UNITED STATES DEPARTMENT OF AGRICULTURE

SPECIFICATIONS
100% SUBMITTAL

Wooton Hall Colonnade Demo – Design - Asset # 623515B001

USDA-ARS
New Mexico State University
Wooton Hall
2995 Knox Street
Las Cruces, NM 88003

Prepared For:
U.S. Department Of Agriculture
Agricultural Research Service (ARS)
2150 Centre Avenue
Bldg D, Suite 300
Fort Collins, CO 80526

Contract No.
12805B23D0001

Task Order No.
12805B23F0260

Prepared By:
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Greenwood, Mississippi

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SECTION 01 00 01

WARRANTY OF CONSTRUCTION
01/20

PART 1 GENERAL

1.1 WARRANTY OF CONSTRUCTION

1.1.1 General

In addition to any other warranties set out elsewhere in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect of equipment, material or design furnished, or workmanship performed by the Contractor or any of his subcontractors or suppliers at any tier. Such warranty shall continue for a period of one year from the date of final acceptance of the project. Under this warranty, the Contractor shall remedy at his own expense any such failure to conform or any such defect. In addition, the Contractor shall remedy at his own expense any damage to Government owned or controlled real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements or any such defect of equipment, material, workmanship, or design. The Contractor shall also restore any work damaged in fulfilling the terms of this clause. The Contractor's warranty with respect to work repaired or replaced hereunder will run for one year from the date of such repair or replacement.

1.1.2 Notification and Compliance

The Government shall notify the Contractor in writing within a reasonable time after the discovery of any failure, defect, or damage. Should the Contractor fail to remedy any failure, defect, or damage described in paragraph 1.1.1 above within a reasonable time after receipt of notice thereof, the Government shall have the right to replace or repair and have the cost billed to the Contractor.

1.2 EXPRESSED WARRANTY

In addition to the other rights and remedies provided by this clause, all subcontractors', manufacturers', and suppliers' warranties expressed or implied, respecting any work and materials shall, at the direction of the Government, be enforced by the Contractor for the benefit of the Government. In such case, if the Contractor's warranty under paragraph 1.1.1 above has expired, any suit directed by the Government to enforce a subcontractor's, manufacturer's, or supplier's warranty shall be at the expense of the Government. The Contractor shall obtain any warranties which the subcontractors, manufacturers, or suppliers would give in normal commercial practice. If so directed by the Contracting Officer, the Contractor shall require any such warranties to be executed in writing to the Government.

1.3 LATENT DEFECTS

The Warranty specified herein shall not limit the Government's rights with respect to latent defects, gross mistake, or fraud.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 00 11

GENERAL PARAGRAPHS
06/20

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

1.1.1 Work To Be Done

The work to be done consists of furnishing all labor, materials, and equipment and performing all work in strict accordance with these specifications for Wooton Hall Colonnade Demo - Design in Las Cruces, NM. Bidder shall provide Base Bid pricing and Alternate pricing as defined in the contract documents.

1.1.2 Location

The site of work is at the USDA ARS, New Mexico State University Las Cruces, Wooton Hall, 2995 Knox Street, Las Cruces, NM 88003.

1.1.3 Principal Features of Work

Base Bid:

All work associated with underpinning the south colonnade as required to restore the colonnade to its original vertical position. The colonnade structure has settled and rotated to the south to an approximate .26 Degree angle creating a 1" gap, at its top, from the main wooton hall structure.

Bid Alternate #1:

All work associated with underpinning the west colonnade as required to restore the colonnade to its original vertical position. The colonnade structure has settled and rotated to the west to an approximate .26 Degree angle creating a 1" gap, at its top, from the main wooton hall structure.

BASE BID AND BID ALTERNATE CONTAIN:

Demolition of existing concrete sidewalk, installation of hydraulic piers under colonnade footings to restore the colonnades to original position, installation of new concrete sidewalks, minor repair of exterior finishes, and installation of sealant to seal openings.

1.2 SITE VISIT

USDA will conduct a single pre-bid site inspection for all interested contractors that will be coordinated with Scott Schrader. Contractor must be able to provide valid US or state photo ID and must be with USDA escort for access.

Contact:

U.S. Department of Agriculture, ARS
Attn: Scott Schrader
Wooton Hall

2995 Knox Street
Las Cruces, NM 88003
scott.schrader@usda.gov
1-575-646-5180

1.3 COORDINATION OF WORK

1. Work space and space available for storing materials shall be subject to the approval of the Contracting Officer. Do not store materials and equipment in other than assigned areas.

2. Execute work so as to interfere as little as possible with normal functioning of the facility, including operations of utility services and any existing equipment, and with work being done by others.

3. Minimize interference of construction activities with the flow of traffic by keeping roads, walks and entrances to grounds, to parking areas and to occupied areas of buildings clear of construction materials, debris, construction equipment and vehicles except where noted on plans or in specifications. Provide unobstructed access to areas required to remain in operation.

4. The Contractor shall complete all work within 60 consecutive calendar days after Notice to Proceed. Within 14 calendar days after Contract Award, the Contractor shall provide the Government with a detailed schedule of dates on which the Contractor plans to accomplish the work. In addition, the Contractor shall notify the Contracting Officer 20 days in advance of starting work. A planned work schedule shall be submitted to the Contracting Officer for approval. The schedule shall include a detailed description of the methods and equipment to be used for each operation and the sequence of operations. This schedule shall be updated monthly and submitted to the Contracting Officer for approval.

5. The Contractor shall take all measures and provide all material necessary for protecting existing equipment, property, and ongoing operations in affected areas of construction against dust, noise and debris.

6. Power sources for the Contractor's operations will be available and supplied by the Government to the Contractor as long as its use does not interfere with the operations of the Government's facilities. Water sources will be available and supplied by the Government to the Contractor as long as its use does not interfere with the operations of any building. The Contractor is responsible for extending utility sources to his work locations. Such extensions shall be removed after work is completed, to the satisfaction of the Contracting Officer.

7. All references in the specifications to the Contracting Officer and Contracting Officer's Representative shall constitute referrals initially to the Contracting Officer's Representative.

8. Contractor shall provide sanitary facilities for use by his employees and the employees of his subcontractors working on job site.

1.4 DRAWINGS

All dimensions shown of existing work and all dimensions required for

work that is to be connected with existing work shall be verified by the Contractor by actual field measurements. Any work at variance with that specified or shown on the drawings, shall not be performed by the Contractor until the Contractor has received approval in writing from the Contracting Officer.

1.5 MATERIAL SAFETY DATA SHEETS (MSDS)

Material Safety Data Sheets must be submitted to the Contracting Officer prior to the commencement of any work with any substance that may be considered hazardous.

1.6 UTILITIES OR STRUCTURAL ITEMS CONFLICTING WITH PROPOSED CONSTRUCTION

In the event the Contractor finds an area where existing utilities or structural items conflict with proposed construction, the Contracting Officer shall be notified immediately. The Contractor shall then propose a method of solving the problem. Work shall not resume in the problem area until the Contractor has received written approval from the Contracting Officer. There shall be no additional cost to the Government.

1.7 ACCEPTANCE OF WORK

1. Final inspection will not be made until the contract work is completed. The Contractor shall notify in writing the Contracting Officer fifteen working days prior to the date on which the work will be ready for final inspection.

2 Final inspection and acceptance of the work shown by the drawings and specifications forming a part of this contract shall not be binding or conclusive on the Government if it shall be shown that (1) the Contractor has willfully or through collusion with persons or firms engaged in the performance of the contract supplied inferior materials, equipment, or workmanship, or (2) the Contractor has otherwise departed from the terms of the contract.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

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SECTION 01 00 21

CONTRACTOR QUALITY CONTROL
01/20

PART 1 GENERAL

1.1 GENERAL

This section covers the quality control inspection, sampling, and testing of all materials, services, and workmanship required to be performed by the contract drawings, specifications, and other contract requirements. The Contractor shall perform all quality control inspection, sampling, and testing required by this contract and shall review and certify that each submittal is correct and in strict conformance with the contract drawings and specifications for all shop drawings and lists of materials, fixtures, and equipment. All work performed under this contract shall be in strict accordance with procedures and requirements detailed on the plans and specifications.

1.1.1 Certificate of Compliance

Upon completion of the contract work and prior to final acceptance, the Contractor shall submit to the Contracting Officer a certificate of compliance which states that all materials, equipment, design, and workmanship incorporated in the work are in strict compliance with contract drawings and specifications except for approved deviations. The certificates of compliance shall be signed and dated by both the manufacturer's representative and the Contractor. Based upon this certificate of compliance and other contract requirements, the Contractor shall be responsible for correcting at his expense any defects, omissions, and deviations (other than those previously approved) which are detected during the contract period or during the one-year warranty period as defined in Section 01 00 01, WARRANTY OF CONSTRUCTION.

1.2 INSPECTION

The Contractor shall inspect all materials, services, and workmanship to assure conformance with contract requirements.

1.3 REVIEW AND APPROVAL OF SHOP DRAWINGS, SUBMITTALS, MATERIALS, FIXTURES, AND EQUIPMENT

1. Prior to submission to the Government for approval, the Contractor shall review and certify that all shop drawings, submittals, lists of materials, fixtures, and equipment as called for under the various headings of these specifications are correct and in strict compliance with the contract drawings and specifications. These drawings, submittals and lists shall be accurate, complete, and adequately detailed. The top copy of data comprising each item listed on the transmittal form shall be identified as having received the quality control inspector's approval by being so stamped, signed and dated. Approval of shop drawings, submittals, materials, fixtures, and equipment by the Contracting Officer will not relieve the Contractor of the responsibility for any errors which may exist and the Contractor shall be responsible for the satisfactory construction of all work. All samples of materials submitted as required by these specifications shall be properly identified and labeled for ready identification, and upon being approved, stored at the site of the

work for jobsite use until all work has been accepted by the Contracting Officer. The Contractor shall provide four (4) sets of all shop drawings.

2. All proposed deviations required by the Contractor shall be noted in the "Remarks" column of the Form. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the shop drawing. The Government reserves the right to rescind inadvertent approval of shop drawings containing unnoted deviations.

1.4 DAILY RECORDS

The Contractor shall maintain a daily record of quality control measures performed for each shift of Contractor or Subcontractor operations on an appropriate format. These records shall provide factual evidence that continuous quality control inspections have been performed, including but not limited to the following: job progress, problems encountered; problems resolved; type and number of inspections; results of inspections or tests including all computations; nature of defects; causes for rejection; safety violations; proposed remedial action; and corrective action taken. These records shall cover both conforming and defective items and shall include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. The Contractor shall maintain a current record of all inspections and shall furnish to the Contracting Officer on a daily basis, legible copies of all inspection records for his permanent retention. The daily records of inspections shall cover all work placement subsequent to the previous report and shall be verified by the Contractor's designated representative.

1.5 RECURRING DEFICIENCIES

If recurring deficiencies in an item or items being inspected by the Contractor indicate that the inspection system is not providing adequate quality control, the Contractor shall take such corrective measures as deemed necessary by the Contracting Officer.

1.6 CONFLICTS

In the event of a difference of opinion between the Contractor and the Contracting Officer, the Contracting Officer shall govern.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 01 00

GENERAL REQUIREMENTS
03/21

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this section to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM E84	(2020) Standard Test Method for Surface Burning Characteristics of Building Materials

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2022; ERTA 1 2021) Standard for Portable Fire Extinguishers
NFPA 30	(2021; TIA 20-1; TIA 20-2; TIA 21-3) Flammable and Combustible Liquids Code
NFPA 51B	(2019; TIA 20-1) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2023) National Electrical Code
NFPA 101	(2021; TIA 21-1) Life Safety Code
NFPA 241	(2022) Standard for Safeguarding Construction, Alteration, and Demolition Operations

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926	Safety and Health Regulations for Construction

1.2 GENERAL INTENTION

A. Contractor shall completely prepare the site for building operations, including demolition and removal of existing structures, and furnish labor and materials and perform work as required by the contract documents.

B. All employees of general contractor and subcontractors shall comply with ARS security management program, obtain permission of the ARS Location Manager, be identified by project and employer by wearing contractor issued identification badges at all times on ARS property, and restricted from unauthorized access.

C. Prior to commencing work, the general contractor shall provide proof that an OSHA certified "competent person" (CP) (29 CFR 1926.20(b)) (2) will maintain a presence at the work site whenever the general or

subcontractors are present.

D. Training:

1. All employees of the general contractor or subcontractors shall have the 10-hour OSHA certified Construction Safety course and /or other relevant competency training. Supervisors shall have completed the 30-hour OSHA training.

2. Submit training records of all such employees to the Contracting Officer for approval before the start of work.

1.3 STATEMENT OF BID ITEMS

A. ITEM I, GENERAL CONSTRUCTION: Work includes general construction, alterations, and removal of existing structures and construction and certain other items.

1.4 PROJECT COORDINATION

A. Construction Project Schedule: See contract, FAR 52.236-15 Schedules for Construction Contracts. The Contractor will not begin actual work until the construction project schedule has been approved by the Contracting Officer. The Contractor shall submit one electronic copy of the updated construction project schedule with each progress payment request.

B. Contract Inspector's Daily Report:

C. Contractor shall submit to the Contracting Officer a daily report listing the names of all those present on the job site each day, along with their Job Classification, hours of work and a brief description of the work performed by each on that day. The Contract Inspector's Daily Report is to be submitted at the beginning of work each day for the previous day's work and shall be maintained throughout the term of the contract.

D. Formal Meetings:

1. Any meeting (deemed formal by the contractor, the COR, or the Contracting Officer) will have the minutes of said meeting prepared by the contractor (and a copy provided to the Contracting Officer). The minutes will include Date, Name of Attendees (with contact info), Old Business, and New Business subjects (or narratives). Regardless of who requests a meeting (the COR or the Contractor or the Contracting Officer), the contractor may be required to provide hard copy pictures of the issues to be discussed. Each issue will be linked to a contract specification section number and/or subject area by page number. Issues discussed will also include an action/completion date.

1.5 SAFETY SUBMITTALS

A. Contractor shall submit a "site specific" Safety Plan to the Contracting Officer that describes how the contractor is to comply with all applicable OSHA standards and NFPA codes pertaining to construction work to include, but not limited to: General Safety and Health Provisions, Occupational Health and Environmental Controls, Personal Protective and Life Saving Equipment, Hand and Power Tools, Welding and Cutting, Electrical, Scaffolds, Fall Protection, Excavations, Demolition,

Stairways, and Ladders, Toxic and Hazardous Substances, Confined Space Entry, Lockout/Tagout, Respiratory Protection, Hearing Protection. Safety Plan shall identify Contractor and sub-contractor employees who are authorized/qualified to perform electrical work. No work shall proceed until written approval of the Safety Plan by the Contracting Officer. Safety Plan shall describe how the Contractor and/or sub-contractors are to secure equipment, supplies, tools, and chemical products. Contractor and/or sub-contractor equipment, supplies, tools, and chemical products are to be under the control of the Contractor at all times, equipment, supplies tools, and chemical products found not to be under the control of the Contractor or sub-contractor are subject to confiscation and will be reported to the Contracting Officer.

1. Pandemic Specific Requirements for Access to ARS Locations/Worksites. Check with Site Safety Officer for specific requirements as requirements change from site to site, nature of the specific project and USDA guidelines per affected date.

a. Contractor must follow all State and Local guidelines for entry into the state which may include testing, quarantine, etc.

b. Plans must show compliance with any State Construction Guidelines

B. The Contractor shall inspect the entire construction site daily, including days without construction work if there are NFPA 101 Life Safety Code deficiencies existing while construction work is shut down, the results of that inspection shall be documented on the attachment "DAILY INSPECTION FORM", and the form is to be signed and submitted to the Contracting Officer.

C. Contractor shall provide continuous monitoring for noise, dust, chemical vapor generation, volatile organic compounds, and vibration. At no time shall noise exposure to any ARS staff exceed 75 db. Contractor shall provide to the Contracting Officer a written weekly update of all test results and also for proposed work for the subsequent two weeks (a two week "look-ahead") involving any construction activity that will produce loud noises, heavy vibrations, strong smells, or significant dust inside ARS staff occupied space.

D. Contractor and sub-contractors shall notify in writing the Contracting Officer at least one week prior to executing high risk work (this may be included in the two week "look-ahead" update). High risk work includes, but is not limited to, tasks requiring Lockout/Tag Out, live electrical work, hot work, work at heights, trenching/ shoring, crane operations, and confined space entry. Contractor's Competent Person shall provide the Contracting Officer written weekly documented safety inspection results.

E. Contractor shall provide to the Contracting Officer for approval, copies of Safety Data Sheets (SDS) for EVERY CHEMICAL WITHOUT EXCEPTION prior to bringing such chemical on the work site.

F. HOT WORK PERMITS:

1. The Contractor will not be permitted to work without this permit when performing hot work.

1.6 CONSTRUCTION SECURITY REQUIREMENTS

A. Security Plan:

1. The security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.

2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations.

B. Contractor Personnel

1. Upon receipt of contract award, the Contractor shall provide information about applicable contract employees requiring routine physical access to the construction site, including that of all sub-contractors before Contractor staff may enter the work site. Completion of the attached forms additionally Form SF-87 fingerprint cards (2 sets), and successful completion of the background investigation are required for Site Project Manager and Site Superintendent. All background investigation information shall be provided directly to:

Personnel Security and Suitability Office
5601 Sunnyside Ave
Beltsville, MD 20705

2. Each employee shall be furnished with a badge by the Government for access to construction site. This badge must be worn so as to be clearly visible at all times while on the work site.

C. Security Procedures:

1. Contractor's employees shall not enter the project site without appropriate badges. They may also be subject to inspection of their personal effects when entering or leaving the project site.

2. On-site Work Hours: Limit work in the existing building to normal business working hours of 7 a.m. to 4 p.m., Monday through Friday, unless otherwise indicated.

3. For working outside the "regular hours" as defined in the contract, The Contractor shall give a ten (10) day notice to the Contracting Officer so that security arrangements can be provided for the employees. This notice is separate from any notices required for utility shutdown described later in this section.

4. No photography of ARS premises is allowed without written permission of the Contracting Officer.

5. ARS reserves the right to close down or shut down the project site and order the Contractor's employees off the premises in the event of a national emergency or Government shutdown. The Contractor may return to the site only with the written approval of the Contracting Officer.

D. Work Restrictions:

1. See Contracting Officer for any additional restrictions exclusive of the ones listed in this section.

E. Document Control:

1. The Contractor is responsible for safekeeping of all drawings, project manuals and other project information. This information shall be shared only with those with a specific need to accomplish the project.

2. These documents shall not be removed or transmitted from the project site without the written approval of Contracting Officer.

3. All paper waste or electronic media such as CD's and diskettes shall be shredded and destroyed in a manner acceptable to the ARS.

F. Motor Vehicle Restrictions

1. Vehicle authorization request shall be required for any vehicle entering the site and such request shall be submitted 24 hours before the date and time of access. Access shall be restricted to picking up and dropping off materials and supplies and Contractor must be on site to receive all deliveries.

2. Separate permits shall be issued for Contractor and its employees for parking in designated areas only.

1.7 FIRE SAFETY

A. Applicable Publications: Publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.

1. American Society for Testing and Materials (ASTM):

ASTM E84 Surface Burning Characteristics of Building Materials

2. National Fire Protection Association (NFPA):

NFPA 10 Standard for Portable Fire Extinguishers

NFPA 30 Flammable and Combustible Liquids Code

NFPA 51B Standard for Fire Prevention During Welding, Cutting and Other Hot Work

NFPA 70 National Electrical Code

NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations

3. Occupational Safety and Health Administration (OSHA):

29 CFR 1926 Safety and Health Regulations for Construction

B. Fire Safety Plan: Establish and maintain a fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to the Contracting Officer for review for compliance

with contract requirements. Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the contractor's competent person per OSHA requirements. This briefing shall include information on the construction limits, ARS safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of ARS equipment, etc. Documentation shall be provided to the Contracting Officer that individuals have undergone contractor's safety briefing.

C. Site and Building Access: Maintain free and unobstructed access to facility emergency services and for fire, police and other emergency response forces in accordance with NFPA 241.

D. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in accordance with NFPA 241. For small facilities with less than 20 feet exposing overall length, separate by 10 feet.

E. Temporary Construction Partitions: Install and maintain temporary construction partitions to provide smoke-tight separations between construction areas and adjoining areas. Construct partitions of gypsum board or treated plywood (flame spread rating of 25 or less in accordance with ASTM E84) on both sides of fire-retardant treated wood or metal steel studs.

F. Temporary Heating and Electrical: Install, use, and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.

G. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Contracting Officer.

H. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to the Contracting Officer.

I. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CRF 1926, NFPA 241 and NFPA 10.

J. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.

K. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. Request interruptions in accordance with Paragraph "OPERATIONS AND STORAGE AREAS", and coordinate with the Contracting Officer. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the Contracting Officer. Parameters for the testing and results of any tests performed shall be recorded by the General Contractor and copies provided to the Contracting Officer.

L. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with the Contracting Officer.

M. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with the Contracting Officer.

N. Designate contractor's responsible project-site fire prevention program manager to coordinate permit hot work. See USDA Forms at the end of this Section for Hot Work Permit.

O. Fire Hazard Prevention and Safety Inspections: Inspect entire construction area weekly. Coordinate with, and report findings and corrective actions weekly to the Contracting Officer.

P. Smoking: Smoking is prohibited in and adjacent to construction areas inside existing buildings and additions under construction. In separate and detached buildings under construction, smoking is prohibited except in designated smoking rest areas.

Q. Controlled Substances: Use of tobacco and other controlled substances within the building is prohibited.

R. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.

S. Perform other construction, alteration, and demolition operations in accordance with 29 CFR 1926.

1.8 OPERATIONS AND STORAGE AREAS

A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers, and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.

B. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.

C. The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

D. Working space and space available for storing materials shall be as determined by the Contracting Officer.

E. Workers are subject to rules of the Location applicable to their conduct which shall be provided by the Contracting Officer.

F. Execute work so as to interfere as little as possible with normal

functioning of location as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others. Use of equipment and tools that transmit vibrations and noises through the building structure, are not permitted in buildings that are occupied during construction except as permitted by the Contracting Officer where required by limited working space.

1. Do not store materials and equipment in other than assigned areas.

2. Schedule delivery of materials and equipment to immediate construction working areas within buildings in use by the ARS in quantities sufficient for not more than two workdays.

3. Where access by ARS personnel to vacated portions of buildings is not required, storage of Contractor's materials and equipment may be permitted subject to fire and safety requirements.

G. Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the ARS operations will not be hindered. Contractor shall permit access to ARS personnel through construction areas which serve as routes of access to such affected areas and equipment. Coordinate alteration work in areas occupied by ARS so that operations will continue during the construction period.

H. When an unoccupied building is turned over to Contractor to complete construction as required, Contractor shall accept entire responsibility until contract completion.

I. Utilities Services: Maintain existing utility services for ARS at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by the Contracting Officer.

1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior written approval of the Contracting Officer. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished, work on any energized circuits or equipment shall not commence without the Contracting Officer's prior knowledge and written approval. Also see Lockout-Tagout Program 2021.

2. Contractor shall submit a request to interrupt any such services to the Contracting Officer, in writing, Two weeks advanced notice and again 48 hours in advance of proposed interruption. Request shall state reason, date, exact time of, and approximate duration of such interruption.

3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least inconvenience to operations of ARS. Interruption time approved by ARS may occur at other than Contractor's normal working hours.

4. Major interruptions of any system must be requested, in writing, at least 21 calendar days prior to the desired time and shall be performed as directed by the Contracting Officer. It is the Contractor's responsibility to develop a work plan and schedule detailing, at a minimum, the procedures to be employed, the equipment and materials to be used, the mitigating life safety measures to be used during the work, and a schedule defining the duration of the work with milestone subtasks.

5. In case of a contract construction emergency, service will be interrupted on approval of the Contracting Officer. Such approval will be confirmed in writing as soon as practical.

6. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.

J. To minimize interference of construction activities with flow of ARS traffic, comply with the following:

1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles.

2. Method and scheduling of required cutting, altering and removal of existing roads; walks and entrances must be approved by the Contracting Officer.

K. Coordinate the work for this contract with other construction operations as directed by Contracting Officer. This includes the scheduling of traffic and the use of roadways, as specified in Paragraph "USE OF ROADWAYS".

1.9 ALTERATIONS

A. Survey: Before any work is started, the Contractor shall make a thorough survey with the Contracting Officer, of areas of the building in which alterations occur and areas which are anticipated routes of access, and furnish a report, signed, to the Contracting Officer.

1. Shall note any discrepancies between drawings and existing conditions at site.

2. Shall designate areas for working space, materials storage and routes of access to areas within buildings where alterations occur and which have been agreed upon by Contractor and Contracting Officer.

1.10 DISPOSAL AND RETENTION

A. Materials and equipment accruing from work removed and from demolition of buildings or structures, or parts thereof, shall be disposed of as follows:

1. Items that remain property of the Government shall be removed or dislodged from present locations in such a manner as to prevent damage which would be detrimental to re- installation and reuse. Store such items where directed by Contracting Officer.

2. Items not reserved shall become property of the Contractor and be removed by Contractor from ARS property.

3. Items of portable equipment and furnishings located in rooms and spaces in which work is to be done under this contract shall remain the property of the Government. When rooms and spaces are vacated by the ARS during the alteration period, such items which are NOT required by drawings and specifications to be either relocated or reused will be removed by the Government in advance of work to avoid interfering with Contractor's operation.

B. Upon completion of contract, deliver work complete and undamaged. Existing work (walls, ceilings, partitions, floors, mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.

C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workers to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are indicated on drawings and which are not scheduled for discontinuance or abandonment.

1.11 AS-BUILT DRAWINGS

A. The Contractor shall maintain two full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications, and clarifications.

B. All variations shall be shown in the same general detail as used in the contract drawings. To ensure compliance, as-built drawings shall be made available for the Contracting Officer's review, as often as requested.

C. Contractor shall deliver two approved completed sets of as-built drawings and one electronic version to the Contracting Officer within 15 calendar days after each completed phase and after the acceptance of the project by the Contracting Officer.

D. Paragraphs A, B, & C shall also apply to all shop drawings.

1.12 USE OF ROADWAYS

A. For hauling, use only established public roads and roads on ARS property and, when authorized by the Contracting Officer, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense.

1.13 TEMPORARY TOILETS

A. Provide for use of all Contractors' workers ample temporary sanitary toilet accommodations with suitable sewer and water connections; or, when approved by Contracting Officer, provide suitable dry closets where directed. Keep such places serviced regularly, clean and free from all pests and all connections and appliances connected therewith are to be removed prior to completion of contract, and premises left perfectly clean.

1.14 AVAILABILITY AND USE OF UTILITY SERVICES

A. See contract, FAR Clause 52.236-14, Availability and Use of Utility Services.

B. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may be fire hazards or may smoke and damage finished work, is prohibited. Maintain minimum temperatures as specified for various materials and equipment as recommended by the manufacturer of the materials and equipment.

C. Electricity (for Construction and Testing): Furnish all temporary electric services.

1. Obtain electricity by connecting to the ARS electrical distribution system. The Contractor shall meter and pay for electricity required for electric cranes and hoisting devices, electrical welding devices and any electrical heating devices providing temporary heat. Electricity for all other uses is available at no cost to the Contractor.

D. Water (for Construction and Testing): Furnish temporary water service.

1. Obtain water by connecting to the ARS water distribution system. Provide reduced pressure backflow preventer at each connection. Water is available at no cost to the Contractor.

2. Maintain connections, pipe, fittings and fixtures and conserve water use so none is wasted. Failure to stop leakage or other wastes will be cause for revocation (at Contracting Officer's discretion) of use of water from ARS system.

1.15 TESTS

A. Conduct final tests required in various sections of specifications in presence of an authorized representative of the Contracting Officer. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.

1.16 INSTRUCTIONS

A. Contractor shall furnish maintenance and operating manuals, verbal instructions and formal training when required by the various sections of the specifications and as herein after specified.

1.17 RELOCATED EQUIPMENT AND ITEMS

A. Contractor shall disconnect, dismantle as necessary, remove and reinstall in new location, all existing equipment and items indicated to be relocated in accordance with statement of work, government approved drawings or Contracting Officer's direction.

B. Perform relocation of such equipment or items at such times and in such a manner as directed by the Contracting Officer.

1.18 CONSTRUCTION WASTE MANAGEMENT

A. Responsibilities: The contractor shall employ processes that ensure

the generation of as little waste as possible and shall avoid the generation of waste due to the following:

1. Over-packaging.

2. Error.

3. Poor planning, layout.

4. Over ordering.

5. Breakage.

6. Mishandling.

7. Contamination.

8. General weather damage, excluding extreme acts of nature (i.e. tornados, hurricanes, flash floods, blizzards, etc.).

B. Procedures.

1. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged or recycled.

2. Waste disposal in landfills shall be minimized to the greatest extent possible.

i. Waste Diversion Goals.

a) Demolition, Major Remodeling: Minimum 10% of total project waste shall be diverted from landfill.

ii. The following waste categories, at a minimum, shall be diverted from landfill:

a) Green waste (biodegradable landscaping materials).

(i) Soil.

(ii) Inert material (concrete, asphalt, masonry).

(iii) Clean dimensional wood, palette wood.

(iv) Engineered wood products: plywood, particle board, I-joists, etc.

(v) Cardboard, paper, packaging.

(vi) Asphalt roofing materials.

(vii) Insulation.

(viii) Gypsum board.

(ix) Carpet and pad.

(x) Paint.

(xi) Plastics: ABS, PVC.

(xii) Beverage containers.

C. Description of Work.

1. Includes:

i. Waste Management Plan development and implementation.

ii. Meetings to discuss goals, issues and training for the Waste Management Plan.

iii. Techniques to minimize waste generation.

iv. Sorting and separation of waste materials.

v. Reuse of salvaged materials on site.

vi. Salvage of existing materials and items for reuse or resale.

vii. Recycling of materials that cannot be reused or sold.

viii. Record keeping of receipts and records of salvaged, recycled or land filled materials.

2. Related Elements:

i. Alternates.

ii. Construction Waste Management.

iii. Site Demolition.

iv. Site Clearing.

v. Slope Protection/Erosion Control.

vi. Asphalt Concrete.

vii. Crushed Stone Paving.

viii. Portland Cement Concrete Paving.

ix. Valve Boxes.

x. Storm Sewers.

xi. Chain Link Fences and Gates.

xii. Walk, Road and Parking Appurtenances.

xiii. Miscellaneous Landscaping Materials.

xiv. Concrete, Concrete Formwork, and Concrete Reinforcement.

xv. Cast-in-Place Concrete.

xvi. Unit Masonry.

xvii. Structural Steel.

xviii. Steel Roof Deck/Steel Floor Deck.

xix. Cold Formed Metal Framing.

xx. Metal Fabrications.

xxi. Rough and Finish Carpentry.

xxii. Engineered Structural Wood.

xxiii. Plastic Lumber.

xxiv. Building Insulation.

xxv. Modified Bitumen Roofing.

xxvi. Metal Doors.

xxvii. Wood and Plastic Doors and Frames.

xxviii. Metal Support Systems.

xxix. Gypsum Wallboard.

xxx. Acoustical Treatment.

xxxi. Resilient Flooring.

xxxii. Tile and Carpet.

xxxiii. Painting.

xxxiv. Toilet Compartments.

xxxv. Louvers and Vents.

xxxvi. Signage and Graphics.

xxxvii. Ductwork and Ductwork Accessories

D. Definitions.

1. Landfill: A discrete area of land or a land excavation in which solid waste is placed for permanent disposal and for which a current permit has been issued by Oklahoma DEQ.

2. Clean: Untreated and unpainted; uncontaminated with adhesives, oils, solvents, mastics and like products.

3. Construction and Demolition Waste: Includes all non-hazardous resources resulting from construction, remodeling, alterations, repair and demolition operations.

4. Dismantle: The process of parting out a building in such a way as to preserve the usefulness of its materials and components.

5. Disposal: Acceptance of solid wastes at a legally operating facility for the purpose of land filling (includes landfills and inert fills).

6. 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.

7. Inert Fill: A facility that can legally accept inert waste, such as asphalt and concrete exclusively for the purpose of disposal.

8. 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.

9. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.

10. 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.

11. 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.

12. 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.

    i. 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.

    ii. Off-site Recycling. Materials hauled to a location and used in an altered form in the manufacture of new products.

13. 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 facility permit or be regulated by the local enforcement agency.

14. Re-Use: Materials that are recovered for use in the same form, on-site or off-site.

15. Return: To give back reusable items or unused products to vendors for credit.

16. Salvage: To remove waste materials from the site for resale or re-use by a third party.

17. Source-Separated Materials: Materials that are sorted by type at the

site for the purpose of reuse and recycling.

18. Solid Waste: Materials that have been designated as non-recyclable and are discarded for the purposes of disposal.

19. 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.

E. References.

1. Guides: No preference is given to the recycles listed below; they are listed for the convenience of the contractor.

2. Dirt/clean fill.

3. Green/landscaping waste.

4. Concrete, asphaltic concrete.

5. Cardboard, paper, packaging.

6. Clean dimensional wood, palette wood.

7. Usable palettes.

8. Metals from banding, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.

9. Carpet and pad.

10. Gypsum board.

11. Paint.

12. Insulation.

13. Asphalt shingles.

14. Beverage containers.

F. Submittals.

1. Waste Management Plan. Prior to any waste removal, the Contractor shall submit their Waste Management Plan to the ARS. The Plan shall contain the following:

i. Analysis of the estimated job site waste to be generated, including types and quantities.

ii. Proposed alternatives to land filling. Contractor shall prepare a list of each material proposed to be salvaged, re-used, or recycled during the course of the project.

iii. Methods handling of materials to be recycled.

iv. On Site:

2. Materials separation

3. Materials storage

4. Materials protection, where applicable

a) Off site:

(i) Provide name of mixed debris recycling facility; include list of materials to be recycled.

b) Procedures. A description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

c) Landfill Options. The name of the landfill(s) where trash will be disposed of.

d) Meetings. Contractor shall conduct Construction Waste Management meetings. Meetings shall include the Subcontractor, the Project Manager and representatives as designated by the Contracting Officer. At a minimum, waste management goals and issues shall be discussed at pre-bid meetings, pre-construction meetings and regular job-site meetings.

e) Transportation. A description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated facilities, or whether mixed materials will be collected by a waste hauler and removed from the site) and destination of materials.

f) Waste Management Plan Implementation.

(i) Manager. The contractor shall designate an on-site party (or parties) responsible for instructing workers and subcontractors and overseeing and documenting results of the Waste Management Plan for the project.

(ii) Distribution. The contractor shall distribute copies of the Waste Management Plan to the Contracting Officer and Location Manager.

(iii) Instruction. The contractor shall provide on-site instruction of appropriate separation, handling, recycling, salvage, reuse and return methods to be used by all parties at appropriate stages of the project.

(iv) Separation Facilities. The contractor shall lay out and label a specific area to facilitate separation of materials for reuse, salvage, recycling, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination or mixing of materials.

(v) Hazardous Wastes. Hazardous wastes shall be separated, stored, and disposed of according to local, state and federal regulations.

5. Reports.

i. The Contractor shall submit (monthly, quarterly, at end of job) a Waste Management Progress Report. The report shall contain the amount(in tons or cubic yards) of material land filled from the project, the identity of the landfill, the total amount of tipping fees paid at the landfill and the total disposal cost. Include legible copies of manifests, weight tickets, receipts, and invoices. Manifests shall be from recycle and/or disposal site operators that can legally accept the materials for the purpose of reuse, recycling or disposal.

ii. For each material recycled, reused, or salvaged from the project, provide the following:

a) Amount (in tons or cubic yards).

b) Date removed from the job site.

c) Receiving party.

d) Transportation cost.

e) Amount of any money paid or received for the recycled or salvaged material. Net total cost or savings of salvage or recycling each material. Attach manifests, weight tickets, receipts, and/or invoices. Indicate the project information, including project title, name of company completing form, and beginning and ending dates of period covered by summary form.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

3.1 USDA FORMS

Hot Work Permit

Daily Inspection Form

HOT WORK PERMIT
NEEDED WHEN ANY SPARK OR HEAT PRODUCING EQUIPMENT IS TO BE USED

Project Name:
Name of Contractor's Firm:
Contractor Contact Name:
Contractor Contact Telephone Number
Date:
Building/Location:
Work To Be Done:

_____

Any Special Precautions:

Fire Watch Required: ___ Yes ___ No

The location where the work is to be performed has been examined, necessary precautions have been taken, and permission is granted for this work.

A. Signed
(Contractor Individual Responsible for Authorizing Hot Work)
Permit Expires: _____ (Date)

Time Hot Work Started: _____ Time Hot Work Completed:

1. FINAL CHECK-UP

Work area and all adjacent areas to which sparks and heat might have spread (including floors above and below and on opposite sides of walls) were inspected 30 minutes after the work was completed and were found fire safe.

Signed_____ Date _____ (Contractor's Fire Watch)

(Page 1 of 2)

ATTENTION
Before approving any cutting and welding permit, the contractor's authorized representative or their appointee shall inspect the work area and confirm that pre-cautions have been taken to prevent fire in accordance with NFPA Standard No. 51B.

a) PRECAUTIONS

1. Sprinklers are in service where installed

2. Cutting and welding equipment in good repair

3. Within 35 feet; floors swept clean of combustible, no combustible material or flammable liquids, all wall and floor openings covered, and covers suspended beneath work to collect sparks

4. When working on enclosed equipment and in confined space, equipment and area is free of flammable vapors

5. Fire watch provided during and 30 minutes after operation (60 minutes for torch applied roofing operations)

6. Portable fire extinguisher with adequate rating available in the immediate vicinity

7. Standpipe system in service where installed

8. Protection of any sprinkler heads when hot work is in close proximity

9. Smoking prohibited in immediate vicinity

10. Non-combustible shields provided when hot work is done near combustible walls, partitions, floors, roofs

11. Prohibition of hot work on pipes contacting combustible walls

12. Personnel trained in use of equipment including portable fire extinguishers and sounding a fire alarm

13. Final check-up conducted after 30 minutes

DAILY INSPECTION FORM

INSTRUCTIONS: This form is to be utilized when hazards are posed by NFPA 101 deficiencies or construction activities are in progress. Remediation must be implemented upon project start and continuously enforced through project completion to provide a level of life safety comparable to that described in the Life Safety Code. Submit completed forms to the Contracting Officer.

Project Name:	Project Number:
Construction & Impact Description:	Construction Location: Affected Areas:
Project COR	Project Start Date
Project Competent Person (CP)	Estimated Duration
	Completion Date
Contractor	
GC Supervisor	Telephone:
Contractor CP	

Inspection Period: Responses:	SUN	MON	TUE	WED	THR	FRI	SAT
1. Are exits readily accessible and provide unobstructed egress?							
2. Have alternate exits been established if required due to inaccessibility of existing exits?							
3. If alternate exits have been established, are personnel in the area informed and aware of their relocation?							
4. Are the existing and relocated exits clearly marked and able to be seen in the event of a fire or emergency?							
5. Are evacuation routes posted with follow-up inspections required by construction impact changes in escape routes?							
6. Are written procedures and guidelines posted in the immediate and adjacent areas for what to do and who to call in the event of a fire or emergency?							

Inspection Period: Responses:	SUN	MON	TUE	WED	THR	FRI	SAT
7. Are personnel in immediate/adjacent areas aware and informed in procedures and guidelines to follow in the event of fire or emergency?							
8. Is there free and unobstructed access to services for emergency personnel (eg, fire, medical, security)?							
9. Are fire alarm (eg, pull station), detection (eg, smoke/heat), suppression (eg, sprinkler, extinguisher) systems in working order, protected and unobstructed with locations identified?							
10. If the fire alarm, detection, suppression systems are impaired or temporarily non-functional, has a fire watch for the area, as required or necessary, been trained and established?							
11. If the fire alarm, detection, suppression systems are impaired, have measures been taken to provide temporary equivalent equipment and/or systems for adequate protection? Note date for equivalent measures.							
12. If the fire alarm, detection, suppression systems are impaired, are equivalent equipment/systems inspected and tested at least monthly?							
13. If temporary fire alarm, detection, suppression systems are installed, are personnel in the area aware and trained on how to operate or utilize them in the event of fire or emergency?							
14. Has the "No Smoking" policy been posted, implemented and enforced in the construction area?							
15. Are temporary partitions built to be fire/smoke tight with fire retardant noncombustible material and inspected daily for integrity?							

Inspection Period: Responses:	SUN	MON	TUE	WED	THR	FRI	SAT
16. Is construction site access restricted to authorized personnel only including warning signs and secured at the end of each day?							
17. Is construction area hazard surveillance conducted daily?							
18. Is construction area storage, waste, debris and excess materials being daily managed properly to reduce fire or safety hazards?							
19. Are construction activities and materials prosecuted, handled, stored, and secured in an orderly and safe manner?							
20. Is the generation, spread and exposure of construction dust, fumes, noise, odor, smoke controlled with appropriate fume, odor, vapor ventilation provided to control noxious, infectious, toxic exposure and store/protect flammable/combustible products?							
21. Has a GC Safety Manager been designated with routine site safety meetings conducted to ensure awareness of Life Safety Code?							
22. Is personnel protective equipment (e.g., safety glasses, ear plugs, hard hats) required and being used?							
23. If there are hand/safety rails, scaffolding or ladders required, are they in place, in good condition and being used in a safe manner?							
24. Are the construction site (buildings and exterior grounds) hazards (e.g., fall/trip) guarded and free of potential safety violations?							
25. Do electrical panels, temporary wiring, extension cords (3 wire grounded type), tools, and equipment appear to be installed, utilized, and functioning in a safe manner?							
26. If there are temporary electrical outlets provided, do they have ground fault protection at the receptacle/panel?							

Inspection Period: Responses:	SUN	MON	TUE	WED	THR	FRI	SAT
27. If hazardous equipment/systems need to be de-energized, are applicable "Lockout/Tagout" procedures being followed?							
28. Are utility services (e.g., electrical, steam, water, waste, gas) properly secured at the end of each day?							
29. If there is any hot work (welding, soldering, cutting) being performed within the construction site, have additional fire safety precautions been taken and necessary equipment provided?							
30. If there is any hot work (welding, soldering, cutting) being performed on the construction site, has Contracting Officer been notified? Has the Hot Work Permit been approved?							
31. If hazardous products are present, are they limited to the amount needed and used daily?							
32. Are hazardous products disposed according to EPA requirements?							
33. Are all hazardous products present or being used (e.g., flammable, combustible, corrosive, noxious) labeled with MSDS information readily available?							
34. If infection control is required, are the appropriate policies and procedures known and being followed?							
35. Are all safety incidents documented and reported to the Contracting Officer?							
Contractor CP Initials Performing Daily Inspections:							

Inspection Comments/Findings: (PROVIDE DETAILED EXPLAINATION OF EXCEPTIONS/DEFICIENTIES)

Signature/Date:

Project CP GC Safety Manager

Wooton Hall Colonnade Demo - Design
Asset # 623515B001

-- End of Section --

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SECTION 01 33 00

SUBMITTAL PROCEDURES
08/18

PART 1 GENERAL

1.1 SHOP DRAWINGS

The Contractor shall furnish the Contracting Officer six copies with such promptness as to cause no delay in this work or the work of any other contractors, one sepia copy of the shop drawings as required for the various subheadings for the Contracting Officer's approval. Shop drawings of any other subcontractor should be reviewed and approved by each subcontractor where their contract work comes in contact with or interferes with that of another subcontractor.

The Contracting Officer's approval, however, shall not relieve the Contractor from responsibility for errors in shop drawings. Shop drawings are the instruments of the Contractor, not the Contracting Officer; the Drawings and Specifications shall always be final.

1.2 SAMPLES

Within and not later than thirty (30) days from the date of the General Contract, the General Contractor shall have secured and submitted to the Contracting Officer for his consideration, two samples of each kind and grade of materials and finish as noted under the various headings of the specifications. These samples shall be finished completely and shall accurately represent the work as it is proposed to be installed. The Contracting Officer will give immediate consideration to such samples and shall notify the General Contractor within ten (10) days after receipt of either approval or rejection. If such samples are rejected, the General Contractor shall, without delay, submit corrected samples for approval, and shall continue to do so until such approval is given the Contracting Officer. All approvals will be given by the Contracting Officer to the General Contractor in writing.

It shall be the Contractor's responsibility to obtain materials at such time as to cause no delay to the project. No allowance for additional time nor substitution of approved materials will be allowed for Contractor's negligence in late ordering of materials.

1.3 PRODUCT DATA

Submit six copies of preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate portion of work.

1.4 O & M MANUALS

O & M Manuals shall be submitted in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

1.5 GOVERNMENT ACTIONS POSSIBLE

Submittals will be returned to the Contractor with one of the following notations:

a. Submittals marked "approved" or "approved as submitted" authorize Contractor to proceed with work covered.

b. Submittals marked "approved" as noted or "approval except as noted; resubmission not required" authorize Contractor to proceed with work as noted provided the Contractor takes no exception to the notations.

c. Submittals marked "revise" and "resubmittal" or "disapproved" indicate submittal is incomplete or does not comply with design concept or requirements of the contract documents and shall be resubmitted with appropriate changes. No work shall proceed for this item until resubmittal is approved.

1.6 SUBMITTAL REGISTER

Contractor shall submit items as listed in each specification section.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

U.S. DEPARTMENT OF AGRICULTURE • AGRICULTURAL RESEARCH SERVICE

CONSTRUCTION PROGRESS AND PAYMENT SCHEDULE

IMPORTANT: Read instructions on reverse before completing this form.

CONTRACT NO.	AMOUNT	CALENDAR DAYS	STARTING DATE	COMPLETION DATE

PROJECT	CONTRACTOR'S NAME & ADDRESS (Include Zip code)
LOCATION	

DESCRIPTION OF BRANCH OF WORK	PROGRESS SCHEDULE				SCHEDULE OF PAYMENTS *(Use in conjunction with ARS Form 372)*		
	Value	Percent of work	DATE		Completed this period	Previously Completed	Total Completed
			Start	Complete			
	A	B	C	D	E	F	G
1.		%					
2.		%					
3.		%					
4.		%					
5.		%					
6.		%					
7.		%					
8.		%					
9.		%					
10.		%					
11.		%					
12.		%					
13.		%					
14.		%					
15.		%					
16.		%					
17.		%					
18.		%					
19.		%					
20.		%					
21.		%					
22.		%					
23.		%					
Following items to be used for Change Orders, Amendments, and other.							
24.		%					
25.		%					
26.		%					
27.		%					
28.		%					
29.		%					
30.		%					
31.		%					
TOTAL							

REMARKS

CONTRACTOR'S SIGNATURE	DATE	CONTRACTING OFFICER'S APPROVAL	DATE

INSTRUCTIONS FOR COMPLETION OF FORM ARS - 371

The construction Progress - Payment Schedule shall be submitted within **14 calendar days after the date of receipt of Notice to Proceed.**

1. Complete blocks entitled: Contract Number, Amount, Calendar Days, Starting Date, Completion Date, Project, Location, and Contractor's Name and Address.

2. Complete Column A**, Value,** indicating a complete breakdown of each branch of work in dollar value.

3. Complete Column B**, Percent of Work,** showing the percentage of each branch of work in relation to the whole project.

4. Complete Columns C and D to show the approximate dates each branch of work will begin and be completed. Final completion date in Column D must not exceed the completion date at the top of the form.

5. Contractor shall sign the form at the bottom and submit to the Contracting Officer for his approval. An approved copy will be returned to the Contractor for his file.

This form is required even though partial payments are not requested. If partial payments are requested, a copy of the approved Form ARS-371 must accompany each Payment Request (Form ARS-372), and Columns E, F, and G must be filled in according to the work completed.

CONTRACTOR'S REQUEST FOR PAYMENT TRANSMITTAL

CONTRACT NO.	PARTIAL PAYMENT NO.	FINAL PAYMENT ☐
PROJECT	REQUISITION NO.	
LOCATION	FOR PERIOD BEGINNING	ENDING

ITEM	AMOUNT	
1. Amount of original contract	$	
2. Change orders and/or amendments	$	
3. Total adjusted contract prices	$	
4. Value of work completed to end of period		$
5. Value of material stored at the site *(Itemize below)*		$
6. Total value of work completed and stored material *(Line 4 plus Line 5).*		$
7. Less _____% retainage		$
8. **Total due contractor thru end of this period**		$
9. Less previous requests		$
10. **Net amount due contractor this payment**		$

MATERIAL STORED AT THE SITE *(See Item 5 above)*

Description	Value

CONTRACTOR'S CERTIFICATION OF PAYMENT

By signing this request for payment, I certify that I have made payment from the proceeds of prior payments, and that I will make timely payment from the proceeds of this payment, of amounts due my subcontractors and suppliers in accordance with my contractual arrangements with them.

SIGNATURE OF CONTRACTOR'S AUTHORIZED REPRESENTATIVE	DATE SIGNED
RECOMMENDED FOR PAYMENT *(Signature of EPM, COR, CM or A.E. as appropriate)*	DATE SIGNED
CONCUR *(Signature of EPM or COR as appropriate)*	DATE SIGNED

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MATERIAL APPROVAL SUBMITTAL

TO: USDA/ARS CO CC: A&E, COR	FROM: (Contractor)	PROJECT TITLE:	CONTRACT NUMBER:

(To be completed by the Contractor)			Government Use Only								
SUBMITTAL NUMBER:	PREVIOUS SUBMITTAL NUMBER (only if items listed were submitted previously):		A&E Recommendation			COR/EPM Recommendation			Contracting Officer Approval/Disapproval		
Line No.	Specification Sect. Para No., Draw No.	Description of Material (Include type, model, mfg)	APP	DISAP	See Comments on Reverse	APP	DISAP	See Comments on Reverse	APP	DISAP	See Comments on Reverse

If an item is disapproved, a resubmittal is due within _____calendar days of the Contracting Officer's signature below.

Contractor (Ktr)	A&E	COR/EPM	Contracting Officer
TYPE or PRINT NAME & TITLE	TYPE or PRINT NAME & TITLE	TYPE or PRINT NAME & TITLE	TYPE or PRINT NAME & TITLE
SIGNATURE:	SIGNATURE:	SIGNATURE:	SIGNATURE:
DATE:	DATE:	DATE:	DATE:
By completing this form, the above signed contractor certifies that the material complies with all specifications of the subject contract.	DATE RECEIVED FROM KTR:	DATE RECEIVED FROM A&E:	DATE RECEIVED FROM COR:

CONTRACT #:	SUBMITTAL #:

COMMENTS

Instructions: Enter the initials of the individual making the comment, the Line Number of the item for which the comment is being made, and the comment.

SECTION 01 35 26

GOVERNMENTAL SAFETY REQUIREMENTS
01/20

PART 1 GENERAL

1.1 REFERENCES

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.

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.34	(2001; R 2012) Protection of the Public on or Adjacent to Construction Sites
ASSP Z359.0	(2012) Definitions and Nomenclature Used for Fall Protection and Fall Arrest

ASTM INTERNATIONAL (ASTM)

ASTM F855	(2015) Standard Specifications for Temporary Protective Grounds to Be Used on De-energized Electric Power Lines and Equipment

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 1048	(2003) Guide for Protective Grounding of Power Lines
IEEE C2	(2023) National Electrical Safety Code

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241	(2022) Standard for Safeguarding Construction, Alteration, and Demolition Operations
NFPA 70	(2023) National Electrical Code
NFPA 70E	(2024) Standard for Electrical Safety in the Workplace

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1910.147	The Control of Hazardous Energy (Lock Out/Tag Out)

29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.16	Rules of Construction
CPL 2.100	(1995) Application of the Permit-Required Confined Spaces (PRCS) Standards, 29 CFR 1910.146

1.2 DEFINITIONS

1.2.1 Competent Person (CP)

The CP is a person designated in writing, who, through training, knowledge and experience, is capable of identifying, evaluating, and addressing existing and predictable hazards in the working environment or working conditions that are dangerous to personnel, and who has authorization to take prompt corrective measures with regards to such hazards.

1.2.2 Competent Person, Confined Space

The CP, Confined Space, is a person meeting the competent person requirements as defined EM 385-1-1 Appendix Q, with thorough knowledge of OSHA’s Confined Space Standard, 29 CFR 1910.146, and designated in writing to be responsible for the immediate supervision, implementation and monitoring of the confined space program, who through training, knowledge and experience in confined space entry is capable of identifying, evaluating and addressing existing and potential confined space hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.3 Competent Person, Cranes and Rigging

The CP, Cranes and Rigging, as defined in EM 385-1-1 Appendix Q, is a person meeting the competent person, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the Crane and Rigging Program, who through training, knowledge and experience in crane and rigging is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.4 Competent Person, Excavation/Trenching

A CP, Excavation/Trenching, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and 29 CFR 1926, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the excavation/trenching program, who through training, knowledge and experience in excavation/trenching is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.5 Competent Person, Fall Protection

The CP, Fall Protection, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and in accordance with ASSP Z359.0, who has been designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the fall protection program, who through training, knowledge and experience in fall protection and rescue systems and equipment, is capable of identifying, evaluating and addressing existing and potential fall hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.6 Competent Person, Scaffolding

The CP, Scaffolding is a person meeting the competent person requirements in EM 385-1-1 Appendix Q and designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the scaffolding program. The CP for Scaffolding has enough training, knowledge and experience in scaffolding to correctly identify, evaluate and address existing and potential hazards and also has the authority to take prompt corrective measures with regard to these hazards. CP qualifications must be documented and include experience on the specific scaffolding systems/types being used, assessment of the base material that the scaffold will be erected upon, load calculations for materials and personnel, and erection and dismantling. The CP for scaffolding must have a documented, minimum of 8-hours of scaffold training to include training on the specific type of scaffold being used (e.g. mast-climbing, adjustable, tubular frame), in accordance with EM 385-1-1 Section 22.B.02.

1.2.7 Competent Person (CP) Trainer

A competent person trainer as defined in EM 385-1-1 Appendix Q, who is qualified in the material presented and who possesses a working knowledge of applicable technical regulations, standards, equipment and systems related to the subject matter on which they are training Competent Persons. A competent person trainer must be familiar with the typical hazards and the equipment used in the industry they are instructing. The training provided by the competent person trainer must be appropriate to that specific industry. The competent person trainer must evaluate the knowledge and skills of the competent persons as part of the training process.

1.2.8 High Risk Activities

High Risk Activities are activities that involve work at heights, crane and rigging, excavations and trenching, scaffolding, electrical work, and confined space entry.

1.2.9 High Visibility Accident

A High Visibility Accident is any mishap which may generate publicity or high visibility.

1.2.10 Load Handling Equipment (LHE)

LHE is a term used to describe cranes, hoists and all other hoisting equipment (hoisting equipment means equipment, including crane, derricks, hoists and power operated equipment used with rigging to raise, lower or horizontally move a load).

1.2.11 Medical Treatment

Medical Treatment is treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

1.2.12 Near Miss

A Near Miss is a mishap resulting in no personal injury and zero property damage, but given a shift in time or position, damage or injury may have occurred (e.g., a worker falls off a scaffold and is not injured; a crane swings around to move the load and narrowly misses a parked vehicle).

1.2.13 Operating Envelope

The Operating Envelope is the area surrounding any crane or load handling equipment. Inside this "envelope" is the crane, the operator, riggers and crane walkers, other personnel involved in the operation, rigging gear between the hook, the load, the crane's supporting structure (i.e. ground or rail), the load's rigging path, the lift and rigging procedure.

1.2.14 Qualified Person (QP)

The QP is a person designated in writing, who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems related to the subject matter, the work, or the project.

1.2.15 Qualified Person, Fall Protection (QP for FP)

A QP for FP is a person meeting the requirements of EM 385-1-1 Appendix Q, and ASSP Z359.0, with a recognized degree or professional certificate and with extensive knowledge, training and experience in the fall protection and rescue field who is capable of designing, analyzing, and evaluating and specifying fall protection and rescue systems.

1.2.16 Recordable Injuries or Illnesses

Recordable Injuries or Illnesses are any work-related injury or illness that results in:

a. Death, regardless of the time between the injury and death, or the length of the illness;

b. Days away from work (any time lost after day of injury/illness onset);

c. Restricted work;

d. Transfer to another job;

e. Medical treatment beyond first aid;

f. Loss of consciousness; or

g. A significant injury or illness diagnosed by a physician or other

licensed health care professional, even if it did not result in (a) through (f) above.

1.2.17 Load Handling Equipment (LHE) Accident or Load Handling Equipment Mishap

A LHE accident occurs when any one or more of the eight elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; or collision, including unplanned contact between the load, crane, or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents, even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, or roll over). Document any mishap that meets the criteria described in the Contractor Significant Incident Report (CSIR).

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Site Specific Safety Plan/Accident Prevention Plan (SSSP/APP); G

SD-06 Test Reports

Notifications and Reports

SD-07 Certificates

Contractor Safety Self-Evaluation Checklist

Crane Operators/Riggers

Standard Lift Plan; G

1.4 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction conference. Complete the checklist monthly and submit with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90 may result in retention of up to 10 percent of the voucher.

1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, comply with the most recent edition of USACE EM 385-1-1, and the following federal, state, and local laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting

work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements govern.

1.6 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 Site Safety and Health Officer (SSHO)

Provide an SSHO that meets the requirements of EM 385-1-1 Section 1. The SSHO must ensure that the requirements of 29 CFR 1926.16 are met for the project. Provide a Safety oversight team that includes a minimum of one (1) person at each project site to function as the Site Safety and Health Officer (SSHO). The SSHO or an equally-qualified Alternate SSHO must be at the work site at all times to implement and administer the Contractor's safety program and government-accepted Accident Prevention Plan. The SSHO and Alternate SSHO must have the required training, experience, and qualifications in accordance with EM 385-1-1 Section 01.A.17, and all associated sub-paragraphs.

If the SSHO is off-site for a period longer than 24 hours, an equally-qualified alternate SSHO must be provided and must fulfill the same roles and responsibilities as the primary SSHO. When the SSHO is temporarily (up to 24 hours) off-site, a Designated Representative (DR), as identified in the AHA may be used in lieu of an Alternate SSHO, and must be on the project site at all times when work is being performed. Note that the DR is a collateral duty safety position, with safety duties in addition to their full time occupation.

1.6.1.2 Contractor Quality Control (QC) Manager:

The Contractor Quality Control Manager can be the SSHO on this project.

1.6.1.3 Competent Person Qualifications

Provide Competent Persons in accordance with EM 385-1-1, Appendix Q and herein. Competent Persons for high risk activities include confined space, cranes and rigging, excavation/trenching, fall protection, and electrical work. The CP for these activities must be designated in writing, and meet the requirements for the specific activity (i.e. competent person, fall protection).

The Competent Person identified in the Contractor's Safety and Health Program and accepted Accident Prevention Plan, must be on-site at all times when the work that presents the hazards associated with their professional expertise is being performed. Provide the credentials of the Competent Persons(s) to the Contracting Officer for information in consultation with the Safety Office.

1.6.1.3.1 Competent Person for Confined Space Entry

Provide a Confined Space (CP) Competent Person who meets the requirements of EM 385-1-1, Appendix Q, and herein. The CP for Confined Space Entry must supervise the entry into each confined space.

1.6.1.4 Crane Operators/Riggers

Provide Operators meeting the requirements in EM 385-1-1, Section 15.B for

Riggers and Section 16.B for Crane Operators. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacities of 50,000 pounds or greater, designate crane operators qualified by a source that qualifies crane operators (i.e., union, a government agency, or an organization that tests and qualifies crane operators). Provide proof of current qualification.

1.6.2 Personnel Duties

1.6.2.1 Duties of the Site Safety and Health Officer (SSHO)

The SSHO must:

a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Attach safety inspection logs to the Contractors' daily production report.

b. Conduct mishap investigations and complete required accident reports. Report mishaps and near misses.

c. Use OSHA's Form 300 to log work-related injuries and illnesses occurring on the project site for Prime Contractors and subcontractors. Post and maintain the Form 300 on the site Safety Bulletin Board.

d. Maintain applicable safety reference material on the job site.

e. Attend the pre-construction conference, pre-work meetings including preparatory meetings, and periodic in-progress meetings.

f. Review the APP and AHAs for compliance with EM 385-1-1, and approve, sign, implement and enforce them.

g. Establish a Safety and Occupational Health (SOH) Deficiency Tracking System that lists and monitors outstanding deficiencies until resolution.

h. Ensure subcontractor compliance with safety and health requirements.

i. Maintain a list of hazardous chemicals on site and their material Safety Data Sheets (SDS).

j. Maintain a weekly list of high hazard activities involving energy, equipment, excavation, entry into confined space, and elevation, and be prepared to discuss details during QC Meetings.

k. Provide and keep a record of site safety orientation and indoctrination for Contractor employees, subcontractor employees, and site visitors.

Superintendent, QC Manager, and SSHO are subject to dismissal if the above duties are not being effectively carried out. If Superintendent, QC Manager, or SSHO are dismissed, project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out.

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the preconstruction conference. This includes the project superintendent, Site Safety and Occupational Health officer, quality control manager, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

b. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, and Government review of AHAs to preclude project delays.

c. Deficiencies in the submitted APP, identified during the Contracting Officer's review, must be corrected, and the APP re-submitted for review prior to the start of construction. Work is not permitted to begin work until an APP is established that is acceptable to the Contracting Officer.

1.6.3.2 Safety Meetings

Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors on the project location. The SSHO, supervisors, foremen, or CDSOs must conduct meetings at least once a week for the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Maintain documentation on-site and furnish copies to the Contracting Officer on request. Notify the Contracting Officer of all scheduled meetings 7 calendar days in advance.

1.7 SITE SPECIFIC SAFETY PLAN/ACCIDENT PREVENTION PLAN (SSSP/APP)

A qualified person must prepare the written site-specific SSSP/APP. Prepare the SSSP/APP in accordance with the format and requirements of EM 385-1-1, Appendix A, and as supplemented herein. Cover all paragraph and subparagraph elements in EM 385-1-1, Appendix A. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP must interface with the Contractor's overall safety and health program referenced in the APP in the applicable APP element, and made site-specific. Describe the methods to evaluate past safety performance of potential subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of subcontractors. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working

conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP must be signed by an officer of the firm (Prime Contractor senior person), the individual preparing the APP, the on-site superintendent, the designated SSHO, the Contractor Quality Control Manager, and any designated Certified Safety Professional (CSP) or Certified Health Physicist (CIH). The SSHO must provide and maintain the APP and a log of signatures by each subcontractor foreman, attesting that they have read and understand the APP, and make the APP and log available on-site to the Contracting Officer. If English is not the foreman's primary language, the Prime Contractor must provide an interpreter.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted SSSP/APP. Once reviewed and accepted by the Contracting Officer, the SSSP/APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted SSSP/APP is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. Continuously review and amend the SSSP/APP, as necessary, throughout the life of the contract. Changes to the accepted SSSP/APP must be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and Quality Control Manager. Incorporate unusual or high-hazard activities not identified in the original SSSP/APP as they are discovered. Should any severe hazard exposure (i.e. imminent danger) become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate and remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSP A10.34), and the environment.

1.7.1 Names and Qualifications

Provide plans in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

a. Names and qualifications (resumes including education, training, experience and certifications) of site safety and health personnel designated to perform work on this project to include the designated Site Safety and Health Officer and other competent and qualified personnel to be used. Specify the duties of each position.

b. Qualifications of competent and of qualified persons. As a minimum, designate and submit qualifications of competent persons for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; and personal protective equipment and clothing to include selection, use and maintenance.

1.7.2 Plans

Provide plans in the SSSP/APP in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

1.7.2.1 Confined Space Entry Plan

Develop a confined or enclosed space entry plan in accordance with

EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, OSHA Directive CPL 2.100, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

1.7.2.2 Standard Lift Plan (SLP)

Plan lifts to avoid situations where the operator cannot maintain safe control of the lift. Prepare a written SLP in accordance with EM 385-1-1, Section 16.A.03, using Form 16-2 for every lift or series of lifts (if duty cycle or routine lifts are being performed). The SLP must be developed, reviewed and accepted by all personnel involved in the lift in conjunction with the associated AHA. Signature on the AHA constitutes acceptance of the plan. Maintain the SLP on the LHE for the current lift(s) being made. Maintain historical SLPs for a minimum of 3 months.

1.7.2.3 Safety and Health Plan

Identify the safety and health aspects, and prepare and submit a safety and Health Plan.

1.8 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in paragraph REFERENCES. Maintain applicable equipment manufacturer's manuals.

1.9 EMERGENCY MEDICAL TREATMENT

Contractors must arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.10 NOTIFICATIONS and REPORTS

1.10.1 Mishap Notification

Notify the Contracting Officer as soon as practical, but no more than twenty-four hours, after any mishaps, including recordable accidents, incidents, and near misses, as defined in EM 385-1-1 Appendix Q, any report of injury, illness, load handling equipment (LHE) or rigging mishaps, or any property damage. The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. Immediate reporting is required for electrical mishaps, to include Arc Flash; shock; uncontrolled release of hazardous energy (includes electrical and non-electrical); load handling equipment or rigging; fall from height (any level other than same surface); and underwater diving. These mishaps must be investigated in depth to identify all causes and to recommend hazard control measures.

Within notification include Contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (for example, type of construction equipment used and PPE

used). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted. Assist and cooperate fully with the Government's investigation(s) of any mishap.

CONFINED SPACE ENTRY REQUIREMENTS.

Confined space entry must comply with Section 34 of EM 385-1-1, OSHA 29 CFR 1926, OSHA 29 CFR 1910, OSHA 29 CFR 1910.146, and OSHA Directive CPL 2.100. Any potential for a hazard in the confined space requires a permit system to be used.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 CONSTRUCTION AND OTHER WORK

Comply with EM 385-1-1, NFPA 70, NFPA 70E, NFPA 241, the APP, the AHA, Federal and State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard prevails.

PPE is governed in all areas by the nature of the work the employee is performing. Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Safety glasses must be worn or carried/available on each person. Mandatory PPE includes:

a. Hard Hat

b. Long Pants

c. Appropriate Safety Shoes

d. Appropriate Class Reflective Vests

3.1.1 Worksite Communication

Employees working alone in a remote location or away from other workers must be provided an effective means of emergency communications (i.e., cellular phone, two-way radios, land-line telephones or other acceptable means). The selected communication must be readily available (easily within the immediate reach) of the employee and must be tested prior to the start of work to verify that it effectively operates in the area/environment. An employee check-in/check-out communication procedure must be developed to ensure employee safety.

3.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint, and

hexavalent chromium, are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. Low mercury lamps used within fluorescent lighting fixtures are allowed as an exception without further Contracting Officer approval. Notify the Radiation Safety Officer (RSO) prior to excepted items of radioactive material and devices being brought on base.

3.1.3 Unforeseen Hazardous Material

Contract documents identify materials such as PCB, lead paint, and friable and non-friable asbestos and other OSHA regulated chemicals (i.e. 29 CFR Part 1910.1000). If material(s) that may be hazardous to human health upon disturbance are encountered during construction operations, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to FAR 52.243-4, "Changes" and FAR 52.236-2, "Differing Site Conditions."

3.2 PRE-OUTAGE COORDINATION MEETING

Apply for utility outages at least 3 days in advance. As a minimum, the request must include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, attend a pre-outage coordination meeting with the Contracting Officer to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 WORK PLATFORMS

3.3.1 Scaffolding

Provide employees with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Comply with the following requirements:

a. Scaffold platforms greater than 20 feet in height must be accessed by use of a scaffold stair system.

b. Ladders commonly provided by scaffold system manufacturers are prohibited for accessing scaffold platforms greater than 20 feet maximum in height.

c. An adequate gate is required.

d. Employees performing scaffold erection and dismantling must be qualified.

e. Scaffold must be capable of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan.

f. Stationary scaffolds must be attached to structural building

components to safeguard against tipping forward or backward.

g. Special care must be given to ensure scaffold systems are not overloaded.

h. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material are prohibited. The first tie-in must be at the height equal to 4 times the width of the smallest dimension of the scaffold base.

i. Scaffolding other than suspended types must bear on base plates upon wood mudsills (2 in x 10 in x 8 in minimum) or other adequate firm foundation.

j. Scaffold or work platform erectors must have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet.

k. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.4 EQUIPMENT

3.4.1 Material Handling Equipment (MHE)

a. Material handling equipment such as forklifts must not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions. Material handling equipment fitted with personnel work platform attachments are prohibited from traveling or positioning while personnel are working on the platform.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. Material Handling Equipment Operators must be trained in accordance with OSHA 29 CFR 1910, Subpart N.

c. Operators of forklifts or power industrial trucks must be licensed in accordance with OSHA.

3.4.2 Machinery and Mechanized Equipment

a. Proof of qualifications for operator must be kept on the project site for review.

b. Manufacture specifications or owner's manual for the equipment must be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Incorporate such additional safety precautions or requirements into the AHAs.

3.5 EXCAVATIONS

Soil classification must be performed by a competent person in accordance with 29 CFR 1926 and EM 385-1-1.

3.5.1 Utility Locations

Provide a third party, independent, private utility locating company to positively identify underground utilities in the work area in addition to any station locating service and coordinated with the station utility department.

3.5.2 Utility Location Verification

Physically verify underground utility locations, including utility depth, by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system.

3.5.3 Utilities Within and Under Concrete, Bituminous Asphalt, and Other Impervious Surfaces

Utilities located within and under concrete slabs or pier structures, bridges, parking areas, and the like, are extremely difficult to identify. Whenever contract work involves chipping, saw cutting, or core drilling through concrete, bituminous asphalt or other impervious surfaces, the existing utility location must be coordinated with station utility departments in addition to location and depth verification by a third party, independent, private locating company. The third party, independent, private locating company must locate utility depth by use of Ground Penetrating Radar (GPR), X-ray, bore scope, or ultrasound prior to the start of demolition and construction. Outages to isolate utility systems must be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement.

3.6 ELECTRICAL

Perform electrical work in accordance with EM 385-1-1, Appendix A, Sections 11 and 12.

3.6.1 Conduct of Electrical Work

As delineated in EM 385-1-1, electrical work is to be conducted in a de-energized state unless there is no alternative method for accomplishing the work. In those cases, obtain an energized work permit from the Contracting Officer. The energized work permit application must be accompanied by the AHA and a summary of why the equipment/circuit needs to be worked energized. Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Attach temporary grounds in accordance with ASTM F855 and IEEE 1048. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator is allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method.

When working in energized substations, only qualified electrical workers are permitted to enter. When work requires work near energized circuits as defined by NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves and electrical arc flash protection for personnel as

required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA. Ensure that each employee is familiar with and complies with these procedures and 29 CFR 1910.147.

3.6.2 Qualifications

Electrical work must be performed by QP personnel with verifiable credentials who are familiar with applicable code requirements. Verifiable credentials consist of State, National and Local Certifications or Licenses that a Master or Journeyman Electrician may hold, depending on work being performed, and must be identified in the appropriate AHA. Journeyman/Apprentice ratio must be in accordance with State, Local requirements applicable to where work is being performed.

3.6.3 Grounding

Ground electrical circuits, equipment and enclosures in accordance with NFPA 70 and IEEE C2 to provide a permanent, continuous and effective path to ground unless otherwise noted by EM 385-1-1.

Check grounding circuits to ensure that the circuit between the ground and a grounded power conductor has a resistance low enough to permit sufficient current flow to allow the fuse or circuit breaker to interrupt the current.

3.6.4 Testing

Temporary electrical distribution systems and devices must be inspected, tested and found acceptable for Ground-Fault Circuit Interrupter (GFCI) protection, polarity, ground continuity, and ground resistance before initial use, before use after modification and at least monthly. Monthly inspections and tests must be maintained for each temporary electrical distribution system and signed by the electrical CP or QP.

-- End of Section --

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SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS
02/19, CHG 1: 08/23

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization (e.g., ASTM B564 Standard Specification for Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
444 North Capital Street, NW, Suite 249
Washington, DC 20001
Ph: 202-624-5800
Fax: 202-624-5806
E-Mail: info@aashto.org
Internet: https://www.transportation.org/

AMERICAN CONCRETE INSTITUTE (ACI)
38800 Country Club Drive
Farmington Hills, MI 48331-3439
Ph: 248-848-3700
Fax: 248-848-3701
Internet: https://www.concrete.org/

AMERICAN HARDBOARD ASSOCIATION (AHA)
1210 West Northwest Highway
Palatine, IL 60067
Ph: 847-934-8800
Fax: 847-934-8803
E-mail: aha@hardboard.org
Internet: http://domensino.com/AHA/

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)
520 N. Northwest Highway
Park Ridge, IL 60068
Ph: 847-699-2929
E-mail: customerservice@assp.org
Internet: https://www.assp.org/

AMERICAN WELDING SOCIETY (AWS)
8669 NW 36 Street, #130

Miami, FL 33166-6672
Ph: 800-443-9353
Internet: https://www.aws.org/

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: https://www.astm.org/

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH)
PO Box 997377, MS 0500
Sacramento, CA 95899-7377
Ph: 916-558-1784
Internet: https://www.cdph.ca.gov/

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
445 and 501 Hoes Lane
Piscataway, NJ 08854-4141
Ph: 732-981-0060 or 800-701-4333
Fax: 732-981-9667
E-mail: onlinesupport@ieee.org
Internet: https://www.ieee.org/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
Quincy, MA 02169-7471
Ph: 800-344-3555
Fax: 800-593-6372
Internet: https://www.nfpa.org

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)
2000 Powell Street, Suite 600
Emeryville, CA 94608
Ph: 510-452-8000
Fax: 510-452-8001
E-mail: info@SCSglobalservices.com
Internet: https://www.scsglobalservices.com/

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)
21865 Copley Drive
Diamond Bar, CA 91765
Ph: 909-396-2000
E-mail: webinquiry@aqmd.gov
Internet: http://www.aqmd.gov

U.S. ARMY CORPS OF ENGINEERS (USACE)
CRD-C DOCUMENTS available on Internet:
http://www.wbdg.org/ffc/army-coe/standards
Order Other Documents from:
Official Publications of the Headquarters, USACE
E-mail: hqpublications@usace.army.mil
Internet: http://www.publications.usace.army.mil/
or
https://www.hnc.usace.army.mil/Missions/Engineering-Directorate/TECHINFO/

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Internet: https://www.archives.gov/
Order documents from:
Superintendent of Documents
U.S. Government Publishing Office (GPO)
732 N. Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800 or 866-512-1800
Bookstore: 202-512-0132
Internet: https://www.gpo.gov/

UNDERWRITERS LABORATORIES (UL)
2600 N.W. Lake Road
Camas, WA 98607-8542
Ph: 877-854-3577 or 360-817-5500
E-mail: CustomerExperienceCenter@ul.com
Internet: https://www.ul.com/
UL Directories available through IHS at https://ihsmarkit.com/

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

-- End of Section --

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SECTION 01 50 00

PROJECT CLOSEOUT
01/20

PART 1 GENERAL

1.1 AS-BUILT DRAWINGS

The Contractor shall furnish red line as built drawings to the contracting officer that indicate all variations in locations, construction, equipment, etc. from that shown on the original drawings.

1.2 SUBSTANTIAL COMPLETION AND COMPLETION OF PUNCH LIST CORRECTIONS

Set date and notify Contracting Officer as to time construction will be ready for preliminary punch list and, upon completion of that list, set time and date for inspection of punch list corrections. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. When the Contracting Officer on the basis of an inspection, determines that the Work or designated portion thereof is sufficiently complete, in accordance with the Contract Documents, so that the Owner or separate contractors can occupy or utilize the Work or designated portion thereof for the use for which it is intended, he will prepare a Certificate of Substantial Completion which shall establish the Date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein or attached thereto. Warranties required by the Contract Documents shall commence on the Date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and the Contractor for their written acceptance of the responsibilities assigned to them in such Certificate.

1.3 FINAL INSPECTION

The Contractor shall notify the Contracting Officer and Owner in writing 10 days prior to the date that the project will be ready for final inspection. An inspection of the project will be made by the Contracting Officer and Contractor at a mutually agreed upon time. If the project is complete, in the opinion of the Contracting Officer, the Contracting Officer shall issue a certificate as set forth hereinafter. Minor unfinished items of work may be excluded from the certificate. The Contracting Officer and Contractor shall mutually agree on a date for the completion of these items of work. Should the Contractor fail to complete the work within the agreed time, the Owner shall have the option of having the unfinished work completed.

1.4 RELEASE OF LIENS AND CERTIFICATION ALL BILLS ARE PAID

The Contractor, before final acceptance is given by the Contracting Officer, shall furnish for himself and all sub contractors, in triplicate, duly certified by a notary, a full release of liens, damages, and a guarantee that all materials and labor are paid in accordance with the Contractual Documents.

1.5 GUARANTEE

The Contractor, before final acceptance by the Contracting Officer, shall furnish the Owner, in triplicate, a written notarized guarantee. All Contractors shall guarantee their work for a period of one year from the date of Substantial Completion as stated by the Contracting Officer. Neither the final Certificate for Payment, nor any provision in the Contract Documents shall relieve the contractors of their responsibility for negligence or defective materials or workmanship within the extent and period covered by law; and upon written notice he shall remedy any defects due thereto, and pay all expenses for any damages to other work resulting therefrom. Emergency defective workmanship and defective materials within the year's guarantee shall be corrected within a few days after receipt of a written order from the Contracting Officer. Any items that are not considered of an emergency nature by the Contracting Officer may be corrected prior to the expiration of the Guarantee period.

The wording for the Guarantee shall be as follows:

> "We hereby guarantee all work performed by us on the above captioned project to be free from defective materials and workmanship for a period of one year, or for such longer period of time as may be called for in the Contractual Documents for such portions of the work."

1.6 OTHER FINAL DOCUMENTS

Deliver to the Owner, through the Contracting Officer, all required bonds, warranties, individual guarantees, etc. that are required by the various following sections of these specifications.

1.7 ACCEPTANCE

Upon satisfactory submittal of the above documents the Contracting Officer shall issue to the Owner a certificate recommending final acceptance of the project. Minor unfinished items of work may be listed on the certificate and excepted from final acceptance. A sum sufficient to cover the cost of completing these unfinished items of work will be withheld by the Owner from the final payment. All other funds including retainage shall be due and payable upon receipt by the Owner of the Contracting Officer's certificate. Upon certification by the Contracting Officer that the items of work have been completed, all monies withheld by the Owner shall be due the Contractor.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 57 50

TEMPORARY ENVIRONMENTAL CONTROLS
10/19

PART 1 GENERAL

1.1 REFERENCES

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.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 112	Oil Pollution Prevention
40 CFR 152 - 186	Pesticide Programs
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 403	General Pretreatment Regulations for Existing and New Sources of Pollution
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

1.2 DEFINITIONS

1.2.1 Sediment

Sediment is soil and other debris that have eroded and have been transported by runoff water or wind.

1.2.2 Solid Waste

Solid waste is a solid, liquid, semi-solid or contained gaseous waste. A solid waste can be a hazardous waste, non-hazardous waste, or non-Resource Conservation and Recovery Act (RCRA) regulated waste. Types of solid waste typically generated at construction sites may include:

1.2.2.1 Rubbish

Combustible and noncombustible wastes such as paper, boxes, glass, crockery, metal, lumber, cans, and bones.

1.2.2.2 Debris

Combustible and noncombustible wastes such as ashes and waste materials resulting from construction or maintenance and repair work, leaves, and tree trimmings.

1.2.2.3 Chemical Waste

This includes salts, acids, alkalies, herbicides, pesticides, and organic chemicals.

1.2.3 Sanitary Wastes

1.2.3.1 Sewage

Waste characterized as domestic sanitary sewage.

1.2.3.2 Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.2.4 Hazardous Waste

Hazardous substances as defined in 40 CFR 261 or as defined by applicable state and local regulations.

1.2.5 Oily Waste

Petroleum products and bituminous materials.

1.2.6 Landscape Features

Trees, plants, shrubs and ground covers.

1.2.7 Hazardous Substances

As defined in EPA PL 96 510.

1.2.8 Hazardous Materials

As defined in DOT Regulation 49 CFR 171 and listed in 49 CFR 172.

1.3 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, state, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances and noise pollution.

PART 2 PRODUCTS

2.1 NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified.

2.1.1 Landscape Features

Do not remove, cut, deface, injure, or destroy existing landscape features without the Contracting Officer's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages, unless authorized by the Contracting Officer. Where such use of attach ropes, cables, or guys is authorized, the Contractor shall be responsible for any resultant damage.

2.1.1.1 Protection

Protect existing landscape features which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operations. By approved excavation, remove trees with 30 percent or more of their root systems destroyed.

2.1.1.2 Replacement

Remove existing landscape features scarred or damaged by equipment operations, and replace with equivalent, undamaged features. Obtain the Contracting Officer's approval before replacement.

2.1.2 Water Resources

2.1.2.1 Oily and Hazardous Substances

Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. Take precautions to ensure that no oil or other hazardous material is released to the water, land, sanitary sewer system, or storm sewer system. Environmental requirements for the prevention of oil spills are contained in 40 CFR 112. For oil and hazardous substance spills which may be large enough to violate Federal, State or Local Regulations, the Contracting Officer shall be verbally notified immediately. Clean up any spills of oil or hazardous substances which result from the Contractor's operations. If the Contractor can not clean up any spill in a timely manner, the Government will perform the cleanup at the Contractor's expense.

2.1.3 Fish and Wildlife Resources

Do not disturb fish and wildlife. Do not alter water flows or otherwise disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as indicated or specified.

2.2 HISTORICAL AND ARCHEOLOGICAL RESOURCES

Carefully preserve and report immediately to the Contracting Officer items having possible historical or archeological interest which are discovered in the course of work. Protect monuments, markers, and works of art.

2.3 EROSION AND SEDIMENT CONTROL

2.3.1 Burnoff

Burnoff of the ground cover is prohibited.

2.3.2 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or specified. Immediately protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

2.3.3 Temporary Protection of Erodible Soils

Provide the following methods to prevent erosion and control sedimentation.

2.3.3.1 Mechanical Retardation and Control of Runoff

Mechanically retard and control the rate of runoff from the construction site. Provide diversion ditches, benches, and berms to retard and divert runoff to protected drainage courses.

2.3.3.2 Seeding

Provide seeding where ground is disturbed. Include topsoil or nutriment during the seeding operation necessary to establish or re-establish a suitable stand of grass.

2.4 SOLID AND SANITARY WASTES

Pick up solid wastes, and place in containers which are regularly emptied. Prevent contamination of the site and other areas when handling and disposing wastes. On completion, leave the areas clean. Control and dispose of wastes.

2.4.1 Disposal of Solid Wastes

Dispose of solid wastes in accordance with the requirements specified.

2.4.1.1 Sub Removal From Government Property

Remove solid wastes from Government property.

2.4.2 Garbage Disposal

Place garbage in approved containers, and move to a pickup point or disposal area, where directed.

2.4.3 Sewage, Odor, and Pest Control

Dispose of sewage through connection to a municipal or district sanitary sewage system, where such a system is not available, use chemical toilets. Empty wastes into a municipal, district, or station sanitary sewage system. Provide pest control and elimination of odors. No substances shall be disposed of which will interfere with treatment plant operations in accordance with 40 CFR 403.

2.5 HAZARDOUS WASTES

2.5.1 General

Handle generated hazardous wastes in accordance with 40 CFR 262. Store hazardous waste in approved containers in accordance with 40 CFR 152 - 186. Label to identify the type of waste and the date the container was filled. Remove the containers from the project site, and store and dispose of hazardous waste in accordance with 40 CFR 263 and 40 CFR 264. For hazardous wastes spills, verbally notify the Contracting Officer immediately.

2.5.2 Petroleum Products

Conduct the fueling and lubricating of equipment and motor vehicles to protect against spills and evaporation. Dispose of lubricants and excess oils.

2.6 DUST

Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars.

2.7 ABRASIVE BLASTING

Provide tarpaulin drop cloths and windscreens to enclose abrasive blasting operations to confine and collect dust, abrasive agent, paint chips, and other debris. Dispose of abrasive blasting debris.

2.8 NOISE

Make the maximum use of low noise emission products, as certified by the EPA. Blasting or use of explosives will not be permitted without written permission from the Contracting Officer, and then only during the designated times.

2.9 FOOD

Preparation, cooking and dispensing of food products will not be permitted.

2.10 TEMPORARY CONSTRUCTION

Remove temporary construction facilities including haul roads, work areas, structures, foundations of temporary structures, and stockpiles of excess or waste materials. Grade temporary roads, parking areas, and temporarily used areas to conform with surrounding contours.

PART 3 EXECUTION

Not used.

-- End of Section --

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SECTION 01 78 23

OPERATION AND MAINTENANCE DATA
08/15

PART 1 GENERAL

1.1 REFERENCES

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.

ASTM INTERNATIONAL (ASTM)

ASTM E1971	(2005; R 2011) Standard Guide for Stewardship for the Cleaning of Commercial and Institutional Buildings

1.2 OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data for the provided equipment, product, or system, defining the importance of system interactions, troubleshooting, and long-term preventive operation and maintenance. Compile, prepare, and aggregate O&M data to include clarifying and updating the original sequences of operation to as-built conditions. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this section and Section 01 33 00 SUBMITTAL PROCEDURES.

1.2.1 Quantity

Submit supplier/manufacturers' O&M information specified herein for the components, assemblies, subassemblies, attachments, and accessories. The items for which O&M Data/Manuals are required are listed in the technical sections which specifies those particular items. O&M manual shall be submitted electronically. Hard copies will not be accepted.

1.2.2 Package Quality

Documents must be fully legible. Operation and Maintenance data must be consistent with the manufacturer's standard brochures, schematics, printed instructions, general operating procedures, and safety precautions. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.

1.2.3 Package Content

Data package content shall be as shown in the paragraph titled "Schedule of Operation and Maintenance Data Packages." For each product, system, or component piece of equipment requiring submission of O&M Data, submit the Data Package specified in the individual technical section.

1.2.4 Delivery

Submit O&M Data Manuals to the Contracting Officer for review and acceptance; submit data specified for a given item within 30 calendar days after the item is delivered to the contract site.

a. In the event the Contractor fails to deliver O&M Data/Manuals within the time limits set forth above, the Contracting Officer may withhold from progress payments 50 percent of the price of the item with which such O&M Data/Manuals are associated.

1.2.5 Changes to Submittals

Manufacturer-originated changes or revisions to submitted data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data, shall be submitted by the Contractor within 30 calendar days of the notification of this change requirement.

1.3 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

The following are a detailed description of the data package items listed in paragraph SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES.

1.3.1 Operating Instructions

Provide specific instructions, procedures, and illustrations for the following phases of operation for the installed model and features of each system:

1.3.1.1 Safety Precautions and Hazards

List personnel hazards and equipment or product safety precautions for operating conditions.

1.3.1.2 Operator Prestart

Provide procedures required to install, set up, and prepare each system for use.

1.3.1.3 Startup, Shutdown, and Post-Shutdown Procedures

Provide narrative description for Startup, Shutdown and Post-shutdown operating procedures including the control sequence for each procedure.

1.3.1.4 Normal Operations

Provide Control Diagrams with data to explain operation and control of systems and specific equipment. Provide narrative description of Normal Operating Procedures.

1.3.1.5 Emergency Operations

Provide Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Provide Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of utility systems including required valve positions, valve locations and zones or portions of systems controlled.

1.3.1.6 Environmental Conditions

Provide a list of Environmental Conditions (temperature, humidity, and other relevant data) that are best suited for the operation of each product, component or system. Describe conditions under which the item equipment should not be allowed to run.

1.3.2 Preventive Maintenance

Provide the following information for preventive and scheduled maintenance to minimize repairs for the installed model and features of each system.

1.3.2.1 Lubrication Data

Include the following preventive maintenance lubrication data, in addition to instructions for lubrication required under paragraph OPERATOR SERVICE REQUIREMENTS:

a. A table showing recommended lubricants for specific temperature ranges and applications.

b. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities.

c. A Lubrication Schedule showing service interval frequency.

1.3.2.2 Preventive Maintenance Plan and Schedule

Include manufacturer's schedule for routine preventive maintenance, inspections, tests and adjustments required to ensure proper and economical operation and to minimize corrective maintenance and repair. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

1.3.2.3 Cleaning Recommendations

Provide environmentally preferable cleaning recommendations in accordance with ASTM E1971.

1.3.3 Corrective Maintenance (Repair)

Include manufacturer's recommendations on procedures and instructions for correcting problems and making repairs.

1.3.3.1 Troubleshooting Guides and Diagnostic Techniques

Provide step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

1.3.3.2 Wiring Diagrams and Control Diagrams

Provide point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number

electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to actual installation configuration and numbering.

1.3.3.3 Maintenance and Repair Procedures

Include instructions and list tools required to restore product or equipment to proper condition or operating standards.

1.3.3.4 Removal and Replacement Instructions

Provide step-by-step procedures and a list of required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Use a combination of text and illustrations.

1.3.3.5 Spare Parts and Supply Lists

Provide lists of spare parts and supplies required for repair to ensure continued service or operation without unreasonable delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead-time to obtain.

1.3.4 Appendices

Provide information required below and information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment. Include the following:

1.3.4.1 Product Submittal Data

Provide a copy of SD-03 Product Data submittals documented with the required approval.

1.3.4.2 Manufacturer's Instructions

Provide a copy of SD-08 Manufacturer's Instructions submittals documented with the required approval.

1.3.4.3 O&M Submittal Data

Provide a copy of SD-10 Operation and Maintenance Data submittals documented with the required approval.

1.3.4.4 Parts Identification

Provide identification and coverage for the parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing must show the index, reference, or key number that will cross-reference the illustrated part to the listed part. Group the parts shown in the listings by components, assemblies, and subassemblies in accordance with the manufacturer's standard practice.

1.3.4.5 Warranty Information

List and explain the various warranties and clearly identify the servicing and technical precautions prescribed by the manufacturers or contract documents in order to keep warranties in force. Include warranty information for primary components of the system. Provide copies of warranties.

1.3.4.6 Personnel Training Requirements

Provide information available from the manufacturers that is needed for use in training designated personnel to properly operate and maintain the equipment and systems.

1.3.4.7 Testing Equipment and Special Tool Information

Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components. Provide final set points.

1.3.4.8 Contractor Information

Provide a list that includes the name, address, and telephone number of the General Contractor and each Subcontractor who installed the product or equipment, or system. For each item, also provide the name address and telephone number of the manufacturer's representative and service organization that can provide replacements most convenient to the project site. Provide the name, address, and telephone number of the product, equipment, and system manufacturers.

1.4 SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES

Provide the O&M data packages specified in individual technical sections. The information required in each type of data package follows:

1.4.1 Data Package 1

a. Safety precautions and hazards

b. Cleaning recommendations

c. Maintenance and repair procedures

d. Warranty information

e. Extended warranty information

f. Contractor information

g. Spare parts and supply list

1.4.2 Data Package 2

a. Safety precautions and hazards

b. Normal operations

c. Environmental conditions

d. Lubrication data

e. Preventive maintenance plan, schedule, and procedures

f. Cleaning recommendations

g. Maintenance and repair procedures

h. Removal and replacement instructions

i. Spare parts and supply list

j. Parts identification

k. Warranty information

l. Extended warranty information

m. Contractor information

1.4.3 Data Package 3

a. Safety precautions and hazards

b. Operator prestart

c. Startup, shutdown, and post-shutdown procedures

d. Normal operations

e. Emergency operations

f. Environmental conditions

g. Operating log

h. Lubrication data

i. Preventive maintenance plan, schedule, and procedures

j. Cleaning recommendations

k. Troubleshooting guides and diagnostic techniques

l. Wiring diagrams and control diagrams

m. Maintenance and repair procedures

n. Removal and replacement instructions

o. Spare parts and supply list

p. Product submittal data

q. O&M submittal data

r. Parts identification

s. Warranty information

t. Extended warranty information

u. Testing equipment and special tool information

v. Testing and performance data

w. Contractor information

x. Field test reports

1.4.4 Data Package 4

a. Safety precautions and hazards

b. Operator prestart

c. Startup, shutdown, and post-shutdown procedures

d. Normal operations

e. Emergency operations

f. Operator service requirements

g. Environmental conditions

h. Operating log

i. Lubrication data

j. Preventive maintenance plan, schedule, and procedures

k. Cleaning recommendations

l. Troubleshooting guides and diagnostic techniques

m. Wiring diagrams and control diagrams

n. Repair procedures

o. Removal and replacement instructions

p. Spare parts and supply list

q. Repair work-hours

r. Product submittal data

s. O&M submittal data

t. Parts identification

u. Warranty information

v. Extended warranty information

w. Personnel training requirements

x. Testing equipment and special tool information

y. Testing and performance data

z. Contractor information

aa. Field test reports

1.4.5 Data Package 5

a. Safety precautions and hazards

b. Operator prestart

c. Start-up, shutdown, and post-shutdown procedures

d. Normal operations

e. Environmental conditions

f. Preventive maintenance plan, schedule, and procedures

g. Troubleshooting guides and diagnostic techniques

h. Wiring and control diagrams

i. Maintenance and repair procedures

j. Removal and replacement instructions

k. Spare parts and supply list

l. Product submittal data

m. Manufacturer's instructions

n. O&M submittal data

o. Parts identification

p. Testing equipment and special tool information

q. Warranty information

r. Extended warranty information

s. Testing and performance data

t. Contractor information

u. Field test reports

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- End of Section --

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SECTION 02 41 00

DEMOLITION
05/10, CHG 2: 02/19

PART 1 GENERAL

1.1 REFERENCES

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.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 145	(1991; R 2012) Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
AASHTO T 180	(2017) Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.6	(2006) Safety & Health Program Requirements for Demolition Operations - American National Standard for Construction and Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 61	National Emission Standards for Hazardous Air Pollutants

1.2 PROJECT DESCRIPTION

1.2.1 Definitions

1.2.1.1 Demolition

Demolition is the process of wrecking or taking out any load-supporting structural member of a facility together with any related handling and disposal operations.

1.2.1.2 Demolition Plan

Demolition Plan is the planned steps and processes for managing demolition activities and identifying the required sequencing activities and disposal mechanisms.

1.2.2 Demolition Plan

Prepare a Demolition Planand submit proposed demolition, and removal procedures for approval before work is started. Include in the plan procedures for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress a detailed description of methods and equipment to be used for each operation and of the sequence of operations. Identify components and materials to be salvaged for reuse or recycling with reference to paragraph Existing Facilities to be Removed. Append tracking forms for all removed materials indicating type, quantities, condition, destination, and end use. Provide procedures for safe conduct of the work in accordance with EM 385-1-1. Plan shall be approved by Contracting Officer prior to work beginning.

1.2.3 General Requirements

Do not begin demolition or deconstruction until authorization is received from the Contracting Officer. The work of this section is to be performed in a manner that maximizes the value derived from the salvage and recycling of materials. Remove rubbish and debris from the project site; do not allow accumulations inside or outside the building. The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Remove rubbish and debris from Government property daily, unless otherwise directed. Store materials that cannot be removed daily in areas specified by the Contracting Officer.
In the interest of occupational safety and health, perform the work in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections.

1.3 ITEMS TO REMAIN IN PLACE

Take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government. Repair or replace damaged items as approved by the Contracting Officer. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract. Do not overload structural elements or pavements to remain. Provide new supports and reinforcement for existing construction weakened by demolition, deconstruction, or removal work. Repairs, reinforcement, or structural replacement require approval by the Contracting Officer prior to performing such work.

1.3.1 Existing Construction Limits and Protection

Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide temporary shoring and bracing for support of building components to prevent settlement or other movement. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove dust, dirt, and debris from work areas daily.

1.3.2 Utility Service

Maintain existing utilities in service and protect against damage during demolition operations.

1.3.3 Facilities

Protect electrical services and utilities. Where removal of existing sidewalk slabs is specified or indicated, provide approved barricades, that prevent physical entry into area. Structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, must remain standing without additional bracing, shoring, or lateral support until demolished or deconstructed, unless directed otherwise by the Contracting Officer. Ensure that no elements determined to be unstable are left unsupported and place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract.

1.4 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Demolition Plan; G

Existing Conditions

SD-07 Certificates

Notification; G

1.6 QUALITY ASSURANCE

Submit timely notification of demolition and renovation projects to Federal, State, regional, and local authorities in accordance with 40 CFR 61, Subpart M. Notify the State's environmental protection agency and the Contracting Officer in writing 10 working days prior to the commencement of work in accordance with 40 CFR 61, Subpart M. Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," conform to the safety requirements contained in ASSP A10.6. Comply with the Environmental Protection Agency requirements specified. Use of explosives will be permitted.

1.6.1 Dust and Debris Control

Prevent the spread of dust and debris to occupied portions of the building and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.

1.7 PROTECTION

1.7.1 Protection of Personnel

Before, during and after the demolition work continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the project site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.8 EXISTING CONDITIONS

Before beginning any demolition or deconstruction work, survey the site and examine the drawings and specifications to determine the extent of the work. Record existing conditions in the presence of the Contracting Officer showing the condition of structures and other facilities adjacent to areas of alteration or removal. Photographs sized 4 inch will be acceptable as a record of existing conditions. Include in the record the elevation of the top of foundation walls, finish floor elevations, possible conflicting electrical conduits, plumbing lines, alarms systems, the location and extent of existing cracks and other damage and description of surface conditions that exist prior to before starting work. It is the Contractor's responsibility to verify and document all required outages which will be required during the course of work, and to note these outages on the record document. Submit survey results.

PART 2 PRODUCTS

2.1 FILL MATERIAL

a. Comply with excavating, backfilling, and compacting procedures for soils used as backfill material to fill basements, voids, depressions or excavations resulting from demolition or deconstruction of structures

b. Fill material shall conform to the definition of satisfactory soil material as defined in AASHTO M 145, Soil Classification Groups A-1, A-2-4, A-2-5 and A-3. In addition, fill material shall be free from roots and other organic matter, trash, debris, frozen materials, and stones larger than 2 inches in any dimension.

c. Proposed fill material must be sampled and tested by an approved soil testing laboratory, as follows:

Soil classification	AASHTO M 145
Moisture-density relations	AASHTO T 180, Method B or D

PART 3 EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED AND/OR REUSED

Remove existing reinforced (6"x6"x#10x#10 wire mesh reinforcing) 6" deep concrete sidewalk. Remove, store and reinstall existing cast cover plates from sidewalk water culvert.

3.1.1 Utilities and Related Equipment

3.1.1.1 General Requirements

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the Contracting Officer. Do not interrupt existing utilities serving facilities occupied and used by the Government except when approved in writing and then only after temporary utility services have been approved and provided.

3.1.2 Slabs

Remove sawcut concrete slabs as indicated. Provide neat sawcuts at limits of slabs removal as indicated. Slabs not to be used in this project shall be removed from the Installation at Contractor's expense.

3.1.3 Patching

Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces, using on-site materials when available. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish.

3.2 DISPOSITION OF MATERIAL

3.2.1 Title to Materials

Except for salvaged items specified in related Sections, and for materials or equipment scheduled for salvage, all materials and equipment removed and not reused or salvaged, shall become the property of the Contractor and shall be removed from Government property. Title to materials resulting from demolition and deconstruction, and materials and equipment to be removed, is vested in the Contractor upon approval by the Contracting Officer of the Contractor's demolition, deconstruction, and removal procedures, and authorization by the Contracting Officer to begin demolition and deconstruction. The Government will not be responsible for the condition or loss of, or damage to, such property after contract award. Showing for sale or selling materials and equipment on site is prohibited.

3.3 CLEANUP

Remove and transport the debris in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

3.4 DISPOSAL OF REMOVED MATERIALS

3.4.1 Regulation of Removed Materials

Dispose of debris, rubbish, scrap, and other nonsalvageable materials resulting from removal operations with all applicable federal, state and local regulations as contractually specified.

3.4.2 Burning on Government Property

Burning of materials removed from demolished and deconstructed structures will not be permitted on Government property.

3.4.3 Removal from Government Property

Transport waste materials removed from demolished and deconstructed structures, from Government property for legal disposal

3.5 REUSE OF SALVAGED ITEMS

Recondition salvaged materials designated for reuse before installation. Replace items damaged during removal and salvage operations or restore them as necessary to usable condition.

-- End of Section --

SECTION 03 30 00

CAST-IN-PLACE CONCRETE
02/02

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 182	(2005; R 2009) Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 117	(1990) Tolerances for Concrete Construction and Materials
ACI 211.1	(1991) Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 212.3R	(2016) Chemical Admixtures for Concrete
ACI 301/301M	(1999) Structural Concrete
ACI 301M	(2016) Metric Specifications for Structural Concrete
ACI 302.1R	(1996) Concrete Floor and Slab Construction
ACI 304R	(2000) Measuring, Mixing, Transporting, and Placing Concrete
ACI 305R	(1999) Hot Weather Concreting
ACI 306.1	(1990; R1998) Cold Weather Concreting
ACI 315	(1999) Details and Detailing of Concrete Reinforcement
ACI 318/318M	(1999) Building Code Requirements for Structural Concrete
ACI 347R	(1994; R1999) Formwork for Concrete

AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)

ACI 301	(2010; ERTA 2015) Specifications for Structural Concrete
ACI/MCP-2	(2015) Manual of Concrete Practice Part 2

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4	(1995) Basic Hardboard

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 82	(1997; Rev. A) Steel Wire, Plain, for Concrete Reinforcement
ASTM A 185	(1997) Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A 496	(1997; Rev. A) Steel Wire, Deformed, for Concrete Reinforcement
ASTM A 497	(1999) Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement
ASTM A 615/A 615M	(2001) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 616/A 616M	(1996; Rev. A) Rail-Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A 617/A 617M	(1996; Rev. A) Axle-Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM C 31/C 31M	(2000) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(2001) Concrete Aggregates
ASTM C 39	(2001) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 42/C 42M	(1999) Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C 94/C 94M	(2000) Ready-Mixed Concrete
ASTM C 143/C 143M	(2000) Slump of Hydraulic Cement Concrete
ASTM C 150	(2007) Standard Specification for Portland Cement
ASTM C 171	(1997; Rev. A) Sheet Materials for Curing Concrete
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 173/C 173M	(2001) Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C 231	(1997) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(2000) Air-Entraining Admixtures for Concrete

ASTM C 309	(1998; Rev. A) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 494/C 494M	(1999) Chemical Admixtures for Concrete
ASTM C 595	(2000) Blended Hydraulic Cements
ASTM C 618	(2000) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 989	(1999) Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
ASTM C 1017/C 1017M	(1998) Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C 1107	(1999) Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM D 1751	(1999) Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D 1752	(1984; R 1996) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D 4397	(2000) Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications

ASTM INTERNATIONAL (ASTM)

ASTM C309	(2011) Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C494/C494M	(2019) Standard Specification for Chemical Admixtures for Concrete
ASTM C666/C666M	(2015) Resistance of Concrete to Rapid Freezing and Thawing
ASTM C779/C779M	(2019) Abrasion Resistance of Horizontal Concrete Surfaces
ASTM C944/C944M	(2019) Standard Test Method for Abrasion Resistance of Concrete or Mortar Surfaces by the Rotating-Cutter Method
ASTM C1585	(2020) Standard Test Method for Measurement of Rate of Absorption of Water by Hydraulic-Cement Concretes
ASTM E1155	(2020) Standard Test Method for Determining Floor Flatness and Floor Levelness Numbers

ASTM F1869 (2016a) Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

U.S. DEPARTMENT OF COMMERCE PRODUCT STANDARDS (PS)

PS1 (1995) Construction and Industrial Plywood

1.2 DEFINITIONS

a. "Cementitious material" as used herein shall include all portland cement, pozzolan, fly ash, and ground iron blast-furnace slag.

b. "Exposed to public view" means situated so that it can be seen from eye level from a public location after completion of the building. A public location is accessible to persons not responsible for operation or maintenance of the building.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Reinforcing steel; G

Reproductions of contract drawings are unacceptable.

SD-03 Product Data

Vapor barrier

Internal Curing Admixture

Reactive Co-Polymerizing

Densifier/Hardener or Liquid

Liquid Chemical Floor Hardener

SD-05 Design Data

Concrete mix design; G

Thirty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Submit a complete list of materials including type; brand; source and amount of cement, fly ash, pozzolans, ground slag, and admixtures; and applicable reference specifications. Provide mix proportion data using at least three different water-cement ratios for each type of mixture, which will produce a range of strength encompassing those required for each class and type of concrete required. If source material changes, resubmit mix proportion data using revised source material. No material shall be provided unless proven by trial mix studies to meet the requirements of this

specification, unless otherwise approved in writing by the Contracting Officer. The submittal shall clearly indicate where each mix design will be used when more than one mix design is submitted. Submit additional data regarding concrete aggregates if the source of aggregate changes. In addition, copies of the fly ash and pozzolan test results shall be submitted. The approval of fly ash and pozzolan test results shall have been within 6 months of submittal date. Obtain acknowledgement of receipt prior to concrete placement.

SD-06 Test Reports

Concrete mix design; G

Fly ash

Pozzolan

Ground iron blast-furnace slag

Air Content

Compressive Strength Tests

1.4 MODIFICATION OF REFERENCES

Accomplish work in accordance with ACI publications except as modified herein. Consider the advisory or recommended provisions to be mandatory, as though the word "shall" had been substituted for the words "should" or "could" or "may," wherever they appear. Interpret reference to the "Building Official," the "Structural Engineer," and the "Architect/Engineer" to mean the Contracting Officer.

1.5 DELIVERY, STORAGE, AND HANDLING

Do not deliver concrete until vapor barrier, forms, reinforcement, embedded items, and chamfer strips are in place and ready for concrete placement. ACI 301/301M for job site storage of materials. Protect materials from contaminants such as grease, oil, and dirt. Ensure materials can be accurately identified after bundles are broken and tags removed.

1.5.1 Reinforcement

Store reinforcement of different sizes and shapes in separate piles or racks raised above the ground to avoid excessive rusting. Protect from contaminants such as grease, oil, and dirt. Ensure bar sizes can be accurately identified after bundles are broken and tags removed.

1.6 Quality Assurance

1.6.1 Drawings

1.6.1.1 Reinforcing Steel

ACI 315. Indicate bending diagrams, assembly diagrams, splicing and laps of bars, shapes, dimensions, and details of bar reinforcing, accessories, and concrete cover. Do not scale dimensions from structural drawings to determine lengths of reinforcing bars.

1.6.2 Test Reports

1.6.2.1 Concrete Mix Design

Submit copies of laboratory test reports showing that the mix has been successfully tested to produce concrete with the properties specified and that mix will be suitable for the job conditions. The laboratory test reports shall include mill test and all other test for cement, aggregates, and admixtures. Provide maximum nominal aggregate size, gradation analysis, percentage retained and passing sieve, and a graph of percentage retained verses sieve size. Test reports shall be submitted along with the concrete mix design. Obtain approval before concrete placement.

1.6.2.2 Fly Ash and Pozzolan

Submit test results in accordance with ASTM C 618 for fly ash and pozzolan or submit liquid fly ash alternative. Submit test results performed within 6 months of submittal date.

1.6.2.3 Ground Iron Blast-Furnace Slag

Submit test results in accordance with ASTM C 989 for ground iron blast-furnace slag. Submit test results performed within 6 months of submittal date.

PART 2 PRODUCTS

2.1 MATERIALS FOR FORMS

Provide wood, plywood, or steel. Use plywood or steel forms where a smooth form finish is required. Lumber shall be square edged or tongue-and-groove boards, free of raised grain, knotholes, or other surface defects. Plywood: PS1, B-B concrete form panels or better or AHA A135.4, hardboard for smooth form lining. Steel form surfaces shall not contain irregularities, dents, or sags.

2.2 FORM TIES AND ACCESSORIES

The use of wire alone is prohibited. Form ties and accessories shall not reduce the effective cover of the reinforcement.

2.3 CONCRETE

2.3.1 Contractor-Furnished Mix Design

ACI 211.1, ACI 301/301M, and ACI 318/318M except as otherwise specified. The compressive strength (f'c) of the concrete for each portion of the structure(s) shall be as indicated and as specified below.

Location	f'c (Min. 28-Day Comp. Strength) (psi)	ASTM C 33 Maximum Nominal Aggregate (Size No.)	Range of Slump (inches)	Maximum Water-Cement Ratio (by weight)	Air Entr. (percent)
All areas	3500	57	4	.50	6

Maximum slump shown above may be increased 1 inch for methods of

consolidation other than vibration. Slump may be increased to 8 inches when superplasticizers are used. Provide air entrainment using air-entraining admixture. Air entrainment shall be within plus or minus 1.5 percent of the value specified.

Note (a): Entrapped air shall be 3% or less.

2.3.1.1 Required Average Strength of Mix Design

The selected mixture shall produce an average compressive strength exceeding the specified strength by the amount indicated in ACI 301/301M. When a concrete production facility has a record of at least 15 consecutive tests, the standard deviation shall be calculated and the required average compressive strength shall be determined in accordance with ACI 301/301M. When a concrete production facility does not have a suitable record of tests to establish a standard deviation, the required average strength shall be as follows:

a. For f'c less than 3000 psi, 1000 psi plus f'c.

b. For f'c between 3000 and 5000 psi, 1200 psi plus f'c.

c. For f'c over 5000 psi, 1400 psi plus f'c.

2.4 MATERIALS

2.4.1 Cement

ASTM C 150, Type I or II or ASTM C 595, Type IP(MS) or IS(MS), IP(MH), IS(MH) blended cement except as modified herein. The blended cement shall consist of a mixture of ASTM C 150, Type II, cement and one of the following materials: ASTM C 618 pozzolan or fly ash, ASTM C 989 ground iron blast-furnace slag. The pozzolan or fly ash content shall not exceed 25 percent by weight of the total cementitious material. The ground iron blast-furnace slag shall not exceed 50 percent by weight of total cementitious material. For exposed concrete, use one manufacturer for each type of cement, ground slag, fly ash, and pozzolan.

2.4.1.1 Fly Ash and Pozzolan

ASTM C 618, Type N, F, or C, except that the maximum allowable loss on ignition shall be 6 percent for Types N and F. Add with cement.

OR

ASTM C494/C494M Type S: Fly Ash, Liquid Pozzolan Replacement, Silicate Free.

2.4.1.2 Ground Iron Blast-Furnace Slag

ASTM C 989, Grade 120.

2.4.2 Water

Water shall be fresh, clean, and potable; free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances deleterious to concrete.

2.4.3 Aggregates

ASTM C 33, except as modified herein. Furnish aggregates for exposed concrete surfaces from one source. Aggregates shall not contain any substance which may be deleteriously reactive with the alkalies in the cement.

2.4.4 Nonshrink Grout

ASTM C 1107.

2.4.5 Admixtures

ASTM C 494/C 494M: Type A, water reducing; Type B, retarding; Type C, accelerating; Type D, water-reducing and retarding; and Type E, water-reducing and accelerating admixture. Type S, specific performance admixtures. Do not use calcium chloride admixtures.

2.4.5.1 Air-Entraining

ASTM C 260.

2.4.5.2 High Range Water Reducer (HRWR) (Superplasticizers)

ASTM C 494/C 494M, Type F and ASTM C 1017/C 1017M.

2.4.5.3 Internal Curing

See paragraph "Internal Curing Admixture" for ASTM C494/C494M Type S Internal Curing Admixture

2.4.5.4 Crystalline Waterproofing Admixture

Permeability-reducing admixture for hydrostatic conditions as defined by ACI 212.3R-10 Chapter 15. Must provide 25-year waterproofing warranty. ASTM C494/C494M Admixture, meets USACE CRD C48-92 standards. Shape of crystal: The shape of the crystal when observed under 30x magnification will be long and needle shaped. Dosage rate is 2% of the cementitious content, not to exceed 13.5 pounds per cubic yard. Certifications: NSF/ANSI Standard 61 certified for use with potable water. Product: Krystol Internal Membrane (KIM) or approved equal.

2.4.6 Vapor Barrier

ASTM D 4397 polyethylene sheeting, minimum 10 mil thickness.

2.4.7 Materials for Curing Concrete

2.4.7.1 Impervious Sheeting

ASTM C 171; waterproof paper, clear or white polyethylene sheeting, or polyethylene-coated burlap.

2.4.7.2 Pervious Sheeting

AASHTO M 182.

2.4.7.3 Liquid Membrane-Forming Compound

ASTM C 309, white-pigmented, Type 2, Class B.

2.4.7.4 Internal Curing Admixture

Reactive co-polymerizing solids using nano-silica and capable of meeting ASTM C494/C494M, Type S; ASTM C156, less than .55 kg/m2; ASTM C666/C666M, durability 89 or better; ASTM C779/C779M and ASTM C944/C944M Abrasion Resistance, loss of 1.2g; ASTM C1585, Rate of Absorption less than .05%; ASTM 96 Water Vapor Transmission Class 2; ASTM E1155 Floor Flatness, FF=50 or greater, FL=30 or greater. BS 8204 Chaplin Abrasion, part 2, wear class Special; ASTM F1869 Moisture Vapor Emissions

2.4.8 Liquid Chemical Hardener Compound

2.4.8.1 Reactive Co-polymerizing Solids admixture and Surface Consolidator Densifier/Hardener Finish

See paragraph "Internal Curing Admixture": Reactive co-polymerizing solids (RCS) using nano-silica and capable of meeting ASTM C494/C494M, Type S; BS 8204 Chaplin Abrasion, part 2, wear class Special.

Surface Consolidator, Densifier/Hardener Surface Finish, used with an RCS ASTM C494 Type S internal cure admixture, silicate-free. Reactive co-polymerizing solids surface applied, meets ASTM 309, ASTM 156, and BS 8204.

Provide surface treatments containing certain chemicals, including sodium.

2.4.9 Expansion/Contraction Joint Filler

ASTM D 1751, ASTM D 1752, or 100% recycled material meeting ASTM D 1752 (subparagraphs 5.1 to 5.4). Material shall be 1/2 inch thick.

2.4.10 Biodegradable Form Release Agent

Form release agent shall be biodegradable with a maximum of 350 grams/liter (g/l) volatile organic compounds (VOCs). Product shall not bond with, stain, or adversely affect concrete surfaces and shall not impair subsequent treatments of concrete surfaces. The form release agent shall not contain diesel fuel, petroleum-based lubricating oils, waxes, or kerosene.

2.5 REINFORCEMENT

2.5.1 Reinforcing Bars

ACI 301/301M unless otherwise specified. ASTM A 615/A 615M and ASTM A 617/A 617M with the bars marked A, S, W, Grade 40; or ASTM A 616/A 616M with the bars marked R, Grade 50.

2.5.2 Mechanical Reinforcing Bar Connectors

ACI 301/301M. Provide 125 percent minimum yield strength of the reinforcement bar.

2.5.3 Welded Wire Fabric

ASTM A 185 or ASTM A 497. Provide flat sheets of welded wire fabric for slabs and toppings.

2.5.4 Wire

ASTM A 82 or ASTM A 496.

2.5.5 Reinforcing Bar Supports

Provide bar ties and supports of coated or non corrodible material.

2.6 FLOOR FINISH MATERIALS

2.6.1 Liquid Chemical Floor Hardener

Surface Consolidator, Densifier/Hardener Surface Finish, used with a reactive co-polymerizing solids ASTM C494 Type S admixture, silicate-free. Reactive co-polymerizing solids surface applied finishing aid, meets ASTM C309, ASTM 156, and BS 8204.

PART 3 EXECUTION

3.1 FORMS

ACI 301/301M. Provide forms, shoring, and scaffolding for concrete placement. Set forms mortar-tight and true to line and grade. Chamfer above grade exposed joints, edges, and external corners of concrete 0.75 inch unless otherwise indicated. Provide formwork with clean-out openings to permit inspection and removal of debris. Forms submerged in water shall be watertight.

3.1.1 Coating

Before concrete placement, coat the contact surfaces of forms with a nonstaining mineral oil, nonstaining form coating compound, or two coats of nitrocellulose lacquer. Do not use mineral oil on forms for surfaces to which adhesive, paint, or other finish material is to be applied.

3.1.2 Removal of Forms and Supports

After placing concrete, forms shall remain in place for the time periods specified in ACI 347R. Prevent concrete damage during form removal.

3.1.2.1 Special Requirements for Reduced Time Period

Forms may be removed earlier than specified if ASTM C 39 test results of field-cured samples from a representative portion of the structure indicate that the concrete has reached a minimum of 85 percent of the design strength.

3.1.3 Reshoring

Reshore concrete elements where forms are removed prior to the specified time period. Do not permit elements to deflect or accept loads during form stripping or reshoring. Forms on columns, walls, or other load-bearing members may be stripped after 2 days if loads are not applied to the members. After forms are removed, slabs and beams over 10 feet in

span and cantilevers over 4 feet shall be reshored for the remainder of the specified time period in accordance with paragraph entitled "Removal of Forms." Perform reshoring operations to prevent subjecting concrete members to overloads, eccentric loading, or reverse bending. Reshoring elements shall have the same load-carrying capabilities as original shoring and shall be spaced similar to original shoring. Firmly secure and brace reshoring elements to provide solid bearing and support.

3.2 Formed Surfaces

3.2.1 Tolerances

ACI 347R and as indicated.

3.2.2 As-Cast Form

Provide form facing material producing a smooth, hard, uniform texture on the concrete. Arrange facing material in an orderly and symmetrical manner and keep seams to a practical minimum. Support forms as necessary to meet required tolerances. Material with raised grain, torn surfaces, worn edges, patches, dents, or other defects which will impair the texture of the concrete surface shall not be used.

3.3 PLACING REINFORCEMENT AND MISCELLANEOUS MATERIALS

ACI 301/301M. Provide bars, wire fabric, wire ties, supports, and other devices necessary to install and secure reinforcement. Reinforcement shall not have rust, scale, oil, grease, clay, or foreign substances that would reduce the bond. Rusting of reinforcement is a basis of rejection if the effective cross-sectional area or the nominal weight per unit length has been reduced. Remove loose rust prior to placing steel. Tack welding is prohibited.

3.3.1 Vapor Barrier

Provide beneath the on-grade concrete floor slab. Use the greatest widths and lengths practicable to eliminate joints wherever possible. Lap joints a minimum of 12 inches. Remove torn, punctured, or damaged vapor barrier material and provide with new vapor barrier prior to placing concrete. Concrete placement shall not damage vapor barrier material.

3.3.2 Reinforcement Supports

Place reinforcement and secure with galvanized or non corrodible chairs, spacers, or metal hangers. For supporting reinforcement on the ground, use concrete or other non corrodible material, having a compressive strength equal to or greater than the concrete being placed.

3.3.3 Splicing

As indicated. For splices not indicated ACI 301/301M. Do not splice at points of maximum stress. Overlap welded wire fabric the spacing of the cross wires, plus 2 inches.

3.3.4 Future Bonding

Plug exposed, threaded, mechanical reinforcement bar connectors with a greased bolt. Bolt threads shall match the connector. Countersink the connector in the concrete. Calk the depression after the bolt is

installed.

3.3.5 Cover

ACI 301/301M for minimum coverage, unless otherwise indicated.

3.3.6 Setting Miscellaneous Material

Place and secure anchors and bolts, pipe sleeves, conduits, and other such items in position before concrete placement. Plumb anchor bolts and check location and elevation. Temporarily fill voids in sleeves with readily removable material to prevent the entry of concrete.

3.3.7 Construction Joints

Locate joints to least impair strength. Continue reinforcement across joints unless otherwise indicated.

3.3.8 Expansion Joints and Contraction Joints

Provide expansion joint at edges of interior floor slabs on grade abutting vertical surfaces, and as indicated. Make expansion joints 1/2 inch wide unless indicated otherwise. Fill expansion joints not exposed to weather with preformed joint filler material. Completely fill joints exposed to weather with joint filler material and joint sealant. Do not extend reinforcement or other embedded metal items bonded to the concrete through any expansion joint unless an expansion sleeve is used. Provide contraction joints, either formed or saw cut or cut with a jointing tool, to the indicated depth after the surface has been finished. Sawed joints shall be completed within 4 to 12 hours after concrete placement. Protect joints from intrusion of foreign matter.

3.4 BATCHING, MEASURING, MIXING, AND TRANSPORTING CONCRETE

ASTM C 94/C 94M, ACI 301/301M, ACI 302.1R, and ACI 304R, except as modified herein. Batching equipment shall be such that the concrete ingredients are consistently measured within the following tolerances: 1 percent for cement and water, 2 percent for aggregate, and 3 percent for admixtures. Furnish mandatory batch ticket information for each load of ready mix concrete.

3.4.1 Measuring

Make measurements at intervals as specified in paragraphs entitled "Sampling" and "Testing."

3.4.2 Mixing

ASTM C 94/C 94M and ACI 301/301M. Machine mix concrete. Begin mixing within 30 minutes after the cement has been added to the aggregates. Reduce mixing time and place concrete within 60 minutes if the air temperature is greater than 85 degrees F except as follows: if set retarding admixture is used and slump requirements can be met, limit for placing concrete may remain at 90 minutes. Additional water may be added, provided that both the specified maximum slump and water-cement ratio are not exceeded. When additional water is added, an additional 30 revolutions of the mixer at mixing speed is required. If the entrained air content falls below the specified limit, add a sufficient quantity of admixture to bring the entrained air content within the specified limits.

Dissolve admixtures in the mixing water and mix in the drum to uniformly distribute the admixture throughout the batch.

3.4.3 Transporting

Transport concrete from the mixer to the forms as rapidly as practicable. Prevent segregation or loss of ingredients. Clean transporting equipment thoroughly before each batch. Do not use aluminum pipe or chutes. Remove concrete which has segregated in transporting and dispose of as directed.

3.5 PLACING CONCRETE

Place concrete as soon as practicable after the forms and the reinforcement have been inspected and approved. Do not place concrete when weather conditions prevent proper placement and consolidation; in uncovered areas during periods of precipitation; or in standing water. Prior to placing concrete, remove dirt, construction debris, water, snow, and ice from within the forms. Deposit concrete as close as practicable to the final position in the forms. Do not exceed a free vertical drop of 3 feet from the point of discharge. Place concrete in one continuous operation from one end of the structure towards the other. Position grade stakes on 10 foot centers maximum in each direction when pouring interior slabs and on 20 foot centers maximum for exterior slabs.

3.5.1 Vibration

ACI 301/301M. Furnish a spare, working, vibrator on the job site whenever concrete is placed. Consolidate concrete slabs greater than 4 inches in depth with high frequency mechanical vibrating equipment supplemented by hand spading and tamping. Consolidate concrete slabs 4 inches or less in depth by wood tampers, spading, and settling with a heavy leveling straightedge. Operate internal vibrators with vibratory element submerged in the concrete, with a minimum frequency of not less than 6000 impulses per minute when submerged. Do not use vibrators to transport the concrete in the forms. Insert and withdraw vibrators approximately 18 inches apart. Penetrate the previously placed lift with the vibrator when more than one lift is required. Place concrete in 18 inch maximum vertical lifts. External vibrators shall be used on the exterior surface of the forms when internal vibrators do not provide adequate consolidation of the concrete.

3.5.2 Cold Weather

ACI 306.1. Do not allow concrete temperature to decrease below 50 degrees F. Obtain approval prior to placing concrete when the ambient temperature is below 40 degrees F or when concrete is likely to be subjected to freezing temperatures within 24 hours. Cover concrete and provide sufficient heat to maintain 50 degrees F minimum adjacent to both the formwork and the structure while curing. Limit the rate of cooling to 5 degrees F in any 1 hour and 50 degrees F per 24 hours after heat application.

3.5.3 Hot Weather

ACI 305R. Maintain required concrete temperature using Figure 2.1.5 in ACI 305R to prevent the evaporation rate from exceeding 0.2 pound of water per square foot of exposed concrete per hour. Cool ingredients before mixing or use other suitable means to control concrete temperature and prevent rapid drying of newly placed concrete. Shade the fresh concrete

as soon as possible after placing.

3.5.3.1 Internal Curing

If using reactive co-polymerizing solids admixture for internally curing, no additional curing methods are necessary.

3.5.3.2 Surface Curing

If using burlap and sheeting, start curing when the surface of the fresh concrete is sufficiently hard to permit curing without damage. Provide water hoses, pipes, spraying equipment, and water hauling equipment, where job site is remote to water source, to maintain a moist concrete surface throughout the curing period. Provide burlap cover or other suitable, permeable material with fog spray or continuous wetting of the concrete when weather conditions prevent the use of either liquid membrane curing compound or impervious sheets. For vertical surfaces, protect forms from direct sunlight and add water to top of structure once concrete is set.

3.6 FLOOR, SLAB, AND PAVEMENT FINISHES AND MISCELLANEOUS CONSTRUCTION

Repair formed surfaces by removing minor honeycombs, pits greater than 1 square inch surface area or 0.25 inch maximum depth, or otherwise defective areas. Provide edges perpendicular to the surface and patch with nonshrink grout. Patch tie holes and defects when the forms are removed. Concrete with extensive honeycomb including exposed steel reinforcement, cold joints, entrapped debris, separated aggregate, or other defects which affect the serviceability or structural strength will be rejected, unless correction of defects is approved. Obtain approval of corrective action prior to repair. The surface of the concrete shall not vary more than the allowable tolerances of ACI 347R. Exposed surfaces shall be uniform in appearance and finished to a smooth form finish unless otherwise specified.

ACI/MCP-2, unless otherwise specified. Slope floors uniformly to drains where drains are provided. Steel trowel and fine-broom finish concrete slabs that are to receive quarry tile, ceramic tile, or paver tile. Where straightedge measurements are specified, Contractor must provide straightedge.

3.6.1 Finish

Place, consolidate, and immediately strike off concrete to obtain proper contour, grade, and elevation before bleedwater appears. Permit concrete to attain a set sufficient for floating and supporting the weight of the finisher and equipment. If bleedwater is present prior to floating the surface, drag the excess water off or remove by absorption with porous materials. Do not use dry cement to absorb bleedwater.

3.6.1.1 Steel Troweled

Use for floors intended as walking surfaces and for reception of floor coverings. First, provide a floated finish. Next, the finish must be power troweled two times, and finally hand troweled. The first troweling after floating needs to produce a smooth surface which is relatively free of defects but which may still show some trowel marks. Perform additional trowelings done by hand after the surface has hardened sufficiently. The final troweling is done when a ringing sound is produced as the trowel is

moved over the surface. Thoroughly consolidate the surface by the hand troweling operations. The finished surface must be essentially free of trowel marks and uniform in texture and appearance. The finished surface must produce a surface level to within 1/4 inch in 10 feet. On surfaces intended to support floor coverings, remove any defects of sufficient magnitude to show through the floor covering by grinding.

3.6.1.2 Chemical-Hardener Treatment

Apply reactive co-polymerizing solids surface applied consolidator/densifier/hardner before the last pass of finishing when the reactive co-polymerizing solids admixture is used.

Apply liquid-chemical floor hardener where indicated after curing and drying concrete surface. Dilute liquid hardener with water and apply in three coats. First coat must be one-third strength, second coat one-half strength, and third coat two-thirds strength. Apply each coat evenly and allow to dry 24 hours between coats.

Approved proprietary chemical hardeners must be applied in accordance with manufacturer's printed directions.

3.6.2 Splash Blocks

Provide at outlets of downspouts emptying at grade. Splash blocks may be precast concrete, and must be 24 inches long, 12 inches wide and 4 inches thick, unless otherwise indicated, with smooth-finished countersunk dishes sloped to drain away from the building.

3.7 SURFACE FINISHES EXCEPT FLOOR AND SLAB FINISHES

3.7.1 Defects

Repair surface defects in accordance with ACI 301 Section 5.

3.7.2 Not Against Forms (Top of Walls)

Surfaces not otherwise specified must be finished with wood floats to even surfaces. Finish must match adjacent finishes.

3.7.3 Formed Surfaces

3.7.3.1 Tolerances

ACI 117 and as indicated.

3.7.3.2 As-Cast Rough Form

Provide for surfaces not exposed to public view a surface finish SF-1.0. Patch holes and defects in accordance with ACI 301.

3.7.3.3 Standard Smooth Finish

Provide for surfaces exposed to public view a surface finish SF-3.0. Patch holes and defects in accordance with ACI 301.

3.8 CURING AND PROTECTION

ACI 301/ACI 301M unless otherwise specified. Avoid damage to concrete from

vibration created by blasting, pile driving, movement of equipment in the vicinity, disturbance of formwork or protruding reinforcement, and any other activity resulting in ground vibrations. Protect concrete from injurious action by sun, rain, flowing water, frost, mechanical injury, tire marks, and oil stains. Do not use membrane-forming compound on surfaces where appearance would be objectionable, on any surface to be painted, where coverings are to be bonded to the concrete, or on concrete to which other concrete is to be bonded.

If using reactive co-polymerizing solids admixture for wet curing, no further curing is necessary.

If using burlap, begin curing immediately following form removal. Do not allow concrete to dry out from time of placement until the expiration of the specified curing period. If forms are removed prior to the expiration of the curing period, provide another curing procedure specified herein for the remaining portion of the curing period. Provide moist curing for those areas receiving liquid chemical sealer-hardener or epoxy coating unless the reactive co-polymerizing solids surface applied method was used in combination with the reactive co-polymerizing solids curing method; then no further curing is necessary.

3.8.1 Moist Curing

When using reactive co-polymerizing solids admixture for wet curing, no further curing is necessary. When using burlap curing, this method is not necessary. Remove water without erosion or damage to the structure.

3.8.1.1 Ponding or Immersion

When using reactive co-polymerizing solids admixture for wet curing, no further curing is necessary.

When using burlap curing, continually immerse the concrete throughout the curing period. Water shall not be more than 20 degrees F less than the temperature of the concrete. For temperatures between 40 and 50 degrees F, increase the curing period by 50 percent.

3.8.1.2 Fog Spraying or Sprinkling

When using reactive co-polymerizing solids admixture for wet curing, no further curing is necessary.

When using burlap curing, apply water uniformly and continuously throughout the curing period. For temperatures between 40 and 50 degrees F, increase the curing period by 50 percent.

3.8.1.3 Pervious Sheeting

When using reactive co-polymerizing solids admixture for wet curing, no further curing is necessary.

Completely cover surface and edges of the concrete with two thicknesses of wet sheeting. Overlap sheeting 6 inches over adjacent sheeting. Sheeting shall be at least as long as the width of the surface to be cured. During application, do not drag the sheeting over the finished concrete nor over sheeting already placed. Wet sheeting thoroughly and keep continuously wet throughout the curing period.

3.8.1.4 Impervious Sheeting

When using reactive co-polymerizing solids admixture for wet curing, no further curing is necessary.

Wet the entire exposed surface of the concrete thoroughly with a fine spray of water and cover with impervious sheeting throughout the curing period. Lay sheeting directly on the concrete surface and overlap edges 12 inches minimum. Provide sheeting not less than 18 inches wider than the concrete surface to be cured. Secure edges and transverse laps to form closed joints. Repair torn or damaged sheeting or provide new sheeting. Cover or wrap columns, walls, and other vertical structural elements from the top down with impervious sheeting; overlap and continuously tape sheeting joints; and introduce sufficient water to soak the entire surface prior to completely enclosing.

3.8.2 Curing Periods

When using reactive co-polymerizing solids admixture for wet curing, no further curing is necessary.

ACI 301/301M except 10 days for retaining walls, pavement or chimneys, 21 days for concrete that will be in full-time or intermittent contact with seawater, salt spray, alkali soil or waters. Begin curing immediately after placement. Protect concrete from premature drying, excessively hot temperatures, and mechanical injury; and maintain minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of the concrete. The materials and methods of curing shall be subject to approval by the Contracting Officer.

3.8.3 Liquid Chemical Sealer-Hardener

If reactive co-polymerizing solids hardener/densifer is used in conjunction with the reactive co-polymerizing solids internal cure admixture, no other application is necessary.

Apply sealer-hardener to interior floors not receiving floor covering and floors located under access flooring. Apply the sealer-hardener in accordance with manufacturer's recommendations. Seal or cover joints and openings in which joint sealant is to be applied as required by the joint sealant manufacturer. Do not apply the sealer hardener until the concrete has been moist cured and has aged for a minimum of 30 days. Apply a minimum of two coats of sealer-hardener.

3.9 FIELD QUALITY CONTROL

3.9.1 Sampling

ASTM C 172. Collect samples of fresh concrete to perform tests specified. ASTM C 31/C 31M for making test specimens.

3.9.2 Testing

3.9.2.1 Slump Tests

ASTM C 143/C 143M. Take concrete samples during concrete placement. The maximum slump may be increased as specified with the addition of an approved admixture provided that the water-cement ratio is not exceeded. Perform tests at commencement of concrete placement, when test cylinders

are made, and for each batch (minimum) or every 20 cubic yards (maximum) of concrete.

3.9.2.2 Temperature Tests

Test the concrete delivered and the concrete in the forms. Perform tests in hot or cold weather conditions (below 50 degrees F and above 80 degrees F) for each batch (minimum) or every 20 cubic yards (maximum) of concrete, until the specified temperature is obtained, and whenever test cylinders and slump tests are made.

3.9.2.3 Compressive Strength Tests

ASTM C 39. Make five test cylinders for each set of tests in accordance with ASTM C 31/C 31M. Precautions shall be taken to prevent evaporation and loss of water from the specimen. Test two cylinders at 7 days, two cylinders at 28 days, and hold one cylinder in reserve. Samples for strength tests of each mix design of concrete placed each day shall be taken not less than once a day, nor less than once for each 100 cubic yards of concrete, nor less than once for each 5000 square feet of surface area for slabs or walls. For the entire project, take no less than five sets of samples and perform strength tests for each mix design of concrete placed. Each strength test result shall be the average of two cylinders from the same concrete sample tested at 28 days. If the average of any three consecutive strength test results is less than f'c or if any strength test result falls below f'c by more than 500 psi, take a minimum of three ASTM C 42/C 42M core samples from the in-place work represented by the low test cylinder results and test. Concrete represented by core test shall be considered structurally adequate if the average of three cores is equal to at least 85 percent of f'c and if no single core is less than 75 percent of f'c. Locations represented by erratic core strengths shall be retested. Remove concrete not meeting strength criteria and provide new acceptable concrete. Repair core holes with nonshrink grout. Match color and finish of adjacent concrete.

3.9.2.4 Air Content

ASTM C 173/C 173M or ASTM C 231 for normal weight concrete. Test air-entrained concrete for air content at the same frequency as specified for slump tests.

-- End of Section --

SECTION 07 92 00

JOINT SEALANTS
08/16

PART 1 GENERAL

1.1 REFERENCES

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.

ASTM INTERNATIONAL (ASTM)

ASTM C509	(2006; R 2015) Elastomeric Cellular Preformed Gasket and Sealing Material
ASTM C920	(2018) Standard Specification for Elastomeric Joint Sealants
ASTM C1193	(2013) Standard Guide for Use of Joint Sealants
ASTM C1311	(2014) Standard Specification for Solvent Release Agents
ASTM C1521	(2013) Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints
ASTM D1056	(2014) Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber
ASTM D1667	(2017) Standard Specification for Flexible Cellular Materials - Poly (Vinyl Chloride) Foam (Closed-Cell)

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH)

CDPH SECTION 01350	(2010; Version 1.1) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS	SCS Global Services (SCS) Indoor Advantage

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

SCAQMD Rule 1168	(2017) Adhesive and Sealant Applications

UNDERWRITERS LABORATORIES (UL)

UL 2818	(2013) GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes And Furnishings

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Sealants; G

Primers; G

Bond Breakers; G

Backstops; G

SD-06 Test Reports

Field Adhesion; G

SD-07 Certificates

Indoor Air Quality For Interior Sealants; S

Indoor Air Quality For Interior Floor Joint Sealants; S

1.3 PRODUCT DATA

Include storage requirements, shelf life, curing time, instructions for mixing and application, and accessories. Provide manufacturer's Safety Data Sheets (SDS) for each solvent, primer and sealant material proposed.

1.4 CERTIFICATIONS

1.4.1 Indoor Air Quality Certifications

Submit required indoor air quality certifications in one submittal package.

1.4.1.1 Adhesives and Sealants

Provide products certified to meet indoor air quality requirements by UL 2818 (Greenguard) Gold, SCS Global Services Indoor Advantage Gold or provide certification or validation by other third-party program that products meet the requirements of this Section. Provide current product certification documentation from certification body. When product does not have certification, provide validation that product meets the indoor air quality product requirements cited herein.

1.5 ENVIRONMENTAL CONDITIONS

Apply sealant when the ambient temperature is between 40 and 90 degrees F.

1.6 DELIVERY AND STORAGE

Deliver materials to the jobsite in unopened manufacturers' sealed shipping containers, with brand name, date of manufacture, color, and material designation clearly marked thereon. Label elastomeric sealant

containers to identify type, class, grade, and use. Handle and store materials in accordance with manufacturer's printed instructions. Prevent exposure to foreign materials or subjection to sustained temperatures exceeding 90 degrees F or lower than 0 degrees F. Keep materials and containers closed and separated from absorptive materials such as wood and insulation.

1.7 QUALITY ASSURANCE

1.7.1 Compatibility with Substrate

Verify that each sealant is compatible for use with each joint substrate in accordance with sealant manufacturer's printed recommendations for each application.

1.7.2 Joint Tolerance

Provide joint tolerances in accordance with manufacturer's printed instructions.

1.7.3 Adhesion

Provide in accordance with ASTM C1193 or ASTM C1521.

PART 2 PRODUCTS

2.1 SEALANTS

Provide sealant products that have been tested, found suitable, and documented as such by the manufacturer for the particular substrates to which they will be applied.

In areas with ambient temperatures that exceed 110 degrees F, do not use polybutene, bituminous, acrylic-latex, polyvinyl acetate latex sealants, polychloroprene (neoprene), polyvinyl chloride (PVC), and polyurethane foams, and neoprene, PVC, and styrene butadiene rubber extruded seals and closure strips due to these materials having maximum recommended surface temperature ranges from 130 to 180 degrees F.

2.1.1 Interior Sealants

Provide ASTM C920, Type S or M, Grade NS, Class 12.5, Use NT. Provide sealant products used on the interior of the building (defined as inside of the weatherproofing system) meeting either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or VOC content requirements of SCAQMD Rule 1168. Provide certification or validation of indoor air quality for interior sealants. Location(s) and color(s) of sealant for the following. Note, color "as selected" refers to manufacturer's full range of color options:

LOCATION	COLOR
a. Small voids between walls or partitions and adjacent lockers, casework, shelving, door frames, built-in or surface mounted equipment and fixtures, and similar items.	As selected

LOCATION	COLOR
b. Perimeter of frames at doors, windows, and access panels which adjoin exposed interior concrete and masonry surfaces.	Match adjacent surface color
c. Joints of interior masonry walls and partitions which adjoin columns, pilasters, concrete walls, and exterior walls unless otherwise detailed.	Match adjacent surface color
d. Joints between edge members for acoustical tile and adjoining vertical surfaces.	Match adjacent surface color
e. Interior locations, not otherwise indicated or specified, where small voids exist between materials specified to be painted.	Match adjacent surface color
f. Joints between bathtubs and ceramic tile; joints between shower receptors and ceramic tile; joints formed where non-planar tile surfaces meet.	Match adjacent surface color
g. Joints formed between tile floors and tile base cove; joints between tile and dissimilar materials; joints occurring where substrates change.	Match adjacent surface color
h. Behind escutcheon plates at valve pipe penetrations and showerheads in showers.	Match adjacent surface color

2.1.2 Exterior Sealants

For joints in vertical surfaces, provide ASTM C920, Type S or M, Grade NS, Class 25, Use NT. For joints in horizontal surfaces, provide ASTM C920, Type S or M, Grade P, Class 25, Use T. Provide location(s) and color(s) of sealant as follows. Note, color "as selected" refers to manufacturer's full range of color options:

a. Joints and recesses formed where frames and subsills of windows, doors, louvers, and vents adjoin masonry, concrete, or metal frames. Use sealant at both exterior and interior surfaces of exterior wall penetrations.	Match adjacent surface color
b. Joints between new and existing exterior masonry walls.	Match mortar color
c. Masonry joints where shelf angles occur.	Match adjacent surface color
d. Joints in wash surfaces of stonework.	Match adjacent surface color

e. Expansion and control joints.	Match adjacent surface color
f. Interior face of expansion joints in exterior concrete or masonry walls where metal expansion joint covers are not required.	Match adjacent surface color
g. Voids where items pass through exterior walls.	Match adjacent surface color
h. Metal reglets, where flashing is inserted into masonry joints, and where flashing is penetrated by coping dowels.	Match adjacent surface color
i. Metal-to-metal joints where sealant is indicated or specified.	Match adjacent surface color
j. Joints between ends of gravel stops, fascia, copings, and adjacent walls.	Match adjacent surface color

2.1.3 Floor Joint Sealants

ASTM C920, Type S or M, Grade P, Class 25, Use T. Provide sealant products used on the interior of the building (defined as inside of the weatherproofing system) meeting either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or VOC content requirements of SCAQMD Rule 1168. Provide certification or validation of indoor air quality for interior floor joint sealants. Provide location(s) and color(s) of sealant as follows. Note, color "as selected" refers to manufacturer's full range of color options:

LOCATION	COLOR
a. Seats of metal thresholds for exterior doors.	As selected
b. Control and expansion joints in floors, slabs, ceramic tile, and walkways.	As selected

2.2 PRIMERS

Non-staining, quick drying type and consistency as recommended by the sealant manufacturer for the particular application. Provide primers for interior applications that meet the indoor air quality requirements of the paragraph SEALANTS above.

2.3 BOND BREAKERS

Type and consistency as recommended by the sealant manufacturer to prevent adhesion of the sealant to the backing or to the bottom of the joint. Provide bond breakers for interior applications that meet the indoor air

quality requirements of the paragraph SEALANTS above.

2.4 BACKSTOPS

Provide glass fiber roving, neoprene, butyl, polyurethane, or polyethylene foams free from oil or other staining elements as recommended by sealant manufacturer. Provide 25 to 33 percent oversized backing for closed cell and 40 to 50 percent oversized backing for open cell material, unless otherwise indicated. Provide backstop material that is compatible with sealant. Do not use oakum or other types of absorptive materials as backstops.

2.4.1 Rubber

Provide in accordance with ASTM D1056, Type 2, closed cell, Class A , Grade 2A, round cross section for cellular rubber sponge backing.

2.4.2 PVC

Provide in accordance with ASTM D1667, Grade VO 12, open-cell foam, round cross section for polyvinyl chloride (PVC) backing.

2.4.3 Synthetic Rubber

Provide in accordance with ASTM C509, Option I, Type I preformed rods or tubes for synthetic rubber backing.

2.4.4 Neoprene

Provide in accordance with ASTM D1056, closed cell expanded neoprene cord Type 2, Class C, Grade 2C2 for neoprene backing.

2.4.5 Butyl Rubber Based

Provide in accordance with ASTM C1311, from a single component, with solvent release. color as selected from manufacturer's full range of color choices.

2.5 CLEANING SOLVENTS

Provide type(s) recommended by the sealant manufacturer and in accordance with environmental requirements herein. Protect adjacent aluminum and bronze surfaces from solvents. Provide solvents for interior applications that meet the indoor air quality requirements of the paragraph SEALANTS above.

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

Perform a field adhesion test in accordance with manufacturer's instructions and ASTM C1193, Method A or ASTM C1521, Method A, Tail Procedure. Remove sealants that fail adhesion testing; clean substrates, reapply sealants, and re-test. Test sealants adjacent to failed sealants. Submit field adhesion test report indicating tests, locations, dates, results, and remedial actions taken.

3.2 SURFACE PREPARATION

Prepare surfaces according to manufacturer's printed installation instructions. Clean surfaces from dirt, frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would destroy or impair adhesion. Remove oil and grease with solvent; thoroughly remove solvents prior to sealant installation. Wipe surfaces dry with clean cloths. When resealing an existing joint, remove existing caulk or sealant prior to applying new sealant. For surface types not listed below, provide in accordance with sealant manufacturer's printed instructions for each specific surface.

3.2.1 Steel Surfaces

Remove loose mill scale by sandblasting or, if sandblasting is impractical or would damage finished work, scraping and wire brushing. Remove protective coatings by sandblasting or using a residue free solvent. Remove resulting debris and solvent residue prior to sealant installation.

3.2.2 Aluminum or Bronze Surfaces

Remove temporary protective coatings from surfaces that will be in contact with sealant. When masking tape is used as a protective coating, remove tape and any residual adhesive prior to sealant application. For removing protective coatings and final cleaning, use non-staining solvents recommended by the manufacturer of the item(s) containing aluminum or bronze surfaces.

3.2.3 Concrete and Masonry Surfaces

Where surfaces have been treated with curing compounds, oil, or other such materials, remove materials by sandblasting or wire brushing. Remove laitance, efflorescence and loose mortar from the joint cavity. Remove resulting debris prior to sealant installation.

3.2.4 Wood Surfaces

Ensure wood surfaces that will be in contact with sealants are free of splinters, sawdust and other loose particles.

3.3 SEALANT PREPARATION

Do not add liquids, solvents, or powders to sealants. Mix multicomponent elastomeric sealants in accordance with manufacturer's printed instructions.

3.4 APPLICATION

3.4.1 Joint Width-To-Depth Ratios

Acceptable Ratios:

JOINT WIDTH	JOINT DEPTH	
	Minimum	Maximum
For metal, glass, or other nonporous surfaces:		
1/4 inch (minimum)	1/4 inch	1/4 inch
over 1/4 inch	1/2 of width	Equal to width
For wood, concrete, masonry, stone, or :		
1/4 inch (minimum)	1/4 inch	1/4 inch
over 1/4 inch to 1/2 inch	1/4 inch	Equal to width
over 1/2 inch to 1 inch	1/2 inch	5/8 inch
Over 1 inch	prohibited	

Unacceptable Ratios: Where joints of acceptable width-to-depth ratios have not been provided, clean out joints to acceptable depths and grind or cut to acceptable widths without damage to the adjoining work. Grinding is prohibited at metal surfaces.

3.4.2 Unacceptable Sealant Use

Do not install sealants in lieu of other required building enclosure weatherproofing components such as flashing, drainage components, and joint closure accessories, or to close gaps between walls, floors, roofs, windows, and doors, that exceed acceptable installation tolerances. Remove sealants that have been used in an unacceptable manner and correct building enclosure deficiencies to comply with contract documents requirements.

3.4.3 Masking Tape

Place masking tape on the finished surface on one or both sides of joint cavities to protect adjacent finished surfaces from primer or sealant smears. Remove masking tape within 10 minutes of joint filling and tooling.

3.4.4 Backstops

Provide backstops dry and free of tears or holes. Tightly pack the back or bottom of joint cavities with backstop material to provide joints in specified depths. Provide backstops where indicated and where backstops are not indicated but joint cavities exceed the acceptable maximum depths specified in JOINT WIDTH-TO-DEPTH RATIOS Table.

3.4.5 Primer

Clean out loose particles from joints immediately prior to application of. Apply primer to joints in concrete masonry units, wood, and other porous surfaces in accordance with sealant manufacturer's printed instructions. Do not apply primer to exposed finished surfaces.

3.4.6 Bond Breaker

Provide bond breakers to surfaces not intended to bond in accordance with, sealant manufacturer's printed instructions for each type of surface and sealant combination specified.

3.4.7 Sealants

Provide sealants compatible with the material(s) to which they are applied. Do not use a sealant that has exceeded its shelf life or has jelled and cannot be discharged in a continuous flow from the sealant gun. Apply sealants in accordance with the manufacturer's printed instructions with a gun having a nozzle that fits the joint width. Work sealant into joints so as to fill the joints solidly without air pockets. Tool sealant after application to ensure adhesion. Apply sealant uniformly smooth and free of wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints, apply additional sealant, and tool smooth as specified. Apply sealer over sealants in accordance with the sealant manufacturer's printed instructions.

3.5 PROTECTION AND CLEANING

3.5.1 Protection

Protect areas adjacent to joints from sealant smears. Masking tape may be used for this purpose if removed 5 to 10 minutes after the joint is filled and no residual tape marks remain.

3.5.2 Final Cleaning

Upon completion of sealant application, remove remaining smears and stains and leave the work in a clean and neat condition.

a. Masonry and Other Porous Surfaces: Immediately remove fresh sealant that has been smeared on adjacent masonry, rub clean with a solvent, and remove solvent residue, in accordance with sealant manufacturer's printed instructions. Allow excess sealant to cure for 24 hour then remove by wire brushing or sanding. Remove resulting debris.

b. Metal and Other Non-Porous Surfaces: Remove excess sealant with a solvent moistened cloth. Remove solvent residue in accordance with solvent manufacturer's printed instructions.

-- End of Section --

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SECTION 31 41 16

STEEL PILE FOUNDATION UNDERPINNING AND LEVELING SYSTEMS
11/23

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this section to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2020; Errata 1 2021) Structural Welding Code - Steel

ASTM INTERNATIONAL (ASTM)

ASTM A36/A36M	(2019) Standard Specification for Carbon Structural Steel
ASTM A53/A53M	(2022) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Pre-Repair Elevation Survey

SD-02 Shop Drawings

Shop Drawings

SD-05 Design Data

Steel Pile Underpinning

Leveling System

Design Calculations

SD-11 Closeout Submittals

Pier Schedule

1.3 STRUCTURAL PERFORMANCE

Provide steel pile underpinning and leveling system to stabilize and raise the structure at the indicated locations shown on the drawings. The contractor's system must be capable of developing a minimum driving force

of 80,000 lbs. per pile.

Provide complete shop drawings, design calculations and installation drawings of proposed system. Calculations showing capacities of all system components sealed by a registered structural engineer shall be submitted for review by engineer.

Contractor shall provide a pre-repair elevation survey along with anticipated amounts of elevation recovery to the engineer for review prior to commencing work. Any changes in pier spacing shall also be submitted at this time. After work is completed, post-repair elevation surveys, final depth of all piles, and the ultimate capacity each pile was driven to, shall be submitted for record. Complete pier schedule on drawings.

1.4 CONTRACTOR QUALIFICATION

The contractor must show evidence of being in business under the same name continuously for a period of five years minimum. Also, the contractor must submit a list of at least 10 projects of similar scope and size that he has completed with his proposed system. The names and addresses of contract person shall be required.

PART 2 PRODUCTS

2.1 MATERIAL

All steel components which are to remain as a permanent part of the structure, including steel tubing pile sections and foundatio, support bracket, must be of new material meeting the requirements of ASTM A36/A36M for plates, bars, and angles and ASTM A53/A53M for tubing, or of superior quality. Tubing shall be certified for the particular application. See Basis of Design Pier Data at the end of this Section.

2.2 WELDMENTS

Welded connections shall conform to the requirements of the AWS D1.1/D1.1M. Welders must be certified for the particular application.

PART 3 EXECUTION

3.1 PILE SPACING

Contractor shall locate pile installation points as close to the layout indicated on the plans as is reasonably feasible. Proposed deviation of more than 24" must be approved by the owner.

Piles must not be placed further than 1 '0" off of any corner. Also, all insets and outsets must be supported individually as not to compromise the foundations structural integrity.

3.2 EXCAVATION

Hand excavate a 2' x 2' opening to allow positioning of steel foundation support bracket and pile. After installation is complete, replace soil in 6" lifts. Mechanically tamp back into place all removed soil.

If the foundation depth exceeds 4 feet or if rock or concrete is encountered during the excavation process, additional excavating equipment may be necessary. Hault work and inform COR for direction

3.3 POSITIONING FOUNDATON SUPPORT BRACKET

Set support bracket under foundation at each location after excavation is completed. Bolting of bracket to foundation shall not be allowed for fear of weakening the foundation system. Bracket should be positioned as close to the vertical position as practical.

The lower surface of the foundation must be thoroughly cleaned of all soil. Chip uneven surfaces to allow proper fit of bracket. Where necessary, enhance brackets engagement with foundation by positioning steel plates in the uneven area.

3.4 PILE INSTALLATION

Attach hydraulic driving assembly for advancement of pile. Piles shall be individually advanced using the structure as the reactive force, until an ultimate capacity load test of 80,000 lbs. is reached, or undesired uplift is encountered. Hydraulic pumps must be equipped with gauges that are new or have been calibrated within the last three months. Operator must constantly monitor pile capacity while pile is being driven.

Pile sections shall be coupled as to form a continuous pile column when installation is complete. Section connectors shall extend a minimum of 6" into each section as to prevent buckling of pile. Lead section of pile shall be solid to prevent soil from entering the internal diameter of the pile.

3.5 LEVELING

Leveling operations shall be conducted by simultaneously lifting at all points required to lift specific areas that have settled. Piles shall be manifolded together as to create a system for synchronized operation at each pile location. Lifting shall be controlled at each location by the opening or closing of valves located in the hydraulic lines that connect each pile. Piles must be continuously linked so as to provide a simultaneous and uniform lifting operation. Contractor must show evidence that he possesses enough equipment to perform such services. Individual raising of piles shall not be allowed.

It is the owner's intent to return the structure to as close to the original elevation as practical. Pre-repair elevations shall be used to derive expected amounts of elevation recovery. The contractor shall continuously monitor the structure's elevation to assure that no piles raise more than 1/4" vertically ahead of the adjacent piles. Failure to lift the structure due to the equipment's or system's inability shall result in contractor non-payment.

Slight cracking in the structure while lifting is expected. The contractor shall allow the sum of $5,000 USD for minor repairs. Damage resulting from gross negligence on the contract's part, or due to inexperienced or unqualified workmen shall be restored solely at the expense of the contractor.

3.6 COMPLETING INSTALLATION

After the desired elevation is reached, individually set piles at designed load. Secure pile to foundation support bracket after load is set. Remove hydraulic driving equipment. Cut pile off 6" below grade. Cap

pile by placing concrete in upper 12" of pile column. Backfill au excavations and restore area to pre-repair condition.

-- End of Section --

POWER Lift
FOUNDATION REPAIR
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P.O. Box 758 • Ada, OK 74821-0758
Ph (580) 332-5438 • Fax (580) 332-5402
NationWide Service (800) 562-5438

2 7/8" HELICAL PIER SPECIFICATION

2 7/8" O.D. PIPE WITH 12" HELIX, 10" HELIX AND 8" HELIX WITH 3 1/2" O.D. COUPLERS
(SEE ATTACHED DETAIL)

MAXIMUM INSTALLATION TORQUE: **7,100 ft-lb**

STEEL PIPE: 2 7/8" O.D. & 3 1/2" O.D.
SAE 1536 (UNS G15360) CLASS 70 PER ASTM A181
Fu = 100,000 psi
Fy = 70,000 psi

STEEL PLATES: ASTM A572
Fu = 65,000 psi
Fy = 50,000 psi

WELDS SHALL CONFORM TO AWS D1.1 USING E70-XX ELECTRODES

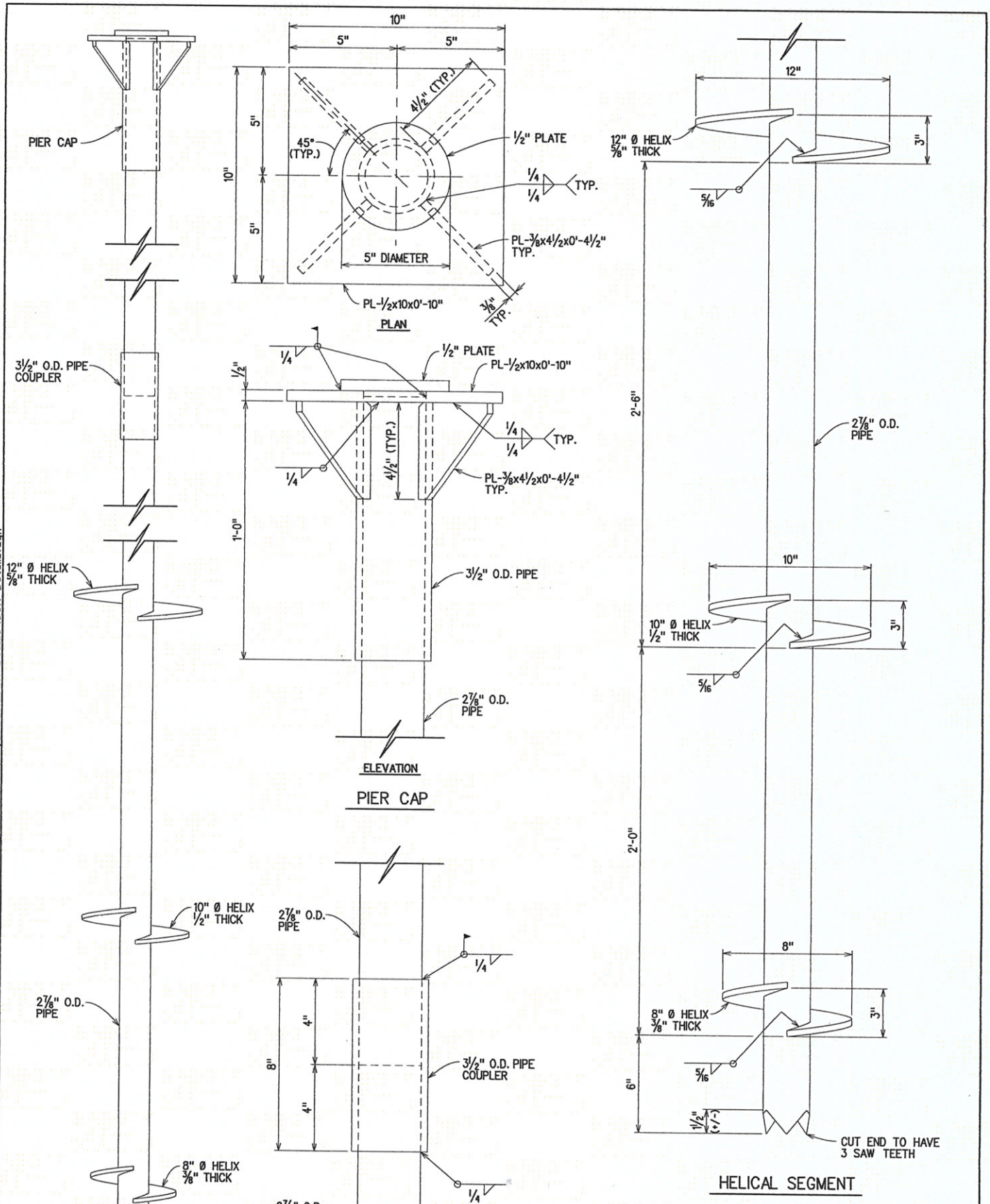
Information provided herein is based only on steel capacity. A final pier design shall be provided and consider site specific geotechnical information.

Prepared By:

GROSSMAN & KEITH ENGINEERING CO.
10408 Greenbriar Place
Oklahoma City, OK 73159
(405) 691-3213
CA. #74 Exp. 6/30/2018

2-3-17

Brad Donwerth, P.E. Date
OK. P. E. No. 19552



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2/6/2017

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HELICAL PIER: 2 7/8" O.D. PIPE WITH 12", 10" AND 8" HELIX PLATES

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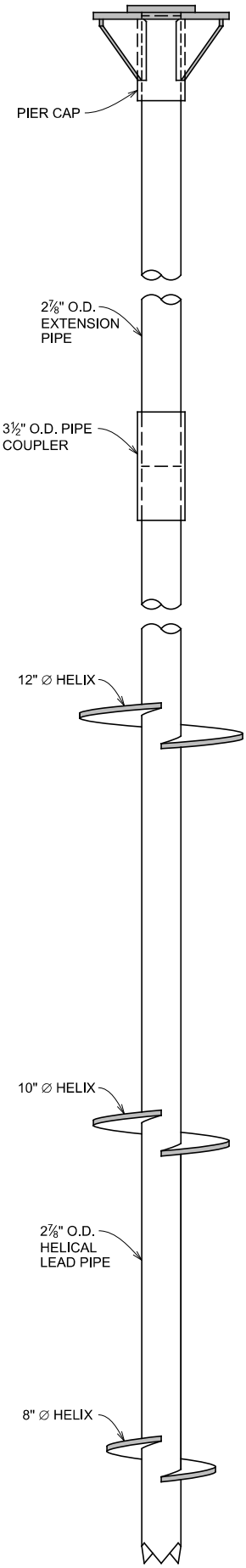
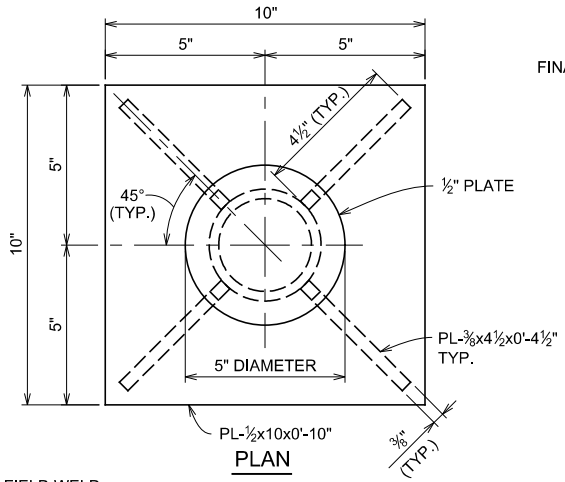
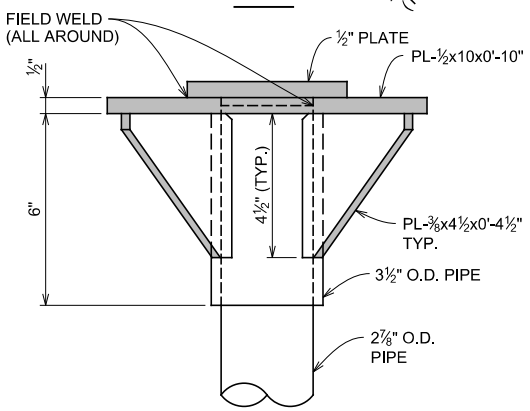


HELICAL PIER

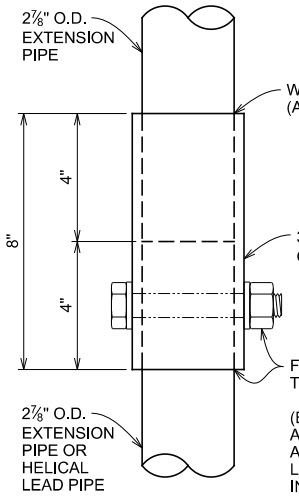


PLAN



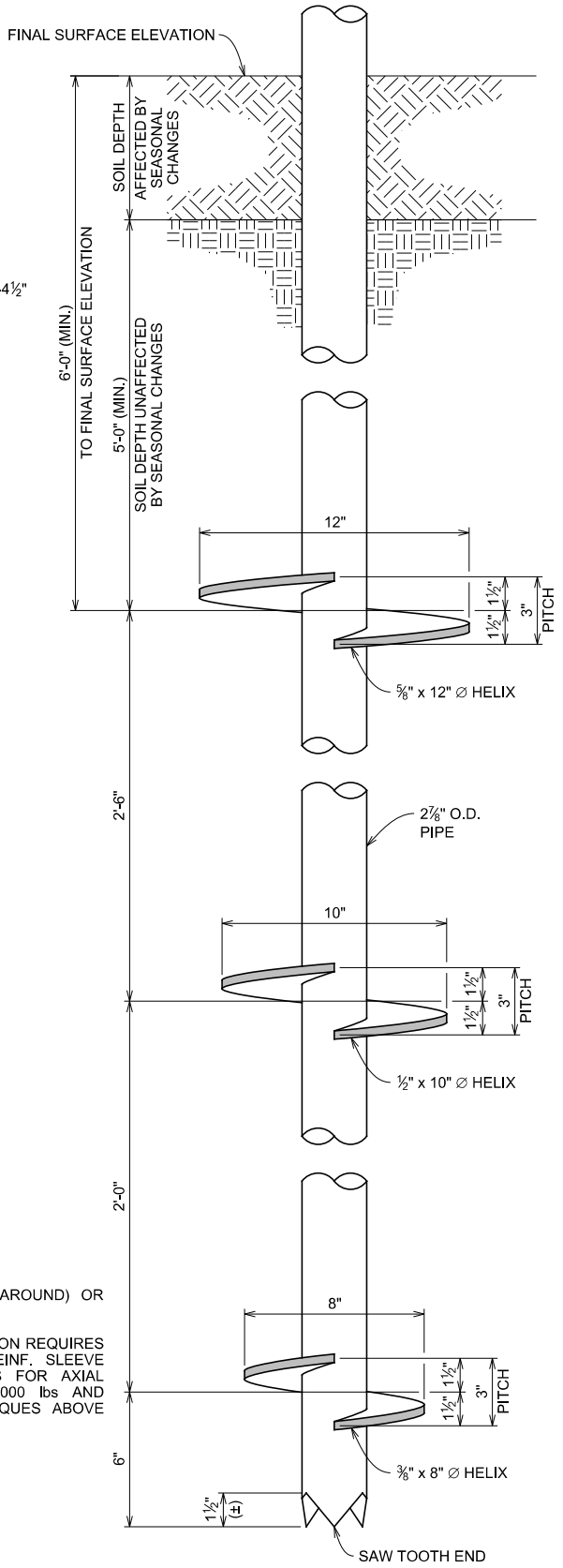
ELEVATION

PIER CAP



(BOLTED CONNECTION REQUIRES ADD. INTERNAL REINF. SLEEVE AND PLUG WELDS FOR AXIAL LOADS ABOVE 25,000 lbs AND INSTALLATION TORQUES ABOVE 5,600 lb-ft)

PIPE COUPLER



PROPORTIONING DETAILS

MATERIAL SPECIFICATIONS

HELIX PLATE	ASTM A572	Fy = 50,000 psi
BOLT (OPTIONAL)	FNL-GRADE 9	Fu = 180,000 psi
STEEL PIPE	SAE 1536 (UNS G15360) ASTM A181 CLASS 70	Fy = 70,000 psi Fu = 100,000 psi

NOTES

LISTED STRUCTURAL CAPACITY OF THE HELICAL PIER ASSEMBLY AND THE REQUIRED INSTALLATION TORQUE ARE DERIVED FROM THE TORQUE CORRELATION METHOD. ADDITIONAL SITE INVESTIGATION INTO THE GEOTECHNICAL PROPERTIES IS REQUIRED TO ENSURE SUFFICIENT SOIL CAPACITY AND FACTOR OF SAFETY.

INSTALLATION TORQUE AND CAPACITY

INSTALLATION TORQUE =	7,000 ft-lbs
MAXIMUM ALLOWABLE AXIAL LOAD =	31,500 lbs

POWERLift FOUNDATION REPAIR

HELICAL PIER: 2⅞" O.D. PIPE 8", 10", & 12" HELIX PLATES	DATE:	SHT. NO.

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2 7/8" HYDRAULIC PUSH PIER SPECIFICATION

2 7/8" O.D. PILE SEGMENTS WITH 4 1/2" O.D. BRACKET AND 3 1/2" O.D. TRANSFER SLEEVE - (SEE ATTACHED DETAIL)

ECCENTRICITY: **7 1/4 inches**

STEEL PIPE: 2 7/8" O.D., 3 1/2" O.D. & 4 1/2" O.D.
SAE 1536 (UNS G15360) CLASS 70 PER ASTM A181
Fu = 100,000 psi
Fy = 70,000 psi

STEEL PLATES: ASTM A572
Fu = 65,000 psi
Fy = 50,000 psi

STEEL ANGLES & S SHAPE: ASTM A36
Fu = 58,000 psi
Fy = 36,000 psi

WELDS SHALL CONFORM TO AWS D1.1 USING E70-XX ELECTRODES

Information provided herein is based only on steel capacity. A final pier design shall be provided and consider site specific geotechnical information.

Prepared By:

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Brad Donwerth 2-3-17

Brad Donwerth, P.E. Date
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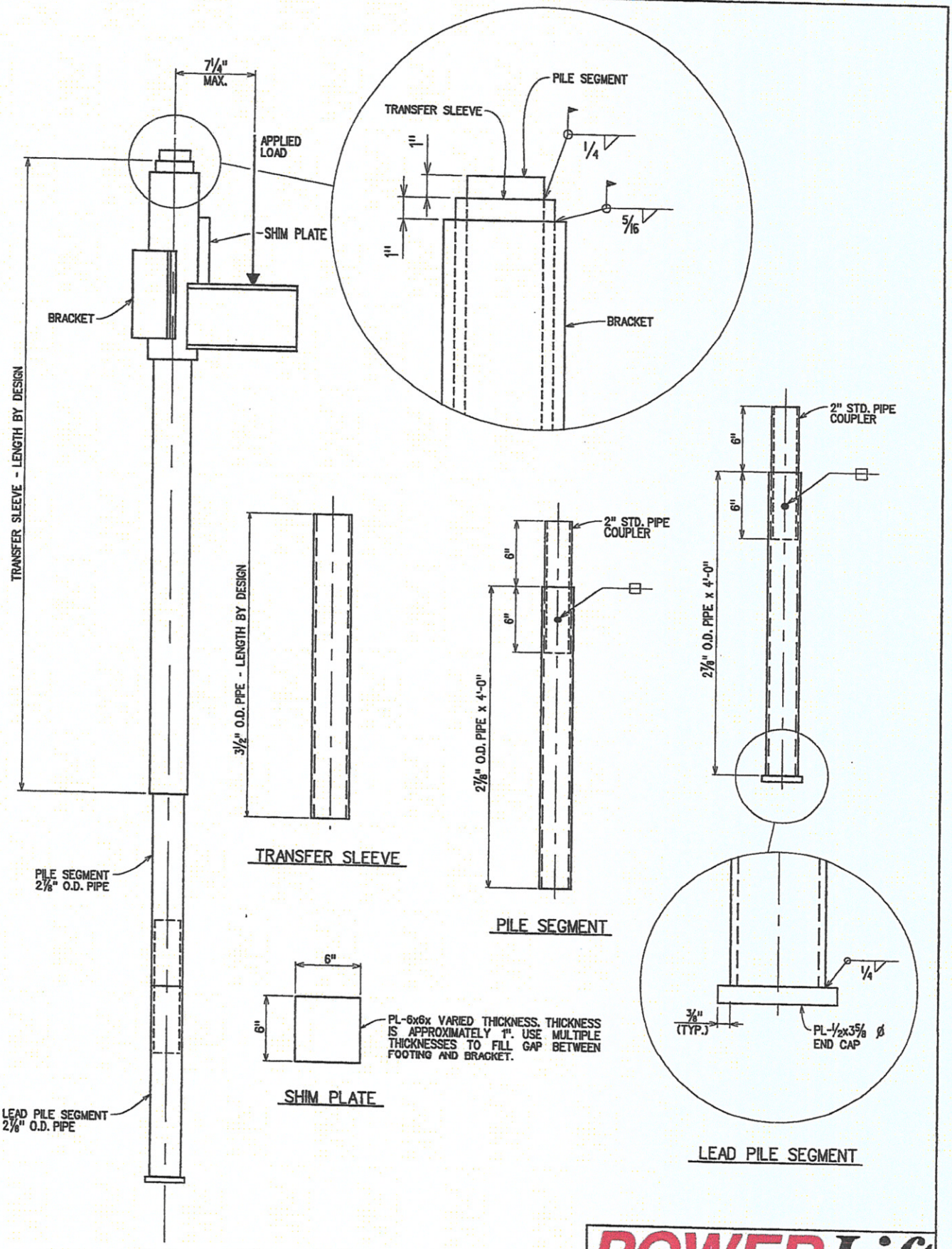

HYDRAULIC PUSH PIER

TRANSFER SLEEVE

PILE SEGMENT

SHIM PLATE

LEAD PILE SEGMENT

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POWER Lift FOUNDATION REPAIR

HYDRAULIC PUSH PIER: 2 7/8" O.D. PIPE WITH BRACKET

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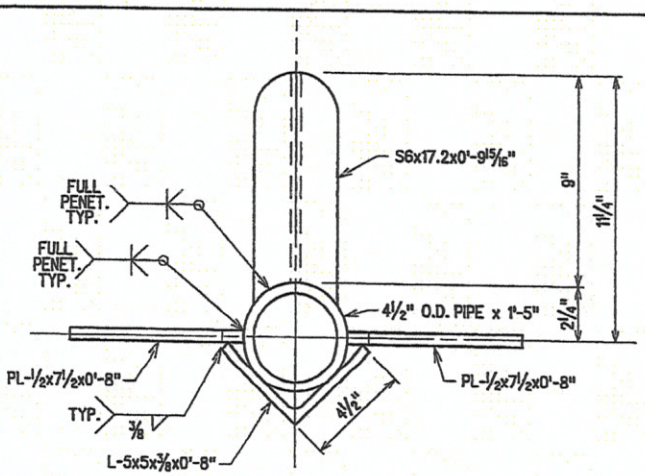

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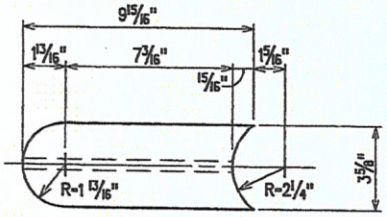

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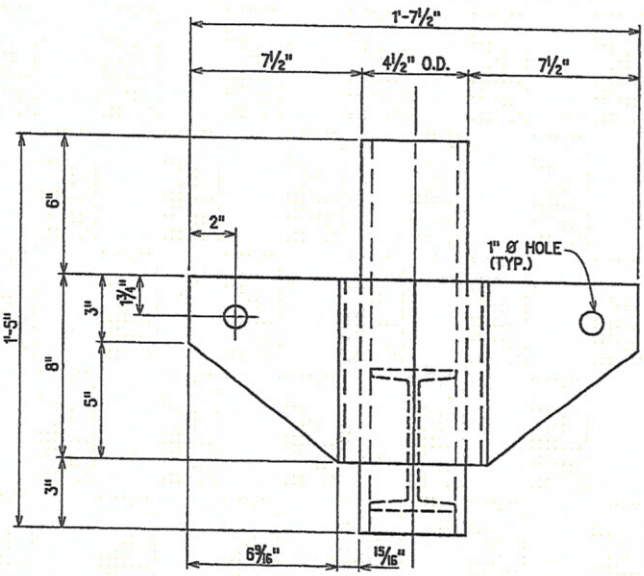
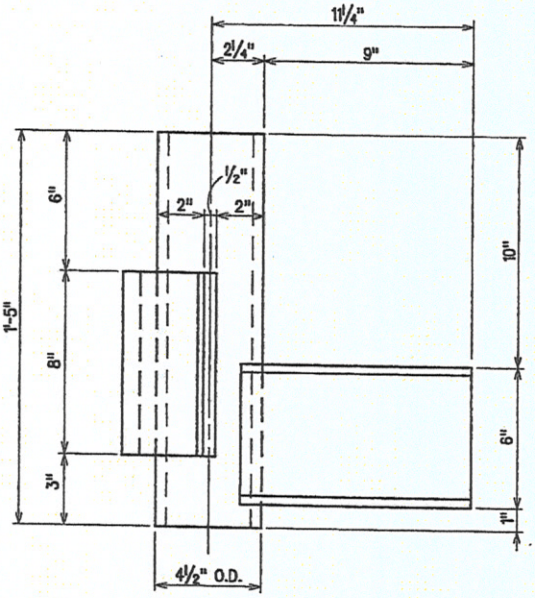


ELEVATION



SIDE VIEW

BRACKET

STEEL SPECIFICATIONS:

STEEL PIPE SHALL BE SAE 1536 (UNS G15360)
Fu = 100,000 psi
Fy = 70,000 psi

PLATES SHALL BE ASTM A572
Fu = 65,000 psi
Fy = 50,000 psi

ANGLE SHALL BE ASTM A36
Fu = 58,000 psi
Fy = 36,000 psi

S SHAPE BEAM SHALL BE ASTM A36
Fu = 58,000 psi
Fy = 36,000 psi

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POWERLift FOUNDATION REPAIR

HYDRAULIC PUSH PIER: 2 7/8" O.D. PIPE WITH BRACKET

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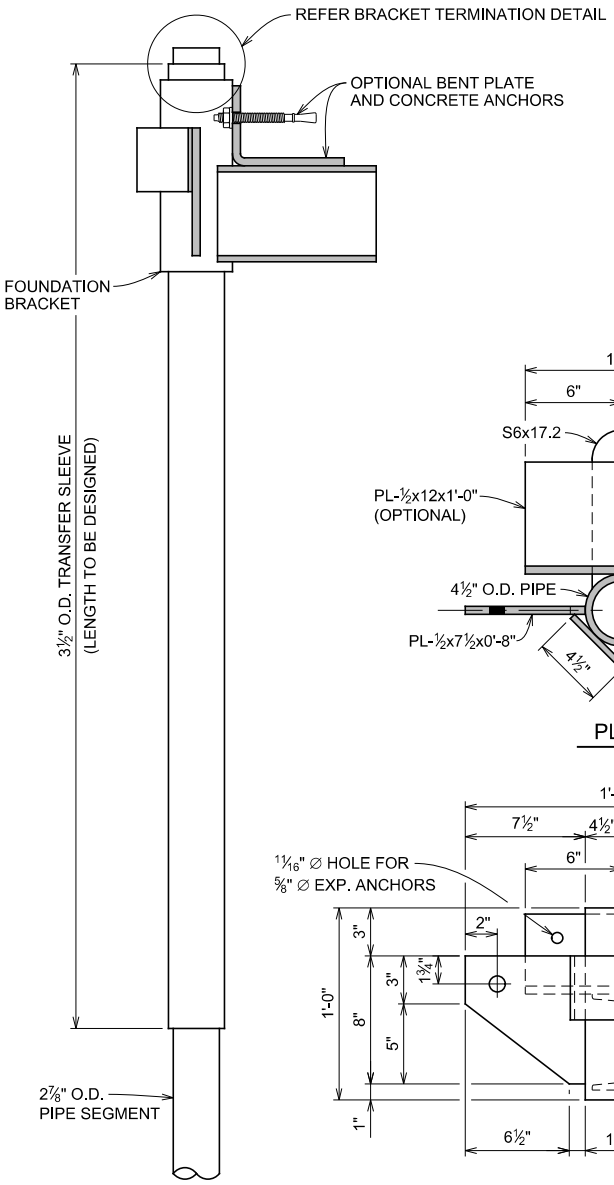
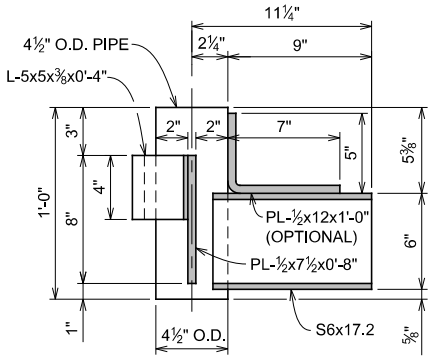


HYRAULIC PUSH PIER

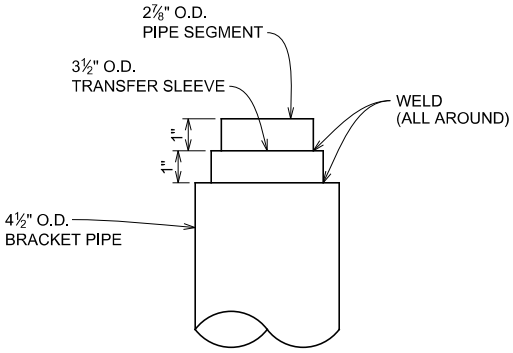
PLAN

ELEVATION

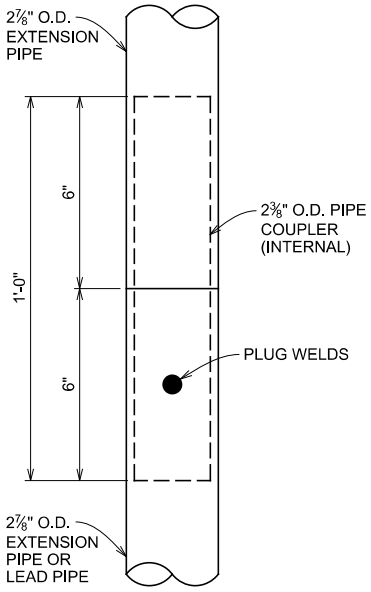


SIDE VIEW

FOUNDATION BRACKET



BRACKET TERMINATION



PIPE COUPLER

MATERIAL SPECIFICATIONS

PLATE	ASTM A572	Fy = 50,000 psi
ANGLE	ASTM A-36	Fy = 36,000 psi
BEAM	ASTM A-36	Fy = 36,000 psi
STEEL PIPE	SAE 1536 (UNS G15360) ASTM A181 CLASS 70	Fy = 70,000 psi Fu = 100,000 psi

NOTES

LISTED STRUCTURAL CAPACITY OF THE HYDRAULIC PIER ASSEMBLY IS DERIVED ASSUMING AN APPLIED VERTICAL LOAD ACTING AT AN ECCINTRICTY OF 6¾". TRANSFER SLEEVE LENGTH WILL NEED TO BE DESIGNED AND ADDITIONAL SITE INVESTIGATION INTO THE GEOTECHNICAL PROPERTIES IS REQUIRED TO ENSURE SUFFICIENT SOIL DEPTH FOR INSTALLATION OF PIER.

CAPACITY

MAXIMUM ALLOWABLE APPLIED LOAD = 30,000 lbs

POWERLift FOUNDATION REPAIR

HYDRAULIC PUSH PIER: 2⅞" O.D. PIPE	DATE:	SHT. NO.