RETURN TO UAO AR INDEX

SDMS DocID 000215419

New Bedford
215419

US Army Corps
of Engineers
New England District

FOSTER WHEELER
FOSTER WHEELER ENVIRONMENTAL CORPORATION
133 FEDERAL STREET
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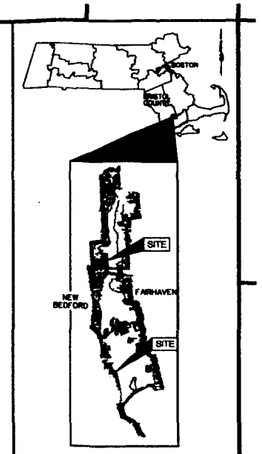

SITE VICINITY
NOT TO SCALE

DESANDING AND DEWATERING FACILITIES DESIGN

NEW BEDFORD HARBOR SUPERFUND SITE

FINAL DESIGN
MAY 2003

NEW BEDFORD, MASSACHUSETTS

INDEX TO DRAWINGS

PROJ. NO. 5197.1720.8002

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PREPARED BY:
Mark T. Otte 5/20/03
PRINCIPAL ENGINEER
This project was designed for the New England Division of the U.S. Army Corps of Engineers. The designs and specifications contained herein are the property of individuals deemed in these project documents, within the scope of their employment as required by 33 USC 1351.

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

COVER SHEET AND
INDEX TO DRAWINGS

Reference number:
G-001
Sheet 1 of 43

CAD FILE: 172093-G-0013xx.DGN

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COMMONWEALTH OF MASSACHUSETTS
Mark T. Otte 5/20/03
REGISTERED PROFESSIONAL ENGINEER

VALUE ENGINEERING PAYS DIVIDENDS

SAFETY PAYS

CONTRACT • DACW33-94-D-0002

LEGEND

EXISTING	PROPOSED	DESCRIPTION
15	5	INDEX CONTOUR
1		INTERMEDIATE CONTOUR
15.3 ×	× 6.00	SPOT ELEVATION
		FLOW ARROW
		LIMIT OF WORK
		EASEMENT LINE
		CHAIN LINK FENCE
		EDGE OF PAVEMENT
S 01° 40' 24" E		PROPERTY OR LOT LINE, BOUNDARY BEARING & DIRECTION
S	S	SANITARY SEWER (3)
W	W	POTABLE WATER SERVICE
E	UGE	UNDERGROUND ELECTRIC SERVICE
D	D	STORM DRAIN
G	G	GAS SERVICE
T	T	TELEPHONE SERVICE
	FP	FIRE PROTECTION
OHW		OVERHEAD UTILITY SERVICE LINES
		FIRE HYDRANT AND VALVE (3)
		UTILITY POLE
		LIGHT POLE
		NAIL FOUND
		BRASS PIN FOUND
		SURVEY BENCH MARK (3)
		CATCH BASIN
		SIGN
		CLEAN OUT
		WATER GATE/VALVE
		TREE
		SANITARY SEWER MANHOLE
		DRAIN MANHOLE
		GAS GATE VALVE
		ELECTRIC MANHOLE
		ELECTRIC HANDHOLE
		TELEPHONE MANHOLE
		REMOVABLE BOLLARD
		STANDARD BOLLARD
FD-20, GZA-4, S-813, 3927, CSO-01, CPT-D-16		TEST BORING
FD204		MONITORING WELL
METER PIT		METER PIT
TEST STATION		TEST STATION
TP-010		OBSERVATION WELL
TP-010		TEST PIT

SECTION IDENTIFICATION LETTER

SECTION — A / C-XXX

NOT TO SCALE

SHEET WHERE SECTION IS DRAWN

DETAIL IDENTIFICATION NUMBER

2 / C-XXX — DETAIL

NOT TO SCALE

SHEET WHERE DETAIL IS DRAWN

ABBREVIATIONS

AREMA	AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION
BC	BOTTOM OF CURB
BM	BENCH MARK
CB	CATCH BASIN
℄ CL	CENTERLINE
C.O.	CLEANOUT
CONC.	CONCRETE
COP	COPPER PIPE
CSO	COMBINED SEWER OVERFLOW
DEP	DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIA.	DIAMETER
DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
DR	DRIVE
EL., ELEV.	ELEVATION
EMH	ELECTRIC MANHOLE
EOP	END OF PAVEMENT
EOG	EDGE OF GRAVEL
EXIST.	EXISTING
FF	FINISH FLOOR
FWENC	FOSTER WHEELER ENVIRONMENTAL CORP.
GMW	GAS MONITORING WELL
GS	GALVANIZED STEEL
GSF	GROSS SQUARE FEET
HDPE	HIGH DENSITY POLYETHYLENE
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HYD.	HYDRANT
INV.	INVERT
MH	MANHOLE
MHW	MEAN HIGH WATER
MLW	MEAN LOW WATER
MW	MONITORING WELL
N/A	NOT APPLICABLE
N/F	NOW OR FORMALLY
NAD83	NORTH AMERICAN HORIZONTAL DATUM OF 1983
NGVD29	NATIONAL GEODETIC VERTICAL DATUM OF 1929
NTS	NOT TO SCALE
OW	OBSERVATION WELL
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
POB	POINT OF BEGINNING
PROP	PROPERTY
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
REF	REFERENCE
ROW	RIGHT-OF-WAY
SMH	SEWER MANHOLE
STA	STATION
SURF.	SURFACE
TB	TOP OF BALLAST (3)
TC	TOP OF CURB
TG	TOP OF GRATE
TMH	TELEPHONE MANHOLE
TYP	TYPICAL
UMH	UTILITY MANHOLE
USACE	U.S. ARMY CORPS OF ENGINEERS
VCP	VITRIFIELD CLAY PIPE
VERT.	VERTICAL
WL	WATER LEVEL
W/	WITH
WTP	WATER TREATMENT PLANT
WQU	WATER QUALITY UNIT
YR.	YEAR

MARK T. OTTEN — MASSACHUSETTS — PROFESSIONAL ENGINEER — 5/20/03

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ISSUED FOR BID

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR IBR/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR IBD	02/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.
0	ISSUED FOR 60% DESIGN SUBMITTAL	08/14/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

Designed by: D. MAHER, F. MENICHELLI
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Reviewed by: M. OTDEN
Submitted by: M. OTTEN
Date: 05/20/03
Design file no. 172003-4-002Sm.DGN
Drawing code:
File name:
Plot date:
Plot scale:
Rev. 3

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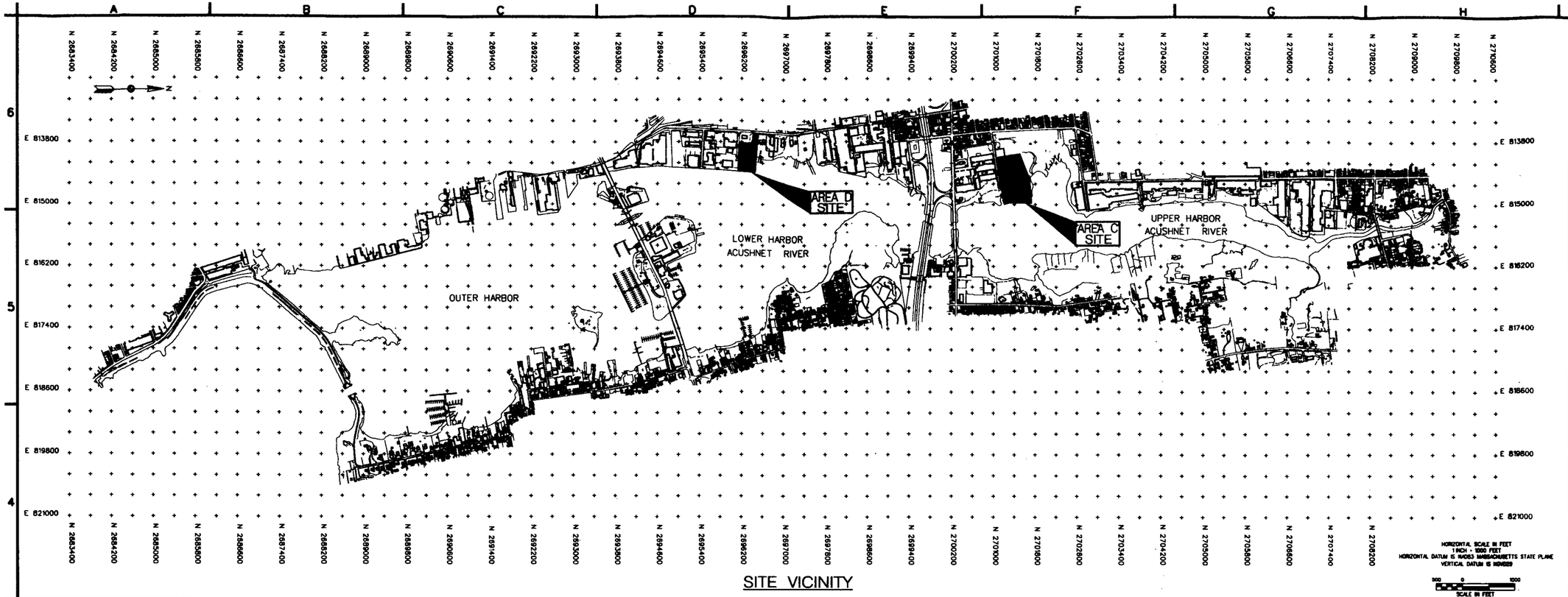
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

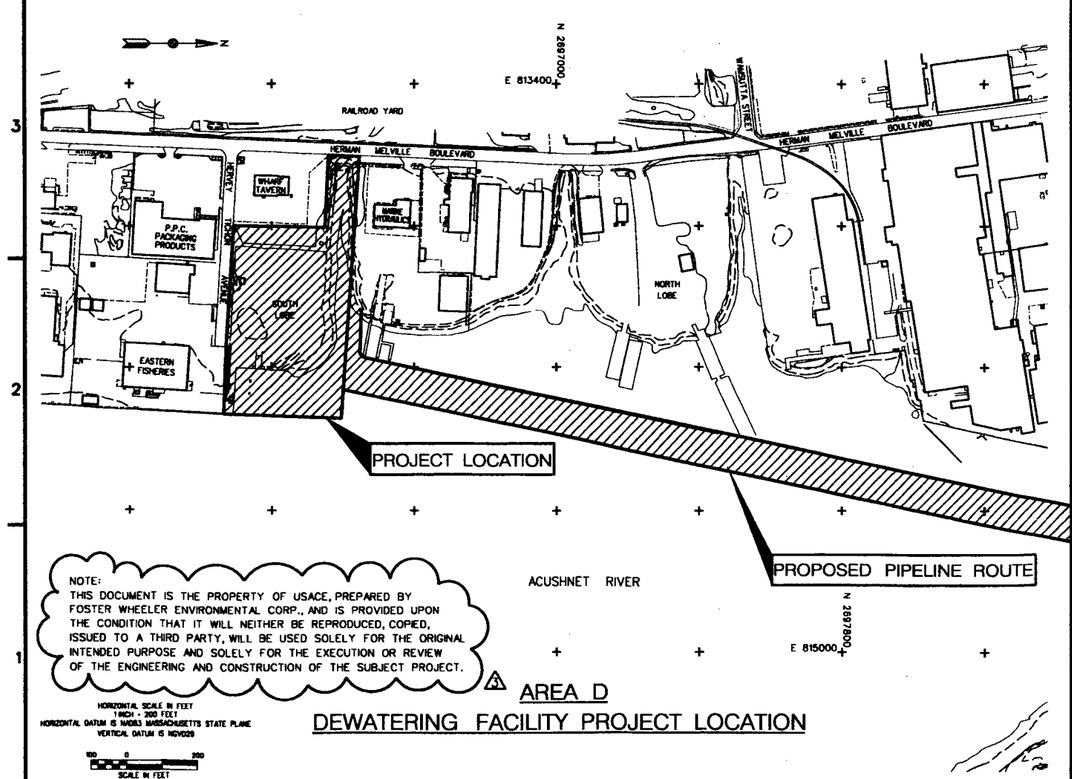
NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

STANDARD SYMBOLS AND ABBREVIATIONS

Reference number:
G-002
Sheet 2 of 43



SITE VICINITY



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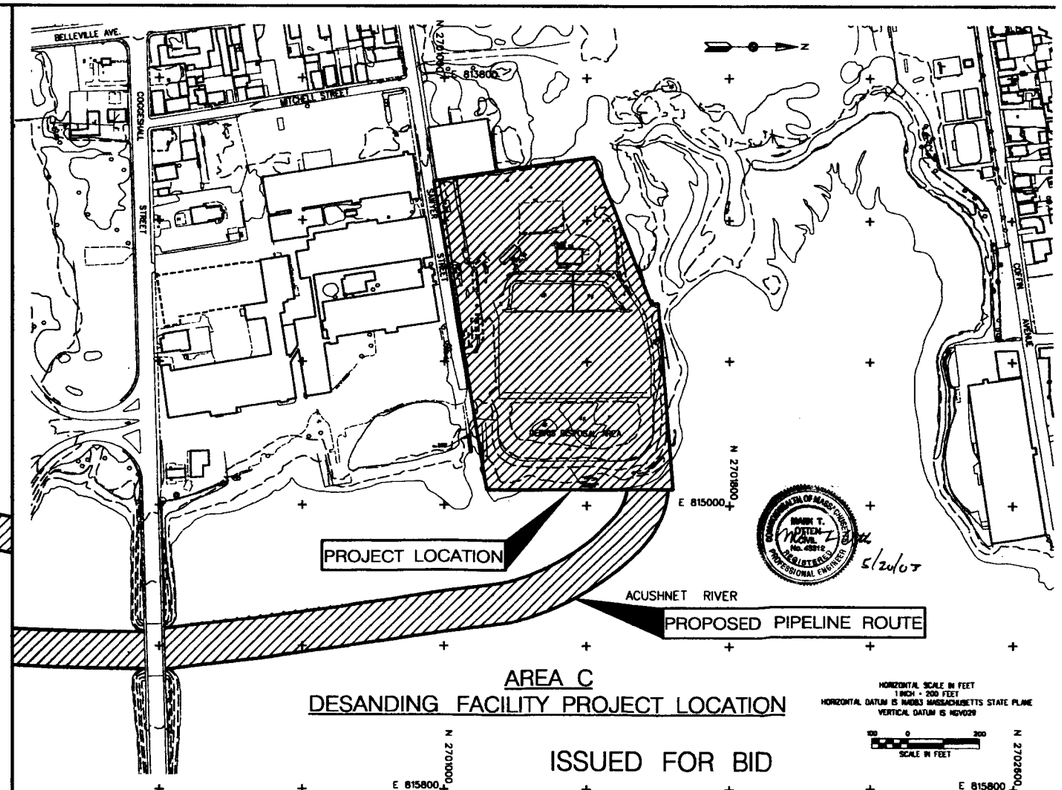
AREA D
DEWATERING FACILITY PROJECT LOCATION



AREA C
DESANDING FACILITY PROJECT LOCATION

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New England District

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0	ISSUED FOR 90% DESIGN SUBMITTAL	05/24/02	M.O.
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Rev. 3

Date: 06/20/03
Design file no. 172063-G-401Sm.DGN
Drawing code
File name
Plot date
Plot date/set

Designed by: D. MAHER
Drawn by: C. POTVIN
Reviewed by: R. OTOSKI
Submitted by: M. OTTEN

U.S. ARMY ENGINEER DISTRICT
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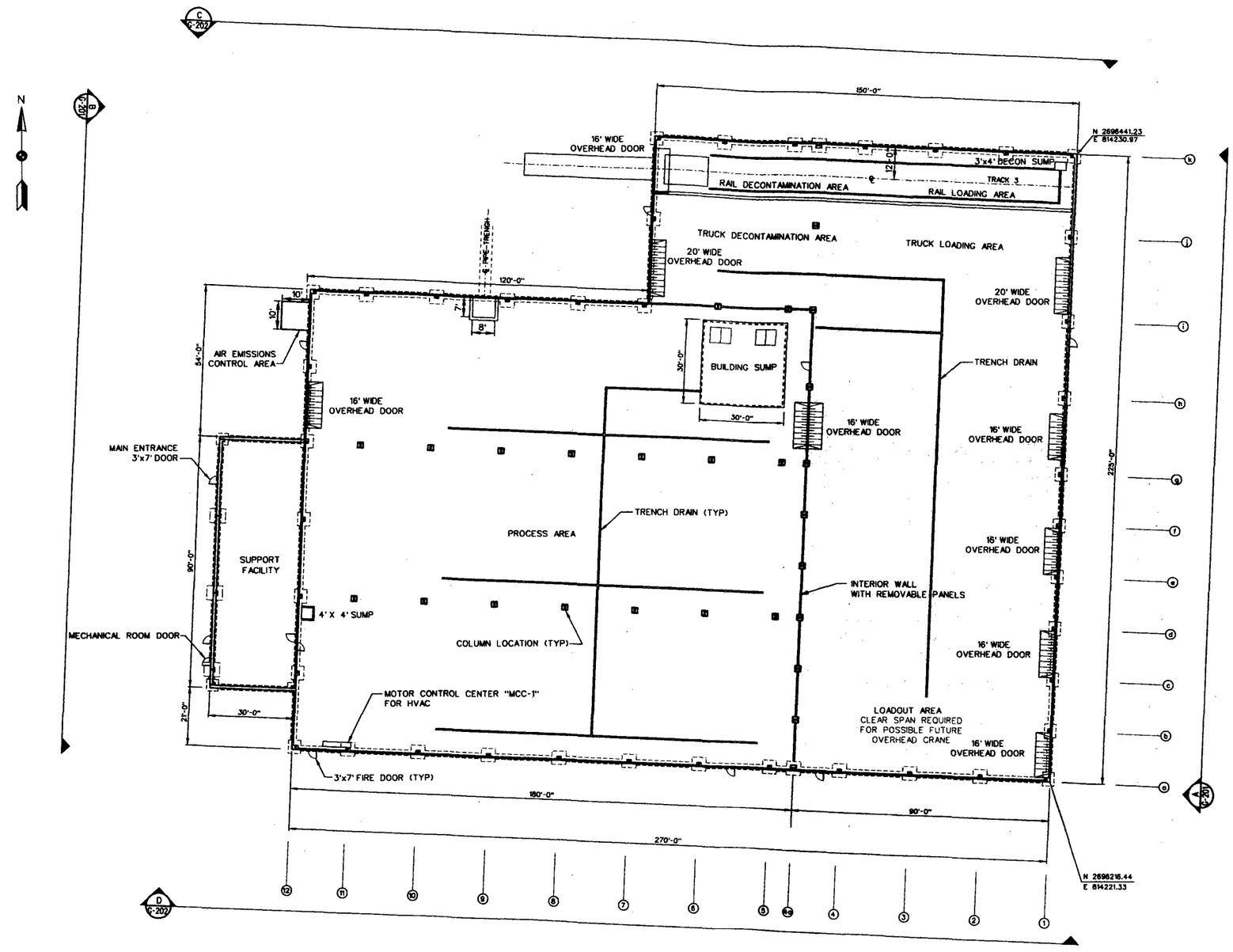
FOSTER WHEELER ENVIRONMENTAL CORP.
100 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

PROJECT LOCATION PLAN

Reference number:
G-401

Sheet 3 of 43



NOTES:

1. 6" CONCRETE CONTAINMENT CURB AROUND EXTERIOR OF PROCESS, LOADOUT AND LOADING AREAS.
2. FIRE GROUPS - FOR FACILITIES ARE:
   - SUPPORT FACILITY - GROUP B
   - PROCESS AREA - GROUP H-4
   - LOADOUT/LOADING AREAS - GROUP H-4
3. LOADOUT/LOADING AREAS TO HAVE A CLEAR HEIGHT OF 36'-6" TO ACCOMMODATE POTENTIAL OVERHEAD CRANE.
4. PROCESS AREA TO HAVE A CLEAR HEIGHT OF 30 FT.
5. SUPPORT FACILITY LAYOUT SHOWN IS CONCEPTUAL. FINAL SUPPORT FACILITY LAYOUT TO BE PROVIDED BY CONTRACTOR.
6. DEWATERING FACILITIES DESIGN INCLUDES BOTH PERFORMANCE AND PRESCRIPTIVE SPECIFICATIONS. DESIGN DRAWINGS ARE PROVIDED FOR USE IN PROCURING PERFORMANCE BASED BUILDING SYSTEMS, HVAC EQUIPMENT AND SYSTEMS, ELECTRICAL SYSTEMS, PLUMBING, AND ARCHITECTURAL COMPONENTS. THE DRAWINGS ARE PROVIDED FOR ACQUISITION OF THESE SYSTEMS ONLY AND NOT FOR CONSTRUCTION.
7. COLUMNS d5-d11, g5-g11 AND (4a-j) COULD BE ELIMINATED WITH USE OF LONG SPAN ROOF SYSTEMS. HOWEVER, FOOTINGS AND FOUNDATION WOULD REQUIRE RE-DESIGN.

5/2/03

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SCALE 1"= 20'

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New England District

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0	ISSUED FOR 90% DESIGN SUBMITTAL	06/24/02	M.O.
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Rev. 3
Date 06/20/03
Design file no. 172063-G-101Sht.DGN
Drawing code
File name
Plot date
Plot scale AS SHOWN

Designed by: J. ZANG, J. BRINGMANN
Drawn by: G. KRYSTYNIAK, C. POTVIN
Reviewed by: R. OTOBO
Submitted by: M. OTTEN

U.S. ARMY ENGINEER DISTRICT
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CONCORD, MASSACHUSETTS

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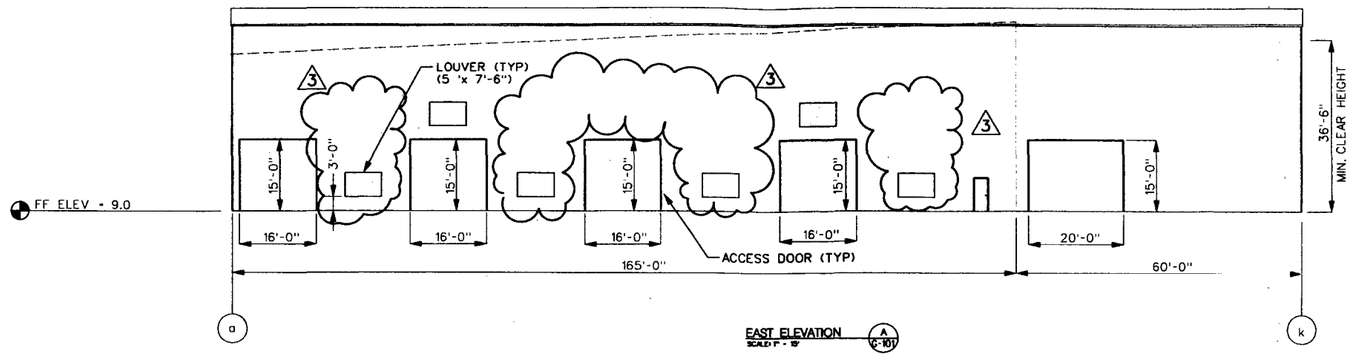
BOSTON, MASSACHUSETTS

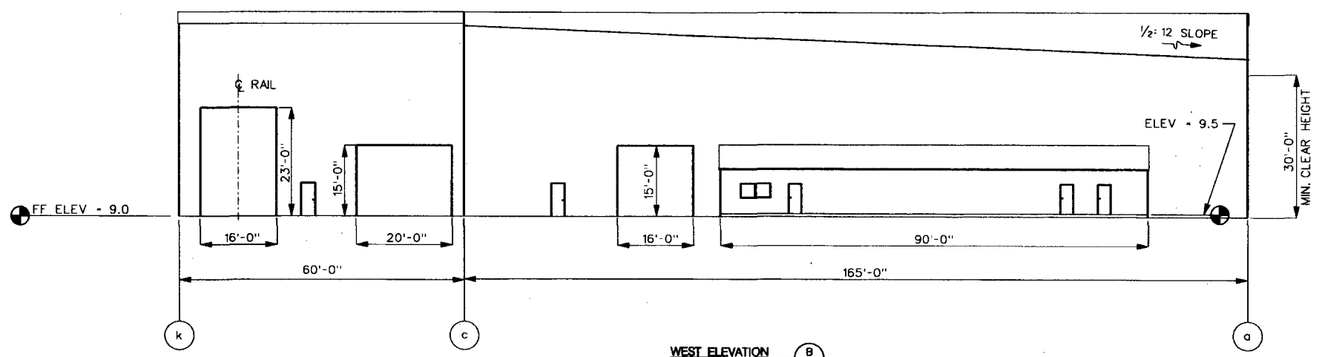
NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
BUILDING GENERAL ARRANGEMENT PLAN

Reference number:
G-101
Sheet 4 of 43



EAST ELEVATION (A / C-101)
SCALE: 1" - 15'



WEST ELEVATION (B / C-101)
SCALE: 1" - 15'

NOTES:

1. DEWATERING FACILITIES DESIGN INCLUDES BOTH PERFORMANCE AND PRESCRIPTIVE SPECIFICATIONS. DESIGN DRAWINGS ARE PROVIDED FOR USE IN PROCURING PERFORMANCE BASED BUILDING SYSTEMS, HVAC EQUIPMENT AND SYSTEMS, ELECTRICAL SYSTEMS, PLUMBING, AND ARCHITECTURAL COMPONENTS. THE DRAWINGS ARE PROVIDED FOR ACQUISITION OF THESE SYSTEMS ONLY AND NOT FOR CONSTRUCTION.
2. SUPPORT FACILITY ROOF SLOPE SHALL BE A MINIMUM OF 1:12 TO A MAXIMUM OF 3:12.

COMMONWEALTH OF MASSACHUSETTS
MARK T. OTTEN
No. 43815
REGISTERED PROFESSIONAL ENGINEER
6/24/03 3

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FEET 7.5 0 15 30 45
SCALE 1" - 15'

ISSUED FOR BID

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New England District

Symbol	Description	Date	Appr.	Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	06/20/03	M.O.				
2	ISSUED FOR BID	03/28/03	M.O.				
1	ISSUED FOR 100% SUBMITTAL	12/03/02	M.O.				
0	ISSUED FOR 60% DESIGN SUBMITTAL	05/24/02	M.O.				
A	ISSUED FOR USACE REVIEW	10/01/02					

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CORPS OF ENGINEERS
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FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

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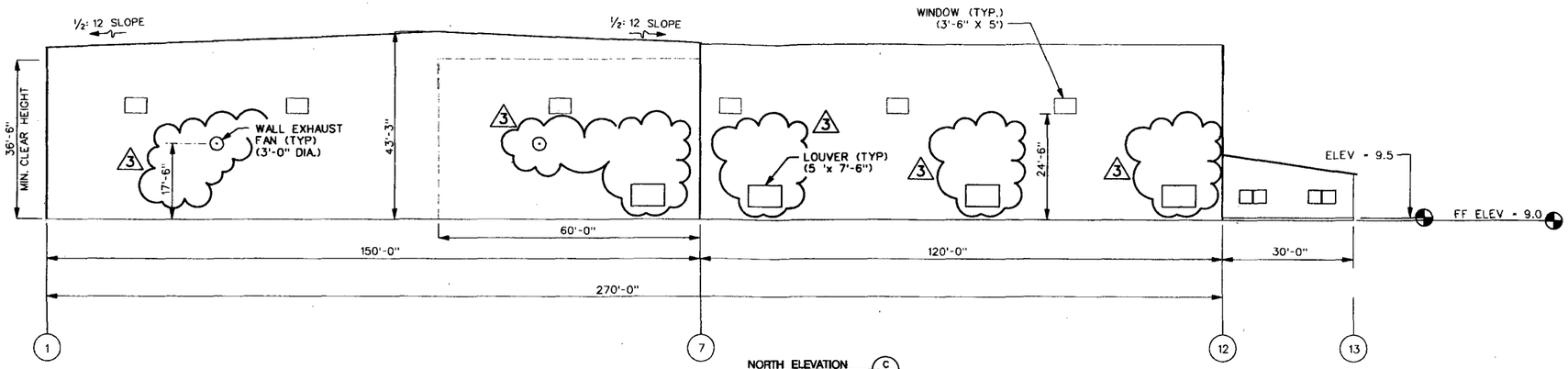
Drawn by: G. KRYSTYNIAK, C. POTVIN
Reviewed by: R. OTOSKI
Submitted by: M. OTTEN
Date: 06/20/03
Rev. 3
Design file no. 172093-G-2013xx.DGN
Drawing code:
File name:
Plot date:
Plot scale:

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

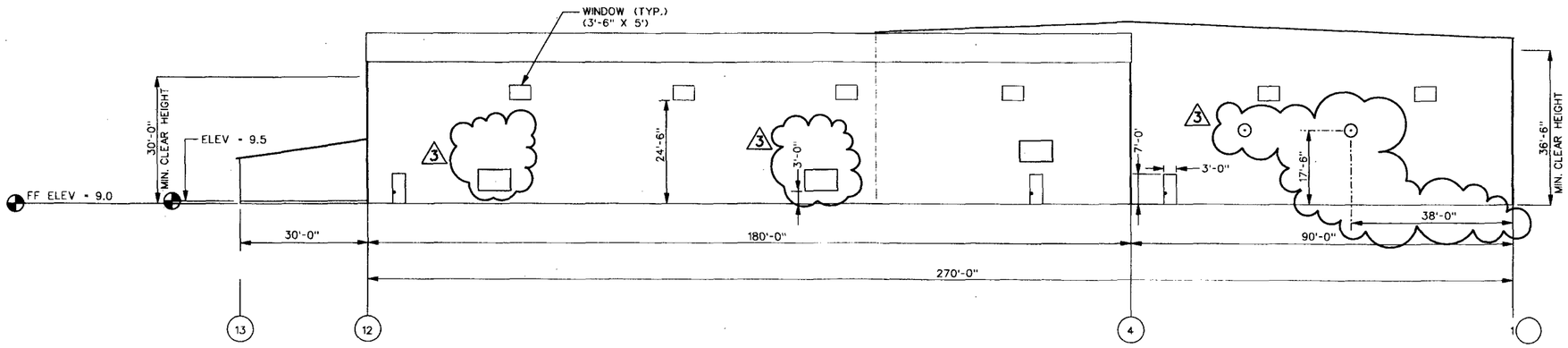
AREA D DEWATERING BUILDING
GENERAL EXTERIOR
ELEVATIONS
(SHEET 1 OF 2)

Reference number:
G-201

Sheet 5 of 43



NORTH ELEVATION (C / C-101)
SCALE: 1" = 15'



SOUTH ELEVATION (D / C-101)
SCALE: 1" = 15'

NOTES:

1. DEWATERING FACILITIES DESIGN INCLUDES BOTH PERFORMANCE AND PRESCRIPTIVE SPECIFICATIONS. DESIGN DRAWINGS ARE PROVIDED FOR USE IN PROCURING PERFORMANCE BASED BUILDING SYSTEMS, HVAC EQUIPMENT AND SYSTEMS, ELECTRICAL SYSTEMS, PLUMBING, AND ARCHITECTURAL COMPONENTS. THE DRAWINGS ARE PROVIDED FOR ACQUISITION OF THESE SYSTEMS ONLY AND NOT FOR CONSTRUCTION.
2. SUPPORT FACILITY ROOF SLOPE SHALL BE A MINIMUM OF 1:12 TO A MAXIMUM OF 3:12.

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3

SCALE 1"= 15'

5/20/03

ISSUED FOR BID

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR BID	02/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.
0	ISSUED FOR 60% DESIGN SUBMITTAL	09/24/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	M.O.

Designed by: L. TOROYAN, J. BRINGMAN
Drawn by: G. KRYSTYNIAK, C. POTVIN
Reviewed by: R. OTOSKI
Submitted by: M. OTTEN
Date: 05/20/03
Design File no. 172083-G-2023xx.DGN
Drawing code:
File name:
Plot date:
Plot scale:
Rev. 3

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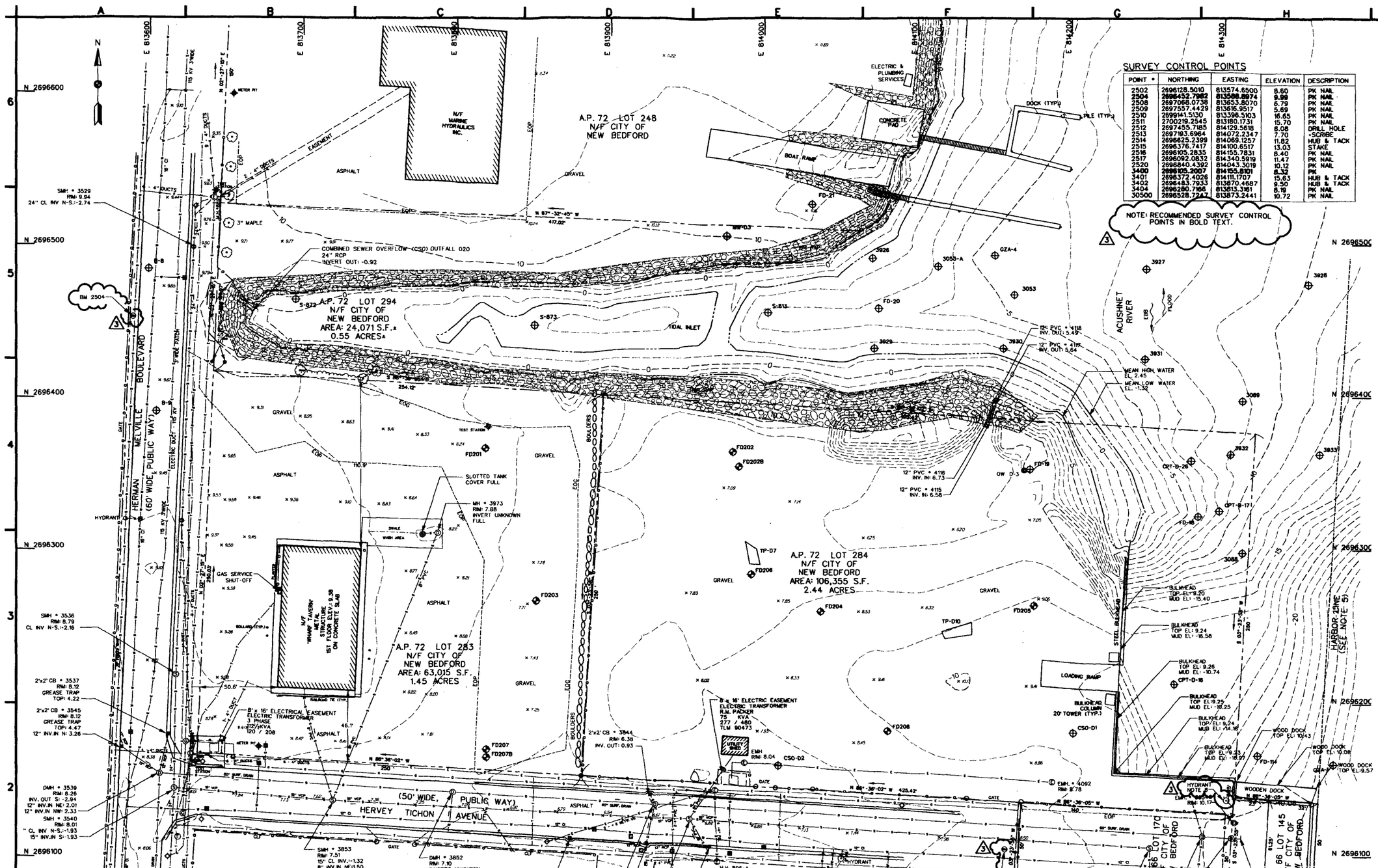
NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN
AREA D DEATERING BUILDING
GENERAL EXTERIOR ELEVATIONS
(SHEET 2 OF 2)

Reference number:
G-202

Sheet 6 of 43



SURVEY CONTROL POINTS

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
2502	2696128.5010	813574.6500	8.60	PK NAIL
2504	**2696452.7982**	**813588.8974**	**9.99**	PK NAIL
2508	2697068.0738	813653.8070	6.79	PK NAIL
2509	2697557.4429	813616.9517	5.69	PK NAIL
2510	2699141.5130	813396.5103	16.65	PK NAIL
2511	2700219.2545	813180.1731	15.70	PK NAIL
2512	2697455.7185	814129.5618	8.08	DRILL HOLE
2513	2697163.6964	814072.2347	7.70	+SCRIBE
2514	2696625.2399	814069.1257	11.82	HUB & TACK
2515	2696376.7417	814100.6517	13.03	STAKE
2516	2696105.2835	814155.7831	8.40	PK NAIL
2517	2696092.0832	814340.5919	11.47	PK NAIL
2520	2696840.4392	814043.3019	10.12	PK NAIL
3400	**2696105.2007**	**814155.8101**	**8.32**	**PK**
3401	2696372.4026	814111.1707	15.63	HUB & TACK
3402	2696483.7933	813870.4687	9.50	HUB & TACK
3404	2696290.7166	813813.3161	8.19	PK NAIL
30500	2696528.7247	813873.2441	10.72	PK NAIL

NOTE: RECOMMENDED SURVEY CONTROL POINTS IN BOLD TEXT.

GENERAL NOTES

1. SITE SURVEY INFORMATION, GROUND SURFACE ELEVATIONS AND MUD ELEVATIONS IN THE TIDAL INLET AND AT THE BULKHEAD AS NOTED TAKEN FROM PLAN ENTITLED, "TOPOGRAPHIC SURVEY A.P. 72 LOT 283, 284, AND 294, HERMAN MELVILLE BLVD., NEW BEDFORD, MASSACHUSETTS FOR FOSTER WHEELER ENVIRONMENTAL CORP. DATED DECEMBER 06, 2001 BY SAI SURVEYING CORPORATION OF JAMESTOWN, RHODE ISLAND.
2. BATHYMETRY IS BASED ON HYDROGRAPHIC SURVEY CONDUCTED BY THE U.S. ARMY CORPS OF ENGINEERS IN FEBRUARY AND MARCH 1999.
3. LOCATION OF ALL UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON FIELD LOCATION OF VISIBLE STRUCTURES, SUCH AS: CATCH BASINS, MANHOLES, WATER GATES, FIRE HYDRANTS, ETC. SIZES AND TYPES OF MATERIALS ARE BASED ON AVAILABLE UTILITY RECORDS. CONTRACTORS SHOULD NOTIFY COMPANIES PRIOR TO CONSTRUCTION AND/OR CALL DIG SAFE AT 1-800-DIG-SAFE.
4. THE SUBJECT PREMISES ARE LOCATED IN FLOOD ZONE "A" BEING ELEVATION 6.0 NGVD29 COMMUNITY NUMBER 255216 0009 B, REVISED JANUARY 05, 1984.
5. HARBOR LINE- U.S. HARBORLINES, NEW BEDFORD AND FAIRHAVEN HARBOR- U.S. ENGINEERS OFFICE, PROVIDENCE, RI, MARCH 30, 1928.
6. FOR LEGEND, NOTES AND ABBREVIATIONS SEE SHEET G-002.
7. SITE SURVEY INFORMATION PRESENTED IS FOR SITE CONDITIONS PRIOR TO BULKHEAD CONSTRUCTION. POST-BULKHEAD CONSTRUCTION CONDITIONS ARE SHOWN ON SHEET C-1.
8. APPROXIMATE LOCATION OF HYDRANT NOT INCLUDED IN CURRENT CITY RECORDS. (APPEARS ABANDONED)

UTILITY INFORMATION: THE CONTACT DATA LISTED BELOW IS CORRECT AS OF OCTOBER 15, 2001.

SANITARY SEWER & STORM DRAINAGE:
CITY OF NEW BEDFORD, ENGINEERING DEPT. 1-508-979-1527.
WATER:
CITY OF NEW BEDFORD, WATER DEPT. 1-508-979-1556.
GAS:
NSTAR (GAS), 1-800-572-9300.
ELECTRIC:
NSTAR (ELECTRIC), 1-508-291-0950.
TELEPHONE:
VERIZON, 1-888-268-5785

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LEGEND:
- TEST BORING
- MONITORING WELL
- OBSERVATION WELL

ISSUED FOR BID

HORIZONTAL SCALE IN FEET
1 INCH = 30 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29
SCALE IN FEET

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR 90% SUBMITTAL	03/28/03	M.O.
1	ISSUED FOR 50% DESIGN SUBMITTAL	10/22/02	M.O.
0	ISSUED FOR 30% DESIGN SUBMITTAL	06/24/02	M.O.
A	ISSUED FOR SPACE REVIEW	03/01/02	M.O.

Symbol	Description	Date	Appr.

Rev. 3
Date: 05/20/03
Design file no. 172083-C-C101.DGN
Drawing code:
File name: 172083-C-C101.DGN
Plot scale:

Designed by: S. LAWSER
Drawn by: K. POTTS, G. LAWER
Reviewed by: G. OTTEN
Submitted by: G. OTTEN

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

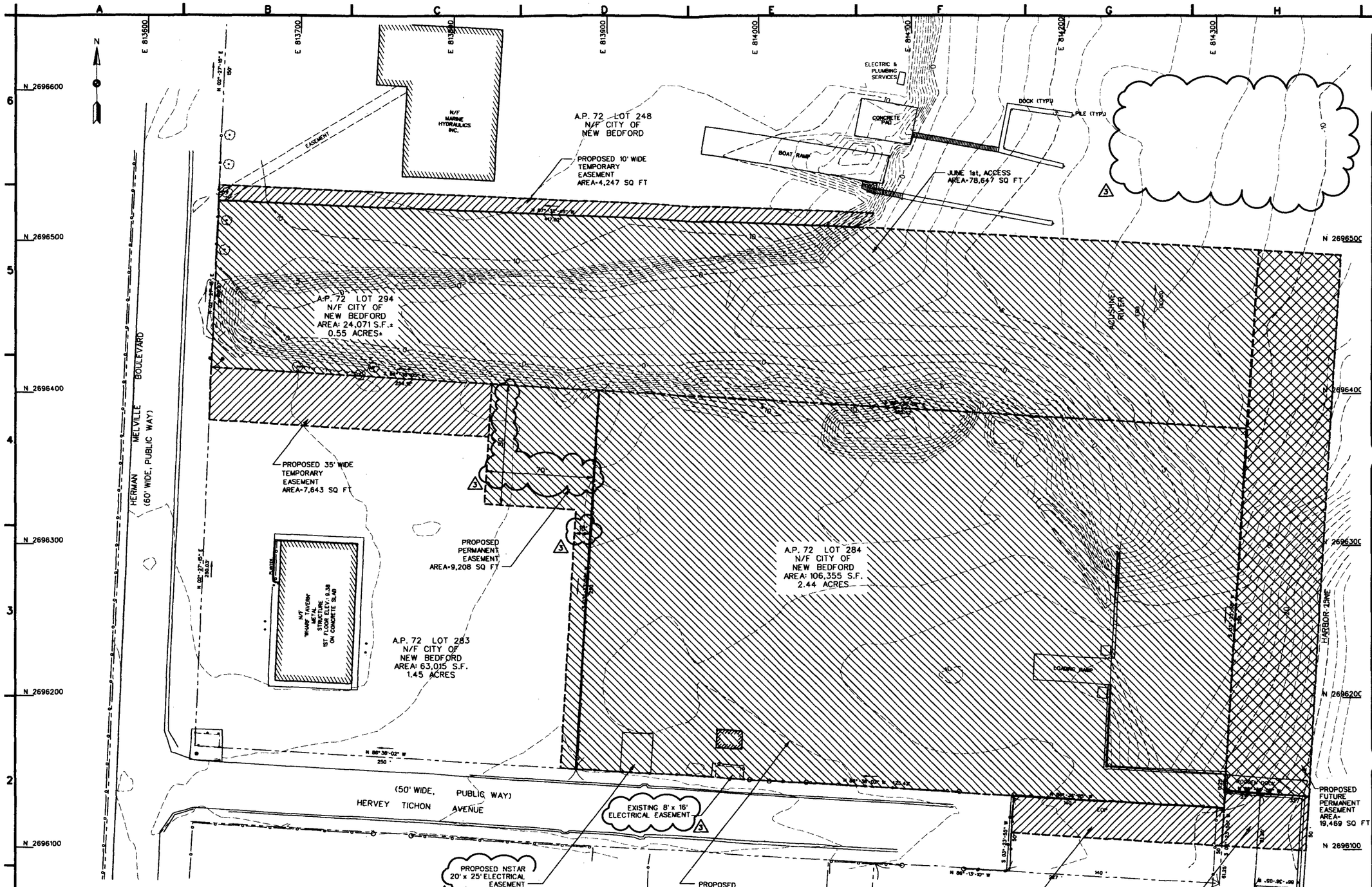
FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
EXISTING CONDITIONS PLAN

Reference number:
C-101

Sheet 7 of 43



GENERAL NOTES

1. SITE SURVEY INFORMATION, GROUND SURFACE ELEVATIONS AND MUD ELEVATIONS IN THE TIDAL INLET AND AT THE BULKHEAD AS NOTED TAKEN FROM PLAN ENTITLED, "TOPOGRAPHIC SURVEY A.P. 72 LOT 283, 284, AND 294, HERMAN MELVILLE BLVD., NEW BEDFORD, MASSACHUSETTS FOR FOSTER WHEELER ENVIRONMENTAL CORP." DATED DECEMBER 06, 2001 BY SAI SURVEYING CORPORATION OF JAMESTOWN, RHODE ISLAND.
2. BATHYMETRY IS BASED ON HYDROGRAPHIC SURVEY CONDUCTED BY THE U.S. ARMY CORPS OF ENGINEERS IN FEBRUARY AND MARCH 1999.
3. THE SUBJECT PREMISES ARE LOCATED IN FLOOD ZONE "A" BEING ELEVATION 6.0 NGVD29 COMMUNITY NUMBER 255216 0009 B, REVISED JANUARY 05, 1984.
4. HARBOR LINE- U.S. HARBORLINES, NEW BEDFORD AND FAIRHAVEN HARBOR- U.S. ENGINEERS OFFICE, PROVIDENCE, RI, MARCH 30, 1928.
5. FOR LEGEND, NOTES AND ABBREVIATIONS SEE SHEET G-002.
6. THE PURPOSE OF DRAWING IS TO SHOW LOCATION OF WORK LOT AND EASEMENT LINES MUST BE LOCATED AND VERIFIED IN THE FIELD BY FOSTER WHEELER ENVIRONMENTAL CORP. PRIOR TO CONSTRUCTION.

LEGEND:

- PERMANENT EASEMENT
- FUTURE PERMANENT EASEMENT
- TEMPORARY EASEMENT

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HORIZONTAL SCALE IN FEET
1 INCH = 30 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29

SCALE IN FEET

ISSUED FOR BID

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.	Symbol	Description	Date	Appr.
3	ISSUED FOR IND/CONSTRUCTION	05/20/03	M.O.				
2	ISSUED FOR BID	04/18/03	M.O.				
1	ISSUED FOR 100% SUBMITTAL	03/28/03	M.O.				
0	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.				

Date: 05/20/03 Rev. 3
Design File no. (72093-C-111Sw.DGN)
Drawing code:
File name:
Plot date:
Plot scale:

Designed by: A. BOVINELLO, J. BRANNAN
Drawn by: C. POTVIN, D. BAKER
Reviewed by: R. OTOSKI
Submitted by: M. OTTEN

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

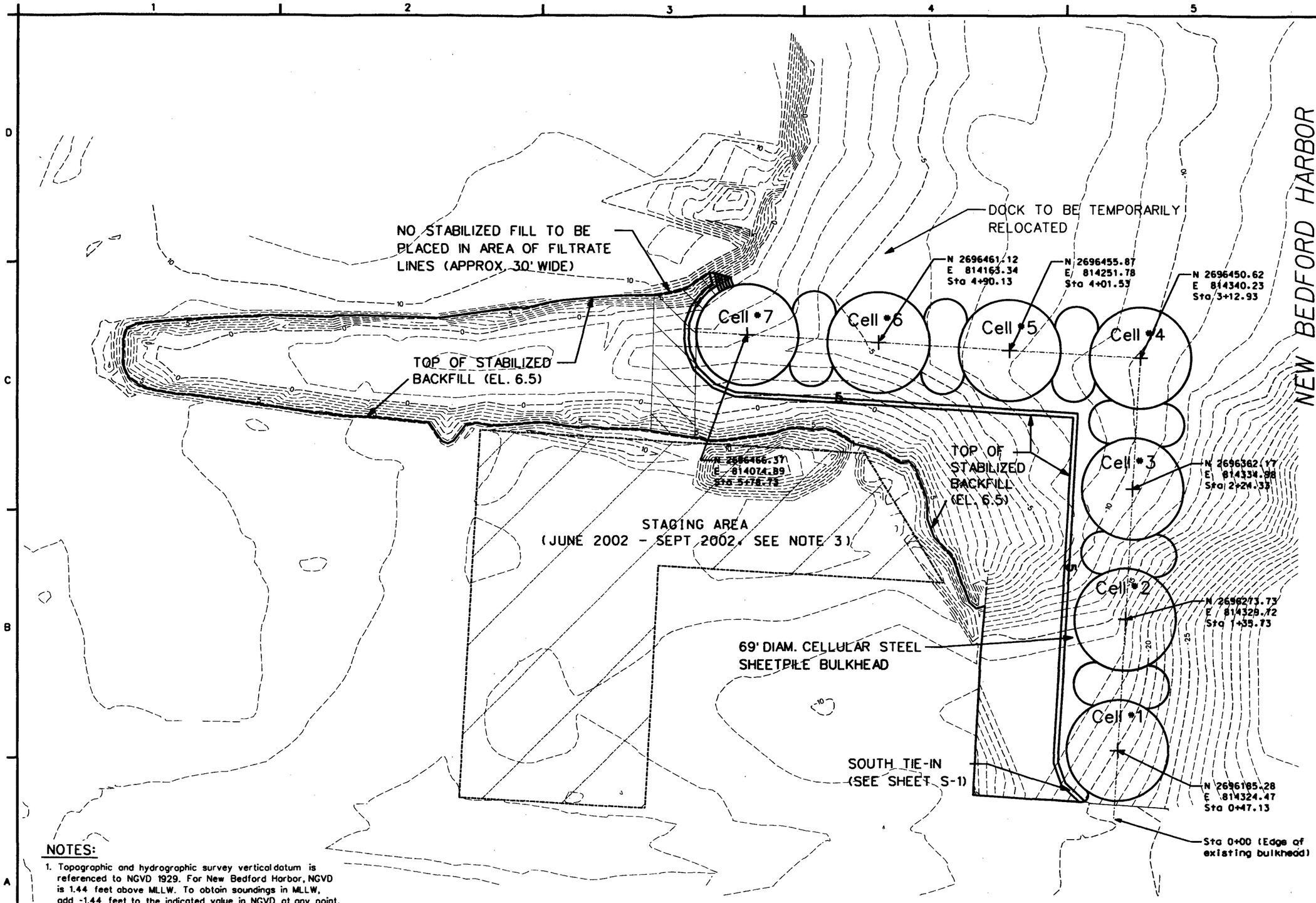
FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
PROPERTY LINES AND EASEMENTS

Reference number:
C-111

Sheet 8 of 43



NOTES:

1. Topographic and hydrographic survey vertical datum is referenced to NGVD 1929. For New Bedford Harbor, NGVD is 1.44 feet above MLLW. To obtain soundings in MLLW, add -1.44 feet to the indicated value in NGVD at any point.
2. Cells 1-3 (including arcs) to be filled with compacted gravel fill. Cells 4-7 (includings arcs) to be filled with dumped crushed stone fill. Arc pair between cells 3 & 4 to be filled with compacted gravel fill.
3. After Sept. 2002, staging area is expanded to the south to the edge of the property along Hervey Tichon Avenue.

SITE PLAN

SCALE: 1" = 30'

30 15 0 30 60FT

SCALE: 1"= 30'

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.	Symbol	Description	Date	Appr.

Date: Apr 2002
Design file no. CDDC01L402
Drawing code:
Rev.
File name:
Plot date:
Plot scale:

Designed by: M. DeSousa
Drawn by: M. DeSousa
Reviewed by:
Submitted by:
Chief, Civil Engg. Sect.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

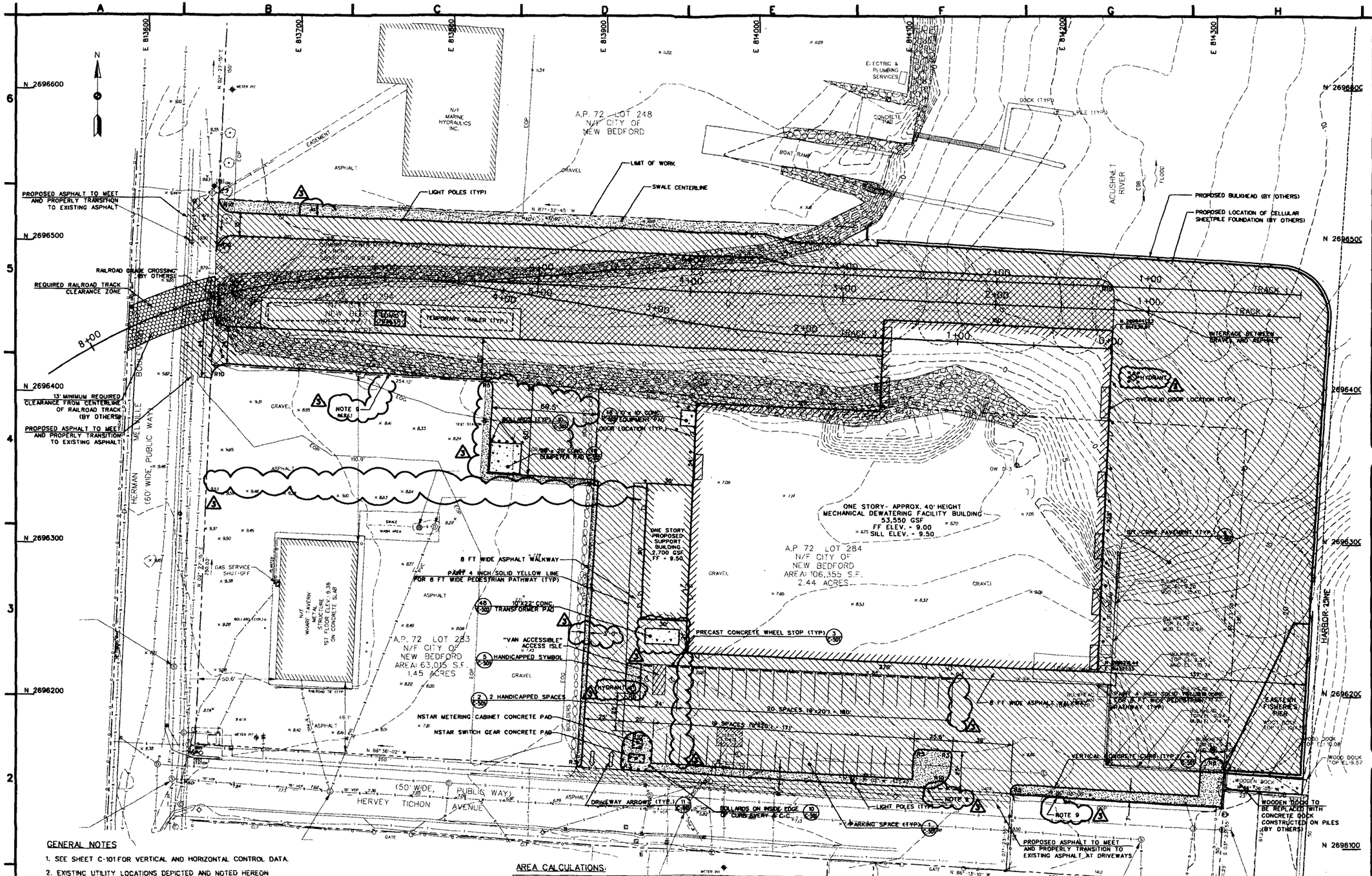
NEW BEDFORD HARBOR SUPERFUND SITE
UPPER HARBOR
NEW BEDFORD, MASSACHUSETTS

AREA D BULKHEAD

SITE PLAN

Reference number:
C-1

Sheet 9 of 43



GENERAL NOTES

1. SEE SHEET C-101 FOR VERTICAL AND HORIZONTAL CONTROL DATA.
2. EXISTING UTILITY LOCATIONS DEPICTED AND NOTED HEREON ARE TO BE CONSIDERED APPROXIMATE. (SEE NOTE 3, SHEET C-101.)
3. THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES AND FEATURES AFFECTING THIS WORK SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
4. BUILDING DIMENSIONS GIVEN TO LIMITS OF FOUNDATION. SEE SHEET S-501 FOR FOUNDATION DIMENSIONS.
5. SEE SHEET C-105 FOR FENCING LOCATIONS.
6. SEE SHEET C-106 FOR RAILROAD LAYOUT.
7. SEE SHEET L-101 FOR LANDSCAPE PLAN.
8. INCREASE IN TOTAL LOT AREA DUE TO BULKHEAD CONSTRUCTION.
9. THE ACTUAL LOCATION OF CURBS SHALL BE DETERMINED BASED ON SURVEYED LOT LINE LOCATIONS (SEE DRAWING C-111). CONSTRUCT CURB SO THAT OUTSIDE IS 0.5 FEET INSIDE LOT LINE.
10. CURBS AND EDGE OF PAVEMENT SHALL BE WITHIN 0.25 FEET OF DESIGN LOCATION.

LEGEND:

- BITUMINOUS CONC. PAVEMENT
- CONCRETE
- GRAVEL
- LANDSCAPE

AREA CALCULATIONS:

EXISTING LOTS	
A.P. 72 LOT 283 =	63,015 SF
A.P. 72 LOT 284 =	106,355 SF
A.P. 72 LOT 294 =	24,071 SF
TOTAL LOT AREA =	193,441 SF
IMPROVED AREA	
EXISTING BUILDINGS (WHARF TAVERN) =	4,641 GSF
NEW BUILDINGS	57,690 GSF
TOTAL BUILDINGS =	62,331 GSF (32% LOT OCCUPANCY)
NEW BITUMINOUS CONC. PAVEMENT =	115,027 SF
NEW CONCRETE SURFACES =	1,327 SF
NEW GRAVEL =	27,480 SF
NEW LANDSCAPED AREAS =	8,539 SF
TOTAL IMPROVED AREA =	212,734 SF
TOTAL UNIMPROVED AREA =	58,929 SF
TOTAL AREA =	271,663 SF *SEE NOTE 8

COMMONWEALTH OF MASSACHUSETTS MARK T. OTTEN No. 36,978 REGISTERED PROFESSIONAL ENGINEER 5/2/03

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HORIZONTAL SCALE IN FEET
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HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29

SCALE IN FEET

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR BID	02/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	09/24/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

Designed by: D. MARCEL, D. MARTOCCIA
Drawn by: F. MENICHELLI, C. POTVIN
Reviewed by: R. OTOSKI
Submitted by: M. OTTEN
Date: 05/20/03
Rev. 3
Design file no. 172093-C-103.dgn
Drawing code:
File name:
Plot date:
Plot scale:

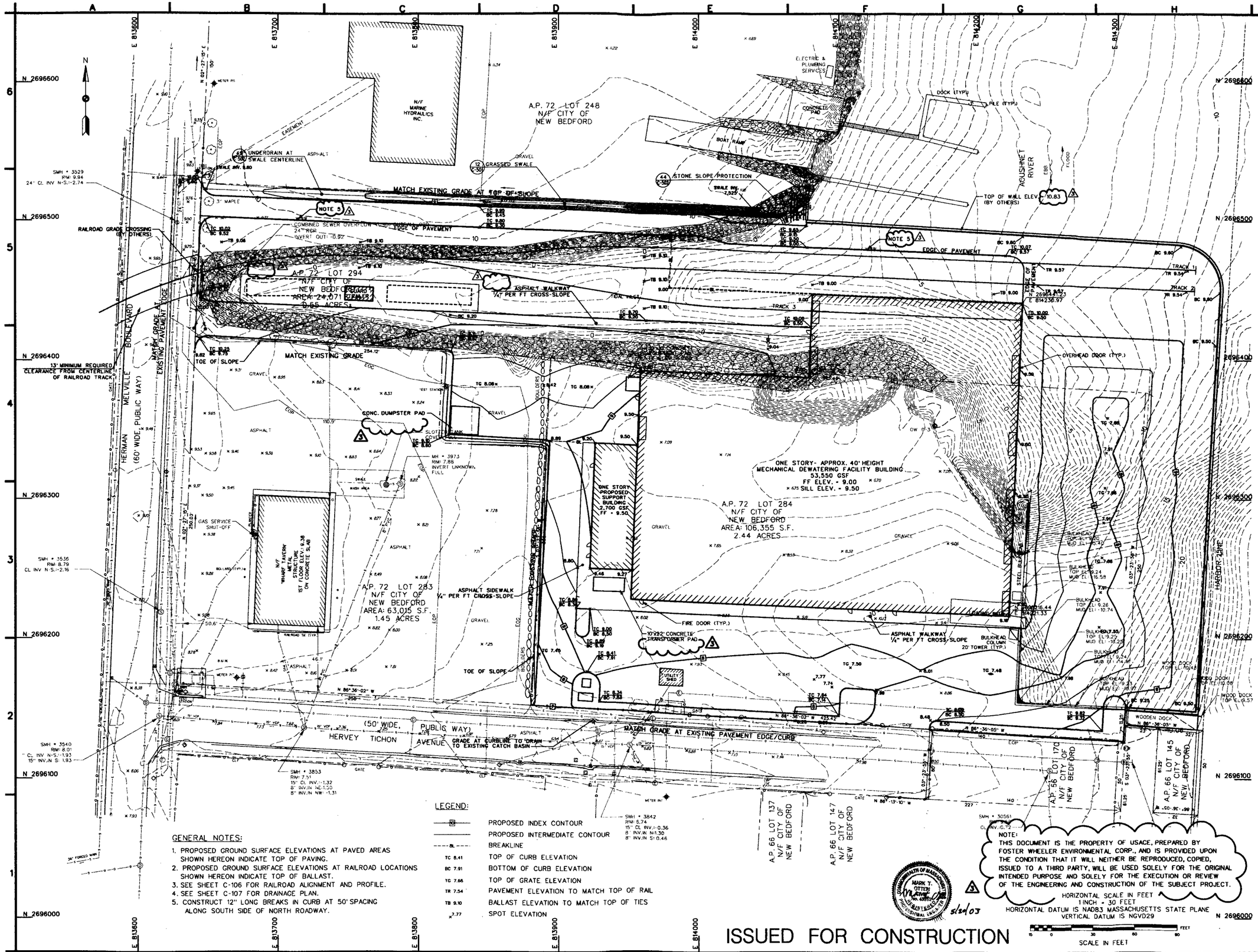
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
SITE PLAN

Reference number:
C-103
Sheet 10 of 43



GENERAL NOTES:

1. PROPOSED GROUND SURFACE ELEVATIONS AT PAVED AREAS SHOWN HEREON INDICATE TOP OF PAVING.
2. PROPOSED GROUND SURFACE ELEVATIONS AT RAILROAD LOCATIONS SHOWN HEREON INDICATE TOP OF BALLAST.
3. SEE SHEET C-106 FOR RAILROAD ALIGNMENT AND PROFILE.
4. SEE SHEET C-107 FOR DRAINAGE PLAN.
5. CONSTRUCT 12" LONG BREAKS IN CURB AT 50' SPACING ALONG SOUTH SIDE OF NORTH ROADWAY.

LEGEND:

	PROPOSED INDEX CONTOUR
	PROPOSED INTERMEDIATE CONTOUR
BL	BREAKLINE
TC 8.41	TOP OF CURB ELEVATION
BC 7.91	BOTTOM OF CURB ELEVATION
TG 7.66	TOP OF GRATE ELEVATION
TR 7.54	PAVEMENT ELEVATION TO MATCH TOP OF RAIL
TB 9.10	BALLAST ELEVATION TO MATCH TOP OF TIES
x 7.77	SPOT ELEVATION

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COMMONWEALTH OF MASSACHUSETTS
MARK T. OTTEN
No. 40811
REGISTERED PROFESSIONAL ENGINEER
5/20/03

HORIZONTAL SCALE IN FEET
1 INCH = 30 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29

15 0 30 60 90 FEET
SCALE IN FEET

ISSUED FOR CONSTRUCTION

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR BID	02/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	09/04/02	M.O.
A	ISSUED FOR USACE REVIEW	03/07/02	

Date: 05/20/03
Rev.: 3
Design file no.: 17209.3-C-104.3.dgn
Drawing code:
File name:
Plot date:
Plot scale:
Plot date:

Designed by: D. MAHER, D. MARTOCCIA
Drawn by: D. MAHER, F. MENCHELLI
Reviewed by: R. OTOSKI
Submitted by: M. OTTEN

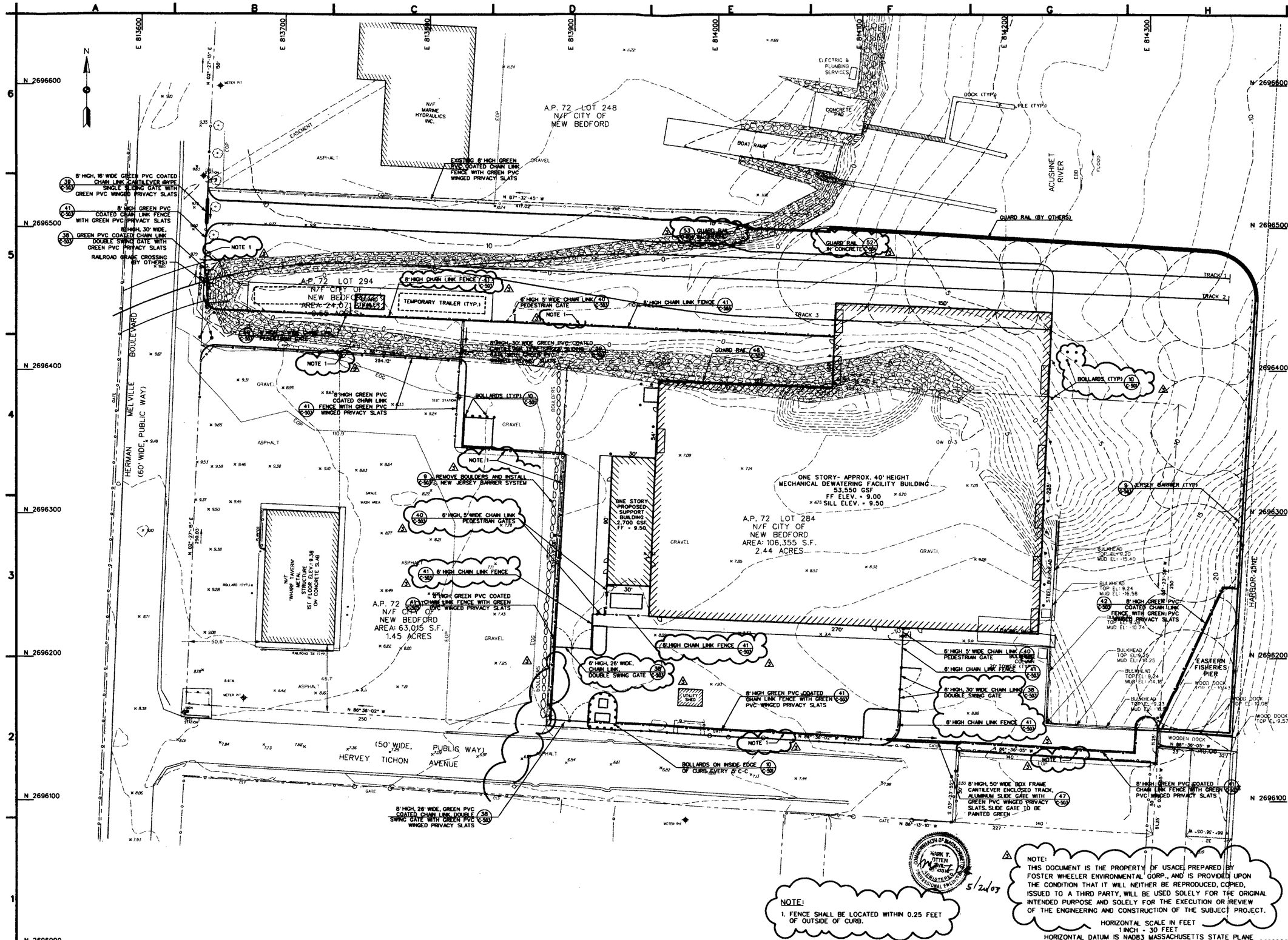
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
SITE GRADING PLAN

Reference number:
C-104
Sheet 11 of 43



NOTE:
1. FENCE SHALL BE LOCATED WITHIN 0.25 FEET OF OUTSIDE OF CURB.

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HORIZONTAL SCALE IN FEET
1 INCH = 30 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29

SCALE IN FEET

COMMONWEALTH OF MASSACHUSETTS
MARK T. OTTEN
No. 43512
REGISTERED PROFESSIONAL ENGINEER
5/22/03

ISSUED FOR CONSTRUCTION

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR BID	02/28/03	M.O.
1	ISSUED FOR 90% SUBMITTAL	12/02/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	09/14/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

Symbol	Description	Date	Appr.

Rev. 3
Date: 05/20/03
Design File no. 172083-C-105.3.DGN
Drawing code:
File name:
Plot date:
Plot scale:

Designed by: D. MANTOGODA
Drawn by: C. POTVIN, F. MENICHELLI
Reviewed by: R. OTOSKI
Submitted by: M. OTTEN

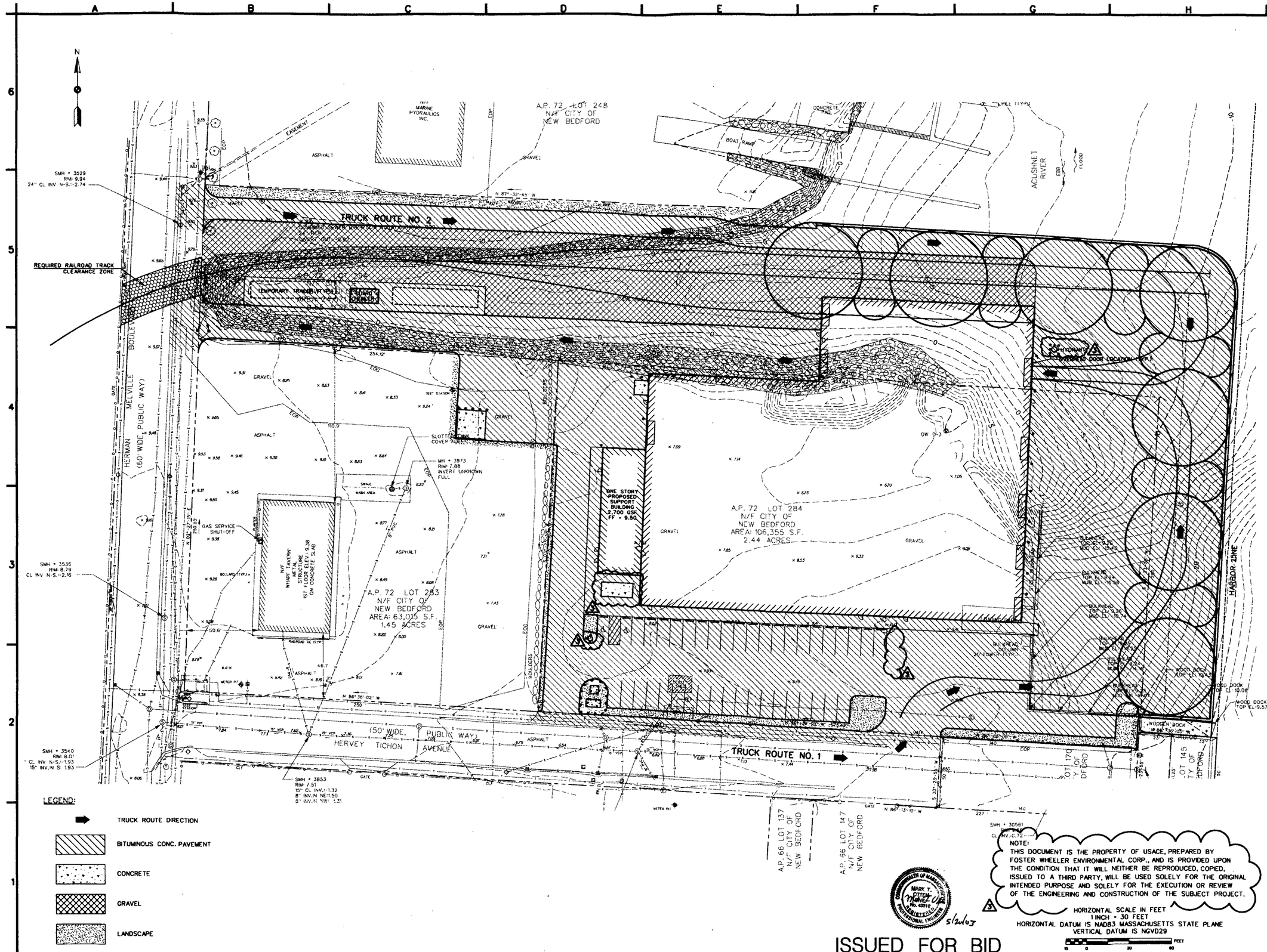
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
40 SHAWMUT ROAD
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D FENCING PLAN

Reference number:
C-105
Sheet 12 of 43



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HORIZONTAL SCALE IN FEET
1 INCH = 30 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29

COMMONWEALTH OF MASSACHUSETTS
MARK T. OTTEN
No. 43816
REGISTERED PROFESSIONAL ENGINEER
5/20/03

ISSUED FOR BID

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR BID	04/18/03	M.O.
1	ISSUED FOR BID	02/28/03	M.O.
0	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.

Designed by: D.MATTOCCIA
Drawn by: C. POTVIN
Reviewed by: R. OTOSO
Submitted by: M. OTTEN
Date: 05/20/03
Rev. 3
Design file no. 172083-C-1122xx.DGN
Drawing code:
File name:
Plot date:
Plot scale:

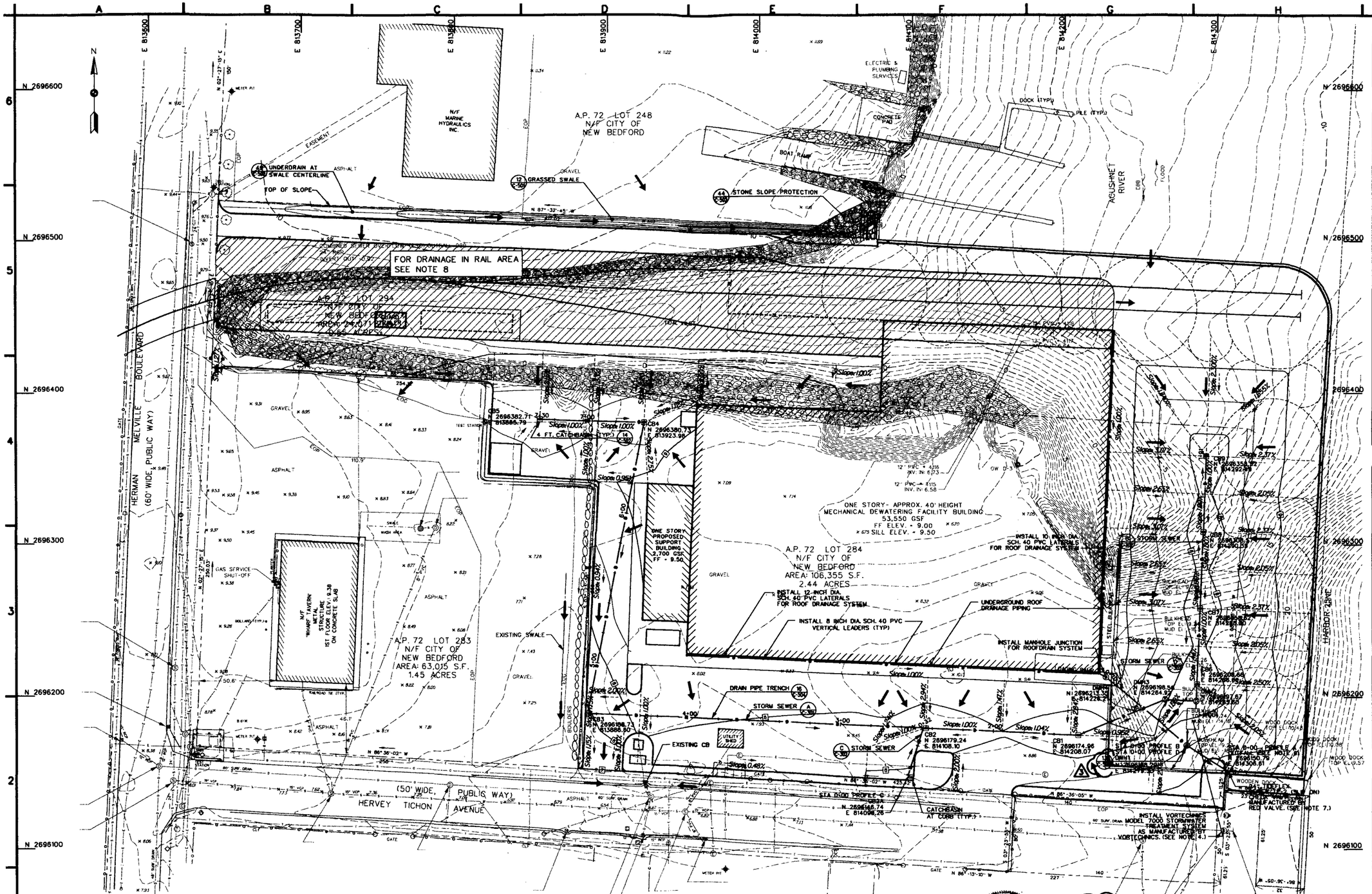
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
1 SPRING STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
TRANSPORTATION ROUTES

Reference number:
C-112
Sheet 14 of 43



DRAINAGE NOTES:

1. SEE SHEET C-104 FOR SITE GRADING PLAN.
2. ALL CATCH BASINS AND MANHOLES SHALL BE 4 FT. DIAMETER UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. MANHOLE AND INLET FRAMES AND GRATES SHALL BE ADJUSTED TO GRADE PRIOR TO PAVING.
4. VORTECHNICS STORMWATER TREATMENT SYSTEM OR ENGINEER APPROVED EQUAL SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. ROOF DRAIN SYSTEM SHALL BE CONNECTED TO LATERAL SUBSURFACE DRAINS ON SOUTH AND EAST SIDE OF BUILDING.
6. FOR OUTFALL PENETRATION THROUGH SHEETPILE SEE SHEET S-1. INVERT ELEVATION SHOWN ON SHEET S-1 IS SUPERCEDED BY THE OUTFALL INVERT ELEVATION ON SHEET C-301. 3
7. TIDEFLEX TF-2 CHECK VALVE OR ENGINEER APPROVED EQUAL REQUIRES A MINIMUM OF 10" OF PIPE BEYOND FACE OF SHEETPILE WALL FOR SLIP-ON APPLICATION. CHECK VALVE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. SEE SHEET S-1 FOR PENETRATION DETAILS.
8. GRADE AT BALLAST IN RAIL AREA IS GENERALLY FLAT WITH LITTLE OR NO SLOPE. STORMWATER RUNOFF IS DESIGNED TO INFILTRATE TO THE SUBSURFACE IN THIS AREA.
9. PIPING USED FOR STORM DRAINAGE SYSTEM IS TO BE SCHEDULE 40 PVC PIPE.
10. MANHOLES SHALL BE LOCATED WITHIN 0.25 FEET OF COORDINATES SHOWN. 3

LEGEND:

SURFACE DRAINAGE FLOW DIRECTION

RAIL CORRIDOR

COMMONWEALTH OF MASSACHUSETTS MARK T. OTTOW No. 43576 REGISTERED PROFESSIONAL ENGINEER 5/24/03

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HORIZONTAL SCALE IN FEET
1 INCH - 30 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29

SCALE IN FEET 15 0 30 60 90 FEET

ISSUED FOR CONSTRUCTION

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	N.O.
2	ISSUED FOR BID	03/28/03	N.O.
1	ISSUED FOR 100% SUBMITTAL	12/02/02	N.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	08/24/02	N.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

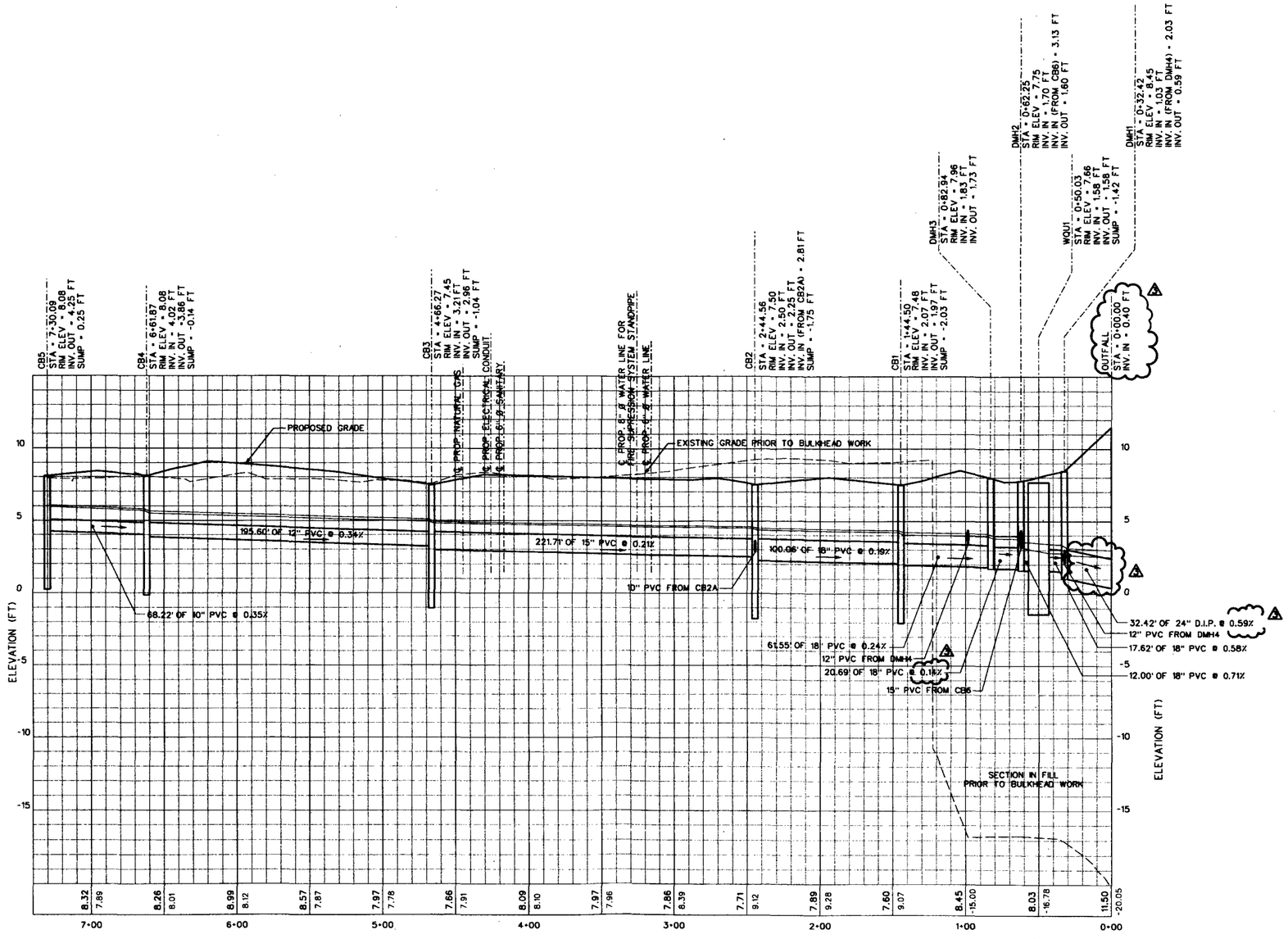
FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

Designed by: D. MAKER, D. MARTOCCIA
Drawn by: C. POTVIN, F. MENICHELLI
Reviewed by: C. COLLET
Submitted by: M. OTTEN
Date: 05/20/03
Design file no.: 172093-C-073
Drawing code:
File name:
Plot date:
Plot scale:
Rev. 3

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
DRAINAGE PLAN

Reference number:
C-107
Sheet 15 of 43



STORM SEWER PROFILE (A / C-107)

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

NOTES:

1. AREAS SHOWN HEREON AS SECTION IN FILL INDICATE PRE-BULKHEAD CONSTRUCTION CONDITIONS. SEE SHEET C-1, SITE PREPARATION PLAN FOR PROPOSED SITE GRADE FOLLOWING INSTALLATION OF CELLULAR BULKHEAD SYSTEM (BY OTHERS).
2. OUTFALL INVERT ELEVATION (STA 0+00) SHOWN ON THIS SHEET SUPERCEDES INVERT ELEVATION ON SHEET S-1.

MARK T. OTTEN No. 42819 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
5/20/03

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HORIZONTAL SCALE IN FEET
1 INCH - 40 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL SCALE IN FEET
1 INCH - 4 FEET

HORIZONTAL SCALE 1"=40'
VERTICAL SCALE 1"=4'

ISSUED FOR CONSTRUCTION

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.	Symbol	Description	Date	Appr.
3	ISSUED FOR REV/CONSTRUCTION	05/20/03	M.O.				
2	ISSUED FOR IBID	03/28/03	M.O.				
1	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.				
0	ISSUED FOR 90% DESIGN SUBMITTAL	06/04/02	M.O.				
A	ISSUED FOR USACE REVIEW	03/01/02					

Date: 05/20/03 Rev. 3
Design file no. 172093-C-301sw.DGN
Drawing code:
File name:
Plot date:
Plot scale:

Designed by: D. MAKER, D. MARTOCCIA
Drawn by: C. POTVIN
Reviewed by: C. COLLET
Submitted by: M. OTTEN

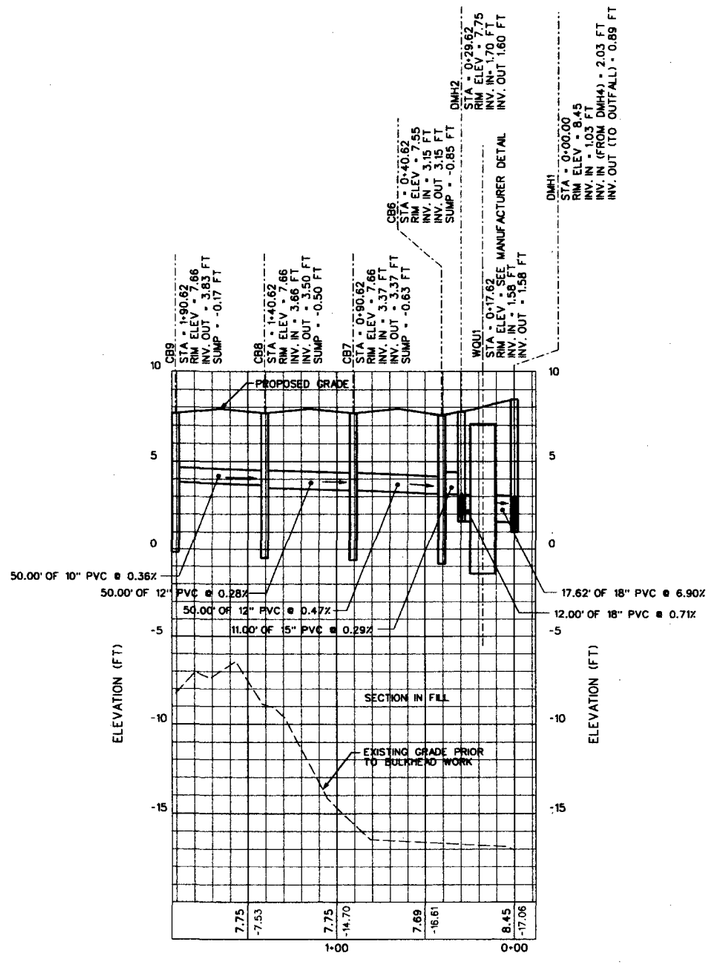
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

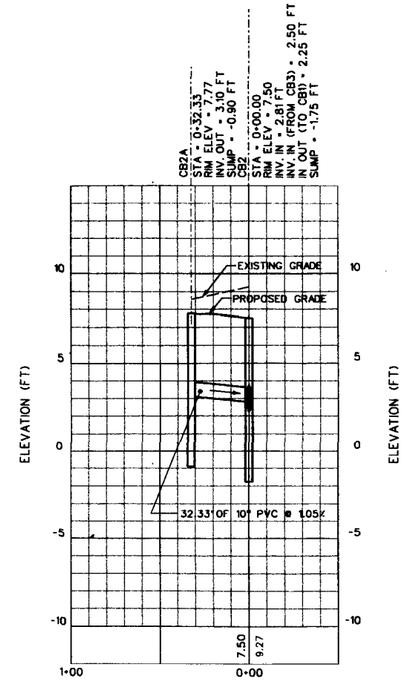
AREA D
STORM SEWER PROFILES
(SHEET 1 OF 2)

Reference number:
C-301
Sheet 16 of 43



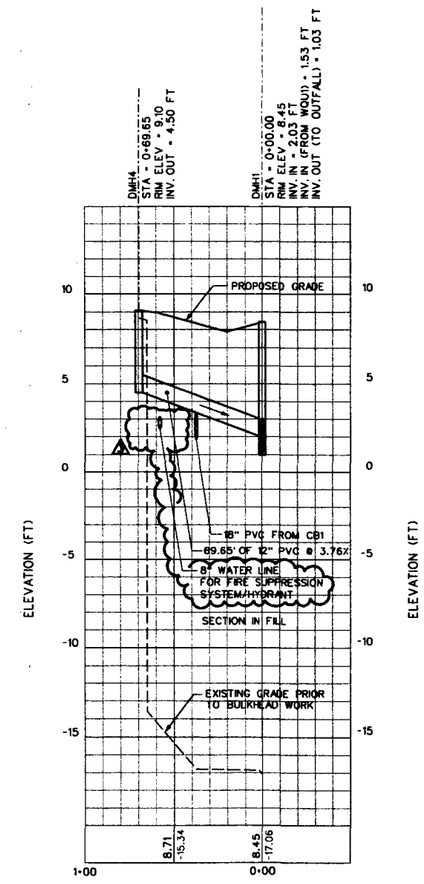
STORM SEWER PROFILE (B / C-107)

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM SEWER PROFILE (C / C-107)

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM SEWER PROFILE (D / C-107)

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

NOTE:
AREAS SHOWN HEREON AS SECTION IN FILL INDICATE PRE-BULKHEAD CONSTRUCTION CONDITIONS. SEE SHEET C-1, SITE PREPARATION PLAN FOR PROPOSED SITE GRADE FOLLOWING INSTALLATION OF CELLULAR BULKHEAD SYSTEM (BY OTHERS).

NOTE:
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ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
MARK T. MOTTEN
CIVIL
No. 43812
REGISTERED PROFESSIONAL ENGINEER
5/20/03

HORIZONTAL SCALE IN FEET
1 INCH = 40 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL SCALE IN FEET
1 INCH = 4 FEET

HORIZONTAL SCALE 1"=40'
20 0 40 80 FEET
2 0 4 8
VERTICAL SCALE 1"=4'

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR IBR/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR IBR	03/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	12/03/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	05/24/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

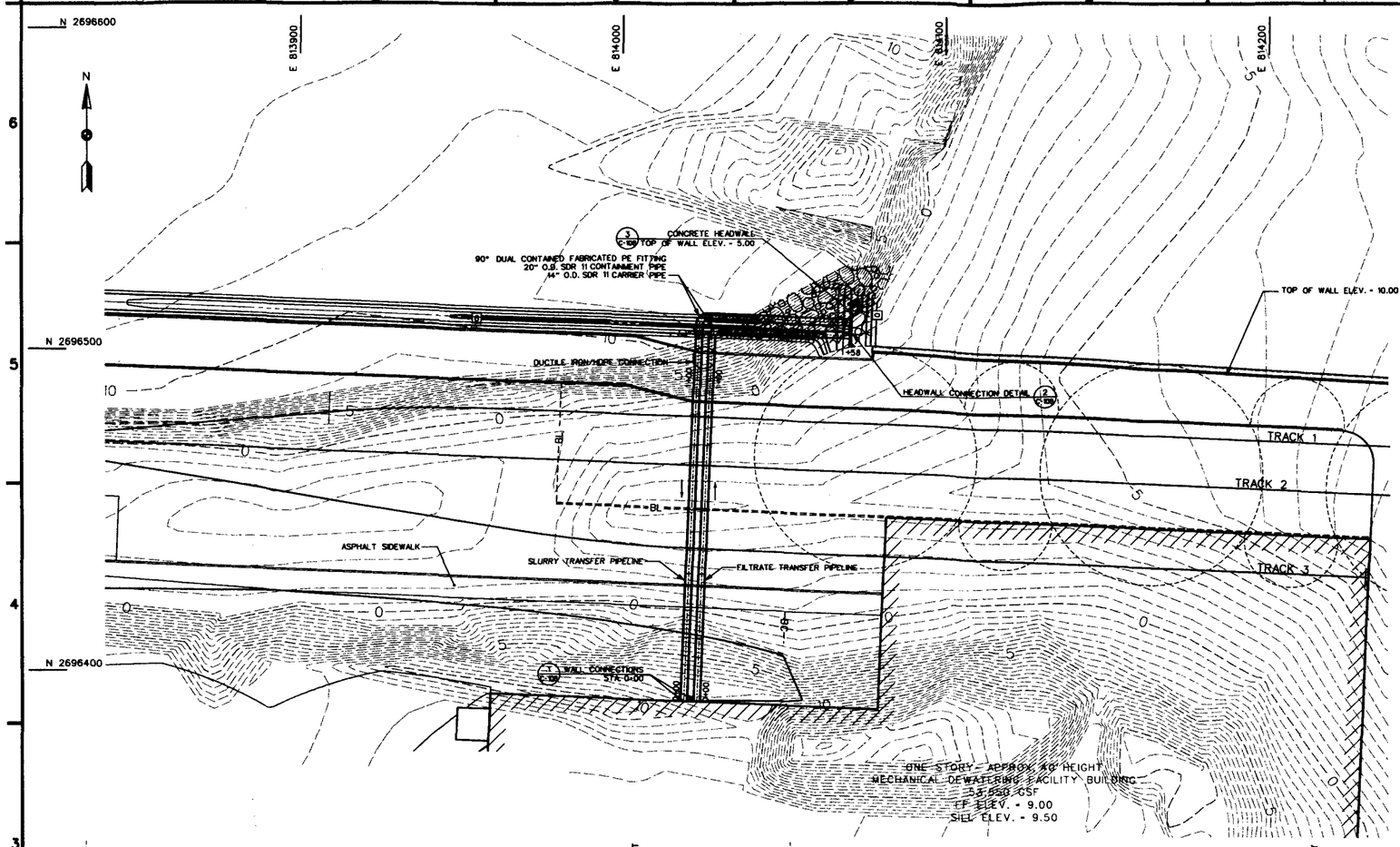
FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

Designed by: D. MAHER, D. MARTOCCIA
Drawn by: C. POTVIN
Reviewed by: C. COLLET
Submitted by: M. OTTEN
Date: 05/20/03
Rev. 3
Design file no. 172063-C-3023xx
Drawing code:
File name:
Plot date:
Plot scale:

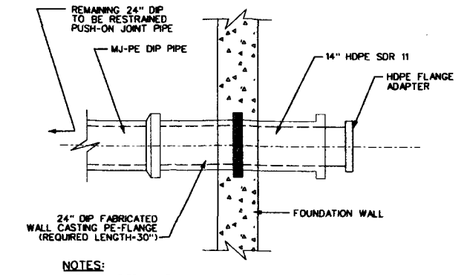
NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
STORM SEWER PROFILES
(SHEET 2 OF 2)

Reference number:
C-302
Sheet 17 of 43



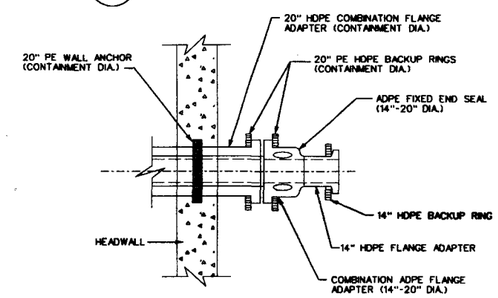
PLAN
SCALE: 1" = 20'



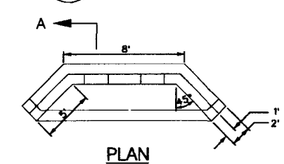
NOTES:

1. FLANGE FITTINGS SHALL CONFORM TO ANSI B16.10, CLASS 125#.
2. MECHANICAL JOINTS SHALL BE RESTRAINED WITH MEGA-LUG 1100SD SERIES.
3. RESTRAINED PUSH-ON TYPE JOINTS SHALL UTILIZE MEGA-LUG 1700 SERIES HARNESS.

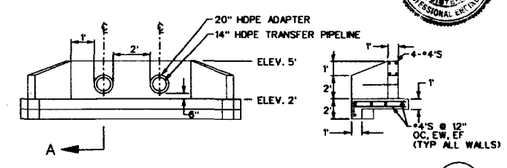
1 / C-108 FOUNDATION WALL CONNECTION DETAIL
NOT TO SCALE



2 / C-108 HEADWALL CONNECTION DETAIL
NOT TO SCALE



PLAN



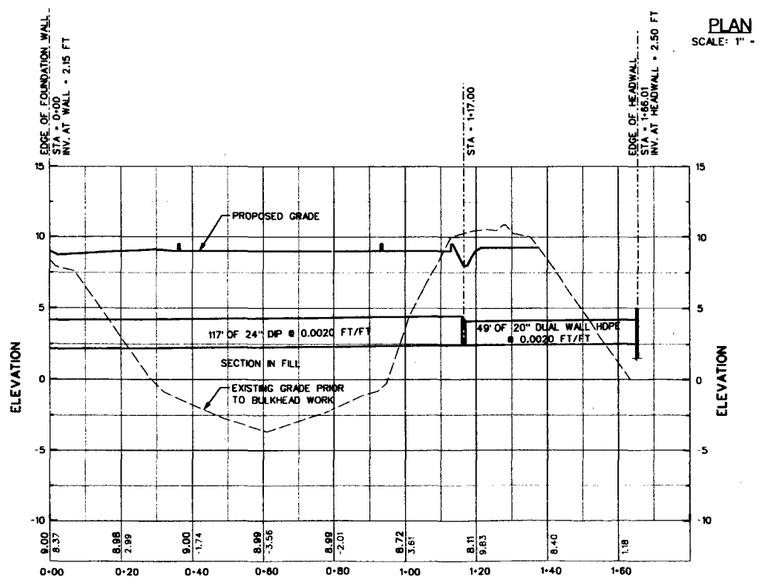
ELEVATION

SECTION A / C-108

3 / C-108 HEADWALL WITH WINGWALLS DETAIL
NOT TO SCALE

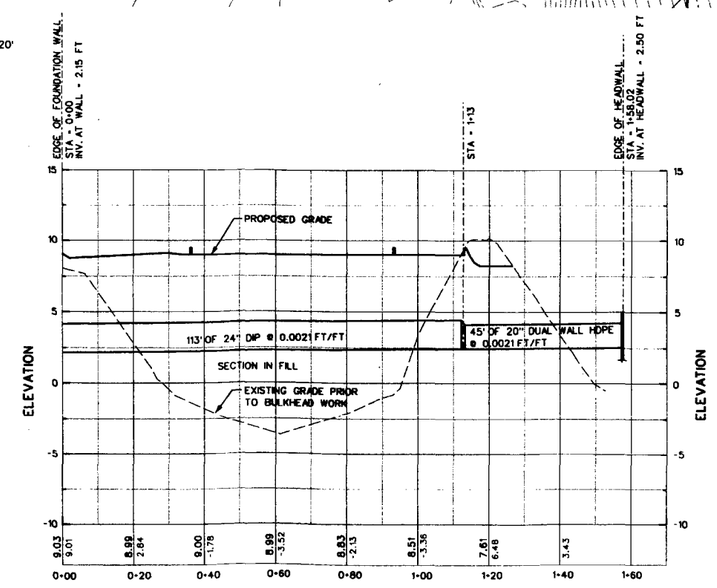
GENERAL NOTES:

1. HDPE PIPE AND FITTINGS SPECIFIED HEREON SHALL BE PLEXCO EXTRA HIGH MOLECULAR WEIGHT/HIGH DENSITY PE 3408, OR EQUIVALENT.
2. DUCTILE IRON MECHANICAL JOINT FITTINGS AND ACCESSORIES SHALL MEET THE APPLICABLE REQUIREMENTS OF ANSI/AWWA C110/A21.10 AND ANSI/AWWA C111/A21.11.
3. DUCTILE IRON PIPE SPECIFIED HEREON SHALL MEET THE APPLICABLE REQUIREMENTS OF ANSI/AWWA C151/A21.51, AND SHALL BE CEMENT LINED IN ACCORDANCE WITH ANSI/AWWA C104/A21.4, SECTION 4.7.2, WITH SEAL COAT IN ACCORDANCE WITH SECTION 4.11. THE CEMENT IN THE MORTAR LINING SHALL CONFORM TO ASTM C150, TYPE V.
4. THE INTERNAL JOINT AREAS COMING INTO CONTACT WITH SEA WATER SHALL BE COATED WITH INDURON PE-54 EPOXY, OR EQUIVALENT.



SLURRY TRANSFER PIPELINE PROFILE
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

NOTE:
AREAS SHOWN HEREON AS SECTION IN FILL INDICATE PRE-BULKHEAD CONSTRUCTION CONDITIONS. SEE SHEET C-1, SITE PREPARATION PLAN FOR PROPOSED SITE GRADE FOLLOWING INSTALLATION OF CELLULAR BULKHEAD SYSTEM (BY OTHERS).



FILTRATE TRANSFER PIPELINE PROFILE
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

ISSUED FOR CONSTRUCTION

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HORIZONTAL SCALE IN FEET
1 INCH = 20 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29
SCALE IN FEET

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	N.O.
2	ISSUED FOR BID	02/28/03	N.O.
1	ISSUED FOR 100% SUBMITTAL	12/02/02	N.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	08/24/02	N.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

Date: 05/20/03 | Rev. 3
Design file no. 172093-C-108.3xx.DGN
Drawing code:
File name:
Plot date:
Plot scale:
Designed by: D. MAHER
Drawn by: C. POTVIN, F. MENICHELLI
Reviewed by: R. OTOSKI
Submitted by: M. OTTEN

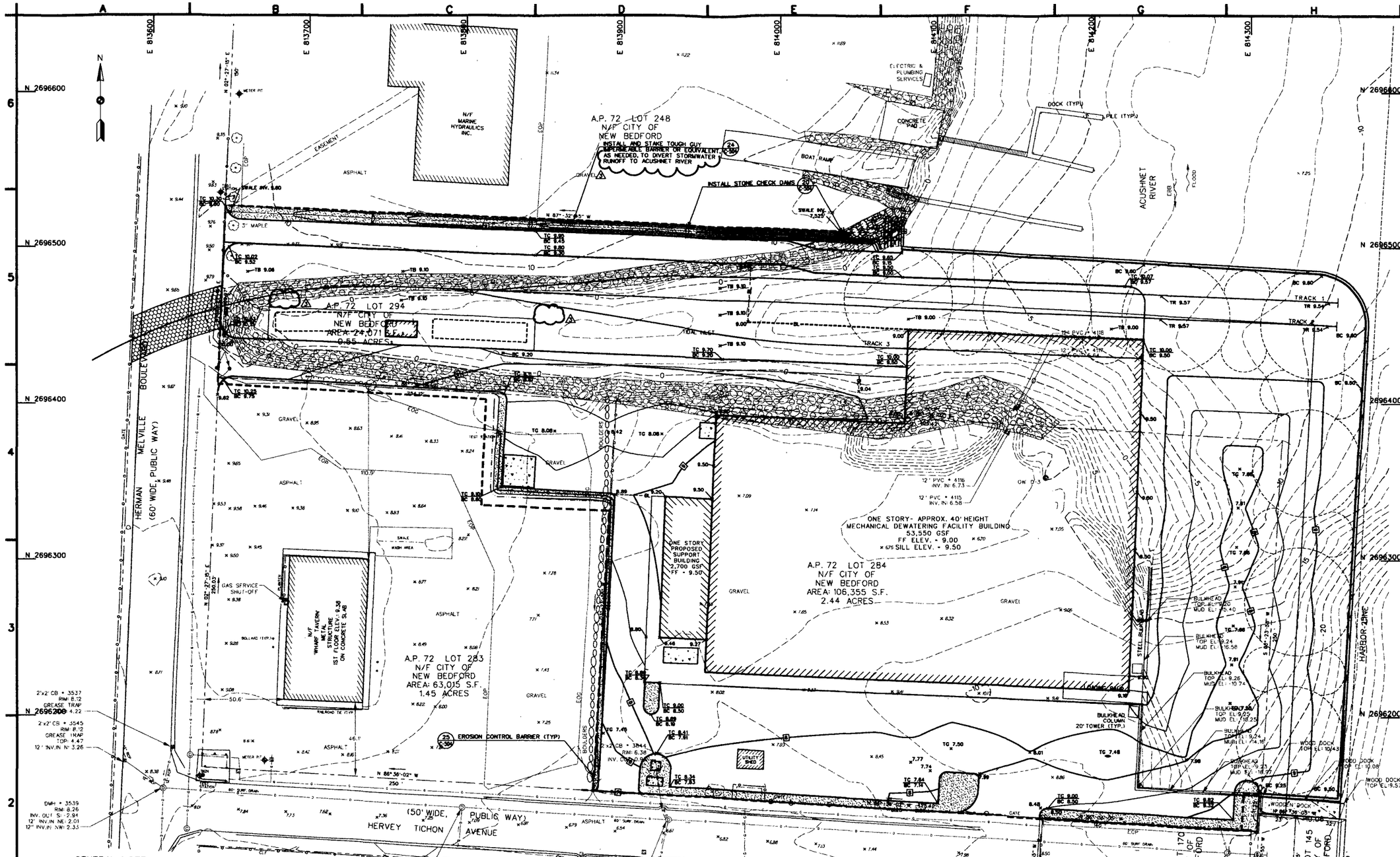
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
TRANSFER PIPELINE PLAN

Reference number:
C-108



GENERAL NOTE:

SOIL EROSION, SEDIMENTATION CONTROL AND STORMWATER MANAGEMENT MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY EARTH MOVING ACTIVITIES.

EROSION CONTROL AND SEDIMENTATION NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING SOIL EROSION AND SEDIMENT CONTROL DURING ALL STAGES OF CONSTRUCTION.
2. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED IN ACCORDANCE WITH THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MADEP) BEST MANAGEMENT PRACTICES.
3. ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES (E.G SILT FENCING, IMPERMEABLE BARRIERS) SHALL BE INSPECTED AND MAINTAINED DAILY.
4. ANY DISTURBED AREA THAT WILL BE LEFT EXPOSED FOR MORE THAN THIRTY (30) DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PROHIBITS TEMPORARY SEEDING, THE DISTURBED AREA WILL BE MULCHED WITH STRAW OR HAY OR AND TACKED IN ACCORDANCE WITH THE MADEP.
5. THE SITE SHALL AT ALL TIMES BE GRADED AND MAINTAINED SO THAT ALL STORM WATER RUNOFF IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES.
6. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED UNTIL THE SURFACE IS WET.
7. ALL SOIL WASHED, DROPPED, SPILLED OR TRACKED INTO A PUBLIC RIGHT-OF-WAY WILL BE REMOVED IMMEDIATELY.
8. CONTRACTOR TO DISTURB ONLY THOSE AREAS DESIGNATED ON THE DRAWINGS OR AS REQUIRED TO PERFORM THE CONSTRUCTION.
9. PAVED ROADWAYS AND DRIVEWAYS SHALL BE KEPT CLEAN AT ALL TIMES.
10. IMPERMEABLE BARRIERS SHALL BE INSTALLED, AS NEEDED, TO DIVERT STORMWATER SURFACE RUNOFF FROM ENTERING THE SITE DURING CONSTRUCTION ACTIVITIES.
11. SHOULD CONDITIONS ARISE IN THE FIELD WHICH RENDER THE EROSION AND SEDIMENTATION CONTROLS FOR THIS PROJECT INAPPROPRIATE OR INADEQUATE, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER. ADDITIONAL DRAWINGS OR MODIFICATIONS, WHEN REQUIRED, WILL BE FURNISHED BY THE CONTRACTOR AND WILL BECOME PART AND A CONDITION OF THE EROSION AND SEDIMENTATION CONTROL PLAN UPON APPROVAL BY THE REVIEWING AGENCY.

LEGEND:

EROSION CONTROL BARRIER

COMMONWEALTH OF MASSACHUSETTS
MARK T. OTTEN
No. 45312
REGISTERED PROFESSIONAL ENGINEER
5/20/03

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HORIZONTAL SCALE IN FEET
1 INCH = 30 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29

SCALE IN FEET

ISSUED FOR CONSTRUCTION

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR BID	03/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	08/01/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

Symbol	Description	Date	Appr.

Rev. 3

Initial 05/20/03

Design file no. 17293-C-1093xx.DGN

Drawing code: RD

File name
Plot date
Plot model

Designed by: D. MATTOCCIA

Drawn by: F. MENCHELLI

Reviewed by: R. OTOSKI

Submitted by: M. OTTEN

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN
AREA D
SOIL EROSION AND SEDIMENTATION CONTROL PLAN

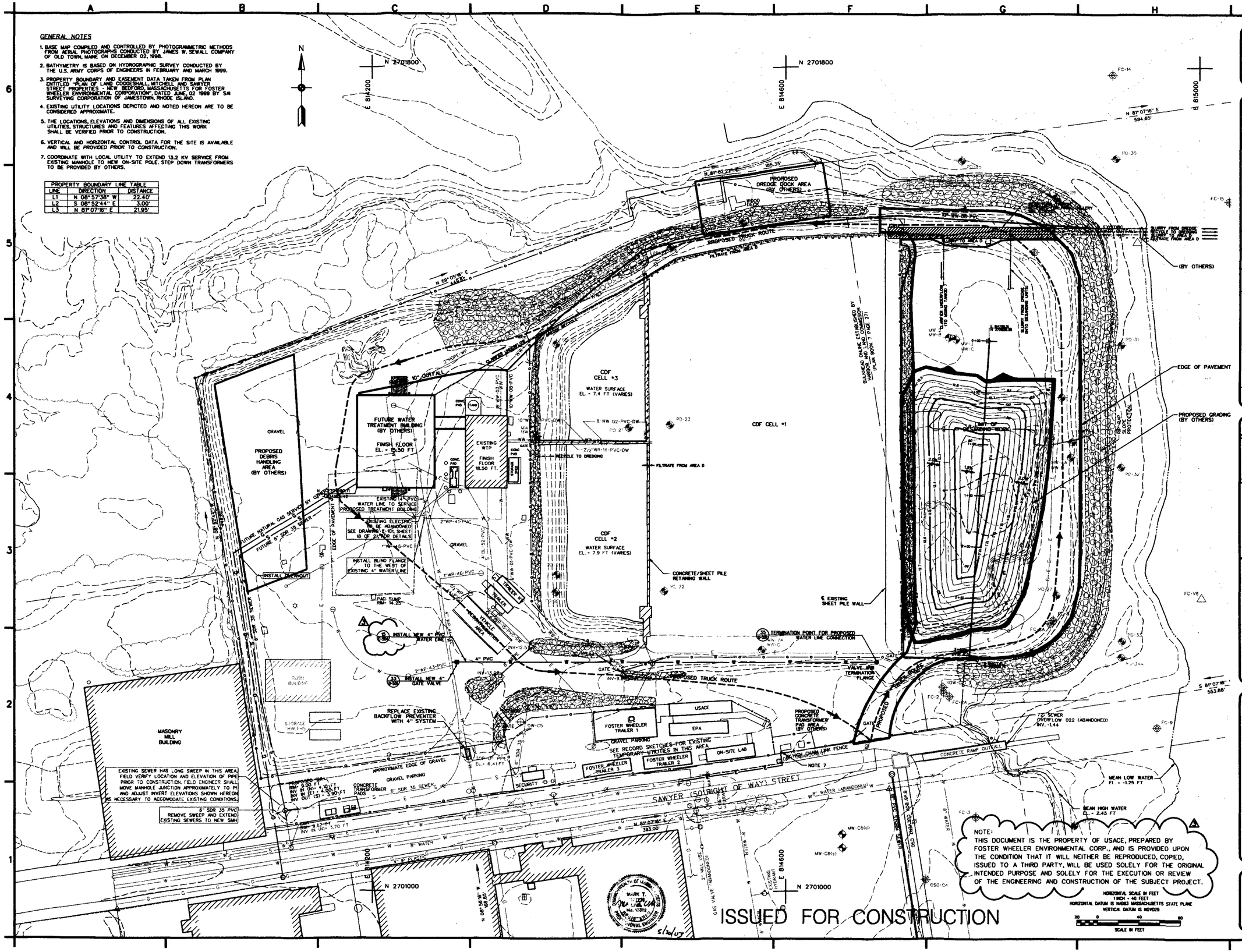
Reference number:
C-109

Sheet 19 of 43

GENERAL NOTES

1. BASE MAP COMPILED AND CONTROLLED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS CONDUCTED BY JAMES W. SEWALL COMPANY OF OLD TOWN, MAINE ON DECEMBER 02, 1998.
2. BATHYMETRY IS BASED ON HYDROGRAPHIC SURVEY CONDUCTED BY THE U.S. ARMY CORPS OF ENGINEERS IN FEBRUARY AND MARCH 1999.
3. PROPERTY BOUNDARY AND EASEMENT DATA TAKEN FROM PLAN ENTITLED "PLAN OF LAND COGGESHALL, MITCHELL AND SAWYER STREET PROPERTIES - NEW BEDFORD, MASSACHUSETTS FOR FOSTER WHEELER ENVIRONMENTAL CORPORATION", DATED JUNE, 02 1999 BY SAI SURVEYING CORPORATION OF JAMESTOWN, RHODE ISLAND.
4. EXISTING UTILITY LOCATIONS DEPICTED AND NOTED HEREON ARE TO BE CONSIDERED APPROXIMATE.
5. THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES AND FEATURES AFFECTING THIS WORK SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
6. VERTICAL AND HORIZONTAL CONTROL DATA FOR THE SITE IS AVAILABLE AND WILL BE PROVIDED PRIOR TO CONSTRUCTION.
7. COORDINATE WITH LOCAL UTILITY TO EXTEND 13.2 KV SERVICE FROM EXISTING MANHOLE TO NEW ON-SITE POLE. STEP DOWN TRANSFORMERS TO BE PROVIDED BY OTHERS.

PROPERTY BOUNDARY LINE TABLE		
LINE	DIRECTION	DISTANCE
L1	N 08°57'38" W	22.40'
L2	S 08°52'44" E	3.00'
L3	N 81°07'16" E	21.95'



NOTE:
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HORIZONTAL SCALE IN FEET
1 INCH = 40 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29
SCALE IN FEET

ISSUED FOR CONSTRUCTION

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.	Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	N.O.				
2	ISSUED FOR 90%	03/28/03	N.O.				
1	ISSUED FOR 100% SUBMITTAL	12/02/02	N.O.				
0	ISSUED FOR 90% DESIGN SUBMITTAL	10/24/02	N.O.				
A	ISSUED FOR USACE REVIEW	03/01/02					

Rev. 3
Date: 05/20/03
Design file no. 172083-C-110Rev.DGN
Drawing code:
File name: 172083-C-110
File number

Designed by: J. FRANCIS
Drawn by: C. POTVIN, F. MENICHELLI
Reviewed by: R. OTTSEN
Submitted by: M. OTTEN

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

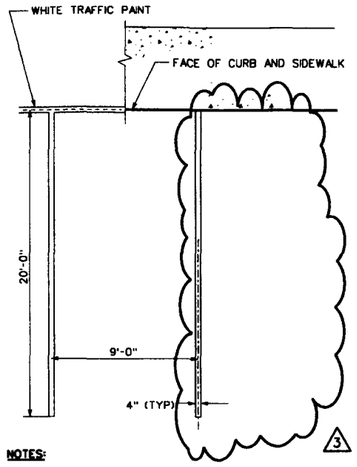
FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA C DESANDING FACILITIES SITE PLAN

Reference number:
C-110

Sheet 20 of 43

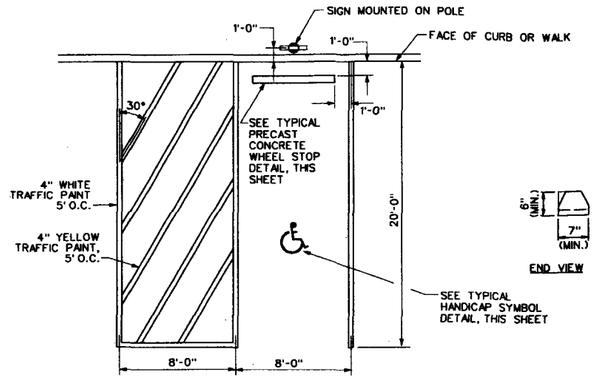


NOTES:

1. PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02763 PAVEMENT MARKINGS.

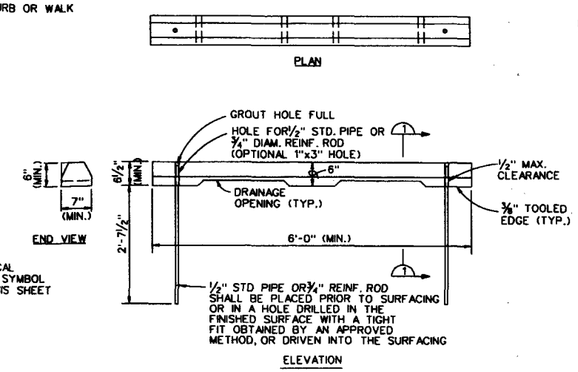
3

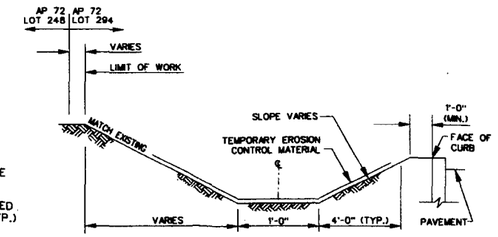
1 / C-103 TYPICAL PARKING SPACE DETAIL
NOT TO SCALE



NOTE:
HANDICAP PARKING SPACES SHALL INCLUDE SIGNAGE IN ACCORDANCE WITH 521 CMR 23.6

2 / C-103 TYPICAL HANDICAP PARKING SPACE DETAIL
NOT TO SCALE

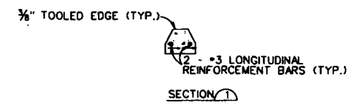




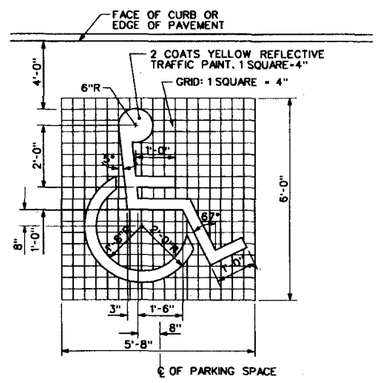
NOTES:

1. LIMIT OF WORK SHALL NOT EXTEND BEYOND PROPERTY LINE.
2. BOTTOM OF CHANNEL SLOPE VARIES BETWEEN 0.005 FT/FT- 0.007 FT/FT.
3. SEE SPECIFICATIONS FOR SEEDING REQUIREMENTS.

12 / C-104 TYPICAL GRASSED SWALE DETAIL
NOT TO SCALE



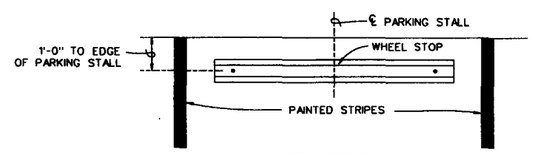
SECTION 1



NOTES:

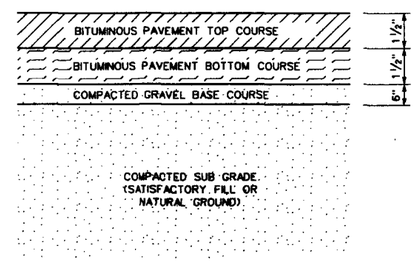
1. INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE IN ACCORDANCE WITH 521 CMR 41.7, SYMBOLS OF ACCESSIBILITY.
2. PAINT MARKINGS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02763 PAVEMENT MARKINGS

5 / C-103 TYPICAL HANDICAP SYMBOL DETAIL
NOT TO SCALE



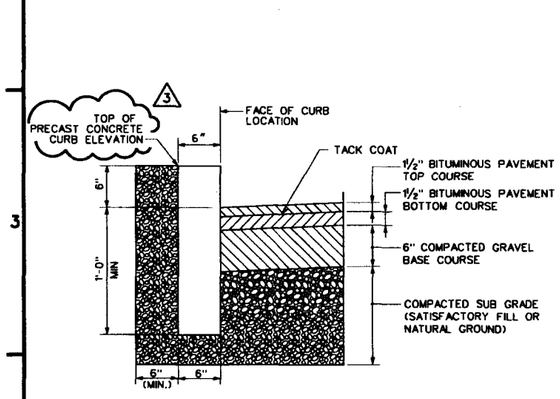
NOTE:
CONCRETE TO BE MINIMUM 3000 PSI PRECAST CONCRETE

3 / C-103 TYPICAL PRECAST CONCRETE WHEEL STOP
NOT TO SCALE



NOTE:
REFER TO TECHNICAL SPECIFICATIONS, APPENDIX I, FINAL IMPLEMENTATION PLAN FOR PLACEMENT AND COMPACTION OF COMMON FILL.

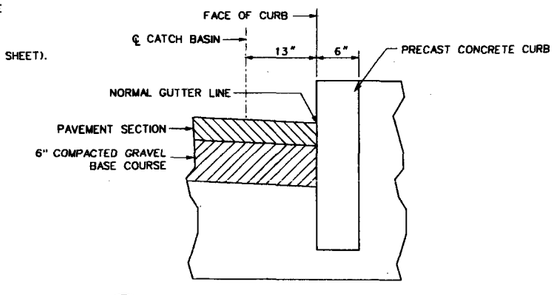
6 / C-103 TYPICAL BITUMINOUS CONCRETE PAVEMENT
NOT TO SCALE



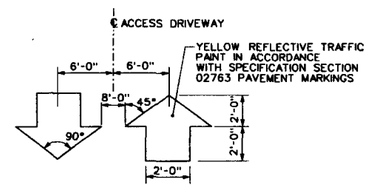
INSTALLATIONS NOTES:

1. CONCRETE CURB MATERIAL AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 501 OF THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
2. SEE TYPICAL PAVEMENT SECTION FOR PAVEMENT SECTION DETAILS (THIS SHEET).
3. APPLICABLE ONLY IF CURB IS TO BE SET AFTER BASE AND/OR BINDER COURSES ARE IN PLACE. CUT NEAT LINE 6" FROM CURB LINE AND REMOVE BINDER, BASE AND STONE, REPLACE WITH CEMENT CONCRETE.

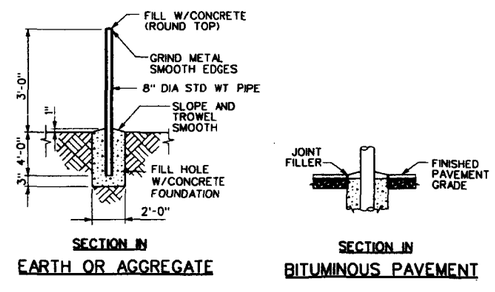
4 / C-103 TYPICAL VERTICAL CURB DETAIL
NOT TO SCALE



7 / C-107 TYPICAL LOCATION OF CATCH BASIN AT VERTICAL CURB
NOT TO SCALE



11 / C-103 TYPICAL TRAFFIC ARROWS DETAIL
NOT TO SCALE



NOTES:

1. BOLLARD TO BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER AND TWO COATS OF EXTERIOR HIGH GLOSS ENAMEL COLOR YELLOW TO MATCH FED STD 595 CHIP NO. 13538.
2. CONCRETE TO HAVE A 28-DAY COMPRESSION STRENGTH OF 3000 PSI.
3. PLACE BOLLARD 2 FEET (MIN.) FROM LIMITS OF WALK/DRIVEWAYS OR AS INDICATED ON PLANS.
4. STEEL PIPE SHALL BE GALVANIZED (2.002.ZINC/SQ.FT.) AND HAVE MINIMUM WALL THICKNESS OF 0.322 INCHES.

10 / C-103 TYPICAL BOLLARD DETAIL
NOT TO SCALE

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COMMONWEALTH OF MASSACHUSETTS MARK T. OTTEN No. 43112 REGISTERED PROFESSIONAL ENGINEER
5/20/03

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR IBID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR IBID	02/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	12/03/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	10/24/02	M.O.
A	ISSUED FOR USACE REVIEW	10/01/02	Initials

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Rev. 3
Sorted 05/20/03
Design file no. 172083-C-501Sht.DGN
Drawing code:
File name: Plot scale: Plot center:

Designed by D. MAKER
Drawn by F. ABBOUELLE, C. ROTHM
Reviewed by R. OTTEN
Submitted by R. OTTEN & OTTEN

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP. 133 FEDERAL STREET BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

DETAILS
(SHEET 1 OF 4)

Reference number:
C-501
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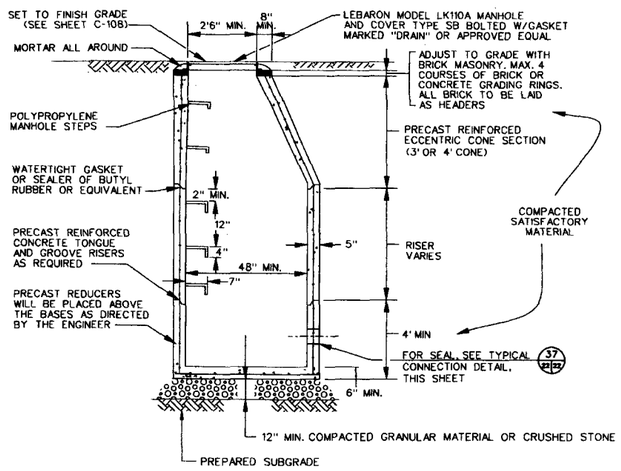
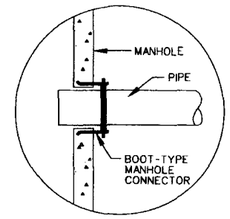
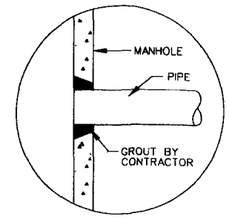


13 C-107 PRECAST CONCRETE DRAIN MANHOLE
NOT TO SCALE



CONNECTION "A"

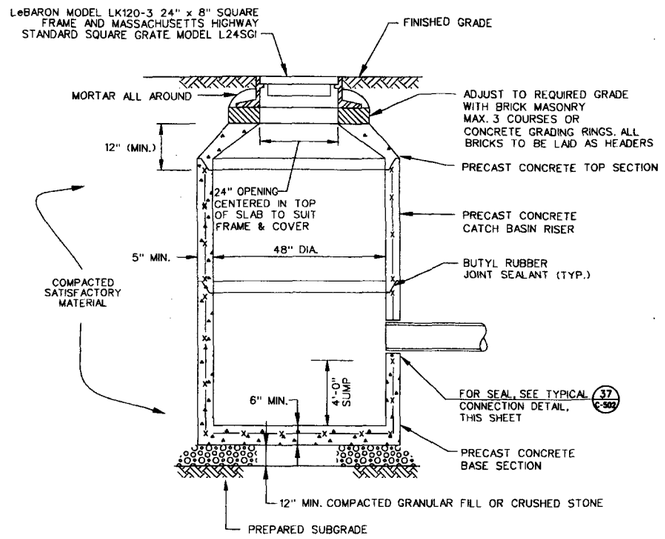


CONNECTION "B"

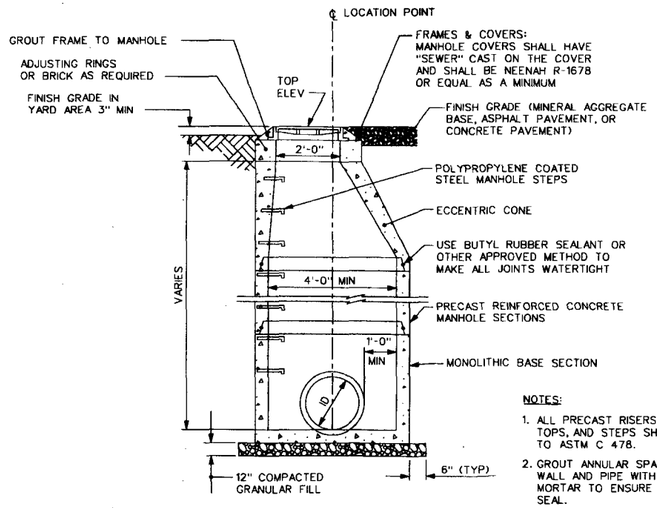
NOTES:

1. STEEL REINFORCING TO MEET OR EXCEED H20 LOADING.
2. CATCH BASIN EXCAVATION TO BE BACKFILLED WITH COMPACTED SATISFACTORY MATERIAL.
3. PRECAST SECTIONS TO MEET ASTM C 478.
4. CONNECTION "A" SHALL BE USED AT ALL PIPE CONNECTIONS UNLESS DIMENSIONAL/MANUFACTURING CONSTRAINTS EXIST, THEN USE CONNECTION "B".
5. KNOCKOUT FOR PIPES MIN. 4" FROM TOP AND BOTTOM OF RISERS.
6. CONCRETE - 4000 PSI MINIMUM CEMENT PER ASTM C-478.
7. MANHOLE STEPS - POLYPROPYLENE COATED GRADE 60 REINFORCING BAR, PER ASTM C-478 & O.S.H.A. (STD 1-1.9).
8. BUTYL RUBBER JOINT SEALANT PER ASTM C-990 AASHTO M-198.

37 U-101 TYPICAL CONNECTION DETAIL
NOT TO SCALE



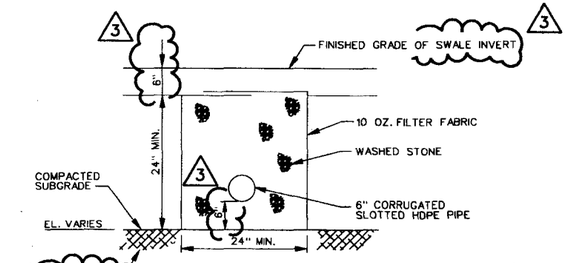
14 C-107 TYPICAL PRECAST CATCH BASIN
NOT TO SCALE



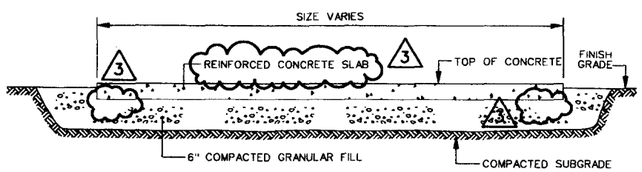
NOTES:

1. ALL PRECAST RISERS, CONES, BASES, TOPS, AND STEPS SHALL CONFORM TO ASTM C 478.
2. GROUT ANNULAR SPACE BETWEEN WALL AND PIPE WITH NON-SHRINK MORTAR TO ENSURE WATERTIGHT SEAL.

45 U-101 PRECAST REINFORCED CONCRETE SEWER MANHOLE
NOT TO SCALE



49 C-107 TYPICAL UNDERDRAIN DETAIL
NOT TO SCALE

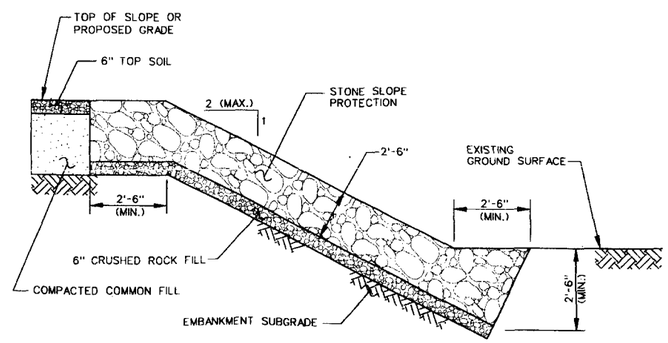


48 C-103 TYPICAL CONCRETE PAD
NOT TO SCALE

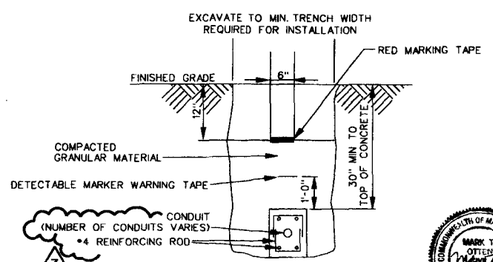
NOTES:

1. CONCRETE DUMPSTER PAD - 4,000 psi CONCRETE: 10" THICK SLAB WITH #4@12" EW, TOP AND BOTTOM.
2. EQUIPMENT PAD - 4,000 psi CONCRETE: 10" THICK SLAB WITH #4@6" EW, TOP AND BOTTOM.
3. TRANSFORMER PAD - 4,000 psi CONCRETE: 12" THICK SLAB WITH #5@6" EW, TOP AND BOTTOM.
4. TOP OF CONCRETE PAD ELEVATIONS SHALL BE 6" ABOVE FINISHED GRADE

3



44 C-104 STONE SLOPE PROTECTION
NOT TO SCALE



18 U-101 TYPICAL CONDUIT DUCT BANK
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
MARK T. OTTEN
No. 43312
REGISTERED PROFESSIONAL ENGINEER
5/20/03

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Drawn by: F. MENCHELLI & THATCH
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Submitted by: M. OTTEN

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CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

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DESANDING AND DEWATERING FACILITIES DESIGN

DETAILS
(SHEET 2 OF 4)

Reference number:
C-502

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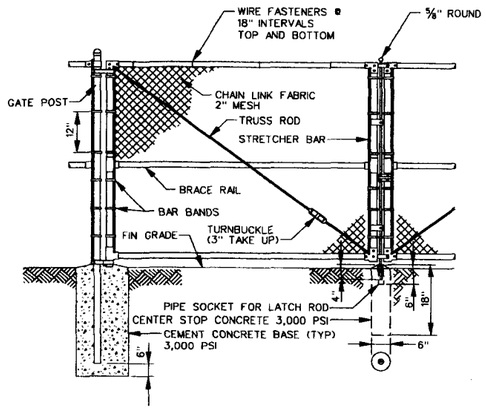


NOTES:

1. TUBULAR GATE POSTS

	STEEL	ALUMINUM
* SINGLE GATE OPENING UP TO 6'	4" NOM. O.D.	3" NOM. O.D.
DOUBLE GATE OPENING UP TO 12'	4" NOM. O.D.	3" NOM. O.D.
* SINGLE GATE OPENING 7' TO 13'	4" NOM. O.D..	4" NOM. O.D..
DOUBLE GATE OPENING 13' TO 26'	4" NOM. O.D.	4" NOM. O.D.
* SINGLE GATE OPENING 14' TO 18'	4" NOM. O.D.	6" NOM. O.D.
DOUBLE GATE OPENING 27' TO 36'	4" NOM. O.D.	6" NOM. O.D.

2. GATE FRAMES & BRACES

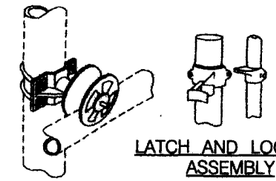
	STEEL	ALUMINUM
SINGLE GATE FRAME UP TO 6'	1.9" NOM. O.D.	2" NOM. O.D.
SINGLE GATE FRAME OVER 6'	2" NOM. O.D.	2" NOM. O.D.

3. TRUSS RODS DIAMETER

STEEL	ALUMINUM
3/8"	3/8"

4. CHAIN LINK FABRIC FOR GATES TO BE THE SAME AS REQUIRED FOR FENCE.
5. FOR DESCRIPTION, MATERIALS AND CONSTRUCTION METHODS, SEE STANDARD SPECIFICATIONS.
6. WHERE SPECIFIED, GATES TO HAVE GREEN PVC WINGED PRIVACY SLATS.
7. GATES TO BE CONSTRUCTED AS PER SECTION 02821 OF SPECIFICATION
8. SWING GATES TO HAVE GATE STOPS.

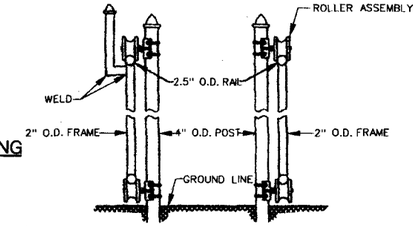
38 / C-105 TYPICAL DOUBLE SWING GATE FENCE DETAIL
NOT TO SCALE



LATCH AND LOCKING ASSEMBLY

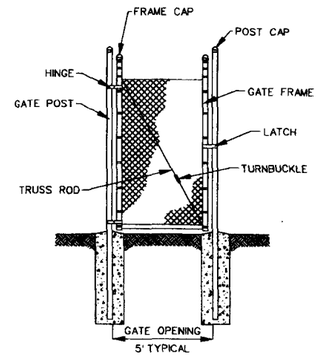
WHEEL EQUIPPED WITH ROLLER BEARINGS AND LUBRICATION FITTING.
MASSIVE MALLEABLE CONSTRUCTION.
4 ASSEMBLIES NEEDED PER SECTION.

ROLLER ASSEMBLY

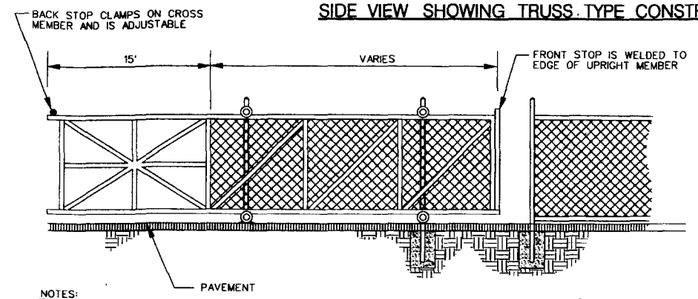


SPECIFICATIONS OF GATE FRAME
TOP AND BOTTOM MEMBER.....2.5" O.D. PIPE
UPRIGHT MEMBERS.....2" O.D. PIPE
HORIZONTAL AND DIAGONAL BRACES....1.5" O.D. PIPE

SIDE VIEW SHOWING TRUSS TYPE CONSTRUCTION



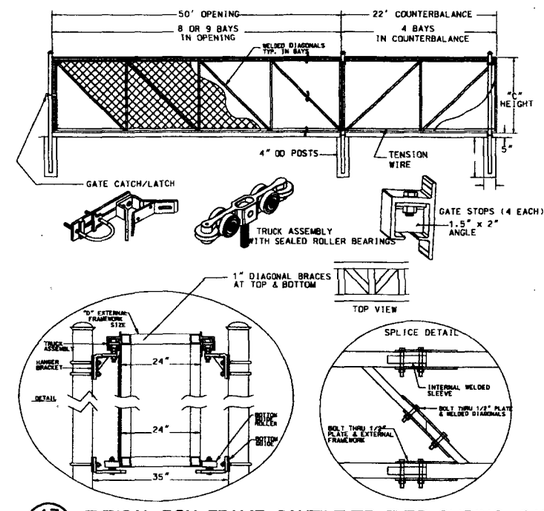
40 / C-105 SINGLE PEDESTRIAN GATE DETAIL
NOT TO SCALE



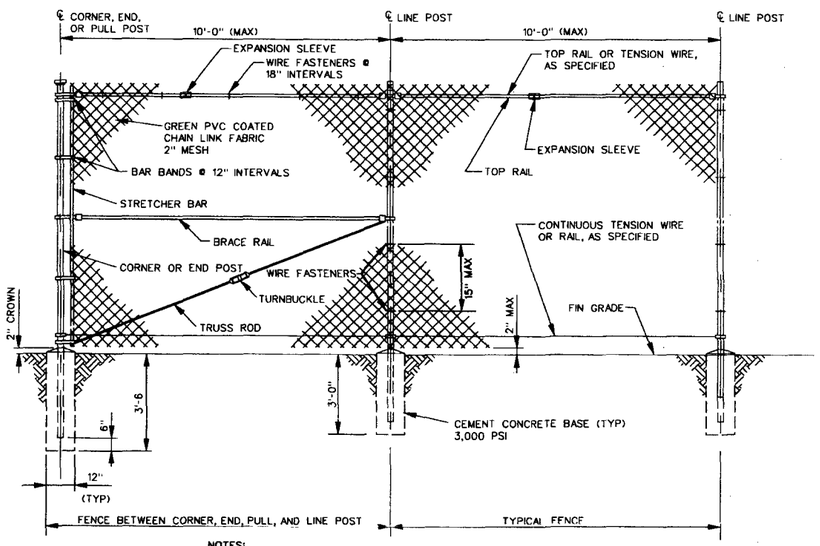
NOTES:

1. WHERE SPECIFIED, GATES TO HAVE WINGED GREEN PVC PRIVACY SLATS.
2. GATES TO BE CONSTRUCTED AS PER SECTION 02821 OF SPECIFICATION.

39 / C-105 TYPICAL SINGLE CANTILEVER TYPE SLIDING GATE
NOT TO SCALE



47 / C-105 TYPICAL BOX FRAME CANTILEVER TYPE SLIDING GATE
NOT TO SCALE

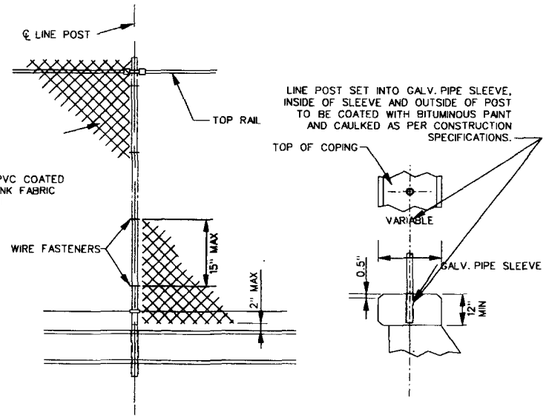


NOTES:

1. WHERE SPECIFIED, GATES TO HAVE WINGED GREEN PVC PRIVACY SLATS.
2. WHERE SPECIFIED, CHAIN LINK FABRIC TO BE GREEN PVC COATED.
3. THE HEIGHT OF THE FENCE TO BE AS INDICATED ON SHEET C-106.
4. GRADE OF FENCE TO BE PARALLEL WITH THE GRADE OF SIDEWALKS, CURBING, GROUND OR TOP OF WALL.
5. LINE POSTS TO BE SPACED 10' CENTER TO CENTER MAXIMUM EXCEPT ON CURVES WHERE THEY SHALL BE SPACED AS FOLLOWS:
   CURVES 200' TO 500' RADIUS
   CURVES 100' TO 200' RADIUS
   CURVES LESS THAN 100' RADIUS
6. FOR DESCRIPTION, MATERIALS, AND CONSTRUCTION METHODS, SEE SPECIFICATION SECTION 02821 CHAIN LINK FENCE.

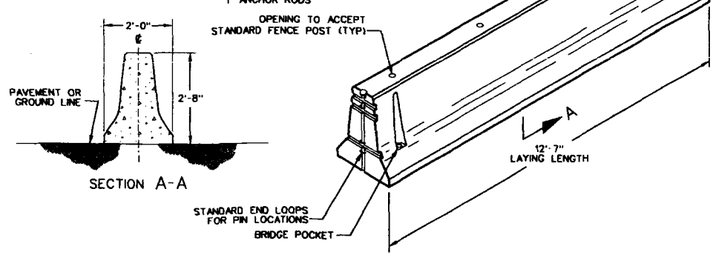
3

41 / C-105 TYPICAL FENCE ON GROUND DETAIL
NOT TO SCALE

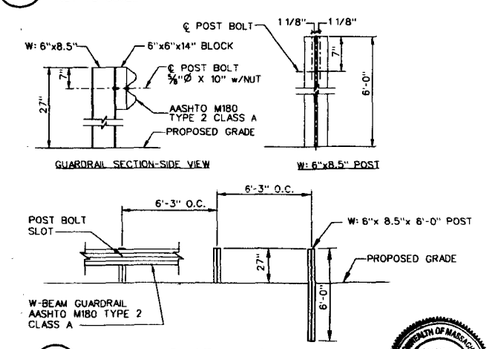


42 / C-105 TYPICAL FENCE ON CONCRETE DETAIL
NOT TO SCALE

SPECIFICATIONS:
APPROXIMATE WEIGHT PER PANEL:6100 LB.
LAYING LENGTH PER PANEL: 12'-7"
END LOOPS ACCEPT 1" CONNECTING PINS
BRIDGE POCKETS HAVE 1 1/4" HOLES FOR 1" ANCHOR RODS



9 / C-105 PORTABLE PRECAST CONCRETE BARRIER RAIL DETAIL
NOT TO SCALE



46 / C-105 TYPICAL GUARD RAIL DETAIL
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US Army Corps of Engineers New England District

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Date: 05/20/03
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Plot date:
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Designed by: D. MATTOCCIA, D. MAHER
Drawn by: F. MONCHELL, C. POTVIN
Reviewed by: R. OTTOBONI
Submitted by: M. OTTEN

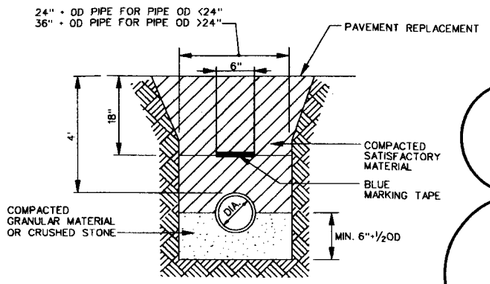
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP. 133 FEDERAL STREET BOSTON, MASSACHUSETTS

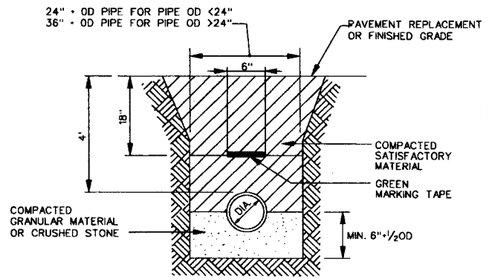
NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

DETAILS
(SHEET 3 OF 4)

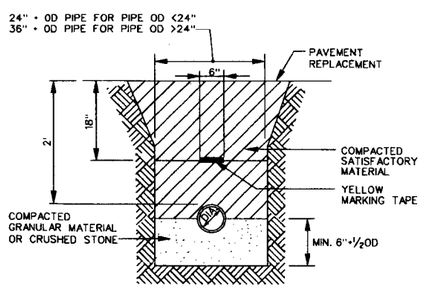
Reference number:
C-503
Sheet 23 of 43



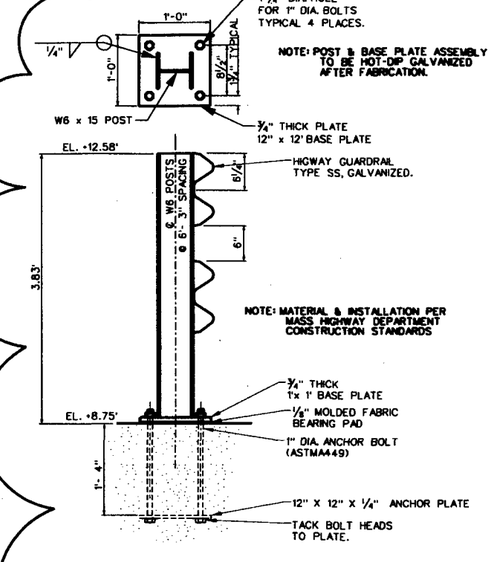
15 / U-101 TYPICAL POTABLE WATER TRENCH DETAIL
NOT TO SCALE



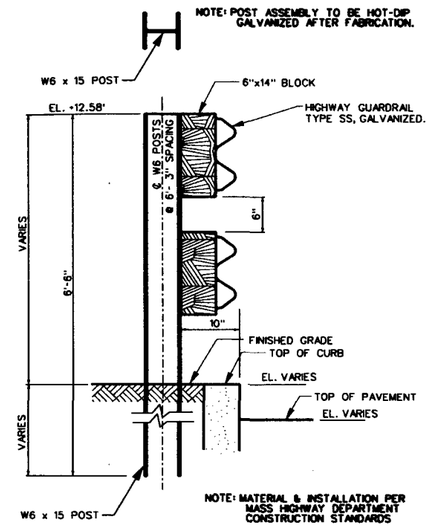
16 / U-101 STANDARD PIPE TRENCH (SEWER OR DRAIN)
NOT TO SCALE



17 / U-101 STANDARD PIPE TRENCH (GAS)
NOT TO SCALE

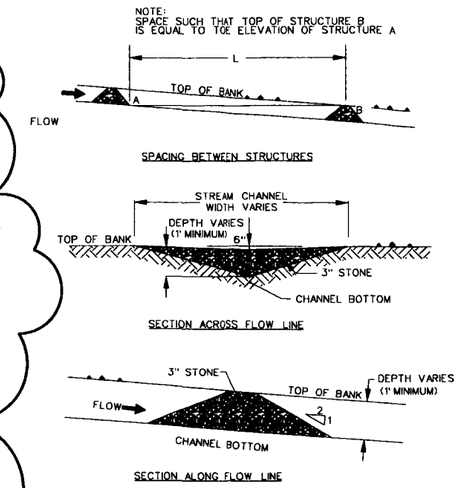


52 / C-105 GUARD RAIL IN CONCRETE DETAIL
NOT TO SCALE

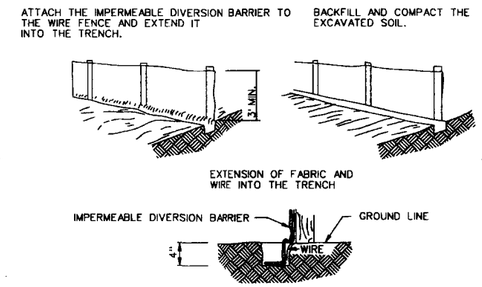


53 / C-105 GUARD RAIL IN GROUND DETAIL
NOT TO SCALE

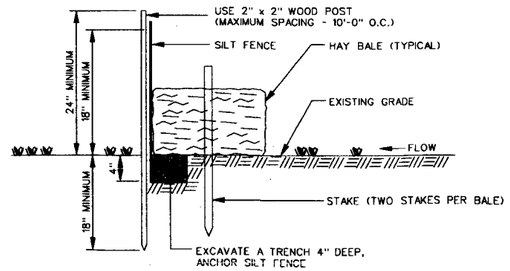
3



20 / C-109 STONE CHECK DAM
NOT TO SCALE



24 / C-109 TEMPORARY IMPERMEABLE BARRIER
NOT TO SCALE



NOTES:
1. FILTER FABRIC SUPPORT SHALL BE WOOD POSTS WITH POLYPROPYLENE FENCE
2. FILTER FABRIC SHALL BE SECURELY FASTENED TO THE STAKES

HAY BALE NOTES
1.) STAKES TO HOLD HAY BALES SHALL BE GRADE STAKES OR EQUIVALENT AND SHALL BE LONG ENOUGH TO EXTEND 1 FOOT MIN. INTO THE GROUND.
2.) HAY BALES WILL BE ALLOWED TO ROT IN PLACE EXCEPT IN HIGHLY VISIBLE AREAS WHERE THEY MAY BE REMOVED.

SILT FENCE NOTES
1.) INSPECTION SHALL BE DAILY AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
2.) REMOVE SEDIMENT WHEN IT REACHES 1/2 FENCE HEIGHT OR WHEN HEAVY RAIN OR HIGH WATER IS ANTICIPATED.
3.) REMOVE SILT FENCE WHEN VEGETATION IS ESTABLISHED AND STABLE. LOAM, SEED, FERTILIZE AND MULCH AFTER REMOVAL.
4.) ALL PROPOSED GRADING ADJACENT TO WETLANDS TO BE LINED WITH SILT FENCE AND DOUBLE ROW OF STAKED HAY BALES

25 / C-109 TYPICAL SILT FENCE AND HAY BALE DETAIL
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
MARK T. OTTEN
No. 42519
REGISTERED PROFESSIONAL ENGINEER
5/20/03

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US Army Corps of Engineers
New England District

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1	ISSUED FOR 90% SUBMITTAL	12/02/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	08/24/02	M.O.
A	ISSUED FOR USACE REVIEW	03/07/02	

Designed by: D. MATTOCKS
Drawn by: F. MONORELLI & THORTON
Reviewed by: R. OTTOSS
Submitted by: M. OTTEN
Date: 05/20/03
Rev: 3
Design file no. 172083-C-504.3.dgn
Drawing code:
File name:
Plot date:
Plot scale:

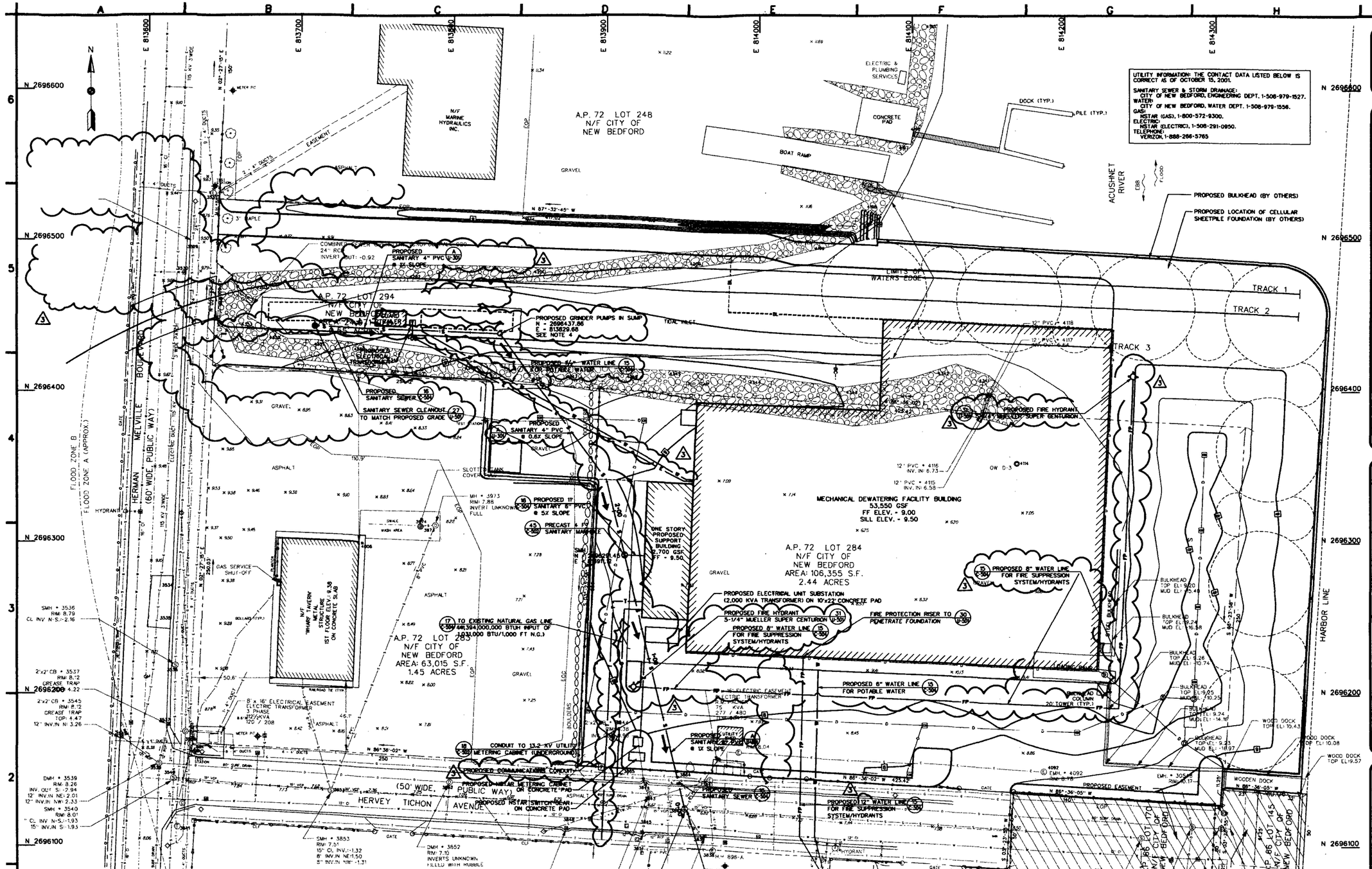
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

DETAILS
(SHEET 4 OF 4)

Reference number:
C-504
Sheet 24 of 43



UTILITY INFORMATION: THE CONTACT DATA LISTED BELOW IS CORRECT AS OF OCTOBER 15, 2003.

SANITARY SEWER & STORM DRAINAGE:
CITY OF NEW BEDFORD, ENGINEERING DEPT. 1-508-979-1527.
WATER:
CITY OF NEW BEDFORD, WATER DEPT. 1-508-979-1556.
GAS:
NSTAR (GAS), 1-800-572-9300.
ELECTRIC:
NSTAR (ELECTRIC), 1-508-291-0950.
TELEPHONE:
VERIZON, 1-888-266-5765

GENERAL NOTES

1. LOCATION OF ALL UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON FIELD LOCATION OF VISIBLE STRUCTURES, SUCH AS: CATCH BASINS, MANHOLES, WATER GATES, FIRE HYDRANTS, ETC. SIZES AND TYPES OF MATERIALS ARE BASED ON AVAILABLE UTILITY RECORDS. CONTRACTORS SHOULD NOTIFY COMPANIES PRIOR TO CONSTRUCTION AND/OR CALL DIG SAFE AT 1-800-DIG-SAFE. FINAL LOCATION SUBJECT TO CHANGE BASED ON DISCUSSIONS WITH UTILITIES.
2. UTILITY LINES AND ASSOCIATED APPURTANENCES TO BE INSTALLED IN ACCORDANCE TO THE DETAILS SPECIFICATIONS, AND IN CONFORMANCE TO FEDERAL, STATE AND LOCAL REGULATIONS.
3. SITE SURVEY INFORMATION, GROUND SURFACE ELEVATIONS AND MUD ELEVATIONS IN THE TIDAL INLET AND AT THE BULKHEAD AS NOTED TAKEN FROM PLAN ENTITLED, "TOPOGRAPHIC SURVEY A.P. 72 LOT 283, 284, AND 294, HERMAN MELVILLE BLVD., NEW BEDFORD, MASSACHUSETTS FOR FOSTER WHEELER ENVIRONMENTAL CORP." DATED DECEMBER 06, 2001 BY SAI SURVEYING CORPORATION OF JAMESTOWN, RHODE ISLAND.
4. OUTDOOR PREPACKAGED DUPLEX 840 GRINDER SYSTEM. USE 36" O x 96" HT FIBERGLASS BASIN. PREPACKAGED SYSTEM BY ZOELLER PUMP CO. OR EQUAL.
5. FINAL LOCATIONS OF WATER LINES, GAS, AND TELECOMMUNICATIONS WILL BE VERIFIED AFTER BUILDING COLUMN LOCATIONS ARE KNOWN.

COMMONWEALTH OF MASSACHUSETTS — MARK I. OTTEN — No. 43912 — REGISTERED PROFESSIONAL ENGINEER — 5/24/03

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HORIZONTAL SCALE IN FEET
1 INCH = 30 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29

SCALE IN FEET

ISSUED FOR CONSTRUCTION

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
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1	ISSUED FOR 100% SUBMITTAL	12/02/02	N.O.
0	ISSUED FOR 60% DESIGN SUBMITTAL	09/04/02	N.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

Rev. 3
Date: 05/20/03
Design file no. 172983-U-101Sec.DGN
Drawing code:
File name: 172983-U-101Sec.DGN
Plot date:
Plot scale:

Designed by: D. MARTOCCIA
Drawn by: C. POTVIN, F. MENICHELLI
Reviewed by: R. OTOSKI
Submitted by: M. OTTEN

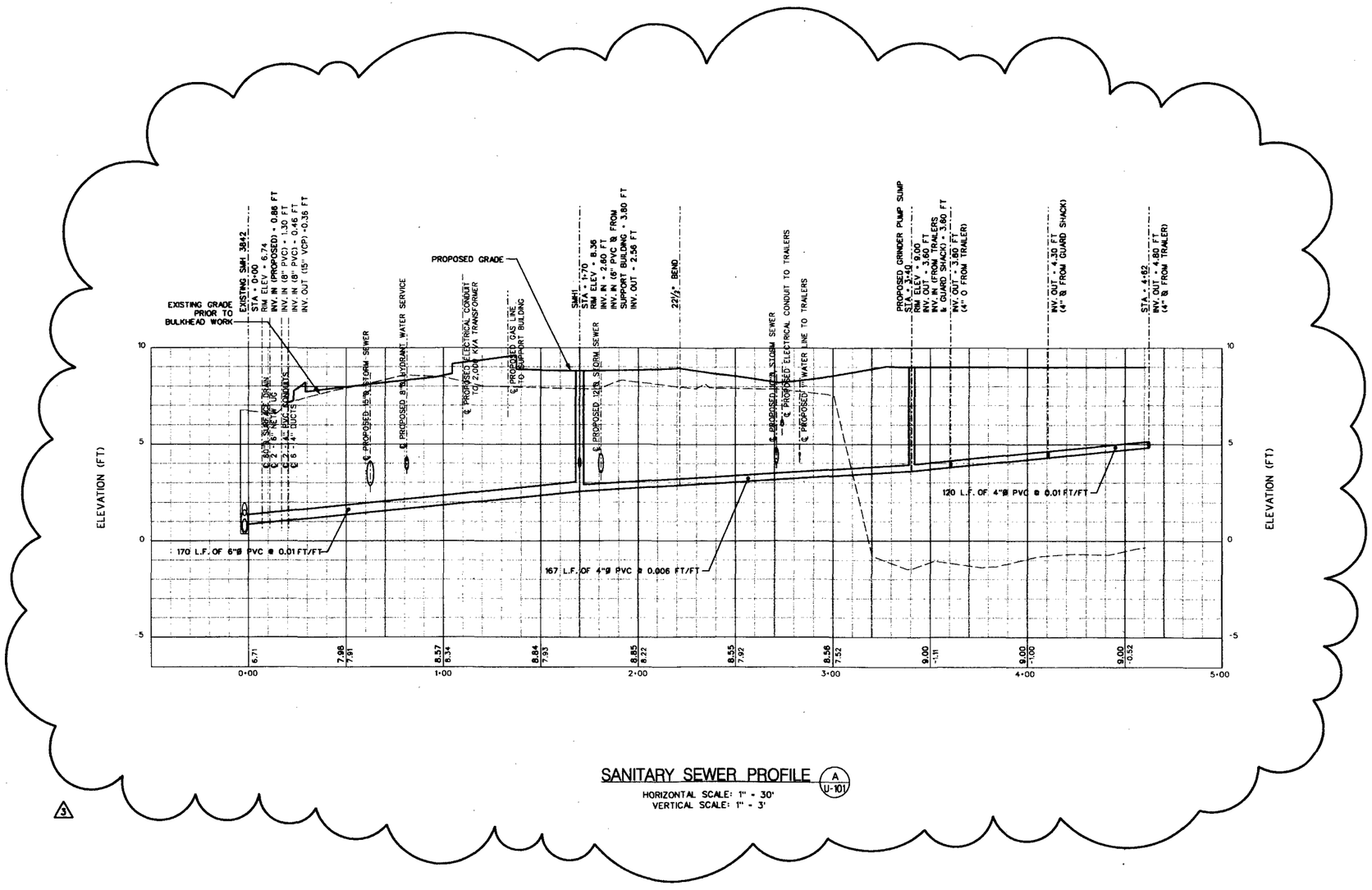
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
UTILITY PLAN

Reference number:
U-101
Sheet 25 of 43



SANITARY SEWER PROFILE (A / U-101)

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

3

NOTE:

AREAS SHOWN HEREON AS SECTION IN FILL INDICATE PRE-BULKHEAD CONSTRUCTION CONDITIONS. SEE SHEET C-1, SITE PREPARATION PLAN FOR PROPOSED SITE GRADE FOLLOWING INSTALLATION OF CELLULAR BULKHEAD SYSTEM (BY OTHERS).

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ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
MARK T. MOLTZ
No. 43915
REGISTERED PROFESSIONAL ENGINEER
5/20/03

HORIZONTAL SCALE IN FEET
1 INCH = 30 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL SCALE IN FEET
1 INCH = 3 FEET

HORIZONTAL SCALE 1"=30'
15 0 30 60 FEET
1.5 0 3 6
VERTICAL SCALE 1"=3'

US Army Corps of Engineers
New England District

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3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR BID	03/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	02/03/03	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	05/24/02	M.O.
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Symbol	Description	Date	Appr.

Date: 05/20/03 Rev. 3
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Designed by: R. OTOSKO
Drawn by: C. POTVIN
Reviewed by: C. COLLET
Submitted by: M. OTTEN

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CONCORD, MASSACHUSETTS

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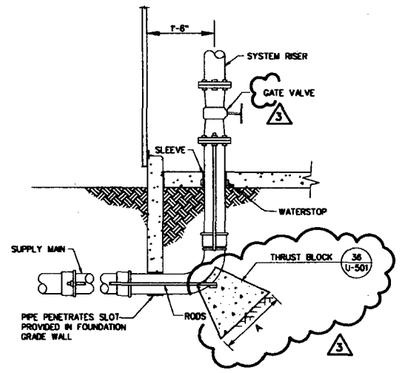
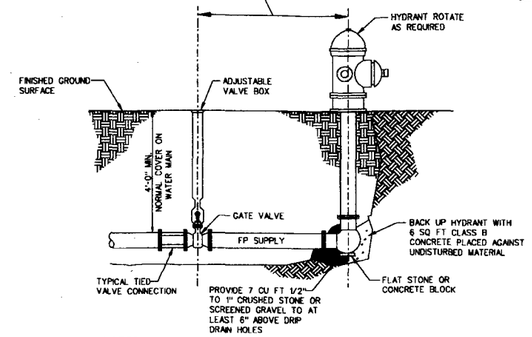
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
SANITARY SEWER PROFILE

Reference number:
U-301



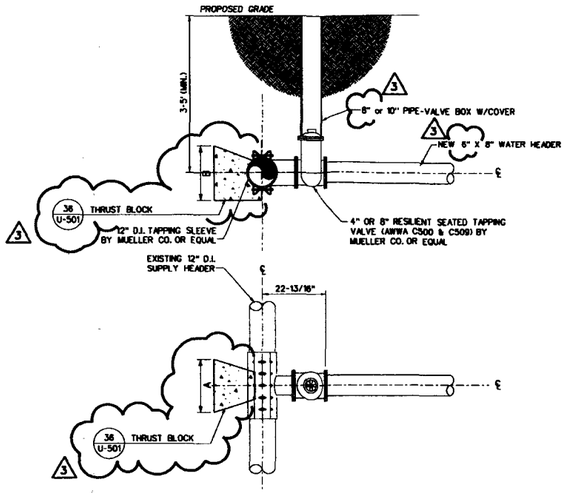
30 U-101 TYPICAL FIRE PROTECTION RISER DETAIL
NOT TO SCALE



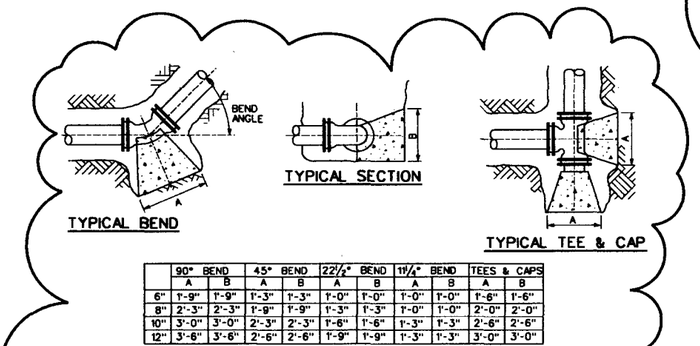
NOTES:
1. ALL HYDRANT, VALVE, AND TEE JOINTS TO BE RESTRAINED MECHANICAL JOINTS.
2. HYDRANT DRAIN HOLE TO BE FUNCTIONAL AND REMAIN UNCLOGGED.

31 U-101 TYPICAL HYDRANT ASSEMBLY DETAIL
NOT TO SCALE

3



32 U-101 PLAN & SECTION FOR WATER MAIN CONNECTION (HOT-TAP)
NOT TO SCALE

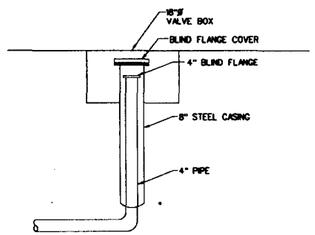


	90° BEND		45° BEND		22½° BEND		11¼° BEND		TEES & CAPS	
	A	B	A	B	A	B	A	B	A	B
6"	1'-9"	1'-9"	1'-3"	1'-3"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	1'-6"
8"	2'-3"	2'-3"	1'-9"	1'-9"	1'-3"	1'-3"	1'-0"	1'-0"	2'-0"	2'-0"
10"	3'-0"	3'-0"	2'-3"	2'-3"	1'-6"	1'-6"	1'-3"	1'-3"	2'-6"	2'-6"
12"	3'-6"	3'-6"	2'-6"	2'-6"	1'-9"	1'-9"	1'-3"	1'-3"	3'-0"	3'-0"

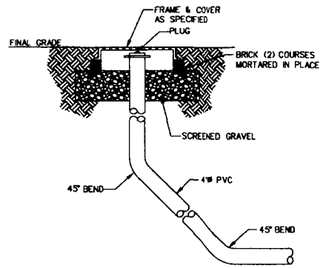
NOTES:
1. PROVIDE CLEARANCE FOR BOLT REMOVAL.
2. BEARING AREAS ARE BASED ON 200 PSI INTERNAL TEST PRESSURE, 110 LB/FT SOIL DENSITY, AND A 3000 PSF SOIL BEARING PRESSURE. IF WEAK (LESS THAN 3000 PSF RESISTANCE) SOIL POCKETS ARE ENCOUNTERED, INCREASE THE BEARING AREAS SHOWN TO PREVENT MOVEMENT UNDER TEST OR OPERATING PRESSURES.
3. THRUST BLOCKS SHALL BE 3000 PSI CONCRETE (MIN.)

36 U-501 THRUST BLOCK DETAIL
NOT TO SCALE

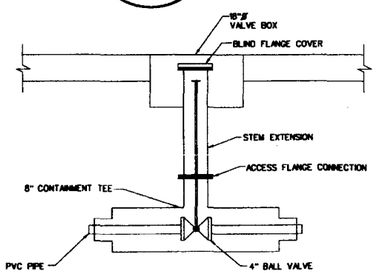
3



35 C-110 PIPE TERMINATION DETAIL
NOT TO SCALE



27 U-101 TYPICAL CLEANOUT DETAIL
NOT TO SCALE



33 C-110 TYPICAL VALVE BOX DETAIL
NOT TO SCALE

GENERAL PIPING NOTES:

1. PIPE TRENCHES MAY BE EXCAVATED WIDER THAN TRENCH WIDTH INDICATED ABOVE THE TOP OF PIPE ZONE.
2. BELOW THE TOP OF PIPE ZONE THE TRENCH SHOULD NOT BE EXCAVATED BEYOND 4'-2".
3. PROVIDE SLOPE PROTECTION AS REQUIRED BY OSHA FOR TRENCHES GREATER THAN 4 FT. DEEP.
4. ALL UNEXCAVATED ROCK WITHIN 3'-0" HORIZONTALLY OF ENDS OF BUILDING CONNECTIONS, BRANCHES OR STUBS, AND DOWN TO A HORIZONTAL PLANE 6" BELOW THE BOTTOMS OF SUCH CONNECTIONS, BRANCHES OR STUBS, SHALL BE SHATTERED. SEE SPECIFICATIONS.

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3

ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
MARK T. OTTEN
No. 43375
PROFESSIONAL ENGINEER
5/24/03

US Army Corps of Engineers
New England District

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1	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.				
0	ISSUED FOR 90% DESIGN SUBMITTAL	10/24/02	M.O.				
A	ISSUED FOR USACE REVIEW	03/01/02					

Date: 05/20/03 Rev. 3
Design file no. 172063-U-3503rev.DGN
Drawing code:
File name:
Plot date:
Plot scale:

Designed by: D. WHITCOMB
Drawn by: F. MENCHELLI & THWATON
Reviewed by: R. CUTCSON
Submitted by: M. OTTEN

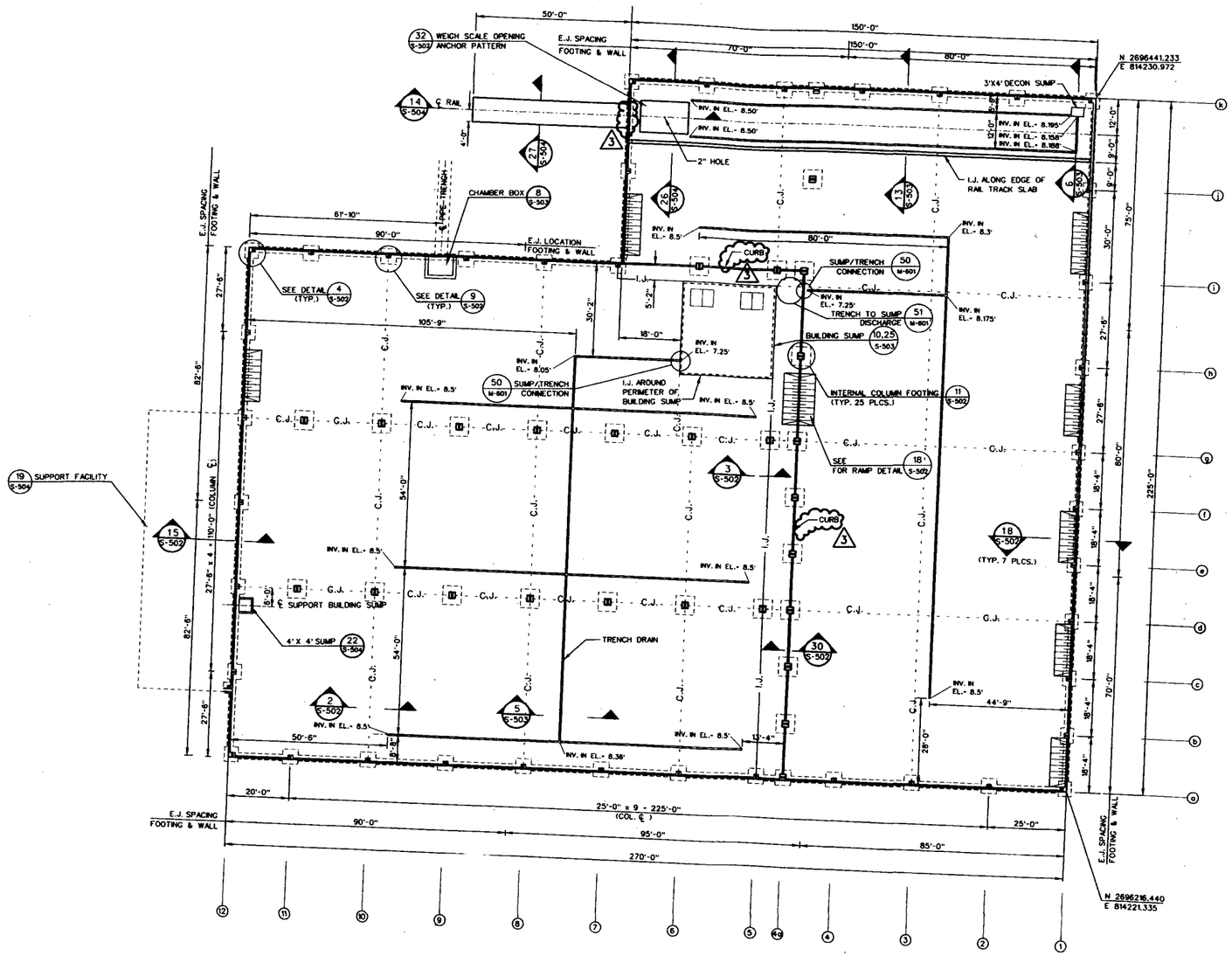
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

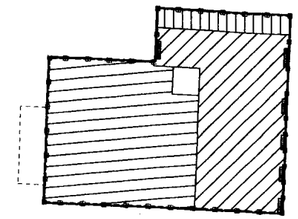
NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

UTILITY DETAILS

Reference number:
U-501
Sheet 27 of 43



FOUNDATION KEY PLAN



AREA	PATTERN	SLAB THICKNESS	REINFORCEMENT	EL. @ EDGE
PROCESS		10"	#5 @ 12 EW, T&B	9.0'
LOADOUT		12"	#6 @ 8 EW, T&B	9.0'
RAIL TRACK		SEE SECTION	SEE SECTION	SEE SECTION
SUPPORT FACILITY		SEE DWG S-504	SEE DWG S-504	9.5'

FOOTING LOCATION	TOP OF FOOTING ELEVATION	BOTTOM OF FOOTING ELEVATION
EXTERIOR FOOTING	6.0'	5.0'
INTERIOR FOOTING	6.5'	5.0'
SUPPORT BUILDING FOOTING	6.0'	5.0'
EXCEPTIONS: 1) 4a - i 2) 5 - i 3) 6 - i 4) 4a - h	 1) 2.0' 2) 2.0' 3) 2.0' 4) 2.0'	 1) 0.5' 2) 0.5' 3) 0.5' 4) 0.5'

3

NOTES:

A. BUILDING DESIGN AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE COMMONWEALTH OF MASSACHUSETTS APPLICABLE SECTIONS OF THE STATE BUILDING CODE.

B. FOUNDATIONS

3 1) FOUNDATION PREPARATION SHOULD REFER TO SPECIFICATION SECTION 02315 - EXCAVATION, FILLING, AND BACKFILLING FOR STRUCTURES.

C. REINFORCING STEEL
REINFORCING STEEL BARS SHALL CONFORM TO ASTM A 615 AND SHALL BE FURNISHED AND PLACED IN ACCORDANCE WITH SPECIFICATION SECTION 03200 - CONCRETE REINFORCEMENT.

D. STRUCTURAL STEEL
1) ALL MISCELLANEOUS STRUCTURAL STEEL SHALL CONFORM TO ASTM A36.
2) STEEL AND CONNECTIONS SHALL BE MANUFACTURER'S STANDARD.

E. CONCRETE
SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI. MATERIALS, PROPORTIONING, HANDLING, PLACEMENT AND TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 03300-CAST-IN-PLACE STUCTRUAL CONCRETE. ALL SLABS SHALL HAVE A TROWELED FINISH.

F. CONCRETE COATING
1) CONTRACTOR SHALL APPLY TNEMEC HIGH-SOLIDS THIN FILM EPOXY SEALER OR EQUIVALENT TO FLOOR OF EQUIPMENT/PROCESS AREA.
2) CONTRACTOR SHALL APPLY TNEMEC MORTAR EPOXY FLOOR COATING SYSTEM OR EQUIVALENT TO FLOOR OF LOADOUT AREA.
3) CONTRACTOR SHALL APPLY TNEMEC H.S. EPOXY SERIES 104 COATING SYSTEM OR EQUIVALENT TO INTERIOR SURFACES OF SUMPS AND TRENCHES.

G. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED ¾" X ¾" WITH MILLED CHAMFER STRIPS.

H. ONLY WIRE REINFORCED FLEXIBLE, CHEMICAL RESISTANT WATERSTOPS SHOULD BE USED. THE DIMENSIONS OF WATERSTOPS SHOULD BE AS FOLLOWS:
1) MIN. THICKNESS - ⅜ IN.
2) MIN. WIDTH - 6 IN.

I. A LAYER OF VAPOR BARRIER SHALL BE INSTALLED BETWEEN FLOOR SLAB/SUMP BOTTOM AND THE SUBGRADE. THE BARRIER SHALL BE COVERED WITH AT LEAST 3 IN. OF FINE GRANULAR MATERIAL SO THAT FLOOR SLAB IS NOT IN DIRECT CONTACT WITH THE BARRIER.

J. BEFORE BACKFILLING AROUND THE BUILDING SUMP, WATER TIGHTNESS TESTING SHALL BE CONDUCTED ACCORDING TO ACI 350.1-01 AND ACI 350.1R-01.

K. TRENCH DRAIN SHALL SLOPE TOWARD SUMP AS SHOWN ON DRAWING.

L. LEGEND:

——E.J.——	EXPANSION JOINT
- - -C.J.- - -	CONSTRUCTION JOINT
——I.J.——	ISOLATION JOINT
—·—·—·—	CENTERLINE

M. JOINTS FOR THE FOOTING AND APRON WALL SHALL BE STAGGERED.

N. FINAL FOUNDATION DESIGN TO BE PROVIDED BY BUILDING SUBCONTRACTOR.

STATE OF TEXAS
GANG ZHAO
89134
LICENSED
PROFESSIONAL ENGINEER
5-6-03

TEMPORARY PERMIT MASSACHUSETTS 2003-32-PE*

ISSUED FOR CONSTRUCTION

SCALE 1"= 20'

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR CONSTRUCTION	05/05/03	M.O.
2	ISSUED FOR BID	02/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	12/03/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	06/24/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

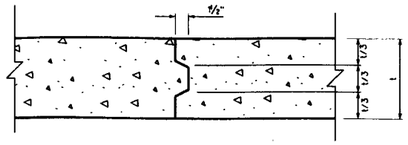
Designed by: J. ZHAO
Drawn by: G. KRYSTYNIAK
Reviewed by: L. TOROYAN
Submitted by:
Date: 05/05/03
Rev. 3
Design file no. 172093-S-5013xx.DGN
Drawing code:
File name: 5013xx.dgn
Plot scale: AS SHOWN

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

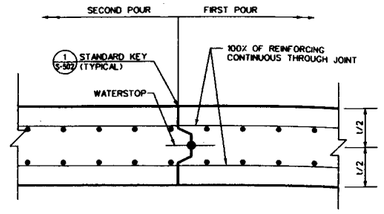
NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

CONCRETE FOUNDATION AND SLAB LAYOUT

Reference number:
S-501
Sheet 28 of 43



1 S-502 STANDARD KEY
NOT TO SCALE



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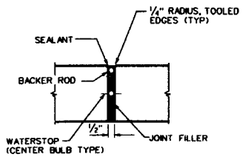
NOT TO SCALE



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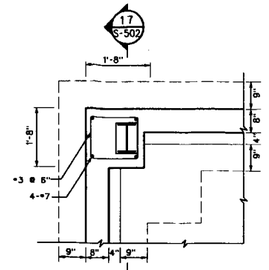
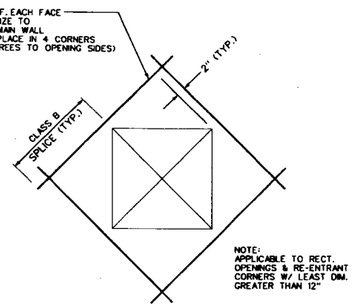
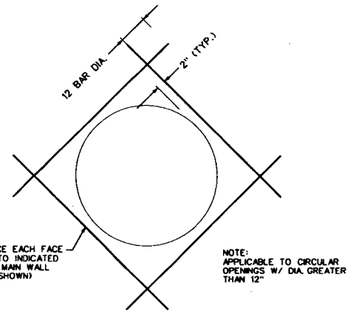


4 S-501 DETAIL 4
NOT TO SCALE





7 S-502 TYPICAL BOXOUT REINFORCEMENT
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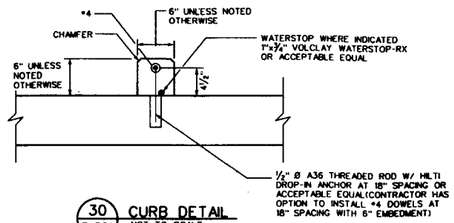

30 S-501 CURB DETAIL
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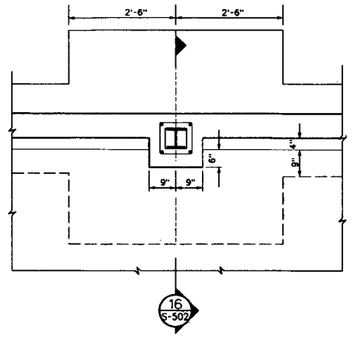

9 S-501 DETAIL 9
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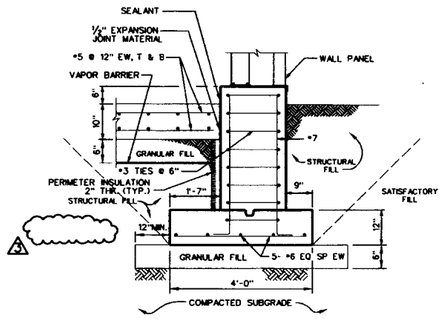
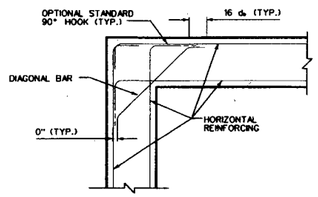
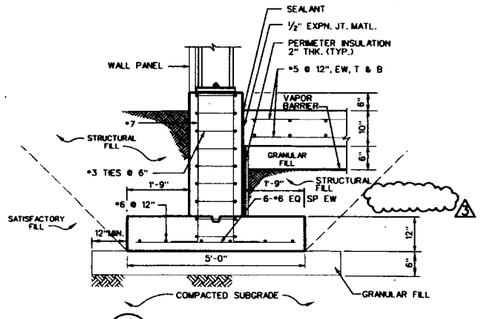


17 S-502 CROSS-SECTION
NOT TO SCALE



24 S-503 REINFORCING AT SUMP WALL CORNER (PLAN VIEW)
NOT TO SCALE



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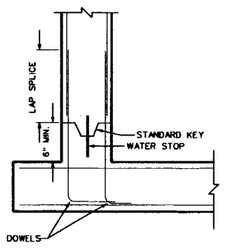
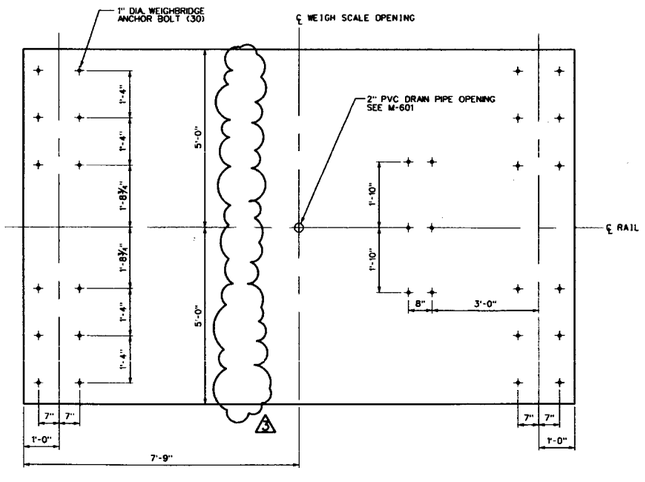
NOT TO SCALE

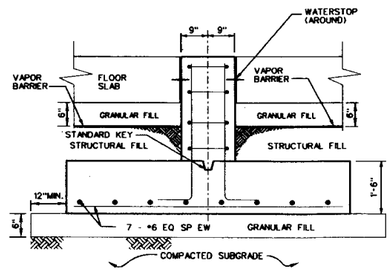


23 S-503 SUMP STARTER WALL (ELEVATION VIEW)
NOT TO SCALE

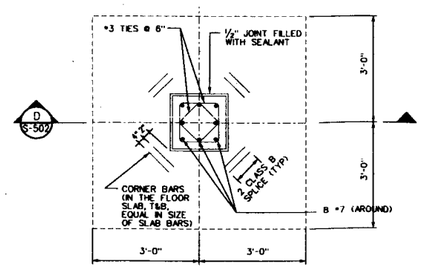


32 S-501 WEIGH SCALE OPENING ANCHOR PATTERN
NOT TO SCALE

NOTE:
TOP REBAR MESH FOR WEIGH SCALE OPENING SHOULD AVOID THE LOCATIONS FOR FUTURE DRILLED-IN ANCHOR BOLTS. CHECK REBAR LOCATIONS BEFORE CONCRETE IS CAST. IF THERE ARE CONFLICTS, SLIGHTLY BEND REBARS TO AVOID ANCHOR BOLT LOCATIONS.

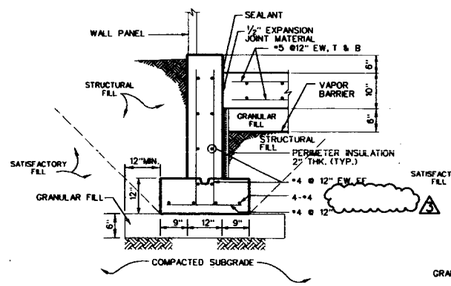


D S-502 CROSS SECTION
NOT TO SCALE

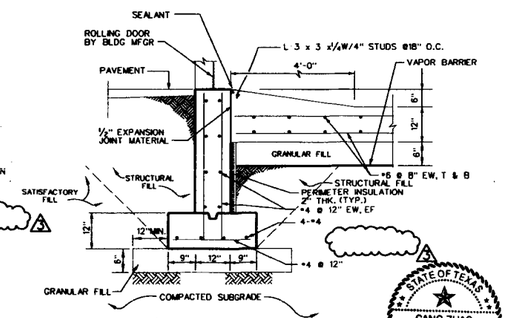


PLAN VIEW
NOT TO SCALE

11 S-501 INTERNAL COLUMN FOOTING DETAIL
NOT TO SCALE



15 S-501 CROSS-SECTION
NOT TO SCALE



18 S-501 CROSS-SECTION
NOT TO SCALE

STATE OF TEXAS
GANG ZHAO
89134
LICENSED PROFESSIONAL ENGINEER
5-6-03

ISSUED FOR CONSTRUCTION

TEMPORARY PERMIT MASSACHUSETTS 2003-32-PE*

US Army Corps of Engineers
New England District

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0	ISSUED FOR NOT DESIGN SUBMITTAL	08/24/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

Designed by: J. ZHAO
Drawn by: G. KRYSTYNIAK, F. MENICHELLI
Reviewed by: L. TOROSYAN, M. OTTEN
Submitted by:

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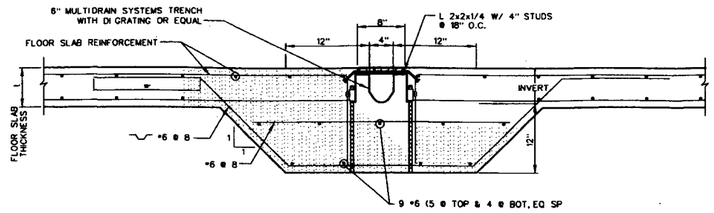
FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

STRUCTURAL DETAILS
(SHEET 1 OF 3)

Reference number:
S-502
Sheet 29 of 43



5 / S-501 TYPICAL REINFORCEMENT DETAIL AT TRENCH DRAIN
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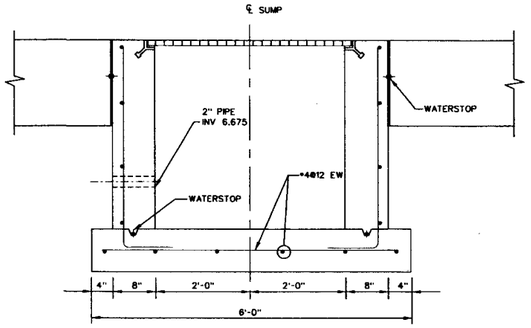

31 / S-503 3' X 4' RAIL SUMP DETAIL
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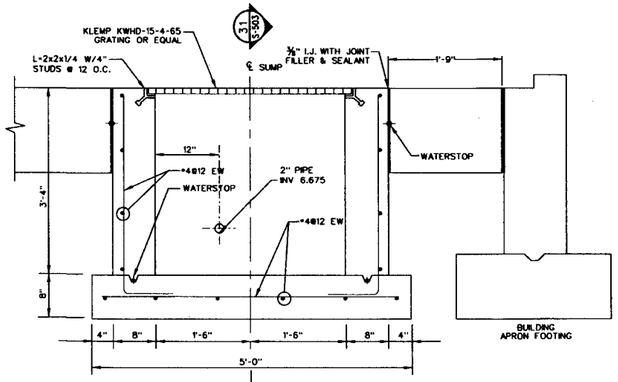
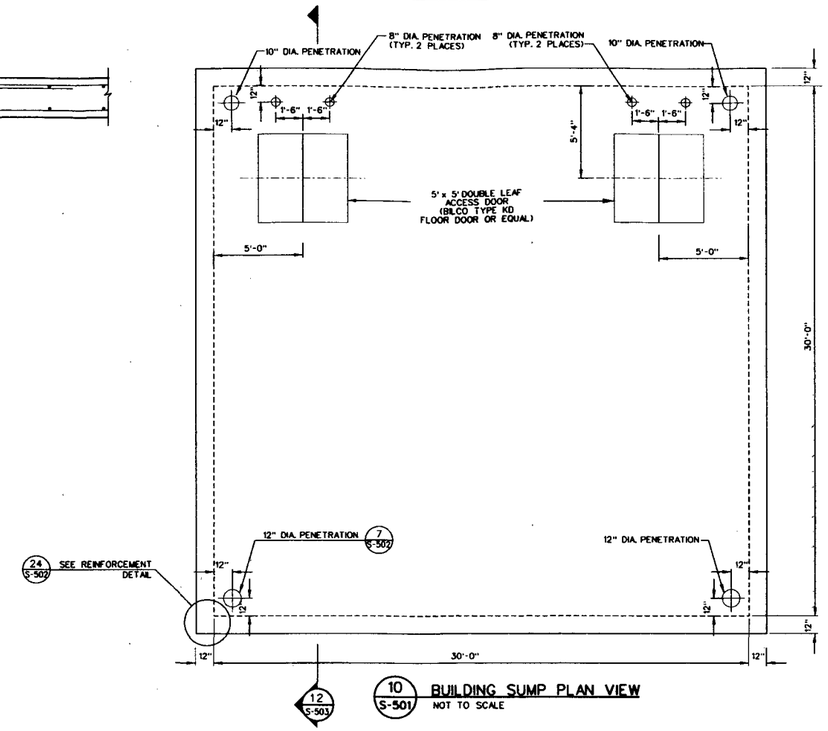
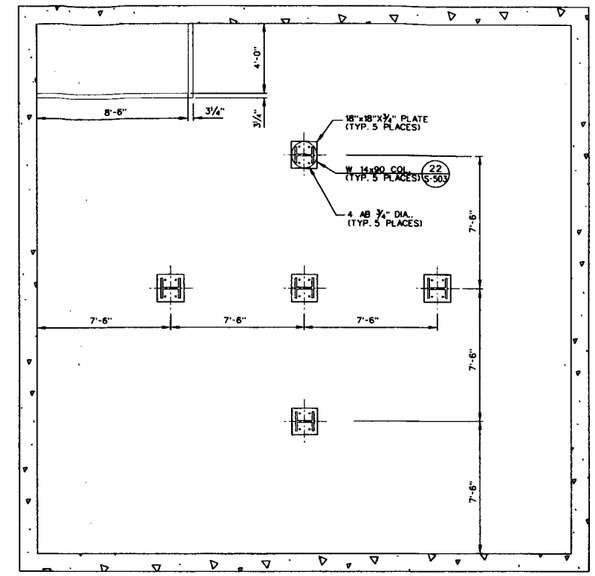


6 / S-501 3' X 4' RAIL SUMP DETAIL
NOT TO SCALE



10 / S-501 BUILDING SUMP PLAN VIEW
NOT TO SCALE



25 / S-501 SUMP BOTTOM LAYOUT DETAIL
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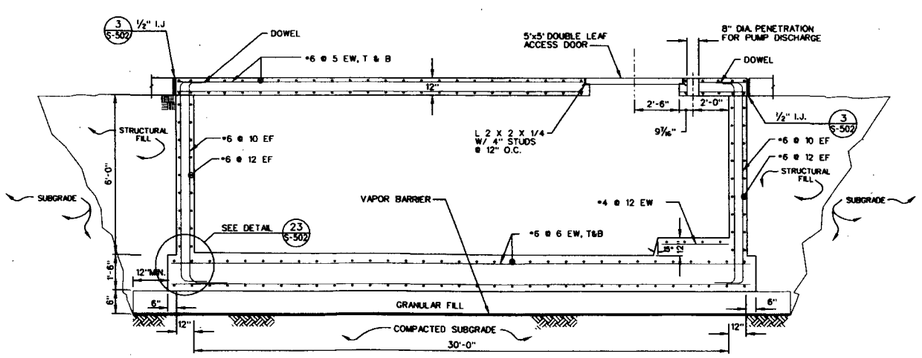
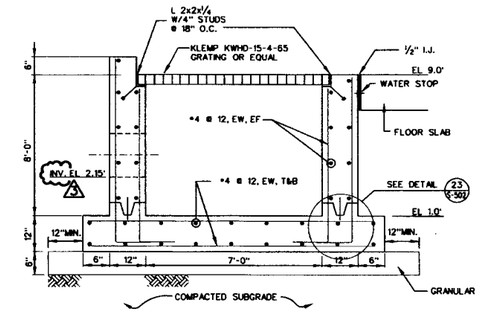
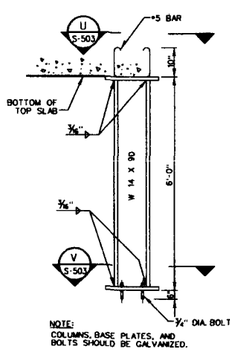


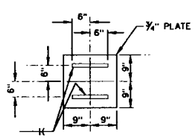
12 / S-503 CROSS-SECTION
NOT TO SCALE



SECTION VIEW W-W



22 / S-503 SUMP COLUMN DETAIL
NOT TO SCALE



CROSS SECTION U-U
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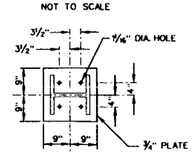

CROSS SECTION V-V
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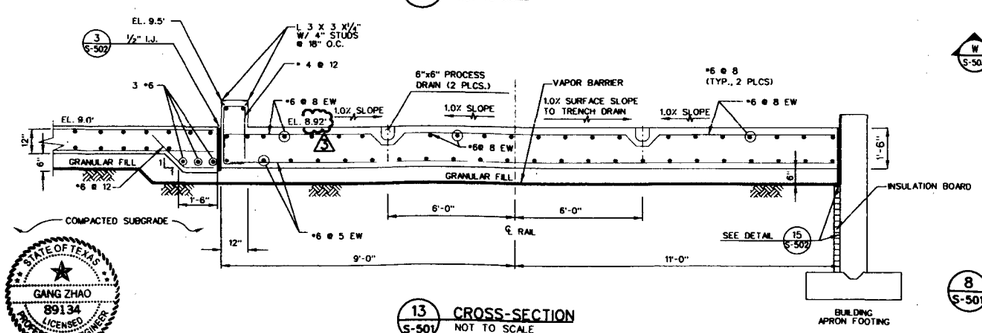
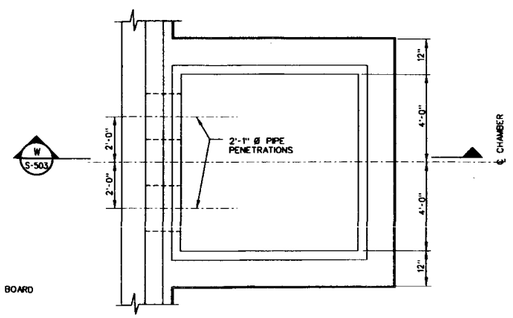


13 / S-501 CROSS-SECTION
NOT TO SCALE



PLAN VIEW

NOTE: AFTER INSTALLATION OF THE PIPES, SEALANT SHALL BE APPLIED AROUND PIPES ON BOTH FACES OF THE WALL.

8 / S-501 CONCRETE CHAMBER BOX FOR SLURRY/FILTRATE PIPING
NOT TO SCALE

STATE OF TEXAS
GANG ZHAO
89134
LICENSED
PROFESSIONAL ENGINEER
5-6-03

TEMPORARY PERMIT MASSACHUSETTS 2003-32-PE*

ISSUED FOR CONSTRUCTION

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR CONSTRUCTION	05/05/03	W.O.
2	ISSUED FOR IBID	02/28/03	W.O.
1	ISSUED FOR 100% SUBMITTAL	12/02/02	W.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	06/14/02	W.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

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Plot scale: AS SHOWN
Rev.: 3

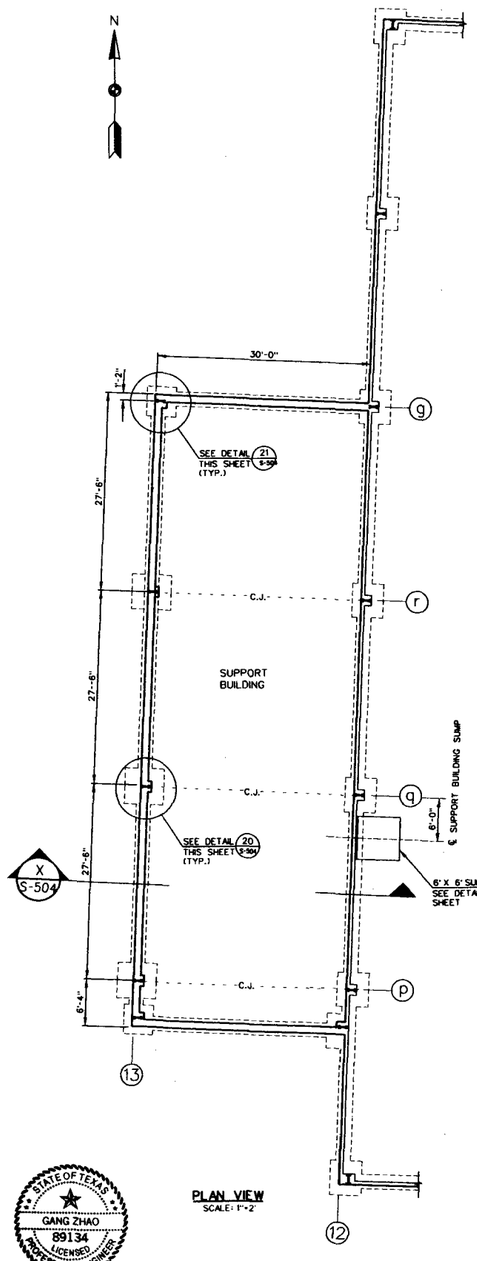
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

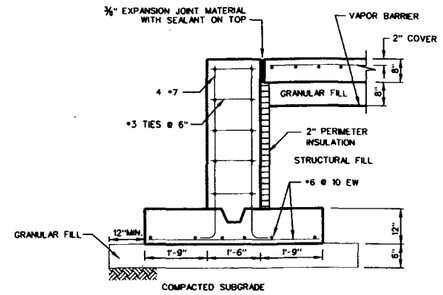
FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

STRUCTURAL DETAILS
(SHEET 2 OF 3)

Reference number:
S-503
Sheet 30 of 43





CROSS-SECTION Y-Y
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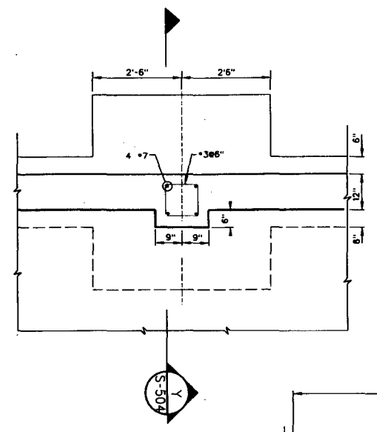
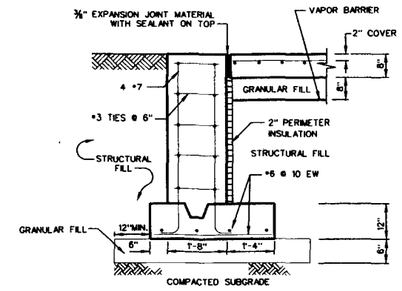


PLAN VIEW
SCALE: 1"=2'

20 S-504 DETAIL 20
NOT TO SCALE



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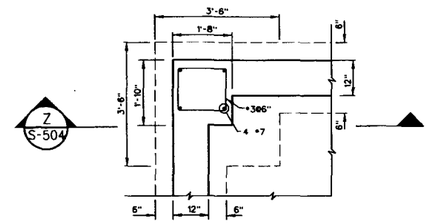
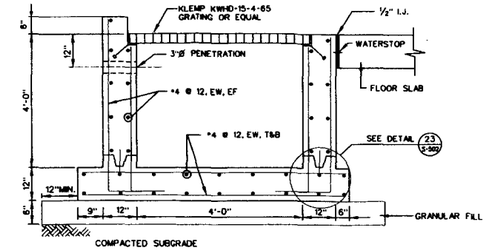


PLAN VIEW
NOT TO SCALE

21 S-504 DETAIL 21
NOT TO SCALE



SECTION VIEW A-A
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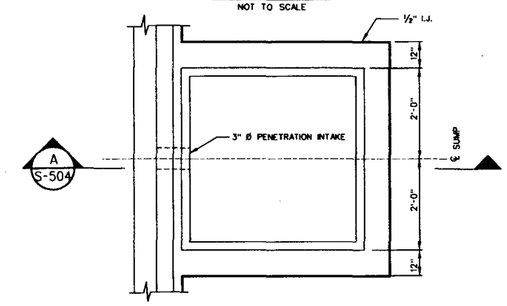
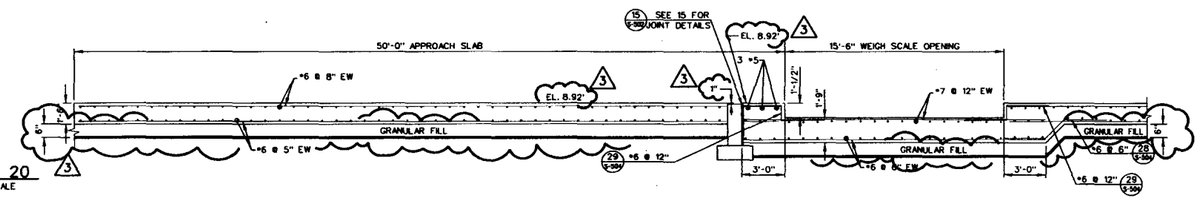
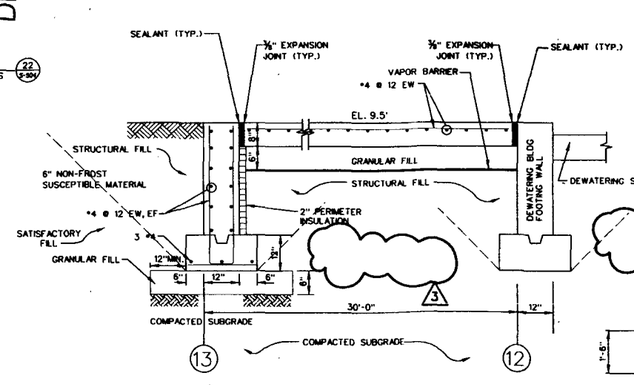


PLAN VIEW

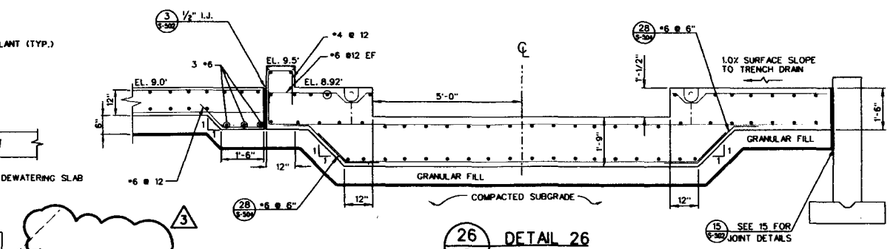
22 S-501 6' x 6' SUMP FOR SUPPORT BUILDING
NOT TO SCALE



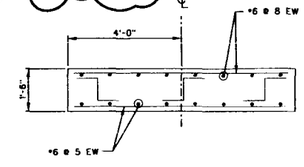
14 S-501 DETAIL 14
NOT TO SCALE



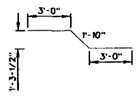
CROSS SECTION X-X
NOT TO SCALE



26 S-501 DETAIL 26
NOT TO SCALE



27 S-501 DETAIL 27
NOT TO SCALE



28 S-504 101 BAR
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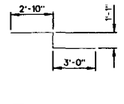

29 S-504 102 BAR
NOT TO SCALE

19 S-501 SUPPORT BUILDING FOR DEWATERING FACILITY
SCALE: AS SHOWN

DEWATERING FACILITY

STATE OF TEXAS
GANG ZHAO
89134
LICENSED
PROFESSIONAL ENGINEER
5-6-03

TEMPORARY PERMIT MASSACHUSETTS 2003-32-PE"

ISSUED FOR CONSTRUCTION

SCALE 1"= 10'

US Army Corps of Engineers
New England District

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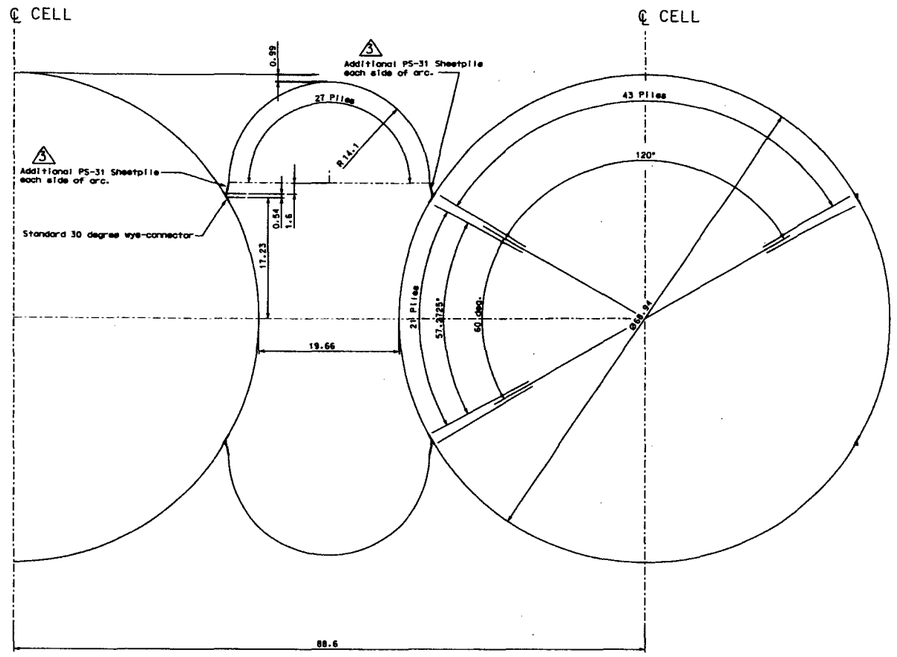
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

STRUCTURAL DETAILS
(SHEET 3 OF 3)

Reference number:
S-504

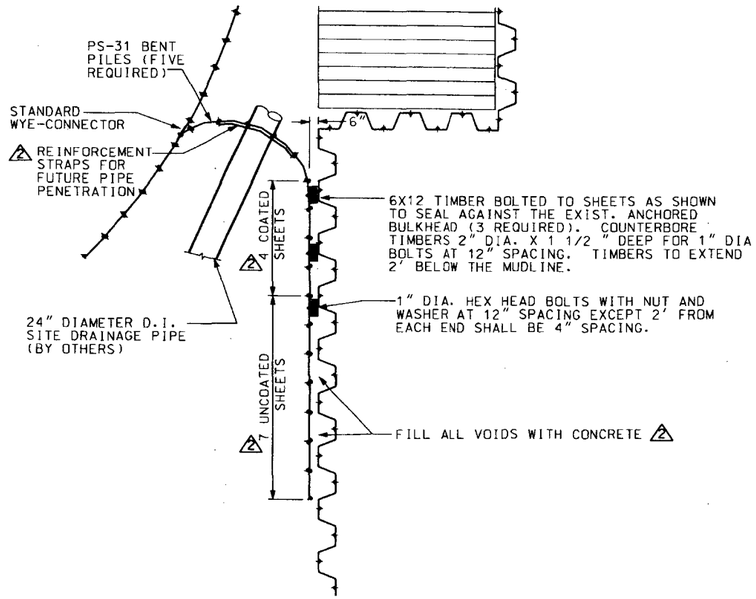
Sheet 31 of 43



TYPICAL CELL GEOMETRY

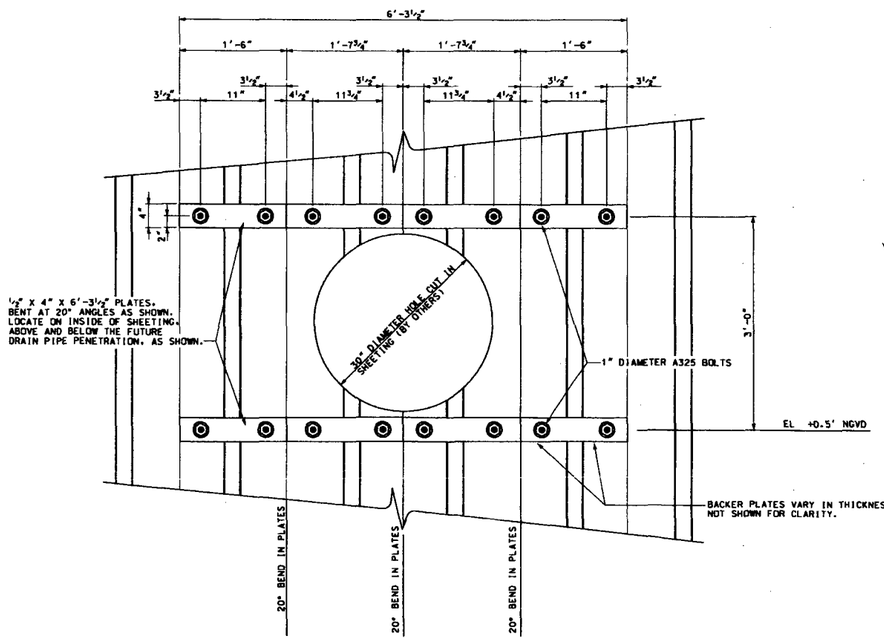
SCALE: 1"=10'

NOTES:
1. PILE WIDTH = 19.69"
2. 132 PILES PER CELL, INCLUDING WYE-CONNECTORS.
3. EACH PILE REPRESENTS 2.7273 DEG. OF THE CIRCLE
4. MAINTAIN ODD # OF PILES BETWEEN WYE-CONNECTORS.
5. WYE-CONNECTORS SHALL BE BOLTED OR RIVETED.
6. ALL PILES SHALL BE ASTM A690, GRADE 50 STEEL
7. PILES SHALL HAVE A MIN INTERLOCK STRENGTH OF 20 KIPS/IN.
8. EXPOSED PILES SHALL BE COATED PER THE SPECIFICATIONS.



2 SOUTH TIE-IN DETAIL

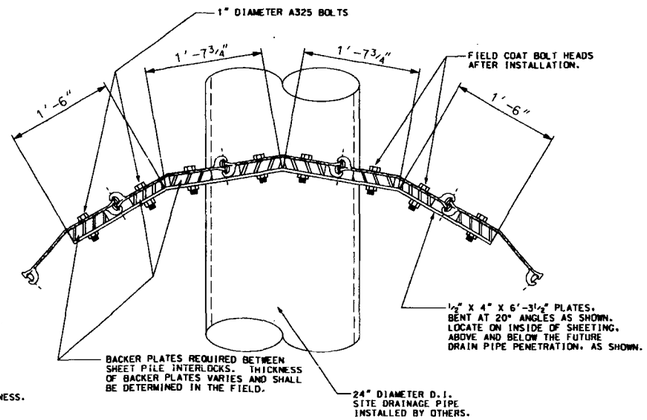
SCALE: 1/4"=1'-0"



1 REINFORCEMENT FOR PIPE PENETRATION - ELEVATION

SCALE: 1"=1'-0"

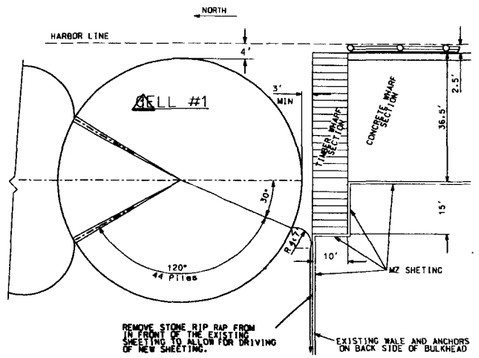
ALL STEEL SURFACED CUT OR DRILLED IN THE FIELD SHALL BE COATED AS SPECIFIED.



1 REINFORCEMENT FOR PIPE PENETRATION - PLAN

SCALE: 1"=1'-0"

ALL STEEL SURFACED CUT OR DRILLED IN THE FIELD SHALL BE COATED AS SPECIFIED.



SOUTH TIE-IN

SCALE: 1"= 20'

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
2	Increase number of piles in cell area.	6/28/02	MEW
2	Reduce number of sheets at South Tie-in	5/13/02	MEW
1	Revised pipe penetration details	5/6/02	MEW
	Miscellaneous Clarification of Notes		

Symbol	Description	Date	Appr.

Designed by: Mike Boilah
Drawn by: Mike Boilah
Reviewed by:
Submitted by:
Chief, General Engrg. Sect.
Date: 15 April 2002
Rev.
Design file no. C005301.dgn
Drawing code
File name:
Plot date:
Plot scale:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
UPPER AND LOWER HARBOR
NEW BEDFORD MASSACHUSETTS

AREA D BULKHEAD
CELLULAR BULKHEAD
STRUCTURAL DETAILS 1

Reference number:
S-1
Sheet 32 of 43

SINGLE LINE DIAGRAM

SYMBOL	DESCRIPTION
100 AF / 20 AT	THERMAL MAGNETIC CIRCUIT BREAKER 100AF - BREAKER FRAME SIZE 20 AT - BREAKER TRIP
7A / 18-70, 1	SIZE 1, FULL VOLTAGE NO-REVERSIZING COMBINATION MOTOR STARTER WITH MAGNETIC BREAKER 7A - BREAKER MAX CON. AMP 18-70 - ADJ. INST. TRIP 1 - STARTER SIZE
	DISCONNECTING DEVICE
	SWITCH, FUSE DISCONNECTING TYPE
	SWITCH, DISCONNECTING TYPE
5	AC INDUCTION MOTOR 5 - 5 HP
	TRANSFORMER, SIZE & RATING AS INDICATED
	EQUIPMENT LOCATED AT MISCELLANEOUS CONTROL PANEL I/O PANEL
	DOUBLE THROW TRANSFER SWITCH
	COMMON ENCLOSURE OR GROUPED EQUIPMENT
V	VARIABLE FREQUENCY DRIVE
LA	LIGHTNING ARRESTER
	GROUND
M	METER
PLP	POWER AND LIGHTING PANEL
H O A	HAND - OFF - AUTO SWITCH
S S	START - STOP PUSHBUTTON

LIGHTING LEGEND

CODE	DESCRIPTION
E	EXIT LIGHT (MOUNT ABOVE DOOR)
S1	EMERGENCY BATTERY OPERATED LIGHT (MOUNTING HEIGHT 10' AFF)
HP I	HIGH PRESSURE SODIUM, HIGH BAY LIGHTING FIXTURE I- INSTANT RESTRIKE
	OUTDOOR WALL PACK HPS FIXTURE WITH PHOTO ELECTRIC CELL
	20 FEET POLE MOUNTED PARKING LOT LIGHTING FIXTURE
	FLOOD LIGHT FIXTURE WITH PHOTO ELECTRIC CELL
F	FLUORESCENT FIXTURE FLUSH CEILING MOUNTED
F	FLORESCENT FIXTURE FLUSH CEILING MTD WITH EMERGENCY BATTERY PACK
FP	FLUORESCENT FIXTURE PENDANT MOUNTED

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
S	SINGLE POLE SWITCH 20 AMP UNLESS OTHERWISE NOTED
S3	THREE WAY SWITCH 20 AMP UNLESS OTHERWISE NOTED
GFI	DUPLEX RECEPTACLE, GROUNDED, MTD 18" AFF. GFI- GROUND FAULT INTERRUPTER: 20 AMP UNLESS OTHERWISE NOTED.
TS 2	THERMOSTAT - COORDINATE LOCATION WITH HVAC CONTRACTOR. MTD. 60" AFF. (2) INDICATES 2-STAGE
	GROUND ROD, COPPERWELD
AFF	ABOVE FINISHED FLOOR
GFI	GROUND FAULT INTERRUPTER
- - - - -	CONDUIT RUN BURIED OR CONCEALED
———	CONDUIT RUN EXPOSED
	CONDUIT - HASH MARKS INDICATE NO. OF CONDUCTORS
— G —	BARE COPPER GROUND WIRE. SIZE PER NEC. CADWELD ALL CONNECTIONS
	HOMERUN TO PANELS: 2•12 & 1•12G LP - LIGHTING PANEL (LP CKT__) CP - CONTROL PANEL
LP	SURFACE MOUNTED BOX OR PANEL LP - LIGHTING PANEL CP - CONTROL PANEL MD - MAIN DISCONNECT
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	GROUND CONNECTION PIGTAIL
150	SINGLE RECEPTACLE, 4 PRONG, 150 AMP
DS	DOOR SWITCH INTRUSION ALARM
	INCOMING METER & SOCKET
WP	DUPLEX RECEPTACLE, GROUNDED, MTD 18" AFF 20 AMP WEATHER PROOF UNLESS OTHERWISE NOTED
	CLOCK RECEPTACLE, MTD. 90" AFF
	SPECIAL PURPOSE OUTLET WEATHERPROOF, TWIST
EUH	ELECTRIC UNIT HEATER (FURNISHED BY VENDOR UNLESS OTHERWISE SPECIFIED)
60	SPECIAL PURPOSE RECEPTACLE (60) - INDICATES AMP RATING TWIST LOCK W/GND CONN.
P 1 / 23	C - 120 V AC CONTROL H - HIGH VOLTAGE P - 480 V AC POWER X - 120 V AC POWER SH- SHIELDED SIZE CONDUIT/CABLE NUMBER EXAMPLE 480 V AC POWER, CONDUIT •23, SIZE 1", CABLE •23 (IF USED)
	COPPER CLAD STEEL GROUND ROD
— G —	BARE COPPER GROUND WIRE
JB	4" X 4" JUNCTION BOX GASKETED

ELECTRICAL-POWER ABOVE GROUND POWER GENERAL NOTES

1. ALL ELECTRICAL INSTALLATIONS SHALL BE COMPLETED IN A WORKMANLIKE MANNER IN CONFORMANCE WITH FWENC ELECTRICAL SPECIFICATIONS FOR THIS CONTRACT, THE NATIONAL ELECTRICAL CODE. ALL LOCAL CODES AND REGULATIONS (AND ALL APPLICABLE DRAWINGS AND DETAILS).
2. ALL EQUIPMENT AND MATERIALS FURNISHED TO COMPLETE INSTALLATIONS SHALL BE TESTED, LABELLED OR OTHERWISE DETERMINED TO BE SUITABLE FOR THEIR INTENDED USE BY A RECOGNIZED INDEPENDENT TESTING LABORATORY SUCH AS UNDERWRITERS LABORATORIES INC, OR FACTORY MUTUAL ENGINEERING CORP. (U.L. OR F.M.)
3. BEFORE INSTALLING ELECTRICAL RACEWAY SYSTEM. A CAREFUL CHECK SHALL BE MADE TO AVOID INTERFERENCES WITH EQUIPMENT, PIPING & STRUCTURES. THE RACEWAY SYSTEM IS SHOWN DIAGRAMMATICALLY AND EXACT ROUTING MUST BE DETERMINED IN FIELD.
4. RACEWAY SYSTEM SHALL BE PROPERLY SUPPORTED. SUPPORTS SHALL NOT BE MORE THAN 10'-0" APART AND WITHIN 3'-0" OF A BOX, FITTINGS OR CABINET. RACEWAY SYSTEM SHALL BE GROUNDED.
5. ALL CONDUITS, COUPLINGS & ELBOWS SHALL BE RIGID STEEL OR INTERMEDIATE METAL CONDUIT WITH A HOT DIPPED GALVANIZED COATING INSIDE & OUTSIDE. THREADS SHALL HAVE A PROTECTIVE ZINC COATING, UNLESS OTHERWISE NOTED.
6. MINIMUM CONDUIT SIZE FOR ABOVE GROUND INSTALLATION SHALL BE ¾". ALL UNUSED OPENINGS IN FITTINGS, BOXES, ETC., SHALL BE PLUGGED WITH A CONDUIT PLUG. DURING CONSTRUCTION, ALL OPENINGS SHALL BE KEPT CLOSED TO PREVENT MOISTURE & FOREIGN MATERIAL, SUCH AS DIRT & DEBRIS, FROM ENTERING THE CONDUIT SYSTEM.
7. CONNECTIONS IN MOTOR TERMINAL BOXES AND ALL OTHER SPLICES, WHERE NECESSARY, SHALL BE MADE WITH SOLDERLESS CONNECTORS PER MANUFACTURES INSTRUCTIONS.
8. CONDUIT FITTINGS SHALL BE STANDARD THREADED WITH COVERS & GASKETS, TYPE FORM & FERALOY OR APPROVED EQUAL, FOR UNCLASSIFIED & CLASS 1, DIV.2 AREAS.
9. IN UNCLASSIFIED NON-PROCESS BUILDINGS, ELECTRIC METALLIC TUBING (EMT) CONDUIT MAY BE USED IN FALSE CEILINGS OR IN CONCEALED AREAS OF GENERAL USE, EXCEPT ALL 480V & ABOVE CIRCUITS MUST BE RUN IN RIGID STEEL CONDUIT.
10. ALL WIRE & CABLES SHALL BE PULLED INTO THEIR CONDUITS BY APPLICATION OF A SUITABLE COMMERCIAL PULLING COMPOUND, "PLOY-EAS" FOR POLYETHYLENE INSTALLATION. PULLING DISTANCE SHALL NOT EXCEED THE EQUIVALENT OF 300 FEET STRAIGHT RUN, OR A PULL SHALL CONTAIN NOT MORE THAN THE EQUIVALENT OF THREE (3) 90 DEGREE BENDS.

ELECTRICAL POWER ABOVE GROUND POWER CABLE AND WIRE NOTES

1. THE SMALLEST WIRE SIZE FOR POWER CIRCUITS 600 VOLTS & BELOW SHALL BE •12 AWG, EXCEPT THAT •14 AWG SHALL BE USED FOR CONTROL.
2. WHERE WIRES IN CONDUIT ARE USED, WIRES FOR POWER & CONTROL LEADS TO MOTORS 600 VOLTS & BELOW SHALL BE INSTALLED IN THE SAME CONDUIT WHEN THE POWER WIRE IS •2 AWG. OR SMALLER. FOR POWER WIRES LARGER THAN •2 AWG. POWER & CONTROL WIRES SHALL BE INSTALLED IN SEPARATE CONDUITS.
3. POWER & CONTROL WIRES SHALL BE LABELED WITH A WIRE NUMBER AS SHOWN IN ELEMENTARY & INTERCONNECTION WIRING DIAGRAMS.
4. THE COLOR CODING FOR SINGLE CONDUCTOR WIRES SHALL BE AS FOLLOWS:
   A) POWER PHASE LEADS SHALL BE BLACK.
   B) ALL CONTROL LEADS INCLUDING THOSE FOR CONTROL STATIONS, INTERLOCKING CIRCUITS, CURRENT TRANSFORMERS ETC, SHALL BE RED.
   C) ALL GROUNDING SHALL BE EITHER BARE OR HAVE A GREEN COVERING.
   D) TWO WIRE 120 VAC BRANCH CIRCUITS SHALL BE AS FOLLOWS
   THE GROUNDED CONDUCTOR SHALL BE WHITE
   THE UNGROUNDED CONDUCTOR SHALL BE BLACK
   THE BRANCH CIRCUIT WIRES SHALL BE IDENTIFIED & LABELLED TO MATCH PANEL CIRCUIT DIRECTORIES.
5. WIRES INSTALLED IN CONDUIT:
   FOR SERVICES 600 VOLT & BELOW WIRE •14 AWG & LARGER SHALL BE 600 VOLT SINGLE CONDUCTOR, STRANDED COPPER HEAT & MOISTURE RESISTANT THERMOPLASTIC INSULATION 75 DEGRESS C TYPE THHN/THWN.
6. ALL CABLES FURNISHED WITH SHEILDING SHALL BE TERMINATED WITH STRESS CONES & GROUND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION
7. CONTROL WIRING SHALL BE IDENTIFIED USING A SLEEVE TYPE WIRE MARKERS WITH IDENTIFICATION CORRESPONDING TO THAT ON WIRING DIAGRAMS. WIRE MARKERS SHALL BE INSTALLED AT ALL TERMINAL & JUNCTION POINTS. WIRE MARKERS SHALL BE RAYCHEM "MS" HEAT SHRINKABLE SLEEVES.
8. CABLES INSTALLED IN TRAY:
   A) CABLES INSTALLED IN TRAY FOR SERVICES 600 VOLT AND BELOW SHALL BE 600 VOLT MULTI-CONDUCTOR TYPE "TC" CABLE WITH STRANDED COPPER CONDUCTORS, HEAT AND MOISTURE RESISTANT THERMOPLASTIC INSULATION 70 DEGREES C TYPE THHN/THWN AND AN OVERALL BLACK PVC JACKET. POWER CABLES SHALL HAVE GROUNDING CONDUCTOR, WHICH IS EITHER GREEN INSULATED OR RE-IDENTIFIED WITH GRFEN TAPE.
9. INSTRUMENT SIGNAL CABLE:
   INSTRUMENT SIGNAL CABLE SHALL BE SINGLE TWISTED PAIR •16, STRANDED COPPER, 300V PVC INSULATION WITH OVERALL ALUMINUM MYLAR SHIELD, UL LISTED AS PLTC AND OVERALL PVC JACKET.

ELECTRICAL UNDERGROUND GENERAL NOTES

1. ALL ELECTRICAL UNDERGROUND INSTALLATIONS INCLUDING GROUNDING SYSTEM SHALL COMPLY WITH OSHA (OCCUPATIONAL SAFETY HEALTH ACT), THE LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE, APPLICABLE STATE AND LOCAL CODES AND REGULATIONS.
2. CONDUIT BANK & GROUNDING SYSTEM SHALL BE INSTALLED PER UNDERGROUND INSTALLATION DRAWINGS & CONSTRUCTION DETAILS.
3. ALL UNDERGROUND CONDUITS & ELBOWS SHALL BE SCHEDULE 80 PVC. MINIMUM CONDUIT SIZE SHALL BE 1"
4. WHERE PVC CONDUIT IS SPECIFIED, STUB UPS SHALL BE MADE BY USING A METALLIC ELBOW, COUPLING & EXTENSION NIPPLE. THE TRANSITION TO METALLIC CONDUIT SHALL BE MADE BY USING AN APPROVED ADAPTER. ALL JOINTS IN PVC CONDUIT & FITTINGS SHALL BE CEMENTED FOR WATERPROOFING. CONDUIT STUB UPS ABOVE GRADE SHALL BE AS SPECIFIED IN UNDERGROUND DETAILS. NO REDUCTION IN CONDUIT SIZE SHALL BE MADE IN UNDERGROUND CONDUITS.
5. ALL UNDERGROUND HORIZONTAL BENDS AND OFFSETS WILL BE MADE IN FIELD AND SHALL HAVE MINIMUM BENDING RADIUS OF 48". ALL STUB-UPS UNLESS OTHERWISE SPECIFIED WILL BE FIELD MADE CONDUIT BENDS HAVING A MINIMUM BENDING RADIUS OF 24" FOR 2" CONDUIT AND SMALLER AND 36" RADIUS FOR 3" CONDUIT AND LARGER.
6. DUCT BANKS SHALL BE ENCASED IN RED COLORED CONCRETE ENVELOPES HAVING A MINIMUM STRENGTH OF 2500 PSI. DUCT BANK SHALL BE FREE OF VOIDS AND SHALL HAVE A MINIMUM COVER OF 3' ENCASING THE PERIPHERAL CONDUITS OR REBARS IN BANK.
7. CONCRETE SHALL BE IN ACCORDANCE WITH JOB SPEC. EXCEPT THAT THE AGGREGATE SIZE SHALL NOT EXCEED ½". TO ACHIEVE COLORING, 15 TO 20 LB. OF RED OXIDE SHALL BE ADDED PER CUBIC YARD OF CONCRETE.
8. CONDUIT STUB-UPS FROM UNDERGROUND BANKS SHALL BE PLUMB, AND ACCURATELY LOCATED AS DIMENSIONED ON THE INSTALLATION PLAN DRAWINGS.
9. THE TOP OF CONCRETE ENCASEMENT OF DUCT BANKS AND CONDUIT RUNS SHALL BE A MINIMUM OF 18 INCHES BELOW GRADE FOR STEEL CONDUITS & 24 INCHES FOR PVC CONDUITS. AT ROAD & RAILROAD CROSSINGS, THE TOP OF THE ENCASEMENT SHALL BE A MINIMUM 30 INCHES BELOW THE ROAD SURFACE OF RAIL BASE AND SHALL BE REINFORCED PER UNDERGROUND DETAILS.
10. WHERE CONDUITS RISE ABOVE GRADE THE CONCRETE ENCASEMENT SHALL EXTEND 4" ABOVE GRADE AS PER UNDERGROUND CONDUIT STUB-UP DETAILS.
11. ALL SPARE CONDUITS SHALL BE STUBBED-UP FROM UNDERGROUND BANKS AND SEALED UTILIZING A COUPLING AND SQUARE HEAD PLUG.
12. COPPER GROUND CONDUCTORS SHALL BE LAID DIRECTLY IN THE GROUND, WITH SLACK, WITHOUT BREAKS OR JOINTS AND SHALL HAVE 12" MINIMUM COVER. GROUND CONDUCTORS RUN UNDER ROADWAYS OR OTHER HEAVY TRAFFIC AREAS, SHALL HAVE 24" MINIMUM COVER AND SHALL BE RUN IN RIGID METAL CONDUIT OR PIPE SLEEVES AS SPECIFIED IN UNDERGROUND DETAILS.
13. ALL CONDUIT STUB-UPS SHALL BE RIGID GALVANIZED STEEL.

ELECTRICAL - LIGHTING GENERAL NOTES

1. LIGHTING PANELS, LIGHTING FIXTURES, RECEPTACLES AND OTHER ITEMS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS. IF ANY DEVIATION IS REQUIRED, APPROVAL SHALL BE OBTAINED FROM THE ELECTRICAL FIELD SUPERINTENDENT PRIOR TO CHANGE. LOCATION OF LIGHTING FIXTURES SHOWN ON THE DRAWINGS ARE IN GENERAL, APPROXIMATE. EXACT LOCATIONS TO AVOID INTERFACE WITH PIPING AND STRUCTURES, ETC., ARE TO BE DETERMINED IN THE FIELD, EXCEPT WHERE THE LOCATIONS ARE FIXED BY DIMENSIONS ON DRAWINGS.
2. CONDUIT RUNS AND WIRES ARE NOT SHOWN ON LAYOUT DRAWING. CONTRACTOR TO DETERMINE CONDUIT SIZE, RUNS & WIRE SIZES.
3. CONDUIT SUPPORTS SHALL BE PROVIDED WHERE REQUIRED SUCH AS AT FIXTURE LOCATIONS, RECEPTACLES, ELEVATION CHANGES, FITTING AND BOXES, ALL CONDUIT SUPPORT HARDWARES SHOWN AS GALV. CLAMPS, STRAPS, CLIPS, CHANNEL SHALL BE HOT-DIPPED GALVANIZED STEEL FINISH.
4. CONTRACTOR SHALL INSTALL UNIONS, BUSHINGS, COUPLINGS AND NIPPLES AS REQUIRED FOR PROPER CONDUIT MAKE UP. CONDUIT FITTINGS SHALL BE INSTALLED WITH COVER OPENING IN THE VERTICAL PLANE OR DOWNWARD IN THE HORIZONTAL PLANE.
5. ALL UNUSED OPENINGS IN FIXTURES, BOXES AND FITTINGS SHALL BE PLUGGED.
6. BEFORE INSTALLING LIGHTING CONDUITS, FIXTURES, ETC. A CAREFUL CHECK SHALL BE MADE TO AVOID INTERFERENCES WITH PIPING, EQUIPMENT, TEC, IF NOT OTHERWISE SPECIFIED CONDUIT RUNS MUST BE KEPT AT LEAST 12" AWAY FROM HOT SURFACES. A MINIMUM CLEARANCE OF 6" SHALL BE KEPT WHERE A CONDUIT CROSSES A HOT PIPE.
7. CONDUIT AND WIRING NOT IDENTIFIED ON DRAWING SHALL BE DETERMINED IN FIELD AS FOLLOWS:
   A) MAXIMUM CONDUIT SIZE SHALL BE 1" EXCEPT DROPS TO PANEL BOARDS MAY BE 1½".
   B) WIRE SIZE SHALL BE •12 AWG EXCEPT THAT •14 AWG, STRANDED, 600 VOLT TYPE SF-2 FIXTURE WIRE SHALL BE INSTALLED BETWEEN EACH LIGHTING FIXTURE AND THE NEAREST CONDUIT FITTING IN THE RUN. WIRE SIZE MIGHT BE LARGER THAN •12 AWG TO MEET VOLTAGE DROP REQUIREMENTS AND WILL BE SPECIFIED ON DRAWINGS.
8. ALL ABOVE GROUND CONDUIT SHALL BE RIGID STEEL UNLESS OTHERWISE NOTED, ALL ABOVE GROUND LIGHTING CONDUIT SHALL BE ¾" INCH MINIMUM OR 1" INCH MAXIMUM WHERE PRACTICAL.
9. ALL LIGHTING FIXTURE ELEVATIONS ARE SHOWN FROM FINISHED GRADE, FINISHED FLOOR OR PLATFORM ELEVATION TO THE BOTTOM OF FIXTURE GLOBE. MINOR VARIATIONS TO SUIT FIELD CONDITIONS ARE ALLOWABLE.

BILL OF MATERIALS FOR LIGHTING

1. 400 W, 208V, HIGH BAY, HIGH PRESSURE SODIUM (HPS) LIGHTING FIXTURE WITH 16" ALUMINUM REFLECTOR AND HIGH POWER FACTOR QUAD VOLT BALLAST AND SSB MOUNTING. FIXTURE SHALL BE U.L. LISTED FOR DAMP LOCATION. SOCKET IN MED POSITION
   RUDD CAT.• A1540-M OR EQUAL.
2. 400W, 208V, HIGH BAY, HIGH PRESSURE SODIUM (HPS) LIGHTING FIXTURE WITH 16" ALUMINUM REFLECTOR AND HIGH POWER FACTOR QUAD VOLT BALLAST AND SSB MOUNTING FIXTURE SHALL BE U.L. LISTED FOR DAMP LOCATION. SOCKET IN MED POSITION 100W QUARTZ LAMP FOR INSTANT RESTRIKE
   RUDD CAT.• A1540-M-Q OR EQUAL.
3. 100W, 120V, HIGH PRESSURE SODIUM (HPS) WALL PACK LIGHTING FIXTURE WITH PHOTOCELL AND SURFACE MOUNTING BOX. RUDD CAT.• MW0510-1-P OR EQUAL, SURFACE BOX.
   RUDD CAT.• SB-16 OR EQUAL.
4. STEEL LED EXIT LIGHT, 120V, WITH BATTERY BACKUP. RED LETTER WITH UNIVERSAL MOUNTING.
   RUDD CAT.• EXSBUR OR EQUAL.
5. 150W, 208V, HIGH PRESSURE SODIUM (HPS) PARKING LIGHT FIXTURE WITH HIGH POWER FACTOR BALLAST. 12" SQUARE HOUSING WITH 6" EXTENDED POLE MOUNT AND FACTORY INSTALLED PHOTOCELL. MOUNTED ON 20' HIGH SQUARE STEEL POLE. COMPLETE WITH WELDED BASE, BASE COVER, MOUNTING TEMPLATE AND GALVANIZED ANCHOR BOLT.
   LIGHTING FIXTURE RUDD CAT.• MPR2515-3-P OR EQUAL,
   STEEL POLE. RUDD CAT.•P54519C1BZ OR EQUAL.
6. EMERGENCY BATTERY PACK WITH MAINTENANCE FREE 6V LEAD CALCIUM BATTERY FOR 50 MINUTE OPERATION AND TWO 8 WATT HALOGEN LIGHTING FIXTURE 120V INPUT.
   CROUSE HING CAT.• N2LPS6222.
7. 400W, 208V, HIGH PRESSURE SODIUM (HPS) FLOOD LIGHT WALL MOUNTED WITH PHOTO CELL, 2" ADJUSTABLE FITTER AND WALL MOUNT BRACKET.
   RUDD CAT.•FS3540-M-PC2 WITH WALL BRACKET CAT.•WM-4 OR EQUAL.
8. 2' X4' FLUORESCENT LIGHT FIXTURE, CEILING GRID MOUNTED, 120V WITH 32W, 4 LAMP AND ELECTRONIC INSTANT START BALLAST.
   LITHONIA CAT•. 2SP8-G-4-32-A12-120-GEB10IS OR EQUAL.
9. 2' X 4' FLUORESCENT LIGHT FIXTURE, CEILING GRID MOUNTED, 120V WITH 32W, 4 LAMP ELECTRONIC INSTANT START BALLAST AND EMERGENCY BATTERY PACK.
   LITHONIA CAT•. 2SP8-G-4-32-A12-120-GEB10IS-EL OR EQUAL.
10. 1' X 4' FLUORESCENT LIGHT FIXTURE, PENDANT MOUNTED, ENCLOSED IN FIBERGLASS HOUSING,120V, WITH 2 LAMPS AND INSTANT START ELECTRONIC BALLAST
    LITHONIA CAT•. DM-2-32-120-BLD OR EQUAL.
11. 1' X 4' FLUORESCENT LIGHT FIXTURE, PENDANT MOUNTED, ENCLOSED IN FIBERGLASS HOUSING, 120V, WITH 2 LAMPS AND INSTANT START ELECTRONIC BALLAST WITH EMERGENCY BATTERY PACK
    LITHONIA CAT•. DM-2-32-120-BLD-EL OR EQUAL.
12. 1' X 4', 120V INDUSTRIAL TYPE FLUORESCENT LIGHTING FIXTURE WITH 2 LAMPS
    LITHONIA CAT•. EJA 2 32 120 OR EQUAL.
13. 400W, 240V HIGH PRESSURE SODIUM (HPS) FLOOD LIGHT WITH PHOTO CELL AND 2" ADJUSTABLE FITTER, MOUNTED ON 30' HIGH (5" X 5") STEEL POLE.
    FLOOD LIGHT RUDD CAT. • FS3540-M-PC2 OR EQUAL.
    STEEL POLE RUDD CAT. • PS5S30STBZ OR EQUAL.
    SINGLE TENNONS RUDD CAT. • PB-1A4 OR EQUAL.
14. TWO (2) 400W, 240V HIGH PRESSURE SODIUM (HPS) FLOOD LIGHTS WITH PHOTO CELL AND 2" ADJUSTABLE FITTER, MOUNTED ON 30' HIGH (5" X 5") STEEL POLE.
    FLOOD LIGHT RUDD CAT. •FS3540-M-PC2 OR EQUAL.
    STEEL POLE RUDD CAT. •PS5S30STBZ OR EQUAL.
    TWIN TENNOL RUDD CAT. •PB-2A5 OR EQUAL.

BILL OF MATERIALS FOR GROUNDING

1. 3/4" X 10 FEET LONG COPPER CLAD STEEL GROUND ROD. COPPERWELD OR EQUAL.
2. • 4/0 BARE STRANDED COPPER MAIN GROUND GRID CABLE
3. CADWELD CONNECTION. FOR PROPER MOLD CATALOG NUMBER AND CADWELD MOLD METAL. SEE CADWELD CATALOG. OR EQUAL.
4. #2 BARE STRANDED COPPER TAP GROUND CABLE
5. GROUND COPPER BUS (1/4" X 2" X 12") WITH WALL MOUNTED BRACKETS.
   HARGER CAT.# GBB 14412 G OR EQUAL.
6. GROUND COPPER BUS (1/4" X 2" X 12") WITH WALL MOUNTING BRACKETS AND INSULATORS.
   HARGER CAT.# GBI 14412 G OR EQUAL
7. HEAVY DUTY BRONZE BONDING PLATE
   HARGER CAT. #220
8. 3.25" X 3.25" GROUND PLATE WITH FOUR (4) TAPPED HOLES
   HARGER CAT. # GP3.25/3.25 4/0

3

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3

HARISH C. RANA ELECTRICAL REGISTERED PROFESSIONAL ENGINEER
Harish C Rana

ISSUED FOR BID

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.	Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.				
2	ISSUED FOR BID	02/28/03	M.O.				
1	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.				
0	ISSUED FOR 90% DESIGN SUBMITTAL	05/24/02	M.O.				
A	ISSUED FOR USACE REVIEW	03/01/02	M.O.				

Designed by: H. RANA
Drawn by: D. WAGNER
Reviewed by: J. SCARAMUZZO
Submitted by: H. RANA

Date: 05/20/03 | Rev. 3
Design file no. 172093-E-0013xx.DGN
Drawing code:
File name:
Plot date:
Plot scale:

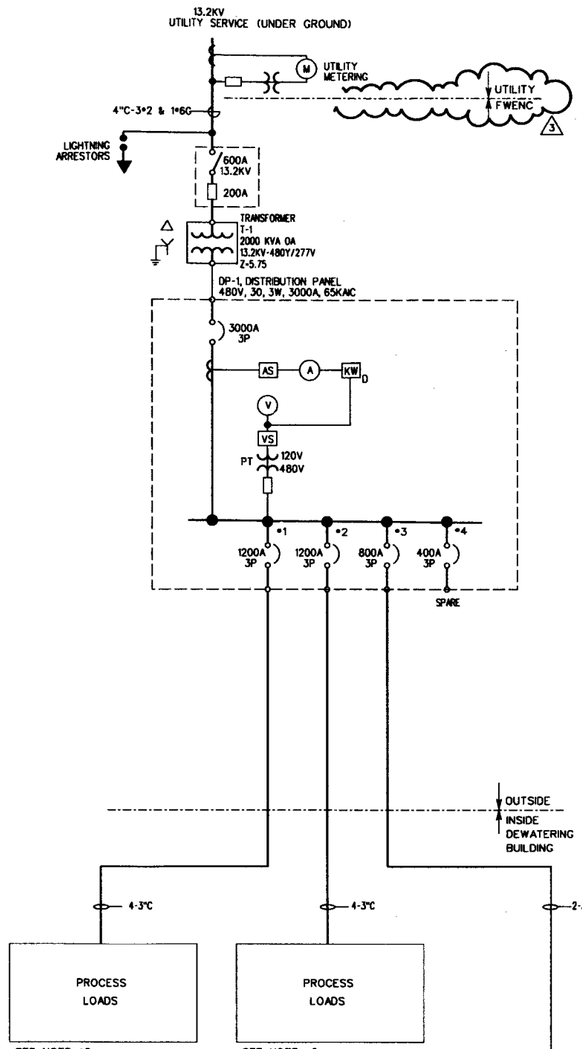
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

ELECTRICAL
NOTES, SYMBOLS AND ABBREVATIONS

Reference number:
E-001



PANEL SCHEDULE LP-1

LOCATION: SEE DRAWING #E-101 DEWATERING BLDG

VOLTAGE: 208/120. 3PHASE. 4 WIRE
NUMBER OF POLES: 42
MAINS: ☐ LUGS ONLY AMPS ☒ TOP ☒ MAIN BKR 150 AMPS ☐ BOT
MTG: ☐ FLUSH ☒ SURFACE
COVER: ☒ WITH DOOR ☒ WITH LOCK ☐ WITHOUT DOOR ☐ WITHOUT LOCK
ALL BRANCH BREAKERS 20 AMP. 1 POLE UNLESS NOTED
INTEGRATED EQUIP S/C RATING 10K AMPS MIN. RMS SYM @ 208/120V
NEUTRAL: ☒ 100%
SPECIAL: EQUIPMENT GROUND BAR. BOLT-ON BREAKERS. NEMA 1 ENCLOSURE. 225 AMP BUS

IDENTIFICATION	KVA	WIRE SIZE	CKT NO	CKT NO	WIRE SIZE	KVA	IDENTIFICATION
SPARE			1	2			SPARE
8-400W LTG FIXTURE PROCESS BLDG	3.2	10	3	4	10	2.8	7-400W LTG FIXTURE PROCESS BLDG
8-400W LTG FIXTURE PROCESS BLDG	3.2	10	5	6	10	2.8	7-400W LTG FIXTURE PROCESS BLDG
3-400W FLOOD LTG	1.2	10	7	8	10	1.2	3-400W FLOOD LTG 3-150W PARKING LOT LTG
* 6-EMERG BATTERY PACK	.6	10	9	10	10	1.2	* 4 EXIT LTG
SPARE			11	12			SPARE
6-RECEPTACLES	1	10	13	14	10	1	6-RECEPTACLES
OVERHEAD DOOR *ODH-1	1	10	15	16	10	1	OVERHEAD DOOR *ODH-2
SLIDING GATE *1	1	10	17	18			SPARE
SPARE			19	20			SPARE
UH-1, 2 & 3	.6	10	21	22	10	.6	UH-4, 5 & 6
UH-7, 8 & 9	.6	10	23	24	10	.4	UH-, 10 & 11
			25	26			
			27	28			

* PROVIDE KEY LOCKED BREAKER

PANEL SCHEDULE LP-2

LOCATION: SEE DRAWING #E-101 DEWATERING BLDG

VOLTAGE: 208/120. 3PHASE. 4 WIRE
NUMBER OF POLES: 42
MAINS: ☐ LUGS ONLY AMPS ☒ TOP ☒ MAIN BKR 150 AMPS ☐ BOT
MTG: ☐ FLUSH ☒ SURFACE
COVER: ☒ WITH DOOR ☒ WITH LOCK ☐ WITHOUT DOOR ☐ WITHOUT LOCK
ALL BRANCH BREAKERS 20 AMP. 1 POLE UNLESS NOTED
INTEGRATED EQUIP S/C RATING 10K AMPS MIN. RMS SYM @ 208/120V
NEUTRAL: ☒ 100%
SPECIAL: EQUIPMENT GROUND BAR. BOLT-ON BREAKERS. NEMA 1 ENCLOSURE. 225 AMP BUS

IDENTIFICATION	KVA	WIRE SIZE	CKT NO	CKT NO	WIRE SIZE	KVA	IDENTIFICATION
SPARE			1	2			SPARE
8-400W LTG FIXTURE TRUCK LOADING AREA	3.2	10	3	4	10	2.8	7-400W LTG FIXTURE TRUCK LOADING AREA
5-400W LTG FIXTURE RAIL LOADING AREA	2	10	5	6	10	2	5-400W LTG FIXTURE RAIL LOADING AREA
3-400W FLOOD LTG	1.2	10	7	8	10	1.2	3-400W FLOOD LTG
			9	10			
OVERHEAD DOOR * ODH-3	1	10	11	12	10	1	OVERHEAD DOOR * ODH-4
OVERHEAD DOOR * ODH-5	1	10	13	14	10	1	OVERHEAD DOOR * ODH-6
OVERHEAD DOOR * ODH-7	1	10	15	16	10	1	OVERHEAD DOOR * ODH-8
* 6-EMERG BATTERY PACK	.6	10	17	18	10	1	5-RECEPTACLES
4-RECEPTACLES	.8	10	19	20	10	.6	3-RECEPTACLES
			21	22			
			23	24			
			25	26			
			27	28			
			29	30			

* PROVIDE KEY LOCKED BREAKER

PANEL SCHEDULE DP-2

LOCATION: SEE DRAWING #E-102 NEAR GUARD HOUSE

VOLTAGE: 240/120. 1PHASE. 3 WIRE
NUMBER OF POLES: 30
MAINS: ☐ LUGS ONLY AMPS ☒ TOP ☒ MAIN BKR 400 AMPS ☐ BOT
MTG: ☐ FLUSH ☒ SURFACE
COVER: ☒ WITH DOOR ☒ WITH LOCK ☐ WITHOUT DOOR ☐ WITHOUT LOCK
ALL BRANCH BREAKERS 20 AMP. 1 POLE UNLESS NOTED
INTEGRATED EQUIP S/C RATING 10K AMPS MIN. RMS SYM @ 120/240V
NEUTRAL: ☒ 100%
SPECIAL: EQUIPMENT GROUND BAR. BOLT-ON BREAKERS. 3R NEMA ENCLOSURE. 400 AMP BUS

IDENTIFICATION	KVA	WIRE SIZE	CKT NO	CKT NO	WIRE SIZE	KVA	IDENTIFICATION
TRAILER *1			1	2			TRAILER *2
FLOOD LIGHTS			3	4			FLOOD LIGHTS
GUARD HOUSE			5	6			
SLIDING GATE *2	1	10	7	8			
SLIDING GATE *3	1	10	9	10			
			11	12			
			13	14			
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			

* PROVIDE KEY LOCKED BREAKER

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NOTES:

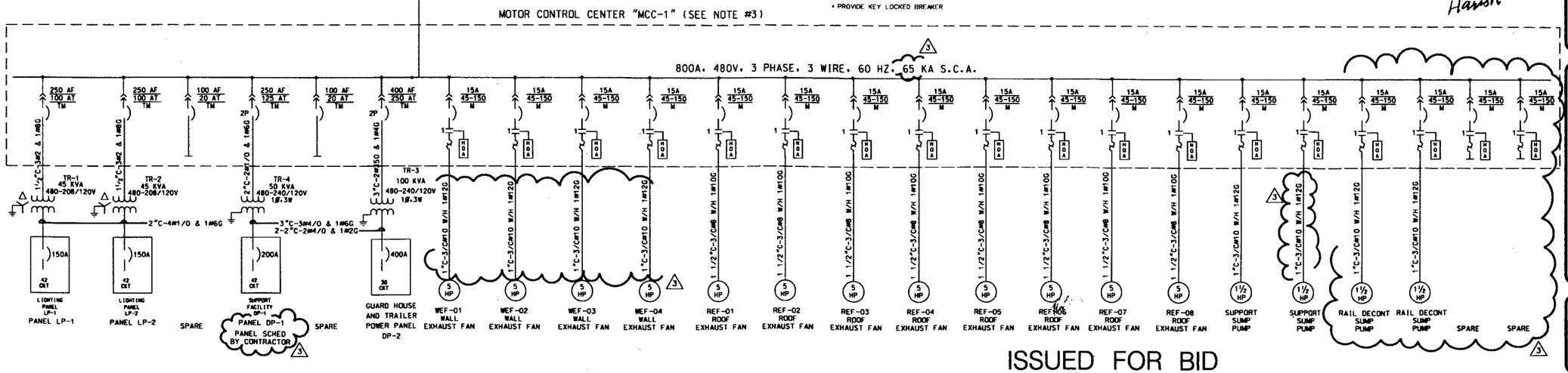
1. 13.2 KV DISCONNECT SWITCH, 2000KVA TRANSFORMER AND "DP-1" 480V DISTRIBUTION PANEL BOARD WILL BE LOCATED ON A CONCRETE PAD OUTSIDE OF THE DEWATERING BUILDING. FOR LOCATION SEE DWG #U-101.
2. DEVELOPMENT OF DETAIL ONE LINE DIAGRAM FOR PROCESS, LOAD BY OTHERS.
3. REVISE MCC-1 ELECTRICAL LOADS AND STARTER SIZE BASED ON FINAL DESIGN OF HVAC SYSTEMS, OVERHEAD DOOR AND SLIDING GATES.
4. ALL HVAC CONTROL DESIGN BY OTHERS.

GENERAL NOTE:

DEWATERING FACILITIES DESIGN INCLUDES BOTH PERFORMANCE AND PERSCRIPTIVE SPECIFICATIONS. DESIGN DRAWINGS ARE PROVIDED FOR USE IN PROCURING PERFORMANCE BASED BUILDING SYSTEMS, HVAC EQUIPMENT AND SYSTEMS, ELECTRICAL SYSTEMS, PLUMBING AND ARCHITECTURAL COMPONENTS.

COMMONWEALTH OF MASSACHUSETTS HARISH C. RANA ELECTRICAL No. 28888 REGISTERED PROFESSIONAL ENGINEER

Harish C. Rana



ISSUED FOR BID

US Army Corps of Engineers New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR BID	02/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	09/24/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

Rev. 3
Date: 05/20/03
Design file no. 172093-E-8013XX.DGN
Drawing code:
File name:
Plot date:
Plot scale:

Designed by: H. RANA
Drawn by: D. WAGNER
Reviewed by: J. SCARAMUZZO
Submitted by: H. RANA

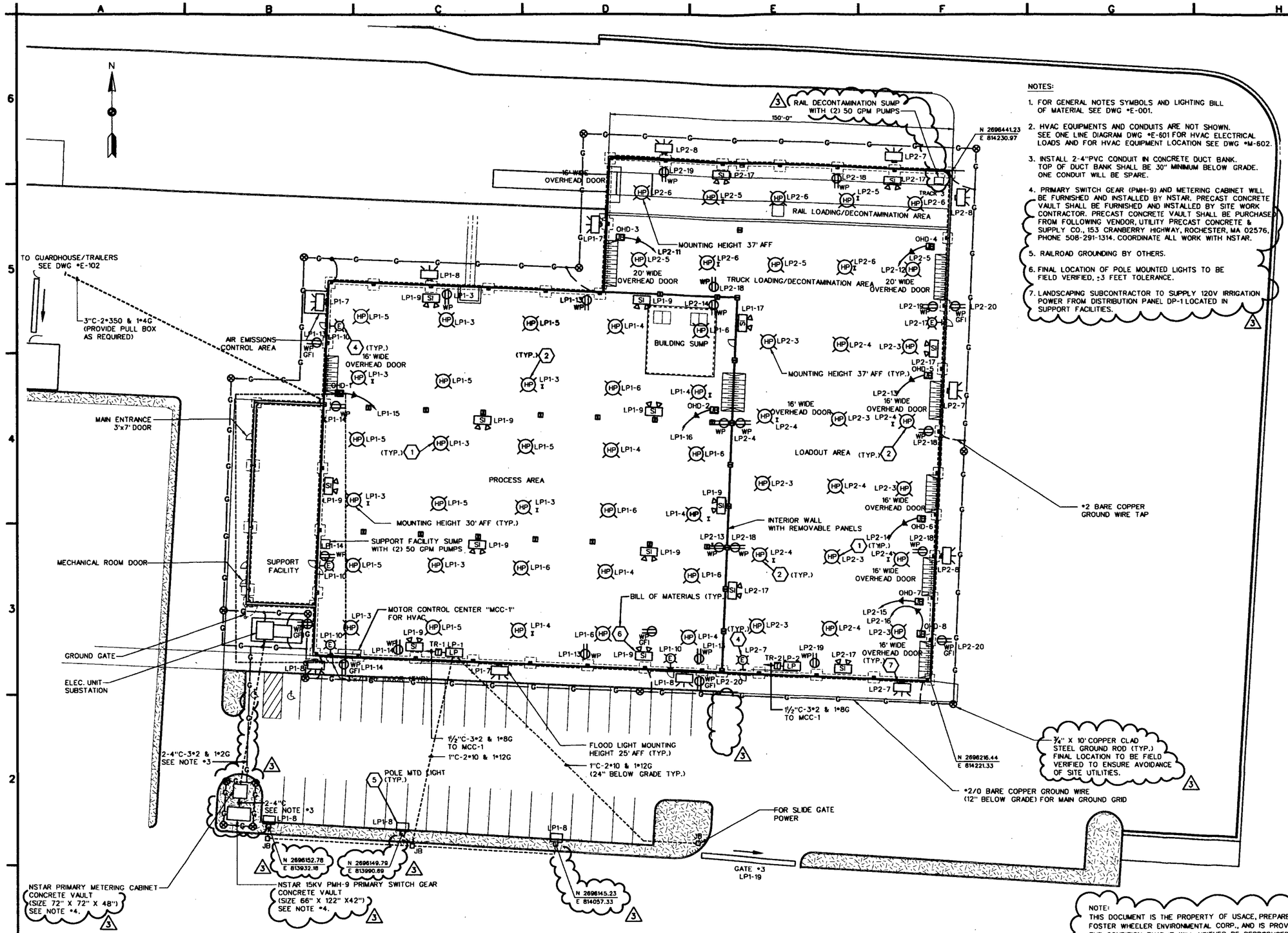
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP. 133 FEDERAL STREET BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

ONE LINE DIAGRAM DEWATERING AREA

Reference number:
E-601



NOTES:

1. FOR GENERAL NOTES SYMBOLS AND LIGHTING BILL OF MATERIAL SEE DWG #E-001.
2. HVAC EQUIPMENTS AND CONDUITS ARE NOT SHOWN. SEE ONE LINE DIAGRAM DWG #E-601 FOR HVAC ELECTRICAL LOADS AND FOR HVAC EQUIPMENT LOCATION SEE DWG #M-602.
3. INSTALL 2-4"PVC CONDUIT IN CONCRETE DUCT BANK. TOP OF DUCT BANK SHALL BE 30" MINIMUM BELOW GRADE. ONE CONDUIT WILL BE SPARE.
4. PRIMARY SWITCH GEAR (PMH-9) AND METERING CABINET WILL BE FURNISHED AND INSTALLED BY NSTAR. PRECAST CONCRETE VAULT SHALL BE FURNISHED AND INSTALLED BY SITE WORK CONTRACTOR. PRECAST CONCRETE VAULT SHALL BE PURCHASED FROM FOLLOWING VENDOR, UTILITY PRECAST CONCRETE & SUPPLY CO., 153 CRANBERRY HIGHWAY, ROCHESTER, MA 02576, PHONE 508-291-1314. COORDINATE ALL WORK WITH NSTAR.
5. RAILROAD GROUNDING BY OTHERS.
6. FINAL LOCATION OF POLE MOUNTED LIGHTS TO BE FIELD VERIFIED, ±3 FEET TOLERANCE.
7. LANDSCAPING SUBCONTRACTOR TO SUPPLY 120V IRRIGATION POWER FROM DISTRIBUTION PANEL DP-1 LOCATED IN SUPPORT FACILITIES.

NOTE:
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SCALE 1"=20'

ISSUED FOR BID

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR BID	03/28/03	M.O.
1	ISSUED FOR BID	02/28/03	M.O.
0	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.

Date 06/20/03 | Rev. 3
Design file no. 172063-E-1012XX.DGN
Drawing code:
File name:
Plot date:
Plot period:
Designed by: H. RANA
Drawn by: D. WAGNER
Reviewed by: J. SCARAMUZZO
Submitted by:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

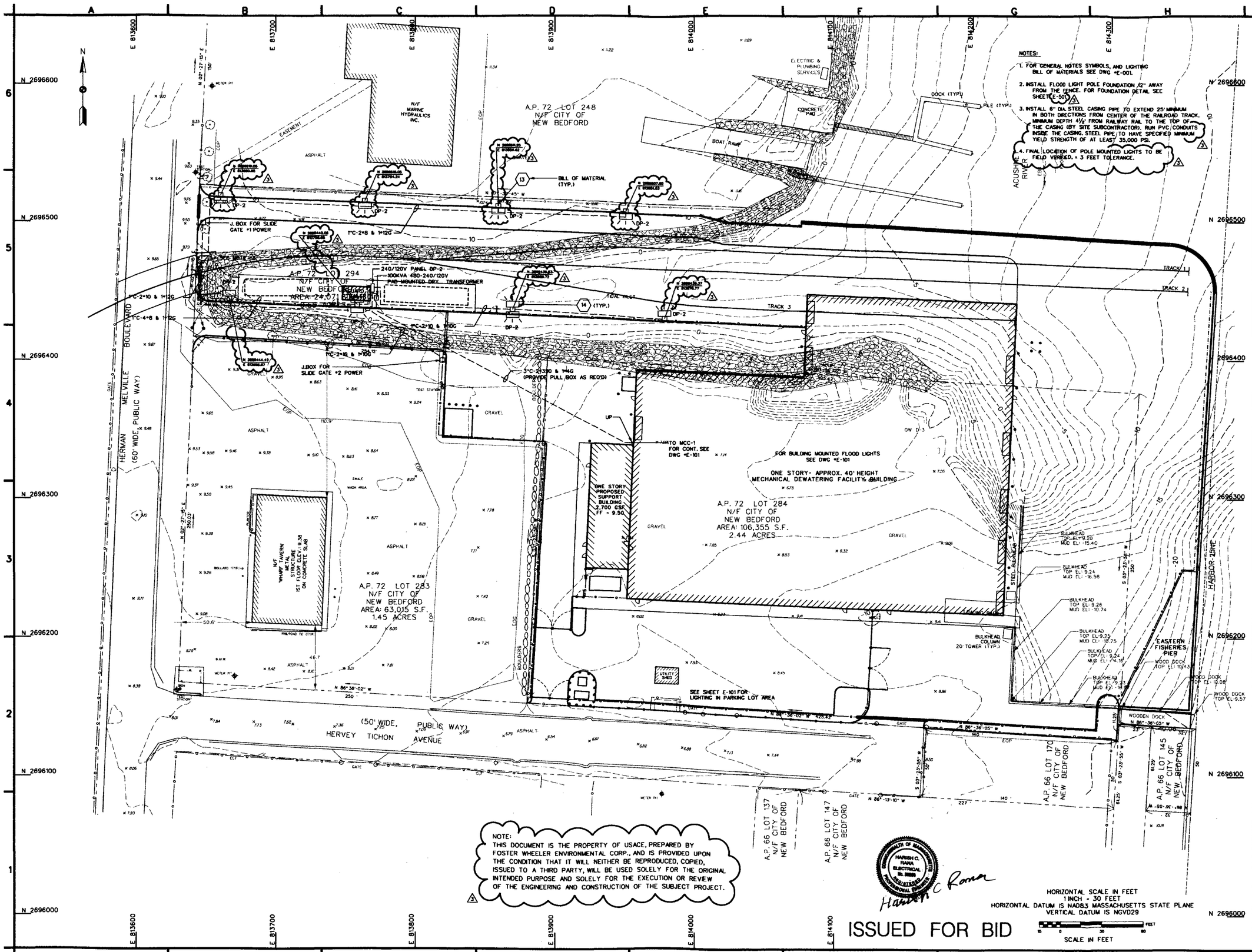
FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

EXTERIOR POWER AND LIGHTING PLAN

Reference number:
E-101

Sheet 35 of 43



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COMMONWEALTH OF MASSACHUSETTS
HARISH C. RANA
ELECTRICAL
No. 35555
REGISTERED PROFESSIONAL ENGINEER

Harish C Rana

HORIZONTAL SCALE IN FEET
1 INCH = 30 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29

SCALE IN FEET

ISSUED FOR BID

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR IFB/CONSTRUCTION	06/26/03	M.O.
2	ISSUED FOR IFB	05/29/03	M.O.
1	ISSUED FOR IFB	02/28/03	M.O.
0	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.

Rev.: 3
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Design file no. 172083-C-022rev.DGN
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Plot scale:

Designed by: H. RANA
Drawn by: D. Wagner
Reviewed by: M. OSBORNE
Submitted by: H. RANA

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

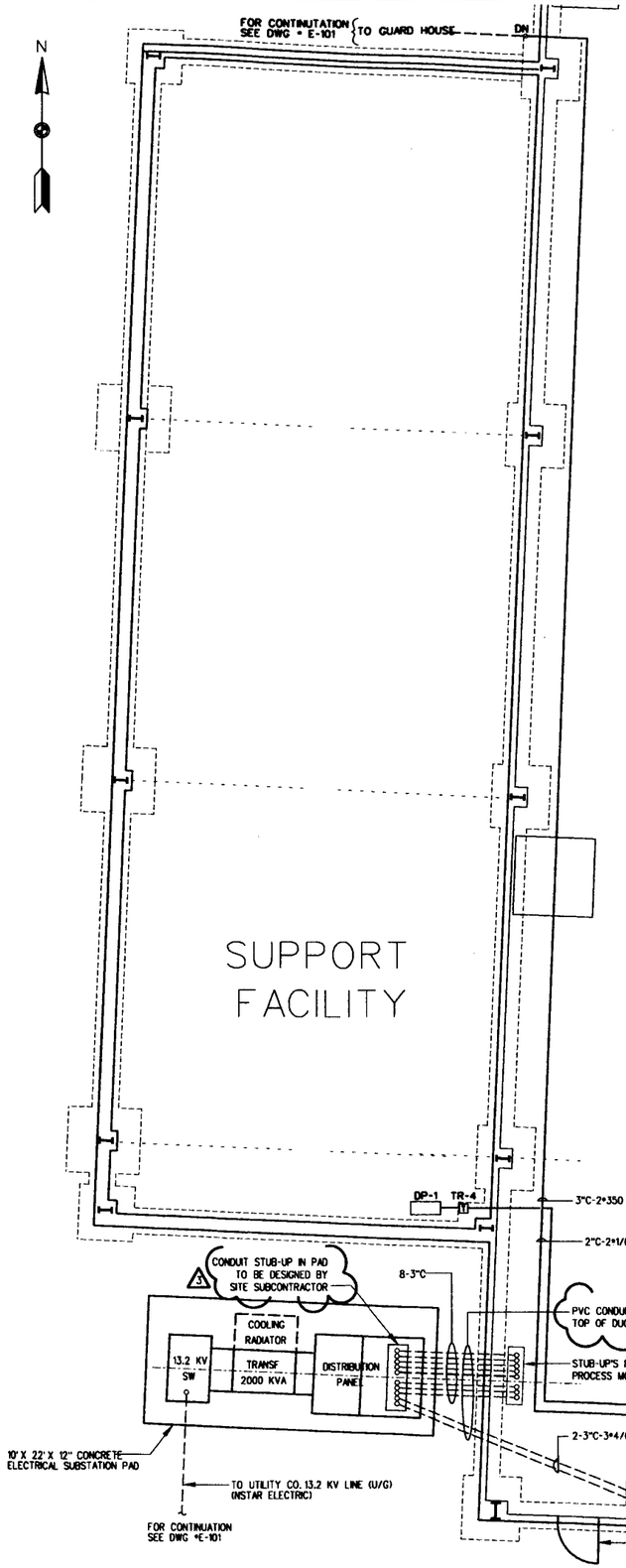
FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

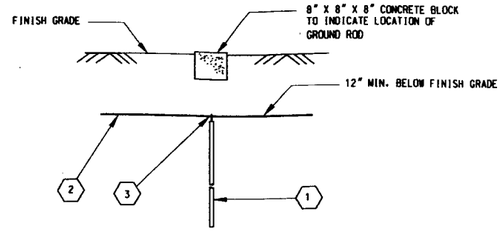
NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D
SITE LIGHTING LAYOUT

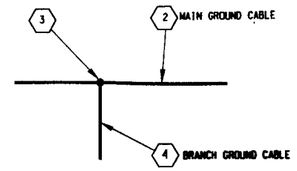
Reference number:
E-102

Sheet 36 of 43

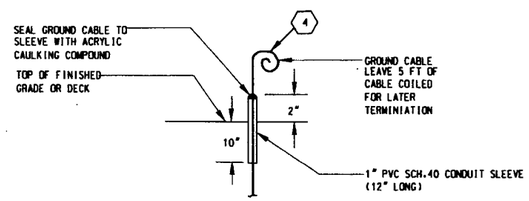




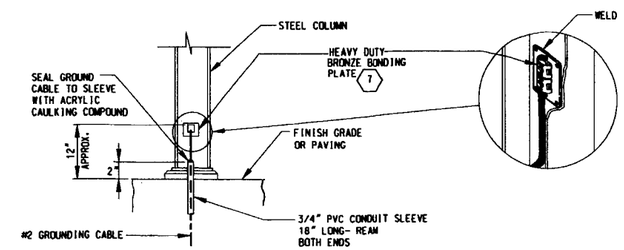
DETAIL #1
GROUND ROD CONNECTION



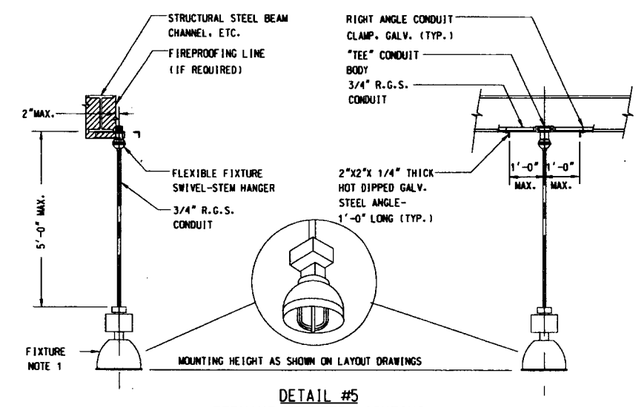
DETAIL #2
GROUND CABLE TAP



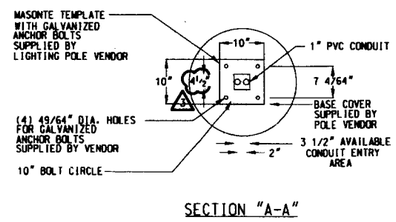
DETAIL #3
GROUND STUB-UP
THROUGH GRADE OR DECK



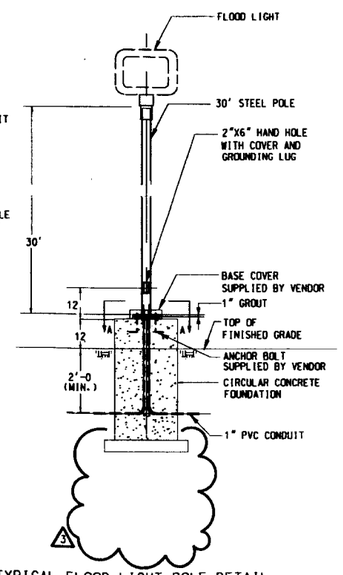
DETAIL #4
STEEL COLUMN GROUNDING



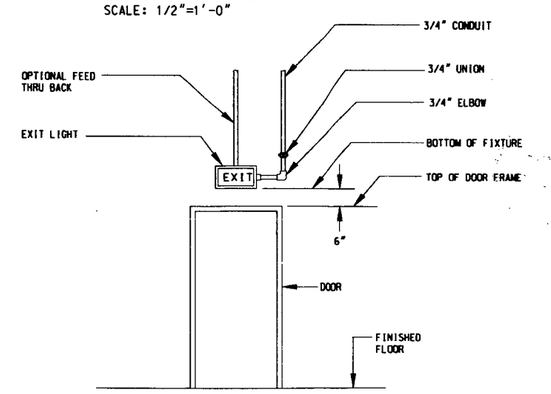
DETAIL #5
PEDNANT MOUNTED LIGHTING
MAXIMUM STEM LENGTH 5 FEET WITH SWIVEL-STEM HANGER (ATTACHED TO STEEL BEAM)
SCALE: 1/2"=1'-0"



SECTION "A-A"



TYPICAL FLOOD LIGHT POLE DETAIL
CONTRACTOR TO PROVIDE FINAL STRUCTURAL DESIGN FOR CAST IN PLACE ON PRECAST CONCRETE FOUNDATION



DETAIL #6
SURFACE WALL MOUNTING EXIT LIGHT

NOTES:

1. FOR GENERAL NOTES SYMBOLS, GROUNDING AND LIGHTING BILL OF MATERIALS SEE DWG #E-101.

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0 2' 4' 8' 12' 16' FEET
3/4"=1'-0"
SCALE IN FEET

ISSUED FOR BID

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/30/03	M.O.
2	ISSUED FOR BID	04/18/03	M.O.
1	ISSUED FOR BID	02/28/03	M.O.
0	ISSUED FOR 100% SUBMITTAL	12/17/02	M.O.

Date: 05/20/03
Rev. 3
Design file no. 172003-E-501CK.DGN
Drawing code:
File name:
Plot date:
Plot scale:
Designed by: H. RUNA
Drawn by: D. WAGNER
Reviewed by: J. SCHRAMLEY
Submitted by: H. RUNA

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

ELECTRICAL DETAILS

Reference number:
E-501
Sheet 37 of 43

LEGEND

L-XX	WALL LOUVER
EF-XX	EXHAUST FAN
REF-XX	ROOF EXHAUST FAN
WEF-XX	WALL EXHAUST FAN
UH-XX	UNIT HEATER
RH-XX	RADIANT HEATER

GENERAL NOTES

1. DRAWINGS PROVIDE CONCEPTUAL GUIDANCE. PERFORM WORK IN ACCORDANCE WITH GOVERNING CODES.
2. FIRE DAMPERS ARE NOT SHOWN. PROVIDE FIRE DAMPERS IN ACCORDANCE WITH GOVERNING CODES.
3. EQUIPMENT NUMBERING LEGEND:
   PROCESS BUILDING: 01 THRU 19
   DESANDING FACILITY: 40 THRU 49

ISSUED FOR CONSTRUCTION

JUNIE W. WEEKS JR. ENGINEERED ENGINEER CONCRETE No.021498 STATE OF TENNESSEE 5-13-03

Temporary Permit Massachusetts 2003-33-PE

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR CONSTRUCTION	05/13/03	J.W.
2	ISSUED FOR BID	02/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	12/02/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	06/24/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

Rev. 3

Dated: 05/13/03
Design file no. 172063-M-0013m.DGN
Drawing code:
File name:
Plot date:
Plot scale: -

Designed by: J. WEEKS
Drawn by: T. VARGAS
Reviewed by: J. BRANGIAN
Submitted by: J. WEEKS

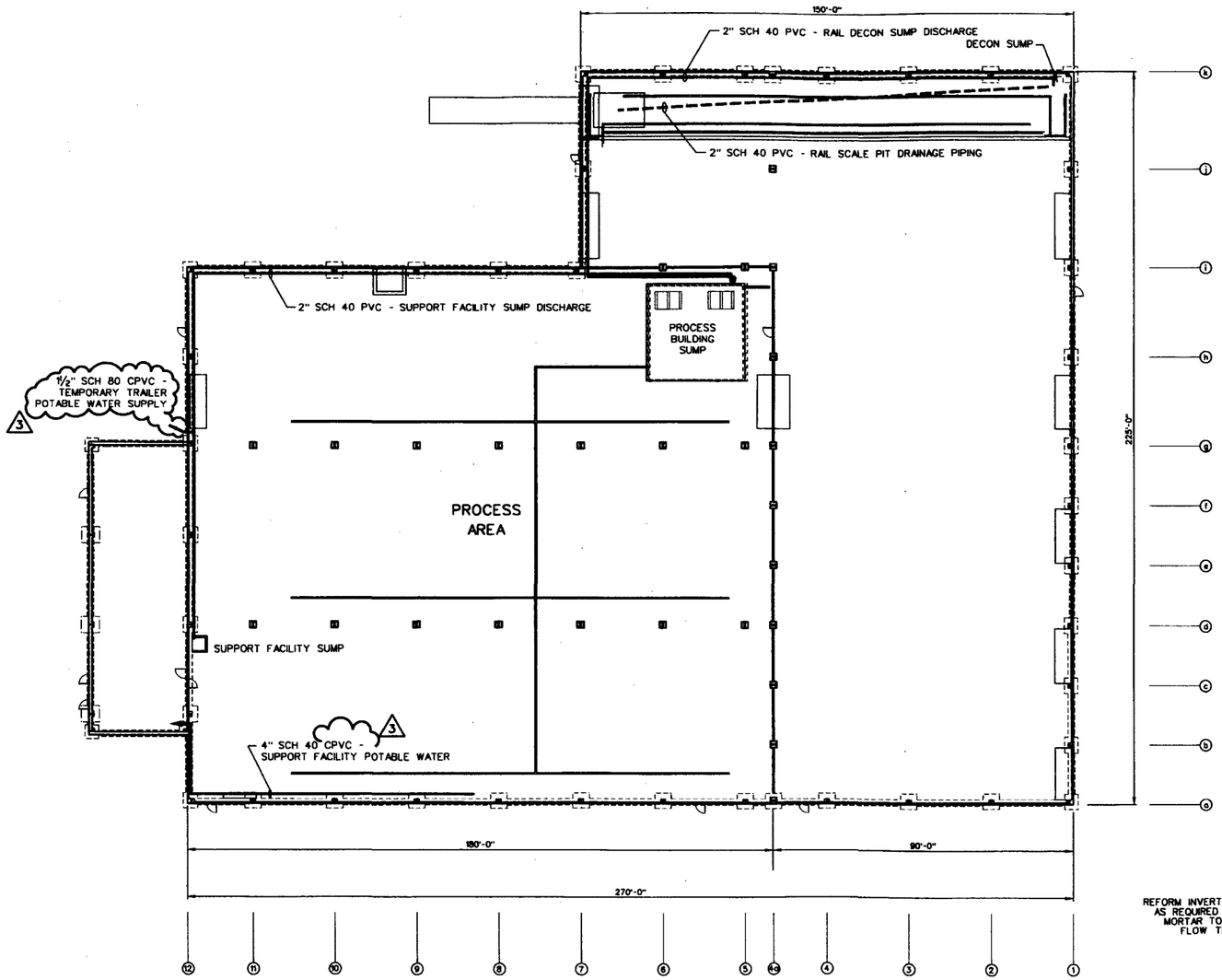
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

MECHANICAL NOTES, SYMBOLS AND ABBREVIATIONS

Reference number:
M-001
Sheet 38 of 43



1. POTABLE WATER TO BE DISTRIBUTED WITHIN PROCESS BUILDING TO THE FOLLOWING TEN COLUMN LOCATIONS:

a10	i11	d12
a8	i8	g12
a6	i6	
a4a	i4a	

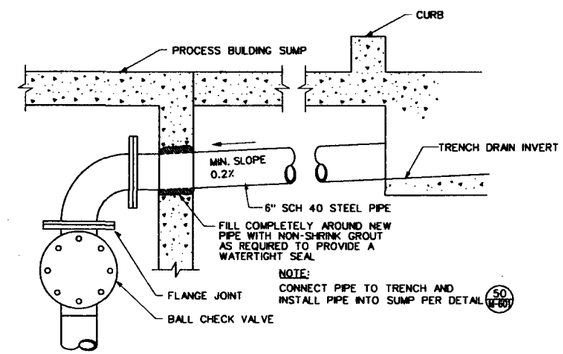
LOCATIONS i4a AND a4a SHALL SUPPLY WATER TO LOADOUT AREA.

2. PROCESS POTABLE WATER SHALL BE DISTRIBUTED IN 2 INCH SCH 40 CPVC PIPING LOCATED ABOVE DOOR OPENINGS TO ¾ INCH HOSE BIBS LOCATED 4 FEET ABOVE FINISHED FLOOR ELEVATION. (3)

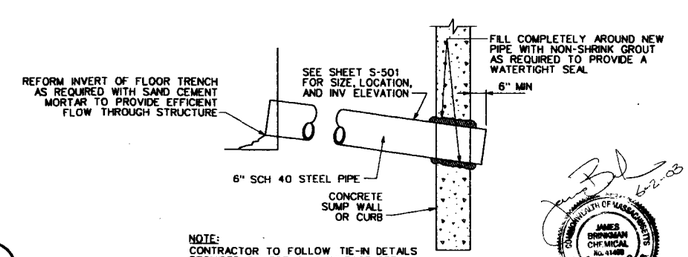
3. SUPPORT FACILITY SUMP PUMP SHALL TRANSFER WATER TO PROCESS BUILDING SUMP THROUGH 2" SCH 40 PVC PIPING ROUTED ALONG INTERIOR WALLS AND ABOVE DOOR OPENINGS.

4. RAIL DECONTAMINATION SUMP PUMP SHALL TRANSFER WATER TO PROCESS BUILDING SUMP THROUGH INSULATED 2" SCH 40 PVC PIPING ROUTED ALONG INTERIOR WALLS AND ABOVE DOOR OPENINGS.

5. RAIL SCALE PIT TO SLOPE TO A 2" SCH 40 PVC PIPE DRAIN WHICH SHALL DISCHARGE TO THE RAIL DECONTAMINATION SUMP. PIPING SHALL BE INSTALLED BELOW FLOOR SLAB AND HAVE A 0.25% SLOPE.



51/S-501 TRENCH TO SUMP DISCHARGE
NOT TO SCALE



NOTE:
CONTRACTOR TO FOLLOW TIE-IN DETAILS PROVIDED BY TRENCH MANUFACTURER.

50/S-501 TYPICAL CONNECTION FLOOR TRENCH TO SUMP
NOT TO SCALE

(3) NOTE:
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ISSUED FOR CONSTRUCTION

SCALE 1"= 20'

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR BID/CONSTRUCTION	05/20/03	M.O.
2	ISSUED FOR BID	04/18/03	M.O.
1	ISSUED FOR BID	02/28/03	M.O.
0	ISSUED FOR 90% SUBMITTAL	12/02/02	M.O.

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Designed by: J. BIRNGRUAN
Drawn by: C. POTVIN
Reviewed by: R. OTOSKI
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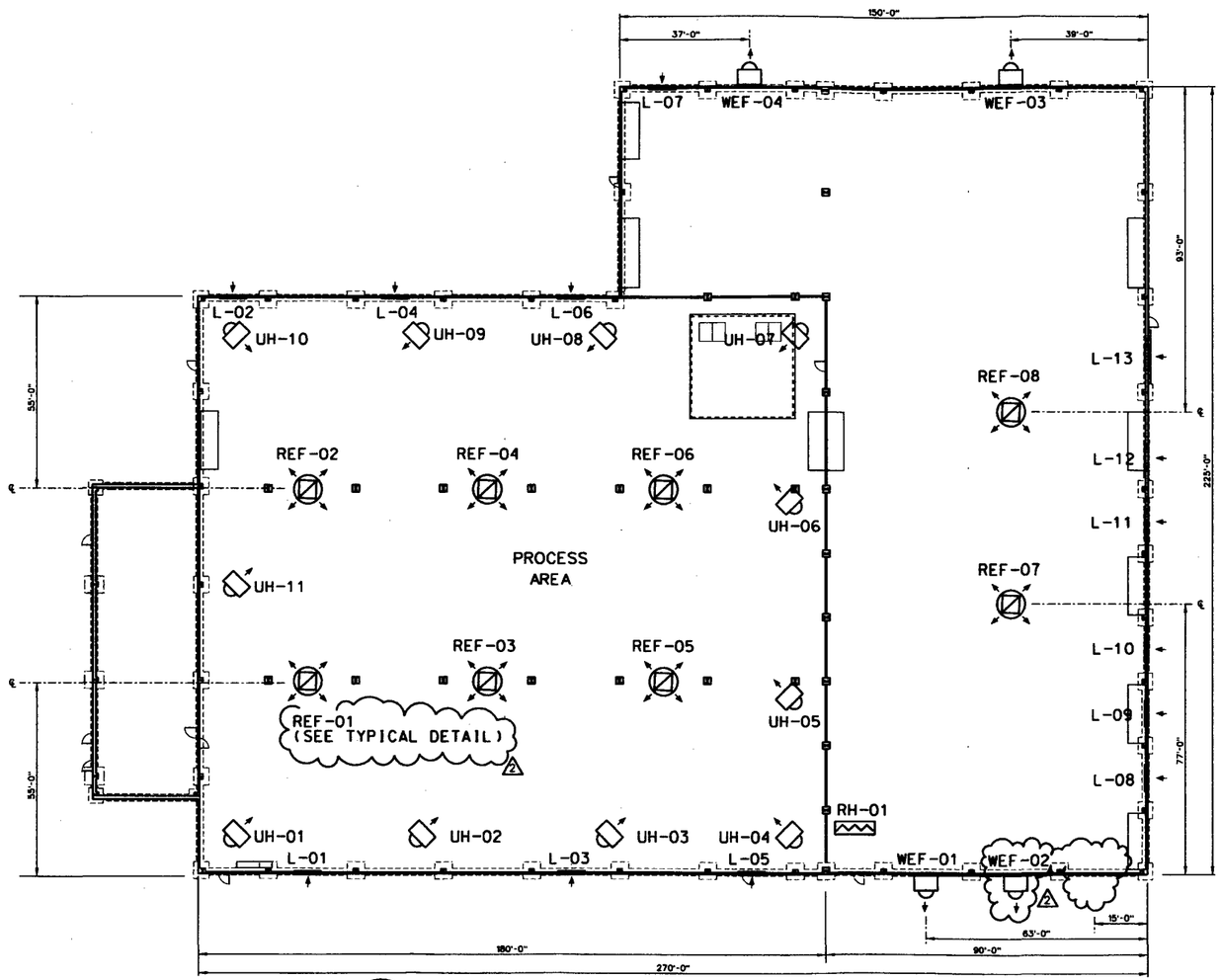
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

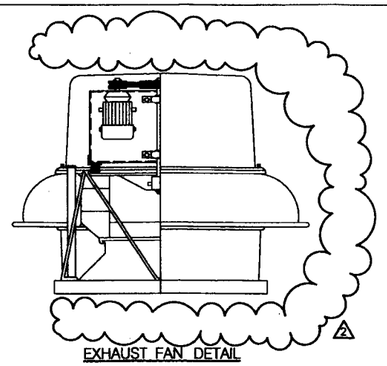
FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESIGNING AND DEWATERING FACILITIES DESIGN

AREA D - DEWATERING BUILDING PIPING

Reference number:
M-601
Sheet 39 of 43





EXHAUST FAN DETAIL

NOTES:

1. SEE M-001 FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS.
2. SEE M-604 FOR EQUIPMENT SCHEDULE.
3. EXHAUST FANS REF-XX ARE LOCATED ON THE ROOF; WHEREAS, OTHER EQUIPMENT SHOWN IS EITHER LOCATED BELOW THE ROOF, IN THE WALLS, OR IN THE OCCUPIED SPACE.
4. LOCATE THE BASE OF WALL LOUVERS L-XX 3 FEET ABOVE FLOOR SLAB ELEVATION UNLESS OTHERWISE APPROVED.
5. LOCATE WALL EXHAUST FANS WEF-XX 15 FEET ABOVE FLOOR SLAB ELEVATION UNLESS OTHERWISE APPROVED.

REF-XX	12,000 SCFM ROOF EXHAUST FAN WITH INTEGRAL ELECTRIC OPERATED DAMPER AND ROOF CURB.
WEF-XX	12,000 SCFM WALL EXHAUST FAN WITH INTEGRAL ELECTRIC OPERATED DAMPER.
L-XX	COMBINATION WALL LOUVER/DAMPER WITH 120 V ELECTRIC OPERATOR.
UH-XX	100,000 BTUH INPUT NATURAL GAS UNIT HEATER WITH INTEGRAL FAN, THERMOSTAT, TURNDOWN NOZZLE AND 50°-90° LATERAL AIR DEFLECTORS.
RH-01	RADIANT HEATER, 100,000 BTUH

TOTAL PROCESS BUILDING SUMMER VENTILATION EXHAUST	- 72,000 CFM
TOTAL LOADOUT BUILDING SUMMER VENTILATION EXHAUST	- 72,000 CFM

OPERATING SEQUENCE:

DURING THE HEATING SEASON EXHAUST FANS, EF-xx AND WALL LOUVERS, L-xx ARE CLOSED EITHER MANUALLY OR AUTOMATICALLY TO TERMINATE FORCED VENTILATION AND MINIMIZE INFILTRATION INTO THE BUILDING.

NATURAL GAS UNIT HEATERS ARE THERMOSTATICALLY CONTROLLED TO MAINTAIN 40°F SPACE TEMPERATURE IN THE PROCESS BUILDING.

DURING THE COOLING SEASON EXHAUST FANS, EF-xx AND WALL LOUVERS, L-xx ARE OPERATED AS REQUIRED TO PROVIDE OUTSIDE AIR VENTILATION. EXHAUST FANS, THEIR INTEGRAL ELECTRIC DAMPER, AND WALL ELECTRIC DAMPERS ARE INTERLOCKED TO ENERGIZE SIMULTANEOUSLY. INTERLOCKED EXHAUST FANS AND WALL DAMPERS ARE STAGED TO PROVIDE BUILDING TEMPERATURE AND PRESSURE CONTROL WHILE MAINTAINING A MORE NEGATIVE PRESSURE IN THE LOADOUT BUILDING THAN IN THE PROCESS BUILDING.

INTERLOCK ELECTRIC WALL DAMPERS TO OPEN AND CLOSE SIMULTANEOUSLY WITH EXHAUST FANS AS INDICATED BELOW:

REF-01	L-01
REF-03	L-03
REF-05	L-05
REF-02	L-02
REF-04	L-04
REF-06	L-06
WEF-01	L-09
WEF-02	L-08
REF-07	L-10 & L-11
REF-08	L-12
WEF-03	L-13
WEF-04	L-07

PROCESS AREA TO OPERATE AT A NEGATIVE PRESSURE WITH RESPECT TO THE SUPPORT FACILITY, A POSITIVE PRESSURE WITH RESPECT TO THE LOADOUT AREA, AND A NEGATIVE PRESSURE WITH RESPECT TO OUTSIDE AIR.

JUNIE W. WEEKS, JR. REGISTERED ENGINEER STATE OF TENNESSEE No. 012696

Temporary Rem: T
Massachusetts 2003-33-PE

SCALE 1"= 20'

ISSUED FOR CONSTRUCTION

US Army Corps of Engineers
New England District

Symbol	Description	Date	Appr.	Symbol	Description	Date	Appr.
2	ISSUED FOR CONSTRUCTION	05/13/03	J.W.				
1	ISSUED FOR BID	03/28/03	M.D.				
0	ISSUED FOR 100% SUBMITTAL	12/02/02	M.D.				

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Designed by: J. WEEKS
Drawn by: T. VARGAS
Reviewed by: J. BERNOLAK
Submitted by: J. WEEKS

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP.
133 FEDERAL STREET
BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS
DESANDING AND DEWATERING FACILITIES DESIGN

AREA D - DEWATERING BUILDING
GENERAL VENTILATION PLAN

Reference number:
M-602
Sheet 40 of 43

PROCESS/LOADOUT AREA EQUIPMENT SCHEDULE

IDENTIFIER	DESCRIPTION	PERFORMANCE RATING
UH-1 THROUGH UH-11	NATURAL GAS UNIT HEATERS - COMPLETE WITH DOWNTURN AIR NOZZLE, VERTICAL LOUVERS, PROPELLOR FAN, AUTO IGNITION, VENT KIT, AND INTEGRAL ON/OFF/AUTO THERMOSTAT WITH HIGH/LOW HEAT ADJUSTMENT.	100,000 BTUH OUTPUT EACH
REF-01 THROUGH REF-08	ROOF EXHAUST FAN - CENTRIFUGAL, BELT DRIVEN, 1,000 RPM MAX, WITH ELECTRIC OPERATED DAMPER, ROOF CURB AND BIRD SCREEN, INTEGRAL TEMPERATURE CONTROLLER, MAX 5 HP 1,800 RPM MOTOR, DESIGNED FOR OUTDOOR SERVICE.	12,000 SCFM EACH AT APPROXIMATELY 0.5 INCH W.G. STATIC PRESSURE
3		
L-01 THROUGH L-07	WALL LOUVER/DAMPER COMBINATION - 700 FPM MAX VELOCITY ALUMINUM CONSTRUCTION, FRONT STATIONARY DRAINABLE BLADES WITH REAR ELECTRIC OPERATED DAMPER, BLADE AND JAM SEALS, 96 INCH WIDE BY 60 INCH HIGH BY 6 INCH TOTAL DEPTH, WITH BIRDSCREEN. STRUCTURALLY DESIGNED TO WITHSTAND A 90 MPH WIND LOAD. AMCA CERTIFIED AND RATED FOR A MAXIMUM AIR LEAKAGE OF 0.4 CFM/SQ. FT AT 0.10 IN. W. G. PRESSURE DIFFERENTIAL ACROSS THE CLOSED DAMPER, MAXIMUM 3 WATER PENETRATION OF 0.01 OZ./SQ. FT. AT 1,179 FPM.	12,000 SCFM EACH AT APPROXIMATELY 0.1 INCH W.G. STATIC PRESSURE
RH-01	RADIANT HEATER - GAS FIRED PACKAGED TUBULAR RADIANT, LOW INTENSITY HEATER FOR INDOOR/OUTDOOR USE, WITH VENT.	100,000 BTUH INPUT
WEF-01 THROUGH WEF-04	WALL EXHAUST FAN - CENTRIFUGAL, BELT DRIVEN, 1,000 RPM MAX, WITH ELECTRIC OPERATED DAMPER, WALL SLEEVE AND BIRD SCREEN, INTEGRAL TEMPERATURE CONTROLLER, MAX 5 HP 1,800 RPM MOTOR, DESIGNED FOR OUTDOOR SERVICE.	12,000 SCFM EACH AT APPROXIMATELY 0.5 INCH W.G. STATIC PRESSURE
L-08 THROUGH L-13	WALL LOUVER/DAMPER COMBINATION - 700 FPM MAX VELOCITY ALUMINUM CONSTRUCTION, FRONT STATIONARY DRAINABLE BLADES WITH REAR ELECTRIC OPERATED DAMPER, BLADE AND JAM SEALS, 48 INCH WIDE BY 96 INCH HIGH BY 6 INCH TOTAL DEPTH, WITH BIRDSCREEN. STRUCTURALLY DESIGNED TO WITHSTAND A 90 MPH WIND LOAD. AMCA CERTIFIED AND RATED FOR A MAXIMUM AIR LEAKAGE OF 0.4 CFM/SQ. FT AT 0.10 IN. W. G. PRESSURE DIFFERENTIAL ACROSS THE CLOSED DAMPER, MAXIMUM 3 WATER PENETRATION OF 0.01 OZ./SQ. FT. AT 1,179 FPM.	3 10,000 SCFM EACH AT APPROXIMATELY 0.1 INCH W.G. STATIC PRESSURE

NOTE:

1. SEE SHEET M-001 FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS.

JUNIE W. WEEKS JR. REGISTERED ENGINEER No. 012495 STATE OF TENNESSEE

Temporary Permit Massachusetts 2003-33-PE

ISSUED FOR CONSTRUCTION

US Army Corps of Engineers New England District

Symbol	Description	Date	Appr.
3	ISSUED FOR CONSTRUCTION	05/13/03	J.W.
2	ISSUED FOR BID	03/28/03	M.O.
1	ISSUED FOR 100% SUBMITTAL	02/03/02	M.O.
0	ISSUED FOR 90% DESIGN SUBMITTAL	05/24/02	M.O.
A	ISSUED FOR USACE REVIEW	03/01/02	

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Drawn by: T. VARGAS
Reviewed by: J. BRANNIGAN
Submitted by: J. WEEKS
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U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP. 133 FEDERAL STREET BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE NEW BEDFORD, MASSACHUSETTS DESANDING AND DEWATERING FACILITIES DESIGN

HVAC EQUIPMENT SCHEDULE

Reference number: M-604

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