



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Paul R. LePage
GOVERNOR

David Bernhardt
COMMISSIONER

February 16, 2018
Subject: Highway Reconstruction
State WIN: 018622.00
Location: **Hallowell**
Amendment No. 2

Dear Sir/Ms.:

Please make the following changes to the Bid Documents:

In the Bid Book:

ADD the attached SECTION 02200 - WATER MAIN EARTHWORK, 14 pages.

The following questions have been received:

Question: After running some preliminary numbers, it appears that the mile stone date of June 29 is not being achieved without the Contractor incurring a large amount of liquidated damages. Would Department please reconsider this.

Response: The Department has completed the same construction calculations and is confident in the proposed schedule. No changes in milestone dates will be considered.

Question: Would the Department also please reconsider extending the bid date by one week. There are many components to this project that require a large amount of time to bid properly. The extra week shall give the Contractors time to make sure that items are not missed.

Response: No, the Department feels there is adequate advertising time, and to maximize available construction time as much as possible.

Question: With the rail crossing at Chestnut being removed, are items 648.021 "8 Inch DR 11 DIPS HDPE" and 648.031 " 16-inch schedule 40 railroad sleeve" still required? If yes, please clarify what the intended purpose is.

Response: Yes. The rail line could be reactivated in the future. The water district wants the water main sleeved in this project to avoid having to install a sleeve in the future.

Question: Please clarify what the new water mains are to be bedded with.



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Response: Water mains are to be bedded with screened or crushed gravel meeting the requirements of MaineDOT specifications Section 703.06 Type B aggregate.

Question: Please clarify if there are any areas where the water main is being installed that the aggregate subbase for the road is not being paid for?

Response: Yes. Aggregate subbase required for rebasing within areas disturbed for construction of water mains or services that are outside the limits of excavation for roadway reconstruction or trenching for highway drainage construction will be incidental to payment for the water main and services.

Question: Does the Department anticipate having enough salvaged curb from the project for the recycled curb wall and required deadmen? How does additional curb get paid for if there is not?

Response: The quantity of salvaged curb is estimated to exceed the quantity required for the entire wall, with allowance for up to 10% of the curb being unusable. Only the exposed surface needs to be curb salvaged from the project. The availability of the curb will be dependent on sequencing of the work by the Contractor. Alternate material for wall construction may be used below the exposed surface. Payment for all wall material is included in payment under Item 679.20. See special provisions, Section 679.08.

Question: In the Special Provision for the recycled curb retaining wall, under Section 679.06-2 states that unsuitable materials encountered in the foundation soils shall be removed and replaced with 3/4" crushed stone. How will this work and stone be paid for?

Response: Excavation for removal of unsuitable bearing materials below the wall will be paid as Common Excavation. See special provisions, Section 679.08. Crushed stone will be considered to be included in payment under Item 679.20.

Question: Also in Special Provision 679, Section 679.06 states that the wall shall be paid for by the square foot of front surface not to exceed dimensions shown on plans. Please verify that the quantity of curb wall in the schedule of values is correct? What happens when the wall is built to the plans but the quantity of front surface exceeds the quantity in the schedule of values?

Response: The quantity of 760 S.F. has been checked. Payment will be made for the actual square foot area completed and accepted.

Question: Would the Department please remove the 10% on the mobilization item? With the way the bid is structured, it is very possible that the mobilization item shall exceed 10% and the remaining money will have to be distributed to other bid items, which could have impacts for both the MaineDOT and the Contractor.

Response: No. The Department feels 10% is adequate for Mobilization.

Question: Will the Department allow the temporary water system to be run between the rear of the building and the river?

Response: No, some areas between the river and the buildings are private property along a private road.

Question: What lane closures will be allowed between the June 29th milestone and the recognized Old Hallowell Days?

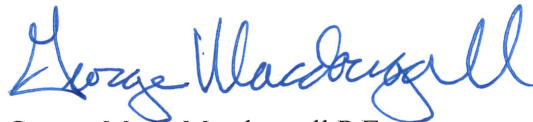
Response: No lane closures will be allowed on Water Street from sunrise Friday, June 29th through sunrise Monday, July 23, 2018.

Question: Please clarify the minimum embedment of the curb wall. The Geotech report and the details on sheet 12 of the plans contradict each other.

Response: There is no contradiction, just a difference in what was being referred to in terms of embedment. The geotechnical report specifies total embedment depth of the wall and concrete leveling pad to be 2 feet below finished grade at the face of the wall. The details on sheet 12 also show that depth to be 2 feet, with 15 inches from finished grade down to the top of the leveling pad and 9 inches of leveling pad thickness in front of the granite. There will be a 3 inch lip on the leveling pad in front of the wall and 6 inches thickness of leveling pad below the wall. The 15 inches stated in Note 5 on sheet 12 refers to the dimension from finished grade to the top of the leveling pad in front of the wall.

Consider these changes and information prior to submitting your bid on **February 21, 2018.**

Sincerely,



George M. A. Macdougall P.E.
Contracts & Specifications Engineer

SECTION 02200
WATER MAIN EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Work described by this Section consists of all earthwork encountered and necessary for construction of the water main as indicated in the Contract Documents, and includes but is not limited to the following:

1. Excavation
2. Backfilling and Filling
3. Compaction
4. Providing soil material as necessary
5. Disposal of excess suitable material and unsuitable materials

Water main earthwork (except for rock excavation) is incidental to water mains, services and appurtenances.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. All work shall be performed and completed in accordance with all local, state and federal regulations.
2. The General Contractor shall secure all other necessary permits unless otherwise indicated from, and furnish proof of acceptance by, the municipal and state departments having jurisdiction and shall pay for all such permits, except as specifically stated elsewhere in the Contract Documents.

B. Line and Grade:

1. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain same to properly perform the work.

C. Testing Methods:

1. Gradation Analysis: Where a gradation is specified the testing shall be in accordance with ASTM C-117-90 and ASTM C-136-93 (or latest revision).
2. Compaction Control:
 - a) Unless otherwise indicated, wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place density divided by the maximum density and multiplied by 100. The maximum density shall be the density at optimum moisture as determined by ASTM Standard Methods of Test for Moisture-Density Relations of Soil Using 10-lb. Hammer and 18-in. Drop, Designation D-1557-91 (Modified Proctor), or latest revision, unless otherwise indicated.

b) The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone method, Designation D 1556-90, (or latest revision) or Nuclear method Designation D2922.

c) Wherever specifically indicated, maximum density at optimum moisture may be determined by ASTM Standard Methods of Test for Moisture Density Relations of Soils, ASTM D-698-91 (Standard Proctor).

d) An Independent Testing Laboratory may be retained by the Owner to conduct laboratory and field soil sampling and testing, and to observe earth work and foundation construction activities. Laboratory testing will consist of sieve analyses, natural water content determinations, and compaction tests. Field testing will consist of field unit weight tests and determination of water contents.

1.3 SUBMITTALS

A. Collection of samples and testing of all materials for submittals shall be performed by the Independent Testing Laboratory and paid for by the Contractor until the materials are approved by the Owner or District or Authorized Representative.

B. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.

C. Submit test results (including gradation analysis) and source location for all borrow material to be used at least 10 working days prior to its use on the site. Contractor shall identify and provide access to borrow sites.

D. Submit moisture density curve for each type of soil (on site or borrow material) to be used for embankment construction or fill beneath structures or pavement.

1.4 TESTS

The Independent Testing Laboratory shall conform to the following procedures and standards:

A. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.

B. All testing shall be performed by a qualified Independent Testing Laboratory acceptable to the District or Authorized Representative and Contractor at the Owner's expense unless otherwise indicated (see Section 01400 - Quality Control).

C. Trenches: Field density test in trenches shall be taken at 75 linear foot intervals on every third lift.

D. In addition to the above tests the Independent Testing Laboratory will perform additional density tests at locations and times requested by the District or Authorized Representative.

E. Additional density testing will be required by the District or Authorized Representative if the District or Authorized Representative is not satisfied with the apparent results of the Contractor's compaction operation.

1. If the test results fail to meet the requirements of these specifications, the Contractor shall undertake whatever action is necessary, at no additional cost to the Owner, to obtain the required compaction. The cost of retesting will be paid by the Contractor. The cost of retesting will be determined by District or Authorized Representative, and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount for retesting plus any late fees will be deducted from the Contract Price. No allowance will be considered for delays in the performance of the work.

2. If the test results pass and meet the requirements of these Specifications, the cost of the testing service will be borne by the Owner, but no allowance will be considered for delays in the performance of the work.

1.5 JOB CONDITIONS

A. Site Information:

1. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner and District or Authorized Representative will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. Data are made available for the convenience of Contractor.

2. Additional test borings and other exploratory operations may be made by Contractor at no additional cost to Owner.

B. Existing Utilities and Structures:

1. The locations of utilities and structures shown on the Drawings are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The District or Authorized Representative in no way warrants that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities or structures within the project area.

PART 2 - PRODUCTS

2.1 SOIL MATERIAL

A. Common Borrow: Shall consist of approved material required for the construction of the work where designated. Common borrow shall be free from frozen material, perishable rubbish, peat, organic, stones larger than 6" in size and other unsuitable material.

B. Crushed Stone: Shall be a uniform material consisting of clean, hard, and durable particles or fragments, free from vegetable or other objectionable matter, containing angular pieces, as are those which come from a mechanical crusher. Gradation requirements shall be as follows:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
1-1/2 inch	100
1 inch	95-100
1/2 inch	25-60
No. 4	0-10

C. Screened Stone: Shall be a well graded stone consisting of clean, hard, and durable particles or fragments, free from vegetable or other objectionable matter, meeting the following gradation requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
1 inch	100
3/4 inch	90-100
3/8 inch	20-55
No. 4	0-10
No. 8	0-5

D. Sand: Shall be well graded durable material free of organic matter and conform to the following gradation requirements:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
3/8 inch	100
No. 4	95-100
No. 16	50-85
No. 50	10-30
No. 100	2-10
No. 200	0-5

Sand conforming to the requirement for fine aggregate in ASTM Standard Specifications for Concrete Aggregate, Designation C-33, will meet the above requirement.

E. Select Fill: Shall consist of well graded granular material free of organic material, loam, wood, trash, snow, ice, frozen soil and other objectionable material and having no rocks with a maximum dimension of over 4 inches and meeting the following gradation requirements, except where it is used for pipe bedding in which case the maximum size shall be 2-inches.

Sieve Designation	Percent by Weight Passing Square Mesh Sieve
4"	100
3"	90-100
1/2"	25-90
No. 40	0-30
No. 200	0-5

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions under which excavating, backfilling, filling, compaction and grading are to be performed and notify the District or Authorized Representative in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 EXCAVATION

A. General:

1. Water main trench excavation (except for rock excavation) is incidental to water mains, services and appurtenances.

2. Excavation consists of removal and disposal of all material encountered when establishing line and grade elevations required for execution of the work.

3. The Contractor shall make excavations in such manner and to such widths as will give suitable room for building the structures or laying and jointing the piping; shall furnish and place all sheeting, bracing, and supports; shall do all cofferdamming, pumping, and draining; and shall render the bottom of the excavations firm, dry and acceptable in all respects.

4. All excavation shall be classified as either earth or ledge.

a) Earth Excavation shall consist of the removal, hauling and disposal of all earth materials encountered during excavation including but not limited to native soil or fill, pavement (bituminous or concrete), existing sewers and manholes, ashes, loam, clay, swamp muck, debris, soft or disintegrated rock or hard pan which can be removed with a backhoe, or a combination of such materials, and boulders measuring less than two cubic yards.

b) Ledge Excavation: Shall consist of the removal, hauling, and disposal of all ledge or rock encountered during excavation. "Ledge" and "rock" shall be defined as any natural compound, natural mixture that in the opinion of the District or Authorized Representative can be removed from its existing position and state only by drilling and blasting, wedging, sledging, boring or breaking up with power operated tools. No boulder, ledge, slab, or other single piece of excavated material less than two cubic yards in total volume shall be considered to be rock unless, in the opinion of the District or Authorized Representative it must be removed from its existing position by one of the methods mentioned above.

5. The Contractor shall not have any right of property in any materials taken from any excavation. Do not remove any such materials from the construction site without the approval of the District or Authorized Representative. This provision shall in no way relieve the Contractor of his obligations to remove and dispose of any material determined by the District or Authorized Representative to be unsuitable for backfilling. The Contractor shall dispose of unsuitable and excess material in accordance with the applicable sections of the Contract Documents.

B. Additional Excavation: When excavation has reached required subgrade elevations, notify the District or Authorized Representative and Resident Project Representative who will observe the conditions.

1. If material unsuitable for the structure or paved area or pipeline (in the opinion of the District or Authorized Representative) is found at or below the grade to which excavation would normally be carried in accordance with the Drawings and/or Specifications, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted select fill, screened stone, crushed stone, or concrete as directed by the District or Authorized Representative.

2. All excavated materials designated by the District or Authorized Representative as unsuitable shall become the property of the Contractor and disposed of at locations in accordance with all State and local laws and the provisions of the Contract Documents.

C. Unauthorized Excavation: Shall consist of removal of materials beyond indicated subgrade elevations or dimensions without specific authorization of District or Authorized Representative. Unauthorized excavation, as well as remedial work required by the District or Authorized Representative shall be at the Contractor's expense. Remedial work required is as follows:

1. If the bottom of a trench is excavated beyond the limits indicated, backfill the resulting void with thoroughly compacted screened gravel, unless otherwise indicated.

2. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by District or Authorized Representative.

E. Trench Excavation: Shall consist of removal, hauling and disposal of all material encountered in the excavation to the widths and depths shown on the Drawings to permit proper installation of underground utilities.

1. Excavate trenches to the uniform width shown on the Drawings sufficiently wide to provide sufficient space for installation, backfilling, and compaction. Every effort should be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

2. Trenches shall be excavated with approximately vertical sides between the elevation of the center of the pipe and an elevation one foot above the top of the pipe.

3. Grade bottoms of trenches as indicated for pipe and bedding to establish the indicated slopes and invert elevations, notching under pipe joints to provide solid bearing for the entire body of the pipe, where applicable.

4. If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to a height of at least two feet above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall be excavated as though in undisturbed material.

5. Perform excavation for water mains in a logical sequence.

6. The extent of open excavation shall be controlled by prevailing conditions subject to any limits prescribed by the District or Authorized Representative.

7. As the excavation progresses, install such shoring and bracing necessary to prevent caving and sliding and to meet the requirements of the state and OSHA safety standards, as outlined in the appropriate section of this Specification.

F. Protection of Persons, Property and Utilities:

1. Barricade open excavations occurring as part of this work and post with warning lights in compliance with local and State regulations.

2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. Exercise extreme caution and utilize sheeting, bracing, and whatever other precautionary measures that may be required.

3. Rules and regulations governing the respective utilities shall be observed in execution all work. Active utilities and structures shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped only with written authorization of the utility owner. Report in writing to the District or Authorized Representative, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable.

4. Repair, or have repaired, all damage to existing utilities, structures, lawns, other public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the District or Authorized Representative, the utility, the property owner, and the Owner.

G. Stability of Excavations:

1. Slope sides of excavations to comply with all codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

H. Shoring and Bracing:

1. Provide materials for shoring and bracing, such as trench boxes, sheet piling, uprights, stringers and cross-braces, in good serviceable condition.
2. Provide trench shoring and bracing to comply with local codes and authorities having jurisdiction.
3. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Install shoring and bracing as excavation progresses.

I. Material Storage:

1. Stockpile excavated materials which are satisfactory for use on the work until required for backfill or fill. Place, grade and shape stockpiles for proper drainage and protect with temporary seeding or other acceptable methods to control erosion.
2. Locate and retain soil materials away from edge of excavations.
3. Dispose of excess soil material and waste materials as herein specified.

J. Dewatering:

1. To ensure proper conditions at all times during construction, the Contractor shall provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdowns) with which to intercept and/or remove promptly and dispose properly of all water entering trenches and other excavations (including surface and subsurface waters).
2. Excavations shall be kept dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged.

K. Cold Weather Protection:

1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35°F.
2. No frozen material shall be used as backfill or fill and no backfill shall be placed on frozen material.

L. Separation of Surface Material:

1. The Contractor shall remove only as much of any existing pavement as is necessary for the prosecution of the work.
2. Prior to excavation, existing pavement shall be cut where in the opinion of the District or Authorized Representative it is necessary to prevent damage to the remaining road surface.
3. Where pavement is removed in large pieces, it shall be disposed of before proceeding with the excavation.
4. From areas within which excavations are to be made, loam and topsoil shall be carefully removed and separately stored to be used again as direct; or, if the Contractor prefers not to separate surface materials, he shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.

M. Dust Control:

1. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, so as to minimize the creation and dispersion of dust. Refer to Specification Section 01562.
2. If the District or Authorized Representative decides that it is necessary to use calcium chloride for more effective dust control, the contractor shall furnish and spread the material, as directed.

3.3 BACKFILL AND FILL

A. General:

1. Backfilling shall consist of replacing material removed to permit installation of structures or utilities, as indicated in the Contract Documents.
2. Filling shall consist of placing material in areas to bring them up to grades indicated on the Drawings.

3. The Contractor shall provide and place all necessary backfill and fill material, in layers to the required grade elevations.
4. Backfill excavations as promptly as work permits, but not until completion of the following:
 - a. Acceptance by District or Authorized Representative of construction below finish grade.
 - b. Inspection, approval, and recording locations of underground utilities.
 - c. Removal of concrete formwork.
 - d. Removal of shoring and bracing, and backfilling of voids with satisfactory materials.
 - e. Removal of trash and debris.
 - f. Density testing having results meeting requirements specified herein.
5. In general, and unless otherwise indicated, material used for backfill of trenches shall be suitable excavated material which was removed in the course of making the construction excavation. Unless otherwise specified or allowed by the District or Authorized Representative the backfill and fill shall be placed in layers not to exceed 6 inches in thickness.
6. Suitable excavated material shall meet the following requirements:
 - a. Free from large clods, silt lumps or balls of clay.
 - b. Free from stones and rock fragments with larger than 6 inch max. dimension.
 - c. Free from organics, peat, etc.
 - d. Free from frozen material.
7. If sufficient suitable excavated material is not available from the excavations, and where indicated on the Drawings, the backfill material shall be select fill or common borrow, unless otherwise indicated, as required and as directed by the District or Authorized Representative.
8. Do not backfill with, or on, frozen materials.
9. Remove, or otherwise treat as necessary, previously placed material that has frozen prior to placing backfill.

10. Do not mechanically or hand compact material that is, in the opinion of the District or Authorized Representative, too wet.
11. Do not continue backfilling until the previously placed and new materials have dried sufficiently to permit proper compaction.
12. The nature of the backfill materials will govern the methods best suited for their placement and compaction. Compaction methods and required percent compaction is covered in Compaction section.
13. Before compaction, moisten or aerate each layer as necessary to provide a water content necessary to meet the required percentage of maximum dry density for each area classification specified.
14. Do not allow large masses of backfill material to be dropped into the excavation in such a manner that may damage pipes and structures.
15. Place material in a manner that will prevent stones and lumps from becoming nested.
16. Completely fill all voids between stones with fine material.
17. Do not place backfill on or against new concrete until it has attained sufficient strength to support loads without distortion, cracking, and other damage.
18. Keep stones or rock fragments with a dimension greater than two inches at least one foot away from the pipe during backfilling.

B. Pipe Bedding, Initial Backfill and Trench Backfill

1. Place bedding and backfill in layers of uniform thickness specified herein, and as shown on the Drawings.
2. Thoroughly compact each layer by means of a suitable vibrator or mechanical tamper.
3. Install pipe bedding and initial backfill in layers of uniform thickness not greater than six (6) inches.
4. Deposit the remainder of the backfill in uniform layers not greater than eight inches.
5. Provide underground marking tape for the full length of trenches as shown on the Drawings.
6. Where soft silt and clay soils are encountered the trench shall be excavated six inches below the normal bedding and backfilled with 6-inches of compacted sand.

7. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and which are carried below the bottom of such footings, or which pass under wall footings. Place concrete to the level of the bottom of adjacent footings.

8. The following schedule gives the bedding requirements for various types of pipe. Distances refer to vertical thickness below the pipe.

BEDDING REQUIREMENTS

DI Pipe	6 inches min. screened or crushed stone or sand
PE Pipe	6 inches min. sand
Copper Services	6 inches min. sand

9. The following schedule gives the initial backfill requirements for various types of pipes. Distances refer to vertical thickness above the pipe.

INITIAL BACKFILL REQUIREMENTS

DI Pipe	6 inches min. screened or crushed stone or select fill over top of pipe
PE Pipe	Sand, 6 inches min. over top of pipe
Copper Services	Sand, 6 inches, min. over top of pipe

10. Special bedding and backfill requirements shown on the Drawings supersede requirements of this section.

C. Improper Backfill:

1. When excavation and trenches have been improperly backfilled, and when settlement occurs, reopen the excavation to the depth required, as directed by the District or Authorized Representative.
2. Refill and compact the excavation or trench with suitable material and restore the surface to the required grade and condition.
3. Excavation, backfilling, and compacting work performed to correct improper backfilling shall be performed at no additional cost to the Owner.

3.4 COMPACTION

A. General:

1. Control soil compaction during construction to provide not less than the minimum percentage of density specified for each area classification.

B. Percentage of Maximum Density Requirements:

1. Compact soil to not less than the following percentages of maximum dry density determined in accordance with ASTM D 15 57 as indicated.

C. Moisture Control:

1. Where subgrade or a layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, in quantities controlled to prevent free water appearing on surface during or subsequent to compaction operations.

2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory level.

D. Compaction Methods: The Contractor may select any method of compaction that is suitable to compact the material to the required density.

1. General: Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with fine material.

2. Tamping or Rolling: If the material is to be compacted by tamping or rolling, the material shall be deposited and spread in uniform, parallel layers not exceeding the uncompacted thicknesses specified. Before the next layer is placed, each layer shall be tamped as required so as to obtain a thoroughly compacted mass. Care shall be taken that the material close to the excavation side slopes, as well as in all other portions of the fill area, is thoroughly compacted. When the excavation width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe or structure, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For compaction by tamping or rolling, the rate at which backfilling material is deposited shall not exceed that permitted by the facilities for its spreading, leveling, and compacting as furnished by the Contractor.

END OF SECTION

02200-14