

Village of Dobbs Ferry
New York

Gould Park Improvements 2023

ADDENDUM NO. 2
September 6, 2023

The following revisions are being issued to the Contract Specifications and Drawings for the above referenced Project.

- 1) See attached response memo, answering received questions.
- 2) See attached revised item specs for items: 76R-Maintenance & Protection of Traffic, 90R-Bike Rack, 3000R-Cast in Place Concrete

The contractor shall sign for the receipt of addendum in Section C, page C-4.

THIS ADDENDUM MUST BE SUBMITTED TOGETHER WITH THE ORIGINAL SPECIFICATIONS AND CONTRACT DOCUMENTS BOOK. SUBMIT THIS ADDENDUM IN ITS ENTIRETY.

Request for Information - Response Memo

DATE: September 6, 2023

RE: Gould Park Improvements
Village of Dobbs Ferry, New York

With regard to the above-mentioned project, this office has received the following questions during the open RFI period. The questions are listed in bold with the responses annotated below.

1. Is there an actual logo involved in the court surfacing items or are you just referring to the halfcourt circle? If so, where can I find more details regarding this item in the contract?
The Logo is the letters DF in "athletic" font, it will be the same paint used for the court markings.
2. Do you have a supplier for item 102CB: 14' Precast reinforced Conc. Drain Inlet (7/C-13)? My usual suppliers are saying they cannot fabricate that material (specifically the roof slab). Please advise.
Contact Precast Concrete Sales Co., (Contact: Bill Vittorini jr. **Phone:** (845) 268-4949)
3. On item 11P-4: 4" Diameter Perforated PVC Underdrain Pipe three of the segments on page 9 are pointing to (6/C-13) while one segment is pointing towards (6/C-12). Was this meant to be (6/C-12) or (6/C-13)?
The bubble should say 6/C-12 for the detail for the 4" Diameter Perforated PVC Underdrain Pipe

Revisions have been made to the following technical specifications. Replace the current specification with the attached.

| | |
|------------|-------------------------------------|
| Item 76R | Maintenance & Protection of Traffic |
| Item 90R | Bike Rack |
| Item 3000R | Cast in Place Concrete |

ITEM 76 -R- MAINTENANCE AND PROTECTION OF TRAFFIC

76.1. WORK INCLUDED:

- A. Under this item the Contractor will be required to protect and maintain pedestrian and vehicular traffic.

76.2. METHOD:

- A. The Contractor shall maintain and protect traffic by conducting his construction operations so that the traveling public is subjected to a minimum of delay and no hazard.
- B. Procedures to be followed are as outlined herein and as required under Section 619 of the New York State Department of Transportation Specifications, latest edition, and as detailed on the plan.
- C. Residents along the existing roads and those having business along them shall have safe means of ingress and egress at all times. Traffic shall be maintained at the intersections of all roads or streets crossing the construction. Where directed by the Owner, the Contractor shall provide adequate and proper bridges over excavations as may be necessary or directed for the purpose of accommodating pedestrians or vehicles.
- D. In the event any portion of a public road must be closed to traffic, permission shall be secured by the Contractor from the Engineer, and notice must be given by the Contractor to the Police and Fire Departments, and adequate detour signs posted.
- E. Approved signs in accordance with the New York State Manual of Uniform Traffic Control Devices shall be provided along all streets while work is in progress. Where traffic direction is required, flagmen shall be designated by the Contractor to direct traffic past the equipment, machinery or construction operations. Construction equipment shall be removed entirely from the traveled roadway when work is shut down for the day and normal lanes of traffic shall be restored. Barricades shall be placed wherever the safety of the traveling public requires them, where a road is officially closed, where an excavation is being made, or where heavy construction equipment is operating. In addition, barricades shall be placed where they are deemed necessary, in the opinion of the Engineer or the Chief of Police, to direct traffic or to prevent entrance to streets or areas where construction is in progress.
- F. All barricades, lights and flags, shall be maintained intact at all times.

76.3. PAYMENT:

- A. Payment for this work will be a lump sum and shall include, but not be limited to: obtaining permits, providing all labor, equipment, and incidentals required to maintain and protect vehicular and pedestrian traffic throughout all phases of construction, as per plan, and as directed by the Engineer. Payment for this work shall include the cost of furnishing all labor, materials and equipment necessary to erect, maintain and dismantle the required equipment.

* * *

ITEM 90 –R- BIKE RACKS

90.1. WORK INCLUDED:

- A. The Contractor shall furnish the labor, material and equipment required to furnish and install bike racks, concrete pad and anchoring hardware assembly complete in accordance with the plans and specifications.

90.2. MATERIALS:

- A. The bike racks shall be product Serpentine Bike Rack, # SR5G-SM, as manufactured by Wagner Collaborative Metal Works, 1-888-243-6914, or approved equal.
- B. The Contractor shall submit catalog cuts and installation instructions by the manufacturer for approval prior to ordering equipment.

90.3. INSTALLATION:

- A. Bike Racks shall be installed as per manufacturer installation instruction, and at the locations shown on the plans.

90.4. MEASUREMENT AND PAYMENT:

- A. Measurement and Payment of this item shall be for each bike rack furnished and installed, in accordance with the plans and specifications, and as directed by the Engineer. Item includes, but is not limited to, all labor, material and equipment required to furnish and install the bike racks.

* * *

ITEM 3000 -R- CAST-IN-PLACE CONCRETE

3000.1.WORK INCLUDED:

- A. Under this item the Contractor shall furnish all labor, materials and equipment necessary to excavate and place cast-in-place concrete structures & properly backfill, all in accordance with the drawings and these specifications.

3000.2.SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.
- B. Cast-in-place concrete includes the following:
 - 1. Foundations and footings.
 - 2. Slabs-on-grade.
 - 3. Foundations & retaining walls.

3000.3.SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract including General and Special Conditions Sections.
- B. Product data for proprietary and non-proprietary materials and items, including but not limited to reinforcement and forming accessories, admixtures, patching compounds, joint systems, curing compounds, dry-shake finish materials, and others if requested by Engineer.
- C. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete reinforcement. Include special reinforcing required for openings through concrete structures.
- D. Shop drawings for formwork indicating fabrication and erection of forms for specific finished concrete surfaces. Show form construction including jointing, special form joints or reveals, location and pattern of form tie placement, and other items that affect exposed concrete visually.
 - 1. Engineer's review is for general engineering applications and features only. Designing formwork for structural stability and efficiency is Contractor's responsibility.

- E. Samples of materials as requested by Engineer, including names, sources, and descriptions, as follows:
1. Color finishes.
 2. Normal weight aggregates.
 3. Filter fabric.
 4. Drain board.
 5. Form liners.
 6. Preformed joint filler and sealer.
- F. Material certificates in lieu of material laboratory test reports when permitted by Engineer. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

3000.4.QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
 2. ACI 318, "Building Code Requirements for Reinforced Concrete."
 3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."

3000.5.FORM MATERIALS

1. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
2. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.
3. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete

upon removal. Provide units that will leave no metal closer than 1-1/2 inches to the plane of the exposed concrete surface.

1. Provide ties that, when removed, will leave holes not larger than 1 inch in diameter in the concrete surface.

3000.6.MATERIALS

A. Reinforcing

1. Reinforcing Bars: ASTM A 615 Grade 60, deformed.
2. Steel Wire: ASTM A 82, plain, cold-drawn steel.
3. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
4. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar-type supports complying with CRSI specifications.

B. Concrete

1. Portland Cement: ASTM C 150, Type I.
2. Use one brand of cement throughout Project unless otherwise acceptable to Engineer.
3. Fly Ash: ASTM C 618, Type F.
4. Normal-Weight Aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for exposed concrete.
5. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.
6. Local aggregates not complying with ASTM C 33 that have been shown to produce concrete of adequate strength and durability by special tests or actual service may be used when acceptable to Engineer.
7. Lightweight Aggregates: ASTM C 330.
8. Water: Potable.
9. Admixtures, General: Provide concrete admixtures that contain not more than 0.1 percent chloride ions.

C. Related Materials

1. Drain board shall be Mirafi G-Series G100N or approved equal.
2. Filter fabric shall meet all provisions for needle punched-non-woven geotextile Section 737.0101 of the New York State Specifications, Construction and materials shall apply except as modified herein:
3. $\frac{3}{4}$ " stone : All materials shall conform to the New York State Department of Transportation Standard Specifications, latest revision, except that no limestone or crushed slag shall be permitted Stone sizes referred to are as specified in Table 703-4 of the latest NYSDOT specifications. The stone size to be supplied shall be as specified on the plan or in the proposal or as ordered in the field by the Engineer.
4. 6" perforated drain pipe as per Section 11P-6 technical specifications.
5. 3"-diameter PVC weep hole sleeves.
6. Preformed joint filler and sealer.
7. Wood Pattern (to be determined) by Sika Architectural Concrete Formliners or approved equal.

3000.7.PROPORTIONING AND DESIGNING MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to Engineer for preparing and reporting proposed mix designs.
- B. Do not use the same testing agency for field quality control testing.
- C. Limit use of fly ash to not exceed 25 percent of cement content by weight.
- D. Submit to the Engineer written reports of each proposed mix for each class of concrete at least 15 days prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed by Engineer.
- E. Design mixes to provide normal weight concrete with the following properties as indicated on drawings and schedules:
 1. 3000 psi (for footings, walls), 28-day compressive strength; water-cement ratio, 0.58 maximum (non-air-entrained) 0.46 maximum (air-entrained).
 2. 4000 psi (for slab-on-grade), 28-day compressive strength; water-cement ratio, 0.58 maximum (non-air-entrained) 0.46 maximum (air-entrained).

- F. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:
 - 1. Subjected to freezing and thawing: W/C 0.45.
 - 2. Subjected to deicers/watertight: W/C 0.40.
 - 3. Subjected to brackish water, salt spray, or deicers: W/C 0.40.
- G. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
- H. Reinforced foundation systems: Not less than 1 inch and not more than 3 inches.
- I. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer before using in Work.

3000.8.ADMIXTURES

- A. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
- B. Use accelerating admixture in concrete slabs placed at ambient temperatures below 50 deg F.
- C. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within the following limits:
 - 1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or hydraulic pressure:
 - (a) 4.5 percent (moderate exposure); 5.5 percent (severe exposure) for 1-1/2 inch maximum aggregate.
 - (b) 4.5 percent (moderate exposure); 6.0 percent (severe exposure) for 1 inch maximum aggregate.
 - (c) 5.0 percent (moderate exposure); 6.0 percent (severe exposure) for 3/4 inch maximum aggregate.

(d) 5.5 percent (moderate exposure); 7.0 percent (severe exposure) for 1/2 inch maximum aggregate.

2. Other concrete not exposed to freezing, thawing, or hydraulic pressure, or to receive a surface hardener: 2 to 4 percent air.

3000.9.CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements of ASTM C 94, and as specified.
 1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

3000.10. GENERAL

- A. Coordinate the installation of joint materials, filter fabric, and other related materials with placement of forms and reinforcing steel.

3000.11. FORMS

- A. General: Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position.
- B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.
- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.
- D. Provide temporary openings for clean-outs and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- E. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

- F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3000.12. PLACING REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as specified.
- B. Avoiding cutting or puncturing filter fabric during reinforcement placement and concreting operations. Repair damages before placing concrete.
- C. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- D. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved by Engineer.
- E. Place reinforcement to maintain minimum coverages as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- F. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3000.13. JOINTS

- A. Construction Joints: Locate and install construction joints so they do not impair strength or appearance of the structure, as acceptable to Engineer.
- B. Provide keyways at least 1-1/2 inches deep in construction joints in walls and slabs and between walls and footings. Bulkheads designed and accepted for this purpose may be used for slabs.
- C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of strip placements.

- D. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.

3000.14. INSTALLING EMBEDDED ITEMS

- A. General: Set and build into formwork anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached.
- B. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, and other conditions.
- C. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3000.15. PREPARING FORM SURFACES

- A. General: Coat contact surfaces of forms with an approved, nonresidual, low-VOC, form-coating compound before placing reinforcement.
- B. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.
- C. Coat steel forms with a nonstaining, rust-preventative material. Rust-stained steel formwork is not acceptable.
- D. Form liner shall be as per Section 3001–Concrete Form Liners of the technical specifications.

3000.16. CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of

weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.

- D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
- E. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
- F. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.
- G. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section.
- H. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
- I. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats or darbies to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
- J. Maintain reinforcing in proper position on chairs during concrete placement.
- K. Cold-Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
- L. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 - 1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

- M. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.
1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F. Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
 3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
- N. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Engineer.

3000.17. FINISHING FORMED SURFACES

- A. Rough-Formed Finish: Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.
- B. Smooth-Formed Finish: Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3000.18. MONOLITHIC SLAB FINISHES

- A. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified; slab surfaces to be covered with membrane or elastic

waterproofing, membrane or elastic roofing, or sand-bed terrazzo; and where indicated.

1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 18 (floor flatness) and F(L) 15 (floor levelness) measured according to ASTM E 1155. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- B. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or another thin film-finish coating system.
- C. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of F(F) 20 (floor flatness) and F(L) 17 (floor levelness) measured according to ASTM E 1155. Grind smooth any surface defects that would telegraph through applied floor covering system.
- D. Nonslip Broom Finish: Apply a nonslip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
- E. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Engineer before application.
- F. Nonslip Aggregate Finish: Apply nonslip aggregate finish to concrete stair treads, platforms, ramps, sloped walks, and where indicated.
- G. After completing float finishing and before starting trowel finish, uniformly spread dampened nonslip aggregate at a rate of 25 lb per 100 sq. ft. of surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as specified.
- H. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose nonslip aggregate.

3000.19. MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in

place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.

- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

3000.20. CONCRETE CURING AND PROTECTION

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before power floating and troweling.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
- C. Curing Methods: Cure concrete by curing compound, by moist curing, by moisture-retaining cover curing, or by combining these methods, as specified.

3000.21. REMOVING FORMS

- A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.

3000.22. REUSING FORMS

- A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use patched forms for exposed concrete surfaces except as acceptable to Engineer.

3000.23. CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable to Engineer.

- B. Mix dry-pack mortar, consisting of one-part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing.
- C. Cut out honeycombs, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
- D. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- E. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Engineer. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar or precast cement cone plugs secured in place with bonding agent.
- F. Repair concealed formed surfaces, where possible, containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.
- G. Repairing Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.
- H. Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of 0.01 inch wide or that penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.
- I. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
- J. Correct low areas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable to Engineer.

- K. Repair defective areas, except random cracks and single holes not exceeding 1 inch in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- L. Perform structural repairs with prior approval of Engineer for method and procedure, using specified epoxy adhesive and mortar.
- M. Repair methods not specified above may be used, subject to acceptance of Engineer.

3000.24. QUALITY CONTROL TESTING DURING CONSTRUCTION

- A. General: The Owner will designate a testing agency to perform tests and to submit test reports. The Contractor shall bear all costs and related expenses for testing, to be performed.
- B. Sampling and testing for quality control during concrete placement may include the following, as directed by Engineer.
- C. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
 - 1. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
 - 2. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
 - 3. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below, when 80 deg F and above, and one test for each set of compressive-strength specimens.
 - 4. Compression Test Specimen: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
 - 5. Compressive-Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yd. plus additional sets for each 50 cu. yd. more than the first 25 cu. yd. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

6. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
 7. When total quantity of a given class of concrete is less than 50 cu. yd., Engineer may waive strength testing if adequate evidence of satisfactory strength is provided.
 8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
 9. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi.
- D. Test results will be reported in writing to the Engineer, Structural Engineer, ready-mix producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
- F. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Engineer. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.
- 3000.25. INSTALLATION:
- A. Excavation
1. The Contractor shall cut and remove any asphalt paving, curbs, drives, or other surface material required to make the excavations. The Contractor shall make all excavations in such a manner and to such widths as will provide ample room for properly installing the cast in place concrete walls, and to permit the thorough compacting of the backfill material.
 2. The Contractor shall excavate to the depth shown on the plans and to a width of one (1) foot on each side of the outside of the concrete walls. Hand excavation shall be employed wherever, in the opinion of the Engineer, it is necessary for the

protection of existing utilities, trees, pavements or other structures, at no additional cost.

3. The Contractor shall keep the excavation area free from water. This shall be done as part of this item.
4. The concrete footings shall rest on suitable material. If the soil encountered at the invert is unsuitable (i.e. soft, spongy, etc.) it shall be excavated and removed. Excavation shall be from a point one foot below the design invert of the structure to the bottom of the excavation for a width of one (1) foot on each side of the structure and to a depth as called for by the Engineer. There shall be no payment for the first foot of extra depth under the Miscellaneous Earth Excavation item. Payment for the first foot shall be included as part of this item. The Contractor shall replace the excavated material with No. 2 crushed stone, which shall be thoroughly compacted. Payment of the excavation of the unstable bottom shall be under the Miscellaneous Earth Excavation item.
5. The Contractor shall provide adequate sheeting, bracing, and pumping of the excavation, whenever necessary to provide safe working conditions, prevent damage to pavement, structures, pipes and utilities or shifting of materials and shall be completely responsible for its adequacy and all damages resulting from its installation, removal, failure or omission. Such sheeting, shoring or bracing shall be included as part of this item.

B. Sheeting and Bracing

1. Trenches shall be properly sheeted, shored and braced as necessary to prevent shifting of materials, to prevent damage to structures, pavement and pipes and to provide safe working conditions.
2. The Contractor shall be responsible for submitting site-specific sheeting designs to the Engineer for review & approval. Sheeting designs must be signed and sealed by a licensed professional in the State of New York.
3. The Contractor shall be responsible for providing, installation of and for the adequacy of all sheeting and bracing used and for all damage resulting from its failure or from placing, maintaining and removing it. No payment will be made for sheeting and bracing if it is removed, or if it is left in place for the Contractor's convenience. If the sheeting and bracing is ordered to be left in place by the Engineer after having been constructed, the Contractor shall be entitled to the cost of materials so left in place.
4. If there is a space between the sheeting and the side of the trench, the space shall be backfilled with suitable material thoroughly compacted in place. Where adjacent structures, pavement or pipes may be damaged by the removal of sheeting, the Contractor shall not remove the sheeting. All sheeting left in place

shall be cut off at least two (2) feet below the surface of the ground. Where sheeting or shoring is to be removed, the removal shall be in such a manner as to prevent loss of ground.

5. The Contractor's attention is drawn to the NYS Dept. of Labor Industrial Code Rule #23 and O.S.H.A. regulations, which must be strictly adhered to. Prefabricated sheeting boxes may be used only with the approval of the Engineer as to the box itself and the method of use.

C. Backfill

1. After the concrete walls have been properly constructed and inspected, the space between the walls and the sides of the trench shall be backfilled and compacted in nine-inch layers. Water may be required by the inspector to be added to the backfill material, to insure its compaction to a degree at least equal to that of the surrounding earth. No stones larger than two (2) cubic feet shall be allowed in the backfill within three (3) feet from the sides of the structure.
2. Excess material and unsuitable backfill material shall be removed from the site and replaced with suitable backfill as determined by the Engineer.
3. Placement of select structural fill will be paid under item 700A.

3000.26. MEASUREMENT:

- A. The measurement for this item shall be by the cubic yard of concrete placed for the retaining wall footing, wall, and slab.

3000.27. PAYMENT:

- A. The payment shall be at the unit price per cubic yard. This price shall include, but not limited to, all labor, materials and equipment necessary to construct the concrete retaining walls in accordance with the plans and details.
- B. Excavation; sheeting, shoring and bracing; backfill; and all other materials, labor and equipment shall be included under this item, except as otherwise noted.
- C. Payment shall be at the unit price bid and includes, but is not limited to, completed, and accepted cast in place concrete walls, stairs, and ramps, constructed as specified herein. Said payment shall include, but not limited to, all labor, materials and equipment for the cast in place concrete, joint filler, sheeting, shoring, and bracing, formliner, $\frac{3}{4}$ " stone, filter fabric, 6" perforated PVC pipe, connection of 6" perforated PVC pipe to drainage structures, 3" weep hole sleeves, drain board, maintaining excavation, construction, and backfilling.
- D. Select Structural Fill will be paid for under item 700A.

PAYMENT FOR CAST IN PLACE CONCRETE SHALL BE AS FOLLOWS:

| <u>Item</u> | <u>Description</u> | <u>Units</u> |
|-------------|--|--------------|
| 3000A | Cast-in-place Concrete Retaining Walls & Footings Over 4 ft. | CY |
| 3000B | Cast-in-place Concrete Retaining Walls & Footings for Stairs. | CY |
| 3000C | Cast-in-place Concrete Retaining Walls & Footings Under 4 ft & Ramps. | CY |

* * *