SAN JACINTO RIVER AUTHORITY
PURCHASING DEPARTMENT

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Lake Conroe Division
Operator Residence Demolition

Date Issued: 10/11/2019

Due Date & Time: November 6,2019 at 10:00AM CST

SJRA PROJECT NO. LCPR0036.1005.2C001
MSA NO. 19-0052
CONTRACT NO. 19-0052

912 - 40 Demolition Services

9/25/2019

Disclosure Requirements

Chapter 176 of the Texas Local Government Code mandates the public disclosure of certain information concerning persons doing business or seeking to do business with the San Jacinto River Authority, including affiliations and business and financial relationships such persons may have with San Jacinto River Authority officers. An explanation of the requirements of Chapter 176, applicable forms and a complete text of the new law are available at: http://www.sjra.net. If you are unable to obtain such information online, please contact the San Jacinto River Authority Purchasing Department, 1577 Dam Site Road, Conroe, Texas 77304 or call (936) 588-3111.

BY DOING BUSINESS OR SEEKING TO DO BUSINESS WITH THE SAN JACINTO RIVER AUTHORITY, YOU ACKNOWLEDGE THAT YOU HAVE BEEN NOTIFIED OF THE REQUIREMENTS OF CHAPTER 176 OF THE TEXAS LOCAL GOVERNMENT CODE AND THAT YOU ARE SOLELY RESPONSIBLE FOR COMPLYING WITH THEM.

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Doc.No. **Document Title** **Doc. Date**

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SECTION 01 11 13

WORK COVERED BY CONTRACT DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Definitions.
2. Work Covered by Contract Documents.
3. Cash Allowances.
4. Owner-Furnished Products.
5. Document Management Software.
6. Work Sequence.
7. Work Guidelines.
8. Coordination of Work.
9. Contractors Use of Premises.
10. Contract Clarification.
11. Alternate Construction Methods.
12. Utility Lines.
13. Warranty.

1.2 MEASUREMENT AND PAYMENT (NOT USED)

1.3 SUBMITTALS (NOT USED)

1.4 DEFINITIONS

A. Construction Limits: For Work at facilities, an area, defined on the Construction Drawings, for the Contractor's staging and storage of construction equipment, tools, products, and spare parts, as well as performance of the work.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. Work of the contract is the demolition of the Lake Conroe Division Operator Residence along with existing concrete foundations and pads as depicted on the construction drawings

1.6 CASH ALLOWANCES (NOT USED)

1.7 OWNER-FURNISHED PRODUCTS

A. Items furnished by the Owner for installation and final connection by Contractor:

1. No items will be furnished by the Owner.

B. Contractor's Responsibilities:
   1. Obtain any required permits
   2. Attend Pre Construction Meeting
   3. Arrange for and coordinate delivery of equipment on site
   4. Submit safety plan and dust control plan.
   5. Coordinate demolition of residence with Owners representative.
   6. Demolish and legally dispose of Lake Conroe Operators residence in its entirety as depicted on the construction drawings.

1.8 DOCUMENT MANAGEMENT SOFTWARE (NOT USED)

1.9 WORK SEQUENCE

A. Construct Work in phases during the construction period. Coordinate construction schedule and operations with the Owner's Representative. Subcontractors shall coordinate its activities and operations with the Contractor.

B. Data for all facilities and utilities shown were taken from available plans, record drawings, and/or utility maps made available from several sources. Actual field locations of facilities and utilities may vary from that shown on the Drawings. Contractor shall make a complete and independent verification of utility locations prior to submittal of subsequent shop drawings. Unless otherwise approved by the Owner's Representative, work shall not continue at locations where there is a conflict with existing utilities.

C. Construction disturbing traffic shall be conducted during off-peak hours, 9:00 a.m. to 4:00 p.m. weekdays. Exception to these times, if necessary, shall be sought during the permit application process. Continue work in areas using same construction schedule during consecutive days and/or weekends until work is completed.

1.10 WORK GUIDELINES

A. Contractor shall bear the sole responsibility for damage to existing utilities resulting from its construction activities. The Contractor shall be responsible for the repair of damaged utilities, at no additional cost to the Owner.

1.11 COORDINATION OF WORK

A. Coordinate activity schedule and extend full cooperation to other Contractors who have responsibilities either concurrent with, proceeding, or following this project's duration along the work site. Ensure availability of access to selected portions of this project area to others and provide appropriate information for planning purposes to other Contractors. No compensation or time extension will be allowed as a result of conflicting construction activities.

B. Prevent overstress or damage of any structure and any part or member of it during construction. This applies to new and existing facilities, utilities, and structures affected by construction operations. Contractor shall monitor and record the effect of its construction operations on new and existing facilities, utilities and structures and provide engineered temporary supports and connections as required to assure the safety and stability of the same to prevent overstress of any part.

1.12 CONTRACTOR USE OF PREMISES

A. Comply with all requirements outlined in Specification Section 01 14 19 – Use of Premises

1.13 CONTRACT CLARIFICATION

A. Should clarification of the Contract Documents be requested, request clarification before proceeding with Work by submitting a Request for Information (RFI). Such requests shall be preceded by a diligent investigation of the Contract Documents. Include evidence of such investigation(s) in all requests for clarification.

1.14 ALTERNATE CONSTRUCTION METHODS

A. Alternate construction means and methods will be permitted in accordance with applicable Contract Document details and specification at no additional cost to the Owner. Alternate construction means and methods shall provide a substantial benefit to the project and/or the Owner. Contractor accepts full responsibility for all additional costs of geotechnical investigations and other incidental items, including any re-design that may be necessary to permit the alternate construction means and methods.

1.15 WARRANTY (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 14 19

USE OF PREMISES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for:
    a. Contractor Responsibilities
    b. Temporary Utilities
    c. Limits of Construction
    d. Storage Sheds and Buildings
    e. Working Times
    f. Site Access Times
    g. Notification to Adjacent Occupants
    h. Safety Requirements
    i. First Aid Equipment
    j. Fire Protection
    k. Security Measures
    l. Protection of Utilities, Pipelines, and Property
    m. Surface Restoration
    n. Traffic Control and Use of Public Rights of Way
    o. Contractor's Roads and Parking
    p. Coordination with Facility Owner's Operations
    q. Project Photographs
    r. Special Considerations Related to Adjacent Properties and Facilities

B. Related Specification Sections include but are not necessarily limited to:

1. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

A. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 SUBMITTALS

A. Contractors Safety Program.

B. Dust Control Measure Plan

1.4 CONTRACTOR RESPONSIBITIES

A. Comply with applicable requirements specified in other sections of Project Specifications.

B. Comply with procedures for access to the site and Contractor's use of rights-of-way.

C. Maintain and operate temporary construction facilities and temporary systems to assure continuous service of Owner's and other adjacent existing facilities.

D. Modify and extend temporary systems as Work progress requires.

E. Completely remove materials and equipment when no longer required.

F. Restore existing facilities used for temporary services to original or better condition, or as specified.

G. Prior to installation of material, equipment and/or other work, verify with subcontractors, material or equipment manufacturers, and installers that the substrate or surface to which those materials will attach is acceptable for installation of those materials or equipment. (Substrate is defined as any building or construction surfaces to which materials or equipment are attached to, or required prior to installation i.e., floors, walls, ceilings, soils, utilities, site grading, and backfill etc.).

H. Correct unacceptable substrate until acceptable for installation of equipment or materials.

1.5 TEMPORARY UTILITES

A. Water:

1. Owner shall provide water required for performance of Work. Contractor shall provide equipment, devices, or other equipment, for use as necessary.

B. Electricity and Lighting:

1. Provide electrical service required for Work, including testing of Work. Provide power for lighting, operation of equipment, and other use as necessary.

2. For projects on existing sites, electric power service to be provided includes temporary power service or generator(s) to maintain Owner's operations during scheduled shutdown(s). Coordinate all temporary shutdowns with Owner and Owner's Representative(s).

3. Minimum lighting level shall be ten (10) foot-candles for open areas; twenty

(20) foot-candles for stairs and shops. Provide minimum of one (1) 300 watt lamp for each 200 square feet of work area.

C. Heat and Ventilation:

1. Provide temporary heat as necessary for protection or completion of Work.
2. Provide temporary heat and ventilation to assure safe working conditions. Maintain enclosed areas at minimum of 50°F.

1.6 LIMITS OF CONSTRUCTION

A. Construction operations and storage areas are limited to Owner's property.

B. Unauthorized use of areas, or trespassing on land outside of defined limits, is not permitted.

C. Make arrangements, at no cost to the Owner, for Contractor's temporary use of any private properties which may be needed by Contractor for performance of Work. Contractor and Contractor's surety shall indemnify and hold harmless the Owner and Owner's Representatives against claims or demands arising from use of properties outside the Limits of Construction. Submit notarized copy of any separately negotiated agreement(s) between private property owner(s) and Contractor prior to use of area.

D. Where Limits of Construction are shown on Contract Drawings to extend to a property or Right-of-Way line, keep equipment, materials, and stockpiles a minimum of 5 feet from boundary, or existing fence lines.

E. Contractor shall safely, properly, and adequately assume and perform all of the duties, indemnities, responsibilities, and liabilities of the Owner under the easement documents.

1.7 STORAGE SHEDS AND BUILDINGS

A. Provide adequately ventilated, watertight storage facilities with floor above ground level for protection of materials and equipment susceptible to weather damage.

B. Store materials in neat and orderly manner. Store materials and equipment to permit easy access for identification, inspection, and inventory.

C. Storage of materials not susceptible to weather damage may be on blocks off ground.

D. Storage of all fuels and chemicals shall be in designated areas by Contractor.

E. Fill and grade site for temporary structures to provide positive drainage away from Work area, but not to impact adjacent property owners.

F. Avoid obstructing drainage ditches or inlets. When obstruction is unavoidable due to requirements of Work, provide grading and temporary drainage structures to maintain unimpeded drainage flow. Failure of the Contractor to

maintain proper site drainage shall prohibit it from making a claim against the Owner for monetary or time damages due to drainage impacts.

1.8 WORKING TIMES

A. Construction shall be conducted during working hours shall be from 8:00 am to 4:00 pm, unless otherwise amended by a supplemental specification or agreement to the General Conditions of the Contract, and approved by Owner.

1.9 SITE ACCESS TIMES

A. Contractor to coordinate all site access, including deliveries, outside of working hours with Owner's Representative. Neither Owner nor Owner's Representatives shall sign for any Contractor deliveries.

B. Contractor shall coordinate with Owner to not interfere with Owner's facility operations.

1.10 NOTIFICATION OF ADJACENT OCCUPANTS

A. Notify individual occupants in areas to be affected by Work of proposed construction activities and schedule using a standardized notification form letter and/or door hanger. Notification shall be made not less than 72 hours or more than 2 weeks prior to performance of work within 200 feet of homes or businesses. Coordinate all notifications with Owner's Representative.

B. Include in notification the names and telephone numbers of two Contractor representatives for resident contact available on 24-hour call. Describe precautions that Contractor will take to protect private property and identify potential inconveniences and disruptions to resident's access and utilities.

C. For Contractor's convenience, Owner's Representative will provide an example notice at the pre-construction meeting. In addition to other requirements of this specification regarding notification to adjacent occupants, Contractor's notice is generally to follow the form and content of the example notice.

D. Submit proposed notification(s) to Owner for approval prior to distribution. Provide notice(s) in languages as appropriate (i.e., double sided notice. Notice on one side shall be written in English and flip side shall be written in Spanish).

1.11 SAFETY REQUIREMENTS

A. Beware of overhead power lines existing in area and in close proximity to project. When 10 feet of clearance between energized overhead power line and construction-related activity cannot be maintained, submit a request to the appropriate utility provider to de-energize or move conflicting overhead power line(s).

B. Conduct operations in strict accordance with the Contractor's Safety Program, in accordance with applicable Federal, State, and local safety codes and statutes, and with good construction practice. Establish and maintain

procedures for safety of all work, personnel, and equipment involved in Project.

C. Observe and comply with Texas Occupational Safety Act (Art. 5182a, V.C.S.) and with all safety and health standards promulgated by Secretary of Labor under Section 107 of Contract Work Hours and Standards Act, published in 29 CFR Part 1926 and adopted by Secretary of Labor as occupational safety and health standards under Williams-Steiger Occupational Safety and Health Act of 1970, and to other legislation enacted for safety and health of Contractor employees. Safety and health standards apply to subcontractors and their employees as well as to Contractor and its employees.

D. Observance of and compliance with regulations is solely and without qualification responsibility of Contractor without reliance or superintendence of or direction by the Owner or Owner's Representative. Immediately advise Owner's Representative of investigation or inspection by Federal Safety and Health Inspectors of Contractor or subcontractor's work or place of work on job site under this Contract, and after investigation or inspection, advise Owner's Representative of results. Submit one copy of accident reports to Owner's Representative within 10 days of occurrence.

E. Protect areas occupied by workmen using best available devices for detection of lethal and combustible gases. Test devices frequently to assure functional capability. Constantly observe infiltration of liquids into Work area for visual or odor evidences of contamination, and immediately take appropriate steps to seal off entry of contaminated liquids into Work area.

F. Implement safety measures, including but not limited to safety personnel, first-aid equipment, ventilating equipment, and other safety equipment, as specified or detailed on the Contract Drawings.

G. Maintain required coordination with Police and Fire Departments during entire period covered by Contract.

H. In safety plan, include project safety analysis. Itemize major tasks and potential safety hazards. Plan to eliminate hazards or protect workers and public from each hazard.

1.12 FIRST AID EQUIPMENT

A. Provide first aid kit throughout construction period. List telephone numbers for hospitals, and ambulance services in each first aid kit.

B. Have at least one person thoroughly trained in first aid and cardiopulmonary resuscitation (CPR) procedures present on site whenever Work is in progress. Contractor to conform to protocols and requirements for training and protection against "blood borne pathogens."

1.13 FIRE PROTECTION

A. Conform to specified fire protection and prevention requirements established

by Federal, State, or local governmental agencies and as provided in Contractor's Safety Program.

1.14 SECURITY MEASURES

A. Protect all Work materials, equipment, and property from loss, theft, damage, and vandalism. Perform duty to protect property of the Owner used in connection with performance of Work.

B. If existing fencing or barriers are breached or removed for purposes of construction, provide and maintain temporary security fencing equal to existing.

1.15 PROTECTION OF UTILITIES, PIPELINES, AND PROPERTY

A. Utilize Utility Coordinating Committee One Call System (telephone number, (713) 223-4567), which must be called 48 hours in advance to locate utilities. Toll free telephone number is 1-800-669-8344, Texas (Lone Star) One Call System.

B. Prevent damage to existing utilities during construction. Utilities shown on Drawings are at approximate locations. Pre-locate, by whatever means may be required (metal detection equipment, probes, excavation, survey), underground utilities before excavating. Perform investigative work and repairs required after investigation. Contractor is responsible for damages caused by failure to locate and preserve these underground utilities. Give owners of utilities a minimum of five (5) days' notice before commencing Work in area, for locating utilities during construction and for making adjustments or relocation of utilities when they conflict with proposed Work. Include cost for temporary relocation of utilities necessary to accommodate construction in unit costs for utility construction unless otherwise noted on Drawings. Bypassing of sanitary waste to storm drainage facilities is not allowed. Utility service laterals are not shown on Drawings. Contractor shall anticipate that service lines exist and repair them when damaged due to construction activity. No separate payment will be made for repair work. Include payment in unit prices for work in appropriate sections.

C. Contractor shall adhere to each privately owned and operated utility company's construction guidelines when working adjacent-to or across each such entities wet or dry utility.

D. Prior to abandonment of any utility indicated on the Drawings, make arrangements with Owner's Representative and utility owner to terminate service, remove meters, valves, appurtenances, transformers, and/or poles, as required or requested by owner.

E. Utility Outages and Shutdowns: Provide a notification to the Owner's Representative and private utility companies (when applicable) a minimum of 48 hours, excluding weekends and holidays, in advance of required utility shutdown. Shutdown planning and coordination activities shall commence a

minimum of 2-weeks prior to scheduled shutdown. Coordinate all work as required.

F. Protect and prevent damage to existing crossing, parallel, and adjacent pipelines during construction in accordance with Specification Section 01 11 13 – Work Covered by Contract Documents.

G. Protection of the Work, and Public and Private Property

1. Take precautions, provide programs, and take actions necessary to protect the Work, and public and private property from damage.
2. Do not alter condition of properties adjacent to and along Limits of Construction.
3. Do not use ways, means, methods, techniques, sequences, or procedures that result in damage to adjacent properties or improvements.
4. Restore properties damaged by Contractor outside of designated Limits of Construction at no cost to Owner.
5. Take action to prevent damage, injury, or loss, including, but not limited to, the following:
    a. Store materials, supplies, and equipment in orderly, safe manner that will not interfere with progress of Work or work of others.
    b. Provide suitable storage for materials subject to damage by exposure to weather, theft, breakage, or otherwise.
    c. Place upon Work or any part thereof only safe loads.
    d. Frequently clean up refuse, rubbish, scrap materials, and debris created by construction operations, keeping Project site safe and orderly.
    e. Provide safe barricades and guard rails to protect pedestrian and vehicular traffic around openings, scaffolding, temporary stairs and ramps, excavations, elevated walkways, and other hazardous areas.
6. Assume full responsibility for preservation of public and private property on or adjacent to the Limits of Construction. When direct or indirect damage is done by or on account of any act, omission, neglect, or misconduct in execution of Work by Contractor, restore to condition equal to or better than that existing before damage was done.
7. Perform daily clean up in affected construction areas in order to restore site to existing or better conditions. Areas should be free of debris, scrap material, dirt, mud, and other items identified by Owner's Representative. Do not leave buildings, roads, streets, or other construction areas unclean. If deemed necessary by the Owner's Representative, Contractor shall employ street sweeping/cleaning equipment to maintain area streets.

H. Barricades and Warning Signals:

1. Where Work is performed on or adjacent to any roadway, right-of-way, or public place, furnish and erect barricades, fences, lights, warning signs, and danger signals, and take other precautionary measures, for protection of persons or property and of the Work.
2. Paint barricades to be visible at night. From sunset to sunrise, furnish and maintain at least one light at each barricade.
3. Erect sufficient barricades to keep vehicles and pedestrians from entering the area under construction.
4. Maintain barricades, signs, lights and provide watchmen until Project is accepted by the Owner or the site has been completely restored to its preconstruction condition.
5. Whenever Work creates encroachment on public roadways, station flagmen to manage traffic flow.

I. Protection of Existing Structures:

1. Underground Structures:
   a. Underground structures are defined to include, but not be limited to, sewer, water, gas, and other piping, manholes, boxes, chambers, electrical signal and communication conduits, tunnels, and other existing subsurface installations located within or adjacent to limits of Work.
   b. Known underground structures including water, sewer, electric, and telecommunication services are shown on Contract Drawings. This information is not guaranteed to be correct or complete.
   c. Explore ahead of trenching and excavation work and sufficiently uncover obstructing underground structures to determine their location, to prevent damage to them, and to prevent interruption of utility services. Restore underground structures to original conditions at no additional cost if damaged during construction.
   d. Locate and protect private lawn sprinkler systems which may exist within site. Repair or replace damaged systems to condition existing at start of Work, or better.
   e. Necessary changes in location of Work may be made by the Owner to avoid unanticipated underground structures.
   f. If permanent relocation of underground structures or other subsurface installations is required and not otherwise provided in Contract, the Owner will direct Contractor in writing to perform Work, which is paid for under provisions for changes as described in Specification Section 00 72 00 - General Conditions of the Contract.

2. Surface Structures: Surface structures are defined as existing buildings, structures and other constructed installations above ground surface. Included with structures are their foundations and any extensions below the surface. Surface structures include, but are not limited to buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks, guard cables, fencing, and other facilities visible above ground surface.
3. Existing Condition Survey: Contractor shall survey and adequately document the condition and elevation of existing structures adjacent to the proposed alignment.
4. Protection of Underground and Surface Structures:
    a. Support in place and protect from direct or indirect damage underground and surface structures located within or adjacent to limits of Work.
    b. Prevent overstress or damage to any structure and any part or member of structures during construction. This applies to new and existing facilities, utilities, and structures affected by construction operations. Contractor shall monitor and record the effect of its construction operations on new and existing facilities, utilities, and structures, and shall provide engineered temporary supports and connections as required to assure the safety and stability of the structures and prevent overstress of any part. Employ a registered Professional Engineer licensed in the State of Texas to design temporary supports to assure safety and integrity of structures and facilities.
    c. Install temporary supports carefully and as required by party owning or controlling structure. Before installing structure supports, satisfy Owner's Representative that methods and procedures have been approved by owner of structure.
    d. Avoid moving or changing property of public utilities or private corporations without prior written consent of responsible official of that service or public utility. Representatives of these utilities reserve the right to enter within limits of this Project for purpose of maintaining their properties, or of making changes or repairs to their property that may be considered necessary by performance of this Contract.
    e. Notify owners and/or operators of utilities and pipelines adjacent to the Work of the nature of construction operations and dates when operations will be performed. When construction operations are required in immediate vicinity of existing structures, pipelines, or utilities, give minimum of 5 working days advance notice. Probe and flag location of

underground utilities prior to commencement of excavation. Keep flags in place until construction operation reaches and uncovers utility.

f. Assume risks attending presence or proximity of underground and surface structures within or adjacent to Work including but not limited to damage and expense for direct or indirect damage caused by Contractor's Work to structure. Immediately repair damage.

J. Protection of Installed Products:

1. Provide protection of installed products to prevent damage from subsequent operations. Remove protection facilities when no longer needed, prior to final completion of Work.

2. Control traffic to prevent damage to equipment, materials, and surfaces.

3. Provide coverings to protect equipment and materials from damage. Cover projections, wall corners, jambs, sills, and exposed sides of openings in areas used for traffic and passage of materials in subsequent work.

1.16 SURFACE RESTORATION

A. Restore site to the condition which existed before construction in accordance with Specification Section 01 74 23 – Restoration of Site, unless otherwise noted in Contract Documents.

1.17 TRAFFIC CONTROL AND USE OF PUBLIC RIGHTS OF WAY

A. Obtain necessary permits and Owner's approval when the nature of Work requires closing an entire street. Obtaining permits required for street closure are the Contractor's responsibility. Avoid unnecessary inconvenience to abutting property owners. Avoid closing more than two (2) consecutive intersections at one time, except by permission of Owner.

B. Notify Owner's Representative at least 48 hours prior to closing a street or street crossing. It is the Contractor's responsibility to obtain all required permits for street closures in advance.

C. Final acceptance of any portion of Work is not based on return of roadway to public use.

D. Avoid obstructing driveways or entrances to private property.

E. Contractor shall bear the sole responsibility for damage to existing traffic cables resulting from its construction activities. The Contractor shall be responsible for the repair of damaged traffic cables including the re-cabling of the entire intersection if required, at no additional cost to the Owner.

F. Provide mats or other means to prevent overloading or damage to existing roadways from tracked equipment, large tandem axle trucks or equipment that will damage existing roadway surface. Contractor shall repair or replace

damaged roadway not scheduled for removal and/or replacement at no additional cost to the Owner. Repairs or replacement shall be in conformance with the roadway owner's requirements.

G. Provide daily sweeping of hard-surface roadways to remove soils tracked onto public roadways.

1.18 CONTRACTORS ROADS AND PARKING

A. Prevent interference with traffic on existing roads.

B. Designate temporary parking areas to accommodate Contractor's and Owner's Representative personnel. When site space is not adequate, provide additional off-site parking. Locate as approved by Owner's Representative.

C. Minimize use by construction traffic of existing streets and driveways.

D. Do not allow heavy vehicles or construction equipment in existing parking areas.

E. Do not inhibit the ability of the Owner's personnel to access, operate, and maintain existing facilities during construction.

1.19 COORDINATION WITH FACILITY OWNER'S OPERATIONS

A. Definition: A "shutdown" is when a portion of the normal operation of Owner's facility, whether equipment, systems, piping, or conduit, has to be temporarily suspended or taken out of service to perform the Work.

B. Work that may interrupt normal operations shall be accomplished at times convenient to, and approved by Owner.

C. Except for necessary shutdowns, perform the Work such that Owner's facilities remain in continuous satisfactory operation during the Project. Schedule and conduct the Work such that the Work does not:

1. Impede Owner's production or processes,
2. Create potential hazards to public health or wellbeing,
3. Create potential hazards to operating equipment and personnel,
4. Reduce the quality of Owner's facilities' product(s) or effluent, or
5. Cause odors or other nuisances.

D. Coordinate shutdowns with Owner. When possible, combine activities into a single shutdown to minimize impacts on Owner's operations and processes.

E. Submit a shutdown plan to the Owner and Principal Architect/Engineer a minimum of {15 days} prior to a planned shutdown. Shutdown plan shall consist of the following:

1. For each shutdown, submit an inventory of labor and materials required to perform the shutdown and activities, an estimate of time required to

accomplish the complete shutdown including time for Owner to take down and start up existing equipment, systems, or conduits, and written description of steps required to complete the Work associated with the shutdown.

F. After acceptance of shutdown planning submittal and prior to starting the shutdown, provide written notification to Owner of date and time each shutdown is to start. Provide written notification submitted to the Owner's Representative at least 72 hours in advance of each shutdown.

G. Furnish at the Site, in close proximity to the shutdown and tie-in work areas, tools, equipment, spare parts and materials, both temporary and permanent, necessary to successfully complete the shutdown. Complete to the extent possible, prefabrication of piping and other assemblies prior to the associated shutdown. Demonstrate to Owner's satisfaction that Contractor has complied with these requirements before commencing the shutdown.

H. If Contractor's operations cause an unscheduled interruption of Owner's operations, immediately re-establish satisfactory operation for Owner.

I. Unscheduled shutdowns or interruptions of continued safe and satisfactory operation of Owner's facilities that result in fines or penalties by authorities having jurisdiction shall be paid solely by Contractor.

J. Shutdowns of Electrical Systems: Comply with Laws and Regulations, including the National Electric Code. Contractor shall lock out and tag circuit breakers and switches operated by Owner and shall verify that affected cables and wires are de-energized to ground potential before shutdown Work is started. Upon completion of shutdown Work, remove the locks and tags and notify Owner that facilities are available for use.

1.20 SPECIAL CONSIDERATIONS RELATED TO ADJACENT PROPERTIES AND FACILITIES

A. Contractor shall be responsible for negotiations of any waivers or alternate arrangements required to enable transportation of materials to the site.

B. Maintain conditions of access road to site such that access is not hindered as the result of construction related deterioration.

1. Provide daily sweeping of hard-surface roadways to remove soils tracked onto roadway.

1.21 WARRANTY (NOT USED)

PART 2 - PRODUCTS (NOT USED)

2.1 OWNER TRAINING (NOT USED)

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SECTION 01 56 39

TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for tree and plant protection.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

A. No separate payment will be made for tree and plant protection specified herein. Include cost in price bid for related work items.

1.3 SUBMITTALS (NOT USED)

1.4 PROJECT CONDITIONS WHEN TREES AND PLANTS ARE IDENTIFIED TO REMAIN

A. Preserve and protect existing trees and plants from foliage, branch, trunk, or root damage that could result from construction operations when trees and plants are identified to remain.

B. Do not allow any vehicular traffic, construction equipment, parking of vehicles or stockpiling of excavated material or construction materials within protected tree root zone areas. Refer to Section 1.6 DEFINITIONS, for Dripline/Root Zone Area definition.

C. Prevent the following types of damage:

1. Compaction of root zone area by equipment, vehicles, foot traffic or materials storage.
2. Suffocating roots by placing soil in excess of three inches (3") within root zone areas, including placement of any select fill or soil with high clay content.
3. Trunk and limb damage resulting from contact with equipment and vehicles.
4. Poisoning by pouring solvents, fuel, and other injurious materials on or near root zone areas or in areas where such materials will leak or wash into root zone areas.
5. Changing soil pH within root zones by depositing concrete, powdered lime or other materials used to stabilize or dehydrate soils.
6. Cutting roots measuring one inch (1") in diameter and larger within protected areas unless required for root pruning.
7. Scorching of foliage, twigs and limbs caused by direct contact with expulsion of hot exhaust from equipment or vehicles.

8. Branch damage due to improper pruning or trimming.
9. Damage from permanently altering drainage patterns near root zones.
10. Trunk and branch damage resulting from nailing or bolting.

1.5 DAMAGE ASSESSMENT

A. When trees other than those designated for removal are destroyed or badly damaged as result of construction operations, remove and replace with same size, species, and variety up to and including 8 inches in trunk diameter. Any tree larger than 8 inches in diameter shall be replaced with 8-inch diameter tree of same species and variety and total contract amount shall be reduced by amount determined from following International Shade Tree Conference formula: 0.7854 x D2 x $38.00 where D is diameter in inches of tree or shrub trunk measured 12 inches above grade.

1.6 DEFINITIONS

A. Dripline/Root Zone Area - The ground area delineated by the branch spread of a single plant or group of plants. This area is considered the most critical area of roots and should be protected, excluding the area within the street located between curbs.

B. Zero Curb Cut - The process in which required street work is conducted without cutting or otherwise disturbing soil located immediately behind the existing curb.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Protection Fencing - Orange, plastic mesh fencing, four feet (4') in height with six feet (6') high steel T-bar posts. Set posts eighteen inches (18") into ground. Stretch fencing material taut prior to securing.

B. Fertilizer - A low salt, slow release fertilizer containing twenty-seven percent (27%) nitrogen, nine percent (9%) phosphorus and nine percent (9%) potassium (potash) or similar.

C. Plastic Vapor Barrier - Polyethylene sheeting at least 6-mil thickness and three feet width to prevent leaching of stabilized material into native soil.

D. Tree Replacements - Shall be as approved by Owner’s Representative as necessary.

PART 3 - EXECUTION

3.1 PROTECTION AND MAINTENANCE OF EXISTING TREES AND SHRUBS

A. Except for trees shown on Drawings or determined by Owner’s Representative to be removed or relocated, trees within Project area are to remain in place, protected from damage and maintained by Contractor.

B. If required by the Project specifications, employ a qualified Arborist. The Arborist must be approved by Owner's Representative and shall have a minimum of 5 (five) years of experience in the field of tree protection.

C. Perform the following services as required by construction activities for trees that remain:

1. Trimming

   a. Trees shall be pruned in accordance ANSI A300 (Part 1) - 2001 Pruning Revision of ANSI A300-1995 Tree, Shrub and Other Woody Plant Maintenance - Standard Practices. Pruning shall be done by a professional arborist who has received training in proper pruning techniques.

   b. Pruning shall not alter the natural shape or character of the tree or leave holes in the canopy. Trees and shrubs should be pruned for balance as well as to maintain proper form and branching habit.

   c. Cut limbs at branch collar. No stubs should remain on trees. Branch cuts should not gouge outer layer of tree structure or trunk.

2. Root Pruning

   a. When excavating with equipment within the root zone area is unavoidable and roots cannot be preserved, root prune prior to excavation to minimize damage to the portion of the root system that will remain.

   b. Prune roots using a conventional trenching machine. Trench along the proposed edge of excavation limits to a depth of three feet (3'). Do not allow ripping of roots with a backhoe or other equipment.

   c. Following trenching with the machine, re-cut roots measuring one inch (1") in diameter and larger using appropriate sharpened, pruning shears or pruning saws to make a clean, smooth-cut surface. Cut roots flush with edge of soil to limit root exposure.

   d. Backfill trench in a manner that will not allow settling using clean, native soil.

3. Fertilizing and Watering

   a. Trees should be fertilized in accordance with the American National Standard for tree fertilization ANSI A300 (Part 2) - 1998 Tree, Shrub and Other Woody Plant Maintenance - Standard Practices (Fertilization).

   b. Deep root fertilize all trees that have received disturbance or damage to their root zone area.

   c. Fertilize entire root zone area within the dripline of the tree and continue ten feet (10') beyond the dripline.

   d. Mixture shall be injected into the top ten inches (10") of soil, under pressure of one hundred and fifty pounds per square inch (150 psi) to two

hundred pounds per square inch (200 psi). Mix and apply per product label instructions.

e. Inject one-half gallon (1/2) of solution at a depth of ten inches (10") on spacing of three feet (3') between injection points.

f. Fertilizer shall be mixed in a tank with mechanical agitation.

g. Fertilizer to be added to tank and mixed on site.

h. During periods of inadequate rainfall, water trees once weekly to saturate soil to a depth of six inches (6") to eight inches (8") within root zones. Allow soils to dry between watering. Do not allow soils to remain wet.

4. Water areas currently being served by private sprinkler systems to maintain health of existing landscapes if the affected systems are temporarily taken out of service due to construction activities.

5. Contractor's option with Owner's Representative's permission, shrubs to remain may be temporarily transplanted and returned to original positions under supervision of professional horticulturist.

3.2 PROTECTION

A. Construction Methods

1. General

a. Contractor shall attend a pre-construction meeting conducted by the Owner's Representative to review tree preservation requirements and sequence of services for the construction process.

b. Protect tree limbs, trunks and foliage from direct exposure to hot exhaust from equipment and vehicles by providing adequate exhaust pipe deflectors.

c. Cover exposed roots within 24 hours to reduce damage caused by desiccation. Roots may be covered with soil or mulch to help protect them from drying.

d. Protect root zone areas from damage that may result from soil compaction or from noxious materials in solution caused by run-off or spillage during mixing and placement of construction materials, or drainage from stored materials.

e. Minimize cut to two inches (2") below grade when installing silt fence within tree root zones or anchor base of fabric on grade using gravel or staples. Do not cut roots 1" in diameter or larger.

f. Site preparation work and/or construction work shall not begin in any area where tree preservation measures have not been completed and approved by the Owner's Representative.

2. Preparation

a. Contractor shall not allow any vehicular traffic, parking of vehicles or stockpiling of excavated material or construction material within the root zone area of trees to be preserved.

b. When access within protected root zone areas by equipment traffic or frequent foot traffic cannot be avoided, contact Owner's Representative for review prior to entrance. Place a three-quarter inch (3/4") thick layer of plywood on natural grade within root zones to minimize soil compaction. Overlap edges of plywood by six inches (6") to twelve inches (12") to ensure adequate coverage. This is not acceptable bridging for driving over exposed tree roots. Exposed roots should not be driven over.

c. Contractor shall notify Owner's Representative if existing tree locations differ from locations represented on construction drawings. The tree location and dripline/root zone area as observed in the field shall supersede that outlined on construction plans.

3. Tree Protection Fencing

a. Each tree located adjacent to proposed soil excavation shall be protected with a tree protection fence or as designated on the plans. Fence locations shall be approved by Owner's Representative.

b. Contractor shall not remove or relocate tree protection fencing and shall not operate within the limits shown without approval of the Owner's Representative.

c. Fences shall be placed in continuous alignment to protect a tree or group of trees.

d. Posts shall be installed on eight-foot (8') centers at eighteen inches (18") below grade. The fencing shall be continuous between posts, shall be pulled taut prior to securing to posts, and shall be firmly attached to the posts with a minimum of three (3) wire ties.

e. Place fencing in a manner that will not obstruct traffic site lines at curbs, intersections or driveways.

f. Fencing shall be removed only after all work within the immediate area is complete.

g. Contractor shall immediately repair fences if damage occurs at no additional charge to client.

4. Excavation within Root Zone Areas

a. For excavation within root zone areas, where required for personal safety, provide excavation protection by using vertical-wall-shoring techniques at excavations to minimize excavation width. Do not bench cut or step cut edge where such techniques will encroach on root zone areas.

b. If roots are encountered and must be severed, roots measuring one inch (1") in diameter and larger shall be cut using a sharpened pruning instrument to leave a smooth, clean-cut surface.

5. Zero Curb Cut and Vapor Barrier Installation

   a. Where existing curb is to be removed within tree root zone areas, do not disturb soil immediately back of curb. Do not allow forms and stakes to disturb roots.

   b. A vapor barrier shall be installed to provide a non-leaching barrier between any stabilized material and/or concrete and tree roots and soils.

   c. Vapor barrier shall be installed vertically to a depth of five inches (5") below limits of stabilized material. Vapor barrier to be extended ten inches (10") above natural grade and ten feet (10') beyond the dripline limits of the tree. Trim vertical vapor barrier to approximately one inch (1") above grade after installation of final grade.

6. Boring/Tunneling

   a. In areas indicated, bore under root systems of trees at a minimum depth of four feet (4') from the top of pipe to the soil surface at natural grade.

   b. Bore pits and receiving pits shall be located outside of protected root zone areas.

   c. Equipment and material shall be positioned outside of protected root zone areas. When access within protected root zone area by equipment traffic or frequent foot traffic cannot be avoided, place a three-quarter inch (3/4") thick layer of plywood on natural grade within root zones to minimize soil compaction, refer to Section 3. 2, A, 2.

7. Trunk Barricading

   a. Install trunk barricading to protect trees in close proximity of moving or mechanical equipment and construction work when work is required within the tree protection fencing as shown on the plans.

   b. Place trunk barricading around entire tree trunks to protect tree trunks located within five feet (5') of construction activities.

   c. Install 2x4's or 2x6's (5-foot to 6-foot lengths) spaced 3 inches (3") apart around the circumference of the tree trunk.

   d. Tie in place with 9 to 12 gauge steel wire.

B. Sequence of Tree Protection and Services

1. Fertilize trees affected by construction between the months of October and May.

2. Prune/trim trees for clearance and safety.

3. Root Prune trees.

4. Place tree protection fence and trunk barricades to protect trees. Place fencing prior to any construction activities.
5. Remove tree protection upon completion of project.

C. Existing Stressed and Declining Trees

1. Prior to beginning the construction phase, trees located within the right-of-way should be reviewed and trees that appear to be stressed or declining in health should be documented. Immediately notify the Owner's Representative of any dead and dying trees.

D. Accidental Spills of Toxic Materials

1. Concrete, lime or other chemicals placed or accidentally spilled within root zone protection areas shall be completely removed. Contaminated soil shall be completely removed at the time of the spill and removed by hand shovel. Fresh soil shall be added as necessary to bring the soil level to that of natural grade.

3.3 MAINTENANCE OF NEWLY PLANTED TREES AND REPLANTED TREES

A. Show proof of capacity to water during dry periods.

B. Guarantee trees planted for this Project shall remain alive and healthy at least until end of 1-year warranty period.

1. Within 4 weeks notice from Owner's Representative, replace dead trees or trees that in opinion of Owner's Representative have become unhealthy, unsightly or have lost their natural shape as result of additional growth, improper pruning, maintenance or weather conditions.
2. When tree must be replaced, guarantee period begins on date of tree replacement, subject to Owner's Representative's inspection, for no less than 1 year.
3. Straighten leaning trees and bear entire cost.
4. Dispose of trees rejected by Owner's Representative and bear entire cost.

END OF SECTION

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SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for construction waste management and disposal.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 01 – General Requirements.

1.2 MEASUREMENT AND PAYMENT

A. No separate payment will be made for waste material disposal under this Section. Include payment in unit price for related sections.

1.3 SUBMITTALS

A. Obtain and submit disposal permits for proposed disposal sites if required by local ordinances. Submit a copy of all disposal permits to the Owner's Representative.

B. Submit copy of written permission from property owner(s) outside limits of Project, with description of property, prior to disposal of excess material. Submit written and signed release from property owner upon completion of disposal work. Copies of the permission and release documents are to be submitted to the Owner's Representative.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SALVAGEABLE MATERIAL

A. Excavated Material: When indicated on Drawings, load, haul, and deposit excavated material at location or locations shown on Drawings outside limits of Project.

B. Other Salvageable Materials: Conform to requirements of individual Specification Sections.

C. Coordinate with the Owner's Representative the loading of salvageable material.

3.2 EXCESS MATERIAL

A. Remove and legally dispose of vegetation, rubble, broken concrete, debris, asphaltic concrete pavement, excess soil, and other materials not designated for salvage from job site.

B. Excess soil may be deposited on private property outside the Project limits when written permission is obtained from property owner. See Paragraph 1.3B above.

C. Verify flood plain status of any proposed disposal site. Do not dispose of excavated materials in area designated as within 100-year Flood Hazard Area unless the proper permit has been obtained. Remove excess material placed in "100-year Flood Hazard Area" at no additional cost to the Owner.

D. Remove waste materials from site daily, in order to maintain site in neat and orderly condition, unless otherwise authorized by the Owner.

END OF SECTION

SECTION 01 74 23

RESTORATION OF SITE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the restoration of sites affected by Utility Work, Roadway Reconstruction or Widening, or Facilities Work. Section does not apply to roadway extension projects.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 01 – General Requirements.
2. Section 02 41 13 13 – Removing Existing Pavements and Structures.
3. Section 32 92 13 – Hydro-Mulching.

1.2 MEASUREMENT AND PAYMENT

A. Stipulated Price (Lump Sum) Contract. If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.3 REFERENCES

A. ANSI Z60.1 – American Standard for Nursery Stock.

1.4 DEFINITIONS

A. Site Restoration is replacement or reconstruction of site improvements to rights-of-way, easements, public property, and private property that are affected or altered by construction operations, with improvements to restore to a condition which is equal to, or better than, that which existed prior to construction operations.

B. Site Improvement includes but is not limited to pavement, curb and gutter, esplanades, sidewalks, driveways, culverts, headwalls, mail boxes, lighting, signage, fences, lawns, irrigation systems, and landscaping.

1.5 SUBMITTALS (NOT USED)

1.6 QUALITY ASSURANCE

A. Have trees, landscape shrubs, and plantings performed by qualified personnel.

1.7 SCHEDULING

A. After paving or utility work is completed on line segment and segment is submitted on monthly estimate for payment, complete site restoration for that segment in accordance with 3.1 of this Section, unless extended in writing by Owner's Representative.

B. For utility work requiring testing or post-installation TV inspection, completion of segment is not considered to include testing or TV inspection. Schedule for

completion of site restoration is not determined by completion of testing or TV inspection.

1.8 WARRANTY

A. Provide 2-week warranty on plants and sod grasses that die due to shock or damage only.

B. Replace plants that fail during warranty period according to specifications governing original plants.

C. At the end of the warranty period, provide written notification to homeowner(s) stating the underlying property owner, advising that home owner is subsequently responsible for watering, maintaining replaced plants and grasses. Provide copy of notice to Owner's Representative. Notice to include date and time notice was provided, who provided the notice and how was delivered.

D. Damage caused by natural hazards including hail, high winds or storm is not covered by warranty.

E. Existing plant material required to be moved on site are covered under warranty.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Seeding and Sodding.

1. Provide hydro-mulching/seeding in accordance with Specification Section 32 92 13 – Hydro-Mulching.

B. Trees, Shrubs, and Plantings.

1. Provide trees, shrubs, and plants of quantity, size, genus, species, and variety of those being replaced and conforming to recommendations and requirements of ANSI Z60.1 and Specification Section 01 56 39 – Temporary Tree and Plant Protection.

2. Use balled-and-burlapped nursery stock for tree replacement.

3. Within availability of standard nursery stock, replace each removed tree with one of an equivalent species and size, but with not less than 2½-inch diameter trunk, as measured 1½ feet above natural ground.

PART 3 - EXECUTION

3.1 COORDINATION (NOT USED)

3.2 EXAMINATION

A. Construction Site Photographs. Document conditions on and adjacent to construction site with construction photographs.

B. Make photographs of all areas where construction operations will be conducted including driveways and sidewalks within or adjacent to Work area.

3.3 PREPARATION

A. Removing Pavements and Structures.

1. Remove minimum pavement, curb and gutter, and other structures as required to perform Work. Perform removals in accordance with Specification Section 02 41 13 13 – Removing Existing Pavements and Structures.

B. Remove or relocate existing fencing, if required, for construction operations. Maintain integrity of private property owner's fencing if needed for protection of children, pets, or property. Notify Property owner and/or resident at least 72 hours in advance before removing fencing and coordinate security needs in accordance with Specification Section 01 11 20 – Use of Premises.

3.4 INSTALLATION

A. Pavement, Sidewalk, and Driveway Restoration.

1. Replace pavement, curb and gutter, culverts, headwalls, sidewalks, and driveways removed or damaged as result of construction operations.

B. Seeding and Sodding.

1. Clean up construction debris and level area with bank sand so that resulting surface of new grass matches level of existing grass and maintains pre-construction drainage patterns. Level minor ruts or depressions caused by construction operations where grass is still viable by filling with bank sand.

2. Restore unpaved areas with hydromulch methods conforming to Specification Section 32 92 13 – Hydro-Mulching.

C. Trees, Shrubbery, and Plants.

1. Take extra care in removing and replanting trees, shrubbery, and plants. Remove trees, shrubbery, and plants, leaving soil around roots. Place trees, shrubbery, and plants outside of excavation area.

2. Replace in kind any trees, shrubbery, and plants removed or damaged by construction operations.

3. Have nursery or landscape firm make tree replacements using balled-and-burlapped nursery stock.

D. Fence Removal and Replacement.

1. Replace fencing removed or damaged to equal or better than what existed prior to construction, including concrete footings and mow strips. Provide new wood posts, top and bottom railing and panels. Metal fencing material not damaged by Work may be reused.
2. Remove and dispose of damaged or substandard material.

3.5 CLEANING

A. Remove debris and trash to maintain clean and orderly site as described in General Conditions and Specification Section 01 74 19 – Construction Waste Management and Disposal.

3.6 MAINTENANCE

A. Maintain shrubs, plantings, sodded areas and seeded areas through warranty period.

B. Replace shrubs, plantings, and seeded or sodded areas that fail to become established through warranty period.

C. Maintain newly planted trees, shrubs, and plantings as follows:

1. Water as often as necessary to keep ground and backfill moist until plantings have become established.
2. Repair or replace bracing as necessary.
3. Prune as necessary.
4. Treat plants in accordance with approved methods of horticultural practices where insects or disease affect plants after planting.

D. Refer to Specification Section 01 56 39 – Temporary Tree and Plant Protection and Specification Section 32 92 13 – Hydro-Mulching for additional maintenance requirements.

END OF SECTION

SECTION 02 41 13.13
REMOVING EXISTING PAVEMENTS AND STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Removing concrete pavement, asphaltic concrete pavement, brick pavement, and base courses.
2. Removing concrete curbs, concrete curbs and gutters, sidewalks, and driveways.
3. Removing miscellaneous structures of concrete or masonry.
4. Removing and salvaging existing residence windows, exterior doors, garage door, air conditioning unit, and water heater.
5. Regulatory Requirements

B. Related Specifications Sections include but are not necessarily limited to:

1. Division 01 – General Requirements

1.2 MEASUREMENT AND PAYMENT

A. Lump Sum. If Contract is a Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.3 SUBMITTALS (NOT USED)

1.4 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary for every type of required demolition.

B. Furnish equipment of every type required to demolish and transport construction debris away from the Site.

C. Furnish labor, materials, equipment and incidentals necessary for removal of designated items and transport to location designated by the Owner.

1.5 STANDARDS

A. Work shall be performed in accordance with the codes and ordinances of the agency having jurisdiction over the Place of Record.

B. Coordinate removal work with utility companies.

C. Occupational Safety and Health Association (OSHA), 29CFR Parts 1010 and 1926, “Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite”, 40 CPR Part 61 - “National Emission Standard for Hazardous Air Pollutants”

1.6 DELIVERY AND STORAGE

A. General:

1. Salvage items, designated for Owner's salvage, as a functional unit.
2. Clean and tag for storage.
3. Protect from damage and deliver to location designated.
4. Salvage each item with auxiliary or associated equipment required for operation.

B. Stockpile construction debris at the Site only as long as necessary to haul to a disposal site. Stack materials neatly and handle in an orderly manner until removed from the Site.

1.7 JOB CONDITIONS

A. Contractor shall visit the Site and determine the extent of demolition required and the Site conditions that might affect his proposal. Include costs of covering all aspects of the demolition and salvage as part of the proposal.

B. The Drawings shall be carefully reviewed to determine the extent of necessary demolition and to identify elements of the existing construction which are to remain in place. Report any discrepancies to Owner and Engineer before disturbing existing conditions. Property lines and limits of demolition shall be accurately located prior to beginning site demolition. Start of demolition activities shall represent confirmation by Contractor that existing conditions are as presented in the Contract Documents. Demolition outside the limits indicated on the Drawings, or outside the property lines shall not be performed.

C. For electrical demolition, verify field measurements and circuiting arrangements are as shown on the Drawings. Verify that existing wiring and equipment serve only abandoned facilities.

D. Material removed during demolition, and any equipment not otherwise designated to remain the property of the Owner, shall become the property of the Contractor and shall be promptly removed from the Site.

E. Equipment and material designated as remaining the property of the Owner shall be removed from the structure and transported to a designated location on the Site and stored for the Owner's use. Store on wood runners raised above the surrounding grade and cover with weather resistant covering that is tied securely in place.

F. Take necessary precautions in removing Owner designated property to prevent damage during the demolition process. Equipment shall be removed in one piece. Loose components may be removed separately. Controls and electrical equipment may be removed from the equipment and handled separately. Large units, such as motor driven pumps, may be dismantled and motors handled separately. Do not use a cutting torch to separate the Owner's equipment or material. Salvaged piping shall be taken apart at flanges or fittings and removed in sections.

G. The Owner's designated property shall include:

1. Any item removed from existing building as awarded within the alternate item on proposal form and listed on construction drawings.

1.8 HAZARDOUS MATERIALS (NOT USED)

1.9 WARRANTY (NOT USED)

PART 2 - PRODUCTS

A. New materials and equipment for patching and extending work shall meet the requirements of the individual Sections in these Contract Documents. For materials not addressed in these documents, materials used shall meet or exceed the dimensions and quality of the existing work.

PART 3 - EXECUTION

3.1 PREPARATION

A. Obtain advance approval from Owner's Representative for dimensions and limits of removal work.

B. Contractor shall be responsible for obtaining location of underground utilities at the Site and stake and flag locations. Known existing underground utilities as shown in Construction Drawings are based on best available information at the time of preparation of these construction documents. Arrange for all applicable utility companies to accurately locate underground piping and set color-coded flags along the project limits. Investigate utility company's records to ascertain depths and sizes of piping and other ancillary features.

1. In the event that exact location of utility cannot be obtained, dig test holes as necessary to establish location of utility. Contractor shall not use mechanical digging machines within 5 feet of any active buried utility. For a distance of 2 feet on either side of buried utility, all digging shall be by hand excavation. If the utility is not active, or is to be abandoned or removed, any form of excavation may be used.

3.2 PROTECTION

A. Protect following from damage or displacement:

1. Adjacent public and private property.
2. Trees, plants, and other landscape features designated to remain.
3. Utilities designated to remain.
4. Pavement and utility structures designated to remain.
5. Bench marks, monuments, and existing structures designated to remain.

3.3 REMOVALS

A. Remove pavements and structures by methods that will not damage underground utilities. Do not use drop hammer near existing underground utilities.

B. Minimize amount of earth loaded during removal operations.

C. Where existing pavement is to remain, make straight saw cuts in existing pavement to provide clean breaks prior to removal. Do not break concrete pavement or base with drop hammer unless concrete or base has been saw cut to minimum depth of 2 inches.

D. Unless otherwise shown and detailed on the plans, when street and driveway saw cut location is greater than one-half of a pavement lane width, remove pavement for full lane width or to nearest longitudinal joint as directed by Owner's Representative.

E. Removal of Existing Site Structures

1. Remove concrete or masonry structures as shown on construction drawings in their entirety. Where structures are a part of an active underground utility system, cap and abandon in place

3.4 BACKFILL

A. Backfill cavities resulting from demolition. Fill cavities occurring within the limits of buildings, structures, or pavements in accordance with the requirements Section 31 24 00.01 – Borrow. Backfill and compact cavities outside the construction limits to the same density as the surrounding earth. No testing is required for backfill outside the limits of new construction.

3.5 DISPOSAL

A. Disposal shall be in accordance with requirements of Section 01 74 19 – Construction Waste Management and Disposal.

B. Remove from site, debris resulting from work under this section in accordance with requirements of Specification Section 01 74 19 – Construction Waste Management and Disposal.

3.6 OWNER TRAINING (NOT USED)

END OF SECTION

SECTION 31 23 00

EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Earthwork.

B. Related Specification Sections include, but are not necessarily limited to:

1. Division 01 – General Requirements.
2. Section 31 21 33 – Borrow.

1.2 MEASUREMENT AND PAYMENT

A. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):
   a. C33 – Standard Specification for Concrete Aggregates.
   b. D698 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3).
   c. D1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3(2,700 kN-m/m)).
   d. D3786 – Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics: Diaphragm.
   e. D4253 – Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
   f. D4254 – Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
   g. D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

1.4 SUBMITTALS

A. Samples:

1. Submit samples and source of fill and backfill materials proposed for use.
2. Submit samples and source of borrow materials proposed for use.

1.5 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fill and Backfill: Selected material approved by Owner's representative (Soils Engineer) from site excavation or from offsite borrow.

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect existing surface and subsurface features on-site and adjacent to site as follows:

1. Provide barricades, coverings, or other types of protection necessary to prevent damage to existing items indicated to remain in place.
2. Protect and maintain bench marks, monuments or other established reference points and property corners.
    a. If disturbed or destroyed, replace at own expense to full satisfaction of Owner and controlling agency.
3. Verify location of utilities.
    a. Omission or inclusion of utility items does not constitute non-existence or definite location.
    b. Secure and examine local utility records for location data.
    c. Take necessary precautions to protect existing utilities from damage due to any construction activity.
    d. Repair damages to utility items at own expense.
    e. In case of damage, notify Owner's Representative at once so required protective measures may be taken.
4. Maintain free of damage, existing sidewalks, structures, and pavement, not indicated to be removed.
    a. Any item known or unknown or not properly located that is inadvertently damaged shall be repaired to original condition.
    b. All repairs to be made and paid for by Contractor.
5. Provide full access to public and private premises, fire hydrants, street crossings, sidewalks and other points as designated by Owner to prevent serious interruption of travel.
6. Maintain stockpiles and excavations in such a manner to prevent inconvenience or damage to structures on-site or on adjoining property.

7. Avoid surcharge or excavation procedures which can result in heaving, caving, or slides.

B. Salvageable Items: Carefully remove items to be salvaged, and store on Owner's premises unless otherwise directed.

C. Dispose of waste materials, legally, off site.

1. Burning, as a means of waste disposal, is not permitted.

3.2 SITE EXCAVATION AND GRADING

A. The work includes all operations in connection with excavation, borrow, construction of fills and embankments, rough grading, and disposal of excess materials in connection with the preparation of the site(s) for construction of the proposed facilities.

B. Excavation and Grading: Perform as required by the Contract Drawings.

1. Contract Drawings may indicate both existing grade and finished grade required for construction of Project.

a. Stake all units, structures, piping, roads, parking areas and walks and establish their elevations.

b. Perform other layout work required.

c. Replace property corner markers to original location if disturbed or destroyed.

2. Preparation of ground surface for embankments or fills:

a. Before fill is started, scarify to a minimum depth of 4 IN in all proposed embankment and fill areas.

b. Where ground surface is steeper than one vertical to four horizontal, plow surface in a manner to bench and break up surface so that fill material will bind with existing surface.

3. Protection of finish grade:

a. During construction, shape and drain embankment and excavations.

b. Maintain ditches and drains to provide drainage at all times.

c. Protect graded areas against action of elements prior to acceptance of work.

d. Reestablish grade where settlement or erosion occurs.

C. Borrow:

1. Provide necessary amount of approved fill compacted to density equal to that indicated in this Specification Section and in Specification Section 31 21 33 – Borrow.

2. Include cost of all borrow material in original proposal.

3. Fill material to be approved by Owner's Representative (Soils Engineer) prior to placement.

D. Construct embankments and fills as required by the Contract Drawings:

1. Construct embankments and fills at locations and to lines of grade indicated.
   a. Completed fill shall correspond to shape of typical cross section or contour indicated regardless of method used to show shape, size, and extent of line and grade of completed work.
2. Provide approved fill material which is free from roots, organic matter, trash, frozen material, and stones having maximum dimension greater than 6 IN.
   a. Ensure that stones larger than 3 IN are not placed in upper 6 IN of fill or embankment.
   b. Do not place material in layers greater than 6 IN loose thickness.
   c. Place layers horizontally and compact each layer prior to placing additional fill.
3. Compact by sheepsfoot, pneumatic rollers, vibrators, or by other equipment as required to obtain specified density.
   a. Control moisture for each layer necessary to meet requirements of compaction.

3.3 ROCK EXCAVATION

A. All rock excavation shall be under one classification.

1. This classification shall include solid ledge rock in its natural location that requires systematic quarrying, drilling and/or blasting for its removal and also boulders that exceed 1/2 CY in volume.

B. When rock is encountered, strip free of earth.

1. Employ an independent surveyor to determine rock quantities before removal operation begins.
2. In computing the volumetric content of rock excavation for payment, the pay lines shall be taken as follows:
   a. For structures: 3 FT outside the exterior limits of foundations and from rock surface to 6 IN below bottom of foundations.
   b. For piping and utilities: A width 18 IN wider than the outside diameter of the pipe or conduit and from rock surface to 6 IN below bottom exterior surface of the pipe or conduit.
   c. For paving: 2 FT outside the exterior limits of paving and from rock surface to 6 IN below bottom of pavement subbase.

3.4 USE OF EXPLOSIVES

A. Blasting with any type of explosive is prohibited.

3.5 FIELD QUALITY CONTROL

A. Include in bid price the cost of inspection services indicated herein as being performed by the Owner's Representative (Soils Engineer).

B. Moisture density relations to be established by the Owner's Representative (Soils Engineer) required for all materials to be compacted.

C. Extent of compaction testing will be as necessary to assure compliance with Specifications.

D. Give minimum of 24 HR advance notice to Owner's Representative (Soils Engineer) when ready for compaction or subgrade testing and inspection.

E. Should any compaction density test or subgrade inspection fail to meet Specification requirements, perform corrective work as necessary.

F. Pay for all costs associated with corrective work and retesting resulting from failing compaction density tests.

3.6 COMPACTION DENSITY REQUIREMENTS

A. Obtain approval from Owner's Representative (Soils Engineer) with regard to suitability of soils and acceptable subgrade prior to subsequent operations.

B. Provide dewatering system necessary to successfully complete compaction and construction requirements.

C. Remove frozen, loose, wet, or soft material and replace with approved material as directed by Owner's Representative (Soils Engineer).

D. Stabilize subgrade with well graded granular materials as directed by Owner's Representative (Soils Engineer).

E. Assure by results of testing that compaction densities comply with the following requirements:

1. Sitework:

LOCATION	COMPACTION DENSITY
Under Paved Areas, Sidewalks and Piping:	
Cohesive soils	100 percent per ASTM D698
Cohesionless soils	75 percent relative density per ASTM D4253 and ASTM D4254
Unpaved Areas:	
Cohesive soils	85 percent of ASTM D698
Cohesionless soils	60 percent relative density per ASTM D4253 and ASTM D4254
Levees, Dams and Canals:	
Cohesive soils	Average (10 test running average) of 98% per ASTM D698
Cohesionless soils	75 percent relative density per ASTM D4253 and ASTM D4254

2. Structures:

LOCATION	COMPACTION DENSITY
Inside of structures under foundations, under equipment support pads, under slabs-on-grade and scarified existing subgrade under fill material	95 percent per ASTM D1557
Outside structures next to walls, piers, columns and any other structure exterior member	90 percent per ASTM D1557

3. Specific areas:

LOCATION	COMPACTION DENSITY
Outside structures under equipment support foundations	95 percent per ASTM D1557
Under void	85 percent per ASTM D1557
Granular fill under base slabs with pressure relief valves, and under building floor slabs-on-grade	75 percent relative density per ASTM D4253 and ASTM D4254

3.7 EXCAVATION, FILLING, AND BACKFILLING FOR STRUCTURES

A. General:

1. In general, work includes, but is not necessarily limited to, excavation for structures and retaining walls, removal of underground obstructions and undesirable material, backfilling, filling, and fill, backfill, and subgrade compaction.
2. Obtain fill and backfill material necessary to produce grades required.
   a. Materials and sources to be approved by Owner's Representative (Soils Engineer).
   b. Excavated material approved by Owner's Representative (Soils Engineer) may also be used for fill and backfill.
3. In this Specification Section, the word "foundations" includes footings, base slabs, foundation walls, mat foundations, grade beams, piers and any other support placed directly on soil.
4. In this Specification Section, the word "soil" also includes any type of rock subgrade that may be present at or below existing subgrade levels.

B. Excavation Requirements for Structures:

1. General:
   a. Do not commence excavation for foundations for structures until Owner's Representative (Soils Engineer) approves:

1) The removal of topsoil and other unsuitable and undesirable material from existing subgrade.
2) Density and moisture content of site area compacted fill material meets requirements of specifications.
3) Site surcharge or mass fill material can be removed from entire construction site or portion thereof.
4) Surcharge or mass fill material has been removed from construction area or portions thereof.

b. Owner's Representative grants approval to begin excavations.

2. Dimensions:
   a. Excavate to elevations and dimensions indicated or specified.
   b. Allow additional space as required for construction operations and inspection of foundations.
3. Removal of obstructions and undesirable materials in excavation includes, but is not necessarily limited to, removal of old foundations, existing construction, unsuitable subgrade soils, expansive type soils, and any other materials which may be concealed beneath present grade, as required to execute work indicated on Contract Drawings.
   a. If undesirable material and obstructions are encountered during excavation, remove material and replace as directed by Owner's Representative (Soils Engineer).
4. Make excavations large enough for working space, forms, dampproofing, waterproofing, and inspection.
5. Notify Owner's Representative (Soils Engineer) as soon as excavation is completed in order that subgrades may be inspected.
   a. Do not commence further construction until subgrade under compacted fill material, under foundations, under floor slabs-on-grade, under equipment support pads, and under retaining wall footings has been inspected and approved by the Owner's Representative (Soils Engineer) as being free of undesirable material, being of compaction density required by this Specification Section, and being capable of supporting the allowable foundation design bearing pressures and superimposed foundation, fill, and building loads to be placed thereon.
   b. Owner's Representative (Soils Engineer) shall be given the opportunity to inspect subgrade below fill material both prior to and after subgrade compaction.
   c. Place fill material, foundations, retaining wall footings, floor slabs-on-grade, and equipment support pads as soon as weather conditions permit after excavation is completed, inspected, and approved and after forms and reinforcing are inspected and approved.

d. Before concrete or fill material is placed, protect approved subgrade from becoming loose, wet, frozen, or soft due to weather, construction operations, or other reasons.

6. Dewatering:

a. Where groundwater is or is expected to be encountered during excavation, install a dewatering system to prevent softening and disturbance of subgrade below foundations and fill material, to allow foundations and fill material to be placed in the dry, and to maintain a stable excavation side slope.

b. Groundwater shall be maintained at least 3 FT below the bottom of any excavation.

c. Review soils investigation before beginning excavation and determine where groundwater is likely to be encountered during excavation.

d. Employ dewatering specialist for selecting and operating dewatering system.

e. Keep dewatering system in operation until dead load of structure exceeds possible buoyant uplift force on structure.

f. Dispose of groundwater to an area which will not interfere with construction operations or damage existing construction.

1) Install groundwater monitoring wells as necessary.

g. Shut off dewatering system at such a rate to prevent a quick upsurge of water that might weaken the subgrade.

7. Subgrade stabilization:

a. If subgrade under foundations, fill material, floor slabs-on-grade, or equipment support pads is in a frozen, loose, wet, or soft condition before construction is placed thereon, remove frozen, loose, wet, or soft material and replace with approved compacted material as directed by Owner's Representative (Soils Engineer).

b. Provide compaction density of replacement material as stated in this Specification Section.

c. Loose, wet, or soft materials, when approved by Owner's Representative (Soils Engineer), may be stabilized by a compacted working mat of well graded crushed stone.

d. Compact stone mat thoroughly into subgrade to avoid future migration of fines into the stone voids.

e. Remove and replace frozen materials as directed by Owner's Representative (Soils Engineer).

f. Method of stabilization shall be performed as directed by Owner's Representative (Soils Engineer).

g. Do not place further construction on the repaired subgrades, until the subgrades have been approved by the Owner's Representative (Soils Engineer).

8. Do not place floor slabs-on-grade including equipment support pads until subgrade below has been approved, piping has been tested and approved, reinforcement placement has been approved, and Contractor receives approval to commence slab construction.
   a. Do not place building floor slabs-on-grade including equipment support pads when temperature of air surrounding the slab and pads is or is expected to be below 40 DegF during the day of placement unless heated to a temperature of at least 50 DegF.
9. Protection of structures:
   a. Prevent new and existing structures from becoming damaged due to construction operations or other reasons.
   b. Prevent subgrade under new and existing foundations from becoming wet and undermined during construction due to presence of surface or subsurface water or due to construction operations.
10. Shoring:
   a. Shore, sheet pile, slope, or brace excavations as required to prevent them from collapsing.
   b. Remove shoring as backfilling progresses, but only when banks are stable and safe from caving or collapse.
11. Drainage:
   a. Control grading around structures so that ground is pitched to prevent water from running into excavated areas or damaging structures.
   b. Maintain excavations where foundations, floor slabs, equipment support pads or fill material are to be placed free of water.
   c. Provide pumping required to keep excavated spaces clear of water during construction.
   d. Should any water be encountered in the excavation, notify Owner's Representative (Soils Engineer).
   e. Provide free discharge of water by trenches, pumps, wells, well points, or other means as necessary and drain to point of disposal that will not damage existing or new construction or interfere with construction operations.
12. Frost protection:
   a. Do not place foundations, slabs-on-grade, equipment support pads, or fill material on frozen ground.

b. When freezing temperatures may be expected, do not excavate to full depth indicated, unless foundations, floor slabs, equipment support pads, or fill material can be placed immediately after excavation has been completed and approved.

c. Protect excavation from frost if placing of concrete or fill is delayed.

d. Where a concrete slab is a base slab-on-grade located under and within a structure that will not be heated, protect subgrade under the slab from becoming frozen until final acceptance of the Project by the Owner.

C. Filling and Backfilling Outside of Structures.

1. This paragraph of this Specification Section applies to fill and backfill placed outside of structures above bottom level of both foundations and piping, but not under paving.

2. Provide material as approved by Owner's Representative (Soils Engineer) for filling and backfilling outside of structures.

3. Fill and backfill placement:

a. Prior to placing fill and backfill material, obtain optimum moisture and maximum density properties for proposed material from Owner's Representative (Soils Engineer).

b. Place fill and backfill material in thin lifts as necessary to obtain required compaction density.

c. Compact material with equipment of proper type and size to obtain density specified.

d. Use only hand operated equipment for filling and backfilling next to walls and retaining walls.

e. Do not place fill or backfill material when temperature is less than 40 DegF and/or when subgrade to receive material is frozen, wet, loose, or soft.

f. Use vibratory equipment for compacting granular material; do not use water.

3.8 SPECIAL REQUIREMENTS

A. Erosion Control:

1. Conduct work to minimize erosion of site.

2. Construct stilling areas to settle and detain eroded material.

3. Remove eroded material washed off site.

4. Clean streets daily of any spillage of dirt, rocks or debris from equipment entering or leaving site.

3.9 OWNER TRAINING (NOT USED)

END OF SECTION

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SECTION 31 24 00.01
BORROW

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Borrow

B. Related Specification Sections include, but are not necessarily limited to:

1. Division 01 – General Requirements.
2. Section 31 23 00 – Earthwork

1.2 MEASUREMENT AND PAYMENT

A. Unit Price. No separate payment will be made for this item. Include the cost in associated items for this project.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. ASTM International (ASTM):

a. ASTM D 2216 - Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil, and Rock by Mass.

b. ASTM D 4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.4 SUBMITTALS

A. Submit location and description of proposed borrow area for approval.

B. Submit material samples for testing.

1.5 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 SOIL MATERIAL

A. Grade borrow material used for embankment free of lumps greater than 6 inches, rocks larger than 3 inches, organic material, chemical waste or other contamination, and debris. Take borrow material from sources approved by Owner's Representative.

B. Use material with plasticity index not less than 12, nor more than 20 when tested in accordance with ASTM D 4318. Maximum liquid limit shall be 45, unless approved by Owner's Representative. Do not use blend of cohesive and granular soils to achieve required plasticity index.

PART 3 - EXECUTION

3.1 PREPARATION

A. Notify Owner's Representative and testing laboratory 5 days in advance of opening borrow source to permit obtaining samples for qualification testing. When material does not meet specification requirements, locate another source of borrow.

B. Clear approved source area of trees, stumps, brush, roots, vegetation, organic matter, and other unacceptable material before excavation.

3.2 TESTS

A. Test and analyze soil materials in accordance with ASTM D 4318 and ASTM D 2216 under provisions of Section 01 45 29 - Testing Laboratory Services.

3.3 EXCAVATION

A. Provide adequate drainage of surface water, so that surface water run off does not enter borrow pit excavation.

3.4 HAULING

A. Use covered trucks

3.5 EMBANKMENT

A. Conform to requirements of Section 31 23 00 – Earthwork.

3.6 OWNER TRAINING (NOT USED)

END OF SECTION

SECTION 32 92 13

HYDRO-MULCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Seeding, fertilizing, mulching, and maintenance of areas indicated on Drawings.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 01 74 23 – Restoration of Site

1.2 MEASUREMENT AND PAYMENT

A. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

1.3 SUBMITTALS

A. Submit certification from supplier that each type of seed conforms to these specifications and requirements of Texas Seed Law. Certification shall accompany seed delivery.

B. Submit certificate stating that fertilizer complies with these specifications and requirements of Texas Fertilizer Law.

1.4 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 MATERIALS

A. Seed: Conform to U.S. Department of Agriculture rules and regulations of Federal Seed Act and Texas Seed Law. Seed shall be certified 90 percent pure and furnish 80 percent germination and meet following requirements:

1. Rye: Fresh, clean, Italian rye grass seed (lollium multi-florum), mixed in labeled proportions. As tested, minimum percentages of impurities and germination must be labeled. Deliver in original unopened containers.

2. Bermuda: Extra-fancy, treated, lawn type common bermuda (Cynodon dactylon). Deliver in original, unopened container showing weight, analysis, name of vendor, and germination test results.

3. Wet, moldy, or otherwise damaged seed will not be accepted.

4. Seed requirements, application rates, and planting dates are:

TYPE	APPLICATION RATE POUNDS/A	PLANTING DATE
Hulled Common Bermuda Grass 98/88 Unhulled Common Bermuda Grass 98/88	40 40	Jan 1 to Mar 31
Hulled Common Bermuda Grass 98/88	40	Apr 1 to Sep 30
Hulled Common Bermuda Grass 98/88 Unhulled Common Bermuda Grass 98/88 Annual Rye Grass (Gulf)	40 40 30	Oct 1 to Dec 31

B. Fertilizer: Dry and free flowing, inorganic, water soluble commercial fertilizer, which is uniform in composition. Deliver in unopened containers which bear manufacturers guaranteed analysis. Caked, damaged, or otherwise unsuitable fertilizer will not be accepted. Fertilizer shall contain minimum percentages of following elements:
   1. Nitrogen: 10 Percent
   2. Phosphoric Acid: 20 Percent
   3. Potash: 10 Percent

C. Mulch:
   1. Virgin wood cellulose fibers from whole wood chips having minimum of 20 percent fibers 0.42 inches in length and 0.01 inches in diameter.
   2. Cellulose fibers manufactured from recycled newspaper and meeting same fiber content and size as for cellulose fibers from wood chips.
   3. Dye mulch green for coverage verification purposes.

D. Soil Stabilizer: “Terra Tack 1” or approved equal.

E. Weed control agent: Pre-emergent herbicide for grass areas, such as “Benefin,” or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Place and compact topsoil in accordance with the Drawings.

B. Dispose of objectionable and waste materials in accordance with Section 01 74 19 – Construction Waste Management and Disposal.

3.2 APPLICATION

A. Seed: Apply uniformly at rates given in Paragraph 2.1 B for type of seed and planting date.

B. Fertilizer: Apply uniformly at rate of 500 pounds per acre.

C. Mulch: Apply uniformly at rate of 50 pounds per 1,000 square feet.

D. Soil Stabilizer: Apply uniformly at rate of 40 pounds per acre.

E. Weed Control Agent: Apply at manufacturer's recommended rate prior to hydro mulching.

F. Suspend operations under conditions of drought, excessive moisture, high winds, or extreme or prolonged cold. Obtain Owner's representative approval before resuming operations.

3.3 MAINTENANCE

A. Maintain grassed areas as required to establish acceptable growth. For areas seeded in fall, continue maintenance following spring until acceptable lawn is established.

B. Maintain grassed areas by watering, fertilizing, weeding, and trimming.

C. Repair areas damaged by erosion by regrading, rolling, and replanting.

D. Reseed small, sparse grass areas. When sparse areas exceed 20 percent of planted area, reseed by hydro mulch.

E. Mow grass when height reaches 3½ inches or greater on average before final acceptance. Mow to height of 2½ inches.

3.4 OWNER TRAINING (NOT USED)

END OF SECTION

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