Indian River County Purchasing Division
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ADDENDUM NO. 1

Issue Date: December 14, 2020

Project Name: Landfill Segment 3 Cell 1

Bid Number: 2021006

Bid Opening Date: **January 6, 2021**

This addendum is being released to answer questions received to date and to modify the bid documents. The information and documents contained in this addendum are hereby incorporated in the invitation to bid. **This addendum must be acknowledged where indicated on the bid form, or the bid will be declared non-responsive.**

Attachments:

SECTION 00456, GENERAL INFORMATION REQUIRED FOR BIDDERS

A. Delete Section 00456 in its entirety and replace with new Section 00456 that is provided as Attachment 1.

SECTION 312050, EARTHWORK FOR SOLID WASTE

B. Delete Section 312050 in its entirety and replace with new Section 312050 that is provided as Attachment 2.

Questions and Answers

1. Our company holds a current and active Florida issued Certified Pollutant Storage System Contractor license and has worked at various landfills throughout the eastern US. Is this licensure acceptable to be able to bid on this project?
A Certified General Contractors license is required by the County.

2. Questions 1 and 11 of this form reference licensures as a General Contractor; however, nowhere in the specifications does it state that this is a requirement.?? Would Indian River County allow the submittal of bids from a Florida Certified Underground Utilities Contractor, in lieu of a General Contractor?
See answer to number 1.

3. The specifications do not list Saturday as a working day. Will the Contractor be allowed to regularly work Saturdays?
Refer to Section 00700, Article 6.02; Section 00800, Article 6, Paragraph SC-6.02C and D; and Section 011000, Paragraph 1.8, Subparagraph B. The Contractor can work on the weekends with

written consent from the Owner, given after prior written notice to the Engineer. Any inspections performed outside of the normal working hours of 7:00 AM to 6:00 PM Monday through Friday shall be paid by the Contractor. If this is desired, a request by the Contractor shall be submitted to the Engineer not less than 48 hours prior to the proposed weekend work. Overtime inspection expenses will be recovered by deductions from the Contractor's monthly payment request.

4. The specs (013233) call for a professional construction photographer. Is it ok if our Superintendent does the photos instead?
Section 013223 shall remain unchanged. A superintendent who regularly takes photographs for the Contractor's construction projects will be considered a "professional photographer" for the purposes of this project.

5. Is an onsite soil borrow pit / stockpile available for trench bedding and backfill?
No, an on-site borrow pit is not available. The Contractor shall provide all fill materials.

6. The specs (312050) have extensive requirements for the backfill dirt to be used in the trenches as far as material specification as well as testing requirements. One section even says we will have to get a screener onsite and process the material including reworking it for optimum moisture content before using it in the project. Is the Contractor going to be held to these requirements - onsite density testing & stringent material specs and paying for the testing?
Refer to revised Section 312050 provided as Attachment 2. Language has been added as Paragraph B.1 to clarify what common fill material is acceptable. If the material that arrives on-site does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the more stringent testing listed in Section 312050. If required by the Engineer, the Contractor shall be responsible for any costs for testing and evaluating fill material.
Refer to Section 312050, Paragraph 3.3. The Contractor shall consolidate the material in place when compacting. If the compaction does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the more rigorous compaction testing.

7. Section 312500 "1.7 QUALITY ASSURANCE A. Prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the U.S. Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) General Permit applicable to this work document number EPA 832-R-92-005, dated 1992, or most recent edition. B. Prepare and submit the NPDES Notice of Intent to Discharge to the applicable Florida Department of Environmental Protection office in accordance with EPA regulations." Is this not already in place at the site setup already? Can the awarded Contractor be provided with a copy of the Plan prior to starting job?
Refer to Section 250111, Paragraph 1.7, Subparagraph B. The Contractor is responsible for obtaining an NPDES Construction Generic Permit as required by the Florida Department of Environmental Protection.

8. The horizontal collector detail C/CD-3 shows "varies" for the dimension of the stone pack. Please provide the dimension so we can calculate the stone needed.
For the purposes of bidding, the Contractor should assume that the approximate depth of cover is 12-inches.

9. For E&S controls the specs state to place silt fences "as indicated on the drawings" but there is no E&S plan drawing provided. Please provide a drawing and/or quantity for Contractors to bid to for

silt fence and seeding

Remove *"as indicated on the Drawings and"* from Section 312500, Paragraph 3.2, Subparagraph A. The Contractor will need to make sure that sediments and other materials from the construction project do not make their way into the landfill stormwater swales that flow to the on-site stormwater pond.

10. Can we provide a letter of good standing from our bank as opposed to our Financials?
A bank letter will be acceptable.

11. Please confirm that there is no seeding or sodding in the project.
Any areas disturbed by the Contractor due to construction that currently have vegetation will require the installation of turf/grasses. However, turf/grasses are not required to be installed on the top of Segment 3 where waste is being actively placed by the landfill operator. Any turf/grasses that are installed must meet the requirements of Section 329200.

12. Will the contractor be responsible for supplying all bedding and backfill materials from an offsite source?
Yes, the Contractor shall provide all fill materials.

13. Can you provide tie-in depths?
Refer to Drawing C-1 for approximate tie-in elevations.

14. Is there any deep trench expected during the project? If so, can you provide estimates of 5-7 ft deep trench and 7-10 ft deep trench?
Refer to Drawing C-1 for approximate tie-in elevations. The Contractor shall ensure that all piping is pitched a minimum of 3-percent.

15. Please confirm that all piping and tie-ins are located outside the limits of final cover.
Yes, the pipe tie-in locations are outside the limits of final cover.

16. For bidding purposes, is the contractor to include tax on a material for the project?
Yes, the Contractor should include tax on the materials.

17. Is this project a prevailing wage rate job?
This project is not Federally funded, and the Davis-Bacon Act does not apply.

18. Does the County have any requirements on the frequency of the as-built survey (i.e. once a week, every two weeks, etc.)? Will survey risers be accepted?
Refer to Section 012200 for measurement and payment requirements on items that will require as-built survey. As-built surveys will need to be submitted by the Contractor with pay applications as needed. Final as-built surveys are required in accordance with Section 017300, Paragraph 3.4, Subparagraph E. As-built surveys must be certified and signed by a licensed professional land surveyor who is legally qualified to practice in the jurisdiction where the project is located and who is experienced in providing land-surveying services of the kind indicated. The licensed professional surveyor's means and methods are not dictated; if risers are acceptable to the surveyor, they must be removed once surveyed to prevent damage to the pipe.

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19. Can bell end PVC pipe be used for the vertical extraction wells?
No, this requirement will not be changed. The PVC landfill gas extraction well casings with bell ends are not an acceptable alternative. All connections shall be flush coupled, square threaded in accordance with Section 335133, Paragraph 2.1, Subparagraphs A.1 and A.2. and Paragraph 3.1, Subparagraph B.

20. Can perforated PVC pipe be used in place of the slotted pipe for the vertical extraction wells?
No, this requirement will not be changed. The pipe shall be slotted in accordance with Section 33513, Paragraph 2.1, Subparagraph A.3 and Paragraph 2.2, Subparagraph A.1.

21. Is that 12,000 square feet correct for bid item 1.A.d.1? 12,000 SF / 23' wide only = about 520 feet long of horizontal collector trench?
Refer to Section 250111, Paragraph 2.8, Subparagraph A and to Note 1 of Detail C on Sheet CD-3. The Owner will provide existing HDPE liner material for the Contractor to utilize. The Contractor shall be responsible for transporting this existing material from the current location on-site to the construction area. The referenced bid item above is for additional supplemental liner material that the Contractor will need to provide.

22. The three horizontal collector bid items (1.A.d.2, d.3, and d.4) have got me confused. Can you please provide a narrative explaining the three different scenarios & where each is on the drawing layout?
The Bid Items referenced above are for the sideslope collectors. Refer to Section 250111, Paragraph 3.1, Subparagraphs E, F, and G for a unit price description of these Bid Items. An example of Bid Item 1A.d.2 (solid pipe and fittings in rock) is highlighted in blue color in the snapshot from Detail A on Sheet CD-3 below. An example of Bid Item 1A.d.3 (solid pipe and fittings in common fill) is highlighted in red color in the snapshot from Detail A on Sheet CD-3 below. An example of Bid Item 1A.d.4 (perforated pipe and fittings in rock) is highlighted in green color in the snapshot from Detail A on Sheet CD-3 below.

23. Does the geotextile really have to be seamed at the top per the detail drawing?
Refer to Section 250111, Paragraph 2.7, Subparagraph A and to Note 2 of Detail C on Sheet CD-3. The Contractor shall heat tack the overlapped geocomposite the entire length. If a 1-foot minimum overlap cannot be achieved, the Contractor may place a 3-foot wide strip over the top of the rock that has been wrapped.

24. Can we put geotextile over the top only instead of a burrito wrap on the horizontal collectors? Top only is pretty commonly done in the industry.
Refer to Section 250111, Paragraph 2.7, Subparagraph A and to Note 2 of Detail C on Sheet CD-3. The Owner will provide existing geocomposite material for the Contractor to utilize. The Contractor shall be responsible for transporting this existing material from the current location on-site to the construction area. As shown in Detail C on Sheet CD-1, if a 1-foot minimum overlap cannot be achieved (heat tack entire length), the Contractor may place a 3-foot wide strip over the top of the rock that has been wrapped.

25. I have a question about the side slope collector installation detail C. It is located on the last page of the plan set. The cover's depth is labeled as "varies", I am wondering if there is a maximum/minimum depth?
For the purposes of bidding, the Contractor should assume that the approximate depth of cover is 12-inches.

SECTION 00456
GENERAL INFORMATION REQUIRED OF BIDDERS - ADDENDUM 1

The undersigned Bidder guarantees the truth and accuracy of all statements and answers herein contained. Failure to comply with these requirements may be considered sufficient justification to disqualify a Bidder. Additional sheets shall be attached as required.

Documentation Submitted with Indian River County Bid No: 2021006 for the Indian River County, Solid Waste Disposal District, Indian River County Landfill, Segment 3 Cell 1 Landfill Gas System Expansion.

1. How many years has your organization been in business as a Contractor?

_____

2. Describe and give the date and owner of the last three projects that you have completed similar in type, size, and nature as the one proposed?

_____

_____

_____

3. Have you ever failed to complete work awarded to you? If so, where and why?

_____

4. Name three individuals or corporations for which you have performed work and to which you refer:

_____

_____

_____

5. Name of person who inspected site or proposed work for your firm:

   Name: _____ Date of Inspections: _____
   Describe any anticipated problems with the site and your proposed solutions:

_____

_____

_____

6. Will you Subcontract any part of this Work? If so, describe which portions:

_____

_____

7. Please list the names and addresses of the subcontractors to be used for the portions of the work listed below. Additional information will be required in accordance with the Instructions to Bidders (Section 00100).

MECHANICAL: _____

CIVIL SITE WORK: _____

LANDFILL GAS WELL DRILLER: _____

SURVEYING: _____

TESTING LAB: _____

8. What equipment do you own that is available for the work?

_____

_____

_____

9. What equipment will you purchase for the work?

_____

_____

10. What equipment will you rent for the work?

_____

_____

11. Florida State Contractor's License No. and Type: _____

_____

12. The following is given as a summary of the Financial Statement of the undersigned: (List Assets and Liabilities and use insert sheet if necessary.)

_____

_____

_____

13. List the names and titles of **ALL** officers of Contractor's firm:

_____ _____

_____ _____

_____ _____

_____ _____

14. State the true and exact, correct, and complete name under which you do business. BIDDER is:

A CORPORATION

_____
(Corporation Name)

_____
(State of Incorporation)

15. State your total bonding capacity:

_____

16. State your bonding capacity per job.

_____

17. Please provide name, address, telephone number, and contact person of your bonding company.

_____

_____

NOTE: If requested by the County, the Bidder shall furnish a notarized financial statement, references and other information, sufficiently comprehensive to permit an appraisal of his current financial condition.

END OF SECTION 00456

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SECTION 312050 - EARTHWORK FOR SOLID WASTE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Earthwork, which includes procurement of fill material (imported), excavation, placing and compacting fill and backfill, transportation and storage of excess earthwork materials
2. Disposal of unsuitable soils, waste, and surplus materials.
3. Supplemental work necessary to complete grading of developed areas to conform with lines, grades, and slopes indicated on Drawings.

B. Related Requirements:

1. Section 013526 “Governmental Safety Requirements” for Safety, Health, and Emergency Response.
2. Section 312333 “Trenching and Backfilling” for Trenching, Bedding, and Backfill.
3. Section 312500 “Erosion and Sedimentation Controls” for Sedimentation and Erosion Control.
4. Section 329200 “Turf and Grasses” for Sodding and Seeding.

1.3 DEFINITIONS

A. Percent Compaction: Required in-place dry density of material, expressed as a percentage of maximum dry density of same material, as determined in the laboratory by ASTM Test Method D1557 (Modified Proctor).

B. Optimum Moisture Content: Moisture content (percent by dry weight) corresponding to the maximum dry density of the same material as determined by ASTM D1557.

C. Moisture-Sensitive Soil: On-site soil containing more than five percent fines (silt- or clay-sized particles) based on the fraction passing the 3/4-inch sieve.

D. In-the-Dry: An excavation subgrade where groundwater level has been lowered to at least two feet below the lowest level of excavation, is stable with no ponded water, mud, or muck and able to support construction equipment without rutting or disturbance and suitable for placement and compaction of fill material, pipe or concrete foundations.

E. Structures: Buildings, wet wells, manholes and below grade vaults, pipelines and utilities, pavements, and slabs-on-grade both above and below ground.

F. Unsuitable Soil: Existing fill materials, organic soils, weak native soils, or clays with a plasticity index greater than 30.

G. Objectionable Material: Topsoil, organic matter, contaminated soil, construction debris, perishable materials, snow, ice, frozen earth, and rocks or lumps of cemented soils over 6 inches in maximum dimension.

H. Overexcavation: Removal of Unsuitable Soil or Objectionable Material at or below normal grade of excavation or subgrade as indicated on Drawings.

I. Subgrade: Required surface of subsoil, borrow fill or compacted fill. This surface is immediately beneath site improvements, especially dimensioned fill, paving, or other surfacing material.

J. Finished Grade: Required final grade elevation indicated on Drawings. However, spot elevations take precedence over proposed contours.

K. Coverage: The pass of compaction equipment over complete surface area of exposed lift or subgrade to receive compaction.

1.4 ACTION SUBMITTALS

A. Construction Work Plan:

1. Proposed methods of construction, including, earthwork operations, excavation limits, fill material moisture conditioning and handling, compaction equipment, and material sources for various portions of work.
2. Additional submittal requirements related to schedule, sequence of work, etc. may be necessary for some projects.

B. Temporary Excavation Slope Stability Evaluation:

1. Prepared by a professional Engineer, licensed in the State of the project, for temporary slopes over 20 feet in height or where existing or proposed facilities or property limits are located at top of slope and within a distance from top of slope equal to slope height.

C. Site Characterization of Off-Site Borrow Sources:

1. Submit to Engineer for review at least three weeks prior to use as an off-site borrow source. No soil or crushed stone from off-site allowed without approval.
2. Site Data: Information regarding off-site source and material, as follows:

    a. Location of site.
    b. Present and past usage of source site and material.
    c. Any previously existing report(s) associated with an assessment of source site as it relates to presence of oil or hazardous materials.
    d. Location within site from which material will be obtained.

D. If the material that arrives on-site does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the following of the Contractor:

1. Quality Control Testing of Off-Site Borrow Materials:

    a. Chemical Analysis Data if suspected of being contaminated, perform analyses at no additional cost. Not anticipated for commercial borrow sources and will not be required if site characterization show off-site borrow sources as acceptable.
    b. Obtain and test off-site borrow samples in accordance with criteria established by Engineer. Submit results for approval prior to use on site.

2. Samples: Provide samples of each granular fill and coarse aggregate source. Take samples prior to delivery and as material is delivered onsite or throughout stockpile. Sample in accordance with the frequencies in Article "Quality Assurance." Take samples in presence of Engineer's representative.

1.5 INFORMATIONAL SUBMITTALS

A. Material Test Reports, if required: For each type of fill material, by a qualified testing agency:

1. Conformance Testing:

    a. Submit laboratory report at least 72 hours prior to importing or placing fill, signed, and sealed by a licensed Professional Engineer in state of the project, as specified in Article "Quality Assurance."
    b. Include name of material, intended use, and location of placement.

2. Field Density Tests:

    a. Map showing density test numbers and locations.
    b. Report signed and sealed by licensed Professional Engineer in state of the project, as specified in Article "Quality Assurance."

1.6 QUALITY ASSURANCE

A. Excavation, trenching, sheeting, bracing, and similar work shall comply with requirements of OSHA excavation safety standards, 29 CFR Part 1926 Subpart P and State and local authorities having jurisdiction. Where conflict between OSHA, State and local regulations exists, apply most stringent requirements.

B. Excavation, trenching, sheeting, bracing, and similar work shall comply with requirements of the Florida "Trench Safety Act", CS/SB 2626, which incorporates by reference, OSHA excavation safety standards, 29 CFR 1926 Subpart P.

C. If the material that arrives on-site does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the following of the Contractor:

1. Purpose of quality assurance testing is to assure that the supplied granular fill materials from each source conform to Specifications. Field quality control procedures assure that subbase, etc. has been installed in accordance with Specifications.

2. Suitability of Existing Subgrade Soil: At structures, prior to placement of bedding material, liner materials, concrete work mats, structural fill or structural concrete, coordinate with or Soils Testing Laboratory to verify.
3. Backfill and Fill: Prior to and during placement, coordinate with or Soils Testing Laboratory Insert entity to perform in-place soil density tests to verify that backfill/fill material has been placed and compacted in accordance with requirements specified herein. Provide minimum 48 hours' notice prior to placement of backfill and fill.
4. Subgrades: Do not cover with fill nor fill placed without observation or testing, and approval by Soils Testing Laboratory. Earthwork activities performed without properly scheduled inspection are subject to removal and replacement or additional testing as directed by Engineer at no cost.
5. Open Areas (no roads, berms, or pipe trenches): Conduct particle size analyses on samples taken from each 5,000 cubic yards of installed material, and/or when a change in fill is observed, to determine particle size distribution. Conduct tests in accordance with ASTM D6913 and ASTM D7928.
6. Field Density and Moisture Content: Determine on each 20,000 square feet of each lift of installed material. Correlate use of nuclear density testing (ASTM D6938) with Modified Proctor. Perform at least one Modified Proctor (ASTM D1557) laboratory compaction test per 15,000 cubic yards of uncompacted material or when a change in fill is observed. Use extreme care when measuring above a geomembrane system to avoid damage.
7. Road Bases, Berms, and Pipe Trenches: Determine field density and moisture content for at least every 250 linear feet of each lift of compacted backfill.
8. Testing:

    a. Conformance Testing: At a minimum, test materials listed under Part 2 of this section that are from onsite or offsite sources, as required. Test each 5,000 cubic yards of material delivered (one test minimum) to verify conformance with specifications.
    b. Chemical Analyses: If requested, sample each proposed material for the following analyses:
        1) Volatile Organic Compounds, (EPA 8240 plus Hazardous Substance List (HSL) Parameters).
        2) Acid and Base Neutral Extractable Organic Compounds (EPA 8270).
        3) Pesticides/PCBs (EPA 8080).
        4) Total Petroleum Hydrocarbons (Infrared Method) (EPA 9071/418.1).
        5) Thirteen Priority Pollutant Metals (EPA 7000 Series).
        6) Total Cyanide (EPA 9012).

D. Qualifications:
1. Chemical Analytical Laboratory: Certified by governing agency, for required analyses with qualifications meeting ASTM D3740.
2. Testing Agency Qualifications: Qualified according to ASTM D3740. Have ASTM certifications for test methods to be used. Professional geotechnical engineer licensed in the State of the project.
3. Lab Sampler: Minimum three years sample collection experience.

E. Soil Testing:

1. If the material on-site does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the following of the Contractor:

a. Prior to and during general placement of fill, Engineer may select areas for testing degree of compaction obtained. Cooperate fully in obtaining information desired.
b. Contractor to pay for laboratory and in-place density testing and costs involved in retesting materials due to deficient test results (to the satisfaction of the Engineer).

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Use materials for fill as described below.

1. Supplier shall show evidence of an adequate supply of material which is relatively homogenous within a designated mine area which is properly permitted by appropriate Federal, State, and local agencies.

B. Soil Fill:

1. Common Fill: Common fill for cover, embankments and, other general fill requirements specified other than those listed below shall consist of mineral soils substantially free of clay, organic material, loam, wood, trash, and other objectionable material that may be compressible, degradable or which cannot be compacted properly. Common fill shall not contain stones or chunks larger than 6 inches in any dimension, broken concrete, masonry, rubble, or similar materials. In general, common fill shall consist of sand, sand with gravel, sand with silt, sand with clay, silty sand, or clayey sand. Common fill for landfill gas pipe bedding shall meet the same requirements but shall not contain stones or chunks larger than 2 inches in any dimension.

2. If the material that arrives on-site does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the following of the Contractor:
   a. Common Fill: Fill for landfill gas pipe bedding, cover, embankments and other general fill requirements specified other than those listed:
      1) Consist of mineral soils substantially free of clay, organic material, loam, wood, trash, and other objectionable material that may be compressible, degradable or which cannot be compacted properly.
      2) Cannot contain stones or chunks larger than 6 inches in any dimension, broken concrete, masonry, rubble, or similar materials. Common fill to be used for landfill gas pipe backfill will require additional processing and shall not contain any stones or chunks larger than 2 inches in any dimension.
      3) Shall not contain greater than 20 percent fines (passing the No. 200 sieve).
      4) Can be readily spread and compacted during filling.
      5) Consist of sand, sand with gravel, sand with silt, sand with clay, silty sand, or clayey sand, classified as SP, SW, SP-SM, SP-SC, SW-SM, SW-SC, SM, or SC in accordance with the Unified Soil Classification System, ASTM D2487.
      6) Do not use soils containing more than five percent by weight of organic materials (ASTM D2974), a Plasticity Index (ASTM D4318) greater than ten percent, or a Liquid Limit (ASTM D4318) greater than 40 percent. Ensure particle size gradation (ASTM D6913 and ASTMD D7928) is within the following limits:

Sieve Size	Percent Finer by Weight
6-in	100
No. 4	70-100
No. 40	5-100
No. 200	0-20

7) Perform screening required to meet these specifications, including the two-inch maximum size, in any dimension. Cover costs of testing and evaluation. Be responsible for coordinating testing, including sampling and shipment to laboratory. If test results are unsatisfactory, bear costs involved in correcting deficiencies in compacted materials and acceptance testing to the satisfaction of Engineer.

PART 3 - EXECUTION

3.1 EXCAVATION

A. Include material of every description and of whatever substance encountered. Cut pavement with a saw, wheel or pneumatic chisel along straight lines before excavating.

B. In general, on-site soils can be excavated using standard earthmoving equipment. Do not plough earth, scrape, or dig with machinery so near to finished subgrade as to result in excavation of, or disturbance of material below grade.

C. Excavate to grade indicated on Drawings and in widths sufficient for laying pipe, construction of structure, bracing, and for placement and compaction of backfill.

D. Perform excavation in the dry and accomplished by methods which preserve natural undisturbed condition of subgrade soils.

E. Moisture Sensitive Soils are particularly susceptible to disturbance due to construction operations. When excavation is to end in such soils, use a smooth edge bucket to excavate last one foot of depth.

F. If bottom of any excavation is taken out below limits indicated on Drawings, specified, or directed by Engineer, refill with compacted common fill, compacted screened gravel, or lean concrete or other material satisfactory to Engineer, with at no additional cost.

G. When excavation has reached prescribed depths, notify Engineer. If materials and conditions are not satisfactory to Engineer, Engineer will issue instructions as to procedures. Engineer will be the sole judge as to whether work has been accomplished satisfactorily.

H. Perform over-excavation at request of Engineer to remove Unsuitable Soil, Objectionable Material, or other materials as determined by Engineer to such depth and width as Engineer may direct. Replace with suitable material as directed by Engineer for which compensation will be made in accordance with Article 11 of the General Conditions.

I. During wet or freezing weather, or in areas where exposed subgrade consists of Moisture-Sensitive Soils, take measures to protect foundation excavations once they have been approved by Engineer. These measures may include, but are not limited to, placing insulation blankets,

placing a layer of pea gravel, crushed rock, or lean concrete on exposed subgrade, or covering exposed subgrade with a plastic tent. If additional overexcavation is required because subgrade was not protected against wet or freezing weather, cover the cost of such additional work.

J. Carry out excavation for pipelines beneath structures and excavation for footings "in the dry" and in a manner which will preserve the undisturbed state of subgrade soils.

K. Where excavation is required below, excavate overlying fill soils, and stockpiled separately. Test excavated fill to determine its suitability for reuse as Common Fill. Segregate deleterious or unsuitable materials in overlying fill from remainder of excavated fill prior to reuse.

3.2 TRENCH EXCAVATION AND BACKFILLING

A. Excavate trenches required for installation of pipes to depths indicated on Drawings and in such a manner and to give suitable room for laying pipe or installing ducts within trenches, for bracing and supporting, and for pumping and drainage facilities.

3.3 COMPACTION

A. Common fill shall be placed in maximum 12-inch-thick loose lifts and each lift compacted using compaction tools to consolidate material in place. The pipe bedding material shall provide continuous support for the pipe and be well compacted and free of material larger than 2 inches in any dimension.

B. Pipe bedding material may be compacted by tamping with an excavator bucket and/or tracking with tracked equipment if approved by the Engineer.

C. If the compaction does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the following of the Contractor:

1. Common fill shall be placed in layers not to exceed 12 inches in depth and each lift compacted to at least 90 percent of Modified Proctor maximum dry density as determined by ASTM D1557, unless otherwise specified.
2. Compact areas adjacent to structures, and other confined areas inaccessible to self-propelled compaction equipment, with approved hand-guided mechanical compaction equipment. Place fill compacted by hand-guided compactors in 6-inch-thick loose lifts and thoroughly tamped over entire surface to specified compaction. Compaction equipment is subject to approval by Engineer. Do not operate heavy equipment within 5 feet of any structure.
3. Ensure fill material moisture content is within three percent of optimum moisture content as determined by ASTM D1557. Spread material which is too wet on fill area and permitted to dry, assisted by harrowing if necessary, until moisture content is reduced to allowable limits.
4. If Engineer determines that added moisture is required, apply water by sprinkler tanks or other sprinkler systems to ensure uniform distribution of water over area to be treated and give complete and accurate control of the amount of water to be used. If too much water is added, allow area to dry before continuing compaction.
5. Supply hose, piping, valves, sprinklers, pumps, sprinkler tanks, hauling equipment, and other materials and equipment necessary to place water in fill in manner specified.

3.4 DISPOSAL OF UNSUITABLE, WASTE AND/OR SURPLUS EXCAVATED MATERIAL

A. Unsuitable Soil, Objectionable Material, and Waste and Surplus Excavated Material: Permanently stockpile in area designated on Drawings. Materials may be temporarily stockpiled in an area within limits of construction that does not disrupt construction activities, create any nuisances or safety hazards, or otherwise restrict access to work site.

3.5 DISPOSAL OF SURPLUS MATERIAL

A. Do not remove or dispose of excavated materials from site except as specified by Engineer. Pile materials neatly to inconvenience, as little as possible, public and adjoining property owners until used or otherwise disposed of as specified below.

B. Use suitable excavated material for fill embankments or backfill on different parts of work, as required.

C. Surplus fill shall become the property of Owner and disposed on site by Contractor in an approved location. Stockpile organic materials for Owner's use.

3.6 PROTECTION

A. Sheeting and Bracing:

1. Furnish, put in place, and maintain sheeting and bracing as may be required by Federal, State, and local safety requirements to support excavation sides; to prevent movement which could diminish width of excavation below that necessary for proper construction; and to protect adjacent structures from undermining or other damage. If Engineer is of the opinion that at any points sufficient or proper supports have not been provided, they may order that additional supports be put in, and compliance with such order shall not relieve or release responsibility for the sufficiency of such supports. Take care to prevent voids outside of the sheeting. But if voids are formed, immediately fill and ram. Where soil cannot be properly compacted to fill a void, use lean concrete as backfill where soil cannot be properly compacted to fill.
2. Construct sheeting outside neat lines of foundation, unless indicated otherwise, to extent deemed desirable for method of operation. Provide plumb and securely braced sheeting tied in position. Provide sheeting and bracing adequate to withstand pressures to which structure or trench will be subjected. Correct movement or bulging which may occur to provide necessary clearances and dimensions.
3. Where sheeting and bracing is required to support the sides of excavations for structures, engage a Professional Engineer licensed in the State of the project, to design sheeting and bracing. Provide sheeting and bracing in conformity with the design.
4. Leave in place to be embedded in backfill sheeting and bracing not indicated on Drawings but which the Engineer may direct in writing to leave in place at any time during the progress of the work for the purpose of preventing injury to structures, utilities, or property, whether public or private. Engineer may require that timber used for sheeting and bracing be cut off at any specified elevation. Include payment for sheeting to be left in place in Base Bid. Pressure-treat timber sheeting to be left in place adjacent to any structures.

5. Carefully remove sheeting and bracing not to be left in place in such manner as not to endanger construction or other structures, utilities, or property. Immediately refill voids left or caused by withdrawal of sheeting with sand by ramming with tools especially adapted to that purpose, or otherwise as may be directed.
6. Withdraw no sheeting if driven below mid-diameter of any pipe, and under no circumstances cut off sheeting at a level lower than 1-ft above top of any pipe.

3.7 REMOVAL

A. Stockpile rock and clay, if any, excavated under this Section at an approved area on site for Owner, or to be used for construction as directed by Engineer.

END OF SECTION 312050

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