



Invitation for Bid

Labor and Materials

January 19, 2022

2022 Park Avenue Boat Launch Project

Site Location:

**Park Avenue Boat Ramp
31 Park Avenue
Highland Park, IL 60035**

MANDATORY PRE-BID MEETING:

**Wednesday, February 2, 2022, 1:00 p.m. CST
31 Park Avenue
Highland Park, IL 60035**

BID OPENING:

**Thursday, February 17, 2022, 1:00 PM CST
636 Ridge Road
Highland Park, IL 60035**

**Jeff Smith, Director of Planning and Projects
Park District of Highland Park
636 Ridge Road
Highland Park, IL 60035**

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ADVERTISEMENT FOR BID

The Park District of Highland Park is accepting sealed bids for the 2022 Park Avenue Boat Launch Project. Questions regarding this bid should be directed to Jeff Smith at 847.579.3109 or jsmith@pdhp.org.

The bid packet, specifications and plans are available on our website at <http://www.pdhp.org/bids-rfps/>. Please note that if you intend to submit a bid for this project, then it is your responsibility to register with Jeff Smith via jsmith@pdhp.org or (847) 579-3109. This will identify that you have downloaded the bid documents, and you will then be considered a registered plan holder. Sealed bids for these items will be received no later than 1:00pm on Thursday, February 17, 2022, at which time they will be publicly opened and read aloud.

There is a MANDATORY PRE-BID MEETING at 1:00pm on Wednesday, February 2, 2022. The pre-bid meeting will be held at: Park Avenue Boating Facility, 31 Park Avenue, Highland Park, IL 60035.

Completed bids must be submitted in sealed opaque envelopes marked 2022 Park Avenue Boat Launch Project and mailed or brought into the Park District of Highland Park, 636 Ridge Road, Highland Park, IL 60035; Attn: Brian Romes, Secretary.

The Park Board of the Park District of Highland Park reserves the right to reject any or all bids in full or in part, if it shall deem it in the public interest to do so. In submitting a bid, Contractor acknowledges that Contractor must comply with all requirements of the Illinois Prevailing Wage Act and all other applicable Illinois laws.

PARK DISTRICT OF HIGHLAND PARK
/s/ Brian Romes
Secretary of the Board of
Park Commissioners

Published: Lake County News Sun

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INVITATION FOR BID

The Park District of Highland Park is seeking sealed bids for the following scope of work: Complete removal of the existing barge breakwater and boat ramp, stockpiling and salvaging existing breakwater fill and armor stone, construction of new steel sheet pile breakwater with concrete crown wall, construction of new concrete boat launch, furnishing and installing all site furniture including bollards, chains, floating docks and lighting, and all associated items at 31 Park Avenue, Highland Park, Illinois. The scope of work includes all necessary workmanship to satisfactorily complete the work as required by the contract documents. Work will start September 6, 2022 and conclude by May 12, 2023.

Refer to the following site schedule/scope of work:

- Site Available for Contractor Mobilization: September 06, 2022
- Substantial Completion: April 22, 2023
- Final Completion: May 12, 2023

Contractors bidding on the project must have a minimum of 5 years of experience in the work or similar.

The bid packet, specifications and plans are available on our website at <http://www.pdhp.org/bids-rfps/>. Please note that if you intend to submit a bid for this project, then it is your responsibility to register with Jeff Smith via jsmith@pdhp.org or (847) 579-3109. This will identify that you have downloaded the bid documents, and you will then be considered a registered plan holder. Sealed bids for these items will be received no later than 1:00pm on Thursday, February 17, 2022, at which time they will be publicly opened and read aloud.

There is a MANDATORY PRE-BID MEETING at 1:00pm on Wednesday, February 2, 2022. The pre-bid meeting will be held at the project site: Project Site, 31 Park Avenue, Highland Park, IL 60035.

Completed bids must be submitted in sealed opaque envelopes marked “2022 Park Avenue Boat Launch Project” and mailed or brought into the Park District of Highland Park, 636 Ridge Road, Highland Park, Illinois; Attn: Brian Romes, Secretary.

All bids must be submitted on the forms included in the bid.

All contracts for work herein are subject to the provisions of all Park District of Highland Park regulations.

Contractor must pay and require all subcontractors to pay the prevailing rate of wages to all related laborers, workers, and mechanics involved in the project. As established by the Illinois Department of Labor for each craft or type of work needed to execute the contract in accordance with 820 ILCS 130/.01 et seq. The Illinois Department of Labor publishes the prevailing wage rates on its website at: <https://www.illinois.gov/idol/Laws-Rules/CONMED/Pages/Rates.aspx> Contractor is advised that the Department revises the prevailing wage rates and the Contractor has an obligation to check the Department’s web site for revisions. Contractor shall prominently post the current schedule of prevailing wages at the Contract site and shall notify immediately in writing all of its Subcontractors, of all changes in the schedule of prevailing wages. Any

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increases in costs to Contractor due to changes in the prevailing rate of wage during the terms of any contract shall be at the expense of Contractor and not at the expense of the Owner. The change order shall be computed using the prevailing wage rates applicable at the time the change order work is scheduled to be performed. Contractor shall be solely responsible to maintain accurate records as required by the prevailing wage statute and to obtain and submit all such certified records to the Illinois Department of Labor Certified Transcript of Payroll Portal at <https://www2.illinois.gov/idol/Laws-Rules/CONMED/Pages/CertifiedTranscriptOfPayroll.aspx> no later than the 15th of each calendar month following a month in which construction on the project has occurred as required by Statute. Contractor shall furnish the District confirmation that certified payroll was submitted. In lieu of certified payroll, Contractor shall submit a letter setting forth the basis upon which Contractor has concluded the Act does not apply. Contractor shall be solely liable for paying the difference between prevailing wages and any wages actually received by laborers, workmen and/or mechanics engaged in the Work and in every way defend and indemnify the District against any claims arising under or related to the payment of wages in accordance with the Prevailing Wage Act. Likewise, Contractor shall comply with all applicable laws, regulations, and rules promulgated by any Federal, State, County, Municipal and or other governmental unit or regulatory body now in effect during the performance of the work. By way of example, the following are included within the scope of the laws, regulations and rules referred to in this paragraph, but in no way to operate as a limitation on the laws, regulations and rules with which Contractor must comply, are all forms of Workers Compensation Laws, all terms of the Equal Employment Opportunity Clause of the Illinois Fair Employment Practices Commission, the Illinois Preference Act, the Social Security Act, Statutes relating to contracts let by units of government, all applicable Civil Rights and Anti-Discrimination Laws and Regulations, and traffic and public utility regulations.

Contractor, before commencing Work, shall furnish a Performance Bond and a Labor and Material (aka Payment) Bond. The Performance Bond shall be in an amount equal to 100% of the full amount of the Contract Sum as security for the faithful performance of the obligation of the Contract Documents, and the Labor and Material Payment Bond shall be in an amount equal to 100% of the full amount of the Contract Sum as security for the payment of all persons performing labor and furnishing materials in connection with the Contract Documents. Such bonds shall be issued by a surety satisfactory to the Owner, and shall name the Owner as a primary co-obligee. The cost of the bonds is to be included in the Bid. The Performance Bond and Labor and Material Payment Bond will become a part of the Contract. The failure of the successful Bidder to enter into a Contract and supply the required Bonds within ten (10) calendar days after the Notice of Award or within such extended period as the Owner may grant if the forms do not meet its approval shall constitute a default, and the Owner may either award the Contract to the next responsible, responsive Bidder or re-advertise for bids. A charge against the defaulting Bidder may be made for the difference between the amount of the bid and the amount for which a contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the bid guarantee.

All bids will remain firm for ninety (90) calendar days after the bid opening. The Park District of Highland Park reserves the right to reject any or all bids or to accept any bid, which in its judgment, will be in the best interest of the public or to waive any informalities in bidding. Only bids in compliance with the provisions of the Contract Documents will be considered. No bids shall be withdrawn after the opening of the bids for a period of ninety (90) calendar days after the bid date opening.

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The Park District of Highland Park encourages small and minority businesses and women's business firms to submit bids on the approved project and successful contract bidders to utilize small and minority businesses and women's businesses as sub-contractors for supplies, equipment, services, and construction.

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INSTRUCTIONS TO BIDDERS

For the purpose of these specifications, "Owner" shall refer to the Park District of Highland Park, and "Contractor" shall refer to the party entering into the contract for the performance of the specified work, and his or her legal representatives or agents. Upon award of the Contract, these instructions shall become a part of the Contract Documents.

PLANS AND SPECIFICATIONS

The bid packet, specifications and plans are available on our website at <https://www.pdhp.org/bids-rfps/>. Please note that if you intend to submit a bid for this project, then it is your responsibility as a potential contractor to register with Jeff Smith via jsmith@pdhp.org or (847) 579-3109. This will identify that you have downloaded the bid documents, and you will then be considered a registered plan holder.

BID FORM

Bidders shall submit the bid form provided which shall be filled out completely and addressed as follows: Park District of Highland Park, 636 Ridge Rd., Highland Park, IL 60035.

On the outside of the bid envelope, each sealed bid shall also contain the notation "SEALED BID" along with

- A) 2022 Park Avenue Boat Launch Project
- B) Bidder's Company Name
- C) Date and Time of Bid Opening

Bids for 2022 Park Avenue Boat Launch Project shall be received at or before 1:00pm on Thursday, February 17, 2022 at which time they will be opened and read publicly.

ACCEPTANCE OR REJECTION OF BID

Owner reserves the right to accept or reject any or all bids. In determining the lowest responsive and responsible bidder, Owner further reserves the right to combine or separate or delete any section of work or alternates or items in the bid if it is in the best interest of Owner. In determining whether the bidder qualifies as "responsible," the Owner may rely on all available public information concerning the bidder, including references and information in addition to that provided by the bidder.

BIDDER EXPERIENCE

Contractor bidding the project shall be actively engaged in work of the nature described in the plans and specifications, must have a minimum of 5 years' experience in that work or similar, and must be able to demonstrate that adequate persons and materials are available to perform the work. Contractor shall submit with the bid no less than three (3) references for which Contractor has completed work similar to that described in the plans and specifications.

NON-BARRED BIDDING

Contractor must certify that it is not barred from bidding on this contract as a result of a conviction for the violation of state laws prohibiting bid-rigging or bid-rotating by executing the included certification.

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EXAMINATION OF SITE AND DRAWINGS

Before submitting a bid, Contractors shall carefully examine the drawings and specifications, visit the site, and fully inform themselves as to all conditions and limitations. The failure or omission of any Contractor to receive or examine any form or document, or to visit the site and become acquainted with existing conditions shall in no way relieve Contractor from any obligation with respect to their bid. By submitting a bid, Contractor warrants that he / she has examined the site, specifications, and drawings, and that where the specifications require that a given result be produced, the specifications and drawings are adequate and the required result can be produced using the specifications and drawings. If applicable, Contractor shall also attend any mandatory pre-bid meetings.

PERFORMANCE BOND

Contractor, before commencing Work, shall furnish a Performance Bond and a Labor and Material (aka Payment) Bond. The Performance Bond shall be in an amount equal to 100% of the full amount of the Contract Sum as security for the faithful performance of the obligation of the Contract Documents, and the Labor and Material Payment Bond shall be in an amount equal to 100% of the full amount of the Contract Sum as security for the payment of all persons performing labor and furnishing materials in connection with the Contract Documents. Such bonds shall be issued by a surety satisfactory to the Owner, and shall name the Owner as a primary co-obligee. The cost of the bonds is to be included in the Bid Proposal. The Performance Bond and Labor and Material Payment Bond will become a part of the Contract. The failure of the successful Contractor to enter into a Contract and supply the required Bonds within ten (10) days after the Notice of Award or within such extended period as the Owner may grant if the forms do not meet its approval shall constitute a default, and the Owner may either award the Contract to the next responsible, responsive Contractor or re-advertise for bids. A charge against the defaulting Contractor may be made for the difference between the amount of the bid and the amount for which a contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the bid guarantee.

LIENS

Waivers of lien shall be submitted with all payment applications. Waivers shall be supplied from all subcontractors and suppliers involved in the contract work. Neither final payment nor any part of the retained percentages shall become due until Contractor delivers to Owner a complete release of all liens arising out of this contract. Waivers of Lien must include the following language “All Materials taken from fully paid for stock and delivered by our own trucks to the project site” AND “All wages paid according to Prevailing Wage Act”.

ASSIGNMENT AND SUBCONTRACTORS

Contractor shall not assign any part of this contract, or award any work under this contract to any Subcontractor without prior written approval from the Owner. Nothing contained in the contract documents shall create any contractual relation between any Subcontractor and the Owner.

INSURANCE

NOTE: Contractors’ attention is directed to the insurance requirements set forth in the Contract Documents and below. It is highly recommended that Contractors confer with their respective insurance carriers or brokers to determine in advance of bid submission, the availability of insurance certificates and endorsements as prescribed and provided herein. If

an apparent low bidder fails to comply strictly with the insurance requirements, that Contractor may be disqualified from award of the contract.

FEDERAL LABOR STANDARDS AND EQUAL EMPLOYMENT REQUIREMENTS

In the event Contractor does not comply with any provision of the Illinois Prevailing Wage Act, Equal Employment Opportunity Clause, the Illinois Fair Employment Practices Act or the Fair Employment Practices Commission's Rules and Regulations for Public Contracts, Contractor may be declared non-responsible and therefore ineligible for future contracts with the State of Illinois or any of its political subdivisions, and the contract may be canceled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.

Contractor agrees to the following:

A. Contractor shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. Contractor shall take affirmative action to insure applicants are employed, and the employees are treated during employment, without regard to race, creed, color, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship.

B. Solicitation or advertisements for employees placed by or on behalf of Contractor shall state that applicants receive consideration for employment without regard to race, creed, color, or national origin.

PREVAILING WAGE LAW

Contractor must pay and require all subcontractors to pay the prevailing rate of wages to all related laborers, workers, and mechanics involved in the project. As established by the Illinois Department of Labor for each craft or type of work needed to execute the contract in accordance with 820 ILCS 130/.01 et seq. The Illinois Department of Labor publishes the prevailing wage rates on its website at: <https://www.illinois.gov/idol/Laws-Rules/CONMED/Pages/Rates.aspx> Contractor is advised that the Department revises the prevailing wage rates and the Contractor has an obligation to check the Department's web site for revisions. Contractor shall prominently post the current schedule of prevailing wages at the Contract site and shall notify immediately in writing all of its Subcontractors, of all changes in the schedule of prevailing wages. Any increases in costs to Contractor due to changes in the prevailing rate of wage during the terms of any contract shall be at the expense of Contractor and not at the expense of the Owner. The change order shall be computed using the prevailing wage rates applicable at the time the change order work is scheduled to be performed. Contractor shall be solely responsible to maintain accurate records as required by the prevailing wage statute and to obtain and submit all such certified records to the Illinois Department of Labor Certified Transcript of Payroll Portal at <https://www2.illinois.gov/idol/Laws-Rules/CONMED/Pages/CertifiedTranscriptOfPayroll.aspx> no later than the 15th of each calendar month following a month in which construction on the project has occurred as required by Statute. Contractor shall furnish the District confirmation that certified payroll was submitted. In lieu of certified payroll, Contractor shall submit a letter setting forth the basis upon which Contractor has concluded the Act does not apply. Contractor shall be solely liable for paying the difference between prevailing wages and any wages actually received by laborers, workmen and/or mechanics engaged in the Work and in every way defend and

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indemnify the District against any claims arising under or related to the payment of wages in accordance with the Prevailing Wage Act.

COMPLIANCE WITH AMERICANS WITH DISABILITIES ACT (ADA)

Contractor shall not discriminate on the basis of disability, and shall comply with pertinent sections of the Americans with Disabilities Act.

COMPLIANCE WITH ALL APPLICABLE LAWS

Contractor shall comply with all applicable laws, regulations, and rules promulgated by any Federal, State, County, Municipal and or other governmental unit or regulatory body now in effect during the performance of the work. By way of example, the following are included within the scope of the laws, regulations and rules referred to in this paragraph, but in no way to operate as a limitation on the laws, regulations and rules with which Contractor must comply, are all forms of Workers Compensation Laws, all terms of the Equal Employment Opportunity Clause of the Illinois Fair Employment Practices Commission, the Social Security Act, the Substance Abuse Prevention on Public Works Act, Statutes relating to contracts let by units of government, all applicable Civil Rights and Anti-Discrimination Laws and Regulations, Americans with Disabilities Act and traffic and public utility regulations. Contractor shall also furnish without charge any affidavit or Certificate in connection with the work covered by this agreement as required by law.

CHANGES IN THE WORK

After the award of the contract, Contractor shall be advised who the Owner's Representative shall be on this project. Minor field changes that are in the best interest of the Owner may be made by the Owner's Representative, with the understanding of both parties that no change in contract price is involved. Where adjustment of contract price is made, a written "Change Order" shall be submitted to and accepted by the Owner before any change is made.

PAYMENT

For projects extending longer than a month, payment request shall be made monthly for that portion of the project which has been completed. Payment request are due no later than the 1st of the month with all necessary documentation to the Owner's Representative. An amount equal to ten percent (10%) shall be withheld from each payment until sixty (60) calendar days after final acceptance by the Owner. Payment by the Owner may be by credit card.

SCHEDULE OF WORK

Contractor shall commence work on September 6, 2022 and work shall be completed by May 12, 2023. The Owner shall pre-approve start date of project. Work shall be completed in accordance with the following site schedule:

Invitation for Bid Release	January 19, 2022
Mandatory Pre-Bid Meeting	February 2, 2022 at 1:00pm CST
Sealed Bids Due No Later Than 1:00 pm CST	February 17, 2022
Anticipated Contract Award	March 31, 2022
Construction Start	September 6, 2022
Project Completion	May 12, 2023

GUARANTEE

Except as otherwise specified, Contractor shall guarantee all workmanship and materials, including plant material for a period of one (1) year from date of final completion and acceptance.

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Neither the final payment nor termination of the guarantee period, nor any provision in the contract document, shall relieve Contractor of the responsibility for negligence, faulty materials or workmanship within the extent and period provided by law. Upon written notice, Contractor shall remedy any defects, and shall pay all expenses for damage to other work resulting from that defect.

If the drawings and/or specifications provide for methods of construction and installation, or materials which cannot be guaranteed by Contractor for the indicated period, Contractor shall so inform the Owner in writing prior to submitting a bid. Otherwise, Contractor shall guarantee all methods of construction and installation, and materials for the indicated period of time.

GENERAL TERMS

In addition to all other requirements of the Contract Documents (including but not limited to the General and Supplementary Conditions that may be contained within or referred to in other Contract Documents (e.g., General Conditions, as modified by Park District “Supplementary Conditions”) and the Drawings and Specifications and other portions of the Project Manual), the following general terms also apply:

TERMS

"Owner" shall refer to the Park District of Highland Park. "Contractor" shall refer to the party entering into the contract for the performance of the specified work, and his or her legal representatives or agents. "Engineer/Architect" shall refer to SmithGroup, Inc., the firm that prepared construction documents and is undertaking construction observation. "Owner's Representative" shall refer to a designated employee or employees of SmithGroup, Inc.

LAWS AND PERMITS

Contractor shall at all times observe and comply with federal, state and local laws, regulations and ordinances which in any manner affect the conduct of the work. Complaints, claims or actions brought against Contractor for failure to observe or comply with any law, ordinance or regulation shall be the sole responsibility of Contractor and shall in no way extend to or expose the Owner or Engineer/Architect to liability. Contractor shall perform all work and use only those materials conforming to city, county, state and federal codes regarding health, safety and welfare. The Owner and Engineer/Architect shall not be held responsible for failure of work or materials that do not conform to codes. Prior to beginning the work, Contractor shall obtain permits and licenses, pay charges and fees, and give notices necessary and incident to the due and lawful prosecution of the work.

INTENT OF CONTRACT DOCUMENTS

The Contract Documents are intended to include all items necessary to complete the Work. Contractor shall perform the work and incidental construction in the manner specified in the Contract and shall furnish all materials, labor, tools, equipment and incidentals necessary to complete the work. Plans and specifications are intended to be complimentary. Work or materials called for by one shall be binding as if called for by all.

PLANS & SPECIFICATION DIMENSIONS

Drawings are fully figured and dimensioned. Figures shall be followed without regard to scaled measurement from plans. When figures have been omitted, or when a marked discrepancy exists between figures and scale, the question shall be referred to the Owner's Representative for a final decision or interpretation.

ERRORS AND DISCREPANCIES

If Contractor, during work, finds discrepancies between the plans and the physical conditions or any errors or omissions, it shall be his duty to notify Engineer/Architect immediately. Engineer/Architect shall verify such findings and determine the course of action, if any, necessary. Any work done after such discovery and without approval to commence from the Owner's Representative, shall be done at Contractors risk. Engineer/Architect reserves the right to prepare supplementary plans showing any additional or revised details for construction purposes not show on the Contract plans when necessary.

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When information concerning underground, subsurface or other concealed conditions, borings, soil analysis, utility locations or conditions, test pits, buried structures, condition of existing structures and other investigations have been provided to Contractor such information has been made available for Contractor's convenience and is not part of the Contract. Neither Owner nor Engineer/Architect shall be responsible for the accuracy of such information. A guarantee is not expressed or implied that indicated conditions are representative of those existing throughout the work, or at any particular location, or that the indicated condition may not change or that unanticipated conditions may not be present.

SUBSTITUTIONS

Each bid shall be based upon the material and equipment called for in the plans and specifications. Items called for in the plans and specifications are done so to establish a standard. Only prior written approval from Engineer/Architect shall allow any substitution of material, furnishing or article in place of the item specified. References to the term "equal" or "approved equal" shall mean that an item used in place shall be of equal or greater quality and shall be approved in the manner described in this section as a substitute to the specified material, furnishing or article.

Requests for substitutions shall be made five (5) calendar days prior to bid opening date to Engineer/Architect. Each substitution request shall include a complete description of the proposed substitute, the name of the material or equipment for which it is to be substituted, all specifications for requested substitute including drawings with dimensions and any other data or information necessary for a complete evaluation. Any substitution accepted by Engineer/Architect shall be done so in a written addendum to the bid documents: no other substitution shall be granted.

CONTRACTOR NOTIFICATION RESPONSIBILITIES & TIMELY DEMAND FOR INSTRUCTIONS

Contractor shall have a complete copy of specifications and plans at the work site whenever work is in progress. Contractor shall notify Engineer/Architect, in writing, a minimum of 48 hours in advance of beginning the work, and shall notify Engineer/Architect a minimum of 48 hours in advance by phone when approvals are needed including: layout staking, all grading, drainage, and other major items of construction for field checking of construction. Copies of material delivery tickets shall be furnished to Engineer/Architect.

All work and materials shall be open to the inspection of Engineer/Architect and the Owner at all times. Contractor shall also furnish upon request of Engineer/Architect at his expense, a person or persons familiar with the project to review work on site and discuss any matters with Engineer/Architect about the work or Contract when Engineer/Architect gives 48 hours notice for such a meeting or whenever Contractor's staff is present at the site.

SUBCONTRACTORS AND SUPPLIERS

Contractor shall provide a list of subcontractors and suppliers to Engineer/Architect for approval prior to commencing the work. When any subcontractor or supplier fails to perform the work in accordance with the Contract, Contractor shall terminate such subcontractor or supplier upon written notice by Engineer/Architect. Contractor shall have no claim for damages, compensation in excess of Contract price or an extension of Contract time as a result of any such termination. Contractor shall not let or transfer this contract or any part thereof without the written consent of the Owner and Engineer/Architect. Contractor shall not be relieved from any liability or obligation under this Contract when work is assigned to others.

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OWNER'S RIGHT TO DO WORK:

The Owner reserves the right to perform or have performed other work at the project site. Contractor shall afford the Owner and other contractors reasonable opportunity for the execution of other work and shall properly coordinate the work with other work.

RIGHT TO SUSPEND WORK:

Engineer/Architect or the Owner will notify contractor in writing when the work is to be suspended wholly or in part for such periods deemed necessary. Where due work may be suspended for unsuitable weather, other conditions unsuitable for the prosecution of the work, any condition deemed to be in the public's best interest, failure of Contractor to carry out provisions of the Contract, or failure of Contractor to carry out orders. Contractor shall maintain work site safety and protect the Work as provided in the General Conditions. No additional compensation shall be paid to Contractor because of such suspension. Contractor shall not suspend the Work without written authority of Engineer/Architect or the Owner.

ALTERATIONS, EXTENSIONS AND DEDUCTIONS:

The Owner reserves the right to extend or shorten the work, alter the plans, add incidental work, and increase or decrease quantities of work to be performed in accord with these changes, including the cancellation or deduction of any one or more of the work items. Changes shall not be considered as a waiver of Contract conditions.

Alterations, extensions and deductions shall be authorized by a written change order issued by Engineer/Architect and signed by Contractor and Owner before work is started. Change orders shall state the items of work involved, changes in Contract amount, and any extension in completion time. Claims for extra work, which have not been authorized by a written change order, will be rejected.

In the case of work specified by the Owner or Engineer/Architect to be completed by Contractor, but not indicated on the plans or specifications, or not susceptible to classification under the Schedule of Unit Prices in the bid, Contractor shall and will perform such work and furnish such materials as may be required. An agreement to the costs of such work and necessary materials shall be agreed upon before commencement of work, and shall be in writing.

The Owner shall have the right to increase or diminish all or any Contract amount or items without impairing the volume or scope of this Contract so long as these alterations do not change the amount of the contract price more than thirty-five percent (35%).

DISCHARGE OF EMPLOYEES:

When any person employed by Contractor fails to perform the work according to the Contract, appears to be incompetent or exhibits disorderly conduct or improper manner, such person shall be immediately removed from the work on written request. Contractor shall have no claim for damages or extension of time as a result of such termination. Should Contractor fail to remove such person or persons as required above, or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, Owner's Representative may suspend the work.

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USE OF SITE

Contractor shall confine equipment, material storage and workers operations to limits indicated by law, ordinances, plans, permits or directions of the Owner and as per plans. Contractor shall not unreasonably encumber the site with materials or cause inconvenience to the Owner, public or other contractors. Contractor's responsibilities for usage of the site shall include:

1. Utilities: Contractor shall obtain permits, provide and make payment for such utilities as water, electricity, heat/air, telephone and waste disposal when necessary in performing the work.
2. Buildings: Contractor shall obtain permits, provide and make payment for temporary structures such as offices, sheds, trailers, and sanitary facilities, and necessary maintenance of structures in performing the work.
3. Pumping: When during construction, standing water caused by heavy rains or poor drainage becomes a hazard to the work, Contractor shall provide and make payment for removal of water to existing drainage swales, storm sewers or other natural or manufactured drainage ways. See Erosion and Sediment Control in Specifications in Special Provisions.
4. Temporary Roads and Turnarounds: Contractor shall provide for temporary roads as necessary or access to and within the site during the construction. All temporary roads or turnaround points shall be approved prior to construction.
5. Storage: Materials and equipment shall be stored in a manner that preserves their quality. When necessary, materials and equipment shall be placed under cover, on wooden platforms or other hard, clean surfaces, and not on the ground. Private property shall not be used for storage purposes without written permission from the owner of the property. Location of any storage area is subject to approval by the Owner.
6. Parking: Contractor's construction vehicles parked on the site shall not inhibit construction or prevent access for emergency or other official vehicles. Parking areas are subject to Owner's Representative's approval. Parking is prohibited under the dripline of trees to be saved.

WORK SITE SAFETY

Contractor shall be solely responsible for providing and maintaining safe conditions at the work site, including the safety of persons and property and shall comply with applicable laws and safety regulations to prevent injury to persons or damage to property. Contractor is responsible for protecting public from dangerous situations on the site during Construction. This requirement shall apply continuously and shall not be limited to normal working hours.

Whenever public or private property is damaged, Contractor shall at his/her own expense, restore such property to a condition equal to that existing before the damage was done. Contractor shall also be responsible for damage to the work by actions of the elements or from any other cause whatsoever and shall restore the work at his/her own expense. A registered Land Surveyor at Contractor's expense shall replace existing property corners disturbed or lost during construction. When the site is opened for usage after final acceptance, damage to the work shall not be due to Contractor's fault or negligence.

Contractor shall have no claim against the Owner or Engineer/Architect because of any damage or loss to the work or to Contractor's equipment, materials or supplies from any cause, including damage or loss due to simultaneous work by others.

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When Owner's Representative deems any operation, condition or practice to be unsafe Contractor shall take corrective action before affected work is resumed. Contractor shall protect public and adjacent properties including roadways and shall use necessary precautions to prevent damage or injury thereto. Contractor shall prevent damage to pipes, conduits, and other underground structures as well as fences, monuments or other aboveground structures. Vegetation not marked for removal shall not be cut, trimmed or damaged except with the approval and under the direction of Owner's Representative: Contractor shall provide on-site traffic patterns away from existing vegetation, provide necessary ramps and shall not park vehicles near or under existing vegetation. Contractor shall not park or maneuver equipment or stockpile materials within ten (10) feet of tree drip lines or plants to be protected. Vegetation damaged during construction is subject to replacement at Contractor's expense. Contractor shall protect the Owner's employees and the public by maintaining barricades, warning signs, flags, lights and temporary passageways around construction areas, covering holes, properly storing materials and equipment and providing other suitable methods for the protection of said persons.

LABOR, EQUIPMENT AND METHODS

Contractor shall at all times employ sufficient labor and equipment for prosecuting the work in the manner and time specified. Workers shall have sufficient experience and skill to properly perform the Work and operate the equipment.

Equipment used shall be of such type, size and amount and in such mechanical condition as to meet the requirements of the work and produce a satisfactory quality of work. Contractor shall replace unsatisfactory equipment and furnish additional equipment when deemed necessary by Owner's Representative.

The specified methods and equipment shall be used in the prosecution of the work unless otherwise authorized by Owner's Representative. However, Contractor alone shall bear the responsibility for safety of the persons and property and shall immediately notify Owner of any specified method that creates any risk of injury or damage to persons or property. Contractor may make a written request to Owner's Representative to use a method or type of equipment other than those specified. The request shall include a description of the proposed methods, equipment and an explanation of the reasons for the substitution. When Owner's Representative authorizes trial use of the substitution, Contractor shall be responsible for producing the work in conformance with the Contract. If Owner's Representative determines that the trial method or equipment does not conform to the Contract requirements, Contractor shall discontinue use of the substitute method or equipment and shall complete the remaining work with the specified methods or equipment. Contractor shall remove defective work and replace it with work meeting the Contract requirements or take other corrective action as directed by Owner's Representative. No increase will be made in payment or in contract time as a result of authorizing a change in methods or equipment under these provisions.

SUSTAINABILITY

Owner is committed to sustainable practices that benefit our environment and the health and safety of our customers. Contractor agrees to work with Owner, if applicable, on sustainable project elements and materials.

INSPECTION AND TESTING

Materials and equipment to be used in the work shall be subject to testing at all times during fabrication as specified or designated by Owner's Representative. Contractor shall give advance

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notice to permit tests or inspections to be performed prior to incorporating materials or equipment into the work. Without charge to the Owner, Contractor shall furnish such amounts of materials needed for testing and shall afford the inspector such facilities required for collecting samples and making inspections. Unless otherwise specified, the Owner will bear the cost of inspections and testing of materials.

SUBMITTALS

Contractor shall submit to Owner's Representative required shop drawings (three sets each), product data and samples concerning materials and equipment. Owner's Representative's review and approval of required submittal shall be for the sole purpose of examining the general details and design of the proposed work and shall not be regarded as an assumption of risk or liability. Equipment and materials installed or used without such review shall be at risk of rejection and replacement by Contractor at no cost to the Owner. Submittals shall become part of the Contract Documents. Contractor shall be responsible for any delay in the work due to a delay in providing required submittals.

Unless otherwise specified, equipment and materials are to be new and of best quality. Materials, equipment or work having a well-known, technical or trade meaning but not specifically defined in the Contract Documents, shall be construed in accordance with such well-known meaning recognized by Architects, Engineer/Architect and Tradesmen.

REMOVAL OF DEFECTIVE WORK

Engineer/Architect may reject and require correction of any work that does not conform to the Contract Documents. Contractor shall correct condemned workmanship and immediately remove and replace rejected materials and equipment without additional cost to the Owner. When Contractor fails to correct condemned work and remove rejected materials and equipment from the site, the Owner reserves the right to refuse payment for such work and perform such work or hire others to perform such work and the expense thereof shall be deducted from the amount to be paid Contractor.

Until final payment, all work shall be subject to inspection and testing, which includes removing or uncovering finished work when necessary. Contractor shall provide access and assistance required for such inspection and testing and shall furnish necessary facilities, labor and materials for such removal and approved replacement. Nothing in this Contract shall be construed to mean that the Owner or Engineer/Architect waives the right to later complain about defective materials or workmanship even after final acceptance.

When questioned work is found to be defective due to fault of Contractor, subcontractor, suppliers or their employees, Contractor shall pay for the cost of such inspection and reconstruction. When questioned work is found to meet Contract requirements, Owner shall pay actual cost of labor and materials involved in inspection and reconstruction, plus the Owner shall allow Contractor 10%.

COMPLETION DATE

Contractor warrants that the commencement and completion dates specified in the Instructions to Bidders is reasonable time for completion of the work for the Contract price taking into consideration natural and manufactured conditions that may affect the work.

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CLEANING UP

Contractor shall keep the project site and adjoining premises and thoroughfares free from accumulation of waste material or rubbish caused by the work on a daily basis. Upon completion of the work, Contractor shall remove equipment, rubbish, tools, and surplus materials from the site and adjoining premises. When Contractor fails to do so within five (5) calendar days of a written request by the Owner's Representative, the Owner may remove the items and deduct the cost of such removal from Contractor's final payment.

Dust shall be kept to a minimum during construction by means of wetting the site or other approved methods. Contractor shall wash down all existing sidewalks and roadways on and off site once a week during construction to keep the area clean. See also Restoration of Disturbed Areas / Site Cleanup in Special Provisions.

PAYMENT

All invoices should be submitted to Engineer/Architect by the first business day of the month for Engineer/Architect review and then submittal to Owner in order to receive payment in the same month.

Engineer/Architect and the Owner shall make a final inspection of work after Contractor notifies the District that work is substantially complete. Contractor will be notified in writing of all punch list items, if any, to be corrected or completed before final acceptance is granted. Following Contractor's completion of all punch list work, Engineer/Architect shall provide a written notice of final acceptance to Contractor. The date of the final acceptance letter shall be the beginning date of the one-year guarantee or work as stated in the Instructions to Bidders.

Upon written final acceptance, Contractor shall submit final waivers of lien, and a final request for payment, including retained monies. Final payment shall be made to Contractor within sixty (60) calendar days after receipt of the above items. Contractor may request a reduction of the percentage of retainage during the one hundred twenty-day period and a payment of a portion of the retainage may be made at the Owner's discretion.

OWNERSHIP OF PLANS, SPECIFICATIONS

All Plans and Specifications and copies thereof furnished by or purchased are properties of the Owner and are not to be used on other work. With the exception of one complete set, all documents are to be returned upon contract completion.

FREEDOM OF INFORMATION ACT REQUESTS

Contractor agrees to maintain, without charge to the Owner, all records and documents for projects of the Owner in compliance with the Freedom of Information Act, 5 ILCS 140/1 et seq. In addition, Contractor shall produce records which are responsive to a request received by the Owner under the Freedom of Information Act so that the Owner may provide records to those requesting them within the time frames required. If additional time is necessary to compile records in response to a request, then Contractor shall so notify the Owner and if possible, the Owner shall request an extension so as to comply with the Act. In the event that the Owner is found to have not complied with the Freedom of Information Act due to Contractor's failure to produce documents or otherwise appropriately respond to a request under the Act, then Contractor shall indemnify and hold the Owner harmless, and pay all amounts determined to be due including but not limited to fines, costs, attorneys' fees and penalties.

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INSURANCE

Contractor shall keep in force, to the satisfaction of the Owner, at all times during the performance of any work referred to above, and unless otherwise agreed by Owner, Workers Compensation and Employer's Liability Insurance, Commercial General Liability Insurance, and Automobile Insurance in at least the type and amounts as follows:

1. Workers' Compensation:
 - a. State: Statutory
 - b. Applicable Federal (e.g., Longshoremen's): Statutory
 - c. Employer's Liability

\$1,000,000.00	Per Accident
\$1,000,000.00	Disease, Policy Limit
\$1,000,000.00	Disease, Each Employee

2. Commercial General Liability:
 1. \$2,000,000.00 General Aggregate
 2. \$1,000,000.00 Products Completed Operations Aggregate
 3. \$1,000,000.00 Personal and Advertising Injury
 4. \$1,000,000.00 Each Occurrence
 5. \$ 50,000.00 Fire Damage (any one fire)
 6. \$ 5,000.00 Medical Expense (any one person)

3. Business Automobile Liability (including owned, non-owned and hired vehicles):
 - a. Bodily Injury:

\$1,000,000.00	Per Person
\$1,000,000.00	Per Accident
 - b. Property Damage:

\$1,000,000.00	Per Occurrence
----------------	----------------

4. Umbrella Excess Liability:

\$2,000,000.00	over Primary Insurance
----------------	------------------------

B. Deductibles and Self-Insured Retentions. Any deductibles or self-insured retention's must be declared to and approved by the Owner. At the option of the Owner either: the insurer shall reduce or eliminate such deductibles or self-insured retention's as respects the Owner, its officers, officials, employees, volunteers and agents; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

C. Other Insurance Provisions. The policies are to contain, or be endorsed to contain, the following provisions:

1. Regarding General Liability and Automobile Liability Coverage

- i. The Owner, its officers, officials, employees and volunteers, and Engineering or Architectural Firm, its officers, officials, employees, and volunteers, are to be covered as additional insured as respects: liability arising out of activities

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performed by or on behalf of the Contractor, including the insured's general supervision of the Contractor; products and completed operations of the contractor; premises owned, occupied or used by the Contractor; or automobiles owned, leased, hired or borrowed by the contractor. Coverage shall contain no special limitations on scope of protection afforded to the Owner, its officers, officials, employees, volunteers, or agents.

- ii. The Contractor's insurance coverage shall be primary insurance as respect to the Owner, its officers, officials, employees, volunteers, and agents. Any insurance or self-insurance maintained by the Owner, its officers, officials, employees, volunteers or agents shall be excess of the Contractor's insurance and shall not contribute with it.
- iii. Any failure to comply with reporting provisions of the policies shall not affect coverage to the Owner, its officers, officials, employees, volunteers, or agents.
- iv. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

2. Workers' Compensation and Employers Liability Coverage

- i. The insurer shall agree to waive all rights of subrogation against the Owner, its officers, officials, employees, volunteers, and agents for losses arising from work performed by the contractor for the Owner.

3. All Coverage

- i. Each insurance policy required by this clause shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) calendar days' prior written notice by certified mail, return receipt requested, has been given to the Owner.

D. Acceptability of Insurers. Insurance is to be placed with insurers with a Best's rating of no less than A: VII and licensed to do business in the State of Illinois.

E. Verification of Coverage. Contractor shall furnish the Owner with certificates of insurance and with original endorsements if applicable effecting coverage required by this clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements are to be received and approved by the Owner before work commences. The Owner reserves the right to require complete, certified copies of all required insurance policies, at any time.

F. Subcontractors. Contractor shall include all subcontractors as insured's under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein.

G. Indemnification.

To the fullest extent permitted by law, to waive any and all rights of contribution against Owner and to indemnify and hold harmless and its officers, officials, employees, volunteers and agents from and against

Park District of Highland Park
2022 Park Avenue Boat Launch Project

all claims, damages, losses and expenses, including, but not limited to, legal fees (attorney's and paralegal's fees, expert fees and court costs) arising out of or resulting from the performance of the Contractor's work, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or injury to or destruction of property, other than the work itself, including the loss of use resulting therefrom, or is attributable to misuse or improper use of trademark or copyright protected material or otherwise protected intellectual property, to the extent it is caused in whole or in part by any wrongful or negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right to indemnity which Owner would otherwise have. Contractor shall similarly, protect, indemnify and hold and save harmless, Owner, its officers, officials, employee, volunteers and agents against and from any and all claims, costs, causes, actions and expenses, including, but not limited to, legal fees, incurred by reason of Contractor's breach of any of its obligations under, or Contractor's default of any provisions of the Contract. The indemnification obligations under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any subcontractor under Workers' Compensation or Disability Benefit Acts or Employee Benefit Acts.

Accordingly, the Commercial General Liability Policy shall provide for coverage of contractual indemnification obligations.

H. An endorsement containing the following: "Solely as respects to work done by and on behalf of the named insured for the Park District of Highland Park, it is agreed that the Park District of Highland Park, its officers, officials, employees, volunteers, and agents, SmithGroup, Inc., and City of Highland Park, are added as additional insured under this policy."

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ACKNOWLEDGEMENT OF DOCUMENTS

1. Receipt of Documents: Contractor has received a complete set of specifications and plans and understands the meaning of their content, and shall willingly comply with the guidelines set forth in these documents.

Yes	No
—	—

2. Identification of Documents Received: The following is a checklist of documents that should appear in the Bid Documents. Please complete the checklist and contact Owner if any of the documents have been omitted.

	Yes	No
ADVERTISMENT FOR BID	—	—
INVITATION TO BID	—	—
INSTRUCTIONS TO BIDDERS	—	—
GENERAL TERMS	—	—
ACKNOWLEDGEMENT OF DOCUMENTS	—	—
BID FORM	—	—
REFERENCES	—	—
CONTRACTOR PROFILE AND QUALIFICATIONS	—	—
CERTIFICATION OF ELIGIBILITY	—	—
SAMPLE CONTRACT	—	—
TECHNICAL SPECIFICATIONS	—	—

Park District of Highland Park
2022 Park Avenue Boat Launch Project

BID FORM
 (Page 1 of 4)

TO: Park District of Highland Park
 636 Ridge Road
 Highland Park, IL 60035

FROM: _____
 Company

 Street Address

 City, State, Zip

 Phone

FOR: 2022 PARK AVENUE BOAT LAUNCH PROJECT

BASE PROPOSAL:

Item #	Item Description	Quantity	Unit	Unit Price Bid	Extended Price
1	Mobilization/Demobilization	1	LS		
2	Erosion Control	1	LS		
3	Cofferdam and Dewatering	1	LS		
4	Site Fencing	1	LS		
5	Excavation, Demolition, & Removal of Parking Lot Concrete & Asphalt Pavement	1	LS		
6	Demolition and Disposal of Existing Barge	1	LS		
7	Salvage, Storage and Replacement of Existing Armor Stone	1	LS		
8	Excavation, Demolition, & Removal of Existing Launch Ramp & Docks	1	LS		

Park District of Highland Park
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Item #	Item Description	Quantity	Unit	Unit Price Bid	Extended Price
9	New Concrete Launch Ramp	1	LS		
10	Concrete Abutment	2	EA		
11	Steel Sheet Pile Breakwater (including wales, tie rods and all necessary appurtenant metals)	1	LS		
12	Concrete Crown Wall	200	LF		
13	Concrete Decking on Steel Sheet Pile Breakwater	1	LS		
14	Lake Fill - Breakwater	2,500	CY		
15	Lake Fill - Launch	228	CY		
16	Concrete Paving – Parking Area	1,500	SF		
17	Asphalt Paving	1,125	SF		
18	Steel Guide Piles	10	EA		
19	Scour Protection Stone - Type A	290	Ton		
20	Scour Protection Stone - Core Stone	100	Ton		
21	Scour Protection Stone - Type B	80	Ton		
22	North and Northwest Bollards	1	LS		

TOTAL BASE PROPOSAL

\$ _____

BID FORM
(Page 2 of 4)

Park District of Highland Park
2022 Park Avenue Boat Launch Project

ALTERNATES:

Item #	Item Description	Quantity	Unit	Unit Price Bid	Extended Price
A1	Solar Flood Lights & Poles	2	EA		
A2	Solar Navigation Light & Pole	1	LS		
A3	Breakwater Bollard & Chain System	1	LS		
A4	Breakwater Cleats	13	EA		
A5	Floating Dock System	1	LS		
A6	Temporary Boat Launch Repair Removal	1	LS		

Receipt of Addenda: The receipt of the following addenda is hereby acknowledged:

Addendum No. _____, Dated _____

Addendum No. _____, Dated _____

Park District of Highland Park
2022 Park Avenue Boat Launch Project

BID FORM
(Page 4 of 4)

SUBCONTRACTORS: List Name, Address, Phone and Work Assignment

1. _____

2. _____

3. _____

The undersigned bidder has carefully examined the plans and specifications for the 2022 Park Avenue Boat Launch Project as prepared by the Owner and/or Engineer/Architect, and having carefully examined the site and completely familiarized him/herself with local conditions affecting the cost of the work: hereby states that he/she will provide all necessary labor, equipment, tools, machinery, apparatus and all other means of construction, do all the work and furnish all materials, called for by said plans and specification and drawings: and will accept as full and complete payment therefore the base bid amount which is the summation of the cost of the items of work and is equal to the summation of the extension of the unit prices.

BY: _____
Name and Title of Authorized Agent

Authorized Signature

Date

Park District of Highland Park
2022 Park Avenue Boat Launch Project

REFERENCES

Contractor shall include at least three (3) references with which the Contractor has completed similar work of approximate magnitude required under this contract.

Project Name _____
Project Location _____
Contact Person _____
Telephone Number/E-Mail _____
Project Completion Date _____

Project Name _____
Project Location _____
Contact Person _____
Telephone Number/E-Mail _____
Project Completion Date _____

Project Name _____
Project Location _____
Contact Person _____
Telephone Number/E-Mail _____
Project Completion Date _____

Project Name _____
Project Location _____
Contact Person _____
Telephone Number/E-Mail _____
Project Completion Date _____

Project Name _____
Project Location _____
Contact Person _____
Telephone Number/E-Mail _____
Project Completion Date _____

Park District of Highland Park
2022 Park Avenue Boat Launch Project

CONTRACTOR PROFILE AND QUALIFICATIONS

(Page 1 of 2)

Name _____
Address _____
City, State, Zip Code _____
Contact Person _____
Telephone Number _____ E-Mail _____

of Employees _____ Annual Sales # _____
Contractor's organization has been in business under its present business name for ____ years.

Contractor's organization has had experience in work comparable with that required under the proposed contract:

as a prime contractor _____ years;
as a subcontractor _____ years.

The following Contractor's employees will be involved with the proposed contract:

Name _____
Position _____
Years of Experience _____
Responsibility/Task _____

Name _____
Position _____
Years of Experience _____
Responsibility/Task _____

Name _____
Position _____
Years of Experience _____
Responsibility/Task _____

Contractor may attach additional project detail to demonstrate ability to successfully complete work comparable with that required under the proposed contract.

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2022 Park Avenue Boat Launch Project

CONTRACTOR PROFILE AND QUALIFICATIONS

(Page 2 of 2)

1. Within the past ten (10) years, has your firm, any officer or other individual employed by your firm, been the subject of any administrative or judicial proceeding for alleged violations of any law, or any rule or regulation of any governmental body. If yes, please provide a detailed explanation of the proceeding, including the nature of the charge or claim, the disposition of the matter and the specific individuals/entities involved.

2. Within the past ten (10) years, has your firm been the subject of any other type of claim, including by way of example and not limitation, for breach of contract? If yes, please provide a detailed explanation of the proceeding, including the caption, claimant, court or other dispute forum, nature and disposition of the claim.

3. Has your firm ever been terminated prior to completion of its services from any project? If yes, please provide a detailed explanation, including the identities of all entities and individuals involved, the nature of the services which your firm was to provide, the individuals who were assigned to provide the services and the reason given for the termination

Park District of Highland Park
2022 Park Avenue Boat Launch Project

CONTRACTOR'S CERTIFICATION OF ELIGIBILITY

In Compliance 720 ILCS 5/33E-11:

_____,a(n) _____
Print name of Contractor Individual, Partnership, Corporation

as part of his bid or proposal on the above referenced Contract, hereby certifies that the Contractor is not barred from bidding on the above referenced contract or entering into a contract with the Park District of Highland Park as a result of a violation of either Section 33E-3 Bid-rigging or 33E-4 Bid-stating of Article 33E of the Illinois Criminal Code, 720 ILCS 5/33E-1, *et. seq.*, as amended.

Date

Contractor

By: _____

Its: _____
Title

STATE OF ILLINOIS)
) SS
COUNTY OF)

I, the undersigned, a notary public in and for the State and County aforesaid, hereby certify that appeared before me this day in person and, being first duly sworn on oath, acknowledged that he/she is authorized to act on behalf of Contractor, and that he/she executed the foregoing certificate as his/her free act and deed and as the act and deed of Contractor.

DATED: _____, 2022
Notary Public _____

[Notary Seal]

Park District of Highland Park
2022 Park Avenue Boat Launch Project

SAMPLE CONTRACT

The Park District of Highland Park executes an Independent Contractor Agreement for all work. The Park District of Highland Park will use the EJCDC C-520 form of contract, which is included in the bid documents.

TECHNICAL SPECIFICATIONS

PARK AVENUE BOAT LAUNCH PROJECT

Prepared for:



ISSUED FOR BID

Project No: 13258

Issue date: JANUARY 19, 2022

Prepared by:

SMITHGROUP

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APPENDIX

2018 GEOTECHNICAL INFORMATION

1982 TENDER DRAWINGS AND ADDENDUM #1

2021 TEMPORARY REPAIRS OF THE BOAT RAMP

DOCUMENT 000107 - SEALS PAGE

<p>Civil Engineer SmithGroup, Inc. Madison, Wisconsin Robert S. Wright, PE Professional Engineer</p> 	<p>Structural Engineer SmithGroup, Inc Chicago, Illinois John Rushing, SE Structural Engineer</p> 
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END OF SECTION

DOCUMENT 000115 - LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

- A. List of Drawings: Drawings consist of the following Contract Drawings and other drawings of type indicated:

1. G001 Title Sheet
2. G-002 Site Access & Construction Staging Plan
3. CV100 Existing Conditions Plan
4. CD100 Site Preparation Plan
5. CD500 Site Preparation Details
6. CS100 Site Layout & Materials Plan
7. CS102 Site Furnishings Plan
8. CS500 Site Details
9. CS501 Site Furnishing Details
10. CS502 Site Details - Boat Launch
11. S-100 Sheet Pile & Tie Back Layout Plan
12. S-500 Sheet Pile & Tie Back Details

END OF DOCUMENT 000115

DOCUMENT 003119 - EXISTING CONDITION INFORMATION

1.1 PART 1 - GENERAL

1.2 EXISTING CONDITION INFORMATION

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of the Bidders' own investigations. They are made available for Bidders' convenience and information, but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.
- B. Survey information that includes information on existing conditions, prepared by JSD Professional Services, Inc., dated June 23, 2021 is shown on the Contract Drawings.
- C. Previous construction plans by HARZA Engineering Co. titled Tender Drawings and Specifications For Construction of Park Avenue Boat Launching Ramp Plans dated September 1981 and Addendum #1 dated September 8, 1981.
- D. Between the bid date and he proposed start of construction, the Owner may implement temporary repairs as shown in documents prepared by WJE, dated November 2, 2021 and made available for Contractor's reference.
- E. Related Requirements:
 - 1. Park District Invitation for Bid Document "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.
 - 2. Document 003132 "Geotechnical Data" for reports and soil-boring data from geotechnical investigations that are made available to bidders.

END OF DOCUMENT 003119

DOCUMENT 003132 - GEOTECHNICAL DATA

1.1 GEOTECHNICAL DATA

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information. This Document and its attachments are not part of the Contract Documents.
- B. Soil-boring data for Project, obtained by ECS, dated July 17, 2018, is attached to the Contract Documents.
- C. Related Requirements:
 - 1. Park District Invitation for Bid Document "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.
 - 2. Document 003119 "Existing Condition Information" for information about existing conditions that is made available to bidders.

END OF DOCUMENT 003132

DOCUMENT 003143 - PERMIT APPLICATION

1.1 PERMIT APPLICATION INFORMATION

- A. The following permits for the Project have been applied for by the Owner. As of the date of advertisement, applications and supporting documents have been submitted to regulatory agencies, public notices have been issued, and extensive discussions have occurred between the Owner and Regulatory Agencies. While permit issuance is expected within 60-90 days, formal permit issuance has not occurred:
 - 1. IDNR General Permit
 - 2. Army Corps of Engineers Lake Michigan Regional General Permit
 - 3. City of Highland Park Building Permit
- B. Contractor is advised that no work shall be allowed in public waterways until the associated permits have been formally issued.
- C. The Contractor shall be familiar with all permit requirements, responsible for compliance with construction-related permit conditions, and responsible for any fines related to noncompliance with construction-related permit conditions. Contractor shall be fully responsible for project delays resulting from Contractor's failure to comply with permit conditions.

END OF DOCUMENT 003143

NOTICE OF AWARD

Date of Issuance:

Owner:

Owner's Project No.:

Engineer:

Engineer's Project No.: 13258

Project:

Contract Name:

Bidder:

Bidder's Address:

You are notified that Owner has accepted your Bid dated _____ for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

Park Avenue Launch Project

The Contract Price of the awarded Contract is \$_____. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

THREE unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner **THREE** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: **Park District of Highland Park, Highland Park, Illinois**

By (signature): _____

Name (printed): _____

Title: _____

Copy: Engineer

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between the Park District of Highland Park (“Owner”) and _____ (“Contractor”).

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Complete removal of the existing barge breakwater and boat ramp, stockpiling and salvaging existing breakwater fill and armor stone, construction of new steel sheet pile breakwater with concrete crown wall, construction of new concrete boat launch, furnishing and installing all site furniture including bollards, chains, floating docks and lighting, and all associated items at 31 Park Avenue, Highland Park, Illinois. The scope of work includes all necessary workmanship to satisfactorily complete the work as required by the contract documents. Work will start September 6, 2022 and conclude by May 12, 2023.

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Complete removal of the existing barge breakwater and boat ramp, stockpiling and salvaging existing breakwater fill and armor stone, construction of new steel sheet pile breakwater with concrete crown wall, construction of new concrete boat launch, furnishing and installing all site furniture including bollards, chains, floating docks and lighting, and all associated items at 31 Park Avenue, Highland Park, Illinois. The scope of work includes all necessary workmanship to satisfactorily complete the work as required by the contract documents. Work will start September 6, 2022 and conclude by May 12, 2023.

ARTICLE 3—ENGINEER

3.01 The Owner has retained **SmithGroup, Inc.** (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Engineer.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

- A. The Work will be substantially complete on or before **April 22, 2023**, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before **May 12, 2023**

4.05 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer the inconvenience of not having the benefit of its public work if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):
1. *Substantial Completion:* Contractor shall pay Owner \$500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
 2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$500 for each day that expires after such time until the Work is completed and ready for final payment.
 4. Liquidated damages for failing to timely attain Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

ARTICLE 5—CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

- A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the **1st** day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.
1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.
 - a. **90** percent of the value of the Work completed (with the balance being retainage).

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

- A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

- A. The Contract Documents consist of all of the following:
1. Invitation to Bid, Instructions to Bidders, and Bid Submission of Contractor.
 2. This Agreement.
 3. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 4. General Conditions.
 5. Supplementary Conditions.
 6. Specifications as listed in the table of contents of the project manual (copy of list attached).
 7. Drawings (not attached but incorporated by reference) consisting of _____ sheets with each sheet bearing the following general title: **PARK AVENUE BOAT RAMP PROJECT**.
 9. Addenda (numbers _____ to _____, inclusive).

10. Exhibits to this Agreement (enumerated as follows):
 - a. **Contractor's Bid**
 - b. Documentation submitted by Contractor prior to Notice of Award

11. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.

- B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

- C. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 Contractor's Representations

- A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:
 1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
 2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

B. *Additional Representations concerning Regulatory Compliance*

1. **Drugfree Workplace.** The Contractor shall comply with the *Illinois Drug Free Workplace Act* as contained in the Illinois Compiled Statutes Ch. 30, Sec. 580/1 *et. seq.*"
2. **Equal Employment Opportunity.** All companies entering into contractual relationships with the Owner on federal or state-assisted projects must comply with the Illinois Preference Act and Federal Equal Opportunity regulations, including, but not limited to Executive Order 11246-11375.
3. **Record Keeping.** Contractor and any subcontractor shall keep and maintain accurate books of record and account, in accordance with sound accounting principles, of all expenditures made and all costs, liabilities and obligations incurred under this Contract, and all papers, files, accounts, reports, cost proposals with backup data and all other material relating to work under this Contract and shall make all such materials available at the office of the Owner at any reasonable time during the term of this contract and for the length of time established by law or five (5) years, whichever is longer from the date of final payment to Contractor or termination of this Contract for audit, inspection and copying upon Owner's request. The Contractor agrees to maintain all records and documents for projects of the Owner in compliance with the Freedom of Information Act, 5 ILCS 140/1 *et seq.* In addition, the

Contractor shall produce records which are responsive to a request received by the Owner under the Freedom of Information Act so that the Owner may provide records to those requesting them within the time frames required. If additional time is necessary to compile records in response to a request, then the Contractor shall so notify the Owner and if possible, the Owner shall request an extension so as to comply with the Act. In the event that the Owner is found to have not complied with the Freedom of Information Act due to the Contractor's failure to produce documents or otherwise appropriately respond to a request under the Act, then the Contractor shall indemnify and hold the Owner harmless, and pay all amounts determined to be due including but not limited to fines, costs, attorneys' fees and penalties."

4. Substance Abuse Prevention. The Contractor shall comply with and cause all subcontractors to comply with the requirements and provisions of the Illinois Substance Abuse Prevention on Public Works Projects Act (820 ILCS 265/1 *et. seq.*) (the "Act") by:

.1 Prohibiting the use, possession, distribution or delivery of any drug or alcohol (as defined under the Act) or allowing any employee to be under the influence of any said drug or alcohol while performing the Work;

.2 Filing a written substance abuse prevention program with the Owner for the prevention of substance abuse among its employees prior to the commencement of the Work. Said program shall be available to the general public and, at a minimum, contain the following:

.a A minimum requirement of a 9 panel urine drug test plus a test for alcohol. Testing an employee's blood may only be used for post-accident testing, however, blood testing is not mandatory for the employer where a urine test is sufficient;

.b A prohibition against the actions for the use, possession, distribution or delivery of any drug or alcohol (as defined under the Act) or any employee under the influence of any said drug or alcohol while performing the Work;

.c A requirement that employees performing the Work submit to pre-hire, random, reasonable suspicion, and post-accident drug and alcohol testing. Testing of an employee before commencement of the Work is not required if the employee participated in a random testing program during the 90 days preceding the date on which the employee commenced work hereunder; and

.d A procedure for notifying an employee that he or she may not perform any of the Work if he or she: 1) uses, possess, delivers or is under the influence of a drug or alcohol as prohibited under the Act; 2) tests positive for the presence of a drug as outlined in the Act; or 3) refuses to submit to drug or alcohol testing as required under the Contractor's substance abuse program until the employee tests negative for the presence of drugs or alcohol as outlined in the Act or has been approved to commence or return to work in accordance with the Contractor's substance abuse program.

.3 Immediately removing and/or prohibiting access to the Work site of any employee who: 1) uses, possess, delivers or is under the influence of a drug or alcohol as prohibited under the Act; 2) tests positive for the presence of a drug as outlined in the Act; or 3) refuses to submit to drug or alcohol testing as required under the Contractor's substance abuse program. Said employee shall be prohibited from the Work site until he or she tests negative for the presence of drugs or alcohol as outlined in the Act or has been approved to commence or return to work in accordance with the Contractor's substance abuse program; and

.4 Complying with all other requirements of the Act.

.5 Failure by the Contractor to comply with the requirements of the Illinois Substance Abuse Prevention on Public Works Projects Act shall constitute a material default of the Contract and shall give the Owner the right to pursue any remedy available to it at law or in equity, including termination of this Contract for cause in the Owner's sole discretion and any other remedy as provided in this Contract. In the event of a default hereunder, Contractor shall also pay to the Owner all damages Owner is entitled to under this Contract that arise from the default, together with interest, costs, and the Owner's reasonable attorney fees."

5. Contractor warrants that it is familiar with and shall comply with Federal, State and local laws, statutes, ordinances, rules and regulations and the orders and decrees of any courts or administrative bodies or tribunals in any manner affecting the performance of the Contract including without limitation Workers' Compensation Laws, minimum salary and wage statutes and regulations, laws with respect to permits and licenses and fees in connection therewith, laws regarding maximum working hours. No plea of misunderstanding or ignorance thereof will be considered.

6. Whenever required, the Contractor or Subcontractor shall furnish the Architect and Owner with satisfactory proof of compliance with said Federal, State and local laws, statutes, ordinances, rules, regulations, orders, and decrees.

7. Contractor shall carefully examine the Occupational Safety and health Act as issued by the Federal Register (OSHA), and the specific regulations governing procedures, techniques, safety precautions, equipment design, and the configuration of the same as required under this Act and shall comply with all terms of the Act and to perform and complete in a workmanlike manner all work required in full compliance with said Act.

8. Contractor shall comply with all terms of the Illinois Preference Act and all terms of the Equal Employment Opportunity Clause of the Illinois Fair Employment Practices Commission.

9. At all times Contractor shall remain in compliance with the Illinois Public Works Employment Discrimination Act (775 ILCS 10/1, et seq.,) and the Illinois Human Rights Act (775 ILCS 5/2-101, et seq.,), and in addition shall at all times comply with Section 2-105 of the Illinois Human Rights Act requiring a written sexual harassment policy as defined therein.

10. Contractor understands, represents and warrants to the Owner that the Contractor and its Subcontractors (for which the Contractor takes responsibility to insure that they comply with the above-mentioned Acts) are in compliance with all requirements and that they will remain in compliance for the entirety of the Work. A violation of any of the Acts set forth in this Article is cause for the immediate cancellation of the Contract. However, any forbearance or delay by the Owner in canceling this Contract

shall not be considered as, and does not constitute, Owner's consent to such violation and a waiver of any rights the Owner may have, including without limitation, cancellation of this Contract.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

B. Sexual Harassment: The Contractor certifies that it is in Compliance with The Sexual Harassment Provision Of The Human Rights Act."

C. Bid Rigging: The Contractor makes the certification required under Article 33E Of The Criminal Code that it has not engaged in bid rigging or bid rotating.

8.03 *Standard General Conditions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____
(which is the Effective Date of the Contract).

Owner:

Contractor:

(typed or printed name of organization)

(typed or printed name of organization)

By: _____
(individual's signature)

By: _____
(individual's signature)

Date: _____
(date signed)

Date: _____
(date signed)

Name: _____
(typed or printed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

(If [Type of Entity] is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

Address for giving notices:

Designated Representative:

Designated Representative:

Name: _____
(typed or printed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

Address:

Phone: _____

Phone: _____

Email: _____

Email: _____

(If [Type of Entity] is a corporation, attach evidence of authority to sign. If [Type of Entity] is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

License No.: _____
(where applicable)

State: _____

NOTICE TO PROCEED

Owner: _____ Owner's Project No.: B-27-21
Engineer: _____ Engineer's Project No.: 12702.0000
Contractor: _____ Contractor's Project No.: _____
Project: _____
Contract Name: _____
Effective Date of Contract: _____

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [_____] pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement:

The date by which Substantial Completion must be achieved is _____, and the date by which readiness for final payment must be achieved is _____.

Before starting any Work at the Site, Contractor must comply with the following:

Owner: Park District of Highland Park
By (signature): _____
Name (printed): _____
Title: _____
Date Issued: _____
Copy: Engineer

WORK CHANGE DIRECTIVE NO.: [Number of Work Change Directive]

Owner: _____ Owner's Project No.: _____
Engineer: _____ Engineer's Project No.: _____
Contractor: _____ Contractor's Project No.: _____
Project: _____
Contract Name: _____
Date Issued: _____ Effective Date of Work Change Directive: _____

Contractor is directed to proceed promptly with the following change(s):

Description:

[Description of the change to the Work]

Attachments:

[List documents related to the change to the Work]

Purpose for the Work Change Directive:

[Describe the purpose for the change to the Work]

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

Notes to User—Check one or both of the following

Non-agreement on pricing of proposed change. Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: \$ _____ **[increase] [decrease] [not yet estimated].**

Contract Time: _____ days **[increase] [decrease] [not yet estimated].**

Basis of estimated change in Contract Price:

Lump Sum Unit Price Cost of the Work Other

Recommended by Engineer

Authorized by Owner

By:

Title:

Date:

CHANGE ORDER NO.: [Number of Change Order]

Owner: _____ Owner's Project No.: _____
 Engineer: _____ Engineer's Project No.: _____
 Contractor: _____ Contractor's Project No.: _____
 Project: _____
 Contract Name: _____
 Date Issued: _____ Effective Date of Change Order: _____

The Contract is modified as follows upon execution of this Change Order:

Description:

[Description of the change]

Attachments:

[List documents related to the change]

Change in Contract Price	Change in Contract Times [State Contract Times as either a specific date or a number of days]
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. [Number of previous Change Order] : \$ _____	[Increase] [Decrease] from previously approved Change Orders No.1 to No. [Number of previous Change Order] : Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: \$ _____	[Increase] [Decrease] this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required)

Authorized by Owner

By: _____

Title: _____

Date: _____

Authorized by Owner _____ Approved by Funding Agency (if applicable) _____

By: _____

Title: _____

Date: _____

FIELD ORDER NO.: [Number of Field Order]

Owner:	Owner's Project No.:
Engineer:	Engineer's Project No.:
Contractor:	Contractor's Project No.:
Project:	
Contract Name:	
Date Issued:	Effective Date of Field Order:

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification Section(s):
Drawing(s) / Details (s):

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by Engineer

By: _____
Title: _____
Date: _____

PERFORMANCE BOND

<p>Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i>: [Address of Contractor's principal place of business]</p>	<p>Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i>: [Address of Surety's principal place of business]</p>
<p>Owner Name: [Full formal name of Owner] Mailing address <i>(principal place of business)</i>: [Address of Owner's principal place of business]</p>	<p>Contract Description <i>(name and location)</i>: [Owner's project/contract name, and location of the project] Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract]</p>
<p>Bond Bond Amount: [Amount] Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
_____ <i>(Full formal name of Contractor)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
 - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1. *Balance of the Contract Price*-The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2. *Construction Contract*-The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3. *Contractor Default*-Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4. *Owner Default*-Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5. *Contract Documents*-All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

PAYMENT BOND

<p>Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i>: [Address of Contractor's principal place of business]</p>	<p>Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i>: [Address of Surety's principal place of business]</p>
<p>Owner Name: [Full formal name of Owner] Mailing address <i>(principal place of business)</i>: [Address of Owner's principal place of business]</p>	<p>Contract Description <i>(name and location)</i>: [Owner's project/contract name, and location of the project] Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]</p>
<p>Bond Bond Amount: [Amount] Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
_____ <i>(Full formal name of Contractor)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety

shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. *Claim*-A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

- 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;
 - 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*-An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3. *Construction Contract*-The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*-Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*-All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1-DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*-Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*-The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*-The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*-The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*-An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*-The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*-The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*-A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*-A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*-Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 12. *Contract*-The entire and integrated written contract between Owner and Contractor concerning the Work.
 13. *Contract Documents*-Those items so designated in the Agreement, and which together comprise the Contract.
 14. *Contract Price*-The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 15. *Contract Times*-The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 16. *Contractor*-The individual or entity with which Owner has contracted for performance of the Work.
 17. *Cost of the Work*-See Paragraph 13.01 for definition.
 18. *Drawings*-The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 19. *Effective Date of the Contract*-The date, indicated in the Agreement, on which the Contract becomes effective.
 20. *Electronic Document*-Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 21. *Electronic Means*-Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*-The individual or entity named as such in the Agreement.
23. *Field Order*-A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*-The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*-Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*-Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*-A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*-The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*-A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*-The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*-A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*-The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*-The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*-Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*-A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.
36. *Schedule of Values*-A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
37. *Shop Drawings*-All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*-Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*-The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*-An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*-A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*-The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*-The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*-The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*-A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*-All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*-Work to be paid for on the basis of unit prices.
49. *Work*-The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*-A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:
1. does not conform to the Contract Documents;
 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 3. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2-PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner's Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3-CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation-RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4-COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work.

Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.
- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5-SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

- 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
- 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
- C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings*: The Supplementary Conditions identify:
 1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
 2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
 3. Technical Data contained in such reports and drawings.
- B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.
- C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.
- D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;
 3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of

their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30

days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6-BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or

Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance-General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.
- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate

set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.
- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.

- C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);
 4. not seek contribution from insurance maintained by the additional insured; and
 5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

- E. *Insurance of Other Property; Additional Insurance:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.
 - 1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 - 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
 - 1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to

Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7-CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.
- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended

to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
 - b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

- A. *Contractor's Request; Governing Criteria:* Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the

Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any

of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 Submittals

A. Shop Drawing and Sample Requirements

1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.
3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. Submittal Procedures for Shop Drawings and Samples: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. Shop Drawings

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. Samples

- a. Contractor shall submit the number of Samples required in the Specifications.

- b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.
5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
 3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.
- E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*
1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.
 - d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. *Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.*

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
1. Observations by Engineer;
 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. Use or occupancy of the Work or any part thereof by Owner;
 5. Any review and approval of a Shop Drawing or Sample submittal;
 6. The issuance of a notice of acceptability by Engineer;
 7. The end of the correction period established in Paragraph 15.08;
 8. Any inspection, test, or approval by others; or
 9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly

employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.
- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8-OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be

set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9-OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10-ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.
- E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in

contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11-CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.
- B. If Owner has issued a Work Change Directive and:
1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
 - 1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 - 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 - 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:
 - 1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in

Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
 4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals***: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12-CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 - 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13-COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 Cost of the Work

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in

advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.
 - c. *Construction Equipment Rental*
 - 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any

surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:
1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel

employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.
3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
6. Expenses incurred in preparing and advancing Claims.
7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. Contractor's Fee

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. Documentation and Audit:** Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
 - 1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.
- E. *Adjustments in Unit Price*
 - 1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

- b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14-TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 Tests, Inspections, and Approvals

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to

reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15-PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 - 3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor

have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

- d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
- a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

- f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or

corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
 - 2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release

or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the

Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;
 2. correct such defective Work;
 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16-SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an

extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under

any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17-FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18-MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if

repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

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SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC-4.05."

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

SC-1.01.A.8 Change Order

Insert a comma and the word "Engineer" immediately after the word "Contractor" in this definition.

SC-1.01.A.18 Drawings

Add the following to the end of Paragraph 1.01.A.18:

The following Drawings are part of the Contract Documents: Drawings titled "PARK AVENUE BOAT LAUNCH," prepared by SmithGroup, Inc.

Electronic files may be provided for the convenience of Contractor. The data on which Contractor may rely is limited to the paper copy.

SC-1.01.A.22 Engineer

Add the following language to the end of Paragraph 1.01.A.22 to read as follow:

The Term "Architect" and "Landscape Architect", where used throughout these documents, have the same meaning as "Engineer"

SC-1.01.A.50 Work Change Directive

Amend the phrase "signed by OWNER" in the first sentence of Paragraph 1.01.A.50 to read as follows: "signed by Owner and Contractor."

Add the following language to the end of Paragraph 1.01.A.50: A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

SC-1.01.A.51 Request for Information

Add the following new paragraph immediately after Paragraph 1.01.A.50:

50. Request for Information:

Written request submitted by Contractor to Engineer on a form supplied by Engineer requesting clarification, interpretation, or additional information pertaining to Contract Documents.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

SC-2.01 Delete Paragraphs 2.01.B. and C. in their entirety and insert the following in their place:

- B. *Evidence of Contractor's Insurance:* When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies (including all endorsements, and identification of applicable self-insured retentions and deductibles) of insurance required to be provided by Contractor in this Contract. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

SC-2.03 Before Starting construction

Add the following subparagraph to Paragraph 2.03:

4. a proposed listing of subcontractors and major material and equipment suppliers. The list shall include any proposed substitutions in accordance with Paragraph 7.06.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

SC-3.03 Reporting Discrepancies.

Add the following language at the end of Paragraph 3.03.A:

4. CONTRACTOR shall report apparent discrepancies to ENGINEER using a Request for Information form on a form supplied by Engineer. The Request for Information form shall:
- a. be submitted by CONTRACTOR only;
 - b. be legible and complete;
 - c. not be used for the purposes of only confirming or verifying issues; and,
 - d. be prioritized by CONTRACTOR in the event that multiple Requests for Information are outstanding.

Requests for Information that are not in conformance with the requirements above shall be returned to CONTRACTOR without response.

5. CONTRACTOR shall not be relieved of its responsibility to coordinate the Work to prevent adverse impacts to CONTRACTOR's Project Schedule while submitting Requests for Information.

6. If CONTRACTOR believes the Scope of Work included in the Request for Information has a cost and/or time impact, CONTRACTOR should submit a claim in accordance with Article 12 of these General Conditions.

7. If CONTRACTOR proceeds with work when CONTRACTOR had actual knowledge or should have known that a conflict, error, ambiguity, or discrepancy existed as indicated above,

correction of work constructed without such notification to ENGINEER shall be at CONTRACTOR's expense, (except in an emergency as authorized by Paragraph 7.15.A).

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.03 Reference Points

Add the following new paragraph immediately after Paragraph 4.03.A:

- B. Contractor is referred to the General Requirements for additional requirements for laying out the work.

ARTICLE 5—SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENV. CONDITIONS

SC-5.01 Delete 5.01(B) and replace with the following:

USE OF SITE

Contractor shall confine equipment, material storage and workers operations to limits indicated by law, ordinances, plans, permits or directions of the Owner and as per plans. Contractor shall not unreasonably encumber the site with materials or cause inconvenience to the Owner, public or other contractors. Contractor's responsibilities for usage of the site shall include:

1. Utilities: Contractor shall obtain permits, provide and make payment for such utilities as water, electricity, heat/air, telephone and waste disposal when necessary in performing the work.
2. Buildings: Contractor shall obtain permits, provide and make payment for temporary structures such as offices, sheds, trailers, and sanitary facilities, and necessary maintenance of structures in performing the work.
3. Pumping: When during construction, standing water caused by heavy rains or poor drainage becomes a hazard to the work, Contractor shall provide and make payment for removal of water to existing drainage swales, storm sewers or other natural or manufactured drainage ways. See Erosion and Sediment Control in Specifications in Special Provisions.
4. Temporary Roads and Turnarounds: Contractor shall provide for temporary roads as necessary or access to and within the site during the construction. All temporary roads or turnaround points shall be approved prior to construction.
5. Storage: Materials and equipment shall be stored in a manner that preserves their quality. When necessary, materials and equipment shall be placed under cover, on wooden platforms or other hard, clean surfaces, and not on the ground. Private property shall not be used for storage purposes without written permission from the owner of the property. Location of any storage area is subject to approval by the Owner.

6. Parking Contractor's construction vehicles parked on the site shall not inhibit construction or prevent access for emergency or other official vehicles. Parking areas are subject to Owner's Representative's approval. Parking is prohibited under the dripline of trees to be saved.

WORK SITE SAFETY

Contractor shall be solely responsible for providing and maintaining safe conditions at the work site, including the safety of persons and property and shall comply with applicable laws and safety regulations to prevent injury to persons or damage to property. Contractor is responsible for protecting public from dangerous situations on the site during Construction. This requirement shall apply continuously and shall not be limited to normal working hours.

Whenever public or private property is damaged, Contractor shall at his/her own expense, restore such property to a condition equal to that existing before the damage was done. Contractor shall also be responsible for damage to the work by actions of the elements or from any other cause whatsoever and shall restore the work at his/her own expense. A registered Land Surveyor at Contractor's expense shall replace existing property corners disturbed or lost during construction. When the site is opened for usage after final acceptance, damage to the work shall not be due to Contractor's fault or negligence.

Contractor shall have no claim against the Owner or Engineer/Architect because of any damage or loss to the work or to Contractor's equipment, materials or supplies from any cause, including damage or loss due to simultaneous work by others.

When Owner's Representative deems any operation, condition or practice to be unsafe Contractor shall take corrective action before affected work is resumed. Contractor shall protect public and adjacent properties including roadways and shall use necessary precautions to prevent damage or injury thereto. Contractor shall prevent damage to pipes, conduits, and other underground structures as well as fences, monuments or other aboveground structures. Vegetation not marked for removal shall not be cut, trimmed or damaged except with the approval and under the direction of Owner's Representative: Contractor shall provide on-site traffic patterns away from existing vegetation, provide necessary ramps and shall not park vehicles near or under existing vegetation. Contractor shall not park or maneuver equipment or stockpile materials within ten (10) feet of tree drip lines or plants to be protected. Vegetation damaged during construction is subject to replacement at Contractor's expense. Contractor shall protect the Owner's employees and the public by maintaining barricades, warning signs, flags, lights and temporary passageways around construction areas, covering holes, properly storing materials and equipment and providing other suitable methods for the protection of said persons.

SC-5.03 Delete 5.03(C) and replace with the following: *Reliance by Contractor*: The furnishing of surveys by the Owner is not a guarantee of the accuracy of the information contained therein, and shall not relieve the Contractor from its duties under the Contract Documents in general. The submission of a bid for the Work implies that the Contractor has examined the site, taking into consideration all such conditions that may affect the Work, regardless of the information contained in the surveys. Any information furnished

by the Owner shall not constitute a representation concerning site conditions and the Contractor shall bear, solely and exclusively, all costs due to concealed, unknown, unusual or otherwise unforeseen conditions at the site. Contractor is aware that all such risk concerning site conditions is borne by it, has considered such in making its bid, and therefore freely waives all of its rights under the Illinois Public Construction Contract Act of 1999.

SC-5.04 Add to end: Contractor is aware that all risk concerning site conditions is borne by it, has considered such in making its bid, and therefore freely waives all of its rights under the Illinois Public Construction Contract Act of 1999 which would otherwise become a part of this Contract.

ARTICLE 6 - BONDS AND INSURANCE

6.03 Contractor's Insurance

SC-6.03(A) Supplement Paragraph 6.03 with the following provisions as part of 6.03.A:

Contractor shall keep in force, to the satisfaction of the Owner, at all times during the performance of any work referred to above, and unless otherwise agreed by Owner, Workers Compensation and Employer's Liability Insurance, Commercial General Liability Insurance, and Automobile Insurance in at least the type and amounts as follows:

1. Workers' Compensation:

- a. State: Statutory
- b. Applicable Federal (e.g., Longshoremen's): Statutory
- c. Employer's Liability
 - \$1,000,000.00 Per Accident
 - \$1,000,000.00 Disease, Policy Limit
 - \$1,000,000.00 Disease, Each Employee

2. Commercial General Liability:

- 1. \$2,000,000.00 General Aggregate
- 2. \$1,000,000.00 Products Completed Operations Aggregate
- 3. \$1,000,000.00 Personal and Advertising Injury
- 4. \$1,000,000.00 Each Occurrence
- 5. \$ 50,000.00 Fire Damage (any one fire)
- 6. \$ 5,000.00 Medical Expense (any one person)

3. Business Automobile Liability (including owned, non-owned and hired vehicles):

- a. Bodily Injury:

2. Workers' Compensation and Employers Liability Coverage

- i. The insurer shall agree to waive all rights of subrogation against the Owner, its officers, officials, employees, volunteers, and agents for losses arising from work performed by the contractor for the Owner.

3. All Coverage

- i. Each insurance policy required by this clause shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) calendar days' prior written notice by certified mail, return receipt requested, has been given to the Owner.

D. Acceptability of Insurers. Insurance is to be placed with insurers with a Best's rating of no less than A: VII and licensed to do business in the State of Illinois.

E. Verification of Coverage. Contractor shall furnish the Owner with certificates of insurance and with original endorsements if applicable effecting coverage required by this clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements are to be received and approved by the Owner before work commences. The Owner reserves the right to require complete, certified copies of all required insurance policies, at any time.

F. Subcontractors. Contractor shall include all subcontractors as insured's under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein.

G. Indemnification.

To the fullest extent permitted by law, to waive any and all rights of contribution against Owner and to indemnify and hold harmless and its officers, officials, employees, volunteers and agents from and against all claims, damages, losses and expenses, including, but not limited to, legal fees (attorney's and paralegal's fees, expert fees and court costs) arising out of or resulting from the performance of the Contractor's work, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or injury to or destruction of property, other than the work itself, including the loss of use resulting therefrom, or is attributable to misuse or improper use of trademark or copyright protected material or otherwise protected intellectual property, to the extent it is caused in whole or in part by any wrongful or negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable. Such obligation

shall not be construed to negate, abridge or otherwise reduce any other right to indemnity which Owner would otherwise have. Contractor shall similarly, protect, indemnify and hold and save harmless, Owner, its officers, officials, employee, volunteers and agents against and from any and all claims, costs, causes, actions and expenses, including, but not limited to, legal fees, incurred by reason of Contractor's breach of any of its obligations under, or Contractor's default of any provisions of the Contract. The indemnification obligations under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any subcontractor under Workers' Compensation or Disability Benefit Acts or Employee Benefit Acts.

Accordingly, the Commercial General Liability Policy shall provide for coverage of contractual indemnification obligations.

H. An endorsement containing the following: "Solely as respects to work done by and on behalf of the named insured for the Park District of Highland Park, it is agreed that the Park District of Highland Park, its officers, officials, employees, volunteers, and agents, SmithGroup, Inc., and City of Highland Park, are added as additional insured under this policy."

I. Contractor's Pollution Liability Insurance: Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance must be maintained for no less than three years after final completion.

J. Contractor's Professional Liability Insurance: If Contractor will provide or furnish professional services under this *Contract*, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion.

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

SC-7.01 Add the following 7.01(C):

LABOR, EQUIPMENT AND METHODS

Contractor shall at all times employ sufficient labor and equipment for prosecuting the work in the manner and time specified. Workers shall have sufficient experience and skill to properly perform the Work and operate the equipment.

Equipment used shall be of such type, size and amount and in such mechanical condition as to meet the requirements of the work and produce a satisfactory quality of work. Contractor shall replace unsatisfactory equipment and furnish additional equipment when deemed necessary by Owner's Representative.

Contractor alone shall bear the responsibility for safety of the persons and property and shall immediately notify Owner of any specified method that creates any risk of injury or damage to persons or property. Contractor may make a written request to Owner's Representative to use a method or type of equipment

other than those specified. The request shall include a description of the proposed methods, equipment and an explanation of the reasons for the substitution. When Owner's Representative authorizes trial use of the substitution, Contractor shall be responsible for producing the work in conformance with the Contract. If Owner's Representative determines that the trial method or equipment does not conform to the Contract requirements, Contractor shall discontinue use of the substitute method or equipment and shall complete the remaining work with the specified methods or equipment. Contractor shall remove defective work and replace it with work meeting the Contract requirements or take other corrective action as directed by Owner's Representative. No increase will be made in payment or in contract time as a result of authorizing a change in methods or equipment under these provisions.

SC-7.03 Add a new paragraph 7.03(D) as follows:

Contractor must pay and require all subcontractors to pay the prevailing rate of wages to all related laborers, workers, and mechanics involved in the project. As established by the Illinois Department of Labor for each craft or type of work needed to execute the contract in accordance with 820 ILCS 130/.01 et seq. The Illinois Department of Labor publishes the prevailing wage rates on its website at: <https://www.illinois.gov/idol/Laws-Rules/CONMED/Pages/Rates.aspx> Contractor is advised that the Department revises the prevailing wage rates and the Contractor has an obligation to check the Department's web site for revisions. Contractor shall prominently post the current schedule of prevailing wages at the Contract site and shall notify immediately in writing all of its Subcontractors, of all changes in the schedule of prevailing wages. Any increases in costs to Contractor due to changes in the prevailing rate of wage during the terms of any contract shall be at the expense of Contractor and not at the expense of the Owner. The change order shall be computed using the prevailing wage rates applicable at the time the change order work is scheduled to be performed. Contractor shall be solely responsible to maintain accurate records as required by the prevailing wage statute and to obtain and submit all such certified records to the Illinois Department of Labor Certified Transcript of Payroll Portal at <https://www2.illinois.gov/idol/Laws-Rules/CONMED/Pages/CertifiedTranscriptOfPayroll.aspx>

no later than the 15th of each calendar month following a month in which construction on the project has occurred as required by Statute. Contractor shall furnish the District confirmation that certified payroll was submitted. In lieu of certified payroll, Contractor shall submit a letter setting forth the basis upon which Contractor has concluded the Act does not apply. Contractor shall be solely liable for paying the difference between prevailing wages and any wages actually received by laborers, workmen and/or mechanics engaged in the Work and in every way defend and indemnify the District against any claims arising under or related to the payment of wages in accordance with the Prevailing Wage Act. Likewise, Contractor shall comply with all applicable laws, regulations, and rules promulgated by any Federal, State, County, Municipal and or other governmental unit or regulatory body now in effect during the performance of the work. By way of example, the following are included within the scope of the laws, regulations and rules referred to in this paragraph, but in no way to operate as a limitation on the laws, regulations and rules with which Contractor must comply, are all forms of Workers Compensation Laws, all terms of the Equal Employment Opportunity Clause of the Illinois Fair Employment Practices Commission, the Illinois Preference Act, the Social Security Act, Statutes relating to contracts let by units of government, all applicable Civil Rights and Anti-Discrimination Laws and Regulations, and traffic and public utility regulations.

- SC-7.10 Add a new paragraph immediately after Paragraph 7.10.A:
- A. Owner is exempt from payment of sales and compensating use taxes of the State of Illinois and of cities and counties thereof on all materials to be incorporated into the Work.
 - 1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
 - 2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

ARTICLE 10-ENGINEER'S STATUS DURING CONSTRUCTION

10.03 Resident Project Representative

- SC-10.03 Add the following new subparagraph immediately after Paragraph 10.03.A:
- 1. On this Project, by agreement with the Owner, the Engineer will not furnish a Resident Project Representative to represent Engineer at the Site or assist Engineer in observing the progress and quality of the Work.

ARTICLE 13 - COST OF WORK; ALLOWANCES, UNIT PRICE WORK

13.01 Cost of the Work

- SC-13.01 Supplement Paragraph 13.01.B.5.c.(2) by adding the following sentence:
- The equipment rental rate book that governs the included costs for the rental of machinery and equipment owned by Contractor (or a related entity) under the Cost of the Work provisions of this Contract is the most current edition of Rental Rate Blue Book for Construction Equipment.
- SC-13.01 Supplement Paragraph 13.01.C.2 by adding the following definition of small tools and hand tools:
- a. For purposes of this paragraph, "small tools and hand tools" means any tool or equipment whose current price if it were purchased new at retail would be less than \$500.

13.03 Unit Price Work

- SC-13.03 Delete Paragraph 13.03.E in its entirety and insert the following in its place:
- E. *Adjustments in Unit Price*
 - 1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the extended price of a particular item of Unit Price Work amounts to 15 percent or more of the Contract Price (based on estimated quantities at the time of

- Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and
- b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
 3. Adjusted unit prices will apply to all units of that item.

ARTICLE 15-PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.01 Progress Payments

SC-15.01D

Change Ten to Thirty in the first sentence.

SC-15.01 Add the following new Paragraph 15.01.F:

- F. For contracts in which the Contract Price is based on the Cost of Work, if Owner determines that progress payments made to date substantially exceed the actual progress of the Work (as measured by reference to the Schedule of Values), or present a potential conflict with the Guaranteed Maximum Price, then Owner may require that Contractor prepare and submit a plan for the remaining anticipated Applications for Payment that will bring payments and progress into closer alignment and take into account the Guaranteed Maximum Price (if any), through reductions in billings, increases in retainage, or other equitable measures. Owner will review the plan, discuss any necessary modifications, and implement the plan as modified for all remaining Applications for Payment.

15.03 Substantial Completion

SC-15.03 Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

SECTION 007500 - INDEMNIFICATION AND REFERENCE STANDARDS

PART 1 - GENERAL

1.1 DEFINITION

- A. The Architect/Engineer is SmithGroup, Incorporated, Chicago, IL.

1.2 INDEMNIFICATION

- A. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Architect, Architect's consultants, and officers, directors, agents and employees of any of them from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from the performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by negligent acts or omissions of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Article on Indemnification.
- B. In claims against any person or entity indemnified under this Article on Indemnification by an employee of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Article on Indemnification shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.
- C. Except to the extent that the Architect would otherwise be liable for negligence under this Agreement, the Contractor shall agree, to the fullest extent permitted by law, to indemnify and hold the Architect harmless from any damage, liability or cost, including reasonable attorney's fees and costs of defense, arising from, allegedly arising from, or in any way connected with changes made by anyone other than the Architect or from any use of the Drawings, Specifications or other Instruments of Service in electronic form (except for normal and customary maintenance and repair) on other than the Project that is the subject of this Agreement, without the prior written consent of the Architect.
- D. Insurance: The Contractor shall procure and maintain sufficient contractual liability insurance to fulfill Contractor's obligations under these indemnification requirements. Such insurance shall be endorsed to include the Architect, Architect's consultants, and officers, directors, agents and employees of any of them as additional insured, and it shall provide that the insurance carriers have no right of subrogation against those indemnified hereunder.

- E. Mold Exclusion: Contractor's Commercial General Liability insurance shall contain no exclusion that would deny coverage for any claim for either bodily injury or property damage arising out of or otherwise caused, in whole or in part, by any fungus, mildew, mold, or resulting allergens. If such exclusion exists and cannot be removed by endorsement, Contractor shall submit proof of coverage for mold claims under a Pollution Legal Liability of Contractor's Pollution Liability policy

1.3 REFERENCE STANDARDS

- A. No provision of any reference standard, manual, statute, code or regulation (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the Owner, Contractor, Architect, Architect's consultants, or officers, directors, agents or employees of any of them from those set forth in the Contract Documents, nor shall it be effective to assign to the Architect, Architect's consultants, or officers, directors, agents or employees of any of them any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, or for the Contractor's failure to carry out the Work in accordance with the Contract Documents, or for the acts or omissions of the Contractor, subcontractors, or any of their agents or employees, or any other persons performing the Work.

END OF SECTION

DOCUMENT 009113 - ADDENDA

1.1 PROJECT INFORMATION

- A. Project Name: Park Avenue Boat Launch
- B. Owner: Park District of Highland Park.
- C. Engineer: SmithGroup, Inc..
- D. Engineer Project Number: 13258.
- E. Date of Addendum: <Insert date of Addendum>.

1.2 NOTICE TO BIDDERS

- A. This Addendum is issued to all registered plan holders pursuant to the Instructions to Bidders. This Addendum serves to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addendum affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement.
- B. The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.
- C. The date for receipt of bids is [unchanged by this Addendum] [changed to the following], at same time and location.
 - 1. Bid Date: <Insert date>.

1.3 ATTACHMENTS

- A. This Addendum includes no attachments.
- B. This Addendum includes the following attached Documents and Specification Sections:
 - 1. Document <Insert Document number and name>, dated <Insert date>, [(reissued)] [(new)].
 - 2. Section <Insert Section number and name>, dated <Insert date>, [(reissued)] [(new)].
- C. This Addendum includes the following attached Sheets:
 - 1. General Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
 - 2. Civil Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
 - 3. Landscape Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
 - 4. Structural Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
 - 5. Architectural Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
 - 6. Interiors Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
 - 7. Fire Protection Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].

8. Plumbing Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
9. Mechanical Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
10. Electrical Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
11. Telecommunications Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].

D. This Addendum includes the attached Addendum Drawings:

1. Civil Addendum Drawing CAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
2. Landscape Addendum Drawing LAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
3. Structural Addendum Drawing SAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
4. Architectural Addendum Drawing AAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
5. Fire Protection Addendum Drawing FAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
6. Plumbing Addendum Drawing PAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
7. Mechanical Addendum Drawing MAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
8. Electrical Addendum Drawing EAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
9. Telecommunications Addendum Drawing TAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.

1.4 REVISIONS TO PREVIOUS ADDENDA

- A. Addendum No. 1, Item <Insert number>: Document <Insert Document number and name>, [(not reissued)] [(reissued)] [(new document)].
 1. Paragraph <Insert number>: <Insert explanatory text>.
- B. Addendum No. 1, Item <Insert number>: Specification Section <Insert Section number and name>, [(not reissued)] [(reissued)] [(new document)].
 1. Paragraph <Insert number>: <Insert explanatory text>.

1.5 REVISIONS TO DIVISION 00 PROCUREMENT REQUIREMENTS AND CONTRACTING REQUIREMENTS

- A. Document <Insert Document number and name>, (not reissued).
 1. Paragraph <Insert number>: <Insert explanatory text>.

- 1.6 REVISIONS TO DIVISION 01 GENERAL REQUIREMENTS
 - A. Specification Section <Insert Section number and name>, (not reissued).
 - 1. Paragraph <Insert number>: <Insert explanatory text>.
- 1.7 REVISIONS TO DIVISIONS 02 - 49 SPECIFICATION SECTIONS
 - A. Specification Section <Insert section number and name>, (not reissued).
 - 1. Paragraph <Insert number>: <Insert explanatory text>.
- 1.8 REVISIONS TO DRAWING SHEETS
 - A. Sheet <Insert number> - <Insert title> (not reissued).
 - 1. Drawing <Insert number>: <Insert explanatory text>.

END OF DOCUMENT

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Contractor's use of site and premises.
 - 4. Coordination with occupants.
 - 5. Work restrictions.

1.3 PROJECT INFORMATION

- A. Project Identification: Park Avenue Boat Launch Project.
 - 1. Project Location: Park Avenue Boat Launch, 8 Park Avenue, Highland Park, IL 60035.
- B. Owner: Park District of Highland Park, 636 Ridge Road, Highland Park, IL 60035.
 - 1. Owner's Representative: Jeff Smith, Director of Planning and Projects
- C. Engineer/Architect: SmithGroup.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following
 - 1. Removal and stockpiling of existing barge contents, and disposal of material unsuitable for re-use
 - 2. Complete removal and offsite disposal of existing barge structure
 - 3. Temporary removal and salvage of existing armor revetment stone
 - 4. Installation of sheet pile breakwater with crown wall and cast-in place concrete deck
 - 5. Installation of scour protection along breakwater
 - 6. Removal of existing boat launch concrete
 - 7. Installation of pipe pile anchorage
 - 8. Installation of cast in place concrete boat launch
 - 9. Installation of dock abutments
 - 10. Installation of solar light
 - 11. Installation of navigational light and cleats

12. Installation of bollard and chain system around pier
13. Installation of dock system
14. Restoration of project site
15. Other Work indicated in the Contract Documents

- B. Type of Contract:
1. Project will be constructed under a single prime contract.

1.5 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Restricted Use of Site: Each Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

1.6 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work to between 7 a.m. to 7 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.
1. Weekend Hours: Saturday only between 9 a.m. to 5 p.m.
 2. Sundays and Holiday Hours: No work permitted.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:
1. Notify Owner not less than two days in advance of proposed utility interruptions.
 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
1. Notify Owner not less than two days in advance of proposed disruptive operations.
 2. Obtain Owner's written permission before proceeding with disruptive operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Proposed Products List and Substitution Requests:
 - 1. Intent:
 - a. To fully identify, prior to beginning the Work, the products Contractor intends to provide, and substitutions the Contractor requests.
 - b. To facilitate timely submittal processing by avoiding rejection of unacceptable products and unspecified products later during construction.
 - 2. Proposed Products List:
 - a. Within 14 calendar days after date of receipt of notice to proceed and before submitting any Product Submittals, submit for approval the list of the products proposed for installation. Include the name of the manufacturer for each product and, where applicable, the name of Subcontractor.
 - b. The list shall be tabulated by and be complete for each Specification Section.

- c. For each product listed, clearly indicate: a) As Specified, or b) Not As Specified. For each product designated Not As Specified, clearly indicate: c) Comparable Product, or d) Proposed Substitution.
- B. Substitution Requests Accompanying the Proposed Products List:
1. A request for substitution will be considered, subject to the following requirements:
 - a. Include with the proposed products list a completed substitution request form for each proposed substitution anticipated for the Project. Check the box indicating the request is submitted with the proposed products list.
 - b. Submit each proposed substitution using a separate copy of the substitution request form. Use substitution request form included in the Project Manual, or request form from the Architect. See Section 012510 "Substitution Request Form." Submit in number of copies specified for proposed product list.
 - c. The substitution request is submitted at the time the proposed products list is submitted. A request submitted after the time set for submittal of the proposed products list is subject to automatic rejection.
 - d. Include with the request complete data on the proposed substitution. Such data shall include:
 - 1) Product Data highlighted to show applicability to the proposed substitution and project conditions;
 - 2) Performance and test data;
 - 3) References, and samples, where applicable; and
 - 4) An itemized comparison of the proposed substitution with the product features specified in the Contract Documents, including data relating to design and artistic effect, where applicable.
 - e. Include copies of the pertinent Contract Documents, clearly marked and highlighted to show changes necessary to accommodate the proposed substitution.
 - f. If the proposed substitution is due to unavailability of a specified product, a written statement shall accompany it, written by the supplier of the specified product, confirming lack of availability.
 - g. By submitting the substitution request, Contractor affirms that: 1) the proposed substitution conforms to the required dimensions and meets or exceeds the standards of required function, appearance, and quality set by the specified product: and 2) the burden of proof rests with the Contractor.
 - h. By submitting a substitution request, Contractor agrees to absorb all costs resulting from acceptance of the proposed substitution, including both known and subsequently discovered revisions to other construction needed to accommodate the substitution, and other expected and unforeseen costs, such as delays, code approval-related expenses, and additional architectural services.
- C. Substitution Requests After Proposed Products List:

1. Use no product in the Work that is not named in the Contract Documents, or not listed in the Proposed Products List, or not approved as a substitute or comparable product. Products specified solely by reference standard or performance requirements do not require naming.
 2. During construction of the Work, products not listed on the accepted Proposed Products List shall not be used without receipt of an approved substitution request for a listed product. A substitution request will be considered under one of the following conditions:
 - a. The product listed on the accepted Proposed Product List becomes unavailable. Include with the substitution request a letter from the listed manufacturer, on the manufacturer's letterhead, verifying that the product is no longer available.
 - b. Conditions uncovered at the Site render the listed product inappropriate, or an undesirable choice for the conditions uncovered. Include with the substitution request a full description of the uncovered conditions and why the requested substitution is preferable to the listed product.
 3. Make each substitution request on the specified substitution request form. Fully execute form in accordance with the provisions of Article, Proposed Products List and Accompanying Substitution Requests, except for provisions requiring submittal concurrent with proposed products list. Check the box indicating the Contractor's request is being submitted separate from and after submittal of the proposed products list
- D. A request for substitution forwarded by the Contractor means that Contractor:
1. Has investigated the proposed substitution.
 2. Has determined that the substitution is equal to or superior in quality and serviceability (performance) to the product specified in the Contract Documents.
 3. Will provide the same guarantee for the substitution that is required for the product specified in the Contract Documents.
 4. Waives all claims for additional costs that subsequently become apparent as a result of the substitution.
 5. Will coordinate the installation of the accepted substitution into the Work, and will make such changes in the Work of the various trades as may be required to provide a completed condition.
- E. A request for a substitution will not be considered if:
1. The substitution is merely indicated or implied on the Shop Drawing or Product Data submittal without the specified formal request and documented proof of conformance. Submittal approvals for items not meeting specifications are not valid. Completed construction related to such items is subject to rejection.
 2. Implementation requires a major revision of the Contract Documents in order to accommodate the substitution.
 3. The substitution request is substantially incomplete.
- F. Architect's Review of Proposed Products List and Substitution Requests:
1. The Architect will review properly submitted proposed products list and accompanying substitution requests.

2. The Architect will evaluate each substitution request and inform Contractor in writing whether the proposed substitution is accepted, accepted as noted, or not accepted.
 - a. Substitution requests that do not conform to requirements, including submittal timing, are subject to return without review.
 - b. A substitution will not be considered accepted by the Owner until it has been documented by Change Order.
3. The Architect's decision as to conformance and acceptability will be consistent with the intent of the Contract Documents.
4. In the absence of written acceptance of a substitution request, proposed substitutions shall be understood as not accepted.
5. The Architect will endeavor to evaluate the substitution request in a reasonable period of time. With the request, the Contractor shall inform the Architect of the deadline for final decision on the request. In the absence of Architect's decision within the critical time, the Contractor shall proceed with the specified product.

G. Product List and Substitution Request Format:

1. Product List: Provide PDF of the list.
2. Substitution Requests: Provide PDF of requests.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.

- g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.
- 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
 - 2. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.

- d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.
 - B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - 6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Proposal Request Form: Use form acceptable to Architect.
- 1.5 ADMINISTRATIVE CHANGE ORDERS
- A. Unit-Price Adjustment: See Section 012976 "Measurement and Payment" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.
- 1.6 CHANGE ORDER PROCEDURES
- A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.
- 1.7 CONSTRUCTION CHANGE DIRECTIVE
- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
 - B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 012976 "Measurement and Payment" for administrative requirements governing the use of unit prices.
 - 2. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 3. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
 - 1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.

2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
 5. Products list (preliminary if not final).
 6. Submittal schedule (preliminary if not final).
 7. List of Contractor's staff assignments.
 8. List of Contractor's principal consultants.
 9. Copies of building permits.
 10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 11. Initial progress report.
 12. Report of preconstruction conference.
 13. Certificates of insurance and insurance policies.
 14. Performance and payment bonds.
 15. Data needed to acquire Owner's insurance.
- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 "Closeout Procedures."
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Certification of completion of final punch list items.
 3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 4. Updated final statement, accounting for final changes to the Contract Sum.
 5. AIA Document G706.
 6. AIA Document G706A.
 7. AIA Document G707.
 8. Evidence that claims have been settled.
 9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

10. Final liquidated damages settlement statement.
11. Proof that taxes, fees, and similar obligations are paid.
12. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

PART 1 - SECTION 012976 - MEASUREMENT AND PAYMENT GENERAL

1.1 SCHEDULE OF VALUES

- A. Immediately after signing of the contract and before the first partial payment is made, the Contractor shall furnish the Owner's representative a Schedule of Values. This schedule must be made up from a form of breakdown furnished by the Owner's representative, and the distribution of the amounts must be such as the Owner's representative shall consider reasonable and be subject to his approval, and when satisfactory shall become the basis for all payments on account during the progress of the Work, and for fixing the valuation of extras and credits involved in modifications. At a minimum, the schedule of values will contain each of the items listed on the bid form.

1.2 MEASUREMENT

- A. Each pay request will be based on the progress to the date of the pay request submittal. The Contractor shall submit partial record drawings with each pay request showing work completed to date. In addition, Contractor shall provide a listing of quantities completed during the pay period along with their history of work completed to date and their summary of work remaining. Engineer will review quantities and record drawings prior to recommending payment. Payment will be based on the Schedule of Values and percentages agreed to be completed.

PART 2 - SUMMARY

2.1 Unit Prices Include:

- 1. Defined work for each Unit Price Item which will provide a functionally complete Project when combined with all Unit Price Items. If there are specific work items which the Contractor believes are not identified in any Unit Price Item, but is required to provide a functionally complete Project, then the identified specific work items shall be included in the appropriate Unit Price Item.
- 2. The method of measurement for payment.
- 3. The price per unit for payment

2.2 GENERAL WORK ITEMS AND CONSTRUCTION SURVEY

- A. Include with the appropriate Unit Price Item the following work items which are common to the Unit Price Items for this Section.
- B. If there is a specific Unit Price Item for any of the following items, then the work item shall be included with that specific unit price item.

1. Removal, hauling, and disposal of surface materials including road pavement, curb and gutter, concrete boat ramp and seawall, asphalt, and other pavement surfaces in the area of excavation as shown on the drawings.
2. Maintenance, protection, replacement and/or repair of facilities not designated for alteration on the Site.
3. Site access requirements including temporary aggregate material as required for local traffic areas.
4. Traffic control.
5. Dust control.
6. Erosion control.
7. Dewatering.
8. Excavation.
9. Loading, hauling, and disposing of surplus excavated material.
10. Pipe bedding.
11. Removal and salvaging of signs and poles.
12. If crossing or undermining of existing public or private utility, then include:
13. Maintaining the utility in service
14. Replacing of existing utilities, if damaged.
15. Providing support and bedding material.
16. Easement and right-of-way requirements.
17. Regulatory requirements.
18. Construction staking and other survey work not provided by Owner's representative.
19. Quality assurance and quality control testing and inspections.
20. Shop drawings and other submittals.
21. Temporary facilities.

C. The unit of measurement for payment is lump sum.

2.3 MOBILIZATION/DEMOBILIZATION

- A. The unit price for Mobilization/Demobilization work includes:
1. General Work Items of Article 2.2
 2. Mobilizing equipment, materials, and personnel to the project location start-up.
 3. Demobilizing equipment, materials, and personnel from the project location at project completion.
- B. Measurement for payment will not be made.
- C. The unit of measurement is lump sum (LS)

2.4 EROSION CONTROL

- A. Erosion Controls work includes all erosion controls work unless noted otherwise under specific bid items.
1. Procuring, stabilizing, inspecting, and maintaining erosion controls.
 2. Stabilization of disturbed areas.

3. Stabilization of diversion channels, sediment traps, and stockpiles
4. The Lump Sum price for erosion controls work include:
 - a. Washout area
 - b. Construction entrance and egress/ingress areas
 - c. Silt fence
 - d. Daily maintenance
 - e. Turbidity curtain
 - f. Removal and disposal of best management practices.
5. General Works Items of Article 2.2
6. Conform to the requirements of Specifications
 - a. Section 312100
 - b. Section 315200

B. Measurement for payment will not be made, except 25% of payment will be withheld until removal is completed and pavement is restored.

C. The unit of measurement for payment is lump sum (LS).

2.5 COFFERDAM AND DEWATERING

- A. The unit price for Cofferdam and Dewatering includes:
1. Procuring, stabilizing, inspecting, and maintaining all materials needed to install cofferdam and dewatering measures
 2. Equipment and labor required to install cofferdam sheeting and other necessary materials
 3. Includes necessary excavation of subgrade to properly install cofferdam measures
 4. Equipment, labor and materials required to operate and maintain dewatering equipment necessary to provide a suitable work environment.
 5. Conform to the requirement of Specifications:
 - a. Section 312319
 - b. Section 315200

B. Measurement for payment will not be made.

C. The unit of measurement for payment is lump sum (LS).

2.6 SITE FENCING

- A. The unit price for Site Fencing includes:
1. Furnishing, installing and maintaining all temporary site fencing to properly secure the project site.
- B. Measurement for payment will not be made.

C. The unit of measurement for payment is lump sum (LS).

2.7 EXCAVATION, DEMOLITION & REMOVAL OF PARKING LOT CONCRETE & ASPHALT PAVEMENT

A. The unit price for Excavation, demolition & removal of parking lot concrete & asphalt pavement includes:

1. General Work Items of Article 2.2.
 - a. Conform to the requirement of Specifications
 - b. Section 312100
2. Removal and disposal of concrete pavement, asphalt pavement, and other associated materials.
3. Saw cutting roads and parking lots prior to removal.
4. Excavation as shown on the drawings
5. Off-site disposal of all materials required to be removed.
6. Construction equipment access

B. The contractor shall bear all costs for demolition, salvaging, excavation, hauling, and disposal of material.

C. Measurement for payment will not be made.

D. The unit of measurement of payment is lump sum (LS).

2.8 DEMOLITION & DISPOSAL OF EXISTING BARGE

A. The unit price for Selective Demolition includes:

1. General Work Items of Article 2.2
 - a. Conform to the requirement of Specifications
 - b. Section 024119
 - c. Section 312000
 - d. Section 353119
2. Removal and disposal of all barge steel, cables, and associated components
3. Removal of exposed rebar.
4. Stockpiling and salvaging reusable broken concrete and aggregate material located inside the existing barge approved for re-use as fill material.
5. Removal of steel sheets surrounding barge located on the drawings
6. Off-site disposal of ineligible materials

B. The contractor shall incur all costs for demolition, salvaging, excavating, hauling, and disposal of material.

C. Measurement for payment will not be made.

D. The unit of measurement for payment is lump sum (LS).

2.9 SALVAGE, STORAGE & REPLACEMENT OF EXISTING ARMOR STONE

A. The unit price for Salvage, Storage & Replacement of existing armor stone includes:

1. General Work Items of Article 2.2
2. Conform to the requirements of Specifications.
 - a. Section 024119
 - b. Section 353119
3. Removal and stockpile of existing armor stone and stone sublayer
4. Replacement of armor stone per the drawings

B. Measurement for payment will be the replacement of the armor stone as depicted on the Drawings.

C. The unit of measurement for payment is lump sum (LS).

2.10 EXCAVATION, DEMOLITION, & REMOVAL OF LAUNCH RAMP & DOCKS

A. The unit price for Selective Demolition includes:

1. General Work Items of Article 2.2.
 - a. Conform to the requirement of Specifications
 - b. Section 024119
 - c. Section 312000
 - d. Section 312319
2. Removal and disposal of pavement, reinforcement, and other unusable subgrade materials
3. On-site storage of suitable material approved for reuse as fill material
4. Removal and disposal of docks and timber railing along east sheet pile wall
5. Excavation as shown on the Drawings
6. Off-site disposal of all materials required to be removed.

B. The contractor shall incur all costs for demolition, excavating, hauling, and disposal of materials.

C. Measurement for payment will not be made.

D. The unit of measurement for payment is lump sum (LS).

2.11 NEW CONCRETE LAUNCH RAMP

A. The unit for Concrete Launch Ramp includes:

1. General Work Items of Article 2.2.
 - a. Conform to requirements of Specifications:
 - 1) Section 312000

- 2) Section 312100
- 3) Section 312319
- 4) Section 315200
- b. Concrete pavement shall include full compensation for all labor equipment and materials for furnishing and installing cast-in-place concrete for launch ramp.
- c. Price includes installing concrete pavement on prepared subgrade as shown on plans, including aggregate base course, geo-textile fabric, steel reinforcement, joint sealants, expansion joints and dowels (where required).
- d. Price includes furnishing and installing boat launch scour stone and geo-textile fabric.
- e. Procurement, delivery, and installation of the launch ramp scour stone as shown on the Drawings

B. Measurement for payment will not be made.

C. The unit of measurement for payment is lump sum (LS).

2.12 CONCRETE ABUTMENT

- A. The unit price for Concrete Abutment includes
 - 1. General Work Items of Article 2.2.
 - 2. Conform to the requirements of Specifications.
 - a. Section 033053
 - b. Section 355905
 - 3. Abutment concrete pavement shall include full compensation for all labor, equipment and materials for furnishing and installing cast-in-place concrete.
 - 4. Price includes installing concrete pavement on prepared subgrade as shown on plans, including aggregate base course (IDOT CA 6), steel reinforcement, joint sealants, expansion joints and dowels (where required).

B. Measurement for payment will be the actual number of completed abutments.

C. The unit of measurement for payment is each (EA).

2.13 STEEL SHEET PILE BREAKWATER

- A. The unit price for Steel Sheet Pile Breakwater includes
 - 1. General Work Items of Article 2.2.
 - 2. Conform to the requirements of Specifications.
 - a. Section 312000
 - b. Section 355411
 - c. Section 353119
 - 3. Furnishing, placement, driving, welding, and cutting of sheet piles as specified

4. Furnishing and placement of all steel hardware, tie-rod hardware, walers, sleeves, coatings, and all other connections as specified.
5. Attachment of the breakwater sheeting to the existing sheeting to ensure a secure and watertight connection
6. Grinding and/or adjustment of existing steel sheets as necessary
7. Ladders
8. Procurement, delivery and placement of additional breakwater subbase as specified.

B. Measurement for payment will not be made.

C. The unit of measurement for payment is lump sum (LS).

2.14 CONCRETE CROWN WALL

A. The unit pricing for Concrete Crown Wall includes:

1. General Work Items of Article 2.2
2. Conform to the requirements of Specifications
 - a. Section 033053
 - b. Section 316216
3. Concrete shall include full compensation for all labor, equipment and materials for furnishing and installing cast-in-place concrete crown wall.
4. Price includes installing concrete crown wall as shown on plans, steel reinforcement, joint sealants, expansion joints, rustification strips, and dowels
5. Price includes blocking on west face of up to twenty (20) plaque locations

B. Measurement for payment will be the actual linear foot constructed.

C. The unit of measurement for payment is linear foot (LF).

2.15 CONCRETE DECKING ON STEEL SHEET PILE BREAKWATER

A. The unit pricing for Concrete Decking on Steel Sheet Pile includes:

1. General Work Items of Article 2.2.
2. Conform to the requirements of Specifications
 - a. Section 033053
 - b. Section 312100
 - c. Section 316216
 - d. Section 321373
3. Concrete decking shall include full compensation for all labor, equipment and materials for furnishing and installing cast-in-place concrete on steel sheet pile breakwater.
4. Price includes installing concrete pavement on prepared subgrade as shown on plans, including aggregate base course (IDOT CA 6), geotextile, steel reinforcement, joint sealants, expansion joints, finishing, and dowels (where required).

5. Reinforcement for crown wall

B. Measurement for payment will not be made.

C. The unit of measurement for payment is lump sum (LS).

2.16 LAKE FILL - BREAKWATER

A. The unit pricing for Fill - Breakwater includes

1. General Work Items of Article 2.2
2. Conform to the requirements of Specifications
 - a. Section 033053
 - b. Section 312100
3. All labor, equipment and materials to furnish, delivery, and placement of lake fill as specified
4. All labor and equipment to place suitable on-site salvage fill materials approved for re-use as lake fill

B. Measurement for payment will be the actual installed cubic yards

C. The unit of measurement for payment is cubic yard (CY).

2.17 LAKE FILL - LAUNCH

A. The unit pricing for Fill - Launch includes

1. General Work Items of Article 2.2
2. Conform to the requirements of Specifications
 - a. Section 033053
 - b. Section 312100
3. All labor, equipment and materials to furnish, delivery, and placement of lake fill as specified
4. All Labor and equipment to place suitable on-site salvaged fill materials approved for re-use as lake fill

B. Measurement for payment will be the actual installed cubic yards

C. The unit of measurement for payment is cubic yard (CY).

2.18 CONCRETE PAVING - PARKING

A. The unit price for Concrete Paving includes

1. General Work Items of Article 2.2.
2. Conform to the requirements of Specifications
 - a. Section 321313
 - b. Section 321373

3. Concrete paving shall include full compensation for all labor, equipment and materials for furnishing and installing cast-in-place concrete on upland parking area.
4. Price includes installing concrete pavement on prepared subgrade as shown on plans, including aggregate base course , steel reinforcement, joint sealants, expansion joints, finishing, and dowels (where required).

B. Measurement for payment will be the actual square foot constructed.

C. The unit of measurement for payment is square foot (SF).

2.19 ASPHALT PAVING

A. The unit price for Asphalt Paving includes:

1. General Work Items of Article 2.2
2. Conform to the requirements of Specifications
 - a. Section 321216
3. Include necessary excavation for subgrade preparation including removal of debris, soils, pavements, and earth
4. Furnishing, hauling, and placement.
5. Finishing and compaction.
6. Testing.
7. Disposal of surplus and unsuitable material.

B. Measurement for payment will be for the installation of the asphalt pavement to the grades and elevations in the area depicted on the Drawings.

C. The unit of measurement for payment is square feet (SF).

2.20 STEEL GUIDE PILES

A. Marine guide piles for the anchorage of docks includes installation of pipe piles as specified and shown on the Drawings.

B. The unit price for piles includes:

1. General Work Items of Article 2.2
2. Conform to the requirements of Specifications:
 - a. Section 316216
 - b. Section 355905
3. Furnishing, hauling, and placement
4. Pile Cap
5. Painting with epoxy tar coating
6. Cleaning
7. Disposal of surplus and unsuitable material.

- C. Measurement for payment will be for the actual installation of the completed piles as depicted on the Drawings.
- D. The unit of measurement for payment is each (EA).

2.21 SCOUR PROTECTION STONE - TYPE A

- A. Scour protection work includes the installation of additional stone as specified, if needed.
- B. The unit pricing for Scour Protection Stone - Type A includes
 - 1. General Work Items of Article 2.2
 - 2. Conform to the requirements of Specifications
 - a. Section 353119
 - 3. Labor, equipment and materials for transporting, stockpiling, furnishing and installing.
- C. Measurement for payment will be the actual amount of material acceptable installed in-place. Overlaps, as specified, are incidental to installation.
- D. The unit of measurement for payment is ton (TON).

2.22 SCOUR PROTECTION STONE - TYPE A CORE STONE

- A. Scour protection work includes the installation of additional stone as specified, if needed.
- B. The unit pricing for Scour Protection Stone - Type A includes
 - 1. General Work Items of Article 2.2
 - 2. Conform to the requirements of Specifications
 - a. Section 353119
 - 3. Labor, equipment and materials for transporting, stockpiling, furnishing and installing.
- C. Measurement for payment will be the actual amount of material acceptable installed in-place. Overlaps, as specified, are incidental to installation.
- D. The unit of measurement for payment is ton (TON).

2.23 STONE - TYPE B

- A. Work includes the installation of additional stone as specified.
- B. The unit pricing for Stone - Type B includes
 - 1. General Work Items of Article 2.2
 - 2. Conform to the requirements of Specifications

- a. Section 353119
 - 3. Labor, equipment and materials for transporting, stockpiling, furnishing and installing.

 - C. Measurement for payment will be the actual amount of material acceptable installed in-place. Overlaps, as specified, are incidental to installation.

 - D. The unit of measurement for payment is ton (TON).
- 2.24 NORTH & NORTHWEST BOLLARDS
- A. Includes all labor and materials to install bollards, chains, accessories as depicted on the drawings and contract documents.

 - B. The unit pricing for NORTH & NORTHWEST BOLLARDS includes:
 - 1. General Work Items of Article 2.2, if required.
 - 2. Conform to the requirements of Specifications:

 - C. Section 323300
 - a. Section 355905
 - 2. Furnish and installing 3 permanent bollards
 - 3. Furnish and install 3 removable bollards

 - D. Measurement for payment not be made.

 - E. The unit of measurement for payment is lump sum (LS).
- 2.25 ALTERNATE 1 - SOLAR LIGHT & POLE
- A. Includes all labor and materials to install solar light pole.

 - B. The unit pricing for ALTERNATE 1 includes:
 - 1. General Work Items of Article 2.2, if required.
 - 2. Conform to the requirements of Specifications:
 - a. Section 323300
 - b. Section 355905
 - 3. Furnish and install light and light pole system

 - C. Measurement for payment will be for the actual installation of the completed solar lights and poles as depicted on the Drawings and contract documents.

 - D. The unit of measurement for payment is each (EA).

2.26 ALTERNATE 2 - NAVIGATION AID & POLE

- A. Includes all labor and materials solar navigation light and pole.
- B. The unit pricing for ALTERNATE 2 includes:
- C. General Work Items of Article 2.2, if required.
 - 1. Conform to the requirements of Specifications:
 - a. Section 323300
 - b. Section 355905
 - 2. Furnish and install
- D. Measurement for payment will be for the actual installation of the navigation light and pole as depicted on the Drawings and contract documents.
- E. The unit of measurement for payment is each (EA)

2.27 ALTERNATE 3 - PIER BOLLARD & CHAIN SYSTEM

- A. Includes all labor and materials to install bollards, chains, accessories as depicted on the drawings and contract documents.
- B. The unit pricing for ALTERNATE 3 includes:
 - 1. General Work Items of Article 2.2, if required.
 - 2. Conform to the requirements of Specifications:
- C. Section 323300
 - a. Section 355905
 - 2. Furnish and install
- D. Measurement for payment not be made.
- E. The unit of measurement for payment is lump sum (LS).

2.28 ALTERNATE 4 - BREAKWATER CLEATS

- A. Includes all labor and materials to install breakwater cleats.
- B. The unit pricing for Alternate 4 includes:
 - 1. General Work Items of Article 2.2, if required.
 - 2. Conform to the requirements of Specifications:
 - a. Section 323300

- b. Section 355905
- 3. Furnish and install

C. Measurement for payment will be for the actual installation of the breakwater cleats as depicted on the Drawings and contract documents.

D. The unit of measurement for payment is each (EA).

2.29 ALTERNATE 5 - FLOATING DOCK SYSTEM

A. Includes all labor and materials to furnish and install floating docks with attachment to guide piles, (2) dock transition plates for each abutment.

- B. The unit pricing for Alternate 5 includes:
- 1. General Work Items of Article 2.2, if required.
 - 2. Conform to the requirements of Specifications:
 - a. Section 323300
 - b. Section 355905
 - 3. Furnish and installing

C. Measurement for payment not be made.

D. The unit of measurement for payment is lump sum (LS).

2.30 ALTERNATE 6 - TEMPORARY BOAT LAUNCH REPAIR REMOVAL

- A. The unit price for TEMPORARY BOAT LAUNCH REPAIR REMOVAL includes:
- 1. General Work Items of Article 2.2.
 - a. Conform to the requirement of Specifications
 - b. Section 024119
 - c. Section 312000
 - d. Section 312319
 - 2. Removal and disposal of additional concrete pavement, reinforcement, and other unusable subgrade materials placed by the owner after date of bid as shown in Section 003119 - Existing Conditions Information.
 - 3. Stockpiling of any suitable material approved for re-use as lake fill.
 - 4. Off-site disposal of all materials required to be removed.

B. The contractor shall incur all costs for demolition, excavating, hauling, and disposal of materials.

C. Measurement for payment will not be made.

D. The unit of measurement for payment is lump sum (LS)

END OF SECTION 012976

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Web-based Project management software package.
 - 6. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.

- B. Key Personnel Names: Prior to starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
1. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction 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 installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Contractor shall coordinate site access with any other Contractor(s) Owner may employ to perform nearby or adjacent work. Owner will provide reasonable notice to Contractor prior to any other Contractor starting nearby or adjacent work.
 3. Coordinate installation of different components with other contractors, including delegated design coordination recommendations, if needed, to ensure maximum performance and accessibility for required maintenance, service, and repair.
 4. Make adequate provisions to accommodate items scheduled for later installation.
- B. 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 direction of Project coordinator 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.
 3. Installation and removal of temporary facilities and controls.
 4. Delegated design services.
 5. Delivery and processing of submittals.
 6. Progress meetings.
 7. Preinstallation conferences.
 8. Project closeout activities.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information, including delegated design information, to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect/Engineer indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Review: Architect/Engineer will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1.7 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.

2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Owner name.
 3. Owner's Project number.
 4. Name of Architect.
 5. Architect's Project number.
 6. Date.
 7. Name of Contractor.
 8. RFI number, numbered sequentially.
 9. RFI subject.
 10. Specification Section number and title and related paragraphs, as appropriate.
 11. Drawing number and detail references, as appropriate.
 12. Field dimensions and conditions, as appropriate.
 13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 14. Contractor's signature.
 15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Form bound in Project Manual.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven business days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following business day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.

3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.
 - E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Software log with not less than the following:
 1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number, including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 - F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
- 1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES
- A. Architect's Digital Data Files: See Section 013300 "Submittal Procedures."
 - B. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare 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. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.
- 1.9 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 and Architect of scheduled meeting dates and times a minimum of 2 business days prior to meeting.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. 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. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Delegated design requirements.
 - o. Preparation of Record Documents.
 - p. Use of the premises.
 - q. Work restrictions.
 - r. Working hours.
 - s. Owner's occupancy requirements.
 - t. Responsibility for temporary facilities and controls.
 - u. Procedures for disruptions and shutdowns.
 - v. Construction waste management and recycling.
 - w. Parking availability.
 - x. Office, work, and storage areas.
 - y. Equipment deliveries and priorities.
 - z. First aid.
 - aa. Security.
 - bb. Progress cleaning.
 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

- C. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 30 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Procedures for completing and archiving web-based Project software site data files.
 - d. Submittal of written warranties.
 - e. Requirements for preparing operations and maintenance data.
 - f. Preparation of Contractor's punch list.
 - g. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - h. Submittal procedures.
 - i. Owner's partial occupancy requirements.
 - j. Installation of Owner's furniture, fixtures, and equipment.
 - k. Responsibility for removing temporary facilities and controls.
 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- D. Progress Meetings: Conduct progress meetings at regular intervals.
1. Attendees: In addition to representatives of Owner and Architect, 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 meeting 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.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.

- 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Status of sustainable design documentation.
 - 6) Status of delegated design services and submittals.
 - 7) Deliveries.
 - 8) Off-site fabrication.
 - 9) Access.
 - 10) Site use.
 - 11) Temporary facilities and controls.
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Status of correction of deficient items.
 - 15) Field observations.
 - 16) Status of RFIs.
 - 17) Status of Proposal Requests.
 - 18) Pending changes.
 - 19) Status of Change Orders.
 - 20) Pending claims and disputes.
 - 21) Documentation of information for payment requests.
3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
- 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013110 - REQUEST FOR INFORMATION

(This form is to be transmitted from GC or CM to ~~SmithGroup~~) RFI NO.: _____
 DATE TRANSMITTED: _____; Bid Pack: _____; Trade Contract: _____
 Response requested from: Civil; Struct; Arch; Mech; Elec; Other _____

Brief description of RFI: (give details below): _____

PROVIDE	Section No.	Section No.	Section No.	Section No.	example:	Section No.
SPECIFIC	_____	_____	_____	_____		019999
REFERENCES:	Reference No.	Reference No.	Reference No.	Reference No.		Reference No.
	→ _____	_____	_____	_____		2.2.A.1

PROVIDE DRAWING REFERENCES: _____

Contractor requests information for the following from SmithGroup:

(Note: Request information for only 1 item per RFI. This permits individual handling and expedites response.)

This box, if checked, indicates a potential change to the Contract Sum associated with this RFI.
 The change is in the range of \$ _____ to \$ _____.

This box, if checked, indicates a potential change to the Contract Time associated with this RFI.
 The change is in the range of _____ days to _____ days

Requested By: (name): _____

(After saving file, email or fax to ~~SmithGroup~~ Project Architect or Project Administrator.)

SmithGroup response: Date Received: _____

SG DOES NOT expect a change to the Contract Sum Contract Time related to this RFI.
 SG expect a change to the Contract Sum Contract Time related to this RFI.

Response By: _____ Date: _____

Date Transmitted: _____ (Indicate the recipients and the means of transmittal below)

Distributed to: Name, Email Address or Fax Number	Email	Fax	Hand	Mail
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

~~SmithGroup~~ Master Office Files

NOTE: This form is formatted for completion on screen using MS Word. Only form revisions by ~~SmithGroup~~ are valid.

END OF DOCUMENT

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Unusual event reports.
- B. Related Requirements:
 - 1. Section 014000 "Quality Requirements" for schedule of tests and inspections.
 - 2. Section 012900 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file.
 - 2. PDF file.
 - 3. Two paper copies, of sufficient size to display entire period or schedule, as required.

- B. Startup construction schedule.
 - 1. Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- C. Qualification Data: For scheduling consultant.

1.5 COORDINATION

- A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.6 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
- B. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Phasing: Arrange list of activities on schedule by phase.
 - 2. Work under More Than One Contract: Include a separate activity for each contract.
 - 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 - 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 - 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 - 6. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use-of-premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
- C. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion

- D. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
 - 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and the Contract Time.

- E. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate Final Completion percentage for each activity.

- F. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

- G. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1.7 GANTT-CHART SCHEDULE REQUIREMENTS

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule no later than 60 days after the Notice of Award and at least 30 days prior to the commencement of the work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Submittal schedule requirements.
 - 2. Administrative and procedural requirements for submittals.

1.3 DEFINITIONS

- A. Contractor: Refers to an entity in direct Contract with the Owner to furnish and/or perform any portion of the Work of the Contract, including but not limited to a Construction Manager. Contractor shall review and approve product submittals.
 - 1. Contractor shall review and approve Product Submittals prior to forwarding them to the Architect.
- B. Product Submittals: In general, Product Submittals show characteristics of the proposed construction in one of the following forms:
 - 1. Shop Drawings: Drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.
 - 2. Product Data: Illustrations, standard schedules, performance charts, color charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
 - a. Product Data does not include Material Safety Data Sheets. Do not submit MSDS. They will be returned without review.
 - 3. Samples: Physical examples that illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged
- C. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- D. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

- E. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.
- F. Submittal Review Stamp: The review stamp used by the Contractor as evidence that submittal has been reviewed for compliance with Contract Documents.
- G. Submittal Review Sheet: The document provided by the Architect to the Contractor for inclusion with all submittals.

1.4 ACTION SUBMITTALS

- A. Submittal Compliance Form: Allowed in lieu of some product data and sample submittals. See individual specification sections for specific allowable use. By submitting the form, the Contractor certifies that all products specified in the Section are being submitted exactly as indicated, including all options and features indicated, with no substitutions or comparable products. Where a Basis-of-Design manufacturer/product is indicated, along with a list of other manufacturers, the Contractor certifies that only the Basis-of-Design manufacturer/product will be provided and not any other listed manufacturers/products. Where a single manufacturer/product is indicated, even if specified as "available manufacturer" or manufacturer "included but not limited to the following", Contractor certifies that only the indicated single manufacturer/product will be provided.
 - 1. Fill in the information required for Document 013330 "Submittal Compliance Form" and include as a line item on the Submittal Cover Sheet for each applicable Submittal.
 - 2. Upon receipt, the Architect will complete the form in the space below "Architect Action" and indicate the Action on the Submittal Cover Sheet.
 - 3. Procedures and processing time are the same as indicated in this Section.
- B. Submittal Schedule: Submit, as an action submittal, 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 Architect and additional time for handling and reviewing submittals required by those corrections. Note that submittal schedule is a separate document required in addition to the construction schedule.
 - 1. Submit all required types of submittals for each product together. For example: Shop Drawings will not be reviewed when related Samples, Product Data, and test reports have not been submitted.
 - 2. Coordinate submittal schedule with list of subcontractors, the schedule of values, and Contractor's construction schedule.

3. Initial Submittal: Submit initial Submittals Schedule not more than 7 days after receipt of reviewed Proposed Products List, or concurrently with start-up construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
4. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
5. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule. Categorize submittal items by type, and designate the respective types by type code. Refer to code definitions below.

Type	Code Explanation
SD	Shop Drawings
PD	Product Data
S	Sample
DC	Design Calculations
L	Letter
SoC	Statement of Compliance
Cer	Certificate/Certification
Q	Qualifications Statement (such as for Contractor, fabricator, or erector)
SC	Sample Construction (such as mock-up or sample installation)
InI	Installation Instructions
AT	Acceptance Test
OpI	Operating Instructions
MaI	Maintenance Instructions
MAA	Maintenance Agreement
MaM	Maintenance Materials
Rcp	Receipt (such as for keys, tools, and detachable parts, including delivery tickets)
RD	Record Documents
SW	Special Warranty
TR	Test Report

6. "Latest possible date" means the date of receipt by Architect. This date allows for review and return to Contractor in time to meet the construction schedule.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Requirements specified for submittals are intended to provide efficient handling, while permitting review responsibilities to be carried out.
- B. Architect will accept submittals only from the Contractor. Only items specified to be submitted will be accepted.

- C. Bind submittals in a manner suitable for 8-1/2 by 11-inch file folder storage, except where doing so is not workable.
- D. Transmit submittals with all transportation charges prepaid.
- E. Avoidable Resubmittals: The first two reviews of each specified submittal will be processed without cost to the Contractor. After the second review, the Owner may charge the Contractor for the cost of such additional processing, unless the processing results from approved Change Orders causing revisions to previously approved submittals.
- F. MSDS: Do not submit Material Safety Data Sheets. If MSDS are required by the Contract Documents, request clarification of instructions from the Architect.
- G. Architect's Digital Data Files:
 - 1. With the Owner's concurrence, Architect's digital data files used to create the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals, subject to the Architect's electronic file transfer agreement. The Contractor shall expect, and shall so agree, to execute and deliver the Architect's agreement before the transfer of such Instruments of Service.
 - 2. The Contractor shall expect, and shall so agree, to pay fees to the Architect related to the transfer of Instruments of Service. Fees shall be paid before transfer. The payment of fees to the Architect reflects administrative costs only and are not, in any way, to indicate a "sale" of goods under the Uniform Commercial Code.
 - 3. Request the Architect's electronic file transfer agreement form. Submit the request for file transfer directly to the Architect. Include the executed agreement, check made payable to SmithGroup, Inc., and a list of documents requested, as identified in the Contract Documents.
 - 4. The files will not be identical to the Contract Drawings. Prior to requesting files, discuss with the Architect how the files will differ from the Contract Documents, and related limitations, such as which Drawings will not be represented, the file format, what information will be included, and method of transmittal.
 - 5. The Architect's fee for providing electronic files to the Contractor is as follows:

1 to 10 drawings:	\$250 set-up charge plus \$25 per drawing
11 to 100 drawings:	\$500 set-up charge plus \$5 per drawing
101 to 500 drawings:	\$1,000 set-up charge plus \$2 per drawing
- H. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.

3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- I. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on 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 business days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required.
 2. When a large volume of submittal materials is scheduled, additional review time may be required. Similarly, a particular submittal may require review completion in less than the agreed normal time. Due to variations in submittal volume and processing needs, agreed review time is not intended to apply to extreme conditions.
 3. Resubmittal Review: Allow 10 business days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 15 business days for initial review of each submittal.
- J. Maintain at the Project Site ready access to the latest reviewed Shop Drawings and Product Data, and one set of samples.

1.6 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections. Before preparing the initial submittal of each type, request the Architect's direction regarding the Contractor's Transmittal format. All submittals, except for samples, shall be submitted as PDF electronic files unless indicated otherwise.
1. Post electronic submittals as PDF electronic files directly to Construction Manager's web-based document processing service specifically established for Project.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Submit electronic submittals via email as PDF electronic files.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 3. Action Submittals: Submit electronic PDF files of each submittal unless otherwise indicated. Architect will return electronic PDF copies.
 4. Informational Submittals: Submit electronic PDF files of each submittal unless otherwise indicated. Architect will return a received receipt without further review.

5. 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.

1.7 PREPARING SUBMITTALS

- A. Title Block for Product Submittals
 1. Shop Drawings, the cover sheets for Product Data, and the labels for Samples shall each have an identifying title block containing:
 - a. Project title.
 - b. Architect's name, Project Number, and Contract Package title.
 - c. Brief description of each submittal item matching the itemized descriptions on the Contractor's Submittal Transmittal.
 - d. Contractor's name and project or contract number.
 - e. Name and phone number of manufacturer, supplier, subcontractor, or other such organization furnishing the submittal to the Contractor.
- B. Product Data: Collect information into a single submittal per specification section 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.
 - a. Mark where selections are to be made.
 - b. Tailor large catalogs so that excessive unrelated products are not included.
 3. To highlight and mark-up Product Data information, use bold markings that will be easily seen on electronic file format. Do not use a highlighter, pencil, or color.
 4. Clearly convey the differences between similar products included in the submittal.
 - a. Highlight information that differs for different sizes or grades.
 5. Correlate Product Data with Contract Documents:
 - a. Where the Contract Documents include designations such as types or marks, mark Product Data with these itemized designations and include them on the Submittal Transmittal. For example: glass types; fixture item numbers.
 - b. Clearly highlight information on Product Data that shows compliance with specified requirements. For example: manufacturer only (not supplier, distributor, etc.); model number; rating; performance characteristics.
 6. If multiple manufacturers or products are being submitted for similar items, include manufacturer or product name in separate line item descriptions on the Contractor's Submittal Transmittal. Do not use distributor or other supplier names other than manufacturer.

7. Dimensioning on Product Data shall be the same system of measure (metric vs. inch-pound) as on the Contract Drawings. If preprinted catalogues display only the system not used in the Contract Drawings, mark-up the Product Data with the other system's dimensions.
 8. Submit Product Data before or concurrent with Samples.
- 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 PDFs formatted such that when printed will fit on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
 3. Each sheet of the same item or system shall be uniform in size and numbered consecutively.
 4. Each sheet shall contain the title block specified below plus an unobstructed space at the right side or bottom, of size not less than 6 by 8 inches for submittal review stamps and notations.
 5. Dimensions on Shop Drawings shall be the same system of measure (i.e., metric or inch-pound) as on the Contract Drawings.
 6. BIM Incorporation: Shop Drawings into BIM established for Project.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Submit submittal transmittal electronically as directed above. Electronic copy shall contain digital images of samples with identifying labels clearly visible.
 2. Submit samples with identifying labels firmly attached.
 - a. Labels shall be of a size to contain the Title Block plus unobstructed space for Submittal Review Stamp(s) and notations.
 - b. Each sample shall display, as a minimum, the Architect's project number, and the submittal and item numbers. Where Sample size does not permit the full title block without obstructing information, provide a separate sheet of paper, 8-1/2 by 11-inch, securely attached to each sample (or sample set), with the information above included.
 3. Recording of Sample Installation: Note and preserve the on-site indicators of each area constituting a sample installation, but remove indicators at final clean-up of Project. Use normal submittal form and process to provide record of sample.
 4. When color, texture, or pattern is specified by naming a particular manufacturer and style, include one sample of the specified product for comparison if another product is submitted.

5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 6. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 7. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Unless indicated otherwise in individual specification sections, provide three sets of Samples. One to the Architect who will retain it for their records; one to the Owner and one shall be retained at the jobsite.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
- F. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- G. Certificates:

1. Certificates and Certifications Submittals: Submit 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. Provide a notarized signature where indicated.
 2. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
 3. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 4. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 6. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- H. Test and Research Reports:
1. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
 2. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 3. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.
 4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
 5. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

6. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
 - I. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
 - J. Subcontractor List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
- 1.8 DELEGATED-DESIGN SERVICES
- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
 - B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.
- 1.9 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 up with review comments before submitting to Architect .
 - B. The Contractor shall be responsible for quantities, weights, and dimensions to be confirmed and correlated at the site; for information that pertains solely to the fabrication processes and to the means, methods, techniques, sequences, and procedures of construction; and for coordination of the work of all trades.

- C. The Contractor shall be responsible for the submittal to be in conformance with information given and the design concept expressed in the Contract Documents.
- D. The Contractor with each submission shall provide specific written notice of any variation from the requirements of the Contract Documents by causing a specific notation to be made on the Submittal attachments or the Submittal-Transmittal.
- E. The Contractor shall affix its own Submittal Review Stamp to all submittals. Architect will not review submittals that do not include a completed Contractor's Submittal Review stamp.

1.10 ARCHITECT'S AND GENERAL CONTRACTOR'S ACTION

- A. General: Architect will not review submittals that do not include the Submittal Review Sheet.
- B. Action Submittals: Architect's staff and consultants will review the submittal, and mark the Submittal Review Sheet with an action code. The code meanings are described below.
- C. Additional codes may be provided within comments or as an electronic submittal review stamp and shall be used in help indicating return of partial submittals.
- D. The Final Review Code on the Submittal Review Sheet prevails and governs the action of the overall submittal.
- E. Review Code meanings are as follows:
 - 1. Action Codes Permitting Use:
 - a. When an action code permitting use is assigned to a submittal, it does not authorize work that does not comply with the requirements of the Contract Documents. Acceptance of the Work will depend on compliance.
 - b. Code AP - Approved: The Work covered by the submittal item may proceed, provided it complies with Contract Document requirements.
 - c. Code AN - Approved as Noted: The Work covered by the submittal item may proceed, provided it complies with the Architect's notations and Contract Document requirements.
 - d. Code AN-R - Approved as Noted - Resubmit: Do not deliver or install the related work until the resubmittal has received Code AP or AN. However, fabrication and other off-site work covered by the submittal item may proceed, at the Contractor's risk, provided it complies with the Architect's notations and Contract Document requirements.
 - 2. Action Code Prohibiting Use:
 - a. Action Code REJ - Not Approved: The Work covered by the submittal item, including purchasing, fabrication, delivery, and other activity, shall not proceed. Revise the submittal item or prepare a new item in accordance with the Architect's notations. Resubmit the corrected or new item without delay; do not permit submittal items marked "Not Approved" to be used. Work incorporating such items will be rejected.

3. Action Code for Items Not Required:
 - a. Action Code X - Not Requested by Contract Documents: The submittal item is not called for by the Contract Documents and is being returned unreviewed by the Architect except to the extent necessary to determine its status.
- F. Informational Submittals: For Architect's information only. Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
 1. Action Code for Information Only:
 - a. Action Code INF - Information Only - Received: The submittal item is not called for a return with a reviewed action code by the Contract Documents and is being returned un-reviewed by the Architect except to the extent necessary to determine its status.
- G. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- H. Incomplete submittals are not acceptable, will be considered non-responsive, and will be returned without review.
- I. Architect will return without review or discard submittals received from sources other than the Contractor.
- J. Submittals not required by the Contract Documents may be returned by the Architect without action.

1.11 SUBMITTAL TRANSMITTAL REQUIREMENTS

- A. General: The Contractor's Submittal Transmittal shall be a PDF file in electronic format. It is recommended, to expedite the submittal review, the electronic form be emailed for review to the Architect as early as possible.
 1. Submittal Numbering: See below.
 2. Contact Information: Full Name, Phone Number and Email Address.
- B. Submittal Definition
 1. Each submittal consists of items from only ONE Specifications section.
 2. Complete Submittal: If ALL the items required by the Specifications section are listed on one Submittal Form (including continuation sheet), it is a complete submittal.
 3. Partial Submittals: If it is necessary to divide the required items of a given Specifications section into two or more submittals to meet schedule or handling requirements, the separate submittals are partial submittals. All partial submittals have the same submittal number, and are differentiated by sequential P-numbers (see below).
 4. All items in each submittal, whether complete or partial, will be processed together: Individual items will not be 'broken out' for special handling. Arrange submittals accordingly.

- C. Submittal Numbering
1. Number submittals as described below to assist tracking.
 2. Number each submittal in the format nnnnnn-nn.
 - a. The 6-digit number is the number of the section that requires the submittal. For example, 044200.
 - b. The 2-digit number is based on the numerical sequence of submittals from that section. In other words, for each section, the first submittal is 01, the second is 02, and so on. The 2-digit number does not change for partial or re-submittals, so that the submittal can be tracked.
 - c. P-Number for Partial Submittals: Number each partial submittal in the P space, beginning with P1, and increasing by one for each partial submittal of that submittal. If the submittal is a complete submittal, leave the P space blank.
 - d. R-Number for Re-submittals: Number each re-submittal in the arr space, beginning with R1, and increasing by one for each re-submittal of that submittal. Do not include an R-Number for the initial submittal.
 - e. Examples:
 - 1) Initial Complete Submittal: 044200-01. First Re-Submittal: 044200-01-R1.
 - 2) Initial Partial Submittal: 044200-01-P1. Second Partial Submittal: 0044200-01-P2. First Re-submittal of Second Partial Submittal: 044200-R1-P2.
- D. Item Kind: Identify each submittal item using the code explanation specified for submittal schedule entries.
- E. Shop Drawings: Include a description of each drawing, matching the description on the drawing itself.
- F. Description: Provide a brief, clear generic description of each line item, using the Drawings or Specifications as a guide. If more than one manufacturer's model numbers are included in the submittal package, indicate the model numbers in parentheses in the affected line items. Do not list distributors or suppliers other than the manufacturer.
- G. Resubmittals: In addition to providing the R-number, enter the information using the same line item number as the original submittal package. Doing so will avoid delay in handling the resubmittal package. Resubmit only those items that previously received Code No. AN-R or REJ.

1.12 SUBMITTAL REVIEW SHEET REQUIREMENTS

- A. General: The Contractor shall obtain the Submittal Review Sheet from the SmithGroup Project Manager.
- B. The Submittal Review Sheet obtained shall be in PDF format, and shall be submitted as the page after the Submittal Transmittal.
- C. When attached, the Submittal Review Sheet shall not obscure information contained in the submittal.

- D. The Contractor shall not edit any of the information contained within the Submittal Review Sheet except as follows:
 - 1. Submittal Number: See Submittal Numbering in Submittal Transmittal Requirements paragraph.
- E. The Contractor shall submit the PDF file in a manner that will allow editing of the Submittal Review Sheet fields by SmithGroup and its consultants.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013330 - SUBMITTAL COMPLIANCE FORM

Instructions:

1. Use the Submittal Compliance Form only with items that specify its use. Use a separate form each product. If this Form is used for items that do not specify its use, the submittal will be returned without review.
2. Do not submit Product Data and/or Samples for products covered by this form.
3. This form is available for completing on-screen with Microsoft Word.

Date Submitted: / /202₂

Submittal Package No / Partial No / Revision No: / / Item No.

Construction Manager/General Contractor: Project No:

Trade or Subcontractor:

This Submittal Compliance Form is required by:

Spec Section No Paragraph Reference(s):

Description of Item:

Manufacturer:

Model No. or Series:

Phone No: Website Address:

By signing below, Contractor certifies that:

1. The item represented by this Submittal Compliance Form conforms to all Contract requirements and the intent expressed in the Contract Documents.
2. There is not a substitution of specified products. The exact named product and characteristics will be provided.
3. Contractor is responsible for: quantities, weights, and dimensions to be confirmed and correlated at the site; information that pertains solely to the fabrication processes; the means, methods, techniques, sequences, and procedures of construction; coordination of the work of all trades.

Reviewed and approved for Contractor by: Print Name: _____ Date: _____

Architect Action:

Architect's review is only for the limited purpose of checking that the item is allowed to be submitted under this form.

Legend - Submittal is:	Code
APPROVED	AP
REJECTED	REJ
NOT REQUESTED BY CONTRACT DOCUMENTS	X

Discipline	Date	Reviewed By	Code
<input type="checkbox"/> Architect:	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Structural:	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Mechanical:	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Electrical:	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Other: <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

END OF DOCUMENT

SECTION 013573 - DELEGATED DESIGN REQUIREMENTS AND PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawing and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes procedures for portions of Work under this Contract that include delegated design requirements and procedures.
- B. Related Requirements:
 - 1. Section 013100 "Project Management and Coordination" for project management and coordination with delegated design requirements.
 - 2. Section 013300 "Submittal Procedures" for quality control of submittal procedure and coordination with delegated design requirements.
 - 3. Section 014000 "Quality Requirements" for quality assurance requirements with delegated design requirements.

1.3 DEFINITIONS

- A. Delegated Design: A portion or component of the Work identified by the Contract Documents to be designed by the Contractor, or an entity assigned by the Contractor, to satisfy performance and design criteria specified in the Contract Documents for that portion or component.
- B. Registered Design Professional: Design professional, assigned by the Contractor, who is responsible for providing the delegated design work, and for certifying that the work is in compliance with the specified performance requirements and design criteria. Design professional shall be legally qualified to practice in jurisdiction where Project is located and shall be experienced in providing delegated design services of the kind indicated. Delegated design services are defined as those performed for installation of the system, assembly or product that are similar in material, design, and extent to those indicated for this Project.
- C. AHJ: Authority having jurisdiction.
- D. Technical Sections: Specification sections included in Divisions 02 through 35 of the Project Manual.

1.4 SUBMITTAL PROCEDURES

- A. Performance and Design Criteria: Where delegated design services are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If specific performance and design criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
 2. Architect's and Engineer's review of delegated design submittal shall be for conformance with performance and design criteria only.
- B. Delegated-Design Services Submittal: Include Shop Drawings, Product Data, and other required submittals indicated in individual technical sections. Submit digitally signed PDF electronic file of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
1. In addition to other submittal requirements specified in other technical sections, at minimum, include the following in delegated design submittal:
 - a. Statement of design and performance criteria identified by the Contract Documents.
 - b. Assumptions.
 - c. Details, calculations, etc. related to the performance criteria.
 - d. Reactions to structure (where applicable).
 - e. Instructions for fabrication, assembly, installation, and interface with other trades.
 2. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.
- C. Submittal Procedures for Delegated Design Components:
1. Comply with requirements specified for other types of submittals included in this Section, including, but not limited to, form and procedures for delivering submittals.
 - a. Submit delegated design documents for approval prior to fabrication of components included in delegated design work.
 - b. Architect's review of delegated design submittals is for the limited purpose of checking for general conformance with information given and the design intent expressed in the Contract Documents. Architect will review submittals consistent with this limited purpose.
 - 1) Architect's review does not lessen nor shift burden or responsibility from Contractor to Architect or Owner.
 - 2) If during submittal review, Architect notes any deficiencies or errors, submittal will be returned with comments. Otherwise, there will be no responsive action by Architect.
 2. Delegated Design Submittal Schedule: Submit list of items identified in the Contract Documents that require delegated design. For each item, include the delegated design entity and the registered design professional.
 - a. If required, submit schedule to the authority having jurisdiction.

3. Preliminary Submission: In order to avoid engineering and detailing of an unacceptable design, and if required by individual technical section, submit to Architect, preliminary documentation describing registered design professional's design prior to preparing engineering calculations and shop drawings.
4. Delegated Design Submission: Submit final delegated design documents to Architect for review, allowing not less than 10 days for review by Architect, and Architect's consultants and AHJ.
 - a. Comply with AHJ requirements.
 - b. Ensure registered design professional's signed seal is affixed to documents in accordance with jurisdictional requirements.
 - c. Make corrections noted by Architect and comply with AHJ requirements.

1.5 RESPONSIBILITIES

A. General Contractor's Responsibilities:

1. Ensure drawings, calculations, specifications, and other documentation provided by registered design professional are complete and are sealed and signed by the registered design professional in accordance with requirements of AHJ. Architect and Owner shall be entitled to rely on the completeness and accuracy of the documentation provided by the registered design professional.
2. Coordinate and assign complete responsibility for design, documentation, calculations, and submittal of delegated design components.
3. Coordinate components requiring delegated design with adjacent or related systems whether designed by Architect or another entity. Ensure complete, operational systems that perform their intended are provided.
4. When required to be reviewed by AHJ, submit delegated design documentation for in a timely manner that will not negatively impact Project's construction schedule.
5. Performance requirements and design criteria are described in each technical section requiring delegated design. Conduct thorough review of other related portions of the Contract Documents to ensure inclusion of full scope of work in delegated design preparation and submittals.
 - a. Provide products and systems complying with specific performance and design criteria indicated.
6. Comply with quality assurance requirements specified in individual technical sections containing delegated design requirements.
7. Comply with accessibility guidelines, codes, policies, and standards required by the AHJ, applicable to the project, and as indicated.

B. Registered Design Professional: Responsibilities include, but are not limited to, the following:

1. Sole responsibility to ensure delegated design accommodates all building movements, including, but not limited to deflection, rotation, creep, shrinkage, live loads, wind loads, and loads, interim and otherwise, resulting from means and methods.
2. If applicable, prepare documentation required by AHJ.
3. Prepare delegated design submittals that are sealed and signed by registered design professional.

- C. Architect's Responsibilities: Architect will review and mark submittals in accordance with procedures defined in Section 013300 "Submittal Procedures", using the action codes defined in that section.

1.6 SCHEDULING

- A. Schedule delegated design activities and submittals to occur in a timely manner that will not negatively impact Project's construction schedule.
 - 1. Allow sufficient time for Architect's review of delegated design submittals.
 - 2. If Architect's approval of shop drawings relating to delegated design components is required prior to application for permit, schedule and sequence delegated design shop drawing review prior to permit submittal. Comply with requirements of Section 013300 "Submittal Procedures."
- B. Owner will not be responsible to pay for delays, additional products, additional hours of work, including overtime, restocking or rework required due to failure by Contractor to coordinate delegated design work with work of other trades.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013573

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Requirements:
 - 1. Section 013573 "Delegated Design Requirements and Procedures" for definitions, submittal procedures, responsibilities, and scheduling requirements associated with delegated design.

1.3 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
 - D. Mockups: Full-size physical assemblies that are constructed either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
 1. Parapet Wall Mockups: Mockups of the parapet wall constructed on-site as freestanding temporary built element, consisting of the wall, reinforcement, jointing, caulking exterior finishes enabling review of finished portions of the Work.
 - E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
 - F. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
 - G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" shall have the same meaning as the term "testing agency."
 - H. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
 - I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.
- 1.4 CONFLICTING REQUIREMENTS
- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

- A. Mockup Shop Drawings: For parapet wall mockups.
 - 1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.
 - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS

- A. Mock-up Completion Submittal: Process submittal for documentation when mock-up is complete.

1.7 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, telephone number, and email address of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Recommendations on retesting and reinspecting.

1.8 QUALITY ASSURANCE

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

- B. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups of size indicated.
 2. Build mockups in location indicated or, if not indicated, as directed by Architect.
 3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
 5. Demonstrate the proposed range of aesthetic effects and workmanship.
 6. Obtain Architect's approval of mockups before starting corresponding Work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
 7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
 8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 10. Demolish and remove mockups when directed unless otherwise indicated.

1.9 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 2. Engage a qualified testing agency to perform quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 3. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspection will be performed.

4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform duties of Contractor.
- E. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspection equipment at Project site.
- F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

- G. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.
 - 1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
 - 2. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and authorities' having jurisdiction reference during normal working hours.
 - 1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "As Otherwise Directed": Used in relation to items to be determined after Contract by agreement between Owner, Architect, and Contractor, with input from other entities as appropriate.
- D. "Certified": Guaranteed in writing over the signature of an authorized representative of the certifying organization.
- E. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- F. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- G. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- H. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- I. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site."
- J. "N.I.C" or "NIC": Not in Contract.
- K. "Necessary": That which is reasonably necessary to the proper completion of the Work.
- L. "Per": In accordance with the requirements of.
- M. "Products": Materials, equipment, or systems.

- N. "Provide": Furnish and install, complete and ready for the intended use.
- O. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.
- P. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- Q. "Replace": To put something new in place of.
- R. "Required": Referring to requirements of the Contract Documents, unless its use clearly implies a different interpretation.
- S. "Shown" or "Indicated": Appearing on the Drawings, unless their use clearly implies a different interpretation.
- T. "Supply": Same as Furnish.

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. AABC - Associated Air Balance Council; www.aabc.com.
 2. AAMA - American Architectural Manufacturers Association; (See FGIA).
 3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
 4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
 5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
 6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
 7. ABMA - American Boiler Manufacturers Association; www.abma.com.
 8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
 9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
 10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
 11. AF&PA - American Forest & Paper Association; www.afandpa.org.
 12. AGA - American Gas Association; www.aga.org.
 13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
 14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
 15. AI - Asphalt Institute; www.asphaltinstitute.org.
 16. AIA - American Institute of Architects (The); www.aia.org.
 17. AISC - American Institute of Steel Construction; www.aisc.org.
 18. AISI - American Iron and Steel Institute; www.steel.org.
 19. AITC - American Institute of Timber Construction; www.plib.org.
 20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
 21. ANSI - American National Standards Institute; www.ansi.org.
 22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
 23. APA - APA - The Engineered Wood Association; www.apawood.org.
 24. APA - Architectural Precast Association; www.archprecast.org.
 25. API - American Petroleum Institute; www.api.org.
 26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
 27. ARI - American Refrigeration Institute; (See AHRI).
 28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
 29. ASCE - American Society of Civil Engineers; www.asce.org.
 30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
 31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
 32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
 33. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
 34. ASSP - American Society of Safety Professionals (The); www.assp.org.
 35. ASTM - ASTM International; www.astm.org.
 36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
 37. AVIXA - Audiovisual and Integrated Experience Association; (Formerly: Infocomm International); www.avixa.org.

38. AWEA - American Wind Energy Association; www.awea.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWPA - American Wood Protection Association; www.awpa.com.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
45. BIA - Brick Industry Association (The); www.gobrick.com.
46. BICSI - BICSI, Inc.; www.bicsi.org.
47. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
48. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
49. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
50. CDA - Copper Development Association; www.copper.org.
51. CE - Conformite Europeenne; www.ec.europa.eu/growth/single-market/ce-marking.
52. CEA - Canadian Electricity Association; www.electricity.ca.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.compositepanel.org.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csa-group.org.
65. CSI - Cast Stone Institute; www.caststone.org.
66. CSI - Construction Specifications Institute (The); www.csiresources.org.
67. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
68. CTA - Consumer Technology Association; www.cta.tech.
69. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.coolingtechnology.org.
70. CWC - Composite Wood Council; (See CPA).
71. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
72. DHA - Decorative Hardwoods Association; (Formerly: Hardwood Plywood & Veneer Association); www.decorativehardwoods.org.
73. DHI - Door and Hardware Institute; www.dhi.org.
74. ECA - Electronic Components Association; (See ECIA).
75. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
76. ECIA - Electronic Components Industry Association; www.ecianow.org.
77. EIA - Electronic Industries Alliance; (See TIA).

78. EIMA - EIFS Industry Members Association; www.eima.com.
79. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
80. EOS/ESD Association; (Electrostatic Discharge Association); www.esda.org.
81. ESTA - Entertainment Services and Technology Association; (See PLASA).
82. ETL - Intertek (See Intertek); www.intertek.com.
83. EVO - Efficiency Valuation Organization; www.evo-world.org.
84. FCI - Fluid Controls Institute; www.fluidcontrolsintitute.org.
85. FGIA - Fenestration and Glazing Industry Alliance; <https://fgiaonline.org>.
86. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
87. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
88. FM Approvals - FM Approvals LLC; www.fmapprovals.com.
89. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
90. FRSA - Florida Roofing, Sheet Metal Contractors Association, Inc.; www.floridarroof.com.
91. FSA - Fluid Sealing Association; www.fluidsealing.com.
92. FSC - Forest Stewardship Council U.S.; www.fscus.org.
93. GA - Gypsum Association; www.gypsum.org.
94. GANA - Glass Association of North America; (See NGA).
95. GS - Green Seal; www.greenseal.org.
96. HI - Hydraulic Institute; www.pumps.org.
97. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
98. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
99. HPVA - Hardwood Plywood & Veneer Association; (See DHA).
100. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
101. IAS - International Accreditation Service; www.iasonline.org.
102. ICBO - International Conference of Building Officials; (See ICC).
103. ICC - International Code Council; www.iccsafe.org.
104. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
105. ICPA - International Cast Polymer Association; www.theicpa.com.
106. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
107. IEC - International Electrotechnical Commission; www.iec.ch.
108. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
109. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
110. IESNA - Illuminating Engineering Society of North America; (See IES).
111. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
112. IGMA - Insulating Glass Manufacturers Alliance; (See FGIA).
113. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
114. II - Infocomm International; (See AVIXA).
115. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
116. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.

117. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
118. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
119. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
120. ISO - International Organization for Standardization; www.iso.org.
121. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
122. ITU - International Telecommunication Union; www.itu.int.
123. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
124. LMA - Laminating Materials Association; (See CPA).
125. LPI - Lightning Protection Institute; www.lightning.org.
126. MBMA - Metal Building Manufacturers Association; www.mbma.com.
127. MCA - Metal Construction Association; www.metalconstruction.org.
128. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
129. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
130. MHI - Material Handling Industry; www.mhi.org.
131. MIA - Marble Institute of America; (See NSI).
132. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
133. MPI - Master Painters Institute; www.paintinfo.com.
134. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
135. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
136. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
137. NADCA - National Air Duct Cleaners Association; www.nadca.com.
138. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
139. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.
140. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
141. NBI - New Buildings Institute; www.newbuildings.org.
142. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
143. NCMA - National Concrete Masonry Association; www.ncma.org.
144. NEBB - National Environmental Balancing Bureau; www.nebb.org.
145. NECA - National Electrical Contractors Association; www.necanet.org.
146. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
147. NEMA - National Electrical Manufacturers Association; www.nema.org.
148. NETA - InterNational Electrical Testing Association; www.netaworld.org.
149. NFHS - National Federation of State High School Associations; www.nfhs.org.
150. NFPA - National Fire Protection Association; www.nfpa.org.
151. NFPA - NFPA International; (See NFPA).
152. NFRC - National Fenestration Rating Council; www.nfrc.org.
153. NGA - National Glass Association (The); (Formerly: Glass Association of North America); www.glass.org.
154. NHLA - National Hardwood Lumber Association; www.nhla.com.
155. NLGA - National Lumber Grades Authority; www.nlga.org.

156. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
157. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
158. NRCA - National Roofing Contractors Association; www.nrca.net.
159. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
160. NSF - NSF International; www.nsf.org.
161. NSI - National Stone Institute; (Formerly: Marble Institute of America); www.naturalstoneinstitute.org.
162. NSPE - National Society of Professional Engineers; www.nspe.org.
163. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
164. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
165. NWFA - National Wood Flooring Association; www.nwfa.org.
166. NWRA - National Waste & Recycling Association; www.wasterecycling.org
167. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
168. PDI - Plumbing & Drainage Institute; www.pdionline.org.
169. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
170. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
171. RFCI - Resilient Floor Covering Institute; www.rfci.com.
172. RIS - Redwood Inspection Service; www.redwoodinspection.com.
173. SAE - SAE International; www.sae.org.
174. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
175. SDI - Steel Deck Institute; www.sdi.org.
176. SDI - Steel Door Institute; www.steeldoor.org.
177. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
178. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
179. SIA - Security Industry Association; www.siaonline.org.
180. SJI - Steel Joist Institute; www.steeljoist.org.
181. SMA - Screen Manufacturers Association; www.smainfo.org.
182. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
183. SMPTE - Society of Motion Picture and Television Engineers; www.smpete.org.
184. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
185. SPIB - Southern Pine Inspection Bureau; www.spib.org.
186. SPRI - Single Ply Roofing Industry; www.spri.org.
187. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
188. SSINA - Specialty Steel Industry of North America; www.ssina.com.
189. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
190. STI - Steel Tank Institute; www.steeltank.com.
191. SWI - Steel Window Institute; www.steelwindows.com.
192. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
193. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
194. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
195. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.

196. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
197. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
198. TMS - The Masonry Society; www.masonrysociety.org.
199. TPI - Truss Plate Institute; www.tpinst.org.
200. TPI - Turfgrass Producers International; www.turfgrassod.org.
201. TRI - Tile Roofing Institute; www.tilerroofing.org.
202. UL - Underwriters Laboratories Inc.; www.ul.com.
203. UL LLC - UL LLC; www.ul.com.
204. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
205. USAV - USA Volleyball; www.usavolleyball.org.
206. USGBC - U.S. Green Building Council; www.usgbc.org.
207. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
208. WA - Wallcoverings Association; www.wallcoverings.org.
209. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
210. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
211. WDMA - Window & Door Manufacturers Association; www.wdma.com.
212. WI - Woodwork Institute; www.wicnet.org.
213. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
214. WWPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.

11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
 12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
 13. SD - Department of State; www.state.gov.
 14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
 15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
 16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
 17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
 18. USP - U.S. Pharmacopeial Convention; www.usp.org.
 19. USPS - United States Postal Service; www.usps.com.
- E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.govinfo.gov.
 2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
 3. DSCC - Defense Supply Center Columbus; (See FS).
 4. FED-STD - Federal Standard; (See FS).
 5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
 6. MILSPEC - Military Specification and Standards; (See DOD).
 7. USAB - United States Access Board; www.access-board.gov.
 8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).
- F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
 2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
 3. CDHS; California Department of Health Services; (See CDPH).
 4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Main-Page.aspx.

5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development;
www.txforestservation.tamu.edu.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.
- C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top rails.

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

2.3 PROJECT IDENTIFICATION SIGNS

- A. General:
 1. Provide one project identification sign(s). Locate where indicated or as directed by Architect.
 2. Refer to Document 015000.01 "Project Identification Sign", for sign dimensions, layout specifications, structure and typefaces.
 3. Submit shop drawings for approval showing structure, exact dimensions, copy, confirmation of specified colors and typefaces, and location(s) on site. Receive approval before erection.
 4. Maintain sign(s) until final acceptance of the Work, and repaint sign(s) at least once in each 12-month period.
- B. Sign Construction:
 1. Fabricate sign of 3/4 inch minimum thickness, waterproof marine plywood, and 1/4 inch hardwood edge strips with mitered corners.
 2. Include the name of the Owner, the Architect and major Contractor(s) on the sign.
 3. Mount project sign on pressure-preservative-treated wood posts, 4 x 4 inch minimum, set in concrete, with 2 x 4 inch horizontal back bracing to 2 x 6 inch deadman anchors driven into soil.

4. Anchor field office sign to field office or mount on 2 x 2 inch pressure-preservative-treated wood post set in ground, or otherwise anchored as approved.
5. Paint fasteners through face of signs to match background.
6. Provide Sherwin-Williams Co. colors as follows:
 - a. Owner's panel: white, SW 2123 (Exterior).
 - b. Architect's panel: gray, SW 2115 (Exterior).
 - c. Contractor's panel: gray, SW 2115 (Exterior).
 - d. Field office signs: white, SW 2123 (Exterior).
 - e. Type: black, SW 2126 (Exterior).

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.
- B. Construct, maintain and remove temporary structures including construction platforms, signs, warning buoys, and sanitary facilities.

3.2 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.3 TEMPORARY UTILITY INSTALLATION

- A. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.4 SUPPORT FACILITIES INSTALLATION

- A. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated on Drawings.

- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
 - 2. Contractor shall have one minimum designated flagger/traffic controller during the project operations that require traffic disturbance onsite and/or enroute to the Project site
 - 3. Maintain access for fire-fighting equipment and access to fire hydrants.
 - C. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
 - D. Storage and Staging: Use designated areas of Project site for storage and staging needs.
 - E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 - 2. Remove snow and ice as required to minimize accumulations.
 - 3. Providing dewatering as necessary for boat ramp installation.
 - F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
 - 1. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
 - 2. Maintain and touch up signs, so they are legible at all times.
 - G. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
 - H. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
 - I. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- 3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION
- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
 - 1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Section 011000 "Summary."

- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to Contract Documents and Lake Michigan Regional General Permit.
 - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
 - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 - 4. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

- E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates. Prior to installing construction site fencing, Contractor shall meet on site with Owner to review proposed location of fence. Contractor to mark proposed location of fence in the field before meeting with Owner.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations, and as shown on the contract Drawings.

- F. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

- G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

- H. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 - 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 015723 - TEMPORARY STORMWATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Temporary stormwater pollution controls.

1.3 INFORMATIONAL SUBMITTALS

- A. Stormwater Pollution Prevention Plan (SWPP): Within 15 days of date established for commencement of the Work, submit completed SWPPP per the Illinois Urban Design Manual.

1.4 QUALITY ASSURANCE

- A. Stormwater Pollution Prevention Plan (SWPPP) Coordinator: Experienced individual or firm with a record of successful water pollution control management coordination of projects with similar requirements.

PART 2 - PRODUCTS

2.1 TEMPORARY STORMWATER POLLUTION CONTROLS

- A. Provide temporary stormwater pollution controls as required by the SWPPP.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with all best management practices, general requirements, performance requirements, reporting requirements, and all other requirements included in the SWPPP.
- B. Locate stormwater pollution controls in accordance with the SWPPP.

- C. Conduct construction as required to comply with the SWPPP and that minimize possible contamination or pollution or other undesirable effects.
 - 1. Inspect, repair, and maintain SWPPP controls during construction.
 - a. Inspect all SWPPP controls not less than every seven days, and after each occurrence of a storm event, as outlined in the SWPPP.

- D. Remove SWPPP controls at completion of construction and restore and stabilize areas disturbed during construction.

END OF SECTION 015723

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
 - 2. Section 012500 "Substitution Procedures" for requests for substitutions.
 - 3. Section 014200 "References" for applicable industry standards for products specified.
 - 4. Section 01770 "Closeout Procedures" for submitting warranties.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
 - 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.
 - C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.
 - D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
 2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.
 - E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."
 - F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.
- 1.4 QUALITY ASSURANCE
- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 1. Resolution of Compatibility Disputes between Multiple Contractors:
 - a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.
 - B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.

1.5 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.
- C. Storage:
 1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
 2. Store products to allow for inspection and measurement of quantity or counting of units.
 3. Store materials in a manner that will not endanger Project structure.
 4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
 5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
 - a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Architect, whose determination is final.

- B. Product Selection Procedures:
 1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."
 2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."
 3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."
 4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
 - a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.
 5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."
 6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.
 - a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:
1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.
 6. By proposing a product that is not listed, for consideration as a comparable product, the Contractor affirms that it meets requirements, except where clearly indicated otherwise. Approval, if granted, will be contingent upon the product meeting requirements as a comparable product. In the absence of clear indication of non-compliance in product submittal, approval of the comparable product by Architect will be based on Contractor's affirmation, whether explicit or implicit.
- B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."
1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
 2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Progress cleaning.
 - 6. Protection of installed construction.

- B. Related Requirements:
 - 1. Section 011000 "Summary" for coordination of , and limits on use of Project site.
 - 2. Section 017700 "Closeout Procedures" for submitting final property as-built survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.2 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.3 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, and other construction affecting the Work.
1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.
- B. Engage a land surveyor experienced in laying out the Work, using the following accepted surveying practices:
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish limits on use of Project site.
 - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 4. Inform installers of lines and levels to which they must comply.
 - 5. Check the location, level and plumb, of every major element as the Work progresses.
 - 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 - 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.5 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb, and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

- G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
 - 1. Allow for building movement, including thermal expansion and contraction.
 - 2. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.
- J. Repair or remove and replace damaged, defective, or nonconforming Work.
 - 1. Comply with Section 01770 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.6 CUTTING AND PATCHING

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of Work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

- F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
- G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
- H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

- G. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
 - 2. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.3 DEFINITIONS

- A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.5 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

- C. Field Report: For pest-control inspection.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.7 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, as-built surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.
 - 5. Submit testing, adjusting, and balancing records.
 - 6. Submit sustainable design submittals not previously submitted.
 - 7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Complete startup and testing of systems and equipment.
 - 3. Perform preventive maintenance on equipment used prior to Substantial Completion.
 - 4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems."

5. Advise Owner of changeover in utility services.
6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Complete final cleaning requirements.
9. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.8 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit Final Completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.9 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
 - 2. Submit list of incomplete items in the following format:
 - a. PDF Electronic File: Architect will return annotated file.

1.10 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
 - 1. Submit on digital media acceptable to Architect.
- E. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Remove labels that are not permanent.
 - i. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - j. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record specifications.
- B. Related Requirements:
 - 1. Section 017700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set(s) of marked-up record prints.
- B. Record Specifications: Submit of Project's Specifications, including addenda and Contract modifications.

1.4 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
 - 1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding photographic documentation.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.

- c. Depths of foundations.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Changes made by Change Order or Construction Change Directive.
 - i. Changes made following Architect's written orders.
 - j. Details not on the original Contract Drawings.
 - k. Field records for variable and concealed conditions.
 - l. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file with comment function enabled.
 2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 3. Refer instances of uncertainty to Architect for resolution.
 4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
 - a. See Section 013100 "Project Management and Coordination" for requirements related to use of Architect's digital data files.
 - b. Architect will provide data file layer information. Record markups in separate layers.
- C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 3. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."

- d. Name of Architect.
- e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 - 5. Note related Change Orders and Record Drawings where applicable.
- B. Format: Submit record specifications as annotated PDF electronic file .

1.6 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file .
 - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Salvage of existing items to be reused or recycled.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
 - 2. Section 017300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction, including associated attachments, supports, bracing, etc., and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site or via phone conference.
 - 1. Review any structural load limitations of existing structure.
 - 2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review areas where existing construction is to remain and requires protection.
 - a. Existing sheet pile walls
 - b. Existing parking lot concrete

1.6 INFORMATIONAL SUBMITTALS

- A. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Coordination for shutoff, capping, and continuation of utility services.
 - 2. Coordination of Owner's continuing occupancy of portions of existing site and of Owner's partial occupancy of completed Work.

1.7 FIELD CONDITIONS

- A. Owner will occupy portions of the site immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents. The existing barge breakwater has deteriorated significantly since its installation, including, but not limited to, damage to barge structure, washout of fill materials, and collapse of concrete deck. The existing boat ramp is also deteriorated from its as-built condition
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
 - 1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary."

3.3 PREPARATION

- A. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
- B. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Store items in a secure area until delivery to Owner.
 3. Transport items to Owner's storage area on-site .
 4. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
1. Pack or crate items after cleaning and repairing. Identify contents of containers.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- D. Existing Armor Stone and Lake Bed Materials:
 - 1. Contractor shall carefully move existing armor stone away from the existing barge breakwater and stockpile on the lakebed adjacent to the work area, or on land within the project limits. Armor stone greater than 18 inches shall be re-used as scour stone. Comply with the requirements of Section 353119 Stone Revetments and Breakwaters
 - 2. Contractor may sidecast existing lake bed materials as shown on the contract drawings for the purpose of completing demolition and removal of the existing barge breakwater. After barge has been removed, sidecast lake bed materials shall be spread evenly over the footprint of the new breakwater.
- E. Barge Removal: Completely remove all of barge steel components, and other associated items including sheet pile walls as shown in the drawing, and remove entirety of barge breakwater structure.
- F. Barge stone/fill: Remove contents of barge including all stone, concrete, and other fill materials. Clean material meeting the gradation requirements of Lake Fill shall be stockpiled on-site for re-use if Engineer deems it acceptable. Concrete slabs shall be broken up so that no dimension is greater than 2 times the least dimension and all exposed rebar and steel wire cut off and disposed of offsite.
- G. Sheet Pile Wall Connection: Remove east side sheets (north/south) and cut east/west sheets below grade to allow concrete regrading. Properly connect new sheet pile wall sheets to existing sheets.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.8 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Items to Be Removed:
 - 1. Barge and associated components
 - 2. Boat Ramp Concrete and adjacent concrete pavement, as indicated on the Contract Drawings.
 - 3. Floating dock
 - 4. Asphalt pavement
 - 5. Planter Boxes
- B. Existing Items to Be Salvaged:
 - 1. Jersey Barriers .
- C. Existing Items to Be Removed and Reinstalled:
 - 1. Armor Toe Stone
 - 2. Acceptable existing barge fill for breakwater construction.
- D. Existing Items to Remain:
 - 1. West steel sheet pile wall
 - 2. Sheet pile walls adjacent to barge, as indicated on the Drawings.

END OF SECTION

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
 - 1. Foundation walls.
- B. Related Requirements:
 - 1. Section 321313 "Concrete Paving" for concrete pavement and walks.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- C. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.
- D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the Architect.
- E. Samples: For waterstops, expansion joints, and rustication strips.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer manufacturer testing agency.
- B. Welding certificates.
- C. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Form materials and form-release agents.
 - 3. Bonding agents.
 - 4. Adhesives.
 - 5. Joint-filler strips.
 - 6. Repair materials.
- D. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- E. Minutes of preinstallation conference.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 - 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
 - E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."
 - F. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
 - G. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
 - H. Mockups: Cast concrete formed-surface wall segment to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship.
 - 1. Build panel approximately 105 linear feet of parapet wall in the location indicated or, if not indicated, as directed by Architect.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
 - I. Preinstallation Conference: Conduct conference at Project site.
 - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
 - 2. Review special inspection and testing and inspecting agency procedures for field quality control, cold- and hot-weather concreting procedures, construction contraction and isolation joints, and joint-filler strips, forms and form removal limitations, steel reinforcement installation, and concrete protection.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.
 - B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
 - 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. Structural 1, B-B or better; mill oiled and edge sealed.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- E. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- F. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Epoxy-Coated Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed bars, ASTM A 775/A 775M, epoxy coated, with less than 2 percent damaged coating in each 12-inch bar length.
- C. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.

- D. Epoxy-Coated Wire: ASTM A 884/A 884M, Class A, Type 1 coated, as-drawn, plain -steel wire, with less than 2 percent damaged coating in each 12-inch wire length.
- E. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.
- F. Epoxy-Coated Welded Wire Reinforcement: ASTM A 884/A 884M, Class A coated, Type 1, plain steel.

2.3 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Epoxy-Coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, ASTM A 775/A 775M epoxy coated.
- C. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A 775M.
- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I/II, gray. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class F.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Silica Fume: ASTM C 1240, amorphous silica.
- C. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Water: ASTM C 94/C 94M and potable.

2.5 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.6 WATERSTOPS

A. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete, 3/8 by 3/4 inch.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Adeka Ultra Seal/OCM, Inc.; Adeka Ultra Seal.
 - b. Greenstreak; Hydrotite.
 - c. Vinylex Corp.; Swellseal.
 - d. .

2.7 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Axim Italcementi Group, Inc.; CATEXOL CimFilm.
 - b. BASF Construction Chemicals - Building Systems; Confilm.
 - c. ChemMasters; SprayFilm.
 - d. Conspec by Dayton Superior; Aquafilm.
 - e. Dayton Superior Corporation; Sure Film (J-74).
 - f. Edoco by Dayton Superior; BurkeFilm.
 - g. Euclid Chemical Company (The), an RPM company; Eucobar.
 - h. Kaufman Products, Inc.; Vapor-Aid.
 - i. Lambert Corporation; LAMBCO Skin.

- j. L&M Construction Chemicals, Inc.; E-CON.
 - k. Meadows, W. R., Inc.; EVAPRE.
 - l. Metalcrete Industries; Waterhold.
 - m. Nox-Crete Products Group; MONOFILM.
 - n. Sika Corporation; SikaFilm.
 - o. SpecChem, LLC; Spec Film.
 - p. Symons by Dayton Superior; Finishing Aid.
 - q. TK Products, Division of Sierra Corporation; TK-2120 TRI-FILM.
 - r. Unitex; PRO-FILM.
 - s. Vexcon Chemicals, Inc.; Certi-Vex Envio Set.
 - t. .
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
 - b. BASF Construction Chemicals - Building Systems; Kure 200.
 - c. ChemMasters; Safe-Cure Clear.
 - d. Conspec by Dayton Superior; W.B. Resin Cure.
 - e. Dayton Superior Corporation; Day-Chem Rez Cure (J-11-W).
 - f. Edoco by Dayton Superior; Res X Cure WB.
 - g. Euclid Chemical Company (The), an RPM company; Kurez W VOX; TAMMSCURE WB 30C.
 - h. Kaufman Products, Inc.; Thinfilm 420.
 - i. Lambert Corporation; AQUA KURE - CLEAR.
 - j. L&M Construction Chemicals, Inc.; L&M Cure R.
 - k. Meadows, W. R., Inc.; 1100-CLEAR.
 - l. Nox-Crete Products Group; Resin Cure E.
 - m. Right Pointe; Clear Water Resin.
 - n. SpecChem, LLC; Spec Rez Clear.
 - o. Symons by Dayton Superior; Resi-Chem Clear.
 - p. TK Products, Division of Sierra Corporation; TK-2519 DC WB
 - q. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating.
- 1. Products: Subject to compliance with requirements, provide one of the following:

- a. Anti-Hydro International, Inc.; AH Clear Cure WB.
 - b. BASF Construction Chemicals - Building Systems; Kure-N-Seal WB.
 - c. ChemMasters; Safe-Cure & Seal 20.
 - d. Conspec by Dayton Superior; Cure and Seal WB.
 - e. Cresset Chemical Company; Crete-Trete 309-VOC Cure & Seal.
 - f. Dayton Superior Corporation; Safe Cure and Seal (J-18).
 - g. Edoco by Dayton Superior; Spartan Cote WB II.
 - h. Euclid Chemical Company (The), an RPM company; Aqua Cure VOX; Clearseal WB 150.
 - i. Kaufman Products, Inc.; Cure & Seal 309 Emulsion.
 - j. Lambert Corporation; Glazecote Sealer-20.
 - k. L&M Construction Chemicals, Inc.; Dress & Seal WB.
 - l. Meadows, W. R., Inc.; Vocomp-20.
 - m. Metalcrete Industries; Metcure.
 - n. Nox-Crete Products Group; Cure & Seal 150E.
 - o. Symons by Dayton Superior; Cure & Seal 18 Percent E.
 - p. TK Products, Division of Sierra Corporation; TK-2519 WB.
 - q. Vexcon Chemicals, Inc.; Starseal 309.
- G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 25 percent solids, nondissipating.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Construction Chemicals - Building Systems; Kure-N-Seal W.
 - b. ChemMasters; Safe-Cure Clear.
 - c. Conspec by Dayton Superior; High Seal.
 - d. Dayton Superior Corporation; Safe Cure and Seal (J-19).
 - e. Edoco by Dayton Superior; Spartan Cote WB II 20 Percent.
 - f. Euclid Chemical Company (The), an RPM company; Diamond Clear VOX; Clearseal WB STD.
 - g. Kaufman Products, Inc.; SureCure Emulsion.
 - h. Lambert Corporation; Glazecote Sealer-20.
 - i. L&M Construction Chemicals, Inc.; Dress & Seal WB.
 - j. Meadows, W. R., Inc.; Vocomp-20.
 - k. Metalcrete Industries; Metcure 0800.
 - l. Nox-Crete Products Group; Cure & Seal 200E.
 - m. Symons by Dayton Superior; Cure & Seal 18 Percent E.
 - n. Vexcon Chemicals, Inc.; Starseal 0800.

2.8 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips:
 1. Expansion joint filler composed of a synthetic foam of isomeric polymers in a very small, closed-cell structure. Joint filler shall be non-absorbent and have a resiliency of 99%. Joint filler shall conform to the following standards and have the following requirements:

- a. ASTM D545 using a (1/2" (12.7 mm) thick test specimen).
 - b. Compression: 13 psi (9 g/mm²) 89.6 kPa.
 - c. Extrusion: 0.1" (2.5 mm).
 - d. Recovery: 99.21%.
 - e. Water Absorption, volume %: 0.246.
2. ASTM D 1752, Type II.
 3. ASTM D5249, Type II
 4. Thickness: 1/2" or 3/4" as shown on drawings.
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, aromatic polyurea with a Type A shore durometer hardness range of 90 to 95 per ASTM D 2240.
- C. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.9 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent. Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
1. Fly Ash: 25 percent.
 2. Combined Fly Ash and Pozzolan: 25 percent.
 3. Ground Granulated Blast-Furnace Slag: 50 percent.
 4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
 5. Silica Fume: 10 percent.
 6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
 7. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Foundation Walls: Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: 4000 psi at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 - 3. Slump Limit: 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 - 4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size.

2.11 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
 - C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Class A, 1/8 inch for smooth-formed finished surfaces.
 - 2. Class C, 1/2 inch for rough-formed finished surfaces.
 - D. Construct forms tight enough to prevent loss of concrete mortar.
 - E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses, and the like, for easy removal.
 - 2. Do not use rust-stained steel form-facing material.
 - F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
 - G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
 - H. Chamfer exterior corners and edges of permanently exposed concrete.
 - I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
 - J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
 - K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
 - L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- 3.2 EMBEDDED ITEMS
- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

- F. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 3. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 - 4. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.6 WATERSTOPS

- A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.7 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- G. Hot-Weather Placement: Comply with ACI 301 and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.8 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish,.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
 - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.9 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

3.10 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3.11 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - 1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.12 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - 1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 - 2. After concrete has cured at least 14 days, correct high areas by grinding.
 - 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 - 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 - 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.13 FIELD QUALITY CONTROL

A. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

B. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Verification of use of required design mixture.
5. Concrete placement, including conveying and depositing.
6. Curing procedures and maintenance of curing temperature.
7. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
6. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
10. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION

SECTION 312000 - EXCAVATION AND FILL FOR STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Logs of soil borings are included only as "Information to Bidders" and are not part of the Contract Documents. The data on indicated subsurface conditions is not intended as representation or warranties of accuracy or continuity between soil borings. Assume full responsibility for interpreting boring data and conclusion drawn from the information furnished and from the inspection at the site.
- C. Geotechnical soil borings prepared by ECS on 7/28/2018 is part included in the Appendix of the Contract Documents. The opinions expressed in this report for design purposes represents interpretation of geotechnical conditions, tests and analyses by geotechnical engineer. Should the data contained in this report not be adequate for the Contractor's purposes, additional test borings and other exploratory operation may be performed at Contractor's, with the approval of the Architect .

1.2 SUMMARY

- A. Section Includes:
 - 1. Excavation and fill which is located within the barge and launch perimeter as documented on the drawings.
 - 2. Preparing subgrades for slabs-on-grade.
 - 3. Excavating and backfilling for structures.
- B. Related Requirements:
 - 1. Section 015000 "Temporary Facilities and Controls" for temporary controls, utilities, support facilities and temporary site fencing.

1.3 DEFINITIONS

- A. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
 - 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

- B. Fill: Satisfactory stone, broken concrete and soil materials used to raise existing grades.
- C. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- D. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- E. Utilities: On-site underground services within the project site (pipes, conduits, ducts, cables).

1.4 PROJECT CONDITIONS

- A. Refer to Section 024119 "Selective Structure Demolition".
- B. Protections of Persons and Property:
 - 1. Barricade open excavations occurring as part of the Work and post with warning lights. Operate warning lights as recommended by OSHA and other authorities having jurisdiction.
 - 2. Protect Utilities, pavements and other facilities from damages caused by settlement, lateral movement, undermining, wash-out and other hazards created by excavation operations.

PART 2 - PRODUCTS

2.1 LAKE FILL:

- A. The Contractor is responsible for furnishing Lake Fill to supplement the on-site salvaged and approved material to adequately support the new breakwater concrete deck and the new launch ramp. The material furnished may comprise new quarry stone, crush concrete, coarse aggregate and other acceptable granular materials.
- B. Lake Fill shall conform to the following gradation requirements:

Percent Passing (%)	sieve or weight size
0	#200
<20	#4
100	50 lb

2.2 SOIL MATERIALS

- A. Bedding Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; conforming to IDOT requirements for CA-1.
- B. Asphalt Base Course Material: Narrowly graded mixture of [washed]crushed stone, or crushed or uncrushed gravel; conforming to IDOT requirements for CA-7.
- C. Concrete Base Course Material: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; conforming to IDOT requirements for CA-7.
- D. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Provide protective insulating materials as necessary. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations for the new boat launch structure, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
- C. Provide and maintain sufficient dewatering devices, such as pumps, hoses, filters, or strainers and other appurtenances, required to remove and convey the water away from excavations.
- D. Conduct all dewatering operation in a manner to prevent the removal of fine soil particles from soil strata being dewatered.

- E. Discharge water in a legal manner, a sufficient distance from the excavations to prevent backflow. Maintain dewatering operations until backfill is placed.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.4 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Slope unbraced excavations to a stable angle in accordance with all local, state and federal regulations to maintain stability of excavation side walls or provide temporary shoring and bracing to prevent cave-ins or adjacent ground movement as specified.
- B. Excavated Material Suitable for Filling or Backfilling
 - 1. Stockpile excavated materials where directed until required for backfill or fill.
 - 2. Locate and retain fill materials away from edges of excavations.
- C. Additional Excavation
 - 1. If unsuitable materials are encountered at the required subgrade elevation or where the bearing capacity required cannot be obtained at the depth indicated, notify the Architect, for direction. Authorized additional Work will be paid for according to Contract provisions.
- D. Temporary Shoring and Bracing
 - 1. Provide sheeting, shoring and bracing to prevent cave-ins and adjacent ground movement and comply with local, state and federal codes and ordinances. Construct shoring and bracing of sound material, accurately placed and securely braced. Maintain shoring and bracing during period excavation is open.
 - 2. Assume full responsibility for the adequacy of the design, installation and effectiveness of shoring and other protective methods utilized. Be responsible for damages resulting from failure to take adequate measures for protection of persons and adjacent property, including land, structures, facilities, pavements, utilities and grades. Remove shoring when no longer required.
 - 3. Prior to installation, make every effort to determine the presence of existing underground conditions not indicated. If unknown utilities or obstructions and boulders are discovered, notify the Architect before proceeding.

4. Wherever boulders of rock material that exceed one cubic yard or obstructions are encountered, notify the Architect before proceeding. Carefully remove the obstruction, or cut through boulders that cannot be removed without endangering the construction or provide additional work at the area of the boulder to brace the construction. Blasting is not allowed in removing boulders or obstructions.
- E. Abandoned Underground services
 1. Remove abandoned underground pipe, conduit, and other utilities to accommodate new Work. Specifically, electrical conduits and utility infrastructure near wood planters on east and light pole structure and conduit on the north side of the existing barge will need to be removed. Seal open ends of abandoned pipe left in place with concrete.

3.5 SUBGRADE PREPARATION AND INSPECTION

- A. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.
- B. Unsuitable material
 1. If unsuitable bearing or subgrade materials are encountered at surface elevation, the Engineer will determine appropriate depth of removal of unsuitable materials or other methods to achieve the desired results with notification to the Architect.
 2. If removal of unsuitable material is recommended by the Engineer, excavate and remove unsuitable material and replace with the specified material. authorized additional work will be paid according to Contract provisions.
- C. Examination
 1. Examine the subgrade just prior to placing subbase, underfloor fill or floor slab.
 2. For engineered fill subgrade, compact subgrade not complying with the compaction requirements.
 3. Comply with paragraph "Test" for unsuitable or otherwise unsatisfactory natural subgrade.
- D. Test
 1. Proof-roll the subgrade with loaded 10-wheel tandem axle dump truck weighing not less than 15 tons. If the impact is more than 1/2 inch deep, recompact the subgrade area.

3.6 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect. Fill unauthorized excavation in other locations with compacted subbase material.

3.7 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust. Contractor shall utilize hay bales or other appropriate technique to prevent any fines from entering Lake Michigan.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.8 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
 - 2. Removing concrete formwork.
 - 3. Removing trash and debris.
 - 4. Removing temporary shoring and bracing, and sheeting.
 - 5. Installing permanent or temporary horizontal bracing on horizontally supported walls.
 - 6. Installing temporary bracing for structures to receive backfill prior to installation of permanent wall supports.
- B. Place and compact fill material in layers to required elevations as shown on the contract documents
 - 1. Against building substructure, use lake fill.
- C. Remove temporary bracing and shoring as work progresses and when its use is no longer necessary.
- D. Prevent damage to waterproofing materials.
- E. Place backfill on subgrades free of mud, frost, snow, or ice.
- F. Place backfill material evenly on all side of structures to required elevations, and uniformly along the full length of each structure.

3.9 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.10 LAKE FILL

- A. Lake Fill materials shall be placed in the locations and to the lines and grades shown on the drawings. The Contractor shall submit a Lake Fill placement plan for review and approval by the Engineer prior to proceeding with this activity. Placement of Lake Fill against the new sheet pile wall shall not be done until the sheet piles, wales and tie-rods are installed; and the structure is aligned within the required tolerances. Special care shall be exercised in placing and compacting Lake Fill adjacent to structures to avoid damage to such structures and tie-rods. Lake Fill lift thickness and compaction shall conform to the following requirements:
1. Placement and Compaction of Lake Fill below existing Lake Michigan water level at time of placement: Lake Fill placed below the water line shall be uniformly deposited in lifts with a maximum thickness of three (3) feet, and consolidated by mechanical manipulation to ensure minimization of voids. The method of consolidation below lake level of Lake Fill shall be at the discretion of the Contractor subject to the approval of the Engineer.
 2. Placement and Compaction of Lake Fill above existing Lake Michigan water level at time of placement: Lake Fill placed above the water line shall be uniformly deposited in lifts with a maximum thickness of 12 inches, each lift shall be compacted with not less than 4 complete passes of a vibratory compaction device. A complete pass shall consist of the entire coverage of the area with one trip of the equipment specified. If in the opinion of the Engineer, the desired compaction of any portion of the Lake Fill is not secured by the minimum number of passes specified, additional complete passes shall be made over the surface area until the desired compaction has been obtained

3.11 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
1. Provide a smooth transition between adjacent existing grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Grading inside slabs and launch: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.12 BASE COURSE UNDER CONCRETE SLABS-ON-GRADE

- A. Place base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact base course under cast-in-place concrete slabs-on-grade as follows:
1. Install subdrainage geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
 2. Place base course 6 inches or less in compacted thickness in a single layer.

3. Place base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
4. Compact each layer of base course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.13 FIELD QUALITY CONTROL

- A. Requirements. The Contractor shall establish and maintain Quality Control (QC) for all work performed at the job site, to assure compliance with Contract Requirements. Contractor shall maintain records of QC tests, inspections and corrective actions. QC measures shall cover all materials, equipment, tests and construction operations including but not limited to the following:
 1. Placement of all materials to the slopes and grades lines shown on the Contract Plans and in accordance with this section.
 2. Check Surveys.
 3. Environmental Protection.
 4. Safety Requirements.
 5. The Contractor shall prepare and maintain a daily record of operations and a QC report. Reports shall always include handling and placement methods, with a minimum of one report containing required information complete for each shift.

3.14 PROTECTION OF EXISTING STRUCTURES, PAVEMENTS AND SIDEWALKS

- A. General
 1. Protect adjacent buildings, pavements and sidewalks from damage during excavation for new structure.
- B. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- C. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- D. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.
- E. Earth Retention System

1. Design and provide earth retention systems for protection of adjacent structures, utilities and property. Include in the design surcharge loads indicated or otherwise expected during the life of the earth retention system.
 2. Leave earth retention systems in place, unless otherwise indicated. Remove earth retention systems when protection is no longer necessary. Cut off earth retention systems left in place a minimum of 2 feet below finish grade, unless otherwise indicated.
 3. Maintain and monitor the earth retention system. If unanticipated movement of any of the components of the earth retention systems is noted, take appropriate action to stabilize the earth retention system, adjacent structures, utilities or property.
- F. Underpinning
1. Perform underpinning using a Contractor who has specialized in this type of Work. If requested by the Architect, submit evidence of successful experience on projects of similar size and scope.
- G. Pictures
1. Provide the Owner and Architect with pictures or video in sufficient detail showing the existing condition of adjoining construction and site improvements, including finished surfaces prior to excavation, after completion of excavation, and after the new structure has been built.
- H. Surveys
1. Retain a licensed surveyor to monitor the movement of the adjacent building wall(s) from benchmarks established by the licensed surveyor.
 2. Take periodic readings of the existing wall during and at the completion of construction of the structure. Submit copies of each reading and graphic plots of observed horizontal and vertical displacement to the Architect.
 3. Inform the Architect immediately of movement of the existing wall that has been observed. The Owner may retain a licensed surveyor to verify the wall movement reported.
- I. Damages
1. Claims and repair costs for damages to the existing building wall or foundations due to the excavation for the new structure is the responsibility of the Contractor.

END OF SECTION 312000

SECTION 315200 - TEMPORARY COFFERDAMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawing and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following: The Contractor shall furnish all labor, material and equipment necessary for the removal of all surface and subsurface waters from the boat launch ramp excavation areas. This section includes the construction of temporary cofferdams with steel sheet piling and bracing or other approved methods. The work includes the removal of temporary cofferdams at the completion of the work. The Contractor may use the existing sheet pile wall as a portion of the cofferdam. The design and stability of this cofferdam is the responsibility of the contractor. Any damage to the existing sheetpile wall shall be repaired by the Contractor at his expense.
- B. Related Sections include the following:
 - 1. Section 312000 "Earth Moving" for excavation and placement of materials.
 - 2. Section 312319 "Dewatering"

1.3 INFORMATIONAL SUBMITTALS

- A. The Contractor shall submit to the Engineer a dewatering plan, which includes the cofferdam design and dewatering equipment, safety procedures and sequence of construction prior to the start of any such operations.
- B. Submit certification from a professional engineer registered in the State of Illinois that the temporary cofferdam has been designed to meet the criteria specified herein.
- C. Two sets of prints of the cofferdam system bearing the seal of an engineer registered in the State of Illinois shall be submitted to the Engineer for reference.
- D. Acquire all permits required to discharge water and protect waterways from turbidity during the dewatering operation.

1.4 RESPONSIBILITIES

- A. This is a performance specification. Except as otherwise specified or indicated, selection of equipment, materials, and methods shall be Contractor's responsibility. The dewatering of any excavation areas and disposal of all water handled shall be in strict accordance with all local and state government rules and regulations.
- B. The Contractor shall be responsible for the design of the dewatering system including, but not necessarily limited to, the temporary cofferdam, required pump equipment, temporary shoring, as well as any miscellaneous temporary structures required.

1.5 PREINSTALLATION

- A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals. The conference may be held virtually.

PART 2 - PRODUCTS

2.1 PRODUCT REQUIREMENTS

- A. All materials used in the construction of the dewatering facilities shall be selected, furnished and installed by the Contractor in accordance with the design as submitted to the Engineer.
 - 1. The Contractor shall provide new or used sheet piling for use in the cofferdam conforming to the requirements of ASTM A328.
 - 2. Structural Steel: The Contractor shall provide structural steel for use in the cofferdam conforming to the requirements of ASTM A36.
 - 3. Portable Engineered cofferdams:
 - a. Per manufacturer

PART 3 - EXECUTION

3.1 PERFORMANCE

- A. The Contractor shall furnish and install cofferdams in accordance with the following.
 - 1. The Contractor shall employ the services of a structural engineer registered in the State of Illinois for the design of the cofferdam system. The walls and bracing shall be designed to withstand, without damage, the maximum water elevations indicated on the drawings.
 - 2. Approximate locations of cofferdam, structural characteristics and embedment depths shall be determined by the engineer designing the cofferdam.

3. The layout and design of the interior and exterior bracing system for the cofferdam shall fully accommodate with appropriate factors of safety, all applied loading indicated. Those loadings may be increased if considered appropriate by the engineer designing the cofferdam.

B. DEWATERING

1. The Contractor shall provide adequate equipment for removal of storm, subsurface or cofferdam leakage waters, which may accumulate in the cofferdam interior.
2. The Contractor shall perform all work for the west boat launch in the cofferdam interior free from water. The Contractor shall furnish, install, maintain, and operate all necessary pumping and other equipment necessary for dewatering the work area.
3. All dewatering equipment shall be in first-class condition and shall at all times be maintained and operated at the efficiency and capacity necessary for maintaining the cofferdam interior free from standing water or wet conditions that prevent proper construction.
4. The Contractor shall provide dewatering facilities with stand-by pumps with 100 percent standby capacity.
5. The Contractor shall comply with all local, state and federal regulations when disposing of water generated by dewatering operations.

3.2 REMOVAL OF DEWATERING SYSTEM AND COFFERDAMS

- A. The Contractor shall remove the cofferdam and dewatering system in its entirety when construction has been completed.

END OF SECTION 315200

SECTION 316216 - STEEL PILES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes steel pipe piles.

1.3 UNIT PRICES

- A. General: See Section 012976 "Measurement and Payment."
- B. The Contract Sum: Base the Contract Sum on number and dimensions of piles indicated from tip to cutoff, plus not less than 12 inches of overlength for cutting piles at cutoff elevations.
- C. Work of this section is affected as follows:
 - 1. Additional payment for number of piles in excess of that indicated, and credit for number of piles less than that indicated, will be calculated at unit prices stated in the Contract.
 - 2. Unit prices include labor, materials, tools, equipment, and incidentals for furnishing, driving, cutting off capping, and disposing of cutoffs.
 - 3. No payment will be made for rejected piles, including piles driven out of tolerance, defective piles, or piles damaged during handling or driving.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For steel piles. Show fabrication and installation details for piles, including details of driving points, splices, and pile caps.

1.5 INFORMATIONAL SUBMITTALS

- A. Mill Test Reports: For steel pipe piles, signed by manufacturer.
- B. Pile-Driving Equipment Data: Include type, make, and rated energy range; weight of striking part of hammer; weight of drive cap; and, type, size, and properties of hammer cushion.

- C. Pile-Driving Records: Submit within three days of driving each pile.
- D. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver piles to Project site in such quantities and at such times to ensure continuity of installation. Handle and store piles at Project site to prevent buckling or physical damage.

1.8 PROJECT CONDITIONS

- A. Protect structures, underground utilities, and other construction from damage caused by pile driving.
- B. Site Information: A geotechnical soil boring has been prepared for this Project and is included referenced elsewhere in the Project Manual for information only.

PART 2 - PRODUCTS

2.1 STEEL PIPE PILES

- A. High-Strength, Low-Alloy, Structural steel: ASTM A 252 Grade 3 (45 Ksi) with epoxy paint coating on top 20 feet
- B. Diameter = 12"; thickness = 0.625" (SCH 80)
- C. Top of pile = 589.0
- D. Bottom of pile = 541.0

2.2 PILE ACCESSORIES

- A. Driving Points: Manufacturer's standard one-piece open driving point, fabricated from steel castings as follows to provide full bearing of pipe wall:
 - 1. Carbon-Steel Castings: ASTM A 27/A 27M, Grade 65-35, heat treated.

2.3 PILE TOP CAP

- A. Concical plastic cap made of UV stable plastic and securely attached to top of pile.
 - 1. Color: Black

2.4 PAINT

- A. Paint: SSPC-Paint 16; self-priming, two-component, coal-tar epoxy polyamide, black.
- B. General: Shop paint steel pile surfaces, except for surfaces to be cased in concrete, as follows:
 - 1. Painting the top 20-feet of the top of exposed pile or where concrete launch surface begins, whichever is greater
- C. Surface Preparation: Clean surfaces to be painted. Remove loose rust and loose mill scale, spatter, slag, and flus deposits. Prepare surfaces according to SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."
- D. Painting: Immediately after surface preparation, apply coat of paint according to manufacturer's written instructions to provide a dry film thickness of not less than 8 mils (0.2mm).
 - 1. Apply second coat to provide a dry film thickness of not less than 8 mils (0.2 mm), resulting in a two-coat paint system thickness of not less than 16 mils (0.4mm).
 - 2. Mark pile lengths after shop painting.

2.5 FABRICATION

- A. Fabricate and assemble piles in shop to greatest extent possible.
- B. Pile-Length Markings: Mark each pile with horizontal lines at 12-inch intervals; label the distance from pile tip at 60-inch intervals. Maintain markings on piles until driven.
- C. Fabricate full-length piles to eliminate splicing during driving, with ends square.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Site Conditions: Do not start pile-driving operations until earthwork fills have been completed or excavations have reached an elevation of 6 to 12 inches above bottom of footing or pile cap.

3.2 DRIVING EQUIPMENT

- A. Pile Hammer: Air-, steam-, hydraulic-, or diesel-powered type capable of consistently delivering adequate peak-force duration and magnitude to develop the ultimate capacity required for type and size of pile driven and character of subsurface material anticipated.
- B. Hammer Cushions and Driving Caps: Between hammer and top of pile, provide hammer cushion and steel driving cap as recommended by hammer manufacturer and as required to drive pile without damage.
- C. Leads: Use fixed, semifixed, or hanging-type pile-driver leads that will hold full length of pile firmly in position and in axial alignment with hammer.

3.3 DRIVING PILES

- A. General: Continuously drive piles to elevations or penetration resistance indicated or established by static load testing of piles. Establish and maintain axial alignment of leads and piles before and during driving.
- B. Heaved Piles: Redrive heaved piles to tip elevation at least as deep as original tip elevation with a driving resistance at least as great as original driving resistance.
- C. Driving Tolerances: Drive piles without exceeding the following tolerances, measured at pile heads:
 - 1. Location: 2 inches from location indicated after initial driving, and 2 inches after pile driving is completed.
 - 2. Plumb: Maintain 1 inch in 8 feet from vertical, or a maximum of 2 inches, measured when pile is aboveground in leads.
- D. Withdraw damaged or defective piles and piles that exceed driving tolerances and install new piles within driving tolerances.
 - 1. Fill holes left by withdrawn piles using cohesionless soil material such as gravel, broken stone, and gravel-sand mixtures. Place and compact in lifts not exceeding 72 inches.
 - 2. Fill holes left by withdrawn piles as directed by Architect.
- E. Cutting Off: Cut off tops of driven piles square with pile axis and at elevations indicated.
- F. Pile-Driving Records: Maintain accurate driving records for each pile. Include the following data:
 - 1. Project name and number.
 - 2. Name of Contractor.
 - 3. Pile dimensions.
 - 4. Elevation of tips after driving.
 - 5. Final tip and cutoff elevations of piles after driving pile group.
 - 6. Records of re-driving.

7. Type, make, model, and rated energy of hammer.
8. Weight and stroke of hammer.
9. Type of pile-driving cap used.
10. Cushion material and thickness.
11. Actual stroke and blow rate of hammer.
12. Pile-driving start and finish times, and total driving time.
13. Time, pile-tip elevation, and reason for interruptions.
14. Number of blows for every 12 inches of penetration, and number of blows per 1 inch for the last 6 inches of driving.
15. Pile deviations from location and plumb.
16. Preboring, jetting, or special procedures used.

3.4 DISPOSAL

- A. Remove withdrawn piles and cutoff sections of piles from site and legally dispose of them off Owner's property.

END OF SECTION

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Driveways.
 - 2. Parking lots.
- B. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for general parapet wall applications of concrete.
 - 2. Section 321373 "Concrete Paving Joint Sealants" for joint sealants in expansion and contraction joints within concrete paving and in joints between concrete paving and asphalt paving or adjacent construction.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Other Action Submittals:
 - 1. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For the following, from manufacturer:
 - 1. Cementitious materials.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Fiber reinforcement.
 - 4. Admixtures.

5. Curing compounds.
6. Bonding agent or epoxy adhesive.
7. Joint fillers.

B. Material Test Reports: For each of the following:

1. Aggregates. Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

1.6 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

B. Concrete Testing Service: Engage a qualified testing agency to perform material evaluation tests and to design concrete mixtures.

C. ACI Publications: Comply with ACI 301 unless otherwise indicated.

D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups of full-thickness sections of concrete paving to demonstrate typical joints; surface finish, texture, and color; curing; and standard of workmanship.
2. Build mockups of concrete paving in the location and of the size indicated or, if not indicated, build mockups where directed by Architect and not less than 96 inches by 96 inches.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

E. Preinstallation Conference: Conduct conference virtually.

1. Review methods and procedures related to concrete paving, including but not limited to, the following:
 - a. Concrete mixture design.
 - b. Quality control of concrete materials and concrete paving construction practices.
 - c. Finishes
 - d. Jointing expectations
2. Require representatives of each entity directly concerned with concrete paving to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.

- c. Concrete paving subcontractor.

1.7 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.1 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
 - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from as-drawn steel wire into flat sheets.
- B. Epoxy-Coated Welded Wire Reinforcement: ASTM A 884/A 884M, Class A, plain steel.
- C. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.
- D. Epoxy-Coated Reinforcing Bars: ASTM A 775/A 775M or ASTM A 934/A 934M; with ASTM A 615/A 615M, Grade 60 deformed bars.
- E. Epoxy-Coated-Steel Wire: ASTM A 884/A 884M, Class A coated, plain.
- F. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 plain-steel bars. Cut bars true to length with ends square and free of burrs.
- G. Epoxy-Coated, Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60, plain-steel bars.
- H. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.

- I. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
- J. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:
 - 1. Portland Cement: ASTM C 150, gray portland cement Type I/II. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class C or Class F.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33, Class 4S, uniformly graded. Provide aggregates from a single source with documented service-record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: Potable and complying with ASTM C 94/C 94M.
- D. Air-Entraining Admixture: ASTM C 260.

2.4 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
 - 1. Products: Subject to compliance with requirements, provide one of the following:

- a. Axim Italcementi Group, Inc.; Caltexol CIMFILM.
- b. BASF Construction Chemicals, LLC; Confilm.
- c. ChemMasters; Spray-Film.
- d. Dayton Superior Corporation; Sure Film (J-74).
- e. Edoco by Dayton Superior; BurkeFilm.
- f. Euclid Chemical Company (The), an RPM company; Eucobar.
- g. L&M Construction Chemicals, Inc.; E-CON.
- h. Meadows, W. R., Inc.; EVAPRE.
- i. Sika Corporation, Inc.; SikaFilm.
- j. SpecChem, LLC; Spec Film.

2.5 RELATED MATERIALS

- A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber in preformed strips.

2.6 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
 2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that meet or exceed requirements.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
1. Compressive Strength (28 Days): 4500 psi.
 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45 .
 3. Slump Limit: 5 inches, plus or minus 1 inch.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
1. Air Content: 6 percent plus or minus 1.5 percent for 3/4-inch nominal maximum aggregate size.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
- F. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.0 lb/cu. yd..

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M. Furnish batch certificates for each batch discharged and used in the Work.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.
 - 1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
 - 2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
 - 3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Section 312000 "Earth Moving."
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M.

3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
 - 1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
 - 1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
 - 2. Provide tie bars at sides of paving strips where indicated.
 - 3. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - 4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
 - 5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
 - 1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.
 - 2. Extend joint fillers full width and depth of joint.

3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows, to match jointing of existing adjacent concrete paving:
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
 - a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
 - a. Tolerance: Ensure that sawed joints are within 3 inches either way from centers of dowels.
 3. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.
- 3.6 CONCRETE PLACEMENT
- A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
 - B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.
 - C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
 - D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

- E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement dowels and joint devices.
- H. Screed paving surface with a straightedge and strike off.
- I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- J. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.
 - 1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.
- K. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
 - 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- L. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 - 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
 - 1. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

3.8 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing moisture-retaining-cover curing curing compound as follows:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas that have been subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.9 PAVING TOLERANCES

- A. Comply with tolerances in ACI 117 and as follows:
1. Elevation: 3/4 inch.
 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
 3. Surface: Gap below 10-foot- long, unlevelled straightedge not to exceed 1/2 inch.
 4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
 5. Lateral Alignment and Spacing of Dowels: 1 inch.
 6. Vertical Alignment of Dowels: 1/4 inch.
 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
 8. Joint Spacing: 3 inches.
 9. Contraction Joint Depth: Plus 1/4 inch, no minus.
 10. Joint Width: Plus 1/8 inch, no minus.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
 6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.
 - a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

- C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
- G. Concrete paving will be considered defective if it does not pass tests and inspections.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- I. Prepare test and inspection reports.

3.11 REPAIRS AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
- B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.
- C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 321373 - CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Cold-applied joint sealants.
 - 2. Joint-sealant backer materials.
 - 3. Primers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

2.2 COLD-APPLIED JOINT SEALANTS

- A. Single-Component, Nonsag, Silicone Joint Sealant: ASTM D 5893/D 5893M, Type NS.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Crafcro Inc.; RoadSaver Silicone.
 - b. Dow Corning Corporation; 888.
 - B. Single-Component, Self-Leveling, Silicone Joint Sealant: ASTM D 5893/D 5893M, Type SL.
 - C. Multicomponent, Pourable, Urethane, Elastomeric Joint Sealant: ASTM C 920, Type M, Grade P, Class 25, for Use T.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Pecora Corporation; Dynatrol II-SG Urexpam NR-200.
- 2.3 JOINT-SEALANT BACKER MATERIALS
- A. Joint-Sealant Backer Materials: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by joint-sealant manufacturer, based on field experience and laboratory testing.
 - B. Round Backer Rods for Cold- and Hot-Applied Joint Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
 - C. Backer Strips for Cold- and Hot-Applied Joint Sealants: ASTM D 5249; Type 2; of thickness and width required to control joint-sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.
- 2.4 PRIMERS
- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Before installing joint sealants, clean out joints immediately to comply with joint-sealant manufacturer's written instructions.
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3 INSTALLATION OF JOINT SEALANTS

- A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions.
- C. Install joint-sealant backings to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of joint-sealant backings.
 - 2. Do not stretch, twist, puncture, or tear joint-sealant backings.
 - 3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install joint sealants immediately following backing installation, using proven techniques that comply with the following:
 - 1. Place joint sealants so they fully contact joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:
 - 1. Remove excess joint sealant from surfaces adjacent to joints.

2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.

F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

3.4 CLEANING AND PROTECTION

A. Clean off excess joint sealant as the Work progresses, by methods and with cleaning materials approved in writing by joint-sealant manufacturers.

B. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

END OF SECTION

SECTION 321723 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Painted markings applied to concrete surfaces.

1.3 ACTION SUBMITTALS

- A. Product Data: Include technical data and tested physical and performance properties.
 - 1. Pavement-marking paint, alkyd.

1.4 FIELD CONDITIONS

- A. Environmental Limitations: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 55 deg F, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- 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. Aexcel Inc.
 - 2. Colorado Paint Company; a subsidiary of Swarco Industries Inc.
 - 3. Columbia Paint & Coatings, Inc.; a subsidiary of Sherwin-Williams Company (The).
 - 4. Conco Paints.
 - 5. Diamond Vogel Paints.
 - 6. Dow Chemical Company (The).
 - 7. Dunn-Edwards Corporation.
 - 8. Ennis-Flint.
 - 9. Farrell-Calhoun.
 - 10. General Paint.
 - 11. Insl-X Products; Benjamin Moore & Co.
 - 12. Kelly-Moore Paint Company Inc.

13. McCormick Paints.
14. PPG Paints.
15. Rodda Paint Co.
16. Rust-Oleum Corporation; a subsidiary of RPM International, Inc.
17. Scott Paint.
18. Sherwin-Williams Company (The).
19. Transpo Industries, Inc.

2.2 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" .

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that pavement-marking substrate is dry and in suitable condition to begin pavement marking in accordance with manufacturer's written instructions.
- B. Proceed with pavement marking only after unsatisfactory conditions have been corrected.

3.2 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
- B. Allow asphalt paving or concrete surfaces to age for a minimum of 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide the manufacturer's minimum wet film thickness.
 1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to asphalt paving or concrete surface. Mask an extended area beyond edges of each stencil to prevent paint application beyond stencil. Apply paint so that it cannot run beneath stencil.

3.3 PROTECTING AND CLEANING

- A. Protect pavement markings from damage and wear during remainder of construction period.

- B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 321723

SECTION 323300 - SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Provide all items of site furnishings, including all connections, fastenings, footings and finishes as shown on the Contract Drawings and specified herein.
 - 1. Solar Light and Pole
 - 2. Solar Navigation Light and Pole
 - 3. Breakwater Bollard and Chain System
 - 4. Breakwater Cleats
- B. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for installing anchor bolts cast in concrete footings and pavement.

1.3 ACTION SUBMITTALS

- A. Product Schedule: Submit to Architect all manufacturer's data, including shop drawings, instructions and other available written or graphic data for all specified furnishings and appurtenances. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For site furnishings to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 SOLAR LIGHT AND POLE

- A. Manufacturers: Subject to compliance with requirements, provide products by the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. SOL by Sauna Design for solar light
 - 2. Hapco for light pole

- B. Pole: 15' tall Cast aluminum pole painted to match light fixture (black)
- C. Solar Light Fixture: Evergen M Series, Color Black
- D. Contractor to comply with all manufacturer specifications attached to this section.

2.2 SOLAR NAVIGATION LIGHT AND POLE

- A. Manufacturers: Subject to compliance with requirements, provide products by the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following
 - 1. Sabik Marine for Navigation light
 - 2. Hapco for Navigation light pole
- B. Pole: 10' tall Cast aluminum pole painted to match light fixture and pole (black)
- C. Solar Navigation Light: M660, Color White
- D. Contractor to comply with all manufacturer specifications attached to this section.

2.3 BREAKWATER BOLLARD AND CHAIN SYSTEM

- A. Manufacturers: Subject to compliance with requirements, provide products by the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following
 - 1. Reliance Foundry, Inc
- B. Recurved Wall Bollard and Chain: Model R-7591, attachment: concrete insert anchor in Existing Concrete, Black Powder-coated Ductile iron with matching removable single 5/8" chain per the drawings
- C. Breakwater Bollard and Chain: Model R-7583, attachment: anchored in Existing Concrete, Black Powder-coated Ductile iron with matching removable double 5/8" chain per the drawings
- D. Breakwater Bollard: Model R-7583, attachment: anchored in Existing Concrete, Black Powder-coated Ductile iron
- E. Contractor to comply with all manufacturer specifications attached to this section.

2.4 BREAKWATER CLEATS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following
 - 1. West Marine
 - 2. Whitecap
- B. Breakwater Cleat: 12" hot dipped galvanized heavy duty cleat attached with manufacturer's recommended anchor bolts

2.5 MATERIALS

- A. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated; free of surface blemishes and complying with the following:
 - 1. Rolled or Cold-Finished Bars, Rods, and Wire: ASTM B211.
 - 2. Extruded Bars, Rods, Wire, Profiles, and Tubes: ASTM B221.
 - 3. Structural Pipe and Tube: ASTM B429/B429M.
 - 4. Sheet and Plate: ASTM B209.
 - 5. Castings: ASTM B26/B26M.
- B. Steel and Iron: Free of surface blemishes and complying with the following:
 - 1. Plates, Shapes, and Bars: ASTM A36/A36M.
 - 2. Steel Pipe: Standard-weight steel pipe complying with ASTM A53/A53M, or electric-resistance-welded pipe complying with ASTM A135/A135M.
 - 3. Tubing: Cold-formed steel tubing complying with ASTM A500/A500M.
 - 4. Mechanical Tubing: Cold-rolled, electric-resistance-welded carbon or alloy steel tubing complying with ASTM A513/A513M, or steel tubing fabricated from steel complying with ASTM A1011/A1011M and complying with dimensional tolerances in ASTM A500/A500M; zinc coated internally and externally.
 - 5. Sheet: Commercial steel sheet complying with ASTM A1011/A1011M.
 - 6. Expanded Metal: Carbon-steel sheets, deburred after expansion, and complying with ASTM F1267.
 - 7. Malleable-Iron Castings: ASTM A47/A47M, grade as recommended by fabricator for type of use intended.
 - 8. Gray-Iron Castings: ASTM A48/A48M, Class 200.

2.6 FABRICATION

- A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.

- B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended, so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.
- C. Preservative-Treated Wood Components: Complete fabrication of treated items before treatment if possible. If cut after treatment, apply field treatment complying with AWP A M4 to cut surfaces.
- D. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.
- E. Factory Assembly: Factory assemble components to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.7 GENERAL FINISH REQUIREMENTS

- A. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.8 ALUMINUM FINISHES

- A. Powder-Coat Finish: Manufacturer's standard polyester powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.

2.9 STEEL AND GALVANIZED-STEEL FINISHES

- A. Powder-Coat Finish: Manufacturer's standard polyester, powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.
- B. PVC Finish: Manufacturer's standard, UV-light stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on, PVC-plastisol finish, with flame retardant added; complying with coating manufacturer's written instructions for pretreatment, application, and minimum dry film thickness.

2.10 IRON FINISHES

- A. Powder-Coat Finish: Manufacturer's standard polyester powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.

2.11 STAINLESS STEEL FINISHES

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - 1. Run directional finishes with long dimension of each piece.
 - 2. Directional Satin Finish: ASTM A480/A480M, No 4.
 - 3. Dull Satin Finish: ASTM A480/A480M, No. 6.

2.12 PRODUCT HANDLING

- A. Arrange for shipments, transport, receive goods, and store them dry and free from damage until installed on site. Wrap, crate or otherwise protect the furnishings as required to keep them free from harm during all transit. Handle and store sealant per manufacturer's recommendations.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- C. Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.
- D. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

- E. Posts Set into Voids in Concrete: Form or core-drill holes for installing posts in concrete to depth recommended in writing by manufacturer of site furnishings and 3/4 inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with , mixed and placed to comply with anchoring material manufacturer's written instructions, with top smoothed and shaped to shed water.

END OF SECTION 323300

Estimate ID #	2-17800-1
Date	2022/01/04 15:40:5
Project Name	End of Pier Light
Location	Highland Park, IL 60035, USA
Dimensions	30' x 30' ft
Application	General Area

**Engineered smart. Built tough. Accurately sized.
Guaranteed reliability for 10 years.**

At Sol, we develop products that we believe in: our EverGen solar light will perform exactly as promised—throughout its lifespan.

This detailed overview combines the complex algorithms of our sizing engine with the experience of our in-house lighting experts to give you the most reliable and cost-effective product for your location. Your EverGen model includes standard features such as a 12-month subscription to Sol's Insight remote monitoring platform, a warm light color temperature, and dark-sky lighting controls.



SOLAR ENGINE DETAILS

Model	EverGen™ M Series
System Color	BK
Tilt Angle	30 Degrees
Solar Panel Wattage	170W



BATTERY DETAILS

Battery Type	GEL
Battery Quantity	2
Battery Capacity	95.0
Battery Location	HIGH

FIXTURE DETAILS

LED Fixture	DSX0
Fixture Color	BK
Optical Distribution Type	4ME
Individual Fixture Wattage	24 W
Light Color Temp.	3000 K
Lumens per Fixture (approx.)	3254 Lumens
Fixtures per System	1

OPERATING DETAILS

Latitude	42N
Longitude	88W
Solar Insolation	2.47 kWh/m ² /day
Longest Night	14.8 hrs
Day/Night Transitioning	Solar panel voltage
Autonomy	7.31
Array-to-Load Ratio	1.22

REMOTE MONITORING

Insight Platform	Cloud-based dashboard and automatic notifications
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EVERGEN-BK-1-170-2-GEL5-HIGH-N-30-1-DSX0-4ME-30K-BK-ALBTD-15-90-INTDIRECTA-24-5D2-RTA15F6B4BK

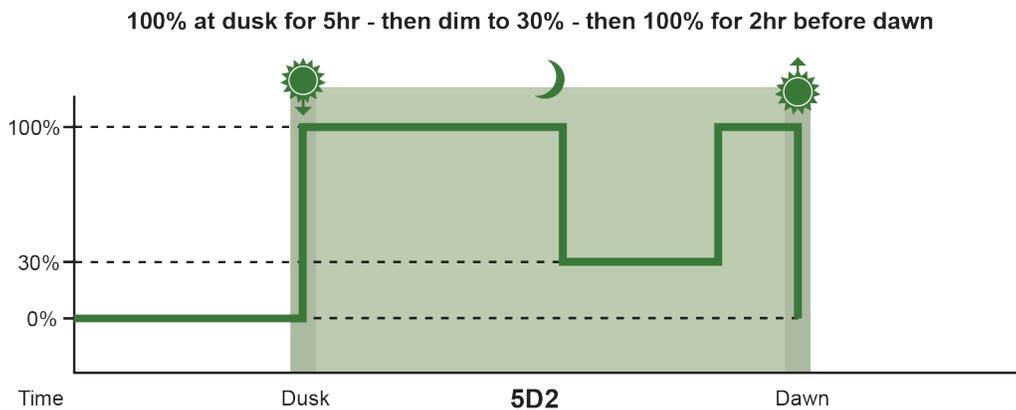
Warranty Details

Battery	5 Years
Solar PV Panel Output Power	Manufacturer's Warranty — Minimum 20 Years
Mounting Hardware	10 Years
Pole (if provided)	Lifetime Excluding Finish
LED Fixture	Manufacturer's Warranty
Electronics (Charge Controller, LED Driver)	10 Years

Additional Details

Weight (with Batteries)	219 lb (99.43 kg)	Pole Type	Aluminum Bolt Down
EPA	8.7 Sq Ft (0.81 Sq m)	Pole Length	15FT
Tenon Requirements	3.5" OD x 6" long (88.9mm OD x 152.4mm long)	Wind Zone	90 MPH
		Arm Type	INTDIRECTA

Operating Profile



System Certifications

Solar Engine	CE 2004-108-CE, EN 55015, EN 61547 for emissions and immunity.
Panels	UL 1703, IEC 61215, IEC 61730, conformity to CE.
Fixture	cULus Listed, suitable for wet locations, CALTrans 611 Vibration testing. Certified to ANSI C136.31-2001, 3G bridge and overpass vibration standards. RoHS

Represented in your region by:

Specifications subject to local environmental conditions.
Specifications may be subject to change.
US and International patents apply. Other patents pending.
"Sol" logo is a trademark of Sunna Design.

All Sol products are manufactured in facilities that are certified to ISO quality standards.
Document: System-Overview_RevD

Programmed or custom run modes include:

- Hrs after Dusk: 03, 05, 07, 09 or All Night
- Dimming Percentage: None, 30%,
- Hours Before Dawn: 02, or All Night



FEATURES

- Bluetooth and App for local configuration and testing
- Satellite modem for remote monitoring with Insight Remote Monitoring Platform Subscription
- Solar panel and battery overvoltage protection
- LED short circuit protection and unconnected LED protection
- Internal PV disconnect (no external diodes required)
- Reverse battery polarity protection
- Self calibrating load, timing, and charging circuitry

BENEFITS

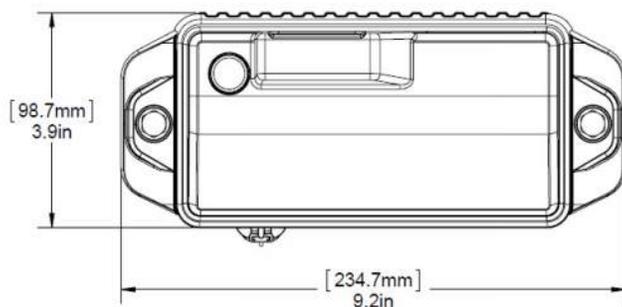
- Flexible operating modes (dusk-to-dawn, split night, split night with dimming)
- Fully tested at the Sol factory before installation and shipment to ensure reliable operation and trouble-free startup
- Programmed by Sol based on your project requirements eliminating confusing switch and knob setting
- Bluetooth and app for simple and secure setup
- Integrated MPPT charging and LED driving system reduces system failures, overall system complexity and cost
- Integrated surge protection and noise reduction
- Keyed connectors for simple and reliable assembly
- Temperature compensated and MPPT controlled battery charging to maximize battery life and energy collection
- High temperature charge compensation to ensure component longevity
- Ruggedized solid state design ensures long life and no maintenance
- Memory averaging to ensure accurate turn on and turn off of lights to prevent false response due to weather variations
- Ten-year limited warranty



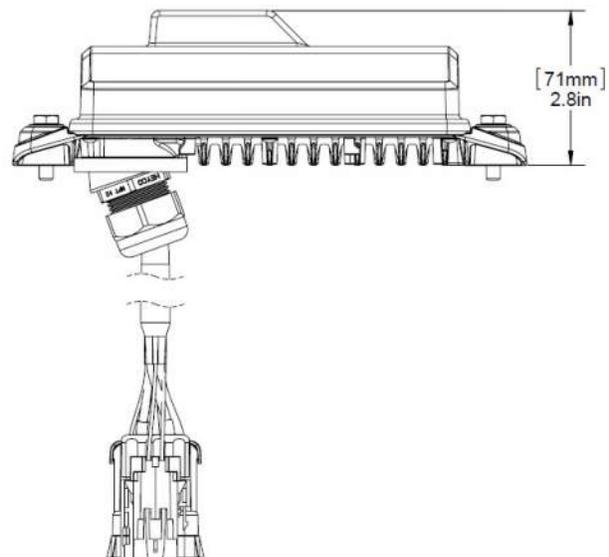
TECHNICAL

FEATURE	VALUE
ELECTRICAL	
Operating Voltage	12/24 VDC
Operating Current	25A max
LED Drive Current	3.5A max. 100W
Lamp Drive Voltage	65 VDC max.
PV Voltage Input	55 VDC max.
Low Voltage Disconnect (LVD)	11.6 / 23.2 VDC
Low Voltage Reconnect (LVR)	12.1 / 24.2 VDC
CHARGING	
Self-consumption	< 5 mA
Charging Method	Maximum Power Point Tracking (MPPT)
Battery Fuse, External	30A max.
COMMUNICATION	
Local Control	Bluetooth and app
Remote Monitoring	Satellite modem to Insight remote monitoring platform
PHYSICAL	
Operating Temperature	-40 to +60 °C (-40 to +140 °F)
Humidity	100% Condensing
Packaging	Aluminum heatsink, polycarbonate cover, gasket and vent, IP68
Weight	0.74 kg (26 oz.)
Size (L x W x H)	234.7 x 98.7 x 71.0 mm (9.2 x 3.9 x 2.8 in)

Top View



Side View



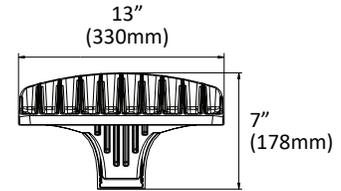
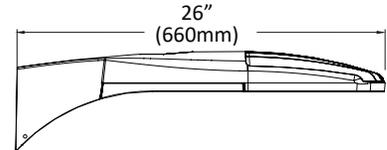
Specifications subject to local environmental conditions.
Specifications may be subject to change.
US and International patents apply. Other patents pending.
"Sol" logo is a trademark of Sunna Design.

All Sol products are manufactured in facilities that are certified to ISO quality standards.
Document: SPEC_SOL-Sunna_EverGen-EMS_RevB

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment.

The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density.

Applications: Residential roads, collector roads, parking lots, and general area spaces



Weight: 16 lbs (7.25 kg)

PERFORMANCE SUMMARY

Initial Delivered Lumens: Up to 12,800

Efficacy: Up to 155 LPW

CRI: Minimum 70 CRI

CCT: 3000K, 4000K, 5000K

Limited Warranty: 5 years on luminaire

OPTIONS

Product	Mounting	Optic	Input Power*	CCT	CRI	Color Options	Mount	Options
DSX0	P5 40LED	2ME Type II Medium	10-100W (based on location and profile)	30K 3000K	>70	BK Black	RPA Round Pole Mounting	Powered by EverGen EMS
		3ME Type III Medium		40K 4000K		BZ Bronze		
		4ME Type IV Medium		50K 5000K		SV Natural Aluminum		
		5ME Type V Medium						

* Please refer to System Overview page for your exact fixture specifications.



PRODUCT SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and pedestrian areas.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (1.01 ft2) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in 3000 K, 4000 K or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°).

INSTALLATION

Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

LISTINGS

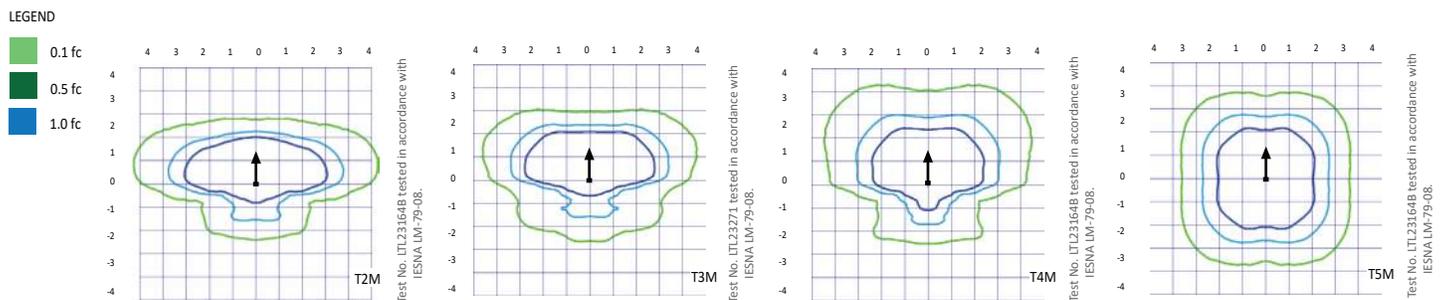
UL Listed for wet locations. luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending. International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

WARRANTY

5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/resources/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (25'). *For visual reference only; please see Sol-provided IES Files and Photometrics.



LUMINAIRE EPA

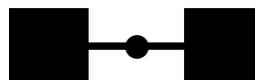
Direct Mount – Weight: 16 lbs (7.25 kg)

Single



0.95 sqft (0.09 sqm)

2 @ 180



1.9 sqft (0.18 sqm)

Specifications subject to local environmental conditions.
Specifications may be subject to change.
US and International patents apply. Other patents pending.
"Sol" logo is a trademark of Sunna Design.

All Sol products are manufactured in facilities that are certified to ISO quality standards.
Document: SPEC_SOL-Sunna_DSX0_RevA

FEATURES

- Gel deep cycle battery
- Ideal for solar applications
- Maintenance-free, sealed construction
- Spill proof / leak proof
- ABS case and cover
- UL recognized
- 100% recyclable
- **5-year warranty***



SOL-GEL-100

SPECIFICATIONS

Nominal Voltage	12V
Nominal Capacity	95.0Ah
Rated Capacity (at 77°F /25°C)	100.0Ah/1.00A (100hr,1.80V/cell) 85.0Ah/4.25A (20hr,1.80V/cell)
Nominal Operating Temperature	77 ±5° F (25 ±3° C)
Operating Temperature Range	Discharge: -4~140°F (-20~60°C) Charge: 32~122°F (0~50°C)
Maximum Discharge Current	850A (5s)
Internal Resistance	Approx 6.0mΩ
Cycle Use	Initial Charging Current less than 25.0A. Voltage: 14.4V~15.0V at 77°F (25°C) Temp. Coefficient -30mV/°C
Standby Use	No limit on Initial Charging Current Voltage: 13.5V~13.8V at 77°F (25°C) Temp. Coefficient -20mV/°C
Self Discharge	Batteries can be stored for up to 6 months at 77°F (25°C) before a freshening charge is required. <i>*Batteries stored at temperatures greater than 77°F (25°C) will require a recharge sooner.</i>
Certifications	UL; CE; IEC60896-21 & 22

MATERIALS AND MECHANICAL

Case and Cover	ABS
Separator	PVC-SiO2
Active	PbO2 + Pb
Electrolyte	LPG Sulfuric Acid Gel
Venting Valve	Rubber, opening pressure 8-20kPa
BCI Group #	27
Terminals	T6
Carrying	Integrated Flush Mount Handle

DIMENSIONS

Length	12.01 in / 305 mm
Width	6.61 in / 168 mm
Height	8.15 in / 207 mm
Total Height (including terminals)	8.38 in / 213 mm
Weight	59.8 lbs / 26.7 kg



Specifications subject to local environmental conditions.

Specifications may be subject to change.

US and International patents apply. Other patents pending.

"Sol" logo is a trademark of Sunna Design.

All Sol products are manufactured in facilities that are certified to ISO quality standards.

Document: SPEC_SOL-Sunna_SOL-GEL-100_RevA

RELIABLE

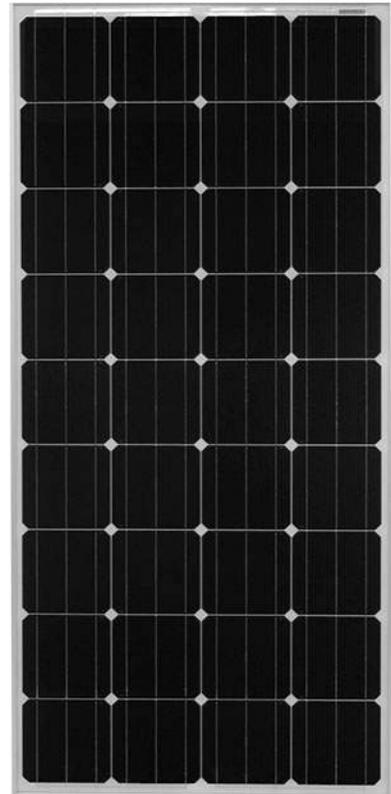
Sol's CTI-170 is a high-efficiency polycrystalline solar module that provides outstanding performance and cost-effective solar power for high-end off-grid and mobile applications. The module is built to last and features a 20-year limited power output warranty.

DURABLE

To ensure long life, the high-efficiency solar cells are encapsulated between a special tempered, low-iron solar glass and a Tedlar[®]/polyester backing material. The mounting frame, manufactured from anodized marine-grade aluminum, allows the CTI-170 to be installed in extreme conditions.

FEATURES

- Compact and rugged design
- Plug and play junction box
- Lightweight anodized aluminum frame
- High transmissivity tempered glass
- Industry standard quick-connect cables (MC4) work in series or in parallel
- **20-year limited power output warranty**



CTI-170



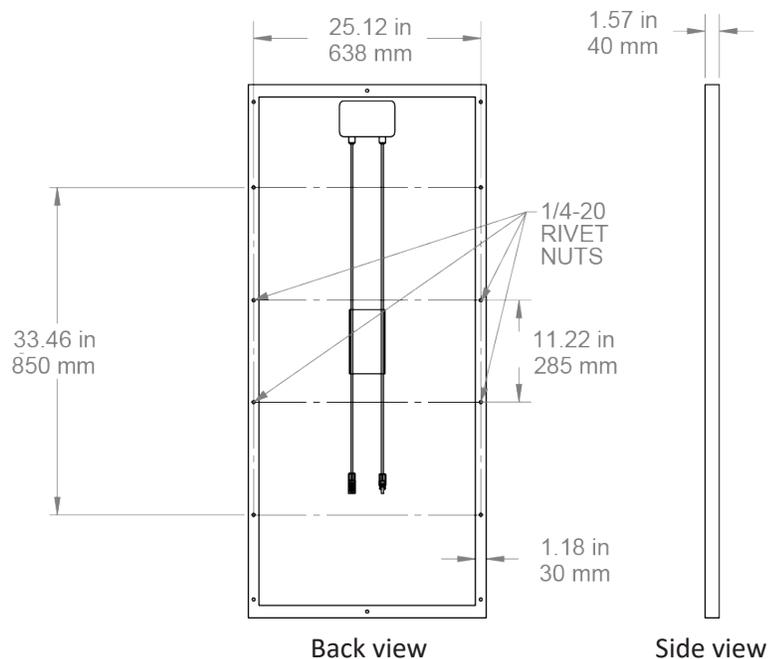
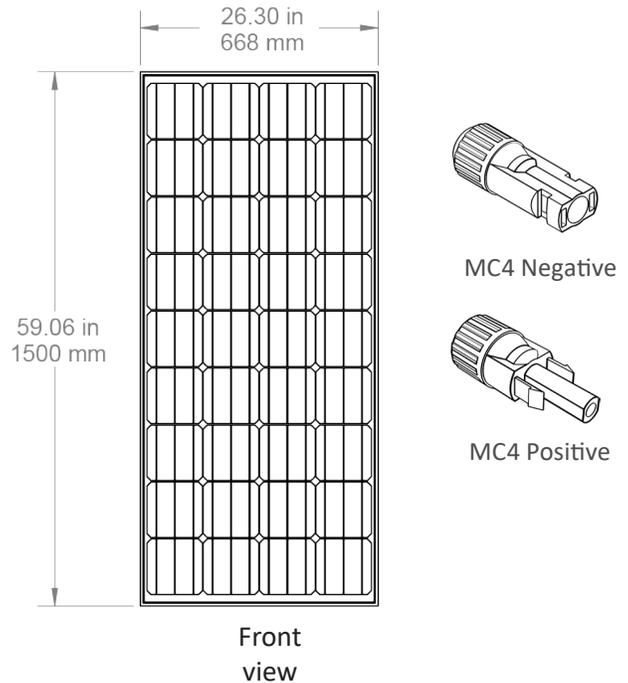
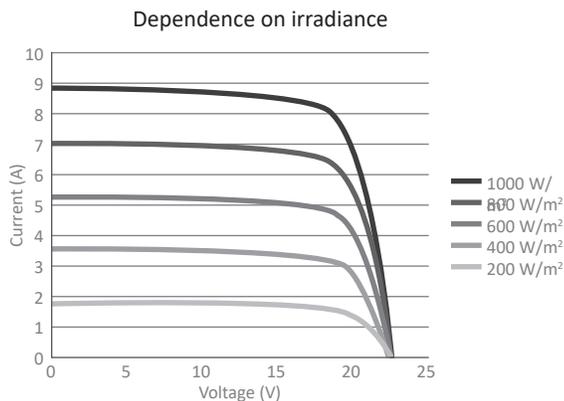
SPECIFICATIONS

Rated power (Pm)	170W
Maximum power voltage (Vmp)	19.60V
Maximum power current (Imp)	8.77A
Open circuit voltage (Voc)	23.20V
Short circuit current (Isc)	9.35A
Power coefficient	-0.42% / °C
Voltage coefficient	-0.31% / °C
Current coefficient	0.033% / °C
Max power tolerance	+/- 3W
Cell type	Polycrystalline
Module efficiency	17.0%
Series fuse rating	15A
Maximum system voltage	600VDC
Operating temperature	-40°C to 85°C (-40°F to 185°F)
Weight	11.16 kg (24.6 lb)
Dimensions	1500 x 668 x 40 mm 59.1 x 26.3 x 1.57 in
Frame type / material	Clear anodized aluminum frame
Certifications	UL 1703

Power Specifications calculated at STC:

- Irradiance: 1000 W/m²
- Cell Temperature: 77°F (25°C)
- Air Mass: 1.5

IV CURVE PARAMETERS



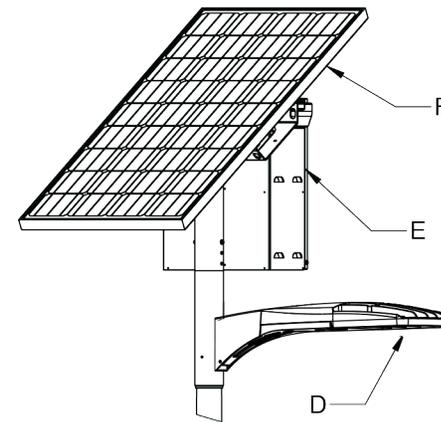
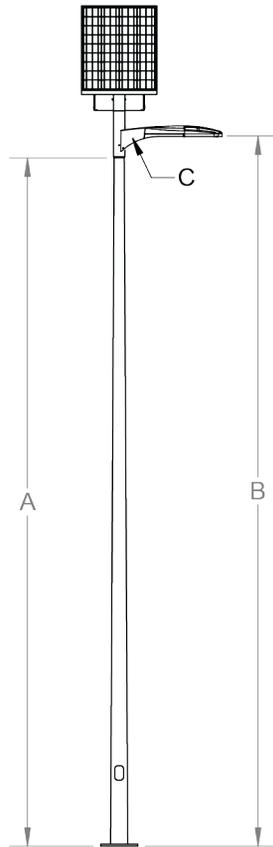
Specifications subject to local environmental conditions.
Specifications may be subject to change.
US and International patents apply. Other patents pending.
"Sol" logo is a trademark of Sunna Design.

All Sol products are manufactured in facilities that are certified to ISO quality standards.
Document: SPEC_SOL-Sunna_CTI-170_RevA

SYSTEM DRAWING

8	7	6	5	4	3	2	1		
MODEL	A [Pole Length Above Grade]	B [Fixture Mount Height]	C/D [Arm Type]	E [Battery Mount]	F [System EPA]	[System Weight]	POLE Type	POLE Info 1	POLE Info 2
EverGen™ M Series	15FT	Based on Photometric Design**	INTDIRECTA	HIGH	8.7 Ft ² (0.81 m ²)	218.1LB	Aluminum Bolt Down	Bolt Length 36 inch	Bolt Circle 13.5 inch

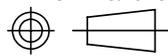
Note: Line Drawings May Not Entirely Resemble Shipped Product

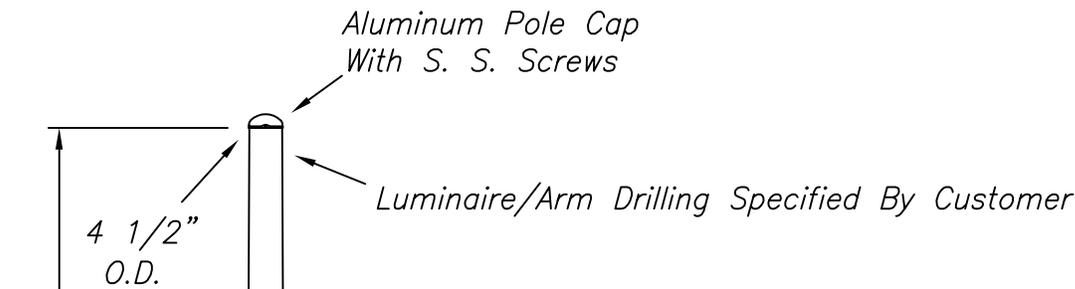


**DISCLAIMER: Arm(s) will be drilled and installed on site as per customer or photometric requirements.

WARNING: DO NOT INSTALL POLES WITHOUT SOLAR LIGHTING SYSTEMS

<p style="text-align: center;">UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING</p> <p style="text-align: center;">INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.100-2000 TOLERANCES APPLY AS SHOWN BELOW</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">DECIMALS</td> <td style="text-align: center;">SURF FINISH</td> <td style="text-align: center;">ANGLES</td> </tr> <tr> <td style="text-align: center;">.X ±.1</td> <td style="text-align: center;">63</td> <td style="text-align: center;">±1°</td> </tr> <tr> <td style="text-align: center;">.XX ±.01</td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td style="text-align: center;">.XXX ±.005</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">.XXXX ±.0005</td> <td></td> <td></td> </tr> </table> <p style="text-align: center;">INCHES</p>	DECIMALS	SURF FINISH	ANGLES	.X ±.1	63	±1°	.XX ±.01	✓		.XXX ±.005			.XXXX ±.0005			<p style="text-align: center;">PDM MAINTAINED DATA</p> <p style="text-align: center;">CHANGES SHALL BE INCORPORATED ELECTRONICALLY BY THE DESIGN AUTHORITY</p> <p style="text-align: center;">PROPRIETARY</p> <p style="text-align: center;">COPYRIGHT © 2020 BY Sol by Sunna Design.</p> <p style="text-align: center;">ALL RIGHTS RESERVED. NO PART OF THIS DOCUMENT MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM, OR TRANSMITTED IN ANY FORM WITHOUT THE WRITTEN PERMISSION OF Sol by Sunna Design.</p>	<div style="display: flex; align-items: center;"> <div> <p>990 Biscayne Blvd., Office 701 Miami, FL 33132, USA Tel 1.800.959.1329</p> </div> </div>
DECIMALS	SURF FINISH	ANGLES															
.X ±.1	63	±1°															
.XX ±.01	✓																
.XXX ±.005																	
.XXXX ±.0005																	
<p style="text-align: center;">THIRD ANGLE PROJECTION</p>	<p style="text-align: center;">SCALE</p> <p style="text-align: center;">1:64</p>	<p>Estimate ID: 2-17800-1</p> <p>Pole Part #: RTA15F6B4BK</p>															





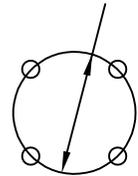
Need to provide sufficient concrete for 36" anchorage

Tapered Alum. Tube
.250" Wall Alloy 6063-T6
Satin Ground Finish

15'-0"

4 1/2"
O.D.

9" To 10" Dia.
Bolt Circle



- (4) 1"-8NC Galv. Stl. Anchor Bolts, AASHTO M314-90 Grade 55, 10" Of Threaded End Galv. Per ASTM A153.
- (4) 1"-8NC Galv. Stl. Hex. Nuts
- (4) 1" Galv. Stl. Lockwashers
- (4) 1" Galv. Stl. Flatwashers

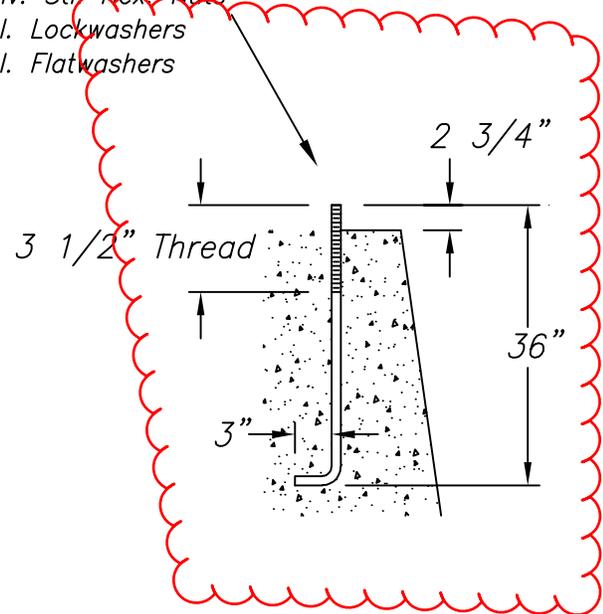
Ground Lug Opposite Handhole ϕ
Reinforced Handhole (3" x 5")
With Cover And Stainless Steel
Hex. Hd. Screws

6" O.D.

1'-6"

Base Flange (47380) Alloy 356-T6
With Bolt Covers And Stainless Steel
Hex. Hd. Screws

9 3/4" Sq.



NO.	REVISIONS	DATE

hapco
Abingdon, Va.

TITLE 15' LIGHTING POLE	
CUSTOMER	
SCALE NTS	DATE 07/30/2018
BY BAD	DWG. NO.
CHK'D	RTA15F6B4-01

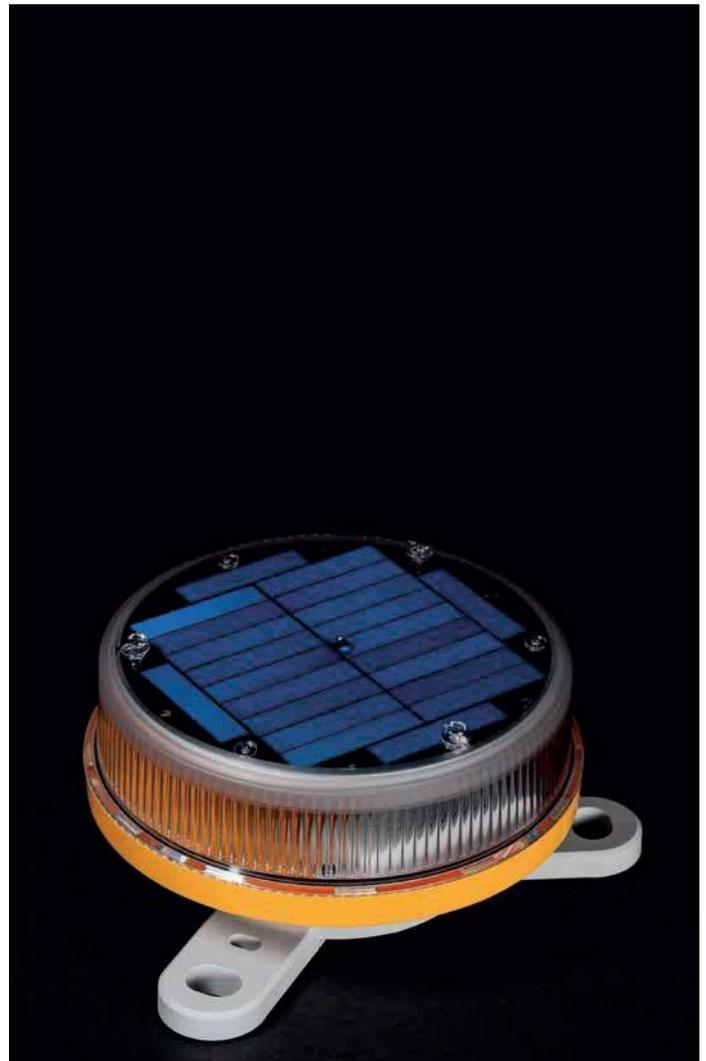


M660

Self-contained LED lantern for buoys and minor beacons, up to 4 NM Range

The M660 is a high-performance, longlife, easy-to-use and cost-effective self-contained solar LED marine lantern. The M660 features a Li-ion battery pack that extends the service life of the lantern up to eight years. M660 has four different mounting options and can be controlled with Bluetooth® Control. To view performance in your installation location, visit Marine Selector Tool in www.sabik-marine.com ->Marine Selector Tool

- **Standard IALA colours**
red, green, white, yellow, blue
- **Ventilated battery compartment**
- **Adjustable intensity and range**
- **Vertical divergence > 8° (FWHM)**
- **High-efficiency solar cells. Maximum Power Point Tracking (MPPT) for optimal energy collection**
- **Premium grade UV resistant, polycarbonate/poly siloxane co-polymer body and lens material**
- **IP 68 rated. O-ring sealing with waterproof vent**
- **Li-ion battery, optional dual pack**
- **Programmable with Bluetooth® Control and IR-Programmer**
- **Optional ON/OFF switch, external charger and charging port**
- **Built-in calendar function for automatic deactivation during off-season months**



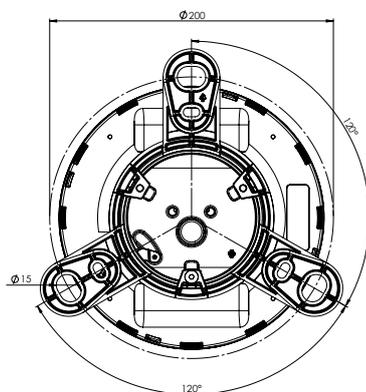
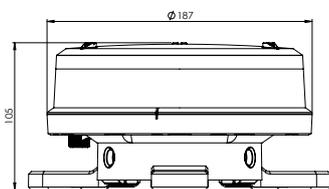
Optical performance

Maximum fixed intensity

40 cd	42 cd	71 cd	52 cd	18 cd
-------	-------	-------	-------	-------

Main Technical Specification

Lens visual/Mechanical diameter	177 mm
Lens material	UV stabilized Polycarbonate
Light source	High Power Light Emitting Diode (LED)
Vertical divergence	>8° (FWHM)
Solar module	High efficiency cells; MPPT; 2.5 W
Battery	Li-ion; 3.6 W / 6 Ah capacity; can be ordered with 1 or 2 battery packs
Degree of ingress protection	IP 68
Weight	0.8 kg
Overall height (excl. bird deterrents)	105 mm
Installation (adapter)	3 x M6 on 150mm and 3 x M12 on 200mm
Installation (pole mount)	70 or 72 diameter



Order Overview M660

Product codes

Colour	M660	M660 switched	M660 dual battery	M660 charge port
red	M660R	M660R-S	M660R-2B	M660R-C
green	M660G	M660G-S	M660G-2B	M660G-C
white	M660W	M660W-S	M660W-2B	M660W-C
yellow	M660Y	M660Y-S	M660Y-2B	M660Y-C
blue	M660B	M660B-S	M660B-2B	M660B-C

Option matrix

M660	
M660 Switched	ON/OFF switch
M660 Dual Battery	Dual Battery Pack
M660 Charge Port	With Charge Port

Accessories

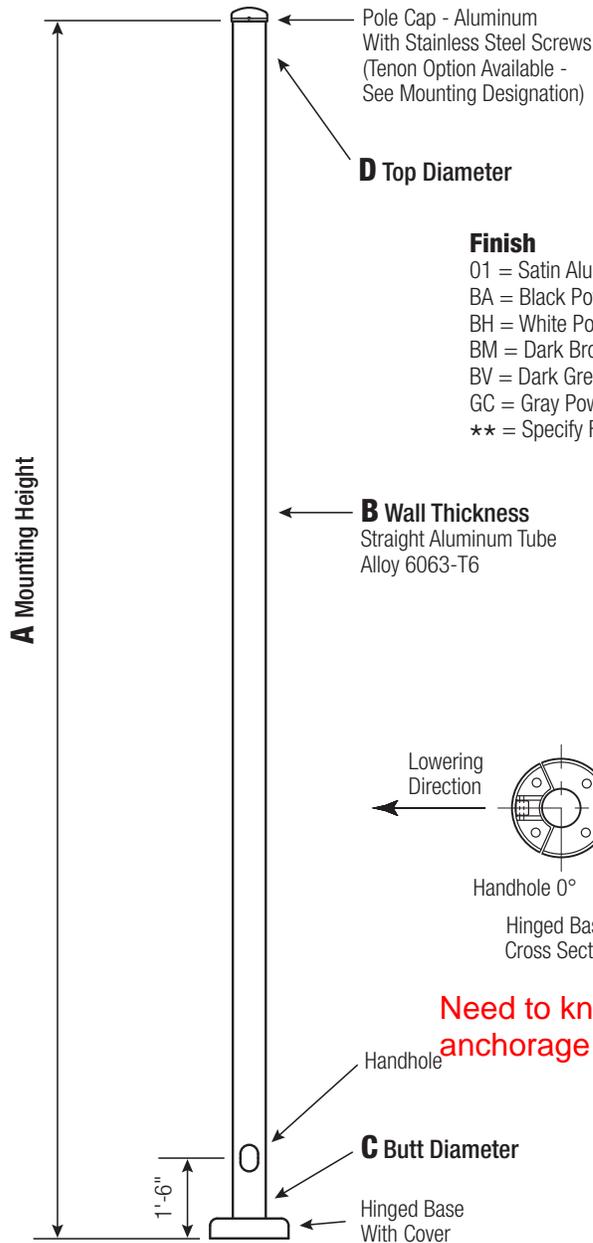
69934	660 Bird Deterrent – Single
79848	Spare adapter (incl. screws)
79273	Optional switch
69885	660 International Wall Charger Assembly
69899	IR (Infrared) Programmer
38334	660 Standard Bolt Kit

Product code example: M660RSC2B

- **M660R** is Sabik/Carmanah code for M660 in red
- with a selection of switched with charge port and dual battery

RSA

Round Straight Aluminum Pole No Arm — Hinged Base



Need to know anchorage depth

WARNING:
Do not install light pole without luminaire.

Satin Aluminum or Powder Coated Finish per Customer Specification.

A Mtg. Hgt.	B Wall Thickness	C Butt Diameter	TOTAL LUM. WEIGHT	MAXIMUM EPA					OLD CAT. NUMBER	CATALOG NUMBER
				90	100	110	120	130		
10	0.188"	4	100	11.6	9.0	8.4	6.8	5.5		RSA10D4-H-**

C BUTT DIA.	D TOP DIA.	F BOLT CIR. DIA.	G COVER DIA.	H BOLT PROJ.	I BOLT SIZE
4	4	7	9.75	2	.75 x 17 x 3

Dimensions in Inches

CUSTOMER NAME:	
PROJECT:	LOCATION:
NOTES:	QUANTITY:

RSA10D4-H

CATALOG NUMBER

FINISH

Pole

The pole shaft will be constructed of seamless extruded tube of 6063 Aluminum Alloy per the requirements of ASTM B221. The shaft assembly shall be full-length heat treated after base weld to produce a T6 temper.

Base Style

Hinged Cast Aluminum Base Flange of Alloy 356-T6 with 2-Piece Cast Aluminum Base Cover and Stainless Steel Tamper-Resistant Attaching Screws.

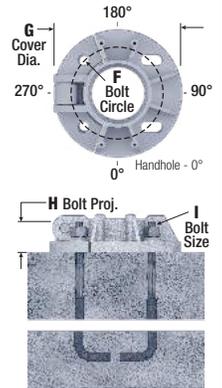


Handhole

2" x 4" Handhole with curved Lap Style Aluminum Door and two (2) Stainless Steel Self-Tapping Attaching Screws. A Grounding Provision incorporating a tapped 1/4" 20NC hole is provided opposite the Handhole.

Anchorage

Anchorage Kit will include four (4) L-shaped Steel Anchor Bolts conforming to AASHTO M314-90 Grade 55. Ten inches (10") of Threaded End will be Galvanized per ASTM A153. Kits will contain four (4) Hex Nuts, four (4) Lock Washers, and four (4) Flat Washers (all components Galvanized Steel). A bolt circle template will be provided.

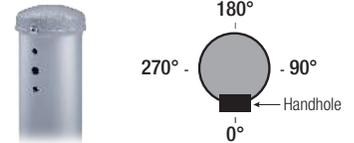


Vibration Damper

When determined necessary by Hapco, a Vibration Damper will be factory-installed inside the pole shaft. Customer specification of the damper is available.

Mounting Designation

Side Drill Mount - For Side Drill Mount applications specify luminaire type, quantity and orientation. A luminaire drilling template must be supplied at time of order.



Tenon Mount

For Tenon Mount applications specify both Tenon diameter (2.375", 2.875", 3.5", etc.) and length (3", 4", etc.).



EPA Notes: Effective Projected Area (EPA) in square feet. EPA's calculated using wind velocity (mph) indicated in accordance with 2009 AASHTO LTS-5 using a 25 year design life. Maximum EPA is based on the luminaire weight shown. Increased luminaire weight may reduce the maximum EPA. If weight is exceeded, or if other design life or code is required, please consult the factory.



26252 Hillman Highway
 Abingdon, VA 24210
 800.368.7171
 www.hapco.com

Bollard R-7591

General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
 Base Diameter: 10 1/4"
 Weight: 79 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 4 1/2" x 25" (Diameter x Height)

Finish Options:

⊙ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

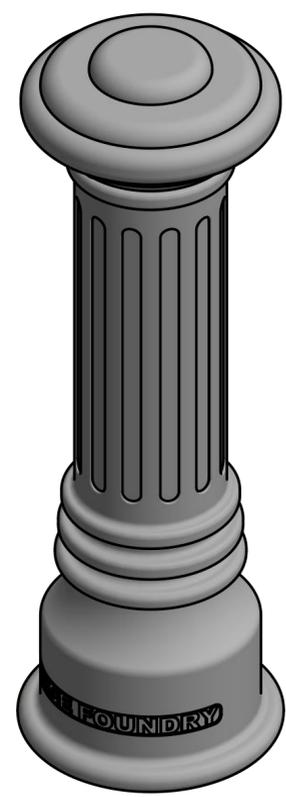
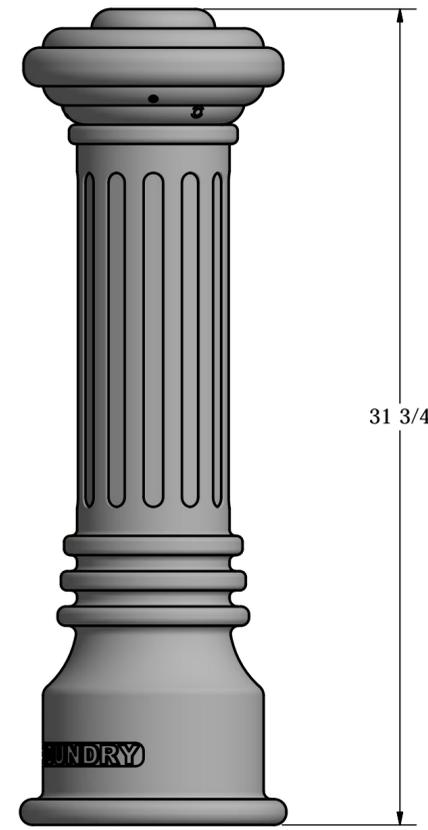
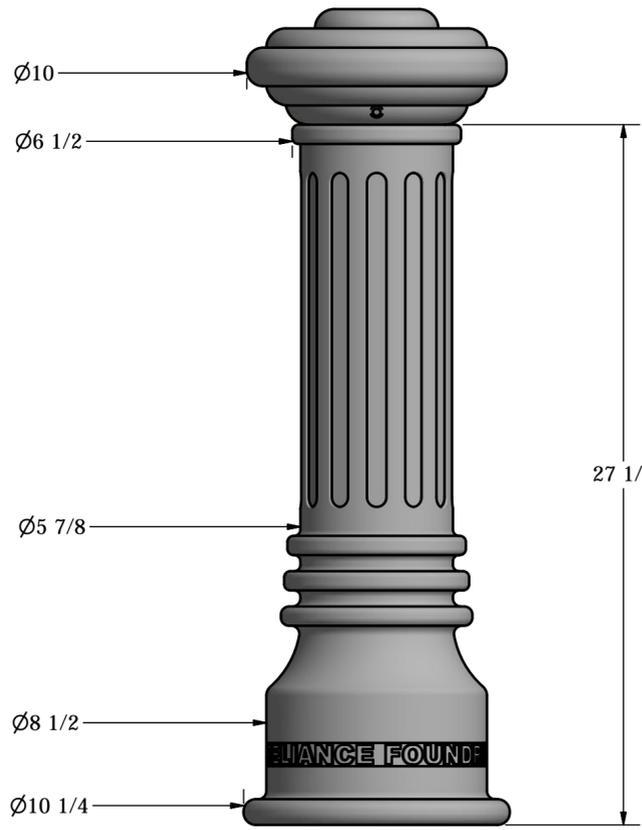
- Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- Post Cover - New Post in New Concrete (see sheet 6 of 12)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

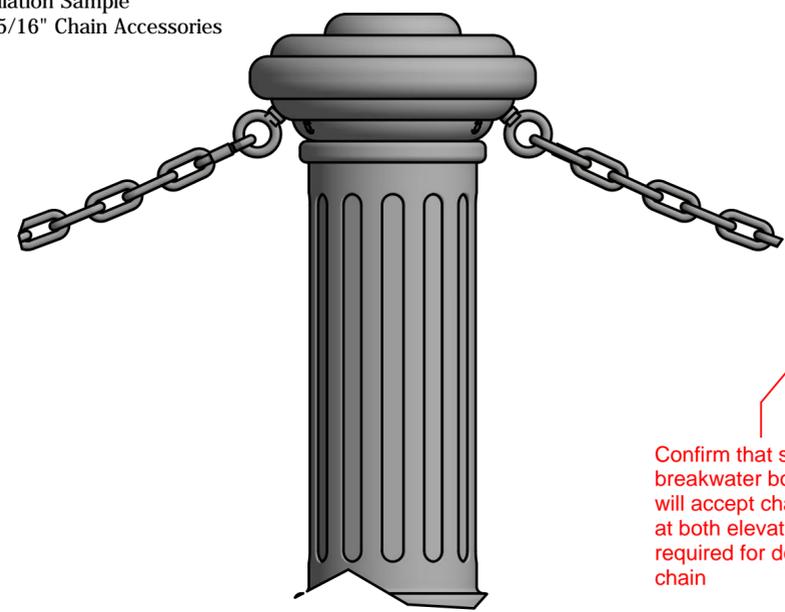
Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

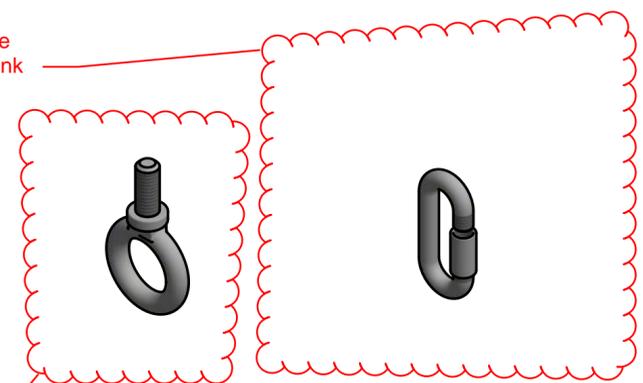


Installation Sample with 5/16" Chain Accessories



Make sure we have minimum 2 quick link for each chain

Confirm that selected breakwater bollard will accept chain eye at both elevations required for double chain



Bollard Chain Eye 3/8" (Powder Coated)

Quick Link Connector 5/16" (Powder Coated)

Bollard Chain 5/16" (Powder Coated)

Optional Accessories:

- Chain Eye
- Quick link
- Chain (5/16")
- Padlock, Brass (1 3/4")
- Padlock, Stainless Steel (2")

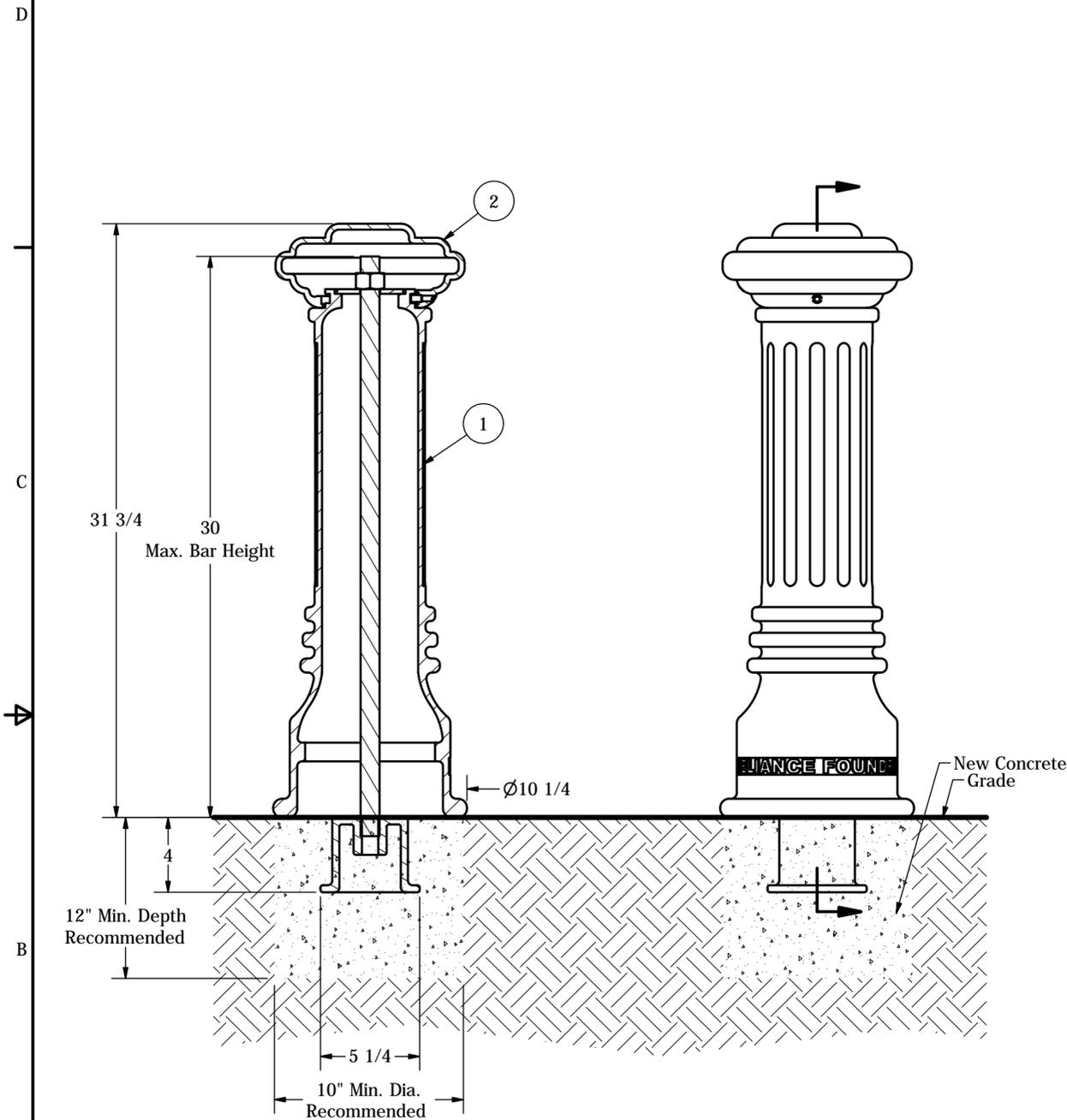
See Reliance Foundry's optional accessories at:
www.reliance-foundry.com/bollard/accessories-bollards



Unit 207, 6450 - 148 Street, Surrey, BC V3S 7G7, Canada
 1-877-789-3245 info@reliance-foundry.com
www.reliance-foundry.com

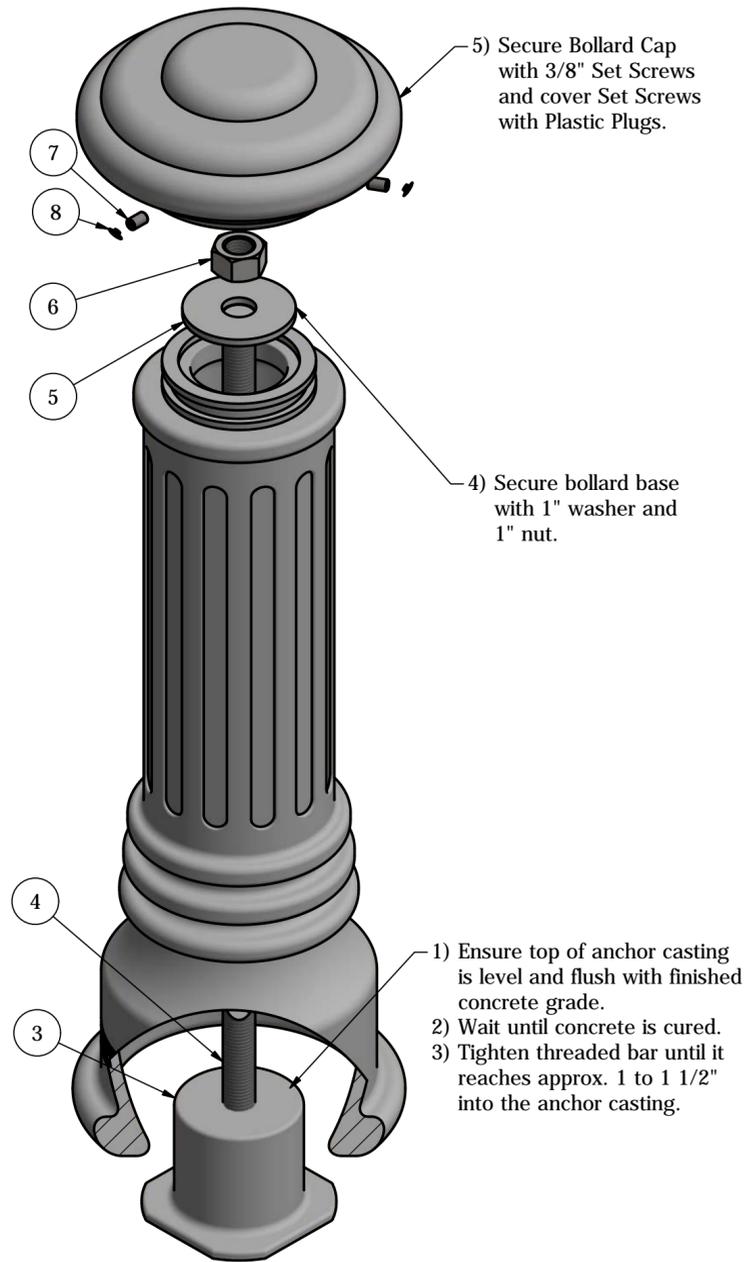
TITLE			
Bollard R-7591			
SIZE	DWG NO	REV	
C	R7591	C4	
NOT TO SCALE		SHEET 1 OF 12	

Bollard R-7591



Notes:

- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
- 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
- 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.



- Tools needed:**
- 1) Measuring tape
 - 2) 1 1/2" wrench
 - 3) 3/16" hex key

General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
 Base Diameter: 10 1/4"
 Weight: 79 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 4 1/2" x 25" (Diameter x Height)

Finish Options:

⊙ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- ⊙ Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- Post Cover - New Post in New Concrete (see sheet 6 of 12)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
2	1	R7591C	R7591 Cap	Ductile Iron Powder Coated	19 lbs
3	1	R7500AN 1"	R7500 Anchor Casting 1"	Ductile Iron Hot Dip Galvanized	8 3/8 lbs
4	1	R7500BAR 1"	R7500 Threaded Bar 1" x 31"	Steel Plated	6 3/4 lbs
5	1	Washer 1" OD 3 1/2"	Washer 1" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
6	1	Hex Nut 1"	Hex Nut 1" - requires 1 1/2" wrench	Steel Plated	1/4 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

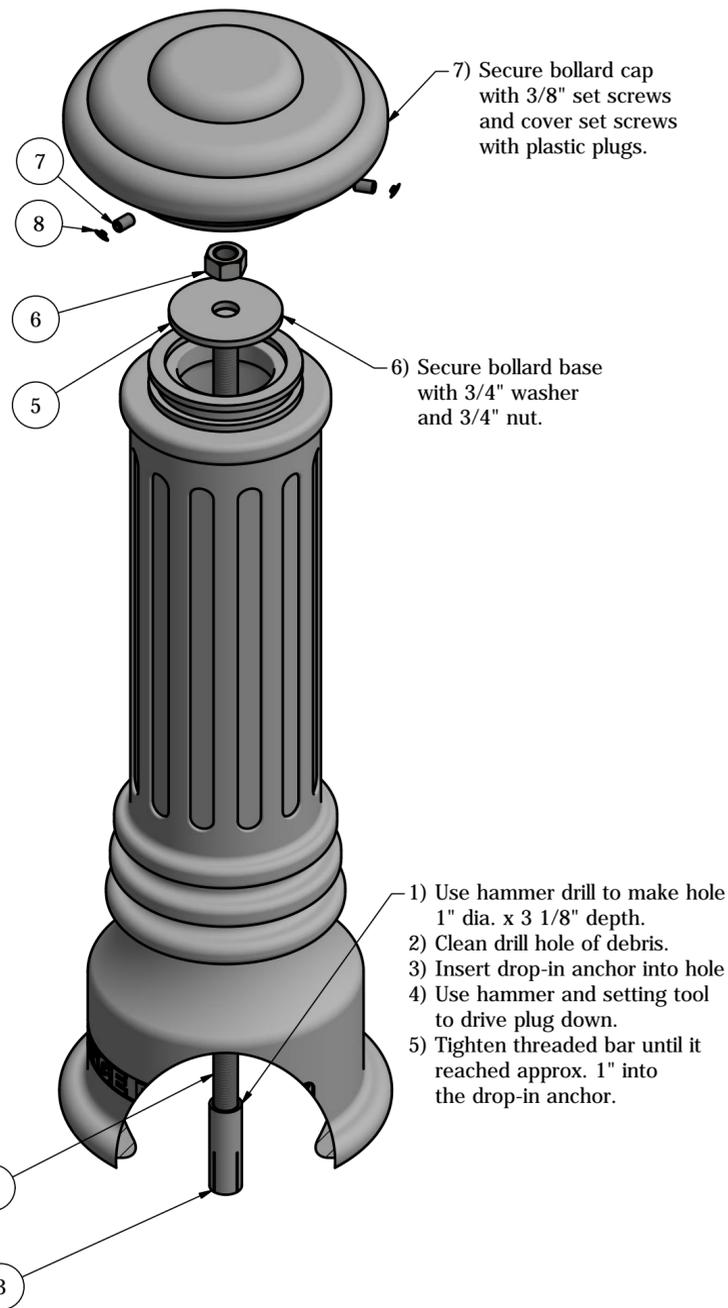
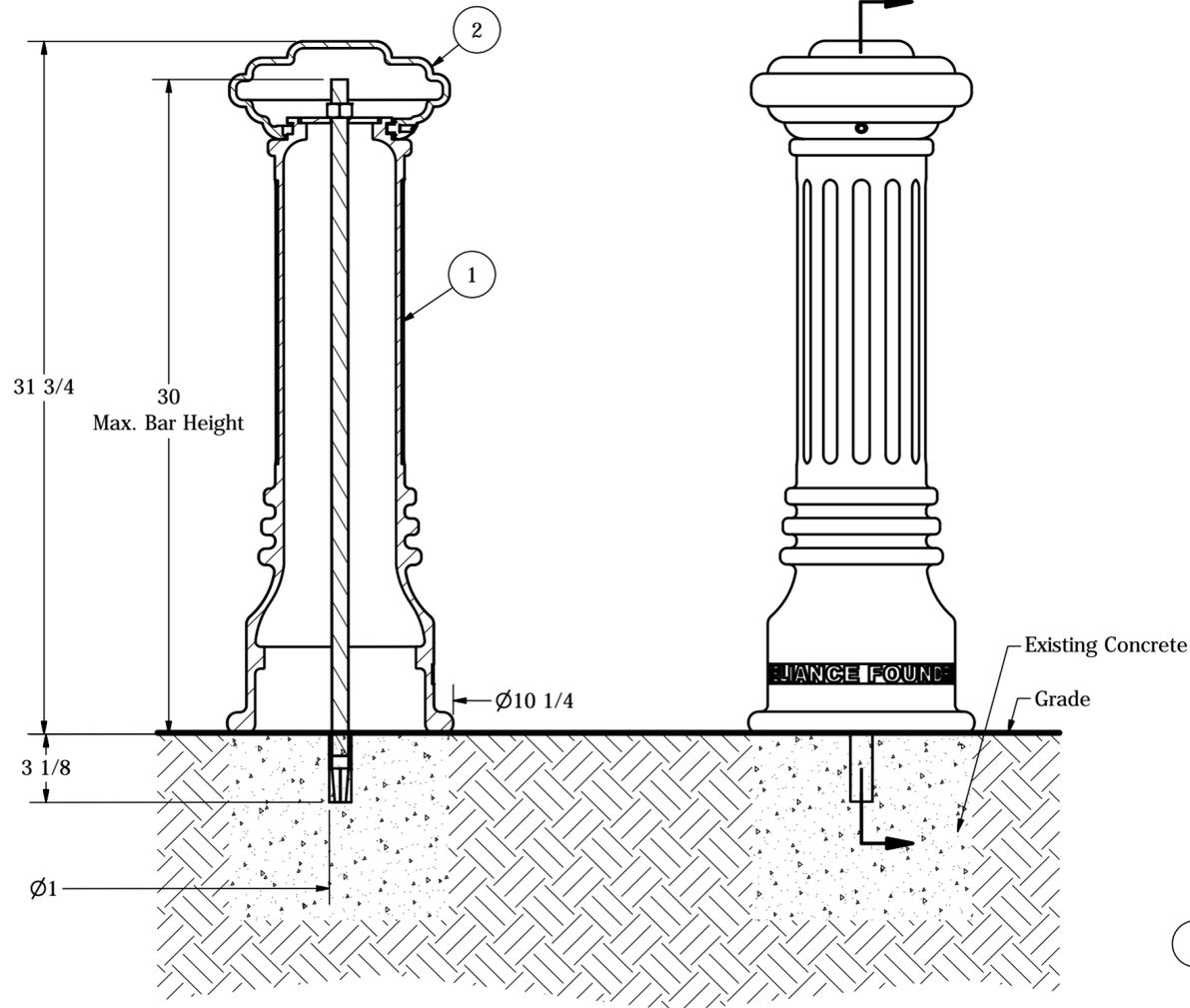
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 1-877-789-3245 info@reliance-foundry.com
www.reliance-foundry.com

Bollard R-7591

SIZE	DWG NO	REV
C	R7591	C4

Bollard R-7591



General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
 Base Diameter: 10 1/4"
 Weight: 79 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 4 1/2" x 25" (Diameter x Height)

Finish Options:

⊙ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- ⊙ Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- ⊙ Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- ⊙ Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- ⊙ Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- ⊙ Post Cover - New Post in New Concrete (see sheet 6 of 12)
- ⊙ Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- ⊙ Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- ⊙ Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- ⊙ Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- ⊙ Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- ⊙ Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

Notes:

- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
- 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
- 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

Tools needed:

- 1) Measuring tape
- 2) 1 1/8" wrench
- 3) 3/16" hex key
- 4) Hammer drill
- 5) 1" Masonry drill bit
- 6) Hammer
- 7) Drop-in concrete insert setting tool

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
2	1	R7591C	R7591 Cap	Ductile Iron Powder Coated	19 lbs
3	1	Drop-in Concrete Insert 3/4"	Drop-in Concrete Insert 3/4" - requires 1" x 3 1/8" hole (dia. x depth)	Steel Plated	1/2 lbs
4	1	R7500BAR 3/4"	R7500 Threaded Bar 3/4" x 31"	Steel Plated	3 1/4 lbs
5	1	Washer 3/4" OD 3 1/2"	Washer 3/4" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
6	1	Hex Nut 3/4"	Hex Nut 3/4" - requires 1 1/8" wrench	Steel Plated	1/8 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

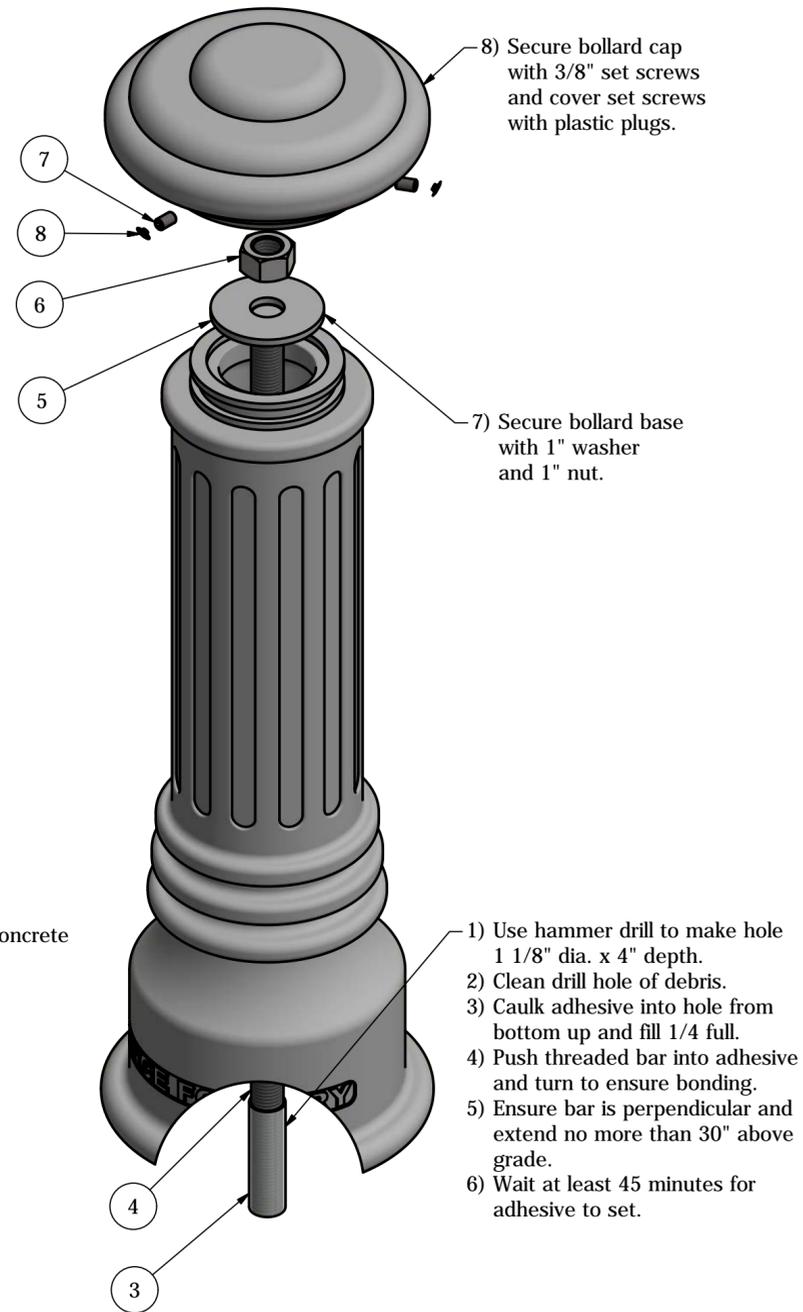
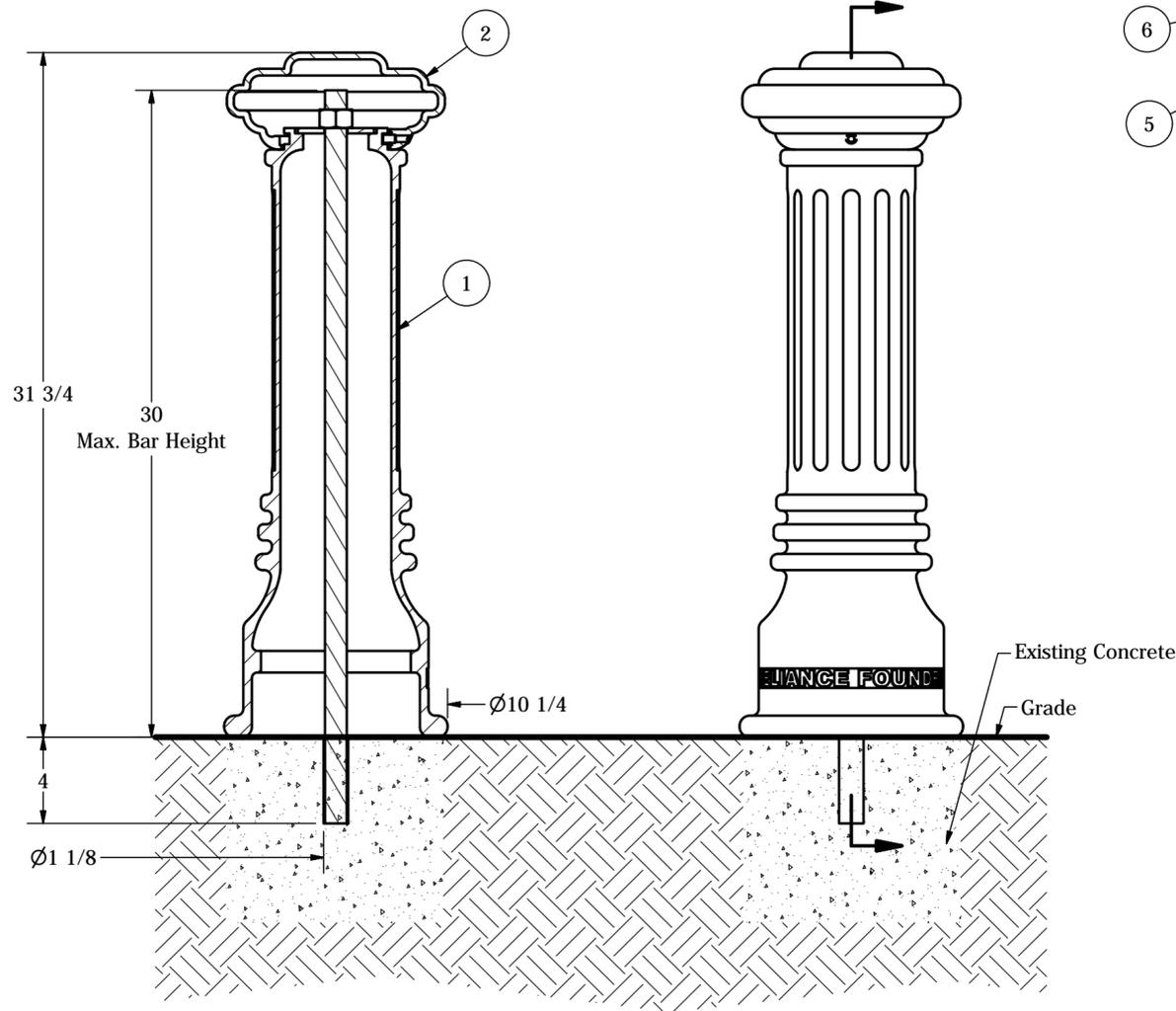
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www.reliance-foundry.com

Bollard R-7591

SIZE	DWG NO	REV
C	R7591	C4

Bollard R-7591



General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
 Base Diameter: 10 1/4"
 Weight: 79 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 4 1/2" x 25" (Diameter x Height)

Finish Options:

⊙ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- ⊙ Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- Post Cover - New Post in New Concrete (see sheet 6 of 12)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

Notes:

- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
- 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
- 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

Tools needed:

- 1) Measuring tape
- 2) 1 1/2" wrench
- 3) 3/16" hex key
- 4) Hammer drill
- 5) 1 1/8" Masonry drill bit
- 6) Caulking gun and utility knife

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
2	1	R7591C	R7591 Cap	Ductile Iron Powder Coated	19 lbs
3	1	Adhesive Anchor	AC100+ Gold Adhesive Anchoring System	Vinylester Adhesive Mortar	5/8 lbs
4	1	R7500BAR 1"	R7500 Threaded Bar 1" x 34"	Steel Plated	6 1/4 lbs
5	1	Washer 1" OD 3 1/2"	Washer 1" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
6	1	Hex Nut 1"	Hex Nut 1" - requires 1 1/2" wrench	Steel Plated	1/4 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

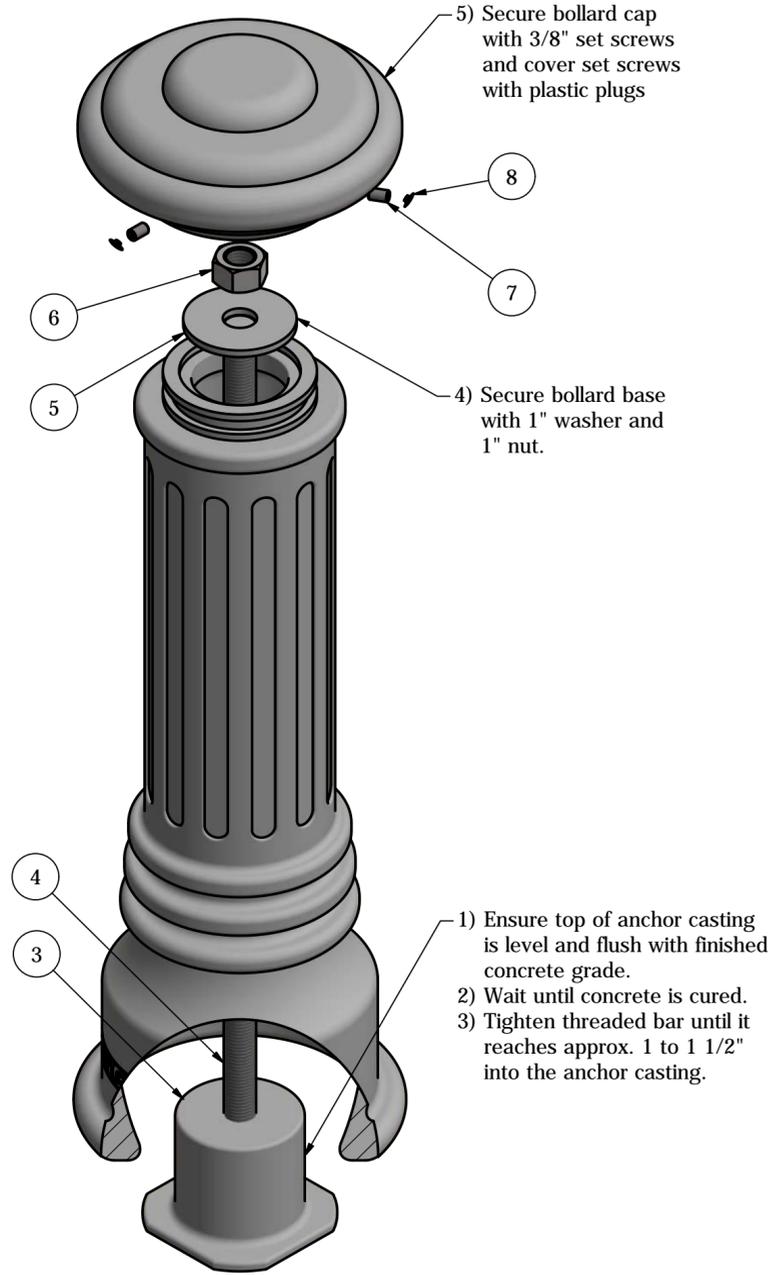
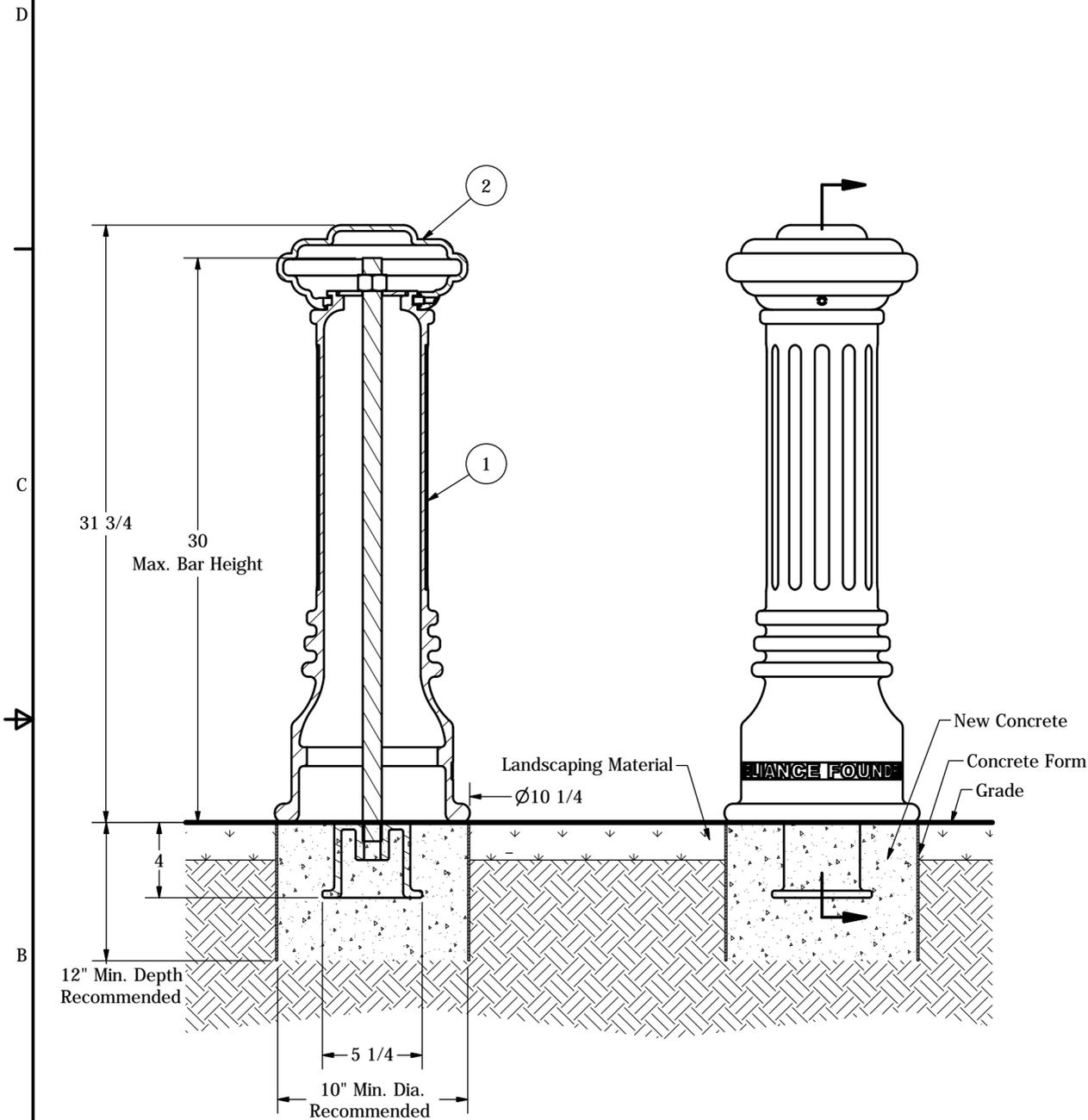
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www.reliance-foundry.com

Bollard R-7591

SIZE	DWG NO	REV
C	R7591	C4

Bollard R-7591



General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
 Base Diameter: 10 1/4"
 Weight: 79 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 4 1/2" x 25" (Diameter x Height)

Finish Options:

☉ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- ☉ Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- Post Cover - New Post in New Concrete (see sheet 6 of 12)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

Notes:

- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
- 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
- 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

Tools needed:

- 1) Measuring tape
- 2) 1 1/2" wrench
- 3) 3/16" hex key

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
2	1	R7591C	R7591 Cap	Ductile Iron Powder Coated	19 lbs
3	1	R7500AN 1"	R7500 Anchor Casting 1"	Ductile Iron Hot Dip Galvanized	8 3/8 lbs
4	1	R7500BAR 1"	R7500 Threaded Bar 1" x 31"	Steel Plated	6 3/4 lbs
5	1	Washer 1" OD 3 1/2"	Washer 1" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
6	1	Hex Nut 1"	Hex Nut 1" - requires 1 1/2" wrench	Steel Plated	1/4 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

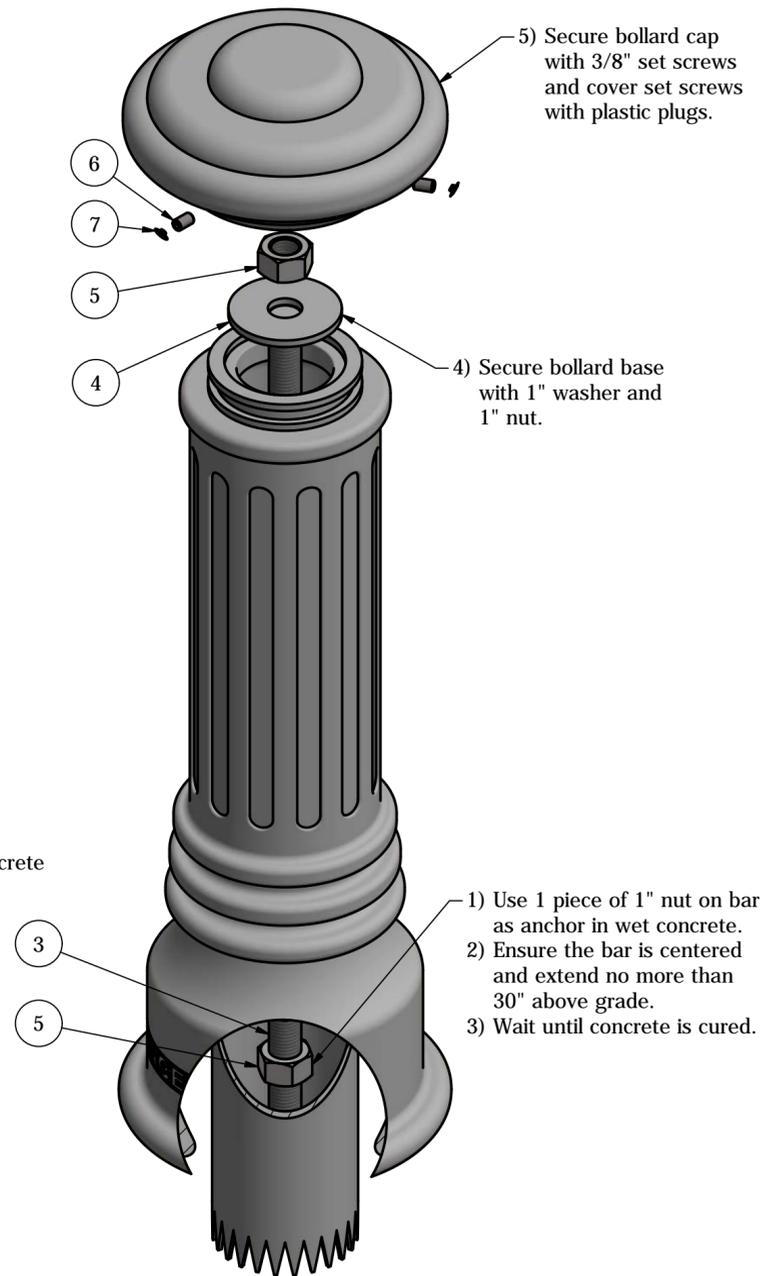
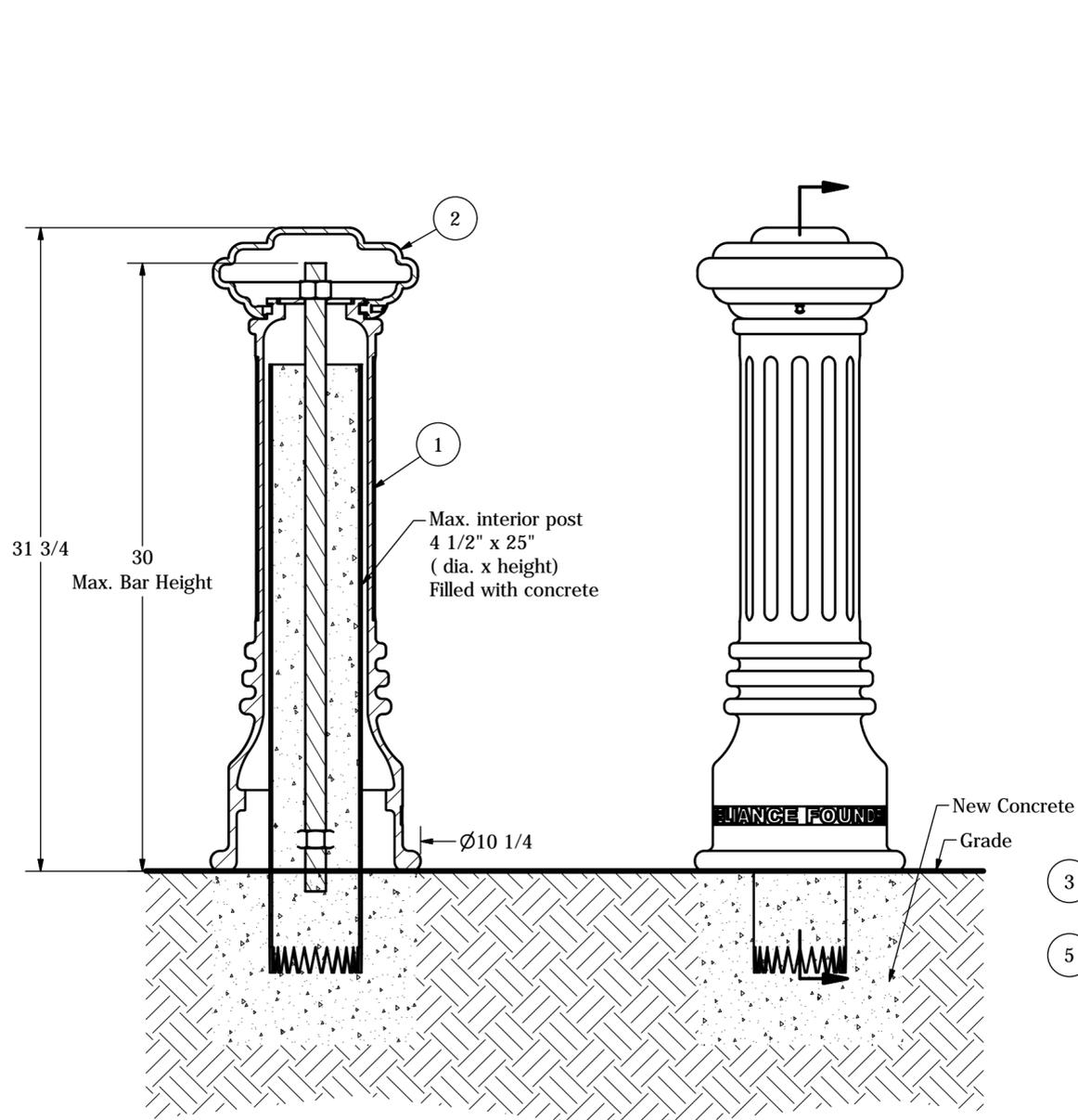
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www.reliance-foundry.com

Bollard R-7591

SIZE	DWG NO	REV
C	R7591	C4

Bollard R-7591



General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
 Base Diameter: 10 1/4"
 Weight: 79 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 4 1/2" x 25" (Diameter x Height)

Finish Options:

☉ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- ☉ Post Cover - New Post in New Concrete (see sheet 6 of 12)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

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Tools needed:

- 1) Measuring tape
- 2) 1 1/2" wrench
- 3) 3/16" hex key

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
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3	1	R7500BAR 1"	R7500 Threaded Bar 1" x 31"	Steel Plated	6 3/4 lbs
4	1	Washer 1" OD 3 1/2"	Washer 1" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
5	2	Hex Nut 1"	Hex Nut 1" - requires 1 1/2" wrench	Steel Plated	1/4 lbs
6	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
7	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

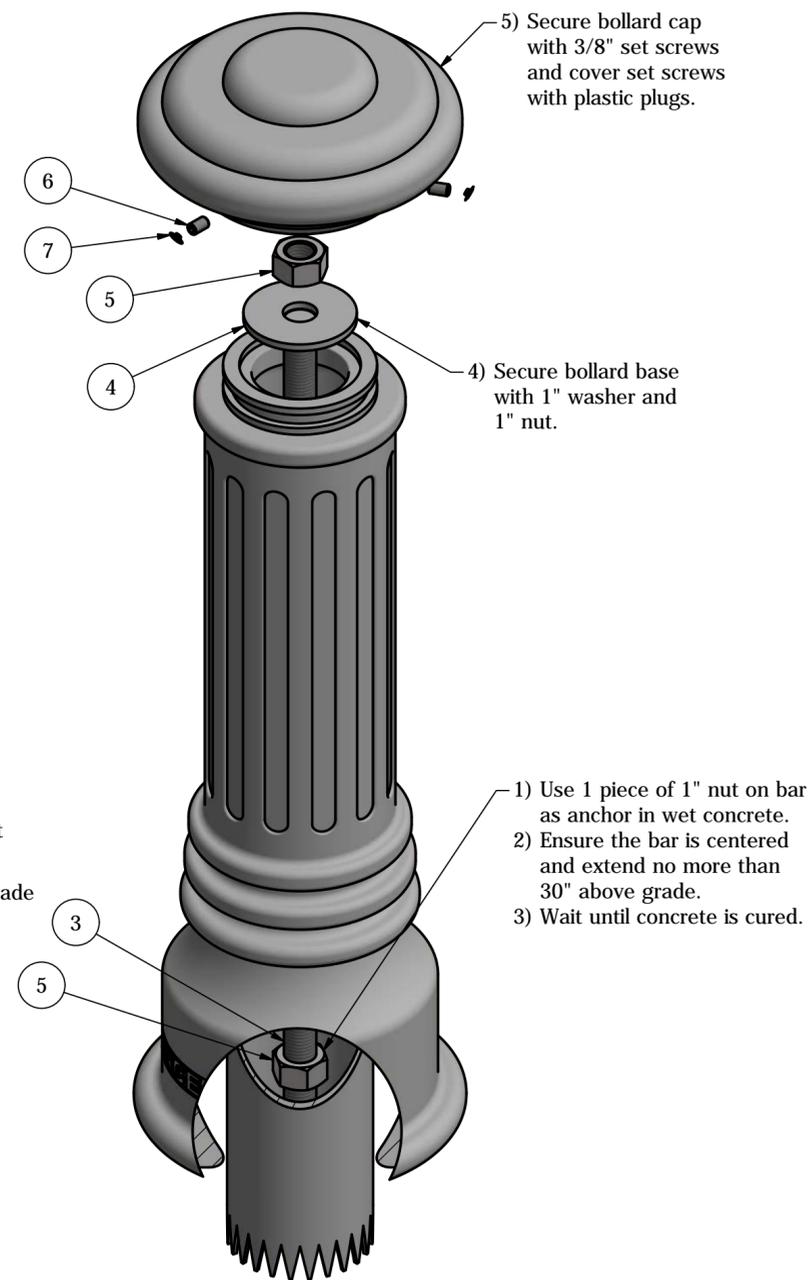
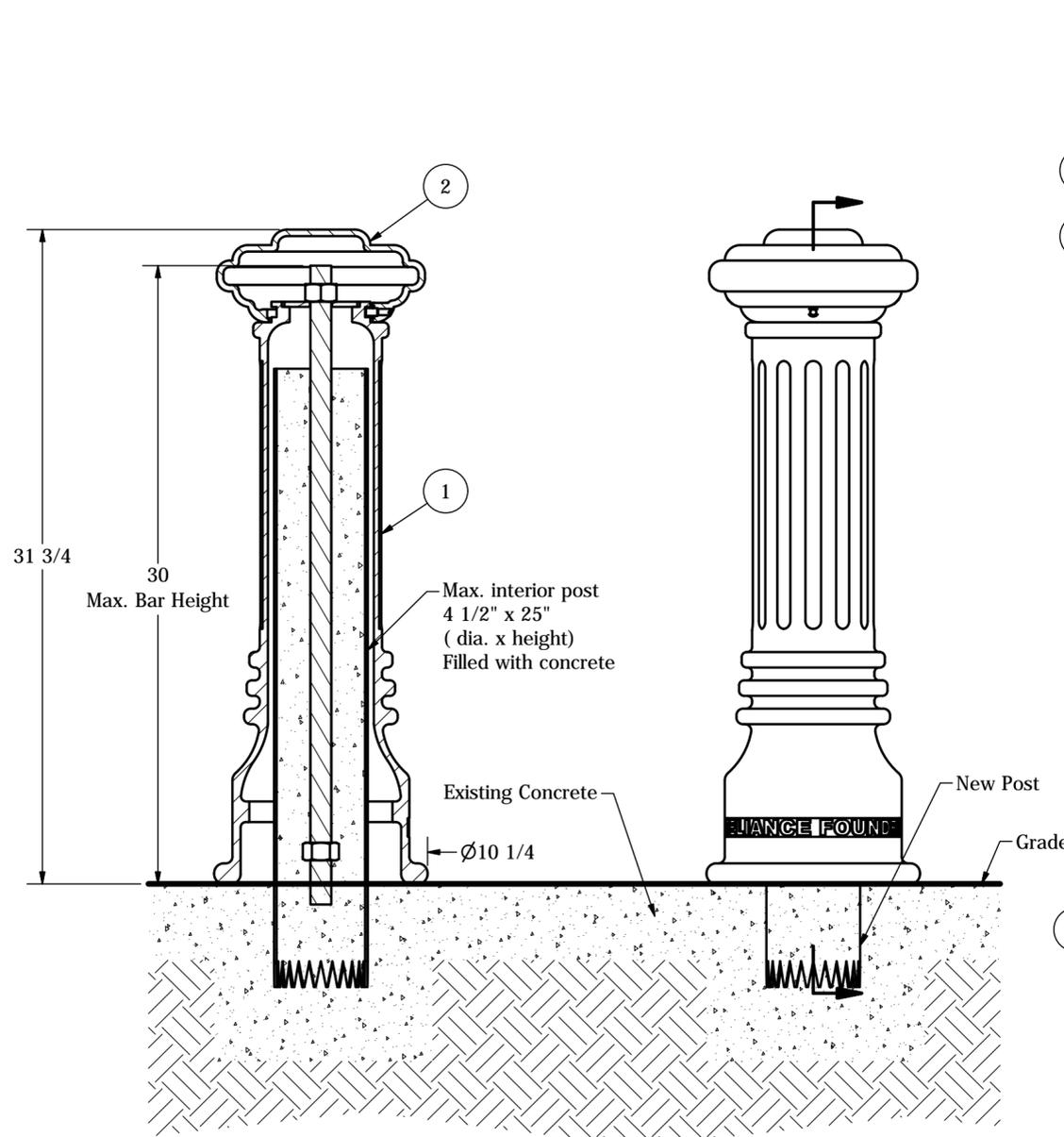
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www.reliance-foundry.com

Bollard R-7591

SIZE	DWG NO	REV
C	R7591	C4

Bollard R-7591



General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
Base Diameter: 10 1/4"
Weight: 79 lbs (Bollard Only)
Material: Ductile Iron
Max. Interior Security Post Size:
4 1/2" x 25" (Diameter x Height)

Finish Options:

⊙ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
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- Post Cover - New Post in New Concrete (see sheet 6 of 12)
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- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
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Care and Maintenance:

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Tools needed:

- 1) Measuring tape
- 2) 1 1/2" wrench
- 3) 3/16" hex key

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
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3	1	R7500BAR 1"	R7500 Threaded Bar 1" x 31"	Steel Plated	6 3/4 lbs
4	1	Washer 1" OD 3 1/2"	Washer 1" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
5	2	Hex Nut 1"	Hex Nut 1" - requires 1 1/2" wrench	Steel Plated	1/4 lbs
6	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
7	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

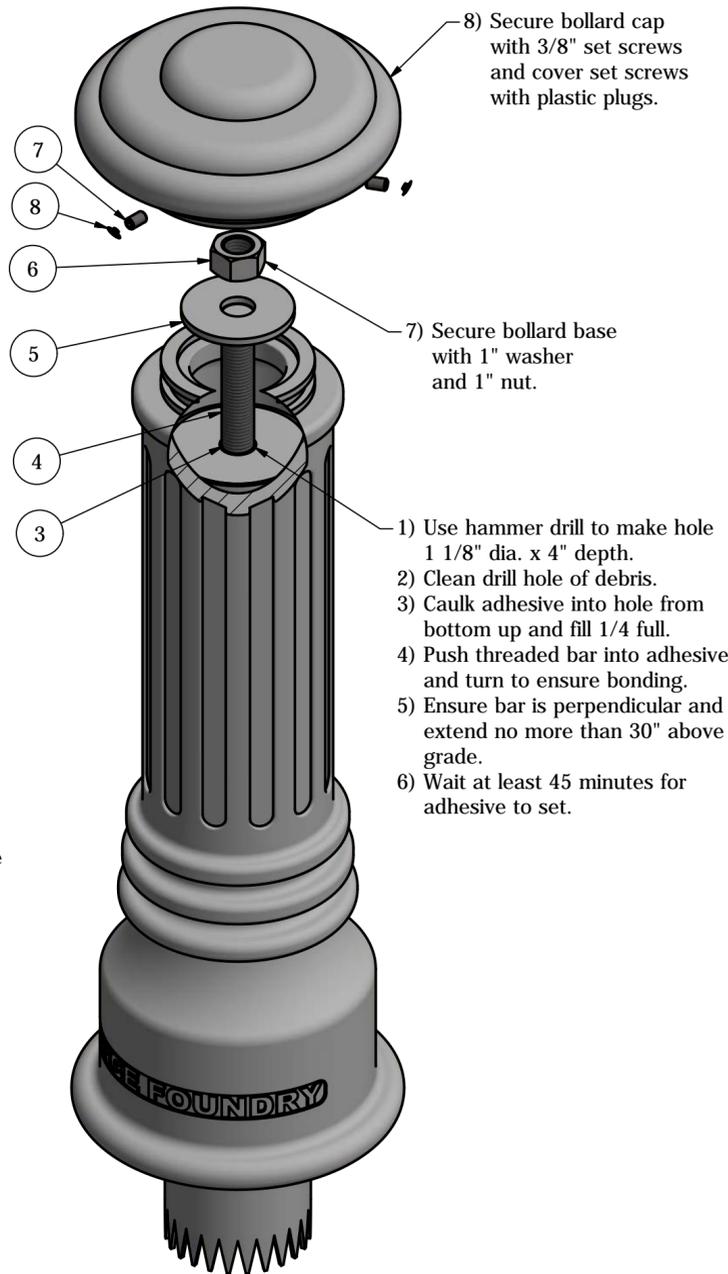
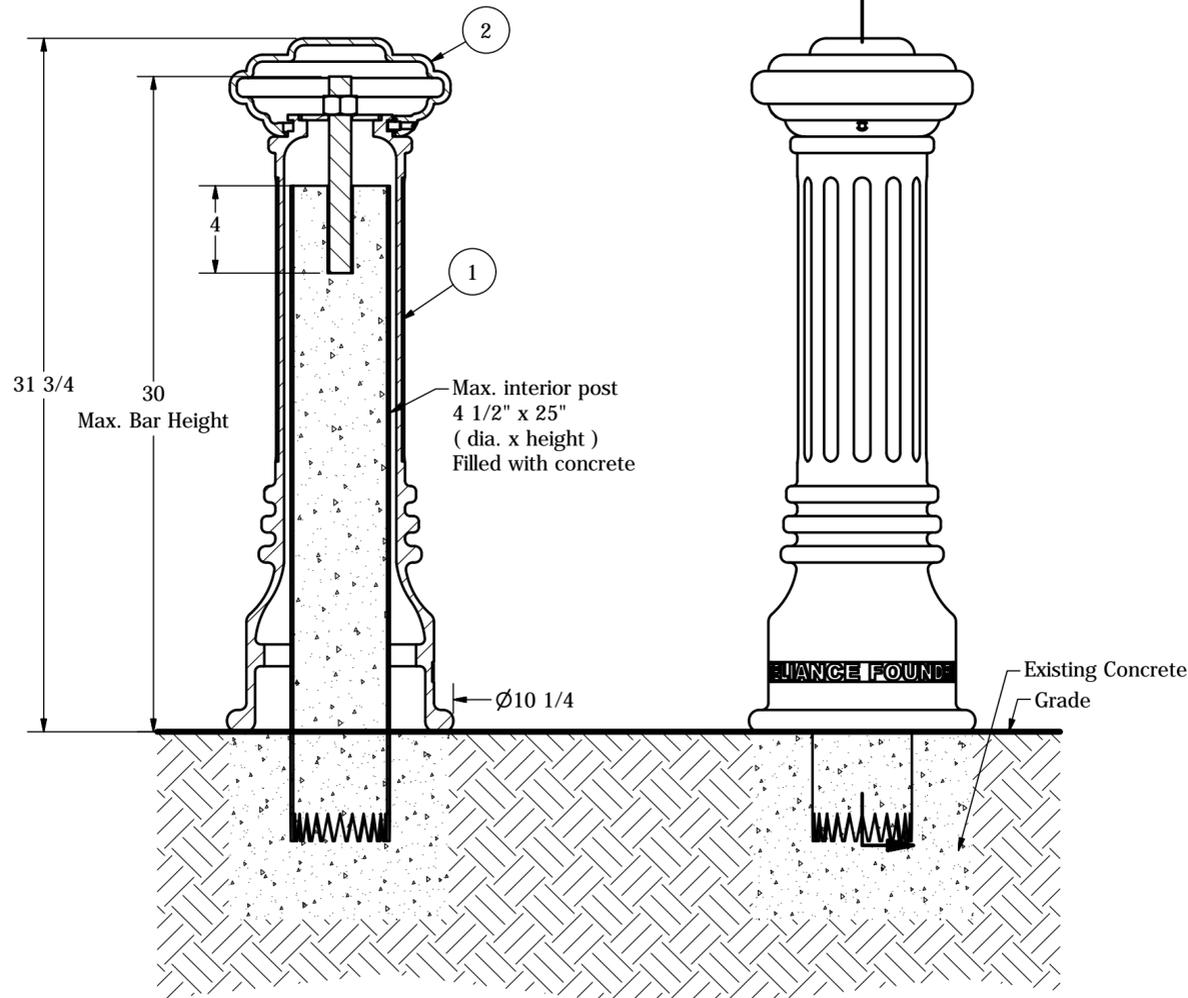
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www.reliance-foundry.com

Bollard R-7591

SIZE C	DWG NO R7591	REV C4
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Bollard R-7591



General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
 Base Diameter: 10 1/4"
 Weight: 79 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 4 1/2" x 25" (Diameter x Height)

Finish Options:

☉ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- Post Cover - New Post in New Concrete (see sheet 6 of 12)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- ☉ Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

Notes:

- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
- 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
- 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

Tools needed:

- 1) Measuring tape
- 2) 1 1/2" wrench
- 3) 3/16" hex key
- 4) Hammer drill
- 5) 1 1/8" Masonry drill bit
- 6) Caulking gun and utility knife

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
2	1	R7591C	R7591 Cap	Ductile Iron Powder Coated	19 lbs
3	1	Adhesive Anchor	AC100+ Gold Adhesive Anchoring System	Vinylester Adhesive Mortar	5/8 lbs
4	1	R7500BAR 1"	R7500 Threaded Bar 1" Custom Order Length	Steel Plated	TBD
5	1	Washer 1" OD 3 1/2"	Washer 1" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
6	1	Hex Nut 1"	Hex Nut 1" - requires 1 1/2" wrench	Steel Plated	1/4 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

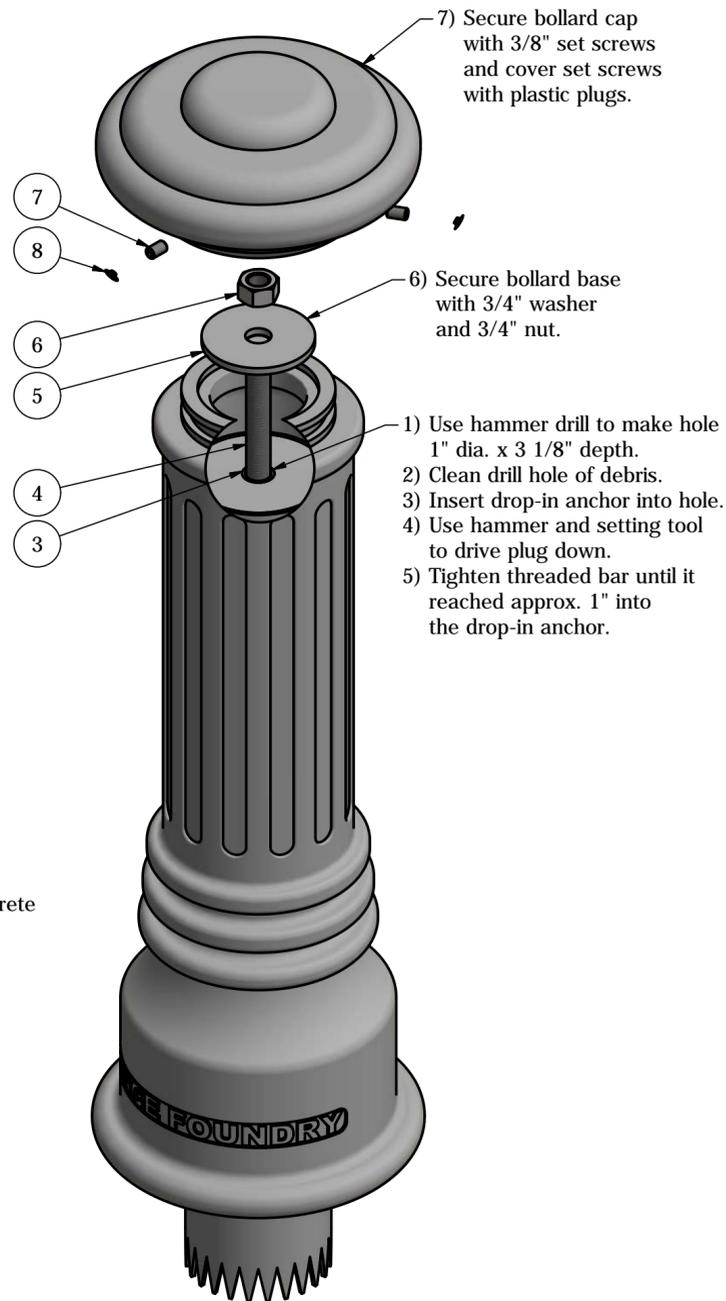
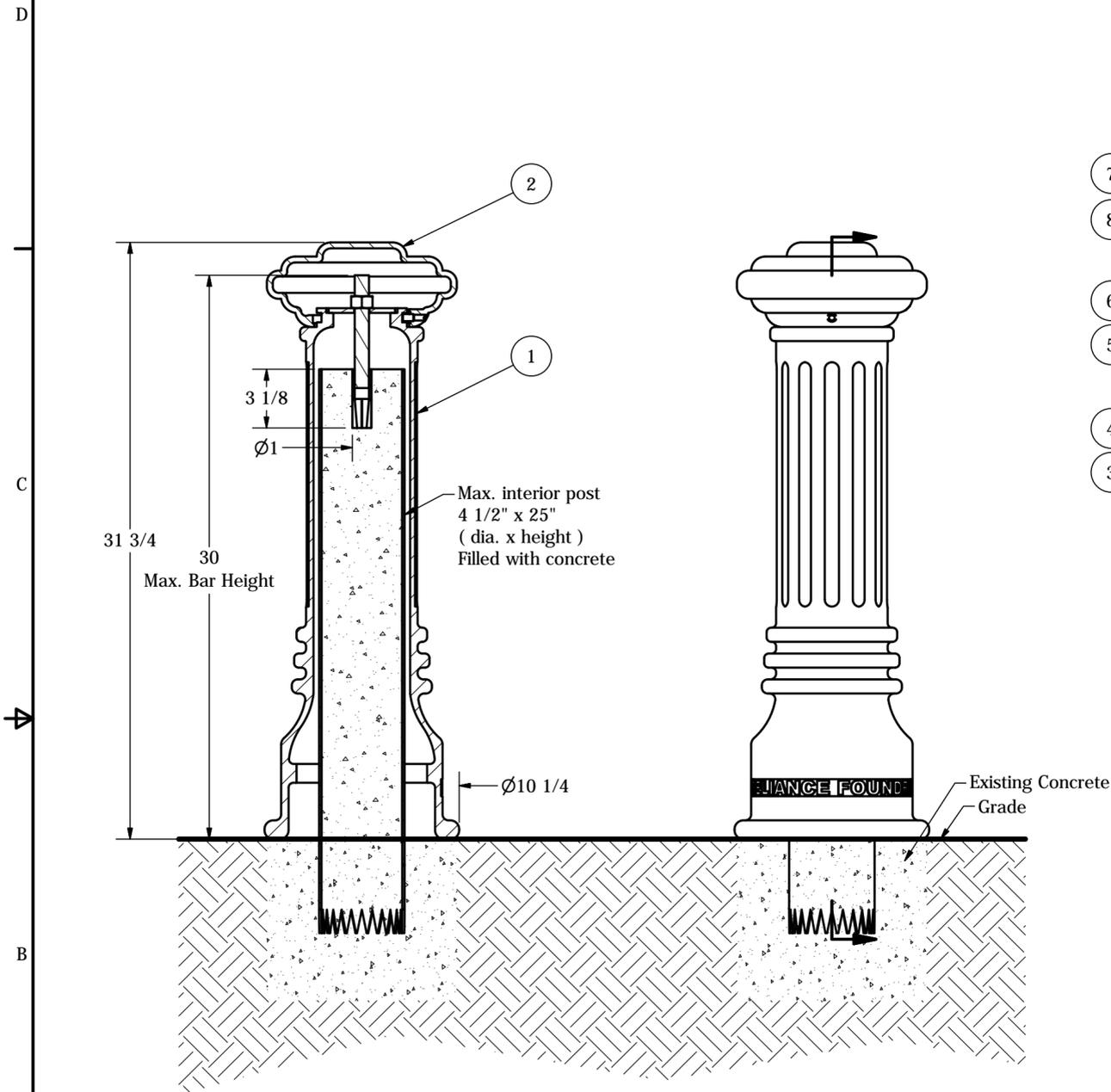
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www.reliance-foundry.com

Bollard R-7591

SIZE	DWG NO	REV
C	R7591	C4

Bollard R-7591



- Tools needed:
- 1) Measuring tape
 - 2) 1 1/8" wrench
 - 3) 3/16" hex key
 - 4) Hammer drill
 - 5) 1" Masonry drill bit
 - 6) Hammer
 - 7) Drop-in concrete insert setting tool

General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
 Base Diameter: 10 1/4"
 Weight: 79 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 4 1/2" x 25" (Diameter x Height)

Finish Options:

⊙ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- Post Cover - New Post in New Concrete (see sheet 6 of 12)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- ⊙ Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

Notes:

- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
- 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
- 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
2	1	R7591C	R7591 Cap	Ductile Iron Powder Coated	19 lbs
3	1	Drop-in Concrete Insert 3/4"	Drop-in Concrete Insert 3/4" - requires 1" x 3 1/8" hole (dia. x depth)	Steel Plated	1/2 lbs
4	1	R7500BAR 3/4"	R7500 Threaded Bar 3/4" Custom Order Length	Steel Plated	TBD
5	1	Washer 3/4" OD 3 1/2"	Washer 3/4" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
6	1	Hex Nut 3/4"	Hex Nut 3/4" - requires 1 1/8" wrench	Steel Plated	1/8 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

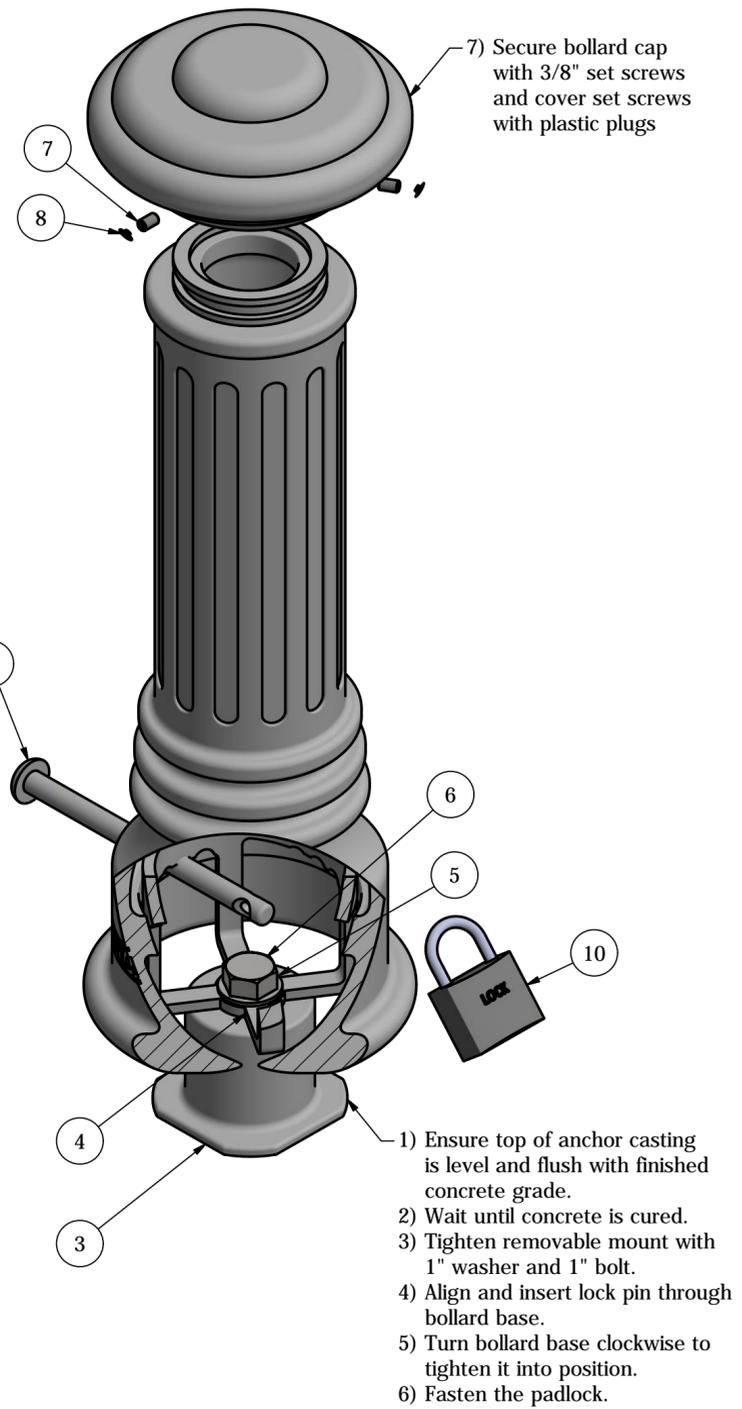
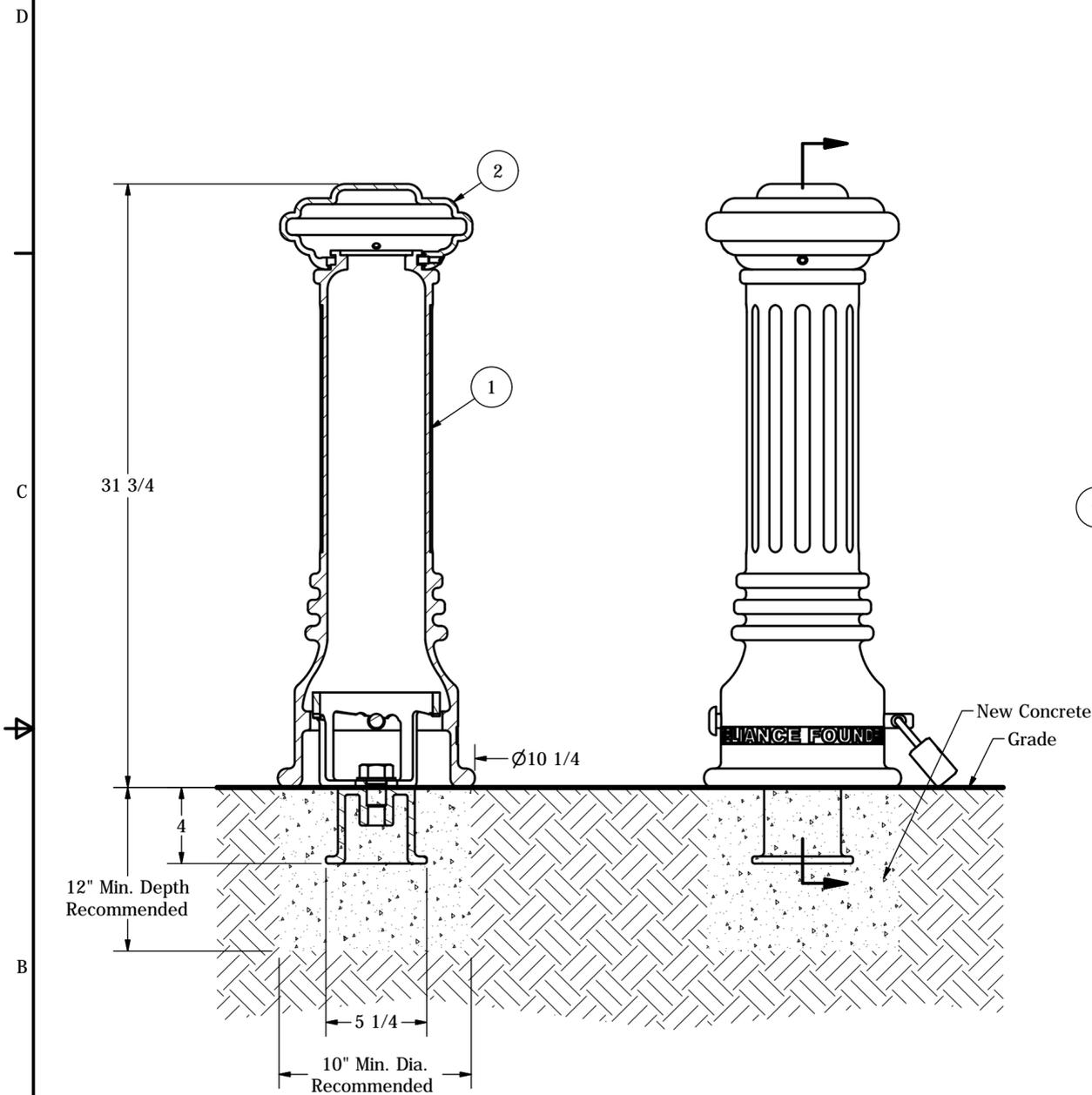
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Bollard R-7591

SIZE	DWG NO	REV
C	R7591	C4

Bollard R-7591



General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
 Base Diameter: 10 1/4"
 Weight: 79 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 4 1/2" x 25" (Diameter x Height)

Finish Options:

☉ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- Post Cover - New Post in New Concrete (see sheet 6 of 12)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- ☉ Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

Notes:

- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
- 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
- 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

Tools needed:

- 1) Measuring tape
- 2) 1 1/2" wrench
- 3) 3/16" hex key

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
2	1	R7591C	R7591 Cap	Ductile Iron Powder Coated	19 lbs
3	1	R7500AN 1"	R7500 Anchor Casting 1"	Ductile Iron Hot Dip Galvanized	8 3/8 lbs
4	1	R7500RM 1"	R7500 Removable Mount 1"	Steel Hot Dip Galvanized	4 5/8 lbs
5	1	Washer 1" OD 2"	Washer 1" OD 2" Thick 1/8"	Steel Plated	1/8 lbs
6	1	Hex Bolt 1" x 1 1/2"	Hex Bolt 1" x 1 1/2" - requires 1 1/2" wrench	Steel Plated	5/8 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	
9	1	R7500 Lock Pin 3/4" x 10"	R7500 Lock Pin 3/4" x 10"	Steel Powder Coated	1 1/2 lbs
10	1	Padlock (Optional)	Optional Padlock (Brass or Stainless Steel)	Choice of Brass or Stainless Steel	5/8 lbs

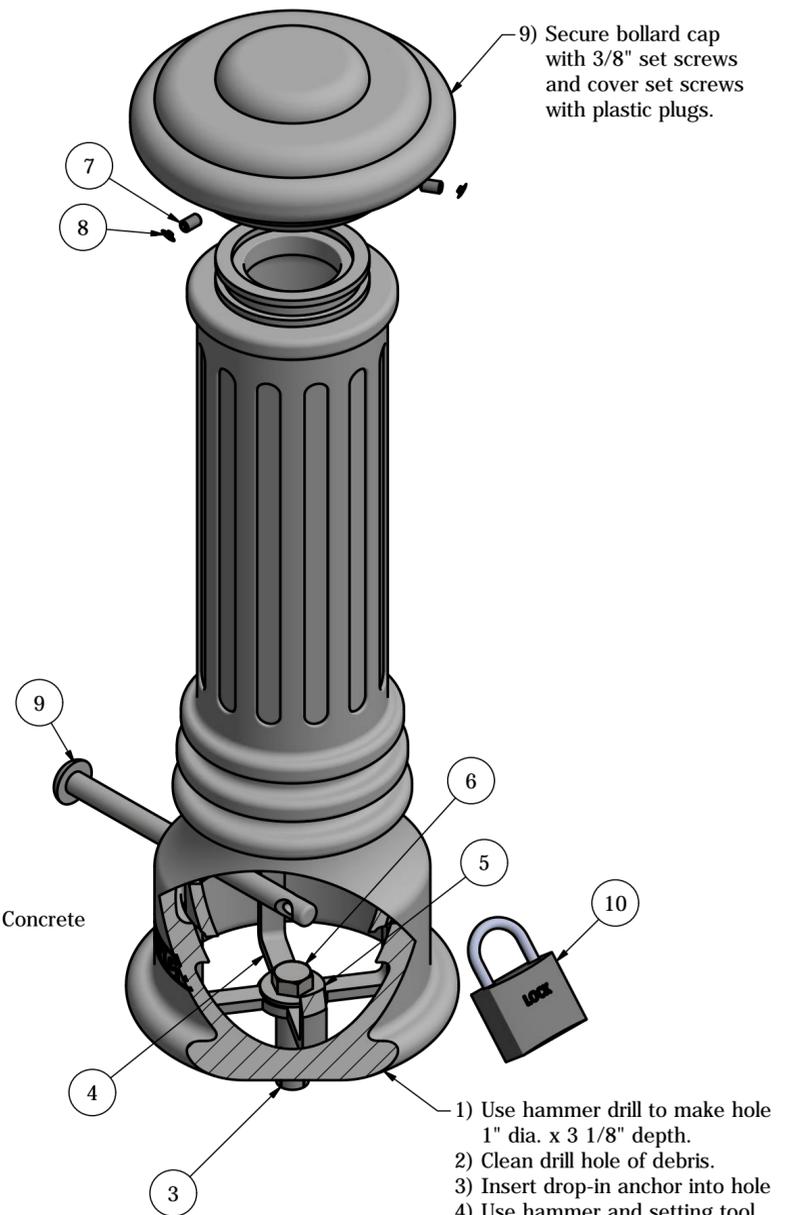
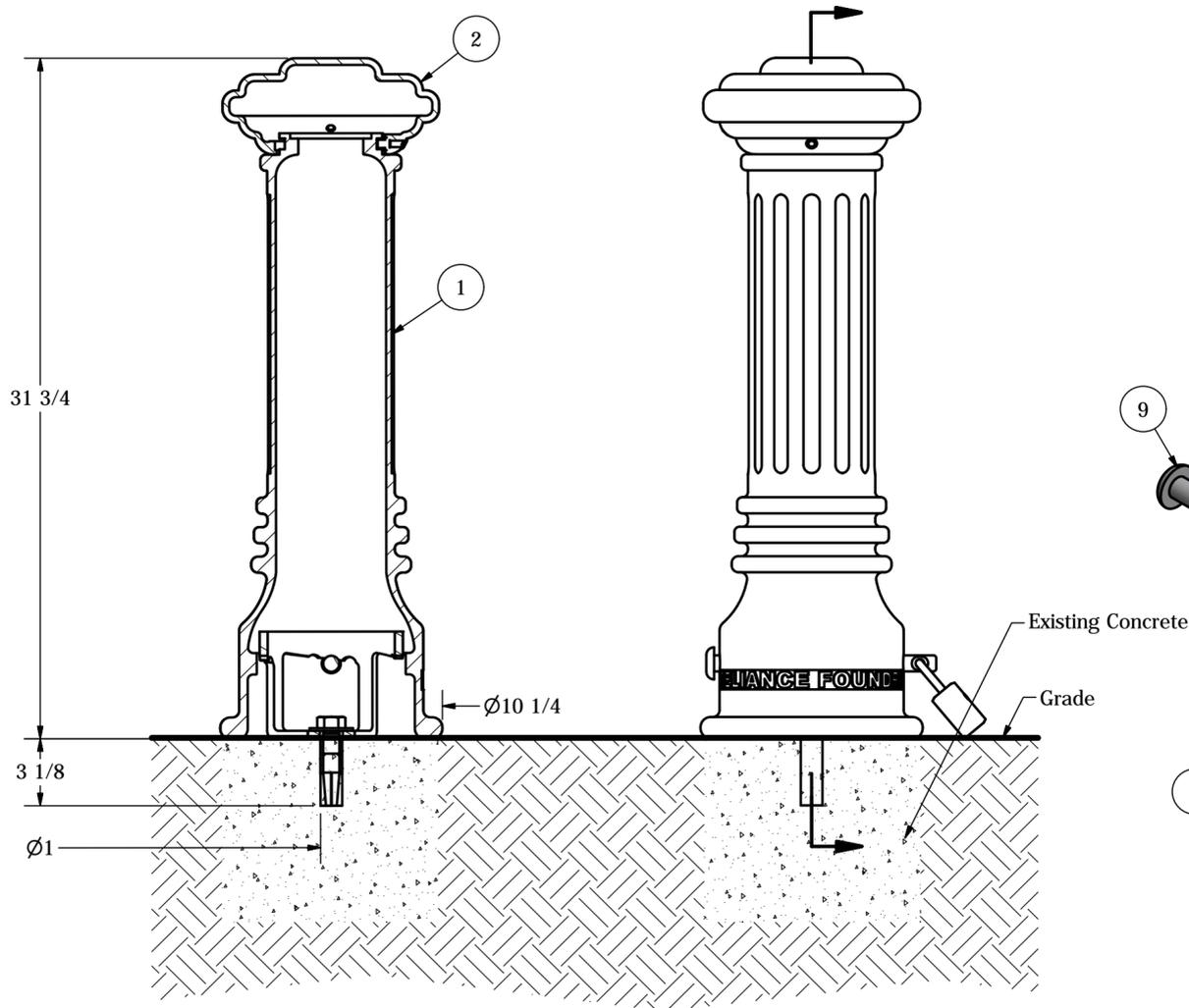
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Bollard R-7591

SIZE	DWG NO	REV
C	R7591	C4

Bollard R-7591



General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
 Base Diameter: 10 1/4"
 Weight: 79 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 4 1/2" x 25" (Diameter x Height)

Finish Options:

☉ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- Post Cover - New Post in New Concrete (see sheet 6 of 12)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- ☉ Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

Notes:

- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
- 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
- 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

Tools needed:

- 1) Measuring tape
- 2) 1 1/8" wrench
- 3) 3/16" hex key
- 4) Hammer drill
- 5) 1" Masonry drill bit
- 6) Hammer
- 7) Drop-in concrete insert setting tool

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
2	1	R7591C	R7591 Cap	Ductile Iron Powder Coated	19 lbs
3	1	Drop-in Concrete Insert 3/4"	Drop-in Concrete Insert 3/4" - requires 1" x 3 1/8" hole (dia. x depth)	Steel Plated	1/2 lbs
4	1	R7500RM 1"	R7500 Removable Mount 1"	Steel Hot Dip Galvanized	4 5/8 lbs
5	1	Washer 3/4" OD 2"	Washer 3/4" OD 2" Thick 1/8"	Steel Plated	1/8 lbs
6	1	Hex Bolt 3/4" x 1 1/4"	Hex Bolt 3/4" x 1 1/4" - requires 1 1/8" wrench	Steel Plated	1/4 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	
9	1	R7500 Lock Pin 3/4" x 10"	R7500 Lock Pin 3/4" x 10"	Steel Powder Coated	1 1/2 lbs
10	1	Padlock (Optional)	Optional Padlock (Brass or Stainless Steel)	Choice of Brass or Stainless Steel	5/8 lbs

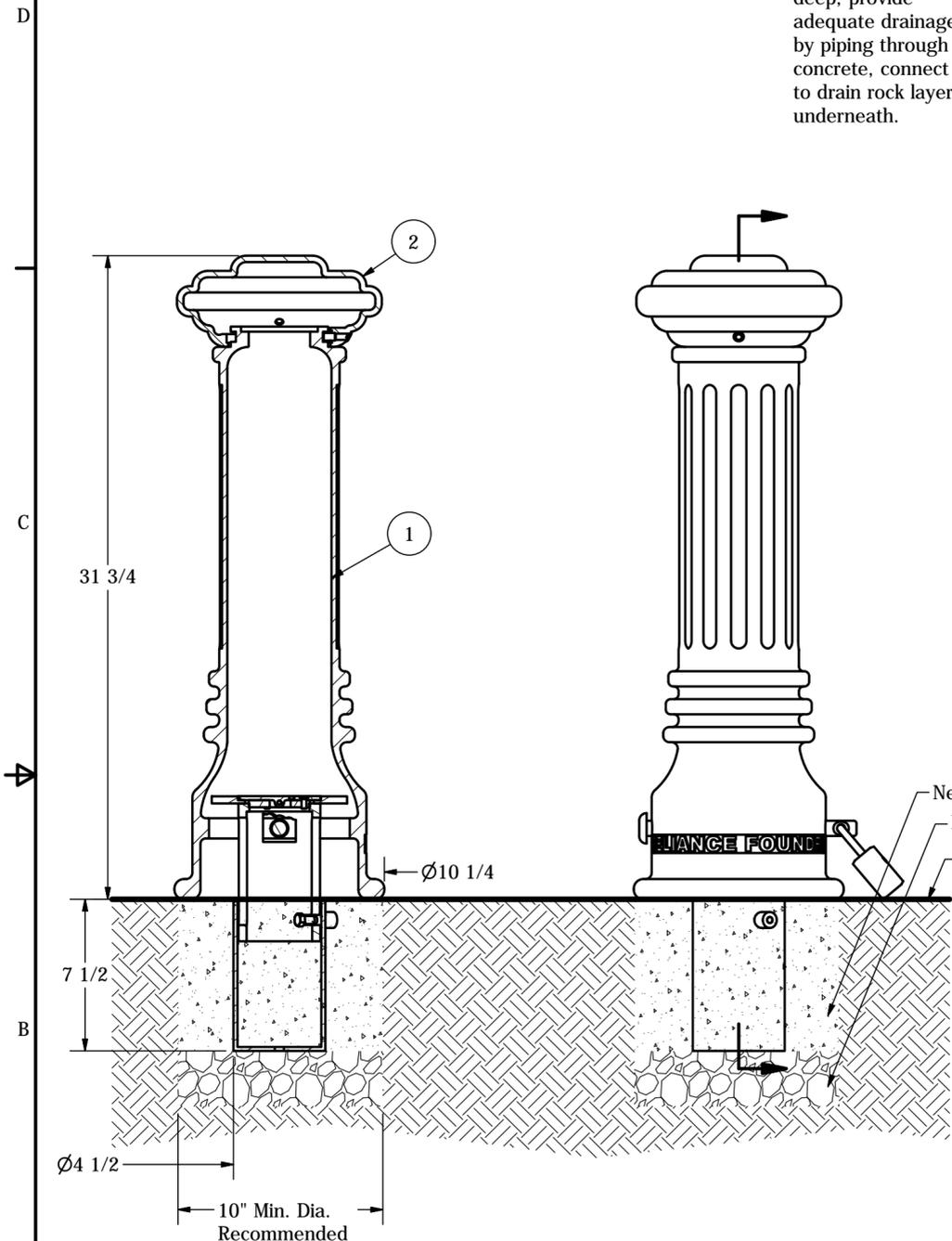
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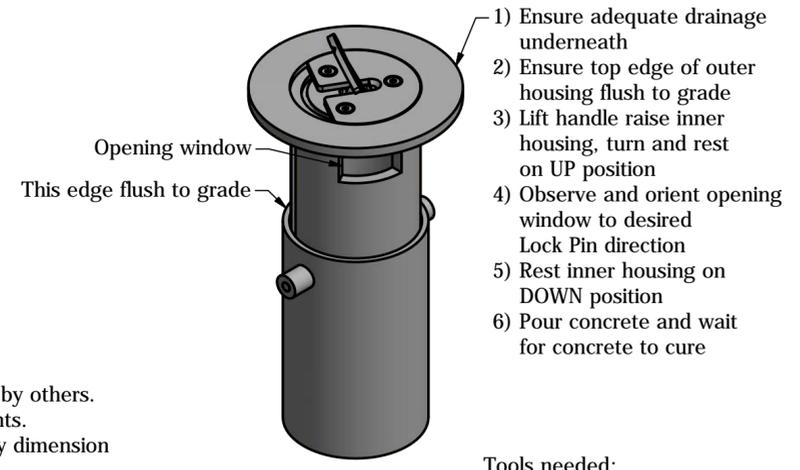
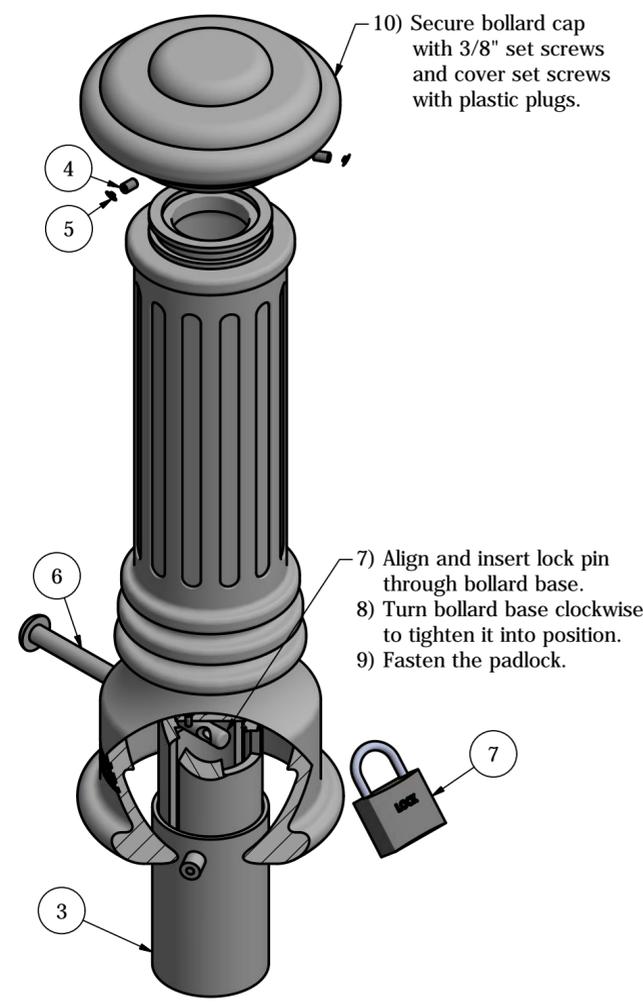
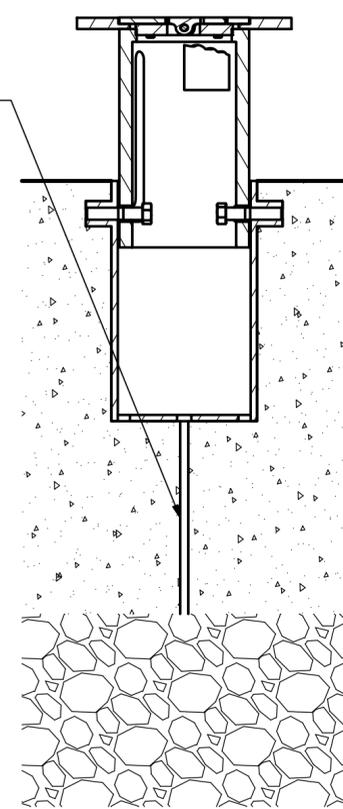
Bollard R-7591

SIZE	DWG NO	REV
C	R7591	C4

Bollard R-7591



* If local frost line exceeds 7-1/2" deep, provide adequate drainage by piping through concrete, connect to drain rock layer underneath.



Tools needed:
1) Measuring tape
2) 3/16" allen key

General Description:

The R-7591 Decorative Bollard features a classic design, suitable for traditional and contemporary environments. R-7591 bollards are made from a versatile ductile iron, featuring decorative fluting and corniced top casting for simple but elegant stature. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 31 3/4"
Base Diameter: 10 1/4"
Weight: 79 lbs (Bollard Only)
Material: Ductile Iron
Max. Interior Security Post Size:
4 1/2" x 25" (Diameter x Height)

Finish Options:

☉ Polyester Powdercoated
See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 12)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 12)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 12)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 12)
- Post Cover - New Post in New Concrete (see sheet 6 of 12)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 12)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 12)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 12)
- Removable - Anchor Casting in New Concrete (see sheet 10 of 12)
- Removable - Concrete Insert Anchor in Existing Concrete (see sheet 11 of 12)
- ☉ Removable - Premium Retractable in New Concrete (see sheet 12 of 12)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

- Notes:
- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
 - 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
 - 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
 - 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7591B	R7591 Base	Ductile Iron Powder Coated	60 lbs
2	1	R7591C	R7591 Cap	Ductile Iron Powder Coated	19 lbs
3	1	R7000	R7000 Retractable Removable Mount w/ Spacer L	Steel Hot Dip Galvanized	17 1/2 lbs
4	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
5	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	
6	1	R7500 Lock Pin 3/4" x 10"	R7500 Lock Pin 3/4" x 10"	Steel Powder Coated	1 1/2 lbs
7	1	Padlock (Optional)	Optional Padlock (Brass or Stainless Steel)	Choice of Brass or Stainless Steel	5/8 lbs

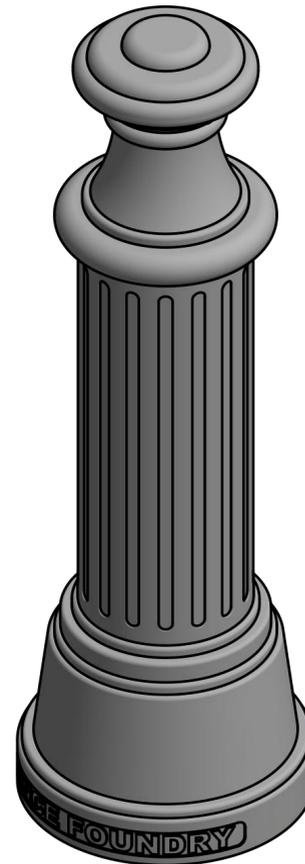
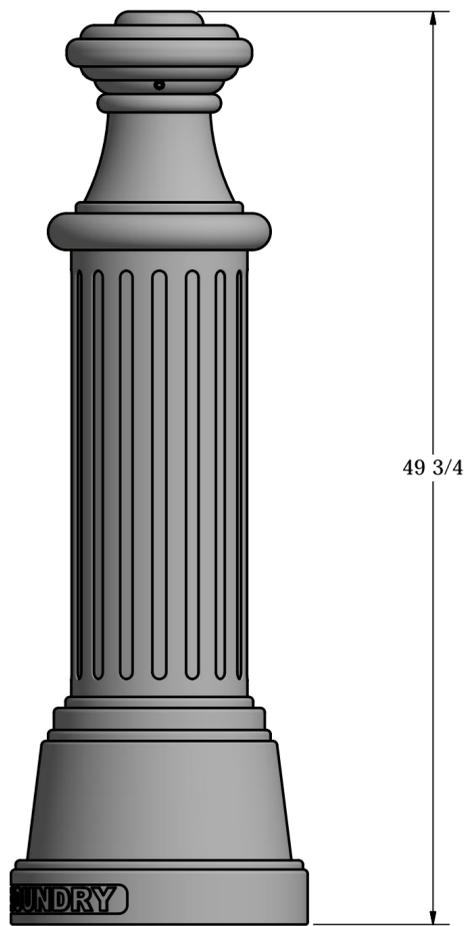
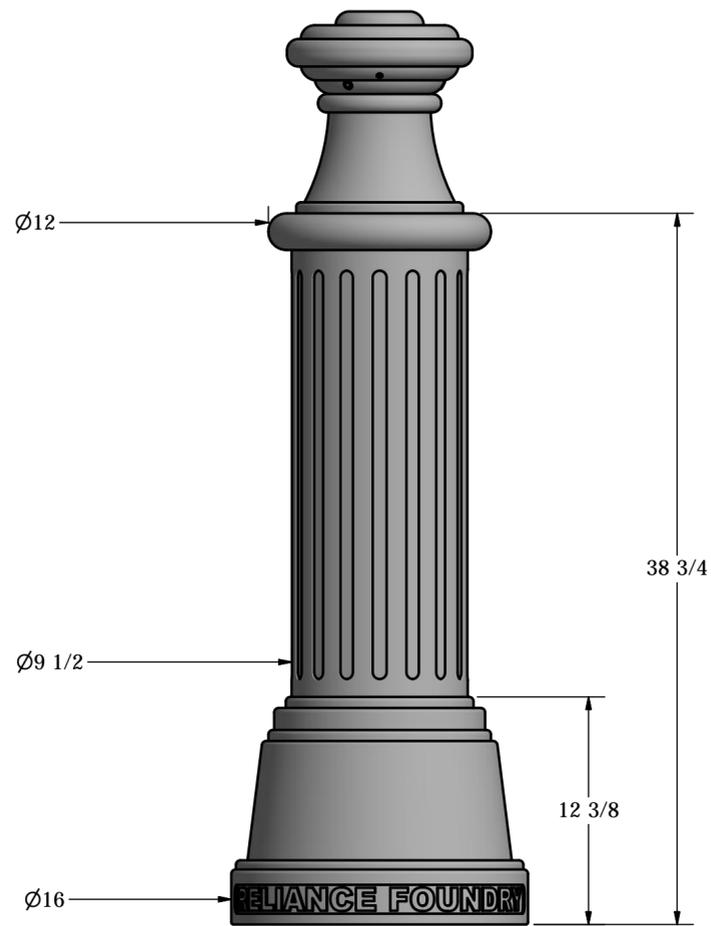


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Bollard R-7591

SIZE	DWG NO	REV
C	R7591	C4

Bollard R-7583



General Description:

The R-7583 Decorative Bollard is modelled after cannon barrels once used as boundary markers to demarcate newly conquered territories. R-7583 bollards are topped with a wide banded finial for simple but elegant stature. Made from versatile ductile iron, its wide body suits larger pipe reinforcement (up to 8" diameter) for better impact protection. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 49 3/4"
 Base Diameter: 16"
 Weight: 204 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 8" x 36" (Diameter x Height)

Finish Options:

☉ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 9)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 9)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 9)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 9)
- Post Cover - New Post in New Concrete (see sheet 6 of 9)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 9)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 9)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 9)

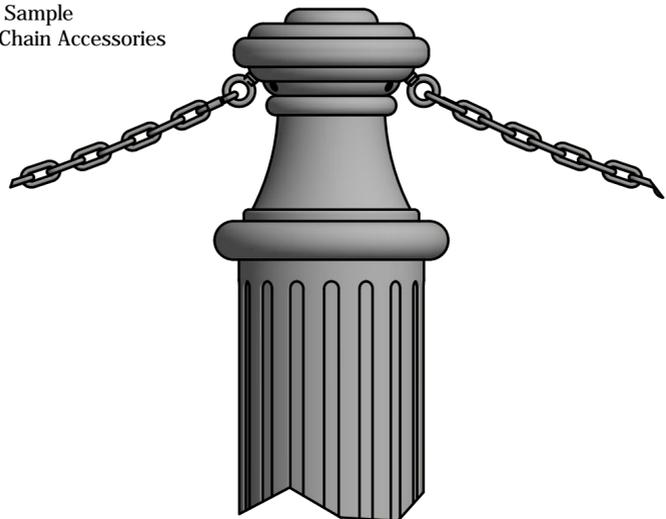
For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

Installation Sample with 5/16" Chain Accessories



Bollard Chain Eye 3/8"
(Powder Coated)



Quick Link Connector 5/16"
(Powder Coated)



Bollard Chain 5/16"
(Powder Coated)

Optional Accessories:

- Chain Eye
- Quick link
- Chain (5/16")

See Reliance Foundry's optional accessories at:
www.reliance-foundry.com/bollard/accessories-bollards

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TITLE

Bollard R-7583

SIZE	DWG NO	REV
C	R7583	C4

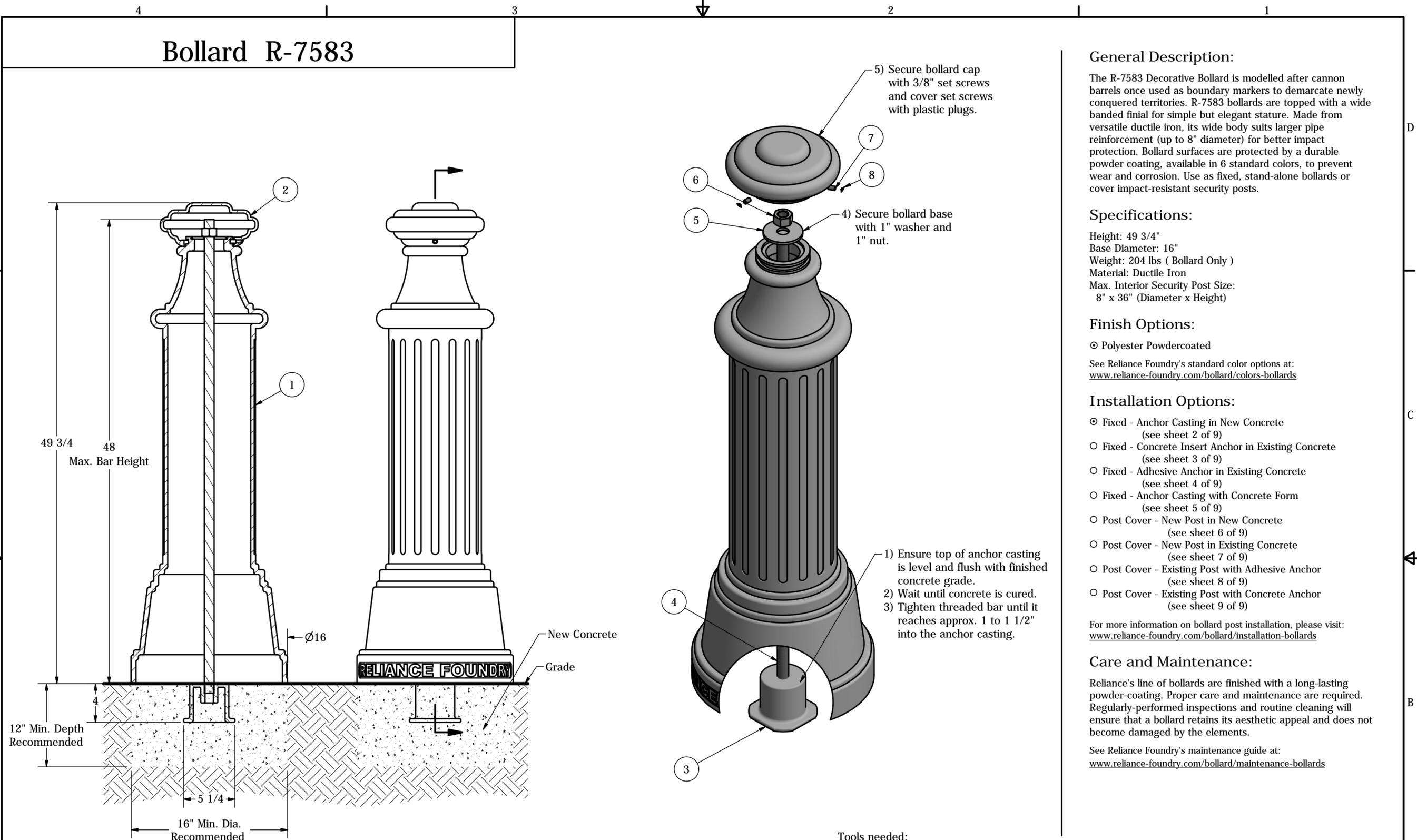
Bollard R-7583

D

C

B

A



49 3/4
48
Max. Bar Height

12" Min. Depth
Recommended

16" Min. Dia.
Recommended

Notes:

- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
- 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
- 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

Tools needed:

- 1) Measuring tape
- 2) 1 1/2" wrench
- 3) 3/16" hex key

General Description:

The R-7583 Decorative Bollard is modelled after cannon barrels once used as boundary markers to demarcate newly conquered territories. R-7583 bollards are topped with a wide banded finial for simple but elegant stature. Made from versatile ductile iron, its wide body suits larger pipe reinforcement (up to 8" diameter) for better impact protection. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 49 3/4"
Base Diameter: 16"
Weight: 204 lbs (Bollard Only)
Material: Ductile Iron
Max. Interior Security Post Size:
8" x 36" (Diameter x Height)

Finish Options:

- ⊙ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- ⊙ Fixed - Anchor Casting in New Concrete (see sheet 2 of 9)
- Fixed - Concrete Insert Anchor in Existing Concrete (see sheet 3 of 9)
- Fixed - Adhesive Anchor in Existing Concrete (see sheet 4 of 9)
- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 9)
- Post Cover - New Post in New Concrete (see sheet 6 of 9)
- Post Cover - New Post in Existing Concrete (see sheet 7 of 9)
- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 9)
- Post Cover - Existing Post with Concrete Anchor (see sheet 9 of 9)

For more information on bollard post installation, please visit:
www.reliance-foundry.com/bollard/installation-bollards

Care and Maintenance:

Reliance's line of bollards are finished with a long-lasting powder-coating. Proper care and maintenance are required. Regularly-performed inspections and routine cleaning will ensure that a bollard retains its aesthetic appeal and does not become damaged by the elements.

See Reliance Foundry's maintenance guide at:
www.reliance-foundry.com/bollard/maintenance-bollards

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7583B	R7583 Base	Ductile Iron Powder Coated	185 lbs
2	1	R7583C	R7583 Cap	Ductile Iron Powder Coated	19 lbs
3	1	R7500AN 1"	R7500 Anchor Casting 1"	Ductile Iron Hot Dip Galvanized	8 3/8 lbs
4	1	R7500BAR 1"	R7500 Threaded Bar 1" x 49"	Steel Plated	9 1/8 lbs
5	1	Washer 1" OD 3 1/2"	Washer 1" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
6	1	Hex Nut 1"	Hex Nut 1" - requires 1 1/2" wrench	Steel Plated	1/4 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

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TITLE

Bollard R-7583

SIZE
C

DWG NO
R7583

REV
C4

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NOT TO SCALE

SHEET 2 OF 9

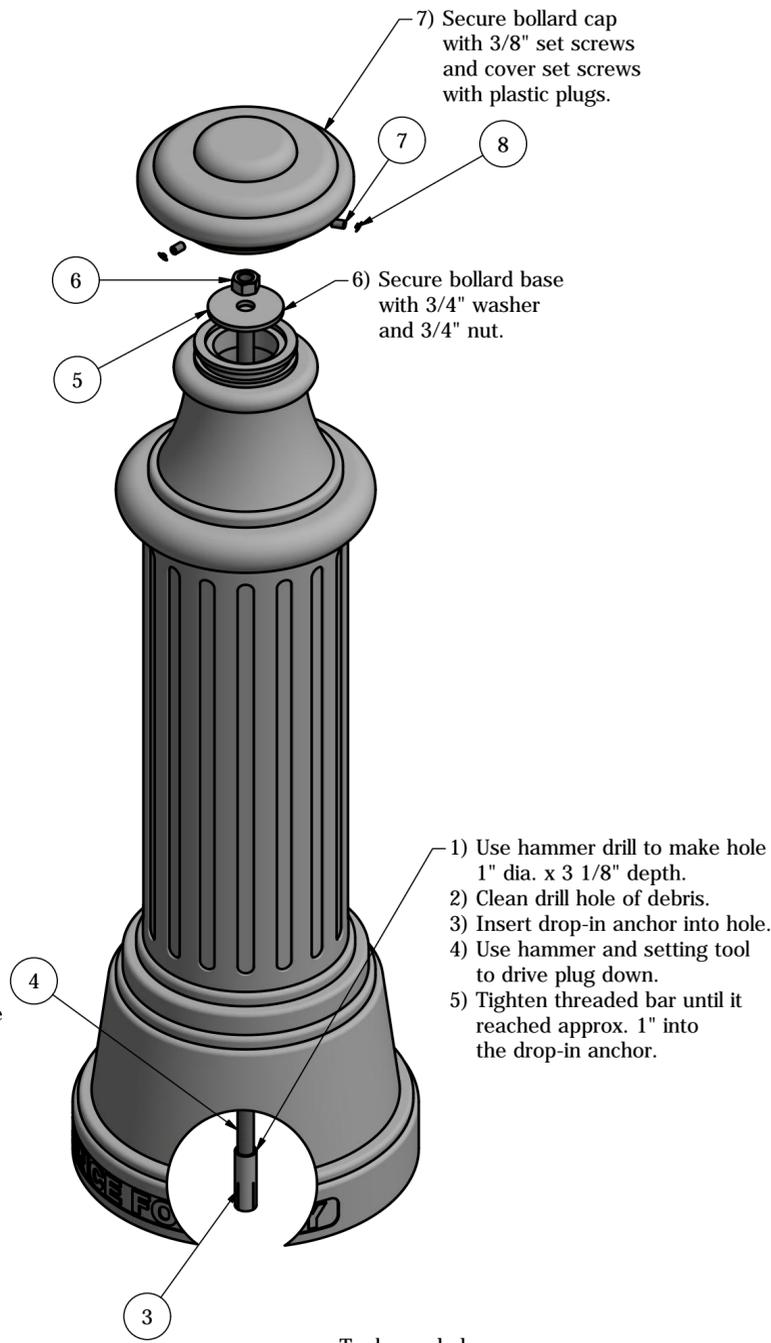
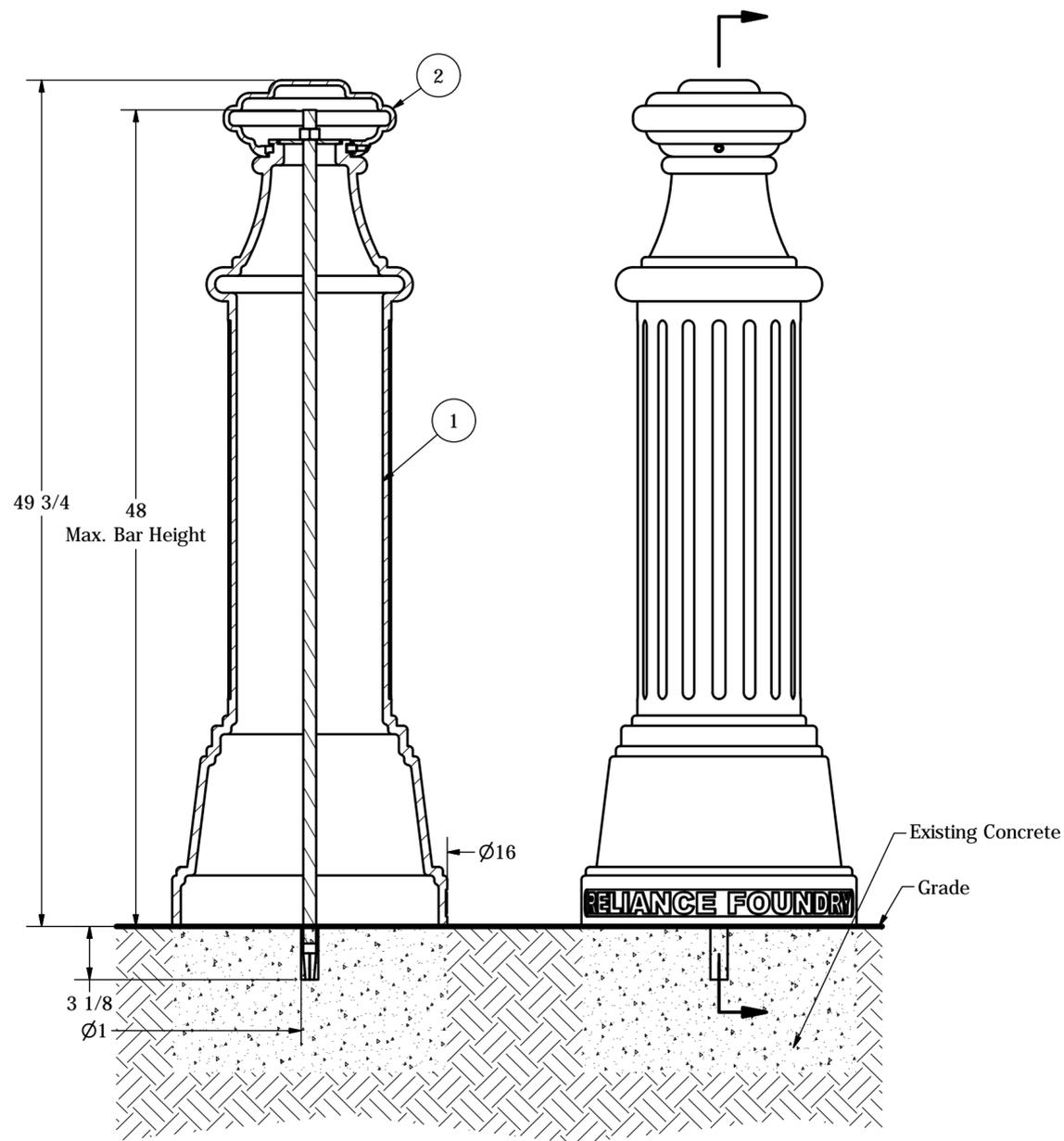
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1

Bollard R-7583



General Description:

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Specifications:

Height: 49 3/4"
 Base Diameter: 16"
 Weight: 204 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 8" x 36" (Diameter x Height)

Finish Options:

☉ Polyester Powdercoated
 See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 9)
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- Fixed - Anchor Casting with Concrete Form (see sheet 5 of 9)
- Post Cover - New Post in New Concrete (see sheet 6 of 9)
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- Post Cover - Existing Post with Adhesive Anchor (see sheet 8 of 9)
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www.reliance-foundry.com/bollard/maintenance-bollards

- Notes:
- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
 - 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
 - 3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
 - 4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

- Tools needed:
- 1) Measuring tape
 - 2) 1 1/8" wrench
 - 3) 3/16" hex key
 - 4) Hammer drill
 - 5) 1" Masonry drill bit
 - 6) Hammer
 - 7) Drop-in concrete insert setting tool

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7583B	R7583 Base	Ductile Iron Powder Coated	185 lbs
2	1	R7583C	R7583 Cap	Ductile Iron Powder Coated	19 lbs
3	1	Drop-in Concrete Insert 3/4"	Drop-in Concrete Insert 3/4" - requires 1" x 3 1/8" hole (dia. x depth)	Steel Plated	1/2 lbs
4	1	R7500BAR 3/4"	R7500 Threaded Bar 3/4" x 49"	Steel Plated	5 1/8 lbs
5	1	Washer 3/4" OD 3 1/2"	Washer 3/4" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
6	1	Hex Nut 3/4"	Hex Nut 3/4" - requires 1 1/8" wrench	Steel Plated	1/8 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

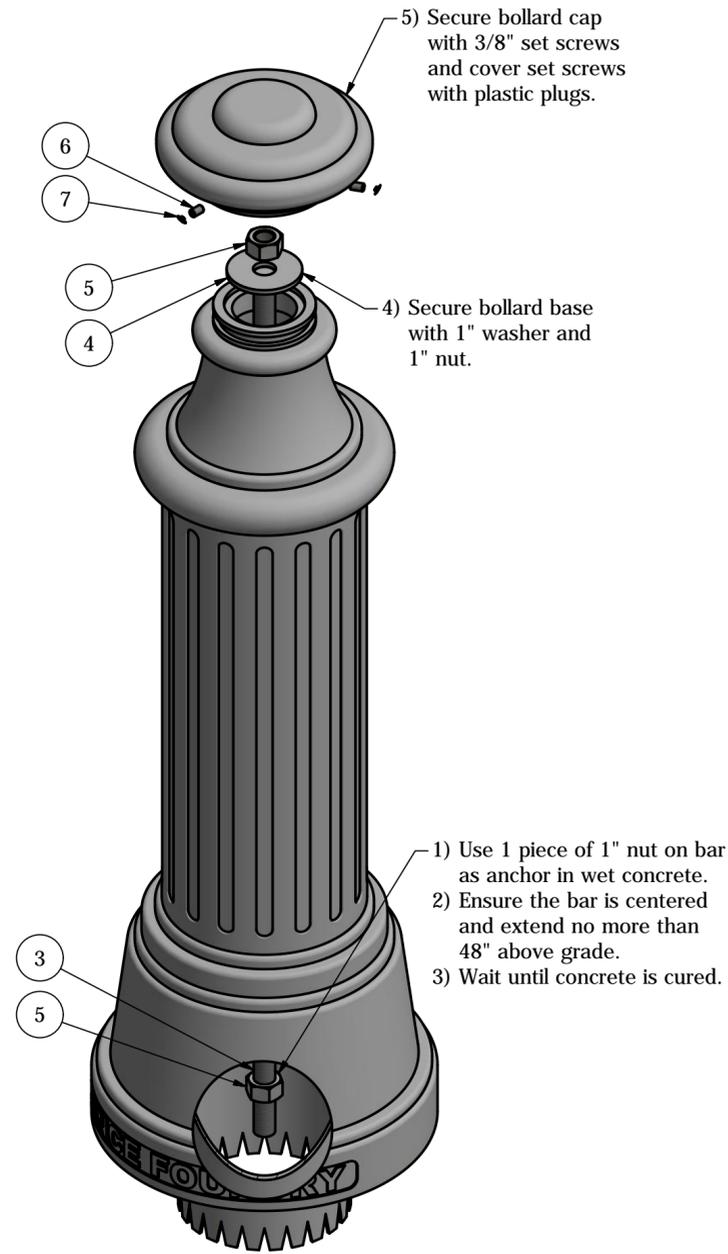
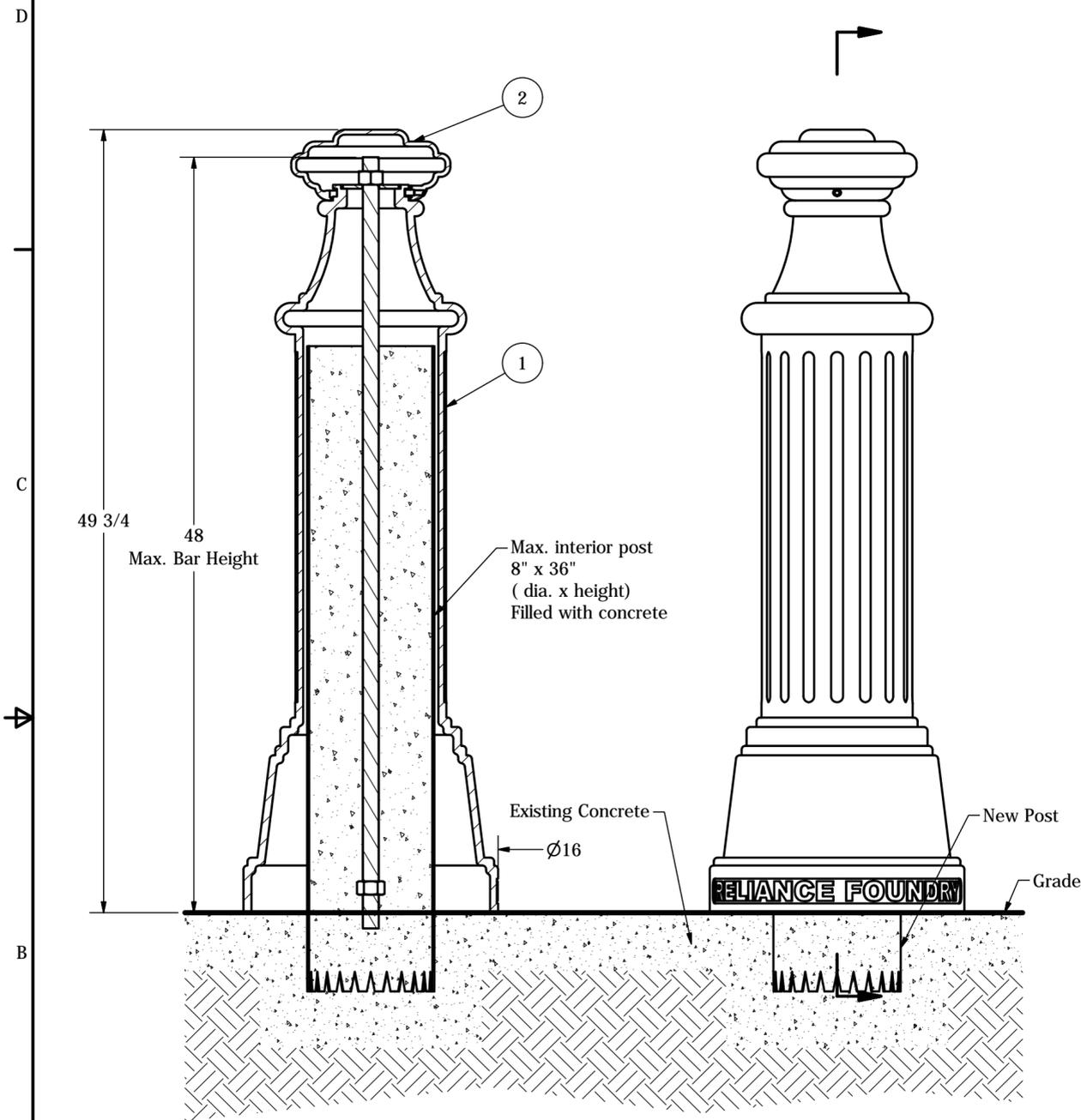


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Bollard R-7583

SIZE	DWG NO	REV
C	R7583	C4

Bollard R-7583



General Description:

The R-7583 Decorative Bollard is modelled after cannon barrels once used as boundary markers to demarcate newly conquered territories. R-7583 bollards are topped with a wide banded finial for simple but elegant stature. Made from versatile ductile iron, its wide body suits larger pipe reinforcement (up to 8" diameter) for better impact protection. Bollard surfaces are protected by a durable powder coating, available in 6 standard colors, to prevent wear and corrosion. Use as fixed, stand-alone bollards or cover impact-resistant security posts.

Specifications:

Height: 49 3/4"
 Base Diameter: 16"
 Weight: 204 lbs (Bollard Only)
 Material: Ductile Iron
 Max. Interior Security Post Size:
 8" x 36" (Diameter x Height)

Finish Options:

⊙ Polyester Powdercoated

See Reliance Foundry's standard color options at:
www.reliance-foundry.com/bollard/colors-bollards

Installation Options:

- Fixed - Anchor Casting in New Concrete (see sheet 2 of 9)
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For more information on bollard post installation, please visit:
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Care and Maintenance:

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Notes:

- 1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
- 2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
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Tools needed:

- 1) Measuring tape
- 2) 1 1/2" wrench
- 3) 3/16" hex key

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ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
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3	1	R7500BAR 1"	R7500 Threaded Bar 1" x 49"	Steel Plated	9 1/8 lbs
4	1	Washer 1" OD 3 1/2"	Washer 1" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
5	2	Hex Nut 1"	Hex Nut 1" - requires 1 1/2" wrench	Steel Plated	1/4 lbs
6	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
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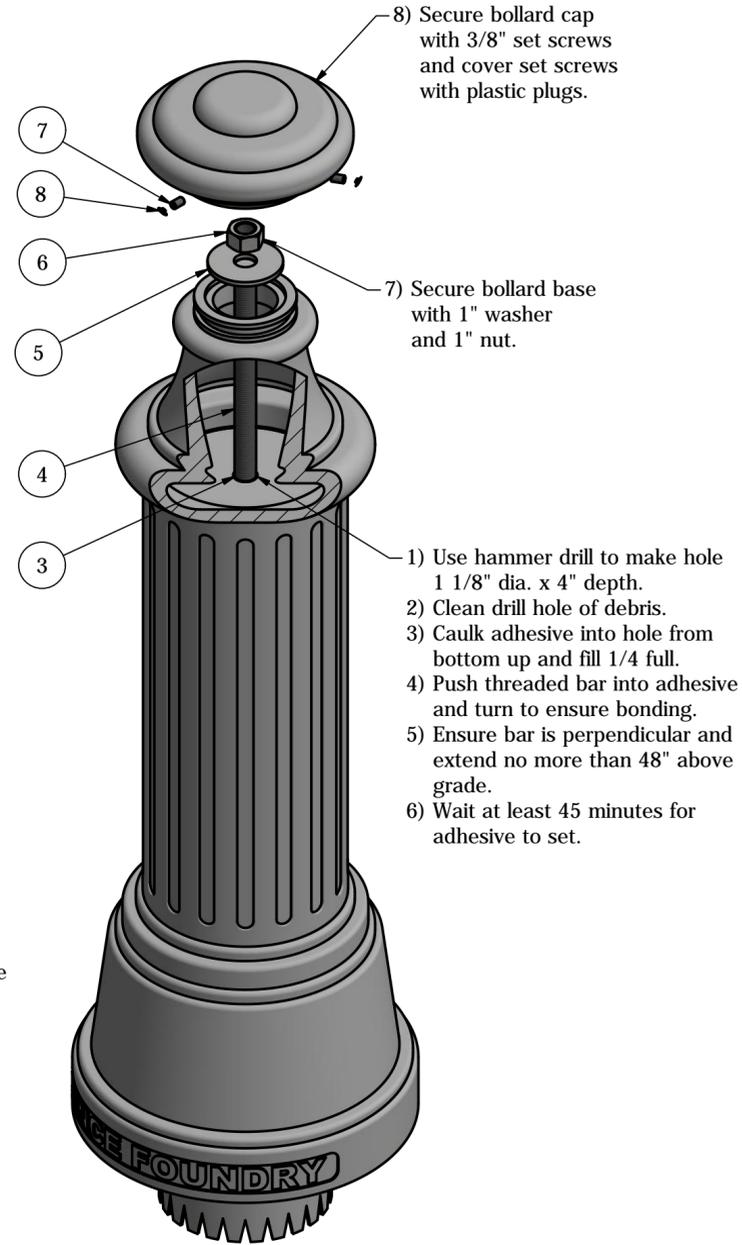
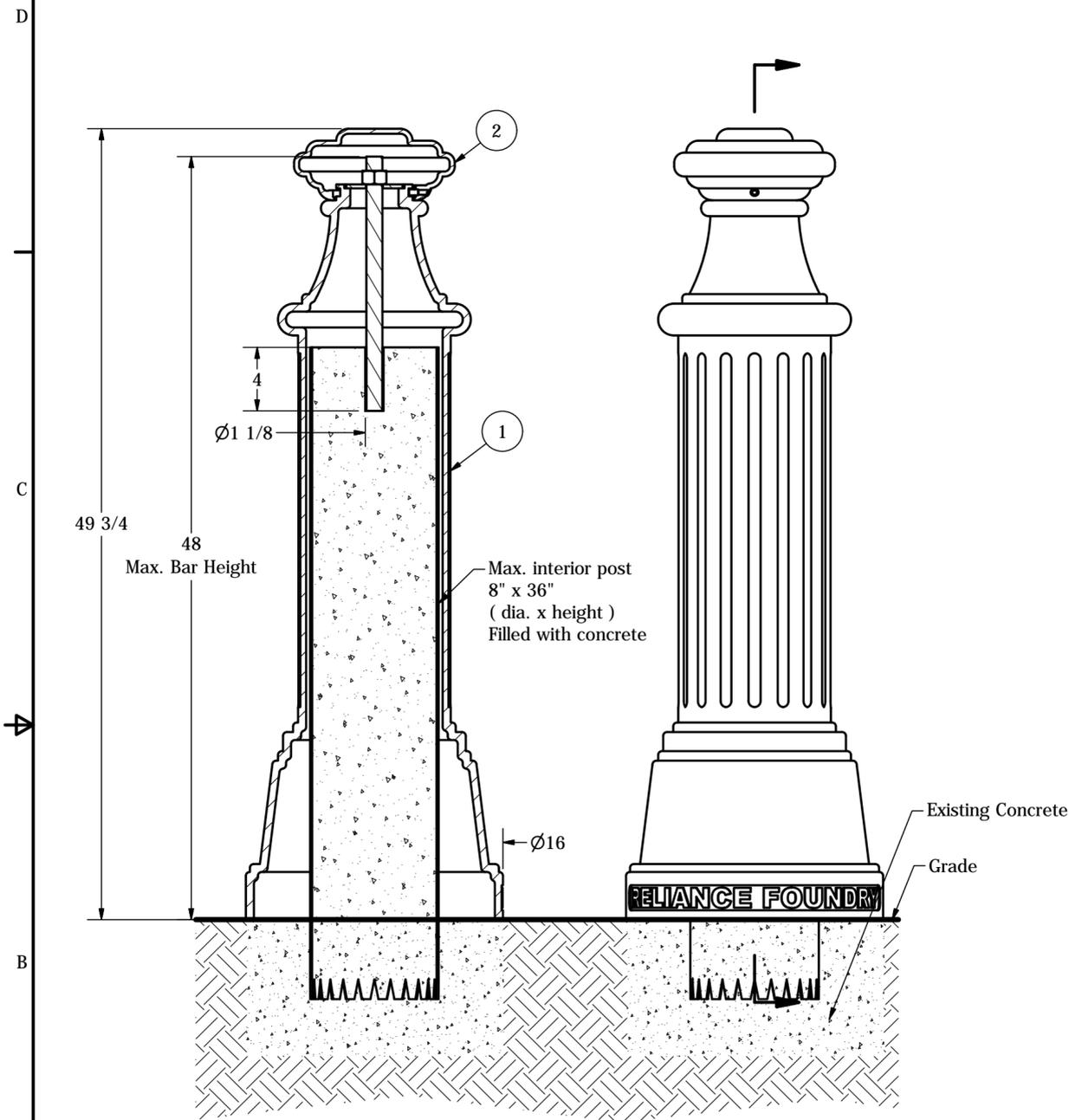
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Bollard R-7583

SIZE	DWG NO	REV
C	R7583	C4

Bollard R-7583



General Description:

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Finish Options:

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Installation Options:

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Tools needed:

- 1) Measuring tape
- 2) 1 1/2" wrench
- 3) 3/16" hex key
- 4) Hammer drill
- 5) 1 1/8" Masonry drill bit
- 6) Caulking gun and utility knife

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
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2	1	R7583C	R7583 Cap	Ductile Iron Powder Coated	19 lbs
3	1	Adhesive Anchor	AC100+ Gold Adhesive Anchoring System	Vinylester Adhesive Mortar	5/8 lbs
4	1	R7500BAR 1"	R7500 Threaded Bar 1" Custom Order Length	Steel Plated	TBD
5	1	Washer 1" OD 3 1/2"	Washer 1" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
6	1	Hex Nut 1"	Hex Nut 1" - requires 1 1/2" wrench	Steel Plated	1/4 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

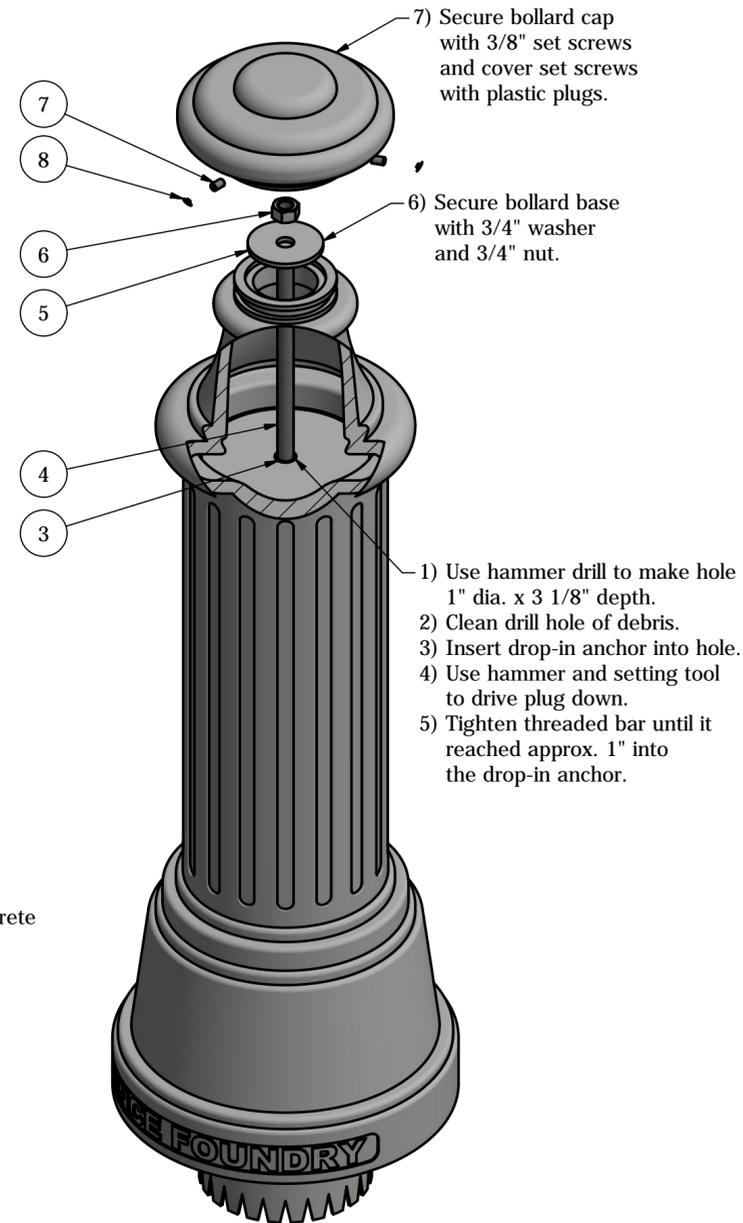
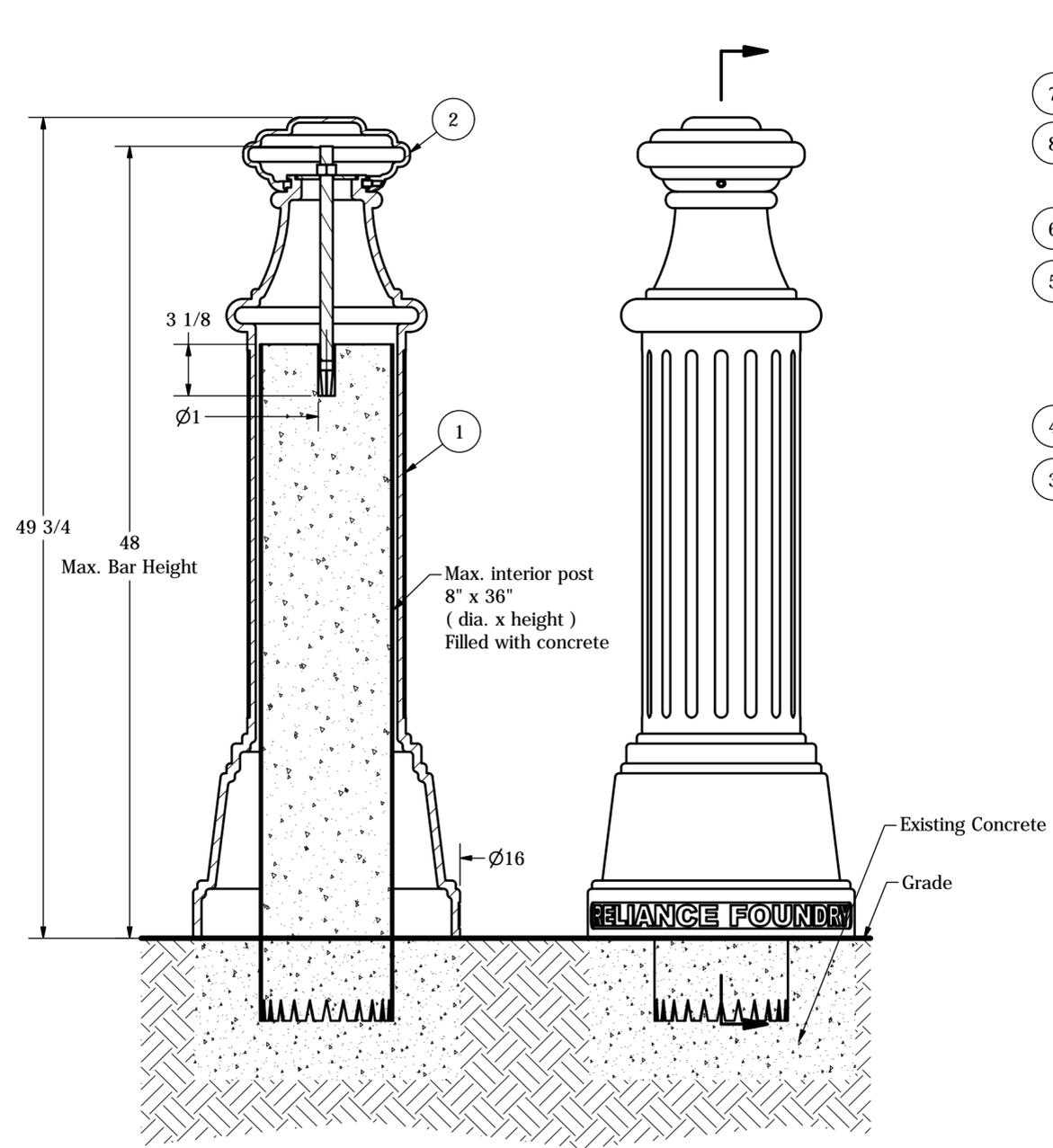
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Bollard R-7583

SIZE	DWG NO	REV
C	R7583	C4

Bollard R-7583



General Description:
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- Tools needed:**
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 - 2) 1 1/8" wrench
 - 3) 3/16" hex key
 - 4) Hammer drill
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 - 6) Hammer
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PARTS LIST

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6	1	Hex Nut 3/4"	Hex Nut 3/4" - requires 1 1/8" wrench	Steel Plated	1/8 lbs
7	3	Hexagon Socket Set Screw 3/8" x 5/8"	Hexagon Socket Set Screw 3/8" x 5/8" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	



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Bollard R-7583

SIZE	DWG NO	REV
C	R7583	C4

SECTION 353119 - STONE SCOUR PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes: This section contains the requirements for furnishing all plant, labor, equipment, materials, transportation and delivery, incidentals, and performing all operations in connection with the procurement and delivery of all specified grades of stone, including Scour Stone (Existing Salvaged On-Site Armor Stone, Type A1 Armor, Type B1 Armor, Core Stone, and Boat Launch Scour Stone) for scour protection, and CA-1 and CA-7 under all new concrete placements.

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. At the initial preconstruction meeting, submit intended scour protection construction procedures and quality control plan containing the following information as a minimum:
 - a. Placement equipment for each stone classification.
 - b. Anticipated placement and delivery rates for each stone classification.
 - c. Survey control and check survey procedures.
 - d. Stone source(s) material quality data and quality control procedures.

1.4 QUALITY ASSURANCE

- A. Stone Quality and Gradation:
 - 1. Establish and maintain quality control for all Work performed at the quarry and at the job site to ensure compliance with the specifications. Submit the written quality control plan to the Engineer for approval prior to material production.
 - 2. The Engineer reserves the right to inspect the quarry operations at any time to check for compliance to the specifications.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Exercise care in the transportation, including loading and unloading, of all stone materials to prevent cracking, splitting, spalling, etc. that would otherwise lead to rejection at the job site.
- B. Handle and store bedding material to ensure that stockpiles are not contaminated with other soils and materials, and to limit the segregation of material sizes.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:

1. All scour protection stone materials to be furnished under this Agreement shall meet all requirements specified in this section. The Engineer, at any time during the Agreement, will reject materials at the source or at the job site for failure to meet the specified requirements. Inspection of materials at the quarry or at the job site shall be as specified in Quality Control. Inspection and testing of materials shall be as specified in Material Quality. Materials which have been delivered to the Project site and are rejected, whether in stockpile or in place in the structure, shall be removed from the Project site at the Contractor's expense.

B. STONE GRADATIONS

1. Existing Salvaged On-Site Armor Stone
 - a. Existing On-Site Armor Stone located on the east side of the existing barge breakwater in Lake Michigan. Contractor to salvage stones larger than 18 inches and stockpile for re-use as scour protection.
2. Supplemental Armor Stone:
 - a. Material having the gradations listed below shall be placed in the Work at the locations as shown on the Contract Drawings. Gradation limits are in-place requirements. Adjustments in production, transportation and placement methods shall be made as necessary to ensure final placed materials are within specified ranges. Within each gradation, a minimum of 50% of the stones by number shall be larger than the median stone weight:

Designation	Description	Weight Range	Median Weight
TYPE A Armor	Armor Stone	250 lbs - 1130 lbs	750 lbs
TYPE B Armor	IDOT RR7	100 lbs - 500 lbs	300 lbs

3. Core Stone:

- a. Material having the gradations listed below shall be placed in the Work at the locations as shown on the Contract Drawings. Gradation limits are in-place requirements. Adjustments in production, transportation and placement methods shall be made as necessary to ensure final placed materials are within specified ranges. Within each gradation, a minimum of 50% of the stones by number shall be larger than the median stone weight:

Designation	Description	Weight Range	Median Weight
-------------	-------------	--------------	---------------

IDOT RR3 1lb -50 lb

4. BOAT LAUNCH SCOUR PROTECTION STONE

- a. Material having the gradations listed below shall be placed in the Work at the locations as shown on the Contract Drawings. Gradation limits are in-place requirements. Adjustments in production, transportation and placement methods shall be made as necessary to ensure final placed materials are within specified ranges. Within each gradation, a minimum of 50% of the stones by number shall be larger than the median stone weight:

Designation	Description	Weight Range	Median Weight
BOAT LAUNCH SCOUR STONE	IDOT RR3	1 lb - 50 lb	10 lb

5. All stone shall have a minimum specific gravity of 2.6 based on water having a unit weight of 62.4 pounds per cubic foot.
6. The neat lines representing the limits of the armor stone and the core stone for revetment construction, as shown on the Contract Drawings, are based on either one or two layers of stone with an average density of 162 pounds per cubic foot (specific gravity 2.6). If the specific gravity of the stone selected by the Contractor differs to the extent that the layer thicknesses change from what is indicated on the Contract Drawings, redesigning of the section will be required by the Engineer.
7. The least dimension of any piece of armor shall not be less than one-half of its greatest dimension when measured mutually perpendicular. The least dimension of any piece of core stone shall not be less than one-quarter of its greatest dimension.
8. All armor stone shall have angular faces that are fractured, split or the actual bedding plane surface.

C. Filter Fabric for boat launch scour stone:

1. Filter fabric shall be a woven monofilament geotextile and meet the following minimum physical property requirements:

Property	Test Method	Requirements
Tensile Strength	ASTM D1682 E	200 lbs.
Puncture Resistance	ASTM D751	135 lbs.
Burst Strength, Mullen	ASTM D751	425 psi
Apparent Opening Size (EOS)	ASTM D4751	100 US std. sieve
Permeability	ASTM D4491	0.4 cm/sec

2.2 MATERIAL QUALITY

- A. All stone shall be highly resistant to weathering and disintegration under freezing and thawing and wetting and drying conditions, and shall be of a quality to ensure permanence of the structure in the climate in which it is to be used. The stone shall be durable, sound, free from detrimental cracks, seams and other defects which tend to increase deterioration from natural causes or cause breakage in handling and/or placing. A high argillaceous or shale content is often indicative of poorer quality rock being more susceptible to weathering, abrasion, thin bedding, close fracturing and other undesirable rock properties.
- B. All stone shall be from US Army Corps of Engineers (USACE) inspected, tested and approved quarries for similar armor stone shore protection applications or shall be submitted and approved by the USCAE prior to acceptance and use.
- C. To ensure visual continuity, all armor stone shall be obtained from the same geologic formation.

2.3 SOURCES

- A. Previously Approved:
 - 1. The following listed sources have been approved by the USACE for similar armor stone (and core stone) scour stone protection applications. All stone shall be produced from the sources listed below, or meet the requirements of Other Sources.
 - a. Thornton, 1322 South Williamas St, Thornton, IL Hanson Material Service
 - b. Yard 672, 25142 Quarry Ave., Athlens, IL, Handson Material Group
 - c. Valley Run, 10425 Joliet Rd, Libson, IL 60541
 - d. Waterloo, W11184 Hubbleton Rd, Waterloo, WI 53594 Michels Materials
 - 2. The potential suppliers listed have not been investigated with respect to the availability of specific quantities and sizes of the material required for the Project at the proposed time of construction. The listing of potential suppliers only indicates that there could be some material at the source, if selected areas and appropriate quarrying techniques are used, that meets all the requirements specified. The listing of potential suppliers does not guarantee that the quality or sufficient quantities of materials necessary for this contract are available in any of the sources listed nor does it guarantee that economical production can be obtained from that source.
 - 3. Nothing herein is to be construed as implying that potential suppliers listed are actually interested in or capable of producing or offering stone in the size, gradation, weights or quantities required, or that transportation from the supplier is available. The Contractor shall verify each supplier for its capability to produce the quantity required of the quality, sizes, gradation or weights specified in the time frame allocated for this Project.
 - 4. If it is found during the contract that acceptable materials and quantities of materials cannot be obtained by the Contractor from the original source(s), the Contractor may request approval to use alternate source(s) from the list of approved suppliers. Obtaining and furnishing materials from the substitute source(s) shall be at no additional cost to the Owner.

- B. Other Sources:
1. If the Contractor elects to use stone from a source not indicated as previously approved, the material must be approved by the Engineer, prior to its production, for use on this Project. This approval process may include any or all of the following, as directed by the Engineer.
 - a. Test samples of the proposed stone shall be obtained by the Contractor at its own expense. Samples selected for testing shall be representative of material formations in the quarry to be used or being used on the Project. The Engineer or its representative must be present and agree on the selection of all test samples prior to shipment. The Engineer may personally select all samples if he so elects. If specified sizes are in excess of 2,000 pounds, 1 ton samples will be taken.
 - b. The samples shall be shipped or delivered by the Contractor, at its expense, to the Rock Laboratory Director, U.S. Engineer Waterways Experimental Station, 3903 Halls ferry Road, Vicksburg, MS 39180 in accordance with USACE protocol.
 - c. Tests to which the material may be subject to include one or more of the following: petrographic examination; specific gravity; abrasion; absorption; wetting and drying; freezing and thawing; soundness; compressive strength; expansion; tensile strength; pulse velocity; gradation; water content; dry unit weight and total porosity; elastic modulus; direct shear; and any other tests determined necessary to ensure that the stone is suitable for its intended use.
 - d. Allow sufficient time for the testing to be completed such that there are no delays in construction.
 - e. If the Contractor elects to use material from a source not previously approved, all costs incurred as a result of testing to verify material acceptability shall be the responsibility of the Contractor.

PART 3 - EXECUTION

3.1 QUARRY OPERATIONS

- A. Quarry operations shall be conducted by the Contractor/supplier in a manner that will produce stone conforming to the requirements specified, and may involve selective quarrying, handling and loading as necessary. Blasting and handling of rock shall be controlled by the Contractor/supplier to produce rock of the size ranges and quality specified. Techniques such as the use of proper hole diameter, hole depth, hole angle, burden and spacing distances, types and distribution of explosives, delay interval and sequence, removal of muck piles between each shot and special handling techniques will be required as necessary to produce the specified materials. All specifications of blasting operations shall be specifically designed so that the end product is not damaged from the blasting technique and that the stone is suitable for the intended purpose.

3.2 CURING STONE

- A. All sedimentary quarry stone from any source shall be stockpiled at the quarry a minimum of 48 hours prior to shipment to the Project site. No stone production shall be allowed prior to 1 April or after 1 November; unless quarry history is available to ensure that durable stone can be quarried in freezing temperatures.

3.3 PLACEMENT

A. General:

1. Placement of all stone materials shall not deviate from the neat lines as shown on the Contract Drawings by more than the tolerances described in this section, unless directed by the Engineer.
2. Approval of placement and/or check surveys for any stone set, or portion thereof, does not constitute final acceptance. The stone Work will be considered substantially complete when the Engineer has approved placement and check surveys for all sets comprising the total length of scour protection Work for the Project. Any damages to approved sets prior to substantial completion, due to Contractor or subcontractor operations, wave activity, or otherwise, shall be repaired by the Contractor at no additional cost to the Owner.

B. Boat Launch Scour Stone:

1. Contractor shall create a generally level lake bed surface along the east end of the boat launch ramp, prior to the placement of boat launch scour stone.
2. Boat launch scour stone shall be placed in sets starting at the toe and proceeding lengthwise along the set, placing both layers simultaneously, with stones placed firmly on the stones beneath.
3. Equipment suitable for handling primary boat launch scour stone of the specified gradation shall be used.
4. All boat launch scour stone shall be placed uniformly within the lines and grades indicated on the Contract Drawings and within the tolerances described in this section.
5. Boat launch scour stone shall be placed in such a manner as to avoid displacing underlying materials and placing undue impact force on underlying materials and to minimize cracking or chipping of stones.
6. Dumping and/or pushing, or the use of dragline buckets or skips, will not be acceptable for placement of core stone.
7. Finishing of slopes will be done as the boat launch scour stone is being placed. The finished primary boat launch scour stone course shall be a well-graded, interlocked mass with rock-to-rock contact.
8. Any damage to the core stone occurring subsequent to approval shall be corrected and resurveyed by the Contractor at no additional cost to the Owner.

C. Core Stone:

1. Contractor shall create a generally level lake bed surface along the east and south sides of the new steel sheet pile breakwater, prior to the placement of core stone.

2. Core stone shall be placed in sets starting at the toe and proceeding lengthwise along the set and upward, placing both layers simultaneously, with stones placed firmly on the stones beneath. Do not place armor stone on the primary core stone until the placement of that set is completed as specified and approved by the Engineer, and check surveys indicate that the set is built to the required lines, grades and tolerances. If the Contractor elects to use multiple placement operations to construct separate primary core stone sets, it must ensure that the specified requirements are met in areas where the sets are to be jointed.
3. Equipment suitable for handling primary core stone of the specified gradation shall be used.
4. All core stone shall be placed uniformly within the lines and grades indicated on the Contract Drawings and within the tolerances described in this section.
5. Core stones shall be placed in such a manner as to avoid displacing underlying materials and placing undue impact force on underlying materials and to minimize cracking or chipping of stones.
6. Dumping and/or pushing, or the use of dragline buckets or skips, will not be acceptable for placement of core stone.
7. Finishing of slopes will be done as the core stone is being placed. The finished primary core stone course shall be a well-graded, interlocked mass with rock-to-rock contact.
8. Any damage to the core stone occurring subsequent to approval, but prior to armor placement, shall be corrected and resurveyed by the Contractor at no additional cost to the Owner.
9. At the end of each work day that core stone is placed, the Contractor will provide a Core Stone Placement Summary to the Engineer. The exact format of the Core Stone Placement Summary shall be determined and agreed upon by the Engineer and Contractor prior to commencement of core stone placement. This summary shall include as a minimum: the tonnage of core stone placed; the stations between which the primary core stone was placed; and total primary core stone placement time.

D. Armor Stone:

1. Contractor shall place salvaged existing on-site armor stone first, and when supply of salvaged material is exhausted, shall utilize new supplemental armor stone to complete the scour protection to the lines and grades indicated on the Contract Drawings.
2. Where indicated on the Contract Drawings, construction of the armor course shall begin at the toe of the structure with the placement of uniformly sized select toe stones. These toe stones will serve to delineate the outer limits of the armor course and act as an anchor stone.
3. The remaining armor stones shall be placed in sets starting adjacent to the toe stone or at the outer limits of the revetment and proceeding upward, with each stone placed firmly on the stones beneath. Each armor stone set shall be as long as practicable so as to provide the Contractor the opportunity to select the most suitable position for each size and shape of rock in order to achieve the results specified herein. The Contractor shall not commence a new set until the previous set is completed as specified and approved by the Engineer, and check surveys indicate that the set has been constructed to the required lines, grades and tolerances. If the Contractor elects to use multiple placement operations to construct separate sets, it must ensure that the specified requirements are met in areas where the sets are to be jointed.

4. Equipment proposed for armor stone placement shall be capable of placing the stone at its final position before release and also will be capable of moving and repositioning a released stone, if necessary. Casting or dropping of stone over 1 foot, or moving stones by drifting or manipulating down the slope will not be permitted. Buckets or skips will not be acceptable for placement of armor stone.
5. Armor stone shall be placed individually between the designated neat lines and to the grades shown on the Contract Drawings, within the tolerances described in this section.
6. Armor stones shall be placed in such a manner as to avoid displacing or placing undue impact force on underlying materials and to minimize cracking or chipping of stones.
7. Where more than one layer of stone is required, armor stone shall be placed to its full course thickness in one operation such that stones are keyed and layers are interlocked.
8. Finishing of the slopes will be done as the armor stone is being placed. Stockpiling of stones on approved sections of the structure will not be permitted. The finished armor stone course shall have uniform slope and crest surfaces and a well-defined break at the shoulder. The armor stone course shall be stable, tightly placed, keyed and interlocked, with rock-to-rock contact and no overhanging stones. All gaps, seams, holes, etc., in the armor surface shall be of a size not greater than the maximum allowable void defined in this section.
9. Re-handling of individual stones after initial placement will be required as necessary to achieve the results specified above.
10. At the end of each work day that armor stone is placed, provide an Armor Stone Placement Summary to the Engineer. The exact format of the Armor Stone Placement Summary shall be determined and agreed upon by the Engineer and Contractor prior to commencement of armor placement. This summary shall include as a minimum: a tally of each stone placed; the stations between which armor stones were placed; and total armor placement time.

- E. Filter Fabric Placement: Filter fabric for boat launch scour stone shall be placed as follows:
1. Placement of filter fabric shall conform to manufacturer's requirements to assure a continuous layer unbroken by rips, tears, punctures, or other physical damage from placement of the fabric or placement of materials over the fabric.
 2. Seams between individual pieces of filter fabric shall be joined or overlapped to provide a continuous layer. To the maximum extent possible, seams should be joined in the shop. Fabric shall be overlapped at a minimum of 18 inches at all longitudinal joints and a minimum of 36 inches at all transverse joints.

3.4 TOLERANCES

- A. The finished surface and stone layer thickness shall not deviate from the lines and grades shown on the Contract Drawings by more than the tolerances listed below. Tolerances are measured perpendicular to the indicated neat lines. Extreme limits of the tolerance given below shall not be continuous in any direction for more than five times the median stone dimension and/or for any area greater than 200 square feet of the structure surface. Any section of a stone course built to the upper tolerance limit shall not be immediately adjacent to a section built to the lower tolerance limits and vice versa (i.e., transitions between extreme tolerance limits shall be smooth).

Material	Above Neat Line	Below Neat Line
Armor Type A	12 inches	12 inches
Armor Type B	0 inches	12 inches
Core Stone	6 inches	6 inches
Boat Launch	2 inches	2 inches
Scour Stone		
Sub-grade	3 inches	3 inches

- B. In addition to the vertical tolerances above, the horizontal alignment for the finished stone courses shall be +2 feet from that shown on the Contract Drawings provided lines, arcs, curves and transition zones are smooth and continuous without visible deflections, bends, kinks, etc.
- C. The intention of the above tolerances is that the Work will be built to the required elevation, slopes and grades, and that the outer surfaces shall present a neat and positive aesthetic appearance. Placed material not meeting these intentions shall be removed and/or reworked to the satisfaction of the Engineer. Material beyond the upper tolerance limit permitted to remain in place by the Engineer will not be paid for, as discussed previously in this section.

END OF SECTION

SECTION 355411- STEEL SHEET PILES, MARINE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes: Driven sheet piles bulkheads, walls, cells, tied back anchorage systems.

1.3 REFERENCES

- A. ASTM International, as referenced herein as ASTM.
- B. American Welding Society, as referenced herein as AWS.
- C. United States defense standard, as referenced herein as Mil Spec.

1.4 ACTION SUBMITTALS

- A. Source Quality Control:
 - 1. Shop Drawings:
 - a. Submit Shop Drawings showing layout and details of fabrication and installation of sheet piling, braces, wales, tie rod assemblies, (tendons/rods and turnbuckles), struts, deadman assemblies and miscellaneous metals.
 - b. Show location of each turnbuckle and show detail of each type of proposed splice, wale separator, beveled washer, shim or wedge connection. All steel connections and welds shall follow AISC (American Institute of Steel Construction) and AWS standards.
 - c. Include complete dimensions and details of sheet piling sections.
 - d. Submit test reports on coating material used and the percent of coverage applied.
 - e. Submit welding certificates.
- B. Field Quality Control:
 - 1. Records:
 - a. Submit records in triplicate of the piles placed or driven, showing the depth of the toe penetration, and the depth driven, dates of starting and completion of driving, steam or air pressure, kind and size of hammer used in driving and any unusual phenomena, amount of pre-drilling, concrete or grout or sand fill placed in each hole.
 - 2. Test Reports:

- a. Submit field reports of the vertical and horizontal alignment of each pile showing, in detail, all conditions.

1.5 SITE CONDITIONS

- A. Examine the site to ascertain the state and conditions under which the work is to be done.
- B. If log of soil test borings is available, assume full responsibility for interpreting boring data and for conclusions drawn from the information furnished and from inspection of the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel Sheet Piling:

- 1. Steel Sheet Piling: Hot rolled (HR) sections are produced by traditional hot-mil procedure with rough shape during series of stages to final form. Interlocks are formed by flow of metal.
- 2. Steel sheet piling, including corners, tees, and crosses: ASTM A328, unless otherwise indicated, having a minimum content of 0.20% copper by heat analysis or 0.18% by product analysis. Provide each leaf of sheeting straight and free of buckling and providing continuous interlock throughout the entire length when in place. Require the interlock stress to be certified by manufacturer.
- 3. Properties of Sections:

Type of Section:	Nominal Web Thickness (inch)	Section Modulus Per Lin. Ft. Of Wall (inch ³)	Weight Per Sq. Ft. of Wall (Lbs.)	Weight Per Lin. Ft. of Piling (Lbs.)
NZ14	0.375	25.65	21.77	55

- 4. Alternative Steel Sheet Piling
 - a. Alternative hot-rolled steel sheet pile sections may be substituted for the section shown on the drawings. Piling substituted for the section shown on the drawings shall have as a minimum the properties listed in the table above. Sections substituted for those shown on the drawings shall have a "Z" profile. Substituted sections shall conform to all other requirements of this specification in addition to the requirements of this paragraph.
 - b. The Contractor shall provide detailed design calculations for any alternative pile section proposed by the Contractor and accepted by the Owner. The calculations shall include, but not be limited to, tie-rods, wale, connections and struts.

- c. The design calculations shall be stamped by a Structural Engineer registered in the state of Illinois and submitted to the Owner for approval. The Contractor is responsible for detailing all revisions to the layout and drawings affected by the selected alternative piling. Revised layouts and drawings shall be submitted as shop drawings for approval. Preparation of design calculations, revised drawings, and revised layouts shall be incidental to the applicable bid item. If an alternative steel sheet pile section is selected, the Contractor shall not be provided any additional time to the Contract Schedule to accommodate this process.
- B. Tie Rods:
1. Tie rods: ASTM A615 A36 Grade 80
 2. True and straight, without rust, without nicks deeper than 0.0625 inch and nicks longer than 10% of the circumference of the tie rod.
- C. Miscellaneous Steel: Braces, rakers, tie back assemblies, wales, plate washers, bevel washers and other miscellaneous metal: ASTM A36.
- D. Coating: Coat all tie rods, nuts, washers, wedges and turnbuckles with bitumastic paint, not less than 30 mils thick, meeting all the requirements of Mil. Spec. for coal tar epoxy DOD-P-23236, Type 1, Class 2, or the Corps of Engineers Formula C-200. Alternate epoxy coating shall be acceptable for substitution of the specified Coal Tar Epoxy Coating and shall be reviewed during submittal process.
- E. Fasteners:
1. High strength bolts, nuts and washers: ASTM A325.
 2. Nuts for tie rods and all other bolts and nuts: ASTM A307.
 3. Threaded rods" F1554 Gr 105 with hardened nuts and washers.
 4. Turnbuckles and clevises: ASTM A668.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Steel Sheet Piling:
1. Driving Line: The driving line shall be cleared of any debris, stone or pieces of the existing barge breakwater prior to the placing of the sheet piling.
 2. Drive steel sheet piling along entire face of bulkhead and at locations indicated. Cut off top of sections and trim to indicated level. Remove cut-off sections from the site. Revise driving sequence if operation disturbs adjacent structures. Consult Owner prior to stopping Work.
 3. Provide reinforcing boot or splice plates to tips of each leaf.
 4. Provide welded shear connectors where composite construction is indicated.
 5. Provide holes in the driven sheet piling for passage of tie rod assemblies. Provide handling holes approximately 4 inches below the top of pile prior to driving.
 6. Spliced sections will not be allowed unless approved by the Engineer.

- B. Connections:
1. Weld all shims in the field, unless otherwise indicated and approved by the Engineer.
 2. Weld all connections, unless otherwise indicated.
 3. Where bolted connections are required, all holes for bolts shall be provided at the proper location or position as specified on the Plans. Holes in metal members shall be made by the applicable method for the connection being made, either drilling or torching. After drilling or torching, holes in metal which are too small or out of shape shall be reamed to the required size. Unless otherwise indicated or specified, all holes for items that are to be inserted through metal members shall not be more than one-sixteenth inch larger than the diameter of the item being installed.
- C. Driving and Installation Tolerances: Drive piling without exceeding the following tolerances, measured at top of piling:
1. Location: 2 inches plus or minus from locations indicated
 2. Plumb: Perpendicular to line: Maintain 1 inch in 4 feet from vertical, or a maximum of 4 inches.
 3. Parallel to line: Maintain 1% of length but not more than 4 inches and not more than 2 inches in any 25 feet of length.
 4. Cut-off tolerance: Tops of sheet piling shall be cut off to within +/- 3/8 inch of design elevation.

3.2 TEMPORARY CONSTRUCTION

- A. The Contractor is responsible for temporary bracing and support of the structure during construction and shall protect all exposed partially complete work against damage. The Contractor shall take precautions to assure that the structure is adequately braced to avoid damage from wave action during construction. Any structural component damaged during construction shall be replaced by the Contractor at no cost to the Owner. The Contractor should place the concrete promenade slab as soon as possible after the backfill is in place to provide backfill protection. The steel sheet pile structure is not designed to resist storm event loads without the tie rods connected and the backfill in place. The Contractor's means and methods of providing temporary protection shall be as included in the work plan as approved by the Engineer. The Contractor is fully responsible to maintain sheet pile alignment and stability during construction. The Contractor should place scour stone and the promenade slab as soon as practical after the backfill is in place to avoid storm or water overtopping damage.

3.3 WINTER CLOSURE

- A. At the time of cessation of work for any extended period, such as for winter weather or for other reasons, a winter closure shall be constructed. No further existing barge removal activities, driving line clearing, existing boat launch removal or site preparation shall be done beyond the limits of the anticipated winter closure until work resumes after the shutdown. The new structure shall be complete, including concrete placement and Scour Stone, up to the winter closure location. The Contractor shall provide a winter closure design for approval by the Engineer. The winter closure shall be designed, as a minimum, to contain the stone fill within the new portions of the structure, protect the new structure and the boat launch area from storm, wind, wave and other damage, and provide a method for preserving the structure continuity after work resumes. Any loss of shoreline materials or structure damages that occur at the site shall be the responsibility of the Contractor, and no compensation will be provided for such damage or material losses

END OF SECTION

SECTION 355905 - FLOATING MARINA DOCK SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section is a Design/Build Specification and includes: Floating dockage system, gangways and the dockage anchorage. No Alternative system shall be considered for this project without prior approval.
- B. Related Requirements:
 - 1. Delegated Design Requirements and Procedures Section 013573

1.3 REFERENCES

- A. ASTM International, as referenced herein as ASTM.
- B. American Welding Society, as referenced herein as AWS.
- C. American Society of Civil Engineers, as referenced herein as ASCE.

1.4 SUBMITTALS

- A. Source Quality Control:
 - 1. Three copies of design calculations signed and sealed by the Dockage Designer (or another Licensed Professional Engineer, experienced in floating dock design) with an affidavit stating that "the structural details, specified materials and performance of the system under design loadings are in complete conformance with the design criteria".
 - 2. Three copies of shop drawings and manufacturers' literature, signed and sealed by the Dockage Designer (or another Licensed Professional Engineer, experienced in floating dock design) with an affidavit stating that "the structural details, specified materials and performance of the system under design loadings are in complete conformance with the design criteria". Shop drawings shall include all information necessary for the fabrication of component parts of the structure. All drawings shall be accurately and completely dimensioned. Drawings shall indicate all relevant sizes and shall show thicknesses, gauges, finishes, materials, etc., of all items shown. Indicate size of members, type and location of shop and field connections and the type, size and extent of all welds. The following is a partial listing of details required for submittal:
 - a. Cover sheet listing project, location, Owner, Manufacture and all project design criteria.

- b. Plan view layout(s) showing location of all joints, framing, cleat layout, anchorage system, and all other dockage amenities.
 - c. Typical sections at headwalk.
 - d. Details of anchorage system.
 - e. Details of flotation unit.
 - f. Rub rails and/or moldings.
3. Three copies of complete As-built Drawings, including location of anchorage system.
 4. Three copies of a complete Operations Manual, as a minimum, containing the following information:
 - a. Manufacturer's representative's name, address and phone number.
 - b. Location of anchorage and connections to dockage.
 - c. Complete discussion of system handling for the winter season and realignment for the boating season.
 - d. Drawings, diagrams, installation instructions and parts lists.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. The Floating Dockage Manufacturer (herein referred to as the Manufacturer) shall have not less than five years continuous experience in the fabrication of floating dockage.
2. The Manufacturer shall demonstrate to the Owner successful floating dockage installations in a similar physical and natural environment with at least one hundred (100) boat slips.
3. The Dockage Designer shall be a Licensed Professional Engineer and shall submit at least three references for marina floating dockage anchorage systems designed by him/her. The Engineer shall review references and has the right to refuse or reject the anchorage designer. Dockage manufacturing shall not commence until the Dockage Designer is approved by the Engineer.
4. The Manufacturer or the Contractor shall provide at least one person who shall be present during installation of this work who shall be thoroughly familiar with the type of materials being installed, the requirements of this work and who shall direct all work.

1.6 WARRANTY

- ##### A.
- A written Guarantee in a form satisfactory to the Owner. The guarantee shall state that all labor and materials (including dockage and all associated work) furnished by the Contractor are in accordance with the contract plans and specifications, and authorized alterations and additions thereto; and that, should any defect develop during the contract guarantee period as hereinafter defined, due to improper materials, workmanship, arrangement or design, those defects be corrected by the Contractor without expense to the Owner. The Guarantee for all labor and materials except the flotation materials shall be for a period of five (5) years from the date in which the completed work is turned over to and accepted by the Owner. The guarantee for the flotation materials shall be for a period of ten (10) years. Individual five-year manufacturer's guarantees for materials and equipment may be provided to comply with the prime contractor's guarantee responsibilities.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Performance Requirements:

1. The complete floating dockage system, gangways and anchorage shall be designed in accordance with ASCE Report No. 50 (Report on Small Craft Harbors, latest edition) except as modified herein. Frequency of spacing and sizing of components of the Anchorage System shall be as required to satisfy the horizontal loading requirements and the structural integrity of the floating dockage system. The system shall also prevent torsion, racking and twisting by providing sufficient built-in torsion resistance.
2. Lake Water Levels:
 - a. The water level at project site is subject to Lake Michigan water levels.
 - b. The dockage system anchorage shall be designed for a low water range of 576.7 (IGLD85) to 582.3 (IGLD85) with all facilities under full design loadings listed below.
 - c. During major Lake Michigan storm surge, the dockage system and anchorage shall be designed for an extreme range of 2 feet of surge) with full dead loads and 50% of the design live loads.
3. Vertical Loading:
 - a. Dead load shall be the entire weight of the floating piers including access ramps and appurtenances, if applicable.
 - b. Live load for flotation calculations shall be not less than 30 pounds/square foot (psf) for floating piers.
 - c. Piers at dead loading in the water shall maintain a free board of 18 inches to 20 inches. Design of free board shall be indicated in the shop drawings. The free board on the overall dock system shall not vary more than 1 inch from the approved drawings. On the main headwalk the slope shall not vary more than 1 inch in 10 feet. At the design load of dead load plus 30 psf live load, a free board of not less than 10 inches shall be maintained. Extra flotation shall be installed at end sections as required to compensate for end reactions of ramps due to combined loading. Additional flotation shall be adequate to ensure that the piers shall maintain a uniform free board over the length of the pier.
 - d. In addition to the above, the end of the piers must be designed to withstand a 400 pound total live load 2 feet from the end without loss of free board of more than 4 inches.
4. Horizontal Loading:
 - a. Uniform wind load perpendicular to the headwalk; assume to be full wind on unshielded boats (15 psf) and 20% of full wind on all shielded boats. Wind load perpendicular to the headwalk, assume to be full wind on the unshielded side of the headwalk (15 psf) and 15% of full wind on the shielded headwalk side
 - b. Impact of the largest boat normally using that slip striking the end of the finger dock at a maximum angle of 10 degrees to the centerline of that finger dock at a velocity of 2 knots (3 feet per second) or less.
 - c. The structure and system shall be designed to withstand the following wave conditions:

- 1) 2.5 foot wave (boat wake) on a continual, basis.
 - 2) 4 foot wave (storm conditions) on a periodic, but not continual, basis.
- d. Dock connections and joints shall resist fatigue failures based upon continual wave loading for the life of the prct (20-years minumum).odu

2.2 MATERIALS

A. Structural:

1. Decking lumber and side skirts shall pressure treated Southern Number 1 Select Yellow Pine, 2 by 6 inch nominal. Treatment shall be AWPAC UC4B preseverative at .4 pounds/cubic foot or Engineer approved equal.
2. Structural steel shall conform to the requirements of the standard specification for structural steel, ASTM A36. All steel for the floating dockage shall be zinc-coated (hot dipped) in accordance with the requirements of ASTM A123. Minimum zinc coating properties required are as follows:

Product Form	Minimum Weight (oz./Sq. ft.)	Minimum Thickness (mils.)
0.125 inch, 0.1875 inch Steel	2.0	3.0
0.25 inch and thicker	2.0	3.4

- a. All steel structural members shall be zinc coated after fabrication. Minimal field cutting, welding or drilling will be allowed, if pre-approved by the Engineer. Steel surfaces exposed by cutting, welding or drilling shall be coated with a zinc rich cold galvanizing paint.
3. Structural Aluminum components shall be 6000 Series Alloy.
4. Hardware - bolts, lag bolts, screws, flat washers and lock washers shall be of the type and size best suited for the intended use. All fasteners and miscellaneous hardware shall be zinc or cadmium coated in accordance with the requirements of ASTM A153. Aluminum extrusion or truss systems shall use Type 304 stainless steel connectors and shall isolate incompatible metals to mitigate electrolytic action.

B. Flotation:

1. Expanded polystyrene encased all around with suitable polyethylene.
2. Encasement Material shall meet the following requirements:
 - a. Rotomolded Linear Low Density Polyethylene or High Density Polyethylene appropriate for a marina environment.
 - b. Nominal thickness shall be .150 inch or greater.
 - c. Encasement shall be black, minimum 2% carbon black and UV stabilized.
3. Flotation material shall be closed cell polystyrene. Polystyrene shall have a minimum density of approximately 0.9 pounds per cubic foot. Water absorption shall be less than 3 pounds per cubic foot at 7 days when tested by the Hunt absorption test.
4. Flotation material shall completely fill the encasement. No voids or air gaps will be permitted.

5. Flotation units shall be manufactured in a fashion to allow full bearing of the float on the structural frame in both vertical and lateral directions. Lateral support by bolted connections only, through the encasement, will not be accepted.
 6. Engineer reserves the right to test the flotation units at the job site.
 7. Cleats shall be galvanized heavy-duty cast iron or ALMAG 35. Mounting bolts shall be recessed to prevent bolt heads from chafing lines.
 8. Dock bumpers shall be a non-marring type, a minimum of 2 inches across consisting of extruded vinyl. The material shall be tough and tear-resistant and maintain flexibility to a temperature of 10 degrees Fahrenheit. Color shall be UV stabilized white.
 9. All steel components associated with the anchorage system shall be galvanized.
 10. Connection of the ramps to the bulkhead is the responsibility of the floating dockage manufacturer.
- C. Dockage Anchorage: Dockage anchoring system shall connect to driven pipe piles. Hoop dock connection shall be designed and installed by the Manufacture under conditions similar to this project. Geotechnical information of the project area is available upon request.
- D. Transition Plates: Two aluminum plates of adequate size shall be installed for each dock pier. One transition plate will be installed from the abutment to dock 1 and the other from Dock 1 to 2. A total of 4 transition plates are required for this project.
- E. Other Materials: All other materials, not specifically described, but required for a complete and proper installation of floating dockage, shall be designed in accordance with ASCE Report No. 50 (Report on Small Craft Harbors, latest edition) except as modified herein.

2.3 CONSTRUCTION

- A. Truss cage type dockage units shall be equipped with nominal 2 inch by 6 inch timber side-skirts which provide complete enclosure of the pier framing, with not less than 12 inches of skirt in the vertical dimension. The timber skirt shall be positively fastened to the pier frame on maximum 4 feet centers.
- B. Timber decking shall be fastened to the structural frame with bolts or screws. Nails will not be permitted. There shall be at least one fastener at every structural cross support with two at the end of each board. Fasteners shall be of a protected metal compatible with the material in the structural frame. Screw holes shall be predrilled through deck boards and substructure.
- C. Deck planks shall be placed perpendicular to the longitudinal axis of the main headwalk and with bark side down.
- D. All joints and connections between floating structures must be capable of transmitting all loads and forces imposed upon the structures. Connections shall not protrude above the level of the deck.

- E. Structures are to be factory assembled in the largest possible shippable units. Modular structures must be designed for quick and easy assembly and disassembly with a minimum of bolts and connectors.
- F. Continuous dock bumpers shall be provided around all docks. Corners shall be protected by molded corner guards and not by mitering or bending the extruded vinyl guards.

2.4 REMOVABLE BOARDING DOCK

- A. Removable Boarding dock shall be per length and width as shown on the drawings.
- B. Boarding dock frame system shall taper on and side section to allow for boarding dock to be in close vicinity to upland land connection and to limit lengths of transition plates from land to dock.
- C. Docks be designed to rest on concrete without damage. .

PART 3 - EXECUTION

3.1 WORKMANSHIP

- A. Piers shall be completely prefabricated by the pier manufacturer and delivered ready for direct unloading into the water. All workmanship shall be first class in all respects. Any units not representing a finished and acceptable appearance will be rejected.
- B. All finished steel or aluminum members shall be free from twists, bends, distortions and open joints. All steel or aluminum construction shall be free of sharp edges and burrs. Ends of exposed steel members shall be rounded or beveled. All coping and mitering shall be done with care. Projecting materials and burrs that would prevent bearing of the various members on each other shall be removed.
- C. All drilling and cutting of steel done after galvanizing (if approved by the Engineer) shall be painted with a zinc dust content paint. All welds over galvanized material shall be thoroughly cleaned and coated with two coats of cold galvanizing compound.
- D. All welding shall conform to the requirements of the AWS. Welds shall be a solid and homogeneous part of the metals joined and shall be free from pits or scale, and shall be of full areas and length required to develop the required strength for the intended use.
- E. All bolts, nuts and washers shall be set square with connecting structural members and the nuts shall be drawn up tight. Lock washers or other devices or techniques shall be used to prevent nuts from loosening after being properly tightened.

- F. Deck screws shall be set so the heads are just below the wood surface without splintering the wood. Lumber shall be counterbored wherever projecting bolt heads or nuts may damage boats or provide a hazard to pier users
- G. Edges of all exposed wood members shall be slightly beveled to ease sharp corners and preclude wood splinters from forming.

END OF SECTION

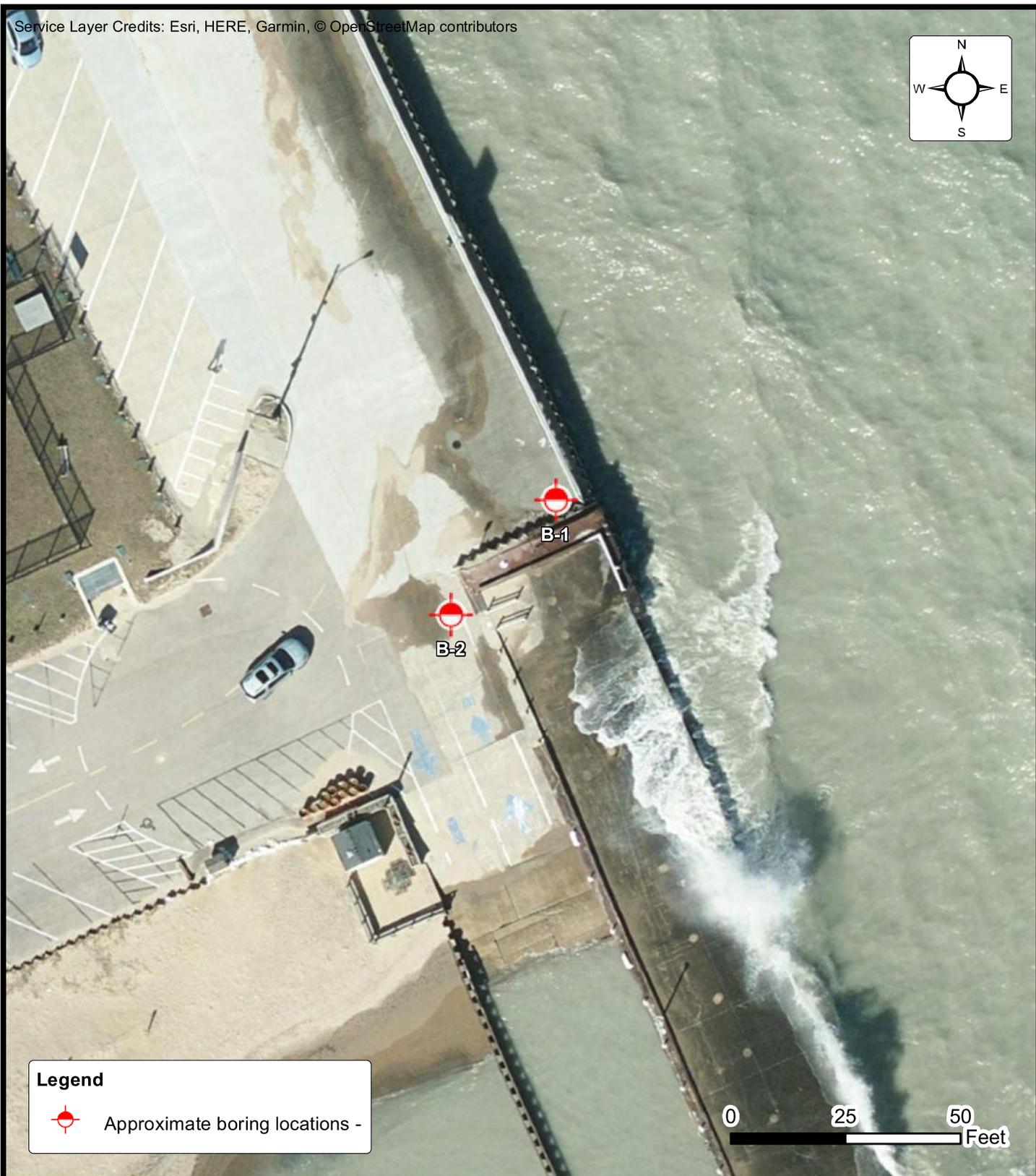
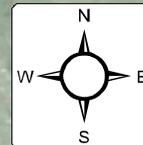
APPENDIX

**PARK DISTRICT OF
HIGHLAND PARK**

**HIGHLAND PARK AVENUE
BARGE ENGINEERING**

APPENDIX E

Soil Borings



Legend



Approximate boring locations -



BORING LOCATION DIAGRAM PARK AVENUE BEACH

31 PARK AVENUE, HIGHLAND PARK, IL

SMITHGROUP JJR

ENGINEER	KSC
SCALE	1" = 30'
PROJECT NO.	12464
SHEET	1 OF 1
DATE	7/28/2018

CLIENT SmithGroup JJR	Job #: 16:12464	BORING # B-1	SHEET 1 OF 2	
PROJECT NAME Park Avenue Beach	ARCHITECT-ENGINEER			

SITE LOCATION
31 Park Avenue, Highland Park, Cook, IL

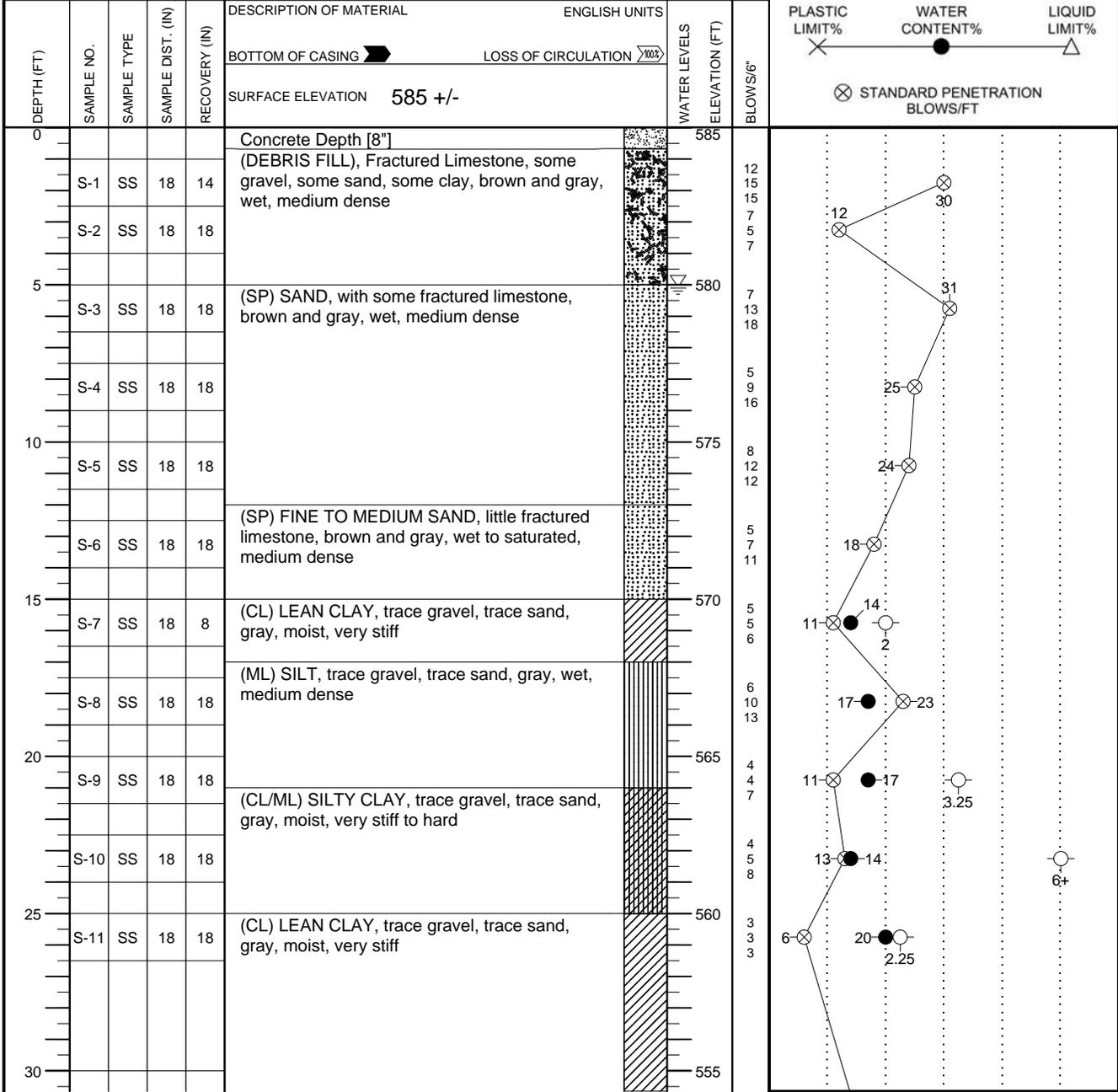
NORTHING	EASTING	STATION
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○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT



CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 5	WS <input checked="" type="checkbox"/>	WD <input type="checkbox"/>	BORING STARTED	07/17/18	CAVE IN DEPTH
WL(SHW)	WL(ACR)		BORING COMPLETED	07/17/18	HAMMER TYPE Auto
WL			RIG Truck	FOREMAN Jason	DRILLING METHOD HSA

CLIENT SmithGroup JJR	Job #: 16:12464	BORING # B-1	SHEET 2 OF 2	
PROJECT NAME Park Avenue Beach		ARCHITECT-ENGINEER		

SITE LOCATION
31 Park Avenue, Highland Park, Cook, IL

NORTHING	EASTING	STATION
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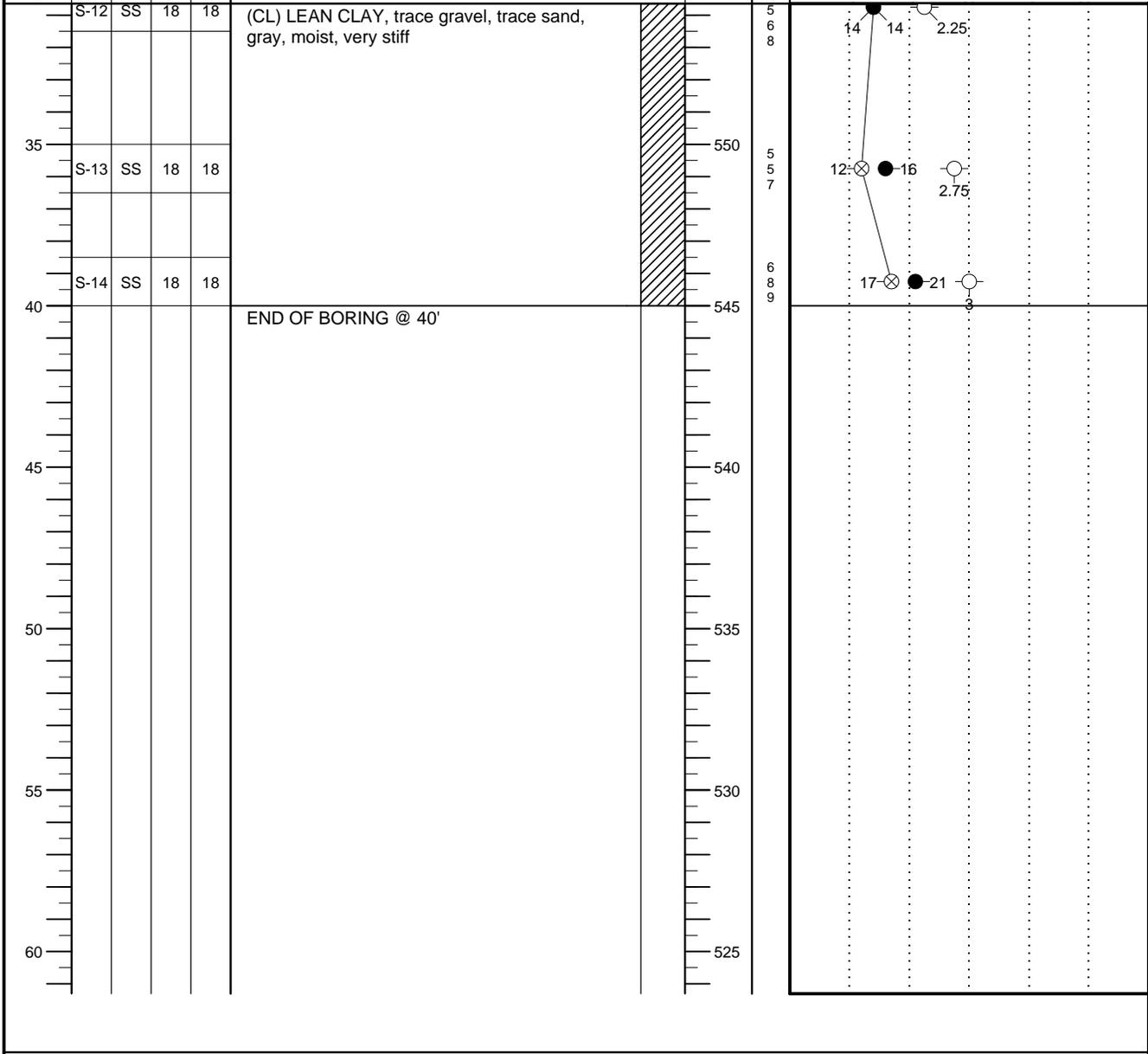
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					BOTTOM OF CASING 	LOSS OF CIRCULATION 			
					SURFACE ELEVATION 585 +/-				

○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 5	WS <input checked="" type="checkbox"/>	WD <input type="checkbox"/>	BORING STARTED	07/17/18	CAVE IN DEPTH
WL(SHW)	WL(ACR)		BORING COMPLETED	07/17/18	HAMMER TYPE Auto
WL			RIG Truck	FOREMAN Jason	DRILLING METHOD HSA

CLIENT SmithGroup JJR	Job #: 16:12464	BORING # B-2	SHEET 1 OF 2	
PROJECT NAME Park Avenue Beach	ARCHITECT-ENGINEER			

SITE LOCATION
31 Park Avenue, Highland Park, Cook, IL

NORTHING	EASTING	STATION
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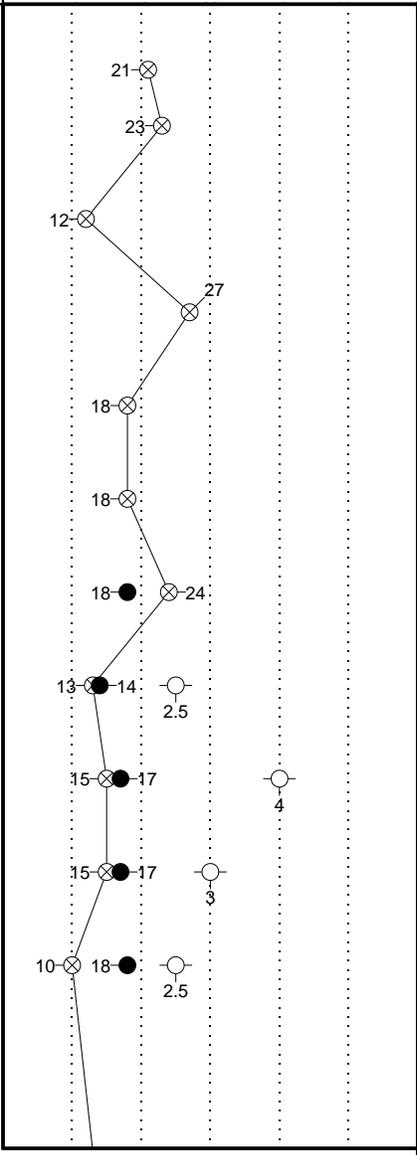
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					Asphalt Depth [6"]		585	
					Gravel Subbase Depth [6"]			
	S-1	SS	18	18	(DEBRIS FILL), Fractured Limestone, some gravel, some sand, some clay, brown and gray, moist to wet, medium dense			
	S-2	SS	18	0				
5	S-3	SS	18	18	(SP) SAND, trace gravel, some fractured limestone from 7 to 10 feet, brown and gray, saturated, medium dense			
	S-4	SS	18	18				
	S-5	SS	18	18				
	S-6	SS	18	18				
15	S-7	SS	18	18	(ML) SILT, gray, wet, medium dense			
	S-8	SS	18	18	(CL) LEAN CLAY, trace gravel, trace sand, gray, moist, very stiff to hard to very stiff			
	S-9	SS	18	18				
	S-10	SS	18	18				
25	S-11	SS	18	18	(CL/ML) SILTY CLAY, trace gravel, trace sand, gray, moist, hard			



CONTINUED ON NEXT PAGE.

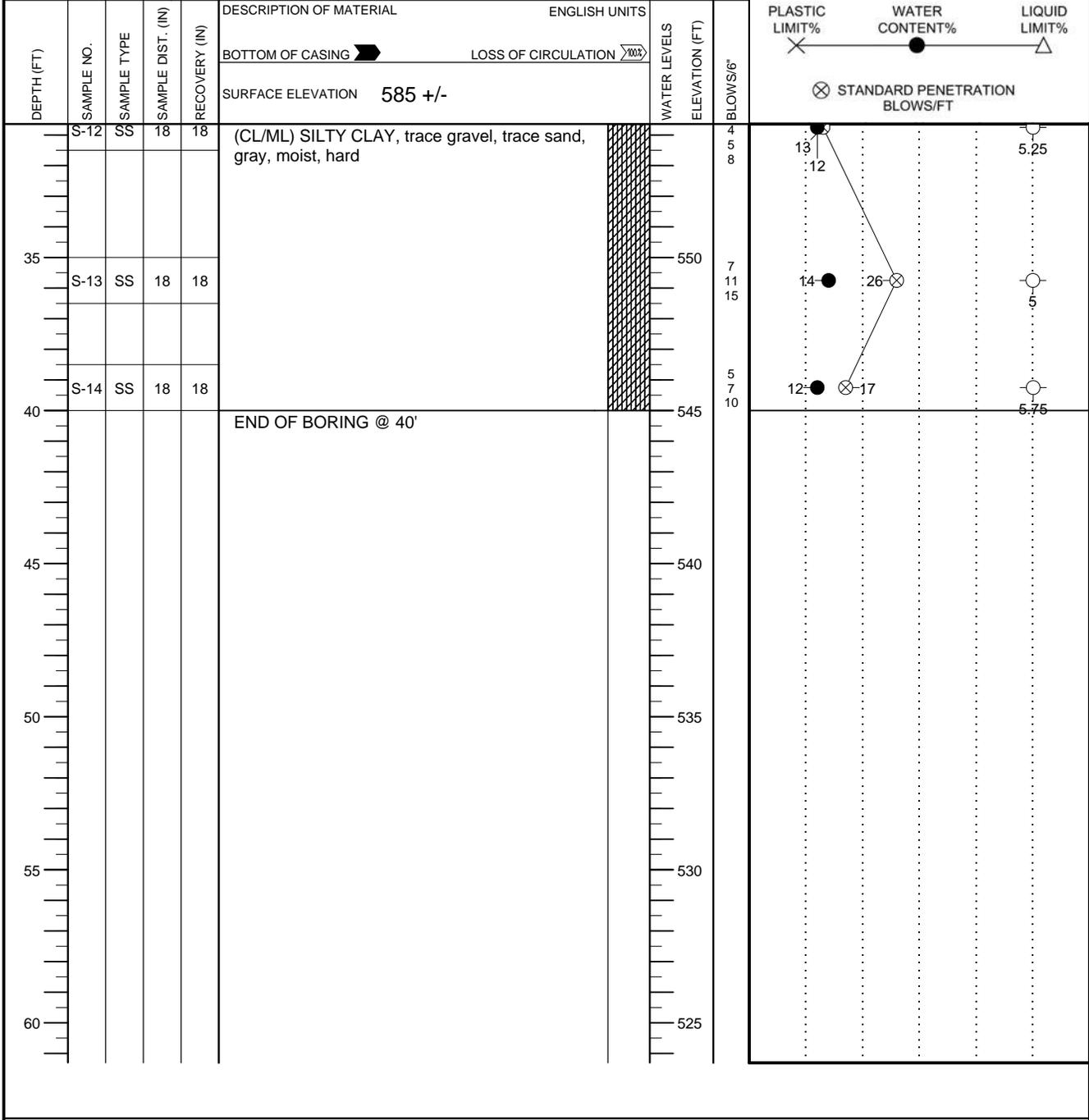
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WL(SHW)	WL(ACR) <input checked="" type="checkbox"/>	BORING COMPLETED	07/17/18	HAMMER TYPE Auto
WL		RIG Truck	FOREMAN Jason	DRILLING METHOD HSA

CLIENT SmithGroup JJR	Job #: 16:12464	BORING # B-2	SHEET 2 OF 2	
PROJECT NAME Park Avenue Beach	ARCHITECT-ENGINEER			

SITE LOCATION
31 Park Avenue, Highland Park, Cook, IL

NORTHING	EASTING	STATION
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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 4	WS <input checked="" type="checkbox"/>	WD <input type="checkbox"/>	BORING STARTED	07/17/18	CAVE IN DEPTH
WL(SHW)	WL(ACR) <input checked="" type="checkbox"/>		BORING COMPLETED	07/17/18	HAMMER TYPE Auto
WL			RIG Truck	FOREMAN Jason	DRILLING METHOD HSA



REFERENCE NOTES FOR BORING LOGS

MATERIAL ^{1,2}	
	ASPHALT
	CONCRETE
	GRAVEL
	TOPSOIL
	VOID
	BRICK
	AGGREGATE BASE COURSE
	FILL³ MAN-PLACED SOILS
	GW WELL-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GP POORLY-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GM SILTY GRAVEL gravel-sand-silt mixtures
	GC CLAYEY GRAVEL gravel-sand-clay mixtures
	SW WELL-GRADED SAND gravelly sand, little or no fines
	SP POORLY-GRADED SAND gravelly sand, little or no fines
	SM SILTY SAND sand-silt mixtures
	SC CLAYEY SAND sand-clay mixtures
	ML SILT non-plastic to medium plasticity
	MH ELASTIC SILT high plasticity
	CL LEAN CLAY low to medium plasticity
	CH FAT CLAY high plasticity
	OL ORGANIC SILT or CLAY non-plastic to low plasticity
	OH ORGANIC SILT or CLAY high plasticity
	PT PEAT highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS			
SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION	
DESIGNATION	PARTICLE SIZES
Boulders	12 inches (300 mm) or larger
Cobbles	3 inches to 12 inches (75 mm to 300 mm)
Gravel: Coarse	¾ inch to 3 inches (19 mm to 75 mm)
Gravel: Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand: Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
Sand: Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
Sand: Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")	<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS		
UNCONFINED COMPRESSIVE STRENGTH, Q _p ⁴	SPT ⁵ (BPF)	CONSISTENCY ⁷ (COHESIVE)
<0.25	<3	Very Soft
0.25 - <0.50	3 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

RELATIVE AMOUNT ⁷	COARSE GRAINED (%) ⁸	FINE GRAINED (%) ⁸
Trace	≤5	≤5
Dual Symbol (ex: SW-SM)	10	10
With	15 - 20	15 - 25
Adjective (ex: "Silty")	≥25	≥30

GRAVELS, SANDS & NON-COHESIVE SILTS	
SPT ⁵	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

WATER LEVELS ⁶		
	WL	Water Level (WS)(WD) (WS) While Sampling (WD) While Drilling
	SHW	Seasonal High WT
	ACR	After Casing Removal
	SWT	Stabilized Water Table
	DCI	Dry Cave-In
	WCI	Wet Cave-In

¹Classifications and symbols per ASTM D 2488-09 (Visual-Manual Procedure) unless noted otherwise.

²To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

³Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

⁴Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

⁵Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf).

⁶The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

⁷Minor deviation from ASTM D 2488-09 Note 16.

⁸Percentages are estimated to the nearest 5% per ASTM D 2488-09.

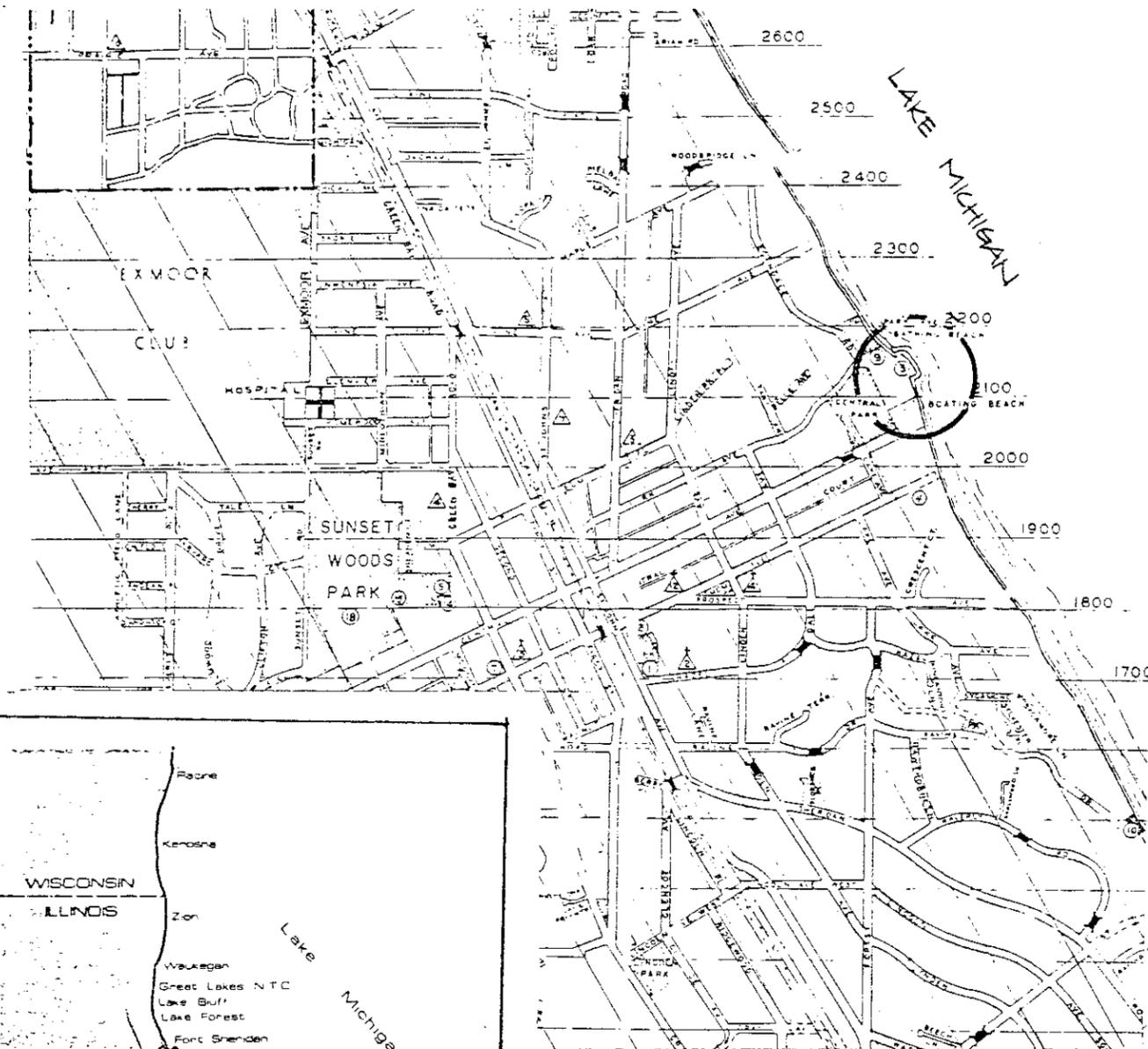
Park Avenue Beach – Soil Properties Table

ECS Project Number 16:12464

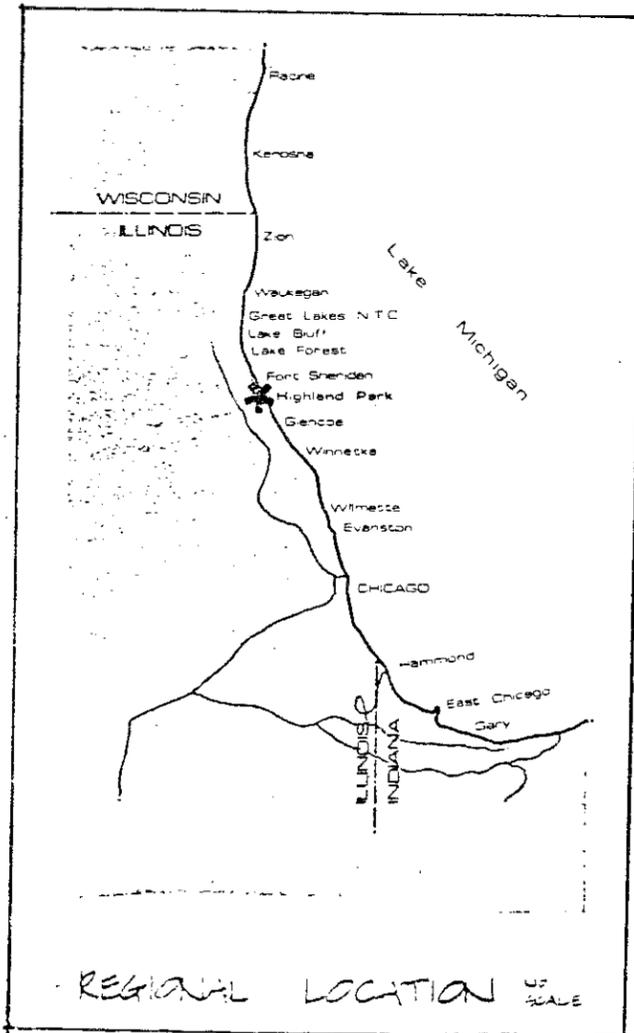
July 30, 2018

Depth Range	Color	Consistency	Soil Description	Depth Range (Elevation)	Soil Description	In-situ Unit Weight (pcf)	Undrained		Drained		Active Earth Pressure Coefficient (Ka)	Passive Earth Pressure Coefficient (Kp)	At Rest Earth Pressure Coefficient (Ko)	Subgrade Modulus, K (pci)	E50	Friction Factor μ (Sheet Pile to Soil Strata)
							Cohesion (psf)	Friction	Cohesion	Friction Angle						
0-5	Brown and Gray	FILL	Fractured Limestone w/ Sand	585-580 (0-5)	FILL Brown and Gray Sand with Gravel	111	-	26	0	26	0.39	2.56	0.56	60	N/A	0.4
5-15	Brown and Gray	Medium Dense	Sand	580-570 (5-15)	Brown and Gray Medium Dense Sand	111	-	29.5	0	29.5	0.34	2.94	0.51	60	N/A	0.3
15-18	Gray	Medium Dense	Silt	570-567 (15-18)	Gray Medium Dense Silt	112	-	27.5	0	27.5	0.37	2.71	0.54	60	N/A	0.25
18-40	Gray	Very Stiff to Hard	Clay	567-545 (18-40)	Gray Very Stiff to Hard Clay	137	3,650	0	125	26	0.39	2.56	0.56	1,820	0.005	Adhesion, Ca = 1,100 psf/ft

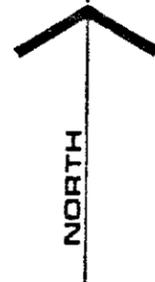
**TENDER DRAWINGS AND SPECIFICATIONS
FOR CONSTRUCTION OF
PARK AVENUE BOAT LAUNCHING RAMP
IN
LAKE MICHIGAN AT HIGHLAND PARK, ILLINOIS
FOR THE
PARK DISTRICT OF HIGHLAND PARK
(THE OWNER)**



SITE LOCATION NO SCALE



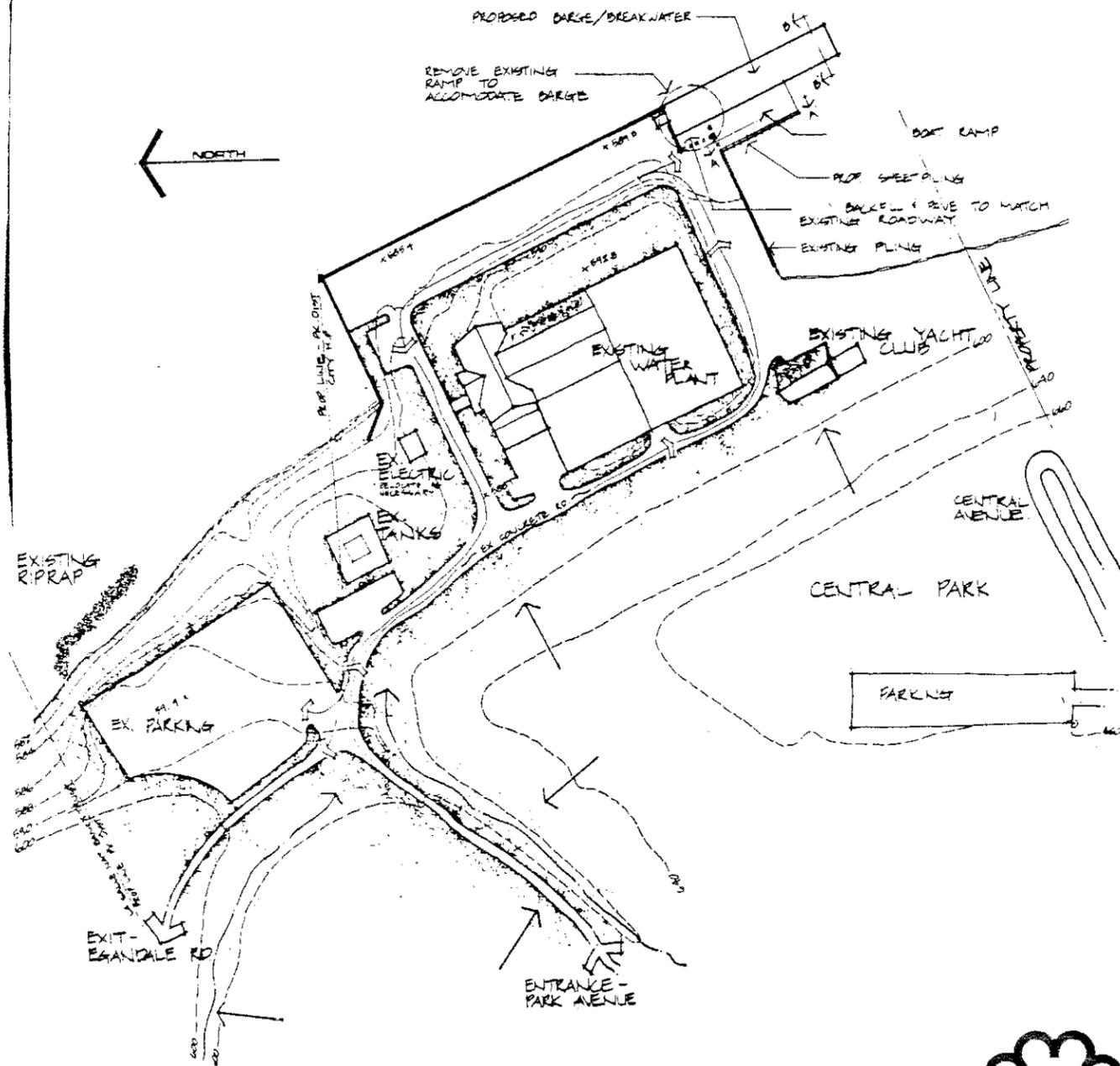
REGIONAL LOCATION 1/4" = 1 MILE



GENERAL NOTES:

1. See transmittal letter for Bidder's Meeting Details.
2. All technical matters related to this project should be taken up with Mr. David Baier, Harza Engineering Company, 150 South Wacker Drive, Chicago, Illinois 60606, hereinafter called the "Engineer".
3. Standard reference specification abbreviations used in this package include:
 - ASTM - American Society for Testing & Materials
 - IDOT - Illinois Department of Transportation
 - Standard Specifications for Road and Bridge Construction. The latest edition of Standard Specifications shall govern.
4. The Contractor shall bid on the work as shown herein but is also free to submit alternate proposals.
5. The Contractor is responsible for development of any construction details not shown in this package but necessary for construction of a working ramp.
6. Unless otherwise specifically stated all materials are Contractor furnished.
7. Elevations shown in this package are IGLD approx. and are provided for Contractor's convenience in correlating with Corps of Engineers lake level data at the time of construction. Elevation of Water Plant Esplanade is about El. 585'+ and should be used for construction purposes as a zero elevation reference datum.

PARK DISTRICT OF HIGHLAND PARK	
PARK AVENUE RAMP	
HARZA ENGINEERING CO., CHICAGO	
APPROVED.....	
DATE <i>Sept. 1981</i>	DWG. NO. <i>1259C-1</i>



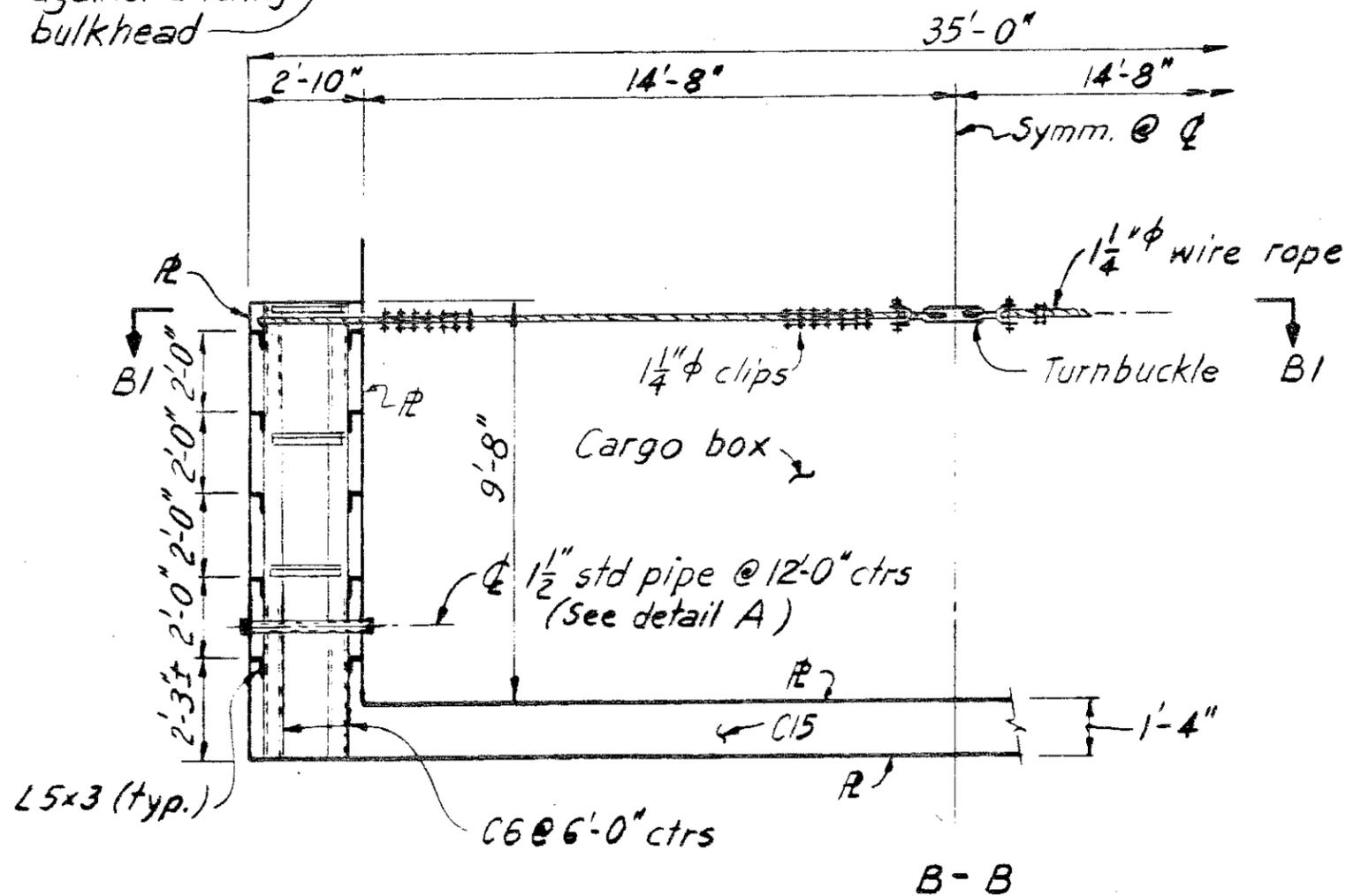
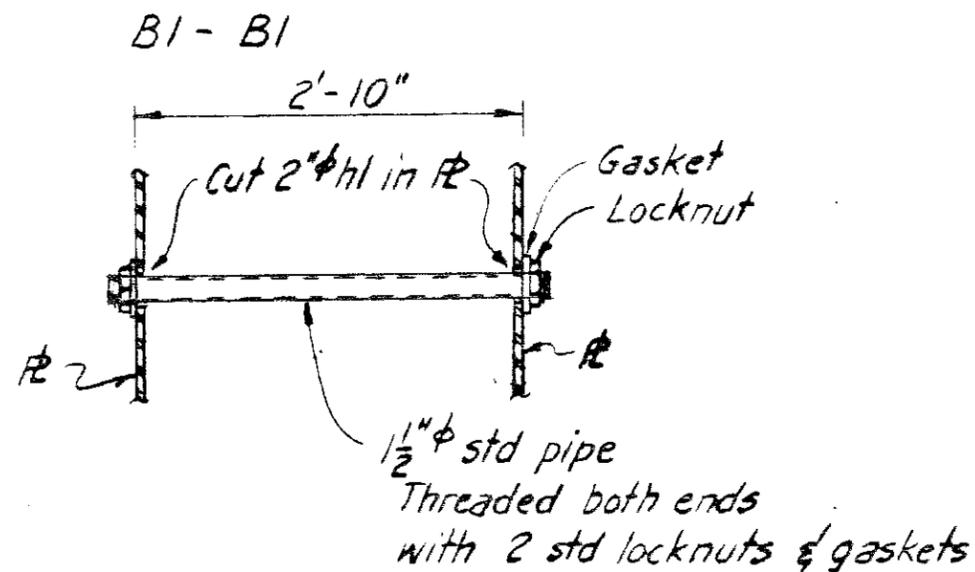
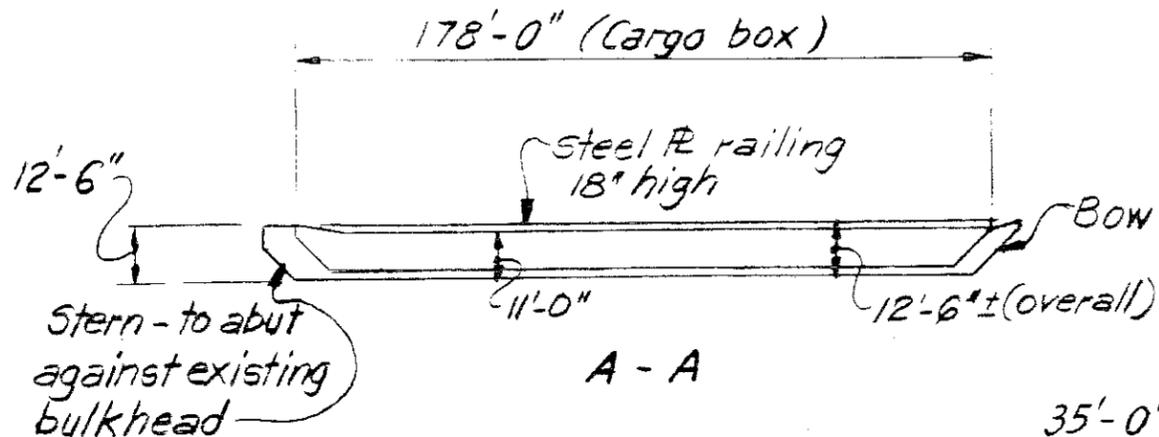
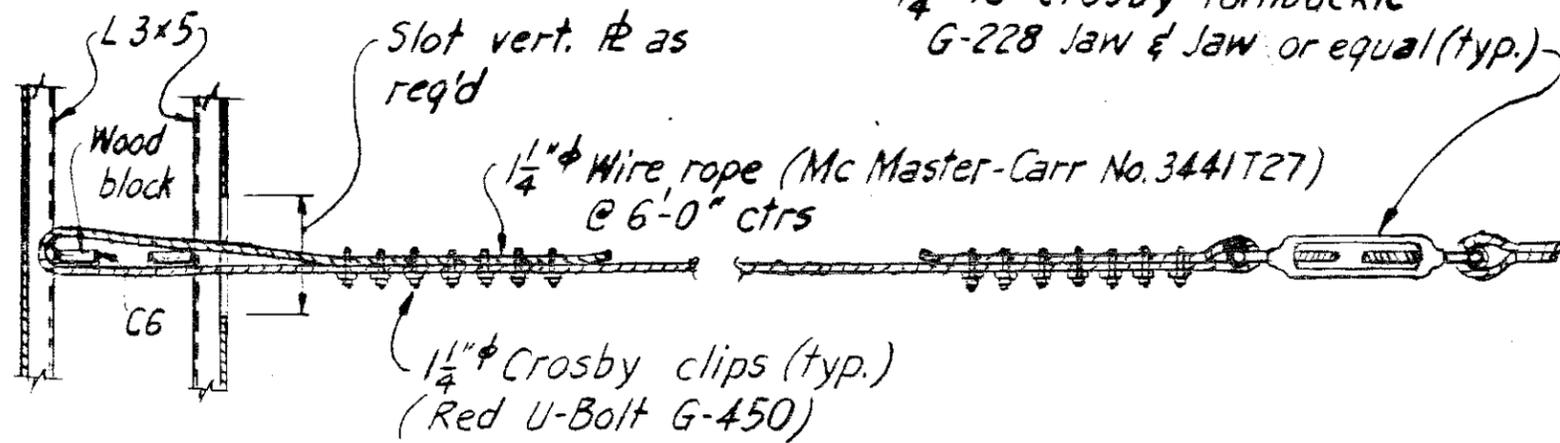
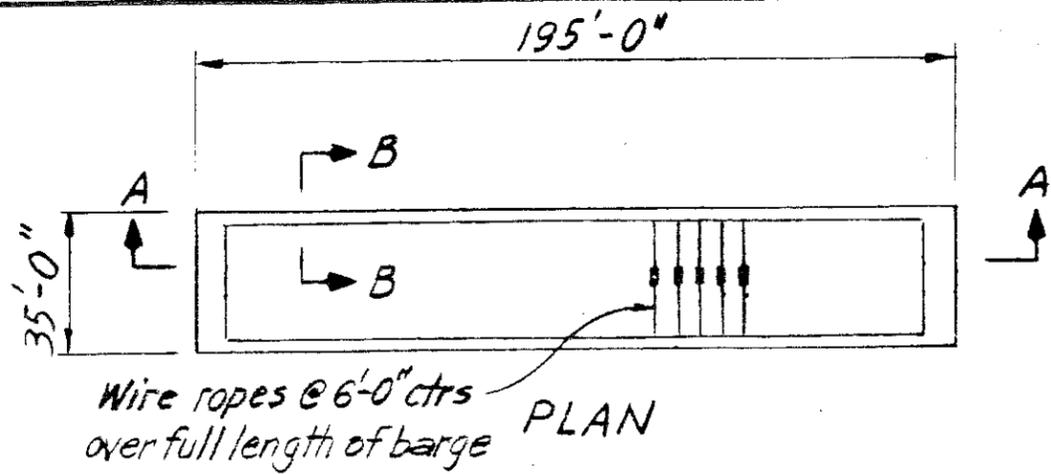
NOTES:

1. The proposed barge/breakwater will utilize a 35' X 195' open-topped hopper barge that is the Owner's property. The Contractor will be responsible for transporting the barge from its berth at Rapp's Marina, I-55 and Des Plaines River, Minooka, Ill. to the site of work. The Contractor will be responsible for barge alterations as shown on Dwg. 1259-C-3. Submit barge sinking plan for approval.
2. All existing piling is PDA-27.
3. Materials may be stored in the existing parking lot North of the Water plant.
4. See attached reference drawings for details of existing ramp to be removed.
5. The Contractor shall provide at its own expense Marine Insurance for the Owner's barge during transit to the site insuring without limitation against replacement costs, bodily and property injury and salvage costs in such amounts and containing such terms as Owner shall approve. The insurance policy shall name the Park District as an additional insured. The barge will be afloat for Contractor pick-up in Minooka. Any necessary pumps to keep the barge afloat shall be provided by Contractor.



GENERAL SITE PLAN
N.T.S.

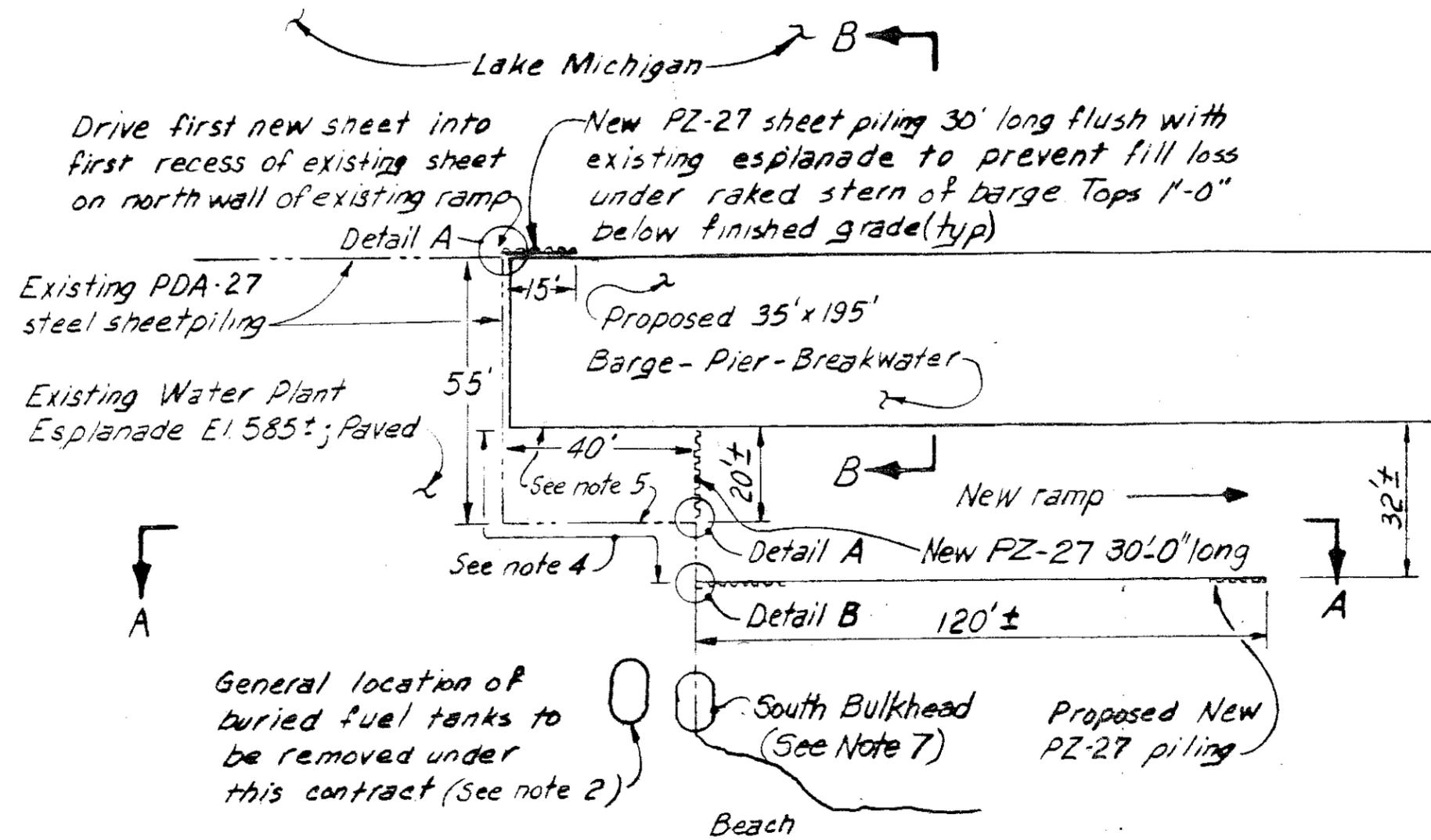
PARK DISTRICT OF HIGHLAND PARK	
PARK AVENUE RAMP	
MARZA ENGINEERING CO., CHICAGO	
APPROVED.....	
DATE SEPT.-81	DWG. NO. 1259 C-2



DETAIL A

Note:
Dimensions of members are approximate

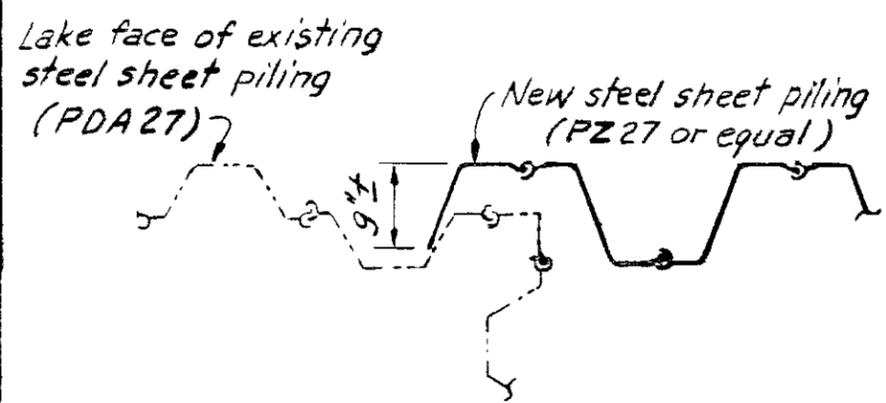
PARK DISTRICT OF HIGHLAND PARK	
BARGE ALTERATIONS PARK AVENUE RAMP	
MARZA ENGINEERING CO., CHICAGO	
APPROVED.....	
DATE Sept. 1981	FIG. NO. 1259C-3



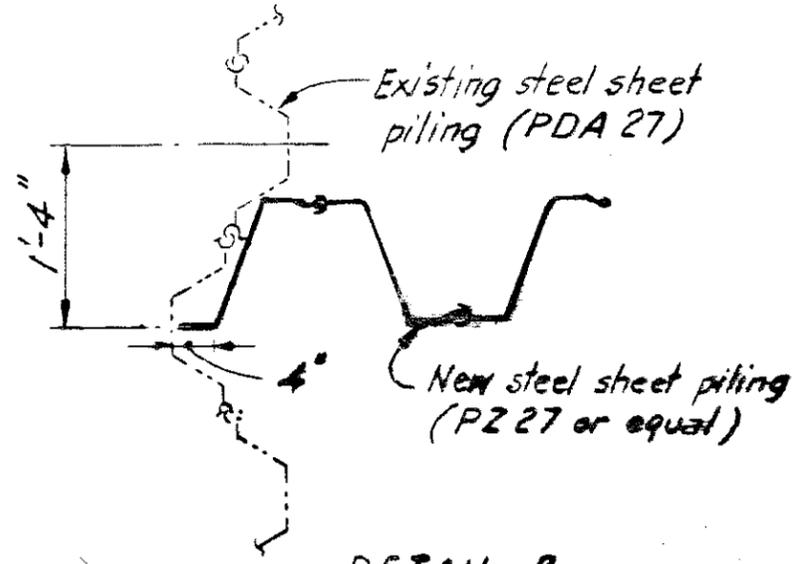
DETAILED PLAN Scale 1" = 30'

NOTES:

1. New steel sheet piling shall be ASTM A-328, PZ-27 new or approved, used piling, or approved piling of equivalent section as determined by the Engineer.
2. Exact location of fuel tanks to be removed is unknown. Attend Bidders Meeting for additional details.
3. Details of existing ramp are not shown; see reference drawings attached.
4. Cut off top of existing piles 6" below existing esplanade grade within areas of new ramp passageway.
5. Fill existing ramp to El. 585' ± and pave to match existing esplanade and upper portion of new ramp.
6. Backfill excavation for fuel tank removal and pave to match existing surface.
7. Remove concrete debris as directed and drive new PDA-27 piles 30' long to fill gap in existing wall 40' wide. Concrete debris may be placed in barge.



DETAIL A

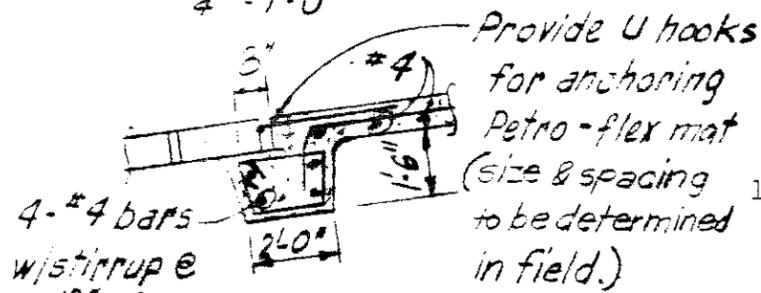
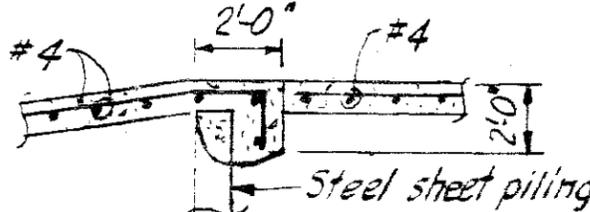
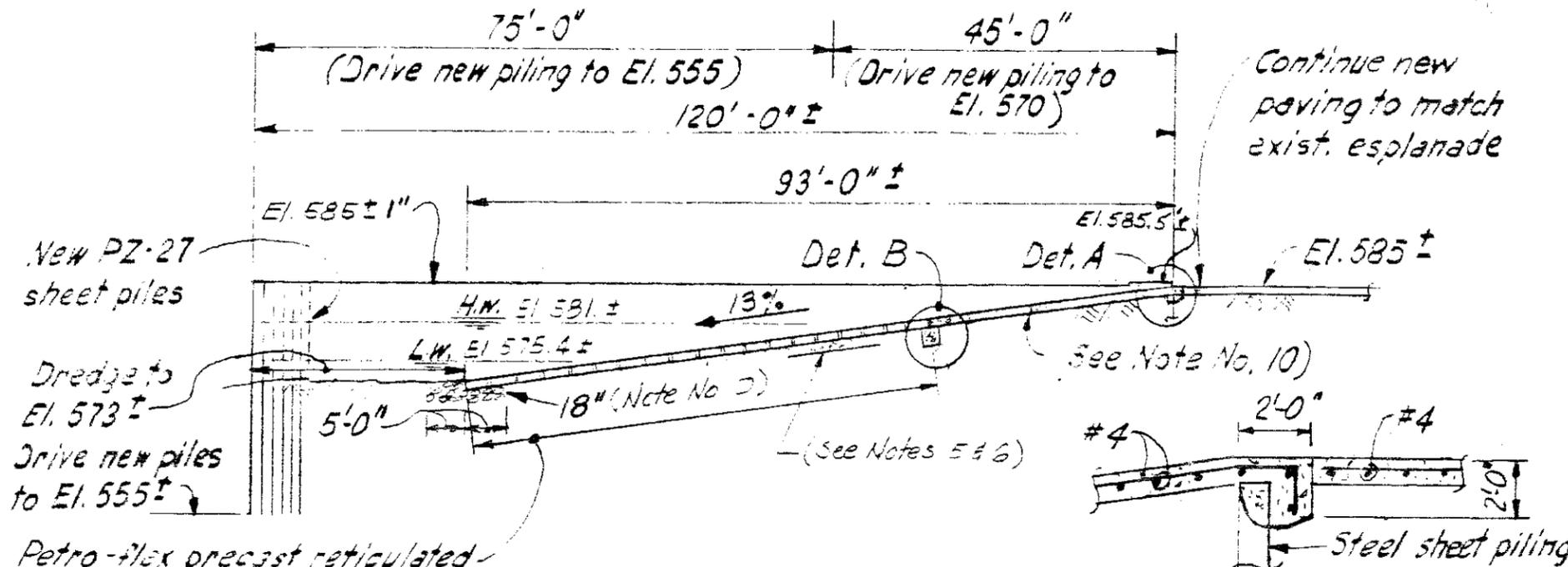


DETAIL B

PARK DISTRICT OF HIGHLAND PARK	
PARK AVENUE RAMP	
HARZA ENGINEERING CO., CHICAGO	
APPROVED.....	
DATE Sept. 1981	FIG. NO. 1259 C-4

NOTES:

1. Drive pile tips to elevation shown or refusal as determined by the Engineer in the field.
2. Drive all piles plumb.
3. Damaged piles shall be removed at no cost to the Owner
4. Petro-flex mats are available from Carlson Sales, St. Charles, Ill. in panels 30' long X 8' wide for field splicing and crane placement. Crane clamp for installation is available from Carlson Sales. Provide Manufacturer's Installation Engineer.
5. Rough grade ramp with sand dredgings and cover w/100 mesh filter cloth (DuPont Typar or equal).
6. Lay Petro-flex on 12" thick IDOT 704.01 crushed stone bedding gradation CA-5 or approved equal.
7. Use deadman for Petro-flex and cast-in-place apron support. Submit shop drawings.
8. Cast-in-place concrete shall conform to IDOT 408.
9. Crushed stone 1'-0" thick IDOT 704.01 gradation CA-1 or approved equal.
10. Cast in place RC slab 8" thick to WL @ time of construction. Reinforce with #4 @ 12" e.w. in center of slab.
11. When sunk, the elevation of any corner of the barge shall not be greater than 6" higher than the lowest corner, side to side, and 1 foot end to end.
12. Drive first four new ramp piles adjacent to existing bulkhead so that new pile tops are at El. 585.5' ±.

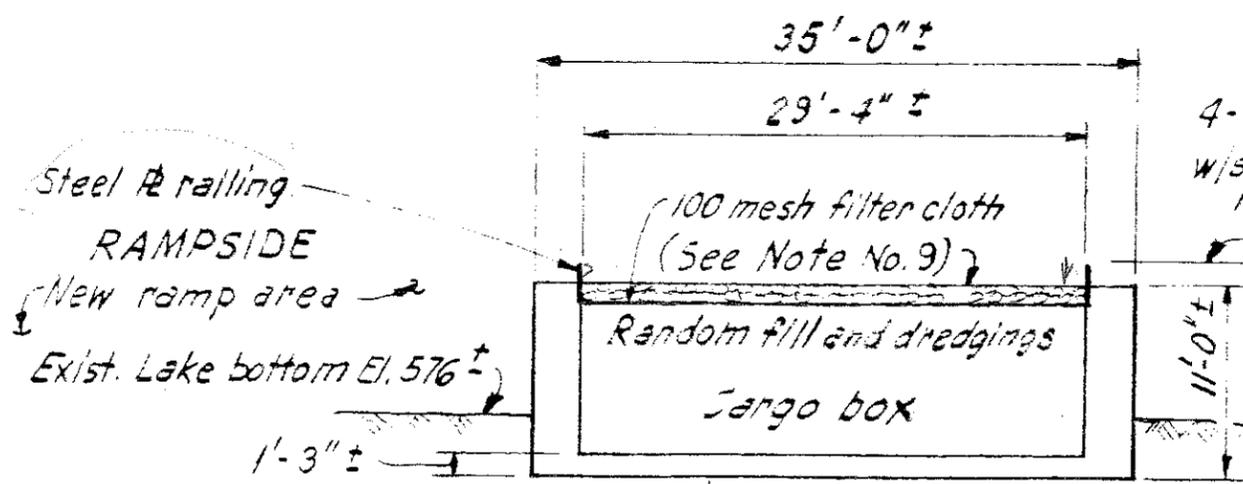


Petro-flex precast reticulated paving mat by Carlson Sales ST Charles, Ill. or equal 60' under water or 60' up ramp slope from El. 573± IGLD

A - A
1/2" = 10'-0"

DETAIL A
1/4" = 1'-0"

DETAIL B
1/4" = 1'-0"



Dredge as necessary for barge installation and level with IDOT CA 11 if necessary. No more than 1.5'± overdredging will be permitted.

B - B
Scale 0 4 8 Feet
3/32" = 1'-0"

Scale 0 10 20 Feet
1/2" = 10'-0"
Except as noted.

PARK DISTRICT OF HIGHLAND PARK	
PARK AVENUE RAMP	
WARZA ENGINEERING CO., CHICAGO	
APPROVED.....	
DATE Sept. 1981	DWG. NO. 1259C-5

ADDENDUM NO. 1

TENDER DRAWINGS AND SPECIFICATIONS

FOR

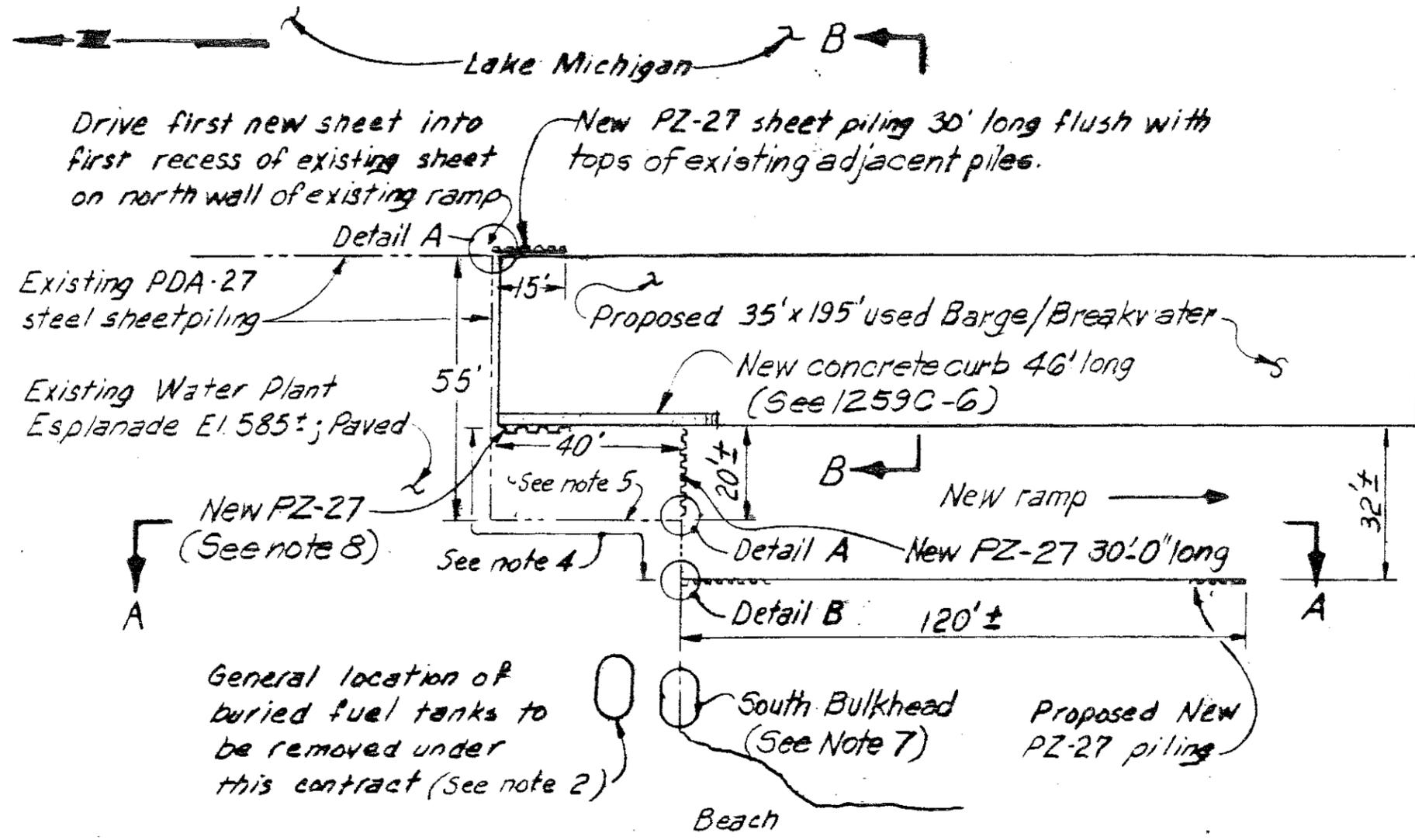
PARK AVENUE BOAT LAUNCHING RAMP

Highland Park, Illinois

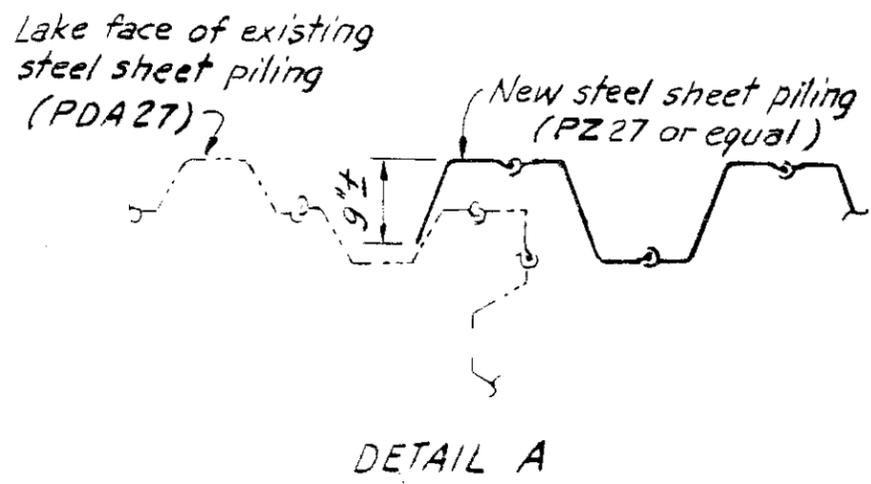
September 9, 1981

1. Drawing No. 1259C-4R1 is hereby issued to Bidders to supersede Drawing No. 1259C-4.
2. Drawing No. 1259C-6 is hereby issued to Bidders as an addition to the TENDER DRAWING set which now consists of the following numbered drawings:
 - 1259C-1
 - 1259C-2
 - 1259C-3
 - 1259C-4R1
 - 1259C-5
 - 1259C-6
3. Construction drawings will be issued.
4. Ramp walkways attached to the barge or new steel sheet piling other than those shown on the drawings identified above are not included in this contract. Mooring accessories and fenders are also excluded.
5. Hydraulic dredging will not be permitted.
6. All dredge spoil not used to satisfy project fill requirements shall be removed from the site of work and disposed of in an approved upland disposal area.
7. The Owner has obtained all necessary Federal and State construction permits for this project. The Contractor will be responsible for obtaining any other necessary permits.
8. Contact the City of Highland Park for weight and traffic restrictions on City streets.

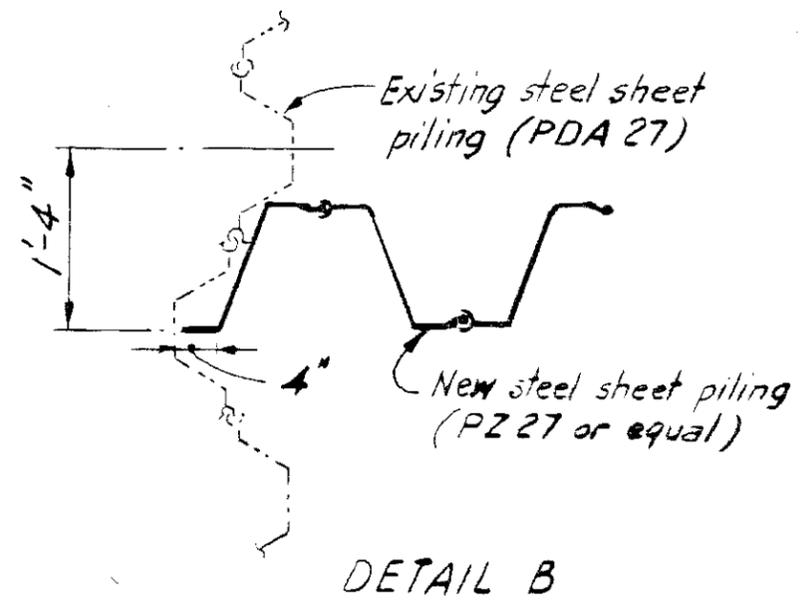
9. Concrete debris removed from South Water Plant bulkhead area shall be either deposited in the used barge as noted on Dwg. 1259C-4R1 or incorporated into new fill in the existing boat ramp area. (See Note 5, Dwg. 1259C-4R1).
10. The Owner and Engineer have inspected the used barge to be transported and sunk as part of this contract. The former barge owner utilized pumps to float the barge for this inspection. The pumps used for this purpose were not in place and operating, however, at the time of the Owner's inspection. The barge was afloat in approximately 4 feet of water. Contact Mr. Dennis Rapp (815) 467-2181 at Rapp's Marina for information concerning his experience in floating the subject barge. Coordinate with Mr. Rapp prior to barge movement to Highland Park.
11. Acknowledge receipt of all Addenda by number and date in proposal letter.



DETAILED PLAN Scale 1" = 30'



DETAIL A



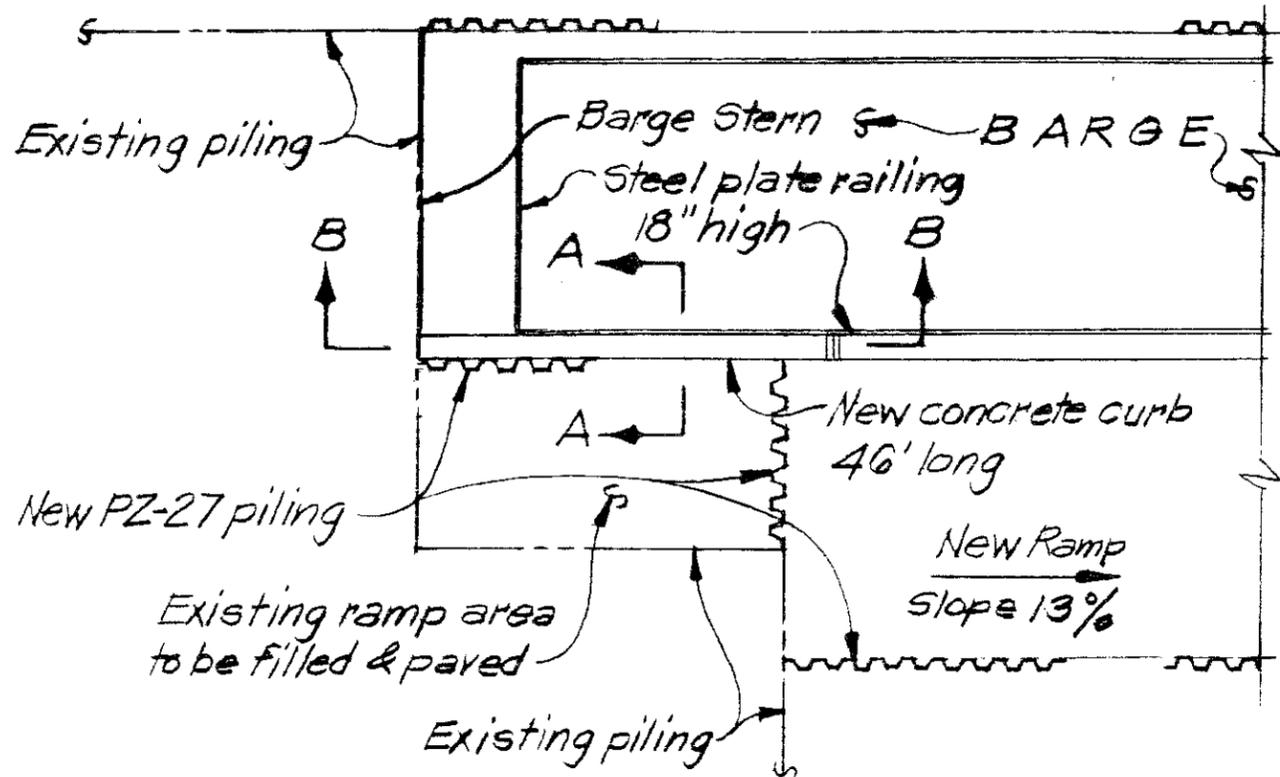
DETAIL B

NOTES:

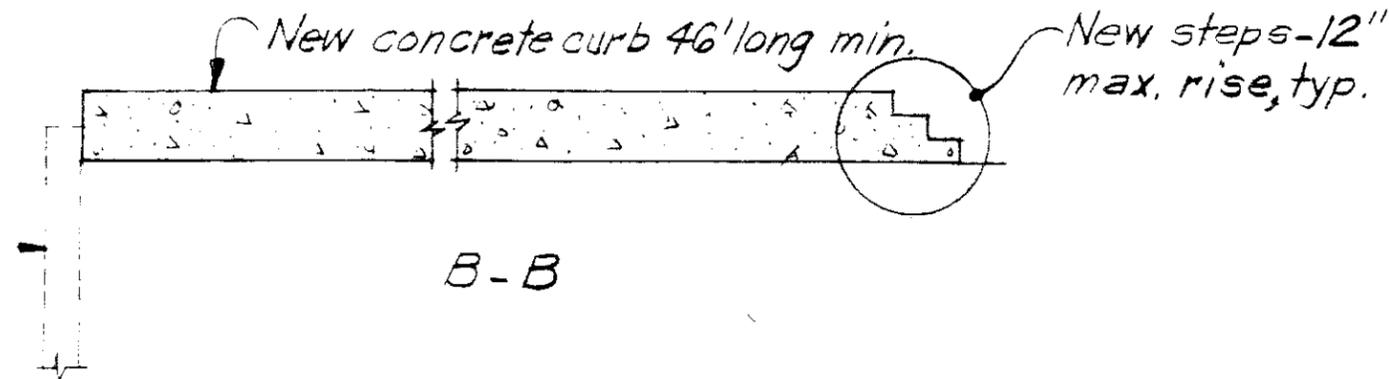
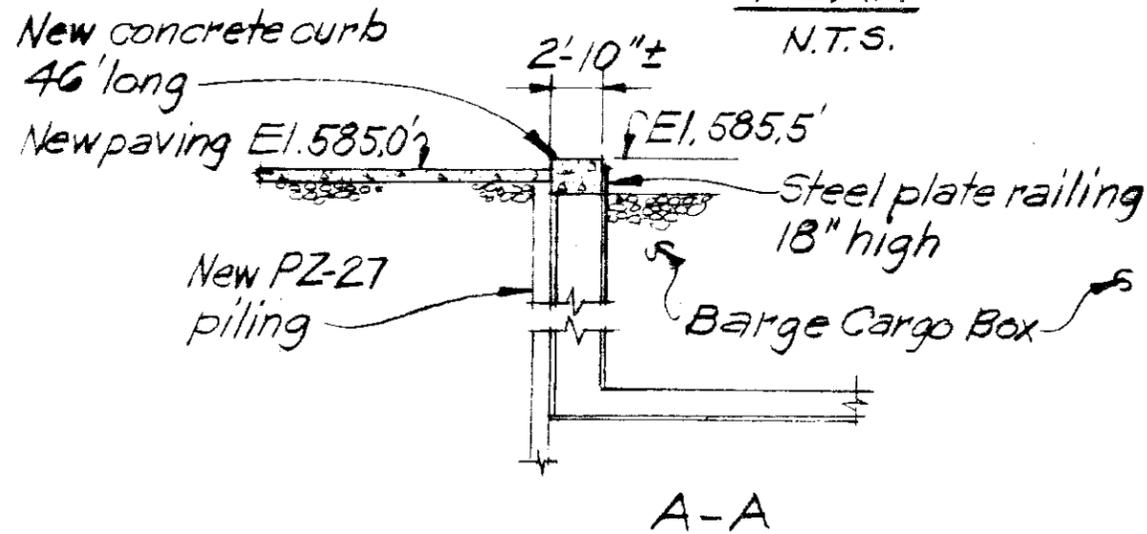
1. New steel sheet piling shall be ASTM A-328, PZ-27 new or approved, used piling, or approved piling of equivalent section as determined by the Engineer.
2. Exact location of fuel tanks to be removed is unknown. Attend Bidders Meeting for additional details.
3. Details of existing ramp are not shown; see reference drawings attached.
4. Cut off top of existing piles 6" below existing esplanade grade within areas of new ramp passageway.
5. Fill existing ramp area and pave to match existing esplanade and upper portion of new ramp.
6. Backfill excavation for fuel tank removal and pave to match existing surface.
7. Remove concrete debris as directed and drive new PDA-27 piles 30' long to fill gap in existing wall 40' wide. Concrete debris may be placed in barge.
8. Drive new PZ-27 sheet piles 15' long from existing sheeting south to cover stern rake of barge as sunk (see 1259C-3). Tops of new piles to be 6" above finished adjacent paving. Remove sharp edges and burrs from tops of piles as directed.

PARK DISTRICT OF HIGHLAND PARK	
PARK AVENUE RAMP	
HARZA ENGINEERING CO., CHICAGO	
APPROVED.....	
DATE Sept. 1981	DWG. NO. 1259C-2-2

LAKE MICHIGAN



PLAN
N.T.S.



NOTES:

1. Submit shop drawings for new curb.
2. Reinforce curb for shrinkage per ACI 318. Reinforce steps per approved Shop Drawings.
3. Anchor curb to barge with 9" Nelson Studs or equal; 2 rows, 2'c.c. in each row.

PARK DISTRICT OF HIGHLAND PARK

PARK AVENUE RAMP

HARZA ENGINEERING CO., CHICAGO

APPROVED.....

DATE Sept. 1981

DWG. NO. 1259C-6



Temporary Repairs of the Boat Ramp
31 Park Avenue, Highland Park, IL 60035

Owner: Park District of Highland Park
Westridge Center, 636 Ridge Road
Highland Park, IL 60035

GENERAL REQUIREMENTS

1. Drawings and bid form are complementary, are to be taken as a whole, and should include sufficient information necessary for the execution and completion of the work in a manner consistent with the design intent. In the absence of explicit or reasonably inferable information on drawings, promptly seek clarification from Engineer as a request for information.
2. Promptly report to Engineer as a request for information known or suspected errors, inconsistencies, or omissions on drawings as well as known or suspected variance of drawings from existing conditions. For bidding purposes only and unless otherwise directed by engineer, the more stringent requirement or better quality shall take precedence.
3. Dimensions, quantities, and geometries provided for existing construction are based on original drawings and limited field documentation by Engineer. Field verify applicable information prior to submitting a bid, ordering materials, or otherwise committing resources to the work. Provided dimensions take precedence over scaled dimensions.
4. Provide labor, materials, equipment, supervision, and coordination directly and incidentally necessary to perform the work in accordance with contract documents.
5. Activities or duties of engineer or tests, inspections, or approvals required or performed by third parties shall not relieve contractor of its obligation to perform the work in accordance with contract documents.
6. Comply with and give notices required by laws, statutes, ordinances, codes, rules and regulations, and lawful orders of authorities having jurisdiction applicable to the work.
7. Supply owner with safety data sheets (sds) for each chemical that will be brought onto owner's property.
8. Contractor is solely responsible for, and shall have sole control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the work. Engineer has no such responsibilities. Specific instruction that may be given in contract documents concerning construction means, methods, techniques, sequences, or procedures shall not relieve contractor of its responsibility for control and coordination.
9. Contractor is solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the work. Engineer has no such responsibilities beyond its own employees.
10. Maintain premises and surrounding area free from accumulations of waste material and rubbish resulting from the work.
11. Develop, implement, erect, and maintain safeguards to prevent damage, injury, or loss resulting from the work to (a) workers, passers-by, and other persons; (b) in-progress work, materials, and equipment under care, custody, and control of the contractor (whether on or off site); and (c) other property at the site or adjacent thereto not designated as part of the work for removal, relocation, or replacement. In the event of damage, injury, or loss, promptly notify engineer and present proposed remedy.
12. In an emergency affecting safety of persons or property, act to prevent or stop further damage, injury, or loss.
13. All work shall be subject to review by Engineer before it is concealed by other work and/or means of access is removed. Coordinate mandatory reviews with engineer prior to start of construction. Provide reasonable notification to engineer to allow for such review as work proceeds.
14. Promptly correct work rejected by engineer or failing to conform to requirements of the contract documents. Associated costs (including additional testing or inspections, cost of uncovering and correction, and compensation for Engineer's services and expenses made necessary thereby) shall be the contractor's responsibility.
15. If a hazardous material or substance not addressed in the contract documents is encountered, immediately stop work in affected area and notify Owner and Engineer of the condition.

SUMMARY OF WORK

This repair work is intended to restore deteriorated submerged precast concrete planks and cast in place concrete slab-on-grade forming inclined boat ramp, deteriorated concrete at top of the ramp, and to fill in void created by eroded soil at the northeast corner below the slab-on-grade access ramp at the boat ramp located at 31 Park Avenue, Park District of Highland Park in Highland Park, Illinois. Overall view, plan view, sections, typical distress conditions and repair details with the scope of work are shown in Drawings SK-1 and SK-2.

The temporary repairs of the boat ramp should include, but are not limited to the following:

1. Repair deteriorated submerged precast concrete planks and submerged edge of the cast-in-place concrete slab-on-grade by installing reinforcing wire mesh and casting new concrete topping over it. All submerged existing concrete and reinforcing bars to remain in place where new concrete topping will be cast over them must be water blasted to remove present biological growth and corrosion.
2. Repairing deteriorated concrete at the top of the ramp to eliminate tripping hazards.
3. Filling out the void caused by eroded soil, below the slab-on-grade at the northeast corner of the ramp with concrete.

Existing concrete barricades preventing access to the boat ramp will be removed prior to start of work by Park District of Highland Park and reinstalled in place after repairs at the boat ramp are completed.

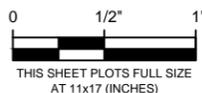
Damaged submerged electrical conduit present at base of the ramp will be repaired by Park District of Highland Park.

MATERIAL NOTES

The following is the list of materials to be used for repairs as shown on Sheets SK-1 and SK-2:

1. Structural repair concrete shall be a normal weight concrete with a 28-day compressive strength of 5,000 psi suitable for "free dump through water" application. The concrete mixture should contain anti-washout mixture.

 Mix Design:
 Cement (C): 600 pcy
 Fly Ash (FA): 90 pcy
 Silica Fume (SF): 43 pcy
 Water/(C+FA+SF)Ratio: 0.4
 Fine Aggregate: 1,467 pcy
 Coarse Aggregate: 1,550 pcy
 Anti-Washout Mixture: 0.60 gcy
 High range water reducing mixture: 1.90 gcy
 Slump: 10 in.
 24-hr Strength: 1,960 psi
2. Wire Mesh Reinforcement - 6x6-W4.0xW4.0.
3. Dowel - Reinforcing bar #3.
4. Epoxy Adhesive - HIT HY-200 System as manufactured by Hilti, Inc. or an approved equal

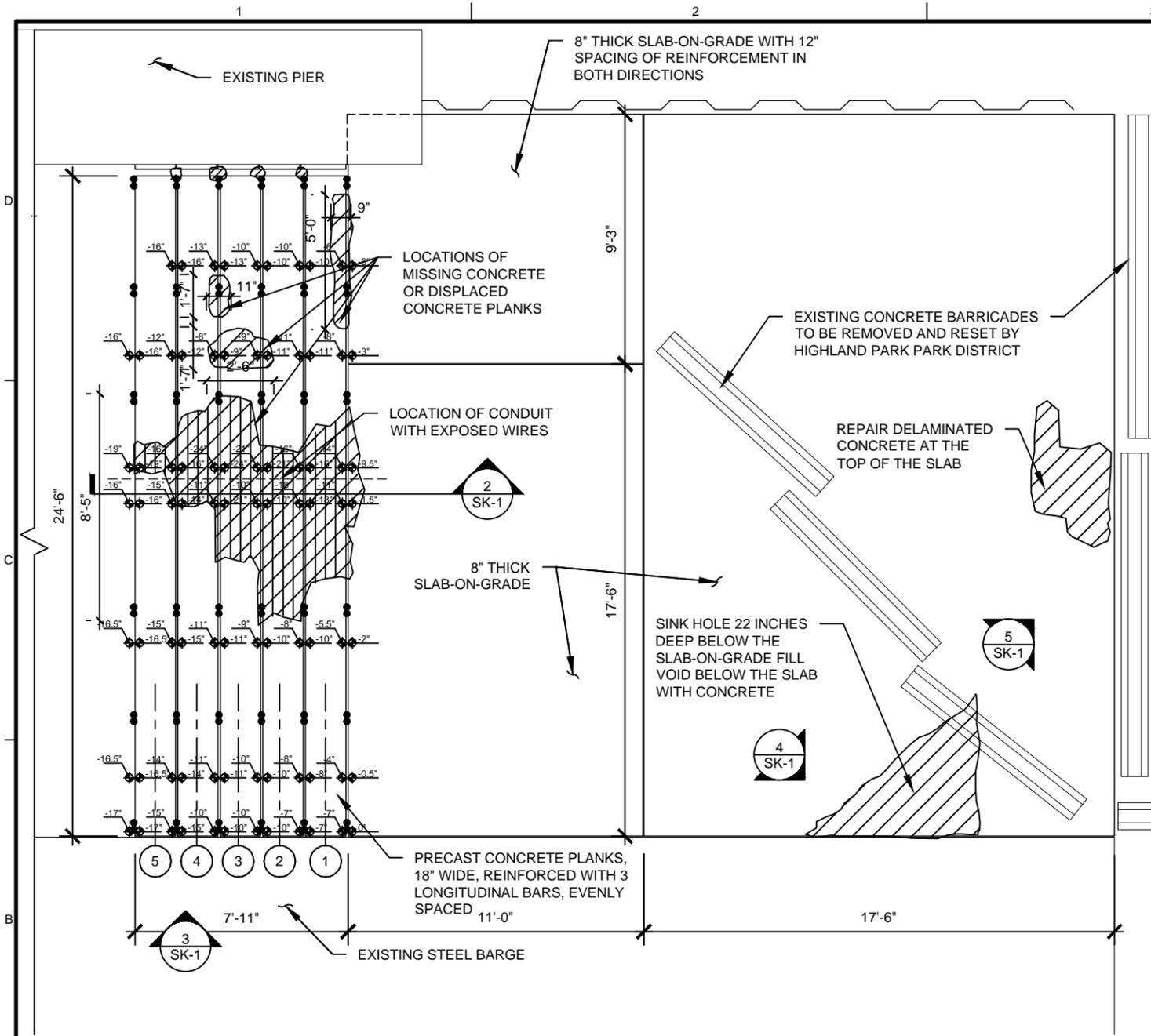


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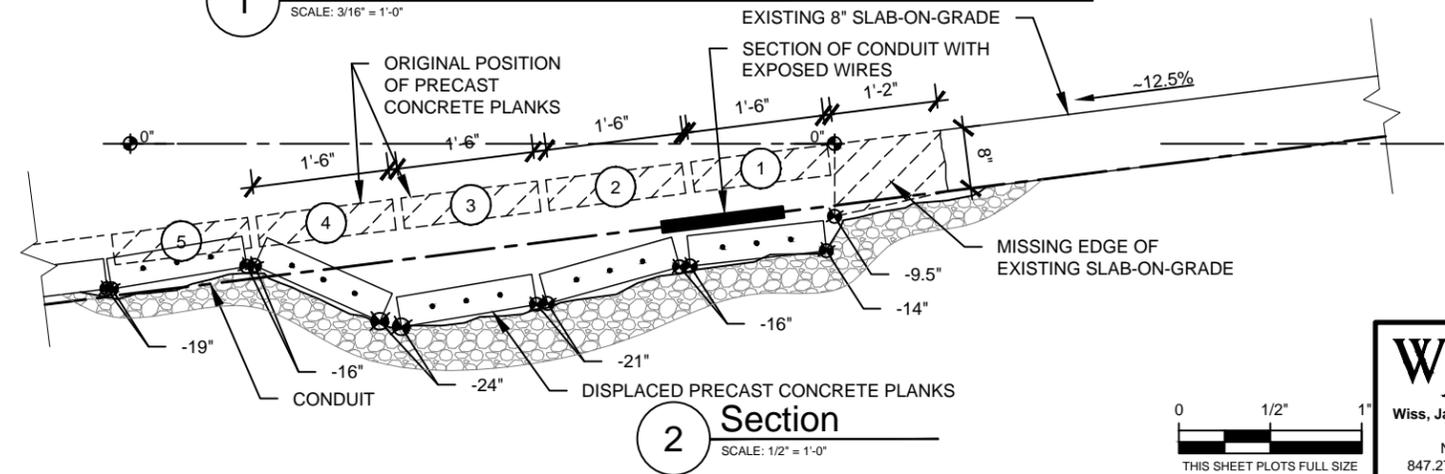
Project	Temporary Repairs of the Boat Ramp 31 Park Avenue, Highland Park, IL 60035		Proj. No.	2021.4890
Sheet Title	Cover Sheet		Date	November 2, 2021
			Drawn	SKA
			Checked	DV/PLP
			Scale	As Noted

SK-0

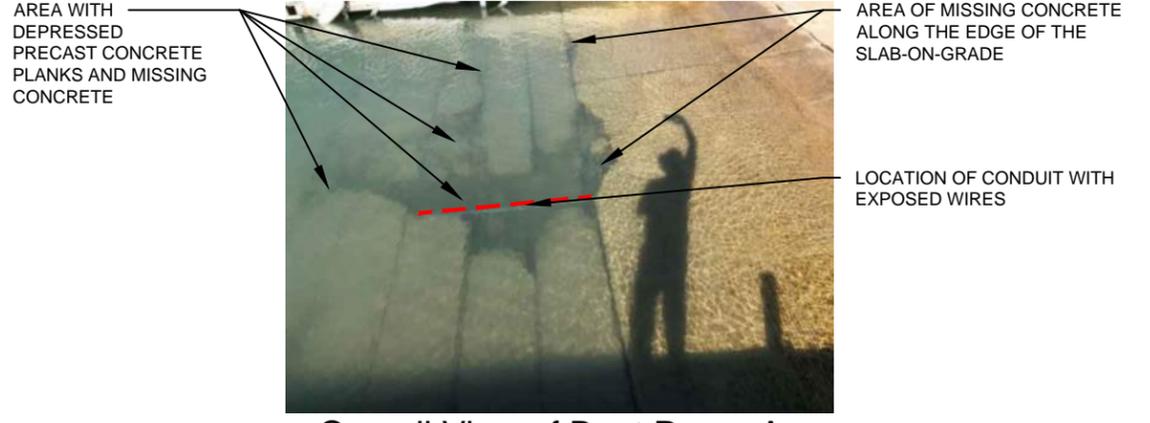
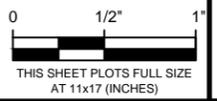
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1 Plan View of the Boat Ramp with Elevation Survey
SCALE: 3/16" = 1'-0"

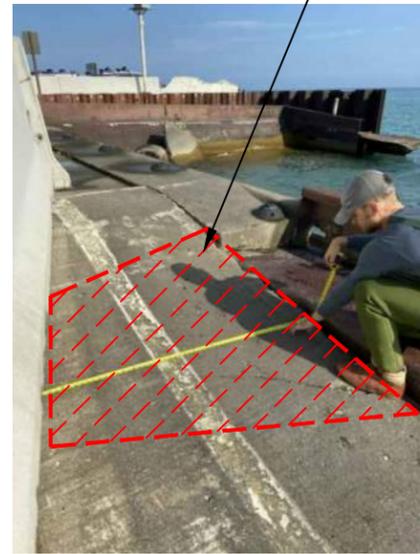


2 Section
SCALE: 1/2" = 1'-0"



3 Overall View of Boat Ramp Area with Missing Concrete
Not to Scale

LOCATION OF 22" DEEP VOID BELOW THE CONCRETE SLAB TO BE FILLED WITH CONCRETE



4 Void Below the Slab-On-Grade
Not to Scale

SPALLED CONCRETE AT THE TOP OF THE RAMP REMOVE SPALLED CONCRETE, INSTALL DOWELS AND CAST NEW CONCRETE PER DETAIL 4/SK-2



5 Spalled Concrete at the Top of the Ramp
Not to Scale

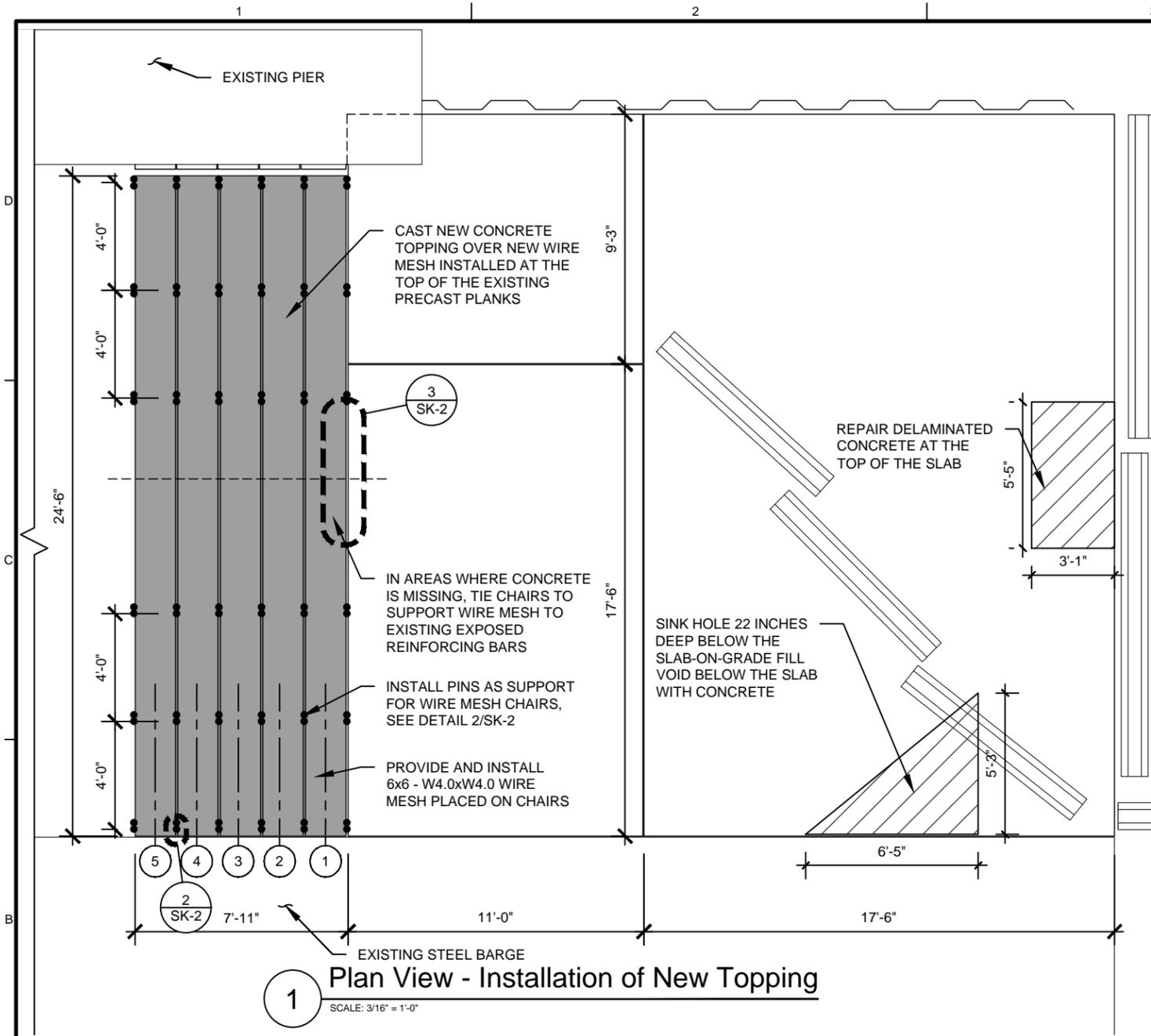
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Project	Temporary Repairs of the Boat Ramp 31 Park Avenue, Highland Park, IL 60035
Sheet Title	Plan View and Cross Section

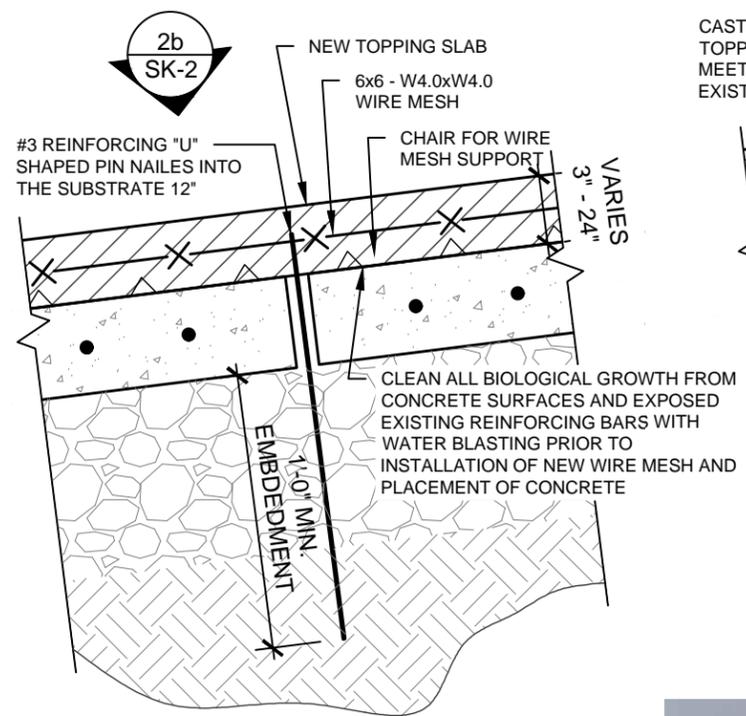
Proj. No.	2021.4890
Date	November 2, 2021
Drawn	SKA
Checked	DV/PLP
Scale	As Noted

Sheet No. **SK-1**

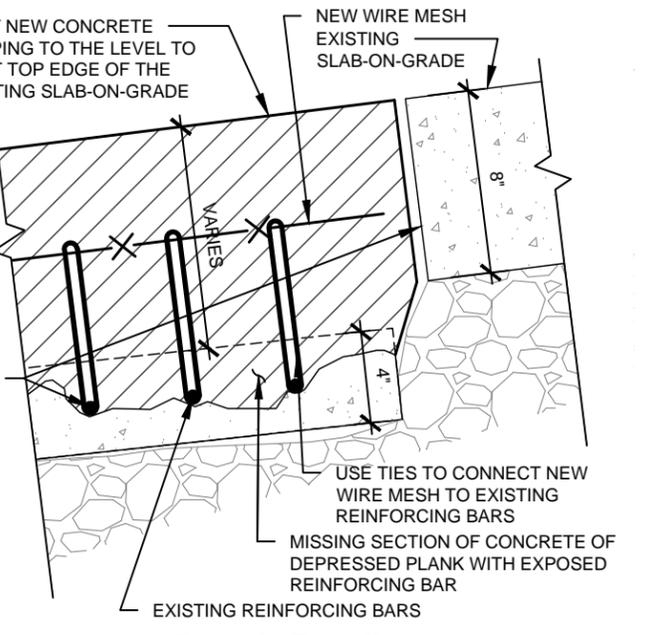
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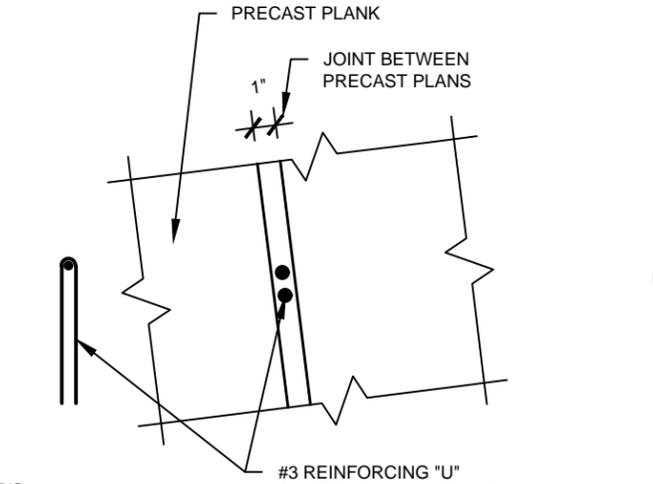
1 Plan View - Installation of New Topping
SCALE: 3/16" = 1'-0"



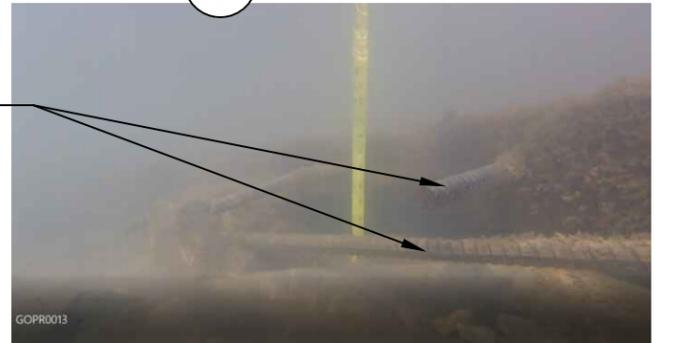
2a Pin Detail
SCALE: 1 1/2" = 1'-0"



3 Repair Detail
SCALE: 1 1/2" = 1'-0"



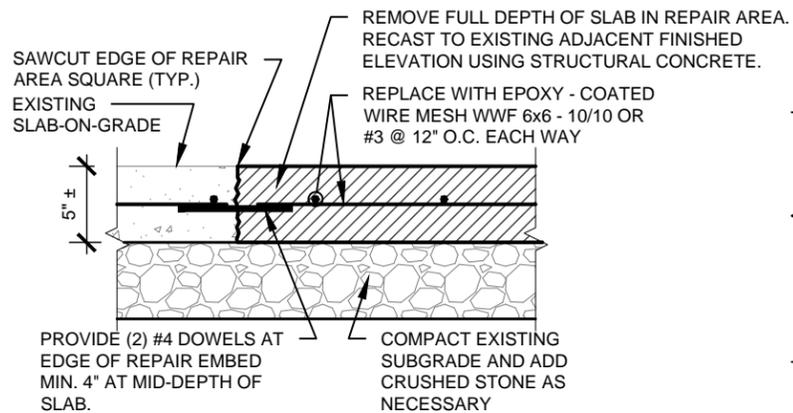
2b Pin Detail - Plan View
SCALE: 1 1/2" = 1'-0"



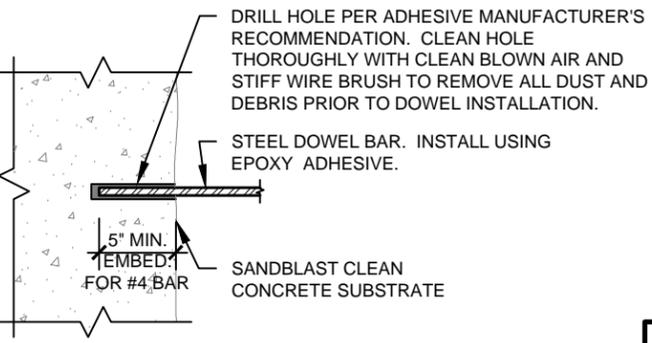
3b Existing Condition at Concrete Slab-On-Grade Edge
Not to Scale



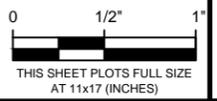
3c Existing Condition at Precast Concrete Plans with Missing Concrete
Not to Scale



4 Slab-On-Grade Replacement
SCALE: 1" = 1'-0"



5 Epoxy Dowel Detail
SCALE: 1" = 1'-0"



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Project: Temporary Repairs of the Boat Ramp
31 Park Avenue, Highland Park, IL 60035
Sheet Title: Repair Details

Proj. No.	2021.4890
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Sheet No. **SK-2**