

SECTION 26 30 00
EXCAVATION / BACKFILL / RESTORATION
(ELECTRICAL - ADD ALTERNATE #1)

0.01 PART 1.00 - GENERAL

ASTM D698 - STANDARD TEST METHODS FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORT (12,400 FT-LBF/FT³ (600 KN-M/M³)); 2012 (REAPPROVED 2021).

0.01 RELATED DOCUMENTS

- A. The Contractor is referred to the "Bid Book"; the "Standard Agreement" between the Construction Manager (CM) and the Contractor(s); "Division 01 - General Requirements" of the Contract Specifications"; the "Contract Drawings" and all Amendments and Addenda thereto; all of which govern the Work of this Section.

0.02 SCOPE OF WORK

- A. The Work of this Section includes all labor, materials, equipment and services necessary to complete the excavation, backfill and restoration work related to installation of underground electrical feeders as indicated on the Drawings and/or specified herein including, but not limited to, the following:
1. Buildings #1, 2, 3, 4, 5, 6, 8 & 9
Perform the following work to permit installation of additional new underground electrical service feeders/conduit adjacent to existing feeders between existing electrical manholes (property line boxes) and cellar electrical meter rooms:
 - a. Verification of existing underground utilities to remain and all other existing conditions adjacent to the work areas.
 - b. Protection of adjacent existing structures, manholes, fencing/curbs, sidewalks/walkways, raised planters, trees indicated to remain, etc.
 - c. Provide temporary fencing and other protection around excavated areas in accordance with requirements of authorities having jurisdiction and as required.
 - d. Removal of above-grade items that will interfere with the excavation, clearing/grubbing of work areas and removal/stockpiling of topsoil.
 - e. Excavation/trenching, including sheeting/shoring/bracing, dewatering, protection/support of existing utilities to remain and removal/sealing-up of abandoned utilities that will interfere with the work.
 - f. Placement/compaction of fill/backfill, including provision of suitable off-site fill materials and field compaction testing as required.
 - g. Rough/finish grading of excavated/disturbed areas.
 - h. Reseeding of restored lawn areas.
 - i. Maintenance/restoration of work areas.
 - j. Legal disposal of excess/unsuitable excavated materials.
 - k. Building #2 (Special Conditions): Removal/restoration/ reinstallation/replacement of existing steel bar fencing/ concrete curb as required (see Site Utilities/Ground Improvements Reference Drawings for location – Contractor to verify in field).
 - l. Building #4 (Special Conditions): Removal/restoration/ reinstallation/replacement of existing steel bar fencing/ concrete curb and concrete pavement at building entrance as required (do not disturb existing decorative concrete pavers - see Site Utilities/Ground Improvements References Drawings for location – Contractor to verify in field).
 2. Provide all other labor and materials as may be reasonably inferred to make the Work of this Section complete.

0.03 RELATED WORK SPECIFIED ELSEWHERE

- A. The following Section/Division contain requirements that relate to the Work of this Section:
 - 1. Section 02050 – Selective Demolition/Removals/Cutting/Patching

0.04 SUBMITTALS

- A. The following Shop Drawings, Catalog Cuts, Material Samples and other submittals pertaining to the Work of this Section shall be submitted in accordance with Division 01- General Conditions, Section 1.7 Submittals:
 - 1. Certifications: Fill/topsoil/legal disposal of removed materials.
 - 2. Manufacturer’s Catalog Cuts: Grass Seed.

0.05 VERIFICATION /COORDINATION OF PROJECT CONDITIONS

- A. The Contractor, by careful examination, shall inform himself as to the nature and location of the Work, the conformation of ground, the nature of the subsoil conditions, the locations of the groundwater table, the character, quality, and quantity of the materials to be encountered, the type of equipment and facilities needed prior to and during the Work, the general and local conditions, and all other matters which may in any way affect the Work.
- B. The Contractor shall have visited the job site before submitting his proposal and shall have thoroughly familiarized himself with locations of adjacent existing structures, trees indicated to remain, etc.
- C. Existing Site Utilities/Ground Improvements:
 - 1. Reference Drawings
 - a. The Contractor shall carefully examine the existing Site Utilities/Ground Improvements Reference Drawings appended to the Electrical Contract Drawings. These documents, which indicate existing electrical manhole locations, underground electrical, gas and steam mains running adjacent and parallel to the new feeders, paved/planted areas, fencing/curbs, etc. are schematic and represent all conditions known to the Authority. The Authority makes no claims regarding the accuracy of these documents, which are being provided for reference purposes.
 - 2. The Contractor shall thoroughly inspect existing electrical meter rooms and other cellar spaces adjacent to the work areas to verify locations and types of utilities entering the buildings from below grade.
 - 3. Utilizing the aforementioned information, the Contractor shall locate existing underground utilities and service connections in the areas of work and provide adequate means of protection during excavation operations.
 - 4. Should undocumented or incorrectly documented piping or other utilities be encountered during excavation, the Contractor shall promptly consult the CM for directions. Cooperate with the CM/ Authority in keeping respective service and facilities in operation while the Work is in progress and repair damaged utilities to the satisfaction of and at no additional cost to the Authority.
 - 5. Do not interrupt existing utilities except when permitted in writing by the CM/Authority and then only after acceptable temporary utility services have been provided. Provide minimum 48-hour notice to the CM/Authority prior to any approved service interruption.
- D. In the event that other existing installations or construction, of which no records are available, are encountered during the excavation, the Contractor shall promptly consult the CM for directions.

0.06 PROTECTION

- A. Protect adjacent existing trees during performance of the work unless otherwise indicated. Box trees indicated to remain with temporary steel fencing or solidly constructed wood barricades as required. Protect root systems from smothering. Do not store excavated material, or allow

vehicular traffic or parking within the branch drip line. Restrict foot traffic to prevent excessive compaction of soil over root systems.

- B. Contractor shall use all necessary precautions to prevent damage to existing structures, pavement, utilities and other installations located within or adjacent to the work areas, and shall repair or replace at his own expense any material or work damaged or destroyed by his forces while performing work of this Section.
- C. Provide temporary lateral support system and other protection as required to insure against damage to existing structures, pavement and utilities when excavation and grading work occurs adjacent to or below same.
- D. Protect all sides of the excavation at all times against cave-ins and movement of soil.
- E. Provide barricades, warning lights and other protective installations as required to prevent accidents, to avoid all possible hazards, and to protect the residents/public and work area at all times, including Saturdays, Sundays and holidays.
- F. Use all means necessary to control dust in and around the work area. Thoroughly moisten all surfaces as required to prevent dust from becoming a nuisance to the residents/public and the performance of other work at the site.

0.07 DELIVERY, STORAGE AND HANDLING

- A. The Contractor shall comply with manufacturer's recommendations for delivery, storage and handling of materials where applicable.

PART 2.00 – PRODUCTS

1.01 MATERIALS

- A. Fill Material: Shall consist of earth, free from stones, organic matter and other deleterious materials, to be used where backfill is unsuitable for reuse and as required.
- B. Topsoil: Shall consist of natural loam free from subsoil, stones, sticks, roots or other debris of any kind. Topsoil shall be one grade only and be of uniform quality. No topsoil shall be delivered to the job site in a frozen or muddy condition. Topsoil shall conform to all NYCHA Landscape Section requirements (copy available upon request). Topsoil delivered which does comply will be rejected and shall be removed from the job site by the Contractor at no cost to the Authority.
- C. Grass Seed: Shall be permanent type consisting of fresh, recleaned, "New Crop" seed mixed in proper proportions by weight and testing with minimum percentages of purity and germination. Seed shall of two kinds, Regular Mix and Shade Mix, used as appropriate. Grass seed shall conform to all NYCHA Landscape Section requirements (copy available upon request).

1.02 SHEETING, SHORING AND BRACING

- A. Timber sheeting, shoring and bracing shall be structural grade timber or lumber, uprights, wales and cross braces of sufficient dimensions to resist pressure of earth to be retained.
- B. Steel sheetpiling shall be continuous interlock type complete with all required accessories, complying with ASTM A 328 or ASTM A 572. Sheetpiling shall be of design, configuration and length to resist pressure of earth to be retained.

PART 3.00 – EXECUTION

2.01 ACCESS TO WORK AREAS

- A. Existing installations adjacent to work areas, including perimeter steel bar fencing/concrete curbs, shall be kept intact and shall not be disturbed unless absolutely necessary. Where required to provide temporary access to work areas, carefully remove sections of existing

fencing/curbs. Store removed fence sections in a secure and protected location for future reinstallation.

- B. Provide and maintain temporary perimeter fencing and other protection as required until steel bar fencing is reinstalled.

2.02 CLEARING AND GRUBBING

- A. Clear and grub the work area of all trees, shrubs, brush, other prominent vegetation, debris and obstructions except for those items indicated to remain. Completely remove stumps and roots protruding through the ground surface. Use only hand methods for grubbing inside the drip line of trees indicated to remain.
- B. Where roots and branches of trees indicated to remain interfere with required excavation work, carefully and cleanly cut them back to point of branching.

2.03 REMOVAL OF TOPSOIL

- A. Remove existing topsoil from work areas where excavation is required.
- B. Stockpile topsoil as approved by the CM where directed until required for reuse. Place, grade and shape stockpiles for proper drainage. Legally dispose of any topsoil rejected by the CM for reuse.

2.04 EXISTING UNDERGROUND UTILITIES

- A. Locate all existing underground utilities and service connections in the work areas before commencing excavation of new trenches. Determine exact utility locations by means of hand excavated test pits.
- B. All necessary precautions shall be taken to protect existing active underground utilities to remain. In the event that any such utilities are damaged during excavation, such installations shall be promptly repaired/replaced as required at no additional cost to the Authority.
- C. Provide temporary support as required for active underground utilities to remain in excavated areas, particularly at locations where new conduit will be installed below existing installations.
- D. Remove inactive/abandoned underground utilities encountered within the areas to be excavated which will interfere with the Work, whether or not such installations are indicated on existing utility drawings.
- E. Permanently seal open ends of abandoned underground utilities exposed by excavation which extend beyond the limits of the work areas with sufficiently strong closures to withstand pressures which may result after closing. Seal open ends of metallic pipe/conduit with threaded galvanized metal caps, plastic plugs or other approved closure method appropriate for the type of pipe material and size.

2.05 EXCAVATION

- A. Excavate earth and other materials encountered as required, excluding rock, boulders, etc. greater than 1 cu. yd. in size which cannot be excavated with standard power equipment, to permit installation of new underground conduit (in the event that additional "Rock Excavation" is required, an "extra" to the Contract shall be negotiated). At critical locations where existing underground utility lines have been confirmed, trenches shall be hand excavated.
- B. Maintain sides and slopes of all excavations in a safe condition until completion of backfilling. Comply with Code of Federal Regulations (CFR) Title 29 - Labor, Part 1926 (OSHA).
- C. Deposit excavated material on one side of trench only at a sufficient distance from the edge to avoid overloading. Trim banks of excavated material to prevent cave-ins and prevent material from falling or sliding into trench. Keep a clear footway between excavated material and trench

edge. Limit damage to adjacent grass areas to remain. Maintain work areas to allow free drainage of surface water.

- D. Stockpile excavated materials approved as suitable for reuse by the CM where directed until required for backfill (approved backfill material shall consist of earth, free from stones, organic matter and other deleterious materials). Place, grade, and shape stockpiled materials as required for proper drainage.
- E. In order to minimize excavation work and damage to adjacent areas, width of trenches shall be limited to 12" on either side of the conduit unless otherwise required by field conditions. Cut trenches to required cross section, elevation, profile, line and grade. New conduit shall be installed in trenches not less than 24" below finish grade.
- F. Accurately grade and shape bottom of trench for uniform bearing of conduit in undisturbed soil. Whenever wet or unstable soil that is incapable of properly supporting the conduit is encountered, such material shall be removed to the depth required and the trench backfilled to the proper grade with suitable material compacted to the required density.
- G. Notify the CM upon completion of excavation operations. The Contractor shall not proceed with installation of conduit until the excavation is inspected and approved.

2.06 DEWATERING

- A. Prevent surface and subsurface water from flowing into excavations and trenches, and from flooding the work areas and surrounding site.
- B. Do not allow water to accumulate in excavations or trenches. Remove water from all excavations immediately to prevent softening of trench bottoms, undercutting footings and soil changes detrimental to the stability of subgrades and foundations. Furnish and maintain pumps, sumps, suction and discharge piping systems, and other system components necessary to convey the water away from the work areas.
- C. Convey water removed from excavations and rainwater to collecting or run-off areas. Cut and maintain temporary drainage ditches and provide other necessary diversions for each excavation. Provide temporary controls to restrict the flow of discharged water as necessary to prevent erosion and siltation of receiving areas. Do not use trench excavations as temporary drainage ditches.

2.07 SHEETING, SHORING AND BRACING

- A. Install temporary timber sheeting with shoring and bracing or steel sheetpiling as required to create a safe working environment and prevent settlement or other damage to adjacent grounds and structures resulting from excavation operations. Shore and brace sheeting in a manner which will not interfere with the Work. Check shoring and bracing for settlement, and adjust installation as required. Promptly remove temporary sheeting, shoring and bracing when no longer required.

2.08 PLACING FILL/BACKFILL

- A. Surface Preparation of Fill Areas: Strip topsoil, remaining vegetation and other deleterious materials prior to placement of fill/backfill.
- B. Excavations: Backfill utility trenches as promptly as work permits, but not until completion of the following:
 - 1. Inspection, testing, approval and recording locations of new underground feeders.
 - 2. Removal of temporary sheeting or sheetpiling and backfilling of voids caused by removals.
 - 3. Removal of all trash and debris.

- C. In confined areas, such as utility trenches, not easily accessible by larger compaction equipment, place suitable fill/backfill material as specified in layers not more than 6" thick in loose depth. Before compaction, moisten or aerate each layer as required to facilitate compaction to the required density. Do not place fill/backfill material on surfaces that are muddy, frozen or covered with ice.
- D. Place fill/backfill material to within 4" of finish grade after compaction to permit placing of topsoil.

2.09 COMPACTION

- A. Compact each layer of fill/backfill at utility trenches, including bedding where required, to 90% of maximum density and at a moisture content suitable to obtain the required density, but at not less than 3 percent drier or more than 2 percent wetter than the optimum content as determined by ASTM D698.
- B. Where fill/backfill must be moisture conditioned before compaction, uniformly apply water to the surface and to each layer of material. Remove and replace, or scarify and air dry, soil that is too wet to permit compaction to specified density.

2.10 ROUGH/FINISH GRADING

- A. Trim and rough grade work areas as required to a level within 1" above or below the required subgrade elevations. Provide smooth finished subgrade surfaces free from irregularities ready to receive 4" layer of topsoil.
- B. Compact fill as specified to within 3" of subgrade surface. Remove objectionable material detrimental to proper compaction or to placing full depth of topsoil.
- C. Provide smooth and uniform transition to adjacent areas. Grade areas adjacent to building lines to drain away from structures and to prevent ponding.
- D. Spread topsoil directly upon prepared subgrade surface to a depth measuring 4" after natural settlement of the topsoil has occurred. Finish topsoil surface level with adjacent existing finish grade, free of depressions which will trap water, free of stones over 1" in any dimension and free of debris. Application of topsoil shall conform to all NYCHA Landscape Section requirements.
- E. Approved existing topsoil removed from the excavated areas may be reused. Provide additional topsoil as specified from outside sources as required.

2.11 RESEEDING

- A. Grass seed at restored lawn areas shall be sown evenly and then lightly wood raked into the topsoil. Reseeded areas shall be mechanically rolled as appropriate and then thoroughly watered with a fine spray. Reseeding shall conform to all NYCHA Landscape Section requirements.

2.12 MAINTENANCE AND RESTORATION

- A. Restore grades to required levels where settlement or damage due to performance of the Work has occurred. Correct conditions contributing to settlement, and remove and replace improperly placed or poorly compacted fill materials at no additional cost to the Authority.
- B. Reinstall previously removed sections of steel bar fencing and repair/replace existing concrete curbs as required. Reinstalled fencing shall be identical in appearance to adjacent existing fencing.
- C. Remove all temporary installations, including barricades, tree protection, etc.

- D. Restore all exterior pavements, lawns and other surfaces in and adjacent to the work areas damaged during performance of the Work to match the appearance and performance of existing corresponding surfaces as closely as practicable. Adjacent lawn areas shall be raked clean of excess soil from the excavation and backfilling operations.

2.13 DISPOSAL OF EXCESS AND UNSUITABLE MATERIALS

- A. Remove from the job site and legally dispose of excess and unsuitable materials, including materials resulting from clearing and grubbing.

2.14 COMPACTION TESTING

- A. The Contractor shall perform testing as required during the filling/backfilling operations to ascertain the compacted density of certain layers of the fill/backfill materials.
- B. If a compacted layer fails to meet the specified percentage of maximum density, the layer shall be recompacted and retested. No additional material may be placed over a compacted layer until the specified density is achieved.

2.15 BUILDING #2: SPECIAL CONDITIONS

- A. After confirming locations of existing underground electrical service feeders extending from electrical manhole (property line box) to cellar electrical meter room and other adjacent utility lines, determine proposed routing of new feeder in consultation with the CM. If possible and with the approval of the CM, leave existing steel bar fencing/concrete curb extending between Building #2 and adjoining stores in place and excavate below for new underground feeder, providing proper support for existing construction throughout the entire excavation/backfill process. As an alternative, temporarily remove section of existing fencing for later reinstallation, and neatly sawcut and remove section of existing concrete curb as required to permit trenching for new conduit at no additional cost to the Authority.
- B. After completion of new underground conduit installation, compact fill/backfill as required to properly support existing curb and avoid future cracking. Any damage sustained to existing construction during this procedure shall be repaired/replaced to the satisfaction of the CM at no additional cost to the Authority. If sections of existing fencing/curb have been removed, fill/backfill trench at affected area, including proper compaction and preparation for new concrete work. Install necessary formwork with reinforcing bars tied into adjacent existing curb, pour new concrete curb section with expansion joints as required and reinstall previously removed section of fencing. All new concrete work shall comply with all applicable industry and Authority standards and requirements. Restored section of fencing/curb shall be identical in all respects to adjacent existing construction to the satisfaction of the CM.

2.16 BUILDING #4: SPECIAL CONDITIONS

- A. After confirming locations of existing underground electrical service feeders extending from electrical manhole (property line box) to cellar electrical meter room and other adjacent utility lines at building entrance, determine proposed routing of new feeder in consultation with the CM to minimize damage to existing steel bar fencing/concrete curbs, concrete pavement and trees to remain (existing decorative concrete pavers shall not be disturbed). If possible and with the approval of the CM, leave existing fencing/curb(s) in place and excavate below for new underground feeder, providing proper support for existing construction throughout the entire excavation/backfill process. As an alternative, temporarily remove section(s) of existing fencing for later reinstallation, and neatly sawcut and remove section(s) of existing concrete curb as required to permit trenching for new conduit at no additional cost to the Authority. Neatly sawcut and remove sections of existing concrete pavement as required to permit necessary excavation work. Provide all necessary protection for residents and the public, and maintain access to the building entrance at all times.

- B. After completion of new underground conduit installation, fill/backfill trench at removed pavement locations, including proper compaction and preparation for new concrete work. Install gravel sub-base, welded wire fabric and pour new concrete pavement sections to match adjacent existing with expansion/control joints as required. If sections of existing fencing/curb have been removed, restore same as specified in Para. 3.15.B above at no additional cost to the Authority. All new concrete work shall comply with all applicable industry and Authority standards and requirements.

2.17 PROTECTION

- A. Protect graded and restored areas from traffic and erosion, and keep them free of trash and debris.

END OF SECTION 26 30 00 26 30 00