APPENDIX AO

Topsoil SE Corner of Site
Pre-Qualification Analytical Results

Riccelli Enterprises, Inc. PO Box 6418 Syracuse, NY 13217

Riccelli Enterprises, Inc.

Fax

To: [illegible] From: Richard J Riccelli

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- **Comments:**

Riccelli fax(315-458-9684) ph(315-433-5115)

TestAmerica
ANALYTICAL TESTING CORPORATION
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1090 King Georges Post Road - Suite 803 - Edison, NJ 08837 (732) 661-0777 - FAX (610) 661-0305

Compass Environmental	Project: Honeywell LCP OU 1	
201 Bridge St.	Project Number: 1000650	**Reported:**
Solvay NY, 13209	Project Manager: Mark Larowe	11/07/06 17:38

Total Metals by EPA 6000/7000 Series Methods

TestAmerica - King Of Prussia, PA

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Lake Road Pit (KPK0187-01) Soil	**Sampled: 10/25/06 14:00**		**Received: 11/06/06 14:20**						
Arsenic	**2.5**	1.2	mg/kg dry	5	6110712	11/07/06	11/07/06	EPA 7060A	DILN
Mercury	ND	0.100	"	1	6110714	11/07/06	11/07/06	EPA 7471A	
Aluminum	**3100**	25	"	"	6110706	11/07/06	11/07/06	EPA 6010B	
Antimony	ND	5.0	"	"	"	"	"	"	
Barium	**67**	0.50	"	"	"	"	"	"	
Beryllium	ND	0.20	"	"	"	"	"	"	
Cadmium	ND	1.0	"	"	"	"	"	"	
Calcium	**21000**	250	"	20	"	"	"	"	11, DILN
Chromium	**4.0**	2.5	"	1	"	"	"	"	
Cobalt	**2.4**	1.0	"	"	"	"	"	"	
Copper	**8.8**	1.0	"	"	"	"	"	"	
Iron	**6700**	5.0	"	"	"	"	"	"	11, B
Lead	ND	5.0	"	"	"	"	"	"	
Magnesium	**8900**	12	"	"	"	"	"	"	11
Manganese	**350**	0.50	"	"	"	"	"	"	
Nickel	**5.2**	2.5	"	"	"	"	"	"	11
Potassium	ND	500	"	"	"	"	"	"	
Selenium	ND	12	"	"	"	"	"	"	
Silver	ND	2.5	"	"	"	"	"	"	
Sodium	**230**	25	"	"	"	"	"	"	
Vanadium	**7.6**	1.2	"	"	"	"	"	"	
Zinc	**52**	2.5	"	"	"	"	"	"	
Thallium	ND	0.10	"	"	6110712	11/07/06	11/07/06	EPA 7841	

Enid Dunmire, Project Manager

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Compass Environmental	Project: Honeywell LCP OU 1	
201 Bridge St.	Project Number: 1000650	**Reported:**
Solvay NY, 13209	Project Manager: Mark Lamwe	11/07/06 17:38

Polychlorinated Biphenyls by EPA Method 8082

TestAmerica - King Of Prussia, PA

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Lake Road Pit (KPK0187-01) Soil	**Sampled: 10/25/06 14:00**		**Received: 11/06/06 14:20**						**A-01, PRLM**
PCB-1016	ND	50	ug/kg dry	1	6110118	11/06/06	11/07/06	EPA 8082	
PCB-1221	ND	50	"	"	"	"	"	"	
PCB-1232	ND	50	"	"	"	"	"	"	
PCB-1242	ND	50	"	"	"	"	"	"	
PCB-1248	ND	50	"	"	"	"	"	"	
PCB-1254	ND	50	"	"	"	"	"	"	
PCB-1260	ND	50	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*102 %*	*43-112*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*76.5 %*	*17-110*		"	"	"	"	

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Compass Environmental	Project: Honeywell LCP OU 1	
201 Bridge St.	Project Number: 1000650	**Reported:**
Solvay NY, 13209	Project Manager: Mark Larowe	11/07/06 17:38

Volatile Organic Compounds by EPA Method 8260B

TestAmerica - King Of Prussia, PA

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Lake Road Pit (KPK0187-01) Soil Sampled: 10/25/06 14:00 Received: 11/06/06 14:20									
Acetone	ND	67	ug/kg dry	1	6110632	11/06/06	11/07/06	EPA 8260B	
Benzene	ND	0.67	"	"	"	"	"	"	PDW
Bromodichloromethane	ND	0.67	"	"	"	"	"	"	
Bromoform	ND	1.3	"	"	"	"	"	"	
Bromomethane	ND	2.0	"	"	"	"	"	"	
2-Butanone	ND	67	"	"	"	"	"	"	
Carbon disulfide	**10**	10	"	"	"	"	"	"	
Carbon tetrachloride	ND	1.3	"	"	"	"	"	"	
Chlorobenzene	ND	1.3	"	"	"	"	"	"	
Chlorodibromomethane	ND	1.3	"	"	"	"	"	"	
Chloroethane	ND	2.7	"	"	"	"	"	"	
Chloroform	ND	1.3	"	"	"	"	"	"	
Chloromethane	ND	6.7	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.3	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.3	"	"	"	"	"	"	
1,1-Dichloroethene	ND	1.3	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	1.3	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	1.3	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.3	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.3	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.3	"	"	"	"	"	"	
Ethylbenzene	ND	1.3	"	"	"	"	"	"	
2-Hexanone	ND	6.7	"	"	"	"	"	"	
Methylene chloride	ND	20	"	"	"	"	"	"	
4-Methyl-2-pentanone	ND	6.7	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	1.3	"	"	"	"	"	"	
Styrene	ND	1.3	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.3	"	"	"	"	"	"	
Tetrachloroethene	ND	0.67	"	"	"	"	"	"	
Toluene	ND	1.3	"	"	"	"	"	"	PDW
1,1,1-Trichloroethane	ND	1.3	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.3	"	"	"	"	"	"	
Trichloroethene	ND	0.67	"	"	"	"	"	"	
Trichlorofluoromethane	ND	1.3	"	"	"	"	"	"	
Vinyl chloride	ND	1.3	"	"	"	"	"	"	
Xylenes (total)	**10**	4.0	"	"	"	"	"	"	

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Compass Environmental	Project: Honeywell LCP OU 1	
201 Bridge St.	Project Number: 1000650	**Reported:**
Solvay NY, 13209	Project Manager: Mark Larowe	11/07/06 17:38

Volatile Organic Compounds by EPA Method 8260B

TestAmerica - King Of Prussia, PA

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Lake Road Pit (KPK0187-01) Soil	**Sampled: 10/25/06 14:00 Received: 11/06/06 14:20**								
Surrogate: Dibromofluoromethane		*107 %*	*42.6-163*		*6110632*	*11/06/06*	*11/07/06*	*EPA 8260B*	
Surrogate: 1,2-Dichloroethane-d4		*120 %*	*48.2-167*		"	"	"	"	
Surrogate: Toluene-d8		*97.3 %*	*41.6-167*		"	"	"	"	

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Compass Environmental	Project: Honeywell LCP OU 1	
201 Bridge St.	Project Number: 1000650	Reported:
Solvay NY, 13209	Project Manager: Mark Larowe	11/07/06 17:38

Semivolatile Organic Compounds by EPA Method 8270D

TestAmerica - King Of Prussia, PA

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Lake Road Pit (KPK0187-01) Soil	**Sampled: 10/25/06 14:00**	**Received: 11/06/06 14:20**							
Acenaphthene	ND	100	ug/kg dry	1	6110334	11/06/06	11/07/06	EPA 8270D	
Acenaphthylene	ND	100	"	"	"	"	"	"	
Aniline	ND	100	"	"	"	"	"	"	
Anthracene	ND	100	"	"	"	"	"	"	
Benzoic acid	ND	500	"	"	"	"	"	"	
Benz (a) anthracene	ND	100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	100	"	"	"	"	"	"	G03
Benzo (b) fluoranthene	ND	100	"	"	"	"	"	"	G03
Benzo (g,h,i) perylene	ND	100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	100	"	"	"	"	"	"	G03
Benzyl alcohol	ND	100	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	100	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	100	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	100	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	330	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	100	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	100	"	"	"	"	"	"	
4-Chloroaniline	ND	100	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	100	"	"	"	"	"	"	
2-Chloronaphthalene	ND	100	"	"	"	"	"	"	
2-Chlorophenol	ND	100	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	100	"	"	"	"	"	"	
Chrysene	ND	100	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	100	"	"	"	"	"	"	G03
Dibenzofuran	ND	100	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	100	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	100	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	500	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	100	"	"	"	"	"	"	
Diethyl phthalate	ND	100	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	100	"	"	"	"	"	"	
Dimethyl phthalate	ND	100	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	330	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	500	"	"	"	"	"	"	

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Compass Environmental	Project: Honeywell LCP OU I	
201 Bridge St.	Project Number: 1000650	**Reported:**
Solvay NY, 13209	Project Manager: Mark Larowe	11/07/06 17:38

Semivolatile Organic Compounds by EPA Method 8270D

TestAmerica - King Of Prussia, PA

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Lake Road Pit (KPK0187-01) Soil	**Sampled: 10/25/06 14:00**	**Received: 11/06/06 14:20**							
2,4-Dinitrophenol	ND	500	ug/kg dry	1	6110334	11/06/06	11/07/06	EPA 8270D	
2,4-Dinitrotoluene	ND	100	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	100	"	"	"	"	"	"	
Diphenylamine	ND	100	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	100	"	"	"	"	"	"	
Fluoranthene	ND	100	"	"	"	"	"	"	
Fluorene	ND	100	"	"	"	"	"	"	
Hexachlorobenzene	ND	100	"	"	"	"	"	"	
Hexachlorobutadiene	ND	100	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	100	"	"	"	"	"	"	
Hexachloroethane	ND	100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	100	"	"	"	"	"	"	
Isophorone	ND	100	"	"	"	"	"	"	
2-Methylnaphthalene	ND	100	"	"	"	"	"	"	
2-Methylphenol	ND	100	"	"	"	"	"	"	
3&4-Methylphenol	ND	100	"	"	"	"	"	"	
Naphthalene	ND	100	"	"	"	"	"	"	
2-Nitroaniline	ND	500	"	"	"	"	"	"	
3-Nitroaniline	ND	500	"	"	"	"	"	"	
4-Nitroaniline	ND	500	"	"	"	"	"	"	
Nitrobenzene	ND	100	"	"	"	"	"	"	
2-Nitrophenol	ND	100	"	"	"	"	"	"	
4-Nitrophenol	ND	500	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	100	"	"	"	"	"	"	
Pentachlorophenol	ND	500	"	"	"	"	"	"	
Phenanthrene	ND	100	"	"	"	"	"	"	
Phenol	ND	100	"	"	"	"	"	"	
Pyrene	ND	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	100	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	500	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	100	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*73.5 %*	*25-121*		"	"	"	"	
Surrogate: Phenol-d6		*76.4 %*	*24-113*		"	"	"	"	
Surrogate: Nitrobenzene-d5		*74.3 %*	*23-120*		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*74.3 %*	*30-115*		"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*75.6 %*	*19-122*		"	"	"	"	

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Compass Environmental	Project: Honeywell LCP OU 1	
201 Bridge St.	Project Number: 1000650	**Reported:**
Solvay NY, 13209	Project Manager: Mark Larowe	11/07/06 17:38

Semivolatile Organic Compounds by EPA Method 8270D

TestAmerica - King Of Prussia, PA

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Lake Road Pit (KPK0187-01) Soil Sampled: 10/25/06 14:00 Received: 11/06/06 14:20									
Surrogate: Terphenyl-d14		*80.7 %*		*18-137*	*6110334*	*11/06/06*	*11/07/06*	*EPA 8270D*	

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Compass Environmental	Project: Honeywell LCP OU 1	
201 Bridge St.	Project Number: 1000650	**Reported:**
Solvay NY, 13209	Project Manager: Mark Larowe	11/07/06 17:38

Notes and Definitions

PRLM	Preliminary results
PDW	The analytical runs from the NaHSO4 vials received for this sample were not reportable due to QC problems. An aliquot of the sample was taken from the non-preserved jar and run in purged drinking water.
G03	The laboratory control spike recoveries associated with this sample were above the laboratory's established acceptance criteria.
Dup	The %RSD between the sample and its duplicate is outside the method acceptable criteria.
DILN	Due to matrix interference and or sample dilution the detection limits for this sample have been elevated.
B	The blank associated with this sample contained 7.57ppm of this compound.
A-01	needs qc
11	This compound was above the method control limits in the Check Standard associated with this sample.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Enid Dunmire, Project Manager

APPENDIX AP

Bulkhead Record Drawings

SHORELINE WORK – PROJECT NOTES

DESIGN CRITERIA

1. STRUCTURAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 1999 BUILDING CODE OF THE STATE OF NEW YORK. WORK SHALL COMPLY WITH FEDERAL, STATE, AND LOCAL PERMIT CONDITIONS.
2. ACI 318–02, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE".
3. ACI 315–92, "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT".
4. ACI 301–99, "STANDARD SPECIFICATION FOR STRUCTURAL CONCRETE".
5. CONCRETE REINFORCEMENT SHALL CONFORM TO ASTM A 615 GRADE 60 AND SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A 775.
6. CONCRETE SHALL BE NORMAL WEIGHT WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS. PORTLAND CEMENT SHALL BE TYPE II. CONCRETE SHALL CONTAIN A MINIMUM OF 6% (±1%) ENTRAINED AIR AND HAVE A MAXIMUM WATER TO CEMENT RATIO OF 0.40.
7. AISC, MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION.
8. STRUCTURAL STEEL SHAPES AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A 572 GRADE 50, UNLESS OTHERWISE NOTED. STEEL TUBES SHALL CONFORM TO ASTM A500, GRADE B. STEEL PIPES SHALL CONFORM TO ASTM A 53, GRADE B OR ASTM A 500, GRADE B. STEEL PLATES SHALL CONFORM TO ASTM A36.
9. WELDING SHALL CONFORM TO THE 'STRUCTURAL WELDING CODE – STEEL', AS ADOPTED BY THE AMERICAN WELDING SOCIETY (AWS D1.1). A WELDER CERTIFIED IN ACCORDANCE WITH AWS STANDARDS SHALL PERFORM WELDING.
10. WELDING ELECTRODES SHALL BE E70XX–X AND COMPLY WITH AWS A5.1 AND AWS A5.5.
11. STEEL SHEET PILES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 572 OR A 690, WITH A MINIMUM Fy = 50 KSI.
12. HIGH–STRENGTH BOLTS, NUTS AND WASHERS SHALL BE IN ACCORDANCE TO "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A 325 BOLTS".
13. GALVANIZING SHALL CONFORM TO ASTM A 123 OR ASTM A 153, AS APPLICABLE.
14. THE COMPLETED STRUCTURE HAS BEEN DESIGNED TO WITHSTAND THE FOLLOWING DESIGN LIVE LOADS APPLIED IN CONJUNCTION WITH DESIGN DREDGE/MUDLINE ELEVATIONS INDICATED ON THE CONTRACT DRAWINGS:

    LIVE LOADS:
    BULKHEAD: 250 PSF UNIFORM SURCHARGE LOAD
    8000 LBS CONCENTRATED LOAD

    WIND/WAVE LOADS:
    BULKHEAD AND RIPRAP
    SHORELINE PROTECTION: 100–YEAR FREQUENCY TIDAL FLOOD ELEVATION AS DEFINED BY FEMA WITH 100–YEAR FREQUENCY WIND GENERATED WAVE LOADING ADJUSTED FOR LOCAL BATHYMETRY
15. TIDAL DATUM INFORMATION IS BASED ON BENCHMARK SHEET FOR STATION ID 8518924, HAVERSTRAW BAY, NEW YORK, NEW YORK, PUBLISHED BY THE NATIONAL OCEANIC SERVICE (NOS). ELEVATIONS REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
16. ALL HORIZONTAL POSITIONS ARE REFERRED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM FOR 1983 (NAD 83).
17. TOPOGRAPHIC FEATURES TAKEN FROM "CITY OF POUGHKEEPSIE" MAPS, DATED 1/22/98, AS PRODUCED BY CHAZEN ENGINEERING AND LAND SURVEYING CO., PC AND SUPPLEMENTED BY MORRIS ASSOCIATES, MARCH 1999.
18. ADDITIONAL EXISTING CONDITION INFORMATION TAKEN FROM "EXISTING CONDITIONS PLAN PRELIMINARY", DATED 8/25/05, AS PRODUCED BY CHAZEN ENGINEERING AND LAND SURVEYING CO., PC.
19. HYDROGRAPHIC SURVEY PERFORMED BY OCEAN AND COASTAL CONSULTANTS, INC. ON DECEMBER 12, 1998.
20. (2) AS–BUILT SURVEY PROVIDED BY CLOUGH HARBOUR ASSOCIATES BASED ON INFORMATION PROVIDED BY CONTRACTOR.

SELECTIVE DEMOLITION AND DISPOSAL

1. SELECTIVE DEMOLITION AND DISPOSAL SHALL BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL PERMIT AND BUILDING CODE REQUIREMENTS.
2. THE CONTRACTOR SHALL REMOVE AND DISPOSE THOSE STRUCTURES AND DERELICT COMPONENTS REQUIRED TO PERFORM THE WORK. THIS WORK INCLUDES BUT IS NOT LIMITED TO TIMBER BULKHEAD, CONCRETE PLATFORMS, TIMBER PILES, CONCRETE AND TIMBER DEBRIS, STEEL DEBRIS, AND OTHER ITEMS THAT MAY NOT BE INDICATED ON THE DRAWINGS.
3. SELECTIVE DEMOLITION INCLUDES BUT IS NOT LIMITED TO REMOVAL AND REUSE (WHERE POSSIBLE) OF EXISTING MATERIALS, UTILITIES, AND OTHER COMPONENTS ESSENTIAL FOR A COMPLETE PROJECT.
4. THE CONTRACTOR SHALL TAKE REASONABLE CARE IN REMOVING ELEMENTS SELECTED TO BE DEMOLISHED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. DAMAGE OR DESTRUCTION BY THE CONTRACTOR TO EXISTING ELEMENTS DESIGNATED TO REMAIN SHALL BE REPAIRED OR REPLACED IN–KIND AT THE DISCRETION OF THE OWNER AT NO ADDITIONAL COST.
5. PRIOR TO COMMENCEMENT OF SELECTIVE DEMOLITION, THE CONTRACTOR SHALL SUBMIT A DISPOSAL PLAN FOR ITEMS TO BE DEMOLISHED. DEMOLITION MATERIAL DESIGNATED BY THE OWNER TO BE REMOVED FROM THE SITE SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE DEBRIS DISPOSAL PLAN SHALL ACKNOWLEDGE THIS OWNERSHIP AND SHALL IDENTIFY THE MEANS AND METHODS AND FINAL DISPOSITION FOR DISPOSAL MATERIALS.
6. PRIOR TO COMMENCEMENT OF DEMOLITION, THE CONTRACTOR SHALL CLEARLY MARK THE LIMITS OF THE DEMOLITION FOR REVIEW AND APPROVAL BY THE OWNER.
7. COMPLETELY REMOVE ITEMS DESIGNATED LEAVING SURFACES CLEAN, SOUND, AND READY TO RECEIVE NEW MATERIALS AS SPECIFIED IN THE CONTRACT DOCUMENTS.
8. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING THE COURSE OF DEMOLITION.
9. THE CONTRACTOR SHALL SUBMIT A DISPOSAL CERTIFICATE TO THE OWNER'S REPRESENTATIVE CERTIFYING LEGAL AND PROPER DISPOSAL.

TEMPORARY WORK

1. LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO PERFORM THE WORK THAT, UPON COMPLETION, ARE NOT A PART OF THE WORK, SHALL BE FURNISHED, INSTALLED, AND SUBSEQUENTLY REMOVED FROM THE SITE BY THE CONTRACTOR.
2. TEMPORARY WORK SHALL BE SUBJECT TO THE REQUIREMENTS OF THE STATE AND APPLICABLE LOCAL BUILDING CODES.
3. THE CONTRACTOR SHALL SAFEGUARD AND PROTECT EXCAVATIONS.
4. DURING EXECUTION OF THE WORK, THE CONTRACTOR IS REQUIRED TO INSTALL AND MAINTAIN REQUIRED SEDIMENTATION AND EROSION CONTROL MEASURES TO PROTECT ADJACENT WATERWAYS, STREETS, AND PROPERTIES. MEASURES INCLUDE BUT ARE NOT LIMITED TO TEMPORARY BERMS, HAY BALES, SILT FENCES, CONTAINMENT BOOMS, AND TURBIDITY CURTAINS. IN ACCORDANCE WITH STATE REGULATORY AUTHORIZATIONS, THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN TEMPORARY TURBIDITY CURTAINS DURING CONSTRUCTION. TEMPORARY MATERIALS AND EQUIPMENT SHALL CONFORM TO REQUIREMENTS FOR TEMPORARY WORK.
5. THE CONTRACTOR SHALL LOCATE EROSION CONTROLS INCLUDING BUT NOT LIMITED TO SILT FENCE, HAY BALES, AND TRACKING PADS AS REQUIRED FOR ADEQUATE PROTECTION DURING CONSTRUCTION AND TO THE SATISFACTION OF THE LOCAL BUILDING OFFICIALS AND THE ENGINEER OF RECORD.

EXCAVATING, BACKFILLING, AND COMPACTION:

1. STRUCTURAL FILL SHALL CONSIST OF BROKEN OR CRUSHED STONE, BANK OR CRUSHED GRAVEL, OR MIXTURES THEREOF. BROKEN OR CRUSHED STONE SHALL CONSIST OF WELL–GRADED, SOUND, TOUGH, DURABLE STONE. BANK OR CRUSHED GRAVEL SHALL CONSIST OF WELL–GRADED, SOUND, TOUGH, DURABLE PARTICLES OF CRUSHED OR UNCRUSHED GRAVEL FREE FROM SOFT, THIN, ELONGATED OR LAMINATED PIECES AND ORGANIC OR OTHER DELETERIOUS SUBSTANCES. STRUCTURAL FILL SHALL WELL GRADED WITH 100% MASS PASSING THE 90mm (3.5") SQUARE MESH SIEVE. SUBMIT AN INDEPENDENT GRADATION ANALYSIS AND MODIFIED PROCTOR TEST FOR ENGINEER OF RECORD'S REVIEW. INCLUDE A REPRESENTATIVE SAMPLE OF THE FILL MATERIAL WITH THE SUBMITTAL.
2. THE CONTRACTOR SHALL EXCAVATE, BACKFILL, COMPACT, AND GRADE THE SITE TO THE ELEVATIONS AND LIMITS SHOWN AND AS NEEDED TO MEET THE REQUIREMENTS OF THE CONSTRUCTION.
3. STRUCTURAL FILL SHALL BE PLACED IN LAYERS NOT MORE THAN 8" IN LOOSE DEPTH. DO NOT PLACE FILL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAINING FROST OR ICE. PLACE FILL MATERIALS EVENLY ADJACENT TO STRUCTURES, TO REQUIRED ELEVATIONS. TAKE CARE TO PREVENT WEDGING ACTION OF BACKFILL AGAINST STRUCTURES BY CARRYING THE MATERIAL UNIFORMLY AROUND THE STRUCTURE TO APPROXIMATELY THE SAME ELEVATION IN EACH LIFT.
4. CONTROL STRUCTURAL FILL COMPACTION DURING CONSTRUCTION TO PROVIDE THE MINIMUM PERCENTAGE OF DENSITY SPECIFIED FOR EACH AREA AS DETERMINED ACCORDING TO ASTM D1557. STRUCTURAL FILL AREAS SHALL NOT FALL BELOW 95% OF ITS DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE ABOVE TEST.

EROSION AND SEDIMENTATION CONTROL

1. SITE WORK SHALL NOT BE PERFORMED UNTIL SEDIMENT AND EROSION CONTROL DEVICES ARE INSTALLED.
2. EROSION AND SEDIMENTATION CONTROL DEVICES AND PROVISIONS SHALL BE MAINTAINED IN OPERATIONAL CONDITION BY THE CONTRACTOR AND SHALL BE REMOVED AND LEGALLY DISPOSED AT THE COMPLETION OF THE PROJECT.
3. TURBIDITY CURTAINS SHALL BE HEAVYWEIGHT TURBIDITY CURTAIN AS MANUFACTURED BY BOOM ENVIRONMENTAL PRODUCTS, SILTDAM TURBIDITY BARRIER AS MANUFACTURED BY SPILLDAM INC., OR EQUIVALENT
4. ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE INSPECTED WEEKLY DURING THE CONSTRUCTION PERIOD.
5. STOCKPILING OF MATERIALS WITHIN 500 YEAR FLOOD PLAIN (ZONE "A" AND "B") IS PROHIBITED UNLESS OTHERWISE SPECIFIED IN THE FLOOD CONTINGENCY PLAN.

GEOTEXTILE FABRIC

1. GEOTEXTILE FABRIC SHALL BE MIRAFI FILTERWEAVE FW–700 GEOTEXTILE FABRIC OR AN EQUIVALENT ACCEPTED BY THE ENGINEER OF RECORD.
2. INSTALL GEOTEXTILE FABRIC IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. MAINTAIN MINIMUM 12–INCH LAP AT ADJACENT SECTIONS.
3. PROVIDE ADEQUATE SLACK IN FABRIC DURING INSTALLATION BY PROVIDING CONTINUOUS 12 INCH FOLDS AT 15 FOOT CENTERS PARALLEL TO THE SHORELINE.
4. PROPERLY ANCHOR FABRIC TO PREVENT SLIDING OR TEARING DURING INSTALLATION OF OVERBURDEN MATERIAL.

RIPRAP SHORE PROTECTION

1. STONE SHALL BE OF A QUALITY TO INSURE PERMANENCE OF THE STRUCTURE IN THE CLIMATE IN WHICH IT IS TO BE USED. THE STONE SHALL BE FREE FROM ORGANIC DEBRIS, DURABLE, SOUND, FREE FROM DETRIMENTAL CRACKS, SEAMS, AND OTHER DEFECTS WHICH TEND TO INCREASE DETERIORATION FROM NATURAL CAUSES OR CAUSE BREAKAGE IN HANDLING OR PLACEMENT. ORGANICS, SAND, CLAY, CHERT AND ROCK FINES ARE PROHIBITED. THE STONE SHALL BE SELECTED GRANITE, QUARTZITE, RHYOLITE, OR LIMESTONE.
2. BEDDING STONE SHALL BE 2–INCH DIAMETER NOMINAL CRUSHED STONE.
3. RIPRAP ARMOR STONE SHALL CONFORM TO THE FOLLOWING GRADATION:

    NOMINAL SIZE: 1000 LB, 22 INCH DIAMETER
    W_{MIN} = 200 LB (DIAMETER= 13 INCHES)
    W_{50} = 1000 LB (DIAMETER= 22 INCHES)
    W_{MAX} = 2600 LB (DIAMETER= 30 INCHES)

    RIPRAP TOE STONE SHALL CONFORM TO THE FOLLOWING GRADATION:
    W_{MIN} = 1000 LB (DIAMETER= 22 INCHES)
    W_{50} = 2600 LB (DIAMETER= 30 INCHES)
    W_{MAX} = 4500 (DIAMETER= 36 INCHES)
4. ARMOR STONE SHALL HAVE A MINIMUM SIZE OF 12 INCHES MEASURED THE LEAST DIMENSION ACROSS ITS MIDSECTION.
5. NO MORE THAN 15% OF THE ARMOR SHALL BE SCATTERED SPALLS AND STONES LESS THAN 12 INCHES.
6. STONE SHALL BE PLACED IN A MANNER TO PRODUCE A WELL GRADED MASS WITHOUT CAUSING DISPLACEMENT OF THE UNDERLYING MATERIAL. THE FINISHED SURFACE SHALL BE FREE FROM POCKETS OF SMALL STONES AND CLUSTERS OF LARGE STONES.

CAST–IN–PLACE CONCRETE

1. UNLESS OTHERWISE SHOWN, LOCATE REINFORCING BARS WITH 4 INCH CLEAR DIMENSIONS TO FACE OF CONCRETE.
2. CONCRETE ACCESSORIES MUST BE ADEQUATE TO MAINTAIN REINFORCING ACCURATELY IN PLACE AND BE NON–CORROSIVE, NON–STAINING TYPE.
3. LAP BAR REINFORCEMENT IN CONCRETE ELEMENTS 51 BAR DIAMETERS, UNLESS OTHERWISE NOTED.
4. WELDED WIRE FABRIC REINFORCEMENT SHALL HAVE A MINIMUM SIDE AND END LAPS OF 12 INCHES.

(2) PRECAST CONCRETE CAP REPAIR PRODUCTS

1. PATCHING OF LIFTING INSERT LOCATIONS: PATCHED WITH SIKAGROUT 212 AS MANUFACTURED BY SIKA PRODUCTS, PRIOR TO PATCHING, EXISTING SURFACES COATED WITH SIKA ARMATEC 110 EPOCEM BONDING AGENT.
2. SPALLS AND VOIDS: BLENDCRETE AS MANUFACTURED BY PRO SPEC.
3. GAPS BETWEEN PRECAST CONCRETE FILLERS AND PRECAST CONCRETE CAPS: DRY PACKED WITH SIKAGROUT 212 AS MANUFACTURED BY SIKA PRODUCTS.
4. JOINTS CONTAINING FIELD CUT ENDS OF PRECAST CONCRETE CAP SECTIONS: JOINT FILLED WITH SIKABOOM POLYURETHANE SPRAY FOAM.

STRUCTURAL STEEL

1. STEEL HARDWARE:

PIPE (INCLUDING WALE SPACERS):	ASTM A 53 GRADE B, SCH. 40
ANCHOR BOLTS:	ASTM F 1554
CARRIAGE BOLTS:	ASTM A 307
HIGH STRENGTH STRUCTURAL BOLTS:	ASTM A 325 WITH HEX. HEADS
NUTS:	ASTM A 563
WASHERS (EXCEPT AGAINST TIMBER):	ASTM F 436

2. STEEL SHAPES AND PLATES, SHALL BE EPOXY COATED. STEEL HARDWARE SHALL BE HOT–DIPPED GALVANIZED.
3. BOLTED CONNECTIONS SHALL USE 3/4" DIAMETER A 325 HIGH–STRENGTH BOLTS.

PROTECTIVE COATING – STRUCTURAL STEEL (2)

1. MATERIAL USED FOR FACTORY EPOXY COATING OF ALL SCHEDULED SURFACES SHALL BE BAR– RUST 235 MULTI–PURPOSE EPOXY COATING AS MANUFACTURED BY DEVOE COATINGS OR EQUIVALENT ACCEPTED BY THE ENGINEER OF RECORD.
2. FIELD TOUCH–UP COATING SHALL BE IDENTICAL TO FACTORY COATING AND APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
3. PROTECTIVE COATING TOP COAT SHALL BE BLACK UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR BY THE OWNER.
4. SURFACES SHALL BE PREPARED IN STRICT ACCORDANCE WITH THE PROTECTIVE COATING SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS. SURFACES ARE TO BE ABRASION–BLASTED TO A NEAR–WHITE SURFACE CLEANLINESS IN ACCORDANCE WITH SSPC–SP–10. BLAST PROFILE ON STEEL SHALL BE 1.5 TO 2.5 MILS IN DEPTH AND BE OF A SHARP, JAGGED NATURE AS OPPOSED TO A "PEEN" PATTERN (FROM SHOT BLASTING). SURFACES MUST BE SOUND, DRY, CLEAN, FREE OF OIL, GREASE, DIRT, MILDEW, FORM RELEASE AGENTS, CURING COMPOUNDS, LOOSE AND FLAKING PAINT, GRIT DUST, AND OTHER FOREIGN SUBSTANCES. ROTO BLASTED SURFACES ARE NOT ACCEPTABLE.
5. THE PROTECTIVE COATING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. COATING IS TO BE APPLIED IN TWO COATS TO ACHIEVE A MINIMUM OVERALL DRY FILM THICKNESS OF 15 MILS.
6. ALL HOLIDAYS OR OTHER IMPERFECTIONS IN THE COATING SHALL BE REMOVED OR REPAIRED AT THE CONTRACTORS EXPENSE PRIOR TO FINAL ACCEPTANCE OF THE WORK.

(2) PROTECTIVE COATING – STEEL SHEET PILING

1. AS A CONTRACTOR REQUESTED SUBSTITUTION, FACTORY EPOXY COATING OF STEEL SHEET PILING WAS MACROPOXY 646 AS MANUFACTURED BY SHERWIN–WILLIAMS.
2. FIELD TOUCH–UP COATING IS IDENTICAL TO FACTORY COATING EXCEPT FOR AREAS BELOW ELEVATION +2.0' ON WATERWARD SIDE WHERE FX–764 HYDRO–ESTER SPLASH ZONE AND UNDERWATER PASTE WAS USED.

STEEL SHEET PILE INTERLOCK WATERSTOP

1. WATERSTOP SHALL BE ADEKA ULTRA SEAL A–30 WATERSTOP FOR STEEL SHEET PILE INTERLOCKS MANUFACTURED BY ADEKA ULTRA SEAL/OCM INC. AND DISTRIBUTED BY EPIC SALES, INC. P.O. BOX 77, HUNTINGTON, N.Y. 11742 (631–692–6704).
2. WATERSTOP FOR PENETRATIONS SHALL BE ADEKA ULTRA SEAL P–201 SEALANT AS MANUFACTURED BY ADEKA ULTRA SEAL/OCM INC. AND DISTRIBUTED BY EPIC SALES, INC. P.O. BOX 77, HUNTINGTON, N.Y. 11742 (631–692–6704).
3. WATERSTOP SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. INTERLOCKS AND PENETRATIONS SHALL BE CLEANED OF ALL DEBRIS AND OTHER DELETERIOUS MATERIALS.
5. INTERLOCK WATERSTOP SHALL BE INSTALLED FOR THE FULL LENGTH OF THE INSTALLED STEEL SHEET PILE.
6. PENETRATION WATERSTOP SHALL BE INSTALLED FOR THE FULL LENGTH (CIRCUMFERENCE) OF THE PENETRATION.
7. PENETRATION WATERSTOP SHALL BE INSTALLED ALONG THE LANDWARD FACE OF THE STEEL SHEET PILE.
8. ALLOW FOR AND PROVIDE PROPER CURING CONDITIONS IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
9. (2) FIELD REPAIR OF LEAKING INTERLOCKS (AFTER PILE DRIVING) WAS REPAIRED VIA THE FOLLOWING METHODS:
    - INSTALLATION OF KM STRING FOLLOWED BY SEALING WITH P–201 SEALANT ON THE UPLAND SIDE OF THE INTERLOCK. KM STRING AND P–201 SEALANT AS MANUFACTURED BY ADEKA ULTRA SEAL/OCM INC.
    - SEALED WITH FX–764 HYDRO–ESTER SPLASH–ZONE AND UNDERWATER PASTE AS MANUFACTURED BY FOX INDUSTRIES.

RECORD DRAWING

P:\1998\98042.3\Cadd\Task10\Record drawings\W-17.dwg W-17 Roy T. Buzeta Wed, 16 Feb 2011 – 11:03am

No.	Submittal / Revision	App'd	By	Date
1	SHEET NUMBER REVISED		ADS	8/6/07
2	RECORD DRAWING		JVB	2/1/11

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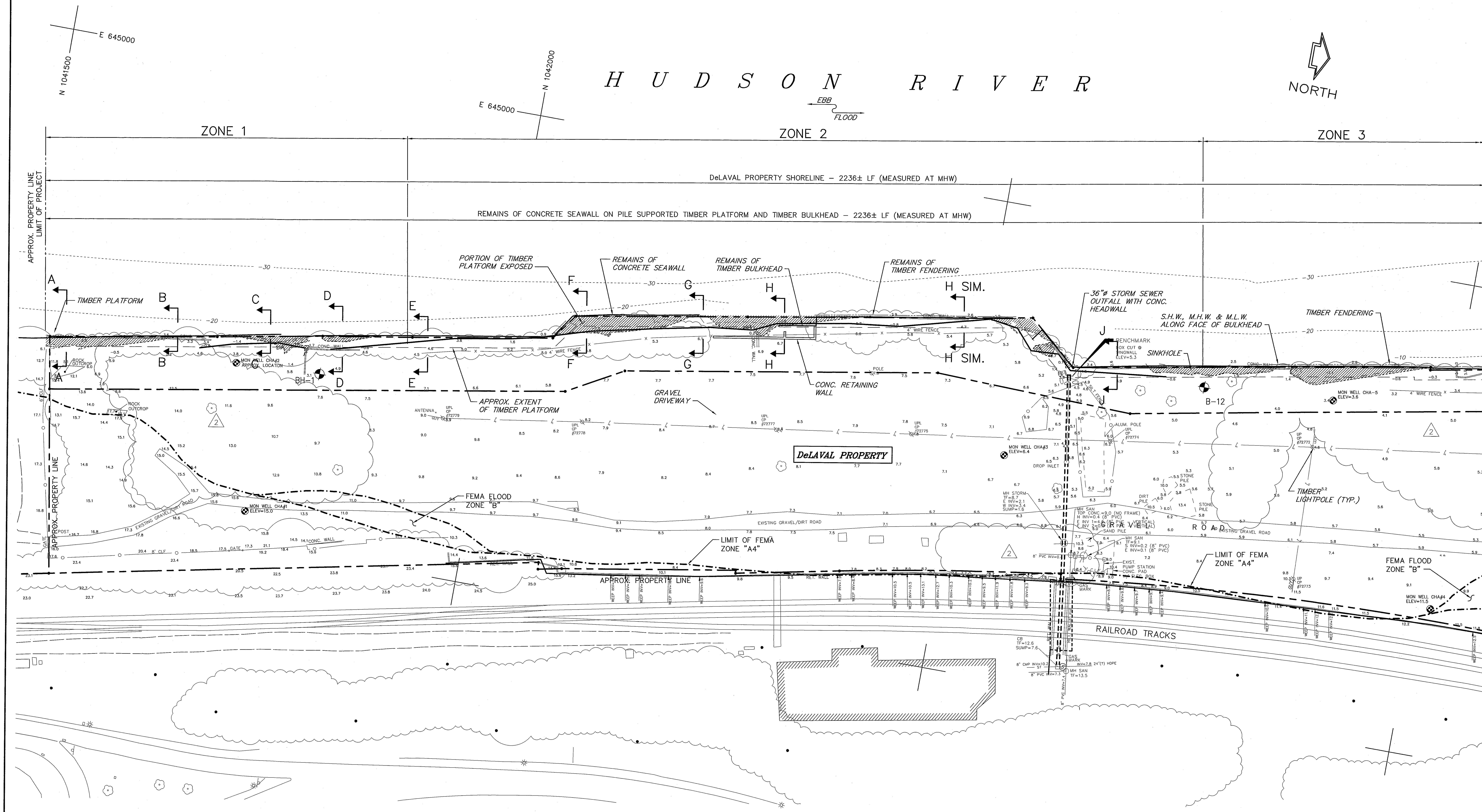
Designed By: A.I.M. | Drawn By: H.R. | Checked By: S.M.W.

DeLAVAL PROPERTY
ENVIRONMENTAL RESTORATION
PROGRAM PROJECT

WATERFRONT PROJECT NOTES

Issue Date: 07/17/07 | Project No.: 14357 | Scale: NONE

W-17



LEGEND

SOIL BORING AND NUMBER

SINKHOLE OR SEVERE EROSION

NOTES

1. SEE DRAWING NUMBER W-17 FOR WATERFRONT PROJECT NOTES.
2. UPLAND STRUCTURES TO REMAIN UNLESS NOTED OTHERWISE.

GRAPHIC SCALES
CHECK GRAPHIC SCALES BEFORE USING

1"=50'-0" 0 50 100 FT.

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DeLAVAL PROPERTY
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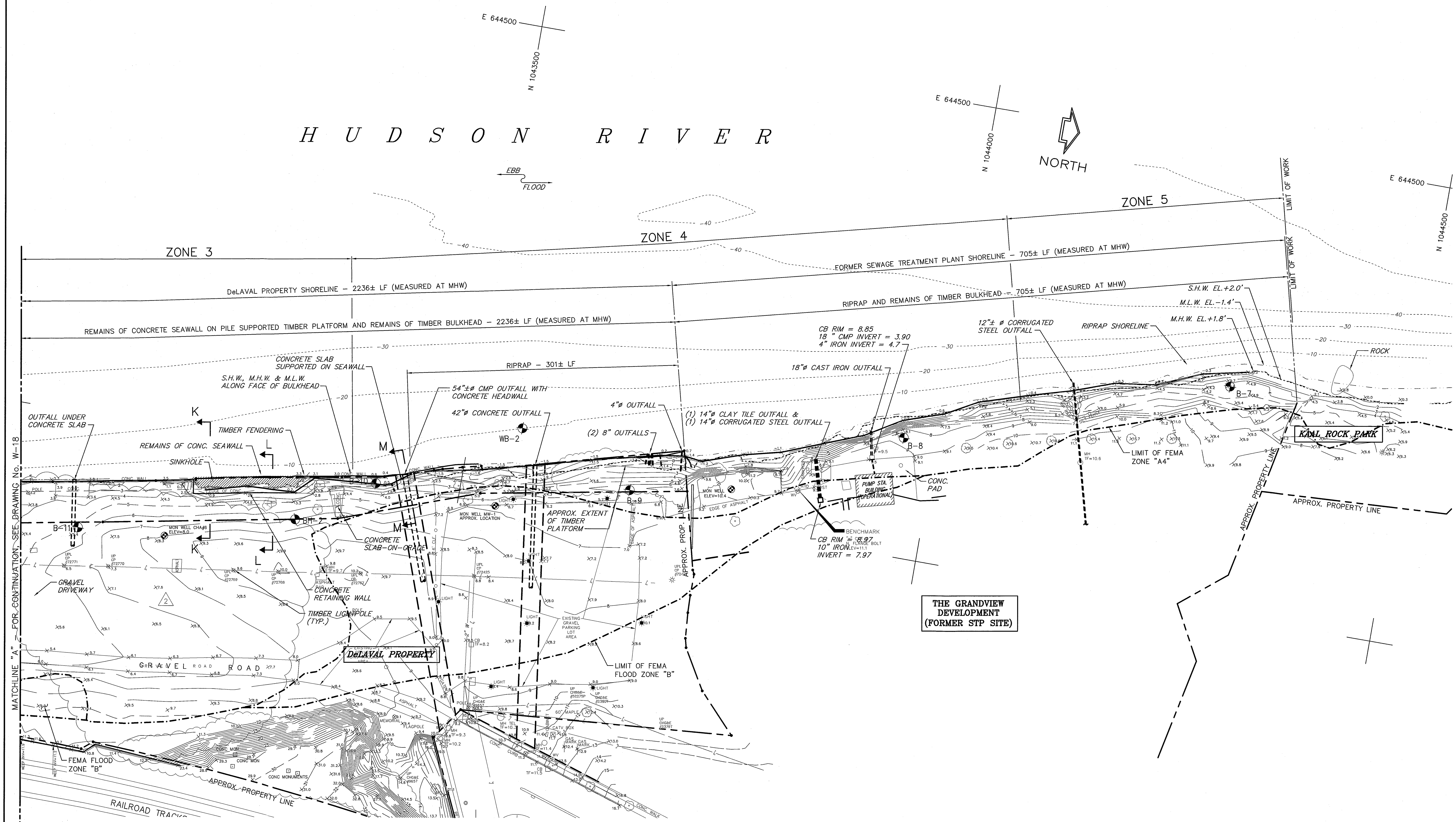
EXISTING WATERFRONT PLAN
SHEET 1 OF 2

Issue Date: 07/17/07 | Project No.: 14357 | Scale: 1"=50'-0"

W-18
Sheet 18 of 29

P:\1998\98042.3\Cadd\Task10\Record drawings\W-18.dwg W-18 Rey T. Buzeta Tue, 15 Feb 2011 – 11:41am



LEGEND

SOIL BORING AND NUMBER

SINKHOLE OR SEVERE EROSION

NOTES

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2. UPLAND STRUCTURES TO REMAIN UNLESS NOTED OTHERWISE.

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1	SHEET NUMBER REVISED		ADS	8/6/07
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DeLAVAL PROPERTY ENVIRONMENTAL RESTORATION PROGRAM PROJECT

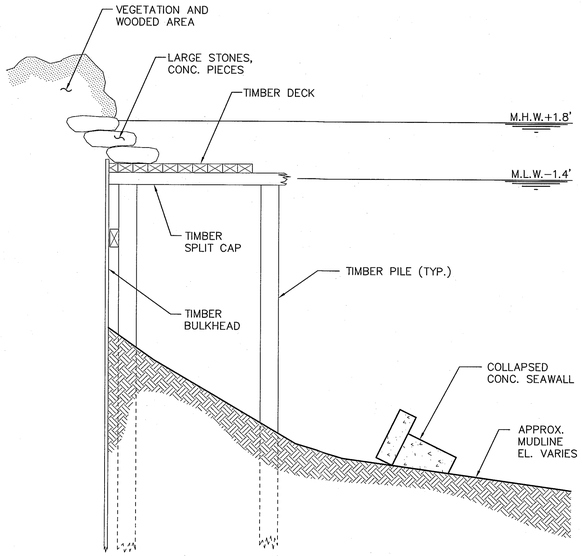
EXISTING WATERFRONT PLAN SHEET 2 OF 2

Issue Date: 07/17/07 | Project No.: 14357 | Scale: 1"=50'-0"

W-19

Sheet 19 of 29

P:\1998\98042.3\Cadd\Task10\Record drawings\W-18.dwg W-19 Rey T. Buzeta Wed, 16 Feb 2011 – 3:27pm



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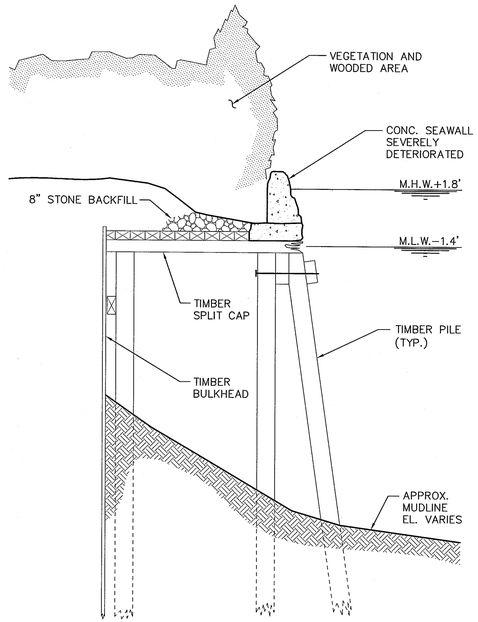

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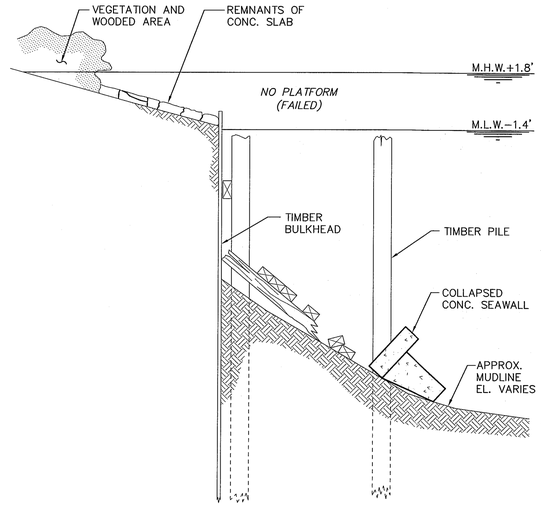

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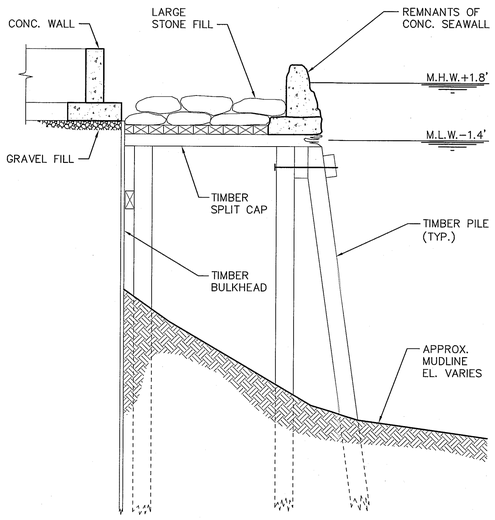

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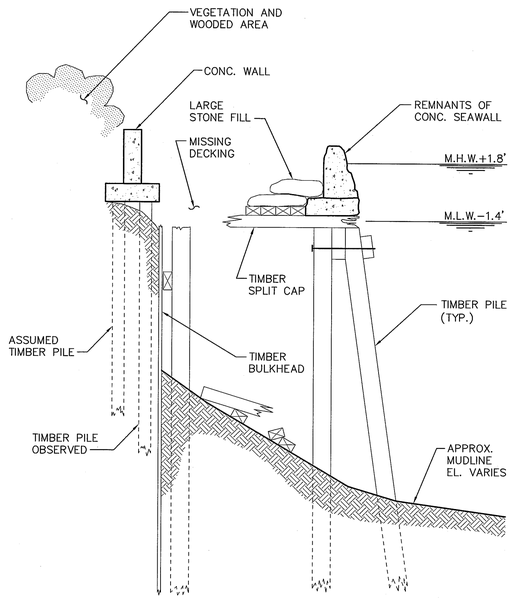

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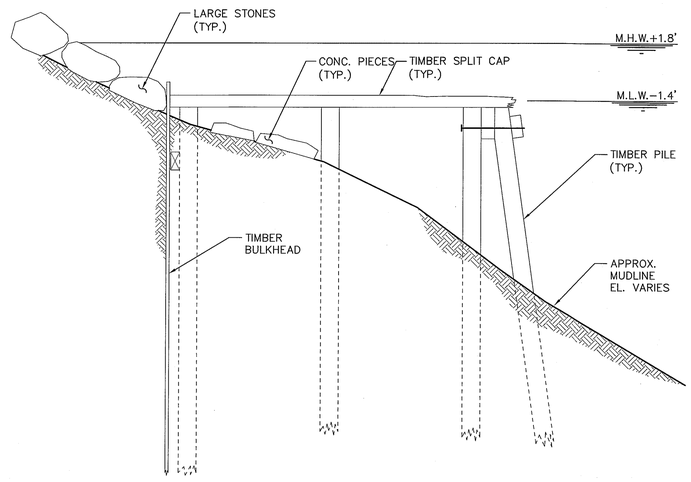

SECTION F–F
NOT TO SCALE

NOTES

1. SEE DRAWING NUMBER W–17 FOR WATERFRONT PROJECT NOTES.
2. FOR LOCATION OF SECTIONS A–A THRU F–F, SEE DRAWING NO. W–18.

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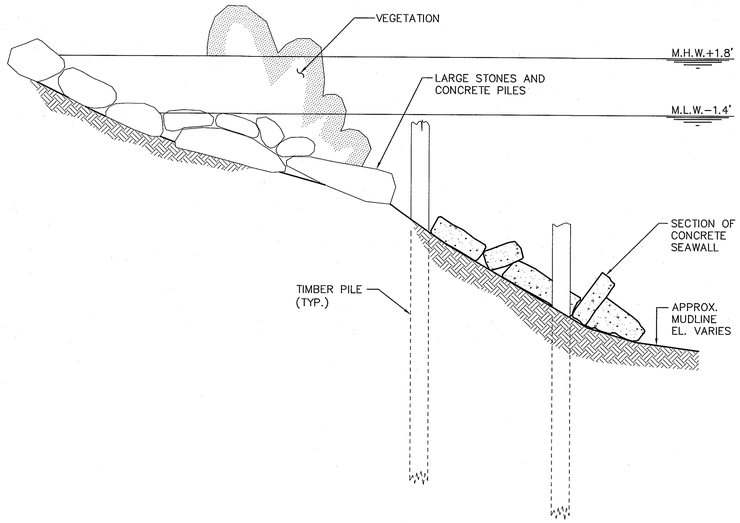
EXISTING SECTIONS
SHEET 1 OF 2

Issue Date: 07/17/07 | Project No.: 14357 | Scale: NONE

W-20
Sheet 20 of 29

P:\1998\98042.3\Cadd\Task10\Record drawings\W-20.dwg W-20 Rey T. Buzeta Tue, 15 Feb 2011 - 11:42am



SECTION G–G

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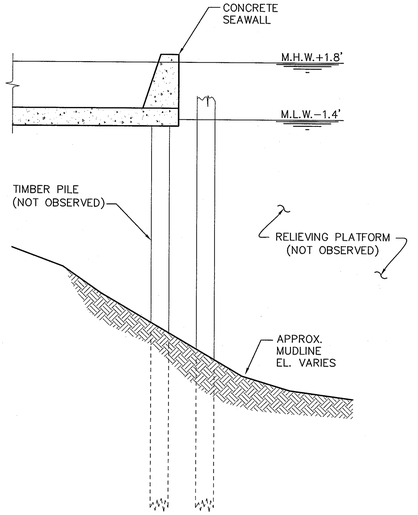

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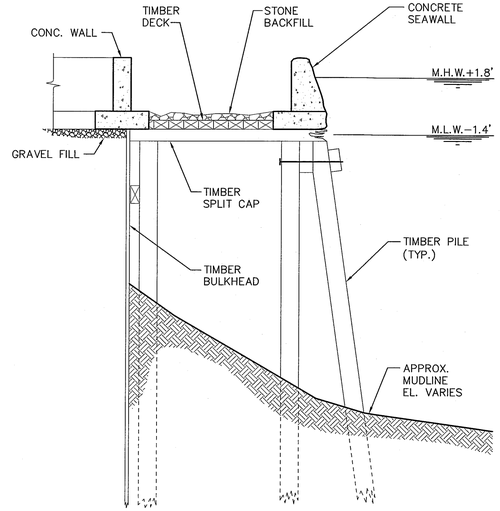

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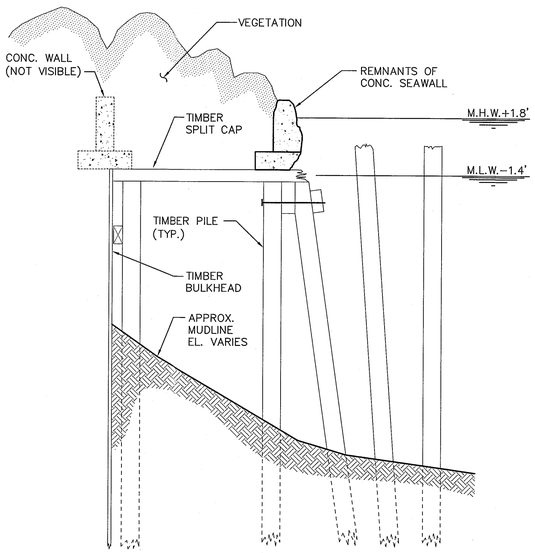

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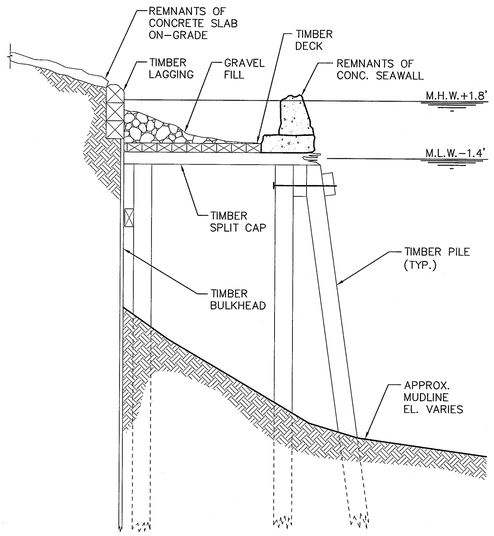

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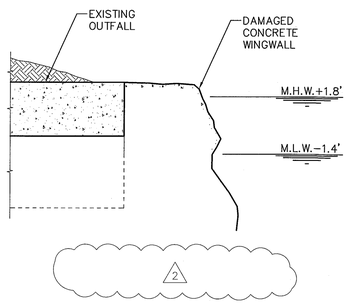

SECTION M–M

NOT TO SCALE

NOTES

1. SEE DRAWING NUMBER W–17 FOR WATERFRONT PROJECT NOTES.
2. FOR LOCATION OF SECTIONS G–G THRU J–J, SEE DRAWING NUMBER W–18.
3. FOR LOCATION OF SECTIONS K–K THRU M–M, SEE DRAWING NUMBER W–19.

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DeLAVAL PROPERTY
ENVIRONMENTAL RESTORATION
PROGRAM PROJECT

EXISTING SECTIONS
SHEET 2 OF 2

Issue Date: 07/17/07 | Project No.: 14357 | Scale: NONE

W-21
Sheet 21 of 29

P:\1998\98042.3\Coast\Task10\Record drawings\W-21.dwg W-21 Rey T. Buzeta Tue, 15 Feb 2011 - 11:42am

E 645000
N 1041500
E 645000
N 1042000
H U D S O N R I V E R
NORTH
EBB
FLOOD
N 1042500
E 645000
E 645000

APPROX. PROPERTY LINE
LIMIT OF PROJECT

ZONE 1 = 381± L.F.
AZ 26 EPOXY-COATED STEEL SHEET PILE BULKHEAD WITH TOE PROTECTION
(SOUTHERN 50'± ZONE 1 IS REVETMENT ONLY)

ZONE 2 = 848± L.F.
RIRAP REVETMENT

ZONE 3 = 658± L.F.
CANTILEVERED AZ 26 EPOXY COATED STEEL SHEET PILE
BULKHEAD WITH TOE PROTECTION

S.H.W. EL.+2.0', M.H.W. EL.+1.8', & M.L.W. EL.-1.4'
ALONG FACE OF BULKHEAD
FUTURE KAYAK LAUNCH FLOAT (BY OTHERS)
PRECAST CONC. BULKHEAD CAP
24"ø HDPE OUTFALL WITH CONCRETE COLLAR INV.=+2.22'
24"ø HDPE OUTFALL WITH BACKFLOW PREVENTER AND PRECAST CONC. HEADWALL INV.=+0.19'
RIPRAP TOE PROTECTION
M.L.W. EL.-1.4'
M.H.W. EL.+1.8'
S.H.W. EL.+2.0'
AA
RIPRAP (TYP.)
24"ø HDPE OUTFALL WITH BACKFLOW PREVENTER AND PRECAST CONC. HEADWALL INV.=+0.20'
EXIST. 36"ø STORMWATER OUTFALL WITH CONC. HEADWALL INV.=-0.60'
S.H.W. EL.+2.0', M.H.W. EL.+1.8', & M.L.W. EL.-1.4' ALONG FACE OF BULKHEAD
PRECAST CONC. BULKHEAD CAP
RIPRAP TOE PROTECTION
AZ 12 STEEL SHEET PILE DEADMAN (UNCOATED)
CAST-IN-PLACE CONCRETE DEADMAN

DeLAVAL PROPERTY

PROPERTY LINE
FEMA FLOOD ZONE "B"
LIMIT OF FEMA ZONE "A4"
PROPERTY LINE
EXISTING GRAVEL ROAD
LIMIT OF FEMA ZONE "A4"
FEMA FLOOD ZONE "B"
RAILROAD TRACKS

MATCHLINE "A" - FOR CONTINUATION, SEE DRAWING No. W-23

NOTES

1. SEE DRAWING NUMBER W-17 FOR WATERFRONT PROJECT NOTES.
2. FOR BULKHEAD PLAN, SEE DRAWING NUMBER W-24.
3. FOR TYPICAL BULKHEAD SECTIONS, SEE DRAWING NUMBER W-25.
4. FOR SECTION AA REVETMENT SECTIONS, SEE DRAWING NUMBER W-28.
5. COORDINATES ARE REFERRED TO THE NEW YORK STATE PLANE SYSTEM, NORTH AMERICAN DATUM FOR 1983 (NAD-83).
6. REFER TO CHA DRAWINGS FOR UPLAND FEATURES NOT SHOWN.

GRAPHIC SCALES
CHECK GRAPHIC SCALES BEFORE USING
1"=50'-0" 0 50 100 FT.

RECORD DRAWING

Underground Facilities Protective Organization Utility Coordinating Committee
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1-800-962-7962

P:\1998\98042.3\Cadd\Task10\Record drawings\W-22.dwg W-22 Rey T. Buzeta Wed, 16 Feb 2011 - 3:43pm

No.	Submittal / Revision	App'd	By	Date
1	REVISED GRADING		ADS	7/9/07
2	SHEET NUMBER REVISED		ADS	8/6/07
3	POINT COORDINATES ADDED		JVB	5/28/08
4	RECORD DRAWING		JVB	2/11/11

City of Poughkeepsie
62 CIVIC CENTER PLAZA
POUGHKEEPSIE, NEW YORK 12602

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OCC Project No. 98042.3 | S.M.W. | Checked By: | C.L.M. | Drawn By: | A.J.M. | Designed By:

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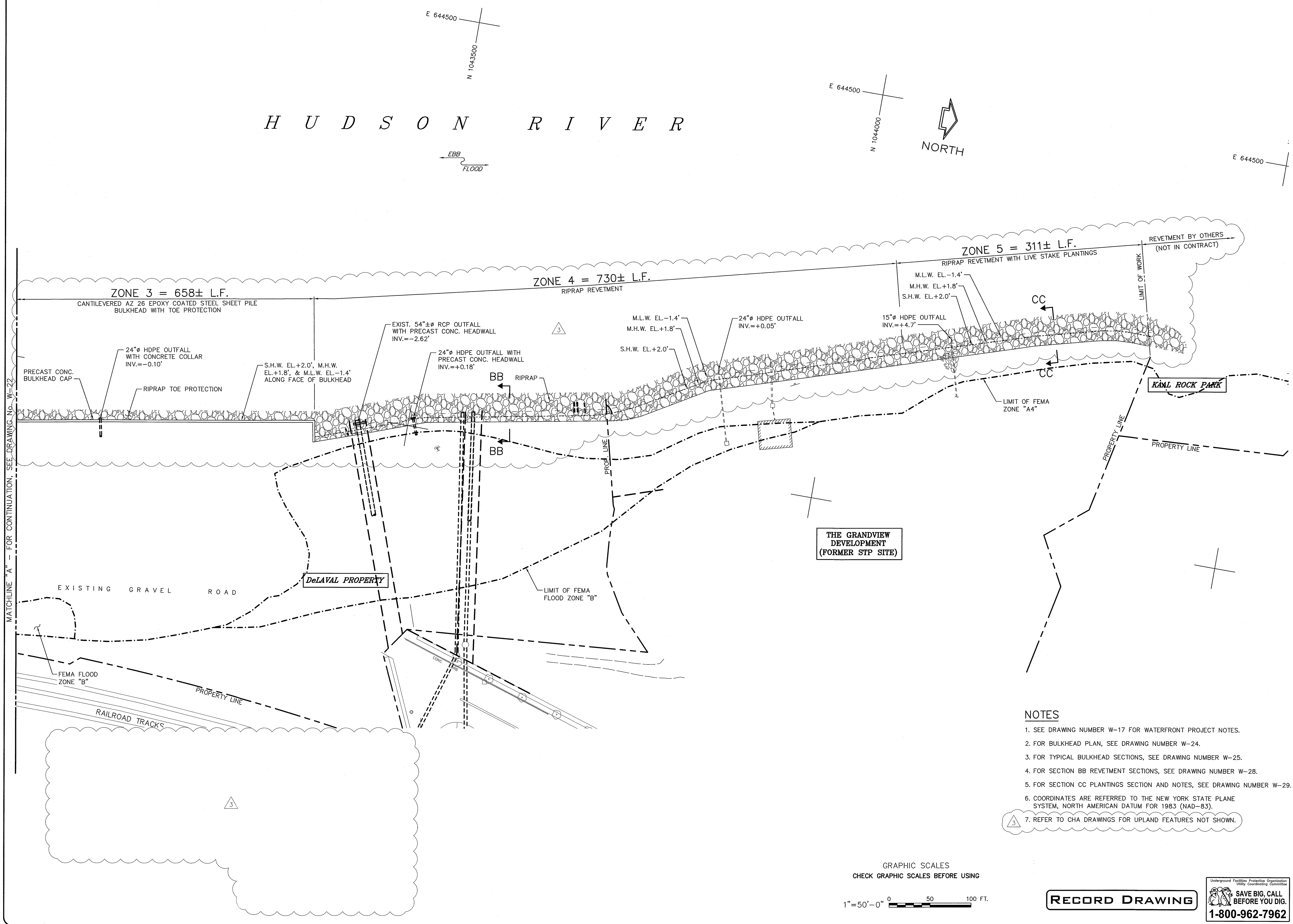
DeLAVAL PROPERTY
ENVIRONMENTAL RESTORATION
PROGRAM PROJECT

WATERFRONT REPAIR PLAN
SHEET 1 OF 2

Issue Date: 07/17/07 | Project No.: 14357 | Scale: 1"=50'-0"

W-22
Sheet 22 of 29



NOTES

1. SEE DRAWING NUMBER W−17 FOR WATERFRONT PROJECT NOTES.
2. FOR BULKHEAD PLAN, SEE DRAWING NUMBER W−24.
3. FOR TYPICAL BULKHEAD SECTIONS, SEE DRAWING NUMBER W−25.
4. FOR SECTION BB REVETMENT SECTIONS, SEE DRAWING NUMBER W−28.
5. FOR SECTION CC PLANTINGS SECTION AND NOTES, SEE DRAWING NUMBER W−29.
6. COORDINATES ARE REFERRED TO THE NEW YORK STATE PLANE SYSTEM, NORTH AMERICAN DATUM FOR 1983 (NAD−83).
7. REFER TO CHA DRAWINGS FOR UPLAND FEATURES NOT SHOWN. (3)

GRAPHIC SCALES
CHECK GRAPHIC SCALES BEFORE USING
1"=50'−0"   0   50   100 FT.

RECORD DRAWING

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1	SHEET NUMBER REVISED		ADS	8/6/07
2	POINT COORDINATES ADDED		JVB	3/28/08
3	RECORD DRAWING		JVB	2/11/11

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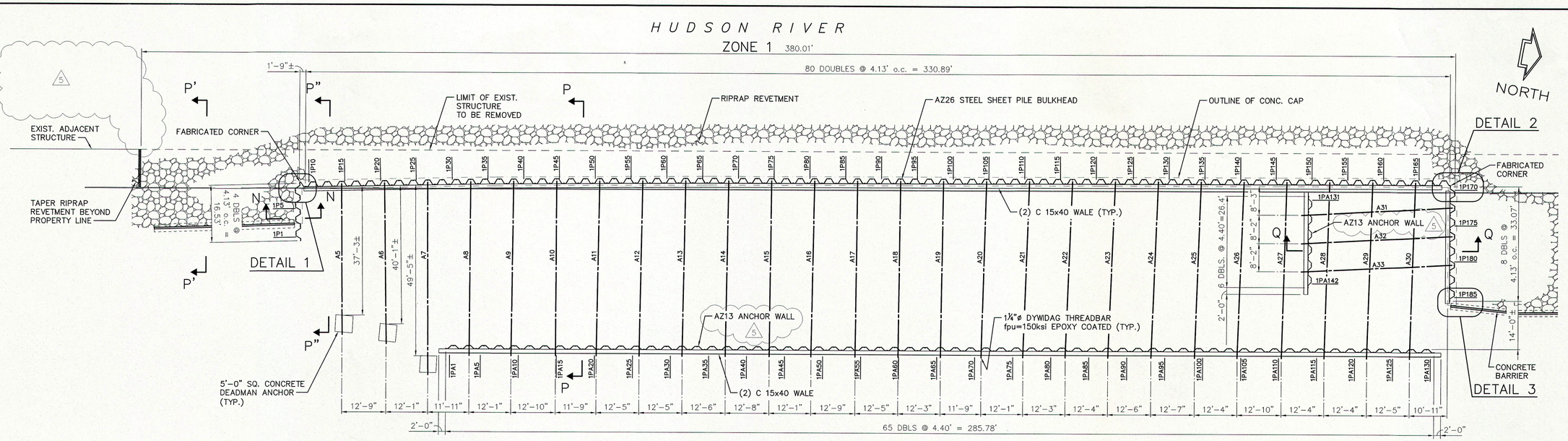
DeLAVAL PROPERTY
ENVIRONMENTAL RESTORATION PROGRAM PROJECT
WATERFRONT REPAIR PLAN
SHEET 2 OF 2

Issue Date: 07/17/07 | Project No.: 14357 | Scale: 1"=50'-0"

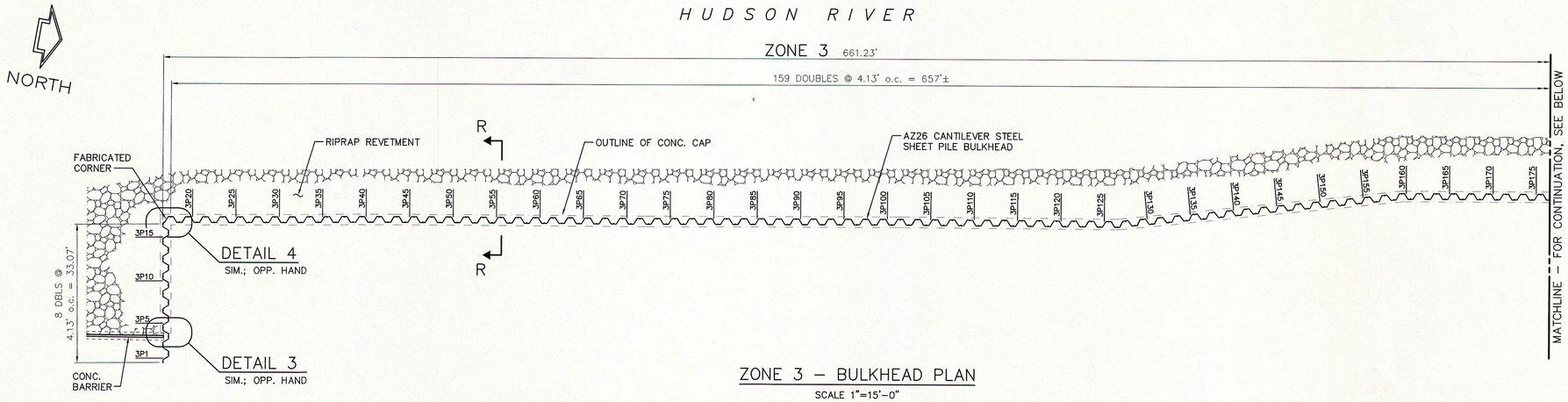
W-23
Sheet 23 of 29

P:\1998\98042.3\Cadd\Task10\Record drawings\W-22.dwg W-23 Rey T. Buzeta Wed, 16 Feb 2011 − 3:43pm



ZONE 1 – BULKHEAD PLAN

SCALE 1"=15'-0"



ZONE 3 – BULKHEAD PLAN

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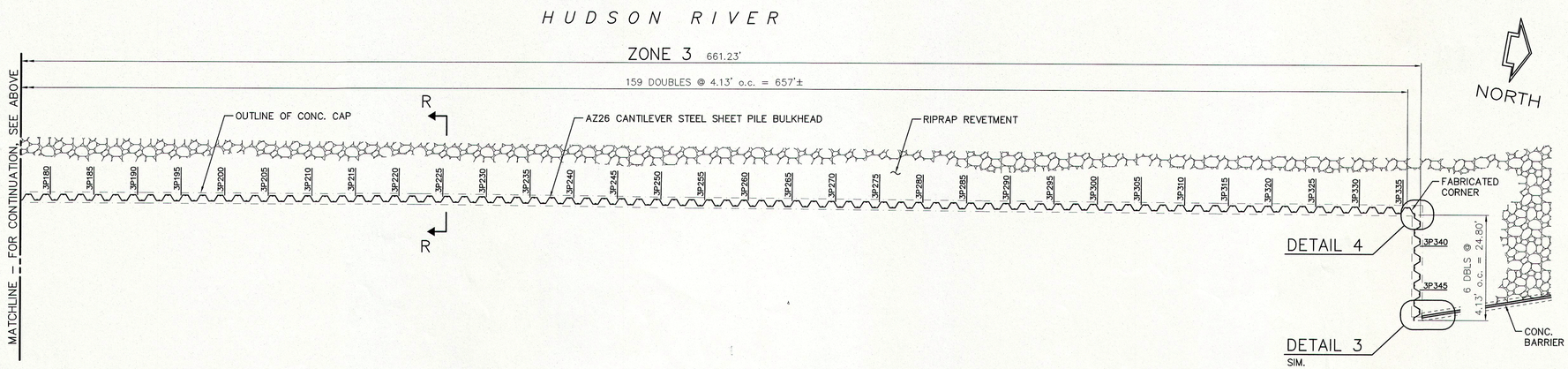

ZONE 3 – BULKHEAD PLAN

SCALE 1"=15'-0"

NOTES

1. SEE DRAWING NUMBER W-17 FOR WATERFRONT PROJECT NOTES.
2. FOR SECTIONS N–N THRU R–R, SEE DRAWING NUMBER W-25.
3. FOR DETAILS 1 THROUGH 4, SEE DRAWING NUMBER W-26.
4. FOR CONCRETE ANCHOR BLOCK DETAILS, SEE DRAWING NUMBER W-26.

GRAPHIC SCALES

CHECK GRAPHIC SCALES BEFORE USING

1"=15'-0" 0 15 30 FT.

RECORD DRAWING

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2	POINT COORDINATES ADDED		JVB	5/28/08
3	RECORD DRAWING		JVB	2/11/11
4	RECORD DRAWING REVISION		JVB	12/7/11
5	RECORD DRAWING REVISION		JVB	4/3/12

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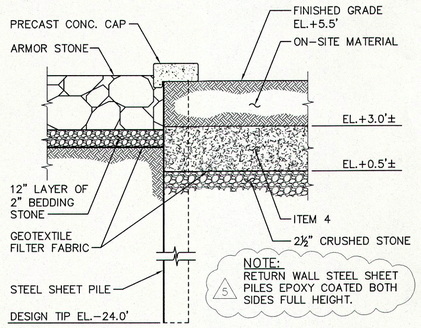
ENVIRONMENTAL RESTORATION
PROGRAM PROJECT

ZONES 1 AND 2
BULKHEAD PLAN

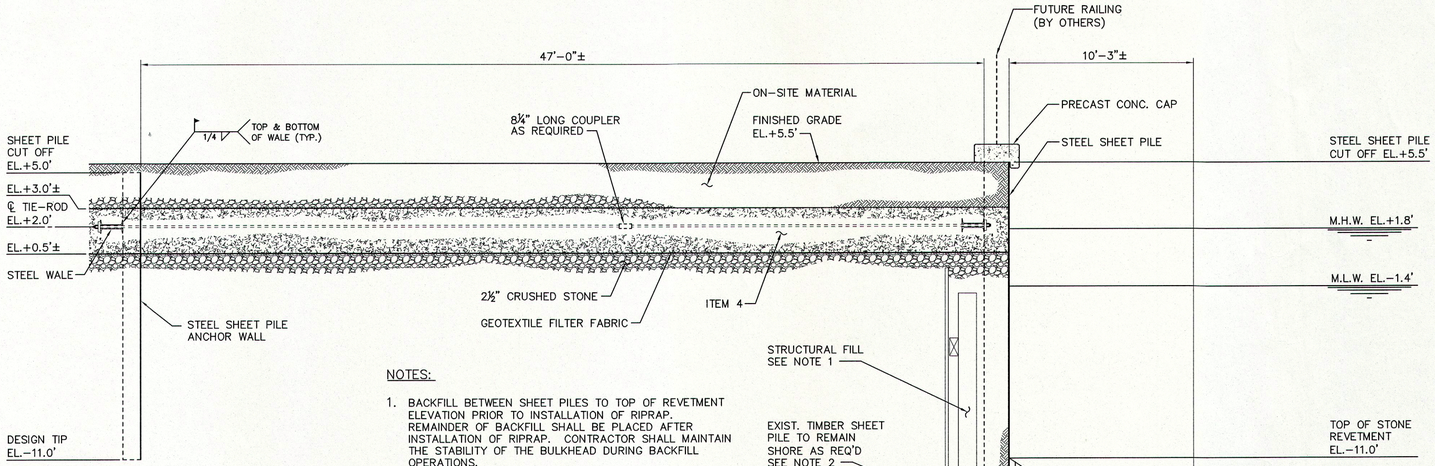
Issue Date: 07/17/07 | Project No.: 14357 | Scale: 1"=15'-0"

W-24
Sheet 24 of 29



SECTION N–N

SCALE ¼"=1'–0"

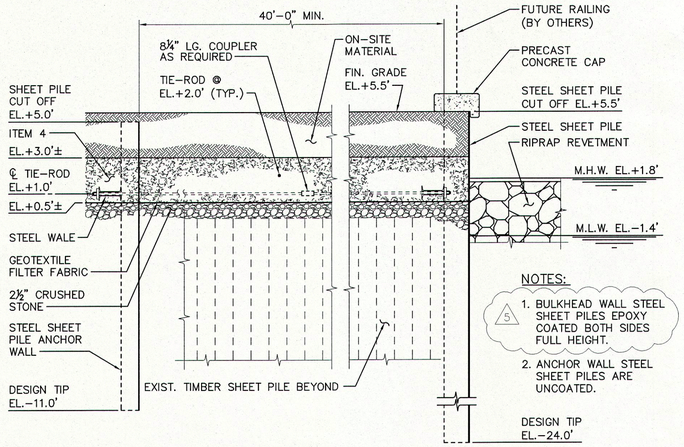


NOTES:

1. BACKFILL BETWEEN SHEET PILES TO TOP OF REVETMENT ELEVATION PRIOR TO INSTALLATION OF RIPRAP. REMAINDER OF BACKFILL SHALL BE PLACED AFTER INSTALLATION OF RIPRAP. CONTRACTOR SHALL MAINTAIN THE STABILITY OF THE BULKHEAD DURING BACKFILL OPERATIONS.
2. CONTRACTOR TO STABILIZE EXISTING TIMBER SHEETS DURING DEMOLITION OF RELIEVING PLATFORM.
3. IF WATER DEPTH AT TOE OF BULKHEAD IS GREATER THAN 10 FEET AT M.L.W., GEOTEXTILE FILTER FABRIC AND BEDDING STONE MAY BE OMITTED.
4. BULKHEAD WALL STEEL SHEET PILES EPOXY COATED BOTH SIDES FULL HEIGHT.
5. ANCHOR WALL STEEL SHEET PILES ARE UNCOATED.

SECTION P–P

SCALE ¼"=1'–0"



SECTION Q–Q

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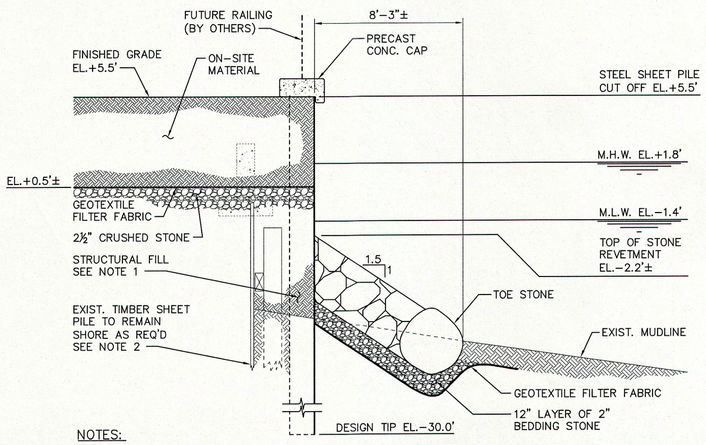
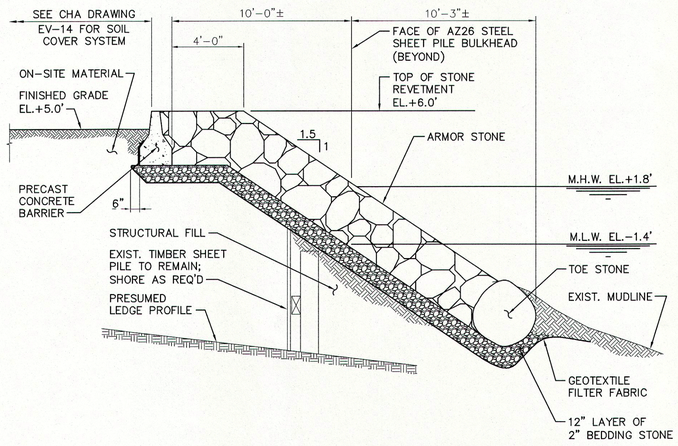


NOTES:

1. BACKFILL BETWEEN SHEET PILES TO TOP OF REVETMENT ELEVATION PRIOR TO INSTALLATION OF RIPRAP. REMAINDER OF BACKFILL SHALL BE PLACED AFTER INSTALLATION OF RIPRAP. CONTRACTOR SHALL MAINTAIN THE STABILITY OF THE BULKHEAD DURING BACKFILL OPERATIONS.
2. CONTRACTOR TO STABILIZE EXISTING TIMBER SHEETS DURING DEMOLITION OF RELIEVING PLATFORM.
3. IF WATER DEPTH AT TOE OF BULKHEAD IS GREATER THAN 10 FEET AT M.L.W., GEOTEXTILE FILTER FABRIC AND BEDDING STONE MAY BE OMITTED.
4. BULKHEAD WALL AND RETURN STEEL SHEET PILING EPOXY COATED BOTH SIDES FULL HEIGHT.

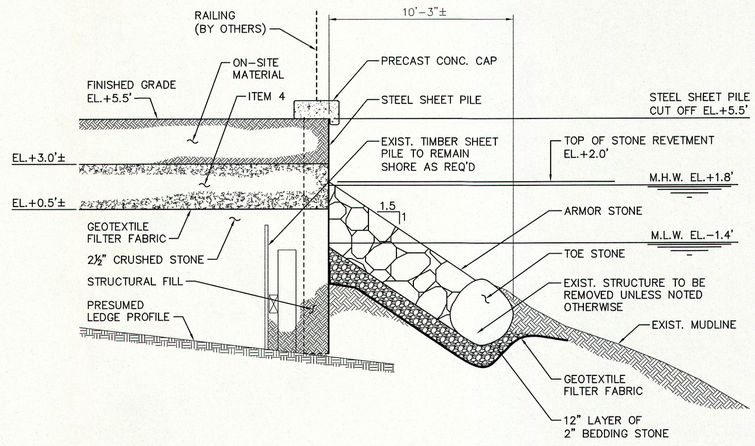
SECTION R–R

SCALE ¼"=1'–0"



SECTION P'–P'

SCALE ¼"=1'–0"



SECTION P"–P"

SCALE ¼"=1'–0"

NOTES

1. SEE DRAWING NUMBER W–17 FOR WATERFRONT PROJECT NOTES.
2. FOR LOCATION OF SECTIONS N–N THRU R–R, SEE DRAWING NUMBER W–24.

GRAPHIC SCALES

CHECK GRAPHIC SCALES BEFORE USING

¼"=1'–0" 0 4 8 FT.

RECORD DRAWING

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No.	Submittal / Revision	App'd	By	Date
1	REVISED SECTION N–N		ADS	7/9/07
2	SHEET NUMBER REVISED		ADS	8/6/07
3	RECORD DRAWING		JVB	2/11/11
4	RECORD DRAWING REVISION		JVB	12/7/11
5	RECORD DRAWING REVISION		JVB	4/3/12

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OCC Project No. 98042.3

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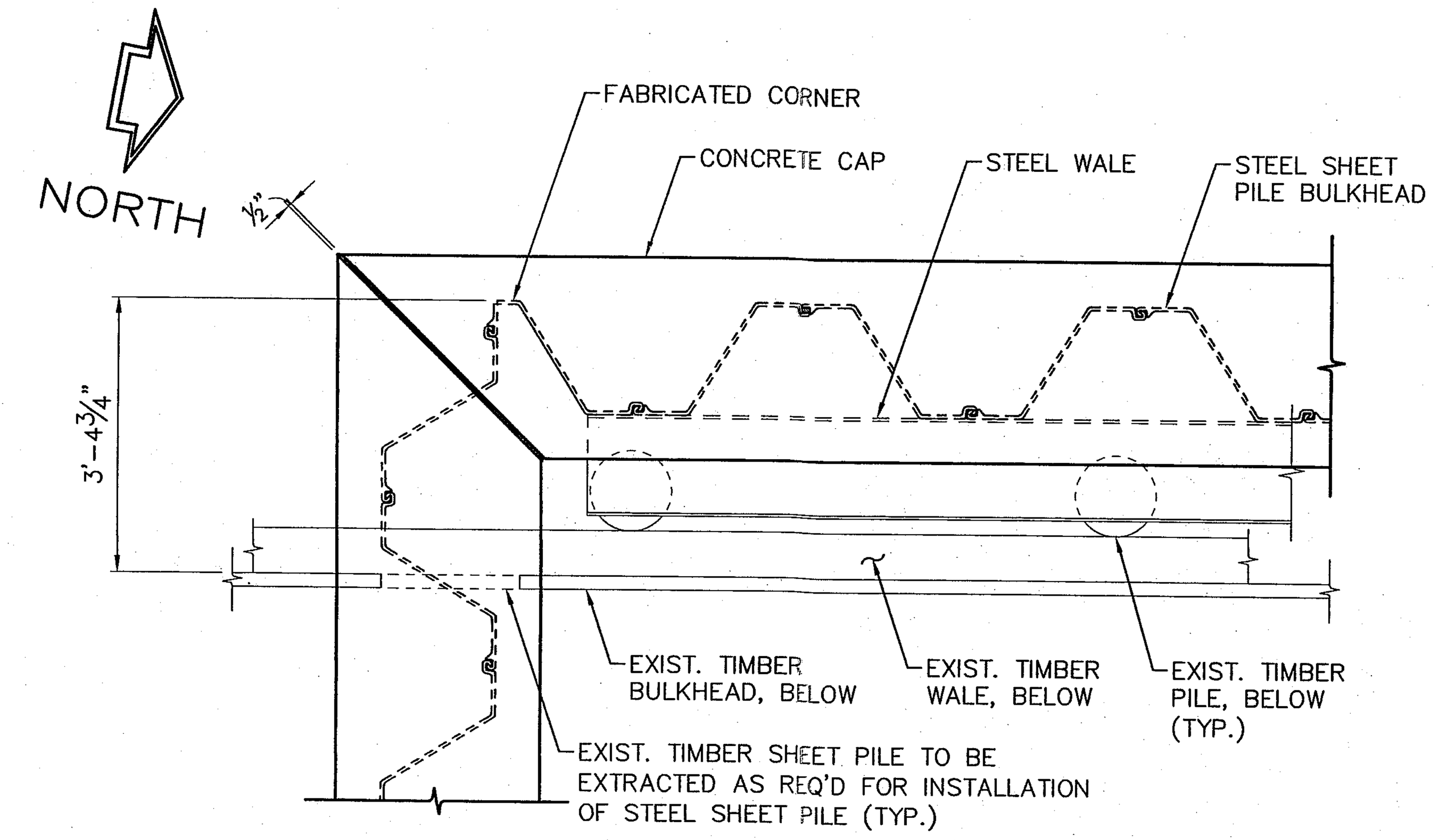
DeLAVAL PROPERTY
ENVIRONMENTAL RESTORATION
PROGRAM PROJECT

TYPICAL BULKHEAD SECTIONS

Issue Date: 07/17/07 | Project No.: 14357 | Scale: 1/4"=1'-0"

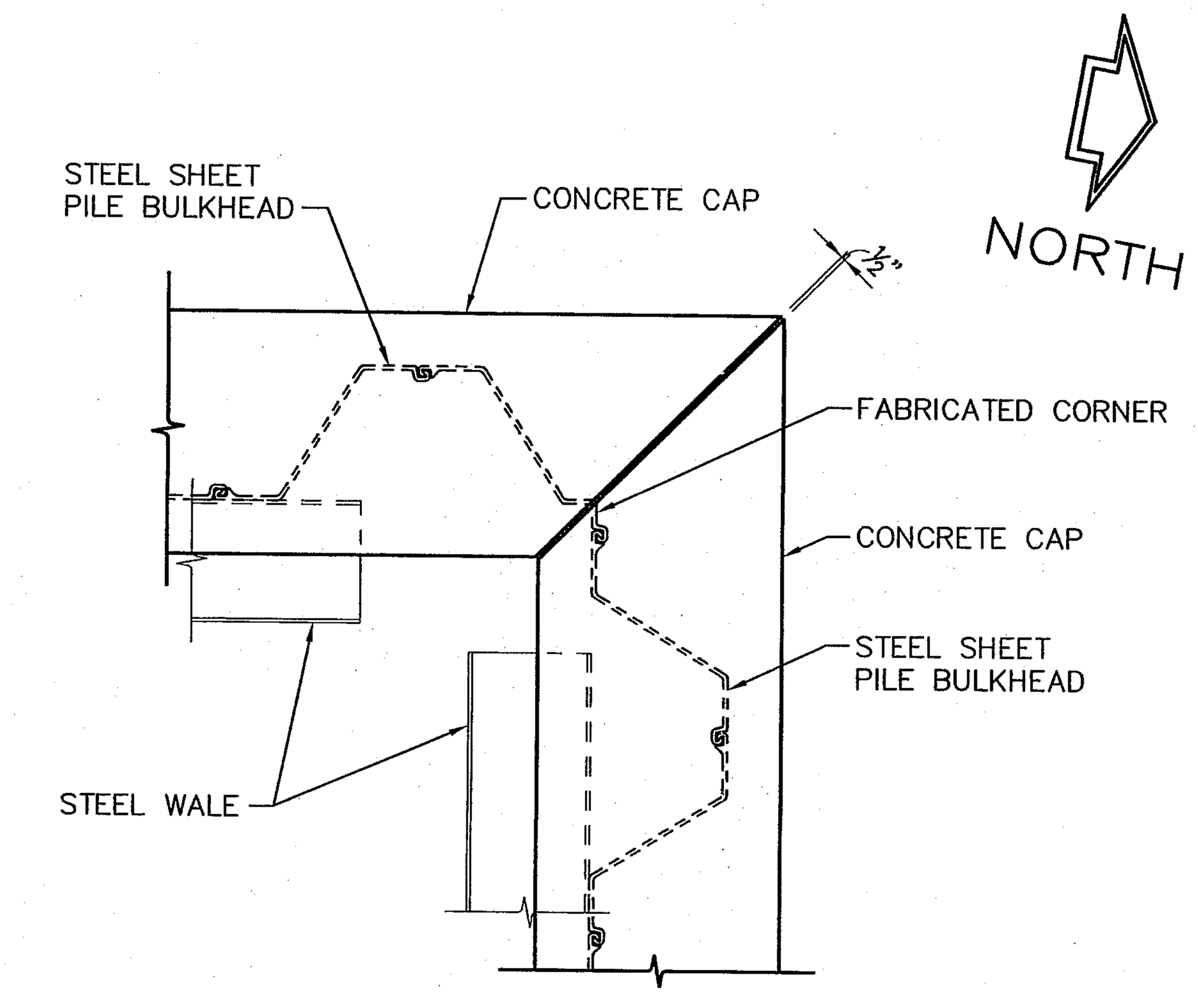
W-25

Sheet 25 of 29



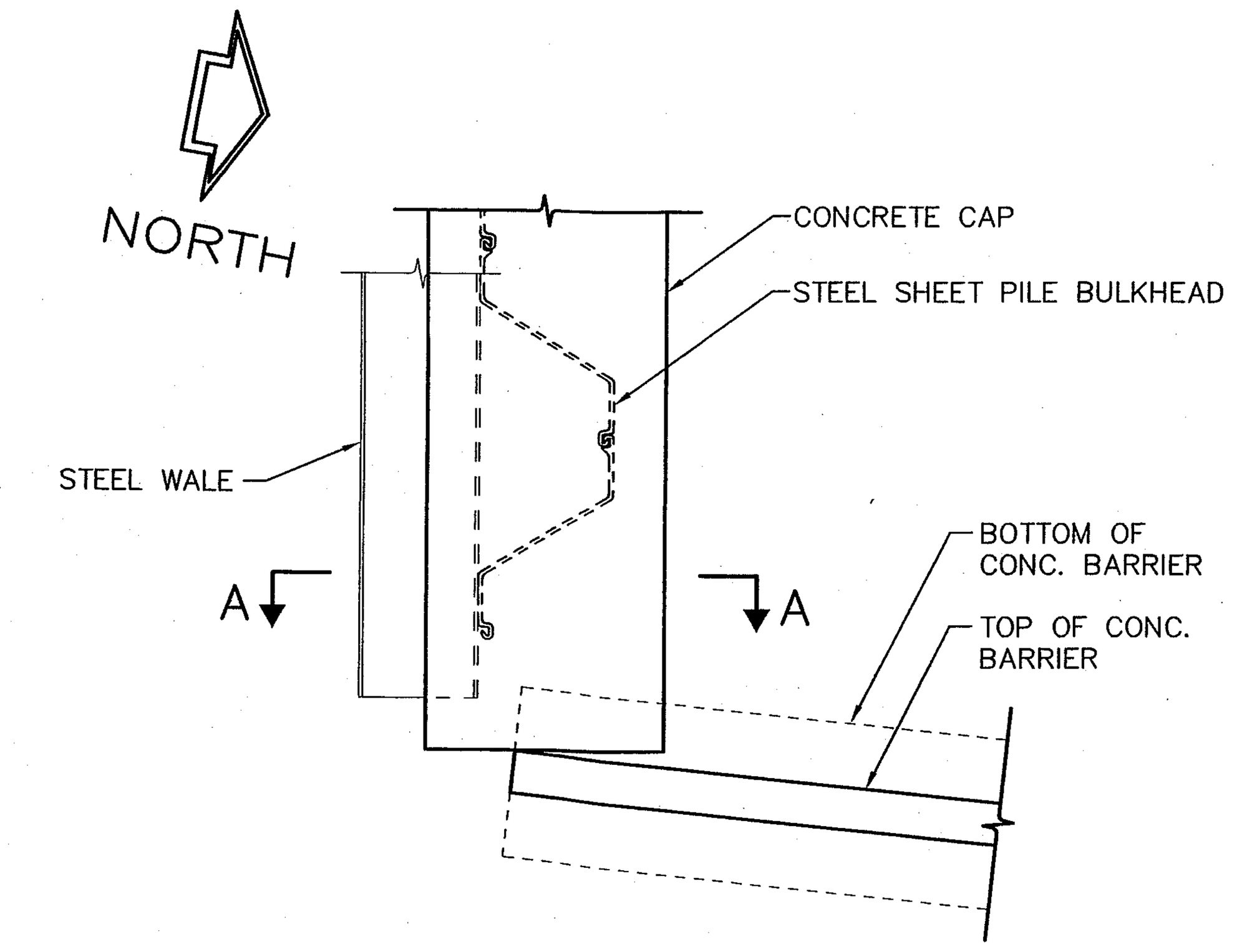
DETAIL 1

SCALE ½"=1'-0"



DETAIL 2

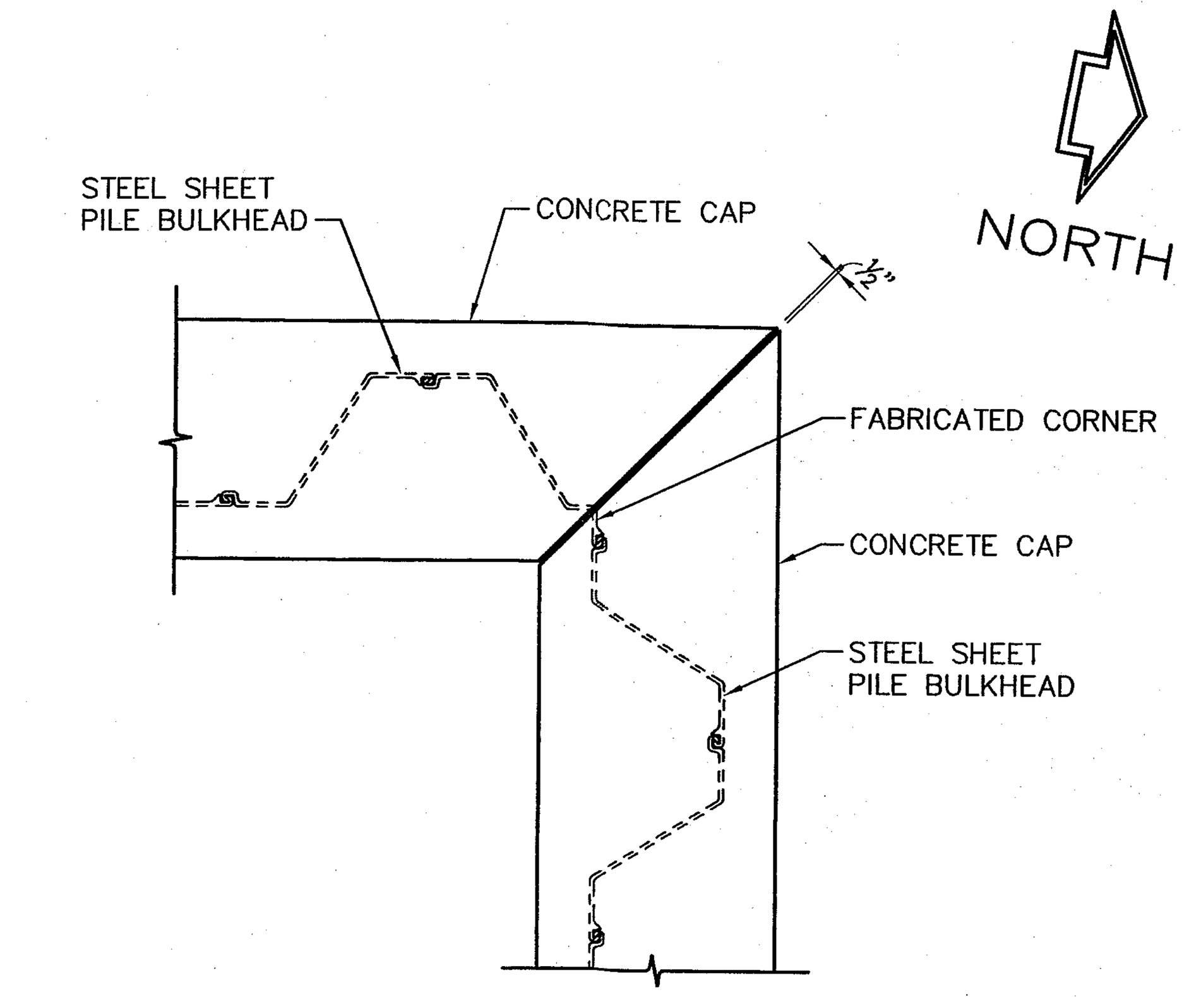
SCALE ½"=1'-0"



NOTE: STONE REVETMENT NOT SHOWN FOR CLARITY.

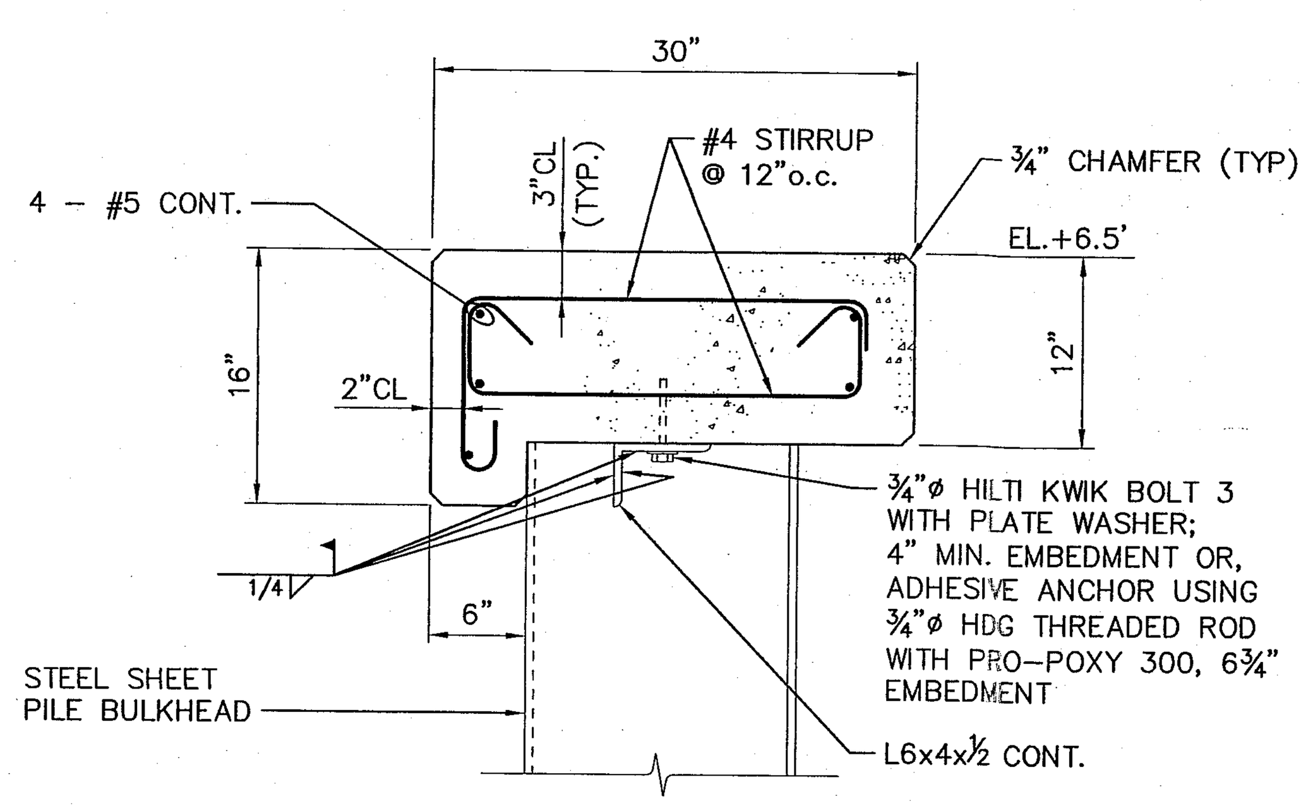
DETAIL 3

SCALE ½"=1'-0"



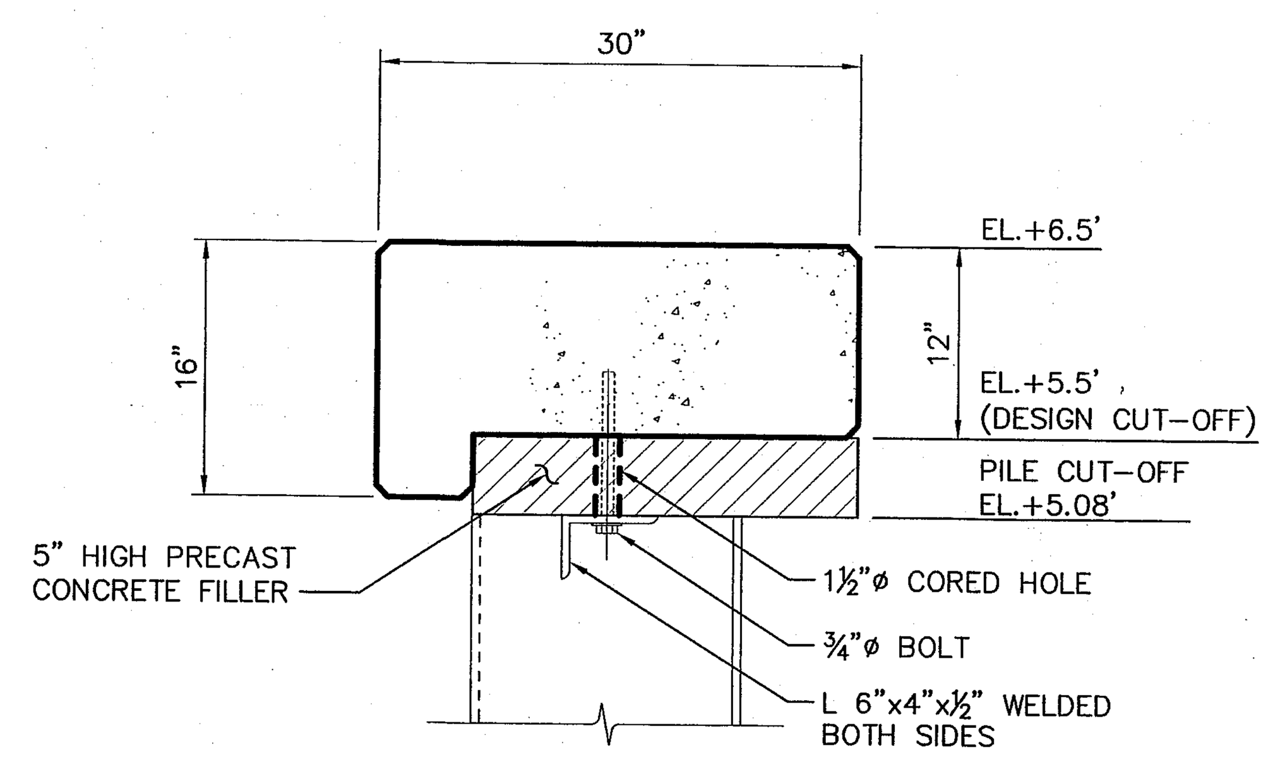
DETAIL 4

SCALE ½"=1'-0"



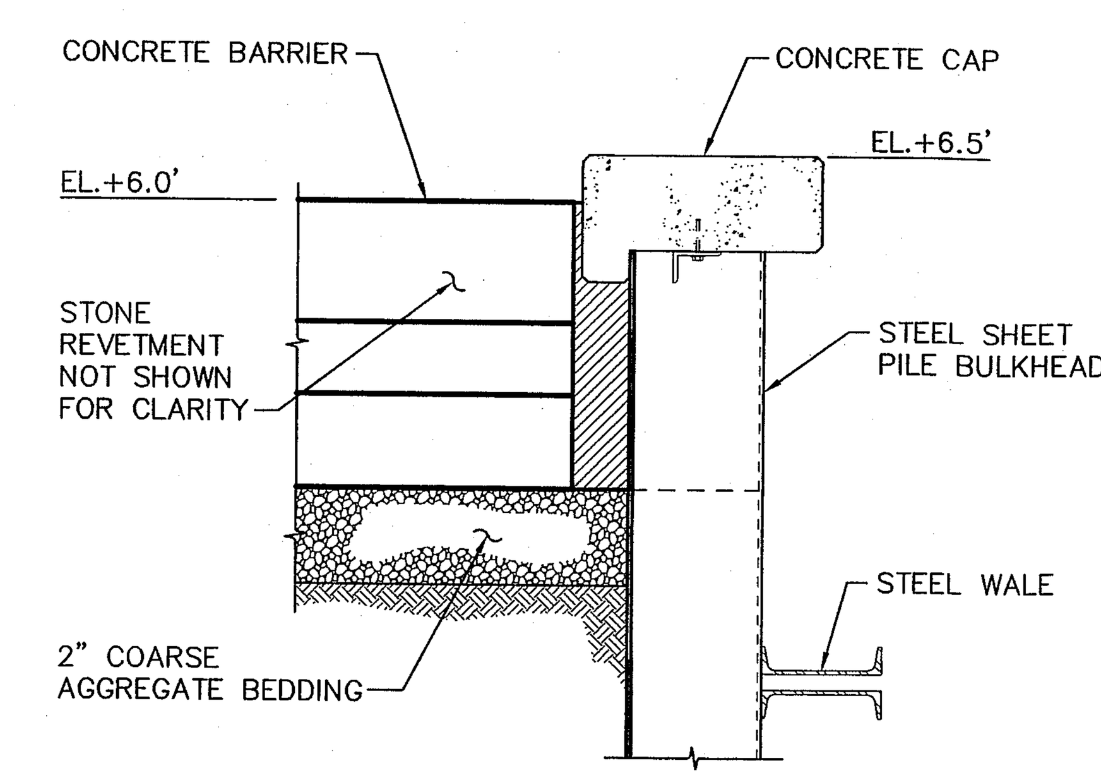
TYPICAL CAP SECTION

SCALE 1"=1'-0"



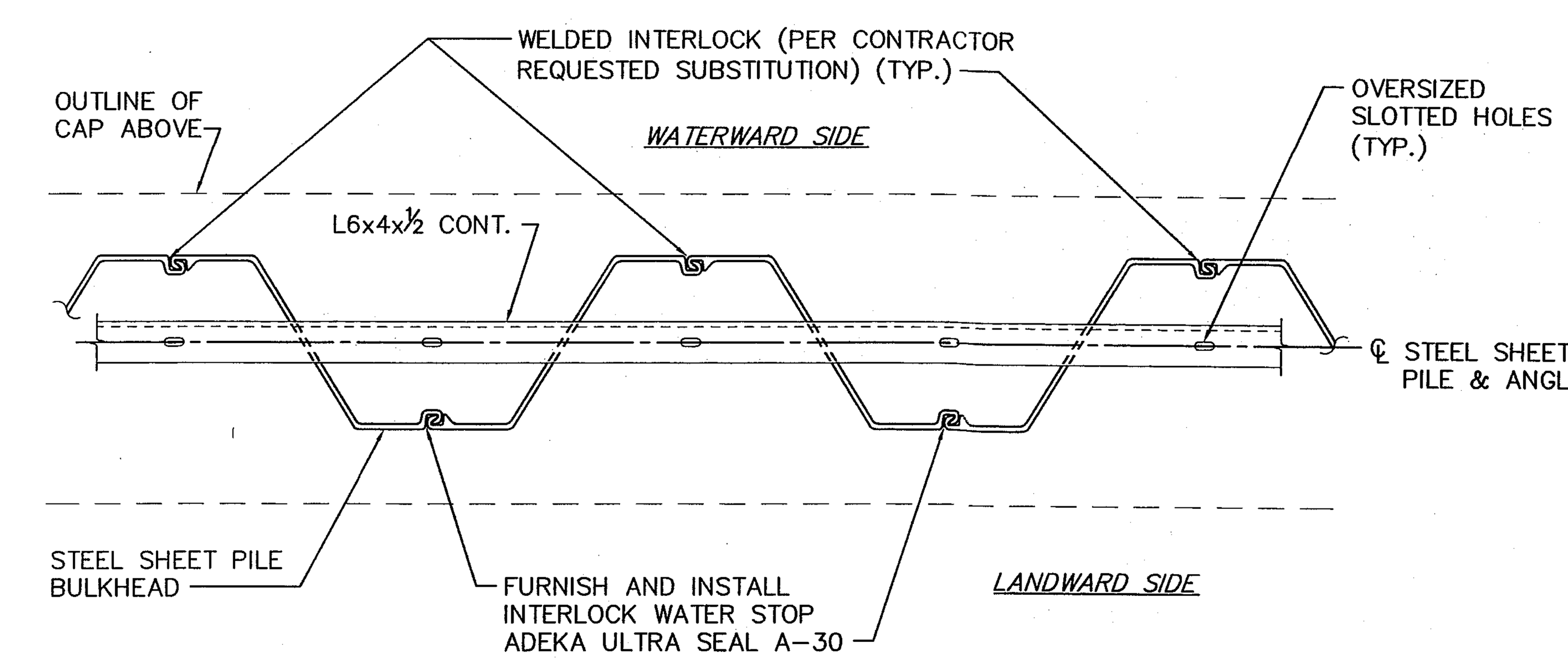
CAP SECTION REPAIR FOR LOW ELEVATION OF TOP OF STEEL SHEET PILE

SCALE 1"=1'-0"



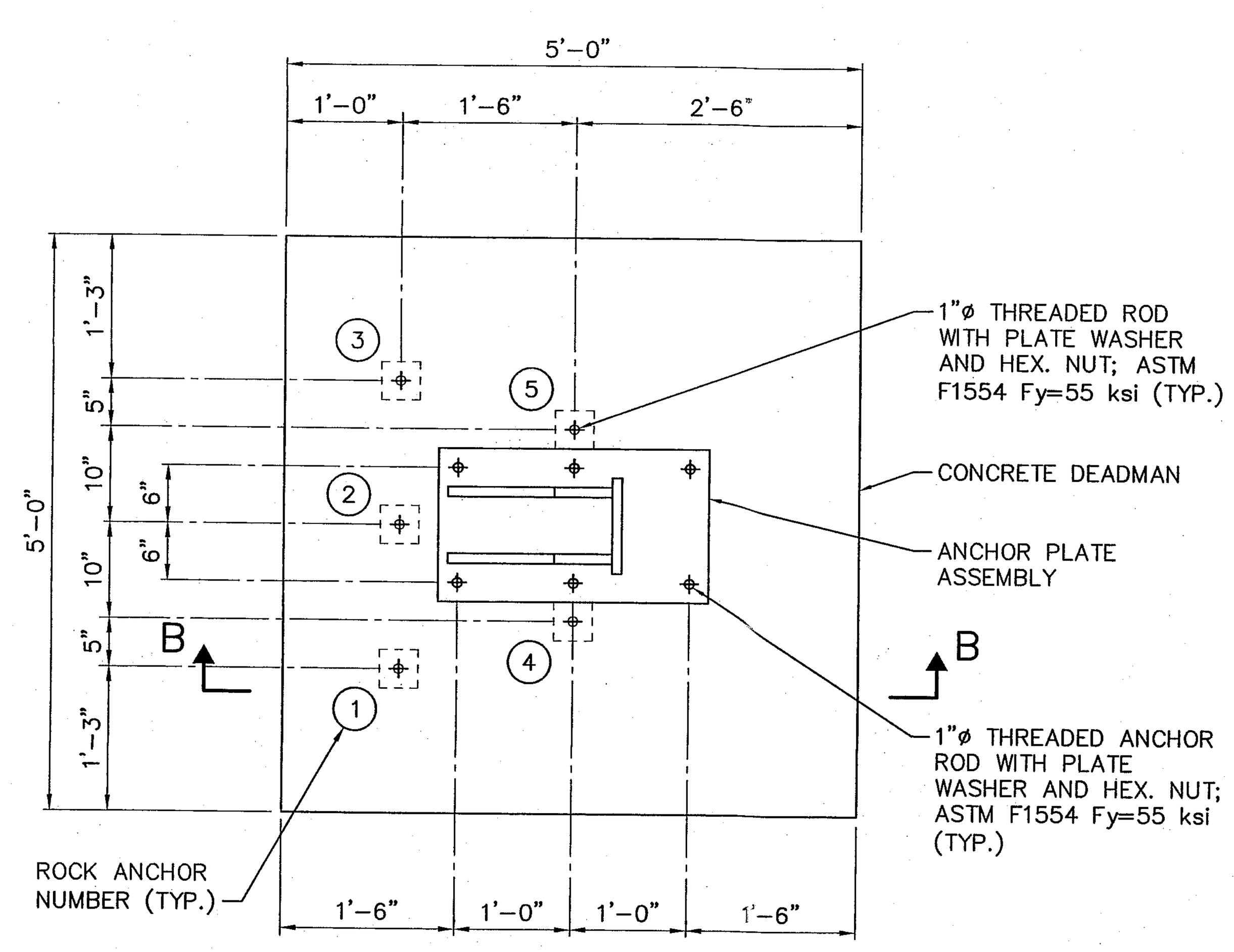
SECTION A–A

SCALE ½"=1'-0"



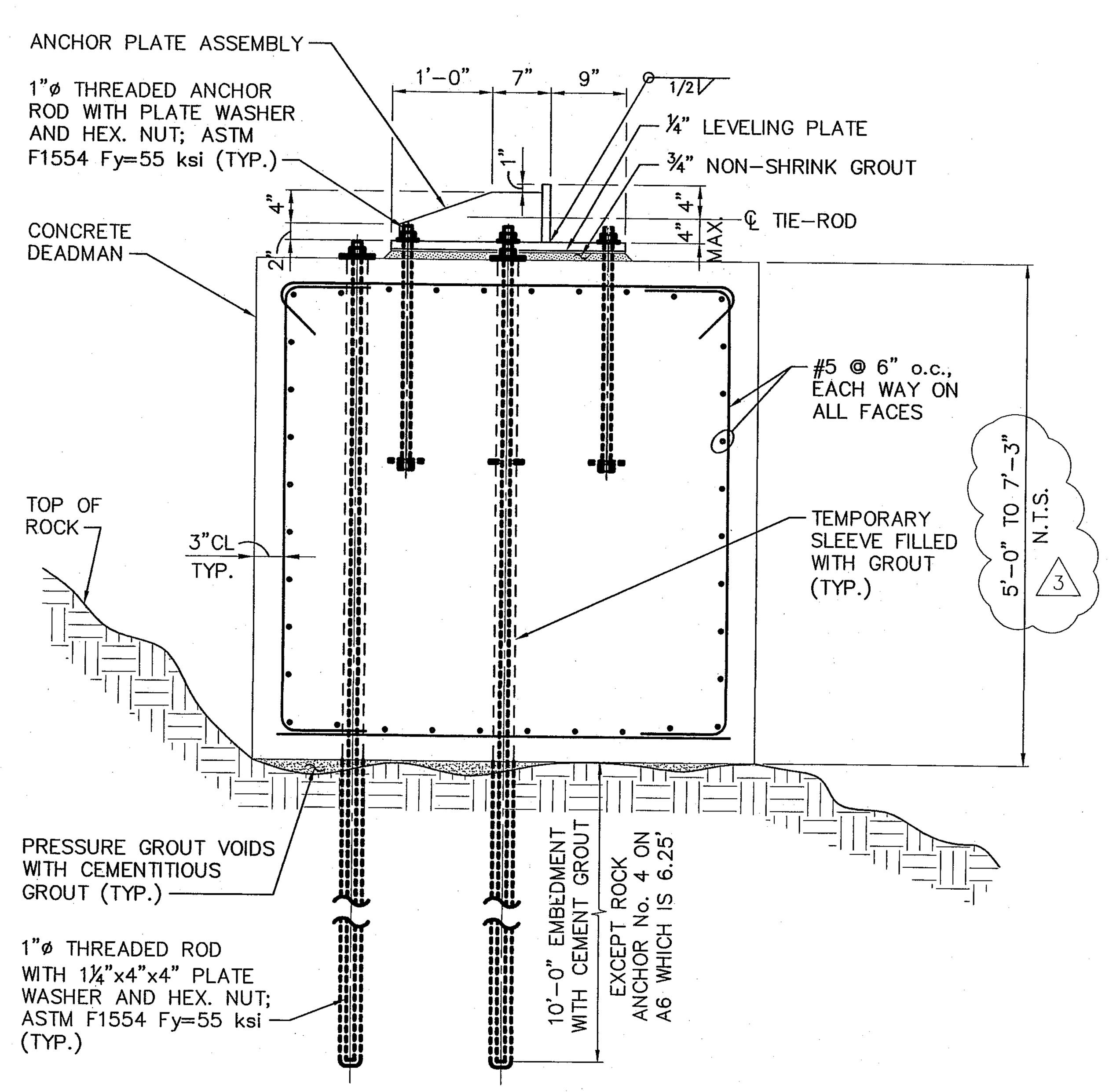
CONCRETE CAP CLIP ANGLE LAYOUT AND WATERSTOP LAYOUT

SCALE ¾"=1'-0"



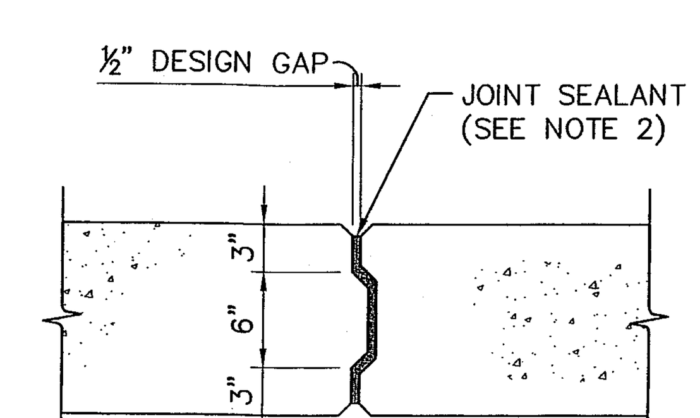
CONCRETE DEADMAN ANCHOR DETAIL

SCALE ¾"=1'-0"



SECTION B–B

SCALE ¾"=1'-0"

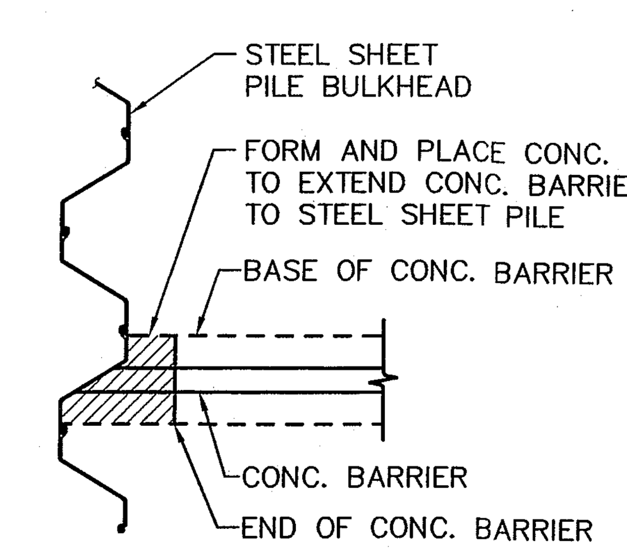


NOTES:

1. MINIMUM SPACING OF SHEAR KEYS IS 8'-0" CENTER TO CENTER, MAXIMUM SPACING IS 25'-0" CENTER TO CENTER. CONTRACTOR TO DETAIL SPACING ON SHOP DRAWINGS.
2. JOINTS WERE SEALED WITH SIKAFLEX-2C NS TG AS MANUFACTURED BY SIKA CORPORATION. JOINTS WERE SEALED DUE TO THE CONTRACTORS EXCEEDENCE OF THE SPECIFIED ½" GAP.

TYPICAL CONCRETE CAP SHEAR KEY

SCALE 1"=1'-0"



TYPICAL CLOSURE DETAIL AT STEEL SHEET PILE – CONCRETE BARRIER

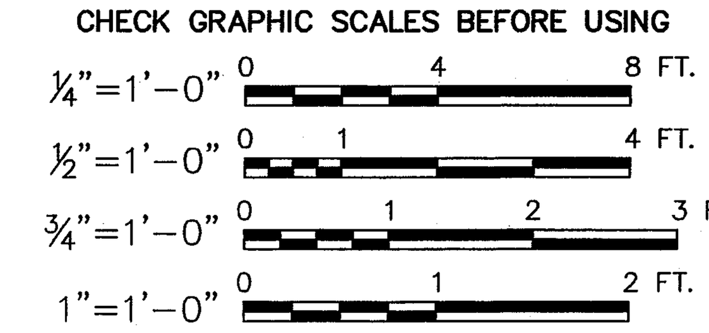
SCALE ¼"=1'-0"

NOTES

1. SEE DRAWING NUMBER W-17 FOR WATERFRONT PROJECT NOTES.
2. FOR LOCATION OF DETAILS 1 THROUGH 4, SEE DRAWING NUMBER W-24.

GRAPHIC SCALES

CHECK GRAPHIC SCALES BEFORE USING



RECORD DRAWING

No.	Submittal / Revision	Apprd	By	Date
1	SHEET NUMBER REVISED		ADS	8/6/07
2	RECORD DRAWING		JVB	2/11/11
3	RECORD DRAWING REVISION		JVB	12/7/11

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OCC Project No. 98042.3

S.M.W.

CHA
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DeLAVAL PROPERTY
ENVIRONMENTAL RESTORATION
PROGRAM PROJECT

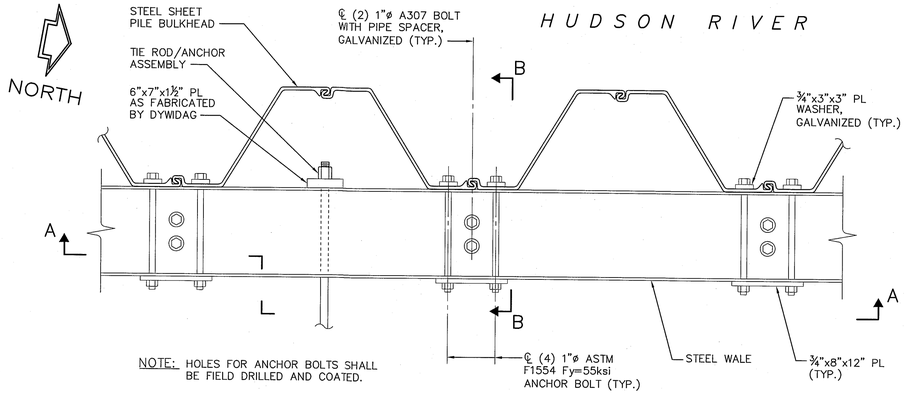
BULKHEAD SECTIONS AND
DETAILS - SHEET 1 OF 2

Issue Date: 07/17/07 | Project No.: 14357 | Scale: 1/2"=1'-0"

W-26

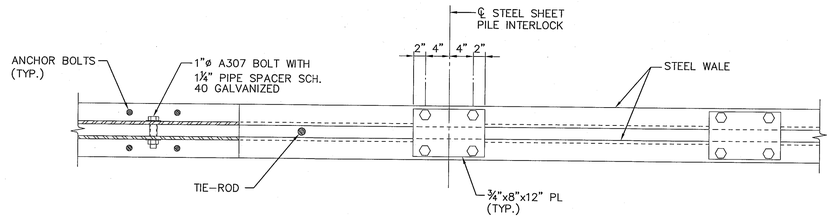
Sheet 26 of 29

P:\1998\98042.3\Cadd\Task10\Record drawings\W-26.dwg W-26 Hajim H. Ramirez Wed, 07 Dec 2011 - 8:35am



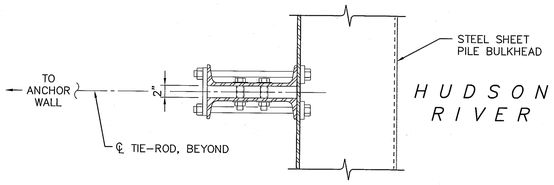
TYPICAL BULKHEAD WALE DETAIL

SCALE 1"=1'–0"



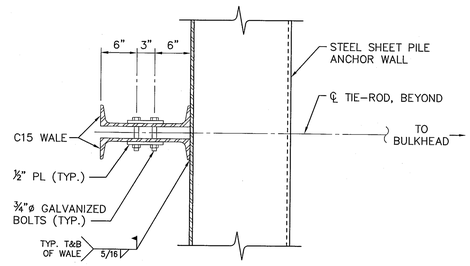
SECTION A–A

SCALE 1"=1'–0"



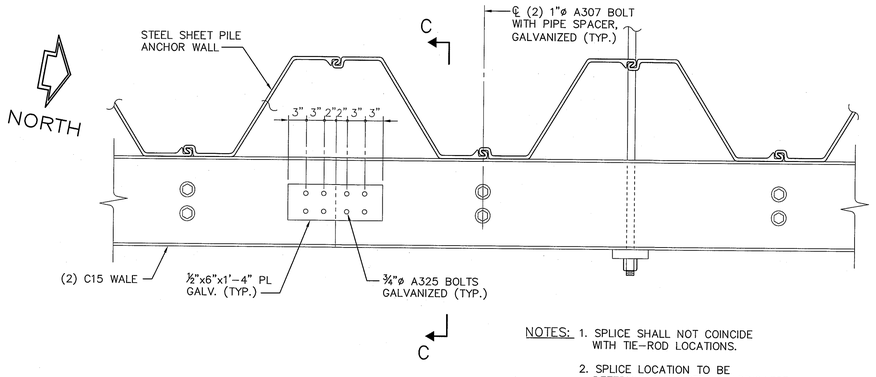
SECTION B–B

SCALE 1"=1'–0"



SECTION C–C

SCALE 1"=1'–0"

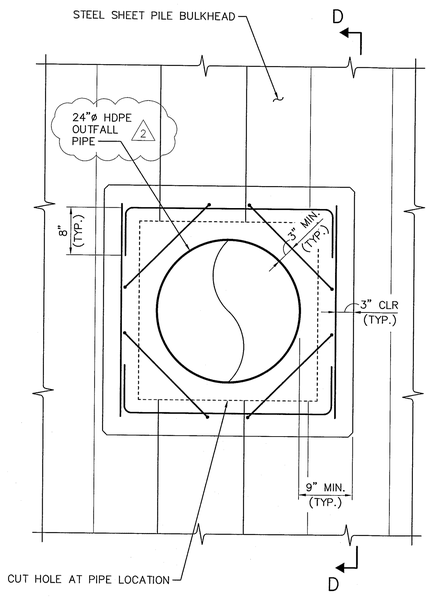


NOTES: 1. SPLICE SHALL NOT COINCIDE WITH TIE–ROD LOCATIONS.

2. SPLICE LOCATION TO BE DETERMINED BY STEEL FABRICATOR.

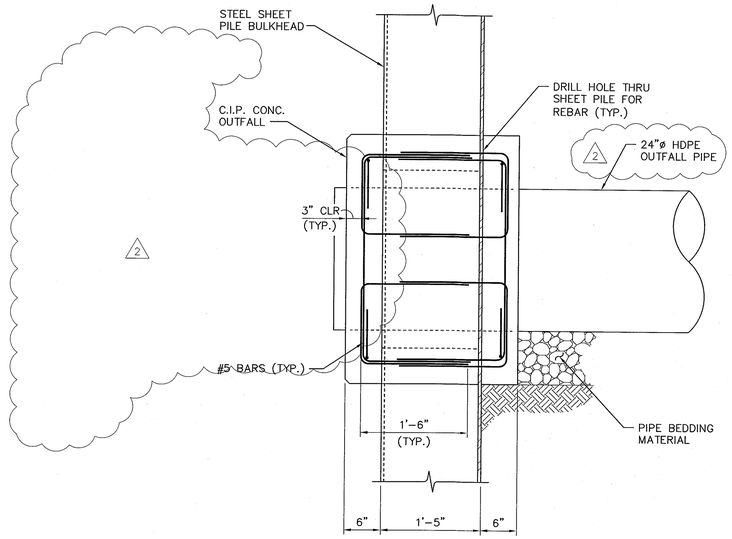
TYPICAL ANCHOR WALL WALE SPLICE DETAIL

SCALE 1"=1'–0"



2 OUTFALL AT BULKHEAD ELEVATION (ZONE 3)

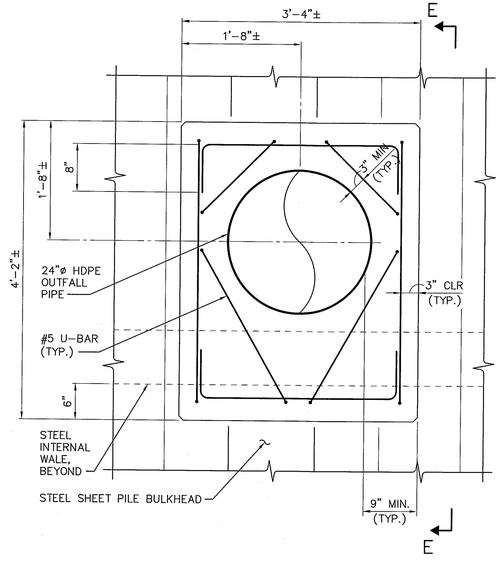
SCALE 1"=1'–0"



NOTE: OUTFALL PIPE SHALL EXTENDED SEAWARD OF BULKHEAD AS REQUIRED IN ORDER TO MEET MANUFACTURER'S RECOMMENDATION FOR INSTALLATION OF BACKFLOW PREVENTER.

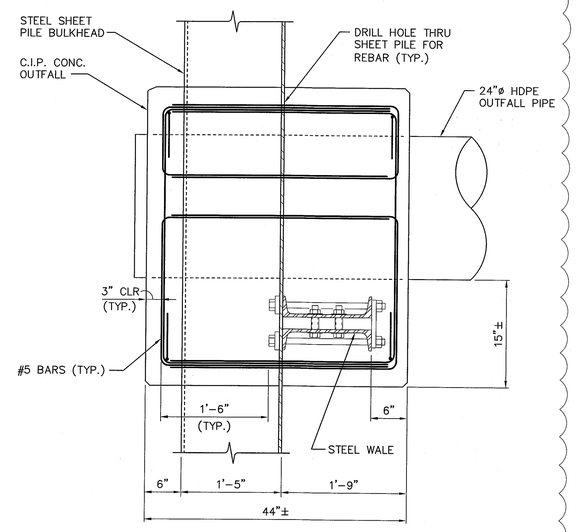
SECTION D–D

SCALE 1"=1'–0"



2 OUTFALL AT BULKHEAD ELEVATION (ZONE 1)

SCALE 1"=1'–0"



2 SECTION E–E

SCALE 1"=1'–0"

GRAPHIC SCALES

CHECK GRAPHIC SCALES BEFORE USING

¾"=1'–0" 0 1 2 3 FT.

1"=1'–0" 0 1 2 FT.

NOTE

SEE DRAWING NUMBER W–17 FOR WATERFRONT PROJECT NOTES.

RECORD DRAWING

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No.	Submittal / Revision	Appd	By	Date
1	SHEET NUMBER REVISED		ADS	8/6/07
2	RECORD DRAWING		JVB	2/11/11

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POUGHKEEPSIE, NEW YORK 12602

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OCC Project No. 98042.3

OCEAN AND COASTAL CONSULTANTS

Checked By: S.M.W.

Drawn By: C.L.M.

Designed By: A.J.M.

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III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (518) 453-4500 - www.cloughharbour.com

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BULKHEAD SECTIONS AND DETAILS - SHEET 2 OF 2

Issue Date: 07/17/07 | Project No.: 14357 | Scale: AS NOTED

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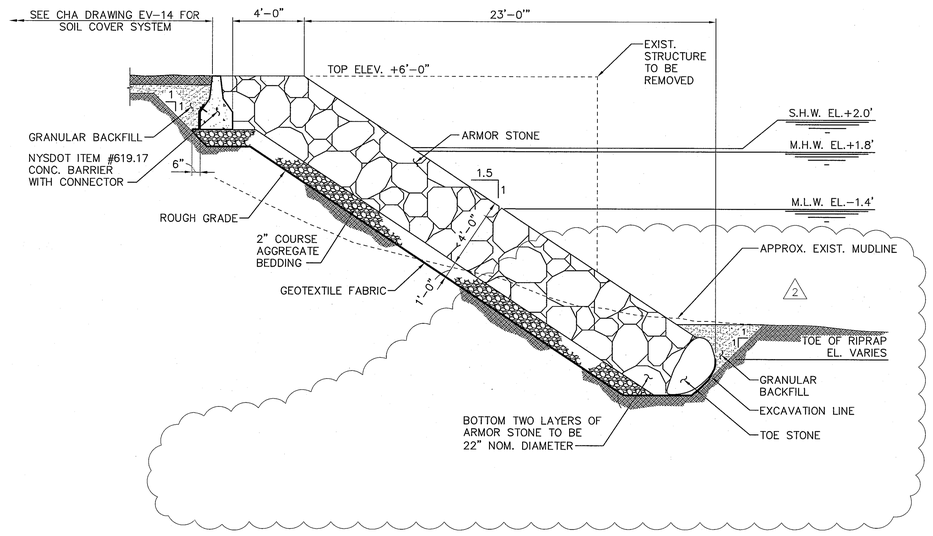
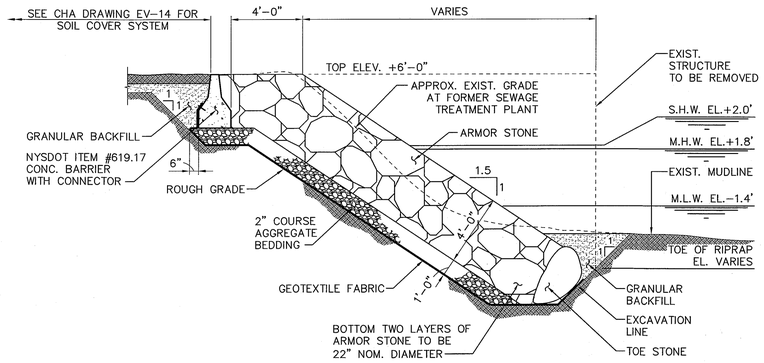


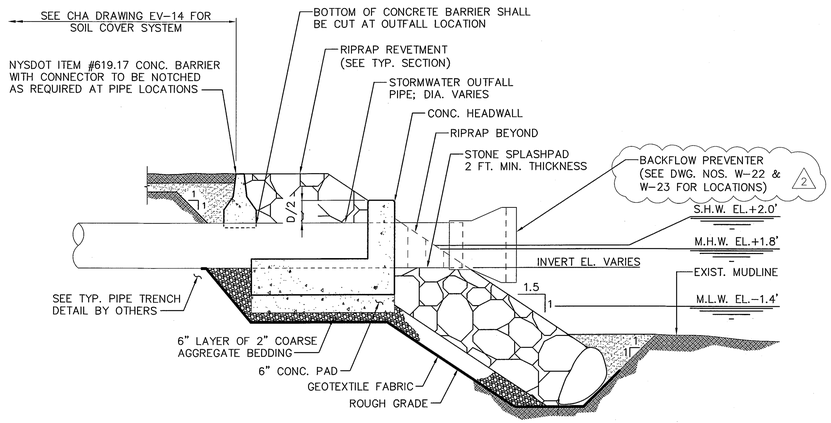
SECTION AA – RIPRAP REVETMENT CROSS-SECTION

SCALE ¼"=1'-0"



SECTION BB – RIPRAP REVETMENT CROSS-SECTION

SCALE ¼"=1'-0"



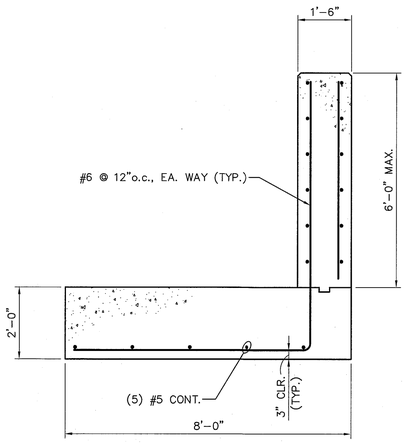
NOTES: 1. D = DIAMETER OF OUTFALL PIPE.

2. PIPE SHALL PROJECT SEAWARD SUCH THAT RIPRAP DOES NOT INTERFERE WITH BACKFLOW PREVENTER.

3. CUFF LENGTH AND PIPE PROJECTION DETERMINED PER BACKFLOW PREVENTER MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.

TYPICAL SECTION OUTFALL AT RIPRAP REVETMENT

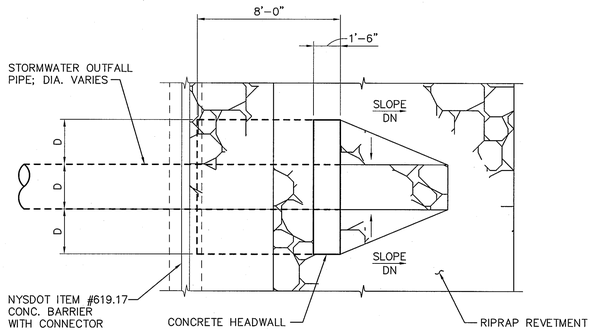
SCALE ¼"=1'-0"



NOTE: OUTFALL PIPE TO BE SET 6" INTO HEADWALL FOOTING. ADJUST WALL REINFORCEMENT AROUND PIPE ACCORDINGLY.

CONCRETE HEADWALL REINFORCEMENT DETAIL

SCALE ½"=1'-0"



NOTES: 1. D = DIAMETER OF OUTFALL PIPE.

2. BACKFLOW PREVENTER NOT SHOWN FOR CLARITY.

TYPICAL PLAN OF OUTFALL AT RIPRAP REVETMENT

SCALE ¼"=1'-0"

NOTE

SEE DRAWING NUMBER W-17 FOR WATERFRONT PROJECT NOTES.

GRAPHIC SCALES

CHECK GRAPHIC SCALES BEFORE USING

¼"=1'-0" 0 4 8 FT.

½"=1'-0" 0 1 4 FT.

RECORD DRAWING

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TYPICAL REVETMENT SECTIONS AND DETAILS

Issue Date: 07/17/07 | Project No.: 14357 | Scale: AS NOTED

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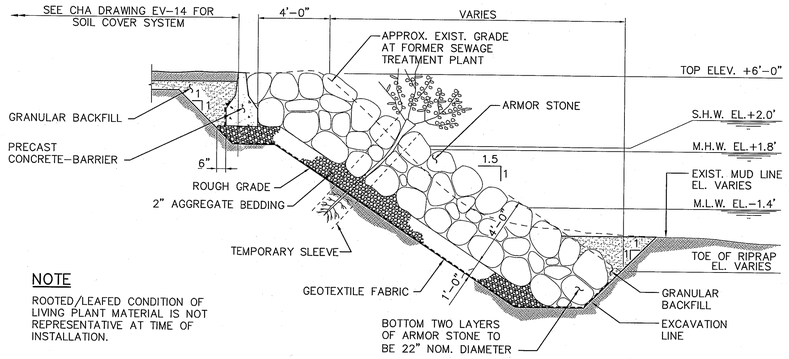


NOTE

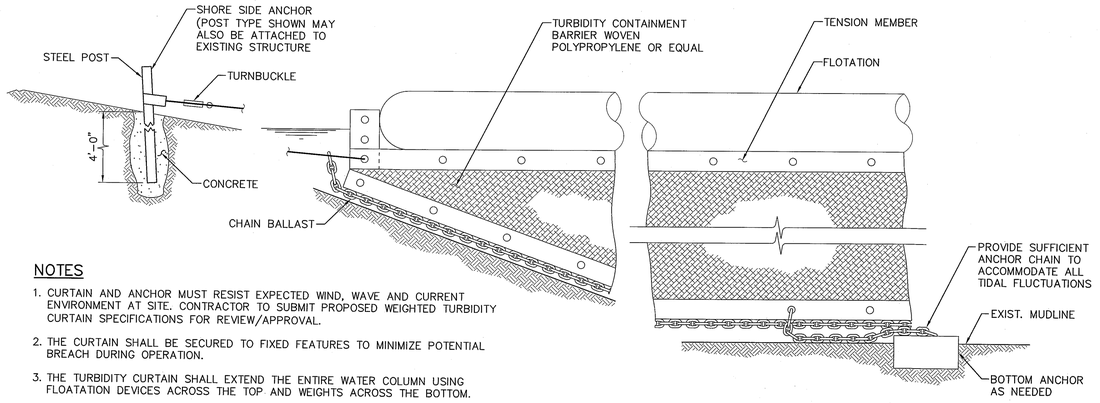
ROOTED/LEAFED CONDITION OF LIVING PLANT MATERIAL IS NOT REPRESENTATIVE AT TIME OF INSTALLATION.

JOINT PLANTING NOTES

1. LIVE STAKES SHALL BE 2 TO 3 INCHES IN DIAMETER.
2. LIVE STAKES SHALL BE 6 TO 8 FEET LENGTH AND PENETRATE THROUGH RIPRAP, BEDDING LAYER AND GEOTEXTILE FABRIC WITH AT LEAST 2 FEET OF PENETRATION INTO UNDERLYING SOIL. TEMPORARY SLEEVING MAY BE USED.
3. LIVE STAKES SHALL BE SPACED AT 4 TO 6 FEET ON CENTER AND ABOVE THE MEAN HIGH WATER LINE.
4. LIVES STAKES SHALL INSTALLED SAME DAY AS HARVESTED IF POSSIBLE, IF SAME DAY INSTALLATION IS NOT POSSIBLE THEN LIVE STAKES MUST BE PROPERLY STORED.
5. LIVE STAKES SHALL BE PLACED PERPENDICULAR TO THE ROCK SLOPE AND HAND TAMPED INTO PLACE.

SECTION CC – RIPRAP REVETMENT WITH JOINT PLANTINGS CROSS-SECTION

¼"=1'-0" 0 4 8 FT.



NOTES

1. CURTAIN AND ANCHOR MUST RESIST EXPECTED WIND, WAVE AND CURRENT ENVIRONMENT AT SITE. CONTRACTOR TO SUBMIT PROPOSED WEIGHTED TURBIDITY CURTAIN SPECIFICATIONS FOR REVIEW/APPROVAL.
2. THE CURTAIN SHALL BE SECURED TO FIXED FEATURES TO MINIMIZE POTENTIAL BREACH DURING OPERATION.
3. THE TURBIDITY CURTAIN SHALL EXTEND THE ENTIRE WATER COLUMN USING FLOATATION DEVICES ACROSS THE TOP AND WEIGHTS ACROSS THE BOTTOM.
4. THE CURTAIN SHALL BE INSPECTED DAILY BEFORE STARTING WORK AND ADJUSTED IF NECESSARY.

WEIGHTED TURBIDITY CURTAIN DETAIL

NOT TO SCALE

NOTE

SEE DRAWING NUMBER W-17 FOR WATERFRONT PROJECT NOTES.

GRAPHIC SCALES

CHECK GRAPHIC SCALES BEFORE USING

¼"=1'-0" 0 4 8 FT.

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TYPICAL REVETMENT SECTIONS AND DETAILS

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Sheet 29 of 29

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APPENDIX AQ

Manufacturer Data Sheets
for Bulkhead Products

Protective & Marine Coatings

MACROPOXY® 646 FAST CURE EPOXY

PART A B58-600 **SERIES**
PART B B58V600 **HARDENER**

Revised 3/11

PRODUCT INFORMATION

4.53

PRODUCT DESCRIPTION

MACROPOXY 646 FAST CURE EPOXY is a high solids, high build, fast drying, polyamide epoxy designed to protect steel and concrete in industrial exposures. Ideal for maintenance painting and fabrication shop applications. The high solids content ensures adequate protection of sharp edges, corners, and welds. This product can be applied directly to marginally prepared steel surfaces.

- Low VOC
- Low odor
- Outstanding application properties
- Meets Class A requirements for Slip Coefficient, 0.36 @ 6 mils / 150 microns dft (Mill White only)
- Chemical resistant
- Abrasion resistant

PRODUCT CHARACTERISTICS

Finish:	Semi-Gloss
Color:	Mill White, Black and a wide range of colors available through tinting
Volume Solids:	72% ± 2%, mixed, Mill White
Weight Solids:	85% ± 2%, mixed, Mill White
VOC (EPA Method 24): mixed	Unreduced: <250 g/L; 2.08 lb/gal Reduced 10%: <300 g/L; 2.50 lb/gal
Mix Ratio:	1:1 by volume

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**7.0** (175)	**13.5** (338)
Dry mils (microns)	**5.0*** (125)	**10.0*** (250)
~Coverage sq ft/gal (m^2/L)	**116** (2.8)	**232** (5.7)
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**1152** (28.2)	

*May be applied at 3.0-10.0 mils dft as an intermediate coat. Refer to Recommended Systems (page 2). See Performance Tips section also.

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 7.0 mils wet (175 microns):

	@ 35°F/1.7°C	@ 77°F/25°C *50% RH*	@ 100°F/38°C
To touch:	4-5 hours	2 hours	1.5 hours
To handle:	48 hours	8 hours	4.5 hours
To recoat:			
minimum:	48 hours	8 hours	4.5 hours
maximum:	1 year	1 year	1 year
To cure:			
Service:	10 days	7 days	4 days
Immersion:	14 days	7 days	4 days
Pot Life:	10 hours	4 hours	2 hours
Sweat-in-time:	30 minutes	30 minutes	15 minutes

If maximum recoat time is exceeded, abrade surface before recoating. Drying time is temperature, humidity, and film thickness dependent.
Paint temperature must be at least 40°F (4.5°C) minimum.

When used as an intermediate coat as part of a multi-coat system:

Drying Schedule @ 5.0 mils wet (125 microns):

	@ 35°F/1.7°C	@ 77°F/25°C *50% RH*	@ 100°F/38°C
To touch:	3 hours	1 hour	1 hour
To handle:	48 hours	4 hours	2 hours
To recoat:			
minimum:	16 hours	4 hours	2 hours
maximum:	1 year	1 year	1 year

PRODUCT CHARACTERISTICS (CONT'D)

Shelf Life:	36 months, unopened Store indoors at 40°F (4.5°C) to 100°F (38°C).
Flash Point:	91°F (33°C), TCC, mixed
Reducer/Clean Up:	Reducer, R7K15
In California:	Reducer R7K111 or Oxsol 100

PERFORMANCE CHARACTERISTICS

Substrate*: Steel
Surface Preparation*: SSPC-SP10/NACE 2
System Tested*:
1 ct. Macropoxy 646 Fast Cure @ 6.0 mils (150 microns) dft
*unless otherwise noted below

Test Name	Test Method	Results
Abrasion Resistance	ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load	84 mg loss
Accelerated Weathering-QUV[1]	ASTM D4587, QUV-A, 12,000 hours	Passes
Adhesion	ASTM D4541	1,037 psi
Corrosion Weathering[1]	ASTM D5894, 36 cycles, 12,000 hours	Rating 10 per ASTM D714 for blistering; Rating 9 per ASTM D610 per rusting
Nuclear Decontamination	ASTM D4256/ANSI N 5.12	99% Water Wash; 95% Overall
Direct Impact Resistance	ASTM D2794	30 in. lb.
Dry Heat Resistance	ASTM D2485	250°F (121°C)
Exterior Durability	1 year at 45° South	Excellent, chalks
Flexibility	ASTM D522, 180° bend, 3/4" mandrel	Passes
Fuel Contribution	NFPA 259	5764 btu/lb
Humidity Resistance	ASTM D4585, 6000 hours	No blistering, cracking, or rusting
Immersion	1 year fresh and salt water	Passes, no rusting, blistering, or loss of adhesion
Radiation Tolerance	ASTM D4082 / ANSI 5.12	Pass at 21 mils (525 microns)
Pencil Hardness	ASTM D3363	3H
Salt Fog Resistance[1]	ASTM B117, 6,500 hours	Rating 10 per ASTM D610 for rusting; Rating 9 per ASTM D1654 for corrosion
Slip Coefficient, Mill White	AISC Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts	Class A, 0.36
Surface Burning	ASTM E84/NFPA 255	Flame Spread Index 20; Smoke Development Index 35 (at 18 mils or 450 microns)
Water Vapor Permeance	ASTM D1653, Method B	1.16 US perms

Epoxy coatings may darken or discolor following application and curing.

Footnotes:
[1] Zinc Clad II Plus Primer

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

continued on back

Protective & Marine Coatings

MACROPOXY® 646 FAST CURE EPOXY

PART A B58-600 SERIES
PART B B58V600 HARDENER

PRODUCT INFORMATION

4.53

RECOMMENDED USES

- Marine applications
- Fabrication shops
- Pulp and paper mills
- Power plants
- Offshore platforms
- Nuclear Power Plants
- Nuclear fabrication shops
- Refineries
- Chemical plants
- Tank exteriors
- Water treatment plants
- DOE Nuclear Fuel Facilities
- DOE Nuclear Weapons Facilities

- Mill White and Black are acceptable for immersion use for salt water and fresh water, not acceptable for potable water
- Suitable for use in USDA inspected facilities
- Conforms to AWWA D102 OCS #5
- Conforms to MPI # 108
- This product meets specific design requirements for non-safety related nuclear plant applications in Level II, III and Balance of Plant, and DOE nuclear facilities*.

* Nuclear qualifications are NRC license specific to the facility.

RECOMMENDED SYSTEMS

		Dry Film Thickness / ct. Mils	(Microns)
Immersion and atmospheric:			
Steel:			
2 cts.	Macropoxy 646	5.0-10.0	(125-250)
Concrete/Masonry, smooth:			
2 cts.	Macropoxy 646	5.0-10.0	(125-250)
Concrete Block:			
1 ct.	Kem Cati-Coat HS Epoxy Filler/Sealer *as needed to fill voids and provide a continuous substrate*.	10.0-20.0	(250-500)
2 cts.	Macropoxy 646	5.0-10.0	(125-250)
Atmospheric:			
Steel:			
(Shop applied system, new construction, AWWA D102, can also be used at 3 mils minimum dft when used as an intermediate coat as part of a multi-coat system)			
1 ct. 1-2 cts.	Macropoxy 646 Fast Cure Epoxy of recommended topcoat	3.0-6.0	(75-150)
Steel:			
1 ct.	Recoatable Epoxy Primer	4.0-6.0	(100-150)
2 cts.	Macropoxy 646	5.0-10.0	(125-250)
Steel:			
1 ct.	Macropoxy 646	4.0-6.0	(100-150)
1-2 cts.	Acrolon 218 Polyurethane	3.0-6.0	(75-150)
or	Hi-Solids Polyurethane	3.0-5.0	(75-125)
or	SherThane 2K Urethane	2.0-4.0	(50-100)
or	Hydrogloss	2.0-4.0	(50-100)
Steel:			
2 cts.	Macropoxy 646	5.0-10.0	(125-250)
1-2 cts.	Tile-Clad HS Epoxy	2.5-4.0	(63-100)
Steel:			
1 ct.	Zinc Clad II Plus	3.0-6.0	(75-150)
1 ct.	Macropoxy 646	3.0-10.0	(75-250)
1-2 cts.	Acrolon 218 Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Zinc Clad III HS	3.0-5.0	(75-125)
or	Zinc Clad IV	3.0-5.0	(75-125)
1 ct.	Macropoxy 646	3.0-10.0	(75-250)
1-2 cts.	Acrolon 218 Polyurethane	3.0-6.0	(75-150)
Aluminum:			
2 cts.	Macropoxy 646	5.0-10.0	(125-250)
Galvanizing:			
2 cts.	Macropoxy 646	5.0-10.0	(125-250)

The systems listed above are representative of the product's use, other systems may be appropriate.

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:

Iron & Steel
- Atmospheric: SSPC-SP2/3
- Immersion: SSPC-SP10/NACE 2, 2-3 mil (50-75 micron) profile
- Aluminum: SSPC-SP1
- Galvanizing: SSPC-SP1

Concrete & Masonry
- Atmospheric: SSPC-SP13/NACE 6, or ICRI No. 310.2, CSP 1-3
- Immersion: SSPC-SP13/NACE 6-4.3.1 or 4.3.2, or ICRI No. 310.2, CSP 1-3

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

TINTING

Tint Part A with Maxitoners at 150% strength. Five minutes minimum mixing on a mechanical shaker is required for complete mixing of color.

Tinting is not recommended for immersion service.

APPLICATION CONDITIONS

Temperature:	35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface) 40°F (4.5°C) minimum, 120°F (49°C) maximum (material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:	
Part A:	1 gallon (3.78L) and 5 gallon (18.9L) containers
Part B:	1 gallon (3.78L) and 5 gallon (18.9L) containers
Weight:	12.9 ± 0.2 lb/gal ; 1.55 Kg/L mixed, may vary by color

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Protective & Marine Coatings

MACROPOXY® 646 FAST CURE EPOXY

PART A B58-600 SERIES
PART B B58V600 HARDENER

Revised 3/11

APPLICATION BULLETIN

4.53

SURFACE PREPARATIONS

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel, Atmospheric Service:
Minimum surface preparation is Hand Tool Clean per SSPC-SP2. Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. For better performance, use Commercial Blast Cleaning per SSPC-SP6/NACE 3, blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Prime any bare steel within 8 hours or before flash rusting occurs.

Iron & Steel, Immersion Service:
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2-3 mils / 50-75 microns). Remove all weld spatter and round all sharp edges by grinding. Prime any bare steel the same day as it is cleaned.

Aluminum
Remove all oil, grease, dirt, oxide and other foreign material by Solvent Cleaning per SSPC-SP1.

Galvanized Steel
Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC-SP1 (recommended solvent is VM&P Naphtha). When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned.

Concrete and Masonry
For surface preparation, refer to SSPC-SP13/NACE 6, or ICRI No. 310.2, CSP 1-3. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F (24°C). Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with Steel-Seam FT910.

Concrete, Immersion Service:
For surface preparation, refer to SSPC-SP13/NACE 6, Section 4.3.1 or 1.3.2 or ICRI No. 310.2, CSP 1-3.

Follow the standard methods listed below when applicable:
ASTM D4258 Standard Practice for Cleaning Concrete.
ASTM D4259 Standard Practice for Abrading Concrete.
ASTM D4260 Standard Practice for Etching Concrete.
ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete.
SSPC-SP 13/Nace 6 Surface Preparation of Concrete.
ICRI No. 310.2 Concrete Surface Preparation.

Previously Painted Surfaces
If in sound condition, clean the surface of all foreign material. Smooth, hard or glossy coatings and surfaces should be dulled by abrading the surface. Apply a test area, allowing paint to dry one week before testing adhesion. If adhesion is poor, or if this product attacks the previous finish, removal of the previous coating may be necessary. If paint is peeling or badly weathered, clean surface to sound substrate and treat as a new surface as above.

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

APPLICATION CONDITIONS

Temperature:	35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface) 40°F (4.5°C) minimum, 120°F (49°C) maximum (material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reducer/Clean Up ..... Reducer R7K15
In California..... Reducer R7K111

Airless Spray
Pump..... 30:1
Pressure..... 2800 - 3000 psi
Hose..... 1/4" ID
Tip ..... .017" - .023"
Filter ..... 60 mesh
Reduction..... As needed up to 10% by volume

Conventional Spray
Gun ..... DeVilbiss MBC-510
Fluid Tip ..... E
Air Nozzle..... 704
Atomization Pressure..... 60-65 psi
Fluid Pressure..... 10-20 psi
Reduction..... As needed up to 10% by volume
Requires oil and moisture separators

Brush
Brush..... Nylon/Polyester or Natural Bristle
Reduction..... Not recommended

Roller
Cover ..... 3/8" woven with solvent resistant core
Reduction..... Not recommended

Plural Component Spray ... Acceptable
Refer to April 2010 Technical Bulletin - "Application Guidelines for Macropoxy 646 & Recoatable Epoxy Primer Utilizing Plural Component Equipment"

If specific application equipment is not listed above, equivalent equipment may be substituted.

continued on back

Protective & Marine Coatings

MACROPOXY® 646 FAST CURE EPOXY

PART A	B58-600	SERIES
PART B	B58V600	HARDENER

APPLICATION BULLETIN

4.53

APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Mix contents of each component thoroughly with low speed power agitation. Make certain no pigment remains on the bottom of the can. Then combine one part by volume of Part A with one part by volume of Part B. Thoroughly agitate the mixture with power agitation. Allow the material to sweat-in as indicated prior to application. Re-stir before using.

If reducer solvent is used, add only after both components have been thoroughly mixed, after sweat-in.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**7.0** (175)	**13.5** (338)
Dry mils (microns)	**5.0*** (125)	**10.0*** (250)
~Coverage sq ft/gal (m^2/L)	**116** (2.8)	**232** (5.7)
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**1152** (28.2)	

*May be applied at 3.0-10.0 mils dft as an intermediate coat. Refer to Recommended Systems (page 2). See Performance Tips section also.

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 7.0 mils wet (175 microns):

	@ 35°F/1.7°C	@ 77°F/25°C *50% RH*	@ 100°F/38°C
To touch:	4-5 hours	2 hours	1.5 hours
To handle:	48 hours	8 hours	4.5 hours
To recoat:			
minimum:	48 hours	8 hours	4.5 hours
maximum:	1 year	1 year	1 year
To cure:			
Service:	10 days	7 days	4 days
Immersion:	14 days	7 days	4 days

If maximum recoat time is exceeded, abrade surface before recoating.

Drying time is temperature, humidity, and film thickness dependent.

Paint temperature must be at least 40°F (4.5°C) minimum.

Pot Life:	10 hours	4 hours	2 hours
Sweat-in-time:	30 minutes	30 minutes	15 minutes

When used as an intermediate coat as part of a multi-coat system:

Drying Schedule @ 5.0 mils wet (125 microns):

	@ 35°F/1.7°C	@ 77°F/25°C *50% RH*	@ 100°F/38°C
To touch:	3 hours	1 hour	1 hour
To handle:	48 hours	4 hours	2 hours
To recoat:			
minimum:	16 hours	4 hours	2 hours
maximum:	1 year	1 year	1 year

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer R7K15. Clean tools immediately after use with Reducer R7K15. In California use Reducer R7K111. Follow manufacturer's safety recommendations when using any solvent.

PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

Do not mix previously catalyzed material with new.

Do not apply the material beyond recommended pot life.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer R7K15. In California use Reducer R7K111.

Tinting is not recommended for immersion service.

Use only Mil White and Black for immersion service.

Insufficient ventilation, incomplete mixing, miscatalyzation, and external heaters may cause premature yellowing.

Excessive film build, poor ventilation, and cool temperatures may cause solvent entrapment and premature coating failure.

Quik-Kick Epoxy Accelerator is acceptable for use. See data page 4.99 for details.

When coating over aluminum and galvanizing, recommended dft is 2-4 mils (50-100 microns).

Refer to Product Information sheet for additional performance characteristics and properties.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

email: info@foxind.com

FOX INDUSTRIES
ENGINEERED PRODUCTS

FX-764
Hydro-Ester®
Splash Zone and Underwater Paste

www.foxind.com
Fox Industries, Inc. • 3100 Falls Cliff Road • Baltimore, Maryland 21211

DESCRIPTION:

FX-764 Hydro-Ester ® Splash Zone & Underwater Paste is a moisture-insensitive, two-component, 100% solids epoxy-resin system. When mixed at a 1:1 ratio, by volume, this product produces a paste-like material that is ideal for protection or restoration of concrete, steel and timber piles and other structural elements in marine environments above and below the water line.

ADVANTAGES:

- Convenient 1:1 mixing ratio
- Long pot life
- Hand-applied
- Bonds to wet surface
- Resists wave action
- Restores structural integrity
- May be mixed and applied underwater

PHYSICAL PROPERTIES:

Consistency		Paste
Color, Mixed		Standard Gray
(Other colors available upon "special order" request)		
Compressive Strength		
ASTM C-579,	24 hours	4000 psi
Method "B"	72 hours	6400 psi
	7 days	7500 psi
Tensile Strength		
ASTM C-307	7 days	1500 psi
Bond Strength		
ASTM C-882		2000 psi
Shrinkage		No Shrinkage
ASTM C-883		Used with concrete
Pot Life		2 hours @ 70°F
Water Absorption		
ASTM C 413-01		0.32%
Direct In Situ Bond		
(Underwater)		50 psi min
Curing Schedule		
Dry to Touch		36 hours @ 50°F
		24 hours @ 70°F
		16 hours @ 90°F
Minimum Recoat Time		36 hours @ 50°F
		24 hours @ 70°F
		16 hours @ 90°F

MIXING:

Material temperature should be a minimum of 60°F for ease of mixing. Mix white "A" Component & charcoal "B" Component together, by hand, while wearing gloves dampened with water, until a uniform medium gray color is achieved. Do not mix more material than can be used within pot life.

SURFACE PREPARATION:

Remove all deteriorated material, barnacles or other marine growth by mechanical abrasion, water or sand blasting. To avoid contamination, apply **FX-764** to prepared surface as quickly as possible.

APPLICATION:

For best results, apply **FX-764** by hand using tight-fitting rubber or plastic gloves. (Wet gloves with slightly soapy water before working with material.) Press material onto surface and knead into place in maximum lift thickness of approximately 2". Smooth gently by rubbing with gloves using water as a lubricant.

LIMITATIONS:

Do not thin **FX-764**. Since water conditions and content vary greatly, it is recommended that a sample application be made to ensure the intended performance. Do not apply when water or ambient temperature is below 50°F.

COVERAGE:

One (1) gallon of **FX-764** will yield 231 cu. in. and cover 12.8 sq. ft. @ 125 mil thickness, or 1/8".

PACKAGING:

This product is available in two (2) gallon, four (4) gallon and ten (10) gallon units.

SHELF LIFE:

Two (2) years for Components "A" and "B". Store indoors.

CAUTION:

Contains "A" Component contains epoxy resins. "B" Component contains organic amines which are strong sensitizers. WARNING! May cause skin sensitization, burns or other allergic responses. Avoid inhalation of vapor. Use good ventilation, particularly if material is heated. Prevent all contact with skin and eyes. Wear protective clothing, goggles and/or barrier creams. Wash thoroughly after handling. FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least fifteen (15) minutes. Remove contaminated clothing before reuse. Discard contaminated shoes.

FOR INDUSTRIAL USE ONLY. KEEP AWAY FROM CHILDREN. 5/2008

PHONE 410-243-8856 TOLL FREE 888-760-0369 FAX 410-243-2701

ADEKA ULTRA SEAL

A-30

OCM, Inc. Chicago, IL

Sales Information: (847) 955-9700

Contact Local Representative

:

Technical Information :(800) 999-3959

Properties	A-30 Resin	A-30 Catalyst
Appearance	Clear Liquid	Clear Liquid
SP (72° F.)	1.05	1.09
Viscosity (MPa.x/77° F).	2000~3000	300~800
Mixing Ratio (resin:catalyst)	**15:1**	
Pot life 50% RH (70~75 deg.F.)	**1~2 Hours**	
Gel time 50% RH (70~75 deg.F.)	**5~6 Hours**	
Cure time 50% RH (70~75 deg.F.)	**12~18 Hours**	

ADEKA ULTRA SEAL A-30 - Improved waterstop system for sealing sheet pile interlocks prior to driving.

Packaging (2 components - 15:1 ratio) **:**

A-30 Resin 20 Liter (5.3 gallon) pail - Net - 15 kg (14.28 liters - 3.77 gallons)

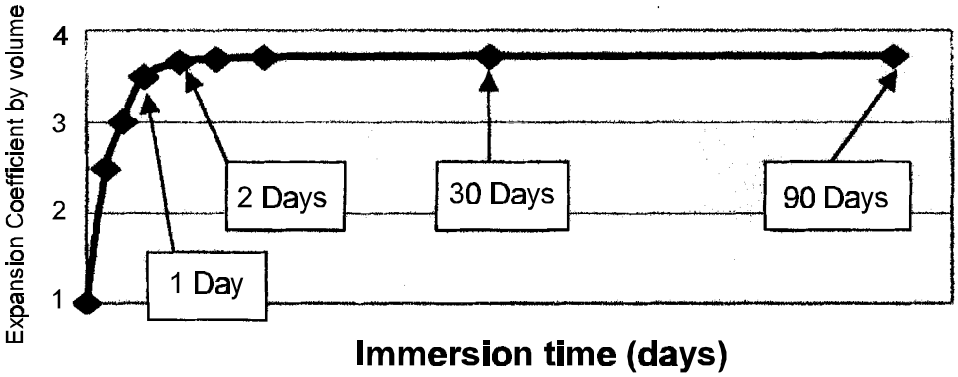
A-30 Hardener 1 Liter (1.06 quart) can - Net - 1 kg (0.92 liters - 0.97 quarts)

Total Net = Resin + Catalyst = 15.20 Liters = 4.0 Gallons

Characteristics:

1. Improved chemical resistance and durability even under alkaline ground water conditions.
2. Easy to use two part urethane system. Packaged in ratio amounts. No measuring necessary.
3. The curing process begins when the two components are mixed (chemical cure). Unlike A-50, curing is not as dependent on temperature.
4. Cured A-30 has excellent adhesive strength.
5. A-30 has a high rate of expansion and will withstand approximately 160 foot hydrostatic head (50 meters).

A-30 Expansion Curve



A-30 APPLICATION PROCEDURES:

Application of A-30 and pile driving procedures are identical with published Adeka Ultra Seal A-50 instructions except for mixing procedures and pot life of mixed material.

Basic Application:

1. Thoroughly clean socket (female) side of the interlock. Remove any rust or dirt from the interlock section. Use wire brush or small sander and air blast to remove any debris. Wipe with solvent if any oil or grease is present.
2. LEVEL PILES AND PLUG ENDS (FOAM WORKS WELL). **MAINTAIN LEVEL UNTIL A-30 IS CURED.**
3. Pour A-30 catalyst (1 liter can) into A-30 resin (5 gallon pail).
4. Mix thoroughly (hand mix by stirring or use power mixer).
5. Pour appropriate amount of A-30 into the level interlock. The amount of A-30 required will vary depending on type of sheet pile. Check with your local representative for recommended coverage.
6. Protect the sheet pile from premature exposure to moisture prior to driving.
7. Drive pile with male or thumb side leading.
8. Drive to final depth at initial driving time. The sheet must be driven to final depth within 2 hours once the pile is in contact with water.

A-30 Cold Temperature Cure Times in Hours

(approximate - not specification)

Temperature Degrees F.	Curing Time Hours
0	168
20	120
30	72
50	36
70	16

Curing time is dependent on environmental conditions and thickness of A-30. Your curing time may vary significantly from above values. Check curing stage before moving sheet piles.

A-30 IS AN IMPROVED VERSION OF A-50

A-30 has good resistance to a number of chemical contaminants. Some chemicals in higher concentrations may affect the performance of A-30. Consult your local Adeka representative before using in a contaminated area. Or call (800) 999-3959 for more information. Visit www.adeka.com for more information.

ADEKA ULTRA SEAL

KM-STRING

OCM, Inc.

Sales Information: (847) 955-9700
Technical Information: (800) 999-3959
Contact Local Representative:

PRODUCT DESCRIPTION:	
PACKAGING INFORMATION: Available in 4~32mm Diameter	
PHYSICAL PROPERTIES:	
Hardness:	**A-33 (JIS K 6253) (ASTM D2240)**
Tensile Strength:	**6 Mpa (JIS K 6251) (ASTM D412)**
Elongation:	**800% (JIS K 6251) (ASTM D412)**
Change Volume:	**170% (In House)**
Specific Gravity:	**1.18 (JIS K 6350) (ASTM D792)**
Vulcanization	**YES**
Hydrophilic Agent	**Urethane Polymer**

*** Property measurements are representative and are not considered as standard values.**

GENERAL DESCRIPTION

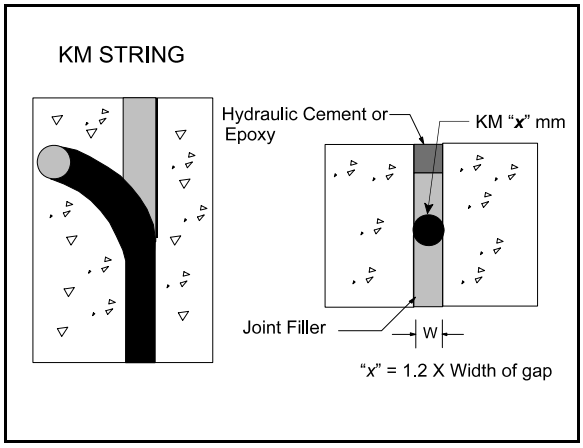
KM String is a chemically modified natural rubber product. A patented process chemically binds a hydrophilic agent to the rubber. This permits the KM String to undergo controlled expansion when in the presence of moisture. This expansion capability provides a "double locking" waterstop. One from rubber's natural resilience and one from the expansion. Any void, within the limits of the product's volume expansion coefficient, will be filled by the expansion of the KM when it is hydrated.

Expansion occurs in all dimensions, diameter and length. Expansion will follow the direction of least resistance. The Volume Expansion Coefficient of 3 times indicates the material will increase 3 times by volume, not 3 times in size. Linear expansion coefficient is approximately 1.45.

KM has excellent durability and resistance to chemicals. It can perform in a wide range of solutions such as salt or cement water. It does not contain any toxic substance or heavy metals and is environmentally safe.

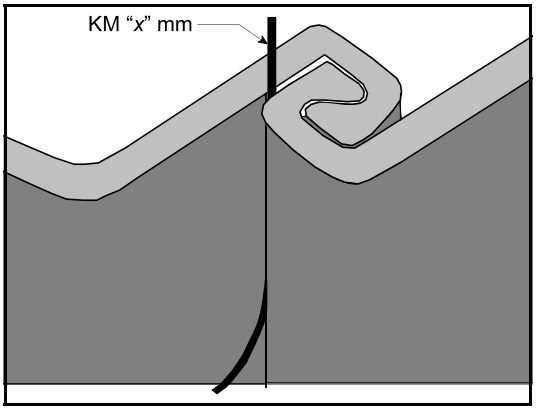
BASIC USE:

Because KM is available in many diameters, it is suitable for waterstopping existing joints of various sizes. The KM string size is determined by the size of the joint. The KM string selected must have a minimum diameter of 1.2 times the joint width. (See Detail No. 1). The string can be easily stretched and inserted into the joint gap with a backer rod insertion tool or a blunt instrument.



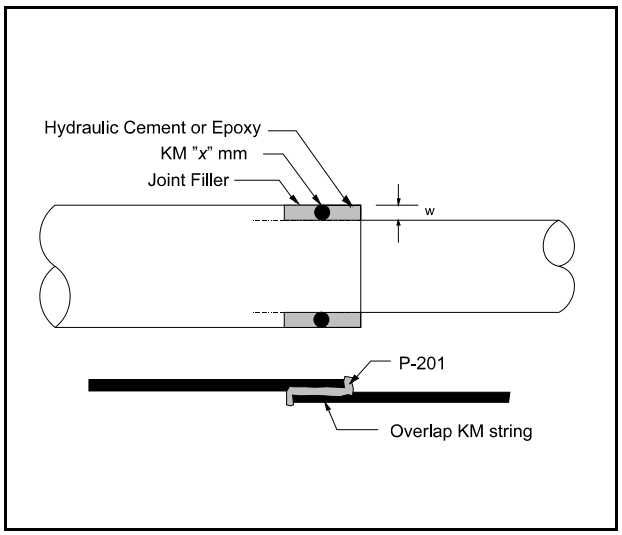
Detail 1

KM is an excellent waterstop for repairing leaks in sheet piles interlocks.
The string size again should be a minimum of 1.2 times the width of the interlock gap. Stretch the string and force into the interlock area. This can be done even if flowing water is present. The natural resilience of the rubber will stop the water and hold the KM in position until expansion has occurred. See detail 2.



Detail 2

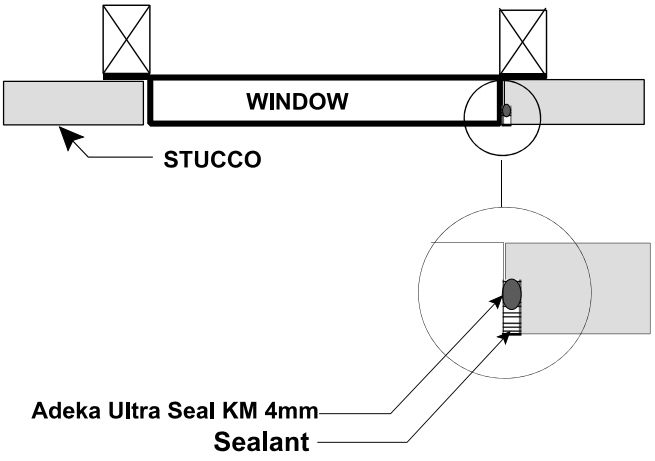
KM string can be used in a variety of applications such as sealing the annular space between two pipes as shown in Detail 3.



Detail 3

Joining two ends of the string can be done by overlapping approximately 2" and applying a bead of P-201 on the overlap area. Note Detail 3.

KM 4mm String can be used to effectively waterproof the joint between a window frame and a stucco exterior (see Detail 4). For more detailed instruction see "Techniques and Comments" newsletter 228. This newsletter is produced by John Bucholtz P.E. Call 408.257.2444 or your local representative for more information.



Detail 4

KM is a versatile waterstop that is easy to install and will remain flexible even when expanded. It will serve as a long lasting positive waterstop.

PACKAGING INFORMATION SELECTED STRING SIZES.

KM 4mm (.15")	**165'/case**	**3.0 lbs**
KM 6mm (.23")	**165'/case**	**4.0 lbs**
KM 8mm (.31")	**99'/case**	**10.1 lbs**
KM 10mm (.39")	**82'/case**	**8.8 lbs**
KM 12mm (.47")	**82'/case**	**11.0 lbs**
KM 14mm (.55")	**66'/case**	**19.8 lbs**
KM 16mm (.62")	**49'/case**	**11.0 lbs**
KM 20mm (.79")	**33'/case**	**12.1 lbs**
KM 24mm (.95")	**33'/case**	**13.2 lbs**

Sizes above 6mm NOT in inventory. Call 800.999.3959 for lead time and price.

*** Other sizes available by special order.**

KM string has good resistance to a number of chemical contaminants. However, some chemicals in higher concentrations may affect the performance of KM. Consult your Adeka Ultra Seal Representative concerning any unusual chemical contaminants or conditions.

Technical assistance is available through the manufacturer and representatives of Adeka Ultra Seal. Contact your local representative for additional information or call (800) 999-3959.

Visit our website at:

www.adeka.com

TNEMEC

PRODUCT DATA SHEET

TNEME-ZINC 90-97 & H90-97

PRODUCT PROFILE

GENERIC DESCRIPTION Aromatic Urethane, Zinc-Rich

COMMON USAGE An advanced technology, two-component, moisture-cured, zinc-rich primer providing extraordinary performance. It's user friendly and rapid curing so chemical- and corrosion-resistant topcoats can be applied the "same-day." Also used for field touch-up of inorganic zinc coating. Application methods, for 90-97 only, include "dry-fall" under certain conditions (see Application). H90-97 is HAPS compliant for use in-shop.

COLORS 90-97 Reddish-gray

ZINC PIGMENT 83% by weight in dried film

SPECIAL QUALIFICATIONS Series 90-97/H90-97 meets **AISC** requirements of Class B surface with a mean slip coefficient no less than 0.50 and a tension creep not in excess of .005 inches (.13mm).
Tneme-Zinc uses a zinc pigment which meets the requirements of **ASTM D 520 Type III** and contains less than .002% lead. This level qualifies it to be classed as "non-lead" (less than 0.06% lead by weight) as defined in Part 1303 of the Consumer Product Safety Act Regulations. Conforms to **SSPC Paint 20, Type II.**

PERFORMANCE CRITERIA Extensive test data available. Contact your Tnemec representative for specific test results.

COATING SYSTEM

TOPCOATS Series 1, 6, 27, 46H-413, 66, L69, L69F, N69, N69F, V69, V69F, 73, 104, 113, 114, 115, 135, 161, 394, 1028, 1029, 1074, 1074U, 1075, 1075U
Note: Certain topcoat colors may not provide one-coat hiding depending on method of application. Contact your Tnemec representative. **Note:** Series 90-97 or H90-97 must be exterior exposed for three days prior to topcoating with Series 1028 or 1029.

SURFACE PREPARATION

Severe Exposure: SSPC-SP10/NACE 2 Near-White Blast Cleaning with a minimum angular anchor profile of 1.5 mils.
Moderate Exposure: SSPC-SP6/NACE 3 Commercial Blast Cleaning with a minimum angular anchor profile of 1.5 mils.

TECHNICAL DATA

VOLUME SOLIDS 63.0 ± 2.0% (mixed)

RECOMMENDED DFT 2.5 to 3.5 mils (65 to 90 microns) per coat.

CURING TIME Without 44-710

Temperature †	To Handle	To Recoat
75°F (24°C)	1 hour	4 hours
65°F (18°C)	1 1/2 hours	5 hours
55°F (13°C)	2 hours	6 hours
45°F (7°C)	2 1/2 hours	7 hours
35°F (2°C)	3 hours	8 hours

† 50% relative humidity. Curing time will vary with surface temperature, humidity and film thickness.
With 44-710: Reference the 44-710 Urethane Accelerator product data sheet.

VOLATILE ORGANIC COMPOUNDS

	Unthinned	Thinned 2.5% (No. 2 or 3 Thinner)	Thinned 10% (No. 2 or 3 Thinner)	Thinned 15% (No. 62 Thinner)
90-97	2.68 lbs/gallon (321 grams/litre)	2.79 lbs/gallon (334 grams/litre)	3.10 lbs/gallon (371 grams/litre)	
H90-97	2.83 lbs/gallon (339 grams/litre)			2.83 lbs/gallon (339 grams/litre)

HAPS

	Unthinned	Thinned 15% (No. 62 Thinner)
H90-97	0.02 lbs/gals solids	0.02 lbs/gals solids

THEORETICAL COVERAGE 1,011 mil sq ft/gal (24.8 m²/L at 25 microns). See APPLICATION for coverage rates.

NUMBER OF COMPONENTS Two: Part A and Part B

PACKAGING Four-Gallon and One-Gallon Kits: Consist of one premeasured container of liquid (Part A) and one premeasured container of powder (Part B). When mixed, yields four gallons (15.1L) or one gallon (3.79L).

NET WEIGHT PER GALLON 23.94 ± 0.60 lbs (10.86 ± .27 kg)

STORAGE TEMPERATURE Minimum 20°F (-7°C) Maximum 110°F (43°C)

TEMPERATURE RESISTANCE Dry (Continuous) 250°F (121°C) Intermittent 300°F (149°C)

SHELF LIFE Part A: 12 months at recommended storage temperature.
Part B: 24 months at recommended storage temperature.

FLASH POINT - SETA 90-97 Part A: 78°F (26°C) H90-97 Part A: 108°F (42°C) Part B: N/A

HEALTH & SAFETY Paint products contain chemical ingredients which are considered hazardous. Read container label warning and Material Safety Data Sheet for important health and safety information prior to the use of this product.
Keep out of the reach of children.

TNEME-ZINC | 90-97 & H90-97

APPLICATION

COVERAGE RATES

	Dry Mils (Microns)	Wet Mils (Microns)	Sq Ft/Gal (m²/Gal)
Suggested	3.0 (75)	5.0 (125)	337 (31.3)
Minimum	2.5 (65)	4.0 (100)	404 (37.5)
Maximum	3.5 (90)	5.5 (140)	289 (26.9)

Allow for overspray and surface irregularities. Film thickness is rounded to the nearest 0.5 mil or 5 microns. Application of coating below minimum or above maximum recommended dry film thicknesses may adversely affect coating performance.

MIXING

Always use the entire contents of A and B components. Use an air-driven power mixer and keep material under constant agitation while mixing. Slowly sift powder (Part B) into liquid (Part A).
–Do Not Reverse This Procedure– Adjust mixer speed to break up lumps and mix until the two components are thoroughly blended. Strain through a 35 to 50 mesh (300 to 600 microns) screen before using. For spray application, keep under low RPM agitation to prevent settling. For brush or roller application, stir frequently to prevent settling. Do not use mixed material beyond pot life limits.

THINNING

90-97: For spray, thin up to 10% or 3/4 pint (380 mL) per gallon with No. 2 Thinner if temperatures are below 80°F (27°C). Thin up to 10% or 3/4 pint (380 mL) per gallon with No. 3 Thinner if temperatures are above 80°F (27°C). For brush or roller, thin up to 10% or 3/4 pint (380 mL) with No. 3 Thinner.
H90-97: For air spray, thin up to 15% per gallon with No. 62 Thinner. For airless spray, brush or roller, thin up to 10% per gallon with No. 62 Thinner.

POT LIFE

8 hours at 77°F (25°C) and 50% R.H.
Caution: This product cures with moisture acting as a catalyst. Incorporation of moisture or moisture laden air (humidity) during use will shorten pot life. Avoid continual agitation at high RPM. When feasible keep containers of mixed material covered during use.

APPLICATION EQUIPMENT

Note: When finish coats are white or light colors, best hiding of this dark color primer can be achieved by spray application.

Air Spray

Gun	Fluid Tip	Air Cap	Air Hose ID	Mat'l Hose ID	Atomizing Pressure (1)	Pot Pressure
DeVilbiss JGA †	E	765 or 704	5/16" or 3/8" (7.9 or 9.5 mm)	3/8" or 1/2" (9.5 or 12.7 mm)	40-50 psi (2.8-3.4 bar)	10-20 psi (0.7-1.4 bar)

(1) Atomizing Pressure for H90-97 is 50-70 psi (3.4-4.8 bar).
† (with heavy mastic spring) Low temperatures or longer hoses will require additional pressure. Use pressure pot equipped with an agitator and keep pressure pot at same level or higher than the spray gun. Compressed air must be dry.

Airless Spray

Tip Orifice	Atomizing Pressure (2)	Mat'l Hose ID	Manifold Filter
0.017"-0.021" (430-535 microns) Reversible Tip	2400-3000 psi (165-207 bar)	1/4" or 3/8" (6.4 or 9.5 mm)	60 mesh (250 microns)

(2) Atomizing Pressure for H90-97 is 3500-4500 (241-310 bar).
Use appropriate tip/atomizing pressure for equipment, applicator technique and weather conditions.
Keep material agitated to prevent settling.
Roller: Use 1/4" or 3/8" (6.4 mm or 9.5 mm) synthetic woven nap roller covers. Stir material frequently or keep under agitation to prevent settling.
Brush: Use high quality natural or synthetic bristle brushes.

SURFACE TEMPERATURE

Minimum 35°F (2°C) Maximum 120°F (49°C) Maximum for Brush & Roller 100°F (38°C)
The surface should be dry and at least 5°F (3°C) above the dew point.

AMBIENT HUMIDITY

Minimum 40% Maximum 90%

CLEANUP

Flush and clean all equipment immediately after use with the recommended thinner or xylene.

CAUTION

Dry overspray can be wiped or washed from most surfaces. Satisfactory dry-fall performance depends upon height of work, weather conditions and equipment adjustment. Low temperature is of particular concern. Test for each application as follows: Spray from 15 to 25 feet towards paint container. The material then should readily wipe off. **Note:** Heat can fuse-dry overspray to surfaces. Always clean dry overspray from hot surfaces before fusing occurs. Be aware that surface temperatures can be higher than air temperatures.

UNITEX™ PRO-POXY 300
PRO-POXY 300 FAST

NON-SAG, INJECTABLE ANCHORING GEL

BENEFITS:

- Permitted for use in wet or damp holes
- Permitted in severe weathering locations
- Freeze-thaw resistant
- Suitable for seismic conditions
- Allowed at close edge distances
- Allowed at shallow embedments
- Low odor
- For both solid and hollow base materials

Also available in bulk

Where other's can't...

PRO-POXY 300
PRO-POXY 300 FAST *can!*

*Above statements per I.C.B.O. E.R. #5000 and/or independent test reports. Available on request.

UNITEX™ PRO-POXY 300 and PRO-POXY

NON-SAG, INJECTABLE ANCHORING GEL

◆ DESCRIPTION

Both PRO-POXY 300 and 300 FAST are high-strength, two component epoxy adhesive anchoring gels. PRO-POXY 300 meets ASTM-C-881, Types I, II, IV, and V, Grade 3, Classes B and C. PRO-POXY 300 FAST meets ASTM-C-881, Types I, II*, IV, V* Grade 3, Classes A, B, and C. They also meet USDA specifications for use in food processing areas.

* Except Gel Time

◆ USAGE

- Chemical anchoring for bolts, dowels, and pins.
- Cap sealing and port setting.
- Pressure-injection of cracks in structural concrete.
- Bonding irregular surfaces.

Appearance: Component A - white Component B - gray
Shelf Life: 2 years in original unopened container
Storage Conditions:
Store at 40°- 95°F (5°- 35°C)
Precondition material to over 73° ± 2°F (23°C)
Cold weather (below 70°F / 21°C): Precondition cartridges slowly to 80-90°F / 27-32° C for easier gunning
Gel Time (60 g mass):
PRO-POXY 300: 35 min at 73° ± 2°F (23°C)
PRO-POXY 300 Fast: 8 min at 73° ± 2°F (23°C)

◆ DIRECTIONS

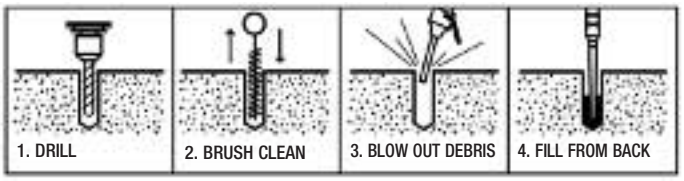
CARTRIDGES: PRO-POXY 300 and 300 FAST may be easily dispensed from cartridges eliminating mixing and measuring. Remove D plugs from small end of cartridge. Slide retaining nut over static mixer. Secure static mixer to cartridge by screwing retaining nut onto cartridge. For easier gunning, the static mixer tip may be cut off to the third notch. Place assembled cartridge into approved pneumatic or hand gun. Extrude epoxy until a uniform gray color is achieved. Do not use epoxy with color streaks. Dispense under a constant uniform pressure. If dispensing is altered, re-establish a uniform gray color prior to continuing. When using a hand gun, release pressure from gun by pressing thumb button at every pause in dispensing. Otherwise, re-establish uniform gray color prior to continuing.

BULK PACKAGED COMPONENTS:
Automatic Dispensing Machines: Only use UNITEX approved positive displacement dispensing machines.

Hand Mixing: Premeasure equal parts by volume of component A and component B in two separate containers. Use a third container to mix the two components together. Do not use one tapered container such as a Dixie paper cup, filling it half full of A and half full of B; the correct ratio (1:1) cannot be achieved due to tapered feature of container. Thoroughly mix for 3 minutes, scraping sides of container until uniform grey color is achieved. Only mix amount of epoxy that can be used within its gel time. Spread mixed epoxy out thin on a hawk to extend gel time. If you pile it up, the gel time will be shortened due to the greater mass and exotherm.

◆ APPLICATION

TO ANCHOR BOLTS, DOWELS, & PINS:
Step 1. Drill holes to proper diameter and length.
Step 2. Clean holes with a nylon brush.
Step 3. Blow concrete dust from hole with oil-free compressed air from back forward.
Step 4. After uniform color is achieved, static mixer should be placed in back of hole. Start extruding epoxy while pulling static mixer out, filling hole 1/2 full. Rotate the bolt slightly as it is inserted to the back of the hole. Refer to tables for annular space, embedment depth, and edge distances.



TO SET PORTS & CAPSEAL CRACKS: Select PRO-POXY 300 or 300 FAST according to the desired gel time. PRO-POXY 300 provides longer working time. PRO-POXY 300 FAST should be selected for cooler weather applications and when faster setup of capseal is desired. Dab a small amount of epoxy to the back of a port and carefully center port over the crack. A centering nail may be helpful. Do not apply so much epoxy to back of port that it could close off the hole. After setting port, carefully butter the shoulder of the port and extend epoxy to 1/2 in / 1.28 cm on either side of the crack. Continue placement of epoxy by buttering crack between ports. To avoid leaks under pressure, the epoxy should be applied to approx. 1/4 in / .64 cm. thick. Do not place epoxy once it starts curing or getting hot or sticky, as this will compromise capseal and cause leaking. Once epoxy is placed, it should not be disturbed during the curing process. Cure time depends on air temperature and mass of epoxy. Normally a minimum of 2 hrs is necessary for PRO-POXY 300 FAST and 4 - 6 hrs for PRO-POXY 300 to fully cure at 73° ± 2°F / 23° C. Capseal must be fully cured prior to injection.

TO BOND IRREGULAR SURFACES: Apply the mixed PRO-POXY 300 or 300 FAST to the prepared substrates. Work into the substrate for positive adhesion. Secure or clamp the bonded surfaces firmly into place until the epoxy has cured. Glue line should not exceed 1/8 in / .32 cm.

◆ PACKAGING

- 8.5 oz / 250 ml cartridge (300 Fast)
- 22 oz / 600 ml cartridge
- 1 gal / 3.8 L units
- 2 gal / 7.6 L units
- 10 gal / 37.9 L units
- 110 gal / 416.4 L units

◆ COVERAGE

- 22 oz / 600 ml cartridge yields 37 cu in / 600 cu cm
- 1 gal / 3.8 L of mixed epoxy yields 231 cu in / 3746 cu cm

(See Estimating Guide for Cartidges on back)

300 FAST

◆ COMPLIANCES

PRO-POXY 300- ASTM-C-881: Types I, II, IV, & V; Grade 3; Classes B & C

PRO-POXY 300 FAST- ASTM-C-881: Types I, II*, IV, V*; Grade 3; Classes A, B, & C *Except Gel Time

V.O.C. Compliant
USDA specifications for use in food processing areas
ICC-ES Report ESR-2621 per AC308
City of Los Angeles, Research Report #25220

D.O.T. Listed
Dade County Approval
NSF/ANSI 61 certified

◆ TECHNICAL DATA

Ultimate Tension Values for Threaded Rod in Concrete *

ANCHOR DIA. (inches)	BIT DIA. (inches)	EMBEDMENT (inches)	ULTIMATE BOND STRENGTH IN CONCRETE (f'c)				ALLOWABLE STEEL STRENGTH (lbs)		
			2500 psi	3000 psi	4000 psi	5500 psi	A36 / A307	A193 B7	300 SERIES STAINLESS
3/8	7/16	1-11/16		5450			2100	4550	3630
3/8	7/16	3-3/8	7300		8250	9200	2110	4550	3630
3/8	9/16	3-3/8	9560				2110	4550	3630
3/8	7/16	5-5/8	10980		11360	11740	2110	4550	3630
1/2	9/16	2-1/4		7495			3750	8100	6470
1/2	9/16	4-1/2	10540		11730	12920	3750	8100	6470
1/2	11/16	4 -1/2	14640				3750	8100	6470
1/2	9/16	7-1/2	14660		17010	19360	3750	8100	6470
5/8	3/4	2-13/16		13665			5870	12655	10130
5/8	3/4	5-5/8	14800		18870	22940	5870	12655	10130
5/8	7/8	5-5/8	23340				5870	12655	10130
5/8	3/4	9-3/8	21560		26260	30960	5870	12655	10130
3/4	7/8	3-3/8		17825			8460	18220	12400
3/4	7/8	6-3/4	22380		25870	29360	8460	18220	12400
3/4	1	6-3/4	29850				8460	18220	12400
3/4	7/8	11-1/4	30320		34340	38360	8460	18220	12400
7/8	1	3-15/16		21390			11500	24800	16860
7/8	1	7-7/8	43280				11500	24800	16860
1	1-1/8	4-1/2		27419			15020	32400	22020
1	1-1/8	9	55650				15020	32400	22020
1-1/4	1-3/8	11-1/4	77860				23480	50610	34420

Shear and Tension Values for Smooth Dowels*

DOWEL DIAMETER (inches)	BIT DIAMETER (inches)	EMBEDMENT (inches)	ULTIMATE BOND STRENGTH (lbs)		ALLOWABLE STEEL STRENGTH	
			TENSION	SHEAR	TENSION	SHEAR
			3000 psi	2500 psi	3000 psi	2500 psi
1/2	9/16	4 1/2	6040	8560	3750	1930
5/8	3/4	5 5/8	6760	13140	5880	3030
3/4	7/8	6 3/4	12000	18920	8460	4360
7/8	1	7 7/8	14220	25720	11500	5930
1	1 1/8	9	23280	33600	15020	7740

*1. The tabulated shear and tension values are for anchors installed in normal weight concrete having reached the designated ultimate compressive strength at the time of installation. Linear interpolation may be used for concrete strengths between those listed.
2. Spacing and edge distance shall be in accordance with appropriate table.
3. Allowable load must be the lesser of the allowable steel strength and that allowable bond strength. Typically, allowable bond strength is equal to the ultimate bond strength divided by the safety factor of 4.
4. Allowable loads may be increased by 33-1/3% for short term loading due to earthquakes or wind.
5. PRO-POXY 300 and PRO-POXY 300 FAST is recognized for installation in water-filled or moist holes, for use in locations subject to severe exterior weathering conditions and for resisting tension and shear loads due to earthquake and wind.

Allowable Shear Values for Threaded Rod in 2000 psi Concrete*

ANCHOR DIAMETER (inches)	BIT DIAMETER (inches)	EMBEDMENT (inches)	ALLOWABLE STEEL STRENGTH (lbs) A36 / A307	A193 B7	300 SERIES STAINLESS
3/8	7/16	3-3/8	1080	2345	1870
1/2	9/16	4-1/2	1930	4170	3330
5/8	3/4	5-5/8	3030	6520	5220
3/4	7/8	6-3/4	4360	9390	6390
7/8	1	7-7/8	5930	12780	8680
1	1 1/8	9	7740	16690	11340
1-1/4	1-3/8	11-1/4	12100	26070	17730

* See notes on previous page.

Cure Times for Adhesive Anchors*

MINIMUM SUBSTRATE TEMP.	CURE TIME PRO-POXY 300	CURE TIME PRO-POXY 300 FAST	MINIMUM CURE TIME PRO-POXY 300	MINIMUM CURE TIME PRO-POXY 300 FAST
40°F (5°C)	F	48 hrs	F	24 hrs
65°F (18°C)	48 hrs	36 hrs	24 hrs	8 hrs
70°F (21°C)	36 hrs	24 hrs	12 hrs	2.5 hrs
80°F (27°C)	24 hrs	12 hrs	6 hrs	2 hrs
100°F (38°C)	12 hrs	6 hrs	4 hrs	1 hrs

* 1. F indicates PRO-POXY 300 FAST is recommended.
2. Cure Time is time required before epoxy reaches ultimate strength. Minimum Cure Time is minimum time required before the design or allowable load may be applied.
3. Anchors are to be undisturbed during the minimum cure time.

Allowable Anchor Spacing and Edge Distance*

		FULL ANCHOR CAPACITY Critical Distance (C_{cr})	REDUCED ANCHOR CAPACITY Distance (C_{min})	REDUCTION FACTOR
SPACING BETWEEN ANCHORS		24 D	8 D	.90
EDGE DISTANCE:	TENSION LOADS	12 D	see following chart	see following chart
	SHEAR LOADS – THREADED ROD	12 D	4 D	.21
	SHEAR LOADS – SMOOTH DOWELS	12 D	4 D	.21
	SHEAR LOADS – REBAR	16 D	4 D	.15

Edge Distance for Tension Values for Anchors in Concrete*

STUD SIZE (inches)	MINIMUM EDGE DISTANCE (C_{min})	REDUCTION FACTOR
3/8	1-1/2	.70
1/2	1-3/4	.66
5/8	1-3/4	.70
3/4	1-3/4	.70
7/8	3-1/2	.70
1	4	.70
1-1/4	5	.70

* 1. The listed values are the minimum distances required to obtain the load values in the tables above and to the left. D = anchor diameter. When adjacent anchors are different sizes or embedments, use the largest value for D.
2. The listed values are the minimum distances at which the anchor can be installed when load values are adjusted in accordance with reduction factor.
3. Load values in the table are multiplied by the reduction factor when anchors are installed at the minimum spacing listed. Use linear interpolation for spacing between critical and minimum distances. Multiple reduction factors for more than one spacing or edge distance are calculated separately and multiplied.

Shear and Tension Values for Reinforcing Steel*

ANCHOR DIAMETER (inches)	BIT DIAMETER (inches)	EMBEDMENT (inches)	TENSION ULTIMATE BOND STRENGTH (lbs) CONCRETE STRENGTH (f'_c) 2500 psi	4000 psi	5500 psi	ALLOWABLE STEEL STRENGTH TENSION OR SHEAR (lbs) Grade 40	Grade 60
# 3	1/2	3 3/8	7080	9050	11020	2200	2640
# 4	5/8	4 1/2	12300	14730	17160	4000	4800
# 5	3/4	5 5/8	16000	18810	21620	6200	7440
# 6	1	6 3/4	39035			8800	10560
# 7	1 1/8	7 7/8	36740			12000	14400
# 8	1 1/4	9	42670			15600	18720

* See notes on previous page.

NOTE: Values for Threaded Rod in Hollow & Grout Filled Block available on request.

Performing where others can't!

PRO-POXY 300
PRO-POXY 300 FAST

*Consult UNITEX Technical Service for wet hole application.

Estimating Guide for Number of Holes per Cartridge 22 oz / 600 ml

		HOLE DEPTH (inches)																		
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
THREADED ROD IN CONCRETE		NUMBER OF HOLES PER CARTRIDGE																		
ROD SIZE (inches)	HOLE SIZE (inches)																			
3/8	7/16	192	128	96	77	64	55	48	43	39	35	32	30	28	26	24	23	22	21	20
1/2	9/16	136	91	68	55	46	39	34	29	28	25	23	21	19	18	17	16	15	15	14
5/8	3/4	70	47	35	28	24	20	18	16	14	13	12	11	10	10	9	9	8	8	7
3/4	7/8	56	37	28	23	19	16	14	13	11	10	10	9	8	8	7	7	7	6	6
7/8	1	47	31	24	19	16	12	12	11	10	9	8	8	7	7	6	6	6	5	5
1	1-1/8	38	26	19	16	13	11	10	9	8	7	7	6	6	5	5	5	5	4	4
1-1/8	1-1/4	34	23	17	14	12	10	9	8	7	7	6	6	5	5	5	4	4	4	4
1-1/4	1-3/8	29	20	15	12	10	9	8	7	6	6	5	5	5	4	4	4	4	3	3
1-1/2	1-5/8	23	16	12	10	8	7	6	5	5	5	4	4	4	3	3	3	3	3	3
REBAR IN CONCRETE																				
REBAR SIZE (inches)	HOLE SIZE (inches)																			
No. 3	1/2	163	109	82	66	55	47	41	37	33	30	28	26	24	22	21	20	19	18	17
No. 4	5/8	127	85	64	51	43	37	32	29	26	24	22	20	19	17	16	15	15	14	13
No. 5	3/4	103	69	52	41	35	30	26	23	21	19	17	16	15	14	13	12	12	11	11
No. 6	7/8	82	55	41	32	28	24	21	19	17	15	14	13	12	11	11	10	10	9	9
No. 7	1	72	48	36	29	24	21	18	16	15	13	12	11	11	10	9	9	8	8	8
No. 8	1 1/8	62	41	31	25	21	18	16	14	13	12	11	10	9	9	8	8	7	7	7
No. 9	1 3/8	31	21	16	13	11	9	8	7	7	6	6	5	5	4	4	4	4	4	3
No. 10	1 1/2	30	20	15	12	10	9	8	7	6	6	5	5	5	4	4	4	4	4	3
SMOOTH DOWEL IN CONCRETE																				
DOWEL SIZE (inches)	HOLE SIZE (inches)																			
3/4	7/8	83	56	42	34	28	24	21	19	17	15	14	13	12	11	11	10	10	9	9
7/8	1	72	48	36	29	24	21	18	16	15	13	12	11	11	10	9	9	8	8	8
1	1 1/8	61	41	31	25	21	18	16	14	12	11	10	10	9	8	8	8	7	7	6
1 1/4	1 3/8	50	33	25	20	17	14	13	11	10	9	9	8	7	7	7	6	6	6	5
1 1/2	1 5/8	42	28	21	17	14	12	11	10	9	8	7	7	6	6	6	5	5	4	4

◆ LIMITATIONS

- Minimum substrate temperature is 40° F (5° C.)
- Do not thin. Solvents will prevent proper cure.
- Use dried aggregate only.
- Minimum age of concrete must be 3 – 7 days, depending on curing and drying conditions
- PRO-POXY 300 and 300 FAST are vapor barriers after cure.
- Do not allow mixed epoxy to reside in static mixing head or mixer for more than 5 minutes or gelation and blockage may result.
- Per NTSB safety recommendations, the use of adhesive anchors is prohibited in sustained overhead load anchoring applications.

◆ CAUTION

- Component A – Irritant
- Component B – Corrosive
- Product is a strong sensitizer. Use of safety goggles and chemical resistant gloves are recommended.
- Use of a NIOSH/MSHA organic vapor respirator recommended if ventilation is inadequate.
- Avoid breathing vapors.
- Avoid skin contact.

◆ FIRST AID

EYE CONTACT: Flush immediately with water for at least 15 minutes. Contact physician immediately.

RESPIRATORY PROBLEMS: Remove person to fresh air.

SKIN CONTACT: Remove any contaminated clothing. Remove epoxy immediately with a dry cloth or paper towel. Solvents should ***not*** be used as they carry the irritant into the skin. Wash skin thoroughly with soap and water.

CURED EPOXY RESINS ARE INNOCUOUS.

◆ CLEANUP

Uncured material can be removed with citrus cleaner or other approved solvent. Collect with absorbent material. Flush area with water. Dispose of in accordance with local, state, and federal disposal regulations. Cured material can only be removed mechanically.

Contact UNITEX Technical Services for further information or installation instructions.

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Product Data Sheet
Edition 6.2003
Identification no. 525-501
SikaGrout 212

Construction

SikaGrout® 212

High performance, cementitious grout

Description	SikaGrout 212 is a non-shrink, cementitious grout with a unique 2-stage shrinkage compensating mechanism. It is non-metallic and contains no chloride. With a special blend of shrinkage-reducing and plasticizing/water-reducing agents, SikaGrout 212 compensates for shrinkage in both the plastic and hardened states. A structural grout, SikaGrout 212 provides the advantage of multiple fluidity with a single component. SikaGrout 212 meets Corps of Engineers' Specification CRD C-621 and ASTM C-1107 (Grade C).
Where to Use	▪ Use for structural grouting of column base plates, machine base plates, anchor rods, bearing plates, etc. ▪ Use on grade, above and below grade, indoors and out. ▪ Multiple fluidity allows ease of placement: ram in place as a dry pack, trowel-apply as a medium flow, pour or pump as high flow.
Advantages	▪ Easy to use...just add water. ▪ Multiple fluidity with one material. ▪ Non-metallic, will not stain or rust. ▪ Low bleed. ▪ Low heat build-up. ▪ Excellent for pumping: Does not segregate...even at high flow. No build-up on equipment hopper. ▪ Non-corrosive, does not contain chlorides. ▪ Superior freeze/thaw resistance. ▪ Resistant to oil and water. ▪ Meets CRD C-621. ▪ Meets ASTM C-1107 (Grade C). ▪ Shows positive expansion when tested in accordance with ASTM C-827. ▪ SikaGrout 212 is USDA-approved.
Coverage	Approximately 0.44 cu. ft./bag at high flow.
Packaging	6 lb. pail, 6/case, 36/pallet; 50-lb. multi-wall bags; 36 bags/pallet.

Typical Data *(Material and curing conditions @ 73°F (23°C) and 50% R.H.)*

Shelf Life		One year in original, unopened bags.		
Storage Conditions		Store dry at 40°-95°F (4°-35°C). **Condition material to 65°-75°F before using.**		
Color		Concrete gray		
Flow Conditions		**Plastic[1]**	**Flowable[1]**	**Fluid[2]**
Typical Water Requirements:		6 pt.+	6.5 pt.	8.5 pt.
Set Time (ASTM C-266):	**Initial**	3.5-4.5 hr.	4.0-5.0 hr.	4.5-6.5 hr.
	Final	4.5-5.5 hr.	5.5-6.5 hr.	6.0-8.0 hr.
Tensile Splitting Strength, psi (ASTM C-496)				
	28 day	600 (4.1 MPa)	575 (3.9 MPa)	500 (3.4 MPa)
Flexural Strength, psi (ASTM C-293)				
	28 day	1,400 (9.6 MPa)	1,200 (8.2 MPa)	1,000 (6.8 MPa)
Bond Strength, psi (ASTM C-882 modified): Hardened concrete to plastic grout				
	28 day	2,000 (13.7 MPa)	1,900 (13.1 MPa)	1,900 (13.1 MPa)
Expansion % (CRD C-621)	**28 day**	+0.021%	+0.056%	+0.027%
Compressive Strength, psi (CRD C-621)				
	1 day	4,500 (31 MPa)	3,500 (24.1 MPa)	2,700 (18.6 MPa)
	7 day	6,100 (42 MPa)	5,700 (39.3 MPa)	5,500 (37.9 MPa)
	28 day	7,500 (51.7 MPa)	6,200 (42.7 MPa)	5,800 (40 MPa)

[1]CRD C-227: 100-124% (plastic), 124-145% (flowable)

[2]CRD C-611: 10-30 sec efflux time.

Construction

How to Use

Surface Preparation	Remove all dirt, oil, grease, and other bond-inhibiting materials by mechanical means. Anchor bolts to be grouted must be de-greased with suitable solvent. Concrete must be sound and roughened to promote mechanical adhesion. Prior to pouring, surface should be brought to a saturated surface-dry condition.
Forming	For pourable grout, construct forms to retain grout without leakage. Forms should be lined or coated with bond-breaker for easy removal. Forms should be sufficiently high to accommodate head of grout. Where grout-tight form is difficult to achieve, use SikaGrout 212 in dry pack consistency.
Mixing	Mix manually or mechanically. Mechanically mix with low-speed drill (400-600 rpm) and Sika mixing paddle or in appropriately sized mortar mixer. **Product Extension:** For deeper applications, SikaGrout 212 (plastic and flowable consistencies only) may be extended with 25 lbs. of 3/8" pea gravel. The aggregate must be non-reactive, clean, well-graded, saturated surface dry, have low absorption and high density, and comply with ASTM C33 size number 8 per Table 2. Add the pea gravel after the water and SikaGrout 212.
Mixing Procedure	Make sure all forming, mixing, placing, and clean-up materials are on hand. Add appropriate quantity of clean water to achieve desired flow. Add bag of powder to mixing vessel. Mix to a uniform consistency, minimum of 2 minutes. Ambient and material temperature should be as close as possible to 70°F If higher, use cold water; if colder, use warm water.
Application	Within 15 minutes after mixing, place grout into forms in normal manner to avoid air entrapment. Vibrate, pump, or ram grout as necessary to achieve flow or compaction. SikaGrout 212 must be confined in either the horizontal or vertical direction leaving minimum exposed surface. After grout has achieved final set, remove forms, trim or shape exposed grout shoulders to designed profile. SikaGrout 212 is an excellent grout for pumping, even at high flow. For pump recommendations, contact Technical Service. Wet cure for a minimum of 3 days or apply a curing compound which complies with ASTM C-309 on exposed surfaces.
Limitations	▪ Minimum ambient and substrate temperature 45°F and rising at time of application. ▪ Minimum application thickness: 1/2 in. ▪ Maximum application thickness (neat): 2 in. Deeper applications are possible, please contact Sika's technical services department. ▪ Do not use as a patching or overlay mortar or in unconfined areas. ▪ Material must be placed within 15 minutes of mixing. ▪ As with all cement based materials, avoid contact with aluminum to prevent adverse chemical reaction and possible product failure. Insulate potential areas of contact by coating aluminum bars, rails, posts etc. with an appropriate epoxy such as Sikadur Hi-Mod 32.

Caution

Irritant	Suspect carcinogen - contains portland cement and crystalline silica. Skin and eye irritant. Avoid breathing dust. Use only with adequate ventilation. May cause delayed lung injury (silicosis). IARC lists crystalline silica as having sufficient evidence of carcinogenicity in laboratory animals and limited evidence of carcinogenicity in humans. NTP also lists crystalline silica as a suspect carcinogen. Use of safety goggles and chemical resistant gloves is recommended. In case of high dust concentrations or exceedance of PELs, use an appropriate NIOSH approved respirator. Remove contaminated clothing.
First Aid	In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at least 15 minutes; contact physician immediately. Wash clothing before re-use.
Clean Up	In case of spillage, ventilate area of spill, confine spill, vacuum or scoop into appropriate container. Dispose of in accordance with current applicable local, state and federal regulations. Uncured material can be removed with water. Cured material can only be removed mechanically.

Visit our website at www.sikaconstruction.com **1-800-933-SIKA NATIONWIDE**

Regional Information and Sales Centers. For the location of your nearest Sika sales office, contact your regional center.

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Construction

SikaTop-Armatec® 110 EpoCem®

Bonding agent and anti-corrosive coating

Product Description

SikaTop-Armatec® 110 EpoCem® is a cement-based, epoxy-modified, three-component, anti-corrosion coating and bonding agent.

Uses

Bonding agent for use on concrete, mortar or steel:

- For repairs to concrete using Sika's patching and repair mortars
- For bonding new concrete to old (wet to dry)

Anti-corrosion coating for reinforcing steel:

- For repairs to reinforced concrete where there is corrosion of the steel

Characteristics / Advantages

- Excellent adhesion to steel and concrete
- Acts as an effective barrier against penetration of water and chlorides
- Contains corrosion inhibitors
- Provides an excellent bonding coat for subsequent application of repair mortars (cement and epoxy cement based)
- High degree of mechanical strength
- May be spray applied

Product Data

Form

Appearance / Colours	Liquid and Powder Component A: white liquid Component B: yellowish liquid Component C: light grey powder (Grey when mixed)
Packaging	1,75 Litre pack (Components A+B+C)

Storage

Storage Conditions / Shelf-Life	6 Months in original, unopened container. Store in a dry area between 5°C and 30°C.Protect from direct sunlight.

Technical Data

Chemical Base	Epoxy, Cement & Crystaline free Silica
Density	Mixed: 2,00kg/litre
Layer Thickness	1 – 2 mm

Mechanical Properties

Bond Strength (14 days)	**To concrete:** 2 – 3 N/mm^2	**To steel:** 1 – 2 N/mm^2

Application Details

Consumption / Dosage

Usage	m^2 per litre
Bonding Agent	1,5 – 2,0
Anti-corrosion coating	0,5 – 1,0 per coat

The recommended coverage's should be strictly adhered to.

Substrate Quality

The concrete substrate must be sound and of sufficient compressive strength (min.20 N/mm² (MPa) with a minimum pull off strength of 1.5 N/mm² (MPa).

The surface must be dry and free of all contaminants such as oils, grease, coatings and surface treatments etc.

The substrate must be prepared mechanically to remove cement laitance and achieve a profile open textured surface.

Weak concrete should be removed and surface defects such as honeycombed areas, blowholes and voids must be fully exposed.

Repairs to substrate, filling of blowholes/voids and surface levelling should be carried out using the appropriate product from the Sikafloor®, SikaDur® and SikaGard® range of materials.

Substrate Preparation / Priming

Concrete, mortar and stone:
All surfaces must be clean and sound. Remove all loose materials mechanically, with a wire brush, or by water or sand blasting. The surface may be dry or damp, but it must be free of any standing water.

Steel:
All surfaces must be clean and free from all traces of grease, oil, rust and mill scale.

Application Conditions / Limitations

Substrate Temperature	Min.5°C – Max.30°C.
Ambient Temperature	Min.5°C – Max.35°C.
Substrate Humidity	< 10 %

Application Instructions

Mixing (Ratio/Dosage)

Mix complete kits only

Shake Components A and B vigorously before opening. Pour both liquids into a suitable mixing pan and mix for 30 seconds. Add Component C slowly while mixing with a slow speed drill (set at 250 rpm). Continue mixing for at least 3 minutes, taking care to entrain as little air as possible, until a uniform, lump-free consistency is obtained. **Leave to stand for 5 — 10 minutes** until the mixture exhibits a brushable, slow-dripping consistency.

Application Method / Tools

For use as a bonding agent:

Wet down the prepared substrate until the concrete is fully saturated with water, and then apply a bonding coat not less than 0,5 mm thick, using a paintbrush, roller or suitable spray gun. For best results, work the bonding slurry well into the substrate to ensure complete coverage of all surface irregularities.

Apply the freshly mixed patching mortar or concrete while the SikaTop-Armatec® 110 EpoCem® is still wet.

For use as an anti-corrosion coating:

Apply a coating approximately 1,0 — 2,0 mm thick to the cleaned and derusted reinforcement steel, using a stiff paintbrush, roller or spray gun.

Leave to dry for 2 — 3 hours (at an ambient temperature of 20°C), then apply a second coat of similar thickness.

Leave to dry for a similar period before applying patching mortar to the repair. In the course of application, some of the coating material will inevitably be deposited on the surrounding concrete, but this has no detrimental effect on the finished repair.

Cleaning of Tools

Remove uncured SikaTop-Armatec® 110 EpoCem® from tools and equipment with water immediately after use. Cured material can only be removed mechanically.

Waiting Time / Overcoatability

The maximum waiting times between the application of SikaTop-Armatec® 110 EpoCem® and the subsequent application of a patching mortar or concrete:

Temperature	Time (Hours)
+5°C	20
+10°C	16
+20°C	12
+30°C	8

Notes on Application / Limits

Freshly applied SikaTop-Armatec® 110 EpoCem® should be protected from damp, condensation and water until the repair mortar has been placed.

On no account should water be added to the mix.

Local Restrictions

Please note that as a result of specific local regulations the performances of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

Health and Safety Information

Protective Measures

During application in closed rooms, pits and shafts, etc. sufficient ventilation must be provided. Keep away from naked flames including welding.

To avoid rare allergic reactions, we recommend the use of protective gloves. Change soiled work cloths and wash hands before breaks and after finishing work.

Local regulations as well as health and safety advice on packaging labels must be observed.

Ecology

Transportation Class

construction

Important Notes	Uncured/unmixed material must be removed according to local regulations. Fully cured material can be disposed of as household waste under agreement with the responsible local authorities. Detailed health and safety information as well as detailed precautionary measures e.g. physical, toxicological and ecological data can be obtained from the Material Safety Data Sheet.
Toxicity	

Legal Notes

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request or access on the Internet under www.sika.co.za.

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3 Contributes LEED Points

PROSPEC®

RCT Rapid Cure Technology

BLENDCRETE

Description

ProSpec® BlendCrete is a one component, polymer modified, cement based concrete and masonry patching compound.

Features

- Fast setting, low slump repair mortar that can be trowelled, shaped and shaved after taking an initial set
- Easy shaping and molding
- One component incorporating water activated polymer system
- Integrated corrosion inhibitor
- Can be applied overhead and vertically without using expensive forming procedures
- Apply from 1/2" to 1" (13 to 25 mm)
- Tenacious bond to substrates
- Interior/exterior
- Portland cement based
- Normal set time of 30 minutes; also available in 15 minute set time
- Available in 3 gray colors and one white color
- Rapid Cure Technology (RCT)™

Uses

- Used interior or exterior, above or below grade, on vertical, overhead and horizontal surfaces
- Suited for patching distressed horizontal, vertical and overhead surfaces including precast products, concrete pipe, curbs, sidewalks, bridges, panels and walls
- Used to fill honeycombs, form tie rise holes, spalls or irregularities due to misaligned forms or unconsolidated concrete

Technical Data

Working Time	
15 minutes at 70° F (21° C)	
Set Time ASTM C 191 @ 70° F (21° C)	
Initial set	Approx. 20 min.
Final set	Approx. 30 min.
Compressive Strength ASTM C 928	
1 hour	1,925 psi (13.3 MPa)
3 hours	3,340 psi (23.0 MPa)
1 day	4,885 psi (33.7 MPa)
7 days	5,845 psi (40.3 MPa)
28 days	6,500 psi (44.8 MPa)

Freeze/Thaw Resistance ASTM C 666 Method “B”	
After 300 cycles	1% loss due to slight scaling; no spalling

Average Scaling Resistance (ASTM C 672-98)		
No. of cycles	Rating	Condition of surface
25	0	No scaling visible

Shear Bond Strength ASTM C 882	
1 day	1,035 psi (7.1 MPa)
7 days	1,650 psi (11.4 MPa)
Flexural Strength ASTM C 348	
1 day	1,142 psi (7.9 MPa)
28 days	1,180 psi (8.1 MPa)

Test results obtained under controlled laboratory conditions.
Reasonable variations can occur due to atmospheric and job site conditions.

PROSPEC®

BLENDCRETE

Preparation

Adjoining surfaces must be sound, clean, free of loose or damaged concrete, dust, dirt and other contaminants that will interfere with bond. Completely expose and clean all reinforcing steel, ensuring a minimum clearance of 3/4" (19 mm) behind reinforcing steel.

Perform reinforcing steel preparation in accordance with ICRI Technical Guidelines No. 03730. For best results patch area edges should be saw cut to a depth of 1/2" (13 mm). Abrade concrete to obtain a rough surface promoting adhesion. The area should be saturated surface dry (SSD) with no standing water on the surface. The use of a vigorously scrubbed application of a no slump bond coat of BlendCrete or a bonding agent like ProSpec Acrylic Additive is recommended. This should be applied to all surfaces coming into contact with the patch. Do not allow bond coat to dry prior to the placement of the BlendCrete.

Refer to

- ICRI Guide No. 03732 Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays

Mixing

BlendCrete requires 4 to 5 quarts (3.8 to 4.7 L) of water per 50 lbs. (22.7 kg) of powder. Mix only the amount of material that can be placed in 15 minutes. Pour the required amount of potable water into a clean mixing container, then add the measured amount of BlendCrete while continuing to mix and blend thoroughly for 1-2 minutes to a lump free putty like consistency. Small amounts of BlendCrete can be mixed using a trowel or a 1/2" drill (400-600 r.p.m.) and paddle.

Extended Mix: To fill areas deeper than 2" (51 mm), add 15 lbs. (6.8 kg) of clean saturated surface dry 3/8" (10 mm) pea gravel to 50 lbs. (22.7 kg) of BlendCrete™. First mix the BlendCrete as outlined, then add the pea gravel and mix for 60 seconds. Total mixing time is not to exceed 2-3 minutes.

Do not over water, re-temper or over mix. Clean out the mixing container thoroughly after each batch to avoid getting hardened mortar into the next batch.

Application

Immediately apply the fresh mortar into the entire surface, forcing BlendCrete firmly into the previously prepared area insuring full contact with all bonding surfaces. Slightly overfill the area. After initial set, using a trowel, shave BlendCrete to the desired final profile, shaving the patch from the center towards the bond edge at the existing surfaces. A wet spray may be used for final shaping. In deeper areas additional lifts can be made after the original patch has reached initial set. Score and roughen the original lift layer to improve bond between applications. BlendCrete can be placed in lifts up to 1" (25 mm) on vertical and overhead applications by holding the mortar in place until initial set has occurred.

PROSPEC®

BLENDCRETE

Clean Up

Use water to clean all tools immediately after use.

Best Performance

- Do not bridge moving cracks, control or expansion joints
- Protect from conditions that cause early water loss: such as wind, sunlight, heat, etc.
- The minimum applications thickness is 1/2" (12 mm)
- Do not overwork, re-temper, over water or add admixtures

Colors

#0 Dark gray

#2 Medium gray

#3 Light gray

Also available in white

Curing

Cure in accordance with American Concrete Institute procedure number 308. Protect patch from high temperature, high wind, low humidity, and direct sun causing rapid drying, by covering with wet burlap or plastic for up to 24 hours. A water based curing compound can also be used.

Do not apply to frozen or frost covered areas. The minimum ambient and surface temperatures should be 40° F (4° C) at time of application. Hot weather and conditions above 80° F (27° C) will reduce working time and accelerate set, while cold temperatures below 60° F (16° C) will have a retarding effect.

Refer to

- ACI 305 Standard on Hot Weather Concreting
- ACI 306 Standard on Cold Weather Concreting
- ACI 308 Standard Practice for Curing Concrete

Coverage

One 50 lb. (22.7 kg) bag yields approximately 0.48 $ft.^3$ (0.01 m^3)
With the addition of 15 lbs. (6.8 kg) of 3/8" (10 mm) pea gravel yield is approximately 0.60 $ft.^3$ (0.02 m^3)

Packaging

50 lbs. (22.7 kg) moisture resistant bag

Storage

Always keep in a cool dry place unexposed to sunlight.

Shelf Life

One year when stored properly in original unopened container.

PROSPEC®

BLENDCRETE

Caution

KEEP OUT OF REACH OF CHILDREN AND ANIMALS. WARNING!

Contains Portland cement and silica sand. May irritate eyes and skin. Avoid contact with eyes or prolonged contact with skin. In case of contact, flush thoroughly with water. The wearing of gloves and safety goggles is recommended.

In case of eye contact, flood eyes with potable water and call physician. DO NOT RUB EYES.

Do not take internally. Crystalline silica sand may cause serious lung problems. Avoid breathing dust and wear a respirator in dusty areas.

Consult Material Safety Data Sheet for further information.

First Aid

Inhalation: Remove to fresh air

Eye Contact: Irrigate eye with water or consult physician if irritation persists.

Skin Contact: Washed exposed skin area with soap and water; consult a physician if irritation persists.

Ingestion: Immediately consult a physician.

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Construction

Sika Boom®

Expanding Polyurethane Foam

Product Description

Sika Boom® is a polyurethane-based fast curing expanding foam.

Uses

- Filling gaps and voids that occur around the home and during building construction
- Blocking out dust, noise, draft and vermin
- Installation of window and doorframes
- Insulation of pipes

Characteristics / Advantages

- HCFC Free
- Can be cut, sanded and over painted
- Can be used when held upside down
- Suitable for use outside
- Has excellent adhesion to most substances
- Quick and easy gap filler
- Reaches difficult access areas that need to be filled

Product Data

Form		
Appearances / Colours	Foam	Light Yellow
Packaging	250, 500 and 750ml aerosol	

Storage

Storage Conditions / Shelf-Life	9 months shelf life if stored in an unopened packaging at between +18°C and +22°C and in a dry place.

Technical Data

Chemical Base	Polyurethane
Density	~ 22 kg / m³
Skinning Time	About 10 minutes at 23 °C
Curing Rate	5 – 10 hours depending on atmospheric temperature and humidity.

Vertical stability in gap	Stable ↑ 100 cm ↔ 5 cm
Service temperature	-30 °C to +80 °C
Flammability Class	B3 (DIN 4102)

Mechanical Properties

Mechanical Strength	> 9 N/cm²
Foam yield in litres	750ml – 39 ± 3 500ml – 26 ± 3 250ml – 12 ± 2
Dimensional stability	± 7 %

Application Details

Substrate Quality	Clean and dry, homogeneous, free from grease, dust and loose particles. Paint, laitance and other poorly adhering particles must be removed. Standard construction rules must be observed.
Substrate Preparation / Priming	The substrate must be free of dust, grease, oil and surface contaminants. The surface should be pre-moistened with water before application to ensure that: (a) The foam cures at an optimum rate (b) Secondary foam expansion is prevented.

Application Conditions / Limitations

Substrate Temperature	Min. 5°C max. 30°C
Ambient Temperature	Min. 5°C max. 35°C
Substrate Humidity	< 5 %
Relative Air Humidity	< 80 %

Application Instructions

Application Method / Tools	Screw the nozzle onto the can. Shake can thoroughly (approximately 20 times) before use. Apply foam by pointing nozzle into area to be filled and depressing. It can be applied valve up or down. Foam will dispense rapidly and will expand 2 to 3 times its size as it comes out of the can. Varying the pressure on the adaptor can regulate the quantity of foam dispensed.
Cleaning of Tools	Remove fresh spots of foam immediately using acetone. Cured foam can only be removed mechanically.
Notes on Application / Limitations	All data for 23°C and 50 % r.h. and non-aged foam. For yield and reactivity 85 % h.r. is necessary (humidify!). Special uses have to be tested in advance. For aged foam no. 8 is up to 30 % lower. Sika Boom® does not adhere to Teflon, polythene, silicone or grease. For special uses, test Sika Boom® in advance. Cutting time is about 25 minutes. Aged material can yield up to 30 % less than the specified value.

construction

Local Restrictions	Please note that as a result of specific local regulations the performances of this product may vary country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

Health and Safety Information

Protective Measures	To avoid rare allergic reactions, we recommend the use of protective gloves. Change soiled work cloths and wash hands before breaks and after finishing work. Local regulations as well as health and safety advice on packaging labels must be observed.
Ecology	
Transportation Class	
Important Notes	Residues of material must be removed according to local regulations. Fully cured material can be disposed of as household waste under agreement with the responsible local authorities. Detailed health and safety information as well as detailed precautionary measures e.g. physical, toxicological and ecological data can be obtained from the Material Safety Data Sheet.
Toxicity	

Legal Notes

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Construction

Sikaflex®-2c NS

Two-component, non-sag, polyurethane elastomeric sealant

Description	Sikaflex-2c NS is a 2-component, premium-grade, polyurethane-based, elastomeric sealant. It is principally a chemical cure in a non-sag consistency. Meets ASTM C-920, Type M, Grade NS, Class 25, use T, NT, M, G, A, O, I and Federal Specification TT-S-00227E, Type II, Class A. Tested in accordance with ASTM C-1382 for use in EIFS Systems.
Where to use	■ Intended for use in all properly designed working joints with a minimum depth of 6 mm. ■ Ideal for vertical and horizontal applications. ■ Placeable at temperatures as low as 4°C. ■ Adheres to most substrates commonly found in construction. ■ An effective sealant for use in Exterior Insulation Finish Systems (EIFS). ■ Submerged environments, such as canal and reservoir joints.
Advantages	■ Capable of ±50% joint movement. ■ Chemical cure allows the sealant to be placed in joints exceeding 12.5 mm in depth. ■ High elasticity with a tough, durable, flexible consistency. ■ Exceptional cut and tear resistance. ■ Exceptional adhesion to most substrates without priming. ■ Available in 40 architectural colors. ■ Color uniformity assured via Color-pak system. ■ Available in pre-pigmented Limestone Gray (no Color-pak needed). ■ Non-sag even in wide joints. ■ Easy to mix. ■ Paintable with water-, oil-, and rubber-base paints. ■ ANSI/NSF 61 approval for contact with potable water. ■ Jet fuel resistant
Packaging	1.5 US gal/unit (5.68 ltr) Color-pak is purchased separately. Limestone Gray color available prepigmented.

Typical Data *(Material and curing conditions 23°C (73°F) and 50%R.H.)*

Shelf life	One year in original, unopened containers.		
Storage conditions	Store dry at 4° to 35°C (40° to 95°F). **Condition material to 18° to 24°C before using.**		
Colors	A wide range of architectural colors are available. Special colors available on request.		
Application temperature	4° to 35°C, ambient and substrate temperatures. Sealant should be installed when joint is at midrange of its anticipated movement.		
Service range	-40° to 75°C (-40° to 170°F).		
Curing rate (ASTM C-679)	Tack-Free Time Final Cure	6 - 8 hrs. 3 days	
Application life	3 - 4 hrs.		
Tear strength	ASTM D-624	0.8 kg/mm	
Shore A hardness	ASTM D-2240	25 ± 5	
Tensile properties (ASTM D-412) **Tensile strength at break** **Tensile elongation** **100% modulus**	 0.83 N/mm^2 500% 0.48 N/mm^2		
Adhesion in peel (FedSpec.TT-S-00227E)	**Substrate** Concrete	**Peel Strength** 25 lb.	**% Adhesion Loss** Zero
Weathering resistance	Excellent		
Chemical resistance	Good resistance to water, diluted acids, diluted alkalines, and residential sewage. Consult Technical Service for specific data.		

How To Use

Surface Preparation

All joint-wall surfaces must be clean, sound, and frost-free. Joint walls must be free of oils, grease, curing compound residues, and any other foreign matter that might prevent bond. Ideally this should be accomplished by mechanical means. Bond breaker tape or backer rod must be used in bottom of joint to prevent bond.

Priming

Priming is typically not necessary. Most substrates only require priming if sealant will be subjected to water immersion after cure. Testing should be done, however, on questionable substrates, to determine if priming is needed. Consult Technical Service or Sikaflex Primer Technical Data Sheet for additional information on priming.

Mixing

Pour entire contents of Component 'B' into pail of Component 'A'. Add entire contents of Color-pak into pail and mix with a low-speed drill (400 - 600 rpm) and Sikaflex paddle.* Mix for 3 - 5 minutes to achieve a uniform color and consistency. Scrape down sides of pail periodically. Avoid entrapment of air during mixing. When mixing in cold weather (<10°C), do not force the mixing paddle to the bottom of the pail. After adding Component 'B' and Color-pak into Component 'A', mix the top 1/2 to 3/4 of the pail during the first minute of mixing. After scraping down the sides of the pail, mix again for another minute. The paddle should reach the bottom of the pail between the first and second minute of mixing. Scrape down the sides of the pail a second time and then mix for an additional 2 - 3 minutes until the sealant is well blended.

Color-pak must be used with tint base. For pre-pigmented Limestone base, just mix with low speed drill and Sikaflex paddle (no Color-pak needed).

Application

Recommended application temperatures 4° to 35°C. Pre-conditioning units to approximately 20°C is necessary when working at extremes. Move pre-conditioned units to work areas just prior to application. Apply sealant only to clean, sound, dry, and frost-free substrates. Sikaflex-2c should be applied into joints when joint slot is at mid-point of its designed expansion and contraction.

To place, load directly into bulk gun or use a follower plate loading system. Place nozzle of gun into bottom of joint and fill entire joint. Keeping the nozzle deep in the sealant, continue with a steady flow of sealant preceding nozzle to avoid air entrapment. Also, avoid overlapping of sealant since this also entraps air. Tool as required. Joint dimension should allow for 6 mm minimum and 12.5 mm inch maximum thickness for sealant. Proper design is 2 : 1 width to depth ratio.

Limitations

- The ultimate performance of Sikaflex-2c NS depends on good joint design and proper application.
- Minimum depth in working joint is 6 mm.
- Maximum expansion and contraction should not exceed 50% of average joint width.
- Do not cure in the presence of curing silicones.
- Avoid contact with alcohol and other solvent cleaners during cure.
- Allow 3-day cure before subjecting sealant to total water immersion.
- Avoid exposure to high levels of chlorine. (Maximum level is 5 ppm).
- Do not apply when moisture vapor transmission exists since this can cause bubbling within the sealant.
- Avoid over-mixing sealant.
- Light color shades tend to yellow over time when exposed to ultraviolet rays.
- Light colors can yellow slightly if exposed to direct gas fired heating elements prior to the formation of initial skin.
- When overcoating: an on-site test is recommended to determine actual compatibility.
- The depth of sealant in horizontal joints subject to traffic is 12.5 mm.
- In horizontal joints exposed to vehicular or foot traffic, "TG" additive is recommended. See Sikaflex-2c NS TG data sheet for specific details.

Caution	**Component 'A'; Irritant** - Avoid contact. Product is a skin, respiratory and eye irritant. Use of safety goggles and chemical resistant gloves recommended. Use of a NIOSH approved respirator required if PELs are exceeded. Use with adequate ventilation. **Component 'B'; Combustible; Sensitizer; Irritant** - Contains Xylene. Keep away from heat, sparks and open flame. Use with adequate ventilation. Product is a respiratory and skin sensitizer. Avoid contact. Product is an eye, skin, and respiratory irritant. Use of safety goggles and chemical resistant gloves recommended. Use of a NIOSH approved respirator required if PELs are exceeded.
First aid	In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at least 15 minutes; contact physician. For respiratory problems, remove to fresh air. Wash clothing before reuse. Discard contaminated shoes.
Clean up	Uncured material can be removed with approved solvent. Cured material can only be removed mechanically. For spillage, collect, absorb, and dispose of in accordance with current, applicable local, state, and federal regulations.
Legal Notes	The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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Web-site: www.sika.cn

SPEED CRETE® BLUE LINE

Fast Setting Underwater Cement Based Patching Material

Description

SPEED CRETE BLUE LINE is a proprietary formulation of blended portland cements, finely processed selected aggregates, and specific chemical additives designed to provide a fast set, particularly for underwater use. SPEED CRETE BLUE LINE undergoes a chemical "hyper hydration" and produces a very stable, low permeable, cementitious matrix, when combined with the correct amount of water.

Primary Applications

- Underwater and below grade repairs
- Vertical, overhead and horizontal restoration
- Outstanding material for repair of dams, piers, reservoirs, pilings, seawalls, tunnels, sewer pipe and other underwater surfaces

Features/Benefits

- Rapid set
- Initial set in 3 to 5 minutes
- Underwater cure
- High strength
- Durable
- Used, without forming, at no slump consistency
- Can be “shaved” to desired contour

Technical Information

Material Properties at 75°F (24°C)

Compressive Strength psi (MPa) ASTM C 109
24 hours 3,500 (24.1)
7 days.....5,460 (37.6)
28 days.....6,015 (41.5)

Set Time Gilmore ASTM C 266
Initial .....3 to 5 min
Final.....20 min

Tensile Strength psi (MPa) ASTM C 190
7 day avg.....315 (2.2)
28 day avg.....410 (2.8)

Flexural Strength psi (MPa) ASTM C 78
28 day avg.....964 (6.6)

Shear Bond Strength psi (MPa) ASTM C 1042
24 hour avg .....921(6.3)
7 day avg.....1,268 (8.7)

Freeze Thaw Durability Factor ASTM C 666
300 cycles 98.05%

Shrinkage ASTM C 157
Initial 7 days .....-0.053%
Final 28 days.....-0.160%
Expansion initial 7 days 0.047%
Final 28 days.....0.104%

Scaling Resistance ASTM C 672
25 cycles ..... 0% loss

Chlorides ASTM D 1411 ..... 0.01%

Packaging

SPEED CRETE BLUE LINE is packaged in 50 lb (22.7 kg) poly-lined bags, and 50 lb (22.7 kg) pails.

Shelf Life

1 year in original, unopened package.

Coverage/Yield

Approximately 0.5 ft^3 (0.01 m^3).

Directions for Use

Surface Preparation: Concrete surfaces must be structurally sound, free of loose or deteriorated concrete and free of dust, dirt, paint, efflorescence, oil and all other contaminants. Mechanically abrade the surface to achieve a surface profile equal to CSP 6 - 7 in accordance with ICRI Guideline 310.2. Properly clean profiled area. **Priming:** Clean and prime exposed steel above water with DURALPREP AC. Concrete that is and will remain above water throughout the repair should be primed with a spray or brush coat of DURALPREP AC. Alternately, a Saturated Surface Dry (SSD) concrete surface can be primed with a scrub coat of SPEED CRETE BLUE LINE. The repair must be made before the scrub coat dries out.

The Euclid Chemical Company
19218 Redwood Rd. • Cleveland, OH 44110
Phone: [216] 531-9222 • Toll-free: [800] 321-7628 • Fax: [216] 531-9596
www.euclidchemical.com
An RPM Company

Mixing: SPEED CRETE BLUE LINE will require approximately 5 to 5.5 quarts (4.7 to 5.26 L) of potable water per 50 lb (22.7 kg) bag or pail to achieve the proper mix consistency. Pour the measured amount of water into a clean container. Add the measured amount of SPEED CRETE BLUE LINE, and thoroughly mix for no more than 60 seconds to a stiff, no slump, putty-like consistency. Because of fast initial set time, do not mix more than 50 lbs (22.7 kg) at a time. Mix small quantities of SPEED CRETE BLUE LINE in a clean pail with a hand trowel.

Application: To ensure complete bond with the entire surface, force the SPEED CRETE BLUE LINE firmly into the Saturated Surface Dry area by hand or with a trowel. Underwater applications may be smoothed or finished by hand. For out-of-water applications, slightly overfill the patch, and following initial set, shave the material to conform to the contour of the surrounding surface. Always shave SPEED CRETE BLUE LINE toward the common bonding edge between the patching material and the existing surface. Cure the material using standard curing practices. For additional information, contact your local EUCLID CHEMICAL representative.

Clean-Up

Clean application tools and mixing equipment with water immediately following use. Hardened SPEED CRETE BLUE LINE is difficult to remove.

Precautions/Limitations

- Covered storage away from all moisture.
- Mix no more than 60 seconds.
- Use only potable water with SPEED CRETE BLUE LINE.
- Mix to a stiff, putty-like, no slump consistency.
- Do not re-temper or add sand to SPEED CRETE BLUE LINE.
- Minimum application 3/4” (19 mm), maximum application, 3” (7.62 cm) per lift.
- Do not overwork or overtrowel patching material.
- Do not featheredge SPEED CRETE BLUE LINE.
- Clean mixing equipment between batches.
- In all cases, consult the Material Safety Data Sheet before use.

Rev. 10.09

DURALPREP A.C.

Bonding Agent and Anti-Corrosion Coating for Reinforcement

Description

DURALPREP A.C. is a three component, pre-proportioned, water based epoxy modified portland cement bonding agent and anti-corrosion coating. DURALPREP A.C. is used as a bonding agent for placing fresh concrete to existing concrete and for repair and restoration of concrete surfaces. DURALPREP A.C. contains a unique migratory corrosion inhibitor which protects reinforcement when used as an anti-corrosion coating for steel. DURALPREP A.C. has a long open time, is non flammable, VOC compliant, and does not form a water vapor barrier after cure.

Primary Applications

- Bonding agent for fresh concrete to existing concrete
- Concrete repairs with cement or epoxy mortars
- Anti-corrosion coating for steel reinforcement
- Exterior or interior
- On grade or above grade applications

Features/Benefits

- Can contribute to LEED points
- Long open time
- Migratory corrosion inhibitor

Technical Information

Material Properties @ 75°F (24°C), 50% R.H.	
Mix ratio (A:B:C:)	1 gal: (3.8L) 1 gal: (3.8L) 36 lbs (16.3 kg)
Color	Concrete Gray
Pot Life:	30 to 45 mins.
Contact Time	Up to 24 hours depending on ambient temperature
Initial Set (ASTM C 266)	2 to 3 hrs
Bond Strength (ASTM C 882), 7 days:	psi (MPa)
1 hr open time	2,480 (17.1)
24 hr open time	2,700 (18.6)

Compressive Strength (ASTM C 109)	psi (MPa)
3 days	>5,100 (35.2)
7 days	>7,300 (50.3)
28 days	>10,000 (68.9)
Flexural Strength (ASTM C 348)	
28 days:	> 1,280 (8.8)
Splitting Tensile Strength (ASTM C 496)	
28 days	>600 (4.1)
Water Vapor Permeability (ASTM E 96)	0.16 grains/ft² hr.

Values presented are typical and not necessarily referenced to create specifications

Packaging

DURALPREP A.C. is packaged in 3.75 gal (14.2 L) kits and 2/1 gal (3.8 L) units/case.

Shelf Life

1 year in original, unopened package.

Coverage

One 3.75 gal (14.2 L) kit of DURALPREP A.C. will cover approximately 250 ft² (23.2m²). One 1 gal (3.8L) unit will cover approximately 65 ft²(6 m²).

Bonding Agent	60 to 80 ft²/gal (1.47 to 1.96 m²/L)
Anti-Corrosion Coating	60 to 80 ft²/gal/coat (1.47 to 1.96 m²/L)

Note: Coverage rates are approximate, and for estimating purposes only. Test the area prior to application to determine effective coverage rates. Surface temperature, porosity, and texture will determine actual material requirements.

Directions for Use

Surface Preparation: The surface must be structurally sound, dry, free of grease, oils, curing compounds, efflorescence, laitance and any other contaminants that would interfere with adhesion. All previous coatings on the substrate must be removed. **Concrete:** Smooth, precast and formed concrete surfaces must be cleaned, roughened and made absorptive by mechanical abrasion. All coatings must be removed completely to provide an absorptive surface. Remove excess moisture, drips and puddles from the surface. The surface should be saturated surface dry (SSD) with no standing water prior to application. **Steel:** All oils, greases, dirt, old coatings or chemical contaminates must be removed. All steel surfaces should be blasted to a “NEAR WHITE” metal finish using clean dry blasting media.

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An RPM Company

Mixing: Mix one full kit at a time. DURALPREP A.C. must be mechanically mixed with a slow speed motor and mixing blade to thoroughly disperse all ingredients. A 1/2" (13mm) drill motor and a "Jiffy" mixer may be used. Premix each containers (Parts A & B). Pour the Component A and Component B into a clean container. Start mixer and mix at slow speed for 30 to 45 seconds. Do not aerate the mix. While mixing gradually, add all of the Part C powder into the mixed liquid to produce a smooth lump free consistency. Mix thoroughly for approximately 3 minutes.

Application: Air and surface temperature must be above 45°F (7°C) and rising. Maximum temperature should not exceed 90°F (32°C). The approximate working life is 30 to 45 minutes depending on the temperature. **Bonding Agent:** Apply DURALPREP A.C. to the SSD surface using a stiff bristle brush or spray equipment. Allow to cure 30 minutes before placing concrete. DURALPREP A.C. has an open time of from 30 min to 24 hrs at 75°F (24°C). **Anti-Corrosion Coating:** Coat the exposed reinforcing steel, making sure to coat the underside portion of the steel. Apply two coats at 20 mils each by brush or spray, allowing 3 to 6 hours between applications. Place fresh mortar or concrete within the open time of the second coat of DURALPREP A.C. 30 min to 24 hrs at 75°F (24°C).

Clean-Up

Clean tools and equipment with water immediately following use. Clean drips with water while still wet. Dried DURALPREP A.C. will require mechanical abrasion for removal.

Precautions/Limitations

- Mix only one full kit at a time.
- Do not mix for longer than 3 minutes.
- Do not allow components to freeze.
- Do not apply at temperatures below 45°F (7°C), or above 90°F (32°C).
- Do not add water to mix.
- Maximum open time: 12 hours @ 90°F (32°C), 24 hours @ 75°F (24°C), 30 hours @ 45°F (7°C).
- Store at temperatures between 65°F and 80°F (18°C to 27°C).
- Protect from freezing.
- Do not use Component A or B if it has frozen.
- Protect from moisture.
- In all cases, consult the Material Safety Data Sheet before use.

SURE-GRIP HIGH PERFORMANCE GROUT™

NON-SHRINK, NON-METALLIC HIGH EARLY STRENGTH GROUT

PRODUCT DESCRIPTION

Sure-Grip High Performance Grout is a ready to use, non shrink, non corrosive, non metallic grout formulated and produced with the highest quality raw materials available. It is a cement based grout designed to deliver a high rate of flow with excellent density (for dynamic loads) and a high compressive strength quickly – 5000 psi in one day – and at 28 days, up to 10,000 psi! Sure-Grip High Performance early strength means an earlier project completion time and less downtime for machines. It is designed to provide an effective load bearing surface through non shrink properties. It contains no chlorides or other components that cause corrosion, or bleeding.

PURPOSE

Sure-Grip High Performance Grout is an ideal product for interior or exterior grouting of architectural and structural precast concrete components, structural column base plates, machinery bases, anchoring bolts, cable anchorages, dowels, bearing pads, keyway joints, crane rails etc. Sure-Grip High Performance Grout is used in power plants, steel mills, paper mills, oil refineries, food plants, sewage and water treatment plants or anywhere a high quality engineered grout is required.

ADVANTAGES

- High compressive strength quickly – 5,000 psi in one day
- Less downtime for machines/finish projects sooner
- High ultimate compressive strength – 10,000 psi in 28 days
- Non metallic/non corrosive
- High density
- Low water requirements
- High fluidity/pourable/pumpable
- Resistant to heat and thermal shock
- Interior/exterior applications
- Approved by numerous state DOTs

MEETS SPECIFICATIONS

- Corps of Engineers Specification for non-shrink grout: CRD-C 621, Grades A,B and C
- ASTM C-1107 Specification for non-shrink grout Grades A, B and C
- ASTM C-827 – Sure-Grip Grout yielded a controlled positive expansion

Test Results – ASTM C-1107

Compressive Strength (PSI)

	@ 1 Day		@ 7 Days		@ 28 Days	
Fluidity	PSI	MPa	PSI	MPa	PSI	MPa
Flowable	5000	34.5	8000	55.1	10,000	68.9
Fluid	3500	24.1	6500	44.8	8500	58.6

APPLICATION INSTRUCTIONS

Surface Preparation: Thoroughly clean all contact surfaces. Existing concrete should be strong and sound. Surface should be roughened to insure bond. Metal base plates should be clean and free of oil and other contaminants. Maintain contact areas between 45°F (7°C) and 90°F (32°C) before grouting and during curing period. For hot and cold weather applications, contact Dayton Superior. Thoroughly wet concrete contact area 24 hours prior to grouting, keep wet and remove all surface water just prior to placement. If 24 hours is not possible, then saturate with water for at least 4 hours. Seal forms to prevent water or grout loss. On the placement side, provide an angle in the form high enough to assist in grouting and to maintain head pressure on the grout during the entire grouting process. Forms should be at least 1" (2.5 cm) higher than the bottom of the base plate.

Mixing:

A mechanical mixer with rotating blades like a mortar mixer is best. Small quantities can be mixed with a drill and paddle. When mixing less than a full bag, always first agitate the bag thoroughly so that a representative sample is obtained. Place approximately 3/4 of the anticipated mix water into the mixer and add the grout mix, adding the minimum additional water necessary to achieve desired consistency. For hot weather conditions (greater than 85°F [29°C]) mix with cold water (approximately 40°F [4°C]). For cold weather conditions (less than 50°F [10°C]) mix with warm water (approximately 90°F [29°C]).

Water Requirements:

Desired Mix	Water Per 50 lb. Bag (22.7 kg)
Flowable	3.25 quarts (3.1L)
Fluid	4.00 quarts (3.81L)

Mix for a total of five minutes to ensure uniform consistency. For placements greater than 3" (7.6 cm), up to 25 lbs. (11.3 kg) of washed pea gravel 3/8" (1 cm.) maximum size must be added to each 50 lb. (22.7 kg) bag

Refer to www.daytonsuperior.com for latest Technical Data Sheet and MSDS
1125 Byers Road, Miamisburg OH 45342
Customer Service: (888) 977-9600
Technical Assistance: (866) 329-8724

SURE-GRIP HIGH PERFORMANCE GROUT™

CONTINUED

of grout. The approximate working time (pot life) is 30 minutes. This will vary with ambient conditions.

Placement:
Grout should be placed to avoid entrapped air pockets. Grout should not be over worked which causes segregation. Provide vent holes where necessary. Forms must be sealed to prevent water or grout loss. When possible, grout bolt holes first. Placement and consolidation should be continuous for any one section of the grout. When nearby equipment causes vibration of the grout, such equipment should be shut down for a period of 24 hours (@73°F, 23°C).

Finishing and Curing:
Forms may be removed when grout is completely self supporting. Cut away where grout excessively restricts movement of steel, i.e., edges of base plates, etc. For best results, grout should extend downward at a 45° angle from the lower edge of the steel base plates or similar structures. Exposed grout surfaces should be cured. Dayton Superior recommends using the J-11-W, Cure & Seal WB (J-18) or a wet cure for 3 days. Maintain the temperature of the grout and contact area at 45°F (7°C) to 90°F (32°C) for a minimum of 24 hours.

APPROXIMATE YIELD
.42 cu. ft/per 50 lb. bag (.011 m3 /22.7 kg)
.57 cu. ft/per 50 lb. (.015m3 /22.7 kg) extended with 25 lbs. (11.3 kg) of washed 3/8" (1 cm) pea gravel.

PACKAGING

ITEM #	PACKAGING	WEIGHT LB./ (KG)
67440	BAG	5O (22.7)
67441	PAIL	5O (22.7)
122964	SUPERSACK	3000 (1361)

STORAGE
Store in a cool, dry area free from direct sunlight. Shelf life of unopened bags, when stored in a dry facility is 12 months. Excessive temperature differential and /or high humidity can shorten the shelf life expectancy.

CLEAN-UP
Use clean water. Hardened material will require mechanical removal methods.

LIMITATIONS
Do not re-temper after initial mixing. Do not add other cements or additives. Setting time for the High Performance Grout will slow during cold weather [less than 50°F (10°C)] and speed up during hot weather [greater than 80°F (27°C)]. Prepackaged material segregates while in the bag, thus when mixing less than a full bag it is recommended to first agitate the bag to assure it is blended prior to sampling.

WARNING
Skin is sensitive to cement. Wearing protective gloves and goggles is recommended. Avoid contact with eyes. Avoid prolonged contact with skin. Contains Portland cement. Wash exposed skin promptly with water. May cause skin irritation as well as cement burns. In case of eye contact, flush eyes repeatedly with clean water and contact a physician. Harmful if ingested. Read MSDS before using product.

MANUFACTURER
Dayton Superior Corporation
1125 Byers Road
Miamisburg, OH 45342
Customer Service: 888-977-9600
Technical Services: 866-329-8724
Website: www.daytonsuperior.com

WARRANTY
Dayton Superior Corporation ("Dayton") warrants for 12 months from the date of manufacture or for the duration of the published product shelf life, whichever is less, that at the time of shipment by Dayton, the product is free of manufacturing defects and conforms to Dayton's product properties in force on the date of acceptance by Dayton of the order. Dayton shall only be liable under this warranty if the product has been applied, used, and stored in accordance with Dayton's instructions, especially surface preparation and installation, in force on the date of acceptance by Dayton of the order. The purchaser must examine the product when received and promptly notify Dayton in writing of any non-conformity before the product is used and no later than 30 days after such non-conformity is first discovered. If Dayton, in its sole discretion, determines that the product breached the above warranty, it will, in its sole discretion, replace the non-conforming product, refund the purchase price or issue a credit in the amount of the purchase price. This is the sole and exclusive remedy for breach of this warranty. Only a Dayton officer is authorized to modify this warranty. The information in this data sheet supersedes all other sales information received by the customer during the sales process. THE FOREGOING WARRANTY SHALL BE EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER WARRANTIES OTHERWISE ARISING BY OPERATION OF LAW, COURSE OF DEALING, CUSTOM, TRADE OR OTHERWISE.

Dayton shall not be liable in contract or in tort (including, without limitation, negligence, strict liability or otherwise) for loss of sales, revenues or profits; cost of capital or funds; business interruption or cost of downtime, loss of use, damage to or loss of use of other property (real or personal); failure to realize expected savings; frustration of economic or business expectations; claims by third parties (other than for bodily injury), or economic losses of any kind; or for any special, incidental, indirect, consequential, punitive or exemplary damages arising in any way out of the performance of, or failure to perform, its obligations under any contract for sale of product, even if Dayton could foresee or has been advised of the possibility of such damages. The Parties expressly agree that these limitations on damages are allocations of risk constituting, in part, the consideration for this contract, and also that such limitations shall survive the determination of any court of competent jurisdiction that any remedy provided in these terms or available at law fails of its essential purpose.

DAYTON® SUPERIOR

Refer to www.daytonsuperior.com for latest Technical Data Sheet and MSDS
1125 Byers Road, Miamisburg OH 45342
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FIVE STAR® GROUT

High Performance Precision Non-Shrink Grout

PRODUCT DESCRIPTION

Five Star® Grout is the industry's leading cement-based, nonmetallic, non-shrink grout for supporting machinery and equipment. It is formulated with Air Release technology that combines high performance with the greatest reliability. When tested in accordance with ASTM C 827, Five Star® Grout exhibits positive expansion. Five Star® Grout meets the performance requirements of ASTM C 1107-02 Grades A, B and C, ASTM C 1107-07, and CRD-C 621-93 specifications for non-shrink grout over a wide temperature range, 40°F - 90°F (4°C - 32°C).

ADVANTAGES

- Air release technology per ACI 351.1 R
- 95% Effective Bearing Area (EBA) is typically achieved following proper grouting procedures
- Provides placement versatility: pour, pump or dry pack
- 45 minute working time
- Permanent support for machinery requiring precision alignment
- Does not contain gas generating additives, such as aluminum powder
- Non-shrink from the time of placement

USES

- Grouting of machinery and equipment to maintain precision alignment
- Non-shrink grouting of structural steel and precast concrete
- Grouting of anchors and dowels
- Support of tanks and vessels

PACKAGING AND YIELD

Five Star® Grout is packaged in heavy-duty, polyethylene lined bags and is available in 50 lb (22.7 kg) units yielding approximately 0.5 cubic feet (14.1 liters), or 100 lb (45.4 kg) units yielding approximately 1.0 cubic foot (28.3 liters) of hardened material at maximum water content.

SHELF LIFE

One year in original unopened packaging when stored in dry conditions; high relative humidity will reduce shelf life.

TYPICAL PROPERTIES AT 70°F (21°C)		
Early Height Change, ASTM C 827	0.0 to 4.0%	
Hardened Height Change, ASTM C 1090	0.0 to 0.3%	
Effective Bearing Area	95%	
Bond Strength, ASTM C 882, 28 Days	2,000 psi (13.8 MPa)	
Pull-out Strength, Tension, #5 threaded bar, 7 Days	2,400 psi (16.6 MPa)	
Compressive Strength, ASTM C 942 (C109 Restrained)	Minimum Water psi (MPa)	Maximum Water psi (MPa)
1 Day	4,000 (27.6)	2,500 (17.3)
3 Days	5,500 (38.0)	3,500 (24.1)
7 Days	6,500 (44.9)	5,000 (34.5)
28 Days	8,000 (55.2)	6,500 (44.9)
Working Time at 70°F (21°C)	45 minutes	

The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown may result. Test methods are modified where applicable.

PLACEMENT GUIDELINES

1. **SURFACE PREPARATION:** All surfaces in contact with Five Star® Grout shall be free of oil, grease, laitance and other contaminants. Concrete must be clean, sound and roughened to ensure a good bond. Soak concrete surfaces for 8 to 24 hours prior to application with liberal quantities of potable water, leaving the concrete saturated and free of standing water.
2. **FORMWORK:** Formwork shall be constructed of rigid non-absorbent materials, securely anchored, liquid-tight and strong enough to resist forces developed during grout placement. The clearance between formwork and baseplate shall be sufficient to allow for a headbox. The clearance for remaining sides shall be one to two inches (25 - 50 mm). Areas where bond is not desired must be treated with form oil, paste wax or similar material. Isolation joints may be necessary depending on pour dimensions. Contact the Five Star Products, Inc. Engineering and Technical Center for further information.
3. **MIXING:** Mix Five Star® Grout thoroughly for approximately four to five minutes to a uniform consistency with a mortar mixer (stationary barrel with moving blades). A drill and paddle mixer is acceptable for single bag mixes. For optimum performance, maintain grout at ambient temperatures between 40°F and 90°F (4°C and 32°C). Use heated or chilled water to help adjust working time. Mix Five Star® Grout with 7 - 11 quarts potable water per 100 lb. bag (3-1/2 to 5-1/2 quarts per 50 lb. bag). Do not exceed maximum recommended amount of mixing water as stated on the package or add an amount that will cause segregation. Working time is approximately 45 minutes at 70°F (21°C). Follow printed instructions on the package. Always add mixing water first to mixer followed by grout.
4. **PLACEMENT PROCEDURES:** Five Star® Grout may be dry packed, poured or pumped into place. Minimum placement thickness for Five Star® Grout is 1 inch (25 mm). For pours over 6 inches (150 mm) in depth Five Star® Grout should be extended with a clean, damp coarse aggregate meeting the requirements of ASTM C 33. Refer to the Five Star Products, Inc. Technical Bulletin "Cement Grout Aggregate Extension" for guidelines.
5. **POST-PLACEMENT PROCEDURES:** Five Star® Grout shall be wet cured for a minimum of three days, or coated with an approved curing compound meeting the requirements of ASTM C 309 after a minimum 24 hour wet cure. In-service operation may begin immediately after the required grout strength has been reached.

NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY. *For more detailed placement procedures, refer to Design-A-Spec™ installation guidelines or call the Five Star Products, Inc. Engineering and Technical Service Center at (800) 243-2206.*

CONSIDERATIONS

- If temperatures of equipment and surfaces are not between 40°F and 90°F (4°C and 32°C) at time of placement, refer to Design-A-Spec™ for cold and hot weather grouting procedures, or call the Five Star Products, Inc. Engineering and Technical Service Center at (800) 243-2206.
- Never exceed the maximum water content as stated on the bag or add an amount that will cause segregation. Construction practices dictate concrete foundation should achieve its design strength before grouting.

CAUTION

Contains cementitious material and crystalline silica. International Agency for Research on Cancer has determined that there is sufficient evidence for the carcinogenicity of inhaled crystalline silica to humans. Take appropriate measures to avoid breathing dust. Avoid contact with eyes and contact with skin. In case of contact with eyes, immediately flush with plenty of water for at least 15 minutes. Immediately call a physician. Wash skin thoroughly after handling. Keep product out of reach of children. **PRIOR TO USE, REFER TO MATERIAL SAFETY DATA SHEET**.

For worldwide availability, additional product information and technical support, contact your local Five Star® distributor, local sales representative, or you may call the Five Star Products, Inc. Engineering and Technical Service Center at (800) 243-2206.

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http://www.FiveStarProducts.com

APPENDIX AR

Monitoring Well Construction Logs

WELL CONSTRUCTION LOG

PROJECT & LOCATION:	DeLeval ERP Project, Poughkeepsie, NY
CLIENT:	City of Poughkeepsie
CONTRACTOR:	NYEG Drilling, LLC

BORING NO.

WELL NO. MW-1

PROJECT NO.: 14357.1013.31000

SHEET NO.: 1 OF 1

ELEVATION:

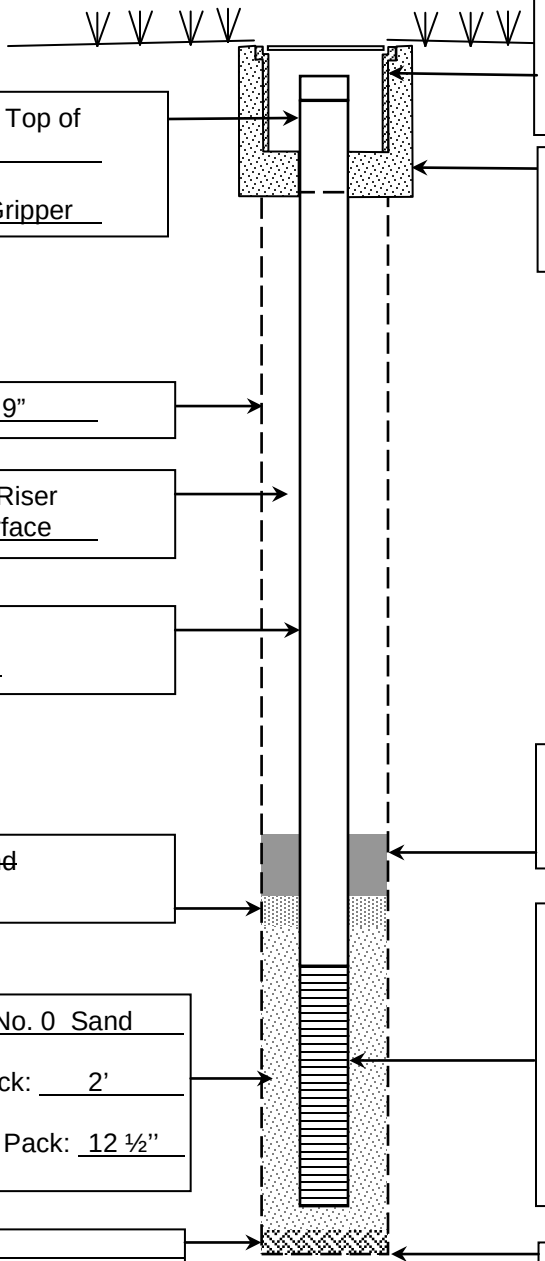
START DATE: 11/16/11 TIME: 11:00am

FINISH DATE: 11/16/11 TIME: 11:30am

DRILLER: Doug Thoma

INSPECTOR: J. Herrick

Note: Installed 3'4" – 4" sch. 40 PVC pipe over 2" riser for protection (backfilled with bentonite).



Type of Protective Casing: Flush Mount Curb Box To Be Installed by Site Contractor
Inside Dia. Of Casing: _____
Depth Below Ground of Casing: _____

Depth Above Ground to Top of Riser Pipe: 2'
Type of Cap: Locking Gripper

Type of Surface Seal: Concrete
Thickness of Surface Seal: _____

Diameter Borehole: 9"

Type of Backfill Around Riser Pipe: Bentonite to Surface

Inside Diameter of Riser Pipe: 2" PVC

Type of Bentonite Seal: Chips
Depth to Top of Bentonite Seal: Ground Surface

~~Depth to Top of Fine Sand Choke~~: _____

Type of Screen: Slotted
Screen Diameter: 2"
Screen Slot Size: 0.010"
Depth to Top of Screen: 2 ½'
Depth to Bottom of Screen: 12 ½'

Type of Sand Pack: No. 0 Sand
Depth to Top of Sand Pack: 2'
Depth to Bottom of Sand Pack: 12 ½"

~~Backfill (if any)~~: _____

Depth to Bottom of Borehole: 12 ½'

PROJECT NUMBER: 14357.1013.31000 12/5/11

DeLeval ERP Project
SUBSURFACE LOG
HOLE NUMBER MW-1

LOCATION: City of Poughkeepsie, NY

CLIENT: City of Poughkeepsie

CONTRACTOR: NYEG Drilling, Inc.

DRILLER: D. Thoma INSPECTOR: J. Herrick

START DATE and TIME: 11/16/2011 10:20:00 AM

FINISH DATE and TIME: 11/16/2011 11:00:00 AM

SURFACE ELEV: CHECKED BY: SMS

DRILL FLUID: None DRILLING METHOD: 4 1/4" HSA

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	11-16-11	10:40 AM	During Drilling	8	10	12

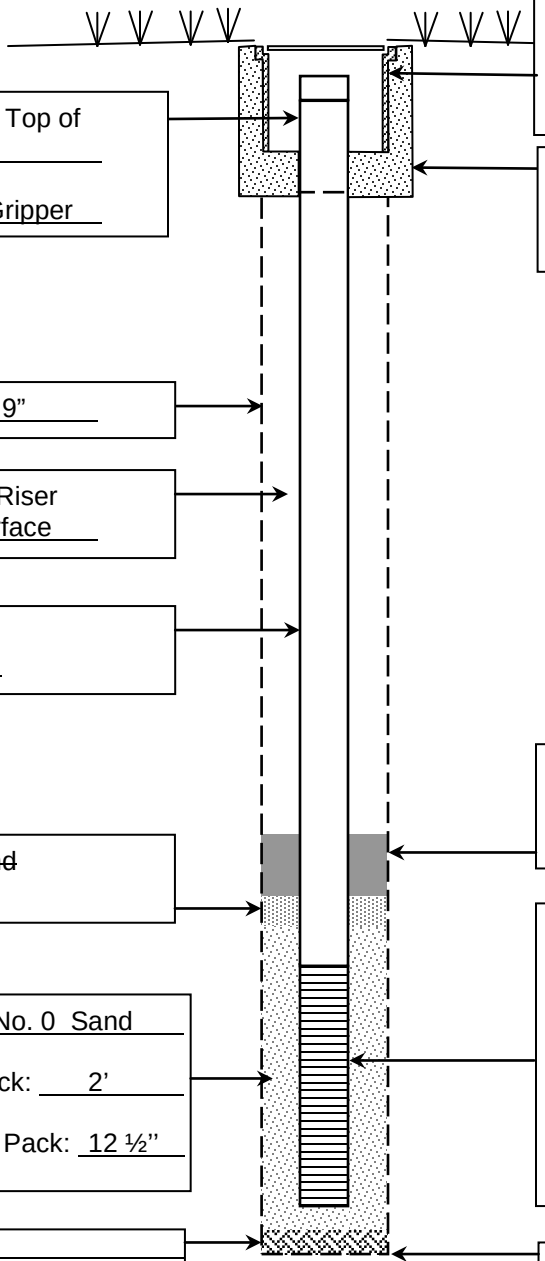
SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.6	3-3-3-6	6		**f.m.c. SAND**, Some f.c. Gravel, little silt, trace brick, gray, loose, moist **(FILL)**		Hnu = 0.0 ppm	
S-2	2	0.5	3-6-7-7	13		**f.m.c. SAND**, Some f.c. Gravel, little silt, trace wood, gray, m. compact **(FILL)**		Hnu = 0.0 ppm	
S-3	2	1	12-10-10-12	20	5	**f.c. GRAVEL**, Some f.m.c. Sand, little slag, little silt, trace wood, gray, m. compact, moist **(FILL)**		Hnu = 0.0 ppm	
S-4	2	0.5	3-4-5-5	9		**f.c. GRAVEL**, Some f.m.c. Sand, little silt, gray, loose, wet **(FILL)**		Hnu = 0.0 ppm	▽
S-5	2	0.8	3-6-6-4	12	10	**f.c. GRAVEL**, Some Silt, trace f.m.c. sand, gray, m. compact, saturated **(FILL)**		Hnu = 0.6 ppm, slight petroleum odor, slight sheen on water in sample spoon.	
S-6	2	0.4	6-6-5-5	11		**Similar Soil (FILL)**		Hnu = 0.4 ppm, slight petroleum odor, slight sheen on water in sample spoon.	
					15	End of Boring at 12 ft			
					20				

SUBSURFACE LOG 14357.1013 LOGS.GPJ UPDATEDCHA.GDT 12/9/11

WELL CONSTRUCTION LOG

PROJECT & LOCATION: DeLeval ERP Project, Poughkeepsie, NY	BORING NO.
CLIENT: City of Poughkeepsie	WELL NO. MW-2
CONTRACTOR: NYEG Drilling, LLC	PROJECT NO.: 14357.1013.31000
	SHEET NO.: 1 OF 1
	ELEVATION:
	START DATE: 11/9/11 TIME: 11:45am
	FINISH DATE: 11/9/11 TIME: 12:30am
	DRILLER: Doug Thoma
	INSPECTOR: J. Herrick

Note: Installed 4 ½' – 4" sch. 40 PVC pipe over 2" riser for protection (backfilled with bentonite).



Type of Protective Casing: Flush Mount Curb Box To Be Installed by Site Contractor
Inside Dia. Of Casing: _____
Depth Below Ground of Casing: _____

Depth Above Ground to Top of Riser Pipe: 2 ½'
Type of Cap: Locking Gripper

Type of Surface Seal: Concrete
Thickness of Surface Seal: _____

Diameter Borehole: 9"

Type of Backfill Around Riser Pipe: Bentonite to Surface

Inside Diameter of Riser Pipe: 2" PVC

Type of Bentonite Seal: Chips
Depth to Top of Bentonite Seal: Ground Surface

~~Depth to Top of Fine Sand Choke~~: _____

Type of Screen: Slotted
Screen Diameter: 2"
Screen Slot Size: 0.010"
Depth to Top of Screen: 2 ½'
Depth to Bottom of Screen: 12 ½'

Type of Sand Pack: No. 0 Sand
Depth to Top of Sand Pack: 2'
Depth to Bottom of Sand Pack: 12 ½"

~~Backfill (if any)~~: _____

Depth to Bottom of Borehole: 12 ½'

DeLeval ERP Project
SUBSURFACE LOG
HOLE NUMBER MW-2

PROJECT NUMBER: 14357.1013.31000 12/5/11

LOCATION: City of Poughkeepsie, NY
CLIENT: City of Poughkeepsie
CONTRACTOR: NYEG Drilling, Inc.
DRILLER: D. Thoma INSPECTOR: J. Herrick
START DATE and TIME: 11/9/2011 10:30:00 AM
FINISH DATE and TIME: 11/9/2011 11:30:00 AM
SURFACE ELEV: CHECKED BY: SMS

DRILL FLUID: None DRILLING METHOD: 4 1/4" HSA

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	11-9-11	11:00 AM	During Drilling	5		12

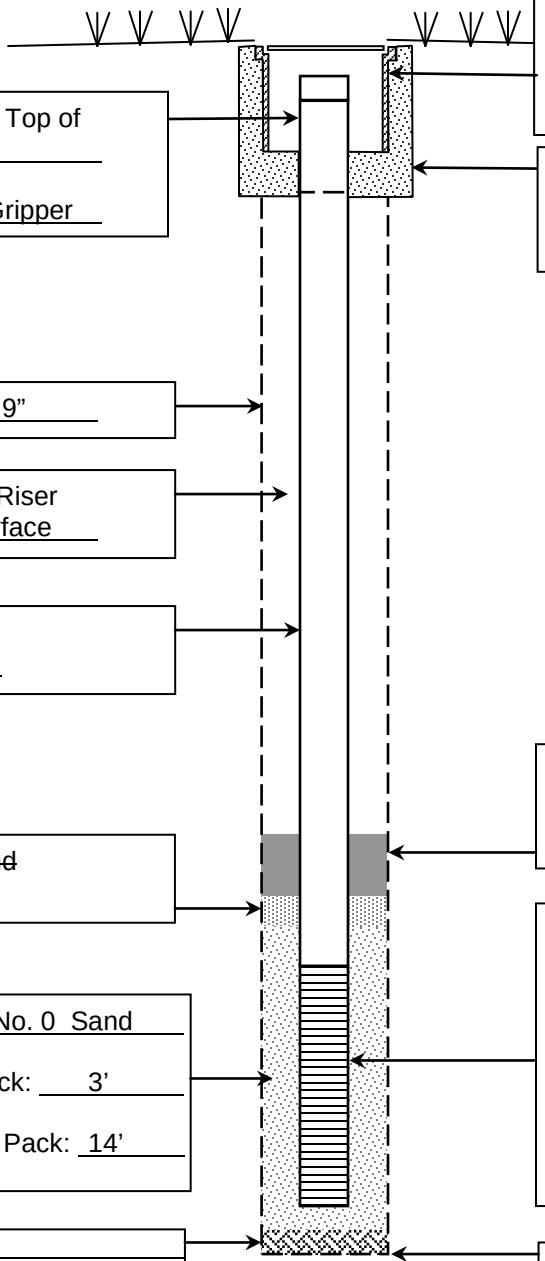
SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1	6-2-3-4	5		**SILT**, Some f.c. Gravel, trace concrete, trace coal, trace wood, brown, loose, moist **(FILL)**		Hnu = 0.0 ppm, no visual observations	
S-2	2	0.8	6-4-4-7	8		**SILT**, Some f.m.c. Gravel, little f.m.c. sand, trace brick, trace concrete, brown, loose, moist **(FILL)**		Hnu = 0.0 ppm, no visual observations	
S-3	2	1.4	2-3-3-3	6	5	**SILT**, Some f.c. Gravel, Some f. Sand, brown/black, loost, wet **(FILL)**		Hnu = 0.0 ppm, no visual observations	▽
S-4	2	0.8	11-7-7-8	14		**f.c. GRAVEL**, Some Brick, little f.m.c. sand, little silt, brown, m. compact, saturated **(FILL)**		Hnu = 0.0 ppm, no visual observations	
S-5	2	1.5	7-5-5-4	10	10	becomes loose **(FILL)**		Hnu = 0.0 ppm, no visual observations	
S-6	2	1	5-2-1-1	3		**f.c. GRAVEL**, Some Silt, little f.m.c. sand, brown, v. loose, saturated **(FILL)**		Hnu = 0.0 ppm, no visual observations	
						SILT, Some Clay, gray, v. loose, saturated **(FILL)**			
					15	End of Boring at 12 ft			
					20				

SUBSURFACE LOG 14357.1013 LOGS.GPJ UPDATEDCHA.GDT 12/9/11

WELL CONSTRUCTION LOG

PROJECT & LOCATION: DeLeval ERP Project, Poughkeepsie, NY	BORING NO.
CLIENT: City of Poughkeepsie	WELL NO. MW-3
CONTRACTOR: NYEG Drilling, LLC	PROJECT NO.: 14357.1013.31000
	SHEET NO.: 1 OF 1
	ELEVATION:
	START DATE: 11/10/11 TIME: 8:45am
	FINISH DATE: 11/10/11 TIME: 9:15am
	DRILLER: Doug Thoma
	INSPECTOR: J. Herrick

Note: Installed 3'4" – 4" sch. 40 PVC pipe over 2" riser for protection (backfilled with bentonite).



Type of Protective Casing: Flush Mount Curb Box To Be Installed by Site Contractor
Inside Dia. Of Casing: _____
Depth Below Ground of Casing: _____

Depth Above Ground to Top of Riser Pipe: 2'
Type of Cap: Locking Gripper

Type of Surface Seal: Concrete
Thickness of Surface Seal: _____

Diameter Borehole: 9"

Type of Backfill Around Riser Pipe: Bentonite to Surface

Inside Diameter of Riser Pipe: 2" PVC

Type of Bentonite Seal: Chips
Depth to Top of Bentonite Seal: 1'

~~Depth to Top of Fine Sand Choke~~: _____

Type of Screen: Slotted
Screen Diameter: 2"
Screen Slot Size: 0.010"
Depth to Top of Screen: 4'
Depth to Bottom of Screen: 14'

Type of Sand Pack: No. 0 Sand
Depth to Top of Sand Pack: 3'
Depth to Bottom of Sand Pack: 14'

~~Backfill (if any):~~ _____

Depth to Bottom of Borehole: 14'

PROJECT NUMBER: 14357.1013.31000 12/5/11

DeLeval ERP Project
SUBSURFACE LOG
HOLE NUMBER MW-3

LOCATION: City of Poughkeepsie, NY

CLIENT: City of Poughkeepsie

CONTRACTOR: NYEG Drilling, Inc.

DRILLER: D. Thoma INSPECTOR: J. Herrick

START DATE and TIME: 11/10/2011 7:20:00 AM

FINISH DATE and TIME: 11/10/2011 8:45:00 AM

SURFACE ELEV: CHECKED BY: SMS

DRILL FLUID: None DRILLING METHOD: 4 1/4" HSA

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	11-16-11	8:00 AM	Static	8		14

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	DESCRIPTION AND CLASSIFICATION	Remarks on Character of Drilling, Water Return, etc.
S-1	2	1.3	4-15-26-16	41	**SILT**, Some f.m.c. Sand, little f.c. gravel, brown, compact, moist **(FILL)** **f.c. GRAVEL**, little concrete, little brick, brown/black, compact, moist **(FILL)**	Hnu = 0.0 ppm
S-2	2	1.8	22-36-42-44	78	**f.c. GRAVEL**, little concrete, little brick, little f.m.c. sand, little silt, brown/black, v. compact, moist **(FILL)**	Hnu = 0.0 ppm
S-3	2	1.6	22-27-21-8	48	**SILT**, Some f.c. Gravel, trace brick, brown/black, compact, moist **(FILL)**	Hnu = 0.0 ppm
S-4	2	2	18-22-20-20	42	**SILT**, little f.c. gravel, little wood, trace f.m.c. sand, trace brick, brown/black, compact, wet **(FILL)**	Hnu = 0.0 ppm
S-5	2	1.3	12-8-13-11	21	**f.c. GRAVEL**, Some Shale Fragments, trace f.m.c. sand, trace silt, brown/black, m. compact, saturated **(FILL)**	Hnu = 0.0 ppm
S-6	2	0.8	6-9-9-7	18	**f.c. GRAVEL**, Some f.m.c. Sand, little silt, brown/black, m. compact, saturated **(FILL)**	Hnu = 3.8 ppm, slight petroleum odor, no visual observations.
S-7	2	1.3	4-6-6-8	12	**f.c. GRAVEL**, Some Slag, little f.m.c. sand, little silt, brown/black, m. compact, saturated **(FILL)**	Hnu = Peak at 19ppm, petroleum odor noted, black coloration of soil sample and oil sheen noted on free water in the sample spoon.
					End of Boring at 14 ft	

DEPTH (Feet): 5, 10, 15, 20

ELEVATION (Feet)

WATER LEVELS AND/OR WELL DATA

SUBSURFACE LOG 14357.1013 LOGS.GPJ UPDATEDCHA.GDT 12/9/11

WELL CONSTRUCTION LOG

PROJECT & LOCATION:	DeLeval ERP Project, Poughkeepsie, NY
CLIENT:	City of Poughkeepsie
CONTRACTOR:	NYEG Drilling, LLC

BORING NO.

WELL NO. MW-4

PROJECT NO.: 14357.1013.31000

SHEET NO.: 1 OF 1

ELEVATION:

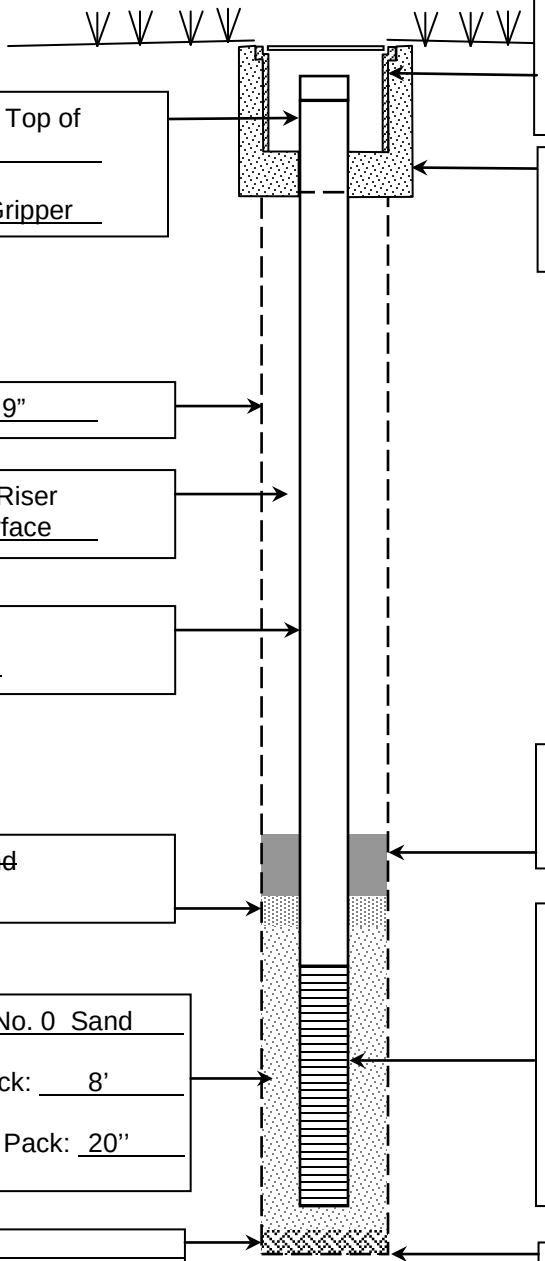
START DATE: 11/9/11 TIME: 3:20pm

FINISH DATE: 11/9/11 TIME: 4:15pm

DRILLER: Doug Thoma

INSPECTOR: J. Herrick

Note: Installed 3'4" – 4" sch. 40 PVC pipe over 2" riser for protection (backfilled with bentonite).



Type of Protective Casing: Flush Mount Curb Box To Be Installed by Site Contractor
Inside Dia. Of Casing: _____

Depth Below Ground of Casing: _____

Depth Above Ground to Top of Riser Pipe: 2'

Type of Cap: Locking Gripper

Type of Surface Seal: Concrete

Thickness of Surface Seal: _____

Diameter Borehole: 9"

Type of Backfill Around Riser Pipe: Bentonite to Surface

Inside Diameter of Riser Pipe: 2" PVC

Type of Bentonite Seal: Chips
Depth to Top of Bentonite Seal: 6'

~~Depth to Top of Fine Sand Choke~~: _____

Type of Screen: Slotted

Screen Diameter: 2"

Screen Slot Size: 0.010"

Depth to Top of Screen: 10'

Depth to Bottom of Screen: 20'

Type of Sand Pack: No. 0 Sand

Depth to Top of Sand Pack: 8'

Depth to Bottom of Sand Pack: 20''

~~Backfill (if any):~~ _____

Depth to Bottom of Borehole: 20'

PROJECT NUMBER: 14357.1013.31000 12/5/11

DeLeval ERP Project
SUBSURFACE LOG
HOLE NUMBER MW-4

LOCATION: City of Poughkeepsie, NY

CLIENT: City of Poughkeepsie

CONTRACTOR: NYEG Drilling, Inc.

DRILLER: D. Thoma INSPECTOR: J. Herrick

START DATE and TIME: 11/9/2011 1:45:00 PM

FINISH DATE and TIME: 11/9/2011 3:20:00 PM

SURFACE ELEV: CHECKED BY: SMS

DRILL FLUID: None

DRILLING METHOD: 4 1/4" HSA

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	11-9-11	3:00 PM	During Drilling	14		20

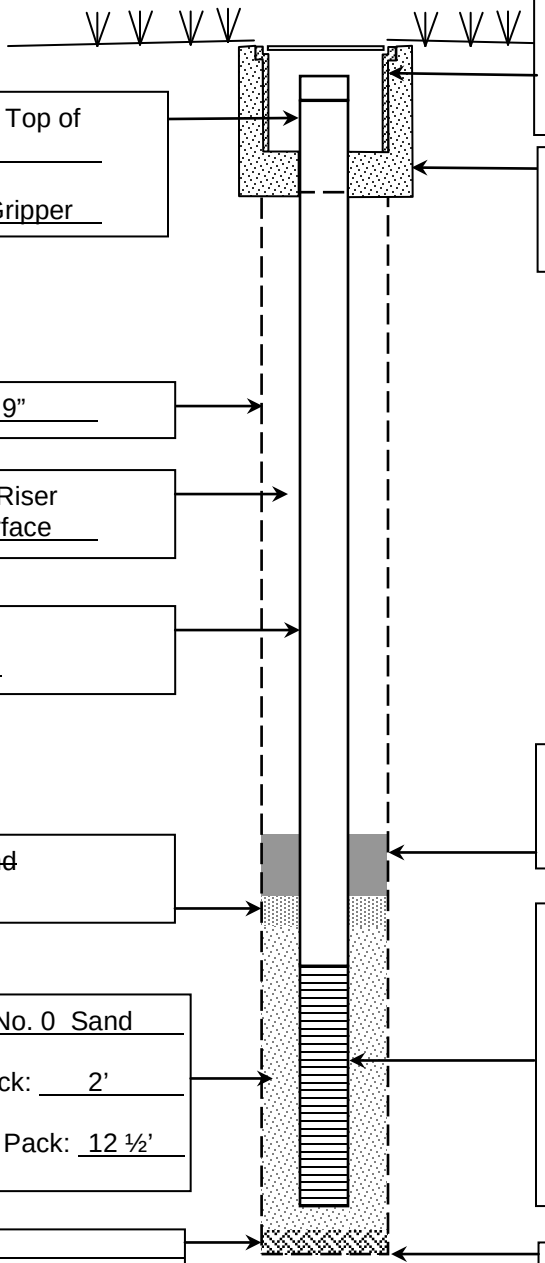
SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.8	6-7-13-10	20				**SILT**, Some f.c. Gravel, trace organics, brown, m. compact, moist **(FILL)**		Hnu = 0.0 ppm	
S-2	2	1.7	13-13-13-17	26				**SILT**, Some f.c. Gravel, little brick, trace organics, brown/gray, m. compact, moist **(FILL)**		Hnu = 0.0 ppm	
S-3	2	1.8	19-16-14-13	30		5		**SILT**, Some f.c. Gravel, little concrete, little brick, trace f.m.c. sand, brown/black, m. compact, moist **(FILL)**		Hnu = 0.0 ppm	
S-4	2	1.1	13-8-8-7	16				**SILT**, Some f.c. Gravel, little f.m.c. sand, little concrete, trace wood, brown/black, m. compact, moist **(FILL)**		Hnu = 0.0 ppm	
S-5	2	1.3	3-4-4-5	8				becomes loose **(FILL)**		Hnu = 0.0 ppm	
S-6	2	1.2	3-4-6-12	10		10		**SILT**, Some f.c. Gravel, trace f.m.c. sand, trace brick, black, loose, moist **(FILL)** **f.m.c. SAND**, brown, loose, moist **(FILL)**		Hnu = 0.0ppm	
S-7	2	1.6	9-9-11-13	20				becomes m. compact **(FILL)** **SLAG**, black, m. compact, wet **(FILL)** **SILT**, trace f. sand, brown/gray, m. compact, saturated **(FILL)**		Hnu = 0.0ppm	▽
S-8	2	1.2	3-2-2-3	4		15		**SLAG**, trace brick, v. loose, saturated **(FILL)**		Hnu = 0.0ppm	
S-9	2	1.3	3-3-4-10	7				**SLAG**, Some Brick, loose, saturated **(FILL)**		Hnu = 0.0ppm	
S-10	2	1	6-5-6-5	11				**f.m.c. SAND**, trace silt, trace shells, m. compact, saturated **(FILL)** **f. SAND**, Some Silt, m. compact, saturated **(FILL)**		Hnu = 0.0ppm	
						20		End of Boring at 20 ft			

SUBSURFACE LOG 14357.1013 LOGS.GPJ UPDATEDCHA.GDT 12/9/11

WELL CONSTRUCTION LOG

PROJECT & LOCATION: DeLeval ERP Project, Poughkeepsie, NY	BORING NO.
CLIENT: City of Poughkeepsie	WELL NO. MW-5
CONTRACTOR: NYEG Drilling, LLC	PROJECT NO.: 14357.1013.31000
	SHEET NO.: 1 OF 1
	ELEVATION:
	START DATE: 11/9/11 TIME: 8:45am
	FINISH DATE: 11/9/11 TIME: 9:45am
	DRILLER: Doug Thoma
	INSPECTOR: J. Herrick

Note: Installed 4 ½' – 4" sch. 40 PVC pipe over 2" riser for protection (backfilled with bentonite).



Type of Protective Casing: Flush Mount Curb Box To Be Installed by Site Contractor
Inside Dia. Of Casing: _____
Depth Below Ground of Casing: _____

Depth Above Ground to Top of Riser Pipe: 2 ½'
Type of Cap: Locking Gripper

Type of Surface Seal: Concrete
Thickness of Surface Seal: _____

Diameter Borehole: 9"

Type of Backfill Around Riser Pipe: Bentonite to Surface

Inside Diameter of Riser Pipe: 2" PVC

Type of Bentonite Seal: Chips
Depth to Top of Bentonite Seal: Ground Surface

~~Depth to Top of Fine Sand Choke~~: _____

Type of Screen: Slotted
Screen Diameter: 2"
Screen Slot Size: 0.010"
Depth to Top of Screen: 2 ½'
Depth to Bottom of Screen: 12 ½'

Type of Sand Pack: No. 0 Sand
Depth to Top of Sand Pack: 2'
Depth to Bottom of Sand Pack: 12 ½'

~~Backfill (if any)~~: _____

Depth to Bottom of Borehole: 12 ½'

DeLeval ERP Project
SUBSURFACE LOG
HOLE NUMBER MW-5

PROJECT NUMBER: 14357.1013.31000 12/5/11

LOCATION: City of Poughkeepsie, NY
CLIENT: City of Poughkeepsie
CONTRACTOR: NYEG Drilling, Inc.
DRILLER: D. Thoma INSPECTOR: J. Herrick
START DATE and TIME: 11/9/2011 7:30:00 AM
FINISH DATE and TIME: 11/9/2011 8:40:00 AM
SURFACE ELEV: CHECKED BY: SMS

DRILL FLUID: None DRILLING METHOD: 4 1/4" HSA

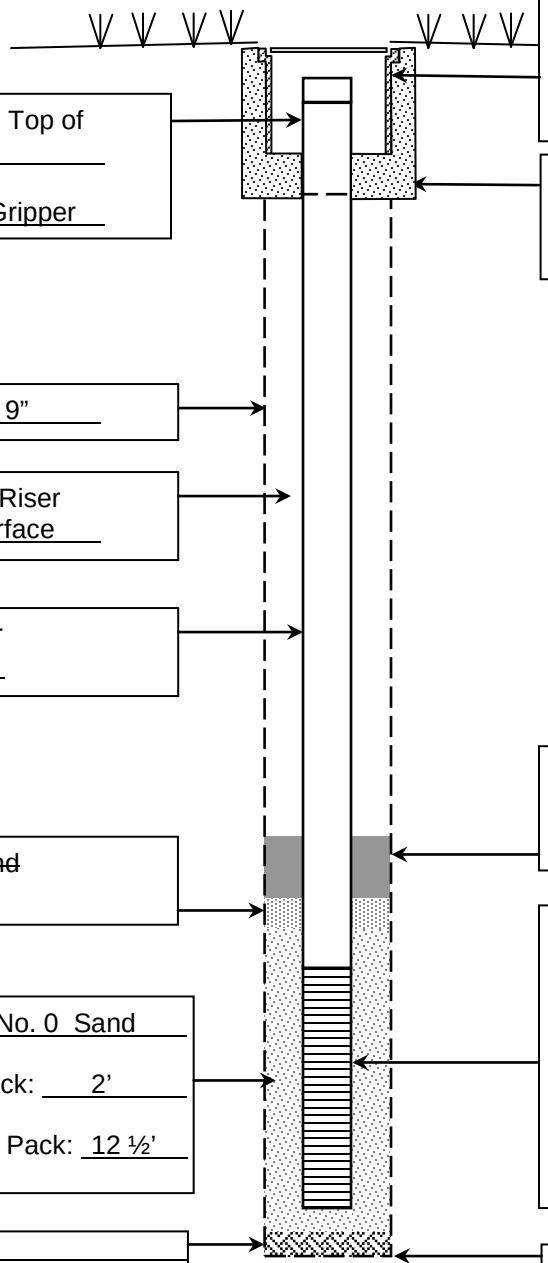
WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	11-9-11	8:00 AM	During Drilling	4		12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.7	4-3-3-5	6		**f.c. GRAVEL**, Some Silt, little bricks, brown, loose, moist **(FILL)**		Hnu = 0.0 ppm	
S-2	2	1.2	5-5-9-16	14		**f.c. GRAVEL**, trace silt, brown, m. compact, moist **(FILL)** **SILT**, Some f.c. Gravel, trace brick, brown, m. compact, moist **(FILL)** **WOOD (FILL)**		Hnu = 0.0 ppm	▽
S-3	2	0	13-5-2-2	7	5				
S-4	2	1.3	11-12-12-12	24		**SILT**, Some f.c. Gravel, little f.m.c. sand, trace wood, black, m. compact, wet **(FILL)**		Hnu = 0.6 ppm, Slight petroleum odor, no visual observations.	
S-5	2	0.9	5-6-10-11	16		**SILT**, Some f.c. Gravel, black, m. compact, saturated **(FILL)**		Hnu = 0.0 ppm	
S-6	2	1.3	8-22-12-14	34	10	becomes compact **(FILL)**		Hnu = 0.3 ppm, Slight petroleum odor, no visual observations.	
						End of Boring at 12 ft			
					15				
					20				

WELL CONSTRUCTION LOG

PROJECT & LOCATION: DeLeval ERP Project, Poughkeepsie, NY	BORING NO.
CLIENT: City of Poughkeepsie	WELL NO. MW-6
CONTRACTOR: NYEG Drilling, LLC	PROJECT NO.: 14357.1013.31000
	SHEET NO.: 1 OF 1
	ELEVATION:
	START DATE: 11/8/11 TIME: 1:50pm
	FINISH DATE: 11/8/11 TIME: 2:45pm
	DRILLER: Doug Thoma
	INSPECTOR: J. Herrick

Note: Installed 4 ½' – 4" sch. 40 PVC pipe over 2" riser for protection (backfilled with bentonite).



Type of Protective Casing: Flush Mount Curb Box – To be installed by Site Contractor
Inside Dia. Of Casing: _____
Depth Below Ground of Casing: _____

Depth Above Ground to Top of Riser Pipe: 2 ½'
Type of Cap: Locking Gripper

Type of Surface Seal: Concrete
Thickness of Surface Seal: _____

Diameter Borehole: 9"

Type of Backfill Around Riser Pipe: Bentonite to Surface

Inside Diameter of Riser Pipe: 2" PVC

Type of Bentonite Seal: Chips
Depth to Top of Bentonite Seal: Ground Surface

~~Depth to Top of Fine Sand Choke~~: _____

Type of Screen: Slotted
Screen Diameter: 2"
Screen Slot Size: 0.010"
Depth to Top of Screen: 2 ½'
Depth to Bottom of Screen: 12 ½''

Type of Sand Pack: No. 0 Sand
Depth to Top of Sand Pack: 2'
Depth to Bottom of Sand Pack: 12 ½'

~~Backfill (if any)~~: _____

Depth to Bottom of Borehole: 12 ½''

PROJECT NUMBER: 14357.1013.31000 12/5/11

DeLeval ERP Project
SUBSURFACE LOG
HOLE NUMBER MW-6

LOCATION: City of Poughkeepsie, NY

CLIENT: City of Poughkeepsie

CONTRACTOR: NYEG Drilling, Inc.

DRILLER: D. Thoma INSPECTOR: J. Herrick

START DATE and TIME: 11/8/2011 1:50:00 PM

FINISH DATE and TIME: 11/8/2011 2:45:00 PM

SURFACE ELEV: CHECKED BY: SMS

DRILL FLUID: None DRILLING METHOD: 4 1/4" HSA

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	11-8-11	2:45 PM	Completion	4		

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.9	5-5-5-3	10				**SILT**, Some f.c. Gravel, trace organics, brown, loose, moist **(FILL)**		Hnu = 0.0 ppm	
S-2	2	1	3-5-2-2	7				**SILT**, Some f.c. Gravel, gray, loose, moist **(FILL)**		Hnu = 0.0 ppm	
S-3	2	0.5	3-6-4-3	10		5		**f.c. GRAVEL**, trace silt, loose, saturated **(FILL)**		Hnu = 0.0 ppm	
S-4	2	0.5	4-4-4-4	8				**f.c. GRAVEL**, trace silt, trace brick, loose, saturated **(FILL)**		Hnu = 0.0 ppm	
S-5	2	1	6-3-6-6	9		10		**f.c. GRAVEL**, little f.m.c. sand, trace bricks, trace silt, loose, saturated **(FILL)**		Hnu = 0.0 ppm	
S-6	2	1	9-3-3-3	6				**Similar Soil (FILL)** **SILT**, trace f.c. gravel, brown, loose, saturated **(FILL)**		Hnu = 0.0ppm	
S-7	2	0.5	4-2-4-4	6		15		**f.c. GRAVEL**, trace silt, loose, saturated **(FILL)**		Hnu = 0.0ppm	
						20		End of Boring at 14 ft			

SUBSURFACE LOG 14357.1013 LOGS.GPJ UPDATEDCHA.GDT 12/9/11

WELL CONSTRUCTION LOG

PROJECT & LOCATION:	DeLeval ERP Project, Poughkeepsie, NY
CLIENT:	City of Poughkeepsie
CONTRACTOR:	NYEG Drilling, LLC

BORING NO.

WELL NO. MW-7

PROJECT NO.: 14357.1013.31000

SHEET NO.: 1 OF 1

ELEVATION:

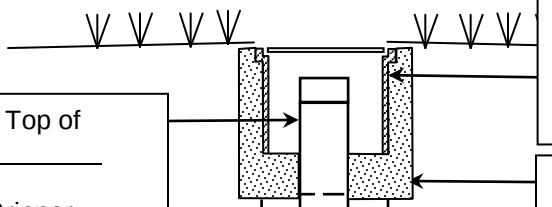
START DATE: 11/8/11 TIME: 11:40am

FINISH DATE: 11/8/11 TIME: 12:05pm

DRILLER: Doug Thoma

INSPECTOR: J. Herrick

Note: Installed 3'4" – 4" sch. 40 PVC pipe over 2" riser for protection (backfilled with bentonite).



Type of Protective Casing: Flush Mount Curb Box – To be installed by Site Contractor
Inside Dia. Of Casing: _____
Depth Below Ground of Casing: _____

Depth Above Ground to Top of Riser Pipe: 2'
Type of Cap: Locking Gripper

Type of Surface Seal: Concrete
Thickness of Surface Seal: _____

Diameter Borehole: 9"

Type of Backfill Around Riser Pipe: Bentonite to Surface

Inside Diameter of Riser Pipe: 2" PVC

Type of Bentonite Seal: Chips
Depth to Top of Bentonite Seal: 2'

~~Depth to Top of Fine Sand Choke~~: _____

Type of Screen: Slotted
Screen Diameter: 2"
Screen Slot Size: 0.010"
Depth to Top of Screen: 6'
Depth to Bottom of Screen: 16'

Type of Sand Pack: No. 0 Sand
Depth to Top of Sand Pack: 4'
Depth to Bottom of Sand Pack: 16'

~~Backfill (if any):~~ _____

Depth to Bottom of Borehole: 16''

PROJECT NUMBER: 14357.1013.31000 12/5/11

DeLeval ERP Project
SUBSURFACE LOG
HOLE NUMBER MW-7

LOCATION: City of Poughkeepsie, NY
CLIENT: City of Poughkeepsie
CONTRACTOR: NYEG Drilling, Inc.
DRILLER: D. Thoma INSPECTOR: J. Herrick
START DATE and TIME: 11/8/2011 9:00:00 AM
FINISH DATE and TIME: 11/8/2011 11:30:00 AM
SURFACE ELEV: CHECKED BY: SMS

DRILL FLUID: None DRILLING METHOD: 4 1/4" HSA

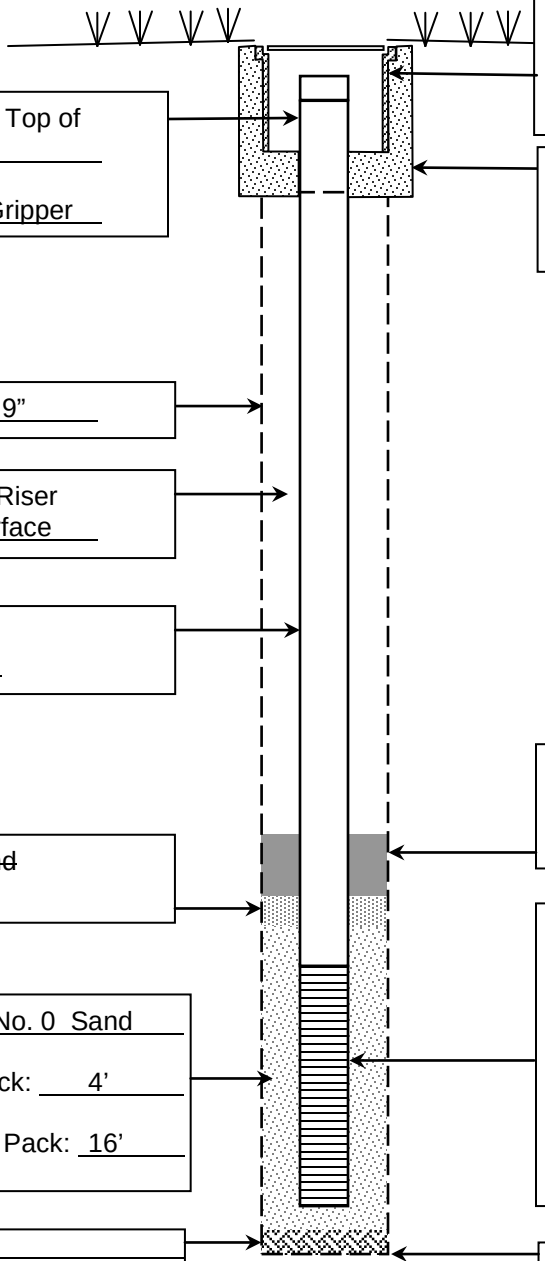
WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	11-8-11	12:00 PM	Completion	9.3		16

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								SUBBASE, Crusher Run			
S-1	2	1.4	8-8-8-8	16						Hnu = 0.0 ppm	
								SILT, little f.m.c. sand, trace f.c. gravel, trace brick, compact, moist **(FILL)**			
S-2	2	1.8	12-17-18-22	35						Hnu = 0.0 ppm	
								SILT, little f.c. gravel, little f.m.c. sand, trace brick, trace slag, m. compact, moist **(FILL)**			
S-3	2	1.7	10-13-17-22	30		5				Hnu = 0.0 ppm	
								becomes v. compact **(FILL)**			
S-4	2	2	23-37-42-43	79						Hnu = 0.0 ppm	
								SILT, little f.c. gravel, little f.m.c. sand, trace brick, trace slag, m. compact, wet **(FILL)**			
S-5	2	2	15-22-10-16	32						Hnu = 0.0 ppm	▽
						10		**f.c. GRAVEL**, pieces of shale, m. compact, saturated **(FILL)**			
S-6	2	0.7	10-12-17-16	29						Hnu = 0.0ppm	
								No Recovery **(FILL)**			
S-7	2	0	16-16-12-10	28						No Recovery	
								f.c. GRAVEL, v. loose, saturated **(FILL)**			
S-8	2	1.6	3-2-2-2	4		15		**SILT**, trace clay, gray, v. loose, saturated **(FILL)**		Hnu = 0.0ppm	
								End of Boring at 16 ft			
						20					

WELL CONSTRUCTION LOG

PROJECT & LOCATION: DeLeval ERP Project, Poughkeepsie, NY	BORING NO.
CLIENT: City of Poughkeepsie	WELL NO. MW-8
CONTRACTOR: NYEG Drilling, LLC	PROJECT NO.: 14357.1013.31000
	SHEET NO.: 1 OF 1
	ELEVATION:
	START DATE: 11/8/11 TIME: 8:00am
	FINISH DATE: 11/8/11 TIME: 8:40am
	DRILLER: Doug Thoma
	INSPECTOR: J. Herrick

Note: Installed 3'4" – 4" sch. 40 PVC pipe over 2" riser for protection (backfilled with bentonite).



Type of Protective Casing: Flush Mount Curb Box To Be Installed by Site Contractor
Inside Dia. Of Casing: _____
Depth Below Ground of Casing: _____

Depth Above Ground to Top of Riser Pipe: 2'
Type of Cap: Locking Gripper

Type of Surface Seal: Concrete
Thickness of Surface Seal: _____

Diameter Borehole: 9"

Type of Backfill Around Riser Pipe: Bentonite to Surface

Inside Diameter of Riser Pipe: 2" PVC

Type of Bentonite Seal: Chips
Depth to Top of Bentonite Seal: 2'

~~Depth to Top of Fine Sand Choke~~: _____

Type of Screen: Slotted
Screen Diameter: 2"
Screen Slot Size: 0.010"
Depth to Top of Screen: 6'
Depth to Bottom of Screen: 16'

Type of Sand Pack: No. 0 Sand
Depth to Top of Sand Pack: 4'
Depth to Bottom of Sand Pack: 16'

~~Backfill (if any):~~ _____

Depth to Bottom of Borehole: 16''

PROJECT NUMBER: 14357.1013.31000 12/5/11

DeLeval ERP Project
SUBSURFACE LOG
HOLE NUMBER MW-8

LOCATION: City of Poughkeepsie, NY

CLIENT: City of Poughkeepsie

CONTRACTOR: NYEG Drilling, Inc.

DRILLER: D. Thoma INSPECTOR: J. Herrick

START DATE and TIME: 11/7/2011 2:00:00 PM

FINISH DATE and TIME: 11/8/2011 8:00:00 AM

SURFACE ELEV: CHECKED BY: SMS

DRILL FLUID: None DRILLING METHOD: 4 1/4" HSA

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	11-8-11	7:50 AM	24 Hours	11	10	10

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								SUBBASE, Crusher Run **(FILL)**			
S-1	2	0.9	3-3-4-17	7				**BRICK (FILL)**		Hnu = 0.0 ppm	
								f.c. GRAVEL (FILL)			
S-2	2	0.8	5-2-2-5	4				**f. SAND**, Some Silt, little f. gravel, trace glass, trace brick, trace organics, v. loose, moist **(FILL)**		Hnu = 0.0 ppm	
S-3	2	0.9	7-7-20-22	27		5		**f.c. GRAVEL**, Some Silt, trace f.m.c. sand, brown, m. compact. moist **(FILL)**		Hnu = 0.0 ppm	
S-4	2	0.8	38-18-5-5	23				**f.c. GRAVEL**, Some Silt, brown, m. compact, moist **(FILL)**		Hnu = 0.0 ppm	
								f.c. GRAVEL, Some Silt, gray, m. compact, moist **(FILL)**			
S-5	2	1.3	4-4-3-3	7				**Clayey SILT**, Some f.c. Gravel, gray, m. stiff, moist **(FILL)**		Hnu = 0.0 ppm	
								Clayey SILT, gray, m. stiff, moist **(FILL)**			
						10		**Silty CLAY**, trace f. gravel. trace f.m.c. sand, gray, v. stiff, moist **(FILL)**			▽
S-6	2	0.8	8-13-6-5	19						Hnu = 0.0 ppm	
								becomes hard, wet **(FILL)**			
S-7	1.3	0.8	8-34-50/0.3	R				**SHALE**, pieces of shale **(FILL)**		Hnu = 0.0 ppm	
								SILT, trace clay, gray. stiff, wet **(FILL)**			
S-8	2	0.9	3-4-5-3	9		15					
								End of Boring at 16 ft			
						20					

WELL CONSTRUCTION LOG

PROJECT & LOCATION:	DeLeval ERP Project, Poughkeepsie, NY
CLIENT:	City of Poughkeepsie
CONTRACTOR:	NYEG Drilling, LLC

BORING NO.

WELL NO. MW-9

PROJECT NO.: 14357.1013.31000

SHEET NO.: 1 OF 1

ELEVATION:

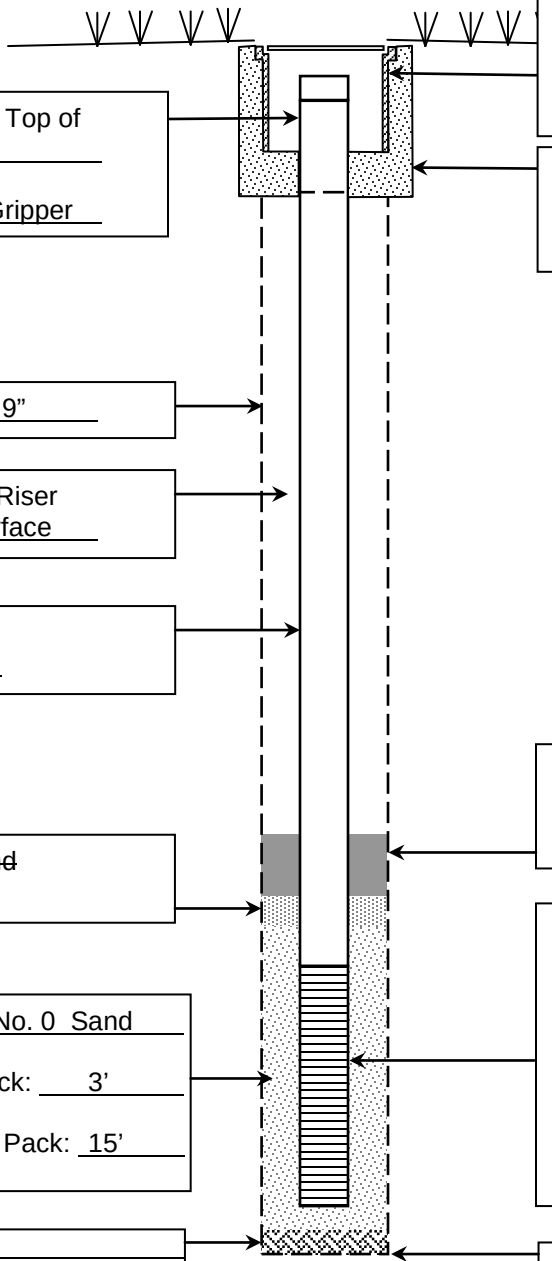
START DATE: 11/7/11 TIME: 12:55pm

FINISH DATE: 11/7/11 TIME: 1:45pm

DRILLER: Doug Thoma

INSPECTOR: J. Herrick

Note: Installed 3'4" – 4" sch. 40 PVC pipe over 2" riser for protection (backfilled with bentonite).



Type of Protective Casing: Flush Mount Curb Box – To be installed by Site Contractor

Inside Dia. Of Casing: _____

Depth Below Ground of Casing: _____

Depth Above Ground to Top of Riser Pipe: 2'

Type of Cap: Locking Gripper

Type of Surface Seal: Concrete

Thickness of Surface Seal: _____

Diameter Borehole: 9"

Type of Backfill Around Riser Pipe: Bentonite to Surface

Inside Diameter of Riser Pipe: 2" PVC

Type of Bentonite Seal: Chips

Depth to Top of Bentonite Seal: 1'

~~Depth to Top of Fine Sand Choke~~: _____

Type of Screen: Slotted

Screen Diameter: 2"

Screen Slot Size: 0.010"

Depth to Top of Screen: 5'

Depth to Bottom of Screen: 15'

Type of Sand Pack: No. 0 Sand

Depth to Top of Sand Pack: 3'

Depth to Bottom of Sand Pack: 15'

~~Backfill (if any)~~: _____

Depth to Bottom of Borehole: 15'

PROJECT NUMBER: 14357.1013.31000 12/5/11

DeLeval ERP Project
SUBSURFACE LOG
HOLE NUMBER MW-9

LOCATION: City of Poughkeepsie, NY
CLIENT: City of Poughkeepsie
CONTRACTOR: NYEG Drilling, Inc.
DRILLER: D. Thoma INSPECTOR: J. Herrick
START DATE and TIME: 11/7/2011 10:45:00 AM
FINISH DATE and TIME: 11/7/2011 12:55:00 PM
SURFACE ELEV: CHECKED BY: SMS

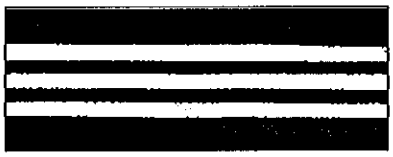
DRILL FLUID: None DRILLING METHOD: 4 1/4" HSA

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	11-7-11	11:00 AM	During Drilling	7		

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								SUBBASE, Crusher Run			
S-1	2	1.2	2-3-3-5	6				**SILT**, trace f. gravel, trace f.m.c. sand, gray, loose, moist **(FILL)**		Hnu = 0.0 ppm	
										Hnu = 0.0 ppm	
								Similar Soil (FILL)			
S-2	2	1.4	12-5-5-10	10				**SHALE**, pieces of shale **(FILL)**		Hnu = 0.0 ppm	
								BRICK (FILL)		Hnu = 0.0 ppm	
								SHALE, pieces of shale **(FILL)**			
S-3	2	1.4	12-27-15-17	42		5				Hnu = 0.0 ppm	
								SILT, trace f. gravel, trace f.m.c. sand, compact, moist **(FILL)**		Hnu = 0.0 ppm	
								SILT, gray/black, v. stiff, moist **(FILL)**			
S-4	2	1.3	12-8-8-7	16				becomes wet **(FILL)**		Hnu = 0.0 ppm Petroleum odor at approximately 7.0', dark colored silt.	▽
								SILT, Some f. Sand, gray/green, m. stiff, wet **(FILL)**		Hnu - 0.0 ppm	
S-5	2	1.6	3-3-3-30	6				**SHALE**, pieces of shale **(FILL)**		Hnu = 0.0ppm, Slight petroleum odor	
						10		**SHALE**, pieces of shale **(FILL)**		Hnu = 0.0ppm	
								SILT, Some f. Gravel, brown, stiff, wet **(FILL)**			
S-6	2	1.4	18-6-6-7	12				**f.c. GRAVEL**, Some f.m.c. Sand, m. compact, wet **(FILL)**		Hnu = 0.0ppm	
								becomes compact **(FILL)**		Hnu = 0.0ppm	
S-7	2	1.8	11-9-24-12	33						Hnu = 0.0ppm	
S-8	0.4		50/0.4	R				**Silty CLAY**, Some f. Gravel, gray, hard, wet **(FILL)**		Hnu = 0.0ppm	
						15		**SHALE**, pieces of shale **(FILL)**		Hnu = 0.0ppm	
								End of Boring at 14.4 ft			
						20					

APPENDIX AS

Environmental Easement
& Proof of Filing



Dutchess County Clerk Recording Page

Record & Return To :

CORPORATION COUSEL
CITY OF POUGHKEEPSIE
62 CIVIC CENTER PLAZA
Poughkeepsie, NY 12601

Date Recorded : 11/27/2013
Time Recorded : 2:25:00

Document # : 02 2013 6386

Received From : FELDMAN JACOBSON
ABSTRACT

Grantor : POUGHKEEPSIE CITY
Grantee : NYS PEOPLE

Recorded In : Deed
Instrument Type : EASE

Tax District : City of Poughkeepsie

Examined and Charged As Follows :

Recording Charge : $0.00

Number of Pages : 12

Transfer Tax Amount : $0.00
Transfer Tax Number : #2061

*** Do Not Detach This Page
*** This Is Not A Bill

Red Hook Transfer Tax :

E & A Form: N

TP-584 : Y

County Clerk By : cni / _____
Receipt # : R65781
Batch Record : C9

0220136386

Bradford Kendall
County Clerk

124

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 4th day of November, 2017, between Owner(s) The City of Poughkeepsie, having an office at 62 Civic Center Plaza, Poughkeepsie, New York 12601 (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233.

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of Rinaldi Boulevard in the City of Poughkeepsie, County of Dutchess and State of New York, known and designated on the tax map of the County Clerk of Dutchess as tax map parcel numbers: Grid 1300 Section 6061 Block 43 Lot 752749, being the same as that property conveyed to Grantor by deed dated November 20, 1968 and recorded in the Dutchess County Clerk's Office in Liber 1255 Page 647. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 13.61 +/- acres, and is hereinafter more fully described in the Land Title Survey dated February 23, 2012, signed and certified September 10, 2013 prepared by Clough Harbor & Associates, Inc , which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of State Assistance Contract Number: C302762, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP.

(4) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(5) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(6) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(7) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP.

(8) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP.

(9) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall annually, or such time as NYSDEC may allow, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5 the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: B00190
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by

the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Grantor: CITY OF POUGHKEEPSIE

By: _____

Print Name: John C. Tkazyik

Title: Mayor Date: 10/24/13

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the 24th day of October, in the year 2013, before me, the undersigned, personally appeared John C. Tkazyik, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Erian N. Buckley
Notary Public - State of New York

Erian N Buckley
Notary Public, State of New York
No. 01BU6193006
Qualified in Dutchess County
Commission Expires September 08, 2016

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner.

By: _____

Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 4th day of November, in the year 2013, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2014

R+R
Corporation Counsel
City of Poughkeepsie
62 Civic Center Plaza
Poughkeepsie, NY 12601

SCHEDULE "A" ENVIRONMENTAL EASEMENT PROPERTY DESCRIPTION

ENVIRONMENTAL EASEMENT PARCEL - ERP SITE No. B00190-3

All those certain pieces or parcels of land situate and lying on the easterly bank of the Hudson River, in the City of Poughkeepsie, County of Dutchess and State of New York being more particularly bounded and described as follows:

BEGINNING at a point at the intersection of the southerly Right-Of Way line of Pine Street and the westerly railroad Right-Of Way line of lands now or formerly of Conrail Corp; being the property division line between lands now or formerly of The City Of Poughkeepsie as described in Liber 22005 of Deeds at page 11133, on the West; thence southerly along said westerly Conrail Corp. Right-Of Way line the following eleven (11) courses and distances:

1. Along an arc of a curve to the left having a radius of 3,146.00 feet, through a central angle of 07°36'40", and an arc length of 417.91' to a point,
2. South 40°07'48" East, departing said curve non radially, a distance of 14.86 feet to a non-tangent point of curvature,
3. Along an arc of a curve to the left having a radius of 3,136.00 feet, through a central angle of 09°29'08", and an arc length of 519.18' to a point,
4. South 82°10'52" West, departing said curve non radially, a distance of 5.00 feet to a non-tangent point of curvature,
5. Along an arc of a curve to the left having a radius of 3,141.00 feet, through a central angle of 04°15'10", and an arc length of 233.14 feet to a point,
6. South 11°40'38" East, departing said curve non radially, a distance of 109.60 feet to a point,
7. South 78°19'22" West, a distance of 3.10 feet to a point,
8. South 09°52'18" East, a distance of 183.06 feet to a point,
9. South 11°40'38" East, a distance of 25.00 feet to a point,
10. South 83°39'52" West, a distance of 7.16 feet to a point,
11. South 11°40'38" East, a distance of 515.89 feet to a point on the property division line between said lands of The City of Poughkeepsie. on the north and lands now or formerly of Norfe Realty Corp. as described in Liber 1110 of Deeds at page 571, on the south; thence along said property division line South 79°49'22" West a distance of 249.77 feet to a point on the property division line between said lands of The City of Poughkeepsie. on the east and lands now or formerly of The People of The State of New York on the west: thence along said property division line the following twenty three (23) courses and distances:

1. North 09°54'38" West, a distance of 28.62 feet to a point,
2. North 10°18'58" West, a distance of 16.94 feet to a point,
3. South 79°51'44" West, a distance of 3.00 feet to a point,
4. North 10°13'03" West, a distance of 338.19 feet to a point,
5. North 79°51'44" East, a distance of 2.95 feet to a point,
6. North 10°08'48" West, a distance of 146.21 feet to a point,
7. North 54°14'28" West, a distance of 33.65 feet to a point,
8. North 10°12'38" West, a distance of 181.01 feet to a point,
9. North 10°12'28" West, a distance of 300.59 feet to a point,
10. North 40°54'42" East, a distance of 67.85 feet to a point,
11. North 10°18'40" West, a distance of 376.73 feet to a point,
12. South 84°31'52" West, a distance of 1.00 feet to a point,

13. North 16°11'17" West a distance of 58.32 feet to a point,
14. North 10°02'03" West a distance of 366.87 feet to a point,
15. North 79°20'12" East a distance of 3.83 feet to a point,
16. North 10°39'48" West a distance of 29.11 feet to a point,
17. North 15°58'08" West, a distance of 28.77 feet to a point,
18. North 18°44'08" West, a distance of 25.70 feet to a point,
19. North 18°19'08" West, a distance of 9.46 feet to a point,
20. North 15°16'08" West, a distance of 21.59 feet to a point,
21. North 14°10'08" West, a distance of 20.34 feet to a point,
22. North 64°45'42" East, a distance of 3.99 feet to a point, and
23. North 15°25'08" West, a distance of 219.87 feet to a point on the property division line between said lands of The City of Poughkeepsie. on the south and lands now or formerly of The City of Poughkeepsie I.D.A. on the north; thence along said property division line and along other lands now or formerly of The City Of Poughkeepsie I.D.A. , as described in Liber 22004 of Deeds at page 4060, the following nine (9) courses and distances:

1. North 75°51'22" East, a distance of 129.24 feet to a point,
2. North 63°20'16" East, a distance of 4.83 feet to a point,
3. South 89°50'48" East, a distance of 23.07 feet to a point,
4. North 87°51'12" East, a distance of 19.07 feet to a point,
5. North 85°24'12" East, a distance of 27.79 feet to a point,
6. North 75°43'42" East, a distance of 10.14 feet to a point,
7. North 59°23'02" East, a distance of 50.07 feet to a point,
8. North 46°44'22" East, a distance of 57.74 feet to a point, and
9. South 04°39'19" East, a distance of 294.64 feet to a point at the westerly terminus of Pine Street; thence along the property division line between said lands now or formerly of The City Of Poughkeepsie and the southerly Right-Of Way line of Pine Street the following three (3) courses and distances:

1. South 55°28'58" East, a distance of 42.02 feet to a point,
2. North 65°03'32" East, a distance of 111.26 feet to a point, and
3. North 66°00'02" East, a distance of 13.83 feet to the point or place of beginning.

Containing 611,369 square feet or 14.04 acres of land, more or less.

Excepting and Reserving from the above described easement all that piece or parcel of land that are described as follows:

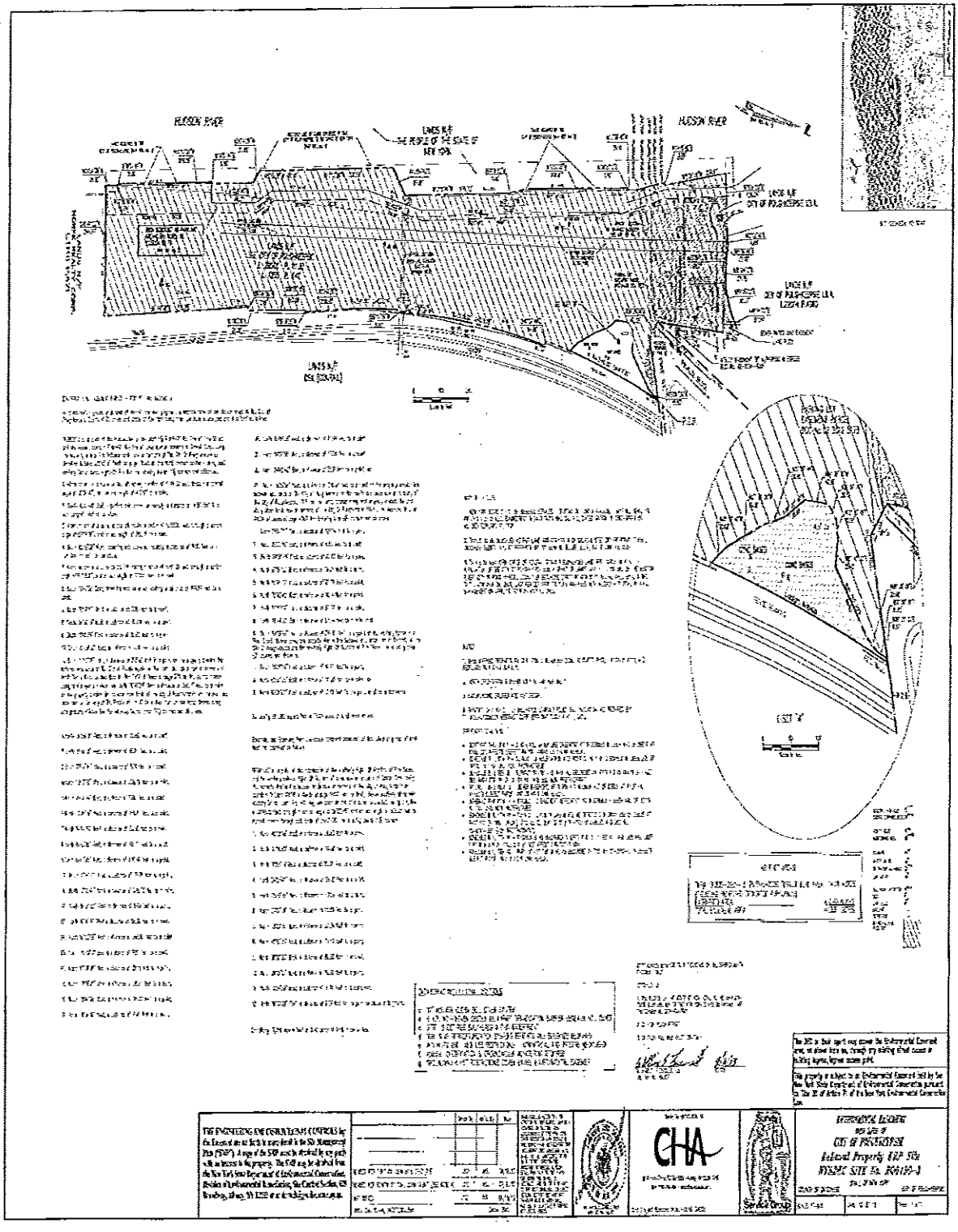
BEGINNING at a point at the intersection of the southerly Right-Of Way line of Pine Street and the westerly railroad Right-Of Way line of lands now or formerly of Conrail Corp; being the property division line between lands now or formerly of The City Of Poughkeepsie as described in Liber 22005 of Deeds at page 11133, on the West; thence southerly along said westerly Conrail Corp. Right-Of Way line along an arc of a curve to the left having a radius of 3,146.00 feet, through a central angle of 06°03'05", and an arc length of 332.27 feet to a point, thence through said lands of the C.O.P. the following twelve (12) courses and distances:

1. North 40°12'48" West, a distance of 30.03 feet to a point,
2. North 27°09'00" West, a distance of 69.38 feet to a point,
3. North 20°55'44 West, a distance of 39.60 feet to a point,
4. North 34°00'47" West, a distance of 38.93 feet to a point,
5. North 04°36'35" West, a distance of 42.50 feet to a point,
6. North 36°07'19" East, a distance of 20.53 feet to a point,
7. North 72°23'09" East, a distance of 20.34 feet to a point,
8. North 88°47'33" East, a distance of 25.42 feet to a point,
9. North 39°03'20" East, a distance of 88.93 feet to a point,
10. North 26°21'01" East, a distance of 22.98 feet to a point,

11. North 10°30'39" East, a distance of 15.82 feet to a point and,
12. North 38°33'22" East, a distance of 6.37 feet to the point or place of beginning.

Containing 17,251 square feet or 0.40 acres of land, more or less.

SURVEY



APPENDIX AT

CPI Investigation of
Bulkhead Coating Damage

CORROSION PROBE, INC.
THE COMPLETE ENGINEERING APPROACH - FROM DETECTION TO CORRECTION

Coating Failure Analysis Report

for

Sheet Pilings

at

De Laval Project
in
Poughkeepsie, NY

Prepared for:

Ocean and Coastal Consultants

Prepared by:

Corrosion Probe, Inc.

December 2009

CORROSION PROBE, INC.
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1.0 Introduction

On November 12, 2009 Corrosion Probe, Inc. (CPI) performed an onsite coating failure investigation on in-place sheet pilings along the east side of the Hudson River in Poughkeepsie, NY. The piles were prepared and shop coated and installed between June and November 2008. In August 2009 localized coating failure was observed by Ocean and Coastal Consultants (OCC) during a follow-up inspection. In part, OCC reported widespread damage throughout the waterward face of the pilings , top of sheet "coating damage caused by vibratory hammer grab points", "long striations possibly caused by false work during installation and/or abrasion damage caused by placement of rip rap", "widespread map cracking and long hairline cracks" ("typically contained to above the tidal zone").

The coating specification (see Appendix to this report) required Near-White Blast Cleaning in accordance with SSPC-SP 10 with a 1.5 to 2.5 mil surface profile. The specified coating system was Bar-Rust 235 by Devoe Coatings. However, Macropoxy 646 by Sherwin-Williams was approved as a substitution.

Both the land and waterward side of sheet piles in Zone 1 and Zone 3 were examined. Due to limited time, the majority of the field investigation focused on Zone 1. The Zone 1 bulkhead is approximately 334 feet long and the Zone 3 bulkhead is approximately 658 feet long (not including the returns).

This report presents the results of CPI's one day onsite visit including visual findings, adhesion, dry film thickness (DFT) measurements, solvent rub testing, annotated photographs, a technical discussion, and conclusions as to the cause(s) of failure and recommendations for corrective action. Observations and testing were performed from the land side and water side. The water side was accessed from a boat during low tide.

2.0 Field Findings and Test Data

An initial observation common to both sides of the piles was that there are numerous existing touch-up coating areas. CPI remains uncertain regarding the type of failures (e.g. mechanical damage, cracking) which necessitated these field repairs, but assume that touch-up coating was performed because of a variety of coating related failures or defects. See Photo 1.

Coating cracks were of primary concern to OCC and that was the main focus during our investigation. Cracking was not exclusive to web to flange locations in the sheet piles; however, the vast majority of the cracks were observed at those areas. Dry film thickness measurements were obtained in close proximity to cracked and non-cracked areas using non-destructive (dry film thickness gages) and destructive methods following sample removal and direct measurement via a micrometer. The later method provided a view of the substrate for observation relative to the degree of cleanliness and surface profile (roughness) provided during original shop surface preparation.

The specified degree of cleanliness was SSPC SP-10 Near –White Blast Cleaning with a surface profile of 1.5 – 2.5 mils. At all locations observed the degree of cleanliness appeared acceptable. Surface profile measurements, accomplished by comparison between respective sheet pile steel surface conditions and a (replica) surface profile comparator disc, were typically between 2.0 to 3.0 mils. However, steel surfaces had a rounded, peened texture as opposed to a sharp, angular (sandpaper-like) texture. Note that paragraph 3.1 A. of the protective coating specification Section 09905 states, in part, the following relative to surface preparation and, specifically, regarding surface profile: "Blast profile on steel shall be 1.5 to 2.5 mils in depth and be of a sharp, jagged nature as opposed to a peen pattern from shotblasting." Recyclable (rounded) steel shot is typically used in shop surface preparation operations in combination with more angular abrasives (e.g. coal or furnace slag). It would appear that the reuse of steel shot without angular abrasives or the lack of sufficient cutting action resulted in the peened appearance of the substrate. See Photo 2.

Sample acquisition for the purposes of possible material property laboratory testing, coating thickness measurement and substrate examination revealed that the coating was very brittle when compared to other cured samples of Macropoxy 646 examined by CPI on other past coating projects. None of the coating samples acquired exceeded .75 sq. in. and, for the most part, were ½" to ¼"or smaller and often powdery. Samples were readily chipped as opposed to peeled-off. It was difficult to get large samples without first applying tape to the areas and chipping with the tape acting as a backing to retain the sample.

As a measure of extent of coating cure, solvent rub testing was performed in accordance with ASTM D 5402, Standard Practice for Assessing Solvent Resistance of Organic Coatings Using Solvent Rubs. Testing at representative areas, using MEK on white cotton cloths, produced black residue. Other than some marginal dulling, the coating did not soften or show other signs of degradation. This indicates the full cure of the coating was obtained for the areas tested. This

is a practical field test to determine extent of cure. More conclusive laboratory testing could be performed relative to the adequacy of cure, but does not seem warranted at this time.

There are several coating adhesion tests that can be performed including tape testing whereby an "X" cut is scribed in the coating through the substrate or by gluing of metal load fixtures that are removed via a pull-off gage. The latter method provides quantitative data (tensile strength in psi units). Due to (wet/recently wet) surface conditions another adhesion test method was deemed appropriate, namely, ASTM D 6677, Standard Test Method for Evaluating Adhesion by Knife. This method involves scribing an "X" cut through the coating and probing the incision. The ease by which the coating is removed, or lack thereof, and the size of the coating pieces removed is interpreted via a rating scale. Refer to Table 2 of this report for the Rating System.

In general, visual examination of the coated piling surfaces indicated reasonably good film quality without evidence of pinholes, holidays, or delaminated coating areas. The exception to this was through film cracking of the coating at a number of areas, mostly located at bends and coincidental with pile interlocks (cracks oriented vertically). See Photos 3 and 4.

However, there were through film cracks which were also horizontal in orientation. See Photo 5. Additionally, CPI observed sporadic areas of multiple and irregularly oriented short cracks. This type of cracking is typical of film curing stresses in solvent based epoxy coatings associated with excessive film thickness during application. See Photo 6. It shows this typical condition.

Please refer to Table 1. It presents the dry film thickness, substrate surface profile, solvent rub, and adhesion test results obtained in the field by CPI.

Table 1
Field Test Data

Sheet Pile No./Location (See Dwg.W-24)	Dry Film Thickness (Mils)	Surface Profile (Average Mils)	Solvent Rub	Adhesion (*See Adhesion Rating Chart Next Page*)
1P5 – Land Side. Zone 1	28.4 33.2 (touch-up area)	2.5	Black residual No softening	10
1P25 – Land Side, Zone 1	34.3 43.2 (touch-up area)	3.0	Black residual No softening	10
1P100 – Land Side, Zone 1	16.1 (single coat) 21.1 (single coat)	2.5	NA	10
1P175 – Land Side, Zone 1	42.0	2.5	Black residual No softening	NA
1P30 – Water Side, Zone 1	29.0 (single coat)	NA	Black residual No softening	10
1P40 – Water Side, Zone 1	37.0	3.0	NA	NA
1P130 – Water Side, Zone 1	34.0	2.0	Black residual No softening	NA
1P40 – Water Side, Zone 3	36.0	2.5	NA	NA
1P110 – Water Side, Zone 3	32.0	2.5	Black residual No softening	10

Table 2
Rating System

Adhesion Rating	Description
10	Coating is extremely difficult to remove; fragments no larger than approximately 0.8 by 0.8 mm (1/32 in. by 1/32 in.) removed with great difficulty.
8	Coating is difficult to remove; chips ranging from approximately 1.6 by 1.6 mm (1/16 by 1/16 in.) to 3.2 by 3.2 mm (⅛ by ⅛ in.) can be removed with difficulty.
6	Coating is somewhat difficult to remove; chips ranging from approximately 3.2 by 3.2 mm (⅛ by ⅛ in.) to 6.3 by 6.3 mm (¼ by ¼ in.) can be removed with slight difficulty.
4	Coating is somewhat difficult to remove; chips in excess of 6.3 by 6.3 mm (¼ by ¼ in.) can be removed by exerting light pressure with the knife blade.
2	Coating is easily removed; once started with the knife blade, the coating can be grasped with ones fingers and easily peeled to a length of at least 6.3 mm (¼ in.).
0	Coating can be easily peeled from the substrate to a length greater than 6.3 mm (¼ in.)

3.0 Technical Discussion

CPI's investigation has shown that generally coating adhesion and film quality with the exception of through film cracked areas and areas of mechanical damage was reasonably good. During construction, it was observed that wood spacer blocks used for separating the piles when they were stacked were found to be stuck to the piles and had to be hammered off. The coating was damaged in these areas when the blocks were removed indicating that the coating may have been uncured when the piles were stacked after coating application. This resulted in many damaged areas. Our findings further showed that the Macropoxy did properly cure and was resistant to the solvent rub test. The one major anomaly identified in the field was excessive coating film thickness. The overall coating thickness was specified to be two coats each applied at 10 mils dry film thickness. The measured film thickness in the field gave common overall DFT values between 28 and 42 mils. In addition, CPI noted that some areas sampled showed the presence of only one coat of the Macropoxy 646 with dry film thickness values as high as 29 mils. These results indicate that the shop coating application was neither uniform nor performed in accordance with the specifications.

When polymerized and solvent containing epoxy coatings like the Macropoxy 646 cure, stresses develop within the coating film which are oriented in all directions. When such coatings are applied at over twice their normally specified film thickness (20.0 mils achieved in two coats), the curing related film stresses reduce the coating film's flexibility significantly and increase the brittleness making the coating less resistant to flexure and impact. It is CPI's technical opinion that the excessive coating film thickness and therefore the increased film stresses resulted in a coating film more susceptible to through film cracking during the handling and installation of the coated piles on this project. The through film cracking oriented vertically was most likely the result of normal flexure of the sheet piling during handling while the horizontal cracking could have been manifested during vibratory driving of the piling. The randomly oriented and closely spaced and/or interconnected cracking observed included through film and partial depth cracking/crazing. These manifestations are typical of impact damage to brittle coating films. In short, the coating was applied too thick. There is a reason coating manufacturers are careful to specify coating thickness ranges. Too little coating thickness results in poor substrate hiding and film quality while excessive thickness causes changes in curing stresses and/or physical properties which are detrimental to coating performance. When proper surface preparation and the appropriate coating film thickness is applied, the normal handling and installation of sheet piling would not result in cracking of the coating system.

Regarding the propensity for through film cracking of the existing coating system to progress in the future, it is CPI's opinion that this should not be excessive. We base this finding on the fact that most of the flexure and impact related forces exerted on the piling occurred during shop handling, transportation, rehandling, and installation. This statement, of course, assumes that there will be some thermal related movement of the piling especially at seams in the future. This movement can and likely will result in some additional coating cracking, but we expect that it will not be extensive. When considering that most of the flexure and impact related forces are

over in concert with the good adhesion and coating film quality observed at non-cracked areas of the piling sheets, we believe it is reasonable not to expect a substantive increase in coating failure manifested as cracking during the normal service life of the coating system.

CPI does need to point out that our investigation did not include coating or corrosion condition assessment of much of the bulkhead surfaces which were not visible during our site visit. Therefore, CPI cannot characterize the extent of the defects noted in this report on those inaccessible piling surfaces (below grade and submerged).

CPI also observed cracks that were coated over. See Photo 7. Those areas should be treated as recommended in Part 5.0 of this report. (Same as for cracks previously untreated.) This is not advisable to do.

4.0 Conclusions

Based on CPI's field investigation findings, we draw the following conclusions:

A. Overall, the surface preparation and resulting shop-applied coating system adhesion appeared acceptable and within specified limits for degree of cleanliness, (SSPC-SP-10). Similarly, coating film quality generally appeared good except at the cracked and mechanically damaged locations observed.

B. There was evidence of workmanship concerns whereas the surface profile of the steel where exposed by CPI revealed a peened appearance as opposed to the angular, sharp surface profile specified. CPI does not know the extent of this peened substrate appearance in the overall bulkhead piling surfaces.

C. The most salient problem identified by CPI's field investigation was the excessively thick dry film thickness of the coating system. This overly thick coating film produced film stresses related to cure that reduced the flexibility and therefore enhanced the brittleness of the coating. Subsequently, the coating film was susceptible to through film cracking when the piling was subjected to flexure and impact during handling and installation.

D. CPI does not expect similar cracking defects to extensively develop progressively over time as most of the piling movement due to flexure and impact has already occurred. This is further supported by the good adhesion and film quality findings reported earlier in this document. It is important to note that this brittleness in the coating will likely result in larger areas of coating defects when mechanical damage (impact) occurs to the sheet piling.

E. There are likely other coating defects similar to those documented above present on areas of the sheet piling bulkhead not accessible during CPI's field investigation. These include the buried portions of the piles and the underwater portions of the piles. The below waterline areas should be repaired as outlined in Part 5.0 of this report. If the same type of defects exist in the buried portion of the piles and the piling is not water tight, ongoing corrosion can be expected. The recommended action will be inspection of some representative areas of the piles to check for such damage. If present, cathodic protection of the piles will likely be the best corrosion protection option long-term as back fill removal and reinstallation may result in more coating damage.

F. CPI does not believe that laboratory testing is warranted for this project unless desired by the customer or facility owner.

5.0 Recommendations for Corrective Action

CPI makes the following recommendations for corrective action:

A. A complete inspection including underwater portions of the piles should be conducted to identify all coating cracking, corrosion problems, and other defects prior to the recoating rework planned for the spring of 2010. If significant corrosion problems are identified by that survey, the use of cathodic protection should be considered in conjunction with the planned coating repairs.

B. All through coating cracked locations should be repaired as follows:

1. Power tool clean the crack in accordance with SSPC-SP-11 Power Tool Cleaning to Bare Metal area plus 4" on either side of the corroded crack areas feathering the cleaning onto the intact coating periphery another 2" to 3". This can be done on one tide change.

2. On the next tide change, pressure water wash the previously cleaned areas to decontaminate the steel. Immediately power tool clean these areas to remove flash rust corrosion product and apply the Splash Zone Coating Material in accordance with the manufacturer's recommendations. CPI understands the approved coating repair product is FX-764 Hydro-Ester Zone and Underwater Paste. This seems like a suitable product for this application. An alternate product can be considered from Sherwin-Williams, but the FX-764 does have a proven track record on similar projects.

3. A similar coating repair procedure should be used for areas where mechanical damage has occurred. In those cases, the power tool cleaned area need only extend approximately 4" beyond the corroding steel area.

C. The use of 3rd party independent coatings inspection (NACE trained) during the recommended coating repair work on this project should be considered along with preparation of a coating repair specification.

6.0 Referenced Photographs

Photo 1 – Zone 1 looking north. Note numerous coating touch-up areas.

Photo 2 – Typical peened surface profile.

Photo 3 – Typical vertical coating cracks. Note through-crack rust.

Photo 4 – Typical vertical coating crack associated with interlocks.

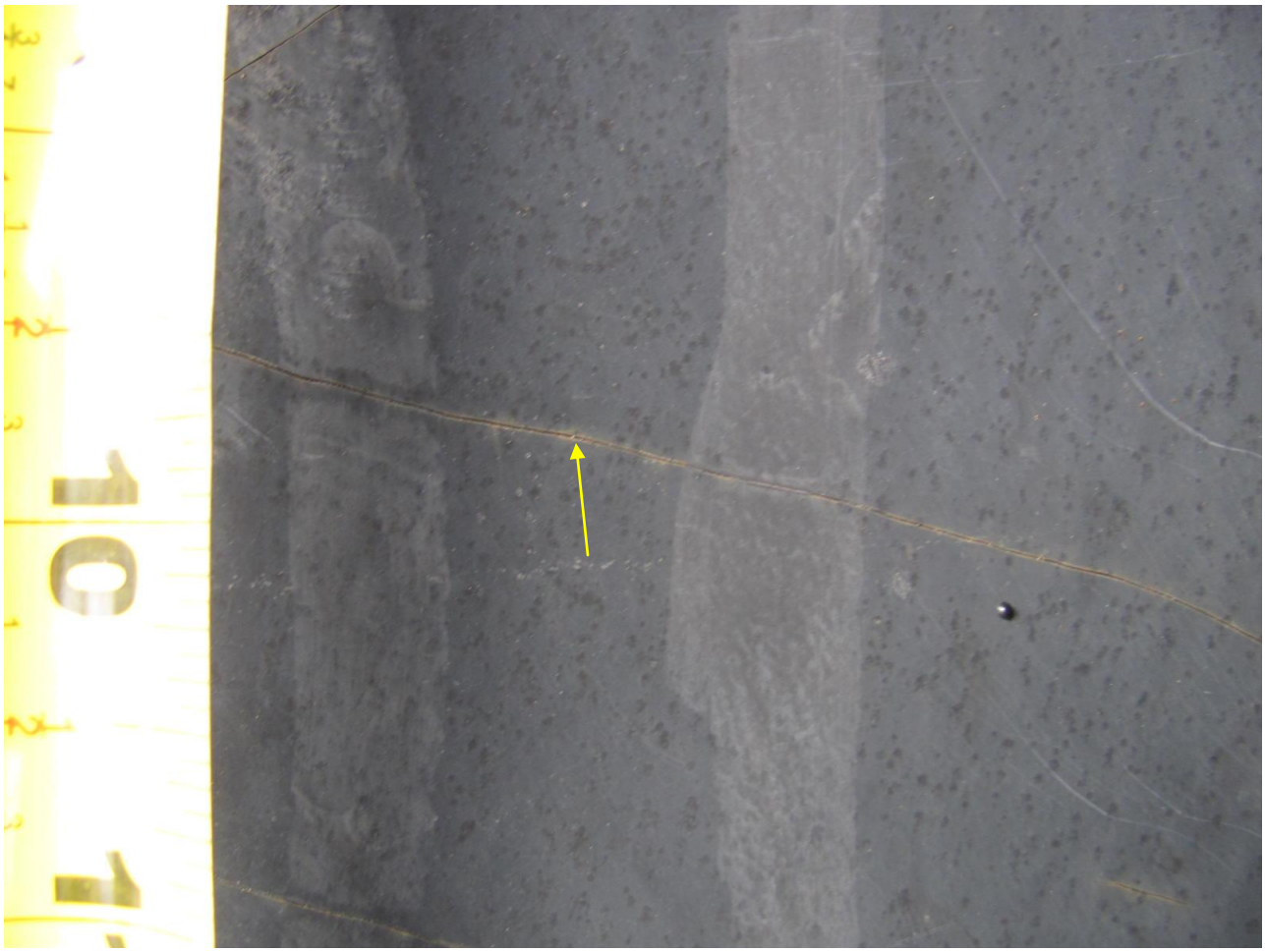

Photo 5 – Typical horizontal coating crack.

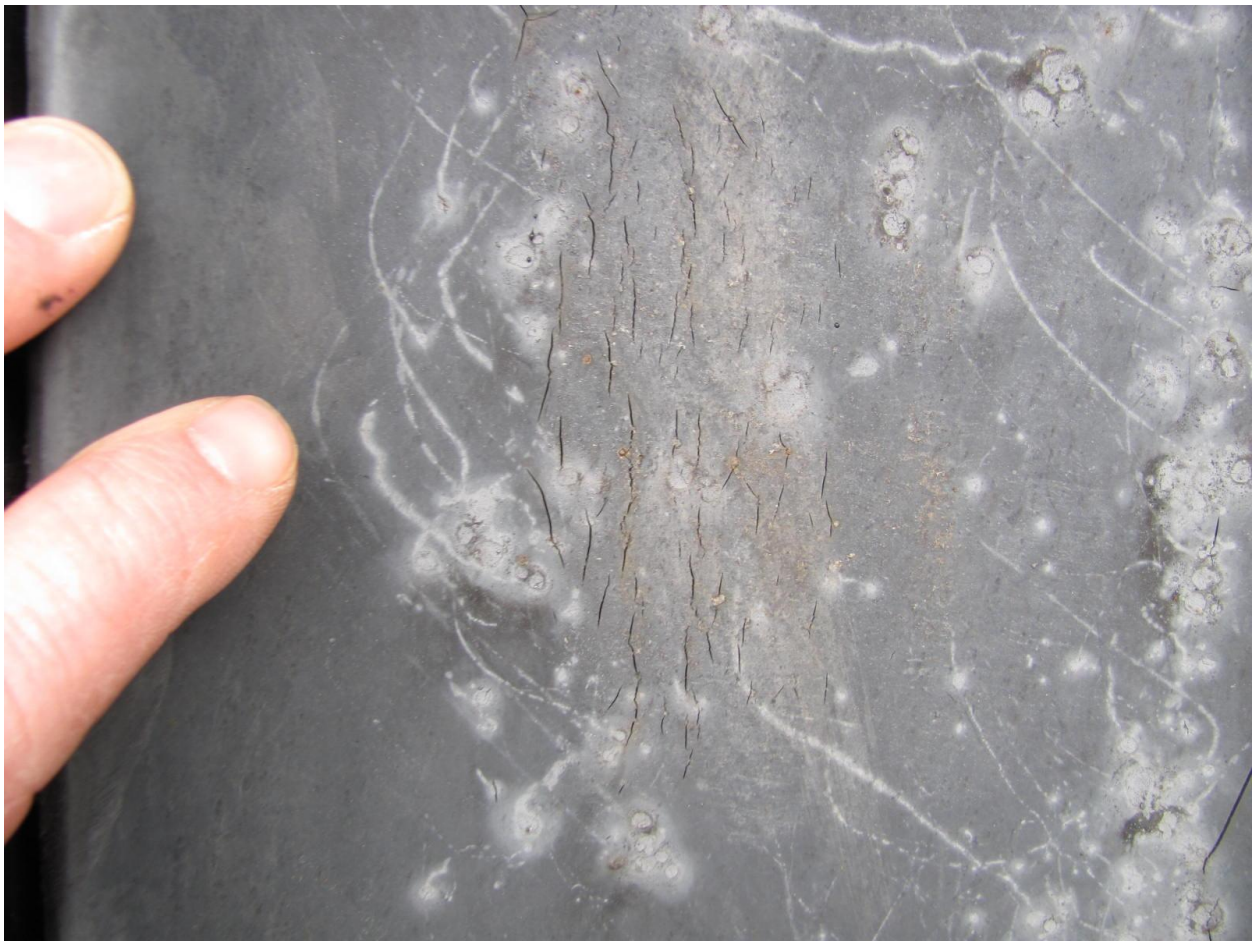

Photo 6 – Short, multiple, irregularly orientated coating cracks.

Photo 7 – Overcoating of cracks.

CORROSION PROBE, INC.
THE COMPLETE ENGINEERING APPROACH - FROM DETECTION TO CORRECTION

14 May 2010

Via email: joba@ocean-coastal.com

Mr. John V. Bazzoni, Jr.
Construction Engineer
Ocean and Coastal Consultants
35 Corporate Drive, Suite 1200
Trumbull, CT 06611

Subject: Site Visit Follow-Up Report for (Landside) Sheet Piling Remedial Coating Work Inspection at De Laval ERP Project in Poughkeepsie, New York

Dear Mr. Bazzoni:

This correspondence presents our findings and comments regarding the remedial (touch-up) coating work based on our May 7, 2010 site visit. Various above-grade sections in Zones 1 through 3 were examined at areas that had been repaired and at areas in the process of being repaired. Findings and comments are as follows:

- At all completed repair areas the coating was tightly adhered including at terminating edges to existing coatings. Note that at some of the repair areas the newly applied coating was not fully cured.

- Repaired coating areas were generally free of dirt/debris and appeared (visually) pinhole free. However, drips and brush marks were not uncommon particularly in Zone 3. Drips are typically associated with excessive application thickness and the brush marks with excessive thickness and/or coating application nearing the end of the coating's potlife. See Photo 1. In addition, it is best that existing coating edges are feathered/tapered prior to applying touch-up coating application. This was not always done on repaired areas. See Photo 2.

- There were no (repair) areas observed where re-cracking through newly applied Macropoxy 646 had occurred.

- There were very few areas requiring repair that were not identified or remediated. Two areas that were identified were within the 3P335-340 and 3P307/308 vicinities. At the former area there was a small (approximately 1") crack and at the latter there were relatively small corroded areas likely caused by mechanical impact/damage to the coating. See Photo 3.

- Coating thicknesses varied widely between prepared/recoated repair areas and adjacent original coated areas where additional coating overlapped to transition from new to existing coating. Examples of where this was found, along with other coating thickness measurement information are as follows:

  3P313/414 – Drips observed at overlap to existing coating where thicknesses were in the 20.0 - 25.0 mil range; however, the center (newly recoated) area dry film thickness range was measured at 7.5 to 9.0 mils.

  3P299/300 – Dry film thickness (DFT) ranged from 9.0 – 40.0 mils on repair area verses (overlapped) existing coating areas.

  3P290 – DFT ranged from 19.5 – 55.0 mils on sheet knuckle.

  3P285 – DFT ranged from 7.0 – 34.0 mils. See Photo 2. Note thickness at newly coated repair area verses the existing coating, overlap area. The edge of the existing coating should have been feathered/tapered to during surface preparation.

  3P261/262 – DFT ranged from 28.0 – 60.0 mils.

  1P105/106 - DFT ranged from 19.0 – 54.0 mils.

  1P49/50 - DFT ranged from 9.0 – 47.0 mils.

  1P8/9 - DFT measurements of 9.5 mils, 10.0 mils, 12.0 mils and 15.0 mils indicating greater uniformity.

  1P26 - DFT ranged from 12.0 – 16.0 mils indicating greater uniformity.

- Prepared areas were examined within the 1P88/89 vicinity. A combination of rotary (sand) disc grinding and needle-gunning were used to prepare the surfaces which were acceptable relative to the (visible) degree of cleanliness and surface profile. See Photo 4.

The workmanship in Zone 1 appeared comparatively better than in other areas in terms of uniformity of application, minimal brush marks, drips and/or embedded matter. See Photo 5.

- River water was being used, as opposed to potable water, for the initial cleaning of repair areas. This was pointed out to repair personnel and they said that they would use potable water in the future.

In general, the coating repair work appeared to be performed properly based on completed and ongoing repair areas observed. Reducing existing coating edge thickness, ensuring greater coating thickness uniformity, using potable water only and recognizing coating potlife restrictions are recommended watchouts for the remaining work.

We trust that this document is sufficient to your needs. Please let you know if CPI can be of further assistance to Ocean and Coastal Consultants with this or other matters.

The Staff of Corrosion Probe, Inc.

Jim Fecher
James Fecher
Project Manager

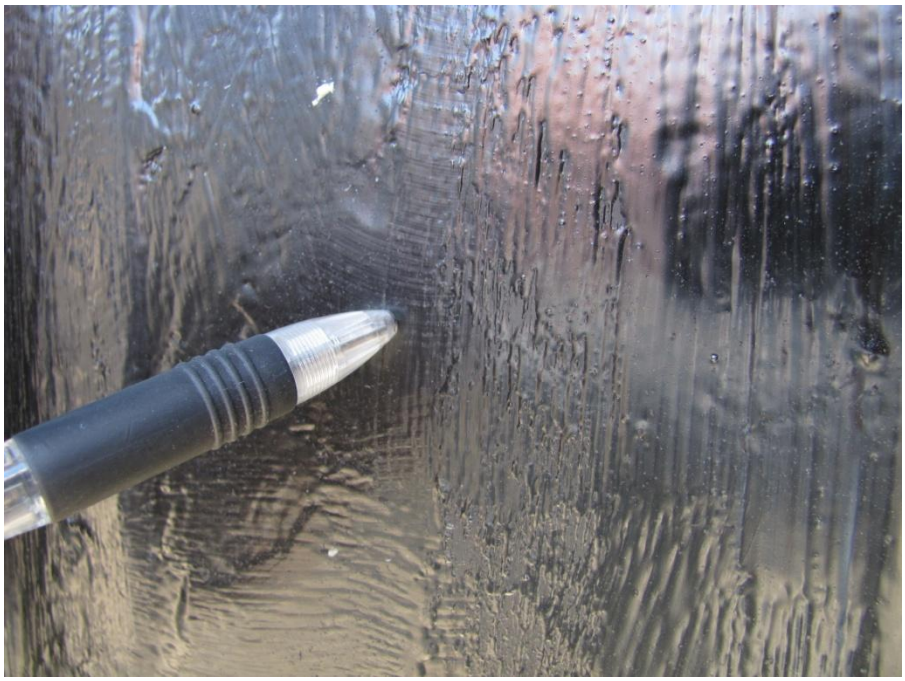

Photo 1 – Note brushmarks.

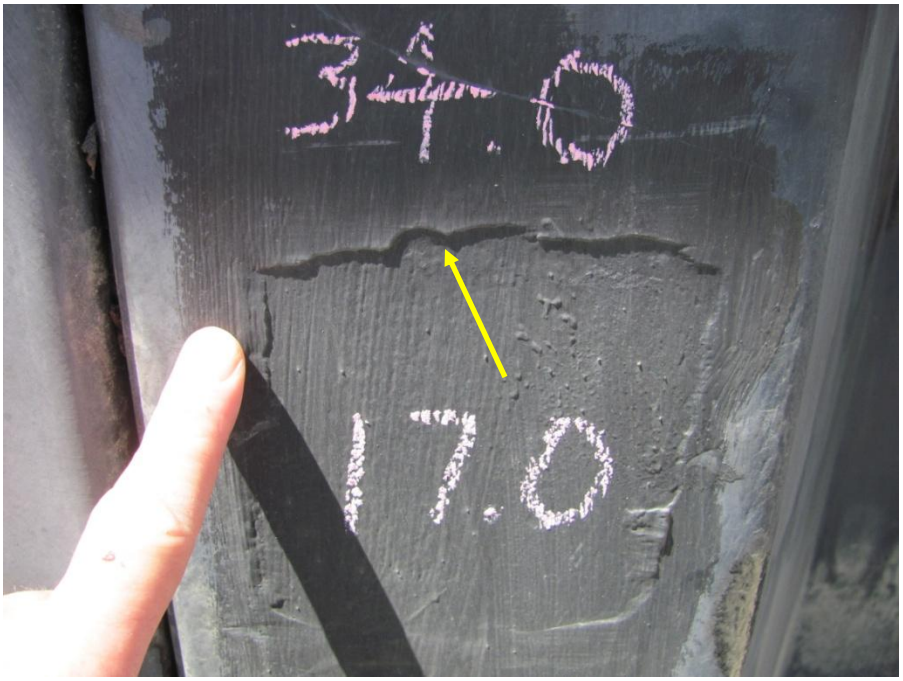

Photo 2 – Note existing coating edges and thickness variation between the repair area and the existing coating.

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Photo 3 – Limited, failed/damaged areas requiring remedial coating work.

Photo 4 – Prepared Zone 1 areas.

Photo 5 –Overview of Zone 1 repair areas.

CORROSION PROBE, INC.
THE COMPLETE ENGINEERING APPROACH - FROM DETECTION TO CORRECTION

11 June 2010

Via email: joba@ocean-coastal.com

Mr. John V. Bazzoni, Jr.
Construction Engineer
Ocean and Coastal Consultants
35 Corporate Drive, Suite 1200
Trumbull, CT 06611

Subject: Site Visit Follow-Up Report for (Landside) Sheet Piling Condition Below-Grade at De Laval ERP Project in Poughkeepsie, New York

Dear Mr. Bazzoni:

This correspondence presents our findings and comments regarding the condition of the protective coating below the existing grade based on site visits performed on June 1 and 4, 2010. On each of the site visits, an area was excavated and a temporary coffer dam was installed. In addition, the sheet pile coating was inspected at several grade area locations and shallow, hand-dug excavations (approximately 6" - 8"deep). CPI's findings are as follows:

- June 1, 2010 –

  The depth of the Zone 3/Sheet Piles 3P307-3P308 excavation site extended to El. -0.58' and was approximately 5'-0" wide which was roughly equal to two single sheet pile sections.

  There were numerous localized areas with coating damage and rust found within the below-grade areas. They did not appear to be failures associated with coating cracks nor were any coating cracks observed within the below grade inspection zone. The failures appeared to be present as a result of mechanical damage. Exposed, rusted metal surfaces did not appear to have any appreciable metal losses (e.g. pitting). It was further noted that the above- grade sheet pile surfaces had numerous coating repair spots. Coating dry

film thickness ranged from 16.0 – 48.0 mils and there was no readily apparent correlation between failures and coating thickness. See Photos 1 – 4.

No additional excavations were performed on this day. Sporadic waterline vicinity coating failures and rusting were noted on the south end of the Zone 3 sheet piles such as those found between piles 3P36 and 3P39. There was an isolated coating failure on the steel channel brace (whaler) located between piles 3P39 and 3P40. At various locations between respective ends of Zone 3, there were several isolated areas with failed coating and steel surface corrosion, including those located and marked for repair on piles 3P48, 3P50, 3P65 and 3P79. See Photo 5. A series of sheet piles at the north end of Zone 3 had vertical cracks which extended from above to below-grade and included piles 3P194-3P199, 3P201, 3P208, 3P210 and 3P212. See Photo 6.

- June 4, 2010 –

The depth of the Zone 1/Sheet Piles 1P175-1P176 excavation site extended to El. -1.62' and was approximately 5'-0" wide. See Photo 6. There were a group of vertical (corner area) cracks in sheet 1P175 starting at El. 1.41' and continuing downward to El. 0.30'. Rust was observed throughout the length of the various cracks and coating dry film thickness measurements adjacent to the cracks were in the 35.0 to 40.0 mil range. This can be considered as comparatively thick. See Photos 7 and 8. There was another vertical crack on the sheet 1P175 knuckle where it adjoined sheet 1P176 and a 1" long horizontal crack on 1P176. There were several 1/4"' – 2" diameter coating delaminations with rust on each of the two piles and coating delaminations with rust on piles 1P175 and 1P176 in the vicinity of the horizontal bracing (whaler). See Photos 7 and 9. Coating thicknesses in the 17.0 mils – 20.0 mil range were measured in close proximity to individual delaminations. Irregular corroded metal surfaces, at certain failed coating areas, were indicative that slight metal loss had occurred. These losses were measured and found to be approximately .005" - .007". See Photo 10.

In conclusion, at one of the two below-grade excavation locations, coating cracks associated with excessive coating thickness, similar to what has been previously documented at above-grade sheet pile areas, were found. Also of concern, there were an even greater amount of exposed metal areas at both below-grade excavation areas which appeared to be a result of mechanical related damage.

Thank you for the opportunity to be of continued assistance with this project.

The Staff of Corrosion Probe, Inc.

Jim Fecher

Jim Fecher
Project Manager

CORROSION PROBE, INC.
Corporate Headquarters:
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Photo 1 – South side of excavation. Note various rust spots with black coating section.

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Photo 2 – Seam between Sheet Piles 307 and 308 at center of the excavated zone. Note various rust spots.

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Photo 3 – North side of excavation. Note various rust spots with (black) coating.

Photo 4 – Excavation overview. Note above grade coating repairs as indicated by white markings.

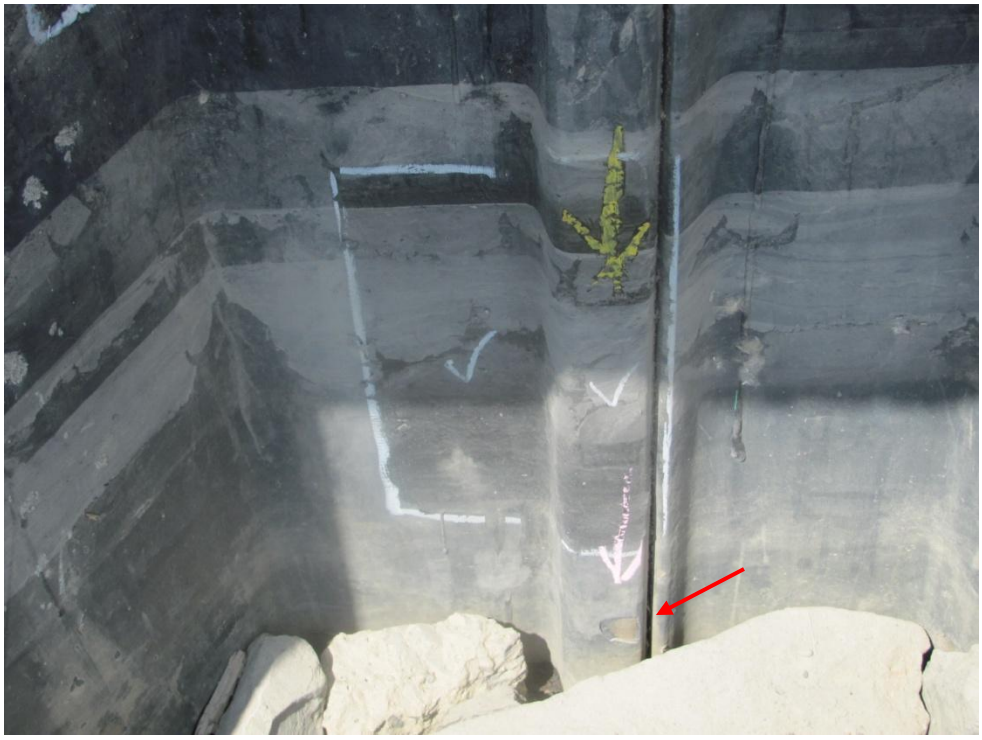

Photo 5 – Example of sporadic coating damage located and marked between 1P48 and 1P79.

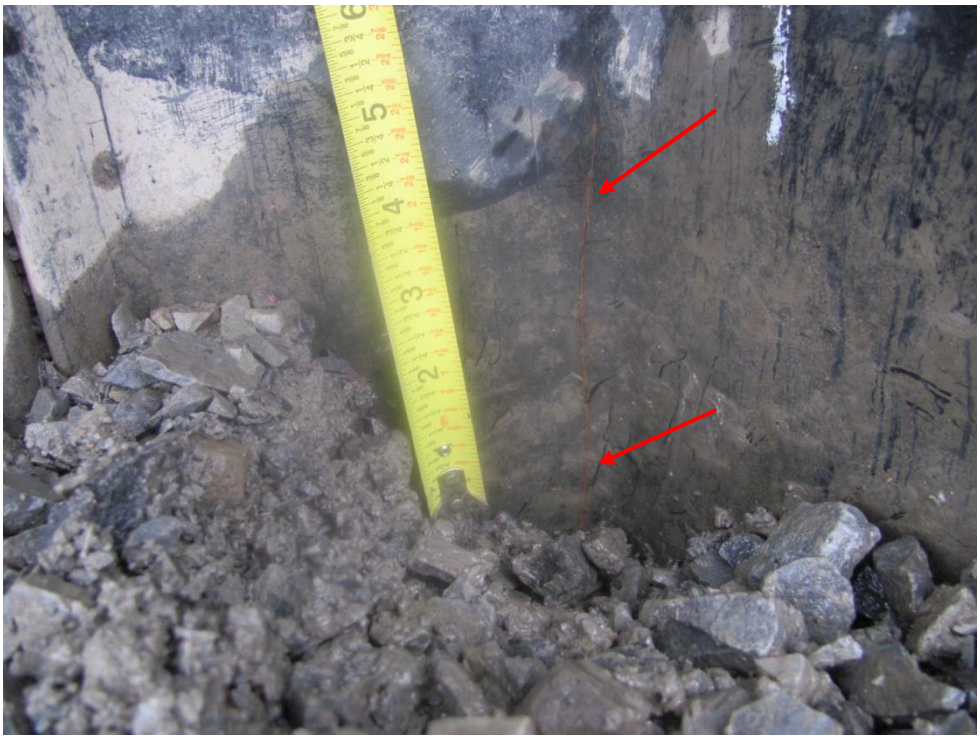

Photo 6 – Crack extending below grade (1P210).

Photo 6 – Overview of 1P175/1P176 excavation area.


Photo 7 – Note vertical corner cracks (upper left), knuckle crack and various 1P176 coating failures with rust. See Photo 8 for crack area close-up.

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Photo 8 – Close-up of previous photo of vertical corner coating cracks with rust bleed.

Photo 9 – Coating delamination on 1P176 adjacent to horizontal bracing (whaler).

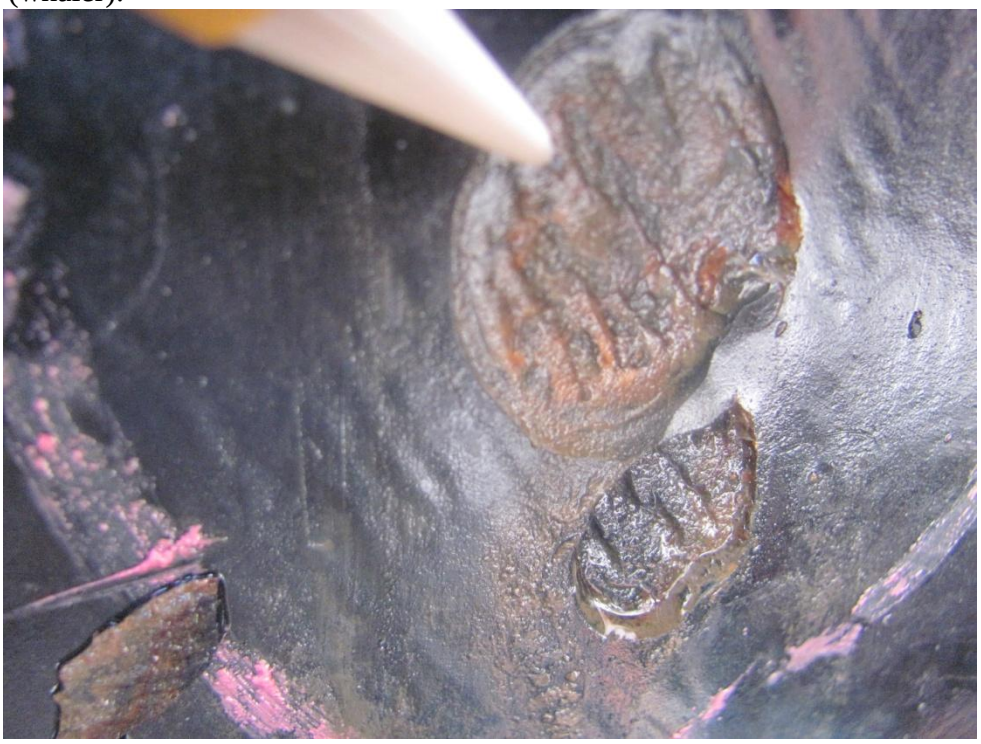


Photo 10 – Coating delamination with slight metal loss of approximately .005".

APPENDIX AU

Bulkhead Coating
Repair Procedures

Repair Procedures Above Elev. +2.0' NAVD 88

Stamford Wrecking Company
30 Nutmeg Drive
Trumbull, CT 006611
Ph: (203)380-8300
Fax: (203)380-8944

Letter of Transmittal

To: Scott M. Smith
Clough Harbor & Associates
441 South Salina St.
Syracuse, NY 13202-4712
Ph: 315-471-3920 Fax: 315-471-3569

Transmittal #: 565
Date: 4/8/2010
Job: SW-POUG-0683 DELAVAL PROPERTY

Subject: Submittal

WE ARE SENDING YOU

- ☐ Attached
- ☐ Under separate cover via Email the following items:
  - ☐ Shop drawings
  - ☐ Prints
  - ☐ Plans
  - ☐ Samples
  - ☐ Copy of letter
  - ☐ Change order
  - ☐ Specifications
  - ☑ Submittal

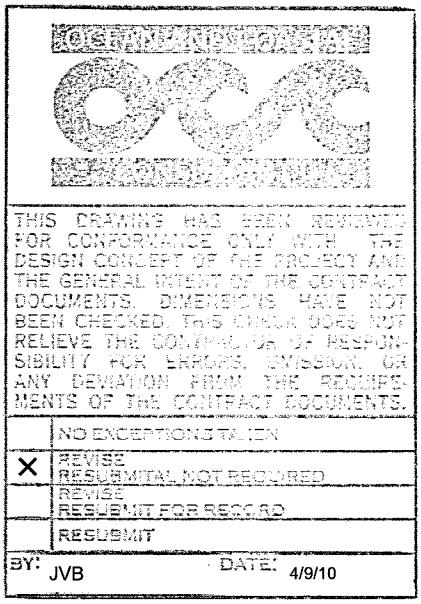
Document Type	Copies	Date	No.	Description
Submittal	6	4/8/10	2375-12 Rev 0	Map Cracking Repair Procedure for Above Water Line Repairs

THESE ARE TRANSMITTED as checked below:

- ☑ For approval
- ☐ For your use
- ☑ As requested
- ☐ For review and comment
- ☐ FOR BIDS DUE
- ☐ Approved as submitted
- ☐ Approved as noted
- ☐ Returned for corrections
- ☐ Other
- ☐ PRINTS RETURNED AFTER LOAN TO US
- ☐ Resubmit ___ copies for approval
- ☐ Submit ___ copies for distribution
- ☐ Return ___ corrected prints

Remarks:

Copy To:



From: Paquin, Greg (Stamford Wrecking Company)

Signature: _____

If enclosures are not as noted, kindly notify us at once.

9 WHIPPLE STREET, UNIT 1
CUMBERLAND, RI 02864-5399
PHONE: (401) 334-2565
FAX: (401) 334-3337
EMAIL: SSNICHOLS@HAYWARDBAKER.COM

G. DONALDSON CONSTRUCTION
A Division of Hayward Baker

KELLER

LETTER OF TRANSMITTAL

TO: Greg Paquin

DATE: April 07, 2010

COMPANY: Stamford Wrecking Company

ADDRESS: 30 Nutmeg Drive, Trumbull, CT 06611

TELEPHONE NO. 203-380-8300

RE: DeLaval Site, Map Cracking Recoat Procedure

JOB NO. 18218

We are sending herewith:

Blue Prints		B & W Prints		Photos		Calculations	
Copies		Samples		Shop Drawings		Specification	
Contract		Others	See Below				

Item No.	No. of Copies	Date	Description
1	1	4/7/10	Map Cracking Repair Procedure

REMARKS:

From: Scott S. Nichols

cc:

G. Donaldson Construction
9 Whipple Street, Unit 1
Cumberland, RI 02864-5399

Tel: 401-334-2565
Fax: 401-334-3337

G. DONALDSON CONSTRUCTION
A Division of Hayward Baker

April 07, 2010

Stamford Wrecking Company
30 Nutmeg Drive
Trumbull, CT 06611

Re: Recoating Procedure for Sheet Pilings Above Splash Zone
Delaval Project
Poughkeepsie, NY

PLUS DISBONDED AREAS, HOLIDAYS, RUST THROUGH AREAS, AND OTHER TYPES OF COATING FAILURES.

G. Donaldson Construction A Division of Hayward Baker, Inc. (GDC) is submitting this recoating procedure for American Steel Coatings, LLC (ASC). Though ASC has tried unsuccessfully to address this issue, we trust the following will address all concerns for the above water repairs.

The above water repairs will be performed by personnel from American Steel Coatings, LLC.. At this time the specific names of the employees who will perform the work is not known. A list will be provided 24 hours prior the commencing the work. If sufficient personnel are not provided by ASC, (GDC) will supplement the work force.

SEE NOTE BELOW

The following procedures will be used for repairing the map cracking above the above water portion:

1. Using grinders, remove all delaminated existing coating at cracked coating areas. The coating shall be removed at least 1-inch either side of the crack including all crazed (stressed) surface area.
2. Power tool clean all coating repair areas where bare or rusted steel is exposed in accordance with SSPC-SP-11 Power Tool Cleaning to Bare Metal.
3. Sand the periphery of all coating repair areas to produce a roughened surface profile in the intact surrounding coating in all directions to a distance of at least 2-inches. This roughening should produce a uniform 2 to 3 mil profile in the existing intact coating.
4. Blow down or vacuum clean the prepared areas to remove all dust, dirt and loose coating material leaving a sound, dry substrate to receive the repair coating application.
5. Brush apply two coats of the black Macropoxy 646 coating @ 4.0 to 6.0 mils dry film thickness in strict accordance with the manufacturer's recommendations for mixing application, recoat times, cure times and necessary ambient/substrate conditions.

SHERWIN WILLIAMS

All care should be taken to ensure that this coating repair work is performed under appropriate temperature and humidity conditions. From the attached product information for the Macropoxy 646 the ambient temperature shall be a minimum of 40-degrees Fahrenheit. It is our intention to have employees on site to start the repairs on April 14, 2010. This date is predicated on approval of this repair procedure.

4.0 TO 6.0 MILS DRY FILM THICKNESS PER COAT. THE TOTAL DRY FILM THICKNESS FOR THE TWO COAT SYSTEM BEING 8.0 TO 12.0 MILS.

NO PRODUCT INFORMATION WAS ATTACHED

We trust this addresses all the concerns for the above water map cracking repairs. If you have any questions please do not hesitate to call.

Sincerely,

G. Donaldson Construction
A Division of Hayward Baker, Inc.

Scott S. Nichols
New England Area Manager

Cc: Ray Johnson – Skyline Steel
Eric Greene – American Steel Coatings, LLC

NOTE:

THIS COATING REPAIR PROCEDURE APPLIES TO THE FOLLOWING AREAS ON THE STEEL SHEET PILE BULKHEADS:

ON THE LANDWARD SIDE: THE AREA ABOVE THE FILL ELEVATION

ON THE WATERWARD SIDE: THE AREA ABOVE THE SPLASH ZONE (ABOVE ELEVATION +2.0 NAVD 88)

Map Cracking Repair Procedures Below Elev. +2.0' NAVD 88

G. Donaldson Construction
9 Whipple Street, Unit 1
Cumberland, RI 02864-5399

Tel: 401-334-2565
Fax: 401-334-3337

G. DONALDSON CONSTRUCTION
A Division of Hayward Baker

April 20, 2010

Stamford Wrecking Company
30 Nutmeg Drive
Trumbull, CT 06611

Re: Recoating Procedure for Sheet Pilings Below Splash Zone
Delaval Project
Poughkeepsie, NY

G. Donaldson Construction A Division of Hayward Baker, Inc. (GDC) is submitting this recoating procedure for American Steel Coatings, LLC (ASC). This repair procedure is for the waterward side below splash zone map cracking (below elevation +2.0 NAVD 88).

The below water repairs will be performed by personnel from Fathom Solutions LLC.. At this time the specific names of the employees who will perform the work is not known. A list will be provided prior the commencing the work.

The following procedures will be used for repairing the map cracking above the above water portion:

1. Dive team will mobilize to the site
2. Diving will be performed from diving vessel.
3. The sheeting will be inspected for map cracking.
4. Power tool clean the crack in accordance with SSPC-SP-11 Power Tool Cleaning to Bare Metal area plus 4" on either side of the corroded crack areas feathering the cleaning onto the intact coating periphery another 2" to 3".
5. The areas of coating loss will be cleaned by pressure washing and wire brush prior to epoxy application.
6. The two part epoxy (FX-764 Hydro-Ester Splash Zone and Underwater Paste) will be mixed as per product specifications, given to the diver(s), and hand applied as per product specifications.

All care should be taken to ensure that this coating repair work is performed under appropriate temperature conditions. From the attached product information for the FX-764 the water temperature shall be a minimum of 50-degrees Fahrenheit. Upon approval of this procedure, the water temperature will be verified prior to mobilization.

We trust this addresses all the concerns for the ~~above water~~ map cracking repairs. If you have any questions please do not hesitate to call.

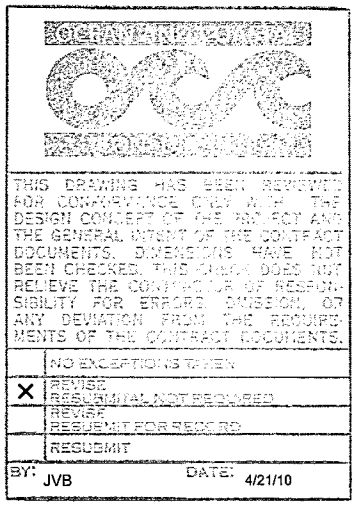
BELOW ELEVATION +2.0 NAVD 88

Sincerely,

G. Donaldson Construction
A Division of Hayward Baker, Inc.

Scott S. Nichols
New England Area Manager

Cc: Ray Johnson – Skyline Steel
Eric Greene – American Steel Coatings, LLC



HAYWARD BAKER
Geotechnical Construction

KELLER

Fathom Solutions LLC

Complete Underwater Resource

April 19, 2010

NOT REVIEWED

Hayward Baker
Scott Nichols
9 Whipple St., Unit 1
Cumberland, RI 02864

RE: Poughkeepsie---underwater epoxy application

Dear Mr.Nichols:

The following is day rate pricing for the underwater application of epoxy splash zone to the sheetpile bulkhead as necessary.

Units	Description	Unit Total
1 day	3 person dive crew. 8 hours onsite.	XXXX
1 day	Extra diver onsite. 8 hours.	XXXX
1 man hour	Overtime	XXXX
1 kit	Splash zone epoxy (2 gal kit)	XXX
1 day	Dive boat	XXX
1 day	Underwater video	XXX
1 RT	Mobilization/Demobilization—round trip	XXX

APPROACH

- The dive team will mobilize to the site.
- Diving will be performed from diving vessel.
- The prime shall decide if they wish to have a three person (one diver in the water) or a four person crew onsite (2 divers in the water).
- The bulkhead will be inspected for coating loss if necessary.
- The areas of coating loss will be cleaned by pressure washing and wire brush prior to epoxy application.
- The two part epoxy will be mixed as per product specifications, given to the diver(s), and hand applied as per product specifications.
- Underwater video of the repairs can be requested.
- Upon project completion, the dive team will demobilize.

Fathom Solutions LLC is a certified WBE firm. We have completed similar projects in the past, and references are available. Please feel free to contact us with any questions regarding this proposal. Thank you.

Regards:

Victoria Preston
Owner/Dive Supervisor

NY office: 607-842-6765
CT office: 860-664-1864
Cell: 860-388-7049
vpreston@fathom-solutions.com

Kevin Shepard: Dive Supervisor
Cell: 860-388-7054
Kevin@fathom-solutions.com

email: info@foxind.com

FOX INDUSTRIES
ENGINEERED PRODUCTS

FX-764
Hydro-Ester®
Splash Zone and Underwater Paste

www.foxind.com
Fox Industries, Inc. • 3100 Falls Cliff Road • Baltimore, Maryland 21211

DESCRIPTION:

FX-764 Hydro-Ester ® Splash Zone & Underwater Paste is a moisture-insensitive, two-component, 100% solids epoxy-resin system. When mixed at a 1:1 ratio, by volume, this product produces a paste-like material that is ideal for protection or restoration of concrete, steel and timber piles and other structural elements in marine environments above and below the water line.

ADVANTAGES:

- Convenient 1:1 mixing ratio
- Long pot life
- Hand-applied
- Bonds to wet surface
- Resists wave action
- Restores structural integrity
- May be mixed and applied underwater

PHYSICAL PROPERTIES:

Consistency		Paste
Color, Mixed		Standard Gray
(Other colors available upon "special order" request)		
Compressive Strength		
ASTM C-579,	24 hours	4000 psi
Method "B"	72 hours	6400 psi
	7 days	7500 psi
Tensile Strength		
ASTM C-307	7 days	1500 psi
Bond Strength		
ASTM C-882		2000 psi
Shrinkage		No Shrinkage
ASTM C-883		Used with concrete
Pot Life		2 hours @ 70°F
Water Absorption		
ASTM C 413-01		0.32%
Direct In Situ Bond		
(Underwater)		50 psi min
Curing Schedule		
Dry to Touch		36 hours @ 50°F
		24 hours @ 70°F
		16 hours @ 90°F
Minimum Recoat Time		36 hours @ 50°F
		24 hours @ 70°F
		16 hours @ 90°F

MIXING:

Material temperature should be a minimum of 60°F for ease of mixing. Mix white "A" Component & charcoal "B" Component together, by hand, while wearing gloves dampened with water, until a uniform medium gray color is achieved. Do not mix more material than can be used within pot life.

SURFACE PREPARATION:

Remove all deteriorated material, barnacles or other marine growth by mechanical abrasion, water or sand blasting. To avoid contamination, apply **FX-764** to prepared surface as quickly as possible.

APPLICATION:

For best results, apply **FX-764** by hand using tight-fitting rubber or plastic gloves. (Wet gloves with slightly soapy water before working with material.) Press material onto surface and knead into place in maximum lift thickness of approximately 2". Smooth gently by rubbing with gloves using water as a lubricant.

LIMITATIONS:

Do not thin **FX-764**. Since water conditions and content vary greatly, it is recommended that a sample application be made to ensure the intended performance. Do not apply when water or ambient temperature is below 50°F.

COVERAGE:

One (1) gallon of **FX-764** will yield 231 cu. in. and cover 12.8 sq. ft. @ 125 mil thickness, or 1/8".

PACKAGING:

This product is available in two (2) gallon, four (4) gallon and ten (10) gallon units.

SHELF LIFE:

Two (2) years for Components "A" and "B". Store indoors.

CAUTION:

Contains "A" Component contains epoxy resins. "B" Component contains organic amines which are strong sensitizers. WARNING! May cause skin sensitization, burns or other allergic responses. Avoid inhalation of vapor. Use good ventilation, particularly if material is heated. Prevent all contact with skin and eyes. Wear protective clothing, goggles and/or barrier creams. Wash thoroughly after handling. FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least fifteen (15) minutes. Remove contaminated clothing before reuse. Discard contaminated shoes.

FOR INDUSTRIAL USE ONLY. KEEP AWAY FROM CHILDREN. 5/2008

PHONE 410-243-8856 TOLL FREE 888-760-0369 FAX 410-243-2701

Mechanical Damage Repair Procedures Below Elev. +2.0' NAVD 88

DeLaval, Poughkeepsie NY
Stamford Wrecking Co.
GLP 6/09/10
(Revised)

note that some areas will be underwater

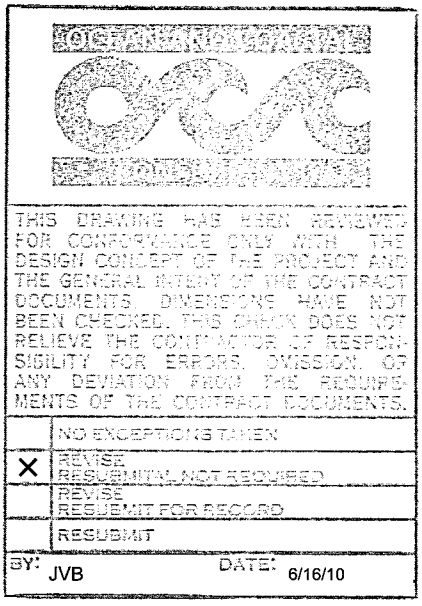
Re: **Steel Sheet Pile Bulk Head Mechanical Damage Repair Procedure**

1. Identify water side locations for repair, below the splash zone elevation of +2.0 NAVD 88, to top of Rip Rap Toe Protection. Low tide working conditions.
2. Surface preparation: "Remove all deteriorated material, barnacles or other marine growth by mechanical abrasion, water, or sand blasting". We plan to use a water blast for the first process, then proceed with ~~hand tool cleaning SSPC - SP2 (wire brush) to remove any additional mill scale~~. If a tide change occurs during this process, previously prepared areas will be hit again with power washing and hand tool cleaning prior to the application of the FX-764 product.
3. Feather and abrade mechanically approximately 4" beyond the existing sub straight coating from the localized mechanical damage area prior to applying the FX-764 Hydro-Ester, Under Water Paste.
4. After surface preparation is performed in the localized areas of the repairs, apply FX-764 Hydro-Ester, Under Water Paste, as previously approved 10/26/09.

Repair areas (above and below water) must be washed first with potable water followed by mechanical abrasion. Areas re-wetted by tides should be re-prepared in the same manner.

power tool cleaning to bare metal per SSPC-SP11 to extend approximately 4 inches beyond the corroding steel area.

The FX-764 should be feather-edged up to and including the 4 inch existing coating prep zone, but not beyond into non-prepared areas.



email: info@foxind.com

FOX INDUSTRIES
ENGINEERED PRODUCTS

FX-764

Hydro-Ester®
Splash Zone and Underwater Paste

www.foxind.com
Fox Industries, Inc. • 3100 Falls Cliff Road • Baltimore, Maryland 21211

Surface preparation is to be in accordance with the procedure listed on the previous sheet

DESCRIPTION:

FX-764 Hydro-Ester® Splash Zone & Underwater Paste is a moisture-insensitive, two-component, 100% solids epoxy-resin system. When mixed at a 1:1 ratio, by volume, this product produces a paste-like material that is ideal for protection or restoration of concrete, steel and timber piles and other structural elements in marine environments above and below the water line.

ADVANTAGES:

- Convenient 1:1 mixing ratio
- Long pot life
- Hand-applied
- Bonds to wet surface
- Resists wave action
- Restores structural integrity
- May be mixed and applied underwater

PLEASE NOTE SURFACE PREPARATION REQUIREMENTS

PHYSICAL PROPERTIES:

Consistency		Paste
Color, Mixed		Standard Gray
(Other colors available upon "special order" request)		
Compressive Strength		
ASTM C-579,	24 hours	4000 psi
Method "B"	72 hours	6400 psi
	7 days	7500 psi
Tensile Strength		
ASTM C-307	7 days	1500 psi
Bond Strength		
ASTM C-882		2000 psi
Shrinkage		No Shrinkage
ASTM C-883		Used with concrete
Pot Life		2 hours @ 70°F
Water Absorption		
ASTM C 413-01		0.32%
Direct In Situ Bond		
(Underwater)		50 psi min
Curing Schedule		
Dry to Touch		36 hours @ 50°F
		24 hours @ 70°F
		16 hours @ 90°F
Minimum Recoat Time		36 hours @ 50°F
		24 hours @ 70°F
		16 hours @ 90°F

MIXING:

Material temperature should be a minimum of 60°F for ease of mixing. Mix white "A" Component & charcoal "B" Component together, by hand, while wearing gloves dampened with water, until a uniform medium gray color is achieved. Do not mix more material than can be used within pot life.

SURFACE PREPARATION:

Remove all deteriorated material, barnacles or other marine growth by mechanical abrasion, water or sand blasting. To avoid contamination, apply **FX-764** to prepared surface as quickly as possible.

APPLICATION:

For best results, apply **FX-764** by hand using tight-fitting rubber or plastic gloves. (Wet gloves with slightly soapy water before working with material.) Press material onto surface and knead into place in maximum lift thickness of approximately 2". Smooth gently by rubbing with gloves using water as a lubricant.

LIMITATIONS:

Do not thin **FX-764**. Since water conditions and content vary greatly, it is recommended that a sample application be made to ensure the intended performance. Do not apply when water or ambient temperature is below 50°F.

COVERAGE:

One (1) gallon of **FX-764** will yield 231 cu. in. and cover 12.8 sq. ft. @ 125 mil thickness, or 1/8".

PACKAGING:

This product is available i
ten (10) gallon units.

SHELF LIFE:

Two (2) years for Compon

CAUTION:

Contains "A" Component c
contains organic amine
WARNING! May cause ski
responses. Avoid inhalatio
ticularly if material is heat
eyes. Wear protective clot
Wash thoroughly after han
immediately flush eyes or
fifteen (15) minutes. Remc
use. Discard contaminated

OCEAN AND COASTAL CONSULTANTS

THIS DRAWING HAS BEEN REVIEWED FOR CONFORMANCE ONLY WITH THE DESIGN CONCEPT OF THE PROJECT AND THE GENERAL INTENT OF THE CONTRACT DOCUMENTS. DIMENSIONS HAVE NOT BEEN CHECKED. THIS CHECK DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ERRORS, OMISSION, OR ANY DEVIATION FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

X	NO EXCEPTIONS TAKEN
	REVISE RESUBMITAL NOT REQUIRED
	REVISE RESUBMIT FOR RECORD
	RESUBMIT

BY: AIM DATE: 10/26/09

FOR INDUSTRIAL USE ONLY. KEEP AWAY FROM CHILDREN. 5/2006

PHONE 410-243-8856 TOLL FREE 888-760-0369 FAX 410-243-2701

NOT REVIEWED

SHERWIN-WILLIAMS.

Surface Preparation

Coating performance is directly affected by surface preparation.

Coating integrity and service life will be reduced because of improperly prepared surfaces. As high as 80% of all coating failures can be directly attributed to inadequate surface preparation that affects coating adhesion. Selection and implementation of the proper surface preparation ensures coating adhesion to the substrate and prolongs the service life of the coating system.

The majority of paintable surfaces are concrete, ferrous metal, galvanizing and aluminum. They all require protection to keep them from corroding in aggressive environments. Selection of the proper method for surface preparation depends on the substrate, the environment, the coatings selected and the expected service life of the coating system. Economics, surface contamination and the environment will also influence the selection of surface preparation methods.

PREVIOUSLY COATED SURFACES

Maintenance painting will frequently not permit or require compete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mold, mildew, mortar, efflorescence and sealers must be removed to assure sound bonding to the tightly adhering old paint. Glossy surfaces of old paint films must be clean and dull before repainting. Washing with an abrasive cleanser will clean and dull in one operation, or wash thoroughly and dull by sanding. Spot prime any bare areas with an appropriate primer. Recognize that any surface preparation short of total removal of the old coating may compromise the service life of the system. Check for compatibility by applying a test patch of the recommended coating system, covering at least 2 – 3 square feet. Allow to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required.

NOT REVIEWED

TOUCH-UP, MAINTENANCE AND REPAIR

For a protective coating system to provide maximum long-term protection, regularly scheduled maintenance is required. Maintenance includes inspection of painted areas, cleaning of surfaces to remove oils, chemicals and other contaminants, and touch-up of areas where the coatings have been damaged. Highly corrosive areas, such as those subjected to frequent chemical spillage, corrosive fumes and/or high abrasion or temperature, should be inspected frequently – every six months for example. Areas exposed to less severe conditions, such as interiors and exteriors of potable water tanks may be inspected annually to assess the condition of the coating system.

The SSPC-VIS 2, Standard Method for Evaluating Degree of Rusting on Painted Steel Surfaces, can be used as a guide to determine appropriate touch-up and repair maintenance schedules.

Concrete

No. 03732 Guideline for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays This standard summarizes the capabilities, operating requirements, and limitations of the various methods used to prepare concrete surfaces for the application of protective sealers, coatings, and polymer overlays. Benchmark profiles are included which provide visual standards for purposes of specification, application and verification.

ICRI 03732 identifies 12 different concrete surface preparation methods and uses nine profile replicates to use as a visual standard to ensure the specified Concrete Surface Profile (CSP 1-9) is achieved.

Non Ferrous Metal Substrates

Aluminum

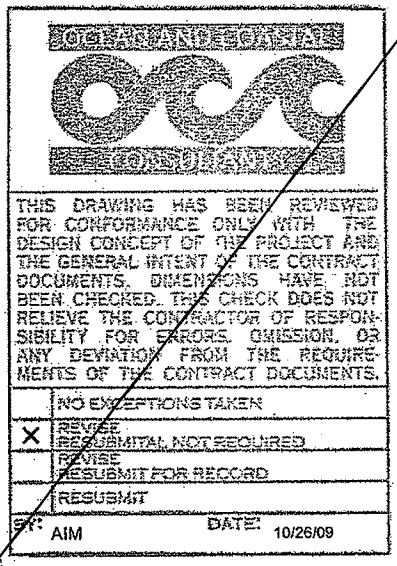
Remove all oil, grease, dirt, oxide and other foreign material by cleaning per , Solvent Cleaning.

Galvanized Metal

Allow to weather a minimum of six months prior to coating. Clean per using detergent and water or a degreasing cleaner, then prime as required. When weathering is not possible or the surface has been treated with chromates or silicates, first solvent clean per and apply a test area, priming as required. Allow the coating to cure at least one week before testing per ASTM D3359. If adhesion is poor, brush blast per is necessary to remove these treatments.

Ductile Iron

NOT REVIEWED



National Association of Pipe Fabricators, Inc. NAPF 500-03 Surface Pr
Ductile Iron Pipe and Fittings in exposed locations receiving special exte
special internal linings.

This Standard summarizes the surface preparation requirements for duc
standard are the following:

NAPF 500-03-01 SOLVENT CLEANING
NAPF 500-03-02 HAND TOOL CLEANING
NAPF 500-03-03 POWER TOOL CLEANING
NAPF 500-03-04 ABRASIVE BLAST CLEANING FOR DUCTILE IRON
NAPF 500-03-05 ABRASIVE BLAST CLEANING FOR CAST DUCTILE IRON FITTINGS

Attempts to apply steel surface preparation specifications to ductile iron actually result in damage to the pipe surface with subsequent reduced life expectancy.

SURFACE PREPARATION SHALL COMPLY WITH MANUFACTURER'S REQUIREMENTS

SSPC/NACE Standards

SSPC-SP1 – SOLVENT CLEANING

Solvent cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation. For complete instructions, refer to Society of Protective Coatings Surface Preparation Specification No. 1.

SSPC-SP2 – HAND TOOL CLEANING

Hand Tool Cleaning removes all loose mill scale, loose rust and other detrimental foreign matter. It is not intended that adherent mill scale, rust and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. Before hand tool cleaning, remove visible oil, grease, soluble welding residues and salts by the methods outlined in SSPC-SP1. For complete instructions, refer to Society of Protective Coatings Surface Preparation Specification No. 2.

SSPC-SP5/NACE 1 – WHITE METAL BLAST CLEANING

A White Metal Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP5/NACE 1.

NOT REVIEWED

SSPC-SP6/NACE 3 – COMMERCIAL BLAST CLEANING

A Commercial Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter, except for staining. Staining shall be limited to no more than 33% of each square inch of surface area and may consist of light shadows, slight streaks or minor discoloration caused by stains of rust, stains of mill scale or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP6/NACE 3.

SSPC-SP7/NACE 4 – BRUSH-OFF BLAST CLEANING

A Brush-Off Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust and loose paint. Tightly adherent mill scale, rust and paint may remain on the surface. Mill scale, rust and coating are considered adherent if they cannot be removed by lifting with a dull putty knife after abrasive blast cleaning has been performed. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP7/NACE 4.

SSPC-SP10/NACE2 – NEAR WHITE BLAST CLEANING

A Near-White Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter, except for staining. Staining shall be limited to no more than 5 percent of each square inch of surface area and may consist of light shadows, slight streaks or minor discoloration caused by stains of rust, stains of mill scale or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP10/NACE 2.

SSPC-SP11– POWER TOOL CLEANING TO BARE METAL

Metallic surfaces that are prepared according to this specification, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxide corrosion products and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted. The profile shall not be less than 1 mil. Prior to power tool surface preparation, remove visible deposits of oil or grease by any of the methods specified in SSPC-SP1. Solvent Cleaning, or other agreed upon methods. For complete instructions, refer to Society of Protective Coatings Surface Preparation Specification No. 11.

SSPC-SP12/NACE5 – HIGH AND ULTRA-HIGH PRESSURE

NOT REVIEWED

WATER JETTING FOR STEEL AND OTHER HARD MATERIALS

This standard provides requirements for the use of high and ultra-high pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only, without the addition of solid particles in the stream. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP12/NACE 5.

SSPC-SP13/NACE 6 - CONCRETE

This standard gives requirements for surface preparation of concrete by mechanical, chemical or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls and shotcrete surfaces. An acceptable prepared concrete surface should be free of contaminants, laitance, loosely adhering concrete and dust, and should provide a dry, sound, uniform substrate suitable for the application of protective coating or lining systems. (Depending upon the desired finish and system, a block filler may be required.) For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP13/NACE 6.

APPENDIX AV

OCC December 8, 2010 Partial Punch List
Waterward Side of Bulkhead - Elevation Above +2.0' NAVD 88

DeLaval ERP Project
Bulkhead Coating Touch-Up Review
Waterward Face - Above Elev. +2.0
December 8, 2010
Areas Requiring Additional Coating Touch-up

ZONE 3

STA	COMMENT
0+79	
1+77	
1+79.5	
2+00.5	
2+09.5	
2+27.5	WASHER
2+46	LEAKING SSP INTERLOCK
2+87.5	
3+20.5	

STA	COMMENT
3+40	
3+46	
3+64.5	
3+74.5	
4+27	
4+37.3	
4+85	ANGLE
5+48	
6+63	

ZONE 1

STA	COMMENT
0+00	ON RETURN, 19'-8" EAST OF CORNER
0+00	ON RETURN, 2'-2" EAST OF CORNER
0+17	
0+52	ANGLE
0+59	ANGLE
0+88.5	WASHER
0+93.5	WASHER
0+99	
1+17.5	WASHER
1+30	WASHER/ANGLE
1+33.5	WASHER
1+37.5	WASHER
1+46	

STA	COMMENT
1+66.5	
1+70	
1+77.5	
1+79	
1+92.5	
1+96	
2+00.5	
2+02.5	
2+12	
2+55.5	
2+66	
2+72.5	

APPENDIX AW

Final Approved Contractor Payment Application

Stamford Wrecking Company
30 Nutmeg Drive
Trumbull, CT 006611
Ph: (203)380-8300
Fax: (203)380-8944

Letter of Transmittal

To: Scott M. Smith
Clough Harbor & Associates
441 South Salina St.
Syracuse, NY 13202-4712
Ph: 315-471-3920 Fax: 315-471-3569

Transmittal #: **541**
Date: 2/2/2010
Job: SW-POUG-0683 DELAVAL PROPERTY

Subject: Jan. 2010 Payment Application # 24

WE ARE SENDING YOU
☑ Attached
☑ Under separate cover via Mail the following items:
☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples
☐ Copy of letter ☐ Change order ☐ Specifications ☐ Other

Document Type	Copies	Date	No.	Description
Jan. 2010 Pay Application	3	2/2/10	Originals	January 2010 Requisition #24

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit ___ copies for approval
☑ For your use ☐ Approved as noted ☐ Submit ___ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return ___ corrected prints
☐ For review and comment ☑ For Your Records
☐ FOR BIDS DUE ☐ PRINTS RETURNED AFTER LOAN TO US

Remarks: Scott,

The attached is the final Jan. 2010 Pay Application. Please call with questions.

Thanks,

Copy To:

RECEIVED
FEB 0 9 2010

From: Bauer, Kenneth (Stamford Wrecking Company) **Signature:**

If enclosures are not as noted, kindly notify us at once.

APPLICATION AND CERTIFICATE FOR PAYMENT AIA DOCUMENT G702

TO OWNER: Poughkeepsie, City of
62 Civic Center Plaza
Poughkeepsie, NY 12601

PROJECT: DeLaval Property

RECEIVED
FEB 0 9 2010

APPLICATION NO: 068300024
PERIOD TO: 1/31/2010
PROJECT NOS: SW-POUG-0683
CONTRACT DATE:

Distribution to:
OWNER
ARCHITECT
CONTRACTOR

FROM CONTRACTOR: Stamford Wrecking Company, Inc.
30 Nutmeg Drive
Trumbull, CT 06611

VIA ARCHITECT:

CONTRACT FOR:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the contract.
Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM		10,387,617.93
2. Net change by Change Orders		5,867,372.95
3. CONTRACT SUM TO DATE (Line 1 + 2)		16,254,990.88
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)		12,755,429.11
5. RETAINAGE:		
a. 5.00 % of Completed Work (Columns D + E on G703)	637,771.59	
b. 0.00 % of Stored Material (Column F on G703)	0.00	
Total Retainage (Line 5a + 5b or Total in Columns I on G703)		637,771.59
6. TOTAL EARNED LESS RETAINAGE (Line 4 less 5 Total)		12,117,657.52
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)		12,116,293.37
8. CURRENT PAYMENT DUE		1,364.15
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)		4,137,333.36

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total approved this Month		
TOTALS		
NET CHANGES by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR: Stamford Wrecking Company, Inc.

By: _____ Date: 2/2/2010

State of: Connecticut
County of: Fairfield

Subscribed and sworn to before me this 2nd day of February, 2010.

Notary Public: Kenneth B. Bauer

My Commission expires: 11/30/2014

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED 1,364.15

(Attach explanation if amount certified differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that are changed to conform to the amount certified.)

ARCHITECT:

By: _____ Date: 02/09/10

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT
containing Contractor's signed Certification, is attached.
In tabulations below, amounts are stated to the nearest dollar.

APPLICATION NO.: 068300024
APPLICATION DATE: 2/2/2010
PERIOD TO: 1/31/2010
ARCHITECTS PROJECT NO.: SW-POUG-0683

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G/C)	BALANCE TO FINISH (C-G)	RETAINAGE
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
01	Mobilization/Demobilization	901,600.00	808,940.00			808,940.00	89.72	92,660.00	40,447.00
02	Health & Safety	28,000.00	28,000.00			28,000.00	100.00		1,400.00
03	Construct Decontamination Pa	3,360.00	3,360.00			3,360.00	100.00		168.00
04	Stabilize Construction Entranc	1,120.00	1,008.00			1,008.00	90.00	112.00	50.40
05	Silt Fence	18,816.00	5,600.00			5,600.00	29.76	13,216.00	280.00
06	Install/Reloc Turbidity Curtn	28,000.00	28,000.00			28,000.00	100.00		1,400.00
07	Temp Chainlink Fence Gate	2,240.00	2,016.00			2,016.00	90.00	224.00	100.80
08	Temp Chainlink Fence	10,348.80	2,759.68			2,759.68	26.67	7,589.12	137.98
09	Waste Character Soil Samples	31,360.00	117,600.00			117,600.00	375.00	-86,240.00	5,880.00
10	Remove Swing Gate	224.00						224.00	
11	Remove Flagpole/Antenna	896.00	896.00			896.00	100.00		44.80
12	Remove Utility Poles/Equip	22,400.00	22,400.00			22,400.00	100.00		1,120.00
13	Salvage Monument	6,720.00	6,720.00			6,720.00	100.00		336.00
14	Remove/Recycle Concrete	38,988.00	133,068.00			133,068.00	341.31	-94,080.00	6,653.40
15	Clear & Grub	22,400.00	22,400.00			22,400.00	100.00		1,120.00
16	Clear Rock Outcropping	7,952.00	7,952.00			7,952.00	100.00		397.60
17	Protect Tree Root Systems	33,600.00						33,600.00	
18	Montoring Well Abandonment	11,760.00	8,400.00			8,400.00	71.43	3,360.00	420.00
19	2" Waterline Removal	2,430.40						2,430.40	
20	4" Pipe Outfall Abandonment	336.00	336.00			336.00	100.00		16.80
21	8"/12" Pipe Out/In Abandoned	2,016.00	1,008.00			1,008.00	50.00	1,008.00	50.40
22	Remove 6" Oil Pipeline	4,480.00	4,480.00			4,480.00	100.00		224.00
23	Remove/Dispose UST	8,960.00	8,960.00			8,960.00	100.00		448.00
24	Excavate/Stockpile Soil	63,800.00	100,991.56			100,991.56	158.29	-37,191.56	5,049.58
25	Excavate Contam. Soil	2,385,600.00	2,187,805.50			2,187,805.50	91.71	197,794.50	109,390.28

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT
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In tabulations below, amounts are stated to the nearest dollar.

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ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G/C)	BALANCE TO FINISH (C-G)	RETAINAGE
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
26	Confirmatory Soil Samples	26,880.00	32,480.00			32,480.00	120.83	-5,600.00	1,624.00
27	Place/Compact Onsite Soil/Cor	55,552.00	60,950.40			60,950.40	109.72	-5,398.40	3,047.52
28	Place/Compact Clean Fill	453,600.00	253,647.33			253,647.33	55.92	199,952.67	12,682.37
29	Install 24" HDPE Pipe/Outfall	29,120.00	27,664.00	1,164.80		28,828.80	99.00	291.20	1,441.44
30	Install 36" HDPE Pipe/Outfall	8,960.00						8,960.00	
31	Weep Hole Extensions	4,300.80	4,300.80			4,300.80	100.00		215.04
32	Install 8" PVC Pipe	13,782.72						13,782.72	
33	Install Precast Conc Manholes	9,968.00	9,968.00			9,968.00	100.00		498.40
34	Connect 8" PVC Pipe/Manhole	1,120.00	1,120.00			1,120.00	100.00		56.00
35	Site Grading	149,800.00	84,000.00			84,000.00	56.07	65,800.00	4,200.00
36	Install Demarcation Barrier	86,135.00	7,776.30			7,776.30	9.03	78,358.70	388.82
37	Barrier Protect Soil Cover	448,560.00	4,611.60			4,611.60	1.03	443,948.40	230.58
38	Mulch Barrier Protect Layer	16,804.48						16,804.48	
39	Dewater/Groudwater Mgmnt	35,000.00	41,955.76			41,955.76	119.87	-6,955.76	2,097.88
40	Free Product Remove/Dispose	4,930.00	6,919.75	271.15		7,190.90	145.86	-2,260.90	359.56
41	Steel Sheet Pile Anchor Wall	493,442.25	678,179.25			678,179.25	137.44	-184,737.00	33,908.97
42	Alternate Concrete Anchor Blo	253,692.00	69,765.30			69,765.30	27.50	183,926.70	3,488.27
43	Alternate Anchor Plate Assblv	246,645.00						246,645.00	
44	Cantilever Sheet Pile Bulkhead	1,252,263.60	1,136,126.25			1,136,126.25	90.73	116,137.35	56,806.32
45	SSP Interlock Waterstop	195,724.08	187,533.36			187,533.36	95.82	8,190.72	9,376.66
46	SSP Toe Pins	112,000.00						112,000.00	
47	Riprap Toe Protection	335,501.60	367,455.70			367,455.70	109.52	-31,954.10	18,372.79
48	Riprap Revetment	954,030.00	1,201,801.49			1,201,801.49	125.97	-247,771.49	60,090.07
49	Outfall Extension Pipe	13,440.00	5,376.00			5,376.00	40.00	8,064.00	268.80
50	Live Stakes	16,800.00	13,440.00			13,440.00	80.00	3,360.00	672.00

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In tabulations below, amounts are stated to the nearest dollar.

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APPLICATION DATE: 2/2/2010
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ARCHITECTS PROJECT NO.: SW-POUG-0683

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ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G/C)	BALANCE TO FINISH (C-G)	RETAINAGE
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
51	Addt'l Soil/Groundwater Sampl	5,000.00						5,000.00	
52	Sheet Pile Cutoff Wall	1,311,559.20						1,311,559.20	
53	Dispose Constr/Demo Debris	168,000.00	12,272.40			12,272.40	7.31	155,727.60	613.63
54	Dispose Solid Waste Material	47,600.00						47,600.00	
55	CO #1 - RR Liab Insurance	2,500.00	2,500.00			2,500.00	100.00		125.00
56	CO #2 - 54" Outfall Replacemn	91,067.10	91,067.10			91,067.10	100.00		4,553.36
57	CO #3 - Silt Fence	8,750.00	9,345.00			9,345.00	106.80	-595.00	467.25
58	CO #6 - Haul Contam. Sedimer	54,000.00	18,000.00			18,000.00	33.33	36,000.00	900.00
59	CO #7 - Fill Sink Holes & Void	66,000.00	1,036,739.55			1,036,739.55	1,570.82	-970,739.55	51,836.97
60	CO #5 - Sediment Contain Pad	20,111.50	20,111.50			20,111.50	100.00		1,005.58
61	CO #4 - Drum Excavate/Dispos	40,000.00	9,504.00			9,504.00	23.76	30,496.00	475.20
62	CO #8 - Waste/Debris SE Corr	82,248.00	100,128.00			100,128.00	121.74	-17,880.00	5,006.40
63	CO #9 - Obstruction investigat	250,000.00	248,105.14			248,105.14	99.24	1,894.86	12,405.25
64	CO #10 - Dispose of Timbers	18,400.00	54,868.80			54,868.80	298.20	-36,468.80	2,743.44
65	CO #11 - Absorb Booms/Pillow	750.39	750.39			750.39	100.00		37.52
66	CO #12 - Clean/Dispose Tires	11,491.32	5,745.66			5,745.66	50.00	5,745.66	287.28
67	CO #13 - Rem/Disp 14" Pipelin	95,287.50	17,151.75			17,151.75	18.00	78,135.75	857.59
68	CO #14 - Renew BR & OCP In:	43,100.00	43,100.00			43,100.00	100.00		2,155.00
69	CO #15 - Non-woven geotextile	25,000.00	8,438.19			8,438.19	33.75	16,561.81	421.91
70	CO #16 - Renew RR Prot. Ins.	2,500.00	2,500.00			2,500.00	100.00		125.00
71	CO #17 - Disposal ASB mat Zn	2,046,000.00	1,307,458.80			1,307,458.80	63.90	738,541.20	65,372.94
72	CO #18 - Mobilize for ASB rem	37,032.46	37,032.46			37,032.46	100.00		1,851.62
73	CO #19 - De Car Fence Materi:	2,800.00	2,800.00			2,800.00	100.00		140.00
74	CO #20 - Orange Temp Fence	1,470.00	1,470.00			1,470.00	100.00		73.50
75	CO #21 - Rem Contam Soil AC	1,013,600.00	373,004.80			373,004.80	36.80	640,595.20	18,650.24

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT
containing Contractor's signed Certification, is attached.
In tabulations below, amounts are stated to the nearest dollar.

APPLICATION NO.: 068300024
APPLICATION DATE: 2/2/2010
PERIOD TO: 1/31/2010
ARCHITECTS PROJECT NO.: SW-POUG-0683

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G/C)	BALANCE TO FINISH (C-G)	RETAINAGE
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
76	CO #22 - Rem Contam Soil Ea	1,830,000.00	1,536,884.91			1,536,884.91	83.98	293,115.09	76,844.25
77	CO #23 - Setup/Maint Costs	39,749.49	39,749.49			39,749.49	100.00		1,987.47
78	CO #24 - Rem Asb Soil Zone 1	33,578.67	33,578.67			33,578.67	100.00		1,678.93
79	CO #25 - Size/matl chng pipe	22,226.52	22,226.52			22,226.52	100.00		1,111.33
80	CO #26 - Erosion contl blankts	8,040.00	2,010.00			2,010.00	25.00	6,030.00	100.50
81	CO #27 - No Cost Time Extens								
82	CO #28 - Contract Reconciliati								
83	CO #29 - Geogrid South E Slor	7,062.00	7,062.00			7,062.00	100.00		353.10
84	CO #30 - Topsoil for SE Slope	14,608.00	12,616.00			12,616.00	86.36	1,992.00	630.80
Totals		16,254,990.88	12,753,993.16	1,435.95		12,755,429.11	78.47	3,499,561.77	637,771.59

DeLaval ERP Project
Stamford Payment Application No. 4 Summary

Item No.	Item Description	Quantity Units	Unit	Stamford Wrecking Company Contract Unit Cost	Stamford Wrecking Company Contract Total	Total Qty. Completed to Date	$ Earned to Date	Qty. Previously Claimed	$ Previously Claimed	Qty. This Period	$ This Period
1	Mobilization/Demobilization	1	LS	$ 901,600.00	$ 901,600.00	0.90	$ 808,940.00	0.90	$ 808,940.00	0.00	$ -
2	Health & Safety	1	LS	$ 28,000.00	$ 28,000.00	1.0000	$ 28,000.00	1.0000	$ 28,000.00	0.0000	$ -
3	Construction of Decontamination Pad	1	LS	$ 3,360.00	$ 3,360.00	1.00	$ 3,360.00	1.00	$ 3,360.00	0.00	$ -
4	Stabilized Construction Entrance	1	LS	$ 1,120.00	$ 1,120.00	0.90	$ 1,008.00	0.90	$ 1,008.00	0.00	$ -
5	Silt Fence	4,200	LF	$ 4.48	$ 18,816.00	1250	$ 5,600.00	1250	$ 5,600.00	0	$ -
6	Install & Relocate Turbidity Curtain	1,000	LF	$ 28.00	$ 28,000.00	1000	$ 28,000.00	1000	$ 28,000.00	0	$ -
7	Temporary Chain Link Fence Gate	2	EA	$ 1,120.00	$ 2,240.00	1.80	$ 2,016.00	1.80	$ 2,016.00	0.00	$ -
8	Temporary Chain Link Fence	165	LF	$ 62.72	$ 10,348.80	44	$ 2,759.68	44	$ 2,759.68	0	$ -
9	Waste Characterization Soil Samples	28	EA	$ 1,120.00	$ 31,360.00	105	$ 117,600.00	105	$ 117,600.00	0	$ -
10	Removal of Existing Swing Gate	1	LS	$ 224.00	$ 224.00	0	$ -	0	$ -	0	$ -
11	Remove Flag Pole & Metal Antenna	1	LS	$ 896.00	$ 896.00	1	$ 896.00	1	$ 896.00	0	$ -
12	Remove Utility Poles & Associated Equip.	1	LS	$ 22,400.00	$ 22,400.00	1	$ 22,400.00	1	$ 22,400.00	0	$ -
13	Salvage Monument	1	LS	$ 6,720.00	$ 6,720.00	1	$ 6,720.00	1	$ 6,720.00	0	$ -
14	Remove & Recycle Concrete	1,900	CY	$ 20.52	$ 38,988.00	6484.80	$ 133,068.00	6484.80	$ 133,068.00	0	$ -
15	Clearing & Grubbing	12.5	AC	$ 1,792.00	$ 22,400.00	12.50	$ 22,400.00	12.50	$ 22,400.00	0.00	$ -
16	Clearing Rock Outcropping	1	LS	$ 7,952.00	$ 7,952.00	1	$ 7,952.00	1	$ 7,952.00	0	$ -
17	Protection of Tree Root System	15	EA	$ 2,240.00	$ 33,600.00	0	$ -	0	$ -	0	$ -
18	Monitoring Well Abandonment	7	EA	$ 1,680.00	$ 11,760.00	5	$ 8,400.00	5	$ 8,400.00	0	$ -
19	2" Waterline Removal	155	LF	$ 15.68	$ 2,430.40	0	$ -	0	$ -	0	$ -
20	4" Pipe Outfall Abandonment	1	EA	$ 336.00	$ 336.00	1	$ 336.00	1	$ 336.00	0	$ -
21	8" and 12" Pipe Outfall/Intake Abandonment	4	EA	$ 504.00	$ 2,016.00	2	$ 1,008.00	2	$ 1,008.00	0	$ -
22	Excavate & Remove 6" Fuel Oil Pipeline	1	LS	$ 4,480.00	$ 4,480.00	1	$ 4,480.00	1	$ 4,480.00	0	$ -
23	Excavate, Clean, Remove & Dispose UST	1	LS	$ 8,960.00	$ 8,960.00	1.0	$ 8,960.00	1.0	$ 8,960.00	0	$ -
24	Excavate, Soil & Stockpile for Reuse	10,000	CY	$ 6.38	$ 63,800.00	15829	$ 100,991.56	15829	$ 100,991.56	0	$ -
25	Excavate Grossly-Contaminated Soils - Off-Site Disposal	35,500	TON	$ 67.20	$ 2,386,600.00	32556.63	$ 2,187,805.50	32556.63	$ 2,187,805.50	0.00	$ -
26	Confirmatory Soil Samples	24	EA	$ 1,120.00	$ 26,880.00	29	$ 32,480.00	29	$ 32,480.00	0	$ -
27	Place & Compact On-Site Soils & Recycled Concrete	12,400	CY	$ 4.48	$ 55,552.00	13605	$ 60,950.40	13605	$ 60,950.40	0	$ -
28	Place & Compact Imported Clean Fill	18,000	CY	$ 25.20	$ 453,600.00	10065	$ 253,647.33	10065	$ 253,647.33	0	$ -
29	Install 24" HDPE Pipe & Outfall	5	EA	$ 5,824.00	$ 29,120.00	4.95	$ 28,828.80	4.75	$ 27,664.00	0.20	$ 1,164.80
30	Install 36" HDPE Pipe & Outfall	1	EA	$ 8,960.00	$ 8,960.00	0	$ -	0	$ -	0	$ -
31	Weep Hole Extensions	12	EA	$ 358.40	$ 4,300.80	12	$ 4,300.80	12	$ 4,300.80	0	$ -
32	Install 8" PVC Pipe	586	LF	$ 23.52	$ 13,782.72	0	$ -	0	$ -	0	$ -
33	Install Precast Concrete Manholes	5	EA	$ 1,993.60	$ 9,968.00	5.0	$ 9,968.00	5.0	$ 9,968.00	0	$ -
34	Connect 8" PVC Pipe to Existing Manhole	2	EA	$ 560.00	$ 1,120.00	2	$ 1,120.00	2	$ 1,120.00	0	$ -
35	Site Grading	53,500	SY	$ 2.80	$ 149,800.00	30000	$ 84,000.00	30000	$ 84,000.00	0	$ -
36	Install Demarcation Barrier	53,500	SY	$ 1.61	$ 86,135.00	4830	$ 7,776.30	4830	$ 7,776.30	0	$ -
37	Install Barrier Protection Soil Cover Layer	17,800	CY	$ 25.20	$ 448,560.00	183	$ 4,611.60	183	$ 4,611.60	0	$ -
38	Mulch Barrier Protection Soil Layer	11	AC	$ 1,527.68	$ 16,804.48	0	$ -	0	$ -	0	$ -
39	Dewatering & Groundwater Management	25,000	GAL	$ 1.40	$ 35,000.00	29,968.40	$ 41,955.76	29,968.40	$ 41,955.76	0	$ -
40	Free Product Removal & Disposal	1,000	GAL	$ 4.93	$ 4,930.00	1458.6	$ 7,190.90	1403.6	$ 6,919.75	55	$ 271.15
41A	Anchored Steel Sheet Pile Bulkhead (SSP)	203	LF	$ 2,430.75	$ 493,442.25	279.00	$ 678,179.25	279.00	$ 678,179.25	0.00	$ -
41B	Anchored Steel Sheet Pile Bulkhead with (Alt. CAB)	100	LF	$ 2,536.92	$ 253,692.00	27.50	$ 69,765.30	27.50	$ 69,765.30	0.00	$ -
41C	Anchored Steel Sheet Pile Bulkhead (Alt. AP)	100	LF	$ 2,466.45	$ 246,645.00	0	$ -	0	$ -	0	$ -
42	Cantilever Steel Sheet Pile Bulkhead (SSP)	744	LF	$ 1,683.15	$ 1,252,263.60	675.00	$ 1,136,126.25	675.00	$ 1,136,126.25	0.00	$ -
43	SSP Interlock Waterstop	1,147	LF	$ 170.64	$ 195,724.08	1099	$ 187,533.36	1099	$ 187,533.36	0	$ -
44	SSP Toe Pins	50	EA	$ 2,240.00	$ 112,000.00	0	$ -	0	$ -	0	$ -
45	Riprap Toe Protection	1,655	CY	$ 202.72	$ 335,501.60	1812.63	$ 367,455.70	1812.63	$ 367,455.70	0.00	$ -
46	Riprap Revetment	6,490	CY	$ 147.00	$ 954,030.00	8175.52	$ 1,201,801.49	8175.52	$ 1,201,801.49	0.00	$ -
47	Outfall Extension Pipe for Existing Pipes	10	EA	$ 1,344.00	$ 13,440.00	4	$ 5,376.00	4	$ 5,376.00	0	$ -
48	Live Stakes	1	LS	$ 16,800.00	$ 16,800.00	0.8	$ 13,440.00	0.8	$ 13,440.00	0	$ -
49	Allowance 1: Additional Soil & Groundwater Sampling	1	Allow	$ 5,000.00	$ 5,000.00	0	$ -	0	$ -	0	$ -
51	Steel Sheet Pile Cut-Off Wall	848	LF	$ 1,546.65	$ 1,311,559.20	0	$ -	0	$ -	0	$ -
52	Off-Site Disposal of C&D Debris Material (Non-Concrete)	2,000	TON	$ 84.00	$ 168,000.00	146.10	$ 12,272.40	146.10	$ 12,272.40	0.00	$ -
53	Off-Site Disposal of Solid Waste Materials	500	TON	$ 95.20	$ 47,600.00	0	$ -	0	$ -	0	$ -

DeLaval ERP Project
Stamford Payment Application No. 4 Summary

Item No.	Item Description	Quantity Units	Unit	Stamford Wrecking Company Contract Unit Cost	Total	Total Qty. Completed to Date	$ Earned to Date	Qty. Previously Claimed	$ Previously Claimed	Qty. This Period	$ This Period
Change Orders:											
CO-1	Railroad Protective Liability Insurance	1	LS	$ 2,500.00	$ 2,500.00	1	$ 2,500.00	1	$ 2,500.00	0	$ -
CO-2	54-inch Outfall Replacement	1	LS	$ 91,067.10	$ 91,067.10	1	$ 91,067.10	1	$ 91,067.10	0	$ -
CO-3	Temporary Silt Fence	2,500	LF	$ 3.50	$ 8,750.00	2670	$ 9,345.00	2670	$ 9,345.00	0	$ -
CO-4	Drum Handling & Disposal	1	LS	$ 40,000.00	$ 40,000.00	0	$ 9,504.00	0	$ 9,504.00	0	$ -
CO-5	Sediment Containment/Drying Bed	1	LS	$ 20,111.50	$ 20,111.50	1	$ 20,111.50	1	$ 20,111.50	0	$ -
CO-6	Hauling Contaminated River Sediments	30	DAY	$ 1,800.00	$ 54,000.00	10	$ 18,000.00	10	$ 18,000.00	0	$ -
CO-7	Filling in Sink Holes/Voids	2,000	TON	$ 33.00	$ 66,000.00	31416.35	$ 1,036,739.55	31416.35	$ 1,036,739.55	0.00	$ -
CO-8	Screening of Materials in Zone 1	23	Day	$ 3,576.00	$ 82,248.00	28	$ 100,128.00	28	$ 100,128.00	0	$ -
CO-9	Standby/Investigation Time for Unforeseen Obstructions	1	LS	$ 250,000.00	$ 250,000.00	0.99	$ 248,105.14	0.99	$ 248,105.14	0.00	$ -
CO-10	Disposal of Timber Piles	200	TON	$ 92.00	$ 18,400.00	596.40	$ 54,868.80	596.40	$ 54,868.80	0.00	$ -
CO-11	Absorbents for Zone 2	1	LS	$ 750.39	$ 750.39	1	$ 750.39	1	$ 750.39	0	$ -
CO-12	Clean & Off-Site Disposal of Tires	2	Load	$ 5,745.66	$ 11,491.32	1	$ 5,745.66	1	$ 5,745.66	0	$ -
CO-13	14-Inch Oil Pipeline Removal & Disposal	1,750	LF	$ 54.45	$ 95,287.50	315	$ 17,151.75	315	$ 17,151.75	0	$ -
CO-14	Insurance Renewal	1	LS	$ 43,100.00	$ 43,100.00	1	$ 43,100.00	1	$ 43,100.00	0	$ -
CO-15	Additional Geotextile in AOCs	15,528	SY	$ 1.61	$ 25,000.00	5241	$ 8,438.19	5241	$ 8,438.19	0.00	$ -
CO-16	RR Insurance Renewal	1	LS	$ 2,500.00	$ 2,500.00	1	$ 2,500.00	1	$ 2,500.00	0	$ -
CO-17	ACM Loading, Trucking & Disposal	12,000	Ton	$ 170.50	$ 2,046,000.00	7668.38	$ 1,307,458.79	7668.38	$ 1,307,458.79	0	$ -
CO-18	Mobilization and Setup for ACM Removal Activities	1	LS	$ 37,032.46	$ 37,032.46	1	$ 37,032.46	1	$ 37,032.46	0	$ -
CO-19	North End Fencing Material	1	LS	$ 2,800.00	$ 2,800.00	1	$ 2,800.00	1	$ 2,800.00	0	$ -
CO-20	Temporary Fence Along MTA Property	420	LF	$ 3.50	$ 1,470.00	420	$ 1,470.00	420	$ 1,470.00	0	$ -
CO-21	Disposal of Petroleum/ACM Soil - Bulkhead/Deadman	5,000	Ton	$ 202.72	$ 1,013,600.00	1840	$ 373,004.80	1840	$ 373,004.80	0	$ -
CO-22	Disposal of Petroleum/ACM Soil - Balance of AOC-1	10,000	Ton	$ 183.00	$ 1,830,000.00	8398.28	$ 1,536,884.91	8398.28	$ 1,536,884.91	0.00	$ -
CO-23	ACM Setup and Maintenance for AOC-1	1	LS	$ 39,749.49	$ 39,749.49	1	$ 39,749.49	1	$ 39,749.49	0	$ -
CO-24	ACM Setup and Maintenance for Zone 2	1	LS	$ 33,578.67	$ 33,578.67	1	$ 33,578.67	1	$ 33,578.67	0	$ -
CO-25	Weep Hole Piping & MH Extensions	1	LS	$ 22,226.52	$ 22,226.52	1.0	$ 22,226.52	1.0	$ 22,226.52	0.0	$ -
CO-26	Erosion Control Blankets	3,000	SY	$ 2.68	$ 8,040.00	750	$ 2,010.00	750	$ 2,010.00	0	$ -
CO-27	No Cost Time Extension for CO-9	0	--	$ -	$ -	0	$ -	0	$ -	0	$ -
CO-28	Contract Reconciliation	0	--	$ -	$ -	0	$ -	0	$ -	0	$ -
CO-29	Geogrid for SE Slope Demarcation Barrier	1,100	SY	$ 6.42	$ 7,062.00	1100	$ 7,062.00	1100	$ 7,062.00	0	$ -
CO-30	Topsoil & Seed for SE Slope	1,100	SY	$ 13.28	$ 14,608.00	950	$ 12,616.00	950	$ 12,616.00	0	$ -
	SUBTOTAL				$ 16,254,990.88						
50	Alternate No. 1 Topsoil and Seeding	11	AC	$ 26,500.00	$ 291,500.00		$ -		$ -	0	$ -
	SUBTOTAL				$ 16,546,490.88		$ 12,755,429.10		$ 12,753,993.15		$ 1,435.95

Items highlighted yellow have been closed out.

1.	Original Contract Sum	$ 10,387,617.93		
2.	Approved Change Order Total	$ 5,867,372.95		
3.	Contract Sum to Date	$ 16,254,990.88		
4.	Total Completed & Stored to Date	$ 12,755,429.10		
5.	Retainage (5%)	$ 637,771.46		
6.	Total Earned Less Retainage	$ 12,117,657.65		
7.	Less Previous	$ 12,103,757.17	$ 12,116,293.49	Check
8.	Current Payment Due	$ 13,900.48	$ 1,364.15	Check
9.	Balance to Finish	$ 4,137,333.24		

Using SWC Retainage:

$ 637,771.59 (SWC uses slightly more than 5%)
$ 12,117,657.51 Using SWC Retainage

$ 13,900.34
$ 4,137,333.37

APPENDIX AX

Construction Contract
Financial Summary

DeLaval ERP Project
Construction Contract
Financial Summary

Item No.	Item Description	Contract Quantity	Unit	Unit Cost	Approved Contract Total	Total Qty. Approved for SWC	Total $ Earned to Date	5% Retainage	Actual Amount Paid By City	Qty. Variance from Contract	Reason for Variance in Qty.	Qty. Withheld By City	Reason for City Withholding	Additional Qty. Not Reimbursable by NYSDEC	Reasons for NYSDEC Withholding	$ Eligible for Reimbursement by NYSDEC	90% Reimbursement Amount
1	Mobilization/Demobilization	1	LS	$ 901,600.00	$ 901,600.00	0.90	$ 808,940.00	$ 40,447.00	$ 768,493.00	0.10	SWC Contract terminated prior to final demobilization	0.10	SWC Contract terminated prior to final demobilization			$ 768,493.00	$ 691,643.70
2	Health & Safety	1	LS	$ 28,000.00	$ 28,000.00	1.00	$ 28,000.00	$ 1,400.00	$ 26,600.00	--		--		0.0357	Additional penalty applied by DEC for CAMP Issues during AOC Excavations	$ 25,650.00	$ 23,085.00
3	Construction of Decontamination Pad	1	LS	$ 3,360.00	$ 3,360.00	1.00	$ 3,360.00	$ 168.00	$ 3,192.00	--		--				$ 3,192.00	$ 2,872.80
4	Stabilized Construction Entrance	1	LS	$ 1,120.00	$ 1,120.00	0.90	$ 1,008.00	$ 50.40	$ 957.60	0.10	SWC did not complete removal of access roadway per Contract	0.10	SWC Contract terminated prior to removal of entrance drive			$ 957.60	$ 861.84
5	Silt Fence	4,200	LF	$ 4.48	$ 18,816.00	1,250	$ 5,600.00	$ 280.00	$ 5,320.00	2,950	Final silt fence installed in Zones 2, 4 & 5 only. Temporary silt fence under CO-3.	--				$ 5,320.00	$ 4,788.00
6	Install & Relocate Turbidity Curtain	1,000	LF	$ 28.00	$ 28,000.00	1,000	$ 28,000.00	$ 1,400.00	$ 26,600.00	--		--	SWC was authorized to install an additional 300 feet, but withheld due to failure to maintain properly			$ 26,600.00	$ 23,940.00
7	Temporary Chain Link Fence Gate	2	EA	$ 1,120.00	$ 2,240.00	1.80	$ 2,016.00	$ 100.80	$ 1,915.20	0.2	Appropriate construction gate not installed on west side & modified existing gate at main entrance	--				$ 1,915.20	$ 1,723.68
8	Temporary Chain Link Fence	165	LF	$ 62.72	$ 10,348.80	44	$ 2,759.68	$ 137.98	$ 2,621.70	121	Fencing at north end of Site was present upon mobilization - installed by Developer	--				$ 2,621.70	$ 2,359.53
9	Waste Characterization Soil Samples	28	EA	$ 1,120.00	$ 31,360.00	105	$ 117,600.00	$ 5,880.00	$ 111,720.00	(77)	Frequency increased due to disposal facility requirements in MA (see discussion in FER)	--		53	NYSDEC disagreed with sampling approach & backup provided and disallowed additional samples	$ 55,328.00	$ 49,795.20
10	Removal of Existing Swing Gate	1	LS	$ 224.00	$ 224.00	0	$ -	$ -	$ -	1	Gate was not removed by SWC, rather modified and re-used.	--			Non-Reimbursable item per NYSDEC, but not completed, so nothing to withhold	$ -	$ -
11	Remove Flag Pole & Metal Antenna	1	LS	$ 896.00	$ 896.00	1	$ 896.00	$ 44.80	$ 851.20	--		--				$ 851.20	$ 766.08
12	Remove Utility Poles & Associated Equip.	1	LS	$ 22,400.00	$ 22,400.00	1	$ 22,400.00	$ 1,120.00	$ 21,280.00	--		--				$ 21,280.00	$ 19,152.00
13	Salvage Monument	1	LS	$ 6,720.00	$ 6,720.00	1	$ 6,720.00	$ 336.00	$ 6,384.00	--		--		1	Non-Reimbursable item per NYSDEC	$ -	$ -
14	Remove & Recycle Concrete	1,900	CY	$ 20.52	$ 38,988.00	6,484.80	$ 133,068.00	$ 6,653.40	$ 126,414.60	(4,584.80)	Additional concrete debris discovered at Site, particularly along shoreline in Zone 4.	--		0.004678	Rounding difference only b/c SWC submitted $ rather than qtys. with payment applications.	$ 126,414.51	$ 113,773.06
15	Clearing & Grubbing	12.5	AC	$ 1,792.00	$ 22,400.00	12.50	$ 22,400.00	$ 1,120.00	$ 21,280.00	--		--				$ 21,280.00	$ 19,152.00
16	Clearing Rock Outcropping	1	LS	$ 7,952.00	$ 7,952.00	1	$ 7,952.00	$ 397.60	$ 7,554.40	--		--		1	Non-Reimbursable per NYSDEC 01/18/2012 Letter - No soil cover installed - does not meet ROD	$ -	$ -
17	Protection of Tree Root System	15	EA	$ 2,240.00	$ 33,600.00	0	$ -	$ -	$ -	15	No trees were able to be saved based upon grading changes by the Developer	--				$ -	$ -
18	Monitoring Well Abandonment	7	EA	$ 1,680.00	$ 11,760.00	5	$ 8,400.00	$ 420.00	$ 7,980.00	2	Only 5 wells abandoned by Contractor, 1 not found in Zone 1, one off-site abandoned by Developer in Zone 4	--				$ 7,980.00	$ 7,182.00
19	2" Waterline Removal	155	LF	$ 15.68	$ 2,430.40	0	$ -	$ -	$ -	155	abandonment work of waterline required by Contractor.	--			Non-Reimbursable item per NYSDEC, but not completed, so nothing to withhold	$ -	$ -
20	4" Pipe Outfall Abandonment	1	EA	$ 336.00	$ 336.00	1	$ 336.00	$ 16.80	$ 319.20	--		--		1	Non-Reimbursable item per NYSDEC	$ -	$ -
21	8" and 12" Pipe Outfall/Intake Abandonment	4	EA	$ 504.00	$ 2,016.00	2	$ 1,008.00	$ 50.40	$ 957.60	2	Only two 8-inch outfalls discovered at site & required abandonment by Contractor.	--		2	Non-Reimbursable item per NYSDEC	$ -	$ -
22	Excavate & Remove 6" Fuel Oil Pipeline	1	LS	$ 4,480.00	$ 4,480.00	1	$ 4,480.00	$ 224.00	$ 4,256.00	--		--				$ 4,256.00	$ 3,830.40
23	Excavate, Clean, Remove & Dispose UST	1	LS	$ 8,960.00	$ 8,960.00	1	$ 8,960.00	$ 448.00	$ 8,512.00	--		--				$ 8,512.00	$ 7,660.80
24	Excavate, Soil & Stockpile for Reuse	10,000	CY	$ 6.38	$ 63,800.00	15,829	$ 100,991.56	$ 5,049.58	$ 95,941.98	(5,829.40)	More overburden saved due to depth of PCS & additional material excavated along shore for revetment	--		3417	Only partially reimbursable per NYSDEC as part of quantity associated with the riprap revetment work	$ 75,229.13	$ 67,706.22
25	Excavate Grossly-Contaminated Soils - Off-Site Dispos	35,500	TON	$ 67.20	$ 2,385,600.00	32,556.63	$ 2,187,805.50	$ 109,390.28	$ 2,078,415.23	2,943.37	Less soil disposed as PCS soil due to presence of ACM in AOC-1	1,594.22	Withheld b/c CAMP not implemented during excavation and DEC had indicated it would disallow reimbursement			$ 2,078,415.23	$ 1,870,573.70
26	Confirmatory Soil Samples	24	EA	$ 1,120.00	$ 26,880.00	29	$ 32,480.00	$ 1,624.00	$ 30,856.00	(5.00)	Hot spot removal areas (AOC-4A & AOC-5) confirmatory samples added	--				$ 30,856.00	$ 27,770.40
27	Place & Compact On-Site Soils & Recycled Concrete	12,400	CY	$ 4.48	$ 55,552.00	13,605	$ 60,950.40	$ 3,047.52	$ 57,902.88	(1,205.00)	Additional concrete discovered and crushed results in additional on-site material requiring placement	--		345	Only partially reimbursable per NYSDEC as part of quantity associated with the riprap revetment work	$ 56,434.56	$ 50,791.10
28	Place & Compact Imported Clean Fill	18,000	CY	$ 25.20	$ 453,600.00	10,065	$ 253,647.33	$ 12,682.37	$ 240,964.96	7,934.63	Reuse of additional on-Site material, including crushed concrete, reduced the need to import clean fill	--				$ 240,964.96	$ 216,868.46

DeLaval ERP Project
Construction Contract
Financial Summary

Item No.	Item Description	Contract Quantity	Unit	Unit Cost	Approved Contract Total	Total Qty. Approved for SWC	Total $ Earned to Date	5% Retainage	Actual Amount Paid By City	Qty. Variance from Contract	Reason for Variance in Qty.	Qty. Withheld By City	Reason for City Withholding	Additional Qty. Not Reimbursable by NYSDEC	Reasons for NYSDEC Withholding	$ Eligible for Reimbursement by NYSDEC	90% Reimbursement Amount
29	Install 24" HDPE Pipe & Outfall	5	EA	$ 5,824.00	$ 29,120.00	4.95	$ 28,828.80	$ 1,441.44	$ 27,387.36	0.05	One backfill preventer in Zone 4 had fallen off at the time of the last payment application	0.05	One backfill preventer in Zone 4 had fallen off at the time of the last payment application	4.95	Non-Reimbursable item per NYSDEC	$ -	$ -
30	Install 36" HDPE Pipe & Outfall	1	EA	$ 8,960.00	$ 8,960.00	0	$ -	$ -	$ -	1	This outfall was switched to a 23" outfall by the Developer during the course of construction	--			Non-Reimbursable item per NYSDEC, but not completed, so nothing to withhold	$ -	$ -
31	Weep Hole Extensions	12	EA	$ 358.40	$ 4,300.80	12	$ 4,300.80	$ 215.04	$ 4,085.76	--		11	Not claimed by Contractor in Payment Applications			$ 4,085.76	$ 3,677.18
32	Install 8" PVC Pipe	586	LF	$ 23.52	$ 13,782.72	0	$ -	$ -	$ -	586.00	Developer grading changes necessitated larger pipe included in Change Order No. 25. Item not used.	--				$ -	$ -
33	Install Precast Concrete Manholes	5	EA	$ 1,993.60	$ 9,968.00	5.0	$ 9,968.00	$ 498.40	$ 9,469.60	--		--				$ 9,469.60	$ 8,522.64
34	Connect 8" PVC Pipe to Existing Manhole	2	EA	$ 560.00	$ 1,120.00	2	$ 1,120.00	$ 56.00	$ 1,064.00	--		--				$ 1,064.00	$ 957.60
35	Site Grading	53,500	SY	$ 2.80	$ 149,800.00	30,000	$ 84,000.00	$ 4,200.00	$ 79,800.00	23,500	Contractor performed no significant grading outside AOC limits	--		28,700	DEC approved 1,300 SY for grading around Zone 2 containment pad only. Balance in placement item per DEC intrepretation of Contract.	$ 3,458.00	$ 3,112.20
36	Install Demarcation Barrier	53,500	SY	$ 1.61	$ 86,135.00	4,830	$ 7,776.30	$ 388.82	$ 7,387.49	48,670	Some demarcation barrier installed in Item 4 building pad & SE slope, but balance not installed by SWC	--	Nothing to withhold b/c SWC Contract terminated prior to completion of this item.			$ 7,387.49	$ 6,648.74
37	Install Barrier Protection Soil Cover Layer	17,800	CY	$ 25.20	$ 448,560.00	183	$ 4,611.60	$ 230.58	$ 4,381.02	17,617	Soil cover system not installed by SWC.	--	Nothing to withhold b/c SWC Contract terminated prior to completion of this item.			$ 4,381.02	$ 3,942.92
38	Mulch Barrier Protection Soil Layer	11	AC	$ 1,527.68	$ 16,804.48	0	$ -	$ -	$ -	11	Soil cover not installed by SWC and no mulch applied after cover installation.	--	Nothing to withhold b/c SWC Contract terminated prior to completion of this item.			$ -	$ -
39	Dewatering & Groundwater Management	25,000	GAL	$ 1.40	$ 35,000.00	29,968.40	$ 41,955.76	$ 2,097.79	$ 39,857.97	(4,968.4)	AOC excavations deeper than anticipated, requiring additional water management, particularly in AOC-2/3	--		636.00	A portion (550 gallons) based on 3/18/09 ticket associated with decon pad.	$ 39,012.09	$ 35,110.88
40	Free Product Removal & Disposal	1,000	GAL	$ 4.93	$ 4,930.00	1,458.6	$ 7,190.90	$ 359.55	$ 6,831.36	(458.6)	Additional product encountered in AOC excavations	--		15.0	DEC calculated lower total based upon manifests submitted at time of review.	$ 6,761.10	$ 6,084.99
41A	Anchored Steel Sheet Pile Bulkhead (SSP)	203	LF	$ 2,430.75	$ 493,442.25	279.00	$ 678,179.25	$ 33,908.96	$ 644,270.29	(76)	project, but resulted in less Item 41B and 41C being required	43.00	Withheld due to problems associated with the bulkhead coating repairs			$ 644,270.29	$ 579,843.26
41B	Anchored Steel Sheet Pile Bulkhead with (Alt. CAB)	100	LF	$ 2,536.92	$ 253,692.00	27.50	$ 69,765.30	$ 3,488.27	$ 66,277.04	72.5	Only small portion of Zone 1 bulkhead (south end) required support with Concrete Anchor Blocks	11.66	Withheld due to problems associated with the bulkhead coating & CABs not complete at time of last payment application			$ 66,277.04	$ 59,649.33
41C	Anchored Steel Sheet Pile Bulkhead (Alt. AP)	100	LF	$ 2,466.45	$ 246,645.00	0	$ -	$ -	$ -	100	This alternative was not used for the project.	--				$ -	$ -
42	Cantilever Steel Sheet Pile Bulkhead (SSP)	744	LF	$ 1,683.15	$ 1,252,263.60	675.00	$ 1,136,126.25	$ 56,806.31	$ 1,079,319.94	69	Less quantity was required for the project than estimated.	58.42	Withheld due to problems associated with the bulkhead coating repairs			$ 1,079,319.94	$ 971,387.94
43	SSP Interlock Waterstop	1,147	LF	$ 170.64	$ 195,724.08	1,099	$ 187,533.36	$ 9,376.67	$ 178,156.69	48	Less quantity was required for the project than estimated.	--				$ 178,156.69	$ 160,341.02
44	SSP Toe Pins	50	EA	$ 2,240.00	$ 112,000.00	0	$ -	$ -	$ -	50	Toe pins were not required for the project based upon Site conditions encountered	--				$ -	$ -
45	Riprap Toe Protection	1,655	CY	$ 202.72	$ 335,501.60	1,812.63	$ 367,455.70	$ 18,372.79	$ 349,082.92	(157.63)	Mud line found to be steeper than anticipated in front of bulkheads requiring additional stone	--			Rounding difference of $0.01 only.	$ 349,082.92	$ 314,174.62
46	Riprap Revetment	6,490	CY	$ 147.00	$ 954,030.00	8,175.52	$ 1,201,801.49	$ 60,090.07	$ 1,141,711.42	(1,685.52)	Additional 50' revetment section south of Zone 1 bulkhead & steeper mud lines	--		8,075.52	Non-Reimbursable item per NYSDEC - Agreed to pay 100 CY for 50' section south of Zone 1 bulkhead where portion of bulkhead eliminated.	$ 13,965.00	$ 12,568.50
47	Outfall Extension Pipe for Existing Pipes	10	EA	$ 1,344.00	$ 13,440.00	4	$ 5,376.00	$ 268.80	$ 5,107.20	6	Only 4 active outfalls requiring extensions found during construction.	--		4	Non-Reimbursable item per NYSDEC	$ -	$ -
48	Live Stakes	1	LS	$ 16,800.00	$ 16,800.00	0.8	$ 13,440.00	$ 672.00	$ 12,768.00	0.2	Planted 2 times, but withheld due to low survival rate.	0.2	Planted 2 times, but withheld due to low survival rate (~20%)and non-compliance with project specifications	0.8	Non-Reimbursable item per NYSDEC	$ -	$ -
49	Allowance 1: Additional Soil & Groundwater Sampling	1	Allow	$ 5,000.00	$ 5,000.00	0	$ -	$ -	$ -	1	Not utilized during construction.	--				$ -	$ -
51	Steel Sheet Pile Cut-Off Wall	848	LF	$ 1,546.65	$ 1,311,559.20	0	$ -	$ -	$ -	848.00	No cut-off wall was required during construction. Some additional revetment used, but far less $.	--				$ -	$ -

DeLaval ERP Project
Construction Contract
Financial Summary

Item No.	Item Description	Contract Quantity	Unit	Unit Cost	Approved Contract Total	Total Qty. Approved for SWC	Total $ Earned to Date	5% Retainage	Actual Amount Paid By City	Qty. Variance from Contract	Reason for Variance in Qty.	Qty. Withheld By City	Reason for City Withholding	Additional Qty. Not Reimbursable by NYSDEC	Reasons for NYSDEC Withholding	$ Eligible for Reimbursement by NYSDEC	90% Reimbursement Amount
52	Off-Site Disposal of C&D Debris Material (Non-Concrete)	2,000	TON	$ 84.00	$ 168,000.00	146.10	$ 12,272.40	$ 613.62	$ 11,658.78	1,853.90	Very little waste from Site was disposed of as C&D due to discovery of ACM. Tires & timber piles separate.	--				$ 11,658.78	$ 10,492.90
53	Off-Site Disposal of Solid Waste Materials	500	TON	$ 95.20	$ 47,600.00	0	$ -	$ -	$ -	500.00	No waste disposed from Site as actual solid waste. Mostly C&D in Zone 1 contaminated with ACM	--				$ -	$ -
Change Orders:								$ -									
CO-1	Railroad Protective Liability Insurance	1	LS	$ 2,500.00	$ 2,500.00	1	$ 2,500.00	$ 125.00	$ 2,375.00	--	MTA permit not in-hand when contract bid	--				$ 2,375.00	$ 2,137.50
CO-2	54-inch Outfall Replacement	1	LS	$ 91,067.10	$ 91,067.10	1	$ 91,067.10	$ 4,553.36	$ 86,513.75	--	Requested by City as part of a sewer rehabilitation project since SWC already mobilized	--		1	Non-Reimbursable item per NYSDEC	$ -	$ -
CO-3	Temporary Silt Fence	2,500	LF	$ 3.50	$ 8,750.00	2,670	$ 9,345.00	$ 467.25	$ 8,877.75	(170)	More temporary silt fence used in lieu of Item No. 5	--				$ 8,877.75	$ 7,989.98
CO-4	Drum Handling & Disposal	1	LS	$ 40,000.00	$ 40,000.00	0	$ 9,504.00	$ 475.20	$ 9,028.80	0.76	Buried drums discovered in Zone 1.	--				$ 9,028.80	$ 8,125.92
CO-5	Sediment Containment/Drying Bed	1	LS	$ 20,111.50	$ 20,111.50	1	$ 20,111.50	$ 1,005.58	$ 19,105.93	--	Contaminated river sediments encountered in Zone 2. No sediment testing previously performed.	--				$ 19,105.93	$ 17,195.33
CO-6	Hauling Contaminated River Sediments	30	DAY	$ 1,800.00	$ 54,000.00	10	$ 18,000.00	$ 900.00	$ 17,100.00	20	Contaminated river sediments encountered in Zone 2. No sediment testing previously performed.	--		2	NYSDEC disallowed 2 days due to some of the qty. being associated with areas off-site in Zone 4/5	$ 13,680.00	$ 12,312.00
CO-7	Filling in Sink Holes/Voids	2,000	TON	$ 33.00	$ 66,000.00	31,416.35	$ 1,036,739.55	$ 51,836.98	$ 984,902.57	(29,416.35)	backfill AOC excavations beneath water table. Excavated deeper than anticipated.	--		600	NYSDEC disallowed 600 CY as reimbursable as a portion was associated with the riprap reventment installation work (mostly Zone 4 & 5).	$ 966,092.57	$ 869,483.32
CO-8	Screening of Materials in Zone 1	23	Day	$ 3,576.00	$ 82,248.00	28	$ 100,128.00	$ 5,006.40	$ 95,121.60	(5)	Intent was to screen material to reduce off-site disposal	--		4	NYSDEC disallowed 4 days as reimbursable because some days spent screening shoreline & sediment material rather than AOC-1 material.	$ 81,532.80	$ 73,379.52
CO-9	Standby/Investigation Time for Unforeseen Obstruction	1	LS	$ 250,000.00	$ 250,000.00	0.99	$ 248,105.14	$ 12,405.26	$ 235,699.88	0.01	Difficult driving conditions and deep obstructions in Zone 3.	--				$ 235,699.88	$ 212,129.89
CO-10	Disposal of Timber Piles	200	TON	$ 92.00	$ 18,400.00	596.40	$ 54,868.80	$ 2,743.44	$ 52,125.36	(396.40)	Significant additional timbers removed from Zones 4 & 5	--				$ 52,125.36	$ 46,912.82
CO-11	Absorbents for Zone 2	1	LS	$ 750.39	$ 750.39	1	$ 750.39	$ 37.52	$ 712.87	--	Contaminated river sediments encountered in Zone 2. Absorbents for this material not in SWC Contract	--				$ 712.87	$ 641.58
CO-12	Clean & Off-Site Disposal of Tires	2	Load	$ 5,745.66	$ 11,491.32	1	$ 5,745.66	$ 287.28	$ 5,458.38	1	Tire disposal separate waste stream not included in contract	--				$ 5,458.38	$ 4,912.54
CO-13	14-Inch Oil Pipeline Removal & Disposal	1,750	LF	$ 54.45	$ 95,287.50	315	$ 17,151.75	$ 857.59	$ 16,294.16	1,435.00	Unforeseen condition - Discovery of 14-inch diameter oil-filled pipelines	--				$ 16,294.16	$ 14,664.75
CO-14	Insurance Renewal	1	LS	$ 43,100.00	$ 43,100.00	1	$ 43,100.00	$ 2,155.00	$ 40,945.00	--	Project extended beyond 12 months by change orders, so renewal required to complete project	--				$ 40,945.00	$ 36,850.50
CO-15	Additional Geotextile in AOCs	15,528	SY	$ 1.61	$ 25,000.00	5,241	$ 8,438.19	$ 421.91	$ 8,016.28	10,286.84	to separate finer grained soils from stone bedding below water	--				$ 8,016.28	$ 7,214.65
CO-16	RR Insurance Renewal	1	LS	$ 2,500.00	$ 2,500.00	1	$ 2,500.00	$ 125.00	$ 2,375.00	--	Project extended beyond 12 months and CO-1 was for one year only	--				$ 2,375.00	$ 2,137.50
CO-17	ACM Loading, Trucking & Disposal	12,000	Ton	$ 170.50	$ 2,046,000.00	7,668.38	$ 1,307,458.79	$ 65,372.94	$ 1,242,085.85	4,331.62	ACM discovered in Zone 1 - Debris piles from screening operation	--		0.54	NYSDEC disallowed 0.54 CY based upon review of manifests/tickets submitted at time of review.	$ 1,241,998.38	$ 1,117,798.55
CO-18	Mobilization and Setup for ACM Removal Activities	1	LS	$ 37,032.46	$ 37,032.46	1	$ 37,032.46	$ 1,851.62	$ 35,180.84	--	ACM discovered in Zone 1 - Debris piles from screening operation	--				$ 35,180.84	$ 31,662.75
CO-19	North End Fencing Material	1	LS	$ 2,800.00	$ 2,800.00	1	$ 2,800.00	$ 140.00	$ 2,660.00	--	Existing fence rented by Bonura and City requested be included in SWC Contract	--				$ 2,660.00	$ 2,394.00
CO-20	Temporary Fence Along MTA Property	420	LF	$ 3.50	$ 1,470.00	420	$ 1,470.00	$ 73.50	$ 1,396.50	--	Fence requested by MTA along SE corner of Site after clearing trees and removing old fence in that area	--				$ 1,396.50	$ 1,256.85
CO-21	Disposal of Petroleum/ACM Soil - Bulkhead/Deadman	5,000	Ton	$ 202.72	$ 1,013,600.00	1,840	$ 373,004.80	$ 18,650.24	$ 354,354.56	3,160	ACM discovered in Zone 1 - Anticipated slower excavation due to present of bulkhead tie rods	--				$ 354,354.56	$ 318,919.10
CO-22	Disposal of Petroleum/ACM Soil - Balance of AOC-1	10,000	Ton	$ 183.00	$ 1,830,000.00	8,398.28	$ 1,536,884.91	$ 76,844.25	$ 1,460,040.66	1,601.72	ACM discovered in Zone 1 - Required disposal as PCS with ACM debris	--				$ 1,460,040.66	$ 1,314,036.60
CO-23	ACM Setup and Maintenance for AOC-1	1	LS	$ 39,749.49	$ 39,749.49	1	$ 39,749.49	$ 1,987.47	$ 37,762.02	--	ACM discovered in Zone 1	--				$ 37,762.02	$ 33,985.81

DeLaval ERP Project
Construction Contract
Financial Summary

Item No.	Item Description	Contract Quantity	Unit	Unit Cost	Approved Contract Total	Total Qty. Approved for SWC	Total $ Earned to Date	5% Retainage	Actual Amount Paid By City	Qty. Variance from Contract	Reason for Variance in Qty.	Qty. Withheld By City	Reason for City Withholding	Additional Qty. Not Reimbursable by NYSDEC	Reasons for NYSDEC Withholding	$ Eligible for Reimbursement by NYSDEC	90% Reimbursement Amount
CO-24	ACM Setup and Maintenance for Zone 2	1	LS	$ 33,578.67	$ 33,578.67	1	$ 33,578.67	$ 1,678.93	$ 31,899.74	--	Removal of previously placed ACM (prior to discovery) behind Zone 2 jersey barrier	--				$ 31,899.74	$ 28,709.76
CO-25	Weep Hole Piping & MH Extensions	1	LS	$ 22,226.52	$ 22,226.52	1.0	$ 22,226.52	$ 1,111.33	$ 21,115.19	--	Developer proposed grading changes required additional weep holes to be connected to system	--		0.59	NYSDEC limited reimbursement to the original Contract cost for Item 32	$ 13,093.58	$ 11,784.23
CO-26	Erosion Control Blankets	3,000	SY	$ 2.68	$ 8,040.00	750	$ 2,010.00	$ 100.50	$ 1,909.50	2,250	For steep slopes southwest corner of site - based upon developer parking lot grades	--				$ 1,909.50	$ 1,718.55
CO-27	No Cost Time Extension for CO-9	1	--	$ -	$ -	0	$ -	$ -	$ -	--	Additional time provided to contractor based upon actual time spent for CO-9	--				$ -	$ -
CO-28	Contract Reconciliation	0	--	$ -	$ (1,780,450.02)	0	$ -	$ -	$ -	--		--				$ -	$ -
CO-29	Geogrid for SE Slope Demarcation Barrier	1,100	SY	$ 6.42	$ 7,062.00	1,100	$ 7,062.00	$ 353.10	$ 6,708.90	--	For soil cover system in SE corner of Site. Required due to 1:3 slopes in area.	--		1,100	Change order not executed.	$ -	$ -
CO-30	Topsoil & Seed for SE Slope	1,100	SY	$ 13.28	$ 14,608.00	950	$ 12,616.00	$ 630.80	$ 11,985.20	150	Part of alternative soil cover system in SE Corner of the Site	150	Repairs to scoured areas not complete at time of last payment application	950	Change order not executed.	$ -	$ -
CO-31	Zone 1 Concrete Anchor Block Modifications	1	LS	$ 21,573.20	$ 21,573.20	0	$ -	$ -	$ -	1	Never claimed on approved payment application prior to SWC contract termination	--	Never claimed on approved payment application prior to SWC contract termination			$ -	$ -
CO-32	Reverse CO - OCC Inspection of Welded Interlocks	1	LS	$ (2,508.37)	$ (2,508.37)	0	$ -	$ -	$ -	1	Never executed and no additional payment applications to take deduct from					$ -	$ -
CO-33	Reverse CO - OCC Underwater Inspection of Interlocks	1	LS	$ (14,659.22)	$ (14,659.22)	0	$ -	$ -	$ -	1.00	Never executed and no additional payment applications to take deduct from					$ -	$ -
	SUBTOTAL				**$ 14,478,946.47**												
50	Alternate No. 1 Topsoil and Seeding	11	AC	$ 26,500.00	$ 291,500.00	0	$ -	$ -	$ -	11.00	Alternate was not used as part of project.					$ -	$ -
	SUBTOTAL				**$ 14,770,446.47**		**$ 12,755,429.10**	**$ 637,771.46**	**$ 12,117,657.65**							**$ 10,623,516.35**	**$ 9,561,164.71**

1. Original Contract Sum	$ 10,387,617.93
2. Approved Change Order Total	$ 4,091,328.54
3. Contract Sum to Date	$ 14,478,946.47
4. Total Completed & Stored to Date	$ 12,755,429.10
5. Retainage (5%)	$ 637,771.46
6. Total Earned Less Retainage	$ 12,117,657.65

Items designated as non-reimbursable by NYSDEC
Items designated as partially reimbursable by NYSDEC
Change Order Items never fully executed by SWC

Note: Any withholdings by the City are already accounted for in the Total Qty. Approved for SWC.

APPENDIX AY

Developer Construction Costs Summary

VCCI Remedial Activities for DeLaval Site (as provided by City)

Item No.	Description	Unit	Actual Qty.	Unit Price	Estimated Amount
1	Install Demarcation Layer				
	a) Purchase and Install	SY	39,239	$1.61	$63,174.79
	b) Install only 29 rolls @ 500 Sq Yards	SY	14,500	$0.94	$13,630.00
2	Install 12" Soil Cover System				
	a) City to provide Item 4 material billed directly from Tilcon. Estimated Qty: 27,676 tons @ $12.20 = $337,644.93	TON	29,046	$12.20	$354,361.20
	b) Provide "Dirt" Soil Cover Material	TON	9,000	$10.00	$90,000.00
	c) Place and Compact Soil Cover Material	TON	37,469	$5.00	$187,345.00
3	Install Light Poles-Includes anchor bolts, concrete conduit, fabric, clean backfill	EA	33	$900.00	$29,700.00
4	Install PVC Conduit-Provide and Install PVC SCH 40 conduit up to 2" diameter. Includes trenching, fabric lining, clean backfill and compaction.	LF	2297.00	$9.00	$20,673.00
5	Install Transformer Pad	EA	1	$2,900.00	$2,900.00
	Provide and Install CHGE standard transformer vault. Includes materials, excavation, backfill				
6	Stabilize Green Areas With Vegetation	SF	0	$ 0.62	$0.00
	Includes 2" topsoil, seed, straw, starter fertilizer. This is a basic erosion stable solution to obtain COC. Developer will need to improve the lawn in the future.				
7	Air Monitoring	MONTH	13	$ 2,000.00	$26,000.00
	Provide (2) Dust Trak Air Monitors with alarms and environmental enclosures. Record data each day and provide to City.				
8	Provide Handheld PID	MONTH	13	$ 580.00	$7,540.00
9	Replace Exported Material				
	City to replace 7,500 cy of material exported from site. Tilcon to bill City directly for this material. Qty: 15,215 tons @ $12.20 = $185,616.90		Item 4:10,191.08 Tons @ $12.20 = $124,331.18		$185,617.00
10	General Conditions	EA	1	4500	$ 4,500.00
	All testing required by the DEC and/or City and its consultants will be billed at cost.				
CO#1	a) Dr11 HDPE 3" force main and two(2) precast structures with frames and covers	LF	890	$ 78.27	$69,660.30
	b) credit for install and supply of insulation and auto air release valves	LS	1	$ (5,278.25)	$ (5,278.25)
	c) Rock removal	CY	90	$ 155.00	$13,950.00
CO#2	Additional Rock Removal	CY	144	$ 155.00	$22,320.00
CO#3	Excavation of existing fill material, compact area of excavation, live load material, haul material, place excavated material in fill section, grade and compact. Place item-4 delivered and provided by City of Poughkeepsie in excavated area. Sizing and crushing of oversized material excavated.	LS	1.00	$ 50,624.00	$ 50,624.00
CO#4	Install PVC Conduit-Provide and Install PVC SCH 40 conduit up to 5" diameter. Includes trenching, fabric lining, clean backfill and compaction.	LF	100%	Complete	$8,515.00
CO#5	Hydroseed at Green Areas	LS	1	$14,800.00	$ 14,800.00
CO#6	Silt Fence between Green ares and Riverfront Walkway	LF	1240	$5.00	$ 6,200.00
CO#7	Provide and Install MH Frame and Cover	LS	1	$990.00	$ 990.00

	Costs associated with Soil Cover System:	$767,550.99
	Costs associated with Non-Soil Cover Items:	$399,671.05
	Total Construction Costs Borne by City:	**$1,167,222.04**

APPENDIX AZ

Professional Services
Financial Summary

Summary of Engineering Fees for DeLaval Project

CHA Phase No.	Item Description	Budget	Eligible for Reimbursement	Reimbursement Rate	Reimbursible Component of Supplemental Budget
11205	Investigation & AAR	$ 145,600.00	Yes	0.9	$ 131,040.00
1001	Design Work Plan - Reimbursable	$ 46,028.94	Yes	0.9	$ 41,426.05
1002	Design Work Plan - Non-Reimbursable	$ 5,995.19	No	0	$ -
1003	ERP Design Application	$ 3,842.74	No	0	$ -
1004	Design - Reimbursable Components	$ 207,370.68	Yes	0.9	$ 186,633.61
1005	Design - Non-Reimbursable Components	$ 32,402.94	No	0	$ -
1006	Bidding Services	$ 22,217.13	Yes	0.9	$ 19,995.42
1008	Contract Administration	$ 21,521.62	Yes	0.9	$ 19,369.46
1009	Construction Observation - Reimbursable	$ 1,291,929.97	Yes	0.9	$ 1,162,736.97
1010	Construction Observation - Non-Reimbursab	$ 79,960.79	No	0	$ -
1011	Certification Report	$ 69,123.31	Yes	0.9	$ 62,210.98
1012	OCC Non-Remedy Coordination	$ 9,711.53	No	0	$ -
1013	Post-remediation Monitoring	$ 10,036.36	No	0	$ -
1014	Monthly Status Reporting	$ 46,766.99	Yes	0.9	$ 42,090.29
1015	IRM Resposne and Work Plan Prep	$ 9,535.70	Yes	0.9	$ 8,582.13
1016	As-Built Survey Bulkheads & Benchmarks	$ 7,379.30	Yes	0.9	$ 6,641.37
1017	Coating Inspection	$ 500.00	Yes	0.9	$ 450.00
1018	Site Management Plan	$ 33,421.16	Yes	0.9	$ 30,079.04
1019	Conflict Resolution	$ 2,272.89	Yes	0.9	$ 2,045.60
	Totals	**$ 2,045,617.24**			**$ 1,713,300.92**