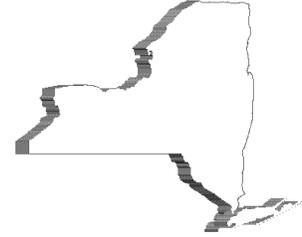




STATE OF NEW YORK
OFFICE OF GENERAL SERVICES
DESIGN AND CONSTRUCTION GROUP
THE GOVERNOR NELSON A. ROCKEFELLER
EMPIRE STATE PLAZA
ALBANY, NY 12242



ADDENDUM NO. 2 TO PROJECT NO. 41135

**CONSTRUCTION WORK, HVAC WORK, PLUMBING WORK and ELECTRIC WORK
CONSTRUCT MAINTENANCE SUBHEADQUARTERS
BUILDING NO. 4
DOT REGION 8, WESTCHESTER COUNTY
ROUTE 100, MILLWOOD, NY 10546**

February 23, 2015

<p>NOTE: This Addendum forms a part of the Contract Documents. Insert it in the Project Manual. Acknowledge receipt of this Addendum in the space provided on the Bid Form.</p>
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BIDDING REQUIREMENTS:

1. CONSTRUCTION, HVAC, PLUMBING & ELECTRIC SPECIFICATION
DOCUMENT 015000 CONSTRUCTION FACILITIES & TEMPORARY CONTROLS, Add to the project manual and the table on contents the accompanying Document (pages 015000– 1 thru 015000-5) noted “Updated 04/20/2011” issued for **each** of the four prime contracts.
2. SPECIFICATION SECTION 015000, 1.02 RELATED WORK SECIFIED ELSEWHERE, Add Paragraph C. in its entirety. Add the following:
“ C. DOT FIELD OFFICE: Section 015214 (Construction Work Contract only)

CONSTRUCTION SPECIFICATION:

3. DOCUMENT 333912 DUPLEX SUBMERSIBLE PUMPS AND APPURTENANCES, Add to the project manual and the table on contents the accompanying Document (pages 333912– 1 thru 333912-3) noted “No Date” .

ELECTRICAL SPECIFICATION:

4. DOCUMENT 310000 EARTHWORK, Add to the project manual and the table on contents the accompanying Document (pages 310000– 1 thru 310000-10) noted “Dated 02/23/2015” .
5. DOCUMENT 337119 ELECTRIC MANHOLES, Add to the project manual and the table on contents the accompanying Document (pages 337119–1 thru 337119-4) noted “Dated 02/23/2015”.

DRAWINGS:

6. CONSTRUCTION DRAWING No. A-102:

Add note to drawing to read:

- “ 1.) Provide R-38 fiberglass insulation, foil faced, the full length and width of the storage structure ceiling.(Approximately +/-2,500 sq ft.) Fasten per manufacturers recommendations to the underside of the wood trusses.
- 2.) Provide 2 layers of 2” metal building rigid insulation the full height and length of perimeter of the storage building walls.(Approximately +/-3,300 sq ft.) Fasten insulation per manufacturer’s recommendations to the interior side of the exterior walls.
- 3.) Provide 29 gauge AZ55 galvalume corrugated interior liner panel and trim on the interior of the ceiling and walls of the storage structure the full length, width, height and perimeter.(Approximately +/-5,800 sq ft.) Fasten liner panel per manufacturer’s recommendations to the interior side of the exterior walls. “

END OF ADDENDUM

Margaret F. Larkin
Executive Director

SECTION 015000

CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide construction facilities and temporary controls necessary for the Work, unless otherwise indicated.
 - 1. The construction facilities and temporary controls specified to be provided by a particular Contract shall be kept operational by that Contractor for the Work of all related Contracts at all times Work is being performed by a Contractor.
 - 2. The construction facilities and temporary controls specified to be provided by a particular Contractor shall be installed as soon after award of the Contract as necessary to enable the Work of each Contract to proceed on schedule, and maintained until completion of the Work of all related Contracts unless otherwise directed in writing.
 - 3. Any Contractor who requires additions to the construction facilities and temporary controls specified to be provided by another Contractor, shall provide and maintain them.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Construction Heat and Temporary Heat: Section 015123.
- B. State Field Office: Section 015213 (Construction Work Contract only).

1.03 TEMPORARY LIGHT AND POWER

- A. Electrical energy for temporary light and power will be made available without charge.

1.04 TEMPORARY WATER

- A. Water will be made available for the Work without charge at source or sources directed within the limits of the existing supply and usage.
- B. All Contracts: Prevent waste of water.

1.05 TEMPORARY TOILETS

- A. Construction Work Contract: Provide toilet facilities for Contractor's and subcontractors employees engaged on the Project, including employees of other contractors. Locate toilets where directed and maintain them in a sanitary condition.

NUMBER OF EMPLOYEES	MINIMUM NUMBER OF FACILITIES*
20 or less	1 toilet
20 or more	1 toilet and 1 urinal per 40 employees
200 or more	1 toilet and 1 urinal per 50 employees

*Toilet/Urinal Combinations shall count as only one facility.

1. Provide water closets where water and sewer connections are available, otherwise, provide approved chemical or electric toilets.
2. Inside buildings, locate toilet facilities no more than 4 stories or 60 feet above or below, nor more than 500 feet travel on the same level from the work location of any person.
3. Locate toilet facilities no more than 1000 feet from any work location.
 - a. Exception: Mobile crews having readily available transportation to nearby toilet facilities.

1.06 TEMPORARY CLOSURES FOR EXTERIOR WALL OPENINGS

- A. Construction Work Contract:
 1. Whenever necessary, after the building is enclosed, to maintain proper temperatures for the performance of the Work, provide and maintain temporary closures for all openings in exterior walls that are not closed with permanent materials.
 2. During the period when plastering is being done and continuing thereafter until the plaster is properly cured, provide exterior window and door openings with temporary closures, regardless of the time of year.
 3. Construct temporary closures of 2 x 4 framing sheathed with plywood, waferboard, or 6 mil polyethylene attached to wood frames, as approved and to suit job requirements.
 4. Provide closures so that they will afford convenient means of entrance and exit for persons having business within the building, afford ample light to permit continued progress of the Work, and exclude inclement weather.

1.07 PROTECTION OF WORK AND EXISTING PROPERTY

- A. Protect installed Work and existing property during performance of the Work.
- B. Maintain the building in a watertight condition during performance of the Work.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at wall projections, jambs, sills, and soffits of openings.

- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, and movement of heavy objects by covering them with durable sheet materials.
- F. Protect smoke detectors from airborne dust and debris.
 - 1. At the beginning of each work day, provide protective coverings over smoke detectors in areas where airborne dust and debris will be generated by the Work.
 - 2. At the end of the work day, clean the areas in which the smoke detectors are located by whatever means necessary to assure that airborne dust and debris will not contaminate the smoke detectors, then remove protective coverings.
 - 3. Provide signs, instructions and alternate methods for reporting a fire during the periods that the smoke detectors are covered.
 - 4. Notify the Director's Representative and have procedures approved.
- G. Prohibit traffic or storage upon waterproofed and roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- H. Protect existing trees and plants during performance of the Work unless otherwise indicated. Box trees and plants within the grading limit lines. Do not deposit excavated materials or store building materials around trees or plants. Do not attach guy wires to trees.
- I. Prohibit traffic from landscaped areas.

1.08 BARRIERS AND ENCLOSURES

- A. Construction Work Contract:
 - 1. Temporary Dust Barriers: Provide temporary dust barriers to prevent the spread of dust from the work areas. Construct the dust barriers of wood framing sheathed with 6 mil polyethylene film. Secure the dust barriers in place without damaging existing construction.

1.09 WATER CONTROLS

- A. Provide and maintain pumping equipment necessary to keep the work areas free from water. Discharge water into existing storm drainage systems or otherwise disperse as directed.

1.10 FIRE PREVENTION

- A. Take precautions necessary to prevent fires.
- B. Fuel for cutting and heating torches shall be acetylene or LP-gas only, and shall be contained in Underwriters Laboratory or Federal Department of Transportation approved containers.

- C. Furnish and maintain a currently inspected 20 pound capacity multi-class ABC fire extinguisher in the immediate vicinity where welding tools or torches are in use.
- D. Do not use flammable liquids, other than those specified, within a building without the written approval from the Director's Representative.
- E. Tarpaulins shall be flameproof and shall be securely anchored when attached to scaffolding or when used to enclose any portion of a building.

1.11 ACCESS ROADS

- A. Routes of ingress and egress on the premises to the location of the work areas shall be as directed.
- B. Keep designated access roads clear of dirt and debris resulting from the Work.
- C. Provide means of removing mud from vehicle wheels before entering paved roads.

1.12 PARKING

- A. All Contracts:
 - 1. Park vehicles in areas where directed.
 - 2. Keep designated parking areas clear of dirt and debris resulting from the Work.
 - 3. If requested, register vehicles which are to be parked at the Facility with the Facility Safety/Security Department.
 - 4. Remove ignition key from unattended vehicles and lock doors.
- B. Construction Work Contract:
 - 1. Remove snow from parking areas allocated to all Contractors.
 - 2. Provide a temporary parking lot, approximately 35 x 40 feet, adjacent to the State Field Office for the exclusive use of State personnel. Surface the area with a minimum of 6 inches of compacted Select Granular Material or Subbase Course Type 2. Crown or slope surface to provide adequate drainage.

1.13 RUBBISH REMOVAL

- A. All Contracts: Clean up and containerize the rubbish (refuse, debris, waste materials, and removed materials and equipment) resulting from the Work at least once a day and more often if the rubbish interferes with the work of others or presents a hazard. Leave work areas broom clean, except where more stringent cleaning is specified, at the end of each day. Locate containerized rubbish on the Site where directed.
 - 1. Burning of rubbish will not be permitted.

- B. Construction Work Contract: Remove rubbish from State property at least once a week and more often if the rubbish presents a hazard. Properly dispose of rubbish.

1.14 RELOCATION AND REMOVALS

- A. Should a change in location of any construction facilities and temporary controls be necessary in order to progress the Work properly, remove and relocate such items as directed.
 - 1. Electrical Work Contract: Frequently relocate/revise the temporary lighting as Contractors progress the Work of their contracts causing changes to the condition of the building (installation or relocation of walls, partitions, ceilings, equipment, etc.). Keep pace with the changes and maintain a minimum of 10 foot candles in each recomposed work area.
- B. Remove the construction facilities and temporary controls when they are no longer required. Restore permanent facilities used for or connected to temporary facilities to their original condition or better.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 015000

CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Provide construction facilities and temporary controls necessary for the Work, unless otherwise indicated.
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 - 2. The construction facilities and temporary controls specified to be provided by a particular Contractor shall be installed as soon after award of the Contract as necessary to enable the Work of each Contract to proceed on schedule, and maintained until completion of the Work of all related Contracts unless otherwise directed in writing.
 - 3. Any Contractor who requires additions to the construction facilities and temporary controls specified to be provided by another Contractor, shall provide and maintain them.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Construction Heat and Temporary Heat: Section 015123.
- B. State Field Office: Section 015213 (Construction Work Contract only).

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NUMBER OF EMPLOYEES	MINIMUM NUMBER OF FACILITIES*
20 or less	1 toilet
20 or more	1 toilet and 1 urinal per 40 employees
200 or more	1 toilet and 1 urinal per 50 employees

*Toilet/Urinal Combinations shall count as only one facility.

1. Provide water closets where water and sewer connections are available, otherwise, provide approved chemical or electric toilets.
2. Inside buildings, locate toilet facilities no more than 4 stories or 60 feet above or below, nor more than 500 feet travel on the same level from the work location of any person.
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 3. Construct temporary closures of 2 x 4 framing sheathed with plywood, waferboard, or 6 mil polyethylene attached to wood frames, as approved and to suit job requirements.
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- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at wall projections, jambs, sills, and soffits of openings.

- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, and movement of heavy objects by covering them with durable sheet materials.
- F. Protect smoke detectors from airborne dust and debris.
 - 1. At the beginning of each work day, provide protective coverings over smoke detectors in areas where airborne dust and debris will be generated by the Work.
 - 2. At the end of the work day, clean the areas in which the smoke detectors are located by whatever means necessary to assure that airborne dust and debris will not contaminate the smoke detectors, then remove protective coverings.
 - 3. Provide signs, instructions and alternate methods for reporting a fire during the periods that the smoke detectors are covered.
 - 4. Notify the Director's Representative and have procedures approved.
- G. Prohibit traffic or storage upon waterproofed and roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- H. Protect existing trees and plants during performance of the Work unless otherwise indicated. Box trees and plants within the grading limit lines. Do not deposit excavated materials or store building materials around trees or plants. Do not attach guy wires to trees.
- I. Prohibit traffic from landscaped areas.

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- A. Take precautions necessary to prevent fires.
- B. Fuel for cutting and heating torches shall be acetylene or LP-gas only, and shall be contained in Underwriters Laboratory or Federal Department of Transportation approved containers.

- C. Furnish and maintain a currently inspected 20 pound capacity multi-class ABC fire extinguisher in the immediate vicinity where welding tools or torches are in use.
- D. Do not use flammable liquids, other than those specified, within a building without the written approval from the Director's Representative.
- E. Tarpaulins shall be flameproof and shall be securely anchored when attached to scaffolding or when used to enclose any portion of a building.

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- A. Routes of ingress and egress on the premises to the location of the work areas shall be as directed.
- B. Keep designated access roads clear of dirt and debris resulting from the Work.
- C. Provide means of removing mud from vehicle wheels before entering paved roads.

1.12 PARKING

- A. All Contracts:
 - 1. Park vehicles in areas where directed.
 - 2. Keep designated parking areas clear of dirt and debris resulting from the Work.
 - 3. If requested, register vehicles which are to be parked at the Facility with the Facility Safety/Security Department.
 - 4. Remove ignition key from unattended vehicles and lock doors.
- B. Construction Work Contract:
 - 1. Remove snow from parking areas allocated to all Contractors.
 - 2. Provide a temporary parking lot, approximately 35 x 40 feet, adjacent to the State Field Office for the exclusive use of State personnel. Surface the area with a minimum of 6 inches of compacted Select Granular Material or Subbase Course Type 2. Crown or slope surface to provide adequate drainage.

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 - 1. Burning of rubbish will not be permitted.

- B. Construction Work Contract: Remove rubbish from State property at least once a week and more often if the rubbish presents a hazard. Properly dispose of rubbish.

1.14 RELOCATION AND REMOVALS

- A. Should a change in location of any construction facilities and temporary controls be necessary in order to progress the Work properly, remove and relocate such items as directed.
 - 1. Electrical Work Contract: Frequently relocate/revise the temporary lighting as Contractors progress the Work of their contracts causing changes to the condition of the building (installation or relocation of walls, partitions, ceilings, equipment, etc.). Keep pace with the changes and maintain a minimum of 10 foot candles in each recomposed work area.
- B. Remove the construction facilities and temporary controls when they are no longer required. Restore permanent facilities used for or connected to temporary facilities to their original condition or better.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 310000

EARTHWORK

PART 1 GENERAL

1.01 DEFINITIONS

- A. The following terms shall have the meanings ascribed to them in this Article, wherever they appear in this Section.
1. Earth Excavation: The removal of all surface and subsurface material not classified as rock (as defined below).
 2. Rock: Limestone, sandstone, shale, granite, and similar material in solid beds or masses in its original or stratified position which can be removed only by blasting operations, drilling, wedging, or use of pneumatic tools, and boulders with a volume greater than 1.0 cu yd. Concrete building foundations and concrete slabs, not indicated, with a volume greater than 1.0 cu yd shall be classified as rock.
 - a. Limestone, sandstone, shale, granite, and similar material in a broken or weathered condition which can be removed with an excavator or backhoe equipped with a bucket with ripping teeth or any other style bucket shall be classified as earth excavation.
 - b. Masonry building foundations, whether indicated or not, shall be classified as earth excavation.
 3. Subgrade Surface: Surface upon which subbase or topsoil is placed.
 4. Subbase: Select granular material or subbase course Type 2, which is placed immediately beneath pavement or concrete slabs.
 5. Foundation Bearing Grade: Grade/elevation at which the bottom-of-footings are constructed.
 6. Maximum Density: The dry unit weight in pounds per cubic foot of the soil at "Optimum Moisture Content" when determined by ASTM D 698 (Standard Proctor), or ASTM D 1557 (Modified Proctor).
 7. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
 8. Landscaped Areas: Areas not covered by structures, walks, roads, paving, or parking.
 9. Unauthorized Excavation: The removal of material below required elevation indicated on the Drawings or beyond lateral dimensions indicated or specified without specific written direction by the Director.
 10. Grading Limit Line (Shown on Drawings): Limits of grading, excavations and filling required for the work of this contract. Unless specifically noted otherwise, the Grading Limit Line and Contract Limit Line shall be considered the same.

1.02 SUBMITTALS

- A. Product Data:
 - 1. Permanent Sheeting, Shoring, and Bracing: Specifications for materials and accessories.
 - 2. Filter Fabric: Manufacturer’s catalog sheets, specifications, and installation instructions.

- B. Quality Control Submittals:
 - 1. Subbase Materials: Name and location of source and the DOT Source Number. If the material is not being taken from an approved DOT Source the results of the gradation and soundness tests performed by an ASTM certified soils laboratory will be required.
 - 2. Other Aggregates: Name and location of source and soil laboratory test results.
 - 3. Other Aggregates: Name and location of source and soil laboratory test results.
 - 4. Excavation Procedure: Submit a lay out drawing or detailed outline of intended excavation procedure for the Director’s information. This submittal will not relieve the Contractor of responsibility for the successful performance of intended excavation methods.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Protect filter fabric from sunlight during transportation and storage.

1.04 PROJECT CONDITIONS

- A. Protect existing trees and plants during performance of the Work. Box trees and plants indicated to remain within the grading limit lines 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. Cold Weather Requirements: When freezing temperatures are predicted, do not excavate to final required elevations for pipe, conduit or equipment requiring concrete work unless concrete can be placed immediately. Retain enough earth over the bottom elevation of excavations to prevent frost penetration.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Select Granular Material: Stockpiled, sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation and material requirements specified below:

Sieve	Percent Passing
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Sieve Size	Size opening (mm)	
2 inch	50.8	100
1/4 inch	6.35	30-65
No. 40	0.425	5-40
No. 200	0.075	0-10

1. Magnesium Sulfate Soundness Test: 20 percent maximum loss by weight after four test cycles.
2. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve shall not exceed 5.0.
3. Elongated Particles: Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve shall consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than three times its least dimension.

B. Subbase Course Type 2: Stockpiled, crushed ledge rock or approved blast furnace slag. Comply with the gradation and material requirements specified below:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
2 inch	50.8	100
1/4 inch	6.35	25-60
No. 40	0.425	5-40
No. 200	0.075	0-10

1. Magnesium Sulfate Soundness Test: 20 percent maximum loss by weight after four test cycles.
2. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve shall not exceed 5.0.
3. Elongated Particles: Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve shall consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than three times its least dimension.

C. Selected Fill: Sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation requirements specified below:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
4 inch	101.6	100
No. 40	0.425	0-70
No. 200	0.075	0-15

D. Suitable Material (Fill and Backfill for Landscaped Areas): Material consisting of mineral soil (inorganic), blasted or broken rock and similar materials of natural or man-made origin, including mixtures thereof. Maximum particle size shall not exceed 2/3 of the specified layer thickness prior to compaction. NOTE: Material

containing cinders, industrial waste, sludge, building rubble, land fill, muck, and peat shall be considered unsuitable for fill and backfill, except topsoil and organic silt may be used as suitable material in landscaped areas provided it is placed in the top layer of the subgrade surface.

- E. Cushion Material: Shall consist of clean, hard, durable, uncoated particles, free from lumps of clay and all deleterious substances and shall meet the following gradation requirements:

Sieve Size		Percent Passing
Sieve Size	Size opening (mm)	
1/4 inch	6.35	100
No. 60	0.25	0-35
No. 100	0.15	0-10

- F. Pea Gravel: Comply with DOT Article 703-02 for screened gravel.

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1/2 inch	12.7	100
1/4 inch	6.35	90-100
1/8 inch	3.17	0-15
No. 200 Sieve	0.075	0-1

- G. Item B-12: Equal Blend of No.1 and No. 2 Crushed Stone that complies with material requirements of DOT Article 703-02, crushed stone only.

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1-1/2 inch	38.1	100
1 inch	25.4	95-100
1/2 inch	12.7	45-60
1/4 inch	6.35	0-15

- H. No. 1 Coarse Aggregate: Crushed Stone that complies with material requirements of DOT Article 703-02 and meets the following gradation.

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1 inch	25.4	100
1/2 inch	12.7	90-100
1/4 inch	6.35	0-15

- I. No. 2 Crushed Stone: Comply with the applicable portions of DOT Article 703-02.

Sieve		Percent Passing
Sieve Size	Size opening (mm)	

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1-1/2 inch	38.1	100
1 inch	25.4	90-100
1/2 inch	12.7	0-15

- J. Marker Tape: FL Industries Blackburn/Holub's Type YT6, or Seton Nameplate Corporations Type 6 ELE, imprinted with message suited to item buried below.

PART 3 EXECUTION

3.01 CLEARING AND GRUBBING

- A. Clear and grub 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.
- B. Fill depressions caused by the clearing and grubbing operations in accordance with the requirements for filling and backfilling, unless further excavation is indicated.

3.02 REMOVAL OF TOPSOIL

- A. Remove existing topsoil from areas where excavation or fill is required.
- B. Stockpile approved topsoil where directed until required for use. Place, grade, and shape stockpiles for proper drainage.
1. Topsoil shall be tested prior to stockpiling. Stockpile only quantities of topsoil approved in writing for re-use. Dispose of excess topsoil as specified.

3.03 UNDERGROUND UTILITIES

- A. Locate existing underground utilities prior to commencing excavation work. Determine exact utility locations by hand excavated test pits. Support and protect utilities to remain in place.
- B. Do not interrupt existing utilities that are in service until temporary or new utilities are installed and operational.
- C. Utilities to remain in service: Shall be re-routed as shown on the Contract Drawings.
- D. Utilities abandoned beneath and five feet laterally beyond the structure's proposed footprint shall be removed in their entirety. Excavations required for their removal shall be backfilled and compacted as specified herein.
- E. Utilities located outside the limits specified above may be abandoned in place provided their ends are adequately plugged as described below.

1. Permanently close open ends of abandoned underground utilities exposed by excavations, which extend outside the limits of the area to be excavated.
2. Close open ends of metallic conduit and pipe with threaded galvanized metal caps or plastic plugs or other approved method for the type of material and size of pipe. Do not use wood plugs.
3. Close open ends of concrete and masonry utilities with concrete or flow-able fill.

3.04 EXCAVATION AND TRENCHING

- A. Excavate earth as required for the Work.
- B. Install and maintain all erosion and sedimentation controls during all earthwork operations as specified on the Contract Drawings or as directed by local officials. If the erosion and sedimentation controls specified by the local officials are more stringent than those specified on the Contract Drawings contact the Director's Representative.
- C. Maintain sides and slopes of excavations in a safe condition until completion of backfilling. Comply with Code of Federal Regulations Title 29 - Labor, Part 1926 (OSHA).
 1. Trenches: Deposit excavated material on one side of trench only. 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. Maintain areas to allow free drainage of surface water.
- D. Stockpile excavated materials classified as suitable material where directed, until required for fill. Place, grade, and shape stockpiles for proper drainage as approved by the Director's Representative.
- E. Concrete Slabs, Floors, and Bases: Excavate to the following depths below bottom of concrete for addition of Subbase Course Type 2:
 1. Interior: 6 inches unless otherwise indicated.
 2. Exterior: 12 inches unless otherwise indicated.
- F. Conduit, Cable, Tubing and Piping (other than Bell and Spigot): Provide sufficient trench width for installation and to accommodate special backfill when specified.
- G. Underground Storage Tanks: Excavate as required to install tank and to accommodate special backfill.
- H. Pavement: Excavate to subgrade surface elevation.
- I. Open Ditches: Cut ditches to cross sections and grades indicated.
- J. Unauthorized Excavations: Unless otherwise directed, backfill unauthorized excavation under footings, foundation bases, and retaining walls with compacted

select granular material without altering the required footing elevation. Elsewhere, backfill and compact unauthorized excavation as specified for authorized excavation of the same classification, unless otherwise directed by the Director.

1. Unauthorized excavations under structural Work such as footings, foundation bases, and retaining walls shall be reported immediately to the Director before any concrete or backfilling Work commences.
- K. Notify the Director's Representative upon completion of excavation operations. Do not proceed with the Work until the excavation is inspected and approved. Inspection of the excavation by the Director's Representative will be made on 3 working days notice.

3.05 DEWATERING

- A. Prevent surface water and subsurface or ground water from flowing into excavations and trenches. Pump out any accumulated water.
- B. Do not allow water to accumulate in excavations or trenches. Remove water from all excavations immediately to prevent softening of foundation 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 Site.
- C. Convey water removed from excavations, and rain water, to collecting or run-off area. Cut and maintain temporary drainage ditches and provide other necessary diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.
- D. Provide temporary controls to restrict the velocity of discharged water as necessary to prevent erosion and siltation of receiving areas.

3.06 PLACING FILL AND BACKFILL

- A. Surface Preparation of Fill Areas: Strip topsoil, remaining vegetation, and other deleterious materials prior to placement of fill. Break up or scarify old pavements to a maximum of 2 square feet. Prior to placement of fill, smooth out and compact areas where wheel rutting has occurred due to stripping or earthwork operations.
- B. Excavations: Backfill as promptly as Work permits, but not until completion of the following:
 1. Inspection, testing, approval, and recording locations of underground utilities.
 2. Removal of concrete formwork.
 3. Removal of temporary sheeting (or sheet-piling) and backfilling of voids caused by removals.
 4. Cutting off top of permanent sheeting (or sheet-piling).
 5. Removal of trash and debris.

- C. Place backfill and fill materials in layers not more than 8 inches thick in loose depth unless otherwise specified. Before compaction, moisten or aerate each layer as necessary to facilitate compaction to the required density. Do not place backfill or fill material on surfaces that are muddy, frozen, or covered with ice. Do not backfill with excavated material unless it meets the requirements of this Section.
 - 1. Place fill and backfill against foundation walls, and in confined areas (such as trenches) not easily accessible by larger compaction equipment, in maximum 6 inch thick (loose depth) layers.

- D. Under Exterior Concrete Slabs and Bases:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place 12 inches of Subbase Course Type 2 over subgrade surface.

- E. Under Exterior Pavement and Walks:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Subbase Course Type 2 over subgrade surface.

- F. Landscape Areas: Place suitable material when required to complete fill or backfill areas up to subgrade surface elevation. Do not use material containing rocks over 4 inches in diameter within the top 12 inches of suitable material.

- G. Rigid Nonmetallic Conduit: Except where concrete encasement is required place cushion material a minimum of 4 inches deep under conduit, 4 inches on both sides, and 12 inches above top of conduit. Complete balance of backfill as specified.

- H. Plastic Pipe in Trenches: Place cushion material a minimum of six inches deep under pipe, 12 inches on both sides, and 12 inches above top of pipe. Complete balance of backfill as specified.

- I. Direct Burial Cable: Place sand a minimum of 6 inches deep under cable, 6 inches on either side, and 12 inches above top of cable. Complete balance of backfill as specified.

- J. Marker Tape: Install marker tape 4 inches below finish grade directly over the following:
 - 1. Direct burial cable.
 - 2. Conduit.

3.07 COMPACTION

- A. All materials with exception of open graded stone (No. 2 Crushed Stone, No. 1 Crushed Stone, Item B-12, etc.):
 - 1. Compact each layer of fill and backfill for the following area classifications to the percentage of maximum density specified below

and at a moisture content suitable to obtain the required densities, but at not less than three percent drier or more than two percent wetter than the optimum content as determined by ASTM D 698 (Standard Proctor) or 1557 (Modified Proctor).

- a. Structures (entire area within ten feet outside perimeter): 95 percent.
 - b. Concrete Slabs and Steps: 95 percent.
 - c. Landscaped Areas: 90 percent.
 - d. Pavements and Walks: 95 percent.
 - e. Pipes and Tunnels: 95 percent.
 - f. Pipe Bedding: 95 percent. If a compacted layer fails to meet the specified percentage of maximum density, the layer will be re-compacted and retested. If compaction cannot be achieved the material/layer will be removed and replaced. No additional material may be placed over a compacted layer until the specified density is achieved
- B. Open graded Stone (Item B-12, No. 1 crushed stone, etc): Place material in maximum twelve inch lifts. Each lift shall be raked smooth and compacted through several passes of a walk behind vibratory roller. Compaction Testing is **not** required.

3.08 GRADING

- A. Rough Grading: Trim and grade excavations required by this Contract to a level 4 inches below the finish grades unless otherwise indicated. Provide a smooth uniform transition to adjacent areas.
- B. Finish Grading: Finish surfaces free from irregular surface changes, and as follows:
 1. Grassed Areas: Finish areas to receive topsoil to within not more than 1 inch above or below the required subgrade surface elevations.
 2. Walks and Pavements: Place and compact subbase material as specified. Shape surface of areas to required line, grade and cross section, with the finish surface not more than 1/2 inch above or below the required subbase elevation.
 3. Building Slabs: Grade subbase material smooth and even, free of voids, compacted as specified, and to required subbase elevation. Finish final grades within a tolerance of 1/4 inch when tested with a 10 foot straightedge.
- C. Spread approved topsoil, directly upon prepared subgrade surface to a depth measuring 4 inches after natural settlement of the topsoil has occurred in areas to be seeded or to receive sod. Provide greater depth to adjust grades when directed by the Director's Representative.
 1. Approved existing topsoil may be used. Provide additional topsoil from outside sources as required.
- D. Finish topsoil surface free of depressions which will trap water, free of stones over 1 inch in any dimension, and free of debris.

3.09 RESTORATION

- A. Restore pavements, walks, curbs, lawns, and other exterior surfaces damaged during performance of the Work to match the appearance and performance of existing corresponding surfaces as closely as practicable.
- B. Topsoil and seed or sod damaged lawn areas. Water as required until physical completion of the Work.

3.10 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Remove from State Property and dispose of excess and unsuitable materials, including materials resulting from clearing and grubbing and removal of existing improvements.

3.11 FIELD QUALITY CONTROL

- A. **Compaction Testing:** Notify the Director's Representative at least 3 working days in advance of all phases of filling and backfilling operations. Compaction testing will be performed by the Director's Representative to ascertain the compacted density of the fill and backfill materials. Compaction testing will be performed on certain layers of the fill and backfill as determined by the Director's Representative. If a compacted layer fails to meet the specified percentage of maximum density, the layer shall be recompact and will be retested. No additional material may be placed over a compacted layer until the specified density is achieved.

3.12 PROTECTION

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

END OF SECTION

SECTION 333912

DUPLEX SUBMERSIBLE PUMPS AND APPURTENANCES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork: Section 31000.
- B. Valves: Section 331216.
- C. Motors and Motor Controllers: Section 260523.

1.02 SUBMITTALS

- A. Product Data: Catalog cuts, pump curves, specifications (including indication of UL approvals), wiring diagrams, and description of operational sequence.
- B. Shop Drawings: Show scaled detailed drawings of the installation and connections to adjacent work.
- C. Maintenance Manuals: Provide Director's Representative with two copies each of manufacturer's maintenance manual and parts list for approved pumping system (pump controls and appurtenances).

PART 2 PRODUCTS

2.01 MATERIALS

- A. Pumps:
 - 1. General: Duplex, UL approved, submersible, pumps equal to Goulds Model 1DV51C-V. Each pump shall be capable of pumping minimum of 25 gpm at total Dynamic Head of 18 feet. Pump shall be 1/2 HP, 230 Volts, single phase, 3450 RPM.
- B. Controls:
 - 1. Duplex Motor Control panel provided by the pump manufacturer to assure compatibility with pump operation.
 - a. Nema 3R enclosure with dead front and lock hasp.
 - b. Motor controllers with overload protection.
 - c. Circuit breakers for pumps and control circuits.
 - d. HOA selector switches for pumps, green running lights, red trouble lights indicating source and nature of problem, alternator, oil level monitor, elapsed time meters, heat seal failure relays, and condensation heater.
 - e. Switches and lights shall be identified by use of engraved screw attached labels.

f. Intrinsically safe relays for float controls for automatic pump control audible alarm and alarm light.

1. Audible alarm shall be equipped with a silence switch.
2. Annunciator light shall remain lit until off-normal condition has been corrected

C. Accessories:

1. Provide weighted sealed Mercury float switches mounted on easily retractable rod for simple maintenance and adjustments with pumps in place..
2. Pump rail removal system: The pump manufacturer shall provide a quick disconnect for pump removal, and a UL approved duplex pump rail removal system anchored to the precast manhole. Stainless steel lifting chains shall be provided for ease of pump removals.
4. Provide sufficient signal and power cable to reach motor control panel at the designated location.

2.02 PIPING:

- A. Provide galvanized piping Schedule 40 inside Pump Pit.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install pumps and appurtenances in pump pit in accordance with contract drawings, approved shop drawings and written instructions of the pump manufacturer.
1. Set mercury float switches at noted elevations.
 2. Install control panel and make electrical connections.
 3. Extend vent with galvanized piping as indicated or as directed.

3.02 PUMP OPERATION

- A. Set the controls to perform the following functions:
1. Mercury Float Switches: Starts and stops the pumps at the selected water levels in the pump pit.
 2. Pumps should be set to run alternately. If the first pump fails to start it shall be shut down, the second pump shall automatically start and send an alarm.
 3. High Water Alarm: Set to sense a pre-determined high water level in the pump pit and sound an alarm bell, and light the alarm light. The alarm may be silenced manually using the relay, but the light remains on until the trouble is remedied and the water in the pump pit reaches a lower level. After the trouble has been remedied, the high water alarm automatically returns to the ready.
 4. Electric Alternator: Changes the units after each operation or after failure of one unit.

3.03 FIELD QUALITY CONTROL

- A. Develop testing procedure with Director's Representative to ensure all controls and alarms are properly functioning. Use clean water for test. All pumps must be tested.
- B. Test pump rail removal system.
- C. Make required adjustments and leave equipment in operating condition.

END OF SECTION

SECTION 337119

ELECTRIC MANHOLES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork: Section 310000.

1.02 DEFINITIONS

- A. The words manhole, handhole and pullbox are synonymous.

1.03 SUBMITTALS

- A. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" in Section 013300 does not apply to the following products specified in this Section:
 - 1. Manholes.
 - 2. Manhole covers and frames.
- B. Product Data: Catalog sheets, specifications and installation instructions.
- C. Shop Drawings: Show dimensions, reinforcing and construction details for manholes.

PART 2 PRODUCTS

2.01 MANHOLES

- A. Manholes may be precast or field constructed:
 - 1. Field Constructed Manholes: Furnish manholes of dimensions as shown on the drawings.
 - 2. Precast Manholes: As manufactured by The Fort Miller Co., or Lakelands Pre-cast, Inc., having:
 - a. Reinforcing meeting American Association State Highway Officials requirements for H-20 loading. Drawings shall bear the seal of a professional engineer licensed to practice in the State of New York.
 - b. Minimum interior dimensions as shown on the drawings for field constructed manholes.
 - c. Walls minimum 6 inches thick reinforced concrete. Exception:
 - 1) Walls minimum 4-1/2 inches thick reinforced concrete for 30 x 30 inch manholes.
 - d. Top slab minimum 7 inches thick reinforced concrete.
Exceptions:
 - 1) Top slab minimum 6 inches thick reinforced concrete for 4 x 4 foot manholes.
 - 2) Top slab not required for 30 x 30 inch manholes.

- e. Bottom slab minimum 6 inches thick reinforced concrete.
Exception:
 - 1) Bottom slab minimum 4 inches thick reinforced concrete for 30 x 30 inch manholes.
 - f. Sealed joints.
- B. Equip manholes with a pulling hook opposite each conduit entrance. Construct hook of 3/4 inch galvanized stock with 3 inch diameter eye and 8 inches for anchoring in manhole wall or use Pennsylvania Pulling Iron as manufactured by Pennsylvania Insert Corporation.
- C. Provide a drain in center of manhole consisting of 30 inch length of 6 inch diameter vitrified sewer pipe extending downward under floor and filled with broken stone.
- D. Brick shall comply with the Specifications for Sewer Brick, Grade MS, ASTM C32.
- E. Mortar: One part of Portland cement to 2 parts sand, mixed with water for proper consistency.
- F. Waterproofing for Bricked-Up Throat: Single component, rubber reinforced asphalt elastomeric coating, ASTM D-4586 Type I and ASTM D-4479 Type I.

2.02 WATERTIGHT MANHOLE FRAMES AND COVERS

- A. Design of each shall be the same throughout the project unless otherwise specified or indicated on the drawings.
- B. Units shall meet AASHTO H20 wheel loading requirements. Manufacture, workmanship and certified proof-load tests shall conform to AASHTO M306-89.
- 1. Material:
 - a. Cast iron: ASTM A48, Class 30B or 35B.
 - b. Delivered to the site free of any coatings, unless otherwise specified.
 - 2. Frames:
 - a. Round, 6-1/2 inches high with a 27-inch clear opening.
 - b. Minimum bearing area of the flange on the masonry: 645 sq. inches.
 - c. Minimum weight: 156 lbs.
 - 3. Outer Lids:
 - a. Round, approximately 1-1/2 inches thick at the perimeter bearing surface.
 - b. Minimum one inch wide perimeter bearing surface.
 - c. Unperforated checkered surface design.
 - d. Concealed type pick holes.
 - e. The letter "P" 6 inches high cast in the outer lid for power manholes; the letter "S" 6 inches high for signal manholes.
 - f. Minimum weight: 215 lbs.
 - 4. Inner Lids:

- a. Each equipped with two lift handles, a neoprene seating gasket, and a lock bar with a hasp or other means suitable for padlocking.
 - b. Minimum total weight of lid and lock bar: 165 lbs.
- C. Acceptable Frames and Covers: Pattern R1755-G1 by Neenah Foundry Company, P. O. Box 729, Neenah, WI 54957, (414) 729-3661; Pattern 6553 by Syracuse Casting Sales Corp., P. O. Box 190, South Bay Rd., Cicero, NY 13039, (315) 699-2601.

2.03 CABLE SUPPORT ASSEMBLIES

- A. Cable Support Assemblies (Steel): A.B. Chance Co.'s 1225 rack, 1231 Series support arms, 1121 porcelain insulators, or McGraw-Edison's DU10B Series rack, DU9S Series support arms, DE12U porcelain insulators.
- B. Cable Support Assemblies (Nonmetallic): Underground Devices Inc.'s CR36 rack, RA Series support arms.

2.04 GROUNDING AND BONDING

- A. Rod Electrodes: Copper clad (min. .010 jacket) ground rods minimum 5/8 inch diameter by 8'-0" long.
- B. Exothermic Type Weld: Erico Products Inc.'s Cadweld Process.
- C. Compression Connectors: Amp Special Industries' Ampact Grounding System, Burdy Corp.'s Hyground System, or Thomas & Betts Corp.'s Grid and Ground Rod System.
- D. Grounding Electrode Conductors and Bonding Conductors: Bare copper conductors.
- E. Hardware: Silicon-bronze bolts, nuts, flat and lock washers, etc. as manufactured by Burndy Corp., Dossert Corp., or OZ/Gedney Co.

PART 3 EXECUTION

3.01 PREPARATION

- A. Dewater and remove debris from existing manholes used for the Work.
- B. Provide heavy blankets, plywood or other devices to protect existing cables and equipment from physical damage.

3.02 INSTALLATION

- A. Depth: Install manholes at depth required to bring top of manhole covers 2 inches above finished grade in lawns, and flush with paved surfaces of walks, roads, or parking spaces.

- B. Bricked-Up Throat: Mortar brick into place. Set manhole frame with mortar. Waterproof exterior of throat with minimum thickness of 3/32 inch elastic bituminous plastic cement coating.
- C. Cable Supports: Install racks, support arms and insulators of size and number to provide one insulator (or equivalent space on nonmetallic support arms) on each cable support assembly for each conduit entering the manhole:
1. New Manholes or Pullboxes: Route cables around periphery of manholes (or pullbox). Secure cables to cable support assemblies with cable ties. Equip manholes and pullboxes with number of cable support assemblies indicated below:
 - a. Manholes:
 - 1) Where conduits penetrate 2 adjacent sides of a manhole, provide a minimum of 3 cable support assemblies.
 - 2) Where conduits penetrate 2 opposite sides of a manhole, provide a minimum of 3 cable support assemblies.
 - 3) Where conduits penetrate 3 sides of a manhole, provide a minimum of 3 cable support assemblies.
 - 4) Where conduits penetrate 4 sides of a manhole, provide a minimum of 6 cable support assemblies.
 - b. Pullboxes:
 - 1) Where conduits penetrate 2 adjacent sides of a pullbox, provide a minimum of 2 cable support assemblies.
 - 2) Where conduits penetrate 2 opposite sides of a pullbox, provide a minimum of 1 cable support assemblies.
 - 3) Where conduits penetrate 3 sides of a pullbox, provide a minimum of 3 cable support assemblies.
 - 4) Where conduits penetrate 4 sides of a pullbox, provide a minimum of 4 cable support assemblies.
 2. Signal Manholes or Pullboxes: In addition to cable support assemblies, provide across and spanning the support arms, troughs for support of each signal cable. Troughs shall consist of lengths of 4 inch diameter Schedule 40 plastic conduit split lengthwise into halves. Route cables around periphery of manhole. Set trough on the support arms, lay in cable and secure with cable ties.
- D. Grounding and Bonding:
1. New Manholes Containing Feeder Circuits Over 600 Volts:
 - a. Install rod electrode in each manhole near a wall. Install rod electrode thru floor into earth below manhole with 4 inches protruding for ground connection.
 - b. Bond manhole cover frame, steel cable support assemblies and splices (lead sheath of splice or cable shields for non-lead type cables) to rod electrode with No. 6 AWG bare copper ground conductor.
 - c. Make connection to rod electrode with exothermic type weld or compression connectors.

END OF SECTION