



INDUSTRI- PLEX SITE

REMEDIAL TRUST

Superfund Records Center  
SITE: IndustriPlex  
BREAK: 8417.4  
OTHER: 32789

WOBURN, MASSACHUSETTS

INDUSTRI- PLEX SITE  
WOBURN, MASSACHUSETTS  
100% DESIGN REPORT, PART I  
REMEDIAL WORK FOR  
SOIL, SEDIMENTS AND AIR  
Volume 8 of 8



SITE LOCATION

Prepared By:



In Association with:  
Jordan, Jones and Goulding  
Normandeau Associates

250166097

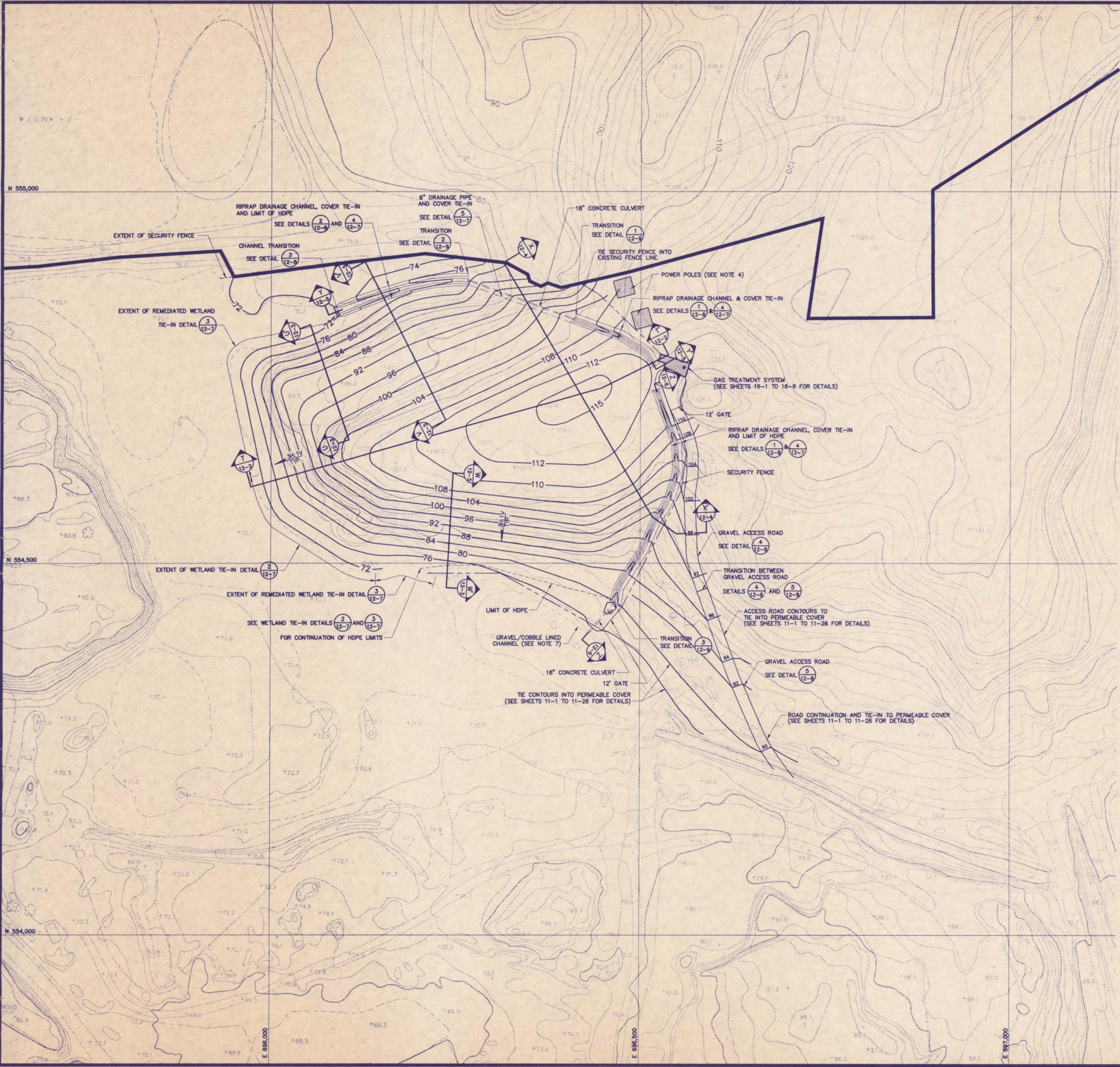
# Volume 7 of 8

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5-1	INDUSTRI-PLEX SITE LANDOWNERS
5-2	EXISTING DEVELOPMENT
5-3A	EXISTING UTILITIES
5-3B	EXISTING UTILITIES
5-3C	EXISTING UTILITIES
5-3D	EXISTING UTILITIES
5-4	ABANDONED FACILITIES ABOVE GRADE
5-5	ABANDONED FACILITIES BELOW GRADE
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5-7	GEOTECHNICAL INVESTIGATION PDI TASKS S-2 AND S-4
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9-1	RECHARGE BASIN
11-1A	EXISTING TOPOGRAPHY
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11-1D	EXISTING TOPOGRAPHY
11-2A	EXTENT OF ARSENIC, LEAD, AND CHROMIUM AT OR ABOVE ACTION LEVELS
11-2B	EXTENT OF ARSENIC, LEAD, AND CHROMIUM AT OR ABOVE ACTION LEVELS
11-2C	EXTENT OF ARSENIC, LEAD, AND CHROMIUM AT OR ABOVE ACTION LEVELS
11-2D	EXTENT OF ARSENIC, LEAD, AND CHROMIUM AT OR ABOVE ACTION LEVELS
11-3A	COVER TYPES
11-3B	COVER TYPES
11-3C	COVER TYPES
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11-5	STRUCTURE DECOMMISSIONING PLAN
11-6	MONITORING WELL DECOMMISSIONING PLAN
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11-7B	COVER GRADING PLAN
11-7C	COVER GRADING PLAN
11-7D	COVER GRADING PLAN
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11-11	PERMEABLE COVER EAST-CENTRAL HIDE PILE CROSS SECTIONS
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11-24	PERMEABLE COVER DETAILS
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11-26	PERMEABLE COVER DETAILS

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12-8	IMPERMEABLE COVER EAST HIDE PILE DETAILS
12-9	IMPERMEABLE COVER EAST HIDE PILE DETAILS
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13-3	STREAM SEDIMENT REMEDIATION DETAILS
13-4	WETLAND SEDIMENTS REMEDIATION DETAILS
13-5	STORMWATER MANAGEMENT DETAILS
13-6	STORMWATER MANAGEMENT DETAILS
13-7	STORMWATER MANAGEMENT DETAILS
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14-5	COMPENSATORY WETLANDS CROSS SECTIONS
14-6	WETLAND 3A RESTORATION PLAN VIEW AND CROSS SECTION
14-7	STANDARD STREAM BANK REVITALIZATION
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15-2	GAS COLLECTION PIPING DETAILS
15-3	GAS LINE LOCATION PLAN
16-1	EAST HIDE PILE GAS TREATMENT SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM LEGEND I
16-2	EAST HIDE PILE GAS TREATMENT SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM LEGEND II
16-3	EAST HIDE PILE GAS TREATMENT SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM
16-4	EAST HIDE PILE GAS TREATMENT SYSTEM PLAN, SECTION AND DETAIL
16-5	EAST HIDE PILE GAS TREATMENT SYSTEM ELECTRICAL
16-6	EAST HIDE PILE GAS TREATMENT SYSTEM STRUCTURAL FOUNDATION PLAN, SECTION AND DETAIL

PROJECT No.	903-6400	PROJECT:	INDUSTRI-PLEX SITE REMEDIAL TRUST WOBBURN, MASSACHUSETTS
DES BY	PSF 12/19/91	SHEET TITLE:	INDEX OF DRAWINGS
DR BY	MRM 12/19/91		
CHK BY			
RVW BY			
 <b>Golder Associates</b> Mt. Laurel, New Jersey		1 OF 1 FILE No. 1MA01-799 <b>INDEX</b>	



**LEGEND**

- SITE BOUNDARY
- GRID LINE
- STREAM OR WATERCOURSE
- TRAIL
- EXISTING FENCE
- EXISTING CONTOUR
- POWER POLE
- MARSH
- SECURITY FENCE
- TOP OF PROPOSED COVER CONTOUR
- DETAIL/CROSS SECTION DESIGNATION SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

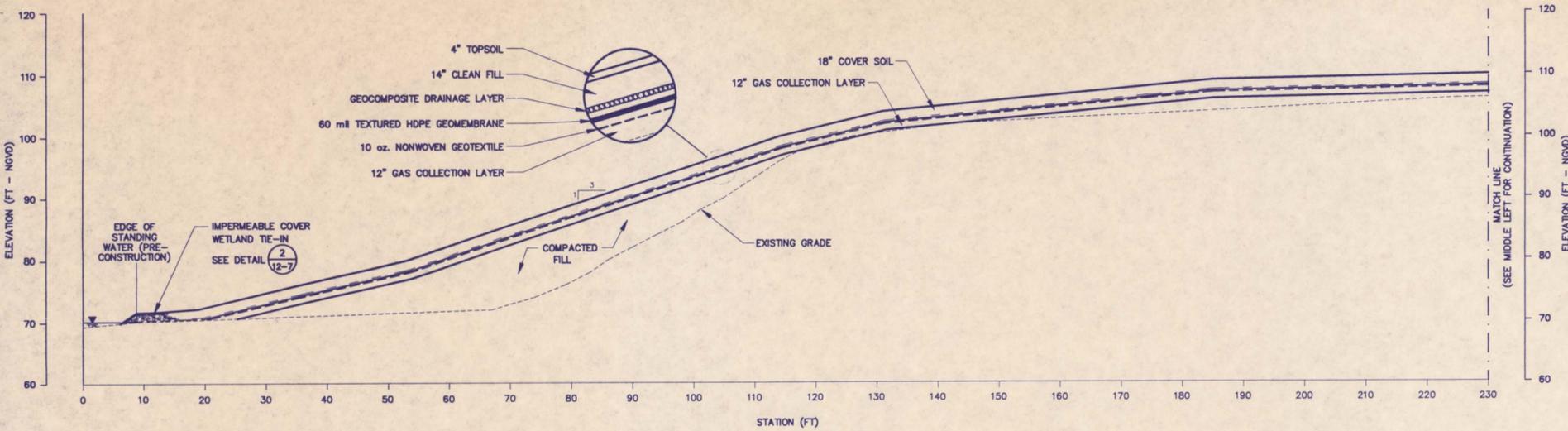


**NOTES**

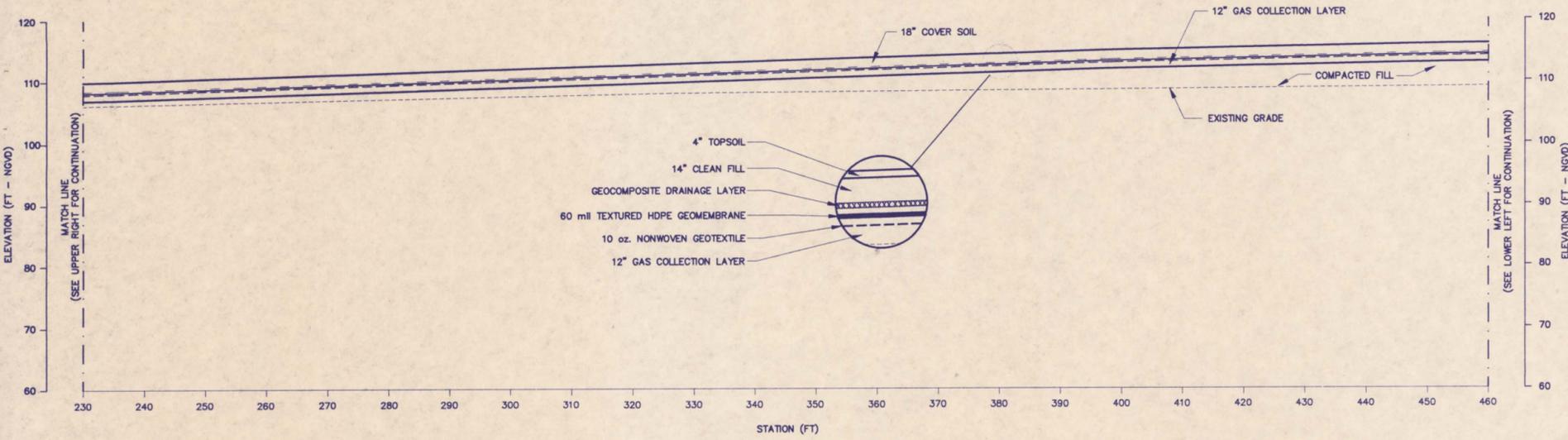
- 1.) TOPOGRAPHIC BASE MAP PREPARED BY SAIC ENGINEERING, INC., APRIL 1992, SCALE 1 INCH TO 100 FEET. TOPOGRAPHY BASED ON AERIAL PHOTOGRAPHY CONDUCTED ON NOVEMBER 22, 1989, SCALE 1 INCH TO 800 FEET AND FEBRUARY 21, 1990, SCALE 1 INCH TO 480 FEET. TOPOGRAPHY SCALE AND DETAIL IS FOR DESIGN PURPOSES ONLY AND NOT FOR ACCURATE ESTIMATING OF CONSTRUCTION QUANTITIES.
- 2.) SITE BOUNDARY SURVEY BY SAIC ENGINEERING, INC., APRIL 1990 AND JANUARY 1991.
- 3.) ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929, AND COORDINATES BASED ON MASSACHUSETTS COORDINATE SYSTEM.
- 4.) LOCATION OF POWER POLES ARE APPROXIMATE. DESIGN AND INSTALLATION OF NEW POWER POLES, AND REMOVAL OF EXISTING POWER POLES ON THE EAST HIDE PILE TO BE CONDUCTED BY BOSTON EDISON AND/OR CONTRACTORS TO BOSTON EDISON.
- 5.) MONITORING WELL OW-32 AND EXISTING GAS VENTS TO BE DECOMMISSIONED ACCORDING TO THE SPECIFICATIONS. SEE SHEET 11-6 FOR MONITORING WELL LOCATIONS.
- 6.) FOR GAS COLLECTION SYSTEM PLAN AND DETAILS SEE SHEETS 15-1 TO 15-3.
- 7.) FOR STREAM AND WETLAND DETAILS SEE SHEETS 13-1 TO 13-7.



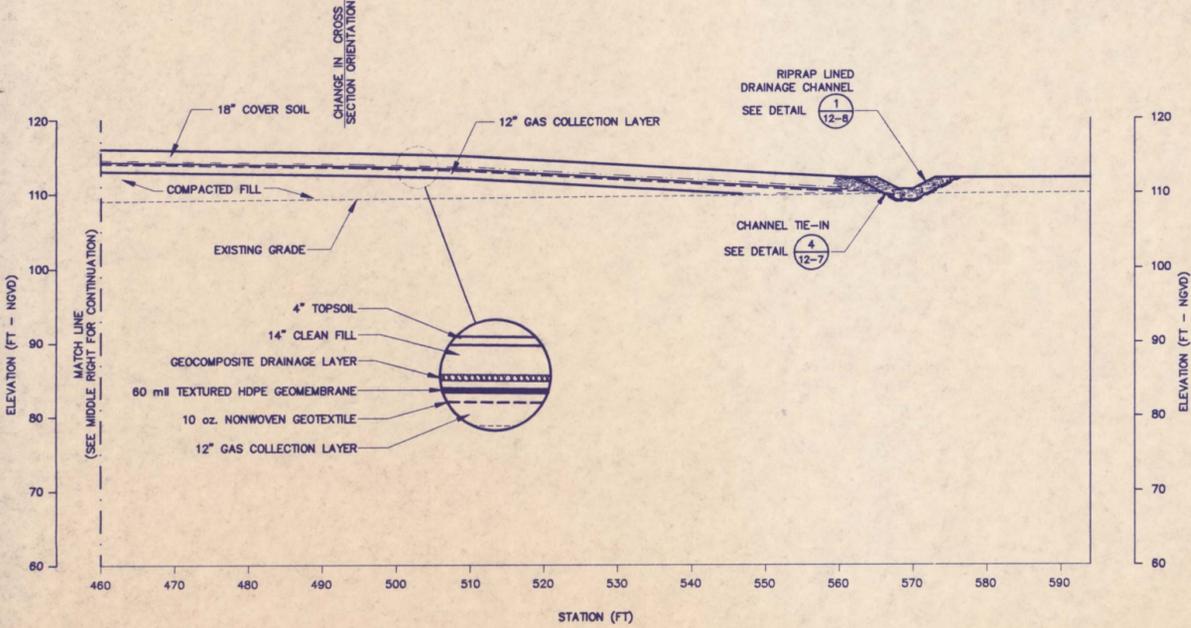
04/92	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	Pjf
REV	DATE	DESCRIPTION	DR BY
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST	
PROJECT No. 903-6400		WOBURN, MASSACHUSETTS	
DES BY	RAC	11/19/91	SHEET TITLE:
DR BY	RDH	12/16/91	<b>EAST HIDE PILE IMPERMEABLE COVER PLAN</b>
CHK BY	R.J.	12/16/91	
RWV BY	PCR	12/16/91	
<b>Golder Associates</b>			1 OF 1
Mt. Laurel, New Jersey			FILE No. 1MA01-866
			<b>SHEET 12-1</b>



**T**  
**12-2** SECTION T-T'  
10 0 10 20  
scale feet



**T**  
**12-2** SECTION T-T'  
10 0 10 20  
scale feet

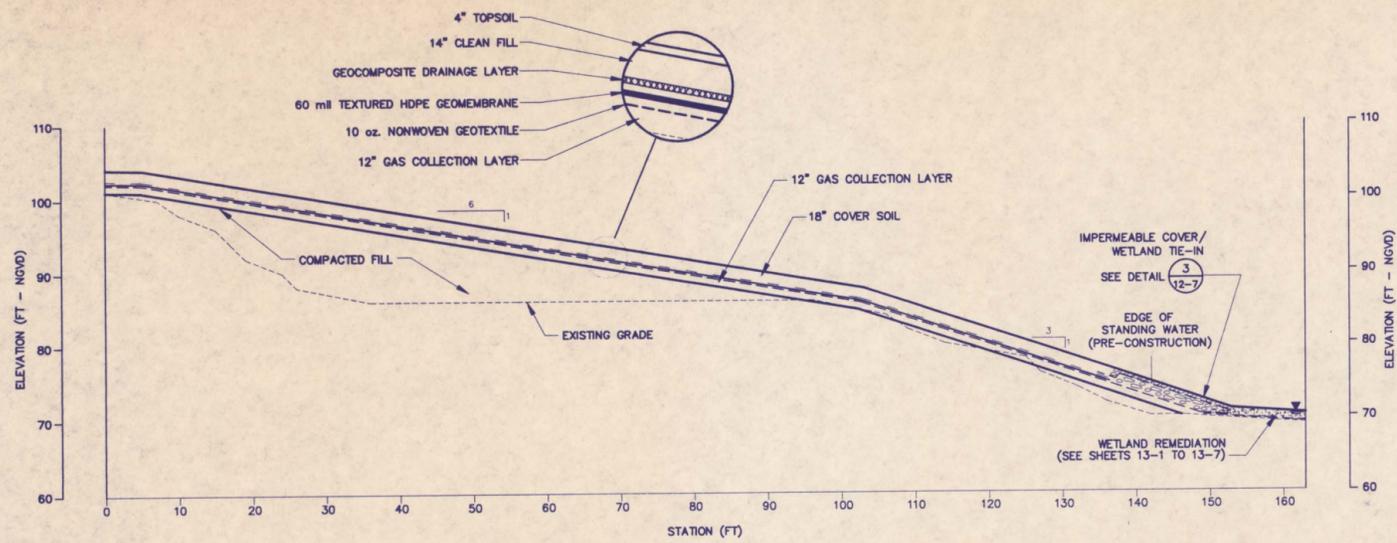


**T**  
**12-2** SECTION T-T'  
10 0 10 20  
scale feet

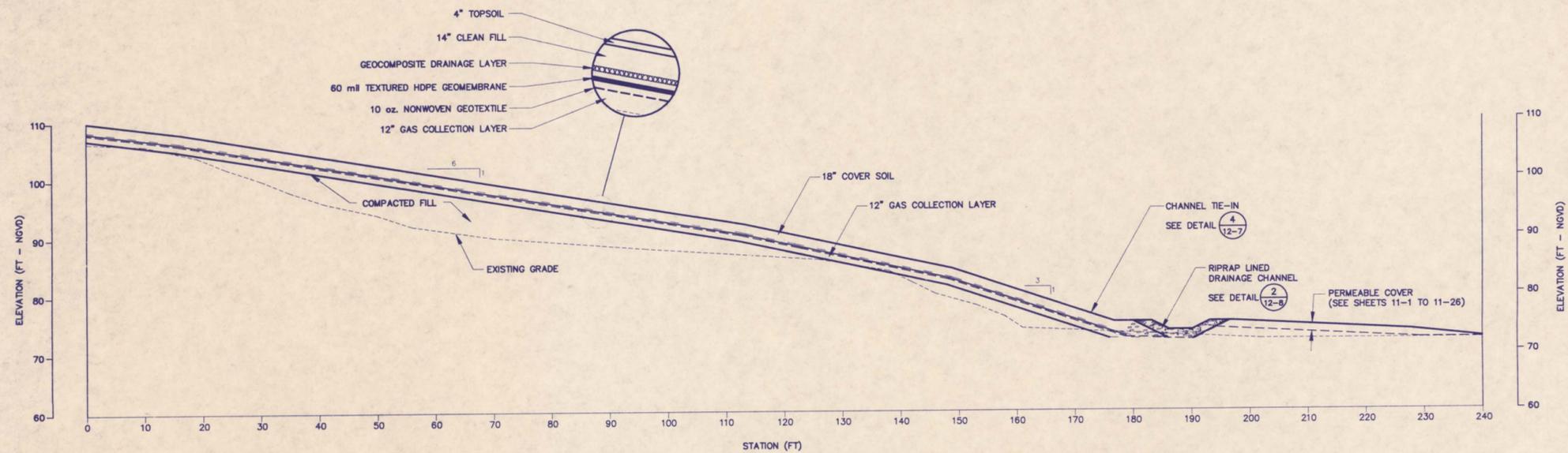
- LEGEND**
- DETAIL/CROSS SECTION DESIGNATION
  - SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

- NOTES**
1. ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
  2. EDGE OF STANDING WATER (PRE-CONSTRUCTION) TAKEN FROM TOPOGRAPHIC BASE MAP BY SAIC ENGINEERING, INC. WATER LEVEL MAY VARY WITH SEASONAL FLUCTUATIONS.
  3. FILL PLACED ON SLOPES SHOULD BE GRANULAR AND FREE OF DELETERIOUS MATERIALS SUCH AS WOOD AND CONSTRUCTION DEBRIS. ONLY CLEAN FILL FROM AN OFF-SITE BORROW SOURCE SHALL BE PLACED OUTSIDE THE LIMITS OF COVER.
  4. FILL PLACED ON SLOPES SHALL BE PLACED AND COMPACTED IN HORIZONTAL LAYERS STARTING FROM THE TOE IN ACCORDANCE WITH THE SPECIFICATIONS SO AS TO PROVIDE A BUTTRESS. EXISTING VEGETATION SHALL BE CLEARED IN STAGES JUST IN ADVANCE OF THE FILLING OPERATION. CLEARING SHALL BE CONDUCTED IN ACCORDANCE WITH THE SPECIFICATIONS LEAVING THE ROOT MASS IN PLACE ON HIDE PILES.

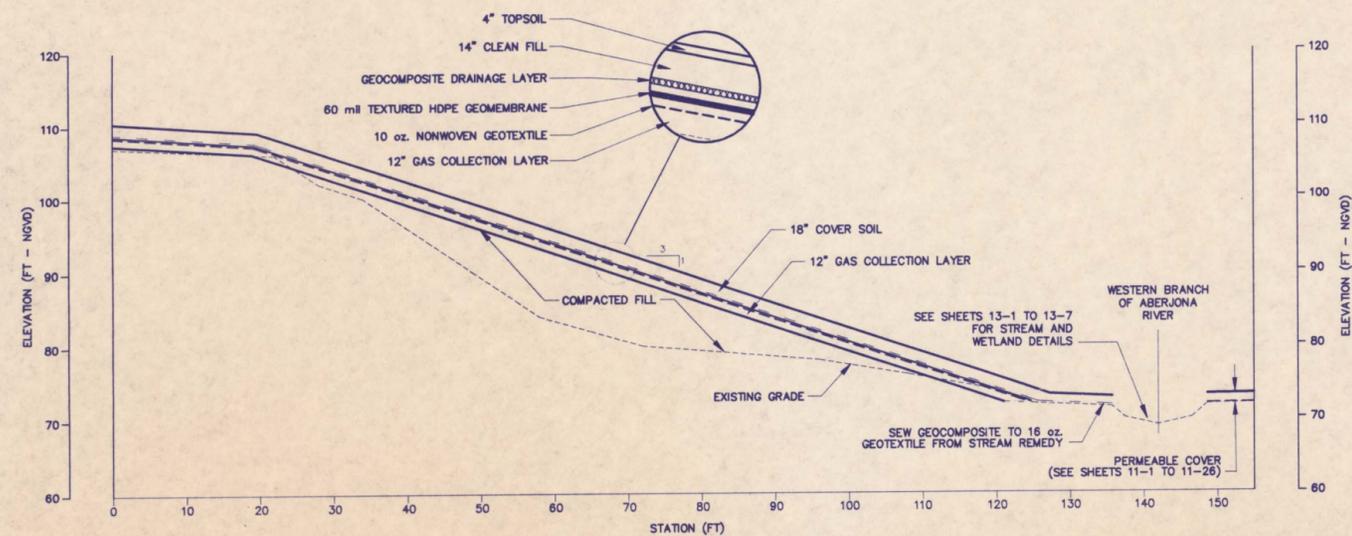
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Δ	04/92	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	PC
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 903-6400		SHEET TITLE: IMPERMEABLE COVER EAST HIDE PILE CROSS SECTIONS		
DES BY	RAC	11/20/91	SHEET No. 1 OF 1	
DR BY	ALK	12/16/91	FILE No. 1MA01-869	
CHK BY	RJ	12/16/91	SHEET 12-2	
RVW BY	PCR	12/16/91	Golder Associates Mt. Laurel, New Jersey	



**U SECTION U-U'**  
12-3  
scale 0 10 20 feet



**V SECTION V-V'**  
12-3  
scale 0 10 20 feet



**W SECTION W-W'**  
12-3  
scale 0 10 20 feet

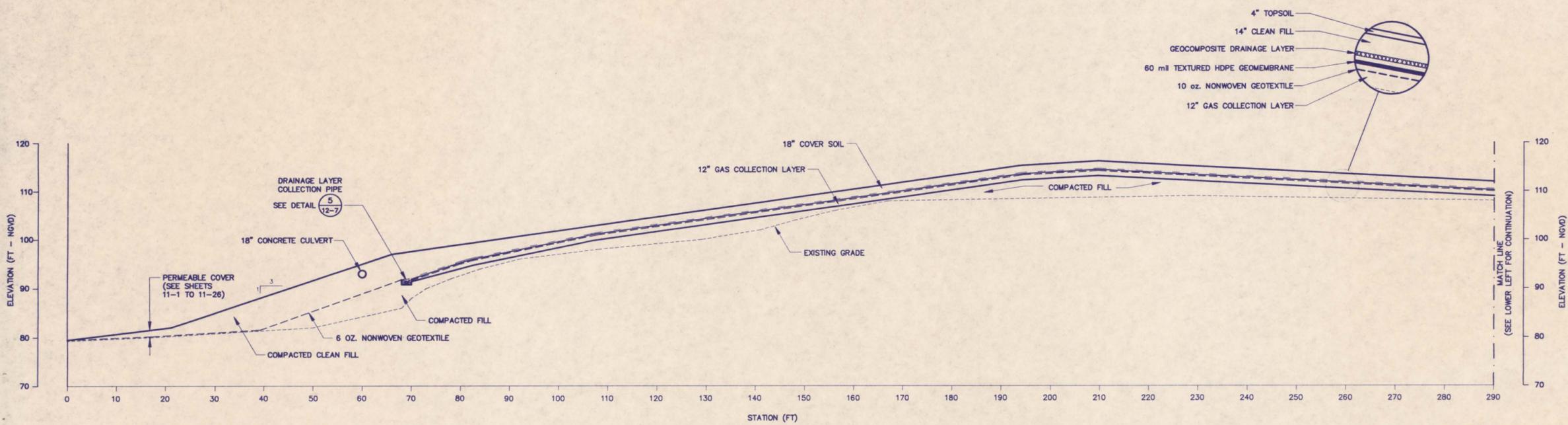
**LEGEND**

- ← DETAIL/CROSS SECTION DESIGNATION
- ← SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

**NOTES**

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REV	DATE	DESCRIPTION	DR BY	RVW BY
04/92		AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	JK
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST		
PROJECT No. 903-6400		WOBURN, MASSACHUSETTS		
DES BY	RAC	11/20/91	SHEET TITLE: IMPERMEABLE COVER	
DR BY	ALK	12/16/91	EAST HIDE PILE CROSS SECTIONS	
CHK BY	RJ	12/16/91		
RVW BY	PCR	12/16/91		

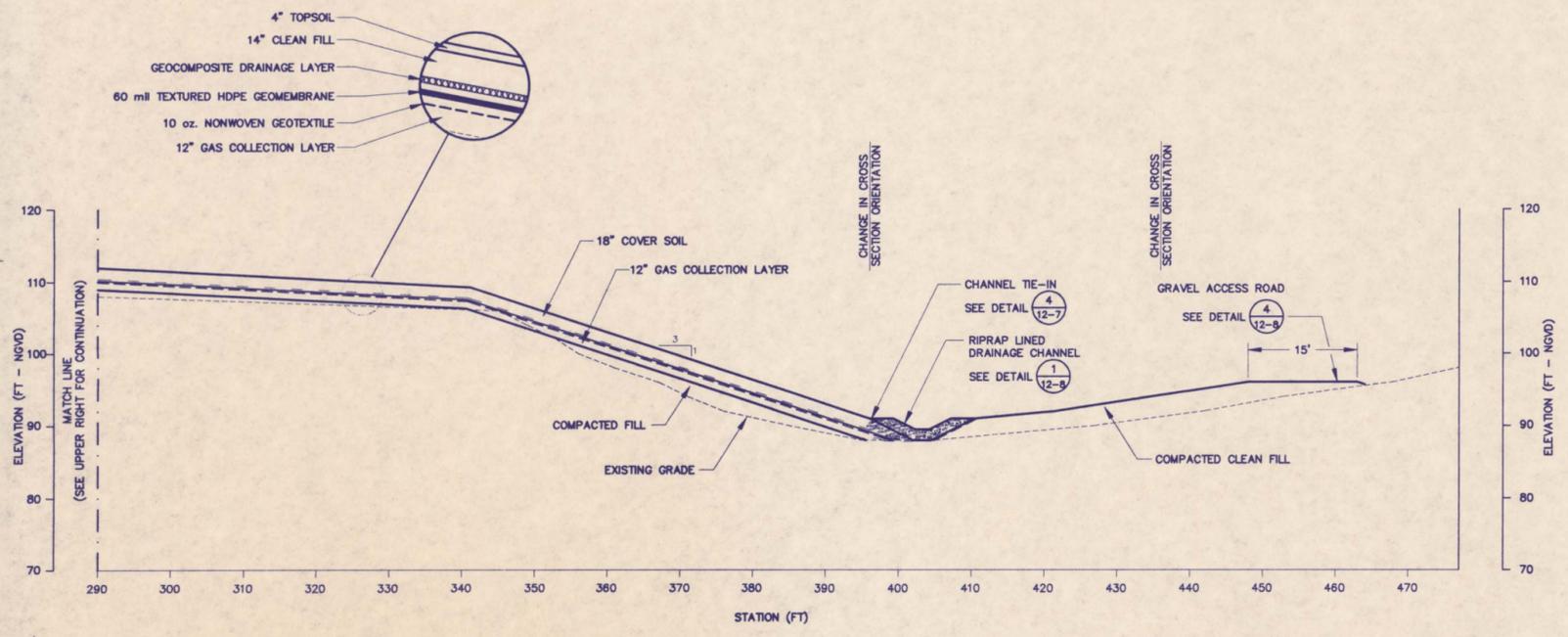


**X**  
12-4  
SECTION X-X'  
10 0 10 20  
scale feet

**LEGEND**

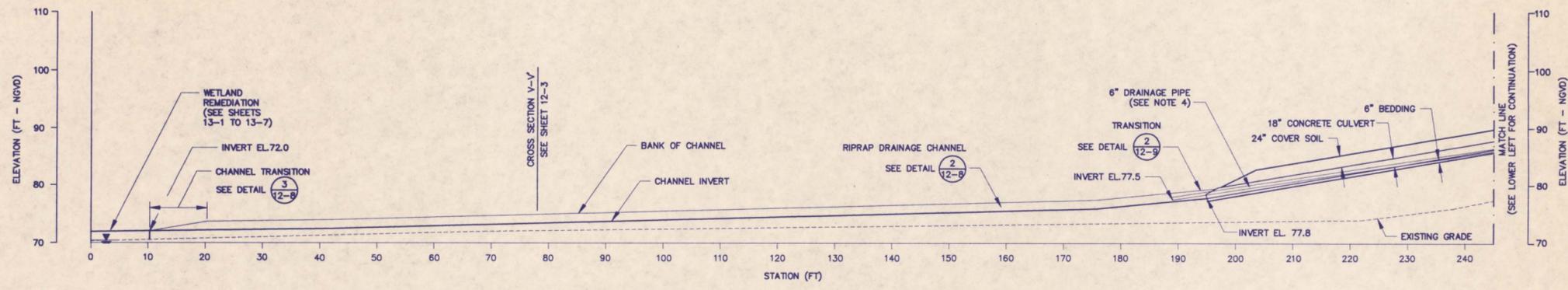
X  
12-4 → DETAIL/CROSS SECTION DESIGNATION  
SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

- NOTES**
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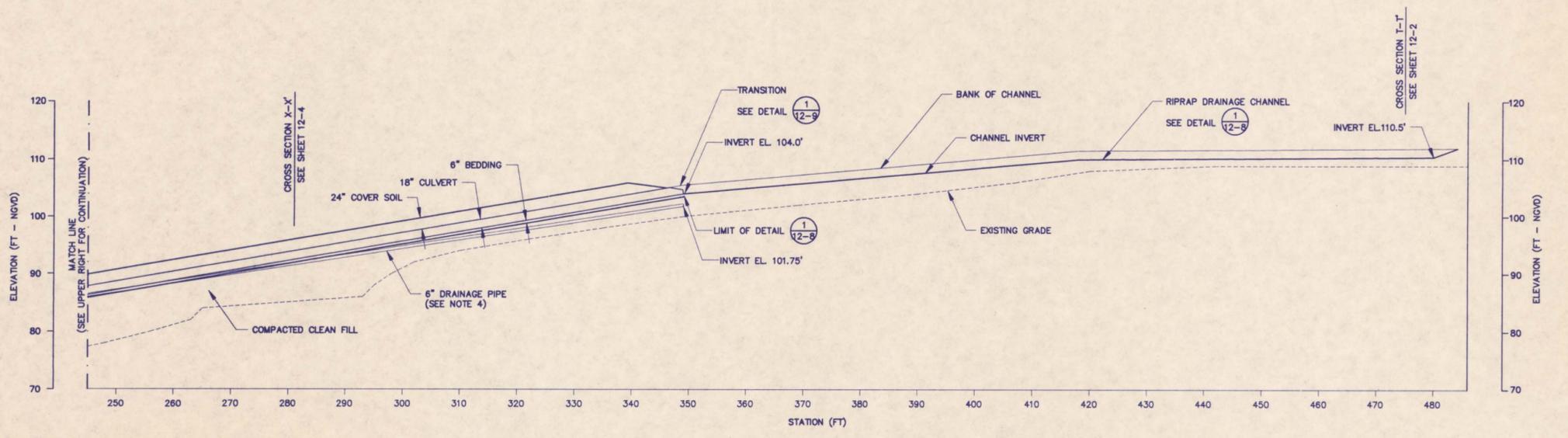
**X**  
12-4  
SECTION X-X'  
10 0 10 20  
scale feet

REV	DATE	DESCRIPTION	DR BY	R/W BY
Δ	04/92	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	BJG
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 903-6400		SHEET TITLE: IMPERMEABLE COVER EAST HIDE PILE CROSS SECTIONS		
DES BY	RAC	11/20/91		
DR BY	ALK	12/16/91		
CHK BY	RJL	12/16/91		
R/W BY	PCR	12/16/91		
Golder Associates Mt. Laurel, New Jersey		1 OF 1 FILE No. 1MA01-874 SHEET 12-4		



**Y**  
**12-5** DRAINAGE CHANNEL PROFILE

10 0 10 20  
scale feet



**Y**  
**12-5** DRAINAGE CHANNEL PROFILE

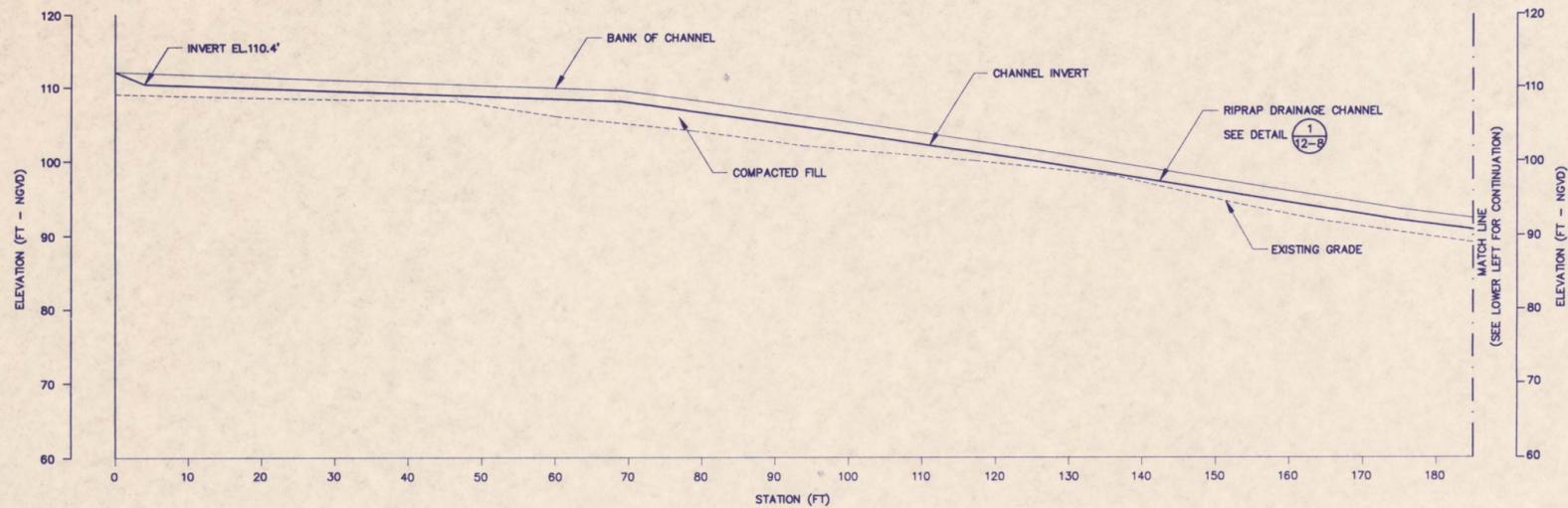
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scale feet

**LEGEND**

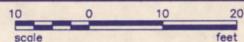
Y 12-5 ← DETAIL/CROSS SECTION DESIGNATION  
 12-5 ← SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

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  - 6" DRAINAGE PIPE PROJECTED TO PROFILE LINE. SEE DETAIL 5/12-7
  - EDGE OF STANDING WATER (PRE-CONSTRUCTION) TAKEN FROM TOPOGRAPHIC BASE MAP BY SAIC ENGINEERING, INC. WATER LEVEL MAY VARY WITH SEASONAL FLUCTUATIONS.

REV	DATE	DESCRIPTION	DR BY	RW BY
04/92		AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	RJG
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 903-6400		SHEET TITLE: IMPERMEABLE COVER EAST HIDE PILE DRAINAGE CHANNEL PROFILE		
DES BY	ALK	11/21/91		
DR BY	ALK	12/16/91		
CHK BY	RJG	12/16/91		
RW BY	PCR	12/16/91		
Golder Associates		1 OF 1		
Mt. Laurel, New Jersey		FILE No. 1MA01-877		
		SHEET 12-5		

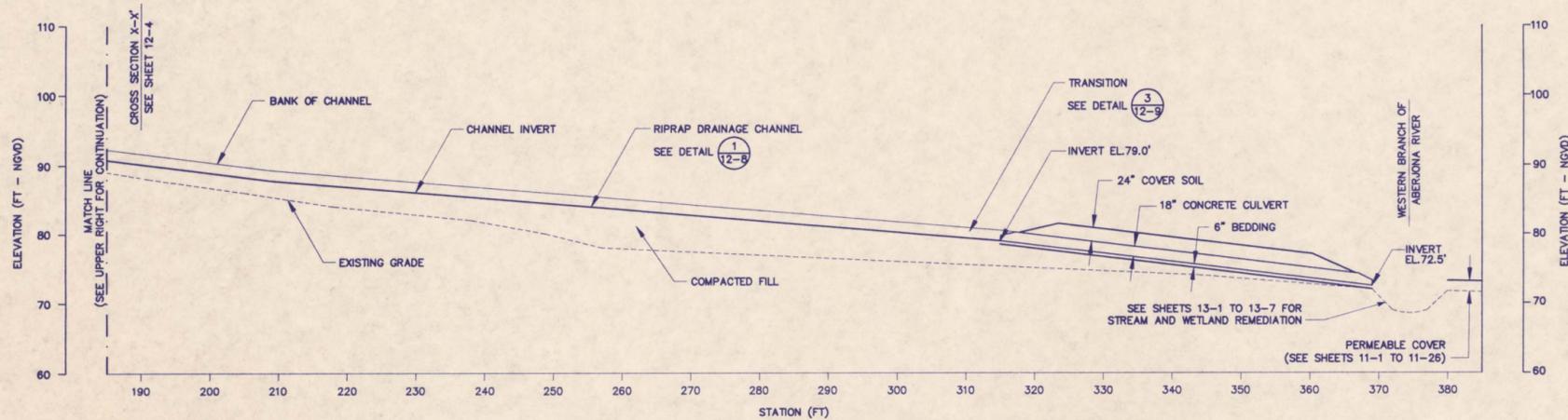


**Z**  
**12-6** DRAINAGE CHANNEL PROFILE

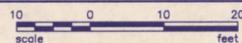


**LEGEND**

- Z** — DETAIL/CROSS SECTION DESIGNATION
- 12-6** — SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED



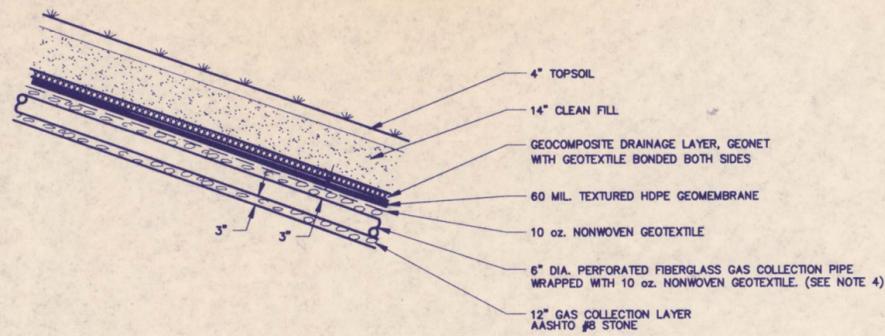
**Z**  
**12-6** DRAINAGE CHANNEL PROFILE



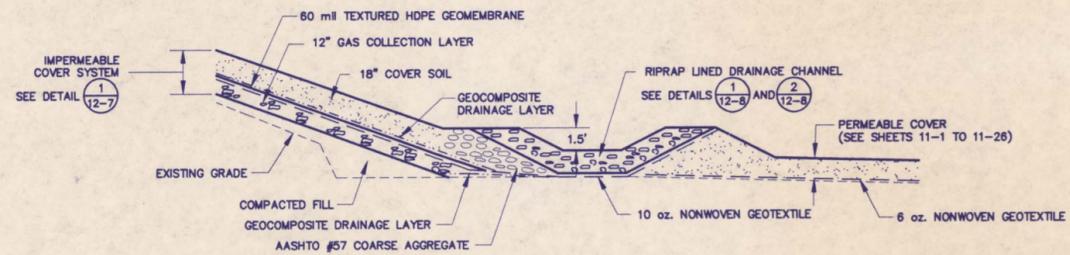
**NOTES**

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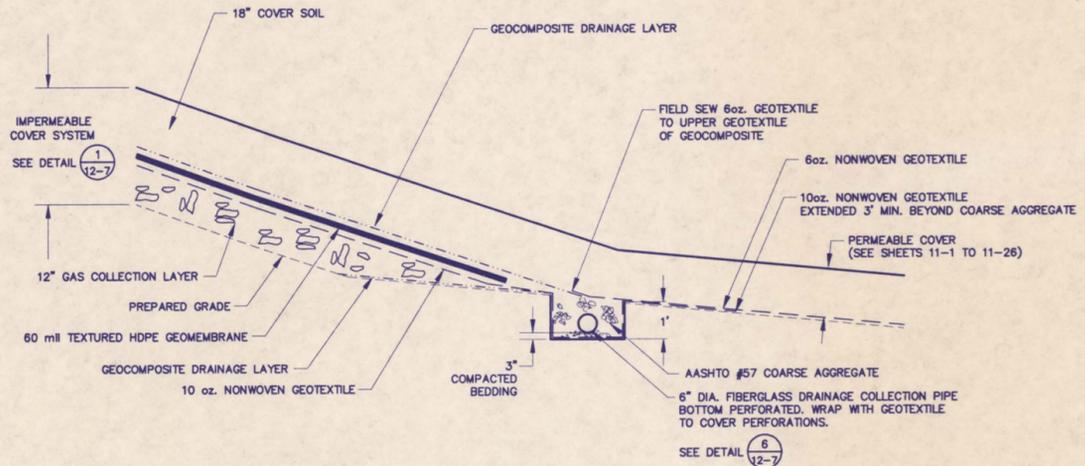
04/92	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	BSZ
REV	DATE	DESCRIPTION	DR BY
SCALE:	AS SHOWN	PROJECT:	INDUSTRI-PLEX SITE REMEDIAL TRUST
PROJECT No.	903-6400	PROJECT:	WOBURN, MASSACHUSETTS
DES BY:	ALK	11/18/91	SHEET TITLE:
DR BY:	JSG	12/16/91	IMPERMEABLE COVER
CHK BY:	RJL	12/16/91	EAST HIDE PILE DRAINAGE
RVW BY:	PCR	12/16/91	CHANNEL PROFILE



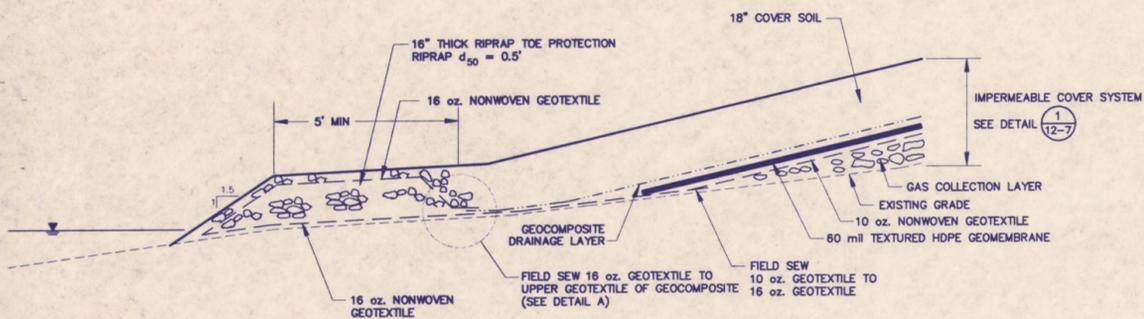
**1 IMPERMEABLE COVER SYSTEM**  
12-7



**4 TYPICAL CHANNEL TIE-IN DETAIL**  
12-7



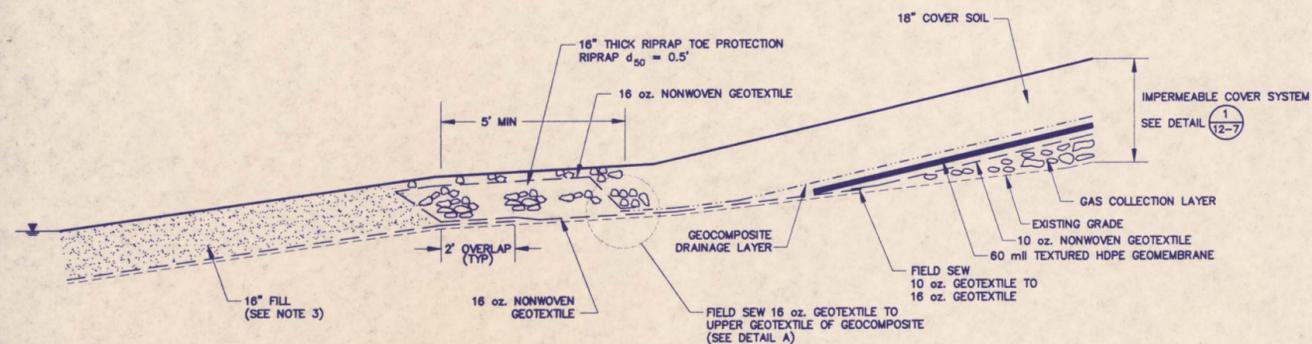
**5 TYPICAL DRAINAGE COLLECTION DETAIL**  
12-7



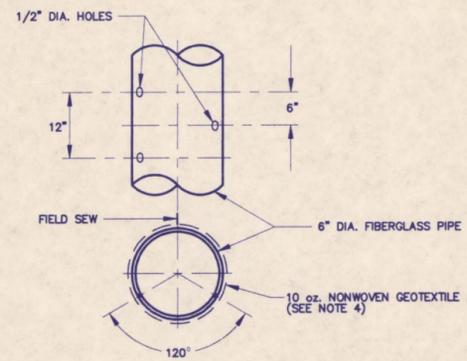
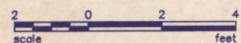
**2 TYPICAL NON-REMEDIAED WETLAND TIE-IN DETAIL**  
12-7



**DETAIL A**  
NOT TO SCALE



**3 TYPICAL REMEDIATED WETLAND TIE-IN DETAIL**  
12-7



**6 DRAINAGE COLLECTION PIPE DETAIL**  
12-7

NOT TO SCALE

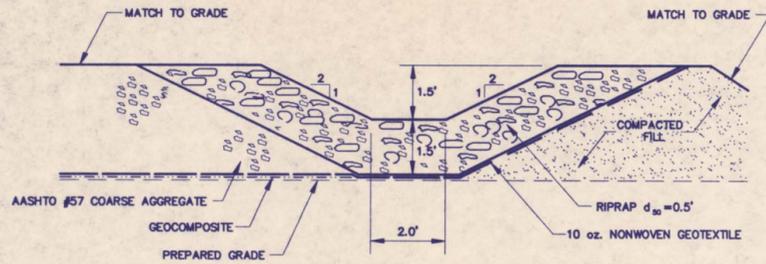
**LEGEND**

- 1 — DETAIL/CROSS SECTION DESIGNATION
- 12-7 — SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

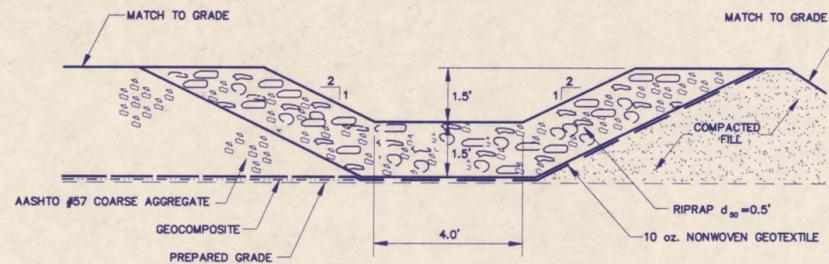
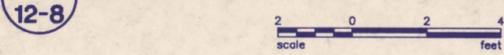
**NOTES**

- 1.) GEOCOMPOSITE DRAINAGE LAYER (TEX-NET TN3002CN OR EQUIVALENT) TO COMPRISE GEONET WITH BONDED GEOTEXTILE ON BOTH SIDES.
- 2.) WATER LEVEL MAY VARY WITH SEASONAL FLUCTUATIONS.
- 3.) SEE SHEETS 13-1 TO 13-7 FOR WETLAND REMEDIATION.
- 4.) OVERLAP 10 OZ. NONWOVEN GEOTEXTILE WRAPPING GAS COLLECTION AND DRAINAGE COLLECTION PIPES BY A MINIMUM OF 3 INCHES AND FIELD SEW. ADJACENT SHEETS OF GEOTEXTILE SHALL BE OVERLAPPED BY A MINIMUM OF 6 INCHES. FOR ADDITIONAL GAS COLLECTION SYSTEM DETAILS SEE SHEETS 15-1 TO 15-3.
- 5.) VERTICAL EXAGGERATION OF GEOSYNTHETICS SCALE FOR VISUAL PURPOSES ONLY.

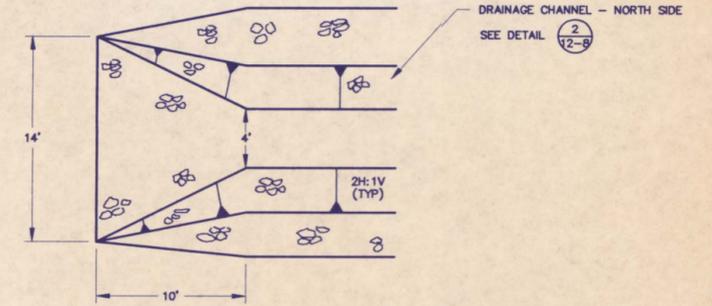
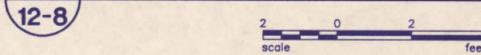
REV	DATE	DESCRIPTION	DR BY	RVW BY
04/92		AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	RF
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 903-6400		SHEET TITLE: IMPERMEABLE COVER EAST HIDE PILE DETAILS		
DES BY	RAC	07/15/91	SHEET TITLE:	
DR BY	RDH	12/16/91		
CHK BY	RJ	12/16/91		
RVW BY	PCR	12/16/91		



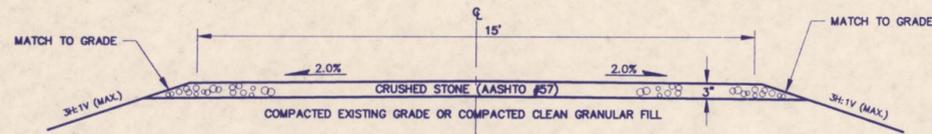
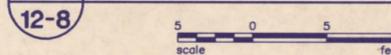
**1 RIPRAP DRAINAGE CHANNEL-TYPICAL DETAIL**



**2 RIPRAP DRAINAGE CHANNEL-NORTH SIDE**

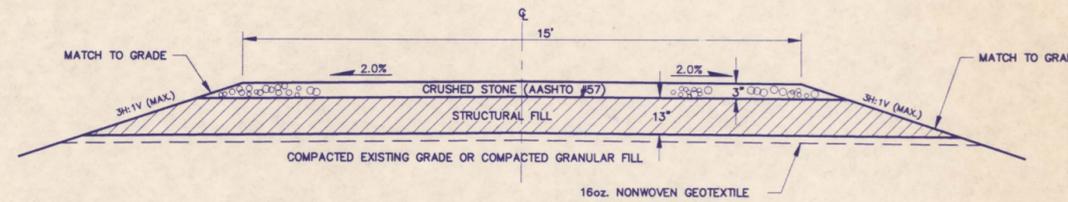


**3 CHANNEL TRANSITION DETAIL**



**4 GRAVEL ACCESS ROAD OUTSIDE OF PERMEABLE COVER LIMITS**

NOT TO SCALE



**5 GRAVEL ACCESS ROAD WITHIN PERMEABLE COVER LIMITS**

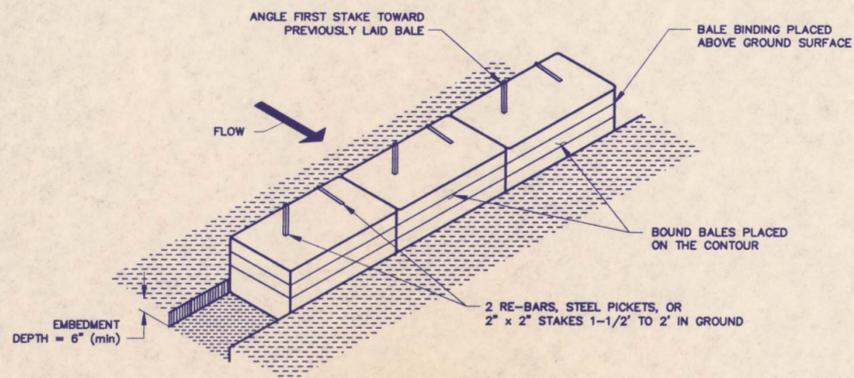
NOT TO SCALE

**LEGEND**

- 1 - DETAIL/CROSS SECTION DESIGNATION
- 12-8 - SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

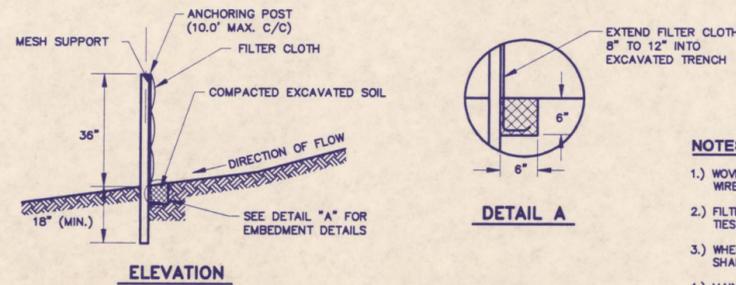
**NOTES**

- WITHIN THE CAP LIMITS THE THICKNESS OF THE ROAD SHALL NOT BE LESS THAN 16" UNDERLAIN BY A 16oz. NONWOVEN GEOTEXTILE.
- CRUSHED STONE WEARING COURSE SHALL HAVE THE FOLLOWING GRADATION BY WEIGHT (AASHTO #57):
  - % FINER THAN 1-1/2" : 100
  - % FINER THAN 1" : 95-100
  - % FINER THAN 1/2" : 25-60
  - % FINER THAN No.4 SIEVE : 0-10
  - % FINER THAN No.8 SIEVE : 0-5
- SILT FENCE AND STRAW BALES TO BE PLACED AROUND WETLANDS AND STREAMS TO AVOID SILTATION UNTIL PERMANENT VEGETATION HAS GROWN. SILT FENCE AND STRAW BALES SHOULD BE PLACED IN UPLAND AREAS WHERE NECESSARY TO AVOID SEDIMENT TRANSPORT OFF-SITE. SILT FENCE AND STRAW BALES SHALL BE MAINTAINED REGULARLY AND REPLACED AS NECESSARY.
- ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES INCLUDING BUT NOT LIMITED TO, JUTE MESH, DIVERSION DITCHES AND TEMPORARY SEEDING SHALL BE USED WHERE NECESSARY TO PREVENT SEDIMENT TRANSPORT INTO STREAMS AND WETLANDS OR OFF-SITE.
- SEE SPECIFICATIONS FOR ADDITIONAL EROSION AND SEDIMENTATION DETAILS AND REQUIREMENTS FOR PREPARATION, SUBMISSION AND APPROVAL OF EROSION AND SEDIMENTATION PLANS.
- VERTICAL EXAGGERATION OF GEOSYNTHETICS SCALE FOR VISUAL PURPOSES ONLY.



**6 STRAW BALE DETAIL**

NOT TO SCALE



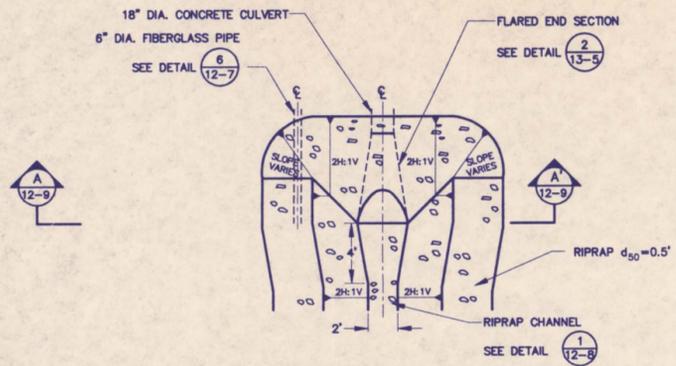
**7 SILT FENCE DETAIL**

NOT TO SCALE

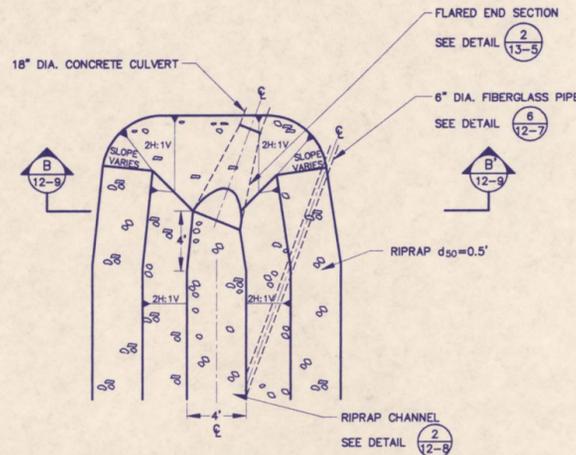
**NOTES FOR SILT FENCE**

- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
  - FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
  - WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES.
  - MAINTENANCE SHALL BE PERFORMED AS NEEDED AND ACCUMULATED MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
- POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD  
 FENCE: WOVEN WIRE, 14 1/2 GA. 6" MAX. MESH OPENING  
 FILTER CLOTH: MIRAFI 100X, AMOCO 1380, EXXON GTF-100 SERIES OR APPROVED EQUAL

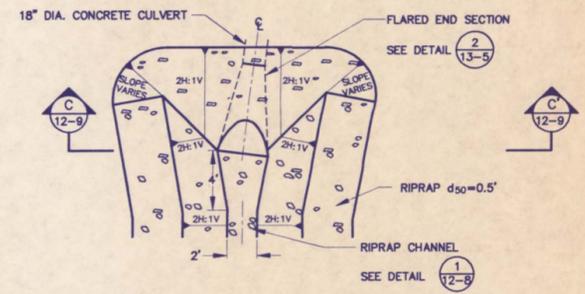
REV	DATE	DESCRIPTION	DR BY	RVW BY
04/92		AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	
SCALE: AS SHOWN				
PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS				
PROJECT No. 903-6400				
DES BY	RAC	07/10/91	SHEET TITLE:	
DR BY	RDH	12/16/91	IMPERMEABLE COVER	
CHK BY	RJ	12/16/91	EAST HIDE PILE DETAILS	
RVW BY	PCR	12/16/91		
1 OF 1				
Golder Associates Mt. Laurel, New Jersey				
FILE No. 1MA01-879				
SHEET 12-8				



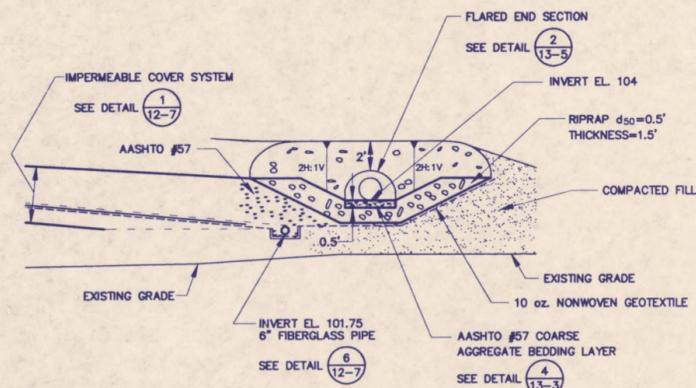
**1 CULVERT INLET TRANSITION DETAIL**  
12-9



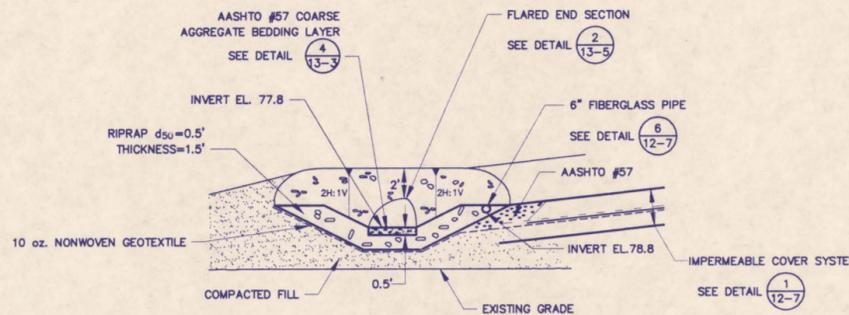
**2 CULVERT OUTLET TRANSITION DETAIL**  
12-9



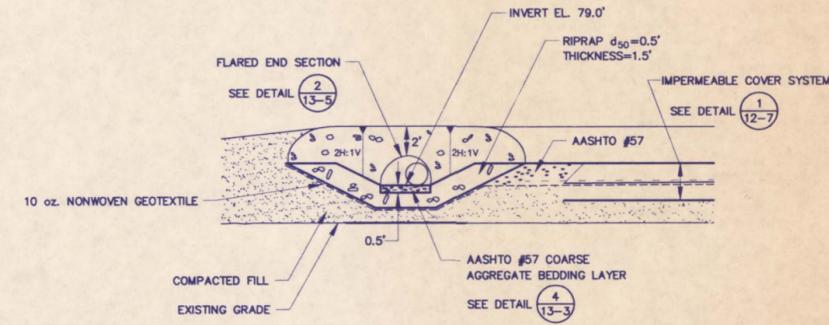
**3 CULVERT INLET TRANSITION DETAIL**  
12-9



**A SECTIONAL VIEW A-A'**  
12-9



**B SECTIONAL VIEW B-B'**  
12-9



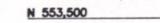
**C SECTIONAL VIEW C-C'**  
12-9

**LEGEND**

- 1/A → DETAIL/CROSS SECTION DESIGNATION
- 12-9 → SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

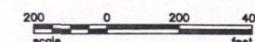
REV	DATE	DESCRIPTION	DR BY	RVM BY
Δ	04/92	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	PJE
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 903-6400		SHEET TITLE: IMPERMEABLE COVER EAST HIDE PILE DETAILS		
DES BY	ALK	11/18/91	SHEET TITLE:	
DR BY	ALK	12/20/91	1 OF 1	
CHK BY	RJL	12/20/91	FILE No. 1MA01-B60	
RVM BY	PCR	12/20/91	SHEET 12-9	

**LEGEND**

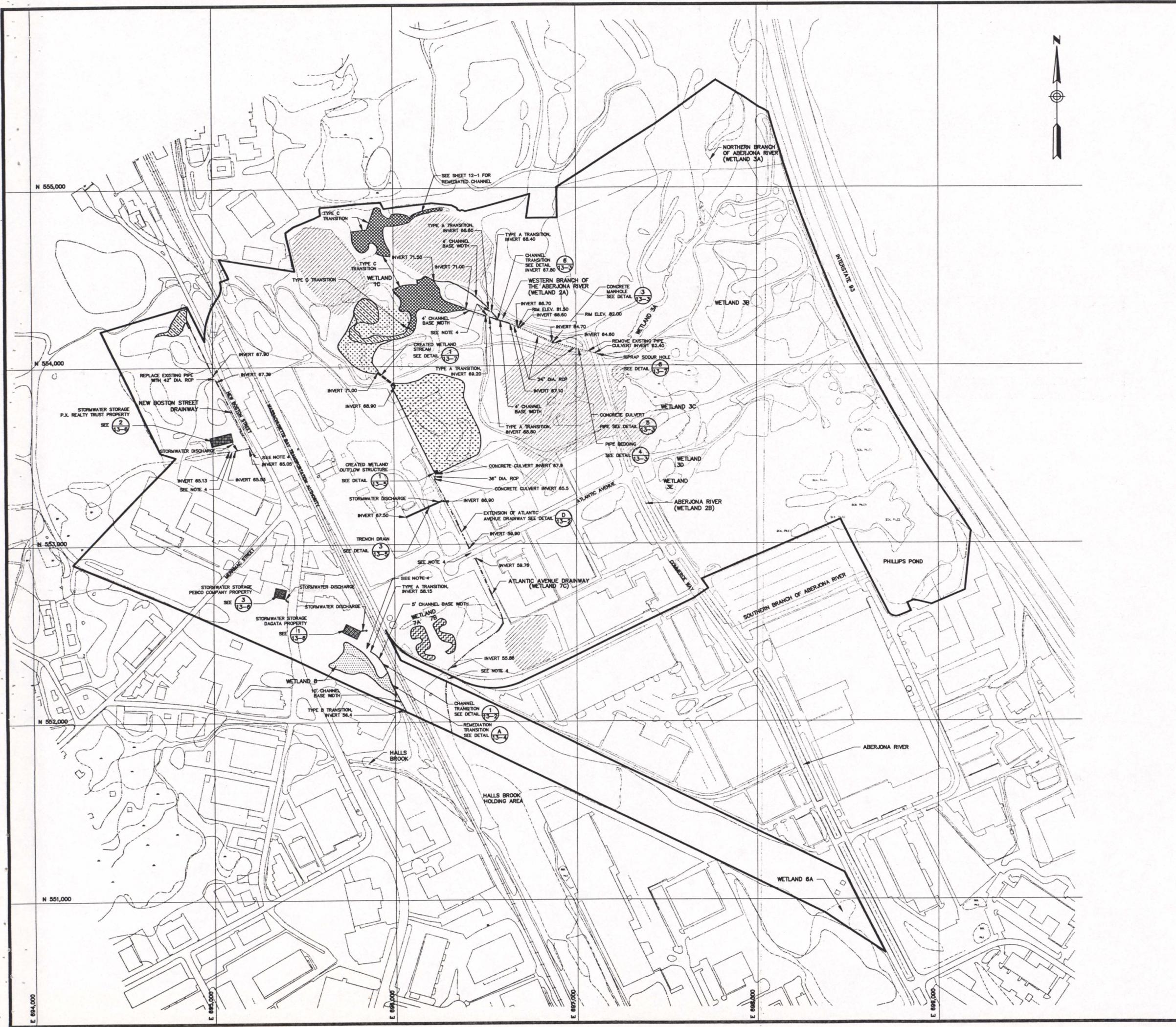
-  SITE BOUNDARY
-  GRID LINE
-  EDGE OF WOODS
-  TRAIL
-  SOIL AND WOOD CHIP PILES
-  STREAMS AND WATERCOURSES
-  RAILROAD TRACKS
-  GRAVEL/COBBLE LINED STREAM  
SEE DETAILS A & B ON SHEET 13-2
-  CREATED WETLAND STREAM
-  CONCRETE CULVERT
-  STREAM TO BE DREDGED, FOLLOWED BY CAPPING WITH PERMEABLE COVER. SEE DETAIL C ON SHEET 13-2
-  EXTENSION OF THE ATLANTIC AVENUE DRAINWAY TO BE EXCAVATED. SEE DETAIL D ON SHEET 13-2
-  DETAIL/CROSS SECTION DESIGNATION  
SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED
-  MARSH
-  CONCRETE MANHOLE (SEE DETAIL 3 SHEET 13-3)
-  CREATED WETLAND OUTFLOW STRUCTURE
-  AREA TO BE CAPPED WITH PERMEABLE COVER. SEE DETAIL 4 ON SHEET 13-4
-  AREA TO BE CAPPED WITH PERMEABLE COVER. SEE DETAIL 5 ON SHEET 13-4
-  AREA TO BE DREDGED, FOLLOWED BY CAPPING WITH PERMEABLE COVER. SEE DETAIL 3 ON SHEET 13-4
-  AREA TO BE FILLED AND CAPPED WITH PERMEABLE COVER.
-  CREATED WETLAND  
SEE SHEETS 14-4 AND 14-5
-  ENHANCEMENT WETLAND  
SEE SHEETS 14-4 AND 14-5
-  AREA TO BE EXCAVATED FOR STORMWATER STORAGE
-  HIDE PILES BASED ON CONSENT DECREE

**NOTES**

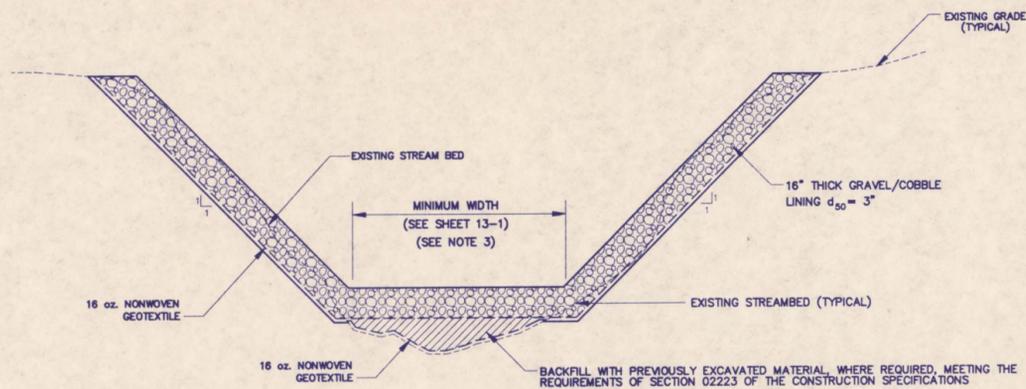
- 1.) SITE BOUNDARY SURVEYED BY SAIC ENGINEERING, INC. APRIL 1990 AND JANUARY 1991.
- 2.) GRID COORDINATES BASED ON MASSACHUSETTS COORDINATE SYSTEM.
- 3.) WETLAND NOTATION IN ACCORDANCE WITH WETLAND MANAGEMENT SPECIALISTS, INC., JULY 1986.
- 4.) WHERE EXISTING CULVERTS CONNECT CHANNELS UNDERGOING REMEDIATION, THE CULVERTS WILL BE CLEANED IN ACCORDANCE WITH SECTION 02800 OF THE CONSTRUCTION SPECIFICATIONS.
- 5.) FOR TRANSITION DETAILS, SEE SHEETS 13-2, 13-3 AND 13-4.
- 6.) THE PORTION OF WETLAND 1C RECEIVING DREDGE AND CAP REMEDIATION SHALL BE ENHANCED, SEE SHEETS 14-4 AND 14-5.
- 7.) THE PORTION OF WETLAND 1C RECEIVING PERMEABLE CAP REMEDIATION SHALL BE REVITALIZED, SEE SHEET 14-1.
- 8.) WETLAND 3A SHALL BE RESTORED IN ACCORDANCE WITH SHEET 14-8 AND SECTION 02937 OF THE CONSTRUCTION SPECIFICATIONS.
- 9.) FOR DETAILED DESIGN FOR THE ATLANTIC AVENUE DRAINWAY, SEE SHEET 9-1.
- 10.) WETLAND SEDIMENT CAP OF WETLAND 1C SHALL EXTEND ABOVE GRADE, 10 FEET INTO THE AREA ADJOINING THE REMEDIATED AREA UNLESS THE ADJOINING AREA IS TO RECEIVE RIPRAP PROTECTION.
- 11.) ALL REMEDIATED STREAMS AND DRAINWAYS SHALL HAVE A VEGETATIVE PLANTING STRIP LOCATED ON EACH SIDE OF THE STREAM. SEE SHEET 14-7 FOR DETAILS.
- 12.) MODIFICATION AND CREATION OF STREAMS SHALL COMPLY WITH SECTION 02244 OF THE CONSTRUCTION SPECIFICATIONS.
- 13.) MODIFICATIONS TO EXISTING WETLANDS SHALL COMPLY WITH SECTION 02243 OF THE CONSTRUCTION SPECIFICATIONS.



DATE	04/92	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG
REV	DATE	DESCRIPTION	DR BY
SCALE:	AS SHOWN	PROJECT:	INDUSTRI-PLEX SITE REMEDIATION TRUST
PROJECT No.	903-6400	LOCATION:	WOBRUN, MASSACHUSETTS
DES BY:	VEEF 02/28/91	SHEET TITLE:	STREAM AND WETLAND
DR BY:	RDH 12/17/91		SEDIMENTS REMEDIATION
CHK BY:	CRM 12/17/91		
REV BY:	PCR 12/17/91		
 Golder Associates			1 of 1
Mt. Laurel, New Jersey			FILE No. TMA01-857
			<b>SHEET 13-1</b>



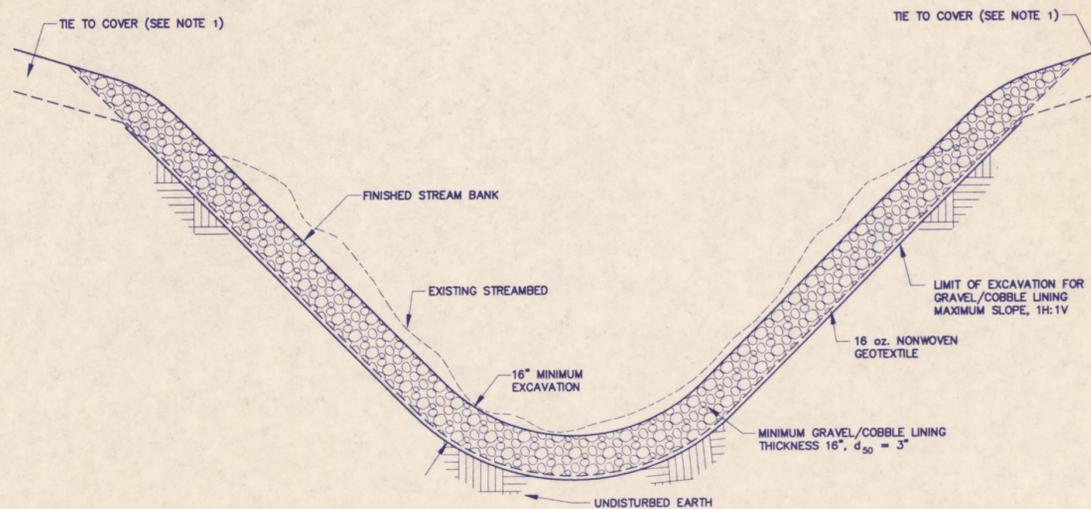
N 555,000  
 N 554,000  
 N 553,000  
 N 552,000  
 N 551,000  
 E 804,000  
 E 805,000  
 E 806,000  
 E 807,000  
 E 808,000  
 E 809,000



**A**  
13-2

**TYPICAL GRAVEL/COBBLE LINING STREAM  
REMEDY WITHOUT ADJACENT COVER SECTION**

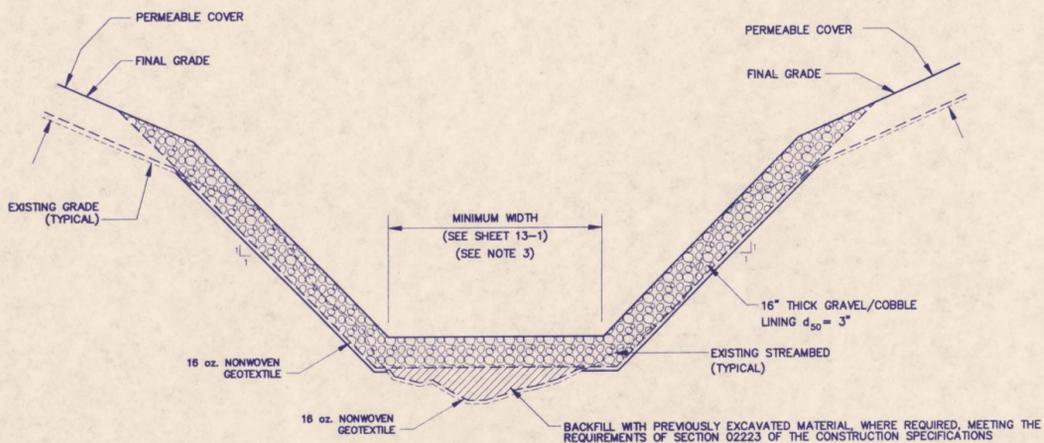
NOT TO SCALE



**C**  
13-2

**TYPICAL DREDGE AND PERMEABLE  
CAP STREAM REMEDY SECTION**

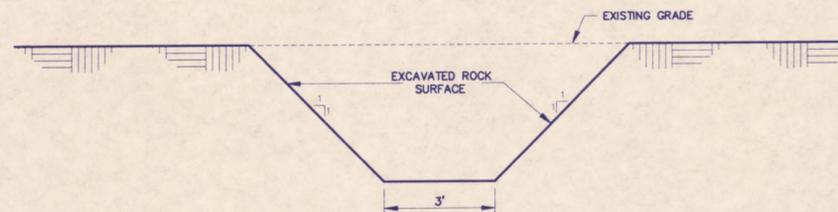
NOT TO SCALE



**B**  
13-2

**TYPICAL GRAVEL/COBBLE LINING STREAM  
REMEDY WITH ADJACENT COVER SECTION**

NOT TO SCALE



**D**  
13-2

**EXTENSION OF ATLANTIC  
AVENUE DRAINWAY SECTION**

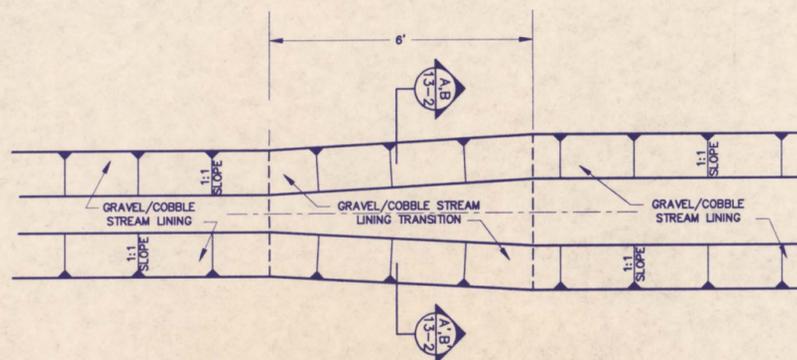
NOT TO SCALE

**LEGEND**

- 1 - DETAIL/CROSS SECTION DESIGNATION
- 13-2 - SHT. No. WHERE DETAIL/CROSS SECTION IS PRESENTED

**NOTES**

- SEE SHEETS 11-3A, 11-3B, 11-3C, & 11-3D FOR COVER TYPES.
- ALL REMEDIATED STREAMS AND DRAINWAYS SHALL HAVE A VEGETATIVE PLANTING STRIP LOCATED ON EACH SIDE OF THE STREAM. SEE SHEET 14-7 FOR DETAIL.
- CHANNEL WIDTH SHALL BE AS INDICATED ON SHEET 13-1 UNLESS INCREASED UNDER THE DIRECTION OF THE TRUST REPRESENTATIVE.
- MODIFICATIONS AND CREATION OF STREAMS SHALL COMPLY WITH SECTION 02244 OF THE CONSTRUCTION SPECIFICATIONS.

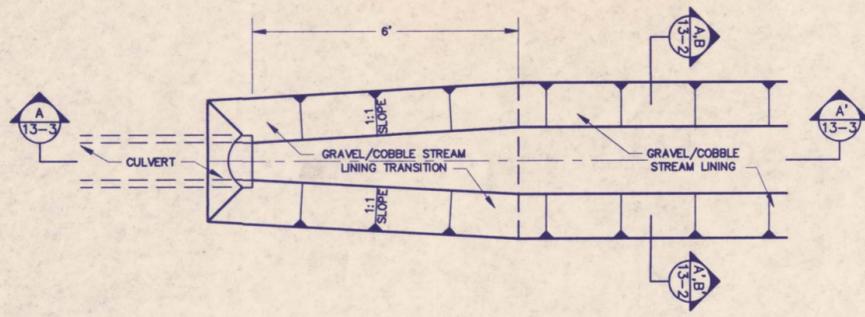


**1**  
13-2

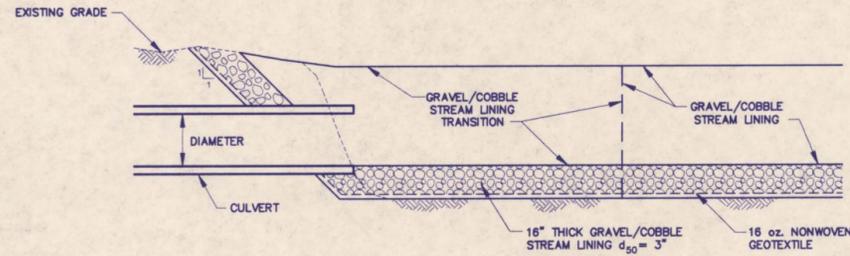
**STREAM LINING TRANSITION DETAIL**

NOT TO SCALE

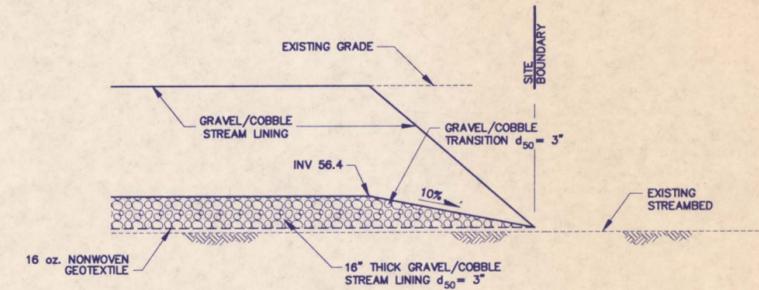
REV	DATE	DESCRIPTION	DR BY	RVW BY
04/92		AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	psf
SCALE: NOT TO SCALE		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 903-6400		SHEET TITLE:		
DES BY: CRM 07/25/91		STREAM SEDIMENT REMEDIAL DETAILS		
DR BY: ELW 12/17/91				
CHK BY: CRM 12/17/91				
RVW BY: PCR 12/17/91				
Golder Associates Mt. Laurel, New Jersey		SHEET 1 OF 1 FILE No. 1MA01-858 SHEET 13-2		



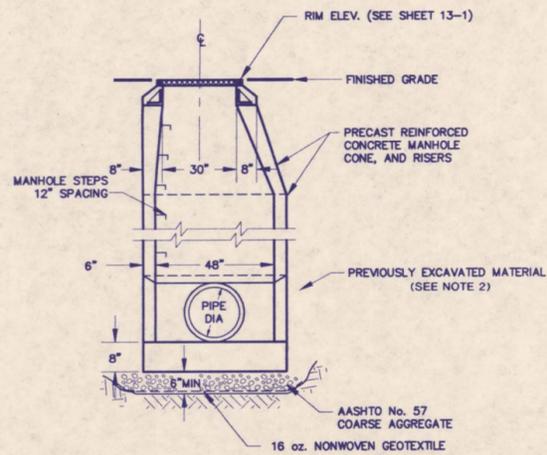
**1 TYPE A TRANSITION**  
13-3 NOT TO SCALE



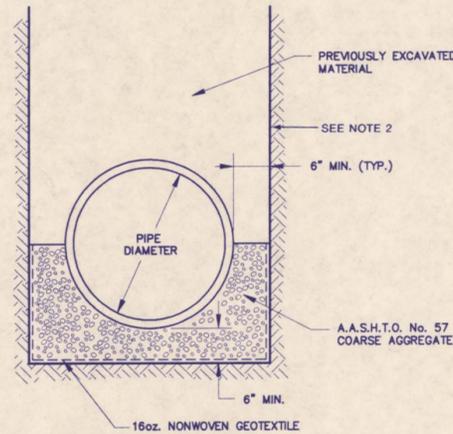
**A SECTIONAL VIEW A-A'**  
13-3 NOT TO SCALE



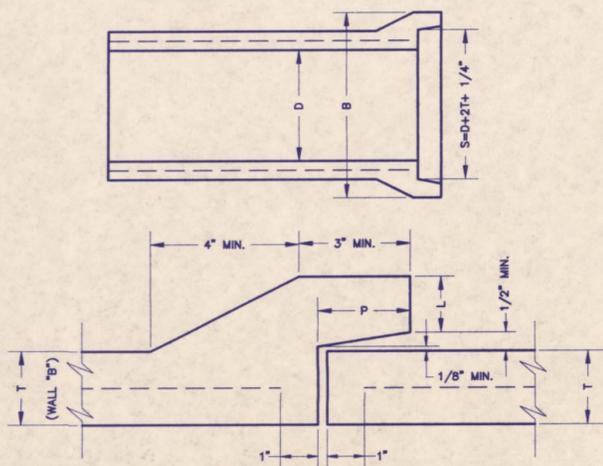
**2 TYPE B TRANSITION SECTION**  
13-3 NOT TO SCALE



**3 PRECAST CONCRETE MANHOLE DETAIL**  
13-3 NOT TO SCALE



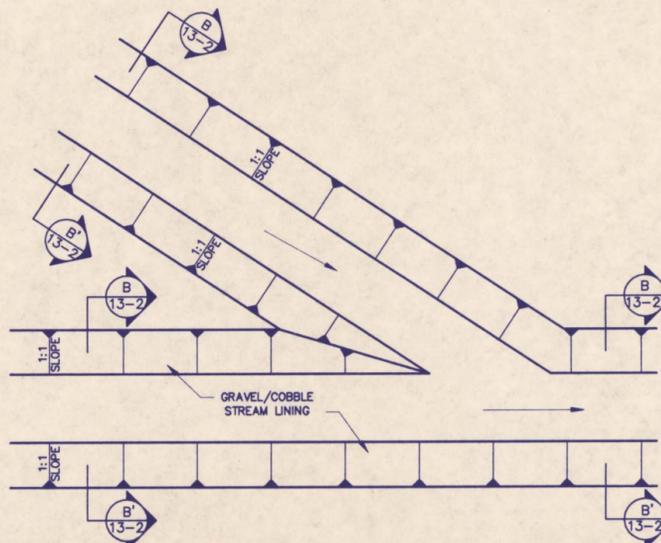
**4 DRAINAGE PIPE BEDDING DETAIL**  
13-3 NOT TO SCALE



D	T	B	S	P	L
NOM. DIA.	MINIMUM DIMENSIONS, INCHES				
18	2 1/2	27 3/4	23 1/4	2 3/4	1 7/8
24	2 3/4	31 5/8	26 3/4	2 3/4	2 1/16

NOTE: PIPE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION M170.

**5 REINFORCED CONCRETE PIPE DETAIL**  
13-3 NOT TO SCALE



**6 STREAM LINING TRANSITION DETAIL**  
13-3 NOT TO SCALE

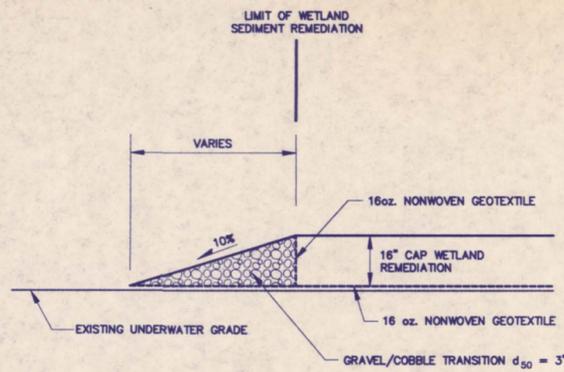
**LEGEND**

- 1 — DETAIL/CROSS SECTION DESIGNATION
- 13-3 — SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

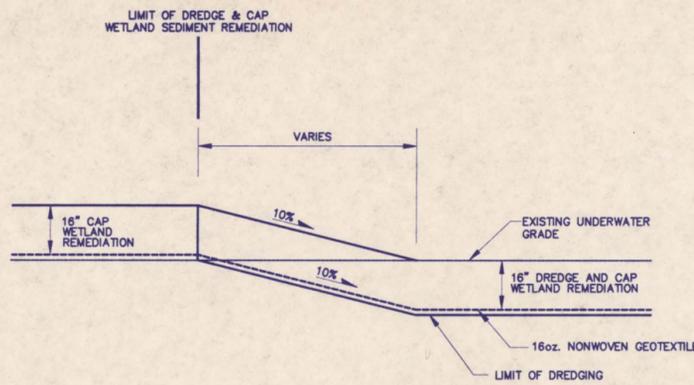
**NOTES**

- 1.) MODIFICATIONS AND CREATION OF STREAMS SHALL COMPLY WITH SECTION 02244 OF THE CONSTRUCTION SPECIFICATIONS.
- 2.) ACTUAL SLOPES FOR ALL EXCAVATIONS MUST BE DETERMINED BY THE CONTRACTOR TO SUIT SOIL CONDITIONS AND ALL APPLICABLE HEALTH AND SAFETY REQUIREMENTS.

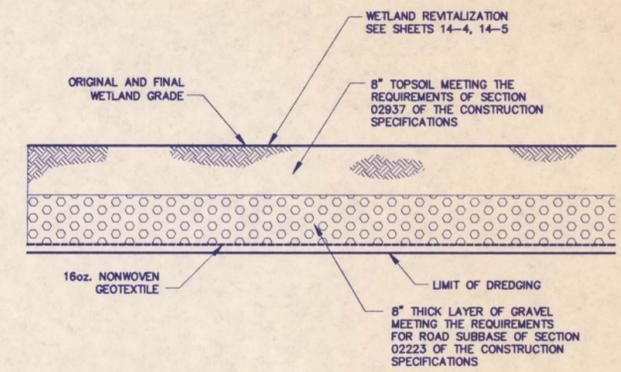
REV	DATE	DESCRIPTION	DR BY	RVW BY
04/92		AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	PCF
SCALE: NOT TO SCALE				
PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS				
PROJECT No. 903-6400				
DES BY: CRM 07/29/91		SHEET TITLE: STREAM SEDIMENT REMEDIATION DETAILS		
DR BY: ELW 12/17/91				
CHK BY: CRM 12/17/91				
RVW BY: PCR 12/17/91				



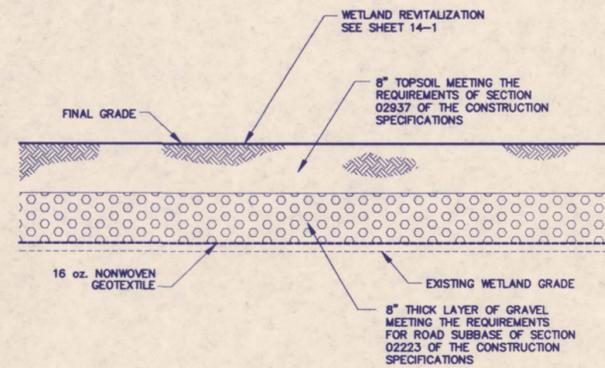
**1**  
13-4 **TYPE C TRANSITION**  
NOT TO SCALE



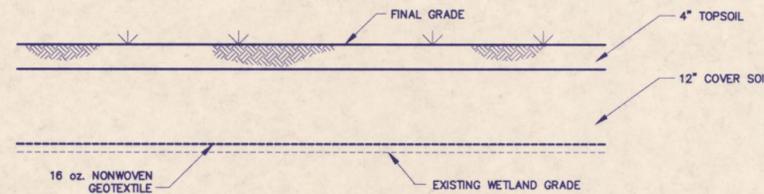
**2**  
13-4 **TYPE D TRANSITION**  
NOT TO SCALE



**3**  
13-4 **WETLAND SEDIMENT DREDGE AND CAP DETAIL**  
scale 0 1 2 feet

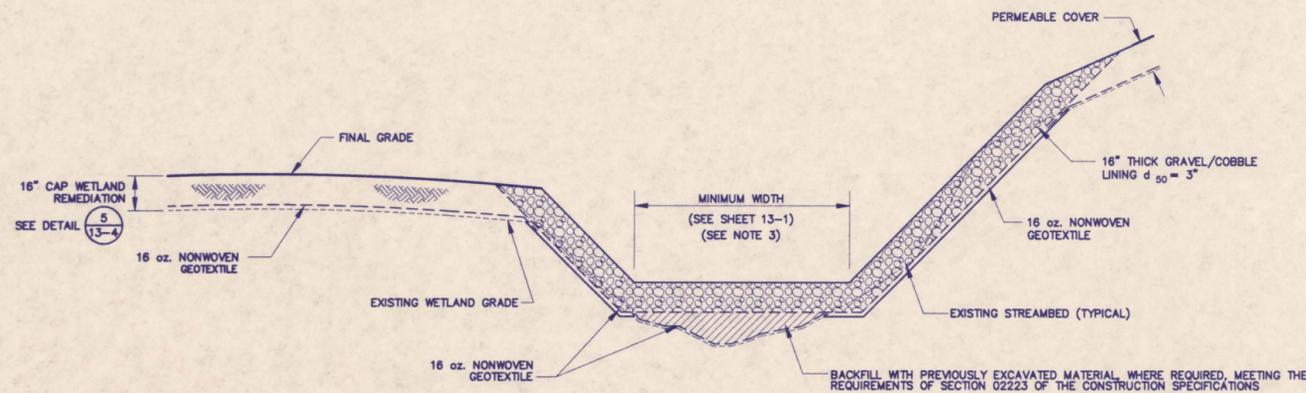


**4**  
13-4 **WETLAND 1C SEDIMENT CAP DETAIL**  
scale 0 1 2 feet



**5**  
13-4 **WETLAND 8 SEDIMENT CAP DETAIL**  
scale 0 1 2 feet

NOTE: SEDIMENT CAP SHALL MEET THE REQUIREMENTS FOR PERMEABLE COVER AS INDICATED IN SECTION 02242 OF THE CONSTRUCTION SPECIFICATIONS.



**A**  
13-4 **WETLAND 8 REMEDIATION WITH ADJACENT STREAM REMEDIATION SECTION**  
NOT TO SCALE

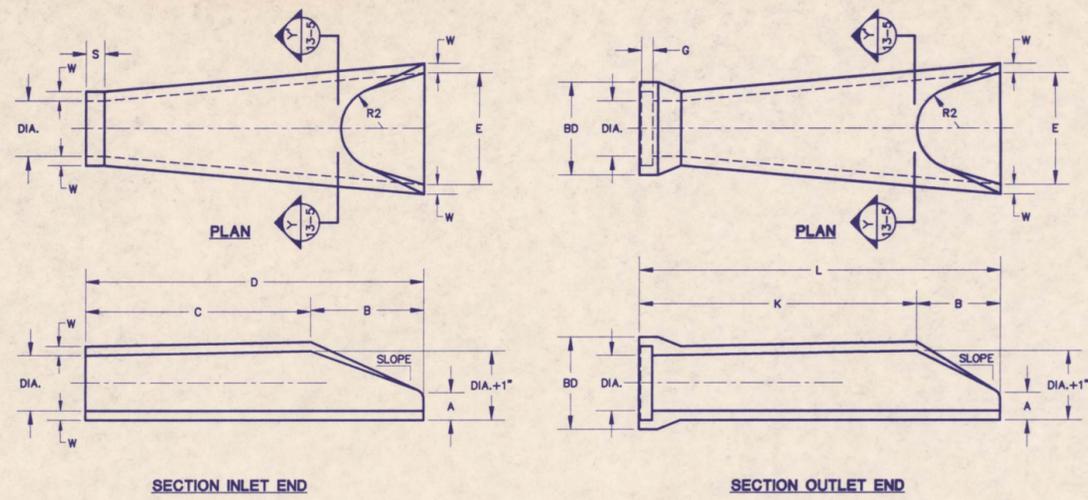
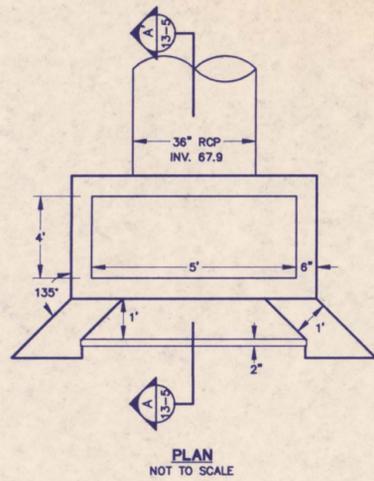
**LEGEND**

- 1 ———— DETAIL/CROSS SECTION DESIGNATION
- 13-4 ———— SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

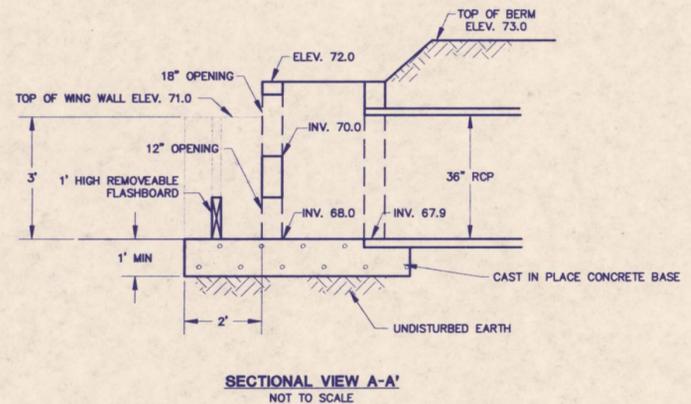
**NOTES**

- 1.) ALL REMEDIATED STREAMS AND DRAINWAYS SHALL HAVE A VEGETATIVE PLANTING STRIP LOCATED ON EACH SIDE OF THE STREAM. SEE SHEET 14-7 FOR DETAILS.
- 2.) CHANNEL WIDTHS SHALL BE AS INDICATED ON SHEET 13-1 UNLESS INCREASED UNDER THE DIRECTION OF THE TRUST REPRESENTATIVE.
- 3.) MODIFICATIONS TO EXISTING WETLANDS SHALL COMPLY WITH SECTION 02243 OF THE CONSTRUCTION SPECIFICATIONS.

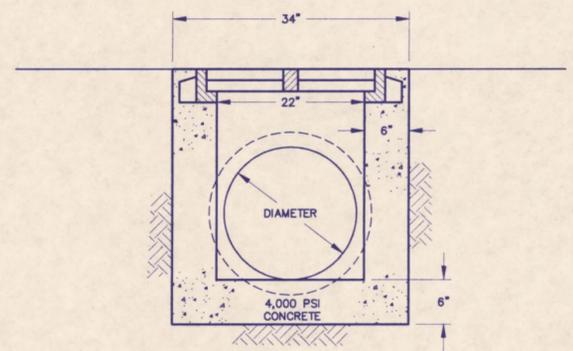
REV	DATE	DESCRIPTION	DR BY	RVW BY
04/92		AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	RVW
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 903-6400		SHEET TITLE: WETLAND SEDIMENTS REMEDIATION DETAILS		
DES BY	CRM	07/29/91		
DR BY	ELW	12/17/91		
CHK BY	CRM	12/17/91		
RVW BY	PCR	12/17/91		



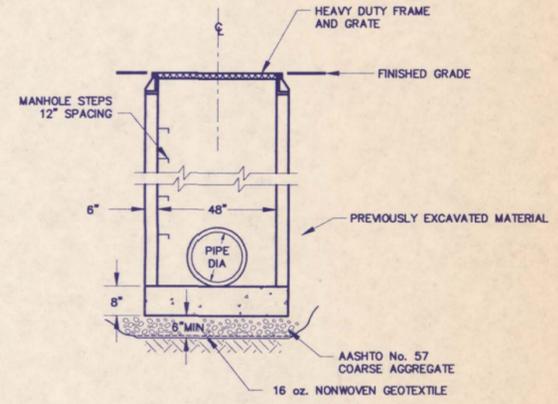
DIA.	W	A	B	C	D	E	BD	K	L	P	DIA.+1"	R1	R2	S	G	SLOPE
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	28"	4'-3 7/8"	5'-6 7/8"	29"	19"	15-1/2"	12"	4"	2-3/4"	3:1
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1"	4'-0"	36"	3'-1/2"	6'-8"	33-3/16"	25"	6-13/16"	14"	4"	3"	3:1



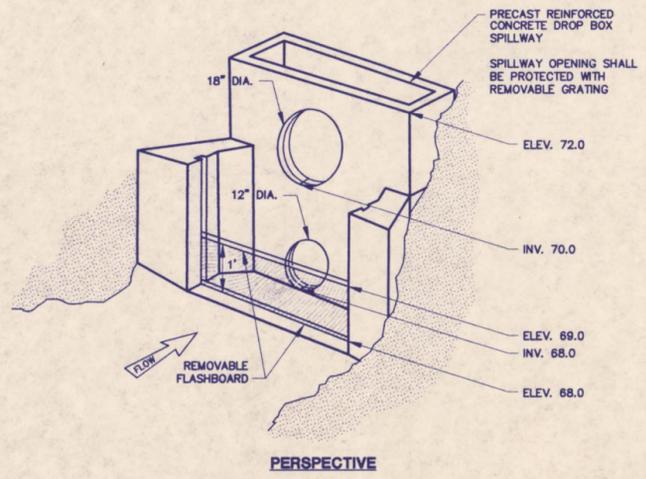
**2 REINFORCED CONCRETE PIPE FLARED ENDS**  
13-5 NOT TO SCALE



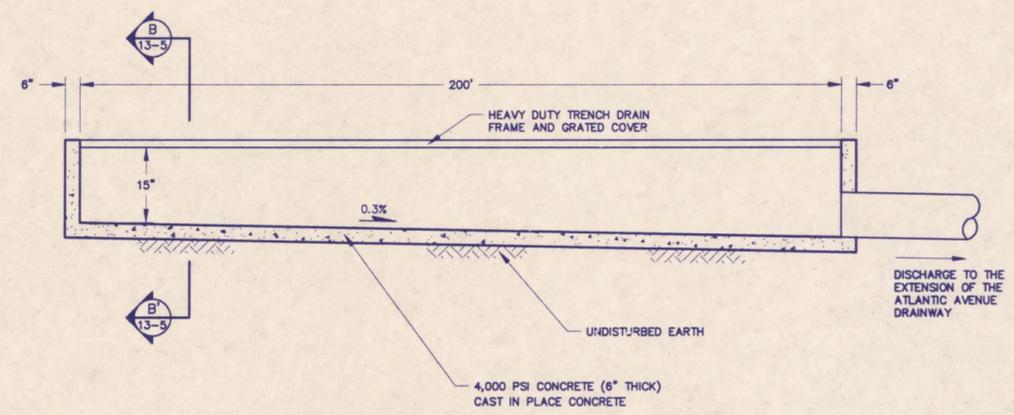
**B SECTIONAL VIEW B-B'**  
13-5 NOT TO SCALE



**4 PRECAST CONCRETE STORMWATER INLET DETAIL**  
13-5 NOT TO SCALE



**1 CREATED WETLAND OUTFLOW STRUCTURE DETAIL**  
13-5 NOT TO SCALE



**3 TRENCH DRAIN DETAIL**  
13-5 NOT TO SCALE

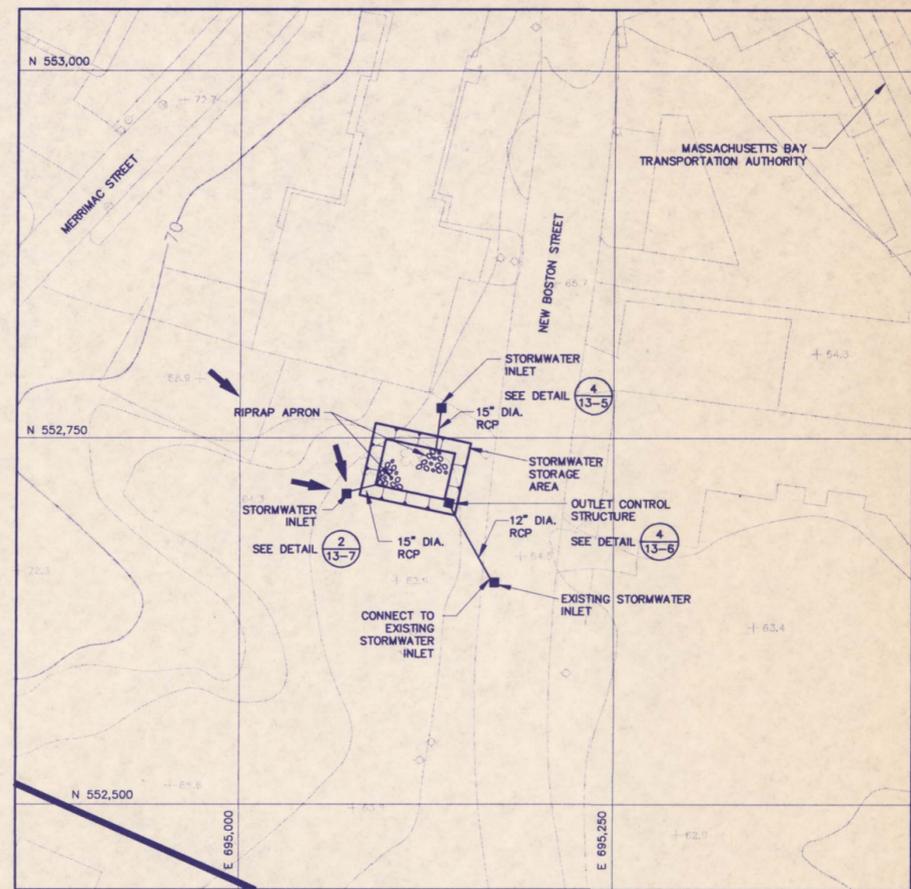
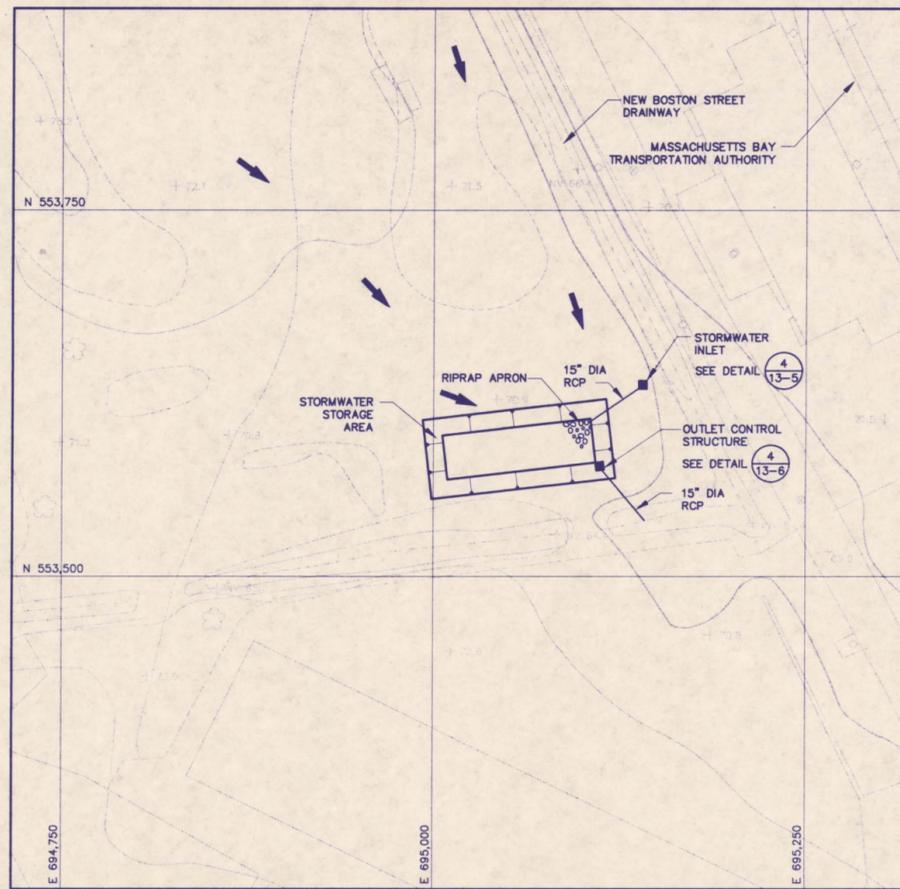
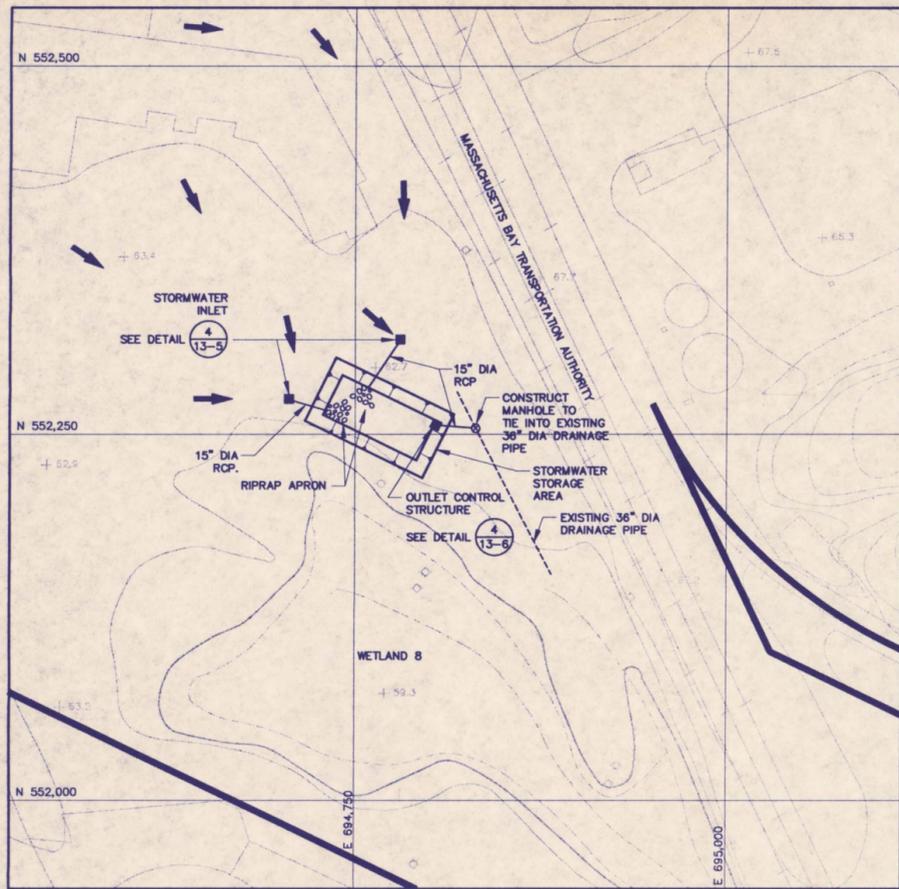
**LEGEND**

1 13-5 ——— DETAIL/CROSS SECTION DESIGNATION  
 13-5 ——— SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

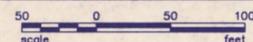
**NOTES**

1.) CONTRACTOR SHALL PROVIDE STEEL REINFORCEMENT DESIGN FOR CAST IN PLACE CONCRETE IN ACCORDANCE WITH SECTION 03200 OF THE CONSTRUCTION SPECIFICATIONS.

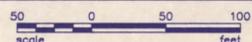
REV	DATE	DESCRIPTION	DR BY	RVW BY
D4/92		AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	JSG	
SCALE:	AS SHOWN	PROJECT:	INDUSTRI-PLEX REMEDIAL TRUST WOBURN, MASSACHUSETTS	
PROJECT No.	903-6400	SHEET TITLE:	STORMWATER MANAGEMENT DETAILS	
DES BY	CRM	08/07/91		
DR BY	RDH	12/17/91		
CHK BY	CRM	12/17/91		
RVW BY	PCR	12/17/91		
Golder Associates Mt. Laurel, New Jersey			1 OF 1 DRAWING No. 1MA01-864 SHEET 13-5	



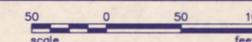
**1** STORMWATER STORAGE-DAGATA PROPERTY  
13-6



**2** STORMWATER STORAGE-P.X. REALTY TRUST PROPERTY  
13-6

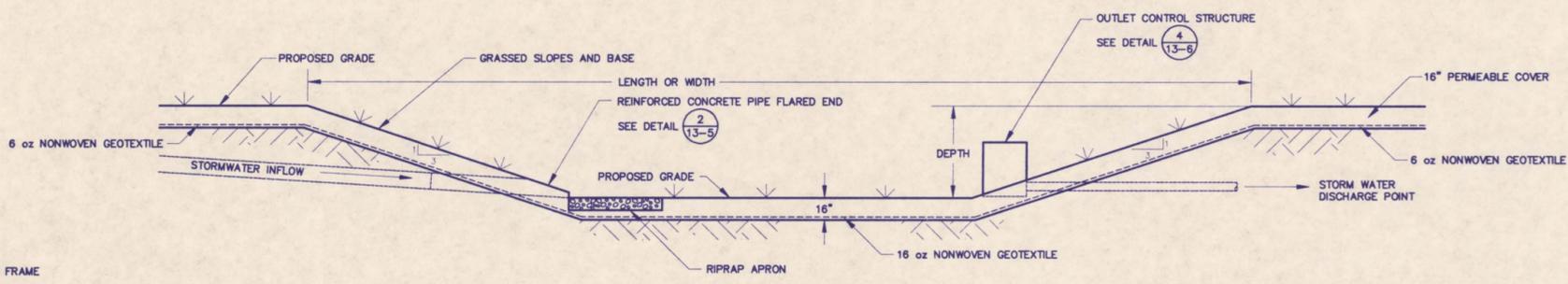


**3** STORMWATER STORAGE-PEBCO COMPANY PROPERTY  
13-6



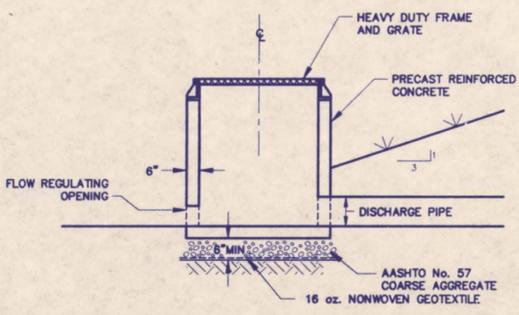
- LEGEND**
- DETAIL/CROSS SECTION DESIGNATION
  - SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED
  - SITE BOUNDARY
  - GRID LINE
  - STREAMS AND WATERCOURSES
  - RAILROAD TRACKS
  - BUSH
  - TREE
  - HYDRANT
  - UTILITY POLE
  - CATCH BASIN
  - MANHOLE
  - TYPICAL SPOT ELEVATION
  - SURFACE WATER DRAINAGE DIRECTION

- NOTES**
- 1.) STORMWATER STORAGE AREAS AND ASSOCIATED DRAINAGE STRUCTURES ARE CONCEPTUAL IN DESIGN.
  - 2.) FINAL GRADING AND DRAINAGE DETAILS WILL BE DETERMINED IN THE FIELD BASED ON DETAILED CONDITIONS EXISTING AT THE TIME OF REMEDIATION.



STORMWATER STORAGE AREA LOCATION	WIDTH	LENGTH	DEPTH	STORMWATER DISCHARGE POINT
DAGATA	48'	88'	3'	NEW BOSTON STREET DRAINWAY CONNECTION TO WETLAND 8
P/X REALTY	54'	124'	4'	NEW BOSTON STREET DRAINWAY
PEBCO	50'	65'	3'	NEW BOSTON STREET STORM SEWER

**4** OUTLET CONTROL STRUCTURE DETAIL  
13-6

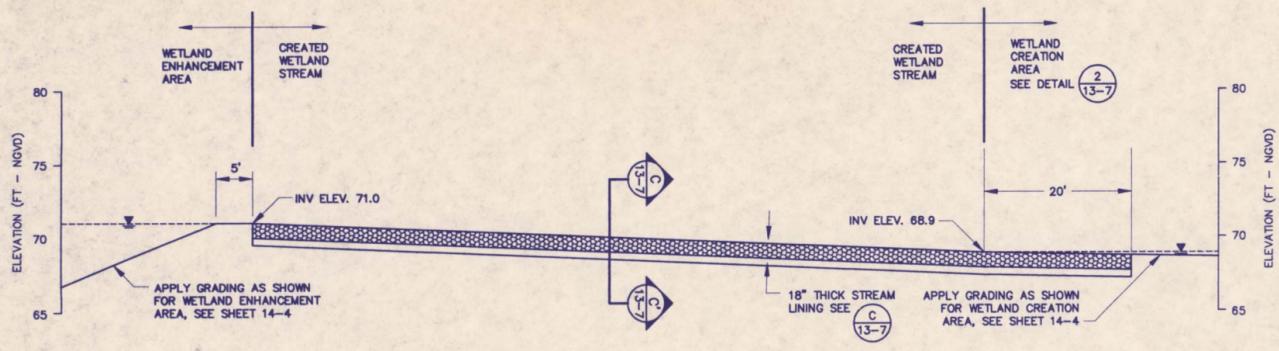


NOT TO SCALE

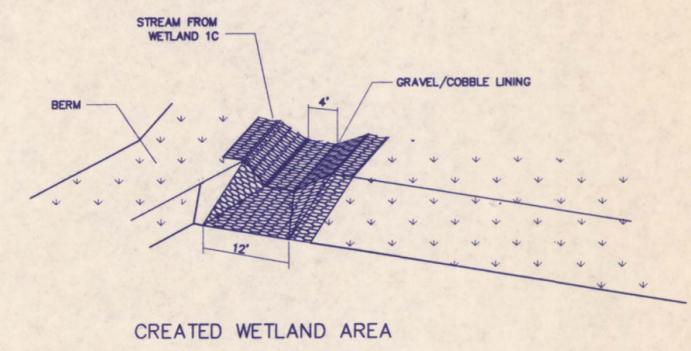
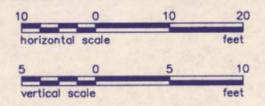
**A** TYPICAL STORMWATER STORAGE AREA SECTION  
13-6

NOT TO SCALE

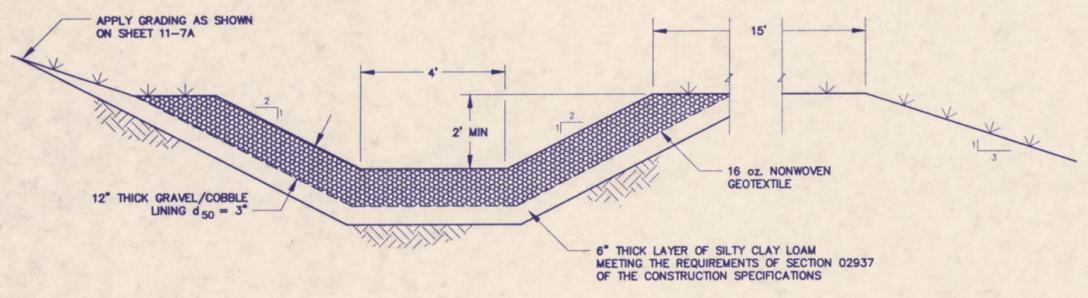
REV	DATE	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	ISS	DR BY	RVW BY
04/92			JSG	PK	
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS			
PROJECT No. 903-6400		SHEET TITLE: STORMWATER MANAGEMENT DETAILS			
DES BY	CRM	12/04/91			
DR BY	PK	12/17/91			
CHK BY	CRM	12/17/91			
RVW BY	PCR	12/17/91			



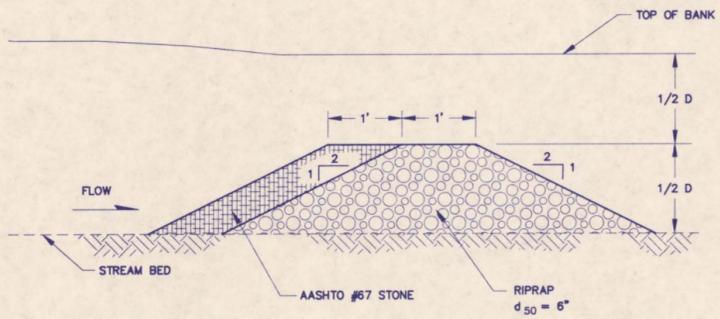
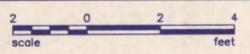
**1** **CREATED WETLAND STREAM DETAIL**  
13-7



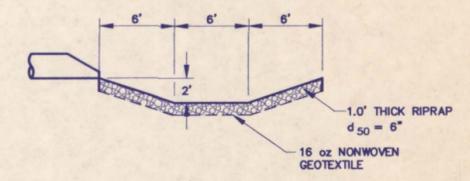
**2** **CREATED WETLAND STREAM TERMINUS**  
13-7 NOT TO SCALE



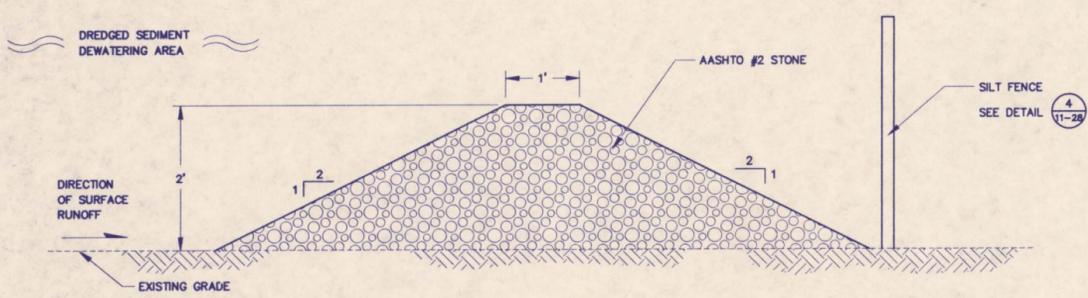
**C** **SECTIONAL VIEW C-C'**  
13-7



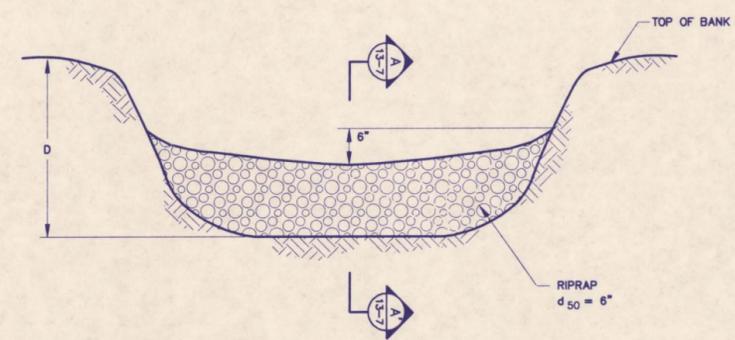
**A** **SECTIONAL VIEW A-A'**  
13-7 NOT TO SCALE



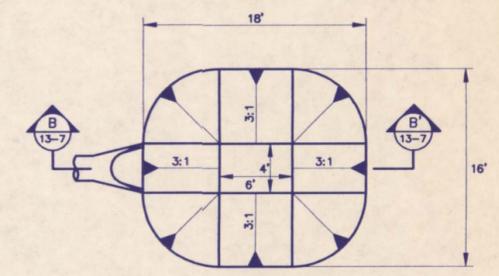
**B** **SECTIONAL VIEW B-B'**  
13-7



**3** **DEWATERING AREA SEDIMENT FILTER DETAIL**  
13-7 NOT TO SCALE



**4** **STREAMBED SEDIMENT FILTER DETAIL**  
13-7 NOT TO SCALE



**5** **RIPRAP SCOUR HOLE DETAIL**  
13-7



**LEGEND**

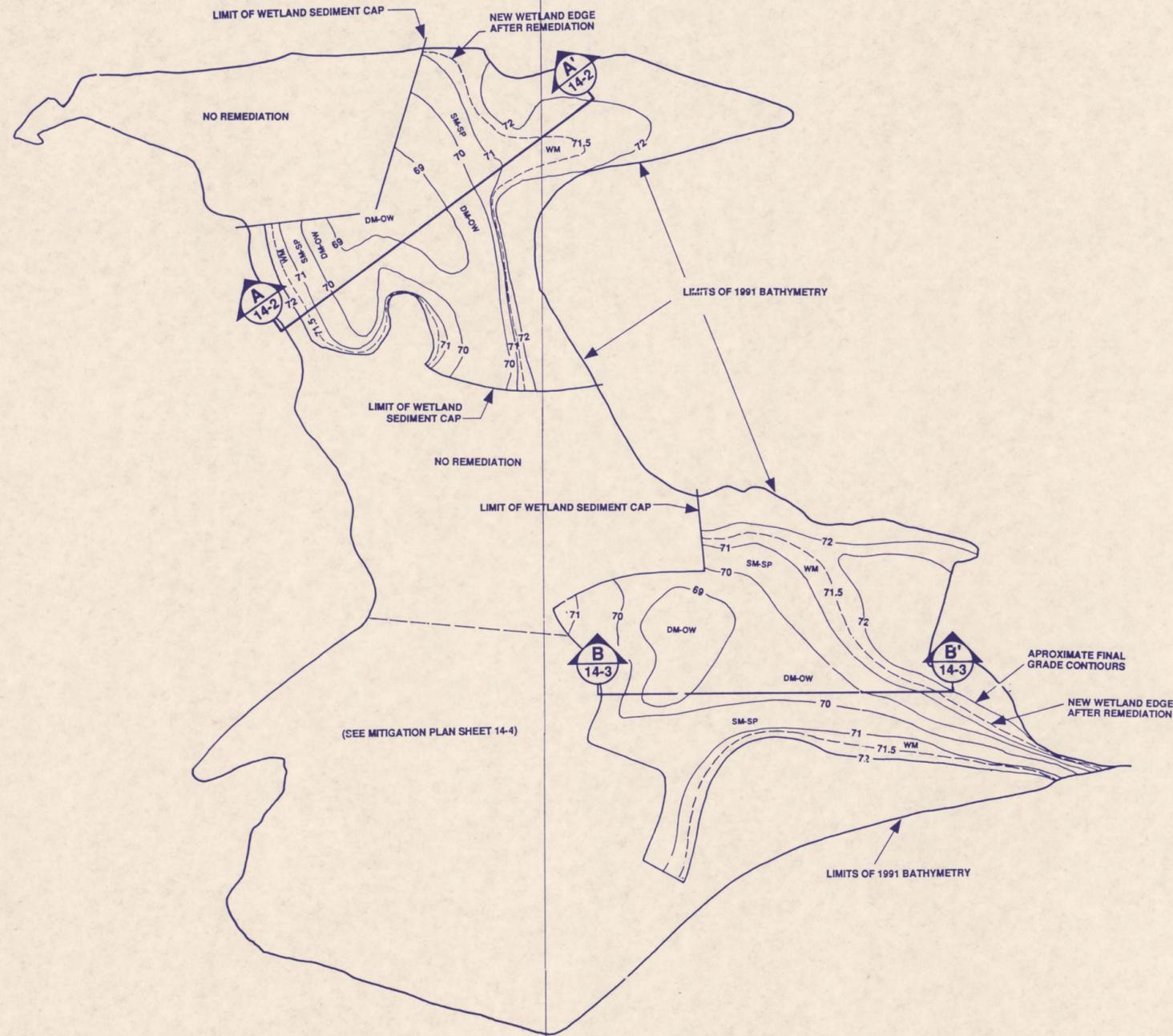
- 1 ← DETAIL/CROSS SECTION DESIGNATION
- 13-7 ← SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

**NOTES**

- 1.) DETAILS 3 AND 4 SHALL BE USED IN CONJUNCTION WITH SECTION 02125, TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL, OF THE CONSTRUCTION SPECIFICATIONS.

REV	DATE	DESCRIPTION	DR BY	RVW BY
1	04/92	AGENCY COMMENTS INCORPORATED -- ISSUED FOR BID	JSG	PC
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 903-6400		SHEET TITLE: STORMWATER MANAGEMENT DETAILS		
DES BY	CRM	12/10/91		
DR BY	RK	12/17/91		
CHK BY	CRM	12/17/91		
RVW BY	PCR	12/17/91		
<b>Golder Associates</b> Mt. Laurel, New Jersey		1 OF 1 DRAWING No. 1MA01-942 <b>SHEET 13-7</b>		

N 555,000



N 554,000

**REVITALIZATION PLAN FOR AREAS OF  
WETLAND 1C WITH WETLAND SEDIMENT CAP.**

E 696,000

**LEGEND**

SYMBOL	HABITAT	SPECIES
DM-OW	Deep Marsh-Open Water	<i>Potamogeton</i> spp./Pondweeds <i>Najas variegatum</i> /Spatterdock <i>Nymphaea odorata</i> /Waterlily <i>Scirpus validus</i> /Softstem bulrush
SM-SP	Shallow Marsh-Semipermanently Flooded	<i>Typha latifolia</i> /Cattail <i>Scirpus validus</i> /Softstem bulrush <i>Sagittaria latifolia</i> /Arrowhead <i>Polycnum</i> spp./Smartweeds <i>Pontederia cordata</i> /Pickerelweed <i>Spartanium eurycarpum</i> /Giant burreed
SM-SF	Shallow Marsh-Seasonally Flooded	Wetland seed mix 1 <i>Iris versicolor</i> /Blue flag <i>Carex lurida</i> , <i>C. stricta</i> , <i>C. crinita</i> /Sedges
WM	Wet Meadow-Saturated	Wetland seed mix 2 <i>Spiraea latifolia</i> /Meadowsweet
SS	Shrub Swamp-Seasonally Flooded to Saturated	<i>Cornus amomum</i> /Silky dogwood <i>Ilex verticillata</i> /Winterberry <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Viburnum racemiflorum</i> /Northern arrowwood <i>Salix</i> spp. /Willows Wetland seed mix 1
FS	Forested Wetland-Saturated	<i>Acer rubrum</i> /Red maple <i>Acer rubrum</i> /Red maple seedlings <i>Fraxinus pennsylvanica</i> /Green ash <i>Sambucus canadensis</i> /Common elder <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Cornus amomum</i> /Silky dogwood <i>Osmunda cinnamomea</i> /Cinnamon fern Wetland Seed Mix 1
UB	Upland Buffer	<i>Acer rubrum</i> /Red maple seedlings <i>Pinus strobus</i> /White pine <i>Quercus rubra</i> /Red oak <i>Populus tremuloides</i> /Trembling aspen <i>Prunus serotina</i> /Black cherry <i>Cornus racemosa</i> /Gray dogwood <i>Corylus sp.</i> /Hazelnut Upland grass seed mix

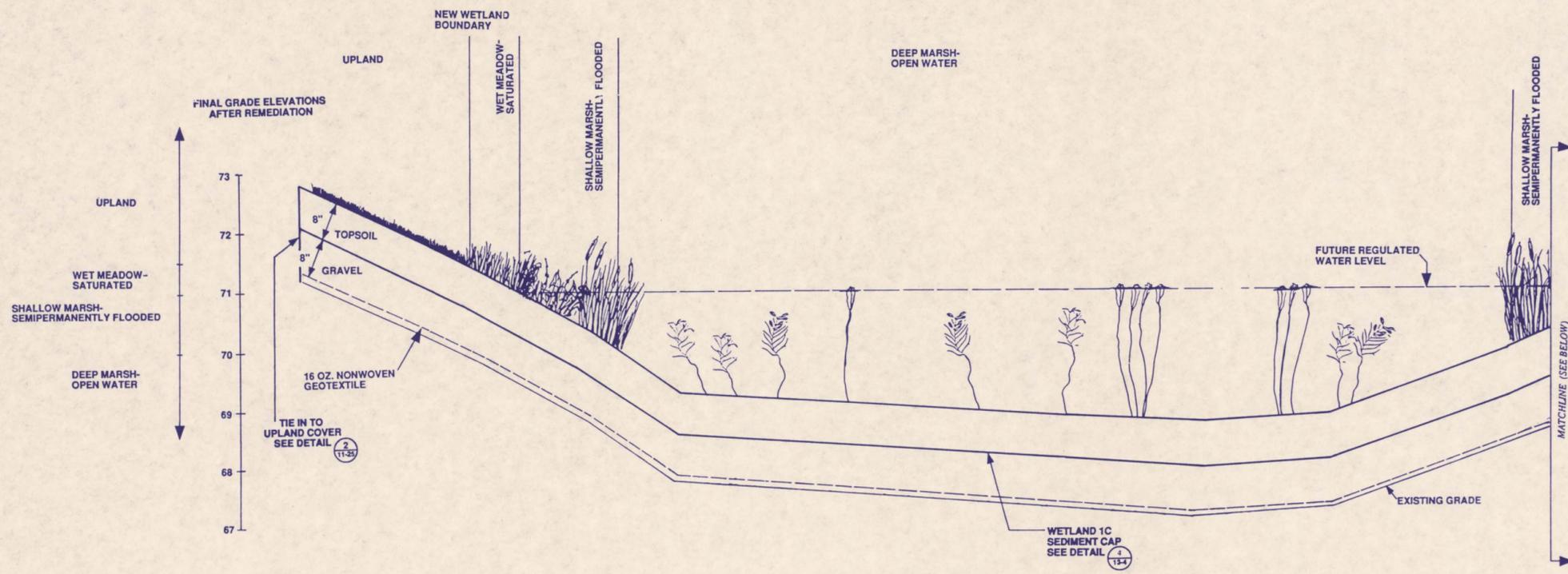
\* For planting along Wetland 3A only.

**NOTES**

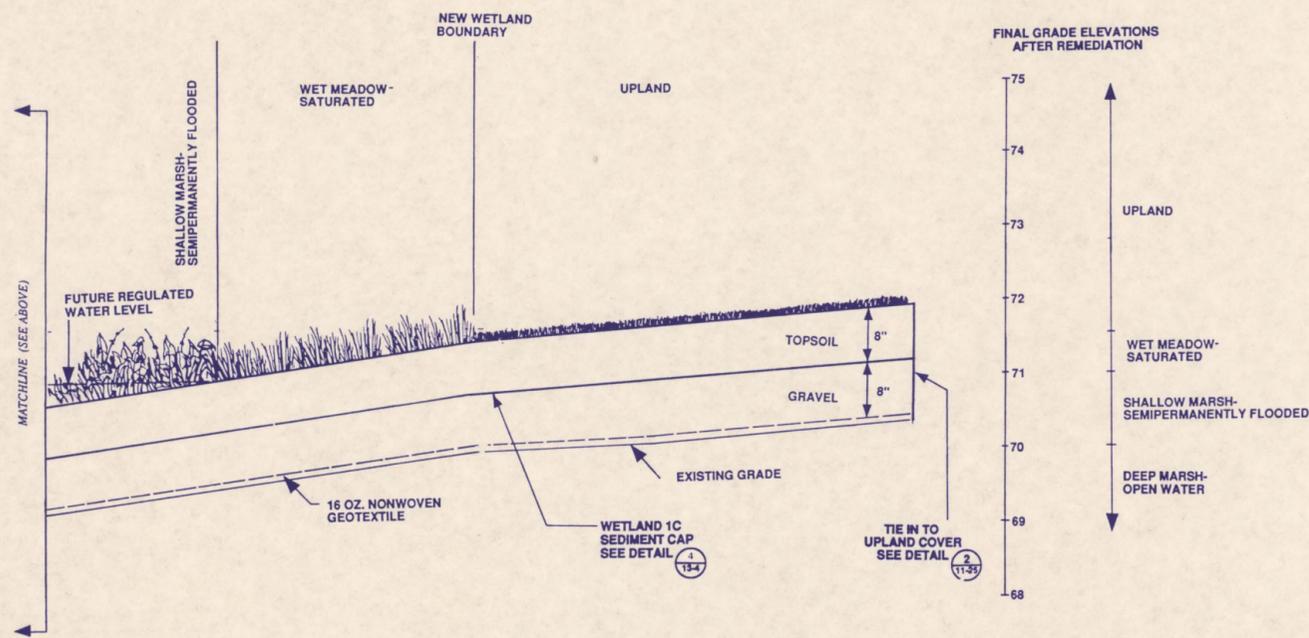
- 1) CONTOURS ARE BASED ON SOFT BOTTOM BATHYMETRIC DATA OBTAINED BY NORMANDEAU ASSOCIATES INC. AND TWM NORTHEAST DURING MARCH 1991 SURVEY. NATURE AND EXTENT OF SEDIMENT REMEDIATION PROVIDED BY GOLDER ASSOCIATES INC. (SEE SHEET 11-3A).
- 2) ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
- 3) SEE SHEET 11-7A FOR ADJACENT UPLAND COVER GRADING PLAN AND SHEETS 11-25 AND 12-7 FOR WETLAND TIE-IN DETAILS.
- 4) BOUNDARIES OF WETLAND HABITATS ARE THE CONTOUR INTERVALS IN WHICH THEY ARE LOCATED. SPECIFICATIONS FOR PLANTINGS WITHIN EACH WETLAND HABITAT ARE LISTED IN CHAPTER 14, TABLE 14-16 AND SPECIFICATION SECTION 02937.



SCALE:	AS SHOWN	PROJECT:	INDU/TRI-PLEX SITE REMEDIAL TRUST WOBBURN, MASSACHUSETTS
PROJECT No.	10538.07	SHEET TITLE:	Wetland 1C Revitalization - Plan view
DES BY	JLG 8/1/91	DR BY	K.L.M. 8/6/91
CHK BY	SPR 8/7/91	REV BY	W.M. 8/7/91
NORMANDEAU ASSOCIATES INC. ENVIRONMENTAL CONSULTANTS		SHEET	OF
		FILE No.	
			SHEET 14-1



**A** CROSS SECTION A-A'  
14-1

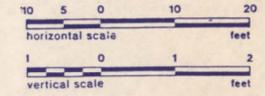


**A** CROSS SECTION A-A'  
14-1

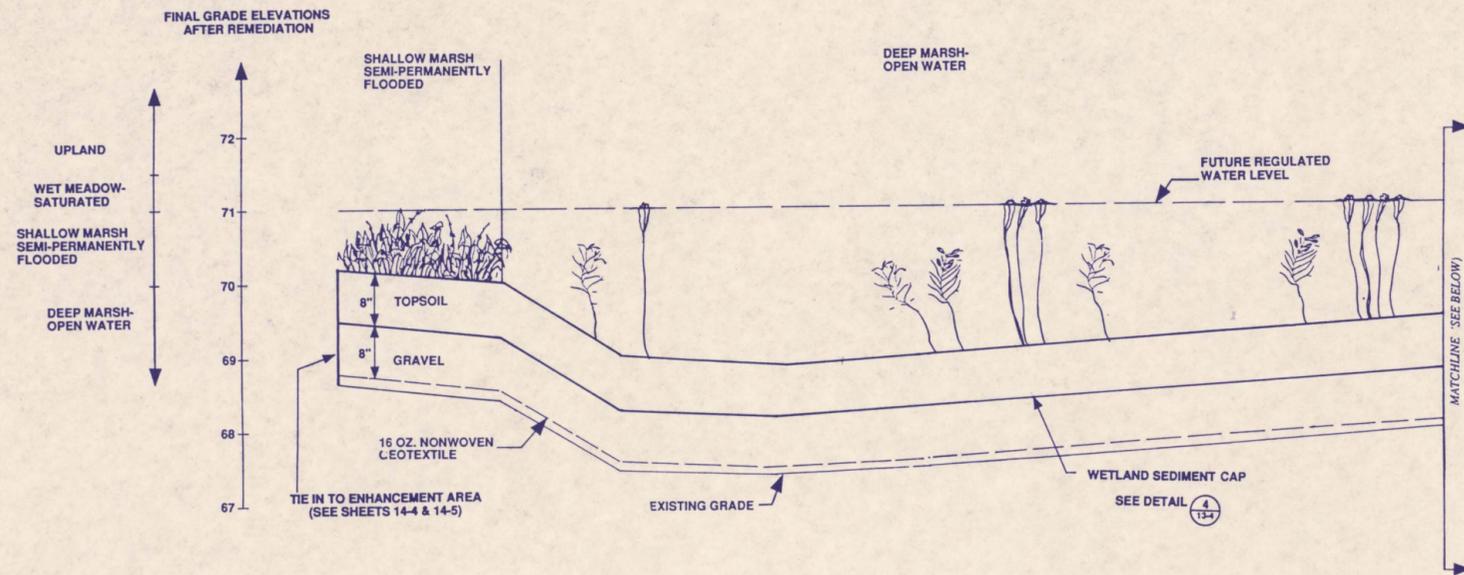
SYMBOL	HABITAT	SPECIES
DM-OW	Deep Marsh-Open Water	<i>Potamogeton</i> spp./Pondweeds <i>Najas variegatum</i> /Spatterdock <i>Najas obovata</i> /Waterlily <i>Scirpus validus</i> /Softstem bulrush
SM-SP	Shallow Marsh-Semipermanently Flooded	<i>Typha latifolia</i> /Cattail <i>Scirpus validus</i> /Softstem bulrush <i>Sagittaria latifolia</i> /Arrowhead <i>Polygonum</i> spp./Smartweeds <i>Pontederia cordata</i> /Pickerelweed <i>Sparganium eurycarpum</i> /Giant burreed
SM-SF	Shallow Marsh-Seasonally Flooded	Wetland seed mix 1 <i>Iris versicolor</i> /Blue flag <i>Carex lurida</i> , <i>C. stricta</i> , <i>C. crinita</i> /Sedges
WM	Wet Meadow-Saturated	Wetland seed mix 2 <i>Spiraea latifolia</i> /Meadowsweet
SS	Shrub Swamp-Seasonally Flooded to Saturated	<i>Cornus amomum</i> /Silky dogwood <i>Ilex verticillata</i> /Winterberry <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Viburnum racematum</i> /Northern arrowwood <i>Salix</i> spp. /Willows Wetland seed mix 1
FS	Forested Wetland-Saturated	<i>Acer rubrum</i> /Red maple <i>Acer rubrum</i> /Red maple seedlings <i>Fraxinus pennsylvanica</i> /Green ash <i>Sambucus canadensis</i> /Common elder <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Cornus amomum</i> /Silky dogwood <i>Osmunda cinnamomea</i> /Cinnamon fern Wetland Seed Mix 1
UB	Upland Buffer	<i>Acer rubrum</i> /Red maple seedlings <i>Pinus strobus</i> /White pine <i>Quercus rubra</i> /Red oak <i>Populus tremuloides</i> /Trembling aspen <i>Prunus serotina</i> /Black cherry <i>Cornus racemosa</i> /Gray dogwood <i>Corylus sp.</i> /Hazel Upland grass seed mix

\* For planting along Wetland 3A only.

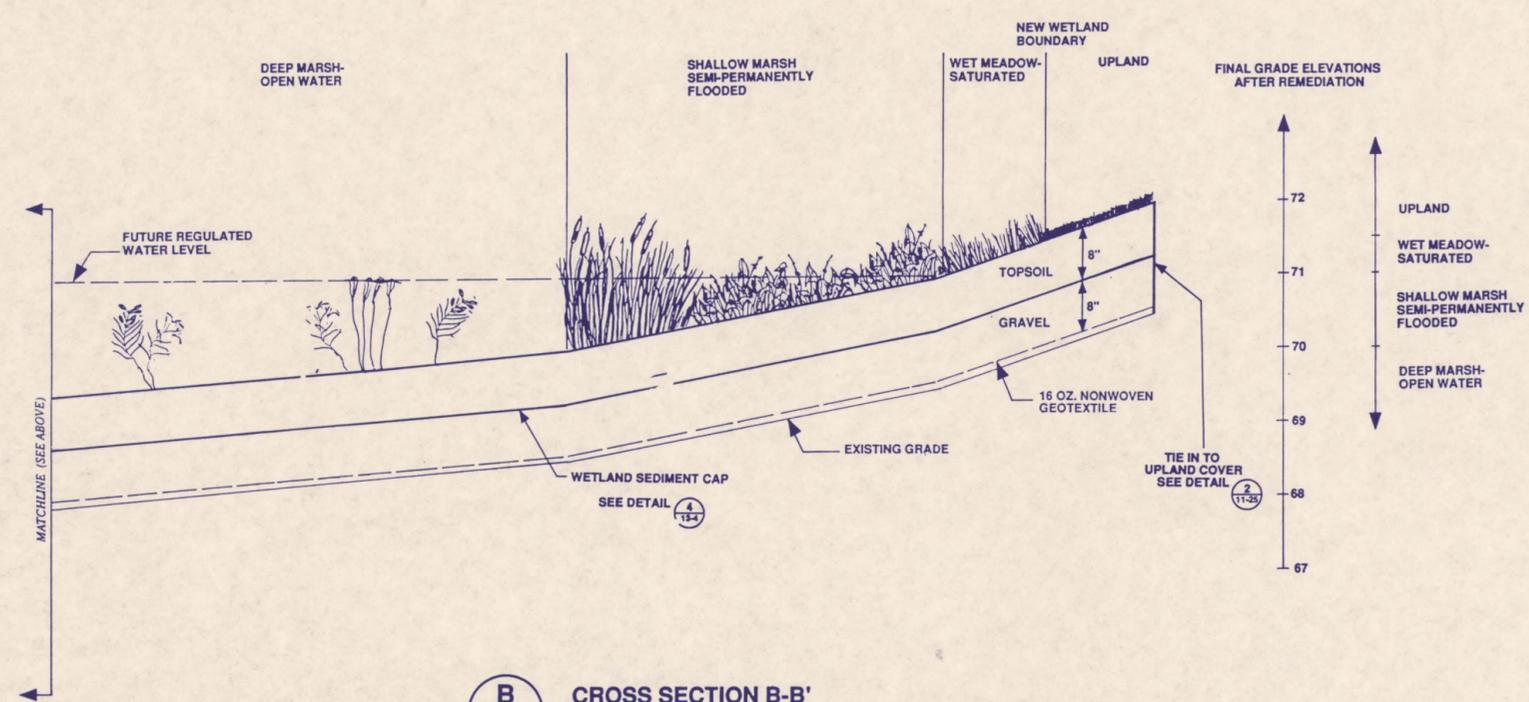
- NOTES**
- 1.) CONTOURS ARE BASED ON SOFT BOTTOM BATHYMETRIC DATA OBTAINED BY NORMANDEAU ASSOCIATES INC. AND TWM NORTHEAST DURING MARCH 1991 SURVEY. NATURE AND EXTENT OF SEDIMENT REMEDIATION PROVIDED BY GOLDER ASSOCIATES INC. (SEE SHEET 11-3A).
  - 2.) ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
  - 3.) SEE SHEET 11-7A FOR ADJACENT UPLAND COVER GRADING PLAN AND SHEETS 11-25 FOR WETLAND TIE-IN DETAILS.
  - 4.) SEE SPECIFICATION SECTION 02937 FOR WETLAND TOPSOIL REQUIREMENTS.
  - 5.) BOUNDARIES OF WETLAND HABITATS ARE THE CONTOUR INTERVALS IN WHICH THEY ARE LOCATED. SPECIFICATIONS FOR PLANTINGS WITHIN EACH WETLAND HABITAT ARE LISTED IN CHAPTER 14, TABLE 14-16 AND SPECIFICATION SECTION 02937.
  - 6.) GRAVEL SHALL MEET THE REQUIREMENTS OF SECTION 02223.2.04 OF THE CONSTRUCTION SPECIFICATIONS.



PROJECT No. 10538.07	PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS
DES BY: JRG	DATE: 12/14/97
DR BY: KC	DATE: 12/14/97
CHK BY: JRG	DATE: 12/14/97
RVW BY: DMH	DATE: 12/17/97
SHEET OF	
FILE No.	
SHEET 14-2	



**B** CROSS SECTION B-B'  
14-1

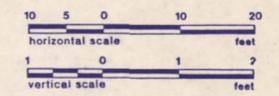


**B** CROSS SECTION B-B'  
14-1

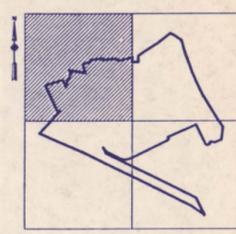
SYMBOL	HABITAT	SPECIES
DM-OW	Deep Marsh-Open Water	<i>Potamogeton</i> spp./Pondweeds <i>Nuphar variegatum</i> /Spatterdock <i>Nymphaea odorata</i> /Waterlily <i>Scirpus validus</i> /Softstem bulrush
SM-SP	Shallow Marsh-Semi-permanently Flooded*	<i>Typha latifolia</i> /Cattail <i>Scirpus validus</i> /Softstem bulrush <i>Sagittaria latifolia</i> /Arrowhead <i>Polygonum</i> spp./Smartweeds <i>Pontederia cordata</i> /Pickersweeet <i>Sparganium eurycarpum</i> /Giant burreed
SM-SF	Shallow Marsh-Seasonally Flooded	Wetland seed mix 1 <i>Iris versicolor</i> /Blue flag <i>Carex lurida</i> , <i>C. stricta</i> , <i>C. crinita</i> /Sedges
WM	Wet Meadow-Saturated	Wetland seed mix 2 <i>Spiraea latifolia</i> /Meadowweet
SS	Shrub Swamp-Seasonally Flooded to Saturated	<i>Cornus amomum</i> /Silky dogwood <i>Ilex verticillata</i> /Winterberry <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Viburnum recognitum</i> /Northern arrowwood <i>Salix</i> spp. /Willows Wetland seed mix 1
FS	Forested Wetland-Saturated	<i>Acer rubrum</i> /Red maple <i>Acer rubrum</i> /Red maple seedlings <i>Fraxinus pennsylvanica</i> /Green ash <i>Sambucus canadensis</i> /Common elder <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Cornus amomum</i> /Silky dogwood <i>Osmunda cinnamomea</i> /Cinnamon fern Wetland Seed Mix 1
UB	Upland Buffer	<i>Acer rubrum</i> /Red maple seedlings <i>Pinus strobus</i> /White pine <i>Quercus rubra</i> /Red oak* <i>Populus tremuloides</i> /Trembling aspen <i>Prunus serotina</i> /Black cherry* <i>Cornus racemosa</i> /Gray dogwood* <i>Corylus</i> sp. /Hazelnut Upland grass seed mix

\* For planting along Wetland 3A only.

- NOTES**
- 1) CONTOURS ARE BASED ON SOFT BOTTOM BATHYMETRIC DATA OBTAINED BY NORMANDEAU ASSOCIATES INC. AND TWM NORTHEAST DURING MARCH 1991 SURVEY. NATURE AND EXTENT OF SEDIMENT REMEDIATION PROVIDED BY GOLDER ASSOCIATES INC. (SEE SHEET 11-3A).
  - 2) ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
  - 3) SEE SHEET 11-7A FOR ADJACENT UPLAND COVER GRADING PLAN AND SHEETS 11-25 FOR WETLAND TIE-IN DETAILS.
  - 4) SEE SPECIFICATION SECTION 02937 FOR WETLAND TOPSOIL REQUIREMENTS.
  - 5) BOUNDARIES OF WETLAND HABITATS ARE THE CONTOUR INTERVALS IN WHICH THEY ARE LOCATED. SPECIFICATIONS FOR PLANTINGS WITHIN EACH WETLAND HABITAT ARE LISTED IN CHAPTER 14, TABLE 14-16 AND SPECIFICATION SECTION 02937.



REV	DATE	DESCRIPTION	DR BY	RVW BY
△	04/92	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID		
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 10538.07		SHEET TITLE: Wetland 1C Revitalization - Cross Sections		
DES BY	DATE	SHEET		
DR BY	DATE	FILE No.		
CHK BY	DATE	SHEET OF		
RVW BY	DATE	FILE No.		
NORMANDEAU ASSOCIATES INC. ENVIRONMENTAL CONSULTANTS		SHEET 14-3		



**LEGEND**

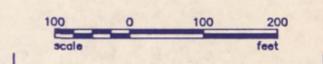
	SITE BOUNDARY
	GRID LINE
	STREAMS AND WATERCOURSES
	EXISTING CONTOUR
	FINAL CONTOURS

SYMBOL	HABITAT	SPECIES
DM-OW	Deep Marsh-Open Water	<i>Potamogeton</i> spp./Pondweeds <i>Nuphar variegatum</i> /Spatterdock <i>Nymphaea odorata</i> /Waterlily <i>Scirpus validus</i> /Softstem bulrush
SM-SP	Shallow Marsh-Semipermanently Flooded	<i>Typha latifolia</i> /Cattail <i>Scirpus validus</i> /Softstem bulrush <i>Sagittaria latifolia</i> /Arrowhead <i>Polygonum</i> spp./Smartweeds <i>Pontederia cordata</i> /Pickerelweed <i>Sparganium eurycarpum</i> /Giart burreed
SM-SF	Shallow Marsh-Seasonally Flooded	Wetland seed mix 1 <i>Iris versicolor</i> /Blue flag <i>Carex lurida</i> , <i>C. stricta</i> , <i>C. crinita</i> /Sedges
WM	Wet Meadow-Saturated	Wetland seed mix 2 <i>Spiraea latifolia</i> /Meadowsweet
SS	Shrub Swamp-Seasonally Flooded to Saturated	<i>Cornus amomum</i> /Silky dogwood <i>Ilex verticillata</i> /Winterberry <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Viburnum racematum</i> /Northern arrowwood <i>Sax</i> -* spp. /Willows Wetland seed mix 1
FS	Forested Wetland-Saturated	<i>Acer rubrum</i> /Red maple <i>Acer rubrum</i> /Red maple seedlings <i>Fraxinus pennsylvanica</i> /Green ash <i>Sambucus canadensis</i> /Common elder <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Cornus amomum</i> /Silky dogwood <i>Osmunda cinnamomea</i> /Cinnamon fern Wetland Seed Mix 1
UB	Upland Buffer	<i>Acer rubrum</i> /Red maple seedlings <i>Pinus strobus</i> /White pine <i>Quercus rubra</i> /Red oak* <i>Populus tremuloides</i> /Trembling aspen <i>Prunus serotina</i> /Black cherry <i>Cornus racemosa</i> /Gray dogwood <i>Corylus sp.</i> /Hazelnut Upland grass seed mix

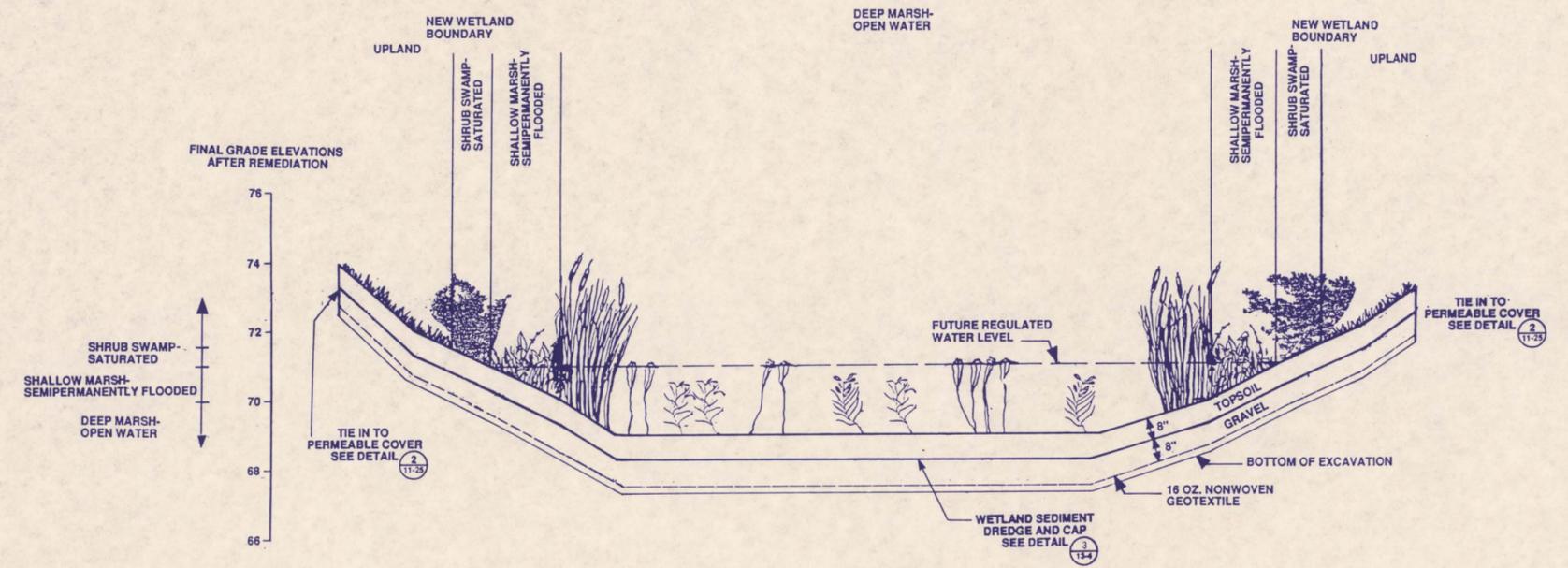
\* For planting along Wetland 3A only.

**NOTES**

- TOPOGRAPHY BASE MAP PREPARED BY SAIC ENGINEERING, INC., APRIL 1992. SCALE 1 INCH TO 100 FEET. TOPOGRAPHY BASED ON AERIAL PHOTOGRAPHY CONDUCTED ON NOVEMBER 22, 1989, SCALE 1 INCH TO 800 FEET AND FEBRUARY 21, 1990, SCALE 1 INCH TO 480 FEET. TOPOGRAPHY SCALE AND DETAIL IS FOR DESIGN PURPOSES ONLY AND NOT FOR ACCURATE ESTIMATING OF CONSTRUCTION QUANTITIES.
- SITE BOUNDARY SURVEY BY SAIC ENGINEERING, INC., APRIL 1990 AND JANUARY 1991.
- ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929, AND COORDINATES BASED ON MASSACHUSETTS COORDINATE SYSTEM.
- SEE SHEET 11-7A FOR ADJACENT UPLAND COVER GRADING PLAN AND SHLE; 11-25 FOR WETLAND TIE-IN DETAILS.
- BOUNDARIES OF WETLAND HABITATS ARE THE CONTOUR INTERVALS IN WHICH THEY ARE LOCATED. SPECIFICATIONS FOR PLANTINGS WITHIN EACH WETLAND HABITAT ARE LISTED IN CHAPTER 14, TABLE 14-16 AND SPECIFICATION SECTION 02937.



DATE	04/92	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID		
REV	DATE	DESCRIPTION	DR BY	RVW BY
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 10538.07		SHEET TITLE: Compensatory Wetlands Plan View		
DES BY	REC	4/1/92		
DR BY	KE	4-10-92		
CHK BY	SP	4/10/92		
RVW BY	DWM	4/10/92		

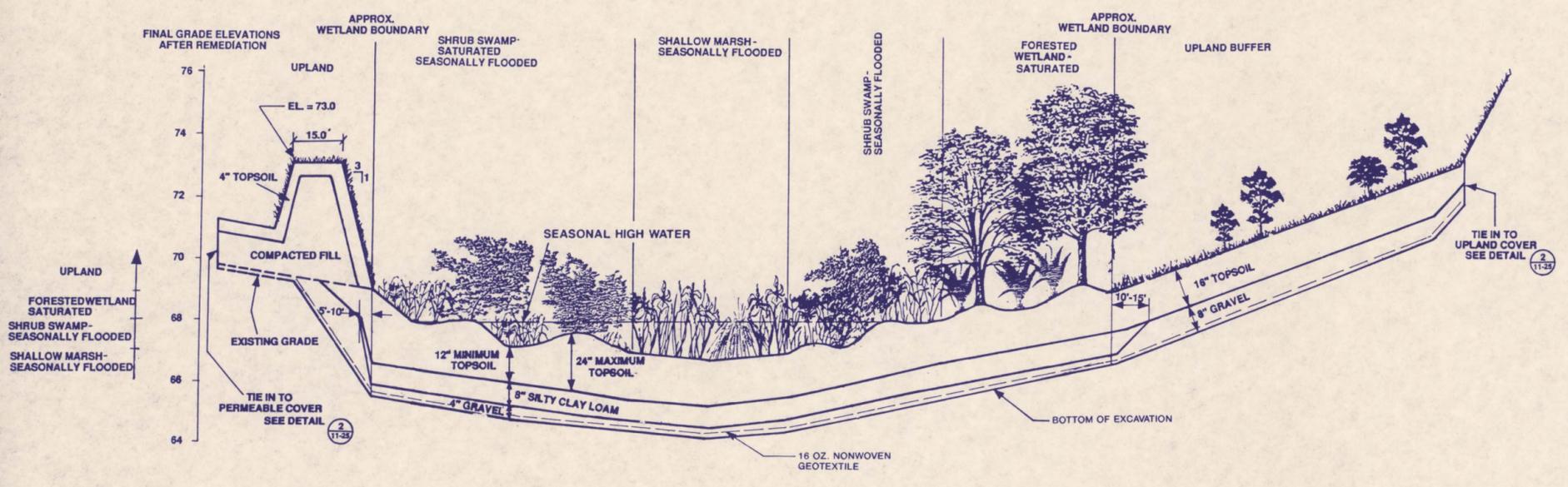


**C**  
14-4  
horizontal scale: 20 0 20 40 feet  
vertical scale: 2 0 2 4 feet

SYMBOL	HABITAT	SPECIES
DM-OW	Deep Marsh-Open Water	<i>Potamogeton</i> spp./Pondweeds <i>Najas variegatum</i> /Spatterdock <i>Nymphaea odorata</i> /Waterlily <i>Scirpus validus</i> /Softstem bulrush
SM-SP	Shallow Marsh-Sempermanently Flooded	<i>Typha latifolia</i> /Cattail <i>Scirpus validus</i> /Softstem bulrush <i>Sagittaria latifolia</i> /Arrowhead <i>Polygonum</i> spp./Smartweeds <i>Pontederia cordata</i> /Pickersweed <i>Sparganium eurycarpum</i> /Giant burreed
SM-SF	Shallow Marsh-Seasonally Flooded	Wetland seed mix 1 <i>Iris versicolor</i> /Blue flag <i>Carex lurida</i> , <i>C. stricta</i> , <i>C. crinita</i> /Sedges
WM	Wet Meadow-Saturated	Wetland seed mix 2 <i>Spiraea latifolia</i> /Meadowsweet
SS	Shrub Swamp-Seasonally Flooded to Saturated	<i>Cornus amomum</i> /Silky dogwood <i>Ilex verticillata</i> /Winterberry <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Viburnum recognitum</i> /Northern arrowwood <i>Salix</i> spp. /Willows Wetland seed mix 1
FS	Forested Wetland-Saturated	<i>Acer rubrum</i> /Red maple <i>Acer rubrum</i> /Red maple seedlings <i>Fraxinus pennsylvanica</i> /Green ash <i>Sambucus canadensis</i> /Common elder <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Cornus amomum</i> /Silky dogwood <i>Osmunda cinnamomea</i> /Cinnamon fern Wetland Seed Mix 1
UB	Upland Buffer	<i>Acer rubrum</i> /Red maple seedlings <i>Pinus strobus</i> /White pine <i>Quercus rubra</i> /Red oak <i>Populus tremuloides</i> /Trembling aspen <i>Prunus serotina</i> /Black cherry <i>Cornus racemosa</i> /Gray dogwood <i>Corylus</i> sp. /Hazelnut Upland grass seed mix

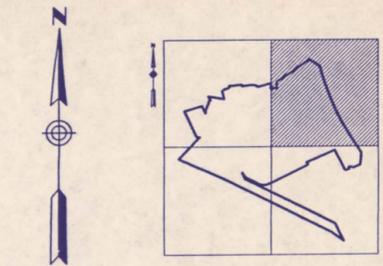
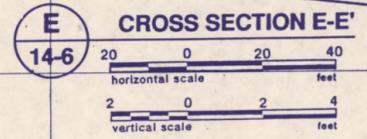
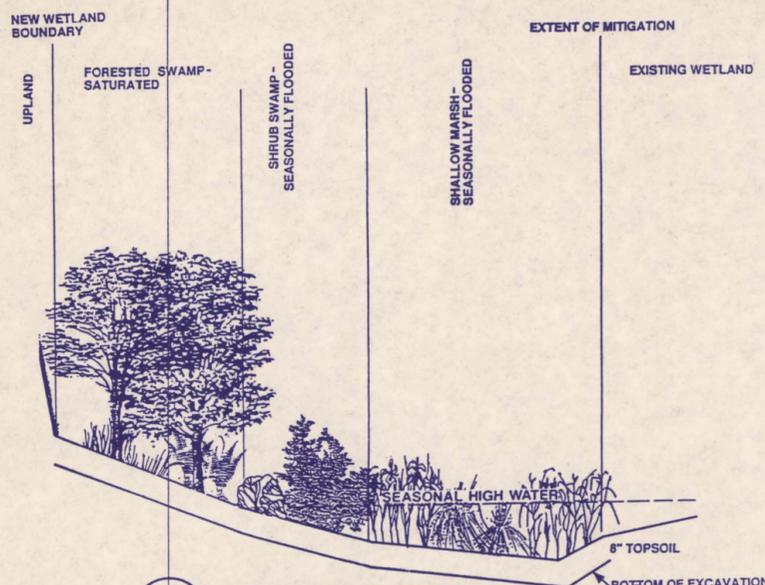
\* For planting along Wetland 3A only.

- NOTES**
- 1) CONTOURS ARE BASED ON SOFT BOTTOM BATHYMETRIC DATA OBTAINED BY NORMANDEAU ASSOCIATES INC. AND TWM NORTHEAST DURING MARCH 1991 SURVEY. NATURE AND EXTENT OF SEDIMENT REMEDIATION PROVIDED BY GOLDER ASSOCIATES INC. (SEE SHEET 11-3A).
  - 2) ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
  - 3) SEE SHEET 11-7A FOR ADJACENT UPLAND COVER GRADING PLAN AND SHEET 11-25 FOR WETLAND TIE-IN DETAILS.
  - 4) SEASONAL WATER LEVEL ELEVATION ESTIMATES ARE DERIVED FROM GROUND WATER AND SURFACE WATER DATA PROVIDED BY GOLDER ASSOCIATES INC.
  - 5) SEE SPECIFICATION SECTION 02937 FOR WETLAND TOPSOIL STANDARDS AND SILTY CLAY LOAM - SPECIFICATIONS FOR THE WETLANDS CREATION AREA. GRAVEL SHALL MEET THE REQUIREMENTS OF SECTION 02223.2.04 OF THE CONSTRUCTION SPECIFICATIONS.
  - 6) BOUNDARIES OF WETLAND HABITATS ARE THE CONTOUR INTERVALS IN WHICH THEY ARE LOCATED. SPECIFICATIONS FOR PLANTINGS WITHIN EACH WETLAND HABITAT ARE LISTED IN CHAPTER 14, TABLE 14-16 AND SPECIFICATION SECTION 02937.
  - 7) TOPSOIL IN THE CREATION AREA WILL BE RAKED INTO 6 TO 16 INCH HIGH MOUNDS AND TREES AND SHRUBS WILL BE PLANTED ON THESE MOUNDS FOLLOWING THE SPECIFICATIONS IN TABLE 14-16 AND SPECIFICATION SECTION 02937.



**D**  
14-4  
horizontal scale: 20 0 20 40 feet  
vertical scale: 2 0 2 4 feet

REV	DATE	DESCRIPTION	DR BY	RVW BY
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 10538.07		SHEET TITLE: Compensatory Wetlands Cross Sections		
DES BY	JLB	8/11/91		
DR BY	ELM	8/6/91		
CHK BY	SPD	8/7/91		
RVW BY	DWM	8/7/91		
NORMANDEAU ASSOCIATES INC. ENVIRONMENTAL CONSULTANTS			SHEET OF FILE No. 14-5	

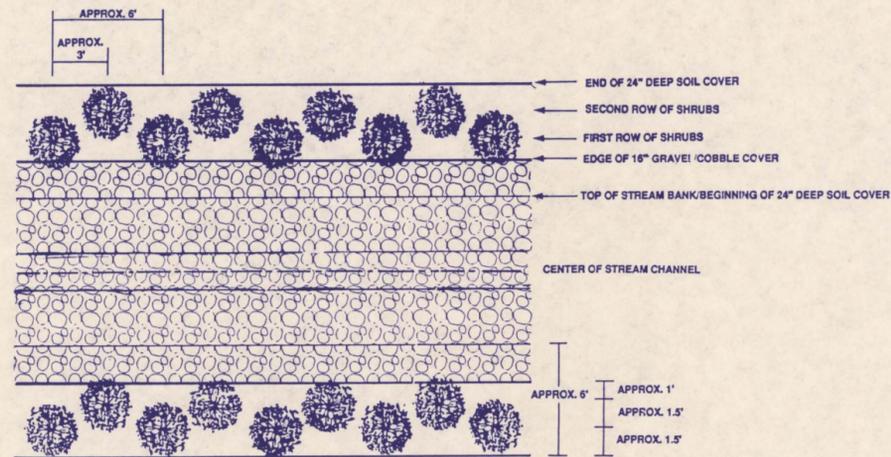


**LEGEND**

—	SITE BOUNDARY	
—	GRID LINE	
---	STREAMS AND WATERCOURSES	
—	EXISTING CONTOURS	
—	FINAL CONTOURS	
—	EXTENT OF RESTORATION	
<b>SYMBOL:</b>	<b>HABITAT</b>	<b>SPECIES</b>
DM-OW	Deep Marsh-Open Water	<i>Potamogeton</i> spp./Pondweeds <i>Najas variegatum</i> /Spatterdock <i>Nymphaea odorata</i> /Waterlily <i>Scirpus validus</i> /Softstem bulrush
SM-SP	Shallow Marsh-Semi-permanently Flooded	<i>Typha latifolia</i> /Cattail <i>Scirpus validus</i> /Softstem bulrush <i>Sagittaria latifolia</i> /Arrowhead <i>Polygonum</i> spp./Smartweeds <i>Pontederia cordata</i> /Pickerelweed <i>Sparganium eurycarpum</i> /Giant burreed
SM-SF	Shallow Marsh-Seasonally Flooded	Wetland seed mix 1 <i>Iris versicolor</i> /Blue flag <i>Carex lurida</i> , <i>C. stricta</i> , <i>C. crinita</i> /Sedges
WM	Wet Meadow-Saturated	Wetland seed mix 2 <i>Spiraea latifolia</i> /Meadowsweet
SS	Shrub Swamp-Seasonally Flooded to Saturated	<i>Cornus amomum</i> /Silky dogwood <i>Ilex verticillata</i> /Winterberry <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Viburnum recognitum</i> /Northern arrowwood <i>Salix</i> spp./Willows Wetland seed mix 1
FS	Forested Wetland-Saturated	<i>Acer rubrum</i> /Red maple <i>Acer rubrum</i> /Red maple seedlings <i>Fraxinus pennsylvanica</i> /Green ash <i>Sambucus canadensis</i> /Common elder <i>Vaccinium corymbosum</i> /Highbush blueberry <i>Cornus amomum</i> /Silky dogwood <i>Osmunda cinnamomea</i> /Cinnamon fern Wetland Seed Mix 1
UB	Upland Buffer	<i>Acer rubrum</i> /Red maple seedlings <i>Pinus strobus</i> /White pine <i>Quercus rubra</i> /Red oak <i>Populus tremuloides</i> /Trembling aspen <i>Prunus serotina</i> /Black cherry <i>Cornus racemosa</i> /Gray dogwood <i>Corylus</i> sp./Hazelnut Upland grass seed mix

- NOTES**
- 1.) TOPOGRAPHIC BASE MAP PREPARED BY SAIC ENGINEERING, INC., APRIL 1992, SCALE 1 INCH TO 100 FEET. TOPOGRAPHY BASED ON AERIAL PHOTOGRAPHY CONDUCTED ON NOVEMBER 22, 1989, SCALE 1 INCH TO 870 FEET AND FEBRUARY 21, 1990, SCALE 1 INCH TO 480 FEET. TOPOGRAPHY SCALE AND DETAIL IS FOR DESIGN PURPOSES ONLY AND NOT FOR ACCURATE ESTIMATING OF CONSTRUCTION QUANTITIES.
  - 2.) SITE BOUNDARY SURVEY BY SAIC ENGINEERING, INC., APRIL 1990 AND JANUARY 1991.
  - 3.) ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
  - 4.) BOUNDARIES OF WETLAND HABITATS ARE THE CONTOUR INTERVALS IN WHICH THEY ARE LOCATED. SPECIFICATIONS FOR PLANTINGS WITHIN EACH WETLAND HABITAT ARE LISTED IN CHAPTER 14, TABLE 14-16 AND SPT CIFICATION SECTION 02937.
  - 5.) PLANTINGS WITHIN THE SUPPLEMENTAL PLANTING AREA WILL INCLUDE SELECTIONS FROM THE FORESTED WETLAND HABITAT LIST FOR LOCATIONS DIRECTLY ADJACENT TO WETLAND 3A AND SELECTIONS FROM THE UPLAND BUFFER HABITAT LIST FOR PLANTINGS BEYOND THE WETLAND EDGE. PLANTING SPECIFICATIONS ARE DETAILED IN TABLE 14-16 AND SPECIFICATION SECTION 02937.
  - 6.) PORTIONS OF THE SUPPLEMENTAL PLANTING AREA WILL REQUIRE SUPPLEMENTAL TREE AND SHRUB PLANTINGS ONLY. PLACEMENT OF TOPSOIL AND GRASS SEED WILL BE NECESSARY IN OTHER PORTIONS OF THE SUPPLEMENTAL PLANTING AREA.

100	0	100	200
scale feet			
DATE	04/92	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID	
REV	DATE	DESCRIPTION	DR BY
SCALE:	AS SHOWN	PROJECT:	INDUSTRI-PLEX SITE REMEDIATION TRUST
PROJECT No.	903-6400	LOCATION:	WOBRUN, MASSACHUSETTS
DES BY	JCS	DATE	1/25/91
DR BY	JCS	DATE	12/5/91
CHK BY	JCS	DATE	12/1/91
REV BY	DWA	DATE	12/17/91
SHEET TITLE:		Wetland 3A Restoration Plan View & Cross Section	



**STANDARD STREAM BANK REVITALIZATION PLAN -  
DREDGE AND PERMEABLE CAP STREAM REMEDY**

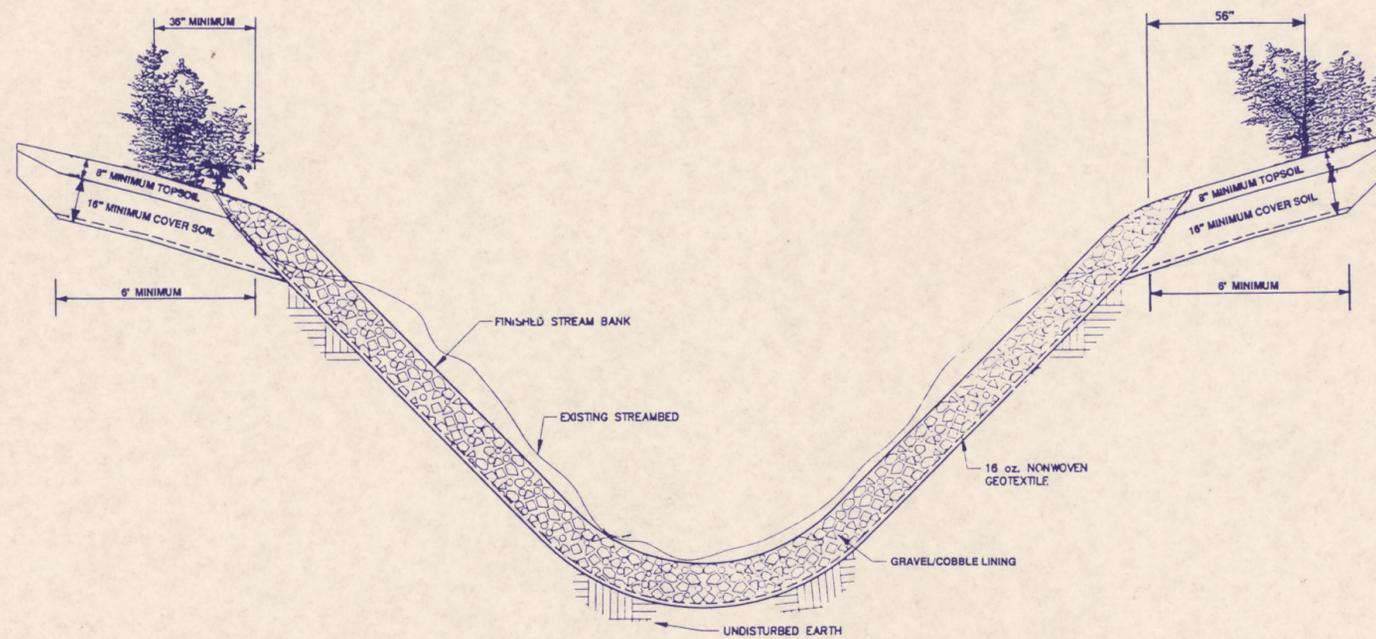
NOT TO SCALE

**LEGEND**

SYMBOL	HABITAT	SPECIES
	Drainway Banks	<i>Alnus rugosa</i> / Speckled alder <i>Cornus amomum</i> / Silky dogwood <i>Viburnum recognitum</i> / Northern arrowwood

**NOTES**

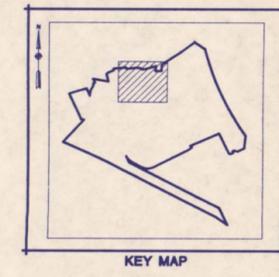
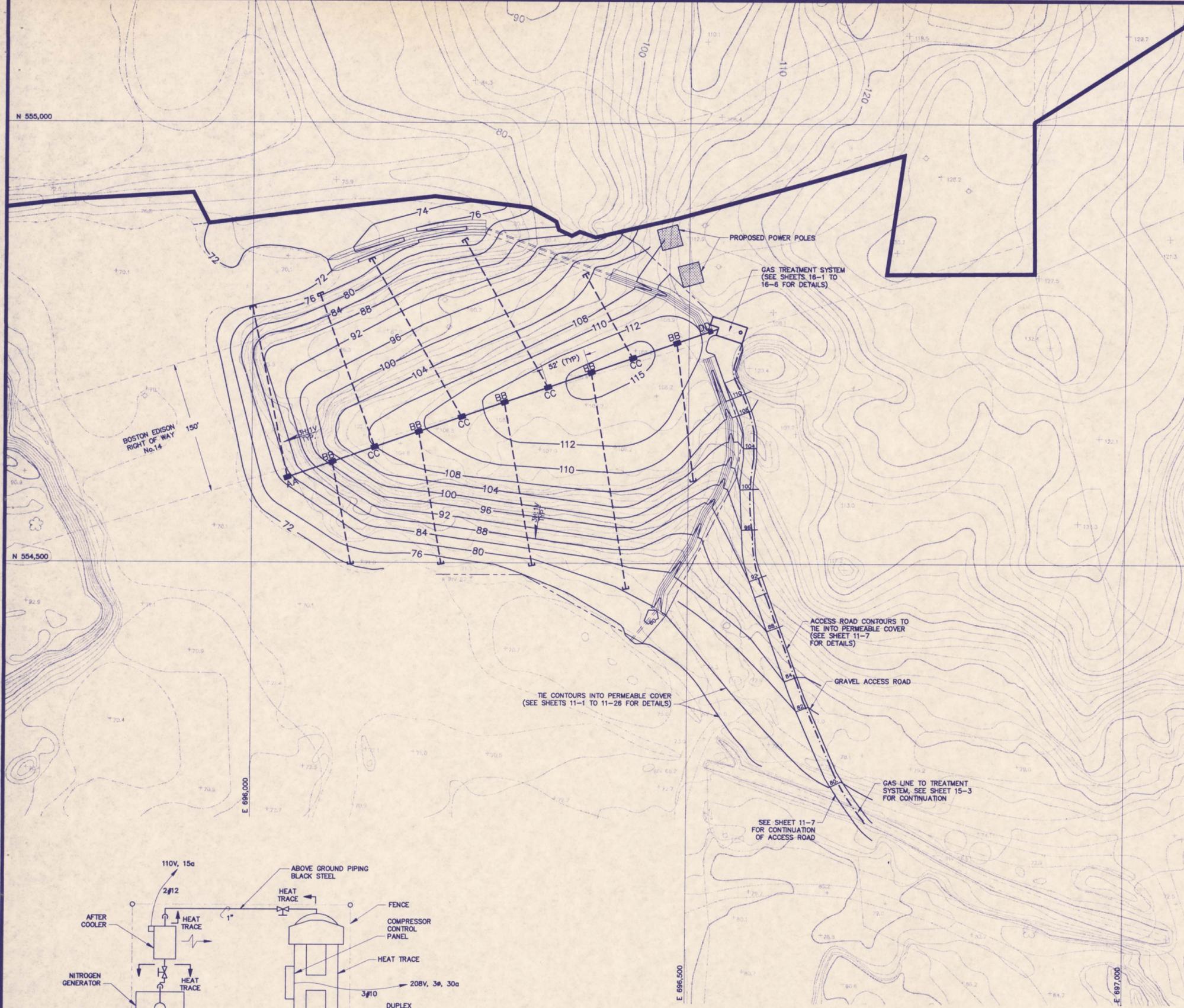
1.) SEE CHAPTER 14, TABLE 14-18 AND SPECIFICATION SECTION 02937 FOR RE-VEGETATION SPECIFICATIONS ALONG REMEDIATED STREAM BANKS.



**TYPICAL STREAM BANK REVITALIZATION CROSS SECTION**

NOT TO SCALE

04/92	AGENCY COMMENTS INCORPORATED - ISSUED FOR BID				
REV	DATE	DESCRIPTION	DR BY	RW BY	
SCALE: AS SHOWN			INDUSTRI-PLEX SITE REMEDIATION TRUST WOBBURN, MASSACHUSETTS		
PROJECT No. 10538.07			SHEET TITLE:		
			STANDARD STREAM BANK REVITALIZATION		
DES BY	RE	4/8/92			
DR BY	RE	4-10-92			
CHK BY	RE	4/10/92			
RW BY	DM	4/10/92			
NORMANDEAU ASSOCIATES INC. ENVIRONMENTAL CONSULTANTS			SHEET	OF	
			FILE No.		
			SHEET 14-7		

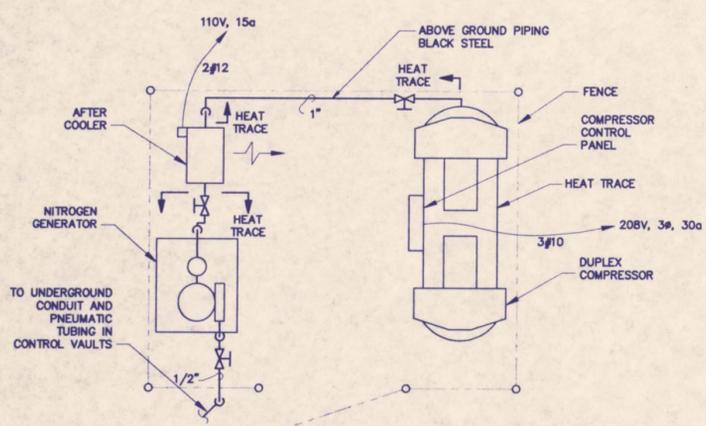


**LEGEND**

- SITE BOUNDARY
  - GRID LINE
  - RIGHT OF WAY
  - POWER POLE
  - STREAM OR WATERCOURSE
  - TRAIL
  - EXISTING FENCE
  - EXISTING CONTOUR
  - MARSH
  - TOP OF PROPOSED COVER CONTOUR
  - CONTROL VAULT
  - 6" PIPE CAP
  - 6" FIBERGLASS PERFORATED COLLECTION PIPE
  - 6" FIBERGLASS MANIFOLD PIPE
  - SECURITY FENCE
  - GAS LINE TO TREATMENT SYSTEM
- DETAIL/CROSS SECTION DESIGNATION  
 SHEET No. WHERE DETAIL/CROSS SECTION IS PRESENTED

**NOTES**

- 1.) TOPOGRAPHIC BASE MAP PREPARED BY SAIC ENGINEERING, INC., APRIL 1992, SCALE 1 INCH TO 100 FEET. TOPOGRAPHY BASED ON AERIAL PHOTOGRAPHY CONDUCTED ON NOVEMBER 22, 1989, SCALE 1 INCH TO 800 FEET AND FEBRUARY 21, 1990, SCALE 1 INCH TO 480 FEET. TOPOGRAPHY SCALE AND DETAIL IS FOR DESIGN PURPOSES ONLY AND NOT FOR ACCURATE ESTIMATING OF CONSTRUCTION QUANTITIES.
- 2.) SITE BOUNDARY SURVEY BY SAIC ENGINEERING, INC., APRIL 1990 AND JANUARY 1991.
- 3.) ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929, AND COORDINATES BASED ON MASSACHUSETTS COORDINATE SYSTEM.
- 4.) LATERAL FIBERGLASS PIPES TO BE MITER CUT AND REJOINED TO MATCH CHANGES IN SLOPE.
- 5.) COLLECTION PIPES SHALL BE PERFORATED WITH 1/2" DIAMETER HOLES 4" ON CENTER BOTH SIDES 180 DEGREES APART.



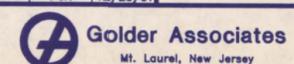
**1 N2 SYSTEM PARTIAL PLAN**

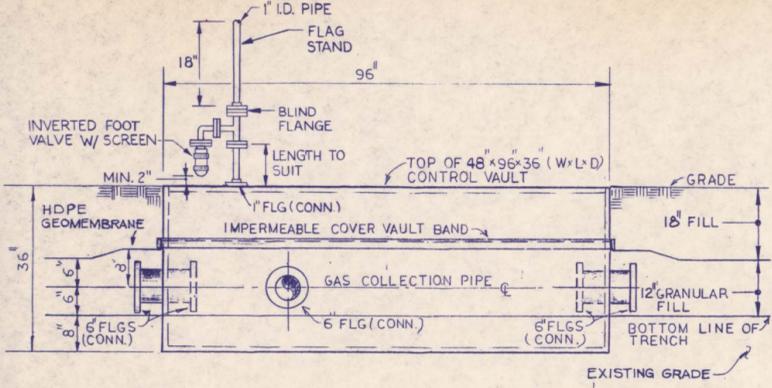
15-1



SEE SHEET 16-4 FOR LOCATION

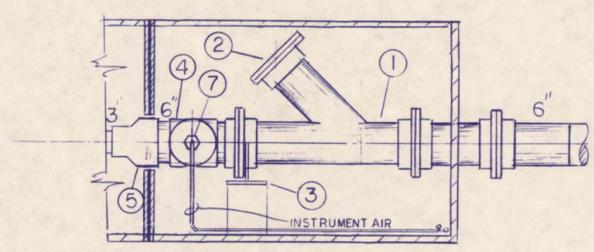
REV	DATE	DESCRIPTION	ISSUED FOR BID	DR BY	R/W BY
A	04/92			JSG	PL
SCALE: AS SHOWN					
PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS					
PROJECT No. 903-6400					
DES BY	RJH	07/26/91	SHEET TITLE: EAST HIDE PILE GAS COLLECTION SYSTEM PIPING PLAN		
DR BY	RDH	12/19/91			
CHK BY	RJH	12/20/91			
R/W BY	PCR	12/20/91			



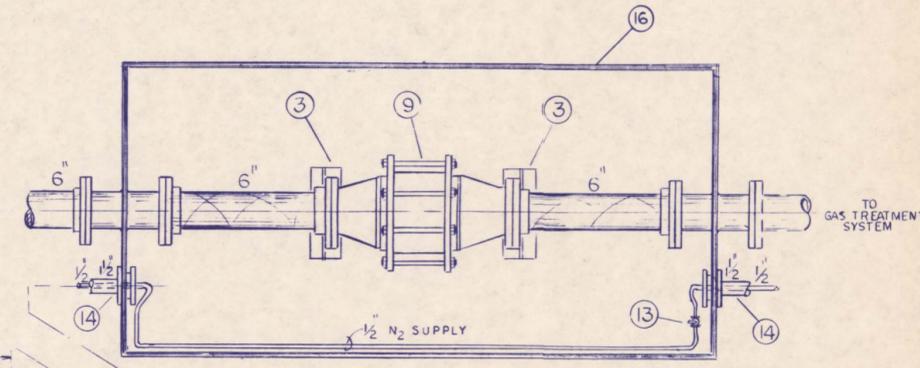


BB CONTROL VAULT ELEVATION  
SCALE: 3/4" = 1'-0"

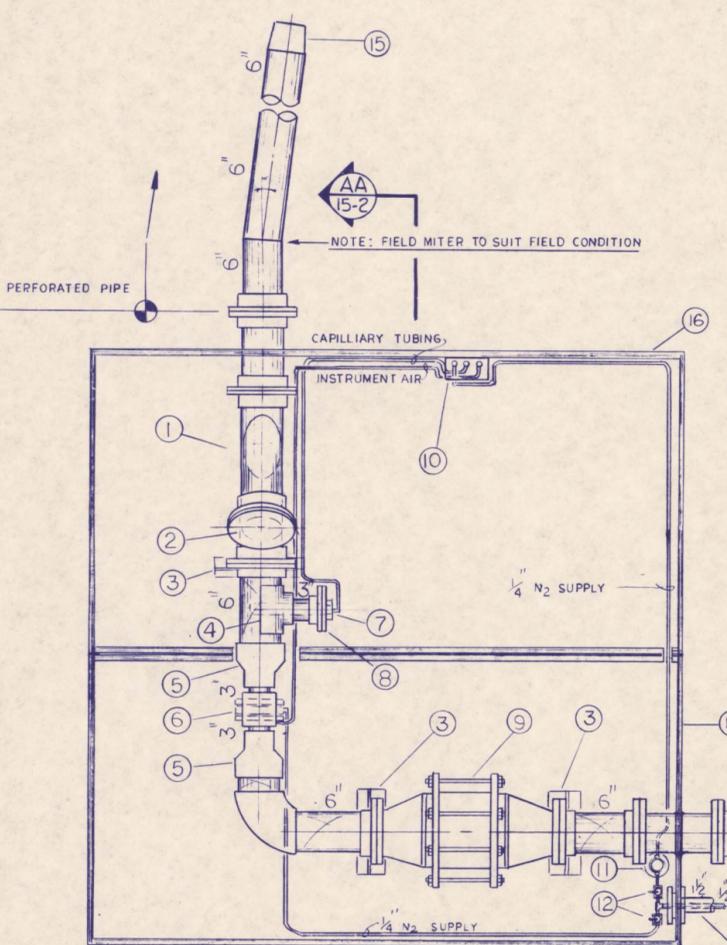
- LEGEND**
- ① 6" CLEAN OUT FIBERGLASS
  - ② 11" DIA. BLIND FLANGE
  - ③ 6" FIXED ANCHOR
  - ④ 4" X 3" FIBERGLASS SADDLE EPOXY OUTLET
  - ⑤ 6" X 3" FIBERGLASS CONCENTRIC REDUCER
  - ⑥ 3" BUTTERFLY CONTROL VALVE
  - ⑦ PRESSURE PROBE
  - ⑧ 3" STAINLESS STEEL BLIND FLANGE
  - ⑨ 6" DETONATION FLAME ARRESTOR
  - ⑩ VACUUM CONTROLLER WITH GAUGES AND ADJUSTMENT
  - ⑪ NITROGEN GAS REGULATOR 100 PSI INLET TO 20 PSI OUTLET
  - ⑫ 1/4" NITROGEN GAS LINE VALVE
  - ⑬ 1/2" NITROGEN GAS LINE VALVE
  - ⑭ INSTRUMENT TUBING IN CONDUIT
  - ⑮ 6" CAP FIBERGLASS
  - ⑯ 48" X 96" X 36" POLYMERIZED CONCRETE VAULT



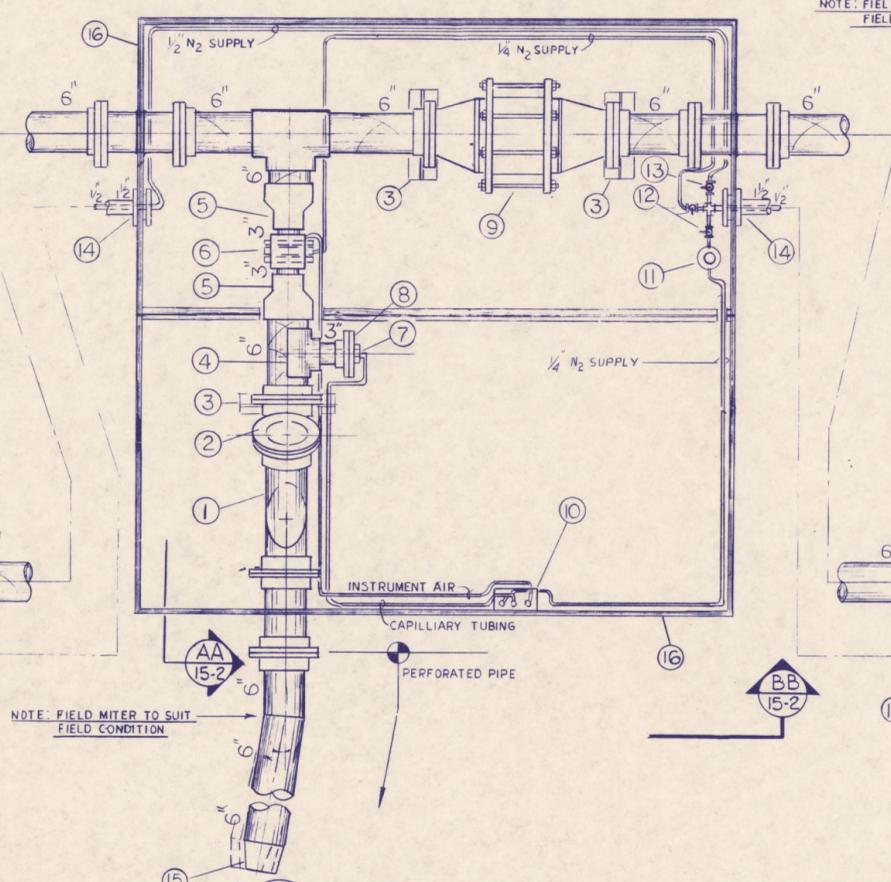
AA 6" CLEAN OUT ELEVATION (TYPICAL)  
SCALE: 1" = 1'-0"



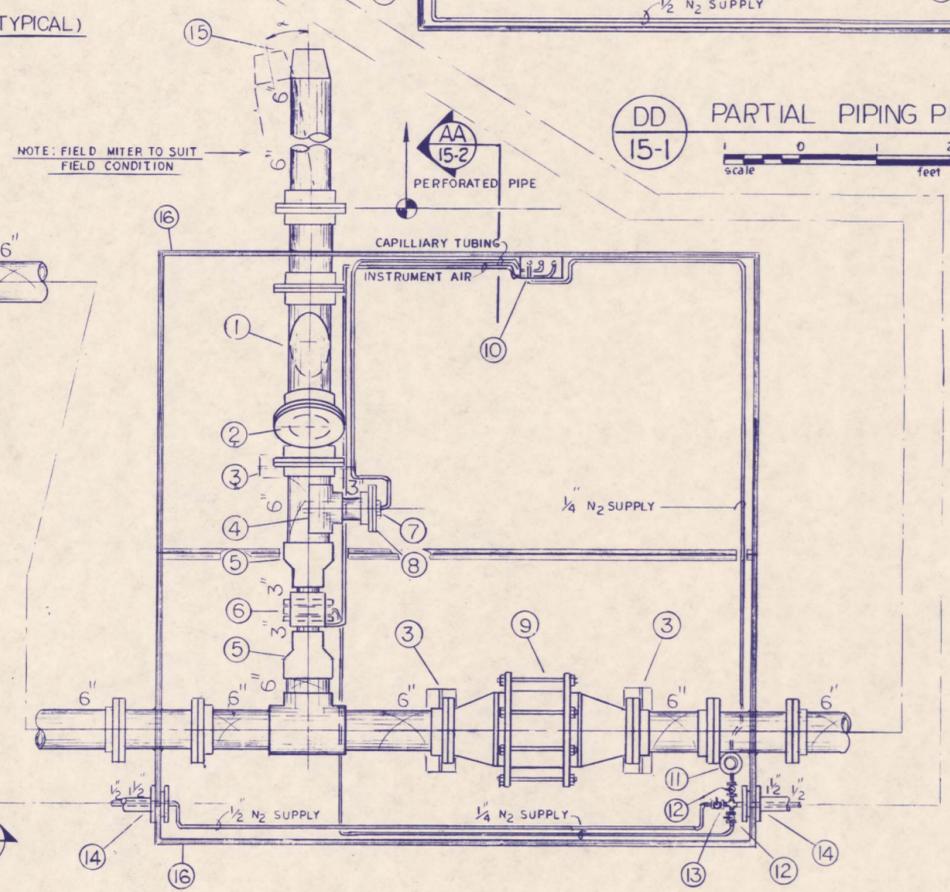
DD PARTIAL PIPING PLAN  
SCALE: 1" = 1'-0"



AA PARTIAL PIPING PLAN  
SCALE: 1" = 1'-0"

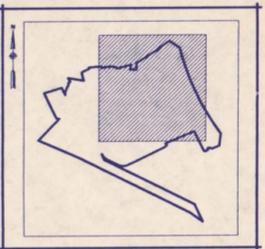


BB PARTIAL PIPING PLAN  
SCALE: 1" = 1'-0"

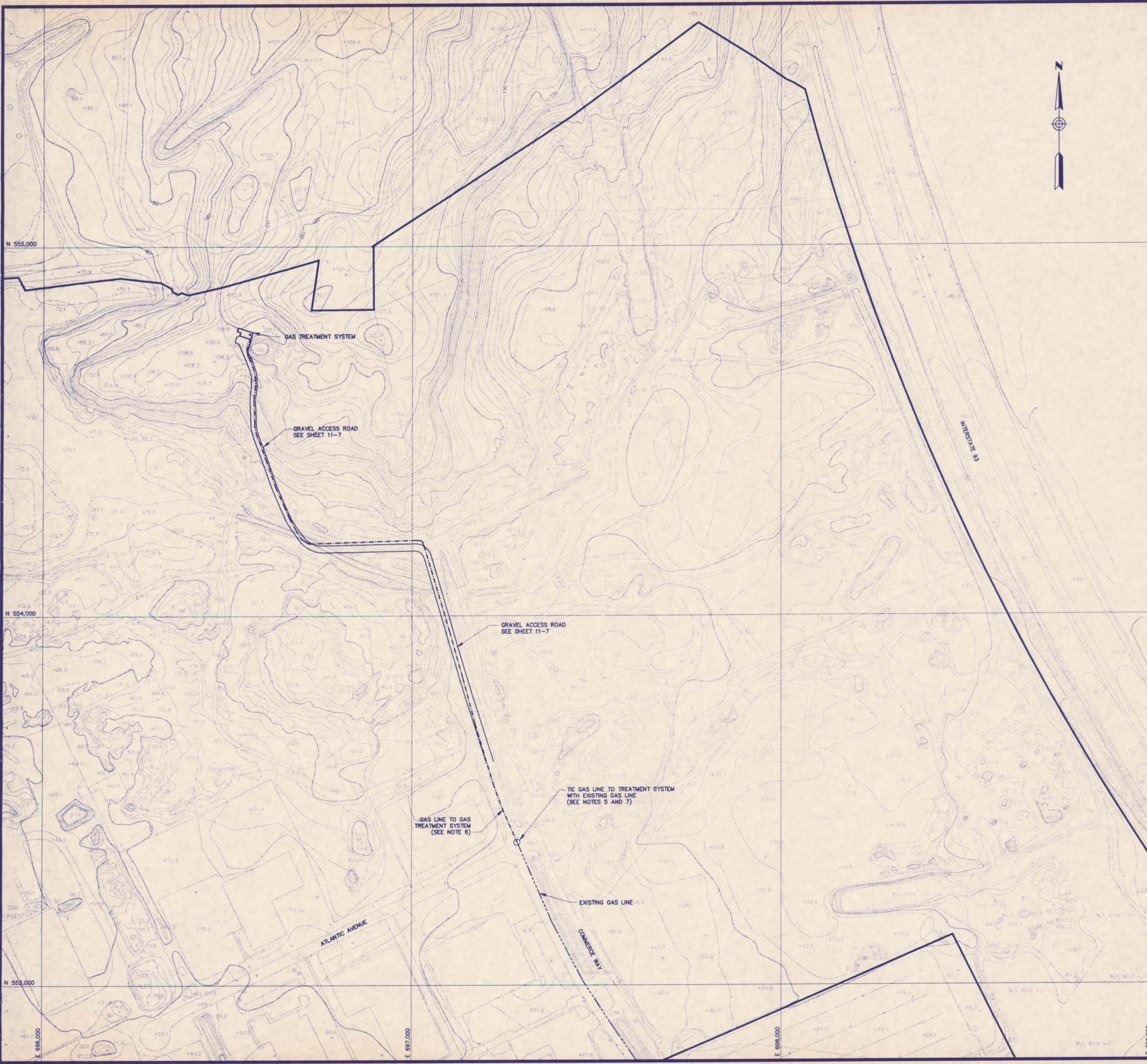


CC PARTIAL PIPING PLAN  
SCALE: 1" = 1'-0"

REV	DATE	ISSUED FOR BID	DESCRIPTION	DR BY	REV BY
Δ	4/92	ISSUED FOR BID			RJH
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS			
PROJECT No. 903-9400		SHEET TITLE: GAS COLLECTION PIPING DETAILS			
DES BY	RJH	04/01/91	SHEET No.		
DR BY	RJH	12/18/91	REVISED		
CHK BY	RJH	12-28-91	REVISED		
REV BY	RJH	12-28-91	REVISED		
Golder Associates Mt. Laurel, New Jersey		SHEET 15-2 OF 15-2 FILE No. MA01-946			



KEY MAP



**LEGEND**

- SITE BOUNDARY
- GRID LINE
- SOIL PILES
- STREAMS AND WATERCOURSES
- TRAILS
- RAILROAD TRACKS
- GRAVEL ACCESS ROAD
- EXISTING GAS LINE
- GAS LINE TO TREATMENT SYSTEM

**NOTES**

- 1.) TOPOGRAPHIC BASE MAP PREPARED BY SAIC ENGINEERING, INC., APRIL 1992, SCALE 1 INCH TO 100 FEET, TOPOGRAPHY BASED ON AERIAL PHOTOGRAPHY CONDUCTED ON NOVEMBER 22, 1989, SCALE 1 INCH TO 800 FEET AND FEBRUARY 21, 1990, SCALE 1 INCH TO 480 FEET. TOPOGRAPHY SCALE AND DETAIL IS FOR DESIGN PURPOSES ONLY AND NOT FOR ACCURATE ESTIMATING OF CONSTRUCTION QUANTITIES.
- 2.) SITE BOUNDARY SURVEY BY SAIC ENGINEERING, INC. APRIL, 1990 AND JANUARY, 1991.
- 3.) ELEVATIONS TO NATIONAL GEODETIC VERTICAL DATUM OF 1929. GRID COORDINATES BASED ON MASSACHUSETTS COORDINATE SYSTEM.
- 4.) TOPOGRAPHIC CONTOUR INTERVAL 2 FEET.
- 5.) GAS LINE INSTALLATION AND CONNECTION WITH EXISTING LINE TO BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF THE GAS UTILITY COMPANY.
- 6.) GAS LINE TO BE INSTALLED IN CLEAN UTILITY CORRIDOR WHERE PRESENT, SEE SHEET 11-7.
- 7.) EXISTING UTILITY LOCATION PLOTTED FROM DRAWING PROVIDED BY UTILITY OWNER. UTILITY LOCATION IS APPROXIMATE AND NOT VERIFIED ON SITE. LOCATION SHOULD NOT BE SCALED FROM THIS DRAWING.



SCALE: AS SHOWN	PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS
PROJECT No. 903-6400	SHEET TITLE: GAS LINE LOCATION PLAN
DES BY: R.J. 11/26/91	DR BY: RDH 12/19/91
CHK BY: R.J. 12/20/91	RJV BY: PCR 12/20/91

**Golder Associates**  
Mt. Laurel, New Jersey

### VALVE SYMBOLS

- VALVE, NORMALLY OPEN (GENERIC SYMBOL)
- VALVE, NORMALLY CLOSED (GENERIC SYMBOL)
- CHECK VALVE
- GATE VALVE
- GLOBE VALVE
- DIAPHRAGM VALVE
- BALL VALVE
- PLUG VALVE
- PINCH VALVE
- NEEDLE VALVE
- BUTTERFLY VALVE
- 3 WAY BALL VALVE
- 3 WAY PLUG VALVE
- KNIFE GATE VALVE

### PIPING SYMBOLS

- BUSHING OR REDUCER
- UNION
- COUPLING (TRANSITION)
- QUICK COUPLING
- FLANGE
- BLIND FLANGE
- FLEXIBLE HOSE WITH QUICK COUPLING
- CAP
- DRAIN
- FLEXIBLE SLEEVE PRESSURE SENSOR
- EXPANSION JOINT / VIBRATION ISOLATOR
- WYE STRAINER
- SIMPLEX BASKET STRAINER
- DUPLEX BASKET STRAINER
- CALIBRATION CHAMBER
- PULSATION DAMPER
- DIFFUSER (AERATOR)
- BACKFLOW PREVENTER AND DRAIN

### PIPING SYMBOLS CONT'D

- AIR FILTER
- VENT TO ATMOSPHERE
- PARTICULATOR FILTER

### EQUIPMENT SYMBOLS

- CENTRIFUGAL PUMP
- GEAR OR ROTARY LOBE PUMP WITH FURNISHED RELIEF VALVE
- METERING PUMP WITH FURNISHED INTERNAL RELIEF VALVE
- AIR DIAPHRAGM PUMP
- PROGRESSIVE CAVITY PUMP
- CENTRIFUGAL BLOWER
- ROTARY POSITIVE DISPLACEMENT BLOWER
- VACUUM PUMP
- RECIPROCATING COMPRESSOR
- EJECTOR OR EDUCTOR
- RADIAL AGITATOR
- PROPELLER AGITATOR
- TURBINE AGITATOR
- INLINE MIXER

### LINE SYMBOLS

- MAIN PROCESS FLOW
- SECONDARY PROCESS OR UTILITY
- POWER SUPPLY, VOTAGE/PHASE
- CONTINUATION - SAME SHEET
- CONTINUATION - DIFFERENT SHEET
- VENDOR PACKAGE BOUNDARY

### MISC. ELECTRICAL SYMBOLS

- GENERAL CONTROL PANEL OR EQUIPMENT, AS NOTED.
- GENERAL CONTROL PANEL OR EQUIPMENT, (FWE).
- GENERAL INTERLOCK OR CONTROL FUNCTION.
- MODULATING OR POSITIONING MOTOR
- VARIABLE FREQ. DRIVE w/ CONSTANT SPEED BY-PASS. xx = BY-PASS CONTROL
- AUDIBLE DEVICE
- TELEMETRY

### ELECTRICAL SYMBOLS HANDSWITCH SYMBOLS

- FIELD MOUNTED.
- REAR PANEL MOUNTED.
- REAR PANEL MOUNTED (FWE)
- FRONT PANEL MOUNTED.
- FRONT PANEL MOUNTED (FWE).
- LR - LOCAL/REMOTE.
- LOR - LOCAL/OFF/REMOTE.
- OO - ON/OFF.
- OC - OPEN/CLOSE
- OCA - OPEN/CLOSE/AUTO.
- OCR - OPEN/CLOSE/REMOTE.
- OCS - OPEN/CLOSE/STOP
- RSJ - RUN/STOP/JOG.
- SS - START/STOP.
- SR - SAFE RUN
- AOC - AUTO/OPEN/CLOSE.
- ROC - REMOTE/OPEN/CLOSE.
- HOA - HAND/OFF/AUTO.
- MA - MANUAL/AUTO
- FOR - FORWARD/OFF/REVERSE
- FSR - FORWARD/STOP/REVERSE
- AB - FUNCTION SELECTOR
- S - SILENCE

### GENERAL ABBREVIATIONS

- ATM - ATMOSPHERE
- CP - CONTROL PANEL
- D.O. - DISSOLVED OXYGEN
- E/I - VOLTAGE TO CURRENT
- E/P - VOLTAGE TO PNEUMATIC
- FC - FAIL CLOSE
- FO - FAIL OPEN
- FOP - VENDOR FURNISHED CONTROL PANEL
- FWE - FURNISHED WITH EQUIPMENT
- HT - HEAT TRACE
- I/P - CURRENT TO PNEUMATIC
- LCP - LOCAL CONTROL PANEL
- MCC - MOTOR CONTROL CENTER
- MCP - MAIN CONTROL PANEL
- NC - NORMALLY CLOSED
- P/E - PNEUMATIC TO VOLTAGE
- P/I - PNEUMATIC TO CURRENT
- SW - SEAL WATER
- VFD - VARIABLE FREQUENCY DRIVE
- VSD - VARIABLE SPEED DRIVE
- VTA - VENT TO ATMOSPHERE
- V - VENDOR FURNISHED

### SYSTEM EQUIPMENT LEGEND

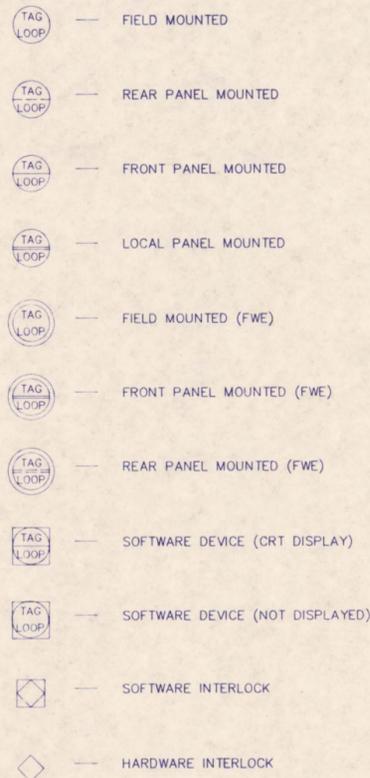
SYSTEM AND/OR FLOWING MEDIUM	PROCESS ITEM	PROCESS ITEM NO
CAU	CAUSTIC	P PUMP (AS INDICATED)
PA	PHOSPHORIC ACID	SG SLIDE GATE
FC	FERRIC CHLORIDE	PE PROCESS EQUIPMENT
SA	SULFURIC ACID	T TANK
HP	HYDROGEN PEROXIDE	LCP LOCAL CONTROL PANEL
MGH	MAGNESIUM HYDROXIDE	FCP FIELD CONTROL PANEL
EQ	EQUALIZATION TANK(S)	MX MIXER
PHT(#)	P.H. ADJUSTMENT TANKS	CV CONTROL VALVE
RC	REACTOR CLARIFIERS	SV SOLENOID VALVE
HX(#)	HEAT EXCHANGER	V VALVE
ASN(#)	AIR STRIPPING / NITRIFICATION	
SC(#)	SECONDARY	
RAS	RETURN ACTIVATED SLUDGE	
WAS	WASTE ACTIVATED SLUDGE	
OZ	OZONE	
F	FLOCCULATION	
PFT	PRESSURE FILTER	
BWS	BACKWASH SUPPLY	
BWR	BACKWASH RECIRCULATION	
PS(#)	PUMP STATION	
EFF	EFFLUENT	
GAC	GRANULAR ACTIVATED CARBON	
VGAC	VAPOR PHASE GAC	
THK	THICKENER	
FLTP	FILTERPRESS	
LM	LIME	
HP	HYDROGEN PEROXIDE	
BT	BATCH TANK	
NAOCL	SODIUM HYPOCHLORITE	

### PIPING LEGEND

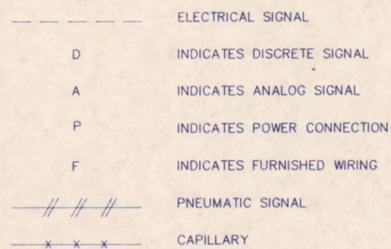
SIZE (IN.)	FLOWING MEDIUM	PIPING / VALVES SPECIFICATION CODES	INSULATION OR HEAT TRACE
	ASL ARSENIC SLUDGE	D11 DUCTILE IRON	-1 INSULATE
	BWS BACKWASH SUPPLY	CS1 CARBON STEEL	-2 INSULATE & HEAT TRACE
	BWR BACKWASH RECIRCULATION	CPVC1 CHLORINATED POLYVINYL CHLORIDE	
	CA COMPRESSED AIR	S.STL1 STAINLESS STEEL	
	CAU CAUSTIC	FRP FIBERGLASS REINFORCED POLYESTER	
	EFF EFFLUENT	CJ COPPER	
	FC FERRIC CHLORIDE		
	G NATURAL GAS		
	GW GROUNDWATER		
	H.P. HYDROGEN PEROXIDE		
	HPG HIDE PILE GAS		
	I.A. INSTRUMENT AIR		
	L.S. LIME SLURRY		
	MGH MAGNESIUM HYDROXIDE		
	M.SL. METAL SLUDGE		
	NAOCL SODIUM HYPOCHLORITE		
	NPW NON-POTABLE WATER		
	OF OVERFLOW		
	OG OFFGAS		
	PD PROCESS DRAIN		
	PW POTABLE WATER		
	RAS RETURN ACTIVATED SLUDGE		
	SA SULFURIC ACID		
	WAS WASTE ACTIVATED SLUDGE		

REV	DATE	ISSUED FOR BID	DESCRIPTION	DR BY	RW BY
SCALE:	AS SHOWN	PROJECT:	INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No.	903-6400	SHEET TITLE:	EAST HIDE PILE GAS TREATMENT SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM		
DES BY	TAA	CHK BY	EH	LEGEND I	
DR BY	RED	REV BY		DRAWING No. OF	
Jordan Jones & Goulding INCORPORATED			SHEET 16-1		

## INSTRUMENT SYMBOLS AND DESIGNATIONS

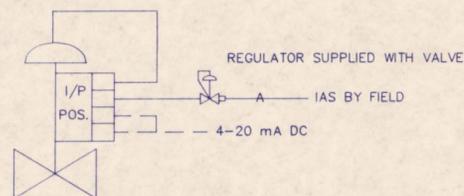


## INSTRUMENTATION LINES

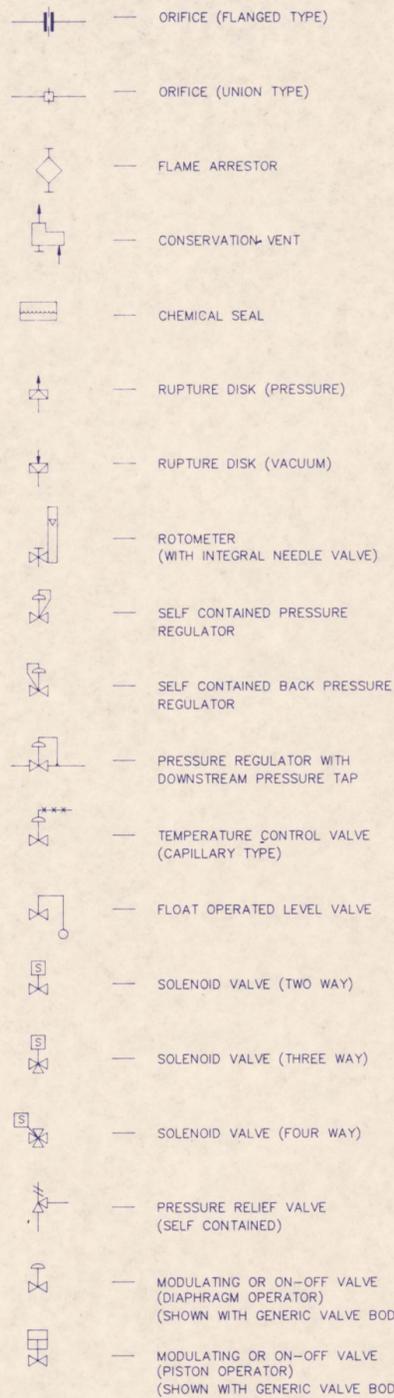


## MODULATING VALVE DETAIL

MODULATING VALVES ARE PROVIDED WITH ELECTRO-PNEUMATIC POSITIONERS PRE-PIPED WITH THE VALVE.

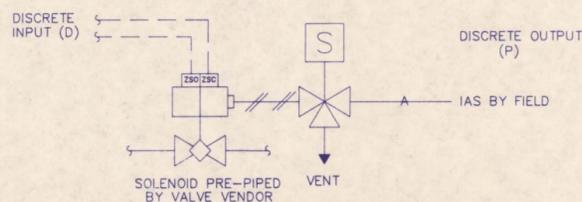


## LINE MOUNTED INSTRUMENTS



## ON-OFF VALVE DETAIL

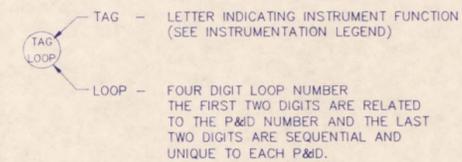
ON P&ID'S, COMPLETE VALVE DETAILS ARE LEFT OFF FOR CLARITY. VALVE ACTUATION AND SIGNAL TRANSMISSION ARE AS SHOWN BELOW.



## INSTRUMENTATION LEGEND

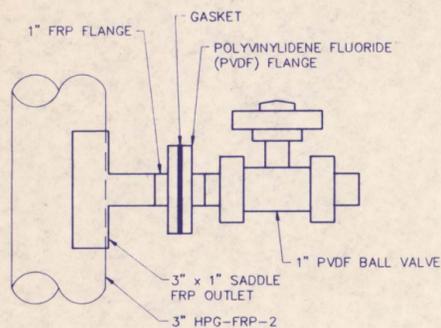
FIRST LETTER		SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A ANALYSIS		ALARM		
B BURNER FLAME				
C CONDUCTIVITY (ELECTRICAL)			CONTROL	
D DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E VOLTAGE (EMF)		PRIMARY ELEMENT		
F FLOW RATE	RATIO (FRACTION)			
G GAGING		GLASS		
H HAND (MANUALLY INITIATED)				HIGH
I CURRENT (ELECTRICAL)		INDICATE		
J POWER	SCAN			
K TIME OR SCHEDULE			CONTROL STATION	
L LEVEL		LIGHT (PILOT)		LOW
M MOISTURE OR HUMIDITY				MIDDLE OR INTERMEDIATE
N USER'S CHOICE				
O USER'S CHOICE		ORIFICE (RESTRICTION)		
P PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q QUANTITY OR EVENT	INTEGRATE OR TOTALIZE		QUANTITY OR TOTALIZE	
R RADIOACTIVITY		RECORD OR PRINT		
S SPEED OR FREQUENCY	SAFETY		SWITCH	
T TEMPERATURE			TRANSMIT OR TRANSMITTER	
U MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V VISCOSITY			VALVE, DAMPER OR LOUVER	
W WEIGHT OR FORCE		WELL		
X UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y USER'S CHOICE			RELAY	
Z POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

## INSTRUMENT TAG NUMBER

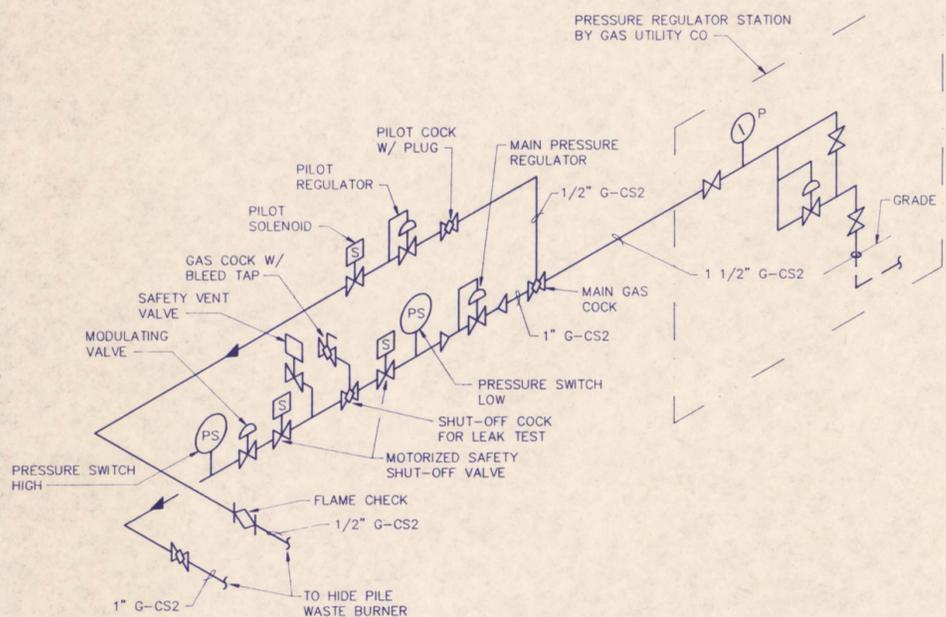


REV	DATE	ISSUED FOR BID	DESCRIPTION	DR BY	RVW BY
SCALE:	AS SHOWN	PROJECT:	INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
DES BY:	JL	SHEET TITLE:	EAST HIDE PILE GAS TREATMENT SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM		
DR BY:	ELPN	LEGEND II			
CHK BY:	EYP				
RVW BY:					
Jordan Jones & Goulding		DRAWING No. 16-2			

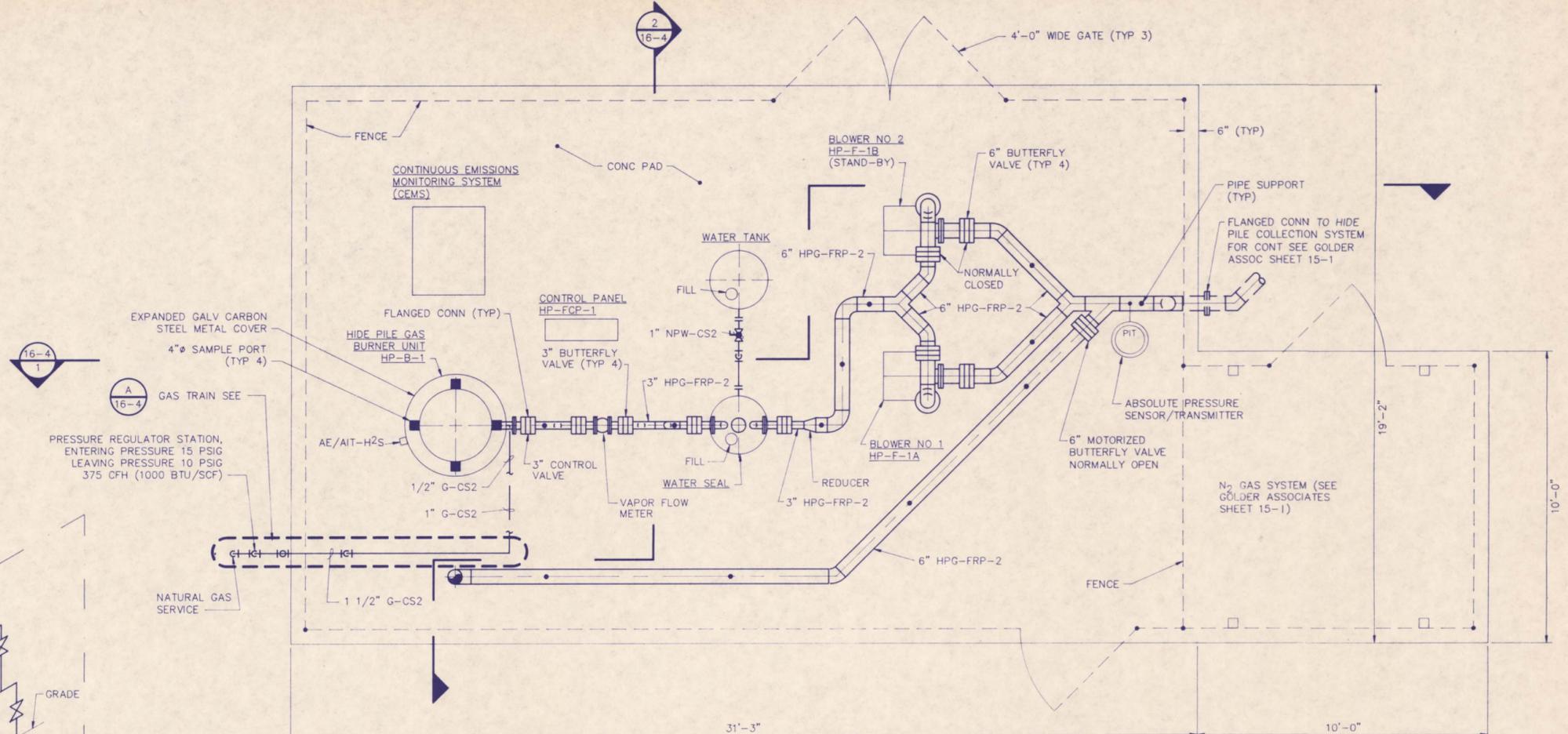




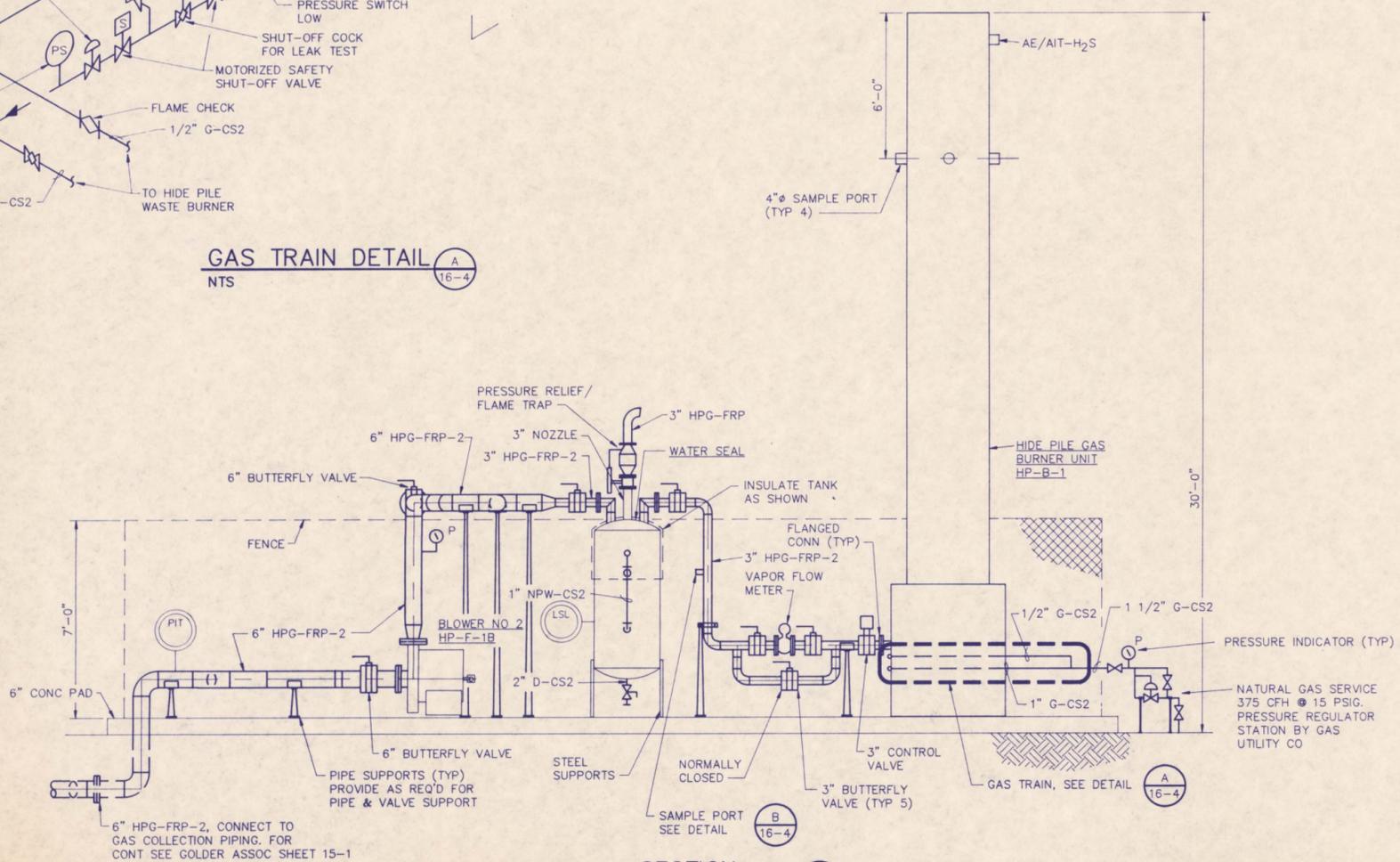
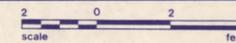
**SAMPLE PORT DETAIL (B)**  
NTS



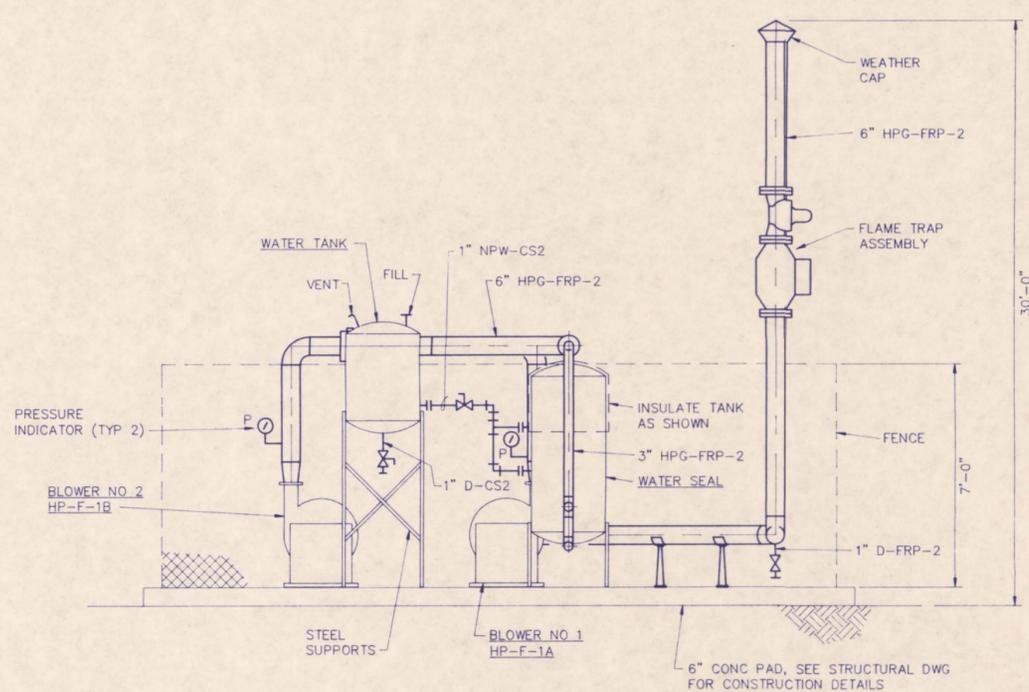
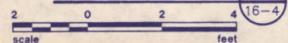
**GAS TRAIN DETAIL (A)**  
NTS



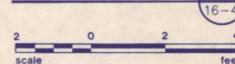
**HIDE PILE GAS FLARE SYSTEM PLAN**



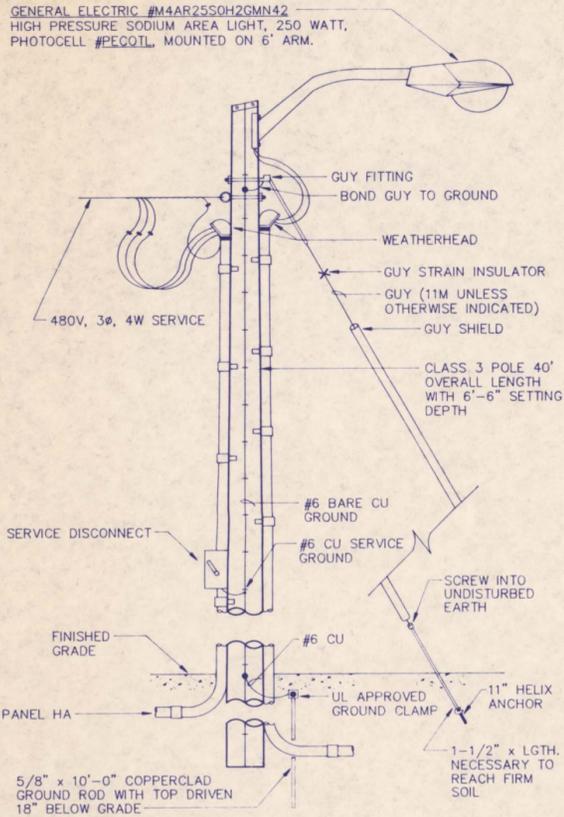
**SECTION 1**



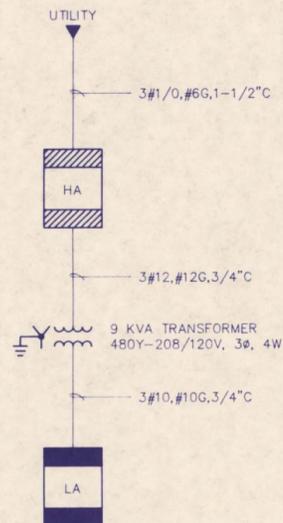
**SECTION 2**



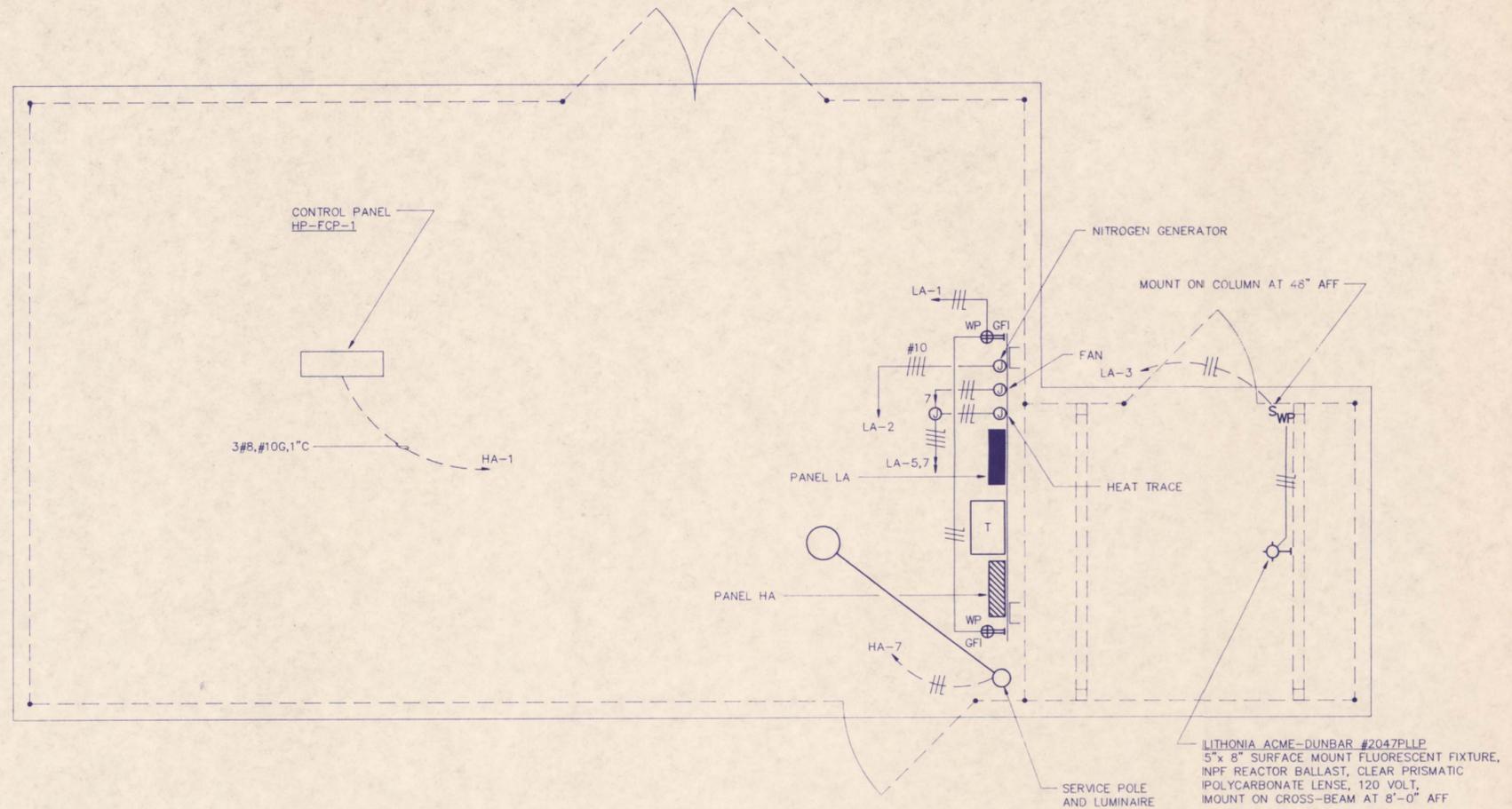
REV	DATE	ISSUED FOR BID	DESCRIPTION	DR BY	RVW BY
SCALE: AS SHOWN			PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		
PROJECT No. 1126.001			SHEET TITLE: EAST HIDE PILE GAS TREATMENT SYSTEM PLAN, SECTION & DETAIL		
DES BY	EP				
DR BY	NAK				
CHK BY	NDS				
RVW BY					
			DRAWING No. 16-4		
SHEET			16-4		



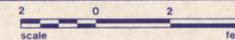
**SERVICE POLE DETAIL**  
NO SCALE



**ONE LINE DIAGRAM**

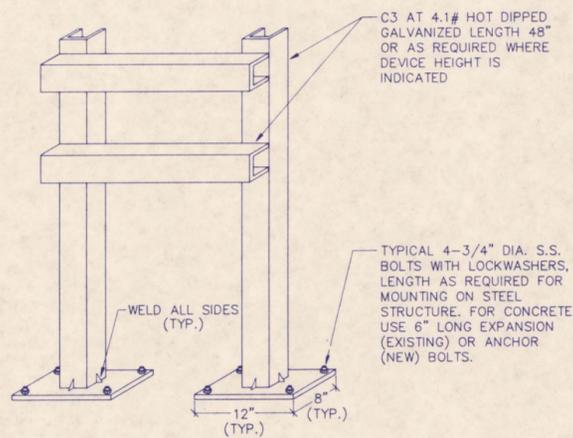


**HIDE PILE GAS FLARE SYSTEM PLAN**



**ELECTRICAL SYMBOLS**

- - POLE AND LUMINAIRE, SEE SERVICE POLE DETAIL
- INCANDESCENT OR HID FIXTURE, WALL MOUNTED.
- ⊕ - DUPLEX RECEPTACLE, 48" AFF
- WIRING IN CONDUIT CONCEALED ABOVE CEILING AND IN WALL.
- WIRING IN CONDUIT UNDER OR IN FLOOR OR UNDERGROUND.
- WIRING IN CONDUIT EXPOSED ON CEILING OR WALL.
- BRANCH CIRCUIT WIRING IN CONDUIT HOMERUN TO PANELBOARD. ONE ARROW PER CIRCUIT. SLASHES INDICATE NUMBER OF CONDUCTORS; #12 UNLESS OTHERWISE INDICATED.
- GROUND CONDUCTOR, #12 UNLESS OTHERWISE INDICATED.
- CONDUIT TURNS UP.
- CONDUIT TURNS DOWN.
- FLEXIBLE CONDUIT CONNECTION.
- PANELBOARD, 240 VOLT AND BELOW.
- PANELBOARD, ABOVE 240 VOLT.
- FUSED DISCONNECT SWITCH, AMPS/POLES/NEMA ENCLOSURE.
- TRANSFORMER, KVA AND VOLTAGE AS INDICATED.
- OUTLET BOX OR JUNCTION BOX
- GROUND CONNECTION
- DUAL SUPPORT STAND, SEE DETAIL
- S - SINGLE POLE SWITCH, 48" AFF.



- NOTES**
- SPACE AS REQUIRED TO ACCOMMODATE EQUIPMENT
  - ALL HARDWARE TO BE STAINLESS STEEL.

**DUAL SUPPORT STAND DETAIL**  
NO SCALE

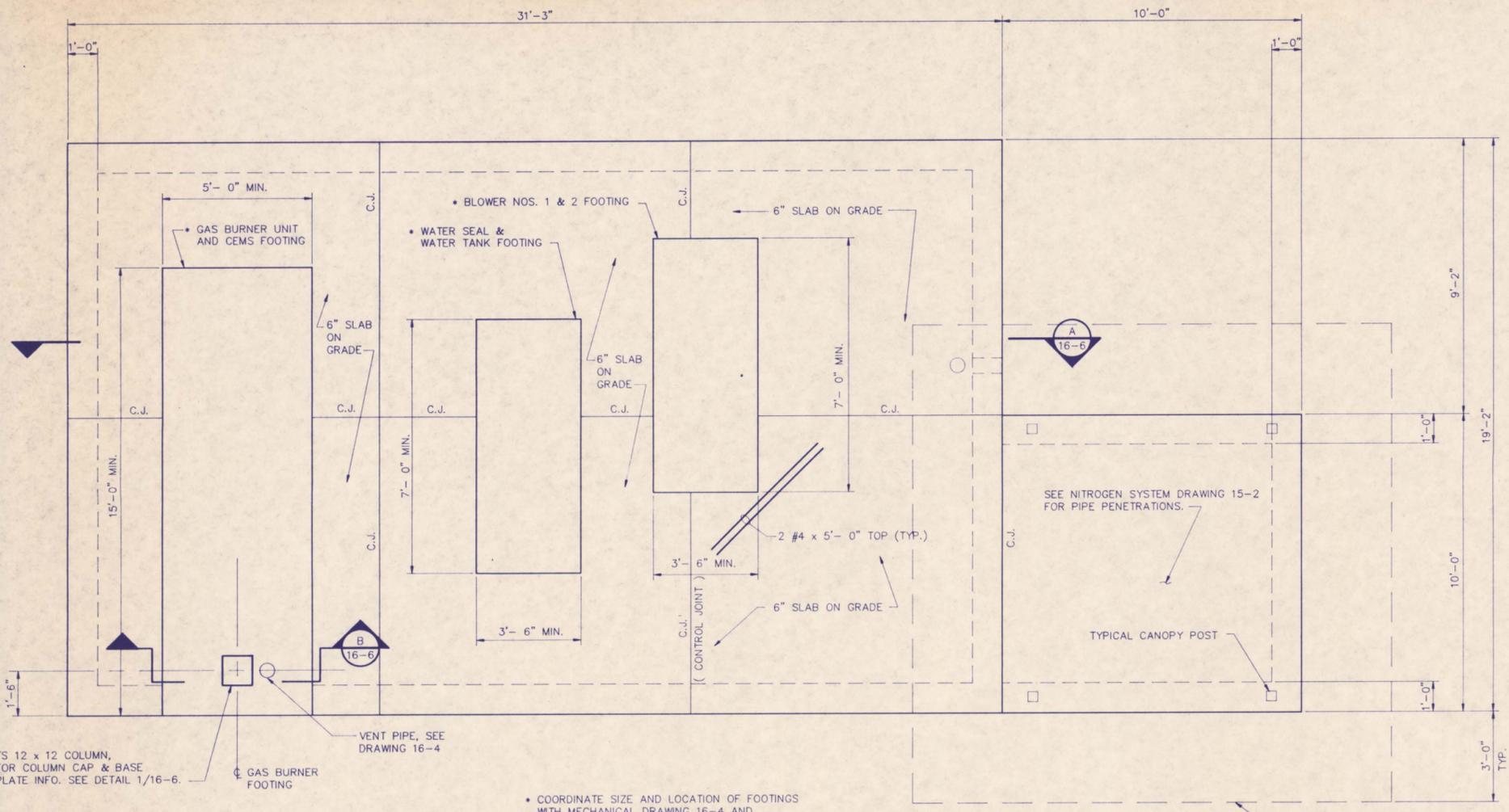
**ABBREVIATIONS**

- AFF - ABOVE FINISHED FLOOR
- AFG - ABOVE FINISHED GRADE
- AIC - AMPS INTERRUPTING CAPACITY
- FWE - FURNISHED WITH EQUIPMENT
- GFI - GROUND FAULT INTERRUPTING
- MCB - MAIN CIRCUIT BREAKER
- WP - WEATHERPROOF

PANEL HA				SERVICE 480/277V, 3Ø, 4W			
MAINS 150A MCB		LOAD		TRIM SURFACE		AIC 14,000	
CKT.	C/B	LOAD	LOAD	C/B	CKT.	C/B	CKT.
1	40	HP-FCP-1	9KVA TRANSFORMER	20	2		
3					4		
5	3			3	6		
7	20/1	SECURITY LIGHT	SPARE	20/1	8		
9	20/1	SPARE	SPARE	20/1	10		
11		SPACE	SPACE		12		
13					14		
15					16		
17					18		
19					20		
21					22		
23					24		
25					26		
27					28		
29					30		
31					32		
33					34		
35					36		
37					38		
39					40		
41					42		

PANEL LA				SERVICE 208/120V, 3Ø, 4W			
MAINS 30A MCB		LOAD		TRIM SURFACE		AIC 10,000	
CKT.	C/B	LOAD	LOAD	C/B	CKT.	C/B	CKT.
1	20/1	RECEPTACLES	NIT. GENERATOR	30	2		
3	20/1	NITRO. SYS. LIGHT			4		
5	20/1	HEAT TRACE		3	6		
7	20/1	FAN	SPARE	20/1	8		
9	20/1	SPARE	SPARE	20/1	10		
11		SPACE	SPACE		12		
13					14		
15					16		
17					18		
19					20		
21					22		
23					24		
25					26		
27					28		
29					30		
31					32		
33					34		
35					36		
37					38		
39					40		
41					42		

REV	DATE	ISSUED FOR BID	DESCRIPTION	DR BY	RVW BY
SCALE: AS SHOWN	PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS		SHEET TITLE: EAST HIDE PILE GAS TREATMENT SYSTEM ELECTRICAL		
DES BY: WFB	PROJECT No. 1126.001		DRAWING No. 16-5		
DR BY: MAG	SHEET TITLE: EAST HIDE PILE GAS TREATMENT SYSTEM ELECTRICAL		SHEET 16-5		
CHK BY: MAG	Jorden Jones & Goulding		SHEET 16-5		
RVW BY:	Jorden Jones & Goulding		SHEET 16-5		



**GENERAL NOTES:**

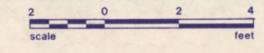
1. ALL CAST-IN-PLACE CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4000 P.S.I. IN ACCORDANCE WITH THE SPECIFICATIONS.
2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
3. ALL REINFORCING BAR SPLICES SHALL BE ACI CLASS "B" TENSION SPLICES, UNLESS OTHERWISE NOTED.
4. ALL REINFORCING BAR END HOOKS SHALL BE ACI STANDARD HOOKS, UNLESS OTHERWISE INDICATED.
5. CHAMFER ALL EXPOSED CONCRETE EDGES 3/4 INCH.
6. DURING CONSTRUCTION THE BOTTOM OF ALL FOUNDATION EXCAVATIONS MUST BE INSPECTED BY A PROFESSIONAL GEOTECHNICAL ENGINEER.
7. THE DESIGN ALLOWABLE ROCK BEARING PRESSURE IS 8 K.S.F.
8. DESIGN OF THE SLAB-ON-GRADE IS BASED UPON A MODULUS OF SUBGRADE REACTION OF 100 P.C.I.
9. ALL ANCHOR BOLTS AND PLATES SHALL CONFORM TO ASTM A 36, UNLESS NOTED OTHERWISE.
10. STRUCTURAL TUBES SHALL CONFORM TO ASTM A 500, GRADE B (FY = 46 KSI).
11. ALL WELDING SHALL BE MADE WITH E70XX ELECTRODES IN ACCORDANCE WITH AWS D1.1, AND SHALL BE PERFORMED BY CERTIFIED WELDERS.
12. ANCHOR BOLTS, PLATES AND STRUCTURAL TUBES SHALL BE GALVANIZED.

TS 12 x 12 COLUMN, FOR COLUMN CAP & BASE PLATE INFO. SEE DETAIL 1/16-6.

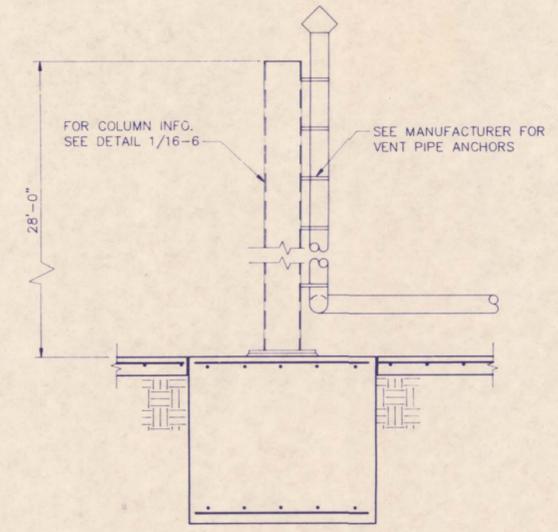
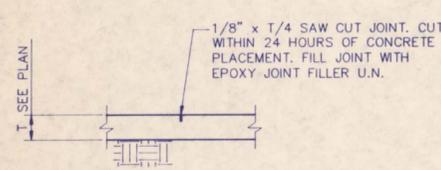
COORDINATE SIZE AND LOCATION OF FOOTINGS WITH MECHANICAL DRAWING 16-4 AND EQUIPMENT MANUFACTURER.

ALCAN EXTRUDED ALUMINUM CANOPY SYSTEM OR EQUIVALENT DESIGNED IN ACCORDANCE WITH THE MASSACHUSETTS STATE BUILDING CODE AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER. PROVIDE 8 FT. CLEAR HEIGHT.

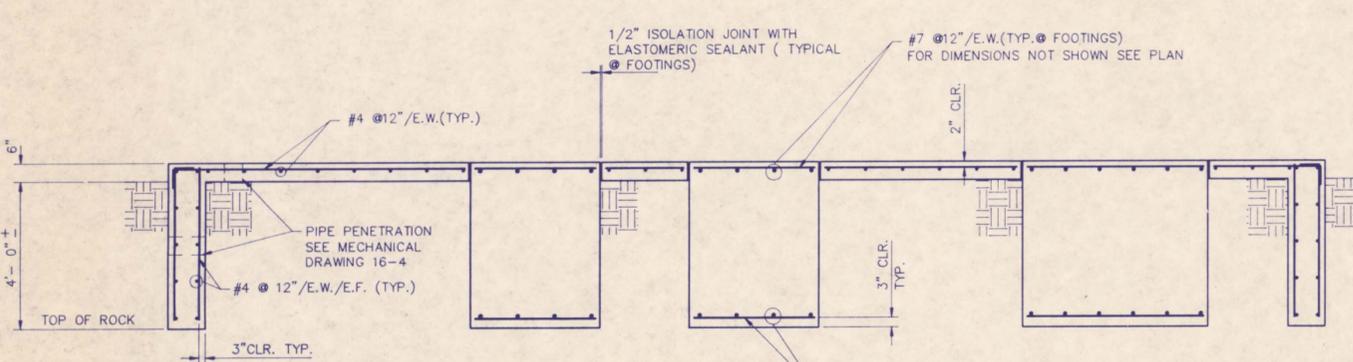
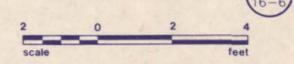
**GAS TREATMENT SYSTEM SLAB PLAN**



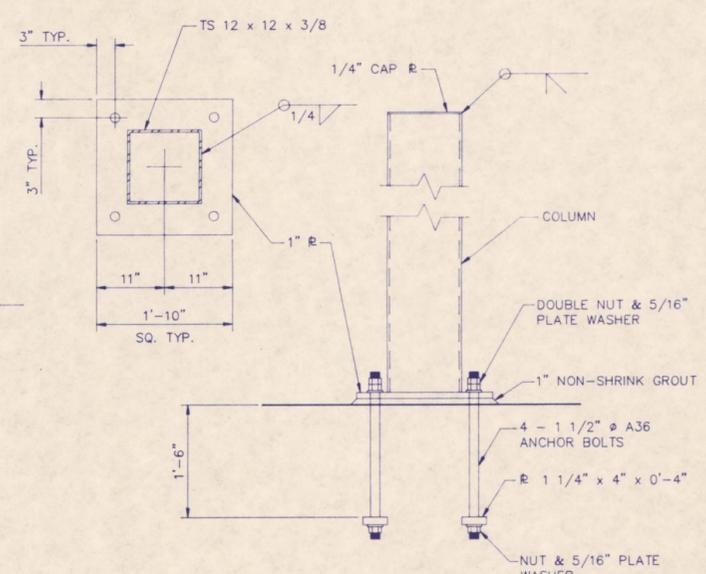
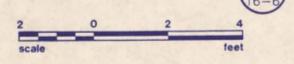
**CONTROL JOINT DETAIL**  
N.T.S.



**SECTION**



**SECTION**



**DETAIL**



- NOTES:**
1. EQUIPMENT FOOTINGS SHALL BEAR DIRECTLY ON ROCK. IF ROCK IS ENCOUNTERED AT A DEPTH LESS THAN 4 FEET, THE EQUIPMENT FOOTINGS SHALL HAVE A 3'-0" MINIMUM DEPTH.
  2. THE PERIMETER OF THE SLAB SHALL EXTEND TO 4 FEET IF ROCK IS AT A DEPTH OF 4 FEET OR MORE. SHOULD ROCK BE ENCOUNTERED ABOVE 4 FEET, THE PERIMETER SHALL EXTEND A MINIMUM OF 12 INCHES BELOW SURROUNDING GRADE AND TO ROCK.
  3. THE SLAB SHALL BE SUPPORTED ON A MINIMUM OF 12 INCHES OF COMPACTED SELECT FILL, PLACED OVER COMPACTED SUBGRADE.

REV	DATE	ISSUED FOR (BY)	DESCRIPTION	DR. BY	RVW. BY
SCALE: AS SHOWN		PROJECT: INDUSTRI-PLEX SITE REMEDIAL TRUST WOBURN, MASSACHUSETTS			
PROJECT No. 1126.001		SHEET TITLE: EAST HIDE PILE GAS TREATMENT SYSTEM STRUCTURAL FOUNDATION PLAN, SECTION & DETAIL			
DES BY	CB				
DR BY	WL				
CHK BY	CB				
RVW BY					
<b>Jordan Jones &amp; Goulding</b>					OF DRAWING No. SHEET <b>16-6</b>