

WHEELER DRAIN

GRANT AND ASHLAND TOWNSHIPS NEWAYGO COUNTY, MICHIGAN

CYNTHIA J. HUNT NEWAYGO COUNTY DRAIN COMMISSIONER 1996

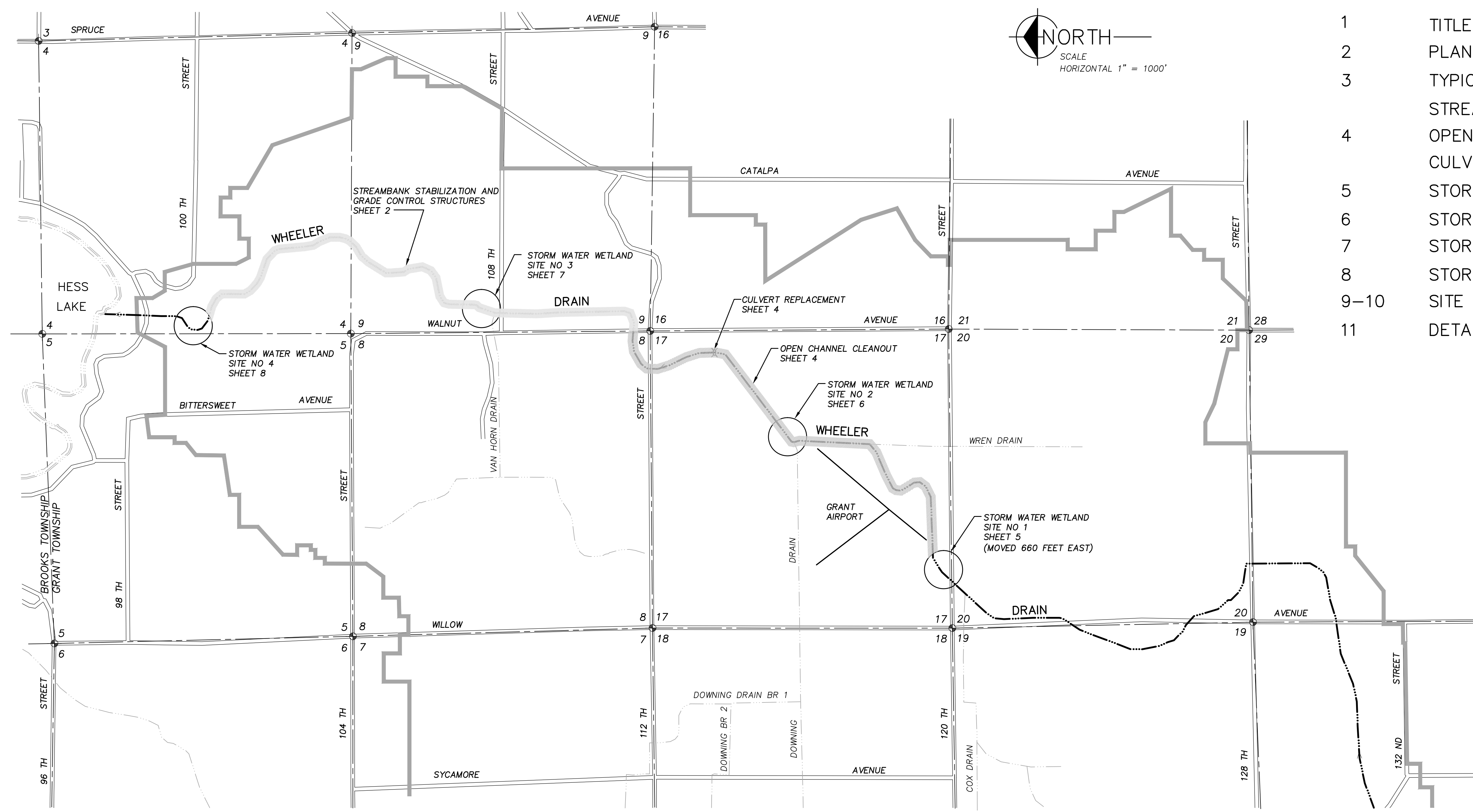


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			JEB	CES	CES	8/12/96

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SHEET INDEX

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3	TYPICAL CHANNEL SECTION FOR STREAMBANK STABILIZATION
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RECORD DRAWINGS
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LEGEND
 DRAINAGE DISTRICT BOUNDARY
 OPEN DRAIN

NOTE: DRAINAGE DISTRICT BOUNDARY LINES ARE REPRODUCED FROM 1984 DISTRICT MAP BY JOINER ENGINEERING.

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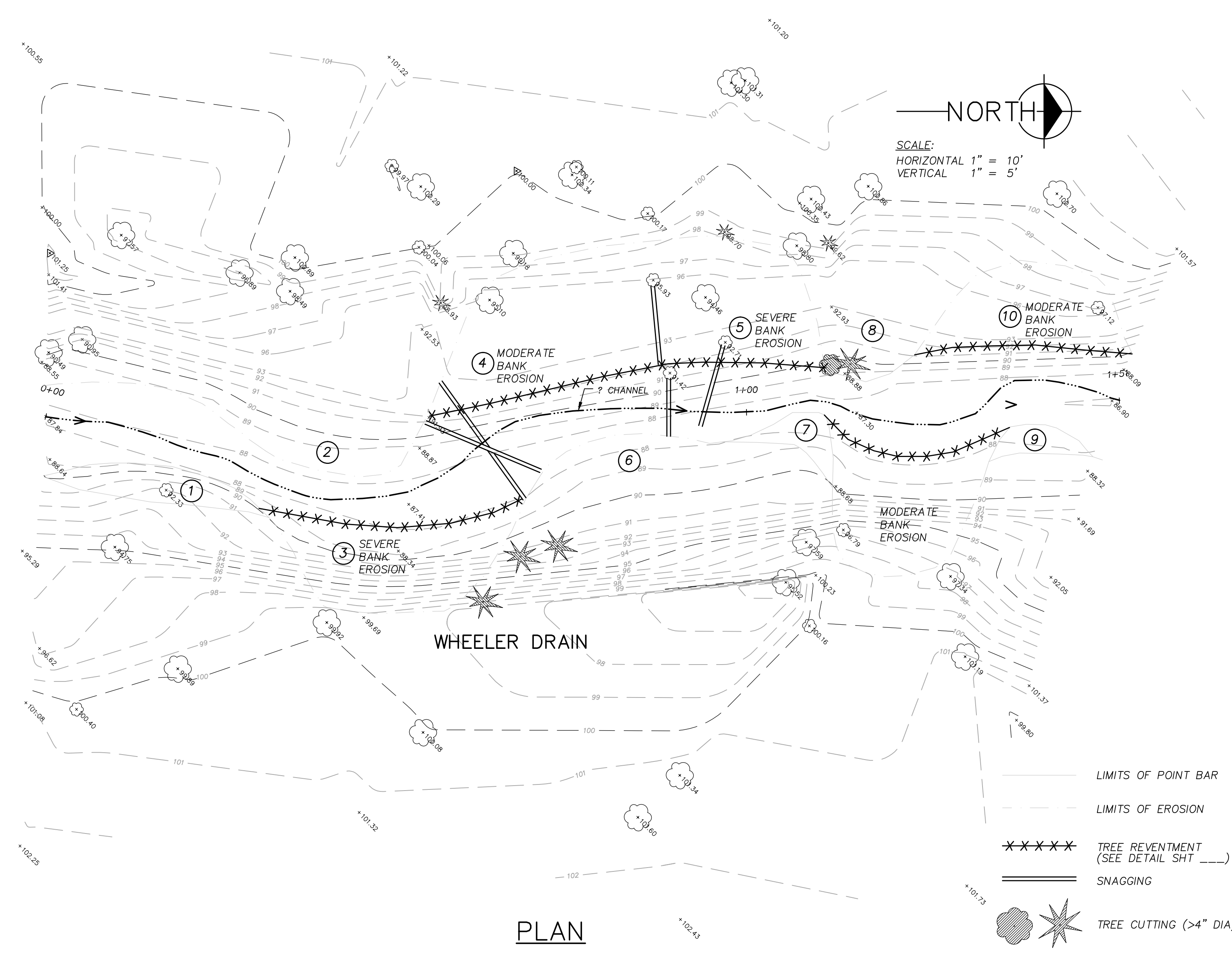
NEWAYGO COUNTY DRAIN COMMISSIONER
GRANT AND ASHLAND TOWNSHIPS

WHEELER DRAIN

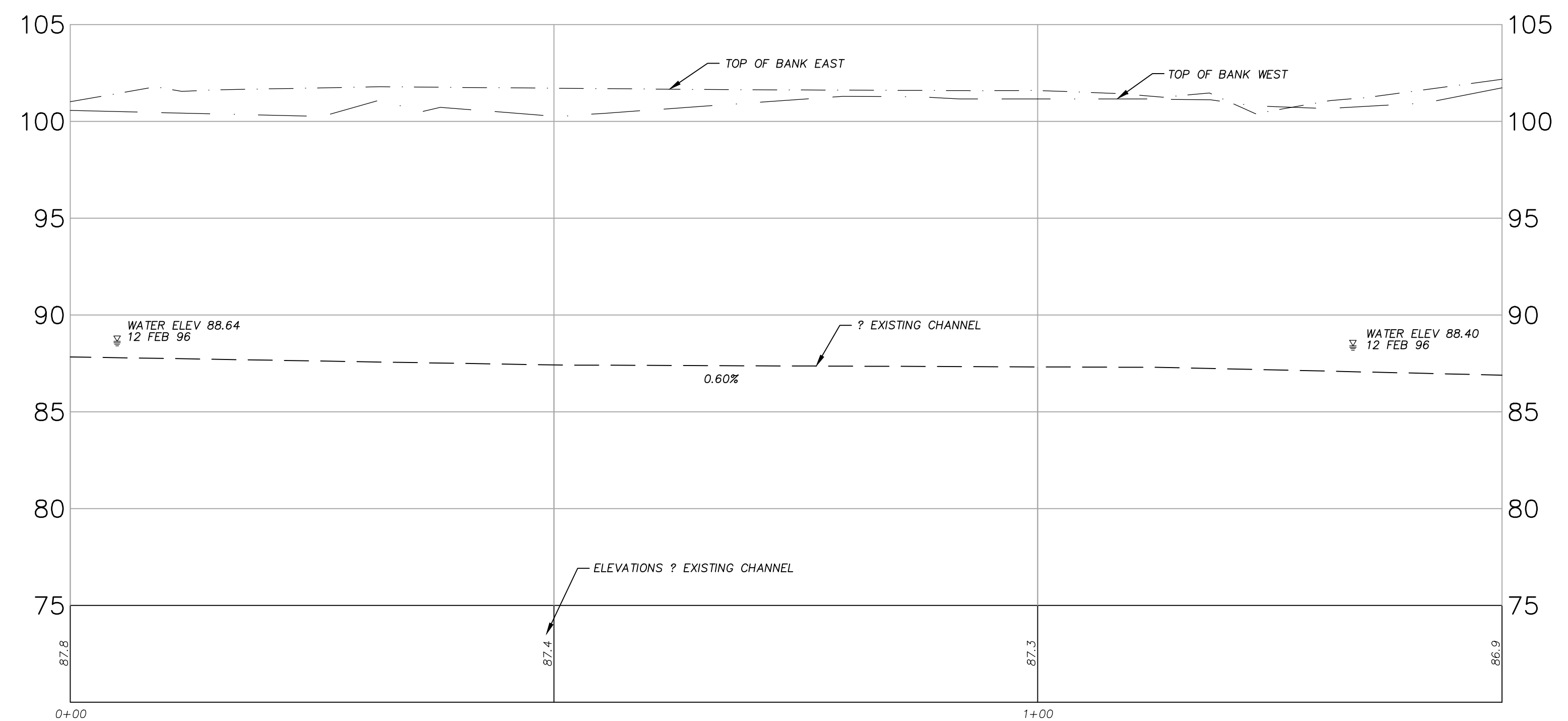
PROJECT NO.
F95330AD
SHEET NO.
1

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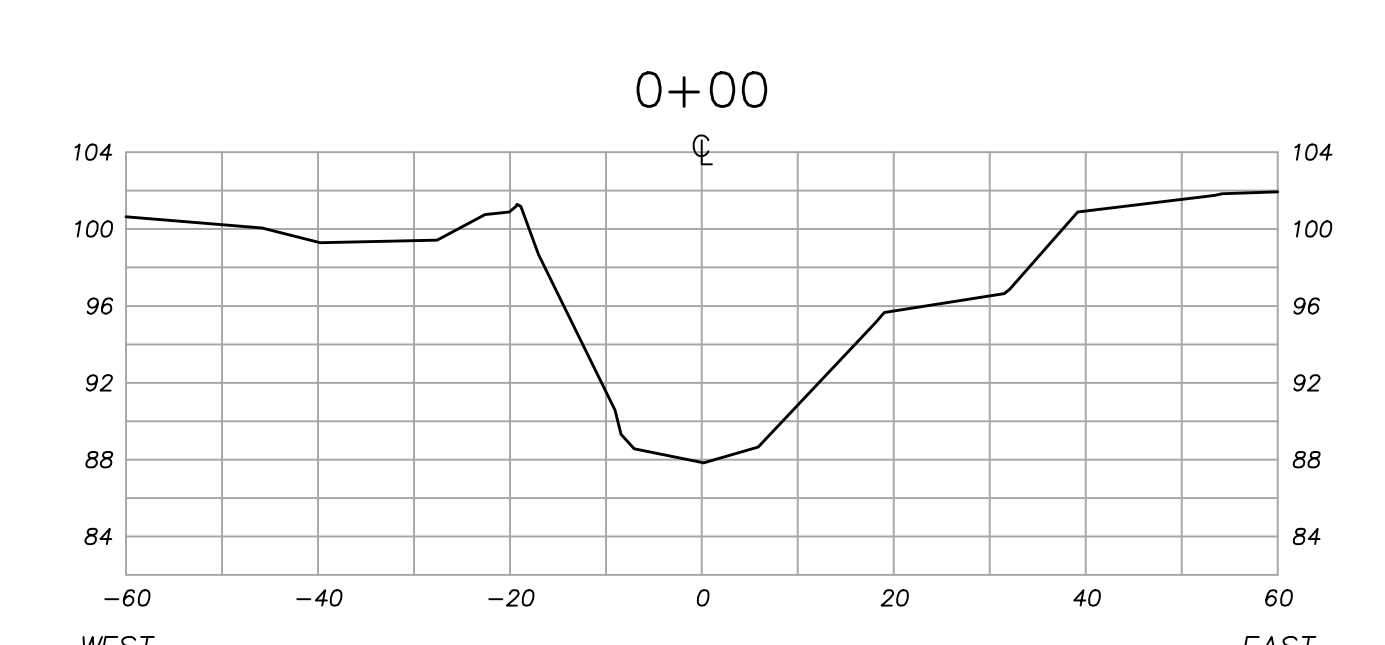
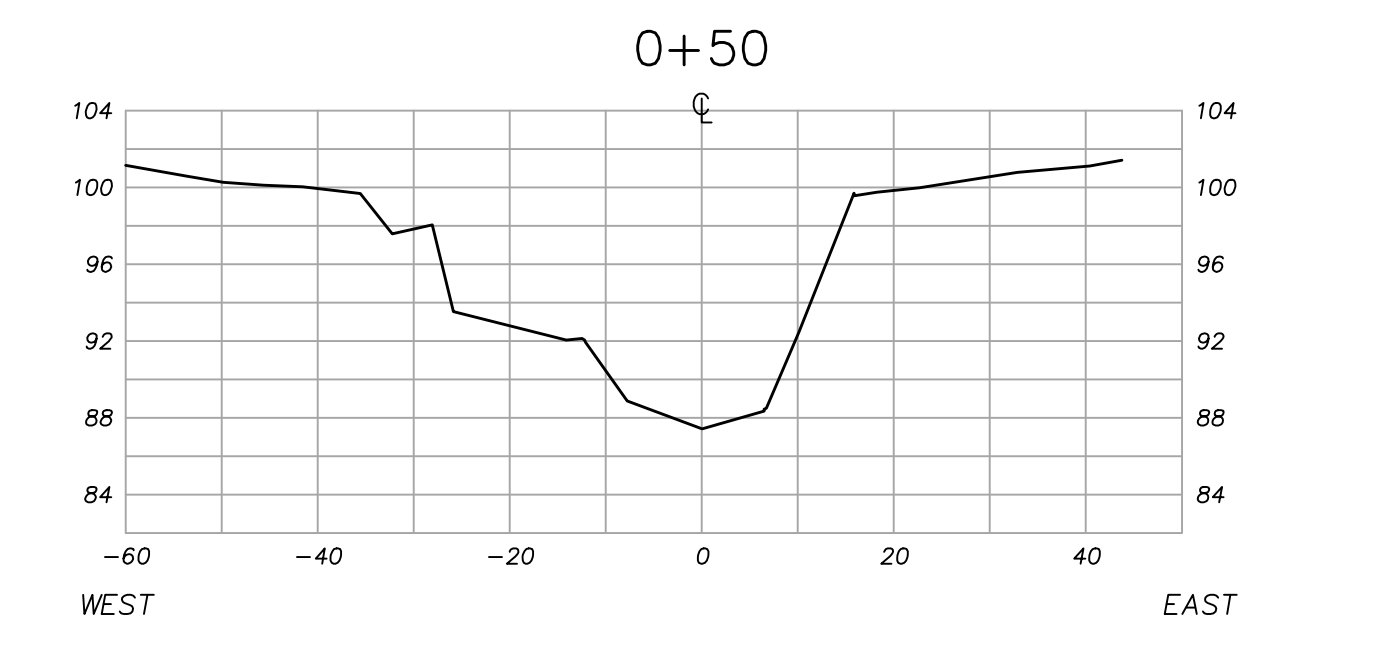
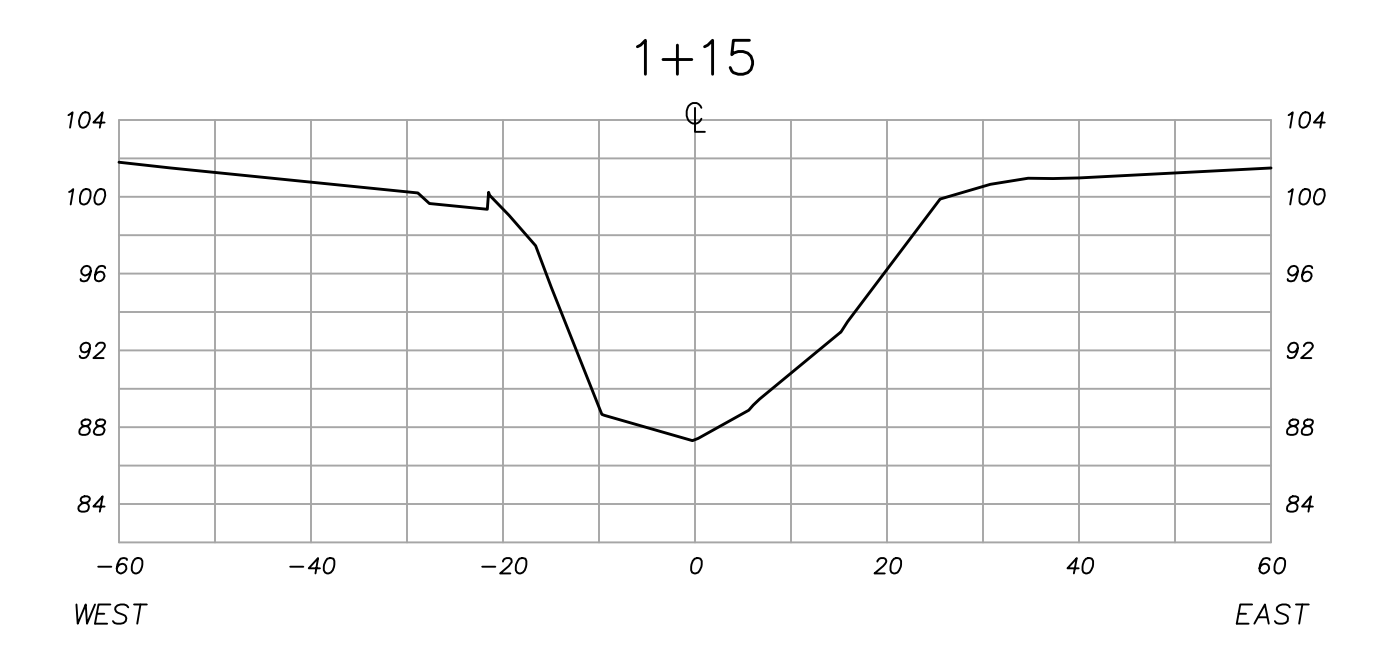
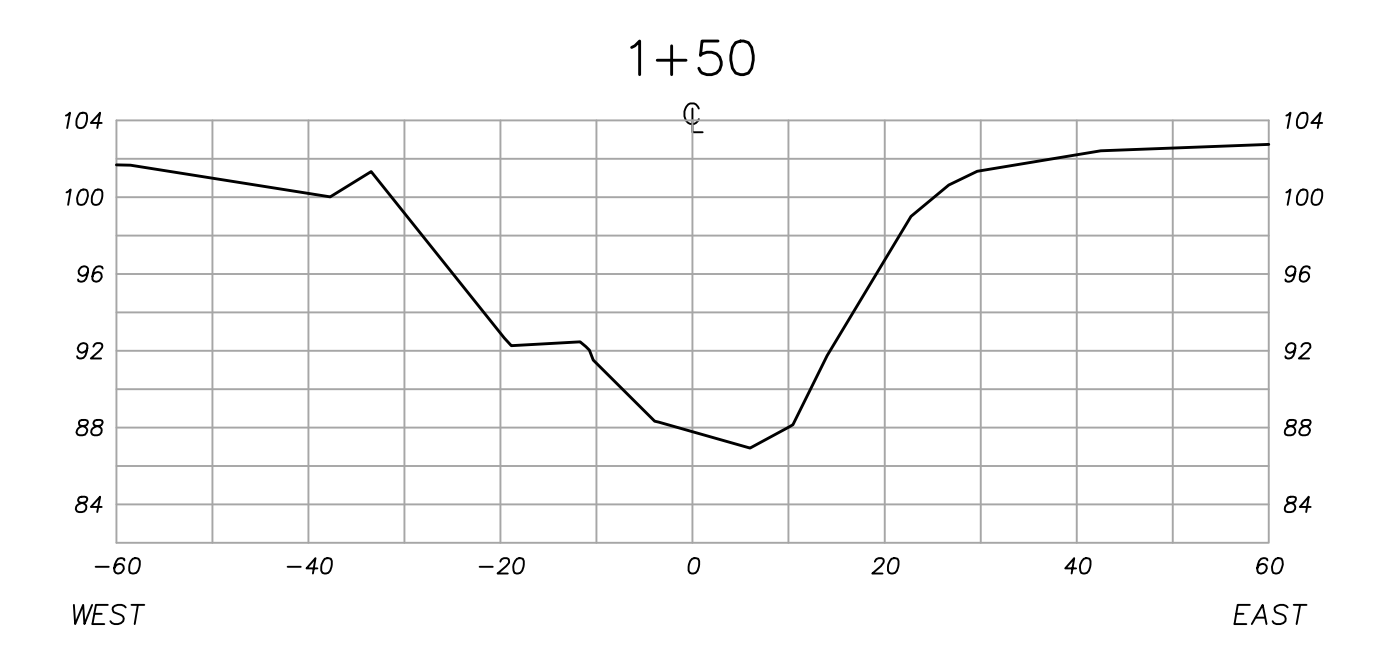
NOTE: PERMANENT EASEMENT WIDTH IS 150 FEET, 75 FEET EACH SIDE OF CHANNEL CENTERLINE.
EXISTING CONTOURS ARE APPROXIMATE.



PROFILE

PHOTOGRARHS

CHANNEL CROSS SECTIONS
TYPICAL CHANNEL SECTION
FOR STREAMBANK STABILIZATION



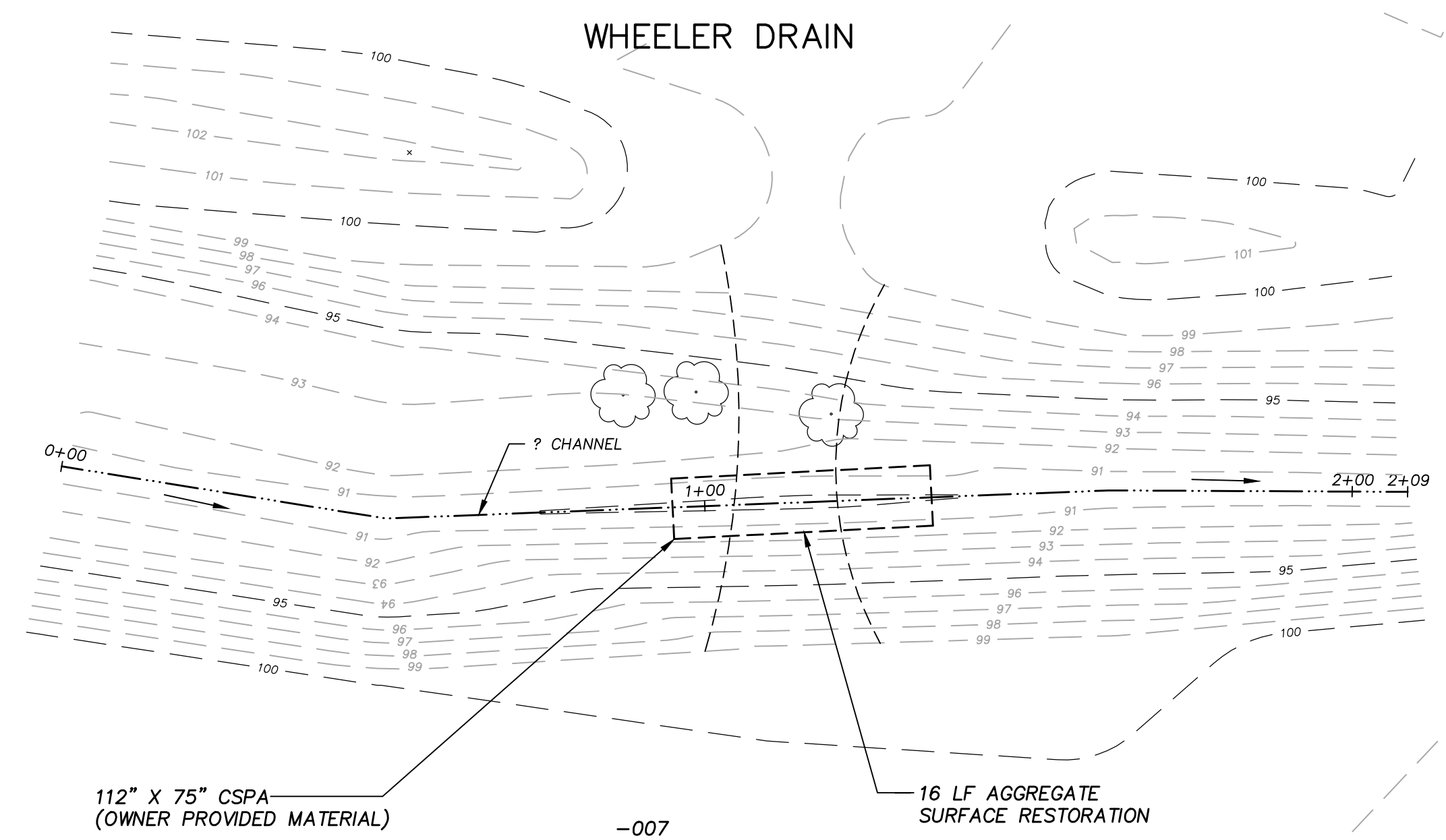
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GRANT AND ASHLAND TOWNSHIPS

PROJECT NO.
F95330AD
SHEET NO.
3

DM PROJECT: 95330AD PATH: DR: S330A03.DWG DATE: 04/15/96 TIME: 3:26 pm USER: JEB
M:\PROJECTS\95330AD\DRAWINGS\95330AD.DWG
N:\PROJECTS\95330AD\DRAWINGS\95330AD.DWG
N:\PROJECTS\95330AD\DRAWINGS\95330AD.DWG

BENCHMARK ELEV 103.62
? 1' X 5' CONCRETE SLAB, 2' E
OF SW CORNER OF BUILDING



NORTH

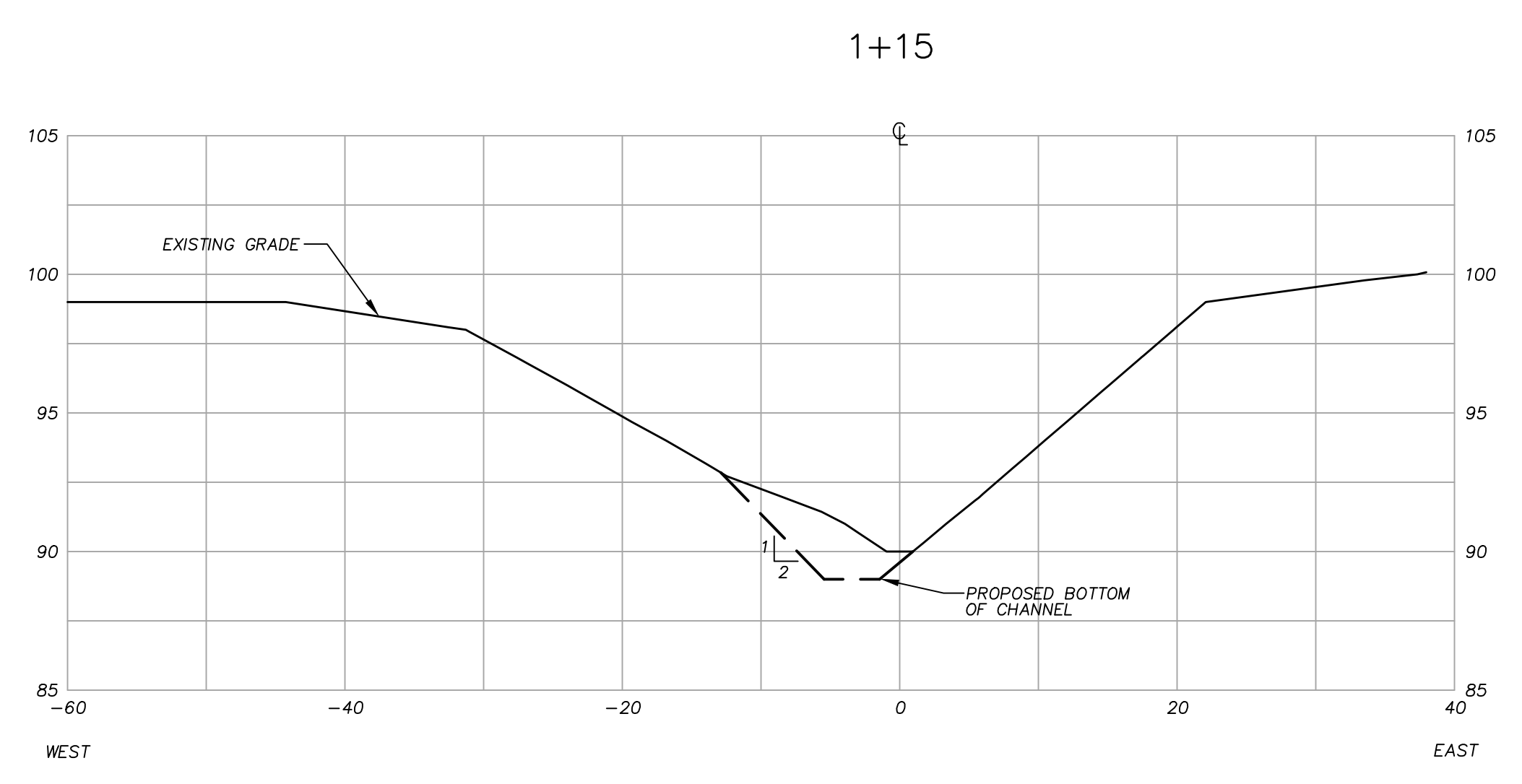
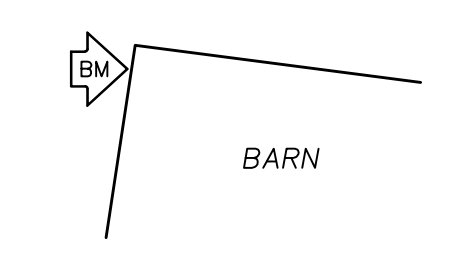
SCALE:
HORIZONTAL 1" = 20'
VERTICAL 1" = 5'

PLAN

- (6/P) SEED, FERTILIZE AND MULCH ALL DISTURBED AREAS.
- (13/P) 4 EA RIPRAP SIDE INLETS AS NECESSARY FOR OPEN CHANNEL CLEANOUT AT LOCATIONS APPROVED BY ENGINEER.

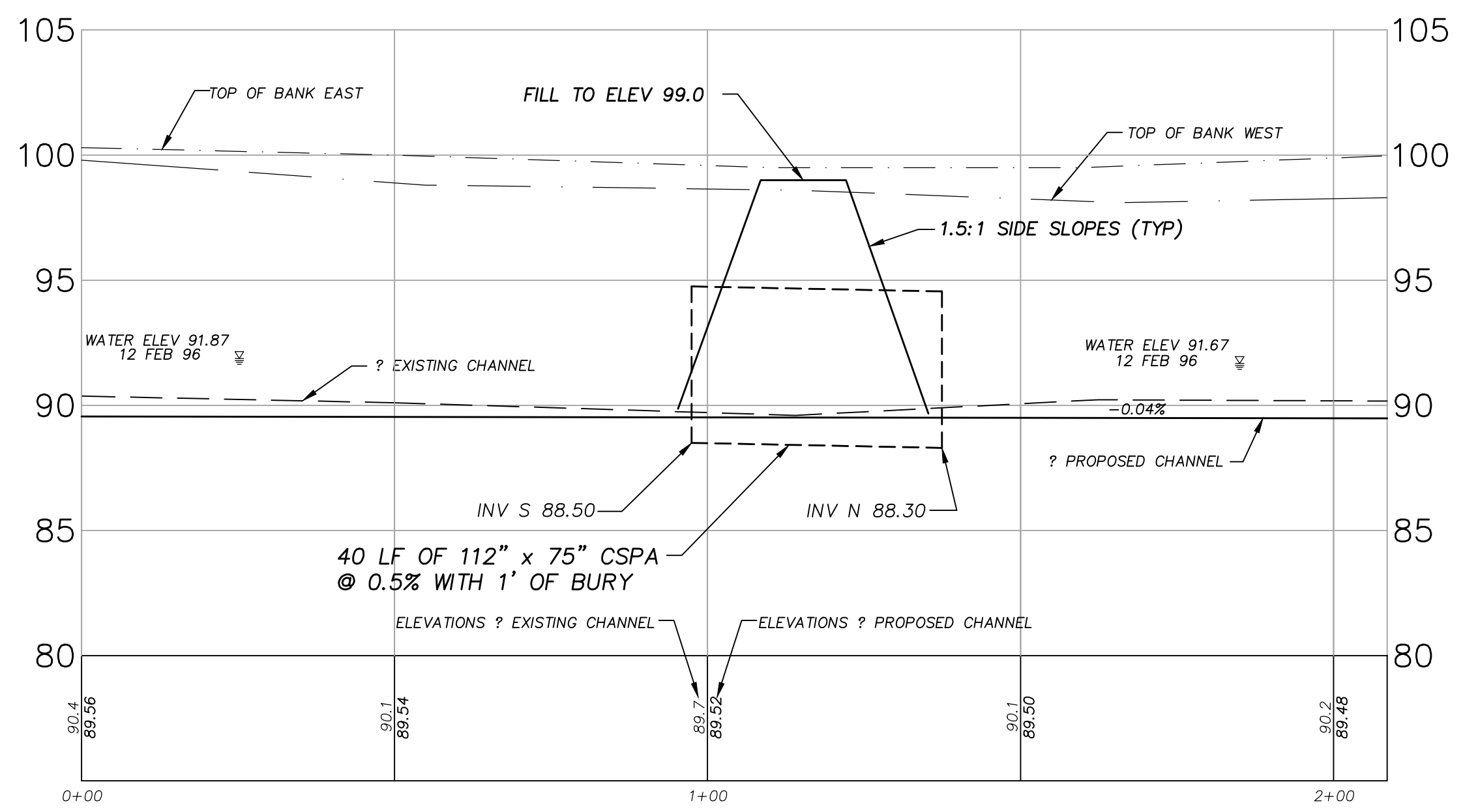
DESCRIPTION OF OPEN CHANNEL CLEANOUT WORK

LOCATION: 120 TH STREET TO WALNUT AVENUE
SCOPE: CLEANOUT CHANNEL BOTTOM WITH MINIMAL DISTURBANCE TO CHANNEL SIDE SLOPES
100' SEDIMENT BASIN AT DOWNSTREAM LIMITS
GRADE: ELEVATION 801.35 AT 120 TH STREET
ELEVATION 797.64 AT WALNUT AVENUE
0.04 PERCENT GRADE



SCALE:
HORIZONTAL 1" = 10'
VERTICAL 1" = 5'

TYPICAL CROSS SECTION



PROFILE

RIPRAP SIDE INLETS

1. SOUTH OF 112TH STREET - 32 SY RIPRAP
2. 300 FEET SOUTH OF CULVERT REPLACEMENT - 45 SY RIPRAP
3. 660 FEET SOUTH OF CULVERT REPLACEMENT - 33 SY RIPRAP
4. 300 FEET NORTH OF STORMWATER WETLAND SITE NO. 1 - 39 SY RIPRAP

RECORD DRAWINGS

CONSTRUCTED BY: OPPIE & SONS EXCAVATING, INC.
INSPECTED BY: FTC&H
DATE: 8/18/97

OPEN CHANNEL CLEANOUT AND CULVERT REPLACEMENT

NO.	REVISIONS	DATE	Drawn By	Managed By	Designed By	Date
			JEB	CE5		
	REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS	8/18/97				
	ISSUED FOR BIDS AND CONSTRUCTION	8/17/98				
			M.L.W			
						8/12/98

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DRAWING INFO: 95330AD, UPR, 03/31/2004, DATE: 08/08/97, TIME: 11:24 am, USER: KLC

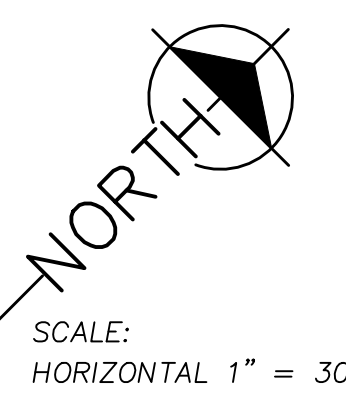
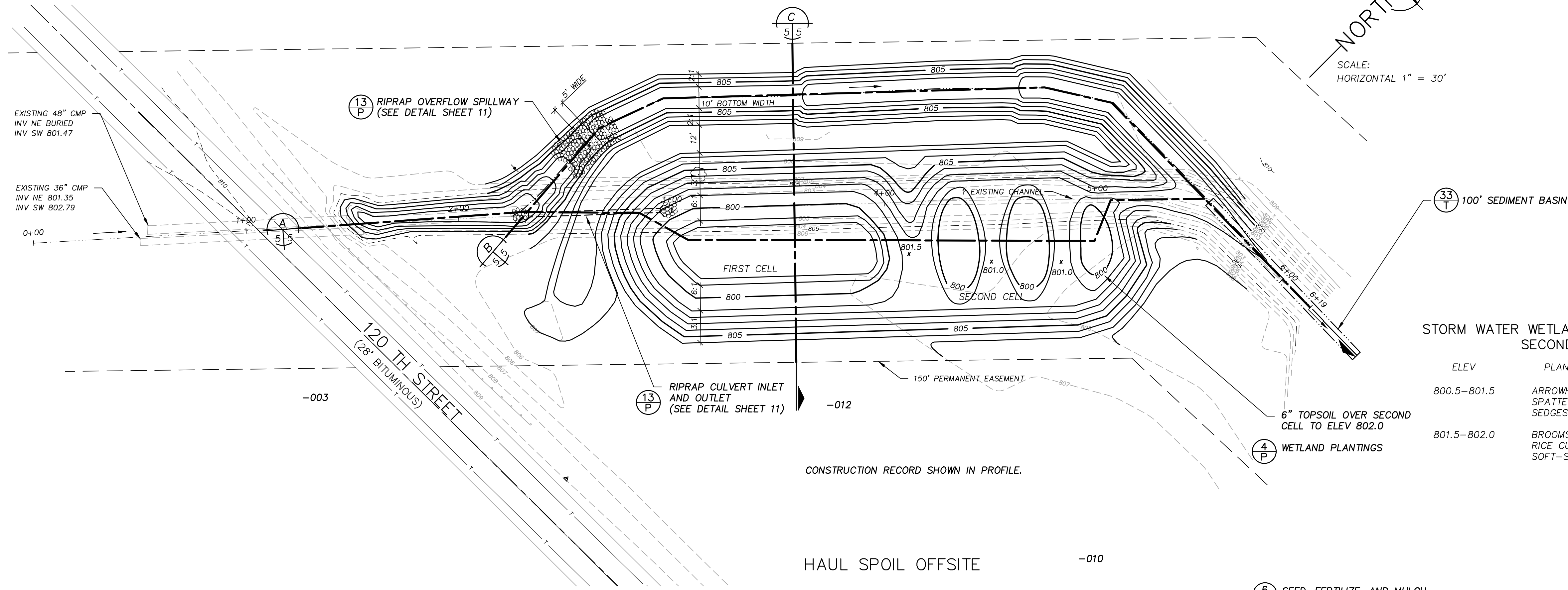
M:\AD012\TOWNSHIPS\MISSING M:\ACAD\2\FICH\COMBOLD\BALOCK
N:\95330AD\UPR\95330AD00
N:\95330AD\UPR\95330AD01
N:\95330AD\UPR\95330AD02

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	CES	
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	8/18/97	
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	BY	
	CES	
	8/12/98	
	DATE	
	8/12/98	
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SITE MOVED 660 FEET EAST

BENCHMARK 1
RR SPIKE IN POWER POLE AT THE SE CORNER OF
120 TH AND WILLOW
ELEV 814.69

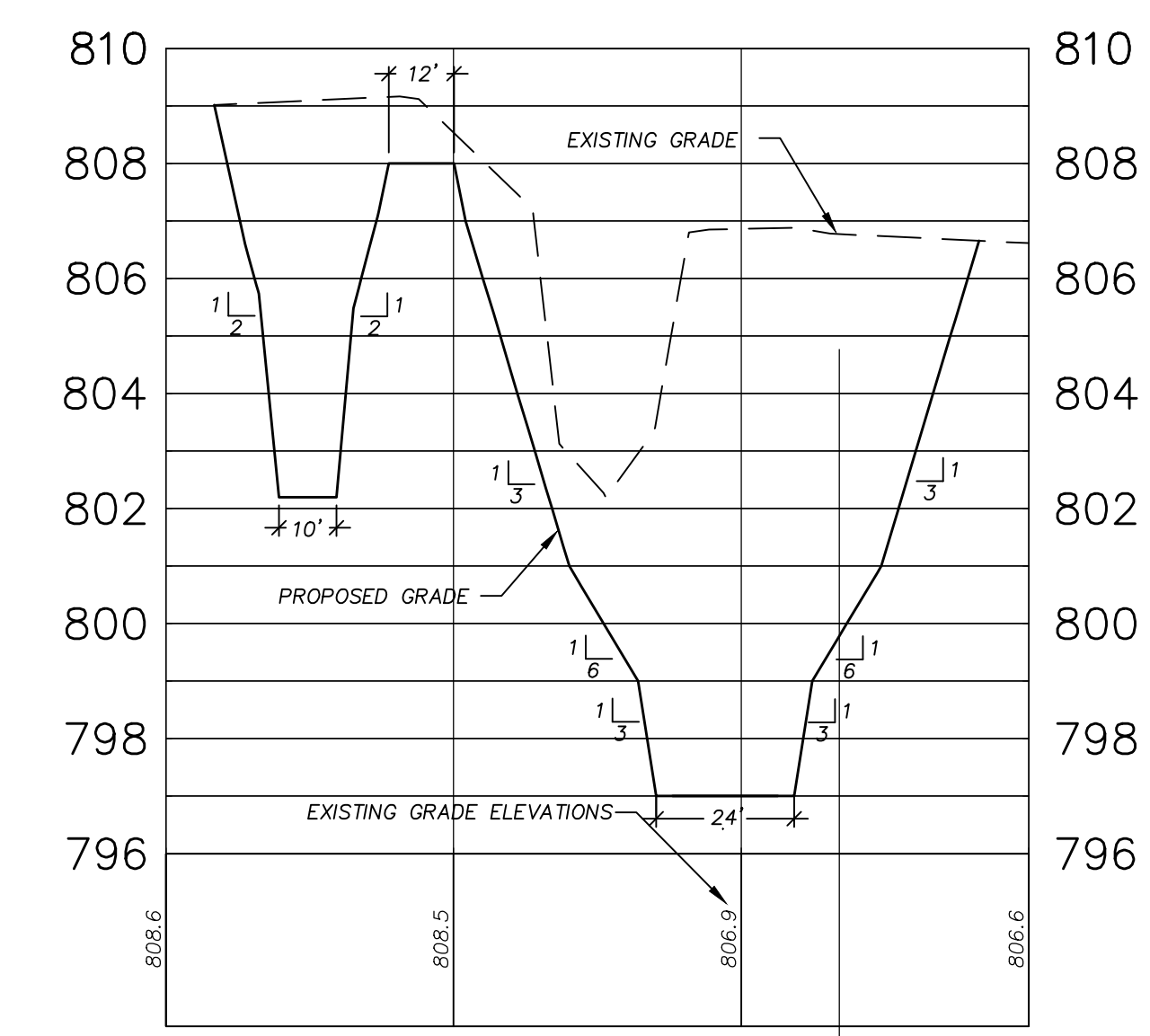
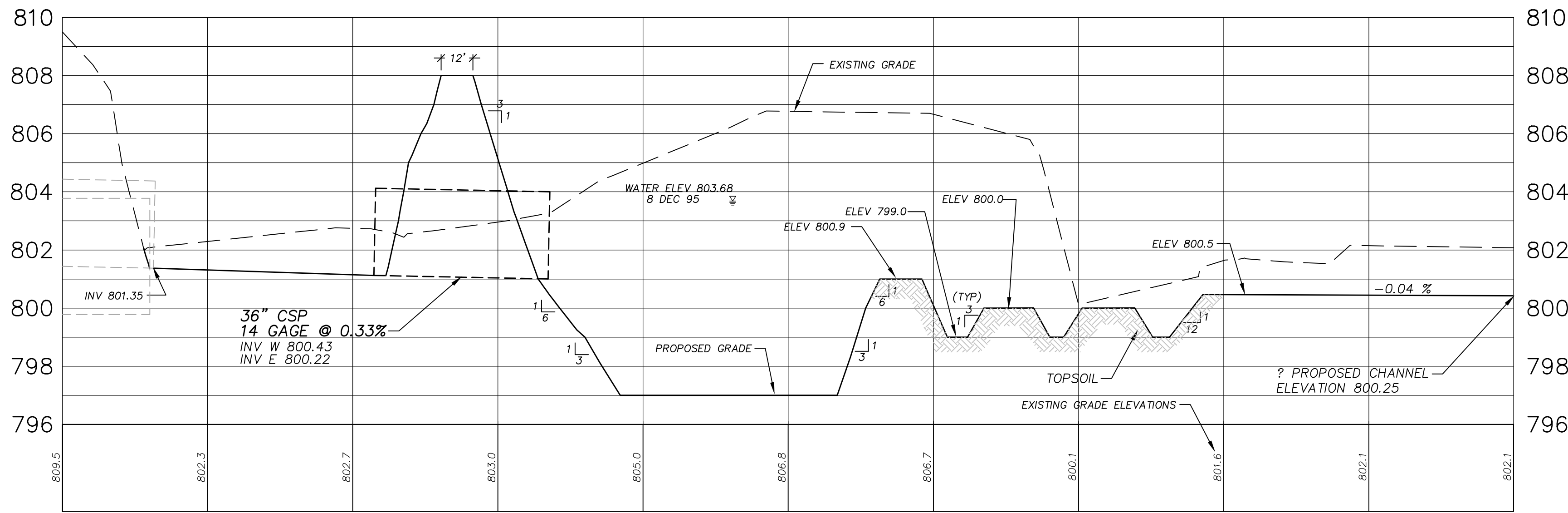


SCALE:
HORIZONTAL 1" = 30'

**STORM WATER WETLAND PLANTING ZONES
SECOND CELL**

ELEV	PLANTS	QUANTITY
800.5-801.5	ARROWHEAD SPATTERDOCK SEDGES	70 50 40
801.5-802.0	BROOMSEDGE RICE CUTGRASS SOFT-STEM BULRUSH	35 100 75

6 P SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS



RECORD DRAWINGS
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DATE: 8/18/97

STORM WATER WETLAND SITE NO 1

DRAWING INFO: 955330AD, UPR, 5330A205 DATE: 08/06/97 TIME: 11:22 am USER: RLC
M:\ADP\17\0\1\5\WB\05\MISSIG N:\955330AD\CA\SITE\KSLING
M:\ADP\17\0\1\5\WB\05\MISSIG N:\955330AD\CA\SITE\KSLING
M:\ADP\17\0\1\5\WB\05\MISSIG N:\955330AD\CA\SITE\KSLING

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WHEELER DRAIN

PROJECT NO
F95330AD

SHEET NO.
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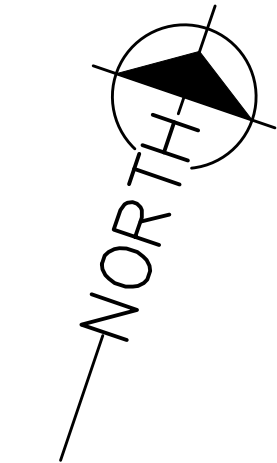
BENCHMARK 1B
LAG BOLT IN SW FACE OF 6" CHERRY BETWEEN DRAIN AND
RUNWAY NEAR THE N/S 1/4 SEC. LINE

ELEV 813.41

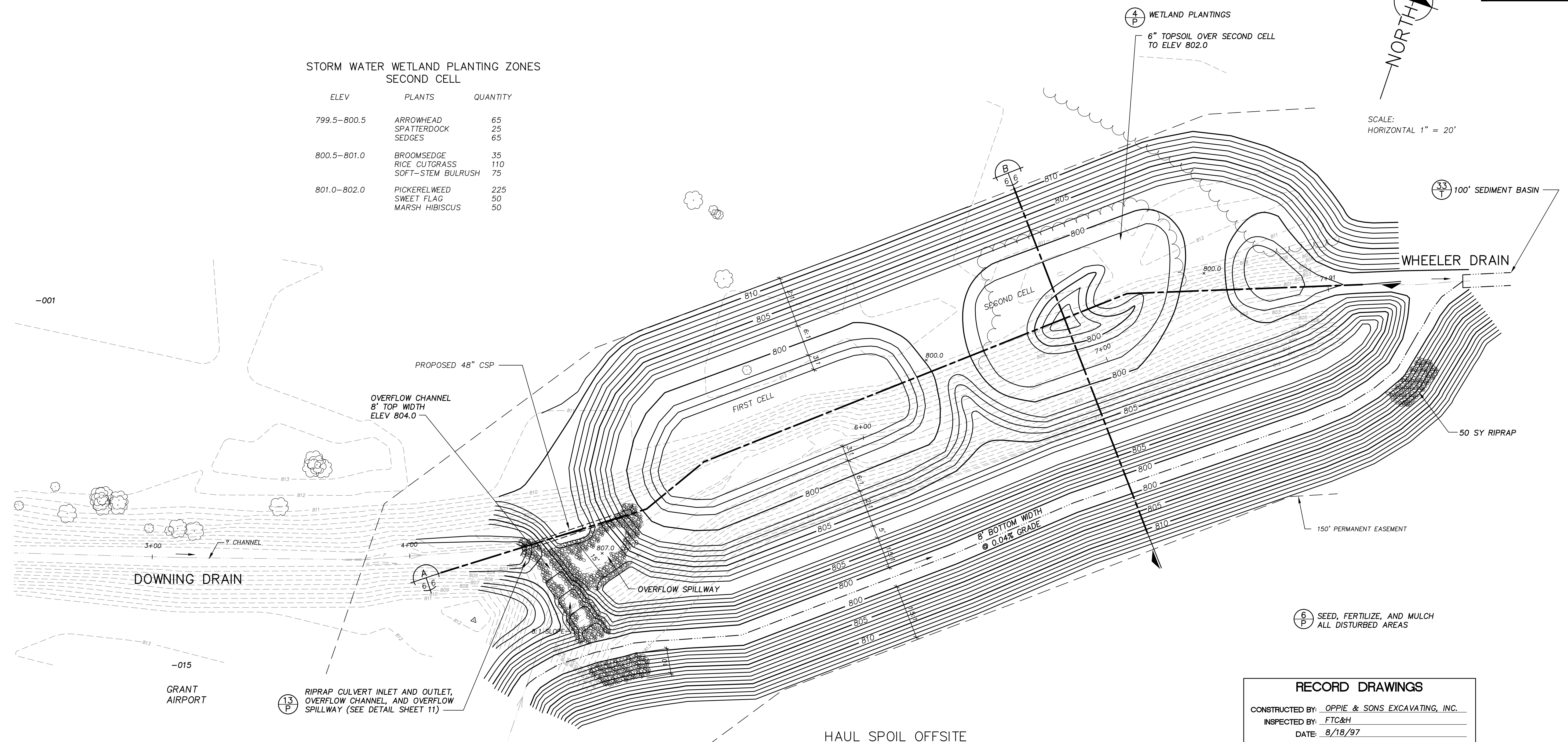
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STORM WATER WETLAND PLANTING ZONES
SECOND CELL

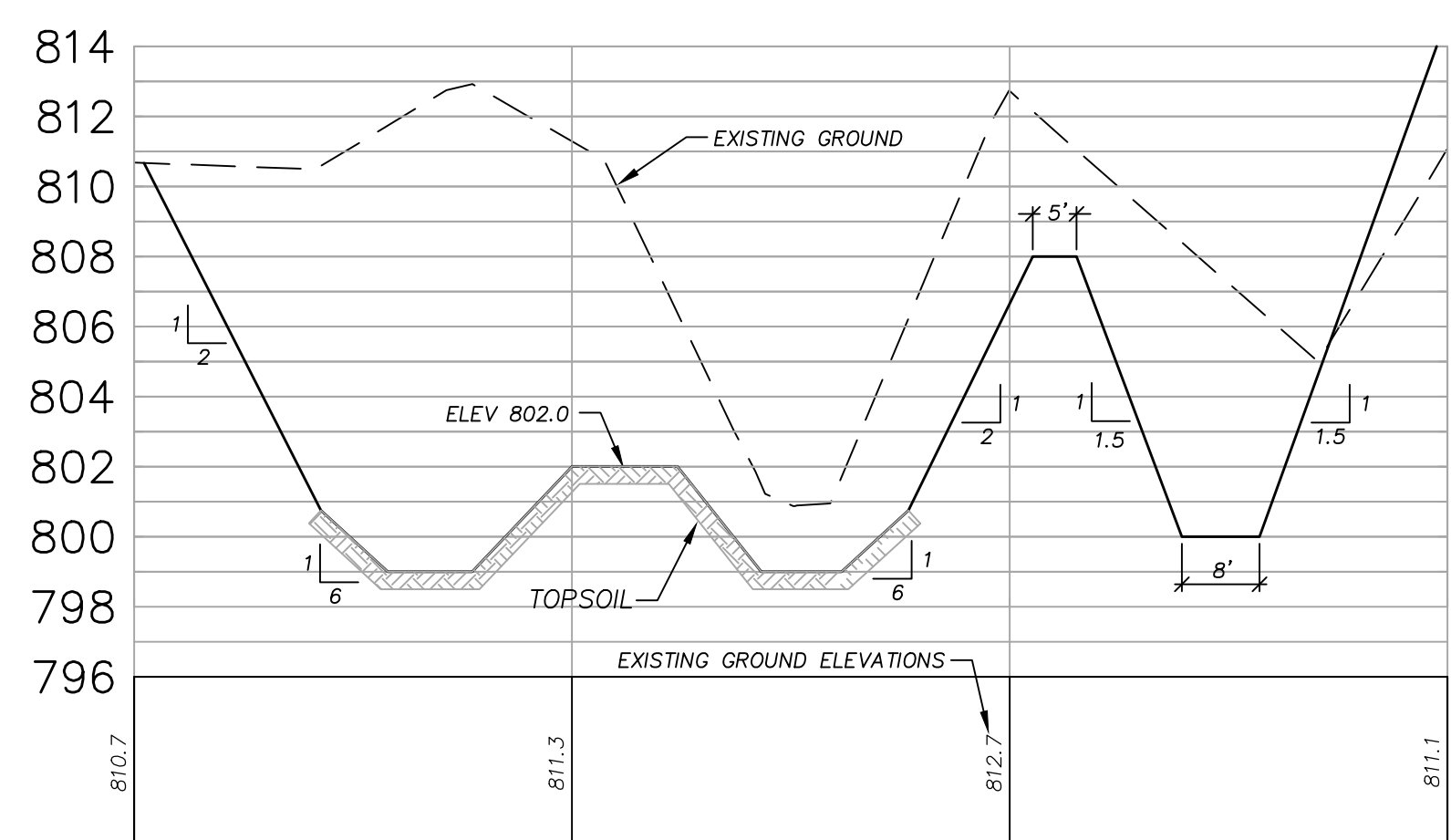
ELEV	PLANTS	QUANTITY
799.5-800.5	ARROWHEAD SPATTERDOCK SEDGES	65 25 65
800.5-801.0	BROOMSEDGE RICE CUTGRASS SOFT-STEM BULRUSH	35 110 75
801.0-802.0	PICKERELWEED SWEET FLAG MARSH HIBISCUS	225 50 50



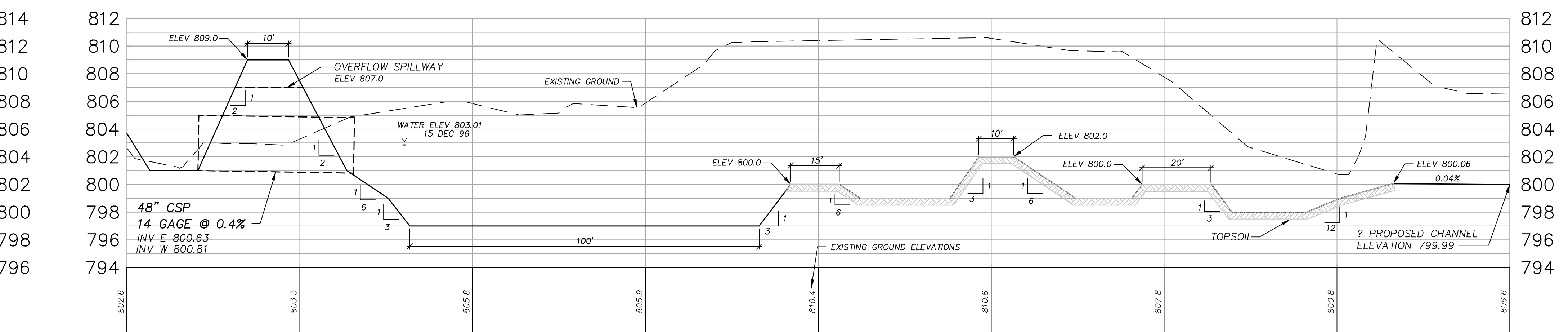
SCALE:
HORIZONTAL 1" = 20'



RECORD DRAWINGS
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INSPECTED BY: FTC&H
DATE: 8/18/97



SECTION B
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 5'



SECTION A
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 5'

STORM WATER WETLAND SITE NO 2

NO.	REVISIONS	DATE	Drawn By	Managed By	Designed By	Date
	REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS	8/18/97	DAS	CES	CES	8/12/96
	ISSUED FOR BIDS AND CONSTRUCTION	8/12/96				

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PROJECT NO.
F95330AD
SHEET NO.
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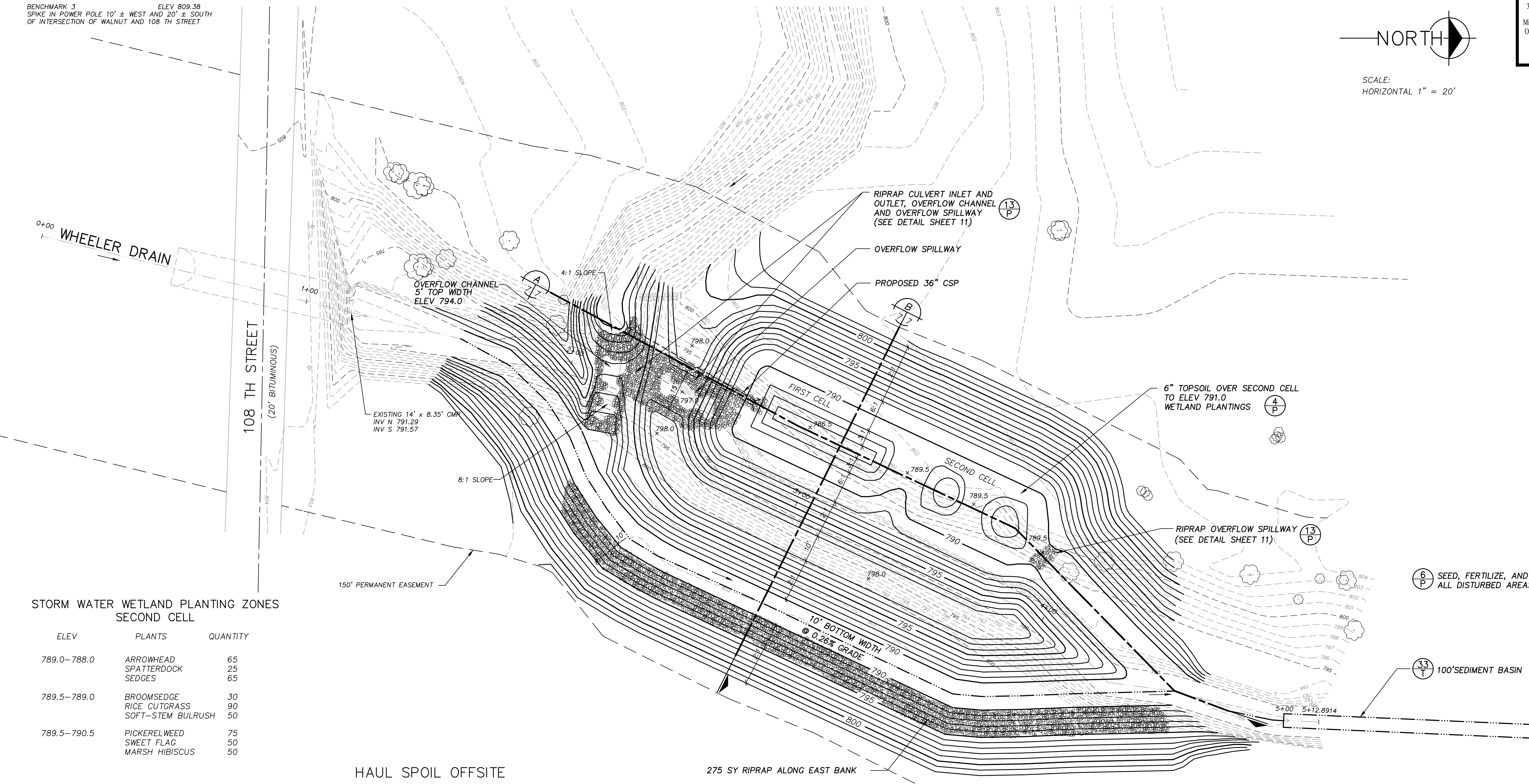
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M:\AD01\VTOR\STW\MS\95330AD.DWG
N:\95330AD\VTOR\STW\95330AD.DWG
M:\AD01\VTOR\STW\MS\95330AD.DWG

BENCHMARK 3
SPIKE IN POWER POLE 10' ± WEST AND 20' ± SOUTH
OF INTERSECTION OF WALNUT AND 108 TH STREET
ELEV 809.38

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NORTH
SCALE:
HORIZONTAL 1" = 20'

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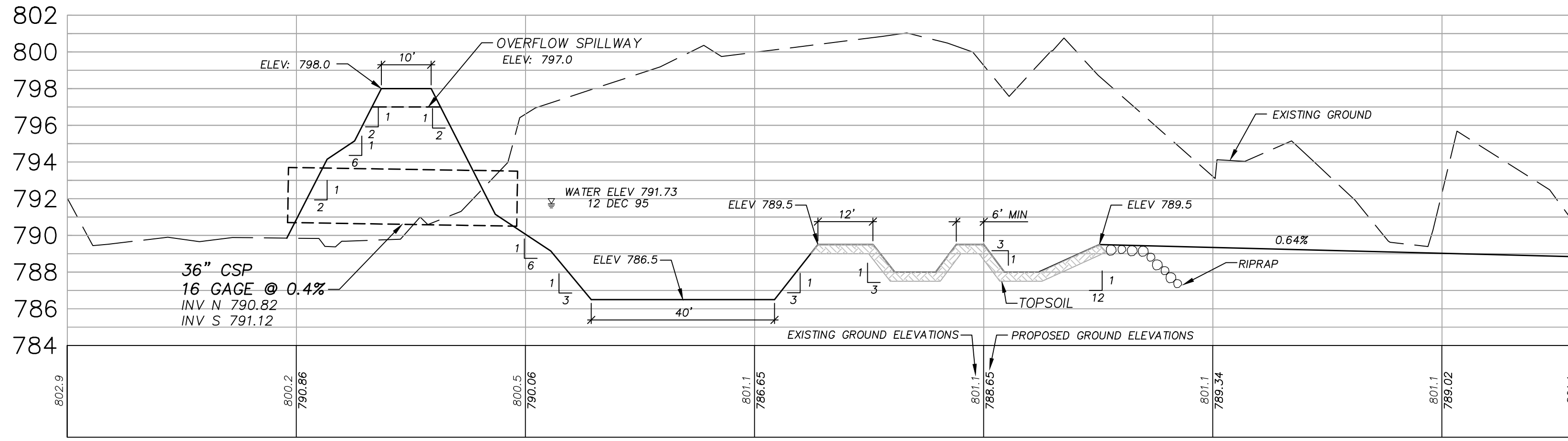


STORM WATER WETLAND PLANTING ZONES
SECOND CELL

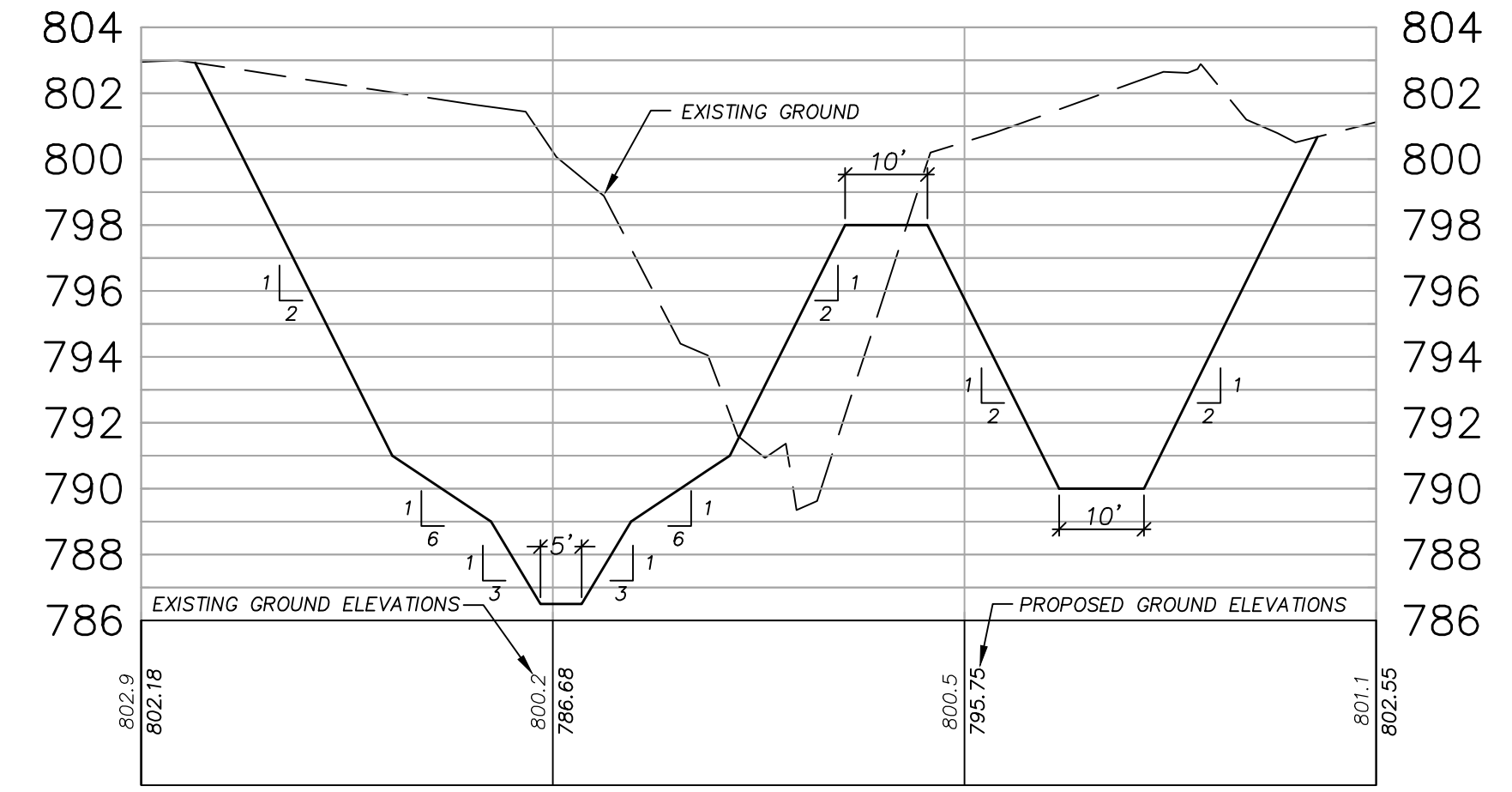
ELEV	PLANTS	QUANTITY
789.0-788.0	ARROWHEAD SPATTERDOCK SEDGES	65 25 65
789.5-789.0	BROOMSEDGE RICE CUTGRASS SOFT-STEM BULRUSH	30 90 50
789.5-790.5	PICKERELWEED SWEET FLAG MARSH HIBISCUS	75 50 50

HAUL SPOIL OFFSITE

275 SY RIPRAP ALONG EAST BANK



A
SECTION A
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 5'



B
SECTION B
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 5'

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PROJECT NO
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SHEET NO.
7

DRAWING INFO: 95330AD.DWG, 13330A207 DATE: 08/06/97 TIME: 11:20 am USER: HLC
M:\AD07\1\TOWNSHIPS\MISSIG N:\95330AD\95330A207 M:\AD07\1\TOWNSHIPS\WBLOCK

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				8/12/96

NO. _____

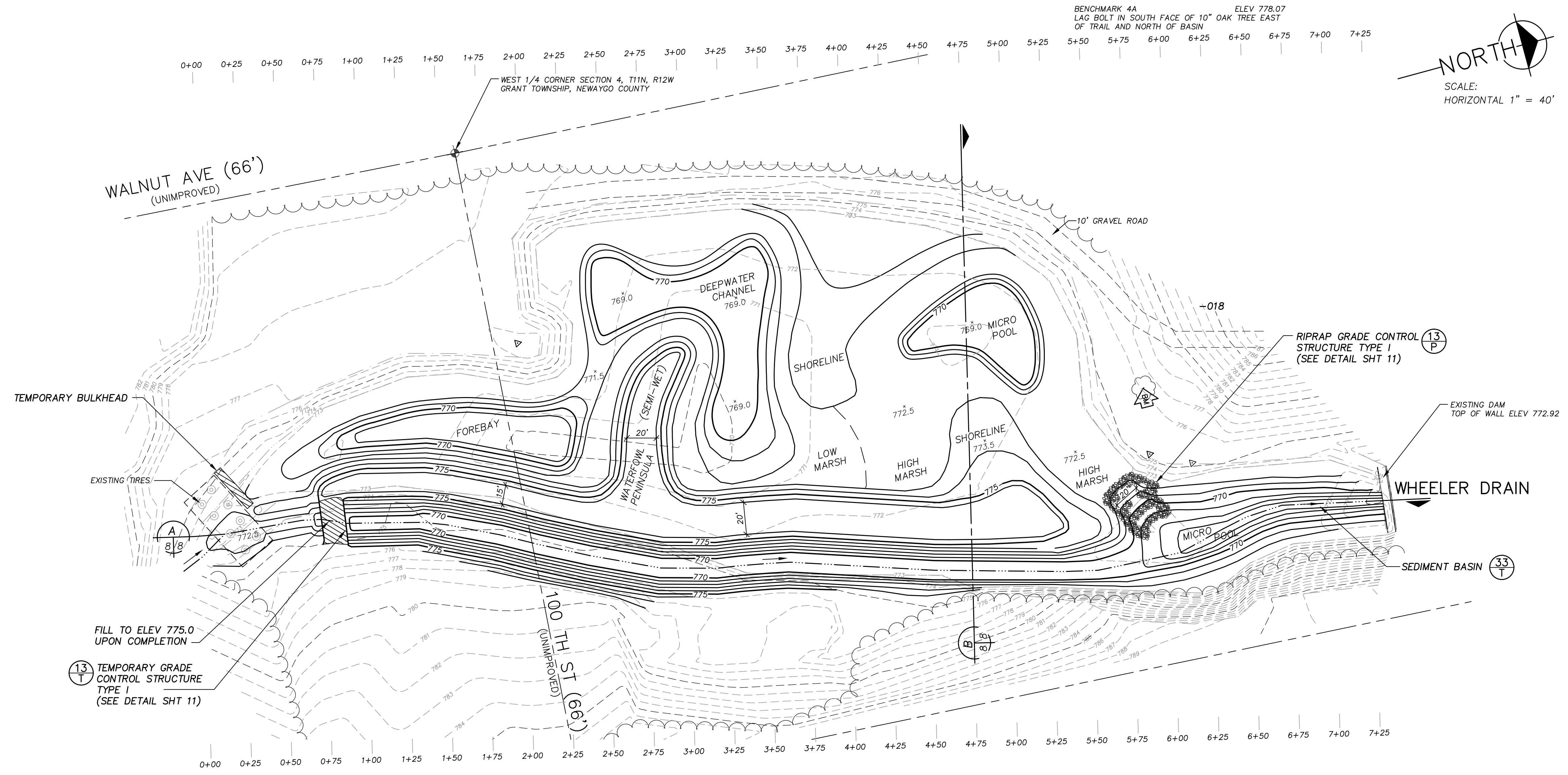
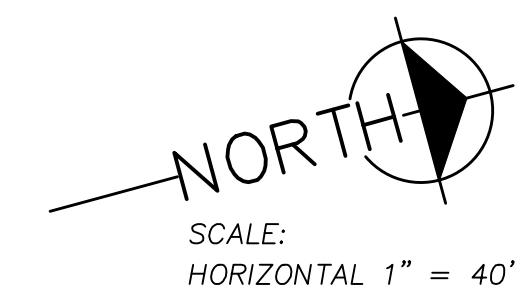
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BENCHMARK 4A ELEV 778.07
LAG BOLT IN SOUTH FACE OF 10" OAK TREE EAST OF TRAIL AND NORTH OF BASIN

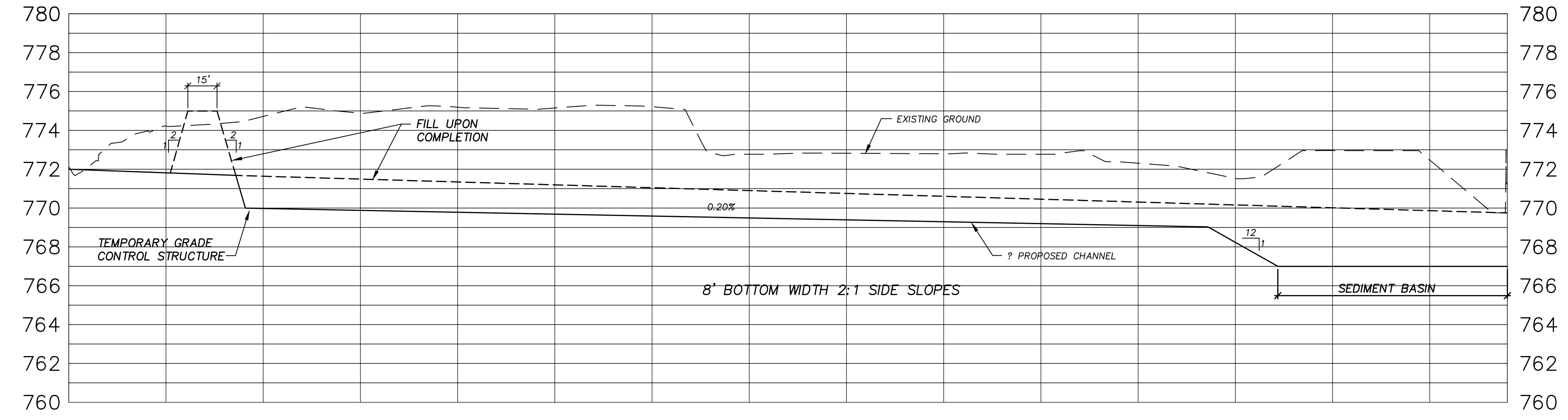


NOTES

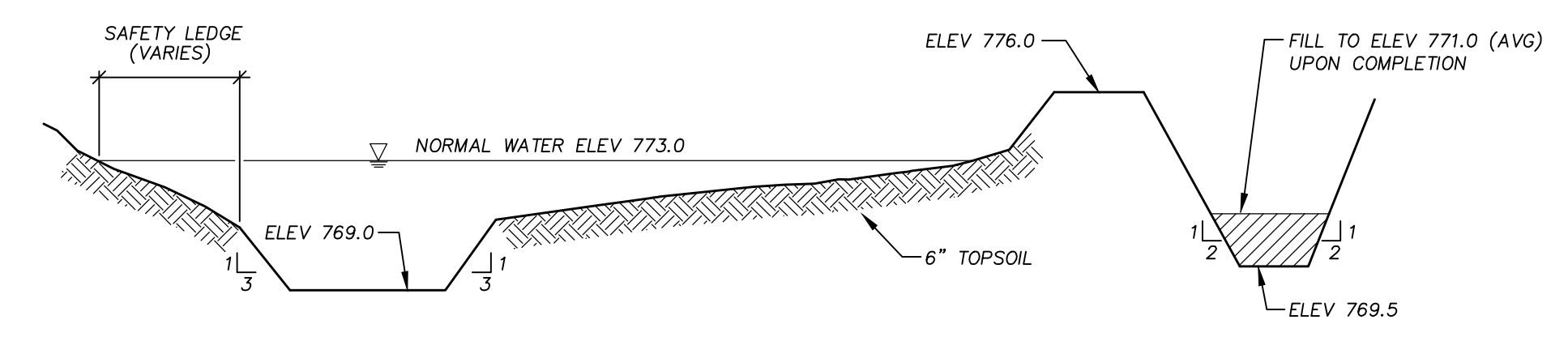
FILL DIVERSION CHANNEL AS INDICATED UPON COMPLETION OF WORK.

6" TOPSOIL OVER SEMI-WET, SHORELINE, HIGH MARSH, AND LOW MARSH AREAS TO ELEV 775.0.

SEED, FERTILIZE, AND MULCH ALL DISTURBED VEGETATED AREAS ABOVE ELEV 773.0



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



B
SECTION B
NO SCALE

RECORD DRAWINGS

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INSPECTED BY: FTC&H

DATE: 8/18/97

STORM WATER WETLAND SITE NO 4

NEWAYGO COUNTY DRAIN COMMISSIONER
GRANT AND ASHLAND TOWNSHIPS

WHEELER DRAIN

PROJECT NO
F95330AD

SHEET NO.
8

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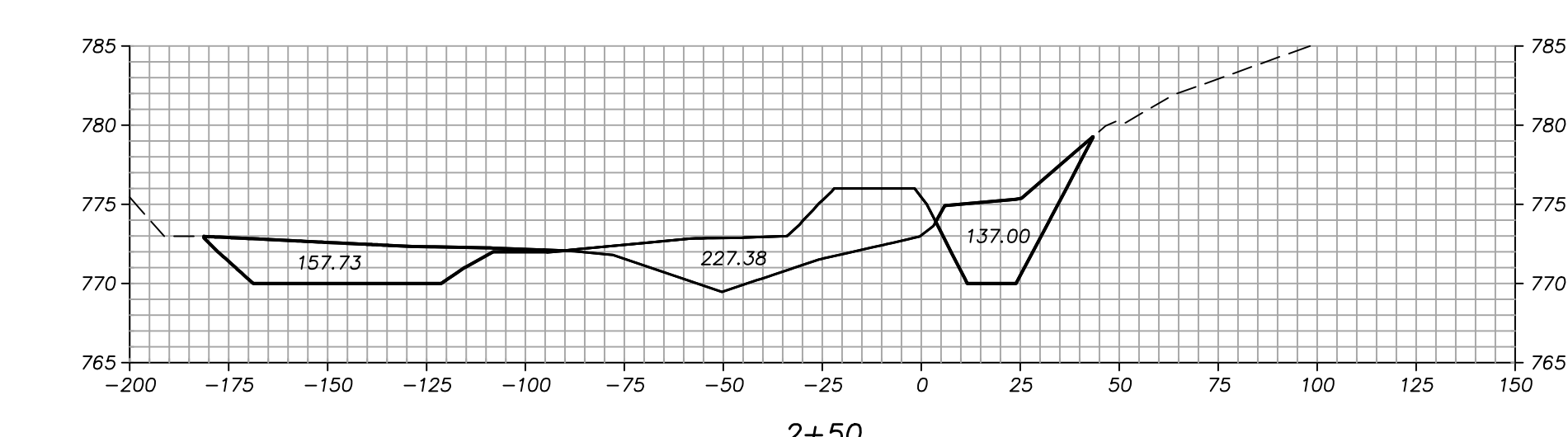
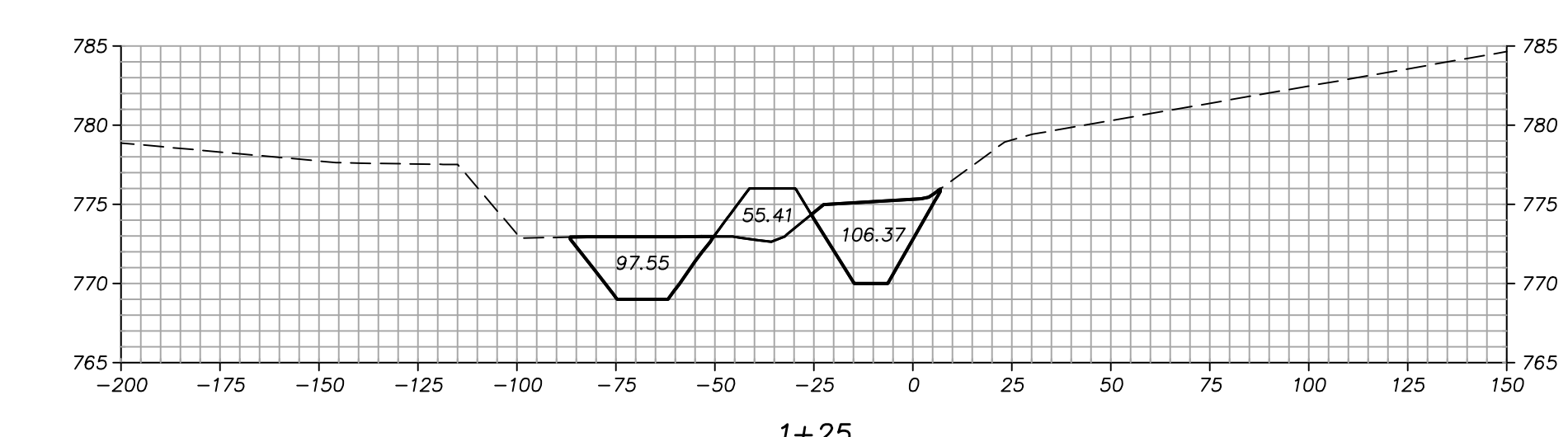
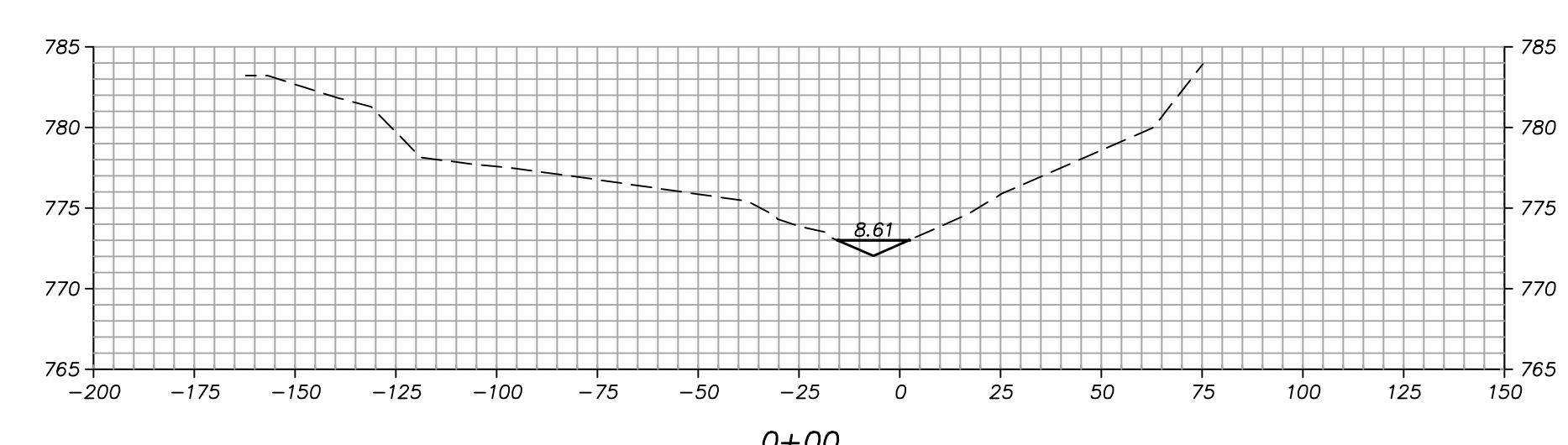
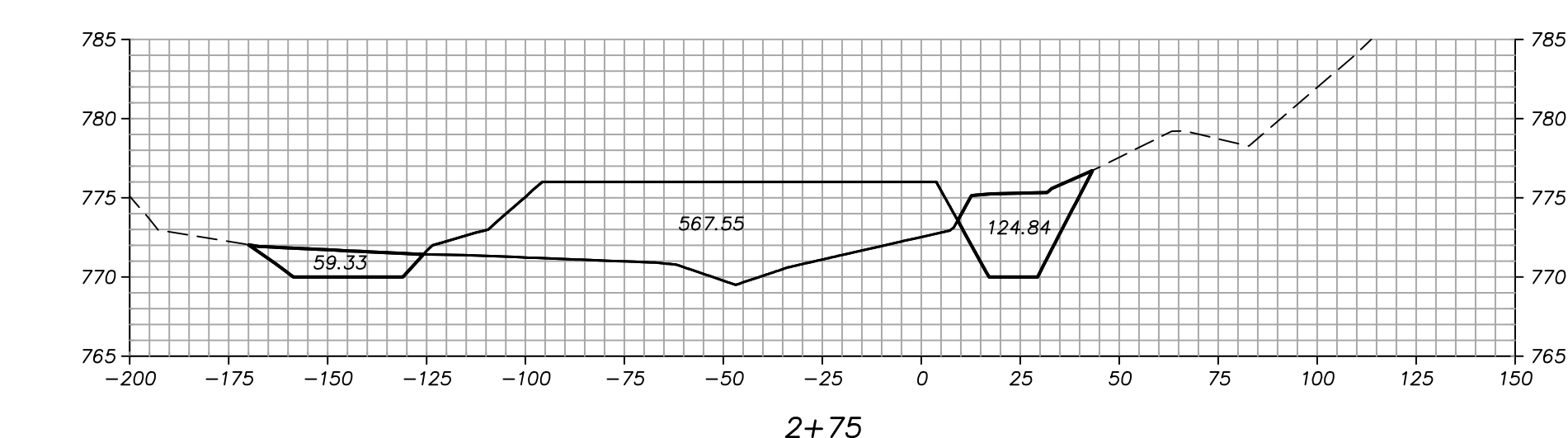
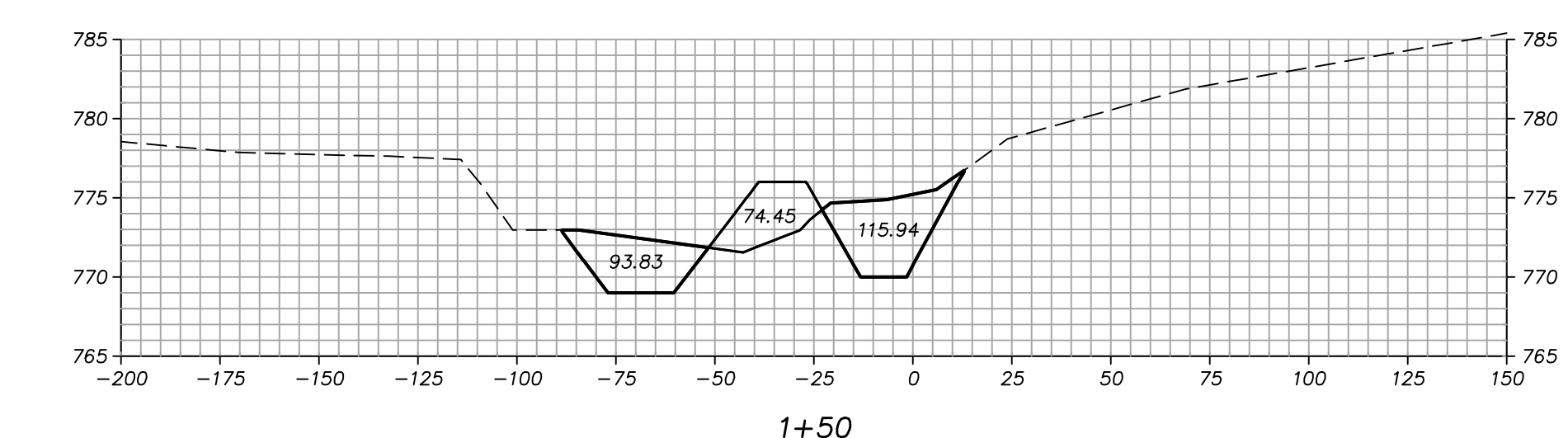
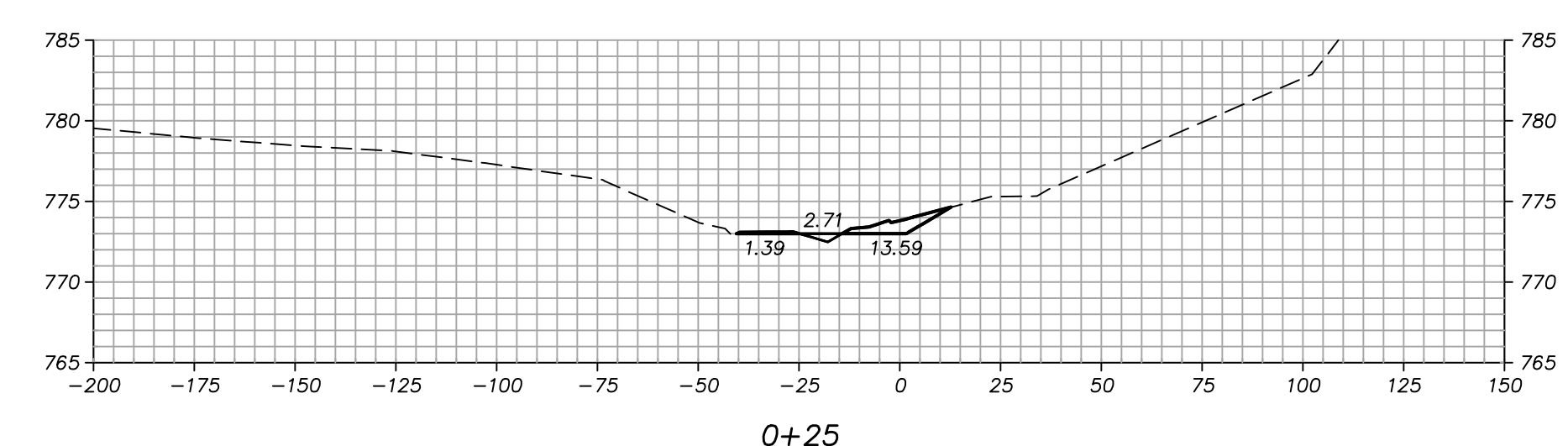
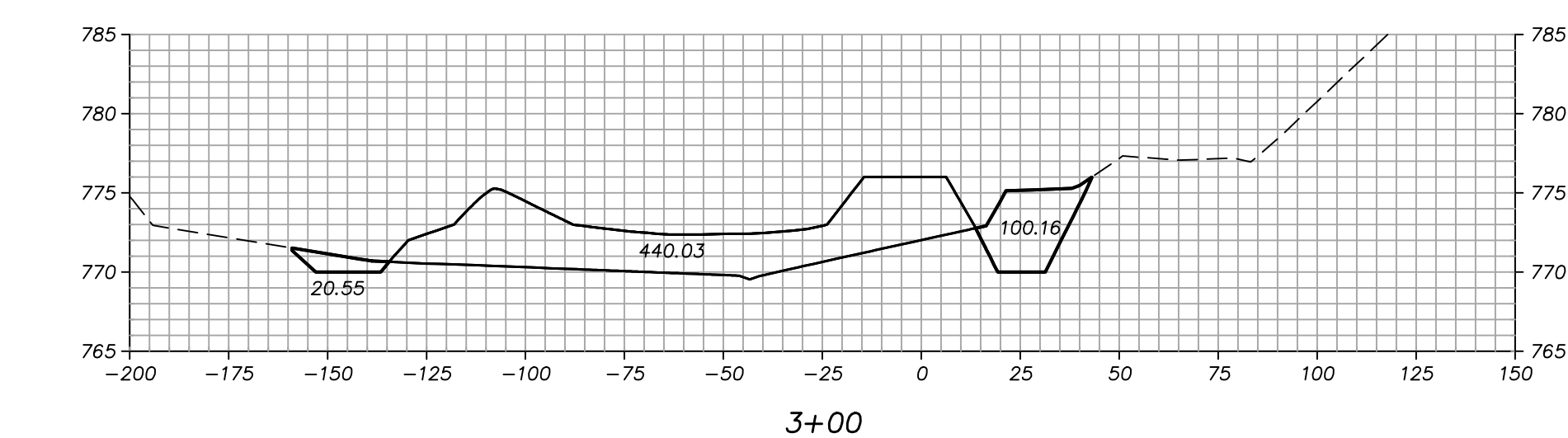
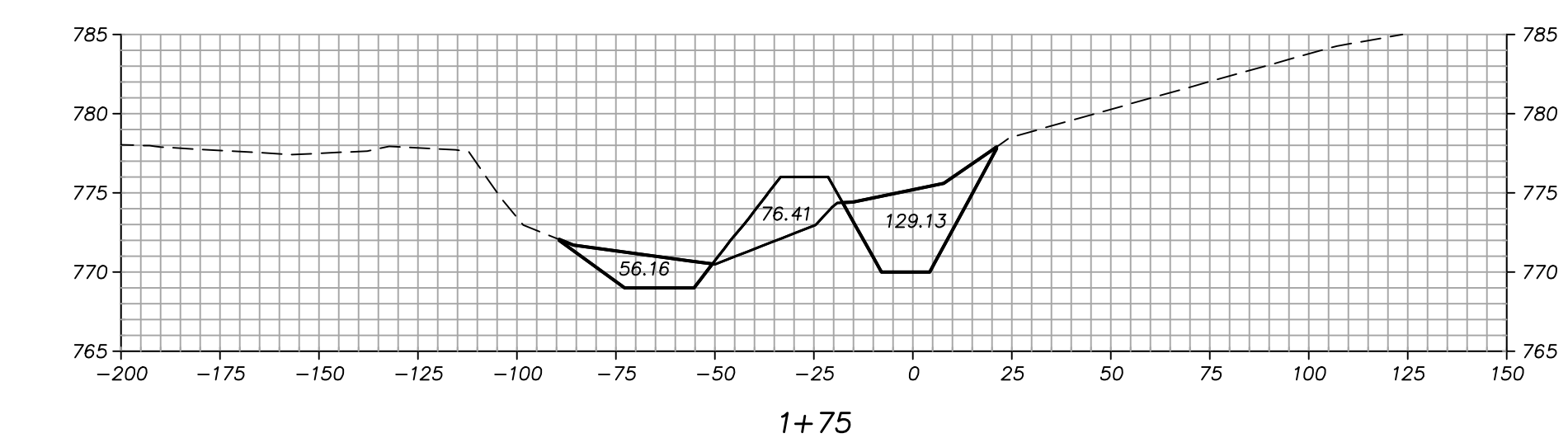
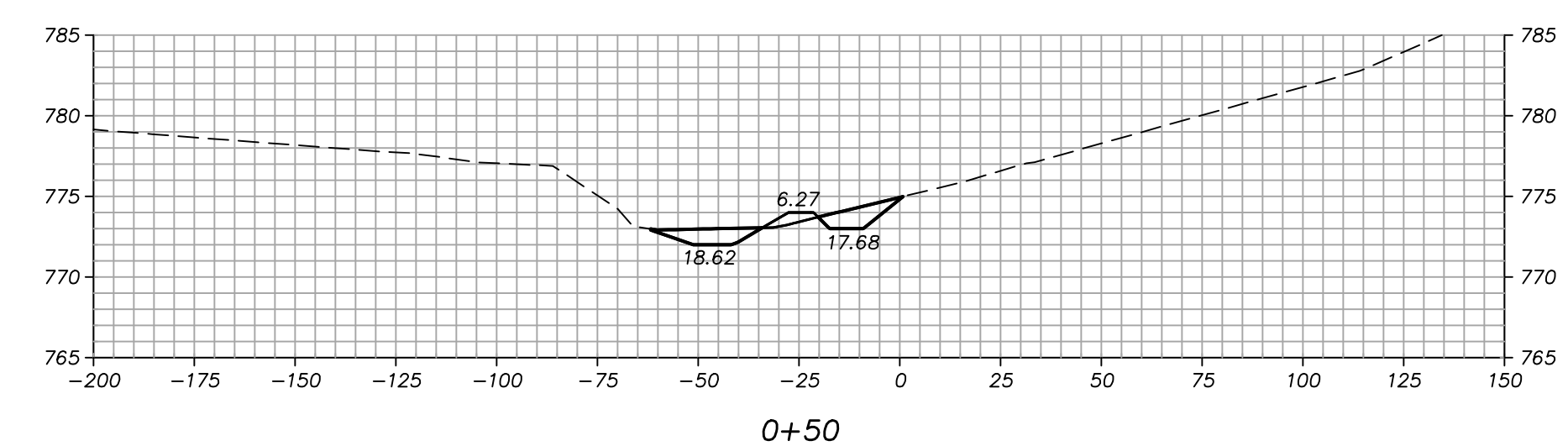
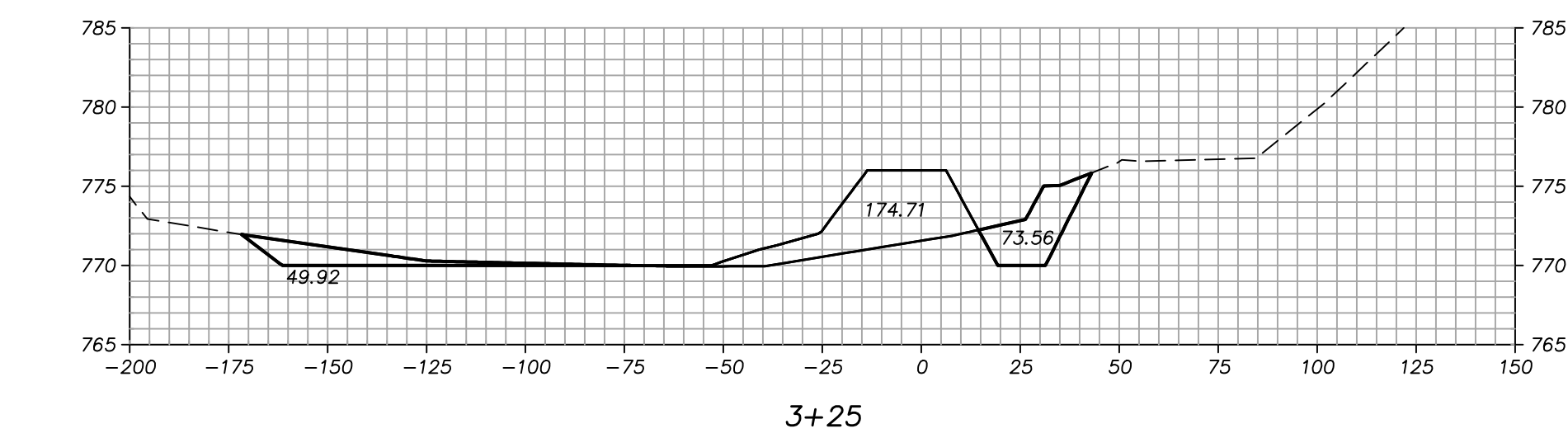
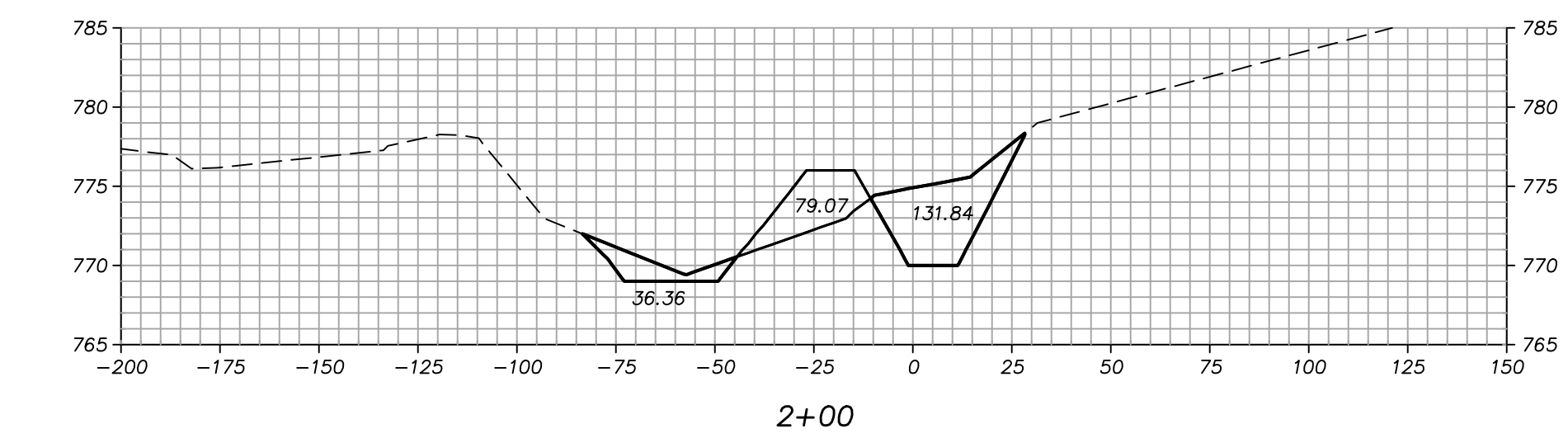
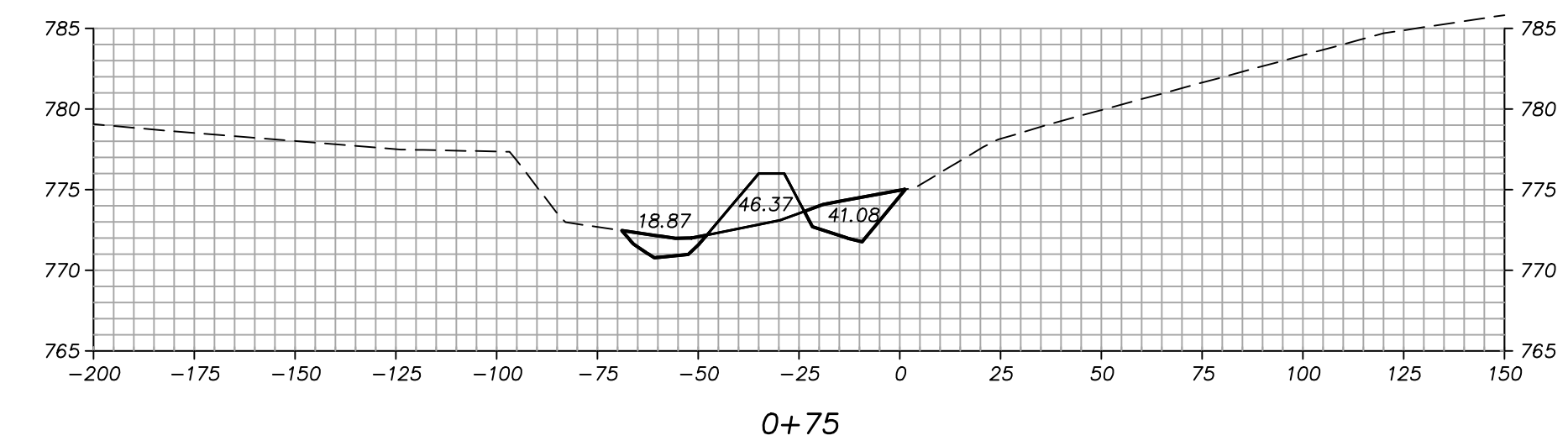
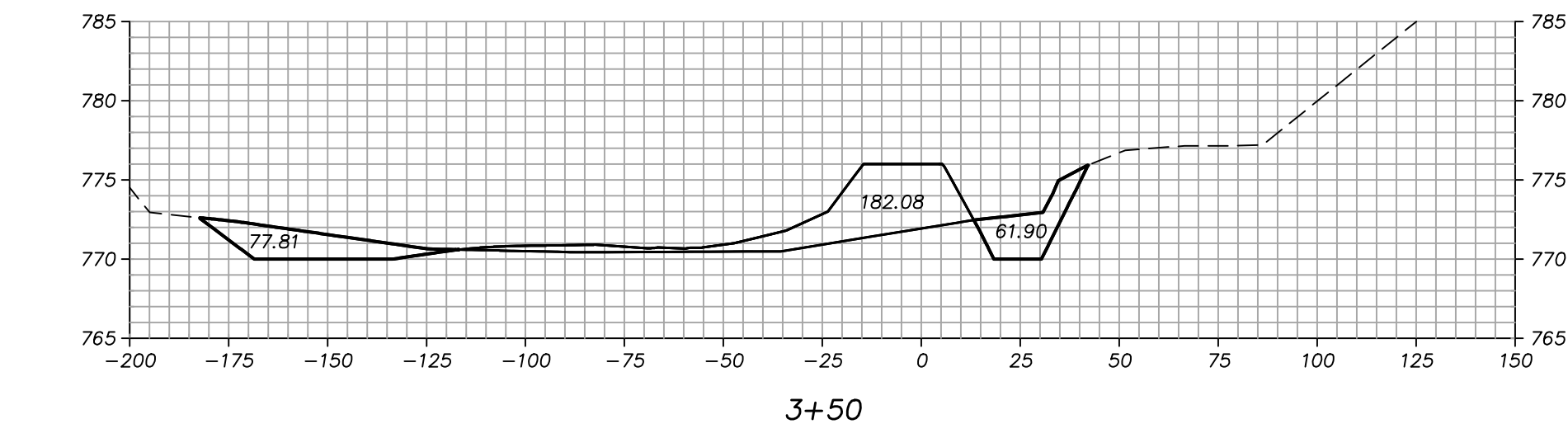
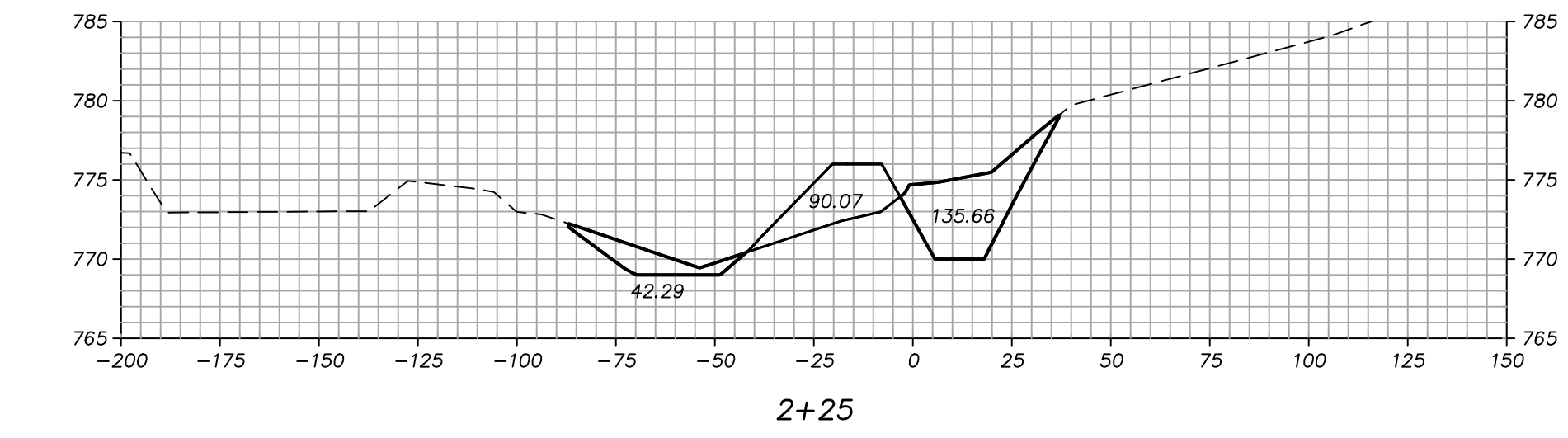
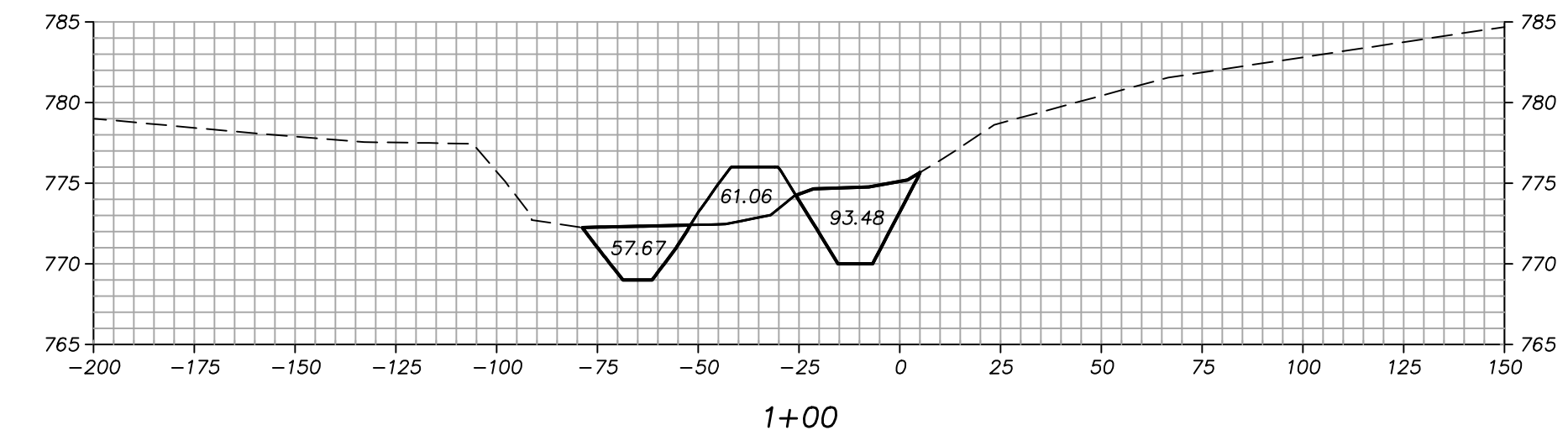
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 INSPECTED BY: FTC&H
 DATE: 8/18/97

SCALE:
 HORIZONTAL 1" = 40'
 VERTICAL 1" = 10'

LEGEND
 EXISTING GRADE - - - - -
 PROPOSED GRADE _____

SITE NO 4 CROSS SECTIONS

DRAWING INFO: 95530AD\CY\SITE4XS DATE: 08/12/98 TIME: 7:29 pm USER: JEB
 M:\DRAWING\PROJECTS\95530AD\SETUP N:\95530AD\95530AD.DWG

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NEWAYGO COUNTY DRAIN COMMISSIONER
 GRANT AND ASHLAND TOWNSHIPS

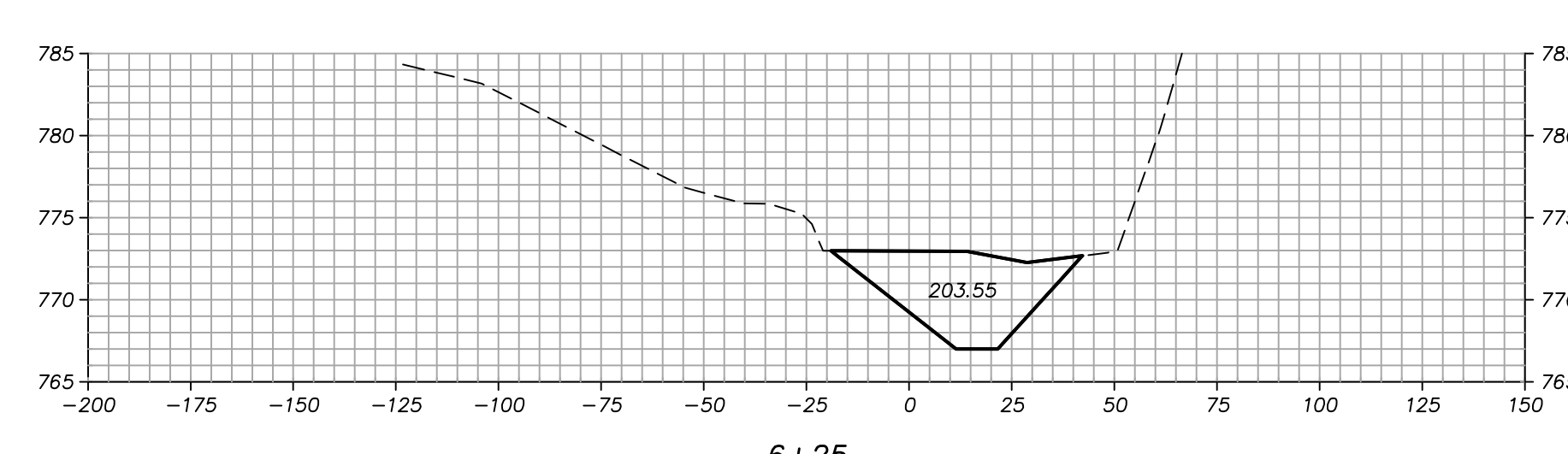
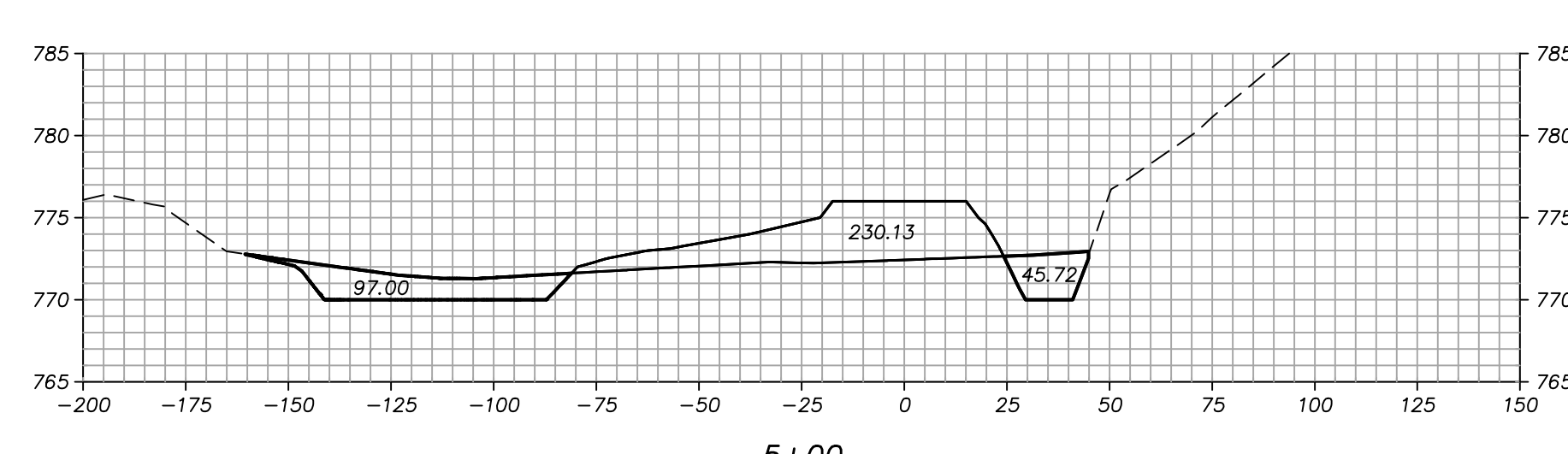
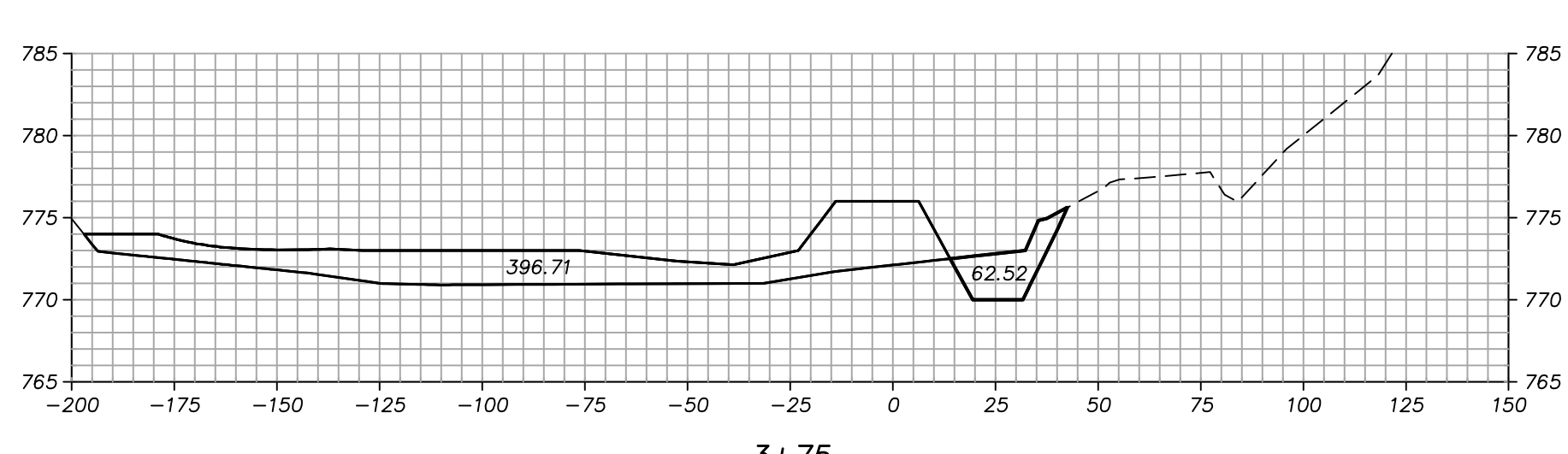
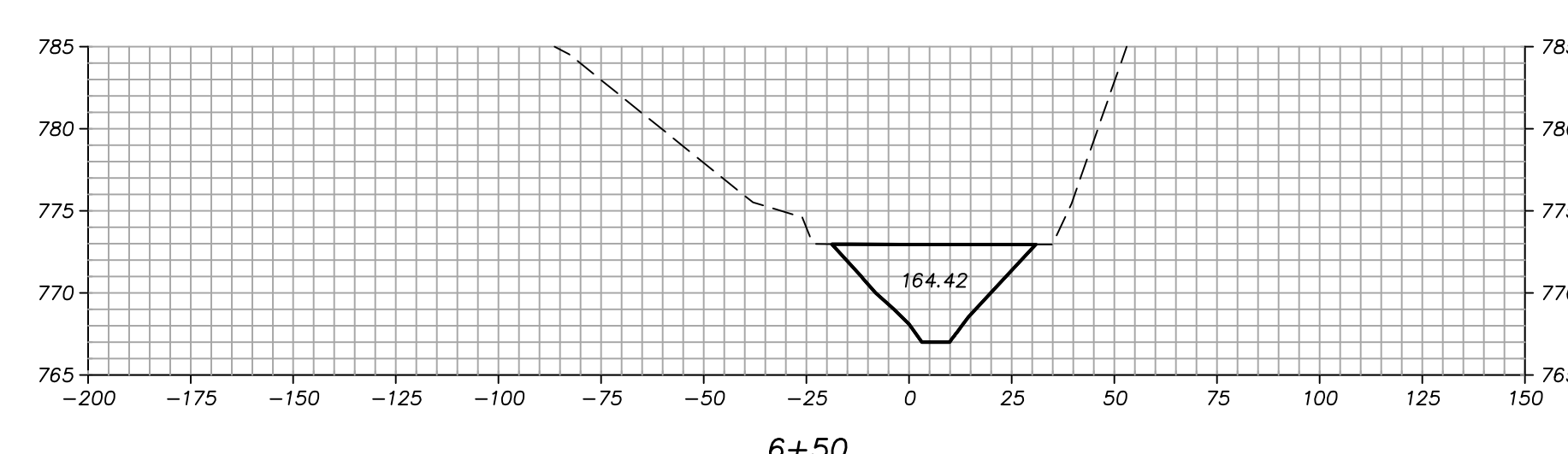
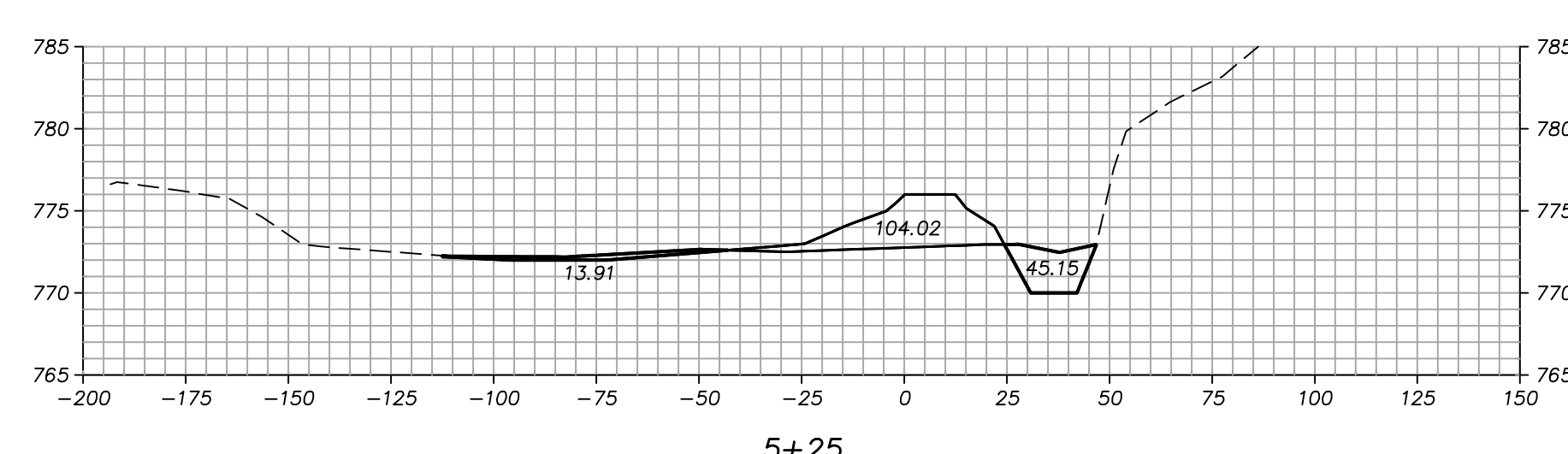
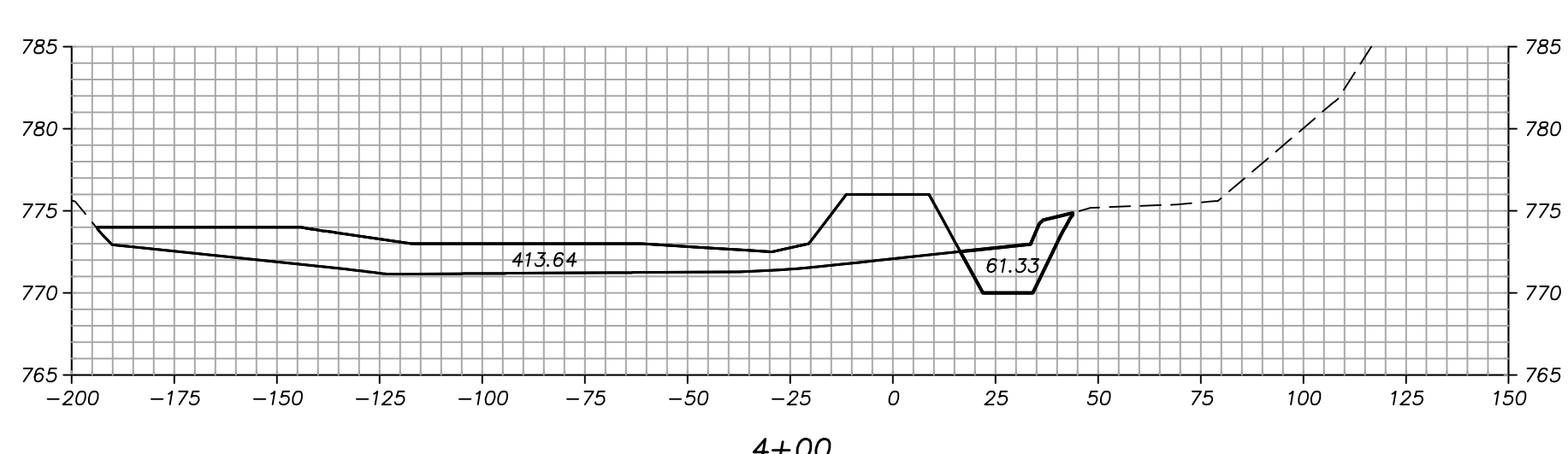
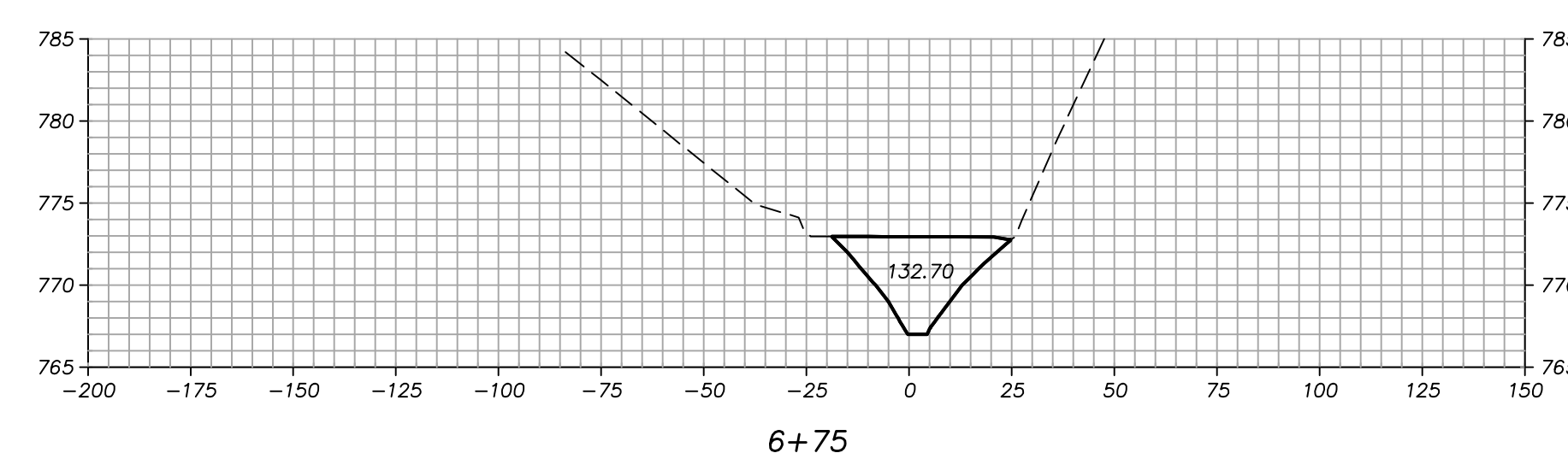
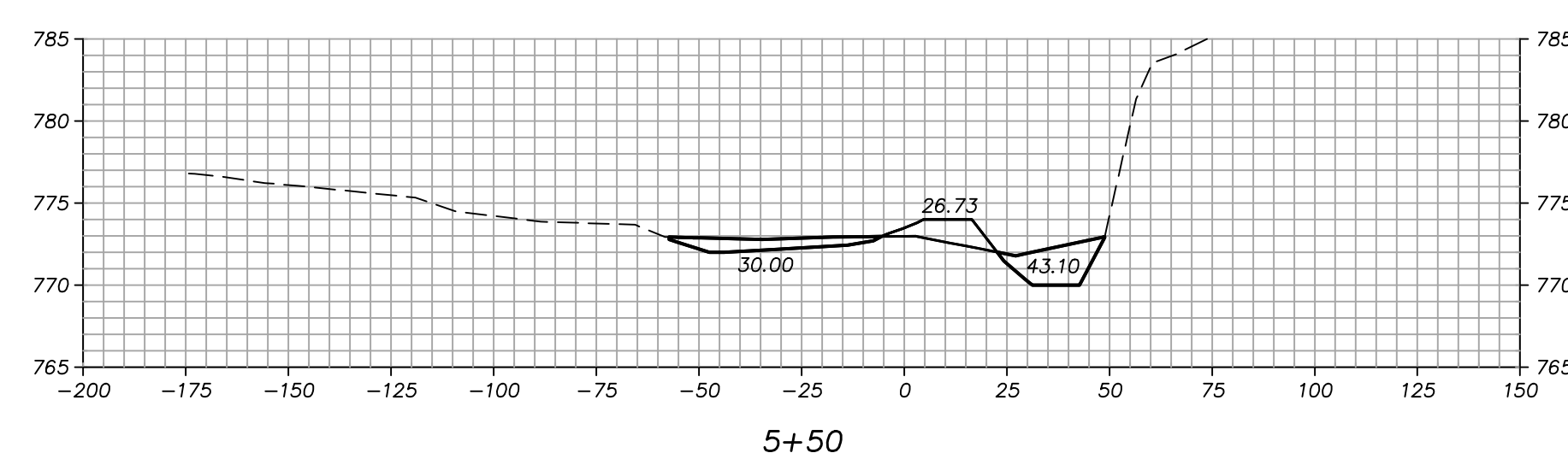
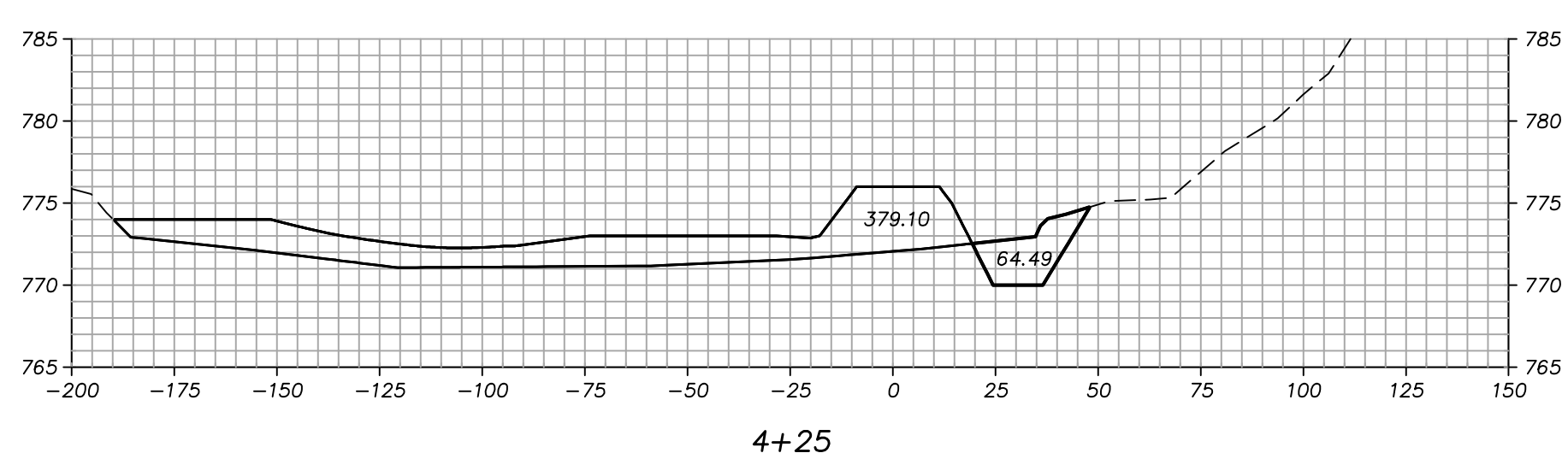
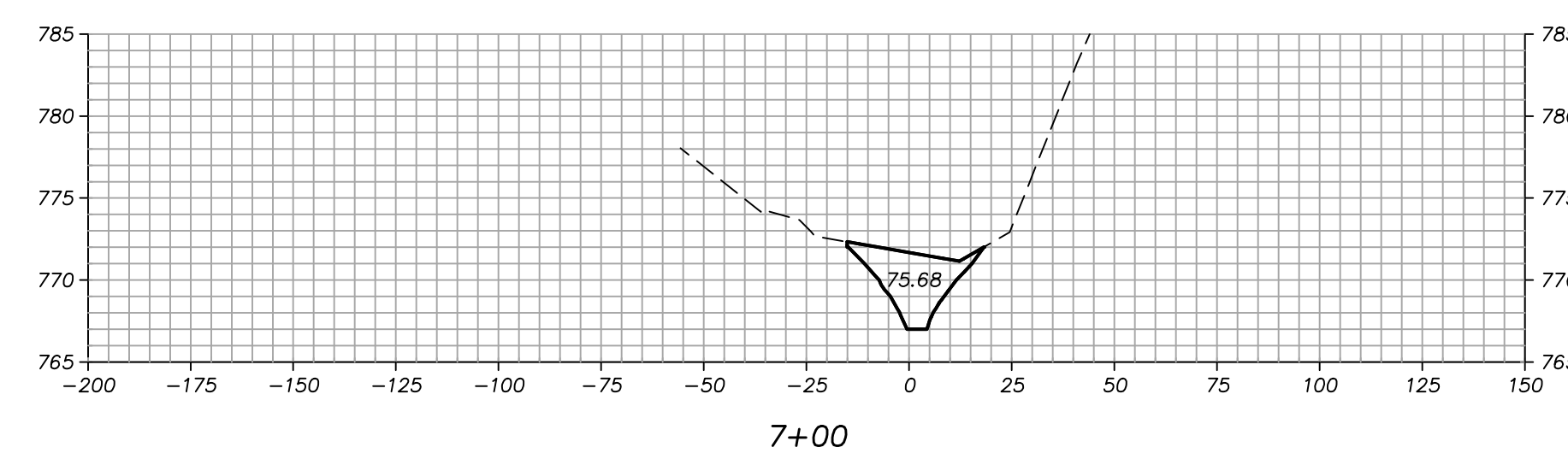
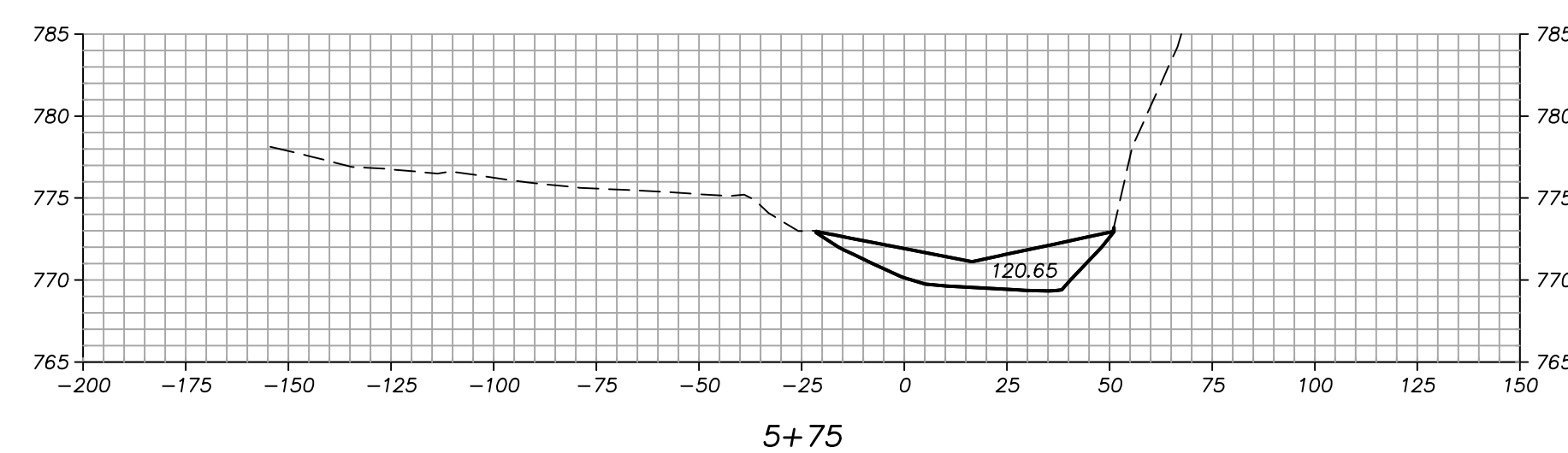
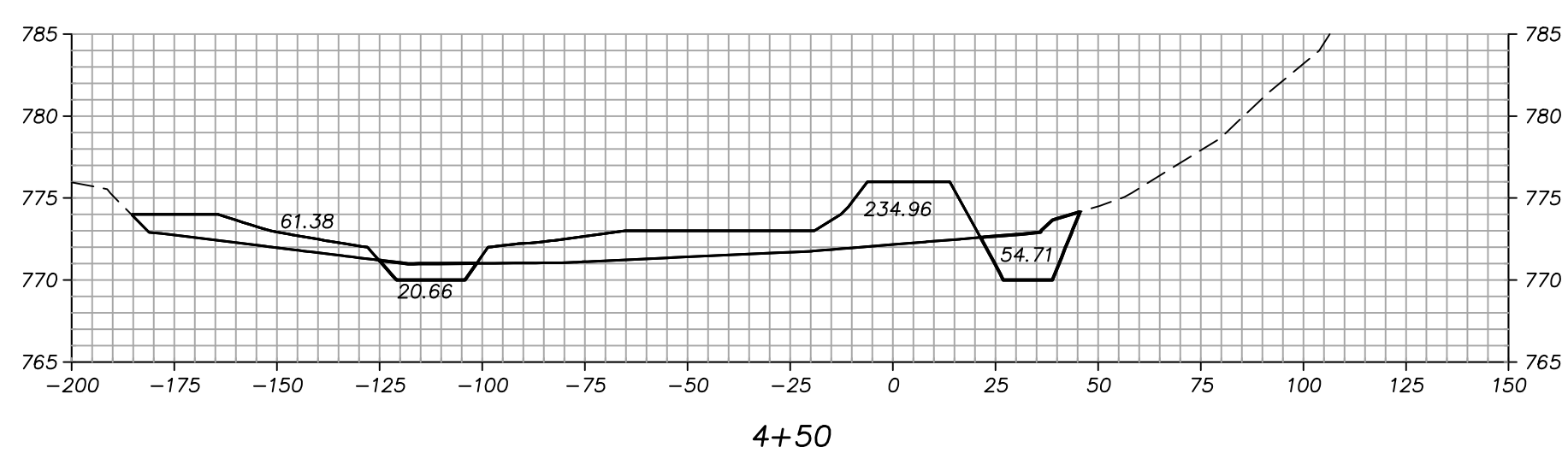
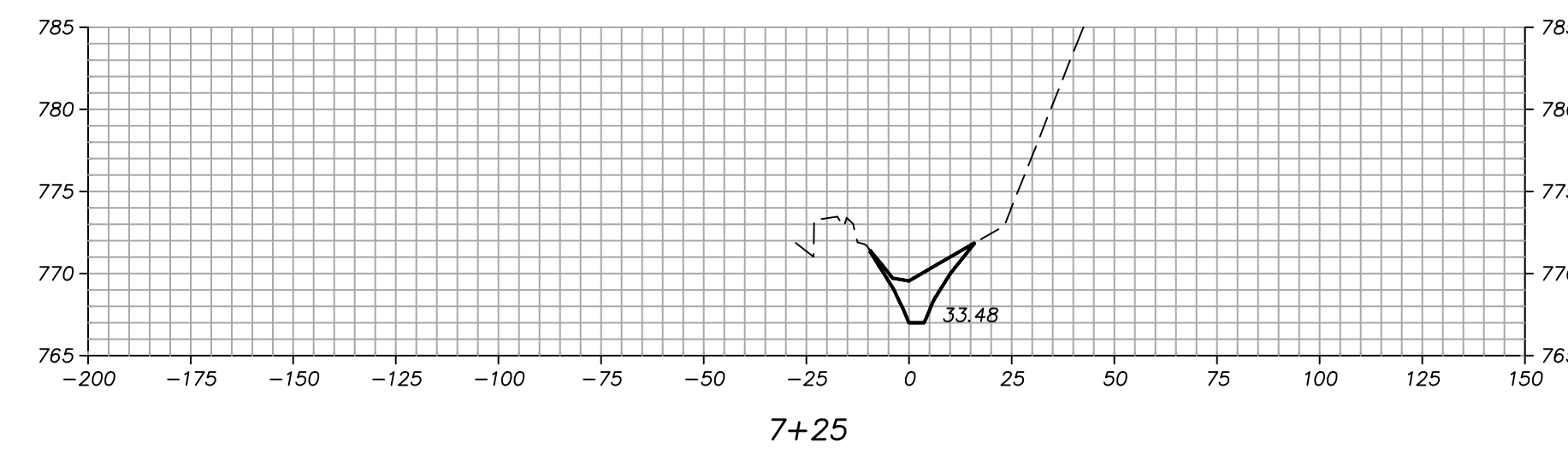
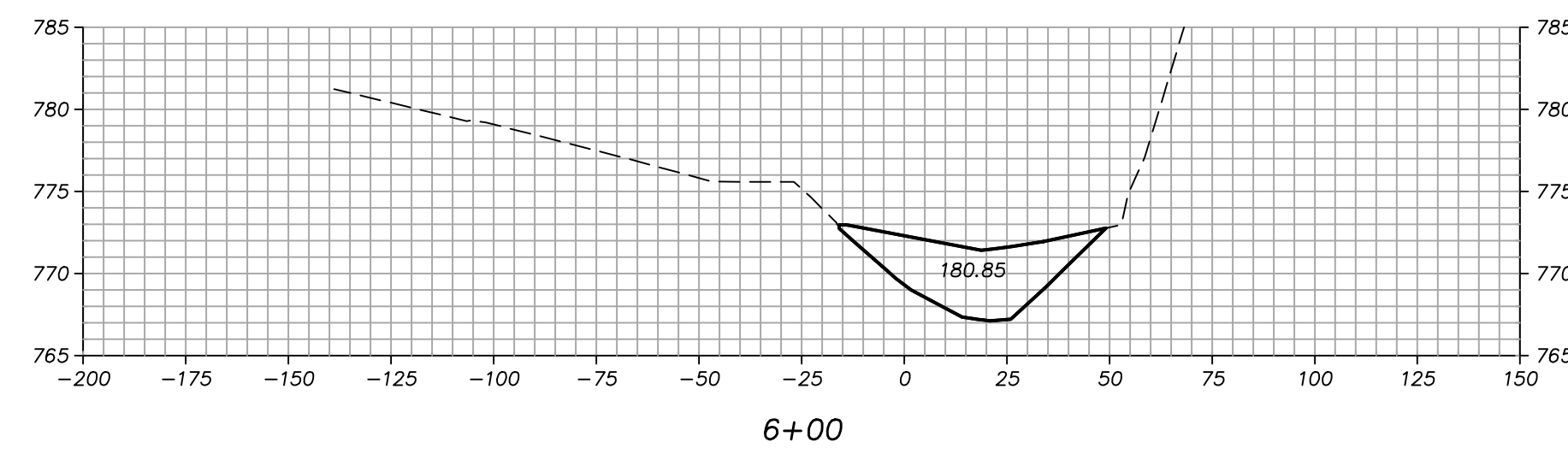
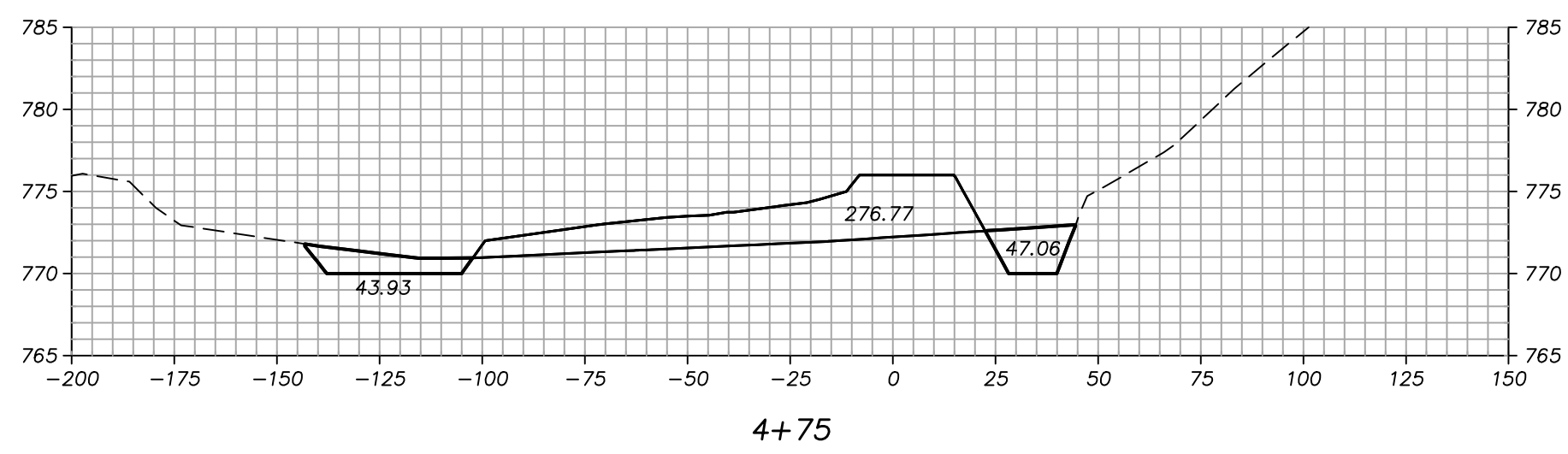
WHEELER DRAIN

PROJECT NO.
F95330AD
 SHEET NO.
9

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3 full working days before you dig.
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1-800-482-7171
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DATE	Drawn By	Managed By	Designed By	Date
	JEB	CES	CES	8/18/97
				8/12/96

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CONSTRUCTED BY: OPPIE & SONS EXCAVATING, INC.
INSPECTED BY: FTC&H
DATE: 8/18/97

SCALE:
HORIZONTAL 1" = 40'
VERTICAL 1" = 10'

LEGEND
EXISTING GRADE - - - - -
PROPOSED GRADE _____

SITE NO 4 CROSS SECTIONS

DRAWING INFO: 95530AD\CIVIL\SITE4AS DATE: 08/12/96 TIME: 7:29 pm USER: JEB
M:\CADD\PROJECTS\95530AD\SETUP N:\95530AD\95530AD.DWG

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NEWAYGO COUNTY DRAIN COMMISSIONER
GRANT AND ASHLAND TOWNSHIPS
WHEELER DRAIN

PROJECT NO
F95330AD
SHEET NO.
10

DATE	Drawn By	Managed By	Designed By	Date
	JEB	CES	CES	8/18/97
				8/12/98

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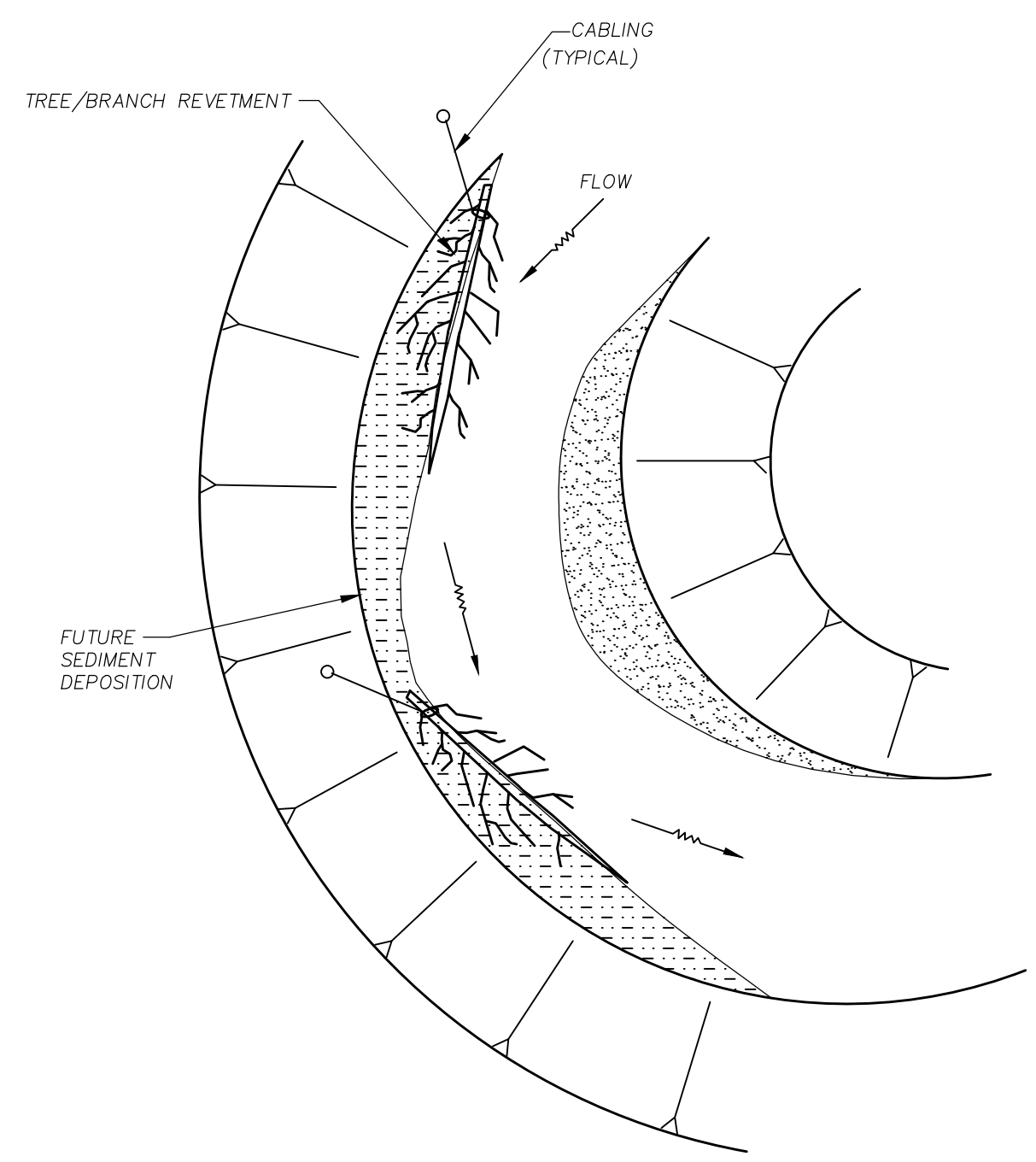
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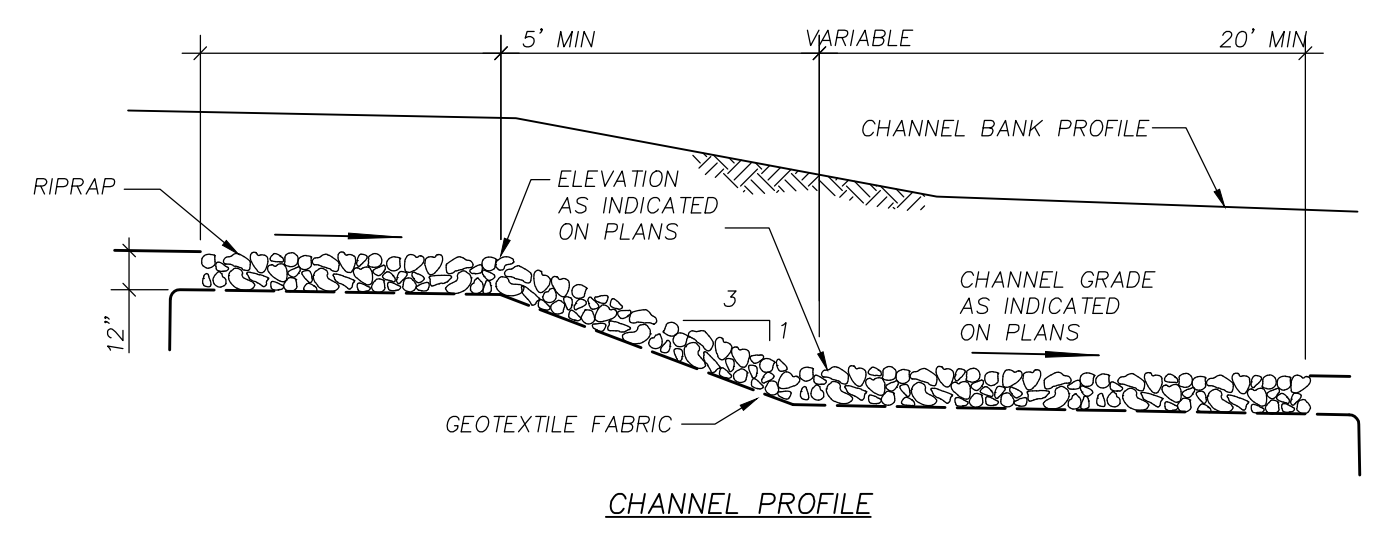
NEWAYGO COUNTY DRAIN COMMISSIONER
GRANT AND ASHLAND TOWNSHIPS

WHEELER DRAIN

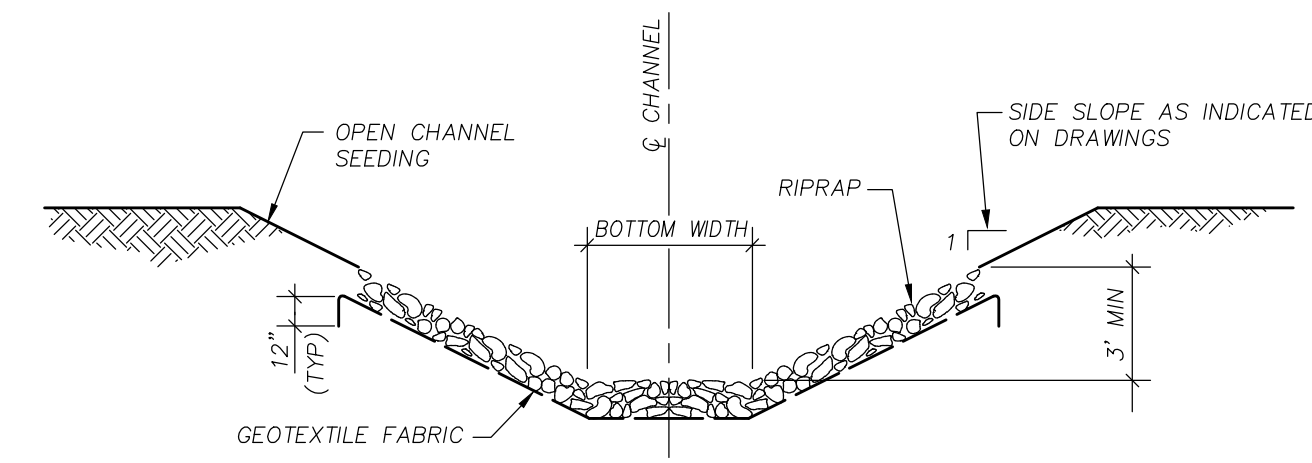
PROJECT NO
F95330AD
SHEET NO.
11



TREE/BRANCH REVETMENT
NO SCALE

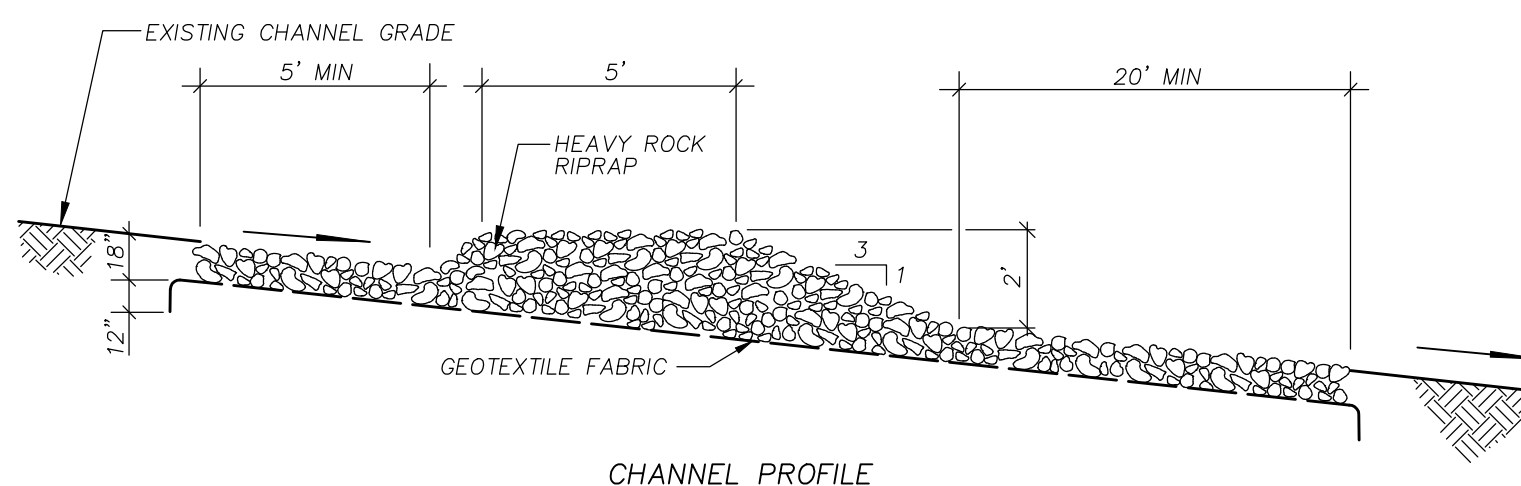


CHANNEL PROFILE

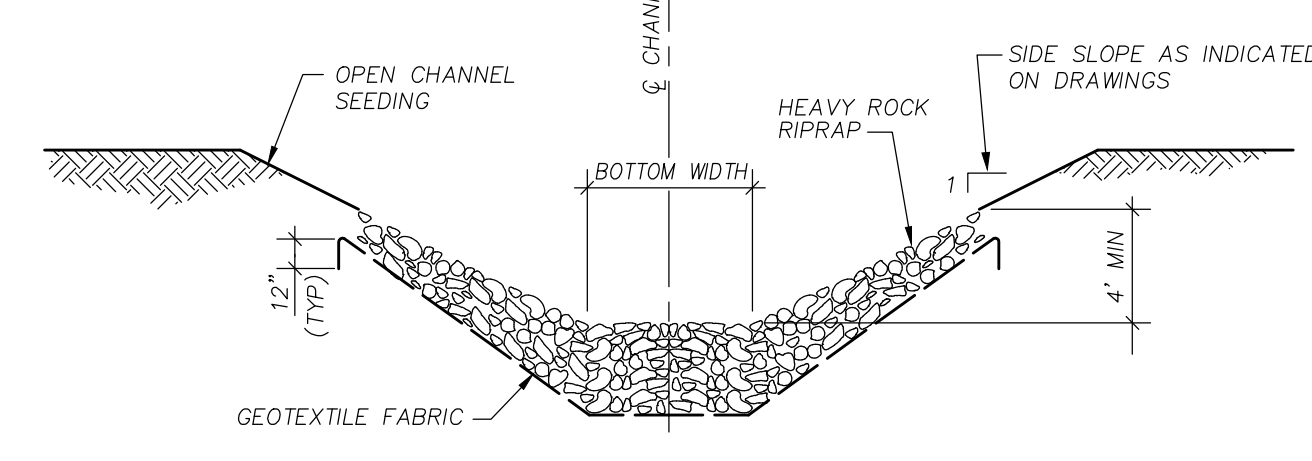


SECTION

GRADE CONTROL STRUCTURE TYPE I
NO SCALE 06SL9M302271-03

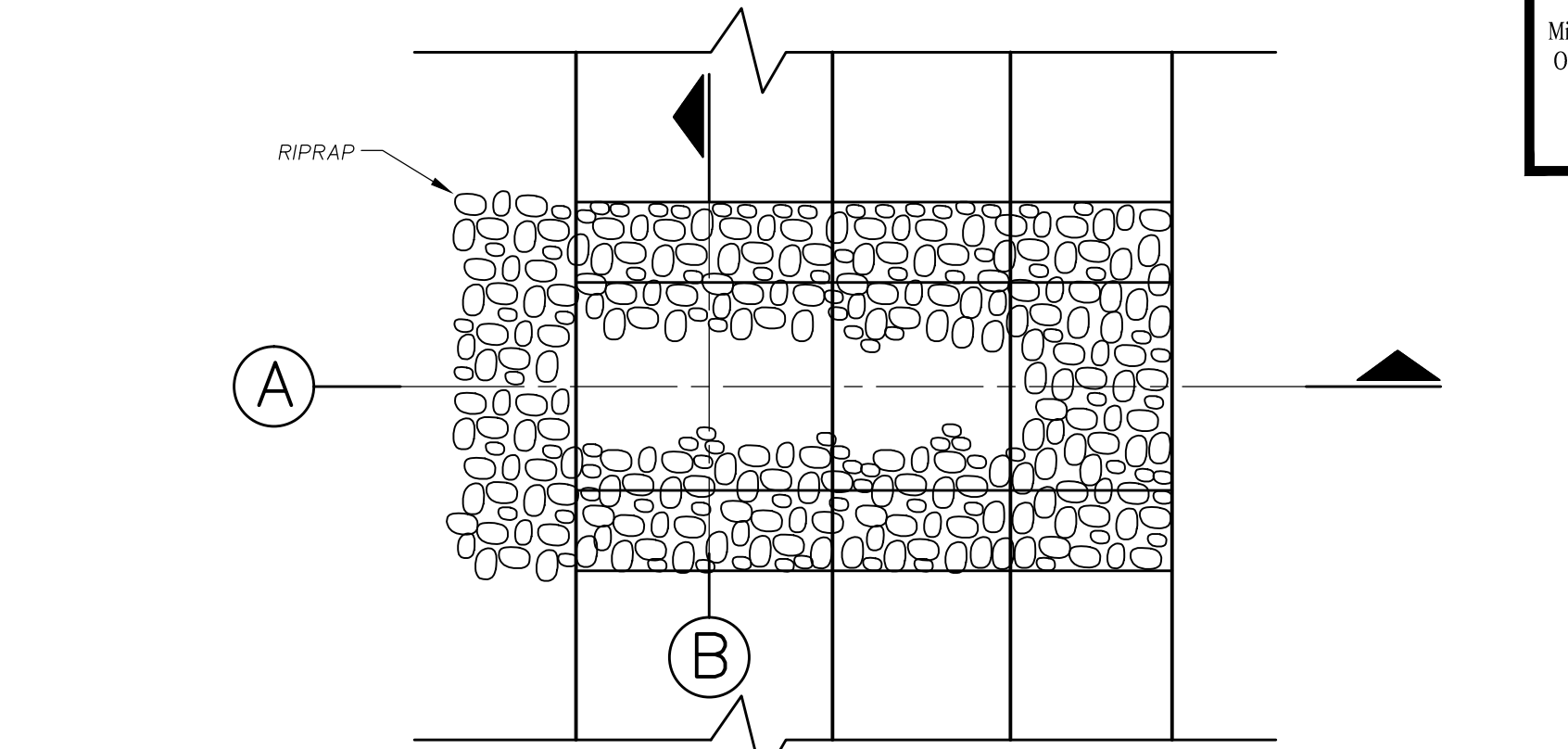


CHANNEL PROFILE

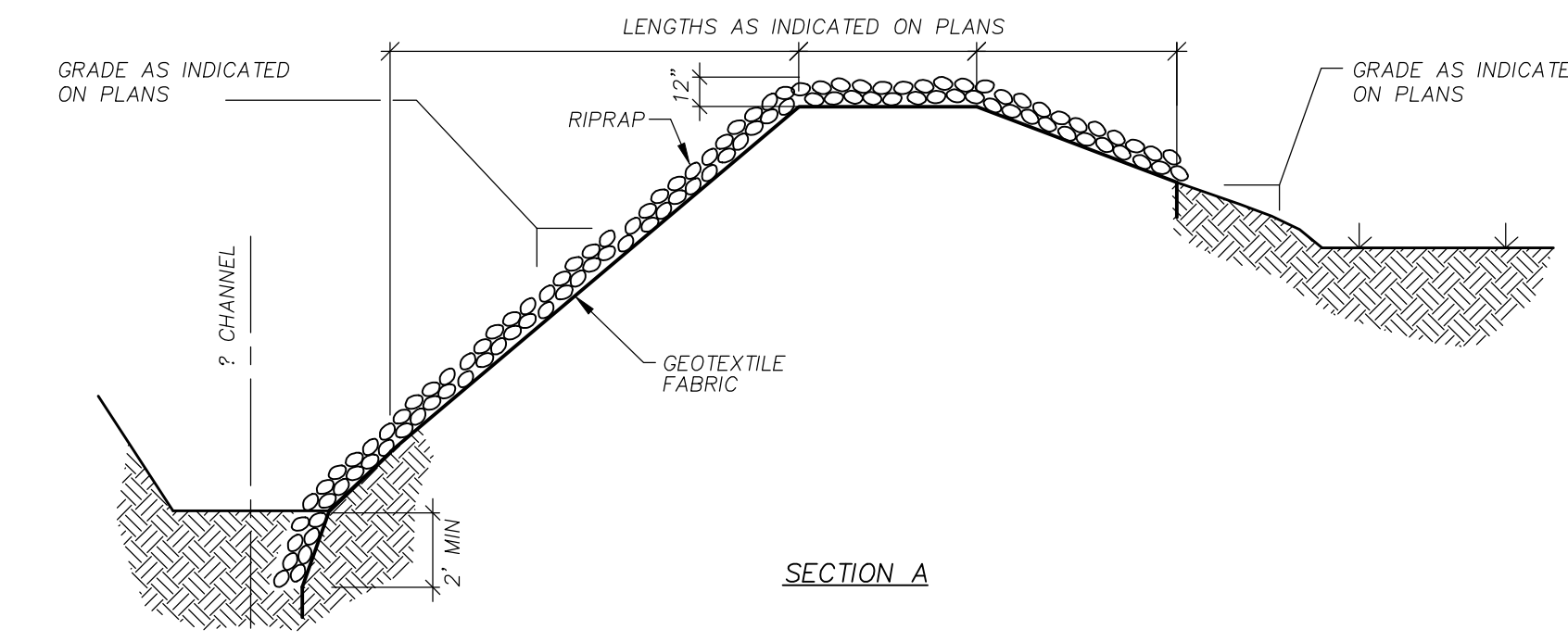


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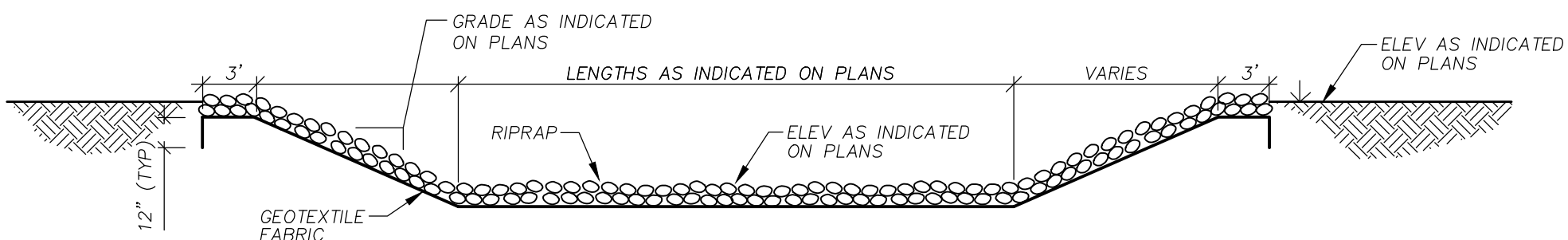
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NO SCALE 06SL9M302271-03



PLAN VIEW

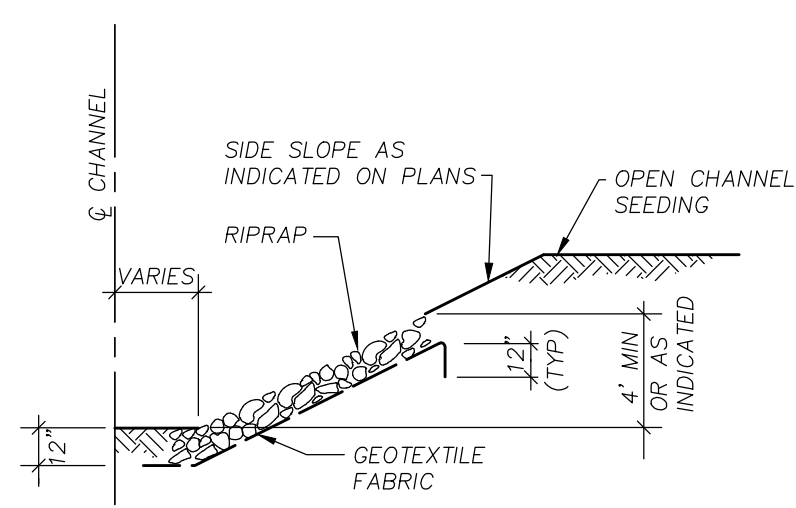


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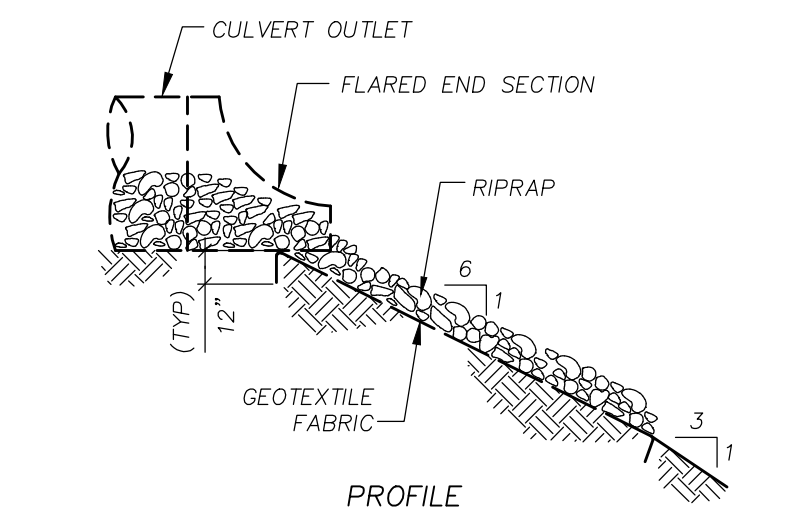


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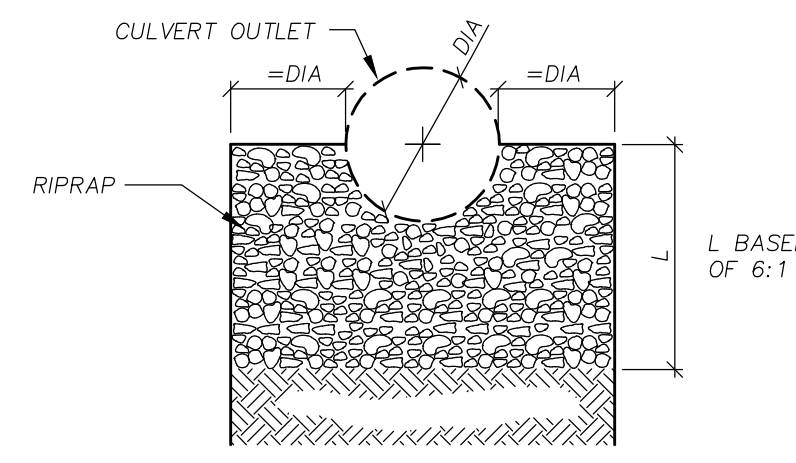
RIPRAP SPILLWAY
NO SCALE



RIPRAP PLACEMENT IN CHANNEL
NO SCALE 06TE956 02271-04

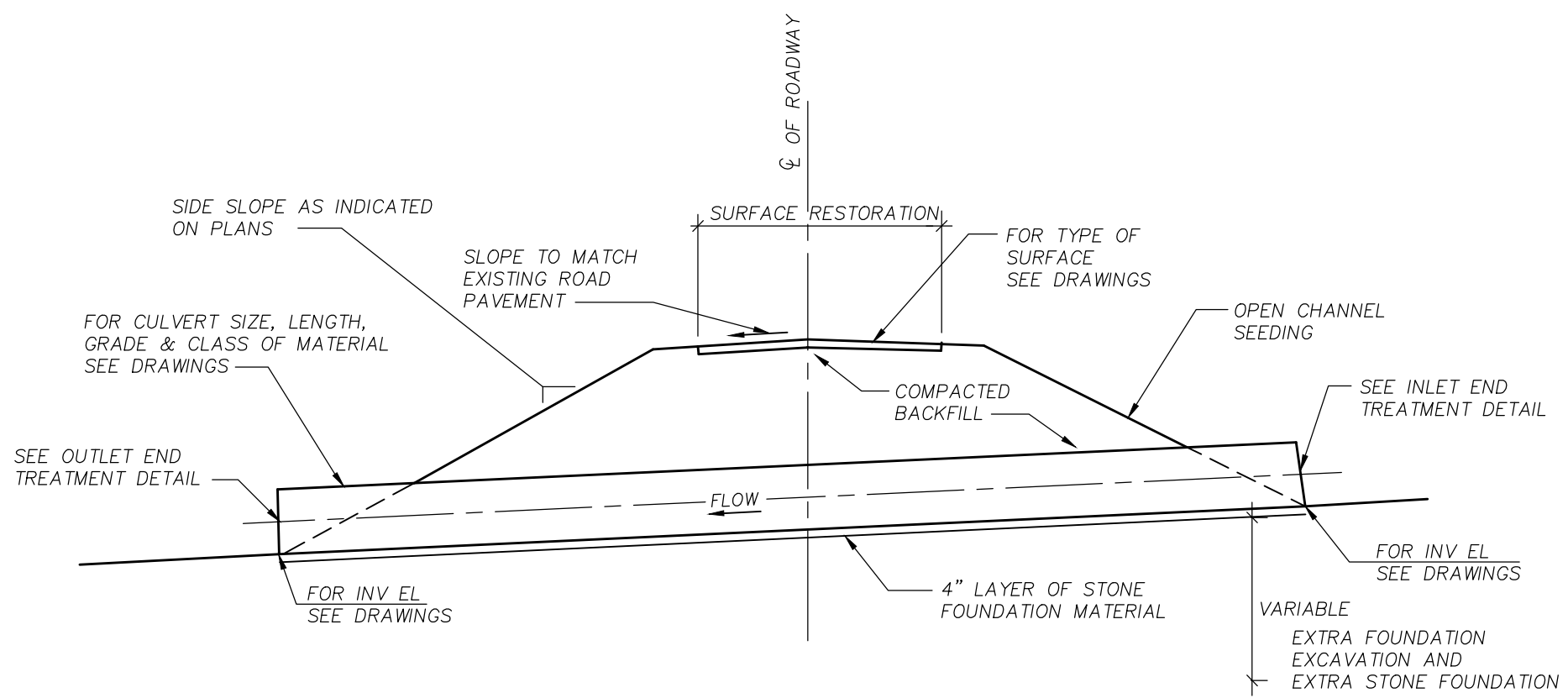


PROFILE

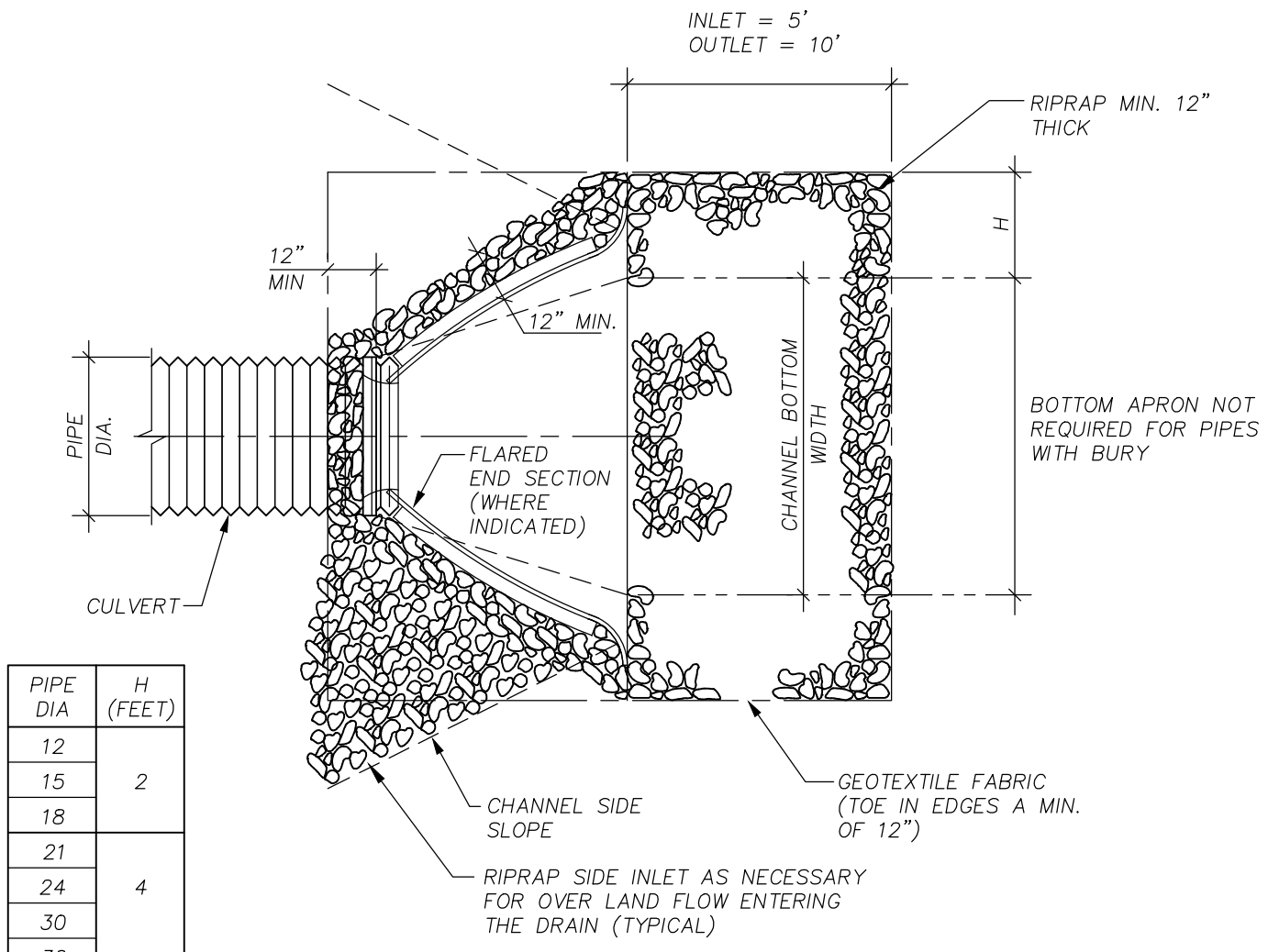


END VIEW

STORM WATER WETLAND RIPRAP APRON DETAIL
NO SCALE



CULVERT CROSSING DETAIL
NO SCALE 06SL9M302270-03



RIPRAP END TREATMENT DETAIL
NO SCALE 06SL9M3 02271-02

PIPE DIA	H (FEET)
12	
15	2
18	
21	
24	4
30	
36	
42	
48	6
54	
60	
66	
72	8
78	
84	

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

4	Vegetative Stabilization	May utilize a variety of plant material. Stabilizes soil. Slows runoff velocity. Filters sediment from runoff.
6	Seeding with Mulch and/or Matting	Facilitates establishment of vegetative cover. Effective for drainageways with low velocity. Easily placed in small quantities by inexperienced personnel. Should include prepared topsoil bed.
13	Riprap, Rubble, Gabions	Used where vegetation is not easily established. Effective for high velocities or high concentrations. Permits runoff to infiltrate soil. Dissipates energy flow at system outlets.
28	Drop Spillway	Slows velocity of flow, reducing erosive capacity.
33	Sediment Trap	May be constructed of a variety of materials. Traps sediment and reduces velocity of flow. Can be cleaned and expanded as needed.

RECORD DRAWINGS
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DETAILS