Madison, Wisconsin

CITY OF MADISON

CITY ENGINEERING DIVISION
DEPARTMENT OF PUBLIC WORKS
PLAN OF PROPOSED IMPROVEMENT

MCKENNA FLOOD MITIGATION

CITY PROJECT NO. 12011

CONTRACT NO. XXXX

PUBLIC IMPROVEMENT PROJECT APPROVED

BY THE COMMON COUNCIL
OF MADISON, WISCONSIN

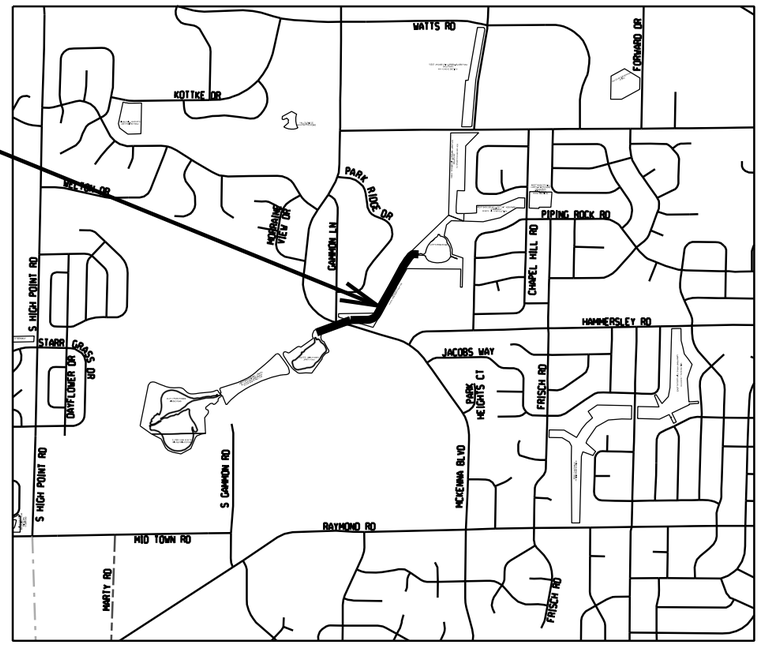
PUBLIC IMPROVEMENT DESIGN
APPROVED BY:

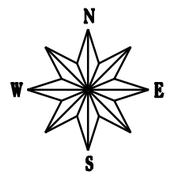
City Engineer _____ Date _____

STORM SEWER
DESIGNED BY:

INDEX OF SHEETS

PROJECT LOCATION





CONVENTIONAL SIGNS

FIELD VERIFY ALL UTILITY LOCATIONS

GAS	G
STORM SEWER	ST
SANITARY SEWER	SAN
WATER	W
OVERHEAD ELECTRIC	OH
POWER POLE	

NOTES:

ALL GUTTERS SHALL DRAIN WITH A MINIMUM GRADE OF 0.50% TOWARD STORM SEWER INLETS.

SIDEWALK RAMPS AND CURB THRU SIDEWALK RAMPS SHALL HAVE A MAXIMUM SLOPE OF 1" PER 12". SIDEWALK AND CURB RAMPS SHALL BE CONSTRUCTED WITH A SIDE SLOPE OF 2.00%. SIDEWALK SHALL HAVE A MINIMUM LONGITUDINAL SLOPE OF 0.50% AND A MAXIMUM LONGITUDINAL SLOPE OF 5.00%

DRAFT
PRELIMINARY
NOT FOR CONSTRUCTION

PLOT SCALE: ____

PLOT NAME: ____

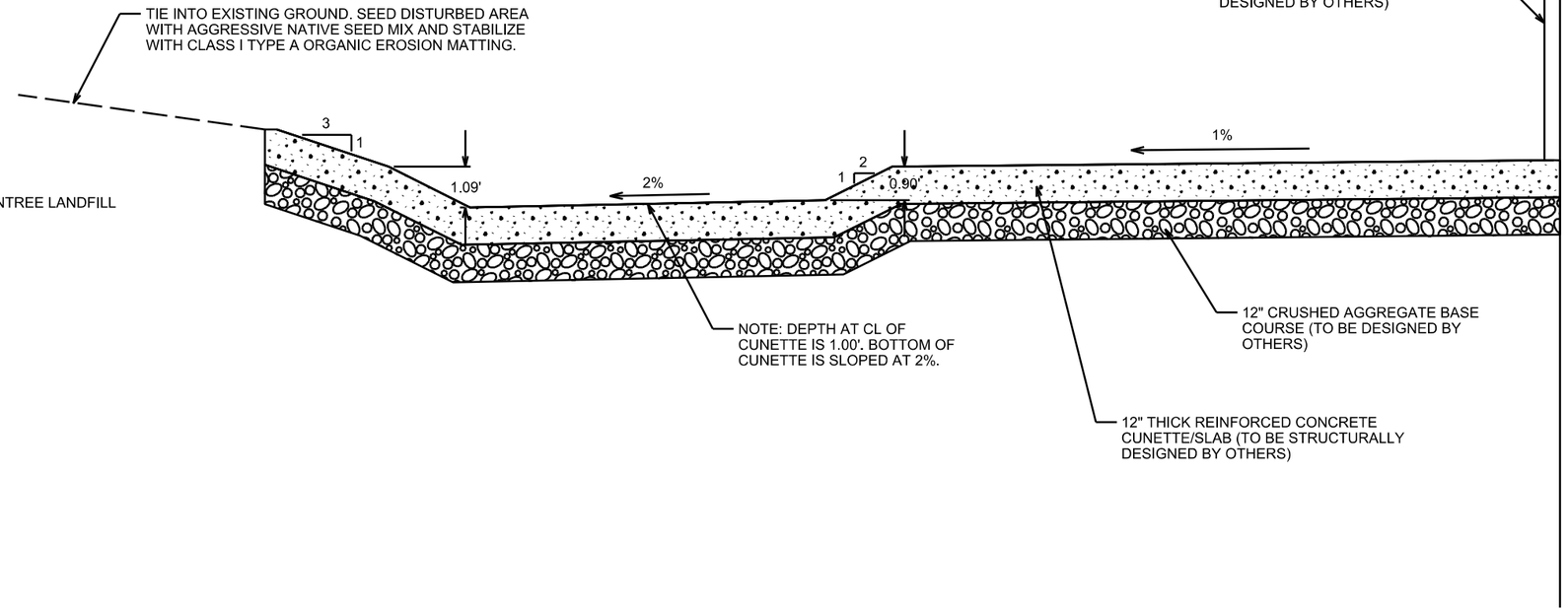
REV. DATE: ____

ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-TitleSht.dgn

DATE: 3/1/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. D-1
DETAIL SCALE = 1:4 REPRESENTATIVE CUNETTE CROSS SECTION	CITY OF MADISON



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PLOT NAME: ____
REV. DATE: ____
ORIGINATOR: CITY OF MADISON STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM_Details##.dgn
DATE: 2/28/2019
PLOT SCALE: 4.0000 sf / In.

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-1
PLAN AND PROFILE	
GREENTREE SOUTH SECTION CITY OF MADISON	

BOX CULVERT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

BARRIER LOCATION PHASED WITH CULVERT REMOVAL & CONSTRUCTION AND FLOW DIVERSION

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88

PHASED TEMPORARY FLOW DIVERSION (SEE SHEET R-1)

MATCHLINE

STREET CONSTRUCTION ENTRANCE BERM
CONSTRUCTION ENTRANCE
TYPE D HYBRID INLET PROTECTION
TYPE C INLET PROTECTION
SILT SOCK (VELOCITY CHECK)
STREET CONSTRUCTION STONE BERM

GREENTREE SOUTH SECTION:
ESTIMATED CUT VOLUME = 7,543 C.Y.
ESTIMATED DISTURBED AREA = 113,713 S.F.

PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475EC-PnP##1.dgn

DATE: 3/1/2019

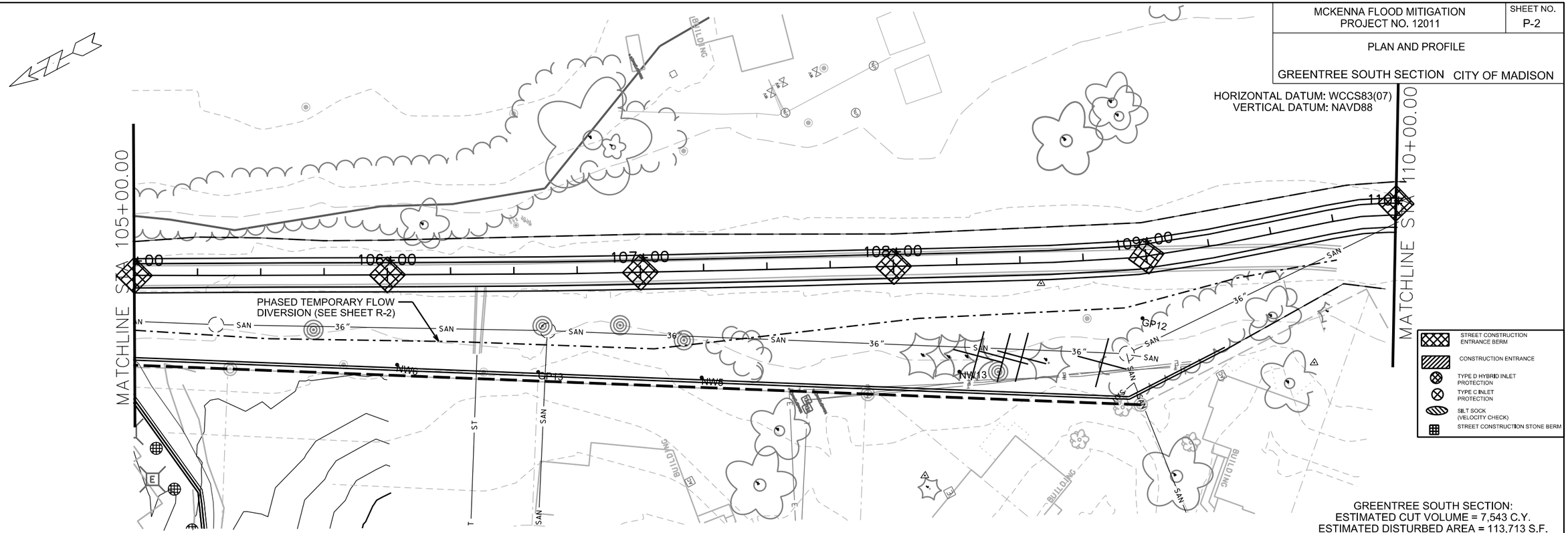
MCKENNA FLOOD MITIGATION
PROJECT NO. 12011

SHEET NO.
P-2

PLAN AND PROFILE

GREENTREE SOUTH SECTION CITY OF MADISON

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88



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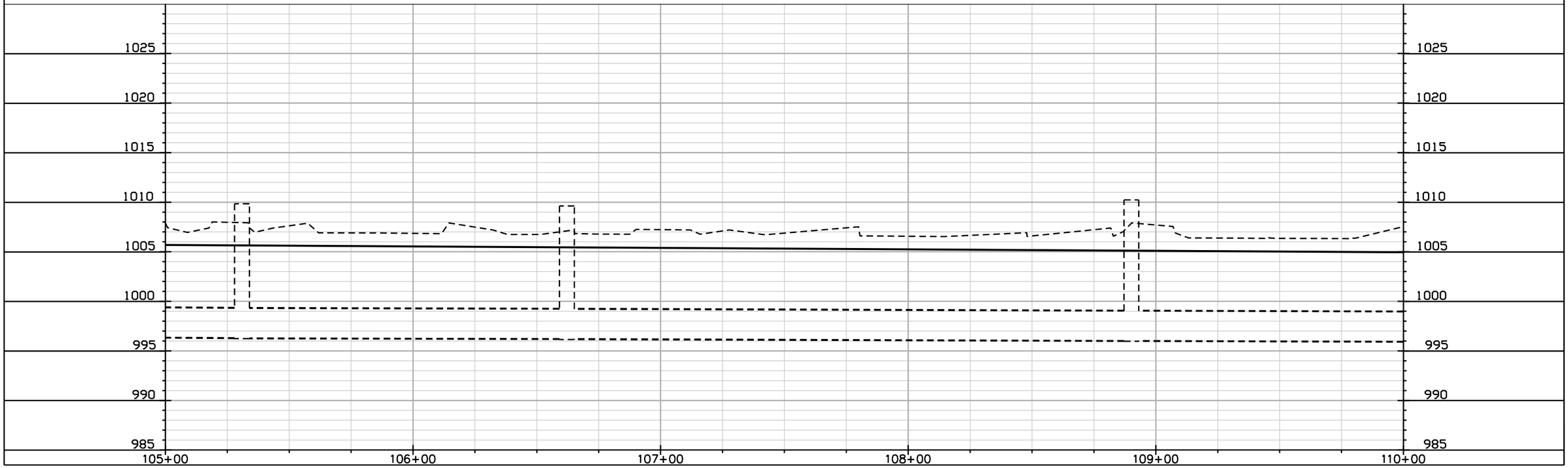

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REV. DATE: ——
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

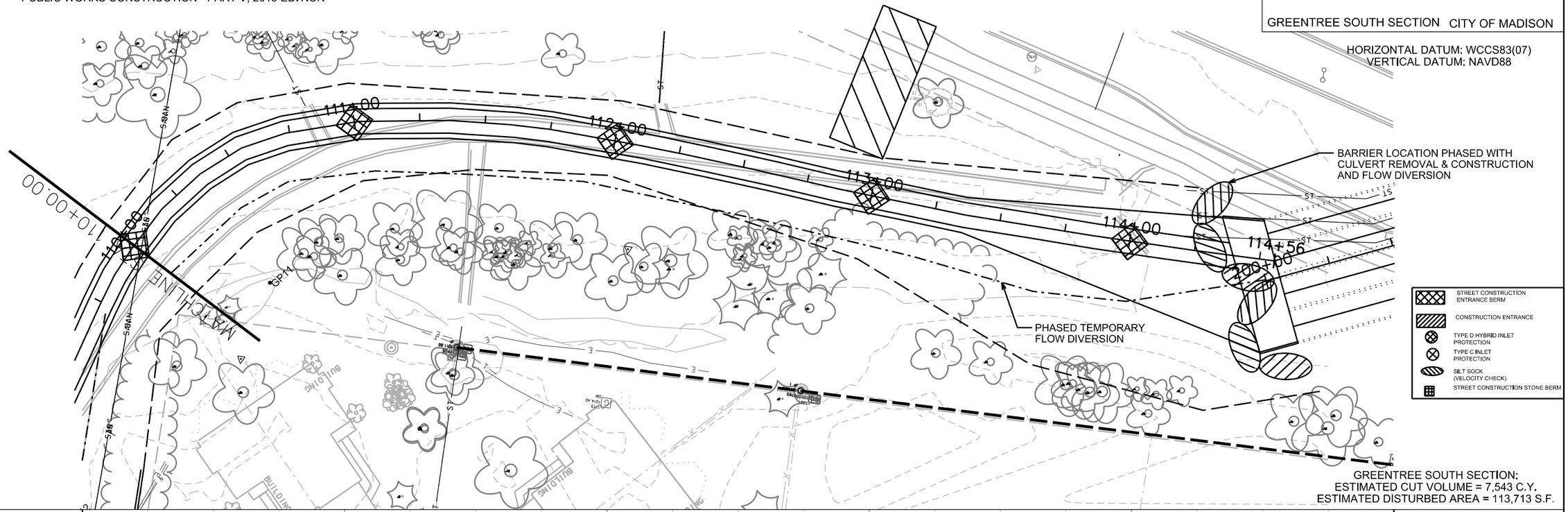
FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475EC-PnP##2.dgn

DATE: 3/1/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-3
PLAN AND PROFILE	
GREENTREE SOUTH SECTION CITY OF MADISON	

BOX CULVERT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88



GREENTREE SOUTH SECTION;
ESTIMATED CUT VOLUME = 7,543 C.Y.
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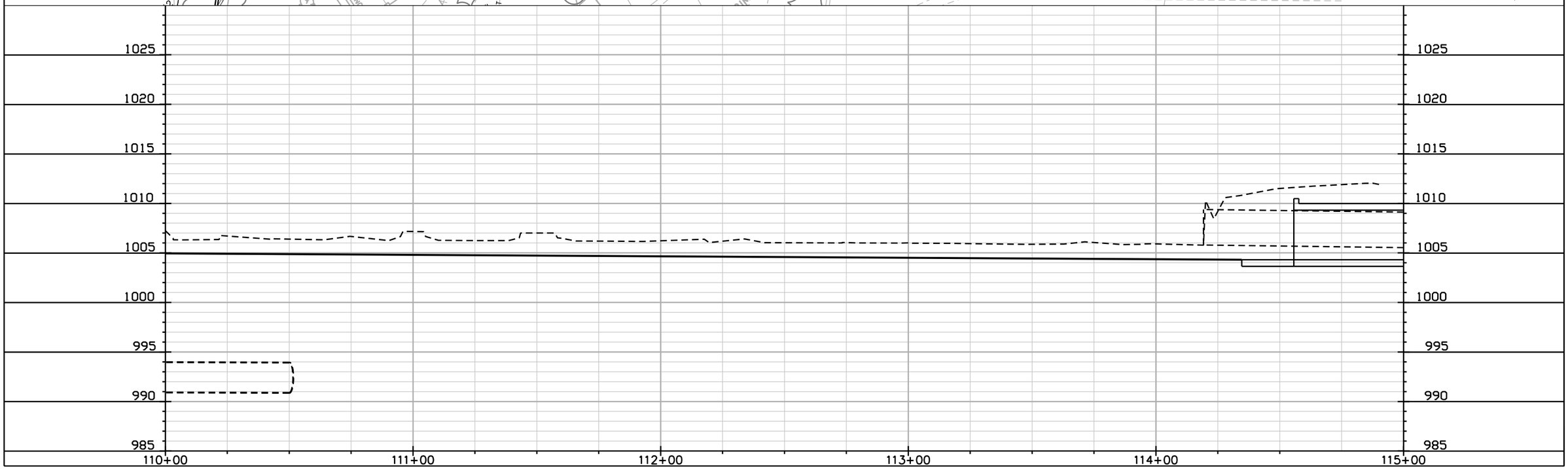

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PLOT NAME:
REV. DATE:
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

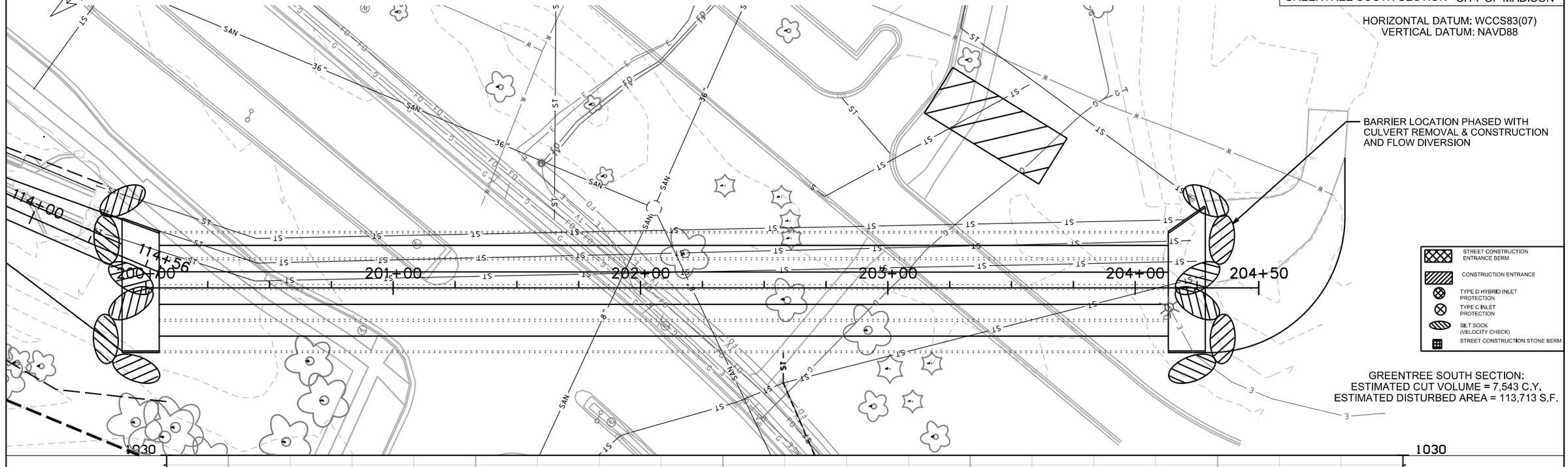
FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475EC-PnP##3.dgn

DATE: 3/1/2019

BOX CULVERT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-4
PLAN AND PROFILE	
GREENTREE SOUTH SECTION CITY OF MADISON	

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88



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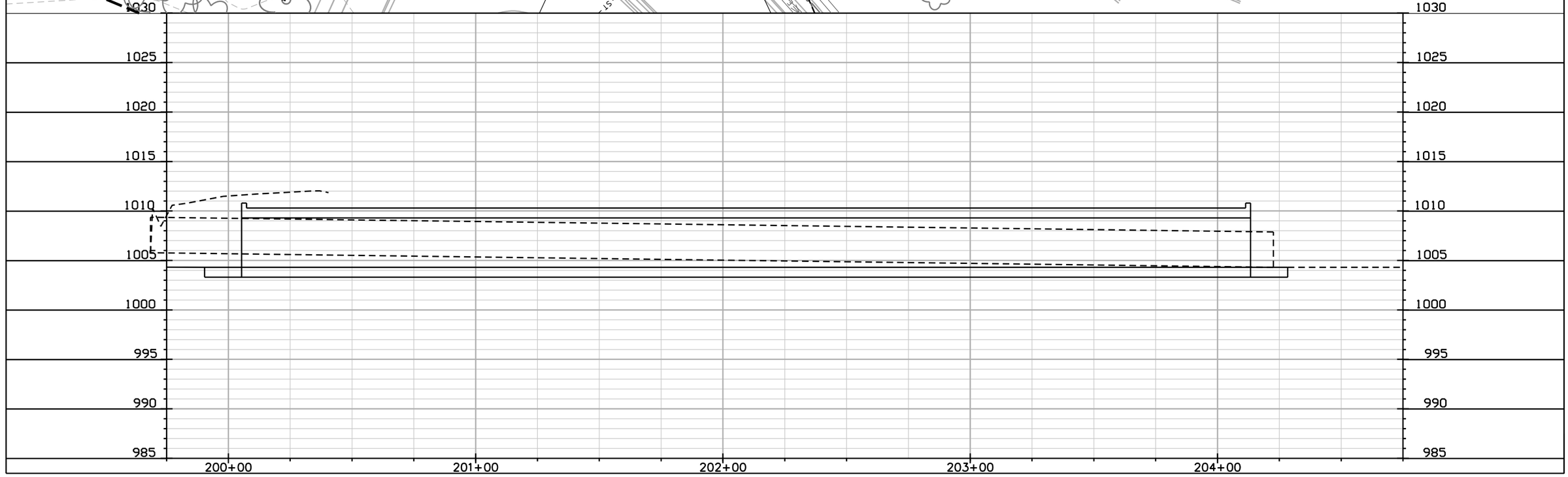
ESTIMATED DISTURBED AREA = 113,713 S.F.



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PLOT NAME: ——
REV. DATE: ——
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475EC-PnP##4.dgn

DATE: 3/1/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-5
PLAN AND PROFILE	
WATTS ROAD SECTION	CITY OF MADISON

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88

STRUCK STREET

PRIVATE DRIVEWAY

PHASED TEMPORARY FLOW DIVERSION

MATCHLINE STA 5+00.00

WATTS ROAD AND SCHROEDER ROAD SECTIONS:
ESTIMATED CUT VOLUME = 2,599 C.Y.
ESTIMATED DISTURBED AREA = 90,761 S.F.

- STREET CONSTRUCTION ENTRANCE BERM
- CONSTRUCTION ENTRANCE
- TYPE D HYBRID INLET PROTECTION
- TYPE C INLET PROTECTION
- SILT SOCK (VELOCITY CHECK)
- STREET CONSTRUCTION STONE BERM

PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

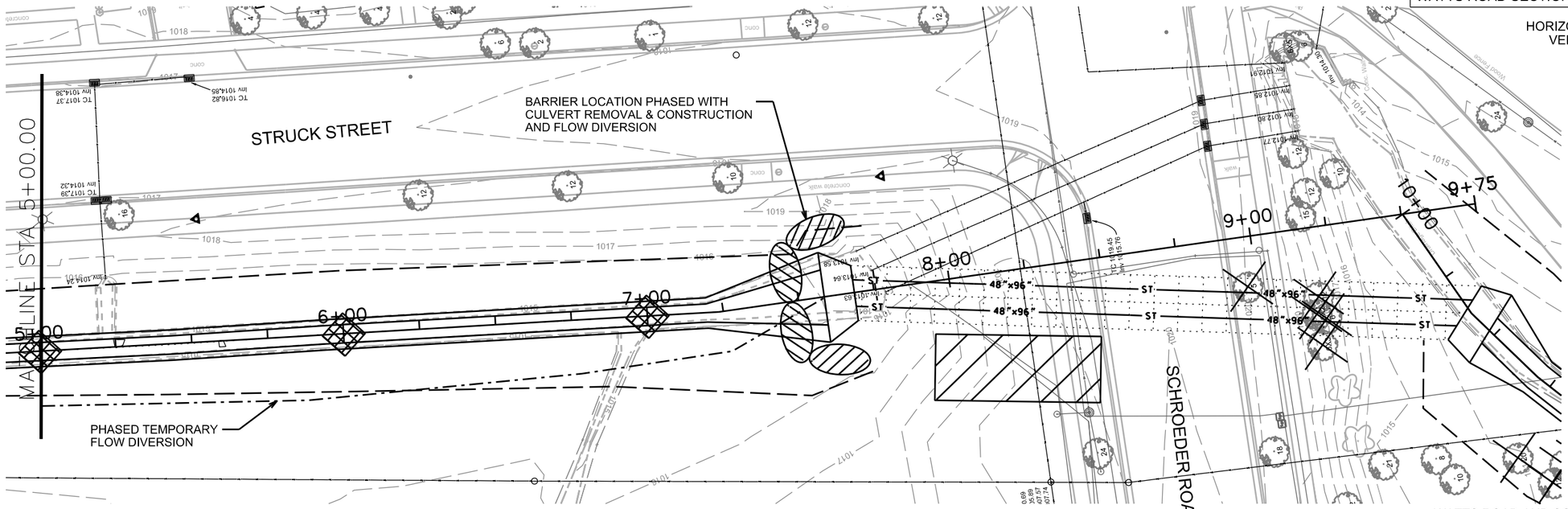
FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475EC-PnP##5.dgn

DATE: 3/1/2019

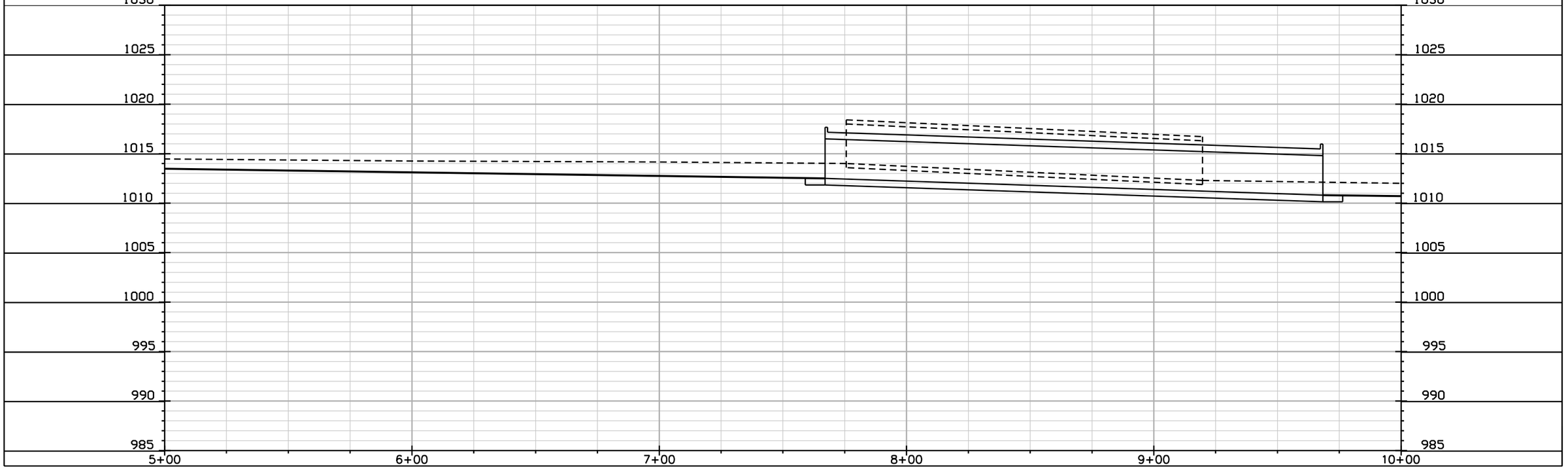
BOX CULVERT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-6
PLAN AND PROFILE	
WATTS ROAD SECTION	CITY OF MADISON

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88



WATTS ROAD AND SCHROEDER ROAD SECTIONS:
ESTIMATED CUT VOLUME = 2,599 C.Y.
ESTIMATED DISTURBED AREA = 90,761 S.F.



PLOT SCALE:
PLOT NAME:
REV. DATE:
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475EC-PnP##6.dgn

DATE: 3/4/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-7
PLAN AND PROFILE	
SCHROEDER ROAD SECTION CITY OF MADISON	

BOX CULVERT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88

WATTS ROAD AND SCHROEDER ROAD SECTIONS:
ESTIMATED CUT VOLUME = 2,599 C.Y.
ESTIMATED DISTURBED AREA = 90,761 S.F.

BARRIER LOCATION PHASED WITH CULVERT REMOVAL & CONSTRUCTION AND FLOW DIVERSION

PHASED TEMPORARY FLOW DIVERSION

MATCHLINE STA 15+00.00

- STREET CONSTRUCTION ENTRANCE BERM
- CONSTRUCTION ENTRANCE
- TYPE D HYBRID INLET PROTECTION
- TYPE C INLET PROTECTION
- SILT SOCK (VELOCITY CHECK)
- STREET CONSTRUCTION STONE BERM

1035 1030 1025 1020 1015 1010 1005 1000 995 990

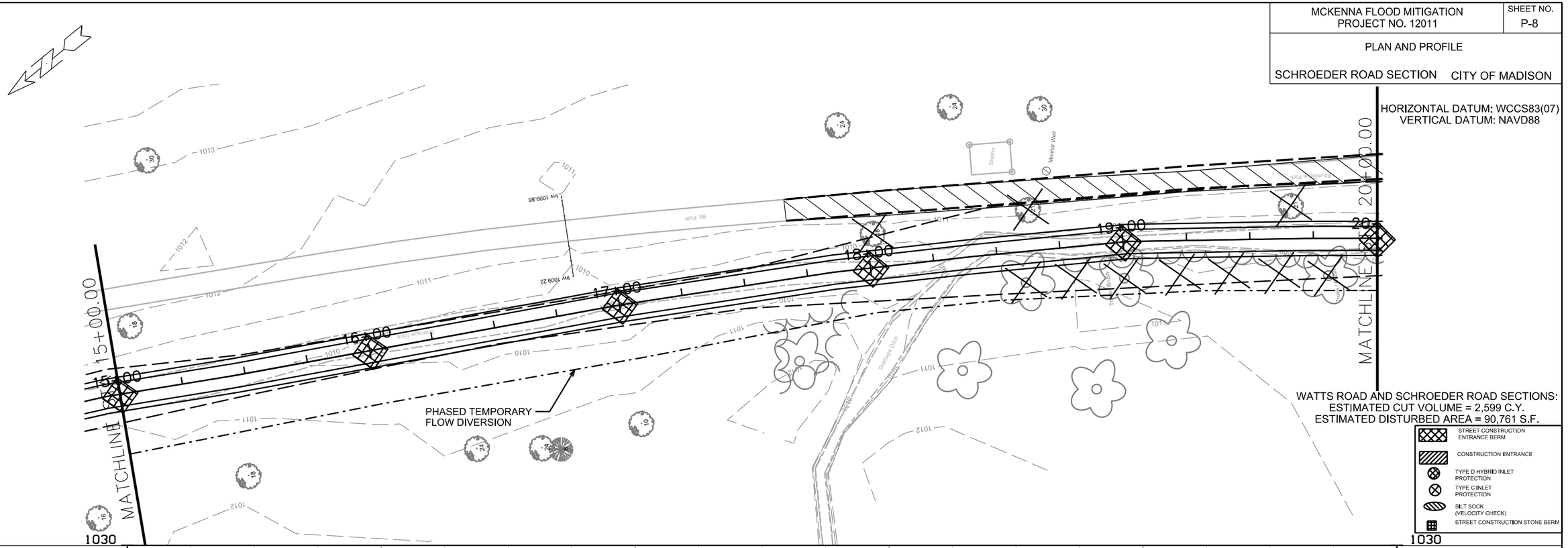
10+00 11+00 12+00 13+00 14+00 15+00

PLOT SCALE: ——
PLOT NAME: ——
REV. DATE: ——
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475EC-PnP##7.dgn DATE: 3/4/2019

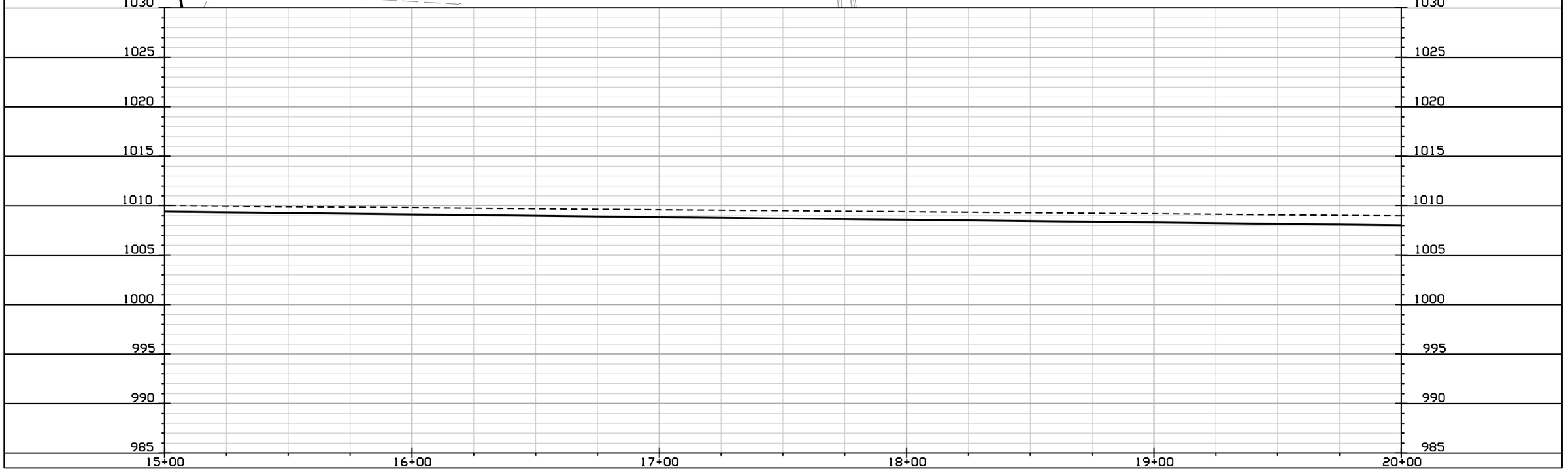
MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-8
PLAN AND PROFILE	
SCHROEDER ROAD SECTION CITY OF MADISON	

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88



WATTS ROAD AND SCHROEDER ROAD SECTIONS:
ESTIMATED CUT VOLUME = 2,599 C.Y.
ESTIMATED DISTURBED AREA = 90,761 S.F.

- STREET CONSTRUCTION ENTRANCE BERM
- CONSTRUCTION ENTRANCE
- TYPE D HYBRID INLET PROTECTION
- TYPE C INLET PROTECTION
- SILT SOCK (VELOCITY CHECK)
- STREET CONSTRUCTION STONE BERM



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REV. DATE: ——
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475EC-PnP##8.dgn

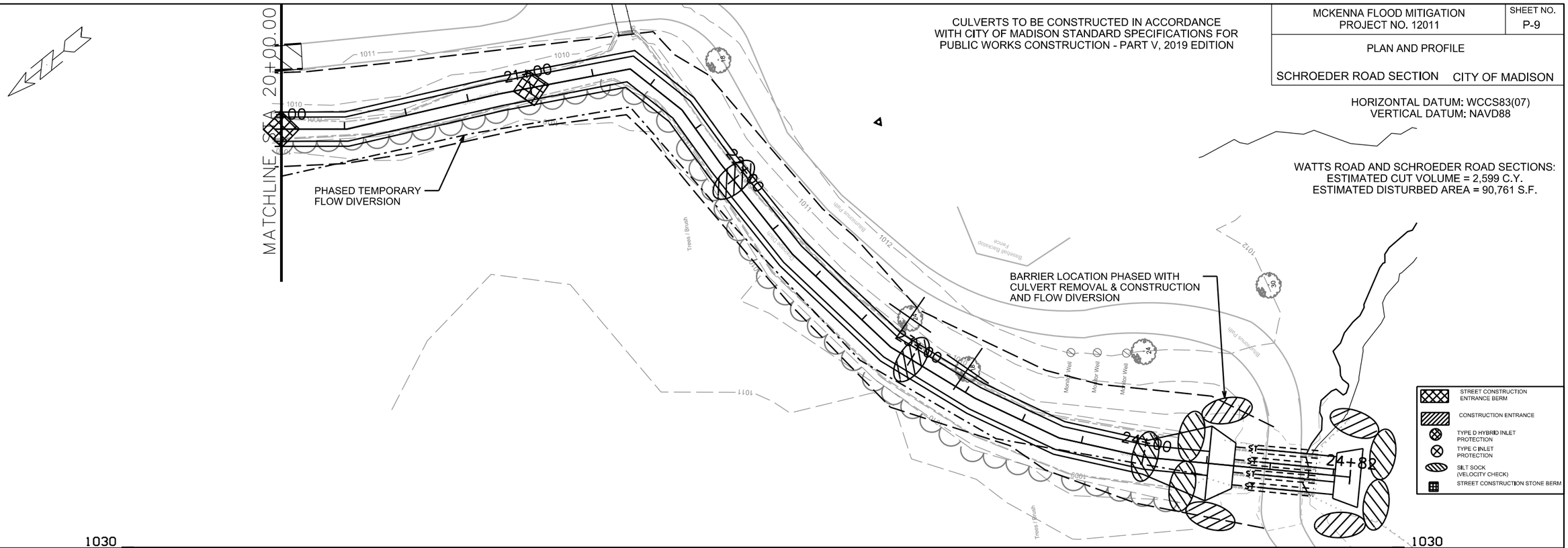
DATE: 3/1/2019

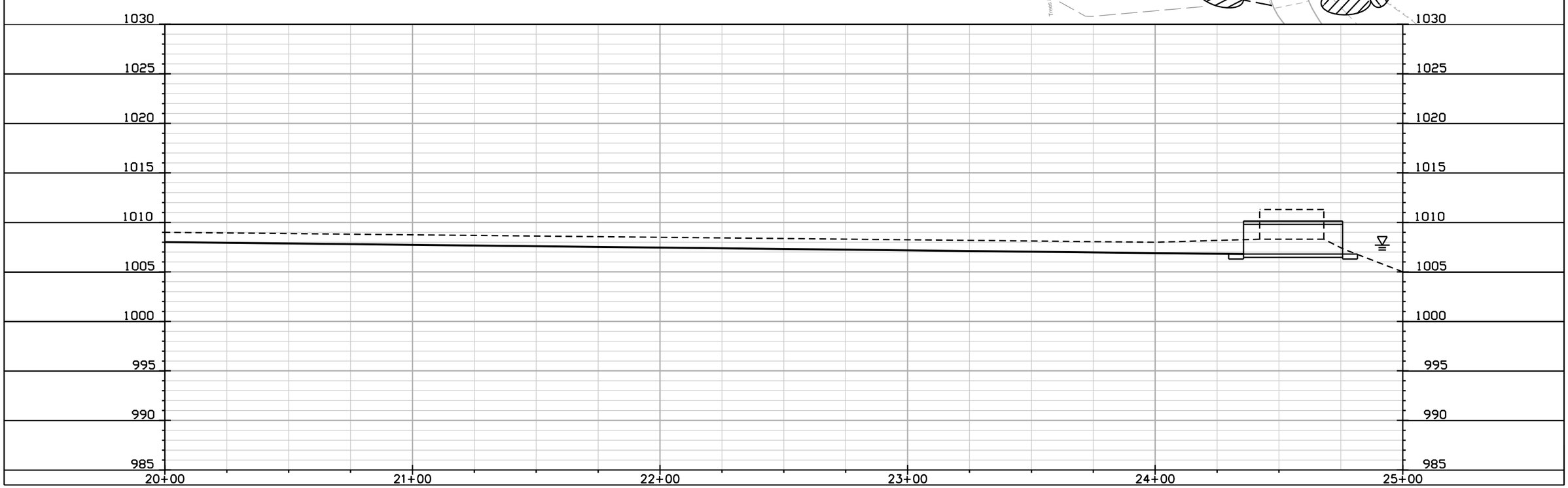
MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-9
PLAN AND PROFILE	
SCHROEDER ROAD SECTION CITY OF MADISON	

CULVERTS TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88

WATTS ROAD AND SCHROEDER ROAD SECTIONS:
ESTIMATED CUT VOLUME = 2,599 C.Y.
ESTIMATED DISTURBED AREA = 90,761 S.F.





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PLOT NAME: ——
REV. DATE: ——
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475EC-PnP##9.dgn

DATE: 3/1/2019

BOX CULVERT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

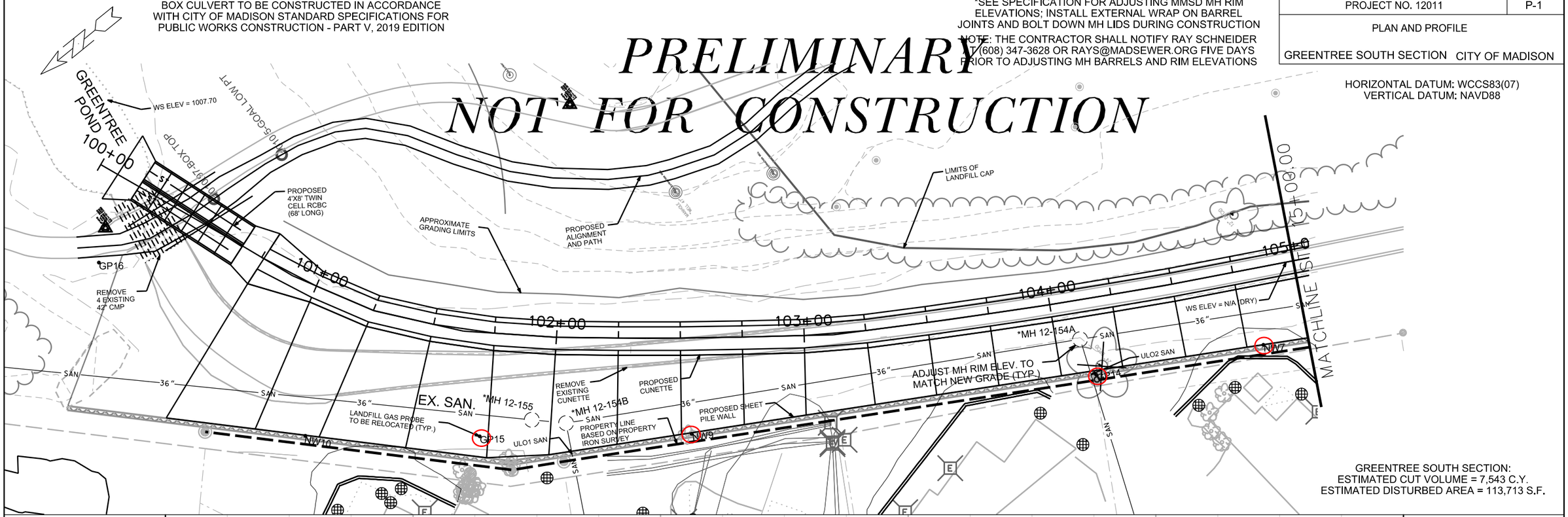
*SEE SPECIFICATION FOR ADJUSTING MMSD MH RIM ELEVATIONS; INSTALL EXTERNAL WRAP ON BARREL JOINTS AND BOLT DOWN MH LIDS DURING CONSTRUCTION

NOTE: THE CONTRACTOR SHALL NOTIFY RAY SCHNEIDER AT (608) 347-3628 OR RAYS@MADSEWER.ORG FIVE DAYS PRIOR TO ADJUSTING MH BARRELS AND RIM ELEVATIONS

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-1
PLAN AND PROFILE	
GREENTREE SOUTH SECTION CITY OF MADISON	

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88

PRELIMINARY NOT FOR CONSTRUCTION



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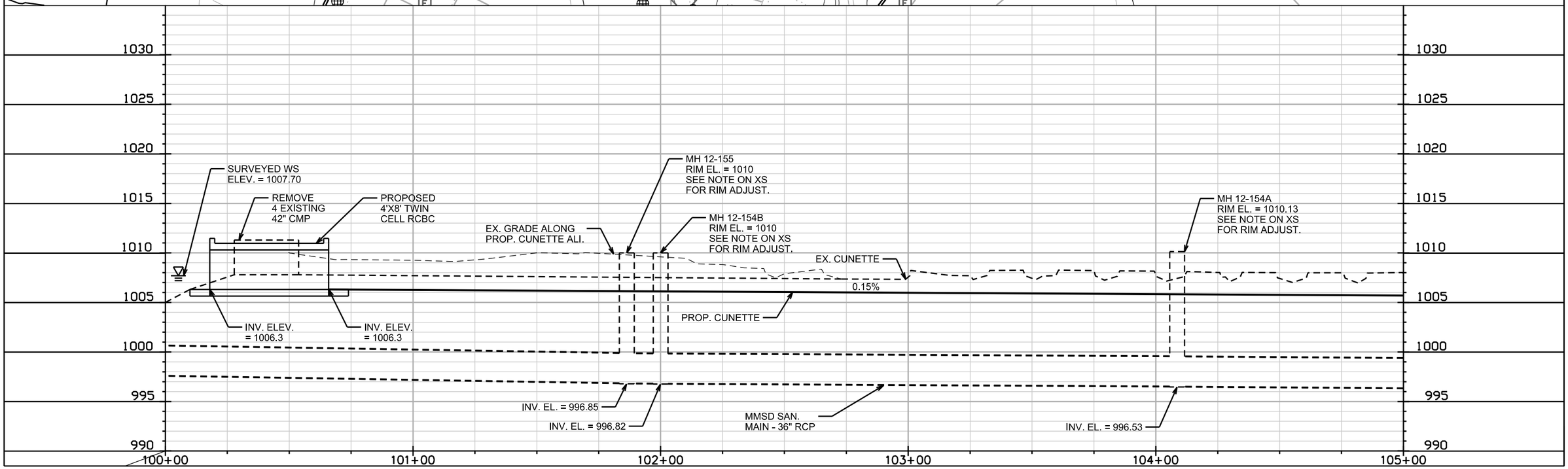

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PLOT NAME:
REV. DATE:
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\12011\Storm\Design\12011STM-PnP##1.dgn

DATE: 3/29/2019

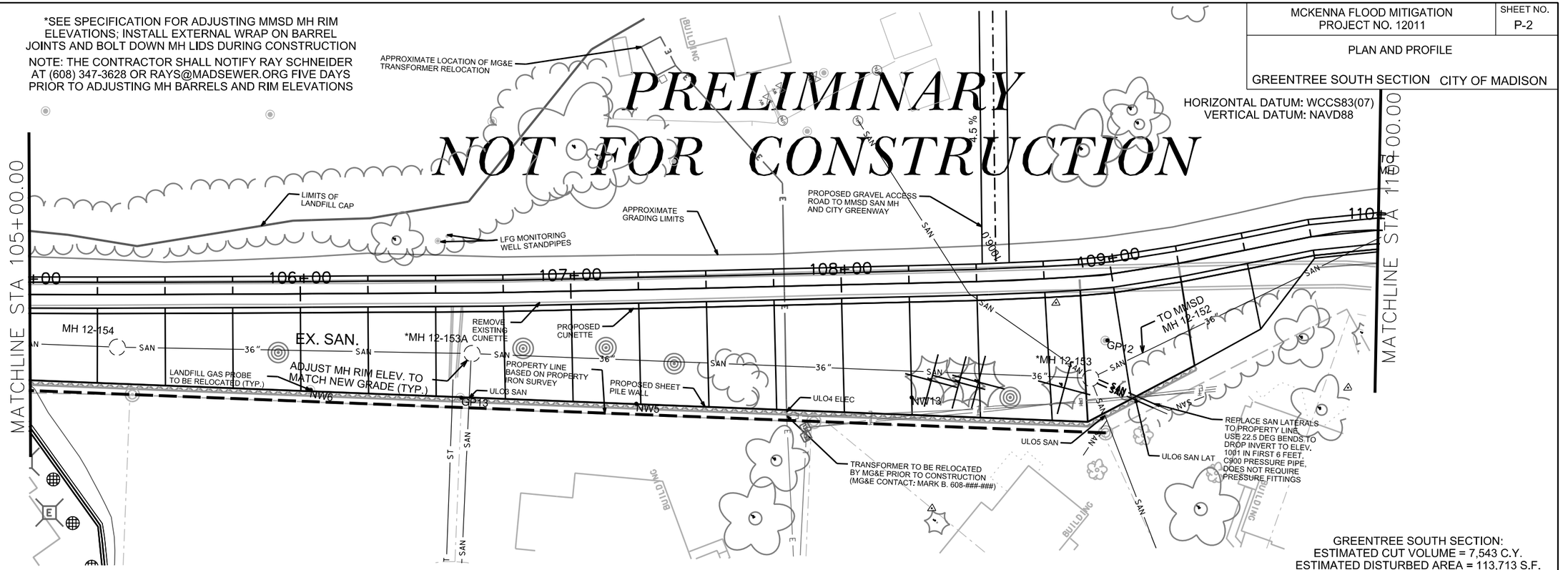
MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-2
PLAN AND PROFILE	
GREENTREE SOUTH SECTION CITY OF MADISON	

*SEE SPECIFICATION FOR ADJUSTING MMSD MH RIM ELEVATIONS; INSTALL EXTERNAL WRAP ON BARREL JOINTS AND BOLT DOWN MH LIDS DURING CONSTRUCTION

NOTE: THE CONTRACTOR SHALL NOTIFY RAY SCHNEIDER AT (608) 347-3628 OR RAYS@MADSEWER.ORG FIVE DAYS PRIOR TO ADJUSTING MH BARRELS AND RIM ELEVATIONS

PRELIMINARY NOT FOR CONSTRUCTION

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88



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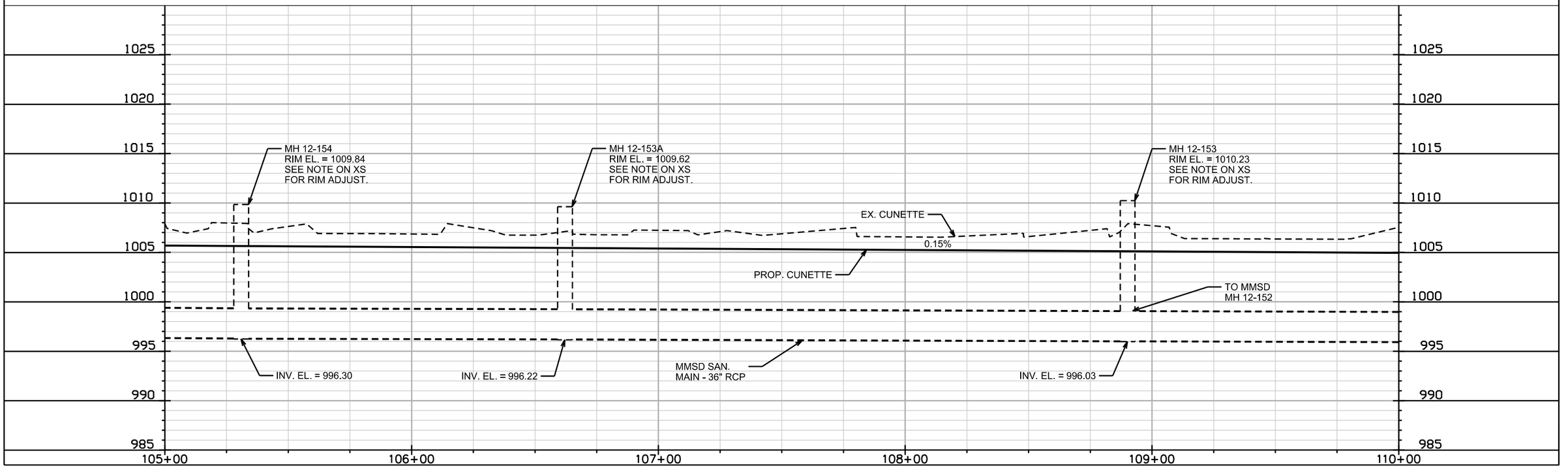

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ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\12011\Storm\Design\12011STM-PnP###2.dgn

DATE: 3/29/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-3
PLAN AND PROFILE	
GREENTREE SOUTH SECTION CITY OF MADISON	

BOX CULVERT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88

REPLACE CONCRETE APRON

PROPOSED CUNETTE

APPROXIMATE GRADING LIMITS

REMOVE 3 EXISTING 43"X68" HERCP

REMOVE EXISTING CUNETTE

PROPERTY LINE BASED ON PROPERTY IRON SURVEY

REPLACE CONCRETE APRON

TO MMSD MH 12-152

MATCHLINE

LANDFILL GAS PROBE TO BE RELOCATED (TYP.)

GP14

PROPOSED 4-CELL RCBC (408' LONG 2-12' & 2-10' CELLS)

REPLACE SAN LATERALS TO PROPERTY LINE USE 22.5 DEG BENDS TO DROP INVERT TO ELEV. 1001.16 FEET. C900 IN PRESSURE PIPE; DOES NOT REQUIRE PRESSURE FITTINGS

GREENTREE SOUTH SECTION;
ESTIMATED CUT VOLUME = 7,543 C.Y.
ESTIMATED DISTURBED AREA = 113,713 S.F.

PROPOSED 4-CELL RCBC
(2-12' & 2-10' CELLS)
SEE 'S' SHEETS

REMOVE 3 EXISTING
43"X68" HERCP

EX. CUNETTE

0.15%

PROP. CUNETTE

INV. ELEV.
= 1004.16

TO MMSD
MH 12-152

1025
1020
1015
1010
1005
1000
995
990
985

110+00
111+00
112+00
113+00
114+00
115+00

PLOT SCALE: ——
PLOT NAME: ——
REV. DATE: ——
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

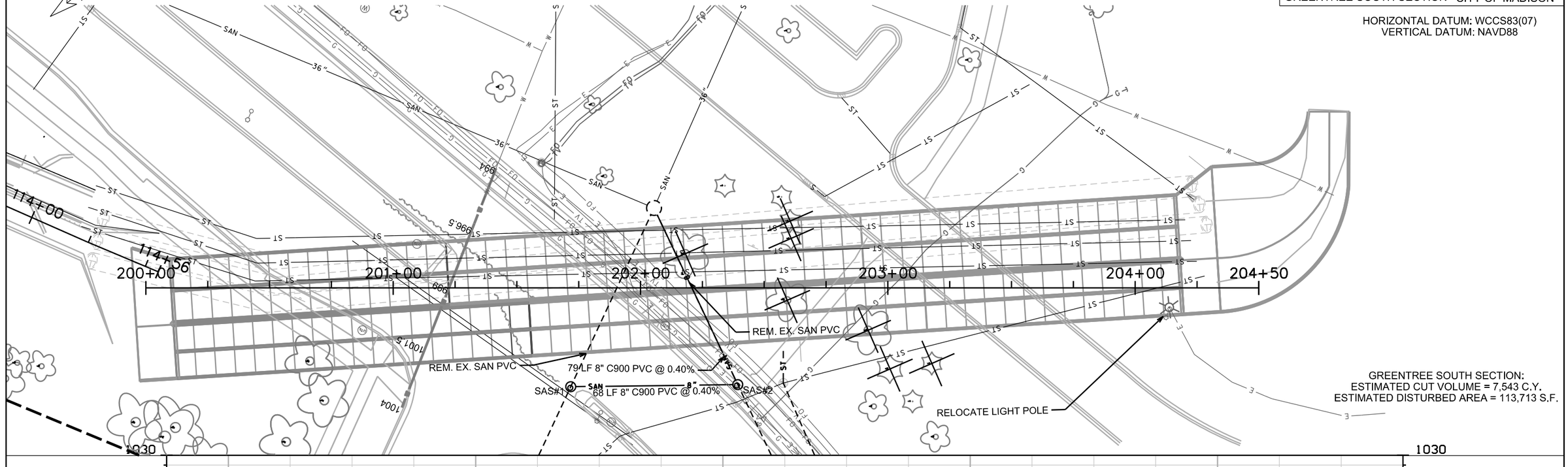
FILE NAME: M:\DESIGN\Projects\12011\Storm\Design\12011STM-PnP##3.dgn

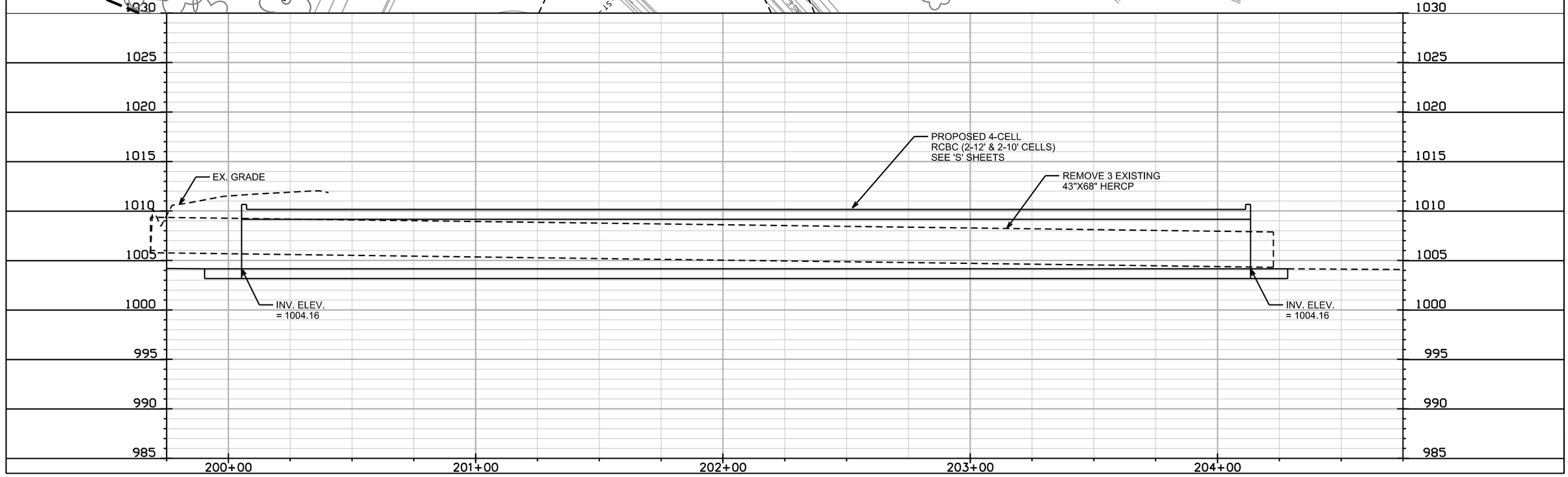
DATE: 4/3/2019

BOX CULVERT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-4
PLAN AND PROFILE	
GREENTREE SOUTH SECTION CITY OF MADISON	

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88





PLOT SCALE: ——
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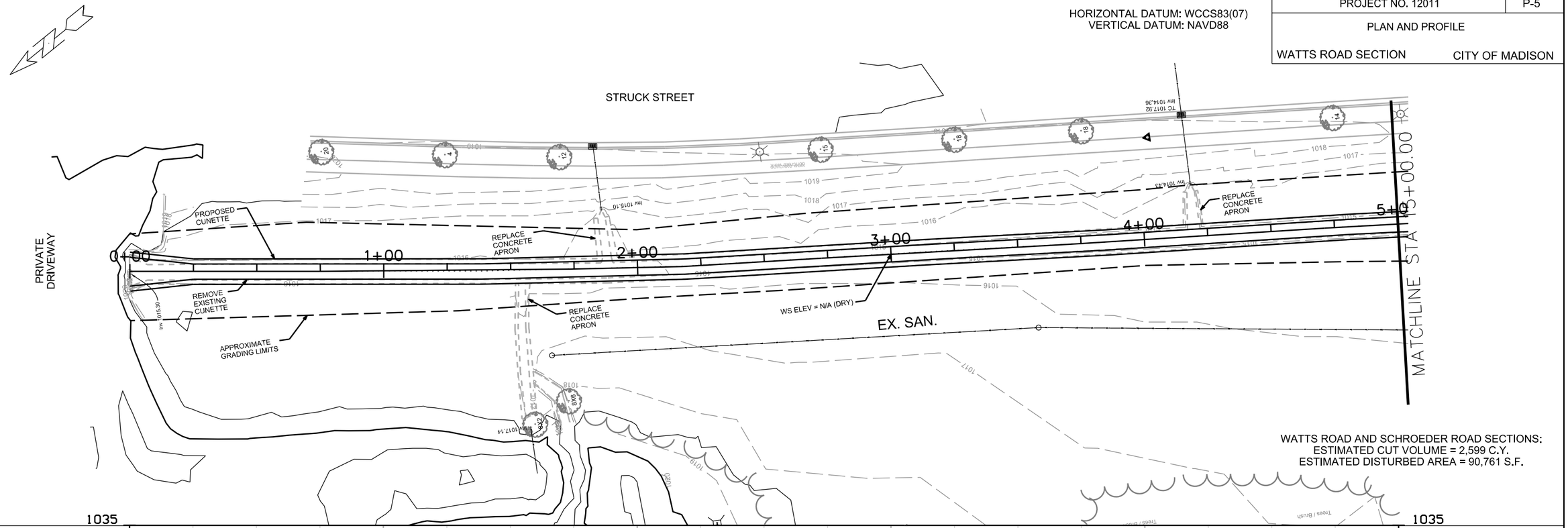
REV. DATE: ——
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\12011\Storm\Design\12011STM-PnP###4.dgn DATE: 4/3/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-5
PLAN AND PROFILE	
WATTS ROAD SECTION	CITY OF MADISON

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88



WATTS ROAD AND SCHROEDER ROAD SECTIONS:
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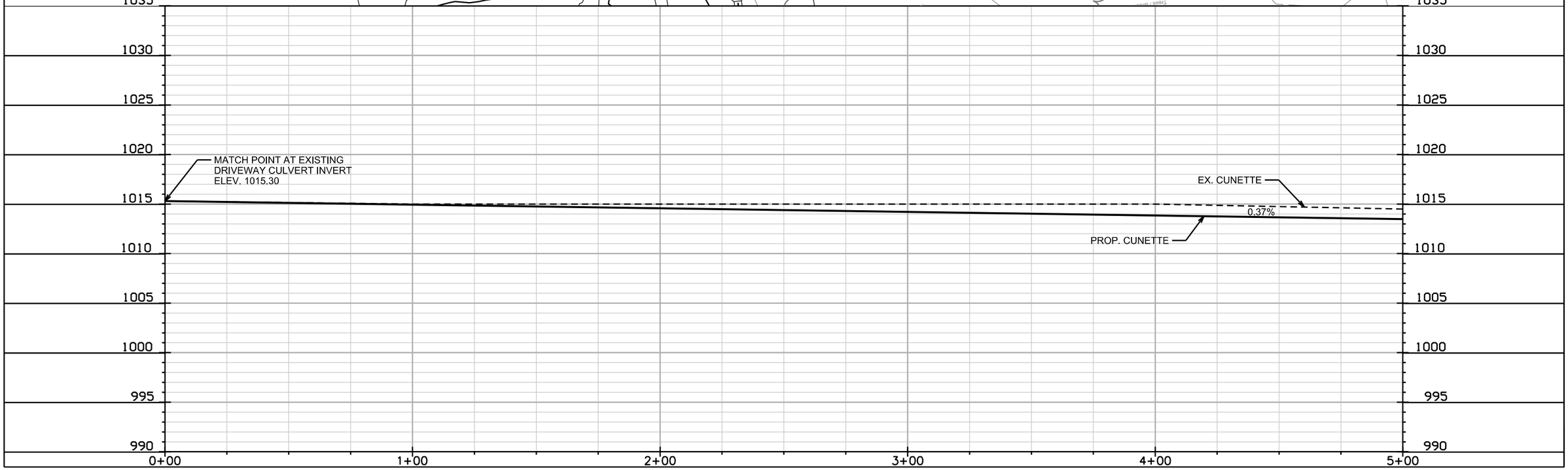
ESTIMATED DISTURBED AREA = 90,761 S.F.



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PLOT NAME: ——
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ORIGINATOR: CITY OF MADISON, STREETS DIVISION

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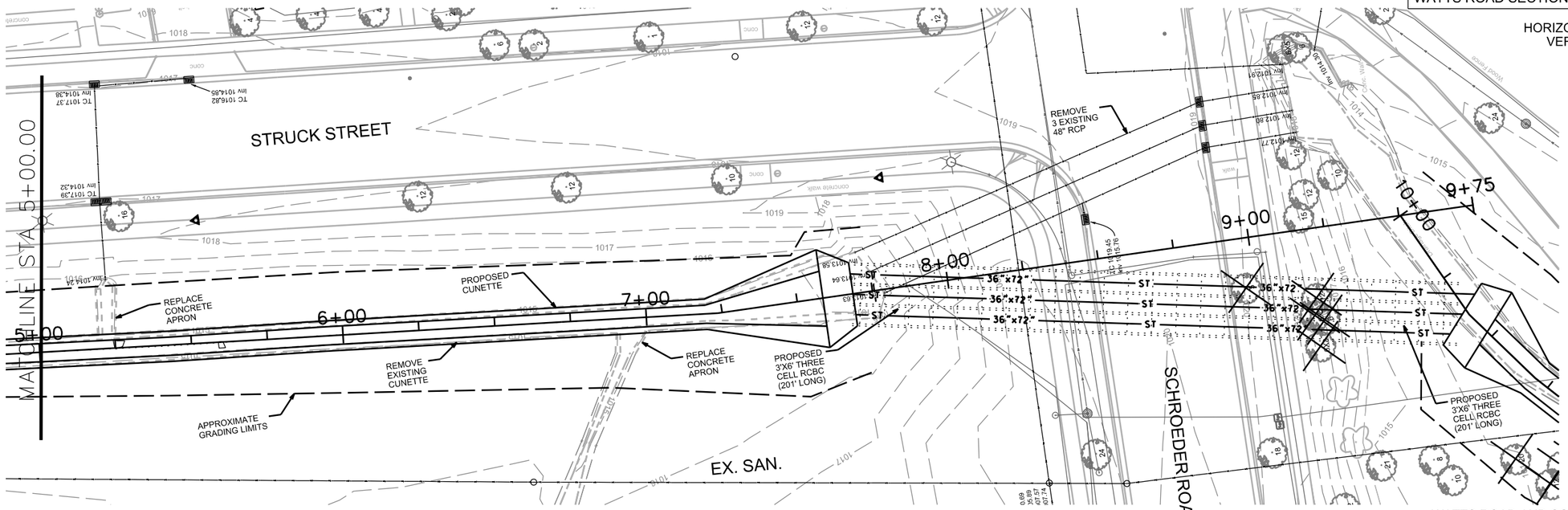
DATE: 3/1/2019

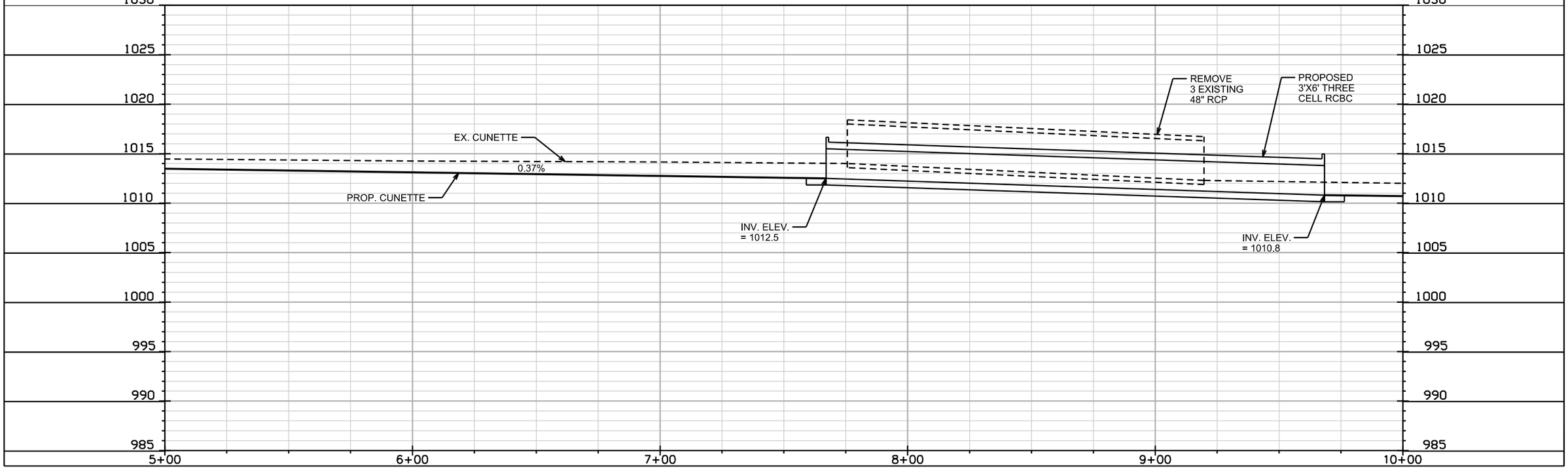
BOX CULVERT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-6
PLAN AND PROFILE	
WATTS ROAD SECTION	CITY OF MADISON

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88



WATTS ROAD AND SCHROEDER ROAD SECTIONS:
ESTIMATED CUT VOLUME = 2,599 C.Y.
ESTIMATED DISTURBED AREA = 90,761 S.F.



PLOT SCALE: ____
PLOT NAME: ____
REV. DATE: ____
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

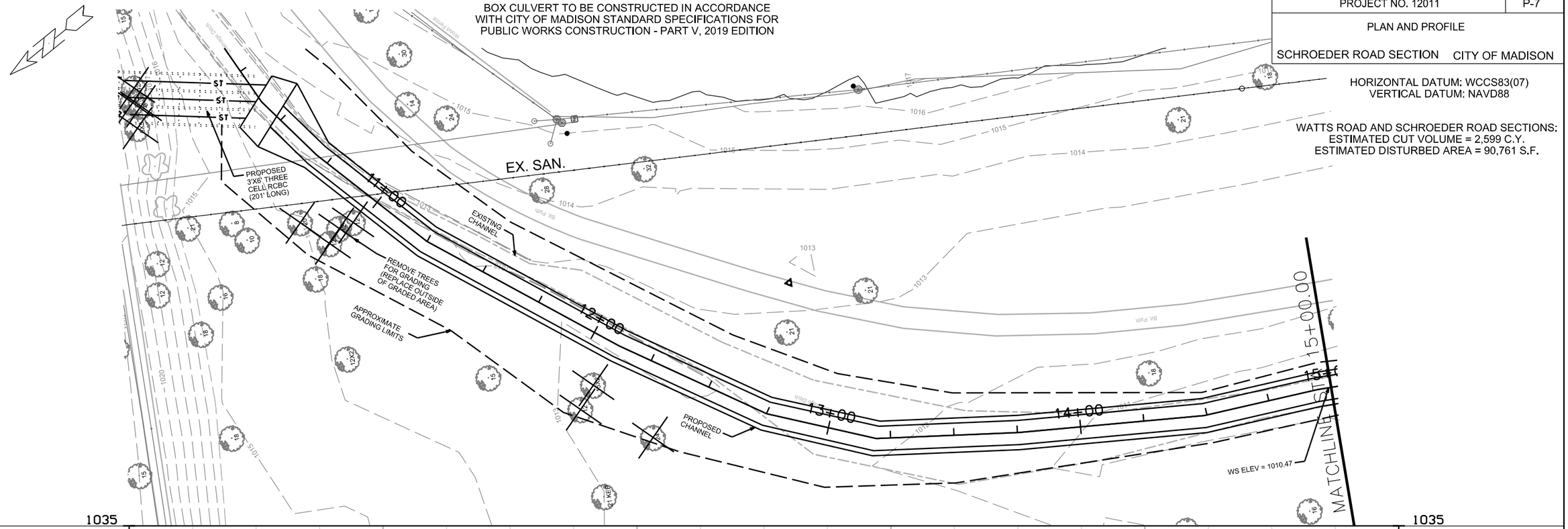
FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-PnP##6.dgn
DATE: 3/4/2019

BOX CULVERT TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-7
PLAN AND PROFILE	
SCHROEDER ROAD SECTION CITY OF MADISON	

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88

WATTS ROAD AND SCHROEDER ROAD SECTIONS:
ESTIMATED CUT VOLUME = 2,599 C.Y.
ESTIMATED DISTURBED AREA = 90,761 S.F.



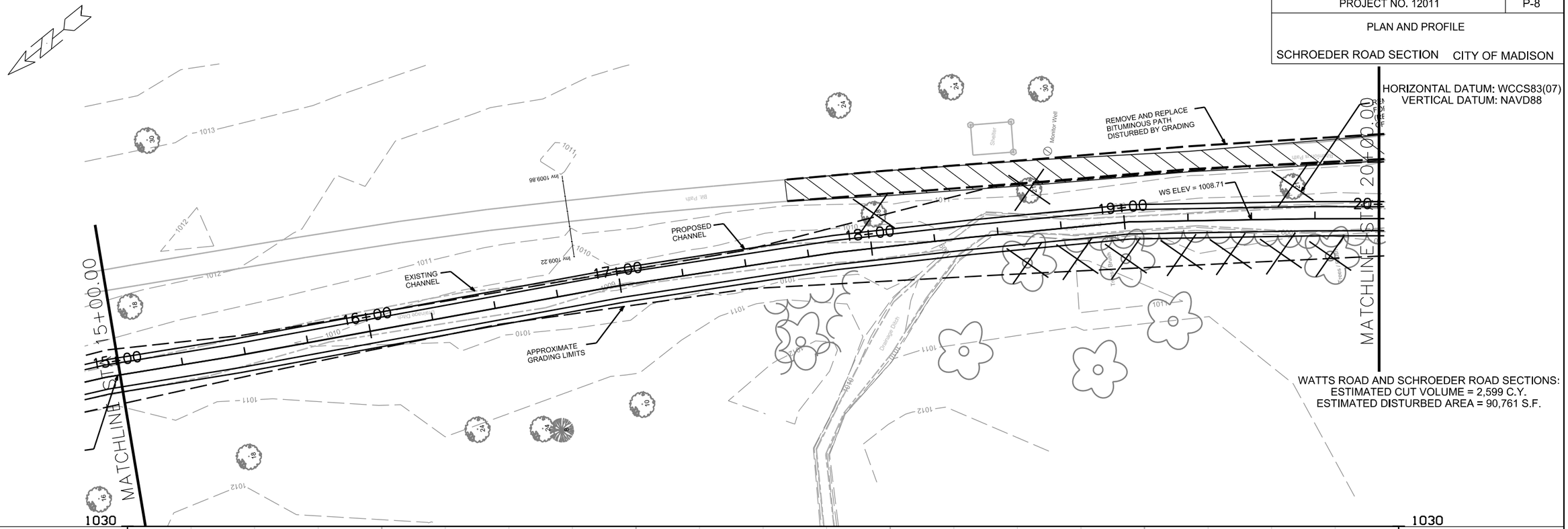
PLOT SCALE: ——
PLOT NAME: ——
REV. DATE: ——
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-PnP###7.dgn

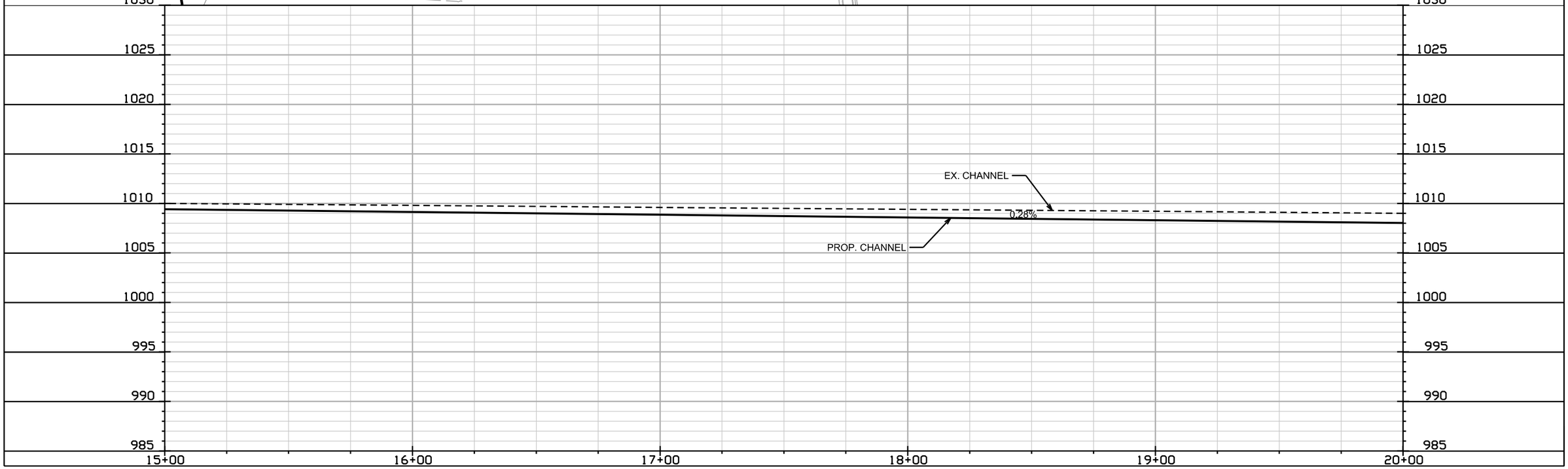
DATE: 3/4/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-8
PLAN AND PROFILE	
SCHROEDER ROAD SECTION CITY OF MADISON	

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88



WATTS ROAD AND SCHROEDER ROAD SECTIONS:
ESTIMATED CUT VOLUME = 2,599 C.Y.
ESTIMATED DISTURBED AREA = 90,761 S.F.



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PLOT NAME: ——
REV. DATE: ——
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

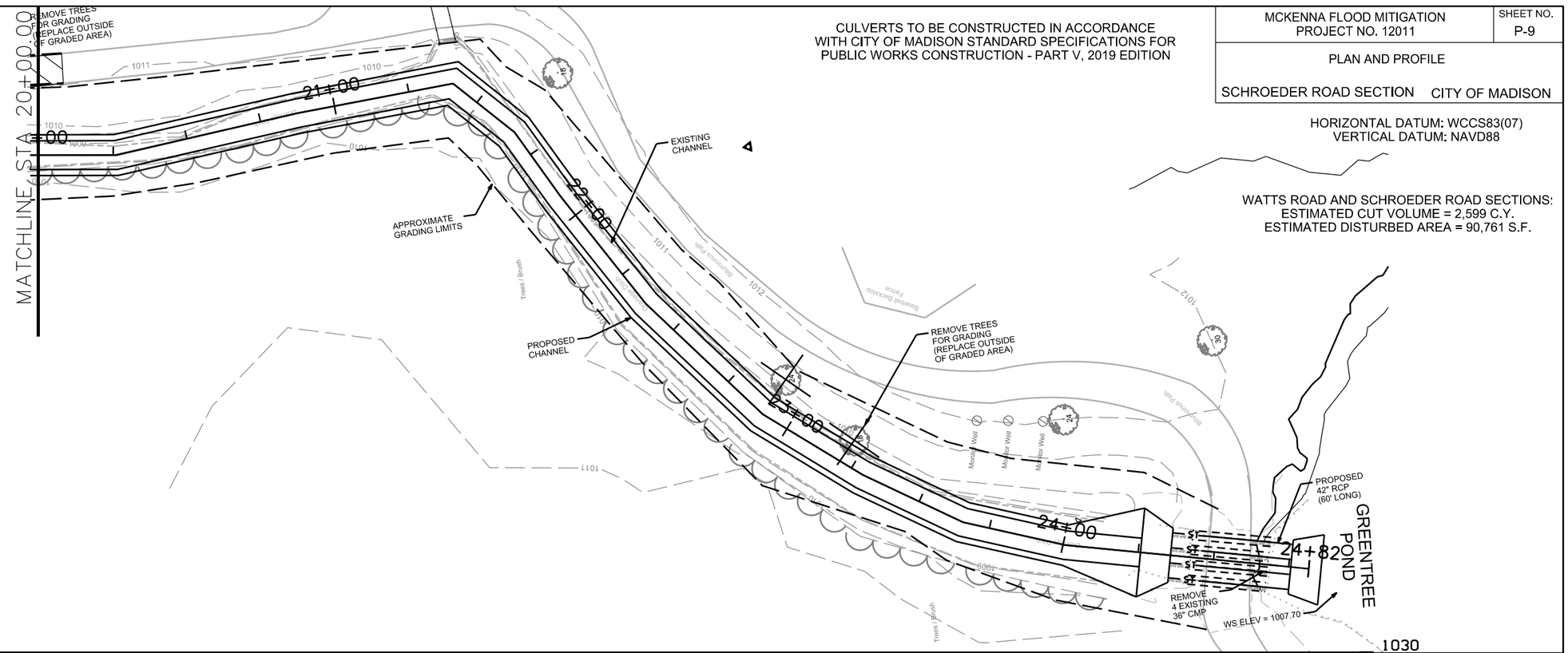
FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-PnP###8.dgn
DATE: 3/1/2019

CULVERTS TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION - PART V, 2019 EDITION

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. P-9
PLAN AND PROFILE	
SCHROEDER ROAD SECTION CITY OF MADISON	

HORIZONTAL DATUM: WCCS83(07)
VERTICAL DATUM: NAVD88

WATTS ROAD AND SCHROEDER ROAD SECTIONS:
ESTIMATED CUT VOLUME = 2,599 C.Y.
ESTIMATED DISTURBED AREA = 90,761 S.F.



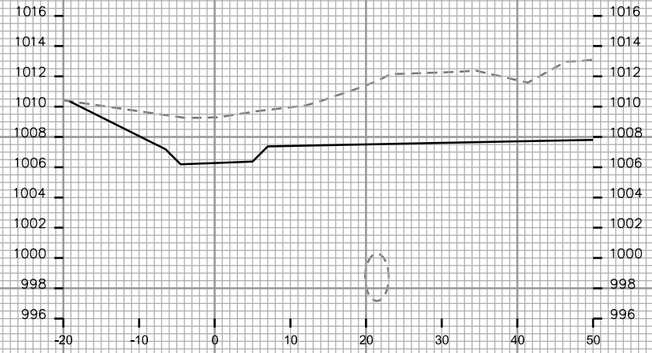
PLOT SCALE: ——
PLOT NAME: ——
REV. DATE: ——
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-PnP###9.dgn

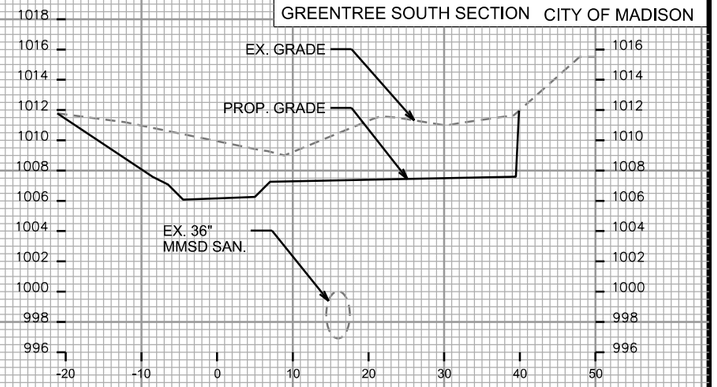
DATE: 3/4/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. X-1
CROSS SECTIONS	
GREENTREE SOUTH SECTION CITY OF MADISON	

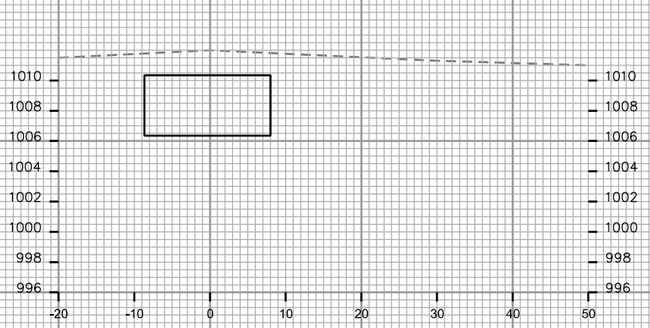
STA. 100+50



STA. 101+25



STA. 102+00



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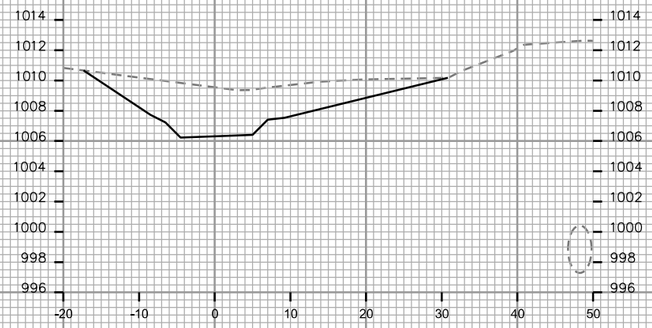
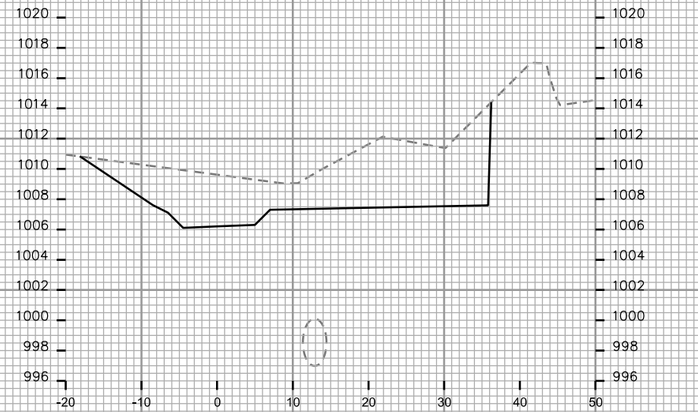
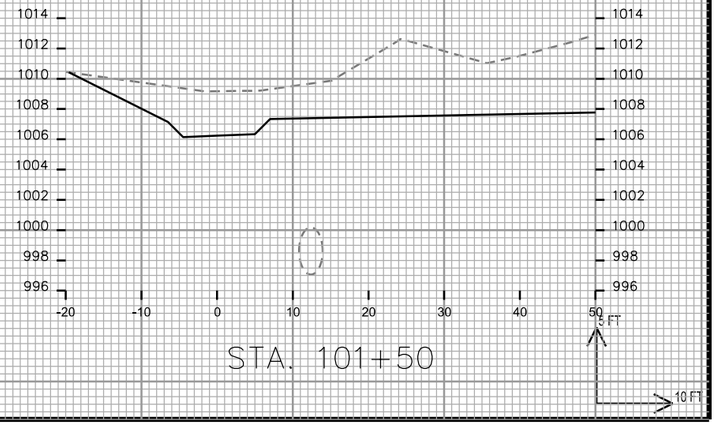


STA. 101+00



STA. 101+75

STA. 100+75



STA. 101+50

PLOT SCALE: ____

PLOT NAME: ____

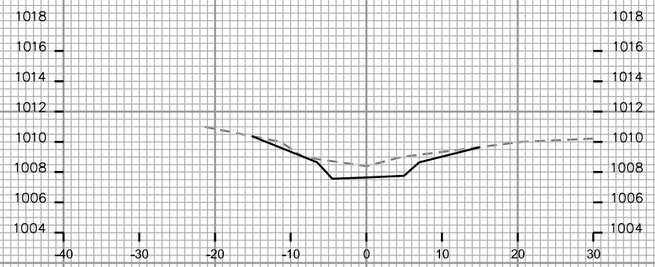
REV. DATE: ____

ORIGINATOR: CITY OF MADISON, STREETS DIVISION

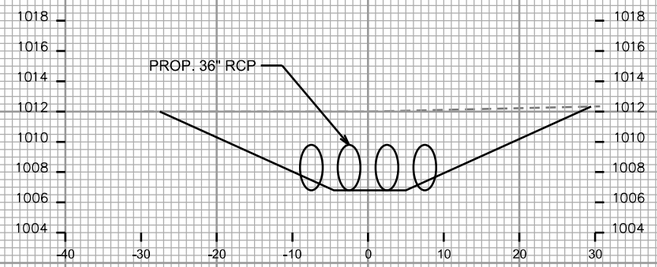
FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-Storm.dgn

DATE: 2/28/2019

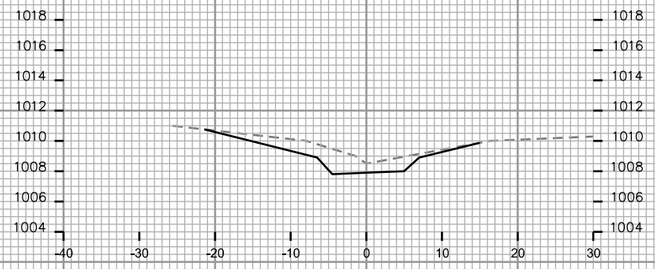
MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. X-10
CROSS SECTIONS	
SCHROEDER ROAD SECTION CITY OF MADISON	



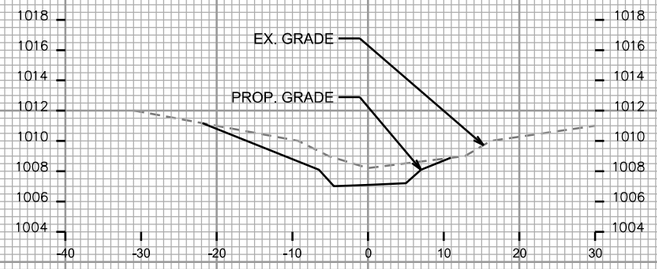
STA. 21+50



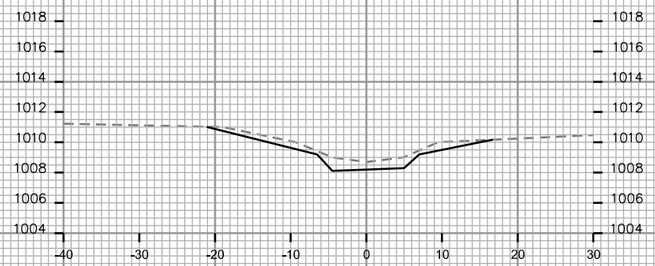
STA. 24+50



STA. 20+50



STA. 23+50



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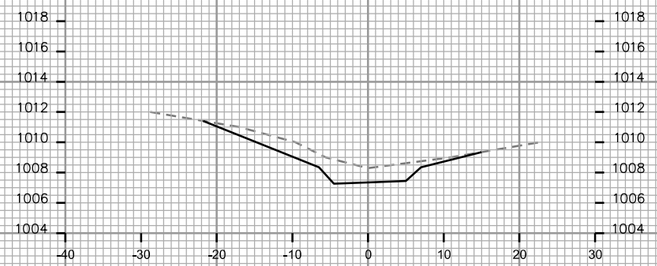
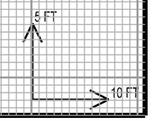


STA. 22+50



PLOT SCALE: ____

PLOT NAME: ____

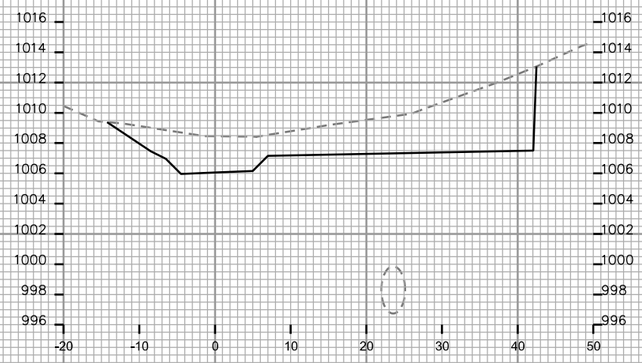
REV. DATE: ____

ORIGINATOR: CITY OF MADISON, STREETS DIVISION

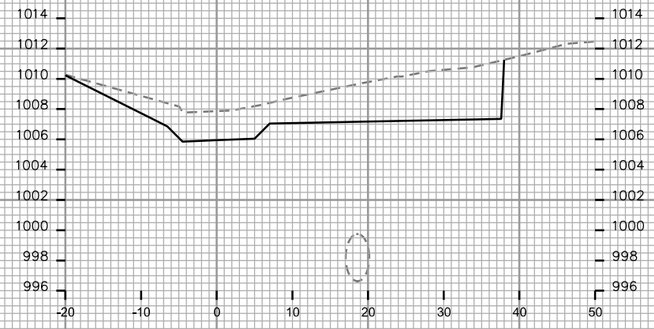
FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-Storm.dgn

DATE: 2/28/2019

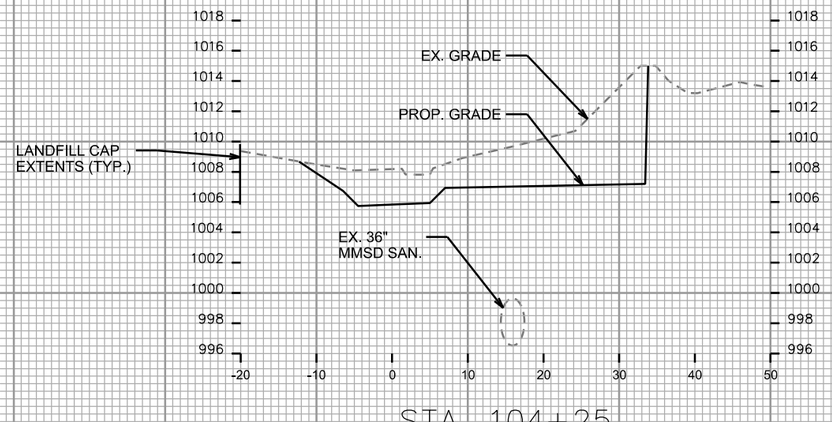
MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. X-2
CROSS SECTIONS	
GREENTREE SOUTH SECTION CITY OF MADISON	



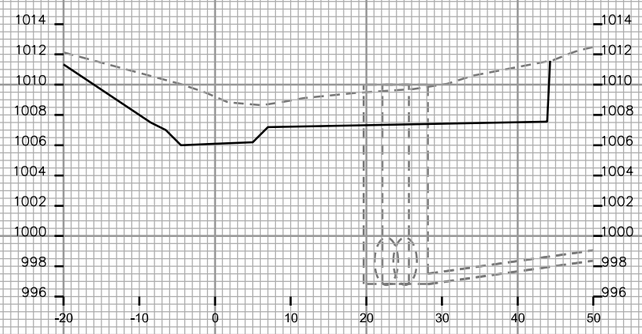
STA. 102+75



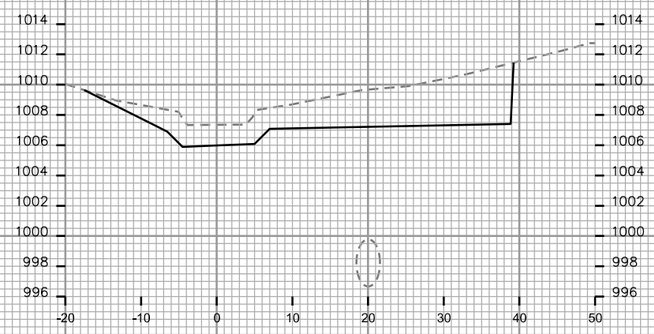
STA. 103+50



STA. 104+25



STA. 102+50



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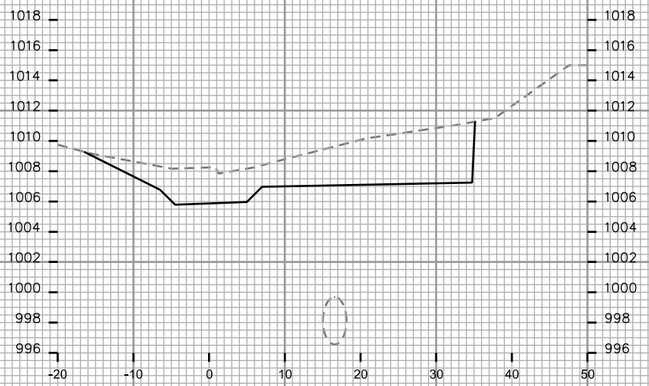
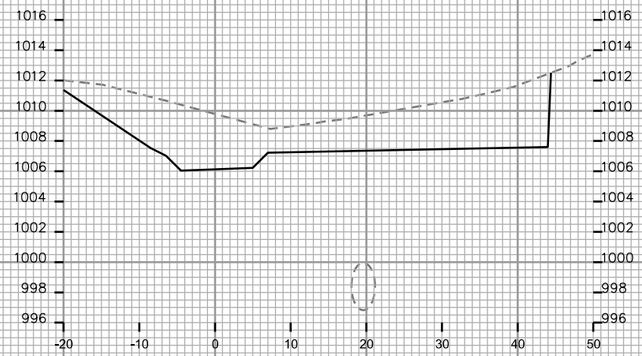


STA. 104+00



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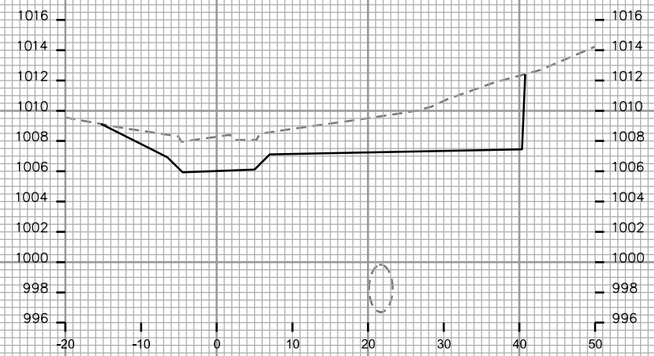
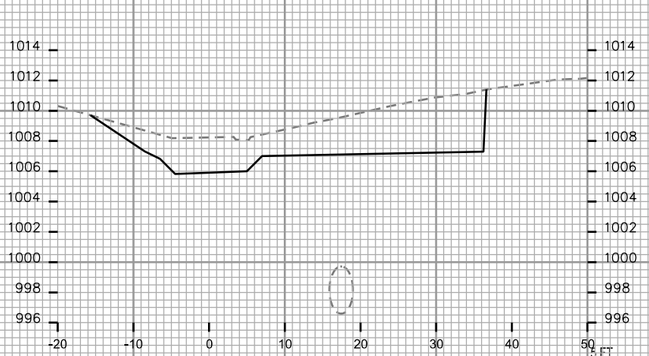


STA. 103+00



STA. 103+75

PLOT SCALE: ____

PLOT NAME: ____

REV. DATE: ____

ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-Storm.dgn

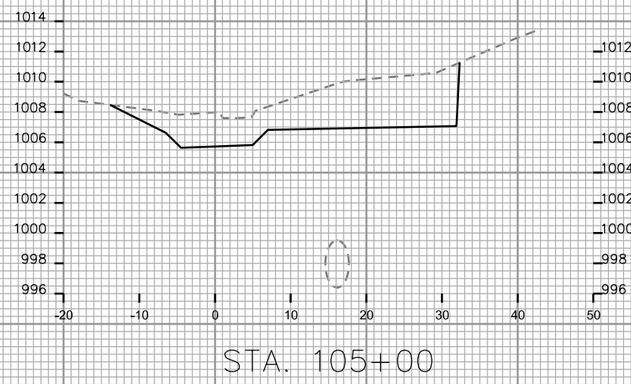
DATE: 2/28/2019

MCKENNA FLOOD MITIGATION
PROJECT NO. 12011

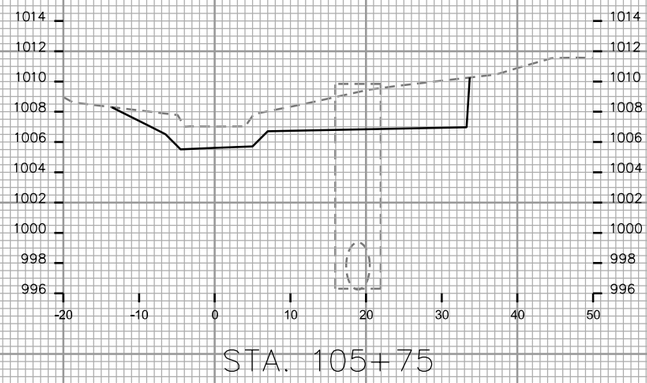
SHEET NO.
X-3

CROSS SECTIONS

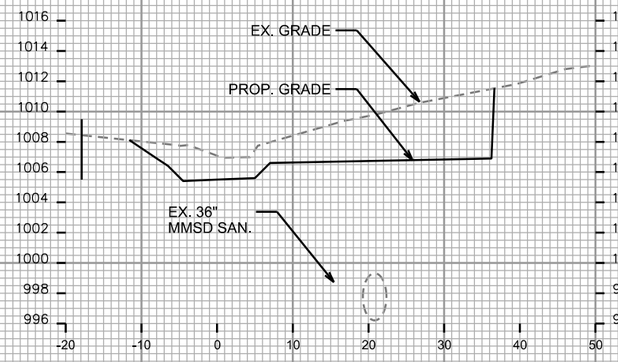
GREENTREE SOUTH SECTION CITY OF MADISON



STA. 105+00

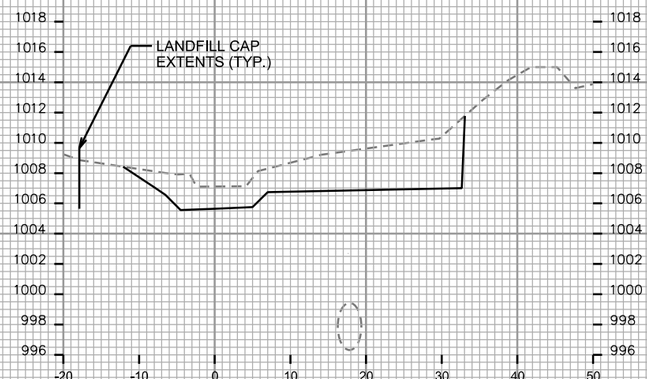


STA. 105+75



STA. 106+50

STA. 104+75



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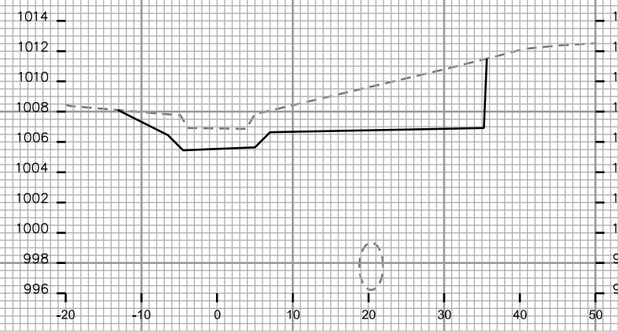
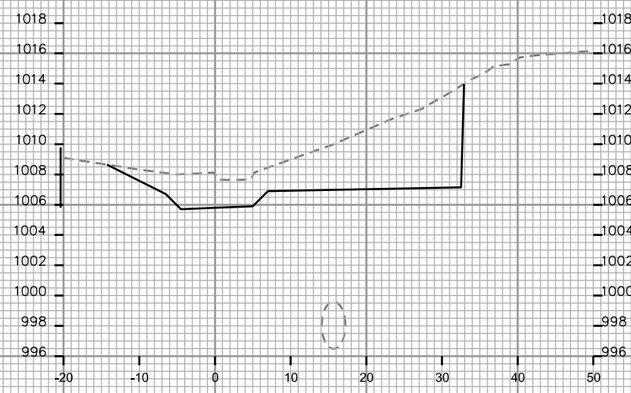
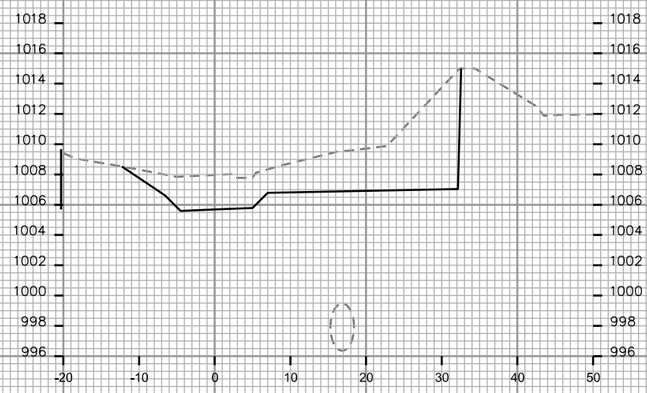


STA. 106+25



STA. 104+50



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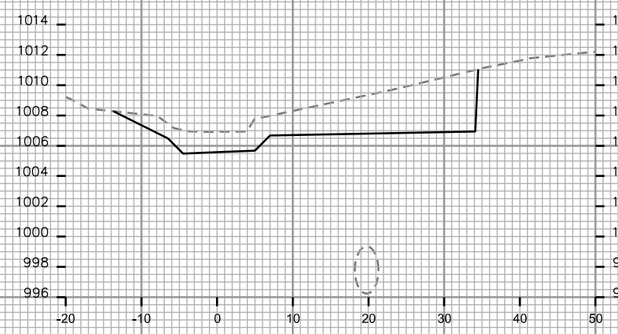
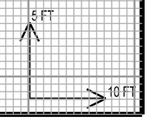


STA. 106+00



PLOT SCALE: ____
PLOT NAME: ____
REV. DATE: ____
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-Storm.dgn

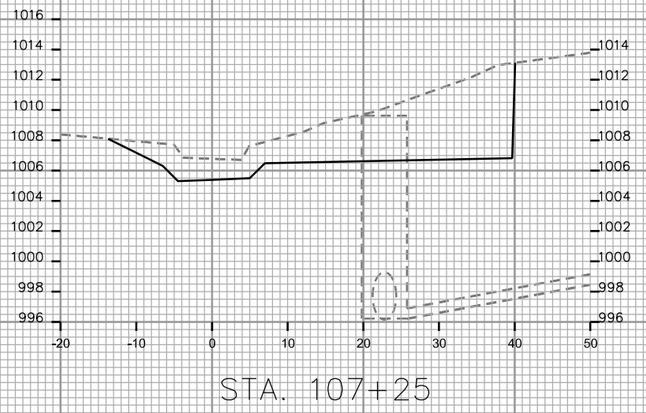
DATE: 2/28/2019

MCKENNA FLOOD MITIGATION
PROJECT NO. 12011

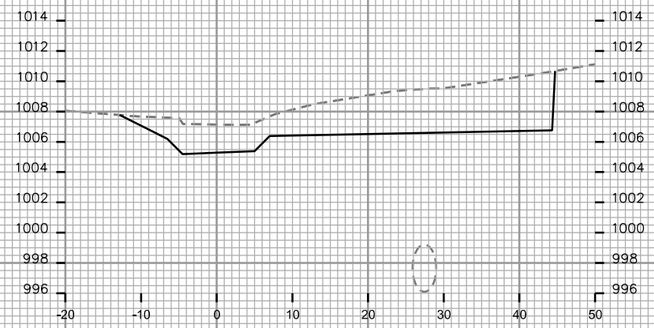
SHEET NO.
X-4

CROSS SECTIONS

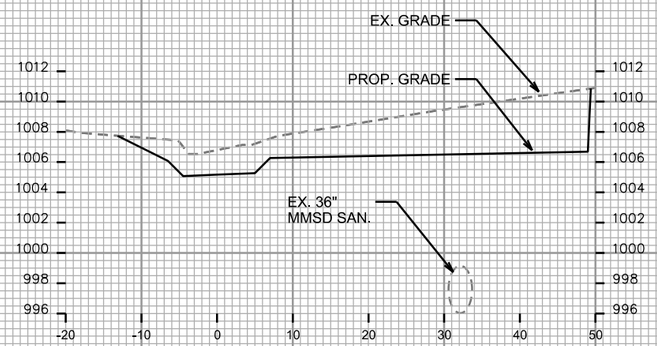
GREENTREE SOUTH SECTION CITY OF MADISON



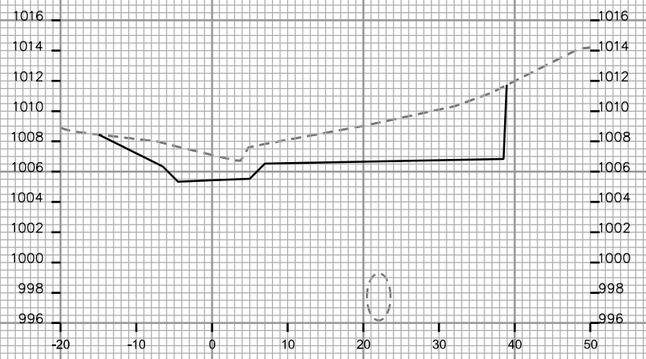
STA. 107+25



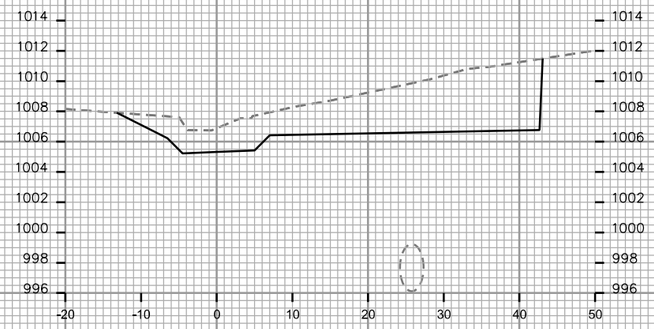
STA. 108+00



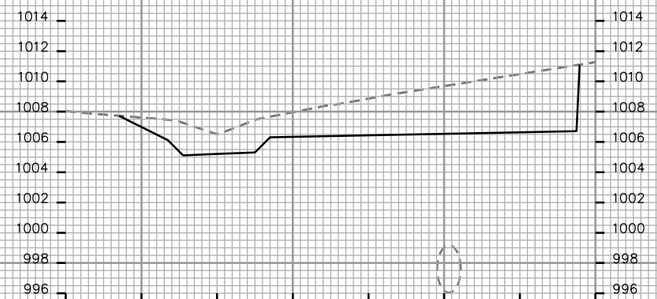
STA. 108+75



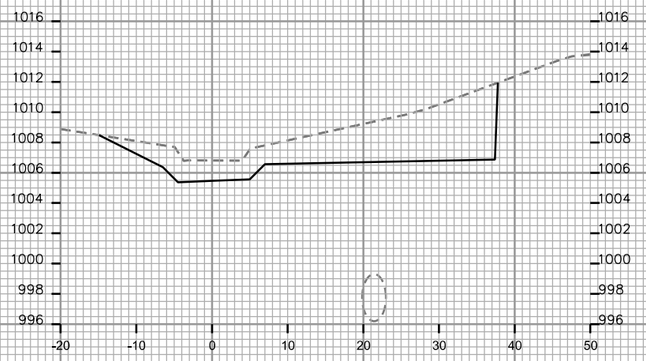
STA. 107+00



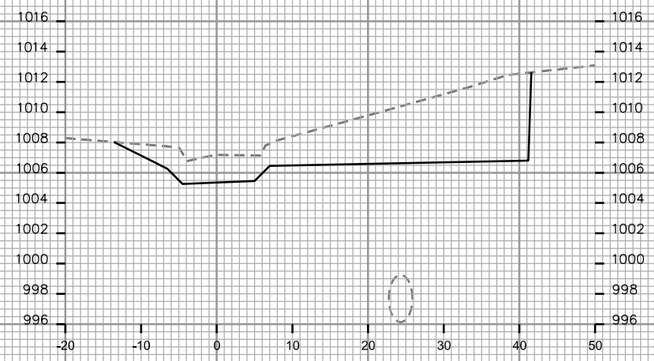
STA. 107+75



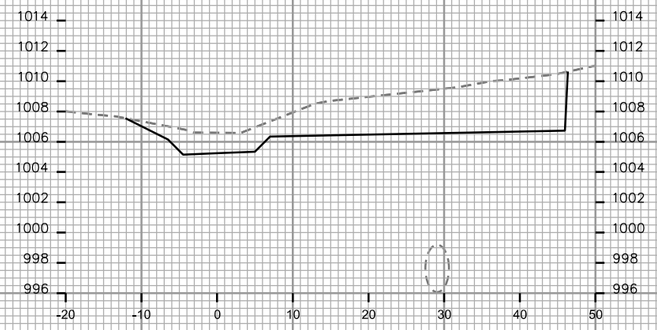
STA. 108+50



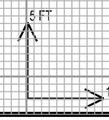
STA. 106+75



STA. 107+50



STA. 108+25



PLOT SCALE: ____

PLOT NAME: ____

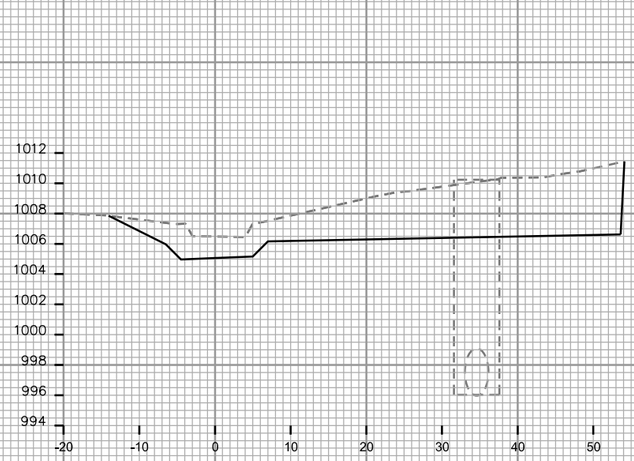
REV. DATE: ____

ORIGINATOR: CITY OF MADISON, STREETS DIVISION

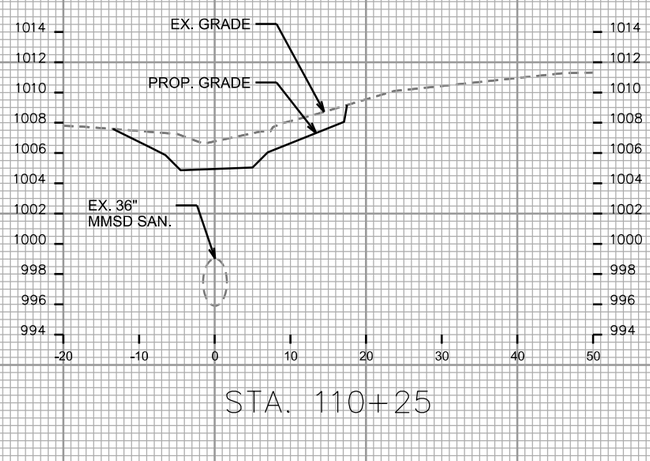
FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-Storm.dgn

DATE: 2/28/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. X-5
CROSS SECTIONS GREENTREE SOUTH SECTION CITY OF MADISON	



STA. 109+50



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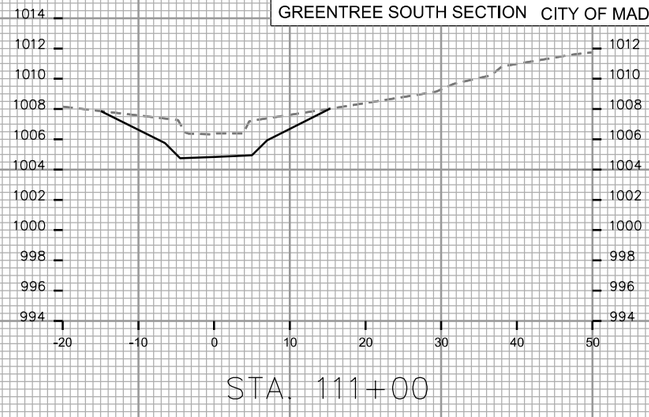
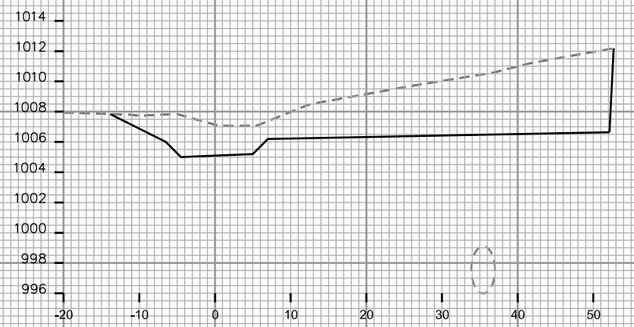


STA. 111+00



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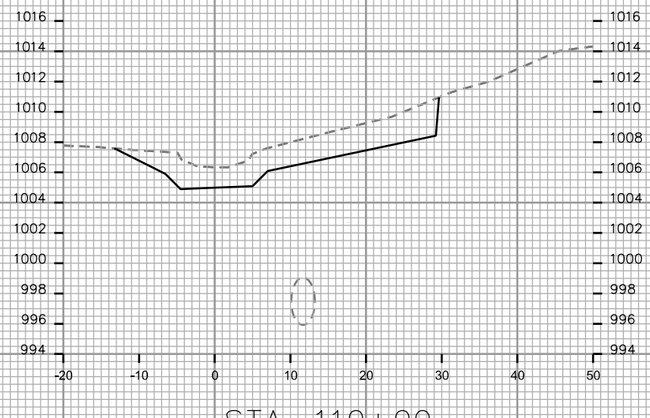

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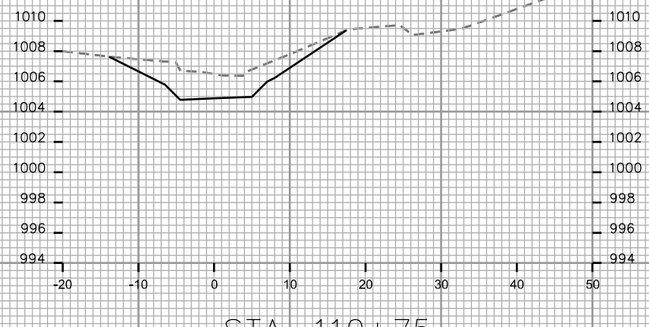

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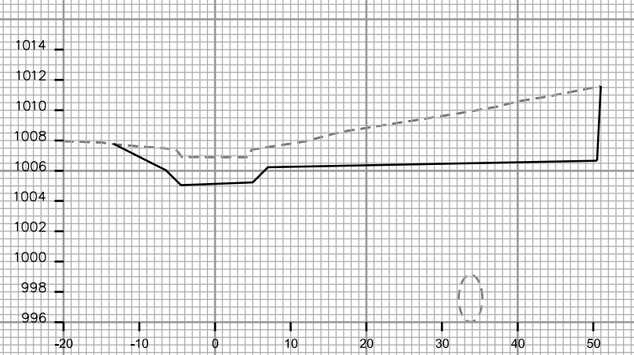

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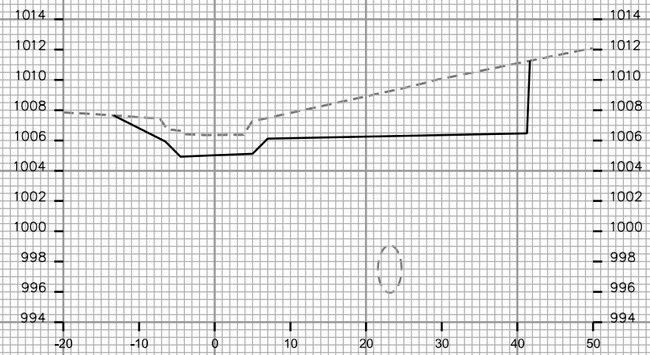

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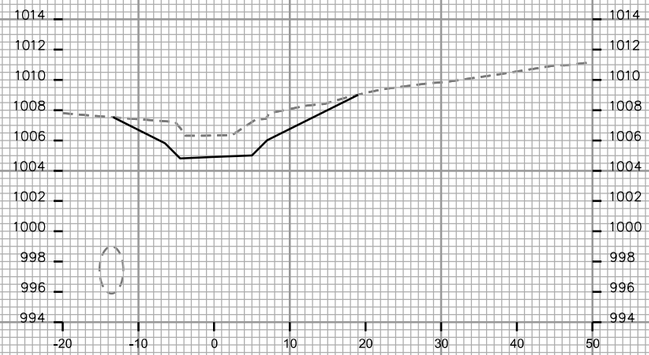

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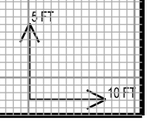

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PLOT NAME: ___

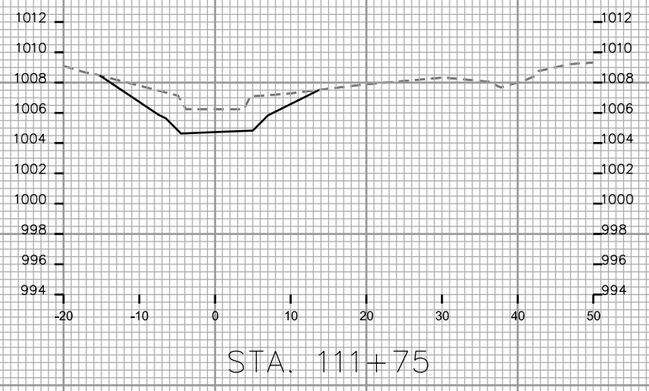
REV. DATE: ___

ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-Storm.dgn

DATE: 2/28/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. X-6
CROSS SECTIONS	
GREENTREE SOUTH SECTION CITY OF MADISON	



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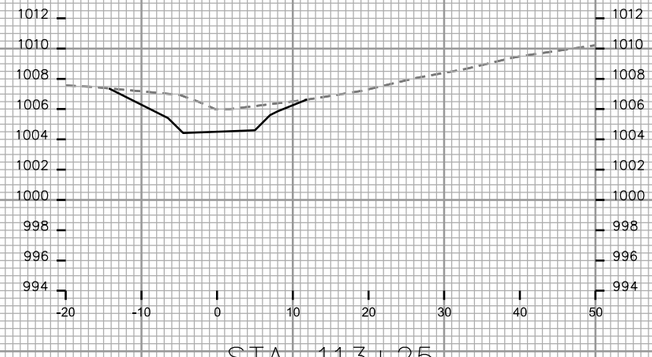
STA. 112+50



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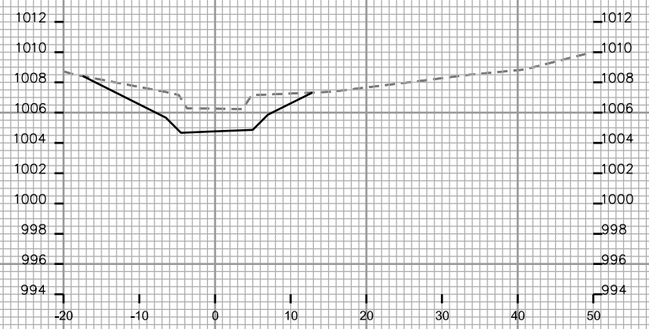

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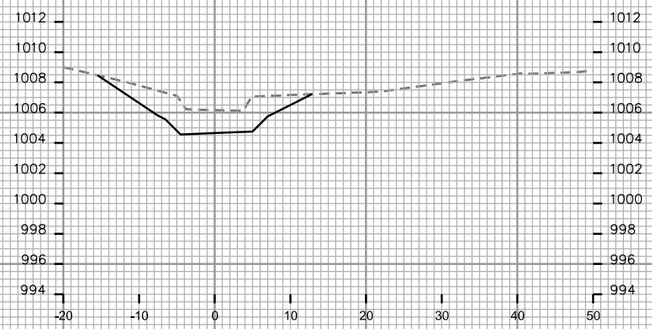

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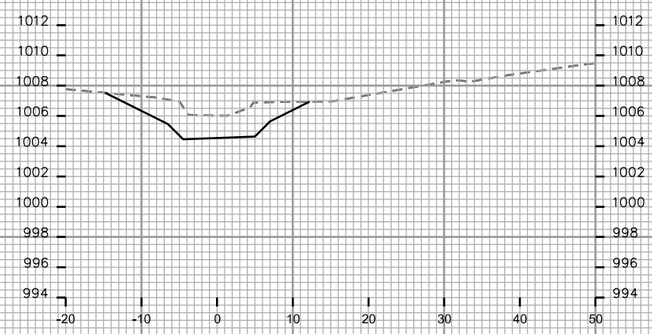

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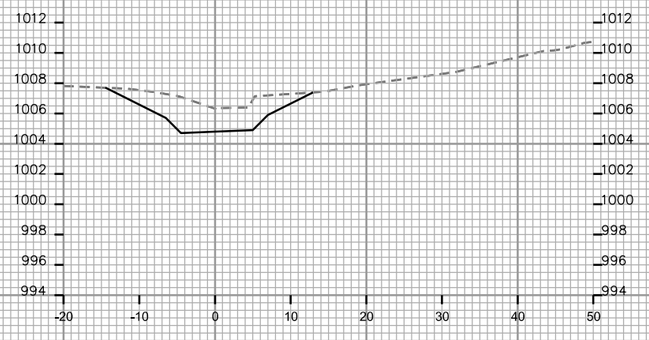

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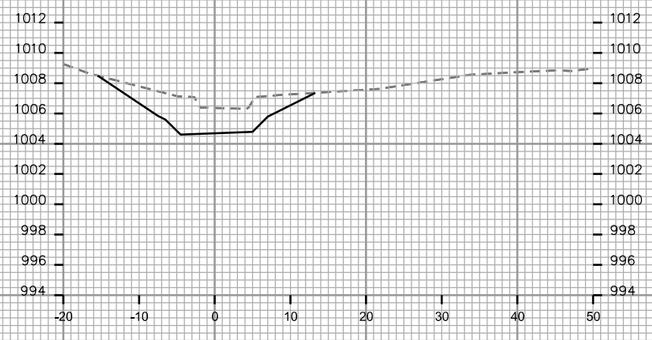

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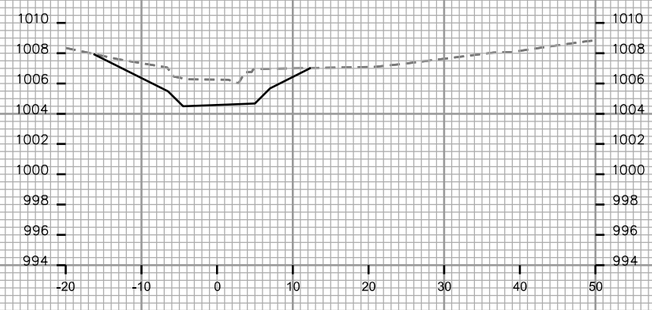

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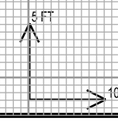


PLOT SCALE: ____

PLOT NAME: ____

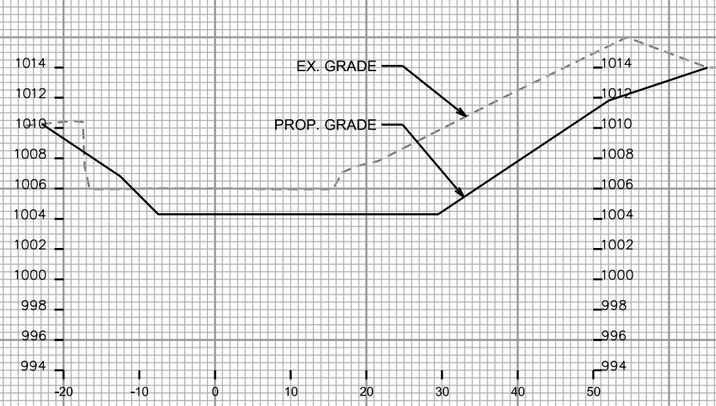
REV. DATE: ____

ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-Storm.dgn

DATE: 2/28/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. X-7
CROSS SECTIONS	
GREENTREE SOUTH SECTION CITY OF MADISON	



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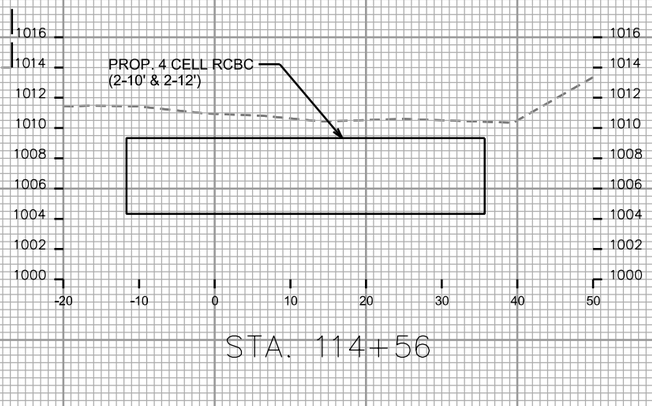

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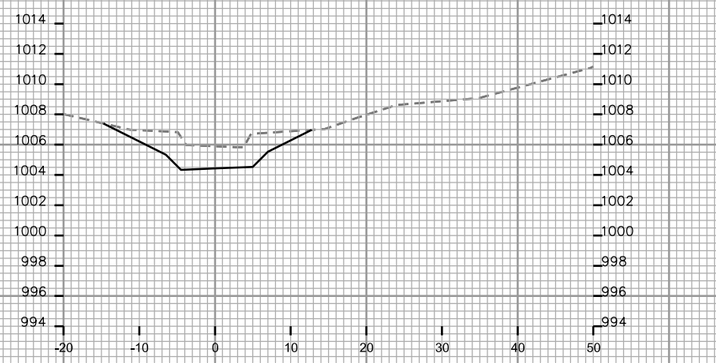

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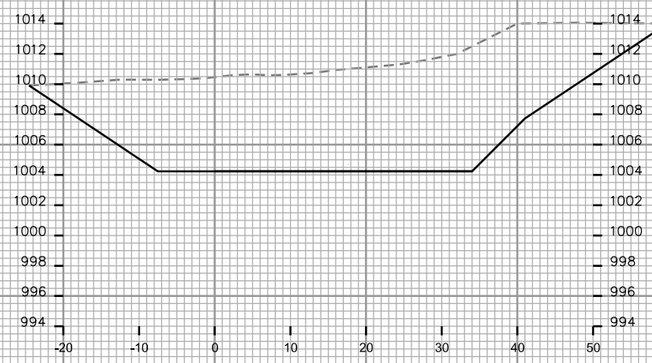

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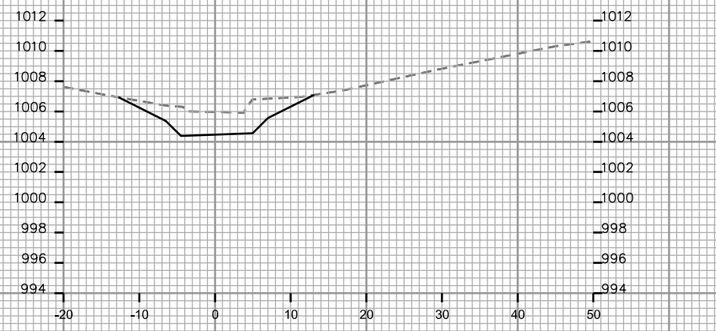

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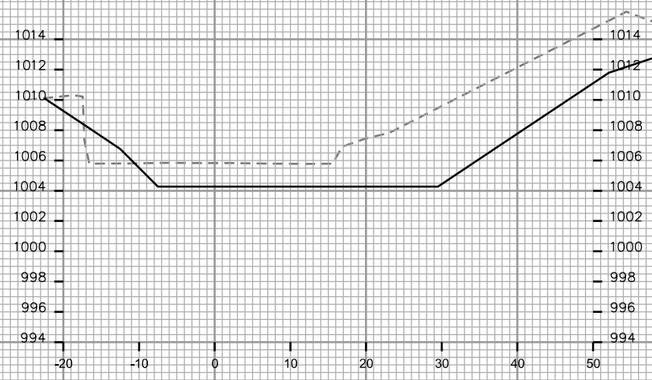

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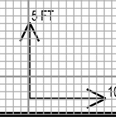


PLOT SCALE: ____

PLOT NAME: ____

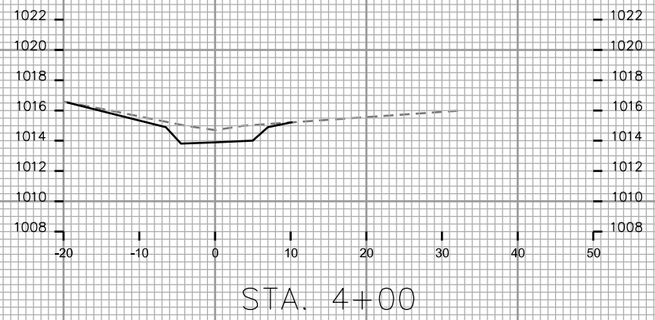
REV. DATE: ____

ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-Storm.dgn

DATE: 2/28/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. X-8
CROSS SECTIONS	
WATTS ROAD SECTION	CITY OF MADISON



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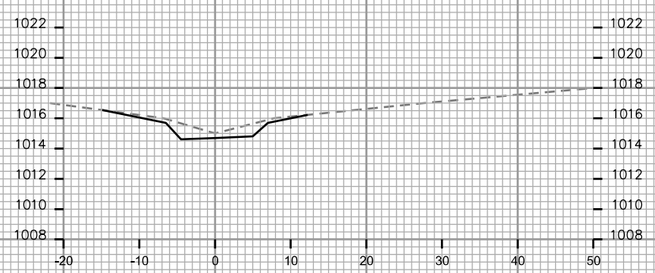
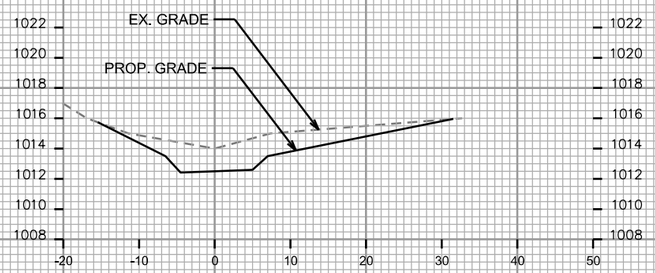


STA. 2+00



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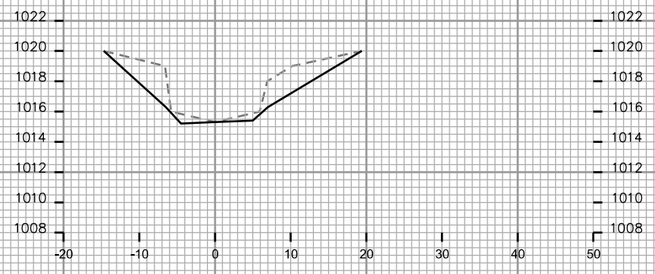

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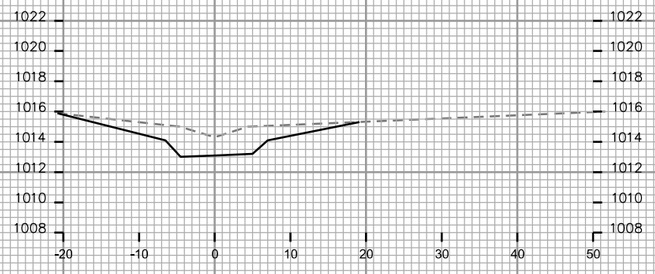

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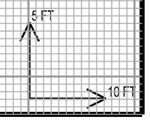

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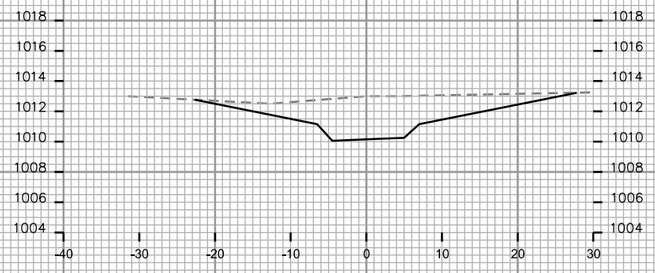
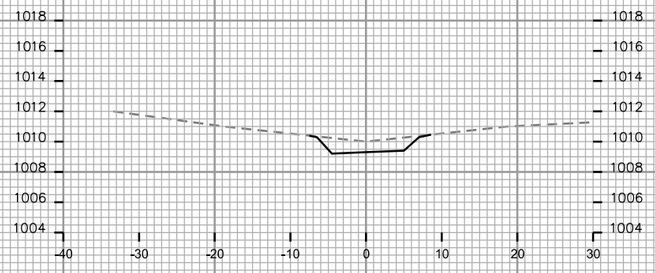
PLOT NAME: ____
REV. DATE: ____
ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-Storm.dgn
DATE: 2/28/2019

MCKENNA FLOOD MITIGATION PROJECT NO. 12011	SHEET NO. X-9
CROSS SECTIONS	
SCHROEDER ROAD SECTION CITY OF MADISON	

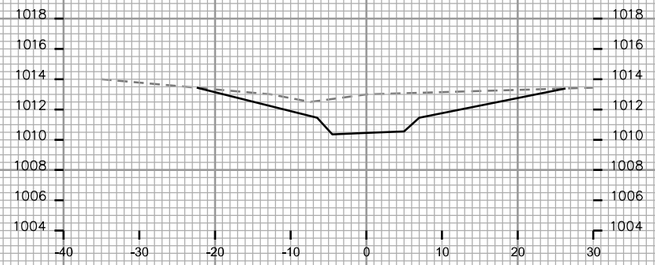


STA. 12+50



STA. 15+50

STA. 18+50



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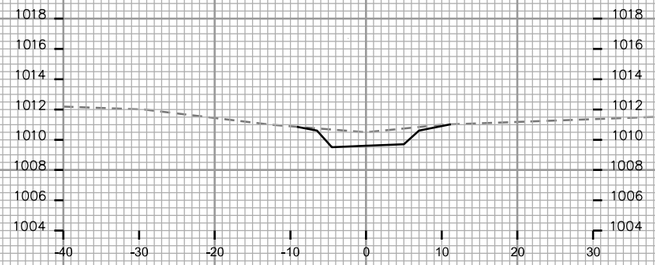

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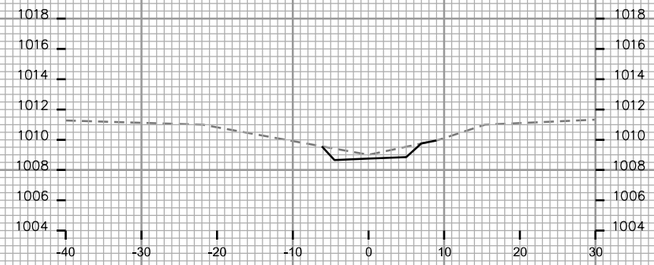

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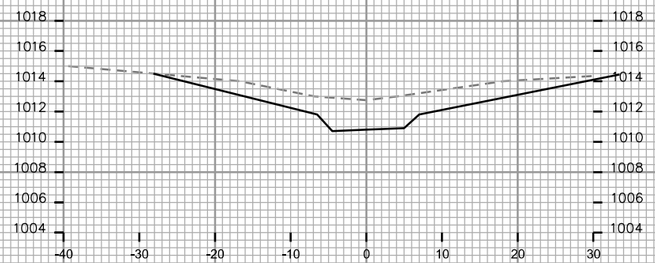

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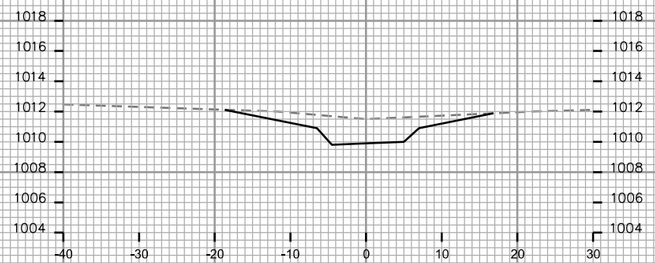
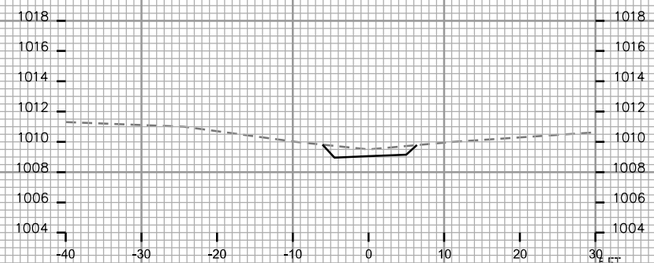


STA. 13+50



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PLOT NAME: ____

REV. DATE: ____

ORIGINATOR: CITY OF MADISON, STREETS DIVISION

FILE NAME: M:\DESIGN\Projects\11475\Storm\Design\11475STM-Storm.dgn

DATE: 2/28/2019

____

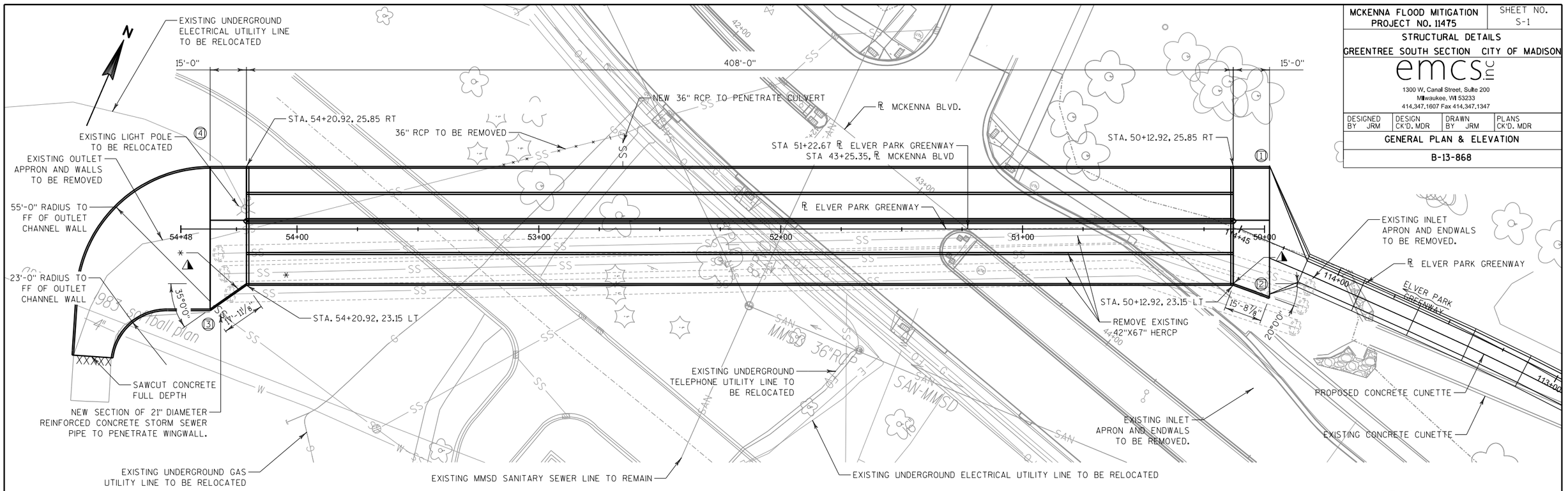
MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. S-1
STRUCTURAL DETAILS	
GREENTREE SOUTH SECTION CITY OF MADISON	

emcs inc
1300 W. Canal Street, Suite 200
Milwaukee, WI 53233
414.347.1607 Fax 414.347.1347

DESIGNED BY JRM	DESIGN CK'D. MDR	DRAWN BY JRM	PLANS CK'D. MDR

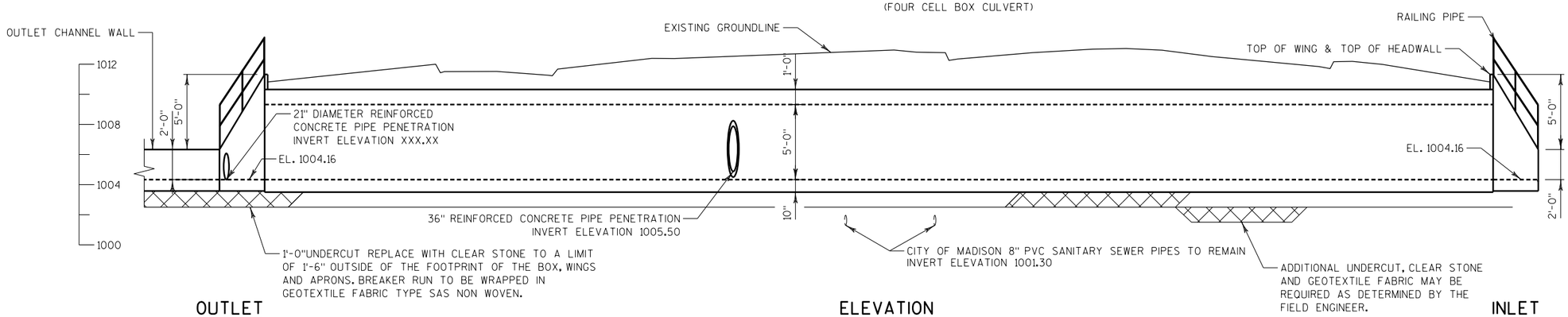
GENERAL PLAN & ELEVATION

B-13-868



PLAN

(FOUR CELL BOX CULVERT)



OUTLET — INLET

ELEVATION

SCALE 1H:5V

ELEVATION TAKEN ALONG ℄ OF ELVER PARK GREENWAY

LIST OF DRAWINGS

LEGEND

(X) DENOTES WINGWALL NUMBER

* FOR NAME PLATE LOCATION, SEE "BOX CULVERT DETAIL" SHEET.

⚠ FOR CORNER DETAILS SEE "APRON DETAILS" AND "WINGWALL DETAILS" SHEETS.

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93

MATERIAL PROPERTIES:

CONCRETE MASONRY ____ f'c = 3.5 KSI
BAR STEEL REINFORCEMENT ____ fy = 60 KSI

SOIL DATA

DRY UNIT WEIGHT OF SOIL γ = 120 LBS/FT^3
K_o = 0.5 FOR AT REST CONDITIONS
ϕ = 30°
LL SURCHARGE = 2 FT
MAX FACTORED BEARING RESISTANCE = 2,000 PSF

WISCONSIN
MICHAEL D. RADTKE
E-40967
ELM GROVE, WI
PROFESSIONAL ENGINEER

April 1, 2019

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED.

ALL STATIONS AND ALL ELEVATIONS ARE IN FEET.

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

THE UPPER LIMITS OF "EXCAVATION CUT" SHALL BE THE EXISTING GROUND LINE.

SELECT FILL IS REQUIRED BEHIND ALL WINGWALLS.

ALL SPACES EXCAVATED AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH "SELECT FILL" TO THE TOP OF THE BOX WITHIN THE LENGTH OF THE BOX.

ALL CONCRETE EDGES TO BE BEVELED ¾" UNLESS NOTED OTHERWISE.

SEE PLANS FOR R-13-337 FOR WORK EAST OF STATION 114+30.

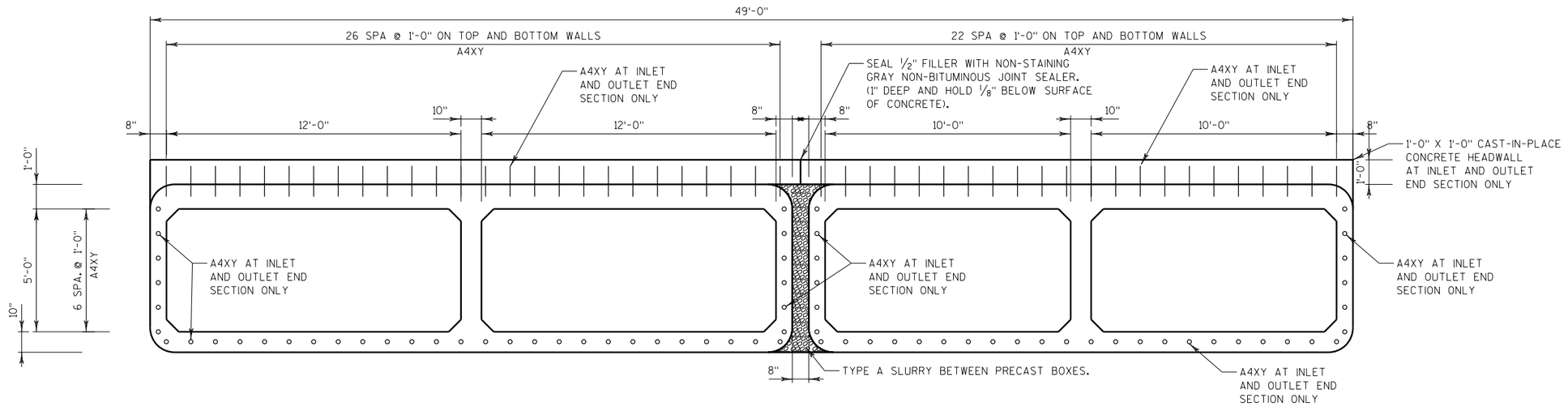
MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. S-2
STRUCTURAL DETAILS	
GREENTREE SOUTH SECTION CITY OF MADISON	

emcs inc
1300 W. Canal Street, Suite 200
Milwaukee, WI 53233
414.347.1607 Fax 414.347.1347

DESIGNED BY JRM	DESIGN CK'D. MDR	DRAWN BY JRM	PLANS CK'D. MDR

CROSS SECTION & QUANTITIES

B-13-868



SECTION THRU PRECAST BOX

LOOKING UPSTATION

TOTAL ESTIMATED QUANTITIES

BID ITEM NO.	BID ITEMS	UNIT	TOTAL
20101	EXCAVATION CUT	CY	11,800
20140	GEOTEXTILE FABRIC TYPE SAS NON WOVEN	SY	5,535
20205	SELECT FILL	CY	2,470
20217	CLEAR STONE	TON	1,820
20302	SAWCUT CONCRETE FULL DEPTH	LF	16
20321	REMOVE CONCRETE PAVEMENT	CY	30
30121	EPOXY COATED BAR STEEL REINFORCING	LBS	4,140
50501	BOX CULVERTS 10' x 5'	LF	408
50502	BOX CULVERTS 12' x 5'	LF	408
90004	RAILING PIPE	LF	170
90007	CONCRETE MASONRY CUNETTE	CY	64
90009	CONCRETE MASONRY WING WALLS	CY	58
90010	REMOVING STRUCTURE	LS	1
90011	TEMPORARY SHORING	SF	1,210
90012	RUBBERIZED MEMBRANE WATERPROOFING	SY	12

GENERAL NOTES

MEMBER THICKNESSES ARE BASED ON ENGINEERING JUDGEMENT. CONTRACTOR SHALL HAVE A REGISTERED ENGINEER DESIGN THE PRECAST BOX CULVERTS AND PROVIDE SEALED DRAWINGS TO THE CITY OF MADISON FOR APPROVAL.

A4XY BARS TO BE PLACED IN END SECTIONS DURING FABRICATION OF THE BOX CULVERT. A4XY BARS SHALL BE INCIDENTAL TO ITEMS "BOX CULVERTS 10'X5'" AND "BOX CULVERTS 12'X5'".

THE UPPER LIMITS OF "EXCAVATION CUT" FOR B-13-868 SHALL BE THE EXISTING GROUNDLINE.

THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES.

"SELECT FILL" REQUIRED ON THE BOX CULVERT SIDES AND BEHIND APRON WINGS FOR 3 FEET. BACKFILL PLACED BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO "EXCAVATION CUT".

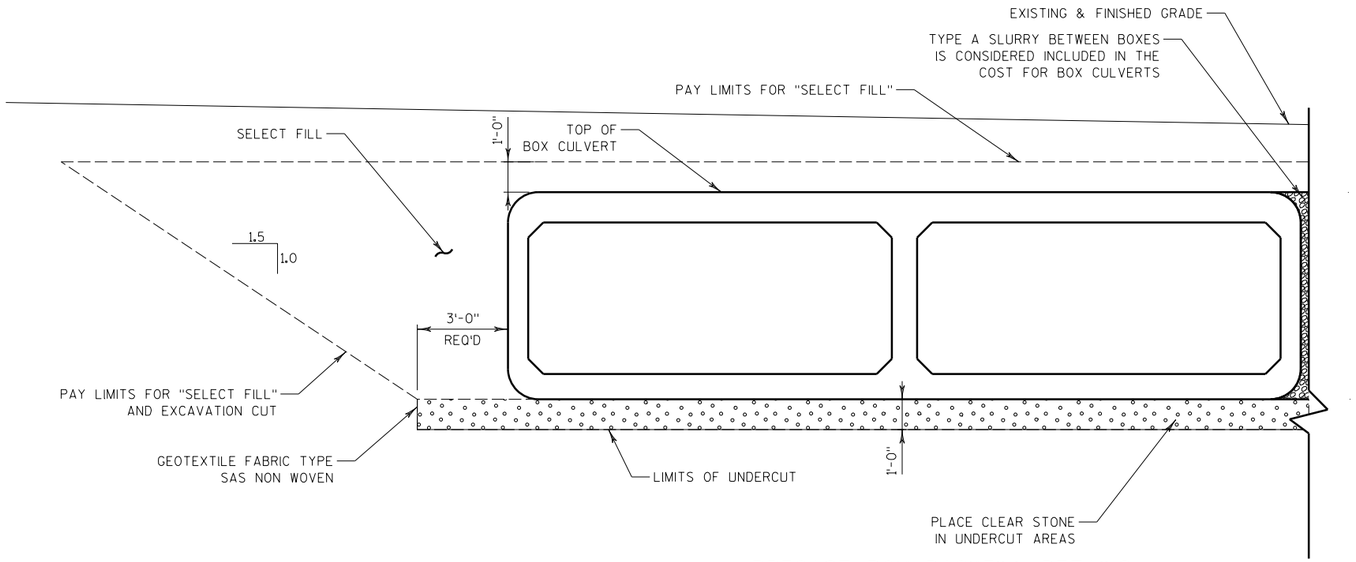
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

UNLESS OTHERWISE SPECIFIED, CONTRACTION JOINTS SHALL BE NORMAL TO THE CENTERLINE.

DOWEL BARS SHALL BE INSTALLED PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

CONSTRUCTION JOINTS SHALL BE A MINIMUM OF 4 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGNED EITHER PARALLEL TO CONTRACTION JOINTS OR AT 90 DEGREES TO THE CENTERLINE.

APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF THE DOWEL BARS TO PREVENT BONDING.



PRECAST BOX BACKFILL DETAILS

LEFT SIDE SHOWN, RIGHT SIDE SIMILAR

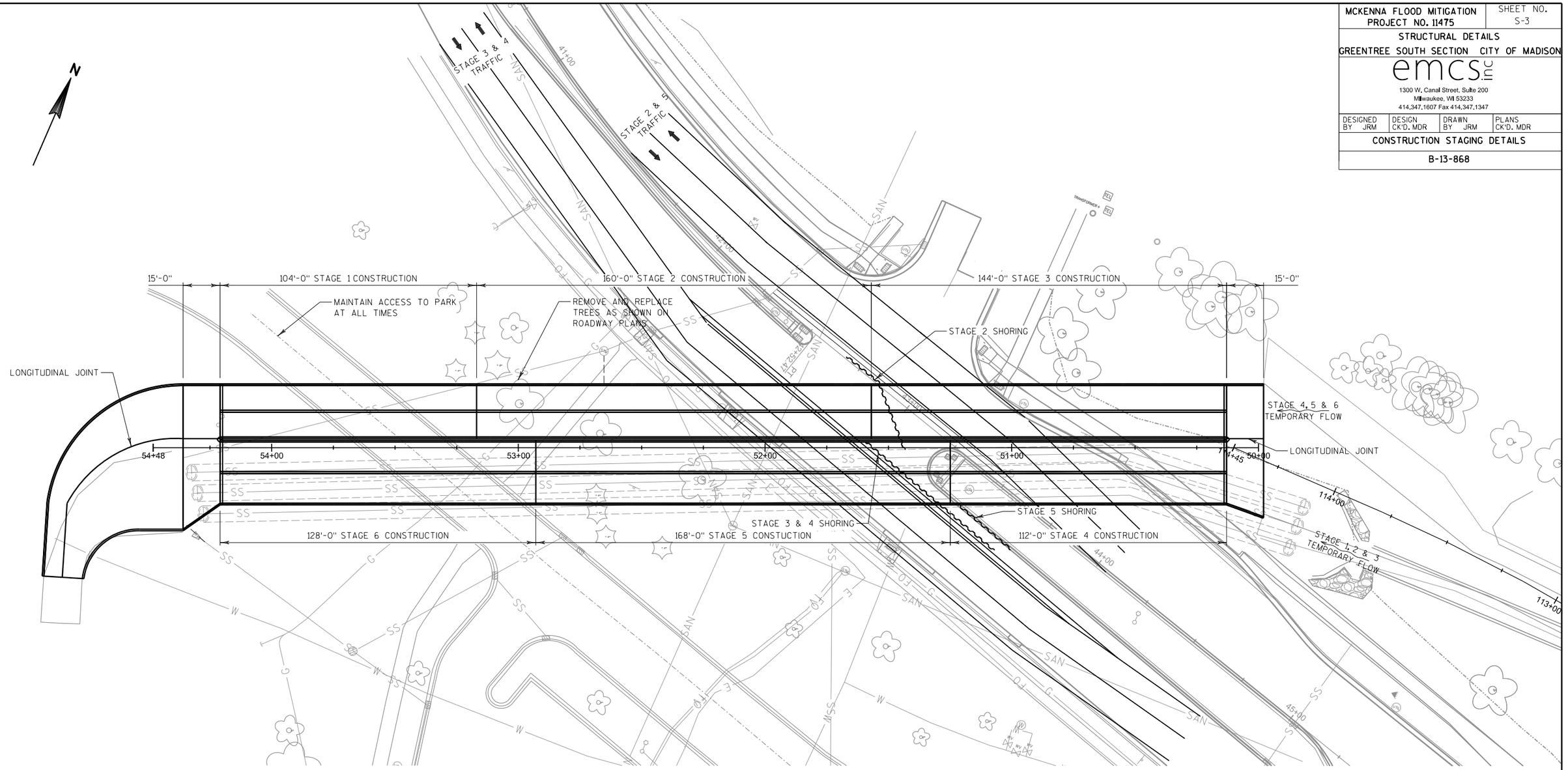
MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. S-3
STRUCTURAL DETAILS	
GREENTREE SOUTH SECTION CITY OF MADISON	

emcs inc
1300 W. Canal Street, Suite 200
Milwaukee, WI 53233
414.347.1607 Fax 414.347.1347

DESIGNED BY JRM	DESIGN CK'D. MDR	DRAWN BY JRM	PLANS CK'D. MDR

CONSTRUCTION STAGING DETAILS

B-13-868



STAGED CONSTRUCTION PLAN

NOTES

1. FOR TRAFFIC STAGING INFORMATION, SEE TRAFFIC CONTROL SHEETS.
2. EARTH RETENTION, STREAM DIVERSION, DEWATERING AND CONSTRUCTION SEQUENCING MEANS AND METHODS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. S-4
STRUCTURAL DETAILS GREENTREE SOUTH SECTION CITY OF MADISON	

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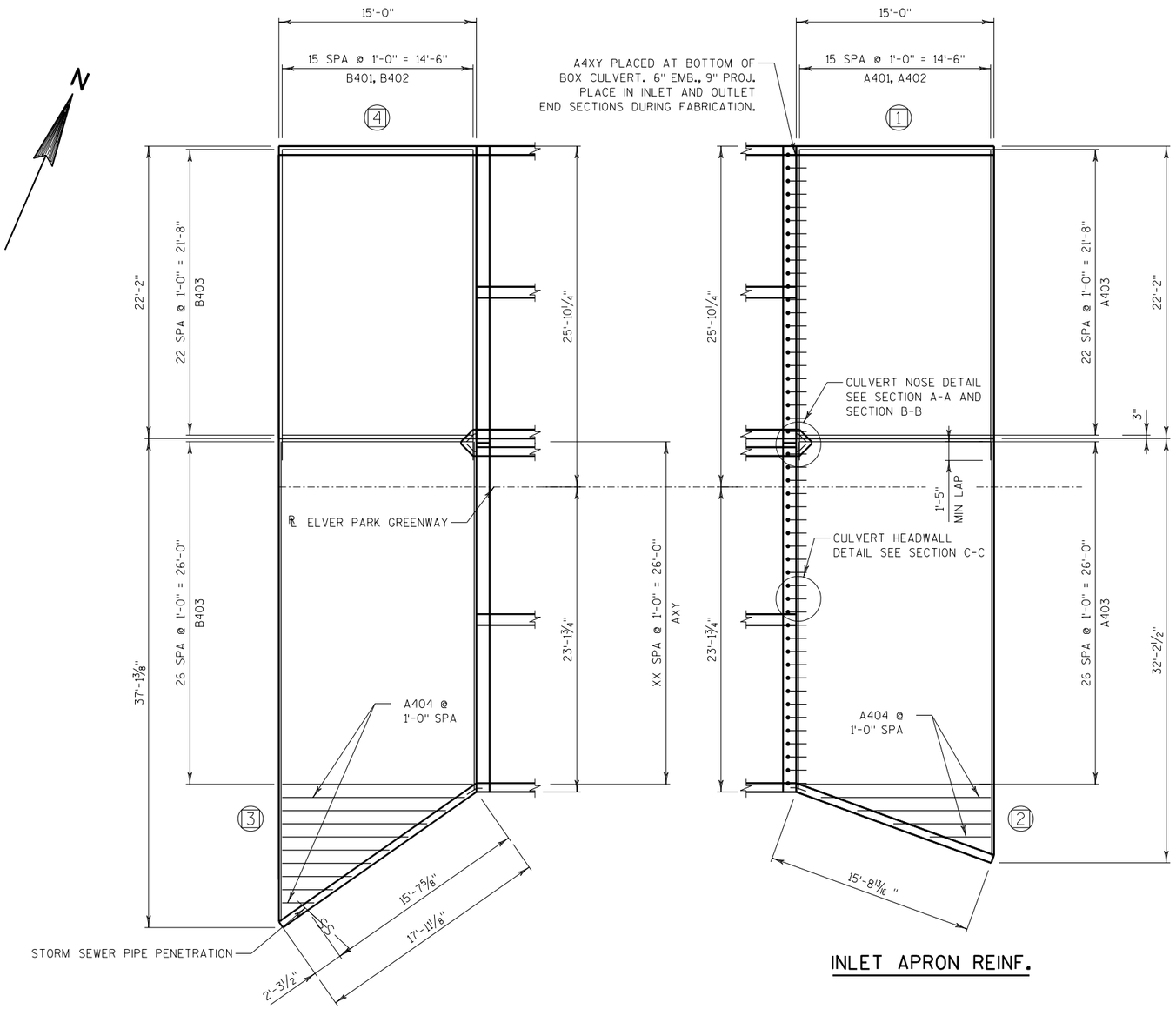
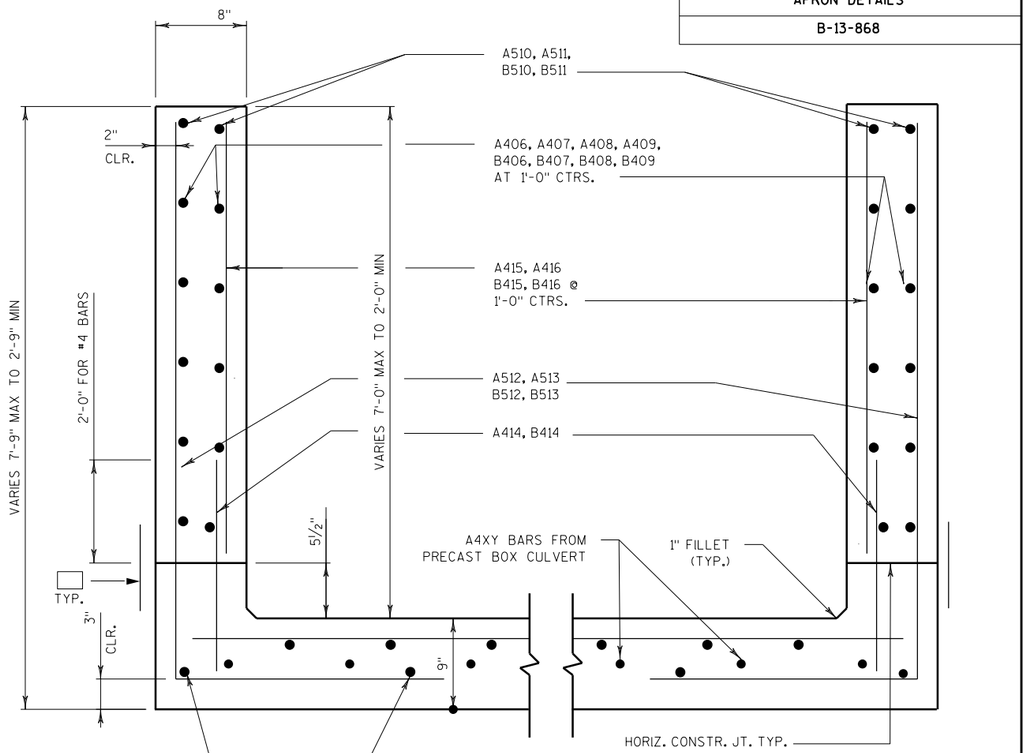
APRON DETAILS

B-13-868

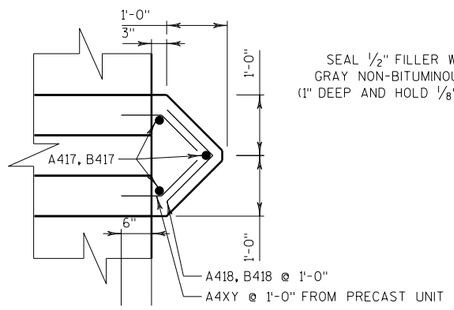


OUTLET APRON REINF.

INLET APRON REINF.

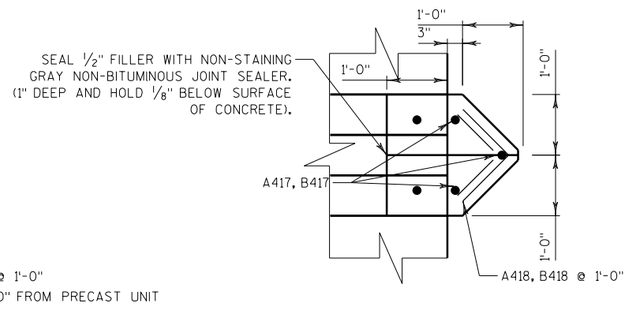


SECTION THRU WINGWALLS



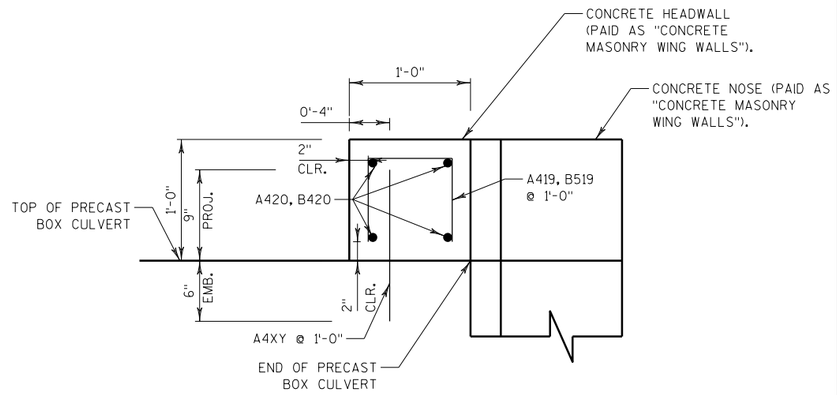
SECTION A-A BELOW HEADWALL

INLET NOSE SHOWN OUTLET NOSE SIMILIAR



SECTION B-B AT HEADWALL

INLET NOSE SHOWN OUTLET NOSE SIMILIAR



SECTION C-C AT HEADWALL

INLET END SHOWN OUTLET END SIMILIAR

MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. S-5
STRUCTURAL DETAILS	
GREENTREE SOUTH SECTION CITY OF MADISON	

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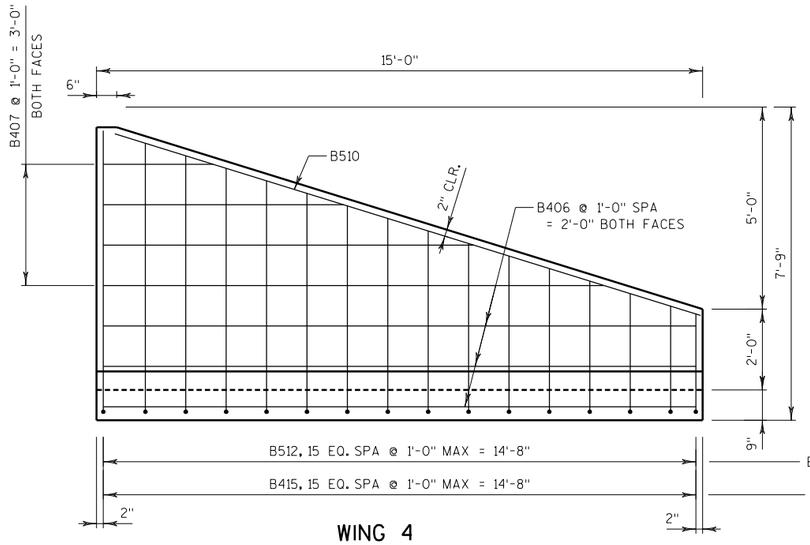
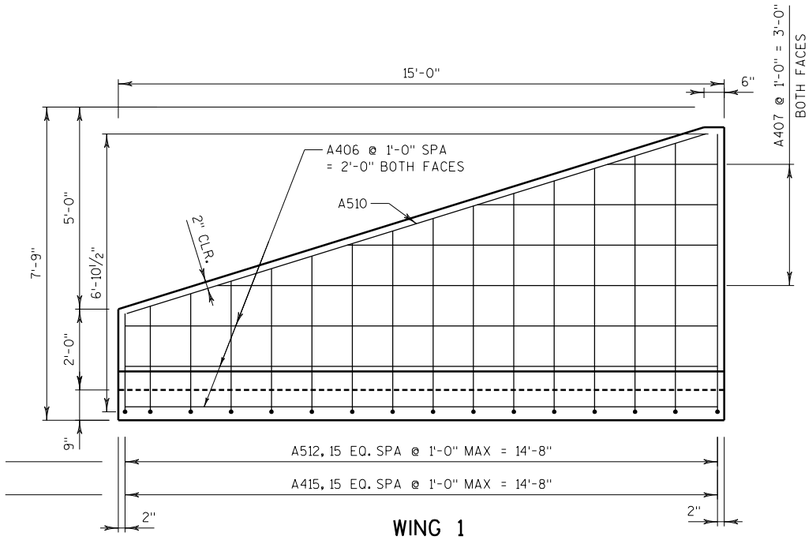
WINGWALL DETAILS

B-13-868



WING 4

EXTERIOR FACE

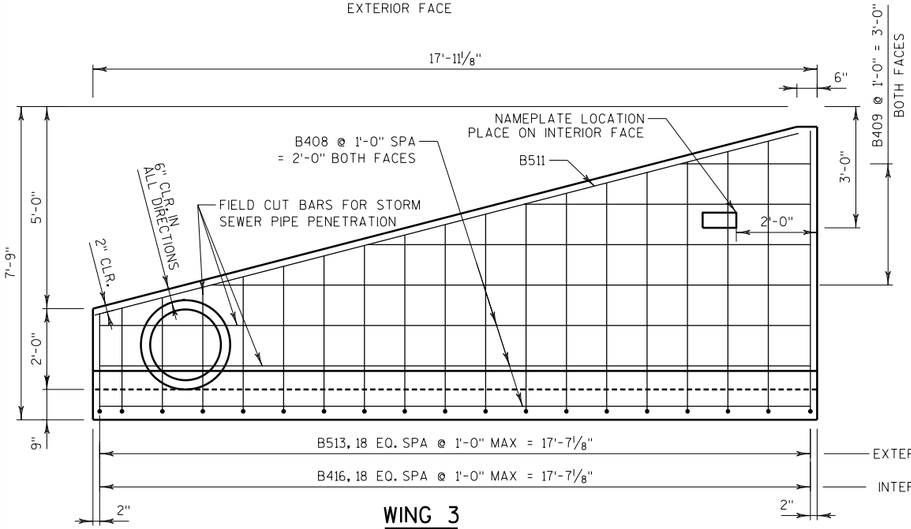


WING 1

EXTERIOR FACE

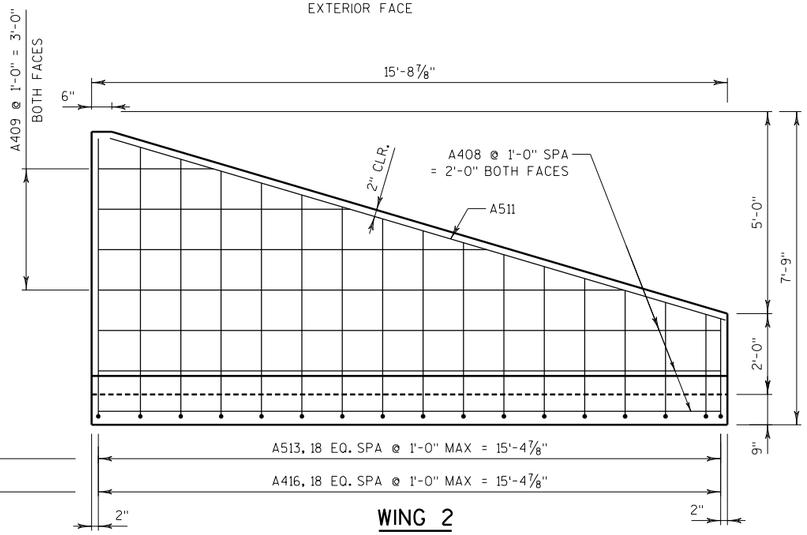
EXTERIOR FACE

INTERIOR FACE



WING 3

EXTERIOR FACE

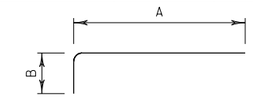


WING 2

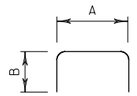
EXTERIOR FACE

NOTE:
ALL WING ELEVATION VIEWS SHOW EXTERIOR FACE REINFORCING ONLY. INTERIOR FACE REINFORCING NOT SHOWN FOR CLAIRTY.

BAR MARK	'A'	'B'
A512	VARIES	6'-1"
A513	VARIES	6'-1"
A418	1'-0"	1'-0"
A419	0'-8"	0'-9"
B512	VARIES	6'-1"
B513	VARIES	6'-1"
B418	1'-0"	1'-0"
B419	0'-8"	0'-9"



A512, A513, A418, B512, B513, B418



A419, B419

BILL OF BARS - OUTLET

BAR MARK	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
A401	16	23'-7"			INLET APRON LONGITUDINAL STAGE 1
A402	16	28'-11"		X	INLET APRON LONGITUDINAL STAGE 2
A403	54	14'-6"			INLET APRON TRANSVERSE
A404	4	8'-9"		X	INLET APRON TRANSVERSE
A406	6	14'-8"			LONG. AT WING 1
A407	8	7'-7"		X	LONG. AT WING 1 TOP
A408	6	15'-5"			LONG. AT WING 2
A409	8	8'-0"		X	LONG. AT WING 2 TOP
A510	2	15'-0"			WINGWALL 1 DIAGONAL
A511	2	15'-11"			WINGWALL 2 DIAGONAL
A512	16	8'-4"	X	X	WINGWALL 1 VERT. B.F.
A513	17	8'-4"	X	X	WINGWALL 2 VERT. B.F.
A414	33	2'-12"			WINGWALL 1 VERT. I.F.
A415	16	3'-10"		X	WINGWALL 1 VERT. I.F.
A416	17	3'-10"		X	WINGWALL 1 & 2 VERT. F.F.
A417	3	5'-6"			INLET NOSE VERT.
A418	8	1'-11"	X		INLET NOSE HORIZ.
A419	56	2'-1"	X		INLET HEADERS TIES
A420	4	26'-0"			INLET HEADERS LONGITUDINAL
A421	4	22'-0"			INLET HEADERS LONGITUDINAL

BAR SERIES TABLE- OUTLET

BAR MARK	NO. REQ'D.	LENGTHS FOR EACH SERIES
B402	1 SERIES OF 16	26'-5" TO 36'-5"
B404	1 SERIES OF 9	2'-5" TO 13'-10"
B407	2 SERIES OF 4	2'-9" TO 12'-5"
B409	2 SERIES OF 4	3'-3" TO 14'-10"
B512	1 SERIES OF 16	8'-4" TO 13'-4"
B513	1 SERIES OF 19	8'-4" TO 13'-4"
B415	1 SERIES OF 16	1'-5" TO 6'-4"
B416	1 SERIES OF 19	1'-5" TO 6'-4"

BILL OF BARS - INLET

BAR MARK	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
B401	16	23'-7"			OUTLET APRON LONGITUDINAL STAGE 1
B402	16	31'-6"		X	OUTLET APRON LONGITUDINAL STAGE 2
B403	50	14'-6"			OUTLET APRON TRANSVERSE
B404	9	8'-2"		X	OUTLET APRON TRANSVERSE
B406	6	14'-8"			LONG. AT WING 4
B407	8	7'-7"		X	LONG. AT WING 4 TOP
B408	6	17'-7"			LONG. AT WING 3
B409	8	9'-1"		X	LONG. AT WING 3 TOP
B510	2	15'-0"			WINGWALL 4 DIAGONAL TOP
B511	2	18'-0"			WINGWALL 3 DIAGONAL TOP
B512	16	8'-4"	X	X	WINGWALL 4 VERT. B.F.
B513	19	8'-4"	X	X	WINGWALL 3 VERT. B.F.
B414	35	2'-12"			OUTLET WINGWALL 3 & 4 VERT. F.F.
B415	16	3'-10"		X	OUTLET WINGWALL 4 VERT. F.F.
B416	19	3'-10"		X	OUTLET WINGWALL 3 VERT. F.F.
B417	3	5'-6"			OUTLET NOSE VERT.
B418	8	1'-11"	X		OUTLET NOSE HORIZ.
B419	56	2'-1"	X		OUTLET HEADERS TIES
B420	4	26'-0"			OUTLET HEADERS LONGITUDINAL
B421	4	22'-0"			OUTLET HEADERS LONGITUDINAL

BAR SERIES TABLE - INLET

BAR MARK	NO. REQ'D.	LENGTHS FOR EACH SERIES
A402	1 SERIES OF 16	26'-4" TO 31'-5"
A404	1 SERIES OF 4	4'-8" TO 12'-11"
A407	2 SERIES OF 4	2'-9" TO 12'-5"
A409	2 SERIES OF 4	2'-10" TO 13'-0"
A512	1 SERIES OF 16	8'-4" TO 13'-4"
A513	1 SERIES OF 17	8'-4" TO 13'-4"
A415	1 SERIES OF 16	1'-5" TO 6'-4"
A416	1 SERIES OF 17	1'-5" TO 3'-10"

MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. S-6
STRUCTURAL DETAILS	
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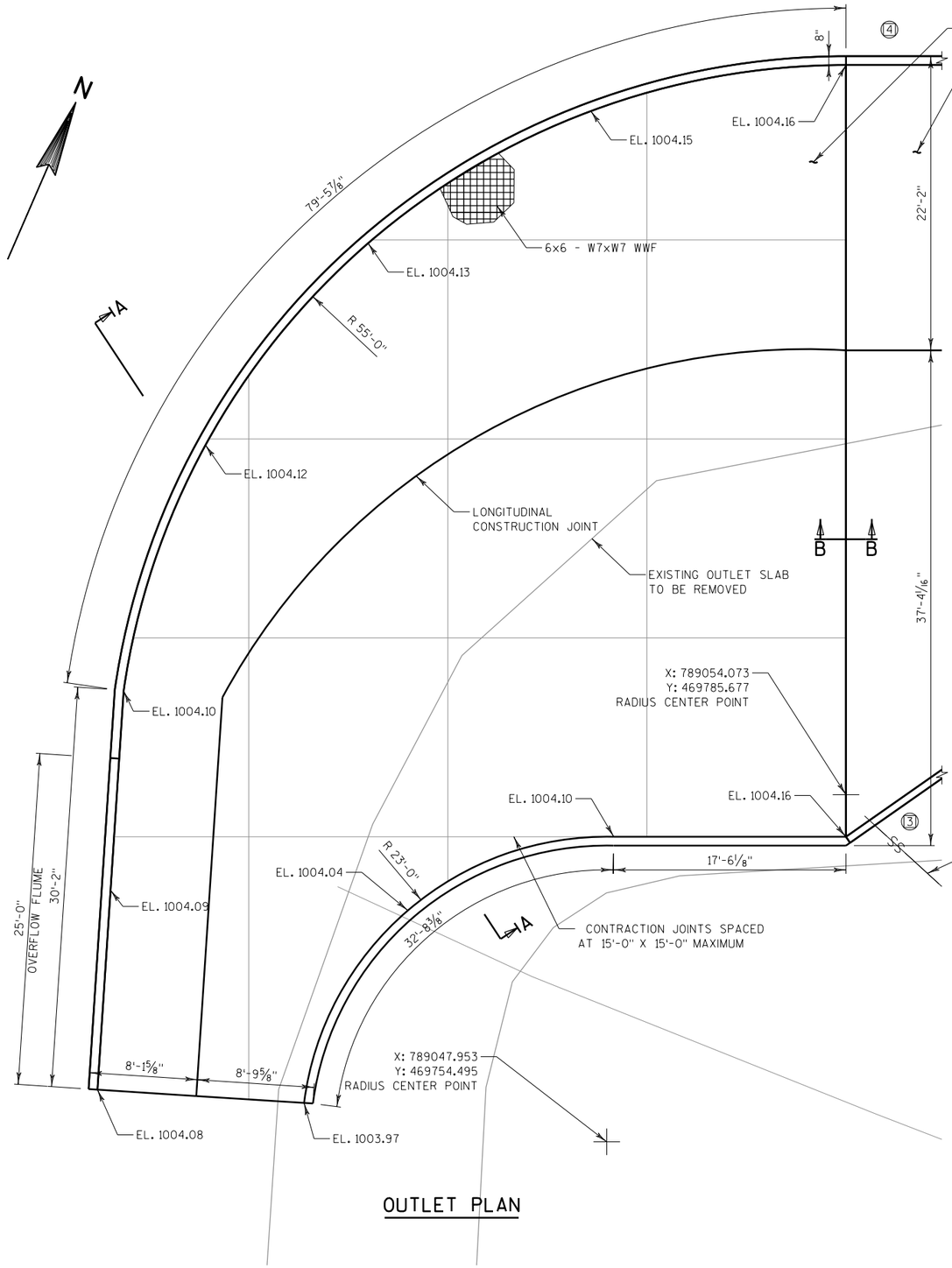
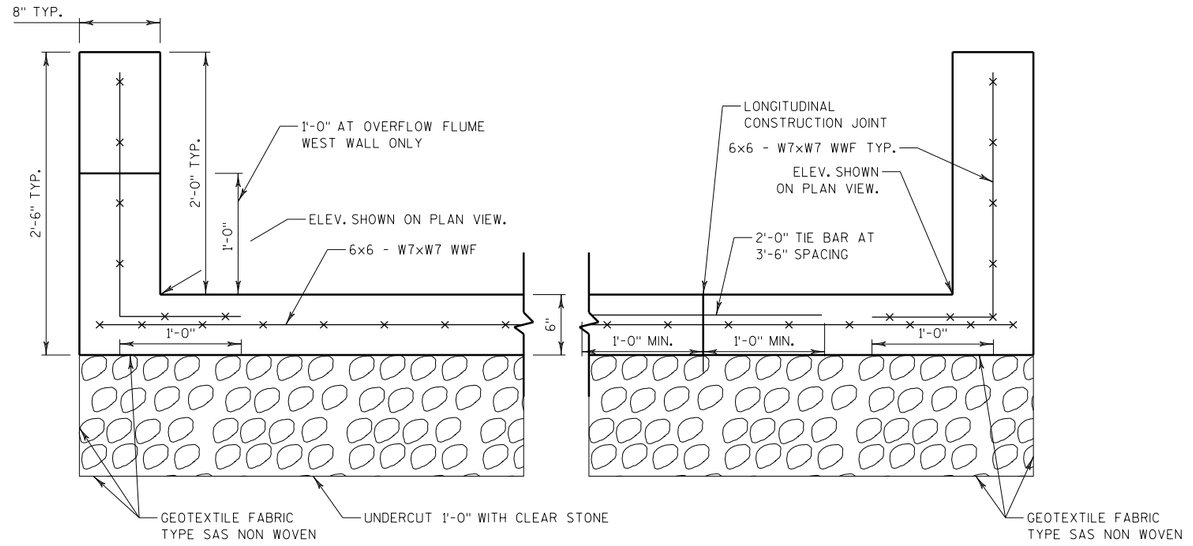
OUTLET SLAB DETAILS

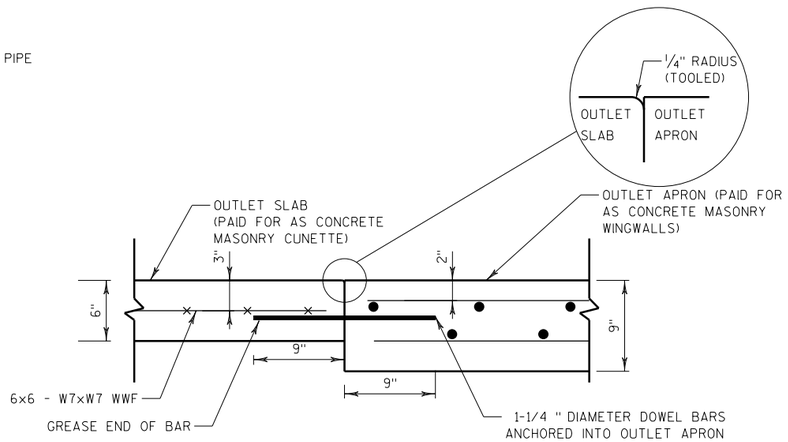
B-13-868



OUTLET PLAN



SECTION A-A THRU OUTLET SLAB & WALLS



SECTION B-B THRU OUTLET SLAB & OUTLET APRON

LEGEND

(X) DENOTES WINGWALL NUMBER

MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. S-7
STRUCTURAL DETAILS	
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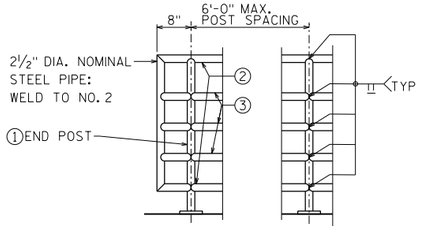
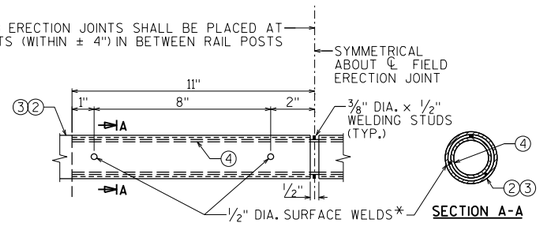
RAILING PIPE DETAILS

B-13-868

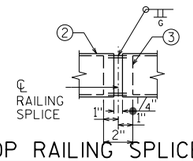


PART ELEVATION RAILING



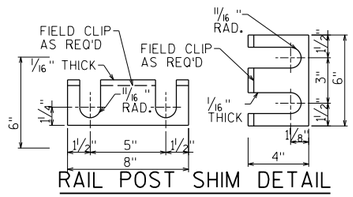
FIELD ERECTION JOINT DETAIL

*MIN. ⅝" FLAT SURFACE DIA. PUNCHINGS OR STUDS MAY BE USED AS AN ALTERNATE.



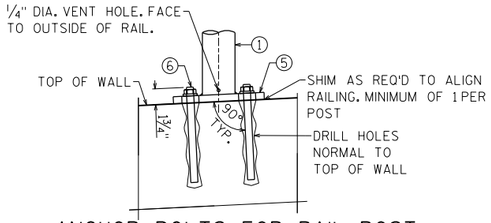
SHOP RAILING SPLICE DETAIL

(LOCATION MUST BE SHOWN ON THE SHOP DRAWINGS)

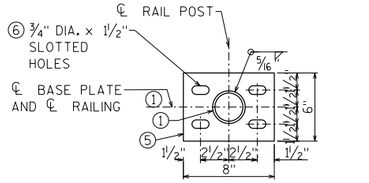


RAIL POST SHIM DETAIL

(2 SETS PER POST)



ANCHOR BOLTS FOR RAIL POST



RAIL POST BASE DETAIL

LEGEND

① 2" DIAMETER STEEL PIPE FOR POSTS. POSTS ARE TO BE SET VERTICAL: WELD TO NO. 5.

② 2" DIAMETER STEEL PIPE FOR RAILS: WELD TO NO. 1.

③ 1" DIAMETER STEEL PIPE FOR INTERMEDIATE RAILS. WELD TO NO. 1.

④ 1" DIAMETER PIPE SLEEVE × 1'-10" LONG PROVIDE ½" DIA. SURFACE WELDS ON ALL SIDES AS SHOWN. GRIND WELDS TO FIT FREE INTO I.D. OF NO. 2. PROVIDE ⅜" DIA. × ½" WELDING STUDS ON TOP AND BOTTOM SURFACES AT CENTERLINE.

⑤ PLATE ⅝" X 6" X 8" WITH ¾" X 1½" SLOTTED HOLES

⑥ ⅝" DIA. ADHESIVE ANCHOR, 6" MIN. EMBEDMENT (EPOXY ANCHORED) MIN. PULLOUT OF 10 KIPS. THREADED LENGTH OF ANCHOR, WASHER, AND NUT SHALL BE GALVANIZED. (4 REQ'D. PER POST).

NOTES

BID ITEM SHALL BE "RAILING PIPE", WHICH INCLUDES ALL ITEMS SHOWN, GALVANIZING AND PAINTING.

RAILING SHALL BE FABRICATED IN LENGTHS NOT MORE THAN 3 POSTS.

FIELD ERECTION JOINTS MUST BE PLACED IN BETWEEN RAIL POSTS WHERE THERE IS ALSO A CONCRETE COPING EXPANSION JOINT IN BETWEEN RAIL POSTS.

POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.

ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS AND STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY S.S.P.C. SPECIFICATIONS. AFTER GALVANIZING PAINT RAILING ASSEMBLIES WITH A TWO COAT SYSTEM SPECIFICALLY INTENDED FOR PAINTING OF GALVANIZED SURFACES. THE FINISH COLOR SHALL BE FEDERAL COLOR NO. 27038 BLACK.

ALL MATERIALS USED IN FABRICATION SHALL BE MADE FROM MATERIALS CONFORMING TO A.S.T.M. DESIGNATION A500 GRADE B UNLESS NOTED OTHERWISE.

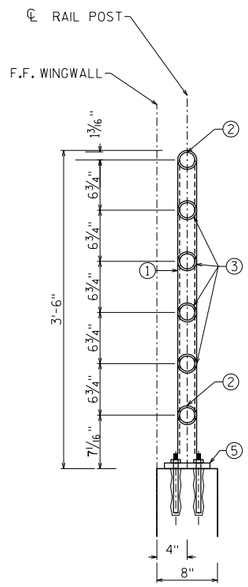
STEEL SHALL BE PROVIDED AND USED UNDER BASE PLATES WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

FILL BOLT SLOT OPENINGS IN SHIMS AND PLATE NO. 1 AND CAULK AROUND PERIMETER OF PLATE NO. 1 WITH NON-STAINING BLACK NON-BITUMINOUS JOINT SEALER.

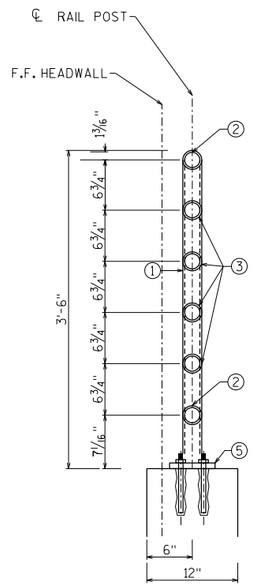
ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING SET TO NORMAL GRADE.

VENT HOLES SHALL BE DRILLED IN MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE. DRILL DRAIN HOLES PRIOR TO GALVANIZING.

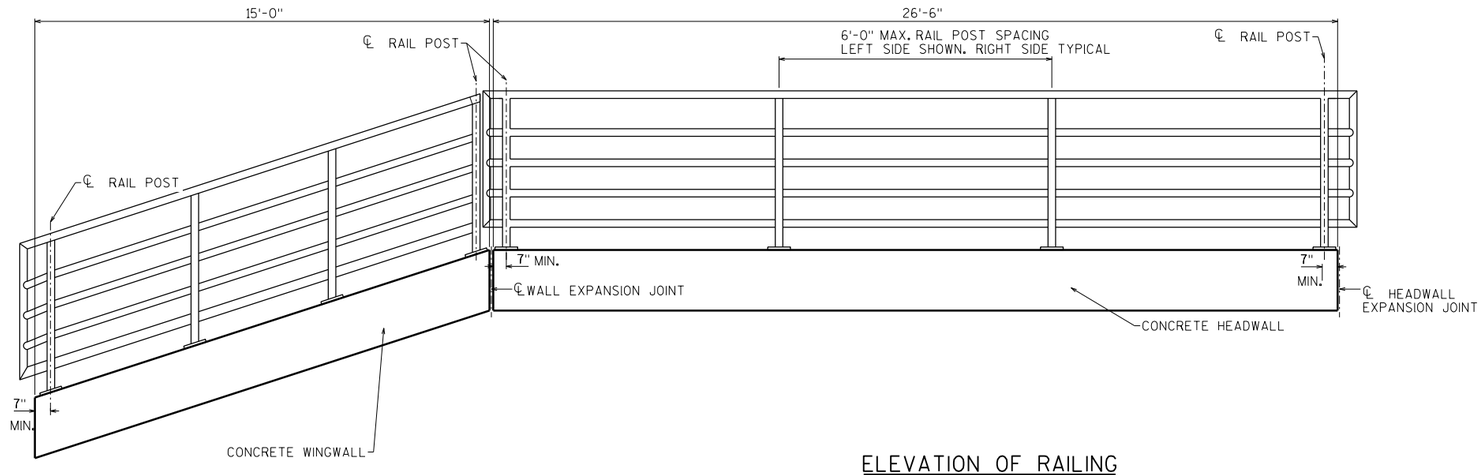
PAINT TOUCH-UP TO BE DONE AT COMPLETION OF STEEL RAILING INSTALLATION TO THE SATISFACTION OF THE ENGINEER AT NO EXTRA COST.



SECTION THRU WINGWALL



SECTION THRU HEADWALL



ELEVATION OF RAILING

LEFT SIDE SHOWN. RIGHT SIDE TYPICAL

MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. R-1
STRUCTURAL DETAILS	
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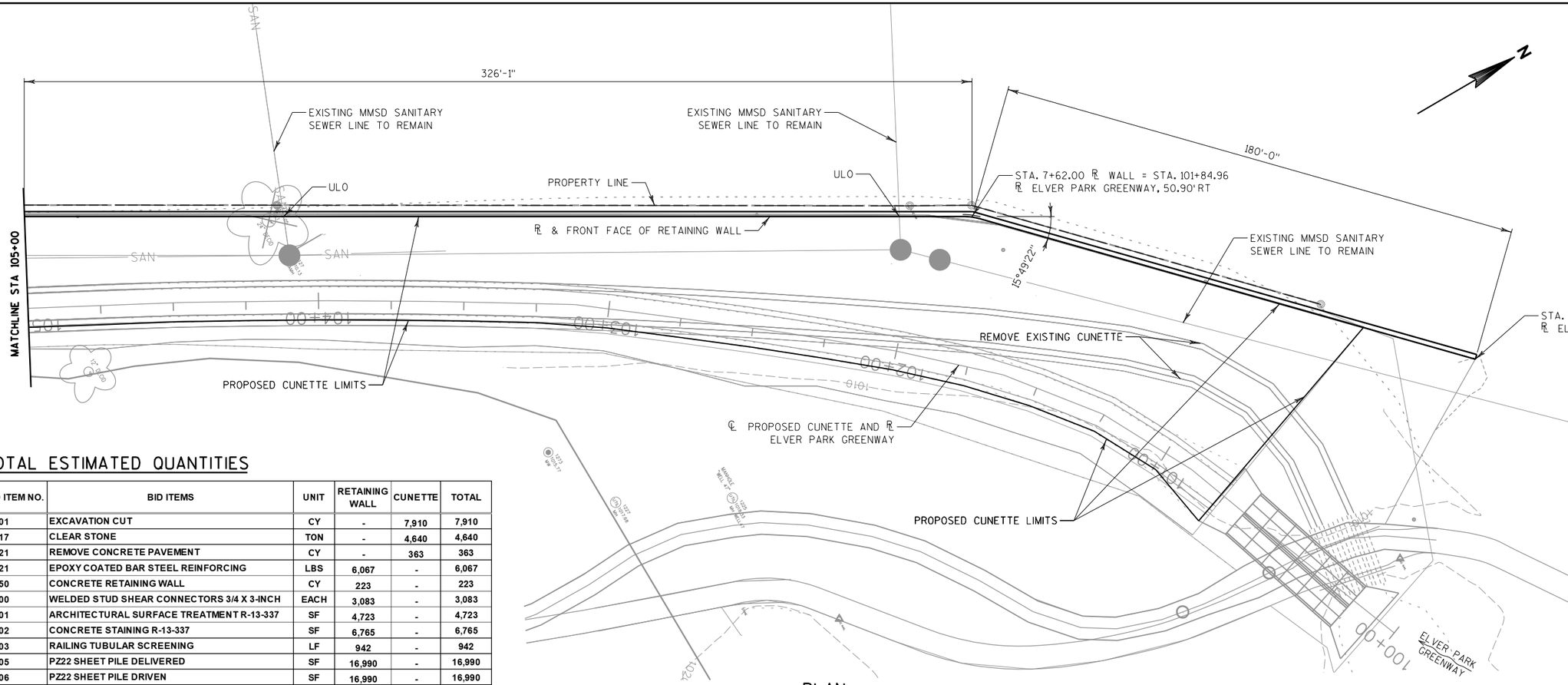
GENERAL PLAN & ELEVATION 1

R-13-337

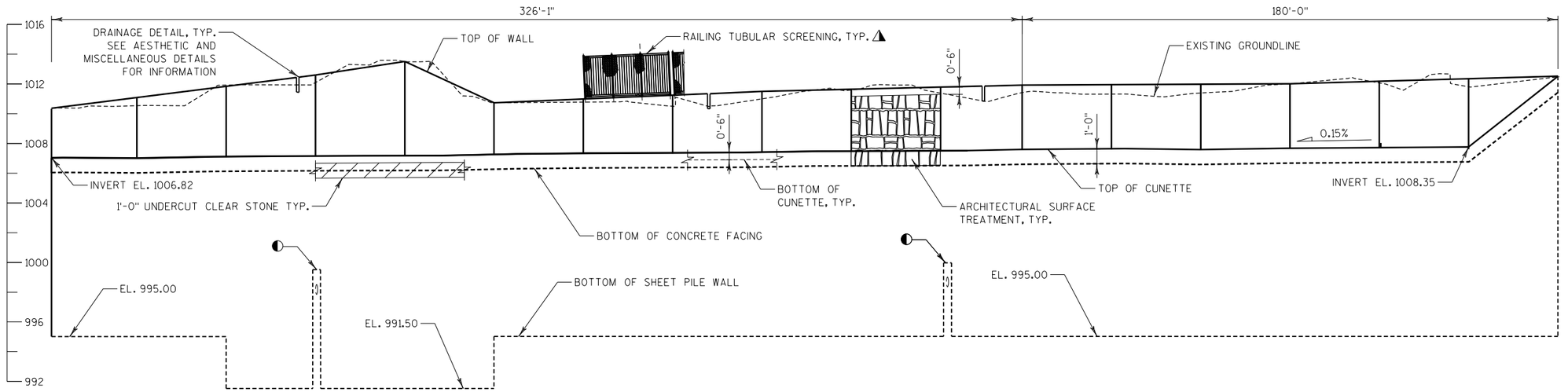


PLAN

(SHEET PILE RETAINING WALL WITH CONCRETE FACING)

TOTAL ESTIMATED QUANTITIES

BID ITEM NO.	BID ITEMS	UNIT	RETAINING WALL	CUNETTE	TOTAL
20101	EXCAVATION CUT	CY	-	7,910	7,910
20217	CLEAR STONE	TON	-	4,640	4,640
20321	REMOVE CONCRETE PAVEMENT	CY	-	363	363
30121	EPOXY COATED BAR STEEL REINFORCING	LBS	6,067	-	6,067
30450	CONCRETE RETAINING WALL	CY	223	-	223
90000	WELDED STUD SHEAR CONNECTORS 3/4 X 3-INCH	EACH	3,083	-	3,083
90001	ARCHITECTURAL SURFACE TREATMENT R-13-337	SF	4,723	-	4,723
90002	CONCRETE STAINING R-13-337	SF	6,765	-	6,765
90003	RAILING TUBULAR SCREENING	LF	942	-	942
90005	PZ22 SHEET PILE DELIVERED	SF	16,990	-	16,990
90006	PZ22 SHEET PILE DRIVEN	SF	16,990	-	16,990
90007	CONCRETE MASONRY CUNETTE	CY	-	972	972



UNFOLDED ELEVATION

SCALE 1H:5V

ELEVATION TAKEN ALONG ℄ OF ELVER PARK GREENWAY

WISCONSIN
MICHAEL D. RADTKE
E-40967
ELM GROVE, WI
PROFESSIONAL ENGINEER

April 1, 2019

LIST OF DRAWINGS

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED.

ALL STATIONS AND ALL ELEVATIONS ARE IN FEET.

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

ALL CONCRETE EDGES TO BE BEVELED ¾" UNLESS NOTED OTHERWISE.

REMOVING EXISTING CUNETTE WILL BE PAID FOR UNDER BID ITEM "REMOVING CONCRETE PAVEMENT". QUANTITY WAS CALCULATED BASED ON AN ASSUMED EXISTING CUNETTE THICKNESS OF 6".

WALL JOINTS ARE SHOWN AT 30'-0" SPACING. HOWEVER, JOINTS SHOULD COINCIDE WITH STEEL SHEET PILE JOINTS. THE WALL JOINTS SHOULD ALSO COINCIDE WITH THE TUBULAR SCREENING RAILING POST SPACING.

LEGEND

◐ SHEET PILE WALL TO BE INSTALLED 1'-0" CLEAR OF MMSD FACILITIES AS SHOWN IN THE PLANS

⚠ SEE "RAILING TUBULAR SCREENING" SHEET FOR DETAILS..

SOIL DATA

DRY UNIT WEIGHT OF SOIL γ = 120 LBS/FT^3
MAX FACTORED BEARING PRESSURE = 2,000 PSF
K_a = 0.3
K_p = 3.25
K_o = 0.47 FOR AT REST CONDITIONS
ϕ = 30°

DESIGN DATA

MATERIAL PROPERTIES:

CONCRETE MASONRY _____ f'c = 3.5 KSI
BAR STEEL REINFORCEMENT _____ fy = 60 KSI

MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. R-2
STRUCTURAL DETAILS	
GREENTREE SOUTH SECTION CITY OF MADISON	

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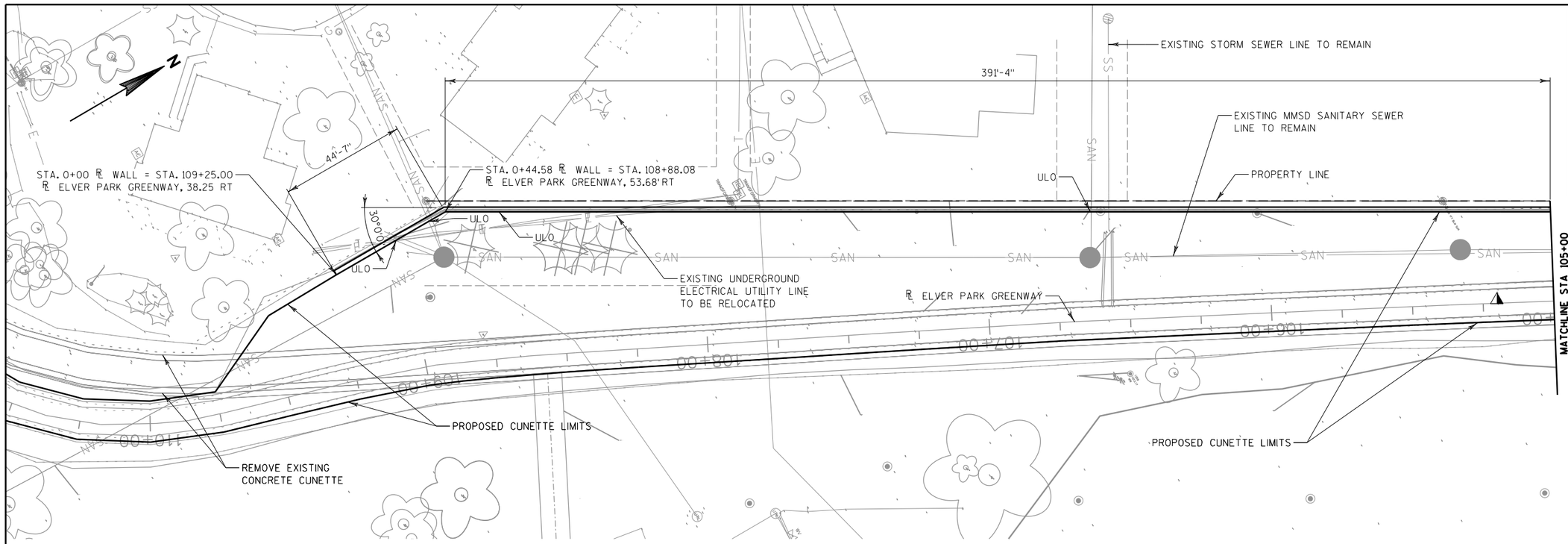
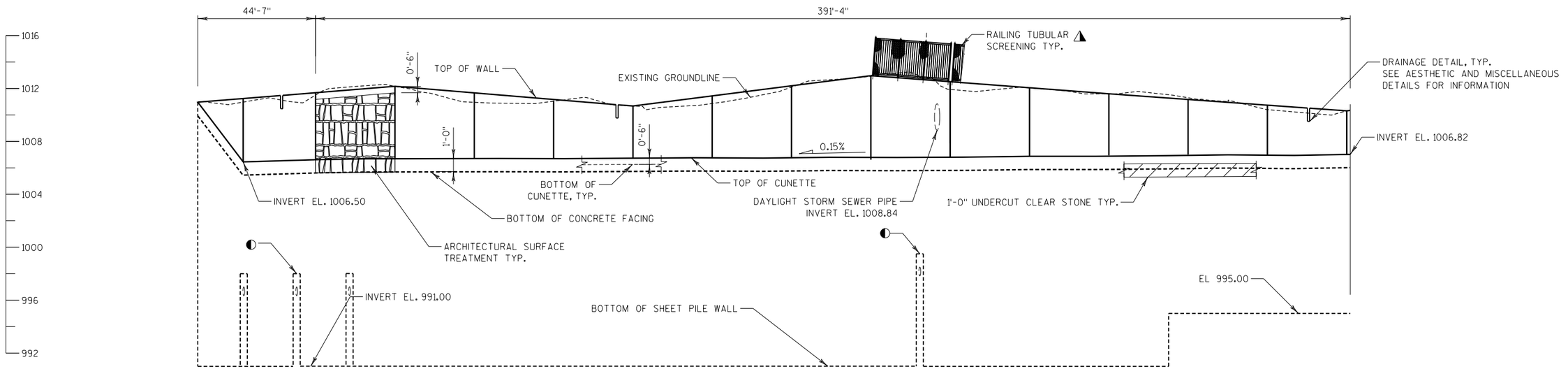
GENERAL PLAN & ELEVATION 2

R-13-337



PLAN

(SHEET PILE RETAINING WALL WITH CONCRETE FACING)



UNFOLDED ELEVATION

SCALE 1H:5V
ELEVATION TAKEN ALONG ℄ OF ELVER PARK GREENWAY

NOTES

SEE NOTES FROM SHEET R-1.

LEGEND

◐ SHEET PILE WALL TO BE INSTALLED 1'-0" CLEAR OF MMSD FACILITIES AS SHOWN IN THE PLANS

⚠ SEE "RAILING TUBULAR SCREENING" SHEET FOR DETAILS.

MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. R-3
STRUCTURAL DETAILS	
GREENTREE SOUTH SECTION CITY OF MADISON	

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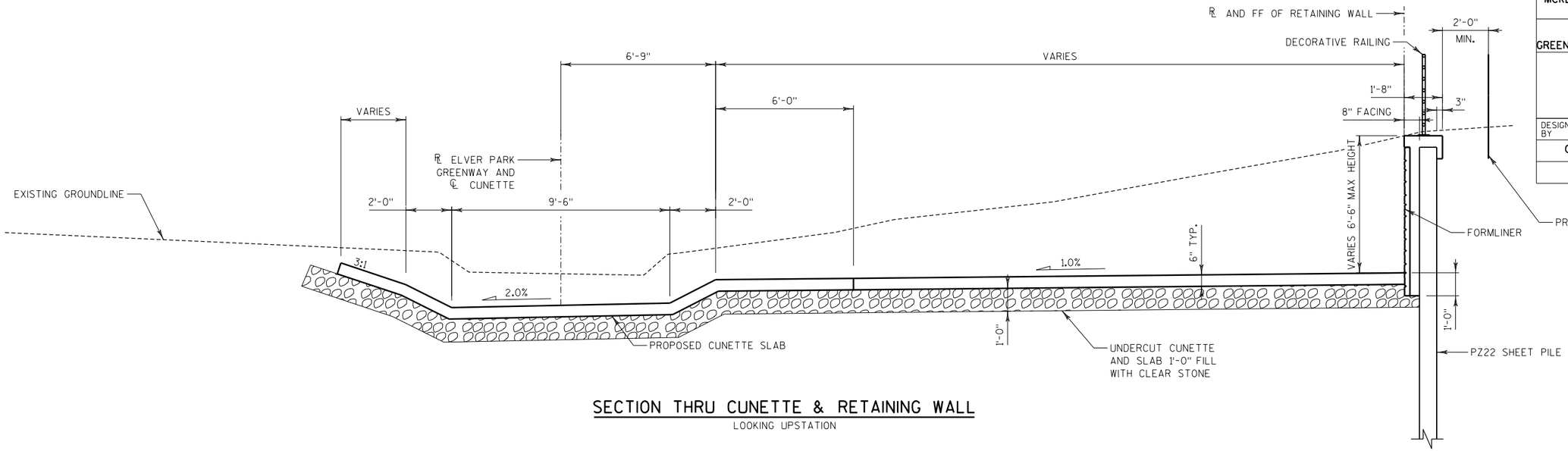
DESIGNED BY JRM	DESIGN CK'D. MDR	DRAWN BY JRM	PLANS CK'D. MDR

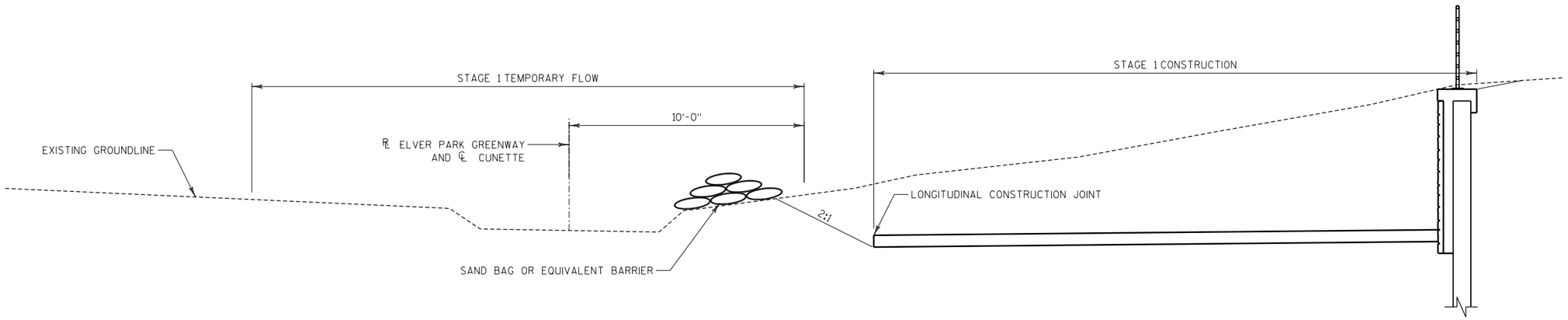
CROSS SECTION & STAGING DETAILS

R-13-337



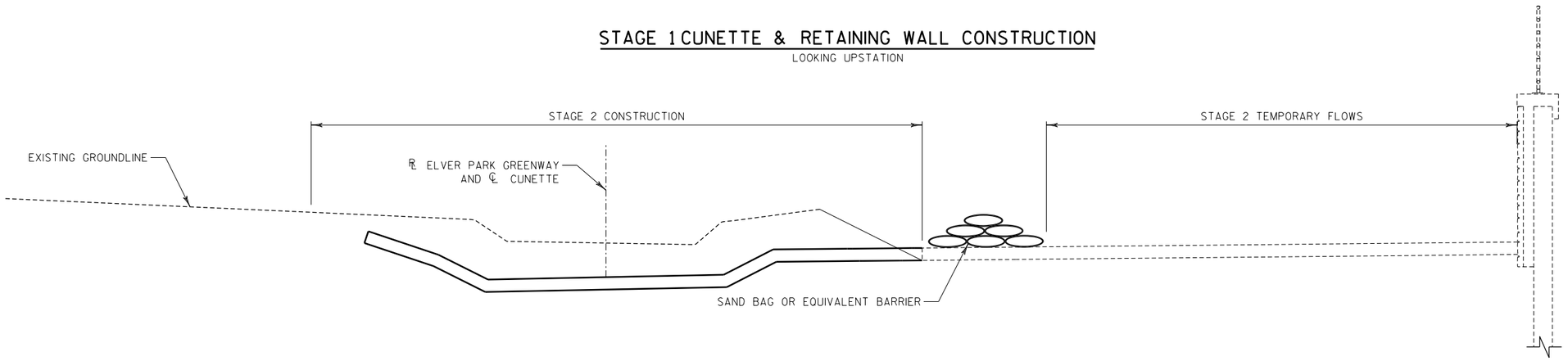
SECTION THRU CUNETTE & RETAINING WALL

LOOKING UPSTATION



STAGE 1 CUNETTE & RETAINING WALL CONSTRUCTION

LOOKING UPSTATION



STAGE 2 CUNETTE & RETAINING WALL CONSTRUCTION

LOOKING UPSTATION

NOTES

EARTH RETENTION, STREAM DIVERSION, DEWATERING AND CONSTRUCTION SEQUENCING MEANS AND METHODS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

SEE SPECIFICATIONS FOR TEMPORARY WATER FLOWS EXPECTED DURING CONSTRUCTION.

CUNNETTE ELEVATIONS

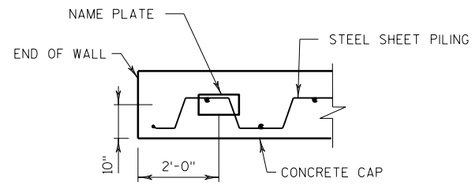
ELVER PARK GREENWAY STATION	ELEV. C	ELEV. D	ELEV. E	ELEV. F	OFFSET FROM ELEV. E TO ELEV. F
100+66.00	1006.36	1007.46	1007.27	N/A	N/A
100+75.00	1006.35	1007.44	1007.25	1007.36	5.50
101+00.00	1006.31	1007.41	1007.22	1007.22	0.00
101+25.00	1006.28	1007.37	1007.18	1007.18	0.00
101+50.00	1006.24	1007.33	1007.14	1007.14	0.00
101+75.00	1006.20	1007.30	1007.11	1007.11	0.00
102+00.00	1006.17	1007.26	1007.07	1007.07	0.00
102+25.00	1006.13	1007.22	1007.03	1007.03	0.00
102+50.00	1006.09	1007.19	1007.00	1007.00	0.00
102+75.00	1006.05	1007.15	1006.96	1006.96	0.00
103+00.00	1006.02	1007.12	1006.93	1006.93	0.00
103+25.00	1005.98	1007.08	1006.89	1006.89	0.00
103+50.00	1005.94	1007.04	1006.85	1006.85	0.00
103+75.00	1005.91	1007.00	1006.81	1006.81	0.00
104+00.00	1005.87	1006.97	1006.78	1006.78	0.00
104+25.00	1005.83	1006.93	1006.74	1006.74	0.00
104+50.00	1005.80	1006.89	1006.70	1006.70	0.00
104+75.00	1005.76	1006.85	1006.66	1006.66	0.00
105+00.00	1005.72	1006.82	1006.63	1006.63	0.00
105+25.00	1005.68	1006.78	1006.59	1006.59	0.00
105+50.00	1005.65	1006.74	1006.55	1006.55	0.00
105+75.00	1005.61	1006.71	1006.52	1006.52	0.00
106+00.00	1005.55	1006.65	1006.46	1006.46	0.00
106+25.00	1005.54	1006.63	1006.44	1006.44	0.00
106+50.00	1005.50	1006.60	1006.41	1006.41	0.00
106+75.00	1005.46	1006.56	1006.37	1006.37	0.00
107+00.00	1005.43	1006.52	1006.33	1006.33	0.00
107+25.00	1005.39	1006.48	1006.29	1006.29	0.00
107+50.00	1005.35	1006.45	1006.26	1006.26	0.00
107+75.00	1005.32	1006.41	1006.22	1006.22	0.00
108+00.00	1005.28	1006.38	1006.19	1006.19	0.00
108+25.00	1005.24	1006.34	1006.15	1006.15	0.00
108+50.00	1005.20	1006.30	1006.11	1006.11	0.00
108+75.00	1005.17	1006.26	1006.07	1006.07	0.00
109+00.00	1005.13	1006.23	1006.04	1006.04	0.00
109+25.00	1005.09	1006.19	1006.00	1006.00	0.00
109+50.00	1005.06	1006.15	1005.96	1005.96	0.00
109+75.00	1005.02	1006.11	1005.92	1005.92	0.00
110+00.00	1004.98	1006.08	1005.89	1005.89	0.00
110+25.00	1004.95	1006.04	1005.85	1005.85	0.00
110+50.00	1004.91	1006.00	1005.81	1005.81	0.00
110+75.00	1004.87	1005.97	1005.78	1005.78	0.00
111+00.00	1004.84	1005.93	1005.74	1005.74	0.00

CUNNETTE ELEVATIONS (CONT.)

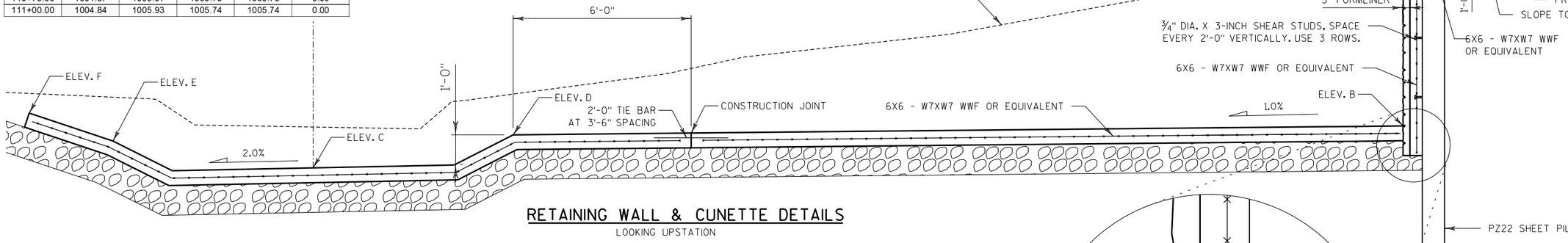
ELVER PARK GREENWAY STATION	ELEV. C	ELEV. D	ELEV. E	ELEV. F	OFFSET FROM ELEV. E TO ELEV. F
111+25.00	1004.80	1005.89	1005.70	1005.70	0.00
111+50.00	1004.76	1005.86	1005.67	1005.67	0.00
111+75.00	1004.72	1005.82	1005.63	1005.63	0.00
112+00.00	1004.69	1005.79	1005.60	1005.60	0.00
112+25.00	1004.65	1005.75	1005.56	1005.56	0.00
112+50.00	1004.61	1005.71	1005.52	1005.52	0.00
112+75.00	1004.58	1005.67	1005.48	1005.48	0.00
113+00.00	1004.54	1005.64	1005.45	1005.45	0.00
113+25.00	1004.50	1005.60	1005.41	1005.41	0.00
113+50.00	1004.47	1005.56	1005.37	1005.37	0.00
113+75.00	1004.43	1005.52	1005.33	1005.33	0.00
114+00.00	1004.31	N/A	N/A	N/A	N/A
114+25.00	1004.27	N/A	N/A	N/A	N/A
114+50.00	1004.23	N/A	N/A	N/A	N/A

RETAINING WALL ELEVATIONS

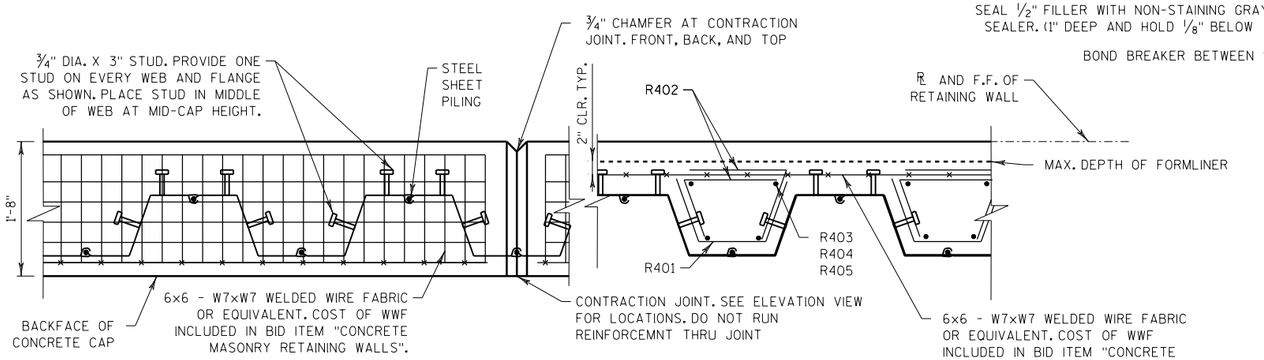
WALL STATION	NORTHING	EASTING	ELVER PARK GREENWAY STATION	ELVER PARK GREENWAY OFFSET	ELEV. A	ELEV. B
0+00.00	789851.83	470114.31	109+25.00	38.25	1010.97	1006.51
0+17.00	789851.90	470131.31	109+08.91	43.71	1011.24	1006.58
0+44.58	789852.02	470158.89	108+88.08	53.68	1011.68	1006.71
0+74.58	789867.14	470184.81	108+59.76	50.91	1012.16	1006.73
1+04.58	789882.25	470210.72	108+30.19	48.94	1011.66	1006.75
1+34.58	789897.36	470236.64	108+00.04	47.04	1011.17	1006.78
1+64.58	789912.48	470262.56	107+70.07	45.14	1010.67	1006.80
1+94.58	789927.59	470288.47	107+40.31	43.22	1011.44	1006.83
2+24.58	789942.70	470314.39	107+10.37	41.42	1012.20	1006.85
2+54.58	789957.81	470340.30	106+80.42	39.64	1012.96	1006.88
2+84.58	789972.93	470366.22	106+51.03	38.13	1012.51	1006.91
3+14.58	789988.04	470392.13	106+21.06	36.78	1012.05	1006.94
3+44.58	790003.15	470418.05	105+91.14	35.43	1011.59	1006.97
3+74.58	790018.27	470443.96	105+61.17	34.13	1011.16	1007.00
4+04.58	790033.38	470469.88	105+31.39	32.83	1010.73	1007.03
4+34.58	790048.49	470495.79	105+01.41	31.69	1010.31	1007.07
4+64.58	790063.61	470521.71	104+71.43	30.52	1011.07	1007.10
4+79.58	790071.16	470534.66	104+56.44	29.98	1011.44	1007.12
4+94.58	790078.72	470547.62	104+42.25	29.52	1011.82	1007.13
5+24.58	790093.83	470573.54	104+12.25	29.19	1012.47	1007.17
5+54.58	790108.94	470599.45	103+82.77	29.14	1013.48	1007.22
5+84.58	790124.06	470625.37	103+53.19	29.42	1010.71	1007.26
6+14.58	790139.17	470651.28	103+23.29	30.08	1010.97	1007.31
6+44.58	790154.28	470677.20	102+96.58	32.52	1011.22	1007.38
6+74.58	790169.40	470703.11	102+67.10	36.44	1011.47	1007.46
7+04.58	790184.51	470729.03	102+37.65	40.58	1011.62	1007.54
7+34.58	790199.62	470754.94	102+08.98	45.48	1011.76	1007.64
7+50.00	470768.26	790207.39	101+96.34	48.29	1011.84	1007.68
7+62.00	470778.63	790213.43	101+84.96	50.92	1011.89	1007.73
7+92.00	470799.44	790235.04	101+62.50	49.75	1011.92	1007.75
8+22.00	470820.25	790256.65	101+32.66	52.75	1011.95	1007.82
8+52.00	470841.07	790278.25	101+13.25	58.92	1011.98	1007.91
8+82.00	470861.88	790299.86	100+93.30	67.33	1012.15	1008.03
9+12.00	470882.69	790321.47	100+64.57	79.37	1012.33	1008.19
9+42.00	470903.50	790343.07	100+37.00	91.00	1012.50	1008.35



NAME PLATE DETAIL
(PLAN VIEW OF CAP)

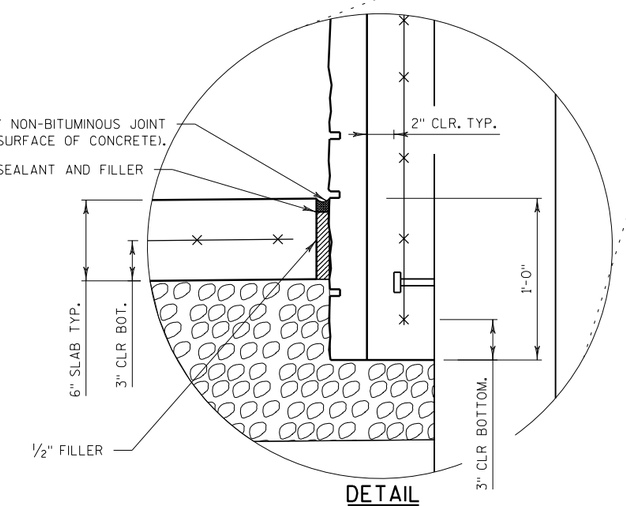


RETAINING WALL & CUNETTE DETAILS
LOOKING UPSTATION



CONCRETE CAP DETAIL
(PLAN VIEW OF CAP)

WALL REINFORCING DETAIL
(PLAN VIEW BELOW CAP)



DETAIL

NOTES

THE MAXIMUM SPACING BETWEEN SAWCUT CONTRACTION JOINTS IS 15'-0" IN BOTH DIRECTIONS. SEE SHEET R-5 FOR DETAILS.

FOR DOWELLED JOINT DETAILS AT BOX CULVERT INLET SLAB SEE B-13-868 PLANS.

MCKENNA FLOOD MITIGATION
PROJECT NO. 11475

SHEET NO. R-4

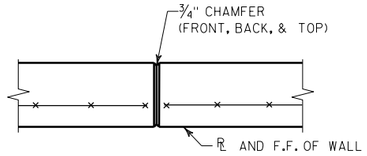
STRUCTURAL DETAILS
GREENTREE SOUTH SECTION CITY OF MADISON

emcs inc
1300 W. Canal Street, Suite 200
Milwaukee, WI 53233
414.347.1607 Fax 414.347.1347

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
JRM	MDR	JRM	MDR

RETAINING WALL DETAILS

R-13-337

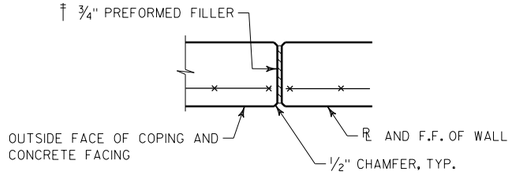


WALL CONTRACTION JOINT

DO NOT RUN BAR STEEL THRU JOINT

MAXIMUM SPACING OF JOINTS SHALL BE 12'-0" AND MUST LINE UP WITH THE STEEL SHEET PILE JOINTS.

ALL CONTRACTION JOINTS TO EXTEND THE FULL DEPTH OF COPING.



WALL EXPANSION JOINT

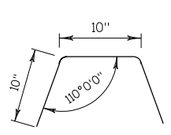
DO NOT RUN BAR STEEL THRU JOINT

MAXIMUM SPACING OF JOINTS SHALL BE 50'-0" AND MUST LINE UP WITH THE SHEET PILE JOINTS.

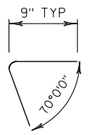
† SEAL ALL EXPOSED HORIZ. AND VERT. SURFACES OF PREFORMED FILLER WITH A NON-STAINING, COLOR TO MATCH WALL PANEL OR COPING STAINING, NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONC.)

BILL OF BARS

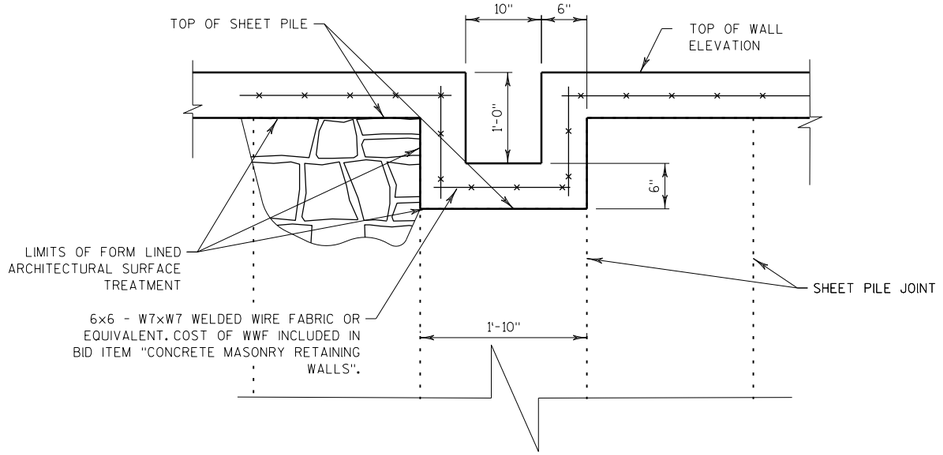
BAR MARK	COAT	NO.	LENGTH	BENT	LOCATION
R401	X	2570	1'-5"	X	PAVING BLOCK VERT. DOWEL
R402	X	1285	2'-8"	X	PAVING BLOCK STIRRUP
R403	X	260	4'-0"		SHEET PILE VERTICAL
R404	X	688	5'-0"		SHEET PILE VERTICAL
R405	X	196	6'-0"		SHEET PILE VERTICAL



R401



R402

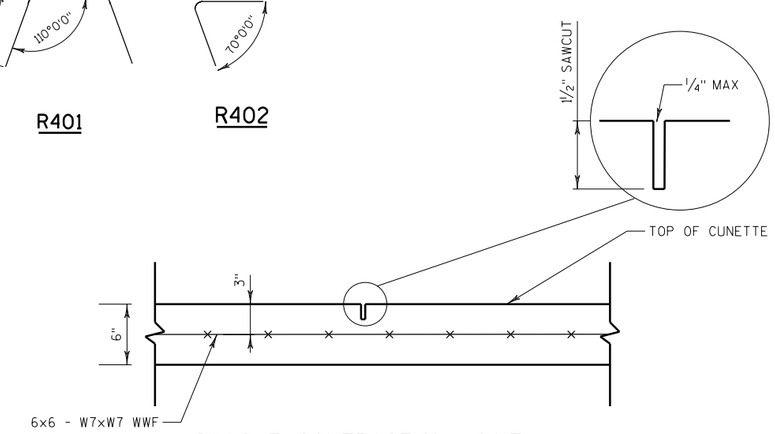


DRAINAGE DETAIL

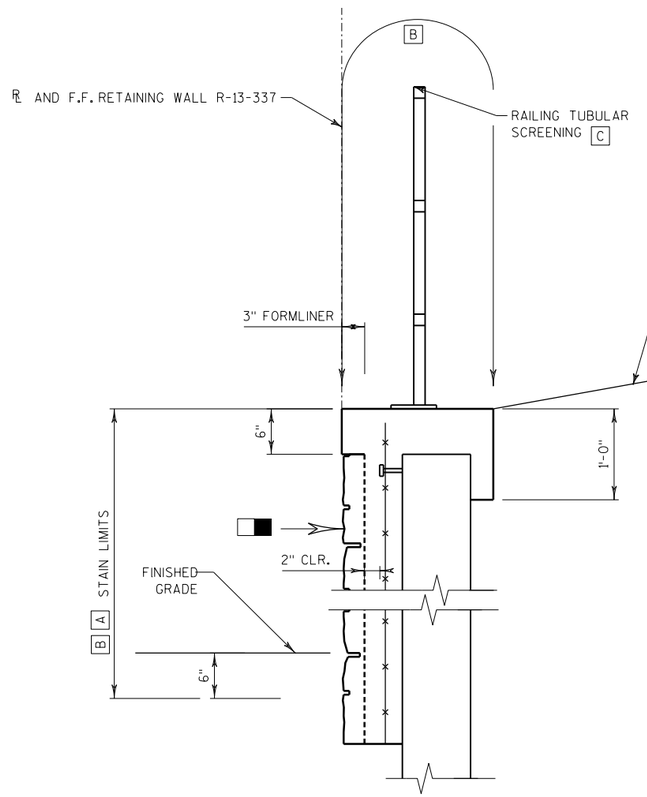
(ELEVATION VIEW AT TOP OF CAP)

PLACE AT EXISTING LOW SWALES AT THE DIRECTION OF THE FIELD ENGINEER TO ALLOW FOR DRAINAGE

SPACE TUBULAR RAIL POSTS MIN. 7" FROM EDGE OF DRAINAGE DETAIL. SEE TUBULAR RAILING SCREENING SHEET FOR POST ANCHORAGE DETAILS.



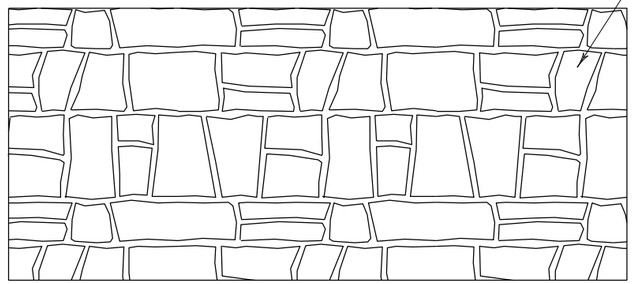
SAWCUT CONTRACTION JOINT



FORMLINER AND STAINING DETAILS AT WALL

CONCRETE STAINING SCHEDULE

MARK	COLOR	LOCATION	NOTES
A	BASE COLOR-FED COLOR 33722	RAISED AREAS (STONE)	EXPOSED FACES TO 0'-6" BELOW FINAL GRADE
B	ACCENT COLOR MEDIUM GRAY-FED COLOR 36424	DEPRESSED AREAS (GROUT)	EXPOSED FACES TO 0'-6" BELOW FINAL GRADE
		COPING	FACE, TOP, AND UNDERSIDE
C	ACCENT COLOR BLACK-FED COLOR 27038	TUBULAR RAILING SCREENING	TWO-COAT FOR SPECIFIC USE WITH GALVANIZED STEEL



RUSTIC ASHLAR PATTERN

FORMLINER THICKNESS = 3"
SIZE = 8" TO 32"
MAX. RELIEF = 2"

NOTES

EXPOSED FACE TO BE STAINED 1'-0" (MIN) BELOW FINISHED GRADE. PAY LIMIT IS 1'-0" BELOW FINISHED GRADE (FF).

ALL JOINTS SHALL BE LOCATED AS SHOWN ON WALL ELEVATIONS AND MUST COINCIDE WITH PANEL JOINT ON FRONT FACE WHERE BOTTOM OF LIP INTERSECTS WITH PANEL JOINT.

AESTHETIC PANEL PATTERN SHALL BE PLACED AS SHOWN ON GENERAL PLAN AND ELEVATION SHEET.

PROVIDE FORM LINED ARCHITECTURAL SURFACE TREATMENT USING RUSTIC ASHLAR PATTERN. ARCHITECTURAL SURFACE TREATMENT TO EXTEND VERTICALLY FROM 6" COPING AT TOP OF WALL TO A MINIMUM OF 1'-0" BELOW TOP OF CUNETTE SLAB ELEVATION AND EXTEND HORIZONTALLY FULL LENGTH OF EXPOSED WALL FACE.

ALL ARCHITECTURAL SURFACE TREATMENT FORMLINER AREAS SHALL BE STAINED IN A RANDOMLY MIXED COLOR ARRANGMENT TO ACHIEVE A TEXTURED LOOK AS DIRECTED BY THE CITY.

PLACE REINFORCEMENT WITH MINIMUM 2" OF CLEAR COVER UNLESS OTHERWISE SHOWN.

MCKENNA FLOOD MITIGATION
PROJECT NO. 11475

SHEET NO. R-5

STRUCTURAL DETAILS
GREENTREE SOUTH SECTION CITY OF MADISON

emcs inc
1300 W. Canal Street, Suite 200
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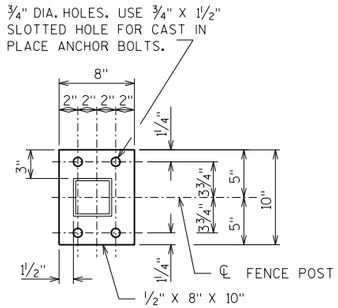
414.347.1607 Fax 414.347.1347

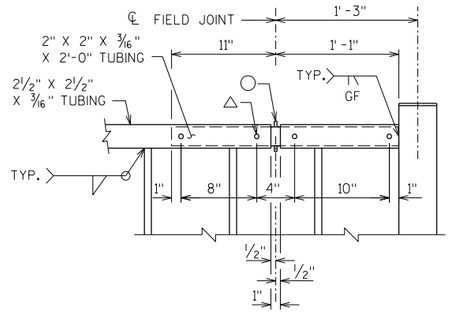
DESIGNED BY JRM	DESIGN CK'D. MDR	DRAWN BY JRM	PLANS CK'D. MDR

AESTHETIC AND MISCELLANEOUS. DETAILS

R-13-337



BASE PLATE

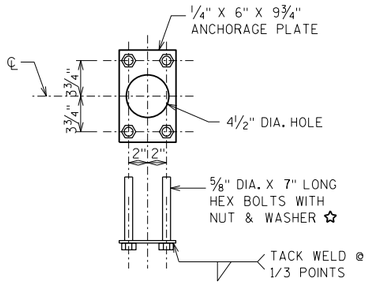


RAILING EXPANSION JOINT DETAIL

LEGEND

○ 5/16" x 3/8" WELDED STUDS

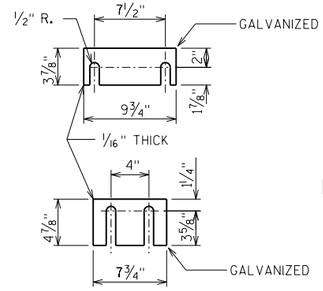
△ WELD BEAD ON EACH SIDE OF TUBE. GRIND BEADS SO THAT SLEEVE FITS FREELY INSIDE THE 2½"x 2½" TUBE.



ANCHORAGE DETAIL

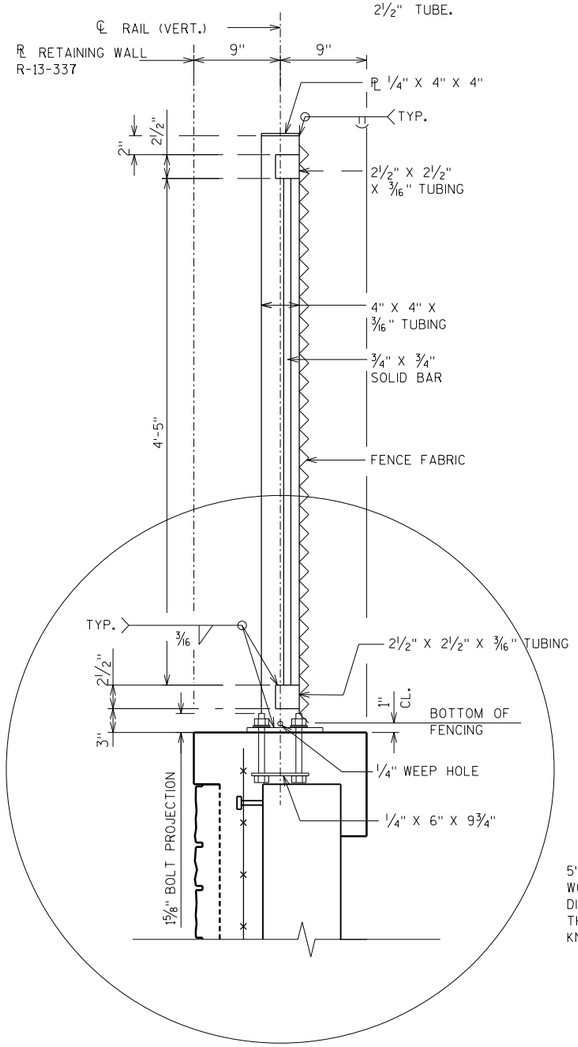
✩ ALTERNATIVE ANCHORAGE: ADHESIVE ANCHORS ⅝-INCH. EMBED 5" IN CONCRETE. ADHESIVE ANCHORS SHALL CONFORM TO SECTION 502.2.12 OF WISDOT STANDARD SPECIFICATIONS.

NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED.

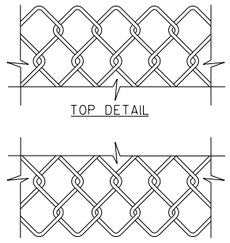


SHIM PLATE DETAILS

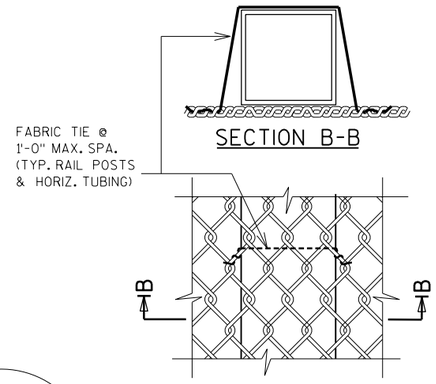
TWO SHIMS OF EACH SIZE REQUIRED PER POST



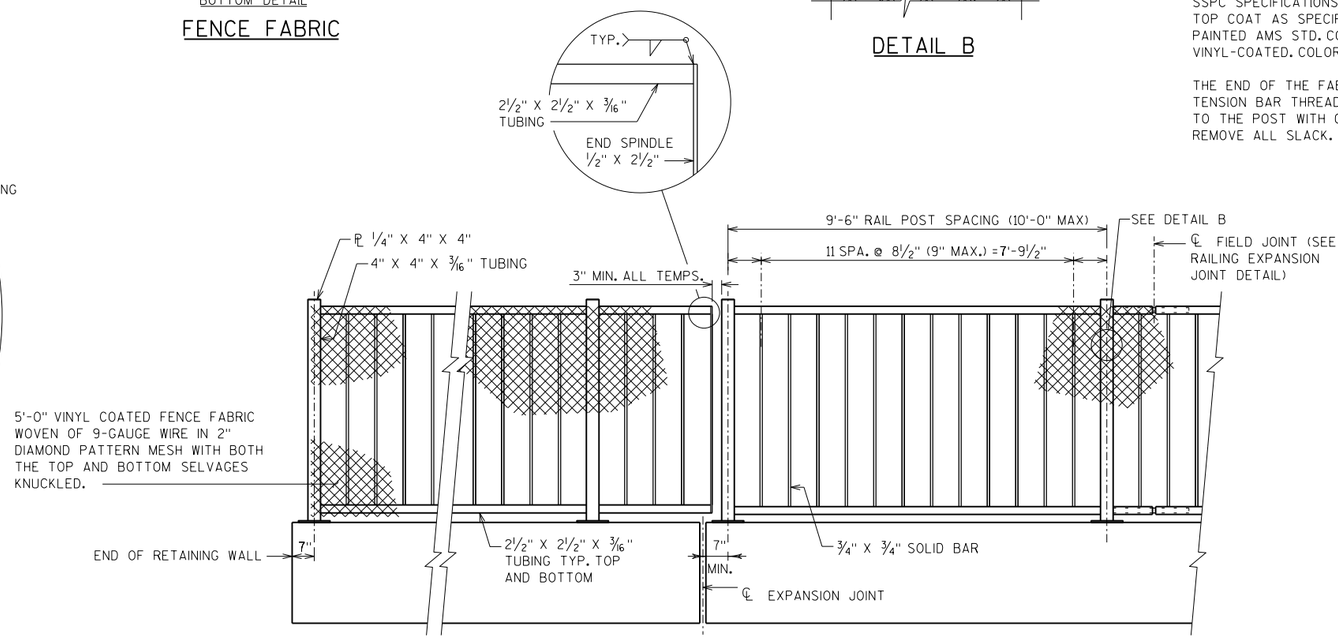
SECTION THRU RAILING



FENCE FABRIC



DETAIL B



INSIDE ELEVATION OF RAILING

NOTES

POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.

STRUCTURAL TUBING SHALL CONFORM TO ASTM A500, GRADE B. PLATES, ANGLES, BARS AND SHIMS SHALL CONFORM TO ASTM A709, GRADE 36. FENCE FABRIC SHALL CONFORM TO F668, CLASS 2B.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET POSTS NORMAL TO GRADE.

ALL POST SPACINGS ARE TAKEN HORIZONTAL ALONG CENTERLINE OF RAILING AT BASE OF POST.

STEEL SHIMS SHALL BE PROVIDED & USED UNDER BASE PLATES WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

CAULK AROUND PERIMETER OF BASE PLATES AND FILL PORTION OF SLOTTED HOLES AROUND ANCHOR BOLTS WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

CUT BOTTOM OF POST TO MAKE VERTICAL IN TRANSVERSE DIRECTION.

ANCHOR BOLTS, NUTS AND WASHERS SHALL BE EITHER STAINLESS STEEL OR ASTM 307. IF 307 IS USED, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED.

THE BID ITEM SHALL BE "RAILING TUBULAR SCREENING" WHICH SHALL INCLUDE ALL ITEMS SHOWN.

RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE NOT MORE THAN 3 POSTS.

VENT HOLES SHALL BE DRILLED IN MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.

ALL RAILING MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING THE STEEL RAILING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS. PAINT OVER GALVANIZING WITH AN APPROVED TIE COAT AND TOP COAT AS SPECIFIED IN THE CONTRACT DOCUMENTS. THE RAILING SHALL BE PAINTED AMS STD. COLOR NO. 27038 , BLACK. FENCE FABRIC AND TIES TO BE VINYL-COATED. COLOR SHALL BE BLACK IN ACCORDANCE WITH ASTM F934.

THE END OF THE FABRIC SHALL BE ATTACHED TO THE POST BY MEANS OF A TENSION BAR THREADED THROUGH THE END LOOPS OF THE FABRIC AND SECURED TO THE POST WITH CLAMPS & BOLT. THE FABRIC SHALL BE STRETCHED TO REMOVE ALL SLACK.

MCKENNA FLOOD MITIGATION PROJECT NO. 11475	SHEET NO. R-6
STRUCTURAL DETAILS	
GREENTREE SOUTH SECTION CITY OF MADISON	

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DESIGNED BY JRM	DESIGN CK'D. MDR	DRAWN BY JRM	PLANS CK'D. MDR

RAILING TUBULAR SCREENING DETAILS

R-13-337