

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>			1. Contract Number <b>DCAM-2007-B-0001-AE</b>	Page of Pages <b>1</b>   <b>42</b>	
2. Amendment/Modification Number <b>5</b>		3. Effective Date <b>26-Jan-07</b>		4. Requisition/Purchase Request No.	
5. Solicitation Caption <b>Rehabilitation of Bryant St. Garage</b>					
6. Issued By: <b>Office of Contracting and Procurement Transportation and Specialty Equipment Commodity Group 2000 - 14th Street, NW, 6th Floor Washington, DC 20009</b>			Code <b>KTO</b>		
7. Administered By (If other than line 6) <b>Office of Property Management Office of Contract Support/FOMA 2000 - 14th Street, NW, 4th Floor Washington, DC 20009</b>					
8. Name and Address of Contractor (No. Street, city, country, state and ZIP Code)			x 9A. Amendment of Solicitation No. <b>DCAM-2007-B-0001-AE</b>		
			9B. Dated (See Item 11) <b>3-Nov-06</b>		
			10A. Modification of Contract/Order No.		
			10B. Dated (See Item 13)		
Code		Facility			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input checked="" type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning <b>1</b> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter which includes a reference to the solicitation and amendment number. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter, provided each letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. Accounting and Appropriation Data (If Required)					
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
A. This change order is issued pursuant to: 27 DCMR 1517					
The changes set forth in Item 14 are made in the contract/order no. in item 10A.					
B. The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) set forth in item 14, pursuant to the authority of 27 DCMR, Chapter 36, Section 3601.2.					
C. This supplemental agreement is entered into pursuant to authority of:					
D. Other (Specify type of modification and authority) 27 DCMR, Section 2008 27 DCMR, Chapter 36 Section 3601(c)					
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input checked="" type="checkbox"/> is required to sign this document and return <b>1</b> copies to the issuing office.					
14. Description of amendment/modification:					
<b>This Addendum No. 5 is being issued for the following:</b>					
<b>(1) The Bid Opening Date has been postponed until Monday, February 5, 2007 at 2:00 p.m.</b>					
<b>(2) Attachment No. 1: Response to questions raised by potential bidders and their answers.</b>					
<b>(3) The following specification sections are attached as part of this specification:</b>					
<b>Attachment No. 2 - Section 02230 - Site Clearing</b>					
<b>Attachment No. 3 - Section 02260 - Excavation Support and Protection</b>					
<b>Attachment No. 4 - Section 02300 - Earthwork</b>					
<b>Attachment No. 5 - Section 02510 - Water Distribution</b>					
<b>Attachment No. 6 - Section 02530 - Sanitary Sewage</b>					
<b>Attachment No. 7 - Section 08710 - Hardware Schedule</b>					
<b>Attachment No. 8 - Section 08800 - Glazing</b>					
<b>Attachment No. 9 - Section 09210 - Gypsum Plaster</b>					
<b>Attachment No. 10 - Section 09651 - Resilient Floor Tile</b>					
<b>Attachment No. 11 - Section 09653 - Resilient Wall Base and Accessories</b>					
Except as provided herein, all terms and conditions of the document referenced in Item (9A or 10A) remain unchanged and in full force and effect.					
15A. Name and Title of Contractor (Type or print)			16A. Name of Contracting Officer (Type or Print) <b>James Roberts</b>		
15B. Signature of Contractor		15C. Date Signed	16B. District of Columbia		16C. Date Signed <b>1/26/2007</b>
(Signature of Person Authorized to Sign)			(Signature of Contracting Officer)		

## QUESTIONS FROM POTENTIAL BIDDERS AND ANSWERS

1. Section 03930-1.3 states that the concrete restoration work will be paid per unit prices per Section 01270. There is no Section 01270 in the bid documents and the Bid Form does not contain a place for unit prices. Are unit prices required to be submitted with our bid? If so, please clarify.

Answer: There is no unit price schedule for concrete work. The only unit price schedule for concrete is for the structural roof restoration work.

2. Section 05100-1.04.C states that the steel fabricator is to be AISC certified and lists "Category I" and "Category II". Which category of certification is required?

Answer: Category 1 is correct. Delete Category II.

3. Question and Answer #23 states that revised specifications for Sections 02230, 02260, 02300, 02510, 02530 and 08800 are attached. We cannot locate these six specification sections. Please issue.

Answer: The six specification sections are provided and attached with this Addendum.

4. Section B of Amendment #4 states to replace all existing windows with new, but Question and Answer #34 contradicts this. Please clarify.

Answer: Section B with Addendum #4 is correct. All windows shall be replaced with new.

5. Question and Answer #53 states that specifications for various items are included in the Amendment. We cannot locate these specification sections. Please issue.

Answer: The specification sections referenced in Question #53 are either issued in the original solicitation, in Addendum No. 4 or are attached herewith in this Addendum No. 5.

6. Question and Answer #73 states that a Hardware Set Schedule is attached. We cannot locate this schedule. Please issue.

Answer: Section 08710, "Hardware Schedule", is attached with this Addendum.

7. Question and Answer #80 states that telecom, data and CCTV are required on the project. Drawings E-001 and E-402 state that we are to provide empty conduit for the owner provided telecom system. The CCTV system is not shown on the drawings. The drawings only show empty conduit and boxes for "future security system". There are no specifications for telecom, data or CCTV. Please clarify the scope of work for these systems.

Answer: Provide conduits as indicated on the drawings. Telecom, data and/or CCTV work will be performed separately by others.

8. The Solicitation, Offer and Award (Page 1R) states in Box 10 that we are to submit an original offer and one copy. Section L-5 of the Solicitation (Page 177) states that we shall submit an original and two copies. Which is correct?

Answer: Follow directions as indicated in Section L.5.

9. Amendment #3, Item #6 mentions that we are to clean an oil leak from the garage. Please describe the size and extent of this leak.

Answer: The contractor shall visit the site and take inventory of the oil leak. The location is the separate north section of the garage.

10. Amendment #2, Attachment B, Section 1.0 Soil Contamination (Pages 1-2) mentions the locations of soil contamination.

- a. Please provide clear direction on what the extent of this work is?
- b. What volume of contaminated soil is expected to be encountered?
- c. Can we have a sketch showing the footprints of the areas of contamination?
- d. The Soil Report mentions that groundwater may be contaminated. What is the scope of work for groundwater contamination?

Answer: This geotechnical and ground water report is provided for informational purposes only.

11. The existing TPO membrane roofing is fully adhered to plywood deck which seems to be installed over a corrugated steel deck. It is not possible to remove the TPO membrane without removing the plywood deck. Please clarify the scope of work as it relates to the roofing demolition.

Answer: The contractor shall remove and replace the plywood deck with new plywood.

## SECTION 02230 - SITE CLEARING

### 1.1 SUMMARY

- A. Protecting existing trees to remain.
- B. Removing existing trees.
- C. Clearing and grubbing obstructions, trees, shrubs, grass, and other vegetation including removing stumps and removing roots and debris.
- D. Removing existing above and below grade site improvements.
- E. Disconnecting, capping or sealing, and removing site utilities.
- F. Providing temporary erosion and sedimentation control measures.

END OF SECTION

## SECTION 02260 – EXCAVATION SUPPORT AND PROTECTION

### 1.1 SUMMARY

- A. Temporary excavation support and protection systems.

### 1.2 PERFORMANCE REQUIREMENTS

- A. The contractor shall design, furnish, install, monitor, and maintain excavation support and protection system. Professional engineering services needed to assume engineering responsibility to be retained and paid for by contractor.

### 1.3 PROJECT CONDITIONS

- A. Geotechnical report is not available.

### 1.4 MATERIALS

- A. Structural steel.
- B. Steel sheet piling with continuous interlocks.
- C. Wood Lagging: Nominal rough thickness of 4 inches.
- D. Cast-in-place concrete.
- E. Tiebacks, if required.

END OF SECTION

## SECTION 02300 – EARTHWORK

### PART 1 GENERAL

#### 1.1 SUMMARY

A. This Section includes the following:

1. Preparing subgrades for slabs-on-grade, walks, pavements and lawns and grasses.
2. Excavating and backfilling for buildings and structures, including footings and foundations, underground tanks, basins and mechanical or electrical utility structures.
3. Excavating and backfilling for utility trenches.
4. Drainage course for slabs-on-grade.
5. Subsurface drainage backfill for walls and trenches.
6. Subbase course for concrete walks and pavements.
7. Subbase and base course for asphalt paving.

#### 1.2 DEFINITIONS

A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Course placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Course supporting the slab-on grade that also minimizes upward capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
  - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract Provisions, Changes in the Work.
  - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

## PART 2 PRODUCTS

### 2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

- B. Satisfactory Soils: AASHTO M 145 Soil Classification Groups A-1, A-2-4, A-2-5, and A-3, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT, according to ASTM D 2487 and A-2-6, A-2-7, A-4, A-5, A-6 and A-7, according to AASHTO M 145, or a combination of these groups.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2 inch sieve and not more than 12 percent passing a No. 200 sieve.
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2 inch sieve and not more than 8 percent passing a No. 200 sieve.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2 inch sieve and not more than 12 percent passing a No. 200 sieve.
- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1 inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Drainage Course: Narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2 inch sieve and 0 to 5 percent passing a No. 8 sieve.

## 2.2 ACCESSORIES

- A. Warning Tape: Acid-and-alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility.

PART 3 EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2, Section 02230, "Site Clearing".
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 2, Section 02230, "Site Clearing", or required by the D.C. Government during earthwork operations.

3.2 EXCAVATION

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.3 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
  - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.4 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

### 3.5 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit, unless otherwise indicated.
  - 1. Clearance: 12 inches each side of pipe or conduit or as required by the Utility.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
  - 1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material, 4 inches deeper elsewhere, to allow for bedding course.

### 3.6 SUBGRADE INSPECTION

- A. Proof-roll subgrade below the building slabs and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

### 3.7 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.
  - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

### 3.8 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.9 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 3, Section “Cast-in-Place Concrete”.
- D. Provide 4 inch thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways and parking area. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.
- E. Place and compact initial backfill of subbase material or satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.
  - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- F. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- G. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.10 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  - 1. Under grass and planted areas, use satisfactory soil material.
  - 2. Under walks and pavements, use satisfactory soil material.
  - 3. Under steps and ramps, use engineered fill.
  - 4. Under building slabs, use engineered fill.
  - 5. Under footings and foundations, use engineered fill.

3.11 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.12 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to D.C. Highway Standards:
  - 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.

2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent.
3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches, compact each layer of initial and final backfill soil material at 90 percent.

### 3.13 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines and elevations indicated.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
  1. Lawn or Unpaved Areas: Plus or minus 1 inch.
  2. Walks: Plus or minus 1 inch.
  3. Pavements: Plus or minus ½ inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of ½ inch when tested with a 10-foot (3-m) straightedge.

### 3.14 SUBBASE AND BASE COURSES

- A. Place subbase and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase and base course under pavements and walks as follows:
  1. Shape subbase and base course to required crown elevations and cross-slope grades.
  2. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to D.C. Department of Highway Standards.

3.15 DRAINAGE COURSE

- A. Place drainage course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:
  - 1. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
  - 2. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.16 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.17 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lost compaction due to subsequent construction operations or weather conditions.
- C. Where settling occurs before project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.18 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off owner's property.

END OF SECTION

## SECTION 02510 - WATER DISTRIBUTION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes water-distribution piping and related components outside the building for Water service and Fire-service mains.
- B. Utility-furnished products include water meters that will be furnished to the site, ready for installation.

#### 1.2 SUBMITTALS

- A. Shop Drawings: Detail precast concrete vault assemblies and indicate dimensions, method of field assembly, and components.
- B. Field quality-control test reports.
- C. Operation and maintenance data.

#### 1.3 QUALITY ASSURANCE

- A. Regulatory Requirements:
  - 1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
  - 2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
  - 3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- C. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.
- D. Comply with FMG's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.
- E. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.
- F. NSF Compliance:
  - 1. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping.

2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

#### 1.4 COORDINATION

- A. Coordinate connection to water main with utility company.

### PART 2 - PRODUCTS

#### 2.1 PIPE AND FITTINGS

- A. Soft Copper Tube: ASTM B 88, Type K and ASTM B 88, Type L, water tube, annealed temper.
  1. Copper, Solder-Joint Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
- B. Hard Copper Tube: ASTM B 88, Type K and ASTM B 88, Type L, water tube, drawn temper.
  1. Copper, Solder-Joint Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
- C. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated.
  1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
  2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
- D. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.
  1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
  2. Gaskets: AWWA C111, rubber.
- E. Grooved-Joint, Ductile-Iron Pipe: AWWA C151, with cut, rounded-grooved ends.
  1. Grooved-End, Ductile-Iron Pipe Appurtenances:
    - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Anvil International, Inc.

2) Victaulic Company of America.

- F. PE, Fire-Service Pipe: ASTM F 714, AWWA C906, or equivalent for PE water pipe; FMG approved, with minimum thickness equivalent to FMG Class 150.
  - 1. Molded PE Fittings: ASTM D 3350, PE resin, socket- or butt-fusion type, made to match PE pipe dimensions and class.
- G. PVC, AWWA Pipe: AWWA C900, Class 150, with bell end with gasket, and with spigot end.
  - 1. Comply with UL 1285 for fire-service mains if indicated.
  - 2. PVC Fabricated Fittings: AWWA C900, Class 150, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
  - 3. PVC Molded Fittings: AWWA C907, Class 150, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
  - 4. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
    - a. Gaskets: AWWA C111, rubber.
  - 5. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
    - a. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

2.2 JOINING MATERIALS

- A. Refer to Division 2 Section "Piped Utilities - Basic Materials and Methods" for commonly used joining materials.
- B. Brazing Filler Metals: AWS A5.8, BCuP Series.
- C. Bonding Adhesive for Fiberglass Piping: As recommended by fiberglass piping manufacturer.
- D. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.3 PIPING SPECIALTIES

- A. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- B. Tubular-Sleeve Pipe Couplings:
  - 1. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.
    - a. Standard: AWWA C219.

## 2.4 GATE VALVES

### A. AWWA, Cast-Iron Gate Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:
  - a. American AVK Co.; Valves & Fittings Div.
  - b. American Cast Iron Pipe Co.; American Flow Control Div.
  - c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
  - d. Crane Co.; Crane Valve Group; Stockham Div.
  - e. East Jordan Iron Works, Inc.
  - f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
  - g. McWane, Inc.; Kennedy Valve Div.
  - h. McWane, Inc.; M & H Valve Company Div.
  - i. McWane, Inc.; Tyler Pipe Div.; Utilities Div.
  - j. Mueller Co.; Water Products Div.
  - k. NIBCO INC.
  - l. U.S. Pipe and Foundry Company.
4. Nonrising-Stem, Metal-Seated Gate Valves:
  - a. Description: Gray- or ductile-iron body and bonnet; with cast-iron or bronze double-disc gate, bronze gate rings, bronze stem, and stem nut.
    - 1) Standard: AWWA C500.
    - 2) Minimum Pressure Rating: 200 psig .
    - 3) End Connections: Mechanical joint.
    - 4) Interior Coating: Complying with AWWA C550.
5. Nonrising-Stem, Resilient-Seated Gate Valves:
  - a. Description: Gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.
    - 1) Standard: AWWA C509.
    - 2) Minimum Pressure Rating: 200 psig.
    - 3) End Connections: Mechanical joint.
    - 4) Interior Coating: Complying with AWWA C550.
6. Nonrising-Stem, High-Pressure, Resilient-Seated Gate Valves:
  - a. Description: Ductile-iron body and bonnet; with bronze or ductile-iron gate, resilient seats, bronze stem, and stem nut.
    - 1) Standard: AWWA C509.

- 2) Minimum Pressure Rating: 250 psig.
  - 3) End Connections: Push on or mechanical joint.
  - 4) Interior Coating: Complying with AWWA C550.
7. OS&Y, Rising-Stem, Metal-Seated Gate Valves:
- a. Description: Cast- or ductile-iron body and bonnet, with cast-iron double disc, bronze disc and seat rings, and bronze stem.
    - 1) Standard: AWWA C500.
    - 2) Minimum Pressure Rating: 200 psig .
    - 3) End Connections: Flanged.
8. OS&Y, Rising-Stem, Resilient-Seated Gate Valves:
- a. Description: Cast- or ductile-iron body and bonnet, with bronze or gray- or ductile-iron gate, resilient seats, and bronze stem.
    - 1) Standard: AWWA C509.
    - 2) Minimum Pressure Rating: 200 psig.
    - 3) End Connections: Flanged.
- B. UL/FMG, Cast-Iron Gate Valves:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  3. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:
    - a. American Cast Iron Pipe Co.; American Flow Control Div.
    - b. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
    - c. Crane Co.; Crane Valve Group; Stockham Div.
    - d. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
    - e. McWane, Inc.; Kennedy Valve Div.
    - f. McWane, Inc.; M & H Valve Company Div.
    - g. Mueller Co.; Water Products Div.
    - h. NIBCO INC.
    - i. U.S. Pipe and Foundry Company.
  4. UL/FMG, Nonrising-Stem Gate Valves:
    - a. Description: Iron body and bonnet with flange for indicator post, bronze seating material, and inside screw.
      - 1) Standards: UL 262 and FMG approved.
      - 2) Minimum Pressure Rating: 175 psig.
      - 3) End Connections: Flanged.

5. OS&Y, Rising-Stem Gate Valves:
  - a. Description: Iron body and bonnet and bronze seating material.
    - 1) Standards: UL 262 and FMG approved.
    - 2) Minimum Pressure Rating: 175 psig.
    - 3) End Connections: Flanged.

C. Bronze Gate Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:
  - a. Crane Co.; Crane Valve Group; Crane Valves.
  - b. Crane Co.; Crane Valve Group; Jenkins Valves.
  - c. Crane Co.; Crane Valve Group; Stockham Div.
  - d. Hammond Valve.
  - e. Milwaukee Valve Company.
  - f. NIBCO INC.
  - g. Red-White Valve Corporation.
  - h. Description: Bronze body and bonnet and bronze stem.
    - 1) Standards: UL 262 and FMG approved.
    - 2) Minimum Pressure Rating: 175 psig.
    - 3) End Connections: Threaded.
4. Nonrising-Stem Gate Valves:
  - a. Description: Class 125, Type 1, bronze with solid wedge, threaded ends, and malleable-iron handwheel.
    - 1) Standard: MSS SP-80.

2.5 GATE VALVE ACCESSORIES AND SPECIALTIES

A. Tapping-Sleeve Assemblies:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:

- a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
  - b. East Jordan Iron Works, Inc.
  - c. Flowserve.
  - d. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
  - e. McWane, Inc.; Kennedy Valve Div.
  - f. McWane, Inc.; M & H Valve Company Div.
  - g. Mueller Co.; Water Products Div.
  - h. U.S. Pipe and Foundry Company.
4. Description: Sleeve and valve compatible with drilling machine.
- a. Standard: MSS SP-60.
  - b. Tapping Sleeve: Cast- or ductile-iron or stainless-steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.
  - c. Valve: AWWA, cast-iron, nonrising-stem, [metal] [resilient]-seated gate valve with one raised face flange mating tapping-sleeve flange.
- B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches in diameter.
1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.
- C. Indicator Posts: UL 789, FMG-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.
1. Service Saddle: Copper alloy with seal and AWWA C800, threaded outlet for corporation valve.
  2. Corporation Valve: Bronze body and ground-key plug, with AWWA C800, threaded inlet and outlet matching service piping material.
  3. Manifold: Copper fitting with two to four inlets as required, with ends matching corporation valves and outlet matching service piping material.
- D. Curb Valves: Comply with AWWA C800. Include bronze body, ground-key plug or ball, and wide tee head, with inlet and outlet matching service piping material.
- E. Service Boxes for Curb Valves: Similar to AWWA M44 requirements for cast-iron valve boxes. Include cast-iron telescoping top section of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over curb valve and with a barrel approximately 3 inches (75 mm) in diameter.
1. Shutoff Rods: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and slotted end matching curb valve.

## 2.6 WATER METERS

- A. Water meters will be furnished by utility company. Any charge will be paid by D.C. Government.
- B. Reduced-Pressure-Principle Backflow Preventers:
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 3. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:
    - a. Ames Fire & Waterworks; a division of Watts Regulator Co.
    - b. Conbraco Industries, Inc.
    - c. FEBCO; SPX Valves & Controls.
    - d. Flomatic Corporation.
    - e. Watts Water Technologies, Inc.
    - f. Zurn Plumbing Products Group; Wilkins Water Control Products Div.

## 2.7 WATER METER BOXES

- A. Description: Cast-iron body and cover for disc-type water meter, with lettering "WATER METER" in cover; and with slotted, open-bottom base section of length to fit over service piping.
  - 1. Option: Base section may be cast-iron, PVC, clay, or other pipe.
- B. Description: Cast-iron body and double cover for disc-type water meter, with lettering "WATER METER" in top cover; and with separate inner cover; air space between covers; and slotted, open-bottom base section of length to fit over service piping.

## 2.8 CONCRETE VAULTS

- A. Description: Precast, reinforced-concrete vault, designed for A-16 load designation according to ASTM C 857 and made according to ASTM C 858.
  - 1. Ladder: ASTM A 36/A 36M, steel or polyethylene-encased steel steps.
  - 2. Manhole: ASTM A 48/A 48M Class No. 35A minimum tensile strength, gray-iron traffic frame and cover.
    - a. Dimension: 24-inch minimum diameter, unless otherwise indicated.
  - 3. Manhole: ASTM A 536, Grade 60-40-18, ductile-iron traffic frame and cover.
    - a. Dimension: 24-inch- minimum diameter, unless otherwise indicated.

4. Drain: ASME A112.6.3, cast-iron floor drain with outlet of size indicated. Include body anchor flange, light-duty cast-iron grate, bottom outlet, and integral or field-installed bronze ball or clapper-type backwater valve.

## 2.9 FIRE DEPARTMENT CONNECTIONS

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Description: Freestanding, with cast-bronze body, thread inlets according to NFPA 1963 and matching local fire department hose threads, and threaded bottom outlet. Include lugged caps, gaskets, and chains; lugged swivel connection and drop clapper for each hose-connection inlet; 18-inch- high brass sleeve; and round escutcheon plate.
  - a. Standard: UL 405.
  - b. Connections: Two NPS 2-1/2 inlets and one NPS 6 outlet.
  - c. Connections: Three inlets and one NPS 6 outlet.
  - d. Connections: Six NPS 2-1/2 inlets and one NPS 6 NPS 8 outlet.
  - e. Inlet Alignment: Inline.
  - f. Finish Including Sleeve: Polished chrome-plated.
  - g. Escutcheon Plate Marking: "AUTO SPKR & STANDPIPE."

## PART 3 - EXECUTION

### 3.1 EARTHWORK

- A. Refer to Division 2 Section "Earthwork" for excavating, trenching, and backfilling.

### 3.2 PIPING APPLICATIONS

- A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.
- B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.
- C. Do not use flanges or unions for underground piping.
- D. Flanges, unions, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.
- E. Water Meter Box Water-Service Piping NPS 3/4 to NPS 2 shall be same as underground water-service piping.

- F. Aboveground and Vault Water-Service Piping NPS 3/4 to NPS 3 shall be hard copper tube, ASTM B 88, Type K wrought-copper, solder-joint fittings; and brazed joints.
  - 1. Hard copper tube, ASTM B 88, Type K wrought-copper, solder-joint fittings; and brazed joints.
  - 2. Ductile-iron, grooved-end pipe; ductile-iron, grooved-end appurtenances; and grooved joints.
- G. Aboveground Fire-Service-Main Piping ¾" to 2" shall be steel threaded pipe, ductile-iron, grooved-end pipe; ductile-iron-pipe appurtenances; and grooved joints are to be used on pipe larger than 2" ID.
- H. Aboveground and Vault Combined Water Service and Fire-Service-Main Piping shall be ductile-iron, grooved-end pipe; ductile-iron-pipe appurtenances; and grooved joints.

### 3.3 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FMG, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.
- B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
  - 1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, nonrising-stem, metal-seated gate valves with valve box.
  - 2. Use the following for valves in vaults and aboveground:
    - a. Gate Valves, NPS 2 and Smaller: Bronze, nonrising stem.
    - b. Gate Valves, NPS 3 and Larger: OS&Y rising stem, metal seated.

### 3.4 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. See Division 2 Section "Piped Utilities - Basic Materials and Methods" for piping-system common requirements.

### 3.5 PIPING INSTALLATION

- A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.
- B. Extend water-service piping and connect to water-supply source and building-water-piping systems at outside face of building wall in locations and pipe sizes indicated.
  - 1. Terminate water-service piping at building wall until building-water-piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building-water-piping systems when those systems are installed.

- C. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.

### 3.6 JOINT CONSTRUCTION

- A. See Division 2 Section "Piped Utilities - Basic Materials and Methods" for basic piping joint construction.
- B. Make pipe joints according to the following:
  1. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
  2. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
  3. Ductile-Iron Piping, Grooved Joints: Cut-groove pipe. Assemble joints with grooved-end, ductile-iron-piping couplings, gaskets, lubricant, and bolts according to coupling manufacturer's written instructions.
  4. PE Piping Insert-Fitting Joints: Use plastic insert fittings and fasteners according to fitting manufacturer's written instructions.
  5. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
  6. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure. Refer to Division 2 Section "Piped Utilities - Basic Materials and Methods" for joining piping of dissimilar metals.

### 3.7 VALVE INSTALLATION

- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.
- B. UL/FMG, Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.
- C. MSS Valves: Install as component of connected piping system.
- D. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.

### 3.8 BACKFLOW PREVENTER INSTALLATION

- A. Install backflow preventers of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.
- B. Do not install backflow preventers that have relief drain in vault or in other spaces subject to flooding.
- C. Do not install bypass piping around backflow preventers.

- D. Support NPS 2-1/2 and larger backflow preventers, valves, and piping near floor and on brick or concrete piers.

### 3.9 WATER METER BOX INSTALLATION

- A. Install water meter boxes in paved areas flush with surface.
- B. Install water meter boxes in grass or earth areas with top **2 inches** above surface.

### 3.10 CONCRETE VAULT INSTALLATION

- A. Install precast concrete vaults according to ASTM C 891.

### 3.11 FIRE HYDRANT INSTALLATION

- A. General: Install each fire hydrant with separate gate valve in supply pipe, anchor with restrained joints or thrust blocks, and support in upright position.
- B. Wet-Barrel Fire Hydrants: Install with valve below frost line. Provide for drainage.
- C. AWWA Fire Hydrants: Comply with AWWA M17.
- D. UL/FMG Fire Hydrants: Comply with NFPA 24.

### 3.12 CONNECTIONS

### 3.13 FIELD QUALITY CONTROL

- A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Hydrostatic Tests: Test at not less than one-and-one-half times working pressure for two hours.
  - 1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig . Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
- C. Prepare reports of testing activities.

### 3.14 IDENTIFICATION

- D. Install continuous underground detectable warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, directly over piping. Underground warning tapes are specified in Division 2 Section "Earthwork."

- E. Permanently attach equipment nameplate or marker indicating plastic water-service piping, on main electrical meter panel. See Division 2 Section "Piped Utilities - Basic Materials and Methods" for identifying devices.

### 3.14 CLEANING

- A. Clean and disinfect water-distribution piping as follows:
  - 1. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
    - a. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
    - b. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
    - c. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.
- B. Prepare reports of purging and disinfecting activities.

END OF SECTION 02510

SECTION 02530 – SANITARY SEWAGE

1.1 SUMMARY

- A. Gravity-flow, non-pressure sanitary sewage outside the building.

1.2 PERFORMANCE REQUIREMENTS

- A. Gravity-flow, Non-Pressure, Drainage-Piping Pressure Rating: 10-foot head of water.

1.3 COMPONENTS

- A. Backwater Valves: PVC.
- B. Cleanouts: PVC.
- C. Manholes: Standard precast concrete or cast-in-place concrete.
  - 1. Resilient pipe connectors.
  - 2. Reinforced-concrete grade rings.
  - 3. Protective coating.
  - 4. Manhole frames and covers.
  - 5. Manhole cover inserts.

1.4 INSTALLATION

- A. Gravity-Flow, Non-pressure Sewer Piping Applications:
  - 1. NPS 4: Hub-and-spigot, service class, cast-iron soil, hubless cast-iron soil, PVC, water service, PVC sewer pipe.
  - 2. NPS 5 and NPS 6 (DN 125 and DN 150): Hub-and-spigot, service class, cast-iron soil, hubless cast-iron soil, PVC sewer pipe.
  - 3. NPS 8 and NPS 10: Hub-and-spigot, service class, cast-iron soil, hubless cast-iron soil, PVC sewer pipe.

END OF SECTION

## SECTION 08710 – HARDWARE SCHEDULE

HARDWARE SET 1A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side) both sides with interchangeable cylinder on exterior, inside always operates with handle, exterior always locked. 1 1/2 pair Finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 non-removable pin and ball bearings. Hinge to fit existing rough in on both door and frame. SS kickplate on interior that is 8 inches high and 3/4 inch less in width than the door itself. SS Wall door stop and painted cast iron interior door closer. Six inch mill finish aluminum threshold.

HARDWARE SET 2: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side) both sides with interchangeable cylinder on exterior, inside always operates with handle, exterior always locked. 1 1/2 pair Finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with non-removable pin and ball bearings. Hinge to fit existing rough in on both door and frame. SS kickplate on interior that is 8 inches high and 3/4 inch less in width than the door itself. Painted cast iron interior door closer. Six inch mill finish aluminum threshold.

HARDWARE SET 2A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), outside with interchangeable cylinder on exterior, inside with Von Duprin Series 98 Touchbar exit Device, exterior always locked. 1 1/2 pair Finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with non-removable pin and ball bearings. Hinge to fit existing rough in on both door and frame. SS kickplate on interior that is 8 inches high and 3/4 inch less in width than the door itself. SS wall door stop and painted cast iron interior door closer. Six inch mill finish aluminum threshold.

HARDWARE SET 3A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on hall side only), with interchangeable cylinder on hall side thumb latch release on inside exterior always locked. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinge to fit existing rough in on both door and frame. Four inch mill finish aluminum threshold.

HARDWARE SET 4A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), both sides with interchangeable cylinder on exterior, inside always operates with handle, exterior always locked. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinges to fit existing rough in on both door and frame. Door to have weatherstrip closure on bottom of door on four inch wide mill finish aluminum threshold.

HARDWARE SET 5: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), access side with interchangeable cylinder, inside always operates with handle, exterior always locked. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinges to fit existing rough in on both door and frame. SS kickplate on interior that is 8 inches high and 3/4 inch less in width than the door itself. Painted cast iron interior door closer.

HARDWARE SET 6A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), both sides with interchangeable cylinder on exterior, inside always operates with handle, exterior always locked. 3 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinges to fit existing rough in on both door and frame. Door to have weatherstrip closure on bottom of door on four inch wide mill finish aluminum threshold. Finger operated door deadbolt on top and bottom with CI door closer on operable leaf of door.

HARDWARE SET 8: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), outside with interchangeable cylinder on exterior, inside with Von Duprin Series 98 Touchbar exit device, exterior always locked. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinge to fit existing rough in on both door and frame. SS kickplate on interior that is 8 inches high and 3/4 inch less in width than the door itself. SS wall door stop and painted cast iron interior door closer. Six inch mill finish aluminum threshold. All with one hour UL label.

HARDWARE SET 9: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheon on lever side), no cylinder on exterior, inside with Von Duprin Series 98 Touchbar exit device, 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinge to fit existing rough in on both door and frame. SS kickplate on interior that is 8 inch high and 3/4 inch less in width than the door itself and painted cast iron interior door closer. Four inch mill finish aluminum threshold. All with one hour UL label.

HARDWARE SET 9A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheon on lever side), no cylinder on exterior, inside with Von Duprin Series 98 Touchbar exit device, 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinge to fit existing rough in on both door and frame. SS kickplate on interior that is 8 inches high and 3/4 inch less in width than the door itself, and painted cast iron interior door closer. Four inch mill finish aluminum threshold. All with one hour UL label.

HARDWARE SET 10: SS Push Plate on exterior with SS pull on interior, painted CI door closer, SS kick plate on push side of door that is 8 inches high and 3/4 inch less in width than the door. Door to have deadbolt and cylinder on push side of door with thumb latch on interior. 1 1/2 pair of SS hinges with ball bearings and SS pin. Painted CI closer.

HARDWARE SET 11: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheon on lever side), interchangeable cylinder on exterior, 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. SS kickplate on lock side of door that is 8 inches high and 3/4 inch less in width than the door. Provide 4 inch wide mill finish aluminum threshold.

HARDWARE SET 11A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), no cylinder, passage set function operates with handle, 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinges to fit existing rough in on both door and frame. SS kickplate on exterior (push side) that is 8 inches high and 3/4 inch less in width than the door itself. Painted cast iron interior door closer. Mill finish 4" aluminum threshold.

HARDWARE SET 12: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), access side with interchangeable cylinder, inside always operates with handle, exterior always locked. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinges to fit existing rough in on both door and frame. SS kickplate on lock side that is 8 inches high and 3/4 inch less in width than the door itself. Painted cast iron interior door closer.

HARDWARE SET 12A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), both sides with interchangeable cylinder on exterior, inside always operates with handle, exterior always locked. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinge to fit existing rough in on both door and frame. SS kickplate on exterior that is 8 inches high and 3/4 inch less in width than the door itself.

HARDWARE SET 13A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), no cylinder, passage set function operates with handle, 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinges to fit existing rough in on both door and frame. SS kickplate on exterior (push side) that is 8 inches high and 3/4 inch less in width than the door itself. Painted cast iron interior door closer. Mill finish 4" aluminum threshold.

HARDWARE SET 14: Push plate on exterior with SS pull on interior, painted CI door closer, SS kickplate on push side of door that is 8 inches high and 3/4 inch less in width than the door itself. 1 1/2 pair of SS hinges with ball bearings and SS pin. CI painted closer.

HARDWARE SET 15A: Stainless steel pull handle on either side of sliding door, new heavy duty (min. 750# galvanized overhead track and ball bearing rollers, complete with end stops and bottom roller. Galvanized hasp to be installed no more than 2 feet-0 inches above concrete floor and is to be complete with heavy duty locks, keyed alike.

HARDWARE SET 16A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), access side with interchangeable cylinder, inside always operates with handle, exterior always locked. 3 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with non-removable pin and ball bearings. Hinges to fit existing rough in on both door and frame. SS kickplate on interior side that is 8 inches high and  $\frac{3}{4}$  inches less in width than the door itself. Painted cast iron interior door closer on operable leaf. Mill finish aluminum 4 inch threshold across entire opening. Two deadbolts on fixed leaf of opening.

HARDWARE SET 17: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), access side with interchangeable cylinder, inside always operates with handle, exterior always locked. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with non-removable pin and ball bearings. Hinges to fit existing rough in on both door and frame. SS kickplate on interior side that is 8 inches high and  $\frac{3}{4}$  inches less in width than the door itself. Painted cast iron interior door closer on operable leaf. Mill finish aluminum 4 inch threshold across entire opening. Weatherstrip on bottom of door surface applied.

HARDWARE SET 18: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), both sides with interchangeable cylinder on exterior, inside always operates with handle, exterior always locked. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with non-removable SS pin and ball bearings. Hinge to fit existing rough in on both door and frame. CI painted closer with 85 degree hold open and 4 inch wide mill finish aluminum threshold and surface applied weatherstrip on interior of door.

HARDWARE SET 19: SS push plate on interior with SS pull on exterior, painted CI door closer, SS kick plate on push side of door that is 8 inches high and  $\frac{3}{4}$  inches less in width than the door. 1 1/2 pair of SS hinges with ball bearings and SS pin. CI painted closer. Door to have deadbolt and cylinder on pull side of door with thumb latch on interior. 4 inch mill finish aluminum threshold.

HARDWARE SET 20A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), no cylinder, passage set function operates with handle. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinges to fit existing rough in on both door and frame. SS kickplate on interior (push side) that is 8 inches high and  $\frac{3}{4}$  inches less in width than the door itself. Painted cast iron interior door closer. Mill finish 4 inch aluminum threshold.

HARDWARE SET 21: SS push plate on interior with SS pull on exterior, painted CI door closer, SS kick plate on push side of door that is 8 inches high and  $\frac{3}{4}$  inches less in width than the door. 1 1/2 pair of SS hinges with ball bearings and SS pin. CI painted closer. Door to have deadbolt and cylinder on pull side of door with thumb latch on interior. 4 inch mill finish aluminum threshold and surface applied weatherstrip on interior.

HARDWARE SET 22: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), no cylinder, passage set function operates with handle. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with SS pin and ball bearings. Hinges to fit existing rough in on both door and frame. SS kickplate on interior (push side) that is 8 inches high and 3/4 inches less in width than the door itself. Painted cast iron interior door closer.

HARDWARE SET 22A: Lever handle (similar to Schlage 06L cast or forged lever handle with forged escutcheons on each side), outside with interchangeable cylinder on exterior, inside always operates with handle, exterior can be locked and unlocked using outside cylinder. Thumb latch on interior operates dead bolt and engages latch. 1 1/2 pair finish 630 (satin stainless steel), hinges to be stainless steel with finish 630 with non-removable SS pin and ball bearings. Hinge to fit existing rough in on both door and frame. CI painted closer.

## SECTION 08800 – GLAZING

### 1.1 SUMMARY

- A. Glazing required for the following:
  - 1. Windows.
  - 2. Doors.
  - 3. Skylights.

### 1.2 QUALITY ASSURANCE

- A. Preconstruction adhesion and compatibility testing.

### 1.3 WARRANTY

- A. Deterioration of Coated Glass: Not less than five years.
- B. Deterioration of Laminated Glass: Not less than five years.
- C. Deterioration of Insulating Glass: Not less than ten years.

### 1.4 MATERIALS

- A. Glass Products:
  - 1. Annealed Float Glass: Clear.
  - 2. Laminated Glass: With polyvinyl-butyl sheet interlayer.
  - 3. Insulating Glass: Manufacturer's standard dual-seal units.
- B. Silicone Glazing Sealants: Neutral curing, Class 50.
- C. Glazing Gaskets: Dense compression.

### 1.5 GLASS UNITS

- A. Monolithic Float-Glass Units:
- B. Interlayer of Laminated-Glass Units: Translucent white with 10% to 20% light reduction in selected locations with clear units elsewhere.
- C. Insulating-Glass Units: Outer lite to be laminated float glass with 10% to 20% light reduction interlayer with low-e coating with clear float glass for inboard lite.

## SECTION 09210 - GYPSUM PLASTER

### 1.1 SUMMARY

- A. Nonstructural steel framing and furring.
- B. Gypsum plasterwork on expanded-metal lath plaster bases.

### 1.2 QUALITY ASSURANCE

- A. Mockups for each finish.

### 1.3 MATERIALS

- A. Nonstructural Steel Framing Members:
  - 1. Cold-Rolled Channels: Manufacturer's standard rust-inhibiting coating.
  - 2. Wire: Zinc-coated steel.
  - 3. Ceilings:
    - a. Suspended Furring: Cold-rolled channels.
    - b. Direct Furring: Cold-rolled channels.
    - c. Hangers: Galvanized Wire.
  - 4. Partitions:
    - a. Studs and Runners: With hot-dip galvanized zinc coating.
    - b. Vertical Furring: Hat-shaped rigid furring channels with hot-dip galvanized coating.
    - c. Solid-Plaster Partitions: Channel studs and L-runners.
- B. Expanded-Metal Lath:
  - 1. Finish: Hot-dip galvanized zinc coating.
  - 2. Paper Backing: Kraft paper.
  - 3. Configuration: Flat diamond mesh.
- C. Accessories:
  - 1. Cornerite.
  - 2. Striplath.
  - 3. Metal Trim: Bead and joint trims.
    - a. Zinc-coated (galvanized) steel.
- D. Bonding compound.
- E. Plaster Mixes:
  - 1. Base-Coat Mixes over Expanded-Metal Lath: For scratch and brown coats of three-coat plasterwork.
  - 2. Base-Coat Mix over Monolithic Concrete. For two-coat plasterwork.
  - 3. Finish-Coat Mix: For smooth-troweled or textured finish or as a skim coat on existing plaster.

**END OF SECTION 09210**

## SECTION 09651 - RESILIENT FLOOR TILE

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Solid vinyl floor tile.
  - 2. Rubber floor tile.
  - 3. Vinyl composition tile (VCT).

#### 1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Samples: Full-size units of each color and pattern of resilient floor tile required.
- C. LEED Submittals:
  - 1. Credit EQ 4.1: Manufacturers' product data for adhesives, including printed statement of VOC content and material safety data sheets.

#### 1.3 PROJECT CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:
  - 1. 48 hours before installation.
  - 2. During installation.
  - 3. 48 hours after installation.
- B. After post installation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Close spaces to traffic during floor covering installation.
- D. Close spaces to traffic for 48 hours after floor covering installation.
- E. Install resilient products after other finishing operations, including painting, have been completed.

#### 1.4 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Floor Tile: Furnish 1 box for every **50** boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

## PART 2 - PRODUCTS

### 2.1 VINYL COMPOSITION TILE - VCT-1

- A. Vinyl Composition Tile (VCT): ASTM F 1066.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
  - 2. Products: Subject to compliance with requirements, provide one of the following:
    - a. AB ColorPlus, American Biltrite (Canada) Ltd.
    - b. Armstrong World Industries, Inc.
    - c. Azrock Commercial Flooring, DOMCO.
    - d. Congoleum Corporation.
    - e. Mannington Mills, Inc.
- B. Color and Pattern: To be selected from manufacturer's full range.
- C. Class: surface-pattern tile.
- D. Wearing Surface: Smooth.
- E. Thickness: 0.125 inch.
- F. Size: 12 by 12 inches.
- G. Fire-Test-Response Characteristics:
  - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E 648.

### 2.2 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
  - 1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
    - a. VCT and Asphalt Tile Adhesives: 50 g/L.
    - b. Cove Base Adhesives: 50 g/L.
    - c. Rubber Floor Adhesives: 60 g/L.
- C. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of tiles, and in maximum available lengths to minimize running joints.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.

- B. Concrete Substrates: Prepare according to ASTM F 710.
  - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  - 2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
  - 3. Moisture Testing:
    - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
    - b. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.
- E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
  - 1. Do not install resilient products until they are same temperature as space where they are to be installed.
- F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
  - 1. Lay tiles in pattern indicated.
- B. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
  - 1. Lay tiles with grain running in one direction in pattern of colors and sizes indicated.
- C. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.
- D. Extend tiles into toe spaces, door reveals, closets, and similar openings.
- E. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.
- F. Install tiles on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of tile installed on covers. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

- G. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- H. Perform the following operations immediately after completing resilient product installation:
  - 1. Remove adhesive and other blemishes from exposed surfaces.
  - 2. Sweep and vacuum surfaces thoroughly.
  - 3. Damp-mop surfaces to remove marks and soil.
    - a. Do not wash surfaces until after time period recommended by manufacturer.
- I. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

**END OF SECTION 09651**

## SECTION 09653 - RESILIENT WALL BASE AND ACCESSORIES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Wall base.

#### 1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Samples: For each type of product indicated, in manufacturer's standard-size Samples but not less than 12 inches long, of each resilient product color, texture, and pattern required.
- C. LEED Submittals:
  - 1. Credit EQ 4.1: Manufacturers' product data for adhesives, including printed statement of VOC content and material safety data sheets.

#### 1.3 PROJECT CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:
  - 1. 48 hours before installation.
  - 2. During installation.
  - 3. 48 hours after installation.
- B. After post installation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

#### 1.4 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

### 2.2 COLORS AND PATTERNS

- A. Colors and Patterns: As selected from manufacturer's full range, roll goods only.

### 2.3 RESILIENT WALL BASE **RB-1**

- A. Wall Base: ASTM F 1861. Followings or approved equal:
  - 1. AFCO-USA, American Floor Products Company, Inc.
  - 2. Armstrong World Industries, Inc.
  - 3. Azrock Commercial Flooring, DOMCO.
  - 4. Burke Mercer Flooring Products.
  - 5. Endura.
  - 6. Estrie, American Biltrite (Canada) Ltd.
  - 7. Johnsonite.
  - 8. Marley Flexco (USA), Inc.
  - 9. Mondo Rubber International, Inc.
  - 10. Musson, R. C. Rubber Co.
  - 11. Nora Rubber Flooring, Freudenberg Building Systems, Inc.
  - 12. Pirelli Rubber Flooring.
  - 13. Roppe Corporation.
  - 14. Stoler Industries.
  - 15. VPI, LLC, Floor Products Division.
- B. Type (Material Requirement): TV (vinyl).
- C. Group (Manufacturing Method): I solid, homogeneous.
- D. Style: Cove (with top-set toe) Straight (toeless) Butt-to (cove with extended square-edge toe that fits flush to floor covering).
- E. Minimum Thickness: 0.080 inch.
- F. Height: 4 inches.
- G. Lengths: Coils in manufacturer's standard length.
- H. Outside Corners: Job formed or premolded.
- I. Inside Corners: Job formed or premolded.
- J. Surface: Smooth.

## 2.4 RESILIENT MOLDING ACCESSORY

- A. Description: Cap for cove carpet; Cap for cove resilient sheet floor covering Carpet bar for tackless installations; Carpet edge for glue-down applications; Nosing for resilient floor covering; Reducer strip for resilient floor covering; Joiner for tile and carpet. Products: Followings or approved equal:
  - 1. Burke Mercer Flooring Products.
  - 2. Johnsonite.
  - 3. Marley Flexco (USA), Inc.
  - 4. Roppe Corporation.
  - 5. Stoler Industries.
- B. Material: Vinyl.
- C. Profile and Dimensions: As indicated.

## 2.5 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturers for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
  - 1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
    - a. Cove Base Adhesives: 50 g/L.
    - b. Rubber Floor Adhesives: 60 g/L.
- C. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.
- B. Concrete Substrates for Stair Accessories: Prepare according to ASTM F 710.
  - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  - 2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
  - 3. Moisture Testing:
    - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

- b. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.
- E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
  - 1. Do not install resilient products until they are the same temperature as the space where they are to be installed.
- F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 RESILIENT WALL BASE INSTALLATION

- A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- D. Do not stretch wall base during installation.
- E. On masonry surfaces or other similar irregular substrates, fill voids along top edge of wall base with manufacturer's recommended adhesive filler material.
- F. Premolded Corners: Install premolded corners before installing straight pieces.
- G. Job-Formed Corners:
  - 1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
  - 2. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

### 3.3 RESILIENT ACCESSORY INSTALLATION

- A. Resilient Stair Accessories:
  - 1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.

2. Tightly adhere to substrates throughout length of each piece.
3. For treads installed as separate, equal-length units, install to produce a flush joint between units.

- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

### 3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing resilient product installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

- a. Do not wash surfaces until after time period recommended by manufacturer.

- B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

**END OF SECTION 09653**