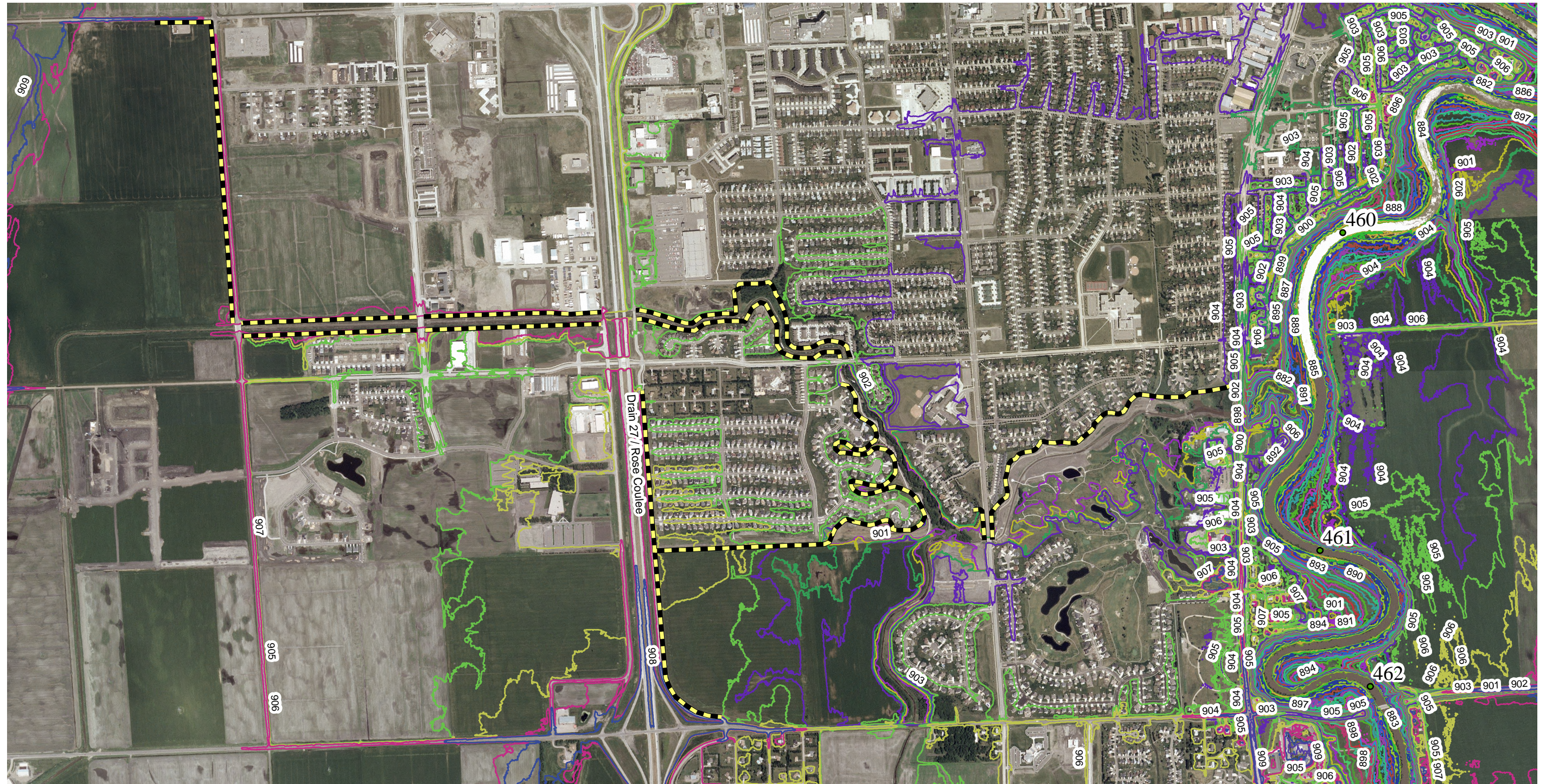


# Attachment H-12: Drain 27 / Rose Coulee Levee Information






**St. Paul District**  
 GEOLOGY  
 GEOTECHNICAL  
**US Army Corps**  
**of Engineers®**

FMMFS\_P2\_geotech\_2009-04.mxd  
 Printed 20 NOV 09

## FMMFS: Credit to Existing Levees Drain 27 / Rose Coulee, 5093 (Fargo)








**St. Paul District**  
 GEOLOGY  
 GEOTECHNICAL  
**US Army Corps**  
**of Engineers®**

FMMFS\_P2\_geotech\_2009-04.mxd  
 Printed 20 NOV 09

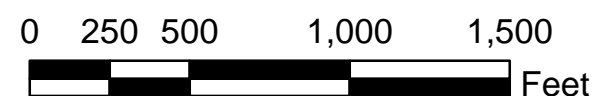
## FMMFS: Credit to Existing Levees Drain 27 / Rose Coulee, 5093 (Fargo)

0 250 500 1,000 1,500  
 Feet





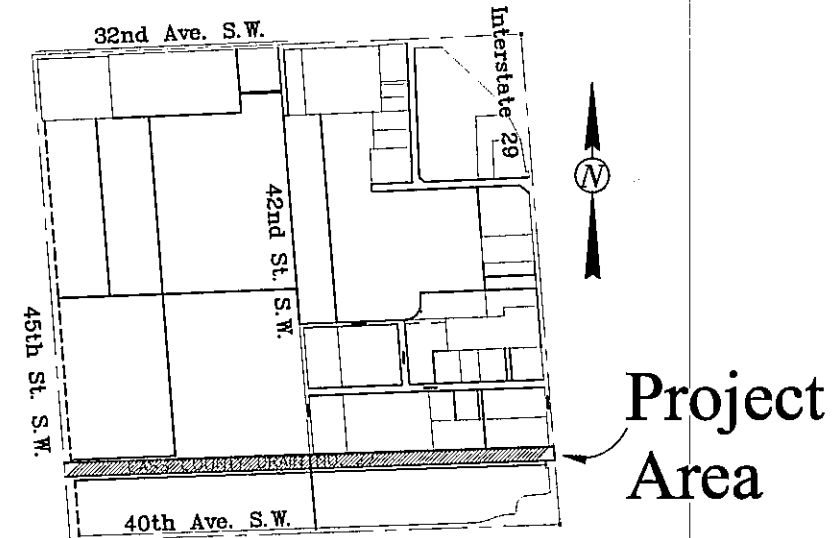
## FMMFS: Credit to Existing Levees Drain 27 / Rose Coulee, 5093 (Fargo)





*PLANS FOR  
DRAIN IMPROVEMENTS  
& INCIDENTALS*

*ENGINEERING DEPARTMENT*



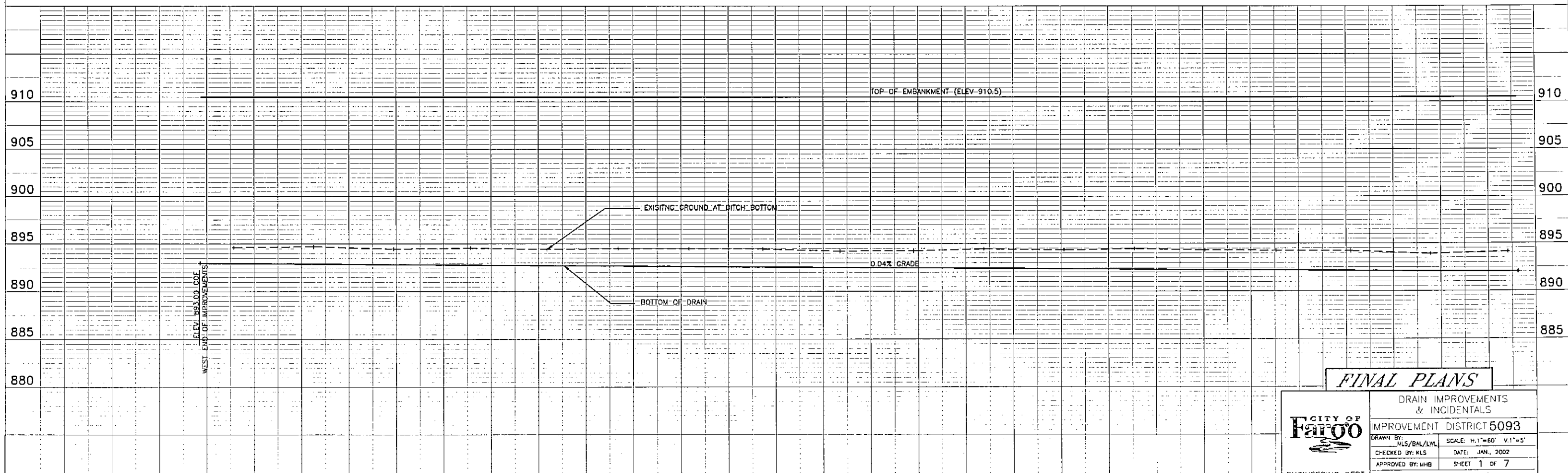
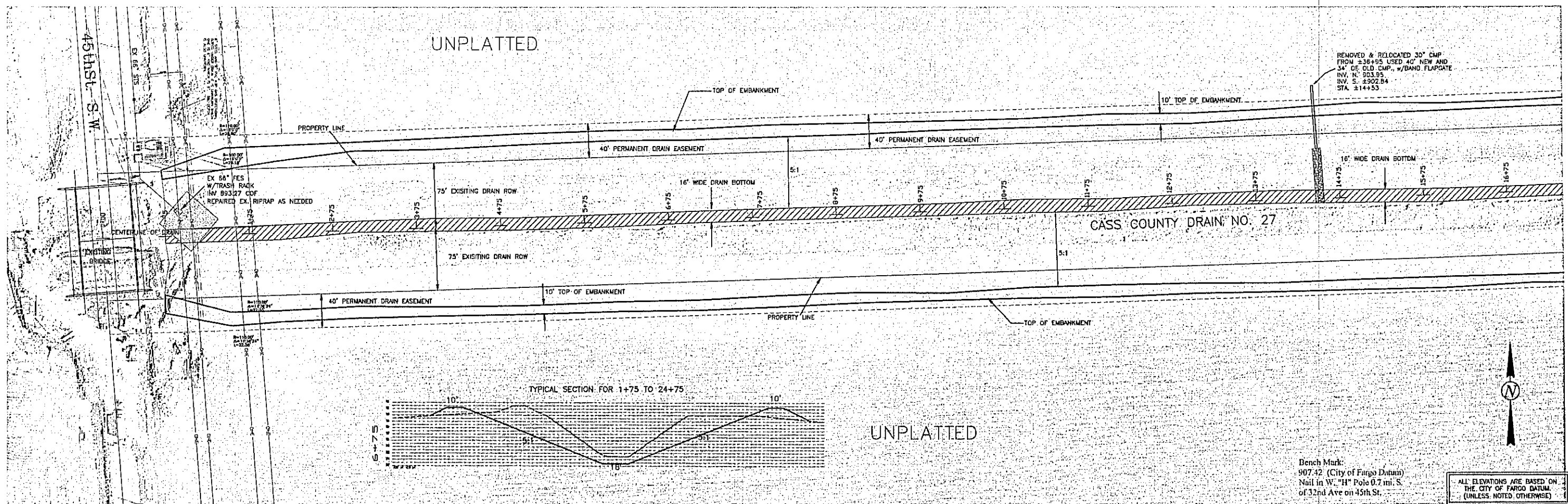
FINAL PLANS

*IMPROVEMENT DIST. 5093*

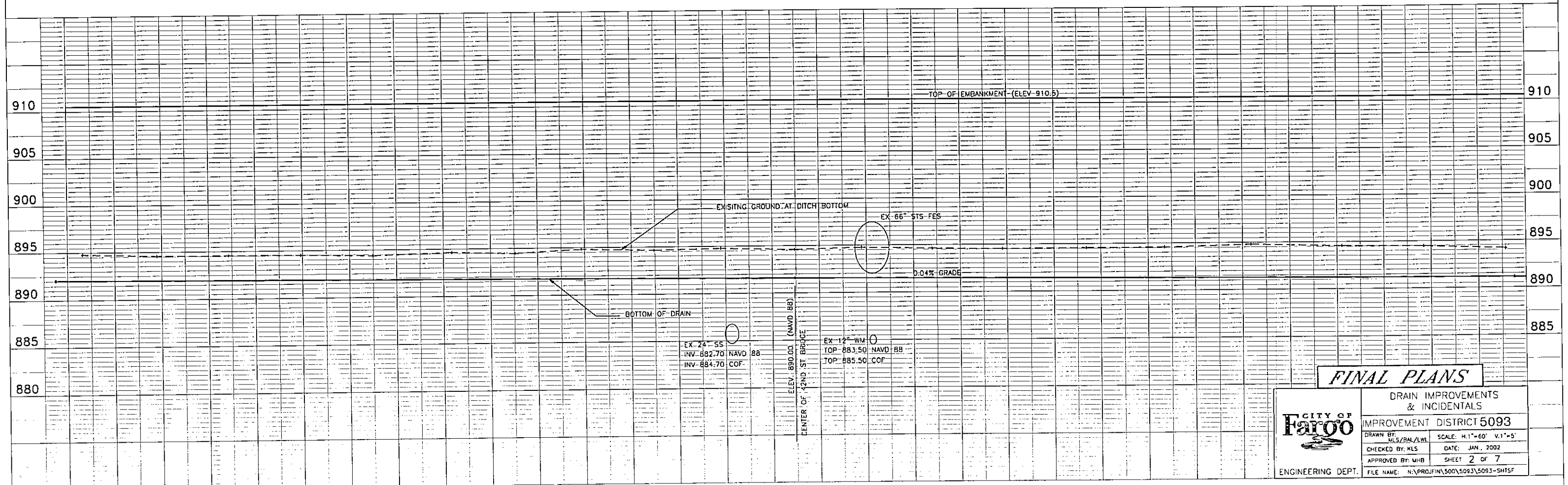
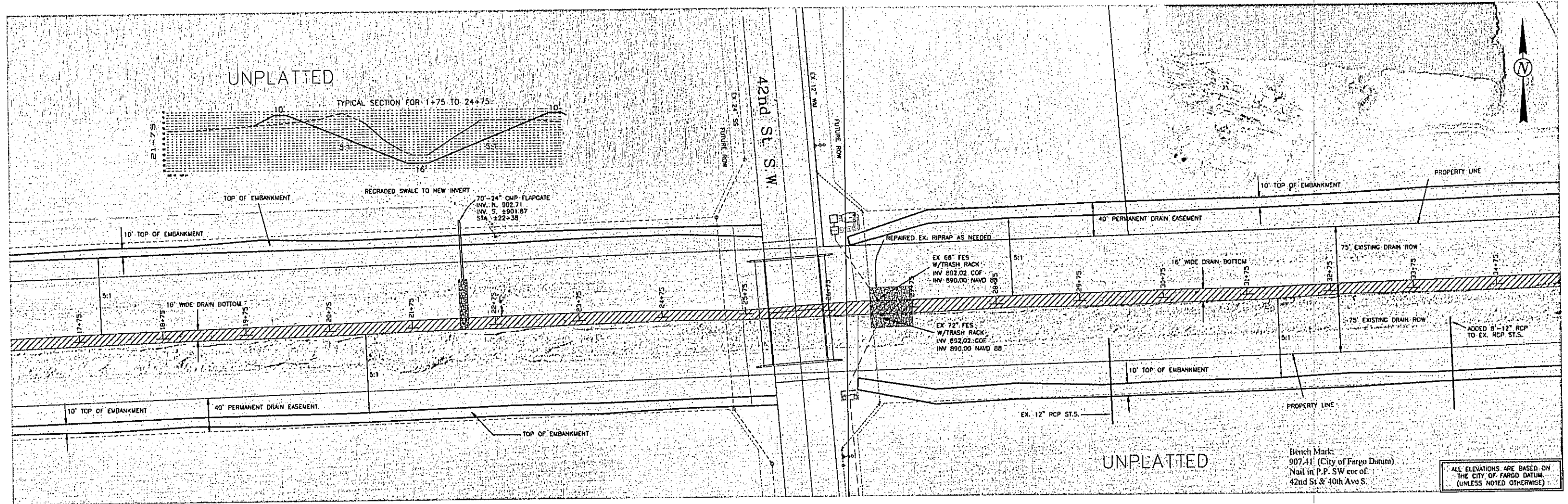
FINAL AMOUNT: \$542,762.85  
PROJECT ENGINEER: KRISTY L. SCHMIDT  
INSPECTOR: LEE LUDWIG  
CONTRACTOR: WANZEK

2002

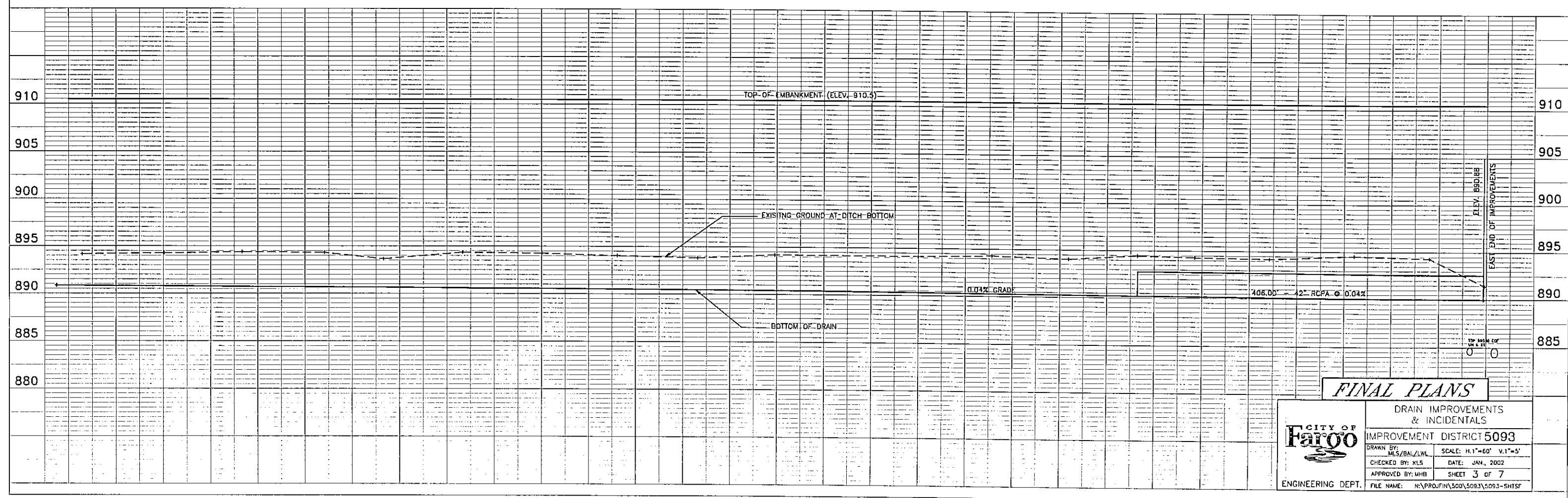
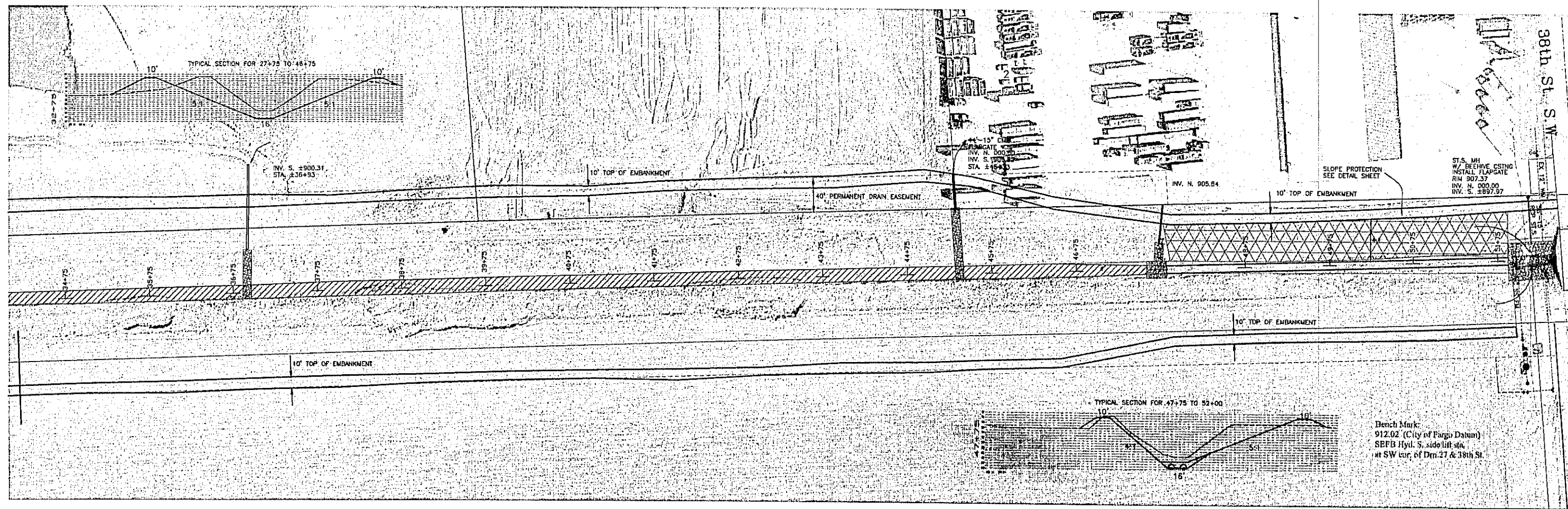




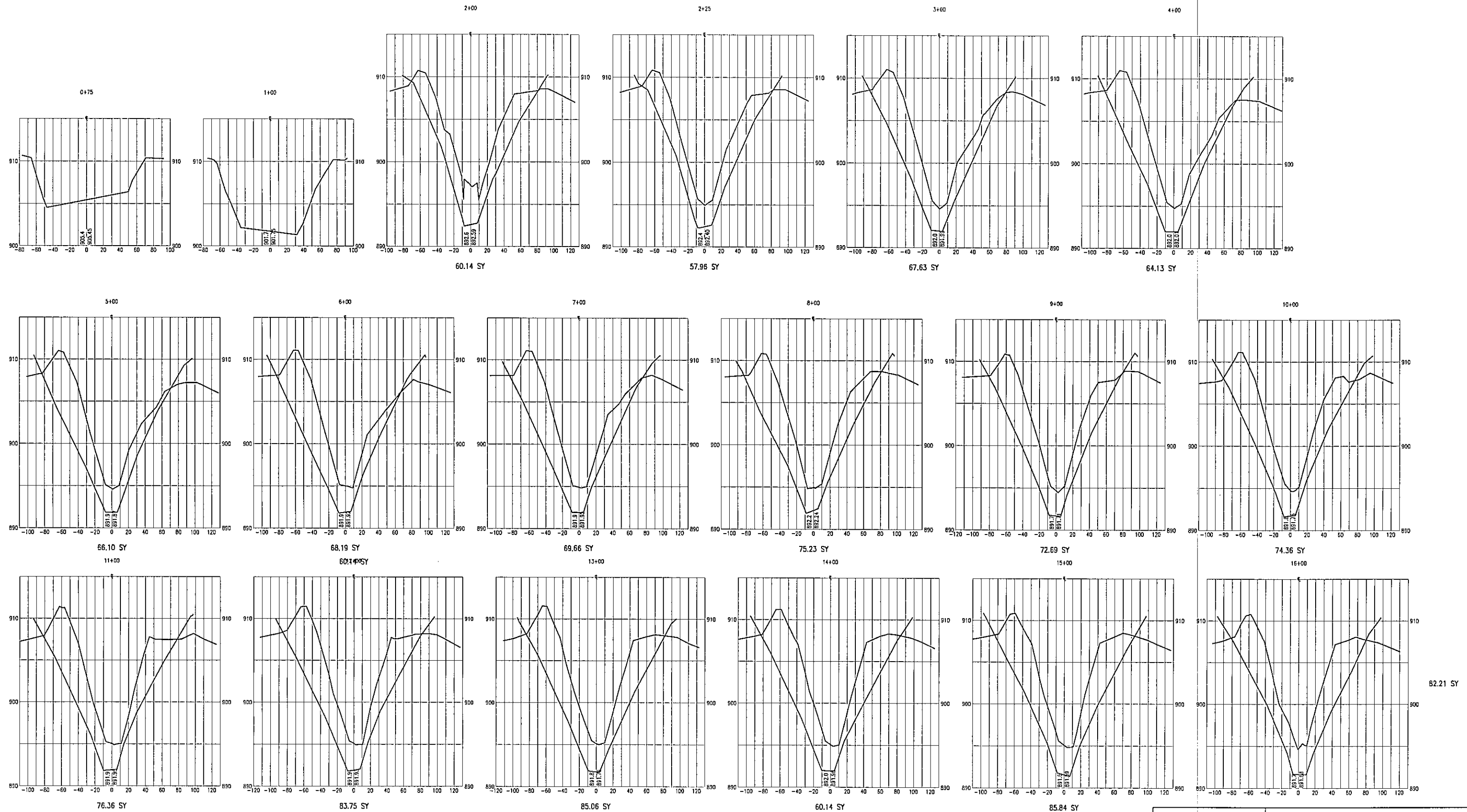












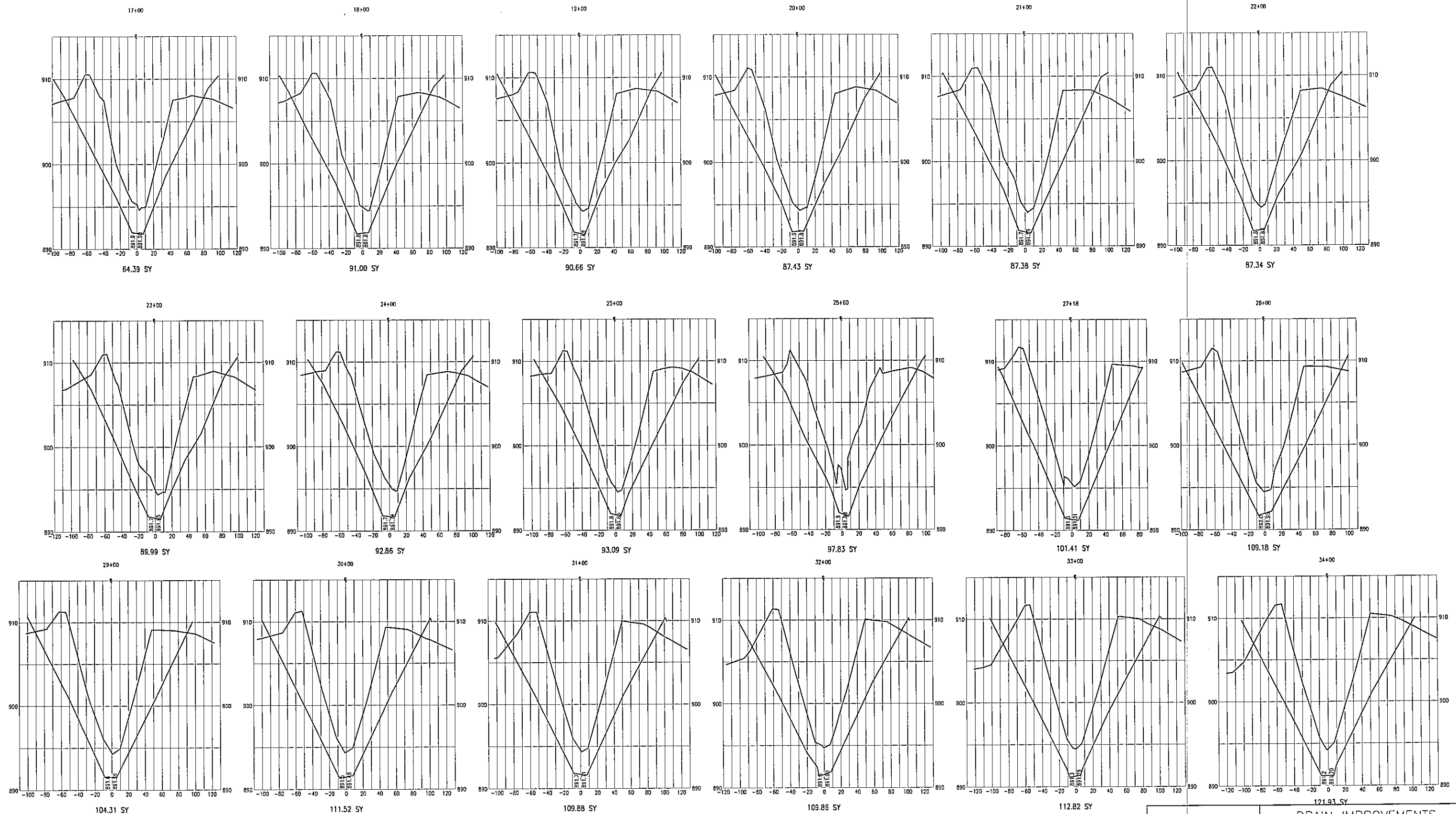
**DRAIN IMPROVEMENTS  
& INCIDENTALS**  
**IMPROVEMENT DISTRICT 5093**

DRAWN BY: LWL	SCALE: NTS
CHECKED BY: KLS	DATE: JAN., 2002
APPROVED BY: MHB	SHEET 4 OF 7

Attachment H-12, pg 8  
Credit to Existing Levees

*FINAL DIAMS*



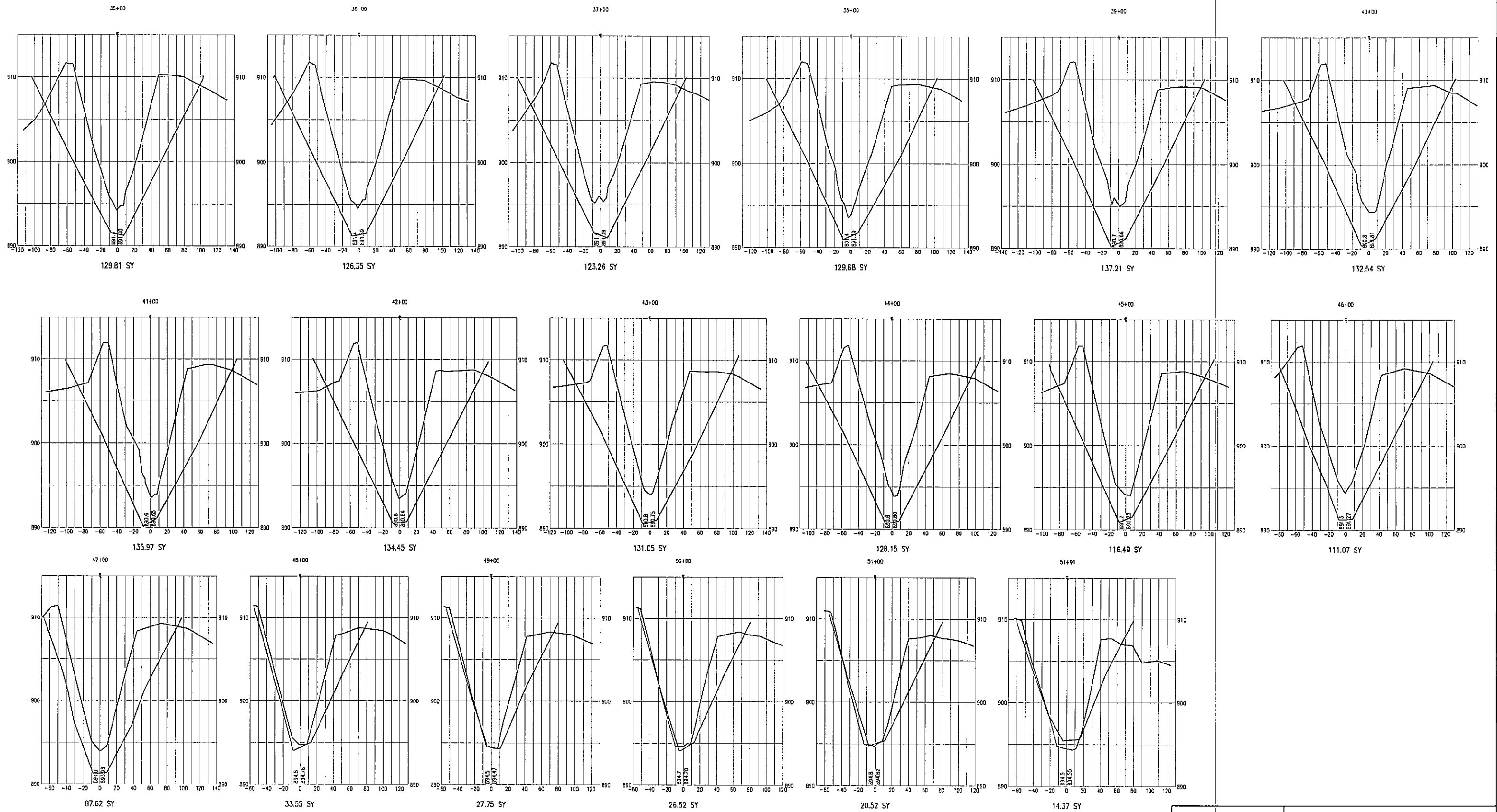


**FINAL PLANS**



DRAIN IMPROVEMENTS & INCIDENTALS	
IMPROVEMENT DISTRICT 5093	
DRAWN BY: LWL	SCALE: NTS
CHECKED BY: KLS	DATE: JAN., 2002
APPROVED BY: MHB	SHEET 5 OF 7





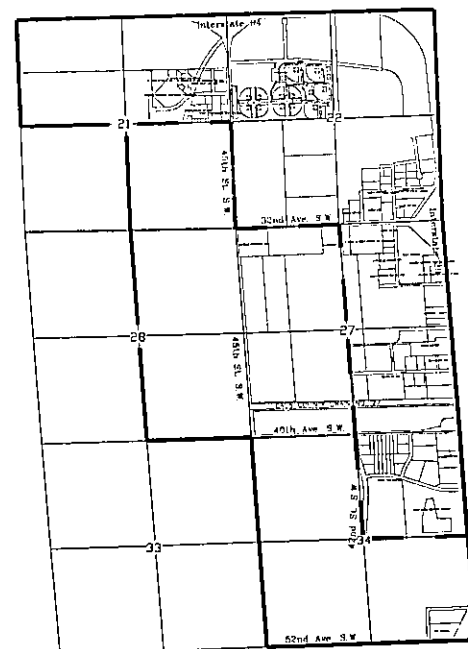
*FINAL PLANS*



ENGINEERING DEPT.

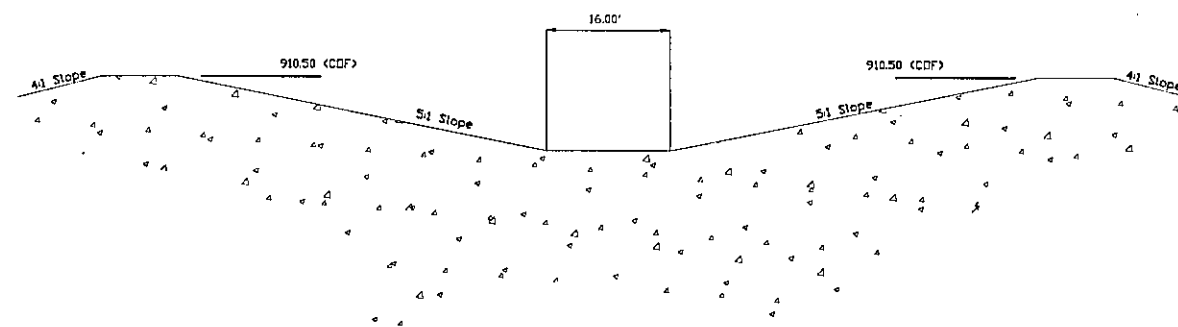
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IMPROVEMENT DISTRICT 5093	
DRAWN BY: LWL	SCALE: NTS
CHECKED BY: KLS	DATE: JAN., 2002
APPROVED BY: MHB	SHEET 6 OF 7
FILE NAME: N:\PROJFIN\5000\5093\5093-XSECF	



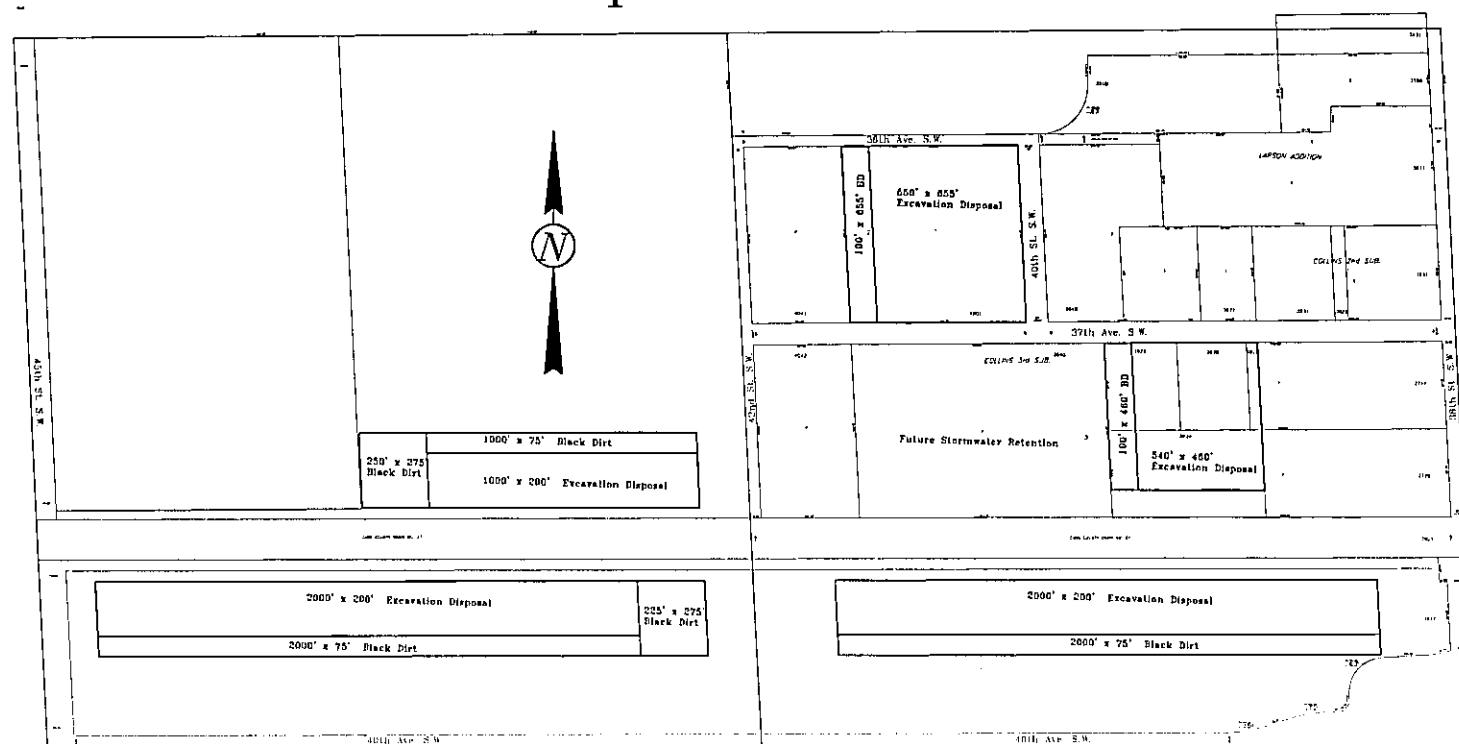


CITY OF FARGO  
ENGINEERING DEPARTMENT  
LOCATION AND ASSESSMENT  
DRAIN IMPROVEMENTS & INCIDENTALS  
IMPROVEMENT DISTRICT NO. 5093

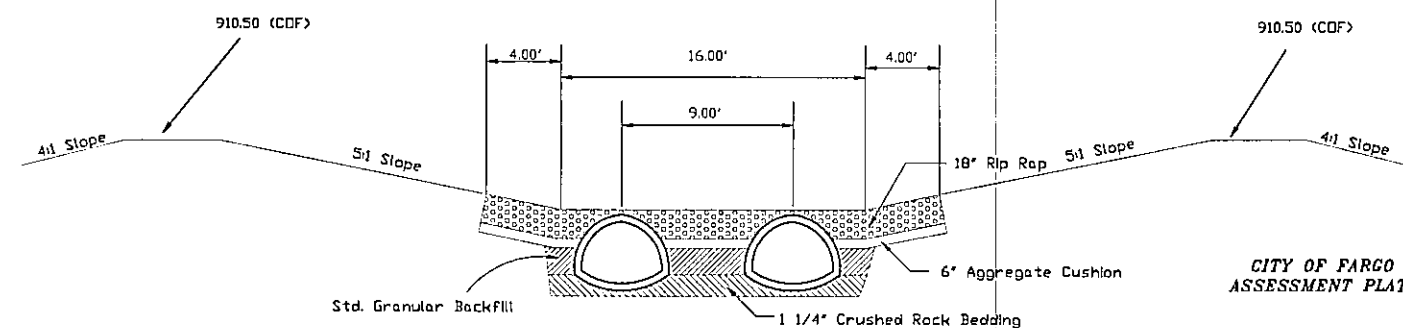
## Open Channel



## Excavation Disposal Site Locations

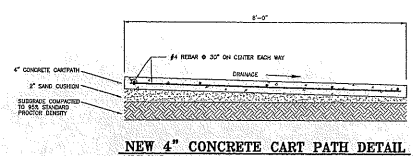
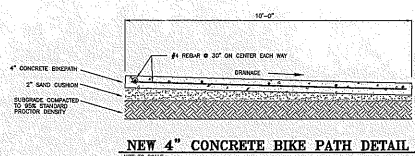
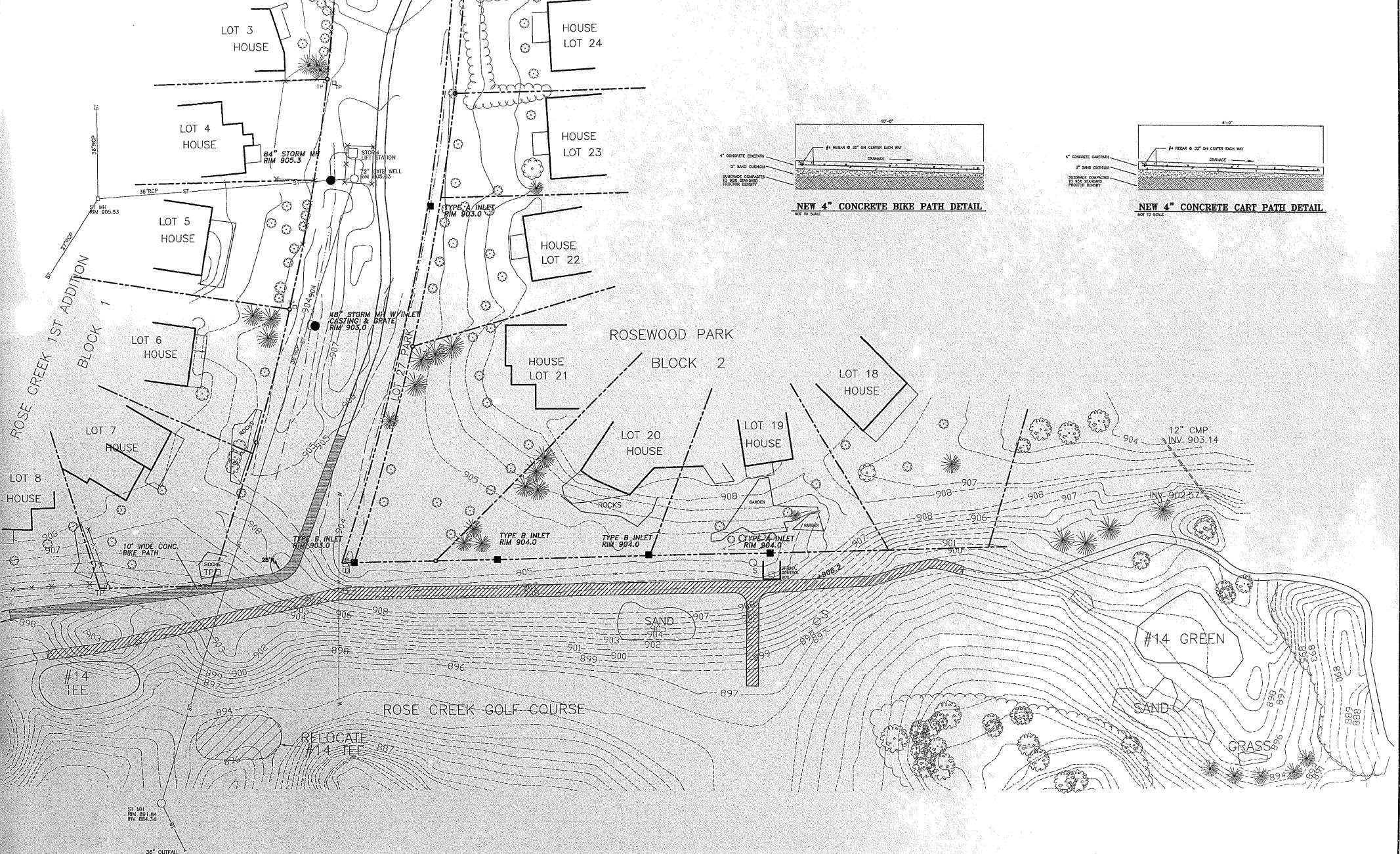


## Open Channel w/ Double Pipe



CITY OF FARGO  
ASSESSMENT PLAT  
DRAIN IMPROVEMENTS  
AND INCIDENTALS  
IMPROVEMENT DISTRICT NO. 5093





- CONSTRUCTION NOTES**
- CONTRACTOR SHALL NOTIFY UTILITY COMPANIES FOR UNDERGROUND LOCATIONS 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
  - CONTRACTOR SHALL PROTECT ALL PROPERTY PINS. PROPERTY PINS DESTROYED OR DISTURBED SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.
  - ALL WORK SHALL COMPLY WITH STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC UTILITIES (REVISED JULY 2011)

**BENCHMARK**  
SOUTHEAST FLANGE BOLT ON FIRE HYDRANT AT THE SOUTHEAST CORNER LOT 24 BLOCK 1, WEST SIDE OF OAK CREEK DRIVE ELEVATION 908.53 PER CITY OF FARGO DATUM

**LEGEND**

- PROPERTY LINE
- EXISTING CONTOUR
- STORM MANHOLE
- STORM SEWER
- WATER LINE
- TELEPHONE PEDESTAL
- NEW STD-61 MANHOLE
- NEW STORM INLET
- NEW STORM SEWER
- NEW 4" CONCRETE PAVEMENT
- CONCRETE MODULAR RETAINING WALL
- 6" CRUSHED CONCRETE

**CERTIFICATION**

I HEREBY CERTIFY THAT THE ATTACHED PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

DATE: 3-2-99 REG. NO. 6593

CITY OF FARGO		PROJECT 488-1	
ROSE COULEE DIKE CONSTRUCTION		FARGO, NORTH DAKOTA	
ATTACHMENT H-2		CONCRETE PAVING PLAN	
CHECKED BY: NWM	DATE: 9/26/97	AS SHOWN	97075
APPROVED BY: NWM	DATE: 9/26/97	SHEET 1 OF 2	ASAP: 97075











RECORD DRAWINGS  
FOR  
DRAIN 27/ROSE COULEE  
IMPROVEMENTS & INCIDENTALS

FARGO, NORTH DAKOTA  
IMPROVEMENT DISTRICT NO. 4556-1  
UEI PROJECT NO. 00-0093

LOCATION MAP

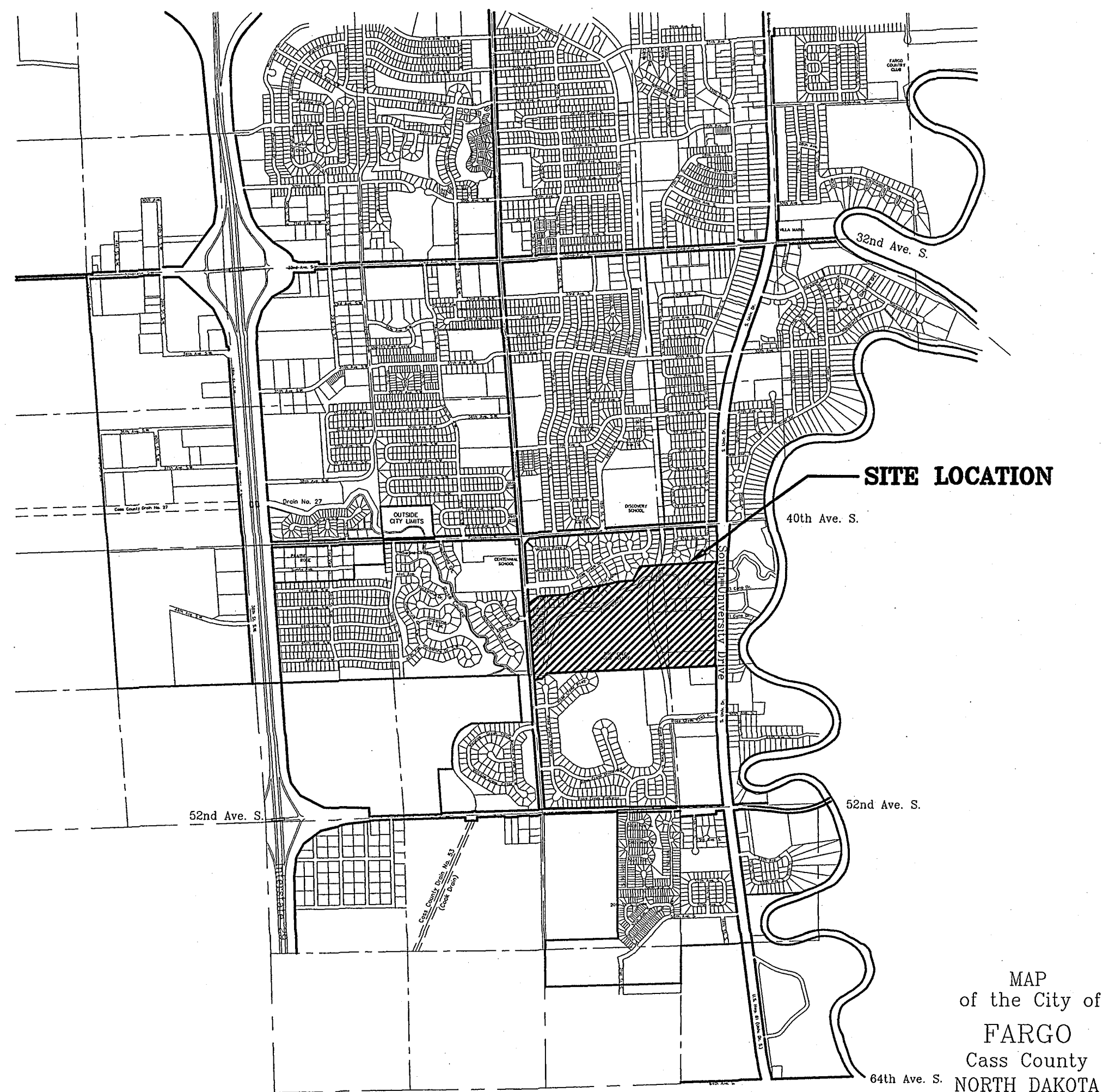


TABLE OF CONTENTS

	COVER
1	OVERALL LAYOUT EXISTING CONDITIONS
2	OVERALL LAYOUT PROPOSED IMPROVEMENTS
3	EXISTING CONDITIONS/DEMOLITION PLAN
4	EXISTING CONDITIONS/DEMOLITION PLAN
5	EXISTING CONDITIONS/DEMOLITION PLAN
6	EXISTING CONDITIONS/DEMOLITION PLAN
7	EXISTING CONDITIONS/DEMOLITION PLAN
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10	PROPOSED IMPROVEMENTS
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12	PROPOSED IMPROVEMENTS
13	PROPOSED IMPROVEMENTS
14	PROPOSED IMPROVEMENTS
15	PROPOSED IMPROVEMENTS
16	PROPOSED IMPROVEMENTS
17	CART PATH BRIDGE PLAN & DETAILS
18	DETAILS
19	DETAILS
20	DETAILS
21	TURF REINFORCEMENT, SEEDING & SODDING PLAN
22	IRRIGATION SYSTEM REVISIONS



I HEREBY CERTIFY THAT THE ATTACHED PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

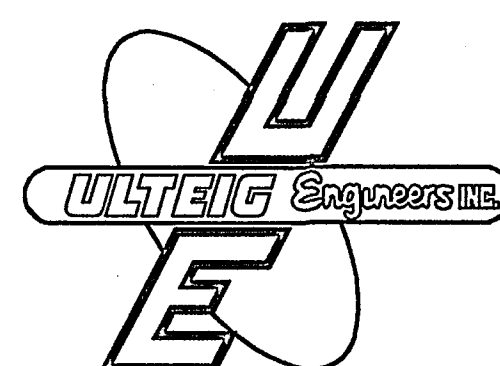
DATE \_\_\_\_\_ REG. NO. \_\_\_\_\_

APPROVAL OF CITY ENGINEER

I MARK BITTNER, P.E., CITY ENGINEER FOR THE CITY OF FARGO, NORTH DAKOTA, HEREBY APPROVE THESE PLANS FOR DRAIN 27/ROSE COULEE IMPROVEMENTS AND INCIDENTALS IMPROVEMENT DISTRICT NO. 4556-1, FARGO, NORTH DAKOTA AS SHOWN ON THE ACCOMPANYING PLANS.

MARK BITTNER, P.E.  
CITY ENGINEER  
FARGO, NORTH DAKOTA

DATE \_\_\_\_\_ REG. NO. \_\_\_\_\_

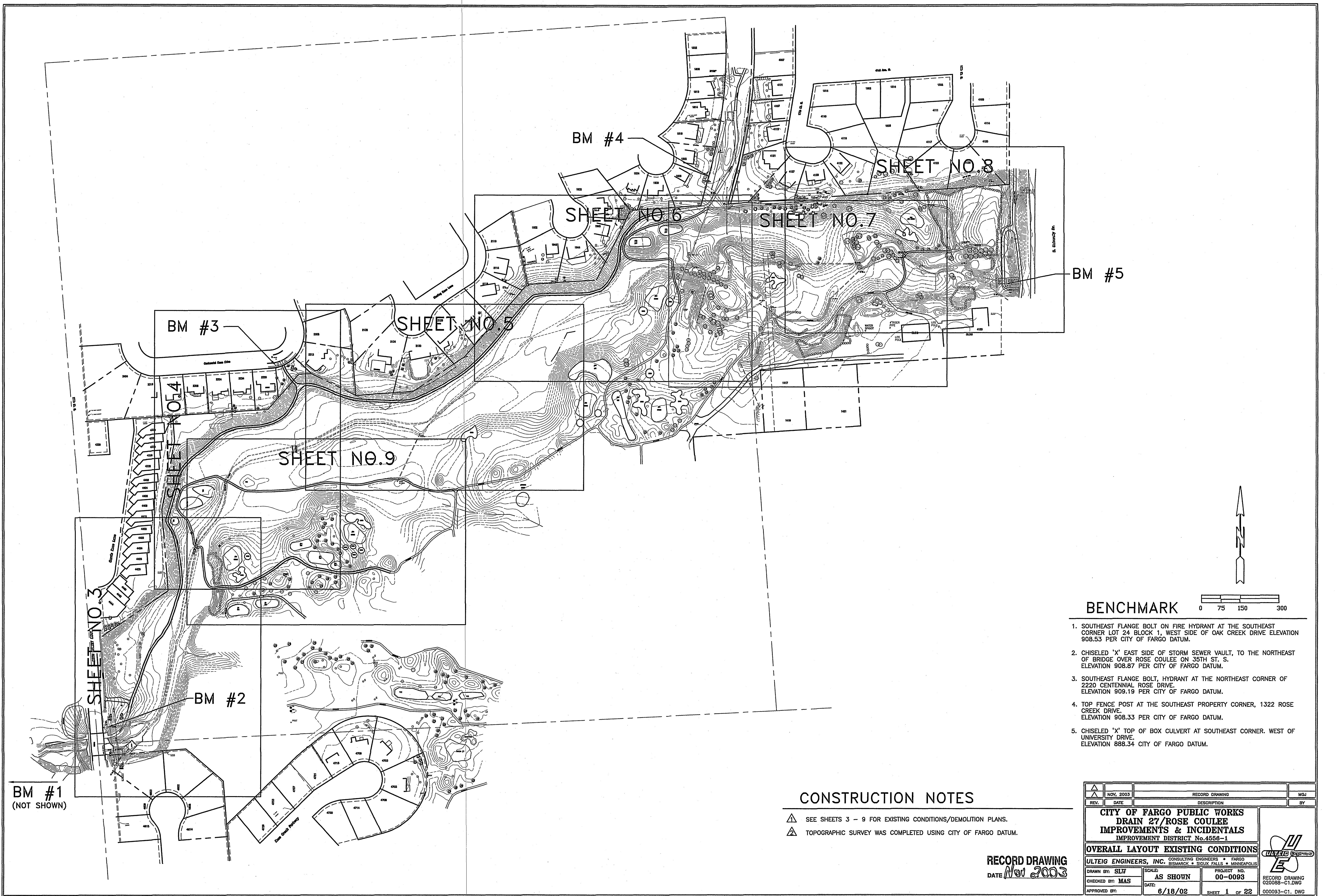


ULTEIG ENGINEERS INC.

FARGO \* BISMARCK \* MINNEAPOLIS \* SIOUX FALLS

RECORD DRAWING  
DATE Nov 2003







DIKE RECONSTRUCTION EARTHWORK QUANTITIES	
REMOVE AND REPLACE 6" TOPSOIL	900 CY
RAW CUT	625 CY
RAW FILL	2,400 CY
FILL REQUIRED	3,120 CY

BIKE PATH EARTHWORK QUANTITIES	
REMOVE AND REPLACE TOPSOIL	4,500 CY
RAW CUT	2,000 CY
RAW FILL	15,600 CY
FILL REQUIRED	20,279 CY
BORROW EMBANKMENT	4,500 CY
6" AGGREGATE BASE FOR BIKE PATH	740 CY

## LEGEND

⊙	MONUMENT FOUND
○	MONUMENT SET. 5/8" REBAR
---	PROPERTY LINE
---	CURB & GUTTER
○	MANHOLE
□	INLET
+	FIRE HYDRANT
+	GATE VALVE
○ PP	POWER POLE
~	ANCHOR
• TP	TELEPHONE PEDESTAL
• TP	TELEVISION PEDESTAL
⊠	TRANSFORMER
*	STREET LIGHT
-	STREET SIGN
+	FENCE
⊙	TREES
---	SANITARY SEWER
---	STORM SEWER
---	WATER LINE
---	GAS LINE
---	UNDERGROUND TELEPHONE
---	UNDERGROUND POWER
---	OVERHEAD POWER
---	UNDERGROUND TELEVISION
---	EXCAVATION LIMIT LINE
⊠	REMOVE CONCRETE
⊠	REMOVE ASPHALT
⊠	REMOVE TREE
⊠	REMOVE CURB & GUTTER
⊠	NEW CONCRETE DRAIN
⊠	NEW CONCRETE BIKE PATH
⊠	NEW CONCRETE CART PATH
⊠	NEW CONCRETE ACCESS ROAD

STRIPPED TOPSOIL FROM #12 FAIRWAY WAS USED IN OTHER AREAS. 3,227 CY OF TOPSOIL WAS IMPORTED FOR FAIRWAY.

ACTUAL EXCAVATION AND EMBANKMENT QUANTITIES WERE NOT FIELD DETERMINED.

#12 FAIRWAY IMPROVEMENTS	
REMOVE AND REPLACE 6" TOPSOIL	3,800 CY
RAW CUT	7,600 CY
RAW FILL	5,638 CY
FILL REQUIRED	5,500 CY
BORROW EMBANKMENT	11,110 CY
	12,000 CY
	14,443 CY
	45,600 CY
	4,335 CY
	5,638 CY

CHANGES ARE PER MEMO DATED 9/11/02.

FLOOD STAGE TABLE		
ITEM	ELEVATION	FLOOD STAGE
BRIDGE ABUTMENT	899.05	31.5
CONTROL STRUCTURE	898.75	31.2
	887.00	19.7

CITY OF FARGO DATUM

BASE FLOOD ELEVATION 905.86 = 38.3' FLOOD STAGE

## CONSTRUCTION NOTES

- SEE SHEETS 10 - 16 FOR PROPOSED IMPROVEMENTS PLANS.
- STRIPPED 6" OF TOPSOIL OFF ALL PROPOSED DISTURBED AREAS ON THE #12 FAIRWAY AND TEE BOX. RECONSTRUCTED #12 FAIRWAY TO PROPOSED GRADES AND CONTOURS WITH APPROVED FILL MATERIALS FROM SITE. MUCK EXCAVATION IS NOT ALLOWED.
- SEE TURF REINFORCEMENT, SEEDING AND SODDING PLAN FOR FINISH WORK (SHEET #21).
- STRIP TOPSOIL FROM ALL AREAS TO BE DISTURBED AND STOCKPILE. REPLACE AFTER COMPLETION OF WORK.
- COORDINATE WITH OWNER REMOVAL AND REINSTALLATION OF EXISTING SPRINKLER SYSTEM IN ALL AREAS AFFECTED BY CONSTRUCTION.

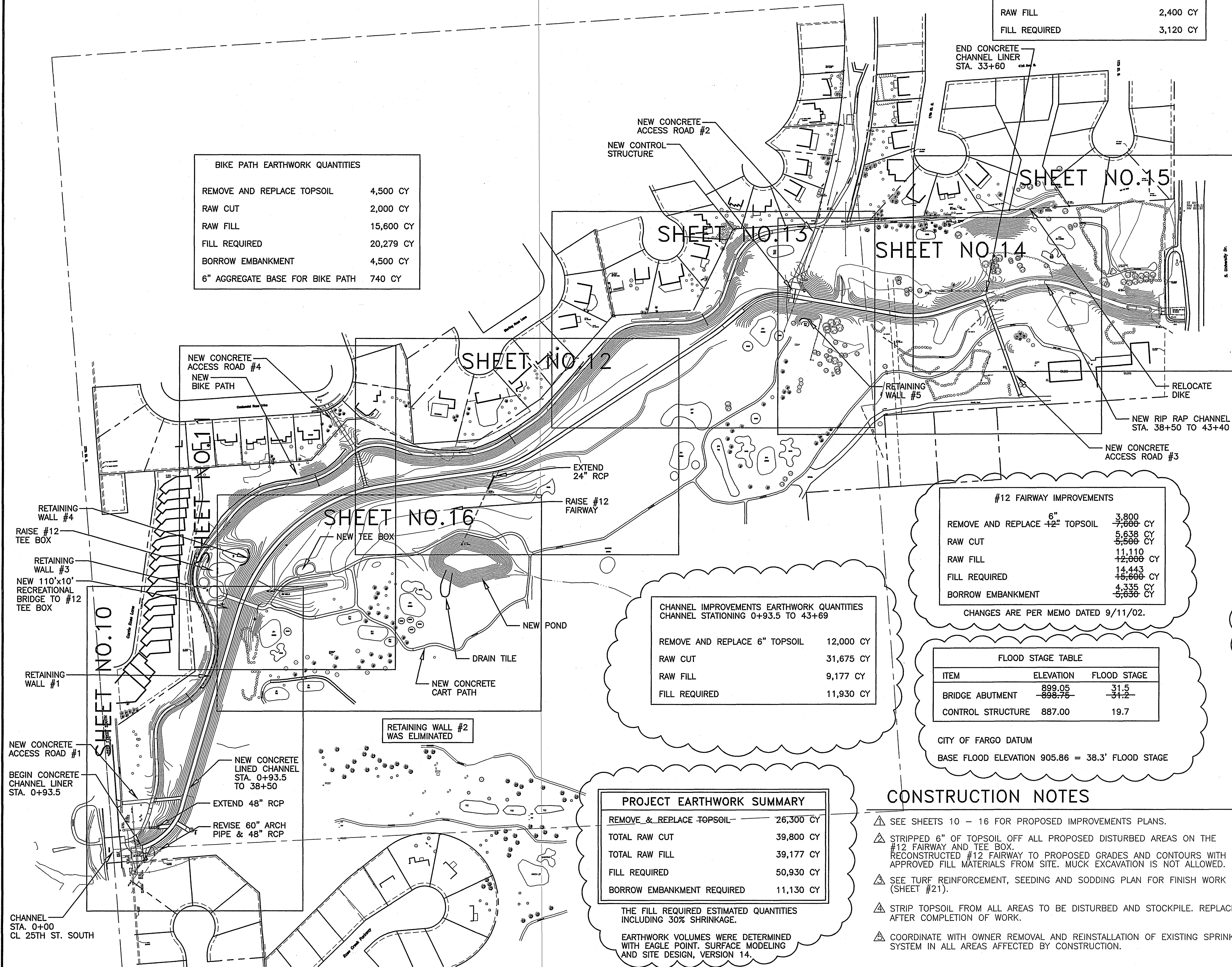
PROJECT EARTHWORK SUMMARY	
REMOVE & REPLACE TOPSOIL	26,300 CY
TOTAL RAW CUT	39,800 CY
TOTAL RAW FILL	39,177 CY
FILL REQUIRED	50,930 CY
BORROW EMBANKMENT REQUIRED	11,130 CY

THE FILL REQUIRED ESTIMATED QUANTITIES INCLUDING 30% SHRINKAGE.

EARTHWORK VOLUMES WERE DETERMINED WITH EAGLE POINT. SURFACE MODELING AND SITE DESIGN, VERSION 14.

### CHANNEL IMPROVEMENTS EARTHWORK QUANTITIES CHANNEL STATIONING 0+93.5 TO 43+69

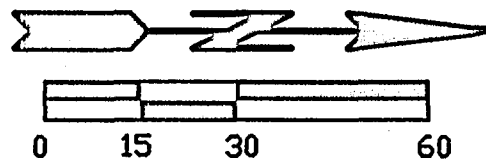
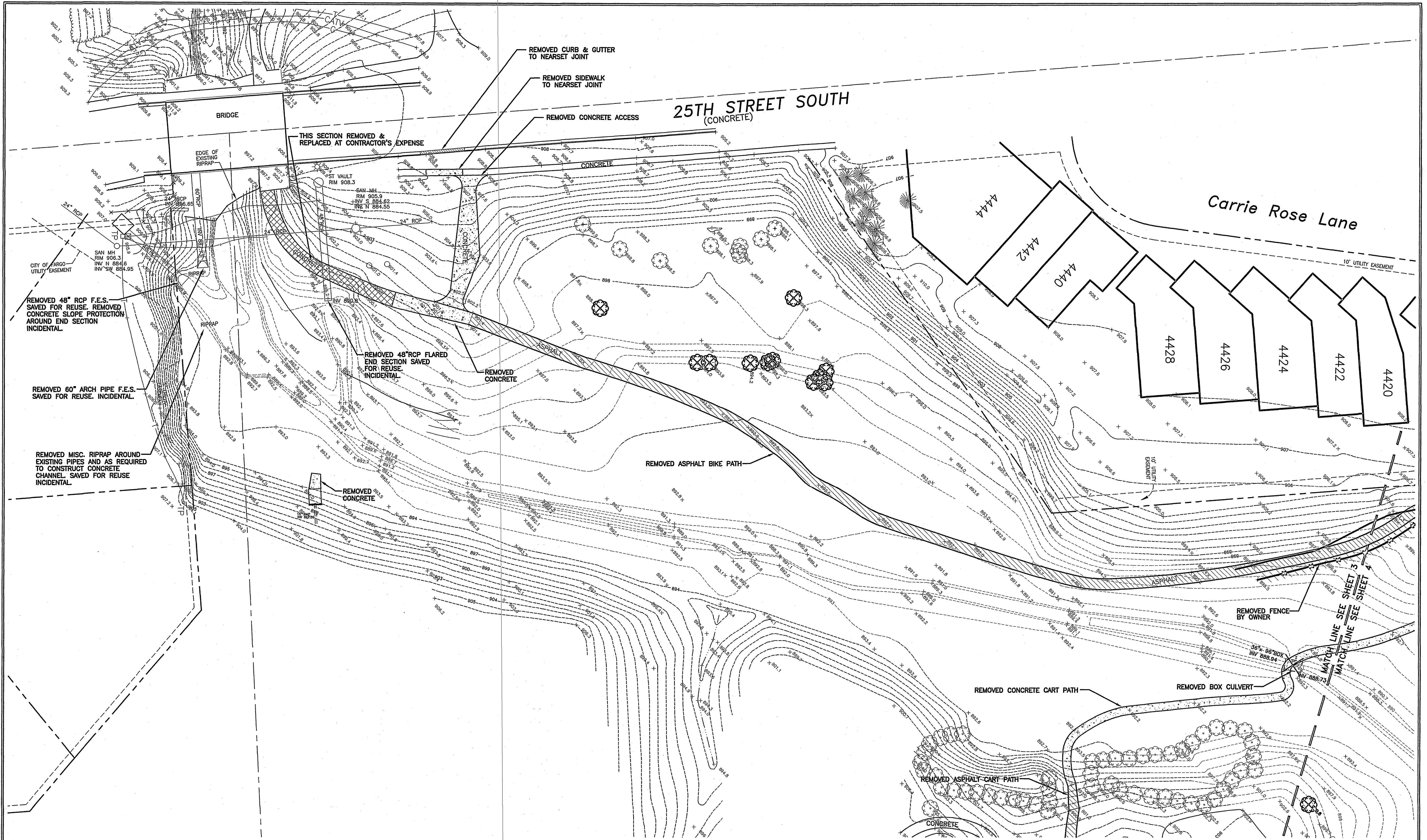
REMOVE AND REPLACE 6" TOPSOIL	12,000 CY
RAW CUT	31,675 CY
RAW FILL	9,177 CY
FILL REQUIRED	11,930 CY



RECORD DRAWING  
DATE Nov 2003

NOV. 2003	RECORD DRAWING	MGJ
6/26/02	ADDENDUM NO. 1 UPDATED EARTHWORK QUANTITIES	SLW
REV.	DATE	DESCRIPTION
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DATE Nov 2003

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1	NOV. 2003	RECORD DRAWING	MGJ

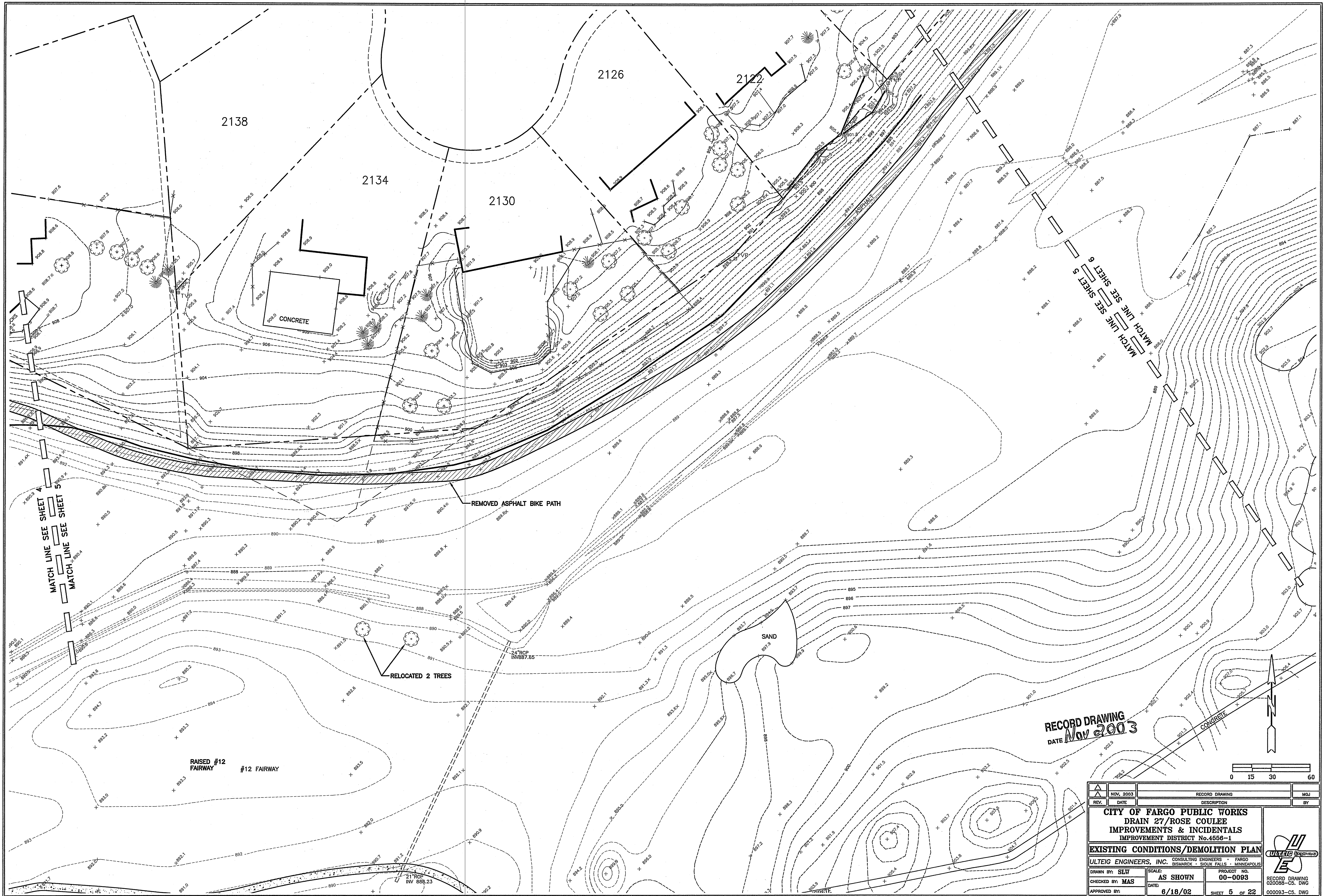
CITY OF FARGO PUBLIC WORKS	
DRAIN 27/ROSE COULEE	
IMPROVEMENTS & INCIDENTALS	
IMPROVEMENT DISTRICT No.4556-1	
EXISTING CONDITIONS/DEMOLITION PLAN	
ULTEIG ENGINEERS, INC.	FARGO
CONSULTING ENGINEERS	SIOUX FALLS
MINNEAPOLIS	
DRAWN BY: SLV	PROJECT NO. 00-0093
CHECKED BY: MAS	DATE: 6/18/02
APPROVED BY:	SHEET 3 OF 22

RECORD DRAWING 020088-C3. DWG  
000093-C3. DWG





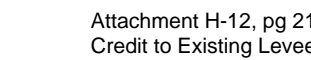




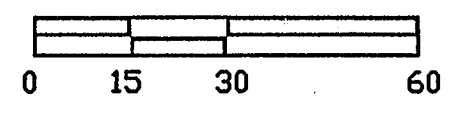
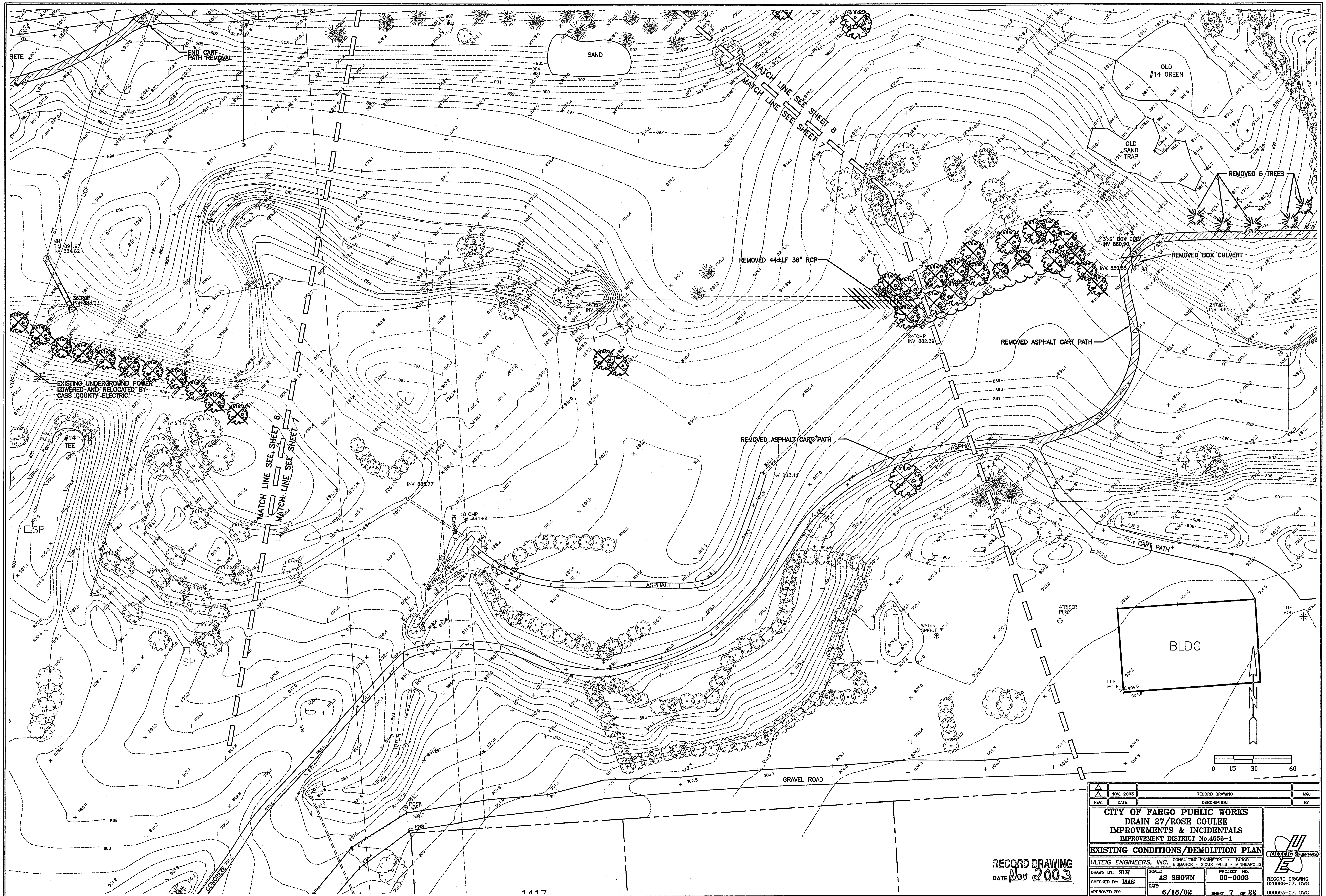
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DATE Nov 2003

REV.	NOV. 2003	RECORD DRAWING	MGJ
DATE		DESCRIPTION	BY
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<b>EXISTING CONDITIONS/DEMOLITION PLAN</b>			
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS - FARGO		PROJECT NO. 00-0093	
BISMARCK - SIOUX FALLS - MINNEAPOLIS		RECORD DRAWING 020088-C5.DWG	
DRAWN BY: SLW	SCALE: AS SHOWN	SHEET 5 OF 22	
CHECKED BY: MAS	DATE: 6/18/02	000093-C5.DWG	
APPROVED BY:			









NOV. 2003	RECORD DRAWING	MGJ
REV.	DATE	DESCRIPTION
<b>CITY OF FARGO PUBLIC WORKS</b> <b>DRAIN 27/ROSE COULEE</b> <b>IMPROVEMENTS &amp; INCIDENTALS</b> <b>IMPROVEMENT DISTRICT No.4556-1</b>		
<b>EXISTING CONDITIONS/DEMOLITION PLAN</b>		
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS • FARGO BISMARCK • SIOUX FALLS • MINNEAPOLIS		
DRAWN BY: SLW	SCALE: AS SHOWN	PROJECT NO. 00-0093
CHECKED BY: MAS	DATE: 6/18/02	SHEET 7 OF 22
APPROVED BY:		RECORD DRAWING 020058-C7. DWG

RECORD DRAWING  
DATE Nov 2003





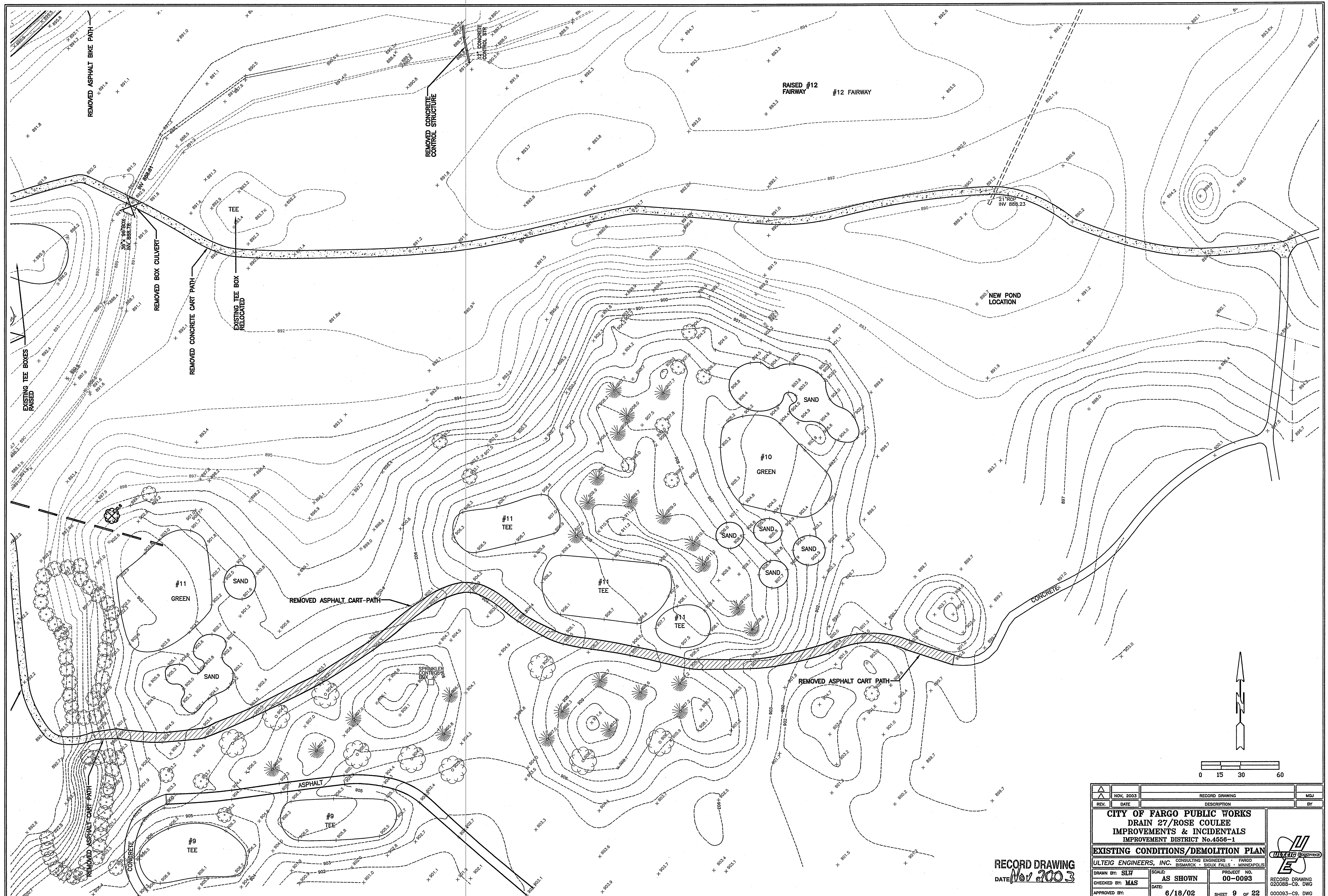
S. University Dr.





























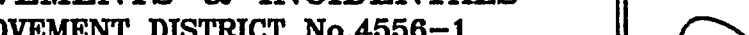



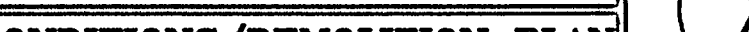







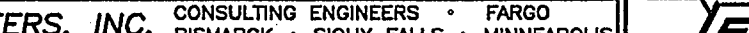



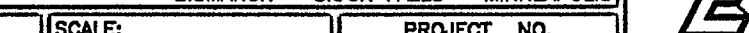


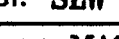




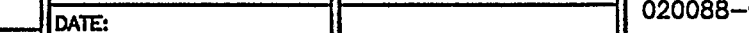


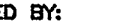


RECORD DRAWING  
DATE Nov 2003

NOV 2003	RECORD DRAWING	MDJ
REV.	DATE	DESCRIPTION
CITY OF FARGO PUBLIC WORKS DRAIN 27/ROSE COULEE IMPROVEMENTS & INCIDENTALS IMPROVEMENT DISTRICT No.4556-1		
EXISTING CONDITIONS/DEMOLITION PLAN		
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS • FARGO BISMARCK • SIOUX FALLS • MINNEAPOLIS		
DRAWN BY: SLT	SCALE: AS SHOWN	PROJECT NO. 00-0093
CHECKED BY: MAS	DATE: 6/18/02	SHEET 8 OF 22
APPROVED BY:		RECORD DRAWING 020088-C8.DWG 000093-C8.DWG

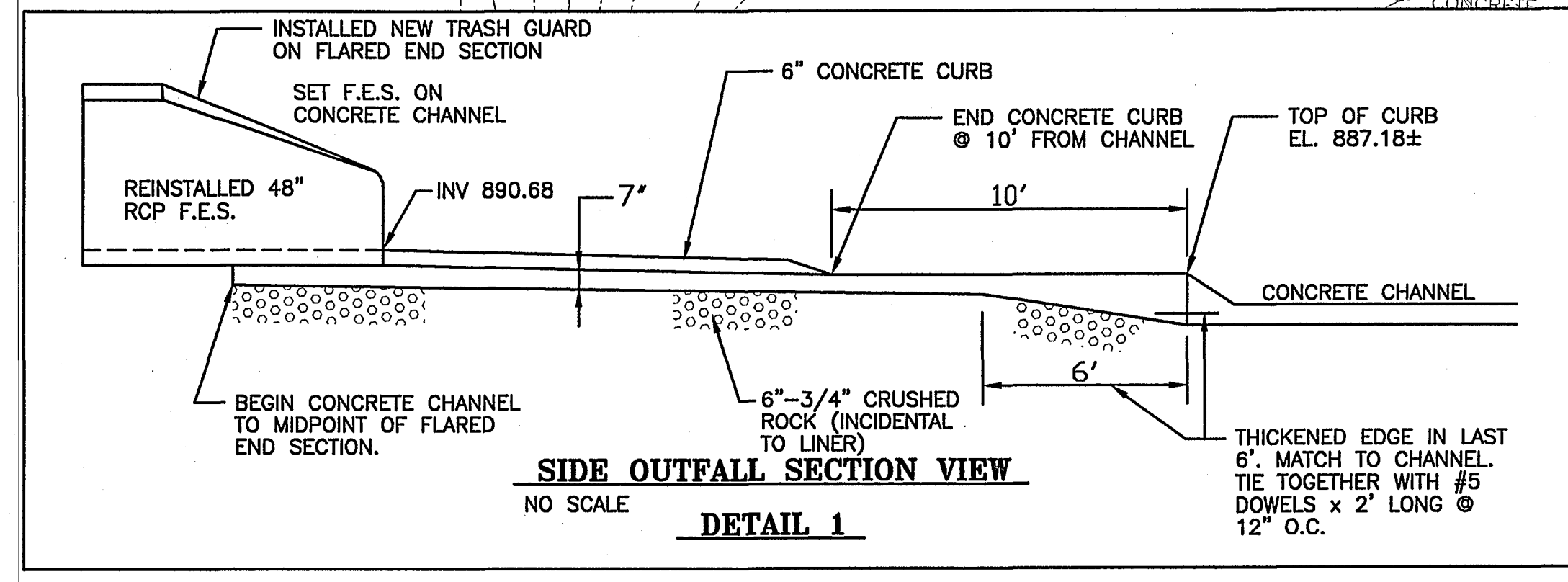
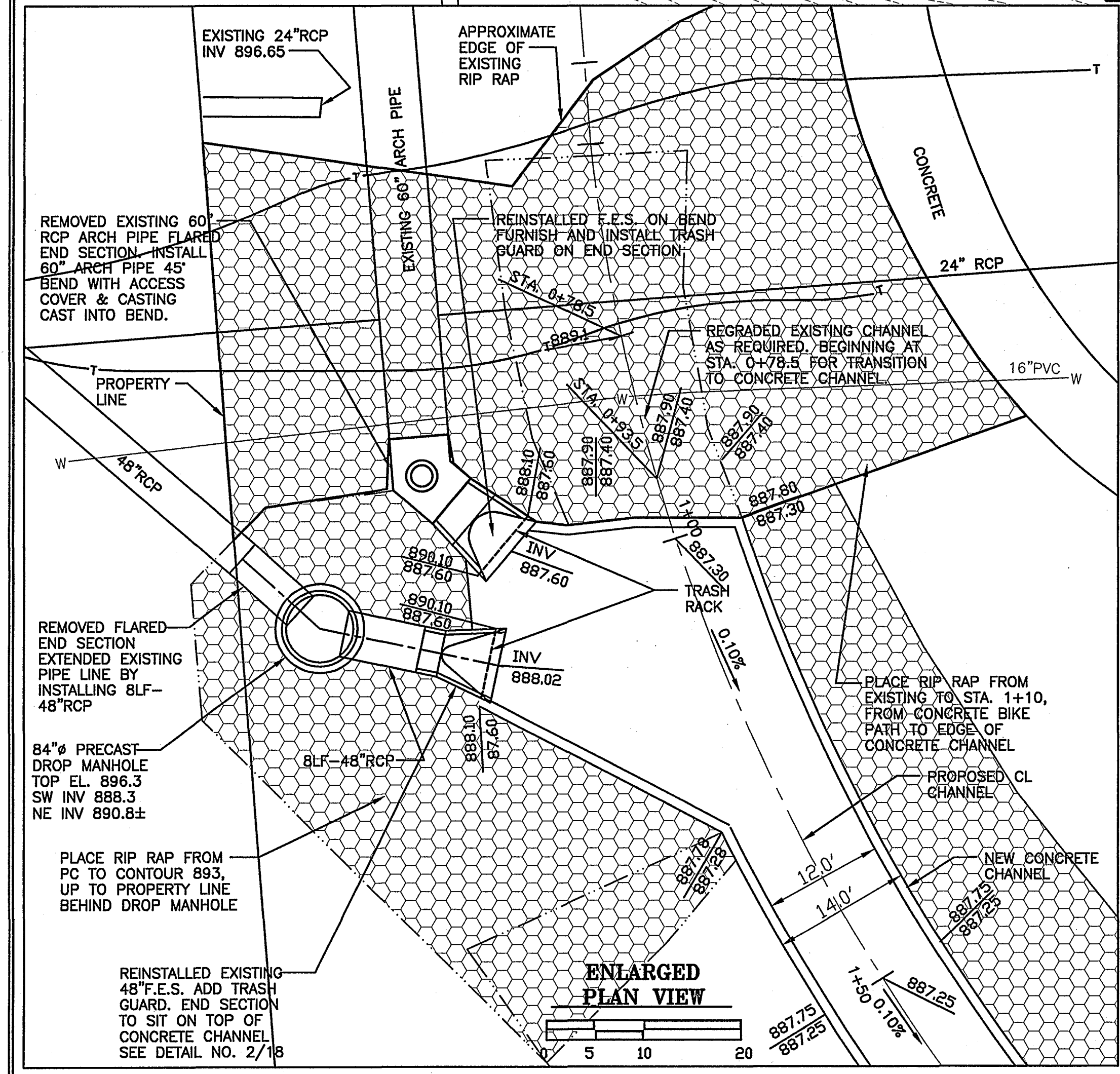
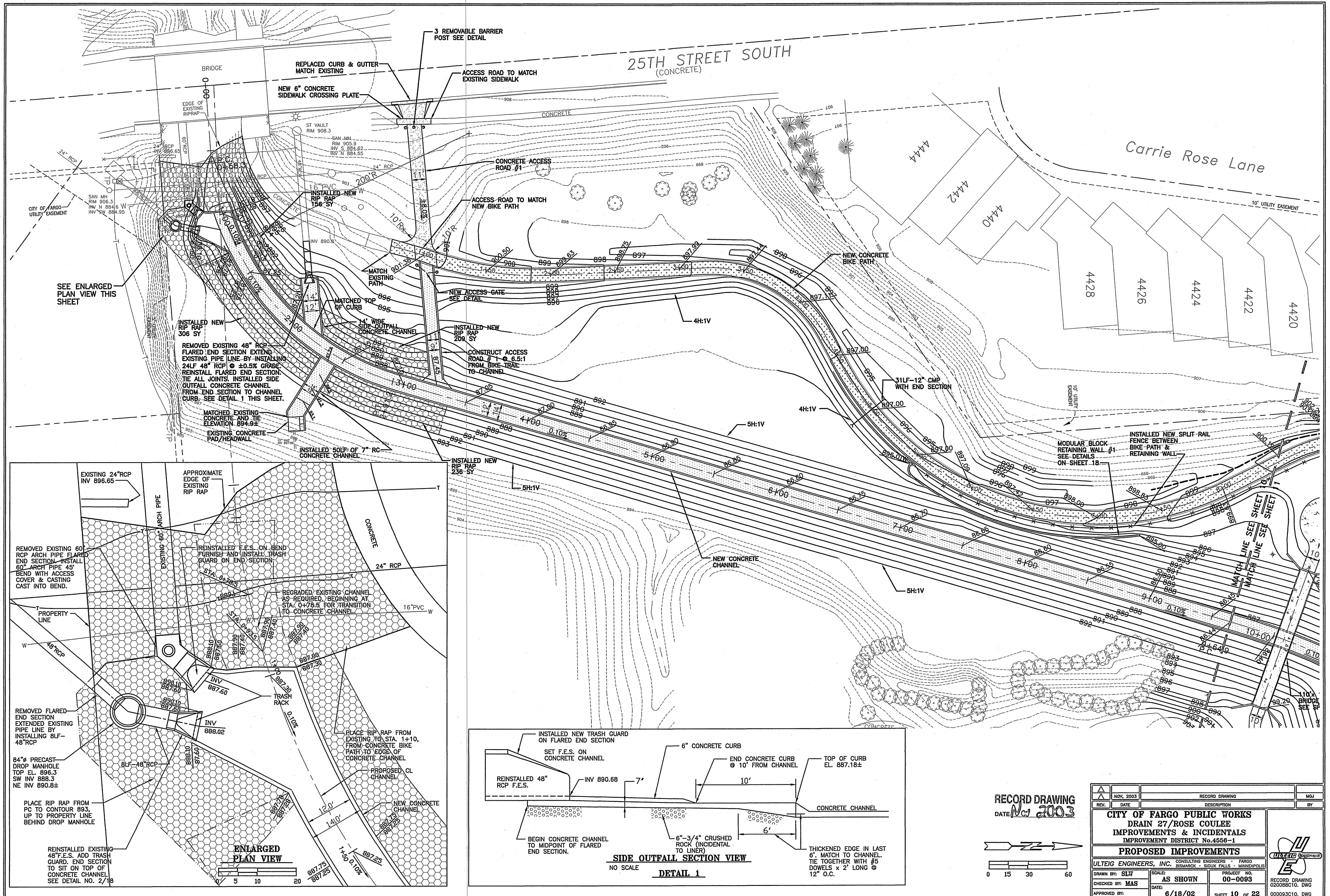





RECORD DRAWING  
DATE Nov 2003


 					
 					
 					
 					
 					
 					
 					
 					
 					
 					
 					
 					
 					
 					





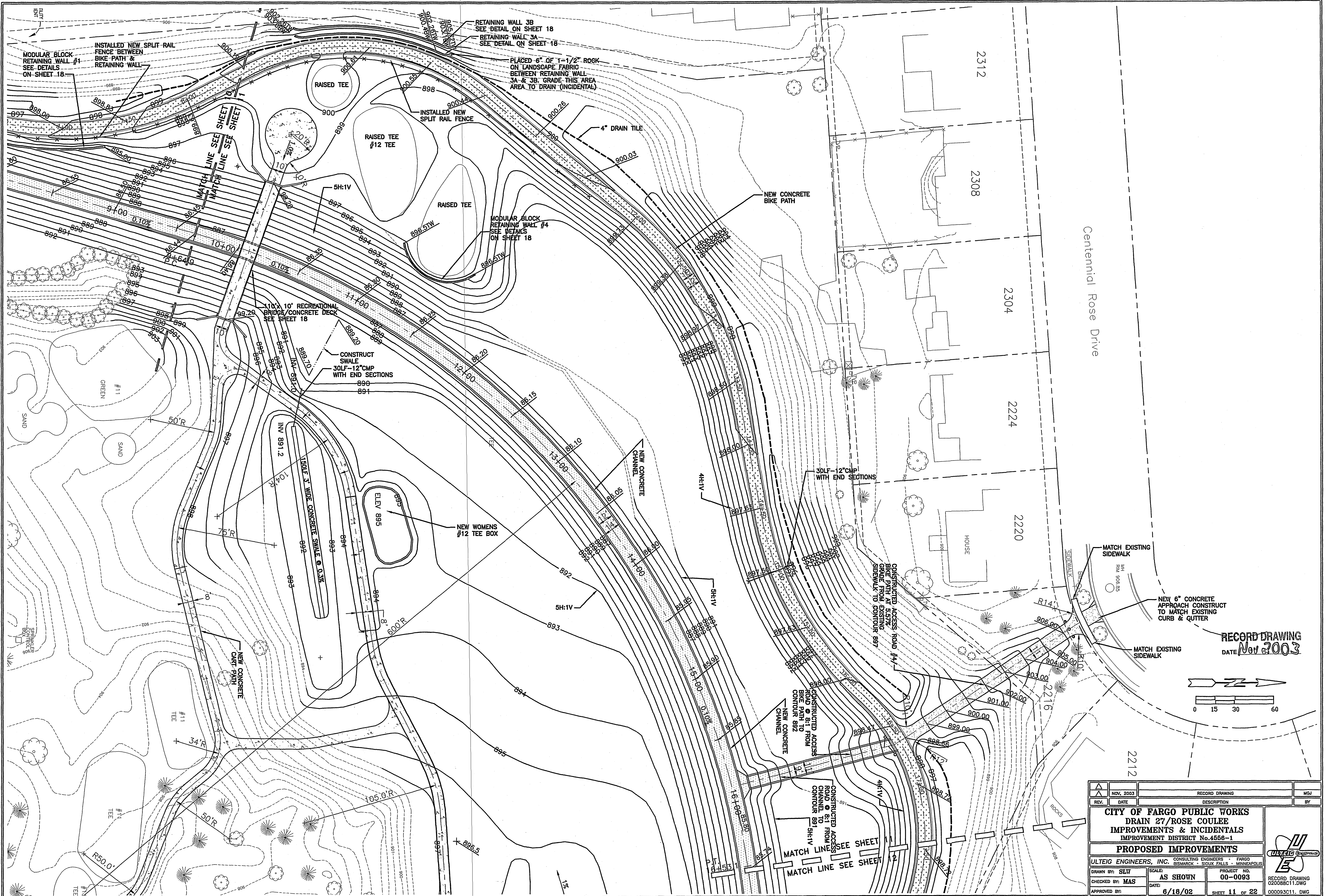
					
NOV. 2003		RECORD DRAWING		MGJ	
REV.	DATE	DESCRIPTION		BY	

<b>CITY OF FARGO PUBLIC WORKS</b>			
<b>DRAIN 27/ROSE COULEE</b>			
<b>IMPROVEMENTS &amp; INCIDENTALS</b>			
<b>IMPROVEMENT DISTRICT No.4556-1</b>			
<b>PROPOSED IMPROVEMENTS</b>			
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS • FARGO BISMARCK • SIOUX FALLS • MINNEAPOLIS			
DRAWN BY: SLV	SCALE: AS SHOWN	PROJECT NO. 00-0093	
CHECKED BY: MAS	DATE: 6/18/02	SHEET 10 OF 22	
APPROVED BY:			

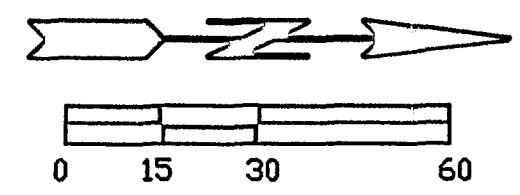


RECORD DRAWING  
020086010.DWG  
000093C10.DWG



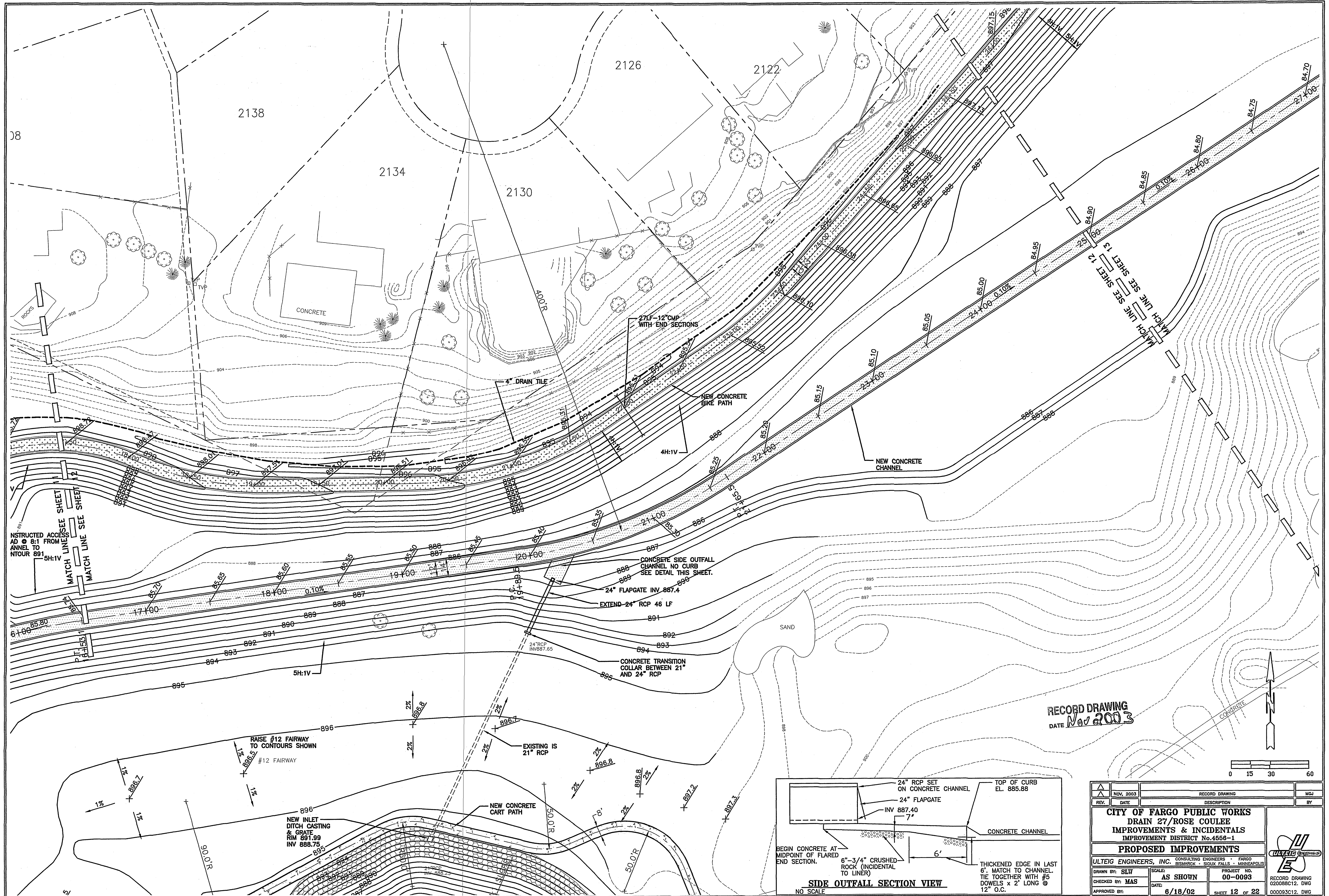


RECORD DRAWING  
DATE Nov 2003

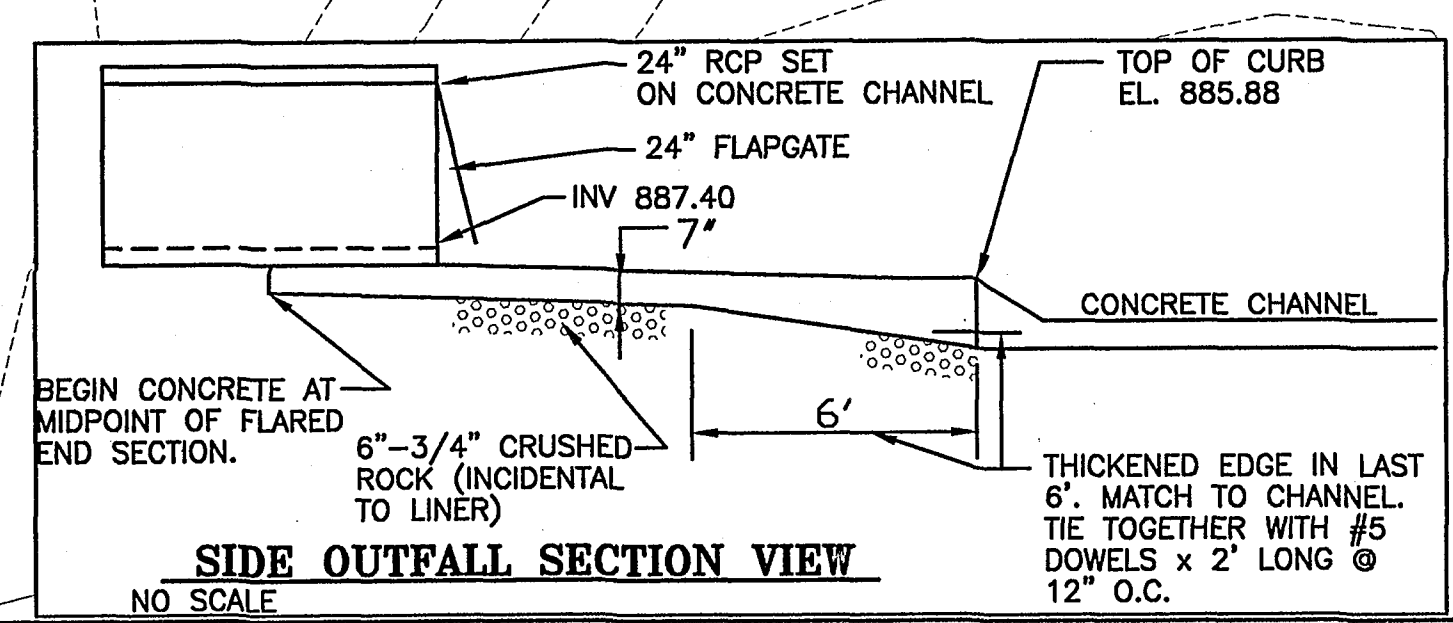
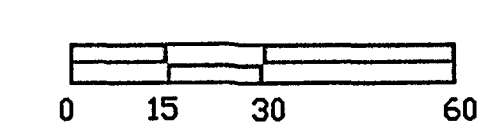


NOV. 2003	RECORD DRAWING	MGJ
REV.	DATE	BY
CITY OF FARGO PUBLIC WORKS DRAIN 27/ROSE COULEE IMPROVEMENTS & INCIDENTALS IMPROVEMENT DISTRICT No.4556-1		
PROPOSED IMPROVEMENTS		
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS • FARGO BISMARCK • SIOUX FALLS • MINNEAPOLIS		
DRAWN BY: SLW	SCALE: AS SHOWN	PROJECT NO. 00-0093
CHECKED BY: MAS	DATE: 6/18/02	SHEET 11 OF 22
APPROVED BY:		RECORD DRAWING 020088C11.DWG 000093C11.DWG



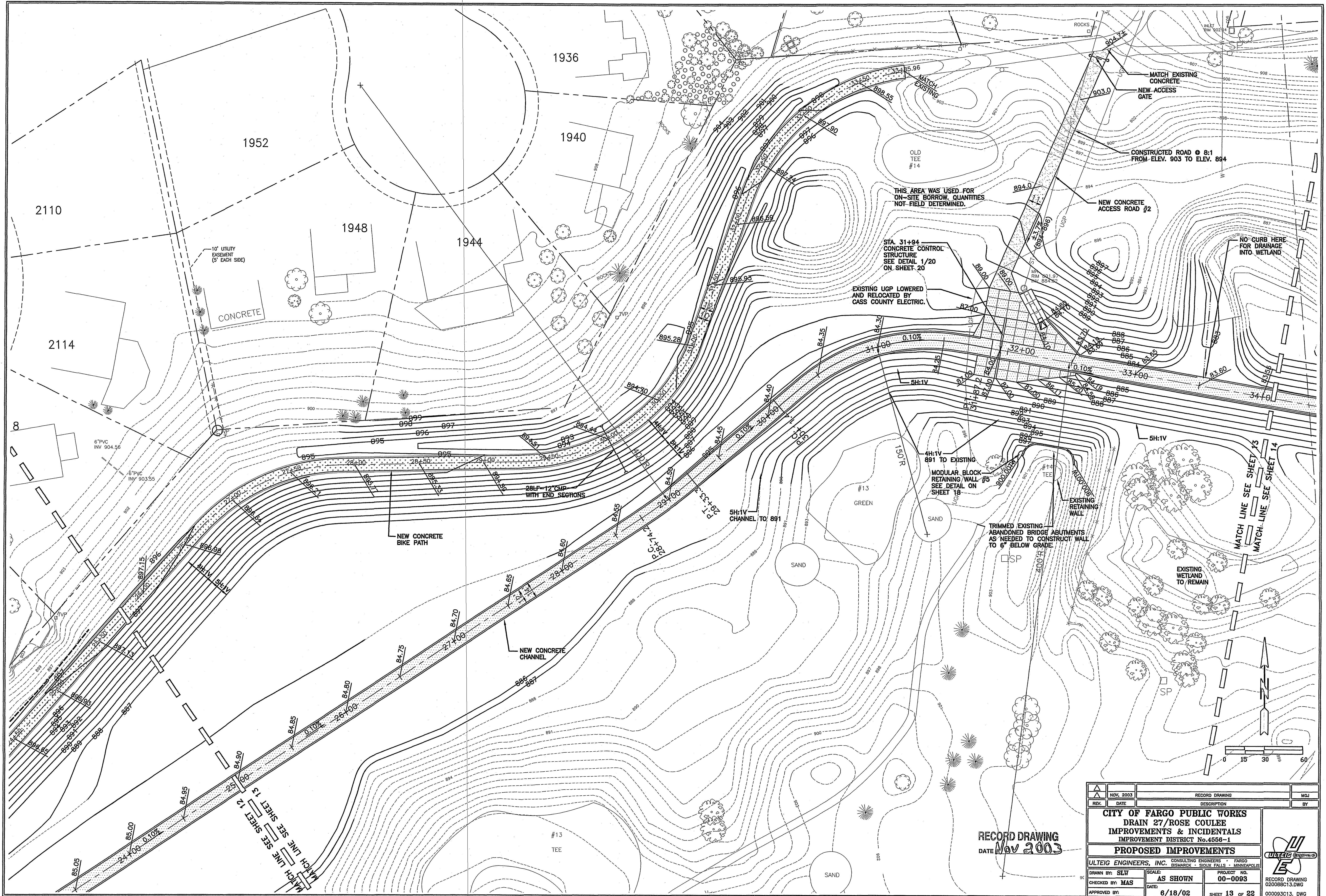


RECORD DRAWING  
DATE Nov 2003



NOV. 2003	RECORD DRAWING	MGJ
REV.	DATE	DESCRIPTION
CITY OF FARGO PUBLIC WORKS DRAIN 27/ROSE COULEE IMPROVEMENTS & INCIDENTALS IMPROVEMENT DISTRICT No.4556-1		
PROPOSED IMPROVEMENTS		
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS • FARGO BISMARCK • SIOUX FALLS • MINNEAPOLIS		
DRAWN BY: SLW	SCALE: AS SHOWN	PROJECT NO. 00-0093
CHECKED BY: MAS	DATE: 6/18/02	RECORD DRAWING 020085C12.DWG
APPROVED BY:	SHEET 12 OF 22	000093C12.DWG

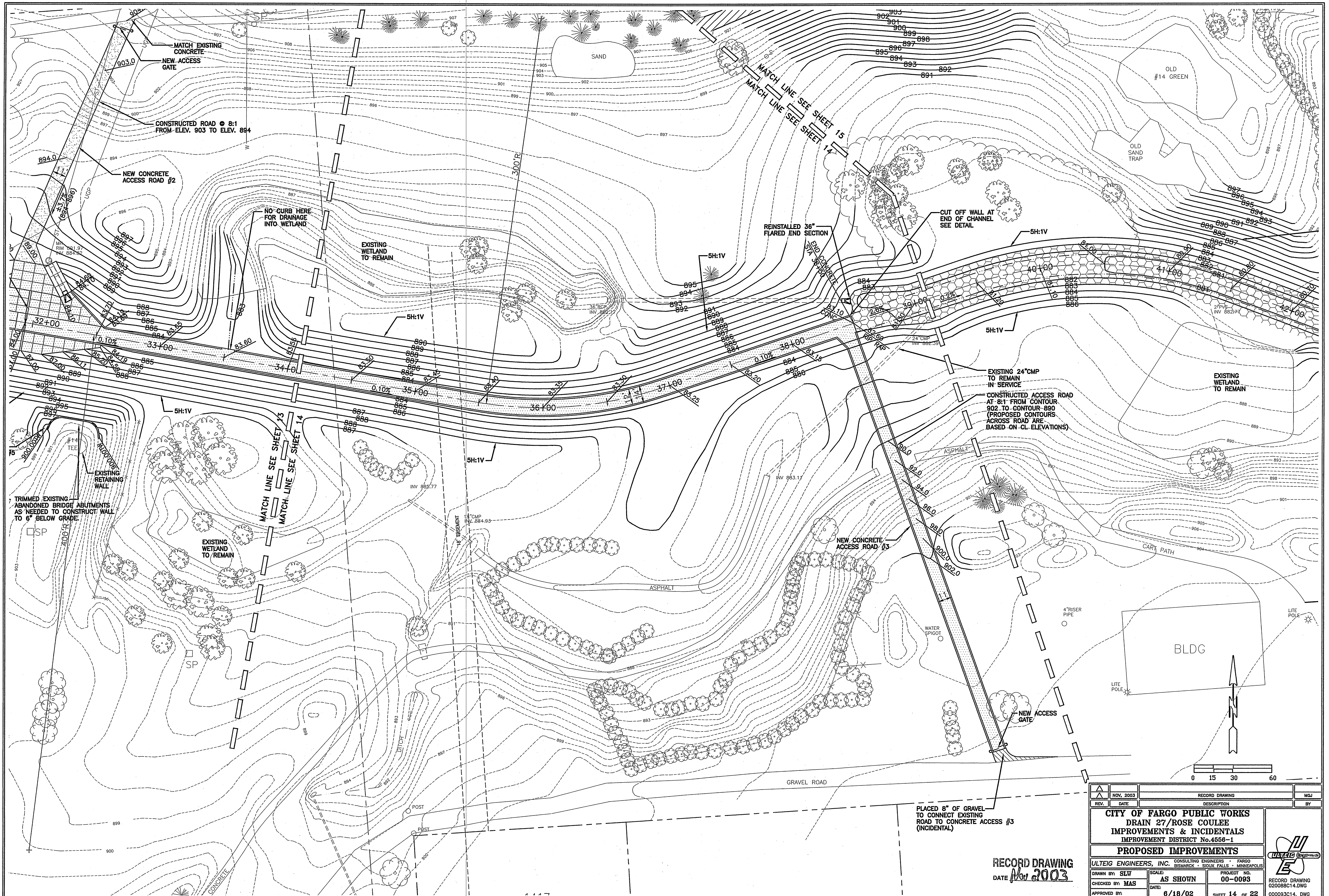




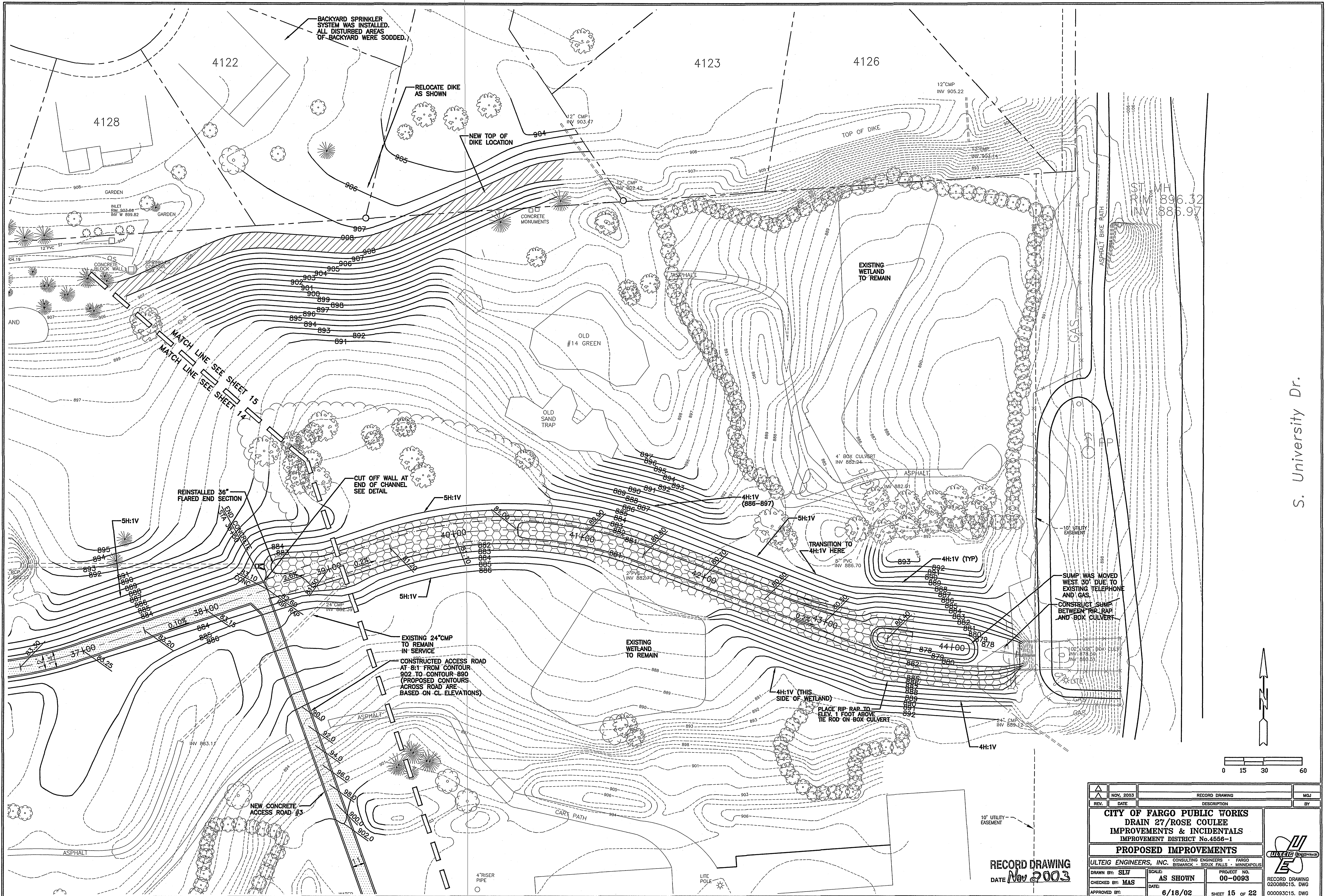
RECORD DRAWING  
Nov 2003

NOV. 2003	RECORD DRAWING	MDJ
REV.	DATE	DESCRIPTION
CITY OF FARGO PUBLIC WORKS DRAIN 27/ROSE COULEE IMPROVEMENTS & INCIDENTALS IMPROVEMENT DISTRICT No.4556-1		
PROPOSED IMPROVEMENTS		
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS • FARGO BISMARCK • SIOUX FALLS • MINNEAPOLIS		
DRAWN BY: SLV	SCALE: AS SHOWN	PROJECT NO. 00-0093
CHECKED BY: MAS	DATE: 6/18/02	RECORD DRAWING 020088C13.DWG
APPROVED BY:	SHEET 13 OF 22	000093C13.DWG

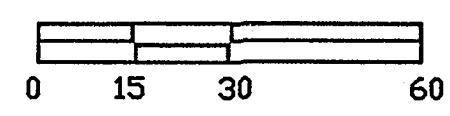








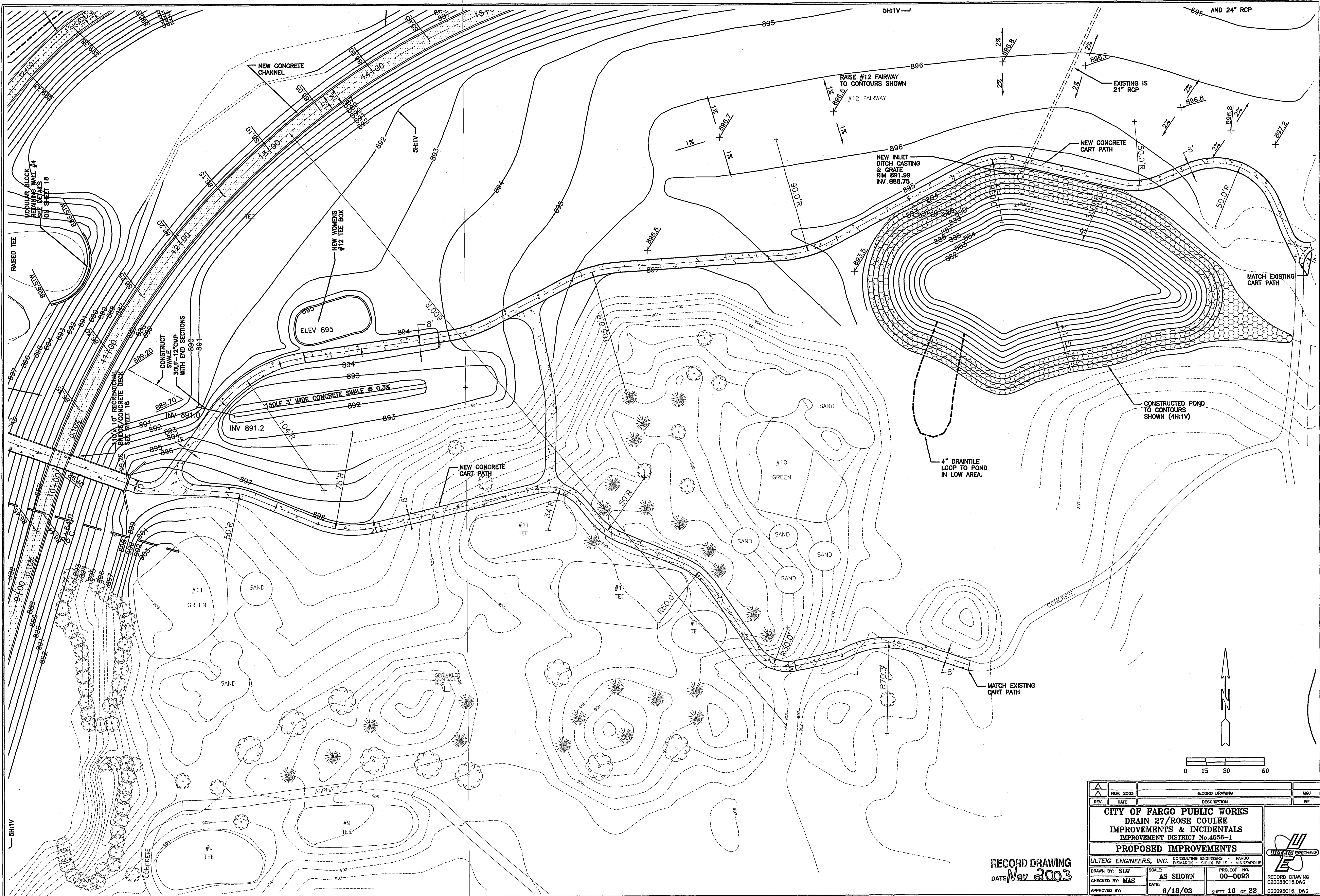
S. University Dr.



RECORD DRAWING  
DATE Nov 2003

NOV 2003	RECORD DRAWING	MGJ
REV.	DATE	DESCRIPTION
CITY OF FARGO PUBLIC WORKS DRAIN 27/ROSE COULEE IMPROVEMENTS & INCIDENTALS IMPROVEMENT DISTRICT No.4556-1		
PROPOSED IMPROVEMENTS		
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS • FARGO BISMARCK • SIOUX FALLS • MINNEAPOLIS		
DRAWN BY: SLV	SCALE: AS SHOWN	PROJECT NO. 00-0093
CHECKED BY: MAS	DATE: 6/18/02	RECORD DRAWING 020088C15.DWG
APPROVED BY:		SHEET 15 OF 22





RECORD DRAWING  
DATE Nov 2003

REV.	NOV 2003	RECORD DRAWING	MGJ
DATE		DESCRIPTION	BY
<b>CITY OF FARGO PUBLIC WORKS</b>			
<b>DRAIN 27/ROSE COULEE</b>			
<b>IMPROVEMENTS &amp; INCIDENTALS</b>			
<b>IMPROVEMENT DISTRICT No.4558-1</b>			
<b>PROPOSED IMPROVEMENTS</b>			
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS • FARGO • MINNEAPOLIS			
PROJECT NO. 00-0093			
RECORD DRAWING 020088C16.DWG			
DRAWN BY: SLW			
CHECKED BY: MAS			
APPROVED BY:			
SCALE: AS SHOWN			
DATE: 6/18/02			
SHEET 16 OF 22			



1. REFER TO SPECIFICATION SECTION 02891- CART PATH BRIDGE FOR BRIDGE SPECIFICATIONS.	
2. REFER TO SPECIFICATION SECTIONS 03200- CONCRETE REINFORCEMENT AND 03300- CAST-IN-PLACE CONCRETE FOR FOUNDATION REINFORCING AND CONCRETE SPECIFICATIONS.	
3. CONTRACTOR SHALL FIELD VERIFY ALL BRIDGE SETTING DIMENSIONS WITH FINAL BRIDGE SHOP DRAWINGS.	
4. GEOTEXTILE FABRIC SHALL BE EQUAL TO AMOCO NO. 4551.	



NO SCALE (TYPICAL BOTH SIDES)

- NOTES:
1. IF APPROACH RAMP IS REPLACED, PUT EXPANSION MATERIAL AT BRIDGE ABUTMENT. TIE APPROACH SLAB TO CART PATH WITH REBAR AT 15' O.C.
  2. ON WEST APPROACH RAMP, REPLACE DAMAGED CONCRETE.
  3. RECOMPACT SUBGRADE AS REQUIRED TO 95% COMPACTION.



SCALE 1' = 10'



SCALE 1" = 10'



NO SCALE

LOAD	P <sup>※</sup>	H <sup>※</sup>	L <sup>※</sup>
DEAD LOAD	27,800	---	---
UNIFORM LIVE	23,400	---	---
VEHICLE	6,000	---	---
WIND - WINDWARD	-12,500	12,100	8,100
- LEEWARD	3,500	---	---
STREAM FLOW	-5,000	---	---
THERMAL	---	---	5,600

- \* - LOAD AT EACH BASEPLATE (4 PER BRIDGE)
- \*\* - LOAD AT EACH FOOTING (2 PER BRIDGE)
  - + DOWNWARD LOAD
  - UPWARD LOAD



NO SCALE (TYPICAL 4 PLACES)



NO SCALE



NO SCALE





NO SCALE



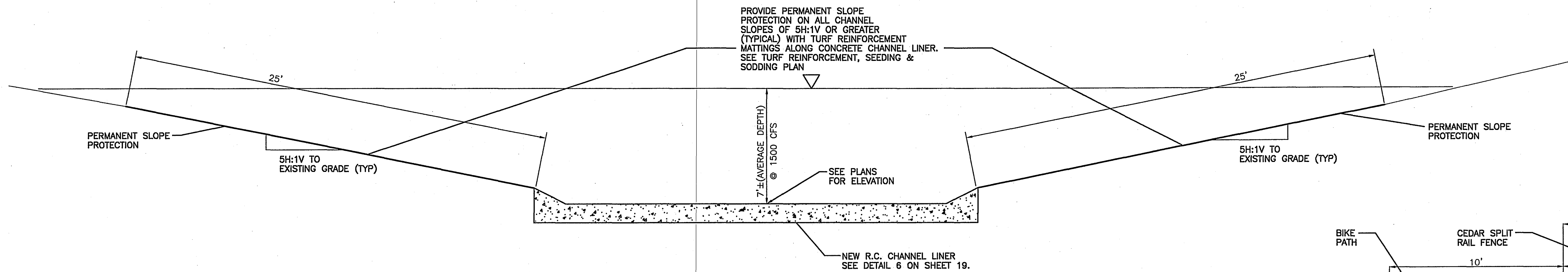
WEST SIDE (SEE PLAN FOR LOCATION)  
NO SCALE



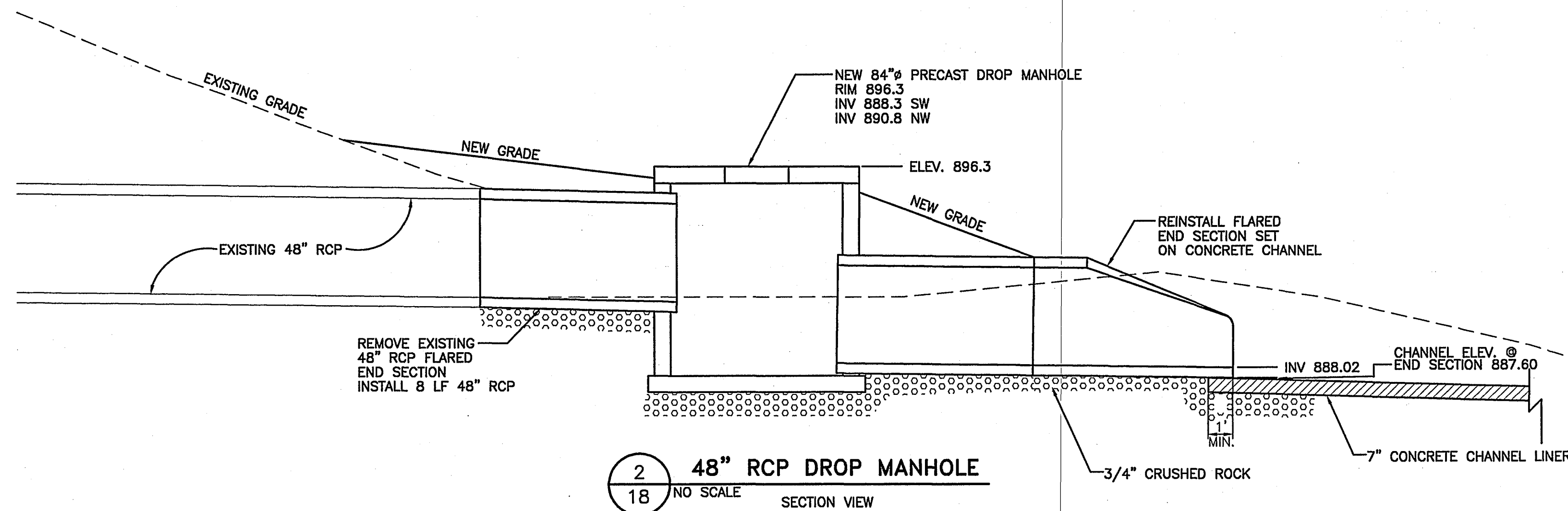
EAST SIDE (SEE PLAN FOR LOCATION)  
NO SCALE

	NOV, 2003	RECORD DRAWING		M&J
	9/24/02	REVISED BRIDGE FOUNDATION DESIGN PER SHOP DRAWINGS		
REV.	DATE	DESCRIPTION		BY
<p><b>CITY OF FARGO PUBLIC WORKS</b>  <b>DRAIN 27/ROSE COULEE</b>  <b>IMPROVEMENTS &amp; INCIDENTALS</b>  <b>IMPROVEMENT DISTRICT No.4556-1</b></p>				
<p><b>CART PATH BRIDGE PLAN &amp; DETAILS</b></p>				
<p><b>ULTEIG ENGINEERS, INC.</b> CONSULTING ENGINEERS FARGO  BISMARCK - SIOUX FALLS - MINNEAPOLIS</p>				
<p>DRAWN BY: SLW  CHECKED BY: MAS  APPROVED BY: SPT</p>				
<p>SCALE: AS SHOWN</p>		<p>PROJECT NO: 02-0088</p>		<p>020088-C17 DWG</p>
<p>DATE: 6/18/02</p>		<p>SHEET 17 OF 22</p>		

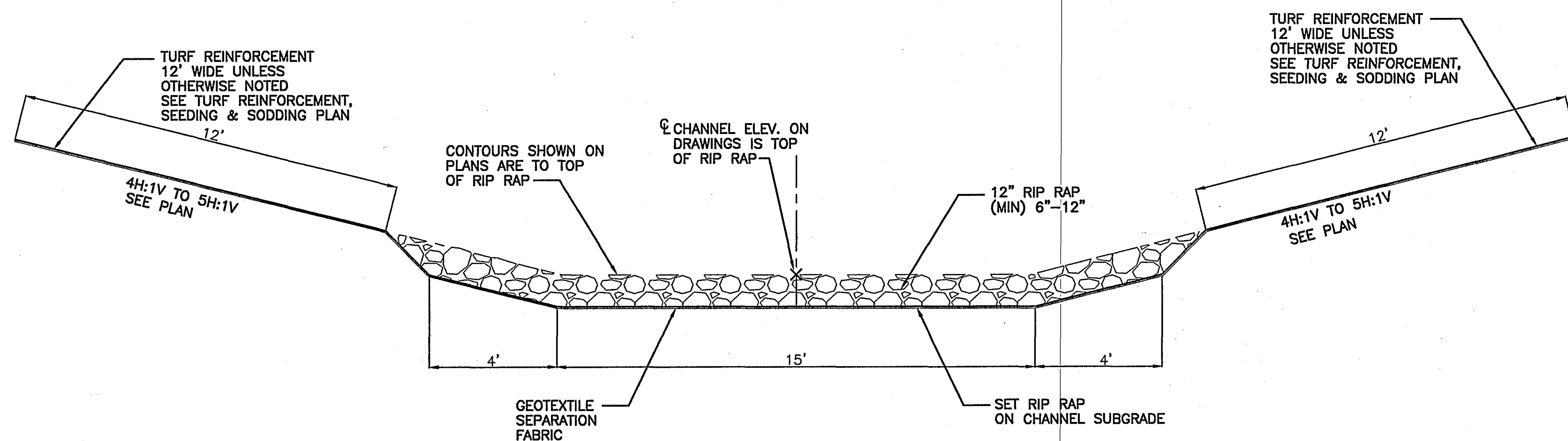




1  
18 TYPICAL CONCRETE CHANNEL SECTION  
NO SCALE



2  
18 48" RCP DROP MANHOLE  
NO SCALE SECTION VIEW



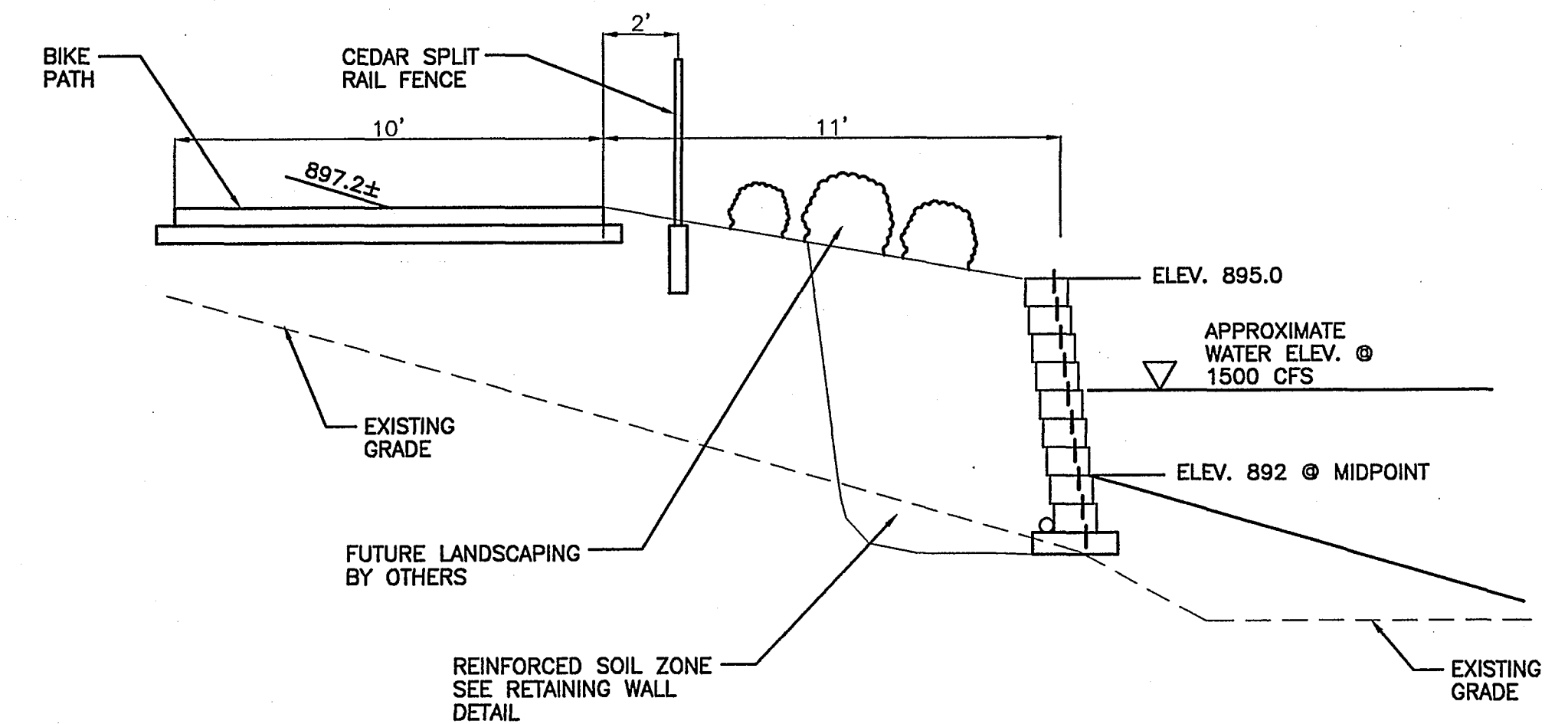
3  
18 RIP RAP CHANNEL SECTION  
NO SCALE

#### RETAINING WALL SCHEDULE

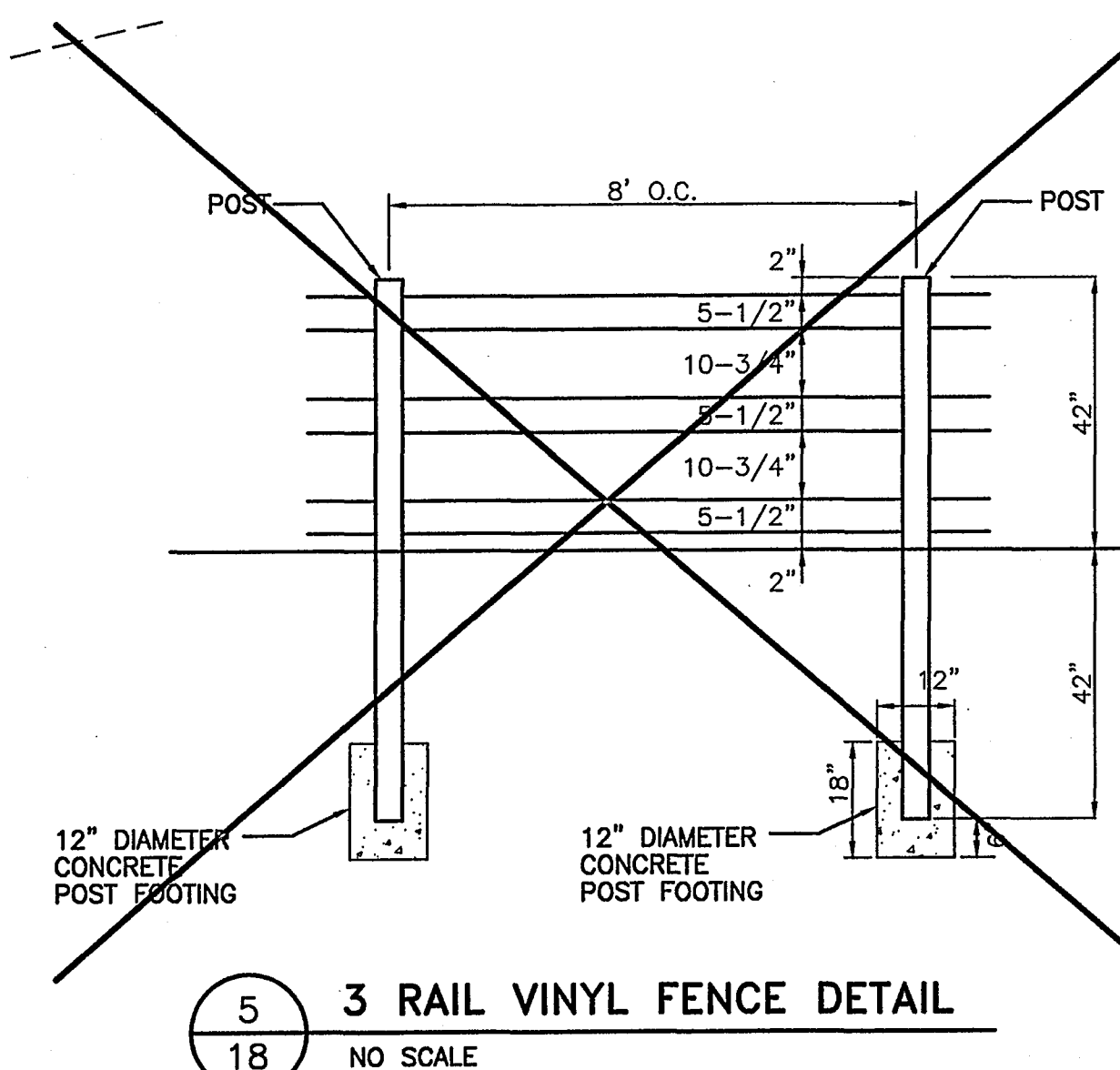
RETAINING WALL #	TOP OF WALL ELEVATION	TOE (GRADE) ELEVATION	MINIMUM WALL HEIGHT (FT)	LENGTH OF WALL @ TOP (FT)	GEOGRID PLACEMENT & MINIMUM LENGTH	COMMENTS
1	895.5	892	6.67	197	3 LAYERS @ 7' LONG	TERRACE TOP TWO FEET INTO GRADE @ SOUTH END
2	896	896	4.67	116.6	2 LAYERS @ 6' LONG	
3a	903.26	900.4	3.84	124	2 LAYERS @ 6' LONG	RETAINING WALL 3 IS TWO SEPARATE WALLS 5 FEET APART. 3A IS THE LOWER WALL. 3B IS THE UPPER WALL. 3B IS THE UPPER WALL. PLACE 6\"
3b	905.72	903	3.84	128	2 LAYERS @ 6' LONG	
4	896.5	894	3.84	73	2 LAYERS @ 6' LONG	
5	900	897	4.67	55	2 LAYERS @ 6' LONG	

RETAINING WALL #2 WAS ELIMINATED

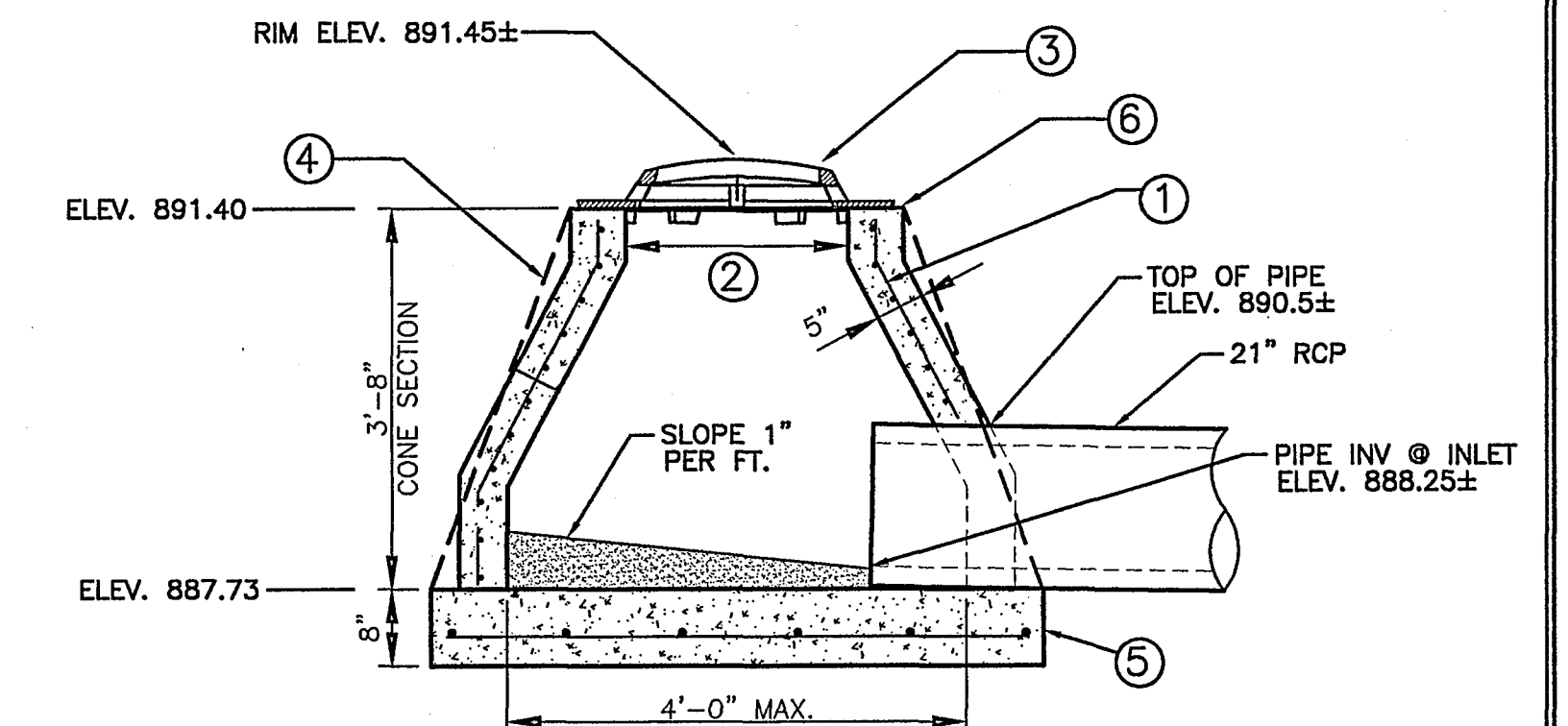
SEE SHOP DRAWINGS FOR FINAL WALL DESIGN



4  
18 BIKE PATH @ RETAINING WALL #1  
SECTION VIEW @ CENTER OF WALL  
NO SCALE

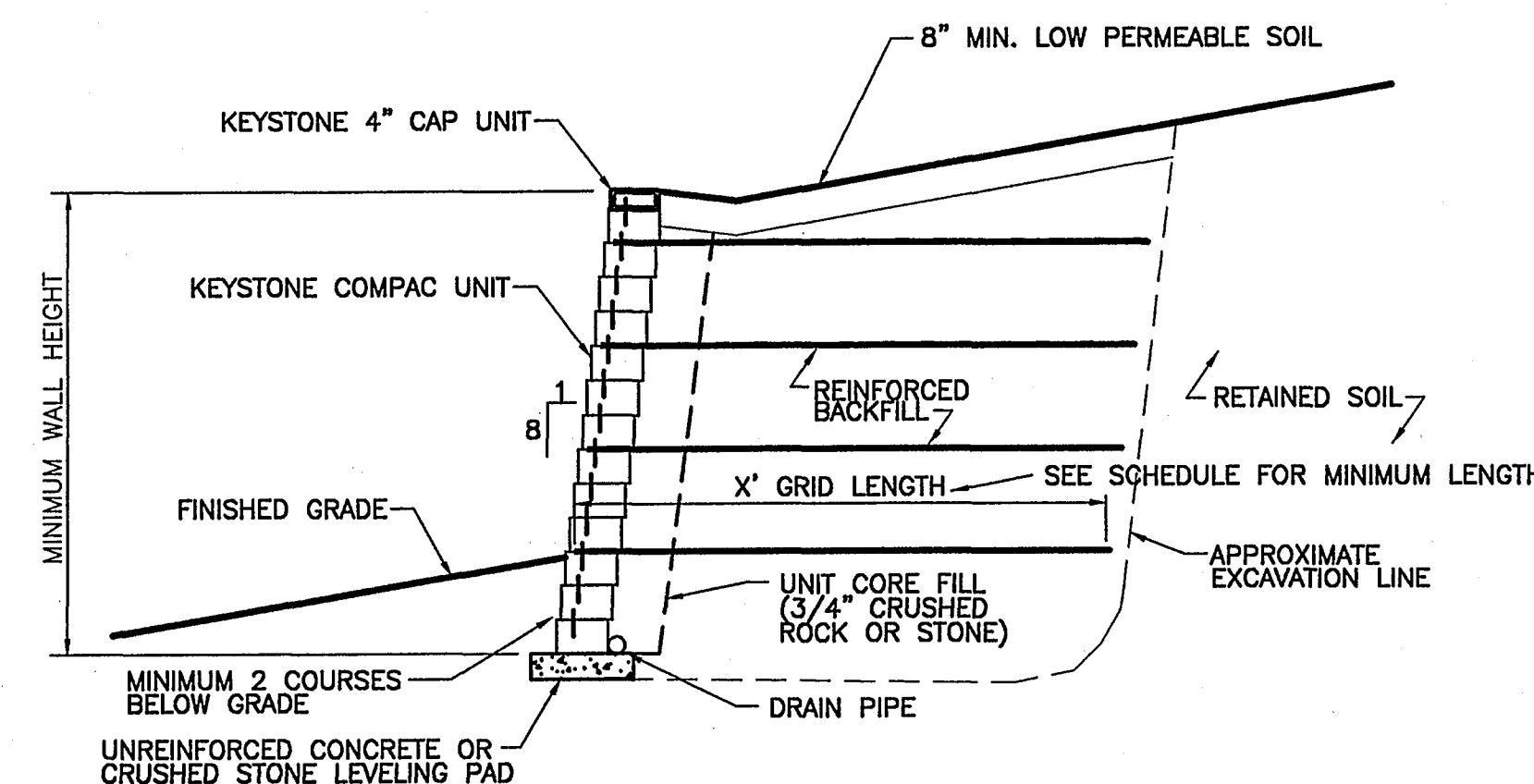


5  
18 3 RAIL VINYL FENCE DETAIL  
NO SCALE



- 1 REINFORCING: SINGLE LINE STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ. IN. PER FOOT OF HEIGHT.
- 2 2'-3" NOM. OPENING.
- 3 INLET CASTING AND GRATE NEENAH FOUNDRY #R2560-E2, HIGH BEEHIVE GRATE OR APPROVED EQUAL.
- 4 A STRAIGHT TAPERED WALL IS ACCEPTABLE.
- 5 8 IN. POURED CONCRETE BASE. BASE REINFORCEMENT: 0.12 SQ. IN. PER FT. IN EACH DIRECTION. AN APPROVED ALTERNATE PRECAST CONCRETE BASE MAY BE USED.
- 6 ADJUSTING RINGS NOT REQUIRED. SECURE FRAME TO TOP OF STRUCTURE. SEAL JOINTS BETWEEN FRAME AND PRECAST CONCRETE.

POND INLET DETAIL  
NO SCALE

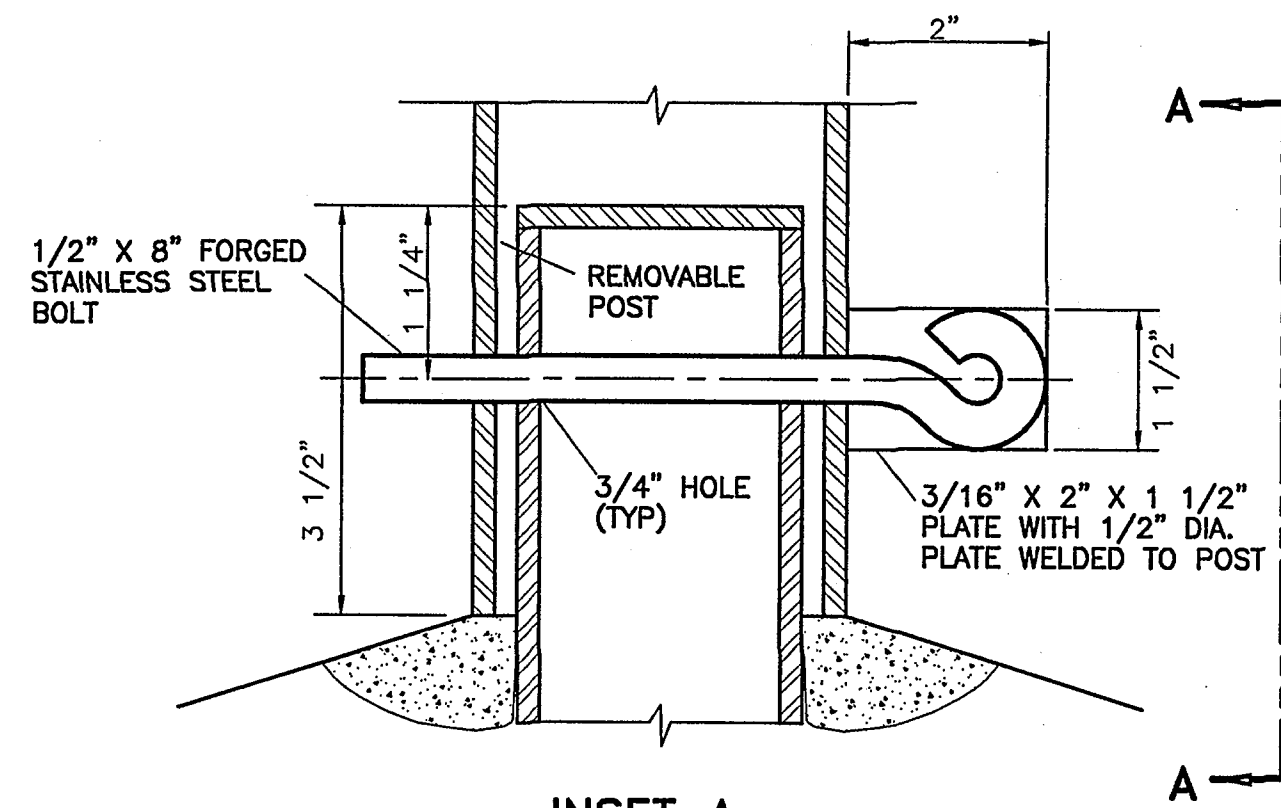


7  
18 TYPICAL REINFORCED SECTION  
COMPAC UNIT - 1" MINIMUM SETBACK  
NO SCALE

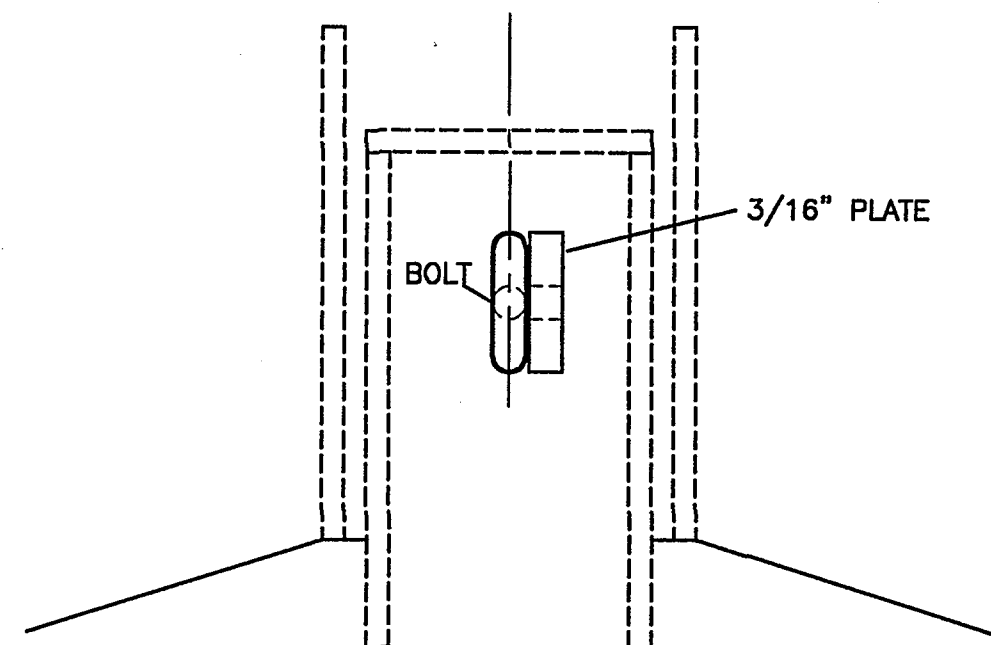
RECORD DRAWING  
DATE NOV 2003

NOV. 2003	RECORD DRAWING	MGJ
REV.	DATE	DESCRIPTION
CITY OF FARGO PUBLIC WORKS DRAIN 27/ROSE COULEE IMPROVEMENTS & INCIDENTALS IMPROVEMENT DISTRICT No.4556-1		
DETAILS		
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS • FARGO BISMARCK • SIOUX FALLS • MINNEAPOLIS	PROJECT NO. 00-0093	RECORD DRAWING 020088C18. DWG
DRAWN BY: SLW	SCALE: AS SHOWN	SHEET 18 OF 22
CHECKED BY: MAS	DATE: 6/18/02	000093C18. DWG
APPROVED BY:		

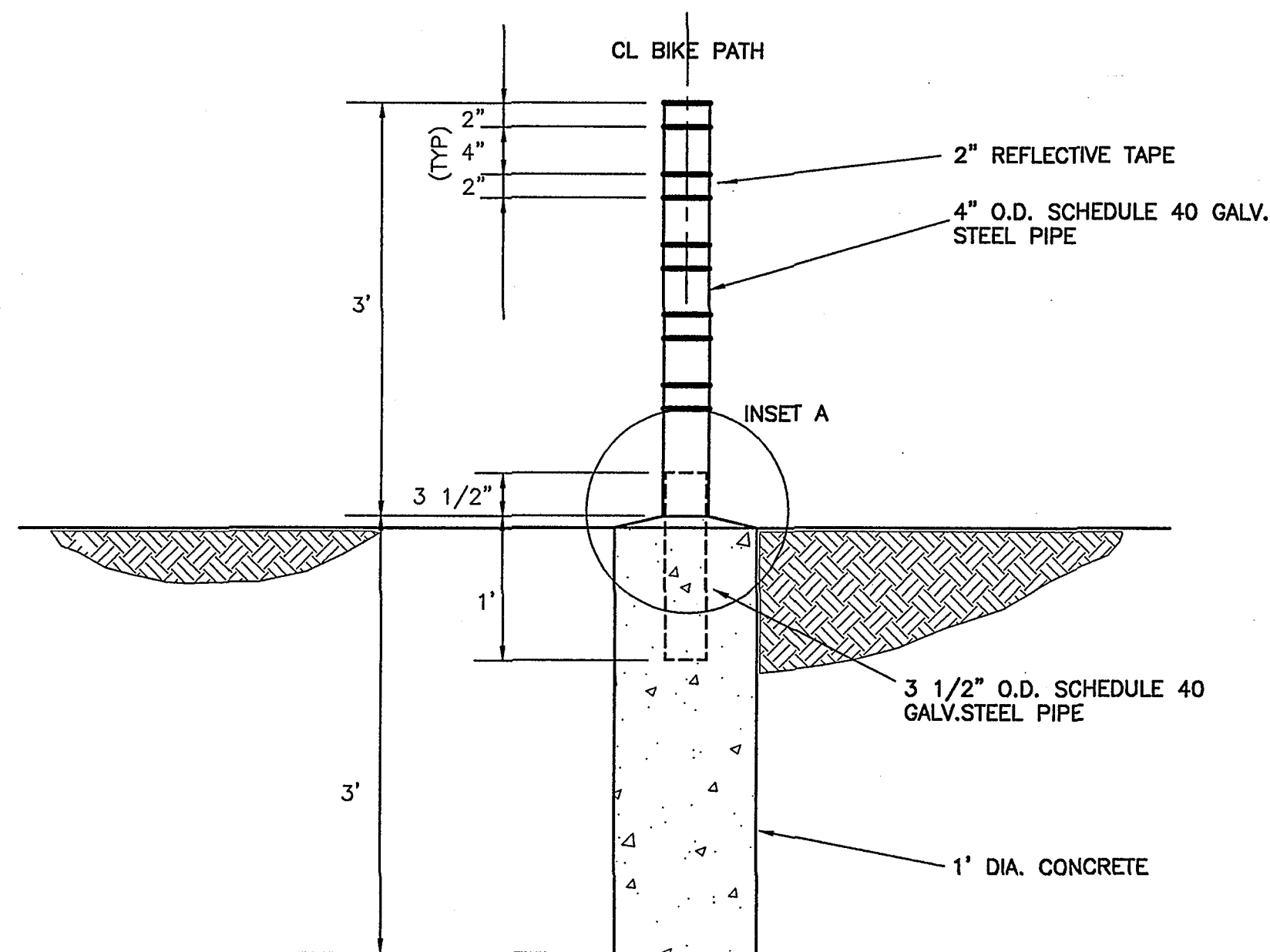




INSET A

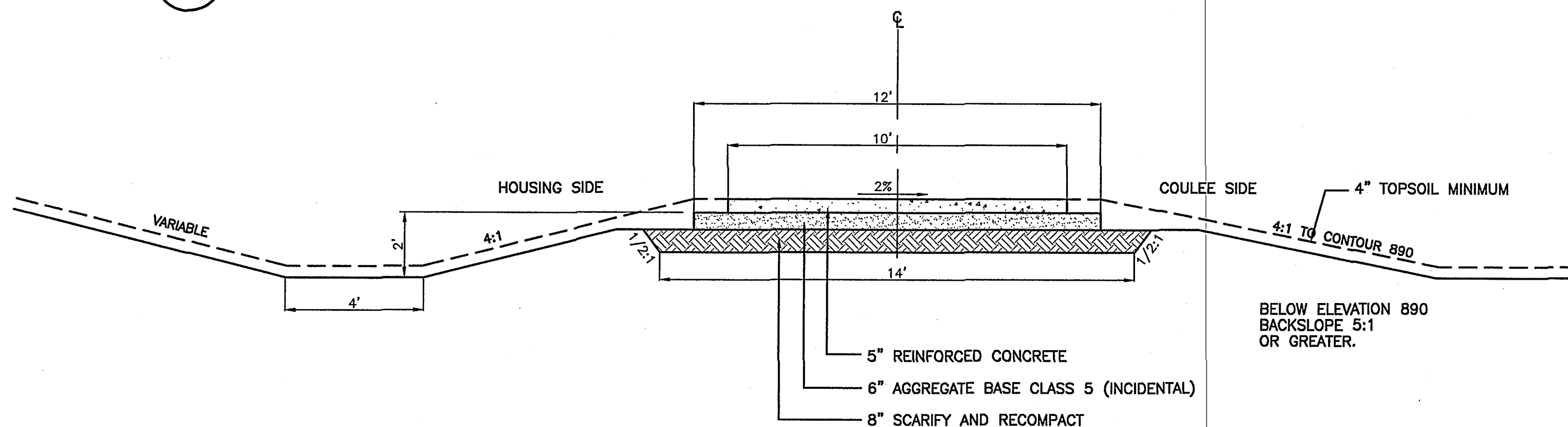


SECTION A-A

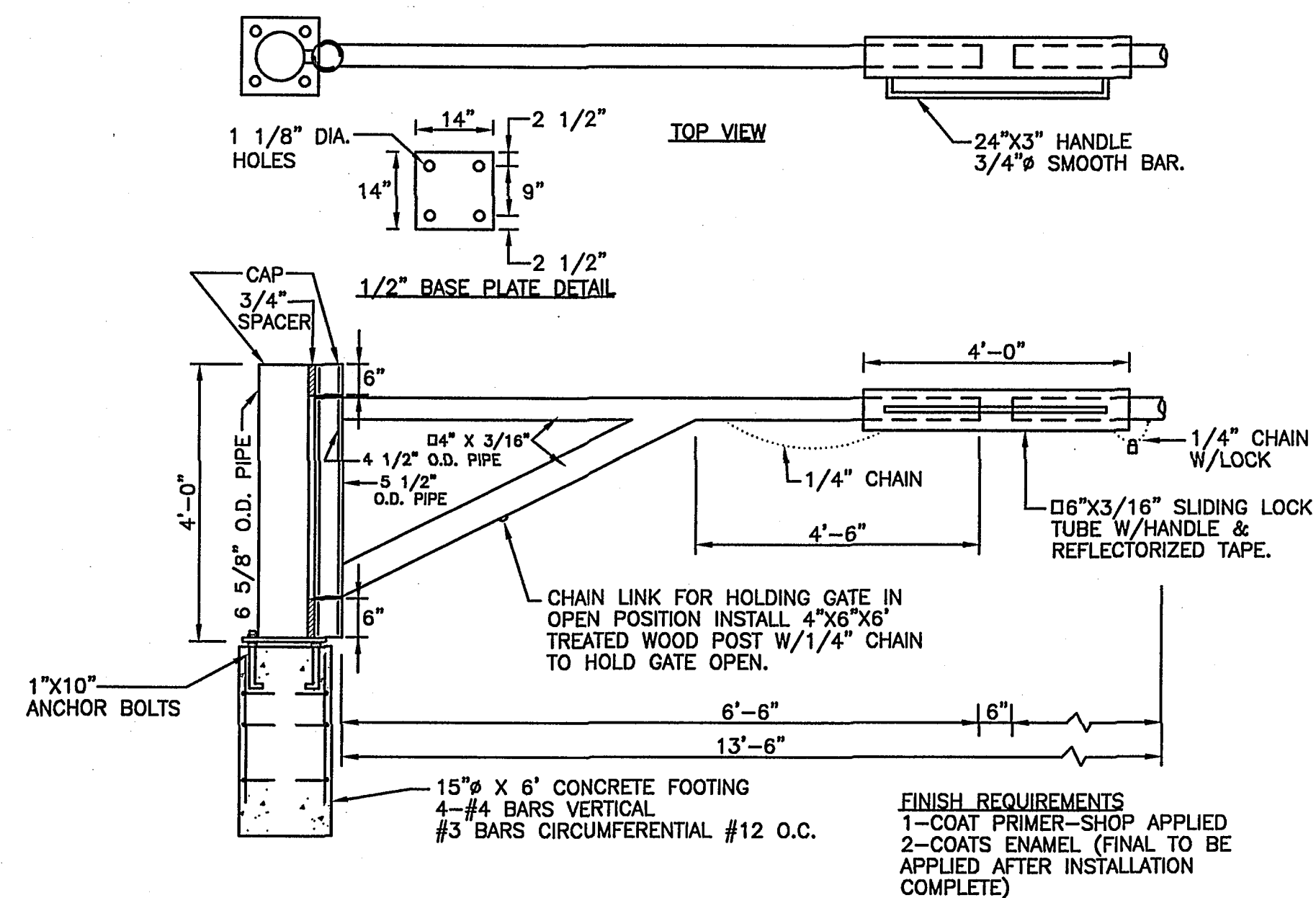


POSTS TO BE INSTALLED 5'-6\"/>

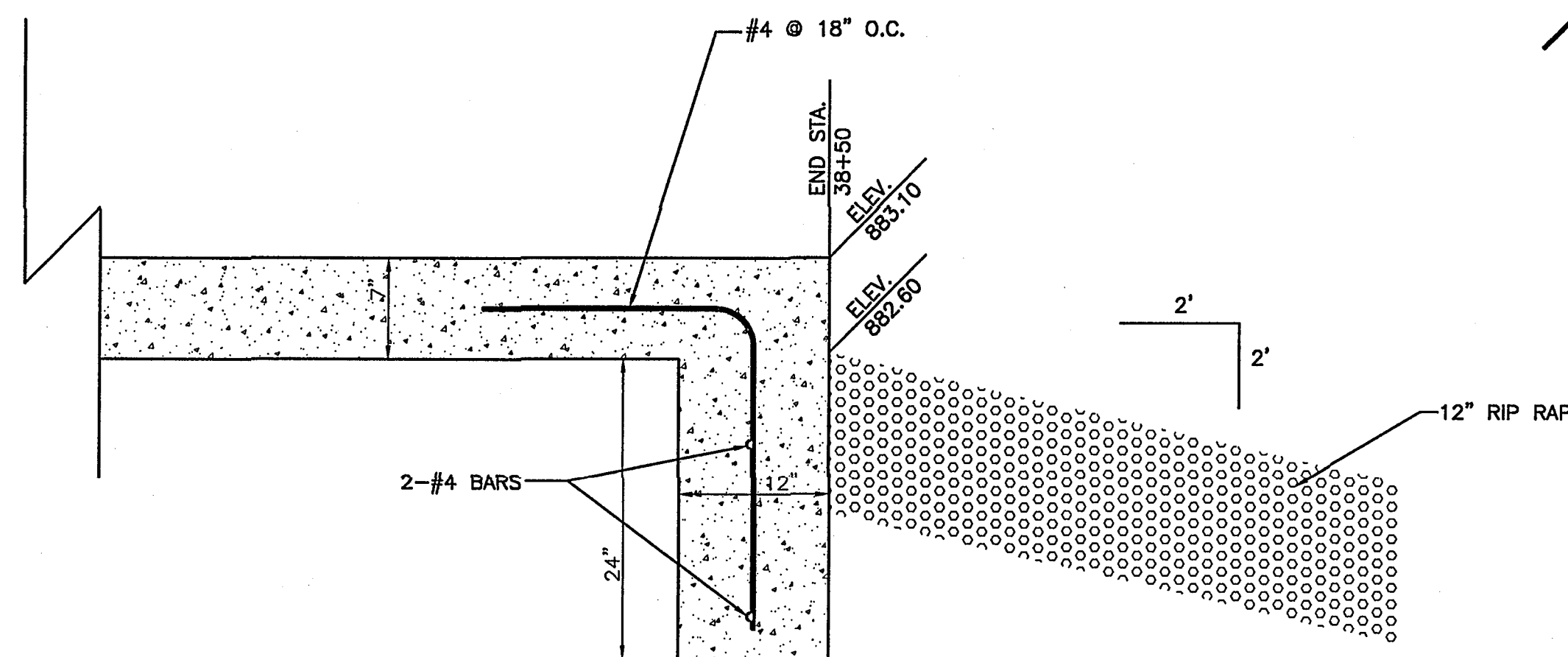
1 REMOVABLE GUARD POST DETAIL  
NO SCALE



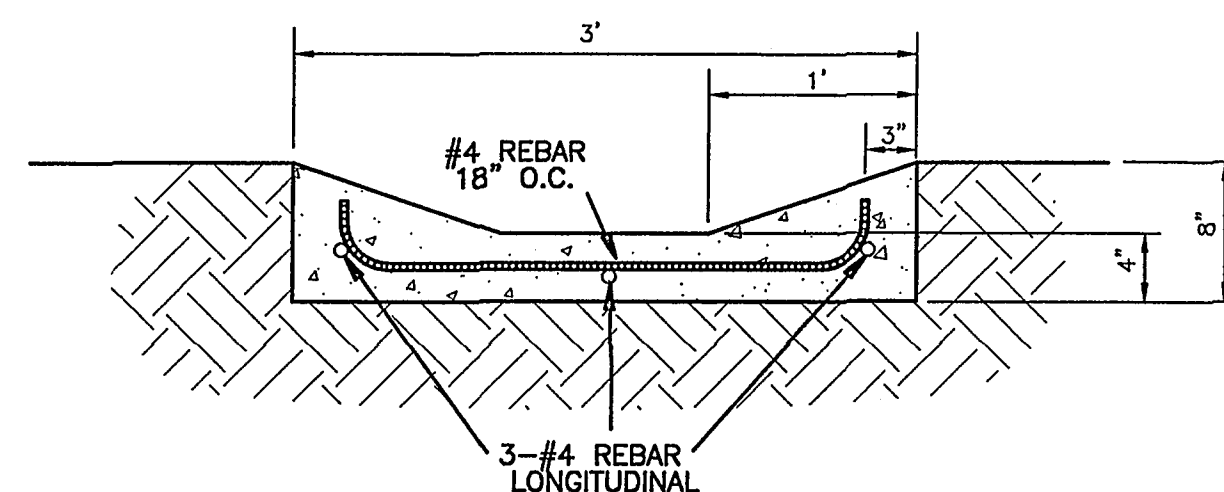
2 TYPICAL BIKEPATH SECTION  
NO SCALE



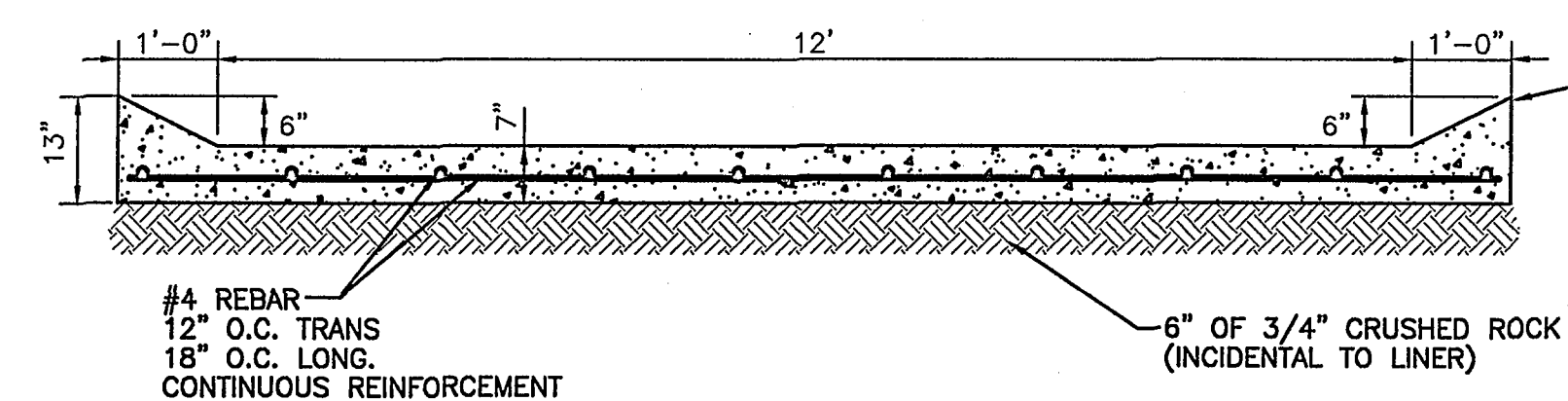
3 ACCESS GATE DETAILS  
NO SCALE



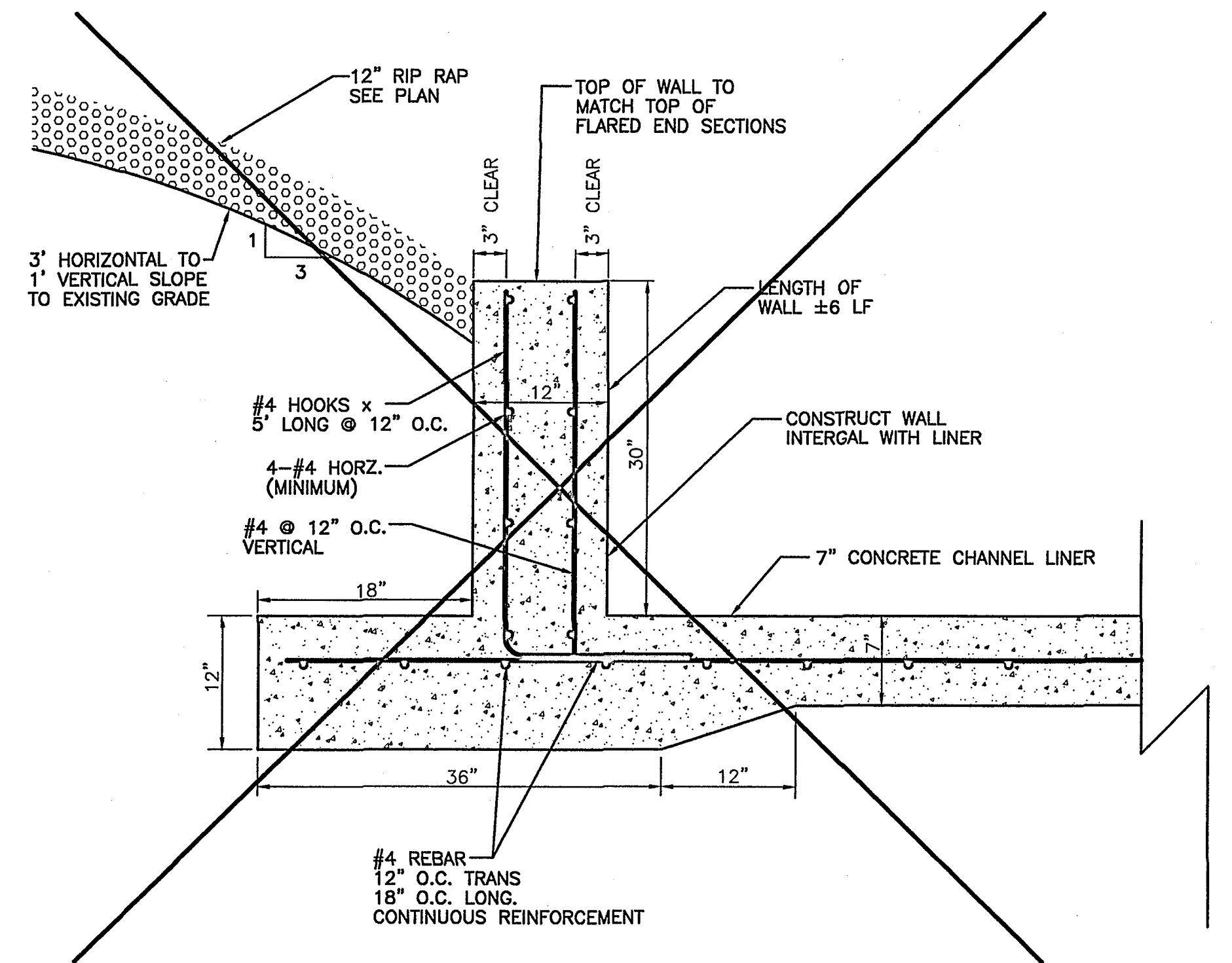
4 CONCRETE CHANNEL  
CUT OFF WALL ( STA. 38+50 )  
NO SCALE



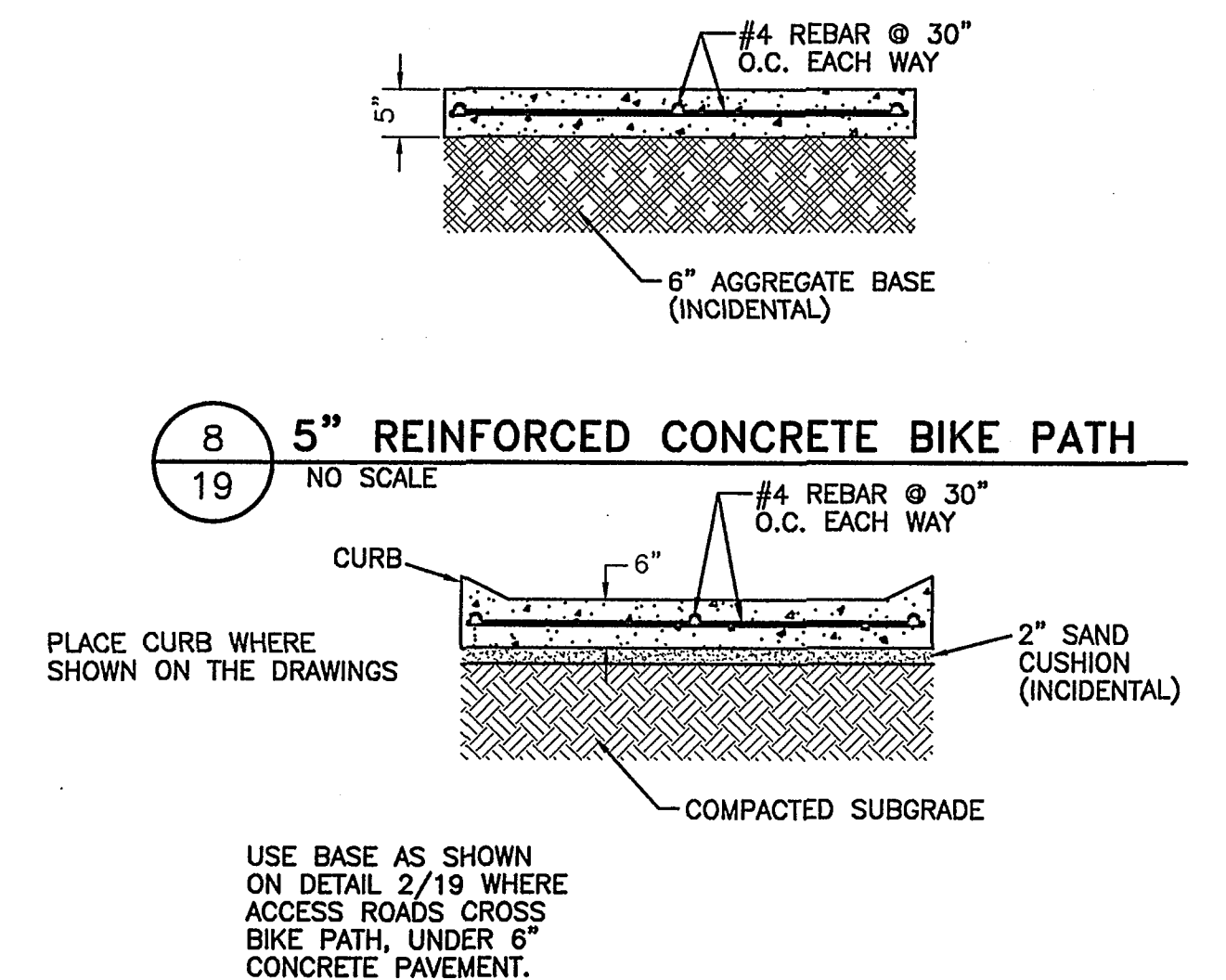
5 CONCRETE SWALE SECTION  
NO SCALE



6 7\"/>

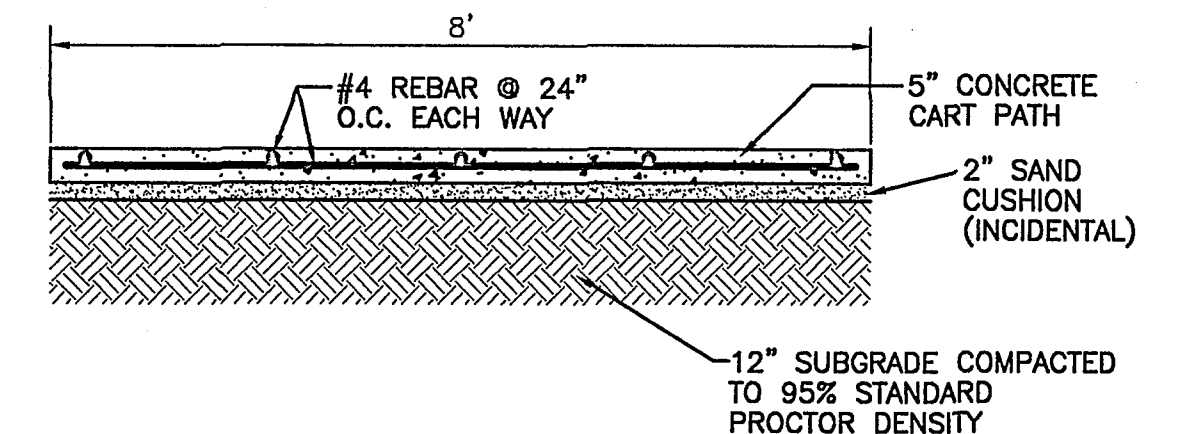


7 RETAINING WALL BETWEEN  
48\"/>



8 5\"/>

9 6\"/>

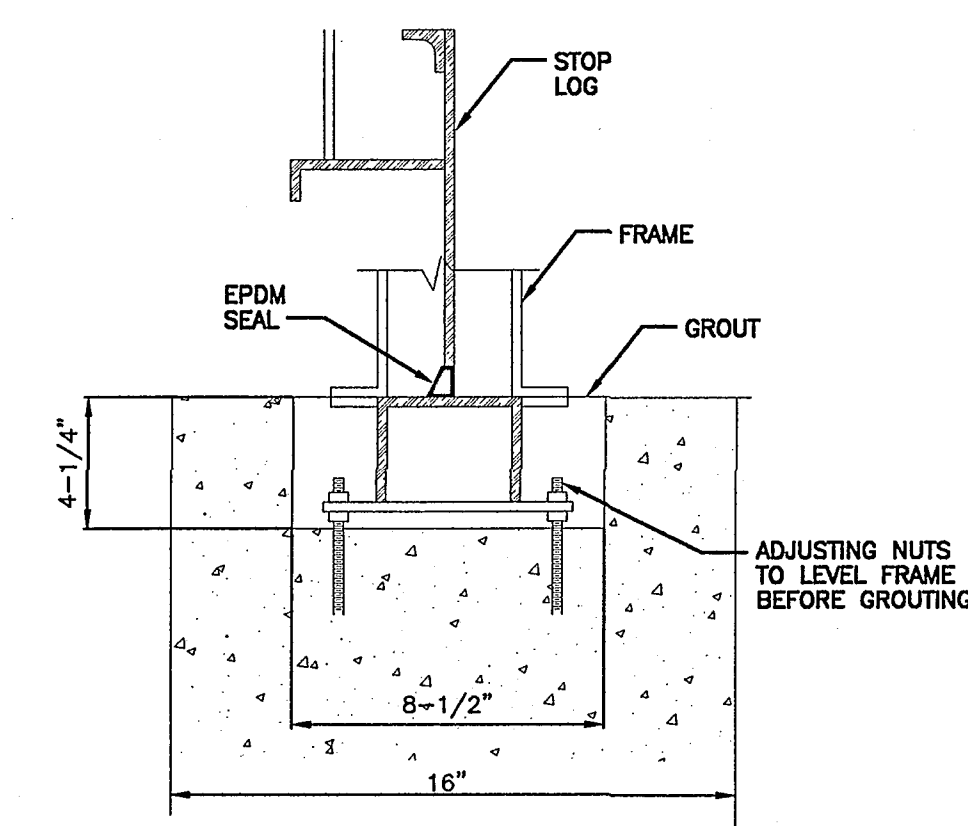
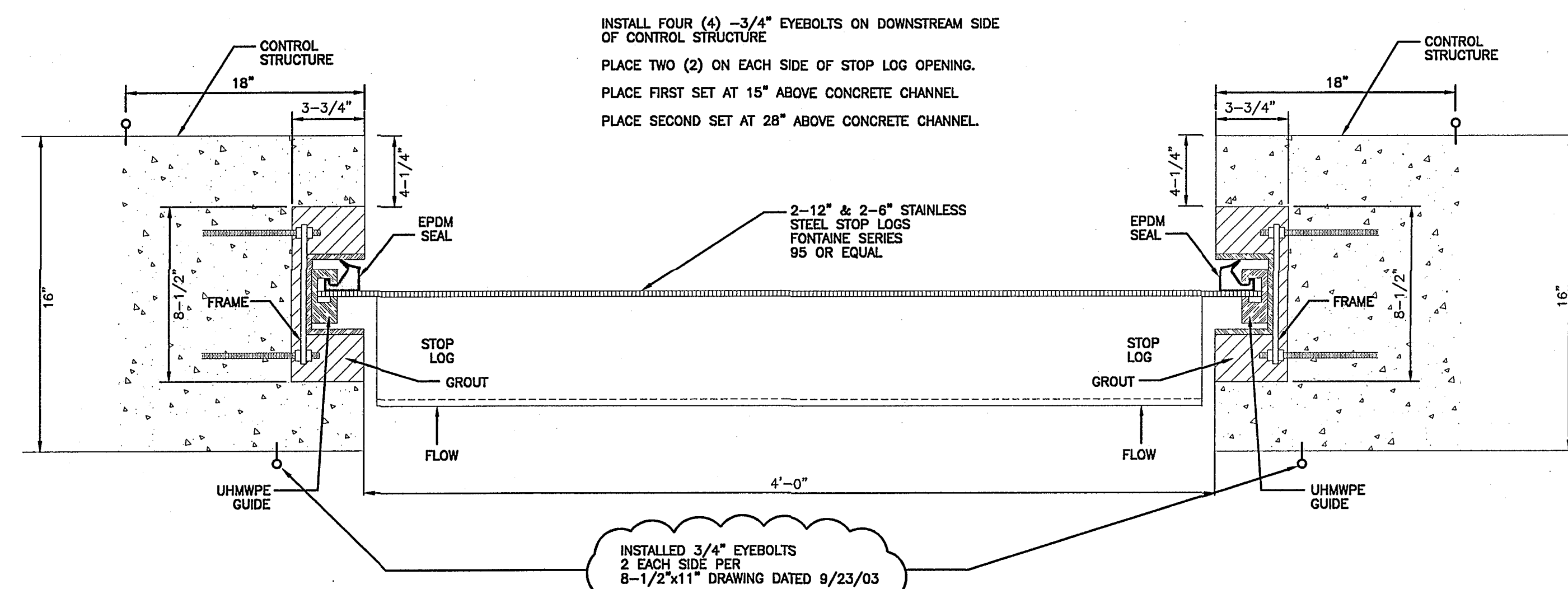
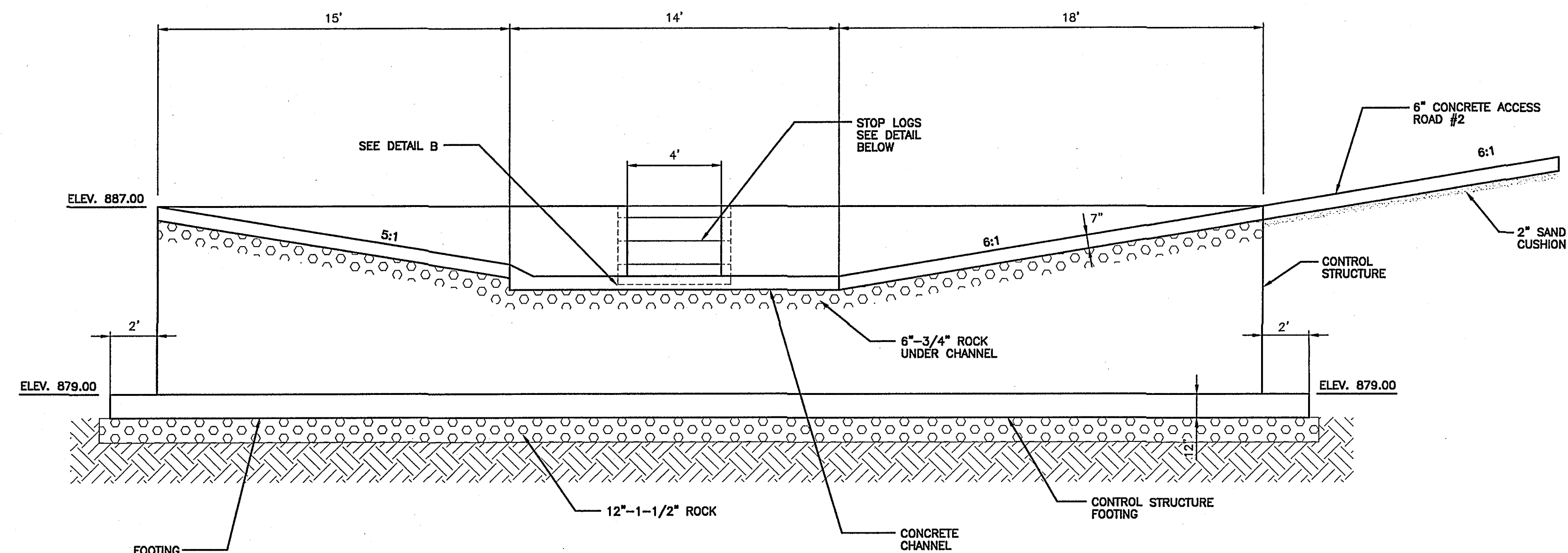
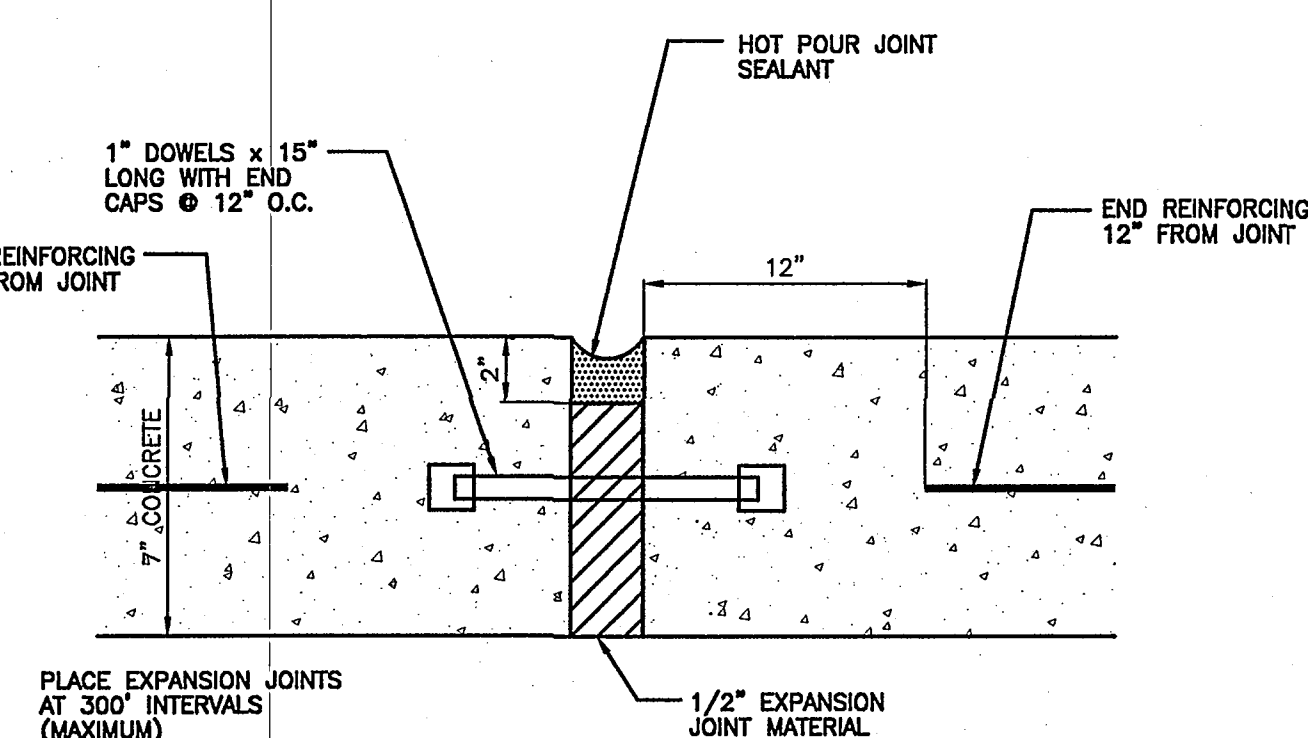
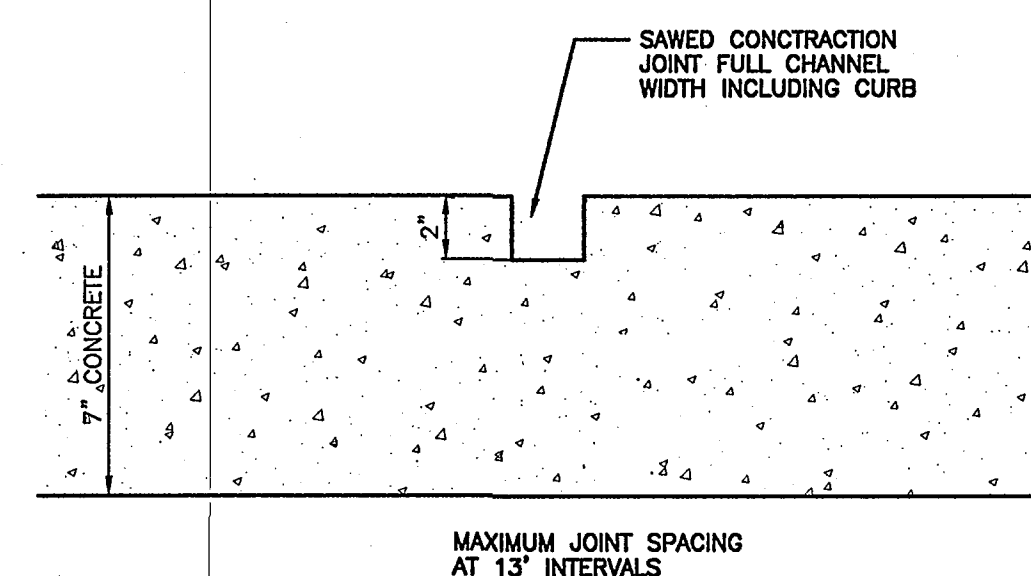
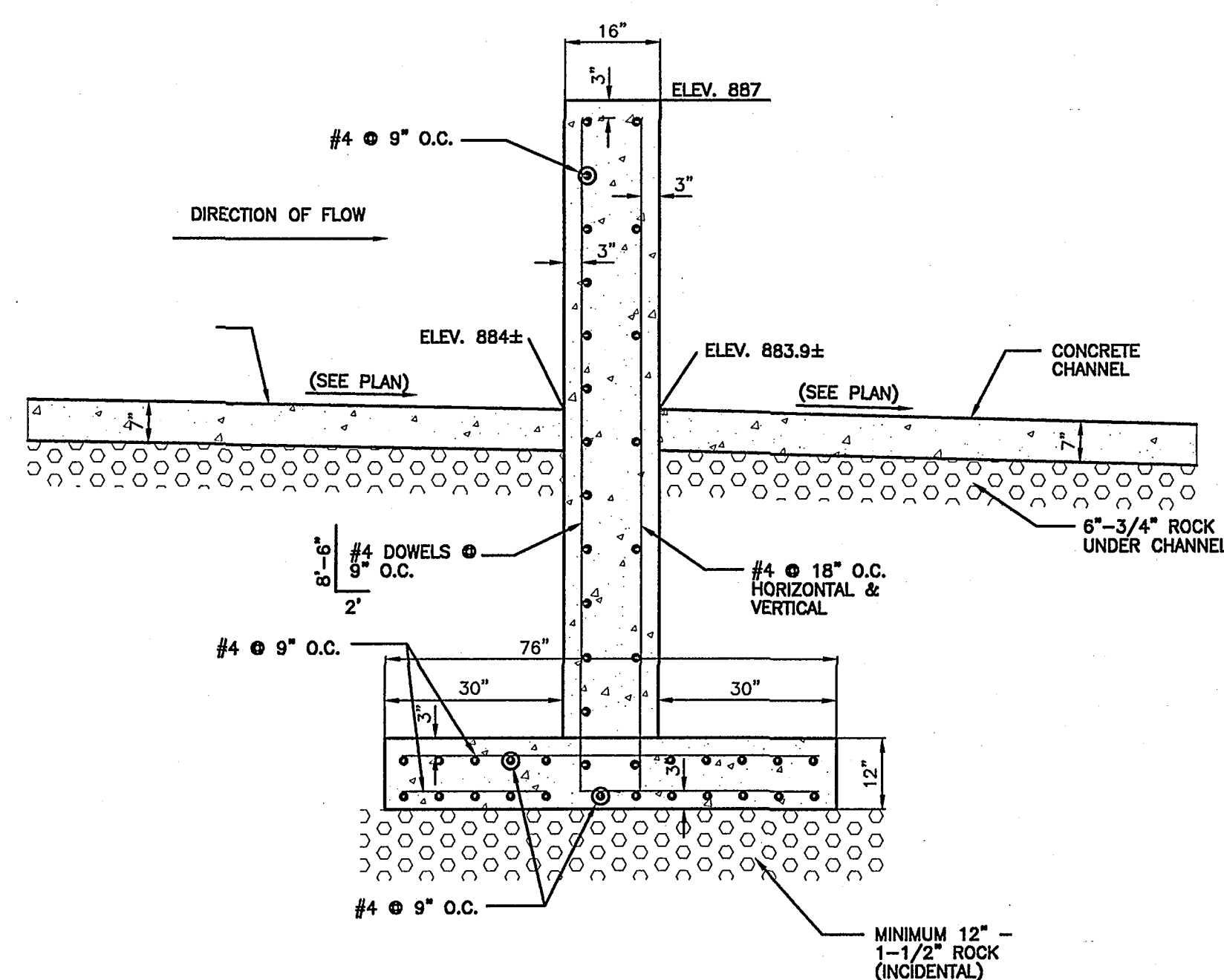
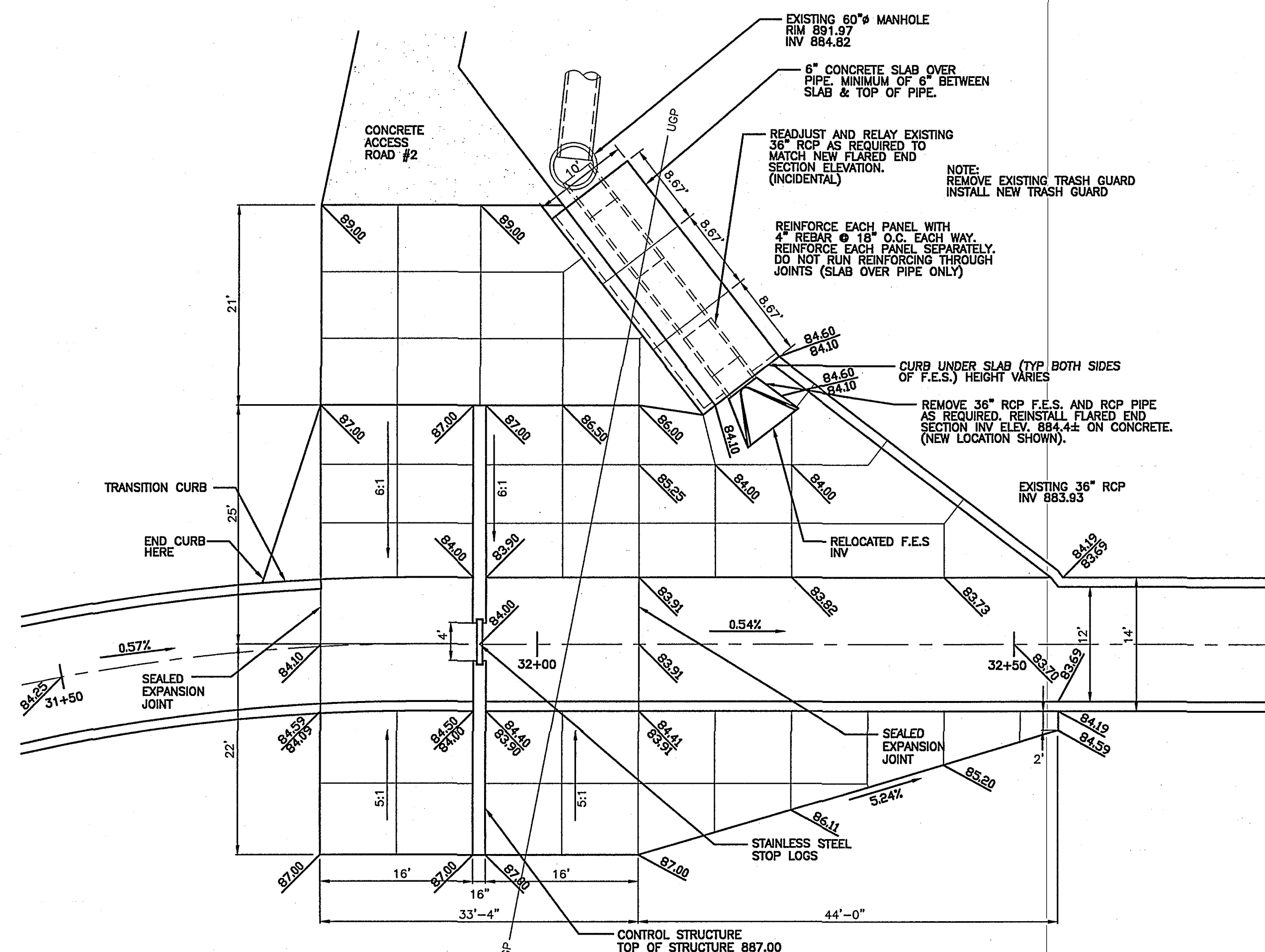




10 NEW 5\"/>

REV.	NOV, 2003	RECORD DRAWING	MGJ
DATE		DESCRIPTION	BY
CITY OF FARGO PUBLIC WORKS DRAIN 27/ROSE COULEE IMPROVEMENTS & INCIDENTALS IMPROVEMENT DISTRICT No.4556-1			
DETAILS			
ULTEIG ENGINEERS, INC.	CONSULTING ENGINEERS	FARGO	
BISMARCK	SIOUX FALLS	MINNEAPOLIS	
DRAWN BY: SLW	SCALE: AS SHOWN	PROJECT NO. 00-0093	
CHECKED BY: MAS	DATE: 6/18/02	SHEET 19 OF 22	
APPROVED BY:			

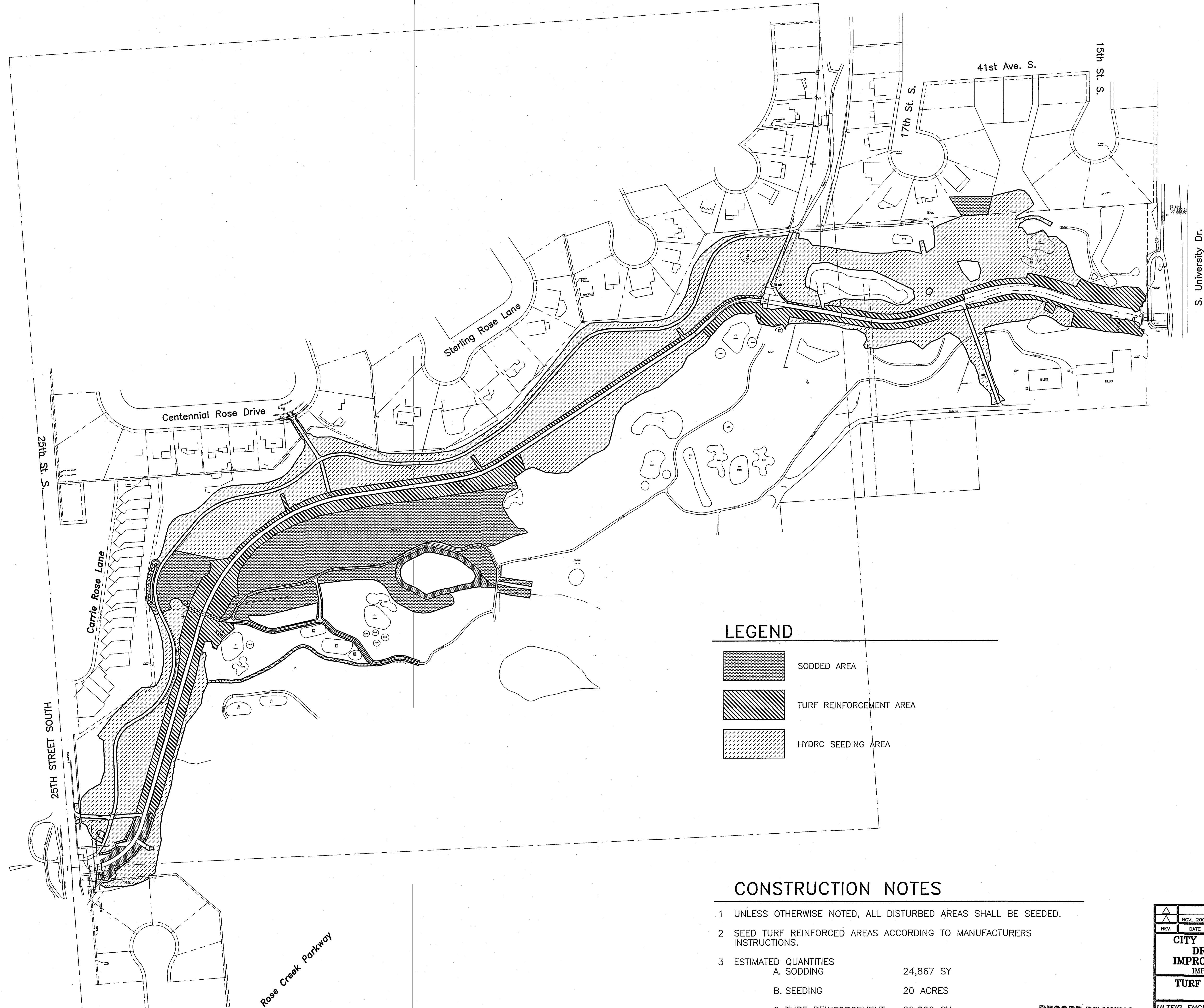
RECORD DRAWING  
DATE Nov 2003



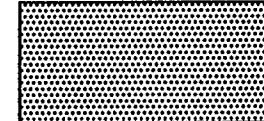

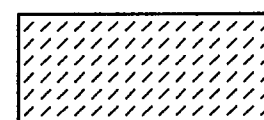


	NOV, 2003	RECORD DRAWING	MGJ
	REV. DATE	DESCRIPTION	BY
<p align="center"><b>CITY OF FARGO PUBLIC WORKS</b>  <b>DRAIN 27/ROSE COULEE</b>  <b>IMPROVEMENTS &amp; INCIDENTALS</b>  <b>IMPROVEMENT DISTRICT No.4566-1</b></p>			
<p align="center"><b>DETAILS</b></p>			
<p><b>ULTEIG ENGINEERS, INC.</b> CONSULTING ENGINEERS • FARGO          BISMARCK • SIOUX FALLS • MINNEAPOLIS</p>			
<p>DRAWN BY: <b>SLW</b>          CHECKED BY: <b>MAS</b>          APPROVED BY:</p>			
SCALE:	<b>AS SHOWN</b>	PROJECT NO.	<b>00-0093</b>
DATE:	<b>6/18/02</b>	SHEET	<b>20 OF 22</b>
		RECORD DRAWING	02008BC20. DWG
			000093C20. DWG





### LEGEND

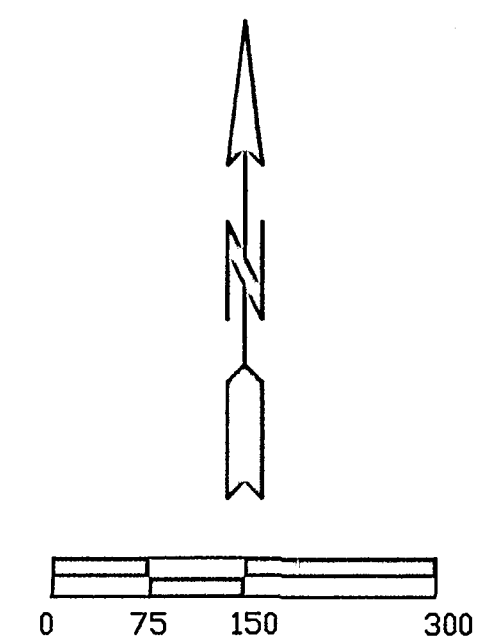
-  SODDED AREA
-  TURF REINFORCEMENT AREA
-  HYDRO SEEDING AREA

### CONSTRUCTION NOTES

- 1 UNLESS OTHERWISE NOTED, ALL DISTURBED AREAS SHALL BE SEED.
- 2 SEED TURF REINFORCED AREAS ACCORDING TO MANUFACTURERS INSTRUCTIONS.
- 3 ESTIMATED QUANTITIES
 

A. SODDING	24,867 SY
B. SEEDING	20 ACRES
C. TURF REINFORCEMENT	22,000 SY

**RECORD DRAWING**  
DATE **Nov 2003**



REV.	DATE	DESCRIPTION	BY
1	NOV. 2003	AS-BUILT	MGJ
<b>CITY OF FARGO PUBLIC WORKS</b> <b>DRAIN 27/ROSE COULEE</b> <b>IMPROVEMENTS &amp; INCIDENTALS</b> IMPROVEMENT DISTRICT No.4556-1			
<b>TURF REINFORCEMENT, SEEDING &amp; SODDING PLAN</b>			
<b>ULTEIG ENGINEERS, INC.</b> CONSULTING ENGINEERS • FARGO BISMARCK • SIOUX FALLS • MINNEAPOLIS			
DRAWN BY: SLW	SCALE: AS SHOWN	PROJECT NO. 00-0093	
CHECKED BY: MAS	DATE: 6/18/02	SHEET 21 OF 22	
APPROVED BY:		RECORD DRAWING 020088C21.DWG	



