



Project #11750
Addendum #3
Date 9/18/26

To All Respondents:

1. All requirements of the original RFP shall remain in full force and effect, except as set forth in this Addendum and any other previously issued Addenda.
2. All capitalized terms set forth in this Addendum shall have the same meaning as set forth in the RFP being amended hereby.
3. Additional documents for respondents to refer to as part of this RFEI are being provided. These are:
 - a. VCBC 2018 Bathymetry
 - b. VCBC Drainage
 - c. VCBC Electrical
 - d. VCBC Inspection 2023
 - e. VCBC Layout
 - f. VCBC Regional Topo
 - g. VCBC Site Development
 - h. VCBC Water utilities
4. Questions and answers submitted via the RFEI website, two information sessions hosted this summer, and September 17 site visit will be posted by Friday, September 25, replacing the original date of Q&A posting.

THIS ADDENDUM MUST BE SIGNED BY THE PROPOSER AND ATTACHED TO THE TECHNICAL PROPOSAL WHEN SUBMITTED.

NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATION

By: Maryann Catalano

Title: Chief Contracting Officer, Contracts

ACKNOWLEDGED AND AGREED:

Name of Proposer: _____

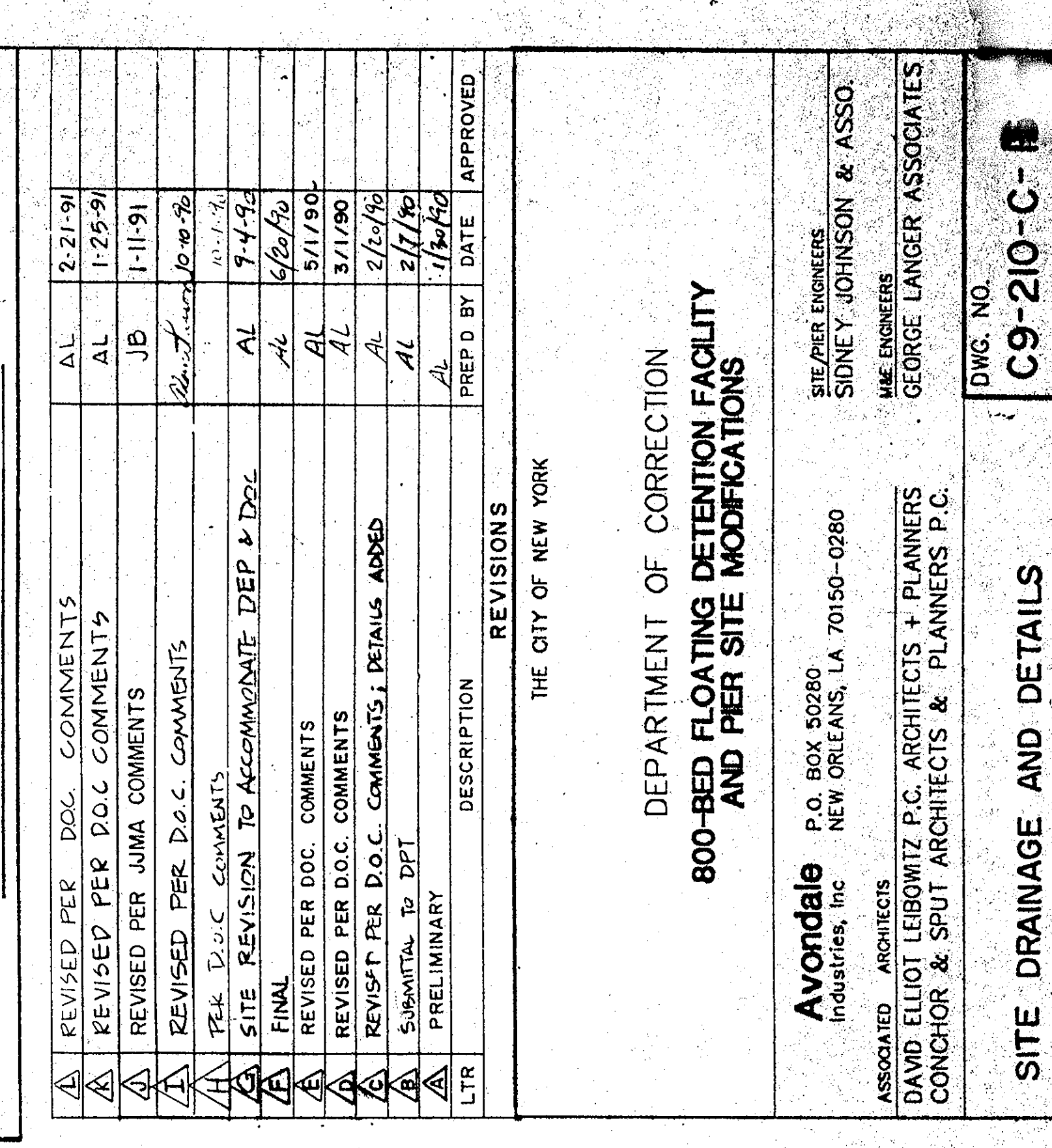
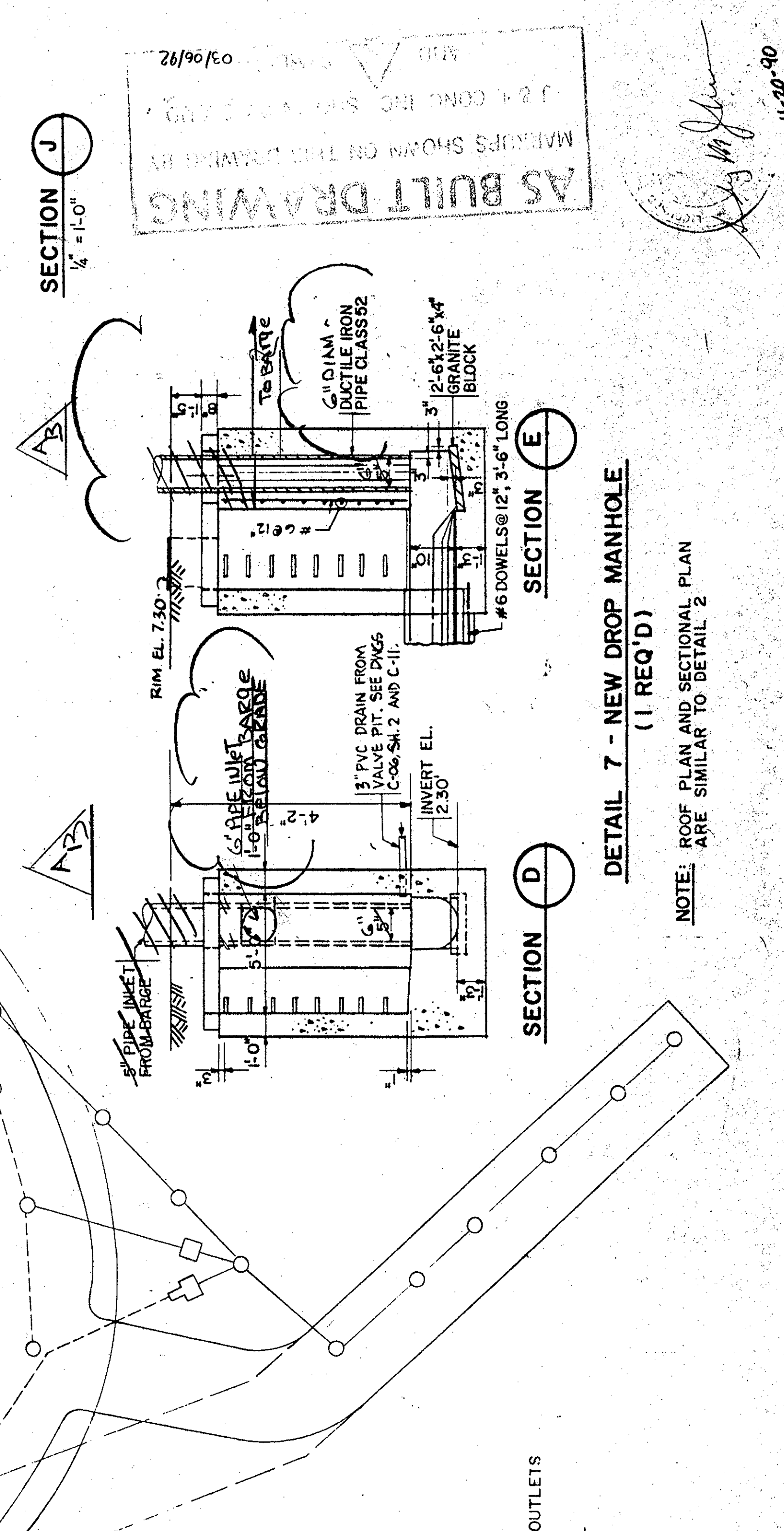
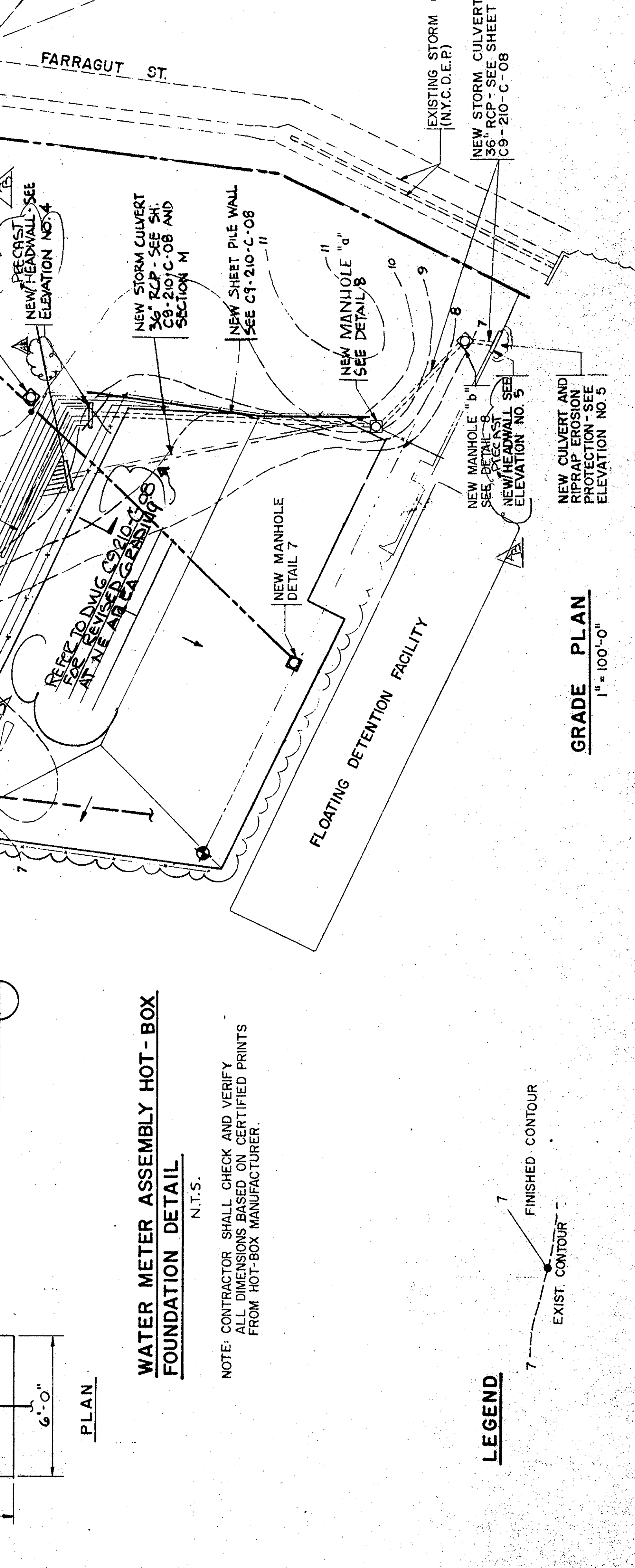
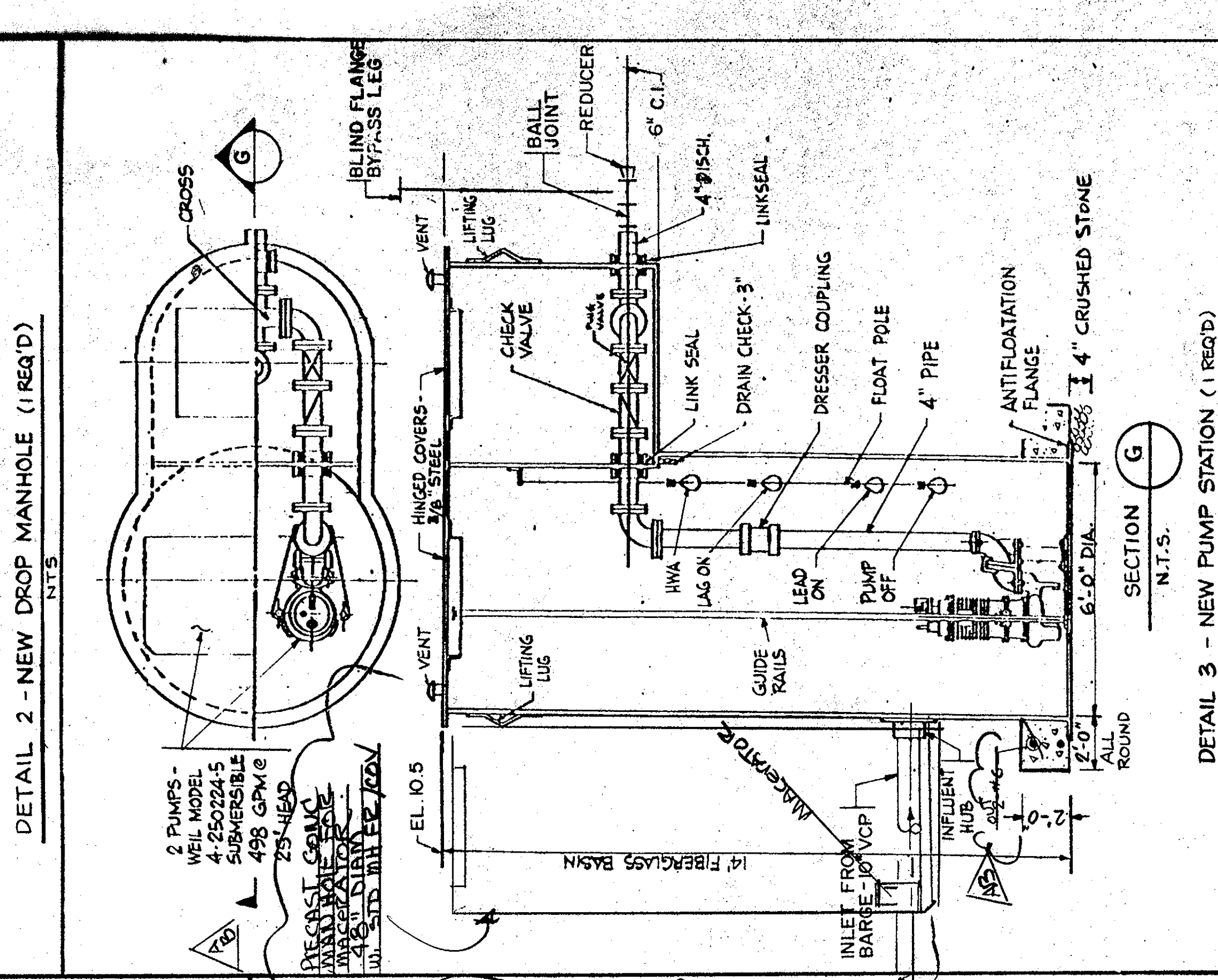
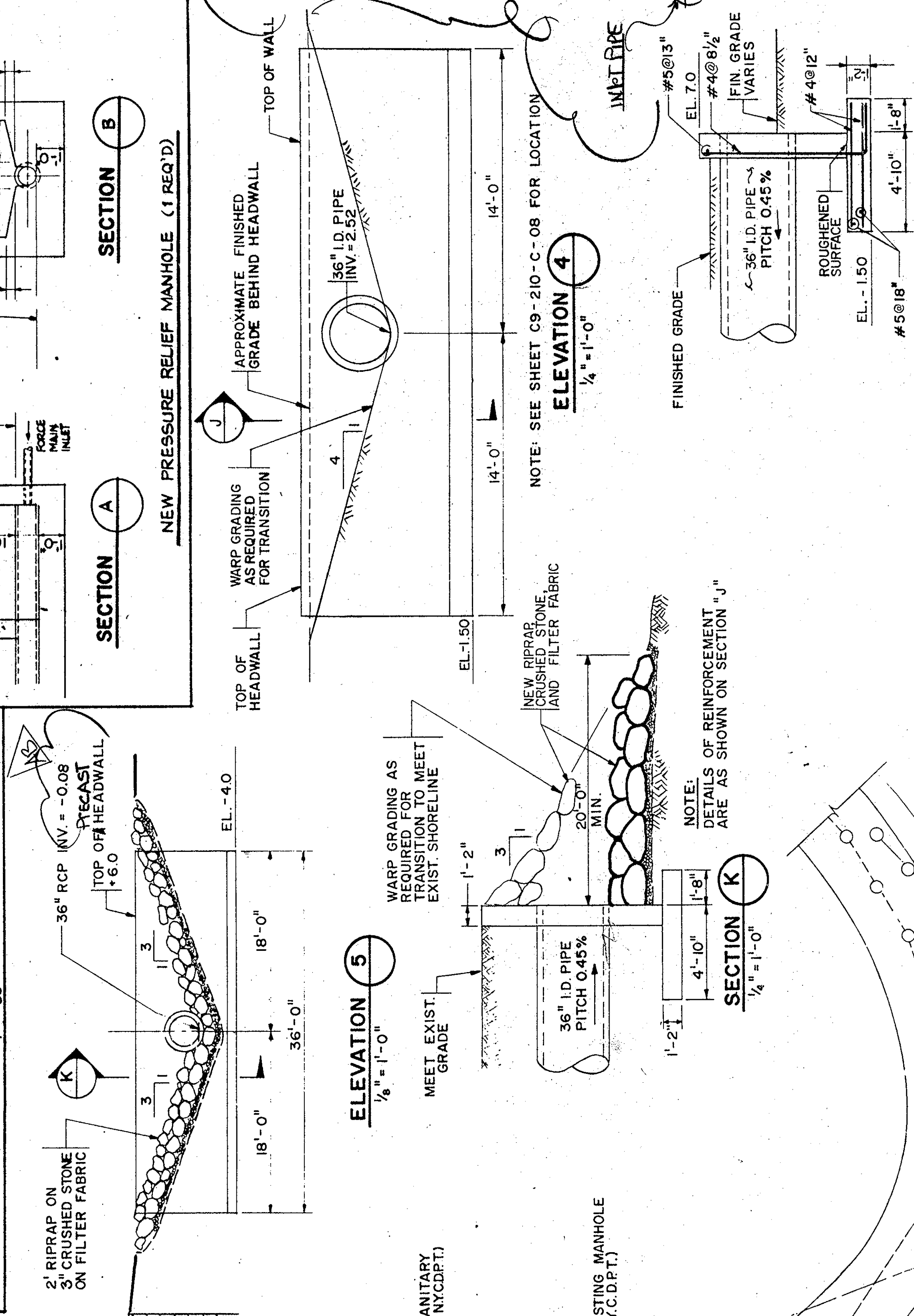
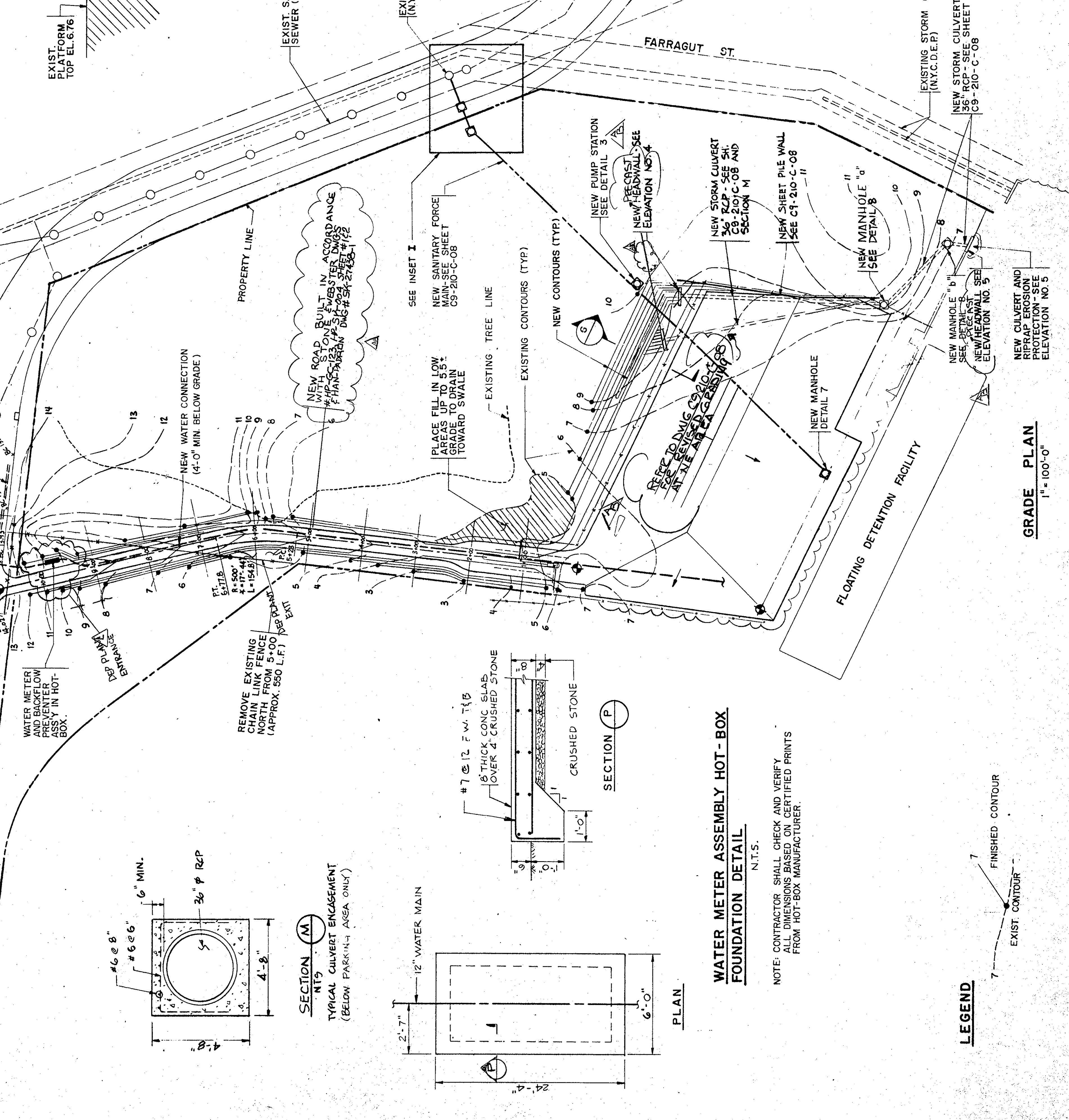
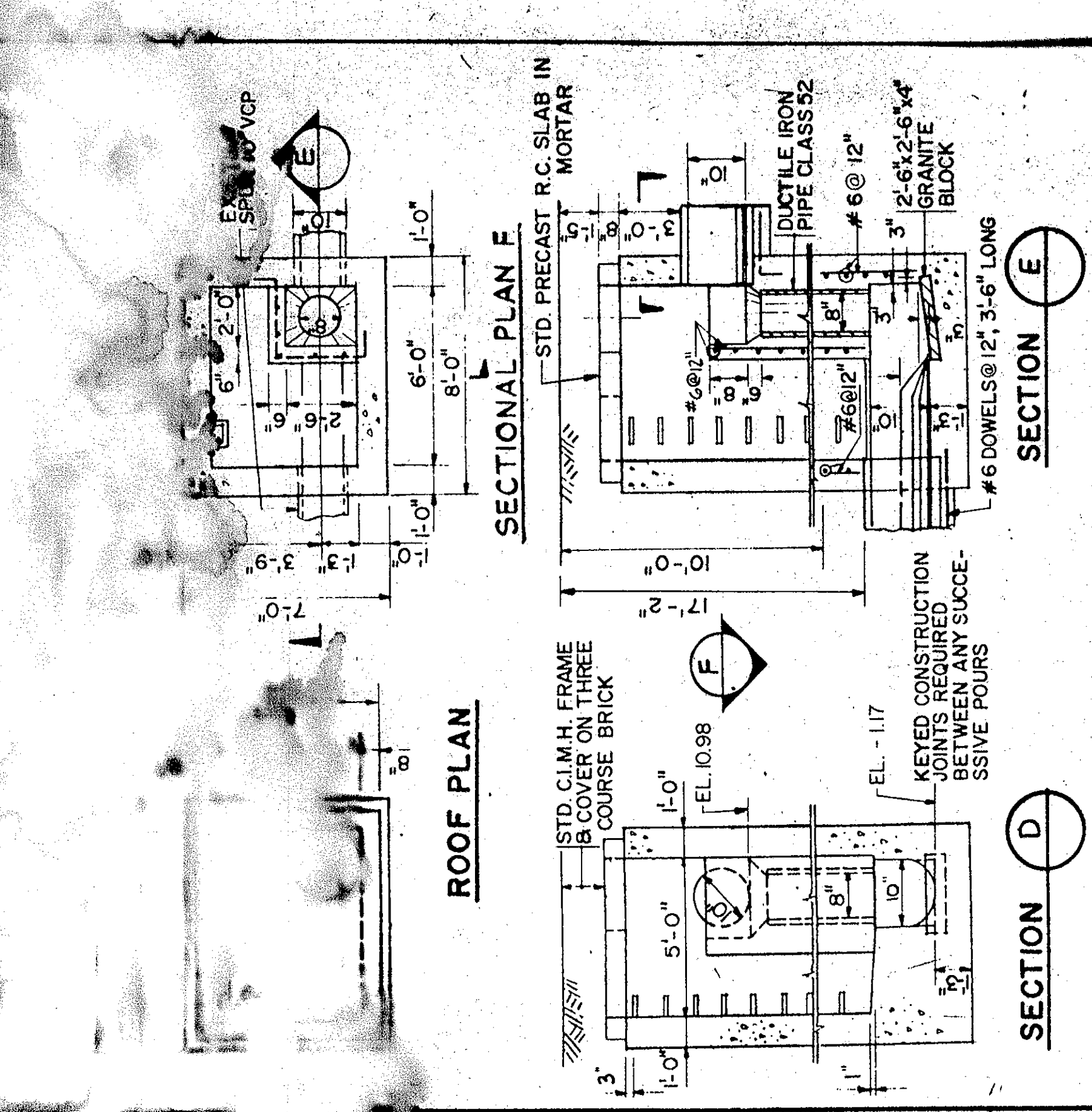
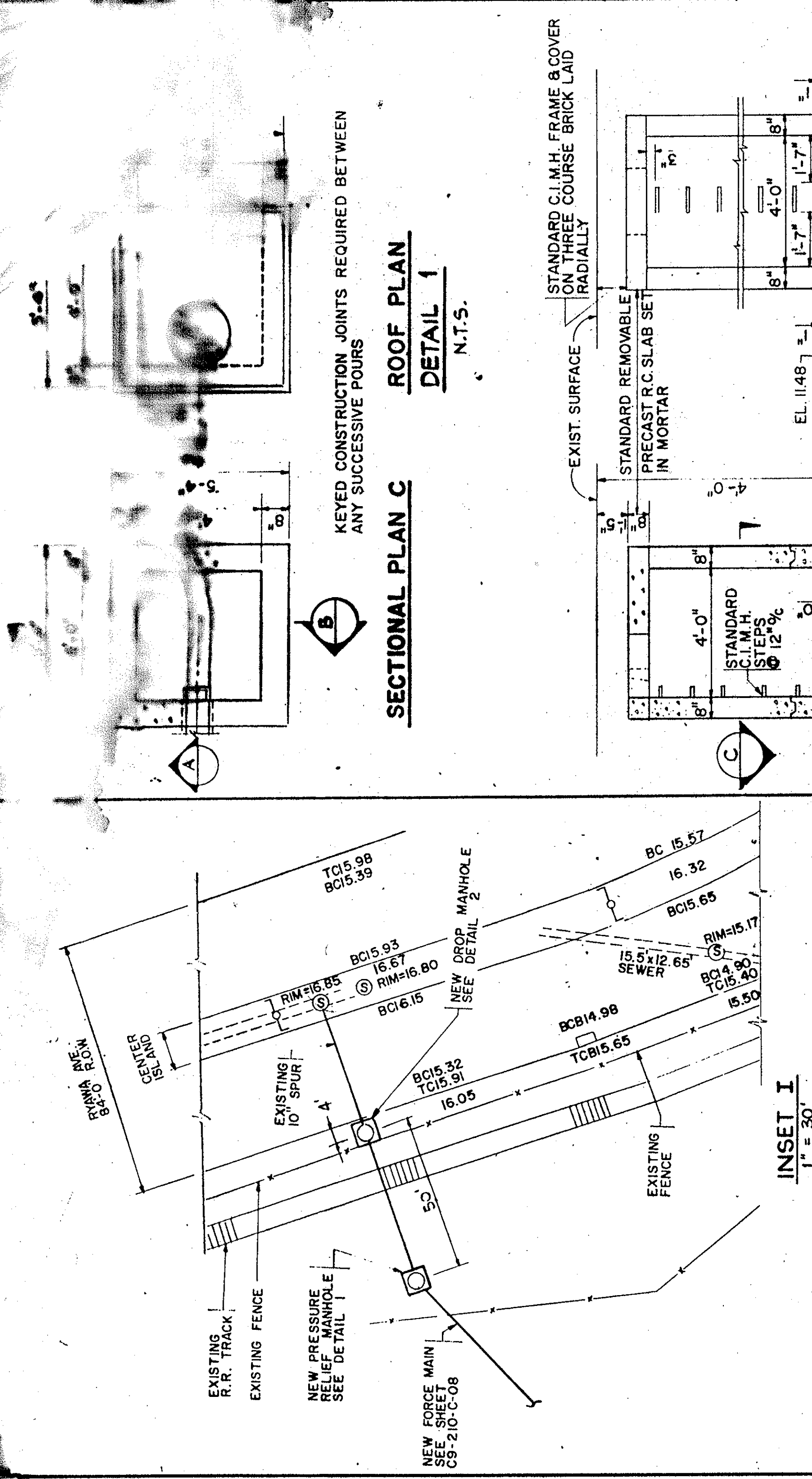
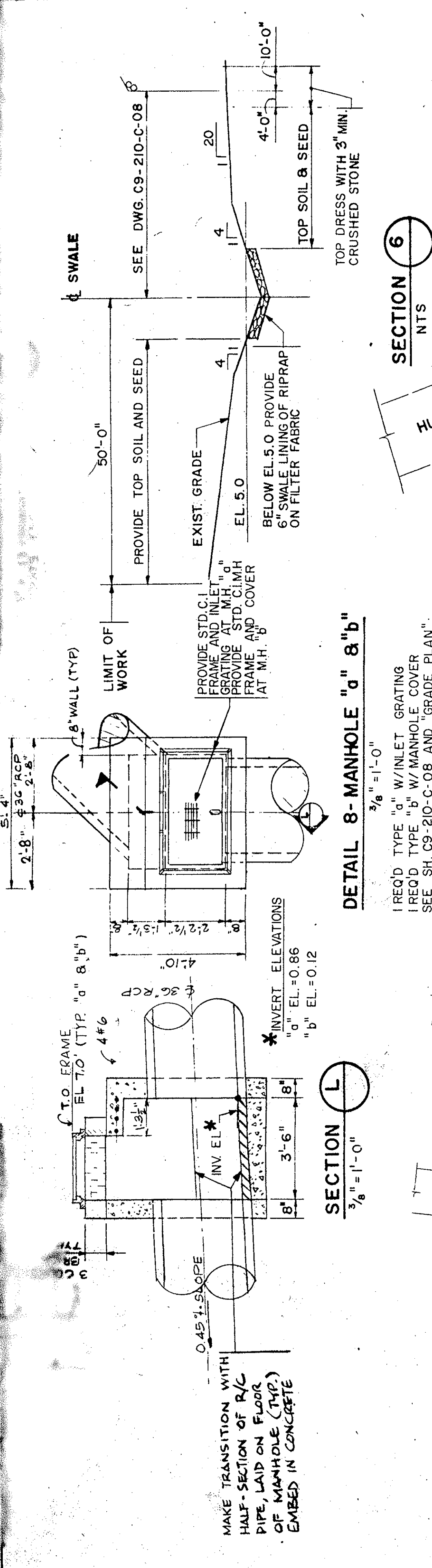
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Date: _____



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WATER METER ASSEMBLY HOT-BOX
FOUNDATION DETAIL
N.T.S.

NOTE: CONTRACTOR SHALL CHECK AND VERIFY
ALL DIMENSIONS AND PARTS PRINTS
FROM HOT-BOX MANUFACTURER.

LEGEND

7 FINISHED CONTOUR

7 EXIST. CONTOUR

REVISION	DATE	DESCRIPTION
1	11/10/90	PRELIMINARY
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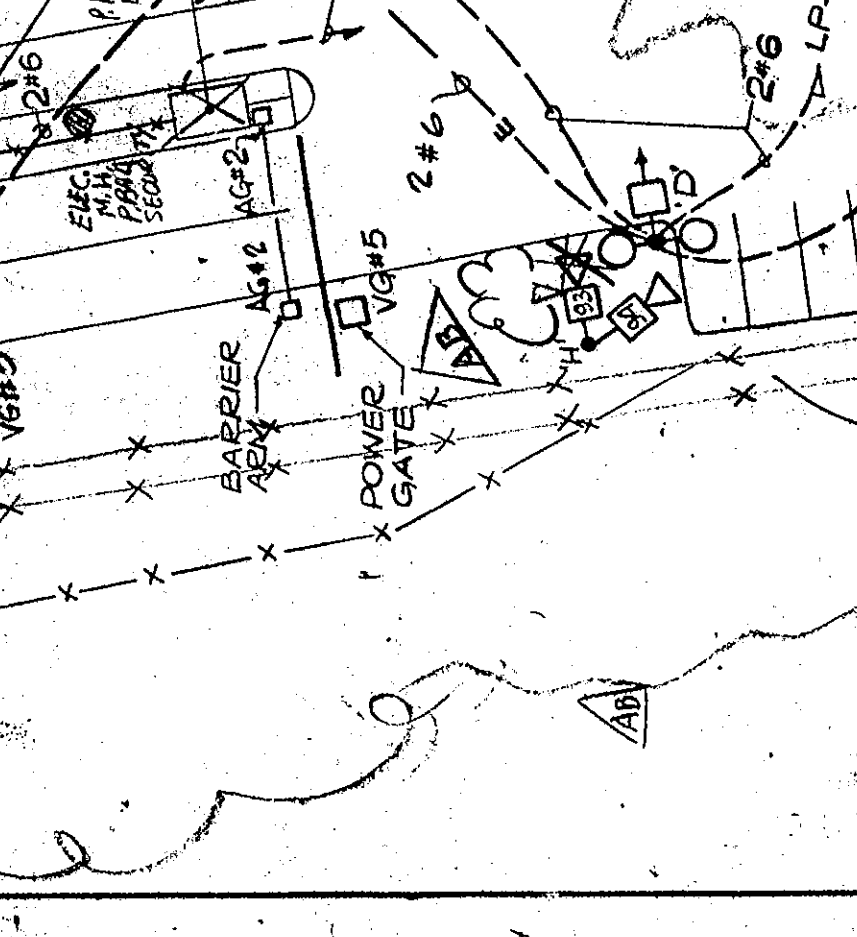
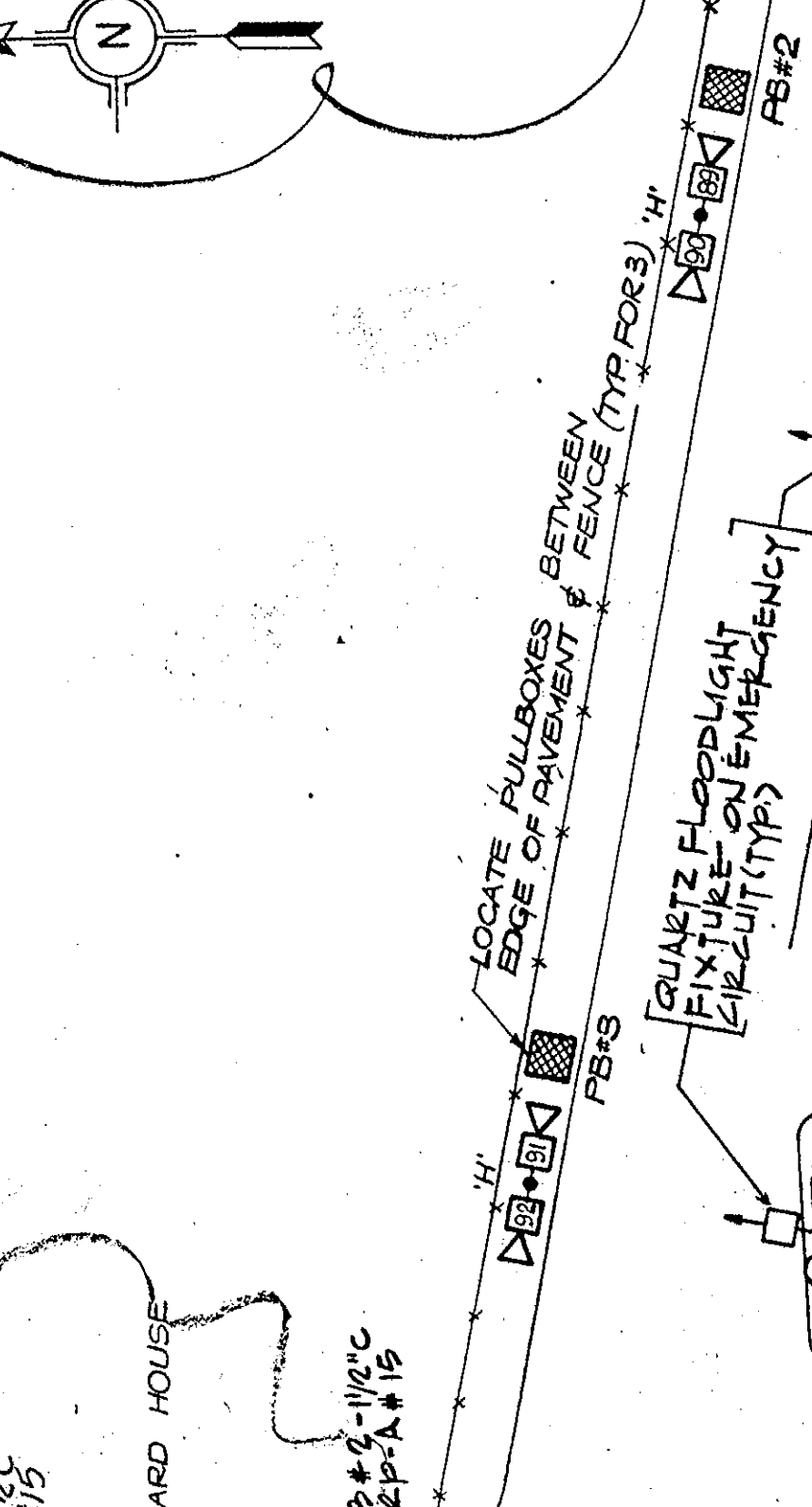
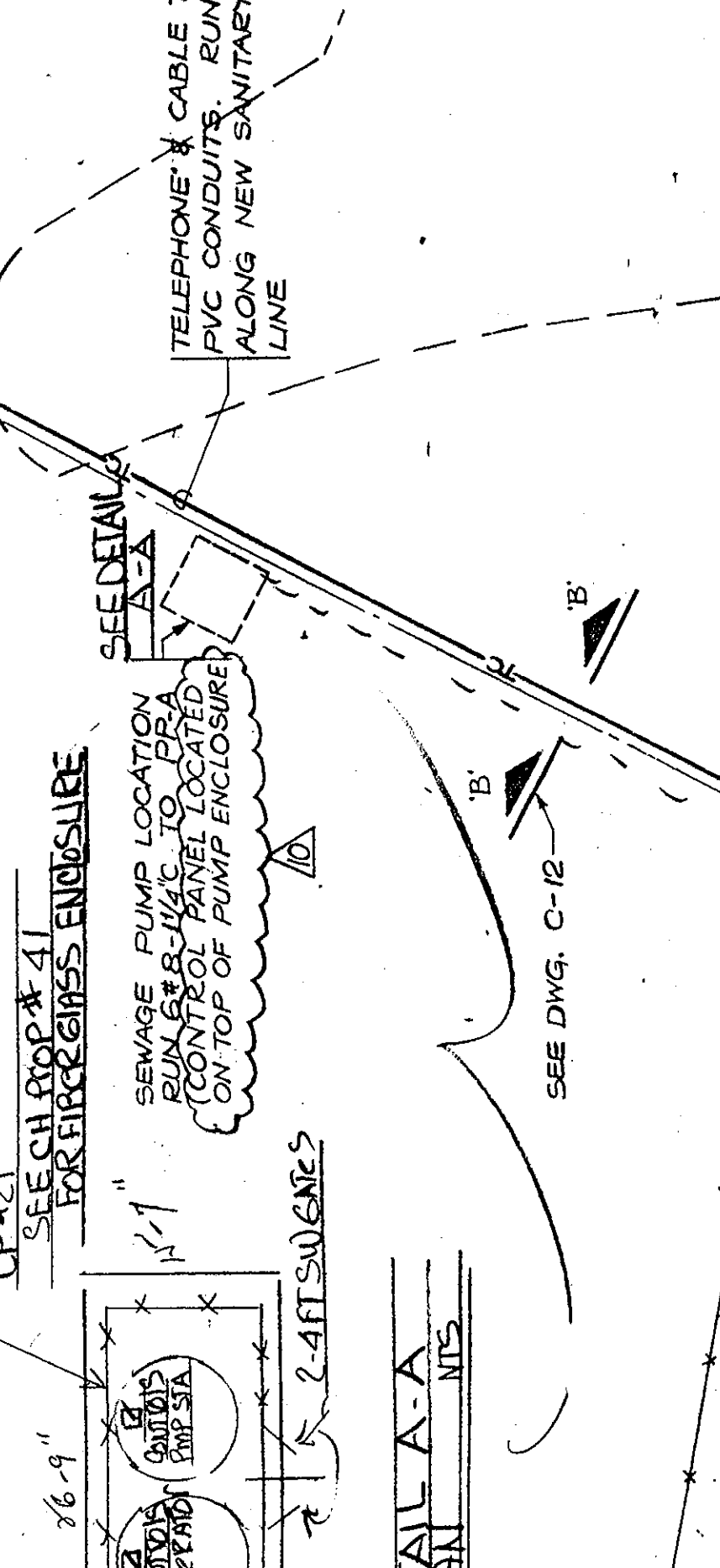
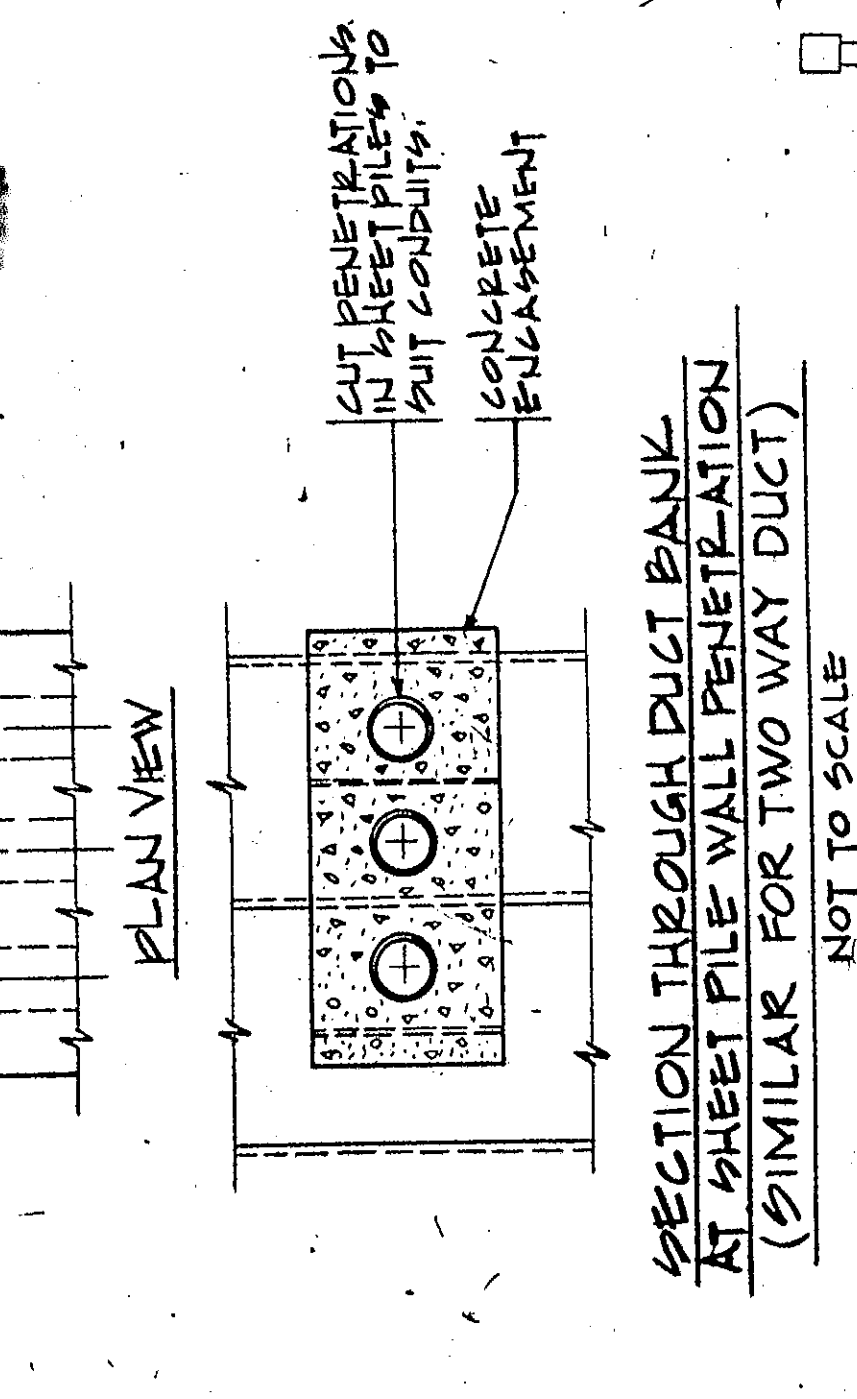
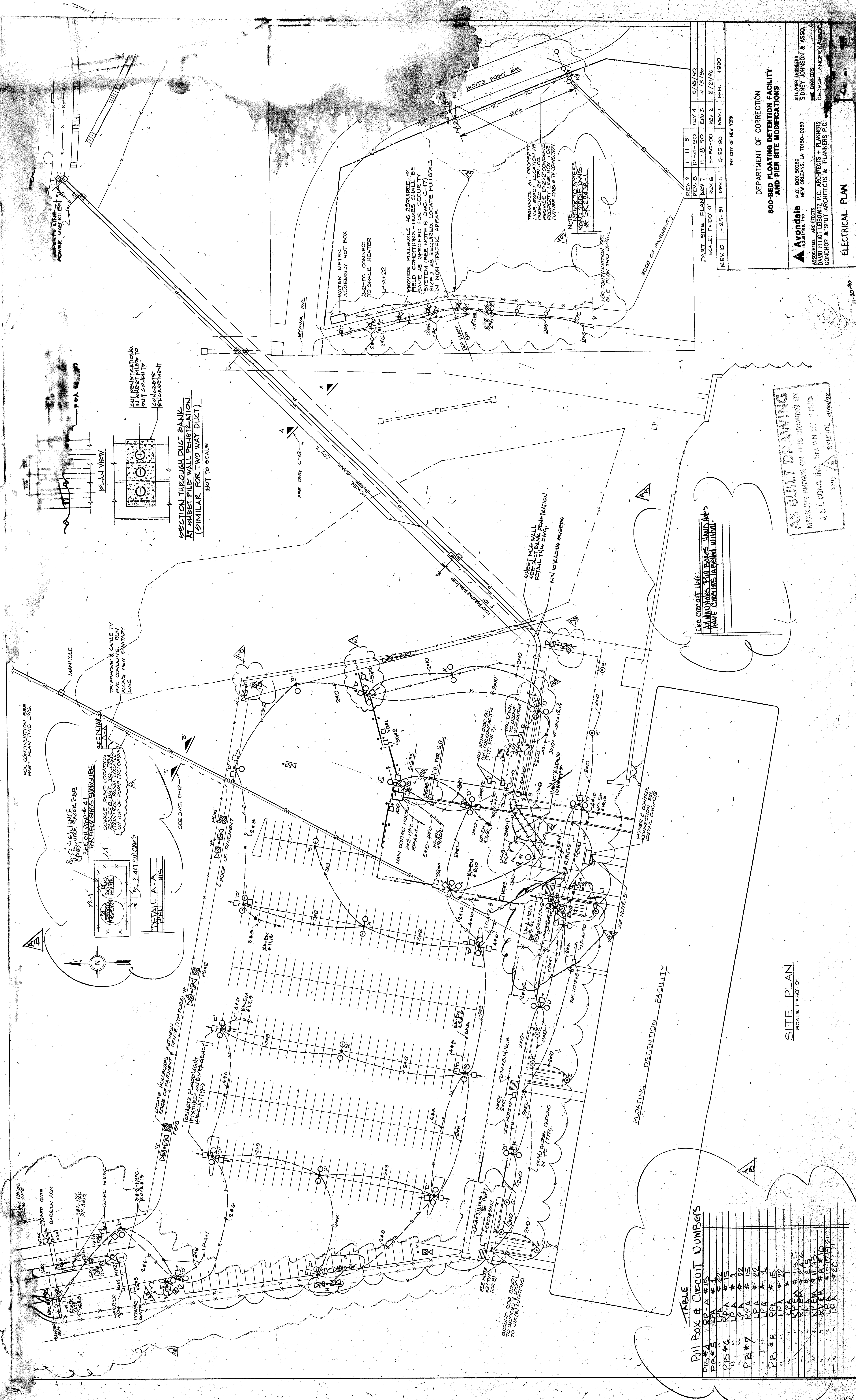
DEPARTMENT OF CORRECTION
800-BED FLOATING DETENTION FACILITY
AND PER SITE MODIFICATIONS

Avondale
P.O. BOX 50280
NEW ORLEANS, LA 70150-0280

ASSOCIATED ARCHITECTS
DAVID ELLIOT LEBOWITZ P.C. ARCHITECTS + PLANNERS
CONCHOR & SPUR ARCHITECTS & PLANNERS P.C.

SITE DRAINAGE AND DETAILS
C9-210-C-B

DWG. NO.



TABLE

Pull Box & Circuit Numbers

PR #1	PR #2	PR #3	PR #4	PR #5	PR #6	PR #7	PR #8	PR #9	PR #10	PR #11	PR #12	PR #13	PR #14	PR #15	PR #16	PR #17	PR #18	PR #19	PR #20	PR #21	PR #22	PR #23	PR #24	PR #25	PR #26	PR #27	PR #28	PR #29	PR #30	PR #31	PR #32	PR #33	PR #34	PR #35	PR #36	PR #37	PR #38	PR #39	PR #40	PR #41	PR #42	PR #43	PR #44	PR #45	PR #46	PR #47	PR #48	PR #49	PR #50	PR #51	PR #52	PR #53	PR #54	PR #55	PR #56	PR #57	PR #58	PR #59	PR #60	PR #61	PR #62	PR #63	PR #64	PR #65	PR #66	PR #67	PR #68	PR #69	PR #70	PR #71	PR #72	PR #73	PR #74	PR #75	PR #76	PR #77	PR #78	PR #79	PR #80	PR #81	PR #82	PR #83	PR #84	PR #85	PR #86	PR #87	PR #88	PR #89	PR #90	PR #91	PR #92	PR #93	PR #94	PR #95	PR #96	PR #97	PR #98	PR #99	PR #100
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AS BUILT DRAWING

REVISIONS SHOWN ON THIS DRAWING BY

1. B. L. CONG. INC. SHOWN BY 11/10/92

AND 1. B. L. CONG. INC. SHOWN BY 11/10/92

800-RED FLOATING DETENTION FACILITY AND PIER SITE MODIFICATIONS

DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK

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SCALE: 1"=100'-0"

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FOR CONTINUATION SEE PART PLAN THIS DWG.

800-RED FLOATING DETENTION FACILITY AND PIER SITE MODIFICATIONS

DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK

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FOR CONTINUATION SEE PART PLAN THIS DWG.

Consulting Engineers, P C

New York City Economic Development Corporation
One Liberty Plaza, 14th Floor
New York, NY 10006

March 4, 2024

Attention: Surge Zherebchuk, Assistant Vice President Asset Management
Gregory Dixon, Vice President, Asset Management

**Reference: New York City Economic Development Corporation (“NYCEDC”) On-Call Maritime Consultant Engineering Services
NYCEDC Contract No. 79930003 for Consulting Services**

Subject: Routine Inspection – Vernon C. Baine Corrections Center
Hunts Point, Bronx, New York
Pennmax Ref. 23023

Dear Mr. Zherebchuk,

Please find attached a copy of our report titled, “Vernon C. Baine Corrections Center, Hunts Point, Bronx, New York, Routine Inspection,” dated February 2024. If you have any questions, or if you require additional information, please feel free to contact the undersigned at your convenience.

Very truly yours,
Pennmax Consulting Engineers, PC

John P. Pensiero, P.E.
President

**WATERFRONT FACILITIES
MAINTENANCE MANAGEMENT SYSTEM**

**VERNON C. BAINE
CORRECTIONS CENTER**

HUNTS POINT, BRONX, NY

ROUTINE INSPECTION

FEBRUARY 2024



Pennmax

Consulting Engineers, P C

**NEW YORK CITY
ECONOMIC DEVELOPMENT CORPORATION**

**WATERFRONT FACILITIES
MAINTENANCE MANAGEMENT SYSTEM**

***VERNON C. BAINE
CORRECTIONS CENTER***

**HUNTS POINT
BRONX, NY**

ROUTINE INSPECTION

FEBRUARY 2024

Submitted by:

**Pennmax Consulting Engineers, PC
777 West Putnam Avenue, Suite 300
Greenwich, CT 06830**

EXECUTIVE SUMMARY

The New York City Economic Development Corporation (NYCEDC) authorized Pennmax Consulting Engineers, PC (Pennmax) to conduct a Routine Inspection of the Vernon C. Baine Correction Center facilities at Hunts Point, Bronx, NY. This work was commissioned as part of NYCEDC's Waterfront Facilities Maintenance Management Systems (WFMMS) through an on-call maritime consultant engineering services agreement, Contract No. 79930003. This investigation was performed on behalf of NYCEDC and the New York City Department of Corrections, which owns and manages the property. The investigation documents the condition of the various elements comprising the systems, assesses their structural viability, and recommends remedial actions necessary to restore and/or maintain the systems' function during service.

According to the Waterfront Facilities Maintenance Management System (WFMMS) database the Vernon C. Baine Corrections Center and Corrections Bulkhead are within the Hunts Point site (Site ID 14). The Center is separated into two distinct facilities: (a) the Corrections Bulkhead (Facility ID 30), and (b) the Vernon C. Baine Corrections Center (Facility ID 29). The Corrections Center facility is separated into multiple systems including a cellular cofferdam, a transition bulkhead, a high-level platform, two mooring arms that secure the floating barge, and various pedestrian, cargo, and utility gangways between the barge and land. The Vernon C. Baine Corrections Center facility comprises the floating barge. This investigation treats only the accessible in-water portions of the barge's hull.

In general, the steel components comprising each of the systems exhibit coating loss with varying degrees of corrosion. The cellular cofferdam and transition bulkhead exhibit coating failure with corrosion throughout exposed surfaces above mean low water. In addition, where sinkholes and subsided areas exist, these should be filled and graded. The topside is overgrown and should be cleared.

The steel pipe piles supporting High-Level Platform exhibit moderate corrosion above mean low water. Similarly, the steel sheet pile cutoff wall exhibits coating failure and corrosion. Where the mooring arm struts penetrate the cutoff wall, the steel contains severe corrosion and voids behind the sheet piles. These areas should

be patched, and all exposed steel sheet piles and pipe piles should be cleaned and coated above mean low water.

The east and west mooring arms contain coating loss with corrosion due to splash. These should be cleaned and recoated. In addition, the grease fittings should be checked and serviced periodically to ensure proper lubrication of the various mechanical interfaces comprising the Crandall Arm assemblies.

The steel support bracket for the west mooring arm support cap is severely corroded and the shims between the bracket and the cap are no longer present. The brackets should be cleaned, reinforced, recoated, and shimmed. The steel pipe piles supporting the east mooring arm pile cap are mostly encased. However, the encasements do not extend to the underside of the cap, nor do they extend down to the mudline. The exposed steel exhibits corrosion and should be cleaned and encased in concrete. New encasements should be installed at the mudline also. The concrete pile cap for the east mooring arm contains excessive map cracks, and two approximately ¼" wide cracks that may be stress related, possibly due to the barge bottoming out on the mudline at mean low water. These cracks should be repaired using low-pressure injection of epoxy grout.

All gangways exhibit varying degrees of coating loss, including the deck surface. The rocker bearings typically exhibit moderate to advanced corrosion of the steel bearing components and the anchor nuts. Safety chains at some locations are corroded or broken. Several of the bearings contain substantial debris buildup. The anchor nuts and chains should be replaced, and all exposed steel should be cleaned and recoated. The access ladders and the winch system at several of the gangway support frames are overgrown with vegetation and prevent access or proper operation. The heavy vegetation should be cut and removed.

The floating detention barge exhibits coating loss with corrosion on the side walls primarily within the splash zone along the waterline. However, the corrosion is minor and intermittent. Corrosion is more prevalent along the exposed south, east, and west sides of the barge. Moreover, one anode is missing on each of the south and north faces. The barge should be cleaned and recoated along the waterline, and the missing anodes should be replaced.

Importantly the barge contacts and rests on the mudline during low tide cycles. This condition exists primarily on the north side of the barge along its eastern half. This condition can cause overstress in the barge mooring arms and supports. The silt below the barge keel should be suction-dredged to permit a minimum underkeel clearance of 3 ft at mean lower low water.

Tables E-1 summarizes the overall condition ratings and estimated repairs costs for immediate, priority, and routine repair actions at each of the systems of the Vernon C. Baine Corrections Center Bulkhead and Floating Detention Barge. Tables E-2 and E-3 describe the recommended repair actions and their corresponding estimated repair costs with recommended implementation dates for each system, respectively.

TABLE E-1
SUMMARY OF THE OVERALL CONDITION RATINGS AND COSTS
AT HUNTS POINT CORRECTIONS BULKHEAD AND VERNON C. BAINE
CORRECTIONS CENTER FLOATING DETENTION BARGE

Facility Name	System	Condition Rating	Opinion of Probable Costs for Recommended Actions			
			Immediate	Priority	Routine	Total
Corrections Bulkhead		Fair				
Cellular Cofferdam		Fair	\$0	\$751,190	\$359,721	\$1,110,911
Transition Bulkhead		Fair	\$0	\$87,801	\$0	\$87,801
High-Level Platform		Fair	\$0	\$714,006	\$0	\$714,006
West Mooring Arm		Fair	\$0	\$69,393	\$0	\$69,393
East Mooring Arm		Fair	\$0	\$168,924	\$0	\$168,924
West Gangway A		Fair	\$0	\$28,644	\$63,526	\$92,170
Middle Gangway B		Fair	\$11,325	\$28,644	\$63,526	\$103,495
East Gangway C		Fair	\$11,325	\$28,644	\$63,526	\$103,495
Plumbing Gangway		Satisfactory	\$0	\$0	\$37,691	\$37,691
Electrical Gangway		Satisfactory	\$11,325	\$0	\$0	\$11,325
Total: Corrections Bulkhead			\$33,975	\$1,877,246	\$587,990	\$2,499,211
Vernon C. Baine Corrections Center		Fair				
Floating Detention Barge		Fair	\$0	\$1,585,349	\$0	\$1,585,349
Total: VC Baine Corrections Center and Floating Barge			\$33,975	\$3,462,595	\$587,990	\$4,084,560

TABLE E-2
SUMMARY OF CONDITION RATINGS, RECOMMENDED ACTIONS,
IMPLEMENTATION DATES, AND COSTS AT THE CORRECTIONS BULKHEAD

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Cellular Cofferdam - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean, prepare, and recoat the steel sheet piles above MLW (approximately 12,408 sf of surface area over a developed length of approximately 1,034 ft), and cleaning/recoating 6 bollards.	FY 2027	\$751,190
	Subtotal Immediate Actions:		\$751,190
Routine	Fill and reestablish grade at sinkholes and depressions and clear all vegetation/overgrowth.	FY 2026	\$55,609
	Repave worn/damaged pavement surfaces	FY 2027	\$304,112
	Subtotal Routine Actions:		\$359,721
TOTAL FOR THE CELLULAR COFFERDAM:			\$1,110,911
Transition Bulkhead - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and recoat steel sheet piles above MLW between Sta. 7+81 and Sta. 7+99. Recoat an area of approximately 240 sf.	FY 2027	\$87,801
	Subtotal Priority Actions:		\$87,801
Routine	Routine actions are not required.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE TRANSITION BULKHEAD:			\$87,801

TABLE E-2 (Cont'd)
SUMMARY OF CONDITION RATINGS, RECOMMENDED ACTIONS,
IMPLEMENTATION DATES, AND COSTS AT THE CORRECTIONS BULKHEAD

Action Type	Description	Implementation Date	Total Cost (2024 USD)
High-Level Platform - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Coat the steel pipe piles above MLW.	FY 2027	\$368,526
	Clean and recoat the steel sheet pile cut-off wall above the riprap and patch the corrosion holes at the strut penetrations.	FY 2027	\$345,481
	Subtotal Priority Actions:		\$714,006
Routine	Routine actions are not required.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE HIGH-LEVEL PLATFORM:			\$714,007
West Single-Leg Mooring Arm - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and coat corroded steel components comprising the Crandal Mooring Arm Assembly.	FY 2026	\$34,425
	Clean, reinforce, coat, and shim the steel brackets below the concrete support cap.	FY 2026	\$34,968
	Subtotal Priority Actions:		\$69,393
Routine	Verify Crandall Arm parts are adequately lubricated using the grease fittings and employ regular maintenance per the O&M manual recommendations	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR WEST MOORING ARM:			\$69,393

TABLE E-2 (Cont'd)
SUMMARY OF CONDITION RATINGS, RECOMMENDED ACTIONS,
IMPLEMENTATION DATES, AND COSTS AT THE CORRECTIONS BULKHEAD

Action Type	Description	Implementation Date	Total Cost (2024 USD)
East Double-Leg Mooring Arm - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and coat corroded steel components comprising the Crandal Mooring Arm Assembly.	FY 2026	\$33,822
	Pack the gap at the pile tops solid with grout and encase the bottom of the piles at the mudline.	FY 2026	\$80,517
	Inject cracks in the concrete pile cap with an epoxy grout.	FY 2026	\$53,924
	Subtotal Priority Actions:		\$168,263
Routine	Verify Crandall Arm parts are adequately lubricated using the grease fittings and employ regular maintenance per the O&M manual recommendations	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR EAST MOORING ARM:			\$168,924
West Pedestrian Gangway A - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$63,526
	Subtotal Routine Actions:		\$63,526
TOTAL FOR THE WEST PEDESTRIAN GANGWAY A:			\$92,170

TABLE E-2 (Cont'd)
SUMMARY OF CONDITION RATINGS, RECOMMENDED ACTIONS,
IMPLEMENTATION DATES, AND COSTS AT THE CORRECTIONS BULKHEAD

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Middle Pedestrian Gangway B - Fair			
Immediate	Remove vegetation and overgrowth from the support frame ladder and winch systems.	FY 2024	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$63,526
	Subtotal Routine Actions:		\$63,526
TOTAL FOR THE MIDDLE PEDESTRIAN GANGWAY B:			\$103,495
East Pedestrian Gangway C - Fair			
Immediate	Remove vegetation and overgrowth from the support frame ladder and winch systems.	FY 2024	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$63,526
	Subtotal Routine Actions:		\$63,526
TOTAL FOR THE EAST PEDESTRIAN GANGWAY C:			\$103,495

TABLE E-2 (Cont'd)
SUMMARY OF CONDITION RATINGS, RECOMMENDED ACTIONS,
IMPLEMENTATION DATES, AND COSTS AT THE CORRECTIONS BULKHEAD

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Cargo Gangway - Fair			
Immediate	Remove vegetation and overgrowth from the support frame ladder and winch systems.	FY 2024	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$105,498
	Subtotal Routine Actions:		\$105,498
TOTAL FOR THE CARGO GANGWAY:			\$145,467
Plumbing Gangway - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Priority action is not required.	N/A	N/A
	Subtotal Priority Actions:		\$0
Routine	Hydroblast clean and coat the steel catwalk, stairs, bearings, and isolated areas of failed coating.	FY 2029	\$37,691
	Subtotal Routine Actions:		\$37,691
TOTAL FOR THE PLUMBING GANGWAY:			\$37,691

TABLE E-2 (Cont'd)
SUMMARY OF CONDITION RATINGS, RECOMMENDED ACTIONS,
IMPLEMENTATION DATES, AND COSTS AT THE CORRECTIONS BULKHEAD

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Electrical Gangway - Fair			
Immediate	Remove heavy vegetation and growth from the gangway support systems and winch.	FY 2025	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Priority action is not required.	N/A	N/A
	Subtotal Priority Actions:		\$0
Routine	Routine action is not required.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR ELECTRICAL GANGWAY:			\$11,325

TABLE E-3
SUMMARY OF CONDITION RATINGS, RECOMMENDED ACTIONS,
IMPLEMENTATION DATES, AND COSTS AT FLOATING DETENTION BARGE

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Floating Detention Barge - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and recoat the barge along the waterline. Assume approximately 1,650 lf long by 3 ft high	FY 2027	\$349,970
	Suction dredge silt from below the barge. Estimated volume of removals is taken as 625 ft long by 125 ft wide by 5 ft deep (avg) = (~15,000 cy).	FY 2025	\$1,194,725
	Install two anodes to replace the missing anodes on the north and south sides.	FY 2025	\$40,654
	Subtotal Immediate Actions:		\$1,585,349
Routine	Retain a corrosion specialist to evaluate and adjust the impressed current cathodic protection system.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE FLOATING DETENTION BARGE:			\$1,585,349

**VERNON C. BAINE CORRECTIONS CENTER
HUNTS POINT, BRONX, NEW YORK**

ROUTINE INSPECTION

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1. INTRODUCTION

The New York City Economic Development Corporation (NYCEDC) authorized Pennmax Consulting Engineers, PC (Pennmax) to conduct a Routine Inspection of the Vernon C. Baine Correction Center facilities at Hunts Point, Bronx, NY. This work was commissioned as part of NYCEDC's Waterfront Facilities Maintenance Management Systems (WFMMS) through an on-call maritime consultant engineering services agreement, Contract No. 79930003. This investigation was performed on behalf of NYCEDC and the New York City Department of Corrections, which owns and manages the property. The investigation documents the condition of the various elements comprising the systems, assesses their structural viability, and recommends remedial actions necessary to restore and/or maintain the systems' function during service.

According to the Waterfront Facilities Maintenance Management System (WFMMS) database the Vernon C. Baine Corrections Center and Correction Bulkhead are within the Hunts Point site (Site ID 14). The Center is separated into two distinct facilities: (a) the Corrections Bulkhead (Facility ID 30), and (b) the Vernon C. Baine Corrections Center (Facility ID 29). The Corrections Bulkhead facility is separated into multiple systems including a cellular cofferdam, a transition bulkhead, a high-level platform, two mooring arms that secure the floating barge, and various pedestrian, cargo, and utility gangways between the barge and land. The Vernon C. Baine Corrections Center facility comprises the floating barge. This investigation treats only the accessible in-water portions of the barge's hull.

The field work was performed in December 2023 by a three-person inspection team consisting of a professional engineer team leader, an inspector-diver, and a technician-diver-tender. Underwater inspections were conducted using commercial-grade surface-supplied air diving equipment in compliance with OSHA and USCG regulations (29 CFR1910 and 46CFR197).

A Level I investigation was performed on 100 percent of accessible structural elements. The purpose of the Level I inspection was to visually determine the overall condition of components and to identify damage or extensive deterioration. The inspection utilized hands-on probing with pick-hammers and scrapers. A Level II

inspection was performed on approximately ten percent of accessible elements, as applicable. The Level II inspection involved examining exposed surfaces for mechanical damage and deterioration on bulkheads. Hand tools were used to assess the physical integrity of the material, as applicable. Where severe deterioration was encountered, measurements of the remaining physical features were obtained to establish the member proportions.

Level III inspections were not required as part of this investigation. Detailed Level III inspections, for example, typically involve destructive sampling/testing, test pits, or obtaining cores. Level III inspections are typically recommended depending on the nature of observed conditions per the Level I and II inspections. The need for Level III inspections was not identified as a necessary component of this investigation.

Divers conducted investigations during low tide cycles as appropriate to achieve maximum visibility of above water elements. Conditions were documented using both digital and written formats, and with the aid of digital photography. Nonstructural systems such as mechanical & electrical systems, ancillary components, utilities, drainage structures, manholes, and/or above-grade buildings or other structures were not included as part of this inspection unless noted otherwise.

1.1 RATING CRITERIA AND RECOMMENDED ACTIONS

Damage grades, assessments, and ratings provided in this report refer to the New York City Economic Development Corporation's (EDC) guidelines manual "Waterfront Facilities Maintenance Management System, Inspection Guidelines Manual," dated May 2016. For a detailed description of the various damage grades, assessment conditions, and ratings of various materials and systems, please refer to Sections 3.1.3 and 3.3 of the manual. Section 3.4 of the manual provides a description of recommended actions. The following sections present a summary of these criteria.

1.1.1 Damage Grades

Various assessment terms are used during the inspection of different material types. These terms describe the damage grades for various components of

each material system. In general, an inspected component will be given a rating of “minor,” “moderate,” “advanced,” or “severe,” as defined in EDC’s guidelines manual. In the case of a revetment, damage grades are estimated by visual assessment, in consideration of armor material composition, interlocking integrity, profile characteristics, and various physical anomalies such as sagging, undermining, scour, and/or overall slope stability.

1.1.2 Condition Assessment Ratings

Each facility, system, and component group in the WFMMS is given a condition assessment rating following an inspection. The ratings are important in establishing the priority of follow-on actions to be taken. This is particularly true when many systems are included in an inspection program and follow-on activities must be ranked or prioritized due to limited resources. The six terms that are used to describe the conditions of hard structures are described below.

- “*Good*” – No problems or only minor problems noted. Structural elements may show some very minor deterioration, but no oversteering observed.
- “*Satisfactory*” – Minor to moderate defects and deterioration observed, but no oversteering observed.
- “*Fair*” – All primary structural elements are sound; but minor to moderate defects and deterioration observed. Localized areas of moderate to advanced deterioration may be present but do not significantly reduce the load bearing capacity of the structure.
- “*Poor*” – Advanced deterioration or oversteering observed on widespread portions of the structure but does not significantly reduce the load carrying capacity of the structure.
- “*Serious*” – Advanced deterioration, oversteering, or breakage may have significantly affected the load bearing capacity of primary structural elements. Local failures are possible and loading restrictions may be necessary.
- “*Critical*” – Very advanced deterioration, oversteering, or breakage has resulted in localized failure(s) of primary structural elements. More

widespread failures are possible or likely to occur and load restrictions should be implemented as necessary.

The ratings are used to describe the existing in-place structure relative to its condition when newly built. The fact that the structure was designed for loads that may be lower than the current standards for design will have no influence upon the ratings. Similarly, present loads on a structure that are substantially lower than the original design loads will not also have an influence on the ratings. The correct assignment of ratings requires both experience and an understanding of the structural concept of the structure to be rated. The following considerations are made:

- Scope of damage (total number of deficiencies)
- Severity of damage (type and size of deficiency)
- Distribution of damage (local vs. general)
- Types of components affected (structural “sensitivity”)

Assignment of ratings reflects an overall characterization of the facility, system, or component group being rated. For example, if the component group “piles” exhibits deterioration characterized by the rating of “serious”, but the rest of the structure is characterized as only “fair”, then the entire structure may be rated as “serious.” However, if a less critical element group such as deck is characterized as “serious,” and the rest of the structure is characterized as “fair”, then the entire structure may be rated as “fair” or possibly “poor,” depending upon the circumstances.

1.1.3 Recommended Actions

Recommended actions are typically assigned upon completion of an inspection. The recommended actions are categorized into the following four general types of actions, which are described below:

- Immediate/Emergency action
- General repair (routine or priority action)
- Additional investigation and engineering analysis
- No action

Emergency/Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the

structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to prove that the condition may be tolerated by the structure through redundancies.

General repair recommendations are required to determine an order-of-magnitude opinion of probable construction costs for future actions including rehabilitation, design, and/or inspection work. They are provided in two general categories, each associated with a different level of urgency as follows:

- “Priority” level actions are recommendations for which no immediate measures are required, but for which further investigations, design, and implementation of interim or long-term rehabilitation should be undertaken. The priority action takes precedence over all other scheduled work and should be implemented within a recommended timeframe. Typically, these actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly. Priority level actions are typically completed within 1 to 3 years depending on the severity of a condition.
- “Routine” level actions are recommended as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance. The routine recommended actions are in accordance with good engineering and industry practice to maintain the structure and reduce future capital expenses. Postponing routine recommended actions will not compromise the structural integrity of the facility or significantly increase the cost to rehabilitate the structure. A routine level recommended action may be reevaluated on a follow-on cyclical inspection since these actions are typically required to be completed within 3 to 5 years.

Additional Investigations are recommended when more information is needed to better determine the overall structural condition, the cause or significance of non-typical deterioration, or an appropriate repair method. An engineering analysis may be recommended when damage or defects are encountered which require a structural investigation or evaluation to determine if rehabilitation or load restrictions are required.

No action is recommended when a facility, system or component is effectively undamaged and can continue to perform its intended function for a period until the next inspection cycle. Additional guidance regarding the frequency of inspections may be found in Section 7 of EDC's inspection guidelines manual.

2. DESCRIPTION OF SITE

The Vernon C. Bain Center is owned and operated by the NYC Department of Corrections and is located at the terminus of Halleck Street in the Hunts Point neighborhood of Bronx, New York. The facility is situated on the southern shore of the Hunts Point peninsula at the confluence of the East River, the Bronx River, and Flushing Bay. It sits within a strait immediately north of Rikers Island. Its property tax map designation is Block 2780, Lot 2.

The site consists of two facilities: the Corrections bulkhead, and the Vernon C. Baine Corrections Center floating detention barge. The structural systems inspected include (a) an approximately 781 ft long steel sheet pile cellular cofferdam, (b) an approximately 19'6" long steel sheet pile transition bulkhead, (c) a 140 ft long by 30 ft wide high-level platform, (d) a 625 ft long by 125 ft wide floating detention barge (800-bed prison barge), and (e) various mooring arms, gangways, gangways, and mooring devices. Illustration 2-1 depicts an overall aerial image of the facility, and Table 2-1 provides a breakdown of the various structural systems. Illustration 2-2 provides the system hierarchy for each of the various facilities. Figure 2-1 depicts a Location Map, and Figures 2-2 and 2-3 illustrate overall site and facility plans.



Illustration 2-1: Overall Aerial View of the Vernon C. Baine Corrections Center as adapted from *google earth*.

Site	Facility	System Name	System ID	Description
Hunts Point (Site ID: 14)	<i>Corrections Bulkhead</i> (Facility ID: 30)	Cellular Cofferdam	2114	Approximately 781 ft long comprising (13) 44'-8" diameter cells and (12) 22'-4" diameter interstitial cells. The cells are formed using flat steel sheet piles measuring approximately 15½" wide by ½" thick. The cells are filled with crushed stone and partially topped with pavement. Mooring bollards are positioned along the top of the structure at various locations.
		Transition Bulkhead	10985	Approximately 19'6" long steel sheet pile bulkhead with HOESCH box-shaped sheet piles and a reinforced concrete pile cap.
		High-Level Platform	716	Approximately 140 ft long by 30 ft wide platform comprising nine bents each containing five steel pipe piles, concrete pile caps, concrete deck, and a steel sheet pile cut-off wall.
		West Mooring Arm	10984	A single-leg mooring arm comprises a gripper plates, pins, a "Crandall arm," and a stiffened anchor plate & pin assembly. The anchor plate is bolted flush against a reinforced concrete foundation block measuring approximately 7 ft wide by 9 ft high by 17 ft long. A steel catwalk sits above the arm.
		East Mooring Arm	10983	A double-leg mooring arm comprises two orthogonally oriented articulated mooring arm assemblies, a concrete pile cap, three 12 in. Sch. 80 steel pipe mini-caissons in rock, two steel HP12x74 batter piles, and a pair of concrete horizontal diagonal struts. A steel catwalk frame sits above the arms.

Table 2-1: Descriptions of the Vernon C. Bain Corrections Center Facilities and Systems

Site	Facility	System Name	System ID	Description
		West Pedestrian Gangway A	3084	An approximately 8'-8" wide by 62 ft long steel-framed pedestrian access gangway fitted with rocker/roller bearings, and a canopy. The gangway may be lifted by an independent steel-framed support frame that utilizes a 24" OD steel pipe.
		Middle Pedestrian Gangway B	3085	An approximately 8'-8" wide by 62 ft long steel-framed pedestrian access gangway fitted with rocker/roller bearings, and a canopy. The gangway may be lifted by an independent steel-framed support frame that utilizes a 24" OD steel pipe.
		East Pedestrian Gangway C	717	An approximately 8'-8" wide by 62 ft long steel-framed pedestrian access gangway fitted with rocker/roller bearings, and a canopy. The gangway may be lifted by an independent steel-framed support frame that utilizes a 24" OD steel pipe.
		Cargo Gangway	10982	An approximately 14'-5" wide by 62 ft long steel-framed cargo gangway fitted with rocker/roller bearings, and a fence railing. The gangway may be lifted by an independent steel-framed support frame that utilizes a 24" OD steel pipe.
		Plumbing Gangway	10981	An approximately 4'-6" wide by 32 ft long gangway that supports plumbing utilities. The gangway is fitted with rocker/roller bearings. The gangway may be lifted by an independent steel-framed support frame that utilizes a 18" OD steel pipe.
		Electrical Gangway	10980	An approximately 7'-6" wide by 32 ft long gangway that supports electrical utilities. The gangway is fitted with rocker/roller bearings. The gangway may be lifted by an independent steel-framed support frame that utilizes a 30" OD steel pipe.

Table 2-1 (cont'd): Descriptions of the Vernon C. Bain Corrections Center Facilities and Systems

Site	Facility	System Name	System ID	Description
Hunts Point (Site ID: 14)	<i>Vernon C. Bain Corrections Center</i> (Facility ID: 29)	Floating Barge	713	A floating detention barge measuring 625 ft long by 125 ft wide. It is positioned approximately 12'-6" off of the south face of the cellular bulkhead and fitted with anodes.

Table 2-1 (cont'd): Descriptions of the Vernon C. Bain Corrections Center

The facilities fall inside FEMA's PFIRM map Community Panel Number 3604970092G. The Corrections Bulkhead falls in zone AE15 (BFE el. +15.0 ft) and is not subject to wave velocity under the theoretical 100-yr storm event. The Floating Detention Barge falls in zone VE16 (BFE el. +16.0 ft) and is subject to wave velocity under the theoretical 100-yr storm event.

Mean high water (MHW) elevation falls at approximately el. +2.59 ft, and mean higher high water (MHHW) elevation falls at approximately el. +2.92 ft. A report prepared by the New York City Panel on Climate Change, titled "Climate Risk Information 2019, Observations, Climate Change Projections, and Maps," (NPCC2) concludes that by the end of the 2020s epoch, sea level is projected to rise 4 in. to 8 in. (middle range) and 10 in. (high estimate). By the end of the 2050s epoch, sea level is projected to rise 11 in. to 21 in. (middle range) and 30 in. (high estimate). The panel statistically projects a high estimate of 30 in. sea level rise as a 90th percentile recurrence probability. By the end of the 2080's epoch, the panel statistically projects a sea level rise of as much as 58" in the 90th percentile high-estimate range.

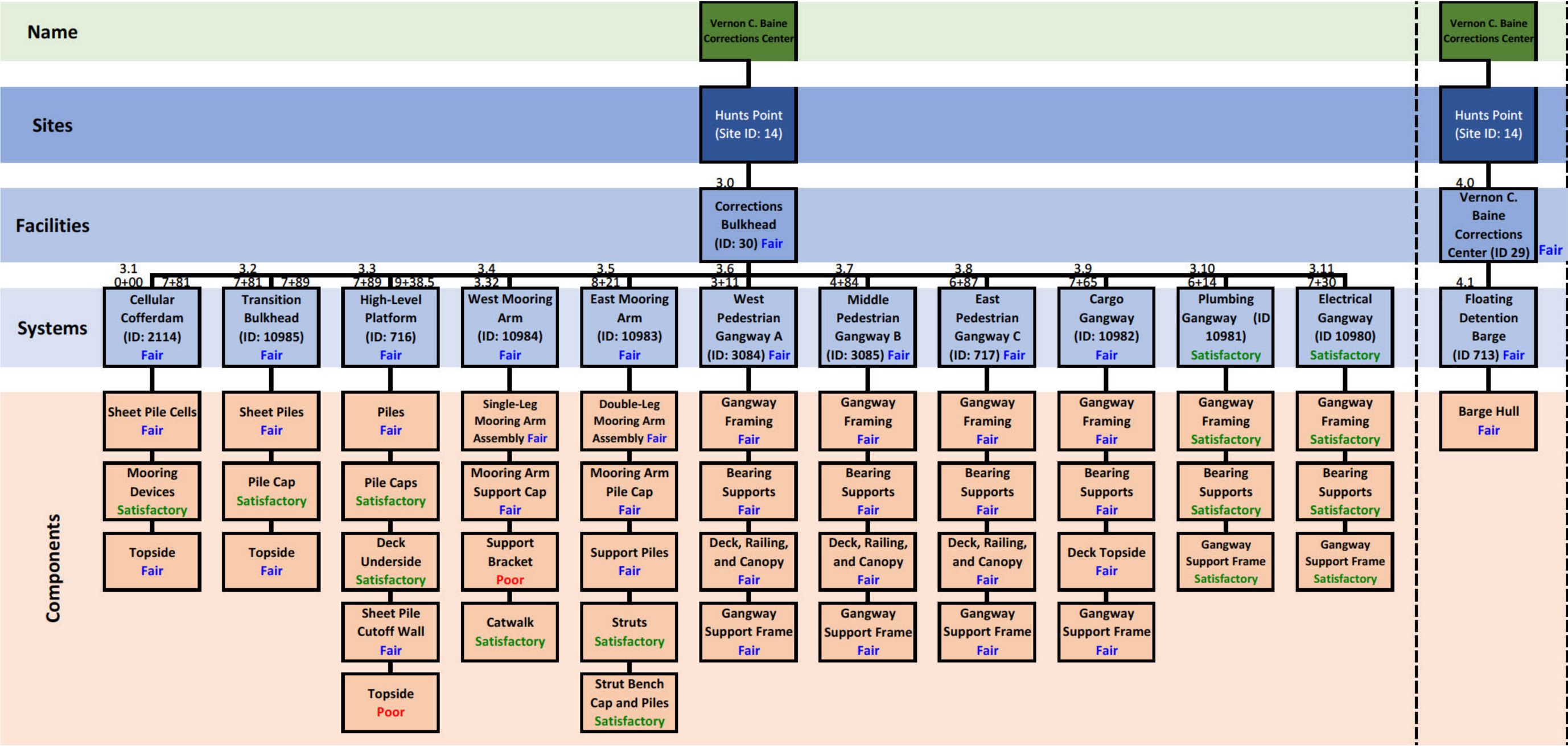
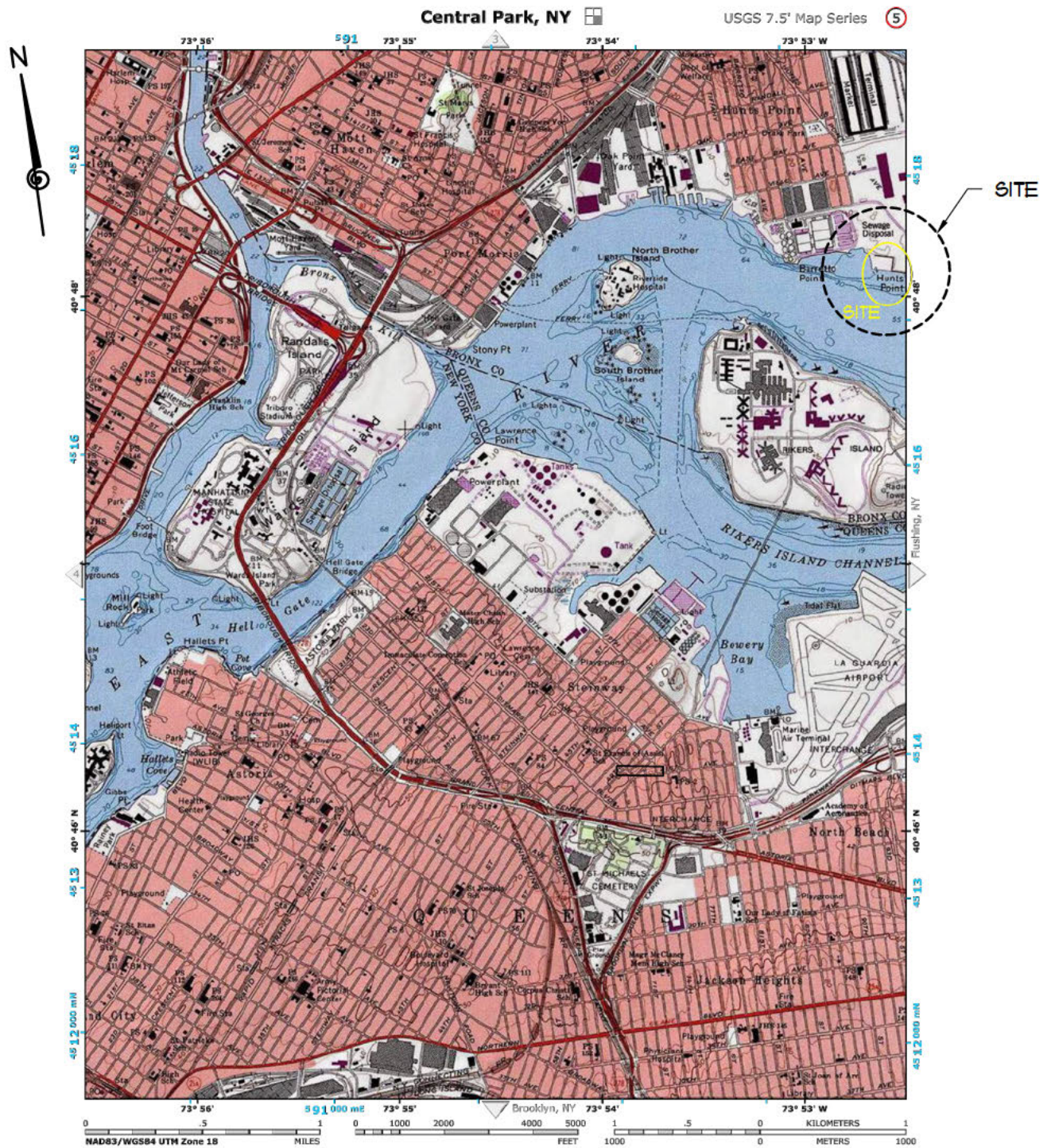
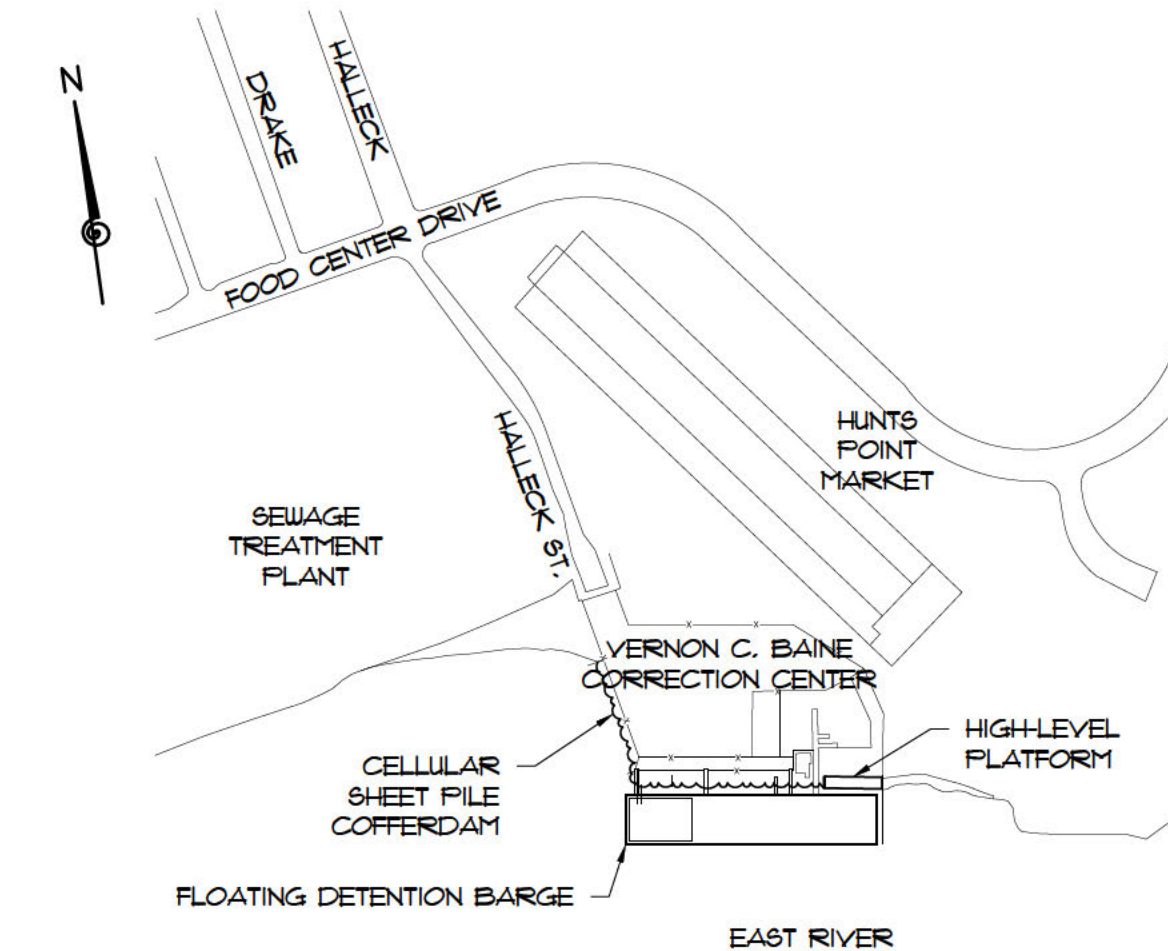


Illustration 2-2: System Heirarchy Vernon C. Baine Corrections Center





NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
ROUTINE INSPECTION OF
VERNON C. BAINE CENTER
 HUNTS POINT, NEW YORK

Penmax
 Consulting Engineers, PC

SITE PLAN

FEBRUARY 2024
 FIGURE 2-2

C
2-3

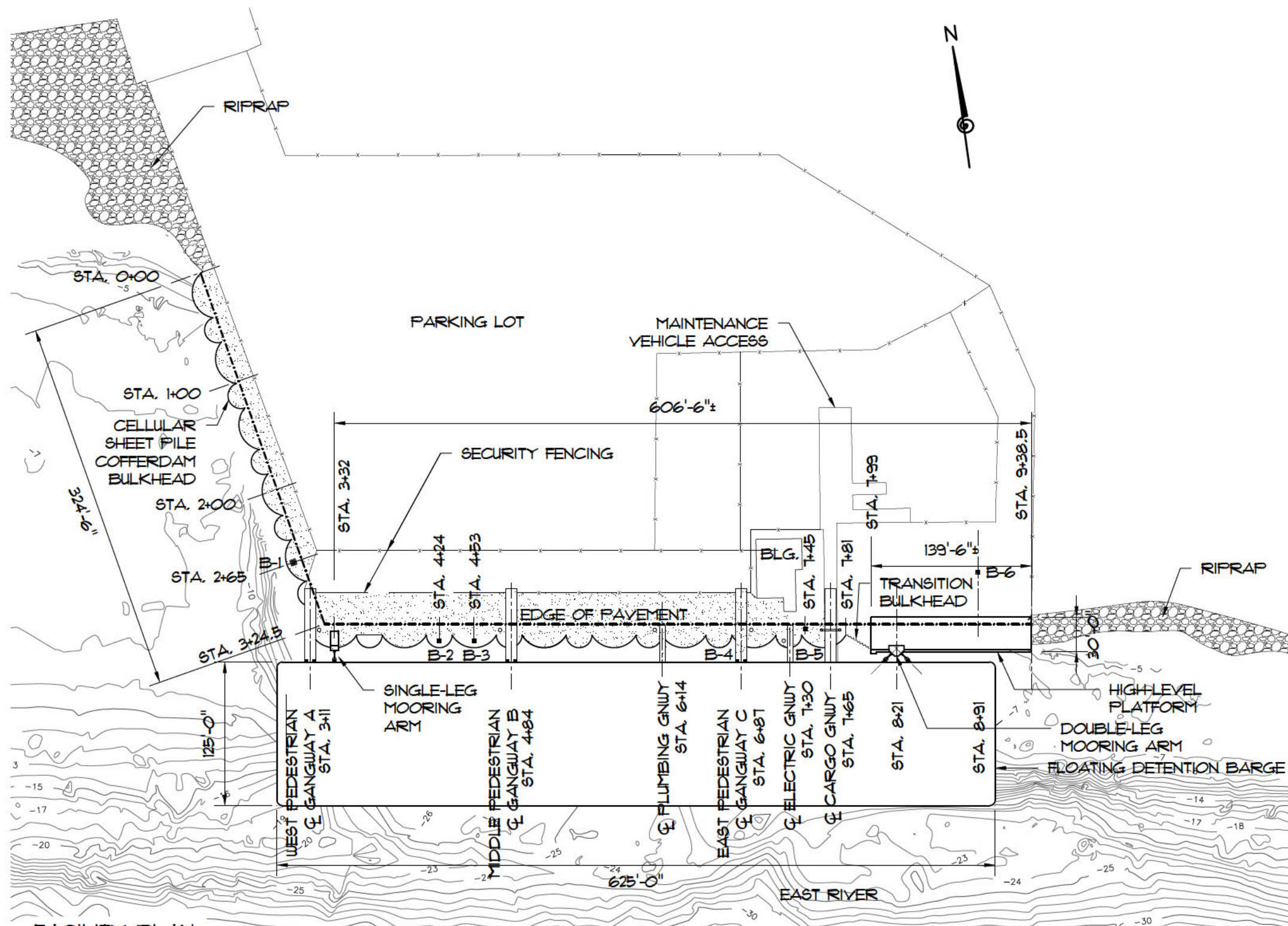
FACILITY PLAN

SCALE: 1"=100'



LEGEND

APPROXIMATE MUDLINE ELEVATION CONTOUR
IN FEET (NAVDS88)



NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
ROUTINE INSPECTION OF
VERNON C. BAINE CENTER
HUNTS POINT, NEW YORK

FACILITY PLAN

FEBRUARY 2024

FIGURE 2-3

3. ROUTINE INSPECTION OF THE CORRECTIONS BULKHEAD

The following subsections provide a discussion of existing configurations, conditions, assessments, and recommendations for each of the systems at the Corrections Bulkhead facility (Facility ID No. 30). Recommended actions are also provided with corresponding opinions of probable construction costs.

The facility is divided into eleven systems as listed in Table 2-1 and depicted in the Facility Plan in Figure 2-2 of the preceding section. The entire site has been marked with station numbers to provide convenient reference points for each system along the shoreline. The overall station is indicated in Figure 2-2. Stationing begins at Sta. 0+00 at the north end of the cellular cofferdam and continues south and then east along the shoreline to facility's end limit at Sta. 9+38.5.

Figures and photographs supplement the narrative descriptions. Figures graphically illustrate the observed conditions and/or element configurations. Color is used to depict the severity of conditions as appropriate.

3.1 CELLULAR COFFERDAM

3.1.1 Description

The cellular steel sheet pile cofferdam serves is approximately 781 ft long as measured along the edge of pavement. In plan, the bulkhead maintains an "L" configuration with its west leg oriented in a north-south direction and south leg oriented in an east-west direction. Stationing is established beginning at the north end of the west leg. It begins at Sta. 0+00 and continues south to approximately Sta. 3+24.5. Stationing then turns an angle of approximately 109°27'10" eastward and continues in a straight line to its end limit at Sta. 7+81.

The bulkhead comprises twenty-five cells of which thirteen are primary cells having a radius of 22'-4". Twelve interstitial cells fit between the primary cells each having a radius of 11'-2". The series of cells are configured such that a linear bulkhead line passes through a common point of tangency along the cells. The cells are numbered in series with Cell 1 located at the east end of the south leg, Cell 15 located at the southwest corner of the intersecting legs, and Cell 25 located at the north end of the west leg. This cell numbering is sequentially opposite the station numbering but is preserved to maintain consistency with previous reports.

The cells are formed using flat steel sheet piles measuring approximately 15½” wide by ½” thick. Available documents do not provide the original sheet pile size, however the sheet profile appears to be consistent with a Bethlehem PS32 sheet pile. Primary cells utilize approximately 37 sheet piles, and interstitial cells utilize approximately 26 steel sheet piles.

The developed length along the perimeter of the cells from Sta. 0+00 to Sta. 7+81 is approximately 1,025 ft. The exposed height of the cells varies from approximately 14 ft to 31 ft above the mudline. Cells 1 to 16 are each fitted with two or three weep holes, approximately 5 in. diameter, immediately above mean low water. The top cut-off elevation of a cell is approximately el. +8.0 (NAVD 88). The cells are filled with crushed stone and topped with a reinforced concrete slab up to the edge of pavement line. Cells 1, 11, 12, and 17 are fitted with a mooring bollard founded on a reinforced concrete footing pad inside the cells. Corner Cell 15 supports an articulated single-leg mooring arm that secures west end of the floating prison barge.

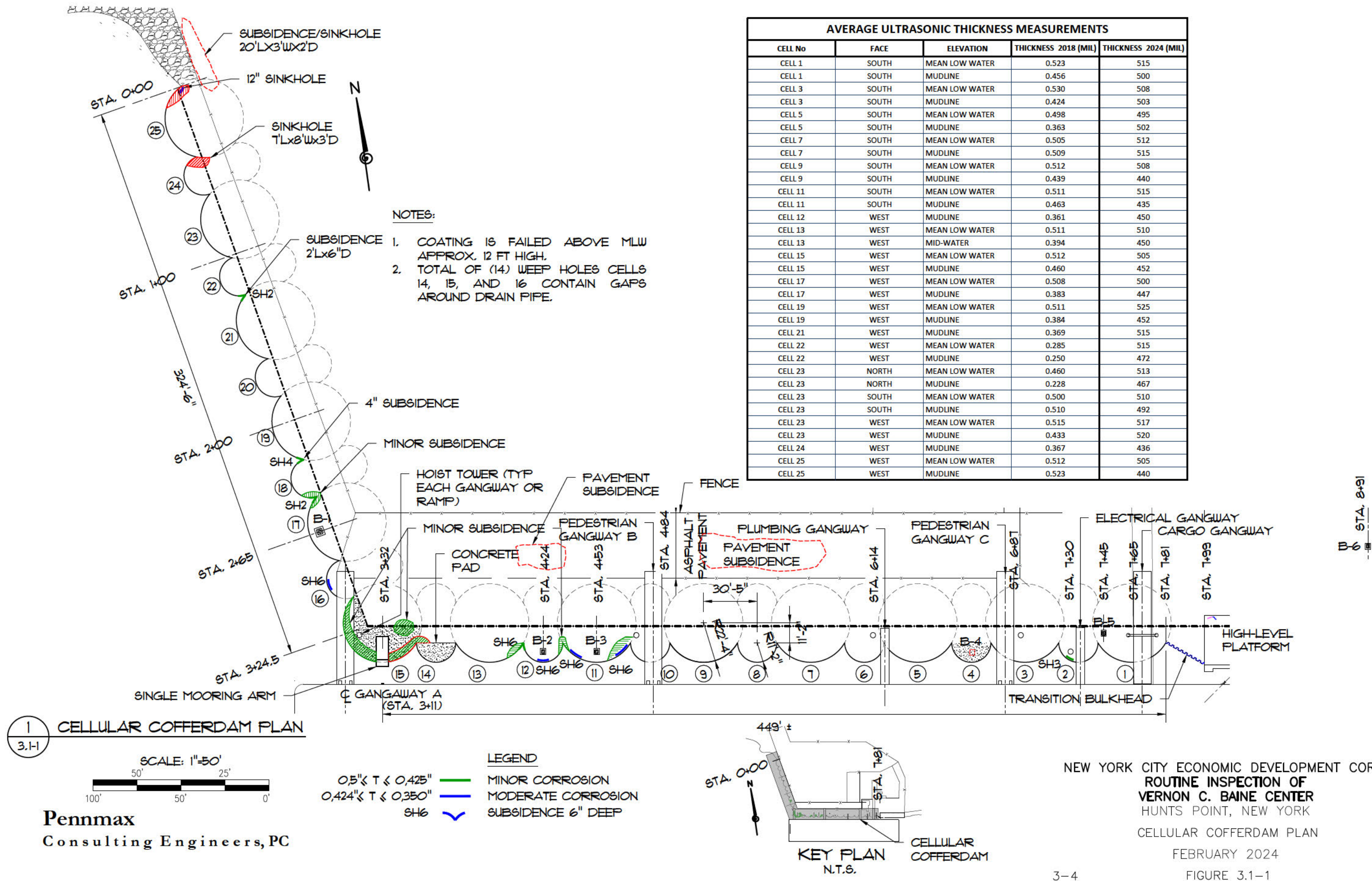
The site contains six bollards to accommodate bow and spring lines for the floating barge. These devices are located through the length of the bulkhead and the high-level platform. The bollards were manufactured by *J.C. MacElroy Co.*, Model Nos. CSB-10A and CSB-4A. Four CSB-10A’s are positioned on Cells 1, 4, 11, and 12. One CSB-4A’s is positioned at Cell 17 and another is positioned at a point located inland from the high-level platform at Sta. 8+91. Each bollard is founded on a 3 ft by 3’-6” reinforced concrete pedestal cast on top of an 18 in. thick reinforced concrete slab within the cells, except that the bollard at Sta. 8+91 is cast on a 30 ft by 30 ft reinforced concrete spread footing. The bollards are numbered B-1 (Cell 17), B-2 (Cell 12), B-3 (Cell 11), B-4 (cell 4), B-5 (Cell 1), and B-6 (Sta. 8+91).

Prior repairs include the added anodes, welded plate patch repairs, and recoating of the steel sheet piles within the tidal zone above mean low water. Each cell is fitted with anodes varying in quantity from two to five anodes per cell. In total the bulkhead is fitted with 89 anodes measuring 7” by 7” by 2 ft long each. Weep holes are visible at low tide along Cells 14, 15 and 16.

Table 3.1-1 provides an asset inventory of the various components comprising the cellular steel sheet pile cofferdam. Figure 3.1-1 provides an overall plan of the Cellular Cofferdam.

Component	Description	Unit	Quantity
Steel Sheet Piles	Flat steel sheet pile PS32 varies in height from 12' to 17' above mudline	EA	793
Anodes	Aluminum bars 7" by 7" by 2 ft long	EA	89
Mooring Devices	Total of (6) MacElroy Bollards: (4) CSB-10A and (2) CSB-4A	EA	6
Deck	Reinforced concrete slab caps a portion of the cells' surface areas to form an inshore pavement edge	LF	781

Table 3.1-1: Asset Inventory of the Cellular Cofferdam



3.1.2 Observed Conditions

The overall condition of the Cellular Cofferdam is **Fair**. Figure 3.1-1 above illustrates an overall plan of the system illustrating the observed conditions. Color is used to graphically indicate the severity of conditions, as applicable.

(A) SHEET PILE CELLS

The steel sheet piles are in **Fair** condition. Prior repairs included installation of 89 anodes below mean low water, various steel plate patches, and application of an epoxy coating on the sheet piles over an approximately 12 ft height above MLW.

All 89 anodes are satisfactorily attached and minimally consumed. The anodes exhibit varying degrees of consumption ranging from approximately 6 percent to 12 percent on average, and a maximum loss of as much as 30 percent at Cells 15 and 16. Below MLW, electric potential difference measurements indicate that the steel sheets are protected from corrosion. Where the steel is coated, the potential difference measurements range from 750 mV to 990 mV, with an average potential difference reading of 928 mV. Where the coating is failed, the potential difference measurements range from 700 mV to 854 mV, with an average potential difference reading of 762 mV. Readings below 850 mV would indicate that the steel may not be protected.

The coal tar epoxy coating within the tidal and splash zones above MHW exhibits minor to moderate material loss as evidenced by areas of peeling and exposed steel with minor corrosion due to pitting. It appears that the coating did not bond well with the underlying substrate. The original coal tar coating is visible below the newer coating. Failure may be due to improper cleaning and surface preparation, inadequate application procedures, insufficient dry-film thickness, and/or possibly inappropriate material specification. The expected life of field-applied should be eight to twelve years, depending on environmental exposure. The coating loss renders the steel susceptible to continued corrosion in the tidal and splash zones.

In general, the corrosion process has been largely arrested below MLW by the cathodic protection provided by the anodes. Assuming a nominal sheet pile thickness of 0.500 in., materials losses range from approximately 3.4 percent to 13 percent on average, and a maximum of approximately 15 percent at Cell 11. Areas of more advanced corrosion exists with as much as approximately 50 percent material loss at several locations

on Cells 22 and 23. This may be due to western exposure to currents and higher wave agitation at shallower water depths. Table 3.1-2 below provides a summary of the steel thickness and electric potential difference measurements for the sheet piles at various cells.

Cell No.	Avg Steel Thickness at MLW (mil)	Avg. Steel Thickness at Mudline (mil)	Average Electric Potential Difference (Ag-Ag-Cl Half Cell)
Cell 1	515	--	--
Cell 1	--	500	--
Cell 3	508	--	867 mV
Cell 3	--	503	--
Cell 5	495	--	--
Cell 5	--	502	--
Cell 7	512	--	944 mV
Cell 7	--	515	--
Cell 9	508	--	--
Cell 9	--	440	--
Cell 11	515	--	980 mV
Cell 11	--	435	--
Cell 12	--	450	--
Cell 13	510	--	--
Cell 13	--	450	--
Cell 15	505	--	988 mV
Cell 15	--	452	990 mV
Cell 17	500	--	--
Cell 17	--	447	--
Cell 19	525	--	750 mV
Cell 19	--	452	--
Cell 21	--	515	--
Cell 22	515	--	--
Cell 22	--	472	--
Cell 23 (North MLW)	513	--	854 mV
Cell 23 (North ML)	--	467	--
Cell 23 (South MLW)	510	--	--
Cell 23 (South ML)	--	492	--
Cell 23 (West MLW)	517	--	--
Cell 23 (West ML)	--	520	--
Cell 24	--	436	--
Cell 25	505	--	--
Cell 25	--	440	--
Average	510	472	910 mV

Table 3.1-2: Summary of UTM and CP Readings for the Steel Sheet Piles along the Cellular Cofferdam

During periods of low tide, weep holes are visible along Cells 14, 15 and 16. Weep holes have active water flow through them. Gaps typically exist at each weep hole where gravel fill was visible. Table 3.1-3 presents a summary of observed conditions along the Cellular Cofferdam. Photo 3.1-1 and Photo 3.1-2 depict overall views of the cofferdam cells along its west leg. Photo 3.1-3 illustrates coating failure in the MHW splash zone, and Photo 3.1-4 depicts a closeup of pitted steel. Photo 3.1-5 provides an example of the typical coating loss on the interlocking joint knuckles.

Station	Description of Observed Conditions	Unit	Quantity
Sta. 0+00 thru Sta 7+81	Minor corrosion of the steel sheet piles below MLW and along the mudline. Developed length along the perimeter of the cells is approximately 1,034 ft. However, the steel is moderately protected by 89 anodes which exhibit between approx. 3.4% to 13% material loss (on average).	LF	1,034
Sta. 0+00 thru Sta 7+81	Failed coating above MLW over a height of 12 ft with minor to moderate corrosion where steel is exposed. Developed length along the perimeter of the cells is approximately 1,034 ft.	SF	12,408
Cells 14, 15, 16	Gaps around circumference of weep holes: (2) at Cell 14, (8) at Cell 15, (4) at Cell 16	EA	14

Table 3.1-3: Summary of Observed Steel Sheet Pile Conditions along the Cellular Cofferdam



Photo 3.1-1: Overall view of the cellular steel sheet pile cofferdam (west leg) as viewed from Cell 25 looking south. Note the anodes above the water's surface.



Photo 3.1-2: Overall view of the cellular steel sheet pile cofferdam (west leg) as viewed from Cell 15 looking north.



Photo 3.1-3: Example of coating failure in the tidal and splash zones above MHW. Note the interlocking joint knuckles typically exhibit coating failure.



Photo 3.1-4: Closeup view of minor corrosion and pitting where the coating is failed.



Photo 3.1-5: Typical coating failure on interlocking joints in the tidal zone. Note the previously pitted steel below the coating.

(B) MOORING DEVICES

The condition of the six bollards is **Satisfactory**. The bollards contain minor loss of coating with some surface corrosion. All bollards are adequately anchored to the footings, and the anchor bolt pockets are adequately filled. Bollard B-1 on Cell 17 is inaccessible. With the exception of Bollard B-6, mooring lines were not deployed on any of the bollards at the time of the investigation. Table 3.1-4 summarizes the observed bollard conditions. Photo 3.1-6 and Photo 3.1-7 depict Bollards B-1 and B-2 respectively.

Element	Description of Observed Conditions	Unit	Quantity
Mooring Devices	The bollards contain minor loss of coating with some surface corrosion. All bollards are adequately anchored to the footings, and the anchor bolt pockets are adequately filled. Bollard B-1 on Cell 17 is inaccessible. With the exception of Bollard B-6, mooring lines were not deployed on any of the bollards at the time of the investigation.	EA	6

Table 3.1-4: Summary of Observed Mooring Devices Conditions



Photo 3.1-6: Bollard B-1 is inaccessible due to the security fence. Note the typical minor coating loss and surface rust.



Photo 3.1-7: Bollard B-2 exhibits typical minor coating loss with surface rust. Note the anchor bolt pockets are filled.

(C) TOPSIDE

The overall condition of the topside is **Fair**. Several sinkholes and depressions were observed immediately along the top edge of the cofferdam at various locations. Sanitary waste that was previously deposited directly onto the surface of Cells 5, 6, and 7 remains. However, it appears that the sanitary waste line leak was repaired as no new sewage effluent was observed on the deck. The gravel fill along the inboard side of the steel sheet piles exhibit slight subsidence at various stations throughout the length of the cellular cofferdam. The subsidence varies in length and depth as catalogued in Table 3.1-5. These conditions do not appear to be recent developments and may be the result of fill migration from an earlier time prior to the installation of patch repairs. The asphalt pavement exhibits advanced wear and tear, and numerous cracks, depressions, and unevenness to varying degrees throughout the structure. The top of the cells are typically overgrown with moderate to heavy vegetation and plant growth. This condition makes it more difficult to access the bollards and the gangway support frame.

Station	Description of Observed Conditions
Cells 5, 6, and 7	Active sewage effluent was not observed, however past remnant leakage exists.
Sta. 0-10	Depression/sinkhole in asphalt walkway, north of the bulkhead, approximately 20 ft long by 3 ft wide by 2 ft deep along the fence line. Depression is caused by settlement of the adjacent riprap/revetment structure.
Sta. 0+00	Depression/sinkhole in granular fill, approximately 3 ft long by 12 in. deep, caused by lack of closure between the sheet pile cell and the retained fill.
Sta. 0+40	Large sinkhole at the north side of Cell 24 due to fill loss, approximately 7 ft long by 8 ft wide by 3 ft deep.
Sta. 1+22	Slight subsidence in granular fill, approximately 2 ft long by 6 in. deep, along bulkhead sheet piles at intersection of Cells 21 & 22. No holes observed.
Sta. 2+22	Slight subsidence in granular fill, approximately 2 ft long by 4 in. deep, along bulkhead sheet piles at intersection of Cells 18 & 19. No holes observed.
Sta. 2+44	Slight subsidence in granular fill, approximately 2 ft long by 2 in. deep, along bulkhead sheet piles at intersection of Cells 17 & 18. No holes observed.
Sta. 2+90	Depression in gravel along the perimeter of cells 15 and 16 with associated ponding water. Depression is up to 25 ft long by 1.5 ft wide by 6" deep on Cell 15, and approximately 4 ft long on Cell 16. Depression is believed to be related to fill loss through the weep hole penetrations. No corrosion holes were observed.
Sta. 3+45	Depression in gravel on the east side of Cell 15, approximately 4 ft diameter by 9" deep. Depression is believed to be related to fill loss through the weep hole penetrations. No corrosion holes were observed.
Sta. 4+14	Slight subsidence in granular fill, approximately 4 ft long by 6 in. deep, along sheet piles. No holes observed below water.
Sta. 4+24	Subsidence in asphalt overlay, approximately 10 ft wide by 4 in. deep, aligned with centerline of Cell 12. A similar depression was observed at Cell 8. Underwater inspection revealed a slight deflection at mid-height of Cell 12. Deflection is believed to be less and 2 degrees.
Sta. 4+38	Subsidence in granular fill, approximately 6 in. deep, along sheet piles in Cell 11 (west) and Cell 12 (east). No holes observed through sheet pile observed below water.
Sta. 4+68	Subsidence in granular fill, approximately 6 in. deep, along sheet piles in Cell 11 (east). No holes observed through sheet pile observed below water.
Sta. 7+15	Cell 3 is deformed on its east side, possibly from a barge impact during installation.

Table 3.1-5: Summary of Observed Topside Conditions along the Cellular Cofferdam

Table 3.1-6 summarizes the observed topside conditions for the Cellular Cofferdam. Photos 3.1-8 depicts the sinkhole at Cell 24 and Photo 3.1-9 illustrates a typical minor sinkhole along the sheet pile at Cell 21. Photos 3.1-10 and Photo 3.1-11 illustrate sinkholes at Cell 15. Photo 3.1-12 depicts the impact damage to Cell 3. Photo 3.1-13 and Photo 3.1-14 illustrate the pavement condition at Cell 8, and the overgrowth at Cell 6, respectively.

Element	Description of Observed Conditions	Unit	Quantity
Topside	Several sinkholes and depressions were observed immediately along the top edge of the cofferdam at various locations. The gravel fill along the inboard side of the steel sheet piles exhibit varying degrees of subsidence at various stations throughout the length of the system. These conditions do not appear to be recent developments and may be the result of fill migration from an earlier time prior to the installation of patch repairs. The asphalt pavement exhibits advanced wear and tear, and numerous cracks, depressions, and unevenness to varying degrees throughout the structure. The top of the cells are typically overgrown with moderate to heavy vegetation and plant growth. This condition makes it more difficult to access the bollards and the gangway support frame	EA	12

Table 3.1-6: Summary of Observed Topside Conditions of the Cellular Cofferdam



Photo 3.1-8: Sinkhole at the north side of Cell 24, approximately Sta. 0+40.



Photo 3.1-9: Subsidence at the north side of Cell 21 at approximately Sta. 1+22.

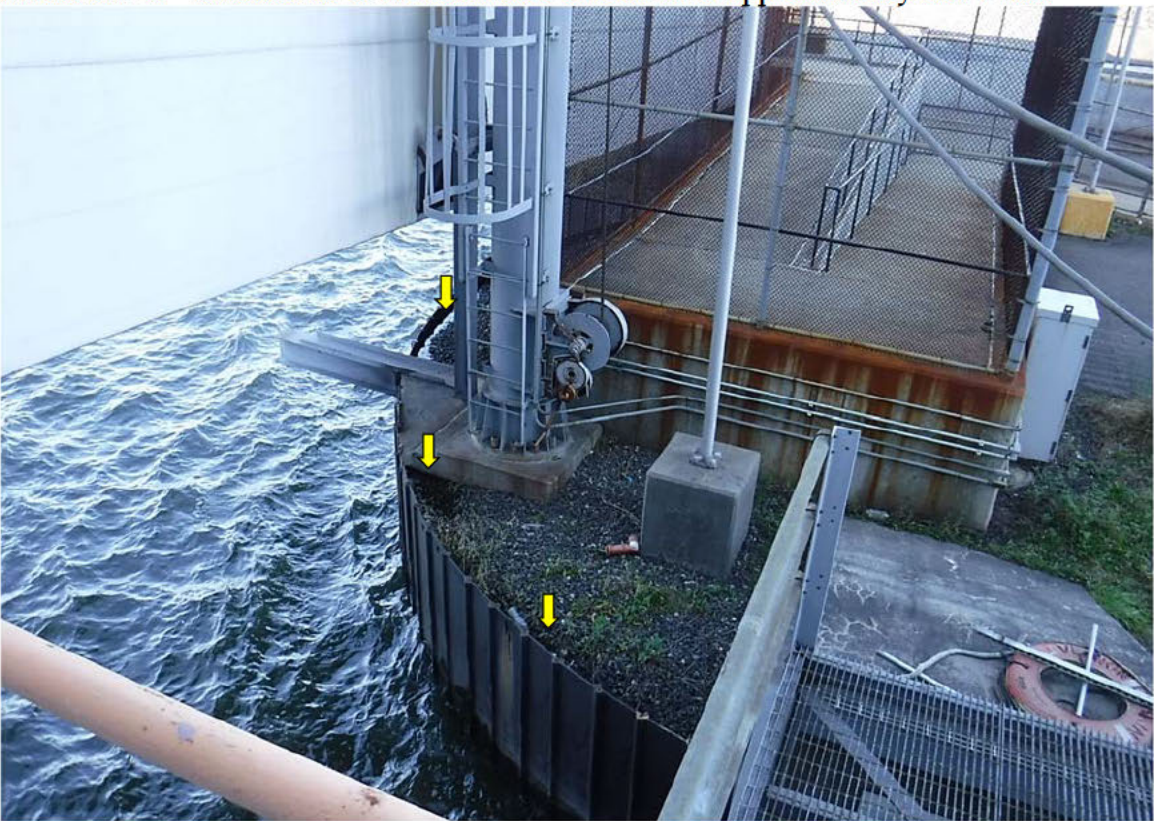


Photo 3.1-10: Various sinkholes along the sheet piles at Cell 15.



Photo 3.1-11: Minor sinkhole at Cell 15.



Photo 3.1-12: East side of Cell 3 is deformed, likely due to barge impact during installation.



Photo 3.1-13: General view of the topside looking west of Cell 4. Note the remnant sanitary waste. The asphalt pavement is generally worn, uneven and contains many cracks. Also note the heavy overgrowth.



Photo 3.1-14: Typical excessive vegetation and overgrowth as shown at Cell 6.

3.1.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection are substantially similar to the observations previously made in the 2018 inspection. The condition of the steel sheets and anodes indicates similar coating loss and corrosion. Coating loss and surface corrosion on the bollards similarly remains the same.

The condition of the topside has degraded somewhat with a deeper and larger sinkhole observed at Cell 24. Other sinkholes and areas of subsidence appear substantially similar to that observed in 2018.

Although the leaked sanitary sewer line has been repaired, the overall condition of the topside finishes have degraded. The asphalt pavement exhibits increased weathering, cracks, and depressions. Excessive overgrowth along the cell topsides inhibit access to the bollards and the gangway support frame.

3.1.4 Further Analysis

The following subsections present an assessment of the system's structural condition, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

The Cellular Cofferdam was likely designed to accommodate reasonably high live loading commensurate with industrial, commercial, or rail marine activities at the Hunt's Point complex. At minimum, design live loads of not less than 500 psf would be anticipated although higher values were not uncommon. The steel sheet piles have undergone some moderate to advanced corrosion, however the interlocking joints appear largely unaffected by the corrosion. Cellular structures of this type should be capable of accommodating an interlocking joint strength of approximately 34 klf. Assuming a steel grade having a yield stress of 36 ksi, a minimum theoretical allowable web thickness 0.12 in. will provide sufficient material to accommodate this value. Although the steel typically exhibits minor to moderate corrosion, sufficient material remains for the system to function as intended by design.

(B) BERTHING ASSESSMENT

The Cellular Cofferdam serves as a permanent berthing facility for the floating detention barge. With regular maintenance the south leg of the cofferdam can

continue to operate in its present function. Although the west leg of the system does not accommodate vessel berthing, it may be possibly to convert its function to accommodate vessel berthing. Depending on vessel size, dredging is likely. In addition, an appropriate fender system and additional mooring devices would be required for a specific design vessel(s). An evaluation of the existing sheet pile tip elevations would be required to determine dredge limitations.

If in the future the floating detention barge is removed, the south leg of the system may be similarly evaluated and converted to accommodate vessel berthing.

(C) RESILIENCY TO COASTAL FLOODING

A coastal resiliency assessment was performed to evaluate the risk of flooding and tidal inundation due to climate change and sea level rise. Assessments were performed in accordance with NYC’s Climate Resiliency Guidelines V4.1 (CRDG) using the resources and “Exposure Screening Tool” contained therein. Assessments are used to inform the scope of requisite resilient design interventions necessary to evaluate the appropriate remedial actions. Table 3.1-7 below summarizes the pertinent elevations¹ used to determine the risk of flooding during the 2020’s epoch (i.e., through 2039), and during the 2080’s epoch (i.e., 2070 through 2099). The assessments are in accordance with the “Climate Resiliency Design Guidelines” (CRDG, v4.1) and the “Climate Risk Information 2019, Observations, Climate Change Projections, and Maps,” prepared by the New York City Panel on Climate Change (NPCC2). The assessments utilize sea level rise projections as provided by NPCC2 for the 90th percentile high-estimate range.

Top of Cellular Cofferdam Elevation (NAVD 88)	MHHW elevation (NAVD 88)	NPCC Projected SLR (90 th percentile) (2020’s)	NPCC Projected SLR (90 th percentile) (2080’s)	FEMA 1% Chance BFE (PFIRM 2015)	Minimum DFE (PFIRM 2015) BFE + 12”	Minimum SLR-Adjusted DFE (2080’s) BFE + 40”
el. +7.0 ft	El. +2.92 ft	10”	58”	el. +15 ft	el. +16.0 ft	el. +18.33 ft
Projected SLR Elevation		el. +3.75 ft	el. +7.75 ft			
Depth of Flooding		3.24 ft above water	(9 in.) below water	(8 ft) below water		

Table 3.1-7: Summary of Pertinent Elevations and Flood Risk Information at the Cellular Cofferdam

¹ All elevations are in feet and are referenced to NAVD 88.

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the Cellular Cofferdam is located in zone AE15 (BFE el. +15.0 ft) and is not subject to wave velocity or overtopping under the theoretical 100-yr storm event. Nevertheless, after accounting for as much as 58” of sea level rise (during the 2080’s epoch) above the present MHHW el. +2.92 ft in the East River, the free surface water level would achieve an elevation of approximately +7.75 ft. Therefore, the topside of the Cellular Cofferdam would be subject to regular nuisance flooding during the 2080’s epoch if sea level rises as predicted. Tidal flooding is not anticipated during the present 2020’s epoch. However, storm flooding of as much as 8 ft should be anticipated with the 100-year storm event.

While the stability of the cofferdam will remain unaffected, severe flooding conditions in the East River would likely result in flood damage to the buildings, ramps, utility systems, and other topside features. The cofferdam itself is inherently “wet floodproofed” allowing floodwaters to flow in and out of the facility without causing significant damage.

The lengths of the “T” guides mounted to the detention barge sides should be evaluated to ensure that the barge will remain engaged during severe flooding. The mooring lines should be deployed and managed (Bollards B-1 to B-6) to secure the detention barge (bow, stern, and spring lines) from excessive excursions in the event the mooring arms fail. The mooring arms and their attachments should be evaluated for strength and stability under these extreme conditions.

Under extreme storm flooding conditions, the mooring lines should be deployed with sufficient slack, and operational protocols should be established to evacuate the facility in an emergency, including temporary relocation of detainees, as the case may be. Utilities should be temporarily disconnected, and gangways should be elevated and secured to the support frame. Alternatively, the detention barge may be disengaged and relocated to a safe site until the storm subsides. Tug-assisted relocation protocols should be established.

3.1.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load

restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly.

Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection.

Table 3.1-8 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean, prepare, and recoat the steel sheet piles above MLW (approximately 12,408 sf of surface area over a developed length of approximately 1,034 ft), and cleaning/recoating 6 bollards.	FY 2027	\$751,190
	Subtotal Priority Actions:		\$751,190
Routine	Fill and reestablish grade at sinkholes and depressions and clear all vegetation/overgrowth.	FY 2026	\$55,609
	Repave worn/damaged pavement surfaces.	FY 2027	\$304,112
	Subtotal Routine Actions:		\$359,721
TOTAL FOR THE CELLULAR COFFERDAM:			\$1,110,911

Table 3.1-8: Summary of Recommended Actions and Cost Estimate for Repairs of Cellular Cofferdam

(A) IMMEDIATE ACTIONS

Immediate action is not required at this time.

(B) PRIORITY ACTIONS

The steel sheet piles above MLW should be cleaned, prepared, and recoated using an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate marine-based epoxy coal tar coating material designed for aggressive marine environments, and which can be applied below water, should be specified. Proper surface preparation is important to ensure a clean substrate and ensure good bond. Both hydroblasting and mechanical cleaning methods should be employed. The activity will require high quality control measures during the application of the coating. The coating should extend several feet below MLW as applied by divers.

(C) ROUTINE ACTIONS

Routine actions call for reestablishing the topside surfaces. Removing all deleterious materials, debris, waste, and cutting back overgrowth is necessary to maintain a fully accessible surface. Sinkholes and depressed areas should be filled with gravel and leveled.

The asphalt pavement along the bulkhead may be stripped and a new pavement overlay may be installed in-kind. For the purpose of estimation, replacement is assumed over an area of approximately 10,500 sf (within the fenced area between Cells 3 and 15). The work involves stripping and scarifying the existing pavement and installing a 2 in. topping course, and a 4 in. binder course over an assumed gravel drainage course.

3.2 TRANSITION BULKHEAD

3.2.1 Description

The Transition Bulkhead extends approximately 19'6" between the east end of Cellular Cofferdam's Cell 1 at Sta. 7+81 and the west end of the High-Level Platform at Sta. 7+99, where it joins with the cut-off wall of the High-Level Platform. The sheet pile size is unknown, but based on field observations it appears to conform with an older "HOESCH box-shaped" profile. Evidence of a tieback system was not observed. The sheet piles are fitted with two aluminum anodes below the MLW line measuring 7" by 7" by 2 ft long each. The sheet piles are capped with a reinforced concrete pile cap measuring approximately 2'6" high by 3 ft wide. Table 3.2-1 below provides an asset inventory of the Transition Bulkhead.

Component	Description	Unit	Quantity
Sheet Piles	Unknown steel sheet pile size conforming to a "HOESCH box-shaped" profile.	LF	~20
Anodes	The bulkhead is fitted with 2 anodes measuring 7" by 7" by 2 ft long each.	EA	2
Pile Cap	Reinforced concrete approximately 2'6" high by 3 ft wide	LF	~20

Table 3.2-1: Asset Inventory of the Transition Bulkhead

3.2.2 Observed Conditions

The overall condition of the Transition Bulkhead is **Fair**. Figures 3.3-1 in Section 3.3 below illustrate a plan of the system in relation to the High-Level Platform. Color is used to graphically indicate the severity of observed conditions, as appropriate.

(A) SHEET PILES

The overall condition of the sheet piles is **Fair**. The sheet piles between Sta. 7+81 and Sta. 7+99 connect to the adjacent cut-off wall for the High-Level Platform. The bulkhead contains three anodes positioned below MLW. The anodes exhibit approximately 10 percent to 15 percent consumption. The coating below the water and in the tidal zone exhibits minor peeling with some corrosion at isolated locations. It appears that the coating did not fully bond with the underlying substrate. The original coal tar coating is visible below a more recently applied coating layer. This may be due to insufficient cleaning and surface preparation, inadequate application procedures, insufficient dry-film thickness, and/or possibly inappropriate material specification. The expected life of field-applied should be ten to twelve years, depending on the severity of exposure. An electric potential difference measurement was taken at approximately Sta. 7+90, yielding a reading of 638 mV. Readings below 850 mV would indicate that uncoated steel may not be effectively protected. The accuracy of this reading is questionable since this portion of the wall contains three anodes with approximately 85 percent to 90 percent remaining material.

In the splash zone above MHW, the coating has completely failed and exhibits moderate to advanced corrosion. This zone is highly susceptible to regular continuous cyclical wetting and oxidation that promotes more aggressive corrosion. Table 3.2-2 summarizes the observed conditions. Photo 3.2-1 depicts an overall view of the Transition Bulkhead at MLW, and Photo 3.2-2 provides a closeup of the steel corrosion in the splash zone above MHW.

Element	Description of Observed Conditions	Unit	Quantity
Sheet Piles Sta. 7+81 thru Sta 7+99	Complete coating loss with minor to moderate corrosion of the steel sheet piles above MLW. Aggressive corrosion exists in the splash zone above MHW.	LF	20

Table 3.2-2: Summary of Observed Sheet Pile Conditions at the Transition Bulkhead



Photo 3.2-1: Overall view of the Transition Bulkhead sheet piles at MLW. Note two anodes protrude above the waterline.



Photo 3.2-2: Closeup view of the moderate to advanced corrosion of the sheet piles in the splash zone above MHW.

(B) PILE CAP

The overall condition of the pile cap is **Satisfactory**. The concrete surfaces are solid, smooth, and do not exhibit cracks, spalls, or other forms of deterioration or distress. Table 3.2-3 summarizes the observed gabion retaining wall conditions. Photo 3.2-3 through Photo 3.2-7 depict the various typical conditions of the gabion retaining walls.

Element	Description of Observed Conditions	Unit	Quantity
Pile Cap Sta. 7+81 thru Sta 7+99	The concrete surfaces are solid, smooth, and do not exhibit cracks, spalls, or other forms of deterioration or distress.	LF	20

Table 3.2-3: Summary of Observed Pile Cap Conditions at the Transition Bulkhead



Photo 3.2-3: Elevation view of the concrete pile cap at the Transition Bulkhead.

(C) TOPSIDE

The overall condition of the topside at the Transition Bulkhead is **Fair**. The surface is unpaved and consists of fill. The fill contains vegetation and overgrowth. Sinkholes indicative of fill loss through the bulkhead were not observed. Table 3.2-4 below summarizes the observed conditions.

Element	Description of Observed Conditions	Unit	Quantity
Topside Sta. 7+81 thru Sta 7+99	The surface is unpaved and consists of fill. The fill contains vegetation and overgrowth. Sinkholes indicative of fill loss through the bulkhead were not observed.	LF	20

Table 3.2-4: Summary of Observed Topside Conditions at the Transition Bulkhead

3.2.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection are substantially similar to the observations previously made in the 2018 inspection. Although degradation has continued, the degree of additional coating loss and corrosion is not significant.

3.2.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

Record as-built construction were not discovered during the preparation of this report. The Transition Bulkhead was likely designed to accommodate reasonably high live loading commensurate with industrial, commercial, or rail marine activities at the Hunt's Point complex. The sheet piles of the Transition Bulkhead appear to be remnant from an older construction and repurposed to its present function. The concrete pile cap was installed more recently, likely at the same time when the High-Level Platform was constructed. At minimum, design live loads of not less than 500 psf would be anticipated although higher values were not uncommon. The steel sheet piles have undergone some moderate to advanced corrosion, however the interlocking joints appear largely unaffected by the corrosion. The bulkhead does not exhibit lateral displacement or distress and can continue to function as intended by design.

(B) BERTHING ASSESSMENT

Berthing requirements for this structure are not applicable.

(C) RESILIENCY TO COASTAL FLOODING

A coastal resiliency assessment was performed to evaluate the risk of flooding and tidal inundation due to climate change and sea level rise. Assessments were performed in accordance with NYC's Climate Resiliency Guidelines v4.1 (CRDG) using the resources and "Exposure Screening Tool" contained therein. Assessments are used to inform the scope of requisite resilient design interventions necessary to evaluate the appropriate remedial actions. Table 3.2-5 below summarizes the pertinent elevations² used to determine the risk of flooding during the 2020's epoch (i.e., through 2039), and during the 2080's epoch (i.e., 2070 through 2099). The assessments are in accordance with the "Climate Resiliency Design Guidelines" (CRDG, v4.1) and the "Climate Risk Information 2019, Observations, Climate Change Projections, and Maps," prepared by the New York City Panel on Climate Change (NPCC2). The assessments utilize sea level rise projections as provided by NPCC2 for the 90th percentile high-estimate range.

Top of Pile Cap (NAVD 88)	MHHW elevation (NAVD 88)	NPCC Projected SLR (90 th percentile) (2020's)	NPCC Projected SLR (90 th percentile) (2080's)	FEMA 1% Chance BFE (PFIRM 2015)	Minimum DFE (PFIRM 2015) BFE + 12"	Minimum SLR-Adjusted DFE (2080's) BFE + 40"
el. +7.0 ft	El. +2.92 ft	10"	58"	el. +15 ft	el. +16.0 ft	el. +18.33 ft
Projected SLR Elevation		el. +3.75 ft	el. +7.75 ft			
Depth of Flooding		3.24 ft above water	(9 in.) below water	(8 ft) below water		

Table 3.2-5: Summary of Pertinent Elevations and Flood Risk Information at the Transition Bulkhead

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the Transition Bulkhead is located in zone AE15 (BFE el. +15.0 ft) and is not subject to wave velocity or overtopping under the theoretical 100-yr storm event. Nevertheless, after accounting for as much as 58" of sea level rise (during the 2080's epoch) above the present MHHW el. +2.92 ft in the East River, the free surface water level

² All elevations are in feet and are referenced to NAVD 88.

would achieve an elevation of approximately +7.75 ft. Therefore, the topside of the bulkhead would be subject to regular nuisance flooding during the 2080's epoch if sea level rises as predicted. Tidal flooding is not anticipated during the present 2020's epoch. However, storm flooding of as much as 8 ft should be anticipated with the 100-year storm event.

While the stability of the bulkhead will remain unaffected, severe flooding conditions in the East River would likely result in flood damage to the buildings, ramps, utility systems, and other topside features. The bulkhead itself is inherently "wet floodproofed" allowing floodwaters to flow in and out of the facility without causing significant damage.

3.2.5 Recommendations

The urgencies of repairs are rated as "immediate," "priority," and "routine." Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly.

Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection.

Table 3.2-6 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and recoat steel sheet piles above MLW between Sta. 7+81 and Sta. 7+99. Recoat an area of approximately 240 sf.	FY 2027	\$87,801
	Subtotal Priority Actions:		\$87,801
Routine	Routine Action is not required.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR TRANSITION BULKHEAD:			\$87,801

Table 3.2-6: Summary of Recommended Actions and Cost Estimate for Repairs of the Transition Bulkhead

(A) IMMEDIATE ACTIONS

Immediate action is not required at this time.

(B) PRIORITY ACTIONS

The surface of steel sheet piles above MLW should be hydro-blasted, prepared, and recoated using an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate epoxy-based bitumastic or coal tar marine grade material designed for in-water application should be selected and applied to achieve a minimum dry-film thickness of 16 mil to 24 mil. The activity will require high quality control measures during application of the coating. The proposed repairs should commence within the next three years.

(C) ROUTINE ACTIONS

Immediate action is not required at this time.

3.3 HIGH-LEVEL PLATFORM

3.3.1 Description

The high-level platform (HLP) is located at the east end of the site between Sta. 7+99 and Sta. 9+38.5. The platform measures approximately 140 ft long by 30 ft wide. It was constructed circa 2005 to replace an older low-level relieving platform. The HLP platform comprises a total of 48 steel pipe plumb piles arranged in nine pile bents. Each bent typically contains five 9½” OD steel pipe piles, and the bents are spaced approximately 16 ft (Bents 1 to 7) and 20 ft (Bents 7 to 9). Bent 8 is configured differently in that the pile cap at its outboard end frames around an older pile cap that independently supports a double-leg mooring arm. Eight piles are utilized to support Bent 8.

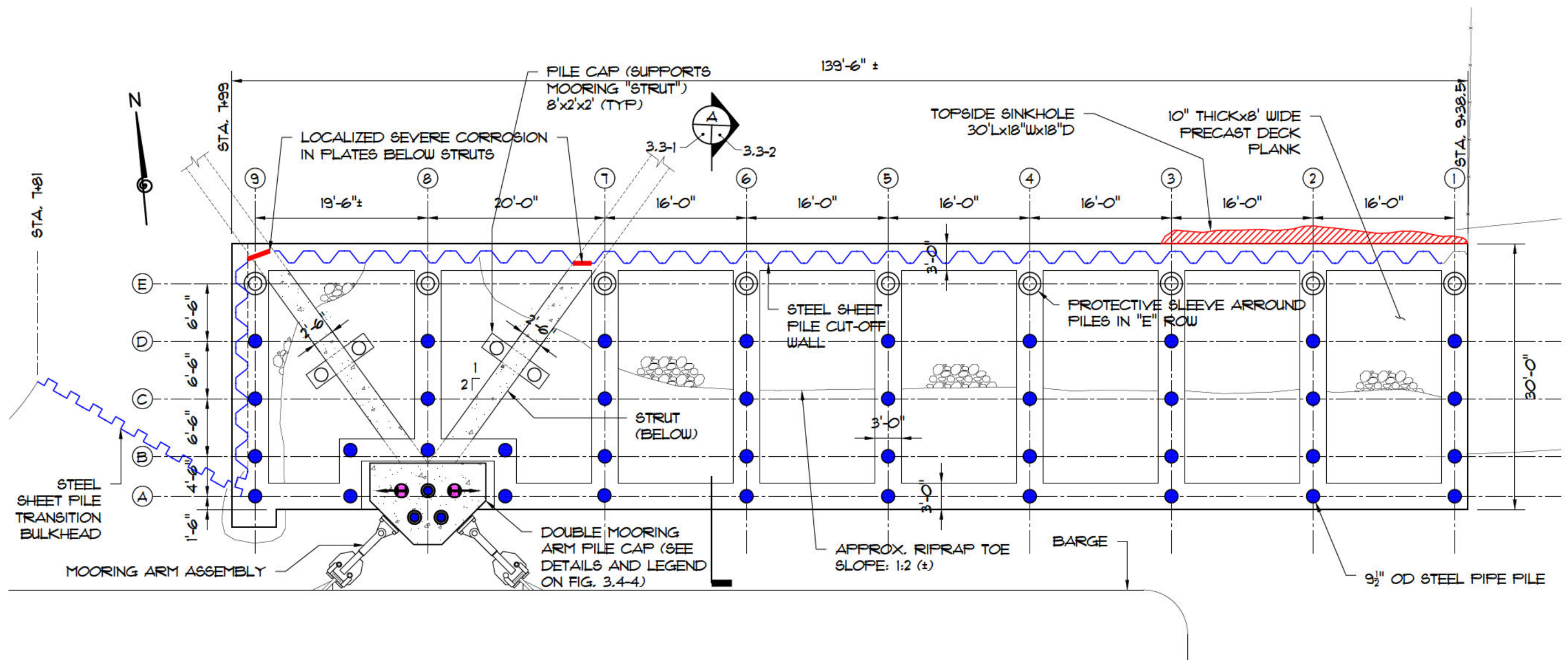
A reinforced concrete edge beam monolithically frames into the ends of the pile caps along the offshore length of the platform. The pile caps measure approximately 36 in. wide by 30 in. high, however, the edge beam measures approximately 36 in. wide by 50 in. high, since it projects above the top of the pile cap approximately 20 in. The deck is constructed of 10 in. thick by 8 ft wide precast concrete planks. The deck planks are topped with 2 in. of asphalt.

The cut-off wall is formed using steel sheet piles capped with a 36 in. wide reinforced concrete pile cap. The sheet pile size is unknown, but it appears to conform to an AZ13-700 profile. A riprap berm is placed against the face of the cut-off wall throughout its length except that it is missing at Bent 7 presumably to accommodate the double-leg mooring arm assembly. The cut-off wall typically runs in an east-west direction along the inboard side of the platform. However, it turns toward the north at its western corner where it continues to the outboard side of the platform and joins with the Transition Bulkhead's sheet pile.

Table 3.3-1 below provides an asset inventory of the High-Level Platform. Figure 3.3-1 provides a pile and pile cap plan, while Figure 3.3-2 illustrates a typical cross-section of the system. The figure also provides a plan of the Transition Bulkhead limits.

Component	Description	Unit	Quantity
Piles	Steel pipe 9½" OD varying in exposed length from 3 ft to 12 ft.	EA	48
Pile Caps	Reinforced concrete bents comprising 36" wide by 30" high.	EA	9
Edge Beam	Reinforced concrete 36" wide by 50" high.	LF	140
Sheet Pile Cut-Off Wall	Cut-Off wall assumed AZ13-700.	LF	170
Deck	Precast concrete 10 in. thick by 8 ft wide with a 2" asphalt topping.	SF	4,200

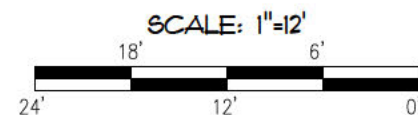
Table 3.3-1: Asset Inventory of the High-Level Platform



1
3.3-1
FILE AND PILE CAP PLAN
HIGH-LEVEL PLATFORM

NOTE:

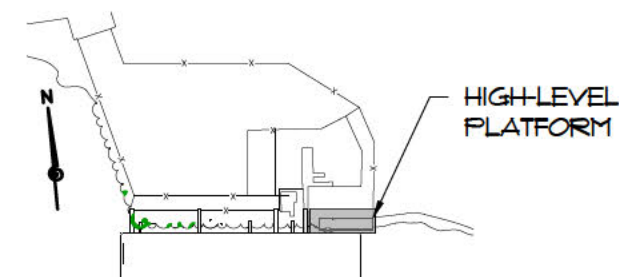
1. SHEET PILE CUT-OFF WALL AND TRANSITION BULKHEAD EXHIBIT COATING FAILURE AND MINOR CORROSION ABOVE MLW.
2. TOPSIDE PAVEMENT IS HEAVILY WORN AND CONTAINS MULTIPLES CRACKS.



LEGEND

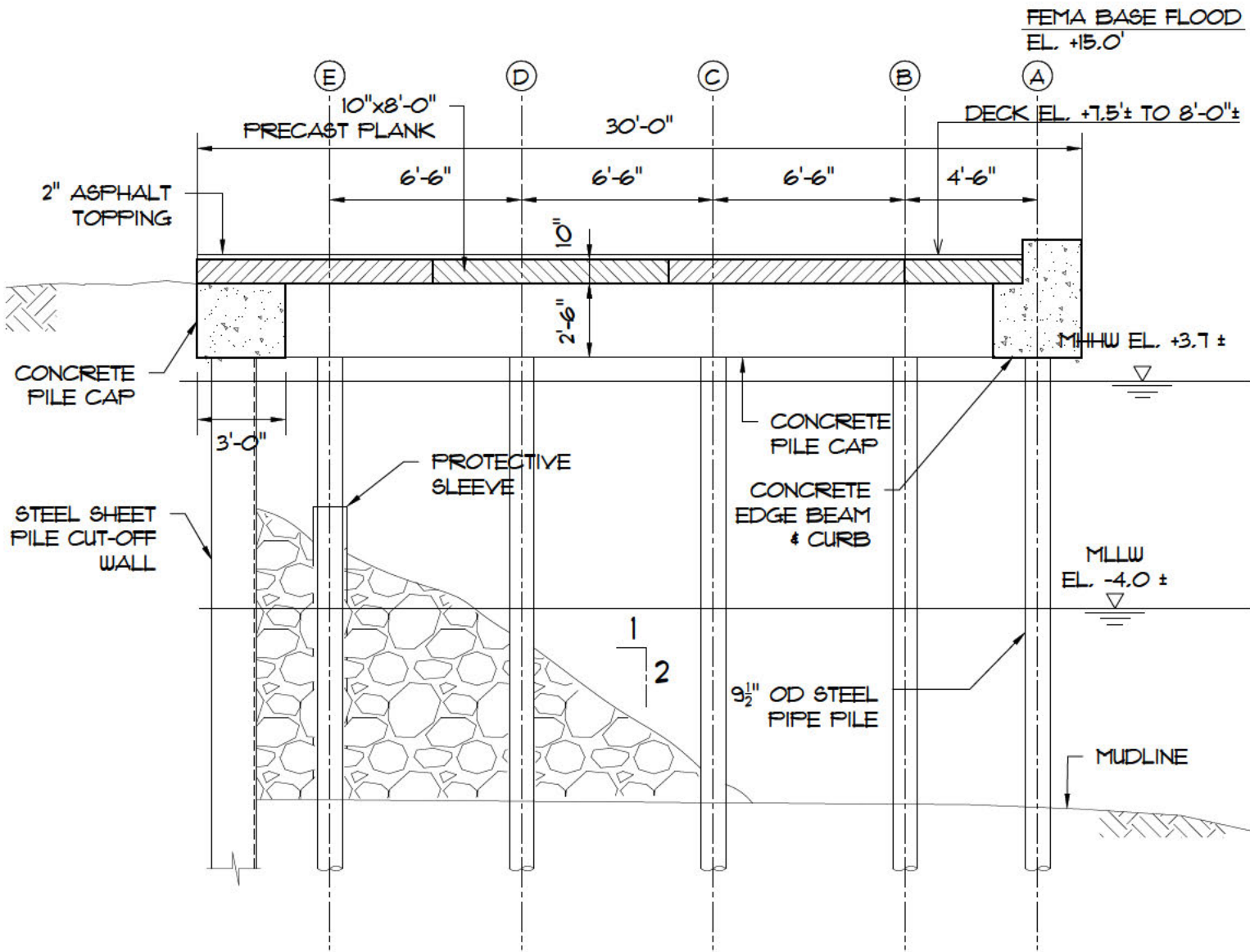
- SEVERE COATING LOSS WITH MINOR TO MODERATE CORROSION OF STEEL IN TOP 3 FT TO 4 FT OF PILE.

CONDITIONS RATING



KEY PLAN
N.T.S.

NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
ROUTINE INSPECTION OF
VERNON C. BAINE CENTER
HUNTS POINT, NEW YORK
PILE AND PILE CAP PLAN
HIGH-LEVEL PLATFORM
FEBRUARY 2024



A TYPICAL CROSS-SECTION
3.3-2 HIGH LEVEL PLATFORM



NOTE:
ALL ELEVATIONS REFER TO NAVD88

NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
ROUTINE INSPECTION OF
VERNON C. BAINE CENTER
HUNTS POINT, NEW YORK

Penmax
Consulting Engineers, PC

TYPICAL CROSS-SECTION
HIGH LEVEL PLATFORM

FEBRUARY 2024
FIGURE 3.3-2

3.3.2 Observed Conditions

The overall condition of the High-Level Platform is **Fair**. The following subsections describe the condition of the platform's components. Figures 3.3-1 and 3.3-2 provide graphical illustrations of the structural configurations and conditions. Use of color in the figures indicates the severity of observed conditions.

(A) PILES

The overall condition of piles is **Fair**. All piles exhibit minor coating loss in the tidal zone, and complete coating loss in the splash zone above MHW. The unprotected steel in the splash zone exhibits moderate corrosion throughout the platform.

In the vicinity of MLW, the remaining steel thickness maintains an average thickness of 0.477 in., which corresponds to an average cross-sectional material loss (SXL) of approximately 4.6 percent. The nominal steel pipe thickness is 0.50 in., consistent with a standard Sch. 80 pipe. In the tidal zone, the remaining average steel thickness is approximately 0.475 in., which corresponds to an average cross-sectional material loss of approximately 5 percent. In the splash zone (above MHW), the remaining average steel thickness is approximately 0.420 in., which corresponds to an average cross-sectional material loss of approximately 16 percent. No material losses were observed below MLW. Electric potential difference measurement readings were not taken on the piles since the coating below MLW remains largely intact.

All 48 piles supporting the high-level platform received a damage grade of “moderate” due to the more aggressive corrosion in the splash zone. The nine piles along the “E” row were mostly not visible due to a protective sleeve. This tube largely inhibits full inspection of these piles. The annular space between the pile and the tube is not filled. Piles in the “C” through “E” rows contain isolated areas of coating loss attributable to the placement of a riprap berm along the sheet pile cut-off wall. The coating remains intact below MLW except where there is abrasion due to riprap in the “C” through “E” rows. None of the piles are protected with anodes below MLW.

Table 3.3-2 below provides a summary of the average steel thicknesses at various elevations with the corresponding average cross-sectional material loss percentages for a number of the steel pipe piles.

Pile Designation or Station	Avg Steel Thickness at MLW (mil)/SXL	Avg. Steel Thickness at Tidal or Splash Zone (mil)/SXL	Average Electric Potential Difference (Ag-Ag-CI Half Cell)
1B	483 / 3.4% SXL	--	--
2E	--	420 (SZ) / 16% SXL	--
3C	480 / 4.2% SXL	--	--
5A	473 / 5.4% SXL	--	--
7B	--	472 (TZ) / 5.6% SXL	--
7D	475 / 5% SXL	--	--
Sta. 7+90	--	--	638 mV
9C	--	478 (TZ) / 4.4% SXL	--
9C	475 / 5% SXL	--	--
Average	477 / 4.6% SXL	457 / 8.6% SXL	638 mV

Table 3.3-2: Summary of UTM and CP Readings of the Steel Pipe Piles at the High-Level Platform

Table 3.3-3 summarizes the observed conditions for the steel pipe piles at the High-Level Platform. Photo 3.3-1 depicts the typical condition of the steel pipe piles in the tidal and splash zones, and Photo 3.3-2 provides an example of a protective pile sleeve along the “E” row. Photo 3.3-3 illustrates typical minor coating loss in the tidal zone.

Element	Description of Observed Conditions	Unit	Quantity
Steel Pipe Piles	All piles exhibit minor coating loss in the tidal zone, and complete coating loss in the splash zone above MHW. The unprotected steel in the splash zone exhibits moderate corrosion throughout the platform. All 48 piles supporting the high-level platform received a damage grade of “moderate” due to the more aggressive corrosion in the splash zone.	EA	48

Table 3.3-3: Summary of Observed Steel Pipe Pile Conditions at the High-Level Platform



Photo 3.3-1: Typical condition of the steel pipe piles in the tidal and splash zones.



Photo 3.3-2: Example of a protective pile sleeve along the "E" row.



Photo 3.3-3: Typical minor coating loss in the tidal zone.

(B) PILE CAPS

The overall condition of the pile caps is **Satisfactory**. The concrete is smooth, solid, and sound when struck with a hammer. The concrete does not contain cracks, spalls, erosion, or any form of distress. Table 3.3-4 summarizes this observation. Photo 3.3-1 above depicts the typical condition of a pile cap, while Photo 3.3-4 below depicts the typical condition of the edge beam.

Element	Description of Observed Conditions	Unit	Quantity
Pile Caps	The concrete is smooth, solid, and sound when struck with a hammer. The concrete does not contain cracks, spalls, erosion, or any form of distress.	EA	9 Bents

Table 3.3-4: Summary of Observed Pile Cap Conditions at the High-Level Platform



Photo 3.3-4: Elevation view of the edge beam along the High-Level Platform.

(C) DECK UNDERSIDE

The overall condition of the precast deck plank underside is **Satisfactory**. The concrete is smooth, solid, and sound when struck with a hammer. The concrete does not contain significant cracks, spalls, erosion, efflorescence, or any form of distress. Table 3.3-5 summarizes this observation. Photo 3.3-5 depicts the typical condition of the deck underside.

Element	Description of Observed Conditions	Unit	Quantity
Deck Underside	The concrete is smooth, solid, and sound when struck with a hammer. The concrete does not contain significant cracks, spalls, erosion, efflorescence or any form of distress	SF	~3,120

Table 3.3-5: Summary of Observed Deck Underside Conditions of the High-Level Platform



Photo 3.3-5: Typical condition of the precast concrete deck underside.

(D) SHEET PILE CUT-OFF WALL

The overall condition of the steel sheet pile cut-off wall is **Fair**. Many of the sheet piles are covered by a riprap berm and only the top 3 ft or 4 ft of the sheets are typically exposed in the tidal and splash zones. All accessible sheet piles exhibit minor coating loss in the tidal zone, and complete coating loss in the splash zone above MHW. The unprotected steel in the splash zone exhibits moderate to advanced corrosion throughout the platform.

In the vicinity of MLW, the average remaining steel thickness maintains an average thickness of 0.323 in., which corresponds to an average material loss (SXL) of approximately 14 percent. The nominal sheet thickness is 0.375 in. In the tidal and splash zones, the remaining average steel thickness is approximately 0.278 in., which corresponds to an average material loss of approximately 26 percent. Electric potential difference measurements were not taken on the sheet piles since the cut-off wall was largely inaccessible below MLW. Where accessible, the coating remains largely intact. Anodes were not observed.

The riprap berm is minimal at locations where the concrete struts for the double-leg mooring arm passes through the cut-off wall (between Bents 7 and 9). At these locations a steel plate bridges the gap between the sheet piles below the struts. The plate below the east strut contains localized severe corrosion with more than 50 percent loss of material thickness. Similarly, the plate below the west strut contains localized severe corrosion and a corrosion hole with a void behind the plate was observed.

Table 3.3-6 below provides a summary of the average steel thicknesses at various locations with the corresponding average material loss percentages.

Bent	Avg Steel Thickness at MLW (mil)/SXL	Avg. Steel Thickness at Tidal or Splash Zone (mil)/SXL
4	--	300 (SZ) / 20.0% SXL
4	--	293 (TZ) / 21.9% SXL
7	--	240 (MHW) / 36.0% SXL
7	323 / 13.9% SXL	--
Average	323 / 13.9% SXL	278 / 25.9 SXL

Table 3.3-6: Summary of UTM and CP Readings of the Steel Sheet Pile Cut-off Wall at the High-Level Platform

Table 3.3-7 summarizes the observed conditions. Photo 3.3-6 and Photo 3.3-7 depict the various conditions observed along the cut-off wall.

Element	Description of Observed Conditions	Unit	Quantity
Sheet Pile Cut-off Wall	Many of the sheet piles are covered by a riprap berm and only the top 3 ft or 4 ft of the sheets are typically exposed in the tidal and splash zones. All accessible sheet piles exhibit minor coating loss in the tidal zone, and complete coating loss in the splash zone above MHW. The unprotected steel in the splash zone exhibits moderate to advanced corrosion throughout the platform. The plate below the east strut contains localized severe corrosion with more than 50 percent loss of material thickness. Similarly, the plate below the west strut contains localized severe corrosion and a corrosion hole with a void behind the plate was observed.	LF	170

Table 3.3-7: Summary of Observed Steel Sheet Pile Cut-Off Wall Conditions at the High-Level Platform



Photo 3.3-6: Typical coating loss and corrosion of the sheet pile cut-off wall in the splash zone.



Photo 3.3-7: Severe localized corrosion and corrosion hole in steel plate below the west strut of the double-bit mooring arm. Note the void through the hole.

(E) TOPSIDE

The overall condition of the high-level platform topside is **Poor**. The asphalt surface contains multiple longitudinal and transverse cracks throughout, with some cracks containing vegetation. The surface is moderately worn or weathered and uneven. It appears that the deck elevation slopes down from west to east in order to accommodate changes in grade.

Between Bents 1 and 3, various depressions and sinkholes developed immediately inboard of the cut-off wall. The sinkhole measures approximately 30 ft long by 18 in. wide by as much as 18 in. deep. Because the sheet piles are obstructed by riprap, it is unknown if fill has migrated through corrosion holes.

Further inland the grade is unpaved and overgrown with vegetation. The vegetation obstructs clear access to Bollard B-6.

Table 3.3-8 summarizes the observed conditions along the topside of the High-Level Platform. Photo 3.3-8 provides an overall view of the topside, and Photo 3.3-9 depicts the sinkhole at the inboard end of the platform between Bents 1 and 3.

Element	Description of Observed Conditions	Unit	Quantity
Topside at the HLP	The asphalt surface contains multiple longitudinal and transverse cracks throughout, with some cracks containing vegetation. The surface is moderately worn or weathered and uneven. Between Bents 1 and 3, various depressions and sinkholes developed immediately inboard of the cut-off wall. The sinkhole measures approximately 30 ft long by 18 in. wide by as much as 18 in. deep. Because the sheet piles are obstructed by riprap, it is unknown if fill has migrated through corrosion holes. Further inland the grade is unpaved and overgrown with vegetation. The vegetation obstructs access to Bollard B-6.	SF	4,200

Table 3.3-8: Summary of Observed Topside Conditions at the High-Level Platform



Photo 3.3-8: Overall view of the topside looking west. The pavement contains multiple cracks, excessive weathering, and the surface is uneven.



Photo 3.3-9: Sinkhole between Bents 1 and 3, approximately 18 in. deep.

3.3.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection are substantially similar to the observations previously made in the 2018 inspection. However, several components have been downgraded. Specifically, the steel pipe piles exhibit moderate corrosion in the splash zone and their component rating has been downgraded to moderate condition. Similarly, the steel sheet pile cut-off wall component rating has been downgraded to moderate condition. The condition of the topside has been downgraded to Poor due to excessive weathering, cracking, overgrowth, and unevenness. The sinkhole appear larger than previously observed in 2018. Overall, the High-Level Platform remains in Fair condition.

3.3.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

Record as-built drawings were not discovered during the preparation of this report. However, a live load capacity estimate can be made based on an assumed axial capacity of the piles and their tributary area. The piles are 9½" OD steel pipe which are assumed driven to rock, as is the case for the piles supporting the mooring arms. Assuming an allowable rock bearing capacity of 40 tsf (medium rock Class 1b), an allowable compressive axial capacity of approximately 40 kips may be computed. The typical tributary area of a pile is 16 ft long by 6'-6" wide (104 sf). Hence the total allowable gravity load is computed to be approximately 385 psf. The dead load of the platform is estimated to be approximately 215 psf. Therefore, the maximum allowable uniform live load capacity of the platform is estimated at approximately 170 psf as governed by pile bearing. Note that elastic stability and material strength of the piles are assumed non-governing by inspection since the piles are assumed to be filled with concrete and the exposed lengths are relatively short.

Insufficient information exists regarding the reinforcing arrangement for the pile caps and deck. However, assuming a minimum flexural reinforcement ratio of 0.0035 for unreinforced concrete, a concrete compressive stress of $f'_c = 5,000$ psi, and a steel yield strength of 60 ksi, we can approximate allowable live load capacity as governed by the pile

cap or deck plank. Assuming a flexural depth of “d” equal to 18” and 8” for the pile cap and deck plank, respectively, we estimate allowable uniform live load values of 237 psf and 188 psf, respectively. It appears that the pile bearing capacity would govern and the minimum allowable uniform live load value of the platform is estimated to be 170 psf.

(B) BERTHING ASSESSMENT

Berthing requirements for this structure are not applicable.

(C) RESILIENCY TO COASTAL FLOODING

A coastal resiliency assessment was performed to evaluate the risk of flooding and tidal inundation due to climate change and sea level rise. Assessments were performed in accordance with NYC’s Climate Resiliency Guidelines v4.1 (CRDG) using the resources and “Exposure Screening Tool” contained therein. Assessments are used to inform the scope of requisite resilient design interventions necessary to evaluate the appropriate remedial actions. Table 3.2-5 below summarizes the pertinent elevations³ used to determine the risk of flooding during the 2020’s epoch (i.e., through 2039), and during the 2080’s epoch (i.e., 2070 through 2099). The assessments are in accordance with the “Climate Resiliency Design Guidelines” (CRDG, v4.1) and the “Climate Risk Information 2019, Observations, Climate Change Projections, and Maps,” prepared by the New York City Panel on Climate Change (NPCC2). The assessments utilize sea level rise projections as provided by NPCC2 for the 90th percentile high-estimate range.

Top of Deck (NAVD 88)	MHHW elevation (NAVD 88)	NPCC Projected SLR (90 th percentile) (2020’s)	NPCC Projected SLR (90 th percentile) (2080’s)	FEMA 1% Chance BFE (PFIRM 2015)	Minimum DFE (PFIRM 2015) BFE + 12”	Minimum SLR-Adjusted DFE (2080’s) BFE + 40”
el. +8.0 ft	El. +2.92 ft	10”	58”	el. +15 ft	el. +16.0 ft	el. +18.33 ft
Projected SLR Elevation		el. +3.75 ft	el. +7.75 ft			
Depth of Flooding		4.24 ft above water	3 in. above water	(7 ft) below water		

Table 3.3-9: Summary of Pertinent Elevations and Flood Risk Information at the High-Level Platform

³ All elevations are in feet and are referenced to NAVD 88.

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the High-Level Platform is located in zone AE15 (BFE el. +15.0 ft) and is not subject to wave velocity or overtopping under the theoretical 100-yr storm event. Nevertheless, after accounting for as much as 58” of sea level rise (during the 2080’s epoch) above the present MHHW el. +2.92 ft in the East River, the free surface water level would achieve an elevation of approximately +7.75 ft. Therefore, the topside of the platform would be subject to regular nuisance flooding during the 2080’s epoch if sea level rises as predicted. The top of deck would be only 3 in. above MHHW. Tidal flooding is not anticipated during the present 2020’s epoch. However, storm flooding of as much as 7 ft should be anticipated with the 100-year storm event.

While the stability of the platform will remain unaffected, severe flooding conditions in the East River would likely result in flood damage to the buildings, ramps, utility systems, and other topside features. The bulkhead itself is inherently “wet floodproofed” allowing floodwaters to flow in and out of the facility without causing significant damage.

3.3.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly.

Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection.

Table 3.3-10 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Coat the steel pipe piles above MLW.	FY 2027	\$368,526
	Clean and recoat the steel sheet pile cut-off wall above the riprap and patch the corrosion holes at the strut penetrations.	FY 2027	\$345,481
	Subtotal Priority Actions:		\$714,006
Routine	Routine actions are not required.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE HIGH-LEVEL PLATFORM			\$714,007

Table 3.3-10: Summary of Recommended Actions and Cost Estimate for Repairs for the High-Level Platform

(A) IMMEDIATE ACTIONS

Immediate action is not required at this time.

(B) PRIORITY ACTIONS

The surface of steel pipe piles and sheet piles above MLW should be hydro-blasted, prepared, and recoated using an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate epoxy-based bitumastic or coal tar marine grade material designed for in-water application should be selected and applied to achieve a minimum dry-film thickness of 16 mil to 24 mil. The activity will require high quality control measures during application of the coating. At the same time, the severely corroded steel at the strut penetrations in the cut-off wall should be patched and coated. The proposed repairs should commence within the next three years.

(C) ROUTINE ACTIONS

Routine actions are not required at this time.

3.4 WEST MOORING ARM

3.4.1 Description

The floating detention barge is secured by two mooring arm assemblies. A single-leg mooring arm is positioned at the west end of the barge, and a double-leg mooring arm is positioned at the east end of the barge. Using the established baseline stationing, the single-leg West Mooring Arm is positioned at Sta. 3+32 at the center of Cell 15.

The West Mooring Arm is a single-leg articulated brace that permits surge, heave, roll, and limited pitch barge motions. It restrains sway and yaw motions. The arms maintain the barge's offset distance of 12'-6" from the Cellular Cofferdam bulkhead line. The mooring arm is fitted with a vertical steel "T" guide welded to the side hull plate of the barge. The guide serves as a glide to a "gripper" clamp at the end of the mooring arm.

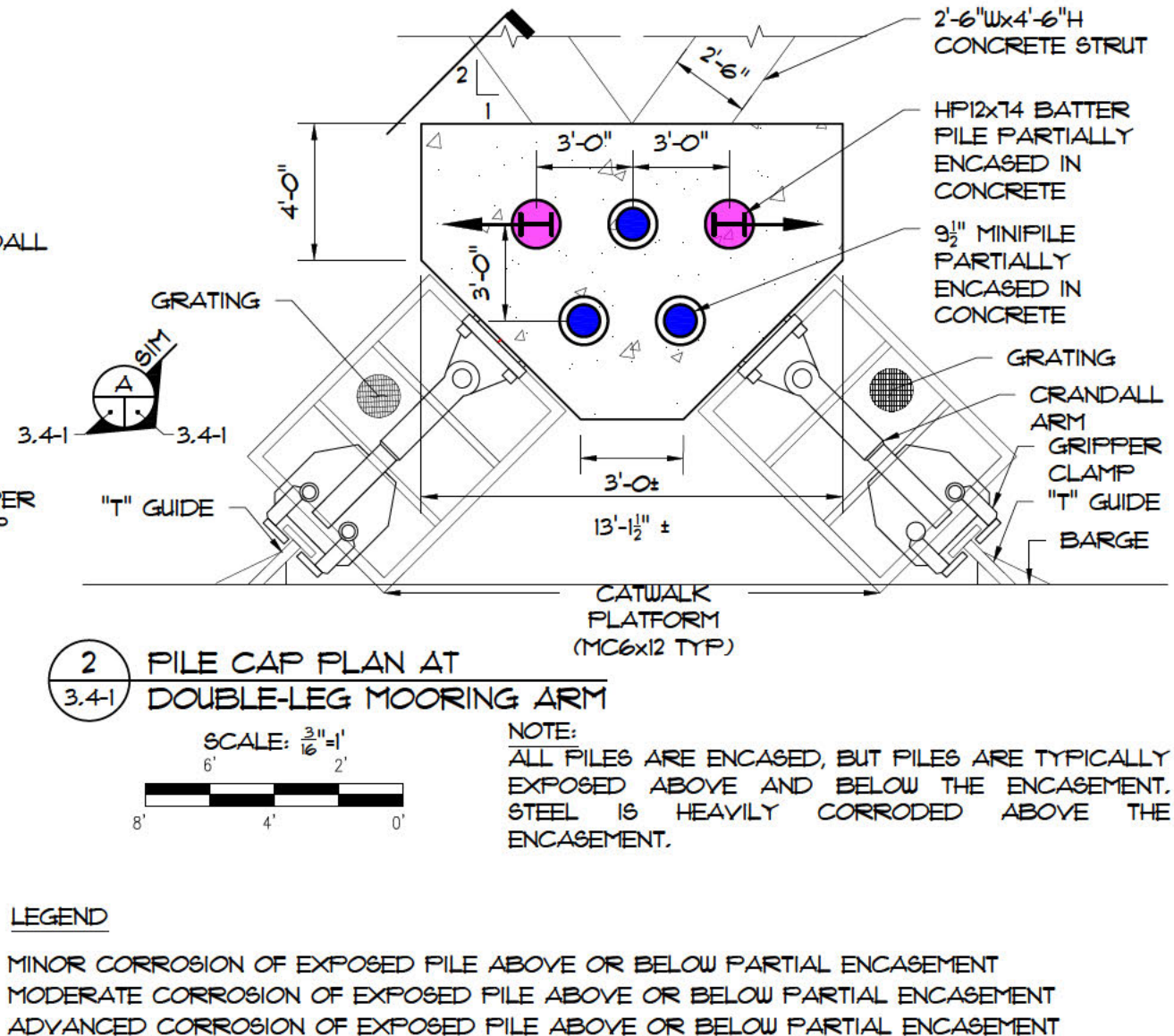
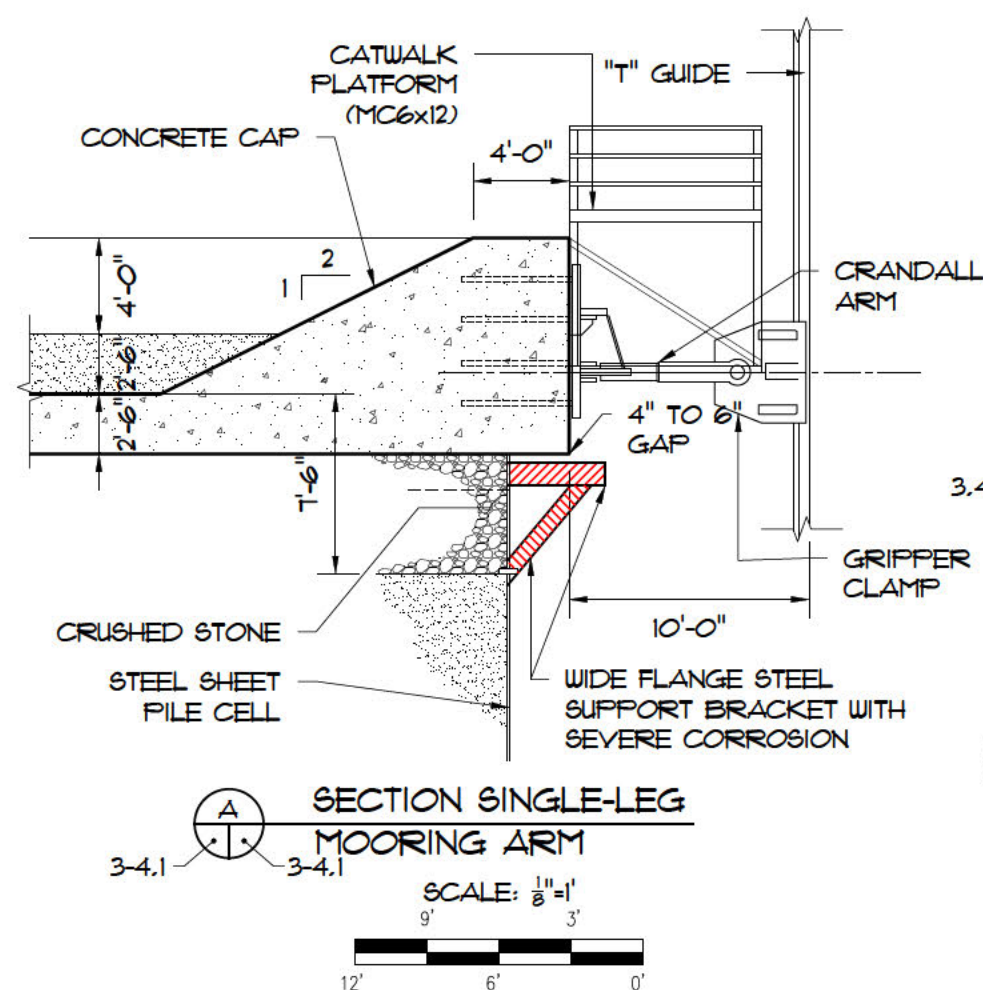
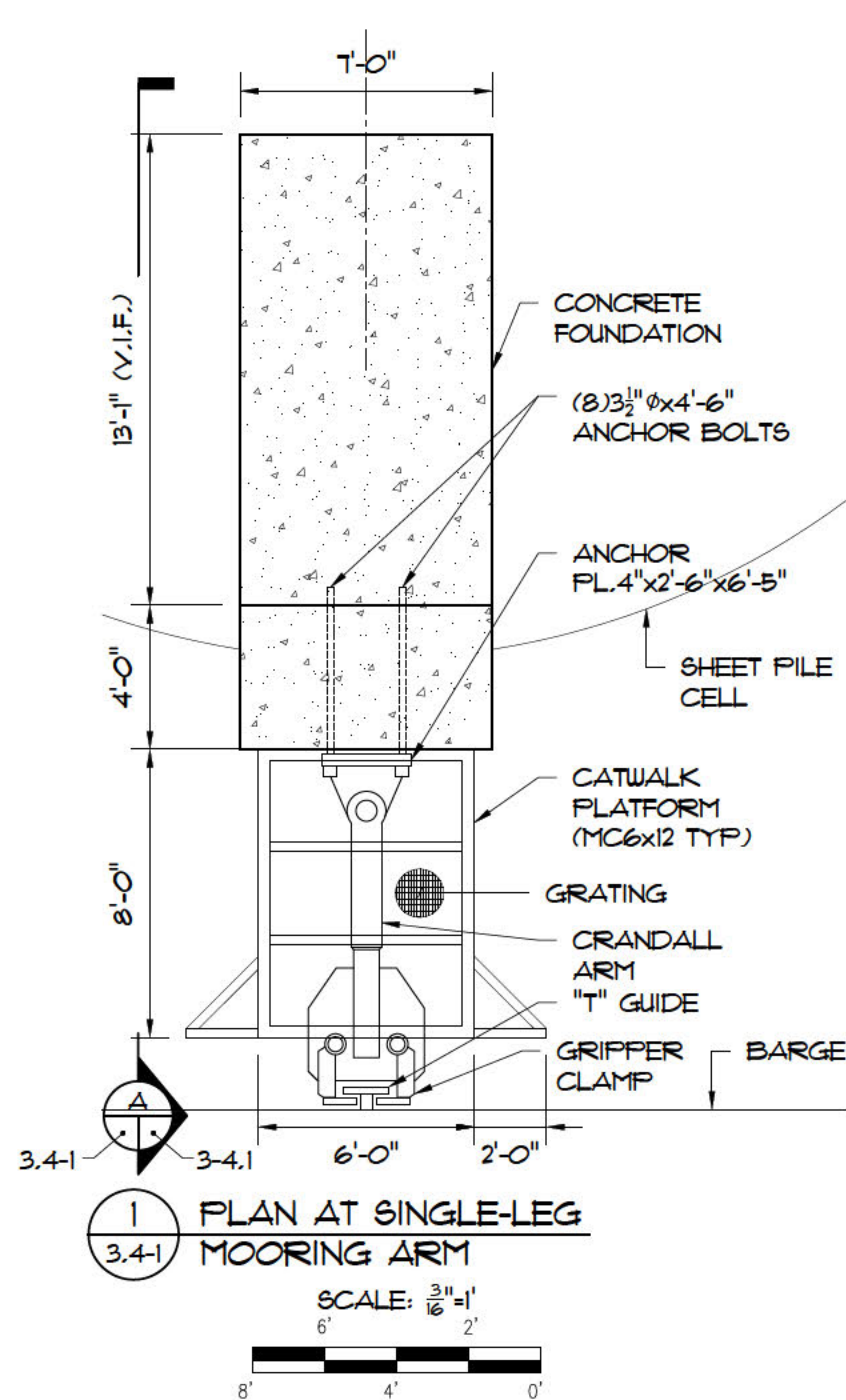
The single-leg arm comprises a collection of welded gripper plates, pins, a "Crandall Arm," and a stiffened anchor plate & pin assembly that is bolted flush against the vertical face of a reinforced concrete foundation measuring approximately 7 ft wide by 9 ft high by 17 ft long. A total of eight 3½" diameter by 4'-6" long anchor bolts cast into the concrete foundation are used to support the arm. The concrete foundation is cast into the top of Cell 15, and it cantilevers beyond the cell by several feet. The cantilevered portion is supported by three steel W-shaped beams propped up by diagonal steel I-shaped knee-braces.

A steel catwalk above the mooring arm is framed using MC6x12 beams and stringers, L3x3 bracing, 1 in. steel grating, and 2" Sch. 40 steel pipe rails. The overall planar dimensions of the catwalk are 6 ft wide by 8 ft long.

Table 3.4-1 provides an asset inventory of the West Mooring Arm, and Figure 3.4-1 illustrates a plan and section of the single-leg mooring configuration.

Component	Description	Unit	Quantity
Single-Leg Mooring Arm	One articulated Crandall Arm assembly	EA	1
Single-Leg Mooring Arm Foundation Cap and Steel Support Framing	Reinforced Concrete (7 ft wide by 9 ft high by approximately 17 ft long). Support framing for cap consists of three W-shape beams with steel I-shaped knee brace supports.	EA	1
Single-Leg Mooring Arm Catwalk Framing	An assembly of steel angles, pipe, and 1" grate framing above the mooring arm assembly	EA	1

Table 3.4-1: Asset Inventory of the West Mooring Arm



3.4.2 Observed Conditions

The overall condition of the West Mooring Arm is **Fair**. The system can continue to function as intended by design. Figure 3.4-1 above illustrates the typical configurations of the mooring arm. Color is used to graphically indicate the severity of observed conditions, as applicable.

(A) SINGLE-LEG MOORING ARM ASSEMBLY

The single-leg mooring arm is located at Cell 15 (Sta. 3+32). The overall condition of the mooring arm is **Fair**. The steel elements exhibit coating failure with minor to moderate corrosion along the bottom of the assemblies immediately above the water surface. Affected components include the gripper clamp, pins, and stiffener plates. Grease fittings remain attached although the hoses dangle in the water at high tide. The steel anchor plate and anchor bolts mounted to the vertical face of the concrete support cap exhibits minor coating failure with corrosion at the bottom end of the assembly. All anchor bolts remain in place. The T-guides and clamps appear fully engaged and functional and the arm continues to operate as intended by design.

Table 3.4-2 summarizes the observed conditions for the single-arm mooring assembly. Photo 3.4-1 and Photo 3.4-2 depict the west and east elevations of the single-leg mooring arm.

Element	Description of Observed Conditions	Unit	Quantity
Single-Leg Mooring Arm Assembly	The steel elements exhibit coating failure with minor to moderate corrosion along the bottom of the assembly, immediately above the water surface. Affected components include the gripper clamp, pins, and stiffener plates. Grease fittings remain attached although the hoses dangle in the water at high tide. The steel anchor plate and anchor bolts mounted to the vertical face of the concrete support cap exhibits minor coating failure with corrosion at the bottom end of the assembly. All anchor bolts remain in place. The T-guides and clamps appear fully engaged and functional and the arm continues to operate as intended by design.	EA	1

Table 3.4-2: Summary of Observed Single-Leg Mooring Arm Conditions at the West Mooring Arm



Photo 3.4-1: West elevation view of the single-leg mooring arm assembly. Note the coating loss and corrosion on the gripper clamps, leg, and T-guides.



Photo 3.4-2: East elevation view of the single-leg mooring arm assembly. Note the coating loss and corrosion on the gripper clamps and anchor plate. Also note the grease fitting hoses hanging into the water.

(B) MOORING ARM SUPPORT CAP

The condition of the concrete cap supporting the arm is **Fair**. The concrete is generally smooth and does not show evidence of structural distress. However, the cap contains numerous hairline map cracks and efflorescence throughout all surfaces. The topside of the cap where it interfaces with the upland exhibits minor delamination and hollowness when sounded with a hammer over an area of approximately 7 ft wide (full width) by up to 2 ft high. Table 3.4-3 summarizes the observed conditions of the support cap. Photo 3.4-3 provides an overall view of the support cap.

Element	Description of Observed Conditions	Unit	Quantity
Mooring Arm Support Cap at the West Mooring Arm	The concrete is generally smooth and does not exhibit evidence of structural distress. However, the cap contains numerous hairline map cracks and efflorescence throughout all surfaces. The topside of the cap where it interfaces with the upland exhibits minor delamination and hollowness when sounded over an area of approximately 7 ft wide (full width) by up to 2 ft high.	EA	1

Table 3.4-3: Summary of Observed Support Cap Conditions at the West Mooring Arm



Photo 3.4-3: Overall view of the concrete support cap at the West Mooring Arm. Hollow sounding concrete exists where indicated by the yellow arrow.

(C) SUPPORT BRACKET

The overall condition of the steel support bracket below the concrete cap is **Poor**. All three knee-brackets supporting the overhanging edge of the cap exhibit moderate to advanced corrosion on the cantilevered beams extending out from the bulkhead, and on the diagonal knee braces. The western knee brace contains a corrosion hole through the web. The function of the brackets, however, is uncertain since there exists a 4" to 6" gap between the top of the steel bracket and the underside of the concrete cap. Timber shims have dislodged and a load path to the bracket is no longer possible.

While it is probable that the steel knee-brace brackets below the concrete support cap were installed to support the formwork during the construction of the cap, this investigation cannot confirm this. Therefore, it is assumed to have structural value and is recommended to be restored. Table 3.4-4 summarizes the observed conditions. Photo 3.4-4 and Photo 3.4-5 below depict the bracket conditions.

Element	Description of Observed Conditions	Unit	Quantity
Support Bracket at the West Mooring Arm	All three knee-brackets supporting the overhanging edge of the cap exhibit moderate to advanced corrosion on the cantilevered beams extending out from the bulkhead, and on the diagonal knee braces. The western knee brace contains a corrosion hole through the web. The function of the brackets, however, is uncertain since there exists a 4" to 6" gap between the top of the steel bracket and the underside of the concrete cap. Timber shims have dislodged and a load path to the bracket is no longer possible.	EA	1

Table 3.4-4: Summary of Observed Steel Support Bracket Conditions at the West Mooring Arm



Photo 3.4-4: Coating loss with moderate corrosion on the steel bracket. Timber shims are missing between the steel bracket and the underside of the concrete.



Photo 3.4-5: Closeup view of the corrosion hole in the western knee brace. Also note the gap between the top of the bracket and the underside of the support cap.

(D) CATWALK

The condition of the steel catwalk framing above the support cap is **Satisfactory**. The components remain functional, and the coating remains intact although some light surface rust is visible at isolated location. The framing members and connections are satisfactorily attached and stable. Table 3.4-5 summarizes the observed conditions. Photo 3.4-6 provides an overall view of the catwalk.

Element	Description of Observed Conditions	Unit	Quantity
Catwalk at the West Mooring Arm	The components remain functional and the coating remains largely intact. The framing members and connections are satisfactorily attached and stable	EA	1

Table 3.4-5: Summary of Observed Catwalk Conditions at the West Mooring Arm



Photo 3.4-6: Overall view of the catwalk at the West Mooring Arm.

3.4.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection indicate further degradation since the 2018 inspection. The single-leg mooring arm has been downgraded to **Fair** since it exhibits additional coating loss and corrosion. The steel brackets below the

mooring cap also exhibit advanced to severe corrosion, although they may no longer be functionally useful. The concrete support cap contains some areas of hollowness with pronounced map cracking. Overall, the West Mooring Arm can continue to function as intended by design.

3.4.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

The West Mooring Arm does not exhibit any distress, although the various parts should be cleaned and recoated to prevent further corrosion. The system can continue to function as designed.

The grease fittings remain in place, although it is unknown when the fittings were used to lubricate the arm components. The internal components of the mooring arm require regular maintenance, which includes periodic injection of grease lubricants into the various mechanical interfaces. The frequency of lubrication should be consulted in the Crandall Arm Operations and Maintenance Manual. Otherwise, a program should be employed to inject grease on a recurring 6-month cycle.

While it is probable that the steel knee-brace brackets below the concrete support cap were installed to support the formwork during the construction of the cap, this investigation cannot confirm this. Therefore, it is assumed to have structural value and is recommended to be restored.

(B) BERTHING ASSESSMENT

Berthing requirements for this system is not applicable.

(C) RESILIENCY TO COASTAL FLOODING

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the site falls in zone VE15 (el. +15.0 ft). Under the theoretical 100-yr flood scenario the water level will be approximately 8 ft above the top of the adjacent high-level platform and cellular cofferdam. Severe flooding conditions in the East River will likely result in substantial damage to the buildings, gangways, ramps, utility systems,

and other topside features. The mooring arm and corresponding components will be submerged.

If the barge is subject to extreme water levels, the mooring arm assemblies, support caps, and corresponding features should be evaluated to determine the magnitude of stresses developed, and whether these stresses may be adequately tolerated.

Utilities should be disconnected, and gangways should be raised and secured in an elevated position to the support frame. Mooring lines should be deployed with sufficient slack, and operational protocols should be established to evacuate the facility in extreme emergency situations. In general, mooring lines should be always deployed and managed (Bollards B-1 to B-6) as a regular maintenance protocol. The mooring arms and their attachments should be evaluated for strength and stability under extreme conditions.

3.4.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly.

Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection.

Table 3.4-6 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work

should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and coat corroded steel components comprising the Crandal Mooring Arm Assembly.	FY 2026	\$34,425
	Clean, reinforce, coat, and shim the steel brackets below the concrete support cap.	FY 2026	\$34,968
	Subtotal Priority Actions:		\$69,393
Routine	Verify Crandall Arm parts are adequately lubricated using the grease fittings and employ regular maintenance per the O&M manual recommendations	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE WEST MOORING ARM:			\$69,393

Table 3.4-6: Summary of Recommended Actions and Cost Estimate for Repairs of the West Mooring Arm

(A) IMMEDIATE ACTIONS

Immediate action is not required at this time.

(B) PRIORITY ACTIONS

Priority actions require hydroblast cleaning all corroded steel on the Crandall Arm Assembly and the steel support knee-brace brackets below the concrete support cap. In the case of the steel brackets, the severely corroded steel knee-braces should be replaced or reinforced. All exposed steel may then be coated with an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate marine-based epoxy coal tar coating material designed for aggressive marine environments, and which can be applied below water, should be specified. Proper surface preparation is important to ensure a clean substrate and ensure good bond. Both hydroblasting and mechanical cleaning methods should be employed. The activity will require high quality control measures during the application of the coating. The coating should extend several feet below MLW as applied by divers. In addition, the gap between the top of the bracket and the underside of the concrete support cap should be grouted solid to reestablish bearing.

(C) ROUTINE ACTIONS

Although the grease fittings remain in place it is unknown when the fittings have been used to lubricate the mechanical interfaces. The internal components of the mooring arm require regular maintenance, which includes periodic injection of grease lubricants into the various mechanical parts. The frequency of lubrication should be consulted in the Crandall Arm Operations and Maintenance Manual. Otherwise, a program should be employed to inject grease on a recurring 6-month cycle.

3.5 EAST MOORING ARM

3.5.1 Description

The floating detention barge is secured by two mooring arm assemblies. A single-leg mooring arm is positioned at the west end of the barge, and a double-leg mooring arm is positioned at the east end of the barge. Using the established baseline stationing, the double-leg East Mooring Arm is positioned at Sta. 8+21, collinearly with Bent 8 of the High-Level Platform.

The East Mooring Arm is a double-leg articulated brace that permits heave, roll, and limited pitch barge motions. It restrains surge, sway, and yaw motions. The arms maintain the barge's offset distance of 12'-6" from the Cellular Cofferdam bulkhead line. The mooring arm is fitted with a vertical steel "T" guide welded to the side hull plate of the barge. The guide serves as a glide to a "gripper" clamp at the end of the mooring arm..

The double-leg mooring arm is located at the east end of the barge within the footprint of the high-level platform. The entire composition consists of two orthogonally oriented articulated "Crandall" mooring leg assemblies, a reinforced concrete pile cap, three concrete-filled 12" OD x ½" wall steel pipe piles advanced and doweled into rock, two steel HP12x74 batter piles driven to rock, a pair of reinforced concrete horizontally diagonal lateral strut ties, and a steel catwalk framework above the mooring arms. The pipe piles contain a central Dywidag 1-3/8 in. diameter rock anchor doweled into the rock. The steel pipe piles and the HP12 batter piles are encased in concrete above the mudline.

Each mooring leg assembly is arranged similarly to the single-leg mooring arm described in the preceding section, including the welded gripper plates, "T" guides, pins, a "Crandall Arm," and a stiffened anchor plate & pin assembly. The anchor plate is bolted flush against the vertical face of a reinforced concrete pile cap. In plan, each leg spreads out diagonally at an angle of 45 degrees from the centerline of the pile cap. The outboard side of the cap is formed by orthogonal planes, each having a width of 7 ft, to support each Crandall mooring leg. The overall projected width of the cap, perpendicular to the face of bulkhead is approximately 10'6". The height of the cap is 8 ft.

A pair of reinforced concrete struts extend diagonally from the inboard side of the cap to a point approximately 61 ft beyond the cut-off wall, as measured along the

length of the struts. Each strut is approximately 2'6" wide by 4'6" high and spans below the high-level platform deck. The struts are slightly pitched downward at a slope of approximately 1V:12H. At a prior time, these struts were buried in the fill of an original low-level relieving platform. However, with the demolition of the LLRP, the struts were exposed during the construction of the HLP. The approximately 34 ft long exposed free-span of each strut is propped up using a pair of 9½ in. OD steel pipe piles and a 2 ft by 2 ft by 8 ft long reinforced concrete bench cap.

A steel catwalk above the double-leg mooring arm assembly is framed using MC6x12 beams and stringers, L3x3 bracing, 1 in. steel grating, and 2 in. Sch. 40 steel pipe rails. Table 3.5-1 below provides an asset inventory, and Figure 3.4-1 in the preceding section illustrates an overall plan of the East Mooring Arm. Figure 3.3-1 in the preceding section illustrates a plan view of the struts and strut support piles.

Component	Description	Unit	Quantity
Double-Leg Mooring Assemblies	Two articulated Crandall Arm assemblies.	EA	2
Mooring Arm Pile Cap	Reinforced Concrete 7 ft wide by approximately 10'-6" deep by 8 ft high.	EA	1
Support Piles	(3) 12"OD x ½" steel pipe piles filled and encased in concrete, and (2) HP12x74 batter piles encased in concrete	EA	5
Struts	Reinforced concrete approximately 2'6" wide by 4'6" high	EA	2
Strut Piles	(4) 9-1/2" diameter minicaisson piles	EA	4
Bench Caps	Two reinforced concrete bench caps approximately 2 ft by 2 ft by 8 ft long.	EA	5

Table 3.5-1: Asset Inventory of the East Mooring Arm

3.5.2 Observed Conditions

The overall condition of the East Mooring Arm is **Fair**. The system can continue to function as intended by design. Figure 3.4-1 of the previous section illustrates the typical configuration of the mooring arm. Color is used to graphically indicate the severity of observed conditions, as applicable.

(A) DOUBLE-LEG MOORING ARM ASSEMBLIES

The double-leg mooring arm is located at the High-Level Platform (Sta. 8+21). The overall condition of the mooring arm is **Fair**. The steel elements exhibit coating failure with minor to moderate corrosion along the bottom of the assemblies immediately above the water surface. Affected components include the gripper clamps, pins, and stiffener plates. All grease fittings remain attached although the hoses dangle in the water at high tide. The steel anchor plates and anchor bolts mounted to the vertical face of the concrete support cap exhibit minor coating failure with corrosion at the bottom ends of the assemblies. All anchor bolts remain in place. The chain lift rod on both legs are detached and hanging on top of mooring arm and the gripper clamp on east leg is shifted northeast by approximately 3/4". However, the T-guides and clamps appear fully engaged and functional and the arms continue to operate as intended by design. Table 3.5-2 summarizes the observed conditions for the double-arm mooring assembly. Photos 3.5-1 and 3.5-2 depict the east elevation, and Photo 3.5-3 depicts the west elevation of the mooring arm.

Element	Description of Observed Conditions	Unit	Quantity
Double-Leg Mooring Arm Assembly	The steel elements exhibit coating failure with minor to moderate corrosion along the bottom of the assemblies immediately above the water surface. Affected components include the gripper clamps, pins, and stiffener plates. All grease fittings remain attached although the hoses dangle in the water at high tide. The steel anchor plates and anchor bolts mounted to the vertical face of the concrete support cap exhibit minor coating failure with corrosion at the bottom ends of the assemblies. All anchor bolts remain in place. The chain lift rod on both legs are detached and hanging on top of mooring arm and the gripper clamp on east leg is shifted northeast by approximately 3/4". However, the T-guides and clamps appear fully engaged and functional and the arms continue to operate as intended by design.	EA	1

Table 3.5-2: Summary of Observed Double-Leg Mooring Arm Conditions at the East Mooring Arm



Photo 3.5-1: Overall view of the east leg of the East Mooring Arm.



Photo 3.5-2: Closeup view of the east leg of the East Mooring Arm. Note the coating loss and corrosion of the assemblies immediately above the waterline. Also note the dangles grease hoses.



Photo 3.5-3: Overall view of the west leg of the East Mooring Arm.

(B) MOORING ARM PILE CAP

The condition of the concrete pile cap supporting the double-leg mooring arms is **Fair**. The concrete is generally smooth and exhibits evidence of minor structural distress. The top face of the cap contains numerous cracks with efflorescence ranging in width from hairline up to approximately 1/16". An approximately 1/16" wide by 8 ft long crack is located 5 ft away from the northwest top face. An approximately 1/16" wide crack is located 5 ft away from the northeast top face. It runs diagonally 6 ft, then proceeds down vertically down the side approximately 4 ft. Table 3.5-3 summarizes the observed conditions of the pile cap. Photos 3.5-4 and 3.5-5 depict the various cracks on the pile cap.

Element	Description of Observed Conditions	Unit	Quantity
Pile Cap at the East Mooring Arm	The concrete is generally smooth and exhibits evidence of minor structural distress. The top face of the cap contains numerous cracks with efflorescence ranging in width from hairline up to approximately 1/16". An approximately 1/16" wide crack is located 5 ft away from the top northwest and northeast faces.	EA	1

Table 3.5-3: Summary of Observed Pile Cap Conditions at the East Mooring Arm



Photo 3.5-4: General view of cracks with efflorescence on the east face of the cap varying in width from general hairline map cracks up to 1/16".



Photo 3.5-5: General view of cracks with efflorescence on the top face of the cap varying in width from general hairline map cracks up to 1/16".

(C) SUPPORT PILES

The condition of the piles supporting the double-leg mooring arm pile cap is **Fair**. All five piles are encased in concrete. However, the encasements do not extend along the full height of the piles. The piles are generally exposed above and below the encasement. The exposed portions between the bottom of the pile cap and the top of the encasements exhibit coating failure with minor to moderate corrosion. The three central pipe piles contain an approximately 2 in. to 8 in. gap above the encasements with coating failure and minor to moderate corrosion. The encasement for the inboard central pipe pile is hollow in the top 18 in of the form. The two battered H-piles contain gaps varying from 2 in. to 8 in. and exhibit moderate to advanced corrosion.

The pile encasement no longer extend to the mudline, possibly due to scour. The steel piles are exposed between the bottom of the encasements and the mudline in varying heights ranging from 1 ft to 3 ft. The bottom of the form has failed on the east batter H-pile. Table 3.5-4 summarizes the observed conditions of the pile cap. Photos 3.5-6 and 3.5-7 illustrate the exposed portions of the piles between the bottom of the pile cap and the top of the encasements for each of the steel pipe and H-piles.

Element	Description of Observed Conditions	Unit	Quantity
Support Piles for the East Mooring Arm Pile Cap	All five piles are encased in concrete. However, the encasements do not extend along the full height of the piles. The piles are generally exposed above and below the encasement. The exposed portions between the bottom of the pile cap and the top of the encasements exhibit coating failure with minor to moderate corrosion. The three central pipe piles contain an approximately 2 in. to 8 in. gap above the encasements with coating failure and minor to moderate corrosion. The encasement for the inboard central pipe pile is hollow in the top 18 in of the form. The two battered H-piles contain gaps varying from 2 in. to 8 in. and exhibit moderate to advanced corrosion. The pile encasement no longer extend to the mudline, possibly due to scour. The steel piles are exposed between the bottom of the encasements and the mudline in varying heights ranging from 1 ft to 3 ft. The bottom of the form has failed on the east batter H-pile.	EA	5

Table 3.5-4: Summary of Observed Pile Conditions for the East Mooring Arm Pile Cap



Photo 3.5-6: View of the southeast steel pipe pile between the bottom of the pile cap and the top of the encasement.



Photo 3.5-7: View of the northwest steel batter H-pile between the bottom of the pile cap and the top of the encasement.

(D) STRUTS

The condition of the diagonal struts that brace the double-leg mooring arm is **Fair**. The concrete is solid and smooth and does not exhibit cracks, spalls, or signs of distress. The bottom surface of the struts contains gravel adhered to the underside. The aggregate is remnant from the original gravel bedding on which the struts were cast. The struts were originally placed on fill of a low-level relieving platform that was demolished when the High-Level Platform was built. Table 3.5-5 summarizes the observed conditions and Photo 3.5-8 depicts the bottom of the strut.

Element	Description of Observed Conditions	Unit	Quantity
Struts at the East Mooring Arm	The concrete is solid and smooth and does not exhibit cracks, spalls, or signs of distress. The bottom surface of the struts contains gravel adhered to the underside. The aggregate is remnant from the original gravel bedding on which the struts were cast. The struts were originally placed on fill of a low-level relieving platform that was demolished when the High-Level Platform was built.	EA	2

Table 3.5-5: Summary of Observed Strut Conditions at the East Mooring Arm



Photo 3.5-8: Typical condition of the strut underside illustrating gravel adhering to the underside of the concrete.

(E) STRUT BENCH CAPS AND PILES

The condition of the two intermediate bench caps supporting the struts is **Satisfactory**. The concrete is solid, smooth and does not exhibit cracks, spalls, or other forms of distress. The condition of the four steel pipe piles supporting the two concrete bench caps is **Satisfactory**. The coating remains intact and does not exhibit damage. Table 3.5-6 summarizes the observed conditions and Photo 3.5-9 depicts the typical condition of the bench caps and the corresponding support piles.

Element	Description of Observed Conditions	Unit	Quantity
Strut Bench Caps and Piles at the East Mooring Arm	The concrete forming the bench caps are solid, smooth and does not exhibit cracks, spalls, or other forms of distress. The coating on the four steel pipe piles supporting the bench caps remains intact and does not exhibit damage.	EA	2

Table 3.5-6: Summary of Observed Bench Cap and Pile Conditions Supporting the Struts at the East Mooring Arm



Photo 3.5-9: Typical condition of diagonal strut that braces the double-leg mooring arm pile cap.

(F) CATWALK

The condition of the steel catwalk framing above the pile cap is **Satisfactory**. The components remain functional, and the coating remains intact although some light surface rust is visible at isolated location. The framing members and connections are satisfactorily attached and stable. Table 3.4-7 summarizes the observed conditions. Photo 3.4-10 provides an overall view of the catwalk.

Element	Description of Observed Conditions	Unit	Quantity
Catwalk at the East Mooring Arm	The components remain functional and the coating remains largely intact. The framing members and connections are satisfactorily attached and stable	EA	1

Table 3.5-7: Summary of Observed Catwalk Conditions at the East Mooring Arm

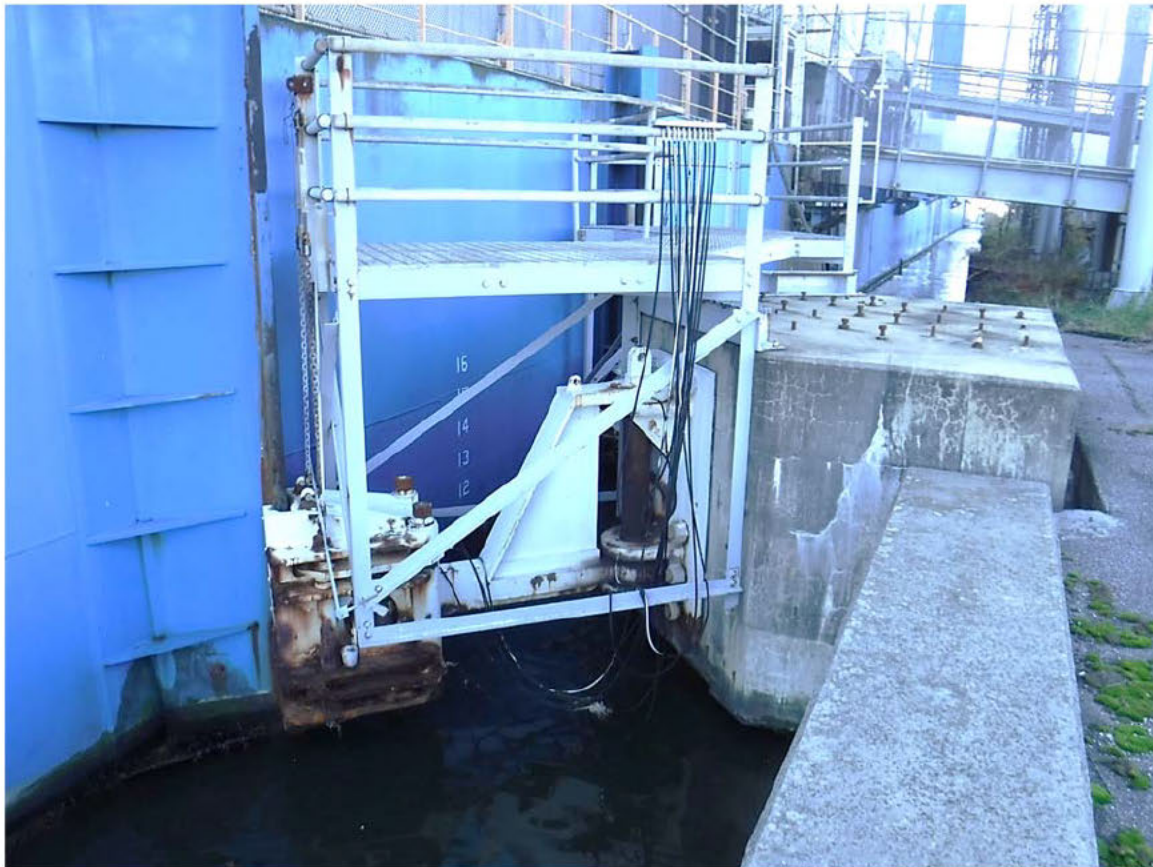


Photo 3.5-10: Overall view of the catwalk at the East Mooring Arm.

3.5.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection do not indicate further degradation since the 2018 inspection. The observed conditions remain substantially similar to those observed in 2018. Although the mooring pile cap exhibits more advanced cracks which may be stress related, the East Mooring Arm can continue to function as intended by design.

3.5.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

The East Mooring Arm does not exhibit significant distress, although the pile cap contains cracks that may be stress related. These cracks do not compromise the overall structural integrity of the system.

The grease fittings remain in place, although it is unknown when the fittings were used to lubricate the arm components. The internal components of the mooring arm require regular maintenance, which includes periodic injection of grease lubricants into the various mechanical interfaces. The frequency of lubrication should be consulted in the Crandall Arm Operations and Maintenance Manual. Otherwise, a program should be employed to inject grease on a recurring 6-month cycle.

The diagonal struts were originally cast on grade at a time when they were installed on fill as grade beams on a low-level relieving platform. At some point after, the platform was demolished and replaced with the High-Level Platform as observed. The original gravel used to bed the bottom face of the struts adheres to the concrete. This condition does not compromise the function of the struts.

(B) BERTHING ASSESSMENT

Berthing requirements for this system is not applicable.

(C) RESILIENCY TO COASTAL FLOODING

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the site falls in zone VE15 (el. +15.0 ft). Under the theoretical 100-

yr flood scenario the water level will be approximately 8 ft above the top of the adjacent high-level platform and cellular cofferdam. Severe flooding conditions in the East River will likely result in substantial damage to the buildings, gangways, ramps, utility systems, and other topside features. The mooring arm and corresponding components will be submerged.

If the barge is subject to extreme water levels, the mooring arm assemblies, support pile caps, struts, and corresponding features should be evaluated to determine the magnitude of stresses, and whether these stresses may be adequately tolerated.

Utilities should be disconnected, and gangways should be raised and secured in an elevated position to the support frame. Mooring lines should be deployed with sufficient slack, and operational protocols should be established to evacuate the facility in extreme emergency situations. In general, mooring lines should be always deployed and managed (Bollards B-1 to B-6) as a regular maintenance protocol. The mooring arms and their attachments should be evaluated for strength and stability under extreme conditions.

3.5.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly.

Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection.

Table 3.5-7 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and coat corroded steel components comprising the Crandal Mooring Arm Assembly.	FY 2026	\$33,822
	Pack the gap at the pile tops solid with grout and encase the bottom of the piles at the mudline.	FY 2026	\$80,517
	Inject cracks in the concrete pile cap with an epoxy grout.	FY 2026	\$53,924
	Subtotal Priority Actions:		\$168,263
Routine	Verify Crandall Arm parts are adequately lubricated using the grease fittings and employ regular maintenance per the O&M manual recommendations	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE EAST MOORING ARM:			\$168,924

Table 3.5-8: Summary of Recommended Actions and Cost Estimate for Repairs of the East Mooring Arm

(A) IMMEDIATE ACTIONS

Immediate action is not required at this time.

(B) PRIORITY ACTIONS

Priority actions require hydroblast cleaning all corroded steel on the Crandall Arm Assembly and the steel piles below the concrete cap. All exposed steel may then be coated with an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate marine-based epoxy coal tar coating material designed for aggressive marine environments should be specified. Proper surface preparation is important to ensure a clean substrate and ensure good bond. Both hydroblasting and mechanical cleaning methods should be employed. The activity will require high quality control measures during the application of the coating.

In the case of the piles, the gap between the bottom of the pile cap and the top of the encasement should be grouted solid. This may be accomplished using a hand-packed high-strength non-shrink cementitious grout, or injectable grout under pressure. Voids in the encasements should be cleaned and filled with new concrete or grout. The exposed portions of the piles at the mudline should also be encased in concrete to a depth of approximately 30 in. below the mudline. This will ensure the full length of the pile is protected.

The 1/16" wide cracks in the concrete pile caps should be repaired using an epoxy grout injection process. Typically, this involves routing and cleaning the crack, installing a cementitious bead sealant along the top of the crack, inserting injection ports along the crack line, and injecting a high-strength low viscosity epoxy grout under pressure. The grout will penetrate all of the crack planes including microcracks.

(C) ROUTINE ACTIONS

Although the grease fittings remain in place it is unknown when the fittings have been used to lubricate the mechanical interfaces. The internal components of the mooring arm require regular maintenance, which includes periodic injection of grease into the various mechanical parts. The frequency of lubrication should be consulted in the Crandall Arm Operations and Maintenance Manual. Otherwise, a program should be employed to inject grease on a recurring 6-month cycle.

3.6 WEST PEDESTRIAN GANGWAY A

3.6.1 Description

Access to the floating detention barge is provided by three pedestrian gangways and one cargo gangway. The West Pedestrian Gangway A is approximately 62 ft long by 8'-8" wide and is framed using a pair of W24 x68 girders, W12x26 floor beams spaced at 8 ft apart, and three W6 stringers along the span of the gangways. The stringers are spaced approximately 2'5" and support a ¼ in. thick checkered steel deck plate. Steel L3x3x3/8 cross-braces span between floor beams. The gangways are covered by a fabric canopy wrapped over a circular arch steel pipe frame made from 2½ in. Sch. 40 pipes. The arch frames are spaced 8 ft apart. Hand rails utilize 1¼ in. pipe. The sides of the gangway are enclosed with chain link mesh panels.

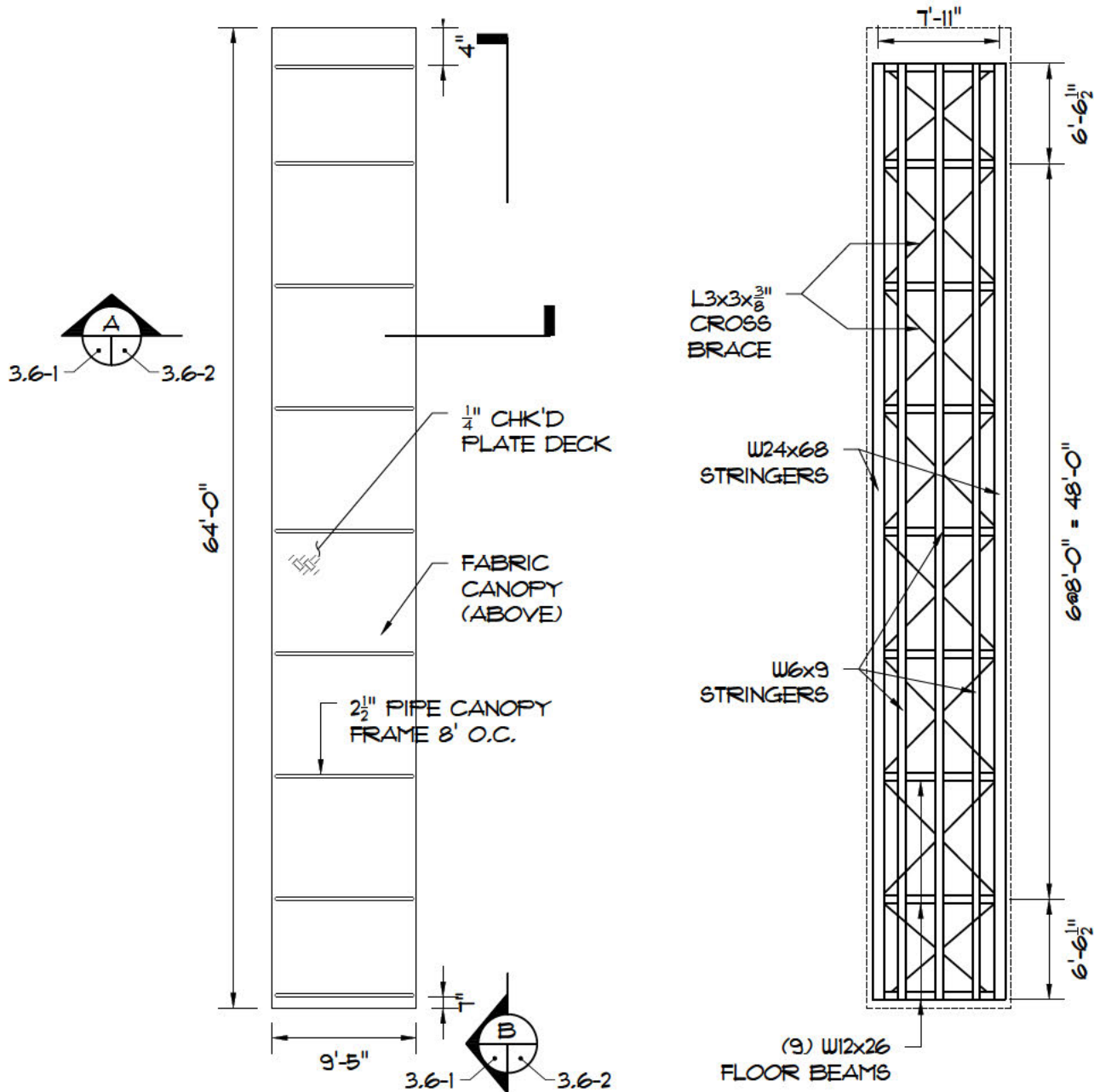
On the land side, the gangways are supported by a pair of 4 in. diameter by 4 in. long steel rocker bearings set onto ¾ in. steel bearing plates. The bearing plates are fitted with 1 in. thick steel restraining bars to keep the rocker bearings in position. The bearing plates are anchored using 1 in. diameter expansion bolts. At the barge end, the gangways are supported by a pair of 12 in. diameter by 5 in. wide steel roller bearings. The roller bearings are supported on steel brackets cantilevered off of the side of the barge.

The gangway may be lifted by an independent support frame comprising winches, hoist cables, gangway support stops, spreader beam, and a caged ladder. The support frames are made from a single columnar steel pipe (mast). The diameter of the pipe is 24 in. The gangway support stops cantilever off of the support frame pipe with their ends propped by a diagonal braces. The gangway support framing is made from 8 in. tube welded to the side of the support frame mast. A diagonal brace is also welded to the support frame, except that at the electrical gangway it is founded on the concrete footing for the support frame.

Table 3.6-1 provides an asset inventory for the West Pedestrian Gangway A. Figure 3.6-1 illustrates the typical overall deck and framing plan, while Figure 3.6-2 provides a typical cross-section and elevation of the pedestrian gangways.

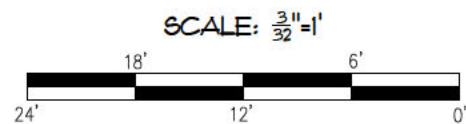
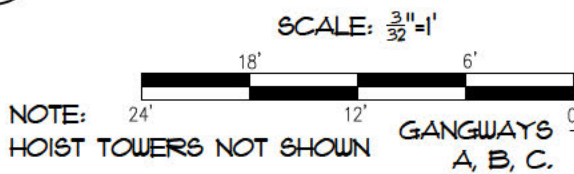
Component	Description	Unit	Quantity
Gangway	Steel-framed 8'-8" wide by 62 ft long.	EA	1
Bearings	(2) 4 in. diameter by 4 in. long steel rocker bearings on land side, and (2) 12" diameter by 5 in. wide steel roller bearings on the barge side. The roller bearings are supported on steel brackets cantilevered off of the side of the barge.	EA	4
Deck	¼ in. thick checkered steel deck plate. Each end of the gangway is fitted with checkered steel transition plates.	SF	537
Railing	Hand rails utilize 1½ in. pipe. The sides of the gangway are enclosed with chain link mesh panels.	LF	124
Canopy Framing	Fabric canopy wrapped over a circular arch steel pipe frame made from 2½ in. Sch. 40 pipes. The arch frames are spaced 8 ft apart.	LF	124
Gangway Support Frame	Independent support frame comprising winches, hoist cables, gangway support stops, spreader beams, and a caged ladder. The support frames are made from a single columnar 24 in. diameter steel pipe.	EA	1

Table 3.6-1: Asset Inventory of the West Pedestrian Gangway A



1 TYPICAL PEDESTRIAN GANGWAY
3.6-1 DECK PLAN

2 TYPICAL PEDESTRIAN GANGWAY
3.6-1 FRAMING PLAN



NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
ROUTINE INSPECTION OF
VERNON C. BAINE CENTER
HUNTS POINT, NEW YORK

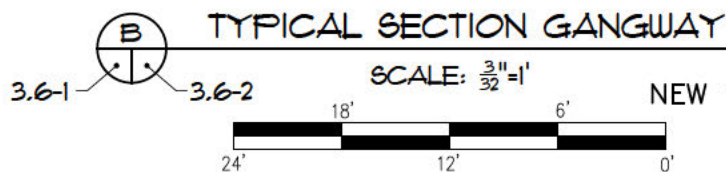
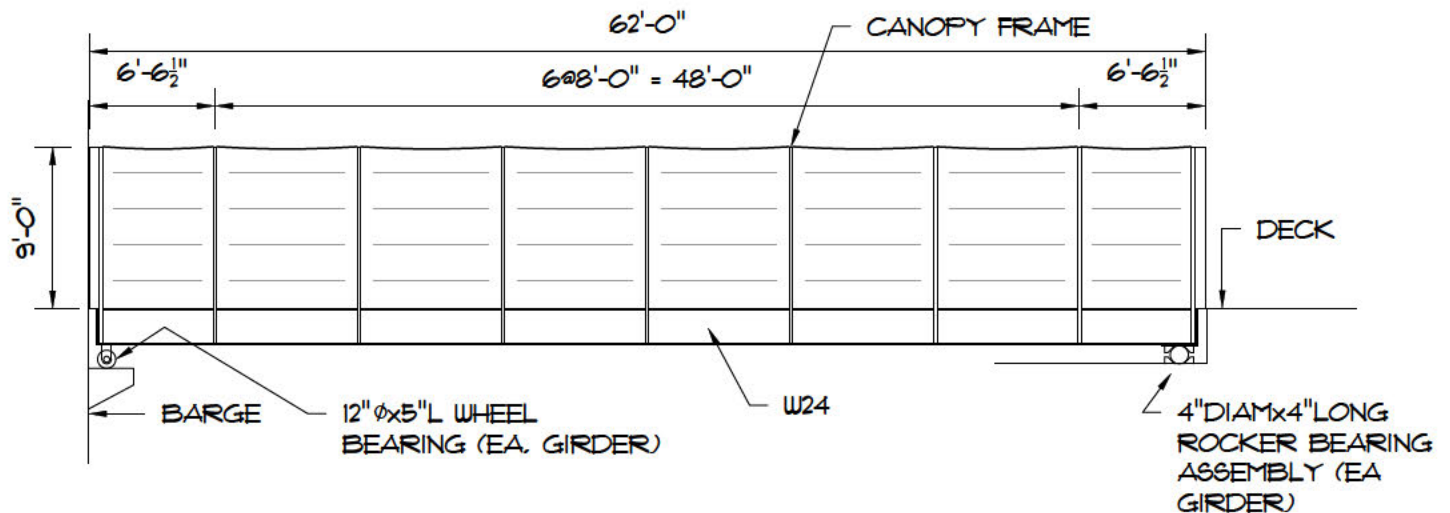
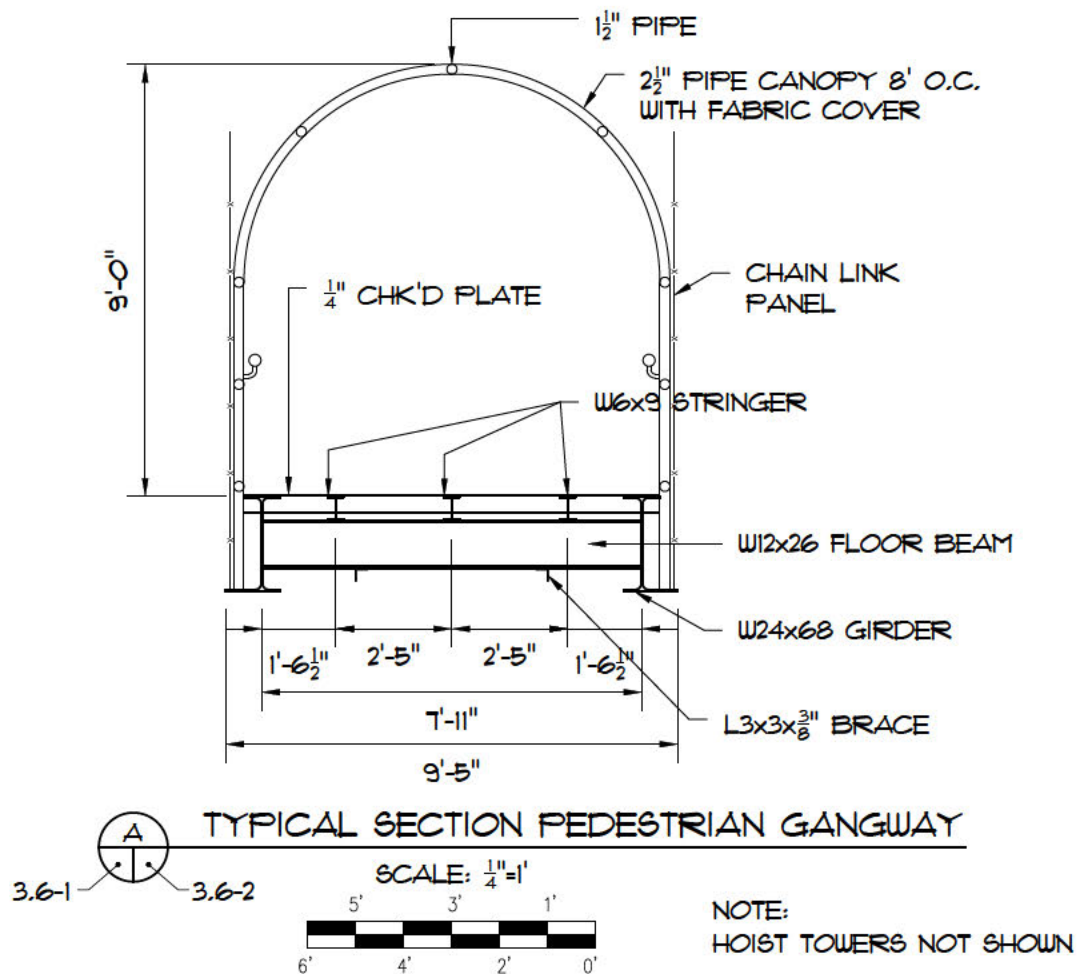
TYPICAL PEDESTRIAN GANGWAY
DECK AND FRAMING PLAN

FEBRUARY 2024

FIGURE 3.6-1

Penmax
Consulting Engineers, PC

3-78



NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
 ROUTINE INSPECTION OF
 VERNON C. BAINE CENTER
 HUNTS POINT, NEW YORK

TYPICAL CROSS-SECTION AND ELEVATION
 OF PEDESTRIAN GANGWAY

Penmax
 Consulting Engineers, PC

FEBRUARY 2024
 FIGURE 3.6-2

3.6.2 Observed Conditions

The overall condition of the West Pedestrian Gangway A is **Fair**. The system can continue to function as intended by design. Figures 3.6-1 and 3.6-2 above illustrate an overall typical deck plan, framing plan, cross-section, and elevation view of the typical pedestrian gangway.

(A) GANGWAY FRAMING

The overall condition of the framing at West Pedestrian Gangway A is **Fair**. In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The girder top flange at the deck interface contains minor corrosion over a length of approximately 56 ft. Cross-bracing contains approximately 10 percent coating loss with minor corrosion of the exposed steel. The bottom flange of the northernmost floor beam on its east side contains moderate corrosion and delamination, with approximately 5/16" remaining material (nominal 3/8"). The gangway functions as intended by design and can accommodate its full range of motion. Table 3.6-2 below provides a summary of the observed conditions for the framing at the West Pedestrian Gangway A. Photos 3.6-1 through 3.6-3 illustrate several of the observed conditions.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Framing at the West Pedestrian Gangway A	In general, the gangway framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The girder top flange at the deck interface contains minor corrosion over a length of approximately 56 ft. The cross-bracing contains approximately 10 percent coating loss with minor corrosion of the exposed steel. The bottom flange of the northernmost floor beam on its east side contains moderate corrosion and delamination, with approximately 5/16" remaining material (nominal 3/8"). The gangway functions as intended by design and can accommodate its full range of motion.	EA	1

Table 3.6-2: Summary of Observed Framing Conditions at the West Pedestrian Gangway A



Photo 3.6-1: Overall east elevation view of the West Pedestrian Gangway A and the gangway support frame.



Photo 3.6-2: The bottom flange of the northernmost floor beam on its east side contains moderate corrosion and delamination. Also note the coating loss on the cross-bracing.



Photo 3.6-3: Overall view of the steel framing below the West Pedestrian Gangway A. Note the steel exhibits minor coating loss with corrosion at isolated locations on the floor beams and cross-braces.

(B) BEARING SUPPORTS

The overall condition of the bearing supports at West Pedestrian Gangway A is **Fair**. The rocker bearings typically exhibit minor to moderate corrosion of the rockers and bearing plates. Anchor bolt nuts exhibit moderate to advanced corrosion. The northwest rocker bearing and bearing plate exhibit moderate corrosion with delamination. The safety/restraining chain on northwest bearing exhibits minor to moderate corrosion. The bearings function as intended by design and can accommodate their full range of motion.

Table 3.6-3 below provides a summary of the observed conditions of the bearing supports at the West Pedestrian Gangway A. Photo 3.6-4 illustrates corrosion at the northwest rocker bearing.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Bearings at the West Pedestrian Gangway A	The rocker bearings typically exhibit minor to moderate corrosion of the rockers and bearing plates. Anchor bolt nuts exhibit moderate to advanced corrosion. The northwest rocker bearing and bearing plate exhibit moderate corrosion with delamination. The safety/restraining chain on northwest bearing exhibits minor to moderate corrosion. The bearings function as intended by design and can accommodate their full range of motion.	EA	4

Table 3.6-3: Summary of Observed Bearing Conditions at the West Pedestrian Gangway A



Photo 3.6-4: Condition of northwest rocker bearing at Pedestrian Gangway A. Assembly exhibits minor corrosion of the rocker bearing, bearing plate, and restraining safety chain. The anchor bolt nuts exhibit moderate to advanced corrosion.

(C) DECK, RAILING, AND CANOPY

The overall condition of the deck, railing and canopy at the West Pedestrian Gangway A is **Fair**. The vinyl canopy on east and west sides of gangway limit ability to inspect various components. The steel diamond deck plate exhibits coating loss due to wear

and abrasion with minor to moderate surface corrosion at isolated locations. The railing and canopy remain in place and are fully functional.

Table 3.6-4 below provides a summary of the observed conditions of the deck, railing, and canopy at the West Pedestrian Gangway A. Photos 3.6-5 and 3.6-6 illustrate an overall view of the gangway interior and the corrosion on the deck plate.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Deck, Railing and Canopy at the West Pedestrian Gangway A	The vinyl canopy on east and west sides of gangway limit ability to inspect various components. The steel diamond deck plate exhibits coating loss due to wear and abrasion with minor to moderate surface corrosion at isolated locations. The railing and canopy remain in place and are fully functional.	EA	1

Table 3.6-4: Summary of Observed Deck, Railing, and Canopy Conditions at the West Pedestrian Gangway A

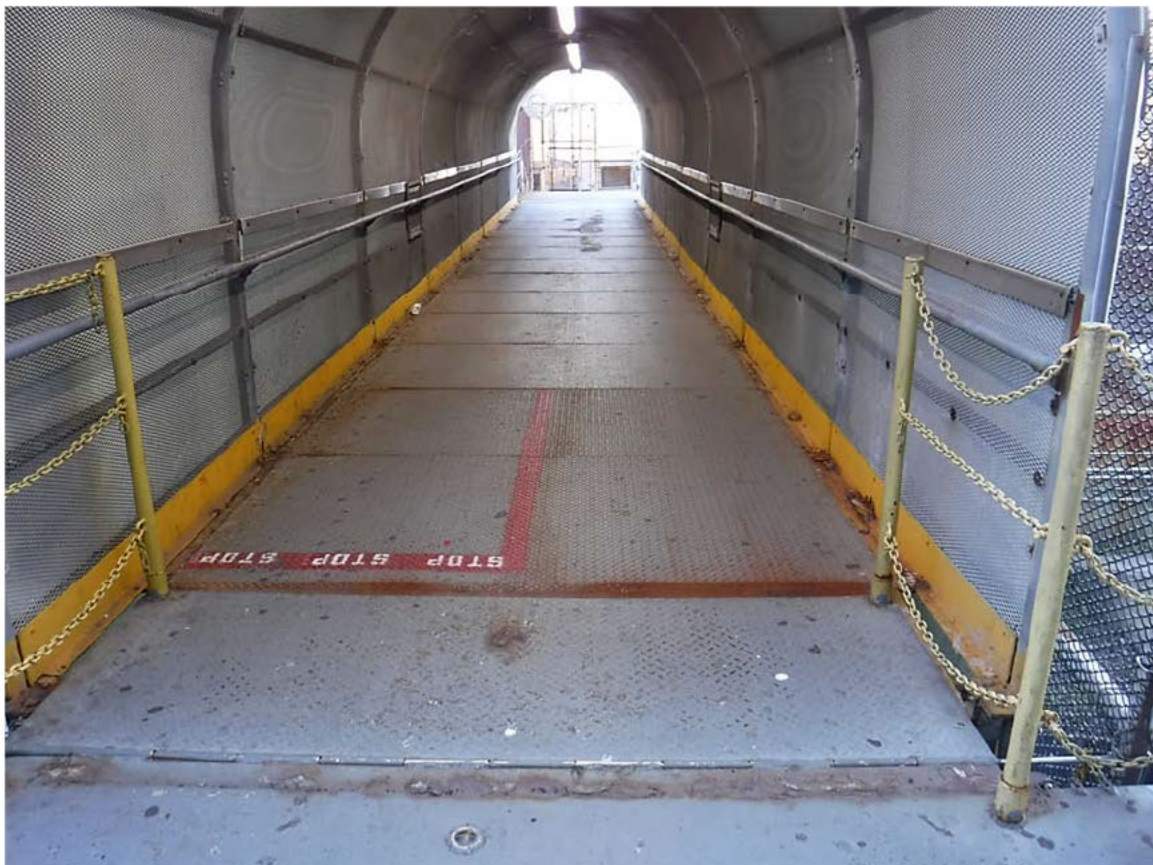


Photo 3.6-5: Overall view of the gangway interior of the West Pedestrian Gangway A.



Photo 3.6-6: The steel diamond deck plate exhibits coating loss due to wear and abrasion at isolated locations. The steel exhibits minor to moderate surface rust.

(D) GANGWAY SUPPORT FRAME

The overall condition of the gangway support frame at the West Pedestrian Gangway A is **Fair**. With the exception of the guide bar framing on the support frame, support frame components do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The mast is plumb and the foundation is secure. The structure does not indicate evidence of distress or significant deterioration. The guide bar framing interferes with a bracket appurtenance on the mast. The elements conflict during low tide cycles, and the appurtenance is slightly deformed as a result. The manual winch mechanism was not inspected for functionality; however no obvious damage, deterioration, or potential for dysfunction was observed.

Table 3.6-5 below provides a summary of the observed conditions at the gangway support frame of the West Pedestrian Gangway A. Photo 3.6-7 illustrate an overall elevation view of the gangway and the support frame. Photo 3.6-8 depicts the interference of the bracket with the guide bar on the main mast.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Support Frame at the West Pedestrian Gangway A	With the exception of the guide bar framing on the support frame, support frame components do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The mast is plumb and the foundation is secure. The structure does not indicate evidence of distress or significant deterioration. The guide bar framing interferes with a bracket appurtenance on the mast. The elements conflict during low tide cycles, and the appurtenance is slightly deformed as a result. The manual winch mechanism was not inspected for functionality; however no obvious damage, deterioration, or potential for dysfunction was observed.	EA	1

Table 3.6-5: Summary of Observed Gangway Support Frame Conditions at the West Pedestrian Gangway A



Photo 3.6-7: Overall east elevation view of the West Pedestrian Gangway A and the gangway support frame.



Photo 3.6-8: Guide bar framing interferes with a bracket appurtenance on the main mast. These elements conflict during low tide cycles, and the appurtenance is slightly deformed as a result.

3.6.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection do not indicate further degradation since the 2018 inspection. The observed conditions remain substantially similar to those observed in 2018.

3.6.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

The gangway and support frame can function in accordance with their intended design. Where debris accumulates at the rocker or wheel bearings, it should be removed to allow complete and uninhibited motion of the bearings. Anchor nuts should be replaced, and safety chains reestablished or replaced. The present corrosion does not compromise the function of these systems, and maintenance repairs should be employed to maintain condition of good repair.

(B) BERTHING ASSESSMENT

Berthing requirements for this structure are not applicable.

(C) RESILIENCY TO COASTAL FLOODING

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the site falls in zone VE15 (el. +15.0 ft). Under the theoretical 100-yr flood scenario the water level will be approximately 8 ft above the top of the adjacent cellular cofferdam. Severe flooding conditions in the East River will likely result in substantial damage to the buildings, gangways, ramps, utility systems, and other topside features. If the barge is subject to extreme water levels, the gangway may dislodge from its bearings and engage the safety chains. In anticipation of extreme flooding, the gangway may be preemptively hoisted off its bearings and disconnected from the barge.

Utilities should be disconnected, and gangways should be raised and secured in an elevated position to the support frame. Mooring lines should be deployed with sufficient slack, and operational protocols should be established to evacuate the facility in extreme emergency situations. In general, mooring lines should be always deployed and managed (Bollards B-1 to B-6) as a regular maintenance protocol. The mooring arms and their attachments should be evaluated for strength and stability under extreme conditions.

3.6.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly.

Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the

nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection.

Table 3.6-6 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$63,526
	Subtotal Routine Actions:		\$63,526
TOTAL FOR WEST PEDESTRIAN GANGWAY A:			\$92,170

Table 3.6-6: Summary of Recommended Actions and Cost Estimate for West Pedestrian Gangway A

(A) IMMEDIATE ACTIONS

Immediate action is not required at this time.

(B) PRIORITY ACTIONS

Priority actions call for removing debris accumulation at the rocker bearings to prevent interference with the gangway motions. Additionally, the corroded anchor bolt nuts should be replaced.

(C) ROUTINE ACTIONS

Routine actions call for general maintenance involving the cleaning and recoating of steel components. These include the substructural framing, the bearing supports, and the deck. All exposed steel may be coated with an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate marine-

based epoxy coal tar coating material designed for aggressive marine environments should be specified. Proper surface preparation is important to ensure a clean substrate and ensure good bond. Both hydroblasting and mechanical cleaning methods should be employed. The activity will require high quality control measures during the application of the coating.

3.7 MIDDLE PEDESTRIAN GANGWAY B

3.7.1 Description

Access to the floating detention barge is provided by three pedestrian gangways and one cargo gangway. The Middle Pedestrian Gangway B is approximately 62 ft long by 8'-8" wide and is framed using a pair of W24 x68 girders, W12x26 floor beams spaced at 8 ft apart, and three W6 stringers along the span of the gangways. The stringers are spaced approximately 2'5" and support a ¼ in. thick checkered steel deck plate. Steel L3x3x3/8 cross-braces span between floor beams. The gangways are covered by a fabric canopy wrapped over a circular arch steel pipe frame made from 2½ in. Sch. 40 pipes. The arch frames are spaced 8 ft apart. Hand rails utilize 1¼ in. pipe. The sides of the gangways are enclosed with chain link mesh panels.

On the land side, the gangways are supported by a pair of 4 in. diameter by 4 in. long steel rocker bearings set onto ¾ in. steel bearing plates. The bearing plates are fitted with 1 in. thick steel restraining bars to keep the rocker bearings in position. The bearing plates are anchored using 1 in. diameter expansion bolts. At the barge end, the gangways are supported by a pair of 12 in. diameter by 5 in. wide steel roller bearings. The roller bearings are supported on steel brackets cantilevered off of the side of the barge.

The gangway may be lifted by an independent support frame comprising winches, hoist cables, gangway support stops, spreader beam, and a caged ladder. The support frames are made from a single columnar steel pipe (mast). The diameter of the pipe is 24 in. The gangway support stops cantilever off of the support frame pipe with their ends propped by a diagonal braces. The gangway support framing is made from 8 in. tube welded to the side of the support frame mast. A diagonal brace is also welded to the support frame, except that at the electrical gangway it is founded on the concrete footing for the support frame.

Table 3.7-1 provides an asset inventory for the Middle Pedestrian Gangway B. Figure 3.6-1 of preceding Section 3.6 illustrates an overall deck and framing plan, while Figure 3.6-2 provides a typical cross-section and elevation for the pedestrian gangways.

Component	Description	Unit	Quantity
Gangway	Steel-framed 8'-8" wide by 62 ft long.	EA	1
Bearings	(2) 4 in. diameter by 4 in. long steel rocker bearings on land side, and (2) 12" diameter by 5 in. wide steel roller bearings on the barge side. The roller bearings are supported on steel brackets cantilevered off of the side of the barge.	EA	4
Deck	¼ in. thick checkered steel deck plate. Each end of the gangway is fitted with checkered steel transition plates.	SF	537
Railing	Hand rails utilize 1½ in. pipe. The sides of the gangway are enclosed with chain link mesh panels.	LF	124
Canopy Framing	Fabric canopy wrapped over a circular arch steel pipe frame made from 2½ in. Sch. 40 pipes. The arch frames are spaced 8 ft apart.	LF	124
Gangway Support Frame	Independent support frame comprising winches, hoist cables, gangway support stops, spreader beams, and a caged ladder. The support frames are made from a single columnar 24 in. diameter steel pipe.	EA	1

Table 3.7-1: Asset Inventory of the Middle Pedestrian Gangway B

3.7.2 Observed Conditions

The overall condition of the West Pedestrian Gangway A is **Fair**. The system can continue to function as intended by design. Figures 3.6-1 and 3.6-2 in preceding Section 3.6 illustrate an overall typical deck plan, framing plan, cross-section, and elevation view of the typical pedestrian gangway.

(A) GANGWAY FRAMING

The overall condition of the framing at Middle Pedestrian Gangway B is **Fair**. In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The girder top flange at the deck interface contains minor corrosion over a length of approximately 40 ft. The steel girders, floor beams and cross-braces maintain their coating with only minor coating loss at isolated locations. The gangway functions as intended by design and can accommodate its full range of motion. Table 3.7-2 below provides a summary of the observed conditions for the framing at the Middle Pedestrian Gangway B. Photos 3.7-1 and 3.7-2 illustrate the typical condition of the gangway framing.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Framing at the Middle Pedestrian Gangway B	In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The girder top flange at the deck interface contains minor corrosion over a length of approximately 40 ft. The steel girders, floor beams and cross-braces maintain their coating with only minor coating loss at isolated locations. The gangway functions as intended by design and can accommodate its full range of motion	EA	1

Table 3.7-2: Summary of Observed Framing Conditions at the Middle Pedestrian Gangway B



Photo 3.7-1: View of the Middle Pedestrian Gangway B framing looking north. The coating generally remains intact.



Photo 3.7-2: View of the Middle Pedestrian Gangway B framing looking south.

(B) BEARING SUPPORTS

The overall condition of the bearing supports at the Middle Pedestrian Gangway B is **Fair**. The bearings typically exhibit minor coating loss and corrosion of the components. The safety/restraining chains and shackles exhibit moderate to advanced corrosion. The northeast rocker bearing contains excessive debris accumulation. Anchor bolt nuts typically exhibit moderate to advanced corrosion with heavy delamination. However, the bearings function as intended by design and can accommodate their full range of motion. Table 3.7-3 below provides a summary of the observed conditions at the bearings of the Middle Gangway B. Photos 3.7-3 and 3.7-4 illustrate bearing conditions.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Bearings at the Middle Pedestrian Gangway B	The bearings typically exhibit minor coating loss and corrosion of the components. The safety/restraining chains and shackles exhibit moderate to advanced corrosion. The NE rocker bearing contains excessive debris accumulation. Anchor bolt nuts typically exhibit moderate to advanced corrosion with heavy delamination. However, the bearings function as intended by design and can accommodate their full range of motion.	EA	4

Table 3.7-3: Summary of Observed Bearing Conditions at the Middle Pedestrian Gangway B

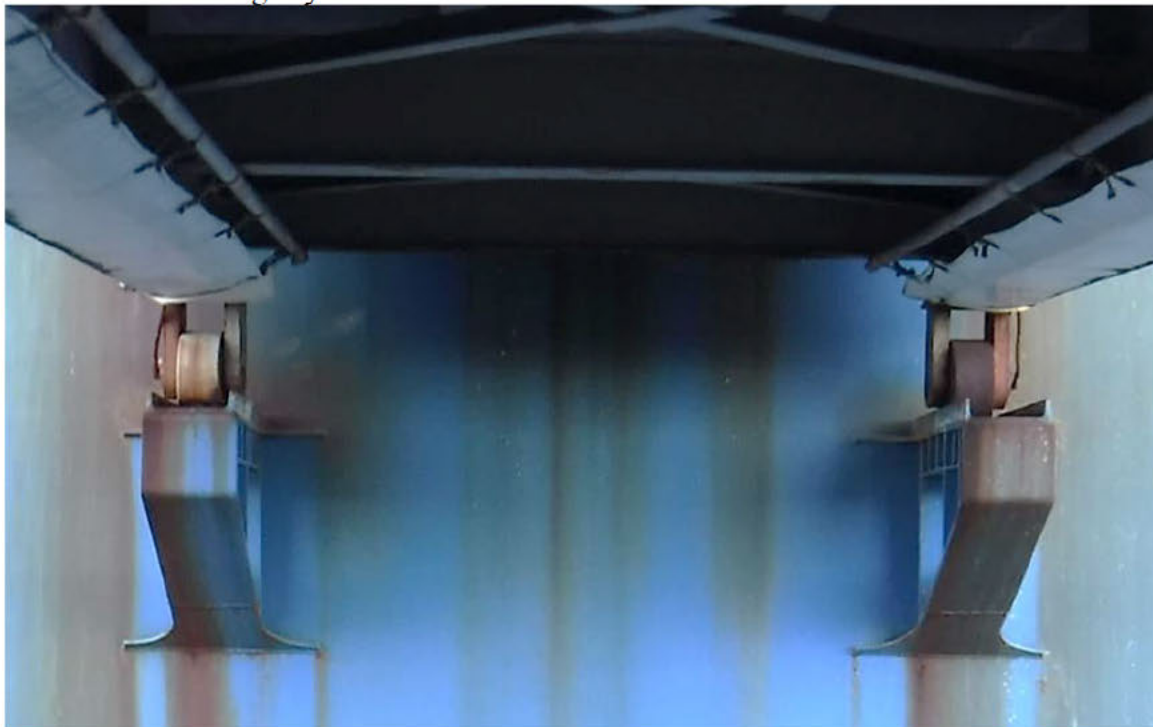


Photo 3.7-3: Enlarged view of the roller bearings at the Middle Gangway B.



Photo 3.7-4: Closeup view of the northeast rocker bearing containing excessive debris accumulations at the Middle Gangway B.

(C) DECK, RAILING, AND CANOPY

The overall condition of the deck, railing and canopy at the Middle Pedestrian Gangway B is **Fair**. The vinyl canopy on east and west sides of gangway limit ability to inspect various components. The vinyl canopy support pole at north abutment on east side is cracked through at bottom with heavy corrosion. The steel diamond deck plate exhibits wear with minor surface corrosion at various locations. The railing and canopy remain in place and are fully functional. Table 3.7-4 below provides a summary of the observed conditions of the deck, railing, and canopy at the Middle Pedestrian Gangway B. Photos 3.7-5 through 3.7-7 illustrate an overall view of the gangway, the deteriorated canopy support pipe, and the interior condition of the gangway.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Deck, Railing and Canopy at the Middle Pedestrian Gangway B	The vinyl canopy on east and west sides of gangway limit ability to inspect various components. The vinyl canopy support pole at north abutment on east side is cracked through at bottom with heavy corrosion. The steel diamond deck plate exhibits wear with minor surface corrosion at various locations. The railing and canopy remain in place and are fully functional.	EA	1

Table 3.7-4: Summary of Observed Deck, Railing, and Canopy Conditions at the Middle Pedestrian Gangway B



Photo 3.7-5: West elevation view of the Middle Gangway B and support frame. Note the vines growing on the support frame stairs.

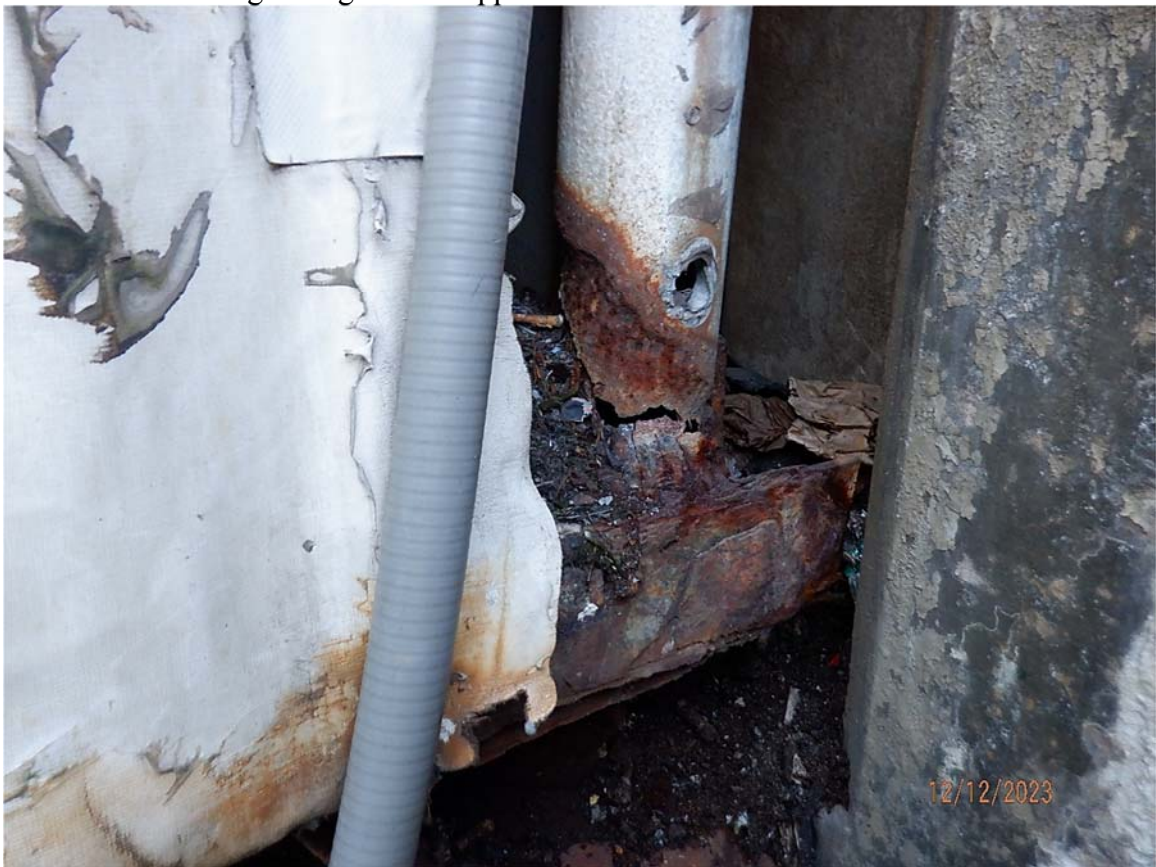


Photo 3.7-6: Severe corrosion of the northeast canopy post at the Middle Gangway B.



Photo 3.7-7: Interior view of the Middle Pedestrian Gangway B exhibiting wear with minor surface corrosion at various locations.

(D) GANGWAY SUPPORT FRAME

The overall condition of the gangway support frame at the Middle Pedestrian Gangway B is **Fair**. The support frame components do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The mast is plumb and the foundation is secure. Moderate vegetation (vines) growth on the steel cage ladder, mast, and mechanical winch components inhibit access by facility personnel and may restrict operation of the winch. The manual winch mechanism was not inspected for functionality. The structure does not indicate evidence of distress or significant deterioration. Table 3.7-5 below provides a summary of the observed conditions at the gangway support frame of the Middle Pedestrian Gangway B. Photo 3.7-8 provides an overall view of the gangway support frame at the Middle Pedestrian Gangway B.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Support Frame at the Middle Pedestrian Gangway B	The support frame components do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The mast is plumb and the foundation is secure. Moderate vegetation (vines) growth on the steel cage ladder, mast, and winch inhibit access and may restrict operation of the winch.	EA	1

Table 3.7-5: Summary of Observed Gangway Support Frame Conditions at the Middle Pedestrian Gangway B



Photo 3.7-8: Overall elevational view of the gangway support frame at the Middle Pedestrian Gangway B. Note the vegetation growth along the steel cage ladder and mast. Some growth exists on the manual winch system.

3.7.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection do not indicate further degradation since the 2018 inspection. The observed conditions remain substantially similar to those observed in 2018.

3.7.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

The gangway and support frame can function in accordance with their intended design. Where debris accumulates at the rocker bearings, it should be removed to allow complete and uninhibited motion of the bearings. Anchor nuts should be replaced, and safety chains reestablished or replaced. The present corrosion does not compromise the function of these systems, and maintenance repairs should be employed to maintain condition of good repair. Additionally, the vines growing on the steel cage ladder, mast, and winch should be cut and removed to permit full access by facility personnel and allow proper operation of the winch.

(B) BERTHING ASSESSMENT

Berthing requirements for this structure are not applicable.

(C) RESILIENCY TO COASTAL FLOODING

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the site falls in zone VE15 (el. +15.0 ft). Under the theoretical 100-yr flood scenario the water level will be approximately 8 ft above the top of the adjacent cellular cofferdam. Severe flooding conditions in the East River will likely result in substantial damage to the buildings, gangways, ramps, utility systems, and other topside features. If the barge is subject to extreme water levels, the gangway may dislodge from its bearings and engage the safety chains. In anticipation of extreme flooding, the gangway may be preemptively hoisted off its bearings and disconnected from the barge.

Utilities should be disconnected, and gangways should be raised and secured in an elevated position to the support frame. Mooring lines should be deployed

with sufficient slack, and operational protocols should be established to evacuate the facility in extreme emergency situations. In general, mooring lines should be always deployed and managed (Bollards B-1 to B-6) as a regular maintenance protocol. The mooring arms and their attachments should be evaluated for strength and stability under extreme conditions.

3.7.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly. Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection.

Table 3.7-6 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Remove vegetation and overgrowth from the support frame ladder and winch systems.	FY 2024	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$63,526
	Subtotal Routine Actions:		\$63,526
TOTAL FOR MIDDLE PEDESTRIAN GANGWAY B:			\$103,495

Table 3.7-6: Summary of Recommended Actions and Cost Estimate for Middle Pedestrian Gangway B

(A) IMMEDIATE ACTIONS

Remove vegetation and overgrowth at the gangway support frame to ensure full access on the steel cage ladder and ensure operability of the manual winch mechanisms.

(B) PRIORITY ACTIONS

Priority actions call for removing debris accumulation at the rocker bearings to prevent interference with the gangway motions. Additionally, the corroded anchor bolt nuts should be replaced.

(C) ROUTINE ACTIONS

Routine actions call for general maintenance involving the cleaning and recoating of steel components. These include the substructural framing, the bearing supports, and the deck. All exposed steel may be coated with an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate marine-based epoxy coal tar coating material designed for aggressive marine environments should be specified. Proper surface preparation is important to ensure a clean substrate and ensure good bond. Both hydroblasting and mechanical cleaning methods should be employed. The activity will require high quality control measures during the application of the coating.

3.8 EAST PEDESTRIAN GANGWAY C

3.8.1 Description

Access to the floating detention barge is provided by three pedestrian gangways and one cargo gangway. The East Pedestrian Gangway C is approximately 62 ft long by 8'-8" wide and is framed using a pair of W24 x68 girders, W12x26 floor beams spaced at 8 ft apart, and three W6 stringers along the span of the gangways. The stringers are spaced approximately 2'5" and support a ¼ in. thick checkered steel deck plate. Steel L3x3x3/8 cross-braces span between floor beams. The gangways are covered by a fabric canopy wrapped over a circular arch steel pipe frame made from 2½ in. Sch. 40 pipes. The arch frames are spaced 8 ft apart. Hand rails utilize 1¼ in. pipe. The sides of the gangway are enclosed with chain link mesh panels.

On the land side, the gangways are supported by a pair of 4 in. diameter by 4 in. long steel rocker bearings set onto ¾ in. steel bearing plates. The bearing plates are fitted with 1 in. thick steel restraining bars to keep the rocker bearings in position. The bearing plates are anchored using 1 in. diameter expansion bolts. At the barge end, the gangways are supported by a pair of 12 in. diameter by 5 in. wide steel roller bearings. The roller bearings are supported on steel brackets cantilevered off of the side of the barge.

The gangway may be lifted by an independent support frame comprising winches, hoist cables, gangway support stops, spreader beam, and a caged ladder. The support frames are made from a single columnar steel pipe (mast). The diameter of the pipe is 24 in. The gangway support stops cantilever off of the support frame pipe with their ends propped by a diagonal braces. The gangway support framing is made from 8 in. tube welded to the side of the support frame mast. A diagonal brace is also welded to the support frame, except that at the electrical gangway it is founded on the concrete footing for the support frame.

Table 3.8-1 provides an asset inventory for the East Pedestrian Gangway C. Figure 3.6-1 of preceding Section 3.6 illustrates an overall deck and framing plan, while Figure 3.6-2 provides a typical cross-section and elevation of the pedestrian gangways.

Component	Description	Unit	Quantity
Gangway	Steel-framed 8'-8" wide by 62 ft long.	EA	1
Bearings	(2) 4 in. diameter by 4 in. long steel rocker bearings on land side, and (2) 12" diameter by 5 in. wide steel roller bearings on the barge side. The roller bearings are supported on steel brackets cantilevered off of the side of the barge.	EA	4
Deck	¼ in. thick checkered steel deck plate. Each end of the gangway is fitted with checkered steel transition plates.	SF	537
Railing	Hand rails utilize 1½ in. pipe. The sides of the gangway are enclosed with chain link mesh panels.	LF	124
Canopy Framing	Fabric canopy wrapped over a circular arch steel pipe frame made from 2½ in. Sch. 40 pipes. The arch frames are spaced 8 ft apart.	LF	124
Gangway Support Frame	Independent support frame comprising winches, hoist cables, gangway support stops, spreader beams, and a caged ladder. The mast is made from a single columnar 24 in. diameter steel pipe.	EA	1

Table 3.8-1: Asset Inventory of the East Pedestrian Gangway C

3.8.2 Observed Conditions

The overall condition of the East Pedestrian Gangway C is **Fair**. The system can continue to function as intended by design. Figures 3.6-1 and 3.6-2 in preceding Section 3.6 illustrate an overall typical deck plan, framing plan, cross-section, and elevation view of the typical pedestrian gangway.

(A) GANGWAY FRAMING

The overall condition of the framing at East Pedestrian Gangway C is **Fair**. In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The steel girders, floor beams and cross-braces maintain their coating with only minor coating loss at isolated locations. However, the girder top flange at the deck interface contains minor corrosion over a length of approximately 40 ft, and the girder bottom flanges exhibit intermittent coating loss with minor corrosion over approximately 10 percent of its length at the interface with the vinyl canopy. The gangway functions as intended by design and can accommodate its full range of motion. Table 3.8-2 below provides a summary of the observed conditions for the framing at the East Pedestrian Gangway C. Photo 3.8-1 illustrates an overall view of the gangway underside.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Framing at the East Pedestrian Gangway C	In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The steel girders, floor beams and cross-braces maintain their coating with only minor coating loss at isolated locations. However, the girder top flange at the deck interface contains minor corrosion over a length of approximately 40 ft, and the girder bottom flanges exhibit intermittent coating loss with minor corrosion over approximately 10 percent of its length at the interface with the vinyl canopy. The gangway functions as intended by design and can accommodate its full range of motion.	EA	1

Table 3.8-2: Summary of Observed Framing Conditions at the East Pedestrian Gangway C



Photo 3.8-1: View of the framing underside and roller bearing supports at the East Pedestrian Gangway C.

(B) BEARING SUPPORTS

The overall condition of the bearing supports at the East Pedestrian Gangway C is **Fair**. The bearings typically exhibit minor coating loss and corrosion of the components. The safety/restraining chains and shackles exhibit moderate to advanced corrosion. The northeast rocker bearing safety chain is broken. Anchor bolt nuts typically exhibit moderate to advanced corrosion with heavy delamination. However, the bearings function as intended by design and can accommodate their full range of motion. Table 3.8-3 below provides a summary of the observed conditions at the bearings of the East Pedestrian Gangway C. Photos 3.8-5 and 3.8-6 illustrate bearing conditions.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Bearings at the East Pedestrian Gangway C	The bearings typically exhibit minor coating loss and corrosion of the components. The safety/restraining chains and shackles exhibit moderate to advanced corrosion. The northeast rocker bearing safety chain is broken. Anchor bolt nuts typically exhibit moderate to advanced corrosion with heavy delamination. However, the bearings function as intended by design and can accommodate their full range of motion.	EA	4

Table 3.8-3: Summary of Observed Bearing Conditions at the East Pedestrian Gangway



Photo 3.8-2: View of the roller bearings at East Pedestrian Gangway C.



Photo 3.8-3: Example of typical anchor bolt and nut corrosion at the rocker bearings. Also note the broken or cut safety chain link at the northeast bearing.

(C) DECK, RAILING, AND CANOPY

The overall condition of the deck, railing and canopy at the East Pedestrian Gangway C is **Fair**. The vinyl canopy on east and west sides of gangway limit ability to inspect various components. The steel diamond deck plate exhibits wear with minor surface corrosion at various locations. The railing and canopy remain in place and are fully functional. Table 3.8-4 below provides a summary of the observed conditions of the deck, railing, and canopy at the East Pedestrian Gangway C. Photos 3.8-4 and 3.8-5 illustrate an overall view of the gangway and the general interior condition of the gangway.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Deck, Railing and Canopy at the East Pedestrian Gangway C	The vinyl canopy on east and west sides of gangway limit ability to inspect various components. The steel diamond deck plate exhibits wear with minor surface corrosion at various locations. The railing and canopy remain in place and are fully functional.	EA	1

Table 3.8-4: Summary of Observed Deck, Railing, and Canopy Conditions at the East Pedestrian Gangway C



Photo 3.8-4: Overall east elevation view of the East Pedestrian Gangway C and the gangway support frame.



Photo 3.8-5: Interior view of the East Pedestrian Gangway C. Note the wear and minor surface corrosion at various locations and at the transition plate.

(D) GANGWAY SUPPORT FRAME

The overall condition of the gangway support frame at the East Pedestrian Gangway C is **Fair**. The support frame components do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The mast is plumb and the foundation is secure. Moderate to heavy vegetation (vines) growth on the steel cage ladder, mast, and mechanical winch components inhibit access by facility personnel and restricts operation of the winch. The manual winch mechanism was not inspected for functionality. The structure does not indicate evidence of distress or significant deterioration. Table 3.8-5 below provides a summary of the observed conditions at the gangway support frame of the East Pedestrian Gangway C. Photo 3.8-4 above provides an overall view of the gangway support frame. Photo 3.8-6 below depict the vine growth on the support frame.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Support Frame at the East Pedestrian Gangway C	The support frame components do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The mast is plumb and the foundation is secure. Moderate to heavy vegetation (vines) growth on the steel cage ladder, mast, and mechanical winch inhibit access and restricts operation.	EA	1

Table 3.8-5: Summary of Observed Gangway Support Frame Conditions at the East Pedestrian Gangway C



Photo 3.8-6: Moderate to heavy vegetation and vines growing on the support gangway cage ladder, mast, and winch restricting access and operation.

3.8.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection do not indicate further degradation since the 2018 inspection. The vegetation growth on the gangway support frame has increased. However, the observed conditions remain substantially similar to those observed in 2018.

3.8.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

The gangway can function in accordance with its intended design. However, access to the support frame is restricted by vegetation and vines growing on the cage ladder. The vines interfere with the manual winch mechanisms and prevent operability. Where debris accumulates at the rocker bearings, it should be removed to allow complete and uninhibited motion of the bearings. Anchor nuts should be replaced, and safety chains reestablished or replaced. The present corrosion does not compromise the function of these systems, and maintenance repairs should be employed to maintain a condition of good repair.

(B) BERTHING ASSESSMENT

Berthing requirements for this structure are not applicable.

(C) RESILIENCY TO COASTAL FLOODING

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the site falls in zone VE15 (el. +15.0 ft). Under the theoretical 100-yr flood scenario the water level will be approximately 8 ft above the top of the adjacent cellular cofferdam. Severe flooding conditions in the East River will likely result in substantial damage to the buildings, gangways, ramps, utility systems, and other topside features. If the barge is subject to extreme water levels, the gangway may dislodge from its bearings and engage the safety chains. In anticipation of extreme flooding, the gangway may be preemptively hoisted off its bearings and disconnected from the barge.

Utilities should be disconnected, and gangways should be raised and secured in an elevated position to the support frame. Mooring lines should be deployed with sufficient slack, and operational protocols should be established to evacuate the facility in extreme emergency situations. In general, mooring lines should be always deployed and managed (Bollards B-1 to B-6) as a regular maintenance protocol. The mooring arms and their attachments should be evaluated for strength and stability under extreme conditions.

3.8.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly. Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection.

Table 3.8-6 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Remove vegetation and overgrowth from the support frame ladder and winch systems.	FY 2024	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$63,526
	Subtotal Routine Actions:		\$63,526
TOTAL FOR EAST PEDESTRIAN GANGWAY C:			\$103,495

Table 3.8-6: Summary of Recommended Actions and Cost Estimate for East Pedestrian Gangway C

(A) IMMEDIATE ACTIONS

Remove vegetation and overgrowth at the gangway support frame to ensure access on the steel cage ladder and ensure operability of the manual winch mechanisms.

(B) PRIORITY ACTIONS

Priority actions call for removing debris accumulation at the rocker bearings to prevent interference with the gangway motions. Additionally, the corroded anchor bolt nuts should be replaced.

(C) ROUTINE ACTIONS

Routine actions call for general maintenance involving the cleaning and recoating of steel components. These include the substructural framing, the bearing supports, and the deck. All exposed steel may be coated with an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate marine-based epoxy coal tar coating material designed for aggressive marine environments should be specified. Proper surface preparation is important to ensure a clean substrate and ensure good bond. Both hydroblasting and mechanical cleaning methods should be employed. The activity will require high quality control measures during the application of the coating.

3.9 CARGO GANGWAY

3.9.1 Description

The Cargo Gangway is framed similarly to the pedestrian gangways. The cargo gangway is approximately 14'-5" wide by 62 ft long and are framed with a pair of W27x94 girders, W12x26 floor beams, and three W6 stringers along the span of the gangway. The stringers are spaced approximately 3'-2" and support a 3/8 in. thick checkered steel deck plate. Steel L3x3x3/8 cross-braces span between floor beams. The gangway is fenced with 3 in. pipe posts at 6 ft spacing infilled with 1-3/8" pipe railing. HSS 8x6x1/4 tubes serve as curbs along the gangway. A 12 ft security fence and 9 gage mesh wire secure the perimeter of the gangway.

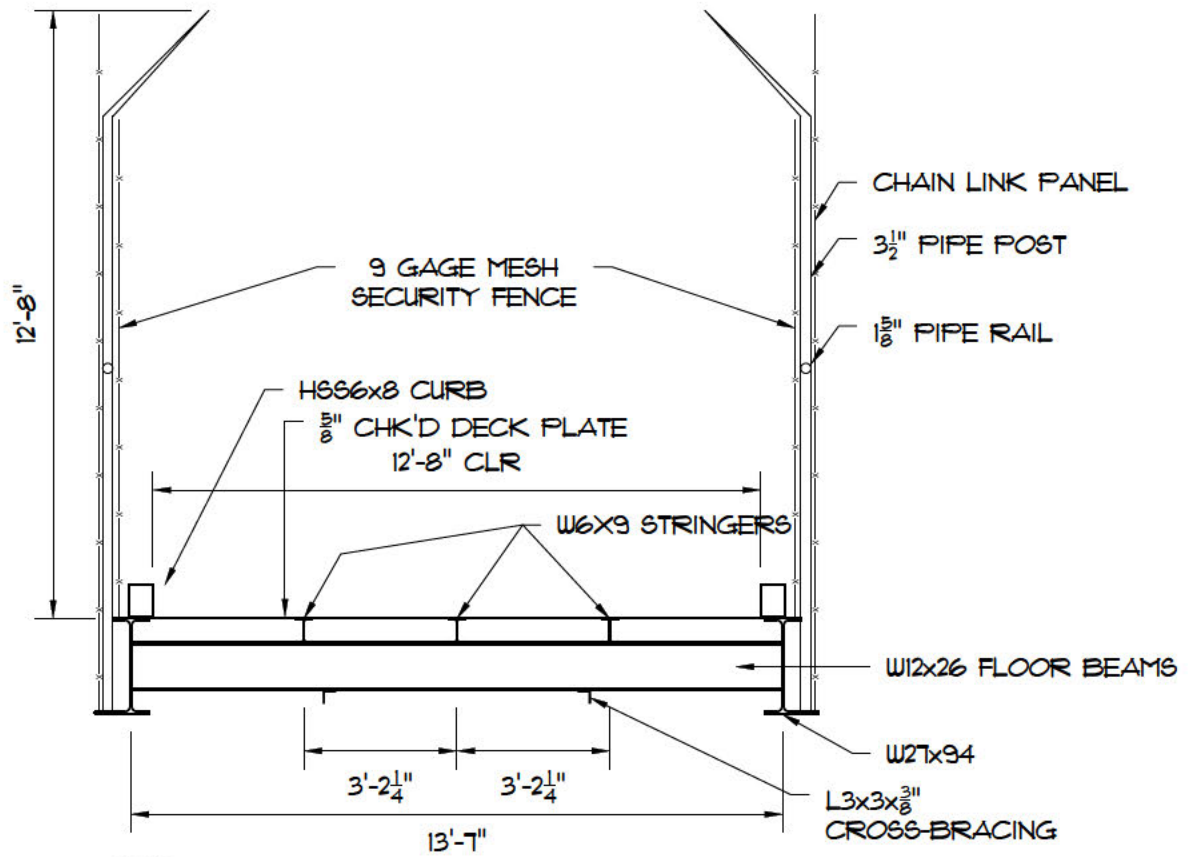
On the land side, the gangway is supported by a pair of 4 in. diameter by 7 in. long steel rocker bearings set onto 3/4 in. steel bearing plates. The bearing plates are fitted with 1 in. thick steel restraining bars to keep the rocker bearings in position. The bearing plates are anchored using 1 in. diameter expansion bolts. At the barge end, the gangways are supported by a pair of 14 in. diameter by 6 in. wide roller bearings. The roller bearings are supported on steel brackets cantilevered off of the side of the barge.

The gangway may be lifted by an independent support frame comprising winches, hoist cables, gangway support stops, spreader beam, and a caged ladder. The support frames are made from a single columnar steel pipe (mast). The diameter of the pipe is 24 in. The gangway support stops cantilever off of the support frame pipe with their ends propped by a diagonal braces. The gangway support framing is made from 8 in. tube welded to the side of the support frame mast. A diagonal brace is also welded to the support frame, except that at the electrical gangway it is founded on the concrete footing for the support frame.

Table 3.9-1 provides an asset inventory for the Cargo Gangway. Figure 3.9-1 illustrates a typical cross-section and elevation for the Cargo Gangway.

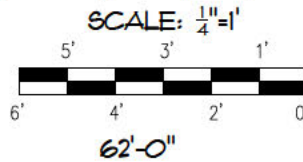
Component	Description	Unit	Quantity
Gangway	Steel-framed 14'5" wide by 62 ft long.	EA	1
Bearings	(2) 4 in. diameter by 7 in. long steel rocker bearings on land side, and (2) 14" diameter steel roller bearings on the barge side. The roller bearings are supported on steel brackets cantilevered off of the side of the barge.	EA	4
Deck	3/8 in. thick checkered steel deck plate. Each end of the gangway is fitted with checkered steel transition plates.	SF	894
Fence	The gangway is fenced with 3 in. pipe posts at 6 ft spacing infilled with 1-3/8" pipe railing. HSS 8x6x1/4 tubes serve as curbs along the gangway. A 12 ft security fence and 9 gage mesh wire secure the perimeter of the gangway	LF	124
Gangway Support Frame	Independent support frame comprising winches, hoist cables, gangway support stops, spreader beams, and a caged ladder. The support frames are made from a single columnar 24 in. diameter steel pipe.	EA	1

Table 3.9-1: Asset Inventory of the Cargo Gangway

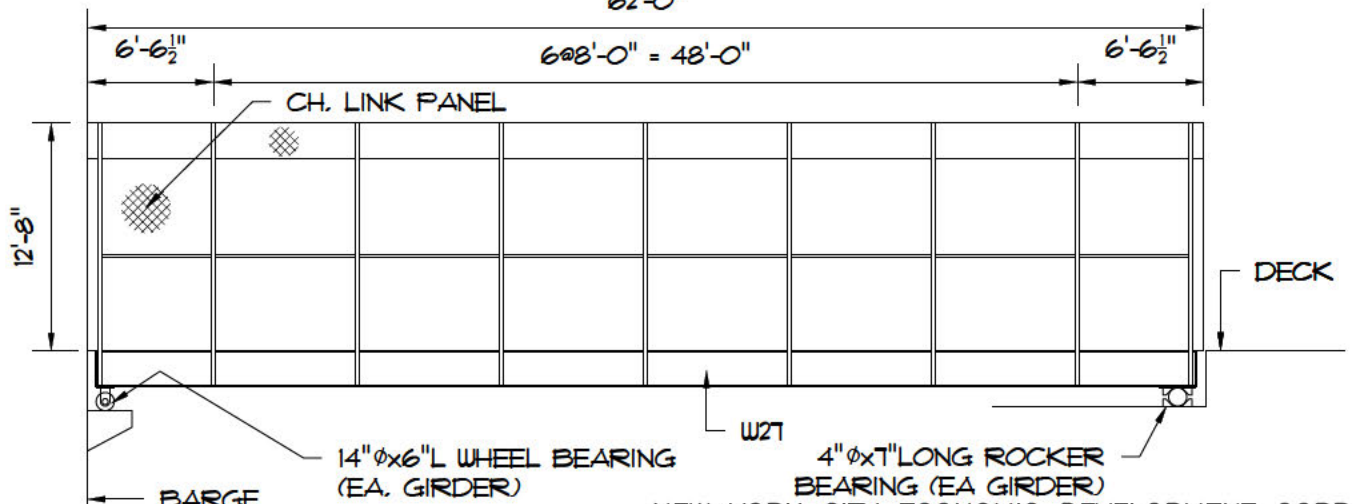


1 CARGO RAMP SECTION
3.9-1

NOTE:
HOIST TOWERS NOT SHOWN



NOTE:
FRAMING ARRANGEMENT IS
SIMILAR TO PEDESTRIAN
GANGWAYS FIG. 3.6-1, U.O.N.



2 CARGO RAMP ELEVATION
3.9-1



NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
ROUTINE INSPECTION OF
VERNON C. BAINE CENTER
HUNTS POINT, NEW YORK

TYPICAL CROSS-SECTION AND ELEVATION
OF THE CARGO GANGWAY

Penmax
Consulting Engineers, PC

FEBRUARY 2024

FIGURE 3.9-1

3.9.2 Observed Conditions

The overall condition of the Cargo Gangway is **Fair**. The system can continue to function as intended by design. Figures 3.9-1 illustrates typical cross-section, and elevation view of the Cargo Gangway. The framing arrangement is similar to the pedestrian gangways.

(A) GANGWAY FRAMING

The overall condition of the framing at the Cargo Gangway is **Fair**. In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The steel girders, floor beams and cross-braces maintain their coating with only minor coating loss at isolated locations. The gangway functions as intended by design and can accommodate its full range of motion. Table 3.9-2 below provides a summary of the observed conditions of the framing at the Cargo Gangway. Photos 3.9-1 and 3.9-2 illustrate overall views of the gangway underside.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Framing at the Cargo Gangway	In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The steel girders, floor beams and cross-braces maintain their coating with only minor coating loss at isolated locations. The gangway functions as intended by design and can accommodate its full range of motion.	EA	1

Table 3.9-2: Summary of Observed Framing Conditions at the Cargo Gangway



Photo 3.9-1: View of the Cargo Gangway framing looking north.



Photo 3.9-2: View of the Cargo Gangway framing looking south.

(B) BEARING SUPPORTS

The overall condition of the bearing supports at the Cargo Gangway is **Fair**. The bearings typically exhibit coating loss and corrosion of the components. The safety/restraining chains and shackles exhibit moderate to advanced corrosion, and the northeast rocker bearing safety chain is broken. Additionally, the southeast and southwest anchor nuts at the northeast rocker bearing are not in contact with the bearing plate. Anchor bolt nuts typically exhibit moderate to advanced corrosion with delamination.

The roller wheel bearings contain excessive debris accumulation and limits the ability for inspection. The debris may interfere with the rollers. Where visible, the bearings exhibit approximately 50 percent coating loss.

Table 3.9-3 below provides a summary of the observed conditions at the bearings of the Cargo Gangway. Photos 3.9-3 through 3.9-5 illustrate bearing conditions.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Bearings at the Cargo Gangway	The bearings typically exhibit coating loss and corrosion of the components. The safety/restraining chains and shackles exhibit moderate to advanced corrosion, and the northeast rocker bearing safety chain is broken. Additionally, the southeast and southwest anchor nuts at the northeast rocker bearing are not in contact with the bearing plate. Anchor bolt nuts typically exhibit moderate to advanced corrosion with delamination. The roller wheel bearings contain excessive debris accumulation and limits the ability for inspection. The debris may interfere with the rollers. Where visible, the bearings exhibit approximately 50 percent coating loss	EA	4

Table 3.9-3: Summary of Observed Bearing Conditions at the Cargo Gangway



Photo 3.9-3: Overall view of the roller bearings at the Cargo Gangway. Note the debris interfering with the bearings.



Photo 3.9-4: Debris accumulation and typical anchor nut corrosion as shown at the northwest rocker bearing.



Photo 3.9-5: Debris accumulation at the northeast rocker bearing. Note the anchor nuts are not in contact with the bearing plate.

(C) DECK TOPSIDE

The overall condition of the deck and topside features at the Cargo Gangway is **Fair**. The steel diamond deck transition plate exhibits wear with moderate to advanced corrosion at one location. The security fence posts exhibit minor coating failure and surface corrosion at several locations. The curbs and security fence remain in place and are fully functional. Table 3.9-4 below provides a summary of the observed conditions of the deck and other topside features of the Cargo Gangway. Photos 3.9-6 and 3.9-7 illustrate an overall view of the gangway and the general topside condition of the gangway.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Deck at the Cargo Gangway	he steel diamond deck transition plate exhibits wear with moderate to advanced corrosion at one location. The security fence posts exhibit minor coating failure and surface corrosion at several locations. The curbs and security fence remain in place and are fully functional.	EA	1

Table 3.9-4: Summary of Observed Deck Conditions at the Cargo Gangway



Photo 3.9-6: Overall east elevation view of the Cargo Gangway and support frame. Note the minor surface corrosion on the security fence posts along the girder.



Photo 3.9-7: Overall view of the Cargo Gangway deck, curb, and security fence. Note the wear and corrosion on the transition plate.

(D) GANGWAY SUPPORT FRAME

The overall condition of the gangway support frame at the Cargo Gangway is **Fair**. The support frame components do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The masts are plumb and the foundation is secure. Moderate vegetation (vines) growth on the steel cage ladder, mast, and mechanical winch components inhibit access by facility personnel and restricts operation of the winch. The manual winch mechanism was not inspected for functionality. The structure does not indicate evidence of distress or significant deterioration.

Table 3.9-5 below provides a summary of the observed conditions at the gangway support frame of the Cargo Gangway. Photo 3.9-6 above depicts an overall view of the gangway support frame. Photo 3.9-8 below illustrates the moderate vegetation on the steel cage ladder, mast, and winch components.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Support Frame at the Cargo Gangway	The support frame components do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The masts are plumb and the foundation is secure. Moderate vegetation (vines) growth on the steel cage ladder, mast, and mechanical winch components inhibit access by facility personnel and restricts operation of the winch. The manual winch mechanism was not inspected for functionality. The structure does not indicate evidence of distress or significant deterioration.	EA	1

Table 3.9-5: Summary of Observed Gangway Support Frame Conditions at the Cargo Gangway



Photo 3.9-8: Moderate vegetation and vines growing on the support gangway cage ladder, mast, and winch restricting access and operation.

3.9.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection do not indicate further degradation since the 2018 inspection. The observed conditions remain substantially similar to those observed in 2018.

3.9.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

The gangway can function in accordance with its intended design. However, access to the support frame is restricted by vegetation and vines growing on the cage ladder. The vines interfere with the manual winch mechanisms and prevent operability. Where debris accumulates at the roller and rocker bearings, it should be removed to allow complete and uninhibited motion of the bearings. Anchor nuts should be replaced, and

safety chains reestablished or replaced. The present corrosion does not compromise the function of these systems, and maintenance repairs should be employed to maintain a condition of good repair.

(B) BERTHING ASSESSMENT

Berthing requirements for this structure are not applicable.

(C) RESILIENCY TO COASTAL FLOODING

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the site falls in zone VE15 (el. +15.0 ft). Under the theoretical 100-yr flood scenario the water level will be approximately 8 ft above the top of the adjacent cellular cofferdam. Severe flooding conditions in the East River will likely result in substantial damage to the buildings, gangways, ramps, utility systems, and other topside features. If the barge is subject to extreme water levels, the gangway may dislodge from its bearings and engage the safety chains. In anticipation of extreme flooding, the gangway may be preemptively hoisted off its bearings and disconnected from the barge.

Utilities should be disconnected, and gangways should be raised and secured in an elevated position to the support frame. Mooring lines should be deployed with sufficient slack, and operational protocols should be established to evacuate the facility in extreme emergency situations. In general, mooring lines should be always deployed and managed (Bollards B-1 to B-6) as a regular maintenance protocol. The mooring arms and their attachments should be evaluated for strength and stability under extreme conditions.

3.9.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will

be significantly more costly. Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection.

Table 3.9-6 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Remove vegetation and overgrowth from the support frame ladder and winch systems.	FY 2024	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$105,498
	Subtotal Routine Actions:		\$105,498
TOTAL FOR THE CARGO GANGWAY:			\$145,467

Table 3.9-6: Summary of Recommended Actions and Cost Estimate for the Cargo Gangway

(A) IMMEDIATE ACTIONS

Remove vegetation and overgrowth at the gangway support frame to ensure access on the steel cage ladder and ensure operability of the manual winch mechanisms.

(B) PRIORITY ACTIONS

Priority actions call for removing debris accumulation at the bearings to prevent interference with the gangway motions. Additionally, the corroded anchor bolt nuts should be replaced.

(C) ROUTINE ACTIONS

Routine actions call for general maintenance involving the cleaning and recoating of steel components. These include the substructural framing, the bearing supports, and the deck. All exposed steel may be coated with an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate marine-based epoxy coal tar coating material designed for aggressive marine environments should be specified. Proper surface preparation is important to ensure a clean substrate and ensure good bond. Both hydroblasting and mechanical cleaning methods should be employed. The activity will require high quality control measures during the application of the coating.

3.10 PLUMBING GANGWAY

3.10.1 Description

The Plumbing Gangway is 4 ft wide by 32 ft long and supports a catwalk and various plumbing utilities such as potable water, sewer, fire water, and fuel oil mains. The gangway is framed using a pair of W12x26 stringers, L4x4 cross-beams, L3x3 cross-braces, pipe hangers, and various pipe member that frame the catwalk. Each end of the gangway is supported in a manner similar to the pedestrian gangways, utilizing roller bearings at the barge end and a rocker bearings on the land side. The rocker bearings are elevated approximately 8 ft above grade atop an A-frame assembly using W8x24 verticals and braces. The gangway may be lifted by an independent support frame comprising winches, hoist cables, gangway support stops, spreader beam, and a caged ladder. The support frames are made from a single columnar steel pipe (mast). The diameter of the pipe is 18 in. The gangway support stops cantilever off of the support frame pipe with their ends propped by a diagonal braces. The gangway support framing is made from 8 in. tube welded to the side of the support frame mast. A diagonal brace is also welded to the support frame, except that at the electrical gangway it is founded on the concrete footing for the support frame. Table 3.10-1 below provides an asset inventory for the Plumbing Gangway.

Component	Description	Unit	Quantity
Gangway	Steel-framed 4 ft wide by 32 ft long.	EA	1
Bearings	(2) pin bearings on land side, and (2) 12" diameter steel roller bearings on the barge side. The roller bearings are supported on steel brackets cantilevered off of the side of the barge.	EA	4
Catwalk	2" Sch. 40 pipe railing with 14 ga. "grip strut" 5-diamond steel deck, 2-1/2" depth.	LF	32
Gangway Support Frame	Independent support frame comprising winches, hoist cables, gangway support stops, spreader beams, and a caged ladder. The support frames are made from a single columnar 18 in. diameter steel pipe.	EA	1

Table 3.10-1: Asset Inventory of the Plumbing Gangway

3.10.2 Observed Conditions

The overall condition of the Plumbing Gangway is **Satisfactory**. The system can continue to function as intended by design.

(A) GANGWAY FRAMING

The overall condition of the framing at the Plumbing Gangway is **Satisfactory**. In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The steel girders, floor beams and cross-braces maintain their coating with only minor coating loss at isolated locations. The gangway functions as intended by design and can accommodate its full range of motion. Table 3.10-2 below provides a summary of the observed conditions of the framing at the Plumbing Gangway. Photo 3.10-1 provides an overall view of the gangway framing. Photo 3.10-2 depicts the typical condition of the framing.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Framing at the Plumbing Gangway	In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The steel girders, floor beams and cross-braces maintain their coating with only minor coating loss at isolated locations. The gangway functions as intended by design and can accommodate its full range of motion.	EA	1

Table 3.10-2: Summary of Observed Framing Conditions at the Plumbing Gangway



Photo 3.10-1: Overall view of the Plumbing Gangway.



Photo 3.10-2: View of the Plumbing Gangway framing.

(B) BEARING SUPPORTS

The overall condition of the roller bearing supports at the Plumbing Gangway is **Satisfactory**. The bearings typically exhibit minor coating loss and corrosion of the components. The upland end of the gangway is supported by pins as part of the stair and catwalk framing. Table 3.10-3 below provides a summary of the observed conditions at the roller bearings of the Plumbing Gangway. Photo 3.10-3 provides an enlarged view of the roller bearings. Photo 3.10-4 in the next section provides an enlarged view of the pin support at the upland end of the gangway.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Bearings at the Plumbing Gangway	The bearings typically exhibit minor coating loss and corrosion of the components. The upland end of the gangway is supported by pins as part of the stair and catwalk framing.	EA	2

Table 3.10-3: Summary of Observed Bearing Conditions at the Cargo Gangway



Photo 3.10-3: Enlarged view of the roller bearings at the Plumbing Gangway. Note the minor surface corrosion on the various surfaces.

(C) GANGWAY SUPPORT FRAME

The overall condition of the gangway support frame at the Plumbing Gangway is **Satisfactory**. The support frame components, stairs, and catwalk do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The masts are plumb and the foundation is secure. The manual winch mechanism was not inspected for functionality.

Framing members for the stairs and catwalk are coated and exhibit minor coating loss with surface corrosion at intermittent locations. The catwalk framing however, exhibits widespread coating failure with minor surface corrosion on all components including grate, steps, hand railing, and posts. The structure does not indicate evidence of distress or significant deterioration.

The utility lines draping from the gangway contain damaged insulation and perforations. One line exhibits corrosion holes. Other lines appear to be improperly patched and may contain leaks. In 2018 a sanitary sewer line contained a breach with leaking effluent. This leak appears to have been repaired.

Table 3.10-5 below provides a summary of the observed conditions at the gangway support frame of the Plumbing Gangway. Photos 3.10-4 and 3.10-5 provide views of the catwalk, and stair frame.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Support Frame at the Plumbing Gangway	The support frame components, stairs, and catwalk do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The masts are plumb and the foundation is secure. The manual winch mechanism was not inspected for functionality. Framing members for the stairs and catwalk are coated and exhibit minor coating loss with surface corrosion at intermittent locations. The catwalk framing however, exhibits widespread coating failure with minor surface corrosion on all components including grate, steps, hand railing, and posts. The structure does not indicate evidence of distress or significant deterioration.	EA	1

Table 3.10-4: Summary of Observed Gangway Support Frame Conditions at the Plumbing Gangway



Photo 3.10-4: Enlarged view of the catwalk railing and steps.



Photo 3.10-5: View of the catwalk railing and steps looking north.



Photo 3.10-6: Example of impacted insulated utility lines at the Plumbing Gangway.

3.10.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection do not indicate further degradation since the 2018 inspection. The observed conditions remain substantially similar to those observed in 2018. The leaking sanitary sewer line observed in 2018 has been repaired.

3.10.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

The Plumbing Gangway and support frame does not exhibit evidence of structural distress and can continue to function as intended by design. Regular inspection and maintenance, including the removal of excessive growth on the support frame and mechanisms will ensure a state of good repair.

(B) BERTHING ASSESSMENT

Berthing requirements for this structure are not applicable.

(C) RESILIENCY TO COASTAL FLOODING

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the site falls in zone VE15 (el. +15.0 ft). Under the theoretical 100-yr flood scenario the water level will be approximately 8 ft above the top of the adjacent cellular cofferdam. Severe flooding conditions in the East River will likely result in substantial damage to the buildings, gangways, ramps, utility systems, and other topside features. If the barge is subject to extreme water levels, the gangway may dislodge from its bearings and engage the safety chains. In anticipation of extreme flooding, the gangway may be preemptively hoisted off its bearings and disconnected from the barge.

Utilities should be disconnected, and gangways should be raised and secured in an elevated position to the support frame. Mooring lines should be deployed with sufficient slack, and operational protocols should be established to evacuate the facility in extreme emergency situations. In general, mooring lines should be always deployed and managed (Bollards B-1 to B-6) as a regular maintenance protocol. The mooring arms and their attachments should be evaluated for strength and stability under extreme conditions.

3.10.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly. Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection. Table 3.10-5 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs.

The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Priority action is not required.	N/A	N/A
	Subtotal Priority Actions:		\$0
Routine	Hydroblast clean and coat the steel catwalk, stairs, bearings, and isolated areas of failed coating.	FY 2029	\$37,691
	Subtotal Routine Actions:		\$37,691
TOTAL FOR THE PLUMBING GANGWAY:			\$37,691

Table 3.10-5: Summary of Recommended Actions and Cost Estimate for the Plumbing Gangway

(A) IMMEDIATE ACTIONS

Immediate action is not required at this time.

(B) PRIORITY ACTIONS

Priority action is not required at this time.

(C) ROUTINE ACTIONS

Routine actions call for general maintenance involving the cleaning and recoating of steel components. These include the steel catwalk railing, steps, roller bearings, and other steel components exhibiting coating failure. Steel may be coated with an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate marine-based epoxy coal tar coating material designed for aggressive marine environments should be specified. Proper surface preparation is important to ensure a clean substrate and ensure good bond. Both hydroblasting and mechanical cleaning methods should be employed. The activity will require high quality control measures during the application of the coating.

3.11 ELECTRICAL GANGWAY

3.11.1 Description

The Electrical Gangway is 7 ft wide by 32 ft long and supports electric power lines cables, clamps, cable trays, and various other wired utilities. The gangway is framed using a pair of W12x40 stringers, L4x4 cross-beams, L3x3 cross-braces, and 14 gage “grip strut” diamond deck plate. Side rails are framed using L3x3’s. Each end of the gangway is support in a manner similar to the pedestrian gangways, utilizing roller bearings at the barge, and a rocker bearings on the land side. The rocker bearings are elevated approximately 13 ft above grade atop an A-frame assembly using W8x24 verticals and braces.

The gangway may be lifted by an independent support frame comprising winches, hoist cables, gangway support stops, spreader beam, and a caged ladder. The support frames are made from a single columnar steel pipe (mast). The diameter of the pipe is 30 in. The gangway support stops cantilever off of the support frame pipe with their ends propped by a diagonal braces. The gangway support framing is made from 8 in. tube welded to the side of the support frame mast. A diagonal brace is also welded to the support frame, except that at the electrical gangway it is founded on the concrete footing for the support frame. Table 3.11-1 below provides an asset inventory for the Electrical Gangway.

Component	Description	Unit	Quantity
Gangway	Steel-framed 7 ft wide by 32 ft long.	EA	1
Bearings	(2) pin bearings on land side, and (2) 12” diameter steel roller bearings on the barge side. The roller bearings are supported on steel brackets cantilevered off of the side of the barge.	EA	4
Catwalk	L3x3x1/4 side rails with 14 ga. “grip strut” 5-diamond steel deck, 2-1/2” depth.	LF	32
Gangway Support Frame	Independent support frame comprising winches, hoist cables, gangway support stops, spreader beams, and a caged ladder. The support frames are made from a single columnar 30 in. diam. steel pipe.	EA	1

Table 3.11-1: Asset Inventory of the Electrical Gangway

3.11.2 Observed Conditions

The overall condition of the Electrical Gangway is **Satisfactory**. The system can continue to function as intended by design.

(A) GANGWAY FRAMING

The overall condition of the framing at the Electrical Gangway is **Satisfactory**. In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The steel girders, floor beams and cross-braces maintain their coating with only minor coating loss at isolated locations. The gangway functions as intended by design and can accommodate its full range of motion. Table 3.11-2 below provides a summary of the observed conditions of the framing at the Electrical Gangway. Photo 3.11-1 provides an overall view of the gangway.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Framing at the Electrical Gangway	In general, the framing does not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The steel girders, floor beams and cross-braces maintain their coating with only minor coating loss at isolated locations.	EA	1

Table 3.11-2: Summary of Observed Framing Conditions at the Electrical Gangway



Photo 3.11-1: Overall view of the Electrical Gangway.

(B) BEARING SUPPORTS

The overall condition of the roller bearing supports at the Electrical Gangway is **Satisfactory**. The bearings typically exhibit minor coating loss and corrosion of the components. The upland end of the gangway is supported by pins as part of the support frame. Table 3.11-3 below provides a summary of the observed conditions at the roller bearings of the Electrical Gangway. Photo 3.11-3 provides an enlarged view of the roller wheel bearings.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Bearings at the Electrical Gangway	The bearings typically exhibit minor coating loss and corrosion of the components. The upland end of the gangway is supported by pins as part of the support framing.	EA	2

Table 3.11-3: Summary of Observed Bearing Conditions at the Electrical Gangway



Photo 3.11-2: Enlarged view of the roller wheel bearings at the Electrical Gangway.

(C) GANGWAY SUPPORT FRAME

The overall condition of the gangway support frame at the Electrical Gangway is **Satisfactory**. The catwalk was inaccessible for inspection. The support frame components do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The masts are plumb and the foundation is secure.

However, access to the catwalk and support tower is significantly restricted by heavy vegetation and overgrowth and vines. The overgrowth interferes with access to the steel cage ladders for both the catwalk and the support frame. Vegetation has grown into the mechanical components of the winch which will prevent its operation. The manual winch mechanism was not inspected for functionality.

Table 3.11-5 below provides a summary of the observed conditions at the gangway support frame of the Electrical Gangway. Photo 3.11-3 provides an overall view of the gangway with excessive vegetation and vines, and Photo 3.11-4 illustrates vegetation growing into the winch mechanisms.

Element	Description of Observed Conditions	Unit	Quantity
Gangway Support Frame at the Electrical Gangway	The support frame components do not exhibit significant corrosion, mechanical damage, or missing/inoperable components. The masts are plumb and the foundation is secure. However, access to the catwalk and support tower is significantly restricted by heavy vegetation and overgrowth and vines. The overgrowth interferes with access to the steel cage ladders for both the catwalk and the support frame. Vegetation has grown into the mechanical components of the winch which will prevent its operation. The manual winch mechanism was not inspected for functionality	EA	1

Table 3.11-4: Summary of Observed Gangway Support Frame Conditions at the Electrical Gangway

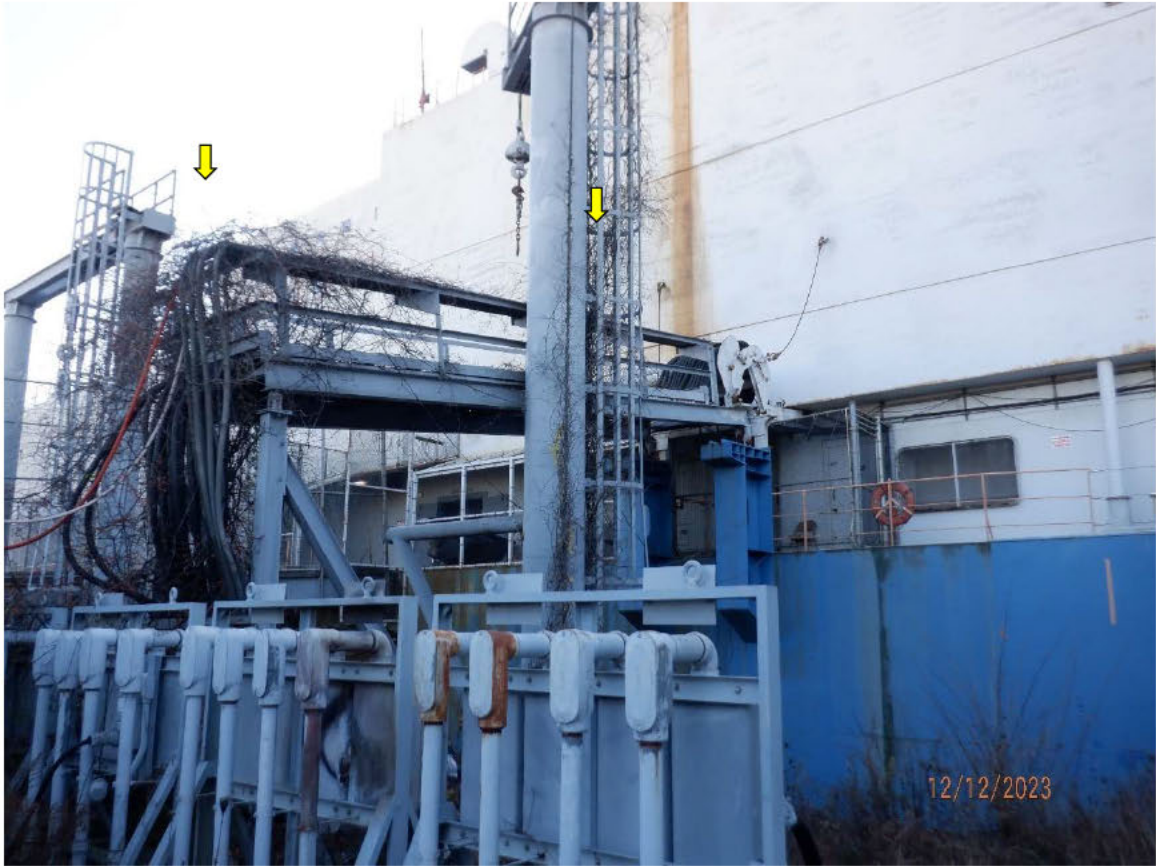


Photo 3.11-3: Overall view of the support frame with excessive vegetation on the Electrical Gangway and support frame.



Photo 3.11-4: Excessive growth in the winch mechanisms at the Electrical Gangway.

3.11.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection do not indicate further degradation since the 2018 inspection. The observed conditions remain substantially similar to those observed in 2018. The system was previously rated as Good in 2018. However, the system is downgraded to **Satisfactory** since the heavy vegetation restricts access to the gangway support frame, catwalk, and operation of the winch system.

3.11.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

The Electrical Gangway and support frame does not exhibit evidence of structural distress and can continue to function as intended by design. Regular inspection and maintenance, including the removal of excessive growth on the support frame and mechanisms will ensure a state of good repair.

(B) BERTHING ASSESSMENT

Berthing requirements for this structure are not applicable.

(C) RESILIENCY TO COASTAL FLOODING

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the site falls in zone VE15 (el. +15.0 ft). Under the theoretical 100-yr flood scenario the water level will be approximately 8 ft above the top of the adjacent cellular cofferdam. Severe flooding conditions in the East River will likely result in substantial damage to the buildings, gangways, ramps, utility systems, and other topside features. If the barge is subject to extreme water levels, the gangway may dislodge from its bearings and engage the safety chains. In anticipation of extreme flooding, the gangway may be preemptively hoisted off its bearings and disconnected from the barge.

Utilities should be disconnected, and gangways should be raised and secured in an elevated position to the support frame. Mooring lines should be deployed with sufficient slack, and operational protocols should be established to evacuate the facility in extreme emergency situations. In general, mooring lines should be always

deployed and managed (Bollards B-1 to B-6) as a regular maintenance protocol. The mooring arms and their attachments should be evaluated for strength and stability under extreme conditions.

3.11.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly. Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection. Table 3.10-5 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Remove heavy vegetation and growth from the gangway support systems and winch.	FY 2025	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Priority action is not required.	N/A	N/A
	Subtotal Priority Actions:		\$0
Routine	Routine action is not required.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE ELECTRICAL GANGWAY:			\$11,325

Table 3.11-5: Summary of Recommended Actions and Cost Estimate for the Electrical Gangway

(A) IMMEDIATE ACTIONS

Remove heavy vegetation and overgrowth to ensure access to the steel cage ladders for the catwalk, support frame, and ensure operability of the manual winch mechanisms.

(B) PRIORITY ACTIONS

Priority action is not required at this time.

(C) ROUTINE ACTIONS

Routine action is not required at this time.

4. ROUTINE INSPECTION OF THE VERNON C. BAINE CORRECTIONS CENTER

The following subsections provide a discussion of existing configurations, conditions, assessments, and recommendations for each of the systems at the Corrections Bulkhead facility (Facility ID No. 29). Recommended actions are also provided with corresponding opinions of probable construction costs.

The facility comprises a single system as listed in Table 2-1 and depicted in the Facility Plan in Figure 2-2. Figures and photographs supplement the narrative descriptions. Figures graphically illustrate the observed conditions and/or element configurations. Color is used to depict the severity of conditions as appropriate.

4.1 FLOATING DETENTION BARGE

4.1.1 Description

The floating detention barge is oriented in an east-west direction, with its longitudinal axis parallel to the cellular cofferdam. The barge's planar dimensions as measured at the main deck are 625 ft long by 125 ft wide. The overall barge height as measured from the main deck elevation down to the bottom keel is 25'2", with a design freeboard of approximately 16 ft and a draft of approximately 9'2". The east and west ends of the barge are raked. It is offset from the bulkhead by approximately 12'6" and secured in position using two mooring arm assemblies. The barge superstructure contains five levels above the main deck.

A single-leg mooring arm is positioned at the west end, and a double-leg mooring arm is positioned at the east end of the barge. The mooring arms are articulated to permit barge heave, pitch, and roll, but restrain surge, sway, and yaw motions. At each mooring arm the barge is fitted with a vertical steel "T" guide welded to the side hull plate. The guide serves as a glide for each mooring arm's clamp attachment to allow for a quick release to disengage the barge from the mooring arms. Bow, stern, and spring lines, were not deployed from the barge at the time of the investigation.

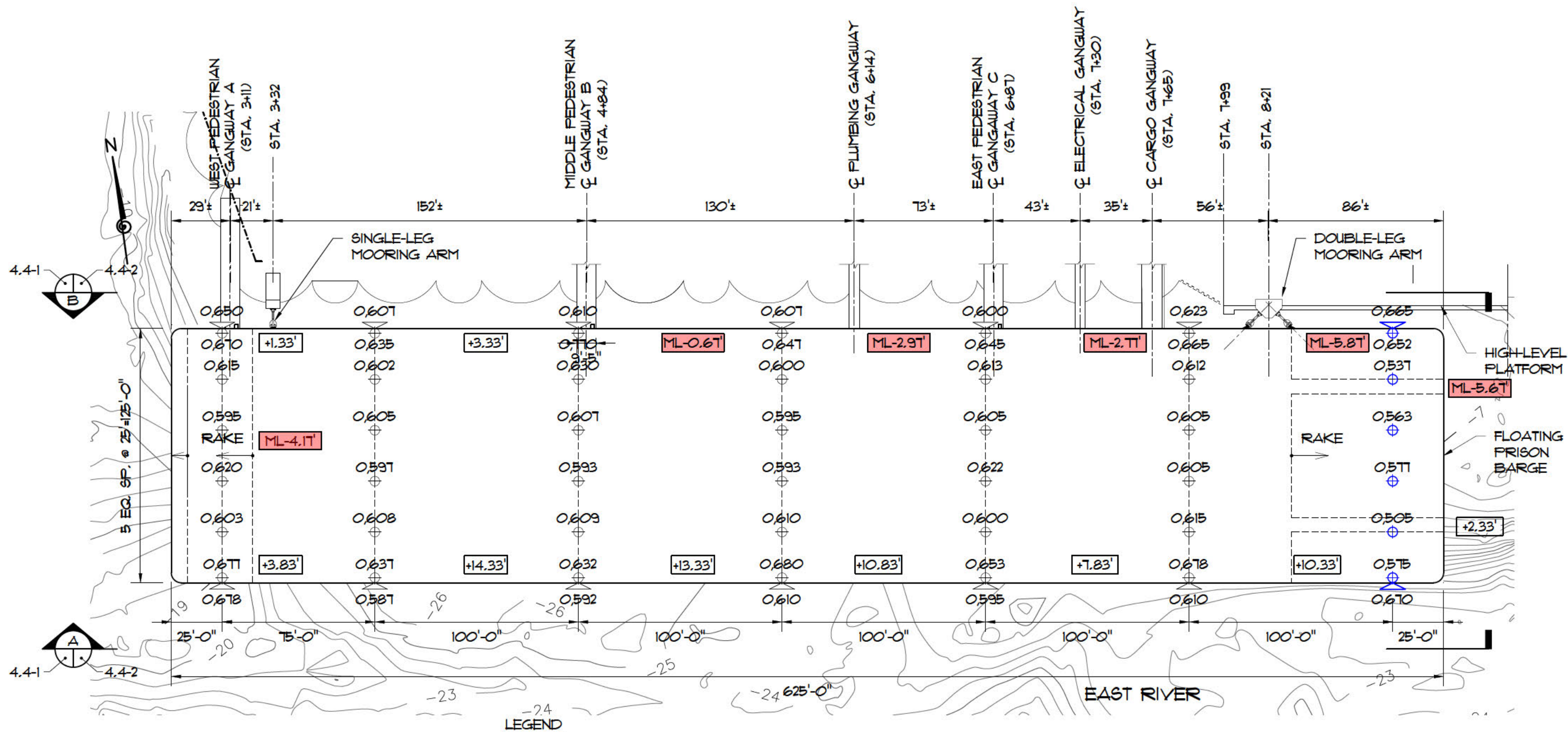
The hull is protected by an impressed current cathodic system comprising eight anodes mounted below the waterline along the north and south faces of the barge

(four anodes on each side). Record construction drawings indicate barge hull is double walled with pressurized argon gas between the walls to monitor hull breaches.

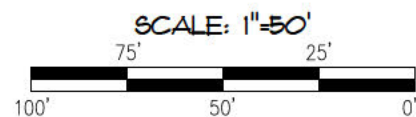
Access to the barge is provided by three pedestrian gangways and cargo gangway. Additionally, a plumbing gangway and an electrical gangway provide utility services for the barge. Table 4.1-1 below provides an asset inventory for the floating detention barge. Figure 4.1-1 provides a barge hull plan, while Figure 4.1-2 illustrates barge elevations. The figures also illustrate the mudline soundings within the immediate vicinity of the barge hull.

Component	Description	Unit	Quantity
Barge Side Hull	Approximately 625 ft long by 25 ft high side hull. Barge is raked at each end.	SF	43,450
Barge Bottom Keel	Approximately 625 ft long by 125 ft wide by 25 ft high main hull with a draft of 9'2".	SF	78,125

Table 4.1-1: Asset Inventory of the Floating Detention Barge



1 FLOATING DETENTION BARGE
4.1-1 HULL PLAN

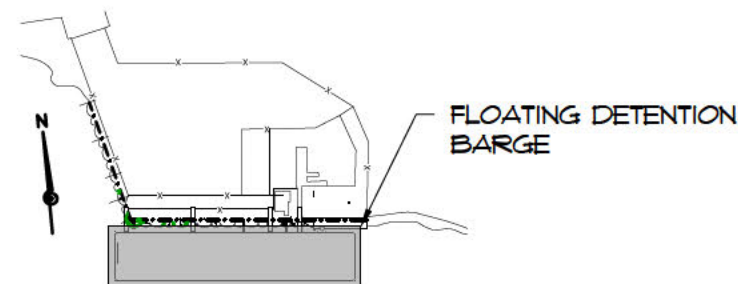


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- +3.33'** INDICATES UNDER CLEARANCE BELOW MLLW (FEET)
ML-2.97' INDICATES BARGE CONTACTS MUDLINE AT MLLW. VALUE
INDICATES REQUIRED DREDGE TO ACHIEVE ZERO CLEARANCE

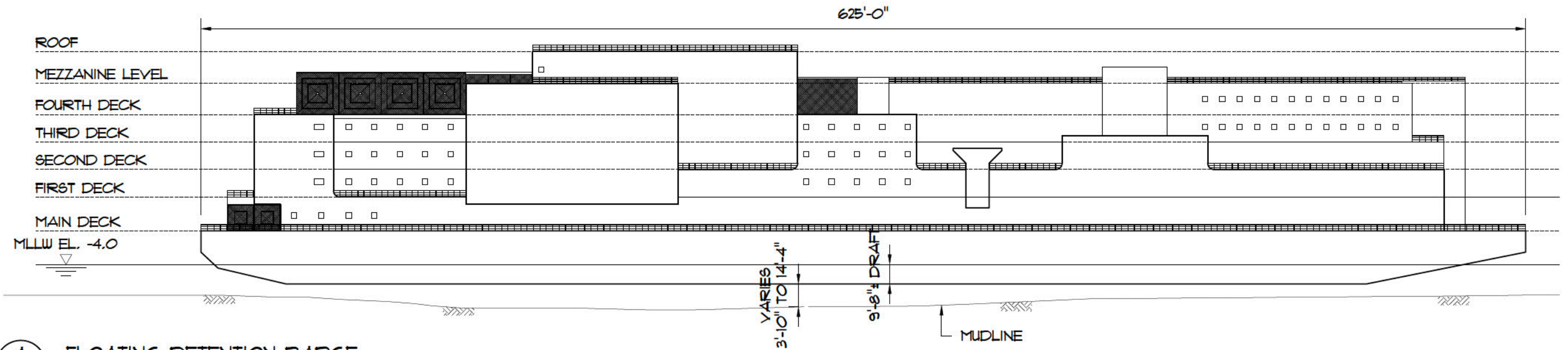
- 0.601 ⊕ BOTTOM KEEL
PLATE THICKNESS (IN.)
0.601 △ SIDE WALL PLATE
THICKNESS (IN.) AT WATERLINE
0.601 ~ MUDLINE ELEVATION CONTOUR
IN FEET (NAVDS88)

- NOTE:
1. NOMINAL DESIGN THICKNESS OF BOTTOM
KEEL PLATE IS 0.59 IN.
2. NOMINAL DESIGN THICKNESS OF SIDE WALL
HULL PLATE IS 0.65 IN.

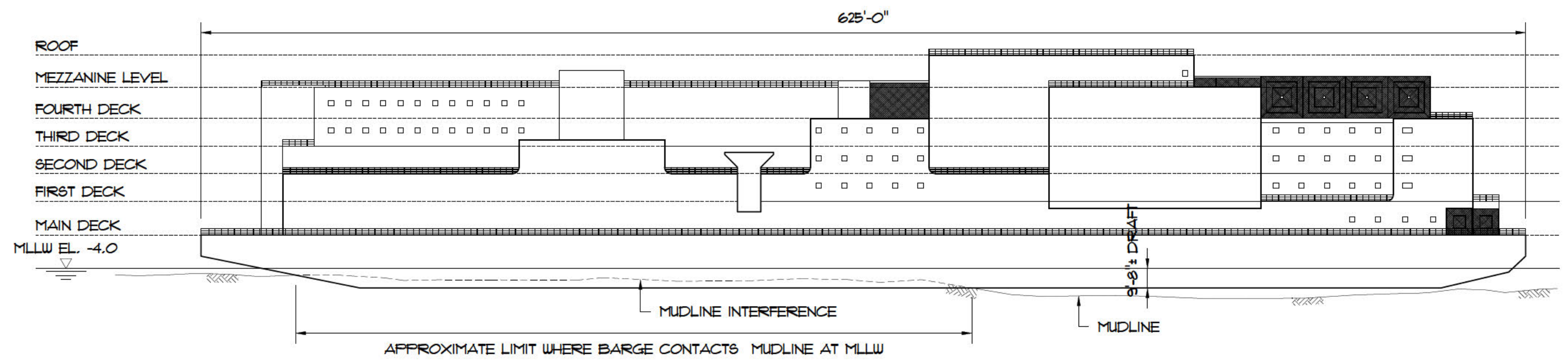
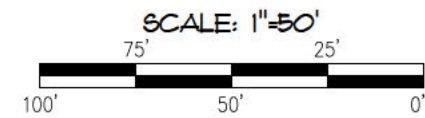


KEY PLAN
N.T.S.

NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
ROUTINE INSPECTION OF
VERNON C. BAINE CENTER
HUNTS POINT, NEW YORK
FLOATING DETENTION BARGE
HULL PLAN
FEBRUARY 2024



A FLOATING DETENTION BARGE
4.1-2 SOUTH ELEVATION



B FLOATING DETENTION BARGE
4.1-2 NORTH ELEVATION



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NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
ROUTINE INSPECTION OF
VERNON C. BAINE CENTER
HUNTS POINT, NEW YORK
FLOATING DETENTION BARGE ELEVATIONS

FEBRUARY 2024

FIGURE 4.1-2

4.1.2 Observed Conditions

The overall condition of the shoreline is **Fair**. Figures 4.1-1 and 4.1-2 above illustrate an overall hull plan and typical elevations of the barge. Color is used to graphically indicate the severity of observed conditions as applicable.

(A) BARGE HULL

The overall condition of the barge's exterior hull is **Fair**. Apart from coating loss and minor corrosion along the waterline, the coating remains intact, but weathered, with no significant corrosion on the hull surfaces. Figure 4.1-1 presents a summary of the average steel thicknesses at various locations.

Ultrasonic thickness measurements across the flat keel bottom range from 0.593 in. to 0.680 in., with an average measurement of 0.625 in. The nominal steel plate thickness of the bottom shell as indicated in barge shop drawings is 0.590 in. Statistically, the amount of material loss due to corrosion along the flat bottom keel portion of the hull is insignificant.

Ultrasonic thickness measurements across the raked portions of the west keel along the waterline range from 0.595 in. to 0.678 in., with an average measurement of 0.630 in. The nominal steel plate thickness of the bottom shell as indicated in barge shop drawings is 0.650 in. Statistically, the average amount of material loss due to corrosion along the raked bottom keel at the west end of the barge is approximately 3 percent. Based on the lowest average reading, not more than approximately 8.5 percent of the steel material has been lost to corrosion along the west rake at the waterline.

Ultrasonic thickness measurements across the raked portions of the east keel along the waterline range from 0.505 in. to 0.670 in., with an average measurement of 0.568 in. The nominal steel plate thickness of the bottom shell as indicated in barge shop drawings is 0.590 in. Statistically, the average amount of material loss due to corrosion along the raked bottom keel at the east end of the barge is under approximately 4 percent. Based on the lowest average reading, not more than approximately 14.4 percent of the steel material has been lost to corrosion along the east rake at the waterline.

Ultrasonic thickness measurements across the northern side hull along the waterline, and along the rounded bottom keel transition, range from 0.600 in. to 0.665 in., with an average measurement of 0.623 in. The nominal steel plate thickness of the side

shell as indicated in barge shop drawings is 0.650 in. Statistically, the average amount of material loss due to corrosion along the northern side hull of the barge is approximately 4 percent. Based on the lowest average reading, not more than approximately 8 percent of the steel material has been lost to corrosion along the northern side hull at the waterline.

Ultrasonic thickness measurements across the southern side hull along the waterline, and along the rounded bottom keel transition, range from 0.587 in. to 0.678 in., with an average measurement of 0.620 in. The nominal steel plate thickness of the side shell as indicated in barge shop drawings is 0.650 in. Statistically, the average amount of material loss due to corrosion along the southern side hull of the barge is approximately 4.6 percent. Based on the lowest average reading, not more than approximately 10 percent of the steel material has been lost to corrosion along the southern side hull at the waterline. The southern side hull is exposed to ice abrasion and direct wave attack making it more susceptible to corrosion than at other locations along the barge's hull.

Anode consumption appears to be negligible in the range of approximately 5 percent. One anode on the north side and one anode on the south side is missing. Electric potential difference measurements were obtained at six locations along the waterline. The readings ranged from 978 mV to 1,251 mV, with an average of 1,042 mV. These readings reveal that the impressed current system is indeed functioning well above the minimum required values for protection. The functional adequacy of the system was not evaluated as part of this investigation; however, a corrosion specialist should be retained to perform such evaluations and recommend adjustments as needed.

The mudline soundings were obtained around the perimeter of the barge to determine where the barge keel contacts the mudline at MLLW. Measurements are provided in Figure 4.1-1. The barge rests on the mudline for a minimum of 3 hours during low tide cycles. Along the south side of the barge, the underkeel clearance varies from approximately 3'-10" to 14'-4". However, the north side the barge rests on the mudline along approximately the easternmost two-thirds to three-quarters of the barge's length. A portion of the east and west rakes also rests on the mudline in the northern half of the barge. Where the barge rests on the mudline, the magnitude of required dredge to achieve zero clearance is provided in Figure 4.4-1.

Table 4.1-2 provides a summary of observed conditions for the floating detention barge's exterior hull. Photo 4.1-1 provides an overall view of the side hull along

the north side. The coating remains largely intact although worn. Photos 4.1-2 and 4.1-4 indicate areas where minor coating loss and corrosion was observed along the waterline, while Photo 4.1-3 illustrates where an anode is missing on the south side. Photo 4.1-5 indicates the barge markings, revealing a draft of approximately 9'-8" on the north side.

Location	Description of Observed Conditions
Flat Bottom Keel	Statistically, the amount of material loss due to corrosion along the flat bottom keel portion of the hull is insignificant.
West Rake Keel	Statistically, the average amount of material loss due to corrosion along the raked bottom keel at the west end of the barge is approximately 3 percent. Based on the lowest average reading, not more than approximately 8.5 percent of the steel material has been lost to corrosion along the west rake at the waterline.
East Rake Keel	Statistically, the average amount of material loss due to corrosion along the raked bottom keel at the east end of the barge is under approximately 4 percent. Based on the lowest average reading, not more than approximately 14.4 percent of the steel material has been lost to corrosion along the east rake at the waterline.
Northern Side Hull	Statistically, the average amount of material loss due to corrosion along the northern side hull of the barge is approximately 4 percent. Based on the lowest average reading, not more than approximately 8 percent of the steel material has been lost to corrosion along the northern side hull at the waterline.
Southern Side Hull	Statistically, the average amount of material loss due to corrosion along the southern side hull of the barge is approximately 4.6 percent. Based on the lowest average reading, not more than approximately 10 percent of the steel material has been lost to corrosion along the southern side hull at the waterline.

Table 4.1-2: Summary of Floating Detention Barge Conditions



Photo 4.1-1: Typical condition of the hull coating along the waterline.



Photo 4.1-2: Loss of coating with minor corrosion along the waterline at the east rake of the barge.

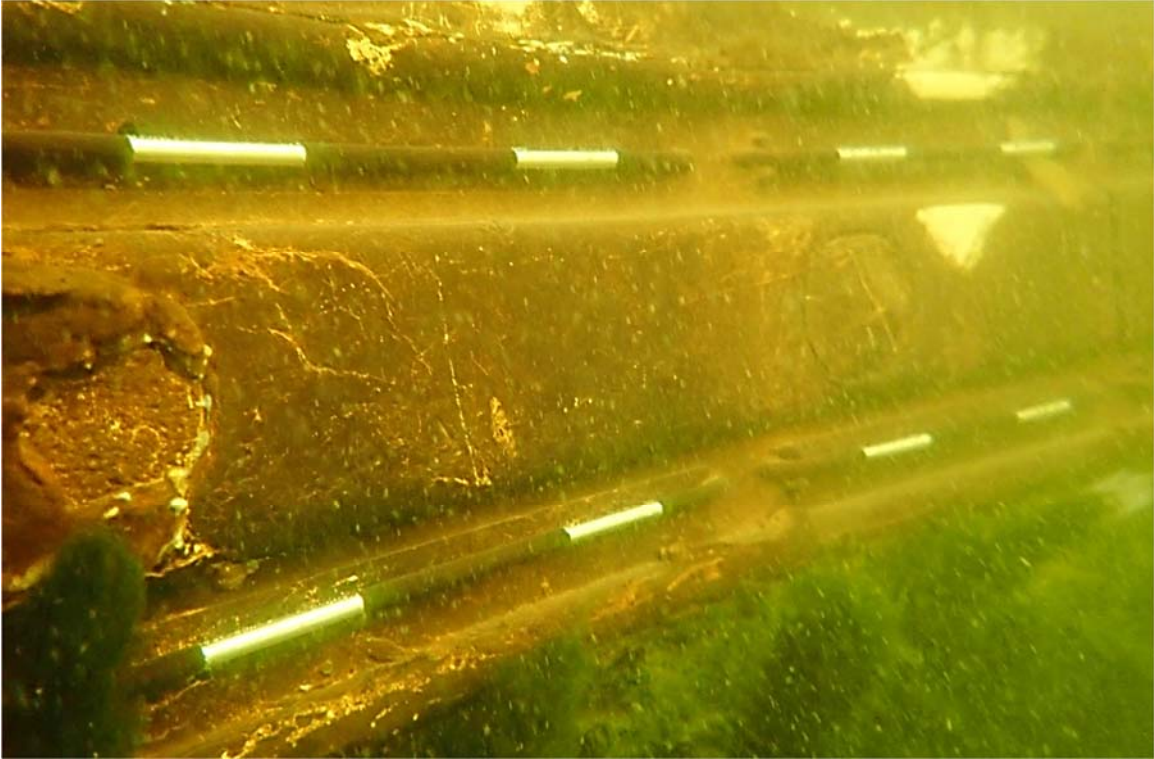


Photo 4.1-3: Missing anode on the side hull of the barge. Anode “clip” remains. The steel exhibits minor corrosion and pitting in local areas (south side, at approximately 80 ft from the west end of the barge).



Photo 4.1-4: Minor coating loss and blistering with corrosion at the waterline along the south side of the barge.



Photo 4.1-5: Barge markings indicate a draft of approximately 9'-8" below the waterline.

4.1.3 Comparison with Previous Inspection Results

The conditions observed under the present inspection do not indicate further degradation since the 2018 inspection. The observed conditions remain substantially similar to those observed in 2018. However, the extent of siltation below the barge may have increased.

4.1.4 Further Analysis

The following subsections present an assessment of the system's structural capability, its berthing accessibility, and its resiliency to coastal flooding.

(A) STRUCTURAL CONDITION ASSESSMENT

The structural integrity of the barge remains intact although minor corrosion of the hull plate exists at several locations. Where corrosion exists along the waterline, touch-up coating is required to arrest corrosion, particularly along south side and the raked portions of the barge.

The barge maintains an active impressed current system that effectively protects the steel from corrosion below the waterline. However, the hull is susceptible to coating failure and corrosion in the splash zone. A corrosion specialist should be consulted for evaluating and adjusting the cathodic protection system to achieve maximum efficiency. The missing anodes should be reintroduced into the system.

A suction dredging program is required to remove silt from below the barge. Dredging should achieve a minimum recommended underkeel clearance in a range between 3 ft to 5 ft at MLLW. Based on the observations made in the 2018 inspection report, it appears that this condition has worsened. The barge is subject to excessive listing beyond tolerable limits which may affect service and cause damage to the mooring arms.

(B) BERTHING ASSESSMENT

Berthing requirements for this structure are not applicable.

(C) RESILIENCY TO COASTAL FLOODING

According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the Floating Detention barge is exposed to Zone VE16 (el. +16.0 ft). Under the theoretical 100-yr flood scenario the water level will be approximately 9 ft above the top of the adjacent cellular cofferdam. Severe flooding conditions in the East River will likely result in substantial damage to the buildings, gangways, ramps, utility systems, and other topside features. If the barge is subject to extreme water levels, the gangways may dislodge from their bearings and engage the safety chains. The mooring arms may also be subject to significant overstress and damage. In anticipation of extreme flooding, the gangways may be preemptively hoisted off their bearings and disconnected from the barge.

Utilities should be disconnected, and gangways should be raised and secured in an elevated position to the support frame. Mooring lines should be deployed with sufficient slack, and operational protocols should be established to evacuate the facility in extreme emergency situations. In general, mooring lines should be always deployed and managed (Bollards B-1 to B-6) as a regular maintenance protocol. The

mooring arms and their attachments should be evaluated for strength and stability under extreme conditions.

4.1.5 Recommendations

The urgencies of repairs are rated as “immediate,” “priority,” and “routine.” Immediate actions require prompt response to prevent unsafe conditions at the structure. These actions may consist of barricading the structure to block access, posting load restrictions, mobilizing a repair crew to quickly restore safe conditions, or performing a structural analysis to demonstrate that the conditions may be tolerated by the structure through redundancies.

Priority actions are required to maintain the structure in a safe operating condition, and/or prevent deterioration from continuing to a point where future repairs will be significantly more costly. Routine actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the nature of the action required. Postponing recommended routine actions will not compromise the structural integrity of the facility or significantly increase the cost to repair the structure. Routine actions may be reassessed at the time of the next cyclical inspection. Table 4.1-3 below summarizes the recommended immediate, priority, and routine actions, together with the corresponding total costs and implementation dates to complete repairs. The implementation years are provided for the time when repair work should commence. The subsections that follow describe the recommended actions.

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and recoat the barge along the waterline. Assume approximately 1,650 lf long by 3 ft high	FY 2027	\$349,970
	Suction dredge silt from below the barge. Estimated volume of removals is taken as 625 ft long by 125 ft wide by 5 ft deep (avg) = (~15,000 cy).	FY 2025	\$1,194,725
	Install two anodes to replace the missing anodes on the north and south sides.	FY 2025	\$40,654
	Subtotal Priority Actions:		\$1,585,349
Routine	Retain a corrosion specialist to evaluate and adjust the impressed current cathodic protection system.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE FLOATING DETENTION BARGE:			\$1,585,349

Table 4.1-3: Summary of Recommended Actions and Cost Estimate for the Floating Detention Barge

(A) IMMEDIATE ACTIONS

Immediate action is not required at this time.

(B) PRIORITY ACTIONS

Priority actions call for cleaning and coating the affected hull surfaces along the waterline. For estimating purposes, approximately 1,650 ft long by 3 ft high area along the waterline is assumed. The steel shall be cleaned and coated with an appropriate marine coating that will provide a service life of not less than ten to twelve years. An appropriate marine-based epoxy coal tar coating material designed for aggressive marine environments should be specified. Proper surface preparation is important to ensure a clean substrate and ensure good bond. Both hydroblasting and mechanical cleaning methods should be employed. The activity will require high quality control measures during the application of the coating.

Silt removals from below the barge may be accomplished by suction dredging. Suction dredging removes loose silt through flexible hoses, which are then

deposited onto a barge scow for disposal. The operation would be aided by divers during high tide cycles. The anticipated volume of dredge spoils is approximately 15,000 cubic yards (625 ft long by 125 ft wide by ~5 ft deep average). At the same time, the divers may install two anodes where missing on the north and south faces.

(C) ROUTINE ACTIONS

A corrosion specialist should be employed to evaluate, adjust, and monitor the cathodic protection system. A regular inspection and maintenance program should be employed.

5. SUMMARY OF RECOMMENDATION ACTIONS AND ESTIMATES

Presented below is a general description on the development of probable construction cost opinions, followed by a summary of recommendations and corresponding costs for the various structural systems.

Cost development originates with an estimation of the anticipated baseline “raw” costs to complete various construction tasks. The baseline costs are established by estimating the required materials, labor force, normalized production rates, and equipment necessary to successfully complete the respective construction activities. The baseline costs are multiplied by factors to account for mobilization/demobilization, general conditions, overhead, profit, design contingencies, construction contingencies, and soft costs. The markup factors are cumulatively applied in the order shown in Table 5-1. These values correspond with the anticipated size and scope of repairs.

Cost Component	Markup Multiplier
Mobilization/Demobilization	6%
General Conditions	8%
Overhead & Profit (OH&P)	21%
Design Contingency	10%
Construction Contingency	20%
Soft Costs	20%
Overall Project Contingency	10%

Table 5-1: Cost Multipliers

The order of the cost component is relevant only for the purpose of extracting a value of a particular cost component. However, the order will not affect the overall cost. The total cumulative multiplier inclusive of all cost components listed in Table 5-1 above is 2.414; that is, the final “loaded” cost which may be used for budgeting will be 241.4 percent of the baseline cost.

Labor rates utilize prevailing wages per local labor law code 220, escalated by 25 percent to account for hidden costs such as prevailing supplemental benefits, unemployment insurance, workers compensation insurance, etc.

Mobilization/demobilization typically covers expenses for construction trailers, tools, fuel, site protection, preparation of submittals/shop drawings, etc.

General conditions typically cover expenses for performance bonds, general liability insurance, umbrella policies, endorsements, USL&H insurance (longshoremen), heavy equipment insurances, and other general contractual requirements.

Overhead expenses typically cover costs for back-office staff salaries, permanent non-union employee salaries, benefits, employee training, office/yard rents or leases, vehicle leases/insurances, utility expenses, supplies, and professional expenses (legal, accounting, and engineering). These costs are assumed to be on the order of approximately eleven percent for overhead. An additional ten percent is added for profit, yielding a total of 21 percent for OH&P.

Due to the several generalized assumptions and normalization of the repair concepts, a minimum design contingency of ten percent and a construction contingency of 20 percent are used. The contingencies cover additional professional costs that arise during construction for treating unknown conditions, surveys, special inspections, design investigations, value engineering, and other unanticipated costs during construction.

To account for soft expenses such as third-party construction inspections, special inspections, construction management, and resident engineering, a markup of 20 percent is applied.

Finally, an across-the-board overall project multiplier of ten percent is applied to offset any potential inaccuracies in the assumptions and to ensure the project may be sufficiently funded.

Tables 5-2 through 5-4 below present a complete summary of the overall conditions, the recommended actions, and the corresponding estimated repair costs for the structural systems inspected. Table 5-2 summarizes the overall condition for each system and the corresponding estimated repair costs, while Table 5-3 and Table 5-4 provide a brief description of the recommended repair actions with associated estimated repair costs for each system. The cost estimates are separated into immediate, priority, and routine action items, and include recommended implementation dates for each system. Backup for the cost assumptions may be found in Appendix C.

Facility Name	System	Condition Rating	Opinion of Probable Costs for Recommended Actions			
			Immediate	Priority	Routine	Total
Corrections Bulkhead		Fair				
Cellular Cofferdam		Fair	\$0	\$751,190	\$359,721	\$1,110,911
Transition Bulkhead		Fair	\$0	\$87,801	\$0	\$87,801
High-Level Platform		Fair	\$0	\$714,006	\$0	\$714,006
West Mooring Arm		Fair	\$0	\$69,393	\$0	\$69,393
East Mooring Arm		Fair	\$0	\$168,924	\$0	\$168,924
West Gangway A		Fair	\$0	\$28,644	\$63,526	\$92,170
Middle Gangway B		Fair	\$11,325	\$28,644	\$63,526	\$103,495
East Gangway C		Fair	\$11,325	\$28,644	\$63,526	\$103,495
Plumbing Gangway		Satisfactory	\$0	\$0	\$37,691	\$37,691
Electrical Gangway		Satisfactory	\$11,325	\$0	\$0	\$11,325
Total: Corrections Bulkhead			\$33,975	\$1,877,246	\$587,990	\$2,499,211
Vernon C. Baine Corrections Center		Fair				
Floating Detention Barge		Fair	\$0	\$1,585,349	\$0	\$1,585,349
Total: VC Baine Corrections Center and Floating Barge			\$33,975	\$3,462,595	\$587,990	\$4,084,560

Table 5-2: Summary of the Overall Condition Ratings and Costs at the Hunts Point Corrections Bulkhead and the Vernon C. Baine Corrections Center Floating Detention Barge

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Cellular Cofferdam - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean, prepare, and recoat the steel sheet piles above MLW (approximately 12,408 sf of surface area over a developed length of approximately 1,034 ft), and cleaning/recoating 6 bollards.	FY 2027	\$751,190
	Subtotal Immediate Actions:		\$751,190
Routine	Fill and reestablish grade at sinkholes and depressions and clear all vegetation/ overgrowth.	FY 2026	\$55,609
	Repave worn/damaged pavement surfaces	FY 2027	\$304,112
	Subtotal Routine Actions:		\$359,721
TOTAL FOR THE CELLULAR COFFERDAM:			\$1,110,911
Transition Bulkhead - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and recoat steel sheet piles above MLW between Sta. 7+81 and Sta. 7+99. Recoat an area of approximately 240 sf.	FY 2027	\$87,801
	Subtotal Priority Actions:		\$87,801
Routine	Routine actions are not required.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE TRANSITION BULKHEAD:			\$87,801

Table 5-3: Summary of Condition Ratings, Recommended Actions, Implementation Dates, and Costs for the Corrections Bulkhead

Action Type	Description	Implementation Date	Total Cost (2024 USD)
High-Level Platform - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Coat the steel pipe piles above MLW.	FY 2027	\$368,526
	Clean and recoat the steel sheet pile cut-off wall above the riprap and patch the corrosion holes at the strut penetrations.	FY 2027	\$345,481
	Subtotal Priority Actions:		\$714,006
Routine	Routine actions are not required.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE HIGH-LEVEL PLATFORM:			\$714,007
West Single-Leg Mooring Arm - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and coat corroded steel components comprising the Crandal Mooring Arm Assembly.	FY 2026	\$34,425
	Clean, reinforce, coat, and shim the steel brackets below the concrete support cap.	FY 2026	\$34,968
	Subtotal Priority Actions:		\$69,393
Routine	Verify Crandall Arm parts are adequately lubricated using the grease fittings and employ regular maintenance per the O&M manual recommendations	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR WEST MOORING ARM:			\$69,393

Table 5-3 (cont'd): Summary of Condition Ratings, Recommended Actions, Implementation Dates, and Costs for the Corrections Bulkhead

Action Type	Description	Implementation Date	Total Cost (2024 USD)
East Double-Leg Mooring Arm - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and coat corroded steel components comprising the Crandal Mooring Arm Assembly.	FY 2026	\$33,822
	Pack the gap at the pile tops solid with grout and encase the bottom of the piles at the mudline.	FY 2026	\$80,517
	Inject cracks in the concrete pile cap with an epoxy grout.	FY 2026	\$53,924
	Subtotal Priority Actions:		\$168,263
Routine	Verify Crandall Arm parts are adequately lubricated using the grease fittings and employ regular maintenance per the O&M manual recommendations	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR EAST MOORING ARM:			\$168,924
West Pedestrian Gangway A - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$63,526
	Subtotal Routine Actions:		\$63,526
TOTAL FOR THE WEST PEDESTRIAN GANGWAY A:			\$92,170

Table 5-3 (cont'd): Summary of Condition Ratings, Recommended Actions, Implementation Dates, and Costs for the Corrections Bulkhead

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Middle Pedestrian Gangway B - Fair			
Immediate	Remove vegetation and overgrowth from the support frame ladder and winch systems.	FY 2024	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$63,526
	Subtotal Routine Actions:		\$63,526
TOTAL FOR THE MIDDLE PEDESTRIAN GANGWAY B:			\$103,495
East Pedestrian Gangway C - Fair			
Immediate	Remove vegetation and overgrowth from the support frame ladder and winch systems.	FY 2024	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$63,526
	Subtotal Routine Actions:		\$63,526
TOTAL FOR THE EAST PEDESTRIAN GANGWAY C:			\$103,495

Table 5-3 (cont'd): Summary of Condition Ratings, Recommended Actions, Implementation Dates, and Costs for the Corrections Bulkhead

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Cargo Gangway - Fair			
Immediate	Remove vegetation and overgrowth from the support frame ladder and winch systems.	FY 2024	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	FY 2025	\$28,644
	Subtotal Priority Actions:		\$28,644
Routine	Hydroblast clean and coat steel framing, bearings, and deck.	FY 2029	\$105,498
	Subtotal Routine Actions:		\$105,498
TOTAL FOR THE CARGO GANGWAY:			\$145,467
Plumbing Gangway - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Priority action is not required.	N/A	N/A
	Subtotal Priority Actions:		\$0
Routine	Hydroblast clean and coat the steel catwalk, stairs, bearings, and isolated areas of failed coating.	FY 2029	\$37,691
	Subtotal Routine Actions:		\$37,691
TOTAL FOR THE PLUMBING GANGWAY:			\$37,691

Table 5-3 (cont'd): Summary of Condition Ratings, Recommended Actions, Implementation Dates, and Costs for the Corrections Bulkhead

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Electrical Gangway - Fair			
Immediate	Remove heavy vegetation and growth from the gangway support systems and winch.	FY 2025	\$11,325
	Subtotal Immediate Actions:		\$11,325
Priority	Priority action is not required.	N/A	N/A
	Subtotal Priority Actions:		\$0
Routine	Routine action is not required.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR ELECTRICAL GANGWAY:			\$11,325

Table 5-3 (cont'd): Summary of Condition Ratings, Recommended Actions, Implementation Dates, and Costs for the Corrections Bulkhead

Action Type	Description	Implementation Date	Total Cost (2024 USD)
Floating Detention Barge - Fair			
Immediate	Immediate action is not required.	N/A	N/A
	Subtotal Immediate Actions:		\$0
Priority	Clean and recoat the barge along the waterline. Assume approximately 1,650 lf long by 3 ft high	FY 2027	\$349,970
	Suction dredge silt from below the barge. Estimated volume of removals is taken as 625 ft long by 125 ft wide by 5 ft deep (avg) = (~15,000 cy).	FY 2025	\$1,194,725
	Install two anodes to replace the missing anodes on the north and south sides.	FY 2025	\$40,654
	Subtotal Immediate Actions:		\$1,585,349
Routine	Retain a corrosion specialist to evaluate and adjust the impressed current cathodic protection system.	N/A	N/A
	Subtotal Routine Actions:		\$0
TOTAL FOR THE FLOATING DETENTION BARGE:			\$1,585,349

Table 5-4: Summary of Condition Ratings, Recommended Actions, Implementation Dates, and Costs for Floating Detention Barge

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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APPENDIX B

CALCULATIONS

CALCULATIONS

The various systems comprising the Vernon C. Bain Center including the barge, steel sheet pile cellular cofferdam, and the high-level platform can continue to operate in accordance with the original design intent. Structural analyses are not performed as there are no anticipated reductions in the expected design live load capacities. However, some assessments may be made:

- The barge contacts and rests on the mudline during low tide cycles. This condition exists primarily on the north side of the barge along its eastern half. This condition can cause overstress in the barge mooring arms and supports. The silt below the barge keel should be suction-dredged to permit a minimum underkeel clearance of 3 ft at mean lower low water.

The pile cap supporting the east double-leg mooring arm contains approximately ¼" wide cracks which may be stress-related. It is unknown the source of these cracks, but it may be possible that the cracks could have developed from alternative load paths when the barge was sitting on the mudline in an unlevel condition and simultaneously subject to high winds and aggressive sea and states during period of slack low tides.

- According to the preliminary FEMA PFIRM map, Community – Panel Number 3604970092G, the Cellular Cofferdam is located in zone AE15 (BFE el. +15.0 ft) and is not subject to wave velocity or overtopping under the theoretical 100-yr storm event. Nevertheless, after accounting for as much as 58" of sea level rise (during the 2080's epoch) above the present MHHW el. +2.92 ft in the East River, the free surface water level would achieve an elevation of approximately +7.75 ft. Therefore, the topside of the Cellular Cofferdam would be subject to regular nuisance flooding during the 2080's epoch if sea level rises as predicted. Tidal flooding is not anticipated during the present 2020's epoch. However, storm flooding of as much as 8 ft should be anticipated with the 100-year storm event.

While the stability of the cofferdam will remain unaffected, severe flooding conditions in the East River would likely result in flood damage to the buildings, ramps, utility systems, and other topside features. The cofferdam

itself is inherently “wet floodproofed” allowing floodwaters to flow in and out of the facility without causing significant damage.

The lengths of the “T” guides mounted to the detention barge sides should be evaluated to ensure that the barge will remain engaged during severe flooding. The mooring lines should be deployed and managed (Bollards B-1 to B-6) to secure the detention barge (bow, stern, and spring lines) from excessive excursions in the event the mooring arms fail. The mooring arms and their attachments should be evaluated for strength and stability under these extreme conditions.

Under extreme storm flooding conditions, the mooring lines should be deployed with sufficient slack, and operational protocols should be established to evacuate the facility in an emergency, including temporary relocation of detainees, as the case may be. Utilities should be temporarily disconnected, and gangways should be elevated and secured to the support frame. Alternatively, the detention barge may be disengaged and relocated to a safe site until the storm subsides. Tug-assisted relocation protocols should be established.

APPENDIX C

BACKUP DATA FOR COST ESTIMATES

Cost Estimate Backup
Cellular Cofferdam

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - PRIORITY REPAIRS
CELLULAR COFFERDAM

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
	PRIORITY ACTIONS					1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
P1	Clean and Coat Sheet Piles above MLW	Clean, prepare, and recoat the steel sheet piles above MLW (approximately 12,408 sf of surface area over a developed length of approximately 1,034 ft), and cleaning/recoating 6 bollards.	LF	1,034	\$ 301.00	\$ 311,234	\$ 18,674	\$ 26,393	\$ 74,823	\$ 431,124	\$ 43,112	\$ 474,236	\$ 94,847	\$ 569,083	\$ 113,817	\$ 751,190
SUBTOTAL						\$ 311,234	\$ 18,674	\$ 26,393	\$ 74,823	\$ 431,124	\$ 43,112	\$ 474,236	\$ 94,847	\$ 569,083	\$ 113,817	
TOTAL PRIORITY ACTIONS																\$ 751,190
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

P1 **Clean and Coat Sheet Piles above MLW**

Quantity = 1,034 LF

Clean, prepare, and recoat the steel sheet piles above MLW (approximately 12,408 sf of surface area over a developed length of approximately 1,034 ft), and cleaning/recoating 6 bollards.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating	250	Gallons	\$125.00	\$31,250
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$31,250

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Construction Crew:	Qty men	Daily Rate	Extended Daily Rate	Hourly Rate
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	1	\$1,210	\$1,210	\$151.19/hr
Tender	1	\$1,009	\$1,009	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr
			<u>\$4,849</u> per day	

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast sheet piles	12408	SF	1500.00	8.272	\$40,113
Apply coat #1	12408	SF	1000.00	12.408	\$60,169
Apply coat #2	12408	SF	1000.00	12.408	\$60,169
Apply coat #3	12408	SF	1000.00	12.408	\$60,169
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	45.50	\$220,619

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	46.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	46.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	46.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	46.0	\$1,000	\$46,000
Dive Spread/Equipment	1	EA.	46.0	\$150	\$6,900
Concrete Pump/Hoses	0	EA.	46.0	\$50	\$0
Generator	0	EA.	46.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	46.0	\$25	\$1,150
Welding Machine	0	EA.	46.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	2	EA.	46.0	\$25	\$2,300
Tools/Consumables/Maintenance	2	EA.	46.0	\$25	\$2,300
Vibratory pile driver	0	EA.	46.0	\$1,500	\$0
reserved	0	EA.	46.0	\$0	\$0
			TOTAL		\$58,650

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price	
P1	TOTAL	\$310,519	\$300.31 per LF
			\$301.00 rounded up per LF

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - ROUTINE REPAIRS
CELLULAR COFFERDAM

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	ROUTINE ACTIONS															
R1	Repair Sinkholes and Clear Vegetation	Fill and reestablish grade at sinkholes and depressions and clear all vegetation/ overgrowth. Average sinkhole volume = 340 cf at each of four general areas.	CF	1,440	\$ 16.00	\$ 23,040	\$ 1,382	\$ 1,954	\$ 5,539	\$ 31,915	\$ 3,192	\$ 35,107	\$ 7,021	\$ 42,128	\$ 8,426	\$ 55,609
R2	Repave Worn Pavement	Repave worn/damaged pavement surfaces over an area of approximately 360 ft long by 70 ft wide	SF	25,200	\$ 5.00	\$ 126,000	\$ 7,560	\$ 10,685	\$ 30,291	\$ 174,536	\$ 17,454	\$ 191,990	\$ 38,398	\$ 230,388	\$ 46,078	\$ 304,112
SUBTOTAL						\$ 149,040	\$ 8,942	\$ 12,639	\$ 35,830	\$ 206,451	\$ 20,645	\$ 227,097	\$ 45,419	\$ 272,516	\$ 54,503	
TOTAL ROUTINE ACTIONS																\$ 359,721
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

R1 **Repair Sinkholes and Clear Vegetation**

Quantity = 1,440 CF

Fill and reestablish grade at sinkholes and depressions and clear all vegetation/ overgrowth. Average sinkhole volume = 340 cf at each of four general areas.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Gravel fill material	50	CY	\$35.00	\$1,750
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$1,750

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Construction Crew:	Qty men	Daily Rate	Extended Daily Rate	Hourly Rate
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	0	\$1,064	\$0	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	3	\$871	\$2,614	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$3,117 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Fill voids and level	4	EA	1.00	4.000	\$12,467
Clear and grub overgrowth	1	EA	1.00	1.000	\$3,117
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	5.00	\$15,583

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	5.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	5.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	5.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	5.0	\$1,000	\$5,000
Dive Spread/Equipment	0	EA.	5.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	5.0	\$50	\$0
Generator	0	EA.	5.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	2	EA.	5.0	\$25	\$250
Welding Machine	0	EA.	5.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	0	EA.	5.0	\$25	\$0
Tools/Consumables/Maintenance	1	EA.	5.0	\$25	\$125
Vibratory pile driver	0	EA.	5.0	\$1,500	\$0
reserved	0	EA.	5.0	\$0	\$0
			TOTAL		\$5,375

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price	
R1	TOTAL	\$22,708	\$15.77 per CF
			\$16.00 rounded up per CF

R2 Repave Worn Pavement

MATERIAL

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Task:	Quantity	Unit	(Quantity/Day)	(days)	Total Labor Cost
Strip existing 2" asphalt and dispose	25,200	SF	9000.00	2.800	\$15,633
Repave - place and roll 2" topping course	25200	SF	12000.00	2.100	\$11,725
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	4.90	\$27,358
			say	5.0	

EQUIPMENT

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

3.1 VCBC Cellular Cofferdam - Routine (rev00)

Cost Estimate Backup Transition Bulkhead

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - PRIORITY REPAIRS
TRANSITION BULKHEAD

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
P1	PRIORITY ACTIONS															
	Clean and Coat Sheet Piles above MLW	Clean and recoat steel sheet piles above MLW between Sta. 7+81 and Sta. 7+99. Recoat an area of approximately 240 sf.	LF	18	\$ 2,021.00	\$ 36,378	\$ 2,183	\$ 3,085	\$ 8,746	\$ 50,391	\$ 5,039	\$ 55,430	\$ 11,086	\$ 66,516	\$ 13,303	\$ 87,801
SUBTOTAL						\$ 36,378	\$ 2,183	\$ 3,085	\$ 8,746	\$ 50,391	\$ 5,039	\$ 55,430	\$ 11,086	\$ 66,516	\$ 13,303	
TOTAL PRIORITY ACTIONS																\$ 87,801
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

P1 **Clean and Coat Sheet Piles above MLW**

Quantity = 18 LF

Clean and recoat steel sheet piles above MLW between Sta. 7+81 and Sta. 7+99. Recoat an area of approximately 240 sf.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating	95	Gallons	\$125.00	\$11,875
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$11,875

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Construction Crew:	Qty men	Daily Rate	Extended Daily Rate	Hourly Rate
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	1	\$1,210	\$1,210	\$151.19/hr
Tender	1	\$1,009	\$1,009	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$4,849 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast sheet piles	240	SF	240.00	1.000	\$4,849
Apply coat #1	240	SF	240.00	1.000	\$4,849
Apply coat #2	240	SF	240.00	1.000	\$4,849
Apply coat #3	240	SF	240.00	1.000	\$4,849
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	4.00	\$19,397

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	4.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	4.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	4.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	4.0	\$1,000	\$4,000
Dive Spread/Equipment	1	EA.	4.0	\$150	\$600
Concrete Pump/Hoses	0	EA.	4.0	\$50	\$0
Generator	0	EA.	4.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	4.0	\$25	\$100
Welding Machine	0	EA.	4.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	2	EA.	4.0	\$25	\$200
Tools/Consumables/Maintenance	2	EA.	4.0	\$25	\$200
Vibratory pile driver	0	EA.	4.0	\$1,500	\$0
reserved	0	EA.	4.0	\$0	\$0
			TOTAL		\$5,100

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P1	TOTAL	\$36,372	\$2,020.66	per LF	\$2,021.00 rounded up per LF

Cost Estimate Backup High-Level Platform

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - PRIORITY REPAIRS
HIGH-LEVEL PLATFORM

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
	PRIORITY ACTIONS					1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
P1	Clean and Coat Pipe Piles above MLW	Coat the tops of 48 steel pipe piles from the cap underside down to 18" below MLW (~10 ft length).	EA	48	\$ 3,181.00	\$ 152,688	\$ 9,161	\$ 12,948	\$ 36,707	\$ 211,505	\$ 21,150	\$ 232,655	\$ 46,531	\$ 279,186	\$ 55,837	\$ 368,526
P2	Clean and Coat Steel Sheet Pile Cutoff Wall above MLW	Clean and recoat the steel sheet pile cut-off wall above the riprap and patch the corrosion holes at the strut penetrations. Height = 10 ft.	LF	170	\$ 842.00	\$ 143,140	\$ 8,588	\$ 12,138	\$ 34,412	\$ 198,279	\$ 19,828	\$ 218,107	\$ 43,621	\$ 261,728	\$ 52,346	\$ 345,481
SUBTOTAL						\$ 295,828	\$ 17,750	\$ 25,086	\$ 71,119	\$ 409,783	\$ 40,978	\$ 450,762	\$ 90,152	\$ 540,914	\$ 108,183	
TOTAL PRIORITY ACTIONS																\$ 714,006
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

P1 **Clean and Coat Pipe Piles above MLW**

Quantity = 48 EA

Coat the tops of 48 steel pipe piles from the cap underside down to 18" below MLW (~10 ft length).

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating (25 sf/pile)	24	Gallons	\$125.00	\$3,000
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$3,000

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	2	\$1,210	\$2,419	\$151.19/hr
Tender	1	\$1,009	\$1,009	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$6,059 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast piles	48	SF	6.00	8.000	\$48,470
Apply coat #1	48	SF	12.00	4.000	\$24,235
Apply coat #2	48	SF	12.00	4.000	\$24,235
Apply coat #3	48	SF	12.00	4.000	\$24,235
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	20.00	\$121,174

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	20.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	20.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	20.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	20.0	\$1,000	\$20,000
Dive Spread/Equipment	2	EA.	20.0	\$150	\$6,000
Concrete Pump/Hoses	0	EA.	20.0	\$50	\$0
Generator	0	EA.	20.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	20.0	\$25	\$500
Welding Machine	0	EA.	20.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	2	EA.	20.0	\$25	\$1,000
Tools/Consumables/Maintenance	2	EA.	20.0	\$25	\$1,000
Vibratory pile driver	0	EA.	20.0	\$1,500	\$0
reserved	0	EA.	20.0	\$0	\$0
			TOTAL		\$28,500

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P1	TOTAL	\$152,674	\$3,180.72	per EA	\$3,181.00 rounded up per EA

P2 **Clean and Coat Steel Sheet Pile Cutoff Wall above MLW**

Quantity = 170 LF

Clean and recoat the steel sheet pile cut-off wall above the riprap and patch the corrosion holes at the strut penetrations. Height = 10 ft.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating (24 mil)	40	Gallons	\$125.00	\$5,000
Miscellaneous steel patch material	2	EA	\$500.00	\$1,000
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$6,000

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	2	\$1,210	\$2,419	\$151.19/hr
Tender	1	\$1,009	\$1,009	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$6,059 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Relocate riprap	170	LF	40.00	4.250	\$25,750
Patch corrosion holes at strut locations	2	EA	1.00	2.000	\$12,117
Hydroblast sheet piles	1700	SF	1000.00	1.700	\$10,300
Apply coat #1	1700	SF	500.00	3.400	\$20,600
Apply coat #2	1700	SF	500.00	3.400	\$20,600
Apply coat #3	1700	SF	500.00	3.400	\$20,600
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	18.15	\$109,966
			say	19.0	

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	19.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	19.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	19.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	19.0	\$1,000	\$19,000
Dive Spread/Equipment	2	EA.	19.0	\$150	\$5,700
Concrete Pump/Hoses	0	EA.	19.0	\$50	\$0
Generator	0	EA.	19.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	19.0	\$25	\$475
Welding Machine	0	EA.	19.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	2	EA.	19.0	\$25	\$950
Tools/Consumables/Maintenance	2	EA.	19.0	\$25	\$950
Paving machine	0	EA.	19.0	\$1,000	\$0
Rolling Machine	0	EA.	19.0	\$500	\$0
			TOTAL		\$27,075

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P2	TOTAL	\$143,041	\$841.42	per LF	\$842.00 rounded up per LF

Cost Estimate Backup
West Mooring Arm

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - PRIORITY REPAIRS
WEST MOORING ARM

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	PRIORITY ACTIONS															
P1	Clean and Coat Crandall Arm	Clean and coat corroded steel components comprising the Crandall Mooring Arm Assembly.	EA	1	\$ 14,263.00	\$ 14,263	\$ 856	\$ 1,210	\$ 3,429	\$ 19,757	\$ 1,976	\$ 21,733	\$ 4,347	\$ 26,080	\$ 5,216	\$ 34,425
P2	Clean, Reinforce, and Coat Support Bracket	Clean, reinforce, coat, and shim the steel brackets below the concrete support cap.	EA	1	\$ 14,488.00	\$ 14,488	\$ 869	\$ 1,229	\$ 3,483	\$ 20,069	\$ 2,007	\$ 22,076	\$ 4,415	\$ 26,491	\$ 5,298	\$ 34,968
SUBTOTAL						\$ 28,751	\$ 1,725	\$ 2,438	\$ 6,912	\$ 39,826	\$ 3,983	\$ 43,809	\$ 8,762	\$ 52,570	\$ 10,514	
TOTAL PRIORITY ACTIONS																\$ 69,393
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

P1 Clean and Coat Crandall Arm

Quantity = 1 EA

Clean and coat corroded steel components comprising the Crandall Mooring Arm Assembly.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating.	5	Gallons	\$125.00	\$625
				\$500
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$1,125

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Construction Crew:	Qty men	Daily Rate	Extended Daily Rate	Hourly Rate
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	1	\$1,064	\$1,064	\$133.01/hr
Diver	1	\$1,210	\$1,210	\$151.19/hr
Tender	1	\$1,009	\$1,009	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

Task:

Hydroblast steel Crandall Arm components	1	LS	1.00	1.000	\$3,785
Apply coat #1	1	LS	2.00	0.500	\$1,893
Apply coat #2	1	LS	2.00	0.500	\$1,893
Apply coat #3	1	LS	2.00	0.500	\$1,893
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	2.50	\$9,463

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	3.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	3.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	3.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	3.0	\$1,000	\$3,000
Dive Spread/Equipment	1	EA.	3.0	\$150	\$450
Concrete Pump/Hoses	0	EA.	3.0	\$50	\$0
Generator	0	EA.	3.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	3.0	\$25	\$75
Welding Machine	0	EA.	3.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	1	EA.	3.0	\$25	\$75
Tools/Consumables/Maintenance	1	EA.	3.0	\$25	\$75
Vibratory pile driver	0	EA.	3.0	\$1,500	\$0
reserved	0	EA.	3.0	\$0	\$0
			TOTAL		\$3,675

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P1	TOTAL	\$14,263	\$14,262.80	per EA	\$14,263.00 rounded up per EA

P2 Clean, Reinforce, and Coat Support Bracket

Quantity = 1 EA

Clean, reinforce, coat, and shim the steel brackets below the concrete support cap.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating (24 mil)	2	Gallons	\$125.00	\$250
Miscellaneous steel patch material/HW	1	LS	\$500.00	\$500
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$750

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	1	\$1,064	\$1,064	\$133.01/hr
Diver	1	\$1,210	\$1,210	\$151.19/hr
Tender	1	\$1,009	\$1,009	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$3,785 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast steel bracket components and install shims	1	LS	1.00	1.000	\$3,785
Apply coat #1	1	LS	2.00	0.500	\$1,893
Apply coat #2	1	LS	2.00	0.500	\$1,893
Apply coat #3	1	LS	2.00	0.500	\$1,893
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	2.50	\$9,463
			say	3.0	

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	3.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	3.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	3.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	3.0	\$1,000	\$3,000
Dive Spread/Equipment	2	EA.	3.0	\$150	\$900
Concrete Pump/Hoses	0	EA.	3.0	\$50	\$0
Generator	0	EA.	3.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	3.0	\$25	\$75
Welding Machine	0	EA.	3.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	2	EA.	3.0	\$25	\$150
Tools/Consumables/Maintenance	2	EA.	3.0	\$25	\$150
Paving machine	0	EA.	3.0	\$1,000	\$0
Rolling Machine	0	EA.	3.0	\$500	\$0
			TOTAL		\$4,275

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P2	TOTAL	\$14,488	\$14,487.80	per EA	\$14,488.00 rounded up per EA

Cost Estimate Backup
East Mooring Arm

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - PRIORITY REPAIRS
EAST MOORING ARM

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
	PRIORITY ACTIONS					1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
P1	Clean and Coat Crandall Arm	Clean and coat corroded steel components comprising the Crandal Mooring Arm Assembly.	EA	1	\$ 14,013.00	\$ 14,013	\$ 841	\$ 1,188	\$ 3,369	\$ 19,411	\$ 1,941	\$ 21,352	\$ 4,270	\$ 25,622	\$ 5,124	\$ 33,822
P2	Repair Pile Encasements	Pack the gap up to 8" at the pile tops solid with grout and encase the bottom of the piles at the mudline up to 5 ft high	EA	5	\$ 6,672.00	\$ 33,360	\$ 2,002	\$ 2,829	\$ 8,020	\$ 46,211	\$ 4,621	\$ 50,832	\$ 10,166	\$ 60,998	\$ 12,200	\$ 80,517
P3	Repair Cracks in Pile Cap	Inject cracks in the concrete pile cap with an epoxy grout.	EA	1	\$ 22,342.00	\$ 22,342	\$ 1,341	\$ 1,895	\$ 5,371	\$ 30,948	\$ 3,095	\$ 34,043	\$ 6,809	\$ 40,852	\$ 8,170	\$ 53,924
SUBTOTAL						\$ 69,715	\$ 4,183	\$ 5,912	\$ 16,760	\$ 96,570	\$ 9,657	\$ 106,227	\$ 21,245	\$ 127,472	\$ 25,494	
TOTAL PRIORITY ACTIONS																\$ 168,263
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

P1 Clean and Coat Crandall Arm

Quantity = 1 EA

Clean and coat corroded steel components comprising the Crandal Mooring Arm Assembly.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating.	5	Gallons	\$125.00	\$625
				\$250
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$875

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Construction Crew:	Qty men	Daily Rate	Extended Daily Rate	Hourly Rate
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	1	\$1,064	\$1,064	\$133.01/hr
Diver	1	\$1,210	\$1,210	\$151.19/hr
Tender	1	\$1,009	\$1,009	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

Task:

Hydroblast steel Crandall Arm components	1	LS	1.00	1.000	\$3,785
Apply coat #1	1	LS	2.00	0.500	\$1,893
Apply coat #2	1	LS	2.00	0.500	\$1,893
Apply coat #3	1	LS	2.00	0.500	\$1,893
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	2.50	\$9,463

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	3.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	3.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	3.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	3.0	\$1,000	\$3,000
Dive Spread/Equipment	1	EA.	3.0	\$150	\$450
Concrete Pump/Hoses	0	EA.	3.0	\$50	\$0
Generator	0	EA.	3.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	3.0	\$25	\$75
Welding Machine	0	EA.	3.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	1	EA.	3.0	\$25	\$75
Tools/Consumables/Maintenance	1	EA.	3.0	\$25	\$75
Vibratory pile driver	0	EA.	3.0	\$1,500	\$0
reserved	0	EA.	3.0	\$0	\$0
			TOTAL		\$3,675

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P1	TOTAL	\$14,013	\$14,012.80	per EA	\$14,013.00 rounded up per EA

P2 Repair Pile Encasements

Pack the gap up to 8" at the pile tops solid with grout and encase the bottom of the piles at the mudline up to 5 ft high

	Quantity	Unit	Unit Cost	Total
FRP Form (5 pile a 5 ft long each)	25	LF	\$100.00	\$2,500
High-strength grout (.48 cf/bag) - 1 bag per pile	5	EA	\$50.00	\$250
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$2,750

Construction Crew:	Qty men	Daily Rate	Extended Daily Rate	Hourly Rate
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	1	\$1,064	\$1,064	\$133.01/hr
Diver	2	\$1,210	\$2,419	\$151.19/hr
Tender	1	\$1,009	\$1,009	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast pile surfaces,mudline	5	EA	5.00	1.000	\$4,995
Set forms	5	EA	3.00	1.667	\$8,324
Pump grout	5	EA	5.00	1.000	\$4,995
Pack pile top with grout	5	EA	5.00	1.000	\$4,995
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	4.67	\$23,308
			say	5.0	

			Total Equipment		Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	5.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	5.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	5.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	5.0	\$1,000	\$5,000
Dive Spread/Equipment	2	EA.	5.0	\$150	\$1,500
Concrete Pump/Hoses	1	EA.	5.0	\$50	\$250
Generator	1	EA.	5.0	\$35	\$175
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	5.0	\$25	\$125
Welding Machine	0	EA.	5.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	1	EA.	5.0	\$25	\$125
Tools/Consumables/Maintenance	1	EA.	5.0	\$25	\$125
Paving machine	0	EA.	5.0	\$1,000	\$0
Rolling Machine	0	EA.	5.0	\$500	\$0
			TOTAL		\$7,300

Item	Total	Unit Price			
P2	TOTAL	\$33,358	\$6,671.66	per EA	\$6,672.00 rounded up per EA

P3 Repair Cracks in Pile Cap

Quantity = 1 EA

Inject cracks in the concrete pile cap with an epoxy grout.

MATERIAL: Note: estimate is normalized to assume Type A ~ Type B materials and assembly, for replacement of posts, chocks, grate, and steel tube regardless of condition.

	Quantity	Unit	Unit Cost	Total
High-strength low viscosity epoxy grout	20	GAL	\$250.00	\$5,000
Miscellaneous (injection ports, sealer)	1	LS	\$2,500.00	\$2,500
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$7,500

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	2	\$855	\$1,711	\$106.91/hr
Electrical/Electrician	0	\$1,064	\$0	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$2,213 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Rout cracks	40	LF	30.00	1.333	\$2,951
Insert injection ports and sealer	40	LF	40.00	1.000	\$2,213
Pump epoxy grout	1	EA	1.00	1.000	\$2,213
Cut ports and grind flush	40	LF	40.00	1.000	\$2,213
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	4.33	\$9,591

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	5.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	5.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	5.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	5.0	\$1,000	\$5,000
Dive Spread/Equipment	0	EA.	5.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	5.0	\$50	\$0
Generator	0	EA.	5.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	5.0	\$25	\$125
Welding Machine	0	EA.	5.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	0	EA.	5.0	\$25	\$0
Tools/Consumables/Maintenance	1	EA.	5.0	\$25	\$125
reserved	0	EA.	5.0	\$0	\$0
reserved	0	EA.	5.0	\$0	\$0
			TOTAL		\$5,250

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price	
P3	TOTAL	\$22,341	\$22,341.23 per EA
			\$22,342.00 rounded up per EA

Cost Estimate Backup
West Pedestrian Gangway A

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - PRIORITY REPAIRS
WEST PEDESTRIAN GANGWAY A

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	PRIORITY ACTIONS															
P1	Repair Rocker Bearings	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	EA	1	\$ 11,868.00	\$ 11,868	\$ 712	\$ 1,006	\$ 2,853	\$ 16,440	\$ 1,644	\$ 18,084	\$ 3,617	\$ 21,700	\$ 4,340	\$ 28,644
SUBTOTAL						\$ 11,868	\$ 712	\$ 1,006	\$ 2,853	\$ 16,440	\$ 1,644	\$ 18,084	\$ 3,617	\$ 21,700	\$ 4,340	
TOTAL PRIORITY ACTIONS																\$ 28,644
	Mobilization/Demobilization at		6%													
	General Conditions at		8%													
	Overhead & Profit at		21%													
	Design Contingency at		10%													
	Construction Contingency at		20%													
	Soft Costs at		20%													
	Overall Project Contingency		10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

P1 Repair Rocker Bearings

Quantity = 1 EA

Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.

MATERIAL

[illegible]

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Construction Crew:	Qty men	Daily Rate	Extended Daily Rate	Hourly Rate
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$2,631 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast clean all rocker bearing components	1	LS	1.00	1.000	\$2,631
Replace safety chains and anchor bolts	1	LS	1.00	1.000	\$2,631
Coat rocker bearing components	1	LS	1.00	1.000	\$2,631
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	3.00	\$7,893

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	3.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	3.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	3.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	3.0	\$1,000	\$3,000
Dive Spread/Equipment	0	EA.	3.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	3.0	\$50	\$0
Generator	0	EA.	3.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	3.0	\$25	\$75
Welding Machine	0	EA.	3.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	1	EA.	3.0	\$25	\$75
Tools/Consumables/Maintenance	1	EA.	3.0	\$25	\$75
Vibratory pile driver	0	EA.	3.0	\$1,500	\$0
reserved	0	EA.	3.0	\$0	\$0
			TOTAL		\$3,225

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P1	TOTAL	\$11,868	\$11,867.88	per EA	\$11,868.00 rounded up per EA

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - ROUTINE REPAIRS
WEST PEDESTRIAN GANGWAY A

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
R1	ROUTINE ACTIONS															
	Clean and Coat West Pedestrian Gangway A	Hydroblast clean and coat steel framing, bearings, and deck. Deck ~9'x62' = 560 sf. Framing below assume 4x deck surface area.	SF	560	\$ 47.00	\$ 26,320	\$ 1,579	\$ 2,232	\$ 6,328	\$ 36,459	\$ 3,646	\$ 40,105	\$ 8,021	\$ 48,125	\$ 9,625	\$ 63,526
SUBTOTAL						\$ 26,320	\$ 1,579	\$ 2,232	\$ 6,328	\$ 36,459	\$ 3,646	\$ 40,105	\$ 8,021	\$ 48,125	\$ 9,625	
TOTAL ROUTINE ACTIONS																\$ 63,526
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

Cost Estimate Backup
Middle Pedestrian Gangway B

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - IMMEDIATE REPAIRS
MIDDLE PEDESTRIAN GANGWAY B

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	IMMEDIATE ACTIONS															
P1	Cut/Remove Vegeation and overgrowth	Remove vegetation and overgrowth from the support frame ladder and winch systems.	EA	1	\$ 4,692.00	\$ 4,692	\$ 282	\$ 398	\$ 1,128	\$ 6,499	\$ 650	\$ 7,149	\$ 1,430	\$ 8,579	\$ 1,716	\$ 11,325
SUBTOTAL						\$ 4,692	\$ 282	\$ 398	\$ 1,128	\$ 6,499	\$ 650	\$ 7,149	\$ 1,430	\$ 8,579	\$ 1,716	
TOTAL IMMEDIATE ACTIONS \$ 11,325																
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

P1 **Cut/Remove Vegetation and overgrowth**

Quantity = 1 EA

Remove vegetation and overgrowth from the support frame ladder and winch systems.

MATERIAL

	Quantity	Unit	Unit Cost	Total
20 CY Dump Truck	1	DAY	\$1,500.00	\$1,500
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$1,500

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	0	\$1,064	\$0	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	3	\$871	\$2,614	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$3,117 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Cut and remove vegetation	1	LS	1.00	1.000	\$3,117
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	1.00	\$3,117

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	1.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	1.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	1.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	0	EA.	1.0	\$1,000	\$0
Dive Spread/Equipment	0	EA.	1.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	1.0	\$50	\$0
Generator	0	EA.	1.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	2	EA.	1.0	\$25	\$50
Welding Machine	0	EA.	1.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	0	EA.	1.0	\$25	\$0
Tools/Consumables/Maintenance	1	EA.	1.0	\$25	\$25
Vibratory pile driver	0	EA.	1.0	\$1,500	\$0
reserved	0	EA.	1.0	\$0	\$0
			TOTAL		\$75

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price	
P1	TOTAL	\$4,692	\$4,691.64 per EA \$4,692.00 rounded up per EA

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - PRIORITY REPAIRS
MIDDLE PEDESTRIAN GANGWAY B

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	PRIORITY ACTIONS															
P1	Repair Rocker Bearings	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	EA	1	\$ 11,868.00	\$ 11,868	\$ 712	\$ 1,006	\$ 2,853	\$ 16,440	\$ 1,644	\$ 18,084	\$ 3,617	\$ 21,700	\$ 4,340	\$ 28,644
SUBTOTAL						\$ 11,868	\$ 712	\$ 1,006	\$ 2,853	\$ 16,440	\$ 1,644	\$ 18,084	\$ 3,617	\$ 21,700	\$ 4,340	
TOTAL PRIORITY ACTIONS																\$ 28,644
	Mobilization/Demobilization at		6%													
	General Conditions at		8%													
	Overhead & Profit at		21%													
	Design Contingency at		10%													
	Construction Contingency at		20%													
	Soft Costs at		20%													
	Overall Project Contingency		10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of 241.4%																

P1 Repair Rocker Bearings

Quantity = 1 EA

Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.

MATERIAL

[illegible]

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$2,631 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast clean all rocker bearing components	1	LS	1.00	1.000	\$2,631
Replace safety chains and anchor bolts	1	LS	1.00	1.000	\$2,631
Coat rocker bearing components	1	LS	1.00	1.000	\$2,631
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	3.00	\$7,893

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	3.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	3.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	3.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	3.0	\$1,000	\$3,000
Dive Spread/Equipment	0	EA.	3.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	3.0	\$50	\$0
Generator	0	EA.	3.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	3.0	\$25	\$75
Welding Machine	0	EA.	3.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	1	EA.	3.0	\$25	\$75
Tools/Consumables/Maintenance	1	EA.	3.0	\$25	\$75
Vibratory pile driver	0	EA.	3.0	\$1,500	\$0
reserved	0	EA.	3.0	\$0	\$0
			TOTAL		\$3,225

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P1	TOTAL	\$11,868	\$11,867.88	per EA	\$11,868.00 rounded up per EA

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - ROUTINE REPAIRS
MIDDLE PEDESTRIAN GANGWAY B

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
R1	ROUTINE ACTIONS															
	Clean and Coat Middle Pedestrian Gangway B	Hydroblast clean and coat steel framing, bearings, and deck. Deck ~9'x62' = 560 sf. Framing below assume 4x deck surface area.	SF	560	\$ 47.00	\$ 26,320	\$ 1,579	\$ 2,232	\$ 6,328	\$ 36,459	\$ 3,646	\$ 40,105	\$ 8,021	\$ 48,125	\$ 9,625	\$ 63,526
SUBTOTAL						\$ 26,320	\$ 1,579	\$ 2,232	\$ 6,328	\$ 36,459	\$ 3,646	\$ 40,105	\$ 8,021	\$ 48,125	\$ 9,625	
TOTAL ROUTINE ACTIONS																\$ 63,526
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

R1 Clean and Coat Middle Pedestrian Gangway B

Quantity = 560 SF

Hydroblast clean and coat steel framing, bearings, and deck. Deck ~9'x62' = 560 sf. Framing below assume 4x deck surface area.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating.	55	Gallons	\$125.00	\$6,875
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$6,875

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

Task:	Quantity	Unit	\$2,631 per day		Total Labor Cost
			Output (Quantity/Day)	Total Labor Time (days)	
Hydroblast clean all exposed steel surfaces above/below deck	1	LS	1.00	1.000	\$2,631
Apply Coat #1	1	LS	0.50	2.000	\$5,262
Apply Coat #2	1	LS	0.50	2.000	\$5,262
Apple Coat #3	1	LS	0.50	2.000	\$5,262
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	7.00	\$18,417

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	7.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	7.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	7.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	0	EA.	7.0	\$1,000	\$0
Dive Spread/Equipment	0	EA.	7.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	7.0	\$50	\$0
Generator	0	EA.	7.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	0	EA.	7.0	\$25	\$0
Welding Machine	0	EA.	7.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	2	EA.	7.0	\$25	\$350
Tools/Consumables/Maintenance	2	EA.	7.0	\$25	\$350
Vibratory pile driver	0	EA.	7.0	\$1,500	\$0
reserved	0	EA.	7.0	\$0	\$0
			TOTAL		\$700

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price	
R1	TOTAL	\$25,992	\$46.41 per SF \$47.00 rounded up per SF

Cost Estimate Backup
East Pedestrian Gangway C

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - IMMEDIATE REPAIRS
EAST PEDESTRIAN GANGWAY C

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	IMMEDIATE ACTIONS															
P1	Cut/Remove Vegeation and overgrowth	Remove vegetation and overgrowth from the support frame ladder and winch systems.	EA	1	\$ 4,692.00	\$ 4,692	\$ 282	\$ 398	\$ 1,128	\$ 6,499	\$ 650	\$ 7,149	\$ 1,430	\$ 8,579	\$ 1,716	\$ 11,325
SUBTOTAL						\$ 4,692	\$ 282	\$ 398	\$ 1,128	\$ 6,499	\$ 650	\$ 7,149	\$ 1,430	\$ 8,579	\$ 1,716	
TOTAL IMMEDIATE ACTIONS																\$ 11,325
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

EAST PEDESTRIAN GANGWAY C

Remove vegetation and overgrowth from the support frame ladder and winch systems.

	Quantity	Unit	Unit Cost	Total
20 CY Dump Truck	1	DAY	\$1,500.00	\$1,500
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$1,500

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Task:	Quantity	Unit	(Quantity/Day)	(days)	Total Labor Cost
Cut and remove vegetation	1	LS	1.00	1.000	\$3,117
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
		TOTAL	1.00	\$3,117	

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	1.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	1.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	1.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	0	EA.	1.0	\$1,000	\$0
Dive Spread/Equipment	0	EA.	1.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	1.0	\$50	\$0
Generator	0	EA.	1.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	2	EA.	1.0	\$25	\$50
Welding Machine	0	EA.	1.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	0	EA.	1.0	\$25	\$0
Tools/Consumables/Maintenance	1	EA.	1.0	\$25	\$25
Vibratory pile driver	0	EA.	1.0	\$1,500	\$0
reserved	0	EA.	1.0	\$0	\$0
			TOTAL		\$75

Item	Total	Unit Price			
P1	TOTAL	\$4,692	\$4,691.64	per EA	\$4,692.00 rounded up per EA

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - PRIORITY REPAIRS
EAST PEDESTRIAN GANGWAY C

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	PRIORITY ACTIONS															
P1	Repair Rocker Bearings	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	EA	1	\$ 11,868.00	\$ 11,868	\$ 712	\$ 1,006	\$ 2,853	\$ 16,440	\$ 1,644	\$ 18,084	\$ 3,617	\$ 21,700	\$ 4,340	\$ 28,644
SUBTOTAL						\$ 11,868	\$ 712	\$ 1,006	\$ 2,853	\$ 16,440	\$ 1,644	\$ 18,084	\$ 3,617	\$ 21,700	\$ 4,340	
TOTAL PRIORITY ACTIONS																\$ 28,644
	Mobilization/Demobilization at		6%													
	General Conditions at		8%													
	Overhead & Profit at		21%													
	Design Contingency at		10%													
	Construction Contingency at		20%													
	Soft Costs at		20%													
	Overall Project Contingency		10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of										241.4%						

P1 Repair Rocker Bearings

Quantity = 1 EA

Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.

MATERIAL

[illegible]

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Construction Crew:	Qty men	Daily Rate	Extended Daily Rate	Hourly Rate
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$2,631 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast clean all rocker bearing components	1	LS	1.00	1.000	\$2,631
Replace safety chains and anchor bolts	1	LS	1.00	1.000	\$2,631
Coat rocker bearing components	1	LS	1.00	1.000	\$2,631
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	3.00	\$7,893

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	3.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	3.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	3.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	3.0	\$1,000	\$3,000
Dive Spread/Equipment	0	EA.	3.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	3.0	\$50	\$0
Generator	0	EA.	3.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	3.0	\$25	\$75
Welding Machine	0	EA.	3.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	1	EA.	3.0	\$25	\$75
Tools/Consumables/Maintenance	1	EA.	3.0	\$25	\$75
Vibratory pile driver	0	EA.	3.0	\$1,500	\$0
reserved	0	EA.	3.0	\$0	\$0
			TOTAL		\$3,225

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P1	TOTAL	\$11,868	\$11,867.88	per EA	\$11,868.00 rounded up per EA

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - ROUTINE REPAIRS
EAST PEDESTRIAN GANGWAY C

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
R1	ROUTINE ACTIONS Clean and Coat East Pedestrian Gangway C	Hydroblast clean and coat steel framing, bearings, and deck. Deck ~9'x62' = 560 sf. Framing below assume 4x deck surface area.	SF	560	\$ 47.00	\$ 26,320	\$ 1,579	\$ 2,232	\$ 6,328	\$ 36,459	\$ 3,646	\$ 40,105	\$ 8,021	\$ 48,125	\$ 9,625	\$ 63,526
SUBTOTAL						\$ 26,320	\$ 1,579	\$ 2,232	\$ 6,328	\$ 36,459	\$ 3,646	\$ 40,105	\$ 8,021	\$ 48,125	\$ 9,625	
TOTAL ROUTINE ACTIONS \$ 63,526																
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

R1 Clean and Coat East Pedestrian Gangway C

Quantity = 560 SF

Hydroblast clean and coat steel framing, bearings, and deck. Deck ~9'x62' = 560 sf. Framing below assume 4x deck surface area.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating.	55	Gallons	\$125.00	\$6,875
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$6,875

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$2,631 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast clean all exposed steel surfaces above/below deck	1	LS	1.00	1.000	\$2,631
Apply Coat #1	1	LS	0.50	2.000	\$5,262
Apply Coat #2	1	LS	0.50	2.000	\$5,262
Apple Coat #3	1	LS	0.50	2.000	\$5,262
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	7.00	\$18,417

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	7.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	7.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	7.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	0	EA.	7.0	\$1,000	\$0
Dive Spread/Equipment	0	EA.	7.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	7.0	\$50	\$0
Generator	0	EA.	7.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	0	EA.	7.0	\$25	\$0
Welding Machine	0	EA.	7.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	2	EA.	7.0	\$25	\$350
Tools/Consumables/Maintenance	2	EA.	7.0	\$25	\$350
Vibratory pile driver	0	EA.	7.0	\$1,500	\$0
reserved	0	EA.	7.0	\$0	\$0
			TOTAL		\$700

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price	
R1	TOTAL	\$25,992	\$46.41 per SF \$47.00 rounded up per SF

Cost Estimate Backup
Cargo Gangway

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - IMMEDIATE REPAIRS
CARGO GANGWAY

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
P1	IMMEDIATE ACTIONS															
	Cut/Remove Vegeation and Overgrowth	Remove vegetation and overgrowth from the support frame ladder and winch systems.	EA	1	\$ 4,692.00	\$ 4,692	\$ 282	\$ 398	\$ 1,128	\$ 6,499	\$ 650	\$ 7,149	\$ 1,430	\$ 8,579	\$ 1,716	\$ 11,325
SUBTOTAL						\$ 4,692	\$ 282	\$ 398	\$ 1,128	\$ 6,499	\$ 650	\$ 7,149	\$ 1,430	\$ 8,579	\$ 1,716	
TOTAL IMMEDIATE ACTIONS																\$ 11,325
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

P1 **Cut/Remove Vegetation and Overgrowth**

Quantity = 1 EA

Remove vegetation and overgrowth from the support frame ladder and winch systems.

MATERIAL

	Quantity	Unit	Unit Cost	Total
20 CY Dump Truck	1	DAY	\$1,500.00	\$1,500
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$1,500

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	0	\$1,064	\$0	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	3	\$871	\$2,614	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$3,117 per day

Task:	Quantity	Unit	Output	Total Labor Time	Total Labor Cost
			(Quantity/Day)	(days)	
Cut and remove vegetation	1	LS	1.00	1.000	\$3,117
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
		TOTAL	1.00	\$3,117	

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	1.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	1.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	1.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	0	EA.	1.0	\$1,000	\$0
Dive Spread/Equipment	0	EA.	1.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	1.0	\$50	\$0
Generator	0	EA.	1.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	2	EA.	1.0	\$25	\$50
Welding Machine	0	EA.	1.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	0	EA.	1.0	\$25	\$0
Tools/Consumables/Maintenance	1	EA.	1.0	\$25	\$25
Vibratory pile driver	0	EA.	1.0	\$1,500	\$0
reserved	0	EA.	1.0	\$0	\$0
			TOTAL		\$75

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P1	TOTAL	\$4,692	\$4,691.64	per EA	\$4,692.00 rounded up per EA

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - PRIORITY REPAIRS
CARGO GANGWAY

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	PRIORITY ACTIONS															
P1	Repair Rocker Bearings	Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.	EA	1	\$ 11,868.00	\$ 11,868	\$ 712	\$ 1,006	\$ 2,853	\$ 16,440	\$ 1,644	\$ 18,084	\$ 3,617	\$ 21,700	\$ 4,340	\$ 28,644
SUBTOTAL						\$ 11,868	\$ 712	\$ 1,006	\$ 2,853	\$ 16,440	\$ 1,644	\$ 18,084	\$ 3,617	\$ 21,700	\$ 4,340	
TOTAL PRIORITY ACTIONS																\$ 28,644
	Mobilization/Demobilization at		6%													
	General Conditions at		8%													
	Overhead & Profit at		21%													
	Design Contingency at		10%													
	Construction Contingency at		20%													
	Soft Costs at		20%													
	Overall Project Contingency		10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of										241.4%						

P1 Repair Rocker Bearings

Quantity = 1 EA

Remove debris from the rocker bearings and replace anchor bolt nuts. Restore or replace safety chains as applicable.

MATERIAL

[illegible]

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$2,631 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast clean all rocker bearing components	1	LS	1.00	1.000	\$2,631
Replace safety chains and anchor bolts	1	LS	1.00	1.000	\$2,631
Coat rocker bearing components	1	LS	1.00	1.000	\$2,631
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	3.00	\$7,893

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	3.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	3.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	3.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	3.0	\$1,000	\$3,000
Dive Spread/Equipment	0	EA.	3.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	3.0	\$50	\$0
Generator	0	EA.	3.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	3.0	\$25	\$75
Welding Machine	0	EA.	3.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	1	EA.	3.0	\$25	\$75
Tools/Consumables/Maintenance	1	EA.	3.0	\$25	\$75
Vibratory pile driver	0	EA.	3.0	\$1,500	\$0
reserved	0	EA.	3.0	\$0	\$0
			TOTAL		\$3,225

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P1	TOTAL	\$11,868	\$11,867.88	per EA	\$11,868.00 rounded up per EA

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - ROUTINE REPAIRS
CARGO GANGWAY

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	ROUTINE ACTIONS															
R1	Clean and Coat Cargo Gangway	Hydroblast clean and coat steel framing, bearings, and deck. Deck ~15'x62' = 560 sf. Framing below assume 4x deck surface area.	SF	930	\$ 47.00	\$ 43,710	\$ 2,623	\$ 3,707	\$ 10,508	\$ 60,547	\$ 6,055	\$ 66,602	\$ 13,320	\$ 79,923	\$ 15,985	\$ 105,498
SUBTOTAL						\$ 43,710	\$ 2,623	\$ 3,707	\$ 10,508	\$ 60,547	\$ 6,055	\$ 66,602	\$ 13,320	\$ 79,923	\$ 15,985	
TOTAL ROUTINE ACTIONS																\$ 105,498
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

R1 Clean and Coat Cargo Gangway

Quantity = 930 SF

Hydroblast clean and coat steel framing, bearings, and deck. Deck ~15'x62' = 560 sf. Framing below assume 4x deck surface area.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating.	90	Gallons	\$125.00	\$11,250
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$11,250

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$2,631 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast clean all exposed steel surfaces above/below deck	1	LS	0.60	1.667	\$4,385
Apply Coat #1	1	LS	0.30	3.333	\$8,770
Apply Coat #2	1	LS	0.30	3.333	\$8,770
Apple Coat #3	1	LS	0.30	3.333	\$8,770
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	11.67	\$30,695

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	12.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	12.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	12.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	0	EA.	12.0	\$1,000	\$0
Dive Spread/Equipment	0	EA.	12.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	12.0	\$50	\$0
Generator	0	EA.	12.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	0	EA.	12.0	\$25	\$0
Welding Machine	0	EA.	12.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	2	EA.	12.0	\$25	\$600
Tools/Consumables/Maintenance	2	EA.	12.0	\$25	\$600
Vibratory pile driver	0	EA.	12.0	\$1,500	\$0
reserved	0	EA.	12.0	\$0	\$0
			TOTAL		\$1,200

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price	
R1	TOTAL	\$43,145	\$46.39 per SF
			\$47.00 rounded up per SF

Cost Estimate Backup
Plumbing Gangway

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - ROUTINE REPAIRS
PLUMBING GANGWAY

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	ROUTINE ACTIONS															
R1	Clean and Coat Pumbing Gangway	Hydroblast clean and coat steel framing, bearings, and deck. Deck ~4'x32' = 560 sf. Framing below assume 4x deck surface area.	SF	128	\$ 122.00	\$ 15,616	\$ 937	\$ 1,324	\$ 3,754	\$ 21,631	\$ 2,163	\$ 23,795	\$ 4,759	\$ 28,553	\$ 5,711	\$ 37,691
SUBTOTAL						\$ 15,616	\$ 937	\$ 1,324	\$ 3,754	\$ 21,631	\$ 2,163	\$ 23,795	\$ 4,759	\$ 28,553	\$ 5,711	
TOTAL ROUTINE ACTIONS																\$ 37,691
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

R1 Clean and Coat Pumping Gangway

Quantity = 128 SF

Hydroblast clean and coat steel framing, bearings, and deck. Deck $\sim 4' \times 32' = 560$ sf. Framing below assume 4x deck surface area.

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating.	15	Gallons	\$125.00	\$1,875
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$1,875

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	2	\$1,064	\$2,128	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$2,631 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast clean all exposed steel surfaces above/below deck	1	LS	0.50	2.000	\$5,262
Apply Coat #1	1	LS	1.00	1.000	\$2,631
Apply Coat #2	1	LS	1.00	1.000	\$2,631
Apple Coat #3	1	LS	1.00	1.000	\$2,631
			2.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	5.00	\$13,155

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	5.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	5.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	5.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	0	EA.	5.0	\$1,000	\$0
Dive Spread/Equipment	0	EA.	5.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	5.0	\$50	\$0
Generator	0	EA.	5.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	0	EA.	5.0	\$25	\$0
Welding Machine	0	EA.	5.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	2	EA.	5.0	\$25	\$250
Tools/Consumables/Maintenance	2	EA.	5.0	\$25	\$250
Vibratory pile driver	0	EA.	5.0	\$1,500	\$0
reserved	0	EA.	5.0	\$0	\$0
			TOTAL		\$500

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price	
R1	TOTAL	\$15,530	\$121.33 per SF
			\$122.00 rounded up per SF

Cost Estimate Backup
Electrical Gangway

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - IMMEDIATE REPAIRS
ELECTRICAL GANGWAY

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
P1	IMMEDIATE ACTIONS															
	Cut/Remove Vegeation and Overgrowth	Remove vegetation and overgrowth from the support frame ladder and winch systems.	EA	1	\$ 4,692.00	\$ 4,692	\$ 282	\$ 398	\$ 1,128	\$ 6,499	\$ 650	\$ 7,149	\$ 1,430	\$ 8,579	\$ 1,716	\$ 11,325
SUBTOTAL						\$ 4,692	\$ 282	\$ 398	\$ 1,128	\$ 6,499	\$ 650	\$ 7,149	\$ 1,430	\$ 8,579	\$ 1,716	
TOTAL IMMEDIATE ACTIONS																\$ 11,325
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

ELECTRICAL GANGWAY

P1 **Cut/Remove Vegetation and Overgrowth**

Quantity = 1 EA

Remove vegetation and overgrowth from the support frame ladder and winch systems.

MATERIAL

	Quantity	Unit	Unit Cost	Total
20 CY Dump Truck	1	DAY	\$1,500.00	\$1,500
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$1,500

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Construction Crew:	Qty men	Daily Rate	Extended Daily Rate	Hourly Rate
Foreman/Superintendent	0.5	\$1,006	\$503	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	0	\$1,064	\$0	\$133.01/hr
Diver	0	\$1,210	\$0	\$151.19/hr
Tender	0	\$1,009	\$0	\$126.09/hr
Laborer	3	\$871	\$2,614	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr
			<u>\$3,117</u> per day	

Task:

Cut and remove vegetation

		\$3,117 per day		
Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
1	LS	1.00	1.000	\$3,117
		0.00	0.000	\$0
		0.00	0.000	\$0
		0.00	0.000	\$0
		0.00	0.000	\$0
		0.00	0.000	\$0
		0.00	0.000	\$0
		0.00	0.000	\$0
		0.00	0.000	\$0
		TOTAL	1.00	\$3,117

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	1.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	1.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	1.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	0	EA.	1.0	\$1,000	\$0
Dive Spread/Equipment	0	EA.	1.0	\$150	\$0
Concrete Pump/Hoses	0	EA.	1.0	\$50	\$0
Generator	0	EA.	1.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	2	EA.	1.0	\$25	\$50
Welding Machine	0	EA.	1.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	0	EA.	1.0	\$25	\$0
Tools/Consumables/Maintenance	1	EA.	1.0	\$25	\$25
Vibratory pile driver	0	EA.	1.0	\$1,500	\$0
reserved	0	EA.	1.0	\$0	\$0
			TOTAL		\$75

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item		Total	Unit Price		
P1	TOTAL	\$4,692	\$4,691.64	per EA	\$4,692.00 rounded up per EA

Cost Estimate Backup
Vernon C. Baine Corrections Center
Floating Detention Barge

OPINION OF PROBABLE CONSTRUCTION COST
VERNON C. BAINE CORRECTIONS CENTER - PRIORITY REPAIRS
FLOATING DETENTION BARGE

Item No.	Common Elemental Repair Work Element	Assumptions	Unit	Baseline Unit Quantity	Baseline Unit Cost	Extended Baseline Cost	Mob/ Demob	General Conditions	Overhead & Profit	Subtotal 1+2+3+4	Design Contingency	Subtotal 5+6	Constr. Cont.	Subtotal 7+8	Soft Costs	Total Project Item Cost (see note 1)
						1	2	3	4	5	6	7	8	9	10	Σ=1-4,6,8,10
	PRIORITY ACTIONS															
P1	Clean and Coat Barge at Waterline	Clean and recoat the barge along the waterline. Assume approximately 1,650 lf long by 3 ft high	SF	5,000	\$ 29.00	\$ 145,000	\$ 8,700	\$ 12,296	\$ 34,859	\$ 200,855	\$ 20,086	\$ 220,941	\$ 44,188	\$ 265,129	\$ 53,026	\$ 349,970
P2	Suction Dredge Underkeel	Suction dredge silt from below the barge. Estimated volume of removals is taken as 625 ft long by 125 ft wide by 5 ft deep (avg) = (~15,000 cy).	CY	15,000	\$ 33.00	\$ 495,000	\$ 29,700	\$ 41,976	\$ 119,002	\$ 685,678	\$ 68,568	\$ 754,246	\$ 150,849	\$ 905,095	\$ 181,019	\$ 1,194,725
P3	Install Anodes	Install two anodes to replace the missing anodes on the north and south sides.	EA	2	\$ 8,422.00	\$ 16,844	\$ 1,011	\$ 1,428	\$ 4,049	\$ 23,332	\$ 2,333	\$ 25,666	\$ 5,133	\$ 30,799	\$ 6,160	\$ 40,654
SUBTOTAL						\$ 656,844	\$ 39,411	\$ 55,700	\$ 157,911	\$ 909,866	\$ 90,987	\$ 1,000,852	\$ 200,170	\$ 1,201,023	\$ 240,205	
TOTAL PRIORITY ACTIONS																\$ 1,585,350
Mobilization/Demobilization at			6%													
General Conditions at			8%													
Overhead & Profit at			21%													
Design Contingency at			10%													
Construction Contingency at			20%													
Soft Costs at			20%													
Overall Project Contingency			10%													
Notes:																
1. Estimated project cost for the individual line item, including mob./demob., general conditions, overhead/profit, all contingencies (including overall) at a loaded mark-up rate of									241.4%							

P1 **Clean and Coat Barge at Waterline**

Quantity = 5,000 SF

Clean and recoat the barge along the waterline. Assume approximately 1,650 lf long by 3 ft high

MATERIAL

	Quantity	Unit	Unit Cost	Total
Coal tar epoxypolyamide coating (24 MIL)	100	Gallons	\$125.00	\$12,500
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$12,500

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

Construction Crew:	Qty men	Daily Rate	Extended Daily Rate	Hourly Rate
Foreman/Superintendent	1	\$1,006	\$1,006	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	0	\$1,064	\$0	\$133.01/hr
Diver	2	\$1,210	\$2,419	\$151.19/hr
Tender	2	\$1,009	\$2,017	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr
			<u>\$5,442</u> per day	

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Hydroblast side hull along waterline	5000	SF	1250.00	4.000	\$21,768
Apply coat #1	5000	SF	1000.00	5.000	\$27,210
Apply coat #2	5000	SF	1000.00	5.000	\$27,210
Apply coat #3	5000	SF	1000.00	5.000	\$27,210
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	19.00	\$103,400

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	19.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	19.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	19.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	19.0	\$1,000	\$19,000
Dive Spread/Equipment	2	EA.	19.0	\$150	\$5,700
Concrete Pump/Hoses	0	EA.	19.0	\$50	\$0
Generator	0	EA.	19.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	1	EA.	19.0	\$25	\$475
Welding Machine	0	EA.	19.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	2	EA.	19.0	\$25	\$950
Tools/Consumables/Maintenance	2	EA.	19.0	\$25	\$950
Vibratory pile driver	0	EA.	19.0	\$1,500	\$0
reserved	0	EA.	19.0	\$0	\$0
			TOTAL		\$27,075

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price	
P1	TOTAL	\$142,975	\$28.59 per SF
			\$29.00 rounded up per SF

P2 Suction Dredge Underkeel

Quantity = 15,000 CY

Suction dredge silt from below the barge. Estimated volume of removals is taken as 625 ft long by 125 ft wide by 5 ft deep (avg) = (~15,000 cy).

MATERIAL

	Quantity	Unit	Unit Cost	Total
None				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			TOTAL	\$0

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	1	\$1,006	\$1,006	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Dockbuilder/Hvy Carpenter	0	\$1,064	\$0	\$133.01/hr
Diver	2	\$1,210	\$2,419	\$151.19/hr
Tender	2	\$1,009	\$2,017	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$5,442 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Suction dredge	15,000	CY	250.00	60.000	\$326,525
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	60.00	\$326,525
			say	60.0	

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	60.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	1	EA.	60.0	\$2,500	\$150,000
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	60.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	0	EA.	60.0	\$1,000	\$0
Dive Spread/Equipment	2	EA.	60.0	\$150	\$18,000
Concrete Pump/Hoses	0	EA.	60.0	\$50	\$0
Generator	0	EA.	60.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	0	EA.	60.0	\$25	\$0
Welding Machine	0	EA.	60.0	\$50	\$0
High Pressure Waterblaster (10,000 psi)	0	EA.	60.0	\$25	\$0
Tools/Consumables/Maintenance	0	EA.	60.0	\$25	\$0
Suction Dredge Rig	0	EA.	60.0	\$1,000	\$0
Reserved	0	EA.	60.0	\$0	\$0
			TOTAL		\$168,000

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price		
P2	TOTAL	\$494,525	\$32.97	per CY \$33.00 rounded up per CY

P3 Install Anodes

Quantity = 2 EA

Install two anodes to replace the missing anodes on the north and south sides.

MATERIAL: Note: estimate is normalized to assume Type A ~ Type B materials and assembly, for replacement of posts, chocks, grate, and steel tube regardless of condition.

	Quantity	Unit	Unit Cost	Total
500 lb Anodes	2	EA	\$5,000.00	\$10,000
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
				\$0
			<u>TOTAL</u>	<u>\$10,000</u>

LABOR (per LL 220 Prevailing Wage Rates increased by 25% contractor markup)

Note: decimal crews reflect the job title will not be on the job the entire duration of the project; eg., 1 week of divers on a 2 wk job is entered as 0.5 for each diver

<i>Construction Crew:</i>	<i>Qty men</i>	<i>Daily Rate</i>	<i>Extended Daily Rate</i>	<i>Hourly Rate</i>
Foreman/Superintendent	1	\$1,006	\$1,006	\$125.7/hr
Machine Operator/Engr	0	\$1,105	\$0	\$138.08/hr
Oiler/Rigger	0	\$859	\$0	\$107.4/hr
Cement/Concr. Worker/Mason	0	\$855	\$0	\$106.91/hr
Electrical/Electrician	0	\$1,064	\$0	\$133.01/hr
Diver	2	\$1,210	\$2,419	\$151.19/hr
Tender	2	\$1,009	\$2,017	\$126.09/hr
Laborer	0	\$871	\$0	\$108.91/hr
Iron Worker/Welder	0	\$1,318	\$0	\$164.73/hr

\$5,442 per day

Task:	Quantity	Unit	Output (Quantity/Day)	Total Labor Time (days)	Total Labor Cost
Clean area and weld anode	2	EA	2.00	1.000	\$5,442
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			0.00	0.000	\$0
			TOTAL	1.00	\$5,442

EQUIPMENT

	Total Equipment				Total Equipment
	Quantity	Unit	Time	Unit Cost per Day	Cost
30'x90' Spud Barge with 120 Ton Hydraulic Track Crane	0	EA.	1.0	\$3,500	\$0
30'x90' Debris Scow or Work Barge	0	EA.	1.0	\$2,500	\$0
Heavy Equipmet (Excavator, Front End Loader, etc.)	0	EA.	1.0	\$1,500	\$0
Light Equip. (Backhoe/Fork Lift/Work Boat/Pickup Truck)	1	EA.	1.0	\$1,000	\$1,000
Dive Spread/Equipment	2	EA.	1.0	\$150	\$300
Concrete Pump/Hoses	0	EA.	1.0	\$50	\$0
Generator	0	EA.	1.0	\$35	\$0
Manual Equipment (jack hammers, torch, saws, tamper)	0	EA.	1.0	\$25	\$0
Welding Machine	1	EA.	1.0	\$50	\$50
High Pressure Waterblaster (10,000 psi)	1	EA.	1.0	\$25	\$25
Tools/Consumables/Maintenance	1	EA.	1.0	\$25	\$25
reserved	0	EA.	1.0	\$0	\$0
reserved	0	EA.	1.0	\$0	\$0
			TOTAL		\$1,400

Note: decimal entry reflects equip will not be on the job the entire duration of the project; eg., 1 week of crane on a 2 wk job is entered as 0.5 for each crane

Item	Total	Unit Price			
P3	TOTAL	\$16,842	\$8,421.04	per EA	\$8,422.00 rounded up per EA

APPENDIX D

REFERENCES

REFERENCES

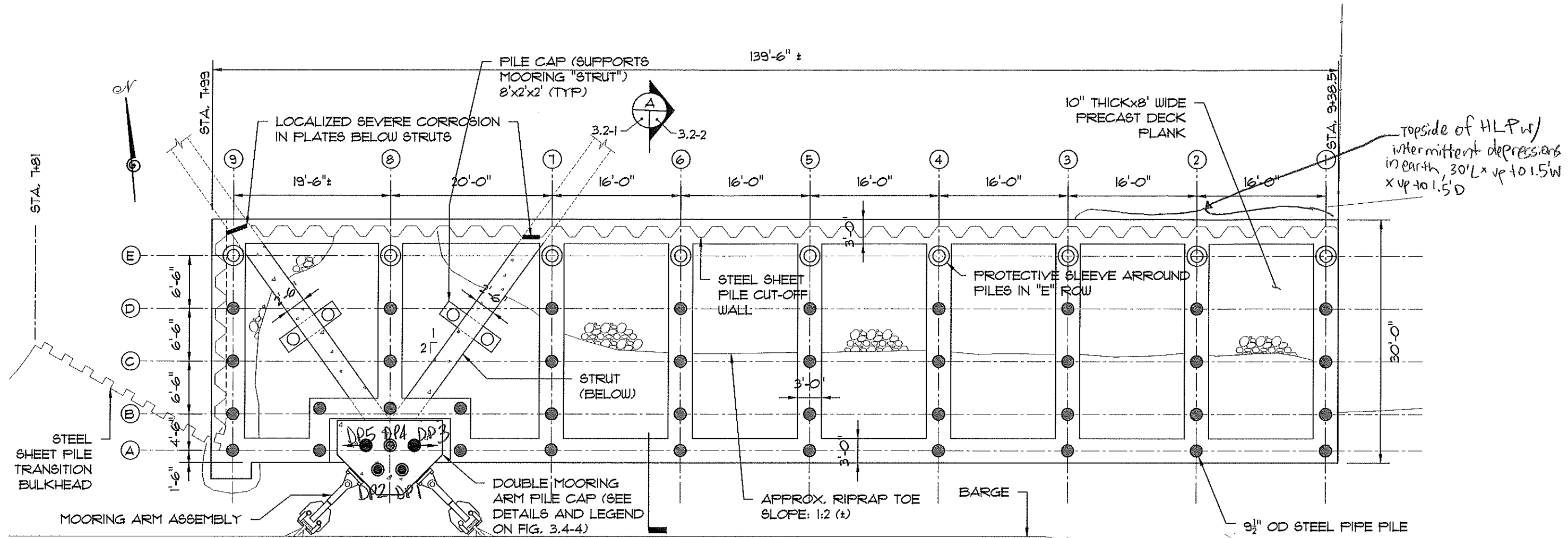
The following documents and historical records were used during the preparation of this report:

1. “Waterfront Maintenance Management System, Inspection Guidelines Manual,” prepared by CH2M on behalf of the New York City Economic Development Corporation, dated May 2016.
2. “Climate Resiliency Design Guidelines,” prepared by the NYC Mayor’s Office of Climate and Environmental Justice, dated May 2022, Version 4.1.
3. Report: “Vernon C. Baine Center, Bronx, New York, Baseline Inspection,” prepared by Pennmax Consulting Engineers, PC, and dated June 2018.
4. Report: “Existing Conditions Report, Underwater Investigation and Landside Inspection, Vernon C. Bain Center, Hunts Point, NY” prepared by *McLaren Engineering Group*, and dated September 2013.
5. Historic Drawing: “Department of Corrections, 800 Bed Floating Detention Facility, Outboard Profile Port (Starboard, Bow & Stern) Elevation,” Dwg. Nos. C9-210 (sheets 1 to 3), prepared by *Avondale*, dated December 3, 1991 (revision).
6. Miscellaneous Historic Drawings: “Department of Corrections, 800 Bed Floating Detention Facility,” various excerpts of historic site drawings for cellular cofferdam, gangways, ramps, and mooring arms as prepared by *Avondale*, and *J.C. Mac Elroy Co. Inc.*, various dates.

APPENDIX E

FIELD NOTES AND DATA

General Note: Underside of pile caps has isolated popouts and shallow rebar up to 1/4" deep

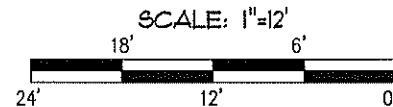


TOP OF PILE NOTES: DP1 - 0.2' EXPOSURE (PILE NOT VISIBLE)

(LIMITED ACCESS TO PILES)

- DP2 - JACKET ERODED @ TOP, PILE EXPOSED UP TO 0.6' H, PIPE PILE W/ MOD. COATING LOSS
- DP3 - PILE EXPOSED 0.7' MOD COATING LOSS
- DP4 - JACKET GOES TO TOP, TOP 1.5' OF JACKET IS HOLLOW
- DP5 - 0.4' EXPOSED PILE W/ PEELING, CHIPPING, BLISTERING EPOXY (MOD LOSS OF COATING)
- DP1 - JACKET DOES NOT EXTEND TO MUDLINE UP TO 3' ON SOUTH SIDE OF PILE
- DP2 - JACKET DOES NOT EXTEND TO MUDLINE UP TO 3' ON SOUTH SIDE OF PILE
- DP3 - JACKET DOES NOT EXTEND TO MUDLINE UP TO 1.5' ON SOUTH SIDE OF PILE, JACKET IS FAILING
- DP4 - JACKET DOES NOT EXTEND TO MUDLINE UP TO 1.0' ON SOUTH SIDE OF PILE
- DP5 - JACKET DOES NOT EXTEND TO MUDLINE UP TO 1.0' ON SOUTH SIDE OF PILE (14' PILE)

HIGH LEVEL PLATFORM
PILE AND PILE CAP PLAN

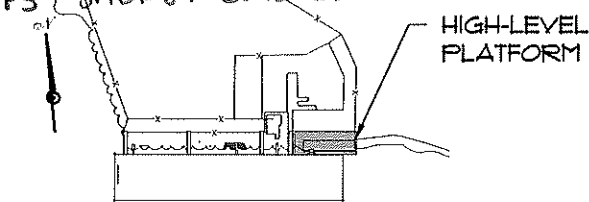


LEGEND

- SEVERE COATING LOSS WITH MINOR CORROSION OF STEEL IN TOP 3 FT TO 4 FT OF PILE.

NOTE: SHEET PILE CUT-OFF WALL AND TRANSITION BULKHEAD EXHIBIT COATING FAILURE AND MINOR CORROSION ABOVE MLW.

MUDLINE NOTES:



KEY PLAN
N.T.S.

NEW YORK CITY ECONOMIC DEVELOPMENT CORP.
ROUTINE INSPECTION OF
VERNON C. BAIN CENTER
HUNTS POINT, NEW YORK
HIGH LEVEL PLATFORM
PILE AND PILE CAP PLAN
JUNE 2018

Changes to Table 3.1-4

Summary of Observed Conditions

Topside of Cellular Steel Sheet Pile Cofferdam

Station: Cells 5, 6, and 7.

Description of Observed Conditions: Previously noted active sewage effluent was not observed, however there is evidence of past leakage in the form of algae growth.

Station: Sta. 0-10.

Description of Observed Conditions: Depression/sinkhole dimensions – 20' long x 3' upland x up to 2' deep. It should be noted that access to this walkway is permanently fenced off.

Location: Cell 24.

Description of Observed Conditions: North side of cell 24, depression/sinkhole in granular fill, 7' diameter x 3' deep.

Station: Sta. 2+22.

Description of Observed Conditions: Depression not found

Station: Sta. 2+44.

Description of Observed Conditions: Depression not found

Station: Sta. 2+90.

Description of Observed Conditions: Depression in gravel along the perimeter of cells 15 and 16 with associated ponding water. Depression is up to 1.5' wide x up to 6" deep x 25' long on cell 15 and 4' long on cell 16

Station: Cell 15

Description of Observed Conditions: East side of cell 15, depression/sinkhole in granular fill, 4' diameter x 9" deep.

Station: Sta. 4+14.

Description of Observed Conditions: Depression not found

Changes to Table 3.4-2

Summary of Observed Conditions

Gangways and Ramps

Location: Pedestrian Gangway A (Western Gangway).

Description of Observed Conditions:

- Cross bracing exhibits 10% coating loss, exposed steel with minor corrosion.
- Northernmost floorbeam bottom flange on east side with moderate to advanced corrosion and delamination, with 5/16" remaining (nominal 3/8").
- Moderate corrosion with delamination on northeast rocker bearing and bearing plate
- Safety/restraining chain on northeast bearing has minor to moderate corrosion.
- Girder top flange/deck interface with moderate corrosion to top flange and deck plate (56LF).
- Vinyl covers on east and west sides of gangway limit ability to inspect components.
- North of gangway A, top landing of stairs on west side with spall at transition plate 0.8' wide x 0.8' high x full depth with exposed reinforcing.
- Pedestrian switchback ramp (east of gangway) with hairline mapcracking and rust staining throughout.
- Top of return wall, east of north abutment exhibits area of spalling and delamination 2' wide x 0.2' high x 0.2' deep.

Location: Pedestrian Gangway B (Middle Gangway).

Description of Observed Conditions:

- Safety/restraining chain and shackles exhibit moderate to advanced corrosion, northeast rocker bearing only.
- Vinyl awning support pole at north abutment on east side is cracked through at bottom with heavy corrosion.
- Girder top flange/deck interface with moderate corrosion to top flange and deck plate (40LF).
- Light to moderate vegetation (vines) growth on ladder and mechanical components of hoist tower.
- Vinyl covers on east and west sides of gangway limit ability to inspect components.
- Pedestrian walkway switchback, adjacent to gangway B, south face, full height crack (4.3' H) x up to 1.5" W with full depth penetration into wall with ¼" misalignment, located 3' east of southwest corner.

Location: Pedestrian Gangway C (Eastern Gangway).

Description of Observed Conditions:

- Girder top flange/deck interface with moderate corrosion to top flange and deck plate (40LF).

- Girder bottom flanges exhibit intermittent coating loss with minor corrosion at interface with vinyl cover for 10% of its length.
- Northeast rocker bearing safety/restraining chain is broken.
- Light to moderate vegetation (vines) growth on ladder and mechanical components of hoist tower.
- Vinyl covers on east and west sides of gangway limit ability to inspect components.

Location: Cargo Ramp.

Description of Observed Conditions:

- Excessive debris accumulation at the wheel bearings limits ability to review components, recommend cleaning and reinspection.
- Northeast rocker bearing, southeast nut on bearing plate is backed off 3/16".
- Safety/restraining chain and shackles exhibit moderate to advanced corrosion and northeast bearing safety/restraining chain is disconnected/broken.
- Light to moderate vegetation (vines) growth on ladder and mechanical components of hoist tower.
- Rocker bearings appear to be in expansion mode. Wheel bearings exhibit 50% coating loss and moderate corrosion.

Location: Plumbing Ramp.

Description of Observed Conditions:

- Previously noted active sewage effluent was not observed, however there is evidence of past leakage in the form of algae growth.
- Bottom step of stairs is bent downward 1.5" over 2.5' length.

Location: Electrical Ramp.

Description of Observed Conditions:

- Moderate vegetation (vines) growth on ladder, structural and mechanical components of hoist tower.

Changes to Table 3.4-3

Summary of Observed Conditions

Mooring Arms and Devices

Location: Single Leg Mooring Arm.

Description of Observed Conditions: Gripper clamp is not centered on "T" guide, shifted west 1.5".

Location: Single Leg Mooring Arm Foundation Cap and Steel Support Framing.

Description of Observed Conditions: Foundation cap with hairline mapcracking with and without efflorescence throughout. North end of foundation cap at interface with upland area, area of delamination/hollow sounding, 7' wide (full width) x up to 2' high.

Location: Double Leg Mooring Arm.

Description of Observed Conditions: Chain lift rod on both legs are detached and hanging on top of mooring arm. Gripper clamp on east leg is not centered on "T" guide, shifted northeast 3/4".

Location: Double Leg Mooring Arm Pile Cap.

Description of Observed Conditions: Top of cap with hairline to 1/16" crack, 5' east of northwest corner, runs south for 8'. Top of cap with hairline to 1/16" crack 5' west of northeast corner, runs diagonally 6' long, then proceeds down vertically on the east face and north face for 4'.

Location: Double Leg Mooring Arm Catwalk and Framing

Description of Observed Conditions: Catwalk connection angle to pile cap with 3 of 8 anchor bolt nuts backed off up to 3/16". Grease fittings on east side of east leg missing outer sheathing approximately 20%.

UT Readings on Floating Detention Barge					
Readings are from West (Sta 0+00) to East (Sta 6+25), North (Sta 0+00) to South (Sta 1+25)					
W-E Station	N-S Station	Reading 1	Reading 2	Reading 3	AVERAGE
Sta 0+25	Sta 0+00 (side wall)	0.625	0.665	0.660	0.650
Sta 0+25	Sta 0+25 (bottom keel)	0.670	0.670	0.670	0.670
Sta 0+25	Sta 0+25	0.620	0.615	0.610	0.615
Sta 0+25	Sta 0+50	0.595	0.595	0.595	0.595
Sta 0+25	Sta 0+75	0.620	0.625	0.615	0.620
Sta 0+25	Sta 1+00	0.605	0.600	0.605	0.603
Sta 0+25	Sta 1+25 (bottom keel)	0.675	0.680	0.675	0.677
Sta 0+25	Sta 1+25 (side hull)	0.680	0.675	0.680	0.678
Sta 1+00	Sta 0+00 (side wall)	0.605	0.610	0.605	0.607
Sta 1+00	Sta 0+25 (bottom keel)	0.635	0.635	0.635	0.635
Sta 1+00	Sta 0+25	0.600	0.600	0.605	0.602
Sta 1+00	Sta 0+50	0.610	0.605	0.600	0.605
Sta 1+00	Sta 0+75	0.600	0.595	0.595	0.597
Sta 1+00	Sta 1+00	0.610	0.610	0.605	0.608
Sta 1+00	Sta 1+25 (bottom keel)	0.630	0.640	0.640	0.637
Sta 1+00	Sta 1+25 (side hull)	0.585	0.590	0.585	0.587
Sta 2+00	Sta 0+00 (side wall)	0.610	0.610	0.610	0.610
Sta 2+00	Sta 0+25 (bottom keel)	0.770	0.770	0.770	0.770
Sta 2+00	Sta 0+25	0.630	0.635	0.625	0.630
Sta 2+00	Sta 0+50	0.605	0.610	0.605	0.607
Sta 2+00	Sta 0+75	0.595	0.590	0.595	0.593
Sta 2+00	Sta 1+00	0.605	0.605	0.610	0.607
Sta 2+00	Sta 1+25 (bottom keel)	0.630	0.635	0.630	0.632
Sta 2+00	Sta 1+25 (side hull)	0.590	0.595	0.590	0.592
Sta 3+00	Sta 0+00 (side wall)	0.605	0.605	0.610	0.607
Sta 3+00	Sta 0+25 (bottom keel)	0.650	0.645	0.645	0.647
Sta 3+00	Sta 0+25	0.600	0.595	0.605	0.600
Sta 3+00	Sta 0+50	0.595	0.595	0.595	0.595
Sta 3+00	Sta 0+75	0.595	0.590	0.595	0.593
Sta 3+00	Sta 1+00	0.610	0.610	0.610	0.610
Sta 3+00	Sta 1+25 (bottom keel)	0.680	0.680	0.680	0.680
Sta 3+00	Sta 1+25 (side hull)	0.610	0.615	0.605	0.610

UT Readings on Floating Detention Barge					
Readings are from West (Sta 0+00) to East (Sta 6+25), North (Sta 0+00) to South (Sta 1+25)					
W-E Station	N-S Station	Reading 1	Reading 2	Reading 3	AVERAGE
Sta 4+00	Sta 0+00 (side wall)	0.600	0.600	0.600	0.600
Sta 4+00	Sta 0+25 (bottom keel)	0.645	0.645	0.645	0.645
Sta 4+00	Sta 0+25	0.615	0.610	0.615	0.613
Sta 4+00	Sta 0+50	0.605	0.605	0.605	0.605
Sta 4+00	Sta 0+75	0.625	0.620	0.620	0.622
Sta 4+00	Sta 1+00	0.600	0.600	0.600	0.600
Sta 4+00	Sta 1+25 (bottom keel)	0.655	0.655	0.650	0.653
Sta 4+00	Sta 1+25 (side hull)	0.595	0.595	0.595	0.595
Sta 5+00	Sta 0+00 (side wall)	0.625	0.620	0.625	0.623
Sta 5+00	Sta 0+25 (bottom keel)	0.665	0.665	0.665	0.665
Sta 5+00	Sta 0+25	0.610	0.610	0.615	0.612
Sta 5+00	Sta 0+50	0.605	0.605	0.605	0.605
Sta 5+00	Sta 0+75	0.605	0.605	0.605	0.605
Sta 5+00	Sta 1+00	0.615	0.615	0.615	0.615
Sta 5+00	Sta 1+25 (bottom keel)	0.680	0.675	0.680	0.678
Sta 5+00	Sta 1+25 (side hull)	0.610	0.610	0.610	0.610
Sta 6+00	Sta 0+00 (side wall)	0.665	0.665	0.665	0.665
Sta 6+00	Sta 0+25 (bottom keel)	0.655	0.650	0.650	0.652
Sta 6+00	Sta 0+25	0.530	0.535	0.545	0.537
Sta 6+00	Sta 0+50	0.580	0.540	0.570	0.563
Sta 6+00	Sta 0+75	0.585	0.575	0.570	0.577
Sta 6+00	Sta 1+00	0.505	0.505	0.505	0.505
Sta 6+00	Sta 1+25 (bottom keel)	0.575	0.575	0.575	0.575
Sta 6+00	Sta 1+25 (side hull)	0.670	0.670	0.670	0.670

Floating Detention Barge Zinc Anodes

North/South	Location	% Consumed	Notes
N	Sta 0+80	5	
N	Sta 1+25	N/A	Markings on barge indicated anode however no anode was found
N	Sta 2+80	5	
N	Sta 4+75	5	Clip 1' below anode, 4'wide x 0.6'high
S	Sta 0+80	5	Clip 1' below anode, 4'wide x 0.6'high
S	Sta 1+25	N/A	Markings on barge indicated anode however no anode was found
S	Sta 2+80	5	
S	Sta 4+75	5	Clip 1' below anode, 4'wide x 0.6'high

Floating Detention Barge Soundings

Bottom Composition: Soft Silt

Datum Elevation = Top cut-off elevation of cells = +8.0 (NAVD 88)

MHW Elevation = 4.5 ft below datum = +3.5 (NAVD 88)

MLLW el. = -4.0 ft (NAVD88)

Readings are from West (Sta 0+00) to East (Sta 6+25), North (Sta 0+00) to South (Sta 1+25)

W-E Station	N-S Station	Sounding	Datum to WSE measurement	ML Elevation (NAVD 88)	Barge Keel Elevation at MLLW (Draft = 9'8")	Underkeel Clearance at MLLW (ft)
0+00	0+00	17.0	6.0	-15.0	-13.6700	1.330
0+50	0+00	25.0	8.0	-25.0	-13.6700	11.330
1+00	0+00	21.0	8.0	-21.0	-13.6700	7.330
1+50	0+00	17.0	8.0	-17.0	-13.6700	3.330
2+00	0+00	13.5	8.0	-13.5	-13.6700	(0.170)
2+50	0+00	13.0	8.0	-13.0	-13.6700	(0.670)
3+00	0+00	12.5	8.0	-12.5	-13.6700	(1.170)
3+50	0+00	14.0	4.7	-10.7	-13.6700	(2.970)
4+00	0+00	14.4	4.7	-11.1	-13.6700	(2.570)
4+50	0+00	14.2	4.7	-10.9	-13.6700	(2.770)
5+00	0+00	15.1	4.7	-11.8	-13.6700	(1.870)
5+50	0+00	15.1	4.7	-11.8	-13.6700	(1.870)
6+00	0+00	11.1	4.7	-7.8	-13.6700	(5.870)
6+25	0+00	12.5	6.0	-10.5	-13.6700	(3.170)
0+00	1+25	19.5	6.0	-17.5	-13.6700	3.830
0+50	1+25	23.5	6.0	-21.5	-13.6700	7.830
1+00	1+25	28.5	6.0	-26.5	-13.6700	12.830
1+50	1+25	30.0	6.0	-28.0	-13.6700	14.330
2+00	1+25	28.5	6.0	-26.5	-13.6700	12.830
2+50	1+25	29.0	6.0	-27.0	-13.6700	13.330
3+00	1+25	27.0	6.0	-25.0	-13.6700	11.330
3+50	1+25	26.5	6.0	-24.5	-13.6700	10.830
4+00	1+25	24.0	6.0	-22.0	-13.6700	8.330
4+50	1+25	23.5	6.0	-21.5	-13.6700	7.830
5+00	1+25	24.5	6.0	-22.5	-13.6700	8.830
5+50	1+25	26.0	6.0	-24.0	-13.6700	10.330
6+00	1+25	26.0	6.0	-24.0	-13.6700	10.330
6+25	1+25	26.5	6.0	-24.5	-13.6700	10.830
0+00	0+62.5	11.5	6.0	-9.5	-13.6700	(4.170)
6+25	0+62.5	10.0	6.0	-8.0	-13.6700	(5.670)
6+25	0+94	18.0	6.0	-16.0	-13.6700	2.330

Floating Detention Barge Cathodic Protection Testing

Readings are from West (Sta 0+00) to East (Sta 6+25), North (Sta 0+00) to South (Sta 1+25)

E-W Station	N-S Station	Location	Reading
0+25	0+00	Waterline	1012
0+25	1+25	Waterline	1003
3+00	0+00	Waterline	1251
3+00	1+25	Waterline	982
5+25	0+00	Waterline	1025
5+25	1+25	Waterline	978

UT Readings on Cellular Steel Sheet Pile Cofferdams

	AVERAGE				% LOSS
Cell 1 MLW	0.510	0.515	0.520	0.515	0.0%
Cell 1 Mudline	0.505	0.500	0.495	0.500	0.0%
Cell 3 MLW	0.510	0.510	0.505	0.508	0.0%
Cell 3 Mudline	0.505	0.500	0.505	0.503	0.0%
Cell 5 MLW	0.500	0.495	0.490	0.495	1.0%
Cell 5 Mudline	0.505	0.500	0.500	0.502	0.0%
Cell 7 MLW	0.510	0.515	0.510	0.512	0.0%
Cell 7 Mudline	0.515	0.515	0.515	0.515	0.0%
Cell 9 MLW	0.510	0.505	0.510	0.508	0.0%
Cell 9 Mudline	0.435	0.440	0.445	0.440	12.0%
Cell 11 MLW	0.510	0.510	0.510	0.510	0.0%
Cell 11 Mudline	0.445	0.425	0.435	0.435	13.0%
Cell 12 Mudline	0.450	0.450	0.450	0.450	10.0%
Cell 13 MLW	0.510	0.510	0.510	0.510	0.0%
Cell 13 Mid Water	0.510	0.510	0.510	0.510	0.0%
Cell 13 Mudline	0.450	0.450	0.450	0.450	10.0%
Cell 15 MLW	0.505	0.505	0.505	0.505	0.0%
Cell 15 Mudline	0.450	0.455	0.450	0.452	9.7%
Cell 17 MLW	0.490	0.500	0.510	0.500	0.0%
Cell 17 Mudline	0.445	0.445	0.450	0.447	10.7%

UT Readings on Cellular Steel Sheet Pile Cofferdams

	AVERAGE				% LOSS
Cell 19 MLW	0.525	0.525	0.525	0.525	0.0%
Cell 19 Mudline	0.450	0.445	0.460	0.452	9.7%
Cell 21 Mudline	0.510	0.515	0.520	0.515	0.0%
Cell 22 MLW	0.515	0.515	0.515	0.515	0.0%
Cell 22 Mudline	0.470	0.475	0.470	0.472	5.7%
Cell 23 North MLW	0.520	0.510	0.510	0.513	0.0%
Cell 23 North Mudline	0.465	0.465	0.470	0.467	6.7%
Cell 23 South MLW	0.510	0.510	0.510	0.510	0.0%
Cell 23 South Mudline	0.490	0.495	0.490	0.492	1.7%
Cell 23 West MLW	0.515	0.515	0.520	0.517	0.0%
Cell 23 West Mudline	0.520	0.520	0.520	0.520	0.0%
Cell 24 Mudline	0.432	0.435	0.440	0.436	12.9%
Cell 25 MLW	0.505	0.505	0.505	0.505	0.0%
Cell 25 Mudline	0.440	0.440	0.440	0.440	12.0%

Cellular Steel Sheet Pile Cofferdam Zinc Anodes

Location	Number of Anodes found	% Consumed	min	max
			consumed %	consumed %
Cell 1	4	10 to 20	10	20
Cell 2	2	10 to 15	10	15
Cell 3	3	5 to 15	5	15
Cell 4	4	5 to 20	5	20
Cell 5	2	5 to 20	5	20
Cell 6	1	5	5	5
Cell 7	4	5	5	5
Cell 8	3	5	5	5
Cell 9	4	5	5	5
Cell 10	4	5	5	5
Cell 11	4	5	5	5
Cell 12	3	5	5	5
Cell 13	4	5	5	5
Cell 14	3	10 to 15	10	15
Cell 15	7	up to 30	10	30
Cell 16	3	up to 30	10	30
Cell 17	5	5 to 10	5	10
Cell 18	3	5 to 10	5	10
Cell 19	5	5 to 10	5	10
Cell 20	3	5 to 10	5	10
Cell 21	5	5 to 10	5	10
Cell 22	3	5 to 10	5	10
Cell 23	5	5 to 10	5	10
Cell 24	2	5 to 10	5	10
Cell 25	3	5 to 10	5	10
89			6	11.8

Cellular Steel Sheet Pile Cofferdam

Bottom Composition: Soft Silt

Datum Elevation = Top cut-off elevation of cells = +8.0 (NAVD 88)

MHW Elevation = 4.5 ft below datum = +3.5 (NAVD 88)

Location	Sounding	Datum to WSE measurement	ML Elevation (NAVD 88)	Sounding Below Datum
Cell 25	4.0	10.0	-6.0	14.0
Cell 24	4.5	10.0	-6.5	14.5
Cell 23	5.0	10.0	-7.0	15.0
Cell 22	6.0	10.0	-8.0	16.0
Cell 21	7.0	10.0	-9.0	17.0
Cell 20	9.5	10.0	-11.5	19.5
Cell 19	11.0	10.0	-13.0	21.0
Cell 18	6.5	10.0	-8.5	16.5
Cell 17	18.0	10.0	-20.0	28.0
Cell 16	21.0	10.0	-23.0	31.0
Cell 15	21.0	10.0	-23.0	31.0
Cell 14	22.0	8.0	-22.0	30.0
Cell 13	18.0	8.0	-18.0	26.0
Cell 12	15.0	8.0	-15.0	23.0
Cell 11	15.0	8.0	-15.0	23.0
Cell 10	14.0	8.0	-14.0	22.0
Cell 9	13.0	8.0	-13.0	21.0
Cell 8	13.0	8.0	-13.0	21.0
Cell 7	14.0	8.0	-14.0	22.0
Cell 6	13.0	8.0	-13.0	21.0
Cell 5	15.5	4.7	-12.2	20.2
Cell 4	16.0	4.7	-12.7	20.7
Cell 3	16.3	4.7	-13.0	21.0
Cell 2	17.0	4.7	-13.7	21.7
Cell 1	16.5	4.7	-13.2	21.2

Cellular Sheet Pile Cofferdam Cathodic Protection Testing

Location	Face	Ref. Cell Elev.	Reading (Coated	Reading (Uncoated
			Steel)	Steel)
Cell 3	South	MLW	867	N/A
Cell 7	South	MLW	944	N/A
Cell 11	South	MLW	980	800
Cell 15	West	MLW	988	707
Cell 15	South	MLW	990	700
Cell 19	West	MLW	750	750
Cell 23	West	MLW	980	854
		min	750	700
		max	990	854
		avg	928	762

High Level Platform

Steel Pipe Piles

Bent	Row	Elevation	Reading 1	Reading 2	Reading 3	Average Reading
1	B.0	MLW	0.485	0.480	0.485	0.483
2	E.0	SZ	0.420	0.420	0.420	0.420
3	C.0	MLW	0.480	0.480	0.480	0.480
5	A.0	MLW	0.475	0.475	0.470	0.473
7	B.0	TZ	0.470	0.475	0.470	0.472
7	D.0	MLW	0.475	0.480	0.470	0.475
9	C.0	MHW	0.480	0.480	0.475	0.478
9	C.0	MLW	0.475	0.480	0.470	0.475

Steel Sheet Pile Cutoff Wall

Bent	Row	Elevation	Reading 1	Reading 2	Reading 3	Average Reading
4	E.2	SZ	0.300	0.300	0.300	0.300
4	E.2	TZ	0.290	0.300	0.290	0.293
7	E.2	MHW	0.240	0.240	0.240	0.240
7	E.2	MLW	0.320	0.325	0.325	0.323

High Level Platform Zinc Anodes

Location	Number of Anodes found	% Consumed
Transition Bulkhead	3	10 to 15

High Level Platform

Steel Pipe Pile, Exposed Lengths

Bent	Row	Length
1	A.0	11.2
1	B.0	10.4
1	C.0	8.5
1	D.0	7.0
1	E.0	4.0
4	E.0	5.1
5	E.0	4.7
6	E.0	4.7
7	E.0	8.4
7.5	A.0	6.8
8.5	A.0	8.3
8.5	B.0	8.0
9	B.0	10.8
9	C.0	11.4
9	D.0	10.3
9	E.0	6.7

Steel Sheet Pile Cutoff Wall, Exposed Lengths

Bent	Row	Length
1	E.2	3.0
2	E.2	4.2
3	E.2	4.0
4	E.2	4.3
5	E.2	3.9
6	E.2	4.5
7	E.2	8.7
8	E.2	7.1
9.2	E.2	6.3

High Level Platform Soundings

Bottom Composition: Soft Silt

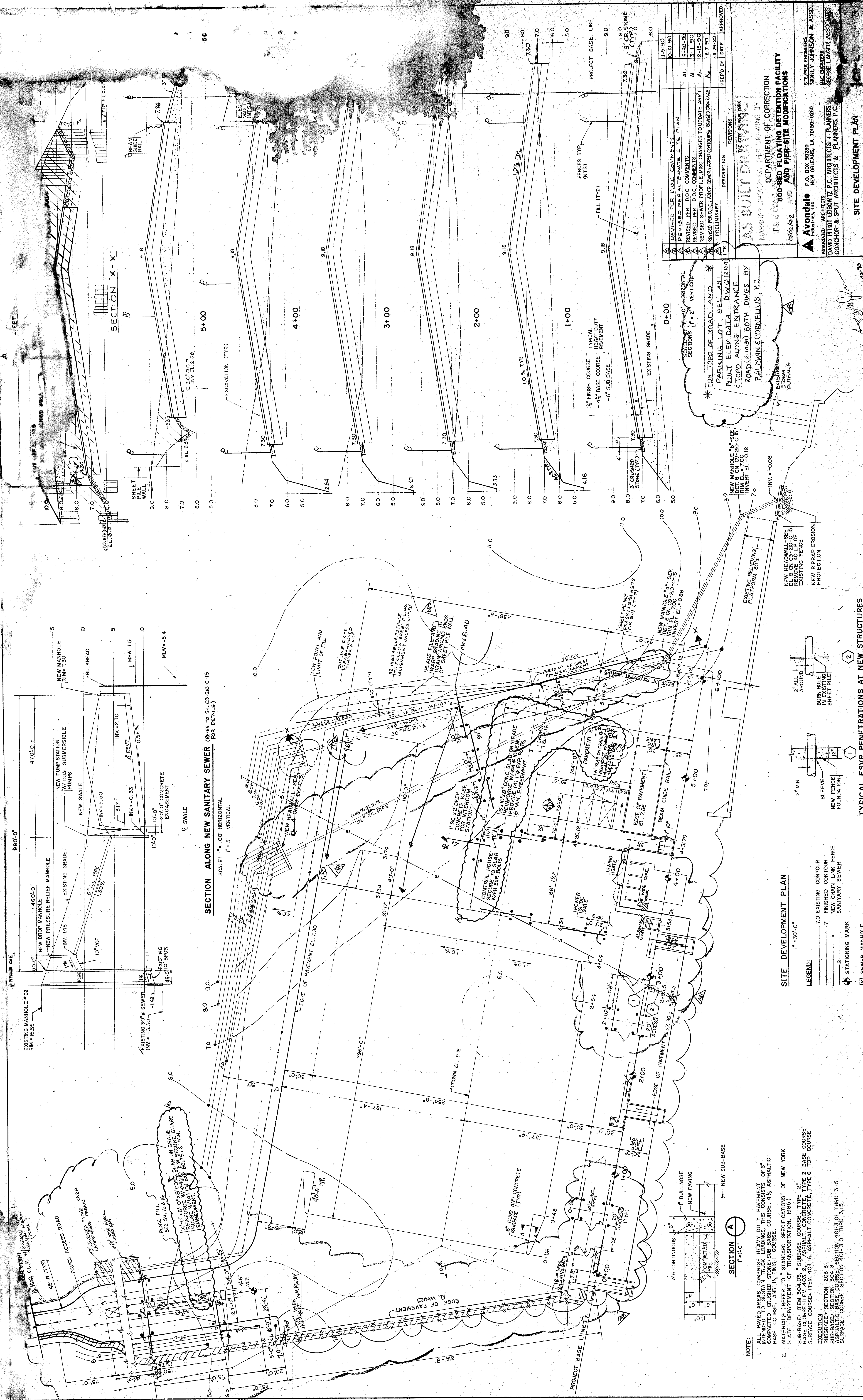
Datum Elevation = Top cut-off elevation of cells = +8.0 (NAVD 88)

MHW Elevation = 4.5 ft below datum = +3.5 (NAVD 88)

Bent	Sounding	Datum to WSE measurement	ML Elevation (NAVD 88)
1	9.7	4.7	-6.4
3	10.6	4.7	-7.3
5	10.6	4.7	-7.3
7	10.5	4.7	-7.2
9	11.8	4.7	-8.5

High Level Platform Cathodic Protection Testing

Station	Offset	Ref. Cell Elev.	Reading
7+90	0+00	MLW	638



NO.	DESCRIPTION	PREP'D BY	DATE	APPROVED
1	REVISED PER D.O.C. COMMENTS		11-5-90	
2	REVISED PER ALTERNATE SITE PLAN		10-10-90	
3	REVISED PER D.O.C. COMMENTS	AL	5-30-90	
4	REVISED PER D.O.C. COMMENTS	AL	3-1-90	
5	REVISED SEWER PROFILE, MISC. CHANGES TO UPDATE A/R/T	AL	2-15-90	
6	REVISED PER D.O.C.; ADDED SEWER, ADDED CATCHMENTS, REVISED MANHOLE	AL	2-17-90	
7	PRELIMINARY		11-29-88	
8	LTR			

REVISIONS THE CITY OF NEW YORK DEPARTMENT OF CORRECTION MARKED BY: J. L. CONNOR 800-FED FLOATING DETENTION FACILITY AND PIER-SITE MODIFICATIONS 3/26/92	SUE/PIER ENGINEERS SUDNEY JOHNSON & ASSOC. WME ENGINEERS GEORGE LANGER ASSOCIATES WME ENGINEERS
ASSOCIATED ARCHITECTS DAVID ELLIOT LEBROWITZ CONCHOR & SPUT ARCHITECTS & PLANNERS P.C.	P.O. BOX 50280 NEW ORLEANS, LA 70150-0280 A Avondale Industries, Inc
SITE DEVELOPMENT PLAN	

SITE DEVELOPMENT PLAN
 1" = 30'-0"
 LEGEND:
 TO EXISTING CONTOUR
 FINISHED CONTOUR
 NEW CHAIN LINK FENCE
 SANITARY SEWER
 STATIONING MARK
 SEWER MANHOLE

NOTE:

1. ALL PAVED AREAS, COMPOSE HEAVY DUTY, PAVEMENT INTENDED TO SUSTAIN TRUCK LOADINGS. THIS CONSISTS OF 6" COMPACTED CRUSHED STONE, SUB-BASE COURSE, 4 1/2" ASPHALTIC BASE COURSE, AND 1 1/2" FINISH COURSE.
2. MATERIALS (REFER TO "STANDARD SPECIFICATIONS" OF NEW YORK STATE DEPARTMENT OF TRANSPORTATION, 1988)
 - SUB-BASE: ITEM 304.03, "SUBBASE COURSE, TYPE 2"
 - BASE COURSE: ITEM 304.03, "BASE COURSE, TYPE 2"
 - SURFACE COURSE: ITEM 403.16, "ASPHALT CONCRETE, TYPE 2"

SECTION A

1" = 1'-0"

EXECUTION SECTION 203.3

SUB-BASE: SECTION 304.3

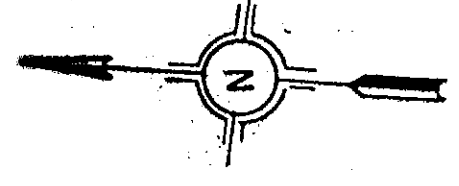
ASPHALTIC BASE COURSE SECTION 401-3.01 THRU 3.15

SURFACE COURSE SECTION 401-3.01 THRU 3.15

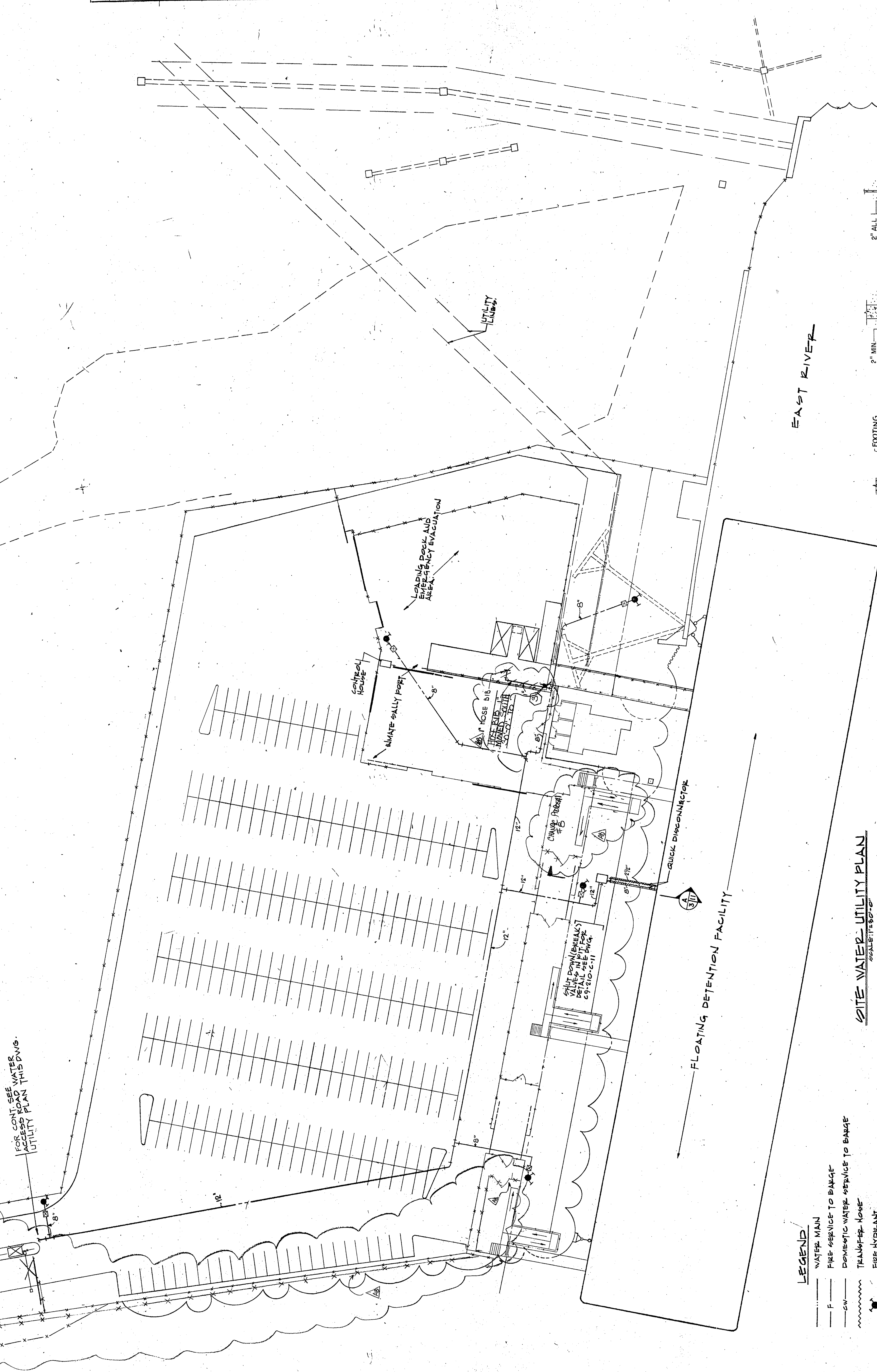
SECTION 203.3

SECTION 304.3

SECTION 401-3.01 THRU 3.15



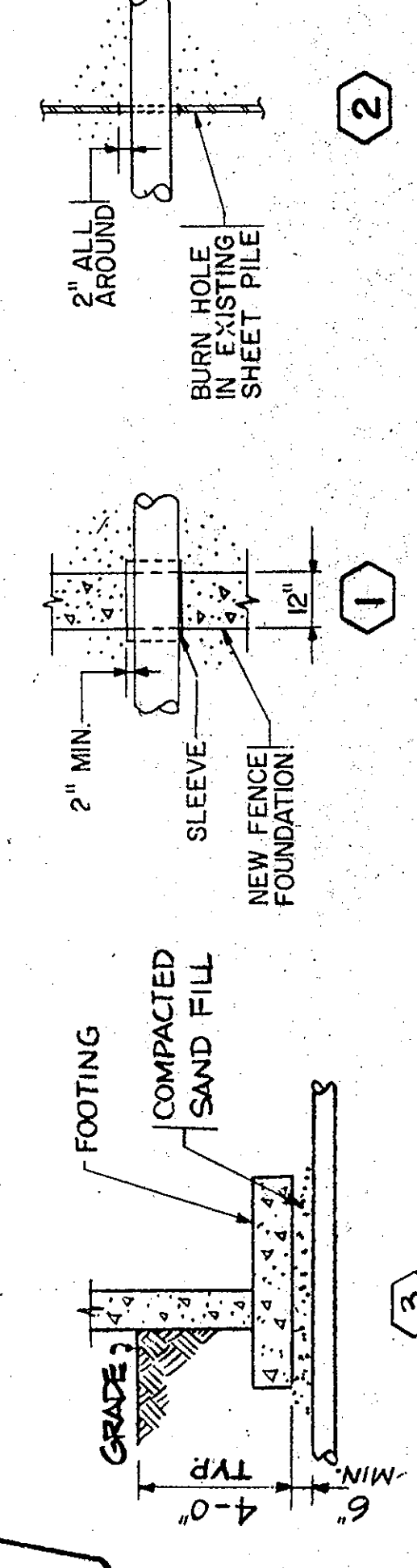
FOR CONT. SEE WATER
ACCESS ROAD PLAN THIS DWG.



SITE WATER UTILITY PLAN

SCALE: 1/8" = 1'-0"

- LEGEND**
- WATER MAIN
 - FIRE SERVICE TO BARGE
 - DOMESTIC WATER SERVICE TO BARGE
 - TRANSFER HOSE
 - FIRE HYDRANT
 - WATER BOX AND VALVE
 - PROPERTY LINE
 - NEW CONNECTION TO CITY WATER MAIN BY NYC WATER DEPARTMENT
 - PIPE PENETRATION AT INTERFERENCE

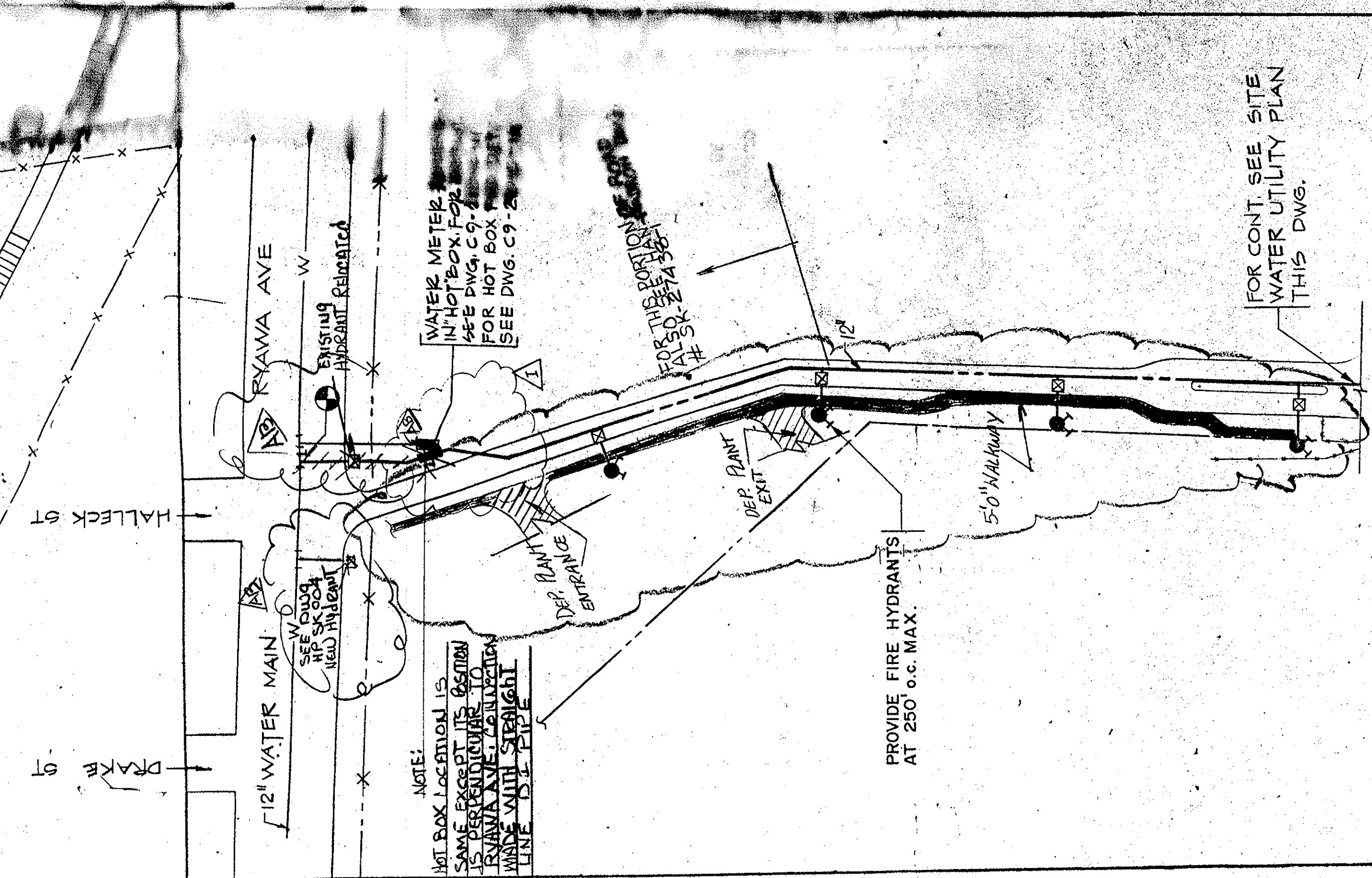


TYPICAL PIPE PENETRATIONS AT STRUCTURES. (AS REQ'D)

ACCESS ROAD WATER UTILITY PLAN

SCALE: 1" = 100'-0"

FOR CONT. SEE SITE
WATER UTILITY PLAN
THIS DWG.



AS BUILT DRAWING
MARKUPS SHOWN ON THIS DRAWING BY
J & L CONC. INC. SHOWN BY CLOUD
AND SYMBOL 3/26/92

REVISED PER D.O.C. COMMENTS	AL	1-25-91
REVISED AS PER LINA COMMENTS	JB	1-11-91
REVISED AS PER BUREAU OF WATER-REVENUE, DEP. COMMENTS	RC	1-4-91
REVISED AS PER PRIVATE WATER-REVENUE, DEP. COMMENTS	LG	9-14-91
REVISED AS PER FIRE DEPT. REQUIREMENTS	AL	7-3-90
REVISED AS PER FIRE DEPT. REQUIREMENTS	AL	5/26/89
REMITTED TO ACCOMMODATE INTERFERENCES	AL	5/26/89
SUBMITTAL TO DPT	AL	5/26/89
PRELIMINARY	AL	5/26/89
DESCRIPTION	PREP. BY	DATE
LTR	APPROVED	

THE CITY OF NEW YORK
DEPARTMENT OF GENERAL SERVICES
AND
DEPARTMENT OF CORRECTION
**800-BED FLOATING DETENTION FACILITY
AND PIER SITE MODIFICATIONS**

Avondale
P.O. BOX 50 80
NEW ORLEANS, LA 70150-0280
ASSOCIATED ARCHITECTS
1001 ELIOT LEBOWITZ P.C. ARCHITECTS + PLANNERS
CONCHOR & SPUR ARCHITECTS & PLANNERS P.C.

SITE/PIER ENGINEERS
SIDNEY JOHNSON & ASSO.
W&E ENGINEERS
GEORGE LARSEN ASSOCIATES