

# PROJECT MANUAL

Technical Specifications and Drawings

for

## PIERCE SEWER LINE REPLACEMENT Project for USDA – FOREST SERVICE

APRIL 2023

Construction Documents

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Project No.: \_\_\_\_\_ Set No.: \_\_\_\_\_



**PROJECT MANUAL**  
**FOR**  
**PIERCE SEWER LINE PROJECT**  
**FOR THE**  
**USDA – FOREST SERVICE**  
**NEZ PERCE-CLEARWATER NATIONAL FORESTS**  
**CLEARWATER COUNTY, IDAHO**

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**PIERCE SEWER LINE REPLACEMENT**

*All Contract Documents provided by the U.S. Forest Service*

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**PART 1 GENERAL****1.01 GENERAL**

- A. This section describes the project and the work to be performed in a general summary. Detailed requirements and extent of work are stated in applicable Specification sections and are shown on the Drawings.

**1.02 ORGANIZATION AND INTERPRETATION OF DRAWINGS AND SPECIFICATIONS**

- A. Specifications and Drawings included in these Construction Documents establish the performance, quality requirements, location and general arrangement of materials and equipment, and establish the minimum standards for quality of workmanship and appearance.
- B. Specification sections have not been divided into groups for work of subcontractors or various trades. Should there be questions concerning the applicability or interpretation of a particular section or part of a section or Drawing, direct questions to the Contracting Officer (CO).
- C. Any piping shown on the Drawings is intended to be depictive and may not be an exact and complete representation of the actual finished work. Include fittings, joints, supports, nuts, bolts, and other accessories required to provide complete and satisfactory piping systems, as specified even though some items may not be specifically shown on the Drawings.
- D. Any part of the work that is necessary or required to make each installation satisfactory and operable for its intended purpose, even though it is not specifically included in the Specifications or on the Drawings, shall be performed as incidental work as if it were described in the Specifications and shown on the Drawings.

**1.04 DESCRIPTION OF PROJECT**

- A. This project generally consists of some or all the following major items of work as further defined by the Bid Schedule:
  - 1. Remove and replace sewer line from the Bunkhouse to Manhole A. Install new cleanout within 10 feet of the building.
  - 2. Remove old orangeburge pipe with new 4" PVC pipe from Manhole A to Manhole B. Add one Wye to maintain sewer flow from Tree cooler.
  - 3. Replace gravel on north driveway entrance.
  - 4. Optional remove and replace orangeburge pipe with new 6" PVC Pipe from Manhole B to manhole C. Add up to three Wye joints to maintain flow from warehouse and trailer court.

- B. The work includes, but is not limited to: furnishing and installation of equipment, materials and related appurtenances, and providing all labor in the following general trades of work: site work, excavation, trenching and backfill, piping, and other related trades to complete the work.

#### 1.05 LOCATION AND INSPECTION OF SITE

- A. The project is located north east of Pierce, Idaho at the Pierce Work Center of the Nez Perce-Clearwater National Forests. The Ranger Station is located approximately 45 miles north and east of Kamiah, Idaho.
- B. Prospective bidders are encouraged to visit the site and become familiar with existing conditions.
- C. Inquiries concerning these Specifications and Drawings may be made to Susan Graves, PE, Forest Engineer, Nez Perce-Clearwater National Forests, 1008 Highway 64, Kamiah, ID 83536, 208-935-4261; Or Steve Rogers 502 Lowery St. Kooskia, ID 83539, 208-702-2598.

#### 1.07 CONTROL POINTS AND STAKING

- A. The existing manhole inverts will act as control points for horizontal and vertical control. The Contractor shall be responsible for maintaining any established control points as well as verifying size of manhole opening and pipe size.
- B. It is assumed the pipe size from the Bunkhouse to Manhole A is 4", the pipe size between Manhole A and Manhole B is 4", and the pipe size between Manhole B and C is 6". Contractor should verify these diameters within the manholes prior to ordering supplies.
- C. Contractor should anticipate one 4" Wye on line A-B and two 4" Wye's on line B-C.
- D. The Contractor shall be responsible for providing all other horizontal and vertical control to complete the work.

#### 1.08 BOUNDARIES OF WORK

- A. The Government shall make suitable provisions for ingress and egress and shall not cause the Contractor to enter or occupy with workers, tools, equipment or material, any ground outside the property of the Government without the written. The final location and extent of the areas to be used shall be coordinated with the CO. Other contractors and employees or agents of the Government may for all necessary purposes enter upon the premise used by the Contractor, providing the operations of other contractors do not interfere with the actual scheduled operations.

- B. It shall be understood that the responsibility for protection and safekeeping of Contractor's equipment and materials on or near the site will be entirely that of the Contractor and that no claim shall be made against the Government by reason of any act of trespassers. It shall be further understood that should any occasion arise necessitating access by the Government to the sites occupied by these stored materials and equipment, the Contractor owning or responsible for the stored materials or equipment shall immediately remove. No materials or equipment may be placed upon the property of the Government until the CO has agreed to the location to be used for storage.

#### 1.09 PROTECTION OF SITE

- A. Except as otherwise provided herein, the Contractor shall take all necessary precautions and provide all material and equipment to protect, shore, brace, support and maintain all public property in the proximity of the construction work. The Contractor shall remove from the site all unused materials.
- B. Contractor shall retain and protect all adjacent improvements not called for removal on the Drawings. Restore damaged items to pre-construction condition. The Contractor is responsible to protect from damage any structures near the trench excavation. Unless otherwise noted, Contractor shall retain and protect (at no additional cost) existing utility poles, culverts, signs, water wells, trees, fences, irrigation ditches, landscaping, and other facilities, features or improvements not specified for removal and outside of the limit of construction. Damage to existing improvements shall be repaired within 10 calendar days of the work in the immediate area. Temporary restoration may be requested by the Government in critical situations.
- C. All surfacing, landscaping, driveways, walks, buildings, utility poles and boxes, guy wires, fences and other surface or subsurface structures removed or damaged by construction operations, except for trees and shrubs in the public right-of-way, shall be restored to their original condition as determined and accepted by the CO. All replacements shall be made with new materials. All fences may not be shown on the project drawings.

#### 1.10 TEMPORARY FACILITIES

- A. The Contractor shall be responsible for supplying his own office, toilet and storage facilities at the site. The Contractor shall also be responsible for providing potable water and water needed for construction and testing purposes. All expenses for connection of electrical service, telephone or other temporary services shall be the responsibility of the Contractor. The Contractor shall remove all traces of these facilities prior to completion of the project.

**1.11 SITE ACCESS**

- A. The Contractor shall be responsible for determining the adequacy of all roads and bridges used in moving equipment and materials to the construction site. The Contractor shall provide Traffic control when excavation crosses, driveways or other transportation facilities, and shall provide barriers to foot traffic at trenching locations.

**1.12 SAFETY**

- A. The Contractor shall be solely responsible for all project personnel on the jobsite, government employees, and members of the public needing to travel through the jobsite. No acts or comments by the CO shall be interpreted as a transfer of responsibility for safety.
  - 1. Contractor shall be responsible to fence off trenching and backfilling activity to prevent accidental walking or falling into trench work zone by the public or employees during the entire time the Trenches are open.
  - 2. Contractor is responsible to secure the site.

**PART 2      PRODUCTS (Not Used)**

**PART 3      EXECUTION (Not Used)**

END OF SECTION 01010

**DIVISION 1 – GENERAL REQUIREMENTS**

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**PART 1      GENERAL**

**1.01   SECTION INCLUDES**

- A.     Requirements for coordinating and sequencing the work under the Contract, and requirements regarding existing site conditions.
- B.     Requirements for cutting and patching of new and existing work.

**1.02   JOBSITE COORDINATION**

- A.     Coordination with Other Work: The project shall be coordinated with the following work and activities:
  - 1.     Public and agency use of the Pierce Work Center Site.
  - 2.     Continuous operation and Pierce Work Center Site.
  - 3.     Contractor shall maintain traffic on Canal Street at all times. Proper signage indicating construction in progress shall be provided by the contractor at bunkhouse driveway entrance.
- B.     Government may perform additional work related to this project or Government may let other direct contracts which may contain General Requirements similar to these. Contractor shall afford the other Contractors who are parties to such direct contracts, (or Government if they are performing the additional work), reasonable opportunity for the introduction and storage of materials and equipment and execution of work, and shall properly coordinate his work with theirs.
- C.     If any part of Contractor's work depends on proper execution or results from the work of any such other Contractor (or Government), Contractor shall inspect and promptly report to CO in writing any defect or deficiencies in such work that renders it unsuitable for such proper execution or results. His failure to so report shall constitute an acceptance of the other work as fit and proper for the execution of his work except as to defects and deficiencies that may appear in the other work after the execution of his work.
- D.     Contractor shall do all cutting, fitting, and patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of the CO and of the other Contractors whose work will be affected.



**DIVISION 1 – GENERAL REQUIREMENTS**

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- E. If the performance of additional work by other Contractors or Government is not noted in the Contract Documents prior to the execution of the Contract, written notice thereof shall be given to Contractor prior to starting any such additional work. If Contractor believes that the performance of such additional work by Government or others involved results in additional expense or requires an extension of the contract time, Contractor may make a claim therefore.
- F. Contractor shall be responsible for all areas of the site and all Subcontractors in performance of the work. He shall exert full control over the actions of all employees and other persons with respect to the use and preservation of property and existing facilities, except such controls as may be specifically reserved to Government or others.
- G. Contractor and all Subcontractors shall cooperate in the coordination of their separate activities in a manner that will provide the least interference with the Government's operations and utility companies working in the area, and in the interfacing and connection of the separate elements of the overall project work. If any difficulty or dispute should arise in the accomplishment of the above, the problem shall be brought immediately to the attention of the Government. All Contractors working on this site are subject to this requirement for cooperation, and all shall abide by the CO's decision in resolving project coordination problems without additional cost to the Government.
- H. The Contractor shall have a designated job superintendent on site at all times during construction operations. The superintendent shall be capable of project level decisions, manpower authorization and equipment utilization.

**1.03 SUBMITTALS**

- A. Contractor shall submit the following information as applicable to coordination activities:
  - 1. Subsurface information and utilities, Contractor is responsible to utilize the services of Dig line and protect subsurface improvements as well as surface improvements.
  - 2. Field Relocation: Clearly show proposed relocations of new or existing facilities, or related work affected by the relocation, on a clean copy of the Contract Drawings and submitted prior to performing the relocation.

**DIVISION 1 – GENERAL REQUIREMENTS**

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3. Easements: Copy of the easements and other agreements obtained from utilities as required to carry out the work. Note that this only applies to easements executed by the Contractor.
4. Connecting Work: Proposed methods of connecting new work to existing facilities, where not shown or specified.
5. Cutting and Patching:
  - a. Written notice requesting consent to perform cutting that may affect structural safety or normal functioning of existing utilities.
  - b. Recommendations indicating changed conditions, alternative materials or methods, time when uncovered work may be observed, and other information necessary to evaluate substitutions when work conditions necessitate change of materials or methods.

**1.04 SITE CONDITIONS**

**A. Information on Site Conditions:**

1. General: Information obtained by the Government regarding site conditions, topography, subsurface information, existing construction of site facilities as applicable, and similar data is included in the Contract Documents or will be available for inspection at the office of the Government upon request. Such information is offered as supplementary information only. The Government assumes no responsibility for its accuracy or completeness or for the Contractor's interpretation of such information.
2. Subsurface Information:
  - a. A subsurface investigation at the site has not been performed.
  - b. Irrigation lines were not located, but are shown based on available information. Contractor is cautioned that irrigation lines could be present in locations not shown.

**DIVISION 1 – GENERAL REQUIREMENTS**

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a. Existing Utilities:

1. Location:

- a. Known utilities and facilities adjacent to or within the work area are shown on the Drawings. The locations shown are taken from existing records and the best information available from existing utility plans; however, it is expected that there may be some discrepancies and omissions in the locations and quantities shown. Contractor's request for additional compensation or Contract time resulting from encountering utilities not shown will not be considered as this work is considered incidental to the overall project work. The Contractor is solely responsible for locating and avoiding conflicts with all existing utilities.
- b. Contractor shall verify locations of utilities and facilities shown on the Drawings and to determine the presence of those not shown. Immediate and adjacent areas where excavations are to be made shall be thoroughly checked by visual examination for indications of underground facilities and also checked with electronic metal and pipe detection equipment. Where there is reasonable cause to verify the presence or absence of an underground facility, make exploratory excavations prior to proceeding with major excavation in the area. Where information on buried facilities is required to verify their nature, shape, configuration, dimensions, materials, or other properties, make exploratory excavations as required to ensure avoidance of conflicts and as acceptable to the CO.
- c. The Contractor is advised that there is a DigLine utility locate number in use for utility location requests within the State of Idaho for buried gas, electrical and telecommunication lines. The DigLine number is 1-800-324-1585 or 811. Also see the DigLine website at <http://www.digline.com/>.
- d. Utilities located within the construction area or trenches shall be protected in-place. Any abandoned utility shall be confirmed abandoned by the CO and removed from the construction area by the Contractor.
- e. Contractor shall be aware that irrigation lines may exist on the proposed project property. Any repairs to existing irrigation lines shall be considered incidental to the work and is responsibility of the Contractor.

**DIVISION 1 – GENERAL REQUIREMENTS**

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2. Contractor's Responsibilities:
  - a. Notify utility offices that are affected by construction operations at least 48 hours in advance. Under no circumstances expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, locate, expose, and provide temporary support for the utilities.
  - b. Notify affected users, the CO, and emergency services of planned service outages a minimum of 48 hours in advance of planned outage. Provide details such as phone number of superintendent, date and times for outage.
  - c. Protect all utility poles from damage. If interfering utility poles will be encountered, notify the utility company at least 48 hours in advance of construction operations to permit necessary arrangements to protect or relocate the poles.
  - d. Contractor shall be solely and directly responsible to owner and operator of such properties for damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of injuries or damage that may result from construction operations under this Contract.
  - e. Neither Government nor its officers or agency shall be responsible to Contractor for damages as a result of Contractor's failure to protect utilities encountered in the work.
  - f. Maintain a legible log of all utility crossings showing type, depth, date of crossing. Location referenced to project stationing, and a notation if the utility was damaged, type of repair, and who made the repair. The Contractor will work with CO to maintain an accurate and complete log that will become part of the as-constructed contract drawings.

**DIVISION 1 – GENERAL REQUIREMENTS**

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C. Interfering Structures:

1. Take necessary precautions to prevent damage to existing structures whether on the surface, above ground or underground.
2. Protect existing structures from damage, whether or not they lie within limits of easements obtained by the Government. Where existing fences, gates, sheds, buildings or other structures must be removed to properly carry out the work, or are damaged during work, restore them to original condition and to the satisfaction of property owner.
3. Contractor may remove and replace in equal or better than original condition, small structures such as fences, or signposts that interfere with Contractor's operations. Contractor shall obtain permission from the small structure owner prior to removal and replacement.

D. Monuments and Markers:

1. Preserve and protect survey monuments and markers throughout construction. If damage occurs or removal becomes necessary, notify CO.
2. Preserve private and public monuments that are found. If monument must be removed, it shall be replaced at its original location using a registered land surveyor. Notify CO when monuments are encountered. If government monuments are encountered, reference the monument for future replacement and provide 10-day advance notification to CO who will notify the proper authority.

E. Connecting to Existing Facilities: Unless otherwise shown or specified, determine methods of connecting new work to existing facilities, and obtain CO's review and acceptance of connections.

1. Determine location, elevation, nature, materials, dimensions, and configurations of existing facilities where necessary for connecting new work.
2. Inspect existing record drawings and shop drawings, conduct exploratory excavations and field inspections, and conduct similar activities as needed.

**DIVISION 1 – GENERAL REQUIREMENTS**

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F. Erosion and Dust Control On-Site:

1. The Contractor shall be responsible for reducing soil erosion and dust due to wind or water to a level meeting federal, state, and local regulations at the construction site. Control measures that may be required include, but may not be necessarily limited to, the following:
  - a. Suspension of excavation during high wind or rain.
  - b. Minimization of land exposure in area and time.
  - c. Covering erodible areas as quickly as possible with gravel or by compaction.
  - d. Stabilizing construction site soils.
  - e. Controlling dust during construction by use of water spray.
  - f. On-site burning of waste materials is not allowed.

1.05 PROJECT MEETING OR REPORTS

- A. Pre-construction Conference: A pre-construction conference will be scheduled after the Notice of Award.
- B. Progress Meetings & Progress Reports: A monthly progress report will be submitted at a monthly meeting. It will include an updated schedule by the Contractor prior to the submission of the application for progress payment. If the work falls behind the schedule, Contractor shall submit progress reports at such intervals as the CO may request. Follow up meeting may be required. Each progress report shall include sufficient narrative to describe current and anticipated delaying factors, their effect on the construction schedule, and proposed corrective actions. Any work reported complete, but which is not readily apparent to the CO must be substantiated with satisfactory evidence.
- C. Purpose of Meetings and Reports: The purpose of the meetings or reports will be to review the progress of work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems that may develop. At a minimum, each meeting must be attended by the Contractor's project manager or field superintendent.

**DIVISION 1 – GENERAL REQUIREMENTS**

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**1.06 SCHEDULING OF WORK**

**A. Modifications to Existing Facilities:**

1. Continuous operation of the existing sanitary sewer facilities is of critical importance. Where existing facilities are to be modified during the course of work, obtain CO's and review and acceptance of submittals for temporary shutdown and bypass pumping, demolition, modification, corrections between new and existing work, and other related work.
2. Connections to existing service or utilities, or other work that requires the temporary shutdown of any existing operations of utilities shall be planned in detail with appropriate scheduling of the work and coordinated with the CO. The schedule for shutdown or restart shall be given by written advance notice at least 15 days prior to the scheduled work in order that the CO may witness the shutdown, tie-in, and startup.
3. All materials and equipment, including emergency equipment, necessary to expedite tie-ins shall be on hand prior to the shutdown of existing services or utilities.
4. Unless otherwise specified or indicated, Contractor shall make all necessary connections to existing facilities including manholes, structures, pipelines, and utilities. In each case, Contractor shall obtain permission from the CO or the owning utility prior to undertaking connections. Contractors shall protect facilities against deleterious substances and damage.
5. Connections to existing facilities that are in service shall be thoroughly planned in advance, and all required equipment, materials, and labor shall be on hand at the time of undertaking the connections. All equipment, materials, and labor that the Contractor plans to have available shall be coordinated with the CO in order to ensure the work is done in the minimum amount of time.

**B. Time of Work:**

1. No work shall be done between 7:00 p.m. and 7:00 a.m., nor on Saturdays, Sundays or legal holidays, without the written permission of the CO. However, maintenance or emergency work during these hours may be done without prior permission.
2. The CO will provide for periodic on site observation by a USFS representative whenever pipe or other items of work are being buried or otherwise concealed.

**DIVISION 1 – GENERAL REQUIREMENTS**

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**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION**

**3.01 CUTTING AND PATCHING**

**A. General:**

1. Execute cutting (including excavating), fitting, or patching of work, required to:
  - a. Make the several parts fit properly.
  - b. Uncover work to provide for installation of specified work.
  - c. Remove and replace defective work or work not conforming to requirements of Contract Documents.
  - d. Install specified work in existing construction.
2. Perform the following upon written instruction of CO:
  - a. Uncover work to provide for CO's observation of covered work.
  - b. Remove work to provide for alteration of existing work.
3. Contractor shall not, without written consent of CO:
  - a. Cut or alter work of another Contractor.
  - b. Cut structural or reinforcing steel.
  - c. Endanger existing or new structures or facilities.
  - d. Shut down or disrupt existing operations.
4. Materials for replacement of work removed shall comply with applicable sections of these Specifications for corresponding type of work to be done.
5. Provide all tools and equipment required to accomplish cutting and patching.



**DIVISION 1 – GENERAL REQUIREMENTS**

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B. Inspection and Preparation:

1. Inspect existing conditions of work, including elements subject to movement or damage during cutting, patching, excavating, and backfilling.
2. After uncovering work, inspect conditions affecting installation of new products.
3. Prior to cutting, provide safety protection.

C. Procedures:

1. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances and finishes.
2. Execute plant piping, general piping and fittings as specified in Division 22 – PLUMBING.
3. Restore work that has been cut or removed; install new products and provide completed work in accordance with specified requirements.
4. Restore structures and surfaces damaged that are to remain in the completed work including piping, conduit, and other utilities.
5. Make restorations with new materials and appropriate methods as specified for new work of similar nature; if not specified, use best recommended practice of manufacturer or appropriate trade association.
6. Restore damaged work so there is a secure and intimate bond or fastening between new and old work. Finish restored surfaces to such planes, shapes, and textures that no transition between new and old work is evident in finished surfaces.

**3.02 TELEPHONE AND/OR ELECTRICAL CROSSINGS**

- A. It is the responsibility of the Contractor to review buried and overhead utility conflicts that may affect the Work. All costs associated with the construction and these utilities shall be the responsibility of the Contractor. All work near buried telephone and/or electrical cables shall be coordinated with the utility provider. It is the Contractor's responsibility to field review the magnitude of any construction conflict (crossings or pole support) created by the overhead utility conflicts. Contractor shall coordinate with the utility companies to ensure pole relocations are completed so as not to delay the Work. Power poles that are exposed to trenching will be

**DIVISION 1 – GENERAL REQUIREMENTS**

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supported by the Contractor at the Contractor's expense. The utility company must accept the Contractor's equipment and methods of stabilizing the power poles. The utility company must be contacted a minimum of 48 hours prior to stabilizing a power pole.

END OF SECTION 01040

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. This section provides bid item descriptions and specifies the method of measurement and basis of payment for work covered by the Contract Documents.

**1.02 GENERAL**

- A. The bid price for each item of the Contract shall cover all work shown on the Drawings and required by the specifications and other Contract Documents. All costs in connection with the work, including furnishing all materials, equipment, supplies and appurtenances; providing all required construction support plants, equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in the unit and/or lump sum prices bid in the Bid Form Schedule. The amounts shown on the Bid Form Schedule shall be the contract price.
- B. No item that is required by the Contract Documents for the proper and successful completion of the work will be paid for outside of or in addition to the prices submitted in the bid. All work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

**1.03 ESTIMATED QUANTITIES**

- A. All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used (1) only as a basis for estimating the probable cost of the work and (2) for the purpose of comparing the bids submitted for the work.
- B. The actual amount of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished to the pay-lines defined in this section. The Contractor agrees that he will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amount of work actually performed and materials actually furnished and the estimated amounts herein except as allowed in the Contract Conditions.

**1.04 SURVEYS AND MEASUREMENTS**

- A. All quantity measurements shall be the responsibility of the Contractor and will be checked by the CO. When considered necessary by CO, Contractor shall demonstrate how quantity measurements were determined.

#### 1.05 METHOD OF MEASUREMENT

- A. No measurement of lump sum bid items contained in this Contract will be made.
- B. Measurement of unit price items contained in the Contract will be made in the field by the Contractor and will be verified by the CO.

#### 1.06 BASIS OF PAYMENT

- A. The bid for the construction work in this Contract is a Actual Quantity bid for all construction activities and materials required to complete the work described in the Contract Documents. Payment for the items shall include all labor, materials, equipment, and incidentals required to complete the item. The work included in each item is more completely described below.

- B. Lump sum bid items will be paid on a periodic basis in an amount equal to the percentage of the total work deemed complete by the CO.

<u>Item</u>	<u>Description</u>
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- |     |   |
|-----|---|
| 101 | <u>Mobilization.</u> Item includes moving equipment and other necessary work items to and from the project site. Payment will be made at the lump sum contract unit price for this item. Contractor may request payment for performance and payment bonds. The amount of the premium, including coinsurance and reinsurance agreements, will be paid upon receipt of evidence of full payment to the surety. When separate payment for bonding cost is made, the bonding cost will be subtracted from the total contract amount for this pay item and the balance paid in accordance with the progress payment schedule outlined below: |
|-----|---|

- (a) When 5 percent or more of the original contract amount is earned from other pay items, 50 percent of the amount for mobilization, or 5 percent of the original contract amount, whichever is less, will be paid.
- (b) When 10 percent or more of the original contract amount is earned from other pay items, 100 percent of the amount for mobilization, or 10 percent of the original contract amount, whichever is less will be paid.
- (c) Upon completion of all work on the project, any unpaid amount for mobilization will be paid.
- (d) Traffic Control for this project is primarily Signage and will be made part of the mobilization bid item, it will all labor, equipment, and materials necessary for the control of traffic during construction

and for submittal of a Traffic Control Plan per Section 01570. This item includes furnish and install of all signs, barricades, cones, and other traffic control devices.

1. Item includes all labor, equipment and materials necessary for erosion and sediment control per Section 01560.

- 102 Clearing and Grubbing. Payment will be made at the contract unit price per acre of area cleared and grubbed. Item includes all labor, equipment, and materials necessary for brush, tree, stump, and root removal, stripping and stockpiling of topsoil, and other clearing necessary for replacement of the Sewer line and repair of crushed gravel roadway.
- 103 Sewer Service 4". Payment will be made at the contract unit price per linear foot for installed and accepted 4-inch sewer service. Item includes all labor equipment and materials necessary to furnish and install 4-inch sewer service excavation, trench dewatering, soil stabilization, Type 1 pipe bedding material, backfill, compaction, pipe locating wire, marker tape and pipe joining and installation to up to 2 4" wye influent lines. Measurement will be made through appurtenances. . Trench boxes and sediment, moisture, and erosion control for this trench and the excavation is incidental to this item.
- 104 Crushed Gravel Roadway. Payment will be at the contract unit price per square yard of crushed gravel, in-place. Item includes all labor, equipment, and materials necessary for subgrade preparation, sub base course preparation, finished grading, road surface, road widening, gravel placement, and compaction necessary to complete the work.
- 105 Landscaping. Raking trench line and reseeding trenched area with a Kentucky blue grass or an approved lawn mix.

Optional

- 106 Sewer Service 6". Payment will be made at the contract unit price per linear foot for installed and accepted 6-inch sewer service. Item includes all labor equipment and materials necessary to furnish and install 6-inch sewer service excavation, trench dewatering, soil stabilization, Type 1 pipe bedding material, backfill, compaction, pipe locating wire, marker tape and pipe joining and installation to up to 2 4"-6" wye influent lines. Measurement will be made through appurtenances. Trench boxes and sediment, moisture, and erosion control for this trench and the excavation is incidental to this item.

- 106 Landscape Surface Restoration. Payment will be made at the lump sum contract price for all cleaning and surface restoration, including gravel surfacing, seeding, patching, as applicable, to restore the site to existing or better conditions after completion of construction as accepted by the Government. All Lawn areas will be reseeded with a Kentucky blue grass seed mix or an approved lawn mix.

Note: All cleanup, electricity, temporary access, construction water, restoration of surfaces beyond pay limits or restoration at areas outside the construction zone damaged by this construction and required to be restored, discharge and other permits not identified as a bid item, and any other items not shown as a pay item are considered subsidiary to the pay items shown and as such receive no direct payment.

**PART 2      PRODUCTS (Not Used)**

**PART 3      EXECUTION (Not Used)**

**END OF SECTION 01150**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Product data.
- D. Functional Tests

**1.02 RELATED SECTIONS**

- A. Section 01400 - QUALITY CONTROL: Manufacturers' field services and reports.
- B. Section 01700 - CONTRACT CLOSEOUT: Contract closeout submittals.

**1.03 SUBMITTAL PROCEDURES**

- A. The Contractor shall submit to Government a submittal schedule with his proposed submittal dates for all equipment and materials for which a submittal is required. The completed schedule shall be submitted to Government by the Contractor within ten (10) working days after the date of the Notice of Award.
- B. Procedures and requirements for submittals are specified herein. CO reserves the right to modify the procedures and requirements for submittals, as necessary to accomplish the specific purpose of each submittal. Direct all inquiries to CO regarding the procedure, purpose, or extent of any submittal.
- C. Before submission of each submittal, determine and verify quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto; review and coordinate each submittal with other submittals, requirements of the work, and Contract Documents.
- D. Review of first submittal and second resubmittal will be performed by Government at no cost to the Contractor. Subsequent submittals will be reviewed by Government; however, Government will document the work-hours and other expenses required for such review(s) and the Contractor shall reimburse

**1. SPECIFIC SUBMITTAL PROCEDURES**

1. The Contractor shall submit an electronic submittal to Government for their approval.
  - a. Provide general submittal information with each PDF submittal, including project, subject, submittal number, submittal date, supplier, and keywords.
  - b. Submittals shall be an electronic file in Adobe Acrobat Portable Document File (PDF) format created directly to PDF (preferred) or via scans of the hard copy. Scans must be legible.
  - c. Electronic files that contain more than 10 pages in PDF format shall contain internal bookmarks linked from an index page to major sections of the document.
  - d. PDF files shall be set up to print legibly at 8.5-inch by 11-inch or 11-inch by 17-inch. No other paper sizes will be accepted.
  - e. New electronic files shall be submitted for each resubmittal, i.e., resubmit entire submittal when individual pages or portions thereof are modified.
2. Sequentially number the transmittal forms. Resubmittals to have original number with an alphabetic suffix.
3. Provide space for Contractor and Government review stamps.
4. Revise and resubmit submittals as required, identify all changes made since previous submittal.
5. Submittals will be acted upon by Government and transmitted to Contractor not later than 20 regular working days after receipt by Government. Shop drawings shall be submitted in sufficient time to allow Government not less than 20 regular working days for examining the shop drawings.

**1.04 CONSTRUCTION PROGRESS SCHEDULES**

- A. Submit initial progress schedule in duplicate within 15 days after date of Government's Notice of Award for Government 's review.
- B. Submit revised schedules with each Application for Payment, identifying changes since previous version.



**1.05 PRODUCT DATA**

- A. Within 7 days after date of Government's Notice of Award, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. Should the Contractor elect to propose use of a substitute equipment or material, which is not listed in the specification as an "equal" and cannot be considered an equal because it does not meet the specifications, Contractor must submit adequate documentation allowing Government to determine the equivalency of the material. Contractor shall pay Government for costs incurred in reviewing the proposed substitution.

**1.06 Functional Test Certification**

- A. Where a certification of functional testing is specified for certain facilities or equipment, Contractor (as applicable to the facilities or equipment furnished) shall state in writing that:
  - 1. Necessary hydraulic structures, piping systems, valves, and similar facilities have been successfully tested.
  - 2. Necessary equipment systems and subsystems have been checked for proper installation, started, and successfully tested to indicate they are operational.
  - 3. Adjustments and calibrations have been made.
  - 4. The systems and subsystems are capable of performing their intended functions.
  - 5. The facilities are ready for performance testing, or for startup and intended operation, as applicable.
- B. Performance Test Reports: Prepare and submit performance test reports where specified for equipment and systems.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION (Not Used)**

END OF SECTION 01300

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Quality Assurance and Quality Control of installation.
- B. References.
- C. Testing and Special Inspections.

**1.02 GENERAL**

- A. Provide all testing and Special Inspections in accordance with the Construction Documents.
- B. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- C. Comply fully with manufacturers' instructions, including each step in installation or construction sequence.
- D. Should the manufacturers' instructions conflict with the Construction Documents, request a clarification from the CO before proceeding.
- E. Comply with all specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- F. Perform work by person qualified to produce workmanship of specified quality.

**1.04 TESTING AND SPECIAL INSPECTIONS****A. General:**

1. Testing and inspections shall be provided as required by the Drawings and Specifications. The following summarizes testing and inspection requirements but any special provisions, individual materials and equipment specifications, and the Drawings must be consulted for complete and detailed testing and inspection requirements.

**B. Government Provided Testing and Special Inspections for Quality Assurance:**

1. The Contractor shall be responsible for coordinating with the CO and scheduling the contractor's testing and Special Inspections to ensure that inspections are completed as required by the Drawings and Specifications.
2. Assure that Government and CO and the quality assurance agency have access to all work areas at all times work is in progress.

**C. Contractor Provided Testing for Quality Control:**

1. The Contractor shall notify the CO when the Work is ready for quality control testing to allow CO's representative to witness the testing.
2. With the exception of the explicitly specified CO provided Special Inspections and testing, the Contractor shall be responsible for and pay for all testing required to control contractor production and construction processes and as required by the Drawings and Specifications.
3. All Contractor testing, except leakage testing and equipment functional testing, shall be performed by an independent, certified testing laboratory paid for by the Contractor and approved by the Government and CO.
4. All test results shall be provided to the CO and the Contractor shall provide written authorization to the testing laboratory to release test results to the CO. A copy of this authorization shall be submitted to the CO prior to construction startup.

4. Unless otherwise stated in the Specifications, the Contractor shall select the quality control testing locations. The CO reserves the right to direct the Contractor as to when and where tests are taken (i.e. select concrete truck(s), areas of backfill for density, etc.). However, this does not relieve the Contractor from the requirement of giving reasonable notice that Work is ready for inspection.
  5. The Contractor shall be responsible for all labor and materials associated with the filling, flushing, and hydrostatic and leakage testing of all pipelines, structures, tanks, and other appurtenances. Hydrostatic and leakage testing shall be conducted in the presence of the CO.
- D. The CO reserves the right to conduct additional testing to assure compliance with the specifications.
  - E. Testing conducted by the government shall not relieve the Contractor from his obligation to perform the work in accordance with the Technical Specifications.
  - F. All laboratory and material test results shall be submitted to the Government for review and approval prior incorporation or covering of the tested material or work.
  - G. Testing and Work results not meeting requirements or found to be defective shall be re-tested, repaired, or replaced at the Contractor's expense.

**PART 2 PRODUCTS (Not Used)****PART 3 EXECUTION****3.01 MINIMUM CONTRACTOR PROVIDED TESTING REQUIREMENTS**

- A. Testing provided by the Contractor shall include but not be limited to:
  1. Materials and Compaction Testing for Earthwork for Structures: As specified in Section 02220, EARTHWORK.
  2. Materials and Compaction Testing for Trench Construction: As specified in Section 02221, TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES.
  3. Leakage/Manhole Leakage, Deflection Testing, all new pipe and sewer manholes as specified in 02730, SANITARY SEWER COLLECTION SYSTEM.

END OF SECTION 01400

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Temporary utilities required during construction.
- B. Temporary construction facilities, including access roads, field offices, and storage facilities.
- C. Requirements for security and protection of facilities and property.
- D. Requirements for traffic regulation and access to the work.

**1.02 RELATED WORK SPECIFIED UNDER OTHER SECTIONS**

- A. See Section 01560, ENVIRONMENTAL QUALITY CONTROL for temporary controls for protection of the environment during construction.

**1.03 MOBILIZATION**

- A. Staging Areas:
  - 1. Area available for staging immediately at the project site may be limited. Coordinate staging area with the Government prior to mobilization.
- B. Notify Government of obstructions not shown or not readily apparent by visual inspection of the staging area. If such obstructions adversely affect Contractor's operations, proper adjustment to Contract will be considered. Do not remove obstructions without Government's prior consent.

**1.04 TEMPORARY UTILITIES**

- A. Costs After Substantial Completion: Upon acceptance of the work or a portion of the work defined and certified as substantially complete by CO, and Government commences full-time successful operation of the facility or portion thereof, the Government will bear the cost for utilities used for Government's operation.

## **DIVISION 1 - GENERAL REQUIREMENTS**

## **SECTION 01500 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

### **B. Electric Power:**

1. Electric power is available at or near the project site. Determine the type and amount available and make arrangements for obtaining temporary electric power service, during the Contract period, except as specifically provided for utilities used by the Government on portions of the work designated in writing by the CO as substantially complete.

### **C. Water for Contractor's Use:**

1. The Contractor shall provide an adequate supply of water of a quality suitable for all domestic and construction purposes.
2. The Contractor shall not make connection to, or draw water from any fire hydrant or pipeline without first obtaining permission of the authority having jurisdiction over the use of said fire hydrant or pipeline and from the agency owning the affected water system. For each such connection made, the Contractor shall first attach to the fire hydrant or pipeline a back flow prevention valve.
3. The site shall be graded to drain. Excavations shall be maintained free of water. Provide, maintain, and operate groundwater pumping equipment. Contractor shall make provisions for disposal of groundwater compatible with adjacent property owners and federal, state and local agencies.
4. Before final acceptance of the work on the project, all temporary connections and piping installed by the Contractor shall be entirely removed and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the CO and to the agency owning the affected utility.
5. Fire Protection: All parts of the work shall be adequately protected against damage by fire. Contractor shall not block access to fire hydrants and shall coordinate with the local fire department during road closures. A responsible person shall be designated and instructed in the operation of such fire apparatus so as to prevent or minimize the hazard of fire. The Contractor's fire protection program shall conform to the requirements of Subpart F of the OSHA Standards for Construction.

**D. Sewage:**

1. Provide and maintain sanitary facilities for Contractor's employees and subcontractors' employees that comply with regulations of local and state health departments. Provide chemical toilets of suitable types and maintain them in a sanitary condition at all times, conforming to code requirements and acceptable to the health authorities. They shall be watertight construction so that no contamination of the area can result from their use. Make arrangements for frequent emptying of toilets. Upon completion of the work, remove toilets and restore area to original condition. Location of portable toilets shall be approved by Government and adjacent property owners prior to placement.

**PART 2 PRODUCTS (Not Used)****PART 3 EXECUTION****3.01 TEMPORARY CONSTRUCTION****A. Access Roads and Parking:**

1. Use area designated as staging area on Drawings or other area as designated by the Government for parking of Contractor's employees' vehicles.

**B. Fencing and Barricades:**

1. Security Fence: If considered necessary by Contractor, erect a temporary security fence with gates and locks around the construction storage site, located and as approved by Government.
2. Barricades: Provide barricades as necessary to prevent unauthorized entry to construction areas, both inside and outside of fenced areas. Also provide barricades to protect existing facilities and adjacent properties from potential damage. Locate barriers to enable access by facility operators and property owners.

**3.02 SAFETY AND PROTECTION****A. Examination of Existing Facilities:**

1. After the Contract is awarded, but before the commencement of work, at the Contractor's request, Contractor and CO shall make a thorough examination of all existing buildings, structures, and other facilities in the vicinity of the work and for which permission for entry has been granted, as applicable, which might be damaged by construction operations.
2. Records in triplicate of all observations shall be prepared by the Contractor and each copy of every document shall be signed by the authorized representative of the Government and of the Contractor.
3. Photographs, as requested by the Government, shall be made by the Contractor and signed in the manner specified above. One signed copy of every document and photograph will be kept on file in the office of the CO.
4. These records and photographs are intended for use as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of the Contractor's operations, and are for the protection of the adjacent property owners, the Contractor, and the Government.

**B. Safety Requirements:**

1. Contractor shall do whatever work is necessary for safety and be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees) and property during the Contract period. This requirement shall apply continuously and not be limited to normal working hours.
2. Safety provisions shall conform to Federal and State Departments of Labor Occupational Safety and Health Act (OSHA), and other applicable federal state, county, and local laws, ordinances, codes, requirements set forth herein, and regulations that may be specified in other parts of these Construction Documents. Where these are in conflict, the more stringent requirement shall be followed.



## **DIVISION 1 - GENERAL REQUIREMENTS**

## **SECTION 01500 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

Contractor shall become thoroughly familiar with governing safety provisions and shall comply with the obligations set forth therein.

3. Contractor shall develop and maintain for the duration of the Contract, a safety program that will effectively incorporate and implement required safety provisions. Contractor shall appoint a qualified employee who is authorized to enforce compliance with the safety program.
4. Contractor shall do all work necessary to protect the general public from hazards, including, but not limited to, surface irregularities or un-ramped grade changes in pedestrian sidewalk or walkway, and trenches or excavations in roadways and alleys.
5. Barricades, lanterns, and proper signs shall be furnished in sufficient amount to safeguard the public and the work.
6. As part of safety program, Contractor shall maintain at its office or other well-known place at the jobsite, safety equipment applicable to the work as prescribed by the governing safety authorities, and articles necessary for giving first-aid to the injured. Establish procedures for the immediate removal to a hospital or a doctor's care of any person who may be injured on the jobsite.
7. Construct and maintain satisfactory and substantial temporary fencing, solid fencing, railing, barricades or steel plates, as applicable, at all openings, obstructions, or other hazards in highways, roads, streets, alleys, sidewalks, floors, roofs, and walkways. Such barriers shall have adequate warning lights as necessary or required for safety.
8. If death or serious injuries or damages are caused, the accident shall be reported immediately by telephone or messenger to the Government. In addition, Contractor shall promptly report in writing all accidents whatsoever arising out of, or in connection with, the performance of the work whether on or adjacent to the site, giving full details and statements of witnesses.
9. If claim is made by anyone against Contractor or any subcontractor on account of accident, Contractor shall promptly report the facts in writing, giving full details of the claim.
10. Any Employee entering manholes must be trained in the hazards associated with Confined Space Entry. All personnel (including subcontractors) entering a confined space must be certified for Confined Space Entry.

**C. Traffic Safety and Access:**

1. Comply with rules and regulations of the federal, state and county authorities regarding closing or restricting the use of public streets, roads, alleys, or highways. No public or private road shall be closed, except by written permission of the proper authority. Assure the least possible obstruction to traffic and normal commercial pursuits. The Manual on Uniform Traffic Control Devices (MUTCD) requirements shall be followed by the Contractor for use of barricades, signs, and similar items when detours, road closures, or obstructions are necessary.

**CI. Protection of Work and Property:****1. General:**

- a. Contractor shall employ such means and methods necessary to adequately protect public property and property of the Government against damage. In the event of damage to such property, immediately restore the property to a condition equal to its original condition and to the satisfaction of the CO, and bear all costs therefore.
- b. Protect stored materials and other items located adjacent to the proposed work. Notify property owners affected by the construction at least 48 hours in advance of beginning of construction in different areas.

**2. Finished Construction:**

- a. Contractor shall assume the responsibility for protection of finished construction and shall repair and restore any and all damage to finished work to its original or better condition.
- b. At such time temporary facilities and utilities are no longer required for the work, notify CO of intent and schedule for their removal. Remove temporary facilities and utilities from the site as Contractor's property and leave the site in such condition as specified, as shown on the Drawings or as directed by the Government.
- c. In unfinished areas, leave the site evenly graded, seeded, or planted as necessary, in a condition that will restore original drainage, and with an appearance equal to or better than original.

**DIVISION 1 - GENERAL REQUIREMENTS**

**3.03 GENERAL CLEANING DURING CONSTRUCTION**

- A. During execution of work, clean site and public properties and dispose of waste materials, debris, and rubbish to assure that buildings, grounds, roads, and public properties are maintained free from accumulations of waste materials. See Section 01560, ENVIRONMENTAL QUALITY CONTROL, for waste material disposal requirements.
- B. Provide approved containers for collection and disposal of waste material, debris, and rubbish.
- C. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from exposed and partially exposed surfaces.
- D. Repair, patch, and touch up marred surfaces to specified finish and to match adjacent surfaces.
- E. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
- F. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

END OF SECTION 01500

**DIVISION 1 - GENERAL REQUIREMENTS**

**PART 1 GENERAL**

**1.01 WORK INCLUDED**

- A. The work shall consist of installing measures or performing work to control and protect the environmental quality of the project site and to minimize the pollution of the water and air during the construction operations in accordance with these specifications.

**1.02 RELATED WORK SPECIFIED UNDER OTHER SECTIONS**

- A. Section 01400 - QUALITY CONTROL.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 GENERAL PROVISIONS**

- A. The Contractor in executing the work shall maintain affected areas within and outside project boundaries free from environmental pollution that would be in violation of federal, state, or local regulations.
- B. Do not impair operation of existing systems. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes and other debris from entering all wastewater pump stations, treatment processes, or other structures. Maintain original site drainage wherever possible.
- C. Permits and authorizations from federal, state, and local agencies are addressed herein. The Contractor shall abide by the provisions of all applicable permits and authorizations.

**3.02 EROSION AND SEDIMENT CONTROL MEASURES AND WORKS**

- A. The erosion and sediment control work and measures shall include but not be limited to the following and as shown on the Contract Documents.
  - 1. The Contractor shall submit a written erosion control plan to the Government 15 days prior to start of construction. The plan shall address, but not be limited to, erosion from stormwater runoff, dust abatement, etc.
- B. Control of Earthwork Activities:
  - 1. The excavation and moving of soil materials shall be scheduled so that the smallest possible areas will be unprotected from erosion for the shortest time practical.

**DIVISION 1 - GENERAL REQUIREMENTS**

2. Excavated materials or other construction material shall not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon actual watercourses itself.
  3. All earthwork operations on shore shall be carried out in such a manner that sediment runoff and soil erosion to the water are controlled.
  4. Sediment Basins: Sediment basins shall be used to settle and filter out sediment from eroding areas, and to protect properties and streams below the construction areas.
  5. Temporary and permanent slope breakers and sediment barriers (e.g. soil berms or staked bales of hay) will be installed to reduce water erosion on slopes greater than five percent.
- C. Vegetation Conservation: Except where clearing is required for the permanent works, approved construction roads, or excavation operations, all trees, native shrubbery, and vegetation shall be preserved and shall be protected from damage by the construction operations and equipment. The Contractor shall move equipment on access routes within the right-of way in a manner which will prevent damage to lawns, crops, range land, or property.

**3.03 WATER POLLUTION CONTROL**

- A. The Contractor's construction activities shall be performed by methods that will prevent the entrance, or accidental spillage, of solid matter, contaminants, debris, and other objectionable pollutants and wastes into sewers, streams, flowing or dry watercourses, lakes, and underground water sources. Such pollutants and wastes shall include, but are not restricted to, refuse, garbage, cement concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution. Servicing and refueling of construction equipment shall be restricted to areas more than 250 feet away from a water body.
- B. Compliance with Applicable Laws and Regulations:
1. The Contractor shall comply with all applicable Federal, State and local laws, orders, and regulations concerning the control and abatement of water pollution.

## **DIVISION 1 - GENERAL REQUIREMENTS**

## **SECTION 01560 ENVIRONMENTAL QUALITY CONTROL**

### **C. Other Provisions:**

1. All construction debris shall be disposed of on land in such a manner that it cannot enter a waterway or wetland.
2. Equipment for handling and conveying materials during construction shall be operated to prevent dumping or spilling the materials into the water except as approved herein.
3. During construction and subsequent operation of this facility, no petroleum products, chemicals, or other deleterious materials shall be allowed to enter or be disposed of in such a manner so that they could enter the water and precautions shall be taken to prevent entry of these materials into the water or any sewers.

### **D. Groundwater Considerations:**

1. Contractor is advised that groundwater could be present in the project site. Seasonal fluctuations in groundwater levels are to be anticipated. Contractor is responsible for providing dewatering equipment and methods for work. Groundwater shall be removed from open trench areas or other excavation to satisfactorily prevent the rising of water into the new or existing piping or facilities that may be exposed during Work.
2. All costs of dewatering, including testing, and all related work of cleanup, restoration, etc. shall be considered incidental to the work.
3. Contractor shall accomplish any dewatering in a manner acceptable to the State of Idaho.
4. Contractor is also advised that if construction dewatering is required and dewatering flow will be discharged to surface water, the contractor may be required to obtain a Short Term Activity Exemption from the Idaho Department of Environmental Quality. Contact IDEQ for details: Sujata Connell, Surface Water Quality Manager, [sujata.connell@deq.idaho.gov](mailto:sujata.connell@deq.idaho.gov), (208) 799-4370.

### **E. Soil Considerations:**

1. Contractor shall be responsible for stabilizing all excavated areas before backfilling. Any excavated material which is unsuitable for

backfill due to moisture content (either excessively wet or dry) shall be conditioned in a manner acceptable to the CO to render it suitable for backfill. If Contractor chooses not to condition the unsuitable materials, then this material shall be wasted at a site meeting all County, State, and Federal Regulations and replaced with acceptable material of proper moisture content. Contractor shall be responsible for selection of a proper disposal site. Either the soil conditioning work method, or the soil replacement work method, whichever is chosen by Contractor, shall be done as incidental to the Work.

### 3.05 CHEMICAL POLLUTION

- A. The Contractor shall provide tanks or barrels to be used to dispose of chemical pollutants produced as a by-product of the project Work such as drained lubricating or transmission oils, greases, soaps, asphalt, etc. At the completion of the construction work, storage tanks or barrels shall be removed from the site and properly disposed of.
- B. The term pesticide as used in these Specifications shall include all herbicides, insecticides, fungicides, and rodenticides. Should the Contractor find it necessary to use pesticides in the areas of Work under this contract, he shall submit his plan for such use to the Government for written approval. The Contractor shall not proceed prior to approval by the Government.
- C. Pesticides used shall only be those registered with the Environmental Protection Agency in compliance with the Federal Environmental Pesticide Control Act of 1972 and other Federal pesticide acts. Pesticides names on the Department of the Interior's "Prohibited List" shall not be used.

### 3.06 AIR POLLUTION

- A. The Contractor shall comply with applicable Federal, State, and local regulations concerning the prevention and control of air pollution. Burning is not permitted at the project site.
- B. Fire prevention measures shall be taken to prevent the start or the spreading of fires resulting from the project Work.
- C. In the conduct of construction activities and operation of equipment, the Contractor shall utilize such practicable methods and devices as are reasonably available to control, prevent, and otherwise minimize atmospheric emissions or discharges of air contaminants.

**DIVISION 1 - GENERAL REQUIREMENTS**

**3.07 DUST ABATEMENT**

- A. All public access or haul roads used during construction of the project shall be sprinkled with water as required to fully suppress dust. The Contractor shall prevent dust which has originated from his operation from damaging lawns, crops, cultivated fields, rangeland, trees, businesses, and dwellings, or causing a nuisance. The Contractor shall be held liable for any damage resulting from dust originating from his operations under these Contract Documents.

**3.08 NOISE POLLUTION**

- A. The Contractor shall comply with applicable Federal, State, and local laws, orders, and regulations concerning the prevention, control, and abatement of excessive noise.

**3.09 FIRE PROTECTION**

- A. Muffler systems on construction equipment shall have spark arresters to reduce risk of fire. The Contractor shall maintain fire extinguishers and other firefighting equipment to quickly respond in the event of a fire.

**3.10 WASTE MATERIAL DISPOSAL**

- A. Excess excavated material not required or suitable for backfill, concrete, sewer mains, and other waste material, must be disposed of in licensed landfills or at other sites for which local, county, or state approval is obtained.
- B. Maintain areas covered by the Contract and affected public properties free from accumulations of waste, debris, and rubbish caused by construction operations. Remove excavated materials from the site, or stockpile where shown or directed by CO.
- C. Cleaning and disposal shall comply with local ordinances and pollution control laws. Do not burn or bury rubbish or waste materials on the project site. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner on-site or in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.
- D. Waste materials including, but not restricted to, refuse garbage, sanitary wastes, industrial wastes, and oil and other petroleum products, shall be disposed of by the Contractor. Materials must be disposed of by acceptable means such as an accepted solid waste facility. Any fees or charges required to be paid for disposal of materials shall be paid by the Contractor.
- E. Disposal of construction debris shall meet the requirements of the State of Idaho.



**DIVISION 1 - GENERAL REQUIREMENTS**

- B. Contractor may make his own arrangements for disposal subject to submission of proof that the owner(s) of the proposed site(s) has a valid fill permit issued by the appropriate governmental agency.
- C. Maintain areas covered by the Contract and affected public properties free from accumulations of waste, debris, and rubbish caused by construction operations. Remove excavated materials from the site, or stockpile where shown or directed by CO.
- D. Cleaning and disposal shall comply with local ordinances and pollution control laws. Do not burn or bury rubbish or waste materials on the project site. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner on-site or in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.
- E. Waste materials including, but not restricted to, refuse garbage, sanitary wastes, industrial wastes, and oil and other petroleum products, shall be disposed of by the Contractor. Materials must be disposed of by acceptable means such as an accepted solid waste facility. It shall be the responsibility of the Contractor to make any necessary arrangements pertinent to the locations and regulations of such disposal. Any fees or charges required to be paid for disposal of materials shall be paid by the Contractor.
- F. Disposal of construction debris shall meet the requirements of the State of Idaho.

**3.11 NOXIOUS WEEDS**

- A. During construction, the Contractor shall take steps to prevent the spread of noxious weeds. The Contractor shall arrive at the construction site with clear, weed-free equipment.
- B. Noxious weeds shall be controlled within the areas disturbed by the Contractor in performance of the work. Control may include pulling and disposal of weeds present after surface restoration.

**3.12 OSHA REGULATIONS**

- A. General: Contractor will be required to comply with the Amendment to the Occupational Safety and Health Administration Construction Standards for Excavations, 29 CFR Part 1926, Subpart P printed Tuesday October 31, 1989 and effective January 2, 1990. Any conflicting information between the OSHA document and these Contract Documents shall be revised so that the OSHA document requirements supersede and take precedence over all other conflicting information.

**DIVISION 1 - GENERAL REQUIREMENTS**

- B. Any conflicting information between the OSHA document and these Contract Documents shall be revised so that the OSHA document requirements supersede and take precedence over all other conflicting information. Contractor shall be required to obtain copies of the OSHA document and to complete review of the same to avoid misinterpretation of their regulations.
- C. Trench Shoring
  - 1. Type 1 TRENCH EXCAVATION. Excavation performed as Type 1 need not have protective support. The sides of all trenches shall be sloped back according to the soil type and in accordance with other criteria as defined in OSHA STANDARDS, 29 CFR, PART 1926, SUBPART P. Contractor shall solely be responsible for determination of soil type and full compliance.
  - 2. TYPE 2 TRENCH EXCAVATION. Excavation performed as Type 2 shall provide a support system, shielded system or other system, if required, which adequately protects employees against cave-in and which is designed in accordance with OSHA STANDARDS as defined in 29 CFR, PART 1926, SUBPART P.

Note: OSHA regulations require that all trenches which are deeper than 20 ft. are to have the side slopes and/or the protective systems designed by a registered professional engineer.
- D. Hazardous Atmospheres: Contractor shall prevent employee exposure to potentially harmful levels of atmospheric contaminants and assure acceptable atmospheric conditions by complying with the requirements of 29 CFR, Part 1926, Subpart P. Monitoring equipment shall be supplied as a requirement of this project.

**3.13 CONTAMINATED MATERIALS**

- A. General: If contaminants are encountered, Contractor shall provide notice to Government and the Idaho Department of Environmental Quality (IDEQ).
- B. Procedures at Petroleum Contaminated Soils/Groundwater Site: Contaminated soil material shall be separated during the excavation process from non-contaminated material and then be removed and disposed of in accordance with Federal, State, and Local laws and regulations. Documentation of the disposal at certified receiving facilities shall be provided to Government. Measures shall be taken to address the following requirements:

**DIVISION 1 - GENERAL REQUIREMENTS**

1. Contractor shall comply with all applicable OSHA regulations to protect the health and safety of their employees from known or suspected hazards in the Work environment. For a Contractor working near any discovered contaminated areas during the process of Work, Contractor shall be required to demonstrate employee training similar to the requirements of 29 CRF 1910.120(e)(3) for "routine and non-routine site employees" on a hazardous waste site. Contractor shall be required to properly secure the site to protect and prevent exposure of the general public to the contaminated materials.
  2. The pipe zone and bedding zone shall be sealed at each end of the determined petroleum contaminated material zone with impervious soil/bentonite trench plugs to prevent migration of the contaminant from the area.
  3. The pipe materials shall be stored, handled, and installed to prevent contact with any contaminants and to prevent migration of the contaminants from the area. The CO may revise the pipe, gaskets, and other materials as necessary to protect Work from the contaminants. Contractor shall be compensated for the increased material and labor costs associated with these pipe modifications.
  4. If temporary site storage of the petroleum contaminated material is required the material shall be secured from access by all unauthorized parties. The material shall be covered and provisions taken to prevent migration of the contaminants from the source material by rainstorms or other events. The material shall be placed either on an impervious liner material, or on the asphalt street surface. The material shall not be mixed with non-contaminated materials.
  5. All petroleum contaminated soils shall be removed from the site as directed by the CO. The materials shall not be placed back in the trench to be used as backfill.
- C. Procedures at Other Contaminated Soil Sites: When contaminants other than petroleum products are encountered during the project (such as hazardous substances or wastes), the situation will be addressed by Government at the time of discovery.
- D. Dewatering Activities:
- For areas where it is determined that Work will be in contaminated groundwater (containing hazardous materials), the dewatering procedure and progress of Work shall be addressed by Government at the time of discovery.

**DIVISION 1 - GENERAL REQUIREMENTS**

**3.16 THREATENED, ENDANGERED, CANDIDATE, AND SENSITIVE SPECIES AND HABITATS**

- A. The Contractor agrees that, should he or any of his employees in the performance of this contract, discover evidence of possible threatened, endangered, candidate, and sensitive species and habitats, he will cease work and notify Government immediately, giving the location and nature of the finding. The Government may issue stop-work orders if construction encounters threatened, endangered, candidate, and sensitive species and habitats. Construction will continue only after consultation with the Montana Department of Fish, Wildlife and Parks.

END OF SECTION 01560

**DIVISION 1 – GENERAL REQUIREMENTS**

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**PART 1: GENERAL**

**1.01 DESCRIPTION**

- A. This work is the furnishing of labor, and equipment for installing, maintaining and operating traffic control devices to insure the safety of the general public and project personnel.

**1.02 DEFINITIONS**

- A. Long Term Restriction: A traffic restriction or lane closure that is in effect during construction without regard to time restrictions specified.
- B. Short Term Restriction. A traffic restriction or lane closure that is in effect only during the Contractor's work hours, and is consistent with time restriction specified.

**1.03 REQUIREMENTS**

- A. Perform work under this section meeting Manual of Uniform Traffic Control Services (MUTCD), ITD 2017 Standard Specifications, and contract requirements.

**1.04 SUBMITTALS**

- A. Coordinate all construction activities to reduce traffic conflicts at the work site, off-site events or other construction projects.
- B. Furnish the CO, for Government review, a copy of the approved construction traffic control plan at least one week before construction begins.
- C. Maintain traffic on in-place, temporary or permanent roadway, or a combination of these.
- D. Provide and maintain proper signing, and warning devices in order to:
  - i. Restrict traffic on a roadway.
  - ii. Protect Work, workers, and motorists.

**1.07 TRAFFIC CONTROL PLAN**

- A. Submit an overall Traffic Control Plan for approval 5 days prior to initiating any construction.
- B. Acceptance: Each Traffic Control Plan is subject to acceptance, rejection or suggested revision by CO.
- C. Revisions: Revisions to Traffic Control Plan are subject to approval of CO.
- D. No construction operations may begin without complete approval of the Plan.

**PART 2: PRODUCT**

**2.01 TRAFFIC CONTROL DEVICES**

- A. Assure all signs and barricades are reflectorized. Assure all night time traffic control devices meet MUTCD lighting requirements.
- B. Use traffic control devices meeting the "Manual of Uniform Traffic Control Devices" and the "Traffic Control Devices Handbook" requirements, available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20492.
- C. Assure all traffic control devices are clean, legible, reflective for night-time use, and operable.

**3.02 NONCOMPLIANCE**

- A. Remove, repair or replace any traffic control device not providing its intended function.
- B. Do not begin work until all required traffic control devices are placed.
- C. The Government will periodically inspect the traffic control and inform the Contractor of any deficiencies.
- D. Contractor failure to correct any deficiency in the traffic control within 4 hours of notification is cause to deduct monies from the contract payment on the next progress payment.
- E. The CO may direct correcting traffic control deficiencies immediately.

**DIVISION 1 – GENERAL REQUIREMENTS**

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**3.04 TRAFFIC PROTECTION**

A. Do not deposit, store materials, or park equipment on or adjacent to any roadway open to traffic that will interfere with safe flow of traffic.

B. Provide traffic barriers for any obstruction placed within “clear zone” as defined by AASHTO Guide for Selecting Locations and Designing Traffic Barriers.

C. Keep roadways that are open to traffic free from earth materials and debris.

D. During construction, provide devices to protect traffic and pedestrian from drop-offs, opening, falling objects, splatter or other hazards.

1. Open excavations/drop-offs adjacent to traveled roadway:
  - a. Schedule operations so as to minimize traffic exposure to uneven lanes, milled edges, and edge drop-offs.
  - b. Sign and delineate any drop-off less than 4 inches

E. Pedestrian Access and Traffic:

1. Provide continuous access to all adjacent residences and buildings.
2. Provide temporary walk where in-place sidewalk is removed.
3. When access to business entrances is prohibited, coordinate with business owners to provide protection and direction for alternate entrances.

**END OF SECTION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Requirements and procedures for work necessary for shipment, handling, storage, and protection of material and equipment products.

**1.02 PREPARATION FOR SHIPMENT**

- A. Package or crate products to provide protection from damage during shipping, handling, and storage.
  - 1. Mark or tag the outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of project and Contractor, equipment number, and approximate weight.
- B. Mark special tools to identify the associated products by name, equipment, and part number. Package tools for protection against damage from the elements during shipping, handling, and storage. Ship in boxes or containers marked to indicate the contents and as stated above. Deliver special tools before the associated equipment is scheduled for the initial test run.
- C. Contractor shall request a minimum 7-day advance notice of shipment from Manufacturers.
- D. Where specified for specific product, factory test results shall be reviewed and accepted before such product is shipped.

**1.03 RECEIVING, INSPECTION, AND UNLOADING**

- A. Contractor shall record the receipt of products at the jobsite.
- B. Upon receipt of products at the jobsite, Contractor shall inspect for completeness and evidence of damage during shipment.
  - 1. Government's and Manufacturer's representative may be present for inspection.
  - 2. Should there appear to be damage, notify the CO immediately and inform the Manufacturers and the transportation company.
  - 3. Expedite replacement of damaged, incomplete, or lost items.
- C. After completion of inspection, unload products in accordance with Manufacturer's instructions for unloading, or as specified. Do not unload damaged or incomplete products to be returned to Manufacturer for replacement, except as necessary to expedite return shipment.



**SECTION 01600**

**DIVISION 1 - GENERAL REQUIREMENTS**      **PRODUCT SHIPMENT, HANDLING,  
STORAGE, AND PROTECTION**

1.04 HANDLING, STORAGE, AND MAINTENANCE

- A. Handle products in accordance with the Manufacturer's written recommendations, and in a manner to prevent damage.

**PART 2**      **PRODUCTS (Not Used)**

**PART 3**      **EXECUTION (Not Used)**

END OF SECTION 01600

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Damage to Existing Structures
- B. Closeout Procedures.
- C. Final Cleaning.
- D. Project Record Documents.
- E. Final Inspection.

**1.02 DAMAGE TO EXISTING STRUCTURES**

- A. Prior to final acceptance by the CO, the Contractor shall repair or otherwise return to original condition any parts of the existing facilities which have been damaged during construction.

**1.03 CLOSEOUT PROCEDURES**

- A. The Contractor shall submit written certification that the Contract Documents have been reviewed, the work has been inspected, and that the work is complete in accordance with the Contract Documents and is ready for the CO's final inspection.
- B. The Contractor shall submit the final Application for Payment identifying the total adjusted Contract Sum, previous payments, and the sum remaining due, with the following information.
  - 1. Measured horizontal and vertical locations of any underground utilities and appurtenances, referenced to permanent surface improvements.
  - 2. Measured depths of foundations in relation to project datum.
  - 3. Field changes of dimension and details.
  - 4. Details not on the original Contract Drawings.
  - 5. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
- D. The Contractor shall submit the required documents to CO with claim for Final Application for Payment.

**1.04 FINAL CLEANING**

- A. The Contractor shall keep the premises free of the accumulation of surplus materials and rubbish resulting from his construction operations and the operations of his subcontractors. The Contractor shall remove all waste and surplus materials, rubbish, and construction facilities from the site.
- B. The Contractor shall execute final cleaning prior to the final inspection according to the following provisions:
  - 1. Should Contractor not remove rubbish or debris or not clean the facilities and site as specified above, the CO reserves the right to have final cleaning done at the sole expense of the Contractor.
- C. The Contractor shall also provide for the following:
  - 1. Repair, patch, and touch up marred surfaces to specified finish, and match adjacent surfaces.
  - 2. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign material from exposed interior and exterior finished surfaces.
- D. Government will assume responsibility for cleaning as of the date of substantial completion.

**1.08 FINAL INSPECTION**

- A. The Contractor shall request a final inspection in writing prior to the anticipated date of completion.
- B. Work will not be considered ready for final inspection until it has been completed and the Contractor has certified that all items are properly operating and tested in strict compliance with the Contract Documents.
- C. The Contractor or project supervisor shall be at the job-site during the final inspection.
- D. The CO will present to the Contractor, after the final inspection, a list of any items not meeting contract requirements. This list will be confirmed in writing by the CO and all items on it must be made acceptable before final payment will be made.

**PART 2 PRODUCTS (NOT USED)****PART 3 EXECUTION (NOT USED)****END OF SECTION 01700**

**PART 1 GENERAL****1.01 WORK INCLUDED**

- A. This section covers the labor and materials necessary for the work associated with the demolition of buildings, structures, equipment, piping, and appurtenances, as shown on the Drawings and specified herein.

**1.02 GENERAL**

- A. All demolition work must be scheduled with the CO a minimum of 14 days before such work is to begin.

**1.03 RELATED WORK SPECIFIED IN OTHER SECTIONS**

- A. The following sections describe some of the work closely related to this section. All demolition and salvage work performed by the Contractor shall be in accordance with these related Specifications:
  - 1. Section 01040, COORDINATION AND SITE CONDITIONS.

**PART 3 EXECUTION****3.01 SAFETY REQUIREMENTS**

- A. All work shall be done in conformance with the rules and regulations pertaining to safety established by federal, state, and local authorities, and as specified elsewhere in these Specifications.

**3.02 UTILITIES**

- A. The Contractor shall be responsible for having the appropriate utility or Government turn off services as required before demolition is started.
- B. Where electrical, natural gas, telephone, or any other private utility lines are exposed by demolition excavation, Contractor shall be solely responsible for notifying Government of these private utilities that their service line has been exposed and allow sufficient time for the utility to plug and abandon their service line. Private utility companies shall be notified a minimum of 14 days in advance of work.

**3.03 DEMOLITION**

- A. The Drawings are based on the best available information, but the structures may differ. The Contractor shall be responsible for determining the work required by inspecting the site as specified in Section 01040, COORDINATION AND SITE CONDITIONS.

END OF SECTION 02020

**PART 1 GENERAL****1.01 WORK INCLUDED**

- A. The work of this section consists of the clearing, removal and disposal of vegetation, including stumps and roots; abandoned structures; fences and debris that will interfere with the construction of this project, and salvaging and stockpiling existing topsoil.

**PART 2 PRODUCTS****2.01 GENERAL**

- A. Provide all materials and equipment, suitable and in adequate quantity, required to accomplish the work as specified herein.

**PART 3 EXECUTION****3.01 GENERAL**

- A. Clearing and Grubbing for the construction of the Project shall not extend beyond the construction limits except as accepted by the CO. Clearing for project construction shall not exceed any easement limits.

**3.02 CLEARING**

- A. Clearing shall consist of the removal and disposal of trees, stumps, shrubs, brush, grass, vegetation, surface debris, abandoned structures, fences, and other objectionable matter from within the described clearing limits.

**3.03 GRUBBING**

- A. Grubbing shall consist of the excavation, removal, and disposal of roots, matted roots, and buried and surface debris from within the described clearing limits. In areas of grading or excavation, remove stumps, roots, structures or foundations a minimum of 12 inches below finished grade. In areas of embankment remove stumps, roots, structures or foundations a minimum of 12 inches below original grade. Backfill all grubbing holes, with accepted material and compact to approximately the same density as the existing surrounding soils.

**3.04 PRESERVATION OF TREES, SHRUBS, AND OTHER VEGETATION**

- A. Protect trees, shrubbery, and other vegetation not designated for removal from damage resulting from the work. Cut and remove tree branches only where, in the opinion of the CO, such cutting is necessary to effect construction operation. Remove branches other than those required to provide a balanced appearance of any tree, as accepted, prior to removal. Scars resulting from the removal of branches shall be treated with an accepted tree sealant.

**3.05 SALVAGE AND PROTECTION**

- A. The Contractor shall protect survey benchmarks, control points, and existing work from damage or displacement.
- B. The Contractor shall maintain a designated site access for vehicle traffic.

**3.06 TOPSOIL**

- A. Topsoil is required for backfill and shall be salvaged and stockpiled by the Contractor for future placement on all graded or otherwise disturbed areas.

**3.07 DISPOSAL OF WASTE MATERIAL**

- A. It shall be the Contractor's responsibility to select an acceptable method of disposal for vegetation or debris not salvageable. The Contractor shall be responsible for obtaining the necessary authorization from State and local agencies for disposal if required; and any accidental loss or damage as a result of the chosen disposal method shall be the Contractor's responsibility and shall in no way involve the Owner or Engineer.

**END OF SECTION**

**PART 1 GENERAL****1.01 WORK INCLUDED**

- A. The work of this section covers all earthwork associated with the construction of the following items:
  - 1. Excavation, backfill, and embankment associated with the installation of the new septic tank and manhole.
  - 2. Trench excavation and backfill for pipelines.
  - 3. Work necessary to repair or replace, when directed by the Government or CO, all gravel surfacing or other features damaged directly or indirectly by the operations incidental to the construction of this project.

**1.02 GENERAL**

- A. Refer to notes on the drawings that contain information and requirements that apply to the work specified herein.

**1.03 CLASSIFICATION OF EXCAVATED MATERIAL**

- A. Unclassified Excavation: Materials encountered during the construction of the work regardless of their nature or the manner in which they are removed, will be considered unclassified excavation.

**1.04 DEFINITIONS**

- A. Relative Compaction: The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D698. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the CO.
- B. Optimum Moisture Content: Determined by the ASTM standard specified to determine the maximum dry density for relative compaction. Field moisture content shall be determined on the basis of the fraction passing the 3/4-inch sieve.
- C. Relative Density: As defined by ASTM D4253 and D4254.
- D. Prepared Ground Surface: The ground surface after clearing, grubbing, stripping, excavation, and scarification and/or compaction.

- E. Completed Course: A course or layer that is ready for the next layer or next phase of the work.
- F. Well-Graded: A mixture of particle sizes that has no specific concentration or lack thereof of one or more sizes. Well-graded does not define any numerical value that must be placed on the coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters. Well-graded is used to define a material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.
- G. Influence Area: The area within planes sloped downward and outward at an angle of 45 degrees from the horizontal from (a) 1 foot outside the outermost edge at the base of foundations or slabs; or (b) 1 foot outside the outermost edge at the surface of roadways or shoulder; or (c) 0.5 foot outside the exterior edge at the spring line of pipes and culverts.
- H. Borrow: Material imported from borrow areas off the immediate project site.
- I. Selected Backfill Material: Material available onsite that the CO determines to be suitable for a specific use.
- J. Imported Pipe Bedding Material: Material obtained by the Contractor from Section 6 pit imported to the project site.
- K. Structural Fill: Fill material as required under and/or adjacent to structures, paving, sidewalks, driveways, curb, etc.
- L. Embankment: The fill material required to raise the existing grade in areas other than under structures.
- M. Unsuitable Materials: Unsuitable materials shall consist of debris, rubble, trash, organics, and other deleterious materials as determined by the CO. Unsuitable materials shall include previously placed, non-engineered fills that were not placed in maximum 6-inch to 8-inch thick lifts and not compacted to the densities specified herein.

#### 1.05 SUBMITTALS

- A. Submittals shall be made in accordance with the requirements of this section and Section 01300.
- B. The Contractor shall submit plans, drawings, and calculations for the proposed shoring or excavation sloping systems. The submittals shall include information on scheduling and sequencing of construction and protection of new and/or existing structures and utilities. Design calculations shall address the sequence of excavation and placement of lateral support



elements, if needed. Drawings shall show the locations of all system elements in plan and section. It is the contractor's responsibility to ensure that the proposed systems are adequate and protective of worker safety and the integrity of construction.

- D. If requested by CO, Contractor shall submit proctors and gradation of materials to be used during construction as specified further below.
- E. Review by the CO of submittals by the Contractor shall not in any way be considered to relieve the Contractor from full responsibility for errors therein or from the entire responsibility for complete and adequate design and performance of shoring or excavation sloping systems. The Contractor shall be solely responsible for proper design, installation, operation, and maintenance, and any failure of any component of the shoring or excavation sloping systems.

#### 1.07 SHORING, SHEETING, BRACING, AND SLOPING

- A. Install and maintain shoring, sheeting, bracing, and sloping necessary to support the side of the excavation, to keep and to prevent any movement which may damage adjacent pavements, utilities, or structures, damage or delay the work, or endanger life and health. Install and maintain shoring, sheeting, bracing, and sloping as required by OSHA and other applicable governmental regulations and agencies.

#### 1.08 EXCAVATION SAFETY

- A. The Contractor shall be solely responsible for making all excavations in a safe manner. Provide appropriate measures to retain excavation side slopes and prevent rock falls to ensure that persons working in or near the excavation are protected. Any necessary trench excavation permits shall be the responsibility of the Contractor.

#### 1.09 CODES, ORDINANCES, AND STATUTES

- A. Contractors shall familiarize themselves with, and comply with, all applicable codes, ordinances statutes, and bear sole responsibility for the penalties imposed for non-compliance.

#### 1.10 TOLERANCES

- A. All material limits shall be constructed within a tolerance of 0.1 foot except where dimensions or grades are shown or specified as minimum. All grading shall be performed to maintain slopes and drainage as shown. No reverse slopes will be permitted.

**1.11 QUALITY ASSURANCE**

- A. The Contractor shall perform earthwork operations in compliance with these specifications and within the applicable requirements of governing authorities having jurisdiction.
- B. Over-excavation made by the Contractor in earth or rock beyond the specified line and grade shall be corrected, at the expense of the Contractor. In areas not under slabs or footings, this shall be done by filling with structural fill meeting the requirements in this section and compacted to 95 percent of maximum density at optimum moisture as determined by ASTM D698. Over-excavation in areas below slabs or footings shall be corrected as specified in this section under Part 3, EXECUTION. Any other costs incurred by the Government, or the CO as a result of the over-excavation, such as professional engineering or construction inspection services or additional materials, shall be the responsibility of the Contractor. If the over-excavation is directed by the CO, the excavation will be paid at a price negotiated with the Contractor through a change order to the lines and grades specified by the Government.
- C. Under-compacted soil placed by the Contractor shall, at the expense of the Contractor, be corrected by additional compaction effort or excavation, replacement, and compaction. Any costs incurred by the Government or the CO as a result of the under-compaction, such as additional professional engineering services, materials testing, or construction inspection services, shall be the responsibility of the Contractor.
- D. If requested by the CO, field density testing will be the responsibility of the Contractor and all costs shall be borne by the Contractor.
- E. BRACING AND SHORING: Safe temporary cut slopes are the responsibility of the Contractor who shall meet all appropriate OSHA regulations including but not limited to; "Constructions Standards for Excavations" (29 CFR Part 1926.650-.652) Subpart P, effective on the date of the Notice to Proceed.

**PART 2 PRODUCTS****2.01 EQUIPMENT**

- A. The Contractor may use any type of earthmoving and compacting equipment; except only walk behind hand compaction equipment will be utilized within 4 feet of structure walls and provided the equipment is in satisfactory condition and of such capacity as to fulfill the requirements of this section.
- B. No embankment shall be started or continued without adequate compaction equipment on hand. If watering is required, tank wagons or tank trucks with hose and sprinkler head capable of providing an even spray.

**2.02 MATERIAL**

- A. General: The intent of the project for earthwork is to use the excavated native soils for backfilling. However, if native materials are not suitable for backfilling, imported gravel backfill may be required in the pipe zone within 6" of the pipe walls. This material can be found at Section 6 pit.
- B. Earthfill: Excavated native earth material may be used for backfill if it is free of detrimental quantities of organic material, such as vegetation, roots, or peat. Rocks larger than 2-inches in average dimension shall not be used in backfill. In order to be used as backfill, native earth material shall be well graded from coarse to fine. Provide imported material of equivalent quality, if required to accomplish the work. Obtain the CO's approval for use of native material within 2 feet of structures or tanks. If the native fill does not meet these specifications, imported structural fill shall be used under concrete pads and within 2 feet of structure/tank walls.
- C. Water: Contractor is responsible for furnishing all water and water conveyance used during construction.

**2.05 COMPACTION EQUIPMENT**

- A. Compaction equipment shall be of suitable type and adequate to obtain the densities specified, and shall provide satisfactory breakdown of materials to form a dense fill.
- B. Compaction equipment shall be operated in strict accordance with the manufacturer's instructions and recommendations. Equipment shall be maintained in such condition that it will deliver the manufacturer's rated compactive effort. If inadequate densities are obtained, larger and/or different types of additional equipment shall be provided by the Contractor. Hand-operated equipment shall be capable of achieving the specified densities.

**2.06 MOISTURE CONTROL EQUIPMENT**

- A. Equipment for applying water shall be of a type and quality adequate for the work, shall not leak, and shall be equipped with a distributor bar or other approved device to assure uniform application. Equipment for mixing and drying out material shall consist of blades, discs, or other approved equipment.

**PART 3 EXECUTION****3.01 EXCAVATION**

- A. General: Excavation is unclassified. Excavation shall be performed to as shown on the Drawings. The CO reserves the right to make minor adjustments or revisions in lines or grades to match depths and slopes of existing manholes. Perform all excavation regardless of the type, nature, or condition of the material encountered. Excavation that cannot be accomplished without endangering present or new structures shall be done with hand tools.
- B. Should the Contractor excavate below the designated lines through fault or negligence, the Contractor shall replace such unauthorized over-excavation with approved materials in an approved manner at his own expense. Limits of Excavation: Excavation shall extend a sufficient distance from walls and footings to allow for protection of building. Temporary construction excavation side slopes shall be made as steep as safely possible.
- C. Where suitable bearing is not encountered at the specified elevation, the CO may direct in writing that additional depth as required be excavated. Such over-excavation shall be compensated for on a work order basis, if not specifically provided for in the Bid Form. Unauthorized over-excavation by the Contractor shall be corrected by the Contractor using approved materials as specified herein at no cost to the Government.
- D. Protection of Excavation: All necessary bailing, drainage, sheeting, and construction of cribs and cofferdams shall be included as part of the excavation. Excavations over four feet in depth shall be shored, sheeted and braced as may be necessary for the protection of the work and the safety of the personnel, or sloped to the angle of repose of the material when saturated per OSHA standards. When excavation is at the required depth, any water, if present, shall be pumped out for cleaning and foundation bed inspection. The Contractor must also ensure that subgrade soils are kept in suitable condition.
- E. Classification: All excavation shall be considered unclassified. All material encountered of whatever nature shall be removed and used in embankment or disposed of as specified in this section. The presence of rock or frozen material shall not constitute a claim by the Contractor for extra work.

**E. Dewatering of Excavation:**

1. Provide and operate equipment adequate to keep all excavations and trenches free of water. Remove all water a minimum of 6 inches below the lowest point of excavation when pipe is being laid, during the placing of backfill, and at such other times as required for efficient and safe execution of the work. Avoid settlement or damage to adjacent property. Dispose of water in a manner that will not damage adjacent property. When dewatering open excavations, dewater from outside the structural limits and from a point below the bottom of the excavation when possible.
2. Positive dewatering systems shall be furnished and installed as necessary to maintain all excavations and trenches free of water at all times until the structure or facility is completely constructed, so that full dead load is applied, and backfill is in place. If necessary, such systems shall remove ground water from outside the limits of the excavation, and shall maintain the water level sufficiently far below the base of the excavations to prevent buoyancy conditions or softening of the base. The Contractor shall dewater the work area sufficiently to prevent water from seeping through the excavated side slopes. Provisions shall be made for removal of storm runoff and all other water that may enter the excavations. Open-sump pumping from the interior of excavations will be permitted only to dispose of surface runoff, and shall not be used as the primary means of dewatering.
3. The Contractor is responsible for obtaining all applicable national, state, and local permits for construction dewatering.

**G. Structure Shoring:**

1. The Contractor shall design, install, and maintain all shoring. The type of shoring shall be the Contractor's option. The shoring shall be designed and maintained so as to prevent any movement of soil which may cause damage to the adjacent facilities and property, damage or delay the work, or endanger life and health.
2. Shoring shall be designed and constructed to withstand soil and hydrostatic loadings, and appropriate equipment and surcharge loadings. Tie-backs and bracing shall be installed where required to prevent movement. Design of shoring shall incorporate the Contractor's sequence of excavation and placement of lateral support elements. The Contractor shall repair, at his own expense, all damage resulting from failure to provide adequate support.

4. Shoring shall be removed in a manner which avoids damage to new or existing facilities or adjacent property. All voids left by removal of shoring shall be immediately filled.

### 3.02 BACKFILLING

- A. General: Backfilling shall be performed where indicated or required, to the grades and elevations shown on the Drawings. No backfilling shall be commenced without approval of the CO. All material used for backfill shall be as specified and of a quality acceptable to the CO and shall be free of large and frozen lumps, wood, and other extraneous materials. In general, this material shall be suitable native material as specified above or imported engineered gravel backfill material below and within 2 feet of any structure walls or footings. Native materials excavated for the structure may be used as backfill outside of 2 feet away. No placement of fill or backfill shall be conducted over frozen subgrade.
- B. Compaction: Backfill material shall be placed in continuous horizontal layers not to exceed 6-inches in loose lift thickness. Each layer shall be compacted as specified hereinafter. Where backfill is placed on both sides of a wall or column, both sides shall be backfilled in such a manner so that the difference in compacted grade does not exceed 18 inches at any time. Care shall be taken when compacting around structure footings, slabs, and walls to prevent damage to the structure.
- C. Watering: Water may be added only to bring the backfill material to the specified moisture content range (plus or minus 2 percent from optimum) for compaction. Jetting or ponding of the backfill material will not be permitted.
- D. Imported Engineered Gravel Backfill Below Structures: Where called for on the Drawings or as otherwise specified herein or directed by the CO, provide hereinbefore specified imported gravel backfill for foundation preparation. Place fill material in maximum 6-inch thick loose lifts and compact each lift to not less than 98 percent of maximum ASTM D698 dry density at optimum moisture content, plus or minus 2 percentage points.
- E. Imported Engineered Gravel Backfill Within 2 Feet Around Structures: Provide hereinbefore specified imported gravel backfill around all buried structure walls and footings in the zone within a minimum of 2 feet from the walls or footings. Place fill material in maximum 6-inch thick loose lifts and compact each lift to not less than 95 percent of maximum ASTM D698 dry density at optimum moisture content, plus or minus 2 percentage points. Stop backfill at six inches below finished grade to allow for placement of gravel.

- F. Earth Backfill or Native Material Around Structures: Deposit material in horizontal lifts of maximum 6-inch uncompacted loose depth and compact each lift to not less than 95 percent of maximum ASTM D698 dry density. Maintain material at optimum moisture content, plus or minus 2 percentage points. Place backfill material free of roots, organic matter, trash, and rocks larger than 3-inch diameter. Stop backfill at 4" above ground level.

### 3.03 MOISTURE CONTROL

- A. During all compacting operations, maintain at each lift of fill optimum practicable moisture content. Maintain moisture content uniform throughout the lift. Supplement, if required, by sprinkling and mixing the fill. At the time of compaction, the water content of the material shall be at optimum moisture content, plus or minus 2 percentage points.
- B. Do not attempt to compact fill material that contains excessive moisture. Aerate material by blading, discing, harrowing, or other methods, to hasten the drying process.

### 3.05 WEATHER CONDITIONS

- A. Earthwork operation shall be suspended at any time when satisfactory results cannot be obtained on account of rain, freezing weather, or other unsatisfactory field conditions.

### 3.08 CLEANUP

- A. All unsuitable material, waste sheeting or forming, and debris shall be removed from the site and disposed of in approved areas as directed by local regulatory agencies or the Government.
- B. All native excess soil materials not required for backfilling around new structures may be disposed of as approved by the CO. Coordinate with the CO to determine a suitable area for disposal of excess clean soil materials.
- C. The area shall be graded to required elevations and all rocks and boulders bladed into a furrow and removed for disposal. Topsoil stripped during clearing and stockpiled shall be spread in such a manner as to restore the area surface to its original condition per Section 02475, Surface Restoration.

END OF SECTION 02220

**PART 1 GENERAL****1.01. DESCRIPTION**

- A. The work of this section includes the excavation, trenching and backfilling for pipelines and appurtenances. It includes all clearing, grubbing, site preparation, removal and disposal of debris from the excavation, handling and storing materials for fill and backfill, bracing, shoring and trench protection, construction dewatering, backfill, subgrade preparation, final grading, site dressing and clean-up.

**1.02. REFERENCES**

- A. The current publications listed below form a part of this specification.

AASHTO T99	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5-lb (2.5kg) Rammer and 12-inch (305mm) Drop
ASTM D698	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5-lb (2.5kg) Rammer and 12-inch (305mm) Drop
AASHTO T191 (ASTM D1556)	Density of Soft In-Place by the Sand-Cone Method
AASHTO T238 (ASTM D2922)	Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)
AASHTO T239 (ASTM D3017)	Moisture Content of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)
AASHTO T11 (ASTM C117)	Materials Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing
AASHTO T27 (ASTM C136)	Sieve Analysis of Fine and Coarse Aggregate
AASHTO T89	Determining the Liquid Limit of Soils
AASHTO T90	Determining the Plastic Limit and Plasticity Index of Soils
ASTM D4318	Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils



**DIVISION 2-SITEWORK**

**SECTION 02221  
TRENCH EXCAVATION AND BACKFILL FOR  
PIPELINES AND APPURTENANT STRUCTURES**

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### 1.03. QUALITY CONTROL

#### A. Field Density Testing

1. In-place field density tests for quality assurance shall be at Contractor expense meeting AASHTO T238 and T239 (ASTM D2922 and D3017), Nuclear Densometer Methods. Quality assurance field density testing shall be performed on trench backfill above the bedding course at 2-foot vertical intervals starting 2 feet above the pipe. Tests shall be conducted at intervals of 200 linear feet of backfilled trench, or at the CO's discretion.
2. Re-testing failing areas shall be at the expense of the Contractor.
3. At the direction of the CO, Contractor shall provide necessary equipment and services to excavate and replace materials for test holes up to 5 feet deep into the compacted backfill to allow testing below the surface of any lifts covered without inspection and approval by the CO.

#### B. Gradation, Laboratory Maximum Density and Optimum Moisture

1. Quality assurance tests shall be at the expense of the Contractor for each on-site natural soil or each source of off-site material, including borrow material, to determine the gradation, laboratory maximum density values, and optimum moisture content according to AASHTO T-99/T-180 or ASTM D698/D1557, as specified.
2. All material samples shall be furnished by the Contractor at the Contractor's sole expense. Samples shall be representative and be clearly marked to show the source or the material and the intended use on the project. Sampling of the material source shall be done by the Contractor in accordance with ASTM D75. Notify the CO at least 24 hours prior to sampling. The CO may, at the CO's option, observe the sampling procedures. Tentative acceptance of the material source may be based on an inspection of the source by the CO.
3. Final acceptance of material for use on the project will be based on laboratory results and/or certified test results submitted by the Contractor to the CO, at the CO's discretion.

#### C. Material Submittals

**DIVISION 2-SITEWORK**

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1. Submit to the Contractor's testing laboratory samples of all on-site and off-site pipe bedding, borrow/backfill material for gradation, laboratory maximum density, and optimum moisture content.
2. Samples shall be submitted to the Contractor's testing laboratory for testing and approval by the CO at least 10 days before the material is required for use.
3. Gradation testing shall be made on samples taken at the place of production prior to shipment. If the CO determines that variation in gradation is occurring, or if the material appears to depart from the Specifications, samples of the finished product for gradation testing shall be taken from each 500 tons of prepared materials, or more often as determined by the CO.

## **PART 2 PRODUCTS**

### **2.01. PIPE BEDDING MATERIALS**

#### **A. TYPE 1 PIPE BEDDING**

1. Type 1 Pipe Bedding includes the material placed from 4 inches below the bottom of the pipe, around the pipe, and to 6 inches above the pipe. Where rock is encountered in the trench, the bedding depth shall be increased to accommodate.
2. Material shall be clean non-cohesive natural unwashed gravel or sand or crushed hard stone graded as follows with a plasticity index of 6 or less as determined by AASHTO T89 and T90. Material shall be free of clods and frozen materials.
3. Native trench material shall not be used for pipe bedding without approval from the CO. If approved by the CO, excavated trench material may be screened, sorted, or otherwise processed to produce pipe bedding material.

### **2.02. TRENCH BACKFILL MATERIALS**

- A. Materials from Trench Excavation: Backfill material obtained from trench excavations must be free of refuse, organic or frozen material, boulders, or other deleterious materials. Backfill materials and placement are further described in the Execution Section of this specification.
- B. Imported Backfill Material: The use of backfill material from borrow source(s) outside the project limits may be authorized when, in the opinion of the CO, an adequate volume of suitable backfill material is not available within the project limits.

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**TRENCH EXCAVATION AND BACKFILL FOR  
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**DIVISION 2-SITEWORK**

**2.03. WATER FOR COMPACTION**

- A. Furnish uncontaminated water as required.
- B. Equipment for applying water shall be of a type and quality adequate for the work, shall not leak, and shall be equipped with a distributor bar or other approved device to assure uniform application. Equipment for mixing and drying out material shall consist of blades, discs, or other approved equipment.

**2.04. DETECTABLE BURIED WARNING TAPE**

- A. Detectable buried warning tape is to have a minimum 6-inch width and 5-mil thickness and a solid aluminum core running the full length and width of the tape enclosed in a color coded inert plastic jacket, impervious to alkalis, chemical reagents and solvents in the soil. The tape is to meet APWA/ULCC Color Code requirements and is to have a maximum 36-inch imprint.

**2.05. TRACER WIRE**

- A. Tracer wire shall be No. 14 TW direct bury insulated copper wire. Tracer wire connections shall be made with Scotchlok Insulation Displacement Connectors No. 314.

**PART 3 EXECUTION**

**3.01. PROTECTION OF EXISTING PROPERTIES**

- A. General
  - 1. Take precautions to protect all adjoining private and public property and facilities, including underground and overhead utilities, driveways, structures, and fences. Restore or replace all disturbed or damaged facilities to its original condition at Contractor's expense. Contact utility owners using the Idaho One Call locate service at 1-342-1585, for utility locates before starting work. Protect the utilities exposed during the work and prevent damaging underground utilities adjacent to excavations. Immediately notify the CO of any construction damage. Repairs of damage to marked utilities are at the expense of the Contractor.
- B. Existing Structures
  - 1. Prevent damage to existing or new buildings or structures in the work area. Repair all construction related damage to the satisfaction of the CO.

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### 3.02. TRENCH EXCAVATION

#### A. General

1. Meet current OSHA Safety and Health Standards for all excavation, trenching, shoring, and related work.
2. Excavate at the specified locations for pipeline installations and appurtenant structures.
3. During excavation, stockpile backfill materials away from the trench banks to assure trench wall stability. Stockpile excavated materials on only one side of the trench without obstructing existing fire hydrants, valves, manholes and other appurtenances. Assure surface drainage of adjoining areas is unobstructed.
4. Remove and dispose of all excess or unsuitable excavated materials.
5. Prevent surface water from flowing into excavations. Promptly remove all water accumulating in trench excavations. Do not permit water to accumulate in any open trench. Remove and re-lay all pipe out of alignment or grade caused by trench flooding.
6. Grade the trench bottoms to the specified lines and grades. Assure bedding material provides uniform bearing and support for each pipe section along its entire length. Excavate for bell and joints after the trench bedding is graded, limiting the excavation to the required length, depth and width for making the particular type of joint used. Backfill over-excavations with Bedding Material.
7. No differentiation between common and rock trench excavation is made, except when listed as separate bid items in the Contract Documents. Excavation includes removing and subsequent handling of all earth, gravel, bedrock or other material encountered regardless of the type, character, composition or condition of the material.
8. The use of trench digging machinery is permitted, except in places where its operation is likely to cause damage to existing structures or features, in which case hand methods are to be employed.

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**DIVISION 2-SITework**

**B. Trench Dimensions**

1. Excavate to the trench dimensions as shown on the Drawings.
2. Depth
  - a. Excavate the trench as required for the invert grade or pipe bury as shown or specified, plus 4 inches for the Type 1 Pipe Bedding. If bedrock, boulders or large stones are encountered at the bottom of the trench, excavate at least 6 inches below the bottom of the pipe for backfilling with Type 1 Pipe Bedding.

**C. Soft or Unsuitable Trench Subgrade**

1. When soft or unstable material is encountered at the trench subgrade which will not uniformly support the pipe, excavate the material to the depth directed by the CO and backfill to trench subgrade elevation with Imported Pipe Bedding.

**D. Shoring, Bracing and Sheeting**

1. Provide all shoring, bracing and tight sheeting required to prevent caving and protect workers, meeting current Occupational Safety and Health Act Requirements, and to protect adjacent property and structures. The cost of this work is included in the cost for trench excavation.

**E. Excavation for Appurtenances**

1. Make excavations for manholes, structures and other appurtenances of the size and depth to permit compacting of backfill on all sides to the specified density. The requirements for removing water and other applicable portions of these specifications apply to excavation for appurtenances.

**3.03. DEWATERING**

- A.** Remove all ground water encountered in trench excavations. Do not place pipe, bedding or backfill materials below the groundwater elevation established by dewatering operations. The cost of dewatering operations is considered a part of the excavation cost and shall be incidental.

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**TRENCH EXCAVATION AND BACKFILL FOR  
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**DIVISION 2-SITEWORK**

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**3.04. EXCAVATION STABILITY AND SAFETY**

- A. The stability of construction excavations and associated worker safety, including slope geometry and shoring/bracing considerations, are the responsibility of the Contractor. Meet current OSHA regulations. This may require design of temporary slopes and/or shoring by a licensed Professional Engineer in the State of Idaho.
- B. It shall be the Contractor's responsibility to provide and maintain a reasonable and safe work area for all phases of construction. The Contractor shall design, install, and maintain all necessary slopes or shoring. The type of slope or shoring shall be the Contractor's option. The slope or shoring shall be designed and maintained so as to prevent any movement of soil which may cause damage to the adjacent facilities and property, damage or delay the work, or endanger life and health.

**3.05. TRENCH FILLING AND BACKFILLING**

- A. General  
Backfill all trenches as specified immediately after grade, alignment and pipe jointing has been inspected and approved by the CO. Conduct any pipe testing as specified in the respective water distribution or sewerage sections. Correct all defects discovered by tests prior to backfilling.
- B. Pipe Bedding Placement
  - 1. Pipe Bedding material 4 inches under the pipe, around the pipe, and to 6 inches over the pipe. Place in maximum lifts of 6 inches, using hand operated or other compaction methods without damaging or disturbing the pipe. Thoroughly compact each layer. Use special care to assure compaction under the pipe haunches. Where wet or unstable material exists, assure the material is free draining and non-plastic.
  - 2. Place backfill material in equal lifts on both sides of the pipe for the full trench width. Take care to prevent migration of Type 1 Bedding into surrounding soils during placement and compaction

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C. Trench Backfill

1. After the pipe bedding material is placed and compacted as specified, backfill the trench. Place in lifts of maximum 8-inch thickness. Use backfill material free of cinders, ash, refuse, organic or frozen material, boulders, or other deleterious materials. From the top of the Pipe Bedding to 6 inches below the ground surface, or to the subgrade elevation, material containing rock up to 8 inches in the greatest dimension may be used.
2. Meet the backfill and compaction requirements for all of the backfill types described in this section.
3. Watering
  - a. Apply uncontaminated water, when required, at the locations and in the amounts required to compact the backfill material to the specified requirements. Maintain an adequate water supply during the work. Assure the equipment used for watering is of the capacity and design to provide uniform water application.
4. Apply water during the work to control dust and to maintain all embankment and base courses in a damp condition in accordance with these contract documents. Remove, replace, and re-compact backfill in trenches where settlement has occurred as directed by the CO at the contractor's expense.
5. Placement and Compaction:
  - a. Type A Trench Backfill. Place trench backfill in maximum 8 inch compacted lifts within 3 percent of optimum moisture content, and compact to at least 95 percent of Standard Proctor density determined by ASTM D698.
  - b. Type B Trench Backfill. Place and compact Type B Trench Backfill in maximum 12 inch lifts at densities equal to or greater than the densities of adjoining undisturbed soil. Mound earth over the trench top a minimum of 6 inches.

**SECTION 02221**

**TRENCH EXCAVATION AND BACKFILL FOR  
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**D. Replacement of Unsuitable Backfill Material**

1. Remove and dispose of excavated soils that are saturated, contain deleterious materials or have characteristics that, in the opinion of the CO, render the soils unsuitable as backfill.
2. Replace unsuitable soils with material obtained from trench excavations within the project limits at the expense of the Contractor. If suitable replacement material is not available within project limits, obtain material from an approved borrow source or from the Owner provided source at Dixie Pit.
3. Place and compact all imported material according to the applicable backfill specification requirements.

**DI. Backfill of Appurtenances**

1. Place and compact backfill for appurtenances to finished grade around manholes, inlets, valve boxes and other underground items without disturbing appurtenance alignments.
2. Meet the backfill material, placement, and compaction requirements specified for the adjoining trench.

**DII. Detectable Buried Warning Tape**

1. Install warning tape where shown on the Drawings. Bury tape 18 inches below finish surface grade and above
2. Bring wire to surface outside of all valve boxes.
3. Subsurface wire splices shall have connections and insulation that ensure continuity of the wire between surface connections.

**3.06. SURVEY MARKERS AND MONUMENTS**

- A. Protect all survey markers and monuments. Protection includes marking with flagged high lath and supervising work near markers and monuments. Do not disturb monuments without prior approval from the Government.
- B. Replace all Contractor-disturbed or destroyed survey markers or monuments using a licensed land surveyor.

**END OF SECTION 02221**



**DIVISION 2 – SITEWORK      LANDSCAPING, AND SEEDING, AND IRRIGATION**

**PART 1      GENERAL**

**1.01    WORK INCLUDED**

- A.    The work included in this section consists of finish grading, re-sodding all grass areas disturbed during construction, repairing and supplement all irrigation to provide coverage of previously irrigated areas and exclude new improvements, and providing other landscaping features.
- B.    Include any incidental work which can reasonably be inferred as part of the work and necessary to provide a complete landscape system.

**1.02    GENERAL**

- A.    Topsoil unnecessarily removed shall be replaced and seeded at the Contractor's expense.
- B.    Suitable equipment necessary for the proper preparation of the ground surface and for the handling and placing of all required materials shall be on hand and in good condition.

**1.03    SUBMITTALS**

- A.    Tags from all seeds bags.
- B.    Tags from all fertilizer bags.

**1.04    QUALITY ASSURANCE: SEED**

- A.    General: Seed shall be labeled in accordance with USDA Rules and Regulations under the Federal Seed Act in effect on date of seed purchase. Seed that has become wet, moldy or otherwise damaged in transit or in storage will not be acceptable seed shall contain not less than eighty-five (85) percent pure live seed and not more than 0.5 percent weed seed.
- B.    Seed Testing: All seed shall be tested within twelve (12) months prior to the planting date. All testing shall be performed by a State Seed Lab, Commercial Seed Testing Lab, or a registered member of the Society of Commercial Seed Analysts. The Contractor shall furnish a certified test report to the CO prior to the start of seeding operations. Seed not planted within the 12-month period shall be retested for dormant seed, hard seed and germination and a new certified test report shall be furnished to the CO. Testing shall be the responsibility of the Contractor.

**DIVISION 2 – SITEWORK      LANDSCAPING, AND SEEDING, AND IRRIGATION**

**2.02 SEED**

- B. Lawn Grass Seed Mix: Seed mixture shall be a Sun and Shade Mix requiring reduced water, specific mix to be provided for climate region guaranteed 95 percent pure and to have minimum germination rate of 85 percent within one year of test. Mixture in pounds of PLS per 1000 square feet shall be 10 pounds total, consisting of:

1. Pennington Smart Seed, Sun and Shade, Planting Zone 4
2. Approved Equal

**PART 3 EXECUTION**

**3.01 GENERAL SITE GRADING AND PREPARATION WORK**

- A. After rough grading is completed and before topsoil is spread, thoroughly scarify ground to a minimum depth of 8 inches with a toothed ripping machine by running in two directions at right angles over the entire surface to be planted.

**3.02 SEEDING**

- A. Soil Preparation: All areas disturbed by construction shall be seeded with native grass seed or have sod installed to match the pre-construction conditions. The Contractor shall also provide weed control on all disturbed areas until completion of all work.
- B. Method of Seeding: Seed shall be applied using broadcast spreaders. Apply seed in two intersecting directions. Establish firm contact with seed bed by rolling or pressing in.
- C. The actual date of seed application shall be approved by the CO. Not more than 15 percent of total area with bare spots larger than 6 inches square.
- D. Inspection for Acceptance: Eight weeks after the start of maintenance on the last section of completed grass and on written notice from the Contractor, the Engineer will, within 15 days of such written notice, make an inspection to determine if a satisfactory stand has been produced. If a satisfactory stand has not been established, another inspection will be made after written notice from the Contractor that the lawn or grass is ready for inspection following the next growing season.

**END OF SECTION**

**PART 1 – GENERAL****1.01 DESCRIPTION**

- A. This section specifies furnishing and installing minor concrete structures and reinforcement. This section specifies concrete to be used for construction of small slabs.

**PART 2 - PRODUCTS****2.01 PREPACKAGED CONCRETE MIX**

- A. Material shall be identified as conforming to ASTM C387, Normal Strength Concrete; Normal Weight Concrete.

**2.02 STEEL REINFORCING**

- A. #4 reinforcing bars on 24-inch centers each way. ASTM A615-75, grade 40, unless other grades are shown on the drawings.
- B. All reinforcement shall be new, free from dirt, oil, paint, grease, loose mill scale, and loose or thick rust when placed.
- C. Store on supports to prevent bending, rusting, and accumulation of dirt or soil.

**2.03 WELDED WIRE MESH**

- A. Welded plain cold-drawn steel wire fabric, ASTM A 185. Furnish in flat sheets, not rolls, unless otherwise acceptable to COR.

**PART 3 - EXECUTION****3.01 REINFORCEMENT PLACING**

- A. Accurately place and adequately support reinforcement with concrete, metal or other chairs, spacers, or ties approved by the Contracting Officer (CO), and secure against displacement within the permitted tolerances, and with no reinforcement within 2" of any edge or form.

**3.02 HOT/COLD WEATHER CONCRETE**

- A. The temperature of the concrete shall not exceed 80o, at time of placement, and when the ambient temperature reaches 90oF, the concrete shall be protected with moist covering or other methods approved by the CO. Water, aggregate, and cement shall be protected or cooled as necessary.
- B. The temperature of the concrete shall no fall below 35degree Fahrenheit. Heat or protect concrete, if necessary, to maintain a temperature of more than 35degree Fahrenheit for at least 24 hours after placing.

**3.03 MIXING OF CONCRETE**

- A. Thoroughly mix ingredients. Use mechanical mixer if total quantity to be placed is over 8 cubic feet.

**3.04 PLACING CONCRETE**

- A. CO must inspect forms before any concrete is placed. Notify CO at least 24 hours before any placement to permit inspection Forms shall be free of debris, and surface shall be clean, free of frost, ice mud, and water.
- B. Thoroughly work the external surface of the concrete with tools approved by the CO to force coarse aggregate from the surface and to bring mortar against the forms to produce a smooth finish, substaintially free from water or air pocket or honeycomb. Avoid segregation.
- C. Consolidate the concrete with suitable mechanical vibrators.
- D. Supplement vibrating by hand spading with suitable tools.
- E. Vibrate at any point sufficiently to accomplish compaction, but do not prolong to a point where segregation occurs.

**3.05 FINISHING**

- A. Finishing
  - 1. Finish the concrete surface Float the concrete surface so it is flush to within 1/8" variation and lightly broom without tearing the concrete. Assure the broomed finish produces regular corrugations not exceeding 1/8-inch (3 mm) in depth.

**3.06 CURING**

- A. Keep all concrete surfaces wet for seven (2) days after being placed. Acceptable methods include ponding, wet burlap, wet straw or hay, curing paper, plastic sheets, and membrane curing compound. Other methods must be approved by the CO.
- B. Wood forms are allowed to remain in place during the curing period, they shall be kept moist at all times to prevent opening at joints.

- C. After form removal, clean ends of joints and point-up any minor honeycombs.
- D. Remove and replace areas or sections with major defects.
- E. Protect concrete from damage until acceptance of work.

**END OF SECTION**

**DIVISION 2 – SITE PREPARATION**

**PART 1: GENERAL**

**1.01 DESCRIPTION**

- A. Furnish and install sewer pipe and fittings including manholes, service lines and other appurtenant structures as specified in the Contract and this section. Pipe strength classifications are shown on the plans, listed in the Contract Documents or specified herein.

**1.02 CERTIFICATION BY MANUFACTURER**

- A. Furnish a manufacturer's certification for all pipe and fittings, certifying that the pipe and fittings meet the contract requirements.

**1.03 REFERENCES**

ASTM C76	Reinforced Concrete Pipe
ASTM C361	Low Head Pressure RCP ASTM C443 O-ring Rubber Gaskets
ASTM C478	Precast Reinforced Concrete Manhole Sections
ASTM C655	D-Load RCP
ASTM D1784	Rigid Polyvinyl Chloride Compounds
ASTM D2241	PVC Pressure Pipe
ASTM D3034	Polyvinyl Chloride Sewer Pipe and Fittings
ASTM F679	Large Diameter PVC Pipe
ASTM F714	HDPE Pipe-Dimensions
ASTM 3350	High Density Polyethylene Pipe
ASTM F949	PVC Open Profile Pipe

**PART 2: PRODUCTS**

**2.01 GENERAL**

- A. Furnish sewer pipe and fittings as specified in the Contract Documents and meeting the materials and testing requirements of this Section. Furnish wye or tee branches and service line piping of the same material and design as the sewer pipe unless specified otherwise. Pipe strength classifications are shown on the plans and/or are listed in the Contract Documents.

**DIVISION 2 – SITE PREPARATION**

- B. References made to ASTM, ANSI or AASHTO designation are the latest revision at the time of call for bids.
- C. Assure all pipe is clearly marked with type, class and/or thickness as applicable. Assure lettering is legible and permanent under normal conditions of handling and storage.
- D. Furnish the joint type, class, thickness designation, castings, lining, marking, testing, etc. as specified.

**2.02 PIPE MATERIALS**

- A. Polyvinyl Chloride (PVC) Pipe
  - 1. General
    - a. Furnish PVC pipe produced by a continuous extrusion process, employing a prime grade of un-plasticized polyvinyl chloride. Assure the grade used is highly resistant to hydrogen sulfide, sulfuric acid, gasoline, oil, detergents and other chemicals found in sewage and industrial wastes. Assure the material meets “Rigid Polyvinyl Chloride Compounds” - ASTM Designation D-1784 requirements. Assure the pipe has self-extinguishing flammability characteristics.
  - 2. Gravity Sewer Pipe
    - a. Furnish gravity sewer pipe meeting one of the following requirements:
      - 1) ASTM D-3034, “Standard Specifications for Polyvinyl Chloride Sewer Pipe and Fittings”, with an SDR of 35 4"15" (10 cm - 38 cm).
      - 2) ASTM F679, “Standard Specifications for PVC Large Diameter Plastic Gravity Sewer Pipe and Fittings” 18"36"(46 cm - 76 cm).

## **DIVISION 2 – SITE PREPARATION**

## **SECTION 02730 SANITARY SEWER COLLECTION SYSTEM**

- 3) ASTM F949, “Standard Specification for PVC Corrugated (Open Profile) Sewer Pipe with a Smooth Interior and Fittings” larger than 12” (10cm).
  - b. Furnish pipe having nominal 12.5 feet (3.8 meters), laying lengths, except shorter lengths may be used adjacent to manholes, lampholes or other appurtenances. Assure each pipe section is marked, as a minimum, with size, SDR, “Sewer Pipe” and Code Number.
- 4 Pipe Jointing
  - a. Furnish each pipe length with a bell designed to provide a watertight joint when jointing the bell and spigot with a rubber ring.
  - b. Make a rubber gasket joint for PVC pipe and fittings using a rubber gasket compressed between the outer surface of the spigot and the inner surface of the bell. Assure the joint is completely sealed by the gasket so that the assembly remains watertight under all service conditions, including expansion, contraction, settlement and pipe deformation. Follow the manufacturer’s recommendations when assembling the rubber ring joint.
5. Fittings
  - a. Assure wye or tee fittings for connecting service lines are of the same material, construction and joint design as the main sewer pipe.
- C. Other Pipe Materials
  1. Other pipe materials may be specified at the discretion of the Engineer and Owner.

## **PART 3: EXECUTION**



**DIVISION 2 – SITE PREPARATION**

**3.01 PIPE AND SERVICE LINE INSTALLATION**

**A. Excavation and Backfill**

1. Perform pipeline excavation and backfill meeting the applicable requirements of Section 02221: TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES.

**B. Responsibility for Materials**

1. Be responsible for all material furnished. Replace all material found defective in manufacture or damaged in handling after delivery. This includes furnishing all material and labor required for the replacement of installed material discovered defective before final acceptance of the work or during the guarantee period.
2. Be responsible for the safe storage of material intended for the work until it has been incorporated in the completed project.

**C. Handling of Pipe**

1. Deliver and distribute all pipe to the site. Load and unload pipe, fittings and accessories by lifting with hoists or skidding to avoid shock or damage. Do not drop any materials. Do not roll or skid pipe handled on skidways against pipe already on the ground.
2. In distributing the material at the site of the work, unload each piece opposite or near the place where it is to be laid in the trench. Keep the interior of all pipe and other accessories free from dirt and foreign matter at all times.
3. Handle pipe to prevent damaging coating or lining. If any part of the coating or lining is damaged, make all repairs in a manner satisfactory to the Engineer.

**D. Laying Pipe**

1. Lay and maintain all pipe to the specified lines and grades with fittings, tees and manholes at the required locations. Establish line and grade using batter boards and string line, laser equipment or

**DIVISION 2 – SITE PREPARATION**

other approved methods. When batter boards and string line are used, use a minimum of three batterboards at all times.

2. Install wye or tee fittings in the mainline sewer for service line connections. Furnish wye or tee fittings of the same material, design and specifications as the sewer main pipe. Joint service pipe to tee branches or main line pipe other than PVC using special joint adapters manufactured specifically for jointing the two types of pipe.
3. Use tools and equipment, satisfactory to the Engineer, for the safe and convenient prosecution of the work. Carefully lower all pipe and fittings into the trench to prevent damage to pipe materials and protective coatings and linings. Do not drop or dump any materials into the trench.
4. Take every precaution to prevent foreign material from entering the pipe while it is being installed. At times when pipe laying is not in progress, close the open ends of pipe using a plug or other means approved by the Engineer. Clean and remove all sand, gravel, concrete and cement grout that has entered the lines during construction.

**E. Tolerances**

1. Install the pipe within 1/2-inch (13 mm) of the specified alignment and within 1/4-inch (6 mm) of the specified grade.

**3.03 SANITARY SEWER SERVICE LINES**

- A. Construct service lines meeting Standard Drawing 511. Install the service line to the property line. Plug the end of the service line with a stopper and gasket, using a gasket of the same type used for pipe jointing. Do not grout the plugs.
- B. Mark the sanitary sewer and storm drain service line ends at the property line using a steel fence post 5 feet (1.5 m) long, buried at least 2 feet (0.6 m). Place a 2" X 2" (5cm X 5 cm) wood marker extending from the pipe invert to ground line. Wire the 2" X 2" (5cm X 5 cm) marker to the steel fence post. Where applicable, mark the concrete curb to identify the service locations. Paint sanitary sewer service markers green and storm drain service markers gray.

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**3.04 TESTS**

- A. Make all tests after backfill is completed, but before any surface restoration or street surfacing. Be responsible for finding and repairing all breaks and leaks revealed by the tests. Additionally, perform all tests in the presence of the Engineer, resident inspector, or the Owner's other designated representative.
- B. Light Test (Visual)
  - 1. After the trench has been backfilled and compacted as specified in Section 02221, perform a light test between manholes to check alignment and grade for pipe displacement. Excluding curved alignments shown on the plans, the completed pipeline is to permit a true circle of light to be visible from one manhole to the next. If alignment or grade is not that specified and displacement of pipe is found, remedy all defects.
- C. Leakage Test: New sewer line will not be finally accepted until leakage tests are made assuring the Engineer that pipe laying and jointing are satisfactory.
- D. Water Test
  - 1. Where groundwater is at least 2 feet (0.6 m) above the sewer line, make tests by sealing off the section of lines between manholes and measuring the actual flow by collecting or pumping the discharge into barrels or other approved methods. Continue tests at a minimum of 4 hours for each section tested. Allow time to soak lines and manholes in advance of performing tests.
  - 2. When groundwater is not 2 feet (0.6 m) above the pipe, test as follows: On flat slopes where the depth over the centerline of the pipe in the lower manhole of the section being tested will be not more than 10 feet (3 m), fill the upper manhole to 2 feet (0.6 m) over the top of the pipe or 2 feet (0.6 m) above the groundwater elevation (whichever is higher), and block the lower manhole. When the above conditions cannot be met, the Engineer may order testing the line in sections between manholes. Measure the leakage by checking the water level drop in the manhole over a 4 hour period.

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3. The allowable infiltration or exfiltration, including manholes, cannot exceed 200 gallons per day per mile of sewer per inch of pipe diameter (185 liters per day per kilometer of sewer per centimeter of pipe diameter). This does not exclude obvious and concentrated leaks and physical defects, such as open joints, pinched gaskets, cracked barrels or bells, etc. Make repairs on concentrated leaks, and as required to reduce infiltration or exfiltration leakage below the specified rate.

**E. Number of Tests**

1. Perform the number of leakage tests directed by the Engineer to assure that materials and workmanship are acceptable. Repair defective joints using only approved methods. Replace pipe having cracked or broken barrels. Do not exceed 800 feet (240 m) of sewer line per test unless otherwise approved.

**F. Material and Equipment for Testing**

1. Furnish all labor, equipment and materials (including water) necessary for performing the sewer line tests at Contractor expense.

**3.05 WATER AND SEWER MAIN SEPARATION**

- A. Horizontal and vertical separation between water and sewer mains is dictated by Idaho Department of Environmental Quality.

**END OF SECTION 02730**

**DIVISION - 22 PLUMBING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. The requirements listed in this section are supplemental to the Division 01 General Requirements.
- B. It shall be the responsibility of the Plumbing Contractor to examine and refer to the specifications for construction. Inspect the building site and existing facilities for verification of present conditions. Make proper provisions for these conditions in performance of the work and cost thereof.
- C. Furnish and install materials and any required incidental items required by good practice to complete the Project.

**1.2 CODES AND STANDARDS**

- A. Work shall meet the requirements of the plans and specifications and shall not be less than the minimum requirements of applicable sections of the latest Codes and Standards of the following Organizations:
  - 1. American Water Works Association (AWWA)
  - 2. Uniform Plumbing Code (UPC)
  - 3. Occupational Safety & Health Act (OSHA)
  - 4. Plastic Pipe Institute (PPI)
  - 5. International Mechanical Code (IMC)
  - 6. International Building Code (IBC)
  - 7. Requirements of the Serving Utility Company
  - 8. Local and State Codes and Ordinances

**1.3 FEES AND PERMITS**

- A. The Plumbing Contractors shall pay all fees and arrange all permits required for work done under their contract and under their supervision by subcontract.

**1.4 MATERIALS AND EQUIPMENT**

- A. This Contractor shall be responsible for materials and equipment installed under this contract. Contractor shall also be responsible for the protection of materials and equipment of others from damage as a result of his work.
- B. This Contractor shall make the arrangement CO for the introduction into the building.
- C. Store materials on raised platforms and protect from the weather by means of waterproof covers. Coverings shall permit circulation of air around the materials to prevent condensation of moisture. Screen or cap openings in pipe to prevent the entry of vermin.

**DIVISION - 22 PLUMBING**

**1.5 INTENT OF DRAWINGS**

- A. The drawings are diagrammatic and do not necessarily show exact location of piping

**1.6 RESPONSIBILITY**

- A. Plumbing work shall conform to requirements of all divisions 22 and 23 specifications.
- B. The Plumbing shall be responsible for the installation of a satisfactory and complete system in accordance with the intent of the drawing and specifications. Provide, at no extra cost, all incidental items, materials, accessories and labor required for completion of the work even though they are not specifically mentioned or indicated on the drawings or in the specifications.
- C. The drawings do not attempt to show complete details of the construction.
- D. Location plumbing system components shall be checked for conflicts with openings, structural members and components of other systems having fixed locations. In the event of any conflicts, the Architect/Engineer shall be consulted and their decision shall govern. Necessary changes shall be made at the Contractor's expense.
- E. Final location of cleanout and wye fittings must be coordinated with facilities required for other installations to prevent conflict with other improvements.
- F. At all times during the performance of this Contract, properly protect work from damage and protect the Owner's property from injury or loss. Make good any damage, injury or loss,
- G. Provide and maintain passageways, guard fences, lights and other facilities for protection required by Public Authority or Local conditions.
- H. The Contractor shall be responsible for damages due to the work of their contractors, to the building or its contents, people, etc.

**1.8 WORKMANSHIP**

- A. Work under this contract shall be performed by workmen skilled in the plumbing trade.
- B. Obtain Architect's/Engineer's approval before performing any cutting on structural members or patching of building surfaces. Any damage to the building or equipment by the Mechanical or Plumbing Contractor shall be repaired by skilled craftsmen of the trades involved at the Contractor's expense.

**DIVISION - 22 PLUMBING**

**1.9 COORDINATION**

- A. Plumbing Contractors shall plan their work to proceed with a minimum interference with Residents and Employees working in the building.
- B. In general, pipelines requiring gravity drainage shall be installed first.
- C. Leave sufficient space for the installation of insulation on piping as specified. It is not acceptable to compress pipe or duct insulation for any reason.

**1.10 CLEANING**

- A. Keep the job site clean. The Plumbing Contractors shall remove all waste and rubbish associated with their work.
- B. Upon completion of work, remove materials, scraps and debris relative to plumbing and leave all spaces clean and orderly.

**1.11 TEMPORARY FACILITIES**

- A. Offices
  - 1. The Mechanical and Plumbing Contractor must have the permission of the Owner and General Contractor or Construction Manager to install a temporary office/job trailer on the project site.
  - 2. Contractor shall completely remove his temporary installations when no longer needed and the premises shall be completely clean, disinfected, patched, and refinished to match adjacent areas.
- B. Ladders and Scaffolds
  - 1. The Plumbing Contractors shall provide their own ladders, trench boxes etc. of substantial construction for access to their work in various locations. When no longer needed, they shall be removed by the Contractor.

**DIVISION - 22 PLUMBING**

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**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes the following:
  - 1. Pipe Sleeves
  - 2. Sleeve Seals Systems for Piping
  - 3. Silicone Sealant
  - 4. Escutcheons for Piping
  - 5. Floor Plates

**1.2 SUBMITTALS**

- A. See Section 220000 "General Requirements of Plumbing and HVAC" for Submittal requirements.

**1.3 QUALITY ASSURANCE**

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Pipe and Pressure-Vessel Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

**1.4 PERFORMANCE REQUIREMENTS**

- A. Compatibility: Products shall be suitable for piping service fluids, materials, working pressures, and temperatures.

**PART 2 - PRODUCTS**

**2.1 SLEEVES**

- A. Galvanized-Steel Sheet Pipe Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.



**DIVISION - 22 PLUMBING**

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**2.2 SLEEVE-SEAL SYSTEMS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Advance Products & Systems, Inc.
  - 2. CALPICO, Inc.
  - 3. GPT; an EnPro Industries company.
  - 4. Metraflex Company (The).
- B. Description:
  - 1. Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
  - 2. Designed to form a hydrostatic seal of 20-psig.
  - 3. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size.
  - 4. Pressure Plates: Composite plastic.
  - 5. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

**2.3 SILICONE SEALANTS**

- A. Silicone, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade P, Class 25, Uses T and NT. Grade P Pourable (self-leveling) formulation is for opening in floors and other horizontal surfaces that are not fire rated.

**2.4 ESCUTCHEONS**

- A. One-Piece, Stamped-Steel Type:

**2.5 FLOOR PLATES**

- A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

**DIVISION - 22 PLUMBING**

**PART 3 - EXECUTION**

**3.1 SLEEVE INTALLATION**

- A. Install sleeves for piping passing through penetrations in floors,
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.
- C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
  - 1. Cut sleeves to length for mounting flush with both surfaces.
    - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.
  - 2. Using silicone sealant, seal space outside of sleeves in slabs and walls without sleeve-seal system.

**3.2 SLEEVE-SEALS SYSTEM INSTALLATION**

- A. Install sleeve-seal systems in sleeves in exterior concrete walls at piping entries into building.
- B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal-system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates and make a watertight seal.

**3.3 SLEEVE-SEAL SCHEDULE**

- A. Use sleeve and sleeve-seals for the following piping-penetration applications:
  - 1. Interior or Exterior Concrete Slabs-on-Grade: Sleeve not required.
  - 2. Interior Concrete Slabs Above Grade: Galvanized-Steel Sheet Pipe  
Sleeves with Silicone Sealant or Fire calk

**3.4 ESCUTCHEON INSTALLATION**

- A. Install metal escutcheon for Cleanout piping lid for exterior location. Install escutcheons with ID to closely fit around pipe, with OD that completely covers opening.

**END OF SECTION 220500**

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**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Cleanouts.
  - 2. Miscellaneous sanitary drainage piping specialties.

**1.2 SUBMITTALS**

- A. See Section 220000 "General Requirements of Plumbing and HVAC" for submittal requirements.

**PART 2 - PRODUCTS**

**2.1 ASSEMBLY DESCRIPTIONS**

- A. Sanitary waste piping specialties shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF 14 for plastic sanitary waste piping specialty components.

**2.2 CLEANOUTS**

- A. Above Grade Wall Cleanout
  - 1. Provide JR Smith 4422 or approved equal
  - 2. Description: Cast iron caulked spigot ferrule with cast bronze taper thread plug and stainless steel round cover and screw.
- B. Finished Floor Cleanout
  - 1. Provide JR Smith 4100 or approved equal
  - 2. Description: Cast iron cleanout with extra heavy duty round, adjustable, scoriated, secured nickel bronze top, and no-hub outlet, gasket seal bronze plug and flashing clamp for.
- C. Outdoor Cleanout
  - 1. Provide JR Smith 4241S or approved equal
  - 2. Description: Cast iron floor level cleanout assembly with heavy duty, round, adjustable, scoriated cast iron top, non-tilt tractor cover, gasket seal bronze plug.

**DIVISION - 22 PLUMBING**

**SECTION 221319  
SANITARY WASTE  
PIPING SPECIALTIES**

**2.3 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES**

**A. Open Drains or Hub Drains:**

1. Description: Shop or field fabricate from ASTM A 74, Service class, hub-less, cast-iron soil-pipe fittings. Include P-trap, riser section; and where required, increaser fitting joined with ASTM C 564 rubber gaskets.
2. Size: See drawings. If not shown drain shall 2" minim or one size larger than piping discharging to the drain.

**B. Expansion Joints:**

1. Standard: ASME A112.6.4.
2. Body: Cast iron with bronze sleeve, packing, and gland.
3. End Connections: Matching connected piping.
4. Size: Same as connected soil, waste, or vent piping.

**PART 3 - EXECUTION****3.1 INSTALLATION**

- A. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
  - 1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
  - 2. Locate at each change in direction of piping greater than 45 degrees.
  - 3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
  - 4. Locate at base of each vertical soil and waste stack.
- B. For floor cleanouts for piping below floors, install cleanout with top flush with finished floor. It shall be the responsibility of the plumbing contractor to coordinate the installation of cleanouts with the general contractor and floor contractor to ensure that floor cleanouts are properly adjusted so that the top is flush and level with finished flooring material. Cleanout covers that are not flush and level with the finished floor will be rejected and the plumbing contractor will be required to sawcut or core drill the floor, provide and install and new cleanout, coordination installation of new concrete and new finished flooring material.
- C. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.
- D. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.
- E. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.
- F. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

**3.2 CONNECTIONS**

- A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.

**DIVISION - 22 PLUMBING**

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**3.3 PROTECTION**

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

**END OF SECTION 221319**