SECTION 31 23 00
EXCAVATION AND FILL - A

PIPPART 1 GENERAL

1.1 DESCRIPTION

A Scope:

1. This section specifies earthwork which consists of excavation, filling, grading, and disposal of excess material.

B Definitions:

1. Compaction: The degree of compaction is specified as percent compaction. Maximum or relative densities refer to dry soil densities obtainable at optimum moisture content.
2. Excavation Slope: Excavation slope shall be defined as an inclined surface formed by removing material from below existing grade.
3. Embankment Slope: Embankment slope shall be defined as an inclined surface formed by placement of material above existing grade.

1.2 QUALITY ASSURANCE

A References:

1. This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
2. Unless otherwise specified, referesandnces to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, whether or not the document has been superseded by a version with a later date, discontinued or replaced.

Reference	**Title**
ASTMC136	Standard Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D1556	Test Method for Density of Soil in Place by the Sand-Cone Method
ASTM D1557	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.5-kg) Rammer and 18-in. (457-mm) Drop
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D3017	Test Method for Moisture Content of Soil and Soil- Aggregate in Place by Nuclear Methods (Shallow Depth)

B Tests:

1. The Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms. will take samples and perform moisture content, gradation, compaction, and density

tests during placement of backfill materials to check compliance with these specifica tions. The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall remove surface material at locations designated by the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms. and provide such assistance as necessary for sampling and testing. The Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms. may direct the Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT to construct inspection trenches in compacted or consolidated backfill to determine that the has complied with these specifications. Payment for inspection trenches shall be as specified in the General Conditions of the Contract Documents .

2. Tests will be made by the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms. in accordance with the following:

Test	Standard Procedure
Moisture content	ASTM D3017
Gradation	ASTMC136
Density in-place	ASTMD1556
Moisture-density relationships	ASTM D1557

1.3 SUBMITTALS

A Samples of fill materials to be used shall be submitted 2 weeks in advance of use. Samples shall consist of 0.5 cubic feet of each type of material.

1.4 REFERENCE STANDARDS

A ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

B ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A Type A:

1. Type A material shall be a clean gravel-sand mixture free from organic matter and shall conform to the following gradation:

U.S. standard sieve size	Percent by weight passing
3/4 inch	100
3/8 inch	70-100
No. 4	55-100
No. 10	35-95
No. 20	20-80
No. 40	0-55
No. 100	0-2

B Type B:

1. Type B material shall be a select granular material free from organic matter and of such size and gradation that the specified compaction can be readily attained. Material shall have a sand equivalent value determined in accordance with ASTM D2419 of not less than 20 and shall conform to the following gradation:

U.S. standard sieve size	Percent by weight passing

3 inch	100
No. 4	35-100
No. 30	20-100

2. The coefficient of uniformity shall be 3 or greater.
3. The material may be an imported quarry waste, clean natural sand or gravel, select trench excavation or a mixture thereof.

C Type C:

1. Type C material shall be unclassified material which is free from peat, wood, roots, bark, debris, garbage, rubbish or other extraneous material. The maximum size of stone shall not exceed 6 inches. If the material excavated from the site meets these requirements, it may be classified as Type C.

D Type D:

1. Type D material shall be granular material commonly known as pea gravel and shall conform to the following gradation:

U.S. standard sieve size	**Percent by weight passing**
1/4 inch	100
No. 8	0-5

E Type E:

1. Type E material shall be crushed rock commonly known as drain rock and shall conform to the following gradation:

U.S. standard sieve size	**Percent by weight passing**
1-1/2 inch	100
3/4 inch	30-75
1/2 inch	15-55
1/4 inch	0-5

2. Type E material shall be composed of hard, durable, sound pieces having a specific gravity of not less than 2.65

F Type F:

1. Type F material shall be crushed rock and shall conform to the following gradation:

U.S. standard sieve size	**Percent by weight passing**
1-1/2 inch	87-100
3/4 inch	45-90
No. 4	20-50
No. 30	6-29
No. 200	0-12

2. Type F material shall be composed of hard, durable, sound pieces having a specific gravity of not less than 2.65.

G Type G:

1. Type G material shall be pervious backfill. Pervious backfill material shall conform to the following gradation:

U.S. standard sieve size	**Percent by weight passing**

2 inch	100
No. 50	0-100
No. 100	0-8
No. 200	0-4

H Type H:

1. Type H material shall be 6-inch riprap. Riprap shall be graded rock having a range of individual rock weights as follows:

Weight of stone	**Percent smaller by weight**
10 pounds	100
5 pounds	80-100
2 pounds	45-80
1 pound	15-45
1/2 pound	5-15
Below 1/2 pound	0-5

2. Specific gravity shall be between 2.5 and 2.82.

I Type I:

1. Type I material shall be 12-inch riprap. Riprap shall be graded rock having a range of individual rock weights as follows:

Weight of stone	**Percent smaller by weight**
160 pounds	100
100 pounds	80-100
50 pounds	45-80
20 pounds	15-45
5 pounds	5-15
1 pound	0-5

2. Specific gravity shall be between 2.5 and 2.82.

J Type J:

1. Type J material shall be unclassified material and may be obtained from excavation on site. The material may contain extraneous material such as demolition waste, unsuitable material excavated from beneath structures, and clearing and grubbing debris up to 50 percent by volume. Extraneous material shall be thoroughly mixed and the maximum size of organic particles shall be 6 inches.

PART 3 EXECUTION

3.1 GENERAL

A Control of Water:

1. The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall keep excavations reasonably free from water during construction. The static water level shall be drawn down a minimum of 1 foot below the bottom of excavations to maintain the undisturbed state of natural soils and allow the placement of any fill to the specified density. Disposal of water shall not damage property or create a public nuisance. The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall have on hand pumping equipment and machinery in good working condition for emergencies and shall

have workmen available for its operation. Dewatering systems shall operate continuously until backfill has been completed to 1 foot above the normal static groundwater level.

2. Groundwater shall be controlled to prevent softening of the bottom of excavations, or formation of "quick" conditions. Dewatering systems shall not remove natural soils. The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall control surface runoff to prevent entry or collection of water in excavations.
3. Release of groundwater to its static level shall be controlled to prevent disturbance of the natural foundation soils or compacted fill and to prevent flotation or movement of structures or pipelines.

B Overexcavation:

1. Where the undisturbed condition of natural soils is inadequate for support of the planned construction, the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms. will direct the Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT to overexcavate to adequate supporting soils. The excavated space shall be filled to the specified elevation with backfill. The overexcavated space under footings may be filled with concrete. The quantity and placement of such material will be paid for as extra work.

C Surplus Material:

1. Unless otherwise specified, surplus excavated material shall be disposed of off site in accordance with applicable ordinances and environmental requirements.
2. If the quantity of surplus material is specified, the quantity specified is approximate. The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall satisfy himself that there is sufficient material available for the completion of the embankments before disposing of any material inside or outside the site. Shortage of material, caused by premature disposal of any material by the Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT, shall be replaced by the Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT.
3. Material shall not be stockpiled to a depth greater than 5 feet above finished grade within 25 feet of any excavation or structure except for those areas designated to be preconsolidated. For these areas, the depth of stockpiled material shall be as specified. The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall maintain stability of the soil adjacent to any excavation.

D Borrow Material:

1. If the quantity of acceptable material from excavation is not sufficient to construct the embankments required by the work, the quantity of material needed to complete the embankments shall consist of imported borrow conforming to specified requirements.

E Hauling:

1. When hauling is done over highways or city streets, the loads shall be trimmed and the vehicle shelf areas shall be cleaned after each loading. The loads shall be watered after trimming to eliminate dust.

F Haul Roads:

1. The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall construct haul roads required to transport materials on site. Alignment of haul roads shall be selected to

avoid interference with plant operations. Haul roads shall be removed after completion of embankment construction.

G Finish Grading:

1. Finished surfaces shall be smooth, compacted and free from irregularities. The degree of finish shall be that normally obtainable with a blade-grader.
2. Finished grade shall be as specified by the contours plus or minus 0.10 foot except where a local change in elevation is required to match sidewalks, curbs, manholes and catch basins, or to ensure proper drainage. Allowance for topsoil and grass cover, and subbase and pavement thickness shall be made so that the specified thickness of topsoil can be applied to attain the finished grade.
3. When the work is an intermediate stage of completion, the lines and grades shall be as specified plus or minus 0.5 foot to provide adequate drainage.
4. If the soil is to be cultivated or straw is to be incorporated into the surface, rocks larger than 2-1/2 inches in maximum dimension, roots and other debris on the surface of the slope shall be removed and disposed of prior to cultivation or placement of straw.

H Control Of Erosion:

1. The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall maintain earthwork surfaces true and smooth and protected from erosion. Where erosion occurs, theContractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall provide fill or shall excavate as necessary to return earthwork surfaces to the grade and finish specified.

3.2 CLASSIFICATION OF FILL

A Fill material shall be placed in horizontal layers and compacted with power-operated tampers, rollers, idlers, or vibratory equipment. Material type, maximum layer depth, relative compaction, and general application are specified in Table A. Unless otherwise specified, fill classes shall be used where specified in Table A under general application.

Table A, Fill Classifications

Fill class	Material type	Maximum uncompressed layer depth, inches	Minimum relative compaction, percent	General application
A1	A	8	95	Bedding for pipe, initial pipeline backfill; slabs on grade (other than specified for Class E1)
A2	A	48	95	Initial and subsequent pipeline backfill when ponded or jetted
B1	B	8	95	Structure and subsequent pipeline backfill
B2	B	8	90	Site fill
C1	C	8	90-95	Subsequent pipeline backfill; compaction as specified
C2	C	8	90	Site fill, embankments and dikes
D1	D	-	95	Bedding for tanks and pipe, initial and subsequent tank and pipeline backfill

E1[a]	E	8	-	Fill under slabs for structures and tank slabs with pressure relief valves
F1[b]	F	12	95	Structure backfill, pipeline bedding, initial and subsequent pipeline backfill
G1	G	8	95	Bedding for plastic pipe, initial and subsequent pipeline backfill
H1[c]	H	-	-	Embankment slope face, channel slope face
I1[c]	I	-	-	Embankment slope face, channel slope face
J1[d]	J	8	90	Excess fill

a. Compaction of layers shall be accomplished in two passes of equipment with complete coverage across the width of the field.
b. Material shall not be used for bedding or initial backfill for plastic pipe.
c. Fill material shall be grouted as specified in paragraph 3.08.
d. Asphalt and concrete slabs from demolition may be placed at the bottom of the fill side by side to form a continuous pad. Clearing and grubbing is not required unless shrubs are taller than 3 feet. Mucking of the subgrade and keying or benching of adjoining embankments is not required.

3.3 EARTHWORK FOR STRUCTURES

A Structure Excavation:

1. The bottom shall not be more than 0.15 foot above or below the lines and grades specified. If the elevation of structure excavation is not specified, the excavation shall be not more than 0.15 foot above or below the elevation specified for fill material below the structure. Slopes shall vary no more than 0.5 foot from specified grade unless the excavation is in rock where the maximum variation shall be 2 feet.
2. Should the excavation be carried below the lines and grades specified on the drawings or should the bottom of the excavation be disturbed because of the Contractor's operations and require overexcavation and backfill, the Contractor shall refill such excavated space to the proper elevation in accordance with the procedure specified for backfill. The cost of such work shall be borne by the Contractor.
3. Unless otherwise specified, excavations shall extend a sufficient distance from walls and footings to allow for placing and removal of forms, installation of services, and for inspection, except where concrete is specified to be placed directly against excavated surfaces.

B Foundation Treatment:

1. Rock foundations for concrete or masonry footings shall be excavated to sound material. The rock shall be roughly leveled or cut to steps and shall be roughened. Seams in the rock shall be grouted under pressure as directed by the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms. and paid for as extra work.
2. When footings are to be supported on piles, excavations shall be completed to the bottom of the footings before any piles are drilled or driven therein. When swell or subsidence results from driving piles, the Contractor-DO NOT USE!!! Use "Contractor's Spec Term"

GT shall excavate, or backfill the footing area to the grade of the bottom of the footing with suitable material as specified. If material under footings is such that it would mix into the concrete during footing placement or would not support the weight of the fluid concrete, the Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall replace the material with suitable material, install soffit forms or otherwise provide a suitable platform on which to cast the footing as directed by the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms.. This shall be paid for as extra work.

3. Whenever any structure excavation is substantially completed to grade, the Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall notify the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms. who will make an inspection of the foundation. No concrete or masonry shall be placed until the foundation has been inspected by the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms.. The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall, if directed by the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms.r, dig test pits and make test borings and foundation bearing tests. If the material tested is undisturbed soil, the cost thereof will be paid for as extra work. If the material tested is backfill material, the cost thereof will be paid as specified in the General Conditions of the Contract Documents.

C Structure Backfill:

1. Unless otherwise specified, structure backfill shall be Class B1.
2. After completion of construction below the elevation of the final grade, and prior to backfilling, forms shall be removed and the excavation shall be cleaned of debris.
3. Structure backfill shall not be placed until the subgrade portions of the structure have been inspected by the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms.. No backfill material shall be deposited against concrete structures until the concrete has developed a strength of not less than 2500 pounds per square inch in compression, or until the concrete has been in place for 28 days, whichever occurs first.
4. Backfill material shall be placed in uniform layers and shall be brought up uniformly on all sides of the structure. When compaction is done by ponding and jetting, thickness of uncompacted layers shall not exceed 4 feet.
5. Compaction of structure backfill may be performed by ponding and jetting if the backfill material is of such character that it will be self-draining when compacted and that foundation materials will not be damaged by the applied water and no damage from hydrostatic pressure will result to the structure. Ponding and jetting shall not be used within 4 feet of finished grade and shall be performed in such a manner that water will not be impounded.
6. Unless otherwise specified, backfill around and above pipelines within the excavation line of any structure shall be the same as that specified for structures.

3.4 EARTHWORK FOR PIPELINES AND CONDUITS

A General:

1. Earthwork for pipelines and conduits is specified in Table A; in the standard details; and in the following paragraphs.

B Pipeline Excavation:

1. The bottom of the trench shall be carried to the specified lines and grades with proper allowance for pipe thickness and for bedding as specified.

C Pipeline Backfill:

1. Bedding: The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall not proceed with backfill placement in excavated areas until the subgrade has been inspected by the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms.. All pipe shall have a minimum thickness of bedding material below the barrel of the pipe as specified. Bedding material shall be placed in the bottom of the trench, leveled and compacted. Bell holes shall be excavated at each pipe joint to permit proper inspection and uniform bearing of pipe on bedding material.
    a. After the pipe has been laid to alignment and grade, unless otherwise specified, additional bedding material shall be placed in layers the full width of the trench and compacted up to the specified level. Bedding shall be placed simultaneously on both sides of the pipe, keeping the level of backfill the same on each side. The material shall be carefully placed and compacted around the pipe to ensure that the pipe barrel is completely supported and that no voids or uncompacted areas are left beneath the pipe. Contractor shall use particular care in placing material on the underside of the pipe to prevent lateral movement during backfilling.
2. Initial Backfill: After pipe has been properly bedded, Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall place and compact initial backfill as specified. Initial backfill, where specified below the springline of the pipe, shall be placed and compacted in accordance with paragraph 3.04 Pipeline Backfill for additional bedding material.
3. Subsequent Backfill:
    a. General: Backfill material, placement and compac tion above the pipe zone shall be as specified. Backfill above the pipe zone shall not commence until pipe zone backfill has been inspected and accepted by the Construction Manager - AVOID USE!!! BC's standard is to use the EJCDC contract terms..
    b. Improved Areas: Unless otherwise specified, select granular backfill (Common Fill) shall be used under all paved and unpaved roadways and paved and unpaved roadway shoulders, roadway embankments, and in all public right-of-ways and easements. The trench shall be backfilled to an elevation which will permit the placement of the specified surface or paving. Paving shall be as specified in Section 32 12 16. Other surfaces shall be restored, including compaction, to the condition existing prior to construction including restoration of yard areas.
    c. Unimproved Areas: Class C1 backfill shall be used for all trenches in pastureland, cultivated land, undeveloped land, and for other unimproved areas where specified. Class C1 backfill shall not be used in any public right-of-way. Trench excavation which meets the requirements of Type C material may be used. The Contractor shall maximize the use of fine-grained materials (e.g., sand, silty sand, sandy silt) as Class C1 backfill.
        1) For Class C1 backfill, the trench above the pipe zone shall be backfilled to within 12 inches of original ground surface. The top 12 inches of soil shall be removed and stored in such a manner that it will not become mixed with unsatisfactory soils. After the trench has been backfilled, the stored topsoil shall

be replaced at a uniform depth in its original area compacted to its original condition. The Contractor shall leave the backfilled trench neatly mounded not more than 6 inches above existing grade for the full width of the Class C1 backfill area.

3.5 EARTHWORK FOR EMBANKMENTS

A Foundation Preparation:

1. The surface of the foundation shall not contain standing water and shall be free of loose material, foreign objects and rocks greater than 6 inches in maximum dimension. Immediately prior to placement of embankment fill material, the foundation surface shall be thoroughly moistened, scarified to a depth of 6 inches, moisture conditioned again as necessary and recompacted to 95 percent relative compaction. After the preparation has been completed, the Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall promptly place and compact the first lift of embankment on the foundation to prevent damage to the surface. If the foundation surface is damaged, the Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall repair the surface to the specified condition. In any areas where materials become soft or yielding, such materials shall be removed, disposed of, and replaced with specified material. The surface of the embankment shall be maintained to permit travel of construction equipment. Ruts in the surface of any layer shall be filled and leveled before compacting.

B Embankment Fill:

1. Rocks, broken concrete, or other solid materials, which are larger than 4 inches in greatest dimension, shall not be placed in embankment areas where piles are to be placed or driven.
2. Fill material having a sand equivalent value less than 10 shall be placed in the lower portions of embankments and shall not be placed within 2.5 feet of finished grade.
3. When the embankment material consists of large, rocky material, or hard lumps, such as hardpan or cemented gravel which cannot be broken readily, such material shall be well distributed throughout the embankment. Sufficient earth or other fine material shall be placed around the larger material as it is deposited so as to fill the interstices and produce a dense, compact embankment.
4. Unless otherwise specified, the embankment shall be raised to form an approximately horizontal plane extending transversely to the final slopes. The embankment shall be crowned at all times during construction so that water will drain readily off the embankment.
5. The temporary differential elevation between any two adjoining zones of the embankment due to construction operations shall not exceed 24 inches.
6. If the compacted surface of any layer of material is too smooth to bond properly with the succeeding layer, the surface shall be scarified. If required, the surface shall be sprinkled or otherwise moisture conditioned before the succeeding lift is placed. Any surface crust formed on a layer of fill material that has been dumped and spread shall be broken up by harrowing and, if required, the full depth of the affected layer shall be moisture conditioned immediately prior to rolling.

C Key Construction:

1. Where specified, a key shall be excavated along the length of the toe of fill slopes. The exposed soils along the key and under fill areas shall be disced and/or scarified to a depth of at least 12 inches, moisture conditioned to within 3 percent of optimum moisture content, and compacted to at least 90 percent of maximum dry density.

D Embankment Tolerances:

1. General: Embankment slopes within 4 feet of shoulder grade shall vary less than 0.5 foot from the designated slope. Slopes beyond 4 feet from shoulder grade shall vary less than 1 foot from the designated slope. Measurements for variance shall be made perpendicular to the slope. Slopes which are 6 to 1 or flatter shall vary less than 0.2 foot from the designated slope.
    a. If embankments are constructed of rock greater than 12 inches in diameter, the slopes more than 4 feet below shoulder grade may vary up to 2 feet from the designated slope.
2. Roadway Embankment Tolerances: The excavated surface shall be less than 0.08 foot above or below the grades specified after deducting for the roadway pavement thickness.
    a. Vertical alignment tolerances permitted on the roadway surface shall not exceed plus or minus 0.30 feet from the vertical alignment specified, with the provision that within the tolerance range local surface irregularities shall not exceed 0.15 feet as measured by the gap between the roadway surface and a 10-foot straightedge placed on any flat graded surface. On vertical curves, the same standards will apply except that an additional gap allowance will be made for the road surface curvature over the 10-foot length of the straightedge.
    b. Horizontal alignment tolerances permitted shall not exceed plus or minus 1 foot providing the departure is relatively uniform over any specific length of the roadway.
    c. Roadway median strips shall be graded to drain and shall not vary more than 0.1 foot from the specified grade.

E Surcharge Embankment:

1. Where specified in Section 00 73 00, the surcharge embankment shall remain in place for the required settlement period before excavation for footings or construction of foundation piles.
2. Surcharge embankments shall not encroach upon traveled ways nor upon existing improve ments that are subject to damage. The Contractor-DO NOT USE!!! Use "Contractor's Spec Term" GT shall restrain the embankment material.

3.6 SUBGRADE FOR PAVEMENT

A The prepared subgrade shall be scarified to a depth of at least 12 inches and recompacted to at least 95 percent of the maximum density.

3.7 SITE FILL

A Unless otherwise specified, site fill shall be Class C2 fill. If the existing slope in an area to be filled is greater than 5:1, the Contractor shall bench the area prior to filling.

3.8 GROUTING RIPRAP

A When riprap is properly positioned, stones shall be flushed with water to remove fines, and cement grout as specified in Section 03 60 00 shall be applied. Stones shall be wet prior to and during grout application. Grout shall be applied in two courses using baffles and diverting equipment. The first course shall completely penetrate the stone voids and shall be applied with

the aid of poles or rods to loosen the tight pockets of stone. The second course shall be applied as soon as the first course has jelled. The second course shall be broomed uphill during application, and the entire surface shall be rebroomed to eliminate runs and fill voids.

B After grouting is complete, no load shall be permitted on the grouted surface for 24 hours. The grouted surface shall be protected from damage until curing is complete. The grout shall be cured as specified in Sections 03 30 00-3.05 and 3.06.

END OF SECTION