County of Humboldt • Department of Public Works
1106 Second Street • Eureka • CA • 95501 • (707) 445-7652

SPECIAL PROVISIONS

NOTICE TO CONTARCTORS,
PROPOSAL AND CONTRACT

FOR

COUNTY OF HUMBOLDT
ARCATA-EUREKA AIRPORT
AIRPORT RESCUE AND FIRE FIGHTING (ARFF) FACILITY - PHASE IV

McKinleyville, California

FAA AIP NUMBER: 3-06-0010-046-2017
COUNTY NUMBER: 919280

Prepared by:

The KPA Group
On behalf of
The Humboldt County Department of Public Works

100% Bid Set
-

Issued:
June 11, 2017

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NOTICE IS HEREBY GIVEN that sealed bids are invited by the Department of Public Works of Humboldt County, a public body, corporate and politic, for the performance of all the work and the furnishing of all the labor, materials, supplies, tools, and equipment for the following project:

CONSTRUCTION OF
ARCATA-EUREKA AIRPORT (ACV)
AIRPORT RESCUE AND FIRE FIGHTING (ARFF) FACILITY - PHASE IV
COUNTY OF HUMBOLDT
FAA AIP NUMBER: 03-06-0010-046
COUNTY NUMBER: 919280

Pursuant to the Contract Documents on file with the Department of Public Works of Humboldt County.

A pre-bid meeting is scheduled for 1:00 p.m. Pacific Time, July 11, 2017 at the Humboldt County Arcata-Eureka Airport, located at 3561 Boeing Avenue, McKinleyville, California. Contract Documents, Plans and Specifications will be available on June 20, 2017.

Each Bid must be contained in a sealed envelope addressed as set forth in said Bid Documents, and filed at the office of the Clerk of the Board of Supervisors of Humboldt County, 825 5th Street, Room 111, Eureka, California at or before 2:00 P.M., Pacific Daylight Time, on August 1, 2017. All Bids will be publicly opened and summary amounts read aloud. The officer whose duty it is to open the Bids will decide when the specified time for the opening of Bids has arrived.

The engineer's estimate for the work is $5,300,000.

Plans and Specifications and other Contract Document forms will be available for examination at the Department of Public Works, 1106 Second Street, Eureka, CA, 95501, Phone: (707) 445-7493. Plans will also be available for viewing at area plan centers and on the County's website at: http://humboldtgov.org/Bids.aspx. Complete sets may be obtained through the office of the Department of Public Works, 1106 Second Street, Eureka, CA, 95501, Phone: (707) 445-7493. Complete sets may be obtained upon advanced payment of $350.00 each, 100 % of which shall be refunded upon the return of such sets unmarked and in good condition within ten (10) days after the bids are opened. Checks should be made payable to County of Humboldt.

Each Bid shall be submitted on the forms furnished by the County within the Bid Documents. All forms must be completed.

Each Bid shall be accompanied by one of the following forms of Bidder's Security to with a certified check or a cashier's check payable to the County, U.S. Government Bonds, or a Bid Bond executed by an admitted insurer authorized to issue surety bonds in the State of California (in the form set forth in said Contract Documents). The Bidder's security shall be in the amount equal to at least ten percent (10%) of the Bid.

The successful Bidder will be required to furnish and pay for a satisfactory faithful performance bond and a satisfactory payment bond in the forms set forth in said Bid Documents.

The County reserves the right to reject any or all Bids or to waive any informalities in any Bid. No Bid shall be withdrawn for a period of one hundred twenty days (120) calendar days subsequent to the opening of Bids without the consent of the County.

All Bidders will be required to certify that they are eligible to submit a Bid on this project and that they are not listed either (1) on the Controller General's List of Ineligible Bidders/Contractors, or (2) on the debarred list of the Labor Commissioner of the State of California.

The successful Bidder shall possess a valid Contractor's license in good standing, with a classification of "B" (General Building Contractor) at the time the contract is awarded.

The successful Bidder will be required to comply with all equal employment opportunity laws and regulations both at the time of award and throughout the duration of the Project.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

The Contractor, and each subcontractor participating in the Project, shall be required to pay the prevailing wages as established by the Department of Industrial Relations, Division of Labor Statistics and Research, P.O. Box 420603, San Francisco, CA, Phone: (415) 703-4780.

The Federal minimum wage rates for this project as predetermined by the United States Secretary of Labor are available on the web home page of the Department of Labor at http://www.gpo.gov/davisbacon/ and copies may be examined at the offices described above where project plans, special provisions, and proposal forms may be seen. Future effective general prevailing wage rates which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

Attention is directed to the Federal minimum wage rate requirements of the Department of Labor. If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, the Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by the Contractor and subcontractors, the Contractor and subcontractors shall pay not less than the Federal minimum wage rate which most closely approximates the duties of the employees in question

The attention of Bidders is directed to the fact that the work proposed herein to be done will be financed in whole or in part with State and County funds, and therefore all of the applicable State and County statutes, rulings and regulations will apply to such work.

In the performance of this contract, the Contractor will not discriminate against any employee or applicant for employment in accordance with the provisions of the California Fair Employment and Housing Act. (Government Code section 12900et seq)

In accordance with the provisions of Section 22300 of the Public contractors code, the Contractor may elect to receive 100% of payments due under the contract from time to time, without retention of any portion of the payment, by entering into an Escrow Agreement for Security Deposits In Lieu of Retention.

DATED:

ATTEST:

By: _____

Kathy Hayes
Clerk of the Board of Supervisors,
County of Humboldt, State of California

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

Sealed Bids will be received by the Clerk of the Board of Supervisors of the County of Humboldt, Humboldt County Courthouse, 825 5th Street, Room 111, Eureka, California 95501, until 2:00 p.m. Pacific Time, on August 1, 2017 at which time they will be publicly opened by the Clerk of the Board of the County of Humboldt at a public meeting in the Office of the Clerk of the Board, for performance of the following work:

CONSTRUCTION OF
ARCATA-EUREKA AIRPORT (ACV)
AIRPORT RESCUE AND FIRE FIGHTING (ARFF) FACILITY - PHASE IV
COUNTY OF HUMBOLDT
FAA AIP NUMBER: 03-06-0010-046
COUNTY NUMBER: 919280

A. SECURING DOCUMENTS

Plans and Specifications and other Contract Document forms will be available for examination at the Department of Public Works, 1106 Second Street, Eureka, CA, 95501, Phone: (707) 445-7493. Plans will also be available for viewing at area plan centers and on the County's website at: http://humboldtgov.org/Bids.aspx. Complete sets may be obtained through the Department of Public Works upon advanced payment of $350.00 each, 100 % of which shall be refunded upon the return of such sets unmarked and in good condition within ten (10) days after the bids are opened. Checks should be made payable to County of Humboldt.

B. BASIC INFORMATION

These instructions pertain to the work (as hereinafter defined) to be performed under Agreement with the County of Humboldt (hereinafter sometimes called "Owner"):

Owner	Humboldt County Board of Supervisors 825 Fifth Street Eureka, CA 95501
Owner's Lead Agency:	Department of Public Works – Aviation Division County of Humboldt 1106 Second Street Eureka, California 95501 Phone: (707) 445-7493 Fax: 445-9409
Project Location:	Humboldt County Arcata-Eureka Airport McKinleyville, California
Architect:	The KPA Group, Inc. 6700 Koll Center Parkway, Suite 125 Pleasanton, CA 94566 Phone: (925).223-8217

C. RECEIPT OF BIDS

Each bidder should mark its bid as "Bid for the Construction of Arcata/Eureka Airport ARFF Building." Bids shall be deemed to include the written responses to the bidder to any questions or requests for information of County made as part of bid evaluation process after submission of bid. Telephone and telefax proposals will not be accepted. County will reject all bids received after the specified time and will return such bids to bidders unopened.

D. DETERMINATION OF APPARENT LOW BIDDER

Apparent low bid will be based on the amount of the bids listed of the Bid Form with the following criteria:

a. The apparent low bid will be based on the Base Bid.

E. REQUIRED BID FORM

All bidders must submit bids on the Section 00 41 00, the "Bid Form." County will reject as non-responsive any bid not submitted on the required form. Bids must be full and complete. Bidders must complete all bid items and supply all information required by the bidding documents and specifications. County reserves the right in its sole discretion to reject any bid as non-responsive as a result of any error or omission in the bid. Bidders may not modify the Bid Form or qualify their bids. Bidders must submit clearly and distinctly written bids. Bidders must clearly make any changes in their bids by crossing out original entries, entering new entries and initialing new entries. County reserves the right to reject any bid not clearly written. The Bid Form shall be signed by the bidder's legal representative as indicated on the Bid Form. If the bid is made by an individual, it shall be signed and his/her full name and his/her address shall be given; if it is made by a partnership, it shall be signed with the co-partnership name by a member of the firm, who shall sign his/her own name and provide the name and address of each member; and if it is by a corporation, the bid shall show the name of the corporation and the state under the laws of which the corporation was chartered. When the bid is signed by the duly authorized officer or officers of the corporation, it shall be attested by the corporate seal, and the names and titles of the principal officers of the corporation shall be given. When a bid is signed by an agent, other than the officer or officers of a corporation authorized to sign contracts on its behalf or a member of a partnership, a "Power of Attorney" must be filed with the County prior to opening bids or shall be submitted with the bid; otherwise, the bid may be rejected as irregular and unauthorized. Bids submitted as joint ventures must so state and be signed by each venturer.

F. CONTENTS OF BID ENVELOPE

The bid envelope shall contain all of the following:

Section 00 41 00 - Bid Form

Section 00 43 13 - Bid Security Form (Bid Bond)

Section 00 43 36 - Subcontractor List

Section 00 45 19 - Non-collusion Affidavit

Section 00 45 26 - Workers' Compensation Certification

Section 00 45 46 – Evidence of Responsibility/Non-responsibility

Section 00 45 47 - Public Contract Code 10232 Statement

Section 00 45 48 - Debarment and Suspension Certification

Section 00 46 01 Equal Employment Opportunity Certification

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Section 00 46 05 Certification of Bidder Regarding Affirmative Action Program

Section 00 46 06 Certification Regarding Foreign Trade Restrictions

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Section 00 46 08 Drug-Free Workplace

Section 00 46 09 Exhibit 12-B Bidder's List of Subcontractors - Part I

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Section 00 46 11 Exhibit 15-G Construction Contract DBE Commitment

Section 00 46 12 Exhibit 15-H DBE Information — Good Faith Efforts

Section 00 46 13 Exhibit 17-F Final Report-Utilization of DBE and First-Tier Subcontractors

Section 00 46 14 Exhibit 17-O: DBE Certification Status Change

G. BID OPENING

The County will stamp bids with the date and time of receipt. Bids will be opened and read publicly at the time and place indicated in Section 1 above. Bidders or their authorized agents may be present. After opening of bids, the County will review all bids for accuracy and reserves the right to correct obvious errors. Upon completion of review, the bids will be ranked by the bid amount and the apparent low bidder will be determined and notified.

H. FAILURE TO EXECUTE AND DELIVER DOCUMENTS

IF the bidder to whom the Contract is awarded shall fail or neglect , with ten (10) calendar days from the date of the receipt of a notice of award, to execute and deliver all required Contract Documents and file all required bonds, insurance certificates and other documents, County may, in its sole discretion, deposit bidder's surety bond, cashier's check or certified check for collection, and retain the proceeds thereof as liquidated damages for bidder's failure to enter into the Contract Documents. Bidder agrees that calculating the damages County may suffer as a result of bidder's failure to execute and deliver all required Contract Documents would be extremely difficult and impractical and that the amount of bidder's required bid security shall be the agreed and presumed amount of County's damages.

I. BIDDER'S BOND, PERFORMANCE BOND AND PAYMENT BOND

Bid security must be submitted with the bid. The successful bidder, prior to execution of the Contract, must submit a Performance Bond in the full amount of the Contract. The successful bidder, prior to execution of the Contract, must submit a Payment Bond in the full amount of the Contract.

J. INSURANCE

It is highly recommended that bidders confer with their respective insurance carriers or brokers to determine in advance of bid submission the availability of the insurance certificates and endorsements required. A bidder, who executes the Contract and thereafter fails to comply strictly with the insurance requirements, will be deemed to be in breach of Contract.

K. RESERVATION OF RIGHTS

County specifically reserves the right, in its sole discretion, to reject any or all bids, or re-bid, or to waive minor irregularities from bid requirements. If no bids are received, the County reserves the right to identify interested contractor(s) and negotiate directly without re-bidding.

L. SECURITIES IN LIEU OF RETENTION

Public Contract Code Section 22300 gives the Contractor for option to deposit securities with an escrow agent as a substitute for retention earnings to be withheld by the County.

M. PRE-BID MEETING

The Pre-Bid Meeting is scheduled for 1:00 p.m. Pacific Time, July 11, 2017 at the Humboldt County Arcata-Eureka Airport, located at 3561 Boeing Avenue, McKinleyville, CA 95519. The Pre-Bid meeting is not mandatory. See Paragraph "R" below.

N. WITHDRAWAL OF BIDS

Any bidder may withdraw his/her bid, either personally or by written request, any time prior to the scheduled closing time for receipt of bids.

O. QUESTIONS AND CLARIFICATIONS

In order to avoid any misinterpretation or misrepresentation between the Bidder, the Architect and the County as regards the plans and specifications for the Project, neither the County nor Architect will respond to any verbal or telephone inquiries, however Bidders may submit written inquiries for clarifications or questions by email, mail or fax to the attention of Department of Public Works, 1106 Second Street, Eureka, CA, 95501, FAX (707) 445-7409, email: jbjohnson@co.humboldt.ca.us. Any responses to written Bidder inquiries will be at the full discretion of the County, and any responses will be in writing in the form of an Addendum to these Contract Documents, which will be sent to all Bidders.

P. ADDENDA OR BULLETINS

Any Addenda or Bulletins issued during the time of bidding or forming a part of the Documents loaned to the Bidder, for the preparation of his Bid, shall be covered in the Bid, and shall be made a part of the Contract.

Q. BIDDERS INTERESTED IN MORE THAN ONE BID

No person, firm, or corporation shall be allowed to make or file, or be interested in more than one bid for the same work, unless alternate bids are called for. A person, firm, or corporation, who has submitted a sub proposal to a bidder, is not thereby disqualified from submitting a sub proposal or quoting prices to the other bidders.

R. VISITING THE SITE & KNOWLEDGE OF PLANS & SPECIFICATIONS

Before submitting a bid for the work, it is recommended that the Bidder inspect the sites and inform himself as to the conditions under which he will be obligated to execute the work. A Pre-Bid meeting and walk-through are scheduled for this project. See Paragraph "M" above.

No allowance will be subsequently made for failure to inspect, and the Bidder will be solely responsible for the consequences of his negligence or lack of diligence. Before submitting any proposal, each Bidder shall examine the General Conditions, Plans, Specifications, as well as these Instructions to Bidders, and the forms appended hereto and made a part hereof.

END OF SECTION 00 21 13

SECTION 00 22 13 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

1. PROJECT DESCRIPTION

The Airport Rescue and Fire Fighting (ARFF) building will house the airport's fire and rescue team. The Project construction site is located within the secure airport and adjacent to active airport movement areas.

The new building is a one-story reinforced concrete frame building with glu-laminated roof beams and deck covered with rigid installation and standing seam metal roofing. Exterior infill walls will be of wood and clad with aluminum panels. The building is rectangular in plan and approximately 9,000 square feet consisting of four large vehicle apparatus bays supported by office and operations area with a mechanical and electrical services platform.

The construction project will include, but is not limited to architectural improvements, civil, electrical, mechanical, and structural engineering, and telecommunications.

The site civil and utilities improvements were previously constructed. The new building will be connected to existing improvements and new concrete driveways and sidewalks will be installed between the existing pavement and the new building.

A. Project Location:
Humboldt County Arcata-Eureka Airport
3561 Boeing Avenue
McKinleyville, CA 95519

2. TIME FOR COMPLETION

The Contractor shall complete the entire project within 480 calendar days from the County's issuance of the "Notice to Proceed".

3. LIQUIDATED DAMAGES

As actual damages for any delay in completion are impossible of determination, the Contractor and their sureties shall be liable for and shall pay to the County of Humboldt the sum of $2,500 as fixed, agreed and liquidated damages for each calendar day of delay beyond the contract completion date until the work is completed and accepted.

4. SUBSTITUTIONS

A. All pre-bid substitution requests for "equal" products or systems shall be submitted to the Owners Representative 10 days prior to the contract bid opening date. All pre-bid substitution requests shall be submitted on the PRE-BID SUBSTITUTION REQUEST FORM - SECTION 00 43 25, see Section 00 72 00, GC 27, B.

B. Product substitution requests for products that are "equal" to specified products but not produced by an "Acceptable Manufacturer", per each technical specification shall be submitted within 35 days after the contract is awarded. All product substitution requests shall be submitted on the PRODUCT SUBSTITUTION REQUEST FORM; see Section 01 60 00, "Product Requirements."

5. ADDENDA

No addenda shall be issued within 48 hours of the designated Bid opening time. Any addenda resulting in material changes, addition, or deletion shall be issued at least 72 hours before the designated Bid opening time; otherwise the Bid time shall be extended by not less than 72 hours.

6. COMMUNICATIONS

A. All notices, demands, requests, instructions, approvals, proposals, and claims must be in writing.

B. Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Contract or at such other office as Contractor may from time to time designate in writing to the County of Humboldt or deposited in the United States mail in a sealed postage-prepaid envelope, or if delivered with charges prepaid to any delivery company for transmission, in each case addressed to such office.

C. All papers required to be delivered to the County shall, unless otherwise specified in writing to the Contractor, be delivered to the County and any notice to or demand upon the County of Humboldt shall be mailed in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any delivery company for transmission to the County of Humboldt at such address, or to such other representatives of the County of Humboldt or to such other address as the County may subsequently specify in writing to the Contractor for such purpose.

D. Any such notice shall be deemed to have been given as of the time of actual delivery; or, in the case of mailing, when the same should have been received in due course of post; or, in case of any delivery company, at the time of actual receipt.

7. MINIMUM RATES OF PAY

A schedule of the minimum rates of pay applicable to this Contract is on file at the principal office of Humboldt County Public Works at 1106 Second Street, Eureka, California, and shall be made available to any interested party on request.

8. JOB OFFICES

A. The Contractor must designate an area to serve the posting requirements of this contract. A board (4’ x 8’) must be in plain view in a well-trafficked area on site. On this board will be posted EEO and wage information in compliance with the General Conditions of this contract.

B. The Contractor and their subcontractors may maintain such office and storage facilities on the site as may be necessary for the proper conduct of the work. These shall be located so as to cause no interference with any work to be performed on the site. The Owner’s Representative shall be consulted with regard to locations.

C. Upon completion of the project, or as directed by the County of Humboldt, Owner’s Representative, the Contractor shall remove all such temporary structures and facilities from the site, same to become their property, and leave the premises in the condition required by the County.

D. The Contractor shall furnish and maintain, during construction of the project, adequate facilities at the site to be designated by the County of Humboldt for the use of the County of Humboldt and the Architect.

9. PERFORMANCE AND PAYMENT BONDS

The company providing the required performance and payment bonds must be listed in U.S. Treasury Circular No. 570 as a surety approved to issue bonds securing Government contracts in the State of California.

10. NOISE ABATEMENT PROVISIONS

A. External Noise:

1. Locate stationary noise sources away from noise sensitive land uses and buildings to the extent possible. Obtain approval from the Owner's Representative before locating stationary noise sources.

2. Use truck haul routes through surrounding communities which minimize impacts on noise sensitive land uses. On the site, use routes as directed and approved by Owner's Representative.

B. Vibration Control: Provide ten (10) working days notice before conducting construction activities that might cause vibration, such as, but not limited to, drilling, excavation, compaction, pile driving, etc.

C. Noise Levels: Do not exceed an average continuous sound level of 72 dBA, measured at the perimeter of the work area, and do not exceed an impact noise level of 100 dBA measured at the perimeter of the work area, and only two impact occurrences between 72 dBA and 100 dBA are permitted in a one-hour period.

END OF SECTION 00 22 13

SECTION 00 41 00 - BID FORM

TO
THE COUNTY OF HUMBOLDT

CONSTRUCTION OF AIRPORT RESCUE AND FIRE FIGHTING (ARFF) FACILITY - PHASE IV

FAA AIP NUMBER: 03-06-0010-046
COUNTY NUMBER: 919280

Name of Bidder: _____
(Note: Name must be exactly as it appears on Contractor's License.)

Business Address: _____

_____

Telephone Number: _____

Residence Address: _____

_____

The work to be done shall be constructed in accordance with the Contract Documents, prepared by the County of Humboldt, Dated June 6, 2017, the Agreement annexed hereto and the General Prevailing Wage provisions as specified in the "Invitation To Bidders".

Bids are submitted for the entire work. The amount of "The Bid" for comparison purposes will be the determination of the apparent low bid as specified in Section 00 21 13, "Instructions to Bidders".
The Bidder shall set forth for the Base Bid and each Alternate, if any, in clearly legible figures, a written lump sum price and a numeric lump sum price.

In case of a discrepancy between the two notated prices, the written price shall prevail, unless, however, if the amount set forth in writing is ambiguous, unintelligible or uncertain for any cause, or is omitted, then the amount set forth in the numeric column for the item shall prevail.

If this proposal shall be accepted and the undersigned shall fail to enter into the Contract and to give the two required bonds in the sums to be determined as aforesaid, with surety satisfactory to the Department of Public Works, within seven (7) days, not including Sundays and legal Holidays, after the Bidder has received notice from the Department that the contract has been awarded, the County may, at its option, determine that the Bidder has abandoned the Contract, and thereupon this Proposal and the acceptance thereof shall be null and void and the forfeiture of such security accompanying this Proposal shall operate and the same shall be the property of the County of Humboldt.

The undersigned, as Bidder, declares that the only persons or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any other person, firm, or corporation; that Bidder has carefully examined the location of the proposed work, the annexed proposed form of contract, and the plans therein referred to; and proposes and agrees if this proposal is accepted, that Bidder will contract with the County of Humboldt, in the form of the copy of the contract annexed hereto, to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the material specified in the contract, in the manner and time therein prescribed, and according to the requirements of the Architect as therein set forth, and that he will take in full payment therefor the following item prices to wit:

Receipt and compliance with the following Addenda to the Contract Documents is acknowledged:

1. Addendum No.____ Dated_____
2. Addendum No.____ Dated_____
3. Addendum No.____ Dated_____
4. Addendum No.____ Dated_____

I, _____, as an agent for

_____, declare under penalty of perjury under the laws of the State of California, that the information contained in this Bid is true and correct.

Executed at _____, California, on _____, 2017

The project shall be complete within the time limits specified in Section 00 22 13, "Supplementary Instructions To Bidders." The undersigned is aware the Contract includes provisions for liquidated damages as specified in Section 00 22 13, "Supplementary Instructions To Bidders," if the Project is not completed within the agreed time of completion.

THE UNDERSIGNED, as Bidder, proposes the following:

BASE BID:

To furnish and complete the entire work as shown on the drawings and listed in the specifications, including required contract bonds and insurance, without additions or subtractions on account of specified alternates, for the sum of:

Base Bid (Lump Sum):	
_____	$ _____
Total Amount in Words	Total

BID ALTERNATES

None

UNIT PRICES

For changing quantities of work items from those indicated on the contract drawings and specifications, upon written instructions from the Architect, the following prices shall prevail:

1. Site Light & Foundation at a unit cost PER FOUR units: $_____

2. Interior Plywood at a unit cost PER SQUARE FOOT: $_____

3. Flag Pole $_____

The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance etc., to cover the finished work of the several kinds called for. Changes shall be processed in accordance with the General Conditions.

Proposal Signature Page

Accompanying this proposal is _____
(Insert the words "Cash ($)", "Cashier's Check", "Certified Check", or "Bidder's Bond", as the case may be)
in the amount of at least ten percent (10%) of the total Bid Price submitted. The names of all persons interested in the foregoing proposal as Principals are as follows:

_____

_____

_____

(NOTE: If a Bidder or other interested person is a Corporation, state the legal name of the corporation, also names of the president, secretary, treasurer, and manager thereof; if a Co-partnership, state the true name of the firm, also state the names of all individual co-partners composing the firm; if the Bidder or other interested person is an Individual, state the first and last names in full.)

Licensed in accordance with an Act providing for the registration of Contractors:

License No.: _____ Expiration Date:_____

By my signature on this proposal I certify, under penalty of perjury under the laws of the State of California, that the foregoing questionnaire and statements of Public Contract Code Section 10162, and 10232, are true and correct and that the bidder has complied with the requirements of Section 8102 of the Fair Employment and Housing Commission Regulations (Chapter 5, Title 2 of the California Administrative Code). By my signature on this proposal I further certify, under penalty of perjury under the laws of the State of California and the United States of America, that the Noncollusion Affidavit required by Title 23 United States Code, Section 112 and Public Contract Code Section 7106; and the Title 49 Code of Federal Regulation, Part 29 Debarment and Suspension Certification are true and correct.

_____ _____
Signature of Bidder Date

If a Bidder is a Corporation or a Co-partnership:

_____
Name of Corporation or Firm Name of Co-partnership

Signatures of officer(s) or partners authorized to sign contracts on behalf of the Corporation or Co-partnership, Corporations require signature by 2 (two) corporate officers:

_____	_____
Name	Title
_____	_____
Name	Title

If Signature is by an agent, other than an officer of a corporation or a member of a partnership, a Power of Attorney must be on file with the Department prior to opening Bids or may be submitted with the Bid; otherwise the Bid will be disregarded as irregular and unauthorized.

Bidder's Business Address: _____

Place of Residence: _____

Date: _____

END OF SECTI0N 00 41 00

SECTION 00 43 13 - BID SECURITY FORM

KNOW ALL MEN BY THESE PRESENTS:

That _____, as Principal, and _____, a corporation, organized and existing under and by virtue of the laws of the State of _____ and authorized to do surety business in the State of California, as Surety, are held and firmly bound unto the _____, State of California, as Obligee, in the sum of _____, Dollars ($ _____), for the payment of which sum well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted a bid to the County of Humboldt, State of California, for all work specifically described in the accompanying bid;

NOW, THEREFORE, if the aforesaid Principal is awarded the contract, and within the time and manner required under the specifications, after the prescribed forms are presented to Principal for signature, enters into a written contract in the prescribed form, in accordance with the bid, and files the two bonds, one guaranteeing faithful performance and the other guaranteeing payment for labor and materials as required by law, or if the said Principal shall fully reimburse and save harmless the Obligee from any damage sustained by the Obligee through failure of the Principal to enter into the written contract and to file the required performance and labor and material bonds, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the Court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20_____.

_____

By:_____ By:_____.

Principal (Seal) Surety (Seal)

NOTE: (1) Signature of those executing for the surety must be properly acknowledged.
(2) This bond must be in an amount equal to as least ten (10%) percent of the amount bid.
(3) Bidders must use this form unless the surety company form is substantially the same.

END OF SECTION 00 43 13

SECTION 00 43 25 - PRE-BID SUBSTITUTION REQUEST FORM

PROJECT: Airport Rescue and Fire Fighting (ARFF) Facility - Phase IV DATE:_____
FAA AIP Number: 03-06-0010-046
County Number: 919280

Note to Contractor: All substitution requests for "equal" products or systems shall be submitted to the Owner's Representative, (10) ten days prior to the contract bid date. See specification section 00 22 13 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS, sub-section 4.

We hereby submit for your consideration the following product in lieu of the specified item for the above project.

SECTION:_____ Paragraph:_____

Specified Item: _____

Proposed Substitution:_____

1. Attach completed technical data, including laboratory tests, color and material samples, if applicable

2. Include complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation. (Plan layout changes, electrical hookup locations)

3. Does the substitution affect dimensions shown on Drawings? [ ] Yes [ ] No

4. Will the undersigned pay for changes to the building design, including detailing costs caused by the requested substitution? [ ] Yes [ ] No

5. What effect does substitution have on other trades?

6. Differences between proposed substitution and specified item?

7. Cost of proposed substitution in comparison with product, system, or method specified?

8. Availability of maintenance and repair services, and sources of repair or replacement items?

9. Manufacturer's guarantees of the proposed and specified items are:

[ ] Same [ ] Different (Explain on attachment)

The undersigned states that the function, appearance and quality are equivalent or superior to the specified item.

Submitted By: _____

Signature: _____

Firm: _____

Address: _____

Telephone: _____

FOR USE BY ARCHITECT:

[ ] Accepted [ ] Accepted as Noted

[ ] Not Accepted [ ] Received Too Late

By: Date:

Remarks:

END OF SECTION 00 43 25

SECTION 00 43 36 - SUBCONTRACTOR LIST

LIST OF SUBCONTRACTORS
PROJECT NAME: AIRPORT RESCUE AND FIRE FIGHTING (ARFF) FACILITY - PHASE IV
FAA AIP NUMBER: 03-06-0010-046
COUNTY NUMBER: 919280

The Bidder shall list all Subcontractors in accordance with Article 18 of the Supplementary General Conditions.

Name of Subcontractor, CA Contractor License Number & DIR Registration Number	Address	Description of Work to be Performed

Name of Subcontractor, CA Contractor License Number & DIR Registration Number	Address	Description of Work to be Performed

END OF SECTION 00 43 36

SECTION 00 43 93 - BID SUBMITTAL CHECKLIST

The following documents shall be submitted by each Bidder, as part of their complete Bid:

1. Section 00 41 00 - Bid Form
2. Section 00 43 13 - Bid Security Form (Bid Bond)
3. Section 00 43 36 - Subcontractor List
4. Section 00 45 19 - Non-collusion Affidavit
5. Section 00 45 26 - Workers' Compensation Certification
6. Section 00 45 46 – Evidence of Responsibility/Non-responsibility
7. Section 00 45 47 - Public Contract Code 10232 Statement
8. Section 00 45 48 - Debarment and Suspension Certification
9. Section 00 46 01 Equal Employment Opportunity Certification
10. Section 00 46 02 Nonlobbying Certification for Federal-Aid Contracts
11. Section 00 46 03 Disclosure of Lobbying Activities
12. Section 00 46 04 Certification of Nonsegregated Facilities
13. Section 00 46 05 Certification of Bidder Regarding Affirmative Action Program
14. Section 00 46 06 Certification Regarding Foreign Trade Restrictions
15. Section 00 46 07 Buy American Certification
16. Section 00 46 08 Drug-Free Workplace
17. Section 00 46 09 Exhibit 12-B Bidder’s List of Subcontractors - Part I
18. Section 00 46 10 Exhibit 12-B Bidder’s List of Subcontractors - Part II
19. Section 00 46 11 Exhibit 15-G Construction Contract DBE Commitment
20. Section 00 46 12 Exhibit 15-H DBE Information — Good Faith Efforts
21. Section 00 46 13 Exhibit 17-F Final Report-Utilization of DBE and First-Tier Subcontractors
22. Section 00 46 14 Exhibit 17-O: DBE Certification Status Change

END OF SECTION 00 43 93

SECTION 00 45 19 - NONCOLLUSION AFFIDAVIT

TO THE COUNTY OF HUMBOLDT, DEPARTMENT OF PUBLIC WORKS

Non-Collusion Affidavit

(Title 23 United States Code Section 112 and Public Contract Code Section 7106)

In accordance with Title 23 United States Code Section 112 and Public Contract Code 7106 the Bidder declares that the Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the Bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid, and they have not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other Bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and further, that the Bidder has not directly or indirectly, submitted their bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member of agent thereof to effectuate a collusive or sham bid.

_____
Signature of Bidder

_____
Date

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

END OF SECTION 00 45 19

SECTION 00 45 26 – WORKERS' COMPENSATION CERTIFICATE

Labor Code Section 3700.

"Every employer except the State shall secure the payment of compensation in one or more of the foregoing ways:

(a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this state.

(b) By securing from the Director of Industrial Relations a certificate of consent to self-insure either as an individual employer, or as one employer in a group of employers, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to their employees."

I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and that I will comply with such provisions before commencing the performance of the work of this contract.

Signature of Contractor

_____

Date

In accordance with Article 5 [commencing at Section 1860], Chapter 1, Part 7, Division 2, of the Labor Code, the above certificate must be signed and filed with the awarding body prior to commencing any work under this contract.

END OF SECTION 00 45 26

SECTION 00 45 46 – RESPONSIBILITY / NONRESPONSIBILITY

1. DETERMINATION OF BIDDER RESPONSIBILITY

   A. A responsible bidder is a bidder who has demonstrated the attribute of trustworthiness, as well as quality, fitness, capacity and experience to satisfactorily perform the contract. It is the County's policy to conduct business only with responsible contractors. (Ord. 2291, § 1, 01/07/2003)

   B. Bidders are hereby notified that the County may determine whether the bidder is responsible based on a review of the bidder's performance on any contracts, including but not limited to County contracts. Particular attention will be given to violations of labor laws related to employee compensation and benefits, and evidence of false claims made by the bidder against public entities. This will include subcontractors and their employees as well.(Ord. 2291, § 1, 01/07/2003)

   C. The County may declare a bidder to be non-responsible for the purpose of this contract, if the Board of Supervisors, in its discretion, finds that the bidder has done any of the following: (1) committed any act or omission which negatively reflects on the bidder's quality, fitness or capacity to perform this contract with the County or a contract with any other public entity, or engaged in a pattern or practice which negatively reflects on same; (2) committed an act or omission which indicates a lack of business integrity or business honesty; or (3) made or submitted a false claim against the County or any other public entity. (Ord. 2291, § 1, 01/07/2003)

   D. If there is evidence that the apparent low bidder may not be responsible, the department shall notify the bidder in writing of the evidence relating to the bidder's responsibility, and its intention to recommend to the Board of Supervisors that the bidder be found not responsible. The department shall provide the bidder and/or the bidder's representative with an opportunity to present evidence as to why the bidder should be found to be responsible and to rebut evidence which is the basis for the department's recommendation. If the bidder fails to avail itself of the opportunity to rebut the department's evidence, the bidder may be deemed to have waived all rights of appeal. (Ord. 2291, § 1, 01/07/2003)

   E. If the bidder presents evidence in rebuttal to the department, the department shall evaluate the merits of such evidence, and based on that evaluation, make a recommendation to the Board of Supervisors. The final decision concerning the responsibility of the bidder shall reside with the Board of Supervisors. (Ord. 2291, § 1, 01/07/2003)

   F. These terms shall also apply to proposed [subcontracts/ subconsultants] of bidders on County contracts. (Ord. 2291, § 1, 01/07/2003)

2. DETERMINATION OF BIDDER DEBARMENT

   A. The bidder is hereby notified that the County may debar the bidder from bidding on other County contracts for a specified period of time, not to exceed three (3) years, and the County may terminate any or all of the bidder's existing contracts with the County, if the Board of Supervisors finds, in its discretion, that the bidder has done any of the following: (1) violated any term of a contract with the County; (2) committed any act or omission which negatively reflects on the bidder's quality, fitness, or capacity to perform a contract with the County or any other public entity, or engaged in a pattern or practice which negatively reflects on same; (3) committed an act or offense which indicates a lack of business integrity or business honesty; or (4) made or submitted a false claim against the County or any other public entity. (Ord. 2291, § 1, 01/07/2003)

   B. If there is evidence that the apparent low bidder may be subject to debarment, the department shall notify the bidder in writing of the evidence which is the basis for the proposed debarment, and shall advise the bidder of the scheduled date for a debarment hearing before the Contractor Hearing Board (CHB). (Ord. 2291, § 1, 01/07/2003)

   C. The CHB shall conduct a hearing where evidence on the proposed debarment is presented. The bidder and/or the bidder's representative shall be given an opportunity to submit evidence at that hearing. After the hearing, the CHB shall prepare a proposed decision, which shall contain a recommendation regarding whether the bidder should be debarred, and, if so, the appropriate length of time of the debarment. If the bidder fails to avail itself of the opportunity to submit evidence to the CHB, the bidder may be deemed to have waived all rights of appeal. (Ord. 2291, § 1, 01/07/2003)

D. A record of the hearing, the proposed decision and any other recommendation of the CHB shall be presented to the Board of Supervisors, by the department head. The Board of Supervisors shall have the right to modify, deny or adopt the proposed decision and recommendation of the hearing board.(Ord. 2291, § 1, 01/07/2003)

E. These terms shall also apply to proposed [subcontractors/ subconsultants] of bidder's on County contracts.(Ord. 2291, § 1, 01/07/2003)

EVIDENCE OF RESPONSIBILITY / NONRESPONSIBILITY

(Humboldt County Code Sections 2141 et seq.)

The bidder shall, under penalty of perjury, answer each of the questions below and provide supporting documentation. The term “bidder” shall include any person associated with the bidder in the capacity of owner, partner, director, officer or manager.

1. Is the bidder under suspension, debarment, or determination of ineligibility by any federal, state or local agency? **[ ] No [ ] Yes (explain)**

2. Has the bidder been suspended, debarred, or determined ineligible by any federal, state or local agency within the preceding 5 years: **[ ] No [ ] Yes (explain)**

3. Is there pending against the bidder any proposed debarment or suspension proceeding?

[ ] No [ ] Yes (explain)

4. Has the bidder been indicted, charged with, or convicted, or assessed civil or administrative penalties, or had a civil judgment rendered against it, in any matter involving:

(a) fraud, false claims, or dishonesty;

(b) any serious or wilful violation of the California Occupational Safety and Health Act of 1973 (Labor Code Sections 6300 et seq) or the Federal Occupational Safety and Health Act of 1970;

(c) violation of the state workers’ compensation laws;

(d) violation of the Contractor’s State License Law (Bus & Prof Code Sections 7000 et seq.)

(e) violation of prevailing wage laws;

(f) violation of state or federal environmental laws;

(g) violation of local laws related to permits, land use, or waste disposal?

[ ] No [ ] Yes (explain)

5. Has the bidder defaulted on a construction contract within the preceding 10 years?

[ ] No [ ] Yes (explain)

6. Provide information concerning any bankruptcy or receivership of bidder, and information regarding all legal claims, disputes, or lawsuits (including administrative matters) arising from any construction project performed within the preceding 5 years, including information regarding any work completed by a surety.

NOTE: This information will not necessarily result in denial of award, but will be considered in determining bidder responsibility. Bidders are cautioned that making a false certification may subject the bidder to criminal prosecution.

END OF SECTION 00 45 46

SECTION 00 45 47 - PUBLIC CONTRACT CODE SECTION 10232 STATEMENT

In accordance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable finding of contempt of court by a Federal court has been issued against the Contractor within the immediately preceding two year period because of the Contractor's failure to comply with an order of a Federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

_____
Signature of Bidder

_____
Date

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

END OF SECTION 00 45 47

SECTION 00 45 48 - DEBARMENT AND SUSPENSION CERTIFICATION

TITLE 49, CODE OF FEDERAL REGULATIONS, PART 29

The CONTRACTOR, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, manager:

1. is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal, State or local agency;

2. has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal, State or local agency within the past 3 years;

3. does not have a proposed debarment pending; and

4. has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Notes: Providing false information may result in criminal prosecution or administrative sanctions. The above certification is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Certification.

Signature of Contractor

Date: _____

END OF SECTION 00 45 48

(THE BIDDER'S EXECUTION ON THE SIGNATURE PORTION OF THIS PROPOSAL SHALL ALSO CONSTITUTE AN ENDORSEMENT AND EXECUTION OF THOSE CERTIFICATIONS WHICH ARE A PART OF THIS PROPOSAL)

EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION

The bidder_____, proposed subcontractor _____, hereby certifies that he has _ , has not __ , participated in a previous contract or subcontract subject to the equal opportunity clauses, as required by Executive Orders 10925, 11114, or 11246, and that, where required, he has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filling requirements.

Note: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of $10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

PUBLIC CONTRACT CODE SECTION 10285.1 STATEMENT

In conformance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the bidder has , has not been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

Note: The bidder must place a check mark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

PUBLIC CONTRACT CODE SECTION 10162 QUESTIONNAIRE

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

YES ☐ NO ☐

If the answer is yes, explain the circumstances in the following space.

PUBLIC CONTRACT CODE SECTION 10232 STATEMENT

In conformance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two-year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

Note: The above Statement and Questionnaire are part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement and Questionnaire.
Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352

1. Type of Federal Action:
☐ a. contract
b. grant
c. cooperative agreement
d. loan
e. loan guarantee
f. loan insurance

2. Status of Federal Action:
☐ a. bid/offer/application
b. initial award
c. post-award

3. Report Type:
☐ a. initial
b. material change

For Material Change:
year _ quarter _
date of last report _

4. Name and Address of Reporting Entity

☐ Prime ☐ Subawardee
Tier , if known

Congressional District, if known

5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:

Congressional District, if known

6. Federal Department/Agency:

7. Federal Program Name/Description:

CFDA Number, if applicable _

8. Federal Action Number, if known:

9. Award Amount, if known:

10 a. Name and Address of Lobby Entity
(If individual, last name, first name, MI)

b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI)

(attach Continuation Sheet(s) if necessary)

11. Amount of Payment (check all that apply)

$_____ ☐ actual ☐ planned

12. Form of Payment (check all that apply):

☐ a. cash
☐ b. in-kind; specify: nature _ value

13. Type of Payment (check all that apply)

☐ a. retainer
☐ b. one-time fee
☐ c. commission
☐ d. contingent fee
☐ e deferred
☐ f. other, specify _

14. Brief Description of Services Performed or to be performed and Date(s) of Service, including officer(s), employee(s), or member(s) contacted, for Payment Indicated in Item 11:

(attach Continuation Sheet(s) if necessary)

15 Continuation Sheet(s) attached: Yes ☐ No ☐

16. Information requested through this form is authorized by Title 31 U.S.C. Section 1352. This disclosure of lobbying reliance was placed by the tier above when his transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to Congress semiannually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Signature: _

Print Name: _

Title: _

Telephone No.: _ Date: _

Federal Use Only:

Authorized for Local Reproduction
Standard Form - LLL

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of covered Federal action or a material change to previous filing pursuant to title 31 U.S.C. section 1352. The filing of a form is required for such payment or agreement to make payment to lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress an officer or employee of Congress or an employee of a Member of Congress in connection with a covered Federal action. Attach a continuation sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence, the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last, previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, County, state and zip code of the reporting entity. Include Congressional District if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the first tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in Item 4 checks "Subawardee" then enter the full name, address, County, state and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organization level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identification in item 1 (e.g., Request for Proposal (RFP) number, Invitation for Bid (IFB) number, grant announcement number, the contract grant. or loan award number, the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitments for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, County, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influenced the covered Federal action.
    (b) Enter the full names of the individual(s) performing services and include full address if different from 10 (a). Enter Last Name, First Name and Middle Initial (Ml).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.
12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.

13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed or will be expected to perform and the date(s) of any services rendered. Include all preparatory and related activity not just time spent in actual contact with Federal officials. Identify the Federal officer(s) or employee(s) contacted or the officer(s) employee(s) or Member(s) of Congress that were contacted.
15. Check whether or not a continuation sheet(s) is attached.
16. The certifying official shall sign and date the form, print his/her name title and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

CERTIFICATION TO BE SUBMITTED BY FEDERALLY ASSISTED CONSTRUCTION CONTRACTORS OF APPLICANTS AND THEIR SUBCONTRACTORS (APPLICABLE TO FEDERALLY ASSISTED CONSTRUCTION CONTRACTS AND RELATED SUBCONTRACTS EXCEEDING $10,000 WHICH ARE NOT EXEMPT FROM THE EQUAL OPPORTUNITY CLAUSE).

CERTIFICATION OF NONSEGREGATED FACILITIES

The federally assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor certifies further that they will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location under his control, where segregated facilities are maintained. The federally assisted construction contractor agrees that a breach of this certification is a violation of the equal opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting room, work areas, rest rooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin, because of habit, local custom, or any other reason. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the equal opportunity clause, and that he will retain such certifications in his files.

_____ _____

Date Signature and Title

_____

IRS Employer Identification Number

CERTIFICATION OF BIDDER REGARDING AFFIRMATIVE ACTION PROGRAM

(REFERENCE: 41 CFR PART 60-4, EXECUTIVE ORDER 11246)

The bidder hereby certifies that he is in compliance with the Civil Rights Act of 1964, Executive Order No. 11246, Employment Practices Act, and any other applicable Federal and State laws and regulations relating to equal opportunity employment.

Bidder's Name: _

Address: _

Name and Title of Signer: _

_____ _____

Date Signature

NOTE: The contractor to whom the Contract is awarded shall submit a statement each month certifying that he is in conformance with the Affirmative Action Program.

CERTIFICATION REGARDING FOREIGN TRADE RESTRICTIONS

The contractor or subcontractor, by submission of an offer and/or execution of a contract, certifies that it:

a. is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (USTR);

b. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list;

c. has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to a contractor or subcontractor who is unable to certify to the above. If the contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on said list for use on the project, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract at no cost to the Government.

Further, the contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor unless it has knowledge that the certification is erroneous.

The contractor shall provide immediate written notice to the sponsor if the contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The subcontractor agrees to provide written notice to the contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

This certification is a material representation of fact upon which reliance was placed when making the award. If it is later determined that the contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract or subcontract for default at no cost to the Government.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

_____ _____

Date Signature

CERTIFICATE OF BUY AMERICAN COMPLIANCE FOR MANUFACTURED PRODUCTS

***(Type 2 - Non-building construction projects, equipment acquisition projects*)**

PROJECT NAME:	Arcata/Eureka Airport ARFF Building
AIRPORT NAME:	Arcata/Eureka Airport (ACV)
AIP NUMBER:	3006-0010-046 03-06

This solicitation and any resulting contract(s) are subject to the Buy America requirements of 49 U.S.C. Section 50101. The bidder certifies it and all associated subcontractors will comply with the Buy American preferences established under Title 49 U.S.C. Section 50101 as follows:

U.S.C. Section 50101 - Buying goods produced in the United States

The contractor agrees to comply with 49 USC § 50101, which provides that Federal funds may not be obligated unless all steel and manufactured goods used in AIP-funded projects are produced in the United States, unless the FAA has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

A bidder or offeror must submit the appropriate Buy America certification (below) with all bids or offers on AIP funded projects. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as nonresponsive.

Type of Certification is based on Type of Project:

There are two types of Buy American certifications.

- For projects for a facility, the Certificate of Compliance Based on Total Facility (Terminal or Building Project) must be submitted.
- For all other projects, the Certificate of Compliance Based on Equipment and Materials Used on the Project (Non-building construction projects such as runway or roadway construction; or equipment acquisition projects) must be submitted.

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101 by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101 by:

a) Only installing steel and manufactured products produced in the United States, or;
b) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing, or;
c) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

1. To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
2. To faithfully comply with providing US domestic product
3. To furnish US domestic product for any waiver request that the FAA rejects

4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

1. To the submit to the Owner within 15 calendar days of the bid opening, a formal waiver request and required documentation that support the type of waiver being requested.
2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination may result in rejection of the proposal.
3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA.
4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 3 Waiver - The cost of the item components and subcomponents produced in the United States is more that 60% of the cost of all components and subcomponents of the "item". The required documentation for a type 3 waiver is:

a) Listing of all product components and subcomponents that are not comprised of 100% US domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety)
b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
c) Percentage of non-domestic component and subcomponent cost as compared to total "item" component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver – Total cost of project using US domestic source product exceeds the total project cost using non-domestic product by 25%. The required documentation for a type 4 of waiver is:

a) Detailed cost information for total project using US domestic product
b) Detailed cost information for total project using non-domestic product

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

STATE OF CALIFORNIA
DRUG-FREE WORKPLACE CERTIFICATION
STD. 21 (REV 12/93) Automated)

CERTIFICATION

I, the official named below, herby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

CONTRACTOR/BIDDER FIRM NAME	FEDERAL ID NUMBER
(Authorized Signature)	DATE EXECUTED
PRINTED NAME AND TITLE OF PERSON SIGNING	TELEPHONE NUMBER (Include Area Code)
TITLE	
CONTRACTOR/BIDDER FIRM'S MAILING ADDRESS	

The contractor or grant recipient named above hereby certifies with Government Code Section 8355 in matters relating to providing a drug-free workplace. The above named contractor or grant recipient will:

1. Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession, or use of controlled substance is prohibited and specifying actions to be taken against employees for violations, as required by Government Code Section 8355(a).

2. Establish a Drug-Free Awareness Program as required by Government Code 8355(b), to inform employees about all of the following:
   (a) The Dangers of drug abuse in the workplace,
   (b) The person's or organization's policy in maintaining a drug-free workplace,
   (c) Any available counseling, rehabilitation and employee assistance programs, and
   (d) Penalties that may be imposed upon employees for drug abuse violations.

3. Provide as required by Government Code 8355(c), that everyone who works on the proposed contract or grant:

   - Will receive a copy of the company's drug-free policy statement, and
   - Will agree to abide by the terms of the company's statement as a condition of employment on the contract or grant.

4. At the election of the contractor or grantee, from and after the "Date Executed" and until _____ (NOT TO EXCEED 36 MONTHS), the state will regard this certificate as valid for all contracts or grants entered into between the contractor or grantee and this state agency without requiring the contractor or grantee to provide a new individual certificate for each contract or grant. If the contractor or grantee elects to fill in the blank date, then the terms of this certificate shall have the same force, meaning, effect and enforceability as if a certificate were separately, specifically, and individually provided for each contract or grant between the contractor or grantee and this state agency.

ADA Notice *For individuals with sensory disabilities, this document is available in alternate formats. For information call (916) 654-6410 or TDD (916) 654-3880 or write Records and Forms Management, 1120 N Street, S-89, Sacramento, CA 95814*

BIDDER'S ASSURANCE OF COMPLIANCE WITH TITLE 49 CFR PART 26 RELATING TO DISADVANTAGED BUSINESS ENTERPRISE *(DBE)* PARTICIPATION

The bidder hereby gives assurance pursuant to the requirements of Title 49 CFR Part 26 that bidder has made a reasonable effort to meet the goals for Disadvantaged Business Enterprise participation specified for the CONTRACT for which this proposal is submitted and that bidder, if the CONTRACT is awarded to bidder, will have a DBE participation of **percent (CONTRACTOR to fill in actual percent of participation)** of the amount of this bid. Bidder further gives assurance that bidder will submit the documentation required by said REGULATIONS and the CONTRACT SPECIFICATIONS, including the Listing of Disadvantaged Business Enterprises with which the bidder will subcontract if the CONTRACT is awarded and if bidder is unable to meet the CONTRACT goals for DBE participation, of the steps bidder has taken to obtain DBE participation.

Bidder's Name:

_____ _____

Date Signature and Title

EXHIBIT 12-B BIDDER'S LIST OF SUBCONTRACTORS (DBE AND NON-DBE) - PART I
AIP Nos.: 3-06-0010-046

The bidder shall list all subcontractors (both DBE and non-DBE) in accordance with Section 2-1.054 of the Standard Specifications and per Title 49, Section 26.11 of the Code of Federal Regulations. This listing is required in addition to listing DBE Subcontractors elsewhere in the proposal. **Photocopy this form for additional firms.**

Firm Name/ Address/ County, State, ZIP	**Phone/ Fax**	**Annual Gross Receipts**	**Description of Portion of Work to be Performed**	**Local Agency Use Only (Certified DBE?)**
Name	*Phone*	☐ < $1 million		☐YES
		☐ < $5 million		☐NO
Address		☐ < $10 million		*If YES list DBE*
	#: Fax	☐ < $15 million		
County State ZIP		☐ > $15 million		Age of Firm (Yrs.)
Name	*Phone*	☐ < $1 million		☐YES
		☐ < $5 million		☐NO
Address		☐ < $10 million		*If YES list DBE*
	#: Fax	☐ < $15 million		
County State ZIP		☐ > $15 million		Age of Firm (Yrs.)
Name	*Phone*	☐ < $1 million		☐YES
		☐ < $5 million		☐NO
Address		☐ < $10 million		*If YES list DBE*
	#: Fax	☐ < $15 million		
County State ZIP		☐ > $15 million		Age of Firm (Yrs.)
Name	*Phone*	☐ < $1 million		☐YES
		☐ < $5 million		☐NO
Address		☐ < $10 million		*If YES list DBE*
	#: Fax	☐ < $15 million		
County State ZIP		☐ > $15 million		Age of Firm (Yrs.)

Distribution: 1) Original - Local Agency File

Garberville Airport
Humboldt County – Garberville, CA
Runway, Parallel Taxiway, and Taxiway Connectors Rehabilitation and Run-up Apron Improvements

PF-29

Division 1
Proposal Forms
Bid Set

EXHIBIT 12-B BIDDER'S LIST OF SUBCONTRACTORS (DBE AND NON-DBE) - PART II

AIP Nos.: 3-06-0010-046

The bidder shall list all subcontractors who provided a quote or bid but were not selected to participate as a subcontractor on this project. This is required for compliance with Title 49, Section 26 of the Code of Federal Regulations. Photocopy this form for additional firms.

Firm Name/ Address/ County, State, ZIP	Phone/ Fax	Annual Gross Receipts	Description of Portion of Work to be Performed	Local Agency Use Only (Certified DBE?)
Name	*Phone*	☐ < $1 million		☐YES
		☐ < $5 million		☐NO
Address		☐ < $10 million		*If YES list DBE*
	#: Fax	☐ < $15 million		
County State ZIP		☐ > $15 million		Age of Firm (Yrs.)
Name	*Phone*	☐ < $1 million		☐YES
		☐ < $5 million		☐NO
Address		☐ < $10 million		*If YES list DBE*
	#: Fax	☐ < $15 million		
County State ZIP		☐ > $15 million		Age of Firm (Yrs.)
Name	*Phone*	☐ < $1 million		☐YES
		☐ < $5 million		☐NO
Address		☐ < $10 million		*If YES list DBE*
	#: Fax	☐ < $15 million		
County State ZIP		☐ > $15 million		Age of Firm (Yrs.)
Name	*Phone*	☐ < $1 million		☐YES
		☐ < $5 million		☐NO
Address		☐ < $10 million		*If YES list DBE*
	#: Fax	☐ < $15 million		
County State ZIP		☐ > $15 million		Age of Firm (Yrs.)

Distribution: 1) Original - Local Agency File

EXHIBIT 12-B - PART II 00 46 10

Exhibit 15-G CONSTRUCTION CONTRACT DBE COMMITMENT

1. Local Agency: HUMBOLDT COUNTY 2. Contract DBE Goal:
3. Project Description: RUNWAY, PARALLEL TAXIWAY, AND TAXIWAY CONNECTORS REHABILITATION AND RUN-UP APRON
4. Project Location: GARBERVILLE AIRPORT
5. Bidder's Name: 6. Prime Certified DBE: ☐ 7. Bid Amount:
8. Total Dollar Amount for **ALL** Subcontractors: 9. Total Number of **ALL** Subcontractors:

10. Bid Item Number	11. Description of Work, Service, or Materials Supplied	12. DBE Certification Number	13. DBE Contact Information (Must be certified on the date bids are opened)	14. DBE Dollar Amount

Local Agency to Complete this Section

21. Local Agency Contract Number: **9919280**
22. Federal-Aid Project Number: **AIP 3-06-0010-046**
23. Bid Opening Date: **July18, 2017**
24. Contract Award Date:

Local Agency certifies that all DBE certifications are valid and information on this form is complete and accurate.

25. Local Agency Representative's Signature 26. Date

27. Local Agency Representative's Name 28. Phone

29. Local Agency Representative's Title

15. TOTAL CLAIMED DBE PARTICIPATION

$

%

IMPORTANT: Identify all DBE firms being claimed for credit, regardless of tier. Names of the First Tier DBE Subcontractors and their respective item(s) of work listed above must be consistent, where applicable with the names and items of the work in the "Subcontractor List" submitted with your bid. Written confirmation of each listed DBE is required.

16. Preparer's Signature 17. Date

18. Preparer's Name 19. Phone

20. Preparer's Title

DISTRIBUTION: 1. Original – Local Agency
2. Copy – Caltrans District Local Assistance Engineer (DLAE). Failure to submit to DLAE within 30 days of contract execution may result in de-obligation of federal funds on contract. Include additional copy with award package.

ADA Notice: For individuals with sensory disabilities, this document is available in alternate formats. For information call (916) 654-6410 or TDD (916) 654-3880 or write Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

INSTRUCTIONS – CONSTRUCTION CONTRACT DBE COMMITMENT

CONTRACTOR SECTION

1. **Local Agency** - Enter the name of the local or regional agency that is funding the contract.
2. **Contract DBE Goal** - Enter the contract DBE goal percentage as it appears on the project advertisement.
3. **Project Location** - Enter the project location as it appears on the project advertisement.
4. **Project Description** - Enter the project description as it appears on the project advertisement (Bridge Rehab, Seismic Rehab, Overlay, Widening, etc).
5. **Bidder's Name** - Enter the contractor's firm name.
6. **Prime Certified DBE** - Check box if prime contractor is a certified DBE.
7. **Bid Amount** - Enter the total contract bid dollar amount for the prime contractor.
8. **Total Dollar Amount for ALL Subcontractors** – Enter the total dollar amount for all subcontracted contractors. SUM = (DBEs + all Non-DBEs). Do not include the prime contractor information in this count.
9. **Total number of ALL subcontractors** – Enter the total number of all subcontracted contractors. SUM = (DBEs + all Non-DBEs). Do not include the prime contractor information in this count.
10. **Bid Item Number** - Enter bid item number for work, services, or materials supplied to be provided.
11. **Description of Work, Services, or Materials Supplied** - Enter description of work, services, or materials to be provided. Indicate all work to be performed by DBEs including work performed by the prime contractor's own forces, if the prime is a DBE. If 100% of the item is not to be performed or furnished by the DBE, describe the exact portion to be performed or furnished by the DBE. See LAPM Chapter 9 to determine how to count the participation of DBE firms.
12. **DBE Certification Number** - Enter the DBE's Certification Identification Number. All DBEs must be certified on the date bids are opened.
13. **DBE Contact Information** - Enter the name, address, and phone number of all DBE subcontracted contractors. Also, enter the prime contractor's name and phone number, if the prime is a DBE.
14. **DBE Dollar Amount** - Enter the subcontracted dollar amount of the work to be performed or service to be provided. Include the prime contractor if the prime is a DBE. See LAPM Chapter 9 for how to count full/partial participation.
15. **Total Claimed DBE Participation** - $: Enter the total dollar amounts entered in the "DBE Dollar Amount" column. %: Enter the total DBE participation claimed ("Total Claimed DBE Participation Dollars" divided by item "Bid Amount"). If the total % claimed is less than item "Contract DBE Goal," an adequately documented Good Faith Effort (GFE) is required (see Exhibit 15-H DBE Information - Good Faith Efforts of the LAPM).
16. **Preparer's Signature** - The person completing the DBE commitment form on behalf of the contractor's firm must sign their name.
17. **Date** - Enter the date the DBE commitment form is signed by the contractor's preparer.
18. **Preparer's Name** - Enter the name of the person preparing and signing the contractor's DBE commitment form.
19. **Phone** - Enter the area code and phone number of the person signing the contractor's DBE commitment form.
20. **Preparer's Title** - Enter the position/title of the person signing the contractor's DBE commitment form.

LOCAL AGENCY SECTION

21. **Local Agency Contract Number** - Enter the Local Agency contract number or identifier.
22. **Federal-Aid Project Number** - Enter the Federal-Aid Project Number.
23. **Bid Opening Date** - Enter the date contract bids were opened.
24. **Contract Award Date** - Enter the date the contract was executed.
25. **Local Agency Representative's Signature** - The person completing this section of the form for the Local Agency must sign their name to certify that the information in this and the Contractor Section of this form is complete and accurate.
26. **Date** - Enter the date the DBE commitment form is signed by the Local Agency Representative.
27. **Local Agency Representative's Name** - Enter the name of the Local Agency Representative certifying the contractor's DBE commitment form.
28. **Phone** - Enter the area code and phone number of the person signing the contractor's DBE commitment form.
29. **Local Agency Representative Title** - Enter the position/title of the Local Agency Representative certifying the contractor's DBE commitment form.

EXHIBIT 15-H DBE INFORMATION —GOOD FAITH EFFORTS

DBE INFORMATION - GOOD FAITH EFFORTS

Federal-aid Project No: **AIP 3-06-0010-046** Bid Opening Date: **Tuesday August 1, 2017, at 2:00 p.m**.

The County of Humboldt established a Disadvantaged Business Enterprise (DBE) **goal of 5%** for this project. The information provided herein shows that a good faith effort was made.

Lowest, second lowest and third lowest bidders shall submit the following information to document adequate good faith efforts. Bidders should submit the following information even if the "Local Agency Bidder DBE Commitment" form indicates that the bidder has met the DBE goal. This will protect the bidder's eligibility for award of the contract if the administering agency determines that the bidder failed to meet the goal for various reasons, e.g., a DBE firm was not certified at bid opening, or the bidder made a mathematical error.

Submittal of only the "Local Agency Bidder DBE Commitment" form may not provide sufficient documentation to demonstrate that adequate good faith efforts were made.

The following items are listed in the Section entitled "Submission of DBE Commitment" of the Special Provisions:

A. The names and dates of each publication in which a request for DBE participation for this project was placed by the bidder (please attach copies of advertisements or proofs of publication):

Publications	Dates of Advertisement

B. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested (please attach copies of solicitations, telephone records, fax confirmations, etc.):

Names of DBEs Solicited	Date of Initial Solicitation	Follow Up Methods and Dates

A

C. The items of work which the bidder made available to DBE firms including, where appropriate, any breaking down of the contract work items (including those items normally performed by the bidder with its own forces) into economically feasible units to facilitate DBE participation. It is the bidder's responsibility to demonstrate that sufficient work to facilitate DBE participation was made available to DBE firms.

Items of Work	Bidder Normally Performs Item (Y/N)	Breakdown of Items	Amount ($)	Percentage Of Contract

D. The names, addresses and phone numbers of rejected DBE firms, the reasons for the bidder's rejection of the DBEs, the firms selected for that work (please attach copies of quotes from the firms involved), and the price difference for each DBE if the selected firm is not a DBE:

Names, addresses and phone numbers of rejected DBEs and the reasons for the bidder's rejection of the DBEs:

_____
_____
_____
_____

Names, addresses and phone numbers of firms selected for the work above:

_____
_____
_____
_____

E. Efforts made to assist interested DBEs in obtaining bonding, lines of credit or insurance, and any technical assistance or information related to the plans, specifications and requirements for the work which was provided to DBEs:

_____
_____
_____
_____

F. Efforts made to assist interested DBEs in obtaining necessary equipment, supplies, materials or related assistance or services, excluding supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate:

_____
_____
_____
_____

A

G. The names of agencies, organizations or groups contacted to provide assistance in contacting, recruiting and using DBE firms (please attach copies of requests to agencies and any responses received, i.e., lists, Internet page download, etc.):

Name of Agency/Organization	Method/Date of Contact	Results

H. Any additional data to support a demonstration of good faith efforts (use additional sheets if necessary):

_____

_____

NOTE: USE ADDITIONAL SHEETS OF PAPER IF NECESSARY.

A

EXHIBIT 17-F FINAL REPORT-UTILIZATION OF DBE AND FIRST-TIER SUBCONTRACTORS

1. Local Agency Contract Number	2. Federal-Aid Project Number:	3. Local Agency	4. Contract Completion Date
919275	**AIP 3-06-0010-046**	**HUMBOLDT COUNTY**	

5. Contractor/Consultant	6. Business Address	7. Final Contract Amount

8. Contract Item Number	9. Description of Work, Service, or Materials Supplied	10. Company Name and Business Address	11. DBE Certification Number	12. Contract Payments		13. Date Work Completed	14. Date of Final Payment
				Non-DBE	DBE		

15. ORIGINAL DBE COMMITMENT AMOUNT $

16. TOTAL

List all first-tier subcontractors/subconsultants and DBEs regardless of tier whether or not the firms were originally listed for goal credit. If actual DBE utilization (or item of work) was different than that approved at the time of award, provide comments on an additional page. List actual amount paid to each entity. If no subcontractors/subconsultants were used on the contract, indicate on the form.

I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT			
17. Contractor/Consultant Representative's Signature	18. Contractor/Consultant Representative's Name	19. Phone	20. Date
I CERTIFY THAT THE CONTRACTING RECORDS AND ON-SITE PERFORMANCE OF THE DBE(S) HAS BEEN MONITORED			
21. Local Agency Representative's Signature	22. Local Agency Representative's Name	23. Phone	24. Date

DISTRIBUTION: Original – Local Agency, Copy – Caltrans District Local Assistance Engineer. Include with Final Report of Expenditures

ADA NOTICE: For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, Local Assistance Procedures Manual TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

INSTRUCTIONS – FINAL REPORT-UTILIZATION OF DISADVANTAGED BUSINESS ENTERPRISES (DBE) AND FIRST-TIER SUBCONTRACTORS

1. **Local Agency Contract Number** - Enter the Local Agency contract number or identifier.
2. **Federal-Aid Project Number** - Enter the Federal-Aid Project Number.
3. **Local Agency** - Enter the name of the local or regional agency that is funding the contract.
4. **Contract Completion Date** - Enter the date the contract was completed.
5. **Contractor/Consultant -** Enter the contractor/consultant's firm name.
6. **Business Address -** Enter the contractor/consultant's business address.
7. **Final Contract Amount** - Enter the total final amount for the contract.
8. **Contract Item Number** - Enter contract item for work, services, or materials supplied provided. Not applicable for consultant contracts.
9. **Description of Work, Services, or Materials Supplied** - Enter description of work, services, or materials provided. Indicate all work to be performed by DBEs including work performed by the prime contractor/consultant's own forces, if the prime is a DBE. If 100% of the item is not to be performed or furnished by the DBE, describe the exact portion to be performed or furnished by the DBE. See LAPM Chapter 9 to determine how to count the participation of DBE firms.
10. **Company Name and Business Address** - Enter the name, address, and phone number of all subcontracted contractors/consultants. Also, enter the prime contractor/consultant's name and phone number, if the prime is a DBE.
11. **DBE Certification Number** - Enter the DBE's Certification Identification Number. Leave blank if subcontractor is not a DBE.
12. **Contract Payments** - Enter the subcontracted dollar amount of the work performed or service provided. Include the prime contractor/consultant if the prime is a DBE. The Non-DBE column is used to enter the dollar value of work performed by firms that are not certified DBE or for work after a DBE becomes decertified.
13. **Date Work Completed** - Enter the date the subcontractor/subconsultant's item work was completed.
14. **Date of Final Payment** - Enter the date when the prime contractor/consultant made the final payment to the subcontractor/subconsultant for the portion of work listed as being completed.
15. **Original DBE Commitment Amount** - Enter the "Total Claimed DBE Participation Dollars" from Exhibits 15-G or 10-O2 for the contract.
16. **Total** - Enter the sum of the "Contract Payments" Non-DBE and DBE columns.
17. **Contractor/Consultant Representative's Signature** - The person completing the form on behalf of the contractor/consultant's firm must sign their name.
18. **Contractor/Consultant Representative's Name** - Enter the name of the person preparing and signing the form.
19. **Phone** - Enter the area code and telephone number of the person signing the form.
20. **Date** - Enter the date the form is signed by the contractor's preparer.
21. **Local Agency Representative's Signature** - A Local Agency Representative must sign their name to certify that the contracting records and on-site performance of the DBE(s) has been monitored.
22. **Local Agency Representative's Name** - Enter the name of the Local Agency Representative signing the form.
23. **Phone** - Enter the area code and telephone number of the person signing the form.
24. **Date** - Enter the date the form is signed by the Local Agency Representative.

EXHIBIT 17-O: DBE CERTIFICATION STATUS CHANGE

4. Local Agency Contract Number	Federal-Aid Project Number:	5. Local Agency	4. Contract Completion Date
919275	**AIP 3-06-0010-046**	**HUMBOLDT COUNTY**	

5. Contractor/Consultant	6. Business Address	7. Final Contract Amount

8. Contract Item Number	9. DBE Contact Information	10. DBE Certification Number	11. Amount Paid While Certified	12. Certification/ Decertification Date (Letter Attached)	13. Comments

If there were no changes in the DBE certification of subcontractors/subconsultants, indicate on the form.

I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT			
14. Contractor/Consultant Representative's Signature	15. Contractor/Consultant Representative's Name	16. Phone	17. Date
I CERTIFY THAT THE CONTRACTING RECORDS AND ON-SITE PERFORMANCE OF THE DBE(S) HAS BEEN MONITORED			
18. Local Agency Representative's Signature	19. Local Agency Representative's Name	20. Phone	21. Date

DISTRIBUTION: Original – Local Agency, Copy – Caltrans District Local Assistance Engineer. Include with Final Report of Expenditures

INSTRUCTIONS –DISADVANTAGED BUSINESS ENTERPRISES (DBE) CERTIFICATION STATUS CHANGE

1. **Local Agency Contract Number** - Enter the Local Agency contract number or identifier.
2. **Federal-Aid Project Number** - Enter the Federal-Aid Project Number.
3. **Local Agency** - Enter the name of the local or regional agency that is funding the contract.
4. **Contract Completion Date** - Enter the date the contract was completed.
5. **Contractor/Consultant -** Enter the contractor/consultant's firm name.
6. **Business Address -** Enter the contractor/consultant's business address.
7. **Final Contract Amount** - Enter the total final amount for the contract.
8. **Contract Item Number** - Enter contract item for work, services, or materials supplied provided. Not applicable for consultant contracts.
9. **DBE Contact Information** - Enter the name, address, and phone number of all DBE subcontracted contractors/consultants.
10. **DBE Certification Number** - Enter the DBE's Certification Identification Number.
11. **Amount Paid While Certified** - Enter the actual dollar value of the work performed by those subcontractors/subconsultants during the time period they are certified as a DBE.
12. **Certification/Decertification Date (Letter Attached)** - Enter either the date of the Decertification Letter sent out by the Office of Business and Economic Opportunity (OBEO) or the date of the Certification Certificate mailed out by OBEO.
13. **Comments** - If needed, provide any additional information in this section regarding any of the above certification status changes.
14. **Contractor/Consultant Representative's Signature** - The person completing the form on behalf of the contractor/consultant's firm must sign their name.
15. **Contractor/Consultant Representative's Name** - Enter the name of the person preparing and signing the form.
16. **Phone** - Enter the area code and telephone number of the person signing the form.
17. **Date** - Enter the date the form is signed by the contractor's preparer.
18. **Local Agency Representative's Signature** - A Local Agency Representative must sign their name to certify that the contracting records and on-site performance of the DBE(s) has been monitored.
19. **Local Agency Representative's Name** - Enter the name of the Local Agency Representative signing the form.
20. **Phone** - Enter the area code and telephone number of the person signing the form.
21. **Date** - Enter the date the form is signed by the Local Agency Representative.

ADA NOTICE: For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, Local Assistance Procedures Manual TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

SECTION 00 52 00 - AGREEMENT

This is an AGREEMENT made and entered into this _____ day of _____, 2017 by and between the County of Humboldt, a political subdivision of the State of California (hereinafter referred to as COUNTY) and _____, a corporation organized and existing under the laws of the State of _____, a partnership consisting of _____; an individual doing business as _____ in the State of California, (hereinafter referred to as "CONTRACTOR").

County and Contractor for the consideration hereinafter named agree as follows:

SECTION 1 - SCOPE OF WORK

Contractor shall furnish all labor, tools and materials and perform all the work for the construction of:

HUMBOLDT COUNTY
AIRPORT RESCUE AND FIRE FIGHTING (ARFF) FACILITY - PHASE IV
FAA AIP NUMBER: 03-06-0010-046
COUNTY NUMBER: 919280

in accordance with the Contract Documents referred to in Section 3 of this Agreement.

The scope of work includes the work included in the “Base Bid” for the project and the following bid alternatives:_____

SECTION 2 - CONTRACT PRICE

County shall pay, and Contractor shall accept Contractor's Price, as follows:
_____ Dollars and /100 ($)

as full compensation for furnishing all materials and for doing all the work contemplated and embraced in this Agreement; also for all loss or damage, arising out of the work aforesaid, or from the actions of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its acceptance by County, and for all risks of every description connected with the work; also for all expenses incurred by or in consequence of the suspension or discontinuance of the work and for well and faithfully completing the work, and the whole thereof, in the manner and according to the Plans and Specifications, and the requirements of the Owner.

SECTION 3 - CONTRACT DOCUMENTS

The complete contract between the parties hereto shall consist of the following, hereinafter referred to as the CONTRACT DOCUMENTS:

- Notice to Contractors
- Bid Form
- Bid Security Form
- This Agreement
- Payment Bond
- Performance Bond
- Insurance Certificates
- Public contract code Statement
- Special Conditions
- General Conditions
- Supplementary General Conditions
- General Requirements
- Technical Specifications
- Plans and Drawings
- Subcontractor List
- Non collusion Affidavit
- Evidence of Responsibility/Nonresponsibility
- Debarment suspension certification

And, as published by the California Department of Industrial Relations and Daivs Bacon:

- General Prevailing Wage Rates

See mead & hunt

And any addenda to any of the above documents, all of which are on file in the office of the Director of Public Works of the County of Humboldt. Each of said CONTRACT DOCUMENTS is incorporated and made a part of this Agreement by the reference contained in this Section.

All rights and obligations of the County and the Contractor are fully set forth and described in the Contract Documents. All of the above named documents are intended to be complementary, so that any work called for in one, and mentioned in the other is to be performed and executed the same as if mentioned in all said documents.

SECTION 4 - BEGINNING OF WORK

Following receipt and full execution and approval of the Contract Documents and posting of the requisite Bonds as called for therein, the COUNTY will issue a "Notice to Proceed". Under no circumstances shall the CONTRACTOR enter upon the site of work until receipt of the "Notice to Proceed", unless so authorized in writing by the COUNTY.

SECTION 5 - TIME OF COMPLETION

The work called for in this Agreement shall be commenced within ten (10) calendar days of the date of receipt by Contractor of the Notice to Proceed and shall be fully completed within 480 calendar days following receipt of the Notice to Proceed by the Contractor.

SECTION 6 - PREVAILING WAGE

Pursuant to Section 1770 of the Labor Code, the County has determined the Prevailing Wage Rate to be as listed by the Department of Industrial Relations, Division of Labor Statistics and Research, P.O. Box 420603, San Francisco, CA, 94101, Phone: (415) 703-4780. Complete Certified Payrolls must be submitted to the OWNER together with each application for progress payment. Electronic submittal directly to DIR shall be required.

SECTION 7 - WORKERS' COMPENSATION

By my signature hereunder, as CONTRACTOR, I certify that I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for Workers' Compensation or to undertake self insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.

SECTION 8 - NOTICES

All notices shall be in writing and delivered in person or transmitted by mail. Notices required to be given to the COUNTY shall be addressed as follows:

Humboldt County Department of Public Works
1106 Second Street, Eureka, California, 95501

Notices required to be given to CONTRACTOR shall be addressed as follows:

SECTION 9 - NUCLEAR FREE HUMBOLDT COUNTY ORDINANCE COMPLIANCE

Neither the Contractor, his Subcontractors or their suppliers are Nuclear Weapons Contractors, and are not knowingly or intentionally engaged in the research, development, production, or testing of nuclear warheads, nuclear weapons systems, or nuclear weapons components, as defined by the Nuclear Free Humboldt County Ordinance. Contractor, his Subcontractors and/or their suppliers agree to notify Owner immediately if they become a nuclear weapons contractor as defined above.

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IN WITNESS WHEREOF, The parties hereto have entered into this Agreement as of the date first above set forth.

COUNTY OF HUMBOLDT

(SEAL)

By:_____
Chairperson, Board of Supervisors of the County of Humboldt, State of California

ATTEST:

By: _____
Clerk of the Board of Supervisors of the County of Humboldt, State of California

CONTRACTOR: Corporations require signature by 2 (two) corporate officers

By: _____

Title: _____

By: _____

Title: _____

APPROVED AS TO FORM:

By: _____
Deputy County Counsel

INSURANCE CERTIFICATES REVIEWED AND APPROVED:

By: _____
Risk Manager

END OF SECTION

SECTION 00 61 13 - PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That _____
(Name of Contractor)

_____
(Address of Contractor)

a _____, hereinafter called Principal, and:
(Corporation, Partnership or Individual)

_____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

HUMBOLDT COUNTY
825 5th Street
Eureka, California 95501

hereinafter called OWNER, in the penal sum of

_____

Dollars ..... ($ _____)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bond ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 20__, a copy of which is hereto attached and made a part hereof for the construction of:

_____

_____

_____

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all of the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if Principal shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

Signed and sealed this _____ day of _____, 20___.

By: _____
Principal

By: _____
Surety

SURETY

(Power of Attorney for person signing for Surety Company, or a certified copy thereof, must be attached. Signatures of person or persons executing for the Surety must be acknowledged.)

END OF SECTION 00 61 13

SECTION 00 61 14 - PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, THAT WHEREAS, the County of Humboldt, by its order made _____, 20___, has awarded to _____, hereinafter designated as the "Principal," a contract for the work described as follows:

_____

_____

_____

NOW, THEREFORE, we the Principal and _____, Surety, are held and firmly bound unto the County of Humboldt in the penal sum of _____ Dollars ($_____), lawful money of the United States of America for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that is said Principal, his/her or its heirs, executors, administrators, successors or assigns, shall fail to pay any of the persons named in Section 9100 of the Civil Code, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the Contractor and their subcontractors pursuant to Section 18806 of the Revenue and Taxation Code with respect to such work and labor as required by Sections 9550 et seq. of the Civil Code of California, then said Surety will pay for the same, in or to an amount not exceeding the amount hereinafter set forth, and also will pay in case suit is brought upon this bond, such reasonable attorney's fees, as shall be fixed by the court, awarded and taxed as in the above-mentioned statutes provided.

AND, the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any wise affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work, or to the specifications.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety above named, on the _____ day of _____, 20 ___.

_____	_____
PRINCIPAL	SURETY
BY:_____	BY_____
	ATTORNEY-IN-FACT

END OF SECTION 00 61 14

SECTION 00 72 00 - GENERAL CONDITIONS

INDEX TO GENERAL CONDITIONS

GC 1. DEFINITIONS

A. COUNTY: The term "County, or pronouns in place of same where used herein, shall mean Humboldt County acting through its Board of Supervisors.

B. BOARD: The term "Board", or pronouns in place of same where used herein, shall mean the Humboldt County Board of Supervisors.

C. OWNER: The "Owner" is the person or entity identified as such in the Owner-Contractor Agreement; the term Owner means the Owner or their authorized representative.

D. ARCHITECT: The term "Architect" shall mean the licensed professional architect employed by the Humboldt County Department of Public Works as the authorized representative of the Owner.

E. CONTRACTOR: The term "Contractor", where used herein, shall mean the Contractor to whom the contract for the work described and specified herein has been awarded by the Board.

F. PLANS AND SPECIFICATIONS: The term "Plans and Specifications", where used herein, shall mean and include all specifications and provisions of every kind, whether general, detailed or otherwise, relating to the equipment, material of work, and the installation thereof, and the plans and drawings accompanying same which are made a part thereof. Such Plans and Specifications are recognized as instruments of professional service.

G. OWNER'S REPRESENTATIVE: The term "Owner's Representative" shall mean agent assigned to the Project by Humboldt County Department of Public Works.

H. PROJECT INSPECTOR: The term "Project Inspector" shall mean agent assigned to the Project by Humboldt County Department of Public Works.

GC 2. CONTRACT

A. The Contract Documents include all documents identified as such in the Agreement (Section 00 52 00), any amendments and Change Orders thereto

B. In the execution of the work or any portion thereof, Contractor shall operate as an independent contractor and not as the agent of Owner or Architect.

C. No verbal agreement or conversation with any officer, agent, or employee of Owner or Architect, either before or after execution of the Agreement, shall affect or modify any terms or obligations of the Contract unless duly incorporated into the Contract by written Change Order or amendment of the Contract.

D. The Contract Documents shall not be construed to create any contractual relationship of any kind between the Architect and the Contractor, but the Architect shall be entitled to performance of obligations intended for their benefit, and to enforcement thereof. Nothing contained in the Contract Documents shall create any contractual relationship between the Owner or the Architect and any subcontractor or sub-subcontractor.

GC 3. BONDS

A. The successful bidder, simultaneously with the execution of the Agreement, will be required to furnish a Payment Bond in an amount equal to one hundred (100%) percent of the contract price, and a faithful Performance Bond in an amount equal to one hundred (100%) percent of the contract price. The Contractor must submit a certificate from the Humboldt County Clerk's Office with all payment bonds. The Clerk's certificate must indicate that the surety is admitted to transact business in the State of California, and certify that the surety's certificate of authority, issued by the Insurance Commissioner, has not been suspended, revoked, canceled, or annulled.

B. The bonds shall comply with Section 9554 of the Civil Code of the State of California. The payment Bond and the faithful Performance Bond shall each be in a form that is satisfactory to the County Counsel, or Risk Management of the County of Humboldt. A copy of an acceptable format is attached to the Agreement forms of these specifications.

GC 4. INSURANCE REQUIREMENTS

A. THIS CONTRACT/AGREEMENT SHALL NOT BE EXECUTED BY COUNTY and the CONTRACTOR is not entitled to any rights, unless certificates of insurance, or other sufficient proof that the following provisions have been complied with, and such certificate(s) are filed with the Clerk of the Humboldt County Board of Supervisors.

B. Without limiting Contractor's indemnification provided herein, Contractor shall and shall require any of its subcontractors to take out and maintain, throughout the period of this Agreement, the following policies of insurance placed with insurers with a current A.M. Bests rating of no less than A:VII or its equivalent against injury/death to persons or damage to property which may arise from or in connection with the activities hereunder of Contractor, its agents, employees or subcontractors:

C. Comprehensive or Commercial General Liability Insurance at least as broad as Insurance Services Office Commercial General Liability coverage (occurrence from CG 0001), in an amount of $2,000,000 per occurrence. If work involves explosive, underground or collapse risks, XCU must be included. If a general aggregate limit is used, either the general aggregate limit shall apply separately to this project or the general aggregate shall be $5,000,000. Said policy shall contain, or be endorsed with, the following provisions:
   1. The County, its officers, employees and agents, are covered as additional insured for liability arising out of the operations performed by or on behalf of Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the County, its officers, agents, and employees.
   2. The policy shall not be canceled or materially reduced in coverage without thirty (30) days prior written notice (10 days for non-payment of the premium) to County by certified mail.
   3. The inclusion of more than one insured shall not operate to impair the rights of one insured against another insured, and the coverage afforded shall apply as though separate policies had been issued to each insured, but the inclusion of more than one insured shall not operate to increase the limits of the insurer's liability.
   4. For claims related to this project, the Contractor's insurance is primary coverage to the County, and any insurance or self-insurance programs maintained by the County are excess to Contractor's insurance and will not be called upon to contribute with it.
   5. Any failure to comply with reporting or other provisions of the parties, including breach of warranties, shall not affect coverage provided to County, its officers, employees, and agents.

D. Automobile liability insurance with coverage at least as broad as Insurance Services Office form CA 0001 06092, Code 1 (any auto), for vehicles used in the performance of this Agreement with minimum coverage of not less than $1,000,000 per accident combined single limit (CSL). Such policy shall contain or be endorsed with the provision that coverage shall not be canceled or materially reduced in coverage without thirty (30) days prior written notice (10 days for non-payment of premium) to County by certified mail.

E. Workers' Compensation insurance meeting statutory limits of the California Labor Code which policy shall contain or be endorsed to contain a waiver of subrogation against County, its officers, agents, and employees and provide for thirty (30) days prior written notice in the event of cancellation.

F. If applicable, Builder's Risk or Course of Construction, written on an "All-Risk" form, for 100% of the completed value of the insurable part of the project. The Builder's Risk policy shall provide for losses to be payable to County and the Contractor as their interests may appear, and that in the event of payment for any loss under the coverage provided, the insurer shall have no rights of recovery against County and Contractor.

G. Contractor shall furnish County with certificates and original endorsements effecting the required coverage prior to execution of this Agreement by County. The endorsements shall be on forms as approved by the County's Risk Manager or County Counsel. Any deductible or self-insured retention over $100,000 shall be disclosed to and approved by County. If Contractor does not keep all required policies in full force and effect, County may, in addition to other remedies under this Agreement, take out the necessary insurance, and Contractor agrees to pay the cost of said insurance.

H. SUBCONTRACTORS: Should contractor subcontract any portion of the work to be performed under this Agreement, said subcontractors shall be required by contractor to:

1. Enter into a written contract with contractor acknowledging that no employee/employer relationship exists between contractor and subcontractor and that no Workers' Compensation, unemployment benefits, or other personnel benefits are required by or available to subcontractor through contractor or County.
2. Hold harmless and to indemnify, defend and save harmless contractor and County, its Board of Supervisors, officers, agents, employees and volunteers, from any and all claims and losses accruing or resulting to any and all contractors, subcontractors, material suppliers, laborers, and any other person, firm or corporation who may be injured or damaged by subcontractor in the performance of this Agreement.

I. HOLD HARMLESS/INDEMNIFICATION CLAUSE

Pursuant to Government Code section 895.4, the parties to this Agreement shall indemnify, defend and hold harmless the other parties hereto and their officers, agents, and employees, from any and all claims, demands, losses, damages, and liabilities of any kind or nature, including attorney's fees, which arise by the virtue of its own acts or omissions (either directly or through or by its officers, agents or employees) in connection with its duties and obligations under this Agreement and any amendments hereto.

Acceptance of insurance, if required by this Agreement, does not relieve Contractor from liability under this indemnification clause. This indemnification clause shall apply to all damages or claims for damages suffered by Contractor's operations regardless if any insurance is applicable or not.

GC 5. TERMINATION OF CONTRACT

A. Each of these general conditions, whether preceding or following this paragraph, is to be considered material and failure to comply with any of such conditions by the Contractor will be deemed a breach of contract.

B. Should the Contractor fail to perform any of the provisions of the Contract, the Owner shall have the right, whether or not an alternative right is provided, to declare the Contract terminated. A written notice by the Owner to the Contractor that the Contract is terminated shall be deemed a complete termination of same.

C. On the Contract being so terminated, the Contractor shall, provided Contractor is ordered to do so by the Owner, immediately remove from the premises all or any materials and personal property belonging to Contractor which have not been used in the construction of the Work or which is not in place in the Work; and both Contractor and their surety shall be liable upon their bond for all damages caused to the Owner by reason of failure to complete the Contract.

D. See GC Article 29, SUFFICIENT LABOR OR MATERIAL.

GC 6. NON-CONTINUANCE OF WORK

A. Should the Contractor at any time during the progress of the Work refuse, neglect or be unable for any reason, except the documented inability to supply a sufficiency of materials or workmen necessary, to complete the Work within the time specified in the Contract, the Owner shall have the power to terminate the Contract as prescribed.

GC 7. ASSIGNMENT OF CONTRACT

A. The Contractor shall not assign or sublet the Contract in whole or in part without the prior written consent of the Owner. The Contractor shall not assign any monies due or to become due to them under the Contract without the prior written consent of the Owner.

B. Any assignments permitted under these documents or approved by the Owner shall, in addition, have prior written approval of all sureties of the Contractor executing bonds or insurance in the interest of this Contract.

C. If the Contractor seeks to assign any portions or monies as permitted, Contractor shall pay to the Owner $1,000 to cover Owner's costs each time an assignment occurs.

GC 8. SEPARATE CONTRACTS

A. The Owner reserves the right to let other contracts in connection with this Project. The Contractor shall afford all other such contractors reasonable opportunity for storage of their materials; shall provide that the execution of their work properly connects and coordinates with theirs; and shall cooperate with them to the end of facilitating the Work.

B. The work performed or executed under other contracts in advance of work under this Contract shall be inspected and determined to be in proper condition by the Contractor before permitting related or connecting work to proceed under this Contract.

C. Contractor shall immediately notify Architect of any discrepancies, defects or other conditions found unsuitable for proper execution of the work.

GC 9. CONFERENCES

A. At any time during the progress of the Work, the Owner, Owner’s Representative, or Architect shall have authority to require the Contractor to attend a conference of any or all of the contractors engaged in the Work; and any notice of such conference shall be duly observed and complied with by the Contractor.

GC 10. TERMS OF PAYMENT

A. At the end of each calendar month, the Contractor shall submit to the Owner’s Representative a statement of all materials actually placed in the building during the month, the labor expended thereon, and the cost thereof; whereupon after verification by the Owner’s Representative it is found to be acceptable, a certificate for the amount less five percent (5%) thereof will be issued by the Owner’s Representative except that no certificate will be issued for defective work and materials until they have been removed, replaced and made good. The Owner will also pay the costs of material on hand under the following conditions: Written approval is given by the Owner’s Representative prior to requesting payment. Approved items have been inventoried by the Owner’s Representative and they are stored in a safe and weather protected manner, and are major items that delay in receiving will adversely affect the construction time schedules. The Owner’s Representative will issue a certificate for the certified invoice amount, less five percent (5%) thereof. The Contractor shall be paid monthly

as the work progresses, the amount of each such certificate. Final payment shall be made in accordance with E. below.

B. As a basis for determining the amount of monthly payments, the Contractor shall, before commencing the work, submit to the Owner's Representative for approval a detailed statement of all materials and labor included in their original estimate. This statement shall be so arranged that the value of the work as it progresses may be readily determined. Payment for change order work will be made if the change order work is complete and is approved prior to the Owner's Representative issuing the monthly certification of payment. The regular initial schedule of values shall be prepared and submitted by Contractor twenty (20) calendar days in advance of the time the first request for payment is due, allowing sufficient time for review, approval and modifications as may be required prior to use for said first payment. The total sum of the schedule of values shall equal the Contract Price.

C. Acceptance of any work and payments therefore shall be made upon written recommendation of the Owner's Representative and Architect.

D. Payments to the Contractor will be made within 30 days of an approved pay estimate in accordance with Owner's regular approval and accounting procedures, based upon statements or certificates received as issued or approved by the Owner's Representative, including written certification that complete certified payroll records have been, or will be, submitted to the Labor Commissioner as required by the California Labor Code.

E. Thirty-five (35) days after the acceptance of the work by the Owner's Representative and Architect (provided the project has been accepted by the Board of Supervisors), the Contractor shall be entitled to the balance due for the completion and acceptance of the work, provided that all claims for labor and materials have been paid, and that no claims shall have been filed with the County based upon acts or omissions of the Contractor and that no stop notices have been filed.

GC 11. CONFLICTS OR ERRORS

A. During construction, if any conflicts are discovered in the plans or specifications, they shall be immediately submitted to the Owner's Representative who will render an interpretation on what was intended and the Contractor agrees to furnish all things necessary by such interpretation to the satisfaction of the Owner's Representative without additional expense to the Owner.

B. The Contractor shall not contend that any error, delay or default in their work is due to omission or ambiguity in said plans or specifications.

C. If errors are found in the Construction Documents that can not be termed conflicts (shown, sized or called out differently in different places) the Contractor shall immediately notify the Owner's Representative within 15 calendar days following the discovery of any error so that a change order can be prepared and the item corrected prior to construction.

D. Refer to G.C. 24, Unity of Documents.

GC 12. CHANGES TO PLANS AND SPECIFICATIONS

A. No modification or deviation from plans and specifications will be permitted by the Contractor without prior written consent of Owner. However, within the limits allowed by law, the Contractor agrees that Owner, without invalidating the Contract, may order extra work or make changes by altering, adding to, or deducting from the Work, the contract sum being adjusted accordingly, and that Contractor will enter into a modification of the original contract to make such changes by means of a written Change Order.

B. Change Orders shall be signed by the Contractor, Architect and authorized representative of the Owner.

C. All such work shall be executed under the conditions of the original contract except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change. Both parties agree that the credit to, or charge against the Owner shall be determined as follows:

1. In the event that a modification results in a reduction of the amount of labor and material to be supplied by the Contractor, the Owner shall be given a credit equal to the actual value of such labor and materials plus a reasonable amount for the use of tools, materials and overhead and profit; or, in the event that a modification results in an increase in the amount of labor and materials to be supplied by the Contractor, the Owner shall pay the Contractor the actual value of such labor materials and equipment plus not more than 15% which shall cover the use of Contractor's overhead and profit. In no case shall the total of any subcontractor(s) together with the Contractor's overhead, profit, bonds and insurance exceed 15%. All costs shall be included as a lump sum price on change orders.
2. Cost Estimates for all changes shall be submitted by the Contractor to the Owner's Representative for checking by the Owner's Representative and Architect. The Contractor shall submit all Cost Estimates within 15 calendar days following the discovery of any potential change. The Owner's Representative shall render a written decision as to reasonable costs within 15 calendar days of receiving cost estimate unless more time is agreed to by both Contractor and Owner's Representative.
3. Any increases in cost or extension of time shall be approved by the Owner's Representative, Architect and Owner, on a signed change order.
4. In the event that the Contractor, for whatever reason, does not accept the dollar amount of increase or decrease or extension of time to the contract amount in the decisions rendered by the Owner, Contractor shall, upon receiving written order from the Owner, proceed with the work called for in the Change Order on a force account basis. Any claim for dollar increases or extension of time shall be made in writing to the Owner's Representative in accordance with the provisions of GC 51, Claims Procedures.

D. In response to a request for a proposed modification, Contractor shall promptly furnish within 15 calendar days, relevant cost breakdowns, time estimates and other information as may be required to the Owner's Representative.

GC 13. GUARANTEE

A. The Contractor shall be held responsible to make-good any defects due to faulty, improper or inferior workmanship or materials arising or discovered in any part of the Work within one (1) year after the completion and final acceptance of the same by the Owner's Representative, Architect and Owner unless a longer period is called for in the Technical Specification Sections.

B. Acceptance of the Work by the Owner's Representative, Architect or Owner shall in no way absolve the Contractor from the responsibility of complying with the provisions of the plans and specifications and other contract documents, even though deviations may not be discovered within the aforementioned one year period.

C. The bond for faithful performance furnished by the Contractor shall cover such defects and protect the Owner against them and remain in force during the one year guarantee period.

GC 14. INTERPRETATIONS

A. The Contractor shall comply with the obvious intent and meaning of the plans and specifications which shall be construed to include all material, measures and modes or work necessary to complete the work required in a workmanlike manner, in strict accordance with these plans and specifications, and to the satisfaction of the Owner.

B. Should any question arise as to the intent and interpretation of the plans or specifications, the Contractor shall promptly, upon discovery thereof, refer the same in writing to the Owner's Representative, whose decision thereon shall be final.

GC 15. DECISIONS BY ARCHITECT AND/OR OWNER'S REPRESENTATIVE

A. The Owner's Representative shall, in all cases, determine whether the amount and quality of the several kinds of work which are to be paid for under the Contract are in accordance with the plans and specifications.

B. The Owner's Representative shall have power to cause all or any part of the work to be expedited with greater diligence when delayed or stopped.

C. When requested by the Owner's Representative, the Architect's decisions in matters relating to artistic effect will be final if consistent with the intent of the Contract Documents.

D. Where not involving a change in the agreed Contract Price or Completion Time, and not inconsistent with the intent of the Contract Documents, the Owner's Representative shall have authority to:
1. Correct any errors or inconsistencies in, and make any deletions from or additions to the drawings and specifications;
2. Order minor changes or adjustments in the work, whether by field order, notations on Contractor's submittals, or other instructions;
3. Order certain portions of the work delayed when particularly involved with or affected by any Change Order in process or being considered by Owner.

E. The Owner's Representative will be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder by both the Owner and Contractor.

F. The Architect through the Owner's Representative will render interpretations necessary for the proper execution or progress of the Work, with reasonable promptness and within fifteen (15) calendar days.

G. Claims, disputes and other matters in question between the Contractor and the Owner relating to the execution or progress of the Work or the interpretation of the Contract Documents shall be referred to the Owner's Representative for decision which the Owner's Representative will render in writing with a reasonable promptness and within fifteen (15) calendar days.

GC 16. ADMINISTRATION OF THE CONTRACT

A. The Owner's Representative will provide administration of the Contract. Maintenance of the Project records for the contract shall be as prescribed by the Owner's Representative and as hereinafter described.

B. The Owner's Representative will be the representative of the Owner during construction and until final payment is due. The Architect will advise and consult with the Owner's Representative and Owner. The Owner's instruction to the Contractor shall be forwarded through the Owner's Representative. The Owner's Representative will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument.

C. The Owner's Representative or Architect will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Owner's Representative or Architect will not be responsible for or have control acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other persons performing any of the Work.

D. The Owner's Representative and Architect shall at all times have access to the Work wherever it is in preparation and progress. The Contractor shall provide facilities for such access so the Owner's Representative and Architect may perform their functions under the Contract Documents.

E. Based on the Owner's Representative and Architect's observations and an evaluation of the Contractor's Applications for Payment, the Owner's Representative will determine the amounts owing to the Contractor and will issue Certificates for Payment in such amounts as provided in GC Article 10.

F. The Owner's Representative shall, upon receipt of a complete submittal from the Contractor, make the submission to the Architect. The Architect shall review and take appropriate action on shop drawings, product data, samples, and other submittals required by the Contract Documents. Such review shall be only for general conformance with the design concept and general compliance with the information given in the Contract Documents. It shall not include review of quantities, dimensions, weights or gauges, fabrication processes, construction methods, coordination with the work of other trades, or construction safety precautions, all of which are the sole responsibility of the Contractor. The Architect's review shall be conducted with reasonable promptness, and within 21 calendar days unless otherwise noted, consistent with sound professional practice. Review of a specific item shall not indicate acceptance of an assembly of which the item is a component. The Architect shall not be required to review and shall not be responsible for any deviations from the Contract Documents not clearly noted by the Contractor, nor shall the Architect be required to review partial submissions or those for which submissions for correlated items have not be received.

G. The Owner's Representative will prepare Change Orders in accordance with GC Article 12.

H. The Contractor shall provide sufficient, safe and proper facilities at all times for the full inspection of the Work by the Architect or other representatives of the Owner, at the project site and at the various other locations where project is being performed.

I. The Owner's Representative and Architect will have authority to reject Work which does not conform to the Contract Documents. Whenever, in their opinion, the Owner's Representative and Architect considers it necessary or advisable for the implementation of the intent of the Contract Documents, the Owner's Representative or Architect will have authority to require special inspection or testing of the Work in accordance with GC Article 31, whether or not such Work be then fabricated, installed or completed. However, the Owner's Representative and Architect's authority to act under this Subparagraph and any decision made by them in good faith to exercise or not to exercise such authority, shall not give rise to any duty or responsibility of the Owner's Representative or Architect to the Contractor, and Subcontractor, any of their agents or employees, or any other person performing any the Work.

J. The duties, responsibilities and limitations of authority of the Owner's Representative as the representative of the Owner during construction as set forth in the Contract Documents will not be modified or extended without written consent of the Owner.

GC 17. NON-CONFORMING WORK

A. The fact that the work and materials have been inspected from time to time and payments on account have been made, shall not relieve the Contractor from the responsibility of replacing and making good any defective work or materials that may be discovered within one year from the date of completion of the Work by the Contractor and its approval by the Owner's Representative, Architect, and its acceptance by the Owner.

B. Failure of Owner's Representative, Architect or Owner to object to any defects in work or material or variances from the plans and specifications during or after construction shall not be deemed a waiver by Owner, Owner's Representative or Architect of such defects or variances; nor by such failure shall Owner, Owner's Representative or Architect be deemed stopped from requiring Contractor to correct such defects or variances.

C. At Owner's sole option, if Owner prefers to accept non-conforming work, Owner may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect an appropriate reduction in the Contract Sum, or if the amount is determined after final payment it shall be paid by the Contractor.

D. Uncovering of Work:

1. If any portion of the Work should be covered contrary to the request of the Owner's Representative, Architect or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Owner's Representative, be uncovered for their observation and shall be replaced at the Contractor's expense.
2. If any other portion of the Work has been covered which the Owner's Representative or Architect has not specifically requested to observe prior to being covered, the Owner's Representative or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work be found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work be found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it be found that this condition was caused by the Owner or a separate contractor as provided in GC 8 above, in which event the Owner shall be responsible for the payment of such costs.

GC 18. OWNERSHIP OF DOCUMENTS

A. All plans and specifications shall remain the property of the Owner and shall be returned to the Owner's Representative or shall be accounted for by the Contractor before the final acceptance of building by the Owner.

B. Documents for this project shall not be used on or for any other work or purposes without express written consent of Owner's Representative, Architect and Owner.

GC 19. DOCUMENTS FURNISHED

A. The Contractor will be supplied ten (10) sets of Contract Documents for use in the Work.

B. Additional sets of Contract Documents may be obtained from the County, at cost, at Contractor's expense.

GC 20. DRAWING DIMENSIONS

A. The general dimensions are shown in figures on the drawings furnished to the Contractor. These figured dimensions shall invariably have preference to scaled measurements; but the Contractor shall exercise proper caution and care to verify the figures before laying out the Work, and shall be held responsible for any omissions or errors therein that might have been avoided.

GC 21. DETAILED DRAWINGS

A. Drawings and details may be furnished to the Contractor as work progresses, showing in more elaboration the work intended to be done and the Contractor shall conform to them as being a part of the Contract.

B. No work shall be performed in advance of the receipt by the Contractor of such detailed drawings, except such work as the Owner's Representative shall order in writing to be done without details. Any complaint as to the character and extent of the details shall be made to the Owner's Representative within ten days after the Contractor has received the same. The Contractor shall notify the Owner's Representative in ample time as to when the Contractor will require these drawings so they may be prepared without causing any delay to the Work.

GC 22. SUBMITTALS

A. Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or any Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

B. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the Work.

C. Samples are physical examples which illustrate materials equipment or workmanship and establish standards by which the Work will be judged.

D. The Contractor shall review, approve and submit, with such promptness as to cause no delay in their own work or in that of any other contractor, copies of all Shop Drawings or Setting Drawings, Schedules for the Work of the various trades and samples of materials and finishes required for the Work, together with information or supporting data as may be required or called for. The Owner's Representative will pass upon them with reasonable promptness in accordance with GC Article 16. The Contractor shall make any corrections required by the Owner's Representative or Architect and resubmit corrected copies.

E. Samples required or called for shall be exactly as specified for and intended to be used in the work; and Shop Drawings shall accurately portray the Work required. Materials, finishes and workmanship shall be equal in every respect to that of the reviewed submittals.

F. Submittals shall be delivered as directed by the Owner's Representative, postage or delivery charges prepaid by the Contractor in all cases. Samples returned upon request from the Contractor shall be returned by collect mail, parcel post or any carrier named by Contractor.

G. The furnishing by the Contractor or the review by the Architect of drawings, samples, schedules or other data shall not relieve the Contractor from responsibility for deviations from drawings or specifications, nor shall it relieve them of responsibility for errors of any sort in shop drawings, schedules or other submittals.

H. By approving and submitting Shop Drawings, Product Data and Samples, the Contractor represents that they have determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that they have checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

I. Each Submittal shall be properly identified as required by the Owner's Representative.

J. Deviations from requirements of Contract Documents, errors, inconsistencies with submittals previously made to or reviewed by Architect, and corrections to dimensions or supporting data shall be clearly identified by the Contractor by notations on the submittals or attached explanations.

K. No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been reviewed by the Architect as provided in Subparagraph of GC Article 16. All such portions of the Work shall be in accordance with reviewed submittals.

GC 23. SURVEY AND LAYOUT

A. All work pertaining to this Contract shall be laid out on the premises by the Contractor who shall be held responsible for its correctness.

B. The Contractor shall retain and pay for the services of a registered Engineer or licensed surveyor, when applicable, who shall lay out the main lines of the building and other improvements at the site and provide other primary lines, pile locations and levels as may be required.

C. All stakes, benchmarks, survey marks, monuments and other line or level points which have been or may be established in the building or on or about the premises shall be carefully preserved and respected by the Contractor.

D. On-site work shall be laid out to properly meet existing off-site work not required to be removed or replaced, or to lines and levels established by civil authorities having jurisdiction, as applicable to conditions at the place of the Work.

GC 24. UNITY OF DOCUMENTS

A. The Plans and Specifications are one document and any work shown, required or called for in the one and not in the other, or vice versa, shall be furnished or performed as though it were shown, required or called for in both.

B. The Contractor admits and agrees that the Contract Documents exhibit the intent and purpose of the Owner in regard to the Work, and that they are not complete in every detail and are to be considered as showing the purpose and intent only; and Contractor further agrees to furnish all labor or material for any detail that is necessary to carry out said intent and purpose without extra charge to the Owner.

C. The misplacement, addition or omission of any word, letter or punctuation mark shall in no way change the intent, purpose of meaning or the Plans and Specifications.

D. Any part of the Work or any article or detail pertaining thereto which is not specifically set forth in the Specifications or shown on the Drawings, but which is necessary for the proper completion of the Work, shall be furnished and installed at the Contractor's expense the same as if it had been partly or fully shown or specified. The Contractor shall do and furnish all things necessary to make a complete and workmanlike job in accordance with the intent and purpose of the Contract Documents.

GC 25. INSPECTION BY CONTRACTOR

A. The Contractor shall inspect, review, compare and familiarize himself with the Contract Documents and the premises of the Work, and shall at once report to the Architect, in writing if requested, any error, omission or inconsistency within the documents or between information given and conditions observed or found at the premises.

B. The Contractor shall make a close inspection of all materials as delivered, and shall promptly return all damaged or defective materials without waiting for their rejection by the Owner’s Representative, Project Inspector, or Architect.

C. Before beginning any of the work, the Contractor shall examine all construction and work of other contractors or trades that may affect this work, and to satisfy that everything is in proper condition to receive this work; and shall at once notify the Owner’s Representative, in writing if requested, of any exception taken to any construction or condition so affecting this work, whether placed under this Contract or other contracts.

D. Failure to file with the Owner’s Representative any notice to the contrary shall constitute acceptance by the Contractor of the construction of other contractors or trades as being suitable in all ways to receive their work, except as to defects which later develop in the work of other contractors after the execution of their own work.

E. Contractor's inspection of documents and premises shall include making known to himself the general and particular location, nature and character of the project work, the physical and contractual conditions, provisions and requirements, the nature and extent of work and equipment to be furnished by Owner, and the limitations and various other aspects relative to this project, including all coordination necessary for proper and timely execution of the Work.

F. Owner will not consider any claims whatsoever on account of Contractor's failure to fully investigate or determine their requirements in advance of commencing the work or the conditions of the work throughout its progress.

GC 26. DEVIATION FROM PLANS OR SPECIFICATIONS

A. No deviations shall be made from the plans or the specifications. If the Contractor shall vary from the plans the amount or value of the materials herein provided for, the Owner shall have the right to order such improper work or materials removed or replaced; any other work disturbed or damaged by such alteration shall be made good at the Contractor's expense.

GC 27. STANDARDS OF MATERIALS

A. Wherever the name or brand of a manufacturer's article is specified herein, it is used as a measure of quality and utility; a standard.

B. If the Contractor desires to use any other brand or manufacturer of equal quality and utility to that specified, Contractor shall make application to the Owner's Representative in writing, and submit samples if requested. Refer to Section 00 22 13, "Supplementary Instructions To Bidders" for substitution request procedures.

GC 28. QUALITY OF MATERIALS AND LABOR

A. All materials used on this Contract shall be new and the best market quality unless specified or shown otherwise. All labor used on this Contract shall be competent and skilled for the Work. All Work executed under this Contract shall be done in the best, most thorough, substantial and workmanlike manner. All material and labor shall be subject to the approval of the Architect as to its quality and fitness, and shall be immediately removed if it does not meet with approval. The Owner's Representative may refuse to issue a Certificate of Payment for unapproved work until all defective materials or work have been removed and other material of proper quality substituted therefore.

GC 29. SUFFICIENT LABOR OR MATERIALS

A. Should the Contractor abandon the Work called for under these specifications, or seek to assign this Contract, or if at any time the Owner's Representative shall be of the opinion and so certify in writing to the Owner that the Contractor is unnecessarily and unreasonably delaying the work, or that the Contractor is willfully violating any of the conditions or provisions of the plans and specifications, or is performing their work in bad faith, the Owner shall, in addition to all other remedies provided by Contract or by law, after seven (7) days written notice to the Contractor, have the power to notify the Contractor to discontinue all work or any part thereof under this Contract; and thereupon, the Contractor shall cease to continue said Work or such part thereof as the Owner may designate, and the Owner shall thereupon have the power to obtain by contract, purchase or hire, such implements, tools, labor or materials by contract or otherwise, as Owner may deem advisable, to work at and be used to complete the Work herein described, or such part thereof as the Owner's Representative shall certify has not been completed, and to use such material as it may find at the building site. The expenses so incurred in the process shall be deducted by the Owner out of such monies as may either be due or may at any time thereafter become due to the Contractor under and by virtue of these plans and specifications, or any part thereof.

B. If the unpaid balance of the Contract Sum exceeds the cost of finishing the Work, including compensation for the Owner's Representative or Architect's additional services made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor or their bondsmen shall pay the difference to the Owner on notice to either from Owner. The amount to be paid to the Contractor or to the Owner, as the case may be, shall be certified by the Owner's Representative, upon application, in the manner provided in GC Article 10, and this obligation for payment shall survive the termination of the Contract.

GC 30. OLD MATERIAL

A. Old material shall not be used.

B. Construction materials or other items used or placed in the work later shall be considered old materials and not reused.

GC 31. TESTS

A. Contractor shall comply with the requirements set forth in Division 01, General Requirements Sections.

GC 32. PATENT RIGHTS, COPYRIGHTS, TRADE NAMES AND ROYALTIES

A. The Contractor shall indemnify and save harmless the Owner and authorized persons acting for the Owner against all liability on account of any patent rights, copyrights or trade names which may affect the articles or materials or their application under the Contract.

B. The Contractor shall pay all royalties or other charges that may arise due to methods, types of construction, processes, materials or use of equipment and shall hold the Owner harmless from any claims or charges whatsoever which may arise; and shall furnish written assurance satisfactory to the Owner that such charges have been paid.

GC 33. COMPLIANCE WITH BUILDING LAWS

A. The Contractor shall conform to and abide by all applicable city, county, regional, state and federal building, labor, sanitary, health and safety laws, ordinances, rules and regulations as currently adopted or enforced, including Part 1 & 2 of Title 24, Calif. Code of Regulation and the International Building Code; a copy of Title 24, CCR and the current California Building Code shall be kept at the job site at all times by the Contractor. Such laws and regulations shall be considered a part of these specifications the same as if set forth herein full, and all work hereunder shall be executed in accordance therewith.

B. All work and materials shall be in full accordance with the latest rules and regulations of the State Fire Marshal, the Safety Orders of the Division of Industrial Safety, the National Electric Code, the Uniform Plumbing & Mechanical Codes published by the International Association of Plumbing and Mechanical Officials, and other applicable state laws or regulation including all of Title 24, Calif. Code of Regulation. Nothing in these plans or specifications is to be construed to permit work not conforming to these codes.

GC 34. PERMITS AND LICENSES

A. Unless otherwise provided in the Contract Documents, the Owner shall give all notices and procure and pay for permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Contract and not excluded in Paragraph D below.

B. LICENSES: Professional, trade, business and other licenses required by state statute or local government are entirely the responsibility of the Contractor and Subcontractors, and shall be prerequisite to submitting a bid proposal or performing work on the Project.

C. PERMITS:
1. Permits shall also include any cash deposits, returnable or otherwise, required by authorities having legal jurisdiction to make such demands;
2. Owner reserves the right to cancel and declare null and void the Contract should any legal permit be refused or not issued for any reason;
3. Due to cancellation for said reasons, Owner will not consider any claims by Contractor for loss of anticipated profits; or for work performed or materials procured prior to obtaining all permits required herein.
4. The Contractor shall obtain Encroachment Permits from the City of Eureka, County of Humboldt, and CalTrans as needed.

D. Contractor shall procure and deliver to the Owner's Representative, in forms prescribed and complete with dates and authorized signatures, all certificates of inspection, testing or approvals required of or by State or Civil authorities having legal jurisdiction or any public authority bearing on the performance of the Work.

E. The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work.

GC 35. TEMPORARY FACILITIES

A. The Contractor shall provide and maintain a temporary field base of operation on the sites. Said base of operation shall be for the exclusive use of the Contractor; and shall be wind and weatherproof, furnished with sufficient lighting to permit reading of blueprints. A complete set of plans and specifications shall be kept continuously at each site. When vacated, said structure shall be removed and the work in that area completed in accordance with the Contract requirements. Based on need, Contractor shall maintain and pay for all utilities and fuels; shall provide maintenance and other services necessary for proper use and operation; and comply with related provisions as specified.

B. The Contractor shall maintain a viable communications system at each site acceptable to the Owner's Representative, and shall maintain the same until the final completion of the Contract and the acceptance of the Work. The Owner's Representative, Architect and Inspector shall have free and unrestricted use of this communications system for all purposes in conjunction with the Work.

C. The Contractor shall provide water closets and urinals for use by their employees and subcontractors and their employees, and in no case shall the permanent plumbing fixtures of buildings on the site be used for this purpose without the written consent of the Owner's Representative.

D. The Contractor and each subcontractor shall furnish, at their own expense, all tools, equipment, appliances, materials, scaffolding or other means necessary for the entire completion of the Work; and shall be responsible for the care and guarding of same.

E. The Contractor and each subcontractor shall erect and maintain where necessary to the progress and completion of the Work, all exterior and interior scaffolding which shall be erected in accordance with the safety rules of the State of California; and use of which shall be unrestricted for all persons performing work on the Project.

F. The Contractor shall pay the cost of all water, gas and electricity used by their employees or subcontractors during the process of the Work, or as required for temporary services or tests and inspections.

G. Also refer to Division 01, General Requirements Sections.

GC 36. LIABILITY FOR ACCIDENTS

A. The Contractor shall be liable for any and all loss, accident, neglect, injury, or damage to person, life or property which may be the result of or may be caused by their building operations or their execution of this Contract, and for which the Owner might be held liable; and shall protect and indemnify the Owner, the Owner's Representative, the Project Inspector, the Architect, and/or any officer, agent or employee of the Owner and hold them harmless in every way from all claims and from all suits or actions at law for damage or injury to persons, life or property that may arise or be occasioned in any way because of their building operations or their execution of this Contract.

B. Safety Precautions and Programs:
1. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

C. The Contractor shall assume the full responsibility for personnel safety on the project and the means and methods of construction that pertain to personnel safety. Contractor is responsible that such means and methods of construction are adequate to provide safety to all personnel while accomplishing all requirements and standards of the Contract Documents. The Owner, Architect, Inspector and/or their representatives have no obligation, responsibility, or jurisdiction over safety or means and methods of construction that pertain to personnel safety on the project.

GC 37. ACCIDENT PREVENTION

A. The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, and any other necessary construction required to secure safety of life or property; and shall maintain during all night hours sufficient lights to prevent accidents or damage to life or property.

B. No earth, building, temporary or other structure shall be loaded, used or stressed so as to endanger its safety.

C. In the event of an emergency affecting the safety of persons or property, the Contractor shall act, at their discretion, to prevent threatened damage, injury or loss. Claims by Contractor on account of alleged emergency actions shall be filed in writing with the Owner's Representative.

GC 38. EXISTING PREMISES AND IMPROVEMENTS

A. The Contractor shall care for, preserve and protect existing structures, utilities and other features, fixtures or improvements at the premises, including adjacent or co-terminus properties which are not required to be removed or altered by reason of work under this Contract; and shall, likewise, care for and protect work or improvements newly placed or recently installed at the premises. Any part or portion of said existing or newly placed improvements which are removed, damaged or disturbed because of this work, shall be replaced, cleaned or otherwise returned to the original condition entirely at the expense of the Contractor.

B. The removal and/or replacing of any existing structure, pipe, conduit, pavement or other existing improvement necessary for the proper completion of any work under the Contract shall be performed by the Contractor, and no claim for extra work shall be made on account of such removal and replacement.

C. In case it shall be necessary to remove any telephone, telegraph or electrical power transmission poles, water pipes, electrical conduits, or underground structures of any character, or any portion thereof, the Owner or their agents shall be notified by the Contractor and the Contractor shall make the necessary arrangements for such removal. The right is reserved to the Owner and to gas, water, telephone, telegraph and electrical power transmission companies to enter upon the Work for purpose of making repairs and changes that have become necessary by reason of work related to the Project.

D. The Contractor shall thoroughly investigate all existing poles, wires, pipes and conduits above and below ground and shall provide for the maintenance or replacing of same, in good condition and at no expense to the Owner. Any necessary new or additional pipe or materials shall be furnished by the Contractor at their expense.

E. At the completion of the Work, the Contractor shall furnish the Owner's Representative with a written certificate from the owner of each and all conduits, pipes or structures to the effect that such replacements and maintenance have been satisfactorily performed.

F. The Contractor shall amply protect all work or improvements, set in the building or at the premises, against any possible damage; and shall furnish all necessary building paper, rough boarding or other means or materials necessary therefore.

G. Also refer to Division 01, General Requirements Sections.

GC 39. USE OF PREMISES AND CLEAN-UP

A. During the progress of the Work, materials shall be neatly stacked at such points so as not to interfere with site access and shall be properly cared for and protected against damage by weather or other causes. Project staging and parking area are defined in the plans.

B. In the case where there are several contractors operating at one time, arrangements must be made to allow the joint use of storage space so as to prevent delays in the work and unnecessary inconveniences.

C. At the end of each working day, or as directed by the Owner's Representative, Project Inspector or Architect, the Contractor shall clean the building, premises, streets and adjacent properties of accumulated rubbish, debris, unnecessary appliances or any unused material which may constitute an obstruction to the progress or completion of the Work, whether the same was caused by their work or by the work of other crafts. Failure by the Contractor to maintain the site and building premises in a safe and clean condition will be considered a breach of contract and Contractor agrees to pay Owner for costs to have site cleaned or deduct said costs from any money due the Contractor under the contract.

D. At the completion of the Work, and as one of the requisites thereof, the Contractor shall remove any and all tools, construction equipment, machinery, surplus materials, appliances, rubbish, packing, debris or other extraneous matter of any kind from the building, premises, sidewalks, streets or adjacent premises; Contractor shall go over all of their work and put the same in perfect order and condition and in strict accordance with the terms of the Contract; and shall repair or replace all damaged, broken or stained parts of their work, whether so injured by their workmen or others.

E. No advertising signs of any kind shall be displayed on the building, premises, fences, offices or elsewhere upon the job, except the Project sign as called for in the specifications.

F. At the completion of each phase of work of each kind of work or activity, the areas so used or involved shall be left in a "broom clean" condition daily unless otherwise more particularly required.

GC 40. DIRECTION OF THE WORK

A. The Contractor shall have control or charge over their Subcontractors; shall be responsible to the Owner for the acts and omissions of their employees, subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor, and for all orders or instructions from the Owner, Owner's Representative or the Architect.

B. It shall be the Contractor's duty to see that all of the subcontractors commence their work properly at the proper time and carry it on with due diligence as not to cause delay or injury either to work or materials; and that all damage caused by them or their workmen be properly made good by them or by himself at no cost to the Owner.

C. The Contractor shall keep on the Work Site at all times and until the acceptance certificate is issued, a competent Project Manager and Project Superintendent for the purpose of receiving and executing without delay any orders in keeping with the terms of the Contract issued by the Owner, Owner's Representative or Architect. This Superintendent shall have charge of Plans and Specifications kept on the job; shall be instructed to be familiarized closely with all the provisions of the plans and specifications and to follow them in a precise manner.

D. If at any time the Superintendent or workman who shall be employed by the Contractor or any of their Subcontractors shall be declared by the Owner's Representative to be incompetent or unfaithful in executing the work, then the Contractor upon receiving written notice shall, forthwith, dismiss such person and shall not again employ him on any part of the Work.

E. Contractor shall supervise and direct the Work using their best skill and attention, and shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the work under the Contract; except that said responsibilities shall not be construed to permit use of any material, process, method or means if they are deemed unsuitable by Owner's Representative.

F. Processing of Change Orders, Cost Estimates and like administrative matters, shall follow the procedures established and approved by the Owner at commencement of Work under the Contract. Change orders and other forms shall be as approved by the Owner's Representative or otherwise required or directed by Owner. Refer to GC 12.

G. Review of Contract Documents: The Contractor shall carefully study and compare the Contract Documents and shall at once report to the Architect through the Owner's Representative any conflict, error, inconsistency or omission Contractor may discover. Refer to GC 11 A.

H. The Contractor shall not be relieved from their obligations to perform the Work in accordance with the Contract Documents by the activities or duties of the Owner's Representative in their administration of the Contract, or by inspections, tests or approvals required or performed under GC 31, by person other than the Contractor.

I. Progress Schedule:

1. The Contractor shall prepare and submit to the Owner's Representative with copy to the Architect and the Construction Inspector the Contractor's Initial Construction Schedule within ten (10) calendar days after date on the Notice to Proceed. The Contractor's Initial Construction Schedule shall be comprised of either a Detailed Bar Chart, if the contract value is less than one million dollars ($1,000,000), or a Critical Path Method network, if the contract value is one million dollars ($1,000,000) or more. The Contractor's Initial Construction Schedule shall show the dates on which each part or division of the work is expected to be started and completed, and shall show all submittals associated with each work activity, allowing a minimum of twenty one (21) calendar days (per GC 16 F) for the Architect's review of each submittal unless a longer period of time is specified elsewhere in these Contract Documents. The work activities making up the schedule shall be of sufficient detail to assure that adequate planning has been done for proper execution of the work and such that, in the sole judgment of the Owner, it provides an appropriate basis for monitoring and evaluating the progress of the work. The schedule shall show the interdependence of each activity and a single critical path. The Contractor shall also submit a separate progress schedule listing all submittals required under the contract and when it is anticipated that each submittal will be submitted.
2. The Contractor's Initial Construction Schedule shall show the sequence, duration in calendar days, and interdependence of activities required for the complete performance of all work. The Contractor's Initial Construction Schedule shall begin with the date of issuance of the Notice to Proceed and conclude with the date of final completion.
3. Float, slack time, or contingency within the schedule (i.e., the difference in time between the project's early completion date and the required contract completion date), and total float within the overall schedule, is not for the exclusive use of either the Owner or the Contractor, but is jointly owned by both and is a resource available to and shared by both parties as needed to meet contract milestones and the contract completion date.
4. The Contractor shall not sequester shared float through such strategies as extending activity duration estimates to consume available float, using preferential logic, or using extensive crew/resource sequencing, etc. Since float time within the schedule is jointly owned, no time extensions will be granted nor delay damages paid until a delay occurs which extends the work beyond the Contract completion date. Since float time within the construction schedule is jointly owned, it is acknowledged that Owner caused delays on the project may be offset by Owner caused time savings (i.e., critical path submittals returned in less time than allowed by the contract, approval of substitution requests which result in a savings of time to the Contractor, etc.) In such an event, the Contractor shall not be entitled to receive a time extension or delay damages until all Owner caused time savings are exceeded and the contract completion date is also exceeded.

5. Comments made by the Owner on the Contractor's Initial Construction Schedule during review will not relieve the Contractor from compliance with the requirements of the contract documents. The review is only for general conformance with the scheduling requirements of the contract documents. Upon the Owner's request, the Contractor shall participate in the review of the Contractor's Initial Construction Schedule submissions (including the original submittal, all update submittals, and any re-submittals). The Owner may request the participation of subcontractor in these reviews, as determined necessary by the Owner. All revisions shall be resubmitted within fifteen (15) calendar days after the Owner's review.
6. The submittal of a fully revised and acceptable Contractor's Initial Construction Schedule shall be a condition precedent to the processing of the first monthly payment application.
7. On any project with a construction value equal to or greater than one million dollars ($1,000,000), the Contractor must submit a Critical Path Method (CPM) network. The network shall provide a workable plan for monitoring the progress of all the elements of the work, establish and clearly display the critical elements of the work, forecast completion of the construction, and match the contract duration in time. Exclusive of those activities for submittal review and material fabrication and delivery, activity duration shall not be less than one (1) nor more than thirty (30) calendar days, unless otherwise approved by the Owner. In addition to the detailed network diagram, the Contractor shall submit the following reports with the original submittal and all updates and revisions:

    a. Predecessor/Successor Report or a list showing the predecessor activities and successor activities for each activity in the schedule.
    b. Activity Report sorted by early start or a list showing each activity in the schedule, arranged by early start dates.
8. Regardless of which schedule method the Contractor elects to use in formulating the Contractor's construction schedule, and unless the Owner's Representative in writing each month, specifically waives this requirement, an updated construction schedule shall be submitted to the Owner's Representative five (5) days prior to the submittal of the Contractor's monthly payment request. The submittal of the updated construction schedule which satisfies the requirements of the Contract Documents accurately reflects the status of the work, and incorporates all changes into the schedule, shall be a condition precedent to the processing of the monthly payment application. Updated schedules shall also be submitted at such other times as the Owner may direct. Upon approval of a change order or issuance of a direction to proceed with a change, the approved change shall be reflected in the next schedule update submittal by the Contractor, or other update submittal approved by the Owner.
9. If completion of any part of the work, the delivery of equipment or materials, or submittal of the Contractor submittals is behind the updated construction schedule and will impact the end date of the work past the contract completion date, the Contractor shall submit in writing, a plan acceptable to the Owner for completing the work on or before the current contract completion date.
10. No time extensions shall be granted nor delay damages paid unless the delay can be clearly demonstrated by the Contractor on the basis of the updated construction schedule current as of the month the change is issued or the delay occurred and which delay cannot be mitigated, offset, or eliminated through such actions as revising the intended sequence of work or other means. Contractor shall submit all disputes or claims under the provisions of GC 51, Claims Procedure, otherwise it shall be waived.
11. As a condition precedent to the release of retained funds, the Contractor shall, after completion of the work has been achieved, submit a final Contractor's construction schedule which accurately reflects the manner in which the project was constructed and includes actual start and completion dates for all work activities on the construction schedule.

J. The Contractor shall forward all communications to the Owner and Architect through the Owner's Representative.

GC 41. CUTTING, FITTING AND PATCHING

A. The Contractor shall do all cutting, fitting and patching of Work that may be required to make its several parts come together properly, and prepare it to join or be joined by the work of other contractors; and Contractor shall make good after them.

B. The Contractor shall not endanger any work by cutting, digging or otherwise; and shall not cut or alter the work of any other contractor without the written consent of the Architect; and shall not cut a beam, timber or support of any kind without the consent of the Architect. Under no circumstances shall any principal brace, timber, truss, support or other structural member be cut or structurally weakened in any way.

C. Where the construction is required to join with or match existing work, it shall be finished exactly similar to that work so as to form complete, unified and finished work.

D. Contractor shall be responsible for and particularly supervise each and every operation and all work which in any way may affect the structural integrity of the various works, including below, or, or above grade structures, and whether for temporary or permanent work.

E. Any cost for repairs or restoration caused by cutting, digging or otherwise due to ill-timed or defective work shall be borne by the Contractor.

F. Also refer to Division 01, General Requirements Sections.

GC 42. RIGHT TO OCCUPY OR USE

A. The Owner reserves the right to occupy or use any part or parts, or the entirety of the building and/or grounds when the Owner deems the same may be safe for use or occupancy.

B. The exercising of this right shall in no way constitute an acceptance of such parts, or any part of the work, nor shall it in any way affect the dates and times when payments shall become due from the Owner to the Contractor, nor shall it in any way prejudice the Owner's right under the Contract or any bonds guaranteeing the same. The Contract shall be deemed completed only when all the Work contracted for shall be duly and properly performed and accepted by the Board of Supervisors.

C. When any part or portion of the Project is to be used or occupied by Owner in advance of final completion and acceptance, and when duly notified by Owner’s Representative, the Contractor shall arrange for completion of said portions of the Work the same as required under the Documents for the whole Work, including cleaning and other readying by the date stipulated with such notice.

D. Contractor shall not be held responsible for any damage to the occupied part of the Project resulting from Owner's occupancy.

E. Occupancy by Owner shall not be deemed to constitute a waiver of existing claims on behalf of Owner or Contractor against each other.

F. Use and occupancy by Owner prior to project acceptance shall not relieve Contractor's responsibility to maintain all insurance and bonds required of Contractor under the Contract until the entire Project is completed and accepted by Owner.

G. If after written notification by the Owner of the intent to occupy, the Contractor feels that such occupancy will delay progress of the work or will cause additional expense to the Contractor, Contractor may file a request for an equitable adjustment in Contract Price or Time of Completion, or both, with the Owner’s Representative. If the Owner’s Representative agrees he will either prepare a written change order for the Owner to sign or advise the Owner to delay occupancy.

GC 43. CHANGE OF CONTRACT TIME & LIQUIDATED DAMAGES

A. Change by Change Order. The contract time may only be changed by change order. A request for an extension or shortening of the contract time shall be based on written notice delivered by the party making the request to County promptly after the occurrence of the event giving rise to the request and stating the general nature of the request. Notice of the extent of the request with supporting data shall be delivered to County and shall be accompanied by the written statement that the adjustment requested is the entire adjustment to which the requesting party has reason to believe it is entitled as a result of the occurrence of said event. No request for an adjustment in the contract time will be valid if not submitted in accordance with the requirements of this paragraph.

B. Contract time may be extended. The contract time will be extended in an amount equal to time lost due to delays beyond the control of Contractor if the request is made therefor as provided in this article. Such delays shall include, but not be limited to, acts of neglect by County or others performing additional work, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

C. Delay and price change. All time limits stated in the contract documents are of the essence. There shall be no adjustment of contract price due to delays for fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God. The provisions of this Provision shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) for delay by either party.

D. Delays in completion of work :

1. Notice of delays. Whenever the Contractor foresees any delay in the prosecution of the work, and in any event immediately upon the occurrence of any delay which the Contractor regards as unavoidable, Contractor shall notify County in writing of the probability of the occurrence of such delay and its cause in order that County may take immediate steps to prevent, if possible, the occurrence or continuance of the delay or, if this cannot be done, may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the work are to be delayed thereby. It will be assumed that any and all delays which have occurred in the prosecution and completion of the work have been avoidable delays, except such delays as shall have been called to the attention of County at the time of their occurrence and found by County to have been unavoidable. The Contractor shall make no requests for extensions of time as to delay not called to the attention of County at the time of its occurrence.
2. Avoidable delays. Avoidable delays in the prosecution or completion of the work shall include all delays which in the opinion of County would have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or Contractor's subcontractors.
3. Unavoidable delays. Unavoidable delays in the prosecution or completion of the work shall include all delays which, in the opinion of County, result from causes beyond the control of the Contractor and which could not have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or the subcontractors and/or any suppliers. Delay in completion due to contract modifications ordered by County and unforeseeable delays in the completion of work or interference by other contractors employed by County will be considered unavoidable delays insofar as they interfere with the Contractor's completion of the work.

E. Extension of time:

1. Avoidable delays. In case the work is not completed in the time specified, including such extensions of time as may have been granted for unavoidable delays, the Contractor will be assessed damages for delay in accordance with liquidated damages provision. The County, however, shall have the right to grant an extension of time for avoidable delay if it is deemed in County's best interest to do so. During such extension of time, the Contractor will be charged for engineering and inspection services and other costs but will not be assessed damages for the delay.

2. Unavoidable delays. For delays which County considers to be unavoidable, the Contractor shall, pursuant to Contractor's application, be allowed an extension of time beyond the time herein set forth, proportional to such delay or delays, in which to complete the contract. During such extension of time, neither extra compensation for engineering and inspection provided nor damages for delay will be charged to the Contractor.
3. Liquidated damages. County and Contractor recognize that time is of the essence and that County will suffer financial loss if the work is not completed within the time specified above, plus any extensions thereof allowed in accordance with this contract. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by County if the work is not completed on time. Accordingly, instead of requiring any such proof, and due to impracticality and difficulty of ascertaining exact damages caused by delay, County and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay County that amount set forth in the Contract, or if no such amount is specified, then one-half of one percent of the total contract price for each day that expires after the time specified above for completion. In case of joint responsibility for delay in the final completion of the work, where two or more separate contracts are in force at the same time and cover work at the same site, liquidated damages assessed against any one Contractor will be based upon the individual responsibility of that Contractor for the delay as determined by, and in the judgment of, County. County shall have the right to deduct the liquidated damages from any money in its hands, otherwise due, or to become due, to Contractor, or to sue for and recover compensation for damages for nonperformance of this contract within the time stipulated. County has determined and the Contractor acknowledges that the liquidated damages as established herein are governed by the provisions of Government Code § 53069.85 and are predicated upon the reasonable damages accruing to County stemming from any delay in the completion of this project.

GC 44. HOURS OF WORK

A. The time of service of any labor, workman or mechanic employed upon any of the Work herein specified, shall be limited and restricted to that allowed by law, and no laborer, workman or mechanic employed upon said Work herein specified shall be required or permitted to labor more than that allowed by law, except in cases of extraordinary emergency caused by fire, military or naval defenses or works in time of war.

B. Within thirty (30) calendar days after any workman is permitted to work over that allowed by law in any one calendar day due to such an extraordinary emergency, the Contractor shall file with the Owner a verified report setting forth the nature of the said emergency, which shall contain the name of said workman and the hours worked by them on said particular day; and failure to file said report within the said thirty day period shall be prima facie evidence that no extraordinary emergency existed.

C. The Contractor and each subcontractor shall keep an accurate record showing the name of and actual hours worked by each worker employed by said Contractor and subcontractor in connection with the work contemplated by this agreement. The record shall be kept open at all reasonable hours to inspection by the Owner or its officers or agents and by the Division of Labor Law Enforcement of the Department of Industrial Relations.

D. The Contractor shall forfeit as a penalty to the Owner twenty-five dollars ($25) for each laborer, workman or mechanic employed in the execution of this Contract by them or by any subcontractor under him, upon any public work herein specified for (a.) each calendar day during which any laborer, workman or mechanic is required or permitted to labor more than that allowed by law; or (b.) each calendar week during which any laborer, workman or mechanic is required or permitted to labor more than that allowed by law of the Labor Code of the State of California. Said sums and amounts which shall have been so forfeited pursuant to the herein paragraph and said provisions of said Labor Code shall be withheld and retained from payments due to the Contractor under this Contract, pursuant to this Contract, and the terms of said Code; but no sum shall be so withheld, retained or forfeited except from the final payment without a full investigation by either the Division of Labor Law Enforcement of the State Department of Industrial Relations or by the Owner.

GC 45. PREVAILING WAGE RATES & PAYROLL RECORDS

A. Prevailing Wage Rates

1. Pursuant to section 1770 and following of the Labor Code of the State of California, the Director of Industrial Relations has ascertained the general prevailing rate of per diem wages and the rates for overtime and holiday work in the locality in which the work is to be performed for each craft, classification or type of worker needed to execute the Contract which will be awarded to the successful bidder, copies of which are on file at Humboldt County Public Works, 1106 Second Street, Eureka, CA 95501, Phone (707) 445-7493 and are available to interested parties on request and by reference are incorporated herein and made a part hereof. Contractor will maintain a copy of prevailing rates and wages on the job site during the contract period.
2. It shall be mandatory upon the Contractor and upon any subcontractor under it, to pay not less than the specified rates to all laborers, workers, and mechanics employed in the execution of the Contract. It is further expressly stipulated that the Contractor shall, as a penalty to the Owner, forfeit not more than $200 for each calendar day, or portion thereof, for paying less than the stipulated prevailing rates for any work done under this contract by Contractor or by any subcontractor under it; and Contractor agrees to comply with all provisions of Section 1775 of the Labor Code.
3. In case it becomes necessary for the Contractor or any subcontractor to employ on the project under this Contract any person in a trade or occupation (except executives, supervisory, administrative, clerical, or other non-manual workers as such) for which no minimum wage rate is herein specified, the Contractor shall immediately notify the Owner, who will promptly thereafter determine the prevailing rate for such additional trade or occupation and shall furnish the Contractor with the minimum rate based thereon. The minimum rate thus furnished shall be applicable as a minimum for such trade or occupation from the time of the initial employment of the person affected and during the continuance of such employment. Each contractor shall file a certified copy of the payroll records with the entity that requested the records within ten (10) days after receipt of a written request.
4. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the Owner, shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address, and social security number. The name and address of the contractor awarded the contract for performing the contract shall not be marked or obliterated.
5. The Contractor shall inform the Owner of the location of the payroll records, including the street address, city and county, and shall, within five working days, provide a notice of any change of location and address.
6. The Prime Contractor shall be responsible for compliance with this section.

B. Payroll Records. The Contractor agrees to comply with all requirements of Section 1776 of the Labor Code, including, without limitation, the following:

1. The Contractor and each subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by it in connection with the public work. Each payroll record shall be verified by written declaration, under penalty of perjury, stating both the following:
   a. The information contained in the payroll record is true and correct.
   b. The employer has complied with the requirements of sections 1771, 1811 and 1815 of Labor Code for any work performed by his employees on the project.
2. The above-referenced payroll records shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:
   a. A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or their authorized representative on request;
   b. A certified copy of all payroll records shall be made available for inspection or furnished upon request to the Owner, the Division of Labor Standards Enforcement,

or the Division of Apprenticeship Standards of the Department of Industrial Relations.

c. A certified copy of all payroll records shall be made available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the Owner, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided, pursuant to paragraph b. above, the requesting party shall, prior to being provided the records, reimburse the cost of the Contractor, subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the Contractor.

C. Pursuant to Section 1771.1(a) of the California Labor Code, a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in Sections 1770 et seq. of the Labor Code, unless currently registered and qualified to perform public work pursuant to Section 1725.5 of the Labor Code. It is not a violation of Section 1771.1(a) for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

GC 46. TAXES

A. Any federal, state or city tax, including sales, excise, use and other taxes payable on articles furnished by the Contractor under the Contract shall be included in the Contract Price and paid for by the Contractor.

GC 47. SUBCONTRACTORS

A. In accordance with the provisions of Section 4100 et seq, of the Public Contract Code of the State of California, each bidder for the work herein specified shall set forth in their Bid Proposal the name and location of the place of business of each subcontractor who will perform work or labor or render service to the General Contractor in or about the construction of the Work or improvements an the amount in excess of one-half (1/2) of one percent (1%) of the General Contractor's total Base Bid; and the portion of the Work which will be done by each subcontractor if the Contract or said Work is awarded to said Bidder.

B. If any General Contractor fails to specify a subcontractor or specifies more than one subcontractor for the same portion of the Work to be performed on the Contract in excess of one-half of one percent of the General Contractor's total Bid, Contractor agrees to perform such portion himself and, if Contractor's Bid is accepted, Contractor shall not be permitted to subcontract that portion of the Work.

C. Should the General Contractor violate any provision of the subletting and subcontracting Fair Practices Act, the Contractor will be deemed in violation of the contract and the Owner may at it’s option, (1) cancel the Contract. (2) assess upon the Contractor a penalty in an amount of not more than ten percent (10%) of the amount of the subcontract involved.

D. Prior to the award of the Contract, the Owner’s Representative shall notify the successful bidder in writing if the Owner, after due investigation, has reasonable objection to any person or organization on the required list of subcontractors. Failure of the Owner to make an objection to any person or organization on the list prior to the award shall constitute acceptance of such person or organization.

E. The Contractor shall not contract with any subcontractor or any person or organization for any portion of the work who has not been accepted by the Owner. The Contractor will not be required to contract with any subcontractor or person or organization against whom Contractor has a reasonable objection.

F If after the award of the contract, the Owner refuses to accept any person or organization on the required list of subcontractors, the Contractor shall submit an acceptable substitute and the Contract Sum shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate Change Order shall be issued; however, no increase in the Contract Sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting a name with respect thereto prior to the award.

G. After the award, the Contractor shall resubmit the list of subcontractors, corrected or modified as may be necessary as directed by the Owner.

H. Subcontracting

1. Nothing contained in the Contract Documents shall be construed as creating any contractual relationship between Owner and any subcontractor. The Divisions or Sections of the Specifications, and the divisioning of the Drawings are not intended to control the Contractor in dividing the Work among subcontractors or to limit the Work performed by any trade.
2. The Owner, Owner's Representative or Architect will not undertake to settle any differences between the Contractor and their subcontractors or between subcontractors.
3. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions, and other Contract Documents insofar as applicable to the work of subcontractors; and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the Contract Documents. The Contractor shall make available to each proposed subcontractor prior to the execution of the Subcontract, copies of the Contract Documents to which the subcontractor will be bound by this Paragraph and identify to the subcontractor any terms and conditions of the proposed Subcontract which may be at variance with the Contract Documents. Each subcontractor shall similarly make copies of such Documents available to their sub-subcontractors.

I. Payments to Subcontractors:

1. Contractor shall pay each subcontractor or supplier upon receipt of payment from Owner, an amount equal to the percentage of completion allowed to Contractor on account of such work performed or material supplied. Contractor shall also require each subcontractor to make similar payments to their subcontractors or suppliers.
2. Contractor shall pay each subcontractor a just share of any insurance monies received by Contractor when and as applicable, and Contractor shall require each subcontractor to make similar payments to their subcontractors or suppliers.
3. The Owner's Representative may, on request and at their discretion, furnish to any subcontractor, if practicable, information regarding percentages of completion certified to the Owner on account of Work done under the Contract.
4. Neither Owner, Owner's Representative or Architect shall have any obligation to see to the payment of any monies to any subcontractor except as may otherwise be required by law.

GC 48. RECORDS, ACCOUNTS AND SEGREGATED PRICES

A. Contractor agrees to keep one complete set of records and books of accounts, on a recognized cost accounting basis, satisfactory to Owner and Owner's Representative showing all expenditures, of whatever nature, made pursuant to this Contract.

B. Contractor shall furnish such records, information and data as may be reasonably required and shall cooperate with Owner or Owner's Representative in establishing total costs for various major portions of the Work as will be designated by the Owner's Representative.

C. If required for convenience of Owner's accounting, Contractor shall furnish segregated prices for various other portions of the Work. These segregated prices shall be in addition to or separate from the required Schedule of Values.

GC 49. LIABILITY FOR TREES

A. In case of damage to or loss of trees due to carelessness or lack of sufficient protective measures specified, Contractor shall forfeit an amount in proportion to the extent of damage or loss, which shall not be less than Two hundred ($200) dollars nor exceed One Thousand ($1,000) dollars per tree for total loss.

GC 50. LIABILITY FOR SURVEY MARKS

A. In case of damage to, disturbance or removal of survey marks, field markers, monuments, or other survey or layout devices due to carelessness or lack of sufficient protective means, the party responsible for such damage, disturbance or removal shall be liable for the expense to have them replaced and reset in compliance with specified requirements.

GC 51. CLAIMS PROCEDURES

A. For purposes of this section:
1. "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:
   a. A time extension, including, without limitation, for relief from damages or penalties for delay assessed by the County under the contract for the project.
   b. Payment by the County of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for the project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.
   c. Payment of an amount that is disputed by the County.
2. "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the California Business and Professions Code who has entered into a direct contract with the County for a project.
3. "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the California Business and Professions Code who either is in direct contract with a Contractor or is a lower tier subcontractor.

B. Upon receipt of a Contractor's claim, the County shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, the County and a contractor may, by mutual agreement, extend the time period provided in this section.

C. The claimant shall furnish reasonable documentation to support the claim.

D. If the County needs approval from its Board of Supervisors to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the County shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

E. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the County issues its written statement. If the County fails to issue a written statement, paragraph (K) shall apply.

F. If the Contractor disputes the County's written response, or if the County fails to respond to a claim issued pursuant to this section within the time prescribed, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the County shall schedule a meet and confer conference within 30 days for settlement of the dispute.

G. Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the County shall provide the Contractor a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the County issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the County and the claimant sharing the associated costs equally. The County and Contractor shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

H. For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

I. Unless otherwise agreed to by the County and the Contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

J. This section does not preclude the County from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

K. Failure by the County to respond to a claim from the Contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the County’s failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

L. Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

M. If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against the County because privity of contract does not exist, the Contractor may present to the County a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the Contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the County shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the Contractor shall notify the subcontractor in writing as to whether the Contractor presented the claim to the County and, if the original Contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

N. A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable, and (2) the County may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the time frames and procedures set forth in this section.

GC 52. ATTORNEY'S FEES

A. Contractor hereby agrees to pay Owner, Owner's Representative and/or Architect a reasonable sum as attorney's fees in all court actions including arbitration brought by either of them against the other or in which they are both plaintiffs or defendants, and also in court actions involving claims of subcontractors or material suppliers and in actions involving offsetting claims between Contractor and Owner, Owner's Representative or Architect because of any doubts, disputes or actions arising out of this Contract, except in the following cases:

1. When Contractor obtains a favorable net judgment against the Owner, Owner's Representative and/or Architect after consideration of claims and offsets of Owner which are allowed by the court against Contractor for breach of this Contract;
2. When Owner, Owner's Representative and/or Architect is denied a favorable judgment by a court in a suit against Contractor which may be brought by Owner, Owner's Representative or Architect.

END OF SECTION 00 72 00

SECTION 00 73 00 - SUPPLEMENTARY GENERAL CONDITIONS

INDEX TO SUPPLEMENTARY GENERAL CONDITIONS

SGC 1. GUARANTEE WORK

A. In the event of failure of Contractor to comply with the requirements of any guarantee by this Contract within seven (7) days after being notified in writing, Owner is authorized to proceed to have the defects repaired and made good at the expense of Contractor, who shall pay the costs and charges therefore immediately on demand.

SGC 2. LAWS AFFECTING PUBLIC WORKS

A. Attention to bidders is called to necessity of being familiar with the various Federal, State and Local laws affecting public work, especially, but not limited to, those laws relating to hours of employment, minimum wage rates, payment of wages, sanitary and safety conditions for workmen, workmen's compensation insurance, type and kind of materials that can be used, non-discrimination in employment and affirmative-action programs. Contractor is advised that this project is being paid for by State and local funds. Contractor shall comply with applicable regulations and hold harmless the Owner for their failure to comply. Certain of those provisions may be set forth herein or in the General Construction Contract. The existence of these provisions does not excuse the Contractor from complying with other statutory requirements or provisions which are not set forth in these Contract Documents.

SGC 3. OWNER'S REPRESENTATIVE, INSPECTOR

A. The Owner will employ an "Owner's Representative" and "Inspector". The Inspector will observe the installation of all materials and equipment to be incorporated into the Work and the placing of such materials and equipment to determine in general if the Work is proceeding in accordance with the Contract Documents. On the basis of their observations, the Inspector will keep the Owner's Representative informed as to the progress of the Work and will endeavor to guard the Owner against defects and deficiencies in the Work of the Contractor and subcontractors employed by the Contractor in the prosecution of the Work. The Owner's Representative and Inspector shall not be responsible for means, methods, techniques, sequences or procedures of construction, nor be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

SGC 4. RESPONSIBILITY FOR COMPLIANCE WITH OSHA

A. All work, materials, work safety procedures and equipment shall be in full accordance with the latest OSHA rules and regulations.

B. Contractor warrants that Contractor and each of their subcontractors shall, in performance of this Contract, comply with each and every compliance order issued pursuant to OSHA and CAL-OSHA. The Contractor assumes full and total responsibility for compliance with OSHA and CAL-OSHA Standards by their subcontractors as well as himself. The cost of complying with any compliance order and/or payment of any penalty assessed pursuant to OSHA and CAL-OSHA shall be borne by the Contractor. Contractor shall save, keep and hold harmless the Owner and all officers, employees and agents thereof from all liabilities, costs or expenses in law or in equity, that may at any time arise or be set up because of Contractor's or subcontractor's non-compliance or alleged non-compliance with OSHA and CAL-OSHA requirements.

C. Nothing contained herein shall be deemed to prevent the Contractor and their subcontractors from otherwise allocating between themselves responsibility for compliance with OSHA and CAL-OSHA requirements; provided, however, that the Contractor shall not thereby be, in any manner whatsoever, relieved of their responsibility to the Owner as herein above set forth.

SGC 5. AS BUILT DRAWINGS

A. The Contractor shall be given an extra set of drawings and specifications which shall be kept at the site of the Work at all times. Exact locations of all pipes and conduits, and all changes in construction and details shall be indicated and dimensioned upon these drawings, and all

changes in materials and equipment installed shall be indicated in these specifications. The as-built drawings shall be current (up-to-date) to qualify for payment; the job Inspector will verify. Upon completion of the Work, the As-Built Drawings shall be prepared by the Contractor and Specifications shall be reviewed by the Owner's Representative and Consultants and returned to the Owner prior to the final payment. The As-Built Drawings shall be neatly drafted on erasable mylar reproducible transparencies, or printed on vellum and submitted as a .dwg file if prepared electronically.

SGC 6. FINAL CERTIFICATES

A. When the Work is ready for acceptance, by the Owner, the Owner's Representative shall so certify in writing to the Owner, indicating substantial completion and that the building can be occupied and used and a Certificate of Acceptance will be issued to the Contractor which will bring their Progress Payment up to ninety-five (95%) percent of the Contract Price, with five (5%) percent to remain in retention until after Notice of Completion, less sums withheld regarding liquidated damages, if any, or any other damages incurred by owner, or other sums withheld pursuant to the terms of this agreement or by law.

B. Notice of Completion will be filed by the Owner after substantial completion and acceptance of the Work by the Board of Supervisors. Providing no stop notices have been filed, thirty-five days after filing of such notice of completion, payment due under the Contract will become due to the Contractor and the Owner's Representative shall so certify to the Owner authorizing the final payment. Such payment may withhold any reasonable sums payable to Contractor for any Work which has not been completed on said date, or that the Owner may have found defective and ordered to be replaced; final payment for withholding to be made when certified by Owner's Representative in writing to Owner.

SGC 7. LIENS AND STOP NOTICES

A. Should Stop Notices be filed with the Owner, Owner shall in accordance with California Civil Code Section 9358, withhold the amount claimed, plus an allowance of 25% to cover its litigation costs plus interest at the rate of 10%, from certificates until such claims have been resolved pursuant to law.

SGC 8. GUARANTEES AND MAINTENANCE MANUALS

A. The Contractor and each subcontractor and each supplier shall provide to the Owner, copies of all maintenance guarantees, maintenance manuals and technical specifications relating to their portion of the Project prior to completion of the Project, and in accordance with the GENERAL REQUIREMENTS, PROJECT CLOSE-OUT.

SGC 9. THE WORK

A. The Work comprises the completed construction required by the Contract Documents and approved change orders and includes all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.

SGC 10. THE PROJECT

A. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part.

B. By executing the Contract, the Contractor represents that Contractor has visited the sites, familiarized themselves with the local conditions under which the Work is to be performed, and correlated their observations with the requirements of the Contract Documents.

C. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. Work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to

produce the intended results. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

D. The organization of the Specifications into divisions, sections and articles, and the arrangement of Drawings shall not control the Contractor in dividing the Work among subcontractors or in establishing the extent of Work to be performed by any trade.

SGC 11. OWNER

A. The Owner shall forward all instruction to the Contractor through the Owner's Representative.

B. Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in the orderly progress of the Work.

SGC 12. OWNER'S RIGHT TO STOP THE WORK

A. If the Contractor fails to correct defective Work as required by GC 17, or persistently fails to carry out the Work in accordance with the contract Documents, the Owner, by a written order signed personally or by an agent specifically so empowered by the Owner in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Owner to stop the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

SGC 13. OWNER'S RIGHT TO CARRY OUT THE WORK

A. If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within seven (7) calendar days after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, after seven (7) calendar days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy the Owner may have, make good such deficiencies. In such case an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Owner's Representative or Architect's additional services made necessary by such default, neglect or failure. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner immediately upon demand.

SGC 14. INDEMNIFICATION

A. To the fullest extent permitted by law, the Contractor shall indemnify, defend and hold harmless the Owner, Owner's Representative, Inspector and the Architect and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense is (1) attributable to bodily injury, sickness, disease or death, or the injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission of the Contractor, and subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder; excepting only such claims as are caused by the sole negligence or willful misconduct of the Owner, Owner's Representative, Inspector or Architect. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this paragraph.

B. In any and all claims against the Owner, Owner's Representative, Inspector or the Architect or any of their agents or employees by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any

subcontractor under Workers' or Workmen's Compensation Acts, disability benefit acts or other employee benefit acts.

C. The obligations of the Contractor under this paragraph shall not extend to the liability of Owner's Representative or the Architect, their agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, design or specification, or (2) the giving of or the failure to give directions or instruction by the Owner's Representative or the Architect, their agents or employees provided such giving or failure to give is the primary cause of the injury or damage.

SGC 15. COMPLIANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE INTERNATIONAL BUILDING CODE

A. Governing Codes: Title 24, California Code of Regulations (C.C.R.),latest edition which adopts and amends the International Building Code, latest edition; International Fire Code, latest edition; Uniform Mechanical Code, latest edition; National Electrical Code, latest edition; Uniform Mechanical Code, latest edition; and the Uniform Plumbing Code, latest edition. The project shall also comply with the Americans with Disabilities Act, and the latest editions of associated regulations.

SGC 16. LIABILITY OF CONTRACTOR

A. The Contractor shall do all of the Work and furnish all labor, materials, tools, and appliances, except as otherwise herein expressly stipulated, necessary or proper for performing the Work herein required in the manner and within the time herein specified. The mention of any specific duty or liability imposed upon the Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon the Contractor by this contract, said reference to any specific duty or liability being made herein merely for the purpose of explanation.

B. The right of general supervision by the Owner shall not make the Contractor an agent or employee of the Owner, and the liability of the Contractor for all damages to persons or to public or private property arising from the Contractor's execution of the Work shall not be lessened because of such general supervision.

B. Until the completion and final acceptance by the Owner of all of the Work under and implied by this contract, the Work shall be under the responsible care and charge of the Contractor. The Contractor shall rebuild, repair, restore and make good all injuries, damages, re-erections and repairs occasioned or rendered necessary or caused of any nature whatsoever, excepting only acts of God not covered by the all-risk insurance policy called for in Article GC 4 and not other, to all or any portions of the Work except as otherwise expressly stipulated.

SGC 17. NUCLEAR FREE HUMBOLDT COUNTY ORDINANCE COMPLIANCE

A. Neither the Contractor, their Subcontractors or their suppliers are Nuclear Weapons Contractors, and are not knowingly or intentionally engaged in the research, development, production, or testing of nuclear warheads, nuclear weapons systems, or nuclear weapons components, as defined by the Nuclear Free Humboldt County Ordinance. Contractor, their Subcontractors and/or their suppliers agree to notify Owner immediately if they become a nuclear weapons contractor as defined above.

SGC 18. REQUIRED LISTING OF PROPOSED SUBCONTRACTORS

A. Each proposal shall have listed therein the name, address, description of work and contractor's license number of each subcontractor to whom the bidder proposes to subcontract portions of the work in the amount of 1/2 of one percent of their total bid, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code and for verification of conformance with Labor Code Sections 1771 and 1725.5. The bidder's attention is invited to other provisions of said Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

B. Pursuant to Section 1771.1(a) of the California Labor Code, a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in Sections 1770 et seq. of the Labor Code, unless currently registered and qualified to perform public work pursuant to Section 1725.5 of the Labor Code. It is not a violation of Section 1771.1(a) for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

C. A sheet for listing the subcontractors, as required herein, is included in the proposal- Please reference Section 00 43 36 “Subcontractor List.”

SGC 19. NONDISCRIMINATION

A. During the performance of this contract, the Contractor and its subcontractors shall not deny the contract's benefits to any person on the basis of religion, color, ethnic group identification, sex, age, physical or mental disability, nor shall they unlawfully discriminate, harass or allow harassment, against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age (over 40), marital status, denial of family care leave and denial of pregnancy disability leave in connection with any program or activity funded in whole or in part by Federal and/or State funds provided through this grant contract.

B. Contractor and all subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. Contractor and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code, Section 12990 [a-f] et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285.0 et seq.).

C. The applicable regulations of the Fair Employment and Housing Commission implementing Government Code, Section 12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations are incorporated into this contract by reference and made a part hereof as set forth in full. Contractor and subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

D. Contractor shall comply with all applicable nondiscrimination laws and regulations.

E. The Contractor and all subcontractors shall include the nondiscrimination and compliance provisions of this clause in all contracts and subcontracts to perform work under the contract.

SGC 20. HAZARDOUS WASTE IN EXCAVATION

A. If the Contractor encounters material in excavation which Contractor has reason to believe may be hazardous waste, as defined by Section 25117 of the Health and Safety Code, Contractor shall immediately so notify the Owner’s Representative in writing. Excavation in the immediate area of the suspected hazardous material shall be suspended until the OWNER authorizes it to be resumed. If such suspension delays the current controlling operation, the Contractor will be granted an extension of time by means of a change order.

B. The Owner reserves the right to use other forces for exploratory work to identify and determine the extent of such material and for removing hazardous material from such area.

SGC 21. CONSTRUCTION ACTIVITIES

A. Construction activities at the site shall be as required by the Contractor to complete the project by the prescribed completion date. Contractor must comply with Noise Abatement Provisions.

SGC 22. DISCOVERY OF HUMAN REMAINS OR AN ARCHAEOLOGICAL SITE

A. If during construction activities, human remains or evidence of an archaeological site, including outhouse pits, construction shall be immediately halted and the Owner's Representative notified who will request an evaluation by a qualified archaeologist, approved by the Owner as to whether the discovery constitutes an "important archaeological resource" as defined in Section III, Appendix K of the CEQA Guidelines.

B. If the resource is determined to be important, mitigation shall proceed as outlined by Appendix K of the Guidelines and as recommended by the archaeologist.

SGC 23. CONTRACTOR RESPONSIBILITY AND DEBARMENT

A. A responsible contractor is a contractor who has demonstrated the attribute of trustworthiness, as well as quality, fitness, capacity and experience to satisfactorily perform the contract. It is the County's policy to conduct business only with responsible contractors. (Ord. 2291, § 1, 01/07/2003)

B. The contractor is hereby notified that, in accordance with Title II, Division 14 of the County Code, if the County acquires information concerning the performance of the contractor on this or other contract which indicates that the contractor is not responsible, the County may, in addition to other remedies provided in the contract, debar the contractor from bidding on County contracts for a specified period of time, not to exceed three (3) years, and terminate any or all existing contracts the contractor may have with the County. (Ord. 2291, § 1, 01/07/2003)

C. The County may debar a contractor if the Board of Supervisors finds, in its discretion, that the contractor has done any of the following: (1) violated any term of a contract with the County; (2) committed any act or omission which negatively reflects on the contractor's quality, fitness, or capacity to perform a contract with the County or any other public entity, or engaged in a pattern or practice which negatively reflects on same; (3) committed an act or offense which indicates a lack of business integrity or business honesty; or (4) made or submitted a false claim against the County or any other public entity. (Ord. 2291, § 1, 01/07/2003)

D. If there is evidence that the contractor may be subject to debarment, the department will notify the contractor in writing of the evidence which is the basis for the proposed debarment and will advise the contractor of the scheduled date for a debarment hearing before the CHB (Contractor's Hearing Board). (Ord. 2291, § 1, 01/07/2003)

E. The CHB will conduct a hearing where evidence on the proposed debarment is presented. The contractor and/or the contractor's representative shall be given an opportunity to submit evidence at that hearing. After the hearing, the CHB shall prepare a proposed decision, which shall contain a recommendation regarding whether the contractor should be debarred, and, if so, the appropriate length of time of the debarment. If the contractor fails to avail itself of the opportunity to submit evidence to the CHB, the contractor may be deemed to have waived all rights of appeal. (Ord. 2291, § 1, 01/07/2003)

F. A record of the hearing, the proposed decision and any other recommendation of the CHB shall be presented to the Board of Supervisors. The Board of Supervisors shall have the right to modify, deny or adopt the proposed decision and recommendation of the hearing board. (Ord. 2291, § 1, 01/07/2003)

G. These terms shall also apply to subcontractors and subconsultants of County contractors. (Ord. 2291, § 1, 01/07/2003)

SGC 24. BID PROTEST

Any bid protest must be in writing and must be received by the Director of Public Works, Humboldt County Department of Public Works, 1106 Second Street, Eureka, CA, 95501, Fax: (707) 445-7409 or by email before 5:00 p.m. no later than three (3) working days following bid opening (the "Bid Protest Deadline") and must comply with the following requirements:

A. Only a bidder who has actually submitted a Bid Proposal is eligible to submit a bid protest against another bidder. Subcontractors are not eligible to submit bid protests. A bidder may not rely on the bid protest submitted by another bidder, but must timely pursue its own protest.

B. The bid protest must contain a complete statement of the basis for the protest and all supporting documentation. Material submitted after the Bid Protest Deadline will not be considered. The protest must refer to the specific portion or portions of the Contract Documents upon which the protest is based. The protest must include the name, address and telephone number of the person representing the protesting bidder if different from the protesting bidder.

C. A copy of the protest and all supporting documents must also be transmitted by fax or by e-mail, by or before the Bid Protest Deadline, to the protested bidder and any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest.

D. The protested bidder may submit a written response to the protest, provided the response is received by the Department Director before 5:00 p.m., within two (2) working days after the Bid Protest Deadline or after receipt of the bid protest, whichever is sooner (the “Response Deadline”). The response must include all supporting documentation. Material submitted after the Response Deadline will not be considered. The response must include the name, address and telephone number of the person representing the protested bidder if different from the protested bidder.

E. The procedure and time limits set forth in this section are mandatory and are the bidder’s sole and exclusive remedy in the event of bid protest. The bidder’s failure to comply with these procedures shall constitute a waiver of any right to further pursue a bid protest, including filing a Government Code Claim or initiation of legal proceedings.

SGC 25. GEOTECHNICAL

A. A geotechnical exploration was performed for the County. The study is bound into this Project Manual. It shall be thoroughly understood by all concerned that the test boring data descriptions nether imply nor guarantee conditions indicated are complete or are even entirely representative of those concerns actual existing or that if continuity of conditions indicated for the site. These records do not form part of the contract documents and are provided for reference purpose. The Contractor and effected subcontractors shall review the soils report before submitting a bid and will have to interpret the soil boring data and satisfy themselves as to the materials to be excavate or reused, and material upon which fill or together material may be placed, based on the recommendations in the soils report and the requirements of these specification

SGC 26. SITE CIVIL AS-BUILDS

A. A previous project installed utilities and pavements for the site. These drawings are bound into this project manual. These records do not form part of the contract documents and are provided for reference purpose. The Contractor and effected subcontractors shall review the previous project civil drawings before submitting a bid and satisfy themselves as to the built conditions.

END OF SECTION 00 73 00

Part 1 – General Provisions

Section 10 Definition of Terms

Whenever the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be interpreted as follows:

10-01 AASHTO. The American Association of State Highway and Transportation Officials, the successor association to AASHO.

10-02 Access road. The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public highway.

10-03 Advertisement. A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.

10-04 Airport Improvement Program (AIP). A grant-in-aid program, administered by the Federal Aviation Administration (FAA).

10-05 Air operations area (AOA). For the purpose of these specifications, the term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.

10-06 Airport. Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; and airport buildings and facilities located in any of these areas, and includes a heliport.

10-07 ASTM International (ASTM). Formerly known as the American Society for Testing and Materials (ASTM).

10-08 Award. The Owner's notice to the successful bidder of the acceptance of the submitted bid.

10-09 Bidder. Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

10-10 Building area. An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.

10-11 Calendar day. Every day shown on the calendar.

10-12 Change order. A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for the work affected by such changes. The work, covered by a change order, must be within the scope of the contract.

10-13 Contract. The written agreement covering the work to be performed. The awarded contract shall include, but is not limited to: Advertisement, Contract Form, Proposal, Performance Bond, Payment Bond, any required insurance certificates, Specifications, Plans, and any addenda issued to bidders.

10-14 Contract item (pay item). A specific unit of work for which a price is provided in the contract.

10-15 Contract time. The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.

10-16 Contractor. The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.

10-17 Contractor's laboratory. The Contractor's quality control organization in accordance with the Contractor Quality Control Program.

10-18 Construction Safety and Phasing Plan (CSPP). The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.

10-19 Drainage system. The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.

10-20 Engineer. The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering observation of the contract work and acting directly or through an authorized representative.

10-21 Equipment. All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.

10-22 Extra work. An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Engineer to be necessary to complete the work within the intended scope of the contract as previously modified.

10-23 FAA. The Federal Aviation Administration of the U.S. Department of Transportation. When used to designate a person, FAA shall mean the Administrator or his or her duly authorized representative.

10-24 Federal specifications. The Federal Specifications and Standards, Commercial Item Descriptions, and supplements, amendments, and indices thereto are prepared and issued by the General Services Administration of the Federal Government.

10-25 Force account. Force account work is planning, engineering, or construction work done by the Sponsor's employees.

10-26 Inspector. An authorized representative of the Engineer assigned to make all necessary observations and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

10-27 Intention of terms. Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject in each case to the final determination of the Owner.

Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.

10-28 Laboratory. The official testing laboratories of the Owner or such other laboratories as may be designated by the Engineer. Also referred to as "Engineer's Laboratory" or "quality assurance laboratory."

10-29 Lighting. A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.

10-30 Major and minor contract items. A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.

10-31 Materials. Any substance specified for use in the construction of the contract work.

10-32 Notice to Proceed (NTP). A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.

10-33 Owner. The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only.

10-34 Passenger Facility Charge (PFC). Per 14 CFR Part 158 and 49 USC § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls."

10-35 Pavement. The combined surface course, base course, and subbase course, if any, considered as a single unit.

10-36 Payment bond. The approved form of security furnished by the Contractor and his or her surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.

10-37 Performance bond. The approved form of security furnished by the Contractor and his or her surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.

10-38 Plans. The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications.

10-39 Project. The agreed scope of work for accomplishing specific airport development with respect to a particular airport.

10-40 Proposal. The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.

10-41 Proposal guaranty. The security furnished with a proposal to guarantee that the bidder will enter into a contract if his or her proposal is accepted by the Owner.

10-42 Runway. The area on the airport prepared for the landing and takeoff of aircraft.

10-43 Specifications. A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.

10-44 Sponsor. A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.

10-45 Structures. Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; flexible and rigid pavements; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.

10-46 Subgrade. The soil that forms the pavement foundation.

10-47 Superintendent. The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

10-48 Supplemental agreement. A written agreement between the Contractor and the Owner covering (1) work that would increase or decrease the total amount of the awarded contract, or any major contract item, by more than 25%, such increased or decreased work being within the scope of the originally awarded contract; or (2) work that is not within the scope of the originally awarded contract.

10-49 Surety. The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.

10-50 Taxiway. For the purpose of this document, the term taxiway means the portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.

10-51 Work. The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.

10-52 Working day. A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.

END OF SECTION 10

Section 20 Proposal Requirements and Conditions

20-01 Advertisement (Notice to Bidders).

See General Conditions.

20-02 Qualification of bidders. Each bidder shall furnish the Owner satisfactory evidence of his or her competency to perform the proposed work. Such evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, a list of equipment that would be available for the work, and a list of key personnel that would be available. In addition, each bidder shall furnish the Owner satisfactory evidence of his or her financial responsibility. Such evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether his or her financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

Unless otherwise specified, a bidder may submit evidence that he or she is prequalified with the State Highway Division and is on the current "bidder's list" of the state in which the proposed work is located. Such evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.

Each bidder shall submit "evidence of competency" and "evidence of financial responsibility" to the Owner at the time of bid opening.

20-03 Contents of proposal forms. The Owner shall furnish bidders with proposal forms. All papers bound with or attached to the proposal forms are necessary parts and must not be detached.

The plans, specifications, and other documents designated in the proposal form shall be considered a part of the proposal whether attached or not.

20-04 Issuance of proposal forms. The Owner reserves the right to refuse to issue a proposal form to a prospective bidder should such bidder be in default for any of the following reasons:

a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.

b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.

c. Documented record of Contractor default under previous contracts with the Owner.

d. Documented record of unsatisfactory work on previous contracts with the Owner.

20-05 Interpretation of estimated proposal quantities. An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception

because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as hereinafter provided in the subsection 40-02 titled ALTERATION OF WORK AND QUANTITIES of Section 40 without in any way invalidating the unit bid prices.

20-06 Examination of plans, specifications, and site. The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves as to the character, quality, and quantities of work to be performed, materials to be furnished, and as to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders. It is understood and agreed that such subsurface information, whether included in the plans, specifications, or otherwise made available to the bidder, was obtained and is intended for the Owner's design and estimating purposes only. Such information has been made available for the convenience of all bidders. It is further understood and agreed that each bidder is solely responsible for all assumptions, deductions, or conclusions which the bidder may make or obtain from his or her examination of the boring logs and other records of subsurface investigations and tests that are furnished by the Owner.

20-07 Preparation of proposal. The bidder shall submit his or her proposal on the forms furnished by the Owner. All blank spaces in the proposal forms must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals for which they propose to do for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

The bidder shall sign the proposal correctly and in ink. If the proposal is made by an individual, his or her name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state under the laws of which the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of his or her authority to do so and that the signature is binding upon the firm or corporation.

20-08 Responsive and responsible bidder. A responsive bid conforms to all significant terms and conditions contained in the Sponsor's invitation for bid. It is the Sponsor's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 49 CFR § 18.36(b)(8). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

20-09 Irregular proposals. Proposals shall be considered irregular for the following reasons:

a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.

b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.

c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.

d. If the proposal contains unit prices that are obviously unbalanced.

e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

20-10 Bid guarantee. Each separate proposal shall be accompanied by a certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such check, or collateral, shall be made payable to the Owner.

20-11 Delivery of proposal. Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

20-12 Withdrawal or revision of proposals. A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

20-13 Public opening of proposals. Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

20-14 Disqualification of bidders. A bidder shall be considered disqualified for any of the following reasons:

a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.

b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.

c. If the bidder is considered to be in "default" for any reason specified in the subsection 20-04 titled ISSUANCE OF PROPOSAL FORMS of this section.

END OF SECTION 20

Section 30 Award and Execution of Contract

30-01 Consideration of proposals. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit price written in words shall govern.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

a. If the proposal is irregular as specified in the subsection 20-09 titled IRREGULAR PROPOSALS of Section 20.

b. If the bidder is disqualified for any of the reasons specified in the subsection 20-14 titled DISQUALIFICATION OF BIDDERS of Section 20.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

30-02 Award of contract. The award of a contract, if it is to be awarded, shall be made within **[___]** calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.

Award of the contract shall be made by the Owner to the lowest, qualified bidder whose proposal conforms to the cited requirements of the Owner.

30-03 Cancellation of award. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with the subsection 30-07 titled APPROVAL OF CONTRACT of this section.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the subsection 30-01 titled CONSIDERATION OF PROPOSALS of this section. Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in the subsection 30-05 titled REQUIREMENTS OF CONTRACT BONDS of this section.

30-05 Requirements of contract bonds. At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

30-06 Execution of contract. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in the subsection 30-05 titled REQUIREMENTS OF CONTRACT BONDS of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder.

30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 Failure to execute contract. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the 15 calendar day period specified in the subsection 30-06 titled EXECUTION OF CONTRACT of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidation of damages to the Owner.

END OF SECTION 30

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Section 40 Scope of Work

40-01 Intent of contract. The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

40-02 Alteration of work and quantities. The Owner reserves and shall have the right to make such alterations in the work as may be necessary or desirable to complete the work originally intended in an acceptable manner. Unless otherwise specified herein, the Engineer shall be and is hereby authorized to make such alterations in the work as may increase or decrease the originally awarded contract quantities, provided that the aggregate of such alterations does not change the total contract cost or the total cost of any major contract item by more than 25% (total cost being based on the unit prices and estimated quantities in the awarded contract). Alterations that do not exceed the 25% limitation shall not invalidate the contract nor release the surety, and the Contractor agrees to accept payment for such alterations as if the altered work had been a part of the original contract. These alterations that are for work within the general scope of the contract shall be covered by "Change Orders" issued by the Engineer. Change orders for altered work shall include extensions of contract time where, in the Engineer's opinion, such extensions are commensurate with the amount and difficulty of added work.

Should the aggregate amount of altered work exceed the 25% limitation hereinbefore specified, such excess altered work shall be covered by supplemental agreement. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

Supplemental agreements shall be approved by the FAA and shall include all applicable Federal contract provisions for procurement and contracting required under AIP. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds.

40-03 Omitted items. The Engineer may, in the Owner's best interest, omit from the work any contract item, except major contract items. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with the subsection 90-04 titled PAYMENT FOR OMITTED ITEMS of Section 90.

40-04 Extra work. Should acceptable completion of the contract require the Contractor to perform an item of work for which no basis of payment has been provided in the original contract or previously issued change orders or supplemental agreements, the same shall be called "Extra Work." Extra Work that is within the general scope of the contract shall be covered by written change order. Change orders for such Extra Work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the Engineer's opinion, is necessary for completion of such Extra Work.

When determined by the Engineer to be in the Owner's best interest, the Engineer may order the Contractor to proceed with Extra Work as provided in the subsection 90-05 titled PAYMENT FOR EXTRA WORK of Section 90. Extra Work that is necessary for acceptable completion of the project, but

is not within the general scope of the work covered by the original contract shall be covered by a Supplemental Agreement as defined in the subsection 10-48 titled SUPPLEMENTAL AGREEMENT of Section 10.

Any claim for payment of Extra Work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the Owner.

40-05 Maintenance of traffic. It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration.

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to his or her own operations and the operations of all subcontractors as specified in the subsection 80-04 titled LIMITATION OF OPERATIONS of Section 80. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in the subsection 70-15 titled CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS in Section 70.

b. With respect to his or her own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport.

c. When the contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic. The Contractor shall be responsible for the repair of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (http://mutcd.fhwa.dot.gov/), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways.

40-06 Removal of existing structures. All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly, but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Engineer shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the Engineer in accordance with the provisions of the contract.

Except as provided in the subsection 40-07 titled RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK of this section, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

40-07 Rights in and use of materials found in the work. Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be either embankment or waste, the Contractor may at his or her option either:

a. Use such material in another contract item, providing such use is approved by the Engineer and is in conformance with the contract specifications applicable to such use; or,

b. Remove such material from the site, upon written approval of the Engineer; or

c. Use such material for the Contractor's own temporary construction on site; or,

d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the Engineer's approval in advance of such use.

Should the Engineer approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at his or her own expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for use of such material used in the work or removed from the site.

Should the Engineer approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of his or her exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

40-08 Final cleanup. Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The Contractor shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of such property Owner.

END OF SECTION 40

Section 50 Control of Work

50-01 Authority of the Engineer. The Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the manner of performance and rate of progress of the work. The Engineer shall decide all questions that may arise as to the interpretation of the specifications or plans relating to the work. The Engineer shall determine the amount and quality of the several kinds of work performed and materials furnished which are to be paid for the under contract.

The Engineer does not have the authority to accept pavements that do not conform to FAA specification requirements.

50-02 Conformity with plans and specifications. All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans or specifications.

If the Engineer finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications but that the portion of the work affected will, in his or her opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the Engineer will advise the Owner of his or her determination that the affected work be accepted and remain in place. In this event, the Engineer will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. The Engineer's determination and recommended contract price adjustments will be based on sound engineering judgment and such tests or retests of the affected work as are, in the Engineer's opinion, needed. Changes in the contract price shall be covered by contract change order or supplemental agreement as applicable.

If the Engineer finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the Engineer's written orders.

For the purpose of this subsection, the term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the Engineer's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the Engineer's opinion, such compliance is essential to provide an acceptable finished portion of the work.

For the purpose of this subsection, the term "reasonably close conformity" is also intended to provide the Engineer with the authority, after consultation with the FAA, to use sound engineering judgment in his or her determinations as to acceptance of work that is not in strict conformity, but will provide a finished product equal to or better than that intended by the requirements of the contract, plans and specifications.

The Engineer will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

50-03 Coordination of contract, plans, and specifications. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within standard test methods, the Contractor shall immediately ask the Engineer for an interpretation and decision, and such decision shall be final.

LIST OF SPECIAL PROVISIONS

50-04 Cooperation of Contractor. The Contractor will be supplied with one copy each of the plans and specifications. The Contractor shall have available on the work at all times one copy each of the plans and specifications. Additional copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof, and shall cooperate with the Engineer and his or her inspectors and with other contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as his or her agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the Engineer or his or her authorized representative.

50-05 Cooperation between contractors. The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct the work so as not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with his or her contract and shall protect and save harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange his or her work and shall place and dispose of the materials being used so as not to interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join his or her work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

50-06 Construction layout and stakes. The Contractor shall establish horizontal and vertical control. The Contractor must establish all layout required for the construction of the work. Such stakes and markings as the Engineer may set for either their own or the Contractor’s guidance shall be preserved by the Contractor. In case of negligence on the part of the Contractor, or their employees, resulting in the destruction of such stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due the Contractor at the discretion of the Engineer.

The Contractor will be required to furnish all lines, grades and measurements from the control points necessary for the proper execution and control of the work contracted for under these specifications.

The Contractor must give copies of survey notes to the Engineer for each area of construction and for each placement of material as specified to allow the Engineer to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. All surveys must be provided to the Engineer prior to commencing work items that will cover or disturb the survey staking as set by the Contractor's surveyor. Survey(s) and notes shall be provided in the following format(s): **[___].** In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the Owner.

The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor.

Controls and stakes disturbed or suspect of having been disturbed shall be checked and/or reset as directed by the Engineer without additional cost to the Owner.

50-07 Automatically controlled equipment. Whenever batching or mixing plant equipment is required to be operated automatically under the contract and a breakdown or malfunction of the automatic controls occurs, the equipment may be operated manually or by other methods for a period 48 hours following the breakdown or malfunction, provided this method of operations will produce results which conform to all other requirements of the contract.

50-08 Authority and duties of inspectors. Inspectors shall be authorized to inspect all work done and all material furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. Inspectors are not authorized to revoke, alter, or waive any provision of the contract. Inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

Inspectors are authorized to notify the Contractor or his or her representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the Engineer for a decision.

50-09 Inspection of the work. All materials and each part or detail of the work shall be subject to inspection. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Any work done or materials used without supervision or inspection by an authorized representative of the Owner may be ordered removed and replaced at the Contractor's expense unless the Owner's representative failed to inspect after having been given reasonable notice in writing that the work was to be performed.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) Owner, authorized representatives of the Owners of such facilities shall

have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the contract, and shall in no way interfere with the rights of the parties to this contract.

50-10 Removal of unacceptable and unauthorized work. All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the Engineer as provided in the subsection 50-02 titled CONFORMITY WITH PLANS AND SPECIFICATIONS of this section.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of the subsection 70-14 titled CONTRACTOR'S RESPONSIBILITY FOR WORK of Section 70.

No removal work made under provision of this subsection shall be done without lines and grades having been established by the Engineer. Work done contrary to the instructions of the Engineer, work done beyond the lines shown on the plans or as established by the Engineer, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the Engineer made under the provisions of this subsection, the Engineer will have authority to cause unacceptable work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs incurred by the Owner from any monies due or to become due the Contractor.

50-11 Load restrictions. The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor shall be responsible for all damage done by his or her hauling equipment and shall correct such damage at his or her own expense.

50-12 Maintenance during construction. The Contractor shall maintain the work during construction and until the work is accepted. Maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

50-13 Failure to maintain the work. Should the Contractor at any time fail to maintain the work as provided in the subsection 50-12 titled MAINTENANCE DURING CONSTRUCTION of this section, the Engineer shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the Engineer's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency

that exists. Any maintenance cost incurred by the Owner, shall be deducted from monies due or to become due the Contractor.

50-14 Partial acceptance. If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the Engineer to make final inspection of that unit. If the Engineer finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the Engineer may accept it as being complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

50-15 Final acceptance. Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The Engineer shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of same and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

50-16 Claims for adjustment and disputes. If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the Engineer in writing of his or her intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the Engineer is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the Engineer has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within 10 calendar days, submit a written claim to the Engineer who will present it to the Owner for consideration in accordance with local laws or ordinances.

Nothing in this subsection shall be construed as a waiver of the Contractor’s right to dispute final payment based on differences in measurements or computations.

END OF SECTION 50

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Section 60 Control of Materials

60-01 Source of supply and quality requirements. The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish complete statements to the Engineer as to the origin, composition, and manufacture of all materials to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the Engineer's option, materials may be approved at the source of supply before delivery is stated. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that conforms to the requirements of cited materials specifications. In addition, where an FAA specification for airport lighting equipment is cited in the plans or specifications, the Contractor shall furnish such equipment that is:

a. Listed in advisory circular (AC) 150/5345-53, Airport Lighting Equipment Certification Program, and Addendum that is in effect on the date of advertisement; and,

b. Produced by the manufacturer as listed in the Addendum cited above for the certified equipment part number.

The following airport lighting equipment is required for this contract and is to be furnished by the Contractor in accordance with the requirements of this subsection: **[___]**.

60-02 Samples, tests, and cited specifications. Unless otherwise designated, all materials used in the work shall be inspected, tested, and approved by the Engineer before incorporation in the work. Any work in which untested materials are used without approval or written permission of the Engineer shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the Engineer, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), Federal Specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids, will be made by and at the expense of the Engineer.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel, including the Contractor's representative at his or her request. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the Engineer. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the Engineer.

The Contractor shall employ a testing organization to perform all Contractor required Quality Control tests. The Contractor shall submit to the Engineer resumes on all testing organizations and individual persons who will be performing the tests. The Engineer will determine if such persons are qualified. All

the test data shall be reported to the Engineer after the results are known. A legible, handwritten copy of all test data shall be given to the Engineer daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the Engineer showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

60-03 Certification of compliance. The Engineer may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's certificates of compliance stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the Engineer.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "brand name," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

a. Conformance to the specified performance, testing, quality or dimensional requirements; and,

b. Suitability of the material or assembly for the use intended in the contract work.

Should the Contractor propose to furnish an "or equal" material or assembly, the Contractor shall furnish the manufacturer's certificates of compliance as hereinbefore described for the specified brand name material or assembly. However, the Engineer shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

The Engineer reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

60-04 Plant inspection. The Engineer or his or her authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the Engineer conduct plant inspections, the following conditions shall exist:

a. The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom the Engineer has contracted for materials.

b. The Engineer shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.

c. If required by the Engineer, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Office or working space should be conveniently located with respect to the plant.

It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The Engineer shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

60-06 Storage of materials. Materials shall be so stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the Engineer. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the Engineer. Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the Engineer a copy of the property Owner's permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at his or her entire expense, except as otherwise agreed to (in writing) by the Owner or lessee of the property.

60-07 Unacceptable materials. Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the Engineer.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the Engineer has approved its use in the work.

60-08 Owner furnished materials. The Contractor shall furnish all materials required to complete the work, except those specified, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

All costs of handling, transportation from the specified location to the site of work, storage, and installing Owner-furnished materials shall be included in the unit price bid for the contract item in which such Owner-furnished material is used.

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due the Contractor any cost incurred by the Owner in making good such loss due to the Contractor's handling, storage, or use of Owner-furnished materials.

END OF SECTION 60

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Section 70 Legal Regulations and Responsibility to Public

70-01 Laws to be observed. The Contractor shall keep fully informed of all Federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all his or her officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.

70-02 Permits, licenses, and taxes. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

70-03 Patented devices, materials, and processes. If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

70-04 Restoration of surfaces disturbed by others. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) is indicated as follows: **[___].**

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the Engineer.

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the Engineer, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

70-05 Federal aid participation. For Airport Improvement Program (AIP) contracts, the United States Government has agreed to reimburse the Owner for some portion of the contract costs. Such reimbursement is made from time to time upon the Owner's request to the FAA. In consideration of the

United States Government's (FAA's) agreement with the Owner, the Owner has included provisions in this contract pursuant to the requirements of Title 49 of the USC and the Rules and Regulations of the FAA that pertain to the work.

As required by the USC, the contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator, and is further subject to those provisions of the rules and regulations that are cited in the contract, plans, or specifications.

No requirement of the USC, the rules and regulations implementing the USC, or this contract shall be construed as making the Federal Government a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

70-06 Sanitary, health, and safety provisions. The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his or her employees as may be necessary to comply with the requirements of the state and local Board of Health, or of other bodies or tribunals having jurisdiction.

Attention is directed to Federal, state, and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions that are unsanitary, hazardous, or dangerous to his or her health or safety.

70-07 Public convenience and safety. The Contractor shall control his or her operations and those of his or her subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to his or her own operations and those of his or her subcontractors and all suppliers in accordance with the subsection 40-05 titled MAINTENANCE OF TRAFFIC of Section 40 hereinbefore specified and shall limit such operations for the convenience and safety of the traveling public as specified in the subsection 80-04 titled LIMITATION OF OPERATIONS of Section 80 hereinafter.

70-08 Barricades, warning signs, and hazard markings. The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs, and hazard markings shall be suitably illuminated. Unless otherwise specified, barricades, warning signs, and markings for hazards that are in the air operations area (AOAs) shall be a maximum of 18 inches (0.5 m) high. Unless otherwise specified, barricades shall be spaced not more than 4 feet (1.2 m) apart. Barricades, warning signs, and markings shall be paid for under subsection 40-05.

For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices.

When the work requires closing an air operations area of the airport or portion of such area, the Contractor shall furnish, erect, and maintain temporary markings and associated lighting conforming to the requirements of advisory circular (AC) 150/5340-1, Standards for Airport Markings.

The Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stock piles, and the Contractor's parked construction equipment that may be hazardous to the operation of emergency fire-rescue or maintenance vehicles on the airport in reasonable conformance to AC 150/5370-2, Operational Safety on Airports During Construction.

The Contractor shall identify each motorized vehicle or piece of construction equipment in reasonable conformance to AC 150/5370-2.

The Contractor shall furnish and erect all barricades, warning signs, and markings for hazards prior to commencing work that requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their removal is directed by the Engineer.

Open-flame type lights shall not be permitted.

70-09 Use of explosives. When the use of explosives is necessary for the execution of the work, the Contractor shall exercise the utmost care not to endanger life or property, including new work. The Contractor shall be responsible for all damage resulting from the use of explosives.

All explosives shall be stored in a secure manner in compliance with all laws and ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactory to the Engineer and, in general, not closer than 1,000 feet (300 m) from the work or from any building, road, or other place of human occupancy.

The Contractor shall notify each property Owner and public utility company having structures or facilities in proximity to the site of the work of his or her intention to use explosives. Such notice shall be given sufficiently in advance to enable them to take such steps as they may deem necessary to protect their property from injury.

The use of electrical blasting caps shall not be permitted on or within 1,000 feet (300 m) of the airport property.

70-10 Protection and restoration of property and landscape. The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, the Contractor shall restore, at his or her own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

70-11 Responsibility for damage claims. The Contractor shall indemnify and save harmless the Engineer and the Owner and their officers, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of his or her contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, his or her surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be

withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

70-12 Third party beneficiary clause. It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create for the public or any member thereof, a third party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

70-13 Opening sections of the work to traffic. Should it be necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work shall be specified herein and indicated on the plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor shall make his or her own estimate of the difficulties involved in arranging the work to permit such beneficial occupancy by the Owner as described below:

Upon completion of any portion of the work listed above, such portion shall be accepted by the Owner in accordance with the subsection 50-14 titled PARTIAL ACCEPTANCE of Section 50.

No portion of the work may be opened by the Contractor for public use until ordered by the Engineer in writing. Should it become necessary to open a portion of the work to public traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the Engineer, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of the contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the Owner shall be repaired by the Contractor at his or her expense.

The Contractor shall make his or her own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

Contractor shall be required to conform to safety standards contained AC 150/5370-2 (see Special Provisions).

Contractor shall refer to the approved Construction Safety Phasing Plan (CSPP) to identify barricade requirements and other safety requirements prior to opening up sections of work to traffic.

70-14 Contractor's responsibility for work. Until the Engineer's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with the subsection 50-14 titled PARTIAL ACCEPTANCE of Section 50, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at his or her expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding,

and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

70-15 Contractor's responsibility for utility service and facilities of others. As provided in the subsection 70-04 titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section, the Contractor shall cooperate with the Owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans.

It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of the responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of his or her plan of operations. Such notification shall be in writing addressed to THE PERSON TO CONTACT as provided in this subsection and subsection 70-04 titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section. A copy of each notification shall be given to the Engineer.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's PERSON TO CONTACT no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Engineer.

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the Engineer and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the Engineer continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or his or her surety.

70-15.1 FAA facilities and cable runs. The Contractor is hereby advised that the construction limits of the project include existing facilities and buried cable runs that are owned, operated and maintained by the FAA. The Contractor, during the execution of the project work, shall comply with the following:

a. The Contractor shall permit FAA maintenance personnel the right of access to the project work site for purposes of inspecting and maintaining all existing FAA owned facilities.

b. The Contractor shall provide notice to the FAA Air Traffic Organization (ATO)/Technical Operations/System Support Center (SSC) Point-of-Contact through the airport manager a minimum of seven (7) calendar days prior to commencement of construction activities in order to permit sufficient time to locate and mark existing buried cables and to schedule any required facility outages.

c. If execution of the project work requires a facility outage, the Contractor shall contact the FAA Point-of-Contact a minimum of 72 hours prior to the time of the required outage.

d. Any damage to FAA cables, access roads, or FAA facilities during construction caused by the Contractor's equipment or personnel whether by negligence or accident will require the Contractor to repair or replace the damaged cables, access road, or FAA facilities to FAA requirements. The Contractor shall not bear the cost to repair damage to underground facilities or utilities improperly located by the FAA.

e. If the project work requires the cutting or splicing of FAA owned cables, the FAA Point-of-Contact shall be contacted a minimum of 72 hours prior to the time the cable work commences. The FAA reserves the right to have a FAA representative on site to observe the splicing of the cables as a condition of acceptance. All cable splices are to be accomplished in accordance with FAA specifications and require approval by the FAA Point-of-Contact as a condition of acceptance by the Owner. The Contractor is hereby advised that FAA restricts the location of where splices may be installed. If a cable splice is required in a location that is not permitted by FAA, the Contractor shall furnish and install a sufficient length of new cable that eliminates the need for any splice.

70-16 Furnishing rights-of-way. The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

70-17 Personal liability of public officials. In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, his or her authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

70-18 No waiver of legal rights. Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or his or her surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill his or her obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights under any warranty or guaranty.

70-19 Environmental protection. The Contractor shall comply with all Federal, state, and local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to

prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

70-20 Archaeological and historical findings. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during his or her operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the Engineer. The Engineer will immediately investigate the Contractor's finding and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in the subsection 40-04 titled EXTRA WORK of Section 40 and the subsection 90-05 titled PAYMENT FOR EXTRA WORK of Section 90. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with the subsection 80-07 titled DETERMINATION AND EXTENSION OF CONTRACT TIME of Section 80.

END OF SECTION 70

Section 80 Execution and Progress

80-01 Subletting of contract. The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Engineer.

The Contractor shall provide copies of all subcontracts to the Engineer. The Contractor shall perform, with his organization, an amount of work equal to at least **[___]** percent of the total contract cost.

Should the Contractor elect to assign his or her contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner.

80-02 Notice to proceed. The notice to proceed shall state the date on which it is expected the Contractor will begin the construction and from which date contract time will be charged. The Contractor shall begin the work to be performed under the contract within 10 days of the date set by the Engineer in the written notice to proceed, but in any event, the Contractor shall notify the Engineer at least 24 hours in advance of the time actual construction operations will begin. The Contractor shall not commence any actual construction prior to the date on which the notice to proceed is issued by the Owner.

80-03 Execution and progress. Unless otherwise specified, the Contractor shall submit their progress schedule for the Engineer's approval within 10 days after the effective date of the notice to proceed. The Contractor's progress schedule, when approved by the Engineer, may be used to establish major construction operations and to check on the progress of the work. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the Engineer's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the notice to proceed is issued by the Owner.

80-04 Limitation of operations. The Contractor shall control his or her operations and the operations of his or her subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct his or her operations within an AOA of the airport, the work shall be coordinated with airport operations (through the Engineer) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the Engineer and until the necessary temporary marking and associated lighting is in place as provided in the subsection 70-08 titled BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS of Section 70.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; immediately obey all

instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until the satisfactory conditions are provided. The following AOA cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows:

Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction (see Special Provisions).

80-04.1 Operational safety on airport during construction. All Contractors' operations shall be conducted in accordance with the project Construction Safety and Phasing Plan (CSPP) and the provisions set forth within the current version of AC 150/5370-2. The CSPP included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a Safety Plan Compliance Document that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks to assure compliance with the safety plan measures.

The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the CSPP and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP unless approved in writing by the Owner or Engineer.

80-05 Character of workers, methods, and equipment. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the Engineer, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the Engineer, be removed forthwith by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the Engineer.

Should the Contractor fail to remove such persons or person, or fail to furnish suitable and sufficient personnel for the proper execution of the work, the Engineer may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall be such that no injury to previously completed work, adjacent property, or existing airport facilities will result from its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the Engineer. If the Contractor desires to use a method or type of

equipment other than specified in the contract, the Contractor may request authority from the Engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the Engineer determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this subsection.

80-06 Temporary suspension of the work. The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods as the Owner may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the execution of the work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the Engineer's order to suspend work to the effective date of the Engineer's order to resume the work. Claims for such compensation shall be filed with the Engineer within the time period stated in the Engineer's order to resume work. The Contractor shall submit with his or her claim information substantiating the amount shown on the claim. The Engineer will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather, for suspensions made at the request of the Owner, or for any other delay provided for in the contract, plans, or specifications.

If it should become necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

80-07 Determination and extension of contract time. The number of calendar or working days allowed for completion of the work shall be stated in the proposal and contract and shall be known as the CONTRACT TIME.

Should the contract time require extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

a. CONTRACT TIME based on WORKING DAYS shall be calculated weekly by the Engineer. The Engineer will furnish the Contractor a copy of his or her weekly statement of the number of working days charged against the contract time during the week and the number of working days currently specified for completion of the contract (the original contract time plus the number of working days, if any, that have been included in approved CHANGE ORDERS or SUPPLEMENTAL AGREEMENTS covering EXTRA WORK).

The Engineer shall base his or her weekly statement of contract time charged on the following considerations:

(1) No time shall be charged for days on which the Contractor is unable to proceed with the principal item of work under construction at the time for at least six (6) hours with the normal work force employed on such principal item. Should the normal work force be on a double-shift, 12 hours shall be used. Should the normal work force be on a triple-shift, 18 hours shall apply. Conditions beyond the Contractor's control such as strikes, lockouts, unusual delays in transportation, temporary suspension of the principal item of work under construction or temporary suspension of the entire work which have been ordered by the Owner for reasons not the fault of the Contractor, shall not be charged against the contract time.

(2) The Engineer will not make charges against the contract time prior to the effective date of the notice to proceed.

(3) The Engineer will begin charges against the contract time on the first working day after the effective date of the notice to proceed.

(4) The Engineer will not make charges against the contract time after the date of final acceptance as defined in the subsection 50-15 titled FINAL ACCEPTANCE of Section 50.

(5) The Contractor will be allowed one (1) week in which to file a written protest setting forth his or her objections to the Engineer's weekly statement. If no objection is filed within such specified time, the weekly statement shall be considered as acceptable to the Contractor.

The contract time (stated in the proposal) is based on the originally estimated quantities as described in the subsection 20-05 titled INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES of Section 20. Should the satisfactory completion of the contract require performance of work in greater quantities than those estimated in the proposal, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in contract time shall not consider either the cost of work or the extension of contract time that has been covered by change order or supplemental agreement and shall be made at the time of final payment.

b. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the notice to proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

c. When the contract time is a specified completion date, it shall be the date on which all contract work shall be substantially complete.

If the Contractor finds it impossible for reasons beyond his or her control to complete the work within the contract time as specified, or as extended in accordance with the provisions of this subsection, the Contractor may, at any time prior to the expiration of the contract time as extended, make a written request to the Owner for an extension of time setting forth the reasons which the Contractor believes will justify the granting of his or her request. Requests for extension of time on calendar day projects, caused by inclement weather, shall be supported with National Weather Bureau data showing the actual amount of inclement weather exceeded what could normally be expected during the contract period. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the supporting documentation justify the work was delayed because of conditions beyond the control and

without the fault of the Contractor, the Owner may extend the time for completion by a change order that adjusts the contract time or completion date. The extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

80-08 Failure to complete on time. For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in the subsection 80-07 titled DETERMINATION AND EXTENSION OF CONTRACT TIME of this Section) the sum specified in the contract and proposal as liquidated damages will be deducted from any money due or to become due the Contractor or his or her surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

Schedule	Liquidated Damages Cost	Allowed Construction Time

The maximum construction time allowed for Schedules **[___]** will be the sum of the time allowed for individual schedules but not more than **[___]** days. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a wavier on the part of the Owner of any of its rights under the contract.

80-09 Default and termination of contract. The Contractor shall be considered in default of his or her contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons if the Contractor:

a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or

b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or

c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or

d. Discontinues the execution of the work, or

e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or

f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or

g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or

h. Makes an assignment for the benefit of creditors, or

i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Engineer consider the Contractor in default of the contract for any reason above, the Engineer shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the Engineer of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract, to take the execution of the work out of the hands of the Contractor. The

Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the Engineer will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

80-10 Termination for national emergencies. The Owner shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the execution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials, obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the Engineer.

Termination of the contract or a portion thereof shall neither relieve the Contractor of his or her responsibilities for the completed work nor shall it relieve his or her surety of its obligation for and concerning any just claim arising out of the work performed.

80-11 Work area, storage area and sequence of operations. The Contractor shall obtain approval from the Engineer prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate his or her work in such a manner as to ensure safety and a minimum of hindrance to flight operations. All Contractor equipment and material stockpiles shall be stored a minimum or **[___]** feet from the centerline of an active runway. No equipment will be allowed to park within the approach area of an active runway at any time. No equipment shall be within **[___]** feet of an active runway at any time.

END OF SECTION 80

Section 90 Measurement and Payment

90-01 Measurement of quantities. All work completed under the contract will be measured by the Engineer, or his or her authorized representatives, using United States Customary Units of Measurement or the International System of Units.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the Engineer.

Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

In computing volumes of excavation the average end area method or other acceptable methods will be used.

The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.

The term “ton” will mean the short ton consisting of 2,000 lb (907 km) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, approved scales by competent, qualified personnel at locations designed by the Engineer. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible identification mark.

Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.

When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Bituminous materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts or ASTM D633 for tars.

Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when bituminous material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work.

When bituminous materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, may be used for computing quantities.

Cement will be measured by the ton (kg) or hundredweight (km).

Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the contract.

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered by the Engineer in connection with force account work will be measured as agreed in the change order or supplemental agreement authorizing such force account work as provided in the subsection 90-05 titled PAYMENT FOR EXTRA WORK of this section.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales.

Scales shall be accurate within 1/2% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the inspector before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed one-tenth of 1% of the nominal rated capacity of the scale, but not less than 1 pound (454 grams). The use of spring balances will not be permitted.

Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the inspector can safely and conveniently view them.

Scale installations shall have available ten standard 50-pound (2.3 km) weights for testing the weighing equipment or suitable weights and devices for other approved equipment.

Scales must be tested for accuracy and serviced before use at a new site. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.

Scales "overweighing" (indicating more than correct weight) will not be permitted to operate, and all materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of one-half of 1%.

In the event inspection reveals the scales have been underweighing (indicating less than correct weight), they shall be adjusted, and no additional payment to the Contractor will be allowed for materials previously weighed and recorded.

All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.

When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the Engineer. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

90-02 Scope of payment. The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of the subsection 70-18 titled NO WAIVER OF LEGAL RIGHTS of Section 70.

When the "basis of payment" subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

90-03 Compensation for altered quantities. When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in the subsection 40-02 titled ALTERATION OF WORK AND QUANTITIES of Section 40 will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from his or her unbalanced allocation of overhead and profit among the contract items, or from any other cause.

90-04 Payment for omitted items. As specified in the subsection 40-03 titled OMITTED ITEMS of Section 40, the Engineer shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

Should the Engineer omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the Engineer's order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the Engineer's order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the Engineer's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

90-05 Payment for extra work. Extra work, performed in accordance with the subsection 40-04 titled EXTRA WORK of Section 40, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the Engineer, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and

specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with the subsection 90-07 titled PAYMENT FOR MATERIALS ON HAND of this section. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

> The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. The Owner must ensure prompt and full payment of retainage from the prime Contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.
>
> No retainage will be held by the Owner from progress payments due the prime.
>
> When at least 95% of the work has been completed, the Engineer shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the Engineer to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in the subsection 90-09 titled ACCEPTANCE AND FINAL PAYMENT of this section.

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

90-07 Payment for materials on hand. Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

a. The material has been stored or stockpiled in a manner acceptable to the Engineer at or on an approved site.

b. The Contractor has furnished the Engineer with acceptable evidence of the quantity and quality of such stored or stockpiled materials.

c. The Contractor has furnished the Engineer with satisfactory evidence that the material and transportation costs have been paid.

d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material so stored or stockpiled.

e. The Contractor has furnished the Owner evidence that the material so stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of his or her responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this subsection.

90-08 Payment of withheld funds. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in subsection 90-06 PARTIAL PAYMENTS, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.

b. The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the retainage that would otherwise be withheld from partial payment.

c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.

d. The Contractor shall obtain the written consent of the surety to such agreement.

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of the subsection 50-15 titled FINAL ACCEPTANCE of Section 50, the Engineer will prepare the final estimate of the items of work actually performed. The Contractor shall approve the Engineer's final estimate or advise the Engineer of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the Engineer shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the Engineer's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the Engineer's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with the subsection 50-16 titled CLAIMS FOR ADJUSTMENT AND DISPUTES of Section 50.

After the Contractor has approved, or approved under protest, the Engineer's final estimate, and after the Engineer's receipt of the project closeout documentation required in subsection 90-11 Project Closeout, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of the subsection 50-16 titled CLAIMS FOR ADJUSTMENTS AND DISPUTES of Section 50 or under the provisions of this subsection, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

90-10 Construction warranty.

a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one year from the date of final acceptance of the work. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of:

(1) The Contractor's failure to conform to contract requirements; or

(2) Any defect of equipment, material, workmanship, or design furnished by the Contractor.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.

e. The Owner will notify the Contractor, in writing, within **[** seven (7) **]** days after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within **[** 14 **]** days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

h. This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

90-11 Project closeout. Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the Engineer approves the Contractor's final submittal. The Contractor shall:

a. Provide two (2) copies of all manufacturers warranties specified for materials, equipment, and installations.

b. Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.

c. Complete final cleanup in accordance with subsection 40-08, FINAL CLEANUP.

d. Complete all punch list items identified during the Final Inspection.

e. Provide complete release of all claims for labor and material arising out of the Contract.

f. Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.

g. When applicable per state requirements, return copies of sales tax completion forms.

h. Manufacturer's certifications for all items incorporated in the work.

i. All required record drawings, as-built drawings or as-constructed drawings.

j. Project Operation and Maintenance (O&M) Manual.

k. Security for Construction Warranty.

l. Equipment commissioning documentation submitted, if required.

END OF SECTION 90

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Section 100 Contractor Quality Control Program

100-01 General. When the specification requires a Contractor Quality Control Program, the Contractor shall establish, provide, and maintain an effective Quality Control Program that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified here and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The intent of this section is to enable the Contractor to establish a necessary level of control that will:

a. Adequately provide for the production of acceptable quality materials.

b. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.

c. Allow the Contractor as much latitude as possible to develop his or her own standard of control.

The Contractor shall be prepared to discuss and present, at the preconstruction conference, their understanding of the quality control requirements. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the Quality Control Program has been reviewed and accepted by the Engineer. No partial payment will be made for materials subject to specific quality control requirements until the Quality Control Program has been reviewed.

The quality control requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the acceptance testing requirements. Acceptance testing requirements are the responsibility of the Engineer.

Paving projects over $500,000 shall have a Quality Control (QC)/Quality Assurance (QA) workshop with the Engineer, Contractor, subcontractors, testing laboratories, and Owner's representative at start of construction. The workshop shall address QC and QA requirements of the project specifications. The Contractor shall coordinate with the Airport and the Engineer on time and location of the QC/QA workshop.

100-02 Description of program.

a. General description. The Contractor shall establish a Quality Control Program to perform quality control inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. This Quality Control Program shall ensure conformance to applicable specifications and plans with respect to materials, workmanship, construction, finish, and functional performance. The Quality Control Program shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of quality control.

b. Quality Control Program. The Contractor shall describe the Quality Control Program in a written document that shall be reviewed and approved by the Engineer prior to the start of any production, construction, or off-site fabrication. The written Quality Control Program shall be submitted to the Engineer for review and approval at least **[___]** calendar days before the **[___]**. The Contractor's Quality

Control Plan and Quality Control testing laboratory must be approved in writing by the Engineer prior to the Notice to Proceed (NTP).

The Quality Control Program shall be organized to address, as a minimum, the following items:

a. Quality control organization

b. Project progress schedule

c. Submittals schedule

d. Inspection requirements

e. Quality control testing plan

f. Documentation of quality control activities

g. Requirements for corrective action when quality control and/or acceptance criteria are not met

The Contractor is encouraged to add any additional elements to the Quality Control Program that is deemed necessary to adequately control all production and/or construction processes required by this contract.

100-03 Quality control organization. The Contractor Quality Control Program shall be implemented by the establishment of a separate quality control organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all quality control staff by name and function, and shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work. If necessary, different technicians can be used for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the Quality Control Program, the personnel assigned shall be subject to the qualification requirements of paragraph 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

The quality control organization shall, as a minimum, consist of the following personnel:

a. Program Administrator. The Program Administrator shall be a full-time **[** `on-site` **]** employee of the Contractor, or a consultant engaged by the Contractor. The Program Administrator shall have a minimum of five (5) years of experience in airport and/or highway construction and shall have had prior quality control experience on a project of comparable size and scope as the contract.

Additional qualifications for the Program Administrator shall include at least one of the following requirements:

(1) Professional Engineer with one (1) year of airport paving experience.

(2) Engineer-in-training with two (2) years of airport paving experience.

(3) An individual with three (3) years of highway and/or airport paving experience, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.

(4) Construction materials technician certified at Level III by the National Institute for Certification in Engineering Technologies (NICET).

(5) Highway materials technician certified at Level III by NICET.

(6) Highway construction technician certified at Level III by NICET.

(7) A NICET certified engineering technician in Civil Engineering Technology with five (5) years of highway and/or airport paving experience.

The Program Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the contract plans and technical specifications. The Program Administrator shall report directly to a responsible officer of the construction firm. The Program Administrator may supervise the Quality Control Program on more than one project provided that person can be at the job site within two (2) hours after being notified of a problem.

b. Quality control technicians. A sufficient number of quality control technicians necessary to adequately implement the Quality Control Program shall be provided. These personnel shall be either Engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II or higher construction materials technician or highway construction technician and shall have a minimum of two (2) years of experience in their area of expertise.

The quality control technicians shall report directly to the Program Administrator and shall perform the following functions:

(1) Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by subsection 100-06.

(2) Performance of all quality control tests as required by the technical specifications and subsection 100-07.

(3) Performance of density tests for the Engineer when required by the technical specifications.

Certification at an equivalent level, by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

c. Staffing levels. The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The Quality Control Program shall state where different technicians will be required for different work elements.

100-04 Project progress schedule. The Contractor shall submit a coordinated construction schedule for all work activities. The schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified in the contract. As a minimum, it shall provide information on the sequence of work activities, milestone dates, and activity duration.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a twice monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

100-05 Submittals schedule. The Contractor shall submit a detailed listing of all submittals (for example, mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include:

a. Specification item number

b. Item description

c. Description of submittal

d. Specification paragraph requiring submittal

e. Scheduled date of submittal

100-06 Inspection requirements. Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified by subsection 100-07.

Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work. These shall include the following minimum requirements:

a. During plant operation for material production, quality control test results and periodic inspections shall be used to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment used in proportioning and mixing shall be inspected to ensure its proper operating condition. The Quality Control Program shall detail how these and other quality control functions will be accomplished and used.

b. During field operations, quality control test results and periodic inspections shall be used to ensure the quality of all materials and workmanship. All equipment used in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The Program shall document how these and other quality control functions will be accomplished and used.

100-07 Quality control testing plan. As a part of the overall Quality Control Program, the Contractor shall implement a quality control testing plan, as required by the technical specifications. The testing plan shall include the minimum tests and test frequencies required by each technical specification Item, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.

The testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

a. Specification item number (for example, P-401)

b. Item description (for example, Plant Mix Bituminous Pavements)

c. Test type (for example, gradation, grade, asphalt content)

d. Test standard (for example, ASTM or American Association of State Highway and Transportation Officials (AASHTO) test number, as applicable)

e. Test frequency (for example, as required by technical specifications or minimum frequency when requirements are not stated)

f. Responsibility (for example, plant technician)

g. Control requirements (for example, target, permissible deviations)

The testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples in accordance with ASTM D3665. The Engineer shall be provided the opportunity to witness quality control sampling and testing.

All quality control test results shall be documented by the Contractor as required by subsection 100-08.

100-08 Documentation. The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the Engineer daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the Contractor's Program Administrator.

Specific Contractor quality control records required for the contract shall include, but are not necessarily limited to, the following records:

a. Daily inspection reports. Each Contractor quality control technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations. These technician's daily reports shall provide factual evidence that continuous quality control inspections have been performed and shall, as a minimum, include the following:

(1) Technical specification item number and description

(2) Compliance with approved submittals

(3) Proper storage of materials and equipment

(4) Proper operation of all equipment

(5) Adherence to plans and technical specifications

(6) Review of quality control tests

(7) Safety inspection.

The daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be signed by the responsible quality control technician and the Program Administrator. The Engineer shall be provided at least one copy of each daily inspection report on the work day following the day of record.

b. Daily test reports. The Contractor shall be responsible for establishing a system that will record all quality control test results. Daily test reports shall document the following information:

(1) Technical specification item number and description

(2) Test designation

(3) Location

(4) Date of test

(5) Control requirements

(6) Test results

(7) Causes for rejection

(8) Recommended remedial actions

(9) Retests

Test results from each day's work period shall be submitted to the Engineer prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical quality control charts. The daily test reports shall be signed by the responsible quality control technician and the Program Administrator.

100-09 Corrective action requirements. The Quality Control Program shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of work contained in the technical specifications.

The Quality Control Program shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable or required by the technical specifications, the Contractor shall establish and use statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

100-10 Surveillance by the Engineer. All items of material and equipment shall be subject to surveillance by the Engineer at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate quality control system in conformance with the requirements detailed here and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to surveillance by the Engineer at the site for the same purpose.

Surveillance by the Engineer does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

100-11 Noncompliance.

a. The Engineer will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or his or her authorized representative to the Contractor or his or her authorized representative at the site of the work, shall be considered sufficient notice.

b. In cases where quality control activities do not comply with either the Contractor Quality Control Program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer, the Engineer may:

(1) Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors.

(2) Order the Contractor to stop operations until appropriate corrective actions are taken.

END OF SECTION 100

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Section 105 Mobilization

105-1 Description. This item shall consist of work and operations, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-1.1 Posted notices. Prior to commencement of construction activities the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster "Equal Employment Opportunity is the Law" in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL "Notice to All Employees" Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-2 Basis of measurement and payment. Based upon the contract lump sum price for "Mobilization" partial payments will be allowed as follows:

a. With first pay request, 25%.

b. When 25% or more of the original contract is earned, an additional 25%.

c. When 50% or more of the original contract is earned, an additional 40%.

d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by 90-11, the final 10%.

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END OF SECTION 105

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FAA
Airports

Required Contract Provisions for Airport Improvement Program and for Obligated Sponsors

Contents

APPENDIX A – CONTRACT PROVISIONS

A1 ACCESS TO RECORDS AND REPORTS

A1.1 SOURCE

2 CFR § 200.333

2 CFR § 200.336

FAA Order 5100.38

A1.2 APPLICABILITY

2 CFR § 200.333 requires a sponsor to retain records pertinent to a Federal award for a period of three years from submission of final closure documents. 2 CFR § 200.336 establishes that sponsors must provide Federal entities the right to access records pertinent to the Federal award. FAA policy extends these requirements to the sponsor's contracts and subcontracts of AIP funded projects.

Contract Types – The sponsor must include this provision in all contracts and subcontracts of AIP funded projects.

Use of Provision – The regulation does not prescribe mandatory language, the following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of part 200.

A1.3 CONTRACT CLAUSE

ACCESS TO RECORDS AND REPORTS

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the sponsor, the Federal Aviation Administration, and the Comptroller General of the United States or any of their duly authorized representatives, access to any books, documents, papers, and records of the contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

A2 AFFIRMATIVE ACTION REQUIREMENT

A2.1 SOURCE

41 CFR part 60-4

Executive Order 11246

A2.2 APPLICABILITY

Minority Participation. Sponsors are required to set goals for minority participation in AIP funded projects. The goals for minority participation depend on Economic Area (EA) and Standard Metropolitan Statistical Area (SMSA) as established in Volume 45 of the Federal Register dated 10/3/80. Page 65984 contains a table of all EAs and SMSAs and the associated minority participation goals.

To find the goals for minority participation, a sponsor must either refer to the Federal Register Notice or to the Department of Labor online document, "Participation Goals for Minorities and Females". EA's and SMSA's cross state boundaries so a sponsor may have to refer to entries for adjacent states to find their project location.

A sponsor must insert the applicable percentage minority goal. Sponsor must not simply insert a reference to the Federal Register Notice.

Female Participation. Executive Order 11246 has set a goal of 6.9% nationally for female participation for all construction contractors. This value does not change per county or state.

Contract Types –

Construction: The sponsor must incorporate this notice in all solicitations for bids or requests for proposals for AIP funded construction work contracts and subcontracts that exceed $10,000. Construction work means construction, rehabilitation, alteration, conversion, extension, demolition or repair of buildings, highways, or other changes or improvements to real property, including facilities providing utility services. The term also includes the supervision, inspection, and other onsite functions incidental to the actual construction.

Equipment: The sponsor must incorporate this notice in any equipment project exceeding $10,000 that involves installation of equipment onsite (e.g. electrical vault equipment). This provision does not apply to equipment acquisition projects where the manufacture of the equipment takes place offsite at the vendor plant (e.g. firefighting and snow removal vehicles)

Professional Services: The sponsor must incorporate this notice in any professional service agreement if the professional service agreement includes construction work (as defined above) that exceed $10,000. Examples include installation of noise monitoring systems.

Property/Land: The sponsor must incorporate this notice in any agreement associated with land acquisition if the agreement includes construction work (defined above) that exceeds $10,000. Examples include demolition of structures or installation of boundary fencing.

Use of Provision – The sponsor must incorporate the text of this provision without modification. The sponsor must incorporate the established minority participation goal and the covered area by geographic name within the provision text.

A2.3 CONTRACT CLAUSE

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION to ENSURE EQUAL EMPLOYMENT OPPORTUNITY

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables

Goals for minority participation for each trade: **[*sponsor must insert established goal*]**

Goals for female participation in each trade: 6.9%

These goals are applicable to all of the contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is **[*sponsor must insert state, county, and city*].**

A3 BREACH OF CONTRACT TERMS

A3.1 SOURCE

2 CFR § 200 Appendix II(A)

A3.2 APPLICABILITY

This provision requires sponsors to incorporate administrative, contractual or legal remedies if contractors violate or breach contract terms. The sponsor must also include appropriate sanctions and penalties.

Contract Types – This provision is required for all contracts that exceed the simplified acquisition threshold as stated in 2 CFR Part 200, Appendix II (A). This threshold is occasionally adjusted for inflation, and is now equal to $150,000.

Use of Provision – The regulation does not prescribe mandatory language. The following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of part 200. Select either "contractor" or "consultant" as applicable.

A3.3 CONTRACT CLAUSE

BREACH OF CONTRACT TERMS

Any violation or breach of terms of this contract on the part of the contractor or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

Owner will provide [*Contractor* | *Consultant*] written notice that describes the nature of the breach and corrective actions the [*Contractor* | *Consultant*] must undertake in order to avoid termination of the contract. Owner reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the Owner elects to terminate the contract. The Owner's notice will identify a specific date by which the [*Contractor* | *Consultant*] must correct the breach. Owner may proceed with termination of the contract if the [*Contractor* | *Consultant*] fails to correct the breach by deadline indicated in the Owner's notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

A4 BUY AMERICAN PREFERENCE

A4.1 SOURCE

Title 49 USC § 50101

A4.2 APPLICABILITY

The Buy-American Preference requirement in 49 USC § 50101 requires that all steel and manufactured goods used on AIP projects be produced in the United States. The statute gives the FAA the ability to issue a waiver to a sponsor to use non-domestic material on the AIP funded project. The sponsor may request that the FAA issue a waiver from the Buy American Preference requirements if the FAA finds that:

1) Applying the provision is not in the public interest;
2) The steel or manufactured goods are not available in sufficient quantity or quality in the United States;
3) The cost of components and subcomponents produced in the United States is more than 60 percent of the total components of a facility or equipment, and final assembly has taken place in the United States. Items that have an FAA standard specification item number (such as specific airport lighting equipment) are considered the equipment.
4) Applying this provision would increase the cost of the overall project by more than 25 percent.

Timing of Waiver Requests. The sponsor must submit Type 1 or Type 2 waiver requests *before* issuing a solicitation for bids or a request for proposal for a project.

The sponsor must submit Type 3 or Type 4 waiver requests *prior* to executing the contract. The FAA will generally not consider waiver requests after execution of the contract except where extraordinary only if extenuating circumstances exist. The FAA cannot review incomplete waiver requests or requests that the Sponsor has not reviewed for adequacy. Sponsor must assess the adequacy of the waiver request before forwarding the request to the FAA.

Buy American Conformance List. The FAA Office of Airports maintains a listing of equipment that has received National waivers from the Buy American Preference requirements or that fully meet the Buy American requirements. This Buy American Conformance List is available online at www.faa.gov/airports/aip/buy_american/. Products listed on the Buy American Conformance list do not require a project specific Buy American Preference requirement waiver from the FAA.

Facility Waiver Requests. For construction of a facility, the sponsor may submit the waiver request after bid opening, but prior to contract execution. Examples of facility construction include terminal buildings, terminal renovation, and snow removal equipment buildings.

Contract Types –

Construction and Equipment - The sponsor must meet the Buy American Preference requirements of 49 USC § 50101 for all AIP funded projects that require steel or manufactured goods. The Buy America requirements flow down from the sponsor to first tier contractors, who

are responsible for ensuring that lower tier contractors and subcontractors are also in compliance.

Note: the Buy American Preference does not apply to equipment a contractor uses as a tool of their trade and does not remain as part of the project.

Professional Services – Professional service agreements (PSA) do not normally result in a deliverable that meets the definition of a manufactured product. However, the emergence of different project delivery methods has created situations where task deliverables may include a manufactured product. If a PSA includes providing a manufactured good as part of the contract, the sponsor must include the Buy American Preference provision in the agreement.

Property – Most land transactions do not involve acquiring a manufactured product. However, under certain circumstances, a property acquisition project could result in the installation of a manufactured product. For example, the installation of property fencing, gates, doors and locks, etc. represent manufactured products acquired under the AIP funded project that must meet the Buy American Preference.

Use of Provision – The regulation does not prescribe mandatory language, the following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's revised language must fully comply with 49 USC § 50101.

There are two types of Buy American certifications. The sponsor must incorporate the appropriate "Certificate of Buy America Compliance" in the solicitation:

- Projects for a facility (Buildings such as Terminal, SRE, ARFF, etc.) – Insert the Certificate of Compliance Based on Total Facility
- Projects for non-facility development (non-building construction projects such as runway or roadway construction; or equipment acquisition projects) – Insert the Certificate of Compliance Based on Equipment and Materials Used on the Project.

A4.3 CONTRACT CLAUSE

A4.3.1 Buy American Preference Statement

BUY AMERICAN PREFERENCE

The contractor agrees to comply with 49 USC § 50101, which provides that Federal funds may not be obligated unless all steel and manufactured goods used in AIP funded projects are produced in the United States, unless the FAA has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

A bidder or offeror must complete and submit the Buy America certification included herein with their bid or offer. The Owner will reject as nonresponsive any bid or offer that does not include a completed Certificate of Buy American Compliance.

A4.3.2 Certificate of Buy American Compliance – Total Facility

CERTIFICATE OF BUY AMERICAN COMPLIANCE FOR TOTAL FACILITY

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101 by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e. not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC. 50101 by:

a) Only installing steel and manufactured products produced in the United States; or
b) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
c) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

1. To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
2. To faithfully comply with providing US domestic products.
3. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

1. To the submit to the Owner within 15 calendar days of the bid opening, a formal waiver request and required documentation that support the type of waiver being requested.
2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA.
4. To furnish US domestic product for any waiver request that the FAA rejects.
5. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 3 Waiver - The cost of components and subcomponents produced in the United States is more that 60% of the cost of all components and subcomponents of the "facility". The required documentation for a type 3 waiver is:

a) Listing of all manufactured products that are not comprised of 100% US domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and

products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety)

b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.

c) Percentage of non-domestic component and subcomponent cost as compared to total "facility" component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

Type 4 Waiver – Total cost of project using US domestic source product exceeds the total project cost using non-domestic product by 25%. The required documentation for a type 4 of waiver is:

a) Detailed cost information for total project using US domestic product

b) Detailed cost information for total project using non-domestic product

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

A4.3.3 Certificate of Buy American Compliance – Manufactured Product

Certificate of Buy American Compliance for Manufactured Products

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101 by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101 by:

a) Only installing steel and manufactured products produced in the United States, or;
b) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing, or;
c) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

1. To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
2. To faithfully comply with providing US domestic product
3. To furnish US domestic product for any waiver request that the FAA rejects
4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

1. To the submit to the Owner within 15 calendar days of the bid opening, a formal waiver request and required documentation that support the type of waiver being requested.
2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination may result in rejection of the proposal.
3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA.
4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 3 Waiver - The cost of the item components and subcomponents produced in the United States is more that 60% of the cost of all components and subcomponents of the "item". The required documentation for a type 3 waiver is:

a) Listing of all product components and subcomponents that are not comprised of 100% US domestic content (Excludes products listed on the FAA Nationwide Buy American

Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).

b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.

c) Percentage of non-domestic component and subcomponent cost as compared to total "item" component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver – Total cost of project using US domestic source product exceeds the total project cost using non-domestic product by 25%. The required documentation for a type 4 of waiver is:

a) Detailed cost information for total project using US domestic product
b) Detailed cost information for total project using non-domestic product

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

A5 CIVIL RIGHTS - GENERAL

A5.1 SOURCE

49 USC § 47123

A5.2 APPLICABILITY

Note: This provision is in addition to the Civil Rights – Title VI provisions.

Contract Types – The General Civil Rights Provisions found in 49 USC § 47123, derived from the Airport and Airway Improvement Act of 1982, Section 520, apply to all sponsor contracts regardless of funding source.

Use of Provision – There are two versions of this provision. One applies to sponsor contracts and the other applies to sponsor lease agreements and transfer agreements. The sponsor must incorporate the text of the appropriate provision without modification.

A5.3 CONTRACT CLAUSE

A5.3.1 Sponsor Contracts

GENERAL CIVIL RIGHTS PROVISIONS

The contractor agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision binds the contractor and subtier contractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required of Title VI of the Civil Rights Act of 1964.

A5.3.2 Sponsor Lease Agreements and Transfer Agreements

GENERAL CIVIL RIGHTS PROVISIONS

The tenant/concessionaire/lessee and its transferee agree to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision obligates the tenant/concessionaire/lessee or its transferee for the period during which Federal assistance is extended to the airport through the Airport Improvement Program.

In cases where Federal assistance provides, or is in the form of personal property; real property or interest therein; structures or improvements thereon, this provision obligates the party or any transferee for the longer of the following periods:

(a) The period during which the property is used by the airport sponsor or any transferee for a purpose for which Federal assistance is extended, or for another purpose involving the provision of similar services or benefits; or

(b) The period during which the airport sponsor or any transferee retains ownership or possession of the property.

A6 CIVIL RIGHTS – TITLE VI ASSURANCE

A6.1 SOURCE

49 USC § 47123

FAA Order 1400.11

A6.2 APPLICABILITY

Title VI of the Civil Rights Act of 1964, as amended, (Title VI) prohibits discrimination on the grounds of race, color, or national origin under any program or activity receiving Federal financial assistance. Sponsors must include appropriate clauses from the Standard DOT Title VI Assurances in all contracts and solicitations.

The clauses are as follows:

A6.2.1 Applicability of Title VI Solicitation Notice

Contract Clause	The Sponsor must include the contract clause in:	Clause Text is Included in Paragraph
Title VI Solicitation Notice	1) All solicitations for bids, requests for proposals work, or material subject to the nondiscrimination acts and regulations made in connection with Airport Improvement Program grants; and 2) All proposals for negotiated agreements regardless of funding source.	A6.3.1
Title VI Clauses for Compliance with Nondiscrimination Requirements	Every contract or agreement, unless the sponsor has determined and the FAA concurs, that the contract or agreement is not subject to the Nondiscrimination Acts and Authorities	A6.3.2
Title VI Required Clause for Property Interests Transferred from the United States	As a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a sponsor.	A6.3.3

Contract Clause	The Sponsor must include the contract clause in:	Clause Text is Included in Paragraph
Title VI Required Clause for Transfer of Real Property Acquired or Improved Under the Activity, Facility or Program	As a covenant running with the land, in any future deeds, leases, licenses, permits, or similar instruments entered into by the sponsor with other parties for all transfers of real property acquired or improved under the activity, facility, or program	A6.3.4
Clauses for Construction/Use/Access to Real Property Acquired Under the Activity, Facility or Program	As a covenant running with the land, in any future deeds, leases, licenses, permits, or similar instruments entered into by the sponsor with other parties for the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program	A6.3.5
Title VI List Of Pertinent Nondiscrimination Acts And Authorities	Insert this list in every contract or agreement, unless the sponsor has determined and the FAA concurs, that the contract or agreement is not subject to the Nondiscrimination Acts and Authorities	A6.3.6

A6.3 CONTRACT CLAUSE

A6.3.1 Title VI Solicitation Notice

Title VI Solicitation Notice:

The **(Name of Sponsor)**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

A6.3.2 Title VI Clauses for Compliance with Nondiscrimination Requirements

Compliance with Nondiscrimination Requirements

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts And Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Nondiscrimination Acts And Authorities on the grounds of race, color, or national origin.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts And Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:

    a. Withholding payments to the contractor under the contract until the contractor complies; and/or

    b. Cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment,

unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the sponsor to enter into any litigation to protect the interests of the sponsor. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

A6.3.3 Title VI Clauses for Deeds Transferring United States Property

CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of the Airport Improvement Program grant assurances.

NOW, THEREFORE, the Federal Aviation Administration as authorized by law and upon the condition that the (***Title of Sponsor***) will accept title to the lands and maintain the project constructed thereon in accordance with (***Name of Appropriate Legislative Authority***), for the **(Airport Improvement Program or other program for which land is transferred),** and the policies and procedures prescribed by the Federal Aviation Administration of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the (***Title of Sponsor***) all the right, title and interest of the U.S. Department of Transportation/Federal Aviation Administration in and to said lands described in (***Exhibit A attached hereto or other exhibit describing the transferred property)*** and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto (***Title of Sponsor***) and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the (***Title of Sponsor***), its successors and assigns.

The (***Title of Sponsor***), in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the (***Title of Sponsor***) will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of

Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the Federal Aviation Administration and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

A6.3.4 Title VI Clauses for Transfer of Real Property Acquired or Improved Under the Activity, Facility, or Program

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE ACTIVITY, FACILITY, OR PROGRAM

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the (***Title of Sponsor***) pursuant to the provisions of the Airport Improvement Program grant assurances.

A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:
    1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a Federal Aviation Administration activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Nondiscrimination Acts and Regulations listed in the Pertinent List of Nondiscrimination Authorities (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Nondiscrimination covenants, (***Title of Sponsor***) will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*

C. With respect to a deed, in the event of breach of any of the above Nondiscrimination covenants, the (***Title of Sponsor***) will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the (***Title of Sponsor***) and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

A6.3.5 Title VI Clauses for Construction/Use/Access to Real Property Acquired Under the Activity, Facility or Program

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by (***Title of Sponsor***) pursuant to the provisions of the Airport Improvement Program grant assurances.

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the List of discrimination Acts And Authorities.

B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above nondiscrimination covenants, (***Title of Sponsor***) will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*

C. With respect to deeds, in the event of breach of any of the above nondiscrimination covenants, (***Title of Sponsor***) will there upon revert to and vest in and become the absolute property of (***Title of Sponsor***) and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

A6.3.6 Title VI List of Pertinent Nondiscrimination Acts and Authorities

Title VI List of Pertinent Nondiscrimination Acts and Authorities

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination In Federally-Assisted Programs of The Department of Transportation—Effectuation of Title VI of The Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq*.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq*.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 – 12189) as implemented by Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

A7 CLEAN AIR AND WATER POLLUTION CONTROL

A7.1 SOURCE

2 CFR § 200, Appendix II(G)

A7.2 APPLICABILITY

Contract Types – This provision is required for all contracts and lower tier contracts that exceed $150,000.

Use of Provision – The regulation does not prescribe mandatory language. The following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of Appendix II to 2 CFR §200.

A7.3 CONTRACT CLAUSE

CLEAN AIR AND WATER POLLUTION CONTROL

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 U.S.C. § 740-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. § 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceeds $150,000.

A8 CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS

A8.1 SOURCE

2 CFR § 200, Appendix II(E)

A8.2 APPLICABILITY

Contract Workhours and Safety Standards Act Requirements, (CWHSSA) requires contractors and subcontractors on covered contracts to pay laborers and mechanics employed in the performance of the contracts one and one-half times their basic rate of pay for all hours worked over 40 in a workweek. CWHSSA prohibits unsanitary, hazardous, or dangerous working conditions on federally assisted projects. The Wage and Hour Division (WHD) within the U.S. Department of Labor (DOL) enforces the compensation requirements of this Act, while DOL's Occupational Safety and Health Administration (OSHA) enforces the safety and health requirements

Contract Types –

Construction - This provision applies to all contracts and lower tier contracts that exceed $100,000, and employ laborers, mechanics, watchmen and guards.

Equipment - This provision applies to any equipment project exceeding $100,000 that involves installation of equipment onsite (e.g. electrical vault equipment). This provision does not apply to equipment acquisition projects where the manufacture of the equipment takes place offsite at the vendor plant (e.g. ARFF and SRE vehicles)

Professional Services - This provision applies to professional service agreements that exceed $100,000 and employs laborers, mechanics, watchmen and guards. This includes members of survey crews and exploratory drilling operations.

Property – While most land transactions do not involve employment of laborers, mechanics, watchmen and guards, under certain circumstances, a property acquisition project could require such employment. Examples include the installation of property fencing or testing for environmental contamination

Use of Provision – Sponsors must incorporate this text without modification.

A8.3 CONTRACT CLAUSE

CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS

1. Overtime Requirements.

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a

rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the clause set forth in paragraph (1) of this clause, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this clause, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

3. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration (FAA) or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 of this clause.

4. Subcontractors.

The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this clause.

A9 COPELAND "ANTI-KICKBACK" ACT

A9.1 SOURCE

2 CFR § 200, Appendix II(D)

29 CFR Parts 3 & 5

A9.2 APPLICABILITY and PURPOSE

The Copeland (Anti-Kickback) Act (18 U.S.C. 874 and 40 U.S.C. 3145) makes it unlawful to induce by force, intimidation, threat of dismissal from employment, or by any other manner, any person employed in the construction or repair of public buildings or public works, financed in whole or in part by the United States, to give up any part of the compensation to which that person is entitled under a contract of employment. The Copeland Act also requires each contractor and subcontractor to furnish weekly a statement of compliance with respect to the wages paid each employee during the preceding week.

Contract Types –

Construction – This provision applies to all construction contracts and subcontracts financed under the AIP program that exceeds $2,000.

Equipment – This provision applies to all equipment installation projects (e.g. electrical vault improvements) financed under the AIP program that exceeds $ 2, 000. This provision does not apply to equipment acquisitions where the equipment is manufactured at the vendor's plant (e.g. SRE and ARFF vehicles)

Professional Services - The emergence of different project delivery methods has created situations where Professional Service Agreements (PSA) includes tasks that meet the definition of construction, alteration or repair as defined in 29 CFR Part 5. If such tasks result in work that qualifies as construction, alteration or repair and it exceeds $2,000, the PSA must incorporate the Copeland Anti-kickback provision.

Property - Ordinarily, land acquisition projects would not involve employment of laborers or mechanics and thus the Copeland Anti-Kickback provision would not apply. However, land projects that involve installation of boundary fencing and demolition of structures would involve laborers and mechanics. The sponsor must include this provision if the land acquisition project involves employment of laborers or mechanics for a contract exceeding $2,000.

Use of Provision – 29 CFR Part 5 establishes specific language a sponsor must use in construction contracts. The sponsor may not make any modification to the standard language. A/E firms that employ laborers and mechanics on a task that meets the definition of construction, alteration or repair are acting as a contractor. The sponsor may not substitute the term "contractor" for "consultant" in such instances.

A9.3 CONTRACT CLAUSE

COPELAND "ANTI-KICKBACK" ACT

Contractor must comply with the requirements of the Copeland "Anti-Kickback" Act (18 U.S.C. 874 and 40 U.S.C. 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the Owner, a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

A10 DAVIS-BACON REQUIREMENTS

A10.1 SOURCE

2 CFR § 200, Appendix II(D)

29 CFR Part 5

A10.2 APPLICABILITY

The Davis-Bacon Act ensures that laborers and mechanics employed under the contract receive pay no less than the locally prevailing wages and fringe benefits as determined by the Department of Labor.

Contract Types –

Construction - Incorporate into all construction contracts and subcontracts that exceed $2,000 and include funding from the AIP program.

Equipment – This provision applies to all equipment installation projects (e.g. electrical vault improvements) financed under the AIP program that exceeds $ 2, 000. This provision does not apply to equipment acquisitions where the equipment is manufactured at the vendor's plant (e.g. SRE and ARFF vehicles)

Professional Services - The emergence of different project delivery methods has created situations where Professional Service Agreements (PSA) includes tasks that meet the definition of construction, alteration or repair as defined in 29 CFR Part 5. If such tasks result in work that qualifies as construction, alteration or repair and it exceeds $2,000, the PSA must incorporate this clause.

Property - Ordinarily, land acquisition projects would not involve employment of laborers or mechanics and thus the provision would not apply. However, land projects that involve installation of boundary fencing and demolition of structures would involve laborers and mechanics. The sponsor must include this provision if the land acquisition project involves employment of laborers or mechanics for a contract exceeding $2,000.

Fencing Projects - Fencing projects that exceed $2,000 must include this provision.

Use of Provision – 29 CFR Part 5 establishes specific language a sponsor must use. The sponsor may not make any modification to the standard language. A/E firms that employ laborers and mechanics on a task that meets the definition of construction, alteration or repair are acting as a contractor. The sponsor may not substitute the term "contractor" for "consultant" in such instances.

A10.3 CONTRACT CLAUSE

DAVIS-BACON REQUIREMENTS

1. Minimum Wages

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any

account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall

refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2 Withholding.

The Federal Aviation Administration or the sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is

enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.* , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i) and that such information is correct and complete;

(2) That each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying or transcription by authorized representatives of the sponsor, the Federal Aviation Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an

apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts.

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance With Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

A11 DEBARMENT AND SUSPENSION

A11.1 SOURCE

2 CFR part 180 (Subpart C)

2 CFR part 1200

DOT Order 4200.5

A11.2 APPLICABILITY

The sponsor must verify that the firm or individual that it is entering into a contract with are not presently suspended, excluded or debarred by any Federal department or agency from participating in federally-assisted projects. The sponsor accomplishes this by: (1) checking the System for Award Management (SAM.gov) to verify that the firm or individual is not listed in SAM.gov as being suspended, debarred or excluded, (2) collecting a certification from the firm or individual that they are not suspended, debarred or excluded, and (3) incorporating a clause in the contract that requires lower tier contracts to verify that no suspended, debarred or excluded firm or individual are included in the project.

Contract Types – This requirement applies to *covered transactions*, which are defined in 2 CFR part 180. AIP funded contracts are non-procurement transactions, as defined by §180.970. Covered transactions include any AIP-funded contract, regardless of tier, that is awarded by a contractor, subcontractor, supplier, consultant, or its agent or representative in any transaction, if the amount of the contract is expected to equal or exceed $25,000. This includes contracts associated with land acquisition projects.

Use of Provision – The regulation does not prescribe mandatory language, the following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of 2 CFR part 180. For professional service agreements, sponsor may substitute bidder/offeror with consultant.

A11.3 CONTRACT CLAUSE

A11.3.1 Bidder or Offeror Certification

CERTIFICATION OF OFFERER/BIDDER REGARDING DEBARMENT

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

A11.3.2 Lower Tier Contract Certification

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds $25,000 as a "covered transaction", must verify each lower tier participant of a "covered transaction" under the project is not

presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: http://www.sam.gov
2. Collecting a certification statement similar to the Certificate Regarding Debarment and Suspension (Bidder or Offeror), above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract

If the FAA later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

A12 DISADVANTAGED BUSINESS ENTERPRISE

A12.1 SOURCE

49 CFR part 26

A12.2 APPLICABILITY and PURPOSE

A sponsor that anticipates awarding $250,000 or more in AIP funded prime contracts in a federal fiscal year must have an approved Disadvantaged Business Enterprise (DBE) program on file with the FAA Office of Civil Rights (§26.21). The approved DBE program will identify a 3-year overall program goal that the sponsor bases on the availability of ready, willing and able DBEs relative to all businesses ready, willing and able to participate on the project (§26.45).

Contract Types – Sponsors with a DBE program on file with the FAA must include the three following provisions, if applicable:

Clause in all solicitations for proposals for which a contract goal has been established.

Clause in each prime contract

Clause in solicitations that are obtaining DBE participation through race/gender neutral means.

Use of Provision –

1. Solicitations with a DBE Project Goal - 49 CFR §26.53 requires a sponsor's solicitation to address what a contractor must submit on proposed DBE participation. This language is not required for projects where DBE participation is by race-gender neutral means.

   The regulation does not prescribe mandatory language, the following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's revised language must fully these requirements.

   The sponsor may require the contractor's submittal on proposed DBE participation either with the bid or within a specified timeframe after bidding.

2. Contracts Covered by DBE Program - Sponsors must incorporate this language if they have a DBE program on file with the FAA. This includes projects where DBE participation is obtained through race-gender neutral means (i.e. no project goal). Sections §26.13 and §26.29 establish mandatory language for contractor assurance and prompt payment. The sponsor must not modify the language.

3. The regulation does not prescribe mandatory language. The following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's revised language must fully these requirements for a sponsor that is not applying a project specific contract goal but is covered by a DBE program on file with the FAA.

4. Sponsors that do not have a DBE program on file with the FAA are not required to include DBE provisions and clauses.

A12.3 REQUIRED PROVISIONS

A12.3.1 Solicitation Language (Solicitations that include a Project Goal)

The Owner's award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR §26.53.

As a condition of bid responsiveness, the Bidder or Offeror must submit the following information with their proposal on the forms provided herein:

(1) The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
(2) A description of the work that each DBE firm will perform;
(3) The dollar amount of the participation of each DBE firm listed under (1)
(4) Written statement from Bidder or Offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner's project goal;
(5) If Bidder or Offeror cannot meet the advertised project DBE goal; evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR Part 26.

[Note: Contract bid dates on or prior to December 31, 2016, use the following language]

The successful Bidder or Offeror must provide written confirmation of participation from each of the DBE firms the Bidder or Offeror lists in their commitment. This Bidder or Offeror must submit the DBE's written confirmation of participation ["within 7 days after bid opening or "with the proposal documents as a condition of bid responsiveness"]

[Note: Contract bid dates after December 31, 2016, use the following language]

The successful Bidder or Offeror must provide written confirmation of participation from each of the DBE firms the Bidder or Offeror lists in their commitment. This Bidder or Offeror must submit the DBE's written confirmation of participation ["within 5 days after bid opening or "with the proposal documents as a condition of bid responsiveness"]

A12.3.2 Solicitation Language (Race/Gender Neutral Means)

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the [Insert Name of Owner] to practice nondiscrimination based on race, color, sex or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

A12.3.3 Prime Contracts (Projects covered by DBE Program)

DISADVANTAGED BUSINESS ENTERPRISES

Contract Assurance (§ 26.13) - The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate.

Prompt Payment (§26.29) - The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than {specify number} days from the receipt of each payment the prime contractor receives from {Name of recipient}. The prime contractor agrees further to return retainage payments to each subcontractor within {specify the same number as above} days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the {Name of Recipient}. This clause applies to both DBE and non-DBE subcontractors.

A13 DISTRACTED DRIVING

A13.1 SOURCE

Executive Order 13513

DOT Order 3902.10

A13.2 APPLICABILITY

The FAA encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or sub-grant.

Contract Types – Sponsors must insert this provision in all AIP funded contracts that exceed the micro-purchase threshold of 2 CFR §200.67 (currently set at $3,500).

Use of Provision – The regulation does not prescribe mandatory language, the following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's revised language must fully these requirements. .

A13.3 CONTRACT CLAUSE

TEXTING WHEN DRIVING

In accordance with Executive Order 13513, "Federal Leadership on Reducing Text Messaging While Driving" (10/1/2009) and DOT Order 3902.10 "Text Messaging While Driving" (12/30/2009), the FAA encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or sub-grant.

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding $3,500 and involve driving a motor vehicle in performance of work activities associated with the project.

A14 ENERGY CONSERVATION REQUIREMENTS

A14.1 SOURCE

2 CFR § 200, Appendix II(H)

A14.2 APPLICABILITY

The Energy Conservation Requirements found in 2 CFR § 200 Appendix II(H) requires this provision on energy efficiency.

Contract Types – The sponsor must include this provision in all AIP funded contracts and lower-tier contracts.

Use of Provision – The regulation does not prescribe mandatory language, the following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's revised language must fully these requirements. Sponsor may substitute "contractor and subcontractor" with "consultant and sub-consultant" for professional service agreements.

A14.3 CONTRACT CLAUSE

ENERGY CONSERVATION REQUIREMENTS

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to energy efficiency as contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201*et seq*).

A15 EQUAL EMPLOYEMENT OPPORTUNITY (E.E.O.)

A15.1 SOURCE

2 CFR 200, Appendix II(C)

41 CFR § 60-1.4

41 CFR § 60-4.3

Executive Order 11246

A15.2 APPLICABILITY

The purpose of this provision is to provide equal opportunity for all persons, without regard to race, color, religion, sex, or national origin who are employed or seeking employment with contractors performing under a federally assisted construction contract. There are two provisions – a construction clause and a specification clause.

The equal opportunity contract clause must be included in any contract or subcontract when the amount exceeds $10,000. Once the equal opportunity clause is determined to be applicable, the contract or subcontract must include the clause for the remainder of the year, regardless of the amount or the contract.

Contract Types –

Construction – The sponsor must incorporate contract and specification language in all construction contracts and subcontracts as required above.

Equipment - The sponsor must incorporate contract and specification language into all equipment contracts as required above that involves installation of equipment onsite (e.g. electrical vault equipment). This provision does not apply to equipment acquisition projects where the manufacture of the equipment takes place offsite at the vendor plant (e.g. ARFF and SRE vehicles)

Professional Services - The sponsor must include contract and specification language into all professional service agreements as required above. Property – The sponsor must include contract and specification language into all land acquisition projects that include work that qualifies as construction work as defined by 41 CFR part 60 as required above. An example is installation of boundary fencing.

Use of Provision – 41 CFR § 60-1.4 provides the mandatory contract language. 41 CFR § 60-4.3 provides the mandatory specification language. The sponsor must incorporate these clauses without modification.

A15.3 MANDATORY CONTRACT CLAUSE

A15.3.1 E.E.O. Contract Clause

EQUAL OPPORTUNITY CLAUSE

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identify or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the

administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance*: Provided, however*, That in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

A15.3.2 EEO Specification

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS

1. As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;

d. "Minority" includes:

(1) Black (all) persons having origins in any of the Black African racial groups not of Hispanic origin);

(2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race);

(3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors shall be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement nor the failure by a union with whom the contractor has a collective bargaining agreement to refer either minorities or women shall excuse the contractor's obligations under these specifications, Executive Order 11246 or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the contractor during the training period and the contractor shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The contractor, where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefore along with whatever additional actions the contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the contractor has a collective bargaining agreement has not referred to the contractor a minority person or female sent by the contractor, or when the contractor has other information that the union referral process has impeded the contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such a superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students; and to minority and female recruitment and training organizations serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor union, contractor community, or other similar groups of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, if the particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally,) the contractor may be in violation of the Executive Order if a specific minority group of women is underutilized.

10. The contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who

fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

A16 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)

A16.1 SOURCE

29 U.S.C. § 201, et seq

A16.2 APPLICABILITY

The United States Department of Labor (DOL) Wage and Hour Division administers the Fair Labor Standards Act (FLSA). This act prescribes federal standards for basic minimum wage, overtime pay, record keeping and child labor standards.

Contract Types – Per the Department of Labor, all employees of certain enterprises having workers engaged in interstate commerce, producing goods for interstate commerce, or handling, selling, or otherwise working on goods or materials that have been moved in or produced for such commerce by any person, are covered by the FLSA.

All consultants, sub-consultants, contractors and subcontractors employed under this federally assisted project must comply with the FLSA.

Professional Services – 29 CFR § 213 exempts employees in a bona fide executive, administrative or professional capacity. Because professional firms employ individuals that are not covered by this exemption, the sponsor's agreement with a professional services firm must include the FLSA provision.

Use of Provision – The regulation does not prescribe mandatory language, the following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of 29 U.S.C. § 201.The sponsor must select *contractor* or *consultant*, as appropriate for the contract.

A16.3 CONTRACT CLAUSE

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part time workers.

The [*contractor* | *consultant*] has full responsibility to monitor compliance to the referenced statute or regulation. The [*contractor* | *consultant*] must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division

A17 LOBBYING AND INFLUENCING FEDERAL EMPLOYEES

A17.1 SOURCE

31 U.S.C. § 1352 – Byrd Anti-Lobbying Amendment

2 CFR part 200, Appendix II(J)

49 CFR part 20, Appendix A

A17.2 APPLICABILITY

Consultants and contractors that apply or bid for an award of $100,000 or more must certify that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or another award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award.

Contract Types – The sponsor must incorporate this provision into all contracts exceeding $100,000.

Use of Provision – Appendix A to 49 CFR Part 20 prescribes language the sponsor must use. The sponsor must incorporate this provision without modification.

A17.3 CONTRACT CLAUSE

CERTIFICATION REGARDING LOBBYING

The bidder or offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

A18 PROHIBITION of SEGREGATED FACILITIES

A18.1 SOURCE

41 CFR § 60

A18.2 APPLICABILITY

The contractor must comply with the requirements of the E.E.O. clause by ensuring that facilities they provide for employees are free of segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin. This clause must be included in all contracts that include the equal opportunity clause, regardless of the amount of the contract.

Contract Types – AIP sponsors must incorporate the Prohibition of Segregated Facilities clause in any contract containing the Equal Employment Opportunity clause of 41 CFR §60.1. This obligation flows down to subcontract and sub-tier purchase orders containing the Equal Employment Opportunity clause.

Construction - Construction work means construction, rehabilitation, alteration, conversion, extension, demolition or repair of buildings, highways, or other changes or improvements to real property, including facilities providing utility services. The term also includes the supervision, inspection, and other onsite functions incidental to the actual construction.

Equipment – On site installation of equipment such as airfield lighting control equipment meets the definition of construction and thus this provision would apply. This provision does not apply to equipment projects involving manufacture of the item at a vendor's manufacturing plant. An example would be the manufacture of a SRE or ARFF vehicle.

Professional Services - Professional services that include tasks that qualify as construction work as defined by 41 CFR part 60. Examples include the installation of noise monitoring equipment.

Property/Land - Land acquisition contracts that include tasks that qualify as construction work as defined by 41 CFR part 60. Examples include demolition of structures or installation of boundary fencing.

Use of Provision – The regulation does not prescribe mandatory language, the following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of 41 CFR § 60.

A18.3 CONTRACT CLAUSE

PROHIBITION of SEGREGATED FACILITIES

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract.

(b) "Segregated facilities," as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

A19 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

A19.1 SOURCE

20 CFR part 1910

A19.2 APPLICABILITY

Contract Types – All contracts and subcontracts must comply with the Occupational Safety and Health Act of 1970 (OSH). The United States Department of Labor Occupational Safety & Health Administration (OSHA) oversees the workplace health and safety standards wage provisions from OSH.

Use of Provision – The regulation does not prescribe mandatory language. The following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of 20 CFR part 1910.

A19.3 CONTRACT CLAUSE

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The Contractor retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (20 CFR Part 1910). Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

A20 PROCUREMENT OF RECOVERED MATERIALS

A20.1 SOURCE

2 CFR § 200.322

40 CFR part 247

A20.2 APPLICABILITY

Sponsors of AIP funded development and equipment projects must comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. Section 6002 emphasizes maximizing energy and resource recovery through use of affirmative procurement actions for recovered materials identified in the EPA guidelines.

The requirements of § 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition.

Contract Types – This provision applies to any contracts that include procurement of products where the purchase price of the item exceeds $10,000 or the value of the quantity acquired by the preceding fiscal year exceeded $10,000.

Construction and Equipment – Include this provision in all construction and equipment projects

Professional Services and Property – Include this provision if the agreement includes procurement of a product that exceeds $10,000

Use of Provision – The regulation does not prescribe mandatory language. The following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of 2 CFR § 200.

A20.3 CONTRACT CLAUSE

Procurement of Recovered Materials

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use of products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

a) The contract requires procurement of $10,000 or more of a designated item during the fiscal year; or,

b) The contractor has procured $10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at www.epa.gov/epawaste/conserve/tools/cpg/products/.

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;

b) Fails to meet reasonable contract performance requirements; or

c) Is only available at an unreasonable price.

A21 RIGHT TO INVENTIONS

A21.1 SOURCE

2 CFR § 200, Appendix II(F)

37 CFR §401

A21.2 APPLICABILITY

Contract Types – This provision applies to all contracts and subcontracts with small business firms or nonprofit organizations that includes performance of *experimental, developmental, or research work*. This clause is not applicable to construction, equipment or professional service contracts unless the contract includes *experimental, developmental or research work*.

Use of Provision – The regulation does not prescribe mandatory language. The following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of Appendix II to 2 CFR part 200.

A21.3 CONTRACT CLAUSE

RIGHTS TO INVENTIONS

Contracts or agreements that include the performance of experimental, developmental, or research work must provide for the rights of the Federal Government and the Owner in any resulting invention as established by 37 CFR part 401, Rights to Inventions Made by Non-profit Organizations and Small Business Firms under Government Grants, Contracts, and Cooperative Agreements. This contract incorporates by reference the patent and inventions rights as specified within in the 37 CFR §401.14. Contractor must include this requirement in all sub-tier contracts involving experimental, developmental or research work.

A22 SEISMIC SAFETY

A22.1 SOURCE

49 CFR part 41

A22.2 APPLICABILITY

Contract Types – This provision applies to construction of new buildings and additions to existing buildings financed in whole or in part through the Airport Improvement Program.

Professional Services and Construction – Sponsor must incorporate this clause in any contract involved in the construction of new buildings or structural addition to existing buildings.

Equipment – Sponsor must include this provision if the project involves construction or structural addition to a building such as an electrical vault project.

Land – This provision will not typically apply to a property/land project.

Use of Provision – The regulation does not prescribe mandatory language. The following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of 49 CFR part 41.

A22.3 CONTRACT CLAUSE

A22.3.1 Professional Service Agreements for Design

Seismic Safety

In the performance of design services, the Consultant agrees to furnish a building design and associated construction specification that conform to a building code standard which provides a level of seismic safety substantially equivalent to standards as established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their building code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety. At the conclusion of the design services, the Consultant agrees to furnish the Owner a "certification of compliance" that attests conformance of the building design and the construction specifications with the seismic standards of NEHRP or an equivalent building code.

A22.3.2 Construction Contracts

Seismic Safety

The contractor agrees to ensure that all work performed under this contract, including work performed by subcontractors, conforms to a building code standard that provides a level of seismic safety substantially equivalent to standards established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety.

A23 TERMINATION OF CONTRACT

A23.1 SOURCE

2 CFR § 200 Appendix II(B)

FAA Advisory Circular 150/5370-10, Section 80-09

A23.2 APPLICABILITY

Contract Types – All contracts and subcontracts in excess of $10,000 must address *termination for cause* and *termination for convenience* by the sponsor. The provision must address the manner (i.e. notice, opportunity to cure, and effective date) by which the sponsor's contract will be affected and the basis for settlement (i.e. incurred expenses, completed work, profit, etc.).

Use of Provision –

Termination for Default - Section 80-09 of FAA Advisory Circular 150/5370-10 establishes standard language for Termination for Default under a construction contract. The sponsor must not make any changes to this standard language.

Termination for Convenience – The sponsor must include a clause for termination for convenience. The following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of Appendix II to 2 CFR part 200.

Equipment, Professional Services and Property – The sponsor may use their established clause language provided that it adequately addresses the intent of Appendix II(B) to Part 200, which addresses termination for fault and for convenience.

A23.3 CONTRACT CLAUSE

A23.3.1 Termination for Convenience

Termination for Convenience (Construction & Equipment Contracts)

The Owner may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of Owner. Upon receipt of a written notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

1. Contractor must immediately discontinue work as specified in the written notice.
2. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
3. Discontinue orders for materials and services except as directed by the written notice.
4. Deliver to the owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work and as directed in the written notice.
5. Complete performance of the work not terminated by the notice.

6. Take action as directed by the owner to protect and preserve property and work related to this contract that Owner will take possession.

Owner agrees to pay Contractor for:

a) completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;

b) documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;

c) reasonable and substantiated claims, costs and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and

d) reasonable and substantiated expenses to the contractor directly attributable to Owner's termination action

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this contract.

Termination for Convenience (Professional Services)

The Owner may, by written notice to the Consultant, terminate this Agreement for its convenience and without cause or default on the part of Consultant. Upon receipt of the notice of termination, except as explicitly directed by the Owner, the Contractor must immediately discontinue all services affected.

Upon termination of the Agreement, the Consultant must deliver to the Owner all data, surveys, models, drawings, specifications, reports, maps, photographs, estimates, summaries, and other documents and materials prepared by the Engineer under this contract, whether complete or partially complete.

Owner agrees to make just and equitable compensation to the Consultant for satisfactory work completed up through the date the Consultant receives the termination notice. Compensation will not include anticipated profit on non-performed services.

Owner further agrees to hold Consultant harmless for errors or omissions in documents that are incomplete as a result of the termination action under this clause.

A23.3.2 Termination for Default

Termination for Default (Construction)

Section 80-09 of FAA Advisory Circular 150/5370-10 establishes conditions, rights and remedies associated with Owner termination of this contract due default of the Contractor.

Termination for Default (Equipment)

The Owner may, by written notice of default to the Contractor, terminate all or part of this Contract if the Contractor:

1. Fails to commence the Work under the Contract within the time specified in the Notice- to-Proceed;

2. Fails to make adequate progress as to endanger performance of this Contract in accordance with its terms;

3. Fails to make delivery of the equipment within the time specified in the Contract, including any Owner approved extensions;
4. Fails to comply with material provisions of the Contract;
5. Submits certifications made under the Contract and as part of their proposal that include false or fraudulent statements;
6. Becomes insolvent or declares bankruptcy;

If one or more of the stated events occur, the Owner will give notice in writing to the Contractor and Surety of its intent to terminate the contract for cause. At the Owner's discretion, the notice may allow the Contractor and Surety an opportunity to cure the breach or default.

If within [10] days of the receipt of notice, the Contractor or Surety fails to remedy the breach or default to the satisfaction of the Owner, the Owner has authority to acquire equipment by other procurement action. The Contractor will be liable to the Owner for any excess costs the Owner incurs for acquiring such similar equipment.

Payment for completed equipment delivered to and accepted by the Owner shall be at the Contract price. The Owner may withhold from amounts otherwise due the Contractor for such completed equipment, such sum as the Owner determines to be necessary to protect the Owner against loss because of Contractor default.

Owner will not terminate the Contractor's right to proceed with the Work under this clause if the delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such acceptable causes include: acts of God, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, and severe weather events that substantially exceed normal conditions for the location.

If, after termination of the Contractor's right to proceed, the Owner determines that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the Owner issued the termination for the convenience the Owner.

The rights and remedies of the Owner in this clause are in addition to any other rights and remedies provided by law or under this contract.

Termination for Default (Professional Services)

Either party may terminate this Agreement for cause if the other party fails to fulfill its obligations that are essential to the completion of the work per the terms and conditions of the Agreement. The party initiating the termination action must allow the breaching party an opportunity to dispute or cure the breach.

The terminating party must provide the breaching party [7] days advance written notice of its intent to terminate the Agreement. The notice must specify the nature and extent of the breach, the conditions necessary to cure the breach, and the effective date of the termination action. The rights and remedies in this clause are in addition to any other rights and remedies provided by law or under this agreement.

a) **Termination by Owner**: The Owner may terminate this Agreement in whole or in part, for the failure of the Consultant to:
   1. Perform the services within the time specified in this contract or by Owner approved extension;
   2. Make adequate progress so as to endanger satisfactory performance of the Project;

3. Fulfill the obligations of the Agreement that are essential to the completion of the Project.

Upon receipt of the notice of termination, the Consultant must immediately discontinue all services affected unless the notice directs otherwise. Upon termination of the Agreement, the Consultant must deliver to the Owner all data, surveys, models, drawings, specifications, reports, maps, photographs, estimates, summaries, and other documents and materials prepared by the Engineer under this contract, whether complete or partially complete.

Owner agrees to make just and equitable compensation to the Consultant for satisfactory work completed up through the date the Consultant receives the termination notice. Compensation will not include anticipated profit on non-performed services.

Owner further agrees to hold Consultant harmless for errors or omissions in documents that are incomplete as a result of the termination action under this clause.

If, after finalization of the termination action, the Owner determines the Consultant was not in default of the Agreement, the rights and obligations of the parties shall be the same as if the Owner issued the termination for the convenience of the Owner.

b) **Termination by Consultant**: The Consultant may terminate this Agreement in whole or in part, if the Owner:
   1. Defaults on its obligations under this Agreement;
   2. Fails to make payment to the Consultant in accordance with the terms of this Agreement;
   3. Suspends the Project for more than [180] days due to reasons beyond the control of the Consultant.

   Upon receipt of a notice of termination from the Consultant, Owner agrees to cooperate with Consultant for the purpose of terminating the agreement or portion thereof, by mutual consent. If Owner and Consultant cannot reach mutual agreement on the termination settlement, the Consultant may, without prejudice to any rights and remedies it may have, proceed with terminating all or parts of this Agreement based upon the Owner's breach of the contract.

   In the event of termination due to Owner breach, the Engineer is entitled to invoice Owner and to receive full payment for all services performed or furnished in accordance with this Agreement and all justified reimbursable expenses incurred by the Consultant through the effective date of termination action. Owner agrees to hold Consultant harmless for errors or omissions in documents that are incomplete as a result of the termination action under this clause.

A24 TRADE RESTRICTION CERTIFICATION

A24.1 SOURCE

49 USC § 50104

49 CFR part 30

A24.2 APPLICABILITY

Unless waived by the Secretary of Transportation, sponsors may not use AIP funds on a product or service from a foreign country included in the current list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (U.S.T.R)

Contract Types – The trade restriction certification and clause applies to all AIP funded projects.

Use of Provision – 49 CFR part 30 prescribes the language for this model clause. The sponsor must include this certification language in all contracts and subcontracts without modification.

A24.3 CONTRACT CLAUSE

TRADE RESTRICTION CERTIFICATION

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror -

a. is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (U.S.T.R.);

b. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the U.S.T.R; and

c. has not entered into any subcontract for any product to be used on the Federal on the project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

(1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R. or
(2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such U.S.T.R. list or
(3) who incorporates in the public works project any product of a foreign country on such U.S.T.R. list;

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by U.S.T.R, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

A25 VETERAN'S PREFERENCE

A25.1 SOURCE

49 USC § 47112(c)

A25.2 APPLICABILITY

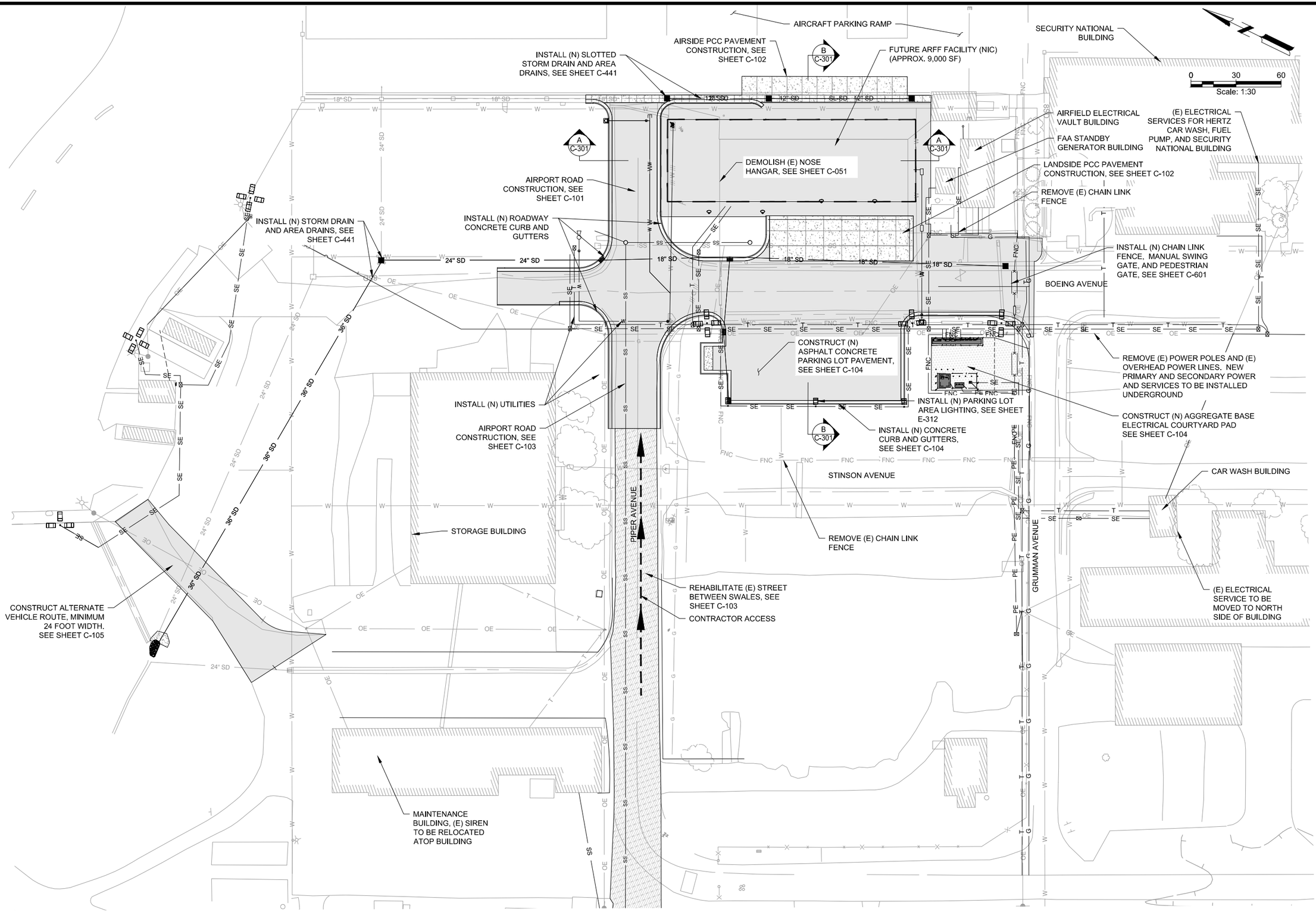
Contract Types – This provision applies to all AIP funded projects that involve labor to carry out the project. This preference, which excludes executive, administrative and supervisory positions, applies to covered veterans (as defined under §47112(c)) only when they are readily available and qualified to accomplish the work required by the project.

Use of Provision – The regulation does not prescribe mandatory language, the following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the sponsor's language must fully satisfy the requirements of 49 U.S.C. § 47112.

A25.3 CONTRACT CLAUSE

VETERAN'S PREFERENCE

In the employment of labor (excluding executive, administrative, and supervisory positions), the contractor and all sub-tier contractors must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 U.S.C. 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.



PROJECT LAYOUT PLAN
AS SHOWN

RECORD DRAWING

Mead & Hunt, Inc.
133 Aviation Boulevard,
Suite 100
Santa Rosa, CA 95403
phone: 707-526-5010
meadhunt.com

REGISTERED PROFESSIONAL ENGINEER
JEFFREY T. LEONARD
NO. 71754
Exp. date: 12/31/13
CIVIL
STATE OF CALIFORNIA

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COUNTY OF HUMBOLDT
PHASE 1 - SITE AND CIVIL IMPROVEMENTS FOR THE ARFF FACILITY
ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION

AIP NO.: 3-06-0010-32
M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: JTL
DRAWN BY: POM
CHECKED BY: JTL/LBM

DO NOT SCALE DRAWINGS

SHEET CONTENTS
PROJECT LAYOUT PLAN

G-031

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D SECTION D-D

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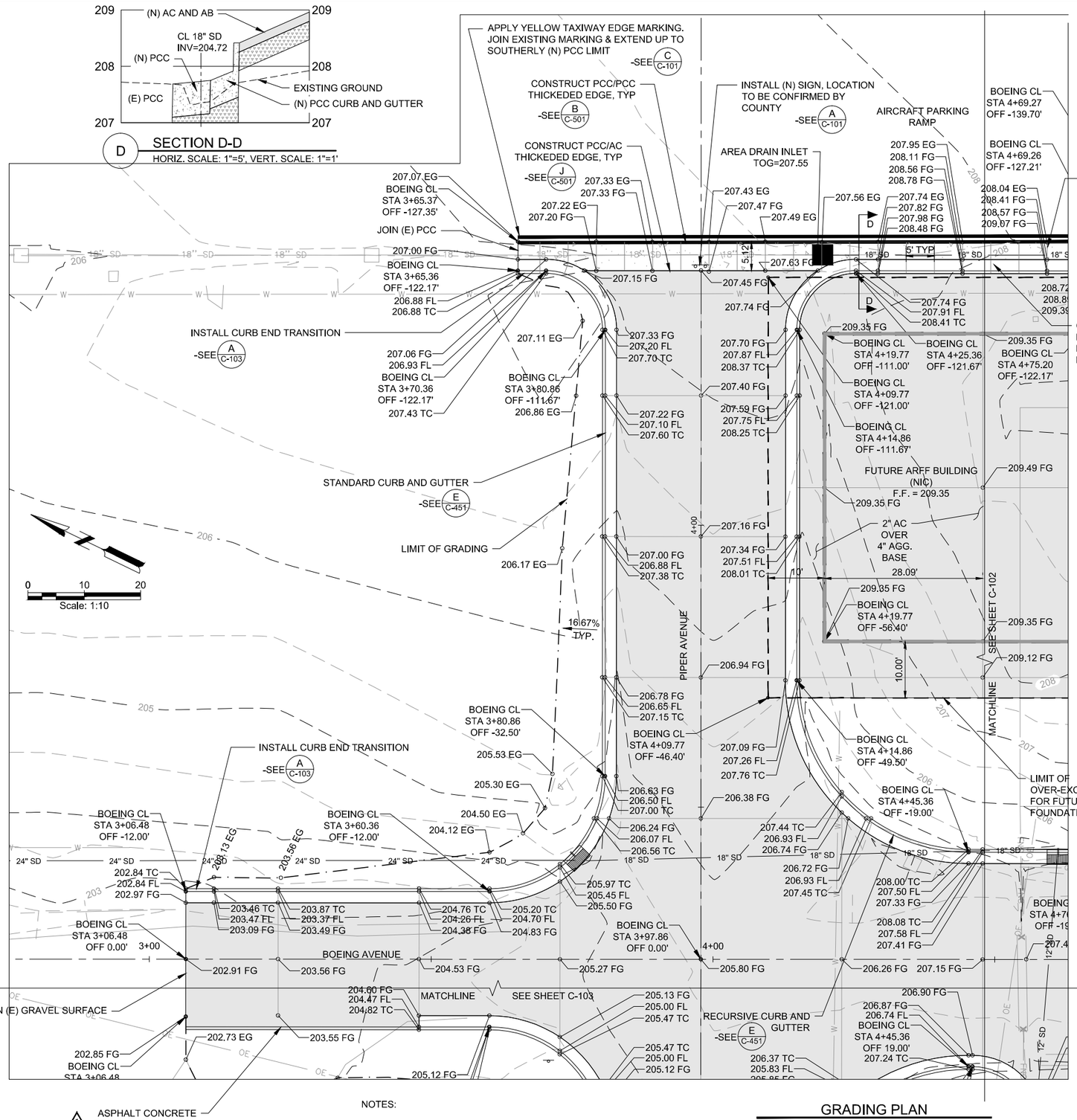
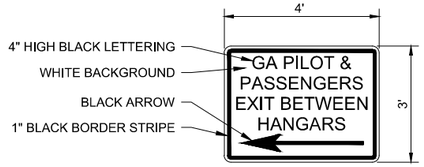


1 ASPHALT CONCRETE BERM CONSTRUCTED

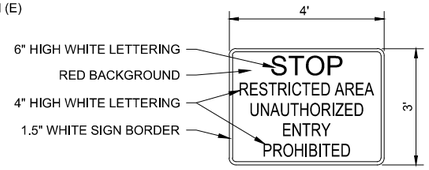
NOTES:

1. PCC CONSTRUCTION (JOINTS, JOINT SEAL, DOWELS, ETC) SHALL CONFORM TO THE DETAILS ON SHEET C-501.

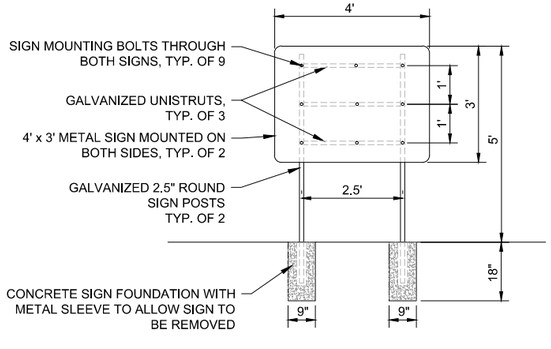
GRADING PLAN
AS SHOWN



AIRFIELD SIDE SIGN



ROADWAY SIDE SIGN



SIGN SPECIFICATIONS SHALL MEET THE SAME REQUIREMENTS AS SECURITY FENCE SIGNAGE, SEE DETAIL E/C-631.

A RESTRICTED AREA SIGN
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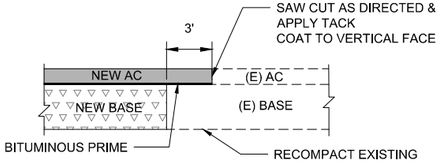

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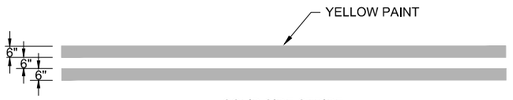

SOLID SIDE STRIPE

C TAXIWAY EDGE MARKING
NO SCALE

RECORD DRAWING

Mead & Hunt
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REGISTERED PROFESSIONAL ENGINEER
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NO. 71754
Exp. date: 12/31/13
CIVIL
STATE OF CALIFORNIA

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COUNTY OF HUMBOLDT
PHASE 1 - SITE AND CIVIL IMPROVEMENTS
FOR THE ARFF FACILITY
ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION
1 RECORD DRAWINGS - JULY 2014

AIP NO.: 3-06-0010-32
M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: JTL
DRAWN BY: POM
CHECKED BY: JTL/LBM
DO NOT SCALE DRAWINGS

SHEET CONTENTS
GRADING PLAN-1

C-101

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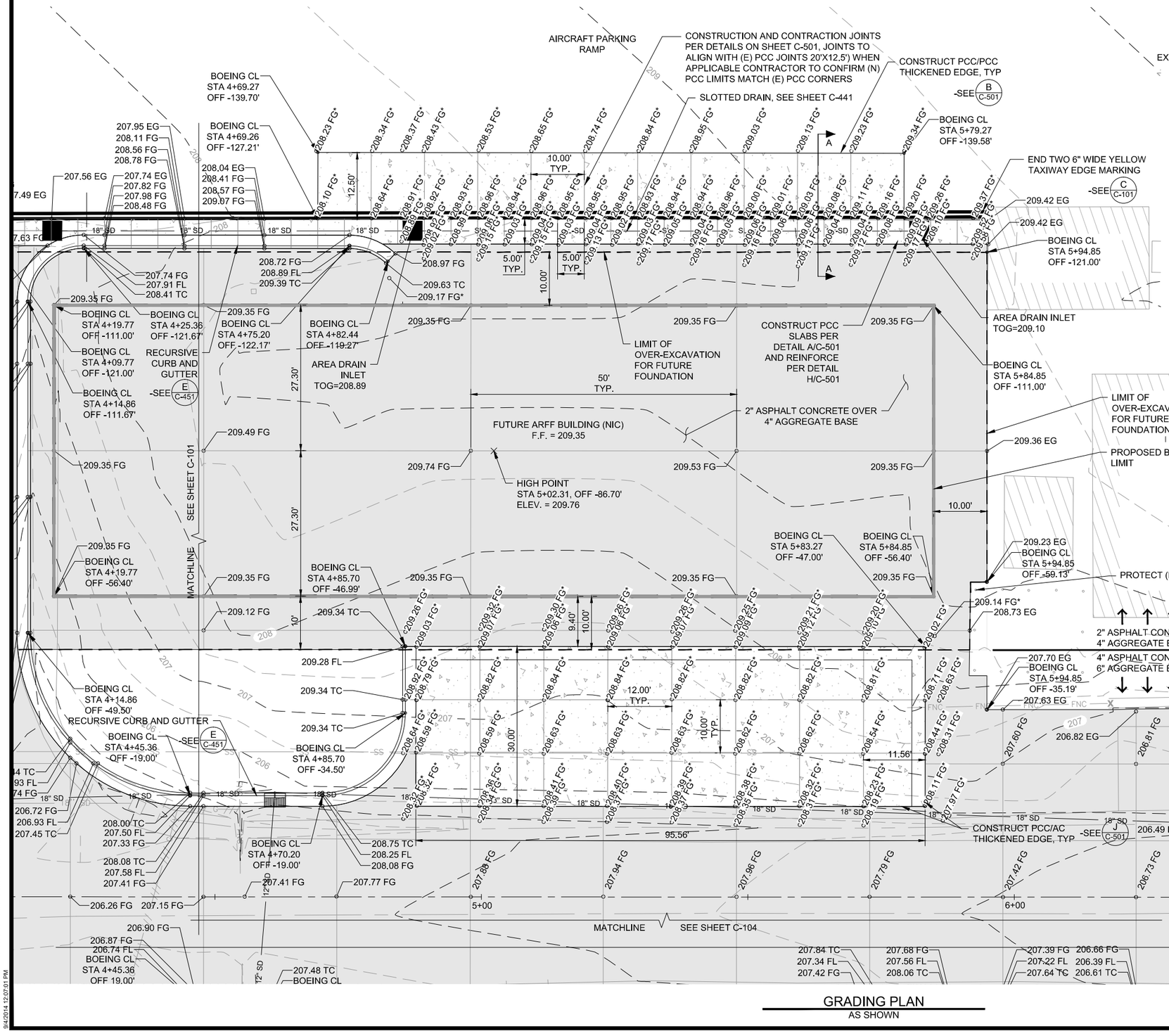
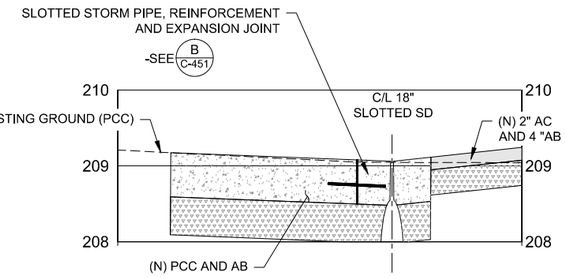
⚠1 * NOTE: FINISH GROUND ELEVATIONS MARKED WITH AN ASTERISK INDICATE ELEVATIONS SUBMITTED AS PART OF THE PCC SURVEY.





A SECTION A-A
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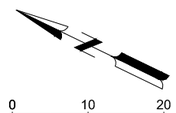

⚠1 ASPHALT CONCRETE LIMIT EXTENDED FROM DESIGN LIMIT

⚠1 AREA DRAIN INSTALLED APPROXIMATELY 3' SOUTH OF DESIGN LOCATION

3' WIDE ASPHALT CONCRETE PAVEMENT JOIN -SEE B C-101

NOTES:

1. PCC CONSTRUCTION (JOINTS, JOINT SEAL, DOWELS, ETC) SHALL CONFORM TO THE DETAILS ON SHEET C-501.

GRADING PLAN
AS SHOWN

RECORD DRAWING

Mead & Hunt

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CIVIL
STATE OF CALIFORNIA

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COUNTY OF HUMBOLDT
PHASE 1 - SITE AND CIVIL IMPROVEMENTS FOR THE ARFF FACILITY

ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION

⚠1 **RECORD DRAWINGS - JULY 2014**

AIP NO.: 3-06-0010-32
M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: JTL
DRAWN BY: POM
CHECKED BY: JTL/LBM

DO NOT SCALE DRAWINGS

SHEET CONTENTS
GRADING PLAN-2

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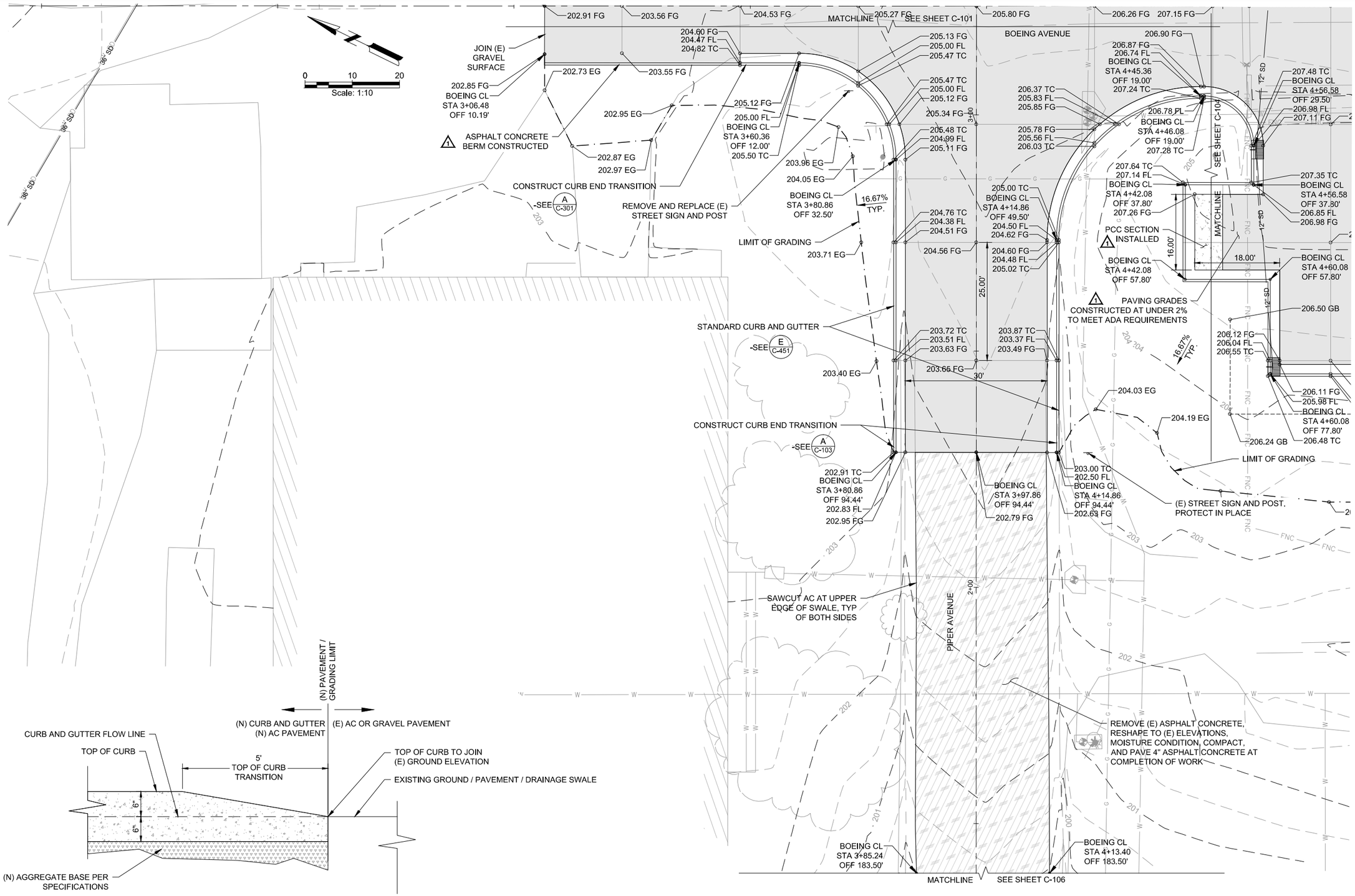

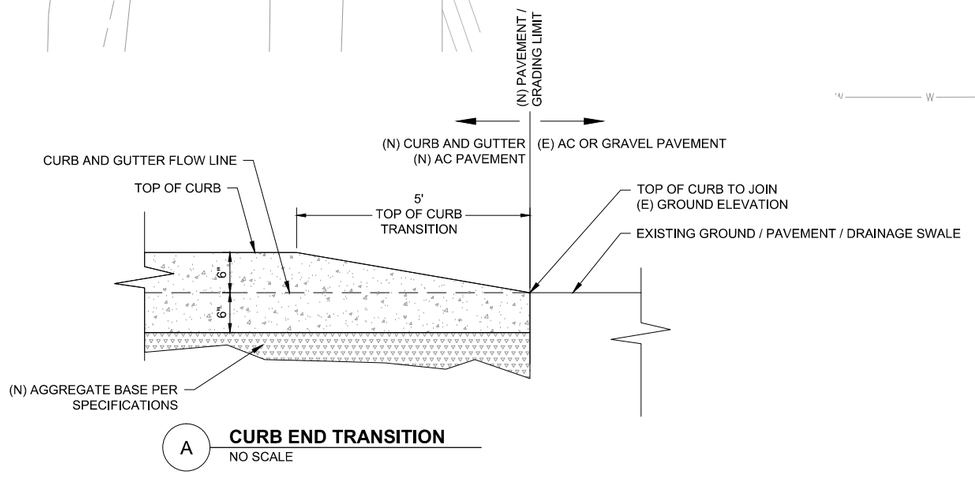

A **CURB END TRANSITION**
NO SCALE

GRADING PLAN
AS SHOWN

RECORD DRAWING

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Santa Rosa, CA 95403
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meadhunt.com

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COUNTY OF HUMBOLDT
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REVISION
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DATE: AUGUST 2014
DESIGNED BY: JTL
DRAWN BY: POM
CHECKED BY: JTL/LBM

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SHEET CONTENTS
GRADING PLAN-3

C-103

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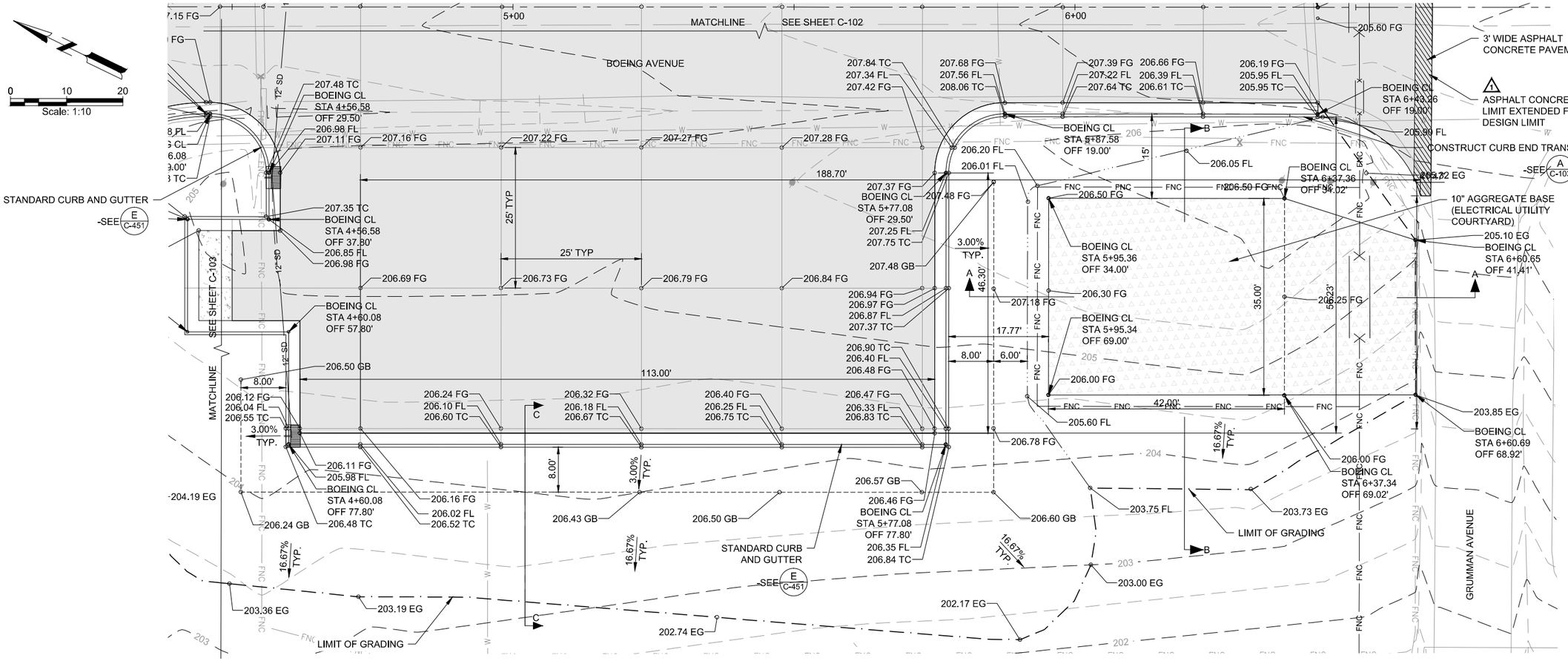

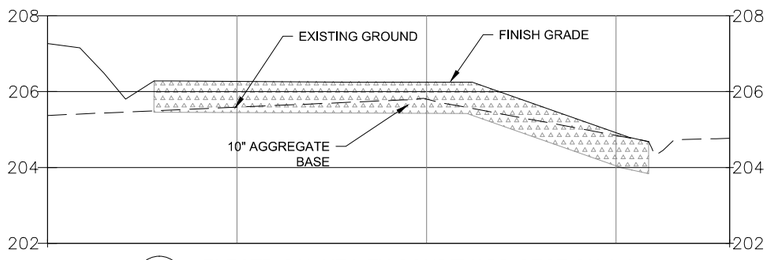

A ELECTRICAL UTILITY COURTYARD SECTION A-A
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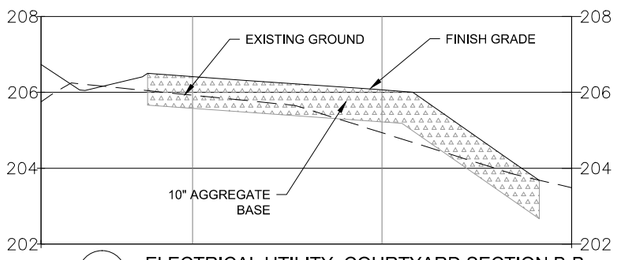

B ELECTRICAL UTILITY COURTYARD SECTION B-B
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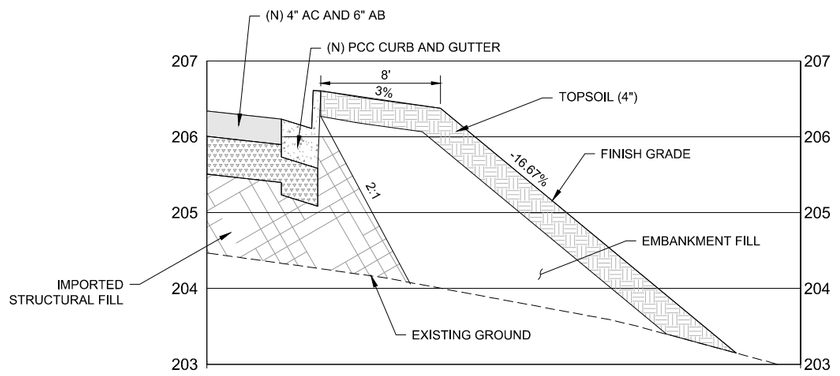

C SECTION C-C
HORIZ. SCALE: 1"=10', VERT. SCALE: 1"=1'

GRADING PLAN
AS SHOWN

RECORD DRAWING

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Suite 100
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phone: 707-526-5010
meadhunt.com

REGISTERED PROFESSIONAL ENGINEER
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NO. 71754
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COUNTY OF HUMBOLDT
PHASE 1 - SITE AND CIVIL IMPROVEMENTS
FOR THE ARFF FACILITY

ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION

1 RECORD DRAWINGS - JULY 2014

AIP NO.: 3-06-0010-32
M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: JTL
DRAWN BY: POM
CHECKED BY: JTL/LBM

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SHEET CONTENTS
GRADING PLAN-4

C-104

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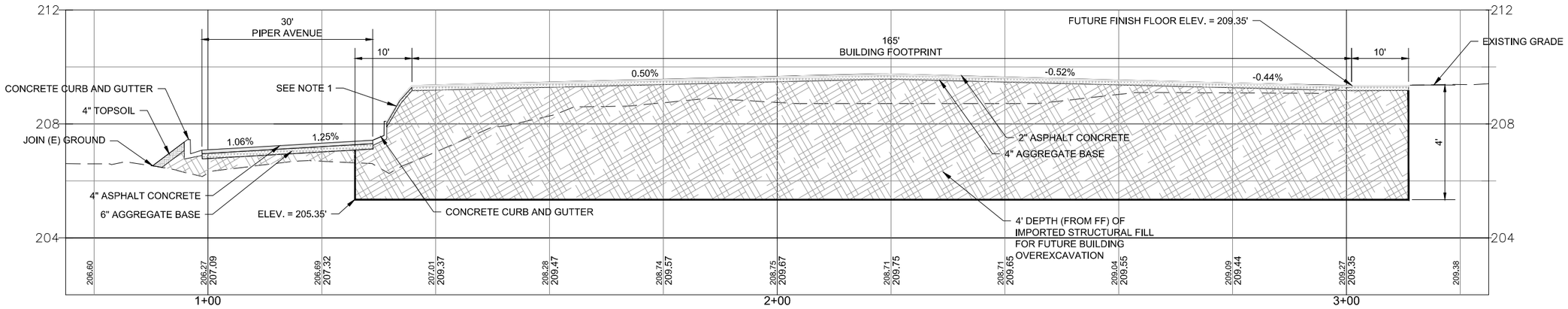
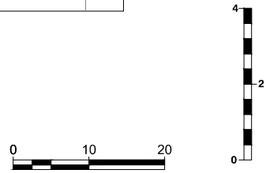
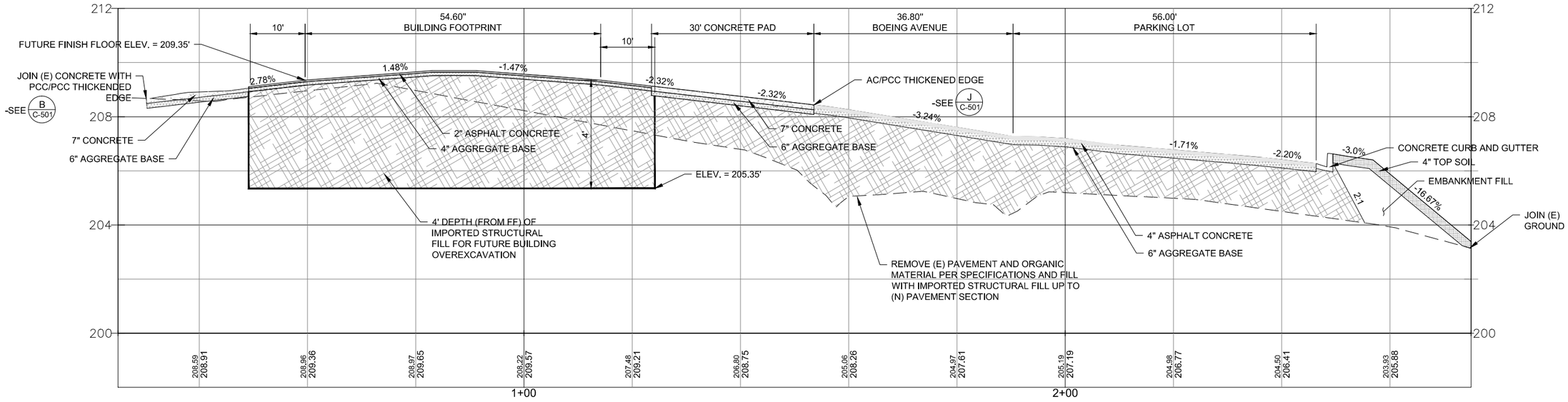


A TYPICAL SECTION

HORIZ SCALE: 1" = 10' / VERTICAL SCALE: 1" = 2'





B TYPICAL SECTION

HORIZ SCALE: 1" = 10' / VERTICAL SCALE: 1" = 2'

NOTES:

1. THE INTENT OF THE 2 INCHES OF ASPHALT CONCRETE OVER 4 INCHES OF AGGREGATE BASE IS TO PROTECT THE BUILDING OVEREXCAVATION UNTIL THE BUILDING CAN BE CONSTRUCTED. DUE TO THE SLOPE FROM THE TOP OF THE FUTURE BUILDING PAD TO THE TOP BACK OF CURB, THE 2" SECTION OF ASPHALT CONCRETE WILL NOT BE TESTED FOR COMPACTION.
2. SECTIONS PROVIDE GENERAL AND APPROXIMATE SLOPES. CONTRACTOR TO USE THE GRADING PLANS FOR ACTUAL ELEVATIONS AND SLOPES.

TYPICAL SECTIONS

AS SHOWN

RECORD DRAWING

Mead & Hunt

Mead & Hunt, Inc.
133 Aviation Boulevard,
Suite 100
Santa Rosa, CA 95403
phone: 707-526-5010
meadhunt.com

REGISTERED PROFESSIONAL ENGINEER
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COUNTY OF HUMBOLDT

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REVISION

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M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: JTL
DRAWN BY: POM
CHECKED BY: JTL/LBM

DO NOT SCALE DRAWINGS

SHEET CONTENTS
TYPICAL SECTIONS

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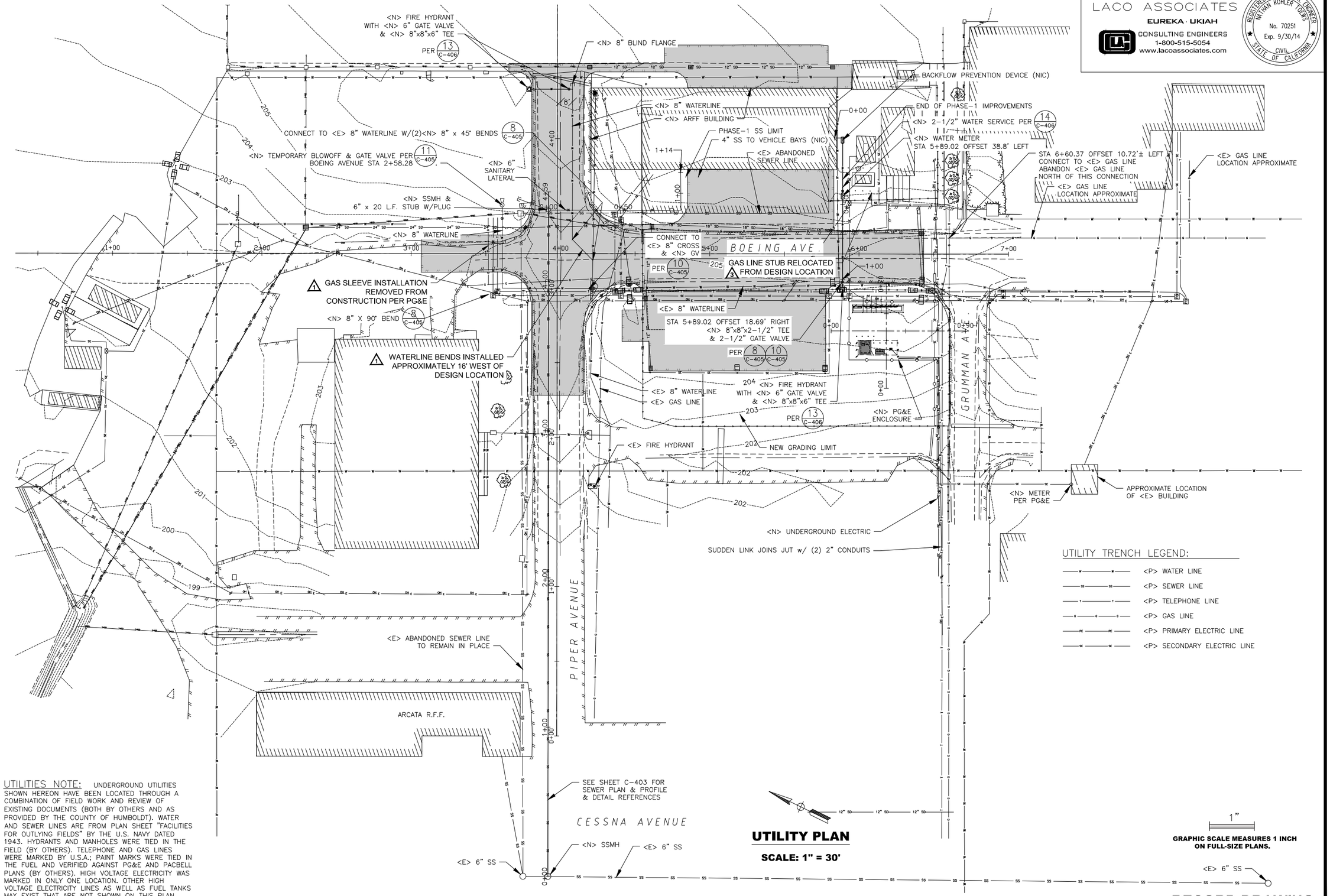

UTILITIES NOTE: UNDERGROUND UTILITIES SHOWN HEREON HAVE BEEN LOCATED THROUGH A COMBINATION OF FIELD WORK AND REVIEW OF EXISTING DOCUMENTS (BOTH BY OTHERS AND AS PROVIDED BY THE COUNTY OF HUMBOLDT). WATER AND SEWER LINES ARE FROM PLAN SHEET "FACILITIES FOR OUTLYING FIELDS" BY THE U.S. NAVY DATED 1943. HYDRANTS AND MANHOLES WERE TIED IN THE FIELD (BY OTHERS). TELEPHONE AND GAS LINES WERE MARKED BY U.S.A.; PAINT MARKS WERE TIED IN THE FUEL AND VERIFIED AGAINST PG&E AND PACBELL PLANS (BY OTHERS). HIGH VOLTAGE ELECTRICITY WAS MARKED IN ONLY ONE LOCATION. OTHER HIGH VOLTAGE ELECTRICITY LINES AS WELL AS FUEL TANKS MAY EXIST THAT ARE NOT SHOWN ON THIS PLAN.

UTILITY PLAN

SCALE: 1" = 30'

1"
GRAPHIC SCALE MEASURES 1 INCH ON FULL-SIZE PLANS.

RECORD DRAWING

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COUNTY OF HUMBOLDT
PHASE 1 - SITE AND CIVIL IMPROVEMENTS FOR THE ARFF FACILITY
ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION

1 **RECORD DRAWINGS - JULY 2014**

APN NO. 03-06-0010-32
M&H NO. 0822900-120614
DATE: AUGUST 2012
DESIGNED BY: NKT
DRAWN BY: JDB/DAN/JB
CHECKED BY: NKT

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SHEET CONTENTS
UTILITY PLAN

Sep 04,2014 - 12:09pm
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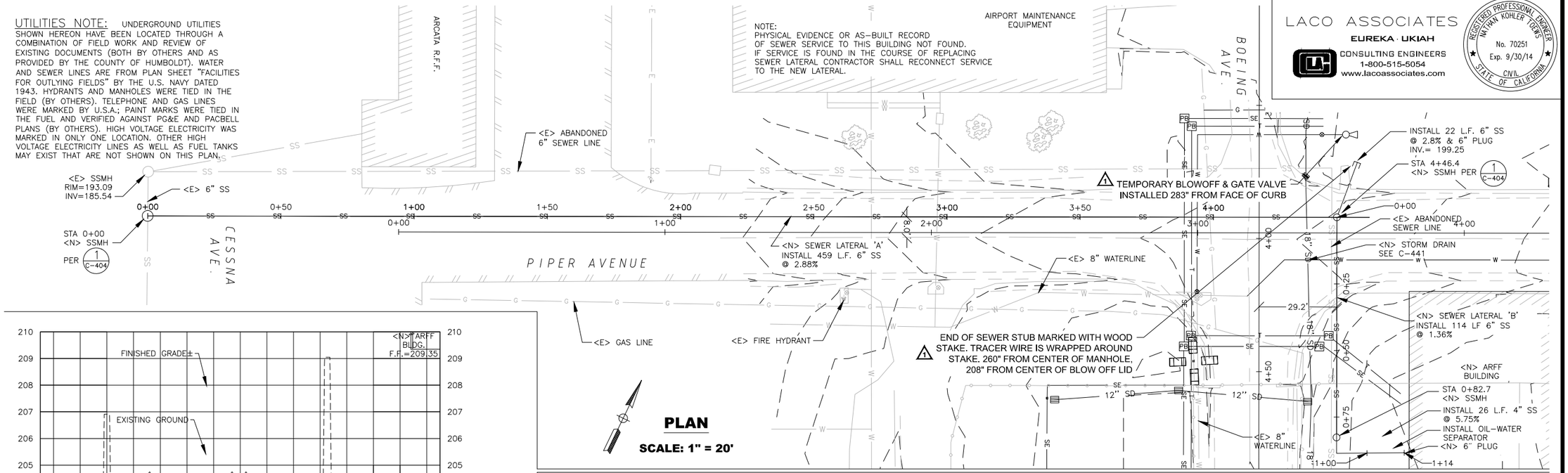
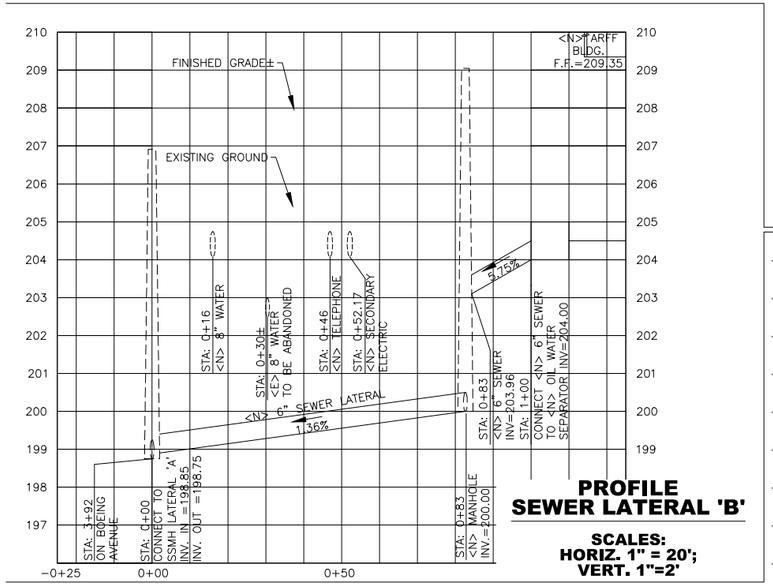
UTILITIES NOTE: UNDERGROUND UTILITIES SHOWN HEREON HAVE BEEN LOCATED THROUGH A COMBINATION OF FIELD WORK AND REVIEW OF EXISTING DOCUMENTS (BOTH BY OTHERS AND AS PROVIDED BY THE COUNTY OF HUMBOLDT). WATER AND SEWER LINES ARE FROM PLAN SHEET "FACILITIES FOR OUTLYING FIELDS" BY THE U.S. NAVY DATED 1943. HYDRANTS AND MANHOLES WERE TIED IN THE FIELD (BY OTHERS). TELEPHONE AND GAS LINES WERE MARKED BY U.S.A.; PAINT MARKS WERE TIED IN THE FUEL AND VERIFIED AGAINST PG&E AND PACBELL PLANS (BY OTHERS). HIGH VOLTAGE ELECTRICITY WAS MARKED IN ONLY ONE LOCATION. OTHER HIGH VOLTAGE ELECTRICITY LINES AS WELL AS FUEL TANKS MAY EXIST THAT ARE NOT SHOWN ON THIS PLAN.

NOTE:
PHYSICAL EVIDENCE OR AS-BUILT RECORD OF SEWER SERVICE TO THIS BUILDING NOT FOUND. IF SERVICE IS FOUND IN THE COURSE OF REPLACING SEWER LATERAL CONTRACTOR SHALL RECONNECT SERVICE TO THE NEW LATERAL.



PLAN
SCALE: 1" = 20'

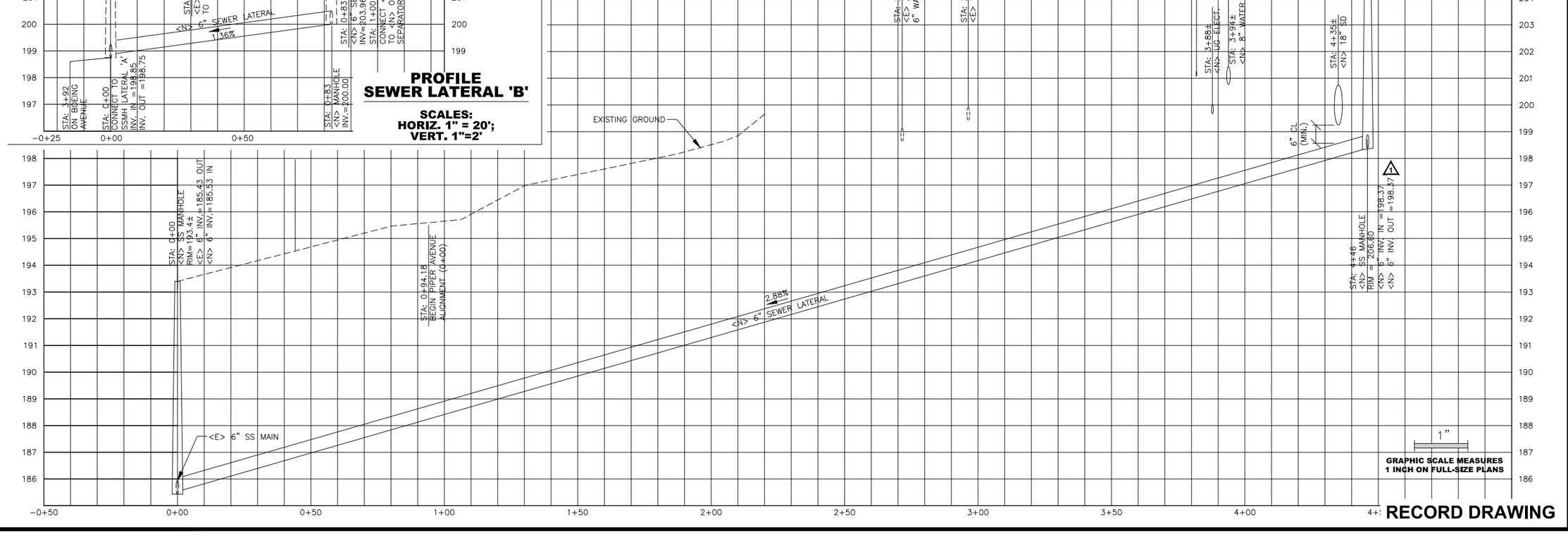


PROFILE SEWER LATERAL 'B'

SCALES: HORIZ. 1" = 20'; VERT. 1"=2'

PROFILE - SEWER LATERAL 'A'

SCALES: HORIZ. 1" = 20'; VERT. 1"=2'



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SEWER PLAN & PROFILE

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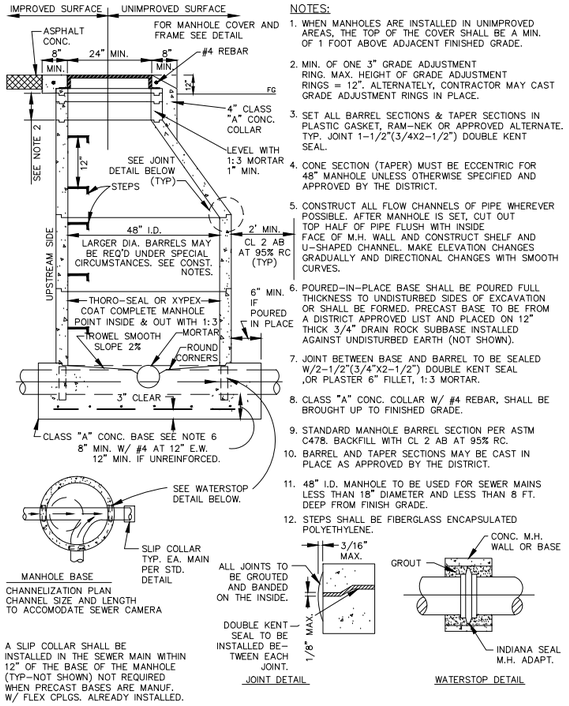
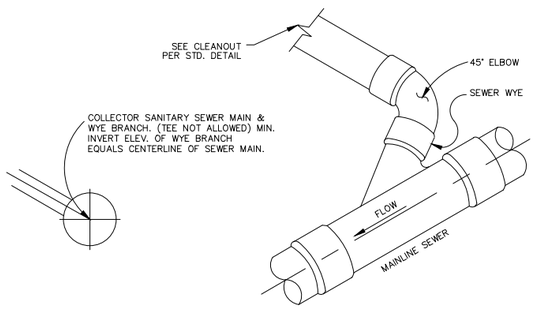


NOTES:

1. WHEN MANHOLES ARE INSTALLED IN UNIMPROVED AREAS, THE TOP OF THE COVER SHALL BE A MIN. OF 1 FOOT ABOVE ADJACENT FINISHED GRADE.
2. MIN. OF ONE 3" GRADE ADJUSTMENT RING. MAX. HEIGHT OF GRADE ADJUSTMENT RINGS = 12". ALTERNATELY, CONTRACTOR MAY CAST GRADE ADJUSTMENT RINGS IN PLACE.
3. SET ALL BARREL SECTIONS & TAPER SECTIONS IN PLASTIC GASKET, RAM-NEK OR APPROVED ALTERNATE. TYP. JOINT 1-1/2"(3/4X2-1/2") DOUBLE KENT SEAL.
4. CONE SECTION (TAPER) MUST BE ECCENTRIC FOR 48" MANHOLE UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE DISTRICT.
5. CONSTRUCT ALL FLOW CHANNELS OF PIPE WHEREVER POSSIBLE. AFTER MANHOLE IS SET, CUT OUT TOP HALF OF PIPE FLUSH WITH INSIDE FACE OF M.H. WALL AND CONSTRUCT SHELF AND U-SHAPED CHANNEL. MAKE ELEVATION CHANGES GRADUALLY AND DIRECTIONAL CHANGES WITH SMOOTH CURVES.
6. POURED-IN-PLACE BASE SHALL BE POURED FULL THICKNESS TO UNDISTURBED SIDES OF EXCAVATION OR SHALL BE FORMED. PRECAST BASE TO BE FROM A DISTRICT APPROVED LIST AND PLACED ON 12" THICK 3/4" DRAIN ROCK SUBBASE INSTALLED AGAINST UNDISTURBED EARTH (NOT SHOWN).
7. JOINT BETWEEN BASE AND BARREL TO BE SEALED W/2-1/2"(3/4"X2-1/2") DOUBLE KENT SEAL ,OR PLASTER 6" FILLET, 1:3 MORTAR.
8. CLASS "A" CONC. COLLAR W/ #4 REBAR, SHALL BE BROUGHT UP TO FINISHED GRADE.
9. STANDARD MANHOLE BARREL SECTION PER ASTM C478. BACKFILL WITH CL 2 AB AT 95% RC.
10. BARREL AND TAPER SECTIONS MAY BE CAST IN PLACE AS APPROVED BY THE DISTRICT.
11. 48" I.D. MANHOLE TO BE USED FOR SEWER MAINS LESS THAN 18" DIAMETER AND LESS THAN 8 FT. DEEP FROM FINISH GRADE.
12. STEPS SHALL BE FIBERGLASS ENCAPSULATED POLYETHYLENE.

1 STANDARD 48" DIA. PRECAST CONCRETE MANHOLE (S-201)

N.T.S.



NEW SEWER LATERAL CONNECTIONS

1. DUCTILE IRON PIPE.
2. POLYVINYL CHLORIDE (PVC) PIPE, SDR-35 WHEN USED WITH A MANUFACTURED "Y" SPECIFICALLY DESIGNED FOR PVC LATERALS THE "Y" SHALL BE OF THE SAME MATERIAL AS THE SEWER MAIN.

LATERAL CONNECTIONS TO EXISTING MAINS

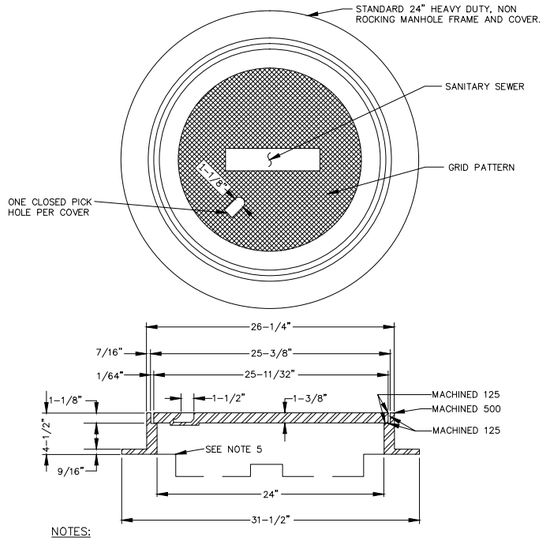
1. PVC. (SDR-35)
   4":CUT IN WYE WITH "CAULDER CPLG." OR TAP WITH ROMAC SEWER SADDLE.
2. LATERALS GREATER THAN 4" DIA. REQUIRE MANHOLE CONNECTION TO MAIN.

NOTES:

1. THE SEWER SERVICE LATERAL SHALL BE OF SUFFICIENT DEPTH TO ADEQUATELY SERVE THE BUILDING SITE, AND IN NO CASE SHALL BE LESS THAN 3 FT. DEEP AT THE BACK OF THE P.U.E. UNLESS OTHERWISE AUTHORIZED BY THE DISTRICT.
2. WHERE PROBLEMS ARE ANTICIPATED IN PROVIDING SEWER SERVICE TO A GIVEN BUILDING SITE, THE LATERAL INVERT AT THE BACK OF THE P.U.E. SHALL BE STAKED BY THE OWNER'S ENGINEER.
3. WHERE DRIVEWAY LOCATION INFORMATION IS KNOWN, SERVICE LATERAL SHALL BE LOCATED OUTSIDE DRIVEWAY APPROACH DROP CURB.
4. MINIMUM 2% SLOPE EXCEPT WHERE A VARIATION IS SPECIFICALLY APPROVED BY THE DISTRICT.

4 SEWER SERVICE LATERAL (S-208)

N.T.S.



NOTES:

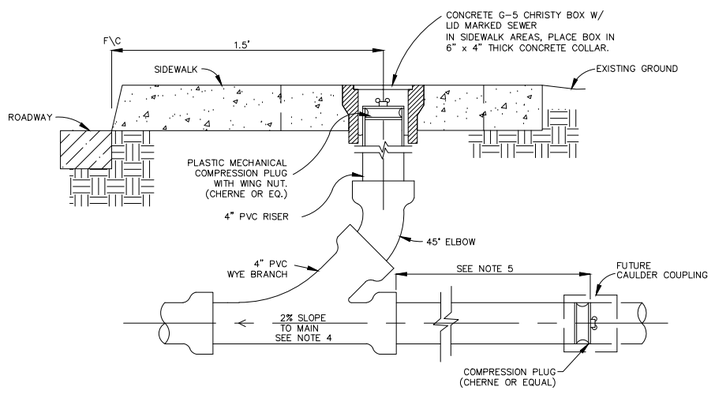
1. SPECIFY SANITARY SEWER WHEN ORDERING. ALL CASTING SHALL BE DIPPED IN APPROVED ASPHALT PAINT.
2. ALL MATERIAL USED IN MANUFACTURING SHALL CONFORM TO A.S.T.M. DESIGNATION A-159-G3000, OR OF UNITED STATES GOVERNMENT SPECIFICATIONS QQI-652B.
3. MINIMUM WEIGHT COMPONENTS: COVER - 130 POUNDS FRAME - 135 POUNDS
4. PROVIDE D & L SUPPLY A-1024 MANHOLE FRAME & COVER OR APPROVED EQUAL.
5. MANHOLES IN NON-PAVED AREAS SHALL HAVE "DUST" COVERS AT THE OPTION OF DISTRICT.

2 STANDARD MANHOLE FRAME AND COVER (S-205)

N.T.S.

NOTES:

1. THE SEWER SERVICE LATERAL SHALL BE OF SUFFICIENT DEPTH TO ADEQUATELY SERVE THE BUILDING SITE, AND IN NO CASE SHALL BE LESS THAN 3 FT. IN DEPTH AT THE BACK OF THE P.U.E. UNLESS OTHERWISE AUTHORIZED BY THE DISTRICT.
2. WHERE PROBLEMS ARE ANTICIPATED IN PROVIDING SEWER SERVICE TO A GIVEN BUILDING SITE, THE LATERAL INVERT AT THE BACK OF THE P.U.E. SHALL BE STAKED BY THE OWNER'S ENGINEER.
3. WHERE SERVICE LATERAL IS LOCATED IN DRIVEWAY APPROACH, THE CLEANOUT IS TO BE LOCATED 18" BEHIND APRON.
4. MINIMUM 2% EXCEPT WHERE A VARIATION IS SPECIFICALLY APPROVED BY THE DISTRICT.
5. A MINIMUM OF 12" WHEN CONNECTING TO EXISTING SEWER LATERAL AND EXTEND TO 1' BEHIND P.U.E. OR 10' BACK OF SIDEWALK.



5 SEWER SERVICE LATERAL CLEANOUT (SS-209)

N.T.S.

1"

GRAPHIC SCALE MEASURES 1 INCH ON FULL-SIZE PLANS

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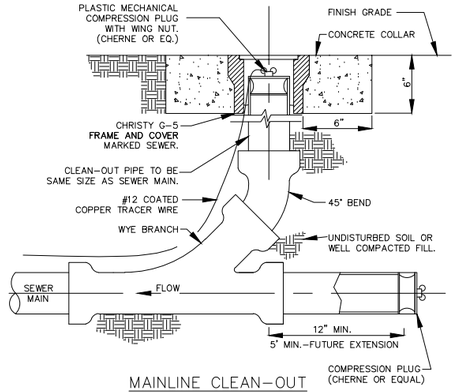
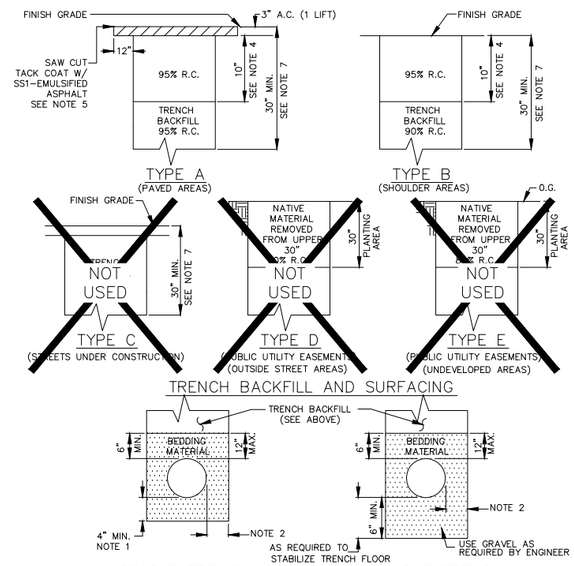


MAINLINE CLEAN-OUT

3 MAINLINE CLEANOUT (SS-210)

N.T.S.



NOTES:

1. 1/4 PIPE O.D. OR 4" MIN. WHEN EXCAVATION IS IN ROCKY GROUND.
2. PIPE DIAMETER 18" OR LESS: 6" MIN., 9" MAX/PIPE DIA. GREATER THAN 18": 9" MIN., 12" MAX.
3. RELATIVE COMPACTION DESIGNATED R.C.
4. THE MINIMUM STREET STRUCTURAL SECTION SHALL BE 3" A.C. ON 10" A.B. OR MATCH EXISTING PAVEMENT, WHICHEVER IS THICKER, SPECIFIED ON PLANS, OR REQUIRED BY ENCROACHMENT PERMIT.
5. SAW CUT PAVEMENT 12 INCHES FROM EDGE OF TRENCH AFTER TRENCH IS BACKFILLED PER HUMBOLDT CO. SPEC.
6. MINIMUM PIPE COVER SHALL BE 36" FROM TOP OF PIPE.
7. NEW STREETS AND SHOULDER AREAS UNDER CONSTRUCTION SHALL BE COMPACTED TO 95% RELATIVE COMPACTION FOR A MINIMUM DEPTH OF 30" PER CALTRANS SECTION 19-5.03.
8. INSTALL #12 COPPER COATED TRACER WIRE ON/OVER ALL NON-METALLIC MAINS AND SERVICE LINES.

6 WATER AND SEWER STANDARD TRENCH DETAILS (SS-200A)

N.T.S.

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COUNTY OF HUMBOLDT
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ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION

APN NO. 03-06-0010-32
M&H NO. 0822900-120614
DATE: AUGUST 2012
DESIGNED BY: NKT
DRAWN BY: JDB/DAN/JB
CHECKED BY: NKT

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SHEET CONTENTS
UTILITY DETAILS - 1

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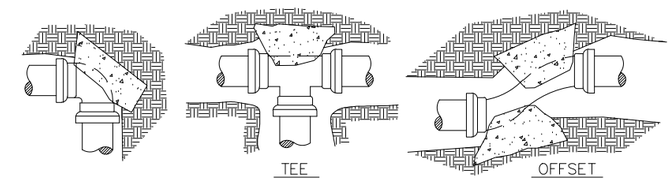
I. MATERIAL SPECIFICATIONS:

1. BEDDING MATERIAL:
   - A.) PEA GRAVEL– CONFORMING TO CALTRANS SECTION 68–1.025, PERMEABLE MATERIAL, CLASS 1, TYPE B.
   - B.) CL 2 AB. – CONFORMING TO CALTRANS SECTION 26–1.02A, CLASS 2 AGGRIGATE BASE, 3/4" MAXIMUM.
2. AGGREGATE BASE:
   - A.) CL 2 AB. – CONFORMING TO CALTRANS SECTION 26–1.02A, CLASS 2 AGGRIGATE BASE, 3/4" MAXIMUM.
3. DRAIN ROCK:
   - A.) NO. 3 ROCK– SHALL BE A WASHED ROCK OF THE NOMINAL SIZE DESIGNATED AS 1" TO 2".
4. GABION ROCK:
   - A.) GABION ROCK– SHALL BE A WASHED OR NON–WASHED ROCK OF THE NOMINAL SIZE DESIGNATED AS 4" TO 12".
5. NATIVE MATERIAL:
   - A.) NATIVE MATERIAL– NATIVE MATERIAL USED AS BACKFILL SHALL BE FREE OF ORGANIC MATTER, REFUSE OR OTHER UNSATISFACTORY MATERIALS, STONES, OR LUMPS GREATER THAN OR EXCEEDING 3" IN GREATEST DIMENSION.
6. SHALE MATERIAL:
   - A.) SHALE MATERIAL– SHALE MATERIAL SHALL MEET THE QUALITY REQUIREMENTS FOR CL 2 AB AND CONTAIN ENOUGH FINE MATERIALS TO BE ABLE TO BE COMPACTED TO 95% RC IN A TIGHT SUSTAINABLE MATRIX.

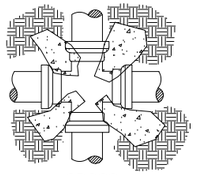
II. COMPACTION REQUIREMENTS:

1. BEDDING MATERIAL:
   - A.) PEA GRAVEL SHALL EITHER BE HAND TAMPED UNDER AND AT THE SIDES OF THE PIPES IN LIFTS NOT GREATER THAN 6" OR SHAPED AND COMPACTED PRIOR TO PIPE INSTALLATION.
   - B.) CL 2 AB SHALL MEET THE ABOVE REQUIREMENTS AND SHALL ADDITIONALLY BE COMPACTED UNDER THE PIPE TO 90% RC AND UP TO THE SPRING LINE OF THE PIPE TO 90% RC IN TWO SEPERATE LIFTS RESULTING IN A FIRM UNYIELDING BEDDED TRENCH. JETTING SHALL NOT BE ALLOWED.
2. AGGREGATE BASE:
   - A.) AGGREGATE BASE SHALL BE COMPACTED WITH MECHANICAL HAND OPERATED, OR EQUIPMENT MOUNTED OR TOWED METHODS TO ACHIEVE THE REQUIRED COMPACTION. IN ANY EVENT, COMPACTION METHODS SHALL NOT DAMAGE THE PIPE, EXCEED THE LOADING CAPACITY OF THE PIPE, OR RESULT IN A CHANGE TO THE DESIGN PIPE SLOPE REQUIRED OR DEFLECTION UNITS. JETTING SHALL NOT BE ALLOWED.
3. DRAIN ROCK:
   - A.) DRAIN ROCK SHALL BE CONSOLIDATED WITH A SURFACE VIBRATOR.
4. SHALE MATERIAL:
   - A.) SHALE SHALL MEET THE COMPACTION REQUIREMENTS FOR CL 2 AB.
5. NATIVE MATERIAL:
   - A.) NATIVE MATERIAL COMPACTED TO 90% RC SHALL MEET THE COMPACTION REQUIREMENTS OF CL 2 AB. NATIVE MATERIAL COMPACTED TO LESS THAN 90% RC MAY BE COMPACTED BY WHEEL ROLLING.

7 WATER AND SEWER STANDARD TRENCH DETAIL NOTES (SS-200B) N.T.S.



TYPICAL CONC. BLOCKING SHOWN IN PERSPECTIVE



NOTES:

1. SAFE BEARING LOAD OF SOIL FOR HORIZONTAL THRUST SHALL NOT BE EXCEEDED.
2. CONCRETE BLOCKING, CAST–IN–PLACE, TO EXTEND FROM BELLS OF FITTINGS TO UNDISTURBED SOIL AND ENTIRE BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
3. IN USING THE THRUST BLOCKING TABLE BELOW, ASSUME 2000 P.S.F. BEARING CAPACITY UNLESS OTHERWISE SHOWN ON THE PLANS. THE DESIGN ENGINEER SHALL SPECIFY THRUST BLOCKING REQUIREMENTS FOR ALL OTHER SOIL BEARING CONDITIONS.
4. FOR PLUGGED LEG(S) OF TEE OR CROSS, USE HARNESS TYPE BLOCKING AS SHOWN ON THE STD DETAILS AND CONCRETE BLOCKING INDICATED IN THE TABLE BELOW.

MIN REQ'D BEARING AREA IN SF PER 100 P.S.I. TEST PRESSURE *						
	SOIL BRG CAPACITY	HARNESS BLOCKS	TEES & DEAD ENDS	90° BENDS	45° BENDS	22–1/2° BENDS
4"	1000 2000	2 1	2 1	3 1.5	2 1	1 0.5
6"	1000 2000	4 2	4 2	6 3	3 2	2 1
8"	1000 2000	7 4	7 4	10 5	5 3	3 2
10"	1000 2000	12 6	12 6	17 8.5	10 5	5 25
12"	1000 2000	16 8	16 8	22 11	12 6	6 3

* MULTIPLY NO. IN TABLE BY TEST PRESSURE & DIVIDE BY 100

8 CONCRETE THRUST BLOCKING (WS-101) N.T.S.

1"
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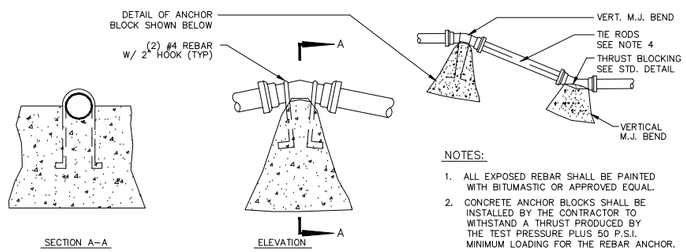
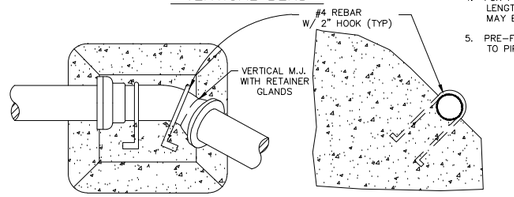


TYPICAL CONCRETE ANCHOR BLOCK FOR VERTICAL BEND



TYPICAL CONCRETE ANCHOR BLOCK FOR COMBINATION HORIZONTAL – VERTICAL BEND

NOTES:

1. ALL EXPOSED REBAR SHALL BE PAINTED WITH BITUMASTIC OR APPROVED EQUAL.
2. CONCRETE ANCHOR BLOCKS SHALL BE INSTALLED BY THE CONTRACTOR TO WITHSTAND A THRUST PRODUCED BY THE TEST PRESSURE PLUS 50 P.S.I. MINIMUM LOADING FOR THE REBAR ANCHOR.
3. USE MJ RETAINER GLANDS AT ALL FITTINGS.
4. FOR PVC PIPE, TIE RODS (THREADED FULL LENGTH) BETWEEN FITTINGS (MIN 2 REQ'D) MAY BE USED IN LIEU OF RETAINING GLANDS.
5. PRE–FORMED #4 REBAR SHALL CONFORM TO PIPE DIAMETER.

9 CONCRETE ANCHOR BLOCKS FOR VERTICAL BENDS (WS-102) N.T.S.

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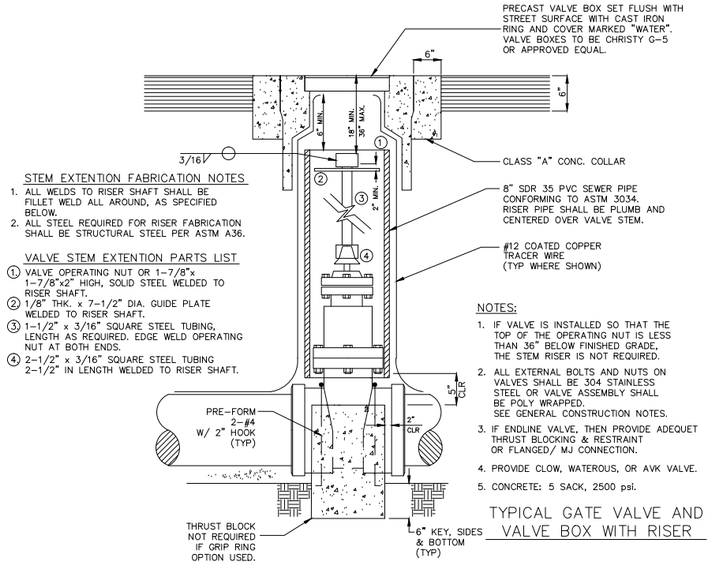


STEM EXTENTION FABRICATION NOTES

1. ALL WELDS TO RISER SHAFT SHALL BE FILLET WELD ALL AROUND, AS SPECIFIED BELOW.
2. ALL STEEL REQUIRED FOR RISER FABRICATION SHALL BE STRUCTURAL STEEL PER ASTM A36.

VALVE STEM EXTENTION PARTS LIST

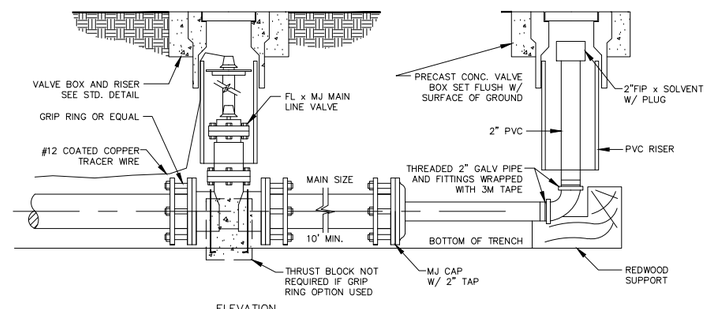
1. VALVE OPERATING NUT OR 1–7/8"x 1–7/8"x2" HIGH, SOLID STEEL WELDED TO RISER SHAFT.
2. 1/8" THK. x 7–1/2" DIA. GUIDE PLATE WELDED TO RISER SHAFT.
3. 1–1/2" x 3/16" SQUARE STEEL TUBING, LENGTH AS REQUIRED. EDGE WELD OPERATING NUT AT BOTH ENDS.
4. 2–1/2" x 3/16" SQUARE STEEL TUBING 2–1/2" IN LENGTH WELDED TO RISER SHAFT.

NOTES:

1. IF VALVE IS INSTALLED SO THAT THE TOP OF THE OPERATING NUT IS LESS THAN 36" BELOW FINISHED GRADE, THE STEM RISER IS NOT REQUIRED.
2. ALL EXTERNAL BOLTS AND NUTS ON VALVES SHALL BE 304 STAINLESS STEEL OR VALVE ASSEMBLY SHALL BE POLY WRAPPED. SEE GENERAL CONSTRUCTION NOTES.
3. IF ENDLINE VALVE, THEN PROVIDE ADEQUET THRUST BLOCKING & RESTRAINT OR FLANGED/ MJ CONNECTION.
4. PROVIDE CLOW, WATEROUS, OR AVK VALVE.
5. CONCRETE: 5 SACK, 2500 psi.

TYPICAL GATE VALVE AND VALVE BOX WITH RISER

10 TYPICAL GATE VALVE AND VALVE BOX WITH RISER (WS-112) N.T.S.

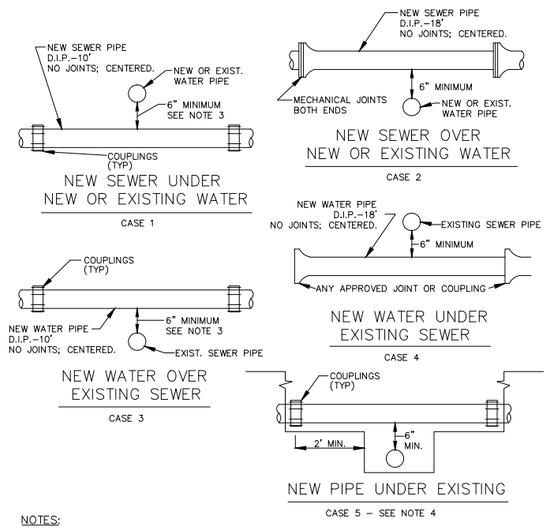


NOTES:

1. TO BE INSTALLED IN CASES WHERE MAIN MAY BE EXTENDED IN FUTURE.
2. FOR 12" PIPE SIZE OR LARGER USE FL x FL MAIN LINE VALVE, FL x MJ ADAPTER & MJ PLUG TAPPED AT BOTTOM FOR B.O.
3. ALL EXPOSED THREADS SHALL BE PAINTED WITH BITUMASTIC PAINT OR APPROVED SUB–STITUTE, AFTER NUTS ARE TIGHTENED.

BLOW–OFF WITH MAIN LINE VALVE

11 TEMPORARY BLOW-OFF WITH MAIN LINE VALVE (WS-116) N.T.S.



NOTES:

1. THIS STANDARD APPLIES TO PIPES UP TO AND INCLUDING 16" DIAMETER. ALL CROSSINGS OF LARGER DIAMETER SHALL BE AS APPROVED BY THE DISTRICT.
2. ALL NEW DUCTILE IRON SHALL BE WRAPPED IN POLYETHYLENE FILM IN TUBE FORM PER DISTRICT CONSTRUCTION SPECIFICATIONS.
3. WHERE SEWER CROSSES BELOW A WATER MAIN, WITH 1' OR MORE OF VERTICAL CLEARANCE, NO SPECIAL INSTALLATION IS REQUIRED.
4. NEW PIPE UNDER EXISTING–CASE 5 SHALL BE USED WHEN THE EXISTING PIPE HAS A JOINT OVER OR WITHIN 2' OF THE NEW TRENCH.
5. ANY PIPE–PIPE CROSSING WITH LESS THAN 6" VERTICAL CLEARANCE SHALL NOT BE INSTALLED WITHOUT APPROVAL OF THE DISTRICT.
6. WATER MAIN LOWERING PER STD. DETAIL.
7. SEE ENGINEER'S APPROVED LIST FOR APPROVED COUPLINGS.

12 PIPE - PIPE CROSSING DETAIL (WS-120) N.T.S.

RECORD DRAWING

Sep. 04, 2014 - 12:10pm
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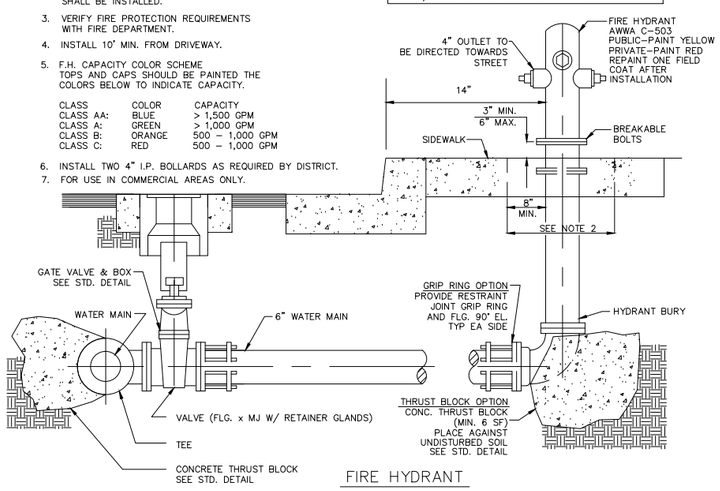
NOTES:

1. HYDRANT SHOULD BE ACROSS STREET FROM MAIN.
2. WHERE NO SIDEWALK EXISTS OR WHERE F.H. IS INSTALLED IN PLANTER STRIP, A 8" THK. x 3' SQ. CONCRETE PAD SHALL BE INSTALLED.
3. VERIFY FIRE PROTECTION REQUIREMENTS WITH FIRE DEPARTMENT.
4. INSTALL 10' MIN. FROM DRIVEWAY.
5. F.H. CAPACITY COLOR SCHEME TOPS AND CAPS SHOULD BE PAINTED THE COLORS BELOW TO INDICATE CAPACITY.

CLASS	COLOR	CAPACITY
CLASS AA:	BLUE	> 1,500 GPM
CLASS A:	GREEN	> 1,000 GPM
CLASS B:	ORANGE	500 – 1,000 GPM
CLASS C:	RED	500 – 1,000 GPM

6. INSTALL TWO 4" I.P. BOLLARDS AS REQUIRED BY DISTRICT.
7. FOR USE IN COMMERCIAL AREAS ONLY.

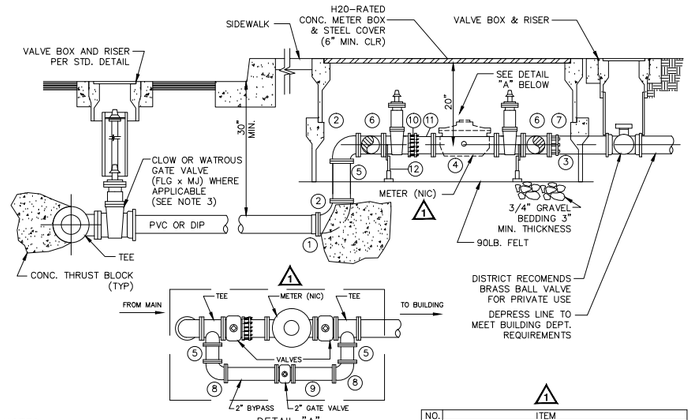
HYDRANT SCHEDULE (WET BARREL)
CLOW MODEL F960 PUMP THREADS TO MATCH ARCATA FIRE P.D. PROVIDE 1–4" AND 2–2 1/2" OUTLETS WITH 3/4" PENTAGON OPPERATING NUTS



FIRE HYDRANT

13 FIRE HYDRANT DETAIL (W - 13A)

N.T.S.



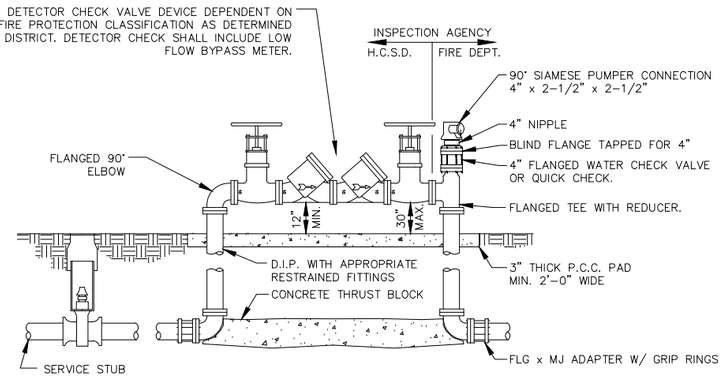
NOTES:

1. 2" SHOWN, AND MAY BE SOLVENT WELD, LARGER SIZES SHALL BE FLANGED.
2. METER BOX MUST BE SET SO THE STEEL COVER IS FLUSH WITH FINISHED SURFACE.
3. SEE GENERAL CONSTRUCTION NOTES.
4. GATE VALVES TO BE RESILIENT SEAT TYPE PER AWWA SPECIFICATION C509
5. SEE ENGINEERS APPROVED LIST FOR TAPPING SLEEVES, METER BOXES AND COVERS.
6. 2" BYPASS TO BE USED ON 2" SERVICES OR LARGER.
7. 2" GATE VALVE BYPASS MAY BE CONSTRUCTED OUTSIDE OF METER BOX IN VALVE BOX AND RISER.

⚠1 NO.	ITEM
1	FLANGE ADAPTER
2	90° ELL. (D.I.P.)
3	PVC PIECE–LENGTH AS REQUIRED.
4	D.I.P. FLANGE BY PLANE END
5	SPOOL–LENGTH AS REQUIRED (D.I.P.)
6	2" TEE (D.I.P.)
7	UNI–FLANGE OR FLG. COUPLING ADAPTER
8	2" x 90° ELL. (G.I.P.)
9	2" G.I.P. W/ 3M TAPE WRAP
10	2" FLANGE COUPLING ADAPTER
11	D.I.P. FLANGE BY PLANE END
12	PIPE SUPPORT STAND

14 2" AND LARGER WATER SERVICE INSTALLATION (WS-106)

N.T.S.



NOTES:

INSTALL FIRE HYDRANT WITHIN 50 FEET OF SIAMESE PUMPER CONNECTION, AS SHOWN ON APPROVED PLANS.

LOCATION TO BE APPROVED BY DISTRICT AND FIRE DEPARTMENT.

ALL ABOVE GROUND VALVES AND POST INDICATOR VALVES SHALL BE EQUIPPED WITH TAMPER SWITCH DEVICES AS APPROVED BY THE FIRE DEPARTMENT AND CHAINED IN THE OPEN POSITION.

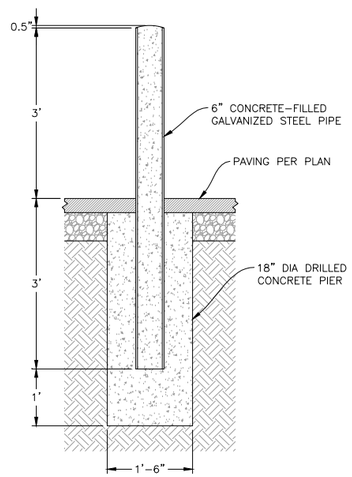
LANDSCAPING OR OTHER SCREENING AROUND THE DETECTOR CHECK VALVE SHALL BE AS SHOWN ON APPROVED PLANS.

ABOVE GROUND INSTALLATION SHOWN; BELOW GROUND INSTALLATION IN VAULT ACCEPTABLE. VAULT SHALL BE MADE WATERTIGHT OR DRAIN TO FREE OUTLET. VERIFY VAULT SIZE TO ACCOMMODATE VALVE OPERATION.

THE PUMPER CONNECTION SHOULD BE INSTALLED NOT LESS THAN 18 INCHES AND NOT MORE THAN 5 FEET ABOVE THE ADJACENT ACCESS GRADE LEVEL.

15 DETECTOR CHECK VALVE SINGLE SERVICE

N.T.S.



17 CONCRETE-FILLED PIPE BOLLARD

SCALE: 3/4" = 1'-0"

RECORD DRAWING

LACO ASSOCIATES
EUREKA · UKIAH
CONSULTING ENGINEERS
1-800-515-5054
www.lacoassociates.com

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COUNTY OF HUMBOLDT
PHASE 1 - SITE AND CIVIL IMPROVEMENTS FOR THE ARFF FACILITY
ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION

⚠1 RECORD DRAWINGS - JULY 2014

APN NO. 03-06-0010-32
M&H NO. 0822900-120614
DATE: AUGUST 2012
DESIGNED BY: NKT
DRAWN BY: JDB/DAN/JB
CHECKED BY: NKT

DO NOT SCALE DRAWINGS

SHEET CONTENTS
UTILITY DETAILS - 3

Sep. 04, 2014 - 12:45pm
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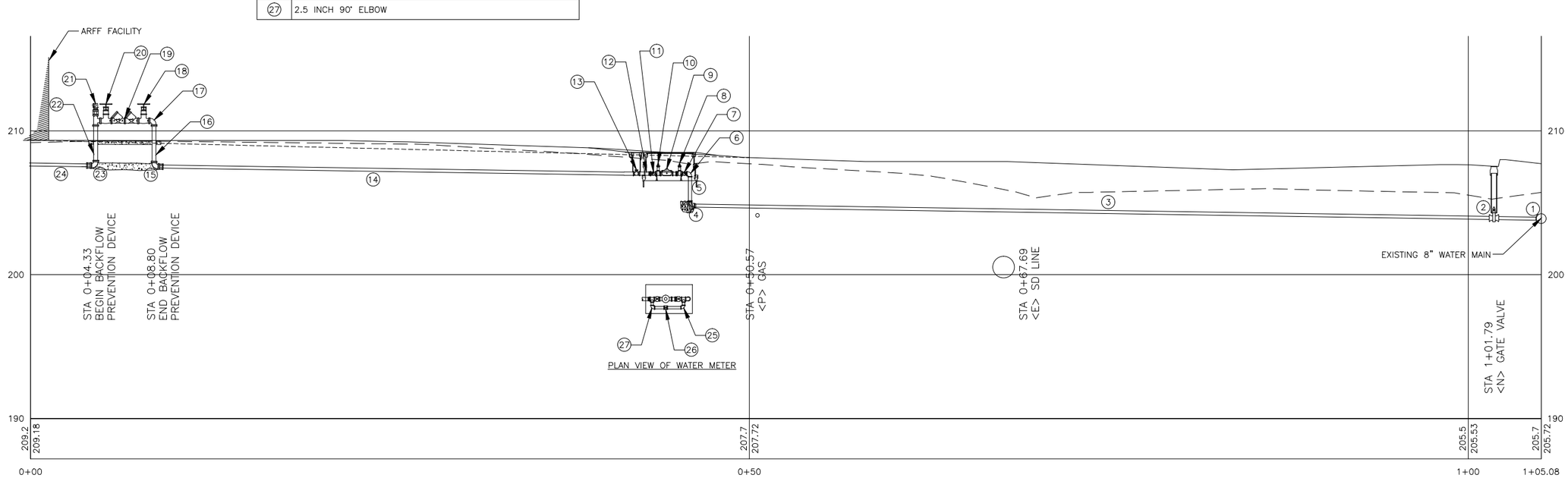
WATER KEY NOTE TABLE	
1	2.5 INCH SADDLE TAP OFF OF THE 8-INCH MAIN
2	2.5 INCH GATE VALVE
3	APPROXIMATELY 56 FEET OF 2.5 INCH PVC PIPE
4	2.5 INCH 90° ELBOW
5	2.5 INCH BY 2 FEET LONG SPOOL DUCTILE IRON SPOOL (FLANGED)
6	2.5 INCH 90° ELBOW
7	2.5 x 2 INCH (BRANCH) TEE
8	2.5 INCH GATE VALVE
9	METER NOT REQUIRED DUE TO UPSTREAM METER. INSTALL D.I.P. FLANGE BY PLANE END ⚠1
10	2.5 INCH GATE VALVE
11	2.5 x 2 INCH (BRACH) TEE
12	2.5 INCH BY 1 FOOT LONG PVC SPOOL w/ FCA
13	2.5 INCH GATE VALVE
14	APPROXIMATELY 32 FEET OF 2.5 INCH PVC PIPE w/ FCA
15	2.5 INCH 90° ELBOW
16	2.5 INCH BY 2.5 FEET LONG DI SPOOL
17	2.5 INCH 90° ELBOW
18	2.5 INCH GATE VALVE
19	BACKFLOW PREVENTION DEVICE (DOUBLE DETECTOR CHECK VALVE)
20	2.5 INCH GATE VALVE
21	2.5 INCH TEE WITH FIRE DEPARTMENT CONNECTION (FIRE DEPARTMENT CONNECTION INCLUDES 2.5 INCH CHECK VALVE, NIPPLE AND THREADED HOSE CONNECTION)
22	2.5 INCH BY 2.5 FOOT LONG DI SPOOL
23	2.5 INCH 90° ELBOW
24	2.5 INCH PVC TO BUILDING w/ FCA
25	2.5 INCH 90° ELBOW
26	2.5 INCH GATE VALVE
27	2.5 INCH 90° ELBOW



A **WATER SERVICE PROFILE**

1" = 4'

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SHEET CONTENTS
UTILITY PROFILE

Sep 04, 2014 - 12:11 pm
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0 20 40
Scale: 1:20

NOTES:

1. SEE SHEETS C-442 AND C-443 FOR STORM DRAIN PROFILES
2. CONTRACTOR TO CONFIRM EXISTING STORM DRAIN INVERTS AT AREA DRAIN #3 PRIOR TO ORDERING STRUCTURES.

PROTECT (E) 18" SD

RAMP STORM DRAIN LINE

AREA DRAIN #2
INSTALL (N) TYPE III AREA DRAIN
TOG = 208.90
(N) 18" SLOT DRAIN INV. IN = 206.90
(N) 18" INV. OUT = 205.34
-SEE D C-451

AREA DRAIN #1
INSTALL (N) TYPE III AREA DRAIN
TOG = 209.10
(N) 18" SLOT DRAIN INV. OUT = 207.10
-SEE D C-451

AREA DRAIN #3
INSTALL (N) TYPE III AREA DRAIN
TOG = 207.55
(N) 18" INV. IN = 204.64
(E) 18 INV. OUT = 204.54
-SEE D C-451

INSTALL 68 L.F. 18" SD @ 1.03%

INSTALL 95 L.F. 18" SLOTTED SD @ 0.21%

FUTURE ARFF FACILITY (NIC)

INSTALL 85 L.F. 18" SD @ 0.99%
-SEE A C-451

AREA DRAIN #5
INSTALL NEW TYPE IV AREA DRAIN
TOG=203.41
(E) 24" INV IN = 199.08
(N) 24" INV IN = 197.33
(N) 36" INV OUT = 197.23
-SEE D C-451

CURB INLET #2
INSTALL (N) CURB INLET
TOC = 206.23
FL = 205.73
(N) 18" INV. IN = 199.65
(N) 24" INV. OUT = 199.55
-SEE F C-451

CURB INLET #1
INSTALL (N) CURB INLET
TOC = 208.46
FL = 207.96
(N) 12" INV. IN = 200.59
(N) 18" INV. IN = 200.59
(N) 18" INV. OUT = 200.49
-SEE F C-451

AREA DRAIN INSTALLED APPROXIMATELY 3' SOUTH OF DESIGN LOCATION
1

INSTALL 146 L.F. 24" SD @ 1.52%
-SEE A C-451

INSTALL 181 L.F. 18" SD @ 1.0%
-SEE A C-451

INSTALL 49 L.F. 12" SD @ 1.46%

BOEING AVENUE STORM DRAIN LINE

PARKING LOT STORM DRAIN LINE

CURB INLET #4
INSTALL (N) CURB INLET -SEE F C-451
TOC = 207.45
FL = 206.95
12" INV. IN = 201.40
12" INV. OUT = 201.30

AREA DRAIN #4
INSTALL (N) TYPE III AREA DRAIN
TOG = 206.21
(N) 18" INV. OUT = 202.40
-SEE D C-451

INSTALL 46 L.F. 12" SD @ 2.37%

CURB INLET #3
INSTALL (N) CURB INLET -SEE F C-451
TOC = 206.48
FL = 205.98
12" INV. OUT = 202.50

BOEING AVENUE STORM DRAIN LINE

INSTALL 294 L.F. 36" SD @ 0.96%
-SEE A C-451

HAND-PLACED CONCRETE ABOVE FLARED END SECTION
1

(N) FLARED END SECTION
(N) 36" INV. OUTFALL = 194.40
-SEE C C-451

INSTALL AND GROUT RIP RAP

STORM DRAIN PLAN
AS SHOWN

RECORD DRAWING

Mead & Hunt

Mead & Hunt, Inc.
133 Aviation Boulevard,
Suite 100
Santa Rosa, CA 95403
phone: 707-526-5010
meadhunt.com

REGISTERED PROFESSIONAL ENGINEER
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NO. 71754
Exp. date: 12/31/13
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REVISION
1 RECORD DRAWINGS - JULY 2014

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DATE: AUGUST 2014
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SHEET CONTENTS
STORM DRAIN PLAN

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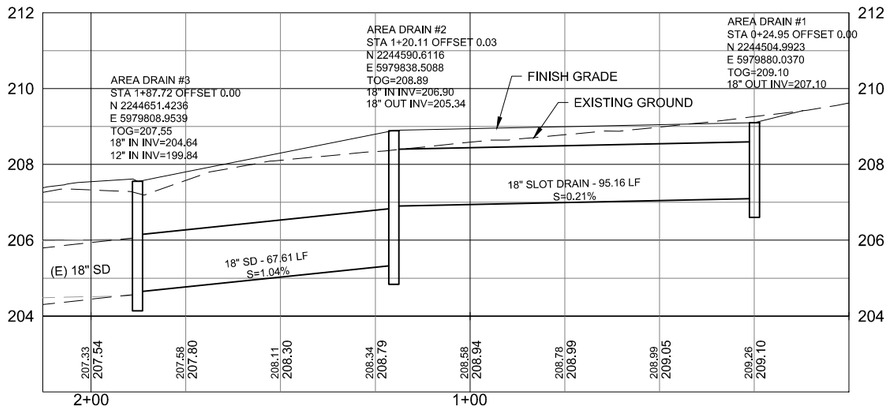
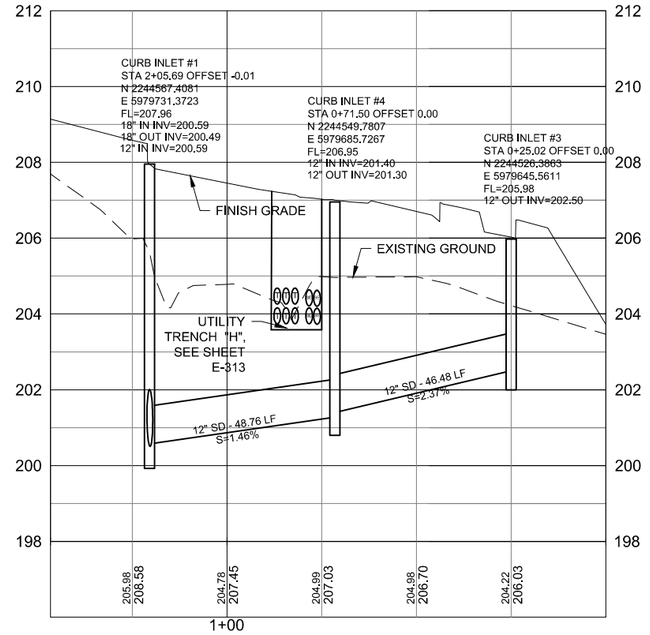
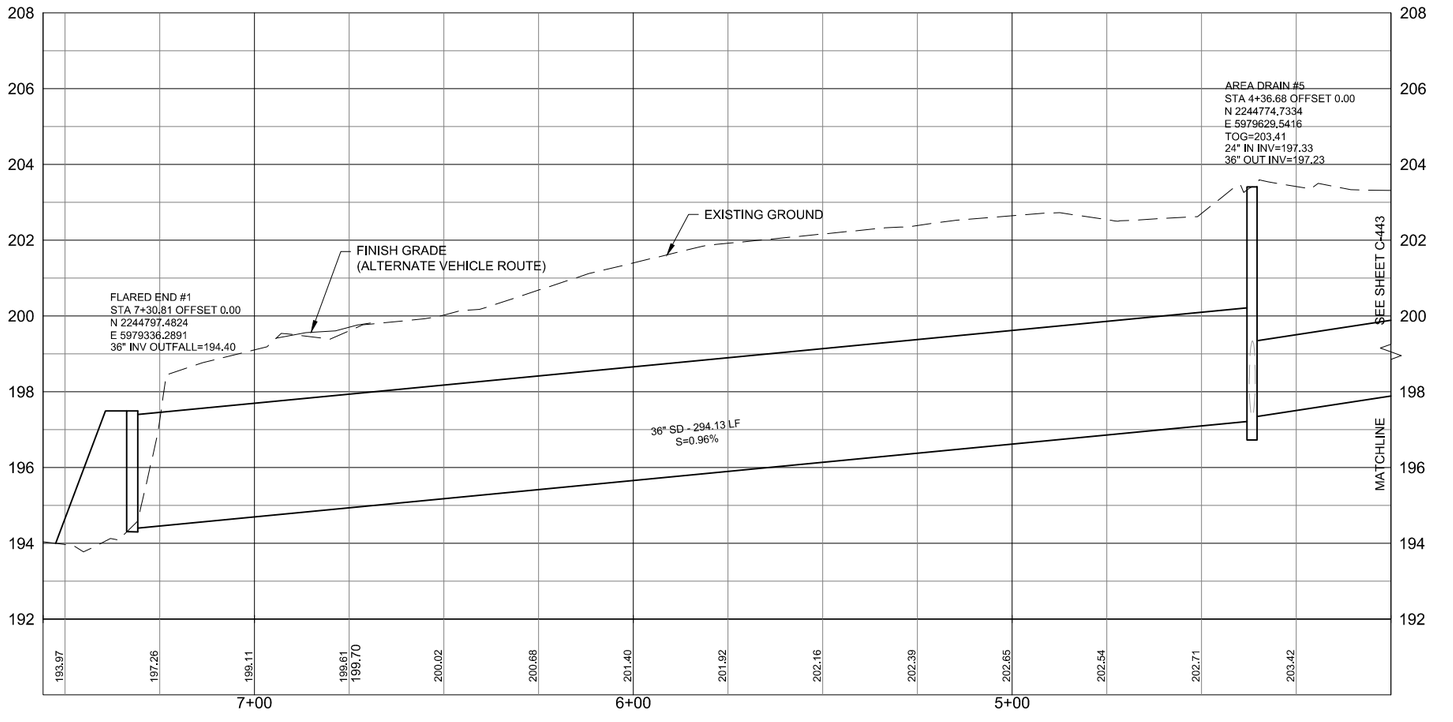


RAMP STORM DRAIN LINE
HORIZ: 1"=20'
VERT: 1"=2'



PARKING LOT STORM DRAIN LINE
HORIZ: 1"=20'
VERT: 1"=2'



BOEING AVENUE STORM DRAIN LINE
STA. 7+50 TO STA. 4+00
HORIZ: 1"=20'
VERT: 1"=2'

NOTES:

1. STATION / OFFSETS AND NORTHING / EASTINGS FOR CURB INLETS ARE TO THE APPROXIMATE CENTER OF THE STRUCTURE. STRUCTURE SIZE MAY VARY SLIGHTLY. CONTRACTOR TO LAYOUT CURB AND GUTTER CONCURRENTLY TO ENSURE PROPER LOCATION.
2. STATION / OFFSETS AND NORTHING / EASTINGS FOR AREA DRAINS ARE TO THE CENTER OF THE STRUCTURE.

0 20 40

RECORD DRAWING

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phone: 707-526-5010
meadhunt.com

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REVISION

AIP NO.: 3-06-0010-32
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SHEET CONTENTS
STORM DRAIN PROFILES-1

C-442

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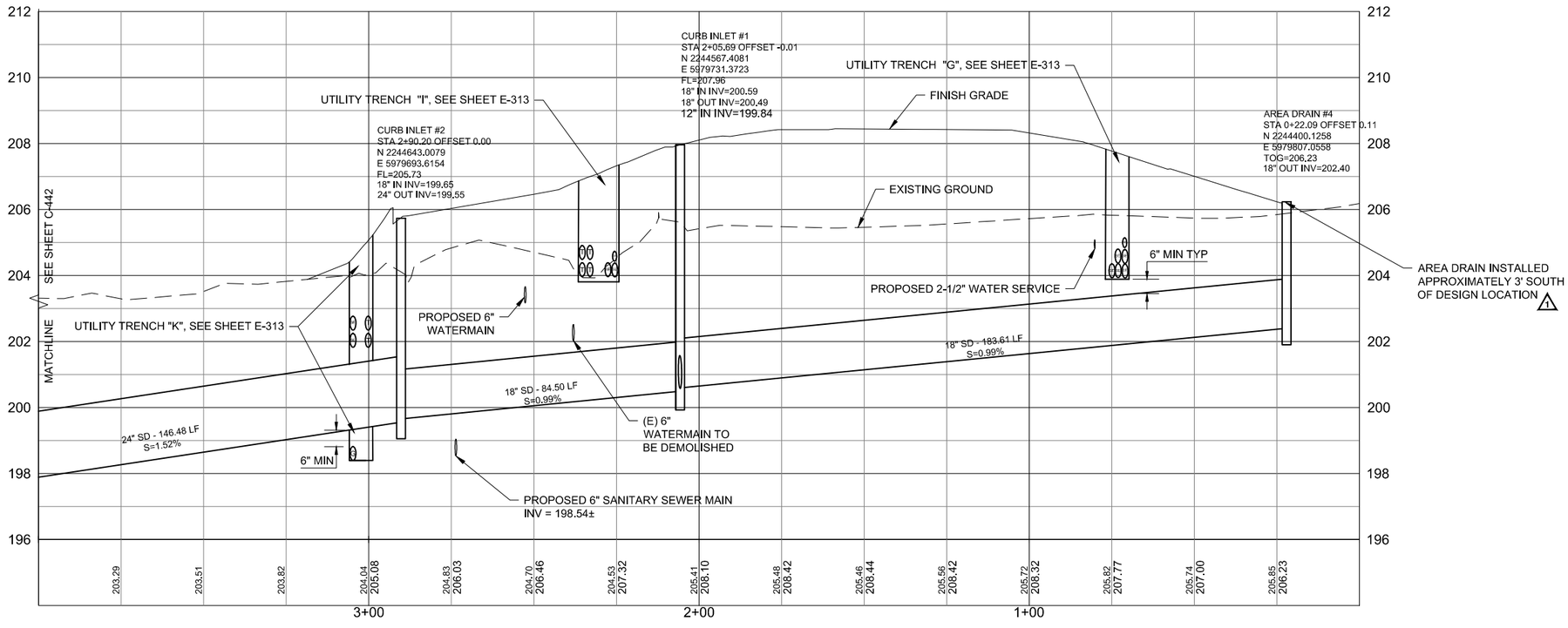

BOEING AVENUE STORM DRAIN LINE
STA. 4+00 TO STA. 0+00

HORIZ: 1"=20'
VERT: 1"=2'

NOTES:

1. STATION / OFFSETS AND NORTHING / EASTINGS FOR CURB INLETS ARE TO THE APPROXIMATE CENTER OF THE STRUCTURE. STRUCTURE SIZE MAY VARY SLIGHTLY. CONTRACTOR TO LAYOUT CURB AND GUTTER CONCURRENTLY TO ENSURE PROPER LOCATION.

2. STATION / OFFSETS AND NORTHING / EASTINGS FOR AREA DRAINS ARE TO THE CENTER OF THE STRUCTURE.

0 20 40

4 2 0

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Suite 100
Santa Rosa, CA 95403
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FOR THE ARFF FACILITY

ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

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SHEET CONTENTS
STORM DRAIN PROFILES-2

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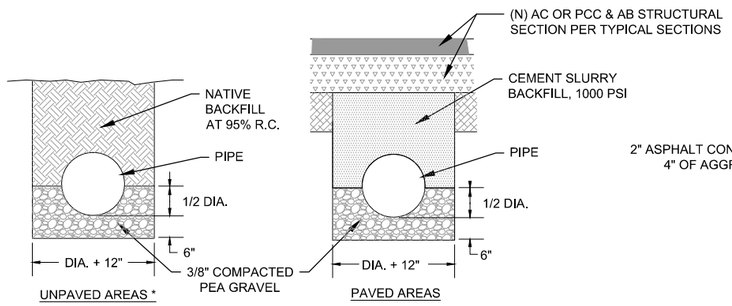
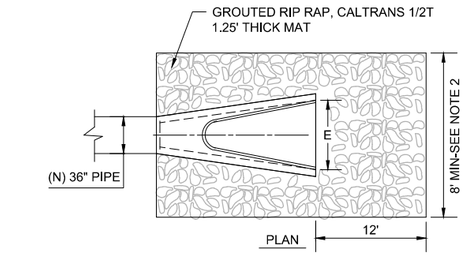
9/4/2014 12:12:31 PM



PEA GRAVEL SLURRY BACKFILL TO BOTTOM OF AB IS REQUIRED ON ALL SD PIPE UNDER PAVED AREAS. EXTEND SLURRY BACKFILL 5 FEET BEYOND EDGES OF PAVEMENT.

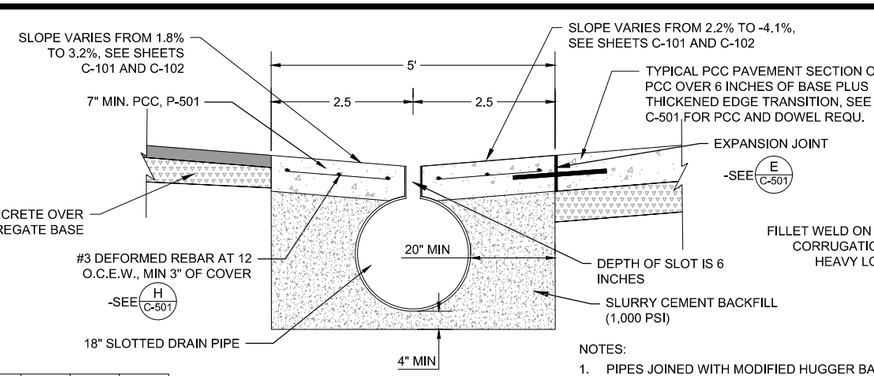
A STORM DRAIN PIPE TRENCHING DETAILS
NO SCALE

MINIMUM DIMENSIONS						
PIPE DIA	A	B	C	D	E	SLOPE
36"	1'-3"	4"	SEE NOTE 1	5'-3"	6'-0"	2:1 OR FLATTER



NOTES:
1. C DIMENSION VARIES BY MANUFACTURER AND WILL BE PAID FOR AS LINEAL FEET OF STORM DRAIN PIPE.
2. INSTALL GROUTED RIP RAP AT AN APPROXIMATE WIDTH OF 8 FEET. GROUTED RIP RAP SHALL EXTEND UP SIDES OF CHANNEL. COUNTY TO CONFIRM LAYOUT PRIOR TO INSTALL.
3. FLARED END SECTION SHALL BE CONCRETE.

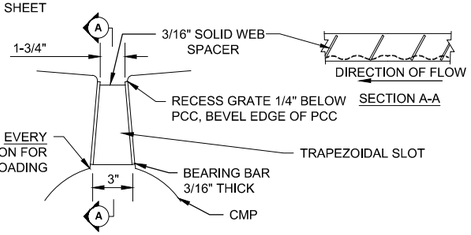
C FLARED END SECTION W/ GROUTED RIP RAP
NO SCALE



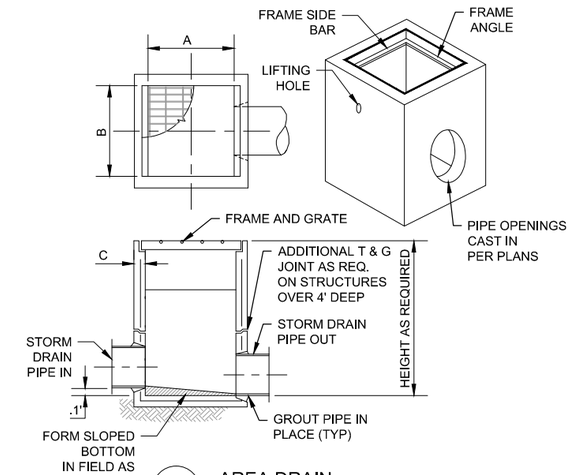
TYPE	A	B	C
III	36	36	*
IV	48	48	*

*= AS REQD FOR H20 LOADING

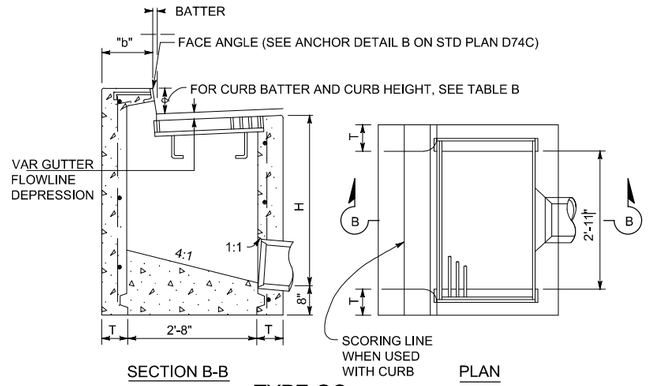
NOTES:
1. PIPES JOINED WITH MODIFIED HUGGER BANDS PER MANUFACTURER'S RECOMMENDATION.
2. SEE TECHNICAL SPECIFICATIONS FOR ALLOWABLE TOLERANCES.
3. GRATE SHALL HAVE 30 DEGREE SLANTED SPACERS AS SHOWN.
4. SEE SHEET C-501 FOR DOWEL BAR AND EXPANSION JOINT DETAILS



B 18-INCH SLOTTED STORM PIPE DETAIL
NO SCALE



D AREA DRAIN
NO SCALE



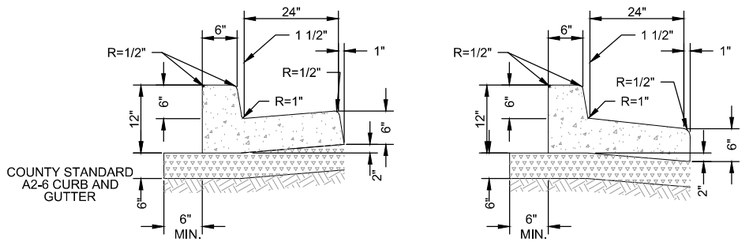
TYPE GO

TABLE A				
CONCRETE QUANTITIES				
TYPE	H=3'-0" TO 8'-0" (T=6")		H=8'-1" TO 20'-0" (T=8")	
	H=3'-0" (CY)	ADDITIONAL PCC PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL PCC PER FOOT(CY)
GO	1.24	0.245	3.39	0.346
TABLE BASED ON 8" FLOOR SLAB, NO DEDUCTION FOR PIPE OPENINGS, AND CURB TYPE GIVING HIGHEST QUANTITY OF CONCRETE. NO DEDUCTIONS OR ADJUSTMENTS ARE TO BE MADE TO THESE QUANTITIES BECAUSE OF PIPE OPENINGS, DIFFERENT FLOOR ALTERNATIVES OR DIFFERENT CURB TYPE.				

TABLE B

CURB TYPE	NORMAL CURB HEIGHT	CURB BATTER	"b" DIMENSION
A1-6	6"	1"	T+6"

NOTES:
1. "H" IS THE DIFFERENCE IN ELEVATION BETWEEN THE OUTLET PIPE FLOW LINE AND THE NORMAL GUTTER GRADE LINE UNDEPRESSED.
2. FOR "T" WALL THICKNESS, SEE TABLE A BELOW.
3. WALL REINFORCING NOT REQUIRED WHEN "H" IS 8'-0" OR LESS AND THE UNSUPPORTED WIDTH OR LENGTH IS 7'-0" OR LESS. WALLS EXCEEDING THESE LIMITS SHALL BE REINFORCED WITH #4 @ 18" CENTERS PLACED 1?" CLEAR TO INSIDE OF BOX UNLESS OTHERWISE SHOWN.
4. INLET BOTTOM REINFORCING NOT REQUIRED. SEE STANDARD PLAN D74C FOR ALTERNATIVE REINFORCED BOTTOM.
5. STEPS - NONE REQUIRED WHERE "H" IS LESS THAN 2'-6" WHERE "H" IS 2'-6" OR MORE, INSTALL STEPS WITH LOWEST RUNG 1'-0" ABOVE THE FLOOR AND HIGHEST RUNG NOT MORE THAN 6" BELOW TOP OF INLET. THE DISTANCE BETWEEN STEPS SHALL NOT EXCEED 1'-0" AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE WALL. PLACE STEPS IN THE WALL WITHOUT AN OPENING. STEP INSERTS MAY BE SUBSTITUTED FOR THE BAR STEPS. STEP INSERTS SHALL COMPLY WITH STATE INDUSTRIAL SAFETY REQUIREMENTS. SEE STANDARD PLAN D74C FOR STEP DETAILS.
6. WHEN SHOWN ON THE PROJECT PLANS, PLACE A ?" PLAIN ROUND PROTECTION BAR HORIZONTALLY ACROSS THE LENGTH OF THE OPENING AND BEND BACK 4" INTO THE INLET WALL ON EACH SIDE.
7. PIPE(S) CAN BE PLACED IN ANY WALL.
8. BASIN FLOORS SHALL HAVE WOOD TROWEL FINISH AND SHALL SLOPE TOWARD THE OUTLET PIPE AS SHOWN.
9. GALVANIZING - SEE STANDARD SPECIFICATIONS OR SPECIAL PROVISIONS.
10. SEE STANDARD PLAN D77A AND D77B FOR GRATE AND FRAME DETAILS AND WEIGHTS OF MISCELLANEOUS IRON AND STEEL.
11. SEE STANDARD PLAN D78A FOR GUTTER DEPRESSION DETAILS.
12. FULL PENETRATION BUTT WELDS MAY BE SUBSTITUTED FOR THE FILLET WELDS ON ALL ANCHORS.
13. STANDARD SQUARE, HEXAGON, ROUND OR EQUIVALENT HEADED ANCHORS MAY BE SUBSTITUTED FOR THE RIGHT ANGLE HOOKS ON THE ANCHORS SHOWN ON THIS PLAN.
14. CAST-IN-PLACE OR PRECAST ALTERNATIVE IS OPTIONAL WITH CONTRACTOR. SEE STANDARD SPECIFICATIONS.
15. CAST-IN-PLACE INLETS TO BE FORMED AROUND ALL PIPES/STUBS INTERSECTING THE INLET AND CONCRETE POURED IN ONE CONTINUOUS OPERATION. PRECAST INLETS SHALL HAVE MORTARED PIPE CONNECTIONS CONFORMING TO DETAILS FOR TYPE GCP INLETS ON STANDARD PLAN D75B. SEE STANDARD SPECIFICATIONS FOR MORTAR COMPOSITION.



NOTES:
1. CONCRETE SHALL BE CLASS B AND SHALL CONTAIN NOT LESS THAN 5 SACKS OF CEMENT PER CUBIC YARD.
2. EXPANSION JOINTS, 1/4 INCH WIDE. SHALL BE INSTALLED AT EACH SIDE OF STRUCTURES, AT ENDS OF CURB RETURNS AND AT THE TOP OF DRIVEWAY TAPERS.
3. EXPANSION JOINTS SHALL BE INSTALLED AT 48 FOOT INTERVALS WITH WEAKENED PLANE JOINTS EVERY 16 FEET. EXPANSION JOINTS MAY BE MORE FREQUENT IF NECESSARY TO MATCH PCC PAVEMENT JOINTING.
4. IF EXTRUSION MACHINE IS USED EXPANSION JOINTS SHALL BE DEEP SCORE 1/3 THE THICKNESS.

E CURB AND GUTTER TYPICAL SECTION
NO SCALE

F CURB INLET CALTRANS STANDARD PLAN RSP D74B
NO SCALE

RECORD DRAWING

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STATE OF CALIFORNIA

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COUNTY OF HUMBOLDT
PHASE 1 - SITE AND CIVIL IMPROVEMENTS FOR THE ARFF FACILITY
ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION

AIP NO.: 3-06-0010-32
M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: JTL
DRAWN BY: POM
CHECKED BY: JTL/LBM

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SHEET CONTENTS
STORM DRAIN DETAILS-1

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C-451

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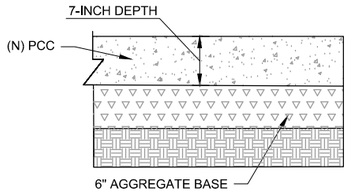
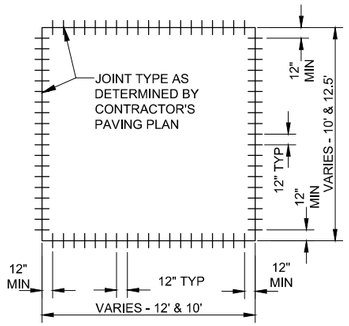


NOTE:
SEE DETAIL H, THIS SHEET, FOR STEEL REINFORCEMENT WHERE SLABS ARE OVER STORM PIPE.

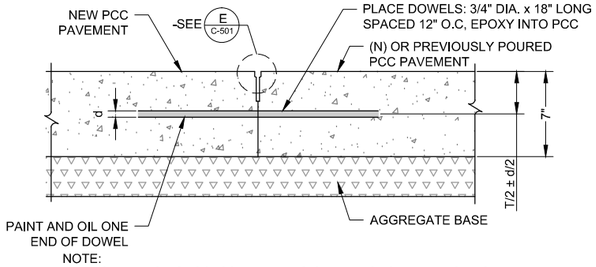
A NEW PCC SECTION
NO SCALE



NOTES:
DOWEL BARS SHALL BE 3/4" DIA., 18" LENGTH, SPACED 12" ON CENTER AND AT LEAST 12" FROM ANY SLAB CORNER. DOWELS INTO (E) PCC SHALL BE EPOXIED. DOWELS IN BASKETS AND/OR PROTRUDING FROM PCC SHALL BE OILED OR GREASED.

CONTRACTOR SHALL SUBMIT PCC PAVING PLAN WITH THE PCC MIX DESIGN. THE PLAN SHALL INCLUDE THE LOCATIONS OF THE CONTRACTION,CONSTRUCTION, AND EXPANSION JOINTS AS WELL AS CONSTRUCTION METHODS FOR PLACEMENT, FINISHING AND PROTECTING THE PCC.

D TYPICAL DOWEL SPACING
NO SCALE



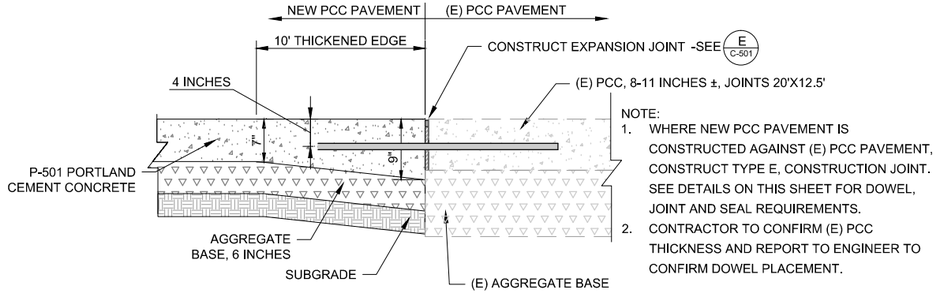
NOTE:
APPLICABLE FOR SUCCESSIVE PAVING OPERATIONS AFTER FORMS ARE REMOVED.

G DOWELED CONSTRUCTION JOINTS - TYPE E
NO SCALE

DEFORMED REBAR FOR PCC REINFORCEMENT				
PCC	NUMBER	DIAM.	LBS/LIN. FT.	SPACING (O.C.)
7"	3	0.375"	0.376	12"

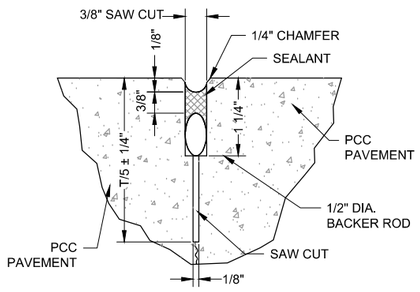
NOTES:
1. CONTRACTOR SHALL PLACE REINFORCEMENT 4" ABOVE AGGREGATE BASE.

H STEEL REINFORCEMENT FOR SLABS OVER STORM DRAIN PIPE (AIRFIELD SIDE PCC)
NO SCALE

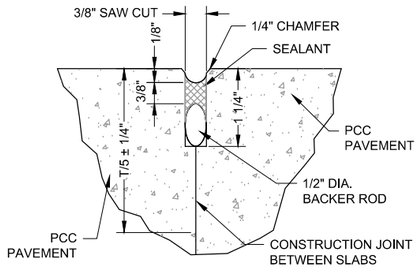


NOTE:
1. WHERE NEW PCC PAVEMENT IS CONSTRUCTED AGAINST (E) PCC PAVEMENT, CONSTRUCT TYPE E, CONSTRUCTION JOINT. SEE DETAILS ON THIS SHEET FOR DOWEL, JOINT AND SEAL REQUIREMENTS.
2. CONTRACTOR TO CONFIRM (E) PCC THICKNESS AND REPORT TO ENGINEER TO CONFIRM DOWEL PLACEMENT.

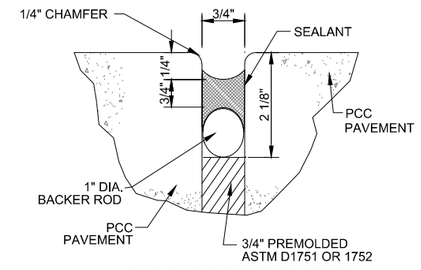
B NEW AND EXISTING PCC PAVEMENT JOIN WITH THICKENED EDGE
NO SCALE



CONTRACTION JOINT
(PERPENDICULAR TO PAVING LANE)

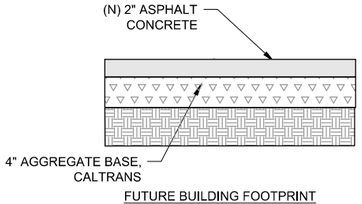


CONSTRUCTION JOINT
(PARALLEL TO PAVING LANE)

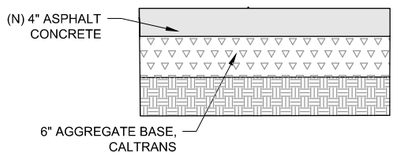


PCC/PCC EXPANSION JOINT

E JOINT SEAL DETAILS
NO SCALE

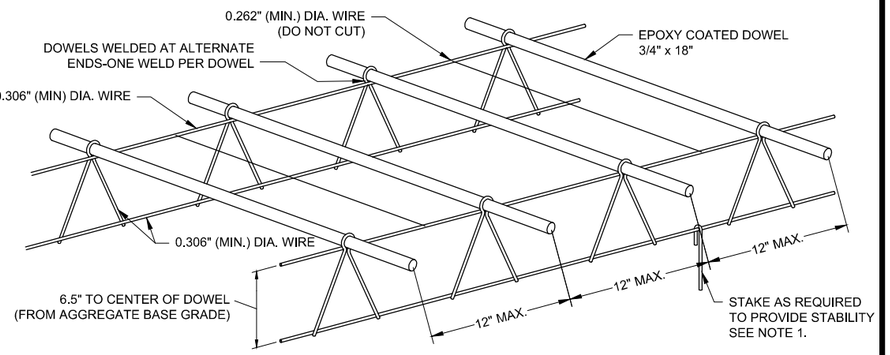


FUTURE BUILDING FOOTPRINT



ROADWAYS AND PARKING LOT

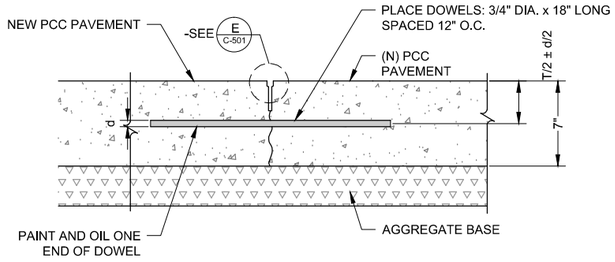
I ASPHALT CONCRETE PAVEMENT TYPICAL SECTIONS
NO SCALE



NOTES:

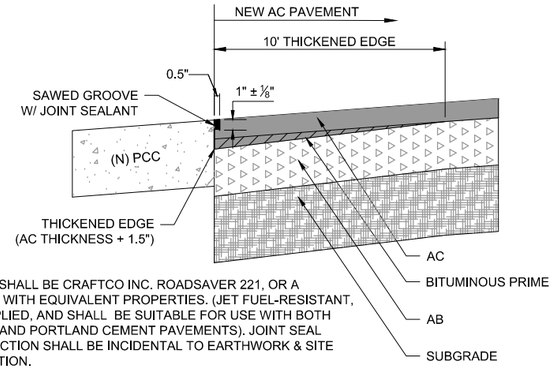
1. THE DOWEL BASKET ASSEMBLY SHOWN IS THE MINIMUM REQUIRED. THE REQUIREMENTS FOR THE DOWEL BASKETS ARE A PERFORMANCE SPECIFICATION AND IT WILL BE REQUIRED THAT THE CONTRACTOR PROVIDE SUFFICIENT SUPPORT, BRACING AND ANCHORAGE TO PREVENT MOVEMENT DURING CONSTRUCTION AND THE CONSTRUCTED DOWELS WILL MEET THE TOLERANCE SPECIFICATIONS.
2. DOWELS TO MEET ASTM A615-GR-60 ALL MATERIALS TO BE PROVIDED SHALL BE SMELTED AND MANUFACTURED IN THE UNITED STATES.
3. DOWELS, INCLUDING ENDS, TO BE EPOXY COATED TO MEET AASHTO M-254-B 7 MIL MIN.
4. DOWELS TO BE LUBRICATED IN THE THE FIELD.
5. DOWEL ASSEMBLY LENGTH AS REQUIRED.

C DOWEL BASKET ASSEMBLY
NO SCALE



NOTE: APPLICABLE FOR JOINTS PERPENDICULAR TO PAVING LANE

F DOWELED CONTRACTION JOINTS - TYPE C
NO SCALE



NOTE:
SEALANT SHALL BE CRAFTCO INC. ROADSAVER 221, OR A PRODUCT WITH EQUIVALENT PROPERTIES. (JET FUEL-RESISTANT, COLD APPLIED, AND SHALL BE SUITABLE FOR USE WITH BOTH ASPHALT AND PORTLAND CEMENT PAVEMENTS). JOINT SEAL CONSTRUCTION SHALL BE INCIDENTAL TO EARTHWORK & SITE PREPARATION.

J PCC/AC PAVEMENT JOIN WITH THICKENED EDGE
NO SCALE

RECORD DRAWING

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SHEET CONTENTS
PAVEMENT DETAILS

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NOTES:

1. CONTRACTOR TO LAYOUT PROPOSED FENCE AND GATES FOR COUNTY APPROVAL PRIOR TO INSTALLATION.
2. ALL FENCE AND GATE CONSTRUCTION SHALL CONFIRM TO THE DETAILS ON SHEET C-631 AND THE TECHNICAL SPECIFICATIONS.

JOIN (E) FENCE AT CORNER POST

MANUAL SWING GATE -SEE B C-631

PEDESTRIAN GATE -SEE F C-631

BOEING CL STA 6+50.72 OFF 32.03'

MANUAL SWING GATE -SEE B C-631

BOEING CL STA 5+93.38 OFF 32.00'

(E) FENCE TO BE REMOVED, SEE SHEET C-051

LIMIT OF ELECTRICAL COURTYARD AGGREGATE BASE SECTION

2.00'

BOEING CL STA 5+93.34 OFF 70.99'

BOEING CL STA 6+50.70 OFF 71.04'

JOIN (E) FENCE AND INSTALL (N) CORNER POST

(E) FENCE TO BE REMOVED, SEE SHEET C-051

BOEING CL STA 6+50.66 OFF 115.15'

(E) FENCE & GATE TO REMAIN

3+00 4+00 5+00 6+00 7+00

SECURITY FENCING PLAN
AS SHOWN

RECORD DRAWING

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SHEET CONTENTS
SECURITY FENCING PLAN

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C-601

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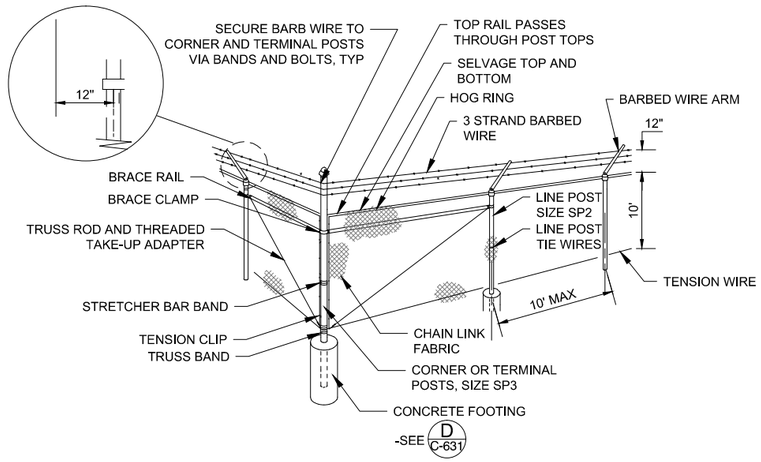
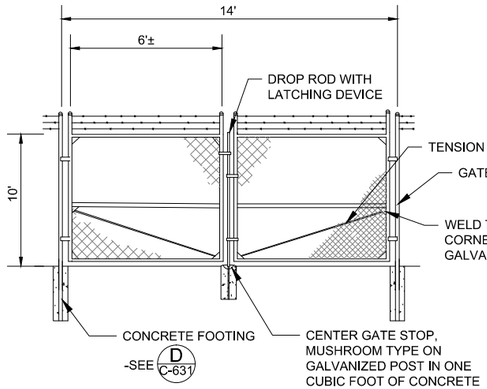
POST DESCRIPTION	FED. SPEC. SIZE	MINIMUM OUTSIDE DIAMETER	MAXIMUM THICKNESS
LINE	SP2	1.900"	0.12"
TERMINAL	SP3	2.375"	0.13"
GATE- (LESS THAN 6')	SP4	2.875"	0.226"
GATE- (6' OR MORE)	SP6	6.626"	0.28"



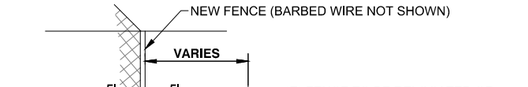
A FENCE CORNER POST DETAIL
NO SCALE

CENTER GATE STOP-
MUSHROOM TYPE

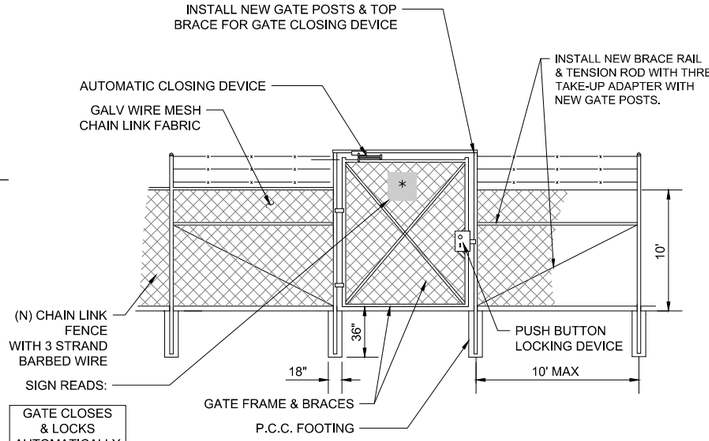


NOTES:
1. ALL FITTINGS AND HARDWARE SHALL BE GALVANIZED.
2. PROVIDE DROP ROD, LATCH ASSEMBLY, AND SCHLAGE LOCKS WITH A PRIMUS CORE, OR APPROVED EQUAL, AT ALL GATES BEING INSTALLED.
3. LATCH AND DROP ROD ASSEMBLIES SHALL BE CONSTRUCTED SO THAT DROP ROD CANNOT BE RAISED WHEN LOCKED.

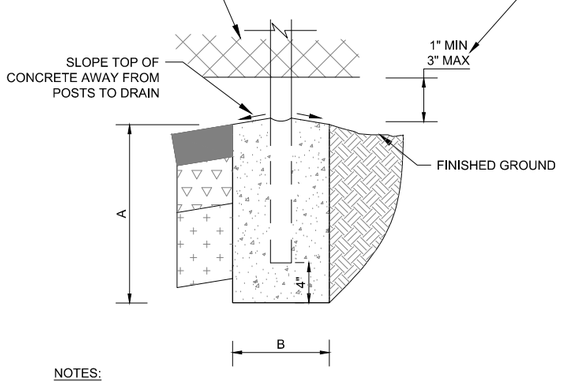
B MANUAL SWING GATE
NO SCALE



C FENCING AREA PREPARATION
NO SCALE

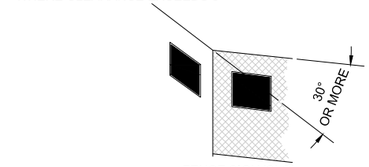


F PEDESTRIAN GATE
NO SCALE



NOTES:
1. CONCRETE FOOTING DEPTH (A)
   TERMINAL POSTS & GATE POSTS - 3'-6"
   LINE POSTS - 3'-0"
2. CONCRETE FOOTING WIDTH (B)
   TERMINAL POSTS & GATE POSTS - 18"
   LINE POSTS - 12"
3. CONCRETE SHALL CONFORM TO CALTRANS MINOR CONCRETE SECTION 90-10.
4. POSTS, RAILS AND BRACING SIZES SHALL CONFORM TO THE SIZES LISTED IN TABLES I THROUGH VI OF FED SPEC RR-F-191/3. ALL OTHER FENCING MATERIALS SHALL CONFORM TO THE RELEVANT FED SPEC FOR THAT MATERIAL.
5. CONCRETE TO HAVE A SMOOTH FINISH.

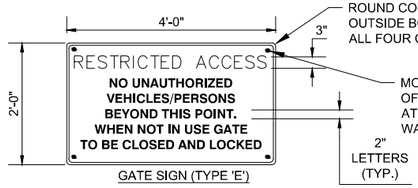
D FENCING POST FOOTING DETAIL
NO SCALE



FENCE SIGN 'SLO'
AT ANGLE
(SEE NOTE 5)

FENCE SIGN

GATE SIGN (TYPE 'E-2')
INSIDE OF GATE (AIRSIDE)



GATE SIGN (TYPE 'E')
OUTSIDE OF GATE (LANDSIDE)

NOTES:
1. ALL SIGNS (EXCEPT FENCE SIGN) ARE RED LETTERS AND BORDER ON WHITE REFLECTIVE BACKGROUND TO MATCH EXISTING. FENCE SIGN IS WHITE LETTERS AND BORDER ON RED REFLECTIVE BACKGROUND.
2. ALL SIGN MATERIAL AND CONSTRUCTION PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
3. ALL MATERIALS TO BE REFLECTORIZED.
4. ALL SIGNS SHALL BE 0.080 SHEET ALUMINUM.
5. MOUNT TYPE C OR FENCE SIGN (AS DIRECTED BY THE AIRPORT) EVERY 150' ON NEW CHAIN LINK FENCE AND AT BOTH SIDES OF ALL FENCE ANGLE POINTS WHERE FENCE LINE CHANGES DIRECTION OF 30° OR MORE.
6. MOUNT SIGN (TYPE E & E-2) ON MANUAL GATES.
7. AN ADDITIONAL 4 FENCE SIGNS SHALL BE TURNED OVER TO THE AIRPORT TO BE INSTALLED BY AIRPORT PERSONNEL.
8. AN ADDITIONAL 2 OF EACH TYPE E AND E-2 FENCE SIGNS SHALL BE TURNED OVER TO THE AIRPORT TO BE INSTALLED BY AIRPORT PERSONNEL.

E FENCE & SECURITY GATE SIGNING
NO SCALE

RECORD DRAWING

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COUNTY OF HUMBOLDT
PHASE 1 - SITE AND CIVIL IMPROVEMENTS FOR THE ARFF FACILITY
ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION

1 **RECORD DRAWINGS - JULY 2014**

AIP NO.: 3-06-0010-32
M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: JTL
DRAWN BY: POM
CHECKED BY: JTL/LBM

DO NOT SCALE DRAWINGS

SHEET CONTENTS
SECURITY FENCING DETAILS

X:\08229-00\132062.011\TECH\CAD\DRAWINGS\RECORD DRAWINGS\C-601 FENCING PLAN.DWG
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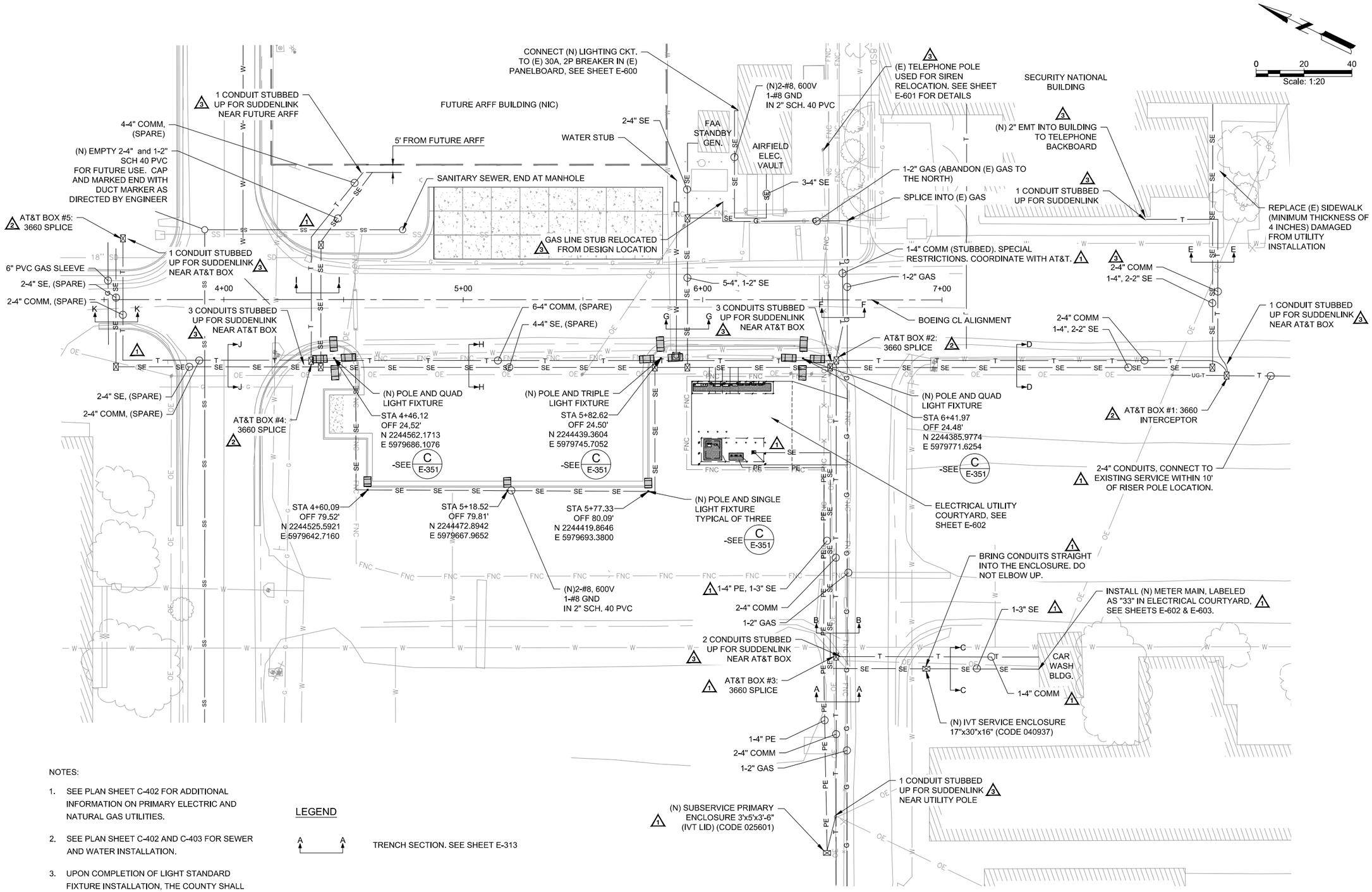

NOTES:

1. SEE PLAN SHEET C-402 FOR ADDITIONAL INFORMATION ON PRIMARY ELECTRIC AND NATURAL GAS UTILITIES.
2. SEE PLAN SHEET C-402 AND C-403 FOR SEWER AND WATER INSTALLATION.
3. UPON COMPLETION OF LIGHT STANDARD FIXTURE INSTALLATION, THE COUNTY SHALL HAVE ONE OPPORTUNITY FOR FIXTURE ADJUSTMENT AND SHIELDING AFTER SEVERAL DAYS OF OPERATION.

LEGEND

A A — TRENCH SECTION. SEE SHEET E-313

LIGHTING AND UTILITY PLAN

AS SHOWN

RECORD DRAWING

Mead & Hunt

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REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

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COUNTY OF HUMBOLDT

PHASE 1 - SITE AND CIVIL IMPROVEMENTS FOR THE ARFF FACILITY

ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION

1 **UPDATE PER PG&E AND AT&T PLANS - 9/24/13**

2 **UPDATE AT&T BOXES - 10/31/13**

3 **RECORD DRAWINGS - JULY 2014**

AIP NO.: 3-06-0010-32
M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: XXX
DRAWN BY: XXX
CHECKED BY: JTL/LBM

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SHEET CONTENTS
PARKING LOT AND ROAD LIGHTING AND UTILITY PLAN

E-312

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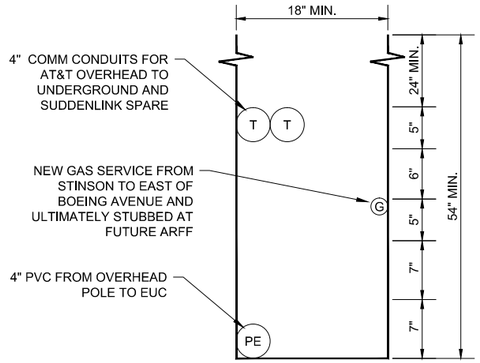
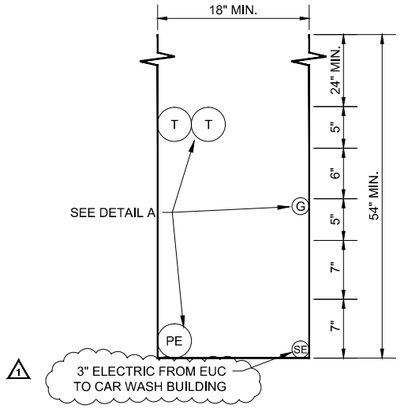


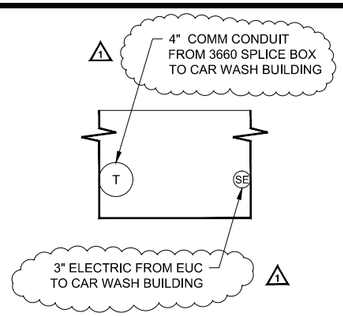
NOTE:
TRENCH LAYOUT TO BE CONFIRMED BY PG&E

A TRENCH SECTION A-A
PRIMARY TRENCH
NO SCALE

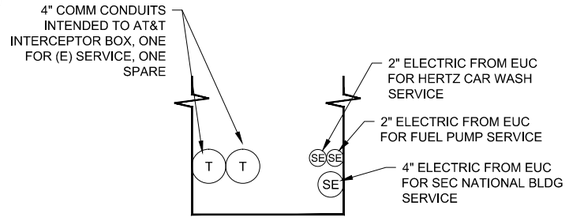


NOTE:
TRENCH LAYOUT TO BE CONFIRMED BY PG&E

B TRENCH SECTION B-B
PRIMARY TRENCH
NO SCALE



C TRENCH SECTION C-C
NO SCALE



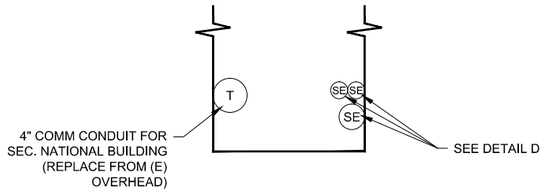
D TRENCH SECTION D-D
NO SCALE

UTILITY TRENCH CONFIGURATION NOTES:

1. ALL PRIMARY TRENCH SECTIONS SHALL CONFORM TO PG&E JOINT TRENCH CONFIGURATIONS.
2. PRIMARY TRENCHES ARE DEFINED AS TRENCHES WITH GAS AND/OR PRIMARY ELECTRIC.
3. TRENCHES OTHER THAN PRIMARY TRENCHES SHALL CONFORM TO THE REQUIREMENTS OF THE TECHNICAL SPECIFICATIONS SUBSECTIONS 18 & 22.
   a. COVER UNDER PAVED AREAS SHALL BE 24 INCHES BELOW AGGREGATE BASE GRADE
   b. MINIMUM COVER IN UNPAVED AREAS SHALL BE 24 INCHES
   c. SEPARATION BETWEEN SECONDARY ELECTRIC AND COMMUNICATION SHALL BE A MINIMUM OF 12 INCHES
   d. TRENCHES WITHIN PROPOSED OR EXISTING PAVED AREAS SHALL BE CONCRETE ENCASED. ENCASEMENT SHALL EXTEND 5 FEET BEYOND PAVEMENT LIMITS
   e. ALL TRENCHES WITH MULTIPLE CONDUITS SHALL HAVE CONDUIT SPACERS
4. ALL CONDUITS SHALL BE TAGGED AS DENOTED ON THIS SHEET. SPARE CONDUITS SHALL BE CAPPED.
5. DETAIL K, THE 6 INCH PVC GAS SLEEVE SHALL BE INCIDENTAL TO THE TRENCHING COSTS. CAP BOTH ENDS OF THE SLEVE AND WRAP WITH GAS LOCATION FOIL.

LEGEND

G	GAS
PE	PRIMARY ELECTRIC
SE	SECONDARY ELECTRIC
T	TELEPHONE / COMMUNICATIONS
EUC	ELECTRICAL UTILITY COURTYARD



E TRENCH SECTION E-E
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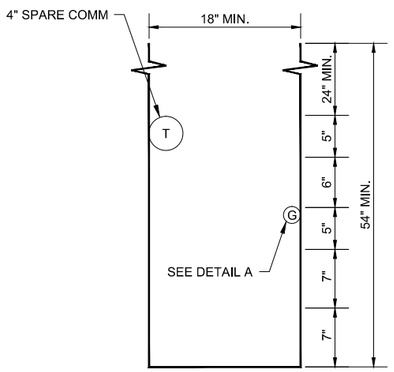
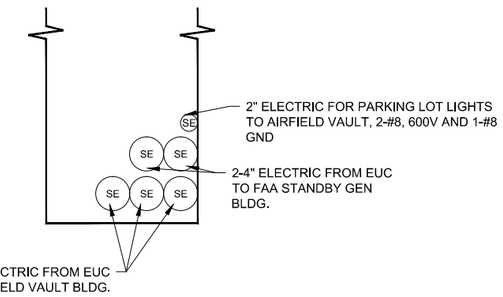
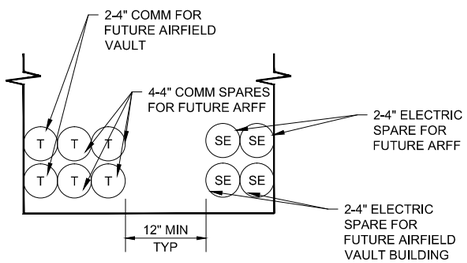


NOTE:
TRENCH LAYOUT TO BE CONFIRMED BY PG&E

F TRENCH SECTION F-F
PRIMARY TRENCH
NO SCALE



G TRENCH SECTION G-G
NO SCALE



H TRENCH SECTION H-H
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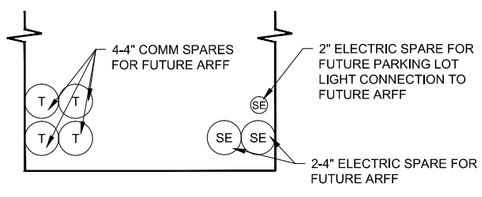
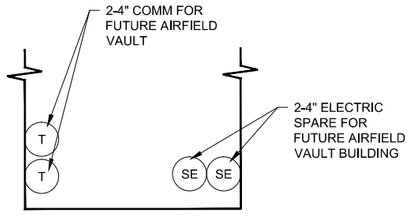
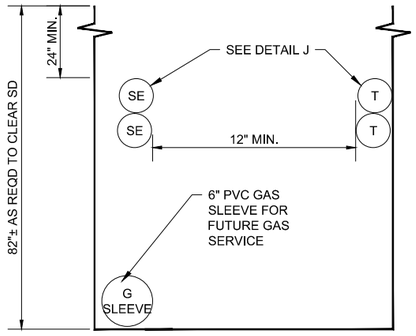


I TRENCH SECTION I-I
NO SCALE



J TRENCH SECTION H-H
NO SCALE



NOTE:
TRENCH LAYOUT TO BE CONFIRMED BY PG&E

K TRENCH SECTION K-K
NO SCALE

RECORD DRAWING

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COUNTY OF HUMBOLDT
PHASE 1 - SITE AND CIVIL IMPROVEMENTS
FOR THE ARFF FACILITY
ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION
1 UPDATE PER PG&E AND AT&T PLANS - 9/24/13

AIP NO.: 3-06-0010-32
M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: JTL
DRAWN BY: POM
CHECKED BY: JTL/LBM
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SHEET CONTENTS
UTILITY TRENCH CONFIGURATIONS

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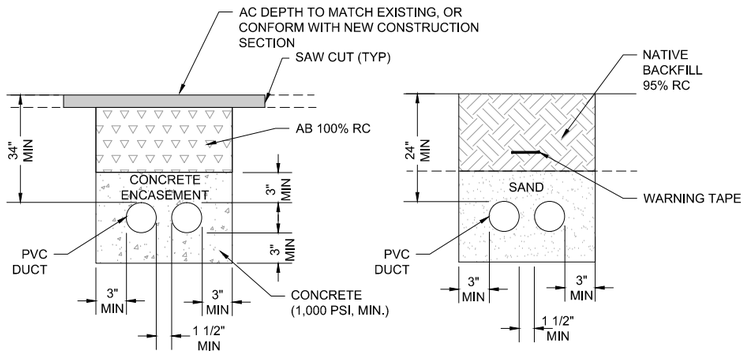


PAVED AREAS

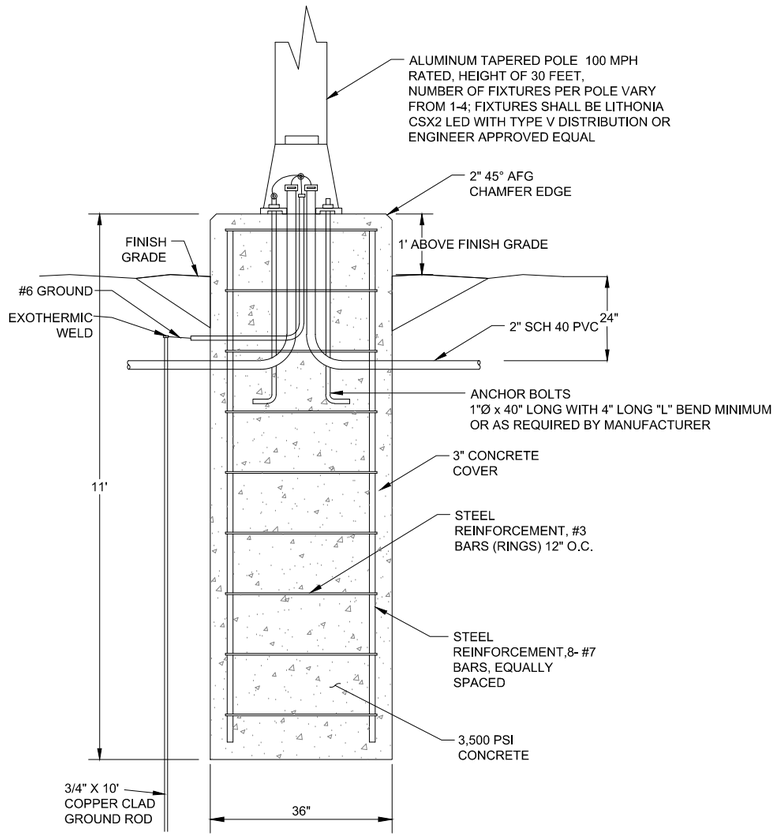
UNPAVED AREAS

NOTES:
1. STACKING OF DUCT IN COMMON TRENCH IS ACCEPTABLE AS THE TRENCH WIDTH IS A MINIMUM OF 10' AND THE HORIZONTAL CLEARANCE BETWEEN CONDUITS IS A MINIMUM OF 2". THERE MUST BE A MIN. OF 24" OF COVER OVER THE TOP OF THE CONDUIT.

2. DUCT UNDER NEW PAVEMENT SHALL BE INSTALLED BEFORE THE PAVEMENT IS PLACED.

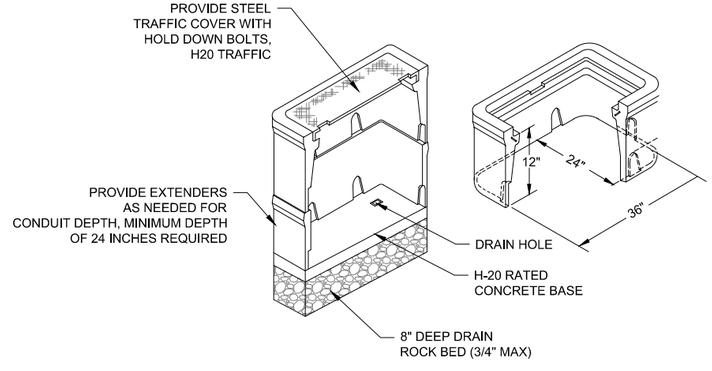
3. CONCRETE ENCASED CONDUIT SHALL EXTEND A MIN. OF 5 FT. BEYOND ALL EDGES OF PAVEMENT.

A PVC DUCT TRENCHING AND BACKFILL
NO SCALE



SEE TECHNCIAL SPECIFICATIONS FOR ADDITIONAL FIXTURE REQUIREMENTS

C LIGHT STANDARD FOUNDATION DETAIL
NO SCALE



B SECONDARY ELECTRICAL PULLBOX
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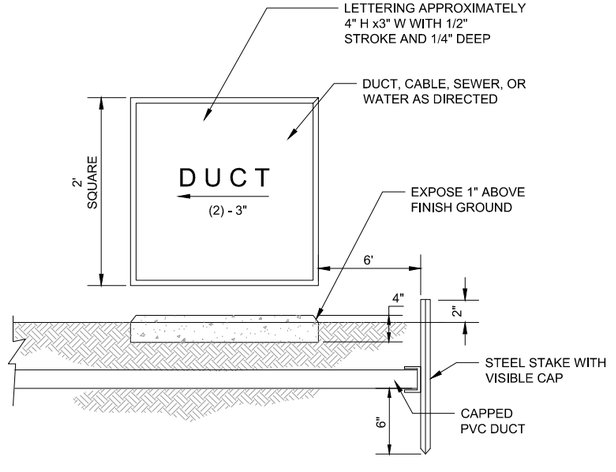

D CONCRETE DUCT MARKER
NO SCALE

E101 07/12

RECORD DRAWING

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COUNTY OF HUMBOLDT
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SHEET CONTENTS
ELECTRICAL DETAILS

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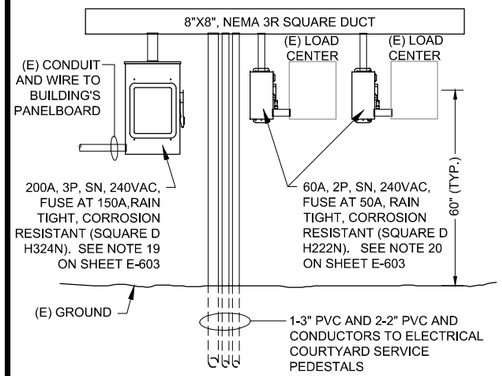
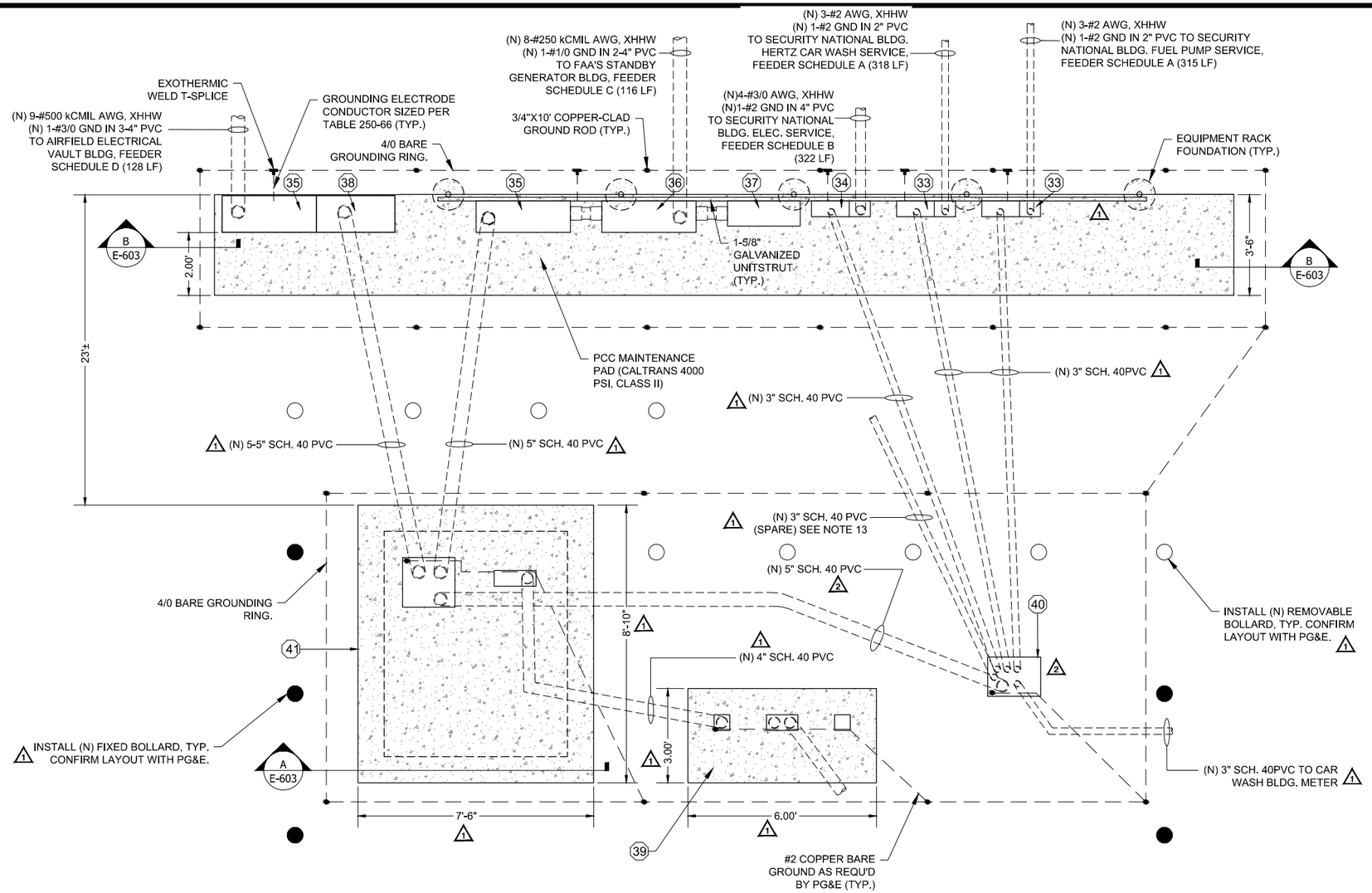


2 SECURITY NATIONAL SERVICE MODIFICATION
NO SCALE



1 ELECTRICAL COURTYARD LAYOUT
NO SCALE

PROPOSED EQUIPMENT SCHEDULE

ITEM	DESCRIPTION
2 (33)	120/208 VAC, 1ϕ3W METER MAIN WITH TEST BLOCK BYPASS; 80A MAIN BREAKER WITH 42 kA SHORT CIRCUIT CURRENT RATING; PULL/TERMINATION SECTION; NEMA UNIT MUST MEET EURSERC REQUIREMENTS; UNIT MUST BE SUITABLE FOR USE AS SERVICE EQUIPMENT (SQUARE D EMT 1225CB SERIES OR EQUAL).
2 (34)	120/208 VAC, 3ϕ,4W METER MAIN WITH TEST BLOCK BYPASS; 150A MAIN BREAKER WITH 65 kA SHORT CIRCUIT CURRENT RATING; PULL/TERMINATION SECTION;UNIT MUST MEETING EURSERC REQUIREMENTS; UNIT MUST BE SUITABLE FOR USE AS SERVICE EQUIPMENT (SQUARE D EMT 3225CB SERIES OR EQUAL).
(35)	PULL/TERMINATION SECTION MEETING EURSERC REQUIREMENTS (FAA SERVICE).
(36)	COMBINATION CURRENT-TRANSFORMER CABINET AND METER SOCKET PANEL SUITABLE FOR UNDERGROUND SERVICE, 400A, 208/120 VAC, 3ϕ, 4W, NEMA 3R. EQUIPMENT MUST MEET EURSERC REQUIREMENTS (FAA SERVICE).
(37)	MAIN CIRCUIT BREAKER DEVICE, 400A, 3P, 65 kA SHORT CIRCUIT RATING, NEMA 3R, MUST MEET EURSERC REQUIREMENTS, SQUARE D EZM3400CBU SERIES OR EQUAL.
(38)	1600A, 208Y/120, 3ϕ SWITCHBOARD WITH: 3-EUSERC UTILITY METERING SECTIONS; 1600A,3P, 65 kA RATED MAIN BREAKER; 1-800A, 3P, 65kA BREAKER; 2-400A, 3P, 65kA BREAKER (SPARE). THE 800A BREAKER WILL BE FOR CURRENT AIRFIELD VAULT AND THE 400A FOR THE FUTURE ARFF FACILITY.
1 (39)	CONCRETE PAD FOR UTILITY DISTRIBUTION PM LB PRIMARY JUNCTION 4-WY BY PG & E .
2 (40)	14"x22" PEDESTAL WITH 6 TERMINAL BUSS BARS
(41)	THREE PHASE UTILITY TRANSFORMER CONCRETE PAD FOR 208/120, 3ϕ (TRANSFORMER BY PG & E)

GENERAL CONSTRUCTION NOTES (CONTINUED FROM E-600):

7. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INTENDED TO CONVEY A DESIGN CONCEPT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONSTRUCT THE PROJECT IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEC, APPLICABLE LOCAL CODES, AND PG&E.
8. ALL ELECTRICAL SERVICE EQUIPMENT SHALL MEET THE REQUIREMENTS OF THE EQUIPMENT UTILITY SERVICE REQUIREMENTS COMMITTEE (EUSERC).
9. ALL GROUND RODS SHALL BE COPPER CLAD AND 3/4"X10'.
10. ALL CONNECTIONS TO GROUND RODS AND GROUND T-SPLICES SHALL BE EXOTHERMICALLY WELDED UNLESS OTHERWISE NOTED IN THE PLANS.
11. ALL WORK FOR PG&E, INCLUDING TRANSFORMER PADS, CONDUIT INSTALLATION, METER PEDESTALS, ETC. SHALL BE IN ACCORDANCE WITH PG&E'S 2012 EDITION OF THE "GREEN BOOK"
12. ALL HARDWARE EXPOSED TO THE ELEMENTS (NUTS, BOLTS, CLAMPS, WASHERS, ETC.) SHALL BE HOT-DIPPED GALVANIZED.
13. EXTEND ALL SPARE CONDUITS 2 FEET BEYOND GROUND RING AND CAP.

RECORD DRAWING

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REVISION
1 UPDATE PER PG&E PLANS - 9/20/13
2 UPDATE PER PG&E PLANS - 1/17/14

AIP NO.: 3-06-0010-32
M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: AR
DRAWN BY: POM
CHECKED BY: JWP
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SHEET CONTENTS
ELECTRICAL COURTYARD LAYOUT

SHEET NO. 41 of 43

E-602

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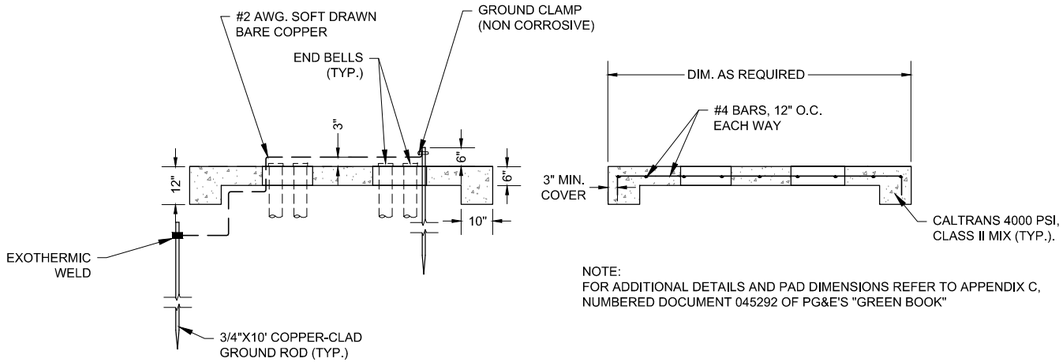
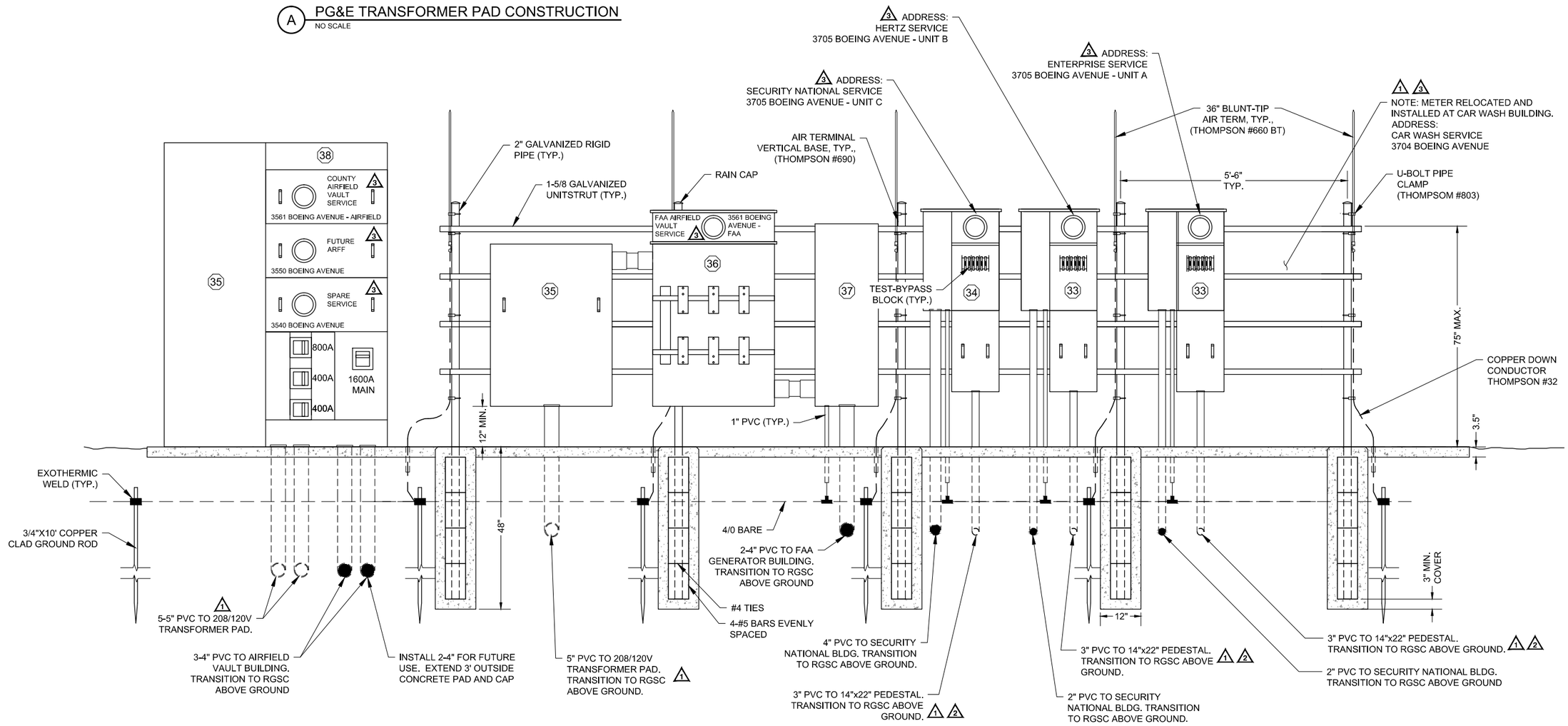


NOTE:
FOR ADDITIONAL DETAILS AND PAD DIMENSIONS REFER TO APPENDIX C, NUMBERED DOCUMENT 045292 OF PG&E'S "GREEN BOOK"

A PG&E TRANSFORMER PAD CONSTRUCTION
NO SCALE

GENERAL CONSTRUCTION NOTES (CONTINUED FROM E-602):

14. UNLESS OTHERWISE NOTED, ALL ABOVE GROUND CONDUIT SHALL BE RIGID GALVANIZED STEEL (RGSC). TRANSITION TO RIGID AT THE 90° ELBOW.
15. ALL AIR TERMINALS SHALL BE BLUNT-TIPPED AND MADE OF COPPER.
16. ALL LIGHTNING HARDWARE (I.E. CLAMPS, VERTICAL BAS, ETC.) SHALL BE BRONZE.
17. REMOVE EXISTING OVERHEAD SERVICE AND METERING EQUIPMENT AT FAA GENERATOR BLDG., SECURITY NATIONAL BLDG., AND CARWASH.
18. INSTALL A (N) 400A, FUSIBLE, 3P, SOLID NEUTRAL, NEMA 3R, HEAVY DUTY DISCONNECT AT THE FAA GENERATOR BLDG. CONNECT TO EXISTING TRANSFER SWITCH.
19. INSTALL ONE (N) 200A, FUSIBLE, 3P, SOLID NEUTRAL, NEMA 3R, STAINLESS STEEL, HEAVY DUTY, DISCONNECT AT THE SECURITY NATIONAL BLDG. WIRE NEW DISCONNECT TO EXISTING PANELBOARD.
20. INSTALL TWO (N) 60A, FUSIBLE, 2P, SOLID NEUTRAL, NEMA 3R, STAINLESS STEEL, HEAVY DUTY, DISCONNECT AT THE SECURITY BUILDING TO FEED HERTZ CAR WASH LOAD CENTER AND FUEL FARM LOAD CENTER.
21. RELOCATE EXISTING CARWASH LOAD CENTER TO THE NORTH WALL. INSTALL A NEW 60A, FUSIBLE, 2P, SOLID NEUTRAL, NEMA 3R, STAINLESS STEEL, HEAVY DUTY, DISCONNECT TO FEED EXISTING SERVICE.



B-B EQUIPMENT RACK CONSTRUCTION
NO SCALE

RECORD DRAWING

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REVISION
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2 UPDATE PER PG&E PLANS - 1/17/14
3 RECORD DRAWINGS - JULY 2014

AIP NO.:	3-06-0010-32
M&H NO.:	0822900-120614
DATE:	AUGUST 2014
DESIGNED BY:	AR
DRAWN BY:	POM
CHECKED BY:	JWP

DO NOT SCALE DRAWINGS

SHEET CONTENTS
TRANSFORMER PAD

SHEET NO. 42 of 43

E-603

X:\0822900\120612\11TECH\CAD\DRAWINGS\RECORD DRAWINGS\ELECTRICAL YARD LAYOUT.DWG
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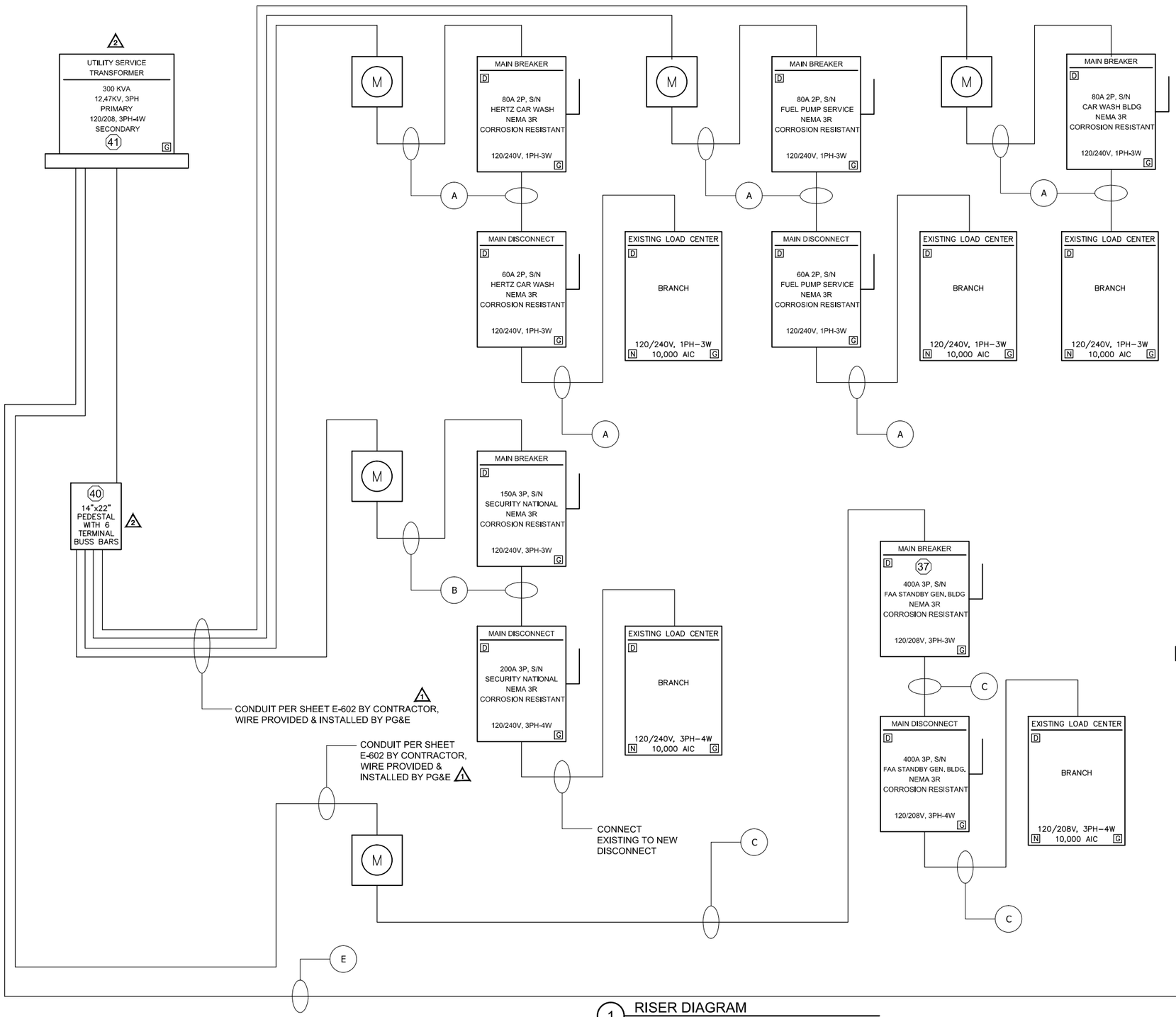

1 RISER DIAGRAM
NO SCALE

RECORD DRAWING

FEEDER SCHEDULE			
SYMBOL	WIRE	CONDUIT	LENGTH
A	3-#2, XHHW, 1-#2 GND	1-2" PVC	650 LF
B	4-#3/0, XHHW, 1-#2 GND	1-4" PVC	322 LF
C	8-#250 kCMIL, XHHW, 1-#1/0 GND	2-4" PVC	116 LF
D	9-#500 kCMIL, XHHW, 1-#3/0 GND	3-4" PVC	128 LF
E	BY PG&E	5-5" PVC	SEE NOTE 3

FEEDER SCHEDULE NOTES:

1. LENGTH IS MEASURED FROM THE SECURITY FENCE SURROUNDING THE ELECTRICAL UTILITY COURTYARD TO THE FACE OF THE BUILDING PER FEEDER SYMBOL A-D.
2. THE PRICE PER LINEAL FOOT FOR EACH FEEDER SCHEDULE A-D AS DENOTED IN THE BID SCHEDULE INCLUDES ALL CONDUCTORS IN THE WIRE COLUMN. EX) THE LINEAL FOOT PRICE FOR FEEDER SCHEDULE A INCLUDES 4 WIRES. TRENCH AND BACKFILL AND CONDUITS ARE PAID UNDER THEIR RESPECTIVE BID ITEMS.
3. THE PRICE FOR FEEDER SCHEDULE E IS INCLUDED IN THE LUMP SUM PRICE FOR ELECTRICAL UTILITY COURTYARD.
4. CONDUITS TO BE INSTALLED BY CONTRACTOR. CABLE/WIRE BETWEEN TRANSFORMERS AND METERS TO BE INSTALLED BY PG&E. CABLE/WIRE AFTER METER TO BE INSTALLED BY CONTRACTOR.

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REGISTERED PROFESSIONAL ENGINEER
JAMES W. ROPPOSCH
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Exp. 6/30/2014
ELECTRICAL
STATE OF CALIFORNIA

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COUNTY OF HUMBOLDT
PHASE 1 - SITE AND CIVIL IMPROVEMENTS FOR THE ARFF FACILITY
ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION
1 UPDATE PER PG&E PLANS - 9/9/13
2 UPDATE PER PG&E PLANS - 1/17/14

AIP NO.: 3-06-0010-32
M&H NO.: 0822900-120614
DATE: AUGUST 2014
DESIGNED BY: AR
DRAWN BY: POM
CHECKED BY: JWP
DO NOT SCALE DRAWINGS

SHEET CONTENTS
RISER DIAGRAM

SHEET NO. 43 of 43

E-604

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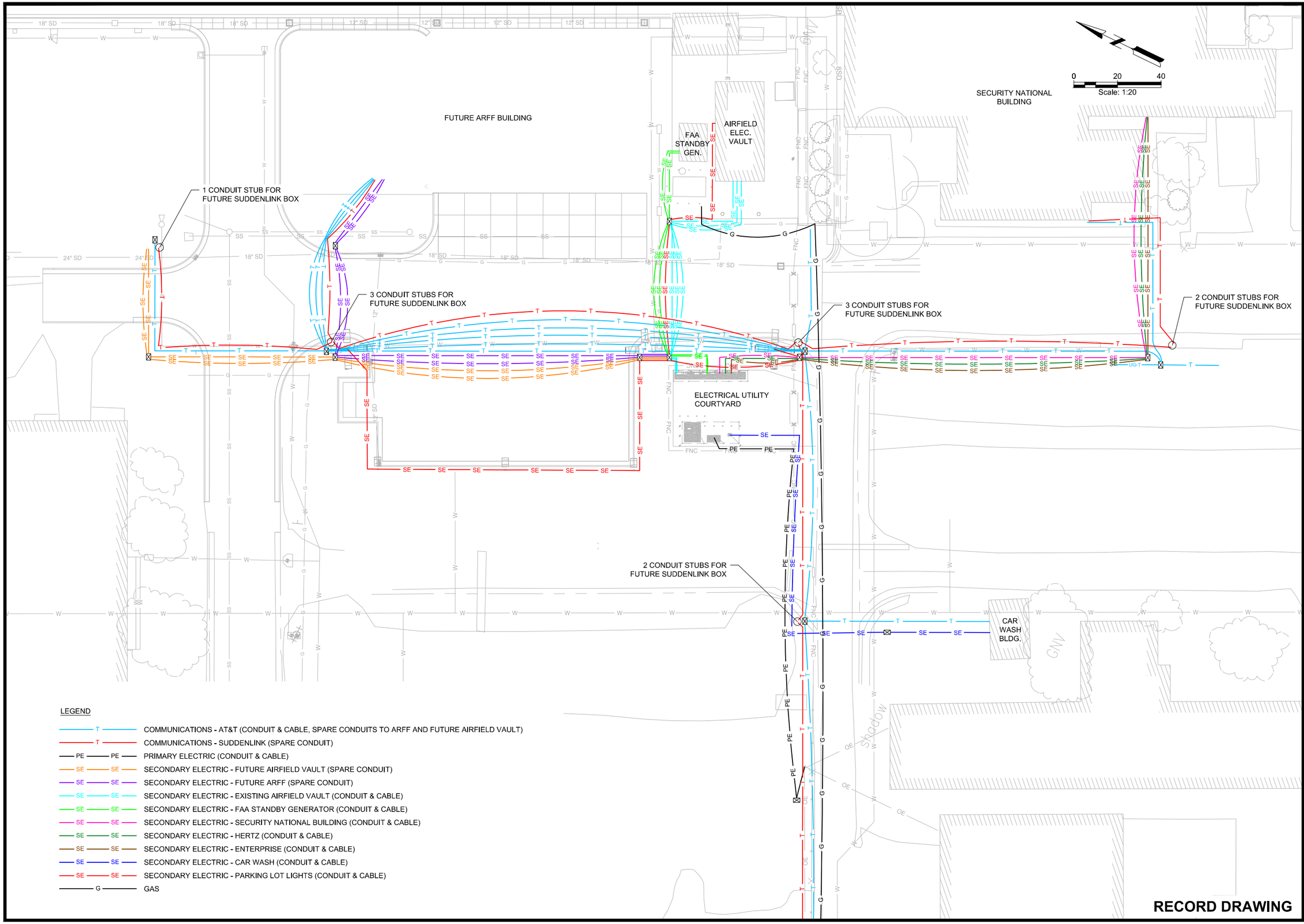

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COUNTY OF HUMBOLDT
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ARCATA/EUREKA AIRPORT, MCKINLEYVILLE, CA

REVISION

AIP NO.:	3-06-0010-32
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DRAWN BY:	AR
CHECKED BY:	JTL

DO NOT SCALE DRAWINGS

SHEET CONTENTS
ELECTRICAL, COMMUNICATION, AND GAS LINE LAYOUT

SHEET NO. 1 of 1

RECORD DRAWINGS, APPENDIX 1

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Geotechnical Exploration and Report

Arcata/Eureka Airport Air Rescue and Fire Fighting Facility

3561 Boeing Avenue, McKinleyville, California
Assessor's Parcel Number 511-035-009

July 20, 2012

Prepared for:
Mead & Hunt

LACO Project No. 7403.01

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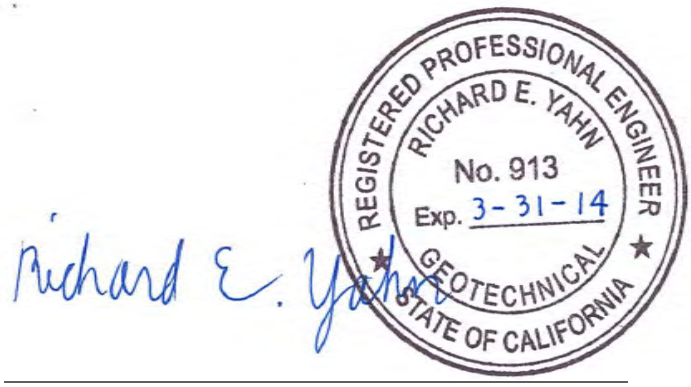
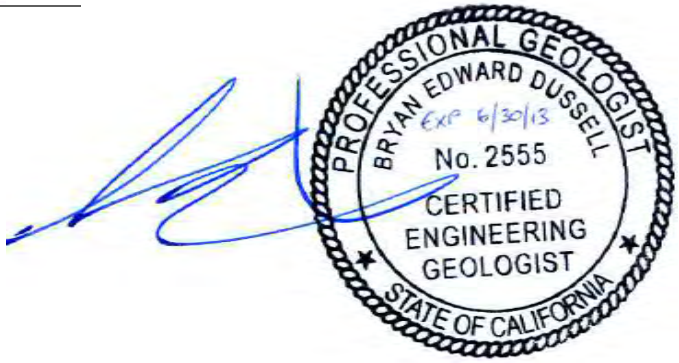


Richard E. Yahn, RCE 31022, RGE 913, Exp. 3/31/14



Bryan E. Dussell, CEG 2555, Exp. 6/30/13

LACO

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Arcata/Eureka Airport Air Rescue and Fire Fighting Facility
3561 Boeing Avenue, McKinleyville, California
Assessor's Parcel Number 511-035-009
LACO Project Number 7403.01

1.0 INTRODUCTION

LACO Associates (LACO) performed a geotechnical exploration in support of design and construction of a new Airport Air Rescue and Fire Fighting Facility (ARFF) at the Arcata/Eureka airport. The project area is located approximately 400 feet northwesterly of the main airport terminal at 3561 Boeing Avenue in McKinleyville, California (Figure 1). Services described in this Report were performed in accordance with our May 7, 2012, agreement with Mead & Hunt (Client).

The primary purposes of our services were to 1) explore and characterize subsurface soil conditions at the project site, and 2) develop geotechnical recommendations and design criteria for planned development in general accordance with the applicable portions of the 2010 California Building Code (CBC). We understand that proposed ARFF facility will not be considered an essential facility nor subject to California Geologic Survey Note 48 requirements.

1.1 Scope of Services

Our Scope of Services included:

- Review of existing soils and/or geologic reports, maps, and other available relevant data regarding the site and vicinity.
- Performance of subsurface exploration under the direction of a Certified Engineering Geologist within the planned building area.
- Preparation of this 2010 CBC-compliant Report documenting the result of LACO's study and providing suitable foundation support and soil design parameters, along with findings regarding potential engineering geologic hazards.

Specifically excluded from our Scope of Services was an environmental assessment for the presence or absence of any hazardous or toxic materials. Although we have explored subsurface conditions as part of our services, we have not conducted any analytical laboratory testing of samples obtained for the presence of hazardous or toxic materials.

1.2 Limitations

This Report has been prepared for the exclusive use of our Client, our Clients' contractors and subconsultants, and appropriate public authorities for specific application to the project development. LACO has endeavored to comply with the generally accepted geotechnical engineering standard of care common to the local area, and makes no other warranty, express or implied. A brochure prepared by Association of Firms Practicing in the Geosciences (ASFE) has been included as Attachment 1 of this Report. We recommend that all individuals reading this Report also read this brochure.

The findings, analyses, and recommendations contained in this Report are based on data obtained from subsurface exploration and/or laboratory tests. The exploration methods used indicate subsurface conditions only at specific locations, only at the time they were observed, and only to the depths penetrated. Exploration locations cannot always be relied upon to accurately reflect stratigraphic variations, nor do they necessarily represent conditions at any other time or location.

The recommendations included in this Report are based in part on assumptions about subsurface conditions that may only be confirmed during earthwork. Accordingly, the validity of these recommendations is contingent upon LACO being retained to provide additional professional services during project design and construction. LACO cannot assume responsibility or liability for the adequacy of the Report recommendations when they are applied in the field unless LACO is retained to observe construction. Please contact us to further discuss the extent of such observations required to check the validity of our recommendations.

This Report's findings, conclusions, or recommendations should not be used if the nature, design, or location of the proposed project development is changed. If changes are contemplated, LACO should be consulted to review their impact on the applicability of the findings, conclusions, or recommendations contained in this Report. Also, LACO will not be responsible for any claims, damages, or liability associated with any other party's interpretation of the subsurface data or reuse of this Report for other projects or at other locations without the express written authorization of LACO.

2.0 PROJECT DESCRIPTION

Pertinent project site location information is listed in Table 1 below.

Table 1 - Project Location Information

Latitude and Longitude*	40.9775° North and -124.1088° West
Assessor's Parcel Number	511-035-009
United States Geologic Survey Quadrangle (USGS)	Arcata North 7.5-minute topographic quadrangle

*Based on coordinates provided by Humboldt County Planning and Building GIS Portal for parcel centroid

The site is currently developed with a wood-framed hanger, gravel parking lot, paved road, concrete airplane apron, and landscaped areas. The existing improvements relative to our test boring exploration locations is as shown on the attached Site Plan (Figure 2).

As we understand, the currently proposed project will be to develop the site with an approximately 9,000-square-foot Air Rescue and Fire Fighting facility, associated airplane apron area, and an asphalt-concrete-paved parking lot. Other design details of the proposed project were not available at the time of this Report preparation. For the purposes of this Report, we assume that the proposed building will be supported by continuous perimeter, and isolated interior, reinforced concrete footings, and will have a concrete slab-on-grade floor. Although specific building construction details are not yet known, only light to moderate loading (i.e., wall and column dead loads in the range of 2 kips per lineal foot and 15 to 50 kips, respectively) is anticipated. Permanent un-retained excavations and/or fill slopes greater than 3 feet-high are not currently proposed.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

The geotechnical field exploration performed as part of our services is described below.

3.1 Field Exploration

To assess the *in-situ* soil conditions within the proposed development area, LACO reviewed soil logs and subsoil data from proximal projects (Geotracker, 2012; SHN, 2005; Taber, 1975) and then, using a geotechnical drill rig on May 18, 2012, performed site specific exploration at five locations in the vicinity of the proposed project. Geotechnical exploration (test borings) utilized a combination of hollow stem rotary auger and direct push drilling equipment. Test borings were located proximal to locations requested by Mead & Hunt on a site plan, dated February 15, 2011, they provided to us.

Soils observed in the borings were logged in the field by our Certified Engineering Geologist in general accordance with the American Society for Testing and Materials (ASTM) Test Procedure D2488 Visual-Manual Procedures. Soil samples were delivered to LACO's materials testing laboratory for possible analysis. Soil logs from the test boring explorations are included as Attachment 2.

3.2 Laboratory Testing

Soil samples collected from the site were submitted to LACO's materials testing laboratory for analysis; soil corrosivity and California Bearing Ratio testing were subcontracted to Cooper Testing Laboratory in Palo Alto, California. The intent of laboratory analyses was to determine pertinent index properties of the soils encountered at the site. The laboratory tests conducted for this investigation included:

- In situ moisture/density (ASTM D2216 / D2937)
- Percent finer than No. 200 sieve (ASTM D1140)

- Gradation (ASTM C136)
- Direct Shear (ASTM D3080)
- California Bearing Ratio (ASTM D1883)
- Corrosivity: Resistivity (ASTM G57), Chloride (Cal 422 mod.), Sulfate (Cal 417 mod.), pH (ASTM G51), Oxidation Reduction Potential (SM 2580B), and Moisture (ASTM D2216)

Laboratory test results are presented in Attachment 3. LACO will archive the soil samples collected for this project for 30 days following the issuance of this Report. Unless directed otherwise by the Client, all samples will be discarded after the 30-day archival period.

4.0 SITE AND SUBSURFACE CONDITIONS

The following Report sections describe the project site and surface conditions; the geologic and seismic settings of the site vicinity; and the subsoil, bedrock, and groundwater conditions (where encountered) at our exploration locations.

4.1 Topography

The Arcata/Eureka Airport occupies a broad low gradient surface adjacent to and easterly of the Pacific Ocean. The surface slopes gently to the west-southwest. Elevations within the project site range from 202 to 207 feet (project datum). There are no significant slopes (gradients greater than 35 percent) within 250 feet lateral to the site.

4.2 Geologic Setting

Field exploration and published geologic mapping (California Division of Mines and Geology, CDMG, 1984; McLaughlin *et al*, 2000) indicates the project site vicinity to be underlain by uplifted Late Pleistocene marine terrace deposits consisting of interbedded gravel and sand, with minor amounts of silt and clay, deposited in a near shore marine environment (map symbol Qmts, Figure 1). The local area, in general, is characterized by a broad, low gradient terrace surface that formerly comprised a coastal plain, dissected and incised at its margins by coastal streams draining to the Pacific Ocean.

4.3 Seismicity

This site is not located within a "Fault Rupture Hazard Zone" (CGS, 2007) or within an area currently designated as a "Seismic Hazard Zone" by the State of California (State). However, the site is located within a seismically active region which is subject to frequent moderate to large earthquakes.

North of the Mendocino Triple Junction, the regional tectonic framework is controlled by the Cascadia Subduction Zone (CSZ), wherein the oceanic crust of the Juan de Fuca/Gorda plate is being actively subducted beneath the leading edge of the North American plate. The CSZ in its entirety extends from the Mendocino triple junction to British Columbia. Plate convergence

along the Gorda segment of the CSZ is occurring at a rate of approximately 30 to 40 millimeters per year (mm/yr) (Heaton & Kanamori, 1984). Rupture along the entire CSZ boundary has the potential to produce an earthquake with a maximum moment magnitude (M_W) of 9.0 or greater (Satake, 2003).

Upper plate crustal deformation associated with the subduction of the Gorda plate is expressed as a 90-kilometer (km) wide fold and thrust belt that comprises the accretionary complex along the North American plate margin (Carver, 1987). Faults associated with the offshore and onshore portions of the CSZ fold and thrust belt include the Little Salmon fault and Mad River fault zone.

The surface trace of the McKinleyville fault is located less than 1,000 feet southwesterly of the site, and is the closest recognized active fault trace to this project (CDMG, 1991 and 2000; CGS, 2007). The McKinleyville fault is a northwest striking, northeast dipping, low-angle thrust fault which underlies the project site at an undetermined, but relatively shallow depth. In the coastal bluff exposure west of the site, the fault is expressed as a broad zone of deformation consisting of densely spaced secondary fore-thrusts with antithetic back-thrusts that display tenths (1/10) of feet of displacement. This distributed pattern of deformation has resulted in a broad, monoclinal warp within the hanging wall of the fault that generally underlies the area hundreds of feet northwesterly of the mapped surface trace. The upper-bound earthquake considered likely to occur on the McKinleyville fault has an estimated M_W of 7.0 (CDMG, 1998). Ground accelerations of at least 0.6g to 0.7g (60 to 70 percent of the force of gravity), or more, may be expected to occur on this site as a result of the regional design basis earthquake (Petersen *et al*, 1999, CGS 2007).

Based on the record of historical earthquakes (approximately 150 years), faults within the plate boundary zone and internally deforming Gorda Plate have produced numerous small-magnitude and several moderate to large (i.e. magnitude greater than 6) earthquakes affecting the local area. Several active regional seismic sources, in addition to those mentioned above, are proximal to the project site and have the potential to produce strong ground motions. These seismic sources include:

- The northern segment of the San Andreas transform fault that represents the boundary between the stable North American plate and the northwest-migrating Pacific plate.
- The Mendocino fault, an offshore, high-angle, east-west-trending, right-lateral strike-slip fault that forms the boundary between the Gorda and Pacific plates.
- Faults within the internally-deforming Gorda plate consisting of high-angle, northeast-trending, left-lateral, strike-slip faults.

4.4 Site Soils

Based on soils observed in our subsurface explorations and soils documented by previous subsurface explorations in the project vicinity, the shallow soils underlying the site primarily consist of geologically young marine sediments capped by a relatively thin layer of pedogenic soil. Thin (less than 1.5 feet-deep) undocumented fills were observed within three of our five test borings (Borings B-1, B-4, and B-5).

The fill soils observed across the building footprint are primarily composed of imported sand and gravel. Where observed, the fill soils are approximately 1.5 feet thick or less. The observed fill materials have a loose to medium dense consistency. In the absence of testing and/or compaction records of the existing fill materials, they should be considered as undocumented fill, and as unsuitable bearing soils for planned foundations.

Underlying the undocumented fill soils and across the site surface without fill soil is 1 to 2 feet of soft, dark-brown to brown, organic silty topsoil (ML). Laboratory tests of the silty topsoil (B-4 at 2.5 to 3.5 feet) indicate that it has a dry density of approximately 80 pounds per cubic foot (pcf).

The native subsoils underlying the topsoil primarily consist of medium-dense, yellow-brown sandy subsoil consisting of interbedded silty sand (SM) and well-graded sand with gravel (SW). At a depth of approximately 10 to 15 feet below the ground surface, the subsoils primarily become silty sand. This soil stratigraphy is consistent with soils observed in the project vicinity during exploration by others. Laboratory results of samples of the undisturbed granular subsoil indicate dry densities ranging from approximately 90 to 98 pcf.

Detailed descriptions of the soils exposed in the test borings associated with our subsurface exploration at the site, and associated laboratory tests, are provided in Attachments 2 and 3, respectively.

Although the undocumented granular fill soils overlying portions of the project site are unsuitable as a foundation bearing material, these materials may be suitable for reuse as structural fill. The actual suitability of the materials should be assessed by the project geotechnical engineer or geologist during earthwork. Additional laboratory testing may be necessary to confirm suitability of the material for reuse as structural fill (see recommendation Section 5.4.2 “Fill Quality and Compaction Standard”).

The native topsoil at the site is also unsuitable for bearing the foundation and concrete slab loads due to this material's soft consistency and low density. In general, the medium-dense, undisturbed native granular subsoils are judged as suitable foundation bearing soils for the proposed lightly- to moderately-loaded building, and for structural fills supporting concrete slabs and/or pavements. All load-bearing foundation elements and/or structural fills should be founded on the undisturbed native granular subsoils.

Groundwater Conditions

Groundwater was not encountered during subsurface exploration performed for this exploration (to a maximum exploration depth of 30 feet below the ground surface, bgs). The soils exposed in our borings were primarily oxidized, suggesting that prolonged saturation of the shallow subsoils is uncommon. Groundwater surface elevations measured in monitoring wells MW-1 and MW-3 (by others) located approximately 275 feet southwesterly, and at a similar topographic elevation to the proposed project site, fluctuate between 128 and 134 feet bgs (Geotracker, 2012).

4.6 Corrosion

Corrosivity test results obtained on the project soils are not considered corrosive (results included in Attachement 3). However, proposed project improvements in contact with the soil that are sensitive to corrosion should be evaluated by a corrosion engineer to reduce their potential for premature corrosion. Chemical modification of the site may change the corrosivity of the soil.

4.7 Geologic Hazards

Primary geologic hazards assessed for the site, include seismic ground shaking, surface fault rupture, liquefaction, landsliding, flooding, high groundwater, settlement, and swelling or shrinking soils. Our assessment of the potential for these hazards to adversely affect the project site is presented below.

4.7.1 Seismic Ground Shaking

As previously discussed, the site is situated within a seismically active area and multiple seismic sources exist in the site vicinity that is capable of producing moderate to strong ground motions. Given the proximity of significant active sources (the McKinleyville fault and other active faults within the Mad River fault system to the south, and the Cascadia subduction zone offshore), as well as other active faults within northern California, this site will experience ground shaking of some magnitude during the economic life span of any site development. The risk of ground shaking at the site is high. According to the California Geologic Survey (CGS), there is a 10 percent chance that site will experience ground shaking of 0.64g or more, within the next 50 years (CGS, 2003).

The spectral response accelerations prescribed by the 2010 CBC as related to seismic analysis and building design are presented in Section 5.3.

4.7.2 Surface Fault Rupture

The surface trace of the McKinleyville fault is located less than 1,000 feet southwesterly of the site and is the closest recognized active fault to the proposed development (Figure 1). Therefore, based on the information available for our review, the potential for surface fault rupture to occur at the project site is considered low. However, we cannot preclude the potential for ground deformation in the form of fault bend folding as a result of a seismic event on the McKinleyville fault. Fault bending folding on the hanging wall of a thrust fault has the potential to cause instantaneous deformation of the ground surface as a result of "warping" produced during a faulting event. The magnitude of ground deformation and differential displacement of the forelimb along thrust faults of a similar nature in Humboldt County has been estimated to be approximately 0.2 to 0.4 inches per 10 linear feet (vertical to horizontal) (LACO, 2010). Statistically, rupture of the McKinleyville fault with the potential to cause warping of the ground surface is estimated to have a recurrence interval of 1,785 years (Carver and Burke, 1988). The timing of the last event is unknown. Therefore, risk of this type of event within the next 50 years is unknown. Based on the unknown risk, LACO does not include recommendations to mitigate this hazard in this Report. However, recommendations can be provided upon request.

4.7.3 Liquefaction

Liquefaction is the loss of soil strength, resulting in fluid mobility through the soil. Liquefaction typically occurs when uniformly-sized, loose, saturated sands or soft silts are subjected to repeat shaking in areas where the groundwater is less than 50 feet bgs. In addition to the necessary soil and groundwater conditions, the ground acceleration must be high enough, and the duration of the shaking must be sufficiently long, for liquefaction to occur. However, historic evidence along the North Coast indicates that liquefaction generally does not occur within Pleistocene age deposits (Youd and Hoose, 1978).

As presented on Map S-1 of Special Publication 115 (CDMG, 1995), the project site is mapped as having a less than moderate liquefaction potential. Further, based on the recorded depth to groundwater of greater than 100 feet below the ground surface in nearby water wells, we judge that the risk of liquefaction within the proposed building area is negligible.

4.7.4 Landsliding

The proposed building site is situated on gently sloping ground with gradients of less than about 15 percent. Currently, no evidence of active or dormant landsliding was observed on the slopes bordering the site.

The nearest mapped slope instabilities are located along the bluffs boarding the Pacific Ocean, a distance of approximately 3,000 feet westerly of the site (CDMG, 1984). According to mapping by the Humboldt County Community Development Services (HCCDS, 2004), the low gradient slopes on which the site is located are considered areas of "Low Instability".

On the basis of our site reconnaissance and map review, the risk of landsliding to adversely affect the proposed project site is determined to be negligible.

4.7.5 Flooding

According to the Flood Insurance Rate Map, Panel Number 060060 0625 B effective July 19, 1982, the proposed project site is located in Zone C and defined as an area with minimal flooding. The risk of flooding is negligible.

4.7.6 High Groundwater

Based on groundwater data from environmental work (by others) at the neighboring site, groundwater beneath the proposed project site is anticipated to remain deep (greater than 100 feet bgs) year round. The risk of high groundwater to adversely affect the proposed project site is determined to be negligible

4.7.7 Settlement

Static settlement is the result of consolidation (compression) of soil beneath an applied load. The consolidation generally results from a reduction in voids within the soil. In dry or granular soils, the settlement generally occurs relatively rapidly. However, settlement of soft, fine-grain soils usually occurs more slowly.

Our scope of services for this project did not include consolidation testing of soil samples. However, given the relatively lightly- to moderately-loaded nature of the proposed project, and the herein presented recommendations for supporting foundations in firm native or compacted engineered (structural) fill, both typically of low compressibility, total building settlement over the project life is judged to be less than 0.5 inches. Differential settlement along a continuous footing, or between adjacent isolated spread footings, should be no more than approximately one-half of the total settlement.

4.7.8 Soil Swelling or Shrinkage Potential

As discussed in Section 4.3, no clay-rich soil materials were encountered at foundation bearing depths in our test borings. On this basis, the potential for soil swelling or shrinkage to adversely affect the proposed building is determined to be negligible.

5.0 DISCUSSION AND GEOTECHNICAL RECOMMENDATIONS

Based on the results of our field exploration and literature review, we judge the project site to be suitable for development of the ARFF facility, as is currently proposed, provided the recommendations presented in this Report are incorporated into the project design and construction.

The main geologic/geotechnical engineering considerations affecting design and construction of the proposed ARFF facility are 1) providing a uniform bearing surface for the new foundation elements; 2) the presence of undocumented fill and/or weak native soils underlying the building site and pavement areas; and 3) the potential for strong seismic shaking at the site.

5.1 Foundations

Foundation design and construction details for the proposed building have not yet been developed nor provided to us for this project. We assume that the proposed building will be supported by continuous perimeter, and isolated interior, reinforced concrete spread footings, and will have a concrete slab-on-grade ground floor. This type of foundation system is deemed suitable for the site soil conditions encountered provided that it is designed and constructed in accordance with the minimum standards of the current edition of the CBC and the recommendations, including earthwork, contained herein.

For design purposes, foundation elements bottomed into the medium-dense, native sandy subsoils or, alternatively, into structural (engineered) fill may assume a bearing capacity of 2,000 pounds per square foot (psf) for dead loads. This recommended bearing capacity is based on site specific bearing value calculations of the granular subsoil and assume a minimum 2-foot-wide footing, an embedment depth of 2 feet, and safety factor of 3.0. The bearing capacity may be increased by one-half to account for short-term wind or seismic forces.

Lateral load resistance may be developed in friction between the foundation bottom and the supporting soil. An allowable friction coefficient of 0.35 is considered applicable (factor of safety of approximately 1.5). Allowable passive resistance equal to an equivalent fluid weighing 350 pcf (factor of safety of approximately 2) acting against the sides of foundations may also be used to resist lateral loads. Passive pressure should be neglected in the upper 1 foot of soil unless the adjacent surface is confined by concrete slabs or pavements. If friction and passive resistances are to be combined, reduce the lesser value by 50 percent.

Foundation elements and/or engineered fill should generally be founded in the undisturbed native subsoils that behave as a firm and unyielding surface. Where explored, undisturbed native subsoils are typically encountered at depths of approximately 1.0 to 3.5 feet below existing grade.

5.2 Floor Slabs

Concrete slab-on-grade floors should be reinforced, and be designed to resist cracking from bending, tension, or shearing forces as required by the CBC. The floor slab should be underlain by at least 4 inches of underslab rock consisting of clean, ¾-inch (nominal diameter) material to act as a capillary moisture break. To reduce the possibility of moisture vapor migration through the floor slab, a minimum 15-mil plastic membrane (vapor retarder) should be placed on top of the underslab rock. Joints between the membrane sheets and utility piping openings should be

lapped and taped. To help protect the membrane from puncture during steel reinforcement and concrete placement, and to possibly aid in concrete finishing, the membrane can be covered with 2 inches of clean sand.

LACO's recommendation for a concrete slab vapor retarder is not intended to waterproof the slab and/or eliminate potential slab moisture problems. Rather, the recommendation is intended to reduce the potential for moisture vapor to migrate through the concrete. Flooring consultants and/or flooring manufacturers should be consulted for slab concrete requirements where floor materials require more stringent moisture control.

5.3 Seismic Design

We recommend the proposed building be designed and constructed to withstand seismic shaking as required by the CBC. Based on the site conditions as encountered within our test borings and an assumption about soils types within 100 feet of the ground surface, we have classified the site as Site Class D consisting of "dense soil profile" (Section 1613.5.2, 2010 CBC). On this basis, the design spectral response accelerations S_s, S_1, F_a, F_v, S_{MS}, S_{M1}, S_{DS} and S_{D1} were determined using the United States Geological Survey (USGS 2012) seismic calculator software, "Seismic Hazard Curves, Response Parameter, Design Parameters: Seismic Hazard Curves and Uniform Hazard Response Spectra", version 5.1.0, and based on the American Society of Civil Engineers (ASCE) Standard 7-05, Minimum Design Loads for Buildings and other Structures analysis option. Calculated values are presented in Table 2.

Table 2 - Summary of Seismic Design Factors

Site Class	F_a	F_v	S_s	S_1	S_{MS}	S_{M1}	S_{DS}	S_{D1}
D	1.0	1.5	2.716	1.049	2.716	1.574	1.810	1.049

*Latitude and longitude are 40.9775° North and -124.1088° West, respectively, based on Humboldt County Planning and Building GIS Portal for parcel centroid

These design spectral response accelerations are further defined as follows:

- F_a – Short period coefficient to modify 0.2-second period of mapped spectral response accelerations for Site Class B.
- F_v – Long period coefficient to modify 1.0-second period of mapped spectral response accelerations for Site Class B.
- S_s – Mapped spectral response acceleration, 5 percent damped, at 0.2-second period for Site Class B (%g).
- S_1 – Mapped spectral response acceleration, 5 percent damped, at 1.0-second period for Site Class B (%g).
- S_{MS} – Maximum considered earthquake spectral response acceleration, 5 percent damped, at 0.2-second for Site Class effects (%g).

S_{M1} – Maximum considered earthquake spectral response acceleration, 5 percent damped, at 1.0-second period for Site Class effects (%g).

S_{DS} – Design spectral response acceleration, 5 percent damped, at 0.2-second period (%g).

S_{D1} – Design spectral response acceleration, 5 percent damped, at 1.0-second period (%g).

5.4 Earthwork

Only minor earthwork (i.e., cuts and fills of less than 3 feet-high) is currently anticipated. The following sections of our Report present general earthwork recommendations for the project, where needed. General recommendations for site and subgrade preparation, fill and backfill quality and compaction, and surface drainage control are presented. Although not currently proposed, if new retaining wall design is needed, the design lateral soil loads presented in Table 1610.1 of the 2010 CBC may be used.

5.4.1 Site and Subgrade Preparation

At the locations of all new foundations, existing foundations should be demolished (if any), and loose fill or native soil should be removed to expose the competent (firm and unyielding) granular subsoils. All earthwork including, but not limited to, site clearing, grubbing, and stripping should generally be conducted during dry weather conditions, where feasible. If wet-weather site preparation is necessary, additional excavation may be needed where rain-softened, yielding soils occur under the construction equipment used.

For suitable support of concrete slab-on-grade floors, we recommend removing undocumented fill and weak native topsoil for its full depth (as deep as approximately 1.5 to 3.5 feet bgs based on our test borings). The exposed excavation surface should be scarified to a depth of at least 8 inches and recompacted to at least 90 percent relative compaction at a moisture content within 2 percent of optimum (ASTM D1557). Fill material should then be placed and compacted as recommended in Section 5.4.2 of this Report to achieve the planned slab subgrade elevation.

5.4.2 Fill Quality and Compaction Standard

If needed, onsite soils that are free of organic matter, deleterious materials, and do not contain rocks over 4 inches in diameter will generally be satisfactory for re-use as compacted fill to support structures (also known as structural fill). Imported fill, where needed to balance the required grading (if any), should be a select material of low expansion potential, free of organic matter and conforming, in general, to the following requirements:

Plasticity Index:	less than 15%
Liquid Limit:	less than 40%
Percent soil passing No. 200 sieve:	50 maximum, 5 minimum
Maximum Aggregate Size:	4 inches

Select imported or onsite fill material should be spread in loose lifts approximately 8 inches (or less) thick, moisture conditioned to near optimum moisture content, and compacted to at least 90 percent relative compaction (ASTM D1557). Fill (or cut) subgrades should generally be finished to present smooth, unyielding surfaces. Subgrade soils should be maintained at their moist or above optimum moisture contents until covered by permanent construction.

5.4.3 Surface Drainage Control

Final site grading should provide for surface drainage away from the foundations; compaction of disturbed soils may be required to reduce the amount of water percolation into the underlying soils. Ponding of surface water should not be allowed adjacent to the foundations. Soil grades should be sloped away from the structure at a minimum gradient of 5 percent for a horizontal distance of at least 10 feet. Impervious surfaces should be sloped away from the structure at a minimum gradient of 2 percent for a horizontal distance of at least 10 feet. Clean rock or other erosion-resistant material should be used around the perimeter of the structure to disperse the concentrated energy of the rainfall runoff. Concentrated surface runoff that may occur as a result of construction should be collected and transported via paved drainage swales or closed pipelines to a suitable discharge point in accordance with locally-adopted stormwater management regulations.

5.4.4 Pavement Design

The proposed project may include the construction of new parking areas, access roadways, loading zones, and/or airplane parking aprons. The airplane parking apron at the location of test boring B-1 consisted of 0.5 feet of concrete overlying approximately 1.0 foot of imported granular (river-run) fill. The fill soils overlie approximately 1.5 feet of soft, dark-brown to brown, silty topsoil (ML). The soils beneath the topsoil are interbedded silty sand and well-graded sand subsoils. LACO selected a bulk sample of this dark-brown topsoil for CBR testing of the anticipated worst-case (fine grained) supporting subgrade soils at the site. CBR test results are included in Attachment 3. Where planned, pavement structural sections should be designed to withstand the anticipated traffic loads over this as-tested supporting subgrade soil, for the design life of the pavement.

5.4.5 Pavement Subgrade Preparation

Compaction standards for pavement sections should conform to the applicable Federal Aviation Authority (FAA), State of California Department of Transportation (Caltrans), or County of Humboldt relative compaction specifications. At a minimum, pavement subgrade should be visually inspected to check its suitability, i.e., proof-rolled with heavy-duty earthmoving equipment to check that a firm and unyielding condition is observed and approved by the project engineer (or his designated representative) prior to covering with completed construction. Pumping areas or soft spots may require over-excavation and replacement with properly

moisture-conditioned fill material that is placed, compacted, and tested as recommended in this Report.

6.0 CONSULTATION, OBSERVATION, AND TESTING

During the design phase, we recommend that communications between the Client, design engineer(s), and LACO be maintained to check for conformance between the design and the actual site conditions. At the request of the Client, LACO can be retained to review the plans and specifications pertaining to earthwork and foundation construction, in order to check that our recommendations have been properly implemented. These services are not currently included in our scope of services but can be provided upon request through a separate work authorization.

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PROJECT	ACV ARFF GEOTECHNICAL REPORT	BY JDB	FIGURE 1
CLIENT	MEAD & HUNT	DATE 6/12/12	
LOCATION	ARCATA/EUREKA AIRPORT	CHECK BD	JOB NO. 7403.01
	GEOLOGIC & GEOMORPHIC MAP	SCALE AS SHOWN	

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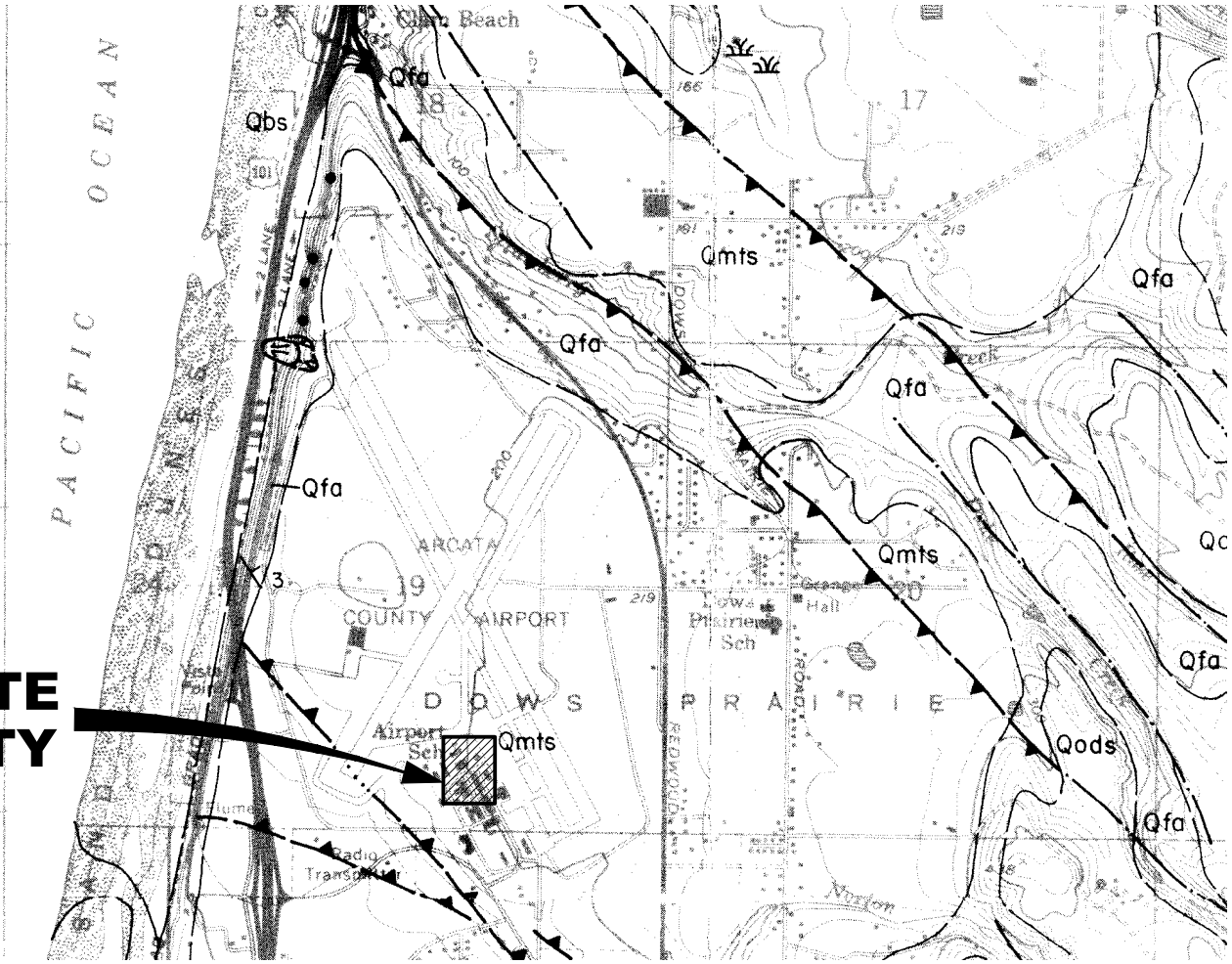

SITE VICINITY

LEGEND

(KELLY, 1984)

TRANSLATIONAL/ROTATIONAL SLIDE: relatively cohesive slide mass with a failure plane that is deep-seated in comparison to that of a debris slide of similar areal extent; sense of motion along slide plane is linear in a translational slide and arcuate or "rotational" in a rotational slide; complex versions with rotational heads and translational movement or earthflows downslope are common; translational movement along a planar joint or bedding discontinuity may be referred to as a block glide; ↶ indicates scarp, ⟸ indicates direction of movement; dashed where dormant, queried where uncertain.

DEBRIS SLIDE: unconsolidated rock, colluvium, and soil that has moved slowly to rapidly downslope along a relatively steep (generally greater than 65 percent), shallow translational failure plane; forms steep, unvegetated scars in the head region and irregular hummocky deposits (when present) in the toe region; scars likely to ravel and remain unvegetated for many years; revegetated scars recognized by step, even-faceted slope and light-bulb shape; includes scarp and slide deposits; solid where active, dashed where dormant.

DEBRIS SLIDE SLOPE: geomorphic feature characterized by steep (generally greater than 65 percent), usually well vegetated slopes that have been sculpted by numerous debris slide events; vegetated soils and colluvium above shallow soil/bedrock interface may be disrupted by active debris slides or bedrock exposed by former debris sliding; slopes near angle of repose may be relatively stable except where weak bedding planes and extensive bedrock joints and fractures parallel slope.

ACTIVE SLIDE: too small to delineate at this scale.

DISRUPTED GROUND: irregular ground surface caused by complex landsliding processes resulting in features that are indistinguishable or too small to delineate individually at this scale; also may include areas affected by downslope creep, expansive soils, and/or gully erosion; boundaries usually are indistinct.

Qbs BEACH AND DUNE SAND (Holocene): unconsolidated fine- to coarse-grained sand with smaller amounts of shell fragments and pebbles.

Qsc STREAM CHANNEL DEPOSITS (Holocene): unconsolidated silt, sand, and pebble- to cobble-sized gravel in active river channel and flood-stage, gravel bar areas.

Q ALLUVIUM (Holocene): unconsolidated, coarse- to fine-grained sand and silt on coastal plain, in valley bottoms, and along modern river flood plains; gravel in channel areas; may include some marine terrace deposits along Mad River flood plain.

Qrt RIVER TERRACE DEPOSITS (Holocene-Pleistocene): dominantly sand and gravel with minor amounts of silt and clay deposited during higher stands of major streams.

Qods OLDER DUNE SANDS (Late Pleistocene): unconsolidated deposits of fine- to coarse-grained sand; generally well vegetated.

Qmts MARINE TERRACE DEPOSITS (Quaternary): poorly to moderately consolidated deposits of marine silts, sands, and gravels forming flat benches on wave-cut surfaces adjacent to the Mad River flood plain.

Qfa FALOR FORMATION (Early to Middle Pleistocene): fluvial and shallow-water marine sediments; includes pebbly conglomerate, sandstone, and silt; in some places, contains abundant animal and plant remains.

KJfs CENTRAL BELT FRANCISCAN SEDIMENTARY ROCKS (Cretaceous-Jurassic): well consolidated sandstone, siltstone, and shale with minor amounts of conglomerate; structurally deformed and usually highly sheared; includes areas mapped as Franciscan Broken Formation by Carver and others (1984).

fm FRANCISCAN MELANGE (Cretaceous-Jurassic): individual blocks of graywacke, sandstone, mudstone, conglomerate, greenstone, chert, and serpentinite in a sheared argillaceous matrix.

LITHOLOGIC CONTACT: dashed where approximately located.

FAULT: dashed where approximately located, dotted where projected or inferred, queried where uncertain.

THRUST FAULT: dashed where approximately located, dotted where projected or inferred, queried where uncertain; barbs on upper plate.

LINEAMENT: linear feature of unknown origin observed on aerial photographs.

STRIKE AND DIP OF BEDDING: approximate; may vary over short distances.

QUARRY OR GRAVEL PIT

SPRING

MARSH

0 1000' 2000'

SCALE: 1"=2000'

Jul 20,2012-1:14pm
T:\Cadfiles\7400\7403.01 Mead and Hunt - McKinleyville ARFF\DWG\ 7403-01 GEO FIG 1.dwg

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PROJECT	ACV ARFF GEOTECHNICAL REPORT	BY JDB	FIGURE 2
CLIENT	MEAD & HUNT	DATE 6/12/12	
LOCATION	ARCATA/EUREKA AIRPORT	CHECK BD	JOB NO. 7403.01
	SITE MAP	SCALE AS SHOWN	

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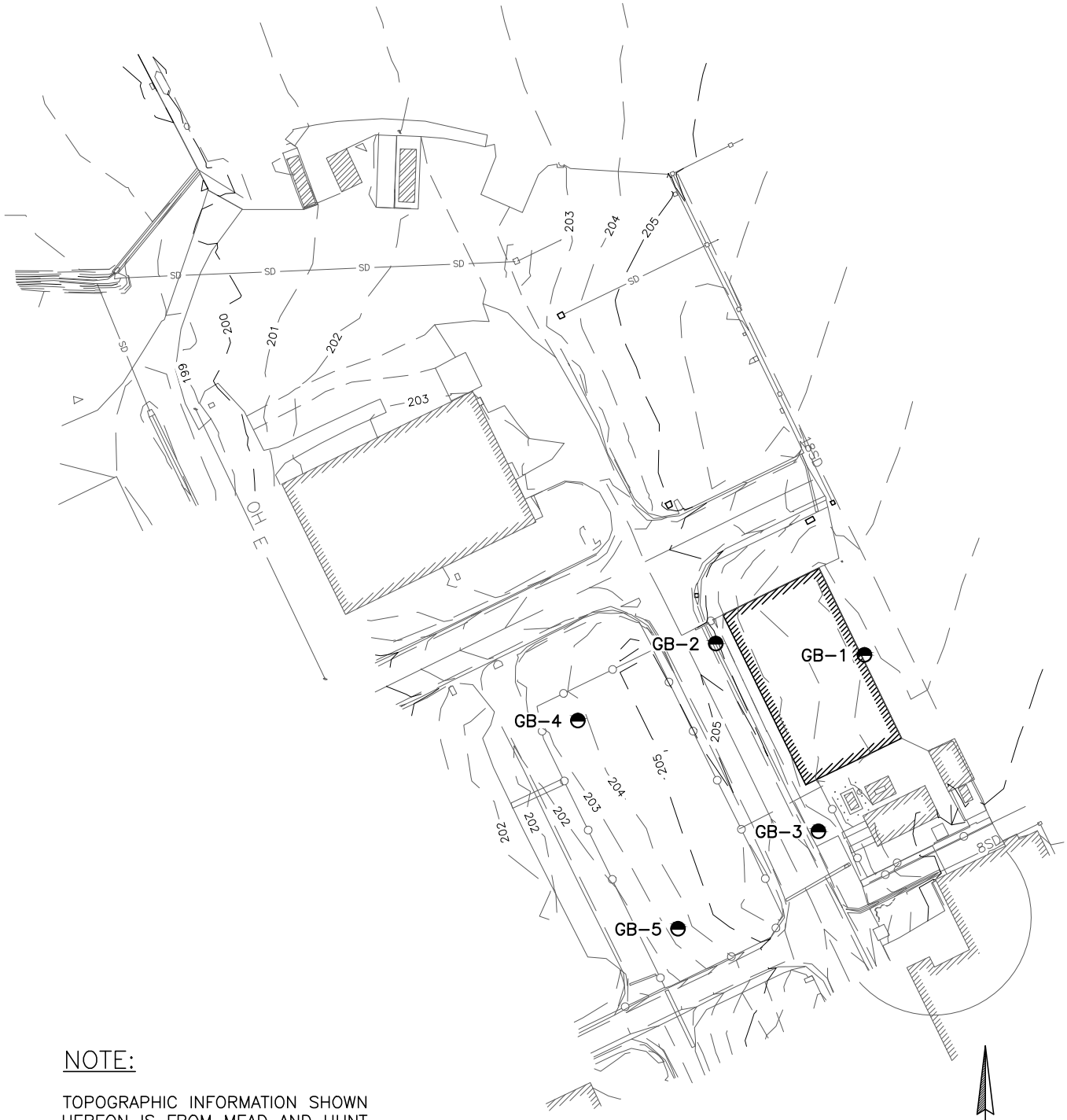

NOTE:

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6501 WATTS ROAD
MADISON, WI 53719
608.273.6391

LEGEND

GB–X ◓ BORING LOCATION

0 50' 100'

SCALE: 1"=100'

Jul 20,2012–1:20pm T:\Cadfiles\7400\7403.01 Mead and Hunt – McKinleyville ARFF\DWG\ 7403-01 GEO FIG 2.dwg

Attachment 1

ASFE Brochure

Important Information about Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

ASFE
THE BEST PEOPLE ON EARTH

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Attachment 2

Boring Logs

BORING LOG LEGEND

CLIENT Mead & Hunt **PROJECT NAME** ACV ARFF Geotechnical Report

PROJECT NUMBER 7403.01 **PROJECT LOCATION** Arcata Eureka Airport

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS More than Half > #200 sieve	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 15% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 15% FINES	SM	SILTY SANDS, POOORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than Half < #200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

KEY TO TEST DATA

⊠	Modified California (MC)	RV	R-Value
⊠	Standard Penetration Test (SPT)	SA	Sieve Analysis
■	Pushed Shelby Tube (ST)	SW	Swell Test
◧	Auger Cuttings	TC	Cyclic Triaxial
	Grab Sample (GB)	DS	Direct Shear
	Continous Core Sample (CC)	CP	Compaction
c	Cohesion	UC	Unconfined Compression
ϕ	Friction Angle	CN	Consolidation
MC	Moisture Content	τ	Shear Strength
DD	Dry Density	▽	Water Level at Time of Drilling
PP	Pocket Penetrometer	▼	Water Level after Drilling

NOTES: The lines separating soil layers are approximate boundaries.
Blow counts represent the number of blows of a 140-pound hammer falling 30 inches to drive an 18-inch sampler the final 12 inches.
Modified California Sampler blow counts have been converted to standard N-value blow counts using Burmister's energy input factor of 0.65.

LACO LEGEND - GINT STD US LAB.GDT - 7/19/12 14:31 - P:\GINT FILES\PROJECTS\7403.01 ACV ARFF GEOTECHNICAL RFCP.GPJ

BORING NUMBER B1

LACO

CLIENT Mead & Hunt
PROJECT NAME ACV ARFF Geotechnical Report
PROJECT NUMBER 7403.01
PROJECT LOCATION Arcata Eureka Airport
DATE STARTED 5/18/12 **COMPLETED** 5/18/12
GROUND ELEVATION _____ **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR LACO ASSOCIATES
GROUND WATER LEVELS:
DRILLING METHOD GeoProbe DIRECT PUSH
AT TIME OF DRILLING ---
LOGGED BY BED **CHECKED BY** _____
AT END OF DRILLING ---
NOTES Borehole initially advanced with 6 5/8 inch diamter hollow stem auger to 7.5 feet bgs.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		CONCRETE SLAB, no rebar										
		IMPORTED RIVER RUN GRAVEL FILL, gray, loose to medium dense, moist										
		SANDY SILT, (ML) brown to dark brown, medium stiff, moist	GB									
		SILTY SAND WITH GRAVEL, (SM) Distubed subsoil, yellow brown with strong brown oxidation, moist, medium dense, gravel is fine										
5		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine	SH				90	21				
		SILTY SAND, (SM) yellow brown, moist, medium dense										
		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine										
10		SILTY SAND, (SM) yellow brown, damp, medium dense										
		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine										
		SILTY SAND, (SM) yellow brown, moist, medium dense										
15												
20												

Bottom of borehole at 20.0 feet.

GEOTECH LOG - COLUMNS - GINT STD US LAB.GDT - 7/19/12 14:56 - P:\GINT FILES\PROJECTS\7403.01 ACV ARFF GEOTECHNICAL RFCP.GPJ

BORING NUMBER B2

LACO

CLIENT Mead & Hunt
PROJECT NAME ACV ARFF Geotechnical Report
PROJECT NUMBER 7403.01
PROJECT LOCATION Arcata Eureka Airport
DATE STARTED 5/18/12 **COMPLETED** 5/18/12
GROUND ELEVATION _____ **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR LACO ASSOCIATES
GROUND WATER LEVELS:
DRILLING METHOD GeoProbe DIRECT PUSH
AT TIME OF DRILLING ---
LOGGED BY BED **CHECKED BY** _____
AT END OF DRILLING ---
NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		SANDY SILT WITH GRAVEL, (ML) Disturbed Topsoil, dark brown, moist, soft to medium stiff, gravel is fine										
		SILTY SAND WITH GRAVEL, (SM) Distubed subsoil, yellow brown with strong brown oxidation, moist, medium dense, gravel is fine										
		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine										
5		SILTY SAND, (SM) yellow brown, damp, medium dense										
		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine										
10		SILTY SAND, (SM) yellow brown, damp, medium dense										
15												
20												
25												
		Bottom of borehole at 25.0 feet.										

GEOTECH LOG - COLUMNS - GINT STD US LAB.GDT - 7/19/12 14:56 - P:\GINT FILES\PROJECTS\7403.01 ACV ARFF GEOTECHNICAL RFCP.GPJ

BORING NUMBER B3

LACO

CLIENT Mead & Hunt
PROJECT NAME ACV ARFF Geotechnical Report
PROJECT NUMBER 7403.01
PROJECT LOCATION Arcata Eureka Airport
DATE STARTED 5/18/12 **COMPLETED** 5/18/12
GROUND ELEVATION _____ **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR LACO ASSOCIATES
GROUND WATER LEVELS:
DRILLING METHOD GeoProbe DIRECT PUSH
AT TIME OF DRILLING ---
LOGGED BY BED **CHECKED BY** _____
AT END OF DRILLING ---
NOTES Borehole initially advanced with 6 5/8 inch diamter hollow stem auger to 5.0 feet bgs.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		CLAYEY SILT WITH FINE SAND, (ML) Disturbed Topsoil, dark brown, moist, soft to medium stiff										
		SILTY SAND WITH GRAVEL, (SM) Distubed subsoil, yellow brown with strong brown oxidation, moist, medium dense, gravel is fine	SH				92	21				29
5		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine										
		SILTY SAND, (SM) yellow brown, moist, medium dense										
		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine										
10		SILTY SAND, (SM) yellow brown, damp, medium dense										
		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine										
		SILTY SAND, (SM) yellow brown, damp, medium dense										
15												
20												
25												
30												
		Bottom of borehole at 30.0 feet.										

GEOTECH LOG - COLUMNS - GINT STD US LAB.GDT - 7/19/12 14:56 - P:\GINT FILES\PROJECTS\7403.01 ACV ARFF GEOTECHNICAL RFCP.GPJ

BORING NUMBER B4

LACO

CLIENT Mead & Hunt
PROJECT NAME ACV ARFF Geotechnical Report
PROJECT NUMBER 7403.01
PROJECT LOCATION Arcata Eureka Airport
DATE STARTED 5/18/12 **COMPLETED** 5/18/12
GROUND ELEVATION _____ **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR LACO ASSOCIATES
GROUND WATER LEVELS:
DRILLING METHOD GeoProbe DIRECT PUSH
AT TIME OF DRILLING ---
LOGGED BY BED **CHECKED BY** _____
AT END OF DRILLING ---
NOTES Borehole initially advanced with 6 5/8 inch diamter hollow stem auger to 7.5 feet bgs.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		WELL GRADED GRAVEL WITH SAND, (GW) Imported Gravel Fill, gray, fine to medium gravel with sand, dry to damp, medium dense to dense										
		CLAYEY SILT WITH FINE SAND, (ML) Disturbed Topsoil, dark brown, moist, soft to medium stiff	SH				80	24				
5		SILTY SAND WITH GRAVEL, (SM) yellow brown, moist, medium dense	SH				98	16				17
10		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine										
15		SILTY SAND, (SM) yellow brown, wet, medium dense Moist										
20		Color become olive, wet										
25												
30		Moist										
		Bottom of borehole at 30.0 feet.										

GEOTECH LOG - COLUMNS - GINT STD US LAB.GDT - 7/19/12 14:56 - P:\GINT FILES\PROJECTS\7403.01 ACV ARFF GEOTECHNICAL RFCP.GPJ

BORING NUMBER B5

LACO

CLIENT Mead & Hunt
PROJECT NAME ACV ARFF Geotechnical Report
PROJECT NUMBER 7403.01
PROJECT LOCATION Arcata Eureka Airport
DATE STARTED 5/18/12 **COMPLETED** 5/18/12
GROUND ELEVATION _____ **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR LACO ASSOCIATES
GROUND WATER LEVELS:
DRILLING METHOD GeoProbe DIRECT PUSH
AT TIME OF DRILLING ---
LOGGED BY BED **CHECKED BY** _____
AT END OF DRILLING ---
NOTES _____

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		WELL GRADED GRAVEL WITH SAND, (GW) Imported Gravel Fill, gray, fine to medium gravel with sand, dry to damp, medium dense to dense										
		CLAYEY SILT WITH FINE SAND, (ML) Disturbed Topsoil, dark brown, moist, soft to medium stiff										
		SILTY SAND WITH GRAVEL, (SM) Distubed subsoil, yellow brown with strong brown oxidation, moist, medium dense, gravel is fine	GB									
5		SILTY SAND, (SM) yellow brown, moist, medium dense										
		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine	GB									
10		SILTY SAND, (SM) yellow brown, damp, medium dense										
		WELL GRADED SAND WITH GRAVEL, (SW) yellow brown with strong brown oxidation, damp, medium dense, gravel is fine	GB									17
		SILTY SAND, (SM) yellow brown, damp, medium dense										
15		Color becomes olive	GB									
20			GB									
25			GB									
30												
		Bottom of borehole at 30.0 feet.										

GEOTECH LOG - COLUMNS - GINT STD US LAB.GDT - 7/19/12 14:56 - P:\GINT FILES\PROJECTS\7403.01 ACV ARFF GEOTECHNICAL RFCP.GPJ

Attachment 3

Laboratory Test Results

LACO

MOISTURE / DENSITY
ASTM D-2216 / 2937

PROJECT	ACV ARFF GEOTECHNICAL REPORT			JOB NO. 7403.01	SHEET 1 of 1
CLIENT	MEAD & HUNT			LAB ID 12-028EK	
LOCATION	ARCATA/EUREKA AIRPORT	TEST BY	DLR	DATE	5/23/12
SOIL TYPE	VARIOUS	CHECKED BY	BED	CHECK DATE	6/14/2012

Sample Location	B1	B3	B4	B4				
Sample Depth (ft bgs)	5.0-5.25'	3.0-3.5	2.5'-3.5'	4.0'-5.0'				
Soil Type (USCS)	SW	SM	ML	SM				
Moisture Content (%)	21.2	20.9	23.9	15.6				
Wet Density (pcf)	109.1	0.0	99.5	113.5				
Dry Density (pcf)	90.0	91.7	80.3	98.2				
Void Ratio*	0.8	0.8	1.1	0.7				
% Saturation	66.9	68.7	59.7	60.1				

*Void ratio calculation assumes a specific gravity of 2.65

LACO

FINER THAN #200 SIEVE
ASTM D-1140

PROJECT	ACV ARFF GEOTECHNICAL REPORT			JOB NO. 7403.01	SHEET 1 of 1
CLIENT	MEAD & HUNT			SAMPLE ID 12-028EK	
LOCATION	ARCATA/EUREKA AIRPORT	TEST BY	DLR	DATE	5/23/12
SOIL TYPE	VARIOUS	CHECKED BY	BED	CHECK DATE	6/14/2012

B5 10.5'-15.0'

(B)	Net sample (Dry)	174.0	gms
(C)	Dry sample after washing	144.5	gms
	Total Material finer than 200 sieve	29.5	gms

(A) % Material finer than 200 sieve **16.95%**

A=[(B-C)/B]X100

B3 2.5'-3.5'

(B)	Net sample (Dry)	180.4	gms
(C)	Dry sample after washing	127.8	gms
	Total Material finer than 200 sieve	52.6	gms

(A) % Material finer than 200 sieve **29.16%**

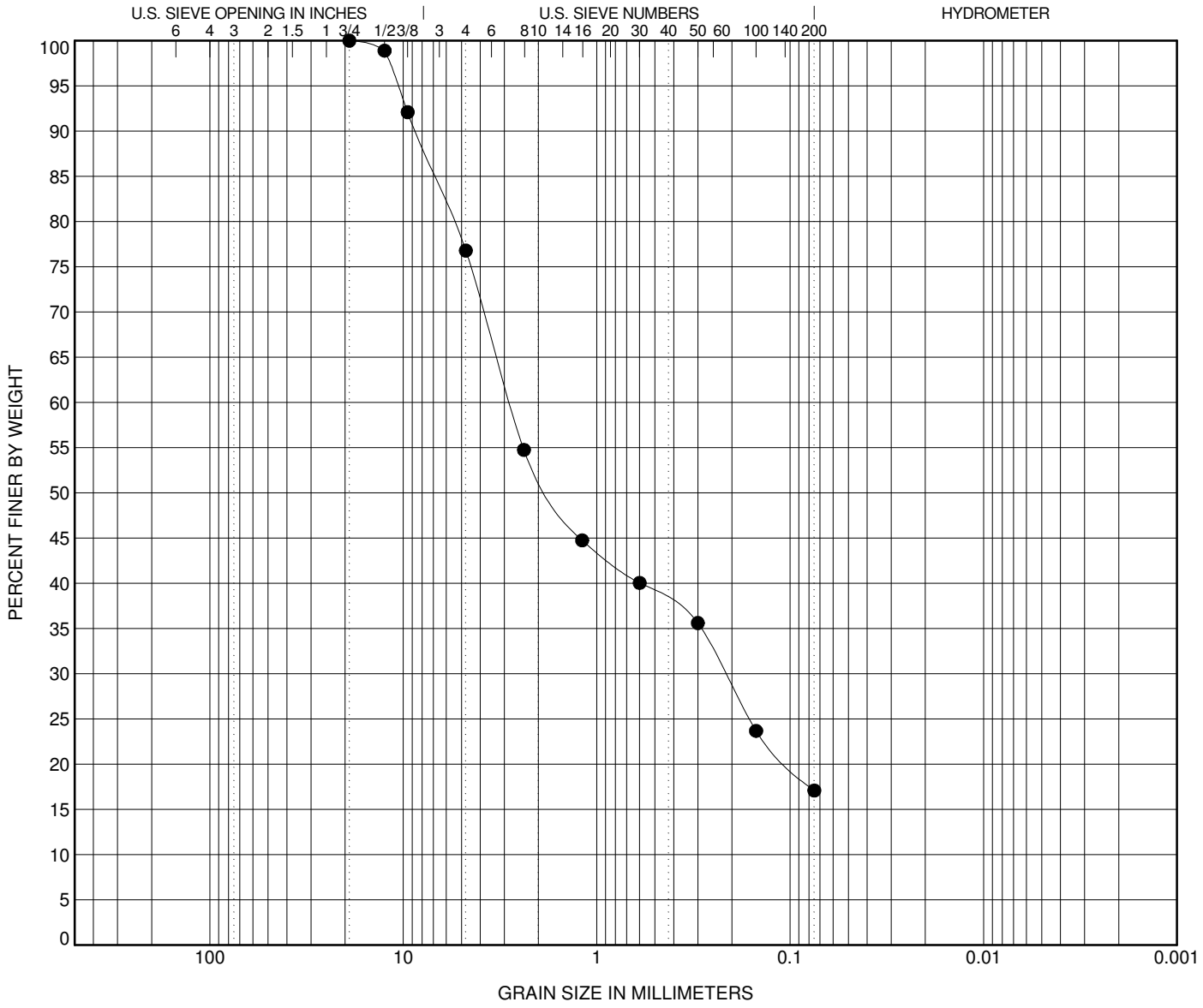
A=[(B-C)/B]X100

GRAIN SIZE DISTRIBUTION (ASTM D422)

LACO

CLIENT Mead & Hunt **PROJECT NAME** ACV ARFF Geotechnical Report

PROJECT NUMBER 7403.01 **PROJECT LOCATION** Arcata Eureka Airport



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
●	**B4**	**4.0**	SILTY SAND WITH GRAVEL (SM)					

	BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B4**	**4.0**	**19**	**2.806**	**0.217**		**23.2**	**59.7**	**17.1**	

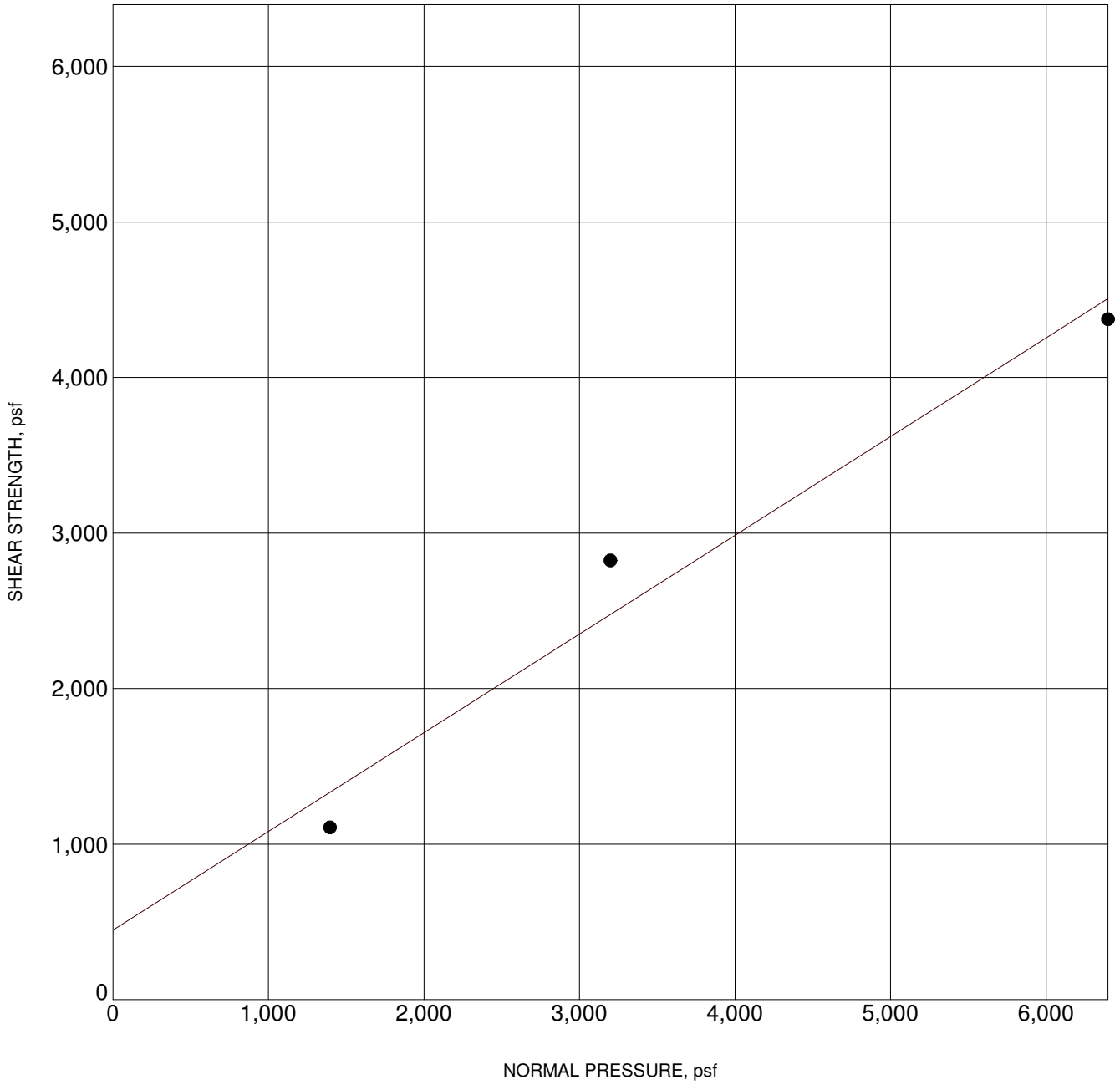
GRAIN SIZE - GINT STD US LAB.GDT - 7/19/12 14:32 - P:\GINT FILES\PROJECTS\7403.01 ACV ARFF GEOTECHNICAL RFCP.GPJ

DIRECT SHEAR TEST

LACO

CLIENT Mead & Hunt **PROJECT NAME** ACV ARFF Geotechnical Report

PROJECT NUMBER 7403.01 **PROJECT LOCATION** Arcata Eureka Airport



	BOREHOLE	DEPTH	Classification	γ_d	MC%	c	ϕ
●	**B3**	**3.0**	SILTY SAND WITH GRAVEL (SM)	**92**	**21**	**447.0**	**32**

DIRECT SHEAR - GINT STD US LAB.GDT - 7/19/12 14:40 - P:\GINT FILES\PROJECTS\7403.01 ACV ARFF GEOTECHNICAL RFCP.GPJ

Corrosivity Test Summary

CTL # 592-036 **Date:** 5/31/2012 **Tested By:** PJ **Checked:** PJ

Client: Laco Associates **Project:** Arcata Airport ARFF **Proj. No:** 7403.01

Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate-(water soluble)		pH	ORP	Sulfide	Moisture	Soil Visual Description
Boring	Sample, No.	Depth, ft.	As Rec.	Minimum	Saturated	mg/kg	mg/kg	%		(Redox)	Qualitative	%	
						Dry Wt.	Dry Wt.	Dry Wt.		mv	by Lead	At Test	
			ASTM G57	Cal 643	ASTM G57	Cal 422-mod.	Cal 417-mod.	Cal 417-mod.	ASTM G51	SM 2580B	Acetate Paper	ASTM D2216	
B-1A & B-1B	Composite	1.3-2.6	-	-	44,655	<2	<5	<0.0005	6.7	334	-	11.5	Olive Silty SAND (slightly plastic)

California Bearing Ratio ASTM D 1883

CTL Job No.:	592-036	**Boring:**	B-1A & B-1B	**Date:**	6/6/2012
Client:	Laco Associates	**Sample:**	Composite	**Tested :**	PJ
Project Name:	Arcata Airport ARFF	**Depth (ft.):**	1.3-2.6	**Checked:**	DC
Project No:	7403.01				

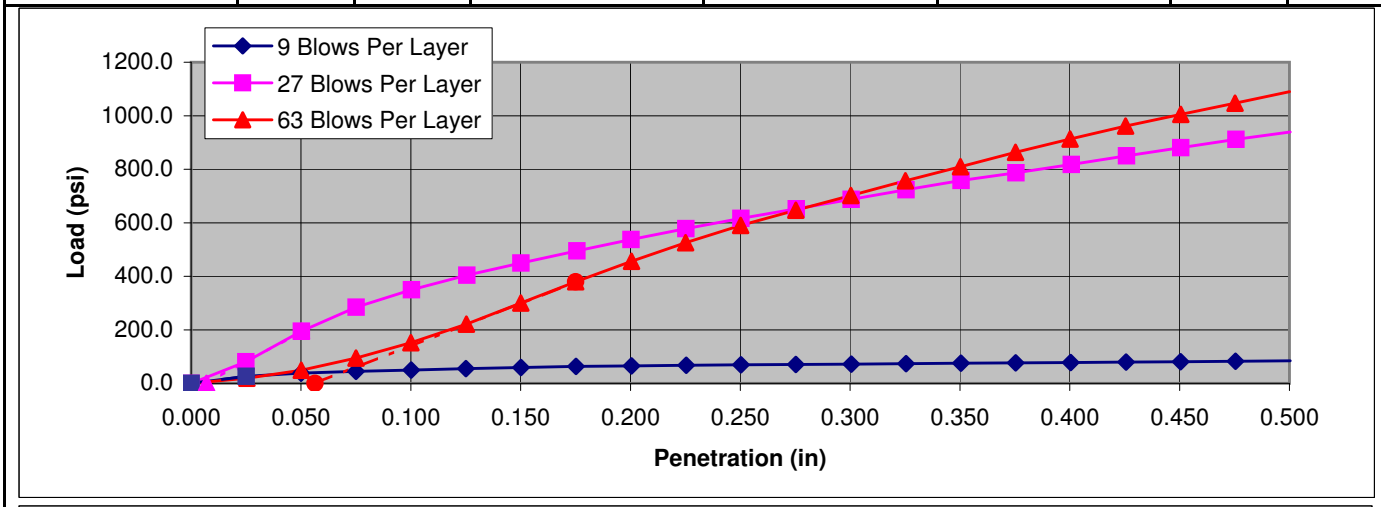
Visual Description: Dark Brown Silty SAND/SANDY SILT

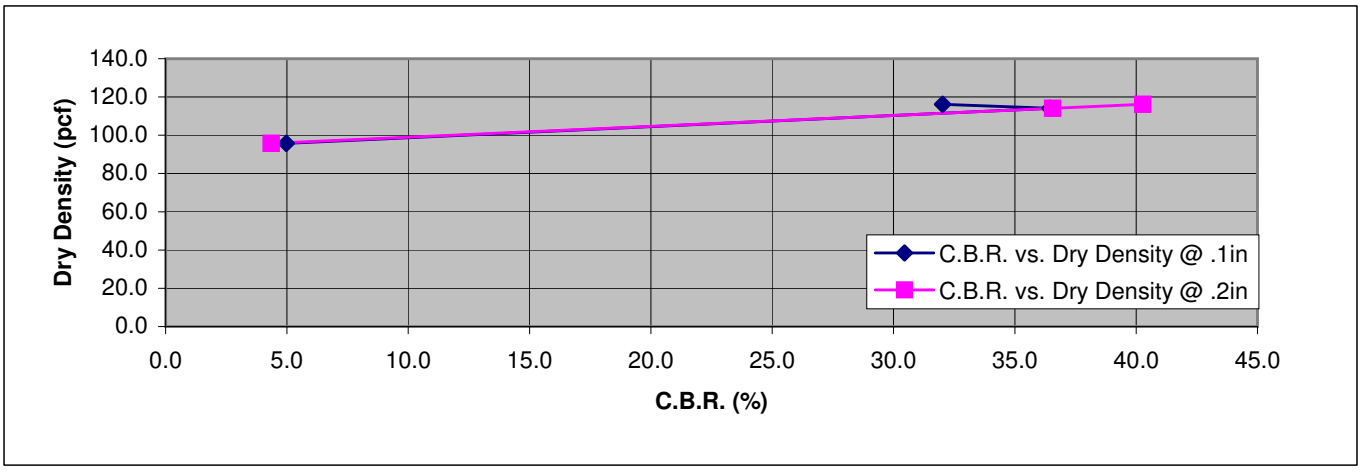
Maximum Dry Density (pcf):	114.0	Optimum Moisture Content (%):	15.5	Rel. Comp. For CBR Evaluation (% of max):	95
Maximum Density & Optimum Moisture Obtained By:	ASTM D1557	Sample Condition:	Soaked	Surcharge Weight (kg):	4.54

Percent Retained on 3/4in. Sieve:	3.1	Remarks:	Due to the shape of the Load - Penetration curves, the CBR at 0.1 inches was higher on the 27 blows per layer point than the 63 blows per layer point. This only affects the CBR when evaluated at more than 100% RC.

Sample Information

Number of Blows per Layer	Dry Density (pcf)		Moisture Content (%)		Expansion (%)	C.B.R. (%)	
	Before Soaking	After Soaking	Before Soaking	After Soaking		@ 0.1in.	@ 0.2in.
9	95.7	95.3	15.7	24.2	0.5	5.0	4.4
27	114.0	113.4	15.5	16.6	0.6	36.4	36.6
63	116.1	115.3	15.5	16.3	0.7	32.0	40.3





C.B.R. at Required In Field Density (%)	
@ 0.1in	26.6
@ 0.2in	26.5

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing the following contract modifications:

1. Request for Information.
2. Field Order.
3. Request for Cost Proposal.
4. Cost Proposal.
5. Change Orders.

1.3 DEFINITIONS

A. Request for Information (RFI)

1. Written request submitted by Contractor to Owner's Representative via the County's online project management system on a form supplied by Owner's Representative requesting clarification, interpretation, or additional information pertaining to Contract Documents.
2. An RFI shall not be used as a vehicle for only confirming or verifying issues.

B. Field Order (FO)

1. Owner's Representative written directives to the Contractor covering a specific aspect of work, signed by the Owner or Owner's lead agency that authorizes changes in the Work to expedite the change order process.

C. Request for Cost Proposal (RFCP)

1. Written request by the Owner's Representative to the Contractor to quote change to Contract Sum and/or Contract Time for proposed change to Contract Document.

D. Cost Proposal (CP)

1. Written request by the Contractor to the Owner's Representative to change Contract Sum and/or Contract Time for proposed change to Contract Document.

E. Change Order (CO)

1. Initiated by the Owner, Contractor, Consultant, Owner's lead agency, or the Owner's Representative and signed by the Owner and Contractor stating their

agreement to a change to Contract Documents and adjustment to Sum and/or Contract Time.

1.4 REQUEST FOR INFORMATION (RFI)

A. Submit RFIs numbered in sequential order, reviewed by the Contractor with respect to Contract Documents.

1. Submit RFIs on forms designated by the Owner's Representative.

B. Owner's Representative will monitor the RFI process and responses from the Consultant. The Consultant will receive RFIs only from the Owner's Representative; Consultant will not accept RFIs directly from any other entity.

C. Owner's Representative will receive only legible, properly prepared RFI:

1. Unreadable facsimile machine RFIs, illegibly written RFIs, or RFIs with incomplete information, will be returned promptly without action.
2. RFIs may be transmitted to Owner's Representative by online project management system.
   a. Owner's Representative will forward to Consultant for review, and return response by same method received from Contractor.
3. Consultant will review RFIs with respect to Contract Documents and return response in a timely manner, generally within 7 calendar days, or commensurate with RFI subject.
   a. RFIs marked "URGENT" will take precedence over outstanding RFIs and be answered by Consultant as soon as possible.

D. Contractor being fully familiar with Contract Documents, shall not be relieved of responsibility to coordinate the Work to prevent adverse impact to Project schedule when submitting RFIs to Owner's Representative for clarification or interpretation of Contract Documents, or additional information.

E. If the Contractor believes the scope of work referenced in the RFI has a cost and /or time impact, he will not proceed with the work until either a Field Order or a Change Order has been issued.

1.5 FIELD ORDER (FO)

A. Field Orders may include supplementary or revised Drawings and/or Specification to describe changes to Contract Documents.

B. Field Orders will be executed on forms designated by the Owner's Representative.

C. Field Orders may be generated by the Contractor's written notice submitted on a Cost Proposal form, that an RFI response or other unforeseen condition has changed the Contract cost and /or time, and that schedule impact will result if written directive is not provided in a timely manner.

D. Contractor shall provide an estimate of cost and/or time impact at the time of the request for a Field Order.

E. Owner's Representative will review the request for a Field Order and initiate a written Field Order for authorization by the Owner or Owner's lead agency.

F. If the Field Order is approved by the Owner or Owner's lead agency, Owner's Representative will release the signed Field Order to the Contractor. If rejected, the Contractor is so notified by the Owner's Representative.

1.6 REQUEST FOR COST PROPOSAL (RFCP)

A. Request for Cost Proposal is an informational request only, and is not an instruction or authorization to execute a change, or an order to stop Work in progress.
B. Request for Cost Proposal may include supplementary or revised Drawings and/or Specification to describe proposed changes to Contract Documents.
C. Contractor shall submit cost and/or time quotation to Owner's Representative within 15 calendar days following receipt of Request for Cost Proposal.

1.7 COST PROPOSAL (CP)

A. Contractor shall submit to the Owner's Representative a Cost Proposal for all occurrences the Contractor believes impacts Scope of Work cost and/or time.

1. A Cost Proposal shall be submitted within 15 calendar days of the occurrences.

B. Submit Cost Proposal numbered in sequential order, reviewed by the Contractor with respect to Contract Documents.

1. Submit Cost Proposals on forms designated by the Owner's Representative.

C. All Cost Proposals submitted shall have detailed breakdown for all associated work, cost and/or time.

D. Owner's Representative will solicit and monitor independent cost estimates responses from the Consultant.

E. Owner's Representative shall return Cost Proposal responses and reviews to the Contractor within 15 calendar days following receipt of Cost Proposal.

F. A processed Cost Proposals is informational back-up for a potential Change Order, and not an instruction or authorization to execute a change, or an order to stop Work in progress.

1.8 CHANGE ORDER (CO)

A. Change Orders may be initiated by the Owner, Contractor, Consultant, Owner's lead agency, or the Owner's Representative.

B. Changes to the Project Contract Sum and/or Contract Time listed or indicated in Change Orders shall include or be determined by methods described in the General Conditions.

C. Owner's Representative has responsibility for processing and administering Change Orders for the Project, and will prepare each Change Order using form designated by the Owner's Representative.

D. Contractor shall provide all pricing proposals Cost Proposals for a Change Order. The Consultant shall provide independent cost estimates to Cost Proposals.
   1. Cost differentials between the Contractor's Cost Proposal and the Owner's Representative may negotiate the Consultants cost estimates.
   2. If no agreement is reached, the Owner's Representative may issue a time and material change Order.
      a. Use Daily Force Account Report designated by Owner's Representative.

E. The Contractor, Consultant, Owner's Representative, Owner's lead agency and Owner will sign a fully documented Change Order.

1.9 CORRELATING CHANGE ORDERS WITH OTHER CONTRACT REQUIREMENTS

A. Revise Schedule of Values and Applications for Payment to record each Change Order as a separate item of work with adjustment to Contract Sum and Contract Time.

B. Revise Construction Schedule to reflect each change in Contract Time.

C. Record modifications in Record Documents.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Visual Mockups; separate or freestanding construction; removal and demolition work.

1.2 VISUAL MOCKUPS

A. Definitions:

1. Visual Mockup: Separate mockup construction, intended to illustrate materials and workmanship in an assembly, and used for technical and aesthetic evaluation. Mockup shall not to be a part of the finished construction.
2. Integrated Visual Mockup: A single, freestanding visual mockup assembly incorporating elements specified in various Sections, and demonstrating interface of various materials and systems, constructed at the site prior to installation of the actual assembly in the Project. Mockup not to be a part of the finished construction.

B. Configuration and Extent of Mockups: As described in this Section and as required to illustrate the design intent for Architect's evaluation.

C. Maintain and protect Visual Mockups from damage during construction, and dispose of mockups when no longer required, as determined by Architect.

1.3 MOCKUP DESCRIPTION

A. General: Provide mockups as specified below.

1. Mockup Construction Schedule: Indicate time required for mockup construction, Architect's and County's review and acceptance, and removal/demolition work associated with mockups in Construction Progress Schedule. Refer to Section 01 32 16 "Construction Schedules" requirements.

B. Exterior Concrete Retaining Walls, Finishing & Scoring:

1. At location on Project selected by Architect, place and finish an 8 foot x 8 foot x 4 inch deep visual mockup of concrete flatwork including finish, scoring pattern, and color for review by Architect.
2. At location on Project selected by Architect and adjacent to flatwork mockup, place and finish an 8 foot long visual mockup of concrete flatwork including finish, color, end condition and corner condition for review by Architect.
3. Construct mockups using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction, and expansion joints in sample panels. Show how different colors will cleanly and sharply abut to each other. Mockup shall be produced by the individual workers who will perform the work for the Project.
4. Accepted mockup shall provide visual standard for work and shall remain through completion of the work for use as a quality standard for finished work.
5. Accepted mock-up may not remain as part of the completed work. Remove after all colored concrete finishing work had been completed and accepted.

1.4 QUALITY ASSURANCE

A. Pre-Installation Meetings

1. Conduct pre-installation meeting in accordance with Section 01 30 00 “Administrative Requirements”.
2. Convene pre-installation meeting at least one week prior to commencing work on Mockups.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

1.5 MOCKUP MATERIALS

A. Contractor is cautioned to not purchase all materials for the project that are involved in any one mockup until after the mockup has been reviewed and accepted by the Architect.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Administrative and procedural requirements for quality control services.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUMMARY

A. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, and governing authorities.

B. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.

1.04 SUBMITTALS

A. Reports: The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Architect (two copies), Humboldt County, the Contractor (two copies), and the Project Manager/ Inspector.

B. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:

1. Date of issue

2. Project title and number

3. Name, address and telephone number of testing agency

4. Dates and locations of samples and tests or inspections

5. Names of individuals making the inspection or test

6. Designation of the Work and test method

7. Identification of product and Specification Section

8. Complete inspection or test data

9. Test results and an interpretation of test results

10. Ambient conditions at the time of sample-taking and testing

11. Comments or professional opinion as to whether inspected or tested

12. Work complies with Contract Document requirements

13. Name and signature of laboratory inspector

14. Recommendations on retesting.

1.05 QUALITY ASSURANCE

A. Referenced Standards

1. California Building Code (CBC), 2016.

1.06 RESPONSIBILITIES

A. Testing Laboratory: Contractor will engage and pay for the services of an independent agency to perform inspections and tests specified.

B. Retesting: The Contractor is responsible for the cost of retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.

1. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.

C. The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested.

D. Coordination: The Contractor, Project Manager/Inspector, and each agency engaged to perform inspections, testing and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for communicating to the Project Manager/Inspector the scheduling times for inspections, tests, taking samples and similar activities.

E. Payment for Testing Laboratory Services:

1. Contractor will pay for tests and inspections performed by Testing Laboratory, as specified in individual product Sections of the Specifications.

2. Contractor shall pay all costs for repeated observations, reinspection or retesting by Testing Laboratory due to non-conforming Work.

F. Obligation to Perform Work According to Contract Documents: Employment of Testing Laboratory shall in no way relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents and applicable Codes.

G. Limits on Testing Laboratory's Authority:

1. Testing Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.

2. Testing Laboratory may not approve or accept any portion of the Work.

3. Testing Laboratory may not assume any duties of Contractor.

4. Testing Laboratory shall have no authority to stop Work.

H. Contractor's Responsibilities to Testing Laboratory: Contractor shall make the Work in all stages of progress available for personal and continuous observation by the Testing Laboratory.

1. Testing Laboratory shall have free access to any and all parts of the Work at all times.

2. Contractor shall provide the Testing Laboratory with reasonable facilities for Testing Laboratory to obtain such information as Testing Laboratory determines is necessary for Testing Laboratory to be kept fully informed of the progress and manner of performance of the Work and character of products, according to Testing Laboratory's duties and responsibilities.

3. Observation and inspection of the Work by Testing Laboratory shall not relieve Contractor from any obligation to fulfill the requirements of the Contract.

I. Retesting: When materials tested fall to meet requirements herein specified, they shall be promptly corrected or removed and replaced and retested in a manner required by Humboldt County's Representative.

1.07 TESTS AND INSPECTIONS

A. Tests and Inspections, General: All construction work shall be subject to inspection by Humboldt County and all such construction or work shall remain accessible and exposed for inspection purposes until approved by Humboldt County.

1. Humboldt County will provide project personnel, including inspectors, to be available at the project site.

2. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of the building code or of other ordinances of the jurisdiction, including plans and specifications. Inspections presuming to give authority to violate or cancel the provisions of code, or of plans and specifications shall not be valid.

3. It shall be the duty of the contractor to cause the work to remain accessible and exposed for inspection purposes. Neither the Inspector nor Humboldt County shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

B. Approval Required: Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the Inspector. The Inspector, upon notification, shall make the requested inspections and shall either indicate in writing that portion of the construction is satisfactory as completed, or shall notify the Contractor

that same fails to comply with plans and specifications. Any portions of Work that do not comply shall be corrected by the Contractor, and such portion shall not be covered or concealed until authorized by the Inspector.

1. There shall be a final inspection and approval of all buildings and structures when completed and ready for occupancy and use.

C. Inspection Coordination: Contractor shall provide, on a weekly basis, an anticipated Inspection Requirements Schedule, coordinated with the three-week look ahead schedule, showing the anticipated inspection needs for the following three weeks to facilitate appropriate campus coordination and interface as well as mobilization of required inspection staffing.

D. Required Inspections: Reinforcing steel, structural framework, or interior wall and/or ceiling support framing of any part of any building or structure shall not be covered or concealed without first obtaining the approval of the Inspector.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION

A. Repair and Protection: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."

1. Protect construction exposed by or for quality control service activities, and protect repaired construction.

2. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 01 45 29

PART 1 GENERAL

1.1 DESCRIPTION

A. This section specifies the requirements for the management of non-hazardous building construction and demolition waste.

B. Waste disposal in landfills shall be minimized to the greatest extent possible. Of the inevitable waste that is generated, as much of the waste material as economically feasible shall be salvaged, recycled or reused.

C. Contractor shall use all reasonable means to divert construction and demolition waste from landfills and incinerators, and facilitate their salvage and recycle not limited to the following:

1. Waste Management Plan development and implementation.

2. Techniques to minimize waste generation.

3. Sorting and separating of waste materials.

4. Salvage of existing materials and items for reuse or resale.

5. Recycling of materials that cannot be reused or sold.

D. At a minimum the following waste categories shall be diverted from landfills:

1. Soil.

2. Inerts (eg, concrete, masonry and asphalt).

3. Clean dimensional wood and palette wood.

4. Green waste (biodegradable landscaping materials).

5. Engineered wood products (plywood, particle board and I-joists, etc).

6. Metal products (eg, steel, wire, beverage containers, copper, etc).

7. Cardboard, paper and packaging.

8. Bitumen roofing materials.

9. Plastics (eg, ABS, PVC).

10. Carpet and/or pad.

11. Gypsum board.

12. Insulation.

13. Paint.

14. Fluorescent lamps.

1.2 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.3 QUALITY ASSURANCE

A. Contractor shall practice efficient waste management when sizing, cutting and installing building products. Processes shall be employed to ensure the generation of as little waste as possible. Construction Demolition waste includes products of the following:

1. Excess or unusable construction materials.

2. Packaging used for construction products.

3. Poor planning and/or layout.

4. Construction error.

5. Over ordering.

6. Weather damage.

7. Contamination.

8. Mishandling.

9. Breakage.

B. Establish and maintain the management of non-hazardous building construction and demolition waste set forth herein. Conduct a site assessment to estimate the types of materials that will be generated by demolition and construction.

C. Contractor shall develop and implement procedures to recycle construction and demolition waste to a minimum of 65 percent.

D. Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling. Any revenues or savings obtained from salvage or recycling shall accrue to the contractor.

E. Contractor shall provide all demolition, removal and legal disposal of materials. Contractor shall ensure that facilities used for recycling, reuse and disposal shall be permitted for the intended use to the extent required by local, state, federal regulations.

F. Contractor shall assign a specific area to facilitate separation of materials for reuse, salvage, recycling, and return. Such areas are to be kept neat and clean and clearly marked in order to avoid contamination or mixing of materials.

G. Contractor shall provide on-site instructions and supervision of separation, handling, salvaging, recycling, reuse and return methods to be used by all parties during waste generating stages.

H. Record on daily reports any problems in complying with laws, regulations and ordinances with corrective action taken.

1.4 TERMINOLOGY

A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial and industrial waste resulting from construction, remodeling, repair and demolition operations.

B. Clean: Untreated and unpainted; uncontaminated with adhesives, oils, solvents, mastics and like products.

C. Construction and Demolition Waste: Includes all non-hazardous resources resulting from construction, remodeling, alterations, repair and demolition operations.

D. Dismantle: The process of parting out a building in such a way as to preserve the usefulness of its materials and components.

E. Disposal: Acceptance of solid wastes at a legally operating facility for the purpose of land filling (includes Class III landfills and inert fills).

F. Inert Backfill Site: A location, other than inert fill or other disposal facility, to which inert materials are taken for the purpose of filling an excavation, shoring or other soil engineering operation.

G. Inert Fill: A facility that can legally accept inert waste, such as asphalt and concrete exclusively for the purpose of disposal.

H. Inert Solids/Inert Waste: Non-liquid solid resources including, but not limited to, soil and concrete that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board, and does not contain significant quantities of decomposable solid resources.

I. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.

J. Mixed Debris Recycling Facility: A solid resource processing facility that accepts loads of mixed construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing non-recyclable materials.

K. Permitted Waste Hauler: A company that holds a valid permit to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.

L. Recycling: The process of sorting, cleansing, treating, and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.

1. On-site Recycling – Materials that are sorted and processed on site for use in an altered state in the work, i.e. concrete crushed for use as a sub-base in paving.

2. Off-site Recycling – Materials hauled to a location and used in an altered form in the manufacture of new products.

M. Recycling Facility: An operation that can legally accept materials for the purpose of processing the materials into an altered form for the manufacture of new products. Depending on the types of materials accepted and operating procedures, a recycling facility may or may not be required to have a solid waste facilities permit or be regulated by the local enforcement agency.

N. Reuse: Materials that are recovered for use in the same form, on-site or off-site.

O. Return: To give back reusable items or unused products to vendors for credit.

P. Salvage: To remove waste materials from the site for resale or re-use by a third party.

Q. Source-Separated Materials: Materials that are sorted by type at the site for the purpose of reuse and recycling.

R. Solid Waste: Materials that have been designated as non-recyclable and are discarded for the purposes of disposal.

S. Transfer Station: A facility that can legally accept solid waste for the purpose of temporarily storing the materials for re-loading onto other trucks and transporting them to a landfill for disposal, or recovering some materials for re-use or recycling.

1.5 SUBMITTALS

A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES, furnish the following:

B. Prepare and submit to the Contracting Officer Representative a written demolition debris management plan. The plan shall include, but not be limited to, the following information:

1. Procedures to be used for debris management.

2. Techniques to be used to minimize waste generation.

3. Analysis of the estimated job site waste to be generated:

a. List of each material and quantity to be salvaged, reused, recycled.

b. List of each material and quantity proposed to be taken to a landfill.

4. Detailed description of the Means/Methods to be used for material handling.

a. On site: Material separation, storage, protection where applicable.

b. Off site: Transportation means and destination. Include list of materials.

1) Description of materials to be site-separated and self-hauled to designated facilities.

2) Description of mixed materials to be collected by designated waste haulers and removed from the site.

c. The names and locations of mixed debris reuse and recycling facilities or sites.

d. The names and locations of trash disposal landfill facilities or sites.

e. Documentation that the facilities or sites are approved to receive the materials.

C. Designated Manager responsible for instructing personnel, supervising, documenting and administer over meetings relevant to the Waste Management Plan.

D. Monthly summary of construction and demolition debris diversion and disposal, quantifying all materials generated at the work site and disposed of or diverted from disposal through recycling.

1.6 RECORDS

Maintain records to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. Records shall be kept in accordance with the LEED Reference Guide and LEED Template.

PART 2 PRODUCTS

2.1 MATERIALS

A. List of each material and quantity to be salvaged, recycled, reused.

B. List of each material and quantity proposed to be taken to a landfill.

C. Material tracking data: Receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices, net total costs or savings.

PART 3 EXECUTION

3.1 COLLECTION

A. Provide all necessary containers, bins and storage areas to facilitate effective waste management.

B. Clearly identify containers, bins and storage areas so that recyclable materials are separated from trash and can be transported to respective recycling facility for processing.

C. Hazardous wastes shall be separated, stored, disposed of according to local, state, federal regulations.

3.2 DISPOSAL

A. Contractor shall be responsible for transporting and disposing of materials that cannot be delivered to a source-separated or mixed materials recycling facility to a transfer station or disposal facility that can accept the materials in accordance with state and federal regulations.

B. Construction or demolition materials with no practical reuse or that cannot be salvaged or recycled shall be disposed of at a landfill or incinerator.

3.3 REPORT

A. With each application for progress payment, submit a summary of construction and demolition debris diversion and disposal including beginning and ending dates of period covered.

B. Quantify all materials diverted from landfill disposal through salvage or recycling during the period with the receiving parties, dates removed, transportation costs, weight tickets, manifests, invoices. Include the net total costs or savings for each salvaged or recycled material.

C. Quantify all materials disposed of during the period with the receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices. Include the net total costs for each disposal.

END OF SECTION 01 79 19

SECTION 01 77 00 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:
   1. Inspection procedures.
   2. Project record document submittal.
   3. Operation and maintenance manual submittal.
   4. Submittal of warranties.
   5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections.

1.3 SUBSTANTIAL COMPLETION

A. Prior to requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

   1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
      a. 100 percent completion will bring the Contractor's progress Payment up to (95%) ninety percent of the Contract Price with (5%) percent to remain in retention until after Notice of Completion.
      b. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
      c. If 100 percent completion cannot be shown, include a list ("punchlist") of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

   2. Advise the Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
   4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra stock, and similar items.
7. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
9. Complete final cleanup requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred, exposed finishes.

B. Substantial Completion will not be issued without the following:

1. Issuance of a Certificate of Occupancy.
2. The electrical system, fire alarm, and sprinkler system 100% complete.
3. Operation manuals, maintenance manuals and warranties submitted and approved.
4. Instruction of staff in the operation and maintenance of equipment and systems.
5. Record drawings submitted and approved.
6. Any extra material required by contract delivered.

C. Inspection Procedures:

1. On receipt of a request for inspection, the Owner’s Representative and the Architect will either proceed with inspection or advise the Contractor of unfilled requirements.
2. The Owner’s Representative will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
   a. The Owner’s Representative and the Architect will repeat inspection when requested and assured that the Work is substantially complete.
   b. Results of the completed inspection will form the basis of requirements for final acceptance.
3. Owner will allow the Contractor no longer than 30 calendar days from the Date of Substantial Completion to remedy deficiencies.

1.4 FINAL ACCEPTANCE

A. Prior to requesting final inspection for certification of final acceptance and final payment, complete and submit the following:

1. Final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Certified copy of the Owner’s Representative and Architect's final inspection list of items to be completed or corrected endorsed and dated by the Owner’s Representative and Architect.
   a. Certification shall state that each item has been completed or otherwise resolved for acceptance.
4. Submit consent of surety to final payment.

5. Submit all subcontractor final unconditional lien releases.
6. Submit a final liquidated damages settlement statement.
7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Re-inspection Procedure:

1. Owner's Representative and /or Architect will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed.
   a. Indicate items whose completion is delayed under circumstances acceptable to the Owner's Representative.
2. Should the Owner's Representative determine that Work is incomplete or defective:
   a. Owner's Representative will notify the Contractor, in writing, listing incomplete or defective Work.
   b. Contractor shall remedy deficiencies promptly and notify Owner's Representative when ready for re-inspection.

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C. Final Acceptance Certificate

1. Upon completion of inspection or any re-inspections, the Owner's Representative and /or Owner's Lead Agency will prepare a certificate of final acceptance in accordance with the Project Specification Section 00 80 00, Supplemental General Conditions.
2. Final Acceptance will be presented to the County Board of Supervisors.
   a. Only the County Board of Supervisors has final authority over Acceptance of Project.

D. Notice of Completion

1. Upon final acceptance by the County Board of Supervisors, the Owner's Lead Agency will prepare and file a Notice of Completion in accordance with the Project Specification Section 00800, Supplemental General Conditions.
   a. Start of mandatory 35-day lien period.

1.5 RECORD DOCUMENT SUBMITTALS

A. Project Record Drawings:

1. Maintain a clean, undamaged set of Contract Drawings and Shop Drawings and identify as "RECORD DRAWINGS - PROJECT SET".
2. Mark the Drawings to show the actual installation where the installation varies substantially from the Work as originally shown.
   a. Using an erasable colored pencil (not ink or indelible pencil) clearly describes change by graphic line or note.
   b. Date all entries, and note related Change Order number where applicable.
   c. Call attention to all entries by a "cloud" drawn around area affected.
   d. Where overlapping changes occur, mark with different colors.
3. Conversion of schematic layouts:
   a. Design of future modifications of facility may require accurate information as to final physical layout of items that are shown schematically on Drawings.

b. Show on Project set of Record Drawings, by dimension accurate to within one inch, centerline of each run of items shown schematically on Drawings. Clearly identify item by accurate note such as “cast iron drain”, “galv. water”, and the like. Show, by symbol or note, vertical location of item (“under slab”, “in ceiling plenum”, “exposed” and the like).

4. Prior to request for Substantial Completion, secure from the Owner’s Representative at no charge to the Contractor, a complete set, full sized drawings and (.DWG) files of all Contract Documents.
   a. Clearly transfer change data shown on Project set of Record Drawings to corresponding transparencies, coordinating changes as required.
   b. Clearly indicate at each affected detail and other drawings a full description of changes made during construction, and actual location of items.
   c. Show final location of electrical junction boxes and outlets, telephone and data outlets, supply and return registers, and like items.
   d. Call attention to all entries by a “cloud” drawn around area affected.
   e. Make changes neatly, consistently, and with proper media to assure longevity and clear reproduction.

B. Record Specifications:

1. Maintain one complete copy of the Project Manual, including addenda and other written construction documents, such as Change Orders and modifications issued during construction.
2. Mark Specifications to show substantial variations in actual Work performed in comparison with the text of the Specifications.
3. Note substitutions in reference to items specified.

C. Maintenance Manuals:

1. Contractor to submit a written summary of all maintenance manuals to be transmitted to Owner’s Representative.
2. Submit 3 complete copies of all maintenance manuals prior to start-ups and instruction of operation to maintenance personnel.
3. Provide manuals in 8-1/2 x 11 inch format with plastic/fiberboard covers and colored fly-sheets separating sections, to include the following:

   a. Covered labeled as “Operating and Maintenance Instructions” with name and address of Project, and names of Contractor and Subcontractor.
   b. Typewritten index near front of manual, providing immediate information as to location within manual of emergency information regarding installation.
   c. Complete instructions regarding operation and maintenance of all equipment, including lubrication, disassembly, and re-assembly.
   d. Complete nomenclature of all parts of all equipment.
   e. Complete nomenclature and part number of all replacement parts, name and address of nearest vendor, and all other data pertinent to procurement and procedures.
   f. Copy of garnets and warranties issued.
   g. Manufacturers’ bulletins, cuts, and descriptive data, where applicable, clearly indicating precise items included in this installation and deleting, or otherwise clearly indicating, all manufacturers’ data which this installation is not concerned.

h. Such other data as required in applicable Specification Sections.

D. Guarantees/warranties and Bonds:
1. General:
a. Manufacturers' warranties notwithstanding, warrant the entire Work against defects in materials and workmanship for twelve (12) months from the date of Substantial Completion in accordance with the GENERAL CONDITIONS & SUPPLEMENTARY GENERAL CONDITIONS.
b. Guarantee/warrant or bond Work as required in the Specifications.
c. Warranties between the Contractor and manufacturers, and the Contractor and suppliers, shall not affect guarantees/ warranties between the Contractor and the Owner.
d. The Contractor will not be held responsible for defects due to misuse, negligence, willful damage, improper maintenance, or accident caused by Others, nor shall he be responsible for defective parts whose replacement is necessitated by failure of the Owner's maintenance forces to properly clean and service them, provided the Contractor has furnished complete maintenance instructions to the Owner.
e. Compile specified guarantees/warranties and bonds.
f. Time of Submittal:
i. For equipment or component parts of accepted equipment put into service for the Owner's benefit during the progress of the Work, submit guarantees/warranties within ten (10) calendar days after acceptance of the Work.
ii. Otherwise, submit guarantees/warranties within ten (10) calendar days after date of Substantial Completion and prior to the Final Application for Payment.
iii. For items of Work where acceptance is delayed materially beyond the date of Substantial Completion, furnish updated submittal within ten (10) calendar days after such delayed acceptance, listing the date of delayed acceptance as the start of the guarantee/warranty period.

E. Other Documents:

1. Three sets of warranties, guaranties and bonds.
2. Spare parts and materials extra stock list.
3. One set of evidence of compliance with requirements of governmental agencies having jurisdiction including, but not limited to:
a. Certificates of Inspection.
b. Certificates of Occupancy.
4. One set of certificates of insurance for products and completed operations.
5. One set of evidence of payment and release of liens.
6. One copy of list of Subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reach for emergency service at all times including nights, weekends, and holidays.

1.6 INSTRUCTION

A. Arrange for each Installer of equipment and systems that requires regular maintenance to meet with the Owner's personnel for instruction in proper operation and maintenance of systems, equipment and similar items, which were provided as part of the Work.

1. Submit to Owner's Representative an instruction schedule listing instruction subjects and proposed dates at least 15 calendar days prior to the first proposed date.

1.7 FINAL CLEANING

A. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.

1. Remove labels that are not permanent labels.
2. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
3. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
4. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
5. Clean the site, sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.

B. Remove temporary protection and facilities installed for protection of the Work during construction.

C. Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the requirements for tests and inspections for concrete work specified in Sections 03 20 00 Concrete Reinforcement and 03 30 00 Cast in Place Concrete.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Submit for review and approval.

1. Design Data: Certified copies of mix designers for each concrete class specified

2. Certifications that materials comply with requirements specified.

3. Samples: As requested by the Testing Laboratory and accompanied by certification from vendor that samples originate from and are representative of each lot proposed for use.

4. Test Reports

a. Mill test reports for reinforcement.

b. Reports from testing organization.

1.04 QUALITY ASSURANCE

A. Referenced Standards

1. California Building Code (CBC), 2016.

2. ACI 301 0 Specifications for Structural Concrete for Buildings.

3. ACI 318 – Building Code Requirements for Structural Concrete.

1.05 DELIVERY, STORAGE AND HANDLING

A. Pursuant to Section 01 45 29 Contractor is responsible for all testing and inspection of concrete work Humboldt County shall retain the services of a certified testing laboratory to perform concrete testing.

PART 2 PRODUCTS

2.01 REINFORCEMNT

A. The Testing Laboratory

1. Take samples from bundles delivered to job site from the mill, unless bundles are identified by heat number and accompanied by mill certificates. When reinforced is not positively identified by heat numbers or when random sampling is intended two specimens will be taken from each 2 ½ tons or fraction thereof of each size and grade.

2. Test for tensile and bending strength in accordance with CBC Chapters 17 and 19.

2.02 CAST IN PLACE CONCRETE

A. The Testing Laboratory will:

1. Review mix designs, compliance certificates and samples of materials proposed for use.

2. Test and inspect materials according to CBC 1903 from compliance with requirements specified in Section 03 30 00 Cast-in-Place Concrete.

3. Inspect batch plant prior to concrete being furnished to verify that:

a. Plant is equipped with approved metering devices for determining moisture content of fine aggregate.

b. Other plant quality controls are satisfactory.

PART 3 EXECUTION

3.01 CAST IN PLACE CONCRETE

A. The Testing Laboratory will:

1. Perform testing in accordance with ACI 318

2. Test concrete slump in accordance with ASTM C143

3. Test concrete for required compressive strength in conformance with CBC Section 1905, as follows.

a. Make and cure a minimum of five specimen cylinders according to ASTM C31 for each 150 cubic yards, or fraction thereof, of each class of concrete placed each day.

b. As a minimum, one set of five specimen cylinders shall be made for each 5,000 square feet of slab or wall surface area or fraction thereof placed each day

c. Retain one cylinder for 7 day test, one for 14-day test, and two for 28 day test. Hold one or more cylinders for subsequent testing, in necessary.

d. Number each cylinder, date each set of cylinders and record placement represented by each set of cylinders.

e. Transport specimen cylinders from jobsite to laboratory.

f. Test specimen cylinders according to ASTM C30 from specified strength after cylinders have aged for 7 days, 14 days, and 28 days.

B. Furnish to the Testing Laboratory the ready mix delivery tickets for each batch of concrete delivered to the jobsite, each ticket bearing the following:

1. Design mix number

2. Time of batching

3. Weight of cement, type and maximum size of aggregates, water, and admixtures in each batch.

4. Total volume of concrete in each batch.

C. When laboratory tests of specimen cylinders show compressive strengths below the minimum specified, the Contractor will be back charged for costs of the taking and testing core specimens of hardened concrete according to ASTM C42.

END OF SECTION 03 05 00

PART 1 GENERAL

1.01 SUMMARY

A. This section includes the requirements for furnishing and placing concrete formwork including formwork for architectural finish concrete..

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Shop Drawings: Indicate details of architectural features, show form construction including jointing, reveals, pattern of form ties and other items that affect appearance of exposed surface. Locate all ties dimensionally from column grids and slab elevations.

B. Product Data: Submit manufacturer's information on formwork for special one side forms including support system and for forms using form liners, joint systems, accessories, and special form liners. All forms to be designed by a California licensed Professional Engineers and submitted for approval.

C. One-Sided Forming System: Submit proposed forming system to be used for casting concrete against existing concrete walls, including ties or anchors and structural support system. Proposed forming system shall produce a finish surface that is void of any tie holes or other means of anchoring the forms.

D. Calculations and drawings shall be stamped by a licensed engineer.

1.04 QUALITY ASSURANCE

A. Referenced Standards

1. California Building Code (CBC), 2016

2. ACI 301 – Specifications for Structural Concrete for Buildings.

3. ACI 318 0 Building Code Requirements for Reinforced Concrete

4. ACI 347R – Guide to Formwork for Concrete.

5. CRSI Manual of Standard Practice

6. PSI-95 US Product Standard for Construction and Industrial Plywood

7. West Coast Lumber Inspection Bureau (WCLB) Standard.

8. Western Wood Products Association (WWPA) Publication: Western Lumber Grading Rules.

B. Design Criteria: Unless otherwise shown, noted, or specified, formwork shall be in conformance with ACI 347

C. Allowable Tolerances

1. Tolerance for column centers, or wall boundary elements, shall not be cumulative; actual overall dimension of a series, such as building bays, shall still be within plus-or-minus 1/4 inch of the overall dimension shown.

2. Flatness of new walls shall be within plus or minus ¼ inch in any 12 foot dimension and no more than plus or minus ½ inch over entire height or length of any wall

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials subject to damage from dirt and moisture maintaining them clean and dry, off the ground, and suitably protected.

PART 2 PRODUCTS

2.01 MATERIALS

A. General: Form materials shall be new at start of work.

B. Form Lumber: Douglas Fir, Construction Grade, S1S2E

C. Board Form Lumber: Douglas Fir, 3 ½" high wide board, rough surface.

D. Plywood Forms: Five-ply, 3/4-inch thick, APA A-A Plyform, Class I, Exterior Type, with mill-oiling treatment omitted; or Humboldt County approved equal.

E. Architectural Smooth Finish: Use only new Five-ply, 3/4-inch thick, APA A-A Plyform, Class I, Exterior Type, with mill-oiling treatment omitted for architectural smooth finish; or Humboldt County approved equal.

F. Form Liner: ABS form liners with a pattern to match existing exterior concrete walls, manufactured by Symons Corp., Fitzgerald Formliners, or approved equal.

G. Flexible spring steel forms or laminated boards for forming radius bends.

H. Form Accessories:

1. Accessories which will be entirely or partially embedded in concrete, such as ties and hangers, shall be of metal and of standard manufacture; wire ties are not acceptable.

2. The portion of embedded accessories remaining in concrete shall have no metal within one inch of face of concrete, and shall have no fractures, spalls, depressions, or other surface disfigurations exceeding 3/4 inch in diameter.

3. Spreader cones on ties shall not exceed one inch in diameter.

I. Form Sealer: Sealer shall eliminate grain raise as a result of moisture, and shall not interfere with color, bond, or subsequent treatment of or application of finishes to concrete surface; Sonneborn Building Products, Inc. "Form Saver," Grace Construction Materials "Form Film," Burke "Form Sealer," or approved equal.

J. Form Release Agents:

1. For Concrete Exposed to View in the Finished Work or to Receive Applied Finishes: Use chemically-active types producing water-insoluble soaps. Release agents shall contain no petroleum-based solvents such as creosote, paraffin, wax, or diesel oil.

2. For ABS form liners, use only form release agents recommended by form liner manufacturer.

3. For Unexposed Concrete: Any type that will not interfere with bond of finishes to be applied.

PART 3 EXECUTION

3.01 PREPARATION

A. Treat contact surface of plywood and board forms with a form sealer in accordance with the manufacturer's printed instructions.

B. Clean form surfaces and reseal before each use. The use of form oil will not be permitted.

3.02 CONSTRUCTION

A. Design, construct, and brace formwork and temporary falsework to safely support concrete and hold personnel during construction operations.

B. Coordinate design, construction, and installation of formwork to accommodate openings, sleeves, chases, pipes, nailers, anchors, ties, inserts, and other embedded items.

C. Construct forms of sufficient strength and rigidity to produce finished concrete of the size, shape, and location shown, without exceeding specified tolerances. Form assembly shall permit removal in proper sequence without damaging concrete.

D. Use Use only new plywood form material for creating smooth architectural finish where required; reuse of forms not permitted for creating smooth architectural finish.

E. Install form liners for architectural finishes in strict accordance with manufacturer’s printed instructions and approved submittal.

F. Arrange forms to permit single pours of exposed areas and panels without joints between adjacent form materials in the same plane.

G. Construct forms for all exposed to view concrete full height and width between construction joints in surface of concrete. Do not break forms for pour or construction joints within such areas.

H. Forms shall not extend higher than 12 inches above the top of a pour or construction joint.

I. Form construction joints as specified in Section 03 30 00 – Cast-In-Place Concrete. Provide a surfaced pouring strip where construction joints intersect faces of surfaces to be exposed to view in the finished work; prior to subsequent pour, remove strip and tighten forms.

J. Construction joints shall show no overlapping or offsetting of concrete surfaces, and shall as closely as possible have the same appearance as butted board joints. Joints in a continuous line shall be straight and true.

K. Provide cleanouts as required to permit inspection and thorough cleaning of loose dirt and debris. Cleanouts shall not be apparent on concrete surfaces exposed to view in finished work.

L. Arrange forms to permit proper erection sequence and subsequent form removal without damaging concrete.

M. Whenever concrete bases and foundations are required for equipment furnished as part of the work of other Sections, verify equipment dimensions prior to placing concrete.

N. Forms for concrete surfaces exposed to view in the finished work shall be constructed to match existing concrete finish.

O. Forms for unexposed concrete surfaces shall be undressed lumber, form plywood, or other suitable material.

P. Provide chamfer to match existing building at exposed edges/corners to provide straight lines. Where no chamfer is used provide ¾-inch uniform chamfer.

Q. Formwork shall be clean and free of foreign material when concrete is placed.

R. Douglas fir 3 ½" board strips shall be ripped and cured for minimum of 90 days. Remove eased edges and plane boards. Prior to install, wet board to raise wood and then oil.

3.03 FORM REMOVAL

A. Do not remove forms until concrete has attained sufficient strength to support its own weight and anticipated construction live loads without damage, but in no case less than the following.

1. Walls: Four (4) days

2. Footings, Curbs, Walks, Paving:Side forms may be removed 24 hours after concrete placement.

3. Beams and Girders: Twenty-one (21) days

END OF SECTION 03 11 13

PART 1 GENERAL

1.01 SUMMARY

A. This section includes the requirements for furnishing and installing concrete reinforcement.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Shop Drawings: Complete bending and placing details of reinforcement.

1. Details of reinforcement not shown on Drawings shall be in conformance with ACI 315 and ACI 318.

2. Detailing fabricating, and spacing of reinforcement shall be in conformance with ACI 315 unless otherwise shown or noted.

B. Test Reports: Certified copies of mill tests showing chemical and physical analyses of each heat or melt from which reinforcement was made.

1.04 QUALITY ASSURANCE

A. Referenced Standards

1. California Building Code (CBC), 2016

2. ACI 301 – Specifications for Structural Concrete for Buildings.

3. ACI 318 – Building Code Requirements for Reinforced Concrete

4. ACI 347R – Guide to Formwork for Concrete.

5. CRSI Manual of Standard Practice

B. Allowable Tolerances Fabricating/placing tolerances shall be in conformance with ACI 301.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement from the mill in securely tied bundles, each bundle limited to one size and grade of reinforcement. Identify each bundle with readily visible metal or plastic tags identifying the reinforcement by the same item marking as on the approved shop drawings; tags shall also identify the mill, heat or melt number, and the grade and size of reinforcement.

B. After bundles are broken, identify by segregating reinforcement by sizes and grades.

C. Store reinforcement off the ground, protected from the elements and foreign material which could adversely affect its bond with concrete.

PART 2 PRODUCTS

2.01 MATERIALS

A. Reinforcing Bars: ASTM A625, Grade 60 for all bars except where noted otherwise on plans.

B. Wire for Ties, Stirrups, and Spiral Reinforcement: ASTM A82.

C. Spacers, Bar Supports, and Other Accessories: In conformance with ACI 315. Where portions of accessories will be within 1/2 inch of concrete surfaces which will be exposed to the elements in the finished work, such accessories shall be of non-corrosive material or shall be corrosion-resistant treated; aluminum products will not be acceptable.

D. Mechanical Bar Couplers: ASTM A576. Coupler shall be capable of developing 160% of specified minimum yield strength of bar. Lenton Taper Threaded Splices manufactured by Erico, Inc. or approved equal.

E. Mechanical Bar Anchorages: ASTM A576. Anchorage shall be capable of developing 125% of specified minimum yield strength of bar. Lenton Terminators manufactured by Erico, Inc. or approved equal.

2.02 FABRICATION

A. Fabricate reinforcement in accordance with the requirements of ACI 315, where specific details are not shown or where Contract Documents are not more restrictive.

B. Fabrication of reinforcement shall begin only after approval of bar lists and shop drawings, with each item of reinforcement fabricated in conformance with such approved documents.

C. Bend reinforcing steel cold; do not straighten/rebend, doing damage to the material.

PART 3 EXECUTION

3.01 INSTALLATION

A. At time of concrete placement, reinforcement shall be free of dirt, oil, scale, loose rust, and other foreign material that could adversely affect the bond with concrete.

B. Fasten reinforcement/support to prevent displacement beyond the tolerances specified in ACI 301, by construction loads and concrete placement. Sizes and dimensions of supports shall be as required to position the reinforcement as shown on the approved shop drawings and in conformance with the minimum concrete protective covering requirements of ACI 301.

C. Furnish reinforcing bars full length whenever possible; splices will be permitted only where shown or noted on the approved shop drawings, or as otherwise permitted by Humboldt County.

D. Splices may be made in horizontal reinforcement by lapping and placing ends of bars in contact and securely wiring; or bars may be separated sufficiently to permit the embedment of the entire surface of each bar in concrete.

1. Locate all splices as per drawings. Lap bars 48 diameters minimum.

2. Stagger splices in adjacent bars.

3. Where threaded couplers are noted on Drawings, locate couplers in accordance with Drawings. Stagger coupler locations unless noted otherwise.

E. Obstructions: Should items to be embedded in concrete interfere with placement of reinforcements, notify Humboldt County to obtain written approval of procedure before starting.

F. Concrete Cover: Install reinforcement to achieve the minimum concrete coverage shown or noted on the Drawings, unless otherwise specified.

G. Welding: Reinforcing bars shall not have welded joints.

H. Misplaced Reinforcing Bars:

1. If reinforcing bars are found to be misplaced after concrete placement, immediately notify Humboldt County for recommendations for correcting the misplacement; perform no corrective measures without such prior recommendations.

2. Redesign, alterations, corrections, and replacement of concrete or reinforcing bars due to misplaced bars shall be performed at no additional expense to Humboldt County.

3.02 MAINTENANCE OF REINFORCEMENT

A. Continuously inspect/maintain reinforcement in proper position during concreting operations.

B. Where reinforcement cannot otherwise be kept properly aligned, provide additional bracing ties, stirrups, and other items as necessary.

END OF SECTION 03 20 00

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the requirements for furnishing and placing cast-in-place concrete, including cast-in-place architectural finish concrete, curing and finishing.

B. All Sections listed in the Table of Contents are a Condition of this Section.

1.02 SUBMITTALS

A. Mix design for each class of concrete proposed for use. If concrete will be pneumatically placed, mixes shall be specifically so designed and designated.

B. Laboratory test reports for concrete mixes. Compression test data (field experience method) or results of testing (trial batch method) used to establish mix proportions.

C. Product Data: Manufacturers' and suppliers' proprietary information on materials.

D. Layout Drawings: Submit layout drawings showing proposed locations of construction joints, control joints, details of construction, and connections for approval prior to concrete placement.

E. Submit delivery ticket to Humboldt County for each batch of concrete delivered.

1.03 QUALITY ASSURANCE

A. Reference Standards

1. California Building Code (CBC), 2016.

2. ACI 301 – Specifications for structural Concrete for Buildings.

3. ACI 318 – Building Code Requirements for Reinforced Concrete.

B. Quality Control: Contractor to retain the services of a qualified testing organization as specified in Testing Laboratory Services Section 01 45 29.

C. Quality Control Supervisor: Humboldt County will retain the services of an independent concrete contractor that will observe Contractor’s work to achieve desired results.

D. Allowable Tolerances: Deviation from plumb and level shall not exceed 1/8 inch within ten feet in any direction, as determined with a ten-foot straightedge. Cumulative deviation over the length or height of the building shall not exceed 3/8 inch in any direction.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle packaged materials in the manufacturers' original, sealed packages, each clearly identified with the manufacturer's name, and name and type of material.

B. Deliver, store, and handle materials subject to damage from dirt and moisture maintaining them clean and dry, off the ground, and suitably protected.

C. Store coarse and fine aggregates in separate, covered bins to prevent them from mixing, and to preserve moisture content of aggregate at batch plant.

D. Store bulk cement in covered bins.

1.05 PROJECT CONDITIONS

A. Environmental Requirements for Concrete Placement:

1. Hot Weather: In conformance with ACI 305.

2. Cold Weather: In conformance with ACI 306.

3. During Precipitation: Do not place unless adequate protection is provided.

1.06 MOCK UP

A. Provide mock up of corner structure as shown on the drawings.

PART 2 PRODUCTS

2.01 MATERIALS

A. Concrete, ready-mixed, ASTM C94.

1. Cement: ASTM C150, Type II, Portland Cement.

2. Aggregate:

a. Fine Aggregate: ASTM C33

b. Coarse Aggregate: ASTM C33

c. Source of aggregate shall remain constant for the duration of the work.

3. Water: Clean, clear, and potable.

B. Curing materials:

1. Liquid Membrane: ASTM C308, Type I.

2. Sheet material: ASTM C171.

C. Admixtures

1. Water reducing Admixture: ASTM C494, only with prior review of mix design.

2. Air-Entraining Admixture: ASTM C260, for lightweight concrete only with prior review of mix design.

3. Unspecified Admixtures: Not Permitted.

4. Calcium Chloride: not Permitted.

5. Hydrogen Chloride: Not Permitted

D. Non-shrink Grout: Premixed, requiring only addition of specified water; Master Builders "Masterflow 928," or approved equal.

1. Flowable, low shrinkage, 5,000 psi at 7 days.

2. Non-metallic Type: For all uses.

3. Metalic Type: Will not be permitted.

E. Bonding Agent: Larsen Products Corp. "Weld-Crete," Sika Chemical Corp. "Sikastix 370" or "Sikadur Hi-Mod," or approved equal.

F. Hardener: Clear, dust-on type; Sonneborn-Contech "Harcol Standard Natural," Upco Co. "Hydroment," Lambert Corp. "Colorhard," or approved equal.

G. Sealer: Heavy penetrating type, from same manufacturer as hardener.

1. Without wax or other constituent that will impair application of finishes.

H. Moisture Barrier: Section 07 26 10.

I. Epoxy Grout for Reinforcement and Bolt Installation: Hilti "HIT-RE 500-SD" Adhesive Anchor System", Simpson Strong-Tie "SET XP", or equal.

J. Colorant: Davis standard pigments as chosen by Owner.

2.02 MIXES

A. Design Criteria

1. Concrete shall develop the minimum compressive strength noted on the Contract Documents at 28 days on cylinders made and tested in accordance with referenced ASTM standards.

2. The average of the sets of three consecutive strength tests shall be equal to or greater than the specified strength, and no individual strength test results shall fall below the specified strength by more than 500 psi.

B. General

1. Mix designs shall be in conformance with CBC Section 1905, based on materials tested and approved by the Testing Laboratory.

2. If concrete will be pneumatically placed, mixes shall be specifically so designed and designated.

3. If concrete is to be pumped, mixes shall be specifically so designed and designated.

C. Nonshrink Grout: Mix in accordance with the manufacturer's printed instructions.

D. Dry Pack: Mix, in proportions by volume, one-part cement to two-and-one-half parts fine aggregate, screening out materials retained on a No. 4 sieve. Mix with water to a consistency so that when a ball of mixture is compressed in the hand, it will show finger marks but maintain its shape and not show any surface water.

E. Patching Mortar: Mix in proportion by volume, one part cement to two parts fine aggregate.

2.03 MIXING

A. Batch Plant:

1. Equipment and plant shall be capable of weighing, segregating, and efficiently handling materials. Automatic metering capable of determining moisture content of sand shall be utilized.

2. Equipment and plant shall be subject to the approval of the Testing Laboratory; equipment and processes not so approved shall not be used for the work.

B. General:

1. Mixing shall be in conformance with ASTM C94 and CBC.

2. Mix cement, fine and coarse aggregate, admixtures, and water to exact proportions of approved mix designs.

3. Measure fine and coarse aggregates separately according to approved method which affords accurate control and checking.

4. Adjust grading to improve workability; do not add water unless otherwise recommended by Humboldt County.

C. Admixtures: use automatic metering dispenser to incorporate admixtures into mix

2.04 CONCRETE CLASSES

A. Definitions:

1. Strength: Minimum compressive strength after 28 days, when tested in accordance with ASTM C39.

2. Aggregate: Maximum size.

3. Weight: Pounds per cubic foot, air dry.

4. Slump: When tested in accordance with ASTM C143.

B. Concrete Classes and Uses:

Class	Weight (psf)	Strength (psi)	Aggregate (inches)	Use
A	145	4000	¾	Cast-In-Place Concrete, Concrete Foundations, Concrete Slabs, Concrete Walls, etc.

PART 3 EXECUTION

3.01 PREPARATION

A. Prior to concrete placement, determine finishes required to accommodate the work of other sections, and make preparations for such finishes. Where determination for such finishes may be in question, refer to Humboldt County for resolution.

B. Remove loose dirt/foreign material from excavations and forms and standing and saturated soil from excavations and cavities. Placing concrete in standing water is not permitted.

C. Thoroughly clean reinforcement and other items to be embedded in concrete of loose rust and other foreign matter which could inhibit bond with concrete.

D. Thoroughly wet wood forms, except coated plywood, and adjacent concrete a minimum of one hour prior to placing concrete; securely close cleanout and inspection ports; repeat wetting as required to keep forms damp.

E. Work form release agent into all areas of form liner as recommended by form manufacturer.

F. Apply form release agent to form liners before each use and within the same day that concrete is placed.

G. Subgrade and forms shall have been checked for line and grade, and work areas shall have been inspected by Soils Engineer and observed by Humboldt County prior to starting concrete placement.

H. Roughen surfaces +/- ¼" amplitude at all joints and at all contact surfaces between new and existing concrete. Provide shear keys and prepare joints as per Drawings and Specifications. Apply bonding agent between existing and new concrete pours.

3.02 TRANSPORTING

A. Transport concrete from the mixer to the place of final deposit as quickly as possible, and by methods which prevent the separation and loss of ingredients. Concrete shall be of uniform density when placed.

B. Concrete shall not be freely dropped where reinforcement will cause segregation. Spouts, elephant trunks, or other approved means shall be utilized to prevent segregation.

C. In no case shall concrete be freely dropped more than six (6) feet. Provide formwork with pour ports at four (4) feet or closer horizontally so that concrete will be deposited freely such that no more than six (6) feet is dropped at any location.

D. Concrete may be pumped from the mixer to the place of deposit, provided that information on mix design adjustments, equipment, and procedures have received Humboldt County's written approval.

3.03 PLACING

A. General:

1. Notify Humboldt County a minimum of 72 hours prior to each major concrete placement.

2. Place concrete in a continuous operation until a section of approved size and shape has been completed.

3. For horizontal surfaces, maintain a plastic surface essentially horizontal until completion of placement of the section.

4. Prevent displacement of reinforcement and other items to be embedded.

5. Before concrete sets, completely remove concrete spilled on forms and reinforcement in sections where concrete is not to be immediately installed.

6. An interruption of more than 60 minutes in concrete placement will be cause for shutting down the work and disposing of remaining mixed concrete. If such interruption occurs, provide construction joints where and as instructed, and cut concrete back to such line, cleaning forms and reinforcement as specified.

7. Record the date and time of concrete placement in each section. Retain records until completion of the work, and make available at all times to the review of Humboldt County.

B. Consolidation:

1. Thoroughly consolidate concrete by puddling with suitable tools during placement, and by thoroughly working around reinforcement and other embedded items, and into corners of forms.

2. In addition to manual spading and tamping, internally vibrate concrete with high-speed mechanical vibrators of sufficient amplitude for thorough consolidation.

3. Vertically insert and remove hand-held vibrators at points 18 to 30 inches apart, vibrating concrete the minimum amount required for consolidation. Do not use vibrators to transport concrete in forms.

    a. Thoroughly clean contact surfaces by sandblasting or chipping the entire surface a minimum of five days after the initial placement, or by an approved method that will ensure equal bond, such as a thorough hose washing of surfaces not less than two or more than four hours after concrete placement.

    b. Thoroughly clean wash water and chalky material from surfaces.

    c. Sandblast vertical construction joints in suspended slabs.

    d. Prior to continuing concrete placement, deposit on horizontal construction joints slurry mix containing the same proportion of cement and fine aggregate used in concrete mix plus a maximum of 50 percent of the coarse aggregate

4. Prevent formation of shoulders and ledges.

5. Provide keys across vertical joints as shown on drawings. Place dowels across joints.

6. Joints for Slabs on Grade: Locate construction joints where approved and under partitions, whenever possible.

3.04 PROTECTION AND CURING

A. Protection:

1. Maintain concrete temperature above 50 degrees F during curing.

2. Protect concrete from sun and rain.

3. Do not subject concrete to loads until it has completely cured and attained minimum 28 day strength.

4. Water cure concrete continuously for minimum duration specified, including Saturdays, Sundays, and holidays; do not permit it to dry out until it has cured for the specified time.

5. Protect concrete during/after curing from damage from construction operations.

6. Cover traffic areas with kraft paper and plywood sheets; maintain protective covering in place and in good repair as long as necessary to protect concrete from damage.

7. Keep finished areas free from traffic for a minimum of four days, or as long as necessary for concrete to have set sufficiently to prevent its being damaged.

B. Curing: Curing shall immediately follow finishing and shall be performed as follows.

1. Wall Surfaces: Cure for a minimum of seven days by form-curing with forms thoroughly wetted a minimum of four times a day until forms are removed; if for less than seven days, immediately follow with membrane curing.

2. Flatwork Surfaces: Membrane cure for a minimum of seven days.

3.05 DEFECTIVE CONCRETE

A. Repair or replace defective concrete as instructed by Humboldt County, and at no additional expense to Humboldt County. Repair materials shall include, as necessary, cements, aggregates, admixtures, and epoxy.

B. With written approval of Humboldt County, some minor defective work may be repaired by use of cement mortar; however, if the defects affect the strength of the structure, its appearance, or are otherwise detrimental, Humboldt County may require the removal and replacement of that portion of the structure.

C. Immediately after form removal, inspect concrete surfaces for poor joints, voids, rock pockets, tie holes, and other defects. Prior to starting patching, Humboldt County will examine the defects, following which such defects shall be immediately patched upon Humboldt County 's written approval of patching mixture and method proposed for use.

D. Finish: Finish to match adjacent surfaces with no discernable or visible difference in appearance.

3.06 PATCHING TIE HOLES

A. No metal will be accepted within one inch (1”) of the face of exposed concrete. Cut nails and tie wires flush with the face of concrete to remain concealed and leave surfaces clean and smooth.

3.07 DRY PACKING

A. Provide for setting steel plates and bolts on concrete.

B. Completely fill voids, thoroughly compacting dry packing in place.

C. Bolts and inserts which have been dry packed or grouted shall be in place for a minimum of seven days, prior to their being tensioned.

END OF SECTION 03 30 00

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the Labor, products, equipment and services necessary for concrete floor stain Work in accordance with the Contract Drawings.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Comply with Section 01 33 00 - Submittal Procedures.

B. Product Data: Submit manufacturer's product data, including physical properties and colors available.

C. Manufacturer’s Safety Data Sheet for each product being used.

D. Product Samples: Submit Architectural Standard samples representative of the final finish, as applied. The Standard shall be approved in writing by the Architect and shall be the final standard of acceptance of the finish.

E. Maintenance Instructions: Submit manufacturer's maintenance instructions.

1.04 REFERENCES

A. ASTM C 494 - Standard Specification for Chemical Admixtures for Concrete.

B. ASTM C 979 - Standard Specification for Pigments for Integrally Colored Concrete.

C. ASTM D 3359 - Standard Test Methods for Measuring Adhesion by Tape Test.

D. ASTM D 3363 - Standard Test Method for Film Hardness by Pencil Test.

E. South Coast Air Quality Management District (SCAQMD) Rule 1113 (2008).

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years experience.

B. Installer Qualifications: All products listed in this section are to be installed by a single installer with demonstrated experience in installing products of the same type and scope as specified.

C. Pre-installation Meeting: Convene a pre-installation meeting before start of Work. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and Applicator. Review surface preparation, application, protection, and coordination with adjacent surfaces.

D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Mock-up areas designated by Architect.

2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.

3. Refinish mock-up area as required to produce an acceptable completed project.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation. Store materials in a clean, dry area indoors in accordance with manufacturer's instructions. Keep containers sealed until ready for use.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits. Do not apply materials in wet weather.

1.08 WARRANTY

A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

1.09 MOCK UP

A.

PART 2 PRODUCTS

2.01 CONCRETE SEALER

A. Stone Tone Sealer: Acrylic water-based, non-yellowing urethane clear sealer.

B. Solids (By Volume): 30 percent.

C. Gloss: High gloss

D. Gloss: Flat to satin gloss.

E. Resistant to blush.

F. VOC: Less than 50 g/L. Meets final SCAQMD Rule 1113 (2008).

G. Pencil Hardness, ASTM D 3363: 2H.

H. Dry Tape Adhesion, ASTM D 3359: 5A-5B.

I. Dry Time at 70F (21C) with 50 percent RH:

J. Recoat: 1 hour.

K. Foot Traffic: 4 hours.

L. Full Cure: 48 hours.

1. Recoat: 1 hour

2. Foor Traffic: 4 hours

3. Full Cure: 48 hours

M. Sta-Natural: Waterborne silane/siloxane emulsion for sealing stained concrete and other cementitious substrates.

1. Gloss: Clear flat gloss (Natural Sheen).

2. Solids (By Volume): 10%

3. Weight per gallon: 9.5 lbs (4,3kg)

4. Dry Time at 70°F (21°C) with 50% RH:

a. Recoat: 1 hour

b. Foot Traffic: 4 hours

c. Full Cure: 48 hours

5. VOC: 0 g/L (Meets final SCAQMD Rule 1113 (2008).

2.02 FLOOR POLISH

A. Easy Shine: Water based acrylic polymer interior floor polish.

1. Gloss (1 coat at 60F): 90+ (2 thin coats recommended).

2. Viscosity, CPS at 73 F, RFV., #1 at 20 RPM: Less than 20.

3. Specific Gravity at 73 F: 8.67.

4. Solids (By Weight): 20 percent.

5. Weight per gallon: 9.5 lbs (4.3kg).

6. Dry Time at 73F (21C) with 40 percent RH: 20 minutes.

7. VOC: 0 g/L (Meets final SCAQMD Rule 1113 (2008).

2.03 CLEAR TOP COAT

A. Apply a clear topcoat sealer.

PART 3 EXECUTION

3.01 EXAMINATION

A. DO not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly, in accordance with manufacturer’s instructions.

B. Protection:

1. Protect walls and surrounding surfaces not to receive concrete floor stain.

2. Do not allow stain to come in contact with wood or metal surfaces.

C. Prepare concrete surface in accordance with manufacturer’s instructions.

D. Concrete shall be as specified in Section 03 30 00, Cast-in-place Concrete. Ensure concrete is a minimum of 28 days old.

E. Ensure surface is clean, dry, structurally sound, and free from dirt, dust, oil, grease, solvents, paint, wax, asphalt, concrete curing compounds, sealing compounds, surface hardeners, bond breakers, adhesive residue, and other surface containments.

F. Do not acid wash or use heavy alkali cleaners.

3.03 INSTALLATION - REMBRANDT POLYMER STAINS AND TOPCOATS

A. Install in accordance with manufacturer’s instructions.

B. Concrete Floor Sealer: Apply concrete floor sealer over concrete floor stain in accordance with manufacturer's instructions.

C. Concrete Floor Polish: Apply floor polish over Stone Tone Sealer in accordance with manufacturer's instructions.

D. Keep material containers closed when not in use to avoid contamination.

3.04 PROTECTION

A. Protect stained surfaces from damage during construction.

B. Protect surfaces from foot traffic for a minimum of 24 hours

C. Do no wash surfaces for a minimum of 48 hours.

END OF SECTION 03 36 00

PART 1 GENERAL

1.01 SUMMARY

A. Provide requirements for furnishing, installing, welding and bolting of all structural steel.

B. General Provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions, and Division 1 apply to the Work of this Section

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Product Data: Manufacturer's data for prefabricated products.

B. Welding Procedures.

C. Shop Drawings: Show shop and installation/erection details, including cuts, holes, copes, connections, threaded fasteners, rivets, and welds. Show locations, quantities, materials, sizes, shapes, and markings; and methods of connecting, anchoring, and bracing to work of other Sections. Use welding symbols in accordance with AWS A2.4 to identify shop and field welds.

D. Samples should be taken and tested/inspected for steel not in conformance with item 1.04.D.1 or this section.

1.04 QUALITY ASSURANCE

A. Reference Standards

1. California Building Code (CBC), 2016

2. AISC-Steel Construction Manual, 13th Edition

3. AISC 360-10 - Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings

4. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges

5. RCSC - Specifications for Structural Joints Using ASTM A325 or A490 Bolts

6. AISC 341 - Seismic Provisions for Structural Steel Buildings

7. AISC 358 -10-Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Application

8. AWS D1.1 -2009 Structural Welding Code –Steel.

9. AWS D1.8 -2009 Structural Welding Code – Seismic Supplement,

10. Steel Structures Painting Council's (SSPC) "Painting Manual".

B. Qualifications: Welding procedures, welding operations, and welders shall be qualified in accordance with AWS D1.1 and AWS D1.8 prior to commencement of welding.

C. Certifications: Submit certificates of compliance with welding qualifications. Costs of certifying qualifications shall be included in the work of this Section.

D. Regulatory Requirements: Humboldt County's Testing Laboratory will:

1. Review ladle analysis and certificates of compliance. Where certification is questionable, material will be tested to verify compliance.

2. Test unidentified steel for tensile strength and bending in conformance with CBC 2203.1.

3. Inspect shop welding, including welding equipment, weld quality, and welder certifications.

4. Continuously inspect field welding.

5. Perform nondestructive weld testing in accordance with CBC Chapter 17.

6. Inspect Connections as follows:

a. Joints will be inspected visually; Complete and Partial Penetration welds will be inspected ultrasonically for laminations, plate discontinuities, and non-metallic inclusions. Defective materials will be rejected, or required to be repaired, at the discretion of the Testing Laboratory and the Structural Engineer.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver store, and handle products to prevent their rusting, deformation, and other damage.

B. Deliver bolts, nuts, washers, and other fasteners in packages, clearly marked for identification.

C. Whenever possible, store products in weather tight enclosure until time for use for the work. When not possible for such storage, store products off the ground, positioned to drain moisture.

D. Take from protected storage only as many fastener components as are anticipated to be installed during the work shift for that day. Return fastener components that are not incorporated into the Work to protected storage at the end of the work shift. Do not clean or modify fastener components from the as-delivered condition.

1.06 SEQUENCING AND SCHEDULING

A. Deliver, information describing installation/erection procedures, including sequencing and temporary staying and bracing

PART 2 PRODUCTS

2.01 MATERIALS

A. Rolled Structural Steel Angles and Channels: ASTM A992, Fy = 50 ksi unless noted otherwise.

B. All Steel Plates including, but not limited to: connecting plates, base plates, stiffeners, shear tabs, etc.: ASTM A572, Fy=50 ksi.

C. Structural Steel Tubing: ASTM A500, Grade B, Fy = 46 ksi.

D. Galvanizing: ASTM A123 or A153, as applicable, unless otherwise shown.

E. Welding Filler: AWS A5.1 or A5.5; E70XX, or as otherwise recommended for structural steel grade being welded. Refer to Sheet S00.0.03 for additional requirements for “Special Moment Frames”. Conform to AWS D1.1, Table 4.11. Use low hydrogen electrodes for full and partial penetration welds. Use filler metal with a Charpy V-Notch (CVN) value of 20 ft.-lb. at 70 degrees F, unless otherwise shown or noted on Drawings. Make welds designated as Demand Critical with filler metals meeting the requirements specified in AWS D1.8, Clause 6.3.

F. Automatic end welded studs: Nelson Granular Flux-filled Shear Connector or Anchor Studs, or approved equal. Manufacture studs from C-1015 cold rolled steel conforming to ASTM A108.

G. Nonshrink Grout: Master Builders "Masterflow 928," or equal.

H. Temporary Supports, Staying, and Bracing: As required by project conditions.

I. Shims and Leveling Devices: As required for temporary support of baseplates; of size and capacity to support dead load of structure without deformation of base plates.

J. Shop Primer: Tnemec "No. 99 Metal Primer," Rust-Oleum "No. 769 DampProof Red Primer," or approved equal.

2.02 STRUCTURAL FASTENERS

A. Unfinished Bolts: ASTM A307, Grade A, including nuts and washers.

B. High Strength Bolts: as indicated on the Contract Drawings, ASTM A490-X or ASTM F2280-X twist-off-type tension-control bolt assemblies, Type 1, including ASTM A563 Heavy-Hex nuts and washers conforming to ASTM F436. See Drawings for washers at over-sized (OS) holes.

C. Anchor Rods: ASTM F1554, Fy = 36 ksi, with nuts conforming to ASTM A563, Grade A.

D. High Strength Anchor Rods: ASTM A193 Grade B7 with nuts conforming to ASTM A194, Grade 2H--Medium Carbon Steel, Quenched and Tempered.

E. Expansion Anchors: Hilti Co. "Kwikbolt TZ”, Simpson Strong-Tie “Strong Bolt”, Simpson Strong-Tie “Strong Bolt 2”, or approved equal. Bolt sizes, embedment, spacing, capacities and inspection requirements shall be as noted.

F. Epoxied Anchors: Hilti Co. “HIT-RE 500-SD”, Simpson Strong-Tie “SET XP”, or approved equal. Sizes and spacing and details shall be as noted.

2.03 FABRICATION

A. Fabricate structural steel in accordance with AISC 360 including associated supplements and commentaries.

B. Shop Connections: Weld in accordance with AWS D1.1 wherever possible, unless otherwise noted. Make welds which will be permanently exposed to the weather or damp conditions in the completed work continuous and watertight.

C. Field Connections: Locate only where shown.

D. Shop and Field Welding:

1. Shielded-arc, submerged-arc, flux-coated-arc, or other AWS-approved method, performed in accordance with AWS D1.1.

2. If sizes of fillet welds are not shown, use AWS minimum weld size, but not less than 5/16 inch.

E. Straightening Material: If straightening of material is required prior to fabrication, obtain Humboldt County's approval of methods prior to performing straightening.

F. Surface Preparation: Prior to assembling components of a connection, clean contact surfaces of loose scale, rust, burrs, and other foreign matter and surface defects; remove local twists and bends.

G. Surface Finishing:

1. Grind weld spatter and sharp edges smooth, prior to cleaning.

2. Clean surfaces prior to application of shop primer and delivery from shop, as follows:

a. SSPC SP-2 for material to receive cementitious fireproofing, or to be encased in concrete, or to be enclosed by other construction in the completed work.

b. SSPC SP-7 for material to remain exposed in the completed work.

3. Shop Primer:

a. Apply within eight hours of surface cleaning.

b. Apply for minimum 3-mil film thickness per coat, unless otherwise specified.

c. Do not apply to within two inches of surfaces to be field welded, encased in concrete, or to receive cementitious fireproofing.

d. Apply two coats to surfaces which will be permanently concealed in the completed work.

e. Touch up or recoat primer of poor quality or insufficient thickness, to condition acceptable to Architect.

4. Refer to Sheet S00.0.03 for additional requirements for the preparation of "Special Moment Frame" connection surfaces.

H. Temporary Coating: Coat contact surfaces which will be grouted for bearing, such as column base plates and similar items, with an oil-based, rust-inhibitive temporary coating

free of metallic pigment, Exxon Petroleum Co. "Rust-Ban 394," Houghton Co. "Rust-Veto 342," or approved equal.

PART 3 EXECUTION

3.01 GENERAL

A. Install/erect structural steel in conformance with AISC 360 including supplements and commentary thereto; AISC 303; the approved shop drawings; and as specified.

B. Welding shall be in conformance with referenced AWS requirements, performed by welders qualified as specified.

3.02 INSTALL ERECTION

A. Structural Steel:

1. Do not cut or alter without prior review and written approval of Structural Engineer of Record; flame cutting requires specific additional prior approval.

2. Set horizontal steel with steel shims or other approved supports and align and plumb prior to grouting.

3. Provide additional or temporary bracing wherever design loads may be exceeded during erection or installation of equipment; provide before bolting.

4. Provide finger shims or drilled plates at “Special Moment Frame” connecting plates.

3.03 TOLERANCES

A. Installation/erection tolerances shall be in conformance with AISC 303 except as follows.

1. Individual Members, 1:750, maximum.

2. Dimensions Shown as Story Height: Plus-or-minus 1/4 inch, maximum, per story, measured from the top of concrete floor beams at their connections at any one column.

3. Horizontal Dimension of Truss structure: 1:2,000, maximum, plus-or-minus, for entire length or width.

4. COMPLETION

B. Clean surfaces of foreign and deleterious matter such as dirt, mud, oil, and grease that could impair touch-up of shop coatings, and application of final finishes or bonding of concrete, as applicable.

C. Repair damaged or removed areas of shop coatings with a primer or galvanizing repair compound, as applicable, compatible with shop coating.

D. Prime and paint all new steel that is not encased in concrete or fireproofing.

END OF SECTION 05 12 00

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies items and assemblies fabricated from structural steel shapes and other materials as shown and specified.

B. Items specified.

1. Support for Wall and Ceiling Mounted Items

2. Guardrail supporting steel

3. Bollards

4. Covers and Frames for Pits and Trenches

5. Pipe Protection at HVAC ducts

6. Roof eave assembly

7. Exterior light standard

1.02 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Shop Drawings:

1. Each item specified, showing complete detail, location in the project, material and size of components, method of joining various components and assemblies, finish, and location, size and type of anchors.

2. Mark items requiring field assembly for erection identification and furnish erection drawings and instructions.

3. Provide templates and rough-in measurements as required.

C. Furnish setting drawings and instructions for installation of anchors to be preset into concrete and masonry work, and for the positioning of items having anchors to be built into concrete or masonry construction.

D. Manufacturer's Literature and Data:

1. Grating, each type.

2. Covers and Frames.

1.04 QUALITY ASSURANCE

A. Each product type shall be the same and be made by the same manufacturer.

B. Assemble product to the greatest extent possible before delivery to the site.

C. Include additional features, which are not specifically prohibited by this specification, but which are a part of the manufacturer's standard commercial product.

1.05 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society of Mechanical Engineers (ASME):

B18.2.2-87(R2005).....Square and Hex Nuts

C. American Society for Testing and Materials (ASTM):

A36/A36M-08 .....Structural Steel

A47-99(R2009).....Malleable Iron Castings

A53-10.....Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

A123-09.....Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

A307-10.....Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength

A653/A653M-10 .....Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process

A786/A786M-09 .....Rolled Steel Floor Plate

C1107-08 .....Packaged Dry, Hydraulic-Cement Grout (Non-shrink)

F436-10.....Hardened Steel Washers

F1667-11.....Driven Fasteners: Nails, Spikes and Staples

D. American Welding Society (AWS):

D1.1-10 .....Structural Welding Code Steel

D1.3-08 .....Structural Welding Code Sheet Steel

E. National Association of Architectural Metal Manufacturers (NAAMM)

AMP 521-01 .....Pipe Railing Manual

AMP 500-06 .....Metal Finishes Manual

Structural Steel Painting Council (SSPC)/Society of Protective Coatings:

SP 1-04 .....No. 1, Solvent Cleaning

SP 2-04 .....No. 2, Hand Tool Cleaning

SP 3-04 .....No. 3, Power Tool Cleaning

PART 2 PRODUCTS

2.01 MATERIALS

A. Structural Steel: ASTM A36.

B. Floor Plate:

1. Steel ASTM A786.

2. Aluminum: ASTM B632.

C. Steel Pipe: ASTM A53.

1. Galvanized for exterior locations.

D. Cast-Iron: ASTM A48, Class 30, commercial pattern.

E. Grout: ASTM C1107, pourable type.

2.02 HARDWARE

A. Rough Hardware:

1. Furnish rough hardware with a standard plating, applied after punching, forming and assembly of parts; galvanized, cadmium plated, or zinc-coated by electro-galvanizing process. Galvanized G-90 where specified.

2. Use G90 galvanized coating on ferrous metal for exterior work unless non-ferrous metal or stainless is used.

B. Fasteners:

1. Bolts with Nuts:

a. ASTM A307 for 415 MPa (60,000 psi) tensile strength bolts.

b. ASTM F593 for stainless steel.

c. Screws: ASME B18.6.1.

d. Washers: ASTM F436, type to suit material and anchorage.

e. Nails: ASTM F1667, Type I, style 6 or 14 for finish work.

2.03 FABRICATION GENERAL

A. Material

1. Use material as specified. Use material of commercial quality and suitable for intended purpose for material that is not named or its standard of quality not specified.

2. Use material free of defects which could affect the appearance or service ability of the finished product.

B. Size:

1. Size and thickness of members as shown.

2. When size and thickness is not specified or shown for an individual part, use size and thickness not less than that used for the same component on similar standard commercial items or in accordance with established shop methods.

C. Connections

1. Except as otherwise specified, connections may be made by welding, riveting or bolting.

2. Field riveting will not be approved.

3. Design size, number and placement of fasteners, to develop a joint strength of not less than the design value.

4. Holes, for rivets and bolts: Accurately punched or drilled and burrs removed.

5. Size and shape welds to develop the full design strength of the parts connected by welds and to transmit imposed stresses without permanent deformation or failure when subject to service loadings.

6. Use Rivets and bolts of material selected to prevent corrosion (electrolysis) at bimetallic contacts. Plated or coated material will not be approved.

7. Use stainless steel connectors for removable members machine screws or bolts.

D. Fasteners and Anchors

1. Use methods for fastening or anchoring metal fabrications to building construction as shown or specified.

2. Where fasteners and anchors are not shown, design the type, size, location and spacing to resist the loads imposed without deformation of the members or causing failure of the anchor or fastener, and suit the sequence of installation.

3. Use material and finish of the fasteners compatible with the kinds of materials which are fastened together and their location in the finished work.

4. Fasteners for securing metal fabrications to new construction only, may be by use of threaded or wedge type inserts or by anchors for welding to the metal fabrication for installation before the concrete is placed or as masonry is laid.

5. Fasteners for securing metal fabrication to existing construction or new construction may be expansion bolts, toggle bolts, power actuated drive pins, welding, self drilling and tapping screws or bolts.

E. Workmanship

1. General:

a. Fabricate items to design shown.

b. Furnish members in longest lengths commercially available within the limits shown and specified.

c. Fabricate straight, true, free from warp and twist, and where applicable square and in same plane.

d. Provide holes, sinkages and reinforcement shown and required for fasteners and anchorage items.

e. Provide openings, cut-outs, and tapped holes for attachment and clearances required for work of other trades.

f. Prepare members for the installation and fitting of hardware.

g. Cut openings in gratings and floor plates for the passage of ducts, sumps, pipes, conduits and similar items. Provide reinforcement to support cut edges.

h. Fabricate surfaces and edges free from sharp edges, burrs and projections which may cause injury.

2. Welding:

a. Weld in accordance with AWS.

b. Welds shall show good fusion, be free from cracks and porosity and accomplish secure and rigid joints in proper alignment.

c. Where exposed in the finished work, continuous weld for the full length of the members joined and have depressed areas filled and protruding welds finished smooth and flush with adjacent surfaces.

d. Finish welded joints to match finish of adjacent surface.

3. Joining:

a. Miter or butt members at corners.

b. Where frames members are butted at corners, cut leg of frame member perpendicular to surface, as required for clearance.

4. Cutting and Fitting:

a. Accurately cut, machine and fit joints, corners, copes, and miters.

b. Fit removable members to be easily removed.

c. Design and construct field connections in the most practical place for appearance and ease of installation.

d. Fit pieces together as required.

e. Fabricate connections for ease of assembly and disassembly without use of special tools.

f. Joints firm when assembled.

g. Conceal joining, fitting and welding on exposed work as far as practical.

h. Do not show rivets and screws prominently on the exposed face.

i. The fit of components and the alignment of holes shall eliminate the need to modify component or to use exceptional force in the assembly of item and eliminate the need to use other than common tools.

F. Finish:

1. Finish exposed surfaces in accordance with NAAMM Metal Finishes Manual.

2. Aluminum: NAAMM AMP 501.

a. Mill finish, AA-M10, as fabricated, use unless specified otherwise.

b. Clear anodic coating, AA-C22A41, chemically etched medium matte, with Architectural Class 1, 0.7 mils or thicker.

c. Colored anodic coating, AA-C22A42, chemically etched medium matte with Architectural Class 1, 0.7 mils or thicker.

d. Painted: AA-C22R10.

3. Steel and Iron: NAAMM AMP 504.

a. Zinc coated (Galvanized): ASTM A123, G90 unless noted otherwise.

b. Surfaces exposed in the finished work:

1) Finish smooth rough surfaces and remove projections.

2) Fill holes, dents and similar voids and depressions with epoxy type patching compound.

c. Shop Prime Painting:

1) Surfaces of Ferrous metal:

a) Items not specified to have other coatings.

b) Galvanized surfaces specified to have prime paint.

c) Remove all loose mill scale, rust, and paint, by hand or power tool cleaning as defined in SSPC-SP2 and SP3.

d) Clean of oil, grease, soil and other detrimental matter by use of solvents or cleaning compounds as defined in SSPC-SP1.

e) After cleaning and finishing apply one coat of primer as specified in Section 09 91 00, PAINTING.

4. Stainless Steel: NAAMM AMP-504 Finish No. 4.

G. Protection:

1. Spot prime all abraded and damaged areas of zinc coating which expose the bare metal, using zinc rich paint on hot-dip zinc coat items and zinc dust primer on all other zinc coated items.

2.04 SUPPORTS

A. General:

1. Fabricate ASTM A36 structural steel shapes where shown.

2. Use clip angles or make provisions for welding hangers and braces to overhead construction.

3. Field connections may be welded or bolted.

B. For Wall Mounted Items:

1. For items supported by metal stud partitions.

2. Steel strip minimum of 150 mm (6 inches) wide, length extending one stud space beyond end of item supported.

C. For Trapeze Bars:

1. Construct assembly above ceilings as shown and design to support not less than a 340 kg (750 pound) working load at any point.

2. Fabricate trapeze supports as shown, with all exposed members, including screws, nuts, bolts and washers, fabricated of stainless steel.

3. Continuously weld connections where welds shown.

4. Use modular channel where shown with manufacturers bolts and fittings.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. Set work accurately, in alignment and where shown, plumb, level, free of rack and twist, and set parallel or perpendicular as required to line and plane of surface.

B. Set frames of access doors and similar items flush with finish floor and, where applicable, flush with side of opening.

C. Field weld in accordance with AWS.

1. Design and finish as specified for shop welding.

2. Use continuous weld unless specified otherwise.

D. Install anchoring devices and fasteners as shown and as necessary for securing metal fabrications to building construction as specified.

E. Spot prime all abraded and damaged areas of zinc coating as specified and all abraded and damaged areas of shop prime coat with same kind of paint used for shop priming.

3.02 INSTALLATION OF SUPPORTS

A. Anchorage to structure:

1. Secure angles or channels and clips to overhead structural steel by continuous welding unless bolting is shown.

2. Secure supports to concrete inserts by bolting as shown.

3. Secure steel plate to studs as detailed.

B. Supports for Wall Mounted items:

1. Locate center of support at anchorage point of supported item.

2. Locate support at top and bottom of wall hung cabinets.

3. Locate support at top of floor cabinets and shelving installed against walls.

4. Locate supports where required for items shown.

C. Supports for Trapeze Bars:

1. Secure plates to overhead construction with fasteners where shown.

2. Secure angle brace assembly to overhead construction with fasteners where shown and bolt plate to braces.

3. Fit modular channel unit to equipment and secure with modular channel unit manufacturer's standard fittings as shown.

3.03 CLEAN AND ADJUSTING

A. Adjust movable parts including hardware to operate as designed without binding or deformation of the members centered in the opening or frame and, where applicable, contact surfaces fit tight and even without forcing or warping the components.

B. Clean after installation exposed prefinished and plated items and items fabricated from stainless steel, aluminum and copper alloys, as recommended by the metal manufacture and protected from damage until completion of the project.

END OF SECTION 05 50 00

PART 1 GENERAL

1.01 SUMMARY

A. Provide spiral stairs and landings, with steel stair handrails (including both self-supporting and wall railings), and including plates, angles, hangers and struts for securing to building structure.

B. Metal stair systems include metal support systems with metal stair treads and risers.

C. Provide additional support of stairs and not otherwise indicated on Architectural or Structural Drawings.

D. Provide top of stair landing for attachment to wood mezzanine framing.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 REFERENCES

A. California Building Code (2016 Edition).

B. American Welding Society (AWS): D1.1, Structural Welding Code.

C. National Association of Architectural Metal Manufacturers (NAAMM):

1. Metal Stairs Manual.

2. Pipe Rail Manual.

D. Design Requirements: Design stairs and railings to support following minimum loads.

1. Stairs: 100 lbs./sq.ft. loads, with individual stair treads designed to support a 300 pound concentrated load placed in a position which would cause maximum stress.

2. Railings: Support a lateral force of 50 lbs./lin. ft. uniform load and 200 lbs. at any single point without permanent set or damage; ASTM E935.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's literature for products used in stair and rail fabrications, including paint, grout, and rail brackets.

B. Shop Drawings: Submit for fabrication and erection of stairs and handrails. Indicate profiles, sizes, connection, reinforcing, and anchorage. Provide templates for anchorage installation by others.

C. Except where noted otherwise on drawings, this is a design build system. Construction Documents indicate intent and minimum sizes.

D. Certificates: Submit structural calculations and certification signed by California registered civil or structural engineer indicating compliance with Contract Documents and code requirements.

1.05 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Building Codes: Comply with requirements of applicable codes for stair and railing design, except where more restrictive codes are specified.

PART 2 PRODUCTS

2.01 MATERIALS

A. Aluminum deck, long curved, diamond stamped pattern

B. 1 1’2” dia. coiled aluminum with dome end caps handrail

C. Aluminum tubular rail support balusters, 1” dia.

D. Integral aluminum landing platform.

E. Support accessories.

2.02 FABRICATION

A. Except where noted otherwise, fabricate stairs, landings and component connections to support live loads specified.

1. Provide closed riser stairs with nosing joined flush to riser.

2. Maximum Allowable Deflection:

a. Standard: Maximum L/240

3. Reinforce underside of landings.

a. Concrete Fill Landings: Provide smooth soffit surfaces unless suspended finish is indicated below landing.

B. Fabricate items with joints neatly fitted and properly secured.

C. Grind exposed welds continuous, smooth and flush with adjacent finished surfaces, and ease exposed edges to approximate 1/32" uniform radius.

D. Exposed Mechanical Fastenings: Flush countersunk fasteners unobtrusively located, consistent with design of structure.

E. Supply components required for proper anchorage of metal stairs.

F. Fabricate anchorage and related components of same material and finish as metal stairs and rails.

G. Supply components required for proper anchorage of metal fabrications; fabricate anchorage and related components of same material and finish as metal fabrication.

PART 3 EXECUTION

3.01 EXAMINATION

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible; do not delay job progress; allow for trimming and fitting where necessary.

1. Verify clearances are sufficient, including code required head height clearances.

3.02 ERECTION

A. Obtain Architect's review prior to site cutting or making adjustments which are not part of scheduled work.

1. Perform necessary cutting and altering for installation of work of other sections.

B. Install stairs and railings square and level, plumb and free from distortion or defects detrimental to appearance and performance.

C. Make provision for erection stresses by temporary bracing; keep work in alignment.

D. Ensure alignment with adjacent construction; coordinate with related work to ensure no interruption in installation.

E. Field bolt and weld to match standard of shop bolting and welding; hide bolts and screws whenever possible, where not hidden, use flush countersunk fastenings.

F. After installation, touch-up field welds and scratched and damaged surfaces; use primer consistent with shop coat or recommended for galvanized surfaces, as applicable.

G. Replace items damaged in course of installation and construction.

END OF SECTION 05 71 13

PART 1 GENERAL

1.01 SUMMARY

A. Provide labor, materials and equipment to complete all rough and finish carpentry work as indicated in the Contract Documents.

B. Work of this section include rough carpentry, framing, plywood, custom wood doors, composite lumber, sheathing, wood nailers, blocking, sleepers, curbs, cants, wood door framing, gutter blocking, finish carpentry and miscellaneous installed finished items..

1. Establish lines and levels for use of other trades.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 REFERENCES

A. AHA A135.4 - Basic Hardboard; American Hardboard Association.

B. ANSI A208.1 - Wood Particleboard.

C. ASTM C1036 - Standard Specification for Flat Glass.

D. ASTM C1048 - Standard Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

F. AWI P-200 - Architectural Woodwork Quality Standards; Architectural Woodwork Institute.

G. AWPA C2 - Lumber, Timbers, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes; American Wood Preservers Association.

H. NWWDA I.S.4 - Industry Standard for Water-Repellent Preservative Non-Pressure Treatment for Millwork; National Wood Window and Door Association.

I. NIST PS 1 - Construction and Industrial Plywood.

J. NIST PS 20 - American Softwood Lumber Standard.

K. WIC - Manual of Millwork; Woodwork Institute of California.

L. Forest Products Society (FPS): National Design Specification for Stress Grade Lumber and its Fastening.

1.04 SUBMITTALS

A. Product Data: Submit wood treatment certifications and instructions for proper use of each type of treated material.

B. Wood Product Certifications:

1. FSC Certification: Furnish certification indicating wood products are from “well-managed” forests.

2. Toxicity Certification: Furnish certification plywood has no added formaldehyde and has no toxic materials as defined by LEED.

1.05 QUALITY ASSURANCE

A. Lumber Grades: Provide visible grade stamp of an agency certified by FPS.

B. Lumber Standard: Comply with US Product Standard PS20 for each indicated use, including moisture content and actual sizes related to indicated nominal sizes.

C. Plywood Standard: Comply with PS1 (ANSI A199.1).

D. FSC Certified Wood Products: Wood products to be from forests certified “well-managed” by an agency accredited by Forest Stewardship Council (FSC) including SmartWood Program and Forest Conservation Program.

PART 2 PRODUCTS

2.01 MATERIALS

A. Blocking: Provide dimensional lumber graded in accordance with FPS Grading Rules; Construction Grade, Douglas Fir; minimum S-Dry.

B. Plywood: Provide minimum APA C-D exterior (CDX) plywood; stress rated where spanning between supporting members; fire retardant treated; minimum 3/4" thick unless otherwise indicated. Where plywood will be exposed in finished work with painted finish provide A-C/EXT-APA plywood with Grade A face exposed and Grade C face concealed for exterior use: and A-C/INT-APA plywood with Grade A face exposed and Grade C face concealed for interior use.

1. General: Provide plywood certified with no added formaldehyde (NAF) and with no toxic materials as defined by LEED.

C. Nails, Spikes and Staples: Galvanized; size and type to suit application.

D. Bolts, Nuts, Washers, Lags, Pins and Screws: Medium carbon steel; galvanized; size and type to suit application.

E. Fasteners: Provide fasteners as required for complete, secure installation of miscellaneous rough carpentry.

1. Steel: Bolts or powder activated type.

E. Hardwood Lumber: Graded in accordance with WIC Custom; of quality suitable for transparent finish. Species as directed by architect.

F. Lumber for Shimming and blocking: Softwood lumber of Douglas fir species.

G. Primer: Alkyd primer sealer type.

H. Wood Filler: Solvent base, tinted to match surface finish color.

I. Wood Treatment: Water Repellant Preservative Treatment by Dipping Method: NWWDA I.S.4, with 0.25 percent retainage.

F. Wood Nailers

1. All lumber for concealer blocking, roof curbs, roof nailers shall be preservative treated hemlock, pine, or fir and shall be new lumber of the best quality available, perfectly sound, well-seasoned, and free from sapwood, large loose or dead knots, streaks and evidence of disease ort pests. Maximum moisture content shall be 15%.

G. Building Paper

1. 15 Lb. asphalt impregnated felt paper.

H. Recessed Mount Key Box

1. Knox Box, 3200 Series, recesses, 10 key steel vault, hinged door, color TBD. Located at main entry as directed by Owner.

2. Knox Vault, 4400 Series, recessed, 50 key steel vault, dark bronze, located in basement mechanical room as directed by Owner.

I. Construction Adhesives

1. Products of Contech Division of Rexnord Chemical Corporation or equal as approved by Architect.
   a. Interior work dry areas – PL200
   b. Exterior work and wet areas – PL 400
   c. Treated Wood – PL500

2.02 FABRICATION

A. Wood Preservation: Treat lumber and plywood to comply with applicable requirements of American Wood Preservers Association.

1. Decay Resistance Treatment: Pressure treat following items with water-borne preservatives for above ground use with AWPA C-2.

   a. Treat wood members in connection with roofing, flashing, vapor barriers and waterproofing.

   b. Treat wood members in contact with masonry, with concrete, and below grade.

c. Kiln-dry wood to a maximum moisture content of 19% after treatment with water-borne preservative.

2. Fire Retardant Treatment: Comply with AWPA standards for pressure impregnation with fire-retardant chemicals to achieve flame-spread rating of not more than 25 in accordance with ASTM E84 or UL Test 723.

a. Treat interior wood and plywood complying with AWPA C20 and C27, Interior Type A, and identify with FRTW.

1) Exterior Type: Where indicated for exterior applications, provide fire treated wood passing ASTM D2898 rain test.

b. Provide UL label on each piece of fire-retardant wood and plywood.

c. Kiln-dry treated items to maximum moisture content of 19%.

3. Complete fabrication of treated items prior to treatment, wherever possible; if cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment.

4. Inspect each piece after drying and discard damaged and defective pieces.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place miscellaneous rough carpentry true to lines and levels.

B. Correlate location so attached work will comply with design requirements and be properly located.

C. Construct members of continuous pieces of longest possible lengths.

D. Fit carpentry work to other work; scribe and cope as required for accurate fit.

E. Shim with metal or slate for bearing on concrete and masonry.

F. Securely attach carpentry work to substrates by anchoring and fastening as required by recognized standards.

1. Provide washers under bolt heads and nuts in contact with wood.

G. Wood Blocking: Provide blocking of S4S lumber not less than 1-1/2" wide and of thickness required to provide adequate support or to properly locate attached material.

1. Provide attachment to other work; form to shapes shown.

2. Countersink bolts and nuts flush with surfaces.

3. Remove temporary blocking when no longer needed.

4. Anchor to formwork before concrete placement.

H. Plywood: Comply with recommendations of American Plywood Association (APA) for fabrication and installation of plywood work.

1. Provide attachment to other work; form to shapes shown.

2. Align fasteners for exposed view aesthetic as shown.

3. Fit carpentry work to other work.

4. Adjust, trim and level.

END OF SECTION 06 10 00

PART 1 GENERAL

1.01 SUMMARY

A. Wood decking.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 REFERENCES

A. ANSI/AITC A190.1 - Standard for Dimensions of Structural Glued Laminated timber.

B. ASTM D 2559 - Standard Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions.

1.04 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Technical data indicating compliance with specifications and standards.

2. Storage and handling requirements and recommendations.

3. Installation methods.

B. Certification: Submit certification that the decking size specified will meet the specified design wind pressure and snow loads.

C. Selection Samples: For each finish product specified, two complete sets of finish samples of the manufacturer's standard stain colors on the specified species and with the specified pattern, size, texture, and finish.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in providing products of the type specified in this section, with minimum of 5 years documented experience with products in use.

B. Manufacturing Standard: Conform to ANSI/AITC A190.1.

C. Labeling Requirements: Each length of lumber shall be stamped at the mill indicating certification mark, mill identification, grade name, and inspection certificate. All labels shall be placed on surfaces where it will not be exposed to view when installed.

1.06 PERFOMANCE REQUIREMENTS

A. Design Wind Pressure: As indicated on the Drawings

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.08 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 MATERIALS

A. Laminated: Decking: Lock-Deck Laminated Decking

1. Species: Douglas Fir/Larch.
2. Grade: Supreme.
3. Pattern: Square Edge.
4. Tongue-And Groove Edges: Center laminations shall be offset and machined to form a tongue and groove on both the edges
5. Ends: End matched (tongue-and-groove).
6. Random Length Continuous Spans: 6' to 16', shipped in multiples of 1 foot and 1 inch short of nominal.
7. Nominal Size: 5x6.
8. Surface Texture: Smooth Surfaced.
9. Moisture Content: 10% to 12% average, maximum 15%.
10. Laminating Adhesive: Exterior 100 percent waterproof type, meeting ASTM D 2559. Laminated decking shall be cured under pressure using high frequency electronics in a radio frequency (RF) press.
11. Quality Control: Manufactured in accordance with ANSI/AITC 190.1 and certified by an independent inspection agency.
12. Factory Finish - Stain: One coat of factory-applied, oven-dried acrylic, semi-transparent stain with mildewcide/fungicide.
    a. Color per Architect.
13. Factory Finish - Clear Sealer: Semi-gloss finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.04 PROTECTION

A. Store material on jobsite on blocking which raises material at least 6 inches above the ground. Cover material with vapor barrier with at least 2 inch air space for ventilation.

B. Protect installed products until completion of project. Cover decking with a single layer of roofing felt, lapped 4 inches minimum, immediately after installation.

1. Use 15 pound felt.

C. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 06 15 23

PART 1 GENERAL

1.01 SUMMARY

A. This section includes the design and supply of the structural glued laminated timber on this project.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 RFERENCE

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

B. American Institute of Timber Construction (AITC)
- AITC 109 ..... Standard for Preservative Treatment of Structural Glued Laminated Timber
- AITC 111 ..... Recommended Practice for Protection of Structural Glued Laminated Timber During Transit, Storage and Erection
- AITC 113 ..... (2010) Standard for Dimensions of Structural Glued Laminated Timber
- AITC 119 ..... (1996) Standard Specifications for Structural Glued Laminated Timber of Hardwood Species

C. American Society of Civil Engineers (ASCE)
- ASCE 7..... (2010; Errata 2011; Supp 1 2013) Minimum Design Loads for Buildings and Other Structures

D. American Wood Council (AWC)
- AWC NDS ..... (2012) National Design Specification (NDS) for Wood Construction

E. American Wood Protection Association (AWPA)
- AWPA T1 ..... (2015) Use Category System: Processing and Treatment Standard
- AWPA U1..... (2015) Use Category System: User Specification for Treated Wood

F. APA - The Engineered Wood Association (APA)
- ANSI 117..... (2008) Standard Specifications for Structural Glued Laminated Timber of Softwood Species
- ANSI 405..... (2012) Standard for Adhesives for use in Structural Glued Laminated Timber
- ANSI A190.1..... (2012) Standard for Wood Products - Structural Glued Laminated Timber
- APA E30..... (2011) Engineered Wood Construction Guide
- APA EWS R540 ..... (2013) Builder Tips: Proper Storage and Handling of Glulam Beams
- APA EWS T300..... (2007) Technical Note: Glulam Connection Details
- APA S580..... (2013) Preservative Treatment of Glued Laminated Timber

G. ASME International (ASME)
- ASME B18.21.1..... (2009) Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers (Inch Series)
- ASME B18.22M..... (1981; R 2010) Metric Plain Washers

H. ASTM International (ASTM)

ASTM A1011/A1011M... (2015) Standard Specification for Steel, Sheet, and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability and Ultra-High Strength

ASTM A153/A153M..... (2016) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM A276/A276M..... (2016a) Standard Specification for Stainless Steel Bars and Shapes

ASTM A307..... (2014) Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

ASTM A36/A36M..... (2014) Standard Specification for Carbon Structural Steel

ASTM A666..... (2015) Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar

ASTM D2559..... (2012a; E 2016) Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions

ASTM D3737..... (2012) Standard Practice for Establishing Allowable Properties for Structural Glued Laminated Timber (Glulam)

ASTM E84..... (2015b) Standard Test Method for Surface Burning Characteristics of Building Materials

I. International Code Council (ICC)

ICC IBC..... (2015) International Building Code

J. Southern Pine Inspection Bureau (SPIB)

SPIB 1003..... (2002) Standard Grading Rules for Southern Pine Lumber

K. U.S. Naval Sea Systems Command (NAVSEA)

QPL-19140..... (2011) Lumber and Plywood, Fire-Retardant Treated

L. Underwriters Laboratories (UL)

UL 723..... (2008; Reprint Aug 2013) Test for Surface Burning Characteristics of Building Materials

M. Western Wood Products Association (WWPA)

WWPA Tech Guide..... (2005) Lumber Technical Guide, Standards

1.04 SUBMITTALS

A. Shop Drawings: Clearly indicate dimensioning, grading, finishing and connections.

B. Furnish material data for finishes.

1.05 QUALITY ASSURANCE

A. Qualifications for Laminating Wood Manufacturer

1. Provide factory glued-laminated structural wood members produced by an American Institute of Timber Construction (AITC) or (APA) Engineered Wood Association licensed manufacturer.

2. Factory mark every member of the structural glued-laminated timber with AITC Quality Mark or APA trademark and provide a certificate of conformance.

3. Manufacture the laminated timber meeting the requirements of [AITC 119], APA E30, ASTM D3737, ANSI A190.1, and WWPA Tech Guide.

B. Certifications

1. Submit certificates for glued-laminated structural members include a product report or laboratory report issued by a US Product certification Agency under ISO 17065 or a US inspection agency accredited under ISO 17020. Include the following information:

a. Glulam manufacturers' name

b. Glulam grade

2. Include in report the results of tests, shear strength, and durability of the glue line. Ensure compliance with the requirements of ASTM D3737. Ensure material tested is typical of a production run of the same material used in the project. Ensure tests are conducted from the same product lot prior to delivery of the wood.

3. Provide certification that structural members meet the requirements of ANSI A190.1 and ANSI 117.

4. Submit signed and sealed documentation prepared by a licensed professional Engineer] verifying design load compliance with ASCE 7 and ICC IBC.

C. Surfaces

1. Submit three samples; 300 millimeter 12 inches long of sufficient width and thickness to illustrate the quality and color of exposed-to-view surfaces.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver the glued-laminated wood structural members in quantities indicated and at construction scheduled times to ensure the continuity of the installation of the structural members and the progress of the erection schedules. Reference AITC 111 and APA EWS R540 for further information.

B. Deliver packaged or wrapped materials in their original, undamaged wrapping, bearing label clearly identifying manufacturer's name, grade and species of lumber, type of glue, and other pertinent data. Use nonmarring slings for loading, unloading, and handling members to prevent damage to surfaces or wrapping.

C. Store wrapped materials in their original wrapping until ready for installation.

D. Place members on level supports off ground, spaced and braced to allow through ventilation. Cover wood and keep free of dirt, grease, moisture, or foreign matter that could cause staining.

PART 2 PRODUCTS

2.01 DRAWINGS

A. Verify all field measurements prior to preparation of fabrication and installation drawings to ensure proper fitting of the work..

B. Submit fabrication drawings for glue-laminated structural units consisting of fabrication and assembly details performed in the factory.

2.02 MATERIALS

A. General: Provide structural glued-laminated timber complying with AITC 113, ANSI 117, and ANSI A190.1, AWC NDS,[and AITC 119]. Provide structural glued-laminated timber manufactured in accordance with ANSI 117, and ANSI A190.1

1. Lumber

a. Douglas fir, graded in accordance with the grading provisions of WWPA Tech Guide.

b. Use only glued-laminated structural members having a maximum moisture content of 15-percent throughout the entire piece before surfacing and bonding.

c. Provide glued-laminated structural members of ANSI A190.1 Architectural Grade, conforming to the standards.

B. Adhesive

1. Bond glued-laminated members with a waterproof adhesive conforming to the test requirements of ASTM D2559 and ANSI 405 for exterior glue, shear strength and durability.

C. Finishes

1. Provide glued-laminated members with manufacturer's standard wiped stain finish, dry-appearance, penetrating acrylic stain and sealer; oven dried with mildew and fungus resistance.

D. Timber Hardware

1. Provide structural steel shapes, plates, and flat bars as indicated for assembly and connection of members conforming to ASTM A36/A36M.

2. Provide stainless steel plate, flat bars, and sheets complying with ASTM A666 Type 304.

3. Provide low carbon steel anchor bolts with regular hexagon nuts and carbon steel washers. Provide anchor bolts and nuts conforming to ASTM A307.

4. Provide plain washers conforming to ASME B18.22MASME B18.21.1.

5. Clean oil, dirt, rust, and foreign matter from all metal surfaces. For exterior locations, provide hot-dipped galvanized hardware in accordance with ASTM A153/A153M, with coating weight as required for Class [A][B][C][D] material as described therein. Coat other metal surfaces with one coat of manufacturer's standard rust-resisting metal primer applied at a minimum dry-film thickness of 0.038 millimeter 1.5 mils.

PART 3 EXECUTION

3.01 INSTALLATION

A. Manufacturer's Information

1. Submit manufacturer's instructions for laminated wood materials and adhesive including special provisions required to install equipment components and system packages. Detail with special notices all impedances, hazards and safety precautions.

B. Installation Drawings

1. Submit installation drawings for glue-laminated structural units showing dimensions of laminated wood members, location, size, and type of reinforcement. Include any reinforcement necessary for safe handling and erection of structural members. Identify each structural member and the corresponding sequence and procedure followed during installation.

2. Identify location and details of anchorage devices that are embedded in other construction on layout drawings.

C. Construction

1. Conform spacing and placement of members and installation methods in accordance with APA EWS T300.

2. Plan and execute erection procedures so that close fit and neat appearance of joints and structure as a whole is not impaired. When hoisting members into place, use padded or non-marring slings. Protect corners with wood blocking. Brace members as they are placed to maintain a safe position until full stability is achieved.

3. Avoid cutting glulam members during erection to the greatest extent possible. Except for fastener drilling and other minor cutting, coat cuts with end sealer.

D. Protection

1. After installation, cover each member with a temporary waterproof protection to maintain the moisture content of the wood. Maintain protection until members are enclosed within the building and final coats are ready for application.

2. Elevate initial building heat gradually to the desired level. To minimize checking do not reduce the relative humidity of the building rapidly.

END OF SECTION 06 18 00

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Provide fabricated architectural woodwork with accessories as required for complete finished installation including cabinetwork hardware.

1. Provide plywood faced cabinetwork with plastic laminate interiors.

2. Provide stainless steel countertops and countertop supports.

3. Custom wood doors and frames

4. Provide custom wood lockers and locker accessories.

5. Provide custom millwork,

a) Stainless steel backsplash

b) Stainless steel plates at toilet accessories

c) Locker hinges and hardware

d) Reclaimed wood at exterior entry

e) Interior window wood stops

f) Rail at glu-lam and ceiling/wall junction perimeter

g) Custom aluminum window jambs

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer’s literature for manufactured items.

B. Shop Drawings: Indicate materials and wood species, component profiles, fastening, joining details, finishes, and accessories.

1. Certification: Provide WI MoM Certified Compliance Label on shop drawings.

C. Samples: Furnish samples of each exposed material.

D. Certificates: WI MoM certification is required.

1. General: Before delivery to jobsite, provide WI MoM Certified Compliance Certificate indicating grade of millwork products to be furnished and certify WI MoM requirements for specified grades shall be met.

2. Casework: Each unit to bear WI MoM Certified Compliance Label.

3. Installation: Provide WI MoM Certified Compliance Certificate for Installation.

4. FSC Certification: Furnish certification indicating wood products are from “well-managed” forests.

5. Toxicity Certification: Furnish certification plywood has no added formaldehyde and has no toxic materials as defined by LEED.

1.04 QUALITY ASSURANCE

A. Fabricator Qualifications: Member of Woodwork Institute (formerly Woodwork Institute of California) with minimum five years successful experience fabricating architectural woodwork similar to that required for Project.

B. Standards: Perform architectural woodwork in accordance with recommendations Woodwork Institute (formerly Woodwork Institute of California) "Manual of Millwork" (WI MoM).

C. Seismic Anchorage: Provide seismic anchorage for wall cabinets as required by code.

D. FSC Certified Wood Products: Wood products to be from forests certified “well-managed” by an agency accredited by Forest Stewardship Council (FSC) including SmartWood Program and Forest Conservation Program.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver architectural woodwork until site conditions are adequate to receive work; protect items from weather while in transit.

1. Allow architectural woodwork shop finish to completely dry prior to delivery to site; allow materials to off-gas volatile organic compound (VOC) emissions off site.

B. Store materials indoors, in ventilated areas with constant but minimum temperature of 60 degrees F and maximum relative humidity of 25% to 55%.

C. Do not begin installation of architectural woodwork until space is fully enclosed and mechanical systems are fully operational.

1. Maintain interior installation areas at 70 degrees F and 50% to 55% relative humidity.

D. Immediately remove from site materials with visible mold and materials with mildew.

PART 2 PRODUCTS

2.01 MATERIALS

A. Plastic Laminate Finished Casework and Countertops:

1. Plastic laminate cabinet work, shelving, tops, etc.: Custom.

2. Plastic Laminates:

a. Types: NEMA LD-3.1 high pressure laminates.

1) Horizontal Surfaces: General Purpose Type, nominal 0.050".

2) Vertical Surfaces: Vertical Surface Type, nominal 0.032".

3) Unexposed Surfaces: Balanced with 0.030" melamine backing sheet.

b. Manufacturers:

1) Formica Corp.

2) Micarta Div., Westinghouse Electric Co.

3) Nevamar Corp.

4) Pioneer Plastics Corp./Pionite.

5) Wilsonart, Ralph Wilson Plastics.

6) Abet Laminati, Co.

c. Colors: As selected by Architect from manufacturer's full range of available colors and patterns, excluding metallics. See Schedule of Finishes, Section 09 06 00.

3. Core: Provide plywood with no added formaldehyde and no toxic materials as defined by LEED, made from recycled wood products.

B. Countertops:

1. Stainless Steel:

C. Casework Hardware: Provide casework hardware items as required for complete installation as indicated; provide types as listed in WI MoM "Manual" but no less than following types.

1. Plug-In Pin Type Shelf Supports: Provide holes 1" on center.

2. Cabinet Hinges: European concealed type, minimum 160 degree opening, with spring closer.

3. Locker hinges: Continuous piano hinge.

a. Manufacturers:

1) Baldwin Hardware Manuf. Corp./No. 4672.

2) Stanley Hardware/No. 4483.

3) The Engineered Products Co./No. MC-4023.

4. Drawer Slides: Full extension, rail mounted type, minimum 100 lb. capacity with ball-bearing rollers.

a. Manufacturers:

1) Accuride.

2) Knape & Vogt.

5. Cabinet Locks: Pin and tumbler slide bolt lock, two keys each.

a. Manufacturers:

1) Olympus Lock co. Models 931DW and 931DR less I/C Core. Provide interchangeable core in Airport Proprietary keyway.

2) Provide locks for 50% of doors and drawers.

6. Miscellaneous

a. 2-1/2” dia. Black plastic grommets with spring loaded door iris for feeding cable. Locate @ 8” oc.

b. Best Lock Company 5L Series, rim type, 5 barrel core, 5 pin cylinder. Finish: 626.

c. Stainless Steel type: AISA Type 304, various finishes. Custom finishes.

d. Locker: Lock and latch fabrication, see drawings.

D. Anchors, Nails and Screws: Select material, type, size and finish required by each substrate for secure anchorage; provide toothed steel or lead expansion bolt screws for drilled-in-place anchors.

2.02 FABRICATION

A. General: Fabricate architectural woodwork in accordance with specified quality standards.

B. Plastic Laminate:

1. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes.

2. Make corners and joints hairline; slightly bevel arises.

3. Locate butt joints at least 2'-0" from cutouts.

4. Cap exposed edges with plastic laminate of same finish and pattern.

5. Apply laminate backing sheet to reverse side of laminate surfaces.

6. Provide cutouts for inserts, fixtures and fittings; verify locations from on-site dimensions.

7. Prime paint contact surfaces of cutouts.

8. Plastic Laminate Countertops: Square butt joints and self edging; applied plastic or metal edging not permitted.

C. Countertops: Provide maximum sizes available. Locate butt joints at least 2'-0" from cutouts where more than one piece countertops are required.

1. Make corners and joints hairline; slightly bevel arises.

2. Provide cutouts for inserts, fixtures and fittings; verify locations from on-site dimensions.

D. Use exposed fastening devices or nails only when approved and unavoidable; arrange neatly.

E. Assemble woodwork in shop in sizes easily handled and to ensure passage through building openings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible; do not delay job progress, allow for trimming and fitting.

3.02 INSTALLATION

A. Install work consistent with specified quality grade, plumb, level, true and straight with no distortions.

1. Shim as required, using concealed shims.

B. Ensure mechanical and electrical items affecting architectural woodwork are properly placed, complete, and have been inspected by Architect prior to commencement of installation.

C. Secure work to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation.

D. Scribe and cut for accurate fit to other finished work.

E. Install architectural woodwork under supervision of factory-trained mechanics.

F. Attach architectural woodwork securely in place with uniform joints providing for thermal and building movements.

G. Paneling: Provide fire-treated wood stops eight feet on center at paneling where not flush with substrate.

H. Acceptable Tolerances:

1. Variation from True Position: Maximum 1/16" at any position and maximum 1/8" in any 10'-0" length.

2. Adjoining Surfaces of Same Material: No variation permitted.

3. Offset with Abutting Materials: Maximum 1/32".

END OF SECTION 06 40 23

PART 1 GENERAL

1.01 SUMMARY

A. Provide thermal insulation and accessories as required for complete installation. Including spray polyurethane foam.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Product Data: Furnish manufacturer's literature for each type of insulation.

1. Submit Underwriter's Laboratory approval numbers for required fire ratings; approvals of other laboratories contingent upon acceptance of applicable authorities.

PART 2 PRODUCTS

2.01 MATERIALS

A. Thermal Batt Insulation: Thermafiber SAFB, preformed slag mineral or glass fiber with thermosetting resin binders, conforming to ASTM C665, Type 1, HH-I-521F, unfaced; formaldehyde-free and with no toxic materials. Flame Spread/Smoke Density Rating: Maximum 0/0, ASTM E84. Combustibility: Pass ASTM E136.

B. White Faced high strength rigid board Insulation (Owens-Corning 705, FRK or equal): Provide glass or mineral fiber rigid board type insulation with white polyethylene face suitable for protected exterior high humidity applications; facing may be integral or may be separate.

1. Polyethylene Face: Not less than 10 mil thickness.

2. Closed Cell Spray Polyurethane Foam. ASTM C 1029, Type II, minimum density of 2.5 lb.cu. ft. and minimum aged R value at 1-inch thickness of 7.0 deg F x h x sq. ft./Btu at 75 deg F. Icynene ProSeal (MD-C-200v3). R value of 7.0 per inch. Class II vapor diffusion retarder.

C. Vapor Retarder Tape: Minimum 4" wide self-adhering white faced tape designed to maintain vapor retarder integrity. Set additional penetration supports at not less than 24” on center at insulation/facing joints to maintain tape in place

D. Accessories: Furnish as recommended by insulation manufacturer for insulation types, substrates, and conditions involved.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify substrate and adjacent materials are dry and ready to receive insulation; beginning installation signifies acceptance of conditions.

B. Ensure mechanical and electrical items affecting work are properly placed, complete, and have been inspected by Architect prior to commencement of installation.

3.02 INSTALLATION

A. Install insulation in accordance with manufacturer's instructions. Install white faced rigid insulation boards with facing below insulation mechanically fasten to bottom of suspended concrete slabs and concrete / metal deck slabs. Use mechanical fasteners such as weld pins or speed clips to bottom of suspended concrete slabs and concrete metal deck slabs; tape joints and secure tape and insulation/white facing with penetration supports not less than 24" on center, not less than 3" from each edge or corner of the board. Pin spacing shall be no greater than 12". Additional pins or clips may be required to hold the insulation tightly against the surface where cross breaking is used for stiffening. Weld pin lengths must be selected to ensure tight fit but avoid "oil-canning." In multiple layer applications, use faced material on outer layer only. All insulation joints should be sealed with pressure-sensitive joint sealing tape (minimum 5" wide) to match the insulation facing. Rub hard with a plastic sealing tool to effect a tight bond.

B. Cut and trim insulation neatly, to fit spaces.

C. Fit insulation tight within spaces and tight to and behind mechanical and electrical services within insulation plane; leave no gaps or voids; maintain integrity of thermal barrier.

D. Friction fit batt insulation in place; use tape or penetration supports as necessary to assure permanent installation.

E. Spray insulation to envelop entire area to be insulated and fill voids. Apply in multiple passes. Do not spray into rising foam.

END OF SECTION 07 21 00

PART 1 GENERAL

1.01 SUMMARY

A. Vapor retarder under concrete slabs on grade.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Product Data: Submit for vapor retarder sheet and installation accessories. Include data from tests performed within 18 months of submittal showing compliance with specified standard.

B. Shop Drawings: Show extent of vapor retarder work. Include details for edges at walls, grade beams, and the like. Include details for penetrating elements including conduit, piping, and structural membranes.

PART 2 PRODUCTS

2.01 VAPOR RETARDER

A. Plastic Sheet Vapor Retarder: Meeting ASTM E 1745, Class A. Minimum 15 mil thick polyolefin sheet Acceptable types include:

1. Stego Wrap by Stego Industries
2. Moistop Ultra A by Fortifiber Corp.
3. VaporBlock 15 by Raven Industries
4. Perminator by W.R. Meadows

B. Accessory Products

1. Provide manufacturer's recommended self-adhesive plastic seam tape for seams and penetrations.
2. Penetration boots: Provide manufacturer's recommended accessory system for sealing pipe and conduit penetrations.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surface to receive vapor retarder is compacted and trimmed smooth.

B. Verify that all work that will penetrate vapor retarder is complete and rigidly installed.

C. Confirm locations and details of vapor retarder termination.

3.02 VAPOR RETARDER INSTALLATION

A. General: Comply with requirements of ASTM E 1643 and manufacturer's published instructions.

B. Place plastic sheet vapor retarder directly on compacted granular fill. Place sheeting with longest dimension parallel with direction of pour.

C. Lap joints 6 inches and seal with per manufacturer's recommendations with pressure sensitive tape.

D. Tape seal vapor retarder at all perimeters.

E. Tape seal vapor retarder around columns, pipe, and conduit penetrations.

F. Avoid cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.

END OF SECTION 07 26 16

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Provide materials and accessories as required for complete installation.

1. Surface preparation.

2. Application of liquid applied vapor permeable air barrier.

3. Application of materials to provide bridge and seal air leakage pathways in

a. Wall and roof connections and penetrations.

b. Walls, windows, louvers or doors

c. All other penetrations through the wall assembly.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 REFERENCES

A. ASTM D412-98a(2002)e1 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

B. ASTM E96-00e1 (Method B) - Standard Test Methods for Water Vapor Transmission of Materials.

C. ASTM E283-91 (1999) - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

D. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors.

E. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference.

F. ASTM E2178-01 - Standard Test Method for Air Permeance of Building Materials.

G. ASTM E2357 - 05 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

1.04 SUBMITTALS

A. Product Data: Furnish manufacturer's literature for each type of insulation.

1. Submit Underwriter's Laboratory approval numbers for required fire ratings; approvals of other laboratories contingent upon acceptance of applicable authorities.

2. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of air barrier.

3. Shop Drawings: Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strip, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction. Include details of interfaces with other materials that form part of air barrier.

4. Use an experienced installer and adequate number of skilled personnel who are thoroughly trained and experienced in the application of the air barrier.

5. Obtain air/vapor barrier materials from a single manufacturer regularly engaged in manufacturing the product.

6. Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

1.05 MOCK-UP

A. Before beginning installation of air barrier, build mockups of exterior wall assembly, full height by ten (10) feet wide, including parapet, backup wall construction, external cladding, window, door frame and sill, insulation, and flashing to demonstrate surface preparation, crack and joint treatment, and sealing of gaps, terminations, and penetrations of air barrier membrane.

1. Coordinate construction of mockup to permit inspection of air barrier before external insulation and cladding is installed.

2. Reconstruct mockups do not comply with requirements.

3. Approved mockups may become part of the completed.

4. Include installers of other construction connecting to air barrier, including roofing, waterproofing, composite metal wall panels, metal wall panels, sealants, windows, glazed curtain walls, and door frames.

5. Review air barrier requirements including surface preparation, substrate condition and pretreatment, minimum substrate curing period, forecasted weather conditions, special details and sheet flashings, mockups, installation procedures, sequence of installation, testing and inspecting procedures, and protection and repairs.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by air barrier manufacturer.

B. Store at temperatures at or above 40^{o}F (4^{o}C), free from contact with cold or frozen surfaces.

C. Remove and replace liquid materials that cannot be applied within their stated shelf life.

D. Protect stored materials from direct sunlight.

E. Protect materials during handling and application to prevent damage or contamination.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Product not intended for uses subject to abuse or permanent exposure to the elements.

B. Do not proceed with product application if rainfall is forecast or imminent within 12 hours.

C. Do not apply membrane when air or surface temperatures are below 40ºF (4ºC).

D. Do not apply when air, material and surface temperatures are expected to fall below 32º F (0º C) within 24 hours of completed application.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Carlisle

B. Grace

C. Henry

D. Rubber Poymer Corporation

E. Tremco

F. W.R. Meadows

2.02 FLUID-APPLIED MEMBRANE AIR BARRIER

A. Fluid-Applied, Vapor Impermeable Membrane Air Barrier: Two-component, self-curing synthetic-rubber-based membrane, free of solvents, isocyanates and bitumen, suitable for spray application to wet film and dry film thickness of 60 mils.

B. Basis-of-Design Product: Products specified to establish required level of performance, quality, and appearance are by Grace Construction Products, Perm-A-Barrier.

2.03 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by air barrier manufacturer for intended use and compatible with air barrier membrane. Liquid-type auxiliary materials shall comply with VOC limits.

B. Transition Membrane Primer: Grace Construction Products; "Perm-A-Barrier WB Primer." Liquid primer recommended for substrate by manufacturer of air barrier material when applying flashing and transition membranes directly to substrate.

C. Flashing and Transition Membrane: Grace Construction Products; "Perm-A-Barrier Wall Flashing."Modified bituminous, 40-mil thick, self-adhering sheet consisting of 32 mils of rubberized asphalt laminated to an 8-mil thick, cross-laminated polyethylene film with release liner backing.

D. Modified Bituminous Transition Membrane: Grace Construction Products; "Perm-A-Barrier Detail Membrane." Vapor-retarding, 40-mil- thick, smooth-surfaced, self-adhering; consisting of 36 mils of rubberized asphalt laminated to a 4-mil- thick polyethylene film with release liner backing.

E. Joint Reinforcing Strip: Sheathing manufacturer's glass-fiber-mesh tape.

F. Substrate Patching Membrane: Manufacturer's standard trowel-grade single component substrate filler.

G. Adhesive and Tape: Air barrier manufacturer's standard adhesive and pressure-sensitive adhesive tape.

H. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, 0.0250 inch thick, and Series 300 stainless-steel fasteners.

I. Sprayed Polyurethane Foam Sealant: 1- or 2-component, foamed-in-place, polyurethane foam sealant, 1.5 to 2.0 lb/cu. ft density; flame spread index of 25 or less according to ASTM E 162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces to receive membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

B. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.

C. Verify that sheathing is attached with proper fasteners and spacing.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 SURFACE PREPARATION

A. Protect adjacent surfaces not designated to receive air barrier.

B. Clean and prepare surfaces to receive air barrier membrane in accordance with manufacturer's instructions.

C. Do not apply membrane to surfaces unacceptable to manufacturer.

D. Patch all holes and voids and smooth out any surface misalignments.

E. Insure joints between dissimilar building materials are sealed with a strip of self-adhesive membrane 10" wide minimum, centered over the joint.

E. Exterior Sheathing Panels:

1. Panels are to be fastened according to sheathing panel manufacturer.

2. Fill all panel joint with detailing compound prior to full application.

3. Gypsum Sheathing: Fill joints greater than 1/4 inch with sealant according to ASTM C 1193 and with air barrier manufacturer's written instructions. Apply first layer of fluid air barrier membrane at joints. Tape joints with joint reinforcing strip after first layer is dry. Apply a second layer of fluid air barrier membrane over joint reinforcing strip.

G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

3.03 TRANSITION MEMBRANE INSTALLATION

A. Install strips, transition membrane, and auxiliary materials according to air barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous air barrier.

B. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.

C. Install modified bituminous transition membrane on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over both substrates.

D. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by air barrier sheet in same day. Reprime areas exposed for more than 24 hours.

E. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.

F. Connect and seal exterior wall air barrier membrane continuously to roofing membrane air barrier, floor-to floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings.

G. At end of each working day, seal top edge of strips and transition membranes to substrate with termination mastic.

H. Apply joint sealants forming part of air barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

I. Wall Openings: Prime concealed perimeter frame surfaces of windows, curtain walls, storefronts, doors and louvers. Apply modified bituminous transition membrane so that a minimum of 6 inches of coverage is achieved over both substrates. Maintain 6 inches of full contact over firm bearing to perimeter frames with not less than 2 inches of full contact.

J. Modified Bituminous Transition Membrane: Roll firmly to enhance adhesion.

K. Preformed Silicone-Sealant Extrusion: Set in full bed of silicone sealant applied to walls, frame, and membrane.

L. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air barrier membrane with foam sealant.

M. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.

N. Repair punctures, voids, and deficient lapped seams in strips and transition membranes. Slit and flatten fishmouths and blisters. Patch with transition membranes extending 10 inches beyond repaired areas in membrane direction.

3.04 AIR BARRIER MEMBRANE INSTALLATION

A. Apply air barrier membrane to form a seal with strips and transition membranes and to achieve a continuous air barrier according to air barrier manufacturer's written instructions.

B. Apply within manufacturer's recommended application temperature ranges.

C. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by air barrier sheet in same day. Reprime areas exposed for more than 24 hours.

D. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.

E. Apply a continuous unbroken air barrier to substrates according to the following minimum thickness. Apply membrane in full contact around protrusions.

F. Vapor-Impermeable Membrane Air Barrier: 60-mil wet film thickness, 60-mil dry film thickness.

G. Apply strip and transition membrane overlapping or onto according to air barrier manufacturer's written instructions.

H. Do not cover air barrier until it has been tested and inspected by testing agency.

I. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

3.05 CLEANING AND PROTECTION

A. Protect air barrier system from damage during application.

B. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. Remove and replace vapor-impermeable air barrier exposed for more than 60 days.

C. Keep barrier from contact with creosote, uncured coal-tar products, TPO, EPDM, flexible PVC membranes, and sealants not approved by air barrier manufacturer.

D. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

E. Remove masking materials after installation.

END OF SECTION 07 27 26

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes (but Is Not Necessarily Limited to)

1. Standing Seam Metal Roofing

2. Dimensional rigid insulation.

3. Self-adhesive underlayment.

B. The work of this Section is not limited to those items specifically mentioned herein but includes all items necessary to produce a properly executed and complete job.

1.02 RELATED SECTIONS

1. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 REFERENCES

A. Aluminum Association (AA)

1. "Aluminum Design Manual."

2. "Aluminum Structures: A Guide to their Specifications and Design."

3. "Aluminum Standards and Data."

B. American Society for Testing and Materials (ASTM)

1. A 167 “Standard Specification for Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.”

2. A 653 “Standard Specification for Steel Sheet, Zinc-Coating (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.”

3. A 792 “Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.”

4. A 924 “Standard Specification for General Requirements for Steel Sheet, Metallic- Coated by the Hot-Dip Process.”

5. D 523 “Standard Test Method for Specular Gloss.”

6. D 714 “Standard Test Method For Evaluating Degree of Blistering of Paints.”

7. D 822 “Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.”

8. D 968 “Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.”

9. D 1056 “Standard Specification for Flexible Cellular Materials.”

10. D 2244 “Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.”

11. D 3359 “Standard Test Methods for Measuring Adhesion by Tape Test.”

12. D 3361 “Standard Practice for Unfiltered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.”

13. D 3363 “Standard Test Method for Film Hardness by Pencil Test.”

14. D 4214 “Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.”

15. E 1592 “Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.”

16. E 1637 “Standard Specification for Structural Standing Seam Aluminum Roof Panel Systems.”

17. E 1646 “Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.”

18. E 1680 “Standard Test Method for Rate of Air Leakage through Exterior Metal Roof Panel Systems.”

C. National Roofing Contractors Association (NRCA): The NRCA Roofing and Waterproofing Manual.

D. Sheet Metal and Air Conditioning Contractors’ National Association (SMACNA): Architectural Sheet Metal Manual.

E. Underwriters Laboratories Inc.: UL 580, Tests for Uplift Resistance of Roof Assemblies.

1.04 PERFORMANCE REQUIREMENTS

A. General: Metal roof panels shall comply with performance requirements without failure due to defective manufacturer, fabrication, installation, or other defects in construction.

B. Material Compatibility: Provide materials that are compatible with one another under conditions of service and application required, as demonstrated by testing and field experience.

C. Delegated Design: Design metal roof panel assembly, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

D. Structural Performance: The wind uplift resistance of the roof assembly shall be established in accordance with ASTM E 1592.

E. Uplift Rating Testing: Roof panel system shall be successfully tested in accordance with UL 580 and maintain a Class 90 uplift rating.

F. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes. Calculations should be based on surface temperatures due to both solar heat gain and nighttime-sky heat loss.

G. System to be designed to allow for maintenance access.

1.05 QUALITY ASSURANCE

A. Field and office representatives responsible for work under this section shall attend a pre-roofing conference at the job site to discuss roofing and sheet metal practices applicable to this project.

B. The manufacturer shall have a minimum of 10 years experience supplying metal roofing to the region of the project.

C. The installer shall be authorized or certified by the panel manufacturer.

D. The installer shall have a minimum 2 years experience installing accepted roof panels on projects of similar scope.

1.06 SUBMITTALS

A. Do not order materials before receiving the Architect's written approval of the list of manufacturers, samples, and appropriate product data sheet.

B. Product Data: For each type of product indicated.

C. Samples: All materials specified unless otherwise noted in Part 2. Provide 12 in. x 12 in. samples of all sheet products, 12 inch long formed sheet profiles, one container of all sealants, and four of each type of fastener.

D. Shop Drawings: Shop drawings must be in scale large enough to clearly define all layers. Show dimensions of all typical and special conditions. Show details of waterproofing, terminations, and penetrations of metal work. Details referenced to manufacturer's literature shall show the specific dimensions for this project. Include material types and thickness, connections (fastener type, size and spacing), sealant or seal tape (brand, type, size, location), and provisions for thermal movement.

E. Calculations: Submit calculations with registered engineer seal verifying roof panel attachment method resists wind pressures imposed on it pursuant to applicable building codes. In addition to uplift load, consider the friction force of thermal movement on the fixed point connection to the structure below.

F. Written certification (in time to prevent delay of the work) by the manufacturers of the roofing materials that the materials supplied to this job are the same as covered by the submitted calculations, that they meet all requirements of the ASTM standards, and that all materials are suitable for the uses specified herein.

G. Maintenance Data: For metal roof panels to include in maintenance manuals.

H. Warranty: Sample copy of warranty.

1.07 PROJECT DELIVERY STORAGE & HANDLING

A. Deliver panels and other components so they will not be damaged or deformed. Package panels for protection against transportation damage.

B. Unload, store, and erect panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, and cover with tarpaulins or other suitable weathertight and ventilated covering. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.

1.08 PROJECT CONDITIONS

A. Advise the General Contractor daily of the area where roofing work is to be performed so that he can protect the personnel, equipment and materials below. Provide 72 hour advance notice if roof mounted equipment, ductwork or conduits must be removed to permit roofing operations.

B. Dispose of all debris in a legal manner, off the site. Safely conduct debris to trucks or approved containers on the ground. Do not apply any roofing or flashing materials unless the exposed surface of the deck or finished membrane is clean and dry. If any unusual condition is discovered, stop work and promptly report this finding to the General Contractor and Architect.

C. Arrange work sequence to avoid use of newly constructed roofing for storage, walking surface and equipment movement. Protect surface with plywood runways where access is absolutely required, and insure full protection of roofing surface against mechanical damage. Notify the General Contractor and Architect in writing if any other contractor abuses or damages roofing or flashing components.

D. Proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed according to manufacturer's written instructions and warranty requirements.

E. Verify actual dimensions of construction contiguous with metal roof panels by field measurement before fabrication.

1.09 WARRANTY

A. Submit written warranty for the Metal Roofing and related work, signed by the roofing contractor, agreeing to repair or replace roof which leaks water, deteriorates, or otherwise fails to perform as required within warranty period as a result of failure of materials and/or workmanship at no expense to the Owner.

1. By terms of warranty, also agree to remove and replace other work, as required, which has been connected to or superimposed on substrate material to be replaced.

2. The guaranty period for the work shall be 5 years after date of Substantial Completion and shall include entire installation and waterproofing membrane assembly with no dollar limit.

3. Guarantees shall be signed by Roofing Contractor.

B. Manufacturer's Warranty

1. Special Warranty: In addition to Contractor's warranty, submit executed copy of manufacturer's standard form in which manufacturer agrees to repair or replace metal panel roof assemblies that fail in materials or workmanship within specified warranty period.

a. Warranty Period: 5 years from date of substantial completion.

2. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panel assemblies that show evidence of deterioration of factory-applied finishes within specified warranty period.

   a. Warranty Period: 20 years from date of substantial completion.

PART 2 PRODUCTS

2.01 PANEL MATERIALS

A. General: The roof system is a standing seam metal roof attached to the building with concealed fasteners. Panels shall be in continuous lengths with no end laps. Exposed fasteners shall be restricted to perimeter conditions.

B. Acceptable manufacturers:

1. Berridge Manufacturing Company.

2. AEP Span, Inc.

3. Morin

4. ATLAS

5. Bridger Steel.

C. Panel Material: .040 Aluminum.

D. Panel System: Aluminum. System to be a 2" deep roll formed mechanically seamed (double lock standing seam) 16" O.C continuous lengths.

E. Panel Finish: Mill finish

F. Flashing and Trim: Manufacturer's standard flashing and trim profiles, factory formed, gauge as recommended by manufacturer, color and finish matching metal roofing panels. Edge of roof flashing shall be curved to follow roof. Pie cut curved parts are not acceptable.

G. Anchor Clips: Anchor clips and clip bases are fabricated from Series 300 stainless steel or nylon coated aluminum. Shape, size, and spacing as determined to meet the uplift requirements.

H. Closures: Fabricate closures of sheet metal matching the color and thickness of the roof panels using and closed cell foam inserts to seal against the panel profile. Use 3T minimum bend radii and open hems to stiffen all edges. Use cleats or clips to minimize the use of exposed fasteners. Flashing shall be installed in strict accordance with the recommended practice in the AA, NRCA and SMACNA architectural sheet metal manuals.

I. Fasteners:

1. Clip anchor screws are minimum #14 hex head stainless steel screws threaded to suit the support material.

2. Exposed fasteners that penetrate to the inside are minimum #14 painted stainless steel hex head sheet metal screws with neoprene washers.

3. Exposed fasteners that do not penetrate to the inside are minimum 3/16 in. painted aluminum pop rivets.

J. Accessories: Provide components approved by roof panel manufacturer and as required for a complete metal roof panel assembly including trim, copings, fasciae, corner units, ridge closures, clips, flashing, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

K. Provide non skid surfaces where indicated on the drawings.

2.02 FABRICATION, GENERAL

A. Fabricate and finish metal roof panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

B. Unless otherwise shown on drawings, panels shall be full length. Flashings and accessories shall be fabricated in longest practical lengths.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

2.03 INSULATION MATERIALS

A. High thermal roof insulation board of a core of rigid, closed cell, polyisocyanurate foam, faced with a fiberglass-reinforced mat conforming to ASTM 1289 and ESP.

1. 4 ft x 8 ft size boards or longer. Overlap joints.

2. Provide R-30 minimum thermal insulation over entire roof surface. Comprised of, polyiscynurate minimum 1 ½" thick board layers.

B. Primed Sheathing Board: 1/2 in. sheathing with a silicone-treated core and integral prime surface: DensDeck Prime: by Georgia Pacific.

C. Mechanical Fasteners: As recommended by roof insulation manufacturer for securing roof insulation to metal decking and as required for Factory Mutual window uplift resistance rating including insulation washers.

2.04 SELF-ADHESIVE UNDERLAYMENT MATERIALS

A. Self-adhesive Underlayment: 30 mil cold-applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of butyl rubber adhesive with embossed slip resistant surface provided on the polyethylene: Ultra by W.R. Grace.

B. Primer: Primer as recommended by self-adhesive underlayment manufacturer.

C. Mastic: Mastic as recommend by self-adhesive underlayment manufacturer.

D. Slip Sheet: Inorganic slip sheet: Tyvek or as recommended by metal roof panel manufacturer.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine roof deck, blocking, and related substrates, and verify that they are uniform in plane and satisfactory for roofing application.

B. Notify the General Contractor and Architect of any discrepancies between drawings and field conditions, and of any elements that require repair.

C. Start of roofing application implies the Sheet Metal Roofing Contractor has verified that the deck and substrates are satisfactory for roofing application.

3.02 INSULATION INSTALLATION

A. Install roof insulation in conformance with the manufacturer's printed instructions.

B. Secure insulation and primed sheathing board using fasteners designed and sized for attaching roof insulation to metal decking.

1. Fasten over entire area of roofing as spacing required by Factory Mutual requirements. Ensure all fasteners engage into top flutes.

2. Install succeeding insulation layer over lower layer. Stagger all joints 6 in. minimum with underlying layer.

C. Do not apply more insulation in one day than can be covered with metal roofing.

3.03 SELF-ADHESIVE UNDERLAYMENT INSTALLATION

A. Prime substrate to receive sheet membrane as required per manufacturer's written instructions.

B. Remove release liner and position membrane carefully before placing length against the surface.

C. Begin installation at the low point of the roof structure. Apply sheets so that direction of flow of water is over and not against laps.

D. Apply membrane firmly into place without wrinkles, buckles, or kinks.

E. When properly positioned, place against surface by pressing firmly into place. Roll membrane with extension-handled membrane roller immediately after placement.

F. Provide minimum 2-1/2 in. end side laps and 6 in. end laps.

G. Do not expose sheet membrane to sunlight for more than thirty days prior to enclosure.

H. Inspect installation prior to installation of metal roof panels and repair punctures, damaged areas and inadequately lapped seams with a patch of the membrane sized to extend 6 in. in all directions from the perimeter of the affected area, unless specifically detailed otherwise. Seal all reverse laps with manufacturer's recommended mastic.

I. Cover installed membrane with slip sheet.

3.04 METAL ROOF PANEL INSTALLATION

A. General: Comply with manufacturer's instructions and recommendations. Anchor panels and other components of the work securely in place, with provisions for thermal and structural movement.

B. Field cutting of panels by torch is not permitted.

C. Workmanship shall conform to standards specified in SMACNA "Architectural Sheet Metal Manual."

D. Remove any strippable protective film prior to panel installation.

E. Fasten metal roof panels to supports with concealed clips at each standing-seam joint location, spacing, and with fasteners recommended by manufacturer.

F. Install panels weathertight without waves, warps, buckles, or distortions and allow for expansion and contraction. Attachment and joints shall allow for expansion and contraction from temperature changes without distortion or elongation of fastener holes.

G. Install panels plumb, level, and straight with seams and ribs parallel, conforming to design as indicated.

H. Do not allow panels or trim to come into contact with dissimilar materials.

I. Install accessories required for a complete roof system, including trim, copings, fascias, gravel stops, ridge closures, clips, seam covers, battens, flashings, gutters, sealants, gaskets, fillers, closure strips, and similar items.

J. Hem raw edges on flashing and trim.

3.05 CLEANING AND PROTECTION

A. Replace panels and other components of the work that have been damaged or have deteriorated beyond successful repair by means of finish touch-up or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as soon as each panel is installed. Upon completion of panel installation, clean finished surfaces as recommended by panel manufacturer, and maintain in a clean condition during construction.

3.06 COMPLETION

A. Provide written punch list from manufacturer.

B. Provide installer and manufacturer's warranty after punch list items have been corrected.

END OF SECTION 07 41 13

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, and equipment necessary for the installation of An aluminum metal wall panel system, complete and weather tight. Work shall include but not be limited to panels, stiffeners, fasteners, and weather seals requires for a complete installation of panels to the support system provided for this scope of work.

1.02 RELATED DOCUMENTS

A. All sections listed in the Table of Contents are a condition of this section.

1.03 WORK SPECIFIED IN THIS SECTION

A. Furnish and install a aluminum wall panel system

B. Accessory items such as clips, flashings, sealants, and gaskets

1.04 METAL PANEL SYSTEM DESCRIPTION

A. Aluminum metal panel system.

B. The panels system shall be hard fastened so that panels are secure, yet able to accommodate movement from thermal expansion and contraction without buckling or causing undue stress on panel fasteners.

1.05 DESIGN AND PERFORMANCE CRITERIA

A. Metal panel system shall be designed so that attachment allows panels to successfully accommodate seismic and thermal movement without causing “oil-canning”, undue stress on fasteners, or failure of weather seals.

1.06 QUALITY ASSURANCE

A. Single Source Quality Control: Metal panel system manufacturer shall provide all design, engineering, panel fabrication, and assembly of panel system in manufacturing facility.

B. Installer Qualifications: Installer shall have a minimum of (5) years experience in the installation of the specified panel type.

C. Metal Panel System Tolerances:

1. Maximum panel bow shall not exceed 2% of panel dimensions in width or length, with an overall maximum tolerance of .1875” within panel face.

2. Face of panel shall not vary in plane to any adjacent panel greater that 1/16”.

1.07 SUBMITTALS

A. Samples: Submit physical samples as follows

1. (4) 12” square panels mounted with specified system attachments, paint finish for composite panel.

2. (3) standard color charts for specified silicone sealant manufacturer

B. Shop Drawings: Submit complete metal panel system shop drawings with keyed plans, elevations and sections. Specific detail shall be included for all panel conditions and all interfaces with all other exterior wall systems. Included coordinated details from shop drawings for other exterior wall systems. Drawings shall also indicate method of attachment weather seals, and drainage method for perimeter extrusion system.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Reynolds Aluminum Panel Systems as manufactured by CSP Architectural Metals. (925) 820-8113.

B. Additional manufacturers may be submitted for prior approval before the bid date. At the sole discretion of the Architect, systems may be approved if they satisfy all of the requirements of the Design and Performance Criteria and Quality Assurance sections of this specification.

2.02 MATERIALS

A. Composite Panels: Fabricate panels from 4mm aluminum panels.

B. Fasteners: Subgirt and panel fasteners shall be ELCO Drillflex with stalgard finish. Size and spacing shall be as required by structural calculations.

C. Concealed Weather seal Gaskets: Provide extruded EPDM gaskets for use as internal weather seals.

2.03 PANEL FINISHES

A. Mill finish.

PART 3 EXECUTION

3.01 FABRICATION

A. Fabricate panels to sizes and configurations as indicated on drawings. All panel joints shall occur exactly where indicated on drawings.

B. Panels shall be formed, with mechanical screw attachment.

3.02 INSTALLATION

A. Provide at least (1) person to be present at all times who is capable of providing layout for the metal panel system. Notify Contractor of any dimensional discrepancies that may affect panel system installation.

B. Install metal panel system in accordance with the approved shop drawings for the project.

END OF SECTION 07 42 13.23

PART 1 GENERAL

1.01 SUMMARY

A. Provide metal flashings and sheet metal including accessories as required for complete weather tight installation.

B. Patch existing flashing and sheet metal as required by new construction.
1. Interior beam ornamental flashings and sheet metal.

C. Gutters and downspouts, custom shapes.

D. Provide concealed sealants used in conjunction with installation of metal flashing and sheet metal.

E. Provide miscellaneous sheet metal flashing and reglets not provided by other trades or suppliers.

1. Where reglets are to be installed in conjunction with other work, provide in adequate time for installation.

2. Flashings and trims at windows and extruded aluminum wall transition flashings.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Product Data: Furnish literature for manufactured products.

B. Shop Drawings: Clearly indicate dimensioning, layout, general construction details including closures, flashings, locations and types of sealants, anchorages, and method of anchorage.

C. Samples: Furnish samples of typical metal flashing fabrication indicating standard soldered joints and edge conditions.

1.04 QUALITY ASSURANCE

A. Referenced Standards

1. California Building Code (CBC), 2016

2. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): Architectural Sheet Metal Manual, Latest Edition

B. Design Requirements: Allow for movement of components without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to 100 year seasonal temperature ranges.

C. Sheet metal fabricator and installer shall have a minimum five (5) years' experience of shop fabrication and installation of shop fabricated roofing metal and flashings.

1.05 DELIVERY, STORAGE AND HANDLING

A. Provide strippable film protective covering on shop finished flashing materials to protect materials through shipping, fabrication and installation.

1.06 WARRANTY

A. Special Warranty: Provide for correcting failure of metal flashing system to resist penetration of water and damage from wind.

1. Special Warranty Period: Two years.

PART 2 PRODUCTS

2.01 MATERIALS

A. Flashing and Sheet Metal:

1. Minimum gauge of aluminum per SMACNA.

2. Custom extruded aluminum roof edge fascia per drawings.

B. Flexible Flashings: Reinforced self- adhered flexible flashing.

C. Solder and Fasteners: As recommended by SMACNA and complying with applicable codes and regulations; hot dipped galvanized minimum coating comparable to G90.

D. Concealed Sealant: Butyl type for use in conjunction with sheet metal; non-staining; non-corrosive; non-shrinking and non-sagging; ultra-violet and ozone resistant for exterior concealed applications.

E. Bituminous Paint: Acid and alkali resistant type; black color; asbestos free.

F. Plastic Cement: Cutback asphaltic type; asbestos free.

G. Sealing Compound: Type recommended by roofing manufacturer; asbestos free.

H. Gaskets: Type suitable for use in conjunction with sheet metal; non-staining, non-corrosive, non-shrinking, non-sagging, ultra-violet resistant, and ozone resistant; for exterior concealed applications.

1. Manufacturers:

a. Sandell Manufacturing Co./Polytite Joint Sealant.

b. Emseal USA, Inc./Emseal Secondary Seal.

I. Downspouts & Gutters

1. Form from aluminum to profiles shown on drawings.

2. Comply with SMACNA recommendations.

3. Clear silicone GE, DOW, or approved equal.

4. Provide custom spun aluminum collector for transition from gutter to downspouts.

5. Where reglets are to be installed in conjunction with other work, provide in adequate time for installation.

2.02 FABRICATION

A. Fabricate sheet metal in accordance with SMACNA Architectural Sheet Metal Manual.

B. Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

C. Fabricate corners and intersections in shop with solder joints; watertight fabrication.

D. Form sections in maximum 10'-0" lengths; make allowance for expansion at joints.

E. Hem exposed edges on underside 1/2".

F. Backpaint flashings with heavy bodied bituminous paint where in contact with cementitious materials or dissimilar metals.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install metal flashing and sheet metal in accordance with SMACNA Architectural Sheet Metal Manual.

1. Install tight in place, with corners square, surfaces true and straight in planes, and lines accurate to profiles as indicated on Drawings.

2. Lap joints in direction of water flow.

3. Install self-adhering flexible flashings and overlap metal flashing joints and adjacent materials in direction of water flow.

B. Exercise care when cutting materials on site, to ensure cuttings do not remain on finished surfaces.

C. Provide expansion joints concealed within system.

D. Use concealed fasteners, continuous cleat type, except where specifically approved by Architect.

1. Exposed fasteners may be used, where clearly indicated on shop drawings and approved by the county, at areas not exposed at exterior walls nor in sight of interior spaces.

E. Apply sealing compound at junction of metal flashing and felt flashing.

F. Lock seams and end joints; fit flashing tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

G. Install flashings with minimum joints and as long of section as possible.

H. Install sealants where required to prevent direct weather penetration.

1. Install continuous gasket behind surface applied reglets.

I. Completed installation shall be free of rattles, noise due to thermal and air movement, and wind whistles.

J. Install metal flashing at all intersections to protect waterproofing, insulation and gypsum sheathing from UV exposure.

K. Install dam flashing at window, louvers, openings and at intersecting horizontal and vertical surfaces. Flashing exposed to view shall be mill finish.

3.02 CLEANING

A. Remove protective coating from shop finished sheet metal when no longer required to protect roofing and flashing from construction.

B. Touch-up scratched and damaged finish to match new; remove and replace sheet metal units that cannot be repaired to look identical to adjacent sheet metal when viewed from 5'-0" away.

END OF SECTION 07 62 00

PART 1 GENERAL

1.01 SUMMARY

A. Provide joint sealers, for interior and exterior joints not specified elsewhere, with backing rods and accessories as required for complete installation. Joint sealers include sealants and calking as indicated.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Product Data: Furnish manufacturer's descriptive literature.

B. Samples: Furnish samples of each type of exposed joint sealer in required colors.

C. Certifications:

1. Furnish manufacturer's certification joint sealers comply with Contract Documents and are suitable for Project applications.

2. Furnish certification indicating installers are trained in proper use of specified products, qualified, and familiar with proper installation techniques.

1.04 QUALITY ASSURANCE

A. Performance Requirements:

1. Select materials for compatibility with joint surfaces and indicated exposures.

2. Where not indicated, select modulus of elasticity and hardness or grade recommended by manufacturer for each application indicated.

3. Comply with applicable limitations on volatile organic compound (VOC) emissions.

B. Installer Qualifications: Firm with minimum five years successful experience on projects of similar type and size, using specified products.

1. Installers shall be familiar with proper application procedures to ensure maximum joint sealer expansion and contraction capabilities.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, cure time, and mixing instructions.

1.06 SITE CONDITIONS

A. Do not proceed with installation of joint sealers under unfavorable weather conditions.

B. Install elastomeric sealants when temperature is in lower third of temperature range recommended by manufacturer.

1.07 WARRANTY

A. Special Warranty: Repair or replace joint sealers which fail to perform as intended, because of leaking, crumbling, hardening, shrinkage, bleeding, sagging, staining and loss of adhesion.

PART 2 PRODUCTS

2.01 MATERIALS

A. Elastomeric Sealants:

1. Single Component Low Modulus Silicone Sealant: ASTM C920 Type S, Class 25, Grade NS; minimum 50% expansion and compaction capability.

a. Provide at exterior locations not exposed to traffic.

b. Manufacturers:

1) General Electric Co./Silpruf, Silglaz or GESIL.

2) Dow Corning Corp./790 or 795.

3) Pecora Corp./864 Architectural Silicone.

4) Tremco/Spectrum 3.

2. Multi-Component Polyurethane Sealant: ASTM C920, Type M, Grade P, Class 25, self-leveling; minimum 25% expansion and compaction capability.

a. Provide following at traffic bearing locations.

b. Manufacturers:

1) Pecora Corp./NR-200 Urexpan.

2) Tremco/Vulkem 245.

3) Sonneborn Division of ChemRex /SL 2

3. Mildew-Resistant Silicone Rubber Sealant: ASTM C920, Type S, Grade NS, Class 25, compounded with fungicide, specifically for mildew resistance and recommended for interior joints in wet areas.

a. Provide at interior joints in wet areas.

b. Manufacturers:

1) General Electric Co./SCS 1702 Sanitary Sealant.

2) Dow Corning Corp./786 Bathtub Caulk.

3) Pecora Corp./863 #345 White.

4) Tremco/Tremsil 200.

B. Non-Elastomeric Sealants:

1. Acrylic-Emulsion Sealant: ASTM C834 acrylic or latex-rubber-modified acrylic sealant, permanently flexible, non-staining and non-bleeding; recommended for general interior exposure; compatible with paints specified in Section 09 90 00.

    a. Provide at general interior applications.

    b. Manufacturers:

        1) Pecora Corp./AC-20.

        2) Sonneborn Division of ChemRex/Sonolac.

        3) Tremco/Ultrem 1500

C. Miscellaneous Materials:

1. Primers/Sealers: Non-staining types recommended by joint sealer manufacturer for joint surfaces to be primed or sealed.

2. Joint Cleaners: Non-corrosive types recommended by joint sealer manufacturer; compatible with joint forming materials.

3. Bond Breaker Tape: Polyethylene tape as recommended by joint sealer manufacturer where bond to substrate or joint filler must be avoided for proper performance of joint sealer.

4. Sealant Backer Rod: Compressible polyethylene foam rod or other flexible, permanent, durable non-absorptive material as recommended by joint sealer manufacturer for compatibility with joint sealer.

    a. Oversize backer rod minimum 30% to 50% of joint opening.

D. Colors: Provide colors indicated or as selected by Architect from manufacturer's full range of colors.

PART 3 EXECUTION

3.01 PREPARATION

A. Prepare joint surfaces in accordance with ASTM C1193 and as recommended by joint sealer manufacturer.

B. Clean joint surfaces immediately before installation of joint sealer; remove dirt, insecure materials, moisture and other substances which could interfere with bond of joint sealer.

C. Prime or seal joint surfaces where recommended by joint sealer manufacturer; do not allow primer/sealer to spill or migrate onto adjoining surfaces.

D. Ensure protective coatings on surfaces in contact with joint sealers have been completely stripped.

3.02 INSTALLATION

A. Comply with manufacturer's printed instructions and ASTM C1193, except where more stringent requirements are shown or specified.

B. Set sealant backer rods at proper depth or position in joint to coordinate with other work, including installation of bond breakers and sealant; do not leave voids or gaps between ends of backer rods.

1. Do not stretch, twist, puncture or tear backer rods.

C. Install bond breaker tape where required by manufacturer's recommendations to ensure joint sealers will perform properly.

D. Size materials to achieve required width/depth ratios.

E. Employ installation techniques that will ensure joint sealers are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of bond surfaces equally on opposite sides.

F. Joint Configuration: Fill sealant joint to a slightly concave surface, slightly below adjoining surfaces, unless otherwise indicated.

G. Where horizontal joints are between a horizontal surface and vertical surface, fill joint to form a slight cove, so that joint will not trap moisture or dirt.

H. Install joint sealers to depths recommended by joint sealer manufacturer but within the following general limitations, measured at center (thin) section of bead.

1. Horizontal Joints: 75% width with minimum depth of 3/8".

2. Elastomeric Joints: 50% width with minimum depth of 1/4".

3. Non-Elastomeric Joints: 75% to 125% of joint width.

I. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces.

1. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.

J. Cure joint sealers in compliance with manufacturer's instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability.

K. Maintain finished joints free of embedded matter, ridges and sags.

END OF SECTION 07 90 00

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies electrically operated sectional overhead steel doors, operators, loop detectors, fasteners and accessories.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 REFERENCES

A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. American Architectural Manufacturers Association (AAMA):
2603-13 ..... Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels

C. American Society of Civil Engineers (ASCE):
7-10 ..... Wind Load Provisions

D. SFM (ASTM):
A36/A36M-14 ..... Structural Steel
A227/A227M-06(R2011) ..... Steel Wire, Cold-Drawn for Mechanical Springs
A229/229M-12 ..... Steel Wire, Oil-Tempered for Mechanical Springs
A653/A653M-12(R2013) ..... Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy Coated (Galvanized) by the Hot Dip Process
C1036-11(R2012) ..... Flat Glass
C1363-11 ..... Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus
E84-14 ..... Surface Burning Characteristics of Building Materials
E283-04(R2012) ..... Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Difference Across the Specimen
E330/E330M-14 ..... Structural Performance of Exterior Windows, Curtain Walls, and Doors by the Uniform Static Air Pressure Difference.
E331-00(R2009) ..... Water Penetration of Exterior Windows, Curtain Walls, and Doors by the Uniform Static Air Pressure Difference.

E. American National Standards Institute and Door and Access Systems Manufacturer Association (ANSI/DASMA):
102-11 ..... Sectional Overhead Type Doors.

F. National Electrical Manufacturer's Association (NEMA):
ICS 6-93(R2011) ..... Industrial Controls and Systems: Enclosures
MG 1-11(R2014) ..... Motors and Generators
ST 20-14 ..... Dry Type Transformers for General Applications

G. National Fire Protection Association (NFPA):
70-14 ..... National Electrical Code

H. National Association of Architectural Metal Manufacturers (NAAMM):
AMP 500-06 .....Metal Finishes Manual

I. Underwriters Laboratories, Inc. (UL):
325-06(R2013) .....Door, Drapery, Gate, Louver, and Window Operators and Systems

1.04 SUBMITTALS

A. Shop Drawings:

1. Details of construction, accessories and hardware, electrical and mechanical items, supporting brackets for motors, location, and ratings of motors, and safety devices.

2. Wiring diagrams for motors and controls, including wiring diagram for door, showing electrical interlock for motor with manually operated deadlock.

B. Manufacturer's Literature and Data:

1. Brochures or catalog cuts.

2. Manufacturer's installation procedures and instruction.

3. Maintenance instructions, parts list.

C. Installer's qualifications.

D. Manufacturer's qualifications

E. Certificates:
1. Attesting door, anchors and hardware will withstand the horizontal loads specified.

2. Attesting door complies with thermal performance, air filtration, and water infiltration requirements.

F. Manufacturer warranty.

1.05 QUALITY ASSURANCE

A. Source: Obtain sectional doors from single source from single manufacturer. Obtain operators and controls from sectional door manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with W.I.C. Section 20.

1.07 WARRANTY

A. Construction Warranty: Comply with FAR clause 52.246-21 "Warranty of Construction".

B. Manufacturer Warranty: Manufacturer shall warranty their sectional doors for a minimum of two (2) years from the date of installation and final acceptance by the Government. Submit manufacturer warranty.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel: ASTM A653/A653M for forming operations. ASTM A36/A36M for structural sections.

B. Hard Drawn Spring wire: ASTM A227/A227M

C. Oil Tempered Spring wire: ASTM A229/A229M.

D. Weather-strips, Gaskets, and Thermal Breaks:

1. Neoprene, EPDM, PVC, silicone rubber, or other low conductance material.

2. Standard with door manufacturer.

2.02 DESIGN REQUIREMENTS

A. Wind Load: Design to withstand uniform pressure (velocity pressure) of 960 Pa (20 lbs. per sq. ft.) acting inward and outward when tested in accordance with ASTM E330/E330M. Doors are to remain operable under design wind load.

B. Thermal Performance for Insulated Doors: Maximum U value of 0.14 for door when tested in accordance with ASTM C1363.

C. Air Infiltration for Exterior Doors: Maximum of 0.10 cfm at 24 Km (15 miles per hour) wind speed per foot of crack between door sections and door perimeter opening when tested in accordance with ASTM E283.

D. Water Infiltration for Exterior Doors: No infiltration when tested in accordance with ASTM E331.

E. Seismic Performance: Sectional doors are to withstand the effects of earthquake motions determined according to ASCE 7.

F. Comply with ANSI/DASMA 102. Provide metal doors with horizontal sections hinged together to operate in a system of tracks to completely close the door opening in the closed position and make the full width and height of the door opening available for use in the open position.

G. Comply with ANSI/DASMA 102. Provide metal doors with horizontal sections hinged together to operate in a system of tracks to completely close the door opening in the closed position and make the full width and height of the door opening available for use in the open position.

2.03 FABRICATION

A. Steel Door Sections:

1. Formed of hot-dipped galvanized steel.

2. Meeting rails: Interlocking joints with thermal breaks separating face sheets formed to provide weathertight closure and alignment for full width of door.

3. Height of Each Section: To match 20 inch building module, horizontally.

4. Install glazing panels where indicated using rubber thermal break gaskets standard with door manufacturer.

5. Provide board foamed in place insulation with flame spread rating of not more than 25 and a smoke development factor of not more than 50 when tested in accordance with ASTM E84.

6. Reinforced for hardware anchorage with not less than 10 gage galvanized steel.

7. Glass, insulated unit with low E coating.

B. Tracks:

1. Manufacturer's standard, formed of galvanized steel.

2. Track Configuration: See drawings and conditions for lift and track support requirements.

3. Minimum of 75 mm (3 inch) tracks.

4. Vertical tracks fabricated with adjustable brackets for mounting at incline to continuous steel angle wall bracket.

5. Horizontal Track: Reinforce with continuous steel angle anchored to vertical steel angle wall bracket and to ceiling angle supports. Provide vertical and cross or diagonal braces to obtain rigid installation of horizontal track.

6. Provide not less than 2.38 mm (11 gage) galvanized steel angles.

6. Brace per non-structural seismic component requirements.

C. Hardware:

1. Manufacturers standard hinges, brackets, rollers, locking devices and other hardware required for a complete installation.

2. Hinges and Roller Brackets: Minimum of 2.38 mm (11 gage) galvanized steel.

3. Provide rollers with ball bearings and case hardened races.

4. Provide positive locking device to receive cylinder lock with interlocking switch to motor actuator.

5. Weatherseals: Manufacturer’s standard fitted to bottom and top around entire perimeter of door. Provide combination bottom weatherseal and sensor edge.

D. Manual Operation:

1. Chain Hoist Operation: Provide galvanized, endless chain operating over a sprocket.

a. Extend chain to within 1219 mm (4 feet) of the floor and mount on inside of building.

b. Obtain reduction by use of roller chain and sprocket drive or gearing.

c. Provide chain cleat and pin for securing actuator chain.

d. Allow for installation of power actuators to chain hoist operator when indicated in construction documents.

e. Do not exceed the maximum lifting force of 111 newton (N) (25 pound force) required to operate the door.

E. Prepare doors to receive hardware. Refer to Section 08 71 00 for hardware requirements.

2.04 ELECTRIC MOTOR OPERATORS

A. Complete with electric motor, machine cut reduction gears, steel chain and sprockets, magnetic brake, overload protection, brackets, wall mount push button controls, limit switches, magnetic reversing contactor, and other accessories necessary for proper operation, including emergency manual actuator.

B. Design:

1. Design the actuator for motor removal without disturbing the limit-switch adjustment and without affecting the emergency manual actuators.

2. Make provision for emergency manual operation of door by chain-gear mechanism in case of electrical failure.

3. Arrange the emergency manual operating mechanism to immediately be put into and out of operation from the floor with a mechanical device to disconnect the motor from the operating mechanism when the emergency manual operating mechanism is engaged. This operation is not to affect the adjustment of the limit switches.

4. Provide interlock with motor to prevent motor from operating when manual locks are activated.

C. Motors:

1. NEMA MG 1, maximum operation 3600 rpm.

2. Suitable for operation on power current of the characteristics indicated on the electrical construction documents.

3. Use high starting torque, reversible type, of sufficient horsepower and torque output to move the door in either direction from door position, and produce door travel speed range of 0.20 to 0.30 m per second (8 to 12 inches per second), without exceeding the rated capacity.

4. Single-phase motors are not to have commutation or more than one starting contact.

5. Motor Enclosures: Drip proof type or NEMA TENV type.

D. Controls:

1. Control Enclosures:

   a. Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.

2. At door actuators, provide an enclosed, across-the-line type, magnetic reversing contactor, thermal overload protection, solenoid operated brake, limit switches, and remote control switches at locations on construction documents. See electrical drawings and specifications for additional information

3. Control switches:

   a. Three push button type on interior, unless noted to be key activated.

   b. Buttons marked, OPEN, CLOSE and STOP.

   c. The OPEN and STOP buttons: Momentary pressure or contact type.

   d. The CLOSE button: Constant pressure type.

   f. Limit switches: Manufacturers standard, position of switches readily adjustable.

4. Operation:

   a. Open door upon activation of OPEN button.

   b. Close door only when constant key pressure applied to CLOSE button.

   c. When the door is in motion, and the STOP button is pressed, door is to stop instantly and remain in the stop position; from stop position, door may be operated in either direction by OPEN or CLOSE button.

   d. Limit switches automatically stop doors at their fully open and closed positions.

5. Provide push buttons with guards to prevent accidental operation.

6. Remote controls for in-vehicle operation. 8 controllers.

7. Transformer:

   a. Provide control transformer in power circuits to reduce the voltage on control circuits to 120 volts or less.

   b. Conform to NEMA ST 20.

8. Electrical Components: Conform to NFPA 70.

9. Safety Device:

   a. Provide bottom door edge weather-strip safety device to immediately stop and reverse the door closing to full open position upon contact with an obstruction in compliance with UL 325. Door is to open upon failure of device, component of device or component of control system.

b. The door closing circuit is to be electrically locked out and door to remain capable of manual operation until the failure or damage has been corrected.

c. Do not use safety device as a limit switch.

d. Safety Device Connecting Cable to Motor: Flexible type SO cable, with spring loaded automatic take up reel or equivalent device, as required for proper operation of the doors.

2.05 FINISHES

A. Steel:

1. Comply with NAAMM's AMP 500-06 Metal Finishes Manual for recommendations for applying and designating finishes.

2. Clean surfaces free of scale, rust, oil and grease.

3. Mill finish

4. Do not paint track, rollers, hinges, or locks.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with approved shop drawings and manufacturer's instructions.

B. Locate anchors and inserts for tracks, brackets, motors, switches, hardware, and other accessories in accordance with approved shop drawings.

C. Lubricate, adjust and demonstrate door to operate freely.

D. Upon completion, leave door openings weathertight and doors free from warp, twists, or distortion.

3.02 REPAIR

A. Repair zinc-coated surfaces both bare and painted, by the application of galvanizing repair compound.

END OF SECTION 08 36 13

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies aluminum framed windows, radius shapes and other components to make complete assemblies.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Shop Drawings: (1/2 full scale) showing construction, anchorage, reinforcement, installation details and glass elevations and images.

B. Manufacturer's Literature and Data:

C. Samples:

1. Two samples of anodized aluminum of each color showing finish and maximum shade range. Glass showing color and finish.

D. Manufacturer's Certificates:

1. Stating that aluminum has been given specified thickness of anodizing.

2. Indicating manufacturer's qualifications specified.

1.04 QUALITY ASSURANCE

A. Approved by Architect is required of products of proposed manufacturer, or supplier, and will be based upon submission by Contractor certification.

B. Certify manufacturer regularly and presently manufactures aluminum entrances and storefronts as one of their principal products.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, cure time, and mixing instructions.

B. Store glass and aluminum material in weather-tight and dry storage facility.

C. Protect from damage from handling, weather and construction operations before, during and after installation.

1.06 REFERENCES

A. The publications listed below form a part of this specification to the extent reference. The publications are referenced in the text by the basic designation only.

B. America Society for Testing and Materials (ASTM):
B209-07.....Aluminum and Aluminum-Alloy Sheet and Plate
B221-08.....Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes

E283-04 ..... Rate of Air Leakage Through Exterior Windows, Certain Walls, and Doors Under Specified Pressure Differences Across the Specimen
E331-00 (R2009) ..... Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
F468-10 ..... Nonferrous Bolts, Hex Cap Screws, and Studs for General Use
F593-03(R2008) ..... Stainless Steel Bolts, Hex Cap Screws, and Studs

C. National Association of Architectural Metal Manufacturers (NAAMM):
AMP 500 Series ..... Metal Finishes Manual

PART 2 PRODUCTS

2.01 MATERIALS

A. Aluminum, ASTM B209 and B221:

1. Alloy 6063 temper T5 for windows and transoms.

B. Thermal Break: Manufacturer standard low conductive material retarding heat flow in the framework, where insulation glass is scheduled.

C. Fasteners:

1. Aluminum: ASTM F468, Alloy 2034.

2. Stainless Steel: ASTM F593, Alloy Groups 1, 2 and 3.

D. Framing

1. Provide nominal 2” x 4 1/2” custom round, thermally-broken aluminum framing system with positive mechanical bonding of interior and exterior aluminum sections.

E. Glazing

1. See Section 08 80 00, Glazing

F. Sealant

1. Glazing Sealant: Clear structural silicone sealant, G.E. Dow, or approved equal.

G. Miscellaneous: .060” thick aluminum break metal cladding at windows. Finish to framing metals which it adjoins.

2.02 FABRICATION

A. Accurately form metal parts and accurately fit and rigidly assemble joints, except those joints designed to accommodate movement. Seal joints to prevent leakage of both air and water.

B. Make welds in aluminum in accordance with the recommended practice AWA D1.2. Use electrodes and methods recommended by the manufacturers of the metals and alloys being welded. Make welds behind finished surfaces so as to cause no distortion or discoloration of the exposed side. Clean welded joints of welding flux and dress exposed and contact surfaces.

C. Fit and assemble the work at the manufacturer's plant. Mark work that cannot be permanently plant-assembled to assure proper assembly in the field.

2.03 PROTECTION OF ALUMINUM

A. Isolate aluminum from contact with dissimilar metals other than stainless steel, white bronze, or zinc by any of the following:

1. Coat the dissimilar metal with two coats of heavy-bodied alkali resistant bituminous paint.

2. Place caulking compound, on non-absorptive tape, or gasket between the aluminum and the dissimilar metal.

3. Paint aluminum in contact with mortar, concrete and plaster, with a coat of aluminum paint primer.

PART 3 EXECUTION

3.01 INSPECTION

A. Beginning of installation shall signify acceptance of substrate and adjacent conditions as being proper and acceptable. Corrections of defects due to installation of products on un acceptable substrata will be at Contractor’s expense at no additional cost to County.

3.02 INSTALLATION

A. Fabricate only from approved shop drawings.

B. Install all frames and accessories per manufacturer’s written instructions and final shop drawings.

C. Anchor securely in place; install plumb, level and in true alignment. Isolate dissimilar materials to prevent corrosion.

D. Allowable Installation Tolerances: Install work plumb and true.

3.03 PROTECTION, CLEANING AND REPAIRING

A. Remove all mastic smears and other unsightly marks, and repair any damaged or disfiguration of the work. Protect the installed work against damage or abuse.

B. Clean-up premises of all litter, dirt, and debris created by work of this Section.

END OF SECTION 08 41 13

PART 1 GENERAL

1.01 SUMMARY

A. Aluminum windows of type and size shown, complete with hardware, related components and accessories.

B. Types:

1. Fixed – Nail Fin

2. Awning with operating hardware and screens. Nail Fin.

1.02 DEFINITIONS

A. Accessories: Mullions, staff beads, casings, closures, trim, moldings, panning systems, sub-sills, clips anchors, fasteners, screens, mechanisms, mechanical operators and other necessary components required for fabrication and installation of window units.

B. Uncontrolled Water: Water not drained to the exterior, or water appearing on the room side of the window.

1.03 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.04 DELIVERY, STORAGE AND HANDLING

A. Protect windows from damage during handling and construction operations before, during and after installation.

B. Store windows under cover, setting upright.

C. Do not stack windows flat.

D. Do not lay building materials or equipment on windows.

1.05 QUALITY ASSURANCE

A. Approval will be based on submission of certification by Contractor that:

1. Manufacturer regularly and presently manufactures the specified windows as one of its principal products.

2. Installer has technical qualifications, experience, trained personnel and facilities to install specified items.

B. Provide each type of window produced from one source of manufacture.

C. Quality Certified Labels or certificate:

1. Architectural Aluminum Manufacturers Association, "AAMA label" affixed to each window indicating compliance with specification.

2. Certificates in lieu of label with copy of recent test report (not more than 4 years old) from an independent testing laboratory and certificate signed by window manufacturer stating that windows provided comply with specified requirements and AAMA 101/I.S.2/A440 for type of window specified.

1.06 SUBMITTAL

A. Shop Drawings:

1. Minimum of 1/2 full scale.

2. Identifying parts of window units by name and kind of metal or material, show construction, locking systems, mechanical operators, trim, installation and anchorages.

3. Include glazing details and standards for factory glazed units.

B. Manufacturer's Literature and Data:

1. Window.

C. Certificates:

1. Certificates as specified in paragraph QUALITY ASSURANCE.

2. Indicating manufacturers and installers qualifications.

3. Manufacturer's Certification that windows delivered to project are identical to windows tested.

D. Samples: Provide 150 mm (six-inch) length samples showing finishes, specified.

1.07 WARRANTY

Warrant windows against malfunctions due to defects in thermal breaks, hardware, materials and workmanship, subject to the terms of Article “WARRANTY OF CONSTRUCTION”, FAR clause 52.246-21, except provide 10 year warranty period.

1.08 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.

B. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)

90.1-07 Energy Standard of Buildings

C. American Architectural Manufacturers Association (AAMA):

101/I.S.2/A440-11 Windows, Doors, and Unit Skylights

505-09 Dry Shrinkage and Composite Performance Thermal Cycling Test Procedures

2605-05 Superior Performing Organic Coatings on Architectural Aluminum Extrusions and Panels

TIR-A8-08 Structural Performance of Poured and Debridged Framing Systems

D. American Society for Testing and Materials (ASTM):

A653/A653M-09 Steel Sheet, Zinc Coated (Galvanized), Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-dip Process

E 90-09 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions

E. National Fenestration Rating Council (NFRC):

NFRC 100-10 Determining Fenestration Product U-Factors

NFRC 200-10 Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence

F. National Association of Architectural Metal Manufacturers (NAAMM):

AMP 500-06 Metal Finishes Manual

PART 2 PRODUCTS

2.01 MATERIALS

A. Aluminum Extrusions; Sheet and Plate: AAMA 101/I.S.2/A440.

B. Sheet Steel, Galvanized: ASTM A653; G90 galvanized coating.

C. Fasteners: AAMA 101/I.S.2/A440. Screws, bolts, nuts, rivets and other fastening devices to be non-magnetic stainless steel.

1. Fasteners to be concealed when window is closed. Where wall thickness is less than 3 mm (0.125 inch) thick, provide backup plates or similar reinforcements for fasteners.

2. Attach locking and hold-open devices to windows with concealed fasteners. Provide reinforcing plates where wall thickness is less than 3 mm (0.125 inch) thick.

F. Weather-strips: AAMA 101/I.S.2/A440.

2.02 FABRICATION

A. Fabrication to exceed or meet requirements of Physical Load Tests, Air Infiltration Test, and Water Resistance Test of AAMA 101/I.S.2/A440.

B. Glazing:

1. Factory glazing.

2. Glaze in accordance with Section 08 80 00, GLAZING.

C. Trim:

1. Trim includes casings, closures, and panning.

2. Fabricate to shapes shown of aluminum not less than 1.6 mm (0.062 inch) thick

3. Extruded or formed sections, straight, true, and smooth on exposed surfaces.

4. Exposed external corners mitered and internal corners coped; fitted with hairline joints.

5. Reinforce 1.6 mm (0.062 inch) thick members with not less than 3 mm (1/8-inch) thick aluminum.

6. Except for strap anchors, provide reinforcing for fastening near ends and at intervals not more than 305 mm (12 inches) between ends.

7. Design to allow unrestricted expansion and contraction of members and window frames.

8. Secure to window frames with machine screws or expansion rivets.

9. Exposed screws, fasteners or pop rivets are not acceptable on exterior of the casing or trim cover system.

D. Thermal-Break Construction:

1. Manufacturer's Standard.

2. Low conductance thermal barrier.

3. Capable of structurally holding sash in position and together.

4. All Thermal Break Assemblies (Pour & Debridge, Insulbar or others) shall be tested as per AAMA TIR A8 and AAMA 505 for Dry Shrinkage and Composite Performance.

5. Location of thermal barrier and design of window shall be such that, in closed position, outside air shall not come in direct contact with interior frame of the window.

E. Mullions: AAMA 101/I.S.2/A440.

F. Subsills and Stools:

1. Fabricate to shapes shown of not less than 4 mm thick extruded aluminum.

2. One piece full length of opening with concealed anchors.

3. Sills turned up back edge not less than 6 mm (1/4 inch). Front edge provide with drip.

4. Sill back edge behind face of window frame. Do not extend to interior surface or bridge thermal breaks.

5. Do not perforate for anchorage, clip screws, or other requirements.

2.03 Fixed Windows

A. Kawneer NX-3800

B. AAMA 101/I.S.2/A440. Performance Class, Gateway Requirement – AW.

C. AAMA certified product to the AAMA 101/I.S.2/A440. - 11 standard.

2.04 Awning Windows

A. AAMA 101/I.S.2/A440. Performance Class, Gateway Requirement – AW.

B. AAMA certified product to the AAMA 101/I.S.2/A440. - 11 standard.

2.05 FINISH

A. In accordance with NAAMM AMP 500 series.

B. Finish exposed aluminum surfaces as follows:

1. Mill Finish.

C. Steel: AMP 504.

D. Hardware: Finish hardware exposed when window is in the closed position: Match window color.

E. Screens:

PART 3 EXECUTION

3.01 PROTECTION (DISSIMILAR MATERIALS): AAMA 101/I.S.2/A440.

3.02 INSTALLATION, GENERAL

A. Install window units in accordance with manufacturer's specifications and recommendations for installation of window units, hardware, operators and other components of work.

B. Where type, size or spacing of fastenings for securing window accessories or equipment to building construction is not shown or specified, use expansion or toggle bolts or screws, as best suited to construction material.

1. Provide bolts or screws minimum 6 mm (1/4-inch) in diameter.

2. Sized and spaced to resist the tensile and shear loads imposed.

3. Do not use exposed fasteners on exterior, except when unavoidable for application of hardware.

4. Provide non-magnetic stainless steel Phillips flat-head machine screws for exposed fasteners, where required, or special tamper-proof fasteners.

5. Locate fasteners to not disturb the thermal break construction of windows.

C. Set windows plumb, level, true, and in alignment; without warp or rack of frames or sash.

D. Anchor windows on four sides with anchor clips or fin trim.

1. Do not allow anchor clips to bridge thermal breaks.

2. Use separate clips for each side of thermal breaks.

3. Make connections to allow for thermal and other movements.

4. Do not allow building load to bear on windows.

5. Use manufacturer's standard clips at corners and not over 600 mm (24 inches) on center.

6. Where fin trim anchorage is shown build into adjacent construction, anchoring at corners and not over 600 mm (24 inches) on center.

3.03 MULLIONS CLOSURES, TRIM, AND PANNING

A. Cut mullion full height of opening and anchor directly to window frame on each side.

B. Closures, Trim, and Panning: External corners mitered and internal corners coped, fitted with hairline, tightly closed joints.

C. Fasten except for strap anchors, near ends and corners and at intervals not more than 300 mm (12 inches) between.

D. Seal units following installation to provide weathertight system.

3.04 ADJUST AND CLEAN

A. Adjust ventilating sash and hardware to provide tight fit at contact points, and at weather-stripping for smooth operation and weathertight closure.

B. Clean aluminum surfaces promptly after installation of windows, exercising care to avoid damage to protective coatings and finishes.

C. Remove excess glazing and sealant compounds, dirt, and other substances.

D. Lubricate hardware and moving parts.

E. Clean glass promptly after installation of windows. Remove glazing and sealant compound, dirt and other substances.

F. Except when a window is being adjusted or tested, keep locked in the closed position during the progress of work on the project.

3.05 OPERATION DEVICES

A. Provide wrenches, keys, or removable locking operating handles.

END OF SECTION 08 51 13

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes door hardware.

1.02 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Product Data: Submit product data including installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Submit shop drawings with details of door hardware:

C. Samples: Submit samples of exposed door hardware for each type indicated below, in specified finish. Tag with full description for coordination with the Door Hardware Schedule.

1. Door Hardware: As follows:

a. Locks and latches.

b. Operating trim.

2. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

D. Door Hardware Schedule: Submit door hardware schedule prepared by or under the supervision of door hardware supplier. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware. The Architect's review of schedule shall neither be construed as a complete check nor shall it relieve the Contractor of responsibility for errors, deviations, or omissions from the specified requirements to provide complete door hardware for the project.

1. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.

a. Organize door hardware sets in same order as in the Door Hardware Schedule at the end of Part 3.

2. Content: Include the following information:

a. Type, style, function, size, label, hand, and finish of each door hardware item.

b. Manufacturer of each item.

c. Fastenings and other pertinent information.

d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.

e. Explanation of abbreviations, symbols, and codes contained in schedule.

f. Mounting locations for door hardware. Supply templates to door and frame manufacturer(s) to enable proper and accurate sizing and locations of cutouts for hardware. Detail any conditions requiring custom extended lip strikes, or any other special or custom conditions.

g. Door and frame sizes and materials.

h. Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.

1) Sequence of Operation: Include description of component functions that occur in the following situations: authorized person wants to enter; authorized person wants to exit; unauthorized person wants to enter; unauthorized person wants to exit.

E. Warranties: Submit special warranties specified in this Section.

F. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, removal and replacement of door hardware.

G. Installation Instructions: Provide manufacturer's installation instructions for each type of hardware item for owner's maintenance at completion of work.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Supplier Qualifications: Door hardware supplier, who has completed a minimum of three (3) projects over the last 5 years which were similar in material, design and extent to that indicated for the project - as determined by the Architect – and which have resulted in construction with a record of successful in service performance, and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

C. Architectural Hardware Consultant Qualifications: A person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.

D. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

E. Regulatory Requirements: Comply with the following:

1. Provide hardware items complying with the applicable provisions for accessibility and usability by the disabled and handicapped in compliance with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG).”

2. NFPA 101: Comply with applicable provisions for means of egress doors.

F. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.

2. Preliminary key system schematic diagram.

3. Requirements for key control system.

4. Address for delivery of keys.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to electrified and mechanical door hardware including, but not limited to, the following:

1. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.

2. Review sequence of operation for each type of electrified door hardware.

3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Review required testing, inspecting, and certifying procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

1.06 COORDINATION

A. Templates: Furnish templates and door hardware schedules, coordinated for the application of door hardware items with door and frame details, to door opening fabricators and trades performing door opening work to permit the preparation of doors and frames to receive the specified door hardware. The fabricated prep and installation shall be in compliance with the lock manufacturer’s recommendations, requirements and templating. Where the door hardware item scheduled is not adaptable to the finished size of door opening members requiring door hardware, submit an item having a similar operation and quality to the Architect for review. Each door hardware item shall be fabricated to templates.

1.07 WARRANTY

A. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:

1. Faulty operation of door hardware.

2. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

PART 2 PRODUCTS

2.01 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this Section, door hardware sets are keyed to each scheduled door in the door and frame schedule, and the Door Hardware Schedule at the end of Part 3.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturer's products.

2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

3. The hardware supplier shall review each hardware set and compare it with the door types, details, and sizes as shown and verify each hardware item for function, hand, backset, and method of fastening through shop drawing submittals.

2.02 HINGES AND PIVOTS

A. Butt Hinge Products and Manufacturers:

1. Heavy Weight, Ball Bearing, 5 Knuckle, Stainless Steel: Complying with BHMA A156.1 A5111, one of the following:

a. BB5006; Bommer Industries, Inc. (BI).

b. BB1199; Hager Companies (HAG).

c. T4A3386-32D; McKinney Products Company (MCK).

d. FBB199(US32D); Stanley Commercial Hardware (STH).

B. General Hinge Characteristics: Where door jamb or trim projects to such an extent that the width of leaf specified will not allow the door to clear such frame or trim, furnish hinges and pivots with leaves of sufficient width to clear. Hinges and pivots shall be template hinges conforming to BHMA A156.1 and in accordance with door and frame material requirements.

C. Butt Hinge Quantity: Provide the following, unless otherwise indicated:

1. Three Hinges: For doors with heights of greater than 60 inches (1524 mm) to and including 90 inches (2286 mm).

2. Four Hinges: For doors with heights greater than 90 inches (2286 mm) to and including 120 inches (3048 mm).

D. Butt Hinge Sizes: 4-1/2 inches (114 mm) h. by 4 inches (102 mm) or 4-1/2 inches (114 mm) w. for doors up to and including 36 inches (914 mm) in width; 5 inches (127 mm) h. by 4 inches (102 mm) or 4-1/2 inches (114 mm) w. for doors greater than 36 inches (914 mm) in width.

E. Hinge Characteristics: Full mortise type with square corners. All butt hinges are to have non-rising pins for interior hinges and all exterior butt hinges are to be made of non-ferrous base metal. Hinges at all locked outswinging doors shall have non-removable pins (NRP). Provide only steel bodied butt and pivot hinges at labeled doors. All butt hinges shall be furnished with button tips.

F. Fasteners: Package all hinges and pivots with machine and wood screws as required by door and frame construction.

2.03 LOCKS AND LATCHES

A. Cylindrical Lock and Latch Sets: Heavy duty, commercial, mortise bodies complying with ANSI A156.2 Series 4000, Grade 1 and Federal FF-H-106C, Series 161. Zinc plated lock chassis. Trim will be cast stainless steel with antimicrobial finish unless otherwise specified.

1. Schlage ND Series, 17 Design x A Rose; Schlage Lock Company (SCH). Provide handed ANSI 4-7/8” curved lip strikes die punched to match bolts provided with latchset functions only (Part No. XL11-820/XL11-821), provide non-handed standard curve lip strikes for all other functions 10-072.

2.05 CYLINDERS AND KEYING

A. Cylinders: Full faced interchangeable core cylinders with square shouldered (not tapered) compression rings, 6 pin cylinders, standard threaded, keyed into building system, with cams to suit lock functions. Provide cylinders for installation into all locks and key-operated electrical switching devices keyed to the instructions by the Best.

B. Keying System: Final keying to determine lock cylinders, keyed alike sets, level of keying, master key groups, grandmaster keying system shall be as directed by the Owner. Supplier and Contractor shall meet with the Owner and obtain final instructions in writing.

1. Construction Keyed Cylinders: Provide construction keyed cylinders in locks during construction and as may be necessary for security or as may be requested by the Owner. Upon completion of the construction phase, construction keyed cylinders shall be voided mechanically without removal of the cylinder housing from the locks. All construction keyed cylinders shall be individually keyed as required.

2.06 STRIKES

A. Strikes for Locks and Latches: All strikes for locks and latches shall be provided by the lock and latch manufacturer unless otherwise specified or scheduled, refer to Article ‘Locks and Latches’.

B. Dustproof Floor Strikes: Complying with BHMA A156.16, Type L04251 or L14021, one of the following:

1. No. 80; Door Controls International.

2. DP2; H.B. Ives.

3. 3910; Triangle Brass Manufacturing Company, Inc. (TBM).

4. 570 x 571; Rockwood Manufacturing Company (RM).

C. Dustproof Threshold Strikes: Complying with BHMA A156.16, Type L2402X or L14011, one of the following:

1. No. 81; Door Controls International.

2. DP1; H.B. Ives.

3. 3911; Triangle Brass Manufacturing Company, Inc. (TBM).

4. 572; Rockwood Manufacturing Company (RM).

2.07 STOPS AND HOLDERS

A. Wall Stops: Cast disc type with concave rubber bumper, having a 2-1/2 inch (63.5 mm) diameter base with nominal 1 inch (25 mm) projection and concealed attachment to substrate.

1. For Attachment to Gypsum Wallboard: Complying with BHMA A156.16, Type L12251 or L12101.

a. WS402CCV, WS407CVX; H.B. Ives (IVS).

b. 1274CCS; Triangle Brass Manufacturing Company, Inc. (TBM).

1.14 FABRICATION

A. Manufacturer's Nameplate: Provide each door hardware item without exposed manufacturers labels, names, or designs.

B. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturer’s specified fastener for each application intended. Provide Phillips oval-head screws with finished heads to match surface of door hardware item being attached. Machine screws and expansion shields shall be used for attaching hardware to concrete and masonry. Use throughbolts for renovation work only where existing door blocking and reinforcements are unknown.

1. Concealed Fasteners: All new doors and door frames have been specified with adequate blocking and reinforcement provisions to eliminate exposed throughbolting of hardware items. Doors installed with exposed throughbolts will be rejected and replaced by the Contractor at no cost to the Owner. Where through bolts are used on existing doors provide sleeves for each through bolt.

1.15 FINISHES

A. Standard: Comply with BHMA A156.18.

B. Appearance of Finished Work: Finishes of the same designation, that come from 2 or more sources, shall match when the items are viewed at arms length and approximately 2' apart. Unless otherwise scheduled, match each hardware item in a single hardware set with the scheduled latch or lock set finish. Painting of BHMA 600 (USP) surfaces is required and is specified under Division 09 Section “Painting.”

C. Designations: The abbreviations used to schedule hardware finishes are generally BHMA (Federal Standards where indicated in parenthesis) designations. Comply with base material and finish requirements indicated by the following:

1. BHMA 600 (USP): Primed for painting.

2. BHMA 626 (US26D): Satin chromium plated.

3. BHMA 628 (US28): Satin aluminum, clear anodized.

4. BHMA 630 (US32D): Satin stainless steel.

PART 3 EXECUTION

3.01 INSTALLATION

A. Mounting Heights: Mount door hardware units at the following heights, unless specifically indicated on the drawings or required to comply with governing regulations:

1. Locks and Latches: 38 inches (956 mm) to center of lever from finish floor.

2. Door Pulls: 44 inches (1118 mm) from finish floor to center of grip. Pull bases centered on door stiles, unless otherwise indicated.
3. Door Pulls: Pull bases centered on top and bottom door rails, and spaced from lock edge of door stile as indicated, or recommended, by the pull manufacturer.

4. Push Plates: 44 inches (1118 mm) from finish floor to center of plate. Coordinate with pull location.

5. Butt Hinges: 10 inches (254 mm) to bottom of lowest hinge from finish floor; 5 inches (127 mm) to top of upper hinge from top of door; space intermediate hinges equally between lower and upper hinges.

6. Deadbolts: Not more than 44 inches (1118 mm) from finish floor to operating trim.

B. Install each door hardware item to comply with manufacturer's written instructions. Install overhead surface closers for maximum degree of opening obtainable. Place on room side of corridor doors, stair side of stair doors, secondary corridor side of doors between corridors. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be finished, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

C. Do not install permanent key cylinders in locks until the time of preliminary acceptance by the Owner. At the time of preliminary acceptance, and in the presence of the Owner's representative, permanent key all lock cylinders. Record and file all keys in the key control system specified, and turn system over to Owner for sole possession and control.

D. Key control storage system shall be installed where directed by the Owner.

E. Thresholds: Thresholds shall be secured with a minimum of 3 fasteners per single door width and 6 fasteners per double door width with a maximum spacing of 12 inches (305 mm). Minimum screw size shall be No. 10 length, dependent on job conditions, with a minimum of 3/4 inch (19 mm) thread engagement into the floor or anchoring device used. Screw heads to be countersunk and flush with face of threshold. Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.02 ADJUSTING

A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every hardware component. Replace hardware components that cannot be adjusted to operate as intended.

3.03 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation. Clean hardware components as necessary to restore proper finish. Provide protection during the progress of the work and maintain conditions that ensure door hardware is in perfect working order and without damage or deterioration at time of Substantial Completion.

3.04 DOOR HARDWARE SCHEDULE – SCHEDULED DOORS

A. Door Hardware Schedule follows at end of this Section.

DOOR HARDWARE

The Owner is seeking best bid on items specified. Any questions or concerns regarding the items or equals specified must be brought to the attention of the Owner's Representative before bid submittal. Owner will make all final decisions regarding the products to be used. If, after bid acceptance, Contractor presents hardware items that are not named equals, there may be a charge to the Contractor for evaluation of those products.

Hinge quantity will vary with size of door; follow manufacturer's recommendations. Hinges on all Exterior Doors to be nonferrous stainless steel material and have non-removable pins.

All cylinders to be full faced interchangeable core cylinders with square shouldered (not tapered) compression rings, 7 pin, standard threaded, keyed into Airport standard, with cams to suit lock functions. Provide cylinders for installation into all locks and key-operated electrical switching devices. Provide temporary construction cylinders for all locks.

HARDWARE GROUPS

Group #1

1 1/2 Pair Hinges	1279	Hager
1 Lockset	F01 (passage function)	Schlage
1 Door Stop	WS407CVX	Ives
3 Mutes	SR64	Ives

Group #2

1 1/2 Pair Hinges	BB1199	Hager
1 Lockset	F20 (entrance function)	Schlage
1 Door Sweep	368CN	Pemko

1 Threshold	1715AK	Pemko
1 Weatherstripping		Pemko
3 Mutes	SR64	Ives

Group #3

1 1/2 Pair Hinges	BB1279	Hager
1 Lockset	F02 (privacy) W “Occupied” indicator And “EZ” thumb turn	Schlage
1 Wall Stop	WS407CVX	Ives
3 Mutes	SR64	Ives

Group #4

1 1/2 Pair Hinges	BB1279	Hager
1 Lockset	F07 (storage function)	Schlage
1 Cylinder	to match system	Best
1 Wall Stop	WS407CVX	Ives
1 Closer	4041	LCN
1 Kickplate	K1050 12” bevel 4 sides	Rockwood
3 Mutes	SR64	Ives

Group #5

1 1/2 Pair Hinges	BB1279	Hager
1 Lockset	F01 (passage function)	Schlage
1 Door Sweep	368CN	Pemko
1 Weatherstripping		Pemko
3 Mutes	SR64	Ives

This Section to provide keyed cylinders for keyed overhead door controls.

END OF SECTION 08 71 00

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies glass, related glazing materials and accessories. Glazing products specified apply to factory or field glazed items. Glazing is required at the Nurse Station, sidelights at resident entry doors and exterior.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 LABELS

A. Temporary Labels:

1. Provide temporary label on each light of glass identifying manufacturer or brand and glass type, quality and nominal thickness.

2. Label in accordance with NFRC (National Fenestration Rating Council) label requirements.

3. Temporary labels shall remain intact until glass is approved by the County.

B. Permanent labels:

1. Locate in corner for each pane.

2. Label in accordance with ANSI Z97.1.

a. Tempered glass.

b. Organic coated glass.

1.04 PERFORMANCE REQUIREMENTS

A. Building Enclosure Vapor Retarder and Air Barrier:

1. Utilize the inner pane of multiple pane sealed units for the continuity of the air barrier and vapor retarder seal.

2. Maintain a continuous air barrier and vapor retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.

B. Glass Thickness:

1. Select thickness of exterior glass to withstand dead loads and wind loads acting normal to plane of glass at design pressures calculated in accordance with ASCE 7 and the CBC.

2. Test in accordance with ASTM E 1300.

3. Thicknesses listed are minimum. Coordinate thicknesses with framing system manufacturers.

1.05 SUBMITTALS

A. Manufacturer's Certificates:

1. Certificates stating that wire glass, meets requirements for safety glazing material as specified in ANSI Z97.1.

2. Certificate on shading coefficient.

3. Certificate on "R" value when value is specified.

B. Warranty: Submit written guaranty, conforming to General Condition requirements, and to "Warranty of Construction" Article in this Section.

C. Manufacturer's Literature and Data:

1. Glass, each kind required.

2. Insulating glass units.

3. Elastic compound for metal sash glazing.

4. Glazing cushion.

5. Sealing compound.

D. Samples:

1. Size: 150 mm by 150 mm (6 inches by 6 inches).

2. Tempered glass.

3. Tempered Low E glass.

4. Insulated glass.

E. Preconstruction Adhesion and Compatibility Test Report: Submit glazing sealant manufacturer's test report indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery: Schedule delivery to coincide with glazing schedules so minimum handling of crates is required. Do not open crates except as required for inspection for shipping damage.

B. Storage: Store cases according to printed instructions on case, in areas least subject to traffic or falling objects. Keep storage area clean and dry.

C. Handling: Unpack cases following printed instructions on case. Stack individual windows on edge leaned slightly against upright supports with separators between each.

1.07 PROJECT CONDITIONS

A. Field Measurements: Field measure openings before ordering tempered glass products. Be responsible for proper fit of field measured products.

1.08 WARRANTY

A. Warranty: Conform to terms of "Warranty of Construction", FAR clause 52.246-21, except extend warranty period for the following:

1. Insulating glass units to remain sealed for 10 years.

2. Laminated glass units to remain laminated for 5 years.

1.09 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extend referenced. Publications are referenced in text by basic designation only.

B. American Society for Testing and Materials (ASTM):

C794-10.....Adhesion-in-Peel of Elastomeric Joint Sealants
C864-05……Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
C920-11.....Elastomeric Joint Sealants
C964-07.....Standard Guide for Lock-Strip Gasket Glazing
C1036-06.....Flat Glass
C1048-12.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
C1376-10.....Pyrolytic and Vacuum Deposition Coatings on Flat Glass
E84-10…… .Surface Burning Characteristics of Building Materials
E119-10……Standard Test Methods for Fire Test of Building Construction and Material
E2190-10.....Insulating Glass Unit

C. Code of Federal Regulations (CFR):

16 CFR 1201 .....Safety Standard for Architectural Glazing Materials; 2010

D. National Fenestration Rating Council (NFRC)

E. Glass Association of North America (GANA):

1. Glass Manual (Latest Addition)

2. Sealant Manual (2009)

F. American Society of Civil Engineers (ASCE):

ASCE 7-10 .....Wind Load Provisions

PART 2 PRODUCTS

2.01 GL-1: INSTULATED TEMPERED GLASS - EXTERIOR

A. Low-E Insulated Tempered Glass:

1. ASTM C1048, Kind FT, Type I, Class 2, Quality q3 with low emissivity pyrolytic coating having an E of 0.15.

2. 1 inch insulated unit with exterior pane of (1/4 inch) Viracon tempered clear VE13-45 glass and interior pane of 6mm (1/4 inch) clear tempered glass with 13.2mm (1/2 inch) air space.

2.02 GL-2: HEAT-TREATED TEMPERED GLASS - INTERIOR

A. Tempered Glass:

1. ASTM C1048, Kind FT, Type I, Class 1, Quality q3.

2. Thickness, 6mm (1/4 inch), Tempered.

3. Color: Clear

2.03 GL-3: INTERIOR STAINED GLASS

A. Stained Glass

1. Minimum 30 pieces, eight colors.

2. Custom design per Architect sketch. TBD.

2.04 GLAZING ACCESSORIES

A. As required to supplement the accessories provided with the items to be glazed and to provide a complete installation. Ferrous metal accessories exposed in the finished work shall have a finish that will not corrode or stain while in service.

B. Setting Blocks: ASTM C864:

1. Channel shape; having 6 mm (1/4 inch) internal depth.

2. Shore a hardness of 80 to 90 Durometer.

3. Block lengths: 50 mm (two inches) except 100 to 150 mm (four to six inches) for insulating glass.

4. Block width: Approximately 1.6 mm (1/16 inch) less than the full width of the rabbet.

5. Block thickness: Minimum 4.8 mm (3/16 inch). Thickness sized for rabbet depth as required.

C. Spacers: ASTM C864:

1. Channel shape having a 6 mm (1/4 inch) internal depth.

2. Flanges not less 2.4 mm (3/32 inch) thick and web 3 mm (1/8 inch) thick.

3. Lengths: One to 25 to 76 mm (one to three inches).

4. Shore a hardness of 40 to 50 Durometer.

D. Sealing Tapes:

1. Semi solid polymeric based material exhibiting pressure sensitive adhesion and withstanding exposure to sunlight, moisture, heat, cold, and aging.

2. Shape, size and degree of softness and strength suitable for use in glazing application to prevent water infiltration.

E. Spring Steel Spacer: Galvanized steel wire or strip designed to position glazing in channel or rabbeted sash with stops.

F. Glazing Gaskets : ASTM C864:

1. Soft, closed cell with locking key for sash key.

2. Flanges may terminate above the glazing beads or terminate flush with top of beads.

G. Glazing Sealants: ASTM C920, silicone neutral cure:

1. Type S.

2. Class 25

3. Grade NS.

4. Shore A hardness of 25 to 30 Durometer.

H. Neoprene, EPDM, or Vinyl Glazing Gasket: ASTM C864.

1. Designed for dry glazing.

I. Color:

1. Color of glazing compounds, gaskets, and sealants used for aluminum color frames shall match color of the finished aluminum and be nonstaining.

2. Color of other glazing compounds, gaskets, and sealants which will be exposed in the finished work and unpainted shall be black.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:

1. Examine openings for glass and glazing units; determine they are proper size; plumb; square; and level before installation is started.

2. Verify that glazing openings conform with details, dimensions and tolerances indicated on manufacturer's approved shop drawings.

B. Advise Contractor of conditions which may adversely affect glass and glazing unit installation, prior to commencement of installation: Do not proceed with installation until unsatisfactory conditions have been corrected.

C. Verify that wash down of adjacent masonry is completed prior to erection of glass and glazing units to prevent damage to glass and glazing units by cleaning materials.

3.02 PREPARATION

A. For sealant glazing, prepare glazing surfaces in accordance with GANA-02 Sealant Manual.

B. Determine glazing unit size and edge clearances by measuring the actual unit to receive the glazing.

C. Shop fabricate and cut glass with smooth, straight edges of full size required by openings to provide GANA recommended edge clearances.

D. Verify that components used are compatible.

E. Clean and dry glazing surfaces.

F. Prime surfaces scheduled to receive sealants, as determined by preconstruction sealant-substrate testing.

3.03 INSTALLATION – GENERAL

A. Install in accordance with GANA-01 Glazing Manual and GANA-02 Sealant Manual unless specified otherwise.

B. Glaze in accordance with recommendations of glazing and framing manufacturers, and as required to meet the Performance Test Requirements specified in other applicable sections of specifications.

C. Set glazing without bending, twisting, or forcing of units.

D. Do not allow glass to rest on or contact any framing member.

E. Glaze doors and operable sash, in a securely fixed or closed and locked position, until sealant, glazing compound, or putty has thoroughly set.

F. Tempered Glass: Install with roller distortions in horizontal position unless otherwise directed.

G. Insulating Glass Units:

1. Glaze in compliance with glass manufacturer's written instructions.

2. When glazing gaskets are used, they shall be of sufficient size and depth to cover glass seal or metal channel frame completely.

3. Do not use putty or glazing compounds.

4. Do not grind, nip, cut, or otherwise alter edges and corners of fused glass units after shipping from factory.

3.04 REPLACEMENT AND CLEANING

A. Clean new glass surfaces removing temporary labels, paint spots, and defacement.

B. Replace cracked, broken, and imperfect glass, or glass which has been installed improperly.

C. Leave glass, putty, and other setting material in clean, whole, and acceptable condition.

3.05 PROTECTION

A. Protect finished surfaces from damage during erection, and after completion of work. Strippable plastic coatings on colored anodized finish are not acceptable.

3.06 GLAZING SCHEDULE

A. Tempered Glass:

1. Install in full and half glazed doors unless indicated otherwise.

2. Use clear tempered glass on interior side lights and doors unless otherwise indicated or specified.

B. Tempered Glass Low E Glass:

1. Install SEU Low-e tempered in exterior pane of dual glazed exterior windows, storefronts, and sidelights.

END OF SECTION 08 80 00

SECTION 09 06 00

SCHEDULES FOR FINISHES

DIVISION 3 – CONCRETE

03 36 00	Concrete	
	Seal Concrete	Clear
	SC1	Per Architect Selection
	SC2(09 67 26)	Resinous Flooring, Light Grey

DIVISION 4 – MASONRY

Not Used

DIVISION 5 – METALS

05 50 00	Structural and Miscellaneous Metal	
	Exposed Framing Connectors:	Paint per Architect Selection
	Steel Framing:	Paint per Architect Selection
	Exterior Guard Bollards:	Paint per Architect Selection
	Interior Guard Bollards:	Paint per Architect Selection
	Interior Counter Supports:	Powder Coat
05 71 13	Spiral Stairs	
	Stair Framing	Black
	Stair Treads	Black

DIVISION 6 – WOOD AND PLASTIC

06 10 00	Rough and Finish Carpentry	
	Plywood Wall Finish	Solid Stain, ST1, ST3 or ST3 per architect
06 15 23	Glue-Laminated Wood Decking	
	Wood Decking	Stain and Topcoat, ST3 with gloss sheen topcoat
06 18 00	Glued- Laminated Construction	
	Wood columns	Stain and Topcaot with Satin topcoat
	Wood Glulams Beams	Stain and Topcaot, with satin topcoat
06 40 23	Millwork	
	Cabinetwork -	
	Locks:	626 Brushed Chrome

DIVISION 7 – THERMAL MOISTURE PROTECTION

07 41 13	Standing Seam Metal Roof Panels	
	Roof Panel:	Structural Standing Seam Panels, Mill Aluminum
07 42 13	Metal Wall Panel	Mill Aluminum
07 62 00	Sheet Metal Flashing and Trims	
	Fascia	Custom: Per Architect Selection
	Gutters and Downspouts:	Custom: Per Architect Selection

	Exterior Exposed Trim:	Custom: Per Architect Selection
07 90 00	Sealants and Caulking	
	Color:	To match adjacent surfaces per Architect selection

DIVISION 8 – DOORS AND WINDOWS

08 14 00	Wood Doors and Framea	
	Interior Flush:	Flat Cut African Mahogany, Amber 30-95
08 36 13	Sectional Door	
	Panel Color (exterior):	Mill, Aluminum
	Panel Color (interior):	Mill, Aluminum
08 41 13	Aluminum Entrances and Storefronts	
	Framing Color:	Anodized Aluminum - Clear
	Aluminum Sills:	Mill Finish on Aluminum
	Aluminum Wall Panel	Aluminum - Clear
08 71 00	Door Hardware	
	Locksets:	US26D, Brushed Chrome
	Closers:	US10
	Butts:	US10, Stainless steel
	Exit Devices:	US10
	Weather-stripping	Mill Finish on Aluminum
08 80 00	Glazing	
	GL1: Exterior Storefront	Color: Warm Grey
	GL2: Interior Storefront	Color: Clear
	GL5: Interior- Tempered	Color: Clear
	GL6: Interior – Annealed	Color: Clear

DIVISION 9 – FINISHES

09 30 13	Porcelain Tile	
	CT1:	Daltile, Dignitary, Lumunary White DR07, 12”x24” AV241, 12”x24”
	GRT 1	Per Architect’s selection
09 90 00	Paint	
	PT1 - Interior	Benjamin Moore, Natural, white TBD
	PT2 - Interior	Benjamin Moore, Natural,
	PT3 - Interior	Benjamin Moore, Natural,
	PT4 - Interior	Benjamin Moore, Natural,
	PT5 - Interior	Benjamin Moore, Natural, matte black
	PT6 – Exterior	Benjamin Moore,

DIVISION 10 – SPECIALTIES

10 14 00	Signage	
	Signage	
	Background Color:	Taupe
	Text Color:	White

10 28 00	Toilet Accessories	
	Accessories	No. 4 Stainless Steel Satin Finish
	Grab Bar	Stainless Steel
10 44 00	Extinguisher Cabinets	
	Finish:	Larsen, Architectural Series, Solid Door with vertical engraved letters, #8 Stainless Steel

DIVISION 12 – FURNISHING

12 24 00 Blinds

DIVISION 13 – SPECIAL CONSTRUCTION

DIVISION 14 – CONVEYING SYSTEMS

GENERAL NOTES – Schedule for Finishes:

A. See Architectural Finishes Schedule, specifications and interior elevations for additional finishes information.
B. Paint exposed interior columns, beams and miscellaneous steel per Architect color selection.
C. Paint exposed soffits and gypsum board ceilings per Architect color selection.
D. Prime painted, exposed structural, and miscellaneous metals to be painted per Architect selection.
E. Paint electrical and communications equipment rooms prior to and after installation of equipment. Paint all exposed metals, conduits and other parts for finished appearance.
F. Paint exposed electrical and communications equipment, piping, conduit, duct and other equipment. Paint all exposed metals, conduits and other parts for finished appearance.
G. Prepare backing and install Owner supplied fixtures, equipment and furniture.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Provide gypsum board systems including gypsum board, joint treatment, acoustical accessories, and general accessories for complete installation.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Product Data: Furnish manufacturer's literature for gypsum board, insulation, and acoustical accessories.

B. Manufacturer’s Certification: Furnish manufacturer's certification indicating products comply with Contract Documents and applicable codes.

1.04 PROJECT CONDITIONS

A. Do not begin installation of interior gypsum board until space is enclosed, space is not exposed to other sources of water, and space is free of standing water.

B. Maintain areas to receive gypsum board at minimum 50 degree F for 48 hours prior to application and continuously after application until drying of joint compound is complete; comply with ASTM C840.

C. Immediately remove from site gypsum board for interior use exposed to water, including gypsum board with water stains, with signs of mold, and gypsum board with mildew.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. National Gypsum Co.

B. Georgia-Pacific Corp.

C. United States Gypsum Co., USG Corp.

2.02 PERFORMANCE REQUIREMENTS

A. General: Perform gypsum board work in accordance with ASTM C840 unless otherwise specified.

2.03 MATERIALS

A. Gypsum Board: Comply with ASTM C840; maximum permissible lengths; ends square cut, tapered edges on boards to be finished.

1. Typical: ASTM C1396, Type X, fire rated gypsum board, unless otherwise indicated.

2. Tile Substrates: Cementitious backer units specified in Section 09 30 13 - Tile.

3. Gypsum Sheathing: ASTM C1177/C1177M, water resistant core, 16mm (5/8 inch) thick.

4. Extended Exposure Gypsum Board: Fire rated Type X gypsum board designed specifically for extended exposure to moisture during construction; ASTM C1177; provide with score of 10 when tested using ASTM D3273 for mold resistance.

   a. National Gypsum/eXP Extended Exposure Sheathing.

   b. Georgia Pacific/DensArmor Plus or DensGlass.

   c. USG/Sheetrock Fiberock Aqua Tough Sheathing.

B. Gypsum Board Accessories: Comply with ASTM C840.

1. Provide protective coated steel corner beads and edge trim; type designed to be concealed in finished construction by tape and joint compound.

2. Corner Beads: Manufacturer's standard metal beads.

3. Edge Trim: “J”, "L", "LK", or "LC" casing beads.

4. Reinforcing Tape, Joint Compound, Adhesive, Water, Fasteners: Types recommended by system manufacturer and conforming to ASTM C475.

   a. Typical Joint Compound: Chemical hardening type for bedding and filling, ready-mixed or powder vinyl type for topping.

5. Control Joints: Back to back casing beads.

   a. Back control joints with 4 mil thick polyethylene air seal.

6. Reveals: Extruded aluminum special trim pieces in manufacturer's standard or custom shapes to conform to configurations and dimensions indicated.

   a. Manufactures:

      1) Fry Reglet Corp./Drywall Moldings.

      2) MM Systems Corp./Drywall Moldings.

      3) Gordon Inc./Final Forms I Drywall Trims.

C. Acoustical Accessories:

1. Acoustical Insulation: Preformed mineral fiber, ASTM C665, Type I; friction fit type without integral vapor barrier; as required to meet STC ratings indicated, or of thickness indicated.

2. Acoustical Sealant: ASTM C919, type recommended for use in conjunction with gypsum board. Paintable, non-shrinking and non-cracking where exposed, nondrying, nonskinning, nonstaining, and nonbleeding where concealed. Provide as required for acoustical ratings and at non-fire -rated partitions to seal edges of gypsum board.

3. Electrical Box Pads: Provide at outlet, switch and telephone boxes in walls with acoustical insulation.

    a. Manufacturers for Non-Fire Rated Partitions:

        1) Harry A. Lowry & Associates (800.772.2521)/Lowry's Electrical Box Pads.

        2) Tremco Sheet Caulking (650.572.1656).

PART 3 EXECUTION

3.01 INSTALLATION

A. Openings: Obtain dimensions and locations from other trades and provide openings and enclosures for accessories, specialties, equipment, and ductwork.

B. Gypsum Board Installation: Install in accordance with ASTM C840 and manufacturer's recommendations.

1. Use screws when fastening gypsum board to furring and to framing.

2. Erect gypsum board with ends and edges occurring over firm bearing.

    a. Ensure joints of second layer do not occur over joints of first layer in double layer applications.

3. Place control joints to be consistent with lines of building spaces and as directed by Architect.

    a. Provide where system abuts structural elements.

    b. Provide at dissimilar materials.

    c. Lengths exceeding 30'-0" in partitions.

    d. Ceiling areas exceeding 50'-0" or 2500 square feet.

    e. Wings of "L", "U" and "T" shaped ceilings.

4. Place corner beads at external corners; use longest practical lengths.

5. Place edge trim where gypsum board abuts dissimilar materials.

6. Tape, fill, and sand exposed joints, edges, corners and openings to produce surface ready to receive finishes; feather coats onto adjoining surfaces.

7. Finishing: Comply with Gypsum Association (GA) “Levels of Gypsum Board Finish”.

    a. GA Level 5 Provide skim coat of joint compound over entire gypsum board surface over Level 4 three coat finish to achieve special smooth surface ready for applied paint finishes.

8. Remove and replace defective work.

C. Acoustical Accessories Installation:

1. Place acoustical insulation tight within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

2. Place acoustical sealant within partitions in accordance with manufacturer's recommendations; install acoustical sealant at gypsum board perimeter at:

   a. Metal Framing: One or two beads.

   b. Base layer and face layer.

   c. Penetrations of partitions.

3. Tolerance: Maximum 1/4" space between gypsum board at floor, ceiling, and penetrations.

4. Install electrical box pads with pads molded and pressed on back side of box, closing openings, in accordance with manufacturer's instructions, for complete acoustical barrier.

END OF SECTION 09 25 00

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes the requirements for furnishing and installing ceramic tile, accessories and related materials as indicated on the Drawings and as specified herein.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 REFERENCES

A. American National Standards Institute (ANSI): Standard Specifications for the Installation of Ceramic Tile.

1. ANSI A108.4: Installation of ceramic tile with Water-Resistant Organic Adhesive.

2. ANSI A108.5: Installation of ceramic tile, with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.

3. ANSI A108.10: Installation of Grout in Tilework.

4. ANSI A118.1: Dry-Set Portland Cement Mortar.

5. ANSI A118.4: Latex Portland Cement Mortar.

6. ANSI A118.6: Ceramic Tile Grout.

7. ANSI A137.1: Standard Specifications for Ceramic Tile.

B. Tile Council of America (TCA): “Handbook for Ceramic Tile Installation”.

1.04 SYSTEM DESCRIPTION

A. Design Requirements: Floor tile tested both wet and dry shall have minimum static coefficient of friction of 0.60 in accordance with ASTM C1028.

1.05 SUBMITTALS

A. Procedure: In accordance with Section 01 30 00 – Submittals.

B. Samples:

1. Tile: Submit three full-size samples of each color, size and type of tile specified.

2. Trim Shapes: Each color, type, and shape.

C. Product Data:

1. Pictorial information or samples showing manufacturer's full line of standard patterns and colors.

2. Upon completion of ceramic tile Work, submit two copies of a list of recommended maintenance products and procedures.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver tile in manufacturer's original cartons, grade-sealed by manufacturer in accordance with ANSI A137.1, and with grade seals unbroken.

B. Deliver dry-set mortar in moisture-proof containers.

C. Manufactured mortars and grouts shall be from one manufacturer for each system, shall contain hallmarks certifying compliance with specified TCA and other referenced standards and shall be recommended by tile manufacturer for the application intended.

D. Organic adhesive containers shall bear hallmark of either Adhesive and Sealant Council or Tile Contractors of America certifying compliance with ANSI A136.1.

E. Store materials in accordance with manufacturer's directions and under cover in manner to prevent damage or contamination.

F. Handle materials carefully to avoid chipping and breakage.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Ambient Temperature: At least 50 degrees F and rising, when setting and grouting with Portland-cement mortar for at least 7 days after completion of installation.

B. Follow manufacturer's requirements for ambient temperature when setting and grouting with other than Portland-cement mortar.

C. Moisture Conditions: In accordance with tile and installation materials manufacturers' requirements.

D. Protect adjoining work surfaces before tile work begins.

E. Close spaces in which tile is being set to traffic and other work; keep closed until firmly set.

PART 2 PRODUCTS

2.01 MATERIALS

A. Tile, General:

1. Tile shall conform to ANSI A137.1, Standard Grade, and shall be the product of Daltile Company or approved equal.

2. Units shall be factory made. Furnish bases, caps, stops, returns, trimmers, and other shapes for a complete installation within limits of selected manufacturer’s type group. Vertical internal corners and external corners shall be bullnosed, including all transitions. Corners shall use special shapes that avoid straight edges, end of tile runs shall be bullnosed. Finish shall match that of wall tile.

B. Ceramic Tile Type:

1. See Section 09 06 00. Schedules of Finishes.

C. Trim Shapes and Bases:

1. Provide bullnose, returns, trimmers, and other shapes, both standard and special, to finish installation and as specified and indicated on the Drawings.

2.02 SETTING MATERIALS

A. Concrete Primer: As recommended by waterproofing membrane manufacturer.

B. Waterproofing Membrane: Elastomeric-based, polyurethane coating, 3M Company "Scotch-Clad Brand Deck Coating Base Coat," or accepted equal.

C. Dry-Set Mortar: Conforming to ANSI A118.1.

D. Latex Portland Cement Mortar: Conforming to ANSI A118.4.

E. Organic Adhesive: In conformance with ANSI A136.1, Type I, low VOC.

F. Water: Clean and potable.

G. Setting Blocks.

H. Raimondi - Leveling System

I. Tile Trim - Schluter Schiene. Corner Trim - Schluter Rondec

2.3 GROUTING MATERIALS

A. Latex-Portland Cement Grout, or accepted equal, mastic grout: Special latex emulsions with commercial Portland cement grout, replacing all or part of water according to directions specified by latex manufacturer.

B. Grout: Custom Building Products, Polyblend (color to be selected by Architect), sanded grout at floor (1/8 inch joints), non-sanded grout at walls (1/8 inch joints).

C. Elastomeric Sealant: One part, mildew-resistant silicone and low VOC.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that conditions are satisfactory for the installation of ceramic tile and does not adversely affect the quality and execution of tile installation.

B. Condition of surfaces to receive tile:

1. Surfaces shall be firm, dry, clean and free of oily or waxy films.

2. Grounds, anchors, plugs, hangers, bucks, and electrical and mechanical work in or behind tile shall be installed prior to proceeding with tile Work.

C. Do not commence the installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Install tile in accordance with the requirements of the specified TCA Method from the TCA "Handbook for Ceramic Tile Installation" appropriate to the tile and surface specified herein.

1. Set tile in a manner to produce solid bedding, smooth even surfaces, and uniform joints, accurately aligned and symmetrically arranged. Avoid use of tile less than half size. Cut and drill tile neatly without marring the tile and grind rough exposed edges.

2. Whenever possible, turn cut to inside corner. Terminate tile at center lines of doors, unless otherwise indicated.

3. Establish lines of borders where applicable, prior to spreading setting bed, centering field work in both directions. Lay tile from center line of wall or floor surface outward, with adjustments made at junction with other floor or wall surfaces.

4. Omit tile where floor or wall area is covered by permanently built-in equipment such as toilet fixtures and recessed accessories.

5. Patch existing tilework, layout shall match existing tile pattern. Align joints vertically and horizontally.

C. Wall Tile: Install in conformance with ANSI A108.4, using TCA Method W242. Utilize tile leveling systems.

D. Curing: Apply non-staining laminated and reinforced Kraft paper having a bituminous or latex binder over floor tile as soon as pointing, grouting and cleaning are completed.

1. Lap the sheets at least 4 inches, and seal the laps against the escape of moisture.

2. Leave curing paper in place until job is ready for final cleaning.

3. Keep traffic off floors during the curing period (7 days).

4. Do not permit cement grouts to dry out until cured a minimum of 72 hours.

3.03 CLEANING

A. Clean surfaces after installation and grouting as recommended by tile manufacturer.

B. Remove grout haze, observing grout manufacturer's recommendations as to use of acid and chemical cleaners.

C. Rinse tile work thoroughly with clean water before and after using chemical cleaners. Do not use acids or abrasive soaps on tile, except as approved by tile manufacturer.

D. Replace damaged, cracked, stained, or broken surfaces before time of final acceptance.

3.04 PROTECTION

E. Apply a protective coat of neutral cleaner solution, one part cleaner to one part water, to clean, completed tile walls and floors.

F. Maintain curing paper cover on floor tile to protect from construction dirt.

G. Place board walkways on newly tiled floors for at least 7 days where floors must be used as passageways by workmen.

H. Just before final acceptance of tile work, remove paper and rinse protective coat of neutral cleaner from tile surfaces.

END OF SECTION 09 30 13

PART 1 GENERAL

1.01 DESCRIPTION

A. Painting and finishing of exposed exterior and interior surfaces as required to complete finishing of the Work as indicated on the Drawings including the following items:

1. Mechanical diffusers.

2. Visible interior of ductwork.

3. Electrical Sub-panels painted to match adjacent wall surface.

B. The Work includes painting and finishing of new and existing interior and exterior exposed items and surfaces throughout project, except as otherwise indicated.

1. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.

C. Surfaces Not to be Painted:

1. Factory pre-finished items as specified in various Sections.

2. Pre-finished wall, ceiling, and floor coverings.

3. Painting specified elsewhere and included in respective Sections, including but not necessarily limited to, shop priming.

4. Code-Required Labels: Keep equipment identification and fire rating labels free of paint.

5. Surfaces concealed in walls and above ceilings except as specifically indicated otherwise.

6. Ducts, piping, conduit, and equipment concealed in walls and ceilings, unless specifically indicated otherwise.

D. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.

E. Paint exposed surfaces whether or not colors are designated in "schedules", except where natural finish of material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint same as adjacent similar materials or areas. If color of finish is not designated, Architect will select these from standard colors available for materials systems specified.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Product Data:

1. Not less than 30 days before beginning work, submit a complete list of materials proposed for use, together with manufacturer's specifications.

2. Paint materials and products shall be subject to the Architect's acceptance.

B. Samples:

1. Custom and Stock Colors: Submit 8x8 inch brush-out samples for Architect's review of each color and texture. Provide a listing of material and application for each coat of each finish sample.

2. Samples shall be resubmitted as requested until required sheen, color, and texture is achieved.

3. Label and identify each sample as to location and application.

C. Field Samples: On actual wall surfaces and other exterior and interior building components in areas designated by Architect, duplicate painted finishes of prepared samples in 4 ft. sq. areas. Simulate finished lighting conditions for Architect's and State's review of in-place Work. Colors may require adjustment at no additional cost to State.

1.04 QUALITY ASSURANCE

A. Include on label of containers:

1. Manufacturer's name.

2. Type of paint.

3. Manufacturer's stock number.

4. Color.

5. Instructions for reducing, where applicable.

B. Field Quality Control:

1. Request review by the Architect of first finished room, space, or item of each color scheme required for color, texture, and workmanship.

2. Use first acceptable room, space, or item as the Project standard for each color scheme.

C. Regulatory Requirements:

1. Comply with the regulations of the Bay Area Air Quality Management District (BAAQMD) for Volatile Organic Contents (VOC's).

2. Paint shall be certified by the manufacturer as "non-lead" (less than 0.06 percent lead by weight in the dried film) as defined in Part 1303 of the Consumer Product Safety Act.

3. Work to be painted may contain excessive levels of lead-based paint. Contractor shall retain and pay for the services of a Testing Agency to perform and report on tests for such suspected material

1.05 DELIVERY AND STORAGE

A. Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:

1. Name or title of material.

2. Manufacturer's stock number and date of manufacturer.

3. Manufacturer's name.

4. Contents by volume, for major pigment and vehicle constituents

5. Thinning instructions.

6. Application instructions.

7. Color name and number.

B. Storage of Materials:

1. Store only acceptable Project materials on Project site.

2. Store in a suitable location.

3. Restrict storage to paint materials and related equipment.

4. Comply with health and fire regulations.

1.06 PROJECT CONDITIONS

A. Environmental Requirements:

1. Comply with manufacturer’s recommendations as to environmental conditions under which coatings and coating systems can be stored and applied.

2. Do not apply paint in rain, fog or mist; or when relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by paint manufacturer's printed instructions.

3. Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

1.07 WARRANTY

A. Color and Life of Film:

1. At the end of 1 year, colors of surfaces shall have remained free from serious fading, and variations (if any) shall be uniform.

2. Materials shall have their original adherence at end of 1 year and there shall be no evidence of blistering, running, peeling, scaling, chalking, streaking, or stains at end of this period.

1.08 MAINTENANCE

A. Extra Materials:

1. At completion of the Work, deliver to the State extra stock of paint equaling approximately 5 percent of each color used in each coating material used.

2. Stock shall be in tightly sealed and clearly labeled containers.

PART 2 PRODUCTS

2.01 MATERIALS

A. Product numbers specified in Article 3.6, “Paint Systems”, are as manufactured by Sherwin Williams, unless otherwise indicated. Equivalent products manufactured by Sinclair Paint Co., Benjamin Moore, Dunn-Edwards, ICI Paints, Fuller O’Brien or Glidden are acceptable.

B. Materials selected for coating system of each type of surface shall be the product of a single manufacturer.

C. Thinner: As recommended by each manufacturer for his respective product for use only within recommended limits.

D. Colors used shall be selected for their permanence and non-fading qualities. In addition, colors that are used over concrete and plaster surfaces shall be limeproof.

E. Unsuitability of Specified Products: Claims concerning unsuitability of any materials specified will not be entertained, unless such claim is made in writing to the Architect before the Work is started.

2.02 MATERIAL QUALITY

A. Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.

B. Proprietary names used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers.

2.03 COLORS

A. Colors: Colors to be selected by Architect from manufacturer’s color chart. Exterior color scheme is to mimic existing, interior to be generally light colors.

B. Color Pigments: Pure, non-fading, applicable types to suit substrates and service indicated.

C. Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information on characteristics of finish material proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and re-prime as required. Notify Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

2.04 MIXING AND TINTING

A. Deliver paints ready mixed to jobsite.

B. Accomplish job mixing and job tinting only when acceptable to the Architect.

C. Mix only in mixing pails placed in suitable sized nonferrous or oxide-resistant metal pans.

D. Use tinting colors recommended by manufacturer for specific type of finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator.

B. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

3.02 SURFACE PREPARATION

A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.

B. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.

C. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly-painted surfaces.

D. Gypsum Board:

1. Fill narrow, shallow cracks and small holes with spackling compound.

2. Rake deep, wide cracks and deep holes.

a. Dampen with clear water.

b. Fill with thin layers of drywall joint cement.

3. Allow to dry.

4. San Smooth after drying; do not raise nap of paper on gypsum board.

5. See Section 09 21 00 for requirements for gypsum board finishing.

E. Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.

1. Touch-up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications. Clean and touch-up with same type shop primer.

F. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent.

G. Concrete:

1. Cure: Concrete must be cured prior to coating application. Cured is defined as concrete poured and aged at a material temperature of 75 degree F for at least 30 days. The pH of the surface should be between 6 and 9.

2. Moisture: Material must be free of moisture as much as possible. Test per ASTM D4263.

3. Temperature: Air, surface and material temperature must be at least 50 degrees F (10 deg C) during the application and until the coating is cured.

4. Surface cleaning: Remove all contaminants, grease, dirt, loose paint, oil, tar, glaze, laitance, efflorescence, loose mortar, and cement. Broom cleaning, vacuum cleaning, air blast cleaning, water cleaning, and steam cleaning are considered suitable as outlined in ASTM D4258. Concrete curing compounds, form release agents, and concrete hardeners may not be compatible with recommended coatings. Check for compatibility by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, surface preparation per methods outlined in ASTM D4259 are required.

5. Surface imperfections may require filling with a material compatible with the coating product.

H. Surfaces which cannot be prepared or painted as specified shall be immediately brought to the attention of the Architect in writing.

1. Starting of work without such notification will be considered acceptance by the Contractor of surface involved.

2. Contractor shall replace unsatisfactory work caused by improper or defective surfaces, as directed by the Architect, at no additional cost to the State.

3.03 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

3.04 APPLICATION

A. General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment or furniture with prime coat only before final installation of equipment.

3. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.

4. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.

B. Scheduling Painting: Apply first-coat material to surfaces that have been cleaned, pre-treated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. Allow sufficient time between successive coatings to permit proper drying. Do not re-coat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or , if not indicated, as recommended by coating manufacturer.

C. Prime Coats: Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others.

1. Re-coat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn through or other defects due to insufficient sealing.

E. Stipple Eggshell Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.

F. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

3.05 CLEAN-UP AND PROTECTION

A. Clean-up: During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.

1. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

B. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

1. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

2. At the completion of work of other trades, touchup and restore all damaged or defaced painted surfaces.

3.06 PAINT SYSTEMS

A. General:

1. Exterior paint systems are specified and identified by number and interior paint systems by letter.

2. Only major areas are scheduled, but miscellaneous and similar items and areas within room or space shall be treated with suitable system.

3. Number of coats scheduled is minimum.

a. Additional coats shall be applied at no additional cost if necessary to completely hide base material, produce uniform color, and provide satisfactory finish result.

4. This specification shall serve as a guide and is meant to establish procedure and quality.

B. Acceptance of Final Colors: Final coat of paint for both exterior and interior shall not be applied until colors have been accepted by the Architect based on field samples noted in 1.3.D above.

C. Interior Coating Systems: Provide the following finish coating systems for the various substrates, as shown on the Finish Plan. Provide coats as indicated and sufficient to cover.

1. Gypsum Wallboard:

a. Flat: (ceilings, except as noted)

1) Prime Coat: 220-22 PVA Sealer.

2) Second Coat: One coat 209-00 Alkyd Wall Primer Sealer.

3) Finish Coat: One coat 202-XX Flat Latex Wall Finish.

b. Stipple Eggshell: (walls, except as noted)

1) Prime Coat: One coat 220-22 PVA Sealer.

2) Second Coat: 209-05 Satin Latex Stipple.

3) Finish Coat: One coat 212-XX Eggshell Latex Enamel.

2. Galvanized Metal (trim and access doors, except structural steel, etc.):

a. Semi-gloss:

1) Prime Coat (delete if shop primed): One coat 621-04 BLOX-RUST Alkyd Metal Primer.

2) Two coats 619-6X Ultra-Color Alkyd Semi-Gloss Enamel.

3. Ferrous Metal or Aluminum (miscellaneous)

a. Semi-gloss:

1) Prime Coat (delete if shop primed): 15 Red Oxide Primer

2) Second Coat: 1790 Latex Enamel Undercoater

3) Finish Coat: 4000 Acrylic Latex Enamel

D. Exterior Coating Systems:

1. Concrete and Plaster

a. Semi-gloss:

1) Prime Coat: 18 Epoxy Water-Base Primer

2) Finish Coat: 4400 Acrylic Emulsion

END OF SECTION 09 90 00

PART 1 GENERAL

1.01 SUMMARY

A. Interior signs. At toilet rooms

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 REFERENCES

A. Americans with Disabilities Act (ADA) - Accessibility Guidelines for Buildings and Facilities.

1.04 DELIVERY, STORAGE, AND PROTECTION

A. Package separately or in like groups of names, labeled as to names enclosed. Include installation template, hardware or adhesive specified and Installation instructions.

B. Store components and materials in a clean, dry location and exercise care to avoid damaging surfaces.

1.05 QUALITY ASSURANCE

A. Regulatory Requirements: Products shall meet requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and local amendments and modifications.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. ASI Sign Systems or equal.

2.02 SIGN MATERIALS

A. Sign Face: High impact polyester acrylate resins, pressure molded into a single polymerized component, using manufacturer’s co-molding process.

B. Tactile Graphics and Text: Provide tactile copy and grade 2 Braille raised 1/32 inch minimum from plaque surface using manufacturer’s co-molding process.

1. Provide lettering and graphics precisely formed, uniformly opaque to comply with relevant ADA regulations and requirements indicated for size, style, spacing, content, position, and colors.

C. Colors: High contrast semi-matte integral colors for graphics. All integral resins are U.V. stabilized resins utilizing automotive grade pigments.

2.03 FINISHES

A. Depth: 0.25 inch thickness.

B. Panel Appearance: Colors per code requirements.

C. Surface Texture: Matte Non-Glare.

D. Letter Style: Sans Serif.

E. Toilet room door and wall identification signs.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions: Verify installation conditions previously established under other sections are acceptable for product installation in accordance with manufacturer's instructions.

B. Scheduling of installation by the client implies that substrate and conditions are prepared and ready for product installation. Proceeding with installation implies installer’s acceptance of substrate and conditions.

3.02 INSTALLATION

A. Install product in accordance with supplier’s instructions.

B. Install product in locations indicated using mounting methods recommended by sign manufacturer and free from distortion, warp, or defect adversely affecting appearance.

C. Install product level, plumb, and at heights indicated.

D. Install product at heights to conform to Americans with Disabilities Act Accessibility Guidelines (ADAAG) and applicable local amendments and regulations.

F. Install signs within the following tolerances and in accordance with manufacturer's recommendations:

1. Interior Signs: Within 1/4 inch vertically and horizontally of intended location.

3.03 CLEANING AND PROTECTION

A. Repair scratches and other damage which might have occurred during installation. Replace components where repairs were made but are still visible to the unaided eye from a distance of 5 feet.

B. Remove temporary coverings and protection to adjacent work areas. Clean installed products in accordance with manufacturer's instructions prior to Owner’s acceptance. Remove construction debris from project in accordance with provisions in Division 1.

END OF SECTION 10 14 00

PART 1 GENERAL

1.01 SUMMARY

A. Furnish labor, materials, equipment and services to install toilet and related accessories and components as shown on the Drawings, as specified herein and as required for a complete and proper installation, including, but not limited to the following:

1. Toilet Room accessories.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Accessories and their installation shall conform to applicable requirements for the disabled.

B. Design Criteria: Grab bars shall be capable of withstanding a force of 900 pounds, minimum, when installed in accordance with the manufacturer's instructions.

C. Accessories shall be the product of a single manufacturer unless otherwise specified.

1.04 SUBMITTALS

A. Product Data: Manufacturer's descriptive and technical data and illustrations, marked to indicate specific product types, variations, and materials.

B. Shop Drawings: Indicate layouts and installation details necessary for proper preparation of toilet partitions and other construction supporting grab bars or other accessory items.

C. Test data or certification that grab bars meet the specified design criteria.

D. Maintenance data, operating instructions, and keys required for each type of accessory and lock.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Quality designation and guarantee label shall be attached to each mirror, or manufacturer's certification that mirrors meet specified requirements shall be submitted.

B. Protection:

1. Maintain protective coatings or coverings on units until installation is complete.

2. Remove protective coverings at final cleanup of installation.

C. Handle so as to prevent damage to finished surfaces.

D. Store materials in original protective packaging to prevent soiling, physical damage, or wetting.

1.06 PROJECT CONDITIONS

A. Coordinate submission of installation instructions so that backing, blocking, framing and formwork can be properly installed and work of other trades will not be delayed.

1.07 WARRANTY

A. Warrant mirrors for 5 years against silver spoilage.

PART 2 PRODUCTS

2.01 MATERIALS

A. Stainless Steel Sheet: ASTM A167, commercial grade, Type 304, standard gage.

B. Stainless Steel Tubing: ASTM A269, commercial grade, seamless welded.

C. Sheet Steel: ASTM A366, cold rolled stretcher leveled; with G90 galvanized coating.

D. Mirrors: ¼ inch thick polished float glass, silver-coated and electrolytically copper-plated.

1. Protect edges with vinyl tape or other protective coating.

E. Adhesive: Epoxy type contact cement.

F. Attachment Devices: Hot dip galvanized; furnish backing plates, brackets, and hardware required for a complete installation as recommended by accessory manufacturer for component and substrate.

1. Fastening shall be concealed and theft-proof when available.

G. Locks: Provide locks and furnish keys for standard lockable items.

H. Grab Bars: 1-1/4 to 1-1/2 inches O.D., mandrel bent, with welded end flanges, exposed mounting, and peened or other approved safety-grip finish; anchor plates for each bar.

2.02 FINISHES

A. Provide manufacturer's finish for each item indicated in accessory schedule, stainless steel where available.

1. Where there are choices of available finishes, not including satin stainless steel, provide chart for Architect's selection.

B. Exposed Finishes: Stainless steel No. 4, satin finish; satin chrome finish acceptable where stainless steel not available for accessory item scheduled.

2.03 ACCESSORY SCHEDULE

A. Model numbers indicated in the Schedule below are those of Bobrick Washroom Equipment, Inc. (unless noted otherwise) and are used to establish a standard of quality, utility. Equivalent products of other manufacturers may also be acceptable, subject to conformance with the requirements specified herein and indicated. All accessories brushed stainless steel, unless otherwise noted.

1. Provide one item for each location indicated on Drawings.

2. All items shall be satin finish, unless otherwise specified or indicated.

B. Schedule (itemized below as referenced on Drawings):

1. B-5806 – 1-1/4 inch (32mm) Diameter Stainless Steel Grab Bars with Snap-Flange Cover

2. Mirror with Stainless Steel Channel Frame. Round. See Drawings.

3. B2112 – Surface Mounted 40 oz Soap Dispenser

4. Robe Hook.

5. Shower bench.

2.04 FABRICATION

A. Corners: Weld and grind smooth; leave no open miters.

B. Form exposed surfaces from one sheet of stock, free of joints.

C. Provide steel anchor plates and anchor components for installation on building finish.

D. Form surfaces flat without distortion; maintain flat surfaces without scratches or dents.

E. Back paint components where contact is made with building finishes, to prevent electrolysis

F. Hot dip galvanize components; package complete with anchors and fittings.

G. Locked Dispensing Units: Key alike for all accessories.

PART 3 EXECUTION

3.01 EXAMINATION

A. Check openings scheduled to receive recessed units for correct dimensions, plumbness of blocking or frames, and preparation that would affect installation of accessories.

B. Check areas to receive surface mounted units for conditions that would affect quality and execution of Work.

C. If unsatisfactory conditions exist, do not commence the installation until such conditions have been corrected.

3.02 INSTALLATION

A. Install accessories in locations and at heights indicated.

B. Install true, plumb and level, securely and rigidly anchor accessories to substrate in accordance with manufacturer's instructions.

C. Use tamper-proof, security type fasteners.

D. Attach grab bars to backing installed in wall to withstand loads prescribed by IBC.

3.03 ADJUSTMENT AND CLEANING

A. Remove protective coatings in accordance with the manufacturer's instructions.

B. Adjust accessories for proper operation.

C. After completion of installation, clean and polish all exposed surfaces.

D. Deliver keys and instruction sheets to the County.

3.04 COMPLETION

A. When complete, accessories shall be set plumb and level, accurately aligned, and securely attached.

B. Exposed surfaces shall be clean and free from scratches, dents, tool marks, stains, discoloration, and other defects and damage.

END OF SECTION 10 28 00

PART 1 GENERAL

1.1 DESCRIPTION

A. Furnish labor, materials, equipment and services to install fire extinguishers, hangers, cabinets and extinguishers and related components as shown on the Drawings, as specified herein and as required for a complete and proper installation.

1.2 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.3 SUBMITTALS

A. Product Data: Manufacturer's specifications and installation instructions for fire extinguishers and cabinets required.

1.4 QUALITY ASSURANCE

A. Furnish fire extinguishers from only one manufacturer.

B. Furnish fire extinguisher cabinets from only one manufacturer.

PART 2 PRODUCTS

2.1 FIRE EXTINGUISHERS

A. Model numbers indicated in the Schedule below are those of Ansul Incorporated (One Stanton Road; Marionette, WI 54143-2542, or approved equal

1. Provide one item for each location indicated on Drawings.

B. Schedule

1. FE-5: Clean Guard 14 CA1481, 2A: 10BC rated.

2.2 FIRE EXTINGUISHER CABINETS

A. Semi-recessed, cold-rolled steel with electrostatically applied, thermally-fused polyester coating with re-coatable white finish for interior gypsum board and plywood partition locations. Larsen, Potter-Roemer or approved equal.

1. FEC-1: semi-recessed: Larsen, solid door with vertical engraved letters, #8 stainless steel. FEC-1 is used in all locations unless noted otherwise on the drawings.

2. FEC-2: surface mounted: Potter-Roemer, Inc. "FRC 7029-DV-6-VB".

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine the conditions under which fire extinguishers and cabinets are to be installed, Notify the Architect, in writing, of conditions detrimental to the proper and timely completion of the Work.

1. Ensure adequate support will be available at time of installation.

B. Do not proceed with the Work until unsatisfactory conditions have been satisfactorily corrected.

3.2 INSTALLATION

A. Install cabinets and extinguishers where indicated on the Drawings.

B. Securely fasten to structure, square and plumb, in accordance with manufacturer's instructions.

1. Typical Fastenings: Use machine screws or bolts to metal backing. Toggle bolts will not be
permitted.

2. Drill and tap mounting surfaces for mounting hardware as required.

C. Wherever exact location of surface-mounted units is not shown, locate as directed by the Architect.

D. Determine the date of Substantial Completion of the Work.

1. Inspect, charge and tag the fire extinguishers within 10 days before the Substantial Completion date.

END OF SECTION 10 44 00

PART 1 GENERAL

1.01 SUMMARY

A. Furnish all material, labor and equipment and perform all work to completely install flagpole and concrete foundation.

1.02 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Submittal Drawings: Show size and installation details for flagpole, base and finial ball.

a. Manufacturer's Literature and Data: Description of each product.

1.04 QUALITY ASSURANCE

A. Installed specified products with satisfactory service on five similar installations for minimum five years.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Prior to installation store flagpole off of the ground to prevent contamination by materials likely to cause staining or other defects.

PART 2 PRODUCTS

2.01 FLAGPOLE

A. Aluminum, Extruded, ASTM B241.B241M, Alloy 6063 – T6.

B. Seamless extruded aluminum.

C. Maximum taper: 50 percent of flagpole outside base diameter.

D. Base: Aluminum plate or stainless steel

E. Finial Ball: 2 MM thick spun aluminum, wit5h seams welded flush and watertight, Mount ball on treaded rod to fit truck,

F. Truck: Equip pole with extra heavy, revolving, non-fouling, ball- bearing truck type cast aluminum body. Fit truck with two cast aluminum, nylon bushed sleeves on stainless steel axles.

G. Cleats: two aluminum, 9 inches long

H. Foundations sleeve: Galvanized

I. Flashing color: to match material and finish of flag ploel.

J. Pole height: 35 feet.

K. Statin aluminum finish, then heavily waxed.

PART 3 EXECUTION

3.01 INSPECTIONS

A. Prior to the installation shall check and verify that the foundation has been properly prepared.

3.02 INSTALLATION

A. Install products according to manufacturer's written instructions.
B. Coat flagpole section with foundation sleeve in bituminous paint.
C. Install flag poles centered in f foundation sleeve.
D. Fill space between pole and metal sleeve to with 50 mm of top with sand and compact.
E. Fill remained of space with sealant and install flashing collar.

END OF SECTION 32 51 50

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies equipment.

1. Refrigerator
2. Range Oven
3. Dishwasher
4. Microwave
5. Washer & Dryer
6. Hoist
7. Fire Fighter Lockers

1.02 QUALITY CONTROL

A. NSF Compliance: Equipment bears NSF Certification Mark or UL Classification Mark:

1. Refrigerators and Freezers: Evaluated according to NSF/ANSI 7.

B. UL Listing: Equipment is listed and labeled by UL:

1. Refrigerators: Evaluated according to UL 471.

C. In-Use Service: At least one factory-authorized service agency for equipment shall be located in the geographical area of the installation and shall have the ability to provide service within 24 hours after receiving a service call.

1.03 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer’s Literature and Data:

1. Include manufacturer's address and telephone number.
2. Include catalog or model numbers and illustrations and descriptions of equipment and accessories.
3. Proof of appliances being Energy Star qualified.

C. Operating Instructions: In accordance with requirements in.

1.04 WARRANTY

A. Warrant refrigerator to be free from defects in materials and workmanship in accordance with requirements of "Warranty of Construction", FAR clause 52.246-21, except warranty period for refrigeration compressors shall be five years.

1.05 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. NSF International/American National Standards Institute (NSF/ANSI):

7-09 Commercial Refrigerators and Freezers

C. Underwriters Laboratories Inc. (UL):

471-10 .....Commercial Refrigerators and Freezers, 8th Edition: Revised 2004

PART 2 PRODUCT

2.01 REFRIGERATOR

A. General Requirements:

1. Size: min. refrigerator 19.7, freezer 10.1 overall 29 cu. ft., 36” max. width

2. Exterior Finish: Stainless steel.

3. Interior Finish: White enamel.

4. Doors: French doors, contoured, gallon door storage, humidity controlled crisper, thru door dispenser, ice & water, crushed and cubed ice

5. Door Hinge: As shown on drawings.

6. Refrigeration System: Self-contained, air cooled, integral.

7. Provide Energy Star qualified appliances. Automatic defrost, ice dispenser.

8. Plug-in power. Digital Controls. LED readouts.

B. Shelves: Glass, adjustable,

C. Freezer compartment drawer at bottom, with bins

D. Temperature:

1. Dual: +1.6 degrees C and -23.3 degrees C (+ 35 and -10 degrees F).

2.02 RANGE OVEN

General Requirements:

1. Size: min. 6.3 cu. Ft. oven with convection, five burners. 30” max. Width,
2. Exterior Finish: Stainless steel. Full wrap. Grey patterned on black glass ceramic top.
3. Bake element 3400W, Broil Element 4200W.
4. Cooktop element (2) 6” 1200W, 1 7” 100W, 1 double 6”, 9” 1400W, 3200W, and one 9” 2500W. Radiant cooktop burner.
5. Cooking Modes. Bake, Broil, Conv Bake, Conv Broil, Warm, Proof, Favorites
6. Self Clean / Easy Clean
7. Provide Energy Star qualified appliances.
8. Plug-in power.
9. Three oven racks
10. Exterior Finish: Stainless steel.
11. 30” w x 36” height to cooking surface x 26” deep
12. Oven lock out control, self-cleaning, digital controls and clock
13. Provide Energy Star qualified appliances. Scrolling digital display
14. Plug-in power. 120 / 208 VAC

2.03 DISHWASHER

General Requirements:

1. Size: min. 125 place setting, Upper rack 12” height limit, bottom rack 14” height limit. Nine wash cycles with 8 wash options.
2. Exterior Finish: Stainless steel.
3. Interior Finish: Stainless Steel
4. Multi-Level Water Direction, 5.
5. Fold down tines
6. Delay start up to 19 hours
7. Soil sensor, end of cycle beep, 3 spray arms
8. Stemware holders, height adjustable racks
9. 24” x 33.5” x 24”

10. 3 in 1 detachable cutlery basket, nylon coated times and racks
11. Provide Energy Star qualified appliances. 258 kWh/Year
12. Plug-in power. 120 / 208 VAC, 15 amps

2.04 MIRCROWAVE

General Requirements:

1. Size: 1.9 cu. Ft over the range microwave
2. Exterior Finish: Stainless steel.
3. Interior Finish: White enamel.
4. 1000 Watts
5. Easy clean with steam clean.
6. 400 CFM venting
7. Rotating recessed tunable with off/on settings
8. Plug-in power.

2.05 WASHER & DRYER

General Requirements:

1. Top load washer, 4.6 cu ft
   a. Exterior Finish: White enamel
   b. Energy Star compliant.
   d. Wash basket: Stainless Steel
2. Front Load Dryer, 7.2 cu. Ft., electric
   a. Exterior Finish: White enamel
   b. Energy Star compliant.

2.06 HOIST

General Requirements:

1. Wall mounted steel jib crane
   a. 10 foot reach, manual

b. 1,100 lb capacity, 180 degree swivel

c. Stop ends, fitting kit, assembly hardware

2.07 FIRE FIGHTER LOCKERS

General Requirements:

1. Wall Mounted Storage System

a. Jumbo Size, 79” x 25.25” x 20” deep, clear width 22.75”

b. Unit shall be welded at all applicable joints.

d. 1.25” O.D. x 16 gauge wall thickness ASTM 513 steel tubing

e. Inner grid .25” diameter ASTM cold drawn steel wire resistance welded to a 3” square pattern.

f. Grid: 25” diameter ASTM 510 cold drawn wire resistance welded to as 3” square pattern.

g. Shelves Top and Bottom. .25” diameter ASTM 510 steel wire

h. Apparel Hooks: 3 per opening, .25” diameter ASTM 510 cold drawn steel resistance welded and cold formed.

i. Horizontal Hang Bar

j. Helmet Holders

k. Powder coated finish.

2.08 STIANLESS STELL TABLE

General Requirements:

1. Stainless Steel Table

a. See drawings for size and location.

b. Coordinate installation of sink and faucet with plumbing contractor.

d. 2 stainless steel fixed shelves at one side of table.

e. Inner grid .25” diameter ASTM cold drawn steel wire resistance welded to a 3” square pattern.

f. Six legs

PART 3 EXECUTION

3.01 INSTALLATION

A. Install equipment level and plumb; arranged for safe and convenient operation; with access clearances required for maintenance and cleaning; and according to manufacturer's written instructions.

3.02 CLEAN-UP

A. At completion of the installation, clean and adjust self-contained refrigeration equipment as required to produce ready-for-use condition.

B. Where stainless-steel surfaces are damaged during installation procedures, repair finishes to match adjoining undamaged surfaces.

END OF SECTION 11 00 00

PART 1 GENERAL

1.01 SUMMARY

A. Cloth shades are specified in this section. Blinds shall be furnished complete, including brackets, fittings and hardware.

1.02 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Submit in accordance with Section 01 33 00, Shop Drawing Submittal Procedures.

B. Samples:

1. Shade cloth, each type, 600 mm (24 inch) square, including cord and ring, showing color, finish and texture.

C. Manufacturer's literature and data; showing details of construction and hardware for: Cloth window shades and Vertical blinds.

1.04 QUALITY ASSURANCE

A. Manufacturers Qualification: Blind manufacturer shall provide evidence that the manufacture of blinds are a major product, and that the blinds have performed satisfactorily on similar installations.

1.05 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced to in the text by the basic designation only.

B. Prior Specifications (Fed. Spec.):

AA-V-00200B ..... Venetian Blinds, Shade, Roller, Window, Roller, Slat, Cord, and Accessories

C. American Society for Testing and Materials (ASTM):

A167-99 (R2009)..... Stainless and heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip

B221/B221M-08 ..... Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes

D635-10 ..... Rate of Burning and/or Extent of Time of Burning of Self-Supporting Plastics in a Horizontal Position

D648-07 ..... Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position

D1784-08 ..... Rigid Poly (Vinyl Chloride) (PVS) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds

PART 2 PRODUCTS

2.01 MATERIALS – ROLLER BLINDS

A. Shade Cloth: translucent.

B. Staples (For Cloth Window Shades): Nonferrous metal or zinc-coated steel.

C. Stainless Steel: ASTM A167

D. Cords for Blinds: No. 4 braided nylon or No. 4-1/2 braided cotton having not less than 80 kg (175 pounds) breaking strength.

E. Extruded Aluminum: ASTM B221/B221M

F. Colors; See Section 09 06 00, Schedule for Finishes.

2.02 FABRICATION – ROLLER SHADES

A. Fabricate shades to fir measurements of finished openings obtained at site.

B. Cloth Window Shades: Rolling type, constructed of shade cloth mounted on rollers. Shade cloth shall have plain sides, and with hem at bottom to accommodate wood slat. Separate shades are required for each individual sash within opening. Length of shades shall exceed height of window approximately 300 mm (12 inches) measured from head to sill, in addition to material required to make-up hem:

1. Provide rollers with spindles, nylon bearings, tempered steel springs, and all other related accessories required for positive action. Provide rollers of diameter recommended by shade manufacturer. Staple shade cloth to wood rollers to prevent wrinkling or folding, and on line parallel to axis of rollers so that shade will hang plumb. Space staples not over 90 mm (3-1/2 inches) on centers. Use of tacks is prohibited.

2. Wood slats shall be smooth, tapered, and inserted in the bottom him of the shade cloth.

3. Eyelets shall bave clear openings large enough to accommodate cords. Edges of eyelets shall not cut into cloth when set.

4. Cords shall be of sufficient length to permit shades to be drawn to bottom of opening with ends looped and held with cord rings. Attach cords to hems through metal eyelets in center of slats in bottom hems.

PART 3 EXECUTION

3.01 INSTALLATION

A. Cloth Window Shades: Mount window shades on end of face brackets, set on metal gussets, or casing of windows as required. Provide extension face brackets where necessary at mullions.

1. Locate rolers in level position as high as practicable at heads of windows to prevent infiltration of light over rollers.

2. Where extenstion brackets are necessary, on mullions or elsewhere, for alignment of shades, provide metal lugs, and rigidly anchor lugs and brackets.

3. Place brackets and rollers so that shades will not interfere with window and screen hardware.

4. Shade installation methods not specifically described, are subject to approval of COR.

5. Install one roller shade per curtain wall lite and per interior vertically glazed lite. Except spandrel glass.

END OF SECTION 12 24 00

PART1 GENERAL

1.01 SUMMARY

A. Provide seismic restraint in accordance with the requirements of this section in order to maintain the integrity of nonstructural components of the building so that they remain safe and functional in case of seismic event.

B. Definitions: Non-structural building components are components or systems that are not part of the building's structural system whether inside or outside, above or below grade. Non-structural components of buildings include:

1. Electrical Elements: Power and lighting systems; selector and controller panels; fire protection and alarm systems; and telephone and communication systems.

2. Mechanical Elements: Heating, ventilating, and air-conditioning systems; roof drainage piping; sprinkler systems.

1.02 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 QUALITY CONTROL

A. Shop-Drawing Preparation:

1. Have seismic-force-restraint shop drawings and calculations prepared by a professional structural engineer experienced in the area of seismic force restraints. The professional structural engineer shall be registered in California.

2. Submit design tables and information used for the design-force levels, stamped and signed by a professional structural engineer registered in California

B. Coordination:

1. Do not install seismic restraints until seismic restraint submittals are approved by the Resident Engineer.

2. Coordinate and install trapezes or other multi-pipe hanger systems prior to pipe installation.

C. Seismic Certification: Permanent equipments and components are to have Special Seismic Certification in accordance with requirements of section 13.2.2 of ASCE 7, and shall comply with section 13.2.6 of ASCE 7.

1.04 SUBMITTALS

A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:

B. Submit a coordinated set of equipment anchorage drawings prior to installation including:

1. Description, layout, and location of items to be anchored or braced with anchorage or brace points noted and dimensioned.

2. Details of anchorage or bracing at large scale with all members, parts brackets shown, together with all connections, bolts, welds etc. clearly identified and specified.

3. Numerical value of design seismic brace loads.

4. For expansion bolts, include design load and capacity if different from those specified.

C. Submit prior to installation, a coordinated set of bracing drawings for seismic protection of piping, with data identifying the various support-to-structure connections and seismic bracing structural connections, include:

1. Single-line piping diagrams on a floor-by-floor basis. Show all suspended piping for a given floor on the same plain.

2. Type of pipe (Copper, steel, cast iron, insulated, non-insulated, etc.).

3. Pipe contents.

4. Structural framing.

5. Location of all gravity load pipe supports and spacing requirements.

6. Numerical value of gravity load reactions.

7. Location of all seismic bracing.

8. Numerical value of applied seismic brace loads.

9. Type of connection (Vertical support, vertical support with seismic brace etc.).

10. Seismic brace reaction type (tension or compression): Details illustrating all support and bracing components, methods of connections, and specific anchors to be used.

D. Submit prior to installation, bracing drawings for seismic protection of suspended ductwork and suspended electrical and communication cables, include:

1. Details illustrating all support and bracing components, methods of connection, and specific anchors to be used.

2. Numerical value of applied gravity and seismic loads and seismic loads acting on support and bracing components.

3. Maximum spacing of hangers and bracing.

4. Seal of registered structural engineer responsible for design.

E. Submit design calculations prepared and sealed by the registered structural engineer specified above in paragraph 1.3A.

1.05 APPLICABLE PUBLICATIONS

A. The Publications listed below (including amendments, addenda revisions, supplements and errata) form a part of this specification to the extent referenced. The publications are referenced in text by basic designation only.

B. American Society of Civil Engineers (ASCE 7) Latest Edition.

C. International Building Code (IBC) Latest Edition

D. VA Seismic Design Requirements, H-18-8, February 2011

E. National Uniform Seismic Installation Guidelines (NUSIG)

F. Sheet Metal and Air Conditioning Contractors National Association

(SMACNA): Seismic Restraint Manual - Guidelines for Mechanical Systems, 1998 Edition and Addendum

1.06 REGULATORY REQUIREMENT

A. IBC, current edition.

B. Exceptions: The seismic restraint of the following items may be omitted:

1. Equipment weighing less than 400 pounds, which is supported directly on the floor or roof.

2. Equipment weighing less than 20 pounds, which is suspended from the roof or floor or hung from a wall.

3. Gas piping less than 2 ½ inches inside diameter.

4. Piping in boiler plants and equipment rooms less than 1 ¼ inches inside diameter.

5. All other piping less than 2 ½ inches inside diameter, except for automatic fire suppression systems.

6. All piping suspended by individual hangers, 12 inches or less in length from the top of pipe to the bottom of the support for the hanger.

7. All electrical conduits, less than 2 ½ inches inside diameter.

8. All rectangular air handling ducts less than six square feet in cross sectional area.

9. All round air handling ducts less than 28 inches in diameter.

10. All ducts suspended by hangers 12 inches or less in length from the top of the duct to the bottom of support for the hanger.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 CONSTRUCTION, GENERAL

A. Provide equipment supports and anchoring devices to withstand the seismic design forces, so that when seismic design forces are applied, the equipment cannot displace, overturn, or become inoperable.

B. Provide anchorages in conformance with recommendations of the equipment manufacturer and as shown on approved shop drawings and calculations.

C. Construct seismic restraints and anchorage to allow for thermal expansion.

3.02 EQUIPMENT RESTRAINT AND BRACING

A. See drawings for equipment to be restrained or braced.

3.03 MECHANICAL DUCTWORK AND PIPING; ELECTRICAL BUSWAYS, CONDUITS, AND CABLE TRAYS; AND TELECOMMUNICATION WIRES AND CABLE TRAYS

A. Support and brace mechanical ductwork and piping; conduits and cable trays; and telecommunication wires and cable trays to resist directional forces (lateral, longitudinal and vertical).

B. Brace duct and breeching branches with a minimum of 1 brace per branch.

C. Provide supports and anchoring so that, upon application of seismic forces, piping remains fully connected as operable systems which will not displace sufficiently to damage adjacent or connecting equipment, or building members.

D. Piping Connections: Provide flexible connections where pipes connect to equipment. Make the connections capable of accommodating relative differential movements between the pipe and equipment under conditions of earthquake shaking.

3.04 CEILINGS AND LIGHTING FIXTURES

A. At regular intervals, laterally brace suspended ceilings against lateral and vertical movements, and provide with a physical separation at the walls.

B. Independently support and laterally brace all lighting fixtures.

3.05 FACADES

A. Install attachments to structure for all façade materials as shown on construction drawings to ensure strength against applicable seismic forces at the project location.

END OF SECTION 13 05 41

PART 1 GENERAL

1.01 GENERAL REQUIREMENT

A. The plumbing work as on the drawings and described in these Specifications shall be subject to all provisions of the General and Special conditions of the contract documents.

B. The work described on the plans and in these specifications includes all labor, materials, equipment, transportation, testing and startup of the plumbing devices and systems, as outlined in the Summary of Work.

C. The plumbing contractor shall submit the initial bid price to include all costs with overhead and profit to complete the construction described in the plans and specifications through start up and acceptance by the owner.

D. The requirements outlined in the specifications shall be in addition to the plans.

1.02 RESPONSIBILITY

A. The contractor shall be responsible for staffing this division of work with qualified persons experienced in the particular work described herein. All material shall be new and of the best quality. All work shall be installed in a manner so as to result in a completed section of work with a neat orderly appearance. The contractor shall coordinate this work with other portions of the project to result in completely operable systems.

B. The intent of the plans and specifications is to describe the general scope of the plumbing work and plumbing systems. It is not the intent of these plans and specifications to preclude the submittal of alternative methods or materials. Manufacturer's names and catalog numbers are stated to identify the type and quality of the equipment or materials required for the project. The contractor may submit shop drawings and/or technical information on alternative equipment, materials or installation details to accomplish the intent of the plans and specifications. Approval of the alternative equipment, materials or installation details shall not relieve the contractor of any responsibility for complying with the intent of the plans and specifications.

C. The contractor shall construct the project in conformance with the plans, specifications, and related codes and installation standards. Deviations from the plans and specifications shall be requested through a "Request for Information (RFI), Authorization to deviate from the plans and specifications shall be by a written response to the RFI. Verbal understandings do not exist.

1.03 SUMMARY OF WORK

Provide and install the following plumbing fixtures, equipment and systems and/or modifications thereto:

A. All plumbing fixtures shown in the architectural and plumbing plans. Reference the architectural plans for fixture locations and dimensions.

B. All cold water piping, valves, fittings, supports and controls from the point of connection to the yard piping or existing building systems, to each point of use, including service and connection to all water heaters. Reference the site utility plan or site plumbing plan for

connection from the yard piping to the building system piping. Provide and install access panels for each concealed valve.

C. All hot water piping, valves, fittings, insulation, supports and controls from the water heaters to the points of use. Provide circulation pumps with related valves and piping in the case of re-circulated systems. Provide and install access panels for each concealed valve.

D. All waste piping, fittings and supports from the point of connection at each fixture to the connection with the onsite waste collection system including indirect waste fittings and clean outs.

E. All vent piping, fittings and supports from the points of connection with the waste piping through the vent terminations above the roof. Vent piping is required to penetrate through the exterior wall then up 6" above the roof. Roof penetrations are not permitted.

F. All fuel gas piping fittings, supports, and painting exposed piping from gas meter to each point of use. Provide shut off valves at the entry into each building. Provide UL listed connectors and shut off valves at each gas fired appliance. Provide a dielectric union, 6" above grade at the entry into each building, for all underground metallic gas piping.

G. All rainwater piping fittings and supports from gutters and roof decks to connection to site storm water piping. Provide site storm water piping and related fixtures when shown on the plans. All trench drains, drain inlets and piping related to the apparatus bays.

H. All site piping, trenching, backfill, fittings, back flow prevention valves, isolation valves and boxes with covers. Provide H-20 composite material or concrete boxes with covers for in ground installations.

I. All valves, including pressure reducing, ball, check, gate and globe.

J. All water heaters, including flues and combustion air provisions for gas or oil fueled units, and safety valve drain piping extended through an exterior wall. Provide isolation valves on both cold water and hot water connections to the water heater. Provide mixing valves, and expansion tanks for each water heater.

K. All floor drains, trap primers and related piping from nearest lavatory, sink or flush valve to the floor drain.

L. All clean outs, including floor, wall and grade types.

1.04 DIVISION 220000 RESPONSIBILITIES

A. Assume responsibility for the installation and proper functioning of the plumbing systems in the entirety. Furnish and install all low voltage (24 volts or less) systems. Providing disconnects, contactors, stop/start and protective devices, for switching power circuits is the responsibility of the electrical contractor. Provide electric water heaters with contactors and controls.

B. Coordinate all electric power and control requirements with the electrical contractor to assure complete, operable systems.

C. The electrical voltage and phase designation for plumbing equipment is based on a commonly available voltage and phase for equipment listed in the Plumbing Equipment Schedule on the plans, and coordinated with the electrical design. Any revision in the

voltage and phase configuration requested by the contractor shall be paid for in total by the contractor.

1.05 DIVISION 260000 ELECTRICAL RESPONSIBILITIES

A. Furnish and install all raceways, conductors, disconnects, contactors, start/stop and protective devices necessary for electrical power supply and switching, all control wiring conduit, and line voltage control wiring to all motors and equipment.

1.06 WORK NOT DESCRIBED

A. Include all minor work not typically shown or specified, as required to produce complete, operational, plumbing systems.

1.07 RULES AND REGULATIONS

All work and materials shall comply with the latest rules and regulations of:

A. The California Building Code, California Code of Regulations (CCR), Title 24, Part 2

B. The California Plumbing Code, CCR Title 24, Part 5, including all related International Association of Plumbing and Mechanical Officials (IAPMO), installation standards.

C. The California Energy Code, CCR, Title 24, Part 6

D. The California Green Code, CCR, Title 24, Part 11

E. The National Fuel Gas Code, NFPA 54.

Strict compliance with the latest adopted codes and regulations is mandatory.

1.08 SITE EXAMINATION

Thoroughly examine the site and verify the actual work conditions. No extra compensation will be allowed for expenses due to failure to discover site conditions which affect the work.

1.09 PLAN AND SPECIFICATIONS ACCURACY

A. The plans and specifications are diagrammatic in nature and do not represent exact locations or distances except where specifically noted. Include all required offsets, bends, and other special fittings. Coordinate with the other building trades and make all modifications required at no extra costs.

B. The plans showing existing plumbing systems in areas to be remodeled show the systems as illustrated in the best available as-built documents and on limited field inspection of the site by the Engineer. Inspect and field-verify actual existing conditions. The plans reflect the desired new configurations. Include all required modifications to implement the new configuration at no extra cost.

1.10 SUBSTITUTIONS AND SUBMITTALS

A. Provide six submittals of all equipment and materials described in the equipment schedules as shown on the plans and exposed plumbing materials. Provide wiring and/or piping diagrams for all control systems. Submittal data shall be sufficient to verify complete compliance with the plans and specifications. Provide complete data even if using materials specified. Submittals shall conform to the requirements of the General Conditions and be submitted in one package to expedite the review process.

B. Provide shop drawings for all fabricated equipment.

C. Submit all proposed deviations from the plans or specifications in material type, size, configuration, quantity, or routing, through a Request for Information (RFI) for Engineer's review. Requested deviations shall be accepted, modified or denied by a written response to the RFI. Verbal understandings do not exist.

D. Submittal review is for the purpose of determining general conformance with the intent of the plans and specifications, the favorable review of part of all or the submittal does not relieve the contractor of any responsibility for compliance with the contract documents.

E. The contractor is responsible for reviewing plumbing equipment and fixture sizes, at the time of submittal, coordinating sizes with all other construction crafts on the project and for submitting a (RFI) through the general contractor to resolve any interferences.

1.11 AS BUILT DRAWINGS

A. Provide and keep up-to-date, a complete set of prints, which shall be regularly corrected, and shall show every change from the original contract drawings, include change orders. Deliver as-built set to the Engineer upon project completion and acceptance. Include dimensions, exact locations, and invert elevations of all exterior and interior underground piping.

1.12 DEMOLITION AND REMOVAL

A. Demolish and remove from the site all portions of the plumbing systems not specifically required for the intended operation of the systems and equipment described herein.

B. Remove all equipment and materials not required for continuing operation and dispose of it in an environmentally accepted manner. The owner shall have the right to take possession of any materials and equipment they deem suitable for other use.

1.13 QUALITY

A. Install only new materials. No used materials, other than equipment shown as "Existing Relocate" (ER), may be installed.

B. Do not install materials received in a damaged in a damaged condition or damaged at job-site. Return all damaged components. Repair of minor and incidental damage, if first approved by Engineer and manufacturer, is acceptable.

1.14 EQUIPMENT SLEEVES, INSERTS AND ANCHORS

A. Install all sleeves, inserts, anchorages, etc. required for this Division and which are embedded in work of other trades.

1.15 FOUNDATIONS AND SUPPORTS

A. Install equipment on concrete foundation pads anchored to the slab floor, if shown on the Plans, listed in the Specifications, or recommended by the manufacturer. Anchor equipment to the pad to meet normal load and seismic requirements.

B. Securely attach all equipment, piping, etc. to the building as detailed in the related construction code, or as described in these plans and specifications. Allow for expansion and contractions.

1.16 CUTTING AND PATCHING

A. Make all cuts and patches required to install the work according to good construction practice. Modification of structural building components shall be made only with the Engineer's specific written approval.

B. Do not cover concealed piping or other systems installed under this Division until inspected and approved by Engineer and all other required construction inspectors. If systems are covered before inspection and approval, Contractor will remove covering and replace after inspection at no extra cost.

1.17 TRAINING FOR OPERATION AND MAINTENANCE

A. After all plumbing systems have been tested and accepted, provide at least 4 hours training to the Owners maintenance crew. Cover operating and maintenance procedures for all plumbing systems and components installed.

B. Submit four (4) bound sets of Operations and Maintenance (O&M) Manuals to the Owner. Submit a draft copy to the Engineer for approval prior to issuing the final copies. The O&M Manuals shall include, at a minimum:

All available manufacturer's O&M literature, parts lists, etc.

Wiring diagrams

Controls diagrams of all pneumatic, electrical, and electronic control systems. Written sequence of operations of all controls.

Any unusual or unique system O&M procedures not covered by manufacturer's literature.

Summary maintenance schedule showing maintenance intervals as recommended by the manufacturers,

A copy of the manufacturers warranties.

The Contractor is required to meet the guarantee requirements of the General Conditions.

1.18 SEISMIC CONSTRUCTION

A. Provide seismic and sway bracing for plumbing components and piping as shown on the plans.

1.19 TESTING

A. Perform pressure tests on all plumbing systems in conformance with the UPC. Failure of any pressure test requires repair of the nonconforming section and retesting until the test criteria is satisfied. Failure of a pressure test in gas piping requires the replacement of the nonconforming section of pipe. Re-test the repaired/replaced section of piping to acceptance. Service test all systems to assure the function and equipment. Provide an operational test on each system.

B. Pressure test requirements:

1. Domestic water piping - Hydrostatic or air test to 50 psi or line pressure, which ever is greater for a period of not less than 15 minutes with no drop in pressure.

2. Waste and Vent piping - Hydrostatic test waste piping to 10 feet of head above the highest fixture connection, for a period of not less than 15 minutes with no drop in liquid level, and no apparent leaks at any joints or connections. Hydrostatic test vent piping to the top of the lowest connected vent through roof, for a period of not less than 15 minutes, with not drop in liquid level, and no apparent leaks at any joints or connections.

3. Gas piping - Air test to 10 psi for a period of not less than 30 minutes for systems operating at less than 14"W.C., and 60 psi for a period of not less than 30 minutes for systems operating at 14"W.C. or greater, with no drop in pressure.

1.20 WARRANTY

A. Provide one year unconditional warranty on all plumbing equipment and systems.

PART 2 PRODUCTS

2.01 WATER CLOSETS

A. Standard and Accessible Type: Wall mounted flush valve model, vitreous china elongated siphon jet with 1-1/2" top spud, 1.6/1.1 gallon dual flush valve and seat, color, white. Handicapped water closet shall have a minimum seat height of 17" and a maximum seat height of 19".

2.02 LAVATORIES AND SINKS

A. Standard and Accessible Type Lavatories: Wall mounted vitreous china with 4" faucet centers, drilled for concealed carrier arms, 3/8" hot and cold water angle stops, 1-1/4" P trap, lever handle faucets, color white. Provide anchorage in in conformance with the plan details, if shown, or the manufacturers recommendations, if details are not shown in the plans.

B. Service Sink: Floor mounted precast terrazzo with SS caps on all curbs, faucet, hose and bracket, gasket and mop bracket. Provide non-removable vacuum breaker on the faucet.

C. Stainless Steel sinks: Minimum 20 ga. Self riming, punched to match the faucet set.

2.03 FLOOR DRAINS

A. Lacquered cast iron two piece body with double drainage flange, weep holes, reversible clamping collar and round, adjustable nickel-bronze heel proof strainer, for cast iron waste systems. Provide with trap primer connection.

B. Provide with trap primer connection.

2.04 DOMESTIC WATER PIPING

A. Inside building, above floor - Type "L" hard copper tubing, conforming to ASTM B-88, with wrought copper fittings and 95/5 solder or pressed fitting joints. Type "M" hard copper may be used for un-pressurized drain piping. P.E. PEX piping may be used for branch piping with brass connectors, in concealed locations.

B. Beneath floor slab, below grade - Type K, copper tubing conforming to ATM B-88, with wrought copper fittings and 95/5 solder or pressed fitting joints, double wrapped with 20 mil P.E. pipe wrap. P.E. PEX listed piping is accepted for below slab on grade, with brass connectors. All brass connectors to be double wrapped with 20 mil P.E. pipe wrap. PEX piping intended for human consumption, located below grade is required to be sleeved in ductile iron or polypropylene pipe.

C. Outside building - Schedule 40 PVC pipe conforming to ASTM D1785, PVC socket fittings and solvent cemented joints.

2.05 SANITARY SOIL, WASTE AND VENT AND RAINWATER PIPING

A. Soil and waste piping, vent and rainwater piping above and below grade - Acrylonite-Buladiene-Styrene (ABS), conforming to ASTM D2661-85a, with solvent cemented fittings, or Poly Vinyl Chloride (PVC), conforming to ASTM D2665-85a, with solvent cemented fittings. Use only listed adapters for connection to non-plastic pipe. Provide standard weight cast iron piping with no hub connectors for all vertical waste and rainwater piping within walls, above grade. Type DWV CU with solder fittings to be used for above grade vent piping in exposed locations, installed in the south end of the apparatus bays.

B. Sanitary sewer and drain piping, outside of building perimeter, below grade, Poly Vinyl Chloride (PVC) SDR 35, conforming to ASTM D3034 with gasket joints. Sand bedded and backfill with # 2 base, compacted to 95% of native soil compaction. Minimum cover 2 feet.

2.06 FUEL GAS PIPING

A. Gas piping within the building envelope - Schedule 40 black steel with threaded fittings for 2" and smaller pipe, and flanged fittings for 2 ½" and larger pipe.

B. Gas piping below grade and outside of the building perimeter, NFPA approved PE piping or Schedule 40 black steel with continuous extruded plastic coating, or wrapped with two layers of 20 mil. P.E. pipe wrap. Minor damage to extruded plastic coating, fittings and bare ends shall be repaired with two layers of 20 mil P.E. pipe wrap.

2.07 INSULATION

A. All concealed tempered water (120 F.) and hot water (140 F.) piping shall be insulated with; a minimum 1" thick P.E. insulation for ½" and 3/4" pipe size, 1 ½" thick P.E. insulation for 1" and larger pipe.

B. All exposed tempered water (120 F) and hot water (140 F) piping shall be Insulated with; a minimum 1" thick sectional molded fiberglass insulation with kraft jacket, 1 ½" thick sectional molded fiberglass insulation with kraft jacket.

C. All cold water piping, above kitchens, and within the building insulation envelope, minimum 3/4" thick P.E. insulation.

D. All cold water piping, above grade and outside the building insulation envelope shall be insulated with a minimum 3/4" thick P.E. insulation.

E. All piping located outside of the building and above grade shall be covered with a minimum 24 ga aluminum jacket.

2.08 PIPE HANGERS AND SUPPORTS

A. Hangers for 1/2" and 3/4" piping with wood construction may be preformed wire type.

B. Hangers for 1" to 4" and cold pipe size 6" and over shall be adjustable wrought steel clevis or trapeze hangers. Provide copper plated hangers for copper piping.

C. Provide steel hanger rods, threaded at both ends, threaded one end or continuous threaded.

2.09 FLASHING

A. Steel flashing: 26 gauge galvanized steel.

B. Caps: Steel 22 gauge minimum.

2.10 SLEEVES

A. Pipe through floors - Form with 18 gauge galvanized steel.

B. Pipes through walls, fire proofing, footings, and potentially wet floors – Form with 18 gauge galvanized steel.

2.11 VALVE CONNECTIONS

A. Provide valves suitable to connect to adjoining as specified for pipe joints. Use pipe size valves.

B. Thread pipe sizes 2 inches smaller. Flange or mechanical joints for 2 ½" and larger.

C. Solder or thread to solder adapters for copper tubing.

2.12 CHECK VALVES

A. Bronze, swing disc, solder or screwed ends.

B. Swing check for horizontal installation only. Provide valve listed for vertical installations, for vertical positions.

C. Iron body, bronze trim, swing disc, renewable disc and seat, flanged ends.

2.13 HOSE BIBBS

A. Bronze or red brass, replaceable hexagonal disc, hose thread spout, chrome plated where exposed.

B. Chrome plated, polished bronze, wall plate, recessed box, hose thread spout, and removable key.

C. Provide non-removable vacuum breaker on each hose bibb.

2.14 BALL VALVES

A. Bronze body, bronze trim, solder or screwed ends. Provide ball valves for all isolation service.

2.15 GASS COCKS

A. Bronze body, bronze tapered plug. Non-lubricated, teflon packing, screwed ends.

2.16 BACK FLOW PREVENTERS

A. Bronze body construction, modular design with replaceable seats, ball type test cocks, and quarter turn, full port ball shutoff valves.

2.17 PRESSURE RATINGS

A. Unless otherwise indicated, use valves suitable for 125 minimum psig, WSP, and 4500 F. and 200 psig, and 2500 F.

2.18 VALVE OPERATORS

A. Provide suitable handwheels for gate, globe or angle valves.

B. Provide loose key operator for all hose bibs.

2.19 CLEANOUTS AND CLEANOUT ACCESS COVERS

C. Provide caulked or threaded type extended to finished floor or wall surfaces. Ensure ample clearance at cleanout for routing of drainage system.

D. Floor cleanout access covers in unfinished areas shall be round with nickel bronze scored frames and plates. Provide round access covers in finished areas with depressed center section to accommodate floor finish. Wall cleanouts to have plated caps.

E. Grade cleanout, provide with cleanout plug and 16" x 16" x 5" deep concrete pond, flush with grade.

2.20 WATER HAMMER ARRESTORS

A. Fit water supply to each fixture or group of fixtures with air chamber. Provide air chambers same size as supply line of 3/4" minimum, and minimum 18" long.

2.21 OIL/WATER SEPARATOR

A. Recessed concrete two compartment, with concrete traffic lid, two 24" man holes and sample box. Provide with H20 rated rings and grates.

2.22 SAND TRAP

A. Concrete drain inlet with H20 grate.

2.23 WATER HEATER

A. Electric Type: Glasslined Tank, R-16 insulation, anode rod protection, automatic thermostat, set at 1100F, UL listed.

B. Fuel Gas Fired. Tankless, automatic thermostat set at 140 F, UL Listed.

Listed for fuel type (natural gas or LPG), supplied.

1. Provide PVC vent and combustion air piping.
2. Provide with 125 psig rated pressure relief valves.
3. Provide condensate discharge through Calcium Carbonate neutralizer, to an indirect connection.

C. Install water heaters in conformance with the UL listing.

D. Install water heaters located in ground floor garages or warehouses on a minimum 6" high concrete pad.

2.24 HOT WATER CIRCULATION PUMP

A. Closed centrifugal impeller, inline bronze fitted with motor, plumbing seal and flanged pipe connections. Provide aguastat control.

PART 3 EXECUTION

3.01 PIPING CONNECTIONS

A. Threaded joint steel piping up to and including 2". Flange or mechanical joint for 2 ½" diameter and larger.

B. Make threaded joint with full cut standard taper pipe threads with teflon tape or teflon-based pipe dope applied to threads only.

C. Steel to ABS of PVC connections shall be made with listed adapters.

D. Make connections to equipment with unions or flanges.

E. Provide non-conductive di-electric union type connections wherever joining dissimilar metals in open systems, such as copper to steel. Brass fittings and valves are acceptable with either copper or steel systems. Provide di-electric union 6" above grade on all metal piping which extends down below grade.

3.02 PIPING ROUTE AND GRADES

A. Route piping in orderly manner and maintain proper grades. Install install all cold and hot water piping concealed in the attic or ceiling space, except as noted in the plans. Run exposed piping parallel to walls.

B. On closed systems, equip low points with 3/4" drain valves and hose nipples. Provide collecting chambers and high capacity float operated automatic air vents, at high points within the system.

C. Make horizontal reductions in water pipes with eccentric reducing fittings installed to provided drainage and venting.

D. Make horizontal sanitary sewer drainage piping 1/4" per foot minimum, within the building perimeter, except as noted on plans.

E. Grade horizontal rain water drainage piping 1/4" per foot minimum, within the building perimeter, except as noted on plans.

F. Install piping to allow for expansion and contraction without stressing pipe or equipment connected.

G. Provide clearance for installation of insulation and for access to valves, air vents, drains and unions.

H. Install same type piping material specified for inside building to 8' outside building.

3.03 PIPE HANGERS AND SUPPORTS

A. Support horizontal copper piping as follows:

Nominal Pipe Size(in.)	Distance Between Supports (ft.)	Hanger Rod Diameter(in.)
½ to 1 1/2"	6	3/8
2" to 4"	10	3/8

B. Support horizontal steel piping as follows:

Nominal Pipe Size(in.)	Distance Between Supports (ft.)	Hanger Rod Diameter(in.)
3/4" and smaller	10	3/8
1" to 4"	12	3/8

Support all horizontal ABS and PVC piping on cable trays.

C. Install hangers to provide minimum 1/2" clear space between finished covering and adjacent work.

D. Place a hanger within one foot of each horizontal elbow.

E. Use hangers which are vertically adjustable 1-1/2" minimum after piping is erected.

F. Support horizontal soil pipe near each hub, with 5' maximum spacing between hangers.

G. Support vertical piping at every other floor. Support vertical soil pipe at each floor at hub.

H. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

I. Where practical support riser piping independently of connected horizontal piping.

3.04 PAINTING

A. Prime coat and finish paint to match building, all exposed pipe, steel hangers,a nd supports. Hangers and supports, located in crawl spaces, pipes, shafts and suspended ceiling are not considered exposed. Label all gas pipes with yellow "GAS" labels every 25 feet.

3.05 FLASHING

A. Flash vents and soil pipes projecting 6" minimum above finished roof surface. Provide roof jacks, storm collars and seal weather tight.

3.06 SLEEVES

A. Set sleeves in position in advance of concrete work. Provide suitable reinforcing around sleeves.

B. Extend sleeves through potentially wet floors, one (1) inch above finished floor level. Caulk sleeves full depth and provide floor plate.

C. Where piping passes through floor, ceiling or wall, close off space between pipe of duct and construction with 2-hour non-combustible insulation. Provide tight fitting metal caps on both sides and caulk.

D. Install chrome plate escutcheons where piping passes through finished surfaces.

3.07 VALVES

A. Install valves with stems upright or horizontal, not inverted.

B. Ball valves for shut-off and isolating service, to isolate equipment, part of systems or vertical risers.

C. Install back flow prevention valves at the service fill connection of each piping system or component requiring a water service protection.

D. Provide and install access covers for all concealed valves. Provide fire rated access covers for rated walls, floors and ceilings.

3.08 PENETRATIONS THROUGH FIRE-RATED WALLS

A. Seal all pipe penetrations through rated walls with a UL approved sealant rated at same exposure level as the wall.

3.09 PLUMBING SYSTEMS

A. Bury outside water and drainage pipe minimum 2'. Provide one foot minimum vertical and horizontal offset of water and sewer piping, installed in a joint trench.

B. Lubricate cleanout plugs with mixture of graphite and linseed oil. Prior to building turnover, remove cleanout plugs, re-lubricate and re-install using only enough force to ensure permanent leakproof joint.

C. Install vacuum breakers on plumbing lines where contamination of domestic water may occur and all hose bibbs and flush valves.

D. Install gas piping in open or ventilated spaces. Pitch lines and provide drip legs for condensation collection points.

3.10 PLUMBING FIXTURES AND TRIM

A. Install each fixture with trap easily removable for servicing and cleaning. At completion, thoroughly clean plumbing fixtures and equipment.

B. Provide chrome plated rigid or flexible supplies to fixtures with screw driver stops, reducers and escutcheons.

C. Install wall mounted lavatories and water closets, with approved wall carriers, model to suit installation. Reference architectural plans for mounting locations and heights.

D. Install hose and faucet connections with vacuum breakers.

E. Install water heaters with T&P safety valve, pipe drain from T&P valve through outside wall. Provide and install two seismic safety straps on all tank type water heaters, one at one third height and one at two thirds height.

F. Provide lever handles on each manually operated lavatory and sink with a maximum 5 lb. Operating force.

3.11 PIPING INSULATION

A. Install piping insulation in conformance with the manufacturers instructions. Do not insulate valve bodies. Install insulation in a manner which will prevent crushing or collapsing the insulation.

END OF SECTION 22 00 00

PART 1 GENERAL

1.01 GENERAL REQUIREMENT

A. The mechanical work as on the drawings and described in these Specifications shall be subject to all provisions of the General and Special conditions of the contract documents.

B. The work described on the plans and in these specifications includes all labor, material, equipment, transportation, testing and startup of the mechanical devices and mechanical systems for the scope described in the Summary of Work.

C. The mechanical contractor shall include in the bid, all costs including overhead and profit to complete the project through start up and acceptance by the owner. The cost of complying with all applicable codes shall be included in the bid.

D. The requirements outlined in the specifications shall be in addition the plans.

1.02 RESPONSIBILITY

A. The contractor shall be responsible for staffing this division of work with qualified persons experienced in the particular work described herein. All material shall be new and of the best quality. All work shall be installed in a manner so as to result in a completed section of work with a neat orderly appearance. The contractor shall coordinate this work with other portions of the project to result in completely operable systems.

B. The intent of the plans and specifications is to describe the general scope of the mechanical work and mechanical systems. It is not the intent of these plans and specifications to preclude the submittal of alternative methods or materials. Manufacturers names and catalog number are stated to identify the type and quality of the equipment or materials required for the project. The contractor may submit shop drawings and/or technical information on alternative equipment, materials or installation details to accomplish the intent of the plans and specifications. Approval of the alternative equipment, materials or installation details shall not relieve the contractor of any responsibility for complying with the intent of the plans and specifications. The contractor shall submit four copies of the manufacturers technical information, shop drawings, and/or written description of alternative methods for each item described by manufacturers name and catalog number and for each component, equipment, material or installation detail required.

1.03 SUMMARY OF WORK

Provide and install the following plumbing fixtures, equipment and systems and/or modifications thereto:

A. All air handling systems including: makeup air, exhaust air, and circulating air systems, and blowers, economizers, ductwork, duct insulation, supports and anchors, dampers, louvers, grills and registers.

B. All warm air space heating equipment except electric unit and baseboard heaters, including gas fired furnaces, combustion air ducts to each gas or oil fired furnace, vents and condensate drains.

C. All system controls, including: temperature and schedule controls. Provide and install all low voltage components and wiring.

D. All air system balancing. Provide and install all volume dampers required to achieve system balance.

E. Mechanical system leak testing, to be completed by a HERS Rater.

1.04 DIVISION 23 00 00 RESPONSIBILITIES

A. Assume responsibility for the installation and proper functioning of the HVAC systems in the entirety.

B. Provide and install all low voltage (24vac) wiring and control components. Line voltage (120, 208, 240 and 480 vac) wiring, conduit, disconnects, starters, stop/start devices and protective devices required for switching power circuits are the responsibility of the electrical contractor.

C. Provide and install 24 volt AC coil interlocking relays required to control associated transfer or exhaust fans. Provide transformers as needed. Provide and install 24 volt AC power to each smoke fire damper, from the mechanical unit. Provide transformers as needed.

D. The electrical voltage and phase designation for mechanical equipment is based on a commonly available voltage and phase for equipment listed in the Mechanical Equipment Schedule on the plans, and coordinated with the electrical design. Any revision in the voltage and phase configuration requested by the contractor shall be paid for in total by the contractor.

E. Coordinate all electric power and control requirements with the electrical contractor to assure complete, operable systems.

1.05 DIVISION 260000 ELECTRICAL RESPONSIBILITIES

A. Furnish and install all raceways, conductors, disconnects, starters, stop/start and protective devices, necessary for electrical power supply and switching, all control wiring conduit, and line voltage control devices and wiring to all motors and equipment.

1.06 WORK NOT DESCRIBED

A. Include all minor work not typically shown or specified, as required to produce complete, operational, mechanical systems.

1.07 RULES AND REGULATIONS

All work and materials shall comply with the latest rules and regulations of:

A. The A. California Building Code (CBC), Title 24, Part 2

B. California Mechanical Code (CMC),Title 24, Part 4.

C. California Energy Code, Title 24, Part 6

D. National Electric Code (NEC),Title 24, Part 3

E. All applicable National Fire Protection Association (NFPA) codes.

Strict compliance with the latest adopted codes and regulations is mandatory.

1.08 SITE EXAMINATION

A. Thoroughly examine the site and verify the actual work conditions. No extra compensation will be allowed for expenses due to failure to discover site conditions which affect the work.

1.09 PLAN AND SPECIFICATIONS ACCURACY

A. The plans and specifications are diagrammatic in nature and do not represent exact locations or distances except where specifically noted. Include all required offsets, bends, and other special fittings. Coordinate with the other building trades and make all modifications required at no extra costs.

1.10 SUBSTITUTIONS AND SUBMITTALS

A. Provide six submittals of all equipment and materials described in the equipment schedules as shown on the plans and exposed plumbing materials. Provide wiring and/or piping diagrams for all control systems. Submittal data shall be sufficient to verify complete compliance with the plans and specifications. Provide complete data even if using materials specified. Submittals shall conform to the requirements of the General Conditions and be submitted in one package to expedite the review process.

B. Provide shop drawings for all fabricated equipment.

C. Submit all proposed deviations from the plans or specifications in material type, size, configuration, quantity, or routing, through a Request for Information (RFI) for Engineer's review. Requested deviations shall be accepted, modified or denied by a written response to the RFI. Verbal understandings do not exist.

D. Submittal review is for the purpose of determining general conformance with the intent of the plans and specifications, the favorable review of part of all or the submittal does not relieve the contractor of any responsibility for compliance with the contract documents. The contractor is responsible for reviewing the size of submitted equipment with respect to the space intended for installation of the equipment, at the time of equipment submittal. All interferences shall be reported through a Request for Information (RFI).

1.11 AS BUILT DRAWINGS

A. Provide and keep up-to-date, a complete set of prints, which shall be regularly corrected, and shall show every change from the original contract drawings, include change orders. Deliver as-built set to the Engineer upon project completion and acceptance.

1.12 SEISMIC CONSTRUCTION

A. All devices and system components shall be anchored using seismic restraint systems and devices, sized to match component weights. SMACNA seismic restraint systems may be used in place of the restraints detailed in the plans.

1.13 QUALITY

A. Install only new materials. No used materials, other than equipment shown as "Existing Relocate" (ER), may be installed.

B. Do not install materials received in a damaged in a damaged condition or damaged at job-site. Return all damaged components. Repair of minor and incidental damage, if first approved by Engineer and manufacturer, is acceptable.

1.14 EQUIPMENT SUPPORTS, SLEEVES, CHASES, INSERTS AND OPENINGS

A. Install all sleeves, inserts, anchorages, etc. required for this Division and which are embedded in work of other trades.

1.15 TESTS

A. Upon completion of the mechanical work, all mechanical systems shall be performance tested at one time to the Engineer's satisfaction. No system will be accepted until it proves satisfactory in every detail. Provide engineer 48 hours notice before testing.

1.16 FOUNDATION AND SUPPORTS

A. Install equipment on concrete foundation pads anchored to the slab floor, if shown on the Plans, listed in the Specifications, or recommended by the manufacturer. Anchor equipment to the pad to meet normal load and seismic requirements.

B. Securely attach all equipment, ductwork, etc. to the building as detailed in the related construction code, or as described in these plans and specifications.

Allow for expansion and contractions.

1.17 CUTTING AND PATCHING

A. Make all cuts and patches required to install the work according to good construction practice. Modification of structural building components shall be made only with the Engineer's specific written approval.

B. Do not cover concealed piping, ductwork, or other systems installed under this Division until inspected and approved by Engineer and all other required construction inspectors. If systems are covered before inspection and approval, Contractor will remove covering and replace after inspection at no extra cost.

1.18 TRAINING, OPERATION AND MAINTENANCE

A. After all mechanical systems have been tested and accepted, provide at least 4 hours training to the Owners maintenance crew. Cover operating and maintenance procedures for all mechanical systems and components installed.

B. Submit four (4) bound sets of Operations and Maintenance (O&M) Manuals to the Owner. Submit a draft copy to the Engineer for approval prior to issuing the final copies. The O&M Manuals shall include, at a minimum:

1. All available manufacturer's O&M literature, parts lists, etc.
2. Wiring diagrams
3. Controls diagrams of all pneumatic, electrical, and electronic control systems.
4. Written sequence of operations of all controls.
5. Any unusual or unique system O&M procedures not covered by manufacturer's literature.
6. Summary maintenance schedule showing maintenance intervals as recommended by the manufacturers.

PART 2 PRODUCTS

2.01 Heating and cooling equipment certification

A. Equipment shall be certified in conformance with CCR, Title 24. All fuel fired equipment shall be UL listed.

2.02 Duct Furnaces

A. Natural draft, horizontal duct furnace with natural gas burners, electronic pilot.

B. Provide self-contained, packaged, factory assembled, and pre-wired unit consisting of cabinet, heat exchanger, burner and controls.

C. Stainless steel heat exchanger and burners with 10 year warranty, acceptable for type "B" venting. Performance as shown on plans.

D. AFUE of 80%.

E. Make, model and size as shown on plans.

F. Furnace vents - Type "B" UL listed double wall gas vent with concentric wall termination kits. Roof penetrations are not permitted.

G. Gas valves - 2 stage to allow operation at 50% or 100% of unit rating.

2.03 Upflow Furnaces

A. Natural draft furnace with natural gas burners and electronic pilot.

B. Condensing furnace, as listed in the Mechanical Equipment Schedules.

C. Self-contained, packaged, factory assembled and prewired unit consisting of:

1. All welded cabinet.
2. Four pass aluminized steel heat exchanger with 20 year warranty.

3. Burner and burner control with draft and combustion airflow safety switches.
4. Controls with all accessory connections wired to terminal board.
5. Multiple speed permanent split capacitor (PSC) motor.
6. Furnace vents shall be vented through the side wall. Roof penetrations are not permitted.
7. Provide duct flanges and filter racks.
8. Provide economizers where shown with the furnaces in the Mechanical Equipment Schedules.
9. Make, model and size as shown on plans.

2.04 DOMESTIC WATER PIPING

A. Inside building, above floor - Type "L" hard copper tubing, conforming to ASTM B-88, with wrought copper fittings and 95/5 solder or pressed fitting joints. Type "M" hard copper may be used for un-pressurized drain piping. P.E. PEX piping may be used for branch piping with brass connectors, in concealed locations.

B. Beneath floor slab, below grade - Type K, copper tubing conforming to ATM B-88, with wrought copper fittings and 95/5 solder or pressed fitting joints, double wrapped with 20 mil P.E. pipe wrap. P.E. PEX listed piping is accepted for below slab on grade, with brass connectors. All brass connectors to be double wrapped with 20 mil P.E. pipe wrap. PEX piping intended for human consumption, located below grade is required to be sleeved in ductile iron or polypropylene pipe.

C. Outside building - Schedule 40 PVC pipe conforming to ASTM D1785, PVC socket fittings and solvent cemented joints.

2.05 DUCTWORK

A. Use galvanized steel for all ductwork except the last 10 feet connected to a register, grill or louver. Use thicknesses, seams and stiffening procedures as recommended in SMACNA low-pressure duct standards. Rectangular duct may be substituted for round duct, or vice versa, if the Contractor first submits revised duct layouts showing all new duct sizes to the Engineer. New duct sizes shall provide equivalent friction drop rates as duct sizes as shown on plans.

B. Use flexible ducting to connect terminal units to the sheet metal ducts. Flexible ducts to be 10 feet long maximum. Flexible ductwork to be steel wire heliz reinforced polyester, wrapped with 1-1/2" fiberglass insulation and reinforced mylar or vinyl jacket. UL smoke/flame rating of 50/25 or less and be listed as Class 0 or Class 1 and be so labeled.

C. Provide flexible duct connecting the exhaust collar at the mezzanine floor to each exhaust fan. Flexible duct to conform with 2.05 B. above.

D. Use air foil duct turns at all rectangle tees and elbows.

E. Provide turning vanes at all rectangular miter bends.

F. Use metal straps or angle iron to support ductwork, space and size supports as shown on plans or SMACNA standards.

G. Provide R-8 fiberglass insulation with kraft or foil cover around all supply and return ductwork, located in vented attic spaces and un-conditioned spaces. Exhaust ducts may be un-insulated.

H. Lap metal ducts in direction of air flow. Hammer down edges and slips to leave smooth duct interior.

I. Construct tees, bends, and elbows with radius of not less than 1-1/2 times diameter of duct on center lines.

J. Increase duct sizes and construct square to round fittings, not exceeding 150 divergence wherever possible. Maximum divergence upstream of equipment to be 300 and 400 convergence downstream.

K. Rigidly construct metal ducts with joints mechanically tight, substantially air tight, braced and stiffened so as not to breathe, rattle, vibrate or sag. Caulk duct joints and connections with sealants as ducts are being assembled.

L. Construct plenums of galvanized panels jointed by standing seams on outside of casing riveted or bolted on approximately 12" centers. Reinforce with steel angles and provide diagonal bracing. Tightly fit at apparatus and seal with sealant.

M. Seal all ductwork joints and seams, air tight with materials conforming to UL 181, 181A and 181B.

2.06 FLASHING

A. Flash and counterflash where mechanical equipment passes through weather- or waterproofed walls, floors and roofs.

2.07 DAMPERS

A. Provide multi-blade, opposed blade dampers for outside air ducts with stainless steel shafts and teflon bearings.

B. Provide single blade dampers for duct sizes to 18" diameter.

C. Provide multi-blade, parallel action gravity balanced backdraft damper with blades, a maximum of 6" width having felt or flexible vinyl sealing edges, linked together in a rattle-free manner and with adjustment device to permit setting of varying differential static pressure.

D. Provide a radial opposed balancing blade damper for each supply return and exhaust grill, not directly connected to an exhaust fan. The opposed blade damper shall be equipped with a quadrant operator located outside the duct.

E. Provide 24v normally closed motor driver damper for outside air and normally open motor driven return air damper, or fabric blade draft damper faced in the direction of air flow.

F. Use outside lever operated branch volume dampers. Provide accessible operators with linkages and access plates for dampers in inaccessible locations.

G. Use extraction dampers at each appropriate diffuser take off.

H. Provide equalizing grids on supply diffusers.

2.08 FLEXIBLE CONNTECTIONS

A. Fabricate of neoprene coated flame proof fabric approximately 2" wide, tightly crimped into metal edging strip and attach ducting to equipment by screws or bolts at 6" intervals.

2.09 DIFFUSERS, REGISTERS, AND GRILLES

A. Base air outlet application on space noise level of NC 35 maximum.

B. Provide supply outlets with sponge rubber seal around edge.

C. Provide baffles to direct air away from walls, columns, or other obstructions within radius of diffuser operation.

D. Ceiling diffusers for all tee-bar ceilings to be white steel, with volume dampers, and adjustable grids. Include UL listed ceiling diffusers in 1 hour rated ceilings. All diffusers shall be louver faced.

E. Ceiling diffusers for all gypsum board ceilings to be white square steel, with adjustable center cones. Include volume dampers. Include UL listed ceiling dampers and insulation pads on diffusers in 1 hour rated ceilings. All diffusers shall be louver faced.

F. Wall supply registers to be white steel, double adjustable deflection with horizontal face bars, column damper. UL listed fire dampers at all rated penetrations.

G. Ceiling and sidewall diffusers and registers factory baked white enamel finish.

2.10 OUTSIDE LOUVERS

A. Four inch deep louvers with blades on 450 slope, center baffle and return bend heavy channel frame. Provide 1/4" mesh galvanized hardware cloth bird screen.

B. Fabricate of 16 gauge galvanized steel and provide welded assembly.

C. Primer paint and finish paint to match exterior wall color.

2.11 FILTERS

A. Pleated disposable extended area filters with 30% ASHRAE dust spot efficiency, 2" thick, 0.2: maximum initial pressure drop at 400 feet per minute maximum face velocity. Filter media and combustible framing to be UL Class 2 rated and approved using California SFM-51.6 test method, Article 80, Title 19 California Administrative Code.

2.12 VIBRATION ISOLATORS

A. Spring isolators with neoprene cushions, housed springs, seismic snubbers, 2" rated spring travel, leveling boats. Provide isolators on all equipment which does not have internal vibration isolators.

2.13 CONTROLS

A. Damper controls - Automatic dampers to have 24Vac control, spring return motors, electric or electronic bulb-type air temperature sensors in the ducts. Provide control transformers.

2.14 THERMOSTATS

A. Zone thermostats to be automatic change-over type with 50 dead band between full heat and full cooling. Provide locking Lexan thermostat guards. Make and model as shown on plans.

2.15 SMOKE DETECTORS

A. Duct smoke detector, interlocked to shutdown zone blower for combined system air flows in excess of 2,000 cfm.

B. Duct smoke detector installed in main supply duct or total coverage smoke detection system with interlock to shutdown zone blower when detector alarms.

PART 3 EXECUTION

3.01 DUCT SEALING

A. Seal all duct work seams with SMACNA Class A or B sealing system, sealing material and application to conform with UL 181, 181A or 181B.

3.02 FLEXIBLE DUCTS

A. Maximum flexible duct length to be 10 feet, with duct supported at mid-length. Use only factory supplied connection collars. Install in compliance with the manufacturers recommendations..

3.03 EQUIPMENT SUPPORTS

A. Support all equipment and duct work to prevent vertical and horizontal movement during a seismic event. Provide lateral bracing to withstand horizontal loads shown on the plans. Horizontal ducts to be laterally braced at each 90 bend.

3.04 HEATING AND COOLING EQUIPMENT

A. Install the equipment in accordance with manufacturer's instructions.

B. Provide two combustion air sources for each gravity gas fired heating unit.

C. Provide PVC combustion air and vent piping for each condensing gas fired heating unit. Provide and install condensate piping from the heating unit condensate trap to; an indirect plumbing waste condensate drain, or into the inlet side of a sink or lavatory trap, if located within the same zone as the heating units. Provide condensate pump as necessary.

D. All filters to be accessible for replacement using hinged and gasketed access door.

3.05 DUCTWORK

A. Clean duct system and force air at high velocity through duct to remove accumulated dust.

B. Connect return grilles to low pressure ducts with 5' minimum length of flexible duct. Hold in place with strap or clamp.

C. At each joint where ducts pass through partitions, seal joints around duct with non-combustible material.

D. Support the horizontal ductwork in conformance with the following schedule:

Duct Diameter	Support Requirement
10" and less	1" wide galvanized steel strap x 22ga. on 12' centers or 12ga galvanized wire on 12' centers, on 1/4" rods.
12" to 18"	1" wide galvanized steel strap x 22ga. on 12' centers or 8ga wire on 12' centers, on 1/4" rods.
20" to 24"	1" wide galvanized steel strap x 22ga on 12" centers or Two 10ga wires on 12' centers, on 1/4" rods.
Rect. Duct max. Side	
Side + Top < 30"	1" wide galvanized steel strap x 22ga on 10' centers, on 1/4" rods.
Side + Top < 72"	1" wide galvanized steel strap x 18ga on 10' centers, on 3/8" rods.
Side + Top < 120"	1" wide galvanized steel strap x 16ga on 10' centers, on 3/8" rods.

E. Tape seal openings during construction to prevent entry of dust into the systems.

3.06 DUCT ACCESSORIES

A. Provide balancing dampers at points on low pressure supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing.

B. Provide flexible connections immediately adjacent to equipment in ducts associated with fans and equipment subject to forced vibrations.

3.07 DIFFUSERS, REGISTERS AND GRILLES

A. Install items in accordance with manufacturer's printed instructions.

B. Paint ductwork, visible behind air outlets, matt black.

3.08 FANS

A. Supply and install sheaves as necessary for final air balancing.

3.09 TESTING AND BALANCING

A. Balance systems after building is complete, with all doors and windows closed or under normal traffic. Install clean filters before balancing. Adjust until all supply, return, and exhaust air quantities are within 10% of flows shown on plan.

B. Use branch volume dampers, splitter dampers, and extraction dampers to adjust air flows.

C. Adjust air diffusers and registers to achieve proper throw and air distribution into the rooms.

D. Submit air balance report to the Engineer after all balancing is complete, show actual fan RPM and horsepower, actual individual register and total fan air flows, actual static pressures. Contractor is to include the ventilation air for each system, expressed as a percent of supply air in the balance report.

E. Leak Testing

Leak testing is required if all of the following criteria are met:

1. The duct system provides conditioned air to an occupied space for a constant volume, single zone, air conditioning system, and

2. The space conditioning system serves less than 5,000 square feet of conditioned floor area, and

3. The combined surface area of the ducts located in the following spaces is more than 25 percent of the total surface area of the entire duct system:

    a. Outdoors.

    b. In a space directly under a roof that has fixed vents or openings to the outside or unconditioned spaces.

    c. In an unconditioned crawl space

    d. In other unconditioned spaces.

3.10 PAINTING

A. Treat all exposed ductwork within the building with metal etch, prime and paint with one coat epoxy paint, color to match ceiling or exposed trusses.

B. Ductwork located in concealed spaces need not be painted.

END OF SECTION 23 00 00

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes general requirements for accomplishing electrical work.

B. All or a portion of the work covered by this Section is to be conducted within the Air Operations Area (AOA). Restrictions and conditions necessary to maintain airfield and aircraft safety as required by FAA regulations, and as required to maintain efficient airport operations, may impose limitations upon the Contractor's methods and procedures.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 GENERAL

A. Manufacturer name, description, and/or catalog number to show intended function and quality specified products.

B. Manufacturers

1. Provide only equipment specified in the Contract Documents or approved by addendum. Manufacturer's catalog numbers and descriptions establish the quality of product required.

2. Facilities and Infrastructure equal may be substituted.

2.02 QUALITY ASSURANCE

A. All materials shall be new, unless noted otherwise. Properly store all materials and equipment for protection from physical damage or damage due to corrosion.

B. Review accessibility of equipment for operation, maintenance and repair prior to installation. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Equipment Manufacturer Qualifications

1. Equipment manufacturers shall have at least 10 year experience in manufacturing products and accessories similar to those for such projects, with a record of successful in-service performance.

PART 3 INSTALLATIONS

3.01 SAFETY AND PROTECTION

A. Electrical Safety Rules below shall be followed:

1. Electrical circuits operating at over 300 volts, phase to ground, or circuits serviced by a transformer over 150 kVA, shall be de-energized before proceeding with the Work.

2. Electrical circuits shall be considered de-energized only under the following conditions:

a. Switches connecting subject circuit to the energy supply are observed in the “open” position with an air break, and safety-tagged in the “open” position.

b. Electrically operated switches are visibly “open”, blocked or racked in the “open” position, and safety-tagged “open”.

c. If the supply circuit break is not visible and clearly identified, the circuit shall be grounded. If the ground connection is not within sight of the work area, the ground connection shall be safety-tagged before proceeding with the Work.

d. Oil switches are observed “open” in a sight window and safety-tagged “open”, or fuse carrier is removed in oil fuse cutouts and safety-tagged “open”.

3. Use of Red Safety Tags

a. For protection of personnel working on circuits, safety tags shall be filled out and attached to any opened switch or equipment.

b. Safety tags shall be removed only the by the airport facilities employee who placed the tag, or by another airport facilities employee who has been authorized to remove the tag in writing by the employee who placed the tag. The airport facilities manager or his designated representative may authorize removal of a safety tag placed by an employee who is not available to remove the tag at the time of need only after carefully checking that the circuit is ready to be energized.

c. Equipment with a safety tag attached shall not be operated, and connections with a safety tag attached shall not be changed.

4. Insulated cables, operated at over 300 volts to ground, shall be handled when energized only with rubber gloves tested to 22,000 volts by an approved testing laboratory.

5. Insulated cables that have been in operation shall be cut only with grounded cable shears, or shall be grounded by driving a grounded sharp tool through the shielding and the conductors before cutting.

6. All personnel working around energized electrical equipment operating at over 750 volts shall wear standard insulated, non-conducting hard hats and shall wear no garments with metallic zipper fasteners.

7. Ladders used in any electrical work shall be wood or fiberglass construction.

8. All panel boards, junction boxes, electrical devices and other similar equipment which is being worked on and which have exposed live wires, bus bars, or terminals operating above 50 volts shall be covered adequately for the voltage with an electrical insulating material and labeled with a “Caution” sign when Contractor personnel are not present. The Caution sign shall advise that exposed electrical parts are behind the temporary protective cover.

9. Contractors engaged on airport projects or working on airport property shall be governed by airport rules, except that all safety tags shall be placed or removed by the airport facilities manager or his designated representative. The Contractor shall designate a supervisor for all contract personnel and operations. This supervisor shall be on the job whenever contract operations are in progress.

3.02 ELECTRICAL EQUIPMENT INSTALLATION

A. Comply with airport standards for environmental regulatory requirements, quality control, construction facilities and temporary controls, traffic control, access control, and signage requirements.

B. Provide electrical connection of all equipment having electrical requirements. Make final connections for all Owner-furnished equipment.

1. Make electrical connections in accordance with manufacturer's written instructions, with recognized industry practices, and complying with requirements of the California Electrical Code.

2. Verify all electrical loads (voltage, phase, full load amperes, number and point of connections, minimum circuit capacity, etc.) for equipment furnished under other divisions of this specification by reviewing respective shop drawings furnished under each division.

3. Meet with each subcontractor furnishing equipment requiring electrical service to review electrical characteristics for each equipment item before rough in begins. Report any variances from electrical characteristics noted on the electrical drawings to the Engineer before proceeding with rough-in work.

C. California Electrical Code Compliance

1. Comply with applicable portions of California Electrical Code as to the type of products used and provisions for electrical power connections.

D. Underwriters Laboratories Acceptance

1. All material and equipment within the scope of the UL Re-examination service shall be approved by Underwriters Laboratories, Inc. for the purpose for which they are used and shall bear their label. Any variation to this requirement must be approved by the Authority Having Jurisdiction.

E. Cutting and Patching

- Provide and coordinate the locations of all openings required in the building construction for installation of the Work.

- Drill penetrations required through existing concrete slabs or walls with a diamond core drill. In no case shall any structural member be cut.

- Provide approved sleeves as required for electrical penetrations through floors and walls. Seal all openings around conduits in sleeves with a material of equal fire rating as the surface penetrated.

- Obtain written approval from a licensed Structural Engineer prior to cutting any reinforcing bars.

F. Equipment Bases and Fastening

1. Comply with seismic zone 3 anchorage and bracing requirements of Section 13 05 41 "Seismic Restraint Requirements for Non-Structural Components".

G. Equipment Accessibility

1. Comply with applicable codes and install equipment to be accessible for operation, maintenance or repair. Equipment deemed inaccessible shall be relocated as directed.

H. Electrical Work Exposed to Weather

1. Provide weatherproof enclosures and corrosion protection for all ferrous metal portions of electrical work exposed to weather, including conduit, clamps, supports and hardware.

3.03 PROJECT FINALIZATION

A. Fully test and adjust all equipment installed under this specification and demonstrate its proper operation.

1. Testing that involves use of instruments other than meggers and volt-ohm meters shall be performed by an independent testing agency according to the requirements of specific sections.

END OF SECTION 26 05 11

PART 1 GENERAL

1.01 SUMMARY

A. This section includes requirements for insulated copper conductors for general power and control use at voltages below 600 Volts, AWG sizes #14 through 750 kcmil.

B. Insulated conductors shall comply with NFPA 70 and carry UL label.

C. 75º C is the standard design temperature for all conductors unless otherwise required by engineering considerations.

D. All conductors #14 and larger shall be copper stranded unless otherwise required by engineering considerations.

E. Use 600-Volt rated cable for all 208-Volt applications.

F. All conductors shall be new.

G. FLEXIBLE TYPE METAL CLAD (MC) WIRING SHALL NOT BE USED FOR GENERAL WIRING PURPOSES.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. American Insulated Wire

B. Halston Wire

C. South Wire

D. Carol Cable or Approved Equal

2.02 GENERAL BUILDING WIRE APPLICABLE TO THE MAJORITY OF APPLICATIONS

A. THHN/THWN stranded copper wire is standard for all wet and dry indoor locations.

B. NO ALUMINUM WIRE ALLOWED.

C. Grounding conductors: #6 AWG and larger: stranded copper, bare soft drawn as required. #8 AWG and smaller: stranded copper with green insulation.

2.03 SPLICES AND CONNECTORS

A. For #14 AWG through #10 AWG wire sizes, use insulated connectors rated for use on stranded wire spring wire connectors or insulated compression connectors

B. For #8 AWG wire, use solderless pressure connectors with insulating sleeves.

C. For #6 AWG and larger cable use split bolt connectors with manufactured insulation covers or tape sufficient to provide 150% insulation level. As an option compression connectors are acceptable using compression dies designed for the exact connector being used. Provide insulating sleeves manufactured specifically for the connector being used.

PART 3 INSTALLATIONS

3.01 GENERAL

A. "National Electrical Installation Standards" (NEIS), published by the National Electrical Contractors Association (NECA) shall be used as a reference to establish a standard for quality of installation workmanship.

B. Make conductor lengths for parallel circuits equal by actual length comparison before installing in conduit.

C. Smallest wire sizes allowed are #12 AWG for lighting and power and #14 AWG for controls.

D. Provide phasing tests for proper rotation of all motors.

E. No splices in raceways or inaccessible locations. Splice only in junction or outlet boxes.

F. Torque all bolted terminations per manufacturers recommendations, or in the absence of these recommendations, refer to UL 486B (reprinted in National Electrical Code Handbook Article 110-14.)

G. For bolted connections in equipment, verify that applying a spot of red paint to each bolt head such that the paint will be visibly disturbed if the bolt is disturbed has properly torqued the connections. Use copper lugs only on main circuit breakers and feeder breakers. No cu/al lugs allowed.

H. As a standard practice, control conductors are to be routed in separate raceways from power conductors. When engineering considerations dictate, control conductors may be routed in power raceway under the following conditions:

1. All conductors must have a voltage rating for the highest voltage in the raceway.

2. The largest power conductor in the raceway is #4 AWG.

3.02 COLOR CODING

A. Color Coding Method

1. Provide colored insulation when available. (normally wire sized #8 AWG and smaller)

2. Provide a 2" wide (minimum) band of colored plastic tape at all terminations. (Scotch No. 33 all-weather vinyl plastic tape)

B. Color Coding and Phasing

1. 208/120 Volt 3Ø, 4-wire systems:

a.	Phase A (left or top)	Black
b.	Phase B (center)	Red
c.	Phase C (right or bottom)	Blue

d.	Neutral	White
e.	Ground	Green
f.	Isolated ground	Green with yellow or orange stripe

3.03 TESTING

A. Megger testing for one half minute is required for all 600-Volt insulated wire #2 AWG and larger using a 500-Volt Megger for 208-Volt systems and a 1000-Volt Megger for 480-Volt systems. Test continuity between conductors and from each conductor to ground before initial energization of all service equipment, switchgear, switchboards, MCCs (including motors) and panelboards. Record test information for all cables tested on attached report.

B. Using a Volt/Ohm meter, test all power conductors below #2 AWG for continuity to ground.

C. Test circuits for motor rotation, phase to phase sequence.

3.04 ALUMINUM CONDUCTORS

A. Contractors in possession of aluminum conductors in their vehicles, storage or work areas may be removed from the site until such material is no longer on the premises.

END OF SECTION 26 05 19

PART 1 GENERAL

1.01 SUMMARY

A. This section includes grounding of electrical systems and equipment and basic requirements for grounding for protection of life, equipment, circuits and systems.

B. Comply with NFPA 70 (NEC), UL 467.

C. Comply with requirements of Authority Having Jurisdiction.

D. Provide products which are UL listed and labeled.

E. Reference: IEEE Green Book “Grounding”, IEEE Std. 142.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Thomas & Betts

B. O-Z/Gedney Co.

C. ILSCO

D. Lyncole XIT Grounding

E. Erico Inc.

F. Raco, Inc.; Division of Hubbell

2.02 CONDUCTORS

A. Equipment Grounding Conductors: Insulated with green-colored insulation in sizes available, otherwise provide two inch band of green plastic marking tape at each termination.

B. Grounding Electrode Conductors: Stranded Cable.

C. Bare Copper Conductors:

1. Assembly of Stranded Conductors: ASTM B 8

D. Copper Bonding Conductors

1. Bonding Conductor: No. 4 or No. 6 AWG stranded copper conductor

2. Bonding Jumpers: Bare copper tape or braided bare copper

E. Bonding Straps: Soft copper

F. Ground Bus: Bare, annealed-copper bars of rectangular cross section

A. Connectors

1. Pressure Connectors: High-conductivity-plated units

2. Bolted Connectors: Heavy-duty, bolted-pressure type only

3. Welded Connectors: Exothermic welded type

B. Grounding Electrodes

1. Ground Rods: Sectional type, copper-clad steel, ¾" x 10'

PART 3 INSTALLATIONS

3.01 GENERAL

A. Comply with CEC Article 250.

B. Use insulated equipment grounding conductor in raceways.

C. When driven ground rods are selected for use as grounding electrodes for switchboard or low impedance applications, install at least three rods spaced at least one rod length from each other.

D. Route grounding conductors along shortest and straightest paths possible.

E. Install bonding straps and jumpers so vibration by equipment mounted on vibration hangers and supports is not transmitted to rigidly mounted equipment.

F. Provide bonding jumper from main service equipment to building main water service. Use braided type bonding jumpers to electrically bypass water meters.

G. Bond interior metal piping systems and metal air ducts to equipment grounding conductors of associated pumps, fan, blowers, electric heaters and air cleaners.

H. Bond each aboveground portion of gas piping system upstream from equipment shutoff valve.

I. Make connections so as to minimize galvanic corrosion or electrolysis. Use compression connections for all embedded and underground connections.

J. Terminate metallic raceways at metal housings, not having a solid mechanical and electrical connection to housing, with a grounding bushing.

3.02 EQUIPMENT GROUNDING CONDUCTORS

A. Provide insulated equipment grounding conductors from the ground bus in all switchboards, and panelboards to all electrical equipment and devices.

B. Signal and Communication Systems: Provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet and central equipment location of telephone, alarm, voice and data, and other communication systems..

3.01 TESTING

A. Provide grounding system as required to obtain the resistance noted in NEC Article 250-56 as a minimum.

B. Test completed grounding systems using the fall-of-potential method (according to IEEE 81) to verify conformance with intended design resistance. Correct deficiencies

C. Summarize all findings in a Ground Resistance Test Report and submit to the Port.

END OF SECTION 26 05 26

3.1 PART 1 GENERAL

1.01 SUMMARY

A. This section includes requirements for raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

B. Raceways include the following:

1. Rigid metal conduit (RMC). (NEC Article 346).

2. Electrical metallic tubing (EMT). (NEC Article 348).

3. Flexible metal conduit (FMC). (NEC Article 350.)

4. Liquidtight flexible conduit (LFMC). (NEC Article 351)

5. Metal Wireway. (NEC Article 362-A).

6. Surface metal raceways. (NEC Article 352-A).

7. Intermediate metallic conduit (IMC) shall not be used.

C. Boxes, Enclosures and Cabinets include the following:

1. Device boxes.

2. Floor boxes.

3. Outlet boxes.

4. Pull and junction boxes.

5. Cabinets and hinged cover enclosures.

D. Quality Assurance

1. Conform to noted ANSI and NEMA standards, and comply with NFPA 70 "National Electrical Code" for components and installation.

2. UL Compliance: Provide products, which are UL-classified and labeled.

3. Comply with NECA "Standard of Installation".

4. Coordinate layout and installation of raceway and boxes with other construction elements to ensure adequate headroom, working clearance, and access.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 METAL CONDUIT AND TUBING

A. Rigid Steel Conduit (RMC): ANSI C80.1

B. Electrical Metallic Tubing (EMT) and Fittings: ANSI C80.3 with steel, compression-type fittings. NO SETSCREWS WILL BE ALLOWED.

C. Flexible Metal Conduit (FMC): Zinc-coated steel

D. Liquidtight Flexible Metal Conduit (LFMC): Flexible steel conduit with PVC jacket.

E. Fittings: NEMA FB 1, compatible with conduit/tubing materials

2.02 METAL WIREWAYS

A. Material: Sheet metal, size and shape as required by the NEC

B. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireway as required for a complete system.

C. Select features, where not indicated otherwise, as required to complete the wiring system and comply with the NEC

D. Wireway Covers: Hinged type

E. Finish and Color: Manufacturer's standard enamel finish and ANSI 61 gray color.

2.03 SURFACE RACEWAYS

A. Types, sizes, and channels as required for each application, with fittings that match and mate with raceway.

B. Surface Metal Raceway: Painted galvanized steel with snap-on covers

2.04 OUTLET AND DEVICE BOXES

A. Sheet Metal Boxes: NEMA OS 1

B. Cast Metal Boxes: NEMA FB 1, cast ferroalloy box with gasketed cover and threaded hubs

2.05 FLOOR BOXES

A. Cast metal, fully adjustable, rectangular

2.06 PULL AND JUNCTION BOXES

A. Small Sheet Metal Boxes: NEMA OS 1, galvanized steel

B. Cast Metal Boxes: NEMA FB 1, cast aluminum with gasketed cover

C. Sheet steel gauge requirements (any direction)

1. 24" or less: 14 USS gauge

2. 24" to 36": 12 USS gauge

2.07 ENCLOSURES AND CABINETS

A. Hinged 110^{o} Swing Opening Cover Enclosures: NEMA 250, Type 1, steel enclosure with continuous hinge cover and flush latch, finished inside and out with manufacturer's standard enamel.

B. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.

2.08 TERMINAL BLOCKS

A. Minimum 600-volt rating for 480-volt circuits

B. Clamp or screw terminals sized for maximum conductor size

C. Separate connection point for each conductor

D. 10% spare terminal points

E. Individual identification for each terminal block

F. Phenolic block separators or barriers shall be used to isolate low-voltage and control terminations from analog and DC circuits.

PART 3 INSTALLATIONS

3.01 WIRING METHODS

A. Outdoors

1. Exposed: RMC

2. Concealed: Rigid steel conduit shall be used under roadways in non-reinforced duct banks.

3. Boxes and Enclosures: NEMA Type 3R

B. Indoors

1. Exposed: RMC

2. Concealed: RMC or EMT

3. Connection to Vibrating Equipment (incl. transformers and hydraulic, pneumatic or electric solenoid or motor-driven equipment): Flexible metal conduit (FMC), except in damp locations use liquid tight flexible metal conduit (LFMC)

4. Damp or Wet Locations: Rigid galvanized steel conduit

5. Boxes and Enclosures: NEMA Type 1, except in damp or wet locations use NEMA Type 4, NEMA Type 4X stainless steel (316) in corrosive locations, or NEMA Type 7 in hazardous locations

3.02 RACEWAY INSTALLATION

A. Use 1/2" conduit size for end use devices and communications.

B. Use 3/4" minimum conduit size for homeruns, outdoor applications and for conduit embedded in slabs.

C. Conduit larger than 2" size containing power conductors shall be RMC. However, EMT may be used for larger conduits containing communication wiring such as telephone, fire alarm and other low-voltage systems.

D. Conceal conduit and EMT, unless otherwise indicated, within finished walls, ceilings and floors.

E. Maintain 6" minimum clearance between conduit and mechanical piping. Maintain 12" minimum clearance between conduit and heat sources such as flues, steam pipes, and heating appliances. Comply with NEC Article 110-16.

F. Install horizontal raceway runs above water and steam piping.

G. Route exposed and concealed conduit parallel and perpendicular to structure.

H. Cut conduit square using a saw or pipe cutter, and ream it to remove burrs.

I. Use temporary closures to prevent foreign matter from entering raceway.

J. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2" size.

K. Run concealed raceways, with a minimum of bends, in the shortest practical distance considering the type of building construction and obstructions.

L. In exposed areas, raceways may be painted to match existing finishes.

M. Raceways embedded in slabs (no aluminum):

1. Secure raceways to reinforcing rods

2. Space raceways laterally to prevent voids in concrete

3. Run conduit larger than 1" trade size parallel to or at right angles to main reinforcement.

N. Raceways in public areas shall be painted to match surroundings.

O. Terminations: Where raceways are terminated with locknuts and bushings, align the raceway to enter squarely, and install the locknuts with dished part against the box.

P. Install pulls nylon #16 in empty raceways, except at sleeves and nipples.

Q. Install raceway seal fittings according to manufacturer's written instructions.

R. Stub up Connections:

1. Extend conduits a minimum of 6" through concrete floor slab for connection to freestanding equipment.

2. Install with an adjustable top or coupling threaded inside for plugs set flush with the finished floor.

3. Extend conductors to equipment with RMC; FMC may be used 6" above the floor.

S. Use maximum of 6' of flexible conduit for recessed and semi-recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Install separate ground conductor across flexible connections.

T. Use Form 8 condulet bodies with cover and fully gasket for standard installation.

U. Conduit raceway and boxes installation should be of the same material. Do not mix dissimilar metal due to galvanic reaction.

V. EMT and rigid metal conduit fittings: set screws, threadless and split couplings will not be allowed.

W. All fasteners and clamps for conduit raceway support shall use mechanical bolted type hardware.

X. All cable shall be installed in raceway including plenum rated cable.

3.03 OUTLET BOX INSTALLATION

A. Do not install boxes back-to-back in walls.

B. Provide knockout closures for unused openings.

C. Support boxes independently of conduit.

D. Use multiple-gang boxes where more than one device is mounted together; do not use sectional boxes.

E. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

F. Provide recessed outlet boxes in finished areas.

G. Mount outlets at the following heights above finished floor:

1. Wall switches: 48" to top of outlet box

2. Convenience outlets: 18" to bottom of outlet box

3. Telephone outlets: 18" to bottom of outlet box

H. Provide cast outlet boxes in exterior or wet locations.

3.04 FLOOR BOX INSTALLATION

A. Set floor boxes level and adjust to floor surface.

B. Use cast iron floor boxes for installations in slab on grade.

3.05 PULL AND JUNCTION BOX INSTALLATION

A. Locate so that covers are accessible at all times.

B. Provide pull boxes as required by NEC or as required to facilitate installation of the work.

C. Mount and support independently of conduit.

3.06 ENCLOSURE AND CABINET INSTALLATION

A. Install hinged cover enclosures and cabinets plumb and level. Support at each corner, minimum.

3.07 PROTECTION AND CLEANING

A. Repair coatings, finishes, and cabinets that are damaged or deteriorated at the time of Substantial Completion as recommended by manufacturer.

B. Remove burrs, dirt, and construction debris and repair damaged finish, including chips, scratches and abrasions, from outlet fittings and devices.

END OF SECTION 26 05 33

PART 1 GENERAL

1.01 SUMMARY

A. This section establishes requirements for identification of electrical materials and equipment.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide engraved labels and nameplates of laminated phenolic plastic 1/16-inch thick minimum, with white letters on a black background. Labels larger than 3”x5” shall be 1/8-inch thick minimum.

B. Label emergency equipment red with white letters.

C. Only temporary markings that are removable without damaging finish are permitted on equipment.

D. No labeling abbreviations shall be permitted without airport approval.

2.02 IDENTIFICATION

E. Provide 5/8-inch minimum height letters on the following equipment:

1. Panelboards, and switchboards

2. Special equipment housed in cabinets, on outside door

3. Terminal junction boxes and data gathering panels

F. Provide 1/4-inch minimum height letters on the following equipment:

1. Disconnects and starters for motors on fixed appliances

2. Duplex receptacles (self-adhesive labels indicating panel and circuit number)

3. Local control panels

PART 3 INSTALLATIONS

3.01 GENERAL

A. Securely attach engraved labels with an or stainless steel screws.

B. Provide nameplate on all power receptacles, equipment disconnects and control panels showing source and circuit number.

C. Provide wire markers on each conductor in panelboards, pull boxes, junction boxes and at all load connections.

D. Where colored conductors are not readily obtainable, use Scotch No. 35 color coding tape.

END OF SECTION 26 05 53

PART 1 GENERAL

1.01 SUMMARY

A. This section includes requirements for lighting control contactors, photoelectric cells, time clocks, programmable lighting control systems, motion sensors, and illumination level sensors.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Lighting Control Contactors:

1. Square D
2. General Electric
3. Cutler-Hammer

B. Photoelectric Cells and Time Clocks:

1. Tork
2. Intermatic

C. Programmable Lighting Control Systems:

1. Wattstopper
2. Hubbell

D. Lighting Control; Motion and Illumination Level Sensors:

1. Watt Stopper
2. Hubbell

2.02 CONTACTORS

A. Mechanically and Electrically Held.

B. 30-Amp ballast rating, 20-Amp tungsten lighting rating.

C. 12-pole maximum.

D. Provide field convertible contacts with N.O. and N.C. indicators.

E. Provide contactors with mounting brackets.

2.03 PHOTOELECTRIC CELLS

A. Photoelectric cells shall typically be conduit mounted.

B. Delay up to two minutes to prevent false switching.

C. Provide on/off adjustment by light level sensor.

D. Enclosure: Heavy-duty die cast zinc, gasketed for maximum weather protection.

E. Cell: Cadmium sulphide, epoxy coated.

F. Contacts: Closed between dusk and dawn.

G. Temperature range: -40°F to 140°F.

H. Manual bypass switch shall be installed in parallel to the photocell (keyed if accessible to general public).

2.04 TIME CLOCKS

A. Multi-Purpose

B. Microprocessor-based digital controller

C. Eight Channel

D. 365-day advance single and block holiday scheduling

E. Astronomic settings

F. Program entities shall be made by mechanical pushbutton and acknowledgement of each entry into the unit.

G. Each channel shall have remote timed override.

H. Controller shall have automatic daylight saving or standard time.

2.05 PROGRAMMABLE LIGHTING CONTROL SYSTEMS

A. Low-voltage switching system consisting of relay panels or switchable breakers and intelligent switches connected together by a dataline, as well as associated wiring.

B. Microprocessor based digital controller.

C. Control devices shall consist of photosensor control modules and/or other low-voltage control devices.

D. All components and assemblies are shall be factory pre-tested prior to installation.

E. Remote panels are to be UL listed under UL 916 Energy Management Equipment.

F. All assemblies are to be in compliance with FCC emissions Standards specified in Part 15 Subpart J for Class A application.

2.06 MOTION SENSORS

A. Passive Infrared/Ultrasonic

B. Choice of auto On or manual On operation

C. Adjustable sensitivity & time delay settings

D. Building management control system compatible

E. Adjustable time delay, 0 to 2 hours

2.07 ILLUMINATION LEVEL SENSOR

A. Natural light level sensor

B. Fully integrated as a part of the lighting control system

C. User adjustable light level settings ranging from 10 to 1000 footcandles.

D. Adjustable dead-band settings

E. LED display

F. Control any lamping source

G. Adjustable time delay, 0 to 2 hours

PART 3 INSTALLATIONS

3.01 GENERAL

A. Photoelectric controls shall be oriented north.

B. Contactors shall be installed in the appropriate NEMA enclosure.

C. Provide a disconnecting means and overcurrent protection at contactor enclosures.

D. Installation shall comply with seismic zone 3 requirements.

E. Wiring within cabinets shall be neatly arranged and protected from damage.

END OF SECTION 26 09 23

PART 1 GENERAL

1.01 SUMMARY

A. This section provides requirements for the design; fabrication, installation and delivery of Service Entrance Switchboards and Distribution Switchboards rated 400 Amps through 2000 Amps, indoor and outdoor, circuit breaker and fused.

B. Provide equipment with sufficient fault duty for available fault currents. Given consideration to possible increases in utility transformer sizes.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 GENERAL

A. Acceptable manufacturers

1. Square D Co.

2. Eaton Corp.: Cutler-Hammer

3. General Electric (only if rated for 40ºC ambient operation)

B. All material shall be of the same manufacturer.

2.02 ENCLOSURE

A. NEMA 1 for indoor dry locations.

B. NEMA 3R for outdoor or damp locations. (Condensation prevention heaters required for outdoor switchboards.)

2.03 BUSSING

A. Provide 100% neutral bus.

B. Bus material for indoor switchboards to be silver plated copper. NO ALUMINUM BUS WILL BE ALLOWED.

C. Bus material for NEMA 3R switchboards shall be silver plated copper. NO ALUMINUM BUS WILL BE ALLOWED.

D. Provisions for Expansion: Make provisions for adding future sections.

2.04 OVERCURRENT PROTECTIVE DEVICES

A. Switchboard mains shall be circuit breaker through 1200 Amps, and are to be individually mounted in compartments to isolate them from group mounted feeder breakers.

B. Feeder breakers shall be group mounted through 800 amps and mounted in individual compartments above 800 Amps.

C. Switchboards shall not require side or rear access unless engineering considerations dictate otherwise.

D. Molded case circuit breakers may be applied up to, but not including, 1200-Amp frame sizes. Molded case circuit breakers shall have solid-state overcurrent protection with inverse time and instantaneous tripping characteristics. Provide current limiting characteristics where applicable.

E. Insulated case circuit breakers are to be used for 1200-Amp frame sizes and above.

2.05 METERING:

A. Make provisions for remote monitoring and revenue metering of main and feeder breakers. All metering shall be revenue grade, .5% accuracy.

PART 3 INSTALLATIONS

3.01 GENERAL

A. Provide dedicated electrical space for switchboards per NEC Article 110-26.

B. Install freestanding switchboards on 3-1/2” minimum concrete housekeeping pad concrete 3000-psi minimum.

C. Secure switchboard to floor with suitable concrete inserts or embedments to provide seismic zone 3 (minimum) restraint.

D. Provide code working space and egress pathways per NFPA 70, Article 110-26.

E. Torque all lugs per manufacturer’s recommendations. When manufacturer’s recommendations are unavailable use UL 486A and UL 486B for torque values. Place spot of red paint on lugs after torquing such that paint will be visibly disturbed if lugs are disturbed. (Reference: NFPA 70 Handbook, Article 110-14)

F. Provide yellow striping in front of all switchboards outlining required code-working space.

G. Provide operation and maintenance manuals, which include manufacturer’s literature, wiring schematics/diagrams, parts lists and suggested maintenance procedures.

3.02 TESTING

A. Megger switchboard and feeders with all breakers open before energizing. Use 1000-Volt megger for 480-Volt equipment and 500-Volt megger for 208-Volt equipment.

B. Check phase rotation of all conductors and ensure proper color coding

C. Verify continuity and tightness of ground connections.

D. Ensure viability of bonding jumper when switchboards are used as service entrances

E. After energization, check load balance under normal operation. If load unbalance exceeds 10%, initiate corrective measures.

F. Engage independent testing agency to perform final testing after installation is complete. Testing shall include:

1. Visual and mechanical inspection

2. Verification that circuit breaker settings complies with Engineers coordination study and instructions.

3. Verification of integrity and completeness of grounding and bonding system.

END OF SECTION 26 24 13

PART 1 GENERAL

1.01 SUMMARY

A. This section includes requirements for Lighting and Appliance Panelboards 100 Amps through 600 Amps and Distribution Panelboards 800 Amps through 1200 Amps.

B. Comply with UL 67, UL 50, NEMA PB1

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 GENERAL

A. Acceptable Manufacturers

1. Square D Co.

2. Eaton Corp.: Cutler-Hammer

3. General Electric Co.

B. Provide approximately 15% spare breakers of the size most used in the panel and 20% future space load growth.

C. Where flush panelboards are below accessible ceilings, provide six 1" empty conduits from top of panel up into ceiling space for future branch circuit conductors.

D. Assure that panelboard-interrupting ratings exceed present and expected future available fault currents. No series rated breakers allowed.

E. Fully rated panelboards are standard. No series rated panelboards are allowed. Manufacturer documentation shall be permanently affixed to the surface of the panelboard indicating circuit breaker types approved for series rating

2.02 ENCLOSURE

A. Enclosure Ratings

1. NEMA 1 for indoor dry locations

2. NEMA 3R or 4 for outdoor or damp locations

3. NEMA 4X for corrosive locations

4. NEMA 7 for hazardous locations

B. Door-in-Door panel fronts for all panelboards. Two locks required. Full size door allowing access to interior of panel shall have maintenance master keyed lock. Smaller door allowing access to circuit breaker handles shall also have a lock keyed for access by maintenance.

C. Panel doors shall have a continuous piano hinge for 110-degree opening minimum.

2.03 BUSSING

A. 200% neutral bus for panelboards with predominately computer, sensitive electronic, lighting with electronic ballasts, variable frequency drives or other non-linear loads.

B. Provide plated copper bus.

C. Isolated ground bus where required by sensitive loads.

2.04 OVERCURRENT PROTECTIVE DEVICES

A. Circuit Breakers are the standard circuit protective device for mains and branch circuits (unless fuses are required for interrupting high fault currents).

B. Provide Bolt-On Circuit breakers

C. Acceptable Options

1. Shunt trips for load management purposes.

2. Transient Voltage Surge Suppression

3. Ground Fault Circuit Interrupter (GFCI) circuit breakers

4. Feed-through lugs

5. Double main lugs

6. Adjustable trips where engineered coordination settings are provided.

PART 3 INSTALLATIONS

3.01 GENERAL

A. Flush fronts to be oversized by approximately ¾" to cover rough opening for recessed panelboards.

B. Top of trim 72" above finished floor for Lighting and Appliance Panelboards.

C. Highest operating handle 78" or less for Distribution Panelboards.

D. Surface panelboard fronts to have same dimensions as enclosure.

E. Provide accurate, legible, complete circuit directories with date of last changes made and name of individual and firm making changes. Describe branch circuits as to the type of load and location using room numbers, column lines or other easily recognizable descriptions.

F. Torque main lugs per manufacturer recommendations. When manufacturer recommendations are unavailable, use UL 486A and UL 486B for torque values.

G. Areas accessible to non-electrical staff in non-finished areas shall have the code clearance areas painted in front of the panel on concrete floor.

3.02 TESTING

A. Megger panelboard with all circuit breakers open before energizing.

B. Verify continuity and tightness of ground connections.

C. After energization, check load balance under normal operation. If load unbalance exceeds 10%, initiate corrective measures.

END OF SECTION 26 24 16

PART 1 GENERAL

1.01 SUMMARY

A. This section includes requirements for receptacles, plugs, switches, cover plates, poke-through assemblies and telephone/power service poles.

1.02 RELATED SECTIONS

B. A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Specification Grade Receptacles

1. Crouse Hinds
2. Appleton
3. Killark

B. Ground-Fault Interrupters

1. Hubbell
2. Arrow Hart
3. Hubbell
4. Leviton
5. Bryant

C. Special Purpose Receptacles

1. Crouse Hinds
2. Appleton
3. Killark

2.02 RECEPTACLES

A. Provide according to NEMA designations for number of poles, voltage and Amperage required

B. UL, CSA, or ETL label required

C. Provide 20-ampere, duplex, industrial specification grade receptacles only. 15-AMPERE RECEPTACLES ARE NOT ACCEPTABLE.

D. Standard colors for all receptacles are gray and ivory (except red for emergency power receptacles).

1. Public Areas: gray with brushed stainless steel plate

2. Office Areas: ivory with plastic matching plate

3. Colors and materials are subject to Architects special requirements.

E. GFCI (ground fault circuit interrupter) receptacles for personnel protection:

1. 5 mA trip is standard

2. All receptacles, which are downstream from a feed-through type GFCI receptacle, shall be labeled “GFCI Protected”.

F. Emergency power receptacles. Red color, no exceptions

G. Locking type: Use NEMA type with rating equal to source circuit

2.03 PLUGS

A. Provide according to NEMA designations to match companion receptacles

B. UL, CSA or ETL label required.

C. Strain relief suitable for application.

2.04 SWITCHES

A. UL label required

B. Industrial specification grade for all locations.

C. Standard color is ivory subject to Architect's special requirements.

D. Quiet operation type is standard.

2.05 COVER PLATES

A. Match color to device as noted above or as otherwise required by Architect.

B. Utilize brushed stainless steel in public areas such as restrooms.

C. Utilize galvanized steel in unfinished areas.

D. Weatherproof for outdoor and damp locations, for use while still connected to cord.

PART 3 INSTALLATIONS

3.01 GENERAL

A. Receptacles shall be labeled according to Section 26 05 53, “Electrical Identification”.

B. Common receptacles shall be labeled “GFCI receptacle” when protected by an up-stream GFCI receptacle.

C. Standard Mounting Heights

1. Wall switches: 48”

2. Convenience outlets: 18”

3. Telephone outlets: 18”

4. Thermostats: 60”

D. Grounding

1. All standard and GFCI receptacles shall be grounded via a separate green equipment ground wire connected to the panelboard ground bus. Metallic raceway shall not be the sole equipment ground current path.

2. Maintain consistent polarity for power and common terminals on all receptacles. Verify by actual test.

3. Test GFCI receptacles per manufacturer’s recommendations.

END OF SECTION 26 27 26

PART 1 GENERAL

1.01 SUMMARY

A. This section provides requirements for Manual Motor Controllers, Magnetic Motor Controllers and Enclosed Combination Motor Controllers rated 600 V and less that are supplied as enclosed units.

B. Comply with the following:

1. NEMA standards

2. NFPA 70 as adopted and administered by the Authority Having Jurisdiction.

3. Provide motor controllers that are UL listed and labeled.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 GENERAL

A. Acceptable Manufacturers

1. Square-D Co.

2. Eaton Corporation: Cutler-Hammer

3. General Electric Co.

4. Allen Bradley

B. Starting methods may include, but are not limited, to the following:

1. Manual

2. Magnetic Full Voltage Non-reversing (FVNR)

3. Solid-state soft start

C. Enclosures

1. NEMA 1: Clean, dry indoor locations

2. NEMA 12: Indoor locations subject to wet or dry contaminants

3. NEMA 3R: Outdoor general use

D. Manual Starters, Single-Phase, 3/4 HP and Under

1. Lockout means required in all applications

2. Fault duty to meet available fault current

3. Interchangeable overload heater elements

E. Combination Starters

1. Motor circuit protector (MCP) unless available fault current exceeds 65,000 Amps symmetrical. This device provides controller and motor disconnect means and overcurrent (short circuit) protection. Adjustable magnetic settings up to 1300% motor FLA.

2. Two normally open and two normally closed auxiliary reversible contacts minimum.

3. Motor controller preferred features include:

a. Current sensor / microprocessor type overload protection with adjustable parameters including overcurrent, ground fault, phase loss, phase unbalance, undervoltage, overvoltage. Melting alloy or bimetallic strip type overload relays with ambient compensated inverse-time-current characteristics are acceptable.

b. Control pushbuttons, industrial oil-tight type

c. Push-to-test pilot lights

d. 120-Volt control power transformer (CPT) in each starter module with primary and secondary overcurrent protection. Size CPT at least one size above minimum VA requirements. Should an external control power source be required, provide auxiliary contacts mechanically tied to the combination starter disconnect switch and wired so that control power within the motor starter module will be disconnected when the motor power disconnect is opened. The secondary of the CPT shall have one leg grounded. No switching of coils shall be allowed between the coil and the ground side.

e. Standard control for remotely controlled motors is Hand-Off-Auto (HOA) mounted in front panel.

f. Standard pilot lights are red “running” and green “ready” mounted in front panel.

g. Standard pilot lights are 120-Volt, transformer type, push-to-test.

F. Spare Fuses and LED Indicating Lamps

1. Furnish 1 spare for every 5 installed units, but not less than 1 set of 3 of each kind.

PART 3 INSTALLATIONS

3.01 GENERAL

A. Provide working space in front of motor controllers per the latest edition of NEC Article 110-26.

B. For individual magnetic motor starters provide an overcurrent protection and disconnect device ahead of controller. This device shall be in an enclosure with lockout means.

C. Torque all lugs per manufacturer’s recommendations.

1. When manufacturer's recommendations are unavailable, use UL 486A and 486B for torque values.

D. Check phase rotation of all conductors and ensure proper color coding.

E. Verify continuity and tightness of ground connections.

F. Set Motor Circuit Protectors in combination starters as low as possible without causing nuisance tripping.

G. Set motor overloads per manufacturer's tables for actual motor nameplate Full Load Amps.

H. Check all motors for proper rotation

END OF SECTION 26 29 11

PART 1 GENERAL

1.01 SUMMARY

A. This section includes requirements for separately mounted enclosed switches and circuit breakers for:

1. Service disconnecting means

2. Feeder and branch circuit protection

3. Motor and equipment disconnect means

B. Quality Assurance

1. Comply with:

a. UL or other certification agency acceptable to Authority Having Jurisdiction.

b. NEMA AB 1 and NEMA KS 1.

c. NFPA 70 as adopted and enforced by the State of Washington .

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 GENERAL

A. Manufacturers

1. Cutler-Hammer

2. Square D Co.

3. Siemens

B. Enclosed Switches

1. Heavy duty type

2. Lockout means

3. Mechanical/electrical interlock

4. Fuse clips to match required fuses. Rejection type where possible

5. Rated to accommodate available fault currents. No series rated breakers allowed.

C. Enclosed Circuit Breakers

1. Thermal magnetic type:

a. Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits Adjustable instantaneous trip settings for frame sizes 250 Amp and larger.

2. Magnetic only type:

a. Adjustable with front mounted field adjustable trip settings.

3. Electronic Trip type:

a. Instantaneous trip

b. Long and short time pickup levels

c. Long and short time adjustments

d. Ground fault pick up, time delay and I2T.

e. Other adjustable parameters as required by application.

4. HACR type for heating, air-conditioning and refrigeration applications.

5. Switch Duty (SWD) rated type for switching lighting fixtures.

6. Auxiliary contacts: Provide as required.

D. Enclosures

1. Meet NEMA 250 requirements as follows:

a. Indoor clean locations: NEMA 1

b. Outdoor locations: NEMA 3R

c. Hazardous locations: NEMA 7, 8 or 9 depending on hazardous area classification and location.

PART 3 INSTALLATIONS

3.01 GENERAL

A. Mounting Height

1. Operator handle typically at 5’-0”, but not to exceed 6’-6” above floor

B. Working Space

1. Comply with NFPA 70 Section 110 working space requirements.

C. Mount on substantial structure and secure to meet seismic zone 3 requirements.

D. Identification

1. Provide nameplate per other sections of this criteria identifying source of power and

load served. Also provide caution sign identifying special considerations of shutting down load served.

E. Torque all connections per manufacturer's recommendations and verify with spot of red paint.

F. Set adjustable parameters and provide testing and calibration as required by engineering considerations.

END OF SECTION 26 29 21

PART 1 GENERAL

1.01 SUMMARY

A. This section includes requirements for interior lighting fixtures, lighting fixture components, ballasts, and lamps.

B. Comply with NFPA 70: National Electrical Code, NFPA 101: Life Safety Code, IESNA recommended practices, ANSI, ADA where appropriate, and UL CSA or ETL listing and labeling.

C. Lighting Fixture Selection

1. Subject to compliance with the project illumination requirements.

2. Products UL listed and labeled for condition of use.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Fluorescent Ballasts – Electronic

1. Advance

2. Magnetek/Triad

3. Energy Savings

B. HID Ballasts

1. Advance

2. Universal

C. Lamps

1. Osram/Sylvania

2. General Electric

3. Philips

2.02 LIGHTING FIXTURES

A. Metal Parts: Steel or aluminum with 300°F, baked enamel finish, brushed aluminum with baked acrylic clear lacquer finish, or stainless steel with a brushed finish.

B. Provide thermal protection via a replaceable cartridge fuse and fuse holder than encloses the fuse.

C. Hangers for pendant fixtures shall be rigid type; with not less than five-threaded engagement turns at each end. A safety factor of 4 shall be used in sizing anchors and hangers.

D. Provide plaster frames for recessed lighting fixtures mounted in other than T-Bar.

E. Recessed fluorescent downlights shall have cones, which are low brightness, low iridescence, and semi-specular or specular alzak as specified and shall be self-flanged type.

F. Reflective surfaces, which are painted, shall be baked white enamel or manufacturer standard color, two coats minimum with an average reflectance of 90% or better.

G. Doors, frames, and other internal access areas shall be smooth operating, free from light leakage under normal operating conditions, and arranged to permit ease of relamping.

H. Lenses, Diffusers, Covers, and Globes: High resistance to yellowing and other changes due to aging, UV stabilized. 100 percent virgin acrylic plastic or annealed crystal glass.

I. Electromagnetic Interference Filters: Integral to fixture assembly. Provide one filter for each ballast. Suppress conducted electromagnetic interference as required by MIL-STD-461.

2.03 BALLASTS

A. Fluorescent Ballasts

1. Electronic integrated circuit, solid-state, full-light-output, energy efficient type, compatible with lamps and lamp combinations to which connected.

2. Certification by Electrical Testing Laboratory (ETL).

3. Labeling by Certified Ballast Manufacturers Association (CBM).

4. Type: Class P, high power factor.

5. Lamp flicker less than 5 percent

6. Operating frequency of 20 kHz.

7. Power factor of .98.

8. Crest Factor of 1.7.

9. Ballast Factor of 0.88.

10. Sound Rating A.

11. Total Harmonic Distortion (THD) of Ballast Current: Less than 10 percent.

12. Conform to FCC regulations Part 15, Subpart J for electromagnetic interference.

13. Conform to IEEE C62.41, Category A, for resistance to voltage surges for normal and common modes.

14. Multi-tap Ballast's: Use 2-, 3-, or 4-lamp ballast for multi-tap fixtures where possible.

15. Lamp ballast connection method does not reduce normal rated life of lamp.

B. HID Ballasts

1. Conform to UL 1029 “High-Intensity-Discharge Lamp Ballasts”

2. Constant wattage autotransformer (CWA) or regulating high power factor type.

3. Minimum starting temperature of -30°C.

4. Normal ambient rating temperature of 40°C.

5. Encapsulation: Manufacturer’s standard epoxy designed to minimize noise. Noise rating B or better.

6. Multi-tap ballast.

2.04 LAMPS

A. Standard fluorescent fixtures shall use T8 style lamps.

B. Comply with ANSI C78 series that is applicable to each type of lamp.

C. Color

1. Office Areas: 4200K (i.e., cool white)

2. Public Areas: 3500K (i.e., warm white)

D. Fluorescent lamps shall have a color temperature of 3500K, and a color-rendering index rating (CRI) of 85.

E. Fluorescent lamps used in close proximity to Metal Halide, or Halogen lamps shall have a color temperature of 4200K, and a color-rendering index rating (CRI) of 85.

F. Non-compact fluorescent lamps shall have a rated lamp life of 20,000 hours at 3 hours per start.

G. Incandescent lamps shall be rated for 130 volts and approved by F&I for each application.

H. Lighting fixtures that contain lamps, which require protective shielding, shall be furnished with a tempered glass lens, or approved unbreakable lens, which is UL, CSA or ETL listed for the application.

I. Fluorescent lamps shall pass federal TCLP tests

2.05 LED LIGHT FIXTURES

A. General:

1. LED light fixtures shall be in accordance with IES, NFPA, UL, as shown on the drawings, and as specified.

2. LED light fixtures shall be Reduction of Hazardous Substances (RoHS)-compliant.

3. LED drivers shall include the following features unless otherwise indicated:

   a. Minimum efficiency: 85% at full load.

   b. Minimum Operating Ambient Temperature: -20˚ C. (-4˚ F.)

   c. Input Voltage: 120 - 277V (±10%) at 60 Hz.

   d. Integral short circuit, open circuit, and overload protection.

   e. Power Factor: ≥ 0.95.

   f. Total Harmonic Distortion: ≤ 20%.

   g. Comply with FCC 47 CFR Part 15

4. LED modules shall include the following features unless otherwise indicated:

   a. Comply with IES LM-79 and LM-80 requirements.

   b. Minimum CRI 80 and color temperature 3000˚ K unless otherwise specified in LIGHTING FIXTURE SCHEDULE.

   c. Minimum Rated Life: 50,000 hours per IES L70.

   d. Light output lumens as indicated in the LIGHTING FIXTURE SCHEDULE.

B. LED Downlights:

1. Housing, LED driver, and LED module shall be products of the same manufacturer.

C. LED Troffers:

1. LED drivers, modules, and reflector shall be accessible, serviceable, and replaceable from below the ceiling.

2. Housing, LED driver, and LED module shall be products of the same manufacturer.

PART 3 INSTALLATIONS

3.01 GENERAL

A. Fixtures shall be level, in straight lines, aligned, and coordinated with ceiling construction and other trades.

B. Fixtures installed in suspended ceilings shall be attached to the ceiling with acceptable seismic clips (which are listed for use with the ceiling framing members and fixtures), mounted on the fixture and the suspended tees or by other means. Wires or chains shall also separately support recessed fixtures. Comply with NEC Article 410-16(c).

C. Fixtures shall be supported by separate means such as wire or chains from the building structure and not from the ceiling system, ductwork, piping, or other systems, with the exception of fixture types to be installed in suspended ceilings. See NEC Article 370-23.

D. Fixture installation shall comply with seismic zone 3 requirements.

E. Aimable or focusing fixtures shall be adjusted in a manner to provide the desired effect.

F. Manufacturer labels or monograms shall not be visible after fixture installation.

G. Provide all accessories required for a complete and operational system.

1. For recessed fixtures, other than T-Bar, provide plaster frames and flanges suitable for ceiling.

2. Provide plates, barriers, or rings to cover any exposed ceiling material between fixture canopy or pan and outlet box.

H. Do not use fixtures as a raceway for circuit conductors except for the single branch circuit supplying the fixtures. Branch circuit wiring shall not pass through an outlet box that is an integral part of an incandescent fixture unless the fixture is identified for the purpose.

I. Flush and recessed fixtures without an integral outlet box shall have a tap connection conductor, with insulation rated for 90°C, run from fixture terminal connection to an outlet box at least 1-foot from the fixture.

J. Fixture whips shall be between 4’ and 6’ long.

K. Wiring within fixtures shall be neatly arranged and protected from damage.

END OF SECTION 26 51 00

PART 1 GENERAL

1.01 SUMMARY

A. Excavating for footings, slabs-on-grade, trenches, curbs, and paving; backfill and compaction of sub-grade, base and trenches.

B. Drawings and general provisions of the Contract, including General and Supplementary Conditions, and Division 1 Specification Sections, apply to this Section.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Submit list and source of materials to be used in the Work.

1.04 QUALITY ASSURANCE

A. Verify that survey benchmark and intended elevations for the Work are as indicated.

B. Comply with State of California Construction Sarety Orders (CAL/OSHA)

1.05 UTILITY DISCONNECTS

A. Coordinate directly with Humboldt County for any utility disconnects.

B. Notify Humboldt County 72 hours prior to any excavation.

PART 2 PRODUCTS

2.01 MATERIALS

A. General: Fill material will be subject to approval of the Geotechnical Engineer.

B. Backfill and Fill Materials: Satisfactory soil materials free of clay, rock or gravel larger than 2 inches in any dimension, debris, waste, vegetation, and other unsuitable materials. Local and import fill should have less than 15% fines and a plasticity index (PI) of less than 20.

C. Aggregate Base: Class 2 conforming to Caltrans Specification Section 26, maximum size 3/4 inches; compact to minimum of 95 percent.

PART 3 EXECUTION

3.01 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain from damage.

C. Notify utility company to remove and relocate utilities if required.

D. Protect plant life, lawns, and other features remaining as a portion of final landscaping.

E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.02 EXCAVATION AND COMPACTING

A. Saw cut all cuts into asphalt and/or concrete surfaces.

B. Excavate subsoil to accommodate building foundations, paving and site structures, construction operations, and as indicated on Drawings.

C. Compact disturbed load-bearing soil in direct contact with foundations to original bearing capacity; perform compaction as directed by Geotechnical Engineer.

D. Support trench excavations in compliance with local codes and safety regulations.

E. Sheet Pile or shore all excavations as required.

F. Do not interfere with 45 degree bearing splay under foundations except at pile foundations or where shoring is designed to resist earth and foundation pressures without permitting any settlements of foundations, slabs, or similar structures.

G. Grade top perimeter of excavation to prevent surface water from draining into excavation.

H. Hand trim excavation. Remove loose matter.

I. Remove lumped subsoil, boulders, and rock larger than 2 inches in diameter.

J. Correct areas over-excavated as directed by Geotechnical Engineer.

K. Do not backfill trenches until tests and inspections have been made.

L. Compact to minimum of 95 percent dry density (ASTM 1557) in planted areas and a minimum of 95 percent dry density (ASTM 1557) in paved areas.

M. Footing bottoms should be free of loose debris and should be firm and unyielding as approved by the project Geotechnical Engineer prior to placement of steel and concrete.

END OF SECTION 31 23 00

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes the requirements for providing and installing temporary erosion control structures as specified.

B. Drawings and general provisions of the Contract, including General and Supplementary Conditions, and Division 1 Specification Sections, apply to this Section.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 QUALITY ASSURANCE

A. Reference Standards

1. California Stormwater Quality Association (CASQA) “Stormwater Best Management Practice Handbook for Construction”.

2. State Water Resources Control Board (SWRCB) standards

3. California Stormwater Quality Assocation “Stormwater Best Management Practice Handbook” for Construction and Industrial and Commercial Development, latest edition.

PART 2 PRODUCTS

2.01 MATERIALS

A. Furnish and install the following as specified herein and required to eliminate potential erosion and sedimentation during construction works.

1. Siltation fences

2. Outlet structure, basins, ditches

3. Filter fabric, and/or mesh

PART 3 EXECUTION

3.01 PROCEDURES

A. Contractor shall prepare and submit for approval a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the SWRCB application and requirements for Humboldt County review and approval prior to submitting to the SWRCB.

B. Erosion and sedimentation control measures are to be installed in areas as indicated or as directed by governing regulations.

C. Contractor shall provide inspection and repair of established SWPPP applications and prepare maintenance reports of erosion control measures in accordance with approved SWPPP.

END OF SECTION 31 25 00

PART 1 GENERAL

1.01 SUMMARY

A. This Section covers the minimum material and performance requirements for flexible metal bollards.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Laboratory test reports for concrete mixes. Compression test data (field experience method) or results of testing (trial batch method) used to establish mix proportions.

B. Product Data: Manufacturers' and suppliers' proprietary information on materials.

1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations.

3. Installation methods.

4. Cleaning and maintenance instructions.

C. Show Drawings: Show mounted items and coordination required for work specified in other Sections; indicate construction and installation details.

D. Verification Samples: One sample for each product specified, representing colors and finishes to be installed.

E. Maintenance Information: Submit manufacturer’s touch-up, cleaning and maintenance information.

F. Warranty Documentation: Submit manufacturer’s warranty documentation.

1.04 REFERENCE STANDARDS

A. ASTM A 36 – Standard Specification for Carbon Structural Steel.

B. ASTM A 53 – Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc-Coated Welded and Seamless.

C. ASTM A 312 – Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.

D. ASTM A 536 – Standard Specification for Ductile Iron Castings.

E. ASTM D 1654 – Subjected to Corrosive Environments

1.05 WARRANTY

A. Manufacturer’s Warranty: Provide manufacturer’s standard warranty that metal and rubber components will be free from defects in material and workmanship for one year.

Provide manufacturer's standard warranty that coatings will not peel, crack or significantly change color for two years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Vesti

2.02 MATERIALS

A. Post (Bollard) – SPBOL-42

1. The post or upright portion of the bollard system shall be comprised of standard ANSI schedule 40 steel pip. Pipe seams shall be ground flush and edges de-burred such that no sharp edges are present.

a. Ductile Cast Iron: ASTM A536, Grade 60/40/18

b. Steel ASTM A36

c. Weight: 13 lbs.

B. Upright Finish:

1. Type: Polyester powder coat finish utilizing an epoxy prime coat and a polyester top coat.

2. Performance: 1000 hours salt-spray resistance as per ASTM D 1654.

3. Color: Yellow RAL 1018

C. Base Finish:

1. Type: Environmental Friendly KTL Finish with UV Glass

2. Performance: 1000 hours salt-spray resistance as per ASTM D 1654.

3. Color: Black

D. Adapter and Base

1. The adapter and base shall be constructed of a ductile case iron material rated to -40°C. The material shall be finished with an environmentally friendly catophoretic (KTL) black paint.

E. Elastomer

1. The elastomer shall be constructed of a rubber compound with a hollow center allowing for compression.

a. Natural Rubber ASTM D2240 Shore A 60 (± 5).

F. Anchors

1. Anchors shall be 5/8" x 5-1/2" concrete screw anchors. Anchors shall be of galvanized carbon steel construction with a static shear resistance of greater than 11,000 pounds and a static tension resistance of greater than 24,000 pounds.

G. Kinetic energy resistance testing by accredited laboratory.

2.03 WORKMANSHIP

A. The selected flexible metal bollard product selected shall exhibit good workmanship and shall be free of scratches, discoloration and other objectionable marks for defects, which affect appearance or serviceability.

PART 3 EXECUTION

3.01 PREPARATION

A. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions for placement.

B. Do not proceed with installation until substrates have been properly prepared and deviations from manufacturer's recommended tolerances for placement and location of embedded items and condition of substrate are corrected.

C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions. Commencement of installation constitutes acceptance of conditions.

3.02 INSTALLATION

A. Install in accordance with manufacturer's written instructions and recommendations.

B. Damaged, cracked, chipped, deformed or marred products are not acceptable. Field touch-up minor imperfections in accordance with manufacturer's instructions.

C. Application Substrates: Concrete, thin slabs on concrete.

1. Anchoring Type: Surface attached.

3.03 CLEANING AND PROTECTION

A. Cleaning: Immediately prior to Substantial Completion, clean bollards in accordance with manufacturer's instructions to remove dust, dirt, adhesives, and other foreign materials.

B. Protections: Protect installed work from damage.

3.04 CLOSEOUT ACTIVITIES

A. Provide minimum two year warranty.

END OF SECTION 03 30 00

PART 1 GENERAL

1.01 SUMMARY

A. Furnish all material, labor and equipment and perform all work to completely install paving brick for pedestrian traffic.

1.02 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Samples: Furnish not less than five (5) individual brick pavers samples (in each color specified), showing extreme variations in color and texture.

B. Test Reports:

1. Test reports for each type of paving brick are to be submitted to the architect, engineer or owner's representative for approval.

2. Testing and reports are to be completed by an independent laboratory.

3. Test reports shall show:

a. Modulus of Rupture (for units complying with ASTM C-1272)

b. Comprehensive strength

c. 24 hr. Cold Water Absorption

d. Saturation Coefficient (for units complying with ASTM C-902)

e. Efflorescence

C. Certificates: Prior to delivery, submit to architect, engineer or owner's representative certificates attesting compliance with the applicable ASTM Specifications for physical requirements and weathering classification.

1.04 QUALITY ASSURANCE

A. Brick Tests:

1. Test in accordance with ASTM C-67, with the following additional requirements:

a. Brick shall meet the requirements of either the abrasions index or volumetric abrasion loss. The brick shall meet the requirements of either column (1) or (2) of Table 2 for the applicable traffic or installation intended. The abrasion index is calculated from the cold absorption in percent and the compression strength in pounds per square inch as follows:

$$\text{Abrasion Index} = \frac{100 \times \text{Absorption}}{\text{Compression Strength}}$$

b. Cost of tests of units after delivery shall be borne by the purchaser, unless tests indicated that units do not conform to the requirements of the specifications, in which case cost shall be borne by the seller.

B. Mock-up:

1. Approximately 4 ft. (1.2m) long by 4 ft. (1.2m) wide area, showing the proposed spacing, brick paver size, color range, texture, and workmanship. All brick paver installed and accepted may be incorporated with the work.

2. Construct brick paver mock-up in the presence of county's representative before installation of materials.

3. Do not start work until county has accepted the mock-up.

4. Use approved mock-up as standard of comparison for all brick paving work construction of same material.

5. Do not alter or destroy approved mock-up until work is completed and accepted by the county.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Prior to installation store paver brick off of the ground to prevent contamination by materials likely to cause staining or other defects.

B. Prior to installation cover paver brick and sand materials with waterproof covering when necessary to protect from the elements.

C. Prior to installation store different type of aggregate separately.

PART 2 PRODUCTS

2.01 CLAY PAVING BRICK

A. All paving brick per Architectural Finish List

1. Pedestrian and Light Traffic Paving Brick shall conform to the latest revision of ASTM C 902.

a. Provide brick similar in texture and physical properties to those available for inspection at the architect's, engineer's or owner's representative office.

2.02 BASE MATERIAL

A. Base material selection shall be determined in part, by the pavement system specified which is dependent on both known and anticipated traffic loads and specific site conditions.

1. Base material for brick paving systems specified under ASTM C 902 (Pedestrian and Light Traffic Paving Brick), shall be in accordance with BIA recommendations:

a. “Semi-Rigid Continuous Bases”

b. “Rigid Bases” which shall be in accordance with BIA recommendations.

PART 3 EXECUTION

3.01 INSPECTIONS

A. Prior to the installation of the brick paving system, the paving contractor shall check and verify that the base material has been properly prepared and that the specified elevation, grade and slope for drainage comply with the project specifications.

3.02 INSTALLATION OF RIGID BRICK PAVING SYSTEM

A. Prepare subgrade to match existing and new site elevations

3.03 CLEANING AND PROTECTION

A. Clean soiled surfaces with cleaning solution approved by brick manufacturer.

B. Protect adjacent construction and landscaping from cleaning agents.

C. Rinse all surfaces with potable water. Pressure not to exceed 120 lbs. per square inch.

3.04 TOLERANCES

A. The final surface elevation shall be flush with adjacent construction.
B. Maximum cariation in level shall be within +/- 3/8” in 10 feet.

END OF SECTION 32 51 50

PART 1 GENERAL

1.01. **DESCRIPTION**:

A. Underground water distribution system complete, ready for operation, including all appurtenant structures, and connections to existing water supply mains.

1.02. RELATED WORK:

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03. DEFINITIONS:

A. Water Distribution: Pipelines and appurtenances which are part of the distribution system. The distribution system comprises the network of piping located throughout building areas and other areas of water use, including hydrants, valves, and other appurtenances used to supply water for domestic and fire-fighting/fire protection purposes.

B. Water Service Line: Pipe line connecting building piping to water distribution lines.

1.04. QUALITY ASSURANCE:

A. Products Criteria:

1. Multiple Units: When two or more units of the same type or class of materials or equipment are required, these units shall be product of one manufacturer.

2. Nameplate: Nameplate bearing manufacturer's name or identifiable trademark securely affixed in a conspicuous place on equipment or name or trademark cast integrally with equipment, stamped, or otherwise permanently marked on each item of equipment.

B. Comply with the rules and regulations of the Public Utility having jurisdiction over the connection to Public Water lines and the extension, and/or modifications to Public Utility systems.

C. Comply with all rules and regulations of Federal, State, and Local Health Department, Department of Environmental Quality having jurisdiction over the design, construction, and operation of potable water systems.

D. All material surfaces in contact with potable water shall comply with NSF 61.

1.05. SUBMITTALS:

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturers' Literature and Data (Submit all items as one package):

(Ductile Iron Pipe and Polyvinyl Chloride (PVC) shall be in accordance with AWWA C600 and C605 respectively; and shall be provided to Contracting Officer Representative for approval.)

1. Piping.

2. Gaskets.

3. Valves.

4. Fire hydrants.

5. Vaults, frames and covers.

6. Valve boxes.

7. Joint restraint.

8. Disinfection products.

C. Testing Certifications:

1. Certification of Backflow Devices.

2. Hydrostatic Testing.

3. Certification of Disinfection, including free chlorine residuals, and bacteriological examinations.

1.06. APPLICABLE PUBLICATIONS:

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American National Standards Institute (ANSI/ASME):

B16.1-98	Cast Iron Pipe Flanges and Flanged Fittings
B16.18	Cast Bronze Solder Joint Pressure Fittings

C. American Society for Testing and Materials (ASTM):

A536-04	Standard Specifications for Ductile Iron Castings
D1784-03	Standard Specifications for Rigid PVC Compounds and CPVC Compounds
D2464-99	Standard Specifications for Threaded PVC Pipe Fittings, Schedule 80
D2467-02	Standard Specifications for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
D3139-98	Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
F477-02e1	Elastomeric Seals (Gaskets) for Joining Plastic Pipe

D. American Water Works Association (AWWA):

B300-04	Hypochlorites
B301-04	Liquid Chlorine
C104-04	Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water
C105-99	Polyethylene Encasement for Gray and Ductile C.I. Piping for Water and Other Liquids
C110-03	Ductile-Iron and Gray-Iron Fittings, 80 mm (3 Inches) Through 1200 mm (48 Inches) for Water and Other Liquids
C111-01	Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings
C115-99	Flanged Ductile-Iron and Gray-Iron Pipe with Threaded Flanges

C150-02 American National Standard for Thickness Design of Ductile Iron Pipe

C151-96 Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids

C153-00 Ductile-Iron Compact Fittings, 80 mm (3 inches) Through 300 mm (12 Inches) for Water and Other Liquids

C500-02 Gate Valves for Water and Sewerage Systems

C503-97 Wet-Barrel Fire Hydrants

C509-01 Resilient Seated Gate Valve for Water System

C550-01 Protective Epoxy Interior Coatings for Valves and Hydrants

C600-01 Installation for Ductile-Iron Water Mains and Their Appurtenances

C605-94 Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water

C651-92 Disinfecting Water Mains

C800-01 Underground Service Line Valves and Fittings

C900-97 Polyvinyl Chloride (PVC) Pressure Pipe, 4 Inches thru 12 Inches, for Water

E. National Fire Protection Association (NFPA):

24-95 Installation of Private Fire Service Mains and Their Appurtenances

291-01 Fire Flow Testing and Marking of Hydrants

1141-98 Fire Protection in Planned Building Groups

F. NSF International:

14-03 Plastics Piping Components and Related Materials

61-02 Drinking Water System Components-Health Effects (Sections 1-9)

PART 2 PRODUCTS

2.01. DUCTILE IRON PIPE AND FITTINGS:

A. Ductile iron pipe, direct buried:

1. Provide ductile iron pipe conforming to the requirements of AWWA C151, Pressure Class 350 for Pipe 4 inches through 12 inches in diameter and 250, minimum for pipe larger than 12 inches in diameter, with standard thickness cement mortar lining interior, and interior asphaltic seal coat and exterior asphaltic coating, in accordance with AWWA and ANSI Standards.

2. Below Grade: Supply pipe in lengths not in excess of a nominal 20 feet with rubber ring type push-on joints, mechanical joint or approved restrained joint. Provide flange joint pipe where shown on the drawings. Provide mechanical and restrained joint pipe with sufficient quantities of accessories as required for each joint.

3. When a polyethylene encasement over pipe, fittings, and valves is a requirement as indicated on the drawings, the material, installation and workmanship shall conform to applicable sections of AWWA C105. Make provisions to keep the polyethylene from direct exposure to sunlight prior to installation. Backfill following installation without delay to avoid exposure to sunlight.

B. Ductile Iron Pipe Above Grade or in Below Ground Concrete Pits:

1. Flanged ductile iron pipe, AWWA C115, with factory applied screwed long hub flanges except as otherwise specified hereinafter. Face and drill flanges after being screwed on the pipe, with flanges true to 90 degrees with the pipe axis and flush with end of pipe, ANSI B16.1, 850 kPa (125 psi) or 1725 kPa (250 psi) standard, for the purpose intended.

2. Pipe Thickness Class: Minimum of Class 53 as defined in AWWA C150 for all sizes of flanged pipe.

3. Rubber Ring Gaskets: Full face type, AWWA C111, 1/16 inch rubber ring gaskets and of approved composition suitable for the required service.

4. Bolts and Nuts on Flanged Fittings: Grade B, ASTM A307. Low alloy, high strength steel in accordance with AWWA C111. Assemble stainless steel bolts and nuts using anti-seize compound to prevent galling.

C. All Pipe Fittings: Ductile iron with a minimum pressure rating of 2400 kPa (350 psi). Fittings shall meet the requirements of ANSI and AWWA specifications as applicable. Rubber gasket joints shall conform to AWWA C111 for mechanical and push-on type joints. Ball joints shall conform to AWWA C151 with a separately cast ductile iron bell conforming to ASTM A148. Flanged fittings shall conform to AWWA C115 and be furnished flat faced and drilled to 850 kPa (125 psi) or 1725 kPa (250 psi) template in accordance with ANSI B16.1 with full faced gaskets.

D. Provide cement mortar lining and bituminous seal coat on the inside of the pipe and fittings in accordance with AWWA C104. Provide standard asphaltic coating on the exterior.

E. Provide a factory hydrostatic test of not less than 3.5 MPa (500 psi) for all pipe in accordance with AWWA C151.

F. Provide non-detectable adhesive backed identification tape on top and sides of all buried ductile iron pipe, extended from joint to joint along the length of the pipe and have black lettering identifying the pipe service at no more than 12 inch intervals. According to service, the tape background color shall be as follows: force main/sanitary-green; potable water-blue; reclaimed water-lavender.

2.02. POLYVINYL CHLORIDE PIPE AND FITTINGS:

A. Class-Rated Polyvinyl Chloride (PVC) Pipe:

1. PVC pipe and accessories 4 inches–14 inches in diameter, AWWA C900 “Polyvinyl Chloride (PVC) Pressure Pipe”, Class 200, DR 14, cast iron outside diameters, unless otherwise shown or specified.

2. PVC pipe and accessories 16 inches or larger, AWWA C905, “Polyvinyl Chloride Water Transmission Pipe”, Class 235, DR 18, cast iron outside diameters unless otherwise shown or specified. Pipe and accessories shall bear the NSF mark indicating pipe size, manufacturer’s name, AWWA and/or ASTM Specification

number, working pressure and production code. Pipe and couplings shall be made in accordance with ASTM D1784.

3. PVC Pipe and Accessories Smaller than 4 inches: Schedule 80, meeting the requirements of ASTM D-1785, Type 1, Grade 1. All exposed piping shall be CPVC meeting requirements of ASTM F441.

B. Joints:

1. Pipe 3 inches and Greater in Diameter: Push-on type with factory installed solid cross section elastomeric ring meeting the requirements of ASTM F-477.

2. Pipe Less Than 3 inches in Diameter: Threaded (ASTM D-2464) or solvent welded (ASTM 2467). Use Teflon tape or liquid Teflon thread lubricant approved for use on plastic on all threaded joints.

C. Fittings:

1. Class-Rated Pipe 3 inches in Diameter and Greater: Ductile iron with mechanical joints conforming to the requirements of AWWA C153.

2. For Schedule 80 Pipe less than 3 inches in Diameter: Threaded or solvent weld. Threaded PVC fittings shall conform to ASTM D2464. CPVC fittings shall conform to ASTM F437 for threaded fittings and ASTM F439 for solvent weld fittings.

2.03. VALVES:

A. Asbestos packing is not allowed.

B. Gate:

1. 3 inches and Larger: Resilient seated, ductile iron body, bronze mounted, inclined seats, non-rising stem type turning counter-clockwise to open, 1375 kPa (200 pound) WOG. AWWA C509. The resilient seat shall be fastened to the gate with stainless steel fasteners or vulcanizing methods. The interior and exterior shall be coated with thermo-setting or fusion epoxy coating in accordance with AWWA C550.

2. Operator:

a. Underground: Furnish valves with 2 inch nut for socket wrench operation. Valves shall comply with the requirements of NFPA 24.

3. Joints: Ends of valves shall accommodate, or be adapted to, pipe installed.

2.04. VALVE BOX:

A. Box with screw or slide-type adjustment and flared base. Minimum thickness of metal shall be 3/16 inch. Box shall be adapted, without full extension, to depth of cover required over pipe at valve location. Cast the word "WATER" in cover. Provide [ ] "T" handle socket wrenches of 5/8 inch round stock long enough to extend 2 feet above top of deepest valve box.

2.05. CAST IRON FRAME AND COVER, STEPS, ETC.:

A. Cast iron frame and cover, steps, etc. shall comply with State Department of Transportation standard details. Identify cover as “WATER”.

2.06. POTABLE WATER:

A. Water used for filling, flushing, and disinfection of water mains and appurtenances shall conform to Safe Drinking Water Act.

2.07. DISINFECTION CHLORINE:

A. Liquid chlorine shall conform to AWWA B301 and AWWA C651.

B. Sodium hypochlorite shall conform to AWWA B300 with 5 percent to 15 percent available chlorine.

C. Calcium hypochlorite shall conform to AWWA B300 supplied in granular form or 5.g tablets, and shall contain 65 percent chlorine by weight.

2.10 WARNING TAPE

A. Standard, 4-Mil polyethylene 3 inch wide tape, detectable type, blue with black letters, and imprinted with “CAUTION BURIED WATER LINE BELOW”.

PART 3 EXECUTION

3.01. REGRADING:

A. Raise or lower existing valve and curb stop boxes and fire hydrants to finish grade in areas being graded.

3.02. PIPE LAYING, GENERAL:

A. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe or coatings. Pipe or fittings shall not be dropped. All pipe or fittings shall be examined before laying, and no piece shall be installed which is found to be defective. Any damage to the pipe coatings shall be repaired as directed by the Contracting Officer Representative.

B. All pipe and fittings shall be subjected to a careful inspection just prior to being laid or installed. If any defective piping is discovered after it has been laid, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional expense to the Government. All pipe and fittings shall be thoroughly cleaned before laying, shall be kept clean until they are used in the work, and when installed or laid, shall conform to the lines and grades required.

C. All buried piping shall be installed to the lines and grades as shown on the drawings. All underground piping shall slope uniformly between joints where elevations are shown.

D. Contractor shall exercise extreme care when installing piping to shore up and protect from damage all existing underground water line and power lines, and all existing structures.

E. Do not lay pipe on unstable material, in wet trench, or when trench or weather conditions are unsuitable.

F. Do not lay pipe in same trench with other pipes or utilities unless shown otherwise on drawings.

G. Hold pipe securely in place while joint is being made.

H. Do not walk on pipes in trenches until covered by layers of earth well tamped in place to a depth of 12 inches over pipe.

I. Full length of each section of pipe shall rest solidly upon pipe bed with recesses excavated to accommodate bells or joints. Do not lay pipes on wood blocking.

J. Tees, plugs, caps, bends and hydrants on pipe installed underground shall be anchored. See section 3.7 “PIPE SUPPORTS”.

K. Close pipe openings with caps or plugs during installation. Tightly cover and protect equipment against dirt, water and chemical, or mechanical injury. At completion of all work, thoroughly clean exposed materials and equipment.

L. Good alignment shall be preserved in laying. The deflection at joints shall not exceed that recommended by the manufacturer.

M. Warning tape shall be continuously placed 12 inches above buried water pipes.

3.03. DUCTILE IRON PIPE:

A. Installing Pipe: Lay pipe in accordance with AWWA C600 with polyethylene encasement if required in accordance with AWWA C105. Provide a firm even bearing throughout the length of the pipe by tamping selected material at the sides of the pipe up to the spring line.

B. All pipe shall be sound and clean before laying. When laying is not in progress, the open ends of the pipe shall be closed by watertight plug or other approved means.

C. When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Bevel cut ends of pipe to be used with push-on bell to conform to the manufactured spigot end. Cement lining shall be undamaged.

D. Jointing Ductile-Iron Pipe:

1. Push-on joints shall be made in strict accordance with the manufacturer’s instruction. Pipe shall be laid with bell ends looking ahead. A rubber gasket shall be inserted in the groove of the bell end of the pipe, and the joint surfaces cleaned and lubricated. The plain end of the pipe is to be aligned with the bell of the pipe to which it is joined, and pushed home with approved means.

2. Mechanical Joints at Valves, Fittings: Install in strict accordance with AWWA C111. To assemble the joints in the field, thoroughly clean the joint surfaces and rubber gaskets with soapy water before tightening the bolts. Bolts shall be tightened to the specified torque.

3. Ball Joints: Install in strict accordance with the manufacturer’s instructions. Where ball joint assemblies occur at the face of structures, the socket end shall be at the structure and ball end assembled to the socket.

4. Flanged joints shall be in accordance with AWWA C115. Flanged joints shall be fitted so that the contact faces bear uniformly on the gasket and then are made up with relatively uniform bolt stress.

3.04. PVC PIPE:

A. PVC piping shall be installed in strict accordance with the manufacturer’s instructions and AWWA 605. Place selected material and thoroughly compacted to one foot above the top of the pipe and thereafter back filled as specified in Section 31 20 00, EARTH MOVING.

B. Copper Tracer Wire: Copper tracer wire consisting of No. 14 AWG solid, single conductor, insulated copper wire shall be installed in the trench with all piping to permit location of the pipe with electronic detectors. The wire shall not be spiraled around the pipe nor taped to the pipe. Wire connections are to be made by stripping the insulation from the wire and soldering with rosin core solder. Solder joints shall be wrapped with rubber tape and electrical tape. At least every 1000 feet, provide a 2.3 kg (5 pound) magnesium anode attached to the main tracer wire

by solder. The solder joint shall be wrapped with rubber tape and with electrical tape. An anode shall be attached at the end of each line.

C. Magnetic markers may be used in lieu of copper tracer wire to aid in future pipe locating. Generally, install markers on 20 foot centers. If pipe is in a congested piping area, install on 10 foot centers. Prepare as-built drawing indicating exact location of magnetic markers.

3.05. RESTRAINED JOINTS:

A. Sections of piping requiring restrained joints shall be constructed using pipe and fittings with restrained “locked-type” joints and the joints shall be capable of holding against withdrawal for line pressures 50 percent above the normal working pressure but not less than 1375 kPa (200 psi). The pipe and fittings shall be restrained push-on joints or restrained mechanical joints.

B. The minimum number of restrained joints required for resisting force at fittings and changes in direction of pipe shall be determined from the length of retained pipe on each side of fittings and changes in direction necessary to develop adequate resisting friction with the soil. Restrained pipe length shall be as shown on the drawings.

C. Restrained joint assemblies with ductile iron mechanical joint pipe shall be “Flex-Ring”, “Lok-Ring”, or mechanical joint coupled as manufactured by American Cast Iron Pipe Company, “Mega-Lug” or approved equal.

D. Ductile iron pipe bell and spigot joints shall be restrained with EBBA Iron Sales, Inc. Series 800 Coverall or approved equal.

E. Ductile iron mechanical joint fittings shall be restrained with EBBA Iron Sales, Inc. Series 1200 Restrainer. The restraining device shall be designed to fit standard mechanical joint bells with standard T head bolts conforming to AWWA C111 and AWWA C153. Glands shall be manufactured of ductile iron conforming to ASTM A536. Set screws shall be hardened ductile iron and require the same torque in all sizes. Steel set screws not permitted. These devices shall have the stated pressure rating with a minimum safety factor of 2:1. Glands shall be listed with Underwriters Laboratories and/or approved by Factory Mutual.

F. Thrust blocks shall not be permitted.

G. Where ductile iron pipe manufactured with restrained joints is utilized, all restrained joints shall be fully extended and engaged prior to back filling the trench and pressurizing the pipe.

H. PVC pipe bell and spigot joints shall be restrained with the Uni-Flange Corp. Series 1350 Restrainer or approved equal. The restraining device and Tee head bolts shall be manufactured of high strength ductile iron meeting ASTM A536. Clamping bolts and nuts shall be manufactured of corrosion resistant high strength, low alloy steel meeting the requirements of ASTM A242.

I. Ductile iron mechanical joint fittings used with PVC pipe shall be restrained with UNI-Flange Corp. Series 1300 Restrainer, EBBA Iron, Inc, Series 2000PV Mechanical Joint Restrainer Gland, or approved equal. The restraining device and Tee head bolts shall be manufactured of high strength ductile iron meeting ASTM A-536. Clamping bolts and nuts shall be manufactured of corrosion resistant high strength, low alloy steel meeting the requirements of ASTM A242.

3.06. PIPE SEPARATION:

A. Horizontal Separation-Water Mains and Sewers:

1. Water mains shall be located at least 10 feet horizontally from any proposed drain, storm sewer, sanitary or sewer service connection.

2. Water mains may be located closer than 10 feet to a sewer line when:

   a. Local conditions prevent a lateral separation of 10 feet; and

   b. The water main invert is at least 18 inches above the crown of the sewer; and

   c. The water main is either in a separate trench or in the same trench on an undisturbed earth shelf located one side of the sewer.

3. When it is impossible to meet (1) or (2) above, both the water main and drain or sewer shall be constructed of mechanical joint ductile iron pipe. Ductile iron pipe shall comply with the requirements listed in this specification section. The drain or sewer shall be pressure tested to the maximum expected surcharge head before back filling.

B. Vertical Separation-Water Mains and Sewers:

1. A water main shall be separated from a sewer so that its invert is a minimum of 18 inches above the crown of the drain or sewer whenever water mains cross storm sewers, sanitary sewers or sewer service connections. The vertical separation shall be maintained for that portion of the wear main located within 10 feet horizontally of any sewer or drain crossed. A length of water main pipe shall be centered over the sewer to be crossed with joints equidistant from the sewer or drain.

2. Both the water main and sewer shall be constructed of slip-on or mechanical joint ductile iron pipe or PVC pipe equivalent to water main standards of construction when:

   a. It is impossible to obtain the proper vertical separations described in (1) above; or

   b. The water main passes under a sewer or drain.

3. A vertical separation of 18 inches between the invert of the sewer or drain and the crown of the water main shall be maintained where a water main crosses under a sewer. Support the sewer or drain lines to prevent settling and breaking the water main.

4. Construction shall extend on each side of the crossing until the perpendicular distance from the water main to the sewer or drain line is at least 10 feet.

3.07. SETTING OF VALVES AND BOXES:

A. Provide a surface concrete pad 18 by 18 by 6 inches to protect valve box when valve is not located below pavement.

B. Clean valve and curb stops interior before installation.

C. Set valve and curb stop box cover flush with finished grade.

D. Valves shall be installed plumb and level and in accordance with manufacturer's recommendations.

3.08. SETTING OF FIRE HYDRANTS**:**

A. Set center of each hydrant not less than 2 feet nor more than 6 feet back of edge of road or face of curb. Fire apparatus connection shall face road with center of nozzle 18 inches above finished grade. Set barrel flange not more than 2 inches above finished grade.

B. Set each hydrant on a slab of stone or concrete not less than 4 inches thick and 15 inches square. The service line to the hydrant, between the tee and the shoe of the hydrant, shall be fully restrained.

C. Set bases in not less than 1/2 cubic yard of crushed rock or gravel placed entirely below hydrant drainage device.

D. Clean interiors of hydrants of all foreign matter before installation.

3.09. FLUSHING AND DISINFECTING:

A. Flush and disinfect new water lines in accordance with AWWA C651.

B. Initial flushing shall obtain a minimum velocity in the main of 0.75 m/sec (2.5 feet per second) at 40 PSI residual pressure in water main. The duration of the flushing shall be adequate to remove all particles from the line.

Pipe Diameter		Flow Required to Produce 2.5 ft/sec(approx.) Velocity in Main		Number of Hydrant Outlets			
				Size of Tap. in. (mm)			
				1(25)	1 ½(38)	2(51)	2 1/2-in (64 mm)
In	(mm)	gpm	(L/sec)	Number of taps on pipe			
4	(100)	100	(6.3)	1	--	--	1
6	(150)	200	(12.6)	--	1	--	1
8	(200)	400	(25.2)	--	2	1	1
10	(250)	600	(37.9)	--	3	2	1
12	(300)	900	(56.8)	--	--	3	2
16	(400)	1,600	(100.9)	--	--	4	2

The backflow preventers shall not be in place during the flushing.

C. The Contractor shall be responsible to provide the water source for filling, flushing, and disinfecting the lines. Only potable water shall be used, and the Contractor shall provide all required temporary pumps, storage facilities required to complete the specified flushing, and disinfection operations.

D. The Contractor shall be responsible for the disposal of all water used to flush and disinfect the system in accordance with all governing rules and regulations. The discharge water shall not be allowed to create a nuisance for activities occurring on or adjacent to the site.

E. The bacteriological test specified in AWWA C651 shall be performed by a laboratory approved by the Health Department, Department of Environmental Quality of the State. The cost of sampling, transportation, and testing shall be the responsibility of the Contractor.

F. Re-disinfection and bacteriological testing of failed sections of the system shall be the sole responsibility of the Contractor.

G. Before backflow preventers are installed, all upstream piping shall be thoroughly flushed.

3.10. HYDROSTATIC TESTING:

A. Hydrostatic testing of the system shall occur prior to disinfecting the system.

B. After new system is installed, except for connections to existing system and building, backfill at least 300 mm (12 inches) above pipe barrel, leaving joints exposed. The depth of the backfill shall be adequate to prevent the horizontal and vertical movement of the pipe during testing.

C. Prior to pressurizing the line, all joint restraints shall be completely installed and inspected.

D. If the system is tested in sections, and at the temporary caps at connections to the existing system and buildings, the Contractor shall provide and install all required temporary thrust restraints required to safely conduct the test.

E. The Contractor shall install corporation stops in the line as required to purge the air out of the system. At the completion of the test, all corporation stops shall be capped.

F. The Contractor shall perform pressure and leakage tests for the new system for 2 hours to 1375 kPa (200 psi). Leakage shall not exceed the following requirements.

G. Copper Tubing: No leaks.

H. Ductile Iron Pipe: AWWA C600.Provide to Contracting Officer Representative office.

I. Polyvinyl Chloride (PVC) AWWA C605.Provide to Contracting Officer Representative office.

END OF SECTION 33 10 00

PART 1 GENERAL

1.01 DESCRIPTION

A. Outside, underground sanitary sewer system, complete, ready for operation, including connections to new building and structure, existing sanitary sewer lines, and existing sanitary structures, and all other incidentals to adjust existing system for new conditions.

1.02 RELATED WORK:

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 QUALITY ASSURANCE:

A. Products Criteria:

1. Multiple Units: When two or more units of the same type or class of materials or equipment are required, these units shall be products of one manufacturer.

2. Nameplates: Nameplate bearing manufacturer's name, or identifiable trademark, including model number, securely affixed in a conspicuous place on equipment, or name or trademark, including model number cast integrally with equipment, stamped, or otherwise permanently marked on each item of equipment.

B. Comply with the rules and regulations of the Public Utility having jurisdiction over the connection to Public Sanitary Sewer lines and the extension, and/or modifications to Public Utility Systems.

1.04 SUBMITTALS:

A. Manufacturers' Literature and Data: Submit the following as one package:

1. Pipe, Fittings, and, Appurtenances.

2. Jointing Material.

3. Gate Valves.

4. Valve Boxes.

5. Check Valves.

1.05 APPLICABLE PUBLICATIONS:

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM):

A48/A48M-03 ..... Gray Iron Castings

A536-84(2004) ..... Ductile Iron Castings

A615/A615M-06 ..... Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

A625/A625M-03 ..... Tin Mill Products, Black Plate, Single Reduced

A746-03.....Ductile Iron Gravity Sewer Pipe
C12-06 .....Installing Vitrified Clay Pipe Lines
C76-05b/C76M-05b.....Reinforced Concrete Culvert, Storm Drain and Sewer Pipe
C150-05 .....Portland Cement
C425-04 .....Compression Joints for Vitrified Clay Pipe and Fittings
C478-06a/C478M-06a ..Precast Reinforced Concrete Manhole Sections
C700-05 .....Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated
C828-03 .....Low-Pressure Air Test of Vitrified Clay Pipe Lines
C857-95(2001).....Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
D698-00ae1 .....Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
D2321-05 .....Underground Installation of Thermoplastic Pipes for Sewers and Other Gravity-Flow Applications
D2412-02 .....Determination of External Loading Characteristics of Plastic Pipe by Parallel- Plate Loading
D2992-01 .....Practice for Obtaining Hydrostatic or Pressure Design Basis for Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe and Fittings
D3034-04a .....Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
D3212-96a (2003) e1....Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
D3261-03 .....Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
D3350-05 .....Polyethylene Plastics Pipe and Fittings Materials
D4101-05a. .....Polypropylene Injection and Extrusion Materials
F477-02e1.....Elastomeric Seals (Gaskets) for Joining Plastic Pipe
F679-06.....Poly (vinyl chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings
F714-05.....Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter
F794-03.....Poly (Vinyl Chloride)(PVC) Ribbed Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter
F894-05.....Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe

F949-03 ..... Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with Smooth Interior and Fittings

C. American Water Works Association (AWWA):

C105/A21.5-05 ..... Polyethylene Encasement for Ductile Iron Pipe Systems
C110/A21.10-03 ..... Ductile-Iron and Gray-Iron Fittings for Water
C111/A21.11-00 ..... Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings
C115-99 ..... Flanged Ductile-Iron Pipe with Threaded Flanges
C116-03 ..... Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile Iron Pipe and Gray Iron Fittings for Water Supply Service
C151-/A21.51-02 Ductile-Iron Pipe, Centrifugally Cast for Water
C153-00 Ductile-Iron Compact Fittings for Water Services
C508-01 ..... Swing Check Valves for Waterworks, 2 inches (50 mm) Through 24 inches (600 mm) NPS
C509-01 ..... Resilient Seated Gate Valves for Water-Supply Service
C515-01 ..... Reduced-Wall, Resilient-Seated Gate Valves For Water Supply Service
C512-04 ..... Air Release, Air/Vacuum, and Combination Air Valves for Waterworks Service
C550-05 ..... Protective Epoxy Interior Coatings for Valves and Hydrants
C600-05 ..... Installation for Ductile-Iron Water Mains and Their Appurtenances
C605-94 ..... Underground Installation of Polyvinyl (PVC) Pressure Pipe and Fittings for Water
C900-97 ..... Polyvinyl Chloride (PVC) Pressure Pipe, 100 mm (4 inches) Through 300 mm (12 inches) for Water Distribution
C905-97 ..... Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 350 mm through 1,200 mm (14 Inches through 48 Inches), for Water Transmission and Distribution
C906-99 ..... Polyethylene (PE) Pressure Pipes and Fittings, 100 mm through 1575 mm (4 Inches through 63 Inches), for Water Distribution

D. American Association of State Highway and Transportation Officials (AASHTO):

M198-05 ..... Joints for Concrete Pipe, Manholes, and Precast Box Sections using Preformed Flexible Joint Sealants

E. Uni-Bell PVC Pipe Association:

Uni-B-6-98.....Recommended Practice Low Pressure Air Testing of Installed Sewer Pipe

PART 2 PRODUCTS

2.01. PIPING:

A. Gravity Flow Lines (Pipe and Fittings):

1. Vitrified Clay: Pipe and fittings shall conform to ASTM C700, extra strength, with gasketed bell and spigot end joints. Joints on the pipe and fitting shall conform to ASTM C425.

2. Polyvinyl Chloride (PVC):

a. Pipe and Fittings, 100 to 375 mm (4 to 15 inches) in diameter, shall conform to ASTM D3034. Pipe and fittings shall have elastomeric gasket joints providing a watertight seal when tested in accordance with ASTM D3212. Gaskets shall conform to ASTM F477. Solvent welded joints shall not be permitted.

b. Pipe and fittings, 450 to 900 mm (18 to 36 inches) in diameter, shall be solid wall or have a corrugated or ribbed exterior profile and a smooth interior. Pipe shall conform to the following:

1) Pipe and fittings shall conform to ASTM F949 corrugated sewer pipe with a smooth interior. The corrugated outer wall shall be fused to the smooth interwall at the corrugation valley. Pipe and fitting shall have a smooth bell, elastomeric joints conforming to ASTM D3212, and shall have a minimum pipe stiffness of 350 kPa (50 psi) at 5 percent deflection, when tested in accordance with ASTM D2412. Corrugation shall be perpendicular to the axis of the pipe to allow gaskets to be installed on field cut sections of pipe without the requirement for special fittings.

2) Ribbed wall PVC pipe and fittings shall conform to ASTM F794 ribbed sewer pipe with smooth interior pipe and fittings shall have a smooth bell, elastomeric joints conforming to ASTM D3212, and shall have a minimum pipe stiffness of 320 kPa (46 psi) when tested in accordance with ASTM D 2412, at 5 percent vertical deflection. Joints shall not leak at 7.6 m (25 feet) of head under 5 percent deflection.

3) Solid wall pipe and fittings shall conform to ASTM F679, pipe and fittings shall gaskets conforming to ASTM F477, and shall be able to withstand a hydrostatic pressure of 345 kPa (50 psi).

3. Ductile Iron Pipe (DIP) for Sanitary Sewer: Shall conform to ASTM A746, thickness Class 51 unless otherwise shown or specified. Joints on pipe and fittings shall be push-on style and conform to AWWA C110 and AWWA C111, rated for 1.03 MPa (150 psi). Exterior coating shall be approximately 0.025 mm (1 mil) asphaltic coating as specified in ASTM A746. Interior lining shall be a catalyzed coal tar epoxy, having a minimum thickness of 0.60 mm (24 mils), a permeability rating of 0.13 perms, direct impact rating of 11.3 Nm (100 in-lbs), an

abrasion resistance of 20 liters of sand per mil, and dielectric strength of 250 volts per mil. Pipe and fittings shall be polyethylene encased with 0.20 mm (8 mil) polyethylene sheeting per AWWA C105. Color of polyethylene encasement shall be green.

4. High density polyethylene (HDPE) pipe and fittings 450 mm to 900 mm (18 inches to 36 inches) shall conform to ASTM F894. Pipe and fittings shall have a smooth interwall and profile exterior, and be Class 100. Joints shall be water tight elastomeric gaskets in accordance with ASTM D3212, or thermal welded joints.

2.02. JOINTING MATERIAL:

A. Gravity Flow Lines:

1. Vitrified Clay Pipe: Rubber gasket, ASTM C425.

2. Ductile Iron Pipe: Push-on or mechanical joints, AWWA C111, AWWA C110. Flange joints shall comply with AWWA C115. Flange joints shall only be used in vaults or above-grade.

3. Polyvinyl Chloride (PVC) Pipe (Gravity Use): Joints, ASTM D3212. Elastomeric gasket, ASTM F477.

4. High Density Polyethylene (HDPE) pipe and fitting joints, ASTM E-3212, elastomeric gaskets, ASTM F477.

B. Gravity Flow with Secondary Containment: Tapered or straight bell and spigot with adhesive bond. Completed joint shall be equal or greater than the pressure rating of the pipe.

2.03. CONCRETE:

A. Concrete shall have a minimum compressive strength of 20 MPa (3000 psi) at 28 days. The cement shall be Type III conforming to ASTM C150. Concrete shall conform with the provisions of Division 03 of these specifications.

2.04. REINFORCING STEEL:

A. Reinforcing steel shall be deformed bars, ASTM A615, Grade 40 unless otherwise noted.

2.05. CONCRETE PROTECTIVE COATING:

A. Concrete coating for the interior of wet wells shall consist of an epoxy blended filler sealer, and a cross linked epoxy phenolic cured, resistant protective coating.

2.06. GATE VALVES:

A. AWWA C509, resilient seated gate valves rated for 1360 kPa (200 psi) WSP, reduced-wall resilient seated gates valves may be supplied in accordance with AWWA C515. Asbestos packing is prohibited. The interior and exterior of the valve shall be epoxy coated for AWWA C550.

B. Operation:

1. Shall turn counterclockwise to open.

2. Underground: 50 mm (2 inch) nut for socket wrench operation.

3. Above Ground and In Pits: Handwheels.

C. Joints: End of valve shall accommodate, or be adapted to, pipe furnished.

2.07. VALVE BOXES:

A. Cast iron extension box with screw or slide-type adjustment and flared base. Minimum thickness or metal shall be 5 mm (3/16 inch). Box shall be of such length as will be adapted, without full extension, to depth of cover required over pipe at valve location.

B. Cast the word "SEWER" on the cover.

C. Provide Three (3) "T" handle socket wrenches, of 16 mm (5/8 inch) round stock long enough to extend 600 mm (2 feet) above top of deepest valve box.

2.08. CHECK VALVES

A. Check valves shall be swing-check valves conforming to AWWA C508. The interior and exterior of the valve shall be epoxy coated per AWWA C550. The check valve shall be rated for minimum of 850 kPa (125 psi) working pressure.

2.09. WARNING TAPE:

A. Standard, .1mm (4Mil) polyethylene 76 mm (3 inch) wide tape detectable type, green with black letters and imprinted with “CAUTION BURIED SEWER LINE BELOW”.”

PART 3 EXECUTION

3.01. BUILDING SERVICE LINES:

A. Install sanitary sewer service lines to point of connection within approximately 1500 mm (5 feet) outside of buildings where service is required and make connections. Coordinate the invert and location of the service line with the Contractor installing the building lines.

B. Connections of service line to building piping shall be made after the new sanitary sewer system has been constructed, tested, and accepted for operation by the Contracting Officer Representative. The Contractor shall install all temporary caps or plugs required for testing.

C. When building services have not been installed at the time when the sanitary sewer system is complete, provide temporary plugs or caps at the ends of all service lines. Mark the location and depth of the service lines with continuous warning tape placed 300 mm (12 inches) above service lines.

3.02. REGRADING:

A. Raise or lower existing manholes and structures frames and covers, cleanout frames and covers and valve boxes in regraded areas to finish grade. Carefully remove, clean and salvage cast iron frames and covers. Adjust the elevation of the top of the manhole or structure as detailed on the drawings. Adjust the elevation of the cleanout pipe riser, and reinstall the cap or plug. Reset cast iron frame and cover, grouting below and around the frame. Install concrete collar around reset frame and cover as specified for new construction.

B. During periods when work is progressing on adjusting manholes or structures cover elevations, the Contractor shall install a temporary cover above the bench of the structure or

manhole. The temporary cover shall be installed above the high flow elevation within the structure, and shall prevent debris from entering the wastewater stream.

C. The Contractor shall comply with all OSHA confined space requirements when working within existing structures.

3.03. CONNECTIONS TO EXISTING VA OWNED MANHOLES:

A. During construction of new connections to existing manholes, it shall be the sole responsibility of the Contractor to maintain continued sanitary sewer service to all buildings and users upstream. The contractor shall provide, install, and maintain all pumping, conveyance system, dams, weirs, etc. required to maintain the continuous flow of sewage. All temporary measures required to meet this requirement shall be subject to the review of the Contracting Officer Representative.

B. Core existing structure, install pipe at the design invert. Install an elastomeric gasket around the pipe, and grout the interstitial space between the pipe and the core.

C. The bench of the manhole shall be cleaned and reshaped to provide a smooth flowline for all pipes connected to the manhole.

D. Connections and alterations to existing manholes shall be constructed so that finished work conforms as nearly as practicable to the applicable requirements specified for new manholes, including concrete and masonry work, cutting and shaping.

3.04. GENERAL PIPING INSTALLATION:

A. Lay pipes true to line and grade. Gravity flow sewer shall be laid with bells facing upgrade. Pressure (force) mains shall have the bells facing the direction of flow.

B. Do not lay pipe on unstable material, in wet trench or when trench and weather conditions are unsuitable for the work.

C. Support pipe on compacted bedding material. Excavate bell holes only large enough to properly make the joint.

D. Inspect pipes and fittings, for defects before installation. Defective materials shall be plainly marked and removed from the site. Cut pipe shall have smooth regular ends at right angles to axis of pipe.

E. Clean interior of all pipe thoroughly before installation. When work is not in progress, open ends of pipe shall be closed securely to prevent entrance of storm water, dirt or other substances.

F. Lower pipe into trench carefully and bring to proper line, grade, and joint. After jointing, interior of each pipe shall be thoroughly wiped or swabbed to remove any dirt, trash or excess jointing materials.

G. Do not lay sewer pipe in same trench with another pipe or other utility. Sanitary sewers shall cross at least 600 mm (2 feet) below water lines.

H. Do not walk on pipe in trenches until covered by layers of bedding or backfill material to a depth of 300 mm (12 inches) over the crown of the pipe.

I. Warning tape shall be continuously placed 300 mm (12 inches) above sewer pipe

J. Install gravity sewer line in accordance with the provisions of these specifications and the following standards:

1. Ductile Iron Piping: AWWA C111 and C600.

2. Vitrified Clay Piping: ASTM C12.

3. Polyvinyl Chloride (PVC) Piping: ASTM D2321.

4. High Density Polyethylene (HDPE) Piping: Comply with manufacturer's recommendations with gaskets with fused joints.

K. Gravity Flow Lines with Secondary Containment:

1. Install per manufacturer's recommendations. Install all pipe centering devices to maintain an interstitial space below the invert of the carrier pipe. Both the carrier and containment pipe shall be tested for leaks.

3.05. MANHOLES AND VAULTS:

A. General:

1. Circular Structures:

a. Precast concrete segmental blocks shall lay true and plumb. All horizontal and vertical joints shall be completely filled with mortar. Parge interior and exterior of structure with 15 mm (1/2 inch) or cement mortar applied with a trowel and finished to an even glazed surface.

b. Precast reinforced concrete rings shall be installed true and plumb. The joints between rings and between rings and the base and top, shall be sealed with a preform flexible gasket material specifically manufactured for this type of application. Adjust the length of the rings so that the eccentric conical top section will be at the required elevation. Cutting the conical top section is not acceptable.

c. Precast reinforced concrete manhole risers and tops. Install as specified for precast reinforced concrete rings.

2. Rectangular Structures:

a. Reinforced concrete structures shall be installed in accordance with Division 03, CONCRETE.

b. Precast concrete structures shall be placed on a 200 mm (8 inch) reinforced concrete pad, or be provided with a precast concrete base section. Structures provided with a base section shall be set on 200 mm (8 inches) thick aggregate base course compacted to a minimum of 95 percent of the maximum density as determined by ASTM D698. Set precast section true and plumb. Seal all joints with preform flexible gasket material.

3. Do not build structures when air temperature is 0 degrees C (32 degrees F), or below.

4. Invert channels shall be smooth and semicircular in shape conforming to inside of adjacent sewer section. Make changes in direction of flow with a smooth curve of as large a radius as size of structure will permit. Make changes in size and

grade of channels gradually and evenly. Construct invert channels by one of the listed methods:

a. Forming directly in concrete base of structure.

5. Floor of structure outside the channels shall be smooth and slope toward channels not less than 1:12 (1-inch per foot) nor more than 1:6 (2 inches per foot). Bottom slab and benches shall be concrete.

6. The wall that support access rungs or ladder shall be 90 degrees vertical from the floor of structure to manhole cover.

7. Install manhole frames and covers on a mortar bed, and flush with the finish pavement. Frames and covers shall not move when subject to vehicular traffic. Install a concrete collar around the frame to protect the frame from moving until the adjacent pavement is placed. In unpaved areas, the rim elevation shall be 50 mm (2 inches) above the adjacent finish grade. Install a 200 mm (8 inches) thick, by 300 mm (12 inches) concrete collar around the perimeter of the frame. Slope the top of the collar away from the frame.

3.06. DRY WELL AND VAULTS:

A. Install precast reinforced concrete vaults on a 200 mm (8 inches) compacted aggregate base course. The floor, walls, and top shall be level and plumb.

B. Vaults shall be sized as indicated on the drawings. Orientate vault and internal piping, valves and appurtenances to provide access to all valves and appurtenances for operation and maintenance of the equipment.

C. Paint interior of dry well and vaults with two (2) coats of alkyd enamel masonry paint.

3.07. CLEANOUTS:

A. 150 millimeters (6 inches) in diameter and consisting of a ductile iron 45 degree fitting on end of run, or combination Y fitting and l/8 bend in the run with ductile iron pipe extension, water tight plug or cap and cast frame and cover flush with finished grade. Center-set cleanouts, located in unpaved areas, in a 300 by 300 by 150 mm (12 by 12 by 6 inches) thick concrete slab set flush with adjacent finished grade. Where cleanout is in force main, provide a blind flange top connection. The center of the flange shall be equipped with a 50 mm (2 inches) base valve to allow the pressure in the line to be relieved prior to removal of the blind flange. Frames and covers for pressure (force) mains shall be 600 mm (24 inches) in diameter.

B. The top of the cleanout assembly shall be 50 mm (2 inches) below the bottom of the cover to prevent loads being transferred from the frame and cover to the piping.

3.08. SETTING OF gate VALVES:

A. Avoid setting valves under pavement except where shown on the drawings.

B. Clean valve interior before installation.

C. Set valve plumb, restrain ends of valves when indicated on the drawing.

D. Set valve box cover flush with the finished grade. Valve box shall be centered over the operating nut.

3.09. SETTING OF CHECK VALVES:

A. Check valves shall be installed in a vault, direct burial of check valves shall not be permitted.

B. Check valves shall be set in the horizontal position, with adequate clearance to the structure to allow for movement of the lever and maintenance of the valve.

C. Clean the interior of the valve and check its operation prior to installation.

D. After installation, adjust the weight on the lever to provide proper operation in accordance with the manufacturer's recommendations.

3.10. INSPECTION OF SEWERS:

A. Inspect and obtain the Contracting Officer Representative's approval. Thoroughly flush out before inspection. Lamp test between structures and show full bore indicating sewer is true to line and grade. Lip at joints on the inside of gravity sewer lines are not acceptable.

3.11. TESTING OF SANITARY SEWERS:

A. Gravity

1. Air Test: Vitrified Clay Pipe ASTM C828. PVC Pipe, Uni-Bell Uni-B-6. Clean and isolate the section of sewer line to be tested. Plug or cap the ends of all branches, laterals, tees, wyes, and stubs to be included in the test to prevent air leakage. The line shall be pressurized to 28 kPa (4 psi) and allowed to stabilize. After pressure stabilization, the pressure shall be dropped to 24 kPa (3.5 psi) greater than the average back-pressure of any groundwater above the sewer. The minimum test time shall be as specified in Uni-Bell Uni-B-6.

2. Exfiltration Test:

a. Subject pipe to hydrostatic pressure produced by head of water at depth of 900 mm (3 feet) above invert of sewer at upper manhole under test. In areas where ground water exists, head of water shall be 900 mm (3 feet) above existing water table. Maintain head of water for one hour for full absorption by pipe body before testing. During one hour test period, measured maximum allowable rate of exfiltration for any section of sewer shall be 11 L (3.0 gallons) per hour per 30 m (100 feet).

b. If measurements indicate exfiltration is greater than maximum allowable leakage, take additional measurements until leaks are located. Repair and retest.

B. Testing of Concrete Wet Well: No leakage with the wet well completely filled with water for a duration of 4 hours.

END OF SECTION 33 30 00

PART 1 GENERAL

1.1 DESCRIPTION

A. This section specifies materials and procedures for construction of outside, underground storm sewer systems that are complete and ready for operation. This includes piping, structures and all other incidentals.

1.2 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic manholes, pipe, and fittings in direct sunlight.

B. Handle manholes catch basins and storm water inlets according to manufacturer's written rigging instructions.

1.4 COORDINATION

A. Coordinate connection to storm sewer main with the Public Agency providing storm sewer off-site drainage.

B. Coordinate exterior utility lines and connections to building services up to the actual extent of building wall.

1.5 Quality Assurance:

A. Products Criteria:

1. When two or more units of the same type or class of materials or equipment are required, these units shall be products of one manufacturer.

2. A nameplate bearing manufacturer's name or trademark, including model number, shall be securely affixed in a conspicuous place on equipment. In addition, the model number shall be either cast integrally with equipment, stamped, or otherwise permanently marked on each item of equipment.

1.6 SUBMITTALS

A. Manufacturers' Literature and Data shall be submitted, as one package, for pipes, fittings and appurtenances, including jointing materials, hydrants, valves and other miscellaneous items.

1.7 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM):

A185/A185M-07 .....Steel Welded Wire Reinforcement, Plain, for Concrete

A242/A242M-04(2009) .. High-Strength Low-Alloy Structural Steel
A615/A615M-09b ..... Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
A760/A760M-10 ..... Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains
A798/A798M-07 ..... Installing Factory-Made Corrugated Steel Pipe for Sewers and Other Applications
A849-10..... Post-Applied Coatings, Paving, and Linings for Corrugated Steel Sewer and Drainage Pipe
A929/A929M-01(2007) .. Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe
B745/B745M-97(2005) .. Corrugated Aluminum Pipe for Sewers and Drains
B788/B788M-09 ..... Installing Factory-Made Corrugated Aluminum Culverts and Storm Sewer Pipe
C33/C33M-08..... Concrete Aggregates
C76-11 ..... Reinforced Concrete Culvert, Storm Drain, Pipe
C139-10 ..... Concrete Masonry Units for Construction of Catch Basins and Manholes
C150/C150M-11..... Portland Cement
C443-10 ..... Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
C478-09 ..... Precast Reinforced Concrete Manhole Sections
C506-10b ..... Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
C507-10b ..... Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
C655-09 ..... Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe
C857-07 ..... Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
C891-09 ..... Installation of Underground Precast Concrete Utility Structures
C913-08 ..... Precast Concrete Storm Drain Structures
C923-08 ..... Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
C924-02(2009)..... Testing Concrete Pipe by Low-Pressure Air Test Method
C990-09 ..... Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
C1433-10 ..... Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers

C1479-10 ..... Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations

D448-08 ..... Sizes of Aggregate for Road and Bridge Construction

D698-07e1 ..... Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3))

D1056-07 ..... Flexible Cellular Materials—Sponge or Expanded Rubber

D1785-06 ..... Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120

D2321-11 ..... Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications

D2751-05 ..... Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings

D2774-08 ..... Underground Installation of Thermoplastic Pressure Piping

D3034-08 ..... Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings

D3350-10 ..... Polyethylene Plastics Pipe and Fittings Materials

D3753-05e1 ..... Glass-Fiber-Reinforced Polyester Manholes and Wetwells

D4101-11 ..... Polypropylene Injection and Extrusion Materials

D5926-09 ..... Poly (Vinyl Chloride) (PVC) Gaskets for Drain, Waste, and Vent (DWV), Sewer, Sanitary, and Storm Plumbing Systems

F477-10 ..... Elastomeric Seals (Gaskets) for Joining Plastic Pipe

F679-08 ..... Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings

F714-10 ..... Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter

F794-03(2009) ..... Poly(Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter

F891-10 ..... Coextruded Poly(Vinyl Chloride) (PVC) Plastic Pipe With a Cellular Core

F894-07 ..... Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe

F949-10 ..... Poly(Vinyl Chloride) (PVC) Corrugated Sewer Pipe With a Smooth Interior and Fittings

F1417-11 ..... Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air

F1668-08 ..... Construction Procedures for Buried Plastic Pipe

C. American Association of State Highway and Transportation Officials (AASHTO):

M190-04 ..... Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe Arches

M198-10 ..... Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants

M252-09 ..... Corrugated Polyethylene Drainage Pipe

M294-10 ..... Corrugated Polyethylene Pipe, 12 to 60 In. (300 to 1500 mm) Diameter

D. American Water Works Association(AWWA):

C105/A21.5-10 ..... Polyethylene Encasement for Ductile iron Pipe Systems

C110-08 ..... Ductile-Iron and Gray-Iron Fittings

C219-11 ..... Bolted, Sleeve-Type Couplings for Plain-End Pipe

C600-10 ..... Installation of Ductile iron Mains and Their Appurtenances

C900-07 ..... Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution

M23-2nd ed ..... PVC Pipe ”Design And Installation”

E. American Society of Mechanical Engineers (ASME):

A112.6.3-2001..... Floor and Trench Drains

A112.14.1-2003..... Backwater Valves

A112.36.2M-1991..... Cleanouts

F. American Concrete Institute (ACI):

318-05..... Structural Commentary and Commentary

350/350M-06..... Environmental Engineering Concrete Structures and Commentary

G. National Stone, Sand and Gravel Association (NSSGA): Quarried Stone for Erosion and Sediment Control

1.8 WARRANTY

A. The Contractor shall remedy any defect due to faulty material or workmanship and pay for any damage to other work resulting there from within a period of one year from final acceptance. Further, the Contractor will furnish all manufacturers’ and suppliers’ written guarantees and warranties covering materials and equipment furnished under this Contract.

PART 2 PRODUCTS

2.1 FACTORY-ASSEMBLED PRODUCTS

A. Standardization of components shall be maximized to reduce spare part requirements. The Contractor shall guarantee performance of assemblies of components, and shall

repair or replace elements of the assemblies as required to deliver specified performance of the complete assembly.

2.2 CONCRETE PIPE AND FITTINGS

A. Non-Reinforced-Concrete sewer pipe and fittings shall be ASTM C14, Class 3, with bell-and-spigot or tongue-and-groove ends and gasketed joints with ASTM C443, rubber gaskets sealant joints with ASTM C990, bitumen or butyl-rubber sealant

B. Reinforced-Concrete sewer pipe and fittings shall be ASTM C76 or ASTM C655.

1. Bell-and-spigot or tongue-and-groove ends and gasketed joints with ASTM C443, rubber gaskets sealant joints with ASTM C990, bitumen or butyl-rubber sealant.

2. Class III: Wall A

2.3 CLEANOUTS

A. Cast-Iron Cleanouts: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug.

1. Top-Loading Classification(s): Heavy Duty

2. Pipe fitting and riser to cleanout shall be same material as main pipe line.

3. Plastic Cleanouts shall have PVC body with PVC threaded plug. Pipe fitting and riser to cleanout shall be of same material as main line pipe.

2.4 MANHOLES AND CATCH BASINS

A. Standard Precast Concrete Manholes:

1. Description: ASTM C478 (ASTM C478M), precast, reinforced concrete, of depth indicated, with provision for sealant joints.

2. Diameter: 48 inches (1200 mm) minimum unless otherwise indicated.

3. Ballast: Increase thickness of precast concrete sections or add concrete to base section as required to prevent flotation.

4. Base Section: 6 inch (150 mm) minimum thickness for floor slab and 4-inch (102 mm) minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.

5. Riser Sections: 4 inch (102 mm) minimum thickness, and lengths to provide depth indicated.

6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated, and top of cone of size that matches grade rings.

7. Joint Sealant: ASTM C990 (ASTM C990M), bitumen or butyl rubber.

8. Resilient Pipe Connectors: ASTM C923 (ASTM C923M), cast or fitted into manhole walls, for each pipe connection.

9. Steps: If total depth from floor of manhole to finished grade is greater than 60 inches (1500 mm). ASTM A615, deformed, 1/2 inch (13 mm) steel reinforcing rods encased in ASTM D4101, width of 16 inches (400 mm) minimum, spaced at 12 to 16 inch (300 to 400 mm) intervals.

10. Adjusting Rings: Reinforced-concrete rings, 6 to 9 inch (150 to 225 mm) total thickness, to match diameter of manhole frame and cover, and height as required to adjust manhole frame and cover to indicated elevation and slope.

B. Manhole Frames and Covers:

1. Description: Ferrous; 24 inch (610 mm) ID by 7 to 9 inch (175 to 225 mm) riser with 4 inch (102 mm) minimum width flange and 26-inch (600 mm) diameter cover. Include indented top design with lettering cast into cover, using wording equivalent to "STORM SEWER."

2. Material: ASTM A536, Grade 60-40-18 ductile iron unless otherwise indicated.

2.5 CONCRETE FOR MANHOLES AND CATCH BASINS

A. General: Cast-in-place concrete according to ACI 318, ACI 350/350R, and the following:

1. Cement: ASTM C150, Type II.

2. Fine Aggregate: ASTM C33, sand.

3. Coarse Aggregate: ASTM C33, crushed gravel.

4. Water: Potable.

B. Concrete Design Mix: 4000 psi (27.6 MPa) minimum, compressive strength in 28 days.

1. Reinforcing Fabric: ASTM A185, steel, welded wire fabric, plain.

2. Reinforcing Bars: ASTM A615, Grade 60 (420 MPa) deformed steel.

C. Manhole Channels and Benches: Channels shall be the main line pipe material. Include benches in all manholes and catch basins.

1. Channels: Main line pipe material or concrete invert. Height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope. Invert Slope: Same slope as the main line pipe. Bench to be concrete, sloped to drain into channel. Minimum of 6 inch slope from main line pipe to wall sides.

2.6 PIPE OUTLETS

A. Head walls: Cast in-place reinforced concrete, with apron and tapered sides.

B. Riprap basins: Broken, irregularly sized and shaped, graded stone according to NSSGA's "Quarried Stone for Erosion and Sediment Control."

1. Average Size: NSSGA No. R-5, screen opening 5 inches (127 mm).

2.7 HEADWALLS

A. Headwalls: Cast in-place concrete with a minimum compressive strength of 3000 psi (20 MPa) at 28 days.

2.8 WARNING TAPE

A. Standard, 4-Mil polyethylene 3 inch (76 mm) wide tape detectable type, purple with black letters, and imprinted with “CAUTION BURIED STORM SEWER BELOW”.

PART 3 EXECUTION

3.1 PIPE BEDDING

A. The bedding surface of the pipe shall provide a firm foundation of uniform density throughout the entire length of pipe. Concrete pipe requirements are such that when no bedding class is specified, concrete pipe shall be bedded in a soil foundation accurately shaped and rounded to conform with the lowest one-fourth of the outside portion of circular pipe. When necessary, the bedding shall be tamped. Bell holes and depressions for joints shall not be more than the length, depth, and width required for properly making the particular type of joint. Plastic pipe bedding requirements shall meet the requirements of ASTM D2321. Bedding, haunching and initial backfill shall be either Class IB or Class II material. Corrugated metal pipe bedding requirements shall conform to ASTM A798.

3.2 PIPING INSTALLATION

A. Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping as shown on the Drawings.

1. Adjust height and slope of pipe based on actual field conditions.

2. Field verify inverts of existing manholes, piping and other utilities prior to fabrication and installation of new manholes.

3. Adjust height of new manhole inlet as required to meet existing site conditions and maintain positive drainage.

C. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

1. Do not lay pipe on unstable material, in wet trench or when trench and weather conditions are unsuitable for the work.

2. Support pipe on compacted bedding material. Excavate bell holes only large enough to properly make the joint.

3. Inspect pipes and fittings, for defects before installation. Defective materials shall be plainly marked and removed from the site. Cut pipe shall have smooth regular ends at right angles to axis of pipe.

4. Clean interior of all pipe thoroughly before installation. When work is not in progress, open ends of pipe shall be closed securely to prevent entrance of storm water, dirt or other substances.

5. Lower pipe into trench carefully and bring to proper line, grade, and joint. After jointing, interior of each pipe shall be thoroughly wiped or swabbed to remove any dirt, trash or excess jointing materials.

6. Do not walk on pipe in trenches until covered by layers of shading to a depth of 12 inches (300 mm) over the crown of the pipe.

7. Warning tape shall be continuously placed 12 inches (300 mm) above storm sewer piping.

D. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.

E. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

F. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.

G. Install gravity-flow, nonpressure drainage piping according to the following:

1. Install piping pitched down in direction of flow.

2. Install corrugated steel piping according to ASTM A798.

H. Existing stormwater drainage shall be maintained throughout construction utilizing temporary piping, pumps and other means as necessary.

3.3 REGRADING

A. Raise or lower existing manholes and structures frames and covers in regraded areas to finish grade. Carefully remove, clean and salvage cast iron frames and covers. Adjust the elevation of the top of the manhole or structure as detailed on the drawings. Reset cast iron frame and cover, grouting below and around the frame. Install concrete collar around reset frame and cover as specified for new construction.

B. During periods when work is progressing on adjusting manholes or structures cover elevations, the Contractor shall install a temporary cover above the bench of the structure or manhole. The temporary cover shall be installed above the high flow elevation within the structure, and shall prevent debris from entering the wastewater stream.

3.4 CONNECTIONS TO EXISTING MANHOLES

A. Make pipe connections and alterations to existing manholes so that finished work will conform as nearly as practicable to the applicable requirements specified for new manholes, including concrete and masonry work, cutting, and shaping.

B. Provide new cast and pre-cast concrete and reinforcing to adjust existing manholes to new grades and conditions.

3.5 CATCH BASIN INSTALLATION

A. Construct catch basins to sizes and shapes indicated.

B. Set frames and grates to elevations indicated.

3.6 CONNECTIONS

A. Connect nonpressure, gravity-flow drainage piping in building's storm building drains specified in Division 22 Section FACILITY STORM DRAINAGE PIPING.

B. Encase entire connection fitting, plus 6 inch (150 mm) overlap, with not less than 6 inches (150 mm) of concrete with 28-day compressive strength of 3000 psi (20.7 MPa).

C. Make connections to existing piping and underground manholes.

1. Make branch connections from side into existing piping, NPS 21 (DN 525) or larger, or to underground manholes and structures by cutting into existing unit and creating an opening large enough to allow 3 inches (76 mm) of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall unless otherwise indicated. On outside of pipe, manhole, or structure wall, use epoxy-bonding compound as interface between new and existing concrete and piping materials.

2. Protect existing piping, manholes, and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

D. Pipe couplings, expansion joints, and deflection fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

1. Use nonpressure-type flexible couplings where required to join gravity-flow, nonpressure sewer piping unless otherwise indicated.

a. Flexible couplings for same OD pipes.

b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.

c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

2. Use pressure-type pipe couplings for force-main joints.

3.7 CLOSING ABANDONED STORM DRAINAGE SYSTEMS

A. Abandoned Piping: Close open ends of abandoned underground piping indicated to remain in place. Include closures strong enough to withstand hydrostatic and earth pressures that may result after ends of abandoned piping have been closed. Use either procedure below:

1. Close open ends of piping with at least 8 inch (203 mm) thick, concrete

2. Close open ends of piping with threaded metal caps, plastic plugs, or other acceptable methods suitable for size and type of material being closed. Do not use wood plugs.

3.8 IDENTIFICATION

A. Install green warning tape directly over piping and at outside edge of underground structures.

3.9 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Prior to final acceptance, provide a video record of all piping from the building to the municipal connection to show the lines are free from obstructions, properly sloped and joined.

1. Submit separate reports for each system inspection.

2. Defects requiring correction include the following:

a. Alignment: Less than full diameter of inside of pipe is visible between structures.

b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.

c. Damage: Crushed, broken, cracked, or otherwise damaged piping.

d. Infiltration: Water leakage into piping.

e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.

4. Reinspect and repeat procedure until results are satisfactory.

3.10 Testing Of Storm Sewers:

A. Submit separate report for each test.

B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.

2. Test completed piping systems according to requirements of authorities having jurisdiction.

3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours advance notice.

4. Submit separate report for each test.

5. Air test gravity sewers. Concrete Pipes conform to ASTM C924, Plastic Pipes conform to ASTM F1417, all other pipe material conform to ASTM C828 or C924,

after consulting with pipe manufacturer. Testing of individual joints shall conform to ASTM C1103.

6. Test force-main storm drainage piping. Perform hydrostatic test after thrust blocks, supports, and anchors have hardened. Test at pressure not less than 1-1/2 times the maximum system operating pressure, but not less than 150 psi (1035 kPa).

C. Leaks and loss in test pressure constitute defects that must be repaired. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.11 CLEANING

A. Clean interior of piping of dirt and superfluous materials. Flush with water.

END OF SECTION 33 40 00