

TECHNICAL SPECIFICATIONS
FOR
BATTERY PARK CITY AUTHORITY
PIER A: PHASE I REPAIR
NEW YORK, NEW YORK

Issue for Construction
February 2018

MEG Project No. 140950.29

Submitted by:
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**BATTERY PARK CITY AUTHORITY PIER A: PHASE I REPAIR
TECHNICAL SPECIFICATIONS**

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GENERAL CONDITIONS

Notwithstanding anything in these specifications and drawings to the contrary, all provisions in the Battery Park City Authority contract herewith shall supersede any conflicting provisions in these documents. All other provisions of the Contract Documents shall remain in full force and effect. References to the "Authority" in these Conditions shall be deemed to mean "Owner/Owner's Representative" and vice versa.

1.01 INTRODUCTION

- A. If, during the performance of the Work, the Contractor finds a conflict, error, or discrepancy in the Contract Documents, the Contractor shall report to the Owner's Representative in writing immediately. Before proceeding with the Work affected thereby, the Contractor shall obtain a written interpretation or clarification from the Owner's Representative. Any work done before the Owner's Representative renders his/her decision is at the Contractor's sole risk and may be forced to remove / modify said work at no additional cost to the Owner.

- B. In the event of discrepancies in the Contract Documents, interpretations will be based upon the following priorities, in descending order of precedence:
 - 1. The Scope of Work, as defined in the Request for proposal.
 - 2. The Agreement including Regulatory Authorizations, and any properly executed Change-Orders thereto.
 - 3. The Drawings and Specifications.

The Agreement, the provisions in the Contract and other Contract documents are intended to supplement and complement each other and shall, where possible, be thus interpreted. If, however, any provision of the Agreement irreconcilably conflicts with a provision of the Contract and the other Contract Documents, the provision imposing the greater duty or obligation on the Contractor shall govern.

In case of inconsistency between Drawings and Specifications, or within either document not clarified by Addendum, the better quality or greater quantity of work shall be provided in accordance with the Owner's interpretation.

- C. The Specification covers the repair work on Pier A at Battery Park City, Manhattan, NY, also referred to herein as the Project Site and is shown in the Contract Drawings.

- D. The Contractor guarantees that in the performance of work, he and every person in his direct or indirect employment (i.e. subcontractors) shall abide by and comply with all federal, state, and local laws including the Occupational Safety and Health Act and waterfront MARSEC USCG requirements.
- E. The term Owner, as used throughout the Contract Documents, designates Battery Park City Authority (BPCA) as the Owner, or its duly authorized representative.
- F. The term Owner's Representative, as used throughout these Specifications, indicates the Owner's authorized representative for a particular activity. The term includes Owner's Representative, Engineer-Of-Record, and/or Special Inspector.
- G. It is the responsibility of the Owner's Representative to delegate responsibility for particular activities.
- H. The term Engineer-Of-Record, Engineer or Owner's Representative as used throughout the Contract Documents, designates McLaren Engineering Group (McLaren).
- I. All correspondence between the Contractor and Engineer of Record shall be directed through the Owner's Representative.
- J. The Work shall commence in accordance with the Contractor's accepted schedule. If, in the opinion of the Owner, the Contractor has not mobilized sufficient plant or material and/or if the Contractor does not demonstrate that sufficient work is underway according to the accepted schedule, the Owner reserves the right to terminate the Contract.
- K. In the event of termination of the Contract pursuant to the conditions set forth herein, such termination shall not act so as to relieve the Contractor from liability for any damages sustained by the Owner as a result of any breach by the Contractor of the terms of the Contract.
- L. At the completion of each work day the area around Pier A must be clear of all construction equipment, materials and debris. The Contractor shall coordinate with the Owner regarding equipment and material lay down area.
- M. Definitions
 - 1. Work: Material, equipment, labor, and services required for Contractor to fulfill his/her obligations of project or the part of the project considered.

2. Project Site: Battery Park City Pier A, New York, NY 10004.
3. Provide: Furnish and install; provide in place.
4. Furnish: Furnish only, not including installation.
5. Install: Furnish and Install in place materials or structures. (Installation of materials furnished by others will be specifically identified).
6. Shall: Mandatory requirement (understood to be applicable whether or not “shall” is used in the sentence structure): omission of “shall” does not make the Specification or Contract Drawing non-mandatory.
7. Contract Sum: This shall be read as the Total Base Proposal amount and will be adjusted based on actual quantities of completed Work, including Owner-accepted Alternatives and Unit Price as included in the Form of Proposal.
8. Day: Contract "day" shall be as defined in the BPCA Agreement.

1.02 DESCRIPTION OF WORK

The Work shall include, but not be limited to:

This Agreement covers the complete scope for the type of work included herein, including all incidental work not necessarily indicated or described in the “scope” documents. This Agreement is let on the basis of such documents with the understanding that the Proposer is to furnish all items required for proper completion of the work without adjustment to the Contract Price. It is intended that the Work be of sound and quality installation and the Proposer shall be solely responsible for the inclusion of adequate amounts to cover installation of all items indicated, described or implied.

- A. Mobilization to and demobilization from the site.
- B. Furnish, installation and maintenance of environmental controls and safety measures.
- C. Furnish, installation and maintenance of temporary works.
- D. Cleaning, demolition and authorized disposal of components associated with repairs.

- E. All repairs shown in the Contract Drawings.
- F. Providing coordination with the Owner's Representative for securing testing services and test results confirming accordance with Contract Documents for Engineer of Record approval.
- G. Providing submittals.
- H. Attendance of authorized representative at project meetings.
- I. Coordination with Owner's Representative and/or Engineer of Record for review of Work.
- J. Providing bi-weekly schedule of anticipated work.
- K. Providing daily construction reports.
- L. Providing detailed outline of Proposer's QA/QC protocol.

1.03 GENERAL SCOPE OF WORK

Schedule

Unless otherwise stated in Section 013300, the following submittal schedule of all shop drawings, etc., for review by the Owner's Representative and Engineer of Record shall be as follows:

A. Contractor's Submittal

Proposer shall submit within two (2) weeks after receipt of Contract or Notice to Proceed a detailed schedule to the Owner's Representative conforming with the project milestone installation dates.

Contractor shall be responsible to meet all project milestone dates. If the contractor does not meet the milestone dates or is progressing behind schedule, the contractor will be directed by the Owner/ Owner's Representative to work additional shifts, hours and weekends at no additional cost to the Owner, in order to ensure substantial completion no later than project closeout date. The project milestone dates are as follows:

- a. Contractor to complete Shop Drawings: TBD
- b. Construction Start: TBD
- c. Substantial Completion: TBD
- d. Punch List Walk-through: TBD
- e. Final Inspection of Punch List: TBD

Contractor shall be required to submit an original certificate of insurance to the Owner's Representative one week prior to commencement of contracted work in accordance with the Owner's contract.

B. Owner's Representative Review and Comments

Within five (5) days after receipt of Contractor's submittal or, upon due notice to the Contractor, within such other reasonable period of time as the Owner may require.

The Work shall be performed in a general sequence developed by the Contractor and submitted to the Owner's Representative for review, in accordance with the requirements of the Contract. The Contractor is solely responsible for the means and methods of construction and for the sequences and procedures to be used.

The Contractor shall furnish and coordinate all plant, labor, supervision, materials, equipment and appliances for all demolition and/or construction work in connection with the demolition and/or construction of the marine facilities.

The Contractor acknowledges and is aware that the area is occupied by others and that the site will not be fully closed from public access. All material delivery and operations associated with the Work shall be coordinated with other activities at the site in such a manner as to minimize the impedance on the site's tenants and the public, while maximizing the cost effectiveness and time of the Work. Coordination of equipment mobilization, construction, deliveries, etc. must be made with the Owner's Representative.

1.04 EXAMINATION OF EXISTING CONDITIONS

Before submitting a proposal, it is a requirement of this Contract that each proposer visit the site to determine the conditions under which the Work is to be done. Such examination shall include, but not be limited to:

- A. Structural detail of the existing structures and related facilities.
- B. Various on-site utilities and structures not within the Scope of this Contract, but that may impact the execution of the Work. These will remain fully operational throughout the construction period.
- C. The layout and structural and finish condition of the existing structures.
- D. Access space, possible work areas, and load restrictions.

1.05 CONTRACTOR-FURNISHED MATERIALS

- A. The Contractor shall furnish all materials for installation in the completed Work as specified hereinafter.
- B. The Contractor shall handle these materials as they are delivered to the site or off-site work areas, and shall store them in a designated storage area by the Owner. If sufficient room is not available, the Contractor shall store materials at his own cost.
- C. The Contractor-furnished material is subject to review by the Owner or Owner's Representative at the plant of manufacture at the Owner's option. Review by the Owner or Owner's Representative is not to be construed as technical in nature and in no way shall be deemed to relieve the Contractor from his/her obligation herein to insure the quality and integrity of the materials supplied by the Contractor for this project.
- D. Project material furnished by the Contractor shall conform to the requirements of the Specifications stated hereinafter. The Contractor shall, as part of the Contract fee, also furnish all consumable materials necessary to complete the Work, such as, but not limited to, welding electrodes, safety equipment, etc.

1.06 LAYOUT

- A. The Contractor shall be solely responsible for the accuracy of all locations, dimensions, and levels and no plea as to instructions or order received from any other sources other than information contained on Contract Drawings, Specifications or in written orders of the Owner or Owner's Representative shall justify departure from the dimensions and elevations required by the Contract Drawings.
- B. The Contractor shall take his own measurements at the site, verifying same with the Contract Drawings and existing facilities, and will be held responsible for the proper fit and alignment of completed work in position.

1.07 GUARANTEE

- A. The Contractor shall guarantee to the Owner all materials and workmanship against original defects, or against injury from proper and usual wear when used for the purpose intended, for twelve (12) months after date of final payment certifications, and shall maintain all items in perfect condition during the period of guarantee.
- B. Defects appearing during the period of guarantee shall be made good by the Contractor at his expense upon written demand of the Owner, it being required that all work shall be in perfect condition when the period of

guarantee shall have elapsed. In the event of default by the Contractor, the Company shall have the right to make good any and all defects and bill the Contractor as per the contract for administration fees. The Owner shall provide notice of correction along with time frame for correction prior to taking action regarding guarantee bonds or penalties.

- C. The Proposer shall follow any and all anti-terrorism security procedures, guidelines, instructions, and regulations with respect to ingress into and egress from the work site, transportation and disposition of material that might be considered contraband as well as any emergency procedures. It is the Proposer's responsibility to make contingencies for the effect upon the scheduling and performance of their work of any and all such regulations and procedures. The cost of such contingencies shall be included in the Contract Price.

1.08 PARKING, STORAGE AND ACCESS TO WORK AREA

- A. The Contractor shall coordinate with the Owner for available parking, storage and access to the work area. In no event shall these areas interrupt or disturb the Owner's operations. The Contractor shall protect the stored equipment and material from the elements in such a manner as to be satisfactory to the manufacturer of the equipment or material and the Owner.
- B. Should questions of labor jurisdiction arise, this Proposer will immediately take steps to settle such disputes and will use such labor as may be determined to have jurisdiction, at no additional cost to the Owner. Should it fail to take expeditious action, it will be responsible for any time lost because of delays arising from such disputes.
- C. The Contract includes the cost of all standby trades and Owner Representative fees should Proposer work prior to or later than normal working hours and on Saturdays, Sundays and Holidays, if Proposer desires to work outside of normal working hours. That includes the additional cost for inspections by the engineer.
- D. As a State Agency, Proposer shall be aware that all BPCA projects require the employment of labor at prevailing wage rates. Outside State and Federal Agencies will closely monitor all projects.
- E. Contractor shall be responsible for providing all equipment required for unloading, installation, clean-up and hauling of debris. Contractor is to be aware that due to the spacing limitations of the surrounding area of work there is to be no staging of equipment on site, unless approved in the Contractor's Staging Plan.
- F. Contractor shall not use the site for staging of construction materials or equipment, unless approved in the Contractor's Staging Plan.
- G. Proposer shall not store any material or equipment on site unless directed by the Owner/Owner's Representative.

- H. Proposer shall not use the site for staging of installation materials or equipment except as approved by the Owner.

1.09 SUBCONTRACTORS

- A. A list of Subcontractors, pre-qualified by the Contractor, shall be submitted to the Owner by the Contractor with his proposal. The Owner has the ultimate right to accept or reject any one or more of the subcontractors, and must do so in writing after receipt of said list from the Contractor. No deviations shall be allowed from this list without written approval of the Owner. Valid insurance certificates for subcontractors shall be submitted by the Contractor to the Owner with his proposal.
- B. The Owner shall receive, upon completion of this Contract in full from the Contractor, any reduction in the Subcontractor's price, which may result from a reduced scope of the Contractor's work.

1.10 SITE CONDITIONS

- A. At the Contractor's expense, the Contractor's working areas shall be cleaned by him on a day-to-day basis, with all rubbish removed from the site and all work areas cleaned at the end of each day. At final completion of all work, the Contractor shall leave the entire premises, within the site of his operations, clean and free from the rubbish resulting from his construction operations.
- B. Each Proposer is responsible for progress cleaning of its own areas on a daily basis. All Proposers are responsible for consolidating any debris caused by their work. The proposer for General Construction (G) shall be responsible for cleanup of the entire site which includes removal of debris for ALL proposers on site on a daily basis. The proposer for General Construction (G) shall legally dispose consolidated debris off-site. Each Proposer is advised that failure to comply with cleaning requirements will result in backcharges and /or reductions in payments.
- C. Contractor shall perform site cleanup and removal of debris on a daily basis and broom clean all installation areas at completion of the day. Surplus equipment, parts & installation materials are to be removed by contractor upon completion of installation unless it is mutually agreed, in writing, from Owner or the Owner's Representative that this material can remain on site.
- D. Contractor shall be responsible for ice, snow and frost removal at site during construction in order to accommodate performance of work.
- E. The Proposer shall take special care to provide for temporary damage protection for any and all existing conditions to remain in proximity to the work area. The protection shall remain in place while performing the work shown or described herein or elsewhere in the Contract Documents. Any damage to existing conditions to remain as a result of work by the Proposer

shall be repaired or replaced to the satisfaction of the Owner and at no cost to the Owner.

1.11 COMPENSATION

- A. Compensation shall be based upon the Owner-accepted Schedule of Values and authorized Change Orders thereto.
- B. Contractor shall provide interim As-Built documents in PDF format and a hard copy with each application for payment. These will be incorporated into the final As-Built documentation.
- C. Requisitions for this project shall be due to the Owner's Representative by the 5th of every month as a "pencil copy". The final signed and sealed requisition is then due to the owner by the 15th of every month in the format specified in the Owner's contract.

1.12 UTILITIES

The Contractor is responsible to provide and maintain any and all utilities he deems necessary to affect the Work. Should existing site utilities be made available for the Contractor's use by the Owner, it is the responsibility of the Proposer to verify the suitability of existing site utilities for their needs. The Contractor may use such provided utilities at his own risk. Damages shall be the sole responsibility of the Contractor and repairs shall be made immediately at no additional cost to the Owner.

1.13 FIRE PROTECTION

The Contractor shall provide and maintain at his expense all required fire protection systems and devices as necessary to safely perform the Work in accord with the applicable regulations. They shall be operational throughout the period of construction. The Contractor shall also maintain sufficient means for fire and emergency rescue vehicles to access the site.

1.14 COMPLIANCE WITH CONTRACT

The Owner shall have the right to withhold without penalty any payment described above, or sections referenced herein, for completed work should the Contractor fail to meet any obligations or requirements of the Contract, cause damage to the existing site, structures or facilities, or violate a condition of the Permits. Any withheld payment shall be promptly made upon the Contractor's full compliance with the Contract, or resolution of impending fines or damage claims.

1.15 ENVIRONMENTAL PROTECTION

The Contractor shall comply with all local, state, and federal requirements for protection of:

- A. The environment during the Work. No later than fifteen (15) days following award of contract and at least ten (10) days prior to mobilization to the site, Contractor shall submit a comprehensive plan describing the means and methods to be employed for protection, containment, and clean up. Contractor shall ensure that personnel are properly trained and that sufficient equipment and materials are readily available for use if required. Contractor shall abide by state and federal spill-reporting requirements. Clean-up required as a result of Contractor negligence shall be the sole responsibility of the Contractor at no additional cost to the Owner.
- B. The work by the Contractor shall conform to the applicable section of the New York City Noise Code regarding the sound level standards and the time and duration of construction activities.

1.16 TEMPORARY WORK

Labor, equipment, materials, and services required to perform the Work that, upon completion, are not a part of the Work, shall be furnished, installed, and subsequently removed from the site by the Contractor.

1.17 SAFETY PLAN

No later than ten (10) days following award of Contract and at least ten (10) days prior to mobilization to the site, Contractor shall submit two (2) copies of his project-specific Safety Plan by the Owner.

1.18 MATERIAL SAFETY DATA SHEETS

No later than ten (10) days following award of contract and at least ten (10) days prior to mobilization to the site, Contractor shall submit two (2) three-ring bound sets of all Material Safety Data Sheets (MSDS) for materials anticipated for use in execution of the Work. As the Work progresses and new materials are used on the project, Contractor shall submit two (2) copies of the corresponding MSDS's for these new materials no later than the time of arrival of the materials on site. ALL MSDS sheets regarding materials used in the execution of the Work shall be up-to-date and stored in the Contractor's onsite job trailer or office.

1.19 WORK SCHEDULE REQUIREMENTS

Access to the site and acceptable working hours are to be determined by the Owner, specified prior to the commencement of Work, and strictly adhered to

throughout contract Work. Work shall be in compliance with local noise restriction ordinances.

1.20 ENGINEERING SERVICES CHARGEABLE TO THE CONTRACTOR

The Owner reserves the right to charge the Contractor for additional engineering and inspection services if required, including, but not limited to, Contractor's actions or inactions, delays, quality assurance failures, re-work, etc.

1.21 CONTRACTOR'S REPRESENTATIVE

The Contractor shall assign an individual to be the single point of contact for all job-related correspondence and issues. This individual shall be assigned to the project from start to finish, and shall not be replaced without permission from the Owner whose permission should not be unreasonably withheld. This individual shall be responsible to disseminate information to other members of the Contractor's staff and to applicable subcontractors as necessary. This individual shall be the Contractor's designated representative at the site, and shall be authorized to conclude all matters, financial and otherwise, on the Contractor's behalf. The Contractor's Representative shall attend all project meetings and shall be on site at all times while the Contractor or his Subcontractors are present on site.

1.22 MEANS AND METHODS

The furnishing of this work is solely the responsibility of the Contractor. Review of construction by the Engineer of Record is for general conformance with the Contract Documents only. Lack of comment by the Owner and Owner's Representative with regard to construction procedures shall not be interpreted as approval or acceptance of any such procedures.

1.23 PRECEDENCE

It is expressly understood and agreed that failure by the Owner or Owner's Representative to exercise his authority or prerogative to order the Contractor for any duly authorized purpose shall not be considered to set a precedent for any other activities.

1.24 SAFETY OF PERSONS AND PROPERTY

The Contractor is solely responsible for the safety of his operations. The Contractor shall take precautions for the safety of, and shall provide protection to prevent damage, injury or loss to:

A. Persons employed by the Contractor in performance of the Work, and persons

nearby that may be affected by the Contractor's operations or the Work;

- B. The Work, including all equipment and materials which will be incorporated in the Work;
- C. Other properties and structures at the site, or on adjacent properties.

1.25 UNCOVERING WORK

The Contractor shall notify the Owner's Representative prior to covering any Work. The Contractor shall not proceed to cover the Work until formal approval from the Owner's Representative is provided in writing. If any Work is covered prior to acceptance by the Owner or Owner's Representative, the Work shall, if requested by the Owner, be uncovered for the Owner's observation and then be re-covered at the Contractor's sole cost and expense.

1.26 DAILY CONSTRUCTION REPORTS

For each day that Work is performed at the site, the Contractor shall prepare and submit a Daily Construction Report to the Owner's Representative. Contractor shall include the following information in the report, as a minimum:

- A. Project name
- B. Contractor name
- C. Date
- D. Hours worked
- E. Weather conditions
- F. Subcontractors working on site
- G. Material deliveries (material, quantity, and vendor)
- H. Trades working on site (trade and number of workers per trade)
- I. Equipment on site (manufacturer and model number, with notation of whether the equipment was idle or was used in the Work)
- J. Specific work performed, location and type of work
- K. Visitors to the site

L. Materials or equipment leaving the site (including debris removal)

M. Incident descriptions

N. Contractor shall submit reports no later than 12 hours for the previous day's work.

1.27 MONITORING OF EXISTING STRUCTURES DURING CONSTRUCTION

The Owner reserves the right to establish an independent monitoring program in order to evaluate the effect of the Work on the existing structures to remain on site. Such monitoring may include, but is not necessarily limited to, settlement gauges, tilt plates, and crack gauges.

The Owner reserves the right to suspend the Contractor's operations at any time based upon the monitoring data.

1.28 EXCAVATED MATERIAL

Not Used

1.29 ENGINEERING REVIEW AND SPECIAL INSPECTION

At key stages throughout the Work, engineering inspections are required to ensure the Work is being performed in accordance with the Contract Documents. These inspections will be performed by a Special Inspector, as selected by the Owner's Representative at the discretion of the Owner. The final acceptance of the Work will be performed by the Engineer of Record. The key stages are specific to each repair type. Additional pre and post inspection criteria may be required at the discretion of the Special Inspector, Engineer of Record.

1.30 EQUIPMENT

Proposers shall use ultra-low sulfur diesel fuel or compressed natural gas (CNG) for all construction vehicles with a carrying capacity in excess of 5 tons and for all portable generators, consistent with Local Law 77 for Lower Manhattan. All diesel engines of greater than 50 horsepower must use ultra-low sulfur diesel fuel with a sulfur content no greater than 15 ppm. Equip the above vehicles with high performance engines and diesel oxidation catalyst (DOC) filters or another previously demonstrated advanced retrofit technology, consistent with NYC Local Law 77 for Lower Manhattan. On-road vehicles used in construction may not idle for more than five consecutive minutes except under practical considerations such as during vehicle maintenance, while stopped in traffic, and in cold weather conditions below 25 degrees F.

END OF SECTION 00 00 05

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work as described herein, and shown on the Construction Drawings.

1.02 EXAMINATION OF DOCUMENTS AND SITE OF WORK

The Proposer acknowledges the following:

- A. The Proposer has reviewed and examined the Proposal Documents to the degree which he is satisfied that the Proposal submitted includes the cost to perform the Work as set forth in the proposed Contract Documents.
- B. The Proposer has informed himself of the existing conditions and limitations under which the Work is to be performed and that the Proposal submitted includes the cost to account for these existing conditions and limitations.
- C. The Proposer acknowledges that any substructure and subsurface condition information provided with the Proposal Documents is for information only.
- D. The Proposer is permitted to perform his own investigation solely for purposes of development of a Proposal. Any site investigation that the Proposer performs, including subsurface, hydrographic, above or below water, or any other non-destructive or destructive testing, shall be documented by the Proposer at the time of the investigation. Results of any investigation performed by the Proposer, which is not representative in the Proposal Documents, and which impact the Proposal, shall be submitted with the Proposal. This information shall be kept confidential during the Contractor selection process.
- E. Proposers are permitted to perform investigations at the site by appointment prior to submitting a proposal. Appointment requests shall be in writing and shall be made through the Owner's Representative at least seventy-two hours prior to the intended time of visit. The Proposer shall provide all required insurance and forms to the Owner's Representative and receive authorization prior to performing any investigation.

1.03 PROOF OF COMPETENCY OF PROPOSER

A Proposer may be required to furnish evidence satisfactory to the Owner that he and his proposed subcontractors have sufficient means and experience in the types of work called for to assure completion of the Contract in a satisfactory manner. Such evidence includes representative project information, similar to the scope and magnitude of this project, consisting of references, contract value, and other pertinent information.

1.04 EXECUTION OF AGREEMENT

A. Certificates of Insurance shall be approved by the Owner before the successful Proposer may proceed with the Work. Failure or refusal to provide Certificates of Insurance in a form satisfactory to the Owner shall subject the successful Proposer to loss of time from the allowable construction period equal to the time of delay in furnishing the required material.

B. Certificates of Insurance shall name, at a minimum, the Owner, Owner's Representative and Consulting Engineer as additional insured parties.

1.05 INTERPRETATION OF CONTRACT DOCUMENTS PRIOR TO PROPOSING

A. If any person contemplating submitting a Proposal for construction of the Work is in doubt as to the true meaning of any part of the proposed Contract Documents, or finds discrepancies in or omissions from any part of the proposed Contract Documents, he must submit to the Owner's Representative, with copy to the Owner, a written request for interpretation thereof by not later than seven (7) days prior to the Proposal due date. The person submitting the request shall be responsible for its prompt delivery.

B. Interpretation or correction of Contract Documents will be made only by Addendum and will be mailed or delivered to each Proposer of Record. The Owner and Owner's Representative will not be responsible for any other explanations or interpretations of the Contract Documents.

1.06 PRE-PROPOSAL CONFERENCE AND JOB SITE WALKTHROUGH

A Pre-Proposal Conference will be held at the site for the purpose of considering questions posed by Proposers and for the purpose of holding a walkthrough of the project site.

Proposers are expected to provide written confirmation of attendance to the

Owner's Representative at least two (2) days prior to the Pre-Proposal Conference.

Clarifications, corrections, and changes, made as a result of the Pre-Proposal Conference, shall be made by Addendum only. The Proposer shall not construe statements made during the Pre-Proposal Conference, by the Owner, the Owner's Representative (Engineer), as a change of terms or conditions of the Proposal Documents.

1.07 CONSTRUCTION TIME

The Contractor shall commence and perform the Work expeditiously in accordance with the Contractor's construction schedule with adequate, trained forces and shall achieve substantial completion and final completion within the times stated within the schedule.

Within the Form of Proposal, provide the total number of days which the Proposer proposes to complete the Work. The schedule is to commence with issuance of the Owner's Executed Contract.

1.08 BASE BID

Base Bid provided shall be complete, including all mark-up, and shall include all appropriate overheads, profit, and cost of labor, materials, equipment, required permits to perform the Work and costs associated with services necessary to complete this work in accordance with the Contract Documents.

For Work to be performed on a unit price based on linear footage, or as specifically directed by the Owner, the estimated quantities are not guaranteed and are solely for the purpose of comparison of proposals and determining an initial Contract price.

Payment for unit price work shall be based upon the total quantity completed and accepted by the Owner.

A. SPECIAL CONDITIONS

The Proposer acknowledges and shall include the cost for the following in the Proposal:

1. Quantities for each Typical repair item are estimates based on limited field visits and lack of access to the entire structure. The contractor is responsible for satisfying themselves of the existing conditions to provide a complete job, regardless of the lack of data presented herein.

1.09 GENERAL CONDITIONS

The Contractor shall commence and perform the Work expeditiously in accordance with the Contractor's construction schedule with adequate, trained forces and shall achieve substantial completion and final completion within the times stated within the schedule.

Within the Form of Proposal, provide the total number of days which the Proposer proposes to complete the Work. The schedule is to commence with issuance of the Owner's Executed contract.

1.10 EXISTING WORK

- A. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work that remains.
- B. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the Owner. At the completion of operations, existing work shall be in a condition equal to or better than that which existed before new work started.

1.11 QUALITY ASSURANCE

- A. Use adequate number of skilled work personnel who are thoroughly trained and experienced in the necessary trades, and familiar with the specified requirements and methods required for proper performance of the work outlined in this specification.
- B. The Contractor shall coordinate the work to ensure no conflicts occur to compromise the timely completion of all work specified.

1.12 WORKING CONDITIONS

- A. The Contractor is responsible for any precautions and scheduling necessary in order to maintain this status. Work may begin only after a schedule representing an acceptable plan is approved by the Owner.
- B. The Contractor shall coordinate day-to-day activities with the Owner. All conflicts will be resolved by the Owner's representative.

1.13 WORKING HOURS

The Contractor is permitted to perform construction work between the hours of 7:00 AM and 4:30 PM Mondays through Fridays, excluding Saturdays, Sundays, and Federal Holidays. Work performed at any other time other than these periods will only be allowed pending approval of the Owner, following a 48 hour advanced request (72 hour for Sundays and Holidays) a DOB after hours work permit, and approval from BPCA. .

1.14 AVAILABILITY OF UTILITIES

- A. Electrical: The Contractor shall provide its own electrical power and equipment. OSHA requirements will govern the use of such utility.
- B. Water: The Contractor will be responsible for supplying its own water and equipment, including all hoses, adapters and backflow preventer as required.
- C. Sanitary Facilities: The Contractor shall be responsible for furnishing and maintaining temporary toilet facilities for their employees, and for the Owner's Engineer.
- D. The Contractor is responsible for the cost of all utilities.

1.15 EQUIPMENT

The Contractor shall supply all equipment necessary to perform all work, including but not limited to cleaning materials, ladders, etc.

1.16 RECEIPT OF MATERIALS

Shipments of equipment, materials, and supplies shall be addressed to the Contractor, not the Owner. The Contractor shall provide all equipment, materials and labor for off-loading. The Owner will not accept shipments for the Contractor.

1.17 STORAGE OF MATERIALS

Contractor's materials may be stored on site at a location that is approved by the Owner.

1.18 EXISTING MATERIALS

The Owner shall have the opportunity to salvage all materials removed prior to disposal by Contractor.

1.19 SITE OFFICE FACILITIES AND STORAGE SHED

A. The Contractor shall be required to provide at his own cost and expense one enclosure at a location to be determined by the Owner. Install and connect all utility services to said enclosure within five (5) days of start of work.

B. The enclosure shall be for the express use of the Resident Engineer.

C. Temporary Electrical Services:

1. Electrical work required for the enclosure will be furnished and maintained under this contract.
2. The Contractor shall furnish, install and maintain a temporary electric feeder to the Resident Engineer's enclosure immediately upon its placement at the job site.
3. The temporary electric feeder shall be at least 3 No. 6 THW wire and shall be protected by a 60 ampere fused safety switch, complying with codes and utility requirements having jurisdiction.
4. Make all arrangements and pay all costs to provide electric service.
5. Pay all costs for current consumed and for maintaining system in operating condition, including furnishing of necessary bulb replacements, lamps, etc., for thirty (30) days after date of substantial completion acceptance.
6. All repair work due to these removals shall be the responsibility of the Contractor.

D. Maintenance:

1. The Contractor shall provide and pay all costs for heat and fuel, and regular daily janitor service. Furnish toilet paper, cloth towels, soap, and maintain the field office in first-class condition, including all repairs, until 30 days after

the date of substantial completion acceptance.

2. Upon final acceptance of all work under the contract, unless sooner directed, the Contractor shall have all services disconnected and capped to the satisfaction of the Resident Engineer.

E. Permits

The Contractor shall make the necessary arrangements for, and obtain all permits required for this work.

- F. The Contractor shall provide his own storage. No equipment or materials storage will be provided by the Owner.

1.20 POWER OUTAGE

Needed power outages shall be arranged only with prior approval from the Owner, with duration and affected areas held to a minimum.

1.21 FINAL INSPECTION

Final Inspection will not be made until all work under the contract is complete. The Contractor shall notify the Owner in writing 48 hours prior to the date on which the project will be ready for final inspection.

1.22 DUMPING AREA

- A. All discarded material shall be removed from the Owner's property and disposed of in an approved site complying with Local, State, and Federal regulations. Certified weight tickets shall be supplied to the Owner within 15 days of the date of the weight ticket for all trash and construction debris disposed. All dumpsters/containers shall be supplied by the Contractor. The contractor shall provide appropriate signs or covers to prevent use by Tenants.
- B. No material shall be washed or swept out of equipment or vehicles (including concrete from chutes of trucks, loose debris, etc.) onto Owner property or in the water. Any material spilled from Contractor furnished dumpsters/containers shall be immediately cleaned up by the Contractor.

1.23 RECYCLABLES

The Contractor shall recycle or reuse all material designated as recyclable or prohibited from landfilling. Definitions for recyclables and landfill prohibited material can be obtained from the contracted trash hauler. Certified weight tickets shall be supplied to the Owner within 15 days of the date of removal from the facility for all material recycled or reused, and for landfill prohibited materials.

1.24 AS-BUILT DRAWINGS

- A. The Owner will furnish one complete set of black and white prints of all drawings which shall be used to indicate any changes from the contract set. Each sheet shall be marked "AS-BUILT DRAWINGS" in red pencil, and all changes or modifications shall be noted thereon by the Contractor.
- B. Changes shall be noted during the construction process for all trades.
- C. Keep "AS-BUILT DRAWINGS" current. Do not permanently conceal any work until the required information has been accurately recorded.
- D. Use colored pencils or pens for graphic work conforming to the following color code:
 - Red - Architectural and Structural Work
 - Green - Electrical Work
 - Use blue pen for written work
- E. Submit a complete set of "AS-BUILT DRAWINGS" to the Owner when all work has been completed, or as directed.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01110

SECTION 01 14 00

WORK RESTRICTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to this section.

1.02 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
 - 1. Limits: Confine construction operations to those areas delineated as included in the Construction Documents.
 - 2. Owner Occupancy: Allow for Owner occupancy of portions of the site and for use by the public at any and all times during the life of the contract. The Owner reserves the right to maintain and provide full public access to the Site within the contract limits at any time during the entire life of the contract. Contractor will be responsible for securing and maintaining temporary construction fencing as necessary to achieve and maintain this access.
 - 3. Contractor shall, throughout the life of the contract, maintain clear access to all areas of the pier to personnel of Battery Park City Authority (Owner) for maintenance and repair operations. Specifically, the Owner and/or its agents shall be unencumbered from performing all required maintenance operations for all areas adjacent to and within the contract limits.
 - 4. Construction Gates / Entrances: Keep all construction gates / entrances, if required, serving the premises clean, clear and available to the Owner, Owner's employees, emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of construction gates and entrances.
 - b. Schedule deliveries to coordinate with other contractor's gaining access to the site.

- c. Provide flag-person services for all deliveries into and out of the site so as to protect the public.
 - d. Secure all construction entrances and gates to the site at all times.
 - e. Provide durable signage limiting public access to the construction site at all construction gate / entrances as directed by the Construction Manager.
 - f. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Use of Existing Site: Maintain existing site throughout the construction period. Repair damage caused by construction operations.

1.03 OCCUPANCY REQUIREMENTS

- A. Partial Owner Occupancy: Owner may occupy portions of the site during the construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION 011400

SECTION 01 31 00

PROJECT MANAGEMENT & COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to this section.

1.02 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Conservation.
 - 3. Coordination Drawings.
 - 4. Administrative and supervisory personnel.
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 – Section “Construction Progress Documentation” for preparing and submitting the Contractor’s Construction Schedule.
 - 2. Division 1 – Section “Submittal Procedures” for means and methods of submitting product data, shop drawings, and construction operations to perform the Contract Work.

1.03 COORDINATION

- A. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where performance of one part of the Work depends on performance of other components, before or after its own completion.
 2. Coordinate performance of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later Contract Work.
 4. Provide detailed written construction work plans within 5 days of award in a format and containing information as requested by the Construction Manager.
- B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
 2. Preparation of the Schedule of Values for payment of completed work.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Pre-installation conferences.
 7. Project closeout activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.

1.04 SUBMITTALS

- A. Coordination Drawings / Work Plans: Prepare Coordination Drawings and/or detailed work plans where careful coordination is needed for performance of repair by separate entities and/or as requested by the Owner. Prepare coordination drawings and/or work plans where limited space availability necessitates utilization of space for efficient installation of different components.
 - 1. Indicate relationship of components shown on separate Shop Drawings and/or work plans.
 - 2. Indicate required installation sequences.
- B. Staff Names: Within 5 days of award, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone.

1.05 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide the resumes of other administrative and supervisory personnel as required for proper performance of the Work, including but not limited to.
 - 1. Project Manager
 - 2. Project superintendent
 - 3. Site Safety Representative
 - 4. Staff Engineer

1.06 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner of scheduled meeting dates and times.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and the Engineer, within 5 days of the meeting.
- B. Pre-construction Conference: Schedule a pre-construction conference before starting construction, at a time convenient to Owner but no later than 5 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendents; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Designation of responsible personnel.
 - c. Procedures for processing field decisions and Change Orders.
 - d. Procedures for processing Applications for Payment.
 - e. Distribution of the Contract Documents.
 - f. Submittal procedures.
 - g. Preparation of Record Documents.
 - h. Use of the premises.
 - i. Responsibility for temporary facilities and controls.
 - j. Parking availability.
 - k. Office, work, and storage areas.
 - l. Equipment deliveries and priorities.
 - m. Testing and inspection requirements.
 - n. Required performance results.
 - o. Protection of construction personnel.
 - p. First aid.
 - q. Security.
 - r. Progress cleaning.
 - s. Working hours.
 3. Record significant conference discussions, agreements, and disagreements.

4. Do not proceed with performance of Contract Work if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- C. Progress Meetings: Conduct progress meetings as necessary, but bi-weekly at a minimum. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Review present and future needs of each entity present, including the following:
 1. Interface requirements.
 2. Sequence of operations.
 3. Status of submittals.
 4. Deliveries.
 5. Off-site fabrication.
 6. Access.
 7. Site utilization.
 8. Temporary facilities and controls.
 9. Work hours.
 10. Hazards and risks.
 11. Quality and work standards.

12. Change Orders.
 13. Documentation of information for payment requests.
3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- D. Coordination Meetings: Conduct Project coordination meetings as needed. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and pre-installation conferences.
1. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract time.
 - b. Schedule Updating: Revise Combined Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report for each meeting.

- c. Review present and future needs of each contractor present, including the following:
 1. Interface requirements.
 2. Sequence of operations.
 3. Status of submittals.
 4. Deliveries.
 5. Off-site fabrication.
 6. Access.
 7. Site utilization.
 8. Temporary facilities and controls.
 9. Work hours.
 10. Hazards and risks.
 11. Quality and work standards.
 12. Change Orders.
3. Reporting: Record meeting results and distribute copies within two (2) days to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 – PRODUCTS

Not used.

PART III – EXECUTION

Not used.

END OF SECTION 013100

SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Specification section 013300, submittal procedures.

1.02 SUBMITTALS

The Contractor shall submit the following to the Approving Authority in accordance with Section entitled "Submittal Procedures, Section 013300."

- A. Schedules
 - 1. Construction schedule
 - 2. Material delivery schedule

1.03 CONSTRUCTION SCHEDULE

Within 5 days after receipt of the Notice of Award, prepare and submit to the Owner's representative for approval a Critical Path Method (CPM) Schedule.

1.04 MATERIAL DELIVERY SCHEDULE

- A. Initial Schedule

Within 10 calendar days after approval of the proposed construction schedule, submit for Owner's representative approval a schedule showing procurement plans for materials and equipment. Submit in the format and content as prescribed by the Owner's representative, and include as a minimum the following information:

- 1. Description.
- 2. Date of the purchase order.
- 3. Promised shipping date.
- 4. Name of the manufacturer or supplier.

5. Date delivery is expected.
6. Date the material or equipment is required, according to the current construction schedule.

1.05 NETWORK ANALYSIS SYSTEM (NAS)

- A. As an alternative to the critical path method (CPM) schedule, the Contractor may use, subject to the approval of the Owner's Representative, some other computer generated network analysis system affording similar and equal information and control to that provided by the CPM.
- B. The schedule shall have a minimum of 15 activities and a maximum of 200 activities. The schedule shall identify as a minimum:
 1. Construction time for all major systems and components;
 2. Manpower requirements for each activity;
 3. Major submittals and submittal processing time; and
 4. Major material and equipment lead time.
- C. CPM Submittals and Procedures

Submit all network analysis and updates electronically via e-mail. The network analysis system shall be submitted in Microsoft Project 2010. The network analysis system shall be kept current, with changes made to reflect the actual progress and status of the construction.

1.06 UPDATED SCHEDULES

Update the construction schedule and material delivery schedule at monthly intervals to correspond to payment applications or when schedule has been revised. Reflect any changes occurring since the last update. Submit copies of the purchase orders and confirmation of the delivery dates as directed by the Owner's representative.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION 013200

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.02 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer and Construction Manager's responsive action.
- B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements.

1.03 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and Construction Manager and additional time for handling and reviewing submittals required by those corrections.

1.04 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
- B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt

of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 10 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 5 working days for review of each resubmittal.
- C. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Engineer and Construction Manager.
 4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Engineer.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Name of firm or entity that prepared submittal.
 - g. Names of subcontractor, manufacturer, and supplier.
 - h. Category and type of submittal.
 - i. Submittal purpose and description.
 - j. Specification Section number and title.
 - k. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - l. Drawing number and detail references, as appropriate.
 - m. Location(s) where product is to be installed, as appropriate.
 - n. Related physical samples submitted directly.
 - o. Indication of full or partial submittal.
 - p. Transmittal number, numbered consecutively.

- q. Submittal and transmittal distribution record.
 - r. Other necessary identification.
 - s. Remarks.
- D. Deviations: Identify deviations from the Contract Documents on submittals.
- E. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Engineer and Construction Manager's action stamp.
- F. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- G. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer and Construction Manager's action stamp.

PART 2 - PRODUCTS

2.01 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements:
- 1. Submit electronic submittals via email as PDF electronic files.
 - a. Engineer, through Construction Manager, will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 - 2. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 - 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
- D. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements,

submit a notarized certification from the manufacturer certifying compliance with specified requirements.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer and Construction Manager.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02 ENGINEER AND CONSTRUCTION MANAGER'S ACTION

- A. General: Engineer and Construction Manager will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Engineer and Construction Manager will review each submittal, make marks to indicate corrections or revisions required, and return it. Engineer and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
 - 1. Submission is in general conformance with design concept: When the Engineer of Record marks the submittal "Submission is in general conformance with design concept"; the Work covered by the submittal may proceed, provided it complies with the requirements of the Contract Documents. Final payment depends on that compliance.
 - 2. Submission is in general conformance with design concept, except as noted: When the Engineer of Record marks the submittal "Submission is in general conformance with design concept, except as noted", the Work covered by the submittal may proceed provided it complies with the notations on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
 - 3. Revise and Resubmit: When the Engineer of Record marks the submittal "Revise and Resubmit", the Work covered by the submittal may proceed provided it complies with the notations on the submittal and requirements

of the Contract Documents. The submittal must be revised to comply with the notations on the submittal and requirements of the Contract Documents, and must then resubmit to the Engineer of Record. Final payment depends on that compliance.

4. Submission is rejected for non-conformance with design concept: When the Engineer of Record marks the submittal "Submission is rejected for non-conformance with design concept", do not proceed with the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise and prepare a new submittal according to the notations, resubmit without delay. Repeat if necessary to obtain a different action mark.
- C. Informational Submittals: Engineer and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements Construction Manager will forward each submittal to appropriate party.
 - D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
 - E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.
 - F. The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Owner's Representative or Engineer's approval of shop drawings, product data, or material samples.

END OF SECTION 013300

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SECTION 01 36 10
TURBIDITY CURTAINS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies requirements for Turbidity Curtains. These requirements establish minimum standards and material requirements for the performance of the work. The Contractor is responsible for the design, furnishing, fabrication, and installation of the Turbidity Curtains. Additional specifications include:

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

- A. New York State Department of Environmental Conservation Standards and Specifications for Erosion and Sediment Control.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Quality Assurance

1. The Contractor shall submit certification from the manufacturer that all Turbidity Curtains were fabricated, inspected, and shipped in accordance with the manufacturer's requirements.
2. The Contractor shall maintain a quality control program to assure that all installations conform to the requirements of the Contract Drawings, Specifications, field inspection, and testing.
3. The manufacturer of Turbidity Curtains shall have been in business of manufacturing Heavy Duty Turbidity Curtains for at least 10 years and shall show proof of three installations each having been in service for at least 1 year.

B. Job Conditions

1. The Contractor is responsible for taking field measurements as required for correct fit. In the event discrepancies are found, the Contractor is responsible for contacting the Engineer immediately.

2. The Contractor is responsible for maintaining the Turbidity Curtains, anchors, anchor lines, buoys, and surroundings as recommended by the manufacturer.

1.04 SUBMITTALS

Submit the following in accordance with the requirements of “Submittal Procedures” of Division 1 – GENERAL REQUIREMENTS.

- A. Product Data – manufacturer’s data showing materials, fabrication, installation instructions, and recommendations.
- B. Shop Drawings and catalog cuts indicating material and dimensions.
- C. Field measurements.
- D. Layout Plan – including proposed materials, dimensioned drawings, and installation procedure.
- E. Certified test report or certificate of conformance or compliance furnished by the manufacturer’s testing laboratory or independent testing agency attesting that each product or material furnished under this specification meets the requirements herein.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Turbidity Curtains shall meet the following requirements:
 1. The visible portion shall be a bright color (safety orange recommended) that will attract the attention of nearby boaters.
 2. The fabric, connections, cables, and anchors must be of sufficient strength to resist the load imparted by a 3 knot current acting perpendicular to the boom.
 3. Sufficient buoyancy must be provided to support the boom and generate a continuous minimum freeboard of 6 inches.
 4. Load cables shall be fabricated into the top and bottom hem of every boom. The cables shall be vinyl coated steel and possess an ultimate capacity of 10,000 pounds. The lower cable shall support ballast of sufficient quantity as to maintain a vertical boom position.

5. Bottom anchors shall be placed fore and aft to resist ebb and flood currents. Bottom anchors must be sufficient to hold the boom in the same position relative to the bottom of the watercourse without interfering with the action of the boom. The anchors shall be attached to a floating anchor buoy. The manufacturer's specifications shall be followed when choosing anchor points on the boom.
6. The boom should have a height that is greater than 20% the depth of water. This will allow for fluctuations in water level.
7. If water depths allow, the toe of the boom may be anchored by means of staking.

2.02 ACCESSORIES

- A. Steel shall conform to ASTM A36 or stronger.

2.03 FABRICATION

- A. All Turbidity Curtains shall be fabricated in strict accordance with manufacturer's specifications.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's recommendations and instructions.
- B. Take care to protect the boom from abrasion, tearing, and puncture.
- C. Install Work in accordance with approved shop drawings.
- D. Shallow installations can be made by securing boom with stakes instead of floatation system.
- E. Turbidity Curtains are not to be used **across** flowing waterways.

3.02 PROTECTION

- A. Protect and maintain protection of completed Work to ensure that the Work is undamaged at the time of delivery

END OF SECTION 01 36 10

SECTION 02 41 16
MARINE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Work of this Section includes, but is not necessarily limited to providing all labor, materials, and equipment necessary for the following:
 - 1. Remove indicated elements or portions thereof of:
 - a. Timber formwork
 - b. Timber piles
 - c. Timber debris
 - d. Timber associated metal hardware
 - e. RPL fender
 - 2. Removal of any item which, in the judgment of the Construction Manager/Resident Engineer is likely to become a drift source including, but not limited to, flotsam and jetsam or other materials lodged within the structure.
 - 3. Removal of river bottom and underwater debris, materials, and timbers:
 - a. within limits indicated on the Contract Drawings
 - b. interfering with installation of new work of other Section(s)
 - 4. Disconnecting, capping or sealing, and removing site utilities.
 - 5. Protecting existing work to remain and repair in-kind of any damage to existing structures to remain resulting from Contractor's operations

at no additional cost to the Owner.

6. Legal disposal off-site of all removed items and demolished construction materials, garbage, cuttings, and miscellaneous materials. Dispose of removed items and material not otherwise indicated to be salvaged and delivered to Owner.
7. Other work as and where indicated incidental to repairs shown on the Contract Drawings and Specifications, as necessary.

B. Related Sections include the following:

1. Section 01 36 10 – Turbidity Curtain

1.03 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or recycled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner at specified location per the Contract Documents.
- C. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or recycled.

1.04 SUBMITTALS

- A. General: Refer to and comply with “Submittal Procedures”, for procedures and additional submittal criteria.
- B. Qualifications: For firms and persons specified in Article 1.06, “QUALITY ASSURANCE” to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, and other information specified.
- C. Work Plans and Schedules:
 1. Procedures and Operations: Submit for approval prior to start of any removal or demolition work to show coordination and conditions with respect to each area of work. Do not proceed with the demolition and removal work until written approval of the following submittals has been received:

- a. Photographs and descriptive narrative of project site, surrounding properties, and structures, including existing items to remain during construction. Photographs and narrative shall be filled with engineer of record for approval. Photographs shall be taken from different vantage points to adequately document the existing conditions. Submit image files within three days of taking photographs.
 - 1) Digital Camera: Minimum sensor resolution of 8 megapixels.
 - 2) Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped.
 - 3) Photo Identification: Photograph shall be named using the calendar date and a sequential numerical identifier in the following format: YYYYMMDD_001.JPEG.
 - 4) Key Plan: The contractor shall provide a key plan depicting the vantage point of each photo keyed to its unique identifier.
 - 5) Narrative Report: The contractor shall provide a narrative report providing descriptions for each photograph. The report shall include the following information:
 - a. Name of the Project
 - b. Name of the contractor
 - c. Photo Description: including the following information:
 - i. Image filename
 - ii. Description of vantage point, indicating location, direction (by compass point), elevation, and existing conditions documented in the photo.
 - b. Demolition and Protection Plan: Submit work plans that indicate areas of demolition and removal, that are related to locations and details of proposed protections and controls and describe the various equipment types and construction aids to be used for work and disposal of debris.
2. Method of control and recovery of drift in the event items or material travel beyond the boundaries of the debris control boom.
 3. Protection of existing structures. Include a written description supported by sketches, drawings, and specific materials and equipment to be used for protection.

4. Sedimentation, erosion control methods and procedures and dust control plan covering all demolition and removal work.
 5. Planned methods and sequences for controlled demolition, including the locations of proposed saw cutting and schedules indicating proposed sequence of operations for selective demolition. Include coordination for shutoff, capping, and continuation of utility services, as required.
 6. Details and descriptions of temporary sheeting, shoring, scaffolds, working platforms, barges, ramps, gangways, access ways, floating booms, float stages with curbs, netting, and equipment for collection of demolition debris, removal work and disposal of debris.
 7. Options if proposed measures are later determined by Construction Manager to be inadequate.
- D. Product Data: Include with work plans a description and manufacturer's catalogue cuts of proposed silt and debris control booms.
- E. Data submitted for Information and Reference
1. Copies of permits necessary to transport materials for disposal off site.
 2. Permits for and location of legal disposal sites for waste materials of this Project with documentation of legal status for type of disposal material.

1.05 REFERENCES AND STANDARDS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. American National Standards Institute/American Society of Safety Engineers (ANSI/ASSE):
1. ANSI/ASSE A 10.6 – Safety Requirements for Demolition Operations.
 2. ANSI/ASSE A 10.11 – Safety Requirements for Safety Nets

1.06 QUALITY ASSURANCE

- A. Qualifications: Work of this Section shall be by an experienced firm that has specialized in demolition work similar in conditions, material, and extent to that indicated for this Project.
 - 1. Demolition and removal work shall be performed by competent workmen experienced in this kind of work, and carried through to completion with due regard to the safety of the public, the Owner, the Construction Manager, the Engineer, any visitors, and the employees of the Contractor and subcontractors, and with as little nuisance as possible.
 - 2. All members of the project team including all subcontractors shall have a minimum of three (3) years of previous experience in demolition in a marine environment comparable to the work of this project.
- B. Pre-demolition Conference: Conduct conference at Project site. Review methods and procedures related to demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be demolished.
 - 2. Review structural load limitations of existing structures.
 - 3. Review and finalize protection requirements.
- C. Damage to Existing Work Not to be Removed: Do not disturb or damage items to remain in any way except where specifically required by the Contract in order to accomplish the removals. If disturbance or damage occurs to work to remain or be salvaged, promptly repair, and restore or replace the damaged items at no additional cost to the Owner to the satisfaction of the Construction Manager.
- D. Regulatory and Safety Requirements:
 - 1. The Contractor, his employees, and subcontractors shall become familiar with and obey all governing regulations, including fire, traffic, environmental, and security regulations. All personnel employed on the project shall keep within the limits of the work (and avenues of ingress and egress), and shall not enter other areas unless required to do so, and authorization is obtained for such entry. The Contractor's equipment shall be conspicuously marked for identification.

2. Floating equipment, mooring conditions, and temporary anchorages of marine equipment and demolition transport barges shall comply with requirements and regulations of governing authorities.
 - a. Operate floating equipment in compliance with U.S. Department of Homeland Security, United States Coast Guard Regulations and conform with the requirements of Navigation Rules, International-Inland.
 - b. Temporary anchorage of marine equipment and demolition transport barges in designated Federal Anchorage area shall comply with all regulations as imposed by the U.S. Coast Guard and U. S. Army Corps of Engineers.
 - c. Maintain, protect, and do not interfere with navigation at any time during the demolition and construction phases of Contract Work.
3. No materials or debris shall be burned on the premises. No open fires, including open drum, barrel fires or salamanders will be permitted.
4. No dynamite, powder or other explosives shall be brought onto or used at the site.
5. Comply with federal, state, and local hauling and disposal regulations.
6. In addition to the safety requirements herein, comply with ANSI/ASSE A10.6 and ANSI/ASSE A10.11.

1.07 PROJECT CONDITIONS

- A. Materials Ownership: Except for materials otherwise indicated for salvage or reuse, to be recycled or to remain Owner's property, all demolished and removed materials shall become property of Contractor and shall be removed from the site in a legal manner.
- B. Existing Conditions:
 1. Damage or loss, whether by reasons of fire, theft, or other casualty, or any other occurrence to the various items required to be demolished or salvaged, shall be at the risk of the Contractor from and after the date of the Contract. Such damage or loss shall not relieve the Contractor from any obligation under the Contract to complete all

demolition and removal work as herein specified.

2. The locations of existing structures and their components shown on the Contract Drawings are based on available information and are schematic. All dimensions shown are approximate based on record documents. Variations from dimensions, sizes or quantities will not be considered additional work. There may be additional elements not shown on the Contract Drawings which may require cutting or removal. The Contractor's bid shall be based on his/her field verification or review of all available information and Contractor's independent interpretation of the surface and subsurface and existing utility and service conditions that may affect the work of the Contract.
 3. Subsurface Conditions (Including Underwater): There may be additional piles, pile stubs, debris, and timbers not shown on the Contract Drawings or lying on the bottom which may require cutting or removal.
 4. Existing Utilities and Services:
 - a. It is not anticipated that active utilities will be found existing at areas of designated demolition and removal work.
 - b. Should uncharted, or incorrectly charted, piping or other active utilities be encountered during the work, consult the Construction Manager immediately for directions. Cooperate in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of the Construction Manager.
 - c. Where inactive surface or subsurface piping, conduit, or other items are encountered during operations, properly remove and dispose of items as specified and to suit item as approved.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. Hazardous materials will be removed by Owner before start of the Work.
 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Engineer and Owner. Hazardous materials will be removed by Owner under a separate contract.

- D. Storage or sale of removed items or materials on-site is not permitted.

PART 2 - PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine existing conditions and correlate with requirements indicated to determine the extent of site preparation, demolition, removals, and other related work.
- B. Review record documents of existing construction provided. Owner does not guarantee that existing conditions are the same as those indicated in Project Record Documents.
- C. Inventory and record the condition of items to be salvaged.
- D. When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element. Promptly submit a written report to Engineer.
- E. Engage a professional engineer to perform an engineering survey of condition of structure to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during timber pile cap and timber deck demolition operations.

3.02 PREPARATION

- A. Protection: Protective measures include the following:
 - 1. Use of Existing Structures
 - a. Do not place any load or operate equipment on the pier that exceeds its live load capacity.
 - b. Comply with Owner's restrictions on use of marine facilities.
 - 2. Existing Items to Remain: Protect construction to remain against damage during demolition operations. Take precautions to guard

against movement, settlement, or collapse of any adjacent structures, sidewalks or street passages, and adjoining property. Provide temporary shoring, bracing, and supports as necessary. Be liable for any such movement, settlement, or collapse. If such damage does accidentally occur, safeguard the public and repair promptly, at no additional cost to the Owner.

- a. Protect existing drainage systems from intrusion of debris and clogging.
 - b. Protect other existing and adjacent bulkheads, structures, surfaces, finishes, copings, fencing, railing and edgings in areas adjacent to the pier demolition locations, as well as, any equipment, piping, conduits, etc. in the work area as well as in the adjoining areas, and leave the same in a safe and satisfactory condition as approved by the Engineer.
3. Take actions and provide temporary installations necessary, subject to concurrence of Construction Manager, to allow the progress of the Work to continue and to make the work accessible to construction equipment and working persons.
 4. Provide barricades and fencing to prevent entry to the demolition areas by unauthorized persons. Prevent access to the demolition areas so such barricades and fencing cannot be circumvented or thwarted.
 5. Provide necessary temporary closures, guard rails, barricades, and other devices to protect workers, employees, visitors, and inhabitants from possible injury.
 6. Provide temporary fire protection in the form of water in buckets and fire extinguishers during metal burning operations. Provide fire protection on the level below the area in which metal is being removed or welded. Discontinue operations involving burning of metal one-half hour prior to the normal time of cessation of each day's work, and apply water to such burned metal for one-half hour after the cessation of such work.
 7. Dust and Debris Control
 - a. Provide the necessary means and measures for the confining of dust and debris to demolition operation area(s) and prevent the spread of dust and debris from creating a nuisance or hazard in the surrounding area. Provide all controls required by

permits granted by the regulatory agencies having jurisdiction. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.

- b. The discarding of any material into the waterway is prohibited. Harbor drift is not allowed.
 - 1) Take appropriate measures to prevent materials from entering the waterway including:
 - a) Protection to prevent materials being dropped into the waterway.
 - b) Use netting, float stages with curbs and other temporary structures to prevent metals and other non-floating debris from entering the waterway.
 - c) Install and maintain floating booms, netting, float stages with curbs and any other temporary structures required to provide such protection to prevent the escape of floating materials from the site. Design the boom system for the wave height and currents anticipated in the work area.
 - d) Indicate all such items on submitted demolition plan.
 - e) Provide a stand-by “chase boat” to retrieve and recover floating drift materials associated with demolition and construction operations. When not actually retrieving drift or otherwise in use by the Contractor’s operations, this boat and operator shall be made available for use by Engineer and /or Construction Manager for observation of the work.
 - 2) Engineer or Construction Manager may order the Contractor to perform a diving inspection if improper handling of demolished materials is noted or suspected, at no additional cost to the Owner.
 - 3) Should demolished elements fall overboard for any reason, retrieve with utmost urgency. If debris causes a hazard to navigation, notify US Coast Guard and temporarily mark with buoy or other device acceptable to the Coast Guard until removed.

- c. Be responsible for all erosion controls required by the work granted by US Army Corps of Engineers and New York State Department of Environmental Conservation.
 8. Noise Control: Comply with governing regulations pertaining to noise levels during demolition procedures.
- B. Existing Utilities: Locate and identify indicated utilities serving structures to be demolished.
 1. Notify utility owners and secure permission from the utility company to locate, identify, stub off, and disconnect utility services that are not indicated to remain, prior to performing demolition.
 2. Do not begin demolition or deconstruction work until all utility disconnections have been made.
- C. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
 1. Strengthen or add new supports when required during progress of demolition.
- D. Removed and Salvaged Items: Comply with the following:
 1. Clean salvaged items of dirt and demolition debris.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area at the location specified in the Contract Documents.
 5. Protect items from damage during transport and storage.

3.03 DEMOLITION AND REMOVAL OPERATIONS

A. General

1. Remove existing structures to the extent indicated and as required for new work preparation. All locations and areas of removals indicated on the Contract Drawings or specified herein are approximate.

2. Demolition includes the cutting out, destruction, and complete removal of the item or portion of item so designated.
3. Where portions of items are to be removed, cutting and removal shall result in neat, plumb, and square edges. Use power saw equipment for solid materials with saw cuts along straight lines to a depth of not more than two inches unless otherwise noted. Protect remaining portions from damage.
4. Remove equipment, fixtures, and miscellaneous articles, as well as abandoned debris found on the premises.
5. Remove existing site elements, surface finishes, and structural components to the level and extent indicated and required to complete the removal of system or item. Include removal of items below indicated elevation that become or are found to be loose or dislodged.
6. Demolish structures in a systematic manner from the top down.

3.04 EXPLOSIVE DEMOLITION

- A. Explosives: Use of explosives is not permitted.

3.05 REPAIRS

- A. General: Promptly repair damage to adjacent structures or property caused by demolition operations.
- B. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- C. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.06 RECYCLING DEMOLISHED MATERIALS

- A. General: Separate recyclable demolished materials from other demolished materials to the maximum extent possible. Separate recyclable materials by type.

1. Provide containers or other storage method approved by

Construction Manager for controlling recyclable materials until they are removed from Project site.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 3. Stockpile materials away from demolition area. Do not store within drip line of remaining trees.
 4. Store components off the ground and protect from the weather.
 5. Transport recyclable materials off Owner's property and legally dispose of them.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling building demolition materials shall accrue to Contractor.

3.07 COLLECTION AND DISPOSAL OF DEMOLISHED MATERIALS AND CLEANUP

- A. General: Except for items or materials indicated to be recycled, salvaged, or otherwise indicated to remain on Owner's property, remove demolished materials from Project site and legally dispose of them.
1. Remove and dispose of materials resulting from operations as work progresses. Do not allow demolished materials to accumulate on-site, except demolished and/or removed materials may be temporarily stockpiled within the site in a volume not exceeding 40 cubic yards and for a period not exceeding 2 weeks unless otherwise approved for specific conditions by the Construction Manager.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Burning or burying of removed materials will not be permitted on the site of work.
- B. Deposit all demolished material, pilings, and equipment deposited into transport barges, watertight trucks, or dumpsters for final deposit at a legal depository.
1. Truck access and on-site storage areas for dumpsters may be limited. Obtain approval from the Owner prior to utilizing trucks or dumpsters

for disposal.

- C. Be responsible for the legal removal of all demolished materials and debris resulting from the work to locations outside the site property, which meet the requirements of all applicable laws and codes of regulatory agencies having jurisdiction over the work.
- D. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition and removal operations. Return and maintain adjacent areas to condition existing before start of clearing, demolition, and removal operations.

3.08 SALVAGED MATERIALS

- A. Remove materials or items that are indicated by Contract Documents to be removed for salvage and that are to remain the property of Owner. Perform removals for salvage and salvage work in a systematic manner.
- B. Salvage the following for future reuse:
 - 1. RPL Fendering at Relieving Platform.
- C. Procedures used are to be developed and optimized during removal and are dependent upon conditions encountered and results achieved. General procedures for materials to be salvaged are as follows:
 - 1. Clean salvaged items of dirt and demolition debris.
 - 2. Dispose of off-site rejected and discarded materials.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Protect and transport items to Owner's designated storage area.
 - 5. Material salvaged for the Contractor shall be stored as approved by the Construction Manager and shall be removed from the site before completion of the contract. Material salvaged for the Contractor shall not be sold on the site.
 - 6. Remove salvaged items to remain the property of the Owner in a manner to prevent damage, and pack or crate to protect the items from damage while in storage or during shipment. Repair or replace items damaged during removal or storage to match existing items. Properly identify containers as to contents.

3.09 REPAIRS/RESTORATIONS

- A. General: Promptly repair damage to adjacent construction caused by work operations. Replace or repair with material of same or better kind, quality, and size, as approved by Engineer, damage caused to the structures, equipment, piping, conduits, and any other items, both on- and off-site, to remain, by methods acceptable to the Engineer, at no additional cost to the Owner.
- B. Where repairs to existing surfaces are required, patch surfaces to produce surface suitable for new materials.
- C. Provide repairs or, if required, replacement in a manner that eliminates evidence of patching and refinishing.
- D. Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces, using on-site materials when available. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Where exposed to view or indicated, make finished surfaces of patched area flush with the adjacent existing surface and match the existing adjacent surface as closely as possible as to texture and finish.

END OF SECTION 02 41 16

SECTION 030130
MAINTENANCE OF CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Removal of deteriorated concrete.
 - 2. Subsequent replacement and patching.
 - 3. Epoxy crack injection.

1.03 UNIT PRICES

- A. General: Unit prices include the cost of preparing existing construction to receive the work indicated.

1.04 PREINSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Pier A, located at 22 Battery Place, New York, NY 10004.
 - 1. Review methods and procedures related to concrete maintenance including, but not limited to, the following:
 - a. Verify concrete-maintenance specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Materials, material application, sequencing, tolerances, and required clearances.
 - c. Quality-control program.
 - d. Coordination with building occupants.

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, chemical composition, physical properties, test data, and mixing, preparation, and application instructions.

1.06 INFORMATION SUBMITTALS

- A. Material Certificates: For each type of Portland cement and aggregate supplied for mixing or adding to products at Project site.
- B. Product Test Reports: For each manufactured bonding agent, cementitious patching mortar, and joint-filler for tests performed by manufacturer and witnessed by a qualified testing agency
- C. Field quality-control reports.
- D. Hot and cold weather procedures.

1.07 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Each manufactured bonding-agent, cementitious patching-mortar, and joint-filler manufacturer shall employ factory-trained technical representatives who are available for consultation and Project-site inspection and assistance at no additional cost.
- B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer to apply packaged patching-mortar materials and crack-injection adhesive.
- C. Maintenance Program: Prepare a written plan for maintenance of cast-in-place concrete, including each phase or process, protection of surrounding materials during operations, and control of debris and runoff during the Work. Describe in detail materials, methods, equipment, and sequence of operations to be used for each phase of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.
- B. Store cementitious materials off the ground, under cover, and in a dry location.
- C. Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.

1.09 FIELD CONDITIONS

- A. Environmental Limitations for Epoxies: Do not apply when air and substrate temperatures are outside limits permitted by manufacturer. During hot weather, cool epoxy components before mixing, store mixed products in shade, and cool unused mixed products to retard setting. Do not apply to wet substrates unless approved by manufacturer.
1. Use only Class A epoxies when substrate temperatures are below or are expected to go below 40 deg F (5 deg C) within 8 hours.
 2. Use only Class A or B epoxies when substrate temperatures are below or are expected to go below 60 deg F (16 deg C) within 8 hours.
 3. Use only Class C epoxies when substrate temperatures are above and are expected to stay above 60 deg F (16 deg C) for 8 hours.
- B. Cold-Weather Requirements for Cementitious Materials: Do not apply unless concrete-surface and air temperatures are above 40 deg F (5 deg C) and will remain so for at least 48 hours after completion of Work.
- C. Cold-Weather Requirements for Cementitious Materials: Comply with the following procedures:
1. When air temperature is below 40 deg F (5 deg C), heat patching-material ingredients and existing concrete to produce temperatures between 40 and 90 deg F (5 and 32 deg C).
 2. When mean daily air temperature is between 25 and 40 deg F (minus 4 and plus 5 deg C), cover completed Work with weather-resistant insulating blankets for 48 hours after repair or provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 48 hours after repair.
 3. When mean daily air temperature is below 25 deg F (minus 4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 48 hours after repair.
- D. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Provide artificial shade and wind breaks, and use cooled materials as required. Do not apply to substrates with temperatures of 90 deg F (32 deg C) and above.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Source Limitations: Obtain each color, grade, finish, type, and variety of product from single source with resources to provide products of consistent quality in appearance and physical properties.
- B. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction

2.02 BONDING AGENTS

- A. Patching Mortar, General:
 - 1. Only use patching mortars that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation.
 - 2. Consider retaining "Color and Aggregate Texture" Subparagraph below for patch repairs that are visible and important to Project's appearance. This can add expense; indicate on Drawings or by inserts the locations where color and aggregate matching is required.
 - 3. Color and Aggregate Texture: Provide patching mortar and aggregates of colors and sizes necessary to produce patching mortar that matches existing, adjacent, exposed concrete. Blend several aggregates if necessary to achieve suitable matches.
 - 4. Coarse Aggregate for Patching Mortar: ASTM C 33, washed aggregate, Size No. 8, Class 5S. Add to patching-mortar mix only as permitted by patching-mortar manufacturer.
- B. Job-Mixed Patching Mortar: 1 part Portland cement and 2-1/2 parts fine aggregate complying with ASTM C 144, except 100 percent passing a No. 16 (1.18-mm) sieve.
- C. Cementitious Patching Mortar: Packaged, dry mix for repair of concrete.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings.

2. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.
- D. Epoxy Crack-Injection Materials: Epoxy Crack-Injection Adhesive: ASTM C 881/C 881M, bonding system [Type I and Type III] free of VOCs.

2.03 OTHER MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I unless otherwise indicated.
- B. Water: Portable.

2.04 MIXES

- A. General: Mix products, in clean containers, according to manufacturer's written instructions.
 1. Do not add water, thinners, or additives unless recommended by manufacturer.
 2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.
 3. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.
- B. Mortar Scrub Coat: Mix dry ingredients with enough water to provide consistency of thick cream.
- C. Dry-Pack Mortar: Mix patching-mortar dry ingredients with just enough liquid to form damp cohesive mixture that can be squeezed by hand into a ball but is not plastic.
- D. Grout for Use with Preplaced Aggregate: Proportion according to ASTM C 938. Add grout fluidifier to mixing water followed by portland cement, pozzolan, and fine aggregate.

PART 3 - EXECUTION

3.01 CONCRETE MAINTENANCE

- A. Comply with manufactures' written instructions for surface preparation and product application.

3.02 EXAMINATION

- A. Notify Engineer of record seven days in advance of dates when areas of deteriorated or delaminated concrete will be located.
- B. Perform surveys as the Work progresses to detect hazards resulting from concrete-maintenance work.

3.03 PREPARATION

- A. Ensure that supervisory personnel are on-site and on duty when concrete maintenance work begins and during its progress.
- B. Preparation for Removal of Deteriorated Concrete: Examine construction to be repaired to determine best methods to safely and effectively perform concrete maintenance work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.
 - 1. Verify that affected utilities have been disconnected and capped.
 - 2. Provide and maintain shoring, bracing, and temporary structural supports as required to preserve stability and prevent unexpected or uncontrolled movement, settlement, or collapse of construction being demolished and construction and finishes to remain.
- C. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from concrete maintenance work.
 - 1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
 - 2. Use only proven protection methods appropriate to each area and surface being protected.
 - 3. Provide barricades, barriers, and temporary directional signage to exclude public from areas where concrete maintenance work is being performed.

4. Contain dust and debris generated by concrete maintenance work and prevent it from reaching the public or adjacent surfaces.
5. Use water-mist sprinkling and other wet methods to control dust only with adequate, approved procedures and equipment that ensure that such water will not create a hazard or adversely affect other building areas or materials.
6. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building.
7. Dispose of debris and runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

D. Concrete Removal:

1. Provide shoring, bracing, and supports as necessary. Strengthen or add new supports when required during progress of removal work. Do not overload structural elements with debris.
2. Saw-cut perimeter of areas indicated for removal as indicated on drawings
3. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement.
4. Remove additional concrete if necessary to provide a depth of removal as indicated on drawings.
5. Test areas where concrete has been removed by tapping with hammer, and remove additional concrete until unsound and disbonded concrete is completely removed.
6. Provide surfaces with a fractured profile of at least 1/8 inch (3 mm) that are approximately perpendicular or parallel to original concrete surfaces. At columns and walls, make top and bottom surfaces level unless otherwise directed.
7. Thoroughly clean removal areas of loose concrete, dust, and debris.

3.04 APPLICATION

- A. General: Comply with manufacturer's written instructions and recommendations for application of products, including surface preparation.
- B. Placing Patching Mortar: Place as detailed on drawings unless otherwise recommended in writing by manufacturer.
- C. Epoxy Crack Injection:
 1. Clean cracks with oil-free compressed air or low-pressure water to remove loose particles

2. Place injection ports as detailed on drawings unless otherwise recommended in writing by epoxy manufacturer.
3. Inject epoxy adhesive, beginning at widest part of crack and working toward narrower parts. Inject adhesive into ports to refusal, capping adjacent ports when they extrude epoxy. Cap injected ports and inject through adjacent ports until crack is filled
4. After epoxy adhesive has set, remove injection ports and grind surfaces smooth.

3.05 FIELD QUALITY CONTROL

- A. Testing Agency: The Owner.
 1. Before any concrete work is done, the condition of concrete shall be inspected by the Owner's independent Testing Agency. Any errors and discrepancies shall be corrected before repairs are made.
 2. Notify both the Testing Agency and the Engineer at least 48 hours before grout or concrete is placed.
- B. Perform the following tests and inspections:
 1. Packaged, Cementitious Patching Mortar: Randomly selected sets of samples for each type of mortar required, tested according to ASTM C 928.
 2. Job-Mixed Patching Mortar: Randomly selected sets of samples for each type of mortar required, tested for compressive strength according to ASTM C 109/C 109M.
- C. Product will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION 03 01 30

SECTION 03 34 20

CELLULAR CONCRETE FILL

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. The Work of this Section includes all labor, materials, equipment, and services necessary to provide cellular lightweight concrete fill below the relieving platform as shown on the Contract Drawings and/or specified herein.

1.03 SUBMITTALS

- A. Product Data: Submit Manufacturer's specifications, catalog cuts, performance criteria, composition, and other engineering data needed to demonstrate compliance with the specified requirements.
 - 1. Cellular Concrete components and mix materials.
- B. Qualifications: Submit as specified in Article "Quality Assurance". Include written approval of the certified installer mixing and placing the cellular concrete and certified equipment by the cellular concrete manufacturer.
- C. Quality Control Submittals
 - 1. Mix Design: Prior to concrete placement, submit proportions for a concrete mixture for each strength and type of low density cellular concrete. Submit a complete list of materials including type; brand; source; and amount of cement, aggregate, admixtures, foaming agent; and applicable reference specifications. Submit additional data regarding concrete aggregates if the source of aggregate changes. Submittal shall clearly indicate where each mixture will be used when more than one mix design is submitted. The mixture shall be prepared by an accredited laboratory experienced in this field and under the direction of a Contractor's Professional Engineer licensed in the State of New York, who shall sign all reports and designs.

2. Equipment Data: Submit descriptive information for each proposed item of equipment to be used for placing low-density cellular concrete placement at different areas on-site. Comply with requirements and submittal requirements specified in Part 3 Article "Installation of Low Density Cellular Concrete".
- D. Test Reports: Submit as specified in Article "Field Quality Control", herein.
 - E. The contractor shall submit a method of measurement for engineer approval.
 - F. Shop drawing for permanent cellular concrete formwork.

1.04 REFERENCES AND STANDARDS

- A. The work covered by this specification shall conform to the latest edition and the latest addenda thereto of the following standards to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. American Concrete Institute International (ACI)
ACI-301 Standard Specifications for Structural Concrete
- C. American Society for Testing and Materials (ASTM)
ASTM C33 Concrete Aggregates
ASTM CI50 Portland Cement
ASTM C495 Compressive Strength of Lightweight Insulating Concrete
ASTM C796 Foaming Agents for Use in Producing Cellular Concrete Using Preformed Foam
ASTM C869 Foaming Agents Used in Making Preformed Foam for Cellular Concrete

1.05 QUALITY ASSURANCE

- A. Installer's Qualifications: Installer of Lightweight Low Density Cellular Concrete fill shall have at least three (3) years successful installation experience on Projects with work similar to that required for this Project and shall be approved and certified in writing by Low Density Cellular Concrete fill manufacturer.

1. Use skilled workers who are thoroughly trained, experienced and familiar with the specified requirements and the methods for proper performance of this work.
 - B. The specialized batching, mixing and placing equipment shall be automated and approved for the purpose by the manufacturer.
- 1.06 DELIVERY, STORAGE AND HANDLING OF MATERIALS
- A. Deliver, store and handle all materials in such a manner as to prevent deterioration. Any material that has been damaged in any way shall not be used in the work.

PART 2 – PRODUCTS

2.01 LOW DENSITY CELLULAR CONCRETE MATERIALS

- A. Low Density Cellular Concrete shall be the following products: Geofill LD Hybrid, manufactured by Mixonsite, 1501 Abbott CT. Buffalo Grove, IL 60089; Mearlcrete as manufactured by Cellular Concrete, LLC, Allentown, PA; or approved equal.
 1. Low Density Cellular Concrete shall consist of the following components:
 - a. Cement: Portland Cement shall comply with ASTM C150 Type II and other cementitious materials may be used when specifically approved by the manufacturer.
 - b. Sand: ASTM C 33
 - c. Admixtures: Admixtures for accelerating, water reducing, and other specific properties may be used when specifically approved by the manufacturer. Admixtures containing chloride ions shall not be used.
 - d. Water shall be potable and free from deleterious amounts of alkali, acid and organic materials that would adversely affect the setting time or strength of the Low Density Cellular Concrete.
 - e. Foaming Agent shall comply with ASTM C 869 when tested in accordance with ASTM C 796.

2. Properties of Low Density Cellular Concrete:

Max. Cast Density, pcf	70 - 75
Min. Compressive Strength, psi	305
Freeze Thaw Resistance, Relative E not less than 70% per ASTM C666, modified	100

3. Mix Design: Lightweight Concrete Fill shall be job site mixed in a water slurry with pre-generated foam from a liquid concentrate. As-cast in-place, material shall comply with the specified properties.

- B. Materials for Forms: Grout bag wall or tongue and groove sheeting.

PART 3 – EXECUTION

3.01 INSTALLATION OF LOW DENSITY CELLULAR CONCRETE

- A. Formwork: Construct formwork as indicated on the Contract Drawings.
1. Formwork shall remain in place.
 2. Reinforce members supporting formwork where formwork shows undue movement beyond possibility of adjustment. Reinforcement shall be left in place.
 3. The formwork shall be constructed of durable materials having a life expectancy of at least 20 years in saltwater and shall have sufficient strength and rigidity to resist the loads impacted by the cellular concrete and any imposed load due to current, tidal action, waves, etc.
 4. Examine the form work before and during concrete placement. Forms shall be mortar tight to prevent any cementitious materials from leaching out into the water or other adjacent surfaces. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until satisfactory conditions are corrected.
 5. Formwork shall have openings to allow the water to escape during concrete placement.

6. Engage a standby diver during placement operations to plug, scab, caulk, or otherwise seal any leaks which may occur during placement.
- B. Install the Low Density Cellular Concrete in accordance with the installation procedures provided by the manufacturer.
 - C. Place and secure pipes, conduits, wires and other such items in position before concrete placement.
 - D. Weather Conditions
 1. Avoid freezing before initial set of the Low Density Cellular Concrete.
 2. Do not place at air or water temperatures of less than 40 degrees F nor when freezing conditions are expected in less than 24 hours.
 3. If this condition cannot be met, consult manufacturer and determine precautions necessary to assure installation of an acceptable Low Density Cellular Concrete.
 - E. Mixing, Conveying, Placing and Curing
 1. Using only the automated job site proportioning, mixing and placing equipment certified by the manufacturer, mix the materials according to the mix design and convey promptly to the location of final placement.
 - a. Use batching and mixing equipment capable of proportioning and mixing all ingredients at a rate that will provide adequate production and with an accuracy that will assure uniformity of batches.
 - b. Control mix proportions by weight batching, or by volume batching complying with ASTM C685.
 2. Avoid excessive handling of the Low Density Cellular Concrete.
 3. Only approved mixing and pumping equipment shall be used in preparation and handling of pumped concrete. All oil or rust inhibitors shall be removed from the mixing drums, stirring mechanisms, and other portions of the equipment in contact with the concrete before the mixers are used.
 4. Arrangements and details related to pumping concrete shall be submitted for approval.

5. Pumping equipment shall be as approved by the low density cellular concrete manufacturer and shall not result in densification of the material, separation or loss of materials nor cause interruptions sufficient to permit loss of plasticity between successive increments. Loss of slump in pumping equipment shall not exceed 2 inches. Low Density Cellular Concrete shall not be conveyed through pipe made of aluminum or aluminum alloy. Rapid changes in pipe sizes shall be avoided.
6. The second to the last lift be brought to a level above the bottom of the caps. A final lift shall be placed in the cell created by adjacent pile caps. Contractor shall provide appropriate injection ports, observation ports, and venting ports as necessary to provide for safe and uniform placement of the cellular concrete.
7. Low Density Cellular Concrete shall be placed under pressure sufficient and via hoses of sufficient size to assure a smooth and continuous flow. The discharge end of the hoses shall be inserted into and lowered to the mudline before any concrete is pumped into place. As the level of the low density cellular concrete rises, the hose shall be slowly withdrawn, care being taken that the end of the pipe or hose be continuously immersed in the newly placed low density cellular concrete. Kinking the hose or other source of flow interruption shall be avoided insofar as possible. In general, low density cellular concrete shall be placed in a smooth, continuous operation, at a rate which will avoid damage to the form and permit the low density cellular concrete to flow around the piles and pile caps, and in such a manner as to avoid segregation of the components. The adequacy of size of the hoses will be judged on the basis of performance, during the concreting operations and, if necessary, shall be increased to provide the smooth, uniform, uninterrupted flow specified above.
8. Concreting shall continue until the entire area beneath the platform, or between pile caps, is completely filled with cellular concrete. After this initial placement, the concrete shall be allowed to settle for approximately 30 minutes. Should the concrete settle during this initial period due to the soft mud at the river bottom, the forms shall be refilled (topped-off) to insure the void is completely filled.
9. After concrete has cured, the Engineer may inspect for any voids present and/or verify that the cellular concrete has completely filled the space up to the bottom of the deck. The Engineer may direct the Contractor, at no

additional cost to the Owner, to remove sheathing or grout bags at locations as selected by the Engineer. Should inspection reveal that the area is not completely filled; remedies satisfactory to the Engineer shall be employed to fill voids. Small voids no more than 4 inches high will be permitted provided they are localized in nature and do not extend more than 2 feet back from the front of the bulkhead and, in the judgment of the Engineer, will be filled during the placement of concrete facing.

3.02 FIELD QUALITY CONTROL

- A. Testing by Contractor: Engage the services of an independent testing laboratory approved by the Construction Manager to perform wet-density testing of the cellular concrete materials during installation and as specified. The laboratory performing the testing services shall meet the requirements of "Testing Agency" as specified in ACI 301 and Division I Section 01400 "Quality Requirements".
1. Wet Density Testing: Test Density by placing the fresh concrete into a container with a minimum volume of one (1) cubic foot. Weigh the container and compute the density. Perform density tests in the presence of the Construction Manager. Perform tests at frequencies specified below.
 - a. During placement of the initial batches, check the density and adjust the mix as required to obtain the specified cast density at the point of placement.
 - b. The contract shall obtain sample as it exits from the mixer and before entering into the pump.
 - c. At hourly intervals during placing monitor the density and adjust as necessary to maintain the specified cast density.
 2. Prepare and submit Test Reports documenting results of each density test.

PART 4 – METHOD OF MEASUREMENT

The contractor will mix and pump cellular concrete into a 1 cubic yard box (1yd x 1yd x1yd) and during this time the above mentioned counter on the Mixer will be monitored to establish the correlation between the counter and the cellular concrete volume. This volume will be established and agreed upon between the contractor and engineer of record.

END OF SECTION 03 34 20

**SECTION 036300
EPOXY GROUTING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work specified in this section.

1.02 DESCRIPTION OF WORK:

- A. The extent of work is shown on drawings.
- B. The work shall include but is not limited to the following:
 - 1. Cleaning and preparation of existing timber.
 - 2. Excavation of soil and riprap.
 - 3. Install a permanent outer jacket of durable, inert and corrosion-free material.
 - 4. Mixing the epoxy.
 - 5. Injecting the epoxy and fill the annular space between the pile and the permanent jacket.
 - 6. Placing excavated riprap and soil.

1.03 QUALITY ASSURANCE:

- A. General:
 - 1. Insofar as possible, all materials and equipment used in the installation of this work shall be of the same brand or manufacturer throughout for each class of material and/or equipment.
 - 2. Use numbers of skilled workers equal to work requirement or occasion. The skilled workers shall be thoroughly trained and experienced in the necessary crafts and shall be completely familiar with the specified requirements and methods needed for proper performance of the Work in this Section.

- B. Where the language in any of the documents referred to herein is in the form of a recommendation or suggestion, such recommendations or suggestions shall be deemed to be mandatory under this Contract.
- C. Conflicts: Conform to requirements of above standard unless specified otherwise below. In case of apparent conflict between standards, or between standards and the specifications herein below, refer the matter to the Engineer, whose decision shall be final.
- D. The Contractor shall establish, to the satisfaction of the Engineer, that the planning for grouting and the actual placement of the mixed epoxy grout system is performed by experienced personnel.
- E. Owner's acceptance: Owner reserves the right to reject or accept supplier of materials.
- F. Workmanship: The Contractor is responsible for correction of restoration work which does not conform to the specified requirements, including strength, tolerances, and finishes. Correct deficiencies as directed by the Engineer.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's data, to include: application and installation instructions, technical data sheets, material safety data sheets, pumping equipment, and any other items as requested by the Engineer.
- B. Shop Drawings, detailing, at a minimum, location of stand off spacers, formwork and bracing details, and bottom seal details, proposed method of installation shall be prepared by the contractor and submitted for approval prior to any field installation.
- C. The contractor shall provide step-by-step installation procedures with manufacture written approval.
- D. Production schedule for placing pile jacket forms, and when pumping the epoxy grout on a daily basis for the duration of the Project.

1.05 PRODUCT HANDLING

- A. Deliver the specified products in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged or contaminated materials shall be removed from the site immediately, at contractor's expense.

- B. Store and condition the specified products as recommended by the manufacturer.
- C. Protect pile jackets, epoxy grout, binders and accessories from damage, dirt, dampness and direct sunlight during storage.
- D. Condition the specified epoxy resin mortar components as specified by the manufacturer.

1.06 JOB CONDITIONS

- A. Environmental Conditions: Do not apply material if ambient surface temperature or water temperature is below manufacturer's minimum application temperature.
- B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the materials. Contractor shall restore any damage incurred to the work zone at his own expense.

PART 2 - MATERIAL

2.01 EPOXY RESIN ADHESIVE FOR EPOXY INJECTION

- A. The epoxy resin adhesive shall be a two-component, moisture-insensitive, epoxy adhesive of low viscosity and high strength, formulated specifically for injecting into the annulus of submerged formwork, around a timber pile, up to one inch thick. It shall meet ASTM C 881 Type I, II Grade -1, Class C.
- B. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Sika US, Sika Corporation, 201 Polito Ave, Lindhurst NJ 07071
Phone: 800-933-7452; <https://usa.sika.com/>
 - 2. 5 Star Marine, 750 Commerce Drive, Fairfield CT 06825,
Phone: 800-338-3145; www.5star-marine.com
 - 3. Denso North America, 9747 Whithorn Drive, Houston Texas 77095,
Phone: 888-821-2300; <http://www.densona.com/>
- C. Core Plug Cement: Where applicable, the following products may be incorporated into the Work include, but are not limited to, the following:

1. Speed Crete Blue Line by The Euclid Company.
2. High strength underwater curing cement from those manufacturers listed in the previous section.

2.02 FIBERGLASS PILE JACKETS

A. Pile Jackets shall be fiberglass and polyester resin with interlocking joints. The minimum jacket thickness shall be 1/8" unless otherwise shown in the plans. The inside face of the jacket shall be textured similar to a sandblasted surface and have no bond inhibiting agents. Non-corrosive standoffs, which will maintain the jackets in the required positions, shall be provided as necessary. The jacket shall be capable of being opened, placed around a pile then returned to its original shape without damaging the jacket.

B. Properties of the Fiberglass Pile Jacket:

Water Absorption (ASTM D-570)	1% max.
Tensile Strength (ASTM D-638) (Longitudinal, Transverse, and Diagonal)	15,000 psi min.
Flexural Strength (ASTM D-796)	25,000 psi
Flexural Modulus of Elasticity (ASTM D-790)	700,000 psi min.
Barcol Hardness (ASTM D-2583)	45 ± 5
Color	Translucent

C. Pile Jackets shall be equipped with a compressible sealing strip at the bottom, which will effectively seal the bottom of the annular space between the pile and jacket.

PART 3 - APPROVALS

3.01 ACCEPTABLE CONTRACTORS:

- A. The epoxy injection work shall be performed by an approved Contractor associated with a nationally known and recognized manufacturer.
- B. The approved Contractor shall have satisfactorily completed a program of instruction sponsored by the manufacturer.

- C. The approved Contractor must have, in his possession at the project site, the manufacturers printed literature on the epoxy resin adhesive.
- D. The approved Contractor must furnish a notarized certification that the material proposed for use meets all of the above requirements.

3.02 ACCEPTABLE PRODUCTS:

- A. Sikadur 35, HI-MOD LV, as manufactured by Sika Corporation, Lyndhurst, New Jersey, is considered to conform to the requirements of this specification for pile encapsulation and restoration.
- B. FX-70, pile protection system, as manufactured by Fox Industries Incorporated, Baltimore, Maryland, is considered to conform to the requirements of this specification for pile encapsulation and restoration.
- C. Variations from materials specified - Should the Contractor wish to use any brand or type of material other than as specified herein, they shall so state in writing to the Engineer naming the proposed substitution and manufacturer. This statement shall be accomplished by the following:
 - 1. A certificate of compliance with test results from an approved independent testing laboratory that the proposed substitute meets or exceeds the specified requirements and has been tested in accordance with the specified test standards;
 - 2. Documented proof that the proposed brand or type of material has a proven record of performance when used in the intended application as confirmed by successful installations in place a minimum of ten years, which the Engineer can verify; and
 - 3. Certification that the components are supplied by the same manufacturer so as to insure compatibility of material and to maintain single-source manufacturer responsibility.

PART 4 - EXECUTION

4.01 SURFACE PREPARATION

- A. Timber surface must be clean and sound. Remove dust, laitance, grease, curing compounds, waxes, impregnations, foreign particles, coatings, efflorescence, disintegrated materials, and any other bond breaking materials, from the timber surface by mechanical means, i.e. – pressure washing maximum 3000 psf, as approved by the Engineer.

4.02 APPLICATION

- A. Mix the epoxy resin components thoroughly, in the proper proportion, in accordance with the manufacturers specifications.
- B. Placement procedure:
 - 1. Formwork must be sufficiently designed, installed, and braced to resist pumping and or static pressures exerted by the epoxy mortar, depending on placement method. This may include the installation of a “bottom plug” to prevent blowout.
 - 2. Tremie Method: In accordance with industry standards and specifications, epoxy mortar shall not be allowed to drop to the bottom of the positioned and bottom-sealed formwork from the top. The epoxy mortar shall flow through a “tremie” hose extending down to the bottom of the form. The nozzle must remain submerged in the mortar as the mortar is pumped.
 - 3. The injection process shall be continuous, except when briefly interrupted to relocate the injector to the next higher port. During grout placement, the injection flow rate shall be controlled to prevent air and/or water entrapment within the pile jacket cavity. A constant tremie must be maintained.
 - 4. Pumping Method: One or more injection ports installed at the bottom of the formwork shall be used to inject epoxy mortar under pressure. The port(s) shall be placed a minimum of 9 inches above the bottom plug and 180° from the formwork connections. Formwork must be designed to resist pump pressure.
- C. Adhere to all limitations and cautions for the epoxy resin adhesives in the manufacturer’s current printed literature.

4.03 CLEANING

- A. Epoxy resin shall be cleaned from work area in accordance with the manufacturer's specifications.
- B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

4.04 TESTING

- A. The Contractor shall provide all labor, material, equipment and supervision necessary to test the grout in accordance with the requirements stated below. If such test indicates that the material is below the required standard, the material in question shall be removed and replaced by the Contractor without cost to the Owner, or additional piles will be jacketed with epoxy grout at the direction of the Engineer, at no additional cost to the Owner.
- B. The methods used in sampling, making, curing and testing of the epoxy grout samples, either in the field or in the laboratory, shall be in accordance with the appropriate ASTM Standards and shall include but not be necessarily be restricted to the following standard:

ASTM C579 — Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes

END OF SECTION 03 63 00

SECTION 05 12 00
STRUCTURAL STEEL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Structural steel materials.
 - 2. Bolts and connectors.

1.03 DEFINITIONS

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at project site, Pier A, located at 22 Battery Place, New York, 10004.

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Show fabrication of structural-steel components.
 - 1. Include details of cuts, connections, splices, holes, and other pertinent data.
 - 2. Indicate type, size, and length of bolts, distinguishing between shop and field bolts.
 - 3. Indicate locations and dimensions of protected zones.
 - 4. Identify demand critical welds.

- C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint including the following:
 - 1. Power source (constant current or constant voltage).
 - 2. Electrode manufacturer and trade name, for demand critical welds.

1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Installer and fabricator.
- B. Welding certificates.
- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- D. Mill test reports for structural steel, including chemical and physical properties.
- E. Product Test Reports: For the following:
 - 1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
- F. Survey of existing conditions.
- G. Source quality-control reports.
- H. Field quality-control reports.

1.07 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD, or is accredited by the IAS Fabricator Inspection Program for Structural Steel (AC 172).
- B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.
- D. Comply with applicable provisions of the following specifications and documents:
1. AISC 303.
 2. AISC 341 and AISC 341s1.
 3. AISC 360.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
1. Clean and relubricate bolts and nuts that become dry or rusty before use.
 2. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

PART 2 - PRODUCTS

2.01 STRUCTURAL-STEEL MATERIALS

- A. Angles / M-Shapes: ASTM A 36/A 36M.
- B. Plate ASTM A 36/A 36M.
- C. Pipe Piles: ASTM A252 Grade 3, with a minimum yield stress of 45 ksi.

2.02 BOLTS, CONNECTORS, AND ANCHORS

- A. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 307, Grade A, steel bolts; ASTM A 563, heavy-hex carbon-steel nuts; and ASTM F 436 steel washers.
 - 1. Finish: Hot-dip zinc coating.

2.03 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
- C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- D. Finishing: Accurately finish ends of members transmitting bearing loads.

2.04 SHOP CONNECTIONS

- A. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.05 COATING (STRUCTURAL-STEEL ONLY)

- A. All angles, plates, pipe, and fabrications to be coated with 2 coats of coal tar epoxy. Minimum dry film thickness shall be 8 mils per coat unless otherwise specified by the manufacturer. Color shall be black. Steel surface shall be prepared in accordance with SSPC SP10 Near White Blast Cleaning.

2.06 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to drawings specification.

1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.

2.07 SOURCE QUALITY CONTROL

- A. Testing Agency: Contractor to engage a qualified testing agency to perform shop tests and inspections.
 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Welded Connections: Visually inspect shop-welded connections according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 1. Liquid Penetrant Inspection: ASTM E 165.
 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 3. Ultrasonic Inspection: ASTM E 164.
 4. Radiographic Inspection: ASTM E 94.
- C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Provide temporary shores, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

3.03 ERECTION

- A. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
 - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- B. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.04 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

3.05 REPAIRS AND PROTECTION

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780/A 780M.
- B. Coal Tar Epoxy Surfaces: Clean areas where coating is damaged or missing and repair coal tar epoxy coating.

END OF SECTION 05 12 00

**SECTION 06 13 23
HEAVY TIMBER FRAMING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes framing using timbers and round wood poles.

1.03 DEFINITIONS

- A. Timbers: Lumber of 5 inches nominal (114 mm actual) or greater in least dimension.
- B. Poles: Round wood members, called either “poles” or “posts” in the referenced standards.
- C. Inspection agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 - 2. AWC NDS: American Wood Council National Design Specifications.
 - 3. NHLA: National Hardwood Lumber Association.
 - 4. NLGA: National Lumber Grades Authority.
 - 5. SPIB: Southern Pine Inspection Bureau (The).
 - 6. WCLIB: West Coast Lumber Inspection Bureau.
 - 7. WWPA: Western Wood Products Association.

1.04 ACTION SUBMITTALS

- A. Product Data: For preservative-treated wood products and timber connectors.
 - 1. For preservative-treated wood products. Include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
 - 2. For timber connectors. Include installation instructions.

- B. Shop Drawings: For timber framing. Show layout, dimensions of each member, and details of connections.

1.05 INFORMATIONAL SUBMITTALS

- A. Material Certificates:
 - 1. For timbers specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by ALSC's Board of Review.
 - 2. For preservative-treated wood products. Indicate type of preservative used and net amount of preservative retained. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
- B. Certificates of Inspection: Issued by lumber-grading agency for exposed timber not marked with grade stamp.

1.06 QUALITY ASSURANCE

- A. Timber Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.
- B. Timber Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Schedule delivery of materials to avoid extended on-site storage and to avoid delaying the Work.
- B. Store materials under cover and protected from weather and contact with damp or wet surfaces. Provide for air circulation within and around stacks and under temporary coverings.

PART 2 - PRODUCTS

2.01 WOOD MATERIALS, GENERAL

- A. Regional Materials: Timbers and round wood piles shall be milled within 500 miles (800 km) of Project site from wood that has been harvested within 500 miles (800 km) of Project site.
- B. Certified Wood: Timbers and round wood poles shall be certified as "FSC Pure" or "FSC Mixed Credit" according to FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship," and to FSC STD-40-004, "FSC Standard for Chain of Custody Certification."

2.02 TIMBER

- A. Comply with DOC PS 20 and with grading rules of lumber-grading agencies certified by ALSC's Board of Review as applicable.
 - 1. Factory mark each item of timber with grade stamp of grading agency.
 - 2. For exposed timber indicated to receive a stained or natural finish, apply grade stamps to surfaces that are not exposed to view, or omit grade stamps and provide certificates of grade compliance issued by grading agency.
- B. Timber Species and Grade: Southern pine; Dense Select Structural, Select Structural, No. 1 Dense.
- C. Structural Properties: Provide any species and grade that, for moisture content provided, complies with required structural properties.
 - 1. Allowable Stress Ratings for 12-Inch Nominal (286-mm Actual) Depth: Fb 1500 psi (10.3 MPa) and E 1,500,000 psi (10 340 MPa).
- D. Moisture Content: Provide timber with 19 percent maximum moisture content at time of dressing.
- E. Dressing: Provide timber that is rough sawn unless otherwise indicated.

2.03 PRESERVATIVE TREATMENT

- A. Pressure treat materials with waterborne preservative according to AWPA U1; Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

- B. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - 1. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not contain colorants, bleed through, or otherwise adversely affect finishes.
- C. Application: Treat all heavy timber framing unless otherwise indicated.

2.04 TIMBER CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Cleveland Steel Specialty Co.
 - 2. Halfen Anchoring Systems.
 - 3. Simpson Strong-Tie Company, Inc.
 - 4. USP Structural Connectors.
 - 5. Approved Equivalent
- B. Provide bolts, complying with ASTM A 307, Grade A; provide nuts complying with ASTM A 563; and, where indicated, provide beveled and flat washers complying with ASTM F436.
- C. Materials: Unless otherwise indicated, fabricate from the following materials:
 - 1. Structural-steel shapes, plates, and flat bars complying with ASTM A 36/A 36M.
- D. Hot-dip galvanize steel assemblies and fasteners after fabrication to comply with ASTM A 123/A 123M, ASTM A386 or ASTM A 153/A 153M.

2.05 MISCELLANEOUS MATERIALS

- A. End Sealer: Manufacturer's standard, transparent, colorless wood sealer that is effective in retarding the transmission of moisture at cross-grain cuts and is compatible with indicated finish.
- B. Penetrating Sealer: Manufacturer's standard, transparent, penetrating wood sealer that is compatible with indicated finish.

2.06 FABRICATION

- A. Camber: Fabricate horizontal members and inclined members with a slope of less than 1:1, with natural convex bow (crown) up, to provide camber.
- B. Shop fabricate members by cutting and restoring exposed surfaces to match specified surfacing. Finish exposed surfaces to remove planing or surfacing marks, and to provide a finish equivalent to that produced by machine sanding with No. 120 grit sandpaper.
- C. Predrill for fasteners and assembly of units.
- D. Where preservative-treated members are indicated, fabricate (cut, drill, surface, and sand) before treatment to greatest extent possible. Where fabrication must be done after treatment, apply a field-treatment preservative to comply with AWPA M4.
- E. Coat crosscuts with end sealer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Erect heavy timber framing true and plumb. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.
 - 1. Install horizontal and sloping members with crown edge up, and provide not less than 4 inches (102 mm) of bearing on supports. Provide continuous members unless otherwise indicated; tie together over supports with metal strap ties if not continuous.
 - 2. Handle and temporarily support heavy timber framing to prevent surface damage, compression, and other effects that might interfere with indicated finish.
- B. Cutting: Avoid extra cutting after fabrication. Where field fitting is unavoidable, comply with requirements for shop fabrication.
- C. Fitting: Fit members by cutting and restoring exposed surfaces to match specified surfacing.
 - 1. Predrill for fasteners using timber connectors as templates.
 - 2. Finish exposed surfaces to remove planing or surfacing marks, and to provide a finish equivalent to that produced by machine sanding with No. 120 grit sandpaper.

3. Coat crosscuts with end sealer.
 4. Where preservative-treated members must be cut during erection, apply a field-treatment preservative to comply with AWPA M4.
- D. Install timber connectors as indicated.
1. Install bolts with orientation as indicated or, if not indicated, as directed by Engineer.

3.02 ADJUSTING

- A. Repair damaged surfaces and finishes after completing erection. Replace damaged heavy timber framing if repairs are not approved by Engineer.

END OF SECTION 06 13 23