

**THIS IS NOT A CONTRACT DOCUMENT –**  
**COMPLETE SOLICITATION DOCUMENTS CAN BE OBTAINED BY CONTACTING**  
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**GENERAL DESCRIPTION OF WORK**  
**WORLD TRADE CENTER**  
**TOWER 2 PLAZA INTERIM IMPROVEMENTS**  
**NEW YORK, NEW YORK**

January 21, 2015

**CONTRACT: TOWER 2 PLAZA INTERIM IMPROVEMENTS**

1. This Trade Contractor shall provide all portions of the Tower 2 Plaza Interim Improvement Work shown in the Contract documents. It is the intent of the Specifications and Drawings to call for work, tested and ready for operation. Any apparatus, appliance, material or work not shown on Drawings but mentioned in the Specifications, or vice versa, and any incidental accessories or details necessary to make the work complete and perfect in all respects and ready for operation, even if not specified, shall be provided without additional expense to the Owner.
2. The Trade Contractor shall include in the Contract Price all costs associated with the required deliveries to the site.
3. Where variances occur between the Drawings and Specifications or within either document itself, the item or arrangement of better quality, greater quantity, or higher cost shall be included in the Contract Price. The Architect/Engineer will decide on the item and manner in which the work shall be installed.
4. In all cases where apparatus is referred to in singular numbers, it is intended that such reference include as many items as required to complete the work.
5. The Trade Contractor is fully responsible for layout, engineering, surveying, etc., required to install all materials included in this Contract. Verify dimensions by field measurements before fabrication and indicate measurements on shop drawings. All layouts shall be from axis lines provided by a NYS Licensed Land Surveyor.
6. If directed by the Construction Manager the Trade Contractor shall, without extra cost, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.
7. The Trade Contractor shall perform all work, file all paperwork, assist in providing all permits & fees, perform all on-site inspections and obtain all approvals from all authorities claiming jurisdiction as required and necessary to enable a Certificate of Occupancy to be issued to the Owner.
8. The Trade Contractor shall provide all labor (including that which is jurisdictionally required for composite labor crews) and work for receiving, uncrating, handling, storing, distributing and installing materials, equipment and appliances for the work of its Contract.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

9. All materials shall be provided in strict accordance with the approved submissions bearing the approval of the Architect. Any material that deviates in any way from the approved submissions shall be removed from the jobsite within twenty-four (24) hours' notice from the Construction Manager and replaced with the approved item(s). All costs related to such replacements, both direct and indirect, shall be the responsibility of the Trade Contractor.
10. The Trade Contractor shall assist in Controlled Inspections (as dictated by the requirements of the PANYNJ and all other agencies claiming jurisdiction).
11. Additionally, the Trade Contractor is aware that the Port Authority will have field inspection personnel on-site to review the installation of all work and agrees to cooperate fully and perform all work as required to obtain the Port Authority's acceptance.
12. The Trade Contractor shall be represented by a dedicated Project Manager, who will attend all Trade Contractor Coordination, construction meetings and interface with the Construction Manager. Should Construction Manager be dissatisfied with the performance of the representative provided by Trade Contractor, Trade Contractor will promptly replace that individual with one satisfactory to Construction Manager. The Owner and/or Construction Manager will not be responsible for costs incurred from the lack of coordination between the works of the Trade Contractors.
13. Materials shall be stored in areas designated by the Construction Manager. The Trade Contractor shall be responsible for the proper and safe storage of all materials until final acceptance of the work, and no claims for replacement material will be accepted. Because of the limited site access, the Trade Contractor will be responsible for any and all off-site storage or staging areas that may be required.
14. The Trade Contractor shall coordinate deliveries with Construction Manager. The Trade Contractor shall notify Construction Manager 48 hours in advance of all deliveries.
15. The Trade Contractor shall be responsible for protecting its work during storage, transit and installation. At completion of the work or when directed by the Construction Manager, the Trade Contractor shall clean its work, repair and refinish any damage incurred, through its workmanship or by others, to the satisfaction of the Construction Manager and at no additional cost.
16. To obtain the Owner's acceptance, the Trade Contractor shall provide refinishing or replacement of defective materials installed. Any costs associated with the refinishing or replacement of damages caused by the Trade Contractor is included in this Contract.
17. The Trade Contractor shall perform all completion work and punchlist work timely.
18. All finished decorative metal and stone and paving work shall be protected by the Trade Contractor. The Trade Contractor may be requested to provide additional protection for other items (i.e. irrigation and plants) until completion and acceptance by the Owner.
19. The Trade Contractor shall include two final cleanings of the Work at the direction of Construction Manager: 1) prior to punch list review; 2) prior to final turnover to the Owner.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

20. The Trade Contractor shall provide all required samples, compatibility testing and visual mock-ups for approval by Architect and for use in coordination with other trades. The Trade Contractor shall submit all test results and certifications as required.
21. Provide barricades and fencing to secure the work area and divert traffic from work areas as required.
22. Reinstall or replace all gates and security fencing as needed. Reinstall or replace safety barricades immediately to maintain a safe workplace.
23. Provide patching of existing fireproofing that is removed or damaged by the Trade Contractor.
24. Protect finished surfaces from staining by mortar, paint, grout and other materials. Do not discharge waste material into the project drainage systems.
25. Provide dielectric separators between dissimilar materials as required to protect substrates.
26. Provide all embedded items. Verify and accept existing conditions.
27. Where provisions of the Building Code, Contract Documents, or codes, standards, manuals and specifications cited in the Contract Documents are more restrictive or provide increased quality, the combination of provisions, examples, procedures and recommendations which provide both best quality and Building Code conformance shall control the Work.
28. Concrete or other materials rejected by the inspecting agent, for not meeting project requirements by the Testing Agency or the Engineer of Record, shall not be placed and shall be immediately removed from the site.
29. The Trade Contractor shall provide a copy of each batch ticket for each batch of concrete discharged and used in the work. Batch tickets shall be submitted to the Construction Manager prior to discharging concrete. The Trade Contractor shall retain duplicate tickets until such time the Owner receives the TCO.
30. The Trade Contractor shall maintain and, on request, submit full documentation of the traceability of all materials to points of origin, assembly, manufacturing and the like.
31. Prior to placing concrete, the Trade Contractor shall clean all debris off slabs, metal deck, or metal surfaces or previously placed concrete, and remove all deleterious material.
32. Load debris into mini containers provided by this Trade Contractor and dispose in a waste facility licensed to receive construction waste. Maintain areas within the work-limits in clean condition at all times. Broom sweep surrounding areas at the end of each day.
33. Protect concrete from drying and plastic shrinkage cracking during placing and finishing processes. Provide curing materials and equipment.
34. Provide all design mixes stamped and signed by a NYS P.E. Design mixes over six months old will not be accepted by the engineer of record. New test results must be provided to obtain approval.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

35. Wash out all concrete from trucks, pumps etc., into washout boxes provided by this Contractor. Dispose of all washout material off site. Protect all temporary and permanent plumbing and street inlets and piping or sumps from concrete, masonry, stone, or landscaping waste. Should it be necessary, repair or replace damaged waste conveyance systems at the expense of the Trade Contractor.
36. Provide all waterproofing work for all locations as shown or indicated in the Contract Documents. This work shall include, but not be limited to temporary and permanent waterproofing. Protect and maintain dry the existing adjacent building at probes, points of tie-in or connection, exposed slabs, and changes in elevation, and any other potential point of entry of water. Submit for approval by the architect of record, site specific details for waterproofing, flashing and counter flashing of all penetrations and connections to area drains existing adjacent building framing, structure, and exterior envelope, new structure, curbs.
37. Patch all existing waterproofed surfaces damaged during construction. Perform 48 hr. water testing of all surfaces in areas not to exceed 20' x 20'.
38. Provide waterproofing compatible with existing products on the Tower 2 structure and building envelope.
39. Remove and dispose of all overburden as may be required to install new structure, slabs and waterproofing.
40. All cutting, patching, etc., required for built-in items and the work of other trades shall be included in the Contract Price.
41. Before commencing work, examine all adjoining surfaces and materials and report to the Construction Manager any conditions which prevent this Trade Contractor from performing first-class work.
42. The Trade Contractor will provide a competent surveyor to establish all lines and levels necessary to the proper locating, laying out and erecting his work.
43. The Trade Contractor will submit for approval by the Engineer of Record the name of a laboratory licensed to perform materials testing and design mixes as required by the Contract Documents. The Trade Contractor shall provide design mixes and laboratory test reports stamped and signed by a NYS licensed professional engineer
44. Perform punchlist work immediately upon receipt of the architect or engineers' reports.
45. The Trade Contractor understands that portions of the work being provided under this Contract may be interrelated to the work being provided by others under separate Contract and that taken together, all such work comprise complete systems in accordance with the Contract Drawings & Specifications.
46. Any and all costs to repair damages caused by the Trade Contractor during the performance of this, or any other work, shall be charged to the Trade Contractors account.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

47. The Trade Contractor shall protect the work of other trades that may be damaged or stained by its operations, and shall be responsible for all costs of repairs to surrounding trades if damages or stains occur due to its actions.
48. Provide rubbish cleanup, removal and disposal off site. Provide labor to clean the site on a daily basis, or more frequently as needed to maintain a safe and orderly work area. Provide labor to load mini containers, transport them to and from the designated tipping area. Provide labor to maintain a safe environment for pedestrians and commercial tenants occupying the buildings and using the areas surrounding Trade Contractor's work area.
49. Provide a licensed waste disposal service and mini and roll off containers. Placement of roll off containers shall be as directed by the Construction Manager. Provide rubbish collection between the hours of 6PM – 5AM weekdays. Waste disposal contractor shall be approved by the Construction Manager.
50. The Trade Contractor shall take the necessary steps to ensure that the mixing of mortar and/or other materials and drainage thereof does not stain adjacent areas nor is dumped into the project drainage system.
51. The Trade Contractor shall be responsible to ensure that fabrication and installation tolerances are in accordance with specifications.
52. The Trade Contractor shall provide its own means of reaching its work (i.e. scaffolding, man-lifts, ladders, etc.).
53. Prior to Owner acceptance of the work of this Contract, the Trade Contractor shall be required to repair and/or replace any damages to any finished devices, panels, equipment, etc. regardless of the cause necessitating such replacement. Such work shall include, but not be limited to replacement of missing covers, doors, access panels, repair of scratched components, etc.
54. The Trade Contractor shall include all provisions as necessary to accommodate building compression and settlement. Such work shall include, but not be limited to the periodic adjustment of anchors, guides and supports throughout the construction duration as required.
55. In addition to submitting to Beyer Blinder Belle, the Trade Contractor shall submit waterproofing submittals to Adamson Associates Inc. (AAI) the Architect of record for Tower 2.
56. Comply with requirements of the "LEED" rating system by the US Green Building Council as indicated in the contract documents. The work of this Contract must meet standards of sustainable construction and building practices required by the LEED program as outlined therein.
57. The Trade Contractor shall at its own expense collect and dispose of offsite debris in accordance with OSHA housekeeping and LEED standards for Waste Management as stated in the Retail Contract Documents, reference section "A General Conditions" line 23.
58. Trade Contractor is aware that the Work of this Contract is within an area that is under the jurisdiction of the MTA. The Trade Contractor shall prepare and submit to the MTA for

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

approval, drawings, calculations, diagrams and logistics plans showing crane locations and loads on the MTA structure at Church St. Drawings and calculations shall be stamped and signed by a NYS P.E. The Port Authority shall also approve all cranes or rigging equipment used on the site.

### **SPECIFIC SCOPE OF WORK**

This Scope of Work shall include, but not be limited to all work shown on the Drawings and Specifications, except such work as may be specifically excluded in "WORK NOT IN CONTRACT".

Trade Contractor warrants that it is aware that although many individual items of work are not specifically shown, the Trade Contractor has an understanding of the intent of the Architect/Engineer and will include such items of work as the Contract Documents shall imply or require. The Trade Contractor agrees that all work is subject to the approval of the Architect/Engineer and shall make such changes as required by the Architect/Engineer to secure such approval.

In addition to the above, the Trade Contractor's work shall include, but not be limited to the following items, clarifications and/or modifications.

The Trade Contractor shall be responsible for examining all of the Documents listed on the Rider "B", "List of Drawings and Specifications", and all items related to the Trade Contractor's work, and called for in these Documents, shall be included in this Contract.

In addition to the above, the Trade Contractor's work shall include, but not be limited to the following items, clarifications and/or modifications:

- Selective demolition, probes and weather protection
- Excavation, grading, compaction, controlled fill
- Temporary protection
- Decorative Green wall and supporting steel structure
- Alteration of, and tie in to, existing structure and enclosure, where required
- Site logistics, rigging, cranes, scaffold,
- Irrigation system
- Landscaping and maintenance
- Plumbing, water, trench and area drains
- Landscape lighting and dimming
- Moveable fiberglass planters, wood benches
- NYS P.E. and NYS Licensed Land Surveyor
- Concrete
- Painting and touchup
- Carpentry, hardware, hollow metal
- Masonry
- Stone stairs, walls and benches
- Stone veneer panels at stone walls within Green Wall
- Hanover cobble stone pavers on mesh reinforcing
- Waterproofing, flashing and counter flashing

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

- Miscellaneous metals
- Telecommunications
- Electrical power and light – temporary and permanent
- Lighting, dimming, Kindorf stands and supports
- Security system
- Fire stopping
- Core Drilling through existing structures required for this scope of work
- Valve and utility decorative boxes
- Plywood backboards for equipment
- Site Cleaning, rubbish removal and disposal off site
- Caulking and sealants
- Snow Removal during construction phase
- Engineering Surveys
- General Conditions – temporary light and power, water heat, etc.
- Backfill – including controlled fill
- MTA filings, drawings, permits, fees and approvals
- PA permits, filings, drawings for cranes and rigging
- NYS P.E. drawings and calculations
- Coring, drilling, cutting, chopping
- Ground penetrating radar (GPR) scanning
- All other work called for in the Contract Documents
- Testing, punchlist work,
- All work required to obtain a Temporary Certificate of Occupancy
- Railroad protective insurance
- Fire watch, burning blankets, fire extinguishers
- Obtain Hot Works Permits from the Port Authority REO
- Warranty and guarantee
- SWAC Fees

### **LANDSCAPING**

1. Under the maintenance agreement provide during installation and through to acceptance by the Owner, the following:
  - a. Monitoring and maintenance of plantings after installation
  - b. Monitoring and maintenance of irrigation system
  - c. Maintenance of wood chip mulch
2. The maintenance agreement is continuous from the time of plant installation and for a period as identified in the specifications from date of Owners acceptance.
3. Provide the following:
  - a. Trees and plantings of specified type, size and caliper
  - b. Tree planting media, geo textile fabric, drainage mat, fill of all types
  - c. Tree pits, planters, fixed and moveable fiberglass planters and wood benches
  - d. Irrigation system, controllers, pumps, piping, valves, heat tracing
  - e. Mockups

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

- f. Other items as may be required for a complete installation, and as described herein.
4. Provide complete operating and maintenance manuals for the irrigation system for final acceptance by the Owner.
  - a. Provide three (3) each of any special tools required for the maintenance of each component and two (2) keys to each valve, controller or utility box
5. The Landscape Contractor shall furnish and install a PC based controller systems and software including but not limited to:
  - a. Moisture Sensors
  - b. Lighting Arrestors
  - c. Outside Operation Switch
  - d. Air Temperature Sensor
  - e. Master Control Valves
  - f. Flow Sensor
  - g. Remote Control Valves
  - h. Control wiring, power, pipe, conduit and wire, sealtight, waterproof boxes, grounding, kindorf, plywood mounting panel
6. Perform hydrostatic testing of pipe and approve before backfilling of trenches.
7. Planter soil mix and other planting material mix formula is to be determined by soil testing laboratory approved by the architect.
8. Upon contract award, immediately purchase all planting material as outlined in the specifications that is to be kept in nursery until ready for site installation.
9. The Trade Contractor shall be responsible for conducting personnel training (minimum 32 hours) for all operating and maintenance managers for all equipment provided and shall provide advanced copies of Approved Operations and Maintenance Manuals to the Owner at least four (4) weeks prior to training. Manuals will include approved equipment catalog cuts, spare parts lists plumbing and wiring diagrams.

### **SITE WORK**

1. Clear existing site of all remaining materials and debris, and dispose off site.
2. Provide site fence and gates to secure stored material and provide worker and pedestrian safety. Maintain, relocate, alter, site fence to accommodate site logistics and PA requirements. Maintain access for PAPD and PAFD.
3. Provide excavation and grading of existing site. Dispose of excavated material off site.
4. Provide controlled fill and compaction as required. Provide testing and inspection to verify compliance. Provide clean backfill material approved by the Architect. Do not over excavate. Any over-excavation must be brought to the correct grade with controlled fill at this Contractor's expense.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

5. Provide 24x7 temporary security lighting of the site.
1. Provide snow and ice removal within the site limits, and beyond the limits for this Trade Contractor's needs. Use only snow melting materials approved by the architect or engineer.
2. Protect existing adjacent permanent building structure walls with exterior fire treated plywood sheeting up to 8 ft. high.
3. Protect all existing permanent or temporary sidewalks from damage during deliveries and rubbish removal. Provide steel plates at curbs and walks. Protect sidewalks from staining, cracking, etc.
4. Provide daily cleanup of the areas immediately around the site. Maintain areas within the site in clean condition at all times.
5. Provide temporary light and power as required for this Trade Contractor's work. Provide welding hookups as required.
6. Provide Porto-sans for this contractor's forces.
7. Provide tool and equipment storage and lockup.
8. Provide protection of all adjacent site or street drains from debris.

### **MISCELLANEOUS METAL**

1. Provide all miscellaneous Metal work as indicated on the Contract Documents including, but not limited to the following:
  - a. Paver retention angles and plates
  - b. Tree well covers plates, hardware, and ledge angles
  - c. Slot drain assemblies
  - d. Stair and walkway handrails and sleeves
  - e. Tree grates and frames
  - f. Slab drain access cover plates
  - g. Pipe hanger straps for aeration drip system
  - h. Treaded rod, bolts, anchorage and connections, anchors
  - i. Lantern wall, cap, and base plate housing
  - j. Trench drain grates plus attachments
  - k. Stainless steel utility access covers in specified finish
  - l. Screen wall and support steel and anchorage
  - m. Scaffolding and rigging of screen wall and support structure as designed by a NYS P.E.
  - n. Shop painting, field painting and touchup of screen wall panels and support structure
2. Provide all miscellaneous metal material including but not limited to, secondary support members, kickers, angles, brackets, sleeves, shoes, braces, plates, clips, caps, bolts, rods and anchoring connections, shimming (up to 6 inches), welding and full penetration welds, and bolting.
3. Provide cutting, burning, drilling chopping, and fire watch. Obtain hot works permits from the PANYNJ REO.
4. Provide pigtailed for welding machines.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

5. Provide certified welders. Provide full penetration welds on tube steel support frames. Third party visual inspection of welding shall be performed by HAKS at the Owner's expense.

### **WATERPROOFING**

1. Provide temporary waterproofing at all points of connection to base building structure and at walls and slabs as may be required to complete the work. The temporary waterproofing is in addition to and out of sequence from the permanent waterproofing at these locations. Provide temporary doghouse protection over existing base building areas that may be exposed to the weather to prevent entry of water into the interior space.
2. Inspect and repair all base building waterproofing membrane exposed during the work.
3. Prepare existing and new surfaces to receive waterproofing. Prior to installing pavers, perform a 48 hr. water test of all areas in 15ftx15ft grids.
4. Prior to installing membrane manufacturer's authorized representative shall inspect the areas and provide written acceptance of the substrate. Prior to installing pavers, the manufacturer's rep shall inspect the work and provide written acceptance of the waterproofing installation.
5. Protect all membrane and flashing from exposure to UV. Apply additional membrane where exposure to UV exceeds the manufacturer's recommendation.
6. Provide all counter flashing, flashing, cap flashing, caulking for a complete installation in conformance with the manufacturer's standards.
7. Submit waterproofing and flashing details, drawn in CAD, for approval by the architect.
8. Provide electric field vector mapping method of leak detection performed by a company and persons experienced in this type of testing, and approved by the Architect. Include multiple tests and visits by the testing agency. Flood testing shall be performed by area in a grid of no more than 15' by 15'.

### **CONCRETE**

1. The Trade Contractor shall coordinate and provide all embedded items as required under this Contract.
  - a. Stair rails wall brackets, base plates and sleeves
  - b. Floor drains, pipe sleeves
  - c. MEP sleeves
  - d. Rebar, dowels, base plates
  - e. Bollards
  - f. Expansion joints
  - g. Base plates, anchor bolts and dowels for structural frame supporting screen wall
2. Submit for approval by the Engineer of Record concrete design mixes stamped and signed by a NYS P.E.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

3. Provide mock-ups as specified.
4. Provide a commercial testing laboratory to design concrete mixes per the specifications.
5. Provide a broom texture finish on all concrete slabs unless otherwise stated in the Contract Documents.
6. Where new concrete is to be bonded to the existing concrete, prepare the surfaces by saw cutting, scraping, chipping, grinding, scarifying, and cleaning to wash off oil and other bond inhibitors, or other means necessary to make the substrate suitable for receiving the new concrete. Provide bonding agents. Cut or burn protruding rebar as required.
7. Expose all existing rebar by chipping and cutting concrete. Cut rebar only after approval of the Engineer of Record.
8. Prior to coring existing concrete, obtain the approval of each core location from the engineer of record. Perform ground penetrating radar (GPR) scanning to locate rebar. Paint rebar locations on walls and slabs for inspection by the Engineer of Record. The engineer will adjust the core location to minimize cutting of rebar.
9. Finish exposed concrete as required by the architect. At a minimum, provide a rubbed concrete finish.
10. Provide flat and tapered fill as required to achieve changes in elevation. Provide Styrofoam or other types of fill as required.
11. The Trade Contractor is responsible for the layout of its work. Locate, and provide sleeves, inserts, embeds and any other elements that need to be incorporated into the concrete structure that are necessary to complete the work of this Contract. Provide a licensed NYC land surveyor to set line and grade. Provide surveyor on site when stone and concrete are being placed, provide an as-built plan and elevation survey on a 20 foot grid.
12. Concrete work that is out of specified tolerance or not acceptable to the Construction Manager under this Contract shall be corrected, repaired or replaced immediately, so as not to delay construction schedules, or at a later time as directed by the Construction Manager at no additional cost to the Owner. The Trade Contractor will prepare appropriate details and procedures for bringing the work into conformance with the Contract Documents and shall submit such details and procedures for acceptance by the Construction Manager and Architect.
13. Provide grouting at bases of screen wall support framing and where ever required whether shown or not.
14. Provide a hardener on all concrete slabs.
15. Caulk joints between new concrete and existing adjoining substrate.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS** **STONE, MASONRY & PAVING WORK**

1. The Stone Contractor shall fit all stone by saw cutting. Paver sheets shall be saw cut to achieve pattern geometry shown on paver plans.
2. Provide, cutting and drilling, anchoring, hangers and hardware, back checking, reinforcing fabric, sealers and sealants,
3. Provide all stonework including, but not limited to, the following:
  - a. Stairs, Risers, and Treads
  - b. Pavers
  - c. Stone veneer panels mounted on steel framing at screen wall
  - d. Stone at benches
  - e. Stone walls
  - f. Setting beds
  - g. Shimming
  - h. Sealants and grout in color selected off of manufacturer's approved color chart
  - i. Sealers if specified
  - j. Chemical cleaning as recommended by the stone supplier prior to inspection by the architect
4. Provide a fulltime supervising foreman to oversee the stone work and paving from time of mock-up installations until acceptance by the Owner.
5. Provide temporary heat or shade structures, water curing, and maintain specified temperatures of concrete during the installation and curing period.
6. Provide stone mock-ups as stated in the specifications, constructed in-place, but out of sequence as directed by the Construction Manager. The Contractor shall construct as many mock-ups as necessary to achieve an acceptance by the architect. The accepted mock-up areas will become the project standard by which the work will be judged. Stone mock-ups may be installed as part of the permanent installation at a location designated by the Construction Manager. Any work not accepted by the Architect, Owner or Construction Manager will be removed and replaced by the Contractor at no additional cost to the Owner.
7. Field measure and verify all locations and sizes prior to cutting and installation.
8. Fabricate all finished stone, within the range of samples as approved by the Architect and Construction Manager. Any material that does not meet the quality standard of the Contract Documents will not be used in the finished work and replacements will be furnished at no additional cost. Each and every piece of stone shall be subject to the Architect's approval at the stone quarry, and any piece or pieces which may be rejected after having been set shall be carefully cut out and replaced with new suitable stone without delay, and without cost to the Owner.
9. Provide stone-to-stone and stone to adjacent surface grouting and caulking including all required expansion joint material. Provide all caulking of stone to dissimilar materials including, but not limited to, where stone abuts perimeter walls, curbs, columns, wall corners, and other types of hard paving and at other locations shown on the Contract Drawings.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

10. Provide setting beds as required for pavers, flooring and all solid fill as required at anchor locations and behind stone base. Care shall be exercised to prevent damage to waterproofing. Should membranes be damaged by the Stone Contractor, it shall be the Stone Contractor's responsibility to bear the cost of those repairs.
11. The Stone Contractor shall take special care to ensure that the finish grade of its work will meet the finish grades of all adjacent work. Setting beds shall vary in thickness to achieve any slope on finish grades as shown on the Contract Documents.
12. Final cleaning of stonework will be at the direction of the Construction Manager. The Stone Contractor shall provide a test cleaning mockup for the architect's approval.
13. The Trade Contract includes ply wood protection during the installation process.
14. Provide sound testing of stone pavers. Remove and replace hollow areas.
15. Provide attic stock of 100 square feet of each paver and stone type and finish type at the completion and turnover of the project to the Owner.
16. Provide sealer on pavers, stone benches, stone walls and stone veneer panels as specified.
17. Finish edges of all stone panels exposed to view.

### **GREEN WALL AND STRUCTURAL SUPPORTS**

1. Provide tube steel structural support frames and connections to green wall panels and Tower 2 existing structure including base plates, full penetration welds, certified welders, fire watch, fire blankets, hot work permits, third party inspection of welds.
2. Provide all shop fabricated green wall panels comprised of wire mesh welded to steel angles. Provide steel connection tabs welded to tube steel and shop painted. Drill and bolt screen wall panels to steel tabs at nodes. Provide touchup after installation.
3. Provide shop applied paint to all support frame steel and miscellaneous iron accessories. Provide touchup after installation.
4. Provide shop applied powder coated paint to each individual bent angle frame and mesh screen panels. Provide touchup after installation.
5. Provide drawings and calculations signed and sealed by a NYS P.E. showing loads imposed on the base building structure by the screen wall support frames.
6. Provide the mockup indicated on elevation 1, dwg L-700 of assembled and painted screen wall panels. Mockup shall be constructed on site and shall be comprised of shop applied powder coat painted metal panels bolted to ½" thick metal tab connectors welded to steel tubes support framing with shop applied paint. Mockup shall demonstrate quality of support framing and connector assemblies as well as bent angle and wire mesh screen assembly. Mockup shall be approved prior to fabrication of other screen wall framing and panel components.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

- 7 The architect shall provide a CAD file providing all working points and geometry necessary for the production of shop drawings and fabrication drawings. The Trade Contractor shall employ a draftsman skilled at 3-D modeling to produce detailed shop drawings for review and approval by the architect. Show adjacent surfaces and locations. Include existing field dimensioning. Show spacers and connection plates.

### **PLUMBING INSTALLATION**

Provide and maintain all plumbing work as indicated on the Contract Documents including, but not limited to the following:

- a. Storm water, domestic water, and irrigation systems and controls and parts for a complete system.
  - b. All work including tie-in at the designated point of connection within the building.
  - c. Temporary water supply at the work area in three concurrent locations for concrete and masonry work and general cleanup.
  - d. Provide heat trace for all exposed or buried piping.
  - e. Provide insulation where required
1. The Trade Contractor shall be required to make all reasonable modifications to its work as is necessary to conform to the Architects requirements. Upon receipt of the Architect's approval, the Trade Contractor shall provide all coordination information to the installing Trade by furnishing approved installation location drawings and clearly marking (using a ribbon, temp sign, etc.) each device installed in inaccessible spaces prior to the commencement of the finished construction.
  2. The Trade Contractor shall coordinate with, and obtain approvals from, the Structural Engineer for the size and location of all such items prior to their installation. This approval process shall include the formal submission of sleeve / embed shop drawings submitted within a sufficient timeframe to allow for Structural Engineer review, comment and approval prior to concrete placement.
  3. Verify in advance of installation, the mounting heights, location, and orientation of all finished devices with the Construction Manager and Architect.
  4. The Trade Contractor shall cooperate fully with all other Contractors at all interfaces (points of connection) required between the work of this Contract and the work of other Contracts and shall perform any work that is required to make these interface points complete and operational in all respects.
  5. Provide fire stopping of sleeves and cores through all horizontal and vertical barriers and partitions. Provide manufacturer's "Engineering Judgment" detail if required.
  6. Provide independent supports, plywood backboards, Unistrut type trapeze, mounting hardware, backing and grounds to support pipe, conduit, equipment, racks, for the work of this Contract.
    - a. At abandoned holes, where anchors/hangers have not been installed plug the hole based on the following:

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

1. Remove all loose material using a wire brush.
  2. Apply anti-corrosive epoxy/cementations adhesive to exposed rebar.
  3. Apply bonding compound to exposed concrete surface to be patched.
  4. Plug unused holes using polymer patching mortar.
  5. All products above shall be compatible and applied per manufacturer direction.
  - b. There shall be no additional compensation for any of the work described above and for any additional hanging materials necessitated by the above procedures and restrictions (i.e. requirement for trapeze hangers, etc.)
  - c. The specifications shall govern after the above minimum requirements are met.
7. The Trade Contractor shall not be permitted to open any valves and/or make any terminations at the points of connection to the work provided by others without the expressed written permission from the Construction Manager.
  8. Drain down all piping that is located within areas that are subject to freezing conditions.
  9. Test all plumbing supply, waste and vent piping with air, followed by a ten foot head of water for 4 hours. All testing to be audited by the PANYNJ REO, EOR, HAKS and the Trade Contractor.
  10. Provide trench and area drains. Provide supports on blocking and kindorf to achieve required grade and alignment. Grade shall be set by surveyor. Provide and maintain temporary screens in drain inlets.
  11. Provide decorative valve boxes and trim.
  12. Provide and maintain temporary mesh screen in drains to catch debris. Clean all plumbing systems of debris as directed.
  13. Provide water meter.

### **ELECTRICAL WORK**

1. The Trade Contractor shall furnish and install all supports, mounting hardware, backboards, grounds for the work of this Contract as per union local area practice and union jurisdictional agreements.
2. Provide all work related to the Electrical Systems as indicated on the Contract Documents, including but not limited to the following.
  - a. Grounding Systems. Testing and reports. Infrared testing and reports
  - b. Low Voltage Power Conductors and Cables
  - c. Normal Power Distribution Systems
  - d. UPS Power Distribution Systems
  - e. Building Management System
  - f. Telecommunications Systems
  - g. Miscellaneous Electrical Equipment & Devices
  - h. Empty Conduit & Raceways with drags
  - i. Equipment Connections

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

- j. Lighting, mockups, focusing, settings, dimming and lighting controls, Irrigation controls
  - k. Fire alarm and security system including programming, testing, and tie in
  - l. Sound or PA system of any type
  - m. Temporary light and power, shutdowns, tie-ins, swing over
  - n. All other work required for a complete installation
  - o. Install heat trace on temp on buried or exposed permanent and temporary pipe
3. The Trade Contractor is cautioned that there are restrictions for the installation of hanging anchors in the reinforced concrete slabs after they are in place. In such instances where anchors are required to be installed after the concrete is in place, compliance with the following procedure shall be required:
- a. Drill underside of slab at preferred location to install selected anchor/hanger. Use drill bit that is appropriate for concrete only and which will not penetrate steel in order not to damage steel reinforcing which coincides with preferred anchor location.
  - b. If drill bit hits rebar stop drilling and try to drill 3" away from the previous location. Repeat this step until hole is successfully drilled without hitting rebar.
  - c. At abandoned holes, where anchors/hangers have not been installed plug the hole based on the following:
    - Remove all loose material using a wire brush.
    - Apply anti-corrosive epoxy/cementations adhesive to exposed rebar.
    - Apply bonding compound to exposed concrete surface to be patched.
    - Plug unused holes using polymer patching mortar.
  - k. All products above shall be compatible and applied per manufacturer direction.
  - l. There shall be no additional compensation for any of the work described above and for any additional hanging materials necessitated by the above procedures and restrictions (i.e. requirement for trapeze hangers, etc.).
  - m. The specifications shall govern after the above minimum requirements are met.
4. Provide seismic restraints as indicated on the contract documents and specifications.
5. Provide vibration isolation components for all equipment furnished under this Contract, including any provisions necessary to accommodate the project seismic requirements.
6. Provide all tagging, labeling and identification as follows:
- a. Provide complete submissions of all equipment tags / labels that shall include a scaled sketch indicating the label size, font size and "typical" information that will be represented (including at a minimum the equipment tag, voltage, amperage, power source and load descriptions).
  - b. Provide a complete submission of all panel directories and shall install all such directories prior to energizing panels. All directories shall include typed descriptions only (no handwritten identification will be accepted). In the event that the panels are feeding temporary loads then the Trade Contractor shall be required to install temporary panel directories (and allowed to use handwritten descriptions). Additionally, the Trade Contractor shall be required to replace panel directories, regardless of the cause necessitating such replacements, until such time that formal Owner acceptance is secured.
  - c. Ensure that their tradesmen do not use markers to temporarily identify panels, switches, etc. during the construction process. If temporary identification is needed prior to the completion of permanent identification the Trade Contractor shall utilize temporary tags

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

and/or labels (i.e. use masking tape instead of permanently marking the above devices).

- d. The specifications shall govern after the above minimum requirements are met.
7. The Trade Contractor shall provide all raceways, including but not limited to, conduit, pull boxes, ladder rack, junction boxes, back boxes, box covers, etc. for all electrical & controls work associated with the work of this Contract unless provided by others.
8. Provide code required disconnect switches for all equipment requiring same, including equipment furnished by others.
9. Furnish and install all fireproofing material for electrical equipment and devices (i.e. pull boxes, etc.) as required by Code and/or the Contract Documents.
10. Provide protection on all conduit-ends terminating in pull-boxes, panels, etc. by utilizing insulated throat connectors and plastic bushings.
11. In the event that the Trade Contractor elects to pull cabling intended for termination to equipment prior to the actual setting of the equipment, it shall be the Trade Contractor's sole responsibility to protect all exposed "whips" from damage by other trades. In the event that such circuiting is damaged, regardless of the cause of the damages, it shall be the Trade Contractors responsibility to remove and replace the damaged cabling at no added cost to the Owner and/or Construction Manager.
12. The Trade Contractor shall not be permitted to route any conduit within the concrete slabs unless no other means is available to route such conduit to its required location. In any such instances all conduit routing and spacing must be provided in conformance with the formal approval of the Structural Engineer.
13. It is understood that the Trade Contractor shall cooperate fully with all of the Trade Contractors performing various portions of the Electrical work in Tower 2, and surrounds, particularly as it relates to all work at the interface points between the work of this Contract and that of others. Accordingly, the Trade Contractor shall coordinate with the these Contractors and perform all work items at all such interface points as required ensure that the complete systems are installed, energized and started up in a manner that is safe and in accordance with all of the requirements of the Contract Documents. Such work shall include strict conformance to the mandated lock-out tag-out procedures.
14. It shall not be permissible for any equipment to be energized on this project that in any way affects work of the other Contractors without formal written notification from each Contractor and the expressed consent of the Construction Manager.
15. Provide electrical conductors and pipe that serve any electrical loads shown in the Contract Documents.
16. The Trade Contractor shall perform all installation work utilizing electricians with all necessary certifications, if applicable, as required by the Port Authority and shall comply fully with the World Trade Center Procedures.
17. The Trade Contractor shall provide all work associated with the grounding systems as stated in specifications.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

All testing procedures shall be formally submitted for approval to the Construction Manager prior to any testing work. The Trade Contractor shall document the results of all such testing and submit the testing report to the Construction Manager for review and approval. In the event that this testing exposes system deficiencies, the Trade Contractor shall perform all required corrective work and re-testing until such time that the system meets the specification requirements.

18. Perform megger testing and provide reports to the EOR and REO. Perform punchlist work.

### **TELECOMMUNICATIONS**

1. The Contractor shall provide all work associated with the telecommunications systems as follows:
  - a. Empty conduits raceways shall be provided in quantities as indicated, complete with drag-lines and all necessary pull boxes (as required by code and / or the Construction Documents), all materials and equipment associated with the telecommunications distribution system, including but not be limited to equipment racks, switches, plywood backing, termination blocks, cabling, ladder rack, cable supports, cable identification, cable terminations, patch panels, fire-stopping, voice / data outlets, loud, end devices, testing and test reports and any other items necessary to make the telecommunications / information technology distribution systems complete in all respects and in compliance with the intent of the Contract Drawings and Specifications.
  - b. The specifications shall govern after the above minimum requirements are met.
2. Furnish and install all cable termination blocks and patch panels, equipment racks and organizers, cross connect supports and guide rings and any other items stated in the Contract Documents for a complete installation of the telecommunication system.

### **WORK NOT IN CONTRACT**

1. Parking area level B4
2. Tower 1, 3, 4, HUB
3. Engineering modeling, calculations and designs for blast
4. Utility usage charges
5. Leak detection system referenced in spec section 071413-5 item 3.4 par. K.; however, leak detection testing shall be required per 3.5 par. C.

### **SCHEDULE - TIME OF PERFORMANCE**

1. Within two (2) weeks of contract award, the Trade Contractor is to submit the following to the Construction Manager:
  - a. Trade Payment Breakdown
  - b. Certificate of insurance
  - c. OCIP paperwork submitted
  - d. Safety Plan

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

- e. Labor Rate Sheet
  - f. Name and resume of Trade Contractor's Superintendent and Project Manager to be assigned to this project, for review and approval by Construction Manager
  - g. Worker's Compensation Employee Modification Ratio
  - h. Begin submission for approval of all drawings, schedule, literature, samples, certifications, etc., as required by the Specifications. Shop drawings shall be completed for approval within Twelve (12) weeks of Contract award.
  - i. Material procurement logs and fabrication schedule.
  - j. Bar Chart Schedule.
  - k. Cash Flow.
2. The Trade Contractor agrees that within two (2) weeks of Contract award, the Trade Contractor shall submit a detailed CPM schedule indicating the aforementioned activities and their interdependencies, as well as any additional activities the Construction Manager may request at during the life cycle of the project.
  3. The Trade Contractor shall be prepared to commence its field work layout on or about the 1st quarter of 2015, or at such later date as directed by Construction Manager provided that the work of others has advanced sufficiently to permit such a start. There will be no escalation of price allowed for duration of the Contract. Any additional cost due to the delayed start or protracted duration of installation as required by the progress of the project
  4. The Trade Contractor understands that work of this trade may not be continuous and that it may be required to work out of sequence at the direction of the Construction Manager. There shall be no charges for comeback time or out of sequence work, provided Contractor's field forces and equipment are still on site and work is accessible to and within the capacity of the on-site equipment.
  5. It is agreed that for purposes of scheduling the various operations of the Trade Contractor's work, the Architect shall require ten (10) working days, or fourteen (14) calendar days, whichever is longer, for the approval of shop drawings, from time of Architect's receipt to time of Architect's return to Construction Manager. The Trade Contractor shall establish a steady flow of shop drawings for approval and avoid the accumulation of an excessive quantity of shop drawings in a single submission.
  6. The Trade Contractor shall furnish to the Construction Manager copies of all material orders (without pricing), cutting lists, shop tickets and acknowledgments of such orders.
  7. Shop drawings for embedded items and separate layout drawings indicating the locations of these embedded items shall be submitted within four (4) weeks after Contract award, or sooner, if required by the Construction Manager.
  8. The Trade Contractor shall furnish to the Construction Manager, transparencies and/or prints of placement plans and shop drawings in such quantities as determined by the Architect, which shall be used for approval of the Trade Contractor's work.
  9. All materials must be fabricated to allow the above installation schedule to proceed uninterrupted. Failure to meet the requirements will require the Trade Contractor to immediately institute a recovery program that may consist of additional manpower, shift work or overtime until the Trade Contractor is capable of performing its work to maintain the above schedule, with no increase to Contract Price.

## **WORLD TRADE CENTER – TOWER 2 PLAZA INTERIM IMPROVEMENTS**

### **TRADE: TOWER 2 PLAZA IMPROVEMENTS**

10. The Trade Contractor understands that work of this trade may not be continuous and that he may be required to work out of sequence at the direction of the Construction Manager. There shall be no charges for reasonable comeback time or out of sequence work, provided the Trade Contractor's field forces and equipment are still on site and work is accessible to and within the capacity of the on-site equipment.
11. Work under this Contract shall commence immediately upon receipt of instructions from the Construction Manager and shall proceed when and where directed, with sufficient labor and material, to accomplish the milestone completion dates as indicated below.
  - **Tower 2 Interim Plaza Improvements**
    - Anticipated Contract Award = *April 1, 2015*
    - Purchase all planting material that is to cultivate in a nursery as outlined in the specifications = *within 2 weeks of Contract Award*
    - Commence Procurement of Stone, Green wall Structure and all long lead items = *On date of Contract Award*
    - Mobilize to site to commence field work = *May 15, 2015*
    - Complete erection of Greenwall Structure = *August 1, 2015*
    - Complete installation of Plantings and Trees = *August 30, 2015*
    - Substantial Completion to permit use / TCO = *October 1, 2015*

There will be no compensation for costs associated with the escalation of labor and materials for any work that is performed in accordance with the above milestones. The Contract Price includes flexibility in these schedule milestones for an extension of up to six (6) months.

Based upon the above milestones, the Trade Contractor shall provide comprehensive schedule information, inclusive of all pertinent work activities, durations and logical links, for the work of this Contract. Such information shall be issued to the Construction Manager in a format compatible with Primavera Version 6 (P6) and shall be updated throughout the course of the project based upon jobsite progress. Provide staff experience including an organizational chart, list of project staff, titles, and relevant experience.