

Project: Phase 5 & 6 Pile Remediation –
Design & Engineering Services

Date: January 7 , 2016

Engineer: N/A

RE: Addendum #2

of Pages: 2

The following responses and/or clarifications are to be made to the Request for Proposals for Phase 5 & 6 Pile Remediation – Design & Engineering Services” (the “RFP”). The responses address all questions received by close of business on December 22, 2015.

Questions: (answers to all question are shown in italics immediately after the question):

1. The DEC permit attached to the RFP as Exhibit G states that the project was permitted for 654 pile repairs. It was then amended to allow for an additional 211 piles and 58 CY of fill in Areas 2 and 5. Can you please confirm how much of this permitted amount has been used in the previous phases of work and how many permitted installations and CY of fill remain available for this work. This will help us understand the required permitting effort for these phases of work.
The DEC has provided BPCA with a multi-year general maintenance permit (Permit #2-6299-00027/00026). For each project performed under the general parameters of this multi-year permit, a modification of the general permit must be applied for and obtained from the DEC. The modified permit attached to the RFP as Exhibit G reflects the modification obtained for the 2015, Phase 4 project, and is provided for informational and illustrative purposes. The modification for the Phase 4 work cannot be used for Phase 5 or 6 work. The consultant is responsible for the work to amend the open DEC permit for the specific scope in Phases 5 & 6, irrespective of previous work completed.
2. The permit also states that the repairs can be protective or structural. The drawings attached to the RFP in Exhibit F show only protective details. Were structural repairs required on the previous work phases? If so, what was the count and overall percentage of repairs that were structural?
Structural repairs were performed in Phases 1 & 2; there were no structural repairs in Phases 3 & 4. The structural repairs accounted for less than 1% of the piles in Phases 1 & 2.
3. Can the BPCA please provide full drawing sets for the previous repair phases? This will help us understand what percentage of piles required repairs during the previous phases.
Jackets (for remediation) were installed on 100% of the piles in all prior phases. Less than 1% of the piles in Phases 1 & 2 required repairs (all repairs being structural for purposes of this response). There were no repairs performed in Phases 3 & 4. Given the information provided in this Addendum, reference to prior sets of drawings should not be necessary to determine the percentage of piles requiring repairs. Nevertheless, drawings for Phase 4 are available for review at bpca.ny.gov.
4. Are there any known issues internal to the concrete of the existing piles (such as ASR or DEF)?
Yes, both ASR and DEF were found in the 20"x20" pre stressed concrete piles
5. The type of repair specified on the drawings is well suited to provide a protective repair to reduce steel corrosion. The specified repair is not necessarily appropriate for internal issues with the concrete. In order to properly evaluate the efficiency of the design, please indicate if there are any known issues internal to the piles and if any testing has been performed to determine if the repair is effective.

Based upon prior design recommendations, Battery Park City Authority has chosen the grout filled fiberglass jackets as a method to extend the life of the piles for 40-50 years. The worst areas, Phase 1 & 2 have previously been jacketed. No subsequent tests have been performed to assess the degree of effectiveness of the jackets in slowing down the ASR and DEF. If a Proposer recommends a different method of remediation, please include the estimated additional construction cost per pile.

6. Will CADD Drawings (site plans, sections, details, etc.) be made available to the winning team?
CADD drawings of existing details and sections will be made available to the successful Proposer.
7. The URL address for the Mandatory Forms is not working. Can you provide a new URL address?
<http://bpca.ny.gov/wp-content/uploads/2015/03/Vendor-Responsibility-Questionnaire.pdf>
8. Will there be any changes in the precast concrete sea wall elevation shown as EL.+7'?'
No changes to the precast concrete seawall are required
9. Can you provide the previous Phase inspection reports including core sampling results?
There were no core samples taken in the Phase 4 project.
10. Was there any prior inspections performed on the superstructures such as pile cap and deck?
A swim by inspection was performed of a section of this location and no issues were found.
11. Does the armored embankment require inspection as well?
Yes, an inspection of bottom conditions is required for construction details; i.e. good/bad bottom, soft/hard bottom

By signing the line below, I am acknowledging that all pages of Addendum #2 have been received, reviewed and understood, and will be incorporated into the bid price submitted. This document must be attached to the Proposal for consideration.

Print Name	Signature	Date
Number of pages received: _____ <fill in>		

Distributed to: All present and all prospective Proposers



bridge, highway & rail engineering
entertainment engineering
subaqueous investigation
civil & site engineering
structural design
marine facilities
geotechnics
surveying
forensics

April 16, 2015

Regional Permit Administrator
NYSDEC Region 2 Headquarters
New York State Department of Environmental Conservation (NYSDEC)
1 Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101-5407

Attn: Sandra Reyes-Guerra

Email: smreyesg@gw.dec.state.ny.us

Re: DEC Permit: # 2-6299-00027/00026
USACE Permit: NAN-2014-00122
Permit Modification #2 – Request for Modification to Work Area
Battery Park City Esplanade – Pile Remediation Program 2014
New York, New York
McLaren File No. 141037

Dear Ms. Reyes-Guerra,

This letter is to request a modification to the approved work area for DEC Permit No. 2-6299-00027/00026 (attached). Please refer to Attachment 2 for drawings referencing the scope of work to be completed at the site. The original permit work area was confined to Areas 3 and 4, and the north side of Area 5 adjacent to the north path tube. Battery Park City requests that the permit be modified to include the piles in areas 2 and 5, along the south and east portions of North Cove Marina.

Scheduled work will commence from June 1 to October 31 and not extend into the moratorium.

All proposed repairs are the same as in the originally permitted design. The original permitted work was for 654 piles with 160 CY of fill, of which 540 piles for 120 CY of grout was completed in November 2014. Assuming the proposed work is approved, the expanded project scope would result in protective pile encasements being applied to 193 piles resulting in 51 CY of fill in the Hudson River. Since repairs are part of a scheduled

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M.G. McLaren P.C.

100 Snake Hill Road
West Nyack, NY 10994
Phone (845) 353-6400
Fax (845) 353-6509
e-mail: mgmclaren@mgmclaren.com
On the web: www.mgmclaren.com

pile remediation plan. The permit modification would accelerate the repairs and ensure a life span of 50 years.

Should you have any questions or concerns relating to this matter, please do not hesitate to contact the undersigned at (845) 353-6400 x 3384.

The Office of
M.G. McLAREN, P.C.
d/b/a McLaren Engineering Group

Attachments:

1. DEC Permit # 2-6299-00027/00026
2. Construction Drawings

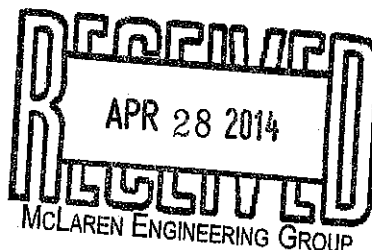
New York State Department of Environmental Conservation
Division of Environmental Permits, Region 2
47-40 21ST Street, Long Island City, NY 11101-5407
Phone: (718) 482-4997 \$ **FAX:** (718) 482-4975
Website: www.dec.state.ny.us



Joe Martens
Commissioner

April 17, 2014

Mr. Matthew Daniels
M. G. McLaren, P. C.
100 Snake Hill Road
West Nyack, NY 10994



130870
mjd
Rjm
CTC

Re: NYSDEC Permit application #2-6299-00027/00026
Battery Park City Esplanade – Pile Remediation Program 2014
Facility: BATTERY PARK CITY
ECL Article 25 - Tidal Wetlands
ECL Article 15 - Protection of Waters
6 NYCRR 608 - Water Quality Certification
NOTICE OF PERMIT ISSUANCE

Dear Mr. Daniels:

Enclosed is your permit for the above referenced project. It is effective beginning April 17, 2014 and expires on December 31, 2017.

Please read all permit conditions carefully. All permit documents must be available upon request by Department staff and must be distributed to and understood by personnel responsible for the proper operation of the project and compliance with the permit requirements. Any violation of these permit conditions constitutes a violation of the Environmental Conservation Law.

Any questions concerning this matter should be directed to Sandra Reyes-Guerra in the Division of Environmental Permits at (718) 482-4969.

Very truly yours,

Sandra Reyes-Guerra
Environmental Analyst 2



PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
BATTERY PARK CITY AUTHORITY
24TH FL

1 WORLD FINANCIAL CTR
NEW YORK, NY 10281
(212) 417-2000

Facility:
BATTERY PARK CITY
WEST ST - W SIDE - CHAMBERS ST TO
BATTERY PL
NEW YORK, NY

Facility Location: in NEW YORK COUNTY **Village:** MANHATTAN

Facility Principal Reference Point: NYTM-E: 583.006 NYTM-N: 4506.765
Latitude: 40°42'27.4" Longitude: 74°01'02.5"

Project Location: W of BPC btwn Liberty & Vesey & btwn Murray & Chambers, under esplanade
Authorized Activity: Phase 2 Pile Remediation consists of applying protective and structural wraps to 654 piles at the location referenced above.

Permit Authorizations

Excavation & Fill in Navigable Waters - Under Article 15, Title 5

Permit ID 2-6299-00027/00024

New Permit

Effective Date: 4/17/2014

Expiration Date: 12/31/2017

Water Quality Certification - Under Section 401 - Clean Water Act

Permit ID 2-6299-00027/00025

New Permit

Effective Date: 4/17/2014

Expiration Date: 12/31/2017

Tidal Wetlands - Under Article 25

Permit ID 2-6299-00027/00026

New Permit

Effective Date: 4/17/2014

Expiration Date: 12/31/2017

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: JOHN F CRYAN, Regional Permit Administrator
Address: NYSDEC REGION 2 HEADQUARTERS
47-40 21ST ST
LONG ISLAND CITY, NY 11101 -5407

Authorized Signature:

Date: 4/17/2014



Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: EXCAVATION & FILL IN NAVIGABLE WATERS; WATER QUALITY CERTIFICATION; TIDAL WETLANDS

1. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by As cited in Natural Resources Special Condition 2..
2. **Conformance with Plans - Addenda** In addition to plans referenced in the Condition titled "Conformance with Plans," the activities authorized by this permit must be in strict conformance with the following approved plans and/or submissions made as part of the permit application:
 - A. Plans prepared by M.G. McLaren P.C., entitled "Battery Park City Esplanade Pile Remediation Program 2014," Sheets 1-9 of 9, dated 4 March 2014, and received by NYSDEC on 11 March 2014.
3. **Notice of Intent to Commence Work** At least five (5) days prior to the start of work. Permittee must complete and submit the attached "Notice of Intent to Commence Work" form to the NYSDEC Bureau of Marine Resources, 47-40 21st Street, Long Island City, New York 11101 (Attention: Christina Batoh; cdbatoh@gw.dec.state.ny.us).
4. **Posting of NYSDEC Permit Sign** The attached NYSDEC permit sign shall be posted, protected from the weather, in a conspicuous outdoor location at the project site. This sign is to be posted for the duration of work authorized by this permit.
5. **Best Management Practices** Best management practices will be employed to prevent the loss of construction materials, debris, and sediment from entering the waterways. Such practices may include, but are not limited to silt fencing, hay bales, and floating booms.
6. **Minimize Adverse Impacts to Wetlands, Wildlife, Water** All work must be performed in a manner which minimizes adverse impacts to wetlands, wildlife, water quality and natural resources.
7. **No In-Water Work Between November 1st and April 30th** In-water work is prohibited between November 1st and April 30th of any given year.



8. Concrete or Leachate Must Not Escape During construction, concrete or leachate will not escape or be discharged, nor will washings from transit mix trucks, mixers, or other devices enter tidal wetlands and or protected buffer areas.

9. Removal of Debris and Excess Material Any debris or excess material from construction of this project will be completely removed from the adjacent area (upland) and removed to an approved upland area for disposal. No debris is permitted in tidal wetlands or tidal wetlands adjacent area or protected buffer areas.

10. Demolition and Construction Debris Should any demolition or construction debris fall into the waterway or enter the tidal wetlands, it must be removed immediately.

11. Disposal of Demolition and Construction Debris All demolition and construction debris must be properly disposed of at a licensed facility.

12. Prior Approval of Changes If the Permittee desires to make any changes in construction techniques, species to be planted, the site plan, any mitigation plan, scheduling or staging of construction, or any other aspect of this project, the Permittee shall submit a written request to the Regional Permit Administrator to make such proposed changes and shall not make such changes unless authorized in writing by the Department.

13. Failure to Meet Permit Conditions Failure of the permittee to meet all the conditions of this permit is a violation of this permit and grounds for an order to immediately cease the permitted activity at the project site.

14. No Interference With Navigation There shall be no unreasonable interference with navigation by the work herein authorized.

15. Precautions Against Contamination of Waters All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.



WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. Water Quality Certification The NYS Department of Environmental Conservation hereby certifies that the subject project will not contravene effluent limitations or other limitations or standards under Sections 301, 302, 303, 306 and 307 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. Facility Inspection by The Department The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. Relationship of this Permit to Other Department Orders and Determinations Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. Applications For Permit Renewals, Modifications or Transfers The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC REGION 2 HEADQUARTERS
47-40 21ST ST
LONG ISLAND CITY, NY 11101 -5407

4. Submission of Renewal Application The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Excavation & Fill in Navigable Waters, Water Quality Certification, Tidal Wetlands.



5. Permit Modifications, Suspensions and Revocations by the Department The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

- a. materially false or inaccurate statements in the permit application or supporting papers;
- b. failure by the permittee to comply with any terms or conditions of the permit;
- c. exceeding the scope of the project as described in the permit application;
- d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
- e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. Permit Transfer Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.



NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification

The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

New York State
Department of Environmental Conservation



The Department of Environmental Conservation (DEC) has issued permit(s) pursuant to the Environmental Conservation Law for work being conducted at this site. For further information regarding the nature and extent of work approved and any Departmental conditions on it, contact the Regional Permit Administrator listed below. Please refer to the permit number shown when contacting the DEC.

Permit Number 2-6299-00027/00024

Expiration Date 12/31/2017

John F. Cryan
Regional Permit Administrator

John F. Cryan
47-40 21st Street
LIC, NY 11101
(718) 482-4997

NOTE: This notice is NOT a permit

NOTICE OF INTENT TO COMMENCE WORK

Date: _____

**NYSDEC Marine Resources
Attn. Marine Resources Supervisor
N.Y.S.D.E.C Region 2 Office
47-40 21st Street
Long Island City, N.Y. 11101**

**Re: NYSDEC Permit No. 2-6299-00027/00024
BATTERY PARK CITY
WEST ST - W SIDE - CHAMBERS ST TO BATTERY PLACE
BETWEEN LIBERTY & VESEY ST AND BETWEEN MURRAY & CHAMBERS
ST, UNDER ESPLANADE, MANHATTAN
NEW YORK, NY 10021**

Dear Marine Resources Supervisor:

In accordance with Natural Resource Condition 3 of the referenced permit, I hereby serve notice to commence work on _____, 20____.

This is also to certify that, having read this entire permit, I am fully aware of and understand the general and natural resource conditions therein, and agree to comply with all such conditions further understand that prior to undertaking any modification to the subject work, I must seek and receive written approval of the NYSDEC Regional Permit Administrator.

Signature of Permittee

Signature of Contractor

Name of Permittee (please print)

Name of Contractor (please print)

Street Address of Contractor

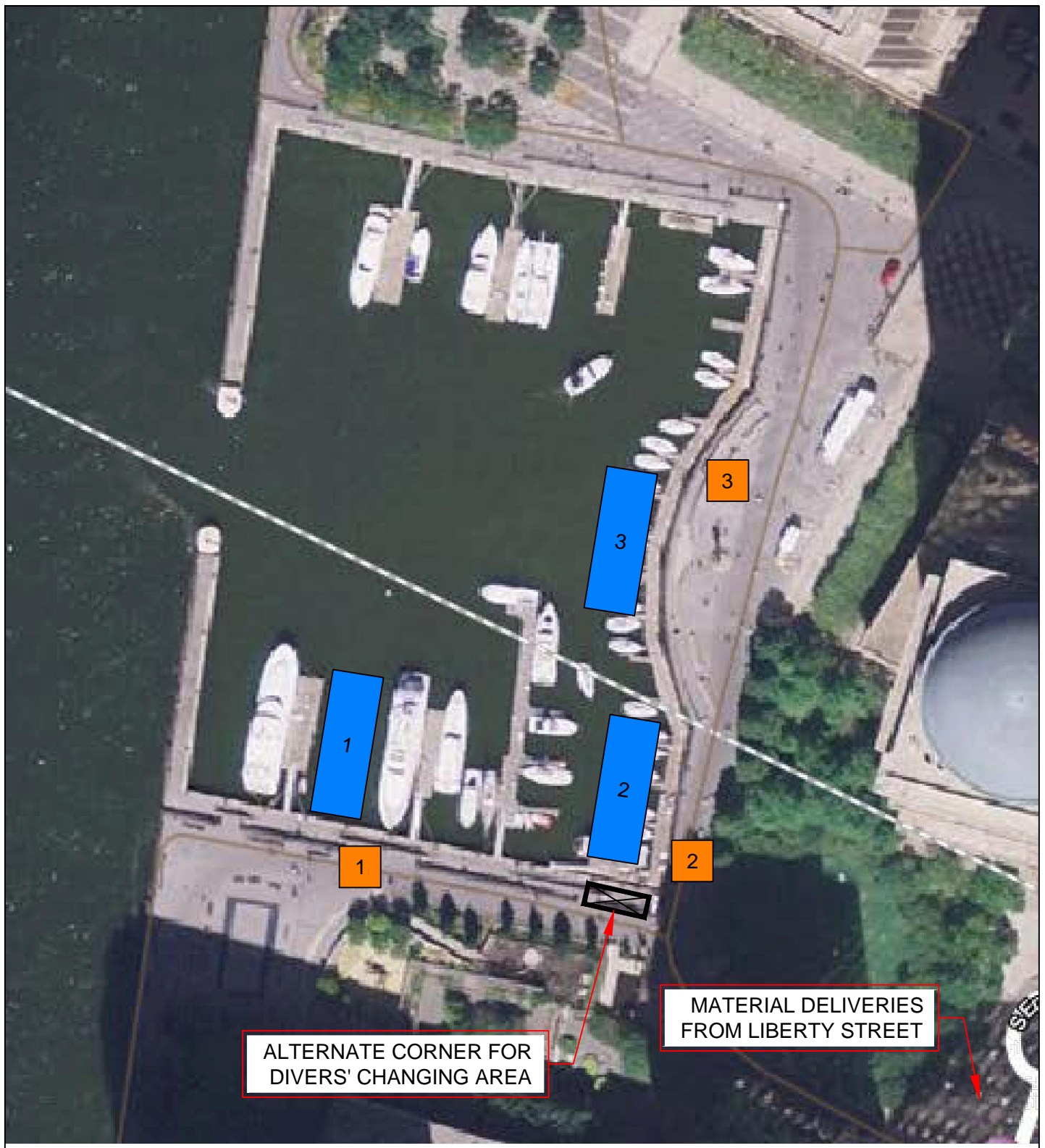
City, State, & Zip Code of Contractor

Telephone Number of Contractor

WARNING

The permittee and his contractor (if any) are required to follow all permit conditions. Violations of the permit may lead to legal action, including the imposition of substantial monetary fines and corrective work.

cc: Environmental Permits



BATTERY PARK CITY PILE REMEDIATION PROGRAM PHASE IV-CONCEPTUAL STAGING PLAN

NOTES:

1. STAGING OF SMALL WORK BARGES FROM WITHIN THE MARINA SHALL EXTEND NO MORE THAN 40' OFF OF THE SEAWALL.
2. MATERIAL DELIVERIES COME BY LIBERTY STREET.
3. UP TO 3 BARGES & 3 PUMP LOCATIONS CAN BE USED.
4. DIVE SHACKS SHOULD BE CONTAINED TO THE BARGES OR IN S CORNER AS SHOWN. CM MUST HAVE ACCESS TO ALL LOCATIONS FOR THEIR DIVERS TO WORK/CHANGE.
5. LOCATION #3 - EVENTS @ THIS LOCATION WILL REQUIRE THIS STATION TO BE BROKEN DOWN 3x FOR 2 WEEKS EACH.

LEGEND:

- | | |
|--|-------------------|
| <div style="display: inline-block; width: 20px; height: 20px; background-color: blue; border: 1px solid black;"></div> | SMALL BARGE |
| <div style="display: inline-block; width: 20px; height: 20px; background-color: orange; border: 1px solid black;"></div> | STAGING/PUMP AREA |

Phase IV Battery Park City Esplanade Repairs
 BID FORM (Revision 00, Dated April 21, 2015)

	Bid Item	REPAIR DETAIL	EST. QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
A	Mobilization / Demobilization		1	LS		
B	General Conditions		1	LS		
C	Performance Bond		1	LS		
D	Protective Pile Encasements	A	2,396	LF		
E	Backwall Batter Pile Encasement	D	71	LF		
F	Backwall Three Side Encasement	E2	84	LF		
G	Backwall Corner Encasement	E1	7	LF		
H	Excavation/Backfill – Soft Bottom	A	105	EA		
I	Excavation/Backfill – Hard Bottom	A	34	EA		
J	Excavation/Backfill – Hard Bottom < 2ft	B	54	EA		
K	Alternate Embedment Detail (AED)	B	31	EA		
L	Riprap Obstruction Detail (ROD)	C	23	EA		
M	Sand Bags		4,000	EA		
N	Grout Bags		1,000	EA		
O	Concrete Core Plug	F	4	EA		
Q	Extended Pile Encasement	A1	25	LF		
P	Deduct – BPCA Supplied FRP Forms		1	LS	(50,000)	
BID TOTAL						

	VALUE ENGINEERED DEDUCT	REPAIR DETAIL	EST. QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
TOTAL DEDUCT						

Note: The estimated quantities listed in the proposal are approximate only and given as a basis for the uniform comparison of bids. The Owner does not expressly or by implication agree that the actual amount of Work or items listed will correspond therewith. The Contract Lump Sum bid shall include all Work required in order to complete the project, even if not specifically mentioned.

Phase IV Battery Park City Esplanade Repairs
ENGINEERS ESTIMATE

	Bid Item	REPAIR DETAIL	EST. QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
A	Mobilization / Demobilization		1	LS	247,500	247,500
B	General Conditions		1	LS	341,000	341,000
C	Performance Bond (per BPCA RFP)		1	LS	38,000	38,000
D	Protective Pile Encasements	A	2,396	LF	1,000	2,396,000
E	Backwall Batter Pile Encasement	D	71	LF	1,800	127,800
F	Backwall Three Side Encasement	E2	84	LF	1,200	100,800
G	Backwall Corner Encasement	E1	7	LF	1,200	8,400
H	Excavation/Backfill – Soft Bottom	A	105	EA	1,500	157,500
I	Excavation/Backfill – Hard Bottom	A	34	EA	3,300	112,200
J	Excavation/Backfill – Hard Bottom < 2ft	B	54	EA	2,500	135,000
K	Alternate Embedment Detail (AED)	B	31	EA	4,400	136,400
L	Riprap Obstruction Detail (ROD)	C	23	EA	7,700	177,100
M	Sand Bags		4,000	EA	15	60,000
N	Grout Bags		1,000	EA	25	25,000
O	Concrete Core Plug	F	4	EA	2,000	8,000
P	Extended Pile Encasement	A1	25	LF	1,750	43,750
Q	Deduct – BPCA Supplied FRP Forms		1	LS	(50,000)	(50,000)
BID TOTAL						4,064,450
With 10% Contingency						4,470,895

Battery Park City Authority
Phase IV Pile Remediation
New York, New York

INDEX OF SPECIFICATIONS

00005 - General Conditions

01110 - Summary of Work

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01320 - Construction Progress Documentation

01330 - Submittal Procedures

01450 - Quality Assurance

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01770 - Closeout Procedures

02100 - Site Work General Provisions

02270 – Erosion and Sediment Control

03310 – Concrete Pile Jacketing and Grouting

SECTION 00005

GENERAL CONDITIONS – WATERFRONT WORK

AIA Document A201 – General Conditions of the Contract for Construction shall be referenced if not stated otherwise in Section 00710 or in the Contract Documents.

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

1.01 INTRODUCTION

- A. If, during the performance of the Work, the Contractor finds a conflict, error, or discrepancy in the Contract Documents, the Contractor shall report to the Construction Manager in writing immediately. Before proceeding with the Work affected thereby, the Contractor shall obtain a written interpretation or clarification from the Owner's Representative which shall be provided within 24 hours of notification from the Owner. Any work done before the Owner's Representative renders his/her decision is at the Contractor's sole risk and may be forced to remove / modify said work at no additional cost to the Owner.
- B. In the event of discrepancies in the Contract Documents, interpretations will be based upon the following priorities, in descending order of precedence:
 - 1. The Scope of Work, as defined in the Request for Proposal.
 - 2. The Agreement including Regulatory Authorizations, and any properly executed Change-Orders thereto.
 - 3. The Drawings and Specifications.
 - 4. AIA Document A201-General Conditions of the Contract for Construction.

The Agreement, the provisions in the Contract and other Contract documents are intended to supplement and complement each other and shall, where possible, be thus interpreted. If, however, any provision of the Agreement irreconcilably conflicts with a provision of the Contract and the other Contract Documents, the provision imposing the greater duty or obligation on the Contractor shall govern. In the event of any dispute over the meaning or application, it shall be interpreted fairly and reasonably and neither more strongly for nor against either party to it.

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

- C. The Specification covers the rehabilitation of Esplanade Repairs at Battery Park City, Manhattan, NY, also referred to herein as the Project Site and is shown in the Contract Drawings.

- D. The Contractor guarantees that in the performance of work, he and every person in his direct or indirect employment (i.e. subcontractors) shall abide by and comply with all federal, state, and local laws including the Occupational Safety and Health Act and waterfront MARSEC USCG requirements.
- E. The term Owner, as used throughout the Contract Documents, designates Battery Park City Authority (BPCA) as the Owner, or its duly authorized representative.
- F. The term Owner's Representative, as used throughout these Specifications, indicates the Owner's authorized representative for a particular activity. The term includes Construction Manager, Engineer-Of-Record, and/or Special Inspector.
- G. The Construction Manager designates CH2M Hill. It is the responsibility of the Construction Manager to delegate responsibility for particular activities.
- H. The term Engineer-Of-Record or Engineer as used throughout the Contract Documents, designates McLaren Engineering Group (McLaren).
- I. The term Special Inspector, as used throughout the Contract Documents, refers to the party responsible for on-site construction review of the Work to confirm accordance with the Contract Drawings. The Special Inspector is selected by the Construction Manager at the discretion of the Owner.
- J. All correspondence between the Contractor and Engineer of Record and/or Special Inspector shall be directed through the Construction Manager.
- K. The Work shall commence in accordance with the Contractor's accepted schedule. If, in the opinion of the Owner, the Contractor has not mobilized sufficient plant or material and/or if the Contractor does not demonstrate that sufficient work is underway according to the accepted schedule, the Owner reserves the right to terminate the Contract.
- L. In the event of termination of the Contract pursuant to the conditions set forth herein, such termination shall not act so as to relieve the Contractor from liability for any damages sustained by the Owner as a result of any breach by the Contractor of the terms of the Contract.
- M. At the completion of each work day the area around North Cove must be clear of all construction equipment, materials and debris. The Contractor shall coordinate with the Construction Manager regarding equipment and material lay down area.
- N. Definitions
1. Work: Material, equipment, labor, and services required for Contractor to fulfill his/her obligations of project or the part of the project considered.

2. Project Site: North Cove Marina, 200 Liberty Street, New York, NY 10280.
3. Provide: Furnish and install; provide in place.
4. Furnish: Furnish only, not including installation.
5. Install: Furnish and Install in place materials or structures. (Installation of materials furnished by others will be specifically identified).
6. Shall: Mandatory requirement (understood to be applicable whether or not "shall" is used in the sentence structure): omission of "shall" does not make the Specification or Contract Drawing non-mandatory.
7. Contract Sum: This shall be read as the Total Base Proposal amount and will be adjusted based on actual quantities of completed Work, including Owner-accepted Alternatives and Unit Price as included in the Form of Proposal.
8. Day: Contract "day" shall be as defined in the BPCA master contract.

1.02 DESCRIPTION OF WORK

The Work shall include, but not be limited to:

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

- A. Mobilization to and demobilization from the site.
- B. Furnish, installation and maintenance of environmental controls and safety measures.
- C. Furnish, installation and maintenance of temporary works.
- D. Coordination of Work with adjacent vessel traffic and usage of the Project Site by others.
- E. Demolition and authorized disposal of components associated with repairs.
- F. All repairs shown in the Contract Drawings.

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

1.03 GENERAL SCOPE OF WORK

Schedule

Unless otherwise stated in Section 01330, the following submittal schedule of all shop drawings, etc., for review by the Construction Manager and Engineer of Record shall be as follows:

1. Contractor's Submittal

Certain critical items are to be submitted by the Contractor within time frames listed in these Specifications. Unless specifically noted as such, the Contractor shall be responsible for the timely submittal of all required items, taking into account the Owner's Representative's review period as outlined herein, in order to maintain satisfactory progress of the Work.

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

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

- a. Contractor to complete Shop Drawings: June 15, 2105
- b. Construction Start: June 15, 2015
- c. Substantial Completion: October 2015
- d. Punch List Walk-through: October 2015
- e. Final Inspection of Punch List: October 31, 2015

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

2. Owner's Representative Review and Comments

Within five (5) days after receipt of Contractor's submittal.

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

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

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

The Contractor is aware of the strong currents and heavy vessel traffic along the Hudson River and potentially in the North Cove. The Contractor is responsible for securing waterborne equipment at his own risk. Approval from the Construction Manager is required for the location and means of securing such equipment. The Contractor shall provide proper notification to USCG and others as required (i.e. Notice to Mariners).

1.04 EXAMINATION OF EXISTING CONDITIONS

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

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

1.05 LIST OF CONTRACT DRAWINGS

The Contract Drawings which form part of these Specifications are listed in Section 08851.

1.06 PERMITS

The Owner is in the process of securing certain permit amendments and extensions required by federal and state authorities for the proposed activities. Copies of the existing permits are provided as part of the contract documents. Copies of the permit extension applications will be provided to the selected contractor. It is the responsibility of the Contractor to perform the Work in accordance with the terms and conditions of the permits. The Contractor shall post copies of the permits at the site throughout the course of the Work. The Contractor is responsible to obtain all permits associated with the legal disposal of construction debris. The Contractor shall secure all required local authorizations and permits, as well as Notification to Mariners.

1.07 CONTRACTOR-FURNISHED MATERIALS

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

1.08 LAYOUT

- A. The Contractor shall be solely responsible for the accuracy of all locations, dimensions, and levels and no plea as to instructions or order received from any other sources other than information contained on Contract Drawings, Specifications or in written orders of the Owner or Construction Manager shall justify departure from the dimensions and elevations required by the Contract Drawings.

- B. The Contractor shall take his own measurements at the site, verifying same with the Contract Drawings and existing facilities, and will be held responsible for the proper fit and alignment of completed work in position.

1.09 GUARANTEE

- A. The Contractor shall guarantee to the Owner all materials and workmanship against original defects, or against injury from proper and usual wear when used for the purpose intended, for twelve (12) months after date of final payment certifications, and shall maintain all items in perfect condition during the period of guarantee.
- B. Defects appearing during the period of guarantee shall be made good by the Contractor at his expense upon written demand of the Owner, it being required that all work shall be in perfect condition when the period of guarantee shall have elapsed. In the event of default by the Contractor, the Company shall have the right to make good any and all defects and bill the Contractor as per the contract for administration fees. The Owner shall provide notice of correction along with time frame for correction prior to taking action regarding guarantee bonds or penalties.
- C. The Proposer shall follow any and all anti-terrorism security procedures, guidelines, instructions, and regulations with respect to ingress into and egress from the work site, transportation and disposition of material that might be considered contraband as well as any emergency procedures. It is the Proposer's responsibility to make contingencies for the effect upon the scheduling and performance of their work of any and all such regulations and procedures. The cost of such contingencies shall be included in the Contract Price.
- D. Access will be granted only through the North Cove Marina. The overall objective will be to perform the work with minimal to no disruption to the daily operation of the esplanade area. See staging plan for allowable areas of access to piles.

1.10 PARKING, STORAGE AND ACCESS TO WORK AREA

- A. The Contractor shall coordinate with the Construction Manager available parking, storage and access to the work area. In no event shall these areas interrupt or disturb the Owner's operations. The Contractor shall protect the stored equipment and material from the elements in such a manner as to be satisfactory to the manufacturer of the equipment or material and the Owner.
- B. Should questions of labor jurisdiction arise, this Proposer will immediately take steps to settle such disputes and will use such labor as may be determined to have jurisdiction, at no additional cost to the Owner. Should it fail to take expeditious action, it will be responsible for any time lost because of delays arising from such disputes.
- C. The Contract includes the cost of all standby trades and Owner Representative fees should Proposer work prior to or later than normal working hours and on Saturdays, Sundays and Holidays, if Proposer desires to work outside of normal working hours. That includes the additional cost for inspections by the engineer.

- D. As a State Agency, Proposer shall be aware, that all BPCA projects require the employment of labor at prevailing wage rates. Outside State and Federal Agencies will closely monitor all projects.
- E. Contractor shall be responsible for providing all equipment required for unloading, installation, clean-up and hauling of debris. Contractor is to be aware that due to the spacing limitations of the surrounding area of work there is to be no staging of equipment on site, unless approved in the Contractor's Staging Plan.
- F. The contractor is responsible for coordination of their work between the Engineer and the Dockmaster. In keeping with the project philosophy of "Zero Impact" on Marina operations, Contractor shall keep the interruption of quay services and access to moored vessels, their crews and passengers to a minimum.
- G. Contractor shall not use the site for staging of construction materials or equipment, unless approved in the Contractor's Staging Plan. The barges shall be subject to the applicable federal, state and local ordinances in addition to the marina regulations.
- H. Proposer shall not store any material or equipment on site unless directed by the Owner/Owner's Representative. The Proposer shall provide storage space for inspection dive equipment and provide access and material support for the inspection crews.
- I. Proposer shall not use the site for staging of installation materials or equipment except as approved by the Owner.

1.11 SUBCONTRACTORS

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

1.12 SITE CONDITIONS

- A. At the Contractor's expense, the Contractor's working areas shall be cleaned by him on a day-to-day basis, with all rubbish removed from the site and all work areas cleaned at the end of each day. At final completion of all work, the Contractor shall leave the entire premises, within the site of his operations, clean and free from the rubbish resulting from his construction operations.

- B. Each Proposer is responsible for progress cleaning of its own areas on a daily basis. All Proposers are responsible for consolidating any debris caused by their work. The proposer for General Construction (G) shall be responsible for cleanup of the entire site which includes removal of debris for ALL proposers on site on a daily basis. The proposer for General Construction (G) shall legally dispose consolidated debris off-site. Each Proposer is advised that failure to comply with cleaning requirements will result in backcharges and /or reductions in payments.
- C. Contractor shall perform site cleanup and removal of debris on a daily basis and broom clean all installation areas at completion of the day. Surplus equipment, parts & installation materials are to be removed by contractor upon completion of installation unless it is mutually agreed, in writing, from Owner or the Construction Manager that this material can remain on site.
- D. Contractor shall be responsible for ice, snow and frost removal at site during construction in order to accommodate performance of work.
- E. The Proposer shall take special care to provide for temporary damage protection for any and all existing conditions to remain in proximity to the work area. The protection shall remain in place while performing the work shown or described herein or elsewhere in the Contract Documents. Any damage to existing conditions to remain as a result of work by the Proposer shall be repaired or replaced to the satisfaction of the Owner and at no cost to the Owner.

1.13 COMPENSATION

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

1.14 UTILITIES

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

1.15 FIRE PROTECTION

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

1.16 COMPLIANCE WITH CONTRACT

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

1.17 ENVIRONMENTAL PROTECTION

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

- A. The environment during the Work. No later than fifteen (15) days following award of contract and at least ten (10) days prior to mobilization to the site, Contractor shall submit a comprehensive plan describing the means and methods to be employed for protection, containment, and clean up. Contractor shall ensure that personnel are properly trained and that sufficient equipment and materials are readily available for use if required. Contractor shall abide by state and federal spill-reporting requirements. Clean-up required as a result of Contractor negligence shall be the sole responsibility of the Contractor at no additional cost to the Owner.
- B. During execution of the Work, the Contractor is required to install and maintain any and all required sedimentation and erosion control measures to protect adjacent waterways, streets, and properties. Measures include but are not limited to temporary berms, hay bales, silt fences, containment booms, and turbidity curtains. In accordance with the NYSDEC, NYCDEP and local regulations. Temporary materials and equipment shall conform to requirements for Temporary Work.
- C. The work by the Contractor shall conform to the applicable section of the New York City Noise Code regarding the sound level standards and the time and duration of construction activities.

1.18 TEMPORARY WORK

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

1.19 SAFETY PLAN

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

1.20 MATERIAL SAFETY DATA SHEETS

No later than ten (10) days following award of contract and at least ten (10) days prior to mobilization to the site, Contractor shall submit two (2) three-ring bound sets of all Material Safety Data Sheets (MSDS) for materials anticipated for use in execution of the Work. As the Work progresses and new materials are used on the project, Contractor shall submit two (2) copies of the

corresponding MSDS's for these new materials no later than the time of arrival of the materials on site. ALL MSDS sheets regarding materials used in the execution of the Work shall be up-to-date and stored in the Contractor's onsite job trailer or office.

1.21 WORK SCHEDULE REQUIREMENTS

Access to the site and acceptable working hours are limited between 0700 and 1730 unless approved otherwise by the Owner. Work shall be in compliance with local noise restriction ordinances. It is understood that Work hours may need adjustment in order to accommodate tidal cycles at the North Cove; which will remain in operation during the course of construction.

1.22 ENGINEERING SERVICES CHARGEABLE TO THE CONTRACTOR

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

1.23 CONTRACTOR'S REPRESENTATIVE

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

1.24 MEANS AND METHODS

The structures have been designed to be self-supporting and stable after construction is complete. The stability of the structures prior to completion is solely the responsibility of the

Contractor. This responsibility extends to related aspects of the construction activity including, but not limited to, erection methods, erection sequence, connections, temporary bracing, forms, shoring, use of equipment, and similar construction procedures. Review of construction by the Engineer of Record is for general conformance with the Contract Documents only. Lack of comment by the Owner and Owner's Representative with regard to construction procedures shall not be interpreted as approval or acceptance of any such procedures.

1.25 PRECEDENCE

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

1.26 SAFETY OF PERSONS AND PROPERTY

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

- A. Persons employed by the Contractor in performance of the Work, and persons nearby that may be affected by the Contractor's operations or the Work;
- B. The Work, including all equipment and materials which will be incorporated in the Work;
- C. Other properties and structures at the site, or on adjacent properties.

1.27 UNCOVERING WORK

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

1.28 DAILY CONSTRUCTION REPORTS

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

- A. Project name
- B. Contractor name
- C. Date
- D. Hours worked
- E. Weather conditions
- F. Subcontractors working on site

- G. Material deliveries (material, quantity, and vendor)
- H. Trades working on site (trade and number of workers per trade)
- I. Equipment on site (manufacturer and model number, with notation of whether the equipment was idle or was used in the Work)
- J. Specific work performed, location and type of work
- K. Visitors to the site
- L. Materials or equipment leaving the site (including debris removal)
- M. Incident descriptions
- N. Weekly tidal predictions
- O. Contractor shall submit reports no later than 12:00 hours for the previous day's work.

1.29 MONITORING OF EXISTING STRUCTURES DURING CONSTRUCTION

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

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

1.30 EXCAVATED MATERIAL

Contractor shall leave excavated material a safe distance from the base of the pile where the excavation was performed. Upon completion of the repair, Contractor shall backfill the excavation with the excavated material.

1.31 ENGINEERING REVIEW AND SPECIAL INSPECTION

At key stages throughout the Work, engineering inspections are required to ensure the Work is being performed in accordance with the Contract Documents. These inspections will be performed by a Special Inspector, as selected by the Construction Manager at the discretion of the Owner. The final acceptance of the Work will be performed by the Engineer of Record. The key stages are specific to each repair type and are listed in the table below. The items listed may not be all inclusive. Additional pre and post inspection criteria may be required at the discretion of the Special Inspector, Engineer of Record or Construction Manager.

1.32 EQUIPMENT

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

END OF SECTION

SECTION 01110

SUMMARY OF WORK

PART I - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

Please see Exhibit A

1.02 EXAMINATION OF DOCUMENTS AND SITE OF WORK

The Proposer acknowledges the following:

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

1.03 PROOF OF COMPETENCY OF PROPOSER

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

1.04 EXECUTION OF AGREEMENT

- A. Certificates of Insurance shall be approved by the Owner before the successful Proposer may proceed with the Work. Failure or refusal to provide Certificates of Insurance in a form satisfactory to the Owner shall subject the successful Proposer to loss of time from the allowable construction period equal to the time of delay in furnishing the required material.
- B. Certificates of Insurance shall name, at a minimum, the Owner, Owner's Representative and Consulting Engineer as additional insured parties.

1.05 INTERPRETATION OF CONTRACT DOCUMENTS PRIOR TO PROPOSING

- A. If any person contemplating submitting a Proposal for construction of the Work is in doubt as to the true meaning of any part of the proposed Contract Documents, or finds discrepancies in or omissions from any part of the proposed Contract Documents, he must submit to the Owner's Representative, with copy to the Owner, a written request for interpretation thereof by not later than seven (7) days prior to the Proposal due date. The person submitting the request shall be responsible for its prompt delivery.
- B. Interpretation or correction of Contract Documents will be made only by Addendum and will be mailed or delivered to each Proposer of Record. The Owner and Owner's Representative will not be responsible for any other explanations or interpretations of the Contract Documents.

1.06 PRE-PROPOSAL CONFERENCE AND JOB SITE WALKTHROUGH

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

Proposers are expected to provide written confirmation of attendance to the Owner's Representative at least two (2) days prior to the Pre-Proposal Conference.

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

1.07 CONSTRUCTION TIME

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

Within the Form of Proposal, provide the total number of days which the Proposer proposes to complete the Work. The schedule is to commence with issuance of the Owner's Executed Contract on or about June 23, 2015, and be 100 percent completed, including all final inspections, by October 31, 2015.

1.08 BASE BID

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

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

Payment for unit price work shall be based upon the total quantity completed and accepted by the Owner and as described below:

- A. The lump sum price for the **Mobilization/Demobilization** shall consist of obtaining all required permits; preparatory work and operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; preparation of a construction schedule; furnishing and erecting field offices, laboratory, batch plants, and other facilities necessary for work on the project; badging and training of flaggers, escorts, gate guards and other employees as specified herein; and all other work which must be performed or cost incurred prior to beginning work on the various contract items at the project site. Mobilization shall include the following principal items:
 - 1. Permits for this project, including DSBS, After Hours Permits, and BPCPC Access Permits.
 - 2. The schedule of costs breakdown of the Bid.
 - 3. The Contractor's approved Baseline Construction Schedule.
 - 4. Contractor's Operation and Storage Yard (Staging Area), including the complete installation of all field offices with utilities, fencing and gates, and supplies.
 - 5. Installation of floating plants and pump stations, with all appurtenances necessary for fully functional facilities of adequate combined capacity to meet project production needs.
 - 6. Moving onto the Site all equipment and materials required for the first thirty (30) days of construction.
 - 7. Submittals of Shop and Coordination Drawings and Job Mixes for the first thirty (30) days of construction.
 - 8. Posting all required OSHA notices and establishing on-site safety programs.
 - 9. Demobilization shall include removal of construction facilities, including all utilities, and equipment off the Site and final cleanup of the Site after completion of the Project.
- B. The lump sum price for **General Conditions** shall consist of the following principal items:
 - 1. Project management and project supervision including the following:
 - a. Superintendent(s)
 - b. Safety Manager
 - c. CPM Scheduler

- d. Quality Assurance / Quality Control
 - e. Project Manager(s)
 - f. Project Executive
 - g. Field Office Engineer
 - h. Field Office Support Staff
 - i. Project Expeditor
 - j. Assistant Superintendent(s)
- 2. Insurance
 - 3. Profit
 - 4. Front Office Overhead
 - 5. Safety and Environmental Controls/Protection Site Conditions:
 - a. Temporary Power Consumption (Offices)
 - b. Temporary Power Consumption (General Site Use)
 - c. Temporary Water and Sewer Consumption
 - d. Temporary Water Hookup, Distribution & Meters
 - e. Temporary Electrical Hookup, Distribution & Meters
 - f. Temporary Fire Protection
 - g. Temporary Heating & Cooling
 - h. Temporary Fencing
 - i. SWPPP Measures
 - j. Temporary Entries and Truck Washes
 - k. Street Cleaning (by G.C.)
 - l. Traffic Control Measures
 - m. Traffic Control Maintenance
 - n. Temporary Barricades & Signage
 - o. Temporary Lighting
 - p. Temporary Partitions & Covered Floor Openings
 - q. Temporary Toilets/Sanitary Measures
 - r. Temporary Laydown (prep and restoration)
 - s. Security System/Watchman (contractor's option)
 - t. Pre-construction Photo Documentation
 - u. Progress Photos
 - v. Temporary Protection (in-place work/adjacent structures)

- C. The Lump Sum price for the **Performance and Payment Bonds** shall consist of obtaining all required bonds including execution and acceptance by the Owner.
- D. The Unit Price for the **Protective Pile Encasements** will be based on a unit cost per linear foot of repair. The unit price shall include costs associated with all details provided in the Contract Drawings for this repair. The cost shall include, but is not limited to:
 - 1. Removal of all debris on or attached to the pile, removing any floating dock chains, cleaning the piles to remove marine growth/fouling, sediment buildup, loose concrete over the full excavated height of the exposed pile, and anything else that will interfere with the installation of an FRP form. Remove all loose and deteriorated concrete located within the extents of the repair.

2. Design and Installation of FRP stay-in-place formwork over the full height of the 4-sided repair including all standoffs, bottom seals, T&G form seals, pump ports, and other appurtenances/requirements in the Contract Documents
 3. Filling forms by injection of an approved underwater epoxy grout, per the Specifications, to the top of the forms as required. The top is to be hand packed with an approved epoxy or epoxy grout that can be sloped to approximately 2:1 so as to prevent ponding of water atop repair. The forms should have a plug installed at the bottom and allowed to cure before the remainder of the pile is filled. Lifts of epoxy are allowable provided each meets the conditions in the Contract Documents.
 4. Remove all temporary items including but not limited to all ratchet straps, forms, strongbacks, banding, exterior ports etc... The FRP forms are to remain in place.
- E. The Unit Price for the **Backwall Batter Pile Encasement** will be based on a unit cost per linear foot of repair. The unit price shall include costs associated with all details provided in the Contract Drawings for this repair. Specifically, the FRP cutoff wall repairs (existing) intersect the batter piles such that forming the top of the pile may not be possible. The cost shall include, but is not limited to:
1. Removal of all debris on or attached to the pile, cleaning the piles and cleaning of the backwall where the batter pile encasement will intersect; to remove marine fouling/growth, sediment buildup, obstructions on the back wall including bolts, spikes, loose timber, loose concrete over the full excavated height of the exposed pile, and anything else that will interfere with the installation of an FRP form.
 2. Design and Installation of FRP stay-in-place formwork over the full clear height of the 4-sided repair including all standoffs, bottom seals, T&G form seals, pump ports, and other appurtenances/requirements in the Contract Documents.
 3. Filling forms by injection of an approved underwater epoxy grout, per the Specifications, to the top of the forms as required. If the exposed height of the pile remaining is less than 8 inches, the top of the pile is to be encased by hand in a marine epoxy paste or splashzone epoxy. If it is greater than 8 inches, a compound form will have to be installed and filled in a second lift. The forms should have a plug installed at the bottom and allowed to cure before the remainder of the pile is filled. Lifts of epoxy are allowable provided each meets the conditions in the Contract Documents.
 4. Remove all temporary items including but not limited to all ratchet straps, forms, strongbacks, banding, exterior ports etc... The FRP forms are to remain in place.
- F. The Unit Price for the **Backwall Three Side Encasement** will be based on a unit cost per linear foot of repair. The unit price shall include costs associated with all details provided in the Contract Drawings for this repair. Specifically, the FRP cutoff wall repairs (existing) intersect the plumb piles such that a three sided form will be required. The cost shall include, but is not limited to:

1. Removal of all debris on or attached to the pile, cleaning the piles and cleaning of the back wall where the pile encasement will intersect; to remove marine fouling/growth, sediment buildup, obstructions on the back wall including bolts, spikes, loose timber, loose concrete over the full excavated height of the exposed pile, and anything else that will interfere with the installation of an FRP form.
 2. Design and Installation of FRP stay-in-place formwork over the full clear height of the 3-sided repair including all standoffs, bottom seals, T&G form seals, attachments to the back wall, pump ports, and other appurtenances/requirements in the Contract Documents. In some instances, the back wall may be formed by angles attached to the concrete pile. The 3-sided form should be opened up to avoid the angles and attached to the back wall.
 3. Filling forms by injection of an approved underwater epoxy grout, per the Specifications, to the top of the forms as required. The forms should have a plug installed at the bottom and allowed to cure before the remainder of the pile is filled. Lifts of epoxy are allowable provided each meets the conditions in the Contract Documents.
 4. Remove all temporary items including but not limited to all ratchet straps, forms, strongbacks, banding, exterior ports etc... The FRP forms and the connections to the back wall are to remain in place.
- G. The Unit Price for the **Backwall Corner Encasement** will be based on a unit cost per linear foot of repair. The unit price shall include costs associated with all details provided in the Contract Drawings for this repair. Specifically, the FRP cutoff wall repairs (existing) or other features intersect the plumb piles such that a three sided form will be required. The cost shall include, but is not limited to:
1. Removal of all debris on or attached to the pile, cleaning the piles and cleaning of the backwall where the pile encasement will intersect; to remove marine fouling/growth, sediment buildup, obstructions on the back wall including bolts, spikes, loose timber, loose concrete over the full excavated height of the exposed pile, and anything else that will interfere with the installation of an FRP form.
 2. Design and Installation of FRP stay-in-place formwork over the full clear height of the 4-sided repair including all standoffs, bottom seals, T&G form seals, attachments to the back wall, pump ports, and other appurtenances/requirements in the Contract Documents.
 3. Filling forms by injection of an approved underwater epoxy grout, per the Specifications, to the top of the forms as required. The forms should have a plug installed at the bottom and allowed to cure before the remainder of the pile is filled. Lifts of epoxy are allowable provided each meets the conditions in the Contract Documents.
 4. Remove all temporary items including but not limited to all ratchet straps, forms, strongbacks, banding, exterior ports etc... The FRP forms and the connections to the back wall are to remain in place.
- H. The Unit Price for the **Excavation and Backfill – Soft Bottom** will be based on a unit cost per pile. A soft mudline is defined as materials that can be removed by hand easily including sand, clay, silt, mud, gravel, pea stone, and any other aggregates smaller than 4 inches in diameter (approx.

6 lbs). The unit price shall include costs associated with all details provided in the Contract Drawings for this excavation and backfill. The cost shall include, but is not limited to:

1. Removal of all debris on or around the pile at the mudline, including anything connected to the pile at the mudline. Chains for the floating docks shall be relocated to an adjacent pile.
 2. Excavation of the mudline, sand or other soft materials to the deeper of:
 - a. Two (2) feet below the current mudline or riprap line, or,
 - b. To a point at which stone is encountered and it is unsafe to remove more riprap due to OSHA slope stability or size of stone exceeds 4 inches in diameter, or,
 - c. A large obstruction prevents further excavation in a specific area.
 - d. Items (a), (b) and (c) are to be verified at Hold Point #1 by the Owner's representative.
 3. Stability of the excavation for diver safety.
 4. Retaining materials for backfill after the pile protective encasement is finished
 5. Backfill the pile completely to ensure that there is 2 ft of the pile embedded in the mudline. Use the existing materials removed and retained for the backfill.
 6. Backfill of a pile with a documented obstruction under this item will be paid for under "Riprap Obstruction Detail" in Line Item L below.
- I. The Unit Price for the **Excavation and Backfill – Hard bottom** will be based on a unit cost per pile. A hard mudline is defined as materials that cannot be removed by hand easily including aggregates from 4 inches up to 12 inches in diameter (max 165 lbs). A pile will be classified as having a hard mudline if there is more than 1 ft of hard materials in the excavation. The unit price shall include costs associated with all details provided in the Contract Drawings for this excavation and backfill. The cost shall include, but is not limited to:
1. Removal of all debris on or around the pile at the mudline, including anything connected to the pile at the mudline. Chains for the floating docks shall be relocated to an adjacent pile.
 2. Excavation to the deeper of:
 - a. Two (2) feet below the current mudline or riprap line, or,
 - b. To a point at which stone is encountered and it is unsafe to remove more riprap due to OSHA slope stability or size of stone exceeds 12 inches in diameter, or,
 - c. A large obstruction prevents further excavation in a specific area.
 - d. Items (a), (b) and (c) are to be verified at Hold Point #1 by the Owner's representative.
 3. Stability of the excavation for diver safety.
 4. Retaining materials for backfill after the pile protective encasement is finished.
 5. Backfill the pile completely to ensure that there is 2 ft of the pile embedded in the mudline. Use the existing materials removed and retained for the backfill.

6. Backfill of a pile with a documented obstruction under this item will be paid for under "Riprap Obstruction Detail" in Line Item L below.
- J. The Unit Price for the **Excavation and Backfill – Hard bottom < 2ft** will be based on a unit cost per pile. A hard mudline is defined as materials that cannot be removed by hand easily including aggregates from 4 inches up to 12 inches in diameter (max 165 lbs). A pile will be classified as having a hard mudline if there is more than 1 ft of hard materials in the excavation. Specifically in this instance, excavation of a hard mudline does not reach 2 ft. The unit price shall include costs associated with all details provided in the Contract Drawings for this excavation and backfill. The cost shall include, but is not limited to:
1. Removal of all debris on or around the pile at the mudline, including anything connected to the pile at the mudline. Chains for the floating docks shall be relocated to an adjacent pile.
 2. Excavation to a point at which stone is encountered and it is unsafe to remove more riprap due to OSHA slope stability or size of stone exceeds 12 inches in diameter, or large obstruction prevents further excavation in a specific area which will be verified by the owner's representative.
 3. Stability of the excavation for diver safety.
 4. Retaining materials for backfill after the pile protective encasement is finished.
 5. Backfill of the pile under this item will be paid for under "Alternate Embedment Detail" in Line Item K below.
- K. The Unit Price for the **Alternate Embedment Detail (AED)** will be based on a unit cost per pile. The unit price shall include costs associated with all details provided in the Contract Drawings for this repair detail. The cost shall include, but is not limited to:
1. Removal of all loose stone and materials on or around the pile at the excavation limits and levelling out the limits as much as possible.
 2. After the epoxy FRP form is installed and pumped full (Item A above), installing grout bags around the base of the pile with anchor spikes as detailed in the Contract Drawings.
 3. Pumping an underwater epoxy grout annulus around the base of the pile.
 4. Backfilling the remainder of the pile completely to ensure that there is 2 ft of the pile embedded in the mudline on the opposite side of the AED. Use the existing materials removed and retained for the backfill.
 5. It is acceptable for the contractor to install the FRP form, then the grout bags, and then pump the annulus of the bags and the plug of the pile concurrently.
- L. The Unit Price for the **Riprap Obstruction Detail (ROD)** will be based on a unit cost per pile. The unit price shall include costs associated with all details provided in the Contract Drawings for this repair detail. The cost shall include, but is not limited to:
1. Removal of all loose stone and materials on or around the pile at the excavation limits and levelling out the limits as much as possible.

2. After the epoxy FRP form is installed and pumped full (Item A above), installing grout bags or custom formwork around the base of the pile and the obstruction as per the with anchor spikes as detailed in the Contract Drawings.
 3. Pumping an underwater epoxy grout annulus in the form or in the grout bag annulus around the base of the pile.
 4. Backfilling the remainder of the pile completely to ensure that there is 2 ft of the pile embedded in the mudline on all sides. Use the existing materials removed and retained for the backfill.
 5. It is acceptable for the contractor to install the FRP form, then the grout bags/obstruction form, and then pump the annulus of the bags and the plug of the pile concurrently.
- M. The Unit Price for the **Sand Bags** will be based on a unit cost per sandbag placement on an "Excavation – Soft Bottom". The unit price shall include costs associated with all details provided in the Contract Drawings for when there is not enough natural material to backfill an excavated pile to the minimum 2 ft of embedment. The cost shall include, but is not limited to:
1. Backfilling to the greatest extent possible, using the natural and existing materials around the pile without compromising the embedment of the adjacent pile repairs.
 2. Stacking sandbags around the base of the pile over the backfill so that the entire pile has an embedment of at least 2.5 ft in materials. The bags shall be placed such that a minimum of voids are present.
 3. Alternately, pea gravel can be used to backfill provided that the pile maintains a 2 ft embedment below the mudline.
- N. The Unit Price for the **Grout Bags** will be based on a unit cost per grout bag placement on an "Excavation – Hard Bottom". The unit price shall include costs associated with all details provided in the Contract Drawings for when there is not enough natural material to backfill an excavated pile to the minimum 2 ft of embedment. The cost shall include, but is not limited to:
1. Backfilling to the greatest extent possible, using the natural and existing materials around the pile without compromising the embedment of the adjacent pile repairs.
 2. Stacking grout bags around the base of the pile over the backfill so that the entire pile has an embedment of at least 2.5 ft in materials. The bags shall be placed such that a minimum of voids are present.
 3. Alternately, pea gravel can be used to backfill provided that the pile maintains a 2 ft embedment below the mudline.
- O. The Unit Price for the **Concrete Core Plug** will be based on a unit cost per plug installed on existing piles per the Contract Documents.
- P. The Unit Price for the **Extended Pile Encasement** will be based on a unit cost per linear foot of repair. The unit cost shall include costs associated with all details provided in the Contract Drawings for this type of repair. The cost shall include but is not limited to:

1. Removal of existing hollow portion of can to three (3) inches above sound cementitious grout, if total length from top of existing form to bottom of pile cap is less than eight (8) inches hand pack with approved epoxy or epoxy grout that can be sloped to approximately 2:1 so as to prevent ponding of water atop repair. Pressure wash top of cementitious grout, fill any voids with pourable epoxy grout and allow to cure before placement of new can.
 2. Removal of all debris on or attached to area of pile where form was hollow, cleaning the piles to remove marine growth/fouling, sediment buildup, loose concrete over height of new encasement, and anything else that will interfere with the installation of an FRP form. Remove all loose and deteriorated concrete located within the extents of the repair.
 3. Design and Installation of FRP stay-in-place formwork over the full height of the 4-sided repair including all standoffs, bottom seals, T&G form seals, pump ports, and other appurtenances/requirements in the Contract Documents.
 4. Filling forms by injection of an approved underwater epoxy grout, per the Specifications, to the top of the forms as required. The top is to be hand packed with an approved epoxy or epoxy grout that can be sloped to approximately 2:1 so as to prevent ponding of water atop repair. The forms should have a plug installed at the bottom and allowed to cure before the remainder of the pile is filled. Lifts of epoxy are allowable provided each meets the conditions in the Contract Documents.
 5. Remove all temporary items including but not limited to all ratchet straps, forms, strongbacks, banding, exterior ports etc. The FRP forms are to remain in place.
- Q. The Unit Price for the **Deduct – BPCA Supplied FRP forms** will be based on a unit cost per LF of 22 inch square FRP, single piece, tongue and groove forms per the Contract Specifications that the BPCA has stored from the previous contract. The contractor shall include the deduct unit cost for the forms not purchased under Items D, E, F and G above, and include the cost to transport the forms from Staten Island, Zip Code 10303, to the jobsite when required.

R. SPECIAL CONDITIONS

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

1. Some piles may have existing items/debris and chains that shall be removed completely prior to performing the work associated with each repair. The chains are for the floating docks and are to be relocated to an adjacent pile while performing work, and then moved back to complete repairs on the adjacent pile. If the chains cannot be removed without cutting, notify the Owner's representative immediately.
2. Provide means to maintain and collect debris, including boom around work area and boat on premises capable of retrieving floatable debris that leaves the immediate work area. The Contractor shall also readily provide the following for the Owner's Representative throughout the duration of the project:
 - a. Means, via work float or skiff, to access areas for review during site visits.
 - b. Safe means, such as a ladder or gangway, to access floating work platform from the wharf.
 - c. A changing station, storage area with heating and cooling for the Owner's divers.

1.09 ENGINEERING REVIEW AND SPECIAL INSPECTION

At key stages on each pile, engineering inspections are required to ensure the Work is being performed in accordance with the Contract Documents. These inspections will be performed by a Special Inspector, as selected by the Construction Manager at the discretion of the Owner. The final acceptance of the Work will be performed by the Engineer of Record. The key stages are specific to each repair type and are listed in the table below. The items listed may not be all inclusive. Additional pre and post inspection criteria may be required at the discretion of the Special Inspector, Engineer of Record or Construction Manager.

A minimum of one (1) protective pile encasement, (1) riprap obstruction detail (ROD), and (1) alternate embedment detail (AED) shall be prepared by each diver to the full requirements of the Contract Documents for inspection by the Special Inspector. Only after the Special Inspector approves the repair can the diver be approved for production work. Each diver must be approved for the three (3) types of repairs noted above.

For the Hold Point inspection #1 through #5 defined below, the Contractor may not proceed with the next step in repair until the pile has been inspected in accordance with the Contract Documents Criteria. If no exceptions have been taken by the Special Inspector, the contractor may proceed. The final inspection #4 is expected to be a difficult approval for the backfilling and application of splashzone, however, the contractor will not be compensated for any additional work performed or any delays due to the failure of hold point inspections.

During all epoxy grout mixing, injection and pump events, the Special Inspector shall be onsite to ensure quality control of the materials and adherence to the Contract Documents. In addition, on the first pump event of epoxy grout, the Engineer of Record as well as the material manufacturer's representative must be onsite in addition to the Special Inspector.

The Contractor shall coordinate with the Construction Manager to maximize inspection sequencing and timing against the production of the divers. At a minimum, and subject to the Construction Manager's procedures, the contractor's dive crews shall provide daily reports of the piles ready for each of the hold point inspections, in groupings, by the pumping location. It is the responsibility of the Contractor to adequately inform the Special inspector when piles are ready to be inspected. Any work completed without approval is at the Contractors risk.

Any exceptions noted during the Special Inspectors dive inspection shall be submitted to the Contractor within 16 hours of the inspection and preferably within the same work shift. All exceptions and re-work will be submitted to the Construction Manager within 48 hours of the initial inspection, or before the cleaning window expires, whichever is soonest. The Special Inspector must generate field reports for all inspections. The field reports shall be submitted to the Construction Manager and Engineer of Record for review.

Order of Operations, Soft and Hard Bottom Excavation, No AED, No ROD

Diver: Measure Pile Exposed Length, Mark <u>Mudline</u> Pre-Excavation Tender: Record Measurements on Daily Report	
Diver: Excavate Pile, Minimum 2 ft Tender: Report Soft, Hard or Hard < 2' Bottom, Obstructions, <u>Backwall</u> interference, Batter Pile Interference etc...	
Diver: Remove all Items connected to the pile, Interferences Tender: Record specific items removed	
Diver: <u>Powerwash</u> Clean Piles, and <u>Backwall</u> As required Tender: Record Date and time of cleaning	
HOLD POINT #1 - Excavation and Cleaning - Dive Inspection If Approved, Proceed	72 Hour Completion Window from Cleaning to Encasement
Diver: Install FRP Forms on Pile, Bottom Seal, Ports and Standoffs Tender: Record Completion	
Diver: Install Formwork on FRP Form as Engineered Tender: Record Completion	
Diver: Install Bottom Epoxy Plug in FRP Form Tender: Record Completion, Date and Time	
HOLD POINT #2 - Forming, Bracing, Bottom Plug - Dive Inspection	
Diver: Fill Form with Epoxy Grout, Lift 1 Tender: Record Completion. Date and time	
HOLD POINT #3a - Epoxy Injection - Lift 1 - Dive Inspection	
Diver: Fill Form with Epoxy Grout, Lift 2 (If Required) Tender: Record Completion. Date and time	24 hr Completion Window
HOLD POINT #3b - Epoxy Pour - Lift 2 - Dive Inspection (If needed)	
Diver: <u>Handpack</u> top of Encasement Tender: Record Completion. Date and time	
Diver: Soft Backfill <u>Mudline</u> , Hard Backfill <u>Mudline</u> , Sand or <u>Groutbags</u> Tender: Record Completion, Date and time	24 Hour Window
HOLD POINT #4 - Backfilling, Hand Pack Top, Final Dive Inspection	
If the Inspection Fails Diver: Repair/Replace all <u>non conforming</u> Items Tender: Record Completion, Date and Time	
HOLD POINT #5 - <u>Reinspection</u> - Final Dive Repeat As Necessary	

Order of Operations, AED, ROD

Diver: Measure Pile Exposed Length, Mark <u>Mudline</u> Pre-Excavation Tender: Record Measurements on Daily Report	
Diver: Excavate Pile, Minimum 2 ft Tender: Report Soft, Hard or Hard < 2' Bottom, Obstructions, <u>Backwall</u> interference, Batter Pile Interference etc...	
Diver: Remove all Items connected to the pile, Interferences Tender: Record specific items removed	
Diver: <u>Powerwash</u> Clean Piles, and <u>Backwall</u> As required Tender: Record Date and time of cleaning	
HOLD POINT #1 - Excavation and Cleaning - Dive Inspection. Determination of Obstruction Detail (ROD) or Alternate embedment Detail (AED) If Approved, Proceed	72 Hour Completion Window from Cleaning to Encasement
Diver: Install FRP Forms on Pile, Bottom Seal, Ports and Standoffs Tender: Record Completion	
Diver: Install Formwork on FRP Form as Engineered Tender: Record Completion	
Diver: Install AED or ROD Details Tender: Record Completion	
Diver: Install Bottom Epoxy Plug with AED and ROD in FRP Form Tender: Record Completion, Date and Time	
HOLD POINT #2 - Forming, Bracing, Bottom Plug - Dive Inspection	
Diver: Fill Form with Epoxy Grout, Lift 1 Tender: Record Completion. Date and time	
HOLD POINT #3a - Epoxy Injection - Lift 1 - Dive Inspection	
Diver: Fill Form with Epoxy Grout, Lift 2 (If Required) Tender: Record Completion. Date and time	
HOLD POINT #3b - Epoxy Pour - Lift 2 - Dive Inspection (If needed)	
Diver: <u>Handpack</u> top of Encasement Tender: Record Completion. Date and time	24 hr Completion Window
Diver: Backfill remainder of <u>mudline</u> , Sand or <u>Groutbags</u> Tender: Record Completion, Date and time	
HOLD POINT #4 - Backfilling, Hand Pack Top, Final Dive Inspection If the Inspection Fails Diver: Repair/Replace all <u>non conforming</u> Items Tender: Record Completion, Date and Time	
HOLD POINT #5 - <u>Reinspection</u> - Final Dive Repeat As Necessary	24 Hour Window

Order of Operations, <u>Backwall</u> and Batter Interferences	
Diver: Measure Pile Exposed Length, Mark <u>Mudline</u> Pre-Excavation Tender: Record Measurements on Daily Report	
Diver: Excavate Pile, Minimum 2 ft Tender: Report Soft, Hard or Hard < 2' Bottom, Obstructions, <u>Backwall</u> interference, Batter Pile Interference etc...	
Diver: Remove all Items connected to the pile, Interferences Tender: Record specific items removed	
Diver: <u>Powerwash</u> Clean Piles, and <u>Backwall</u> As required Tender: Record Date and time of cleaning	
HOLD POINT #1 - Excavation and Cleaning - Dive Inspection. Determination of 3-Side, <u>Backwall</u> Obstruction or Batter Pile <u>Backwall</u> If Approved, Proceed	72 Hour Completion Window from Cleaning to Encasement
Diver: Install FRP Forms on Pile, Bottom Seal, Ports and Standoffs Tender: Record Completion	
Diver: Install Formwork on FRP Form as Engineered Tender: Record Completion	
Diver: Install <u>Backwall</u> Details, AED and/or ROD as required Tender: Record Completion	
Diver: Install Bottom Epoxy Plug (with AED and ROD) in FRP Form Tender: Record Completion, Date and Time	
HOLD POINT #2 - Forming, Bracing, Bottom Plug - Dive Inspection	
Diver: Fill Form with Epoxy Grout, Lift 1 Tender: Record Completion. Date and time	
HOLD POINT #3a - Epoxy Injection - Lift 1 - Dive Inspection	24 hr Completion Window
Diver: Fill Form with Epoxy Grout, Lift 2 (If Required) Tender: Record Completion. Date and time	
HOLD POINT #3b - Epoxy Pour - Lift 2 - Dive Inspection (If needed)	
Diver: <u>Handpack</u> top of Encasement Tender: Record Completion. Date and time	24 Hour Window
Diver: Backfill remainder of <u>mudline</u> , Sand or <u>Groutbags</u> Tender: Record Completion, Date and time	
HOLD POINT #4 - Backfilling, Hand Pack Top, Final Dive Inspection	
If the Inspection Fails Diver: Repair/Replace all <u>non conforming</u> Items Tender: Record Completion, Date and Time	
HOLD POINT #5 - <u>Reinspection</u> - Final Dive Repeat As Necessary	

1.10 GENERAL CONDITIONS

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

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

1.11 EXISTING WORK

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

1.12 LOCATION OF UNDERGROUND FACILITIES

- A. Coordinate with the Owner on the location of underground utilities and which utilities are to remain and be protected, and which are to be removed.
- B. Notify the Owner at least 24 hours prior to starting excavation work.

1.13 QUALITY ASSURANCE

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

1.14 WORKING CONDITIONS

- A. The Contractor is responsible for any precautions and scheduling necessary in order to maintain this status. Work may begin only after a schedule representing an acceptable plan is approved by the Owner.
- B. The Contractor shall coordinate day-to-day activities with the Owner. All conflicts will be resolved by the Owner's representative.
- C. The Owner shall be notified a minimum of three days prior, when any floats are required to be moved within the North Cove.

1.15 WORKING HOURS

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

1.16 AVAILABILITY OF UTILITIES

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

1.17 EQUIPMENT

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

1.18 RECEIPT OF MATERIALS

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

1.19 STORAGE OF MATERIALS

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

1.20 EXISTING MATERIALS

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

1.21 SITE OFFICE FACILITIES AND STORAGE SHED

- A. The Contractor shall be required to provide at his own cost and expense one enclosure in the South East corner of North Cove Marina. Install and connect all utility services to said enclosure within five (5) days of start of work.

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

C. Temporary Electrical Services:

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

D. Maintenance:

1. The Contractor shall provide and pay all costs for heat and fuel, and regular daily janitor service. Furnish toilet paper, cloth towels, soap, and maintain the field office in first-class condition, including all repairs, until 30 days after the date of substantial completion acceptance.
2. Upon final acceptance of all work under the contract, unless sooner directed, the Contractor shall have all services disconnected and capped to the satisfaction of the Resident Engineer.

E. Permits

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

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

1.22 POWER OUTAGE

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

1.23 FINAL INSPECTION

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

1.24 DUMPING AREA

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

1.25 RECYCLABLES

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

1.26 AS-BUILT DRAWINGS

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

PART II - PRODUCTS

Not used.

PART III - EXECUTION

Not used.

END OF SECTION 01110

SECTION 01140
WORK RESTRICTIONS
PART I - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
 - 1. Limits: Confine construction operations to those areas delineated as included in the Construction Documents.
 - 2. Owner Occupancy: Allow for Owner occupancy of portions of the site and for use by the public at any and all times during the life of the contract. The Owner reserves the right to maintain and provide full public access to completed portions of the Battery Park City Esplanade within the contract limits at any time during the entire life of the contract. Contractor will be responsible for securing and maintaining temporary construction fencing as necessary to achieve and maintain this access.
 - 3. Contractor shall, throughout the life of the contract, maintain clear access to all areas of the Esplanade to personnel of Battery Park City Authority (Owner) for maintenance and repair operations. Specifically, the Owner and/or its agents shall be unencumbered from performing all required watering, planting, and maintenance operations for all areas adjacent to and within the contract limits.
 - 4. Construction Gates / Entrances: Keep all construction gates / entrances serving the premises clean, clear and available to the Owner, Owner's employees, emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of construction gates and entrances.
 - b. Schedule deliveries to coordinate with other contractor's gaining access to the site.
 - c. Provide flag-person services for all deliveries into and out of the site so as to protect the public.
 - d. Secure all construction entrances and gates to the site at all times.
 - e. Provide durable signage limiting public access to the construction site at all construction gate / entrances as directed by the Construction Manager.
 - f. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Use of Existing Site: Maintain existing site throughout the construction period. Repair damage caused by construction operations.

1.03 OCCUPANCY REQUIREMENTS

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

PART II – PRODUCTS

Not used.

PART III – EXECUTION

Not used.

END OF SECTION 01140

SECTION 01310

PROJECT MANAGEMENT AND COORDINATION

PART I - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Conservation.
 - 3. Coordination Drawings.
 - 4. Administrative and supervisory personnel.
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 – Section “Construction Progress Documentation” for preparing and submitting the Contractor’s Construction Schedule.
 - 2. Division 1 – Section “Execution Requirements” for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Division 1 – Section “Closeout Procedures” for coordinating Contract closeout.

1.03 COORDINATION

- A. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Provide detailed written construction work plans within 5 days of award in a format and containing information as requested by the Construction Manager.

- B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Preparation of the Schedule of Values for payment to completed work.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Pre-installation conferences.
 - 7. Project closeout activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.

1.04 SUBMITTALS

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

1.05 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.
 - 1. Project Manager: Submit resume confirming a minimum of 15 years of underwater construction experience.
 - 2. Project superintendent: Submit resume confirming a minimum of 10 years of underwater construction experience.

3. Office Engineer: Submit resume confirming a minimum of 5 years of marine construction experience.
4. Dive Superintendent: Submit resume confirming a minimum of 10 years of underwater construction experience.
5. Include special personnel required for coordination of operations with other contractors.
6. Site Safety Representative: Submit resume confirming a minimum of 5 years of underwater construction site safety experience.

1.06 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner, and Construction Manager of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Construction Manager, and the Engineer, within 5 days of the meeting.
- B. Pre-construction Conference: Schedule a pre-construction conference before starting construction, at a time convenient to Owner, Construction Manager and the Engineer, but no later than 5 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
 1. Attendees: Authorized representatives of Owner, Construction Manager, Engineer, and their consultants; Contractor and its superintendents; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing.
 - d. Designation of responsible personnel.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for processing Applications for Payment.
 - g. Distribution of the Contract Documents.
 - h. Submittal procedures.
 - i. Preparation of Record Documents.
 - j. Use of the premises.
 - k. Responsibility for temporary facilities and controls.
 - l. Parking availability.
 - m. Office, work, and storage areas.
 - n. Equipment deliveries and priorities.
 - o. Testing and inspection requirements.

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

3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- D. Coordination Meetings: Conduct Project coordination meetings as needed. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and pre-installation conferences.
 1. Attendees: In addition to representatives of Owner, Construction Manager, and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract time.
 - b. Schedule Updating: Revise Combined Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report for each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 1. Interface requirements.
 2. Sequence of operations.
 3. Status of submittals.
 4. Deliveries.
 5. Off-site fabrication.
 6. Access.
 7. Site utilization.
 8. Temporary facilities and controls.
 9. Work hours.
 10. Hazards and risks.
 11. Progress cleaning.
 12. Quality and work standards.
 13. Change Orders.

3. Reporting: Record meeting results and distribute copies within two (2) days to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART II – PRODUCTS

Not used.

PART III – EXECUTION

Not used.

END OF SECTION 01310

SECTION 01320
CONSTRUCTION PROGRESS DOCUMENTATION

PART I - GENERAL

1.01 SUBMITTALS

Submit the following in accordance with Section entitled "Submittal Procedures."

A. Schedules

1. Construction schedule (Owner)
2. Material delivery schedule (Owner)

1.02 CONSTRUCTION SCHEDULE

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

1.03 MATERIAL DELIVERY SCHEDULE

A. Initial Schedule

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

1. Description.
2. Date of the purchase order.
3. Promised shipping date.
4. Name of the manufacturer or supplier.
5. Date delivery is expected.
6. Date the material or equipment is required, according to the current construction schedule.

1.04 NETWORK ANALYSIS SYSTEM (NAS)

- A. As an alternative to the critical path method (CPM) schedule, the Contractor may use, subject to the approval of the Owner's Representative, some other computer generated network analysis system affording similar and equal information and control to that provided by the CPM.
- B. The schedule shall have a minimum of 25 activities and a maximum of 200 activities. The schedule shall identify as a minimum:

1. Construction time for all major systems and components;
2. Manpower requirements for each activity;
3. Major submittals and submittal processing time; and
4. Major material and equipment lead time.
5. Bent sequence for inspection purposes.

C. CPM Submittals and Procedures

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

1.05 UPDATED SCHEDULES

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

PART II - PRODUCTS

Not used.

PART III - EXECUTION

Not used.

END OF SECTION 01320

SECTION 01330

SUBMITTAL PROCEDURES

PART I - GENERAL

1.01 DEFINITIONS

A. Submittal: Submittals requirements are specified in the respective specification sections.

B. Types of Submittals (SD)

1. SD-01 Preconstruction Submittals

Certificates of Insurance, List of Proposed Subcontractors, List of Proposed Products, Construction Progress Schedule, Submittal Register, Schedule of Prices, Health and Safety Plan, Work Plan, Quality Control Plan, Environmental Protection Plan, Site Utilization Plan.

2. SD-02 Shop Drawings

- a. Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.
- b. Diagrams and instructions from a manufacturer or fabricator for use in producing the product and acts as aids to the Contractor for integrating the product or system into the project.
- c. Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated. An attachment shall be provided with the Shop Drawings which clearly define the methodology for each repair type.
- d. Approval of shop drawings shall not relieve the Contractor of the responsibility for any errors or for furnishing materials of the proper size.

3. SD-03 Product Data.

Product data includes but is not limited to the following:

- a. FRP formwork
- b. Epoxy Grout
- c. Hand Pack Material
- d. Trowel Grade Epoxy
- e. Bottom Seal
- f. Screws
- g. Standoffs
- h. Engineered Products for Form System
- i. Grout Bags
- j. Sand Bags
- k. Samples of warranty language when the contract requires extended product warranties.

4. SD-04 Samples

5. SD-05 Design Data

Calculations, mix designs, analyses or other data pertaining to a part of work.

6. SD-06 Test Reports

- a. Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three (3) years of date of contract award for the project.)
- b. Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.
- c. Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

The New York City Department of Small Business Services (DSBS) Permit shall be satisfied under the direction of the Construction Manager. This includes but is not limited to the concrete testing agency and concrete supplier, TR2 and TR3 filings, and the Contractor's PW2 filing.

7. SD-07 Certificates

- a. Statements signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.
- b. Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to prove quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

8. SD-08 Manufacturer's Instructions

- a. Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

9. SD-09 Closeout Submittals

- a. The Construction Manager is responsible for providing the following to the Engineer of Record for review prior to the project close out:
 - i. Field Reports
 - 1. Upon completion of the work, and prior to the final project closeout, the Construction Manager shall submit to the Engineer of Record all Field Reports from the engineering review site visits. These include, but are not limited to:
 - a. Certification by the Special Inspector that all piles have been repaired as per the contract documents.
 - b. Certification by the Special Inspector that all test results have meet or exceeded the minimum requirements laid out in the Contract Documents.
 - c. Field reports from the Special Inspector confirming that all concrete pumping operations and all the material placed were performed in accordance with the Contract Documents.

ii. As-Built Drawings:

1. Contractor shall submit six (6) sets of drawings, marked "As-Built" within four (4) weeks upon Contractor demobilization. These drawings shall be submitted to the Construction Manager, who shall forward to the Engineer of Record. Approval from the Engineer of Record is required for the final project closeout.

iii. Test Reports:

1. Upon completion of the work, and prior to the final project closeout, the Construction Manager shall submit to the Engineer of Record all Test Reports from the required materials and products testing as laid in the Contract Documents. Test reports must confirm that all materials and products placed during the Work have met or exceeded the minimum requirements of the Contract Documents in order for the Engineer of Record's approval. All Test Reports must be approved by the Engineer of Record for the final project closeout.

iv. Photographs

1. The Construction Manager shall submit to the Engineer of Record a typical photograph illustrating each type of repair in its Pre-Inspection and Post-Inspection completeness.

- v. The items required for final review by the Engineer of Record are not limited to those listed above.

10. For this project, the requirements under SD-03 and SD-08 shall be combined under one submittal for "Product Data". Product data will be submitted for all repairs identified in the contract drawings. The product data submittal may be combined with a number of submittals which reference one particular repair.

- C. Approving Authority: Person authorized to approve submittal. The Engineer of Record shall review submittals in regard to materials, methodology, shop drawings and other components involved in the quality assurance of the work. The Construction Manager shall review submittals in regard to but not limited to site utilization, disposal, coordination, environmental controls, schedule, safety and health requirements, etc.
- D. Work: As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

PART II – PRODUCTS (NOT APPLICABLE)

PART III – EXECUTION

3.01 SUBMITTAL REGISTER

- A. Within 5 calendar days after receipt of Notice to Proceed, provide submittal register listing all submittals required by the contract. Contractor shall maintain at the site, an up-to-date submittal register showing the status of all submittals as the work progresses. The submittal register format is subject to review and approval by the Construction Manager and Engineer of Record. The Contractor shall indicate critical submittals and critical dates for approval. The register shall also

include the following at a minimum:

1. Activity Number: Activity number from the project schedule.
 2. Transmittal Number: Contractor assigned list of consecutive numbers.
 3. Contractor Submittal Date: Scheduled date for approving authority to receive submittals.
 4. Contractor Approval Date: Date Contractor needs approval of submittal.
 5. Contractor Material Date: Date that Contractor needs material delivered to Contractor control.
- B. The Construction Manager or Engineer of Record will not review submittals until the register has been submitted in accordance with the previous paragraph and approved. Should a submittal register be generated by the Engineer of Record, it can be used as a guideline by the Contractor but does not relieve him of submissions required by the Contract Documents that may have been omitted.
- C. Items may be added or removed from the Submittal Register throughout the duration of the Work, as desired by the Construction Manager or Engineer of Record. Additional submittals that are not listed in the Submittal Register may be required as per the Construction Manager's contract.

3.02 PROCEDURES FOR SUBMITTALS

- A. Contractor shall make submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements. Submittals that are not required will not be reviewed by the Construction Manager.
1. Constraints
 - a. Submittals listed or specified in this contract shall conform to provisions of this section, unless explicitly stated otherwise.
 - b. Submittals shall be complete for each definable feature of work; components of definable feature interrelated as a system shall be submitted at same time.
 - c. When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, submittal will be returned without review.
 - d. Approval of a separate material, product, or component does not imply approval of assembly in which item functions.
 2. Scheduling
 - a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential requirements to resubmit.
 - b. Except as specified otherwise, allow for review period, beginning with receipt by approving authority, which includes at least 5 working days for submittals. Period of review for each re-submittal is the same as for initial submittal.

3.03 VARIATIONS

- A. Variations from contract requirements require the Engineer of Record approval. Do not substitute materials, equipment, or methods unless such substitution has been specifically accepted in writing by the Construction Manager.
 - 1. Considering Variations: Discussion with the Construction Manager prior to submission will help ensure functional and quality requirements are met and minimize rejections and re-submittals. When contemplating a variation which results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).
 - 2. Proposing Variations: When proposing a variation, deliver written request to the Construction Manager, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to the Owner. If lower cost is a benefit, also include an estimate of the cost-savings. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation, identify variations from the contract requirements and changes in other work or products.
 - 3. Warranting That Variations Are Compatible: When delivering a variation for approval, Contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work. In submitting a substitution or variation, the Contractor represents that he will coordinate the installation of accepted substitutions or variation, and additional costs or delays caused by the substitution or variation will not constitute grounds for adjustments to the contract.
 - 4. Review Schedule Is Modified: In addition to normal submittal review period, a minimum period of five (5) and maximum period of 14 working days will be allowed for consideration by the Owner of submittals with variations.

3.04 CONTRACTOR'S RESPONSIBILITIES

- A. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and contract documents.
- B. Transmit submittals to Construction Manager in accordance with schedule on approved Submittal Register, and to prevent delays in the work, delays to the Owner, or delays to separate Contractors.
- C. Advise Construction Manager as required by paragraph entitled: "Variations."
- D. Correct and resubmit submittal as directed by approving authority. When resubmitting disapproved transmittals or transmittals noted for re-submittal, the Contractor shall provide copy of that previously submitted transmittal including all reviewer comments for use by approving authority. Direct specific attention in writing or on resubmitted submittal, to revisions not requested by approving authority on previous submissions.
- E. Submittals are to be done electronically, via email to the team determined by the owner, in PDF format.
- F. Furnish hard copies of submittal when requested by the Construction Manager, to a limit of 6 copies per submittal.
- G. Complete work which must be accomplished as basis of a submittal in time to allow submittal to occur as scheduled.

- H. Ensure no work has begun until submittals for that work have been reviewed and returned stamped by the Engineer of Record, as explained in Paragraph 3.08 D or this Section, except to the extent that a portion of work must be accomplished as basis of submittal.

3.05 DELIVERY OF SUBMITTALS

- A. Transmittal Form: Transmit each submittal, except sample installations and sample panels, to office of approving authority. Transmit submittals electronically with transmittal form prescribed by Construction Manager and standard for project. The transmittal form shall identify Contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample panels and sample installations. All submittals must be sent to the Construction Manager, who shall forward submittals on to the Engineer of Record, if required, for approval.
- B. Identifying Submittals: Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:
 - 1. Construction contract number.
 - 2. Section number of the specification section by which submittal is required.
 - 3. Submittal description (SD) number of each component of submittal.
 - 4. When a resubmission, add alphabetic suffix on submittal description, for example, SD-10A, to indicate resubmission.
 - 5. Name, address, and telephone number of subcontractor, supplier, manufacturer, and any other second tier Contractor associated with submittal.
 - 6. Product identification and location in project.

3.06 FORMAT OF SUBMITTALS

- A. Format for SD-02 Shop Drawings
 - 1. Shop drawings shall not be less than 8½ by 11 inches nor more than 22 by 34 inches. Submit in the form of blue line or black line prints of each sheet. Blue prints will not be accepted.
 - 2. Present 8½ by 11 inch sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.
 - 3. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled "Identifying Submittals."
 - 4. Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Shop drawing dimensions shall be the same unit of measure as indicated on the contract drawings. Identify materials and products for work shown.
- B. Format of SD-03 Product Data and SD-08 Manufacturer's Instruction's

1. Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data.
2. Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains
3. Supplement product data with material prepared for project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for project.

C. Format of SD-04 Samples

1. Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately the same size as specified:
 - a. Sample of Equipment or Device: Full size.
 - b. Sample of Materials Less Than 2 by 3 inches: Built up to 8½ by 11 inches.
 - c. Sample of Materials Exceeding 8½ by 11 inches: Cut down to 8½ by 11 inches and adequate to indicate color, texture, and material variations.
 - d. Sample of Linear Devices or Materials: 10 inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.
 - e. Sample of Non-Solid Materials: Pint. Examples of non-solid materials are sand and paint.
 - f. Color Selection Samples: 2 by 4 inches.
 - g. Sample Panel: 4 by 4 feet.
 - h. Sample Installation: 100 square feet.

D. Format of SD-05 Design Data and SD-07 Certificates

1. Provide design data and certificates on 8½ by 11 inches paper. Provide a bound volume for submittals containing numerous pages.

E. Format of SD-06 Test Reports

1. Provide reports on 8½ by 11 inch paper in a complete bound volume.
2. Indicate by prominent notation, each report in the submittal. Indicate specification number and paragraph number to which it pertains.

F. Format of SD-01 Preconstruction Submittals and SD-09 Closeout Submittals

1. When submittal includes a document which is to be used in project or become part of project record, other than as a submittal, do not apply Contractor's approval stamp to document, but to a separate sheet accompanying document.
2. As-Built drawings sets shall be full sized (24" x 32") and represent the installed condition of the Work. The drawings shall clearly mark out where the installed condition differs from the Contract Documents. In addition to the hard copies, the As-Built drawings shall be submitted electronically

in both AutoCAD format (.dwg) version 2007 or newer and Portable Document Format (.pdf).

3. Photographs shall be submitted electronically in JPEG-format (.jpg) as well as Portable Document Format (.pdf). Photographs shall be in color and shall be a minimum of 3 megapixels in size. The location, photo directions, elevation, and date/time taken shall be submitted in conjunction with the PDF submission.

3.07 QUANTITY OF SUBMITTALS

- A. Unless otherwise noted, all submittals should be in PDF format and transmitted electronically. If hard copies are requested:

1. Number of copies of SD-02 Shop Drawings

- a. The Owner and/or Construction Manager may designate that all submittals shall be "paperless" and the contractor may transmit submittals via electronic file.
- b. Submit four (4) copies of submittals of Shop Drawings. One (1) print with the Construction Manager's review comments will be returned to the Contractor. The Contractor may make and distribute such copies as desired.

2. Number of Copies of SD-03 Product Data and SD-08 Manufacturer's Instructions

- a. Submit in compliance with quantity requirements specified for shop drawings.

3. SD-04 Number of Samples

- a. Submit two (2) samples, or two (2) sets of samples showing range of variation, of each required item. One (1) approved sample or set of samples will be retained by approving authority and one (1) will be returned to Contractor.
- b. Submit one (1) sample panel. Include components listed in technical section or as directed.
- c. Submit one (1) sample installation, where directed.
- d. Submit one (1) sample of non-solid materials.

4. Number of Copies SD-05 Design Data and SD-07 Certificates

- a. Submit in compliance with quantity requirements specified for shop drawings.

5. Number of Copies SD-06 Test Reports

- a. Submit in compliance with quantity requirements specified for shop drawings.

6. Number of Copies of SD-01 Preconstruction Submittals and SD-09 Closeout Submittals.

- a. Unless otherwise specified, submit administrative submittals compliance with quantity requirements specified for shop drawings. Submit six (6) copies of all Closeout Submittals.

3.08 REVIEW BY OWNER'S REPRESENTATIVE

- A. Review by the Construction Manager and Engineer of Record does not relieve the Contractor from

responsibility for errors or omissions which may exist in the submitted data.

B. Revisions:

1. Make revisions required by the Construction Manager and Engineer of Record.
2. If the Contractor considers any required revision to be a change, he shall so notify the Construction Manager in accordance with the specifications.
3. Make only those revisions directed or accepted by the Construction Manager and Engineer of Record.

C. Reimbursement of Owner's Representative's Costs:

1. In the event substitutions are proposed to the Construction Manager after the Contract has been awarded, the Construction Manager will record all time used by him and by his consultants in evaluation of each such proposed substitution.
2. Whether or not the Construction Manager and/or Engineer of Record accepts a proposed substitution, the Contractor may be responsible for the costs of the Construction Manager and/or Engineer of Record and consultants for all time spent by them in evaluating the proposed substitution, plus administrative fees. The costs will be deducted from outstanding pay requests due to the Contractor by way of a Change Order.

D. Engineer of Record Review Stamp:

1. The Engineer of Record will use the following approval statement when returning submittals to the Contractor as "Fabrication May Proceed" or "Do Not Fabricate":
 - a. "Submission has been checked for general conformance with design concept of the project. Comments made on [type of submittal] do not relieve the Contractor from compliance with requirements of the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site; for information that pertains solely to the fabrication processes or to techniques of construction; and for coordination of the work of all trades."

Fabrication May Proceed: _____ Do Not Fabricate: _____

By: _____ Date: _____

Note: _____

2. Actions Possible

- a. The Engineer of Record review stamp will indicate the status of the submittal, and corresponding action to be taken by the Contractor as follows:
 - i. Submission is in general conformance with design concept: When the Engineer of Record marks the submittal "Submission is in general conformance with design concept", the Work covered by the submittal may proceed, provided it complies with the requirements of the Contract Documents. Final payment depends on that compliance.
 - ii. Submission is in general conformance with design concept, except as noted: When the Engineer of Record marks the submittal "Submission is in general conformance with design concept, except as noted", the Work covered by the submittal may proceed

provided it complies with the notations on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.

- iii. Revise and Resubmit: When the Engineer of Record marks the submittal "Revise and Resubmit", the Work covered by the submittal may proceed provided it complies with the notations on the submittal and requirements of the Contract Documents. The submittal must be revised to comply with the notations on the submittal and requirements of the Contract Documents, and must then resubmit to the Engineer of Record. Final payment depends on that compliance.
- iv. Submission is rejected for non-conformance with design concept: When the Engineer of Record marks the submittal "Submission is rejected for non-conformance with design concept", do not proceed with the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise and prepare a new submittal according to the notations, resubmit without delay. Repeat if necessary to obtain a different action mark.

Do not use, or allow others to use submittals marked "Submission is rejected for non-conformance with design concept" at the Project Site or elsewhere where Work is in progress.

PART IV – MEASUREMENT AND PAYMENT

Include within the Contract prices the amount sufficient to cover all costs for work of this section. No separate payment will be made for work completed under this section. A Schedule of Values shall be submitted to and approved by the Owner's Representative.

END OF SECTION 01330

SECTION 01450
QUALITY ASSURANCE

PART I - GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A880	Criteria for Use in Evaluation of Testing Laboratories and Organization for Examination and Inspection of Steel, Stainless Steel, and Related Alloys
ASTM C1077	Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
ASTM C31	Standard Method of Making and Curing Concrete Compressive and Flexural Test Specimens in the Field.
ASTM C39	Standard method of Test for Compressive Strength of Cylindrical Concrete Specimens.
ASTM C94	Standard Specification for Ready-Mix Concrete.
ASTM C138	Standard Method of Test for Unit Weight, Yield, and Air Content of Concrete.
ASTM C172	Standard Method of Sampling Fresh Concrete.
ASTM C192	Standard Method of Making and Curing Concrete Test Specimens in the Laboratory.
ASTM C214	Recommended Practice for Evaluation of Compression Test Results of Field Concrete.
ASTM D3740	(Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E329	Agencies Engaged in the Testing and/or Inspection of Materials Used on Construction
ASTM E543	Evaluating Agencies that Perform Nondestructive Testing

1.02 SUBMITTALS

Submit the following in accordance with Section 01330 entitled "Submittal Procedures."

- A. Contractor Production Report.

1.03 TESTING

Except as stated otherwise in the specification sections, perform sampling and testing required under this Contract.

- A. Provide an independent testing laboratory qualified to perform sampling and tests required by this Contract. When the proposed testing laboratory is not accredited by an acceptable "Qualified National Authority" listed in the paragraph entitled "Qualified National Authority," submit to the Contracting Officer for approval, certified statements, signed by an official of the testing laboratory attesting that the proposed laboratory, meets or conforms to the following requirements:
 - 1. Laboratories engaged in testing of construction materials shall meet the requirements of ASTM E329.
 - 2. Laboratories engaged in testing of concrete and concrete aggregates shall meet the requirements of ASTM C1077.
 - 3. Laboratories engaged in testing of soil and rock, as used in engineering design and construction, shall meet the requirements of ASTM D3740.
 - 4. Laboratories engaged in inspection and testing of steel, stainless steel, and related alloys will be evaluated according to ASTM A880.
 - 5. Laboratories engaged in nondestructive testing (NDT) shall meet the requirements of ASTM E543.
 - 6. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA.
- B. Qualified National Authorities are the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology, the American Association of State Highway and Transportation Officials (AASHTO) program, and the American Association for Laboratory Accreditation (A2LA) program. Furnish to the Owner, a copy of the Certificate of Accreditation and Scope of Accreditation. The scope of the laboratory's accreditation shall include the test methods required by the Contract.
- C. Prior to approval of non-accredited laboratories, the proposed testing laboratory facilities and records may be subject to inspection by the Engineer. Records subject to inspection include equipment inventory, equipment calibration dates and procedures, library of test procedures, audit and inspection reports by agencies conducting laboratory evaluations and certifications, testing and management personnel qualifications, test report forms, and the internal QC procedures.
- D. The Owner retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.
- E. Cite applicable Contract requirements, tests or analytical procedures used when reporting test results. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify Owner immediately. Conspicuously stamp the cover sheet for each report in large red letters

"CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results shall be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Owner. Furnish a summary report of field tests at the end of each month.

- F. The Contractor shall furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the Owner.

1.04 COMPLETION INSPECTIONS

- A. Near the completion of all work or any increment thereof established by a completion time stated elsewhere in the specifications, the Contractor shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings and specifications. Include in the punch list any remaining items on the "Rework Items List" which were not corrected prior to the Punch-Out Inspection. The punch list shall include the estimated date by which the deficiencies will be corrected. A copy of the punch list shall be provided to the Owner. The Contractor or staff shall make follow-on inspections to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Owner that the facility is ready for the Owner "Pre-Final Inspection."
- B. The Owner will perform a pre-final inspection to verify that the facility is complete and ready to be occupied. An Owner "Pre-Final Punch List" may be developed as a result of this inspection. The Contractor shall ensure that all items on this list are corrected prior to notifying the Owner that a "Final" inspection can be scheduled. Any items noted on the "Pre-Final" inspection shall be corrected in timely manner and shall be accomplished within the time slated for completion of the entire work, or any particular increment thereof if the project is divided into increments by separate completion dates.
- C. The Contractor's Project Manager, the superintendent or other primary contractor management personnel, and the Owner's Representative will be in attendance at the Final Acceptance Inspection. Additional Owner personnel may be in attendance. The final acceptance inspection will be formally scheduled by the Engineer based upon results of the "Pre-Final" inspection. Notice shall be given to the Owner at least 14 days prior to the final inspection stating that all specific items previously identified to the Contractor as being unacceptable, along with all the remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection.

1.05 DOCUMENTATION

- A. Maintain current and complete records of on-site and off-site QC program operations and activities.
- B. Contractor Production Reports are required for each day that work is performed. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule. Contractor Production Reports are to be prepared, signed and dated by the project superintendent and shall contain the following information:
 - 1. Date of report, report number, name of contractor, Contract number, title and location of Contract and superintendent present.
 - 2. Weather conditions in the morning and in the afternoon including maximum and minimum temperatures.

3. Identify work performed by corresponding Scheduled Activity No., Modification No., etc.
4. A list of Contractor and subcontractor personnel on the work site, their trades, employer, work location, description of work performed, hours worked by trade, daily total work hours on work site, and total work hours from start of construction.
5. A list of job safety actions taken and safety inspections conducted. Indicate that safety requirements have been met including the results on the following:
 - a. Was a job safety meeting held? (If YES, attach a copy of the meeting minutes.)
 - b. Were there any lost time accidents? (If YES, attach a copy of the completed OSHA report.)
 - c. Was crane/trenching/scaffold/high voltage electrical/high work done? (If YES, attach a statement or checklist showing inspection performed.)
 - d. Was hazardous material/waste released into the environment? (If YES, attach a description of meetings held and accidents that happened.)
 - e. List safety actions taken today and safety inspections conducted.
6. A list of equipment/material received each day that is incorporated into the job.
7. A list of construction equipment on the work site including the number of hours used, idle and down for repair.
8. Include a "remarks" section in this report which will contain pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site.

1.06 NOTIFICATION ON NON-COMPLIANCE

- A. The Owner will notify the Contractor of any detected non-compliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time for excess costs or damages by the Contractor.

PART II - PRODUCTS

Not used.

PART III - EXECUTION

Not used.

END OF SECTION 01450

SECTION 01575

TEMPORARY ENVIRONMENTAL CONTROLS

PART I - GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standard for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials, Tables, and Hazardous Materials Communications Regulations
49 CFR 178	Shipping Container Specification

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 832-R-92-005	Storm Water Management for Construction Activities
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1.02 CONTRACTOR LIABILITIES FOR ENVIRONMENTAL PROTECTION

Contractors shall complete and provide environmental training documentation for training required by Federal, State, and local regulations.

1.03 DEFINITIONS

- A. Sediment

Soil and other debris that has eroded and been transported by runoff water or wind.

B. Solid Waste

Rubbish, debris, garbage, and other discarded solid materials, except hazardous waste as defined in paragraph entitled "Hazardous Waste," resulting from industrial, commercial, and agricultural operations and from community activities.

C. Sanitary Wastes

Wastes characterized as domestic sanitary sewage.

D. Rubbish

Combustible and noncombustible wastes such as paper, boxes, glass, crockery, metal, lumber, cans, and bones.

E. Debris

Combustible and noncombustible wastes such as ashes and waste materials resulting from construction or maintenance and repair work, leaves, and tree trimmings.

F. Chemical Wastes

This includes salts, acids, alkalies, herbicides, pesticides, and organic chemicals.

G. Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

H. Hazardous Waste

Hazardous substances as defined in 40 CFR 261 or as defined by applicable State and local regulations.

I. Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

J. Landscape Features

Trees, plants, shrubs, and ground cover.

K. Oily Waste

Petroleum products and bituminous materials.

1.04 SUBMITTALS

Submit the following in accordance with Section entitled "Submittal Procedures."

- A. Pre-construction survey report.
- B. Submit a copy of an approved laboratory analysis of materials collected as a result from abrasive blasting operations before disposing of waste materials.
- C. Submit copies of any State and local permits or licenses for the solid waste disposal facility.
- D. Submit a copy of the applicable EPA and State permits, manifests, or licenses for transportation, treatment, storage, and disposal of hazardous waste by permitted facilities.
- E. Submit one copy of the EPA or State permit license, or regulation for the transporter who will ship the hazardous waste to the permitted Treatment, Storage, and Disposal (TSD) facility.
- F. Submit written certification that hazardous waste turned in for disposal was generated on the Owner's property and is identified, packaged, and labeled in accordance with 40 CFR 261, 40 CFR 262, and 40 CFR 263.

1.05 ENVIRONMENTAL PROTECTION REGULATORY REQUIREMENTS

- A. Provide and maintain, during the life of the contract, environmental protection as defined in this Section. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, State, and local regulations pertaining to the environment, including but not limited to water, air, solid waste, and noise pollution.

1.06 ENVIRONMENTAL PROTECTION PLAN

- A. Contents of Environmental Protection Plan
 - 1. Include any hazardous materials (HM) planned for use on the job. Submit a list (including quantities) of HM to be brought to the site and copies of the corresponding material safety data sheets (MSDS). Submit this list to the Owner. At project completion, remove any hazardous material brought onto the site. Account for the quantity of HM brought to the site, the quantity used or expended during the job, and the left over quantity which (1) may have additional useful life as a HM and shall be removed by the Contractor, or (2) may be a hazardous waste, which shall then be removed as specified herein.
 - 2. The Environmental Protection Plan shall list and quantify any Hazardous Waste (HW) to be generated during the project.
 - 3. Store HW near the point of generation up to a total quantity of 55 gallons of hazardous waste. Move any volume exceeding these quantities to a HW permitted area within 3 days. Properly label all hazardous waste to be stored in accordance with applicable regulations.
 - 4. Contact Owner for conditions in the area of the project which may be subject to special environmental procedures. Include this information in the Pre-construction Survey. Describe in the Environmental Protection Plan any permits required prior to working the area, and contingency plans in case an unexpected environmental condition is discovered.
 - 5. Obtain permits for handling HW, and deliver completed documents to Engineer for review.

File the documents with the appropriate agency, and complete disposal with the approval of Owner. Deliver correspondence with the State concerning the environmental permits and completed permits to Owner.

B. Environmental Protection Plan Format

The Environmental Protection Plan shall conform to the following format:

ENVIRONMENTAL PROTECTION PLAN

Contractor Organization
Address and Phone Numbers

1. Methods to be used to prevent soil erosion
2. Methods to be used to contain spills of oily waste or debris
3. Methods to be used to control dust
4. Methods to be used for solid waste disposal
5. Hazardous materials to be brought onto the site
6. MSDS package
7. Employee training documentation
8. HW storage plan
9. HW to be generated
10. Pre-construction survey results
11. Permitting requirements identified

- C. Perform a pre-construction survey of the project site with the Engineer, and document existing environmental conditions in and adjacent to the site.

PART II - PRODUCTS

Not used.

PART III - EXECUTION

3.01 PROTECTION OF NATURAL RESOURCES

- A. Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified. Conform to the national and state permitting requirements of the Clean Water Act.
- B. Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. Surround all temporary fuel oil or petroleum storage tanks with a temporary earth berm of sufficient size and strength to contain the contents of the tanks in the event of leakage or spillage.
- C. Prevent oily substances or other debris from entering the water. Provide a temporary protective floating boom system, complete with associated hardware and anchors, to prevent debris from escaping from the work area. The boom shall totally enclose any active work or storage area. Booms shall have a minimum of 6 inches of freeboard, 12 inches draft, 11 pounds per foot

buoyancy and a fabric strength of 13,000 pounds.

- D. Do not disturb fish and wildlife. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as indicated or specified.

3.02 NOISE

- A. Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives will not be permitted without written permission from the Owner, and then only during designated times. Confine pile-driving operations to the period between 7 a.m. and 4 p.m., Monday through Friday, exclusive of holidays, unless otherwise directed.

3.03 EROSION AND SEDIMENT CONTROL MEASURES

- A. Burn-off of the ground cover is not permitted.
- B. Temporary Protection of Erodible Soils

Use the following methods to prevent erosion and control sedimentation:

1. Mechanically retard and control the rate of runoff from the construction site. This includes construction of diversion ditches, benches, berms, and use of silt fences and straw bales to retard and divert runoff to protected drainage courses.
2. Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of temporary vegetation, mulching, netting or other methods approved by the Engineer.

3.04 CONTROL AND DISPOSAL OF SOLID WASTES

- A. Pick up solid wastes on a daily basis, and place in covered containers that are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean. Dispose of solid waste generated at locations as directed.
- B. Remove rubbish and debris from Owner property and dispose at a licensed disposal facility off-site.
- C. Place garbage in approved containers, and move to a pickup point or disposal area, where directed.

3.05 CONTROL AND DISPOSAL OF HAZARDOUS WASTE

- A. Handle generated hazardous waste in accordance with 40 CFR 262.
- B. Dispose of hazardous waste in accordance with Federal, State, and local regulations, especially 40 CFR 263, 40 CFR 264, and 40 CFR 265. Removal of hazardous waste from project site shall not occur without prior notification and coordination with the Owner. Transport hazardous waste by a permitted, licensed, or registered hazardous waste transporter to a TSD facility. Hazardous waste shall be properly identified, packaged, and labeled in accordance with 49 CFR

172. Provide completed manifest for hazardous waste disposed of off-site to the Engineer within 7 days of disposal. Hazardous waste shall not be brought onto the site.

- C. Store hazardous waste in containers in accordance with 49 CFR 178. Identify hazardous waste in accordance with 40 CFR 261 and 40 CFR 262. Identify hazardous waste generated within the confines of the site by the site's EPA generator identification number.
- D. Take precautions to prevent spills of oil and hazardous material. In the event of a spill, immediately notify the Owner. Spill response shall be in accordance with 40 CFR 300 and applicable State regulations.
- E. Protect against spills and evaporation during fueling and lubrication of equipment and motor vehicles. Dispose of lubricants and excess oil in accordance with Federal, State, local regulations per 3.05B.

3.06 DUST CONTROL

- A. Keep dust down at all times, including nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning non-particulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not shake bags of cement, concrete mortar, or plaster unnecessarily.
- B. Abrasive Blasting
 - 1. The use of silica sand is prohibited in abrasive blasting.
 - 2. Provide tarpaulin drop cloths and windscreens to enclose abrasive blasting operations to confine and collect dust, abrasive agent, paint chips, and other. Perform work involving removal of hazardous material in accordance with 29 CFR 1910.
 - 3. Collect dust, abrasive, paint, and other debris resulting from abrasive blasting operations on painted surfaces and store in 55 gallon drums with watertight lids. Take a representative sample of this material, and test for EP toxicity with respect to lead, chromium, and cadmium content. The sampling and testing shall be performed in accordance with 40 CFR 261. Handle debris resulting from the abrasive blasting operations as a hazardous material, and dispose of in accordance with 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265. Transport hazardous material by a transporter licensed and permitted for transportation of hazardous materials. Dispose of hazardous material in an EPA-approved and permitted facility specifically designated for hazardous waste disposal.

END OF SECTION 01575

SECTION 01700

EXECUTION REQUIREMENTS

PART I - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction Layout.
2. Field engineering and surveying.
3. General installation of products.
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.
7. Correction of the Work.

- B. Related Sections include the following:

1. Division 1, Section "Project Management and Coordination" for procedures to coordinate field engineering with other construction activities.
2. Division 1, Section "Submittal Procedures" for submitting surveys.
3. Division 1, Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.03 SUBMITTALS

- A. Qualification Data: For land surveyor to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Certificates: Submit certificate signed by land surveyor certifying that locations and elevation of improvements comply with requirements.
- C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- D. Certified Surveys: Submit 5 copies signed by land surveyor.
- E. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.04 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART II – PRODUCTS

Not Used.

PART III – EXECUTION

3.01 IDENTIFICATION

- A. The Contractor will identify existing control points and property line corner stakes.
- B. Verify layout information shown on the Drawings, in relation to the property survey and existing benchmarks, before proceeding to lay out the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.
 - 1. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points or requirements to relocate reference points due to necessary changes in grades or locations.
 - 2. Promptly replace lost or destroyed Project control points. Base replacements on the original survey control points.
- C. Establish and maintain a minimum of 2 permanent benchmarks on the site; referenced to data established by survey control points.
- D. Establish and maintain the Layout Baseline with the stationing indicated on the Contract Drawings.

3.02 EXAMINATION

- A. Existing Conditions: The existence and location of previously installed site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of all site utility systems and other construction affecting the Work.
 - 1. Before construction, verify the location and connection points of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of all underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at connection points of sanitary sewer, storm sewer, gas, telecom, water-service piping, irrigation, and underground electrical services.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

3.03 PREPARATION

- A. Existing Utility Information: Furnish information to Owner's Representative 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. Existing Utility Interruptions: Do not interrupt utilities services serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 1. Notify the Owner's Representative not less than 2 days in advance of proposed utility interruptions.
 2. Do not proceed with utility interruptions without Owner's Representative's written permission.
- C. 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.
- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- E. 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 the Owner's Representative. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on CSI Form 13.2A, "Request for Interpretation" or similar form.

3.04 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Contract Documents in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Owner's Representative immediately.
- B. General: Engage a land surveyor to lay out the Work using 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 dimensions with tolerances indicated. Do not scale Drawings to obtain required dimensions.
 3. Inform installers of lines and levels to which they must comply.

4. Check the location, level and plumb, of every major element as the Work progresses.
 5. Notify Owner's Representative when deviations from required lines and levels exceed allowable tolerances.
 6. Close site surveys with an error of closure less than or equal to 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 invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level structures from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by the Engineer.

3.05 FIELD ENGINEERING

- A. Identification: Contractor will identify existing benchmarks, control points, and property corners.
- B. 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 the Owner's Representative. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to the Owner's Representative before proceeding.
 2. Replace lost or destroyed permanent benchmarks or control points promptly. Base replacements on the original survey control points.
 3. Any required re-calculation and layout plan for an offset baseline shall be provided by the Contractor at no additional cost to the Owner.
- C. 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.

- D. Certified Survey: On completion of substructures, major site improvements, site clearance including debris and/or obstruction removal, controlled fill and horticultural and other work requiring field engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. Final Property Survey: Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
 - 2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey".

3.06 INSTALLATION

- A. General: 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 the best possible results. 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.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by the Owner's Representative.
 - 2. Allow for structure movement, including thermal expansion and contraction.
- G. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.07 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements of NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80°F (27°C).
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris and ensure that no materials enter the adjacent waterway.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- 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 areas.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
 - 1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
- H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- I. 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, adverse weather conditions or deterioration at Substantial Completion.

- J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- K. 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.

3.08 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1, Section "Quality Control".

3.09 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. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

- A. Repair or remove, and replace defective construction. Restore damaged substrates and finishes. Comply with requirements of original construction or installation of Work.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken materials.

END OF SECTION 01700

SECTION 01710

CLEANING

PART I - GENERAL

1.01 DESCRIPTION

- A. Throughout the construction period, maintain the worksites in a standard of cleanliness as described in this Section.
- B. In addition to standards described in this Section, comply with all requirements for cleaning as described in various other Sections of these Specifications.
- C. Maintain premises and public properties free from accumulations of waste, debris, and rubbish caused by operations.
- D. At completion of Work, remove and lawfully dispose of waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all sight-exposed surfaces; leave project clean and ready for occupancy.

1.02 QUALITY ASSURANCE

- A. Conduct daily inspections, and more often if necessary, to verify that requirements of cleanliness are being met.
- B. In addition to the standards described in this Section, comply with all pertinent requirements of governmental agencies having jurisdiction.

1.03 SAFETY REQUIREMENTS

- A. Hazards Control
 - 1. Store volatile wastes in covered metal containers, and remove from premises daily.
 - 2. Prevent accumulation of wastes that create hazardous conditions.
 - 3. Provide adequate ventilation during use of volatile or noxious substances.
- B. Conduct cleaning and disposal operations to comply with all applicable ordinances and anti-pollution laws.

PART II - PRODUCTS

- A. Provide all required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART III - EXECUTION

3.01 PROGRESS CLEANING

A. General

1. Retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.
2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
3. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
4. At least once a week and more often if necessary, completely remove all scrap, debris and waste material from the job site.
5. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the environment.
6. Combustible waste, scrap, rubbish, etc., shall be stored in adequately sized metal containers (with metal covers) where practical, pending removal from the premises.

B. Worksites

1. Daily, and more often if necessary, inspect each site and move all scrap, debris and waste material to a place designated for their storage.
2. Weekly, and more often if necessary, inspect all arrangements of materials stored on each site; restack, tidy, or otherwise service all arrangements to meet the above requirements.
3. Maintain each site in a neat and orderly condition at all times.

C. Structures

1. Weekly, and more often if necessary, inspect the new structures and move all scrap, debris, and waste material to designated storage area.
2. As required preparatory to installation of succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of materials required to achieve the required cleanliness.
3. Handle materials in a controlled manner. Do not drop or throw materials from heights.
4. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly finished surfaces.

3.02 FINAL CLEANING

- A. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris and waste.

- B. Employ experienced workmen, or professional cleaners, for final cleaning.
- C. In preparation for substantial completion or occupancy, conduct a final inspection of sight-exposed exterior surfaces, and of any concealed spaces.
- D. Structures
 - 1. Visually inspect all surfaces and remove all traces of soil, waste material, smudges and other foreign matter. Remove all traces of splashed materials from adjacent surfaces. Remove all paint droppings, spots, stains, and dirt from finished surfaces. Use only the specified cleaning materials and equipment.
 - 2. Besides the general broom cleaning, the Contractor shall do the following special cleaning for all trades at the completion of the work and before final acceptance:
 - a. Remove all marks, stains, and other soil or dirt from all newly finished surfaces.
 - b. Remove all stains and clean exposed concrete floors.
 - c. Clean and polish all hardware for all trades; this shall include removal of all stains, dust, dirt, paint, etc., upon completion.
 - d. Clean all new fixtures and equipment installed as part of this Contract, removing all stains, paint, dirt and dust.
 - e. Repair and patch marred surfaces to specified finish to match adjacent surfaces.
- E. Final Cleaning: Schedule final cleaning as approved by the Engineer to enable the Owner to accept a completely clean project.

PART IV - METHOD OF MEASUREMENT

No Method of Measurement is required for this Section.

PART V - BASIS OF PAYMENT

There shall be no separate payment for this Section.

END OF SECTION 01710

SECTION 01770

CLOSEOUT PROCEDURES

PART I - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project Record Documents.
 - 3. Operation and Maintenance manuals.
 - 4. Warranties.
 - 5. Instruction of Owner's personnel.
 - 6. SD-09 Closeout Submittals.
 - 7. Final cleaning.
- B. Related Sections include the following:
 - 1. Division 1, Section "Construction Progress Documentation" for submitting final documentation.
 - 2. Division 1, Section "Execution Requirements" for progress cleaning of Project site.
 - 3. Divisions 2 through 16, Sections for specific closeout and special cleaning requirements for products of those Sections.

1.03 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspections for determining date of Substantial Completion, complete the following (List items below that are incomplete in request):
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to the services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, final property surveys, and similar final record information.

6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 8. Complete startup testing of systems.
 9. Submit test/adjust/balance records.
 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 11. Advise Owner of changeover in all utilities.
 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 13. Complete final cleaning requirements, including touchup painting.
 14. Touchup and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer and/or Owner's Representative will either proceed with inspection or notify Contractor of unfilled requirements. The Owner's Representative 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 the Owner's Representative that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection 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.

1.04 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a final Application for Payment according to payment procedure.
 2. Submit certified copy of Owner's Representative's endorsed and dated Substantial Completion inspection list of items to be completed or corrected (punch list). The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report and warranty.

5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer and/or Owner's Representative will either proceed with inspection or notify Contractor of unfilled requirements. The Owner's Representative 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. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.05 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three (3) copies 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. Use CSI Form 14.1A.
 1. Organize list of areas in phases to match construction schedule, starting with the northern areas first and proceeding south.
 2. Organize items applying to each phase of work by major element, including categories for earthwork, utility systems, paving, structures, irrigation, water supply, lighting, planting soils and mixes, and site furnishings.
 3. Include the following information at the top of each page:
 - a. Project Name.
 - b. Date.
 - c. Name of Engineer and Owner's Representative.
 - d. Name of Contractor.
 - e. Page number.

1.06 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Owner's Representative for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- 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 the Project Manual.
 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-½" x 11" paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the

product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES", Project name, and name of Contractor.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART II – PRODUCTS

2.01 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 III – EXECUTION

3.01 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances, and Federal and local environmental and anti-pollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial 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 portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, 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 neither planted nor 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 along walkways.
 - f. Clean exposed hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces.
 - g. Remove debris from limited access spaces, including trenches, equipment vaults, manholes, and similar spaces.
 - h. Remove labels that are not permanent.
 - i. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - j. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - k. Replace parts subject to unusual operating conditions.
 - l. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective fixtures.
 - m. Leave Project clean and ready for occupancy.
- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems or waterways. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

SECTION 02100

SITE WORK GENERAL PROVISIONS

PART I - GENERAL

1.01 SUMMARY OF WORK

- A. Under the applicable Division-2 sections referred to herein, the Contractor shall provide all labor, materials and equipment necessary to perform all site work that is indicated or covered by the Contract Documents.
- B. Site work shall be shown on the site improvement plans, or as specified herein, or as directed by the Owner's Representative. Work shall include, but not be limited to, the following:
 - 1. Earthwork
 - 2. Shoring and Bracing Earthwork
 - 3. Pile Remediation
 - 4. Temporary Environmental Controls
- C. The drawings and General Conditions of the Contract, including General and Supplementary Conditions, apply to work specified in the Division-2 sections indicated herein. The site improvement plans consisting of the following shall be referred to herein as the Site Plan.
 - 1. Site Plan and Sections
- D. Site work shall be accomplished in accordance with the requirements and regulations of the City of New York.
- E. The Contractor shall provide continuous access to the site and shall coordinate work with all other contractors and subcontractors working on the site, adjacent roadway systems, or adjacent properties. The Contractor shall not obstruct access to and from the adjacent properties from the adjacent roadways and driveways.
- F. The Contractor shall provide a safe construction site at all times, and the public shall be protected from unreasonable hazards. Applicable local and/or State requirements shall be observed and necessary permits acquired by the Contractor. The Contractor shall take immediate steps to rectify any hazardous or unsafe condition determined so by the Consultant or the municipal agency having jurisdiction. The Contractor shall conform to the requirements of the municipal agency having jurisdiction; and Industrial Code Rule 23, Protection in Construction, Demolition and Excavation, Operations, of the Rules and Regulations of the State of New York and of Subsection 107-05 "Safety and Health Requirements" of the NYSDOT Standard Specifications.
- G. Throughout the specifications contained herein, reference is made to the requirements of the City of New York and the requirements of the utility having jurisdiction (water, sewer, electric, gas and telephone). When there is a conflict between the referenced specifications, requirements, details, and specifications contained herein, the more stringent requirements shall control, as determined by the Consultant or representative of agency having jurisdiction, as appropriate, shall be final.

- H. The Contractor shall obtain and observe the applicable sections of the following specifications, details and requirements herein referenced. In utilizing referenced Standard Details and Specifications, the Contractor shall conform to requirements governing the work, materials, or project and not the general provisions and other provisions relating to measurement and payment. Standard Specifications, Details, Codes, Requirements, etc., specified herein by reference shall be as binding as if copied verbatim and specified directly herein.
1. The specifications, details and requirements of the City of New York.
 2. "Standard Specifications Construction and Materials, and Details", of the New York State Department of Transportation.
 3. Title 29 Code of Federal Regulations, Part 1926, Safety and Health Regulations for Construction, (OSHA).
 4. Industrial Code Rules of the New York State Department of Labor, Board of Standards and Appeals.
- I. Minimum Standard Reminder: Codes and Standard Specifications listed are minimum standards, and will not relieve the Contractor from carrying out all site work operations in a safe and prudent manner, or from providing a higher quality of material and workmanship. Workmen, the public, and adjacent property shall be protected from unreasonable hazard, and, the work shall be satisfactorily completed without causing damage to adjacent ground and structures.
- J. Conformance to the requirements herein does not relieve the Contractor from implementing additional measures or providing additional materials, work, equipment, personnel, etc., necessary to ensure a safe construction site and protection of existing facilities. The Contractor is placed on notice that safety during construction is considered as important as the construction itself. The Contractor shall, therefore, at all times conduct his operations in a manner to ensure that conditions on the site are adequate and effective for safety; and, to insure the convenience of abutting property, Owners and their safety as well as the safety of his own employees.
- K. Emergency Contact Person: The Contractor shall designate someone to be available to respond to emergency calls. The name of the person and the telephone number at which he/she can be reached at any time shall be given to the Consultant, Owner and all police agencies in the area. Such person shall have full authority and capability to mobilize forces promptly as required to respond to an emergency and protect the public.
- L. The work barges must be moored independently of the pier structures either by mooring piles (spuds) or anchors which must conform to USCG requirements.

1.02 PERMITS AND BONDS

- A. Permits and Bonds: Purchase and submit copies of permits and bonds necessary in connection with the performance of the Work specified in this section. At the job site, post notices and copies of permits necessary for the proper and lawful performance of the work, in accordance with such permits.

END OF SECTION 02100

SECTION 02270

EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work of this Section includes all labor, materials, equipment and services necessary to complete the temporary erosion control measures as shown on the Drawings or as ordered by the Engineer and/or Construction Manager or Engineer during the life of the Contract.

The Contractor shall provide and maintain temporary vegetation of all areas disturbed by construction.

B. Vegetative Measures

1. Topsoil
2. Mulching

C. Temporary Structural Measures

1. Earth Dike
2. Temporary Swale
3. Perimeter Dike/Swale
4. Temporary Storm Drain Diversion
5. Pipe Slope Drain
6. Straw Bale Dike
7. Silt Fence
8. Storm Drain Inlet Protection
9. Sediment Trap
10. Portable Sediment Tank
11. Sediment Basin
12. Stabilized Construction Entrance
13. Construction Road Stabilization
14. Dust Control
15. Sump Pit

1.2 RELATED WORK

- | | | |
|----|------------------------------------|---------------|
| 1. | Temporary Environmental Controls | Section 01575 |
| 2. | Cleaning | Section 01710 |
| 3. | Site Work General Provisions | Section 02100 |
| 4. | Concrete Pile Jacketing & Grouting | Section 03310 |

1.3 QUALITY ASSURANCE

- A. The Contractor shall perform all operations in accordance with the rules, regulations and ordinances of those governing bodies having jurisdiction.
- B. NYSDEC General Permit GP-02-01
1. The project will be subject to the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-02-01. The Owner will file a Notice of Intent (NOI) with the NYSDEC in accordance with the General Permit.
 2. A Storm Water Pollution Prevention Plan has been prepared in accordance with the SPDES General Permit. The SWPPP is a part of the Contract Documents and the Contractor shall conform to the Chapter on Soil Erosion and Sediment Control in addition to the requirements of this Specification.
 3. The Contractor(s) and Subcontractor(s) will be responsible for implementing all sediment control measures during construction. All contractors and subcontractors that will be performing excavations on the site must sign a copy of the certification statement before undertaking any construction or activity at the site. The certification must include the name and title of the person providing the signature; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification was made.

Contractor Certification Statement

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the Storm Water Pollution Prevention Plan (SWPPP) for the construction site identified in such SWPPP as a condition of authorization to discharge stormwater. I also understand that the operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards."

4. In the event of conflict between the requirements of these Project Specifications and the pollution control laws, rules or regulations of Federal, State or Local agencies, the more restrictive laws, rules or regulations shall govern.
5. In accordance with the NYSDEC General Permit, the project is limited to a maximum disturbed area of 5.0 acres. The Contractor may alter the construction sequence only with prior approval by the Engineer. Areas covered with gravel,

building sub-base material or temporary emulsion or stabilization shall be considered as stabilized.

6. Temporary stabilization must be maintained at all times. The Contractor is responsible for maintaining records to insure the 5 acre disturbance limit is met.
7. Providing and maintaining all temporary stabilization to meet the NYSDEC requirements shall be included in the Contract price. The Contractor shall maintain throughout the entire construction contract.

1.4 SUBMITTALS

- A. Submit shop drawings in accordance with Section 01330-Submittals.
- B. Manufacturers specifications and other data required to demonstrate compliance with specific requirements of this Section.

1.5 DELIVERY, STORAGE & HANDLING (NOT USED)

1.6 JOB CONDITIONS

- A. The Contractor shall provide all necessary safeguards as may be required to prevent damage to property beyond the Work area or adjacent property.
- B. Area of Work
 1. In accordance with the NYSDEC General Permit, the project is limited to a maximum disturbed area of 5.0 acres. The Contractor may alter the construction sequence only with prior approval by the engineer. Areas covered with gravel, building sub-base material or temporary emulsion or stabilization shall be considered as stabilized.
 2. The Construction Manger or Engineer shall have the authority to increase or decrease the surface area of erodible earth material exposed by clearing and grubbing, and/or excavation and fill operations, and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams or other watercourses, lakes, ponds or other areas of water impoundment.
- C. Temporary Erosion Control Measures
 3. Temporary erosion control measures shall be used to correct conditions that develop during construction that are needed prior to installation of permanent control features, or that are temporarily needed to control erosion that develops during normal construction practices, but which are not associated with permanent control features on the Project. All slopes and stockpile areas that will remain undisturbed and/or not top-soiled and seeded for a period of fourteen (14) days shall be temporarily seeded as specified on Drawings.
- D. Permanent Erosion Control Measures
 4. The Contractor shall incorporate all permanent erosion control features into the Project at the earliest practical time as outlined in the Project Schedule.

PART 2 – PRODUCTS

2.1 GENERAL

- A. All materials shall be in accordance with the items specified on the Drawings and/or contained in the “New York Guidelines for Urban Erosion and Sediment Control”, August 2005.

2.2 SILT FENCE

- A. Fence post shall be at least 36 inches long. Wood posts shall be of hardwood with a minimum cross section area of 4 inches. Steel posts shall be standard “T” or “U” sections and should weigh no less than one (1) pound per linear foot.
- B. Additional support shall be provided by a woven wire fence. Woven wire fence shall be at least 14-gauge with 2” x 4” openings. Plastic netting may be used in lieu of woven wire fence. The plastic netting shall be sewn on top of the geotextile filter fabric. Plastic netting shall have the following minimum properties.

Netting Property	Minimum Acceptable Value
Tensile Strength (lbs/ft)	185
Elongation (%)	11

- C. The geotextile filter fabric shall have the following minimum material properties.

Geotextile Property	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682
Mullen Burst Strength (psi)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D751(mod)
Slurry Flow Rate (gal/min/sf)	0.3	
Apparent Opening Size (AOS)	40-80	US Std Sieve CW-02215
Ultraviolet Radiation Stability	90	ASTM G26

2.3 STABILIZED CONSTRUCTION ENTRANCE

- A. The geotextile filter fabric shall have the following minimum material properties.

Geotextile Property	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	200	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682
Mullen Burst Strength (psi)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D751(mod)
Apparent Opening Size (AOS)	40-80	US Std Sieve CW-02215

- B. Stone size shall be a minimum of two (2) inches conforming to AASHTO M-43, Size no. 1.

2.4 DUST CONTROL

- A. Spray adhesives for use on mineral soils shall be as specified in the Table below.

Material	Water Dilution	Type of Nozzle	Apply Gallons/Acre
Acrylic Polymer	7:1	Course Spray	500
Latex Emulsion	12.5:1	Fine Spray	235
Resin in Water	4:1	Fine Spray	300
Polyacrylamide (PAM) Spray on or Dry Spread	Apply according to manufacturer's instructions.		
Acidulated soy bean soap stick	None	Course Spray	1200

- B. Tillage- to roughen surface and bring clods to the surface. This is a temporary emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, and spring-toothed harrows are examples of equipment which may produce the desired effect.
- C. Sprinkling - site is sprinkled until the surface is wet.
- D. Barriers - solid board fences, snow fences, burlap fences, crate walls, bales of hay, and similar material can be used to control air currents and soil blowing.
- E. Calcium chloride- shall be in the form of loose, dry granules or flakes fine enough to feed through commonly used spreaders at a rate that will keep surface moist but not cause pollution or plant damage. If used on steeper slopes, then use other practices to prevent washing into streams, or accumulation around plants.
- F. Stone – shall be crushed stone or coarse gravel conforming to AASHTO M-43, Size no. 57.

2.5 MULCH

- A. Mulch Materials

Material	Quality Standard	Application Rate per 1,000 s.f.	Depth of application
Small Grain Straw	Air dried; free of undesirable seeds and coarse material	90 to 100 lbs.	Cover about 90% of surface
Wood chips or Shavings	Green or air dried; free of objectionable coarse material	500 to 900 lbs	–
Jute Twisted Yarn	Undyed, unbleached plain weave. Warp 78 ends per yd. Weft 41 ends per yd. 60-90 lbs/roll	48" x 50 yards 48" x 75 yards	–
Gravel, crushed stone or slag	Washed: AASHTO M-43, Size no. 2. AASHTO M-43, Size no. 3.	9 cubic yards	Use Size no. 3 where subject to traffic

1. Alternate mulch materials as described in the "New York Guidelines for Urban Erosion and Sediment Control", August 2005 may be utilized with prior written approval of the Engineer.

A. Mulch Anchoring

1. Mulch anchoring should be accomplished immediately after placement to minimize loss by wind or water. Anchoring may be done by one of the following methods, depending upon the size of the area, steepness of slopes, and costs.
2. Peg and Twine - Drive 8 to 10 inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross and a square pattern. Secure twine around each peg with two or more round turns.
3. Mulch Nettings - Staple the light weight paper, jute, cotton, or plastic nettings to the soil surface. Mulch netting shall be biodegradable.
4. Crimper (mulch anchoring tool) - A tractor-drawn implement, somewhat like a disc-harrow especially designed to push or cut some of the broadcast long fiber mulch 3 to 4 inches into the soil so as to anchor it and leave part standing upright. This technique is limited to areas traversable by a tractor, which must operate on the contour of slopes. Straw mulch rate must be 3 tons per acre. No tackifying or adhesive agent is required.
5. Liquid Mulch-Binders - May be used to anchor salt hay or straw mulches.
 - a. Applications should be heavier at edges where wind catches the mulch, in valleys, and at crests or banks. Remainder of area should be uniform in appearance.
 - b. Use one of the following:
 - 1) Emulsified asphalt - (SS-I, CSS-I, CMS-2, MS-2, RS-I, RS-2, CRS-I, and CRS-2). Apply 0.04 gallons per sq. yd. or 194 gallons per acre on flat slopes less than 8 feet high. On slopes 8 feet high or more use 0.075 gallons per sq. yd. or 363 gallons per acre.
 - 2) Cutback asphalt - rapid curing (RC-70, RC-250, and RC-800) or medium curing (MC-250 or MC-800). Apply 0.04 gallons per sq. yd. or 194 gallons per acre on flat areas and on slopes less than 8 feet high. On slopes 8 feet or more high, use 0.075 gallons per sq. yd. or 363 gallons per acre.
 - 3) Synthetic or Organic binders - binders such as Curasol, DCA-70, Petro-set and Terra-Tack, or equal, may be used at rates recommended by the manufacturer to anchor mulch materials.

PART 3 - EXECUTION

3.1 INSPECTION

- A. The Owner will retain an engineer to conduct on-site inspections every 7 days and within 24 hours of 0.5 inches or greater of rainfall for general compliance with the SWPPP and the General Permit. Inspection reports will be provided to the Owner and Contractor within 24 hours of the field inspection. Any problem areas or areas in need of additional stabilization

will require immediate attention and correction by the Contractor.

- B. Examine the areas and conditions where Erosion Control Measures are to be installed and notify the Construction Manager or Engineer of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected by the Contractor in a manner acceptable to the Construction Manager or Engineer.

3.2 GENERAL REQUIREMENTS

- A. The Contractor shall conduct his operations to minimize erosion of soils and to prevent silting and muddying of streams, rivers, irrigation systems, impoundments (lakes, reservoirs, etc.) and lands adjacent to or affected by the Work, in accordance with the approved Sequence of Construction, Drawings and these Project Specifications.
- B. Construction of drainage facilities and performance of other Work that will contribute to the control of erosion and sedimentation shall be carried out in conjunction with earthwork operations or as soon thereafter as practical.
- C. Where erosion is likely to be a problem, clearing and grubbing operations shall be scheduled so that grading operations and permanent erosion control features can follow immediately thereafter, if the Project conditions permit; otherwise, temporary erosion control measures may be required between successive construction stages. The area of bare soil exposed at any one time by construction operations shall be kept to a minimum.
- D. Throughout all operations covered by this Section, the Contractor shall provide all necessary measures to control dust through the use of water, calcium chloride or other material in accordance with the approval of the Construction Manager or Engineer, at such locations and during such periods as he may direct, or as may be required by Local Ordinance or Authorities.

3.3 TEMPORARY EROSION CONTROL MEASURES

- A. Temporary erosion control measures shall be used to correct conditions that develop during construction that are needed prior to installation of permanent control features, or that are temporarily needed to control erosion that develops during normal construction practices, but which are not associated with permanent control features on the Project.
- B. The Contractor shall install all temporary sediment and erosion control measures in accordance with the Details and as described herein.

3.4 DUST CONTROL

- A. Throughout all operations covered by this Section of the Project Specifications, the Contractor shall provide all necessary measures to control dust through the use of water, resin-in-water emulsion or other material in accordance with the approval of the Construction Manager or Engineer, at such locations and during such periods as he may direct, or as may be required by Local Ordinance or Authorities.
- B. Any disturbed areas that are left exposed more than 14 days, and are not subject to construction traffic, will immediately receive a temporary seeding. If the season prevents the establishment of a temporary cover, the disturbed areas will be mulched with straw or equivalent material.
- C. Application of spray-on adhesive (resin-in-water emulsion) shall be applied at a rate of 300 gallons per acre. The resin-in-water emulsion shall be diluted at a ratio of 4:1 and shall be

applied with a fine spray nozzle. The treated soil shall not be used for travel.

- D. Watering equipment shall consist of pipelines, tanks, tank trucks or other approved devices capable of applying a uniform spread of water over the surface. A suitable device for regulating the flow and positive shut-off of the water shall be provided for positive control by the operator.
- E. The Construction Manager or Engineer will advise the Contractor of any unsatisfactory procedures for dust control. If the unsatisfactory procedures are not corrected promptly, the Construction Manager or Engineer may suspend the performance of any or all construction until the condition has been corrected.

3.5 TEMPORARY SEEDING

- A. Fertilizer shall be applied at the rate of 14 lbs. per 1000 square foot or 600 lbs. per acre, using 5-10-10 or equivalent.
- B. Annual ryegrass shall be applied at the rate of 30 lbs. per acre, or other select mixture described in the standards.
- C. Small grain straw mulch shall be applied at a rate of 90 lbs. per 1000 square foot or 2 tons per acre, to be applied and anchored according to the standards.
- D. All slopes and stockpile areas that will remain undisturbed and/or not topsoiled and seeded for a period of fourteen (14) days shall be temporarily seeded as specified on Drawings.

3.6 SEDIMENTS AND POLLUTANTS

- A. Water from operations containing sediment shall be treated by filtration, settling basins or other approved means sufficient to reduce the sediment content to no more than that of the stream into which it is discharged.
- B. Pollutants such as fuels, lubricants, bitumens, raw sewage and other harmful materials shall not be discharged into or near rivers, streams, and impoundments or into natural or manmade channels leading thereto. Wash water or waste from concrete mixing operations shall not be allowed to enter live streams.

3.7 PERMANENT EROSION CONTROL MEASURES

- A. The Contractor shall incorporate permanent erosion control features into the Project at the earliest practical time as outlined in his accepted schedule.
- B. No area shall receive permanent seeding prior to approval by the Construction Manager or Engineer.

3.8 CONCRETE WASTE

- A. Discharge of excess or waste concrete and/or wash water from Concrete Ready-Mix Trucks will be allowed on the construction site, but only in specifically designated diked areas that have been prepared to prevent contact between the concrete and/or wash water and storm water that will be discharged from the site or in locations where waste concrete can be placed into forms to make riprap or other useful concrete products. The cured residue from the concrete washout diked areas shall be disposed in accordance with applicable state and federal regulations. The Contractor is responsible for assuring that these procedures are followed.

3.9 TEMPORARY FUEL TANKS

- A. Temporary on-site fuel tanks for construction vehicles shall meet all state and federal regulations. Tanks shall have approved spill containment with the capacity required by the applicable regulations. The tank shall be in sound condition free of rust or other damage that might compromise containment. Hoses, valves, fittings, caps, filler nozzles, and associated hardware shall be maintained in proper working condition at all times.

END OF SECTION 02270

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SECTION 03310

CONCRETE PILE JACKETING AND GROUTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

All provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

1.02 SUMMARY

- A. The work covered by this section consists of furnishing all supervision, labor, materials, testing and equipment necessary to install a pile jacketing and grouting system to repair and/or protect concrete piles as hereinafter specified and detailed on the Contract Drawings.
 - 1. Install a permanent outer jacket of durable, inert and corrosion-free material, and fill the annular space between the pile and the permanent jacket with a hydro-ester pourable epoxy grout.
- B. Location and quantity of piles to be repaired and/or protected shall be as specified on the Contract Drawings.
- C. Related Sections include the following:
 - 1. Division 1 – Section “Submittal Procedures” for procedures and other submittal criteria.

1.03 DESCRIPTION OF WORK:

- A. The extent of work is shown on drawings.
- B. The work shall include but is not limited to the following:
 - 1. Cleaning and preparation of existing concrete.
 - 2. Excavation of soil and riprap.
 - 3. Installation of reinforcement, as necessary.
 - 4. Design and installation of formwork and seals.
 - 5. Mixing the epoxy.
 - 6. Injecting the epoxy.
 - 7. Replacing riprap.
- C. Work not included:

1. Field inspection and testing.

1.04 QUALITY ASSURANCE

A. General:

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

B. Manufacturer's Qualifications: Firms regularly engaged in the manufacture of pile protection systems of the type, material, and sizes required, whose products have been in satisfactory use in similar service for not less than seven years.

C. Installer's Qualifications: A firm with at least five years of successful installation experience on projects with work of installing pile protection systems similar to that required for this Work.

D. The Contractor shall establish, to the satisfaction of the Engineer, that the planning for grouting and the actual placement of the mixed epoxy grout system is performed by experienced personnel.

1.05 SUBMITTALS

A. Refer to and comply with Division 1 – Section "Submittal Procedures", for procedures and other submittal criteria.

B. Product Data:

1. Prior to the start of any work, the Contractor shall submit to the Engineer for approval a list of all materials and equipment specified or otherwise required to complete the Work of this Section.
2. Submit manufacturer's technical product data, including specifications and installation instructions, on the jacketing forms to be used, to show compliance with the Contract Documents, including a drawing which shows method of support, spacing and stabilization of formwork.
3. Manufacturer's specifications on the pumping equipment used to place the epoxy grout.
4. Supplier's technical product data, including specifications and installation instructions for the epoxy grout.

C. Production schedule for placing pile jacket forms, and when pumping the epoxy grout on a daily basis for the duration of the Project.

- D. Shop Drawings, detailing at a minimum location of standoff spacers, formwork and bracing details, and bottom seal details, proposed method of installation shall be prepared by the contractor and submitted for approval prior to any field installation.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver the specified products in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged or contaminated materials shall be removed from the site immediately, at Contractor's expense.
- B. Store pile jackets, epoxy grout, binders and accessories together until use as recommended by the manufacturer.
- C. Protect pile jackets, epoxy grout, binders and accessories from damage, dirt, dampness and direct sunlight during storage.
- D. Handle all pile protection system components in accordance with manufacturer's written instructions.

1.07 JOB CONDITIONS

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

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Sika US, Sika Corporation, 201 Polito Ave, Lindhurst NJ 07071
Phone: 800-933-7452
 - 2. Fox Industries Inc., 3100 Falls Cliff Road, Baltimore, MD 21211
Phone: 888-760-0369; www.fox-ind.com
 - 3. 5 Star Marine, 750 Commerce Drive, Fairfield CT 06825,
Phone: 800-338-3145; www.5star-marine.com
 - 4. Denso North America, 9747 Whithorn Drive, Houston Texas 77095
- B. Core Plug Cement: Where applicable, the following products may be incorporated into the Work include, but are not limited to, the following:
 - 1. Speed Crete Blue Line by The Euclid Company.

2. High strength underwater curing cement from those manufacturers listed in the previous section.

2.02 MATERIALS

1. EPOXY RESIN ADHESIVE FOR EPOXY INJECTION

- A. The epoxy resin adhesive shall be a 2-component, solvent-free, moisture-insensitive, epoxy adhesive of low viscosity and high strength, formulated specifically for injecting into the annulus of submerged formwork, around a concrete pile, up to one inch thick. It shall meet ASTM C 881 Type I, Grade B and C.

B. PROPERTIES OF THE CURED MATERIAL

1. Compressive Properties (ASTM D-695) at 28 days
 - a. Compressive Strength 8,000 psi min.
2. Tensile Properties (ASTM D-638) at 14 days
 - a. Tensile Strength 7,000 psi min.
 - b. Elongation at Break 4-5%
3. Flexural Properties (ASTM D-790) at 14 days
 - a. Modulus of Rupture 12,000 psi min.
4. Shear Strength (ASTM D-732) at 14 days 4,500 psi min.
5. Total Water Absorption (ASTM D-570) at 7 days 1.5% max.
(2 hours boil)
6. Bond Strength (ASTM C-882) Hardened Concrete to Hardened Concrete
 - a. 2 day (dry cure) 2,400 psi min.
 - b. 14 day (moist cure) 2,300 psi min.

2. Jackets

1. Jackets shall be inert and corrosion-free, with an interlocking joint, and fabricated from fiberglass and polyester resins to a minimum thickness of 1/8" unless otherwise shown on the Contract Drawings.
2. Jackets shall meet the following material properties:
 - a. Water Absorption (ASTM D570) 1% max.
 - b. Ultimate Tensile Strength (ASTM D638)
Longitudinal, transverse and diagonal 15,000 psi
 - c. Flexural Strength (ASTM D796) 25,000 psi
 - d. Flexural Modulus of Elasticity (ASTM D790) 700,000 psi min.
 - e. Barcol Hardness (ASTM D2583) 45 + 5

f. Color: Translucent

3. The inside face of the jacket shall be textured similar to that of a sandblasted surface and contain no bond-inhibiting agents that contact the hydro-ester epoxy grouts.
4. The jackets shall be provided with non-corrosive "standoffs", which will secure the jackets in the required positions.
5. Jackets shall be capable of being opened, in order to encapsulate the pile, and then returned to its original shape without damage.
6. Jackets shall be equipped with a compressible sealing strip at the bottom, which will effectively seal the bottom of the annular space between the pile and jacket.

A. Trowel Grade Epoxy Grout

1. Trowel grade epoxy grout shall be composed of a binder and filler meeting the following:
 - a. Epoxy Binder: The binder shall be a two component (2:1 ratio) trowel grade hydro-ester epoxy that is moisture insensitive for applications both above and below water that adheres to wet concrete, steel and pile jackets.
 - b. Filler: The filler shall be kiln-dried silica sand consisting of natural sand having a fineness modulus of between 2.40 and 3.0. Fifteen (15) to thirty (30) percent should pass the No. 50 screen and five (5) to ten (10) percent should pass the No. 100 screen. The sand shall be sharp, hard and strong and shall be free from adherent coating, salt, clay, loam, alkali, organic material or other deleterious substances.
2. Mixing
 - a. The binder and filler shall be mechanically mixed in strict accordance with the manufacturer's instructions to (1) part binder combined with a maximum (1) part filler.
 - b. When mixed in the ratio of (1) part binder to (1) part filler by volume, the minimum compressive strength of two inch cubes at 7 days, at a 66 to 74 deg. F curing temperature, shall be 8000 psi when tested in accordance with ASTM C579 Method B.

B. Concrete:

1. All concrete work shall conform to requirements of the ACI building codes requirement for structural concrete.
2. Concrete shall meet the following requirements:
 - a. All concrete shall be air entrained, 6% \pm 1.5% by volume, for 3/8" pea gravel aggregate. No carbonaceous aggregates shall be used.
 - b. All concrete mix shall be mixed, transported and placed in accordance with ACI standards 318 and 304.

- c. Follow ACI standard 211.1 for mixing water requirements.
- d. All concrete shall have compressive strength $F_c' = 5,000$ psi at 28 days with a maximum w/c ratio of 0.40 unless otherwise noted.
- e. Maximum concrete slump shall be 4", prior to the addition of plasticizing admixtures.
- f. Test cylinders shall be taken from the mixer in accordance with ASTM C172 and the project specifications.
- g. Construction joints shall be no more than 40 ft on center, unless otherwise noted.
- h. Concrete shall have 5.4 gal/cy of corrosion inhibitor.

C. Reinforcing:

- 1. Concrete cover measured to the face of the reinforcing bar (including ties and stirrups) shall be 3" unless otherwise indicated in the Drawings.
- 2. All splice lengths shall be greater than or equal to 36 x reinforcing bar diameter for #6 bars and smaller. All splice lengths shall be greater than or equal to 45 x reinforcing bar diameter for #7 bars and larger.
- 3. All reinforcing bars shall be new billet steel conforming to ASTM A615, grade 60.
- 4. All welded wire mesh shall conform to ASTM 185.
- 5. All reinforcing bars and welded wire mesh shall be epoxy coated in conformance with ASTM A775.

PART 3 - APPROVALS

3.01 ACCEPTABLE PRODUCTS:

Epoxy Injection:

- A. Sikadur 35, Hi-Mod LV LPL, as manufactured by Sika Corporation, Lyndhurst, New Jersey, is considered to conform to the requirements of this specification for pile encapsulation and restoration.
- B. Kaufman SurePox HMLV, as manufactured by Kaufman Products, Baltimore, Maryland, is considered to conform to the requirements of this specification for pile encapsulation and restoration. The Contractor is to ensure the appropriate class of product is used depending on the ambient air, water and substrate temperatures.

Epoxy Handpack:

- A. Sikadur 32, Hi-Mod epoxy grout, as manufactured by Sika Corporation, Lyndhurst, New Jersey, is considered to conform to the requirements of this specification for pile encapsulation and restoration.
- B. Kaufman SurePoxy HMLV, as manufactured by Kaufman Products, Baltimore, Maryland, is considered to conform to the requirements of this specification for pile encapsulation and restoration. The Contractor is to ensure the appropriate class of product is used depending on the ambient air, water and substrate temperatures.

Fiber Reinforced Polymer (FRP) Jackets:

- A. FX-70, pile protection system, as manufactured by Fox Industries Incorporated, Baltimore, Maryland, is considered to conform to the requirements of this specification for pile encapsulation and restoration.
- B. PileForm F FRP pile protection system, as manufactured by Five Star Marine, Inc. Fairfield, Connecticut, is considered to conform to the requirements of this specification for pile encapsulation and restoration.

Variations from materials specified - Should the Contractor wish to use any brand or type of material other than as specified herein, he shall so state in writing to the Engineer naming the proposed substitution and manufacturer. This statement shall be accomplished by (a) A certificate of compliance with test results from an approved independent testing laboratory that the proposed substitute meets or exceeds the specified requirements and has been tested in accordance with the specified test standards; (b) Documented proof that the proposed brand or type of material has a proven record of performance when used in the intended application as confirmed by successful installations in place a minimum of ten years, which the Engineer can verify; (c) Certification that the components are supplied by the same manufacturer so as to insure compatibility of material and to maintain single-source manufacturer responsibility.

PART 4 - EXECUTION

4.01 SURFACE PREPARATION

The contractor shall provide all labor, material, equipment and supervision necessary to clean the piles and the bottom surface of the pile caps in the areas to be jacketed, as required by the work and specified hereunder. The work shall include, but not be limited to, the following for each pile to be jacketed.

- A. All concrete pile surfaces to be covered with pile jackets shall be thoroughly cleaned of all marine growth, loose and unsound concrete, or any other deleterious material that would prevent proper bonding, as determined by the Engineer.
- B. The underside of the concrete pile cap shall be similarly cleaned of all marine growth, loose and deteriorated concrete, incipient spalls, etc.
- C. All exposed steel reinforcement shall be cleaned of all rust and scale prior to installation of the pile jacket.
- D. The cleaning operation shall result in a clean sound surface, free from materials that would inhibit bonding of the placed grout system to the existing concrete pile or cap surface.

Cleaned piles must be encased with the protective grout/concrete system within three days to preclude new marine growth or contamination, or cleaning must be repeated.

- E. The extent of cleaning shall be limited to comply with the heretofore requirements, without reducing or compromising the structural integrity of the piles and pile caps.
- F. Cleaning of concrete may be accomplished by mechanical scalers, hand tools, high-pressure water jet, abrasive blasting, or other approved methods that will yield the desired result.
- G. Placement of pile jackets will not be permitted until the concrete surfaces are cleaned to the satisfaction of the Engineer.

4.02 JACKET PLACEMENT

The Contractor shall provide all labor, materials, equipment and supervision necessary to furnish, install and support the jackets as shown on the drawings and specified below. Contractor shall remove any obstructions that impede jacket placement without damaging piles or cap beams.

- A. Prior to installing jackets, place trowel grade epoxy into female portion of joint, spread jacket open and place around pile, and then allow jacket to return to its original shape to engage the interlocking joint.
- B. Install self-drilling, self-tapping stainless steel screws, and center and position jacket to the proper elevation. Provide timber wedges and bracing as required to prevent movement due to tidal and wave action prior to and during grout placement.
- C. The inside of the jacket shall be roughened to ensure adhesion of the repair material.

4.03 GROUT PLACEMENT

- A. The epoxy grout shall be injected, at equal pressures, into the lower ports at the bottom of the pile jacket. The grout shall be continuously injected until the grout reaches the top injection port of the jacket.
- B. The Contractor, at his option, may install multiple levels of grout ports to minimize the pumping pressures. If this option is selected, inject grout first at the lowest grout port. As the grout appears at the next higher port level, and it has been determined that the space between the pile and the jacket is filled to that level, cap the lower port and continue injecting grout through the next higher open port. Repeat this process from port level to port level until the grout reaches the top of the jacket. Ports must be on alternating faces of the pile.
- C. The injection process shall be continuous, except when briefly interrupted to relocate the injector to the next higher port. During grout placement, the injection flow rate shall be controlled to prevent air and/or water entrapment within the pile jacket cavity. A constant tremie must be maintained.
- D. Remove any bracing materials after completion of grout injection and clean jacket exterior of any excess grout or other extraneous material.
- E. Mixing and pumping equipment approved by the Engineer shall be used in preparation and handling of the grout. All oil and other rust inhibitors shall be removed from the mixing drums, stirring mechanisms and other portions of the equipment in contact with the grout before the mixers are used.

- F. All materials shall be accurately measured by volume or weight as they are fed into the mixer. The quantity of water shall be such as to produce a grout having a pumpable consistency, but in no case should it be more than required for such purpose. Time of mixing shall not be less than one minute.
- G. Six (6) inch thick (minimum) tremie seals shall be poured at the bottom of the form and allowed to set for 24 hours prior to pouring the entire height of the form to prevent river bottom sediment from rising and mixing with the grout.

4.04 CONCRETE PLACEMENT

- A. Concrete trucks are specifically **PROHIBITED** on the pier, excepting those areas for which pile jacketing has been complete for a minimum of 14 days. Concrete buggies or conveyor systems must be used to transport the concrete from the truck to the batch mixer located immediately adjacent to the pump hopper.
- B. Mixing and pumping equipment approved by the Engineer shall be used in preparation and handling of the concrete. All oil and other rust inhibitors shall be removed from the mixing drums, stirring mechanisms and other portions of the equipment in contact with the concrete before the mixers are used.
- C. All materials shall be accurately measured by volume or weight as they are fed into the mixer. The quantity of water shall be such as to produce a concrete having a pumpable consistency, but in no case should it be more than required for such purpose. Time of mixing shall not be less than one minute.
- D. The concrete shall be pumped into place using a single hose placed inside the form. The hose shall be placed so that the end is within 6 inches of the bottom before pumping begins. Concrete shall not be allowed to fall freely through water or air and shall be injected in such a manner as to assure uniformly sound, dense and undiluted concrete in the pile jacket. Unsatisfactory concrete resulting in separation of aggregates and honeycombing will not be accepted. A constant tremie must be maintained and injection ports must be on alternating sides of the piles.
- E. Six (6) inch thick (minimum) tremie seals shall be poured at the bottom of the form and allowed to set for 24 hours prior to pouring the entire height of the form to prevent river bottom sediment from rising and mixing with the concrete.
- F. During all concrete placing operations, Contractor shall make a constant inspection of the form, not allowing any leaks or form shifting to occur. Any leaks or shifting of forms shall be immediately repaired.
- G. All concrete shall be ready-mixed concrete, and shall be mixed and delivered in accordance with the "Specifications for Ready Mixed Concrete", ASTM C94 and as specified herein. The batch plant of the concrete producer shall be certified for compliance with the standards established by the National Ready-Mixed Concrete Association.
- H. All finished concrete shall be free of voids or any other defects.
- I. Pumping or tremie method, once started, shall be carried on as a continuous operation until the section of approved size and shape is completed.

- J. Concrete shall be conveyed as rapidly as practicable from the mixer to the pump by methods which prevent the separation or loss of ingredients. It shall be deposited, as nearly as practicable, in its final position to avoid re-handling or flowing.
- K. Concrete that has partially hardened shall not be deposited in the Work.

PART 5 - TESTING

5.01 SCOPE OF WORK

The Contractor shall provide all labor, material, equipment and supervision necessary to test the concrete and grout in accordance with the requirements stated below.

5.02 TESTING

- A. The methods used in sampling, making, curing and testing of the concrete and grout samples, either in the field or in the laboratory, shall be in accordance with the appropriate ASTM Standards and shall include but not be necessarily be restricted to the following standards:
 - ASTM C31 - Standard Method of Making and Curing Concrete Compressive and Flexural Test Specimens in the Field.
 - ASTM C39 - Standard method of Test for Compressive Strength of Cylindrical Concrete Specimens.
 - ASTM C94 - Standard Specification for Ready-Mix Concrete.
 - ASTM C138 - Standard Method of Test for Unit Weight, Yield, and Air Content of Concrete.
 - ASTM C172 - Standard Method of Sampling Fresh Concrete.
 - ASTM C192 - Standard Method of Making and Curing Concrete Test Specimens in the Laboratory.
 - ASTM 214 - Recommended Practice for Evaluation of Compression Test Results of Field Concrete.
 - ASTM C579- Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes
- B. In the event the compressive strength of the cylinders, when tested, is below the specified minimum, the Engineer may require test cores of the hardened structures to be taken by the Contractor in accordance with ASTM Designation C42. If such test indicates that the core specimen is below the required standards, the concrete in question shall be removed and replaced by the Contractor without cost to the Owner, or additional piles will be jacketed with concrete at the direction of the Engineer, at no additional cost to the Owner.

END OF SECTION 03310

Bent	Pile	Pile Length		Mudline Type Back/Front	Mudline Penetration (ft) Back/Front	Bottom Conditions for Repairs	Repair Detail	Notes
		Min (ft)	Diff (ft)					
66	A	4.8	0	B- Silt	B- 1.0	S	A	Old ratchet straps around pile: need to be removed. Pile currently has a jacket around it, of which the top 6' sounds hollow. Remove jacket and strap and re-encase pile
				F- Silt, Debris	F- 0.8'			
66	E	5	0.7	B- Rip Rap	B- 0.0	H<2	A	Timber clamp 2' off mudline-has to be removed, good pile; 3-6" stone typical
				F- Rip Rap	B- 0.0			
66	F	2.7	2	B- Rip Rap	B- 0.0	H<2	E	1.3' Clear space between back wall and pile; 12"+ stone typical
				F- Rip Rap	F- 0.0			
65	A	4.8	0	B- Silt	B-	S	A1	Has a jacket-hollow on top
				F- Silt	F-			
65	B	3.8	0	B- Silt	B-	S	A1	Has a jacket-hollow on top
				F- Silt	F-			
65	C	10.8	0	B- Silt	B- 2.1	H	A	good pile for protective encasement
				F- Gravel	F- 0.4			
65	D	10.1	0.2	B- Silt-Refusal	B- 1.4	S	A	good pile for protective encasement
				F- debris	F- 0.8			
65	E	4.6	3.8' btw S+W face	B- Rip Rap	B- 0.0	S	C	pile looks good for protective encasement; 2' diameter stone against south face resting against pile; 3-8" Rip Rap typ.
				Rip Rap	F- 0.0			
65	F	4.2	0	B- Rip Rap	B- 0.0	O	C	good pile for protective encasement, 2' stone against south face of pile; 3"-8" rip rap typ.
				F- Rip Rap	F- 0.0			
65	F - BATT	4.2	0	B- Rip Rap	B- 0.0	H<2	D	Batter pile located south side of bent; 1.0' clear distance btw piles; 3"-8" rip rap typ.; 0.2' clear space @ mudline; 0.5' clear space between pile and top of back wall
				F- Rip Rap	F- 0.0			
65	I	4	0	B- Rip Rap	B- 0.0	H<2	E	see clear space above; custom form
				F- Rip Rap	F- 0.0			
64	A	13.7	0	B- Silt	B-2.4	S	A	ratchet straps with no jacket; 3 chains attached to pile that lead into mud
				F- Silt	F-2.2			
64	B	11.2	0.4	B- Silt	B-3.0	S	A	good pile for protective encasement
				F- Silt	F-2.2			
64	C	10.6	0	B- Silt	B-3.2	S	A	good pile for protective encasement
				F- Silt	F-2.3			
64	D	10.7	0.2	B- Silt& gravel	B-2.8	S	A	good pile for protective encasement
				F- Silt	F-3.5			
64	E	10.2	0	B- Silt	B-2.9	S	A	good pile for protective encasement
				F- Silt	F-2.6			

64	F	9.9	0	B- Silt	B-2.6	S	A	good pile for protective encasement
				F- Silt	F-2.8			
64	G	7.4	0.4	B- gravel	B-0.0	H	A	possible rip rap below gravel in rear of pile; good pile for protective encasement
				F- Silt	F-2.8			
64	H	4.6	0	B- Rip Rap	B-0.0	H<2	A	good pile for protective encasement
				F- Rip Rap	F-0.0			
64	I	3.9	0.3	B- Rip Rap	B-0.0	H<2	B	back wall flush with pile; good pile for protective encasement; 1.1' clear space to batter pile
				F- Rip Rap	F-0.0			
64	I-BATT	2.7	1	B- Rip Rap	B-0.0	H<2	E	custom form needed on north side of bent; 0.9' batter disappears into back wall
				F- Rip Rap	F-0.0			
63	A	13.4	0.4	B- silt	B-3.0	S	A	Chain around pile 2' off mudline-needs to be removed
				F- silt	F-2.6			
63	B	11.5	0.2	B- silt	B-3.2	S	A	good pile for protective encasement
				F- silt	F-3.0			
63	C	10.9	0.1	B- silt	B-3.2	S	A	good pile for protective encasement
				F- silt	F-2.9			
63	D	10.9	0.1	B- silt	B-2.2	S	A	good pile; 1.5' clear E-west and E-east
				F- silt	F-2.3			
63	E	10.5	0	B- silt	B-3.0	S	A	good pile for protective encasement
				F- silt	F-3.0			
63	F	10	0	B- silt	B-3+	H	A	good pile for protective encasement
				F- silt	F-1.0			
63	G	9.8	0	B- silt/RR?	B-0.3	H	B	good pile for protective encasement
				F- silt	F-2.0			
63	H	5	0.5	B- Rip Rap	B-0.0	H<2	A	4"-8" stone typ.; good pile for protective encasement
				F- Rip Rap	F-0.0			
63	I	4.25	0.4	B- Rip Rap	B-0.0	H<2	E	good; 0.7' clear top & bottom
				F- Rip Rap	F-0.0			
63	I - BATT	3	3	B- Rip Rap	B-0.0	H<2	D	top 18" in back wall; 0.7' top clear & bottom
				F- Rip Rap	F-0.0			
62	A	13.3	0	B- silt	B-3.0'+	S	A	0.3' Clear to skirt wall; chain 6' above mudline; Distance of cap to distance of wall 5.0'
				F- silt	F-3.0'+			
62	B	12.2	0	B- silt	B-3.0'+	S	A	good pile for protective encasement
				F- silt	F-3.0'+			
62	C	11.4	0	B- silt	B-3.0'+	S	A	good pile for protective encasement
				F- silt	F-3.0'+			

62	D	11.8	0.4	B- silt	B-3.0'+	S	A	good pile for protective encasement
				F- silt	F-3.0'+			
62	E	10.8	0	B- silt	B-3.0'+	S	A	good pile for protective encasement
				F- silt	F-3.0'+			
62	F	8.7	0	B- silt	B-3.0'+	S	A	good pile for protective encasement
				F- silt	F-3.0'+			
62	G	10	0	B- silt	B-2.0	S	A	good pile for protective encasement
				F- silt	F-3.0'+			
62	H	7.1	0.9	B- Rip Rap	B-0.0	H<2	B	good pile for protective encasement
				F- Rip Rap/silt	F-0.5			
62	I	4.4	0.6	B- Rip Rap	B-0.0	H<2	B	good pile for protective encasement
				F- Rip Rap	F-0.0			
62	J	4.6	0	B- Rip Rap	B-0.0	H<2	E	good pile for protective encasement
				F- Rip Rap	F-0.0			
62	J - BATT	3.3	1	B- Rip Rap	B-0.0	H<2	D	0" clear at top; 0.2' distance @ top of pile (1.2' clear @ mudline)
				F- Rip Rap	F-0.0			
61	A	12.9	0	B- silt	B-3.0+	S	A	1.0' Clear to skirt wall; chain 5' above mudline
				F- silt	F-2.0			
61	B	12	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
61	C	11.4	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
61	D	11.2	0	B- silt	B-3.0+	S	A	minor crack @ corner 1/8"x4' E.F, SE corner
				F- silt	F-3.0+			
61	E	11	0.1	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
61	F	10.8	0.1	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
61	G	10.7	0	B- silt	B-1.5	S	A	good pile for protective encasement
				F- Rip Rap	F-3.0+			
61	H	7.5	2.3	B- Rip Rap	B-0	O	C	Rip Rap diameter 1.0'+ typ.
				F- Rip Rap/silt	F-1.5			
61	I	3.3	1.9 west	B- Rip Rap	B-0.0	O	C	Stone on south 3.3' , north stone 3.0'
				F- Rip Rap	F-0.0			
61	J	3	2.8 west	B- Rip Rap	B-0.0	H<2	E	good pile for protective encasement
				F- Rip Rap	F-0.0			

61	J - BATT	4	1.2	B- Rip Rap	B-0.0	H<2	D	1.1' clear at mudline to back wall; 0' clear for 1" @ top
				F- Rip Rap	F-0.0			
60	A	13.4	0	B- silt	B-3.0+	S	A	0.6' distance between skirt wall and A; chain 6' above mudline
				F- silt	F-1.5			
60	B	12	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
60	C	11.4	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
60	D	11.3	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-2.5			
60	E	11	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
60	F	11	o	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
60	G	10.4	0	B- silt	B-2.0	S	A	good pile for protective encasement
				F- silt	F-2.0			
60	H	8	0.5	B- Rip Rap	B-0.0	H<2	B	good pile for protective encasement
				F- Silt/Rip Rap	F-0.2			
60	I	4.2	0.7	B- Rip Rap	B-0.0	H<2	B	good pile for protective encasement
				F- Rip Rap	F-0.0			
60	J	3.2	0.5	B- Rip Rap	B-0.0	H<2	E	1.2' clear I-plumb to I-batter
				F- Rip Rap	F-0.0			
60	J - BATT	3	1	B- Rip Rap	B-0.0	H<2	D	0.0' clear top for 1"; 0.9' @ mudline clear to back wall
				F- Rip Rap	F-0.0			
59	A	13.4	0	B- silt	B-2.5	S	A	Rope on pile 5' south of cap; chain 2' above mudline
				F- silt	F-2.0			
59	B	11.5	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
59	C	11.1	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
59	D	11.5	0.2	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
59	E	11.1	0.4	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
59	F	10	0.3	B- silt	B-2.5	S	A	good pile for protective encasement
				F- silt	F-3.0+			

59	G	8.1	0.3	B- Rip Rap	B-0.0	H<2	B	Rope on pile
				F- Rip Rap	F-0.0			
59	H	4.2	0.4	B- Rip Rap	B-0.0	H<2	B	good pile for protective encasement
				F- Rip Rap	F-0.0			
59	I	2.5	1	B- Rip Rap	B-0.0	H<2	E	good pile for protective encasement
				F- Rip Rap	F-0.0			
59	I - BATT	3	1.8	B- Rip Rap	B-0.0	H<2	D	top 0.0' clear to back wall for 1.6' ; 0.3' clear at mudline
				F- Rip Rap	F-0.0			
58	A	13.3	0	B- silt	B-3.0+	S	A	clear 0.8' to skirt wall; chain @ mid pile
				F- silt	F-0.8			
58	B	11.8	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
58	C	11.5	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
58	D	11	0.1	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
58	E	10.8	0.1	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
58	F	10.6	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
58	G	7.9	1.7	B- Rip Rap	B-0.0	H<2	B	good pile for protective encasement
				F- silt	F-1.0			
58	H	4.1	2.3	B- Rip Rap	B-0.0	O	C	2' diameter stone back side of pile
				F- Rip Rap	F-0.0			
58	I	3	1	B- Rip Rap	B-0.0	O	C	3-4' diameter stone in way of form; 0.9' clear between I-plumb and I-batter
				F- Rip Rap	F-0.0			
58	I - BATT	3.5	1.7	B- Rip Rap	B-0.0	H<2	D	0.7' clear @ mudline; top 1.5' embedded
				F- Rip Rap	F-0.0			
57	A	13.5	0	B- silt	B-3.0+	S	A	Chain @ mudline
				F- silt	F-3.0+			
57	B	10.9	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
57	C	10.9	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
57	D	10.4	0.3	B- silt	B-1.5	S	A	good pile for protective encasement
				F- silt	F-2.5			

57	E	4	3	B- Rip Rap	B-0.0	H<2	B	good pile for protective encasement; Rip Rap against pile
				F- Rip Rap	F-0.0			
57	F	3.3	0.6	B- Rip Rap	B-0.0	H<2	E	good pile for protective encasement; 0.8' clear between H-plumb and H-batter
				F- Rip Rap	F-0.0			
57	F - BATT	2.5	1.7	B- Rip Rap	B-0.0	H<2	D	top 1.5' embedded ; 0.4' clear @ mudline
				F- Rip Rap	F-0.0			
56	A	13	0	B- silt	B-3.0+	S	A	Chain 4' off mudline; good pile for protective encasement; timber clasp 4' down from cap-needs to be removed
				F- silt	F-2.4			
56	B	11	0	B- silt	B-3.0+	S	A	Timber clamp 4' off top of pile-has to be removed, good pile for protective encasement
				F- silt	F-2.7			
56	C	10.9	0	B- silt	B-1.9	S	A	good pile for protective encasement
				F- silt	F-1.9			
56	D	10	0	B- silt	B-1.7	S	A	remove timber clamp
				F- silt	F-2.3			
56	E	4.9	2	B- Rip Rap	B-0.0	H<2	B	remove timber clamp
				F- Rip Rap	F-0.0			
56	F	2	2.5	B- Rip Rap	B-0.0	H<2	E	against back wall; 1.2' face of pile to face of wall
				F- Rip Rap	F-0.0			
55	A-Int North	12.4	0.2	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-1.6			
55	A	12	0	B- silt	B-2.1	S	A	good pile for protective encasement
				F- silt	F-2.0			
55	B	10.1	0.2	B- silt	B-2.3	S	A	good pile for protective encasement
				F- silt	F-1.6			
55	C	6.3	2.7	B- Rip Rap	B-0.0	H	A	good pile for protective encasement
				F- silt	F-2.5			
55	D	2.4	3.1	B-Rip Rap	B-0.0	O	C	rip rap around pile; 18" diameter in rear of pile; cant be moved by hand
				F- Rip Rap	F-0.0			
55	E	1.5	2	B- Rip Rap	B-0.0	H<2	E	1.2' clear face of pile to face of wall
				F- Rip Rap	F-0.0			
55	E- BATT	1.7	2	B- Rip Rap	B-0.0	H<2	D	1.2' top of batter embedded; good pile
				F- Rip Rap	F-0.0			
54	A	12.5	0.5	B- silt	B-3.0+	S	A	chain on pile 3' above mudline; possible debris front of pile under mudline
				F- debris	F-1.2			
54	B	11	0.03	B- silt	B-2.2	S	A	good pile for protective encasement
				F- silt	F-3.0'+			

54	C	8.8	0.4	B- Rip Rap	B-0	H	B	good pile for protective encasement
				F- silt	F-1.7			
54	D	4.8	0.3	B- Rip Rap	B-0.0	H<2	B	good pile for protective encasement
				F- Rip Rap	F-0.0			
54	E - BATT	2.2	1.5	B- Rip Rap	B-0.0	O	D/C	2' diameter stone NW corner; top 18" buried in wall
				F- Rip Rap	F-0.0			
54	E	1.5	2	B- Rip Rap	B-0.0	O	D/C	18" to corner; 1.3' clear distance; 1' diameter rip rap
				F- Rip Rap	F-0.0			
54	E-Int 53/54	5.2	0	B- Rip Rap	B-0.0	H<2	B	good pile for protective encasement
				F- Rip Rap	F-0.0			
53	A	13.4	0	B- silt	B-3.0+	S	A	Chain on pile 5' above mudline; good pile for protective encasement
				F- silt	F-2.0			
53	B	12.2	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-2.9			
53	C	12.9	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-2.3			
53	D	9.4	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
53	E	8.7	0	B- silt	B-1.6	S	A	good pile for protective encasement
				F- silt	F-2.3			
52	A	17	0	B- silt	B-3.0+	S	A	chain on pile 8' above mudline; debris front of pile (large stone?)
				F- debris	F-0.1			
52	A1	16.9	0.2	B- sand/silt	B-0.2	O	C	good pile for protective encasement; lots of debris around front of pile
				F- debris	F-0.2			
52	B	16.5	0	B- silt	B-0.4	S	A	good pile for protective encasement
				F- silt	F-1.6			
52	C	14.8	0	B- silt	B-2.5	S	A	good pile for protective encasement
				F- silt	F-3.0+			
52	D	13.1	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
52	E	12.4	0	B- silt	B-2.3	S	A	good pile for protective encasement
				F- silt	F-3.0+			
52	E-Int 52/53	10.8	0	B- silt	B-2.6	S	A	good pile for protective encasement
				F- silt	F-3.0+			
27	AN	11.6	0.2	B- silt	B-3.0+	S	A	chain 6' below cap; chain 3' above mudline; NO EVIDENCE OF CORE
				F- debris	F-0.3			

27	AS	10.9	0.3	B- debris	B-0.5	H	B	wood form still in place from core on west face, elevation at 6.4' below cap
				F- debris	F-0.2			
26	A+1	9.4	0.2	B- silt	B-2.3	S	A	good pile for protective encasement
				F- silt	F-3.0+			
26	A	8.8	0	B- silt	B-1.5	S	A	good pile for protective encasement
				F- silt	F-1.7			
25	A+2	9.3	0.2	B- silt	B-1.8	S	A	good pile for protective encasement
				F- silt	F-2.2			
25	A+1	9	0	B- silt	B-2.4	S	A	good pile for protective encasement
				F- silt	F-3.0+			
25	A-1	9	0	B- silt	B-2.5	S	A	good pile for protective encasement
				F- silt	F-3.0+			
25	B	8.5	0	B- silt	B-2.5	S	A	good pile for protective encasement
				F- silt	F-3.0+			
25	C	7.3	0.5	B- Rip Rap	B-0.0	O	C	good pile for protective encasement; rip rap 1-1.5' diameter
				F- silt	F-3.0'+			
25	D	4.2	2.4	B- Rip Rap	B-0.0	H<2	B	rip rap all around pile; 4.4' clear distance between caisson and pile
				F- Rip Rap	F-0.0			
26	B	8.1	0	B- silt	B-1.4	S	A	good pile for protective encasement
				F- silt	F-1.6			
26	C	8	0	B- gravel	B-0	H	B	stone and gravel south of pile (does not appear to be rip rap)
				F- silt	F-2.5			
26	D	3.3	3.2	B- Rip Rap	B-0	H<2	B	good pile for protective encasement; clear distance 3.7' between pile and caisson
				F- gravel	F-0.1			
27	B	10	0.3	B- Silt	B-1.7	S	A	core on north face, 5' above mudline; remove formwork and timber clamp on pile
				F- Silt	F-3.0+			
27	C	4.4	1.9	B- Rip Rap	B-0.0	H<2	B	1' diameter rip rap; clear distance of 3.9' between pile and caisson
				F- Rip Rap	F-0.0			
107	A	9.4	0	B- Silt	B-1.9	S	A	core located north face 5.0' below cap; CORE NOT INDICATED ON PLAN
				F- silt	F-2.4			
107	B	5.3	0	B- Rip Rap	B-0	H<2	B	core on north face, 1.4' below cap; small rip rap and gravel; 2.4' clear distance btw pile and caisson
				F- gravel	F-0.1			
106	A	9.4	0	B- silt	B-1.5	S	A	good pile for protective encasement
				F- silt	F-0.7			
106	B	8.1	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			

106	C	7.1	0	B- gravel	B-0.1	H	A	clear distance 4.4' between pile and caisson
				F- silt	F-2.6			
105	A	10	0	B- silt	B-1.5	S	A	good pile for protective encasement
				F- silt	3.0+			
105	B	8.1	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
105	C	4.6	3	B- Boulder	B-0.0	O	C	3' Diameter boulder SW corner; clear distance of 5.2' between pile and caisson
				F- Gravel	F-0.5			
104	A	10.4	0	B- silt	B-1.6	S	A	good pile for protective encasement
				F- silt	F-3.0+			
104	B	8	2.6	B- Boulder	B-0.3	O	C	Boulder SE corner 2'+ diameter; good pile for protective encasement
				F- silt	F-0.5			
104	C	5.3	2.8	B- Boulder	B-0	O	C	Boulder SE corner 2'+ diameter; rip rap rear of pile (south); clear distance of 4.4' pile to caisson
				F- silt	F-0.3			
103	A	11.2	0	B- debris	B- 0.7	H<2	B	good pile for protective encasement
				F- debris	F-0.3			
103	B	9.7	0	B- silt	B-2.0	S	A	1/8" minor cracking west face of pile
				F- silt	F-2.0			
103	C	4.2	4.2	B- Rip Rap	B-0.0	H<2	B	3' diameter to west 2" clear space between pile and boulder; clear distance between pile and caisson is 4.5'
				F- silt	F-1.0			
102	A	8.8	0	B- silt	B-2.0	H<2	B	good pile for protective encasement
				F- debris	F-0.0			
102	B	9.3	0.6	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-2.5			
102	C	7.1	1	B- Rip Rap	B-0.0	H	A	good pile for protective encasement; Clear distance from pile to back wall is 6.2'
				F- silt	F-3.0+			
101	A	11.7	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-2.5			
101	B	8.2	0.6	B- gravel	B-0.0	H	B	10.4' distance between pile and back wall
				F- sand	F-0.0			
100	A	11.7	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-2.0			
100	B	7	0	B- Rip Rap	B-0.0	H<2	B	2.1' clear to back wall; stone Rip Rap/Debris present
				F- Rip Rap	F-0.0			
99	A	12.9	0.6	B- silt	B-2.0	S	A	good pile for protective encasement
				F- debris	F-0.2			

99	B	11.7	0.8	B- silt	B-1.4	S	A	good pile for protective encasement
				F- silt	F-2.0			
99	C	7.4	1.3	B- silt	B-0.0	O	C	massive Rip Rap, SE corner 3'+ diameter; 4.6' clear to back wall
				F- Rip Rap	F-0.5			
98	A	12.8	0	B- silt	B-3.0+	S	A	good pile for protective encasement
				F-debris	F-0.2			
98	B	10.1	0.4	B- Rip Rap	B-0.0	O	C	Boulder SE corner
				F- silt	F-2.5			
98	C	7.4	1.2	B- Rip Rap	B-0.0	O	C	Boulders; 5.1' clear to back wall
				F- Rip Rap	F-0.2			
97	A	9.9	0.4	B- silt	B-2.0	S	A	good pile for protective encasement
				F- silt	F-2.5			
97	B	8.6	3.6	B- silt	B-2.8	H	B	SE face large boulder/debris
				F- Rip Rap	F-0.0			
97	C	6.4	2	B- Rip Rap	B-0.0	O	C	2'+ diameter boulders; 4.8' clear to back wall
				F- Rip Rap	F-0.0			
96	A	15.8	0	B- silt	B-1.7	S	A	good pile for protective encasement
				F- silt	F-2.0			
96	B	12.6	0.8	B- Rip Rap	B-0.0	H	A	good pile for protective encasement
				F- silt	F-2.0			
96	C	5.6	3.8	B- Rip Rap	B-0.0	O	C	rip rap 2'-3' diameter all sides; 3.2' clear to back wall
				F- Rip Rap	F-0.0			
95	A	14.6	0	B- Silt	B-2.2	S	A	good pile for protective encasement
				F- silt	F-2.8			
95	B	4.6	1.8	B- Rip Rap	B-0.0	O	C	Large rip rapped on back
				F- Rip Rap	F-0.0			
95	C	2.3	1.4	B- Rip Rap	B-0.0	O	C	1.9 clear to back wall; large rip rap
				F- Rip Rap	F-0.0			
94	A	14.9	0	B- silt	B-2.0	S	A	good pile for protective encasement
				F- silt	F-1.3			
94	B	8.7	2.4	B- Rip Rap	B-0.0	H	B	Rip Rap (large)
				F- Rip Rap	F-0.0			
94	C	4	0	B- Rip Rap	B-0.0	H	B	Rip Rap (small)
				F- Rip Rap	F-0.0			
94	C - BATT	4.4	0	B- Rip Rap	B-0.0	H<2	B	Rip Rap around pile
				F- Rip Rap	F-0.0			

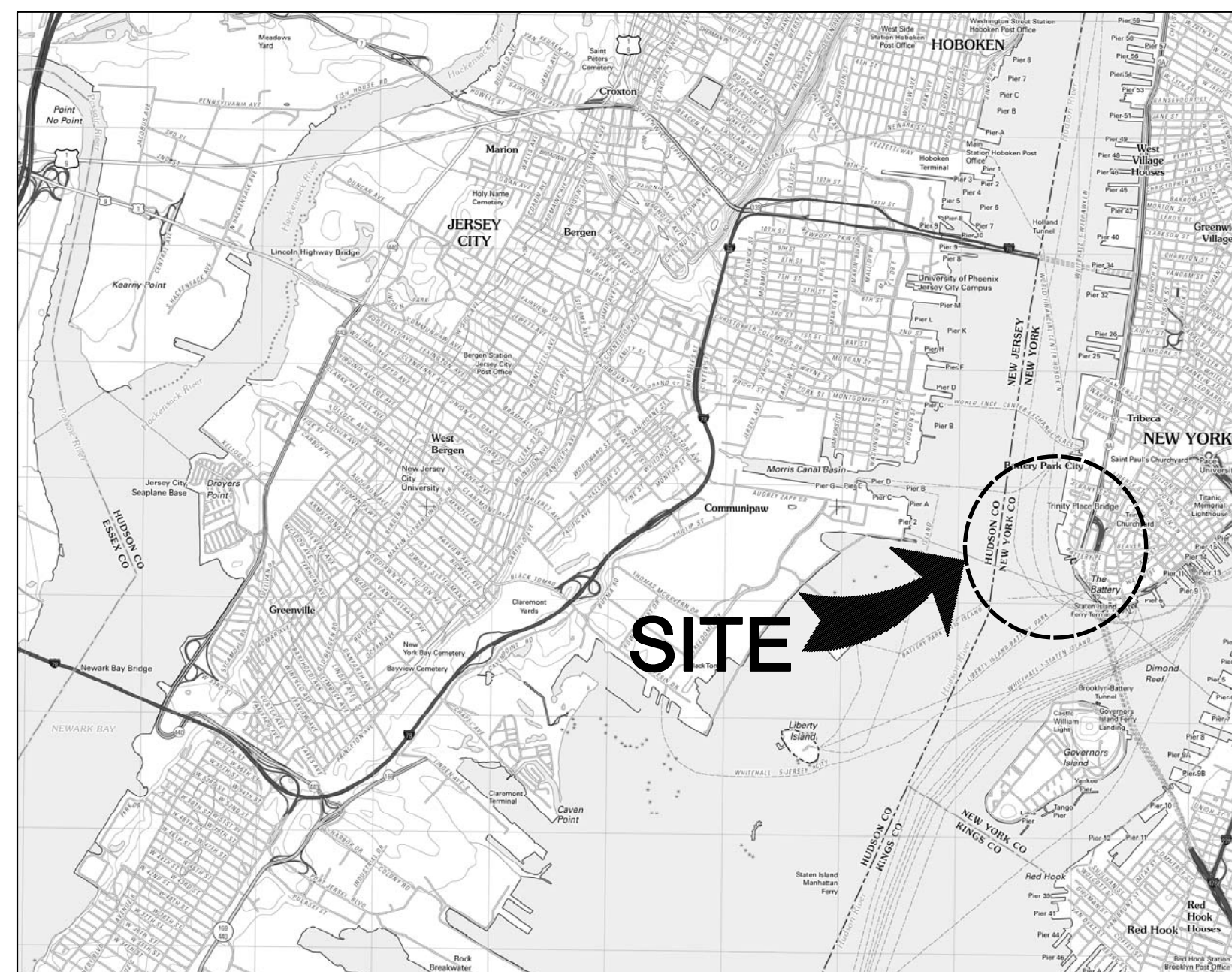
93	A	15	0.7	B- Rip Rap	B-0.0	H	A	Small stone, compact mudline rear of pile
				F- silt	F-1.7			
93	B	12.4	2.2	B- Rip Rap	B-0.0	H	B	Rip Rap 12"+ typ.
				F- silt	F-0.5			
93	C	8.7	2.2	B- Rip Rap	B-0.0	H	B	Rip Rap 12"+ typ.
				F- Rip Rap	F-0.3			
92	A	16.8	0.2	B- silt	B-1.0	S	A	good pile for protective encasement
				F- silt	F-0.8			
92	B	14.8	0.7	B- Rip Rap	B-0.0	O	C	4' diameter boulder SE; 6" clear space
				F- silt	F-0.7			
92	C	11.2	2.1	B- Rip Rap	B-0.0	O	C	3'+ diameter boulder on east face; 6-7' clear space to bent 88
				F- silt	F-0.6			
91	A	19.2	1.1	B- small stone	B-0.0	H	A	good pile for protective encasement
				F- silt	F-0.4			
91	B	16.9	1.1	B- Rip Rap	B-0.0	H<2	B	Rip Rap approximately 6-12" diameter
				F- Rip Rap	F-0.0			
91	C	16.4	2.1	B- Rip Rap	B-0.0	H<2	B	clear distance between batter on 88 is 0.4'; over pour on east side of pile; 6-12" Rip Rap
				F- Rip Rap	F-0.0			
90	A	25.9	0	B- silt	B-1.7	S	A	good pile for protective encasement
				F- silt	F-1.3			
90	B	25.1	0.3	B- silt	B-3.0+	S	A	good pile for protective encasement
				F- silt	F-3.0+			
90	C	24.3	0	B- silt	B-1.7	S	A	good pile for protective encasement
				F- silt	F-3.0+			
89	A	35.1	1	B- silt	B-1.8	S	A	Mud around the pile looks jetted-hole around the pile
				F- silt	F-1.7			
89	B	32.1	0.4	B- silt	B-1.9	S	A	approximately 10' from alpha pile
				F- silt	F-2.0			
89	C	29	0.5	B- silt	B-1.6	S	A	approximately 8' between this pile and bravo pile
				F- silt	F-2.4			

BATTERY PARK CITY AUTHORITY

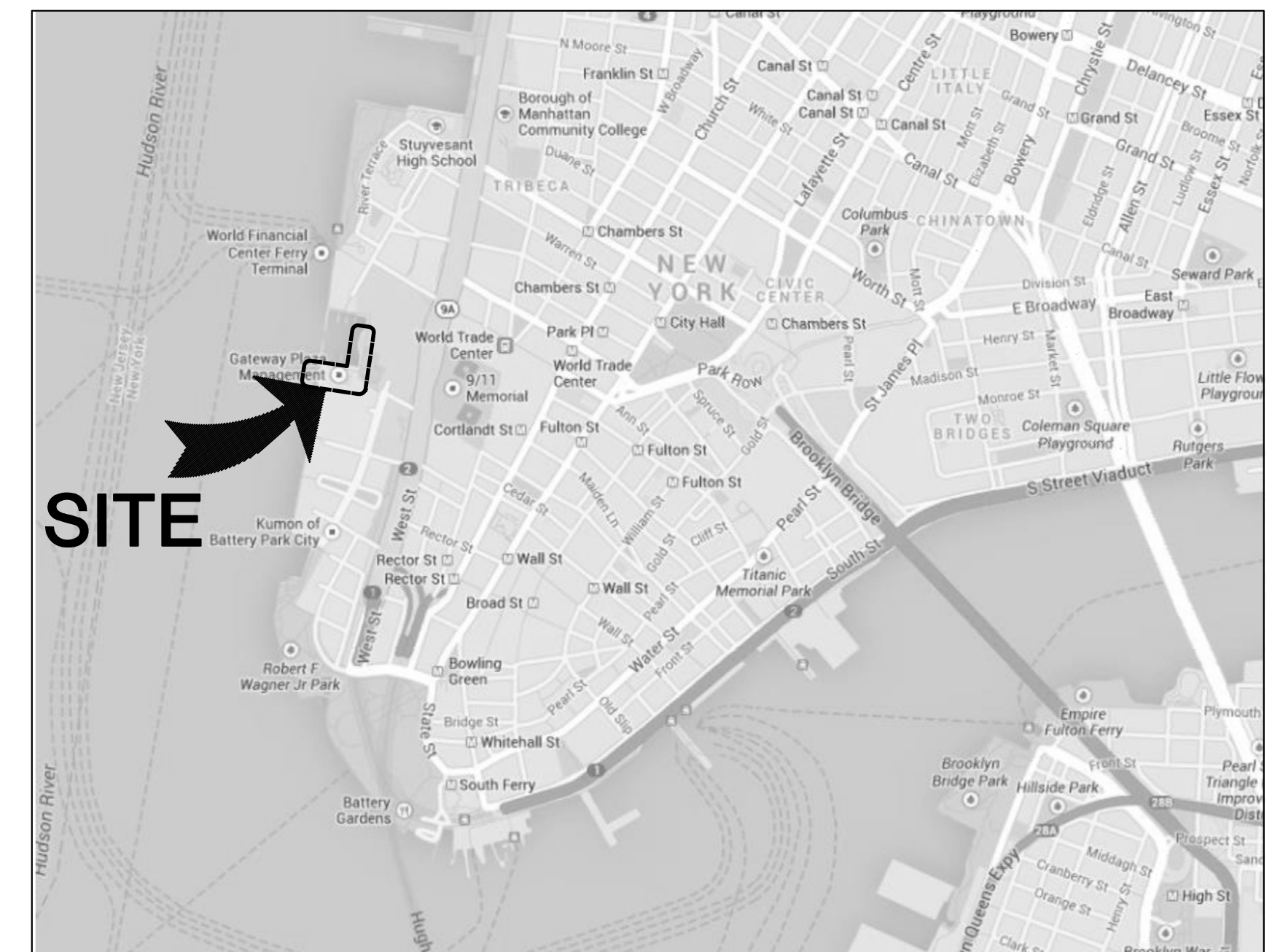
PHASE IV PILE REMEDIATION

BATTERY PARK CITY ESPLANADE
NEW YORK, NEW YORK
APRIL, 2015

PREPARED BY:



LOCATION PLAN

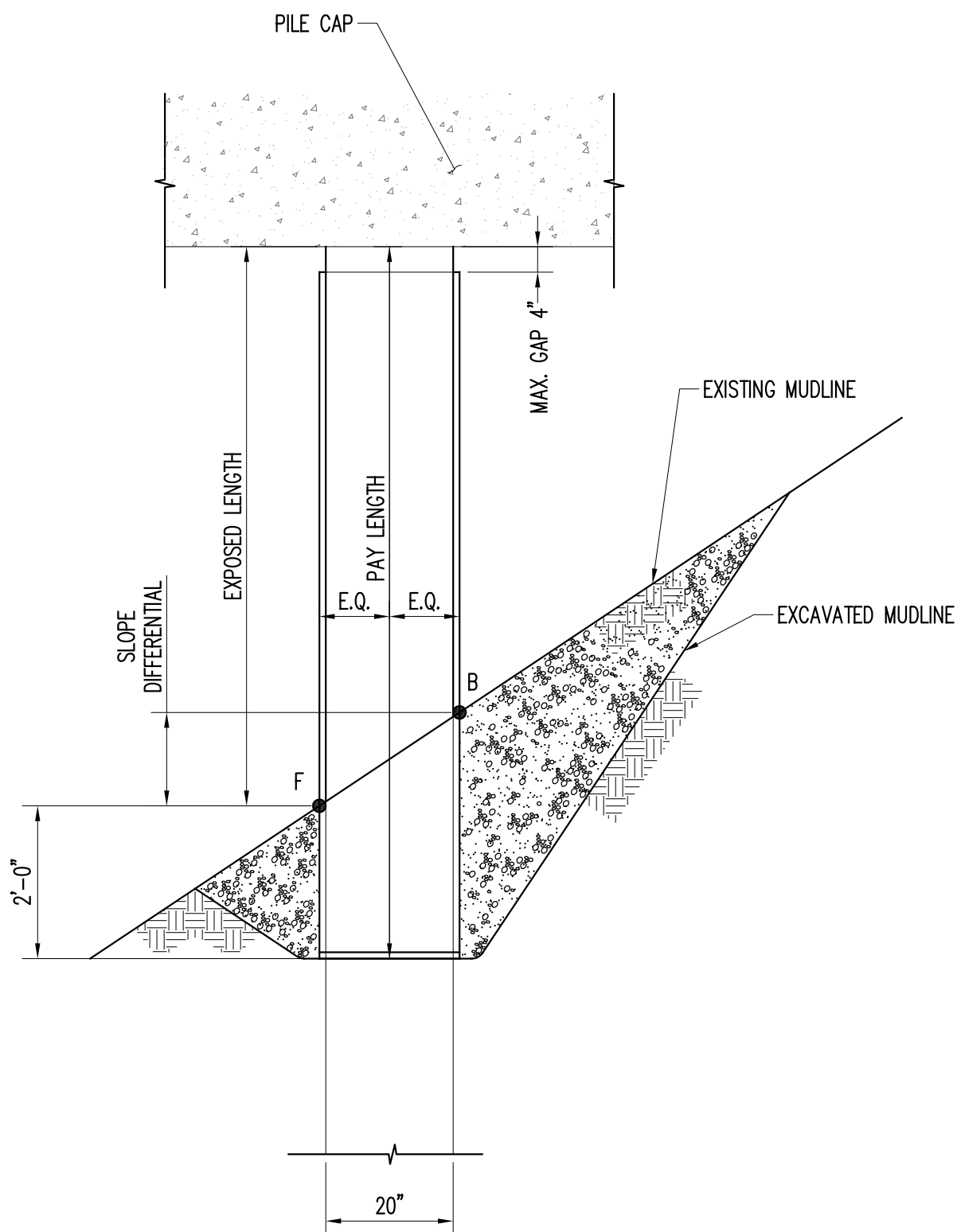
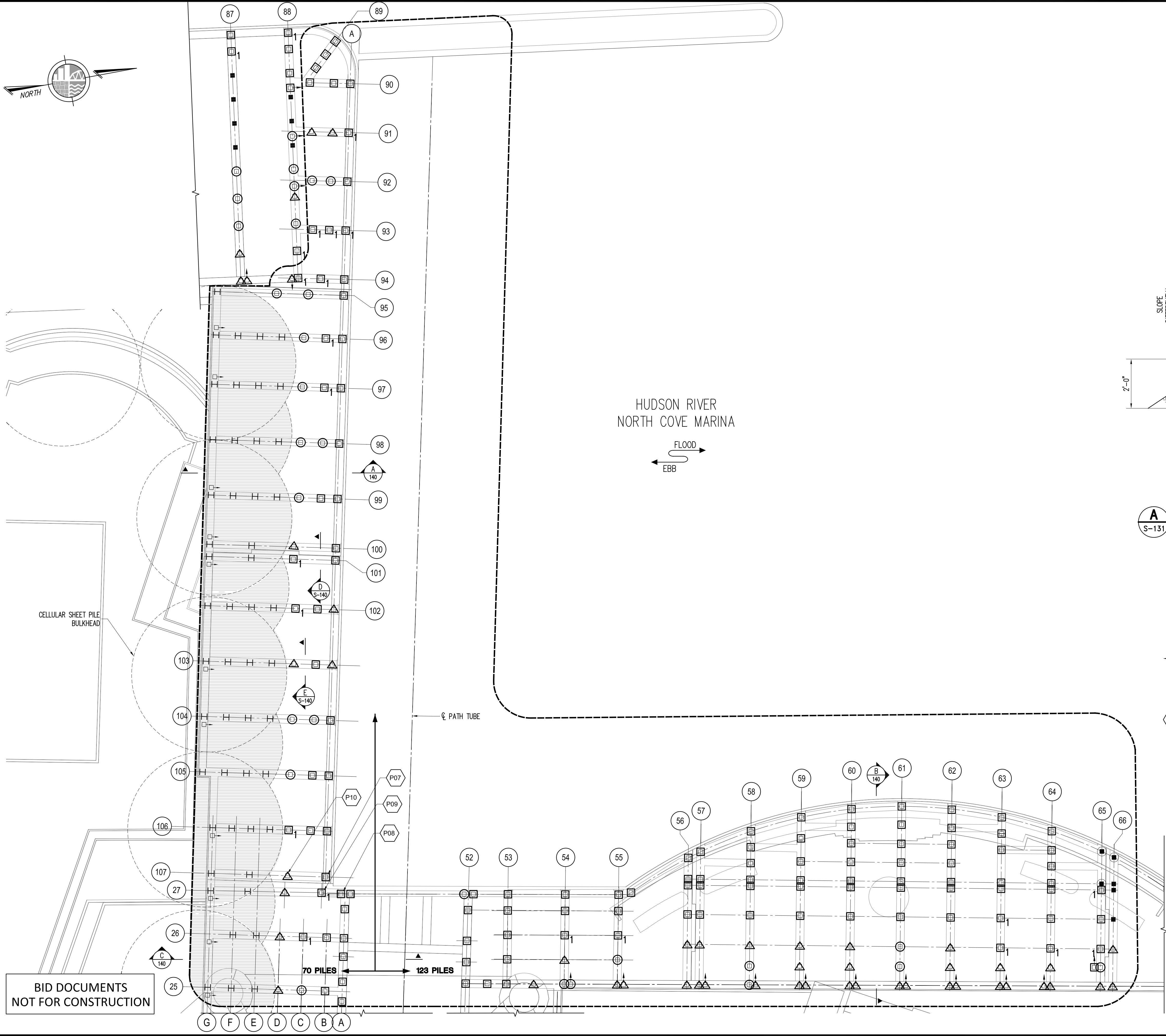


VICINITY MAP

<u>DRAWING LIST:</u>	
<u>DRAWING NO.</u>	<u>SHEET TITLE</u>
S-120	COVER SHEET
S-130	GENERAL NOTES
S-131	FACILITY PLAN
S-132	PILE REMEDIATION PLAN
S-133	REPAIR PLAN 1 OF 2
S-140	REPAIR PLAN 2 OF 2
S-150	ESPLANADE TYPICAL SECTIONS
S-151	PIER TYPICAL DETAILS 1
	PIER TYPICAL DETAILS 2

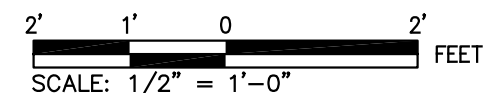
BID DOCUMENTS
NOT FOR CONSTRUCTION

FILE NAME: P:\Proj\140\141037\10_Dwgs\CADD\S-131 Pile Remediation Plan.dwg PLOT TIME: Fri, 24 Apr 2015 - 4:16pm LAST SAVE: Fri, 24 Apr 2015 - 9:57am BY: echi



A PAY LENGTH DETAIL

S-131

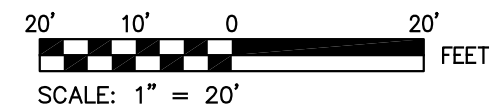


NOTE:
IF OBSTRUCTION IS HIT AND CAN NEEDS TO BE MODIFIED
(CUT AT AN ANGLE) TO INSTALL, PAY LENGTH WILL BE
LENGTH AT THE MIDDLE OF THE CAN.

LEGEND:

- 20" x 20" SQUARE PRESTRESSED CONCRETE PILE
- ◻ 20" x 20" SQUARE PRESTRESSED CONCRETE BATTER PILE
- H STEEL H-PILE
- EXISTING JACKET REPAIR
- ⊙ EXISTING JACKET REPAIR NEEDS ADDITIONAL WORK
- ⬡ CORE LOCATION TO BE PLUGGED (SEE DETAIL F ON DWG. S-151)
- A₁ = PROTECTIVE REPAIR W/ SOFT BOTTOM
- ◻ A₂ = PROTECTIVE REPAIR HARD BOTTOM
- △ A₃ = PROTECTIVE REPAIR HARD BOTTOM < 2 FT EXCAVATION
- A₄ = PROTECTIVE REPAIR POSSIBLE OBSTRUCTION
- F FRONT PROBE
- B BACK PROBE

PILE REMEDIATION PLAN



PROJECT NO. 141037	
SCALE AS NOTED	
DATE 04/20/2015	
DRAWN BY EHC	
CHECKED BY SET	
DRAWING NO. S-131	
4 OF 9 SHTS	

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BATTERY PARK CITY AUTHORITY
PHASE II PILE REMEDIATION
NEW YORK, NEW YORK

PILE REMEDIATION
PLAN



BID DOCUMENTS
NOT FOR CONSTRUCTION

0' 15' 0' 30' FEET
SCALE: 1" = 30'

□ 20" x 20" SQUARE PRESTRESSED CONCRETE PILE
 ▣ 20" x 20" SQUARE PRESTRESSED CONCRETE BATTER PILE
 H STEEL H-PILE
 ■ EXISTING JACKET REPAIR
 ▣ PROPOSED PROTECTIVE REPAIR (SEE DETAIL A ON DWG. S-150)
 ⊗ PROPOSED STRUCTURAL REPAIR (SEE DETAIL B ON DWG. S-150)

1. MEASUREMENTS BASED ON LIMITED FIELD SURVEY. CONTRACTOR TO VERIFY ACTUAL FIELD CONDITIONS.
2. MINIMUM JACKET LENGTH SHALL CONSIST OF EXPOSED PILE LENGTH + 2 FT MINIMUM EMBEDMENT INTO MUDLINE. SEE DETAIL S-131.

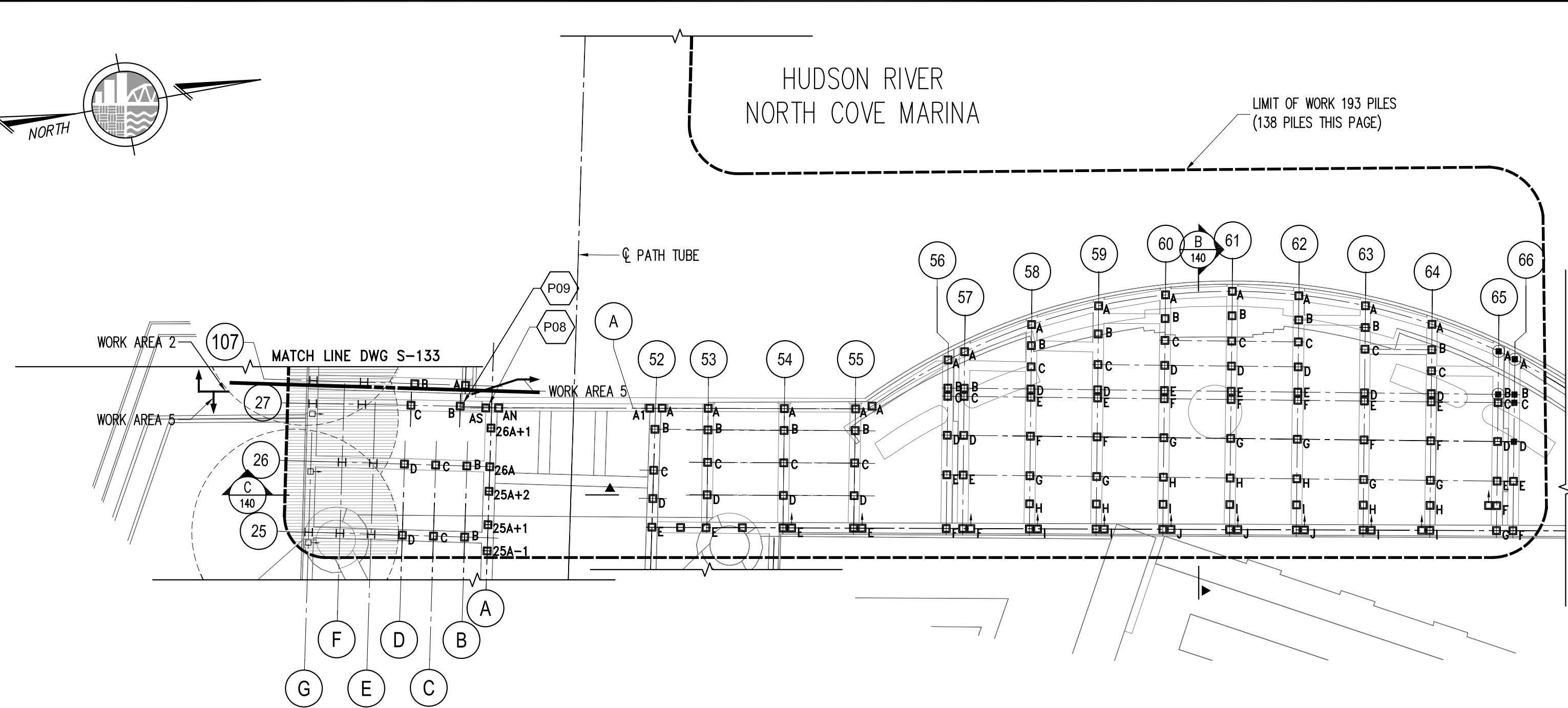
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PROJECT

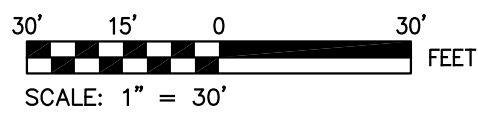
**BATTERY PARK CITY AUTHORITY
PHASE IV PILE REMEDIATION**

NEW YORK, NEW YORK

PROJECT NO.	141037
SCALE	AS NOTED
DATE	04/20/2015
DRAWN BY	EHC
CHECKED BY	SET
DRAWING NO.	
S-132	
5	OF 9 SHTS



REPAIR PLAN 2 OF 2



LEGEND:

- 20" x 20" SQUARE PRESTRESSED CONCRETE PILE
- 20" x 20" SQUARE PRESTRESSED CONCRETE BATTER PILE
- STEEL H-PILE
- EXISTING JACKET REPAIR
- EXISTING JACKET REPAIR NEEDS ADDITIONAL WORK
- PROPOSED PROTECTIVE REPAIR (SEE DETAIL A ON DWG. S-150)
- PROPOSED STRUCTURAL REPAIR (SEE DETAIL B ON DWG. S-150)
- CORE LOCATION TO BE PLUGGED (SEE DETAIL F ON DWG. S-151)

NOTES:

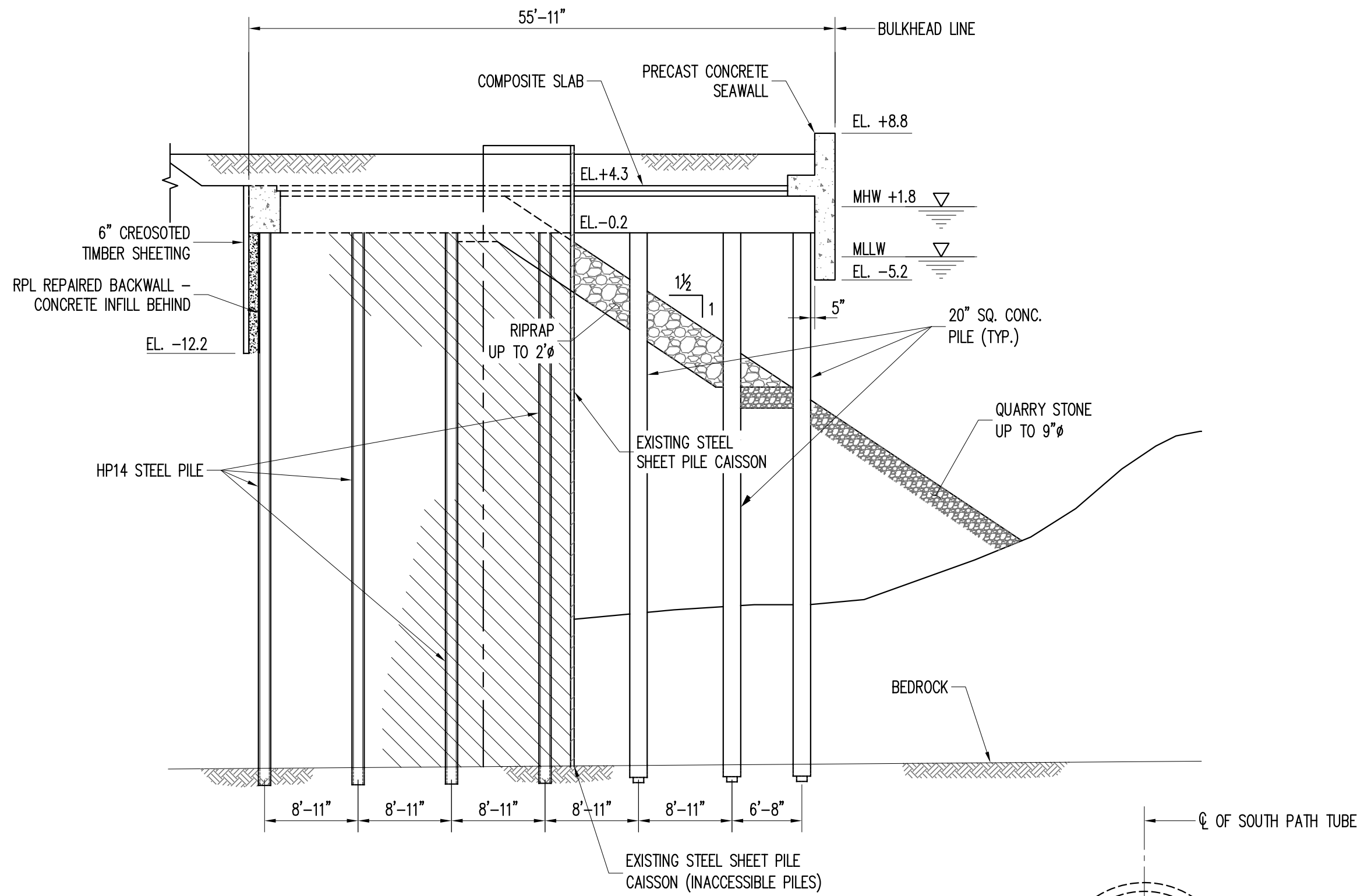
- MEASUREMENTS BASED ON LIMITED FIELD SURVEY. CONTRACTOR TO VERIFY ACTUAL FIELD CONDITIONS.
- MINIMUM JACKET LENGTH SHALL CONSIST OF EXPOSED PILE LENGTH + 2 FT MINIMUM EMBEDMENT INTO MUDLINE. SEE DETAIL S-131.

BENT	PILE	PILE LENGTH MIN. (FT) DIFF. (FT)	MUDLINE TYPE BACK/FRONT	MUDLINE PENETRATION (FT) BACK/FRONT	BOTTOM CONDITIONS FOR REPAIR	REPAIR DETAIL	NOTES
27	AN	11.6	0.2	R = 3.0+ F = 0.3	S	A	chain 6' below cap; chain 5' above mudline; NO F-PILE; 10' 10" H-PILE
27	AS	10.0	0.3	R = 0.0 F = 0.0	I	D	wood form still in place from core on west face; elevation at 6.4' below cap
26	A+1	9.4	0.2	R = 2.3 F = 3.6+	S	A	good pile for protective encasement
26	A	8.8	0	R = 1.5 F = 1.7	S	A	good pile for protective encasement
25	A+2	9.3	0.2	R = 1.8 F = 2.2	S	A	good pile for protective encasement
25	A+1	9	0	R = 2.4 F = 3.6+	S	A	good pile for protective encasement
25	A-1	9	0	R = 2.5 F = 3.6+	S	A	good pile for protective encasement
25	B	8.5	0	R = 3.0 F = 3.0	S	A	good pile for protective encasement
25	C	7.3	0.0	R = 0.0 F = 1.0	D	C	good pile for protective encasement; rip rap 1-1.5' diameter
25	D	4.2	2.4	R = 0.0 F = 0.0	H<2	R	rip rap all around pile; 4.4' clear distance between caisson and pile
26	C	8.1	0	R = 1.4 F = 1.6	S	A	good pile for protective encasement
26	C	11	0	R = 0.0 F = 0.0	H	H	stone and gravel south of pile (does not appear to be rip rap)
26	D	3.3	3.2	R = 0.0 F = 1.0	H<2	B	good pile for protective encasement; clear distance 3.7' between pile and caisson
27	D	10	0.3	R = 1.7 F = 3.6+	S	A	core on north face; 5' above mudline; remove formwork and timber clamp on pile
27	C	4.4	1.9	R = 0.0 F = 0.0	H<2	D	1" diameter rip rap; clear distance of 3.9' between pile and caisson

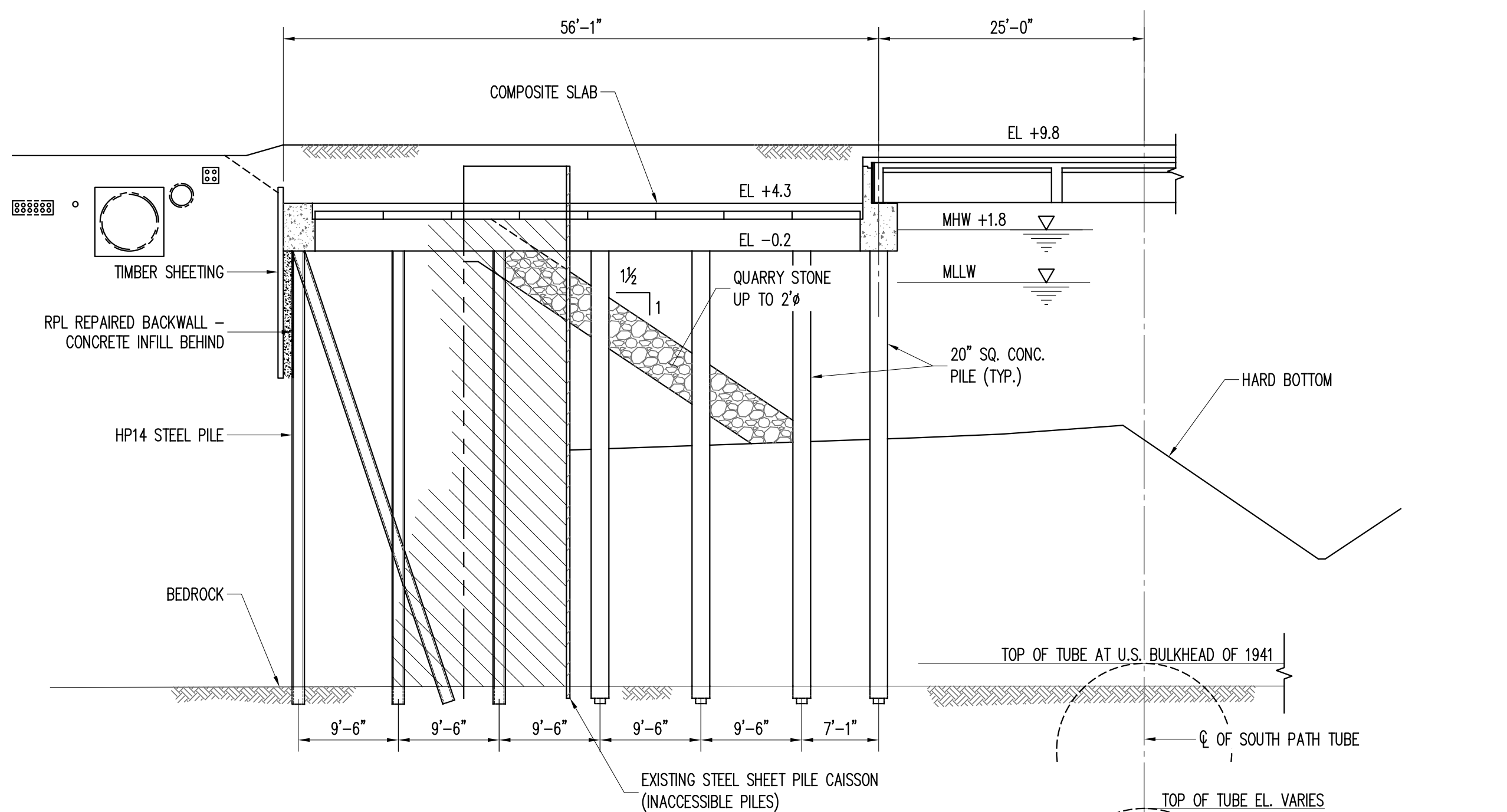
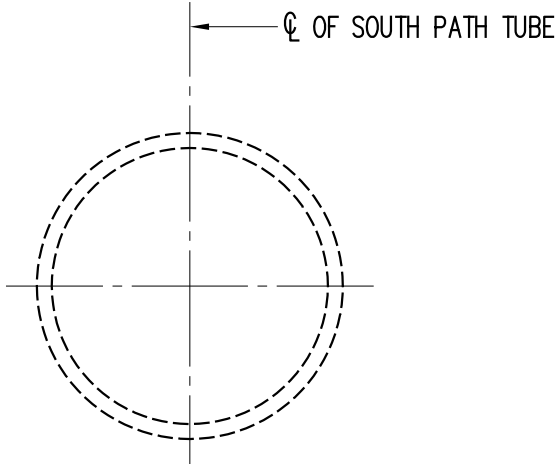
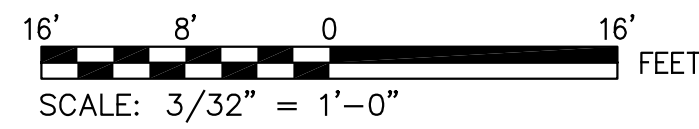
BENT	PILE	PILE LENGTH MIN. (FT) DIFF. (FT)	MUDLINE TYPE BACK/FRONT	MUDLINE PENETRATION (FT) BACK/FRONT	BOTTOM CONDITIONS FOR REPAIR	REPAIR DETAIL	NOTES
66	A	4.8	0	R = 0.0 F = 0.8	S	A1	Old ratchet straps around pile need to be removed. Pile cap Repair: has a jacket around it, of which the top 6' sounds hollow. Remove jacket and strap and remove pile
66	F	5	0.7	R = 0.0 F = 0.0	H<2	A	Timber clamp 2' off mudline has to be removed; good pile; 3'-0" stone typical
66	F	7.7	0	R = 0.0 F = 0.0	H<2	F	1.2' clear space between back wall and pile; 12" stone typical
66	A	4.8	0	R = 0.0 F = 0.0	S	A1	has a jacket hollow on top
65	B	3.8	0	R = 0.0 F = 0.0	S	A1	Has a jacket hollow on top
65	C	10.8	0	R = 2.1 F = 0.4	H	A	good pile for protective encasement
65	D	10.1	0.2	R = 1.4 F = 0.8	S	A	good pile for protective encasement
65	E	4.8	3.8	R = 0.0 F = 0.0	S	C	pile looks good for protective encasement; 2' diameter stone against south face resting against pile; 1-1.5' rip rap top
65	F	4.2	0	R = 0.0 F = 0.0	D	C	good pile for protective encasement; 2' stone against south face of pile; 3' 8" rip rap top
65	F + H A11	4.2	0	R = 0.0 F = 0.0	H<2	I	Butter pile located south side of bent; 1.0' clear distance between pile; 3'-8" rip rap top; 0.7' clear space @ mudline; 0.3' clear space between pile and top of back wall
65	I	4	0	R = 0.0 F = 0.0	H<2	L	see clear space above
64	A	11.2	0	R = 2.1 F = 0.4	S	A	ratchet straps with no jacket; 3 chains attached to pile that lead into mud
64	B	11.2	0	R = 2.1 F = 0.4	S	A	good pile for protective encasement
64	C	10.8	0	R = 2.1 F = 0.4	S	A	good pile for protective encasement
64	D	10.7	0.2	R = 2.8 F = 3.5	S	A	good pile for protective encasement
64	E	10.2	0	R = 2.8 F = 3.5	S	A	good pile for protective encasement
64	F	9.9	0	R = 2.8 F = 3.5	S	A	good pile for protective encasement
64	G	7.4	0.4	R = 0.0 F = 0.0	H	A	possible rip rap below gravel in rear of pile; good pile for protective encasement
64	H	4.6	0	R = 0.0 F = 0.0	H<2	A	good pile for protective encasement
64	I	3.9	0.3	R = 0.0 F = 0.0	H<2	D	back wall flush with pile; good pile for protective encasement; 1.1' clear space to batter pile
64	I + H A11	7.7	1	R = 0.0 F = 0.0	H<2	F	Custom form needed on north side of bent; 11.5' batter disappears into back wall
63	A	13.1	0.4	R = 3.0 F = 2.0	S	A	Chain around pile 2' off mudline needs to be removed
63	B	11.5	0.2	R = 3.0 F = 2.0	S	A	good pile for protective encasement
63	C	10.1	0.1	R = 2.4 F = 2.0	S	A	good pile for protective encasement
63	D	10.8	0.1	R = 2.4 F = 2.0	S	A	good pile; 1.5' clear @ west & east
63	E	10.5	0	R = 3.0 F = 3.0	S	A	good pile for protective encasement
63	F	10	0	R = 3.0 F = 3.0	S	A	good pile for protective encasement
63	G	9.8	0	R = 3.0 F = 3.0	S	A	good pile for protective encasement
63	H	9	0.3	R = 0.0 F = 0.0	H<2	A	4'-8" stone type; good pile for protective encasement
63	I	4.25	0.4	R = 0.0 F = 0.0	H<2	C	good; 0.7' clear top & bottom
63	I + H A11	7.7	1	R = 0.0 F = 0.0	H<2	I	top 10" in back wall; 11.7' top clear & bottom
62	A	13.3	0	R = 3.0 F = 2.0	S	A	0.3' clear to skirt wall; chain 8' above mudline; distance of cap to distance of wall 5.0'
62	H	12.2	0	R = 3.0 F = 2.0	S	A	good pile for protective encasement
62	C	11.4	0	R = 3.0 F = 2.0	S	A	good pile for protective encasement
62	D	11.4	0	R = 3.0 F = 2.0	S	A	good pile for protective encasement
62	E	10.8	0	R = 3.0 F = 2.0	S	A	good pile for protective encasement
62	F	8.7	0	R = 3.0 F = 2.0	S	A	good pile for protective encasement
62	G	10	0	R = 3.0 F = 2.0	S	A	good pile for protective encasement
62	H	7.1	0.9	R = 0.0 F = 0.0	H<2	B	good pile for protective encasement
62	I	4.4	0.6	R = 0.0 F = 0.0	H<2	H	good pile for protective encasement
62	J	4.8	0	R = 0.0 F = 0.0	H<2	E	good pile for protective encasement
62	I + H A11	7.7	1	R = 0.0 F = 0.0	H<2	I	0.7' clear @ top; 11.2' distance @ top of pile (1.2' clear @ mudline)
61	A	12.0	0	R = 3.0 F = 2.0	S	A	1.0' clear to skirt wall; chain 5' above mudline
61	B	12	0	R = 3.0 F = 2.0	S	A	good pile for protective encasement
61	C	11.4	0	R = 3.0 F = 2.0	S	A	good pile for protective encasement
61	D	11.2	0	R = 3.0 F = 2.0	S	A	minor crack @ corner 1/8"x4" E.F. SE corner
61	E	11	0.1	R = 3.0 F = 2.0	S	A	good pile for protective encasement

BENT	PILE	PILE LENGTH MIN. (FT) DIFF. (FT)	MUDLINE TYPE BACK/FRONT	MUDLINE PENETRATION (FT) BACK/FRONT	BOTTOM CONDITIONS FOR REPAIR	REPAIR DETAIL	NOTES	
61	F	10.8	0.1	B = slit F = slit	B = 3.0+ F = 1.0+	S	A	good pile for protective encasement
61	G	10.7	0	B = slit F = Rip, Rip	B = 1.5 F = 3.0+	S	A	good pile for protective encasement
61	H	7.5	2.3	B = Rip, Rip F = Rip, Rip/slit	B = 0 F = 1.5	0	C	Rip, Rip diameter 1.0' + typ.
61	I	5.3	1.9 west	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 0.0	0	C	Stone on south 3.3', north stone 3.0'
61	J	3	2.8 west	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 0.0	H<2	E	good pile for protective encasement
61	J + R A11	4	1.2	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 0.0	H<2	I	1.1' clear @ mudline to back wall; 0.7' clear for 1' B top
60	A	13.1	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	0.6' distance between skirt wall and A; chain 6' above mudline
60	B	12	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
60	C	11.4	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
60	D	11.3	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
60	E	11	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
60	F	11	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
60	G	11	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
60	H	11.4	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
60	I	11.4	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
60	J	11.4	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
60	J + R A11	4	1.2	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 0.0	H<2	E	1.2' clear @ mudline to back wall; 0.7' clear for 1' B top
59	A	13.1	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	0.6' distance between skirt wall and A; chain 6' above mudline
59	B	11.5	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
59	C	11.1	0	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
59	D	11.5	0.2	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
59	E	11.1	0.4	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
59	F	10	0.3	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
59	G	10.1	0.3	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
59	H	10.1	0.3	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
59	I	10.1	0.3	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
59	J	10.1	0.3	B = slit F = slit	B = 3.0+ F = 1.5+	S	A	good pile for protective encasement
59	J + R A11	4	1.2	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 0.0	H<2	E	1.2' clear @ mudline to back wall; 0.7' clear for 1' B top
58	A	13.3	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	0.6' distance between skirt wall and A; chain 6' above mudline
58	B	11.8	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
58	C	11.5	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
58	D	11	0.1	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
58	E	10.6	0.1	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
58	F	10.6	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
58	G	10.6	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
58	H	10.6	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
58	I	10.6	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
58	J	10.6	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
58	J + R A11	4	1.2	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 0.0	H<2	E	1.2' clear @ mudline to back wall; 0.7' clear for 1' B top
57	A	13.5	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	0.6' distance between skirt wall and A; chain 6' above mudline
57	B	10.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
57	C	10.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
57	D	10.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
57	E	10.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
57	F	10.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
57	G	10.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
57	H	10.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
57	I	10.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
57	J	10.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
57	J + R A11	4	1.2	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 0.0	H<2	E	1.2' clear @ mudline to back wall; 0.7' clear for 1' B top
56	A	13	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	0.6' distance between skirt wall and A; chain 6' above mudline
56	B	11	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
56	C	10.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
56	D	10	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
56	E	4.9	2	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
56	F	2	2.5	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
55	A=H1, N=U1	12.4	0.2	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
55	A	12	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
55	B	10.1	0.2	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
55	C	6.5	2.7	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 2.5	H	A	good pile for protective encasement
55	D	2.4	3.1	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 2.5	0	C	rip rap around pile; 18" diameter in rear of pile; cant be moved by hand
55	E	1.5	2	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 0.0	H<2	E	1.2' clear face of pile to face of wall
55	C + DATT	1.7	2	B = Rip, Rip F = Rip, Rip	B = 0.0 F = 0.0	H<2	D	1.2' top of batter embedded; good pile
54	A	12.5	0.5	B = slit F = debris	B = 3.0+ F = 1.2	S	A	chain on pile 3' above mudline; possible debris front of pile under mudline
54	B	11	0.03	B = slit F = slit	B = 3.0+ F = 1.2	S	A	good pile for protective encasement
54	C	8.8	0.4	B = Rip, Rip F = slit	B = 0 F = 1.7	H	B	good pile for protective encasement
54	D	4.5	0.3	B = Rip, Rip F = slit	B = 0 F = 1.7	H	B	good pile for protective encasement
54	F + RATT	7.2	1.5	B = Rip, Rip F = Rip, Rip	B = 0 F = 0.0	0	N/C	3' diameter stone NW corner; rip 18" buried in wall
54	E	1.5	2	B = Rip, Rip F = Rip, Rip	B = 0 F = 0.0	0	U/C	18" to corner; 1.5' clear distance; 1' diameter rip rap
54	I=H1, N=U1	5.2	0	B = Rip, Rip F = Rip, Rip	B = 0 F = 0.0	H<2	H	good pile for protective encasement
53	A	13.1	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	Chain on pile 5' above mudline; good pile for protective encasement
53	B	12.2	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
53	C	12.9	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
53	D	9.4	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
53	E	8.7	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
53	F	17	0	B = slit F = debris	B = 3.0+ F = 0.2	S	A	chain on pile 8' above mudline; debris front of pile
53	A1	16.9	0.2	B = void/slit F = debris	B = 0.2 F = 0.2	0	C	good pile for protective encasement; lots of debris around front of pile
52	B	10.5	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
52	C	11	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
52	D	13.1	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
52	E	12.4	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement
52	F=H1, N=U1	10.8	0	B = slit F = slit	B = 3.0+ F = 1.5	S	A	good pile for protective encasement

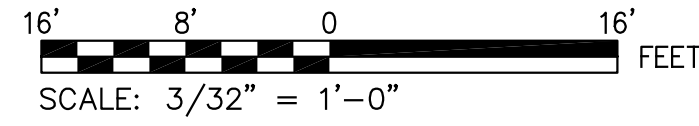
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S-140

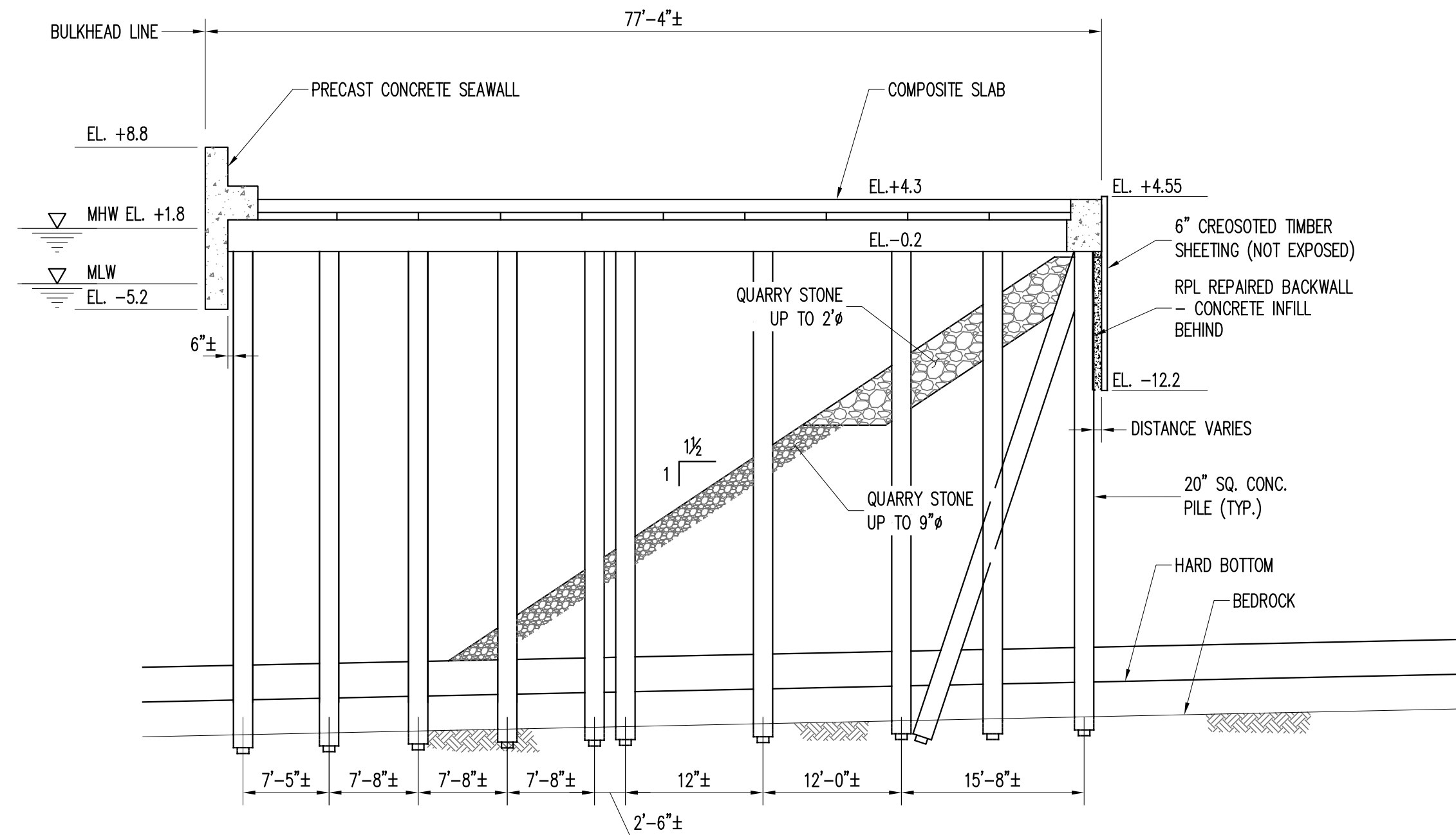


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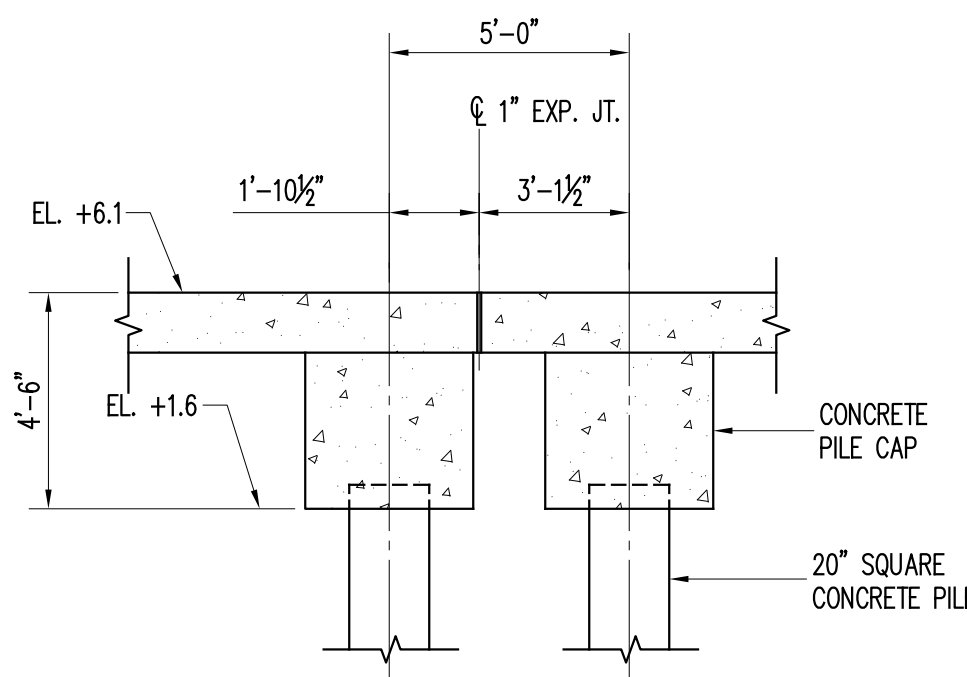
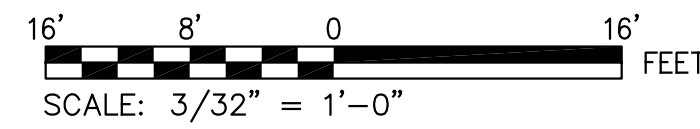


NOTE:
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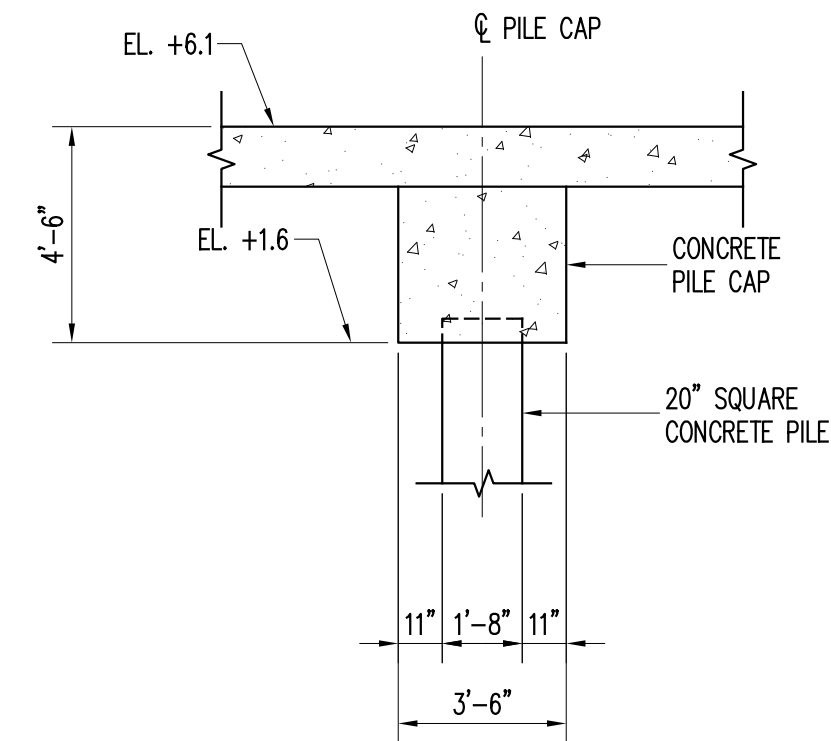
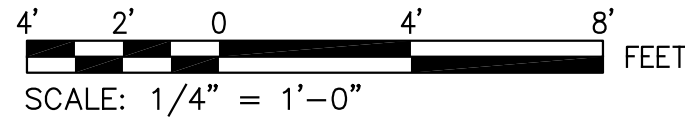


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S-140

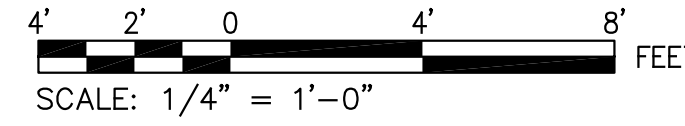


EXPANSION JOINT SECTION

D PILE CAP SECTION
S-140

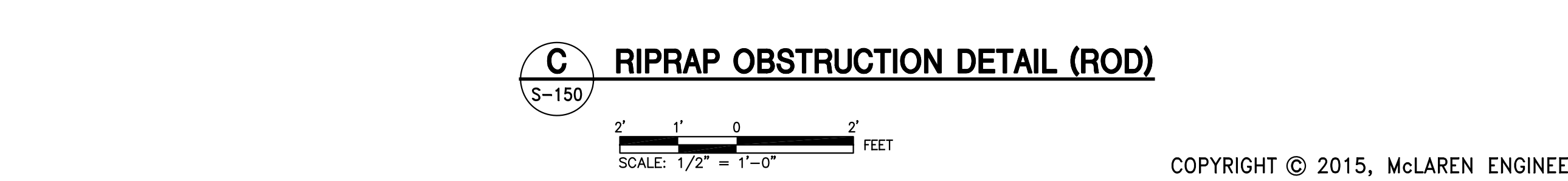
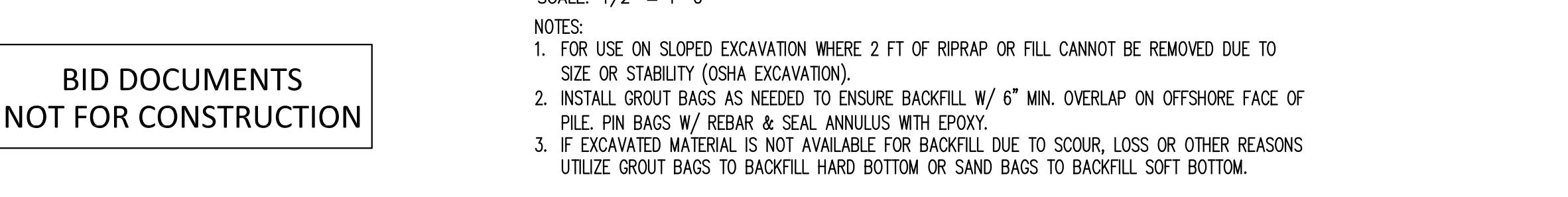


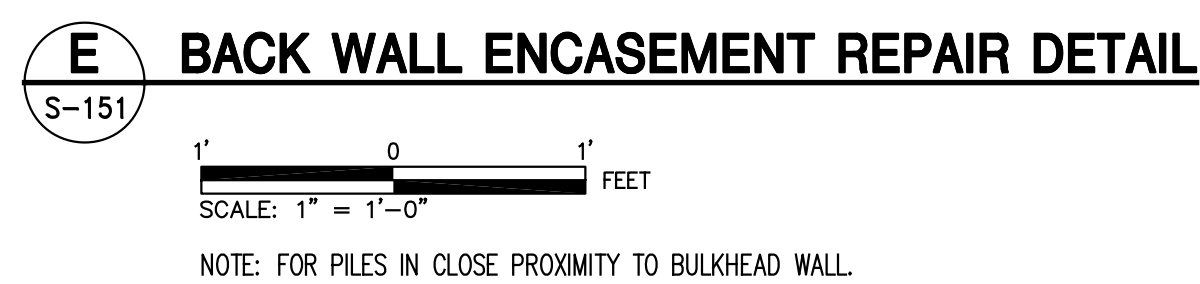
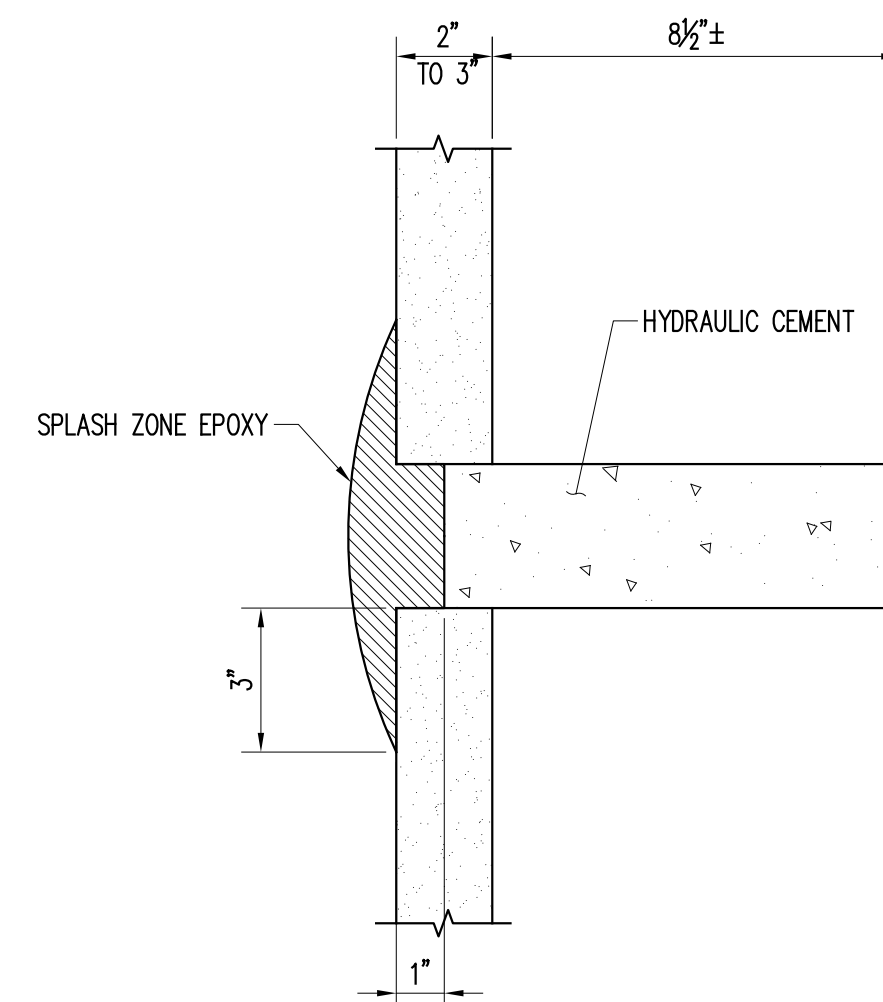
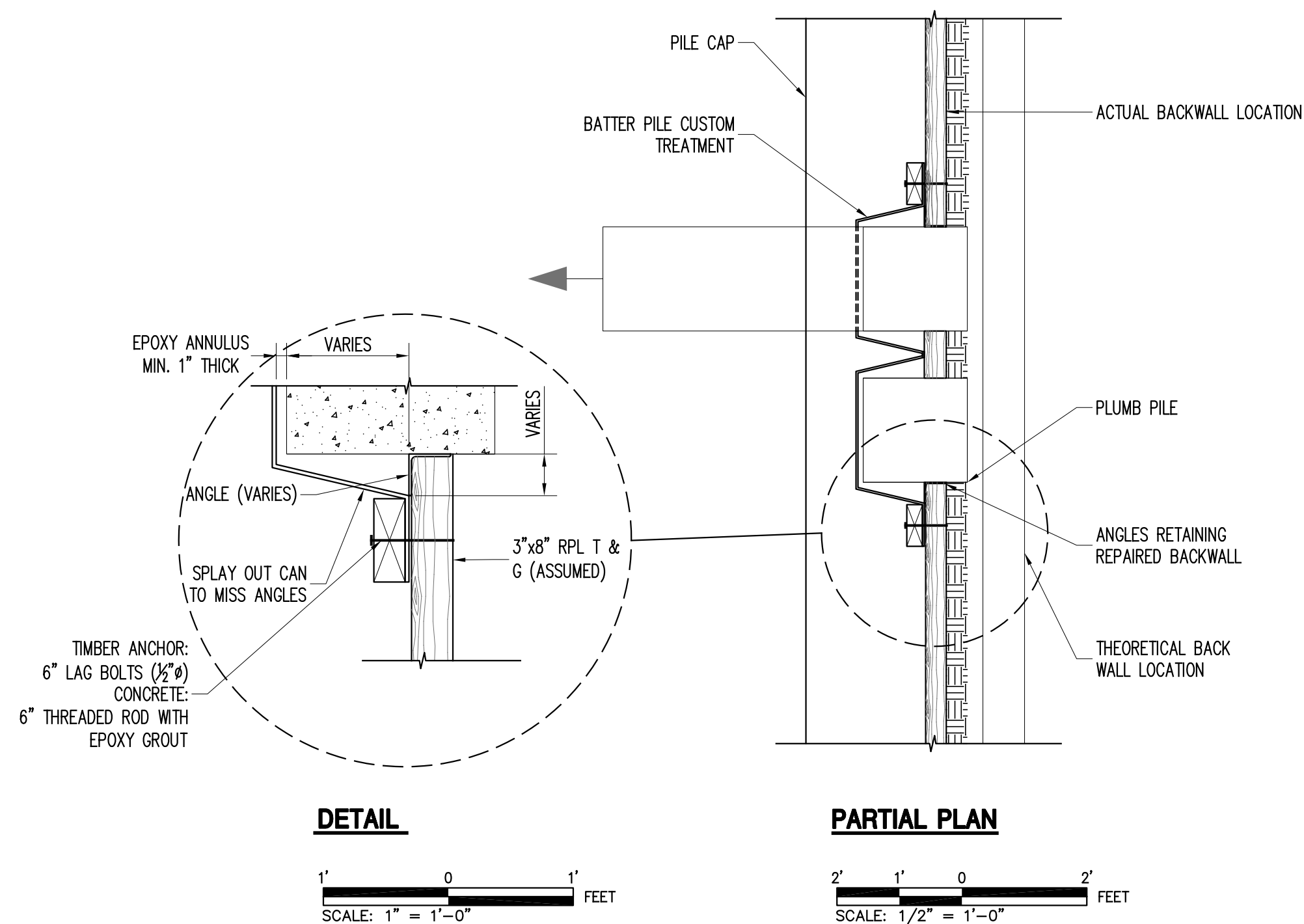
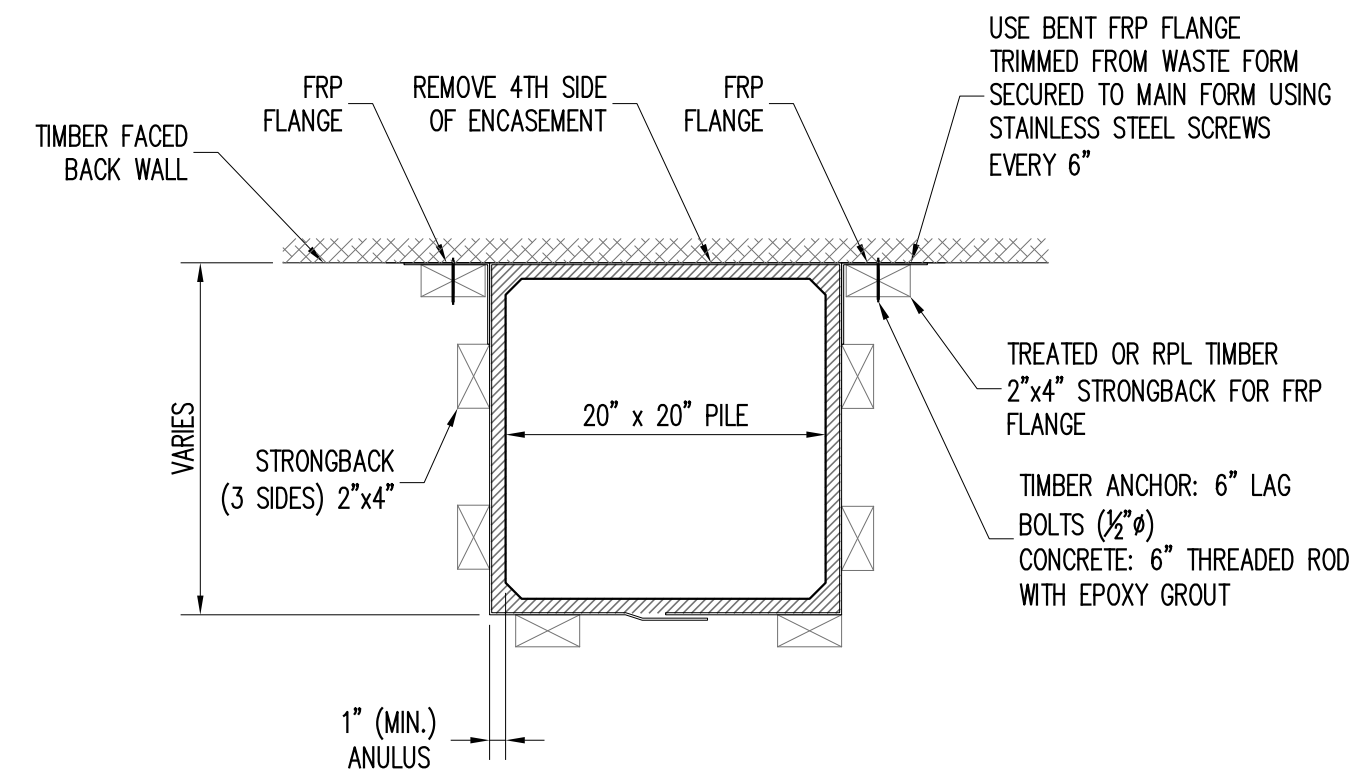
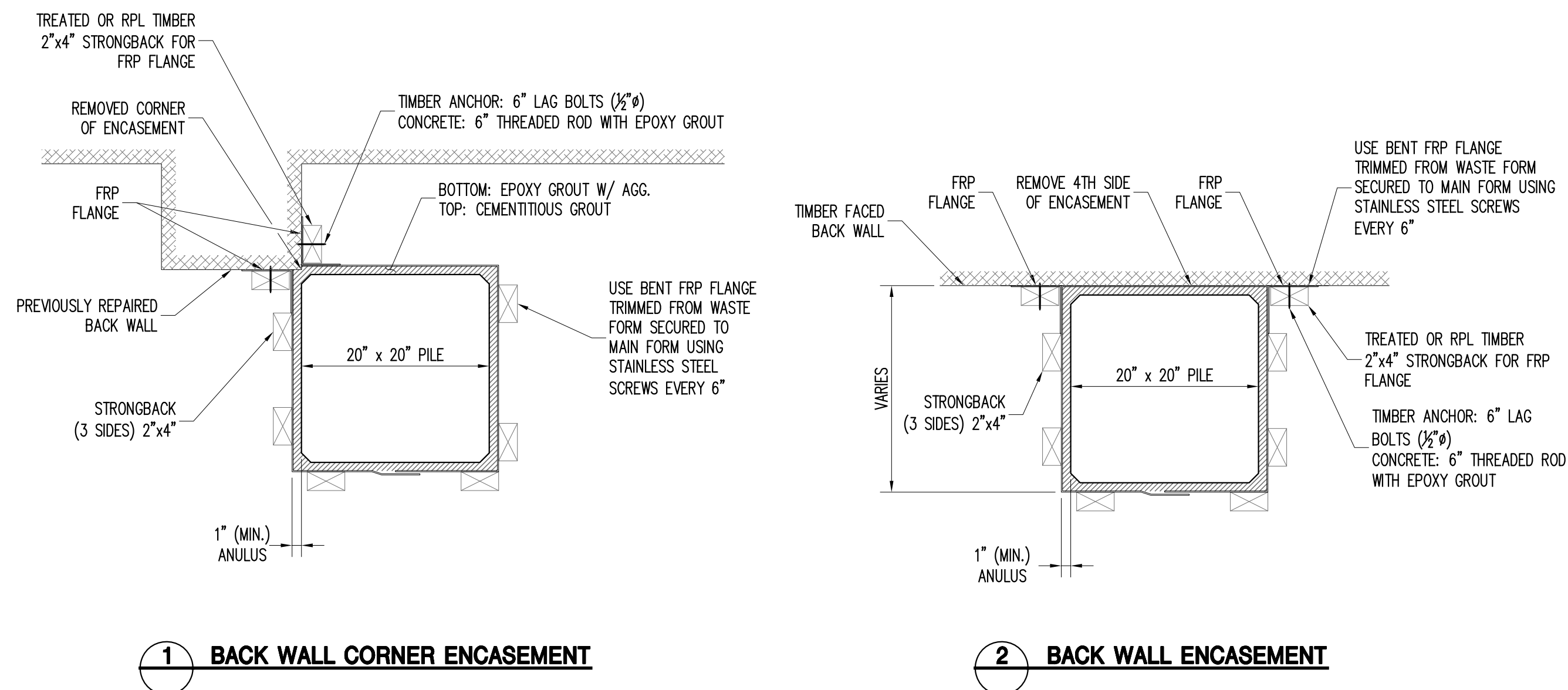
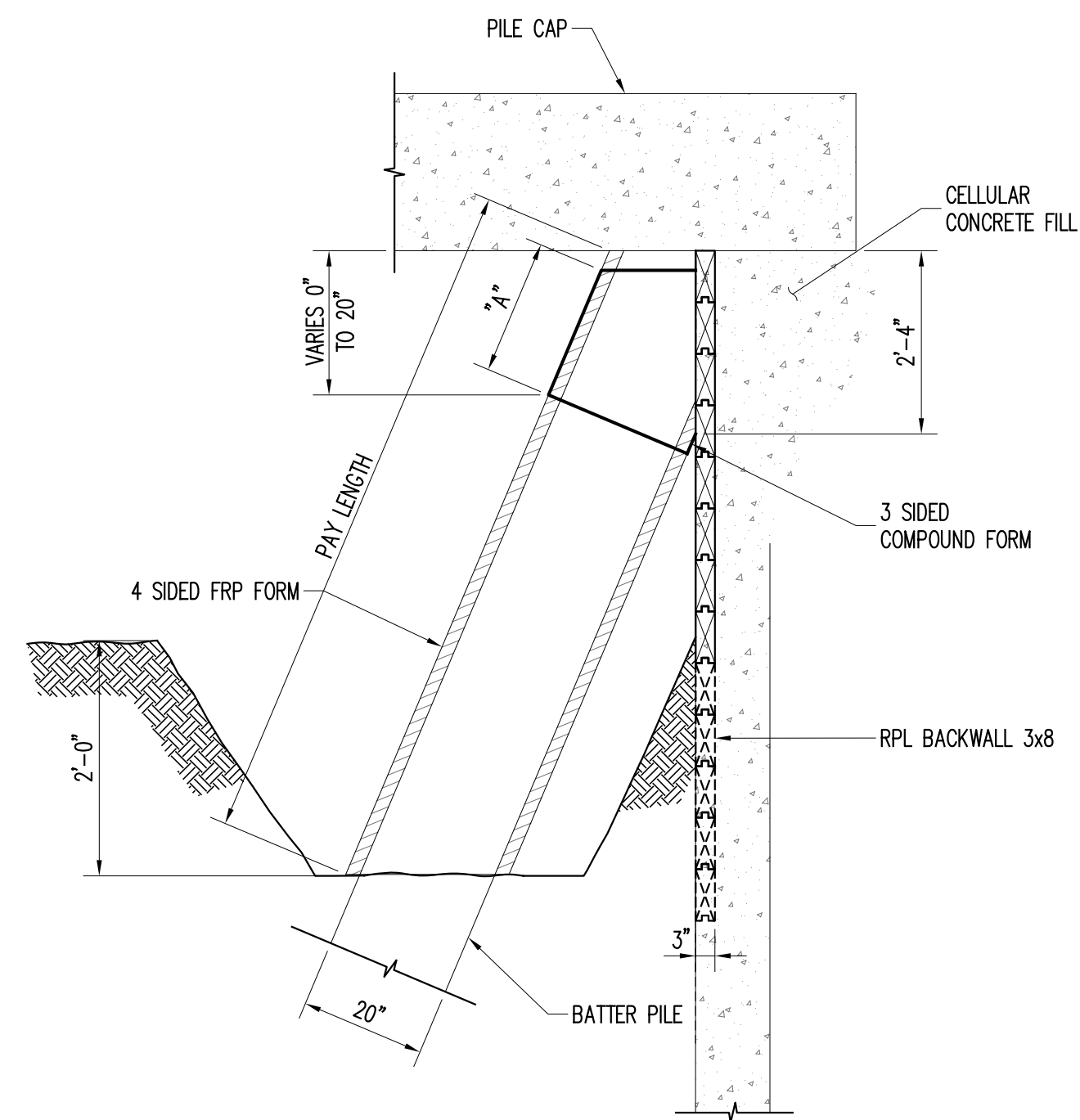
E TYPICAL SECTION
S-140



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DATE		04/20/2015		DRAWN BY	
CHECKED BY		EHC		SET	
DRAWING NO.		S-140		7 OF 9 SHTS	

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