US Army Corps
of Engineers
New England District

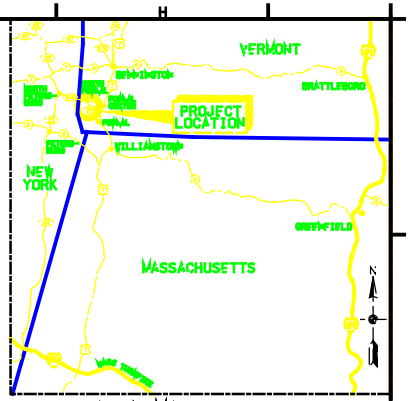
US Environmental Protection Agency
Region 1

POWNAL TANNERY LANDFILL CAP

FINAL AS-BUILTS

NOVEMBER 7, 2001

NORTH POWNAL, VERMONT



LOCATION MAP
SCALE IN MILES
7 0 7 14 Miles (Approx.)

INDEX TO DRAWINGS

DRAWING NO.	REFER. NO.	SHEET NO.	TITLE
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"	C-3	4	SECTIONS NO. 1
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SYMBOL LEGEND

NEW	EXISTING	DESCRIPTION
528	529	CONTOUR
		EROSION CONTROL FENCING
		EARTH CUT
		EARTH FILL
		EDGE OF WATER OR WETLAND
WF	X X	FENCE
		LIMIT OF CONTRACTOR'S WORK AREA
		GRAVEL SURFACED ROAD
	MH	MANHOLE
	R 11	MONITORING WELL
		NATURAL GROUND SURFACE
		OUTLET STONE PROTECTION
	559.29	SPOT ELEVATION

SYMBOL LEGEND (CON'T)

NEW	EXISTING	DESCRIPTION
		TREE OR BUSH
		TREE OR BRUSH LINE
	TP-3	TEST PIT
	TT-3	TEST TRENCH
NUE/T	UE/T	ELECTRIC/TELEPHONE LINES UNDERGROUND
	UE	ELECTRIC LINE UNDERGROUND
	UE	ELECTRIC LINE UNDERGROUND TO BE REMOVED
		LEACHATE COLLECTION HEADER TO BE REMOVED
		VENT PIPE

VALUE ENGINEERING PAYS DIVIDENDS

APPROVED FUNCTIONAL ADEQUACY
TECHNICAL LEAD ENGINEER — DATE
REVIEWED BY:
PROJECT MANAGER — DATE
REVIEWED BY:
CHF. GEOTECH & TAINTER VOT BR — DATE

RECOMMENDED BY:
DEPUTY CHIEF, E/P DIV — DATE
APPROVED BY:
CHIEF, ENGR/PLANNING DIV — DATE

POWNAL TANNERY LANDFILL CAP
NORTH POWNAL, VERMONT
COVER SHEET

Reference number:
T-1
Sheet 1 of 15

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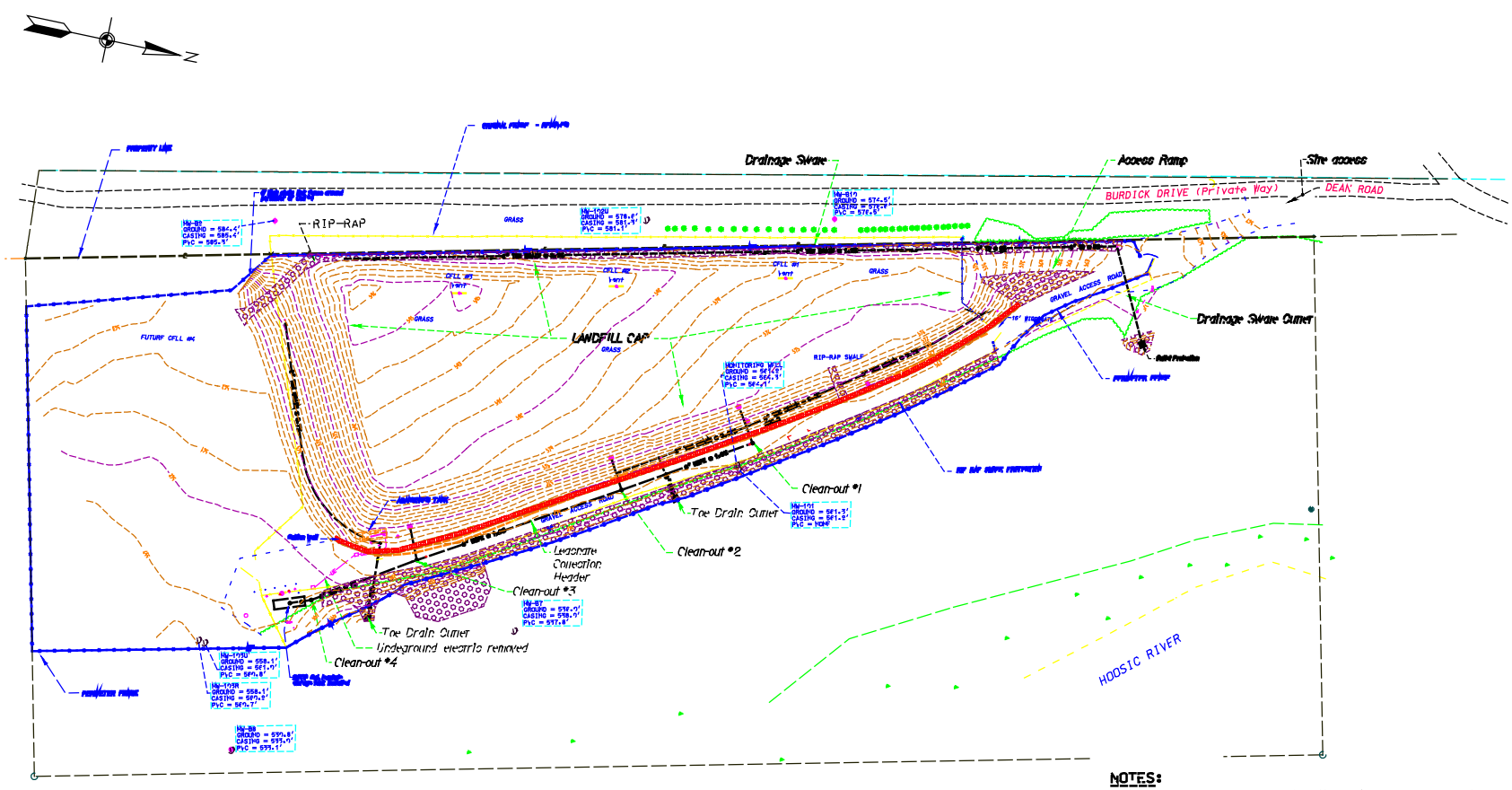

GENERAL PLAN

SCALE: 1" = 40'

NOTES:

1. Topographic survey performed by Hill Engineers, Architects and Planners, Dalton, MA, during the period April - September 1999, and during the period November - December 2000.
2. Information on construction of the existing landfill taken from drawings entitled "Pownal Tanning Company, Route 346, North Pownal, Vermont, Proposed Sludge Disposal Site", Sheets 1-8/8, Dated 1981-1988, on file in the State of Vermont Solid Waste Division.

GRAPHIC SCALE

1" = 40' 40' 0 80' 20'

US Army Corps of Engineers
New England District

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

POWNAL TANNERY LANDFILL
NORTH POWNAL, VERMONT

GENERAL PLAN

Reference number:
C-1
Sheet 2 of 13

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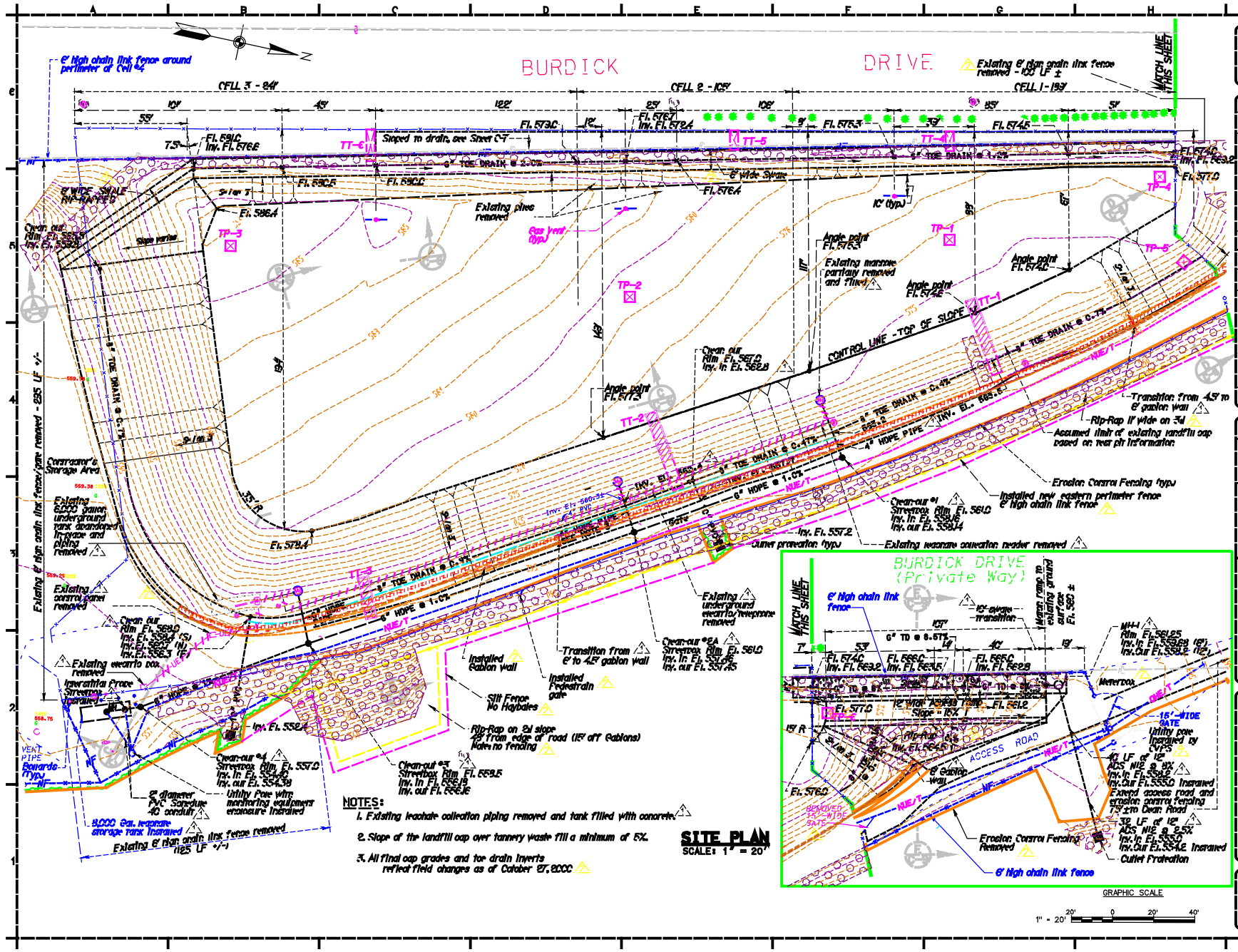

NOTES:

1. Existing leachate collection piping removed and tank filled with concrete.
2. Slope of the landfill cap over tannery waste fill a minimum of 5%.
3. All final cap grades and toe drain inverts reflect field changes as of October 27, 2000.

SITE PLAN
SCALE: 1" = 20'

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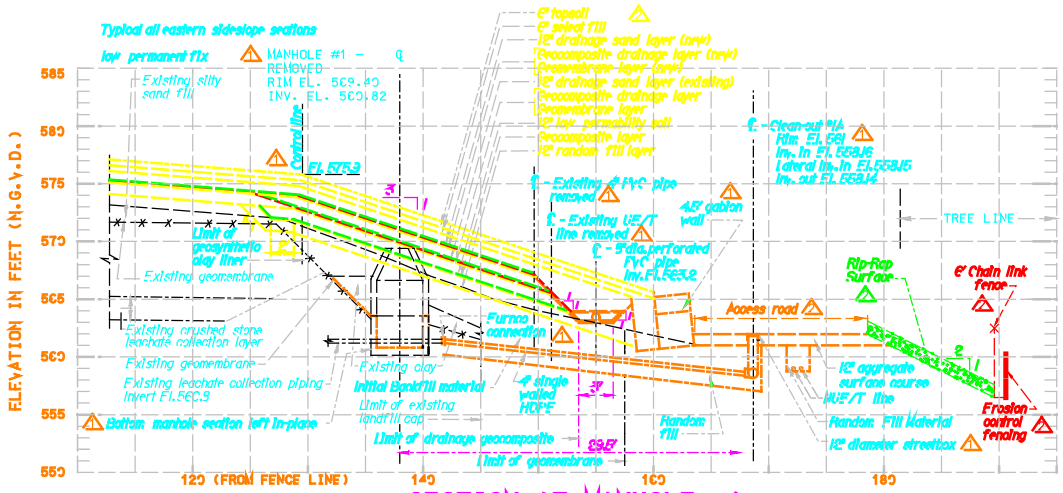
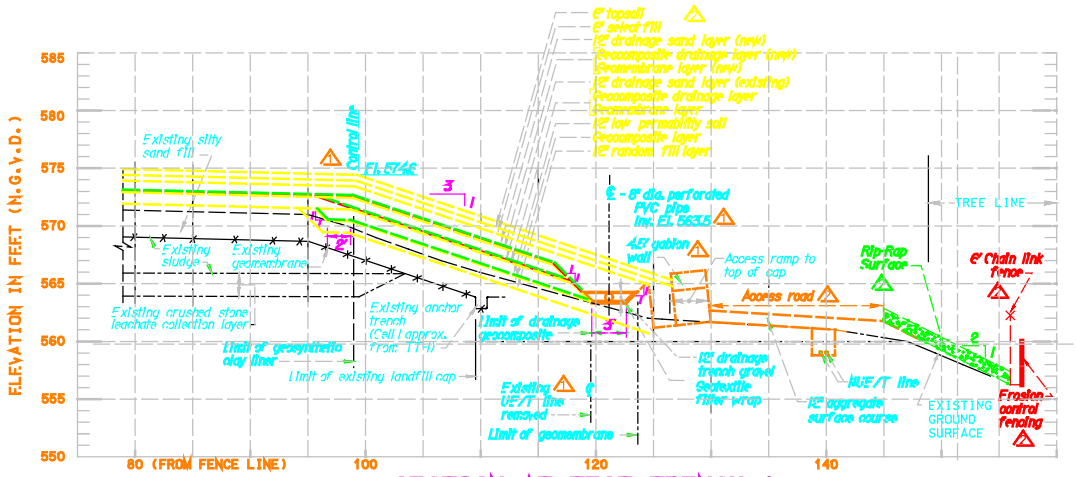


SECTION AT MANHOLE #1

SCALE: 1" = 5'



SECTION AT TEST TRENCH 1

SCALE: 1" = 5'

GRAPHIC SCALE

1" = 5'

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CONCORD, MASSACHUSETTS

POWNAL TANNERY LANDFILL CAP
NORTH POWNAL, VERMONT

Reference number:
C-3

Sheet 4 of 13

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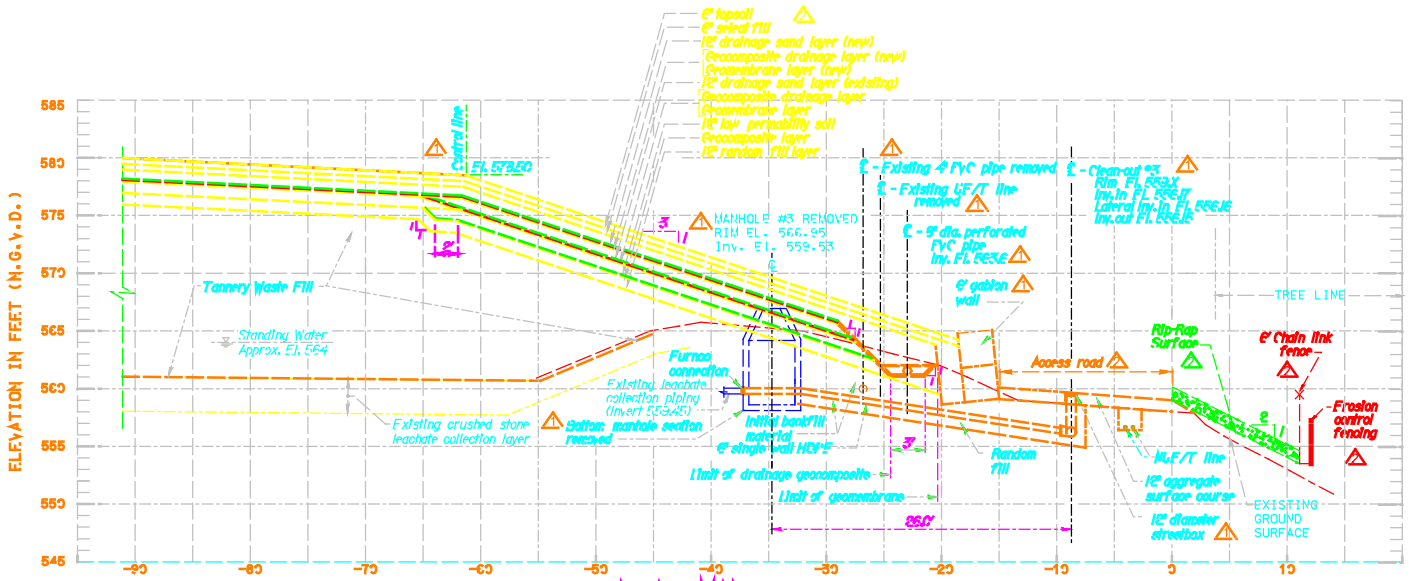
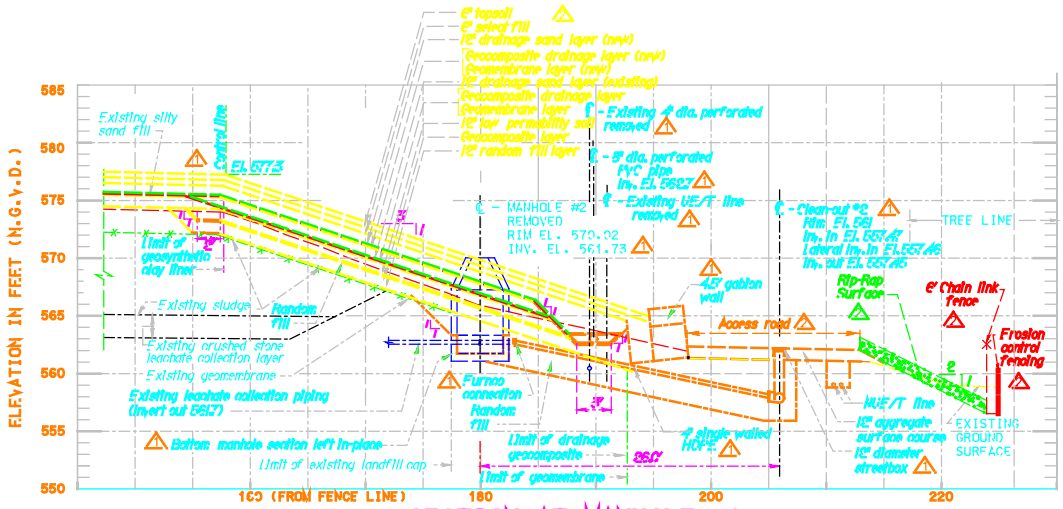


SECTION AT MANHOLE #3

SCALE: 1" = 5'



SECTION AT MANHOLE #2

SCALE: 1" = 5'

GRAPHIC SCALE

1" = 5'

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CONCORD, MASSACHUSETTS

POWNAL TANNERY LANDFILL CAP
NORTH POWNAL, VERMONT

Reference number:
C-4

Sheet 5 of 15

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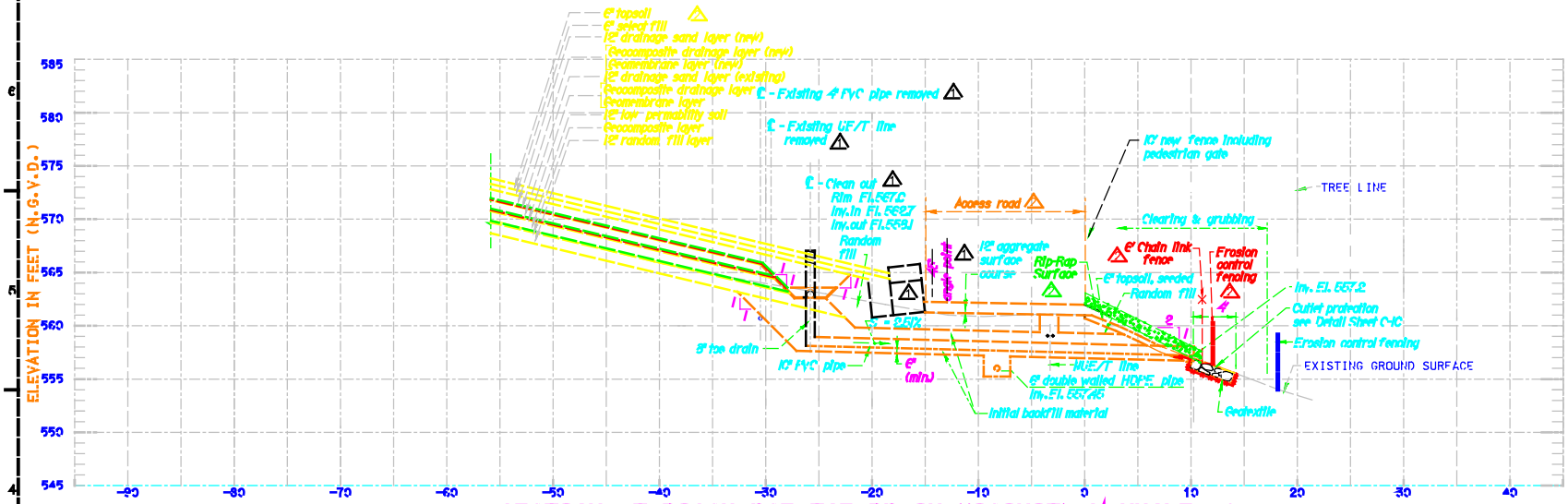
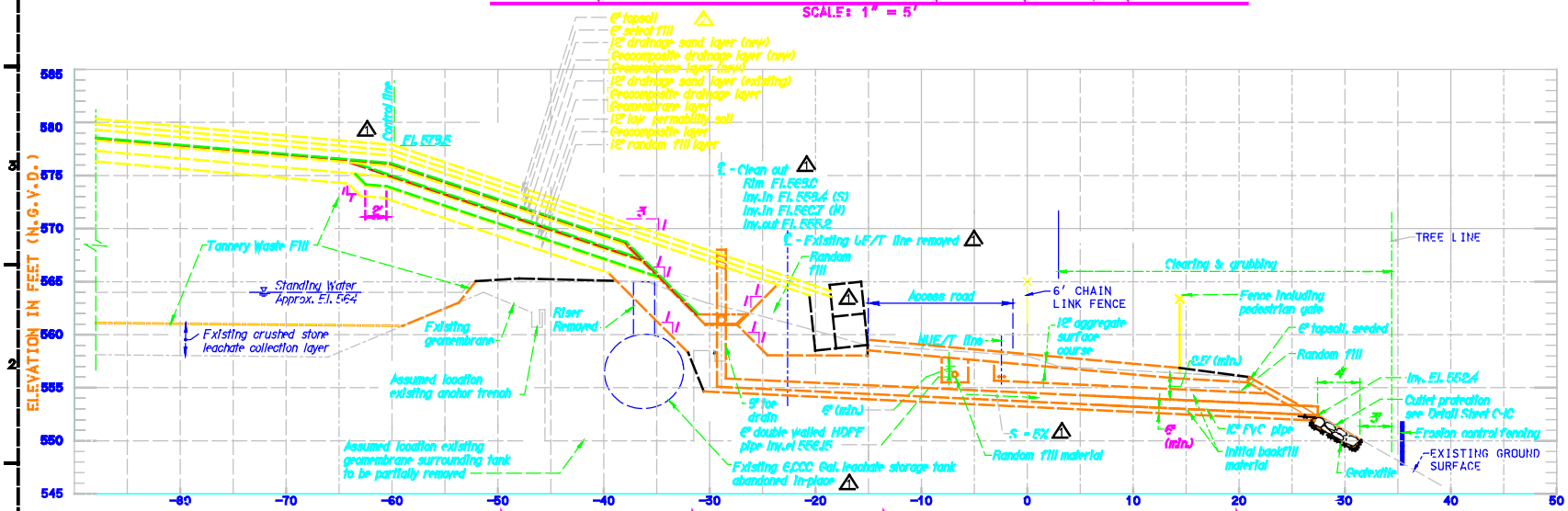


SECTION AT DISCHARGE TOE DRAIN VICINITY MANHOLE #2

SCALE: 1" = 5'



SECTION AT TOE DRAIN OUTLET VICINITY LEACHATE STORAGE TANK

SCALE: 1" = 5'

GRAPHIC SCALE

1" = 5'

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CONCORD, MASSACHUSETTS

POWNAL TANNERY LANDFILL CAP
NORTH POWNAL, VERMONT

Reference number:
C-5

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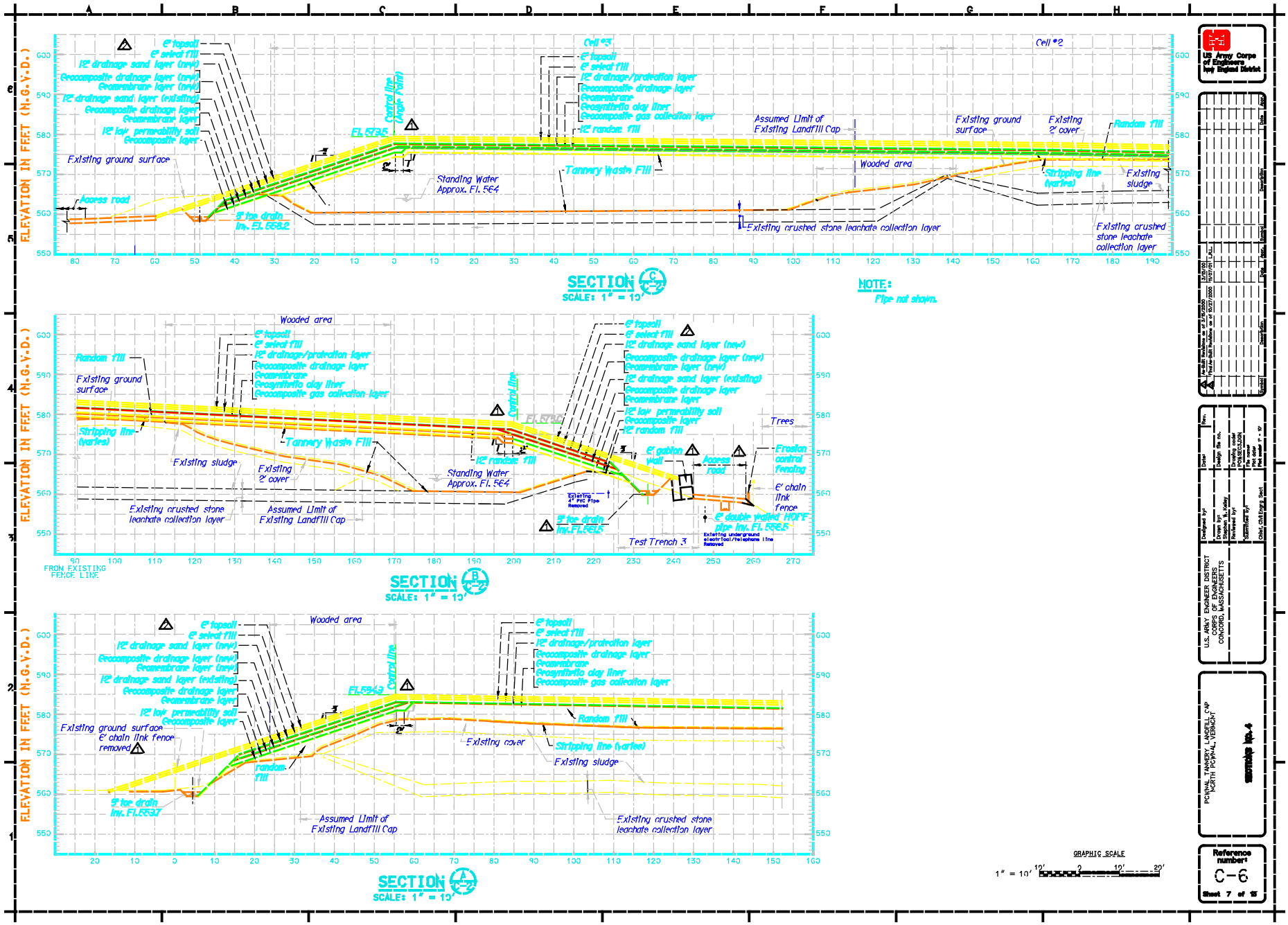

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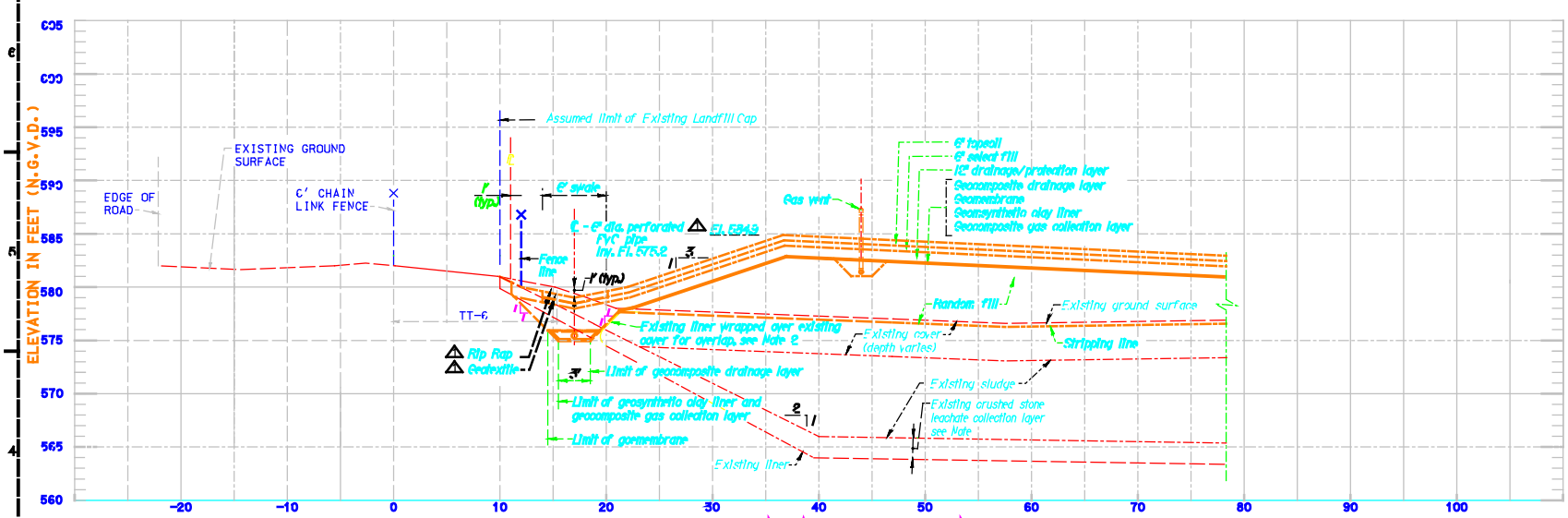
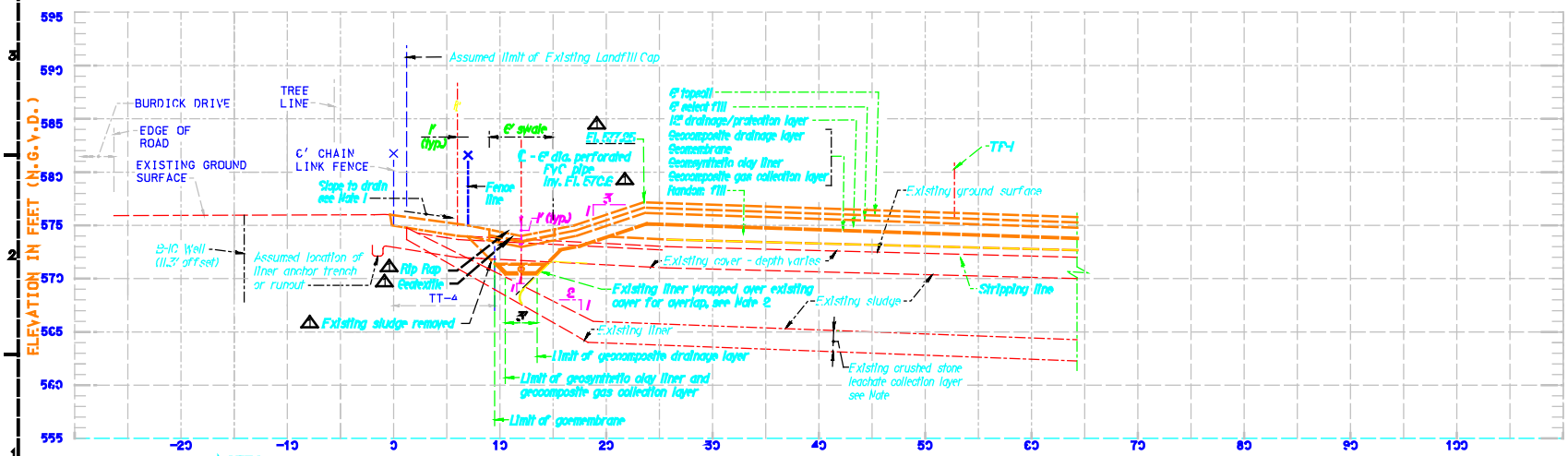


SECTION AT TEST TRENCH # 6

SCALE: 1" = 5'



NOTES:

1. Between TT-6, and the existing north fence line (Match Line Sheet C-2), the area between the existing and new fence line/edge of swale shall be regraded to drain toward the swale.
2. Relocation of existing liner to be field verified.

SECTION AT TEST TRENCH # 4

SCALE: 1" = 5'

GRAPHIC SCALE

1" = 5'

US Army Corps of Engineers New England District

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

POWNAL TANNERY LANDFILL CAP NORTH POWNAL, VERMONT

Reference number: C-7

Sheet 5 of 15

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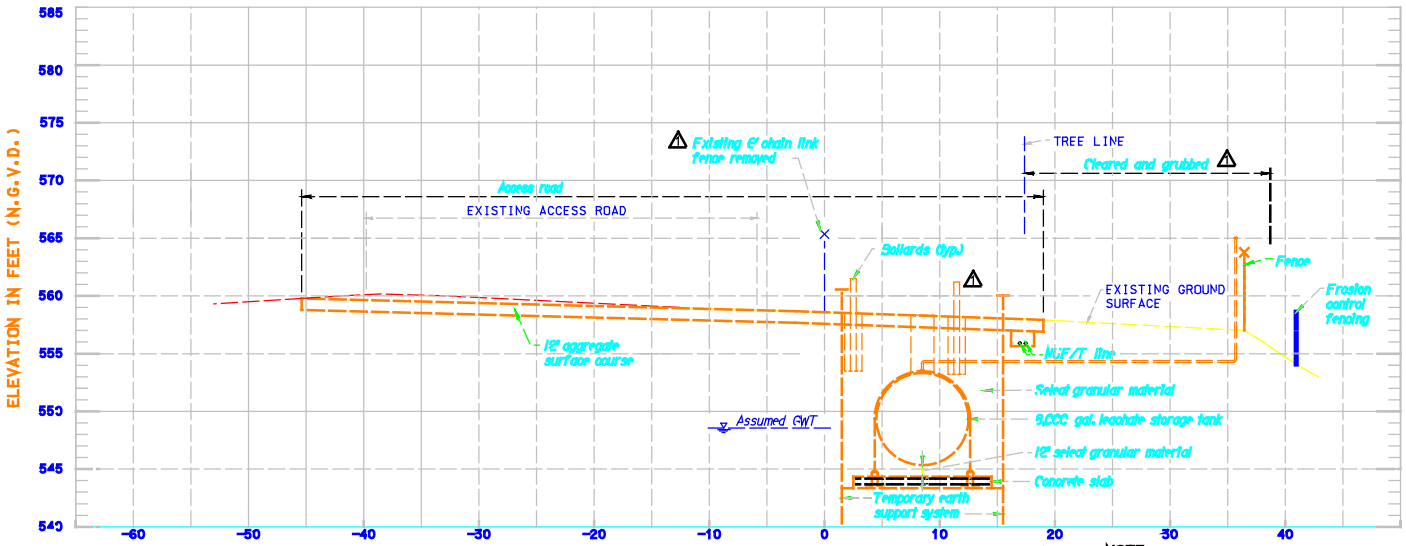
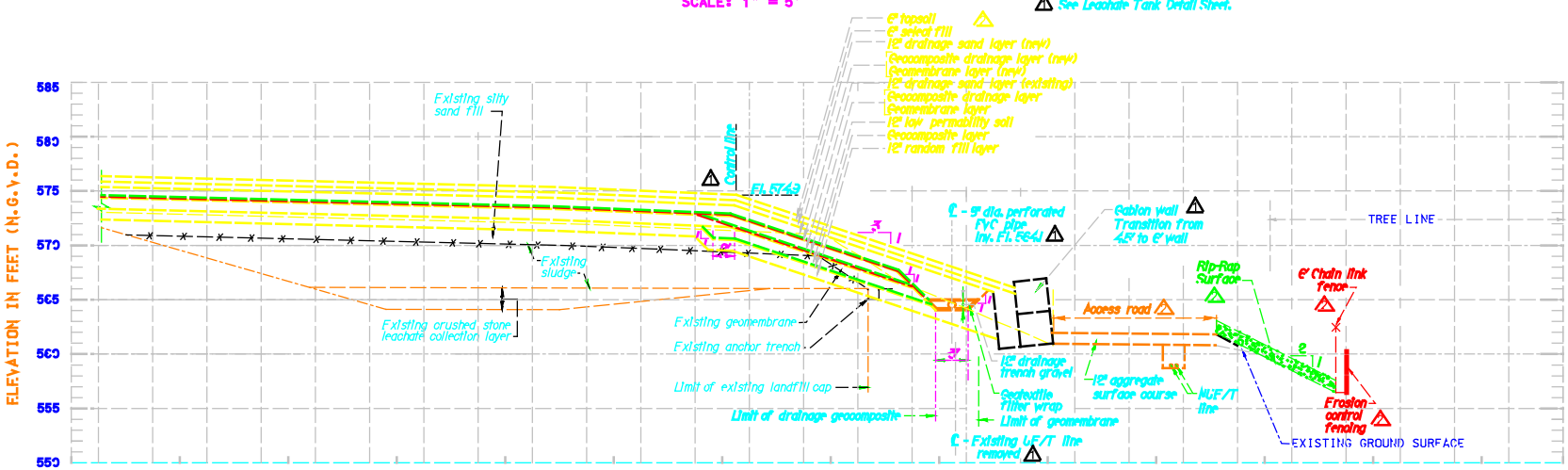


SECTION AT LEACHATE STORAGE TANK

SCALE: 1" = 5'

NOTE:
Tank installation design by submittal.
See Leachate Tank Detail Sheet.



SECTION

SCALE: 1" = 5'

GRAPHIC SCALE
1" = 5'
5' 0 5' 10'

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

POWNAL TANNERY LANDFILL CAP
NORTH POWNAL, VERMONT

Reference number:
C-8

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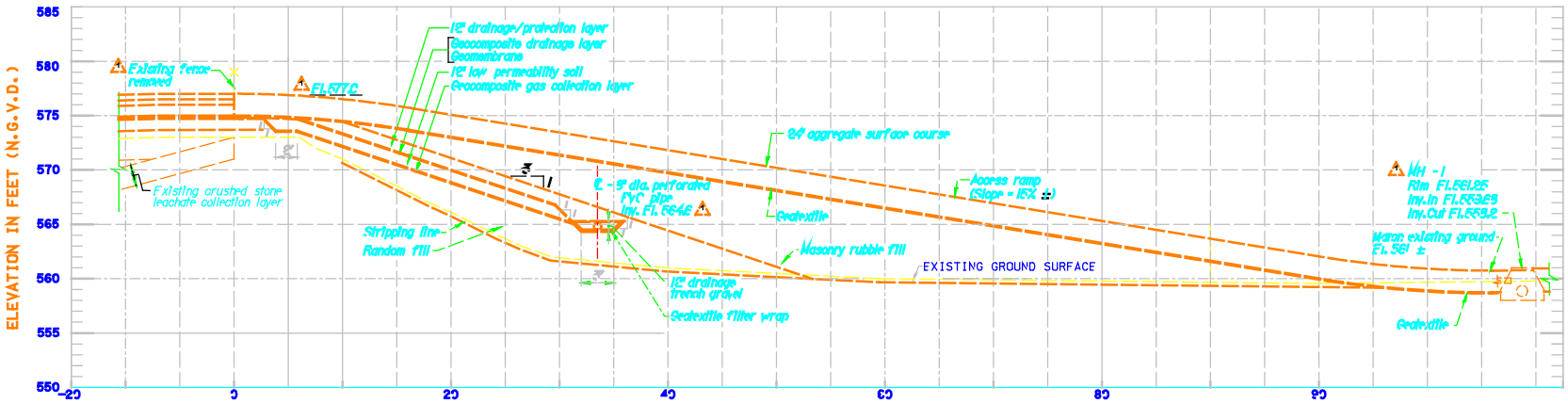
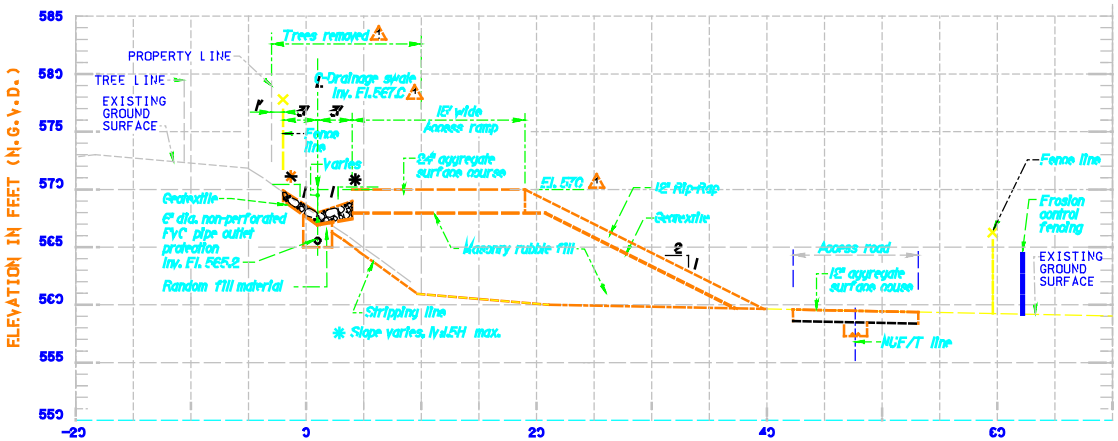
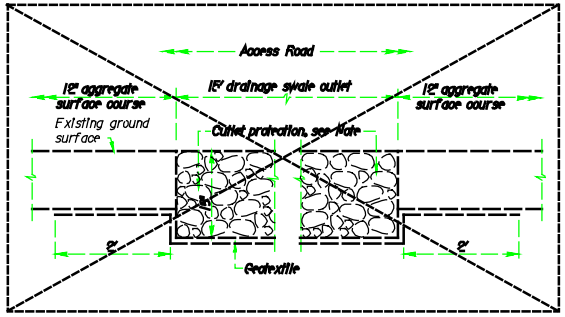


PROFILE
ACCESS RAMP
SCALE: 1" = 5'



SECTION E
SCALE: 1" = 5'



NOTE:
Think outlet protection with aggregate surface course within limits of roadway

DETAIL
DRAINAGE SWALE OUTLET
NOT TO SCALE

GRAPHIC SCALE
1" = 5'
5' 0 5' 10'

US Army Corps of Engineers New England District

Symbol	Description	Date	Appr.
A	Re-Bulk Revisions as of 10/07/02 Re-Bulk Revisions as of 10/07/02	10/07/02	CAC

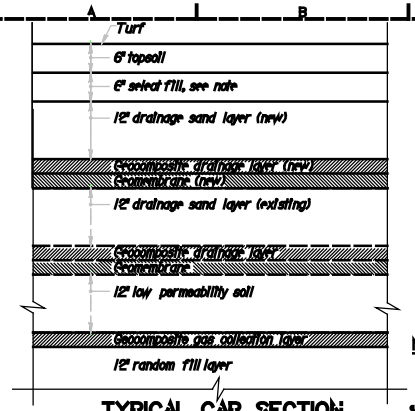
Designed by
Drawn by Stephen M. Kelley
Reviewed by
Submitted by
Date, Title/Energy Sect.
Rev.
Date
Design file no.
Drawing code
Project no.
Contract no.
File name
Plot date
Plot scale 1" = 5'

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

POWNAL TANNERY LANDFILL CAP
NORTH POWNAL, VERMONT

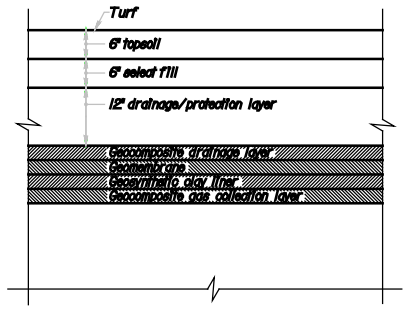
ACCESS RAMP AND DRAINAGE SWALE

Reference number:
C-9
Sheet 10 of 15



TYPICAL CAP SECTION SIDESLOPES OF LANDFILL

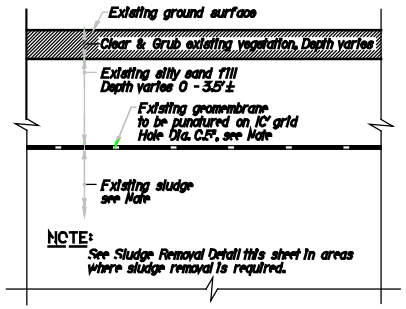
N.T.S.



NOTE: Drainage/protection layer varies at the toe of slope, see sections.

TYPICAL CAP SECTION TOP OF OF LANDFILL

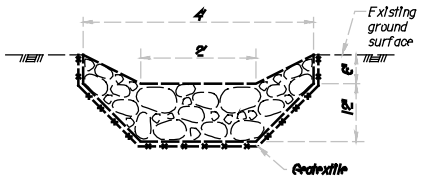
N.T.S.



NOTE:
See Sludge Removal Detail this sheet in areas where sludge removal is required.

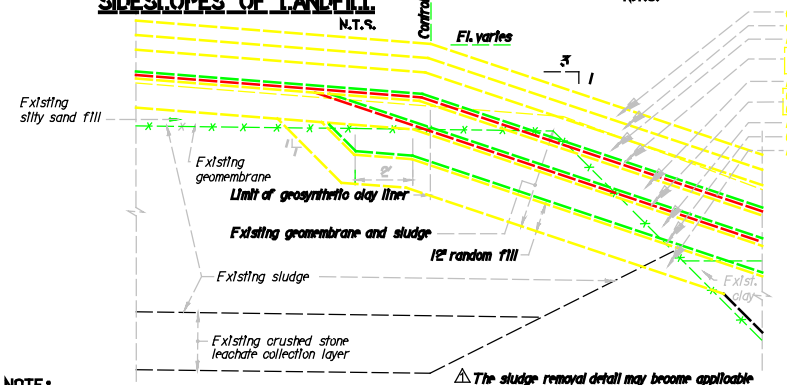
DETAIL PREPARATION OF EXISTING CAP TOP AND SIDESLOPES

N.T.S.



OUTLET PROTECTION DETAIL

SCALE: 1" = 1'

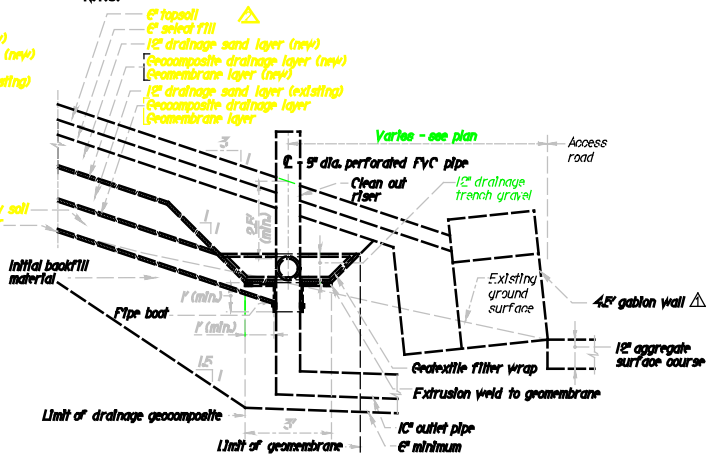


NOTE:
Removal of existing sludge is required in sideslope areas where the existing silty sand fill layer is less than 2' thick. Sludge removal is also required at the northeast corner of the cap where the existing 1½:2H slope is excavated to accommodate new 1½:2H slope. See Section D/C-2, Sheet C-9. Excavated sludge shall be placed in Cell #3.

⚠ The sludge removal detail may become applicable during gabion wall installation on the north end of the landfill to meet proposed grades.

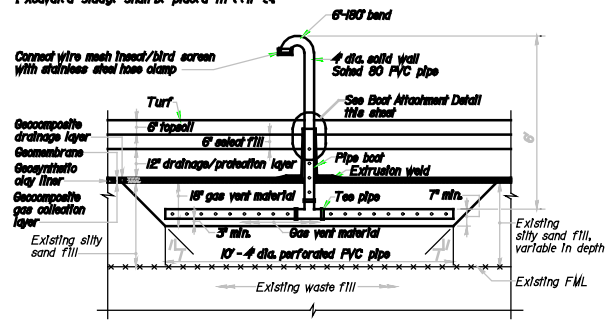
TYPICAL SLUDGE REMOVAL DETAIL

SCALE: 1" = 2'



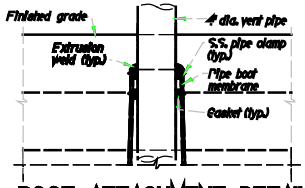
TOE DRAIN DETAIL

SCALE: 1" = 2'



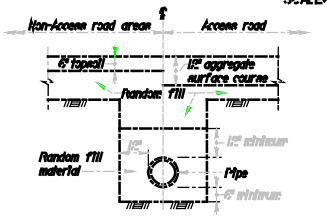
GAS VENT DETAIL

SCALE: 1" = 2'



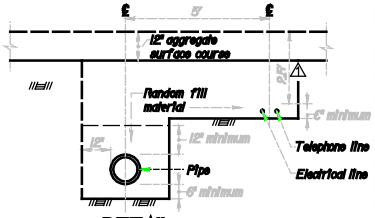
BOOT ATTACHMENT DETAIL

SCALE: 1" = 0.5'



DETAIL TOE DRAIN OUTLET TRENCH

SCALE: 1" = 2'



DETAIL LEACHATE HEADER AND TELEPHONE/ELECTRIC TRENCH

SCALE: 1" = 2'

GRAPHIC SCALES
1" = 1'
1" = 2'

US Army Corps of Engineers New England District

Pre-bid Revisions as of 3/14/2000
Pre-bid Addendum as of 10/27/2000

EDWINAL TANNERY LANDFILL CAP
NORTH EDWINAL, VERMONT

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

Reference number:
C-10
Sheet 11 of 15

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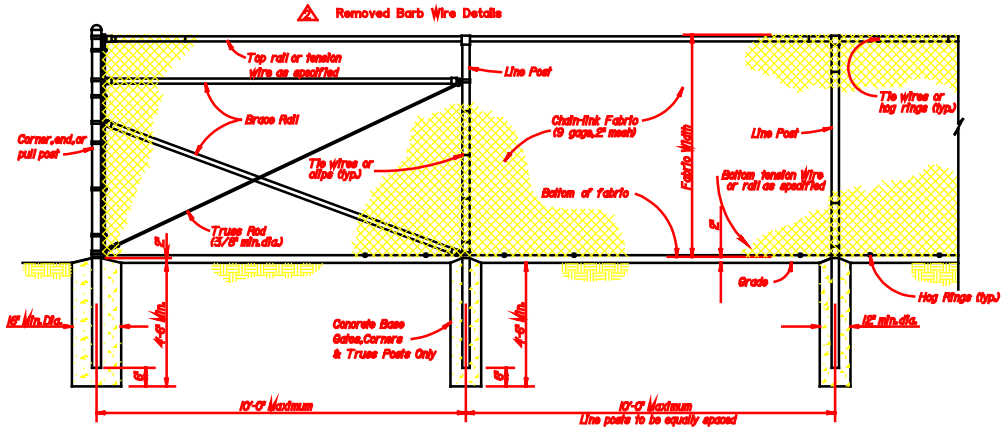
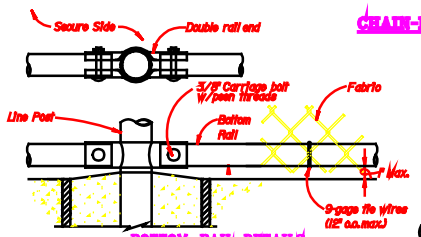


CHAIN-LINK SECURITY FENCE DETAIL

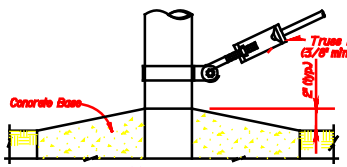
NO SCALE

STEEL POST SCHEDULE			
USE AND SECTION	MINIMUM OUTSIDE DIMENSIONS (NOMINAL)		
	FABRIC LESS THAN 72"	FABRIC 72" TO 96"	FABRIC OVER 96"
Corner, End & Pull Posts			
Tubular - Round	2.875" O.D.	2.875" O.D.	4.00" O.D.
Tubular - Square	2.00" sq.	2.50" sq.	3.00" sq.
d-Section (Roll-Formed)	2.50" x 2.50"	2.50" x 2.50"	——
Line Posts			
Tubular - Round	1.90" O.D.	2.375" O.D.	2.375" O.D.
H-Section	2.25" x 1.70"	2.25" x 1.70"	2.25" x 1.70"
d-Section (Roll-Formed)	1.875" x 1.625"	2.25" x 1.70"	——
Top, Bottom & Brace Rails			
Tubular - Round	1.66" O.D.		
Tubular - Square	1.50" O.D.		
H-Section	1.625" x 1.25"		
d-Section (Roll-Formed)	1.625" x 1.25"		

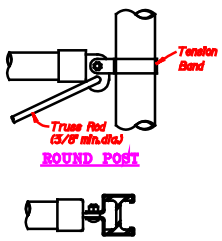


BOTTOM RAIL DETAILS

NO SCALE



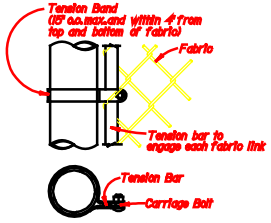
TRUSS ROD AND BAND



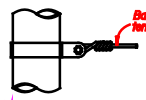
ROUND POST

H-BEAM

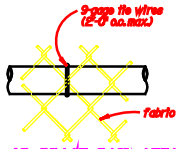
BRACE RAIL CLAMP DETAILS



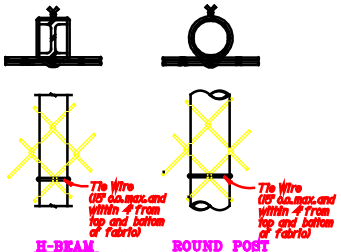
END OR GATE POST DETAIL



TENSION BAND DETAIL



TOP OR BRACE RAIL ATTACHEMENT

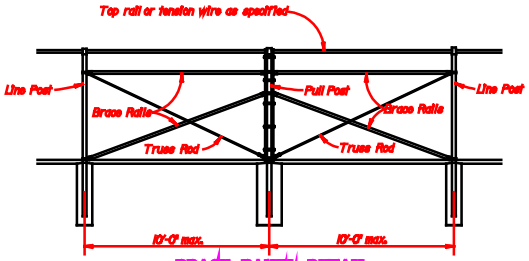


H-BEAM ROUND POST

LINE POST ATTACHMENTS

FASTENING DETAILS

NO SCALE



BRACE PANEL DETAIL

NO SCALE

NOTE:
Provide brace panel whenever straight run exceeds 800 feet.

NOTES:

1. Details shown are to clarify requirements and are not intended to limit other types of fence positions and methods of installation.
2. Bottom rail shall be attached to double rail end splicing, carriage bolts as shown. Additional bolts shall be added in manufacturer's standard double rail end to ensure that carriage bolts pass through the bottom rail as shown.
3. Wire ties, rails, posts, and braces shall be constructed on the secure side of the fence alignment. Chain-link fabric shall be placed on the opposite side of the secure area.
4. Unless specifically shown or specified, all FES fence shall have spans extended outward from the area being protected.
5. Concrete posts shall be installed so that the void inside the post is completely filled with concrete up to the top of the foundation.

FENCE LEGEND:

Type FES - Chain-link Fence Without barbed-wire spans
Type FES - Chain-link Fence w/barbed wire on single outrigger
Type FES - Chain-link Fence w/barbed wire on double outriggers
Type FES - Chain-link Fence w/barbed wire and barbed-tape on double outriggers

TW - Fence with top rail and tension wire at bottom
TRB - Fence with top and bottom rails
TTB - Tension wire top and bottom
TTRB - Fence with top,tension wire and bottom rail

Final number is fabric width in inches.

Examples:

FES-TB-72 - Chain-link security fence with barbed-wire on single outrigger, top rail, and 72 inch fabric width.

FES-TTB-48 - Chain-link security fence with no spans, top and bottom tension wire, and 48 inch fabric width.

SHEET ADAPTED FROM
CADD DRAWING PREPARED BY
U.S. ARMY ENGINEERS DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA
OCTOBER 1991

US Army Corps of Engineers New England District

Symbol	Description	Date	Appr.	Symbol	Description	Date	Appr.
1	Third-Party Review as of 10/27/2005	10/27/05	LJKL				

Designed by:	Date:	Rev.	
Drawn by: Stephen W. Kelley	Design file no. powfencexn.DGN		
Reviewed by:	Drafting order		
Submitted by:	Drawing no.		
Chief, Civil Engrg. Sect.	File name:		
	Plot scale: 1" = 2'		

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

POWNAL TANNERY LANDFILL CAP
NORTH POWNAL, VERMONT

FENCE DETAILS

Reference number:
C-11

Sheet 12 of 15

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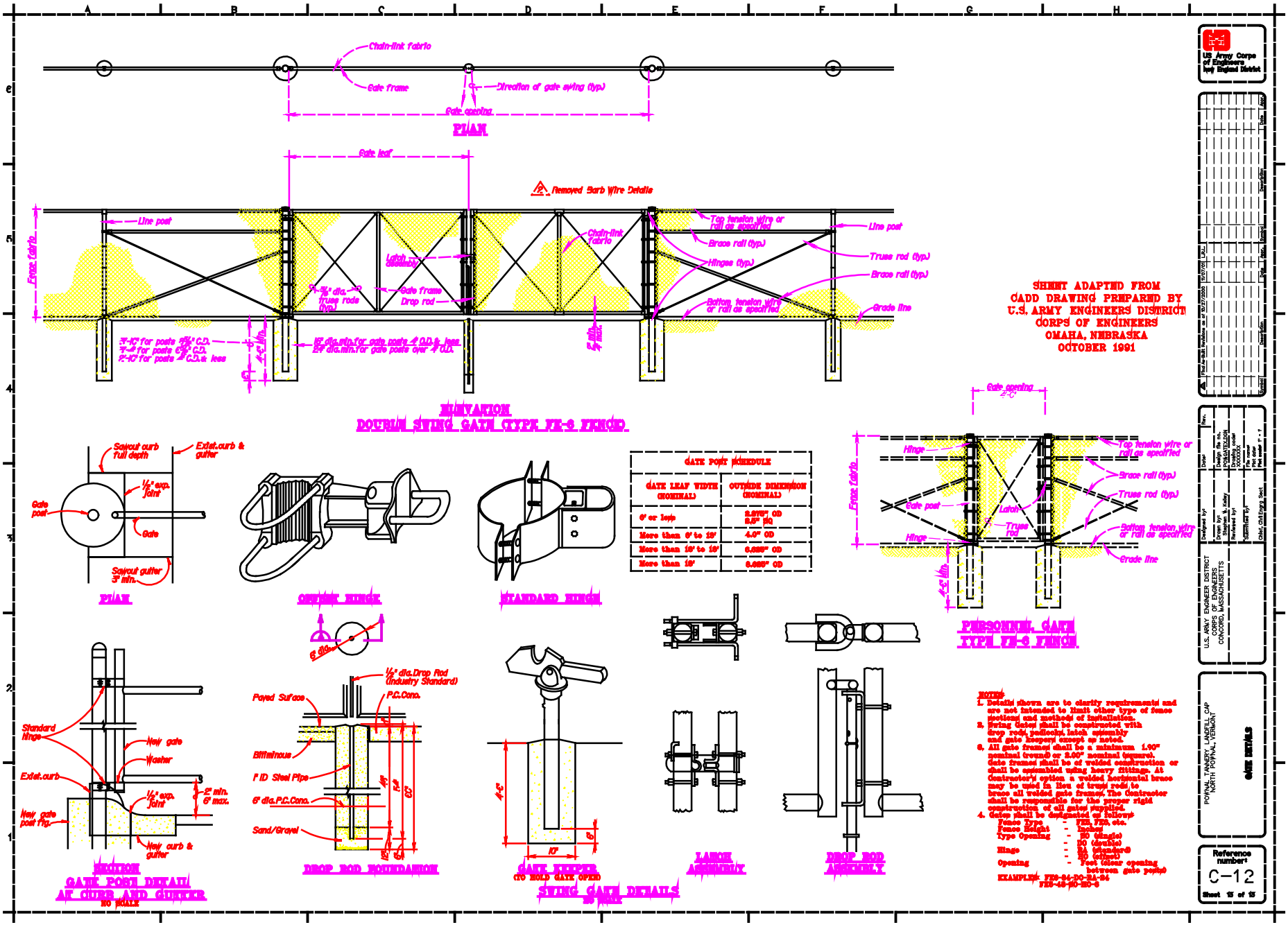

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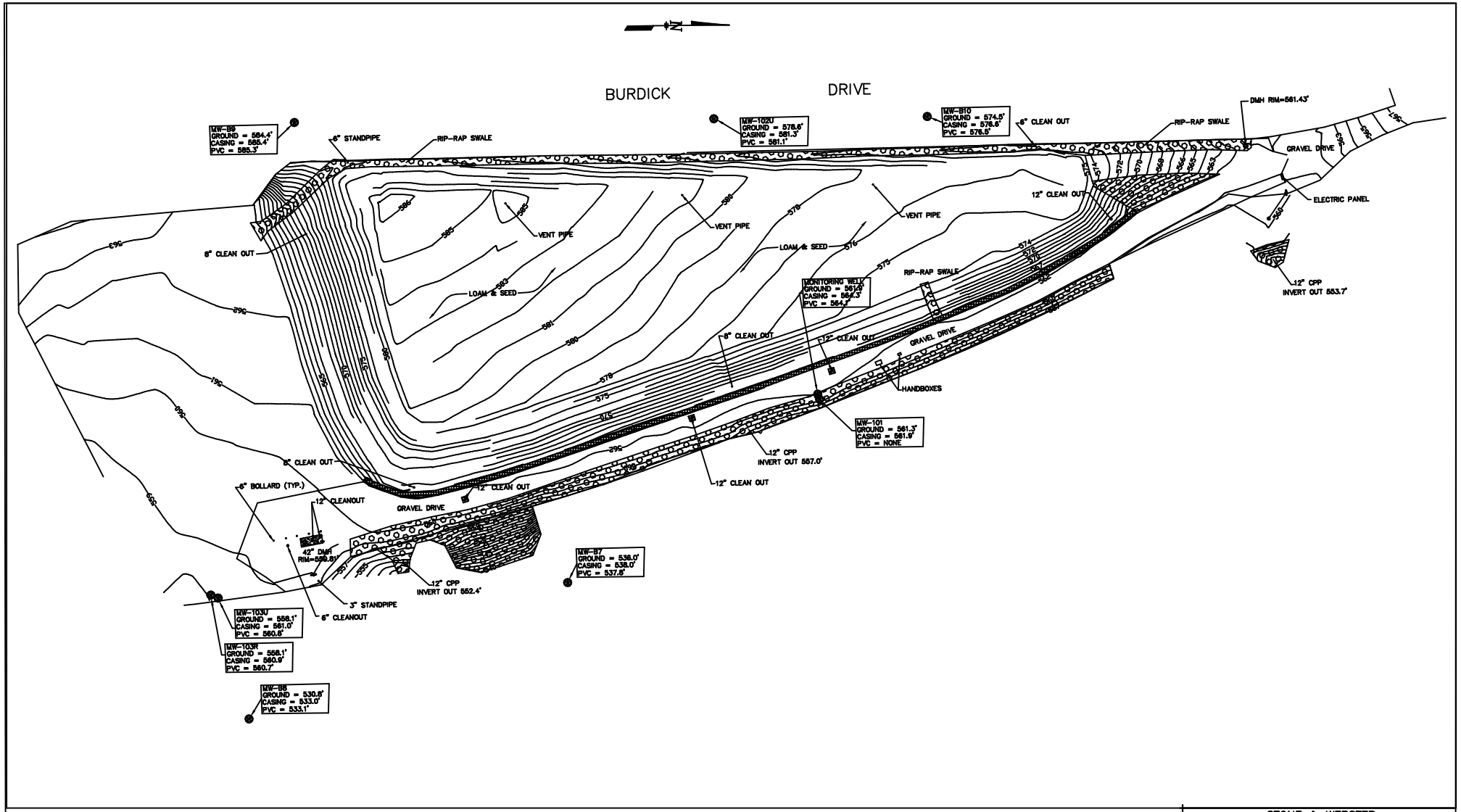


NOTES

1. AS-BUILT TOPOGRAPHIC SURVEY PERFORMED BY HILL-ENGINEERS, ARCHITECTS, PLANNERS, INC. ON NOVEMBER 14, 2000. ELEVATIONS AND TOPOGRAPHY BASED ON TOP OF FORMER MONITORING WELL CASING B-11, ELEVATION 564.36'. AS SHOWN ON SEA PLANTATIONS ENVIRONMENTAL SERVICES, LTD. PLAN ENTITLED "SLUDGE DISPOSAL SITE AS-BUILT PLAN" DATED JULY, 1982.

STONE & WEBSTER

NORTH POWNAL — VERMONT

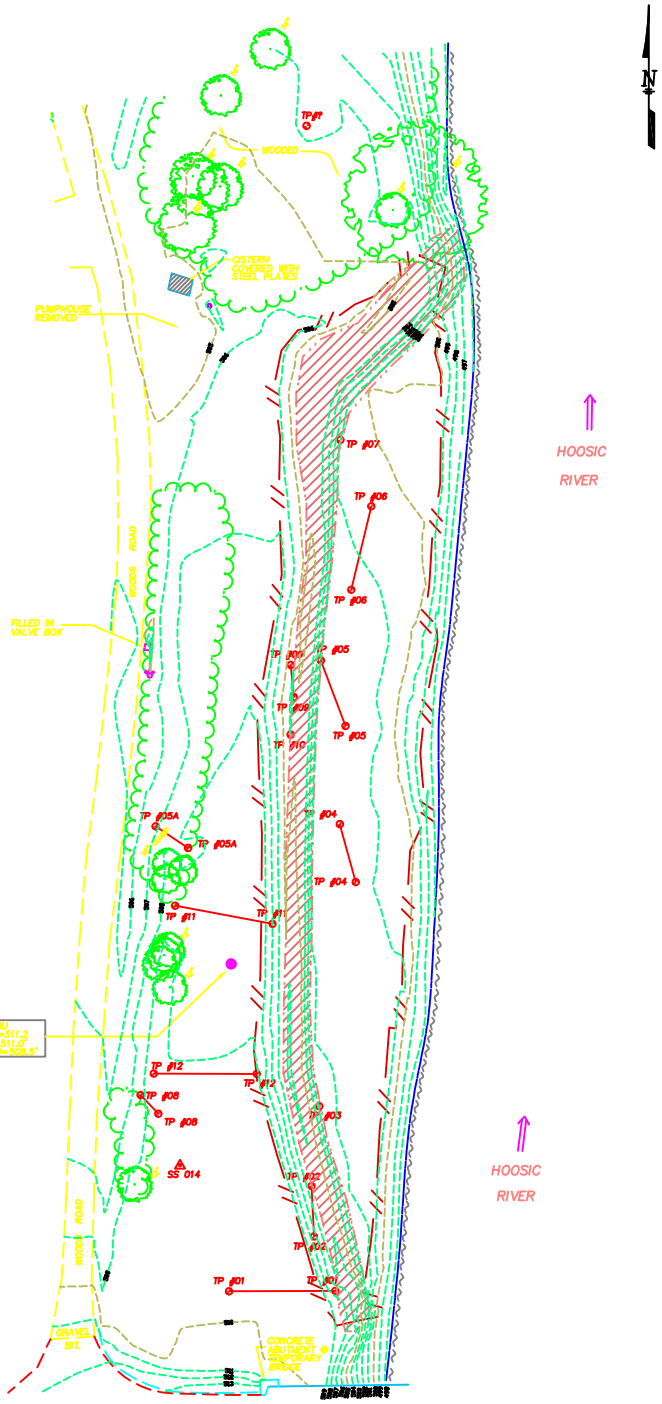
SCALE 1"=60'	REV.	DESCRIPTION	DRW.	CHK.	DATE
DATE 11-13-00					
DRWN. JM CHK.	B	MONITORING WELL INFO	KTP		12/18/00
APVD.	A	CULVERT LOCATION & WELL INFO	KTP		12/11/00
COMP. CODE	BOOK NO.	CAD CODE SRV-376-3AB.DWG			

TITLE POWNAL TANNERY LANDFILL SITE PLAN & FINAL CONTOURS

NO. SRV-376-3AB — REV. B

LEGEND

- IRON PIN FOUND
- MONITORING WELL
- WATER SHUTOFF
- EDGE OF TRAVELED WAY
- EDGE OF EXCAVATION
- TEST PITS
- GUARD RAILS
- EDGE OF WATER
- EDGE OF BRUSH/TREELINE
- DECIDUOUS TREE
- RIPRAP



TEMPORARY ROAD AND BRIDGE AT DEPOT ROAD

NOTES:

1. AS-BUILT TOPOGRAPHIC MEASUREMENTS MADE BY HILL-ENGINEERS, ARCHITECTS, PLANNERS, INC. ON DECEMBER 11, 2000
2. ELEVATIONS SHOWN HEREON ARE BASED UPON AN ALUMINUM DISK, ELEVATION = 521.18', NGVD29 LOCATED ALONG RAILROAD RIGHT-OF-WAY, APPROXIMATELY 62' FEET SOUTHERLY OF THE MAIN ROAD INTO THE POWNAL TANNERY SITE.
3. APPROXIMATELY 16,640 SQ. FT. OF GEO-FABRIC PLACED OVER EXCAVATED AREA, THEN SEEDED AND REVEGETATED.
4. EXCAVATED VOLUME = 2,450 CY
5. RIPRAP VOLUME = 224 CY @ TOE OF EXCAVATION.

STONE & WEBSTER

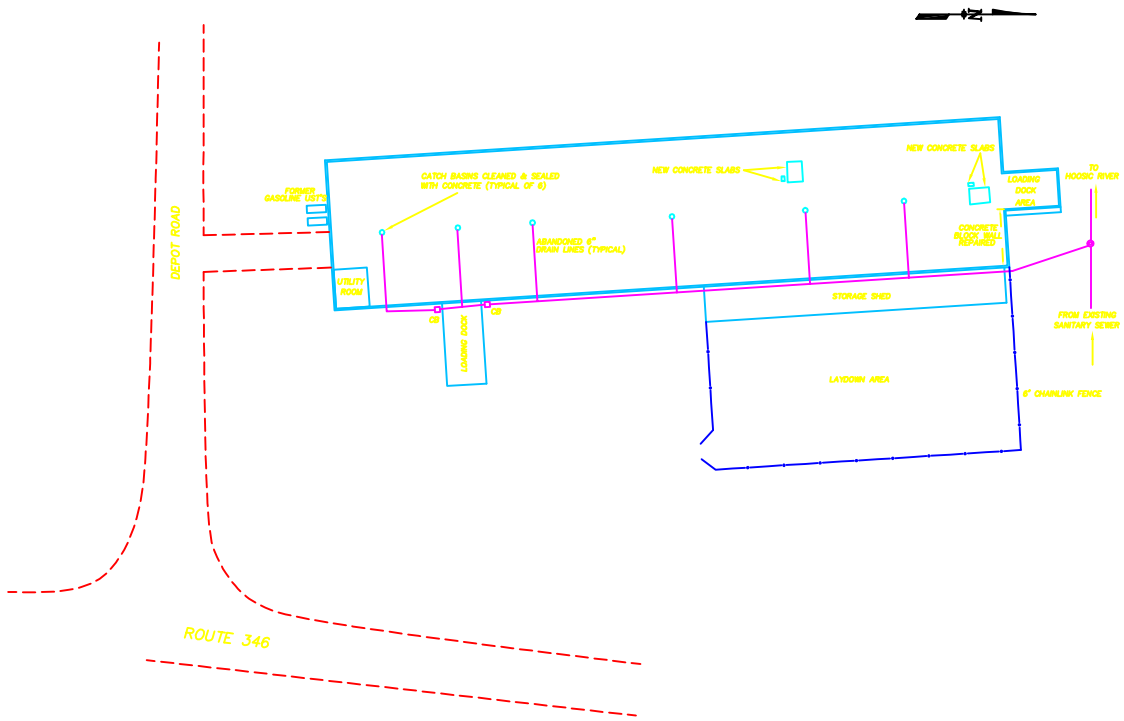
POWNAL TANNERY SITE — POWNAL, VERMONT

SCALE 1"=40'	REV.	DESCRIPTION	DRN	CHK	DATE
DATE 12-12-00					
DRN. JM	B	RIPRAP LIMITS	KTP		1/30/01
	A	LABELING CHANGES	KTP		1/9/01

DWG. NAME SRV-376-5AB.DWG

TITLE: POWNAL TANNERY WOODS ROAD DISPOSAL AREA SOIL REMOVAL & SITE RESTORATION

DWG. NO. SRV-376-5AB



STONE & WEBSTER

POWNAL WAREHOUSE SITE

POWNAL, VERMONT

SCALE 1"=5'	REV.	DESCRIPTION	DR'N	CK'N	DATE
DATE 1-16-01					
DR'N. JM CK'D.					
AP'VD.					

COMP. CODE	BOOK NO.	CAD CODE SRV376-5W.H.DWG

TITLE	NO.	REV.
POWNAL TANNERY WAREHOUSE LAYOUT	SRV-376-5WH	