CHIPPEWA COUNTY ROAD COMMISSION

LITTLE RAPIDS RESTORATION
1 1/2 MILE ROAD RECONSTRUCTION

CHIPPEWA COUNTY, MICHIGAN
SUGAR ISLAND TOWNSHIP
T 47N, R 01E

RELEASED FOR CONSTRUCTION PLANS



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POB
BEGIN PROJECT
STA: 51□32
N: 631,762.76
E: 26,928,422.75

POE
END PROJECT
STA: 76□75
N: 631,808.23
E:26,930,957.94

PROJECT LOCATION MAP
SCALE: NONE

TITLE SHEET LEGEND

PROJECT LOCATION

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND THE 2011 MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

DESIGN SPEED 60 MPH
AADT 2000–5000

PAYNE & DOLAN
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CLIENT

LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	NTS

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

Project Number 490011

Asbuilt Plans

THE CLIENT AND OR OTHER RECIPIENTS AGREE TO THE FULLEST EXTENT PERMITTED BY LAW TO INDEMNIFY AND HOLD PAYNE AND DOLAN HARMLESS FOR ANY REUSE OF OR FROM CHANGES MADE TO THE ORIGINAL DRAWING OR DATA WITHOUT PRIOR WRITTEN CONSENT BY PAYNE AND DOLAN.

MDOT STANDARD DETAIL PLANS/DRAWINGS

GUARDRAIL, TYPE B, 8-FOOT POSTS	MDOT, R-60-I
GUARDRAIL APPROACH TERMINAL, TYPE 1B	MDOT, R-61-G
GUARDRAIL DEPARTING TERMINAL, TYPE B	MDOT, R-66-E
GUARDRAIL ANCHORAGE, BRIDGE	MDOT, R-67-F
SEEDING AND TREE PLANTING	MDOT, R-100-H
SUPERELEVATION AND PAVEMENT CROWNS (CCRC - MAX SUPERELEVATION 4%)	MDOT, R-107-H
TURBIDITY CURTAIN	MDOT EROSION AND SEDIMENT CONTROL MANUAL, E&S-1-A
RIPRAP	MDOT EROSION AND SEDIMENT CONTROL MANUAL, E&S-7-A
MULCH BLANKET AND HIGH VELOCITY MULCH BLANKET	MDOT EROSION AND SEDIMENT CONTROL MANUAL, E&S-33-A
TEMPORARY AND PERMANENT SEEDING	MDOT EROSION AND SEDIMENT CONTROL MANUAL, E&S-3-A
SILT FENCE	MDOT EROSION AND SEDIMENT CONTROL MANUAL, E&S-26-A
TYPICAL TRAFFIC CONTROL	MDOT, M0120 SERIES MDOT, M0130 SERIES MDOT, M0040 SERIES MDOT, M0110 SERIES MDOT, M0160 SERIES MDOT, M0170 SERIES
SIGN SUPPORTS	
STEEL POST, U-CHANNEL	MDOT, SIGN-200-D
MISCELLANEOUS SIGN DETAILS	MDOT, SIGN-740-B
MEDIAN BARRIER CONNECTION	MDOT, SIGN-720-B

MDOT SPECIAL PROVISIONS

SLOPE RESTORATION, NON-FREEWAY	12RC816(A265)
SLOPE RESTORATION, WETLAND	12DS816(C125)
DYNAMIC PILE TESTING	12DS705(E475)
STATIC LOAD TEST	12DS705(E575)
STEEL SHEET PILING, TEMPORARY, SPECIAL	12DS704(E020)
REFLECTIVE PANEL	12SP810(M)

GENERAL NOTES:

1. ALL EXISTING SIGNS IN THE RECONSTRUCTED AREA SHALL BE REMOVED.
2. NO EXISTING SIGNS SHALL BE SALVAGED AND RE-USED ON THE PROJECT.
3. WITHIN THE AREAS TO BE RECONSTRUCTED AND AREAS IMPACTED BY THE TEMPORARY ROAD ALL BRUSH, TREES AND TOPSOIL SHALL BE REMOVED PRIOR TO PLACING NEW MATERIAL.
4. RIVER BOTTOM TO BE CONTOURED TO WITHIN 18" OF PROPOSED PLAN GRADE.
5. SILT FENCE SHALL BE PLACED AROUND ALL STOCKPILE AREAS LOCATED OUTSIDE THE CONSTRUCTION LIMITS.
6. AT&T IS RESPONSIBLE FOR RELOCATING THEIR UTILITY LINES. CONTRACTOR WILL PROVIDE CONDUITS ACROSS BRIDGE.
7. CLOVERLAND ELECTRIC IS RESPONSIBLE FOR RELOCATING THEIR UTILITY POLES AND LINES. CONTRACTOR WILL PROVIDE CONDUITS ACROSS BRIDGE.

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1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

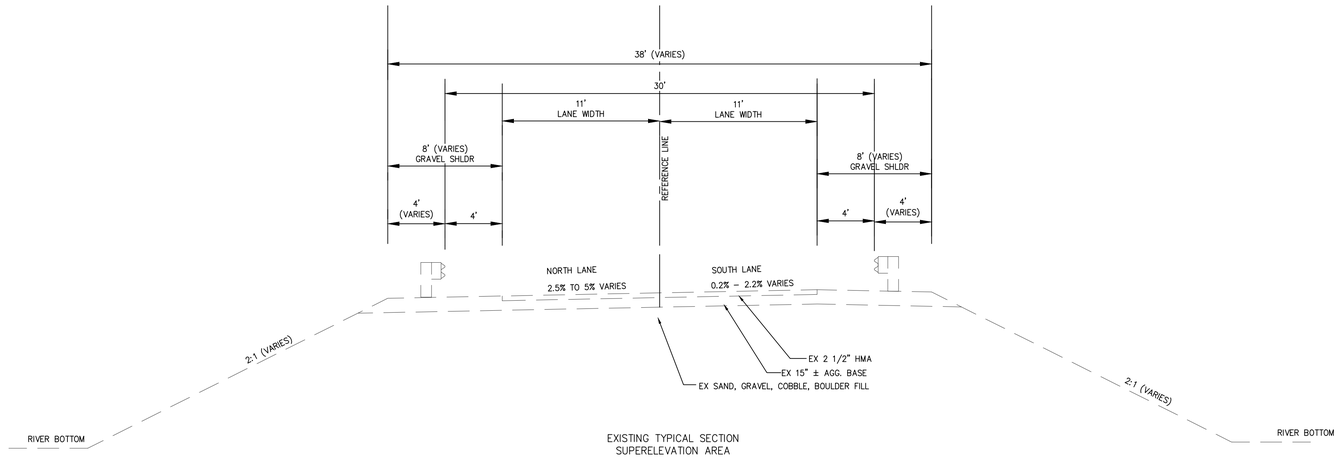
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ENGINEER:	BTS
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REVISION SCHEDULE

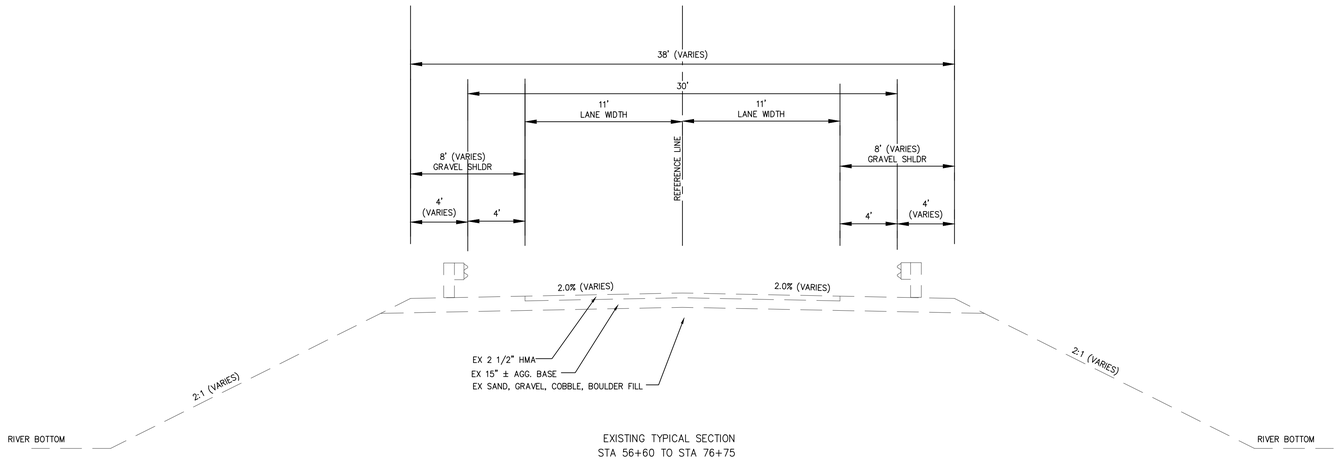
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NOTES



EXISTING TYPICAL SECTION
SUPERELEVATION AREA
STA 51+32 TO STA 56+60



EXISTING TYPICAL SECTION
STA 56+60 TO STA 76+75

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CHIPPEWA COUNTY
MICHIGAN

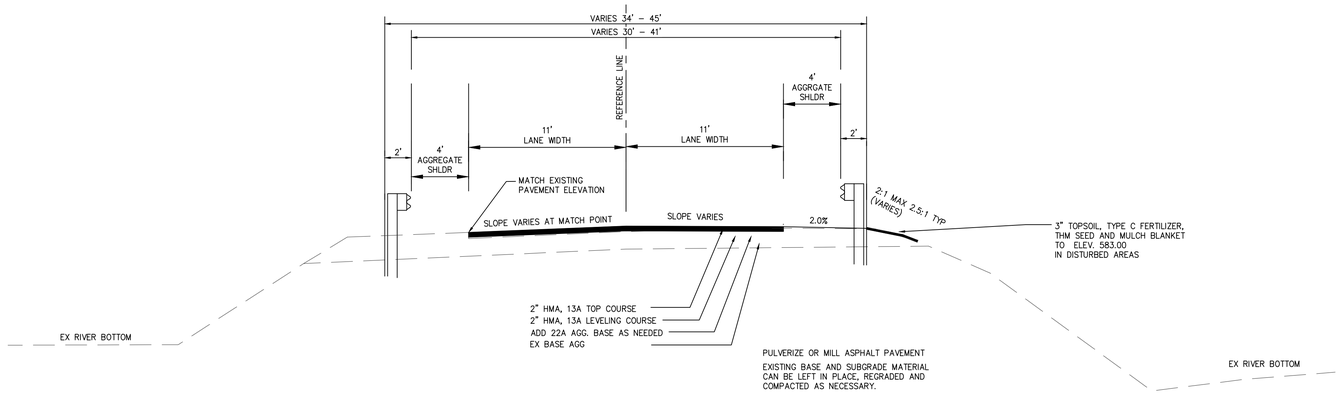
RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
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SCALE:	1" = 5' HOR. AND VER.

REVISION SCHEDULE		
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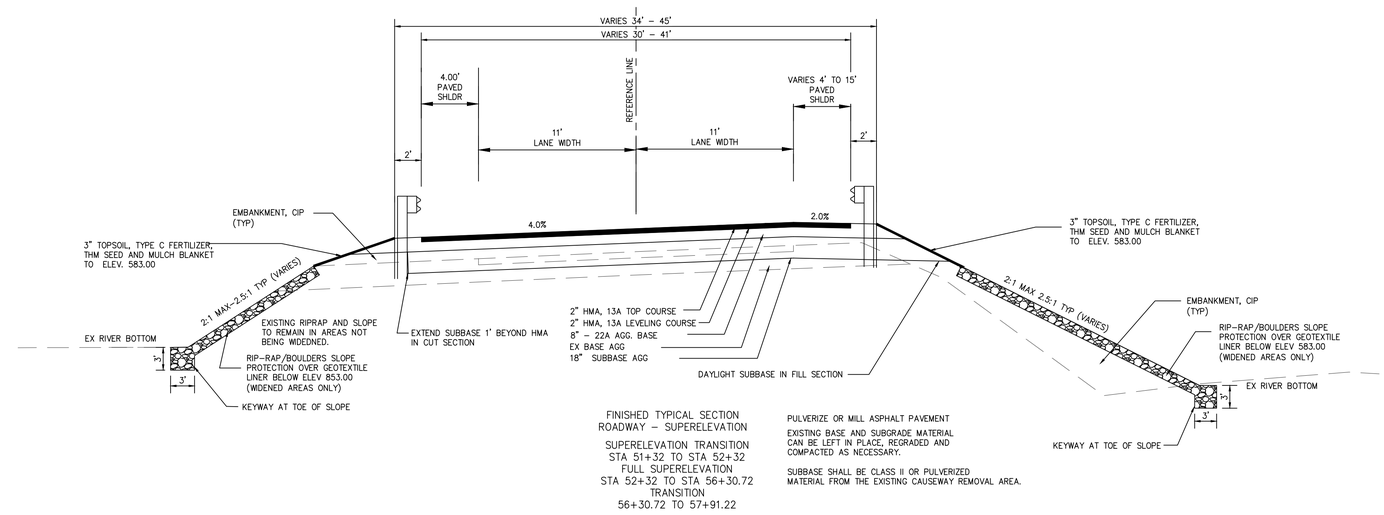
Project Number 490011

3-6 typical sections.dwg
5/3/2016



FINISHED TYPICAL SECTION
ROADWAY – SUPERELEVATION

SUPERELEVATION TRANSITION
STA 51+32 TO STA 52+32
FULL SUPERELEVATION
STA 52+32 TO STA 54+00



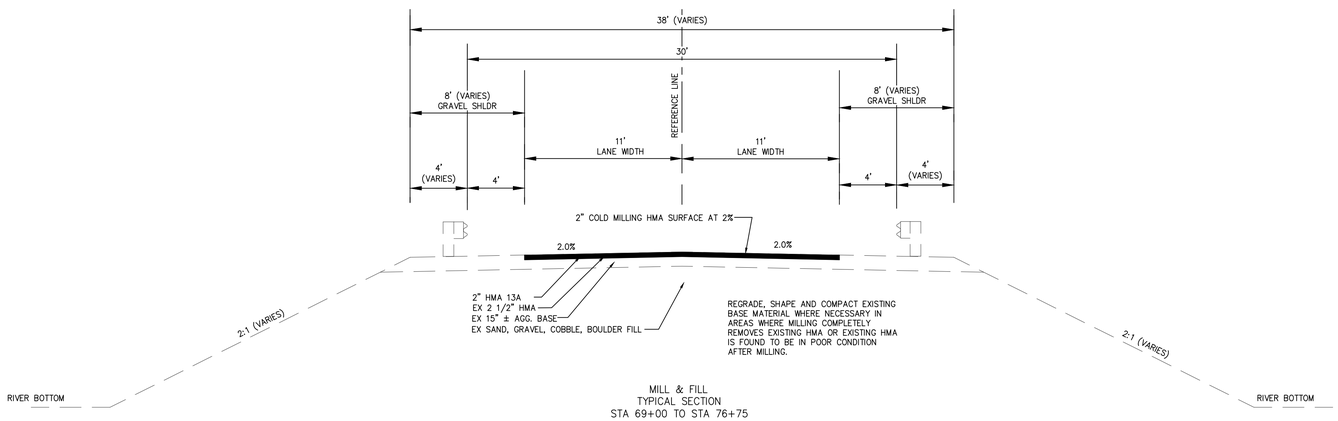
FINISHED TYPICAL SECTION
ROADWAY – SUPERELEVATION

SUPERELEVATION TRANSITION
STA 51+32 TO STA 52+32
FULL SUPERELEVATION
STA 52+32 TO STA 56+30.72
TRANSITION
56+30.72 TO 57+91.22

PULVERIZE OR MILL ASPHALT PAVEMENT

EXISTING BASE AND SUBGRADE MATERIAL CAN BE LEFT IN PLACE, REGRADED AND COMPACTED AS NECESSARY.

SUBBASE SHALL BE CLASS II OR PULVERIZED MATERIAL FROM THE EXISTING CAUSEWAY REMOVAL AREA.



MILL & FILL
TYPICAL SECTION
STA 69+00 TO STA 76+75

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CHIPPEWA COUNTY
MICHIGAN

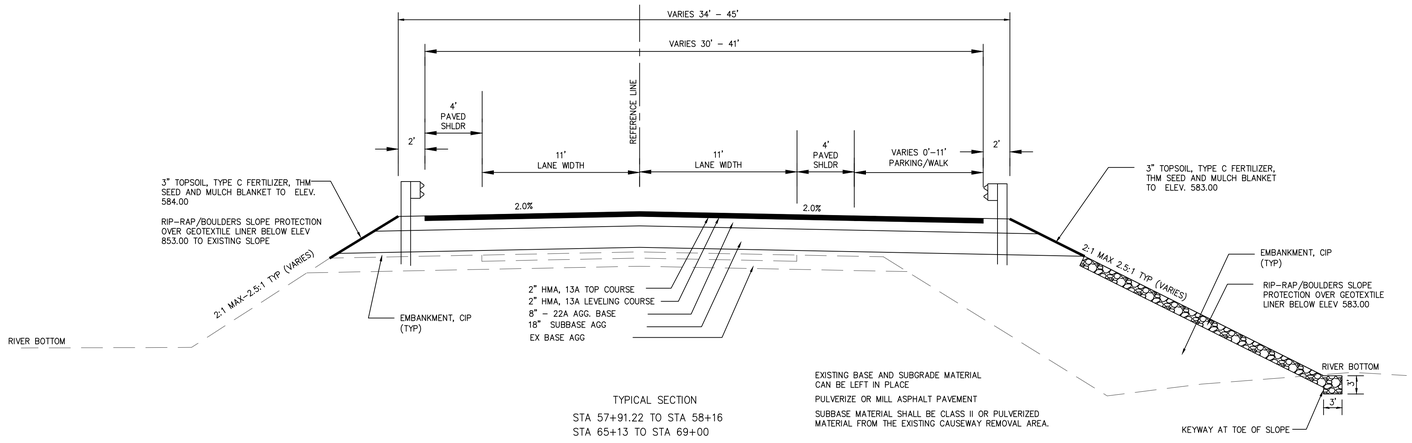
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3–6 typical sections.dwg
5/3/2016

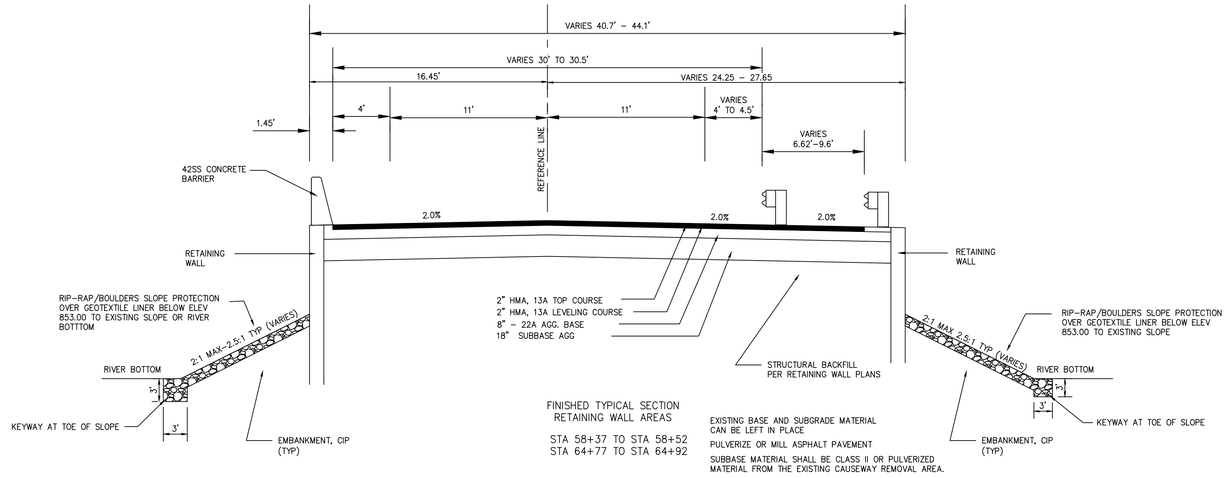


TYPICAL SECTION
STA 57+91.22 TO STA 58+16
STA 65+13 TO STA 69+00

EXISTING BASE AND SUBGRADE MATERIAL CAN BE LEFT IN PLACE

PULVERIZE OR MILL ASPHALT PAVEMENT

SUBBASE MATERIAL SHALL BE CLASS II OR PULVERIZED MATERIAL FROM THE EXISTING CAUSEWAY REMOVAL AREA.



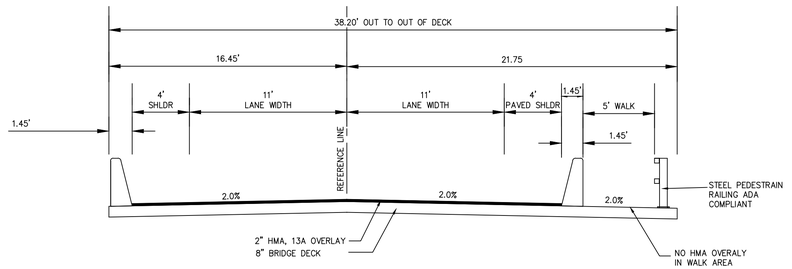
FINISHED TYPICAL SECTION
RETAINING WALL AREAS

STA 58+37 TO STA 58+52
STA 64+77 TO STA 64+92

EXISTING BASE AND SUBGRADE MATERIAL CAN BE LEFT IN PLACE

PULVERIZE OR MILL ASPHALT PAVEMENT

SUBBASE MATERIAL SHALL BE CLASS II OR PULVERIZED MATERIAL FROM THE EXISTING CAUSEWAY REMOVAL AREA.



FINISHED TYPICAL SECTION
BRIDGE
(SEE BRIDGE PLANS)
STA 58+52 TO STA 64+77

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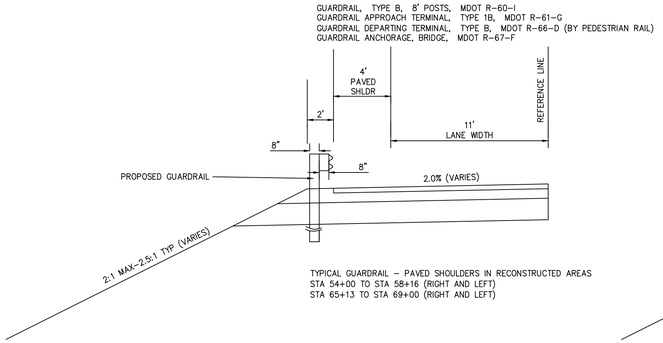
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RFC ROADWAY PLANS

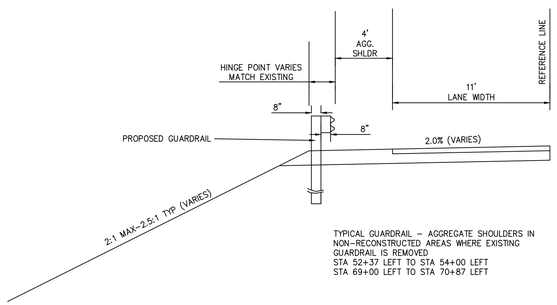
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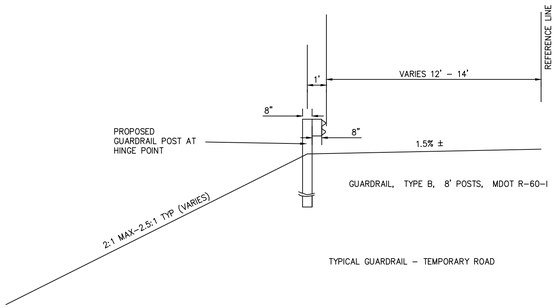
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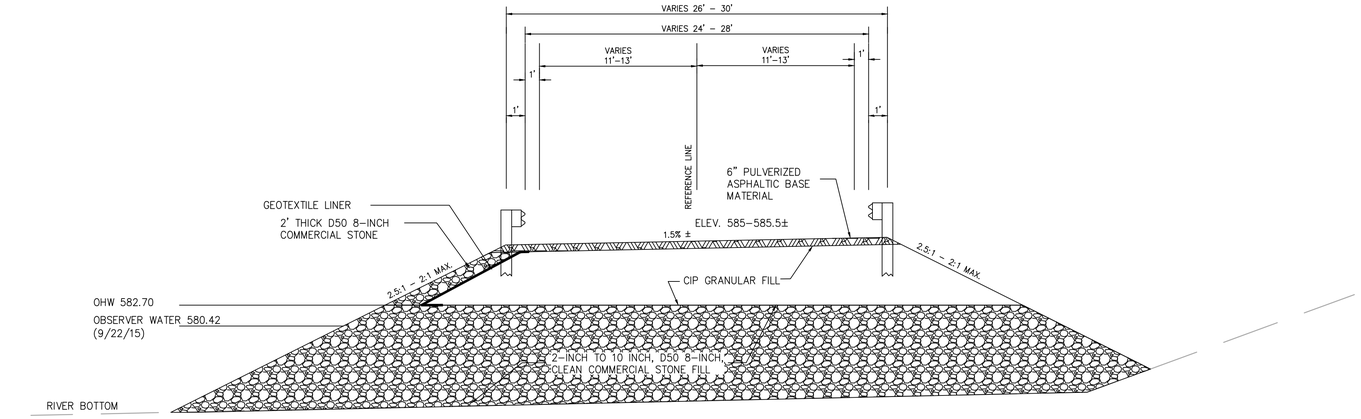
TYPICAL GUARDRAIL – PAVED SHOULDERS IN RECONSTRUCTED AREAS
STA 54+00 TO STA 58+16 (RIGHT AND LEFT)
STA 65+13 TO STA 69+00 (RIGHT AND LEFT)



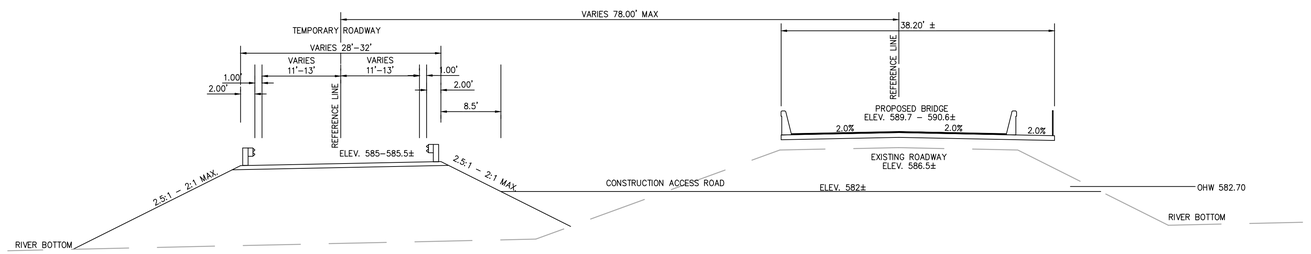
TYPICAL GUARDRAIL – AGGREGATE SHOULDERS IN NON-RECONSTRUCTED AREAS WHERE EXISTING GUARDRAIL IS REMOVED
STA 52+37 LEFT TO STA 54+00 LEFT
STA 69+00 LEFT TO STA 70+87 LEFT



TYPICAL GUARDRAIL – TEMPORARY ROAD



TEMPORARY ROADWAY



TEMPORARY ROADWAY AND CONSTRUCTION ACCESS ROAD

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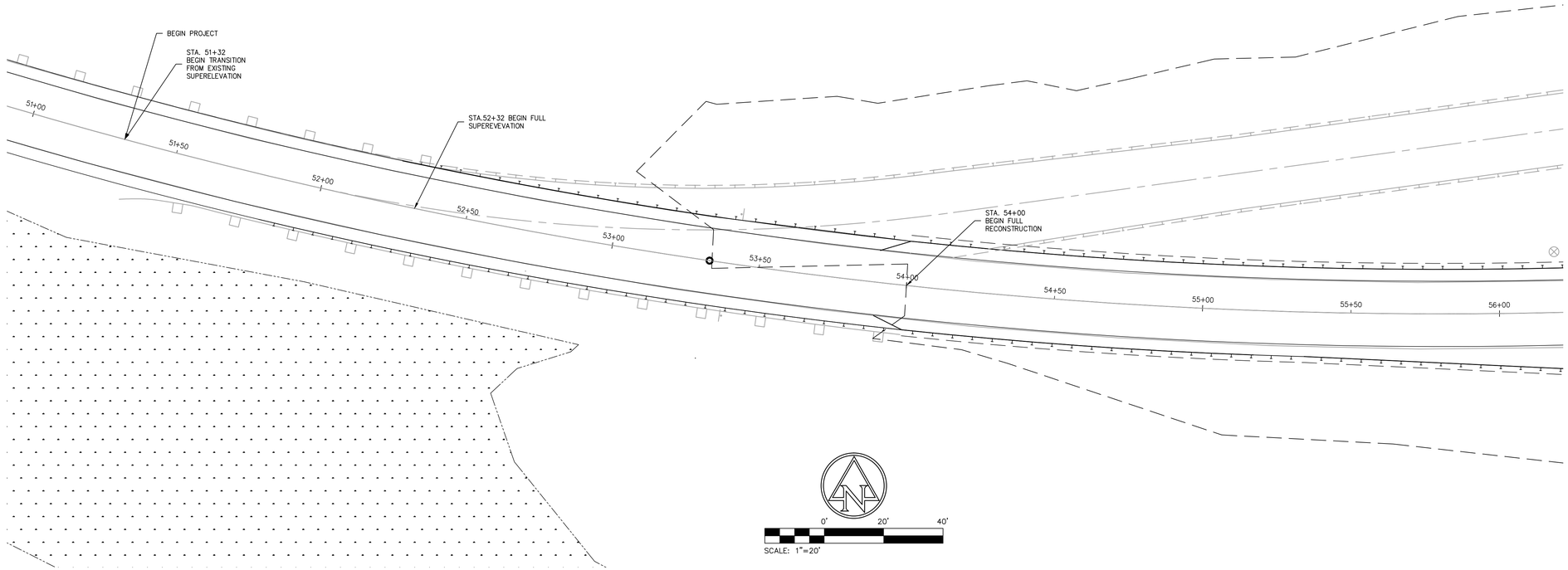
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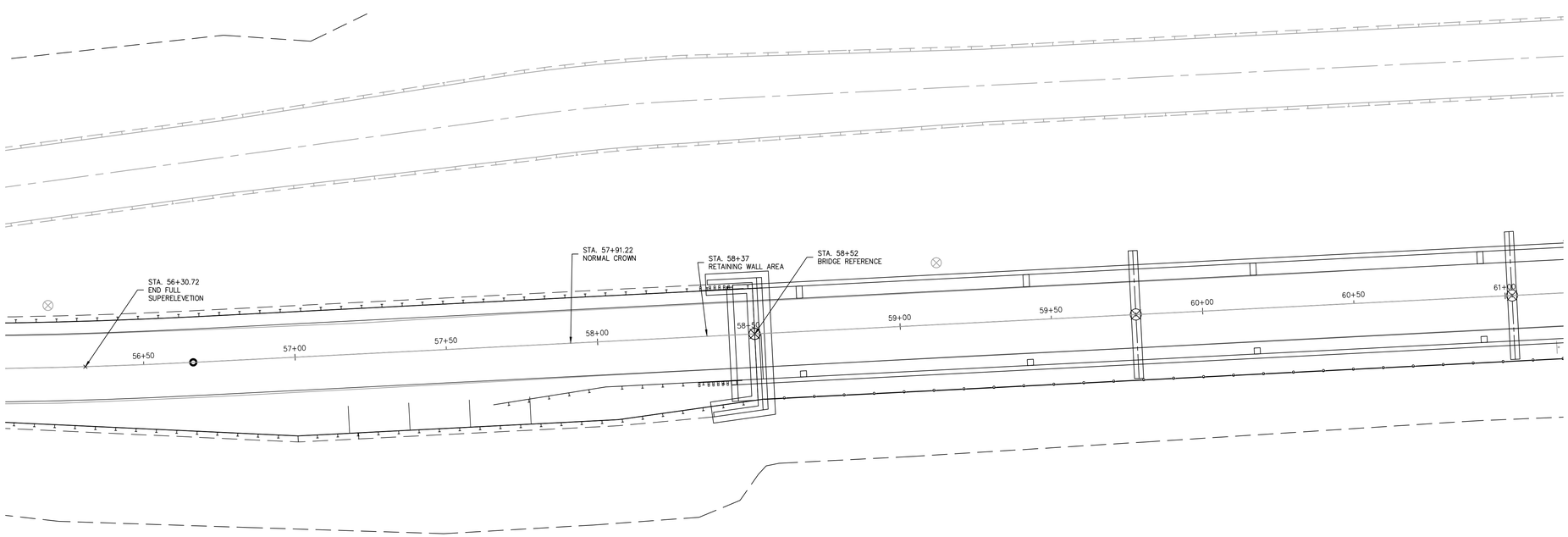
RFC ROADWAY PLANS

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RFC ROADWAY PLANS

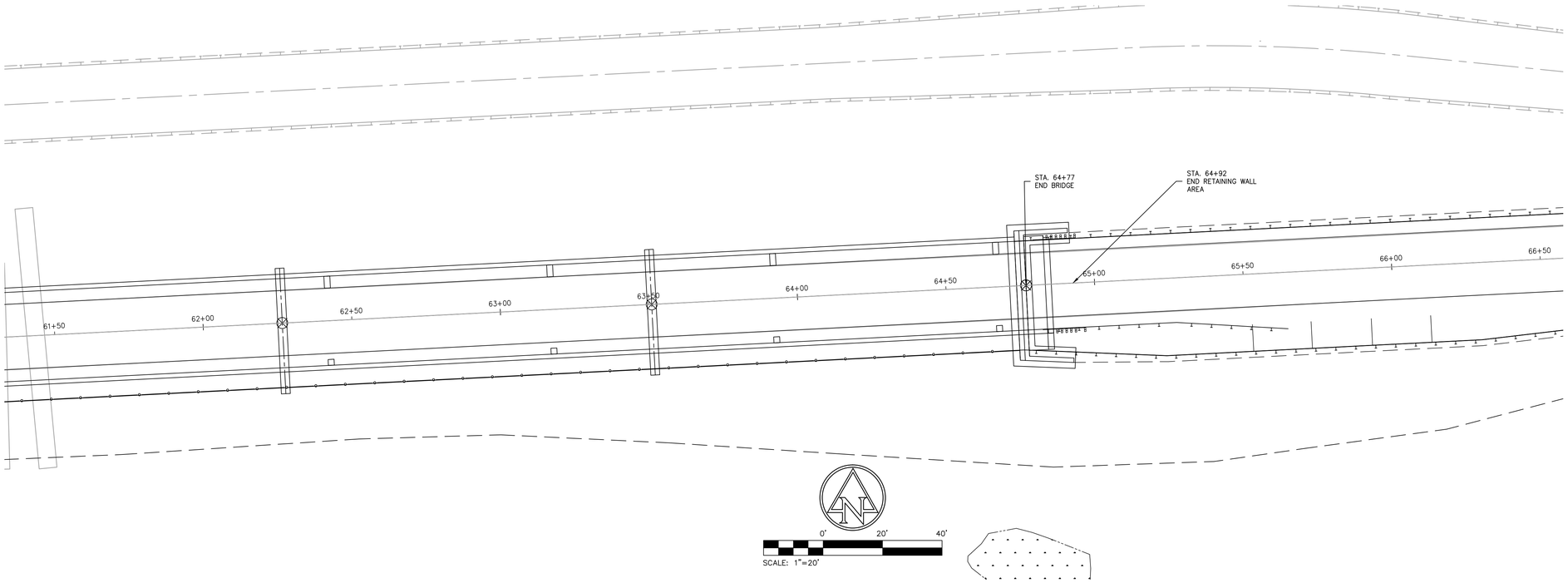
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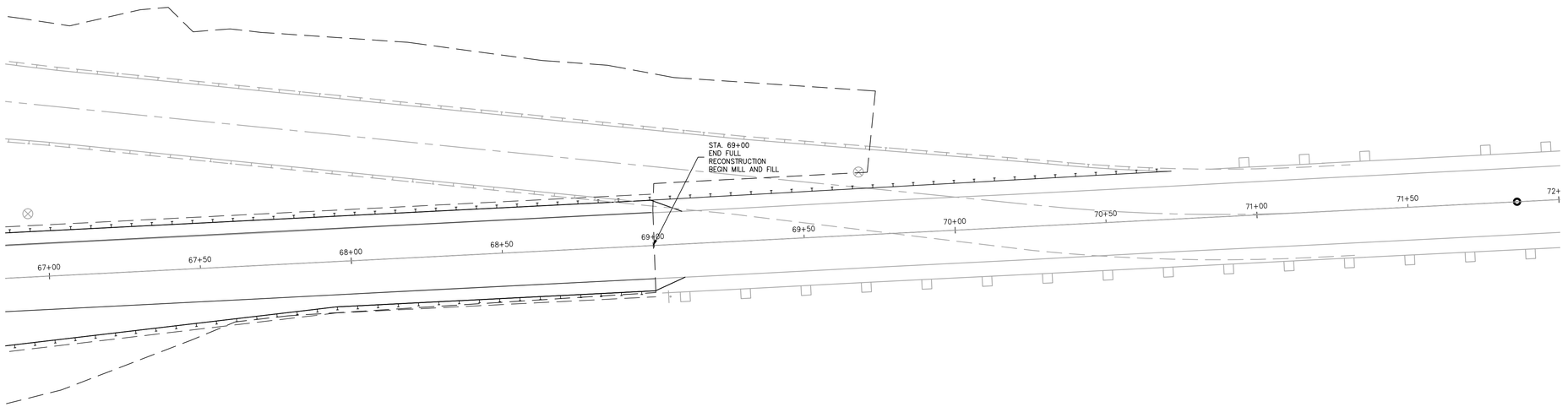
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STATION DETAIL

7-9 station detail.dwg
5/3/2016





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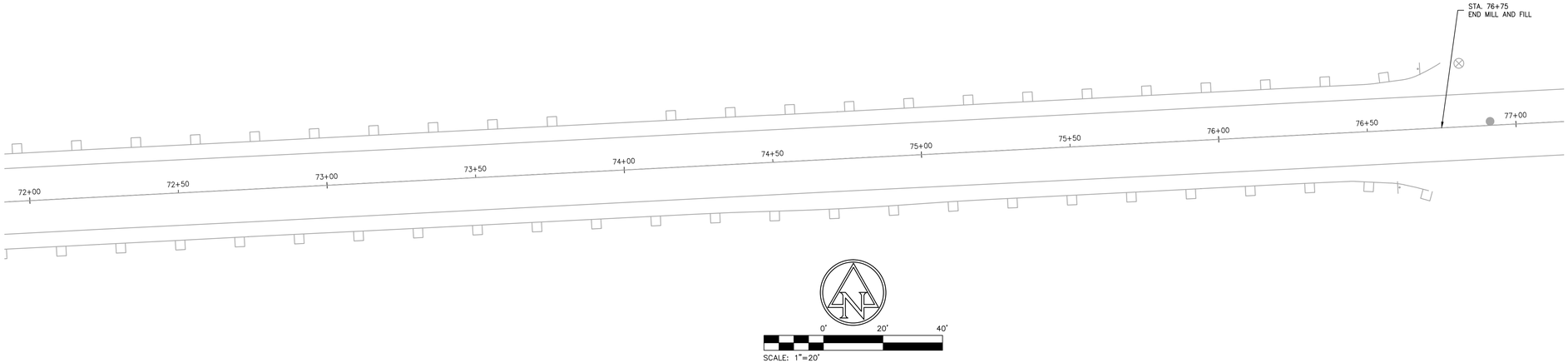
RFC ROADWAY PLANS

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STATION DETAIL



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MICHIGAN

RFC ROADWAY PLANS

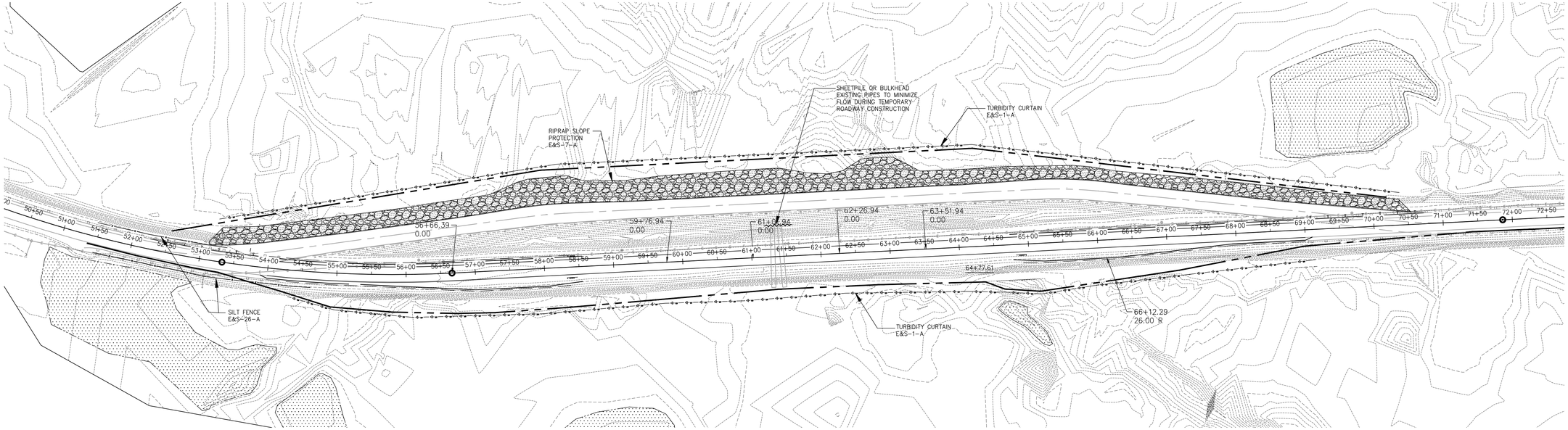
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SCALE:	1" = 20'

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STATION DETAIL

7-9 station detail.dwg
5/3/2016



0' 75' 150'

SCALE: 1"=75'

LEGEND

RIPRAP SLOPE PROTECTION

SILT FENCE

TURBIDITY CURTAIN

NOTES:
1. CONTRACTOR TO PLACE SILT FENCE AROUND OFF SITE STOCK PILES.

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HABITAT
RESTORATION
1 1/2 MILE ROAD

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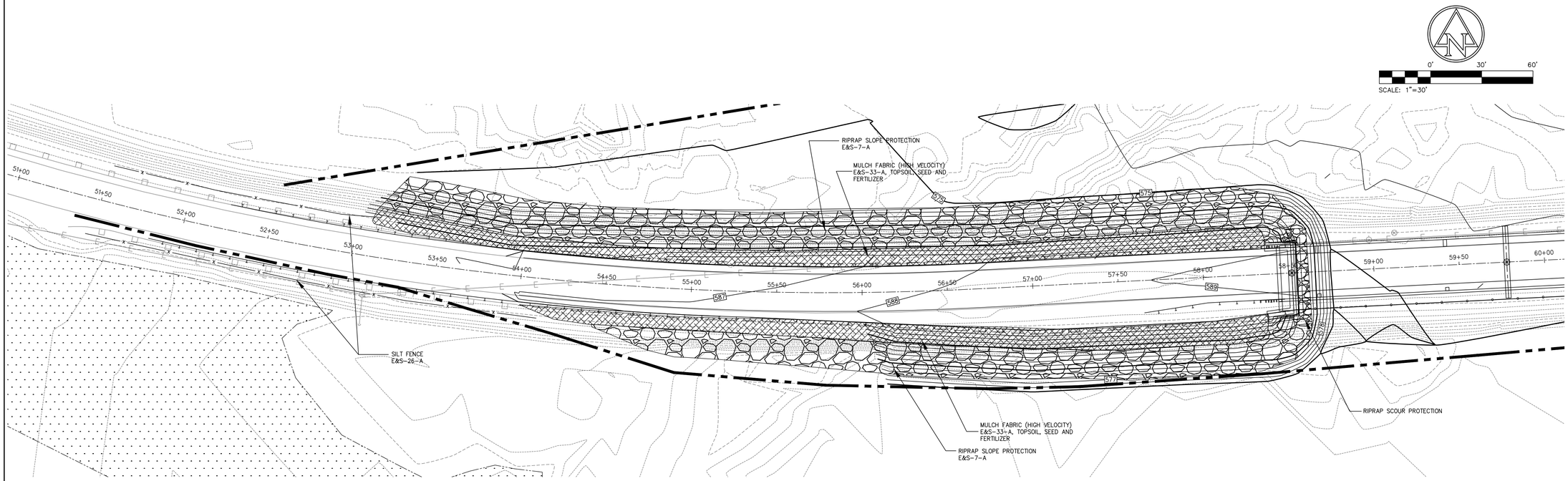
RFC ROADWAY
PLANS

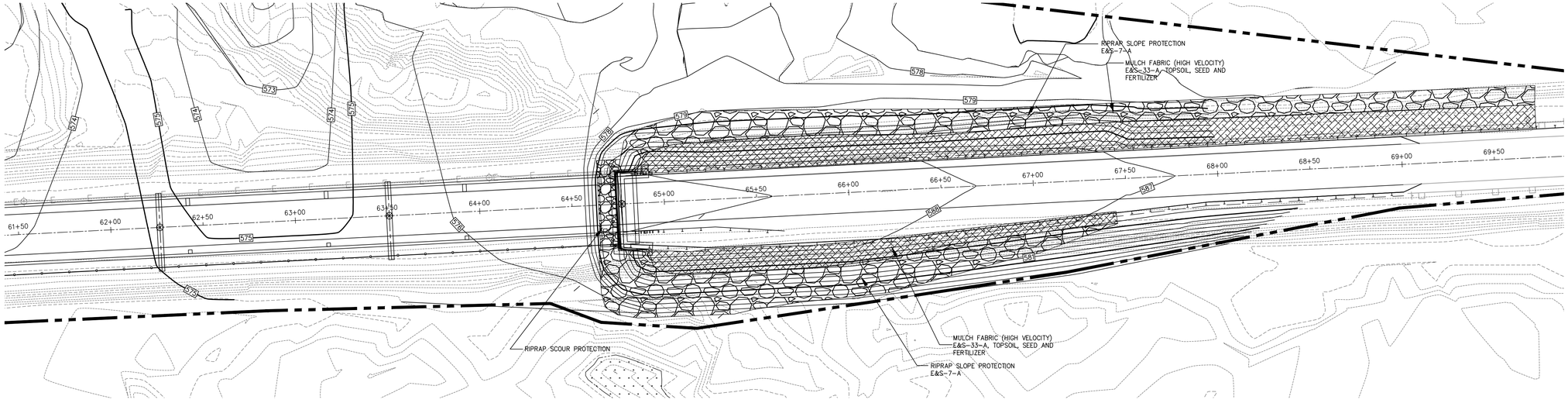
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EROSION CONTROL
TEMPORARY
ROADWAY





HEAVY RIP RAP OVER GEOTEXTILE LINER PER SECTION 803 OF THE STANDARD SPECIFICATIONS (MATERIALS TO COMPLY WITH MDEQ & USACE PERMITS)

HIGH VELOCITY MULCH BLANKET PER MDOT R-100 SERIES AND SECTION 803 OF THE STANDARD SPECIFICATIONS
3" TOPSOIL
THM SEED AND CLASS C FERTILIZER

———— x ———— x ———— SILT FENCE

11 EC PERMANENT.dwg
7/19/2016

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MICHIGAN

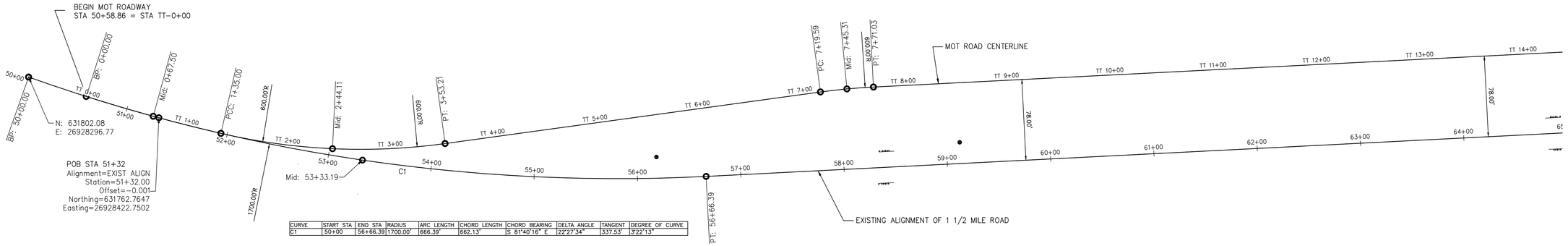
RFC ROADWAY PLANS

ADMINISTRATION	
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ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
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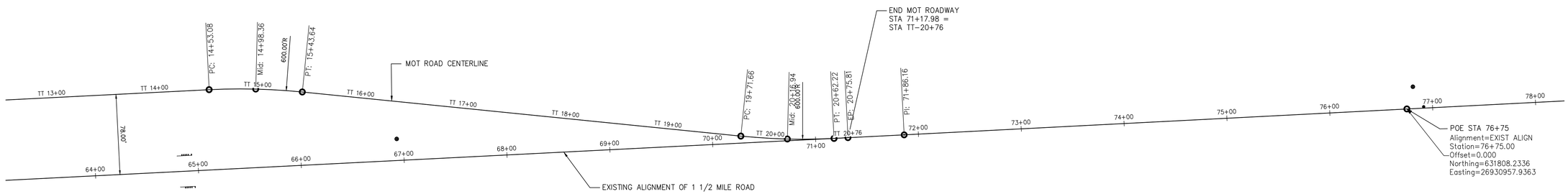
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

EROSION CONTROL PERMANENT SLOPE STABILIZATION



CURVE	START STA	END STA	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT	DEGREE OF CURVE
C1	50+00	56+66.39	1700.00'	666.39'	662.13'	S 81°40'16" E	22°27'34"	337.53'	3°22'13"



NOTE:
EXISTING ALIGNMENT ALONG 1 ½ MILE ROAD TO REMAIN

THE CLIENT AND OR OTHER RECIPIENTS AGREE TO THE FULLEST EXTENT PERMITTED BY LAW TO INDEMNIFY AND HOLD PAYNE AND DOLAN HARMLESS FOR ANY REUSE OF OR FROM CHANGES MADE TO THE ORIGINAL DRAWING OR DATA WITHOUT PRIOR WRITTEN CONSENT BY PAYNE AND DOLAN.

SCALE: 1"=50'

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www.paynedolan.com

CLIENT

LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

30% ROADWAY PLANS

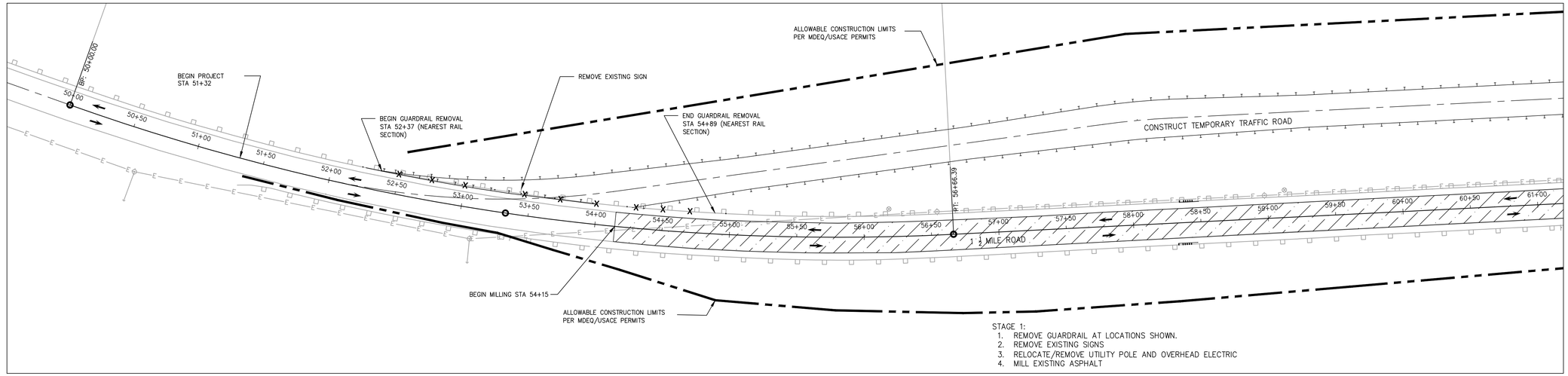
PRELIMINARY
NOT FOR
CONSTRUCTION

ADMINISTRATION	
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ENGINEER:	SPK
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 50'

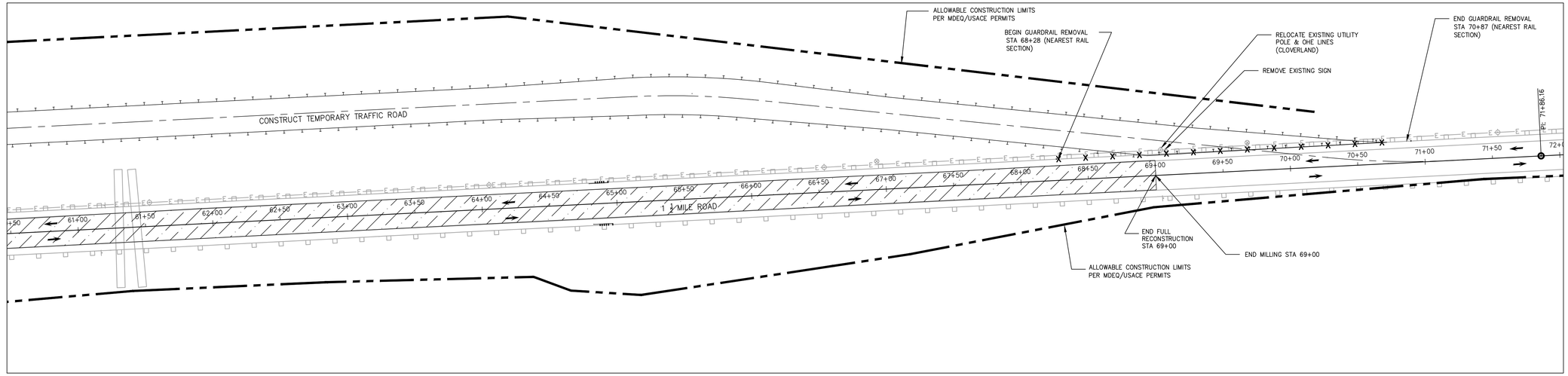
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

ALIGNMENT PLAN

12 alignment data.dwg
5/2/2016



STAGE 1:
1. REMOVE GUARDRAIL AT LOCATIONS SHOWN.
2. REMOVE EXISTING SIGNS
3. RELOCATE/REMOVE UTILITY POLE AND OVERHEAD ELECTRIC
4. MILL EXISTING ASPHALT



MILL EXISTING PAVEMENT (APPROXIMATLEY 2.5")

0' 40' 80'
SCALE: 1"=40'

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HIPPEWA COUNTY ROAD COMMISSION
CLIENT

LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

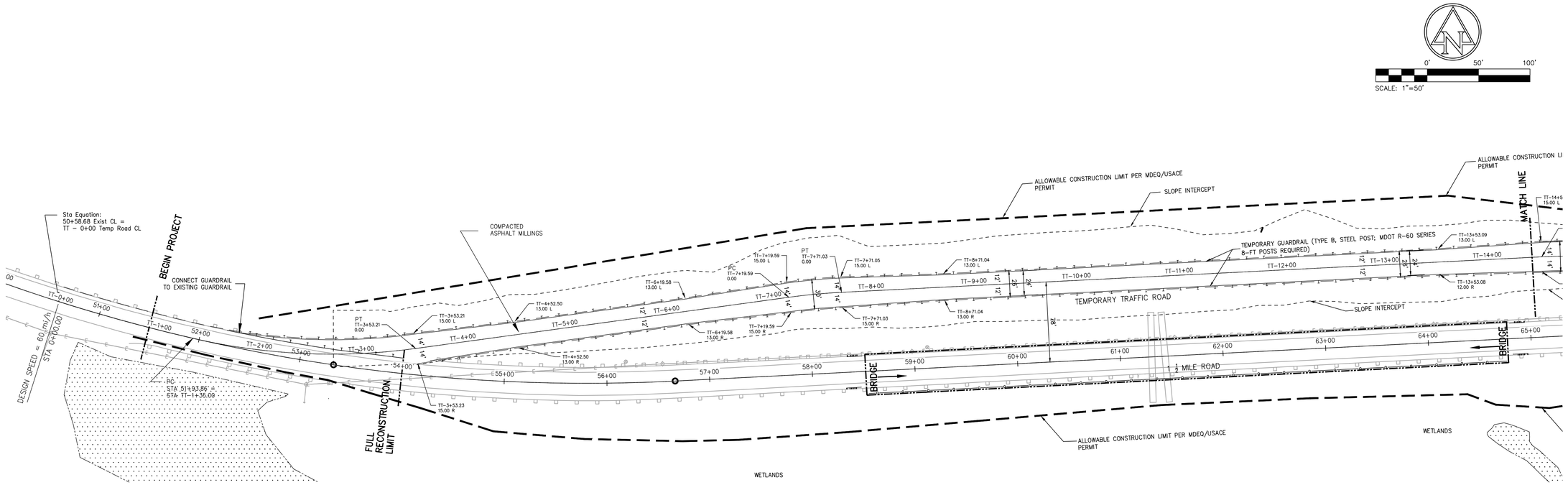
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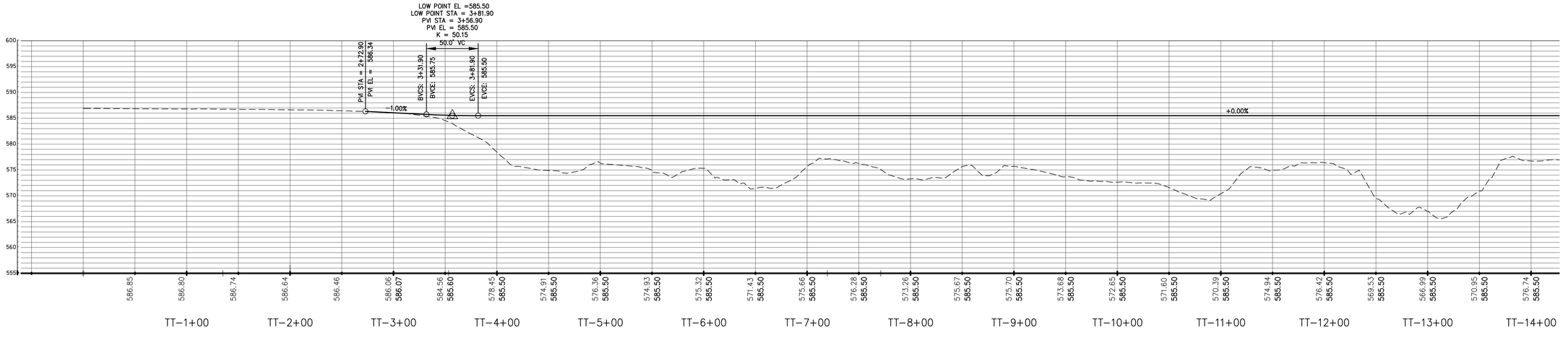
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 1
REMOVALS

13 Stage 1 Removals.dwg
5/2/2016





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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
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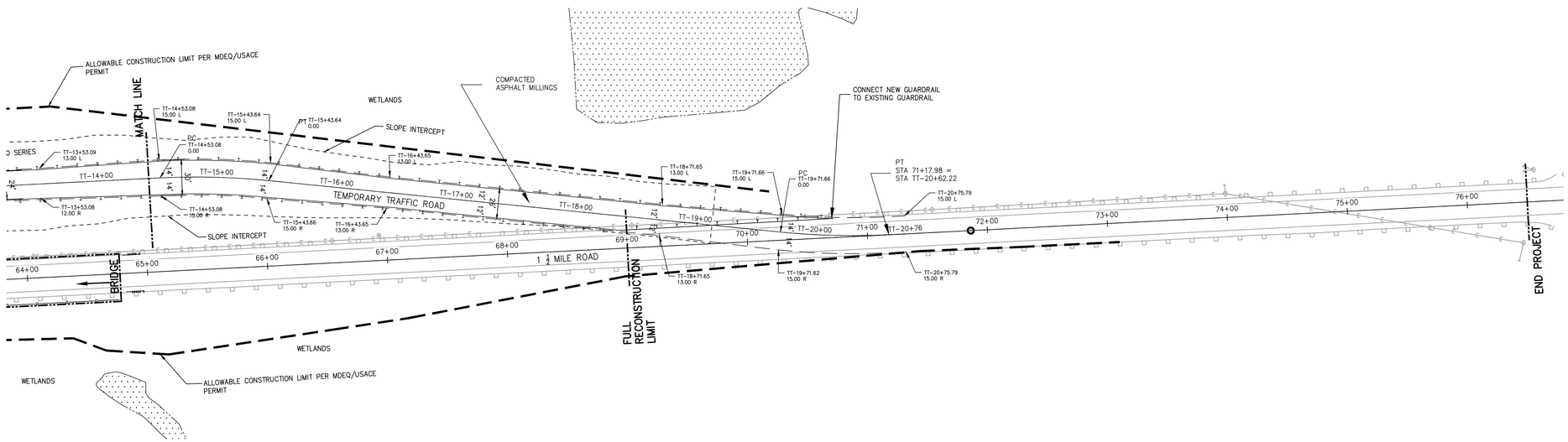
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NO.	DESCRIPTION	DATE

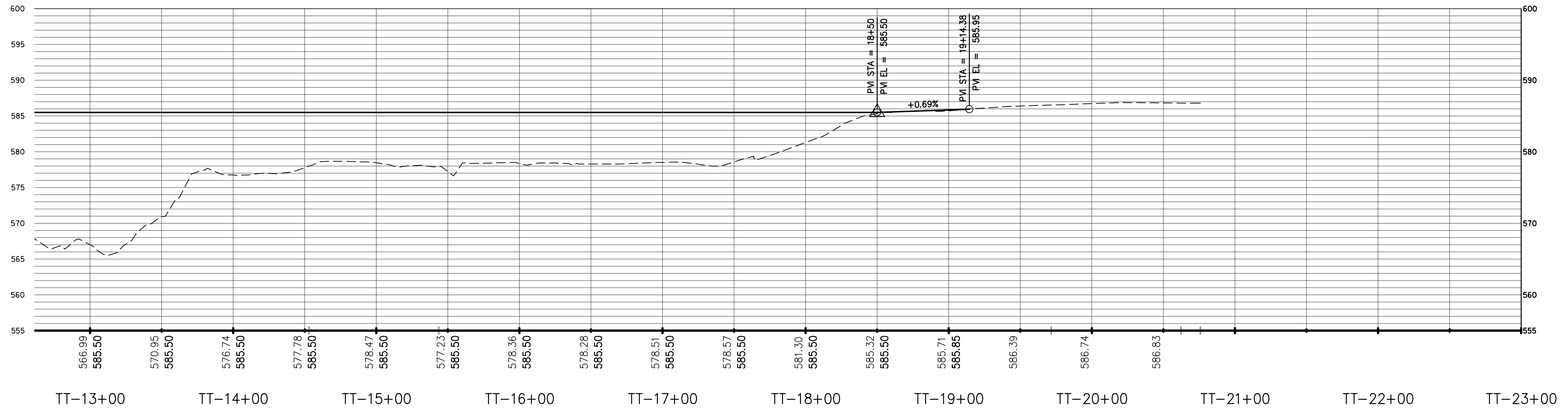
Project Number 490011

STAGE 1
PLAN & PROFILE
TEMPORARY TRAFFIC ROAD

THE LOCATIONS OF EXISTING UTILITY INSTALLATIONS AS SHOWN ON THIS PLAN ARE APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. CONTRACTORS SHALL MAKE THEIR OWN DETERMINATION AND VERIFY THE THE LOCATION OF UNDERGROUND UTILITIES.

THE CLIENT AND OR OTHER RECIPIENTS AGREE TO THE FULLEST EXTENT PERMITTED BY LAW TO INDEMNIFY AND HOLD PAYNE AND DOLAN HARMLESS FOR ANY REUSE OF OR FROM CHANGES MADE TO THE ORIGINAL DRAWING OR DATA WITHOUT PRIOR WRITTEN CONSENT BY PAYNE AND DOLAN.





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CLIENT

LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE: 1" = 50' HOR. 1" = 10' VER.	

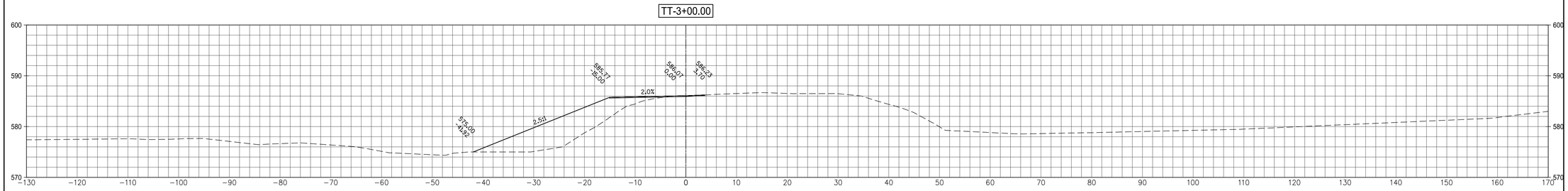
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NO.	DESCRIPTION	DATE

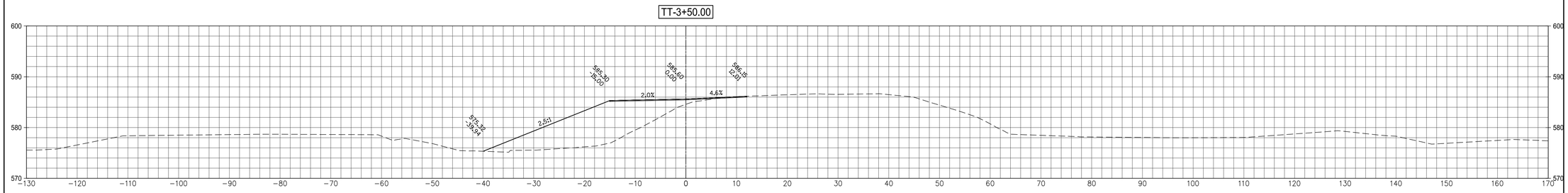
Project Number 490011

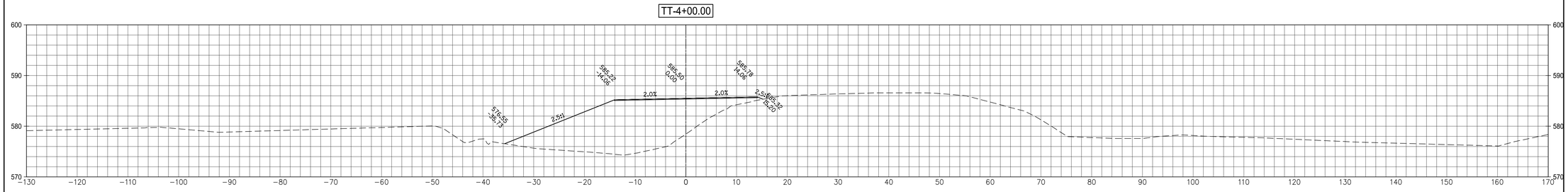
STAGE 1
PLAN & PROFILE
TEMOPRARY TRAFFIC
ROAD

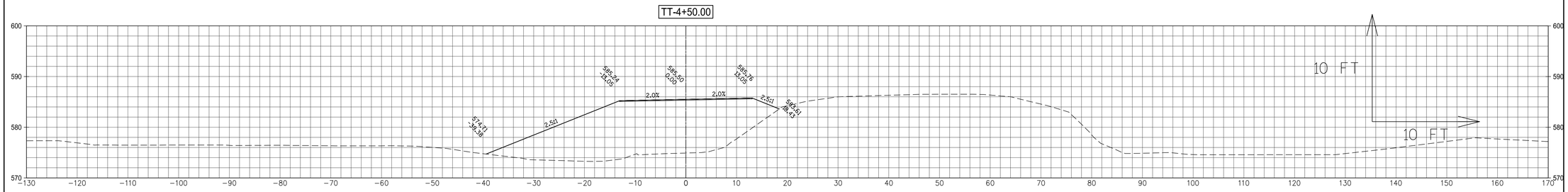
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CLIENT

LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

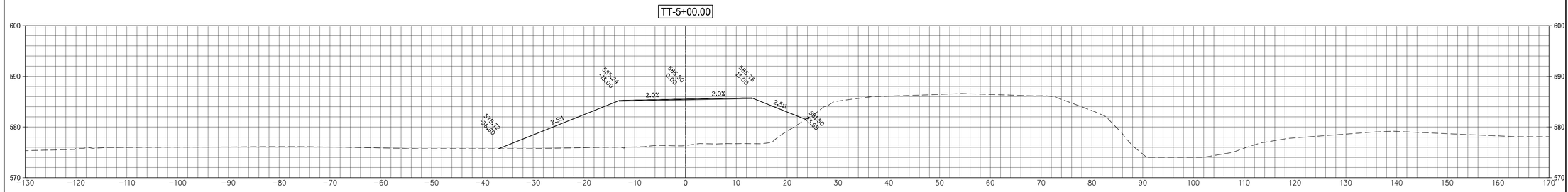
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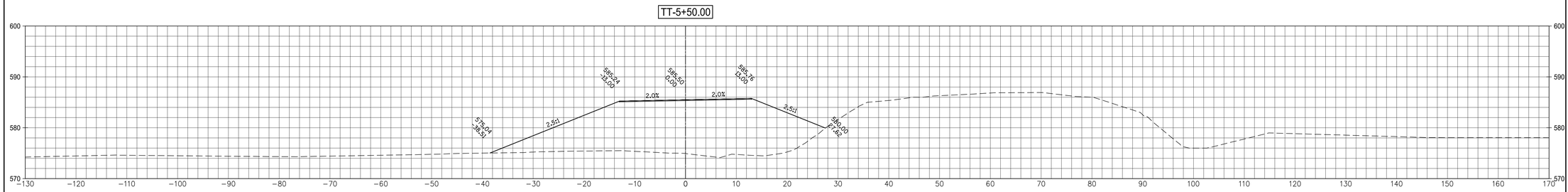
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NO.	DESCRIPTION	DATE

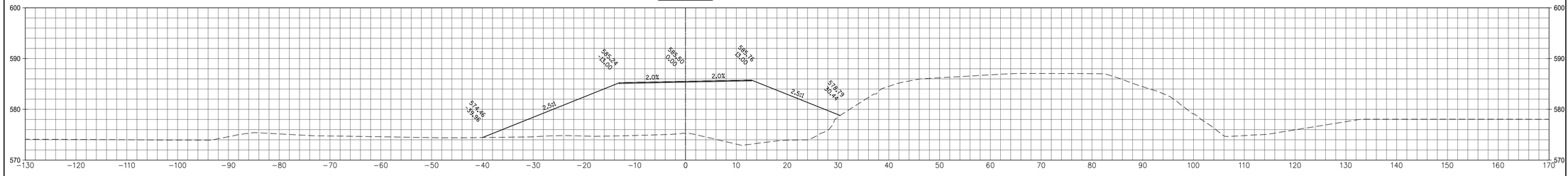
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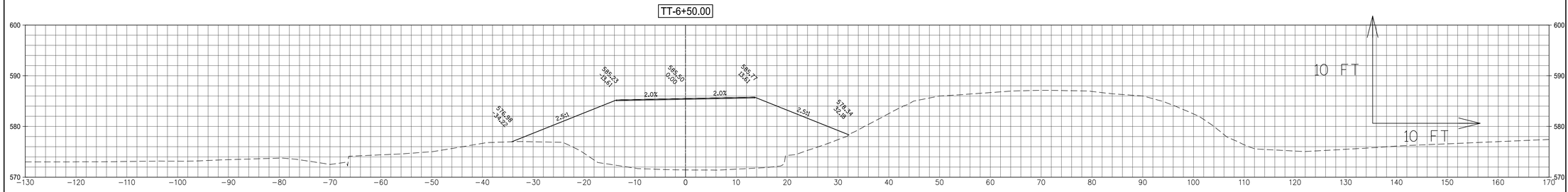
CROSS SECTIONS
TEMPORARY ROAD

16-24 TEMP ROAD XSEC2.dwg
5/2/2016









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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

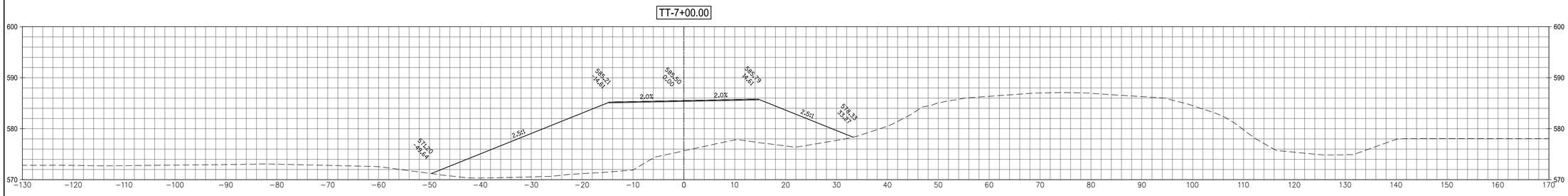
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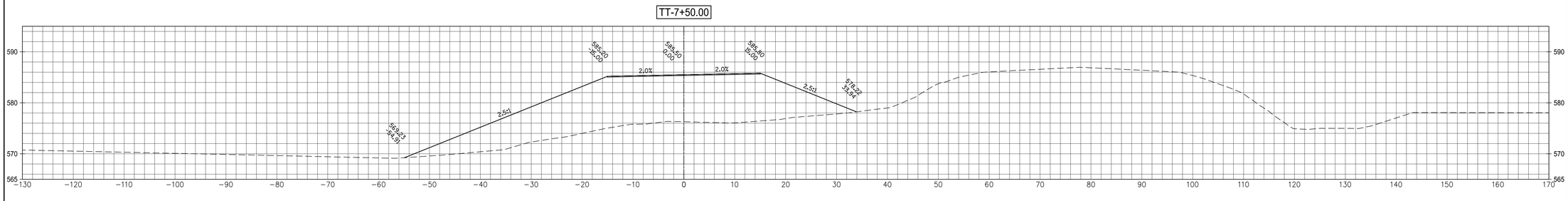
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NO.	DESCRIPTION	DATE

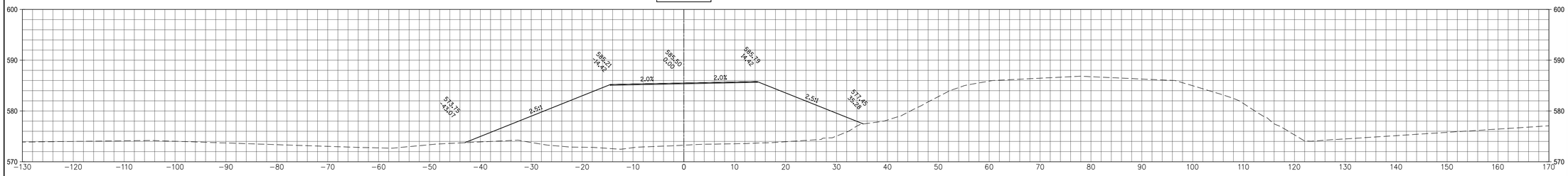
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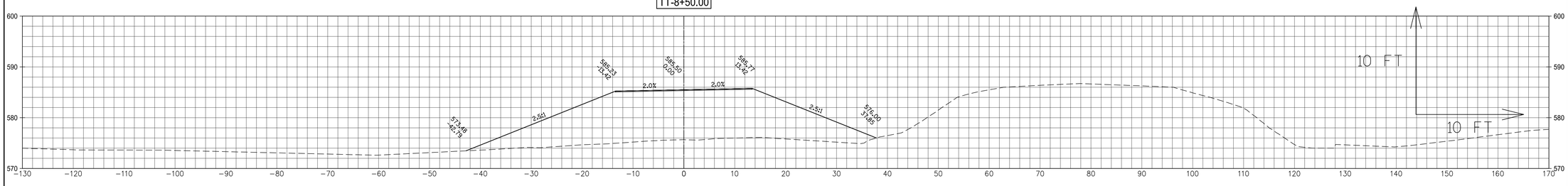
CROSS SECTIONS
TEMPORARY ROAD

16-24 TEMP ROAD XSEC2.dwg
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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

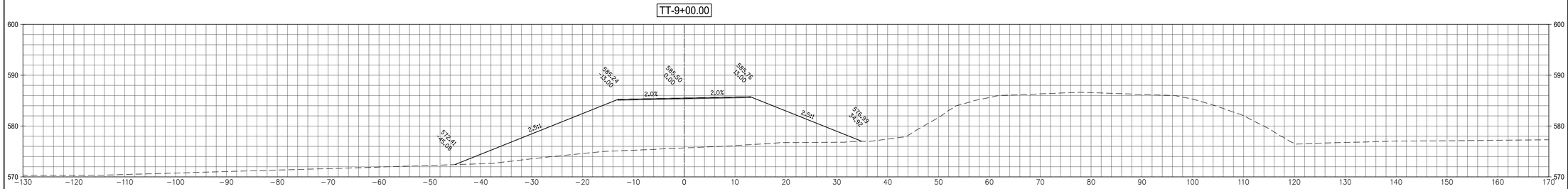
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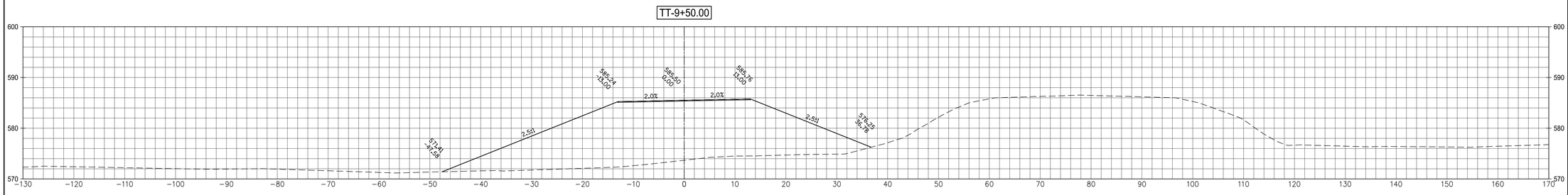
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NO.	DESCRIPTION	DATE

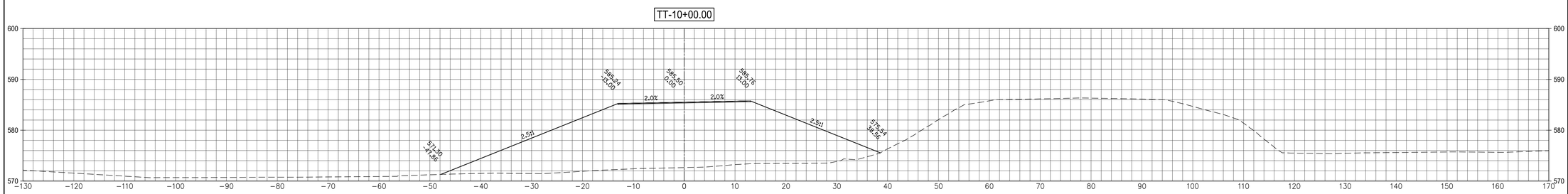
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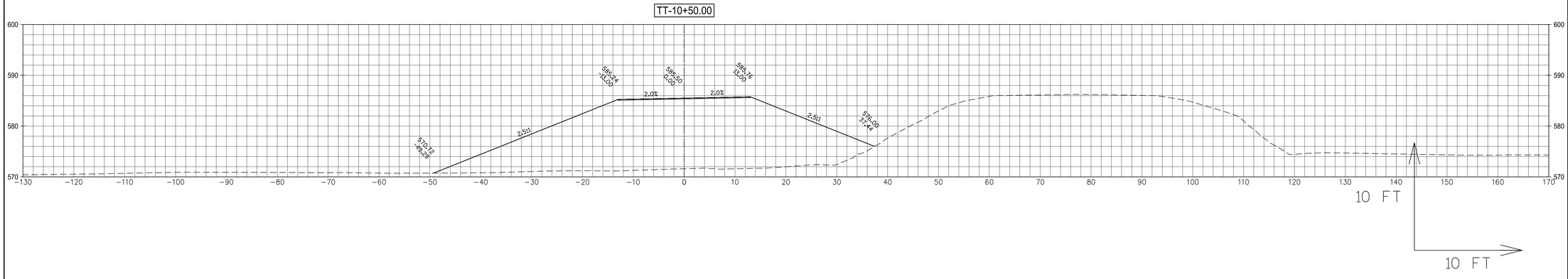
CROSS SECTIONS
TEMPORARY ROAD

16-24 TEMP ROAD XSEC2.dwg
5/2/2016









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HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
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CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

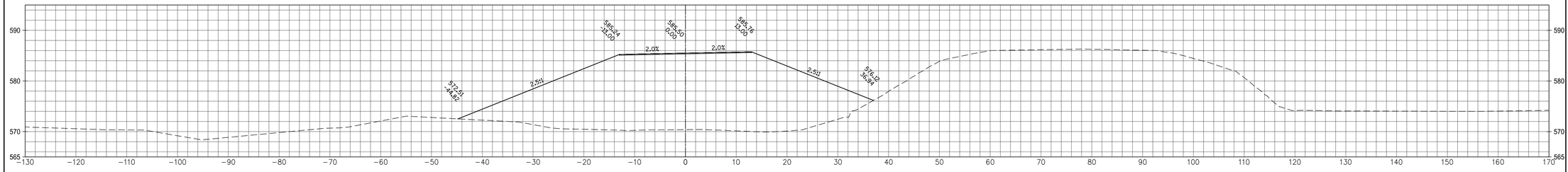
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NO.	DESCRIPTION	DATE

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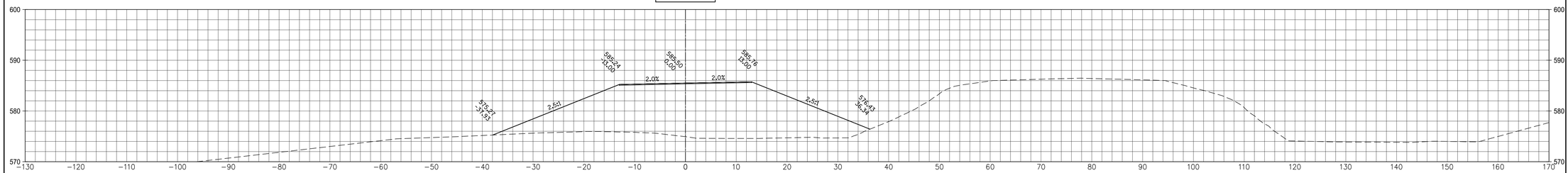
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TEMPORARY ROAD

16-24 TEMP ROAD XSEC2.dwg
5/2/2016

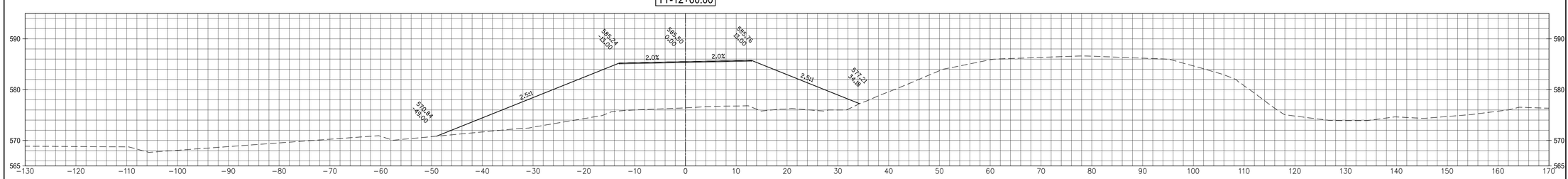
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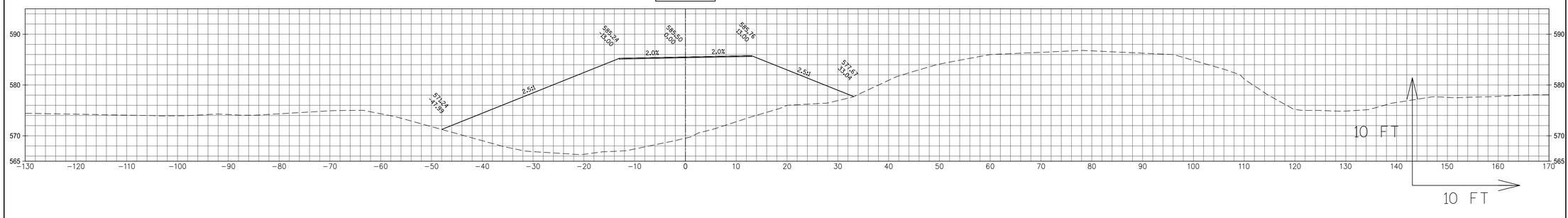
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TT-12+00.00



TT-12+50.00



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LITTLE RAPIDS
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1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

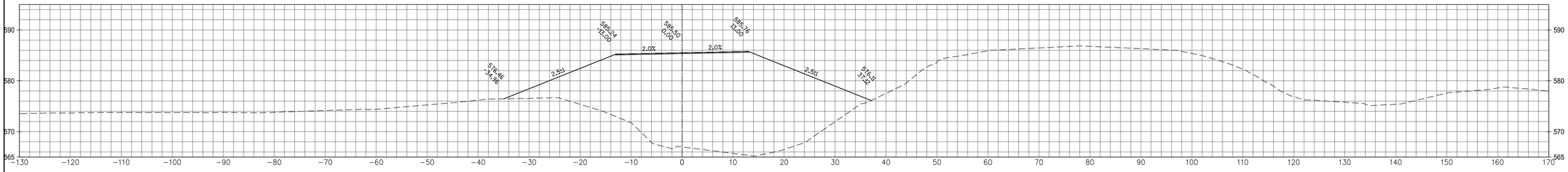
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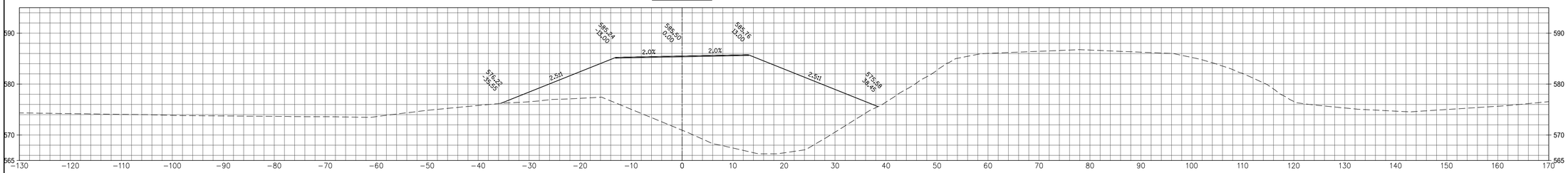
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16-24 TEMP ROAD XSEC2.dwg
5/2/2016

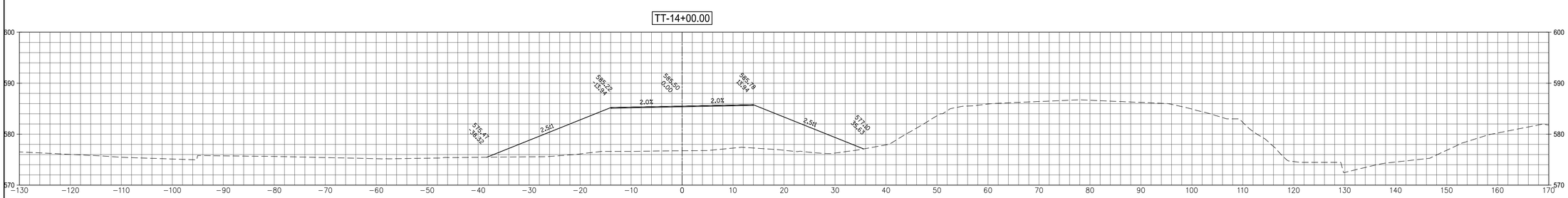
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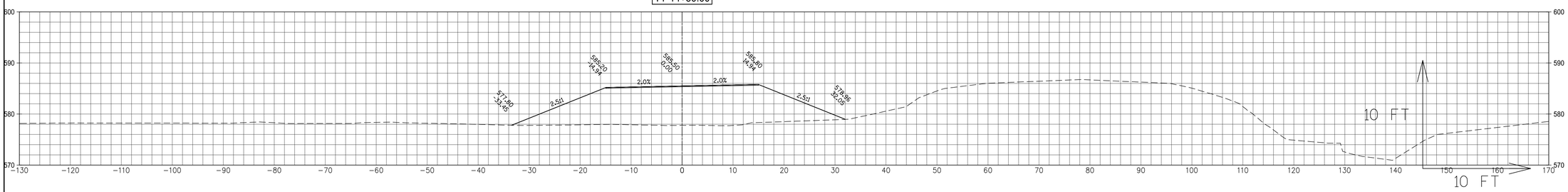
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TT-14+00.00



TT-14+50.00



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1 1/2 MILE ROAD

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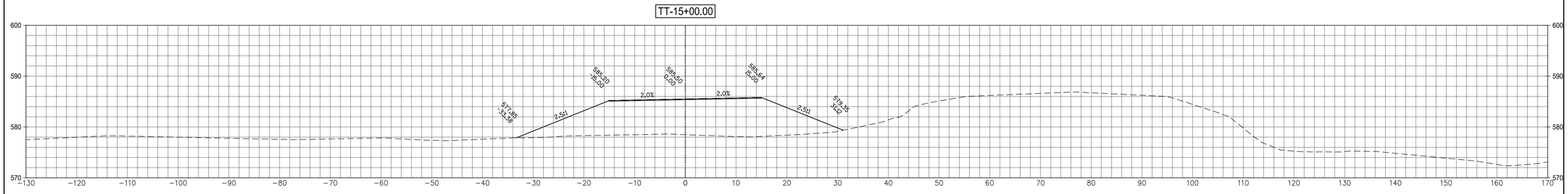
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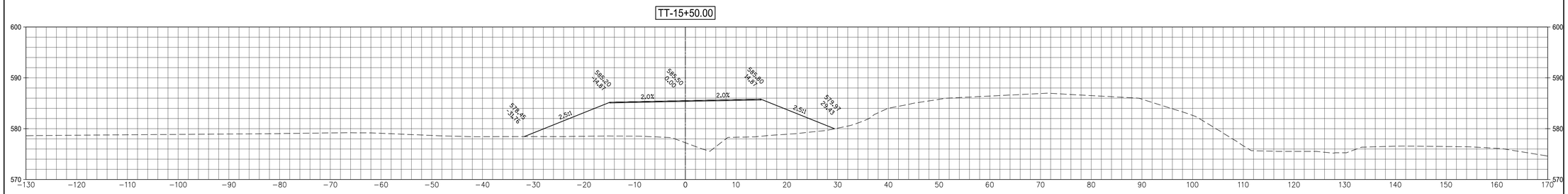
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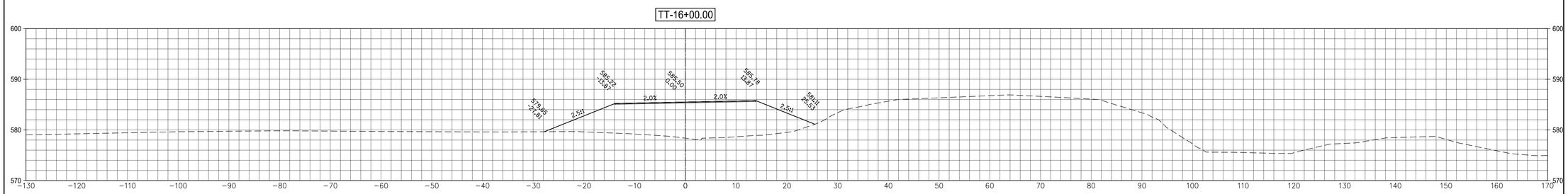
Project Number 490011

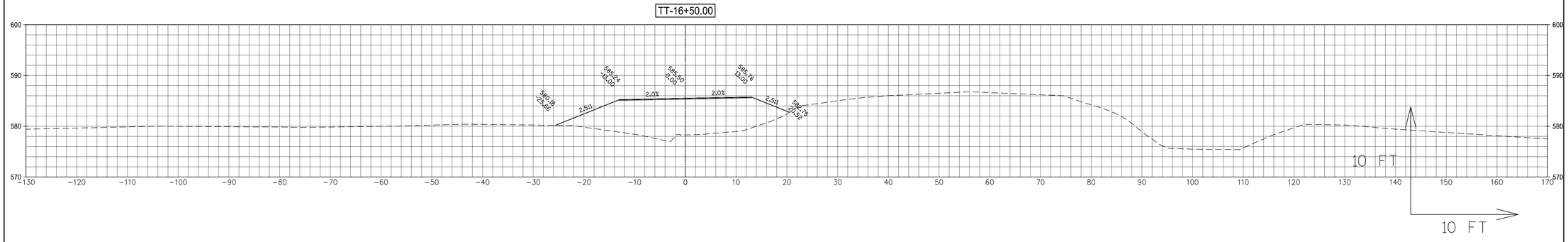
CROSS SECTIONS
TEMPORARY ROAD

16-24 TEMP ROAD XSEC2.dwg
5/2/2016









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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

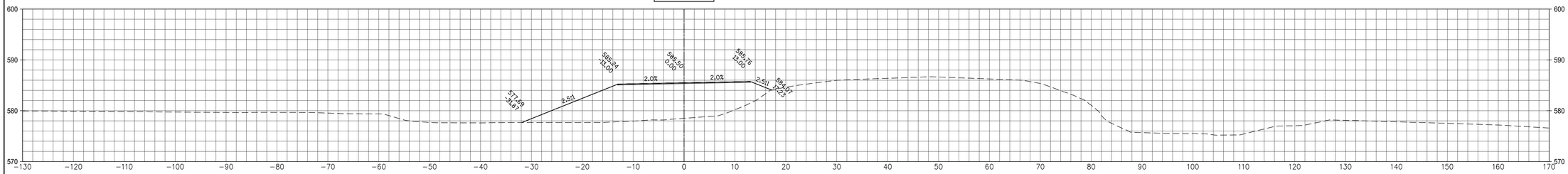
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

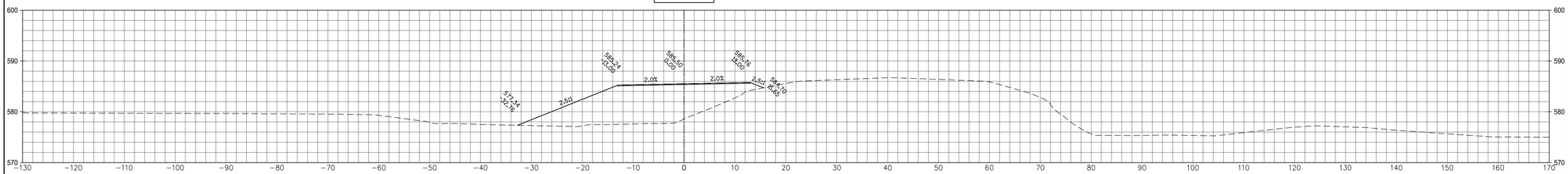
CROSS SECTIONS TEMPORARY ROAD

16-24 TEMP ROAD XSEC2.dwg
5/2/2016

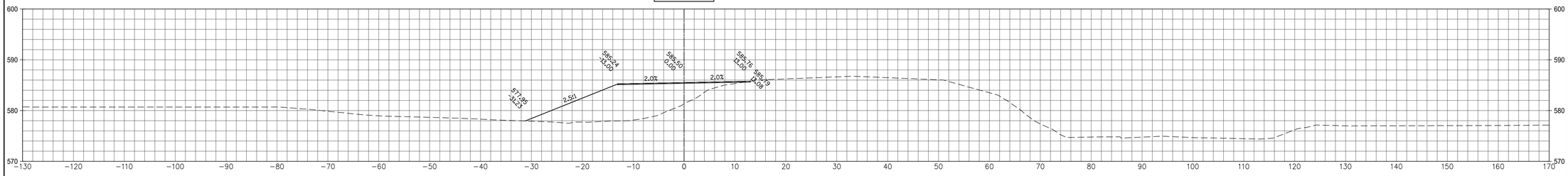
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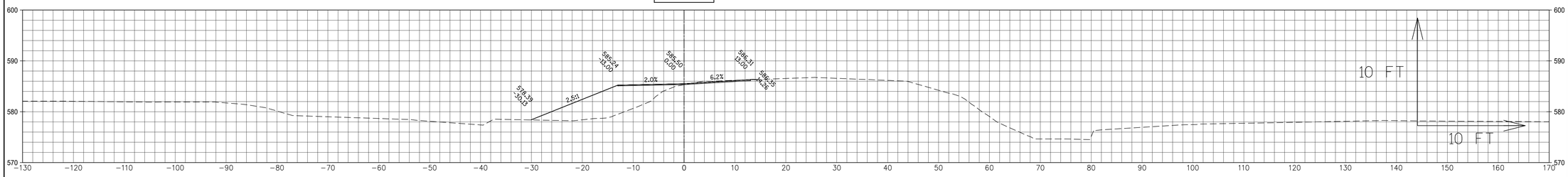
TT-17+50.00



TT-18+00.00



TT-18+50.00



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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

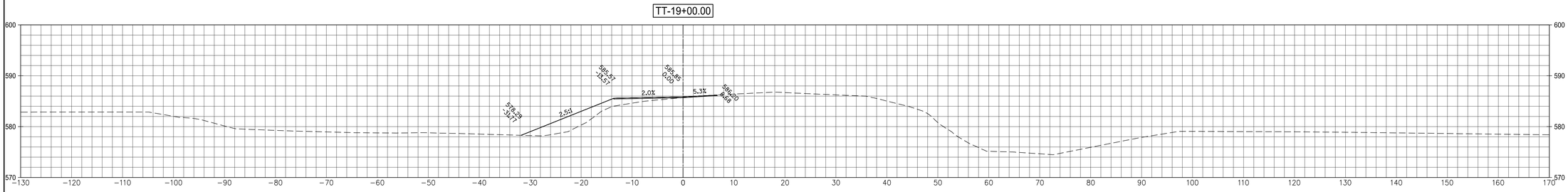
ADMINISTRATION	
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ENGINEER:	BTS
DRAWN BY:	SPK
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SCALE:	1" = 10' HOR. 1" = 10' VER.

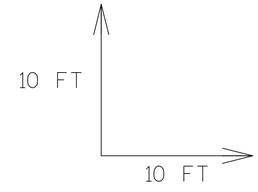
REVISION SCHEDULE		
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Project Number 490011

CROSS SECTIONS
TEMPORARY ROAD

16-24 TEMP ROAD XSEC2.dwg
5/2/2016





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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE: 1" = 10' HOR. 1" = 10' VER.	

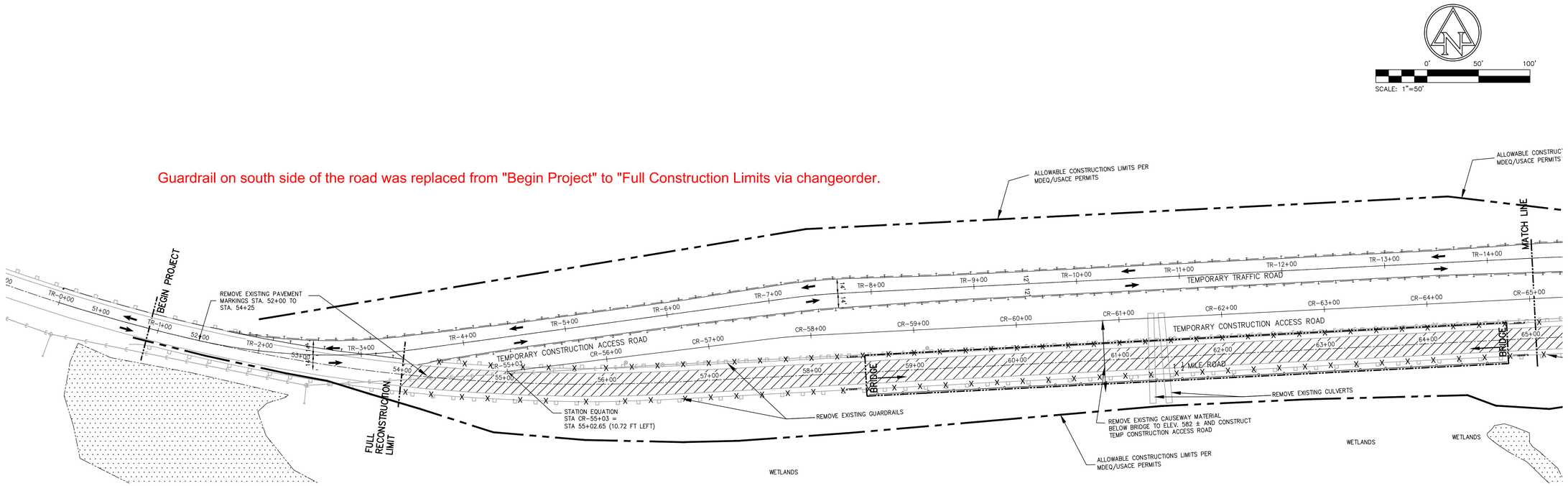
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

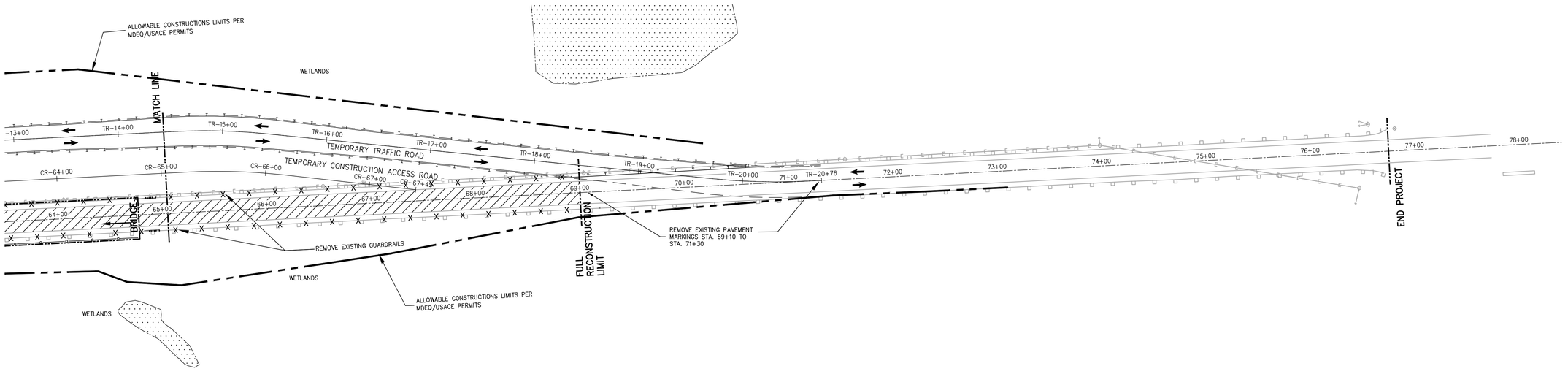
Project Number 490011

CROSS SECTIONS
TEMPORARY ROAD

16-24 TEMP ROAD XSEC2.dwg
5/2/2016

Guardrail on south side of the road was replaced from "Begin Project" to "Full Construction Limits via changeorder.





THE LOCATIONS OF EXISTING UTILITY INSTALLATIONS AS SHOWN ON THIS PLAN ARE APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. CONTRACTORS SHALL MAKE THEIR OWN DETERMINATION AND VERIFY THE THE LOCATION OF UNDERGROUND UTILITIES.

THE CLIENT AND OR OTHER RECIPIENTS AGREE TO THE FULLEST EXTENT PERMITTED BY LAW TO INDEMNIFY AND HOLD PAYNE AND DOLAN HARMLESS FOR ANY REUSE OF OR FROM CHANGES MADE TO THE ORIGINAL DRAWING OR DATA WITHOUT PRIOR WRITTEN CONSENT BY PAYNE AND DOLAN.

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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

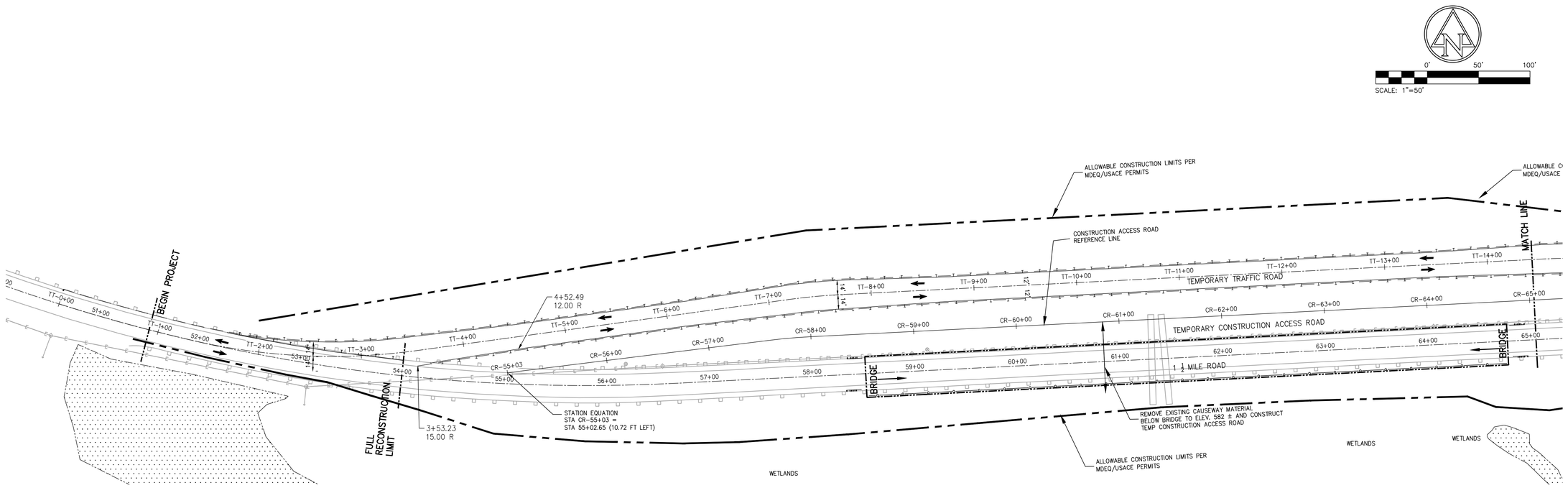
RFC ROADWAY
PLANS

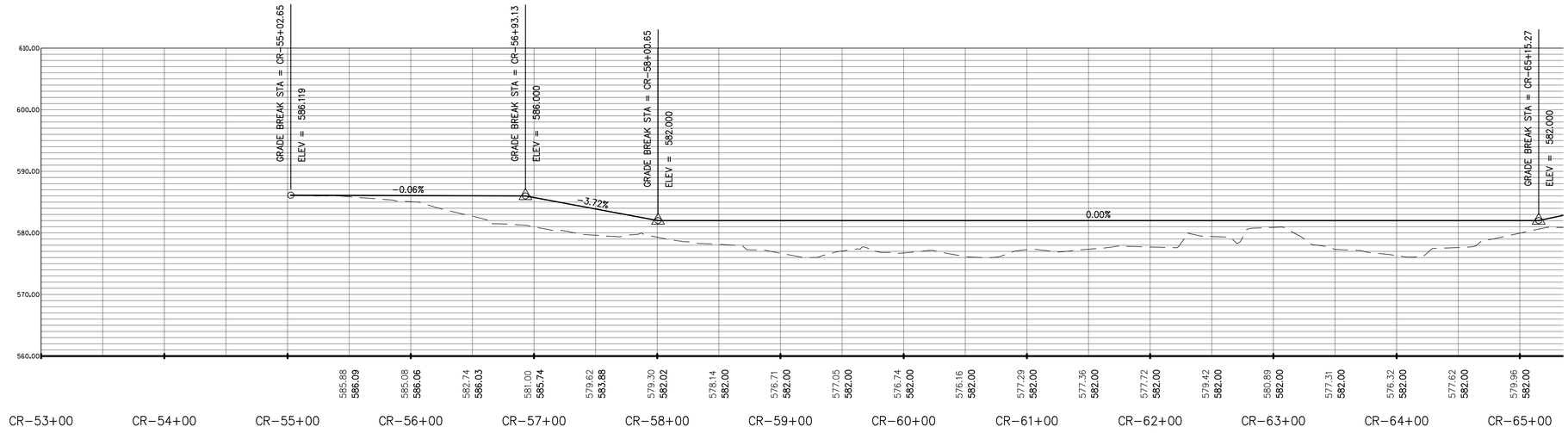
ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 50'

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 2
REMOVALS





THE LOCATIONS OF EXISTING UTILITY INSTALLATIONS AS SHOWN ON THIS PLAN ARE APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. CONTRACTORS SHALL MAKE THEIR OWN DETERMINATION AND VERIFY THE THE LOCATION OF UNDERGROUND UTILITIES.

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HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

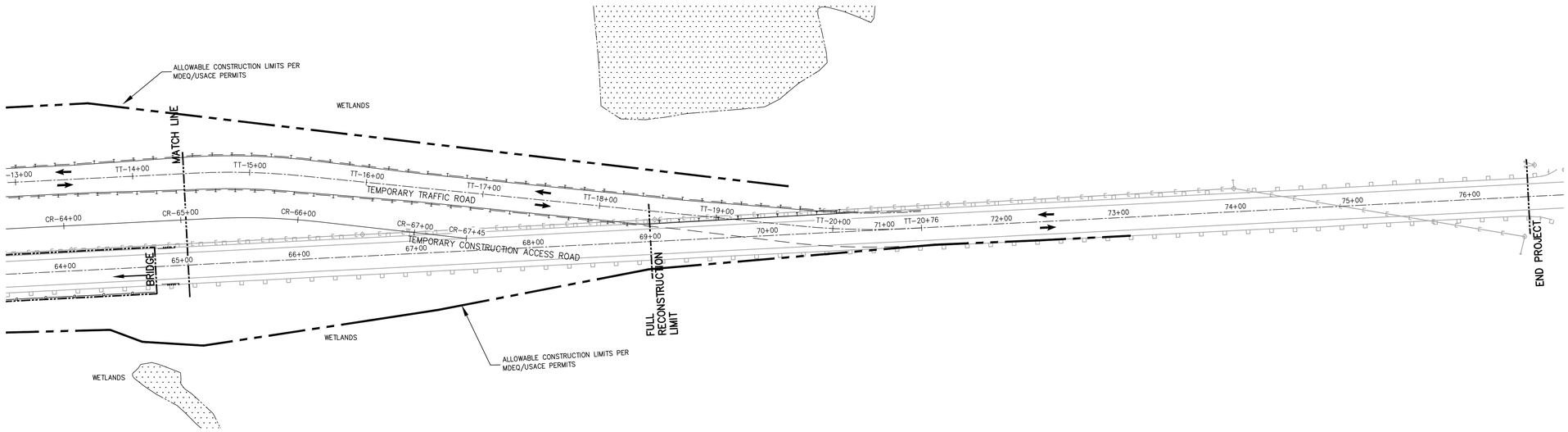
ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
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SCALE:	1" = 50' HOR. 1" = 10' VER.

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

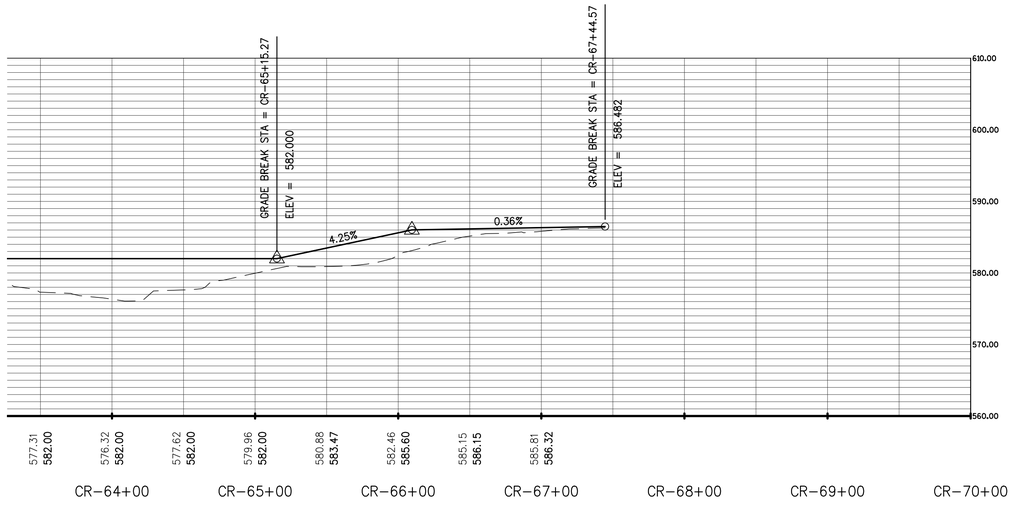
STAGE 2
PLAN & PROFILE
CONSTRUCTION
ACCESS
ROAD

26-27 CONSTR ROAD PLAN PROF2.dwg
5/2/2016



0' 50' 100'

SCALE: 1"=50'



THE LOCATIONS OF EXISTING UTILITY INSTALLATIONS AS SHOWN ON THIS PLAN ARE APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. CONTRACTORS SHALL MAKE THEIR OWN DETERMINATION AND VERIFY THE THE LOCATION OF UNDERGROUND UTILITIES.

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

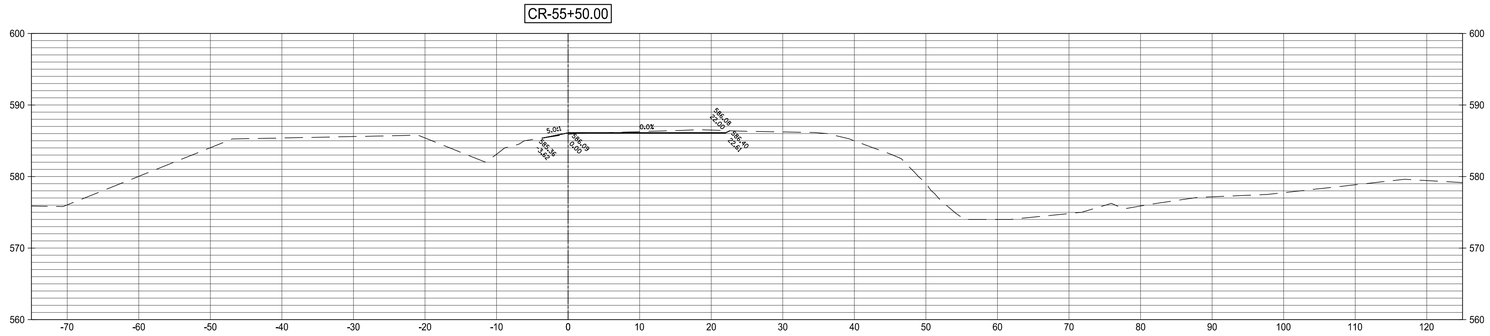
RFC ROADWAY PLANS

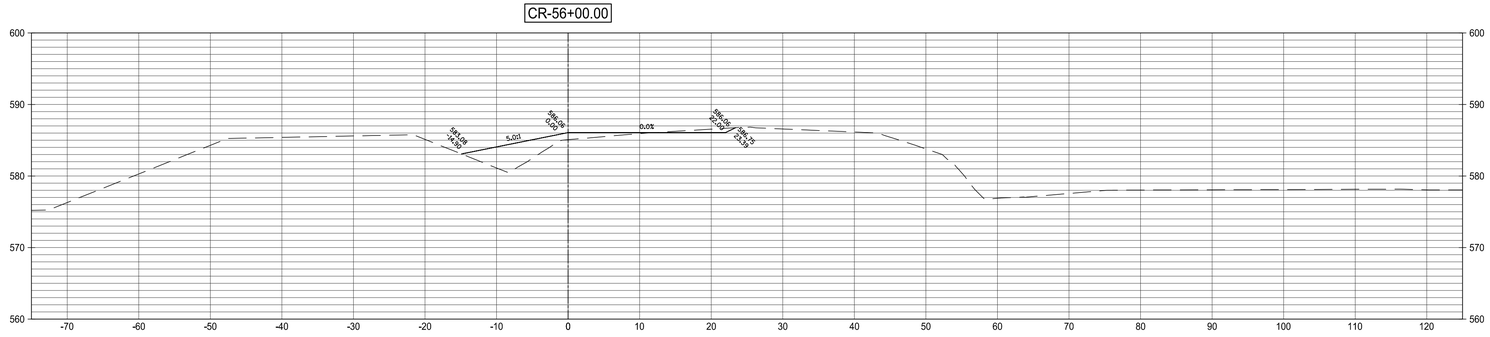
ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
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CHECKED BY:	BTS
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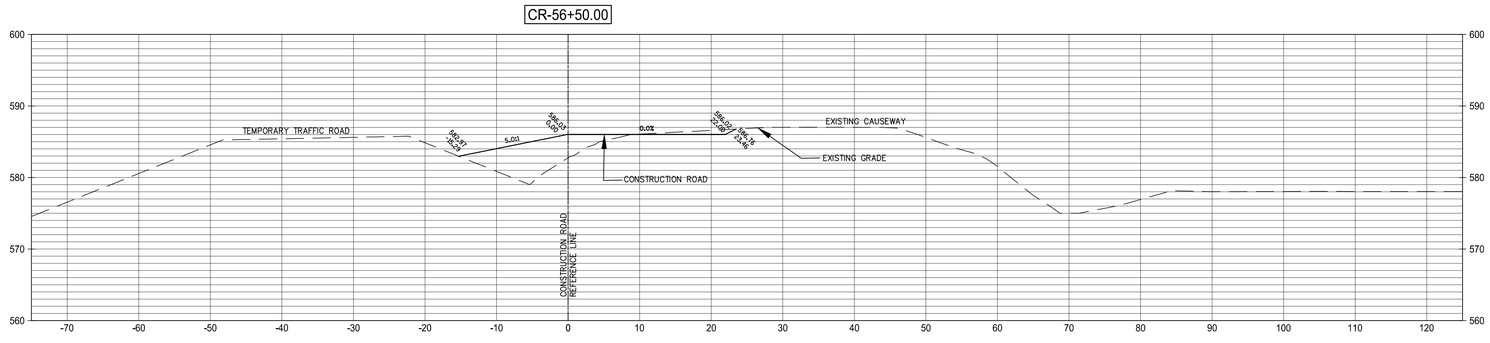
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

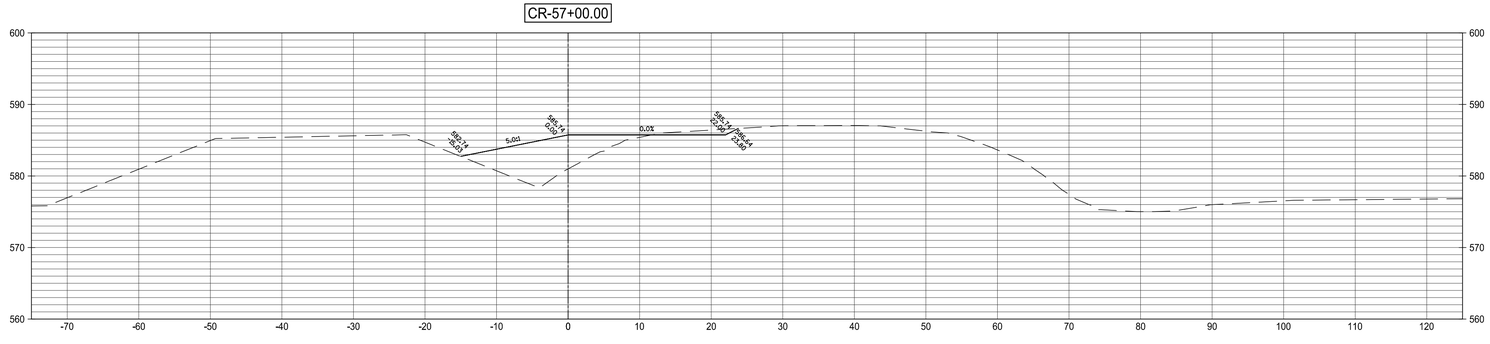
Project Number 490011

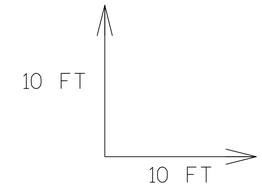
STAGE 2
PLAN & PROFILE
CONSTRUCTION ACCESS ROAD











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LITTLE RAPIDS HABITAT RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

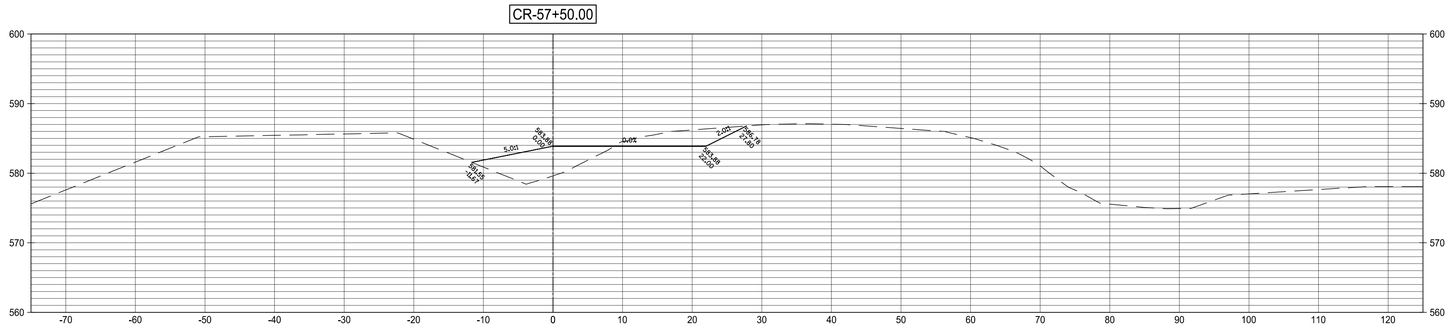
ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
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SCALE: 1" = 10' HOR. 1" = 10' VER.	

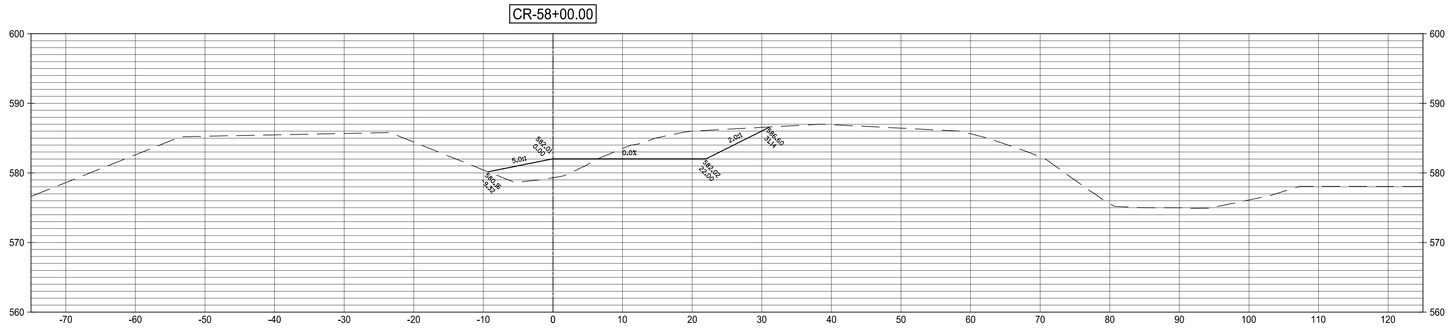
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

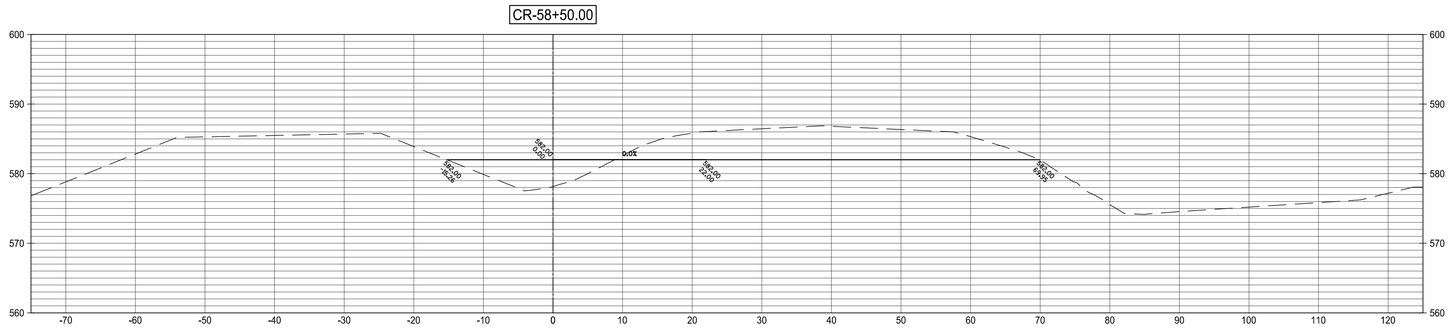
Project Number 490011

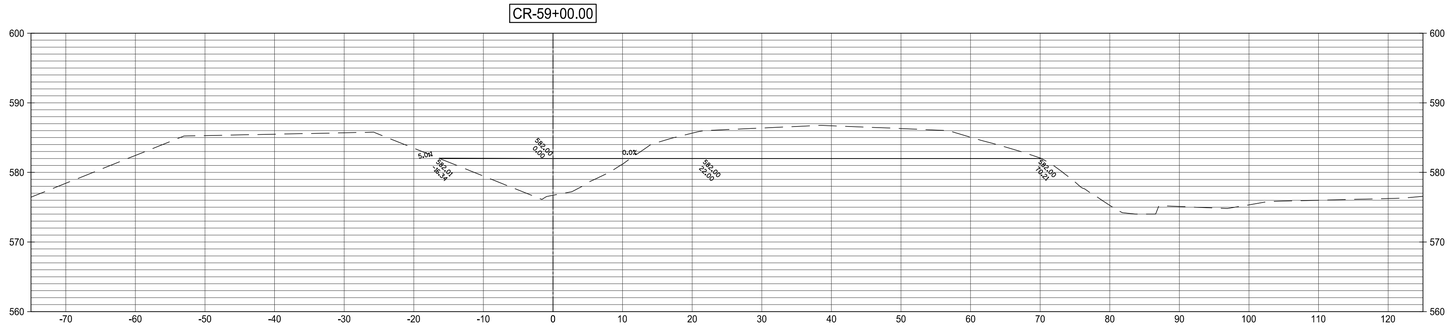
CROSS SECTIONS
CONSTRUCTION ROAD PARTIAL CAUSEWAY REMOVAL

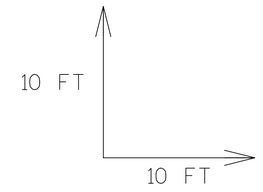
28-33 CONSTR ROAD XSEC2.dwg
5/2/2016











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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

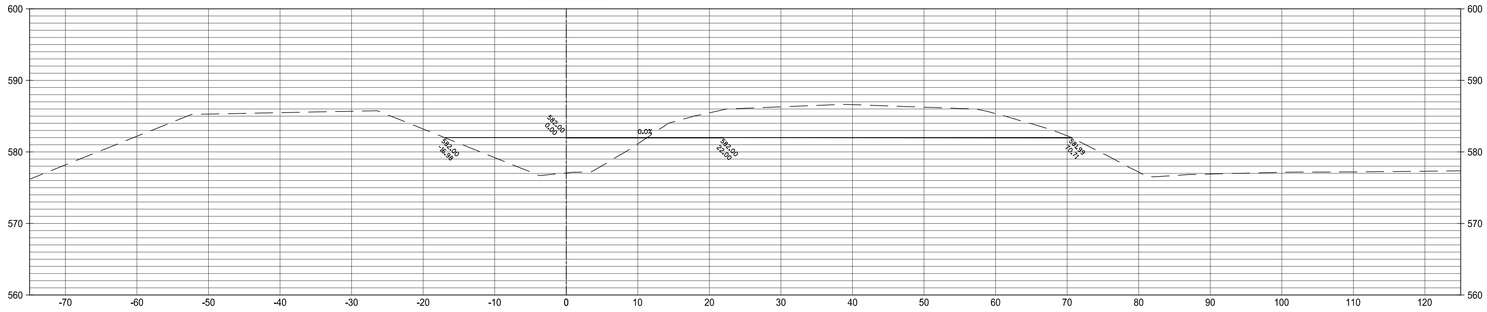
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

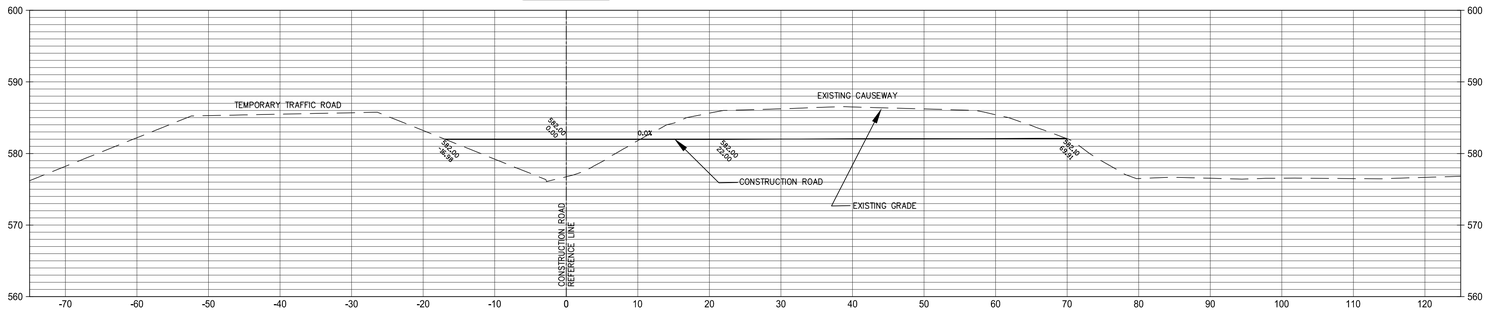
CROSS SECTIONS
CONSTRUCTION ROAD PARTIAL CAUSEWAY REMOVAL

28-33 CONSTR ROAD XSEC2.dwg
5/2/2016

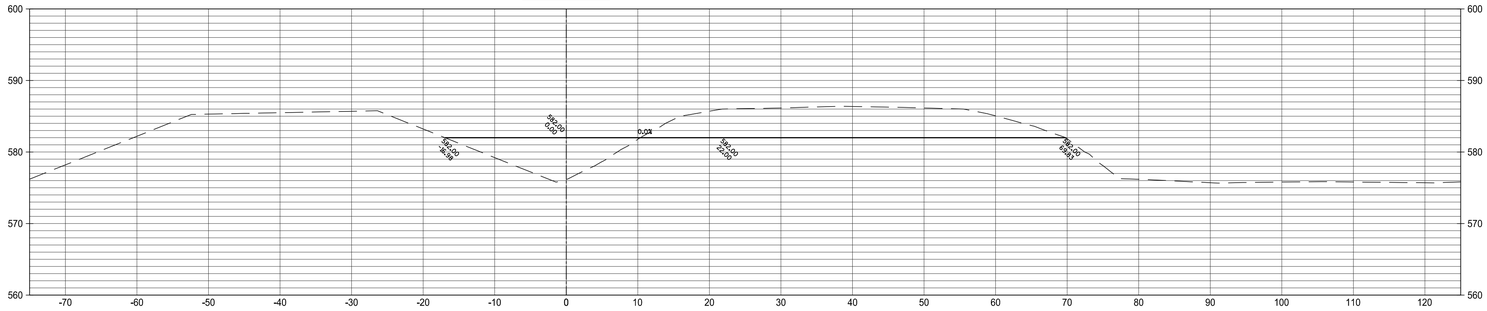
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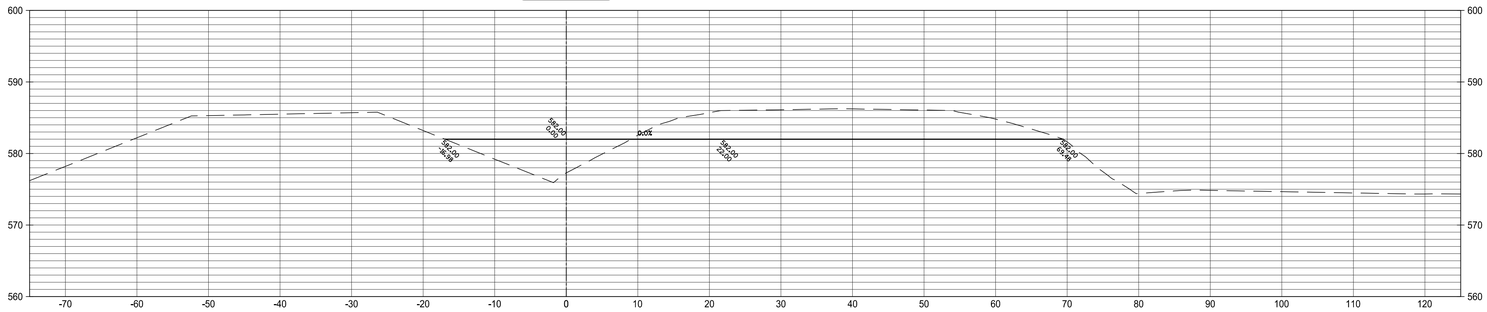
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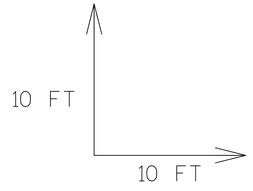


CR-60+50.00



CR-61+00.00





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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

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DATE:	05/02/2016
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SCALE:	1" = 10' HOR. 1" = 10' VER.

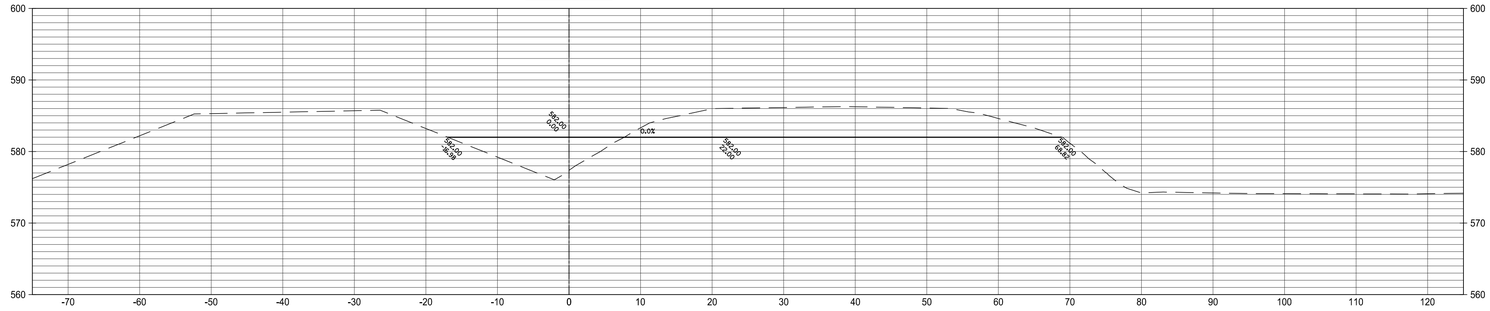
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

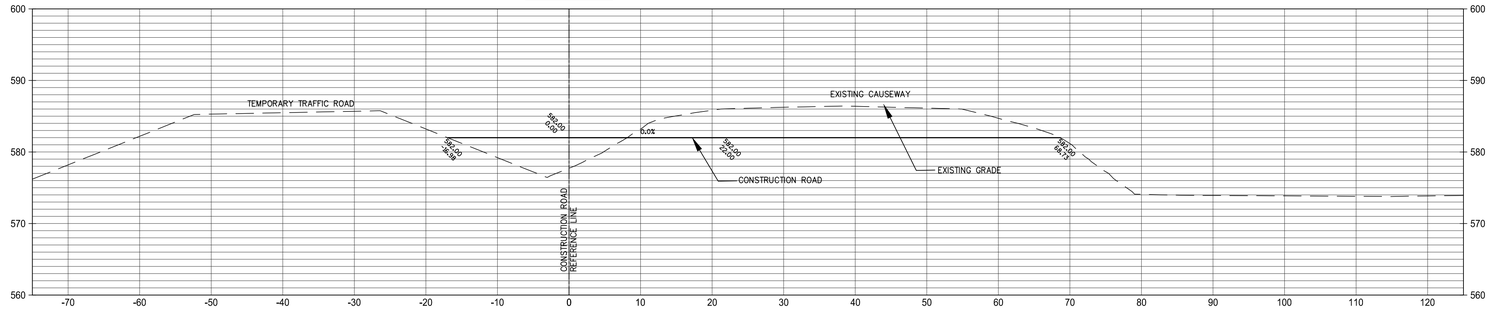
CROSS SECTIONS
CONSTRUCTION ROAD
PARTIAL CAUSEWAY
REMOVAL

28-33 CONSTR ROAD XSEC2.dwg
5/2/2016

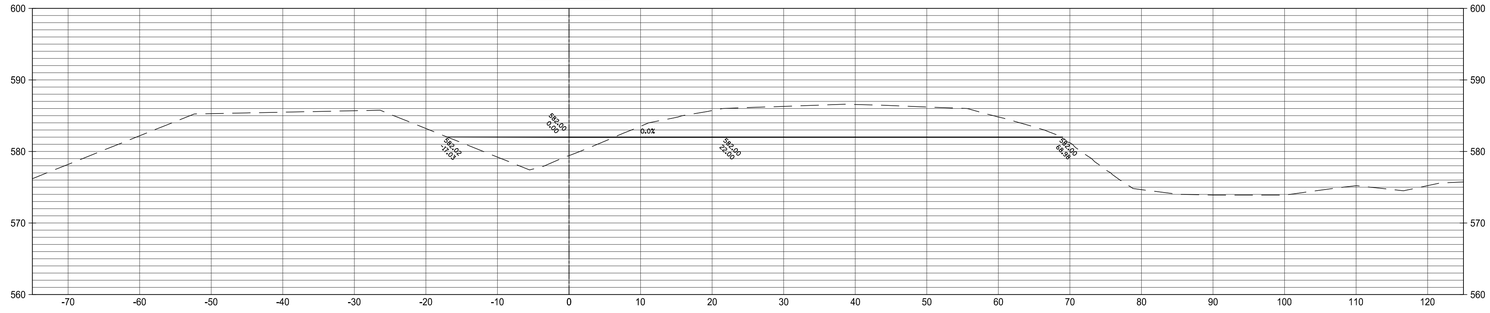
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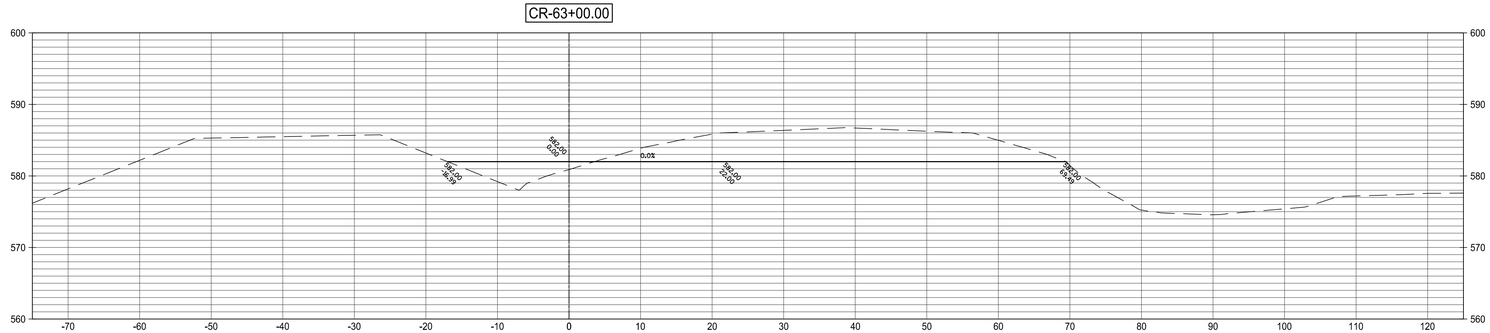
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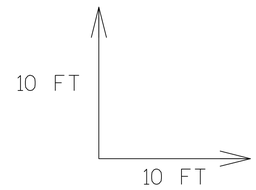


CR-62+50.00



CR-63+00.00





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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

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DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

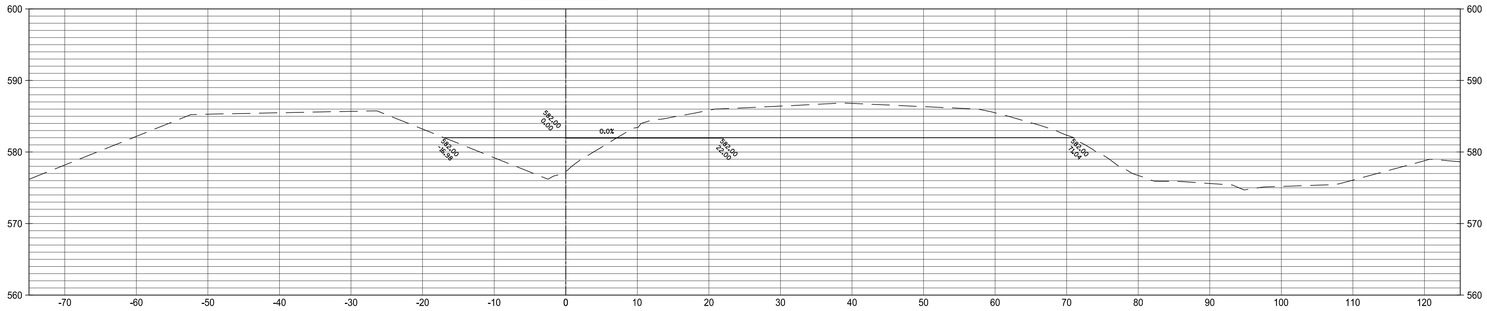
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

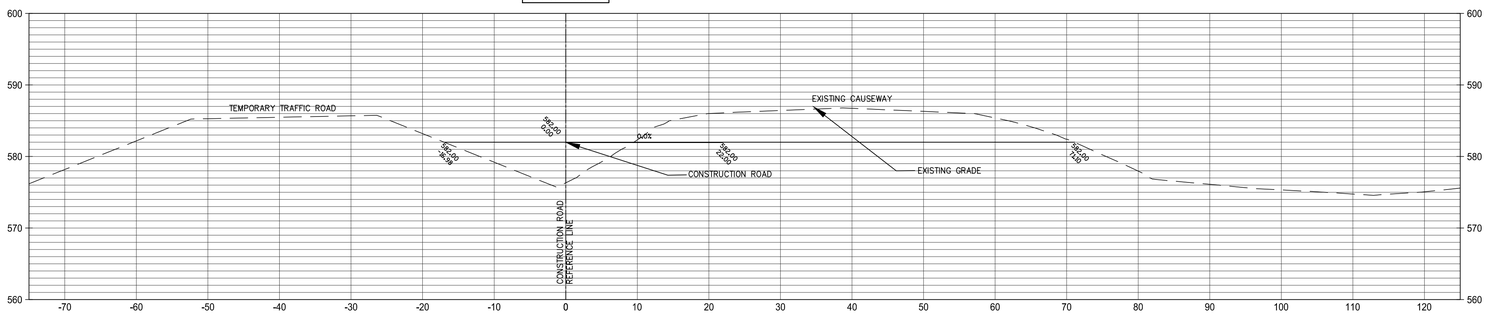
CROSS SECTIONS
CONSTRUCTION ROAD
PARTIAL CAUSEWAY
REMOVAL

28-33 CONSTR ROAD XSEC2.dwg
5/2/2016

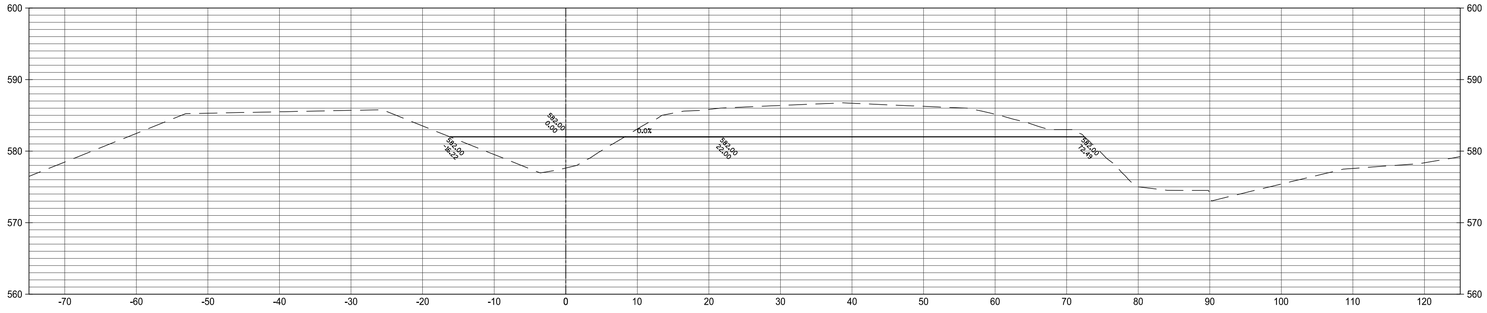
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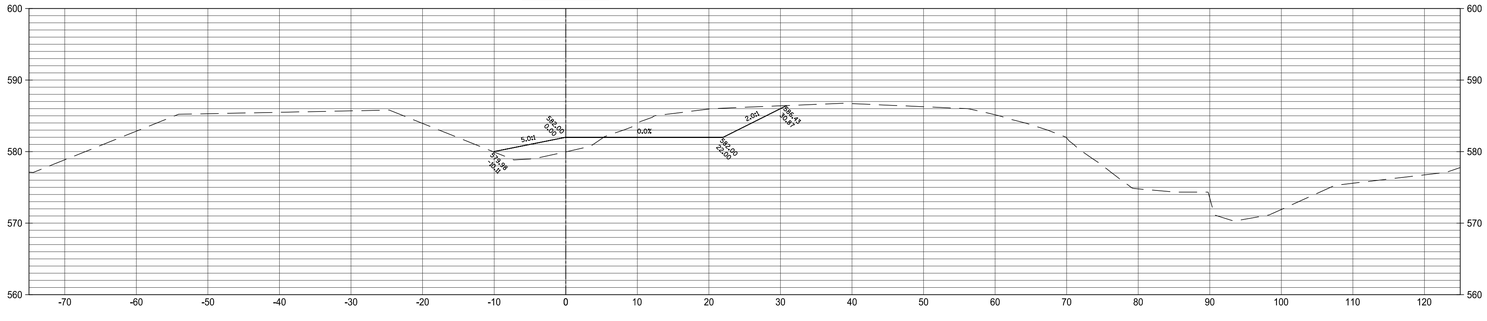
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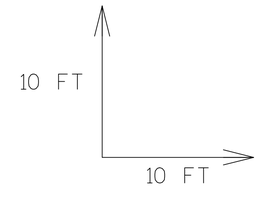


CR-64+50.00



CR-65+00.00





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CLIENT

LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

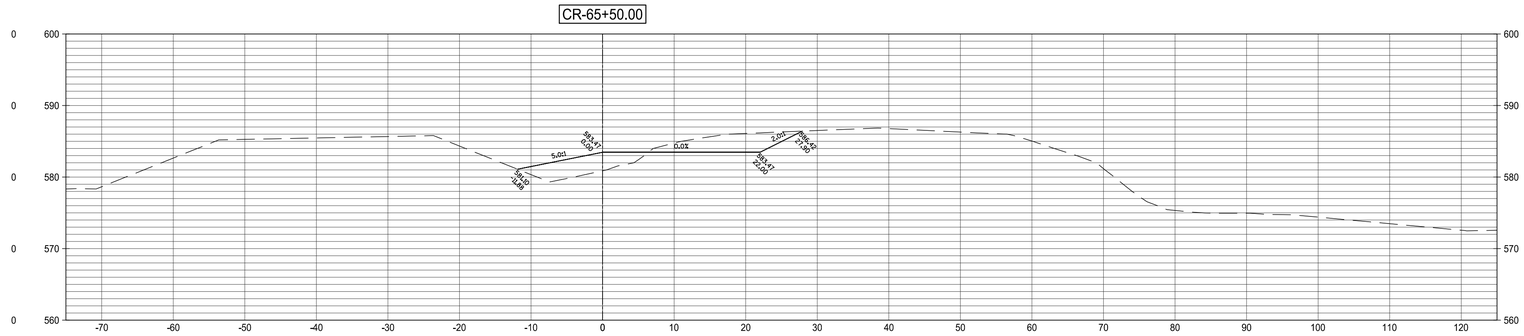
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ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

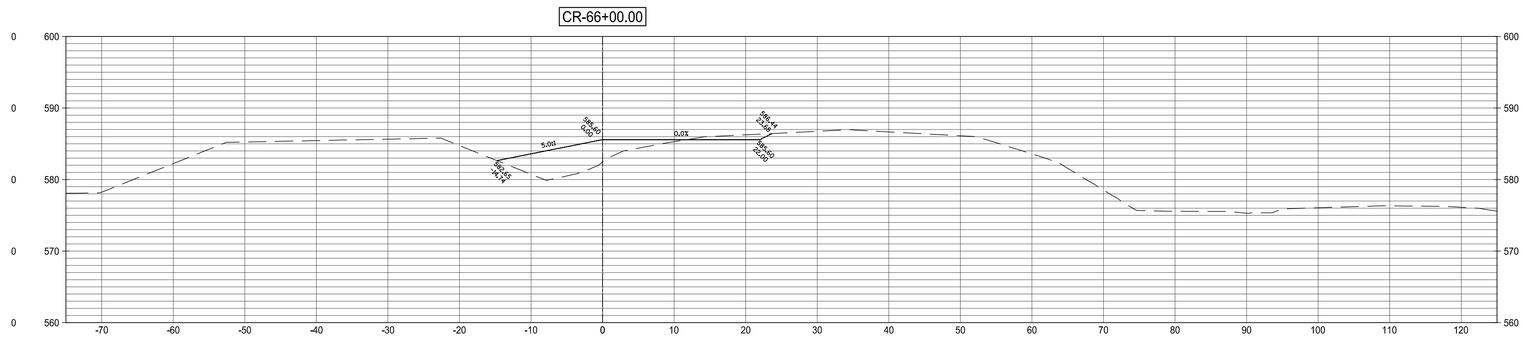
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NO.	DESCRIPTION	DATE

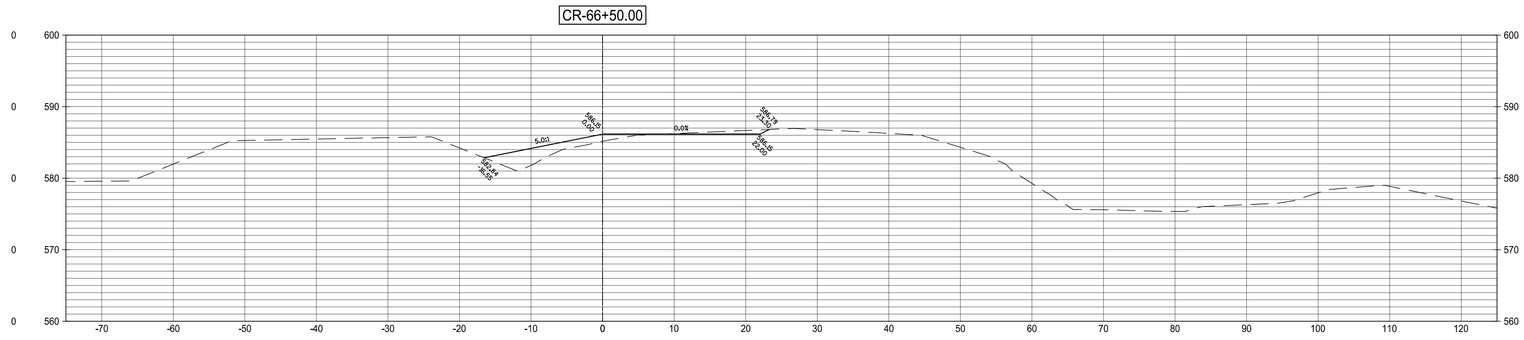
Project Number 490011

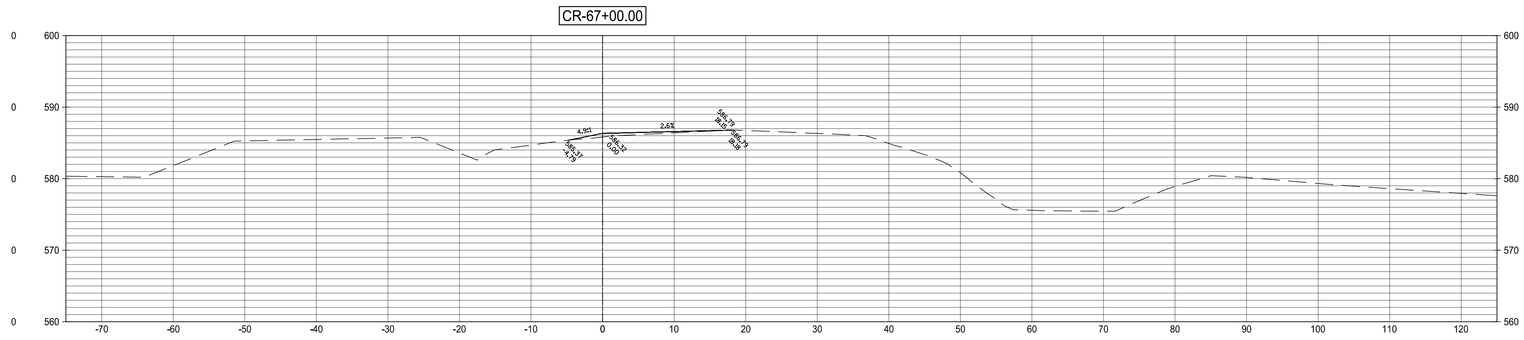
CROSS SECTIONS
CONSTRUCTION ROAD
PARTIAL CAUSEWAY
REMOVAL

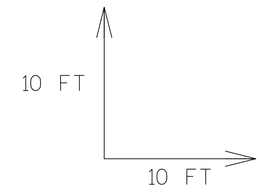
28-33 CONSTR ROAD XSEC2.dwg
5/2/2016











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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

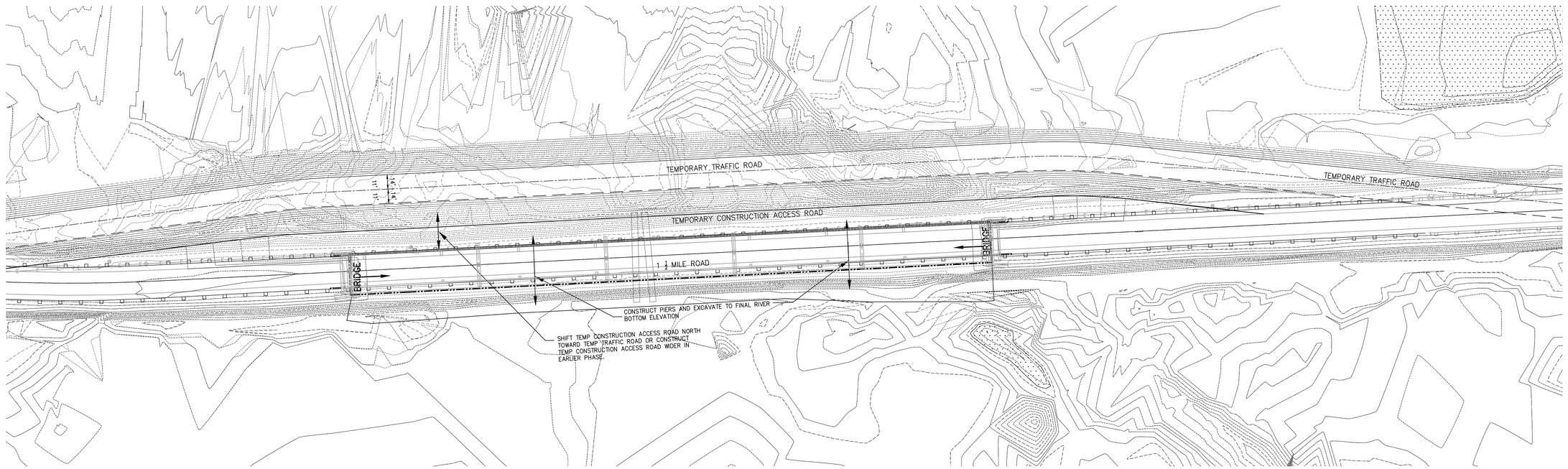
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

CROSS SECTIONS

CONSTRUCTION ROAD
PARTIAL CAUSEWAY
REMOVAL

28-33 CONSTR ROAD XSEC2.dwg
5/2/2016



0' 50' 100'

SCALE: 1"=50'

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LITTLE RAPIDS
HABITAT
RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

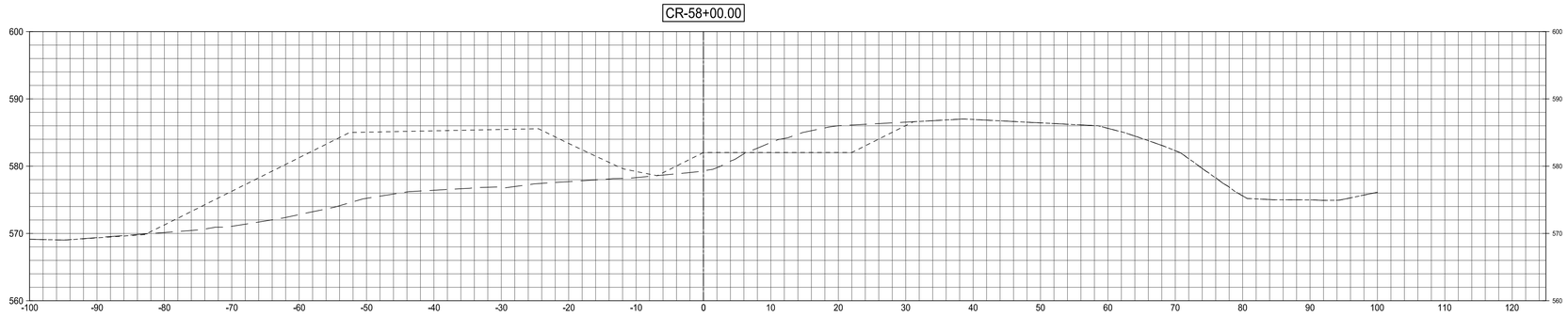
ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
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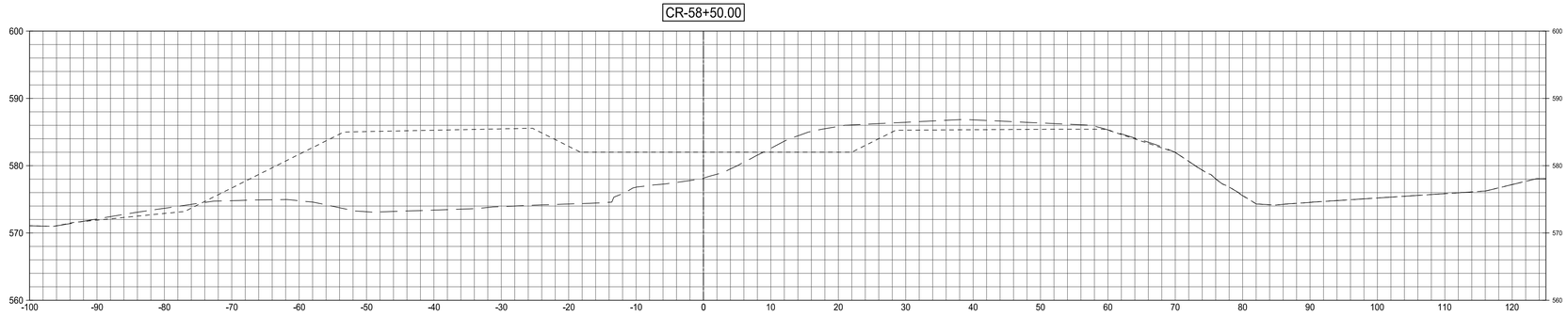
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

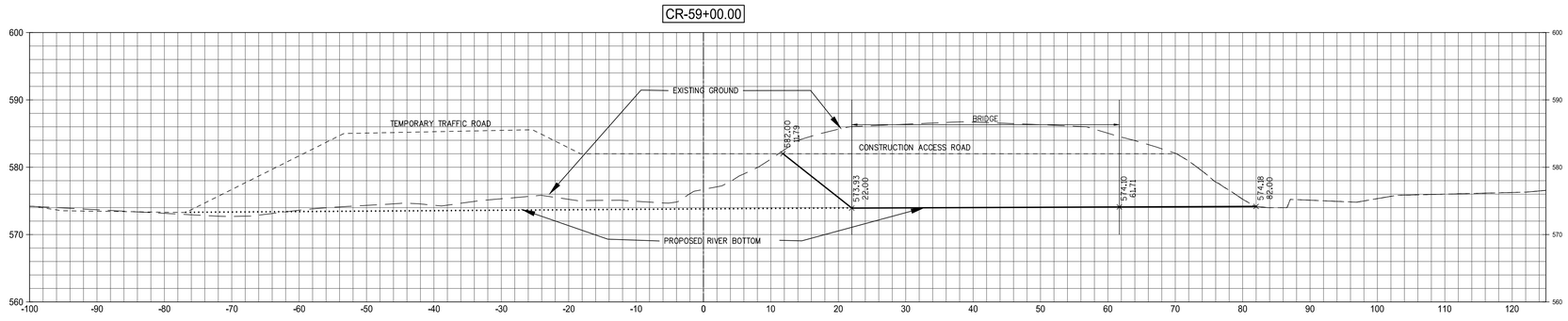
Project Number 490011

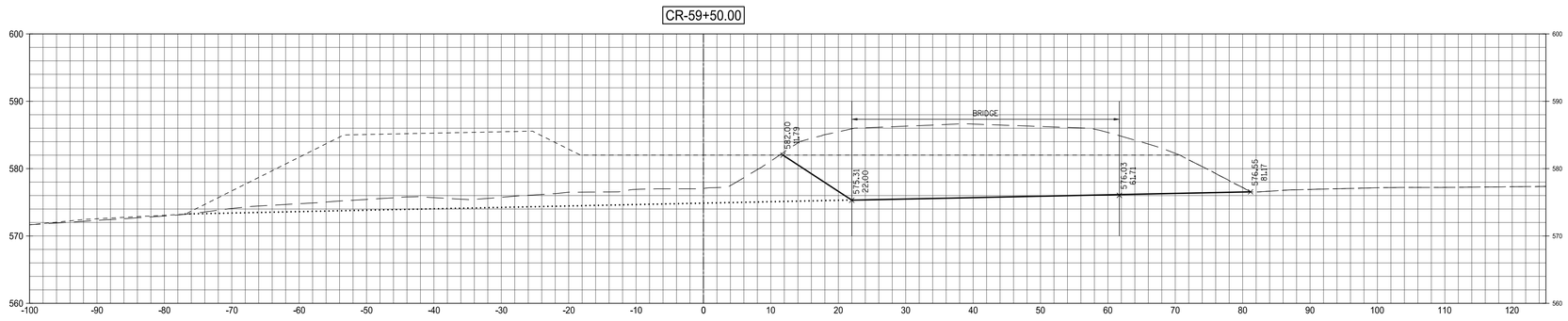
EXCAVATION BELOW
BRIDGE

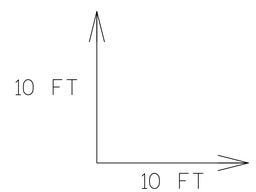
34 removal beneath bridge plan2.dwg
5/2/2016











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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

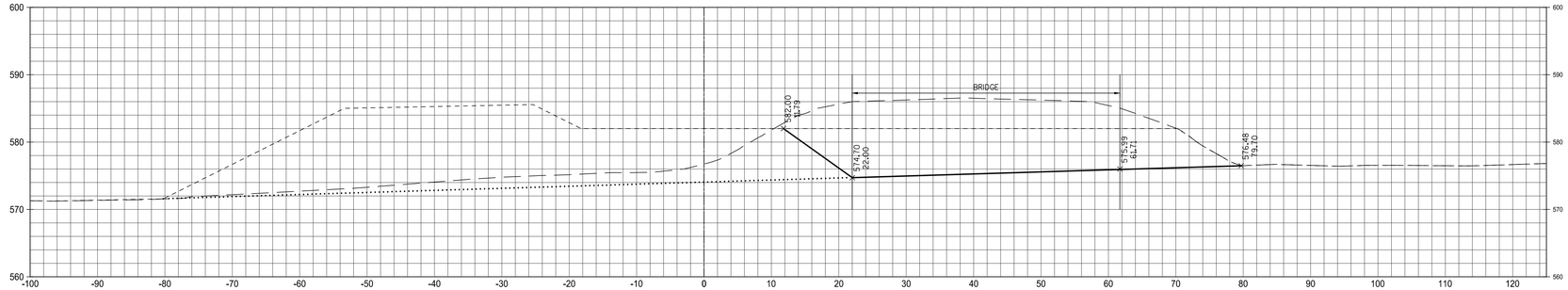
Project Number 490011

CROSS SECTIONS

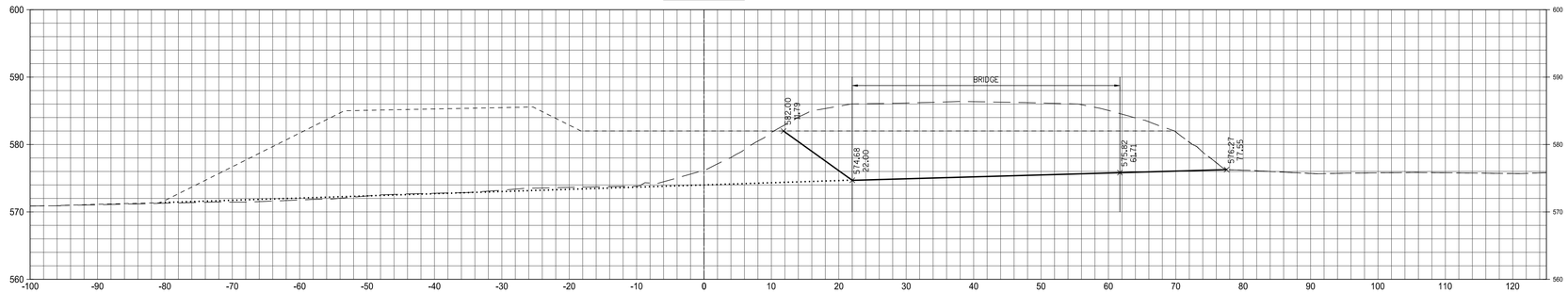
EXCAVATION TO FINAL
RIVER BOTTOM
BENEATH BRIDGE

35-38 REMOVAL BENEATH BRIDGE XSEC2.dwg
5/2/2016

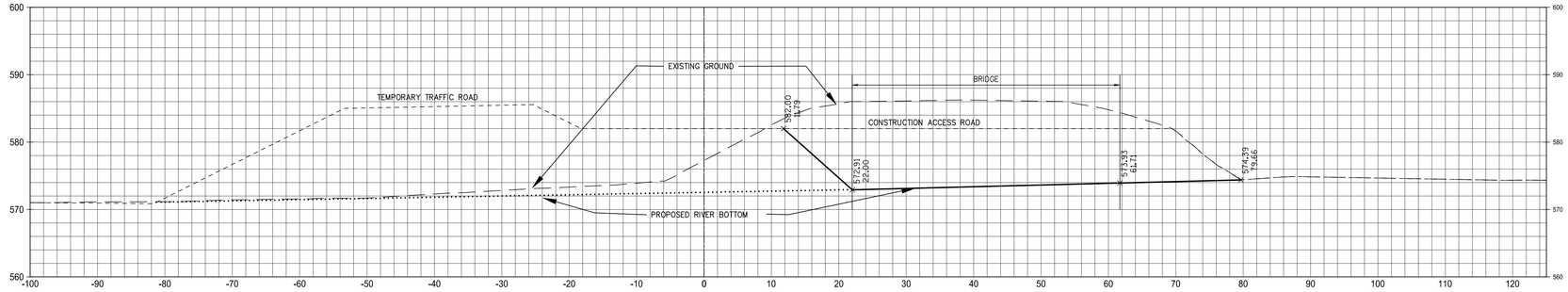
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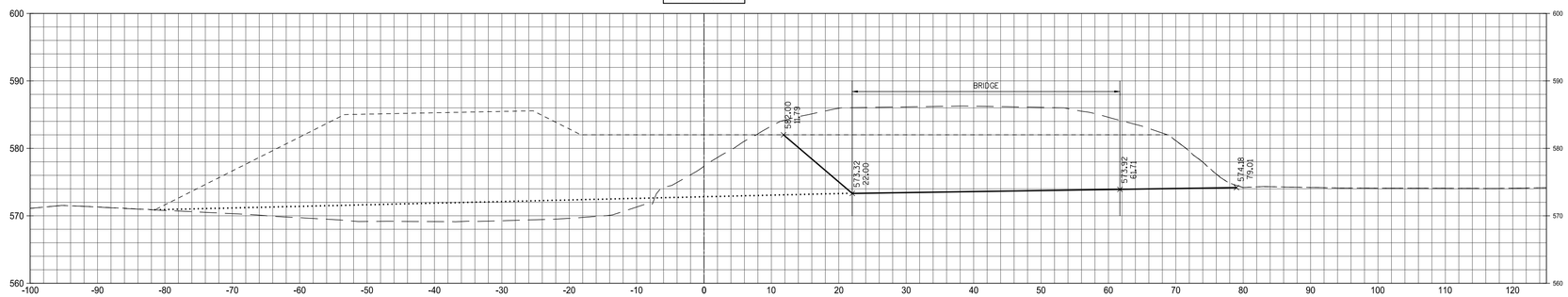
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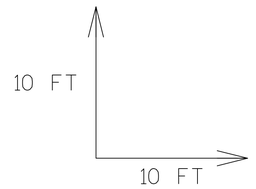


CR-61+00.00



CR-61+50.00





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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

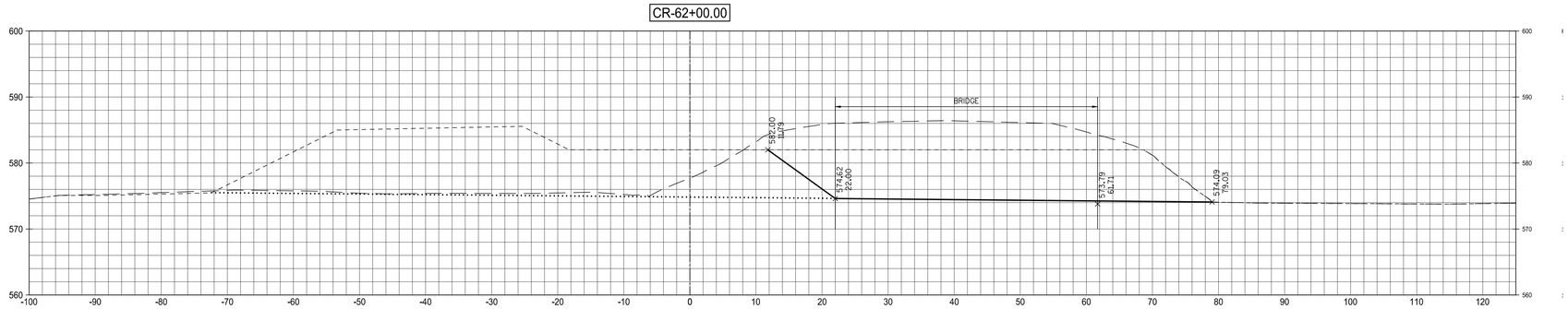
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

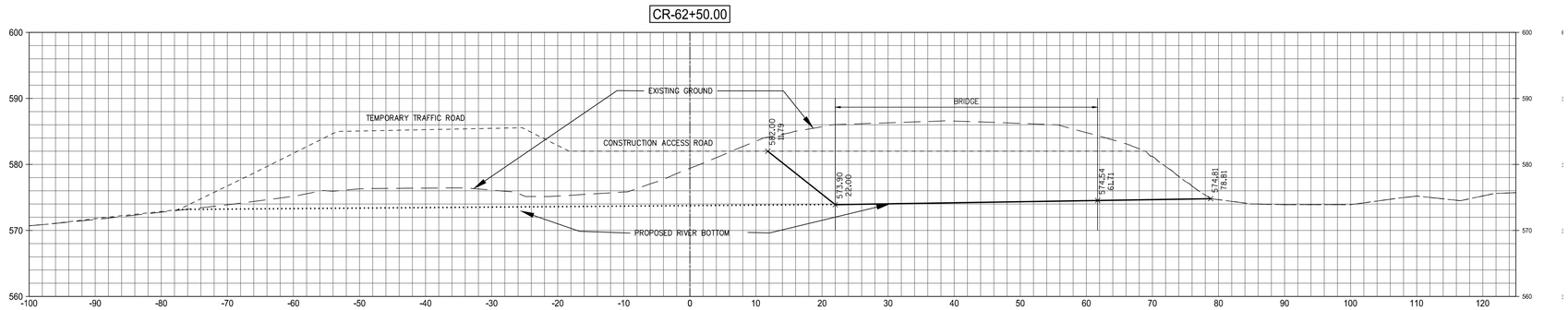
Project Number 490011

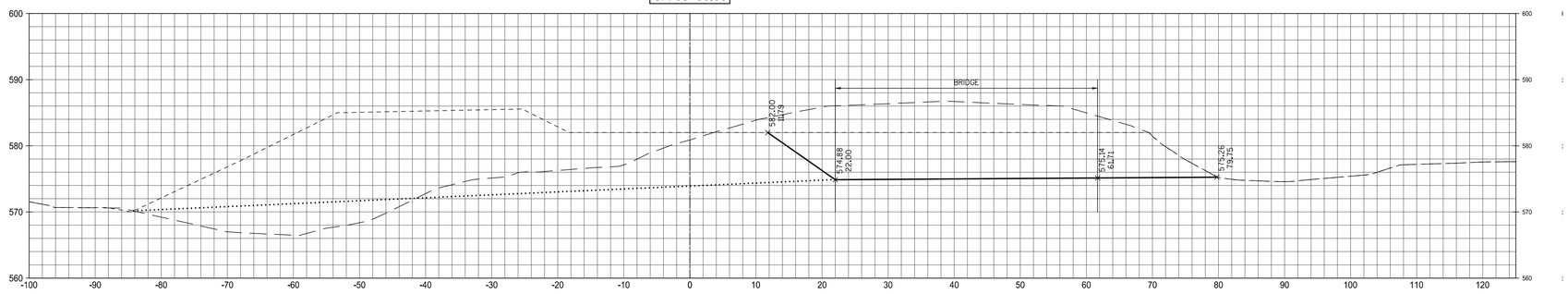
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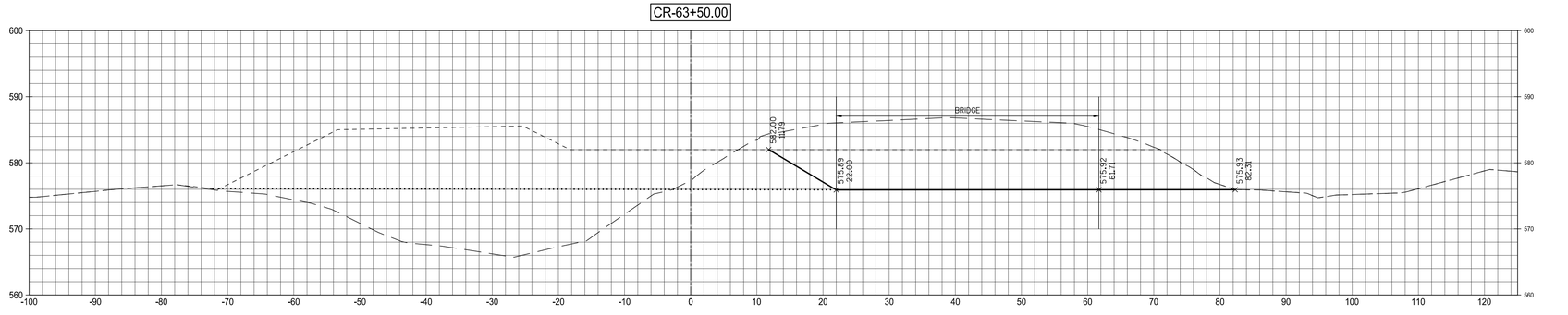
EXCAVATION TO FINAL RIVER BOTTOM BENEATH BRIDGE

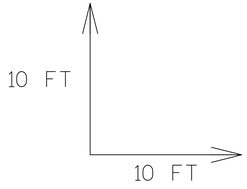
35-38 REMOVAL BENEATH BRIDGE XSEC2.dwg
5/2/2016











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CLIENT

LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

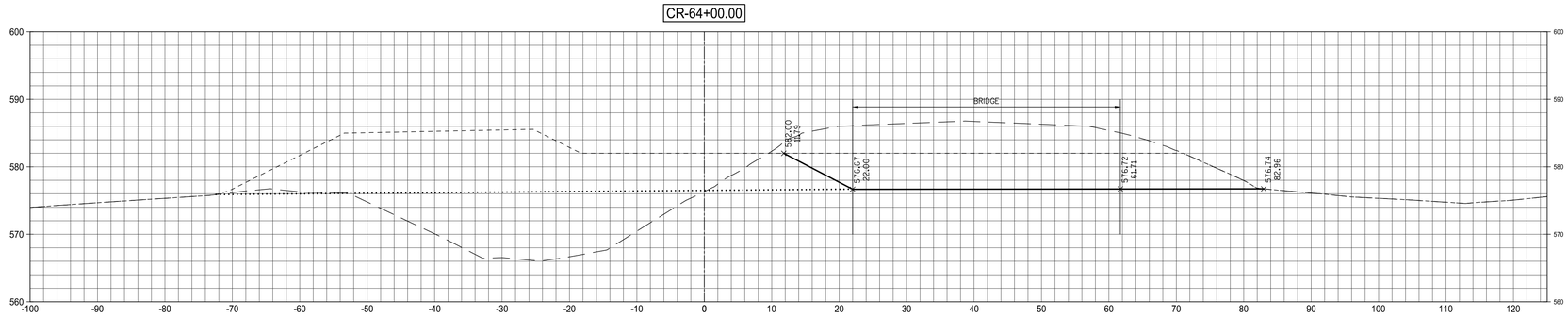
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NO.	DESCRIPTION	DATE

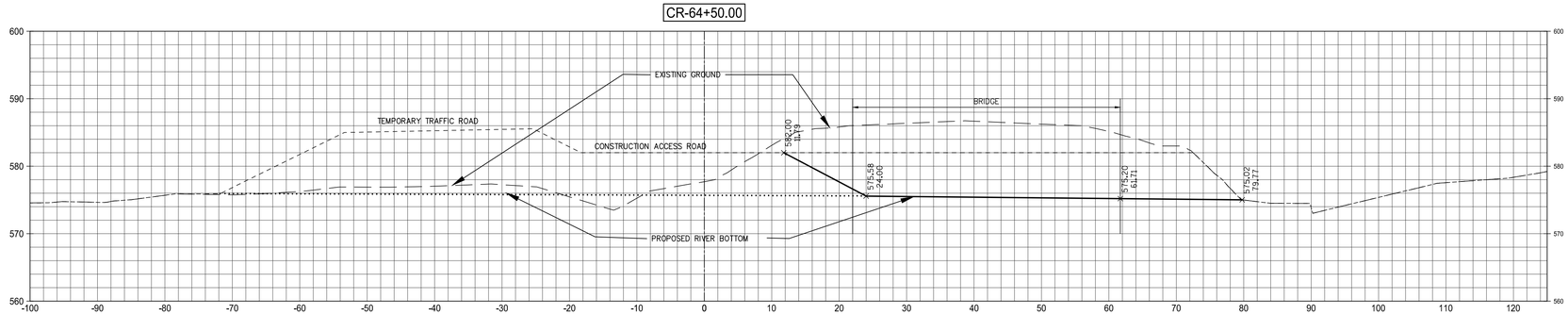
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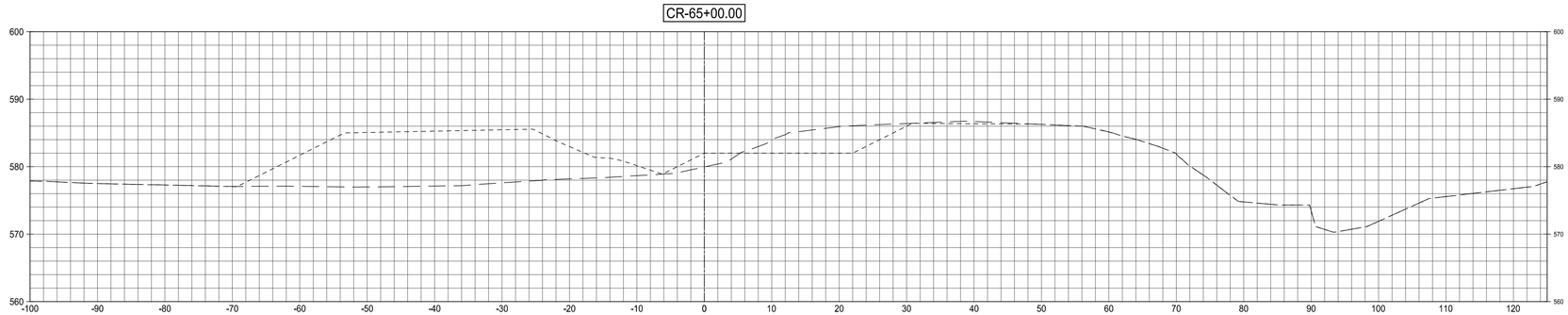
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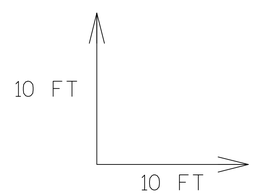
EXCAVATION TO FINAL RIVER BOTTOM BENEATH BRIDGE

35-38 REMOVAL BENEATH BRIDGE XSEC2.dwg
5/2/2016









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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE: 1" = 10' HOR. 1" = 10' VER.	

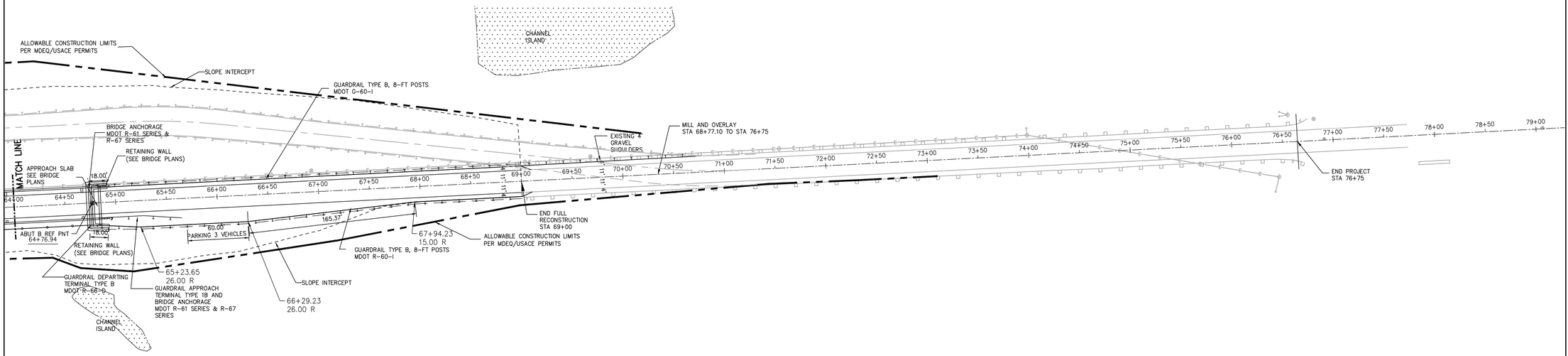
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

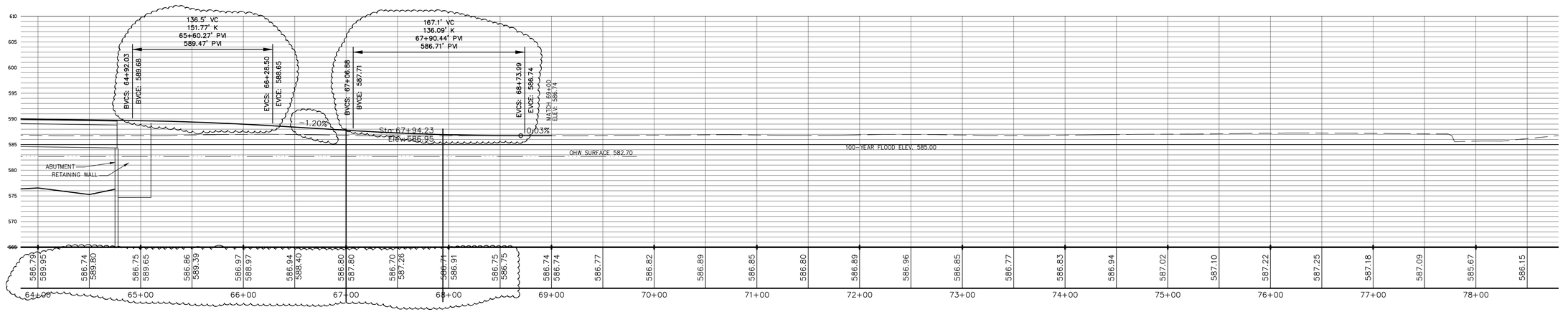
Project Number 490011

CROSS SECTIONS

EXCAVATION TO FINAL
RIVER BOTTOM
BENEATH BRIDGE

35-38 REMOVAL BENEATH BRIDGE XSEC2.dwg
5/2/2016





THE LOCATIONS OF EXISTING UTILITY INSTALLATIONS AS SHOWN ON THIS PLAN ARE APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. CONTRACTORS SHALL MAKE THEIR OWN DETERMINATION AND VERIFY THE THE LOCATION OF UNDERGROUND UTILITIES.

THE CLIENT AND OR OTHER RECIPIENTS AGREE TO THE FULLEST EXTENT PERMITTED BY LAW TO INDEMNIFY AND HOLD PAYNE AND DOLAN HARMLESS FOR ANY REUSE OF OR FROM CHANGES MADE TO THE ORIGINAL DRAWING OR DATA WITHOUT PRIOR WRITTEN CONSENT BY PAYNE AND DOLAN.

SCALE: 1"=50'

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

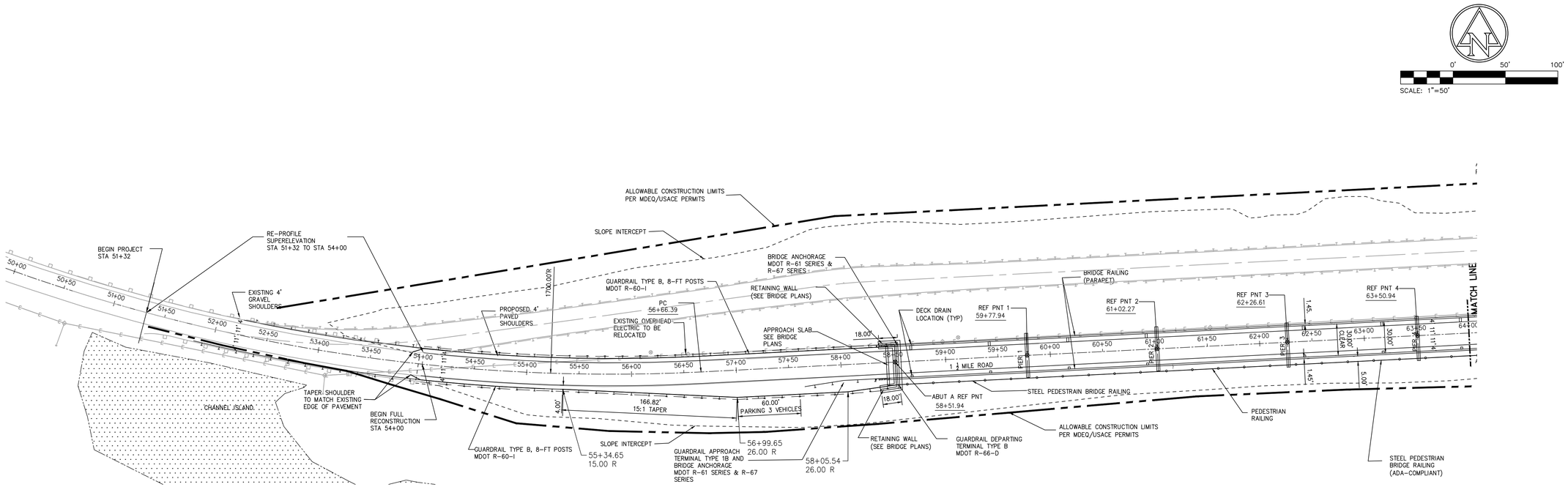
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ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE: 1" = 50' HOR. 1" = 10' VER.	

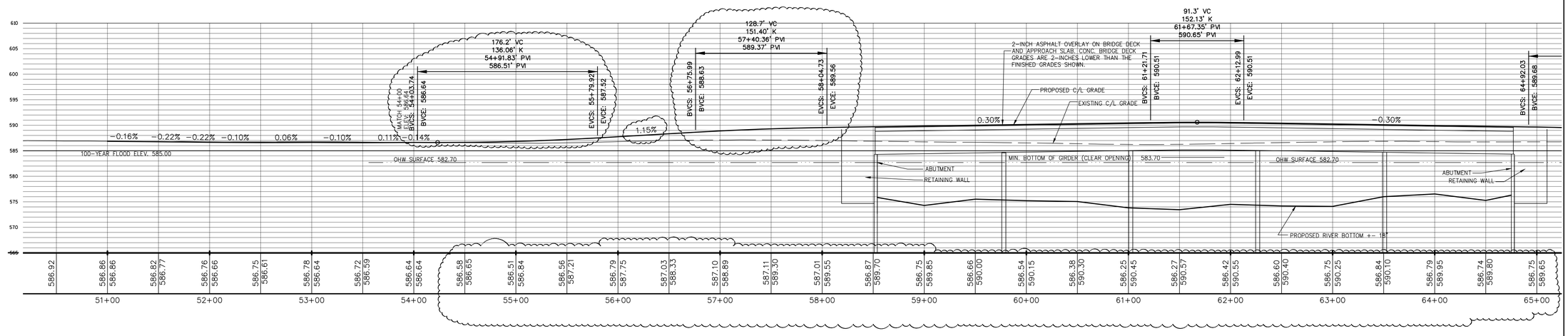
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

Project Number 48011

PLAN & PROFILE
FINISHED ROADWAY

39-40 PLAN PROF revised.dwg
7/20/2016





39-40 PLAN PROF revised.dwg
7/20/2016

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

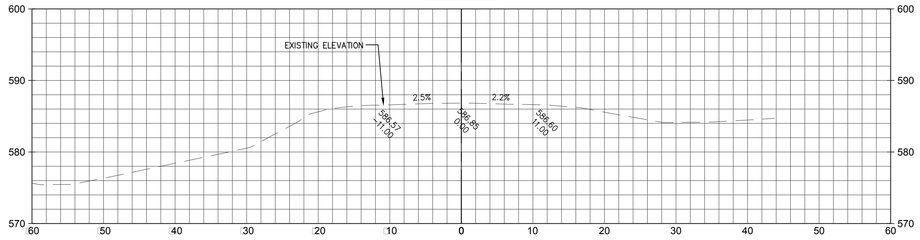
ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE: 1" = 50' HOR. 1" = 10' VER.	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

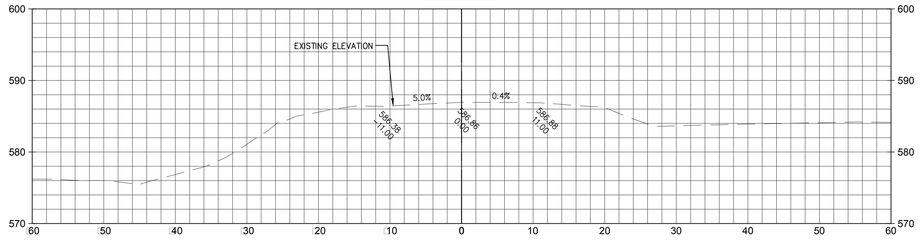
Project Number 490011

PLAN & PROFILE
FINISHED ROADWAY

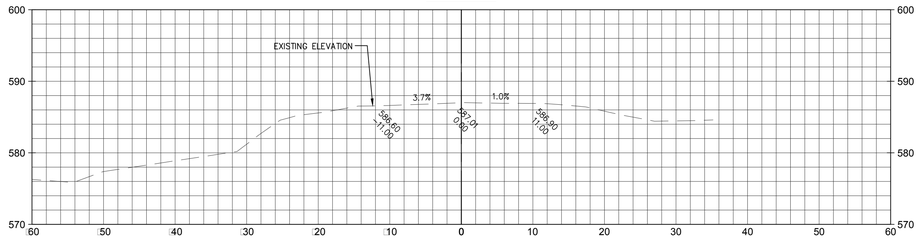
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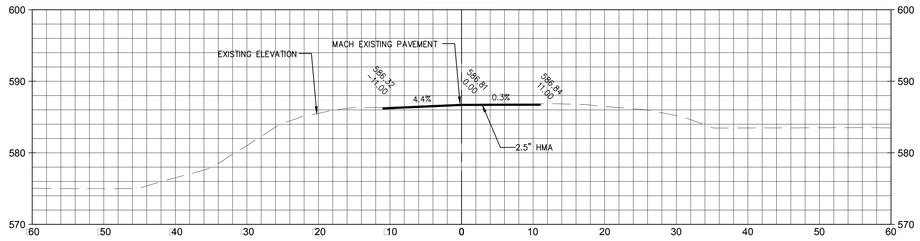
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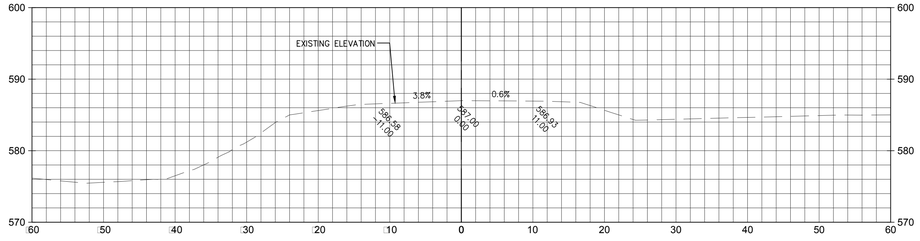
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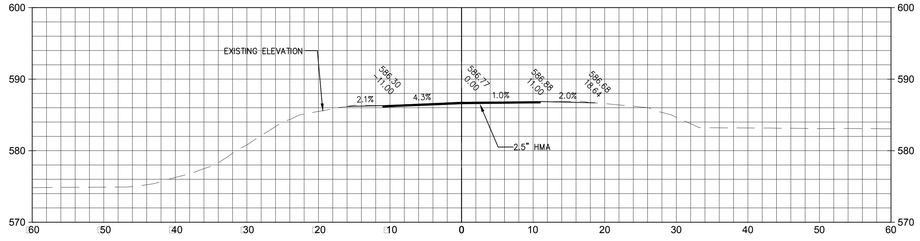
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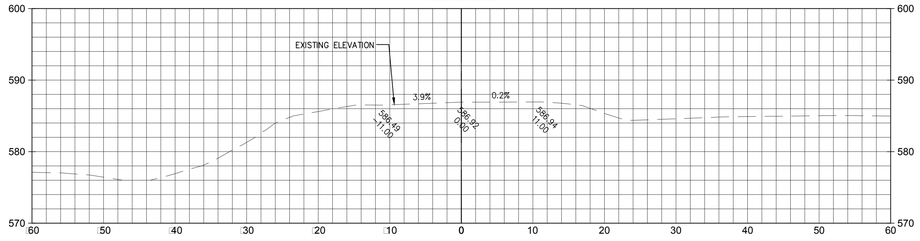
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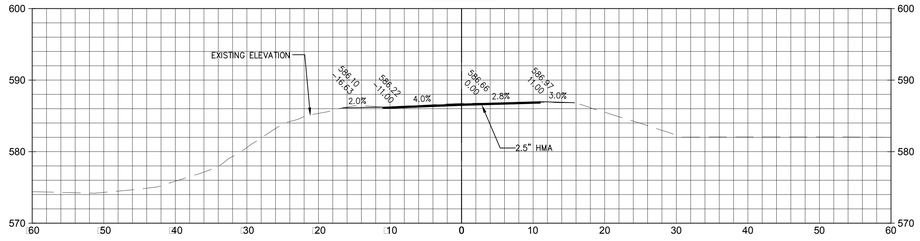
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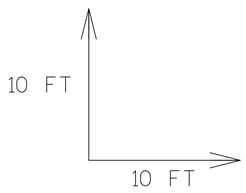


50+50.00



52+00.00





41-49 Xsections revised.dwg
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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

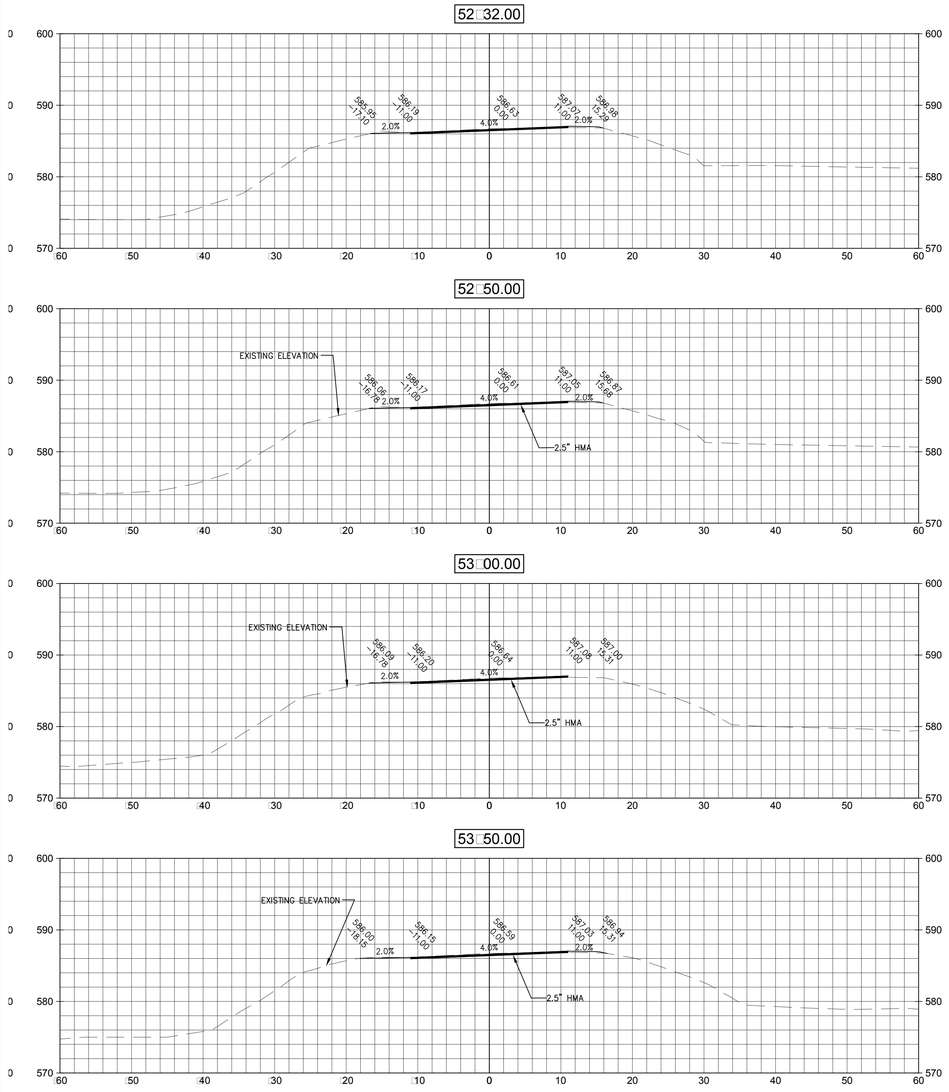
RFC ROADWAY PLANS

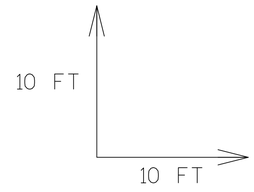
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DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
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REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

Project Number 490011

CROSS SECTIONS
1 1/2 MILE ROAD
RECONSTRUCTION





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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
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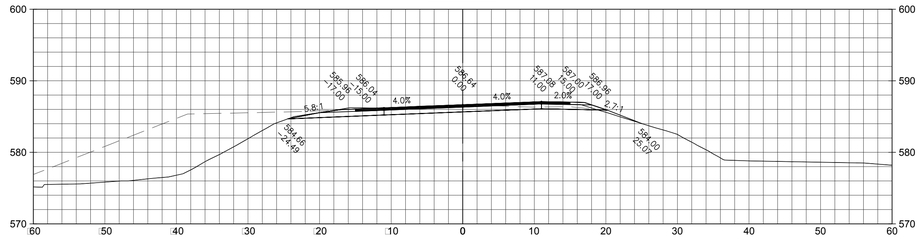
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

Project Number 490011

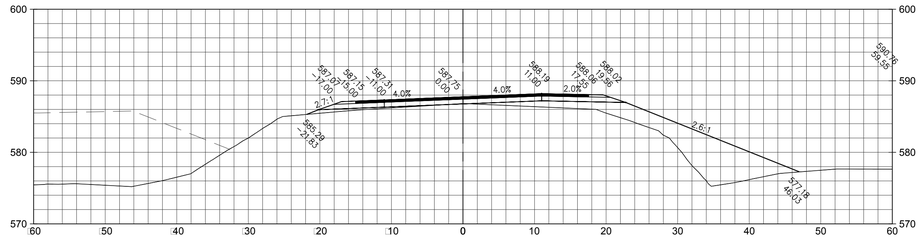
CROSS SECTIONS
1 1/2 MILE ROAD
RECONSTRUCTION

41-49 Xsections revised.dwg
8/11/2016

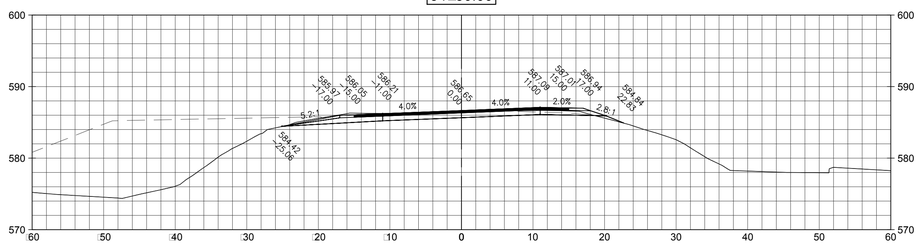
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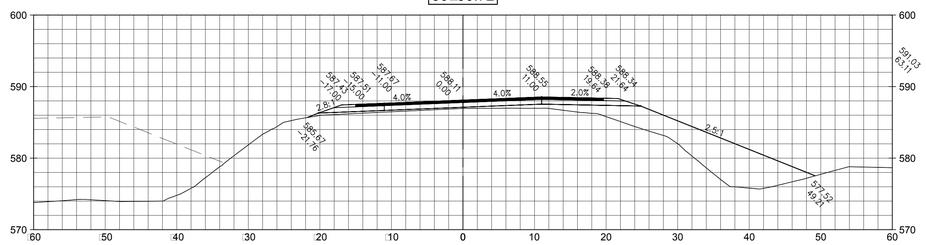
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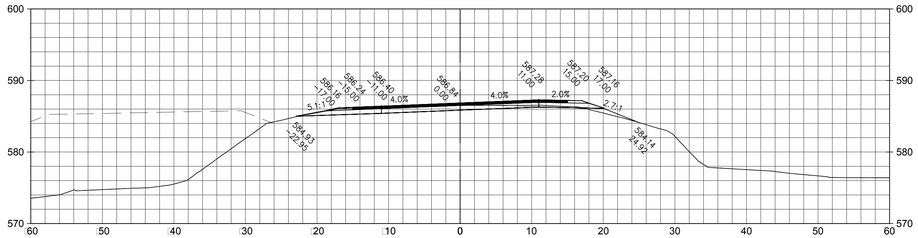
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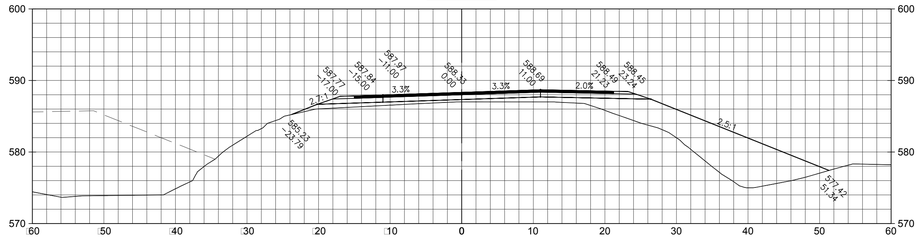
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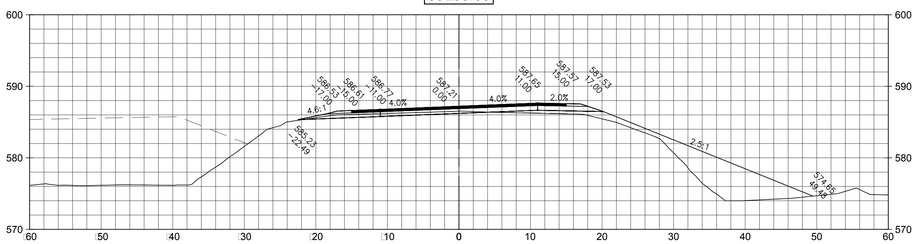
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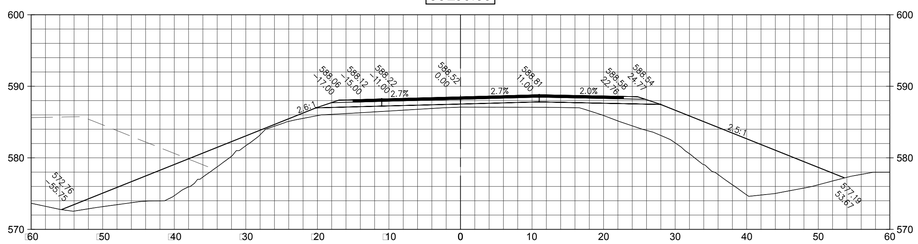
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55+50.00



56+66.39



10 FT

10 FT

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

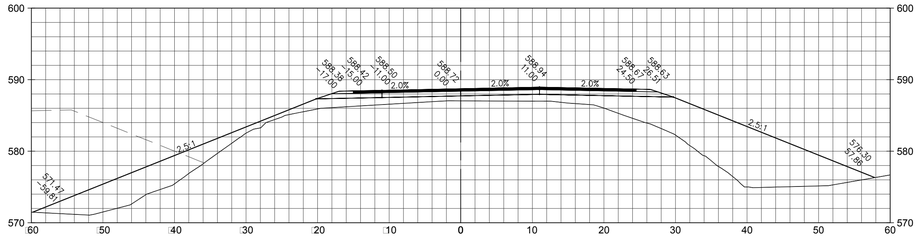
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

Project Number 490011

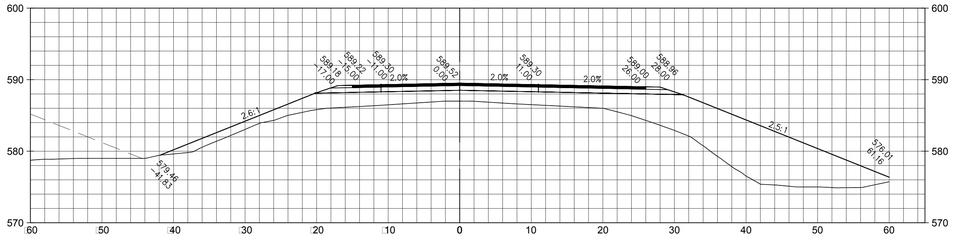
CROSS SECTIONS
1 1/2 MILE ROAD
RECONSTRUCTION

41-49 Xsections revised.dwg
8/11/2016

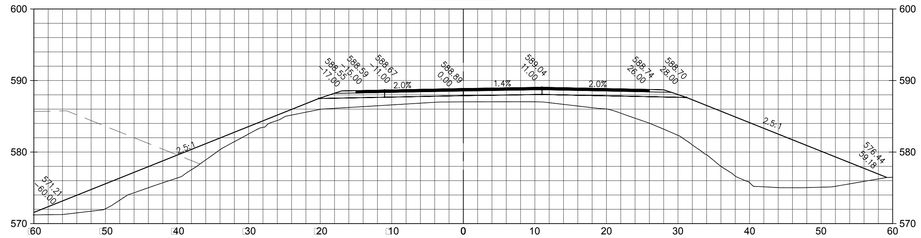
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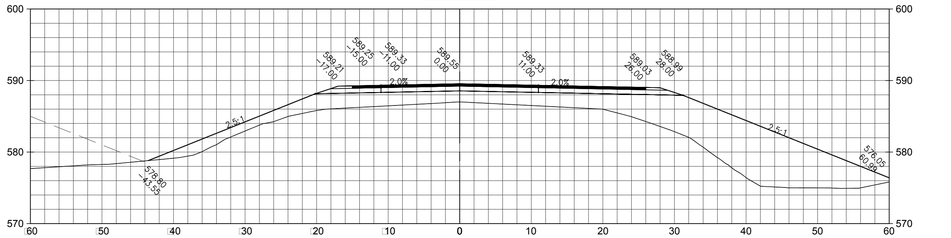
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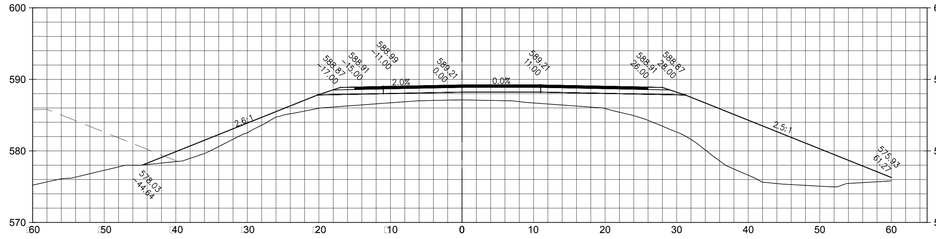
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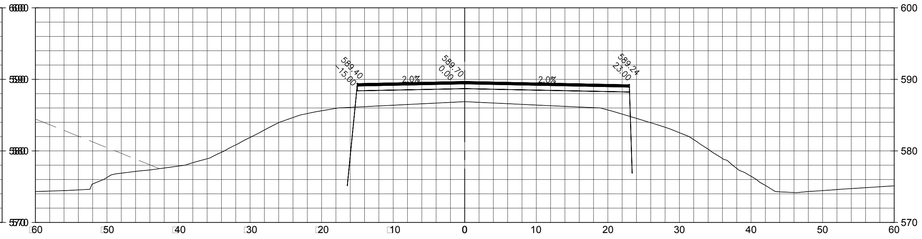
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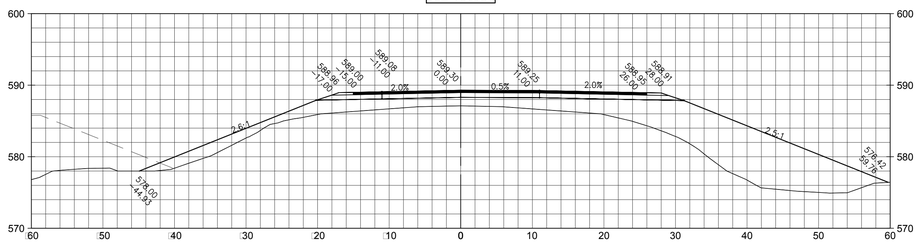
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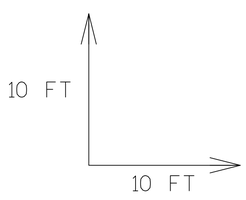


58+50.00



57+50.00





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8/11/2016

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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

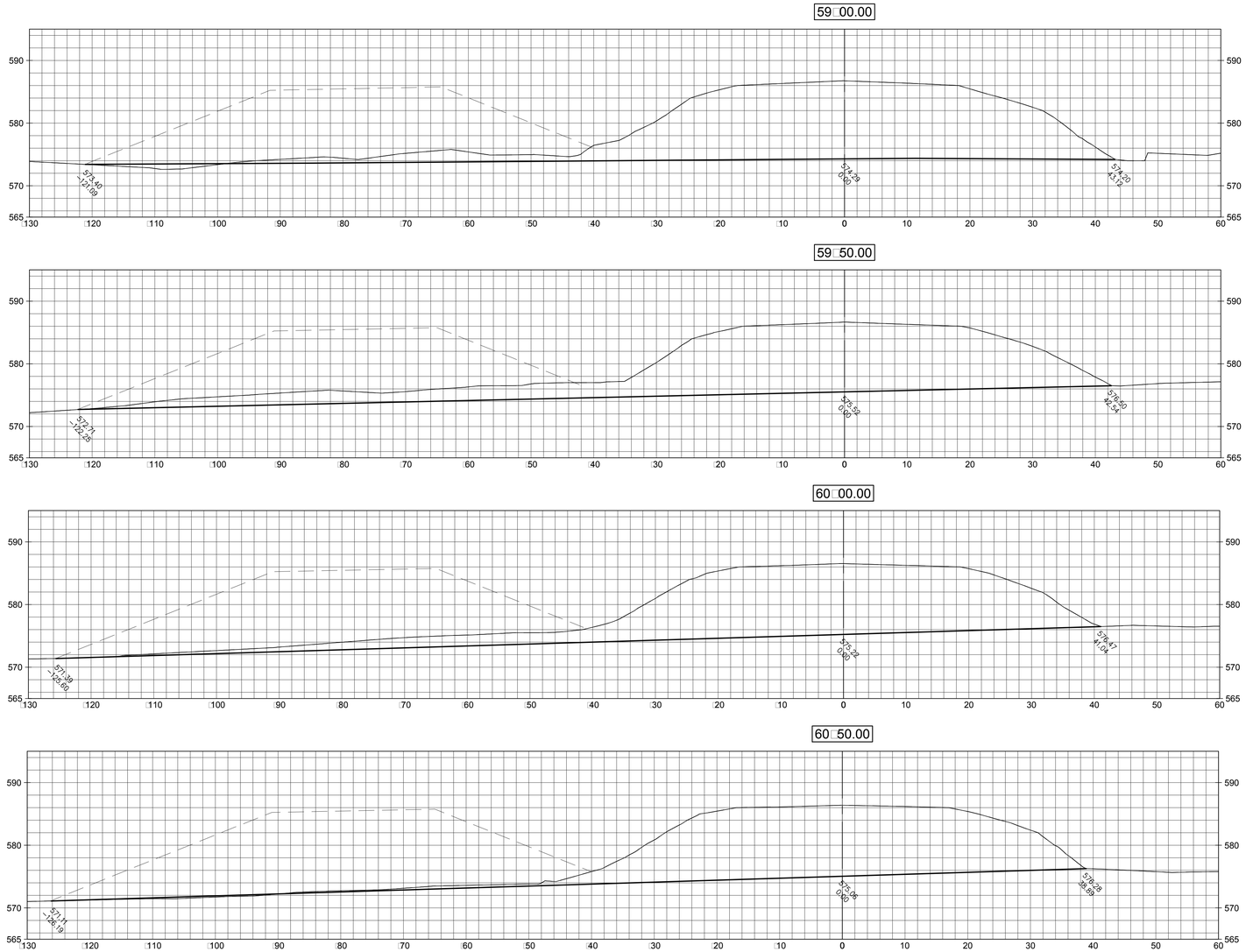
RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

Project Number 490011

CROSS SECTIONS
1 1/2 MILE ROAD
RECONSTRUCTION



10 FT

10 FT

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

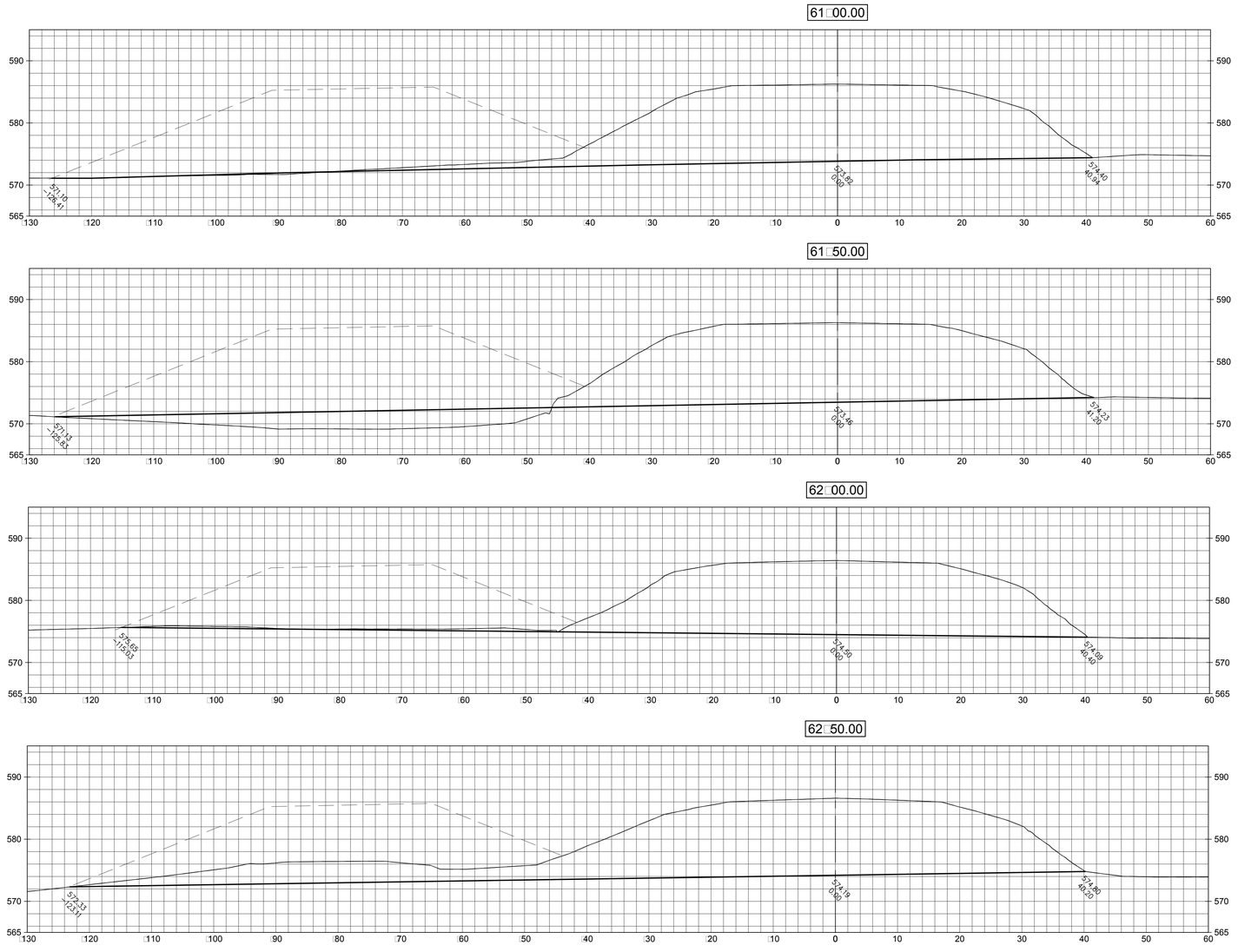
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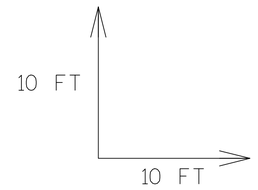
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

Project Number 490011

CROSS SECTIONS
1 1/2 MILE ROAD RECONSTRUCTION

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HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

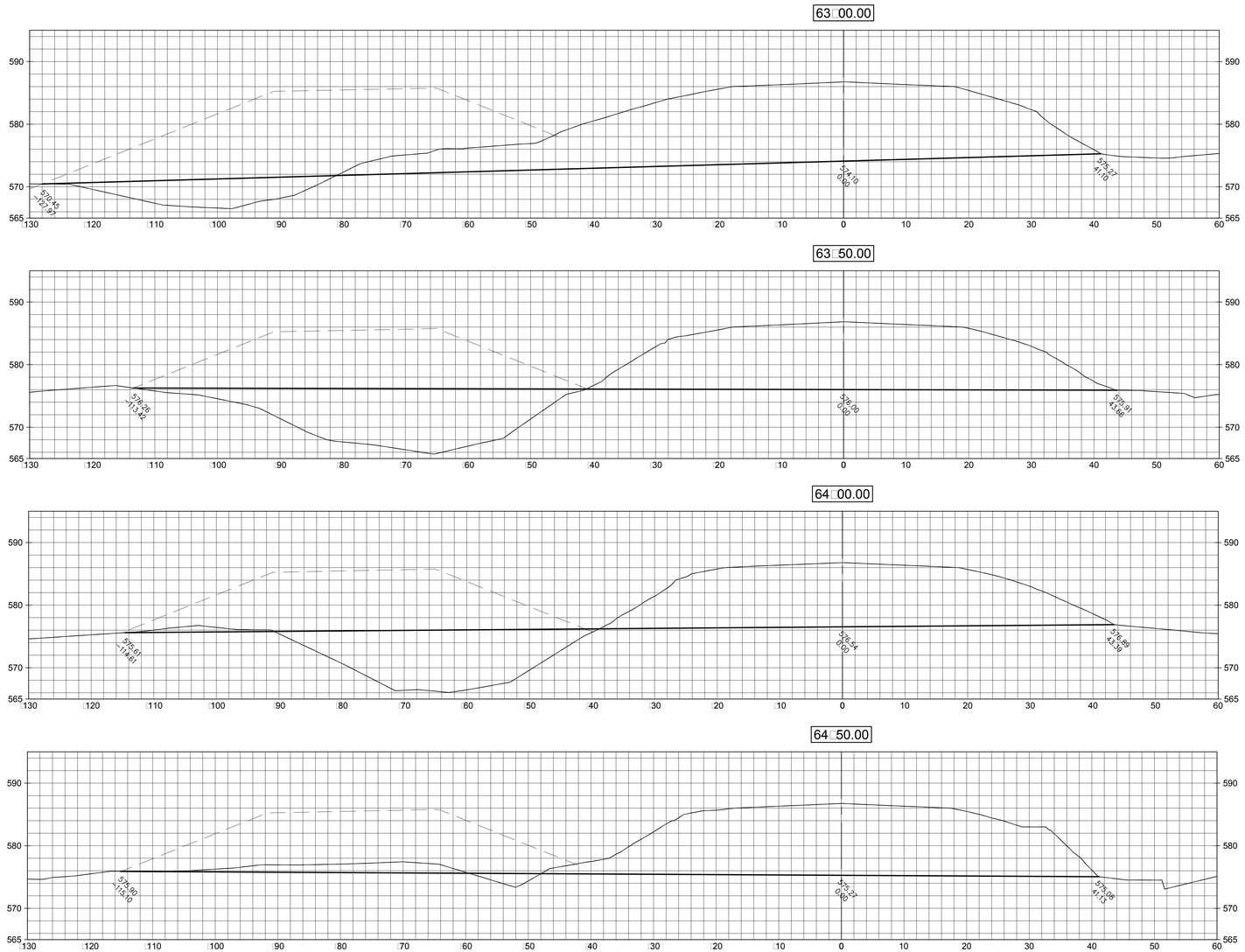
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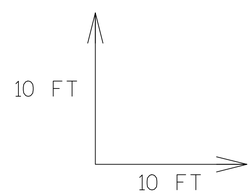
REVISION SCHEDULE		
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	BRIDGE PROFILE RAISED	7/18/2016

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CROSS SECTIONS
1 1/2 MILE ROAD
RECONSTRUCTION

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1 1/2 MILE ROAD

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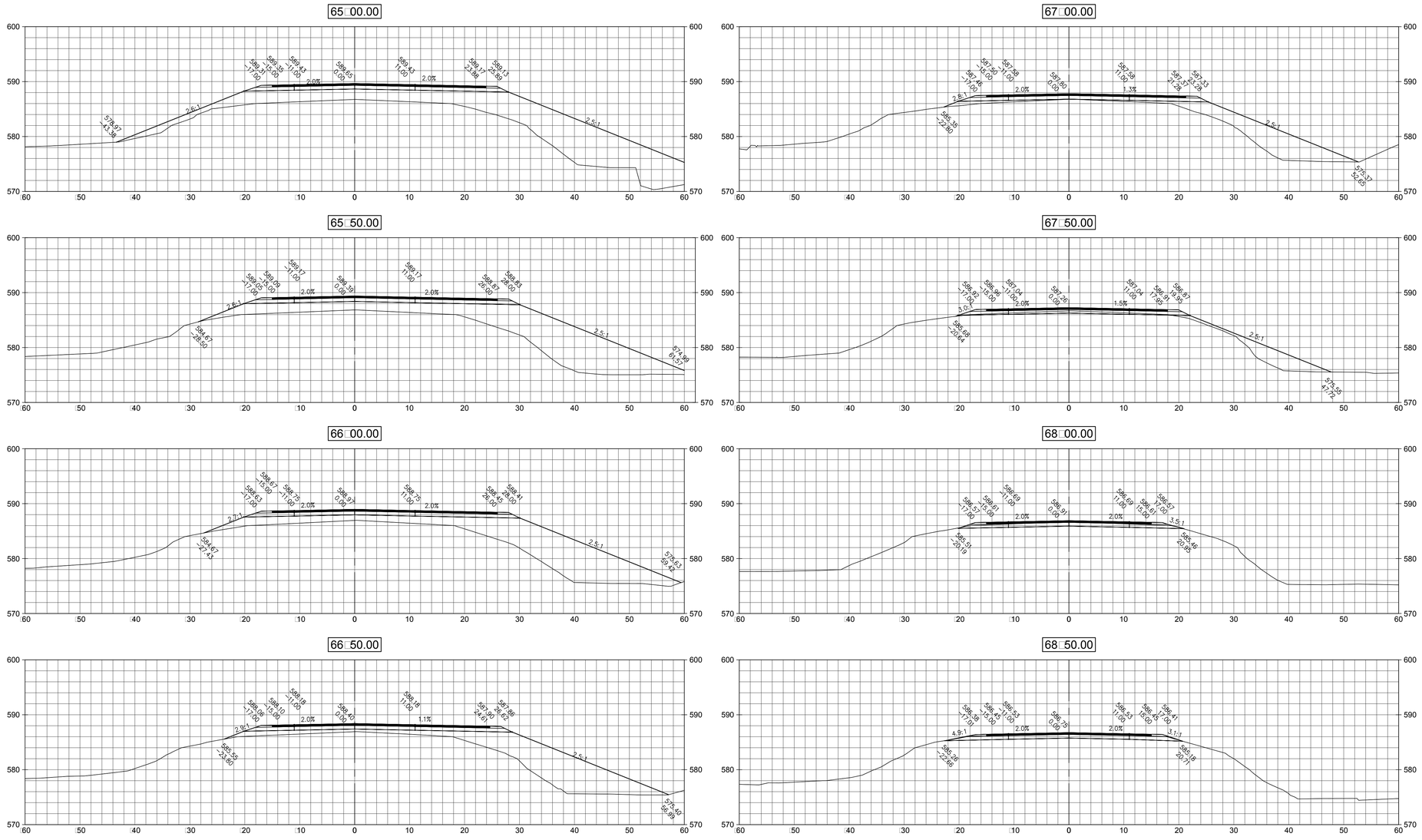
RFC ROADWAY PLANS

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ENGINEER:	BTS
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SCALE:	1" = 10' HOR. 1" = 10' VER.

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CROSS SECTIONS
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RFC ROADWAY PLANS

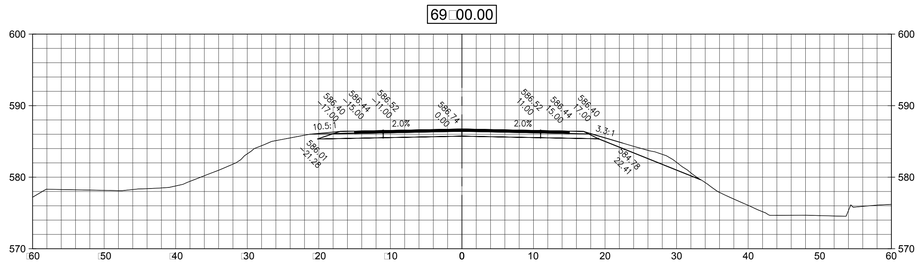
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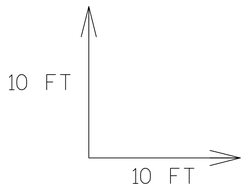
REVISION SCHEDULE		
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CROSS SECTIONS
1 1/2 MILE ROAD RECONSTRUCTION

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LITTLE RAPIDS
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RESTORATION
1 1/2 MILE ROAD

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MICHIGAN

RFC ROADWAY
PLANS

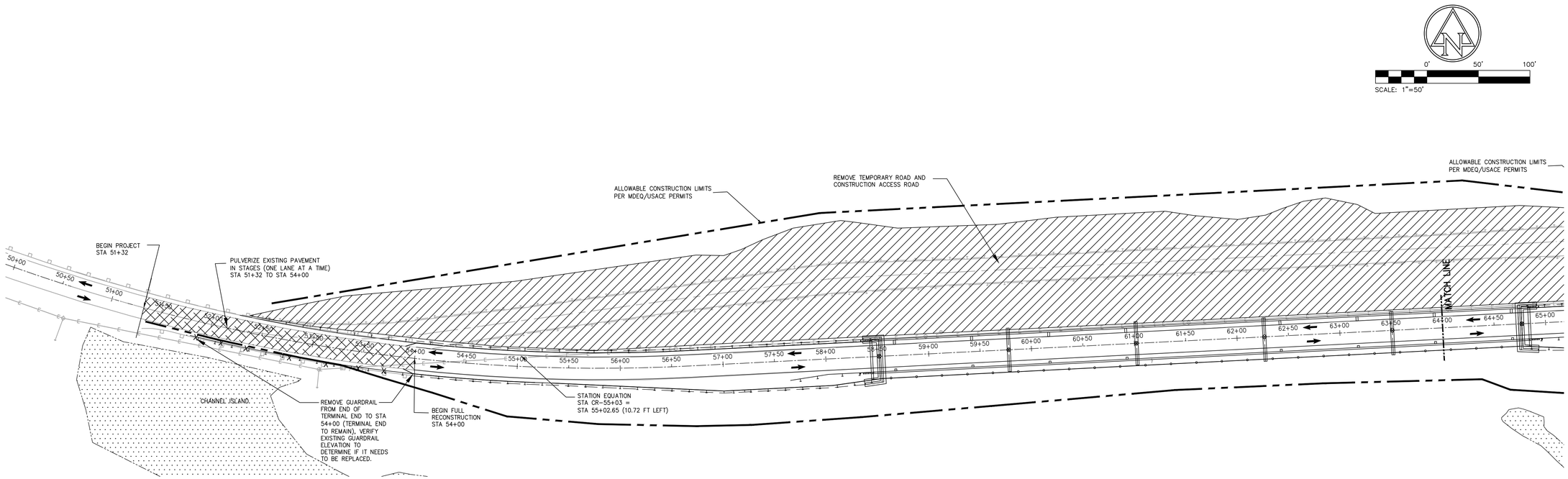
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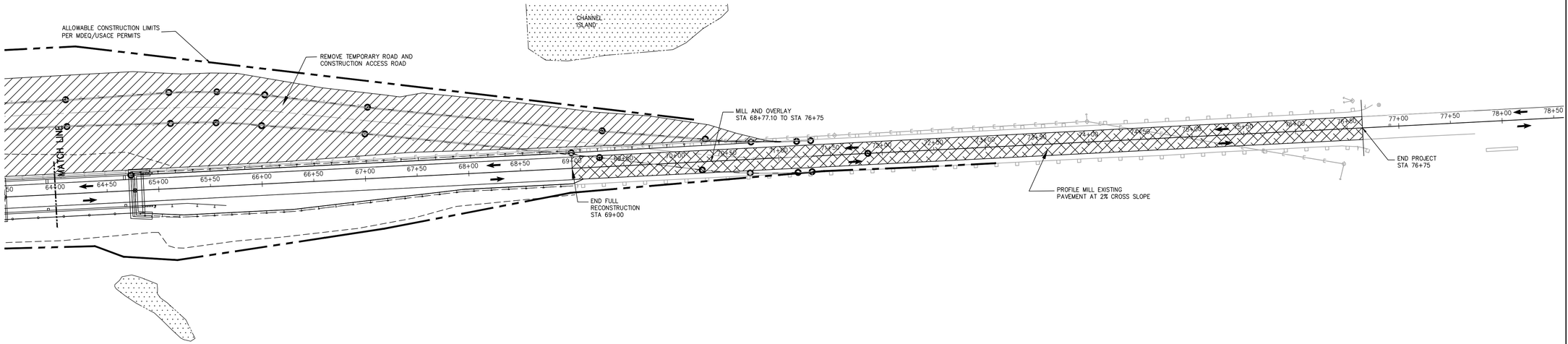
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CROSS SECTIONS
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MICHIGAN

RFC ROADWAY PLANS

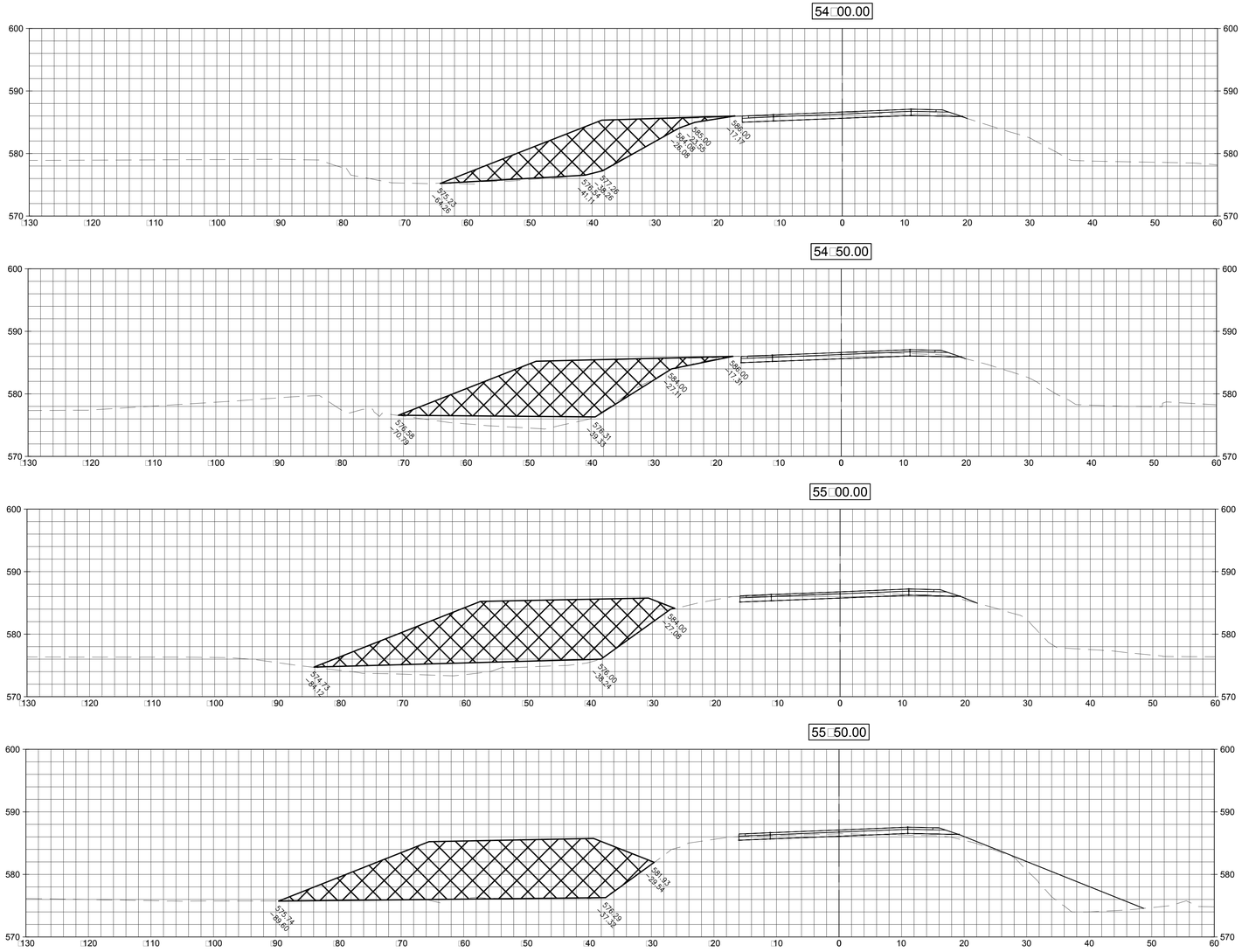
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ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
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REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

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STAGE 3 REMOVALS

50 Stage 3 Removals.dwg
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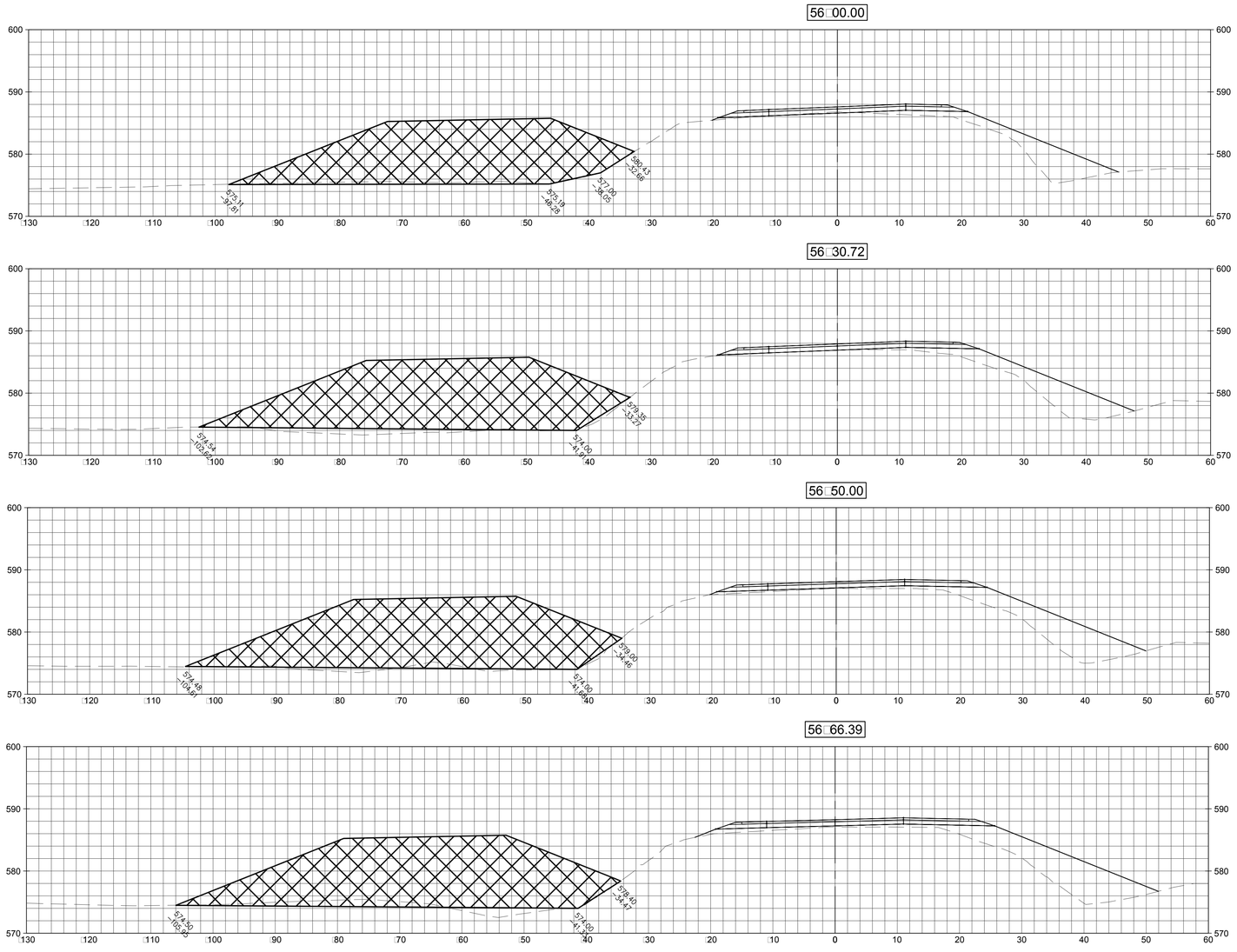
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

CROSS SECTIONS TEMP ROAD REMOVAL

10 FT
10 FT

51-60 Xsections Temp Road Removal.dwg
5/2/2016



10 FT

10 FT

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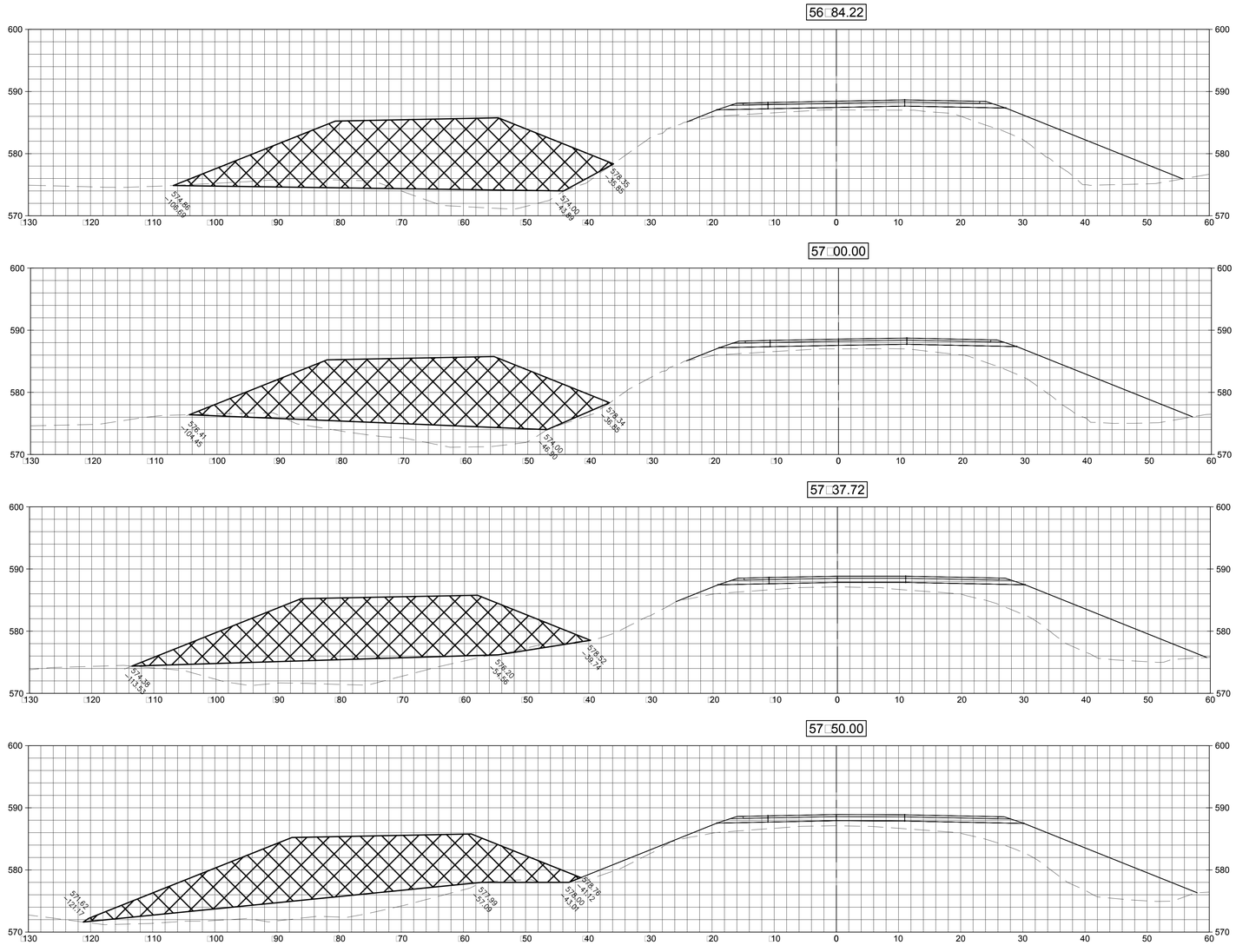
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CROSS SECTIONS
TEMP ROAD REMOVAL

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5/2/2016



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10 FT

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MICHIGAN

RFC ROADWAY PLANS

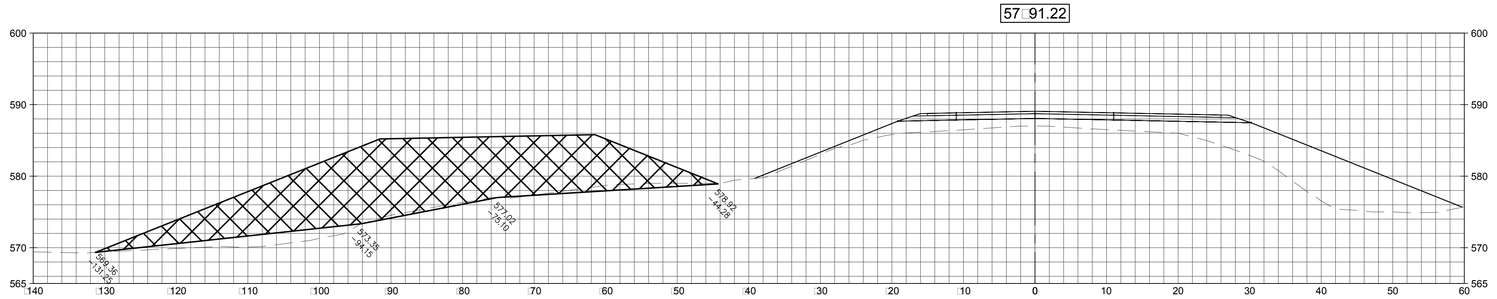
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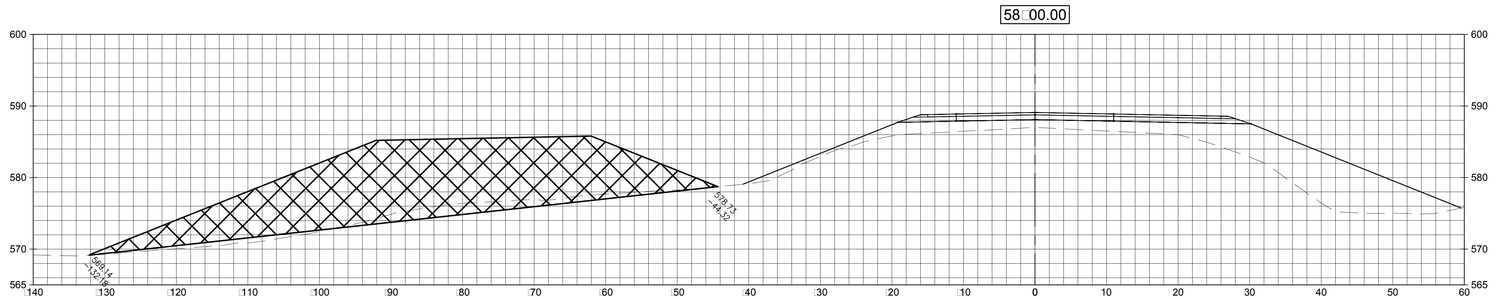
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

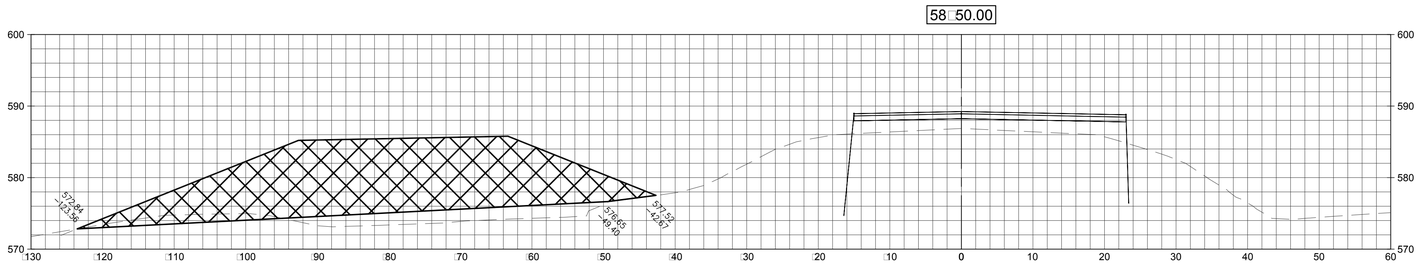
Project Number 490011

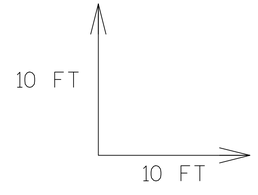
CROSS SECTIONS TEMP ROAD REMOVAL

51-60 Xsections Temp Rood Removal.dwg
5/2/2016









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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

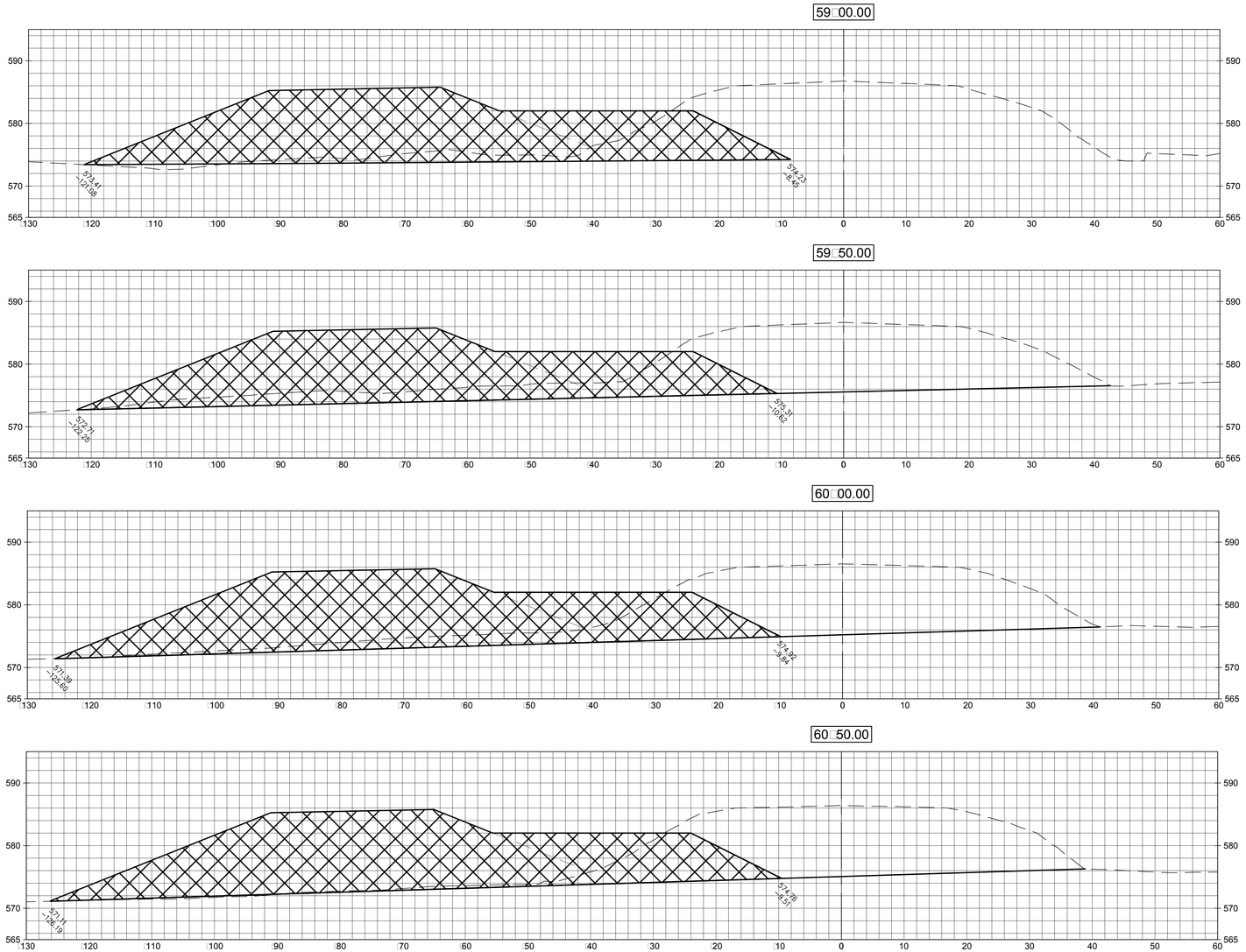
RFC ROADWAY
PLANS

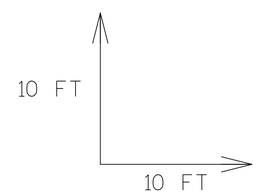
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ENGINEER:	BTS
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CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

CROSS SECTIONS
TEMP ROAD REMOVAL





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1 1/2 MILE ROAD

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CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

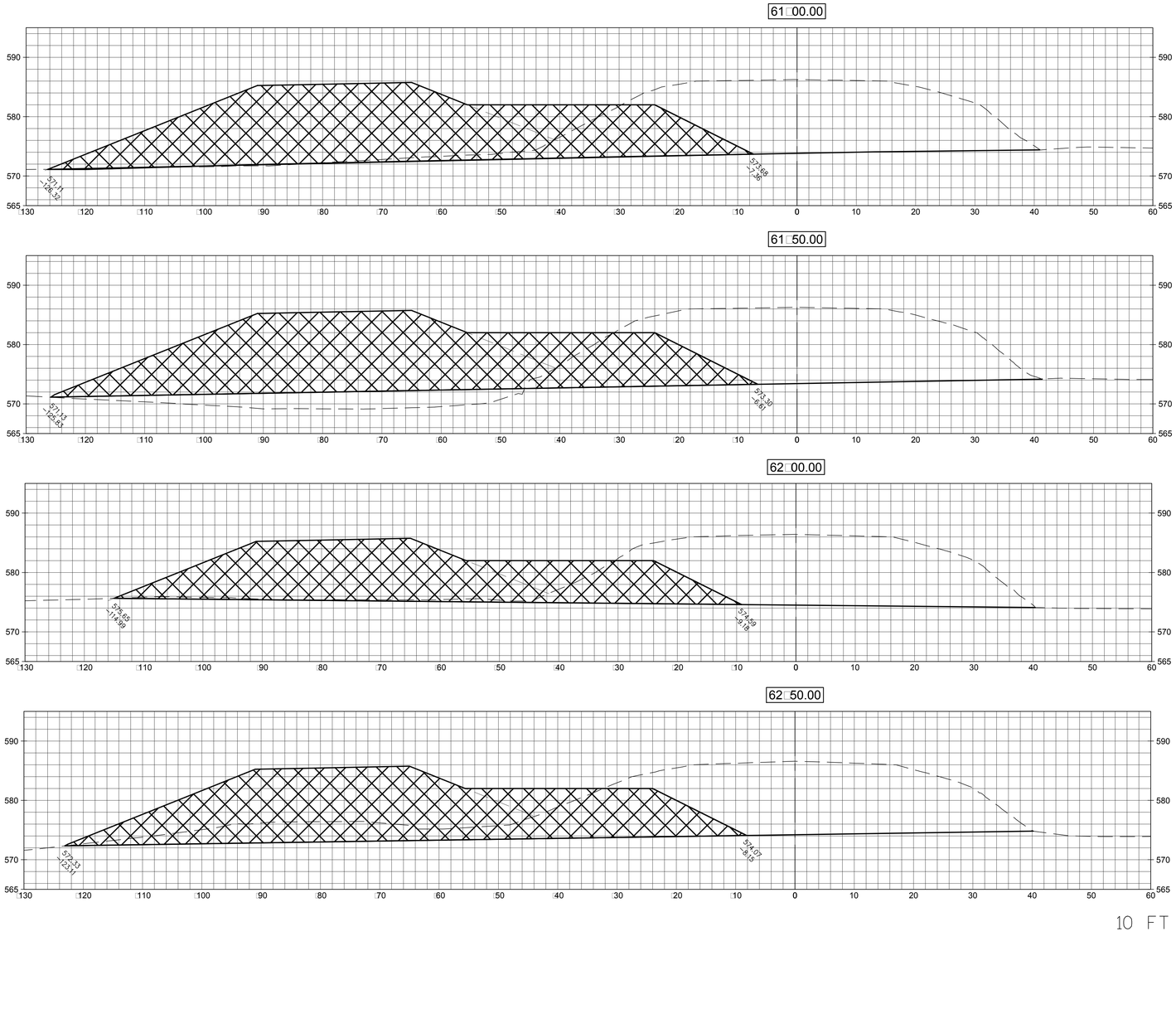
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CHECKED BY:	BTS
SCALE:	1" = 10' HOR. 1" = 10' VER.

REVISION SCHEDULE		
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Project Number 490011

CROSS SECTIONS TEMP ROAD REMOVAL

51-60 Xsections Temp Road Removal.dwg
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LITTLE RAPIDS HABITAT RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

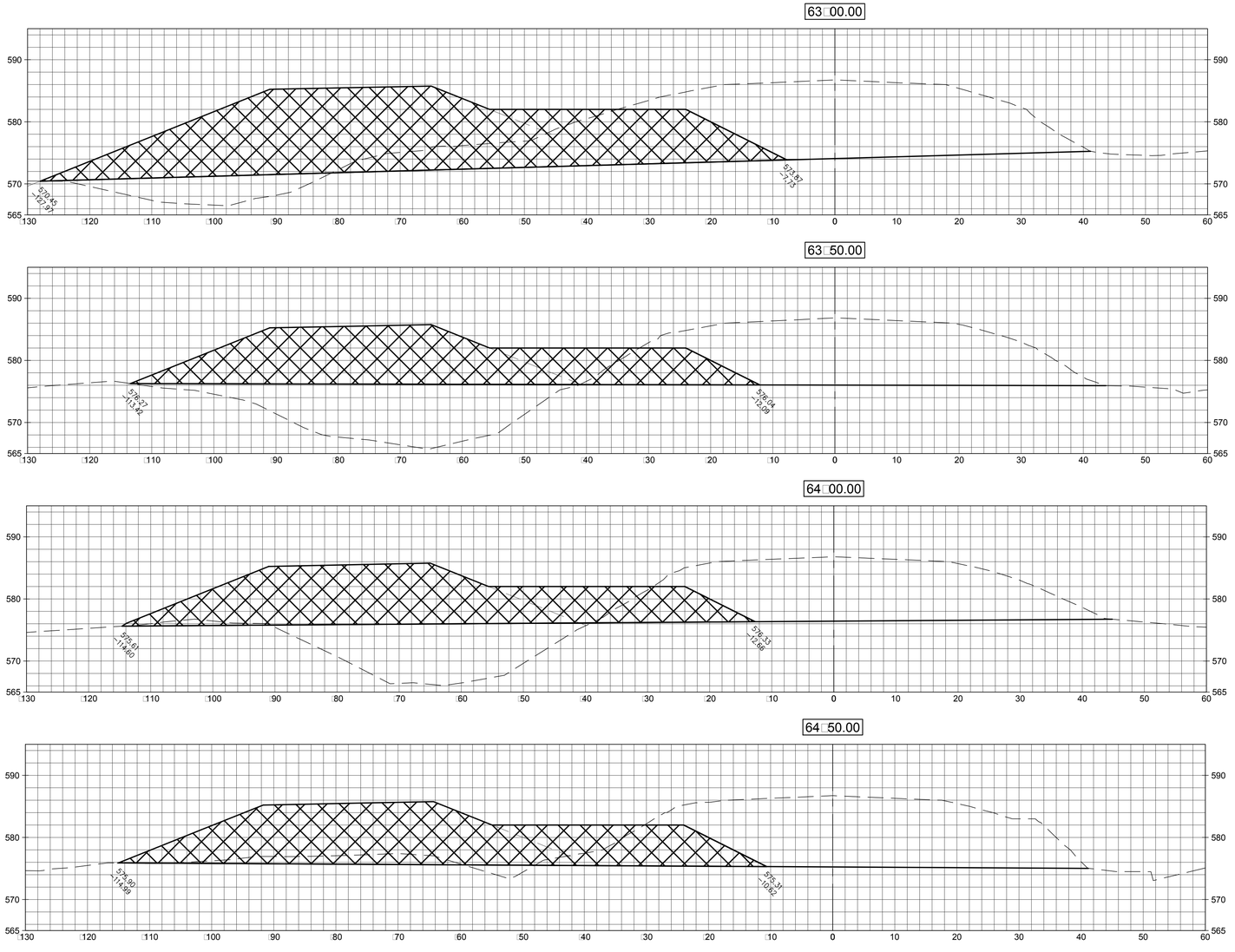
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ENGINEER:	BTS
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REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

CROSS SECTIONS TEMP ROAD REMOVAL

51-60 Xsections Temp Road Removal.dwg
5/2/2016



10 FT

10 FT

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

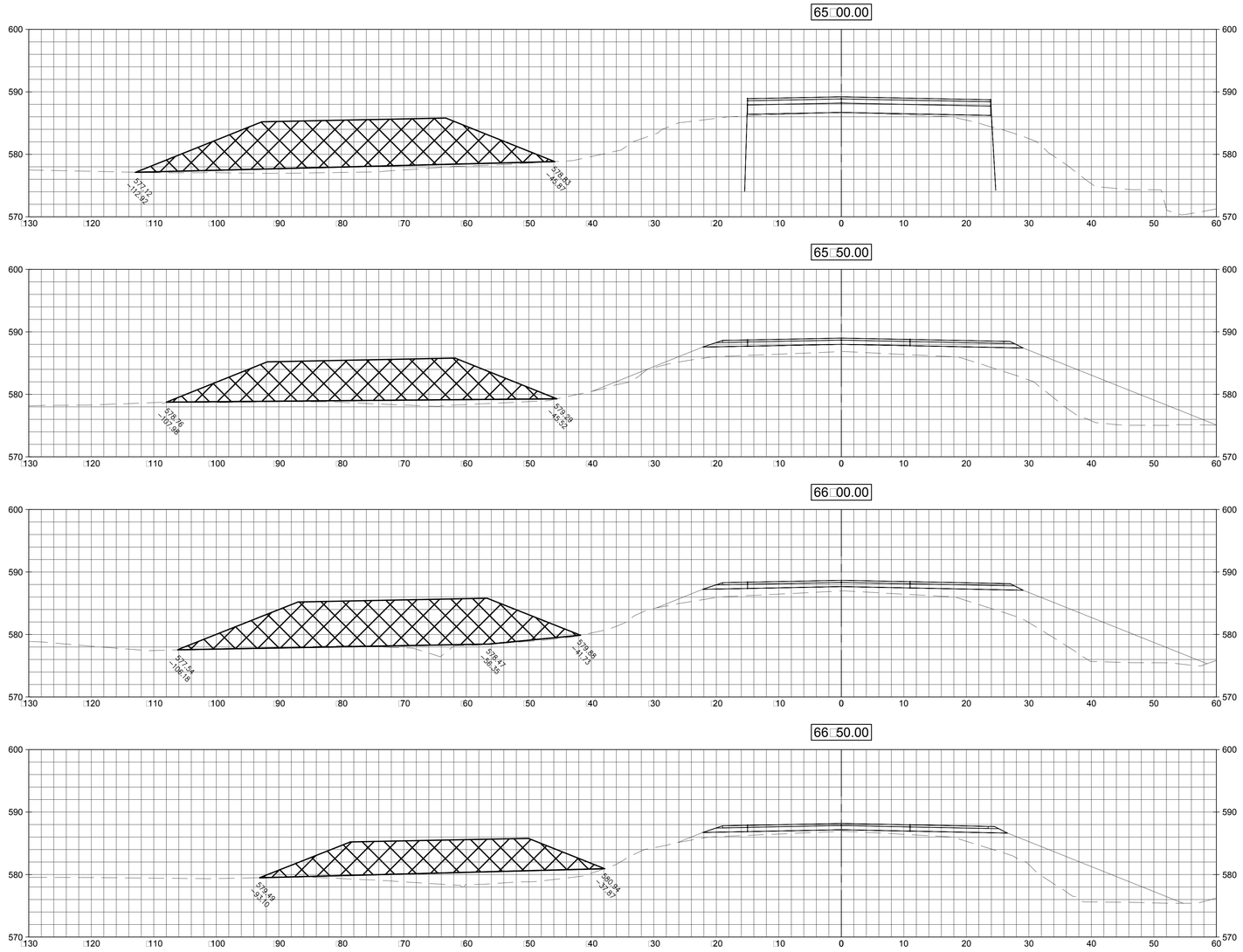
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ENGINEER:	BTS
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SCALE:	1" = 10' HOR. 1" = 10' VER.

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10 FT

10 FT

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1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY
PLANS

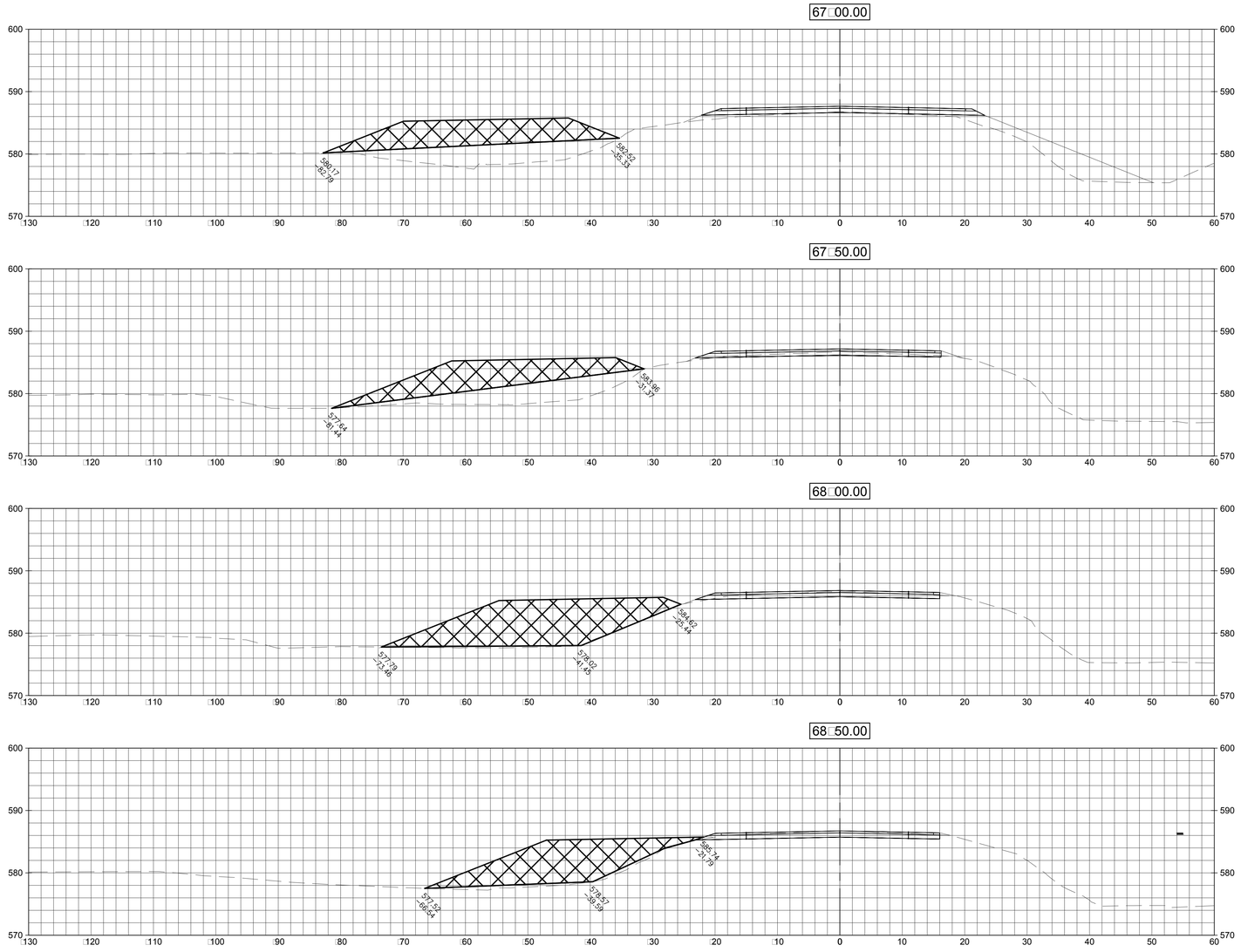
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DATE:	05/02/2016
ENGINEER:	BTS
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CROSS SECTIONS
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51-60 Xsections Temp Road Removal.dwg
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10 FT

10 FT

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CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

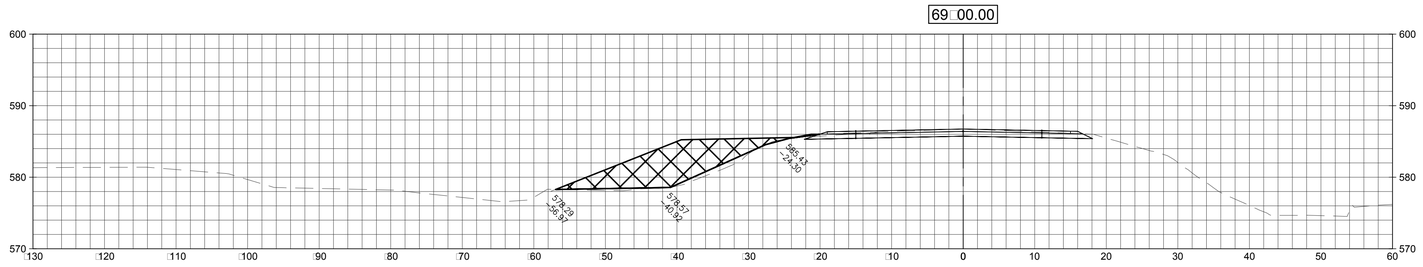
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ENGINEER:	BTS
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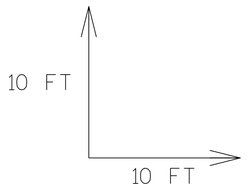
REVISION SCHEDULE		
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CROSS SECTIONS TEMP ROAD REMOVAL

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CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

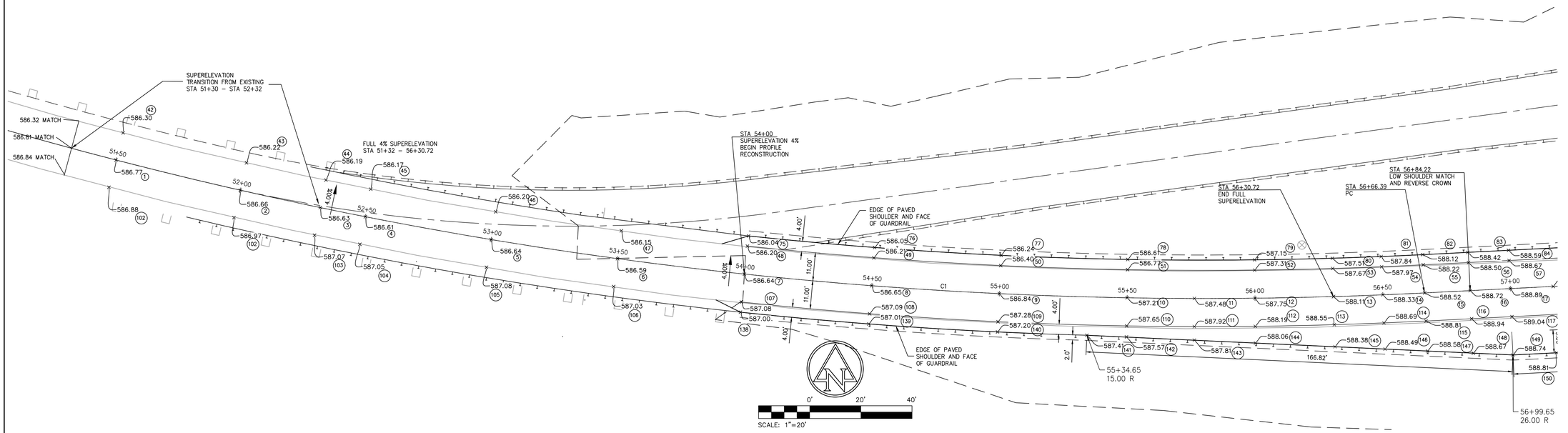
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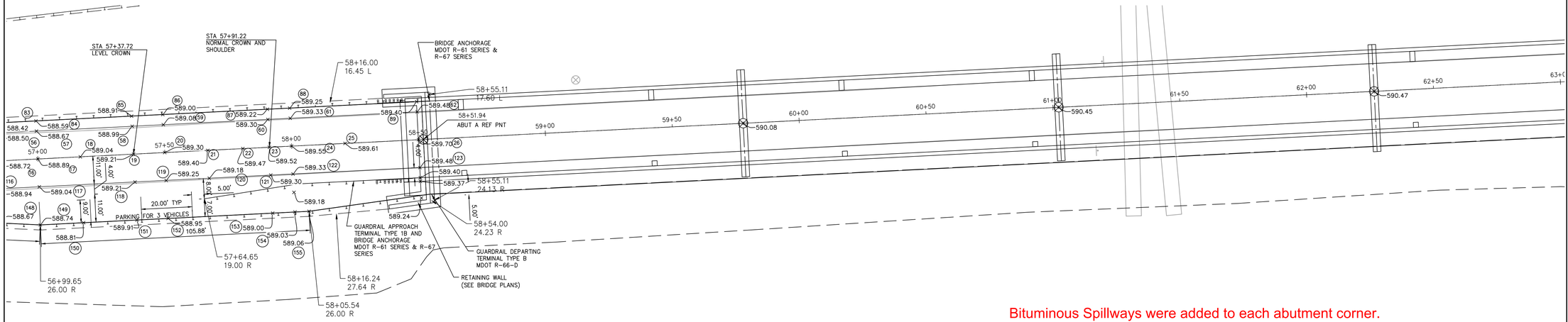
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

CROSS SECTIONS TEMP ROAD REMOVAL

51-60 Xsections Temp Road Removal.dwg
5/2/2016





CURVE	START STA	END STA	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT	DEGREE OF CURVE
C1	50+00	56+66.39	1700.00'	666.39'	662.13'	S 81°40'16" E	22°27'34"	337.53'	3°22'13"

1 ½ MILE ROAD SUPERELEVATION DATA – LITTLE RAPIDS RESTORATION PROJECT					
STATION	DESCRIPTION	LEFT OUTSIDE SHOULDER	LEFT OUTSIDE LANE	RIGHT OUTSIDE LANE	RIGHT OUTSIDE SHOULDER
54+00	Match Existing Superelevation	−4.00%	−4.00%	4.00%	−2.00%
56+30.72	End Full Superelevation	−4.00%	−4.00%	4.00%	−2.00%
56+84.22	Low Shoulder Match	−2.00%	−2.00%	2.00%	−2.00%
56+84.22	Reverse Crown	−2.00%	−2.00%	2.00%	−2.00%
57+37.72	Level Crown	−2.00%	−2.00%	0.00%	−2.00%
57+91.22	Begin Normal Crown	−2.00%	−2.00%	−2.00%	−2.00%
57+91.22	Begin Normal Shoulder	−2.00%	−2.00%	−2.0%	−2.00%

Runnoff	Length
56+30.72 – 57+37.72	107
Runout	Length
57+37.72 – 57+91.22	53.50'

Bituminous Spillways were added to each abutment corner.
The approach slabs were mudjacked to level joints that settled.

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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

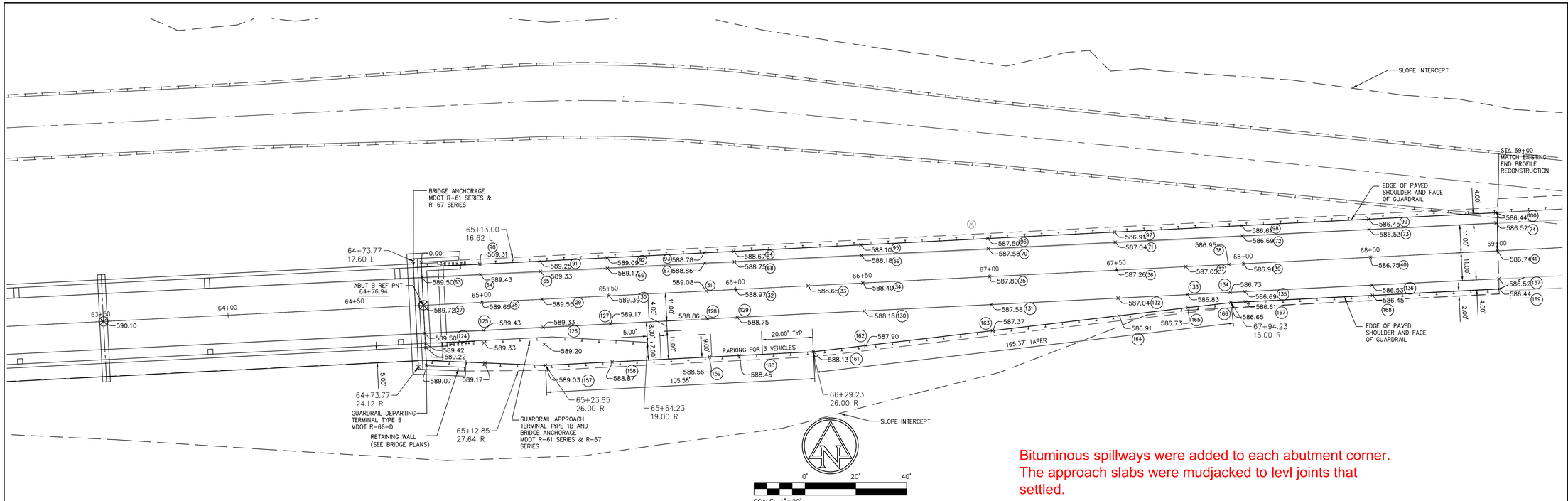
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DATE:	05/02/2016
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DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 20'

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

Project Number 490011

ASBUILT CONSTRUCTION DETAIL
EAST AND WEST BRIDGE APPROACH

roadasbuiltpointnumbers.dwg
7/31/2017



Bituminous spillways were added to each abutment corner. The approach slabs were mudjacked to levl joints that settled.

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

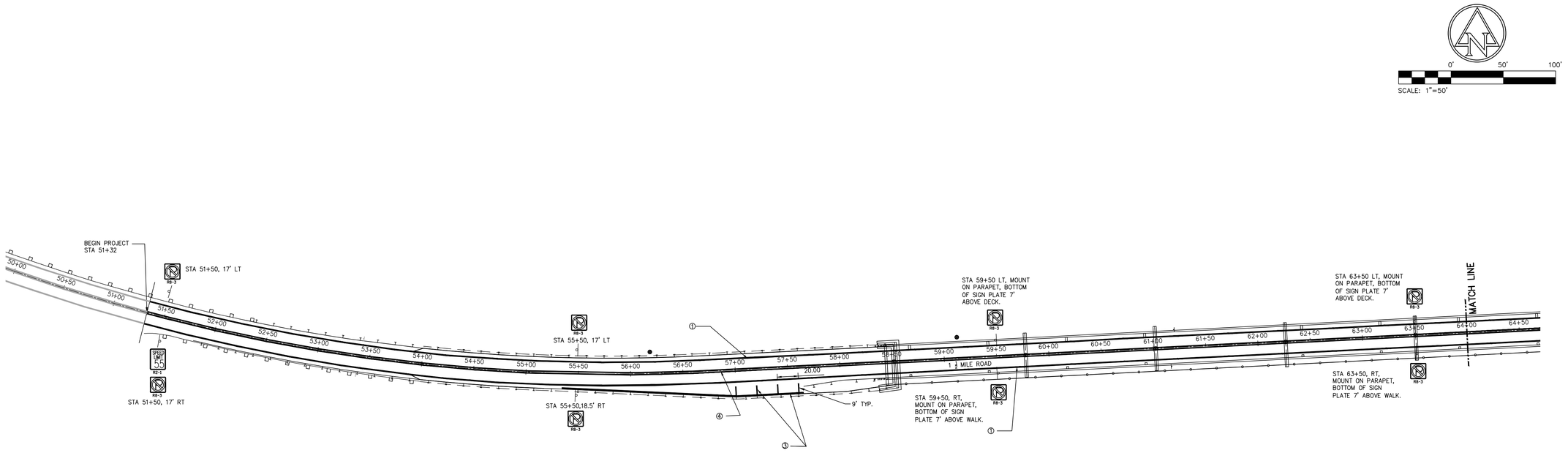
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DATE:	05/02/2016
ENGINEER:	BTS
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CHECKED BY:	BTS
SCALE:	1" = 20'

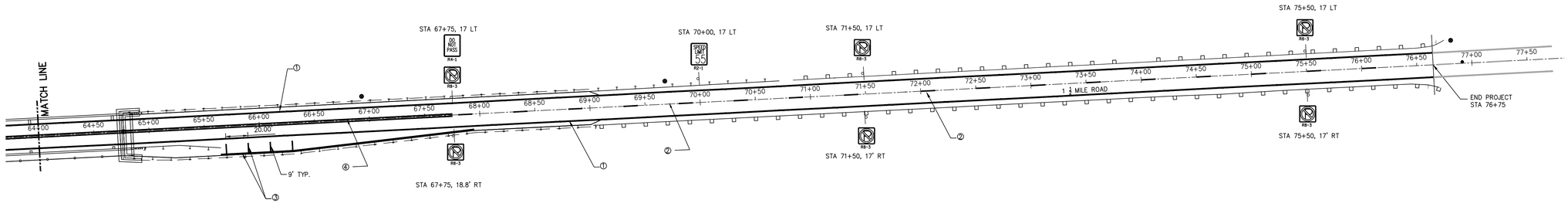
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

Project Number 490011

ASBUILT CONSTRUCTION DETAIL EAST AND WEST BRIDGE APPROACH

roadasbuiltpointnumbers.dwg
7/31/2017





SIGN	SIZE	MATERIAL
R8-3	12 X 12	ASTM D-4956, TYPE IV, BLACK ON WHITE
R4-1	24 X 30	ASTM D-4956, TYPE IV, BLACK ON WHITE
R2-1	24 X 30	ASTM D-4956, TYPE IV, BLACK ON WHITE

NOTES:
1. THE BOTTOM HEIGHT OF ALL SIGNS PLATES SHALL BE 7-FEET.
2. SIGN SUPPORTS SHALL MEET THE REQUIREMENTS OF MDOT SIGN SUPPORT STANDARD PLAN SIGN-200-D, SIGN-740-B AND SIGN-720-A FOR SIGNS MOUNTED ON THE CONCRETE BRIDGE RAIL.

LEGEND
① SOLID WHITE EDGE LINE 4"
② BROKEN YELLOW CENTERLINE 4"
③ SOLID WHITE LINE 4"
④ DOUBLE SOLID YELLOW LINE 4"

ALL PAVEMENT MARKING MATERIAL IS REGULAR DRY.

0' 50' 100'
SCALE: 1"=50'

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
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MICHIGAN

RFC ROADWAY PLANS

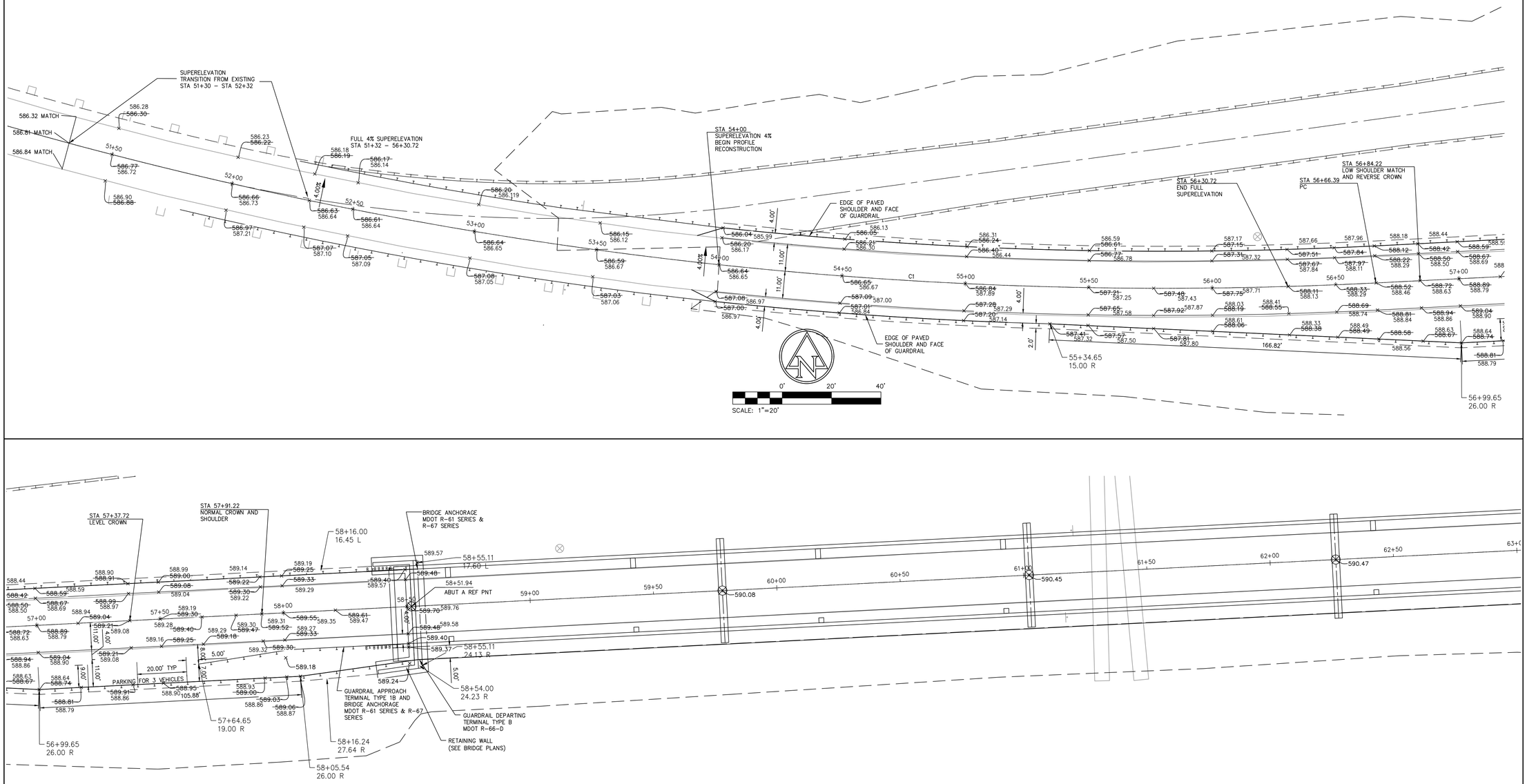
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ENGINEER:	BTS
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CHECKED BY:	BTS
SCALE:	1" = 50'

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

PAVEMENT MARKING AND SIGN PLAN

63 Pavement Markings.dwg
5/3/2016



CURVE	START STA	END STA	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT	DEGREE OF CURVE
C1	50+00	56+66.39	1700.00'	666.39'	662.13'	S 81°40'16" E	22°27'34"	337.53'	3°22'13"

1 ½ MILE ROAD SUPERELEVATION DATA – LITTLE RAPIDS RESTORATION PROJECT					
STATION	DESCRIPTION	LEFT OUTSIDE SHOULDER	LEFT OUTSIDE LANE	RIGHT OUTSIDE LANE	RIGHT OUTSIDE SHOULDER
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56+30.72	End Full Superelevation	−4.00%	−4.00%	4.00%	−2.00%
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56+84.22	Reverse Crown	−2.00%	−2.00%	2.00%	−2.00%
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57+91.22	Begin Normal Crown	−2.00%	−2.00%	−2.00%	−2.00%
57+91.22	Begin Normal Shoulder	−2.00%	−2.00%	−2.00%	−2.00%

Runnoff	Length
56+30.72 – 57+37.72	107
Runout	Length
57+37.72 – 57+91.22	53.50'

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LITTLE RAPIDS HABITAT RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

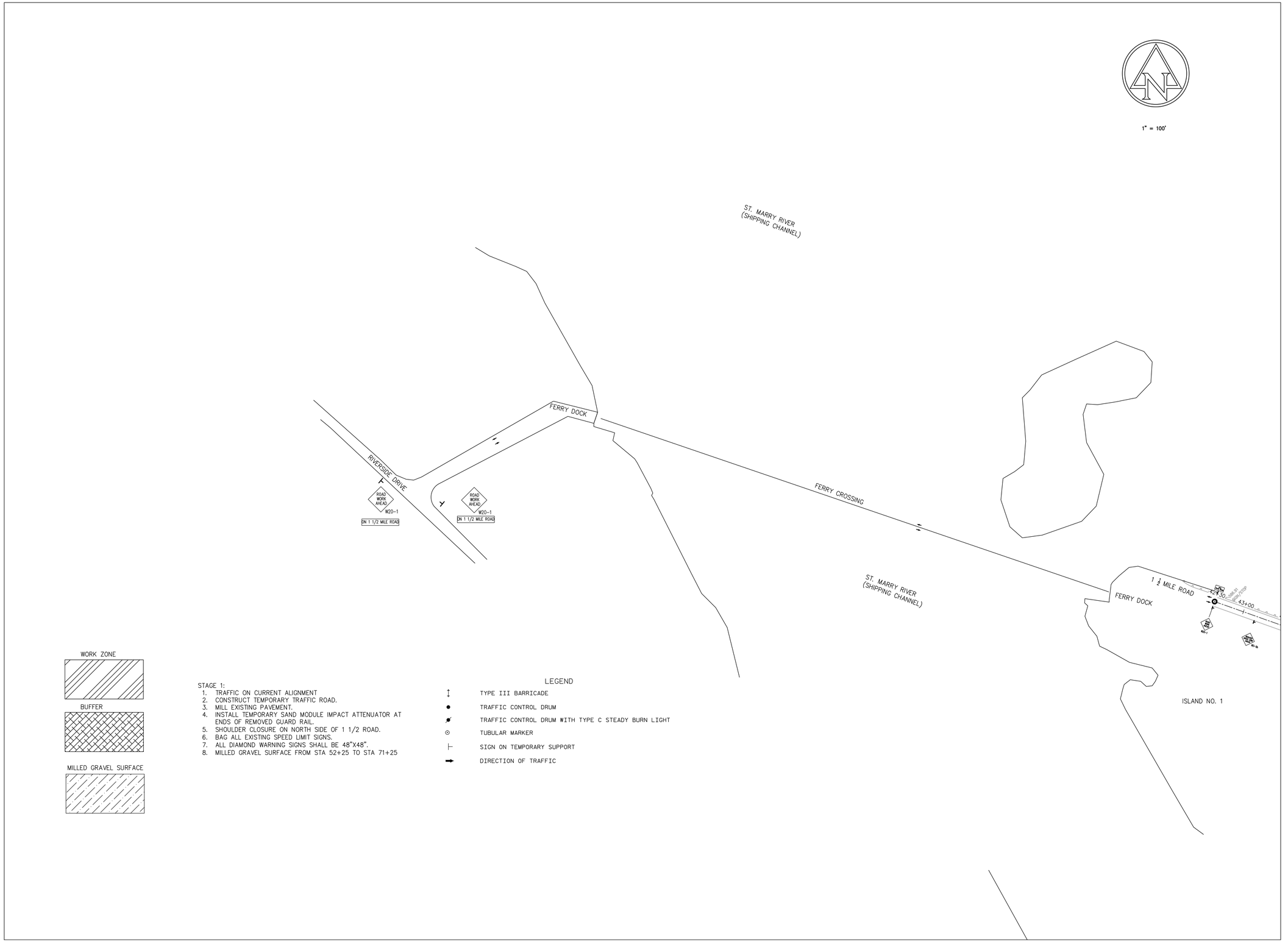
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ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 20'

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

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ASBUILT CONSTRUCTION DETAIL
EAST AND WEST BRIDGE APPROACH

roadelevationredline.dwg
7/31/2017



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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

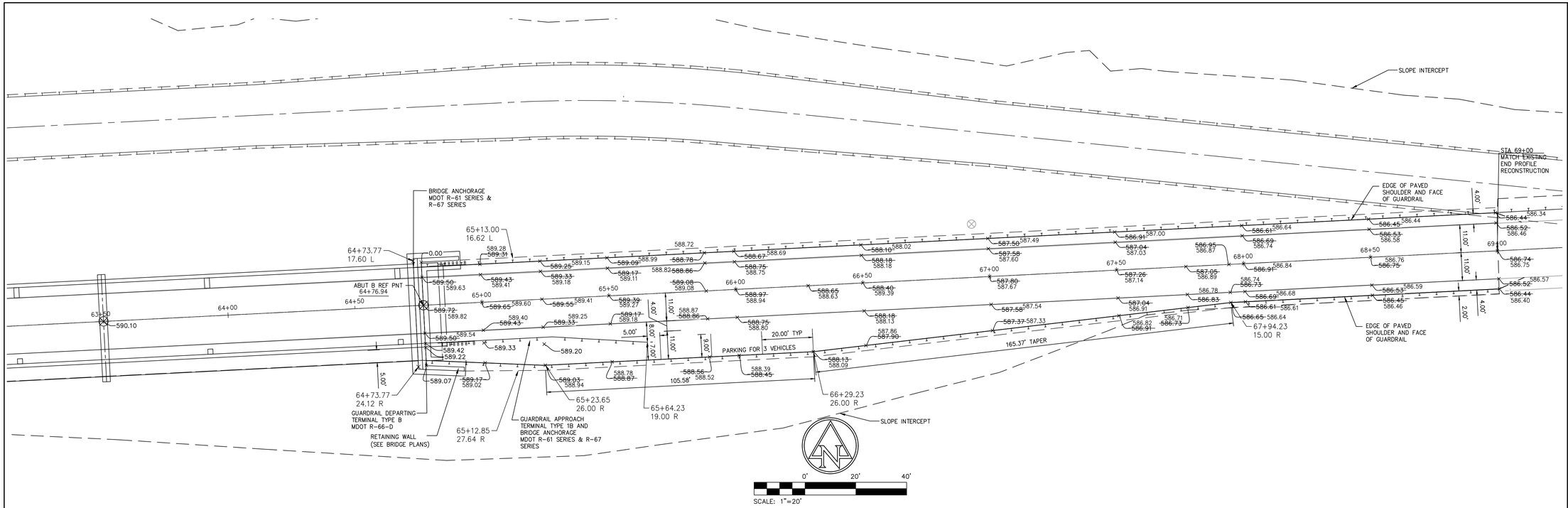
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ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" =100'

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

GLOBAL SIGNING PLAN

64 – 68 Stage 1 Traffic.dwg
5/2/2016



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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

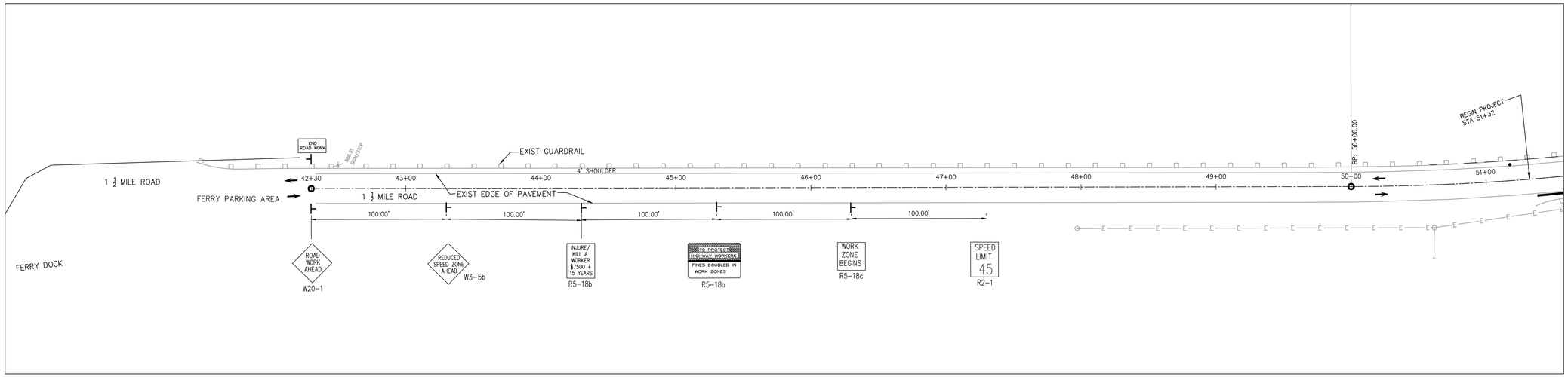
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CHECKED BY:	BTS
SCALE:	1" = 20'

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
	BRIDGE PROFILE RAISED	7/18/2016

Project Number 490011

ASBUILT
CONSTRUCTION
DETAIL
EAST AND WEST
BRIDGE APPROACH

roadelevationredline.dwg
7/31/2017



0' 40' 80'

SCALE: 1"=40'

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HIPPEWA OUNTY ROAD OMMISSION

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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
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MICHIGAN

RFC ROADWAY PLANS

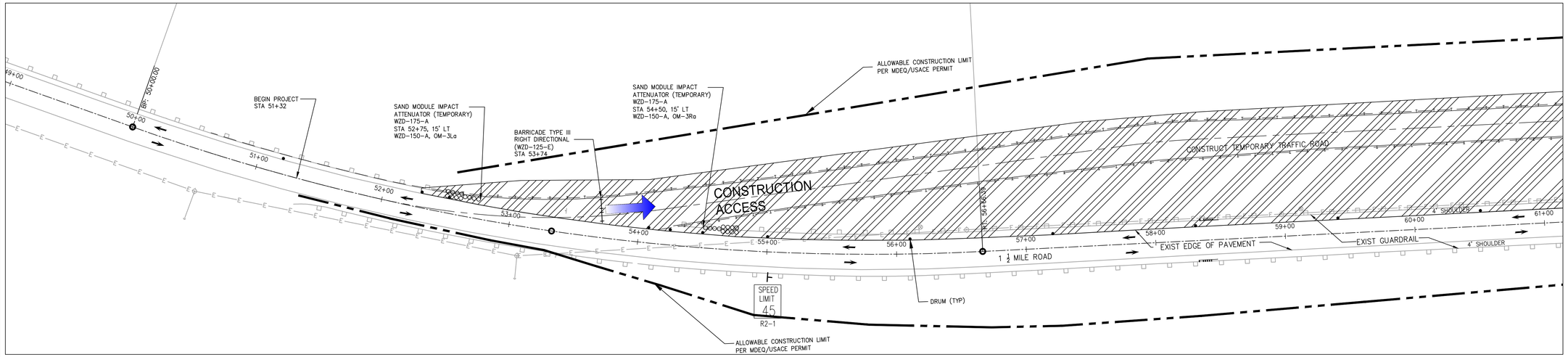
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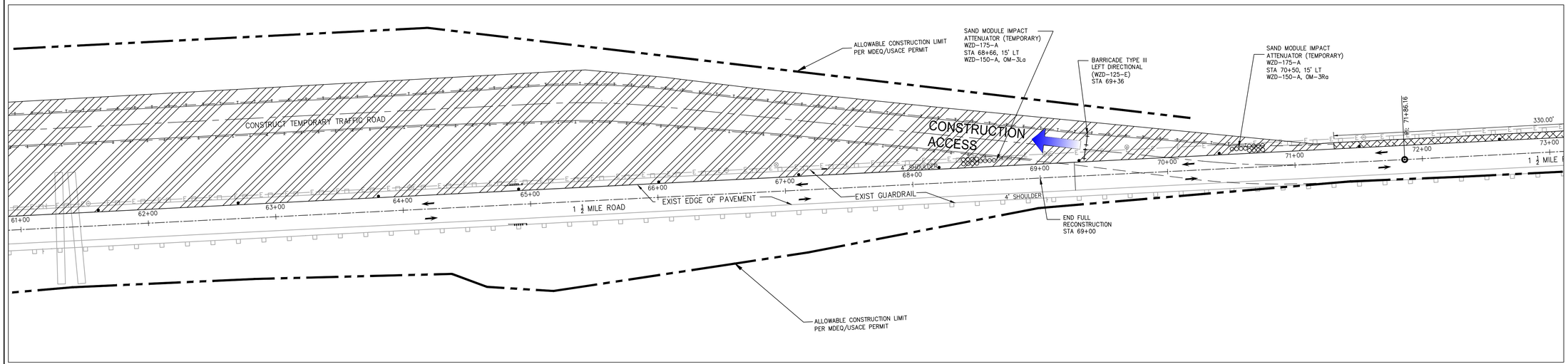
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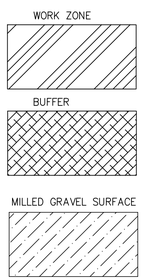
Project Number 490011

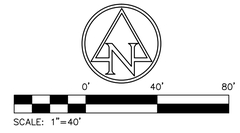
STAGE 1 TRAFFIC- CONSTRUCTION OF TEMPORARY TRAFFIC ROAD

64 – 68 Stage 1 Traffic.dwg
5/2/2016









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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

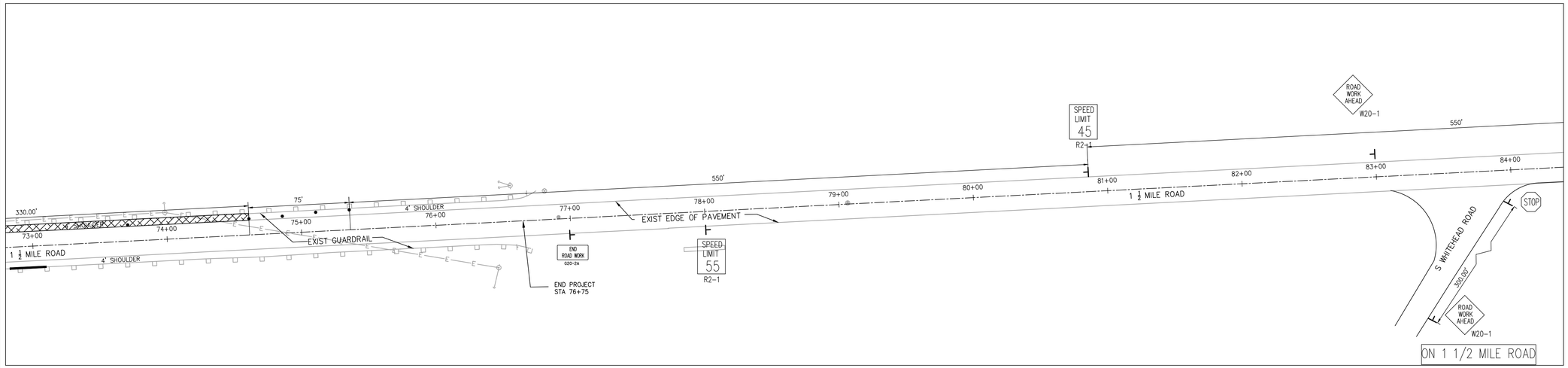
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DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 40'

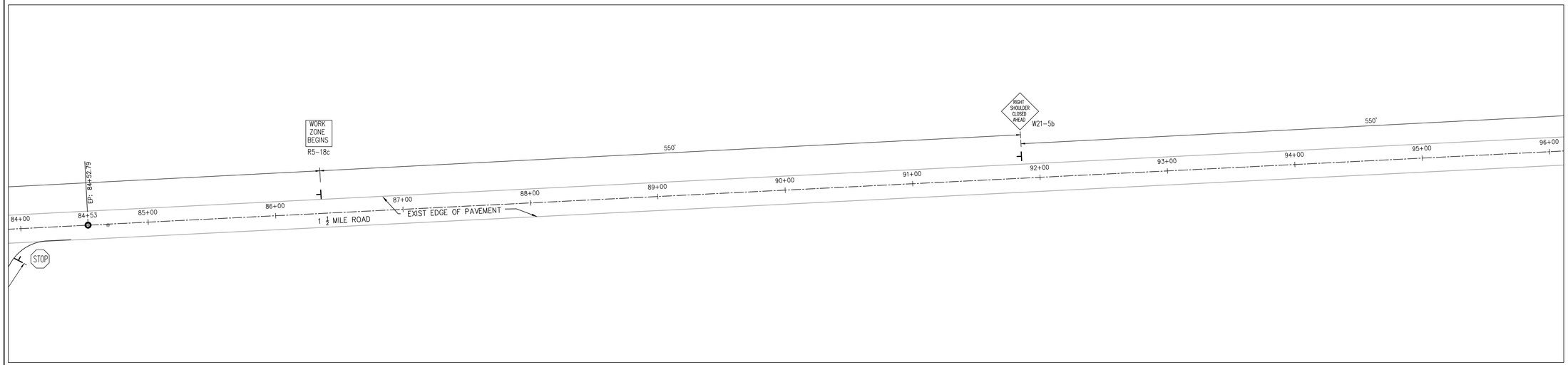
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 1 TRAFFIC- CONSTRUCTION OF TEMPORARY TRAFFIC ROAD

64 – 68 Stage 1 Traffic.dwg
5/2/2016





SCALE: 1"=40'

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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

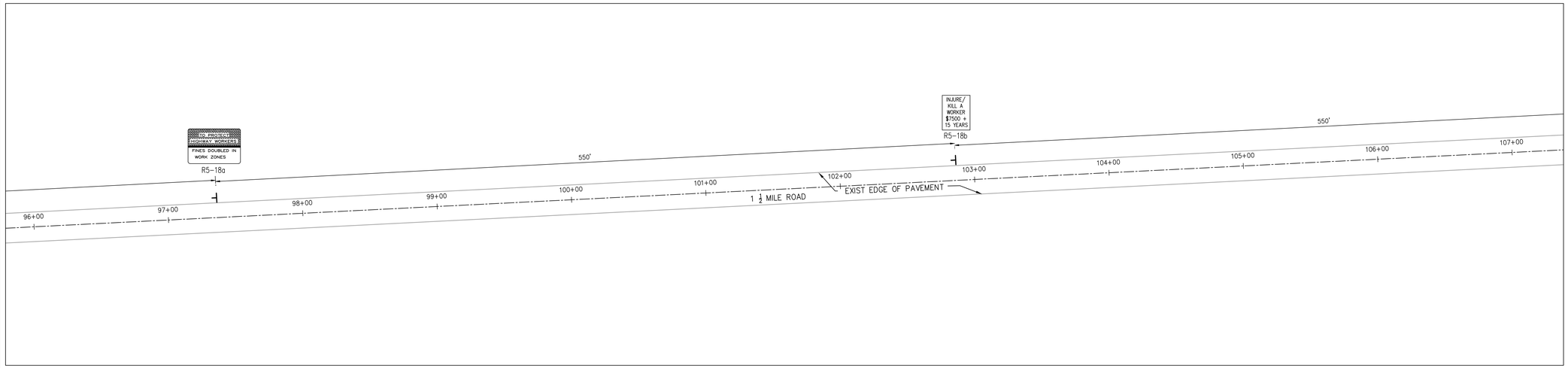
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ENGINEER:	BTS
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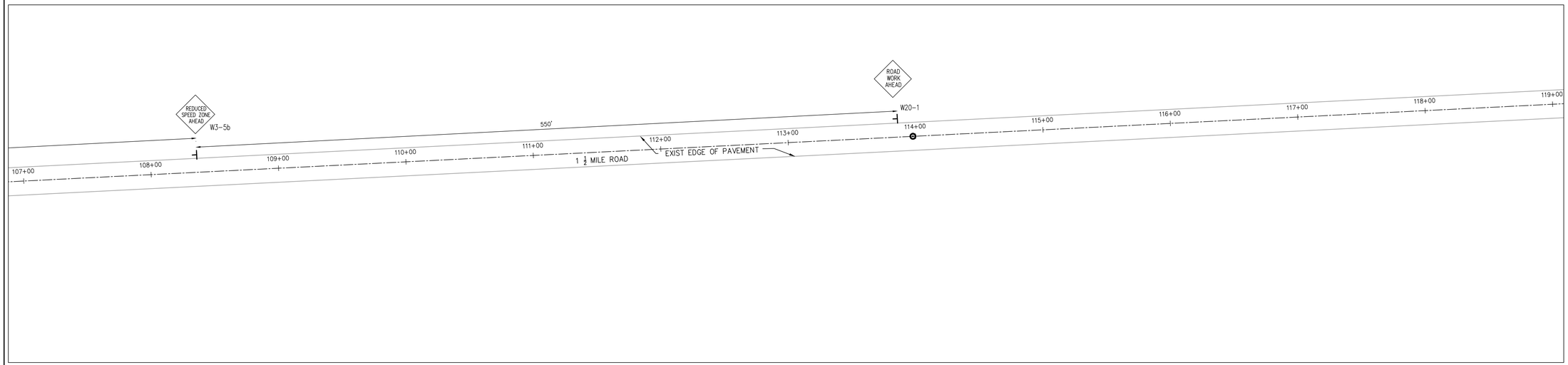
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 1 TRAFFIC-CONSTRUCTION OF TEMPORARY TRAFFIC ROAD

64 – 68 Stage 1 Traffic.dwg
5/2/2016





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0' 40' 80'
SCALE: 1"=40'

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

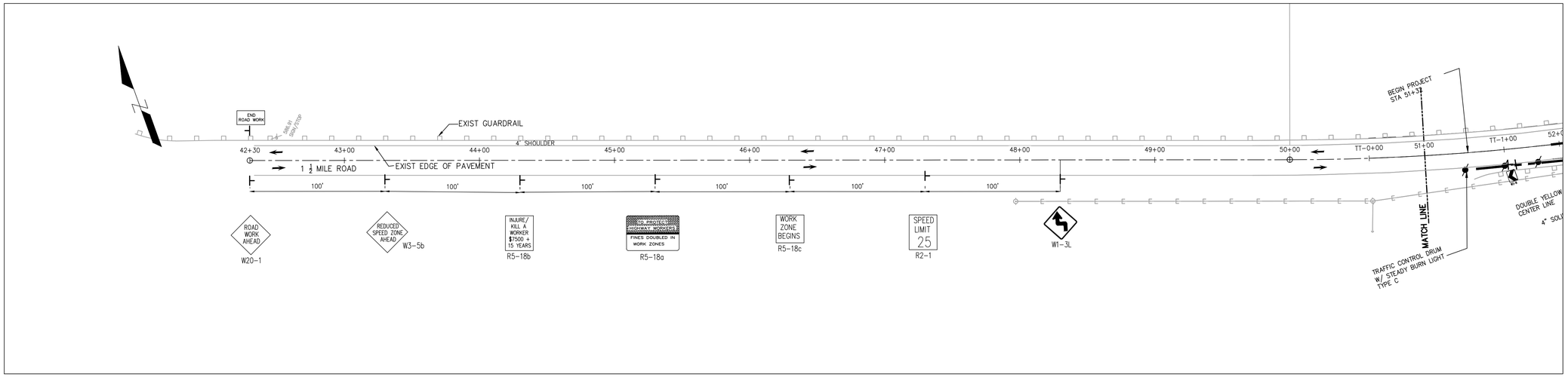
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ENGINEER:	BTS
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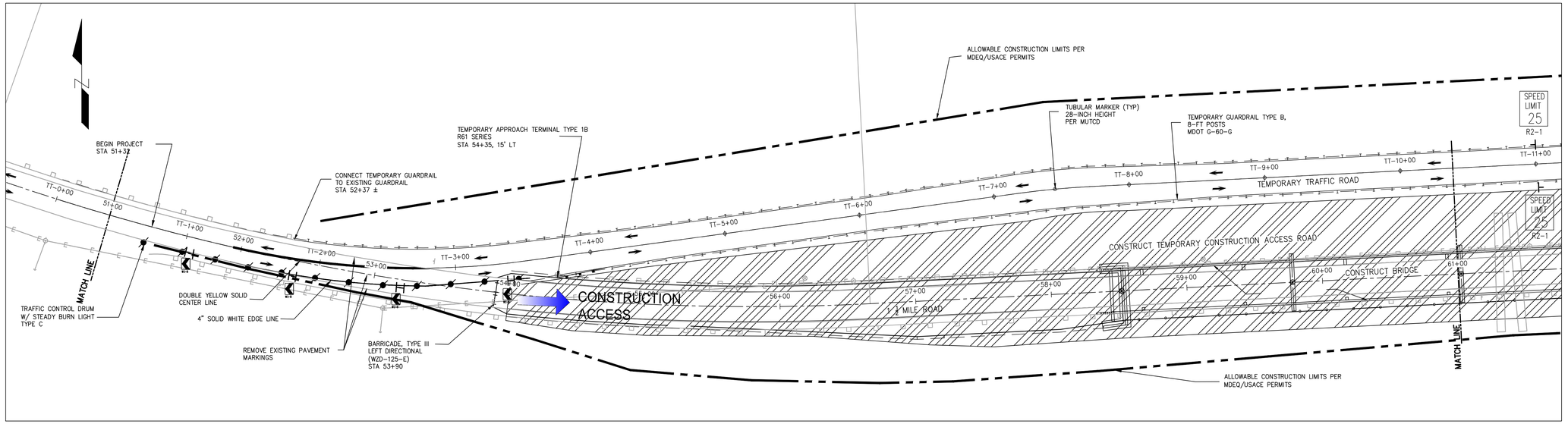
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 1 TRAFFIC-CONSTRUCTION OF TEMPORARY TRAFFIC ROAD

64 – 68 Stage 1 Traffic.dwg
5/2/2016





LEGEND

- TYPE III BARRICADE
- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- TUBULAR MARKER
- SIGN ON TEMPORARY SUPPORT
- DIRECTION OF TRAFFIC

WORK ZONE

STAGE 2:
1. SHIFT TRAFFIC TO TEMPORARY TRAFFIC ROAD.
2. CONSTRUCT TEMPORARY CONSTRUCTION ACCESS ROAD.
3. CONSTRUCT NEW BRIDGE.
3. WIDEN EXISTING CAUSEWAY FOR PARKING AREAS AND FISHING ACCESS TO BRIDGE.
4. INSTALL TRAFFIC BARRIERS, DRUMS AND TEMPORARY END TERMINALS.
5. BAG ALL EXISTING SPEED LIMIT SIGNS.
6. ALL DIAMOND WARNING SIGNS SHALL BE 48"X48".

0' 40' 80'
SCALE: 1"=40'

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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

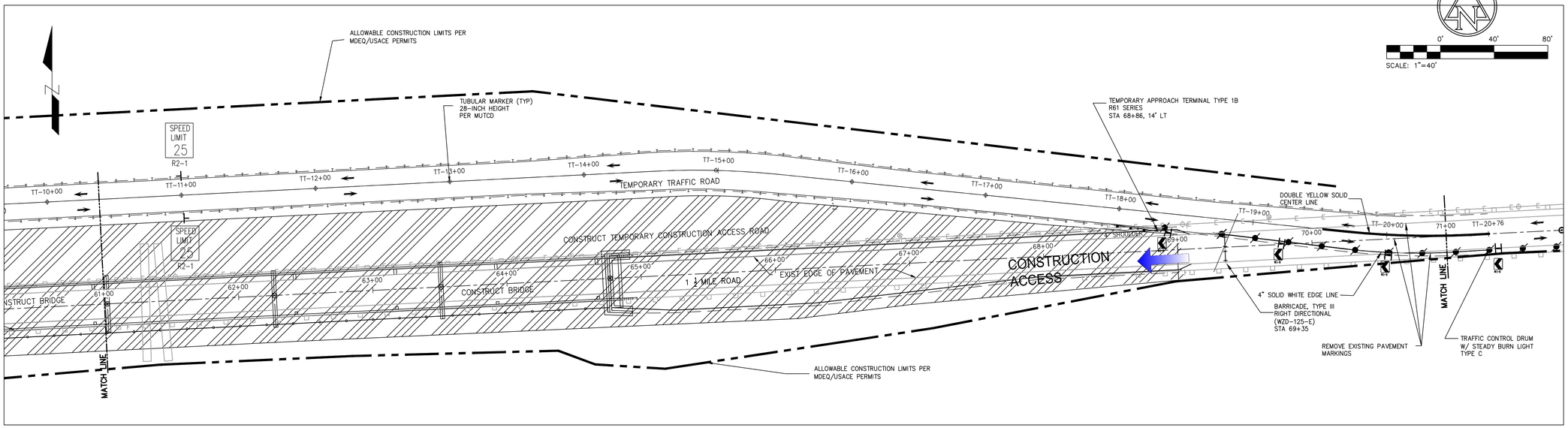
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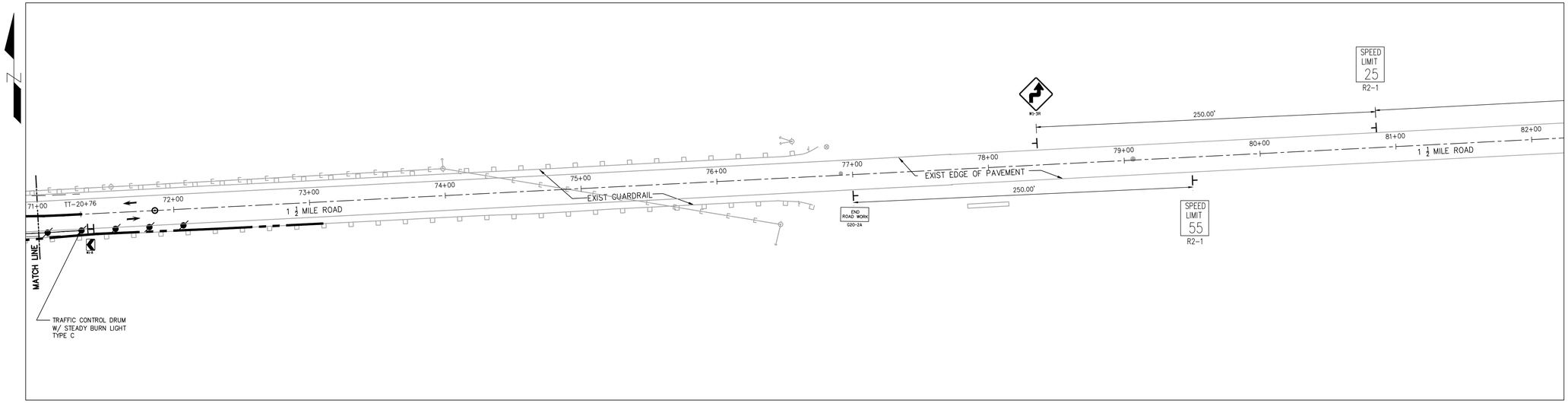
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 2 TRAFFIC-CONSTRUCTION OF TEMPORARY CONSTRUCTION ACCESS ROAD AND NEW BRIDGE

69-72 Stage 2 Traffic.dwg
5/2/2016





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LITTLE RAPIDS HABITAT RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

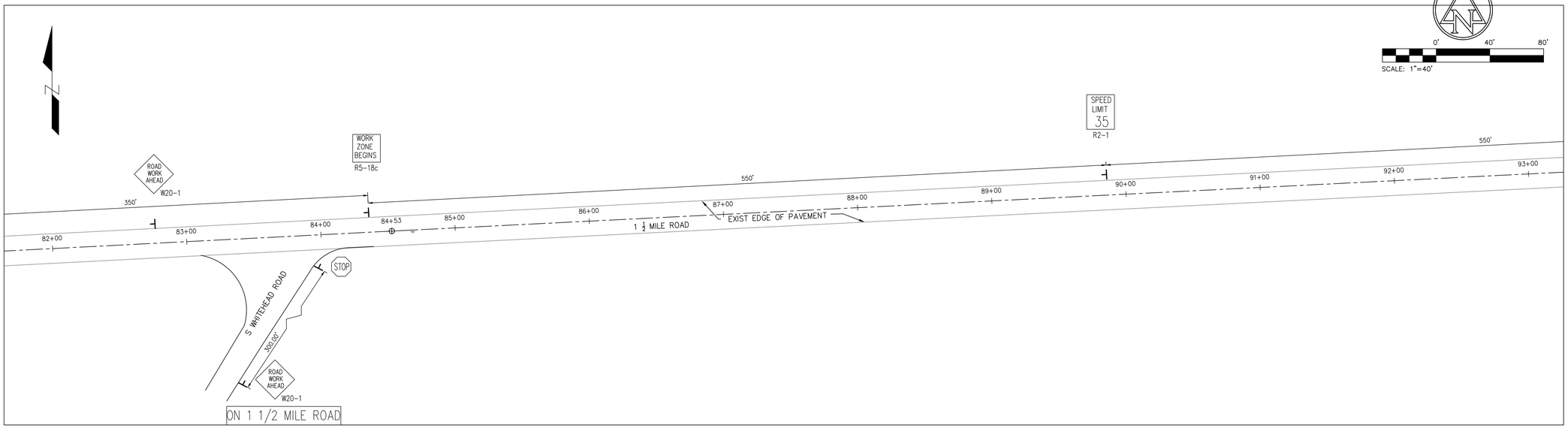
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ENGINEER:	BTS
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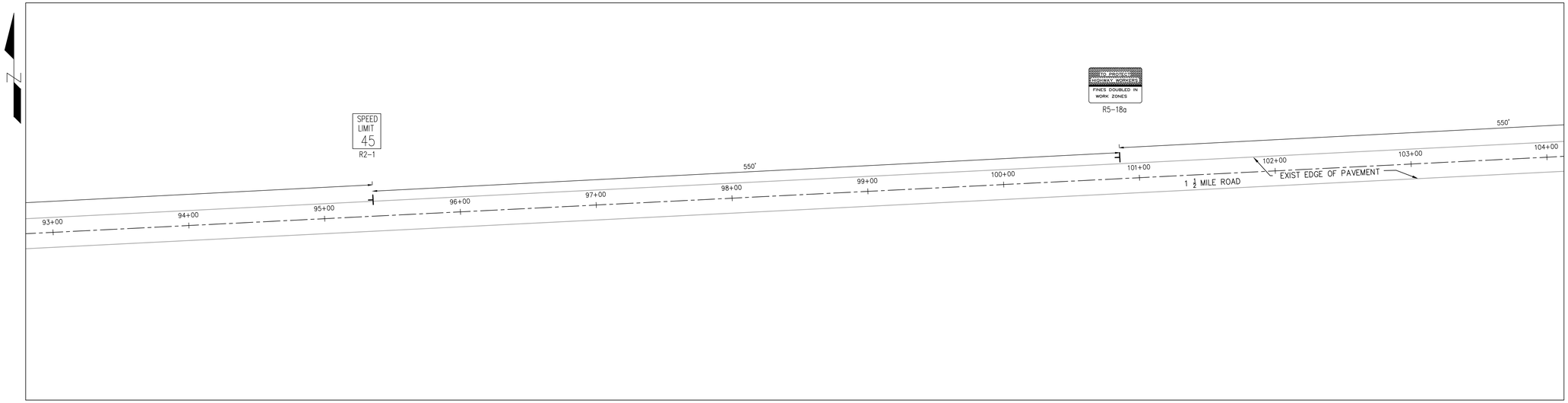
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 2 TRAFFIC-CONSTRUCTION OF TEMPORARY CONSTRUCTION ACCESS ROAD AND NEW BRIDGE

69-72 Stage 2 Traffic.dwg
5/2/2016





0' 40' 80'

SCALE: 1"=40'

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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

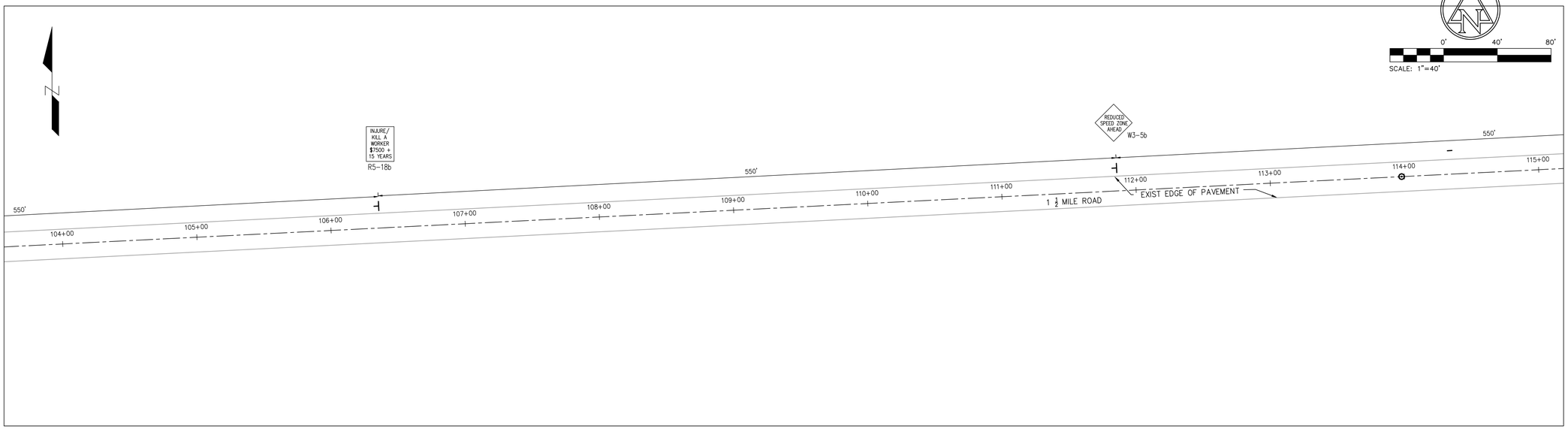
RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 40

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 2 TRAFFIC-CONSTRUCTION OF TEMPORARY CONSTRUCTION ACCESS ROAD AND NEW BRIDGE



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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

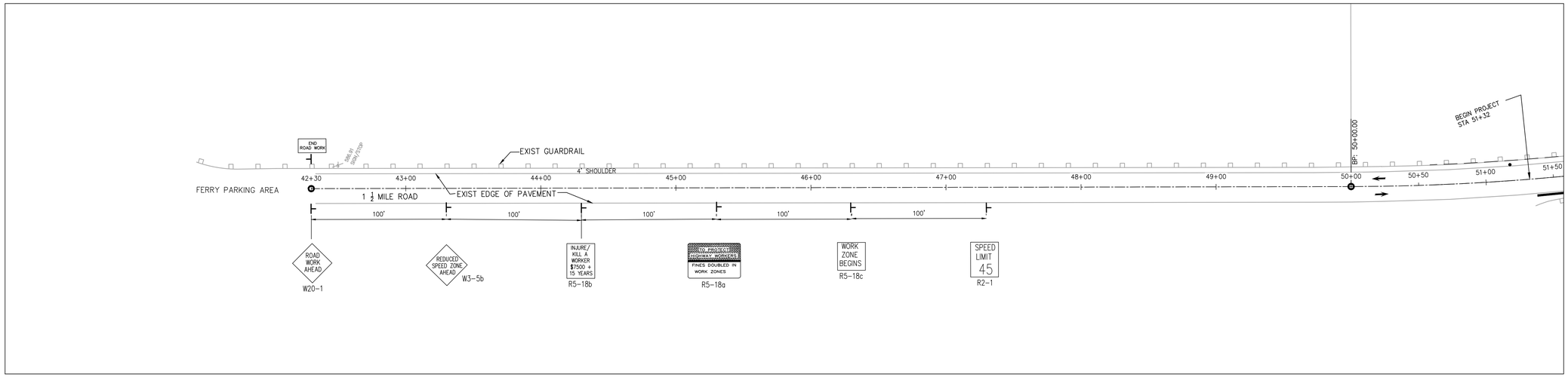
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ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 40'

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 2 TRAFFIC-CONSTRUCTION OF TEMPORARY CONSTRUCTION ACCESS ROAD AND NEW BRIDGE

69-72 Stage 2 Traffic.dwg
5/2/2016



STAGE 3:
1. TRAFFIC ON NEW BRIDGE
2. REMOVE TEMPORARY TRAFFIC ROAD.
3. INSTALL TEMPORARY SAND MODULE IMPACT ATTENUATOR AT ENDS OF GUARD RAIL.
4. SHOULDER CLOSURE ON NORTH SIDE OF 1 1/2 ROAD.
5. BAG ALL EXISTING SPEED LIMIT SIGNS.
6. ALL DIAMOND WARNING SIGNS SHALL BE 48"X48".

LEGEND

- TYPE III BARRICADE
- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE C STEADY BURN LIGHT
- SIGN ON TEMPORARY SUPPORT
- DIRECTION OF TRAFFIC

WORK ZONE

0' 40' 80'
SCALE: 1"=40'

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LITTLE RAPIDS HABITAT RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

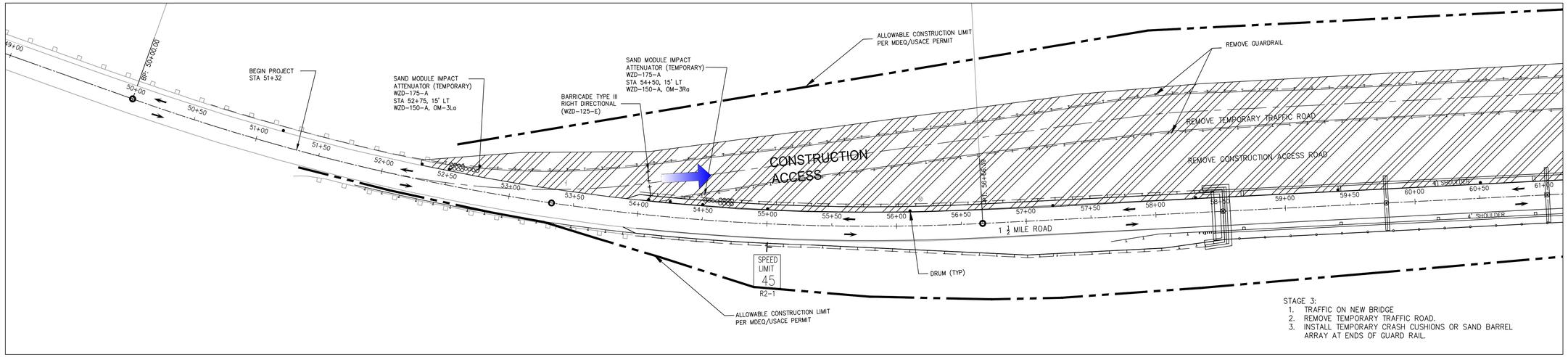
RFC ROADWAY PLANS

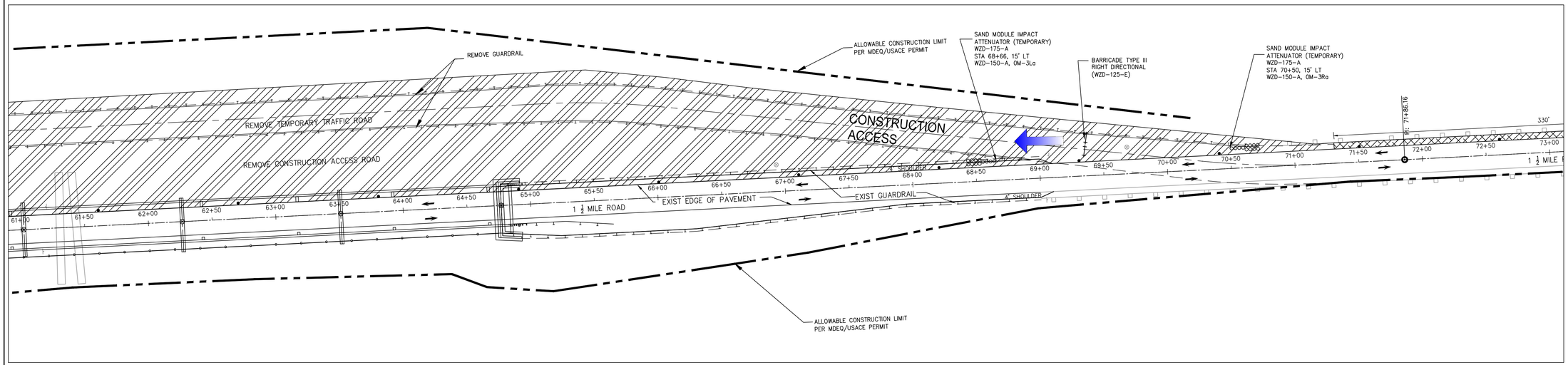
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DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 40'

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 3 TRAFFIC-REMOVAL OF TEMPORARY TRAFFIC ROAD





WORK ZONE

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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

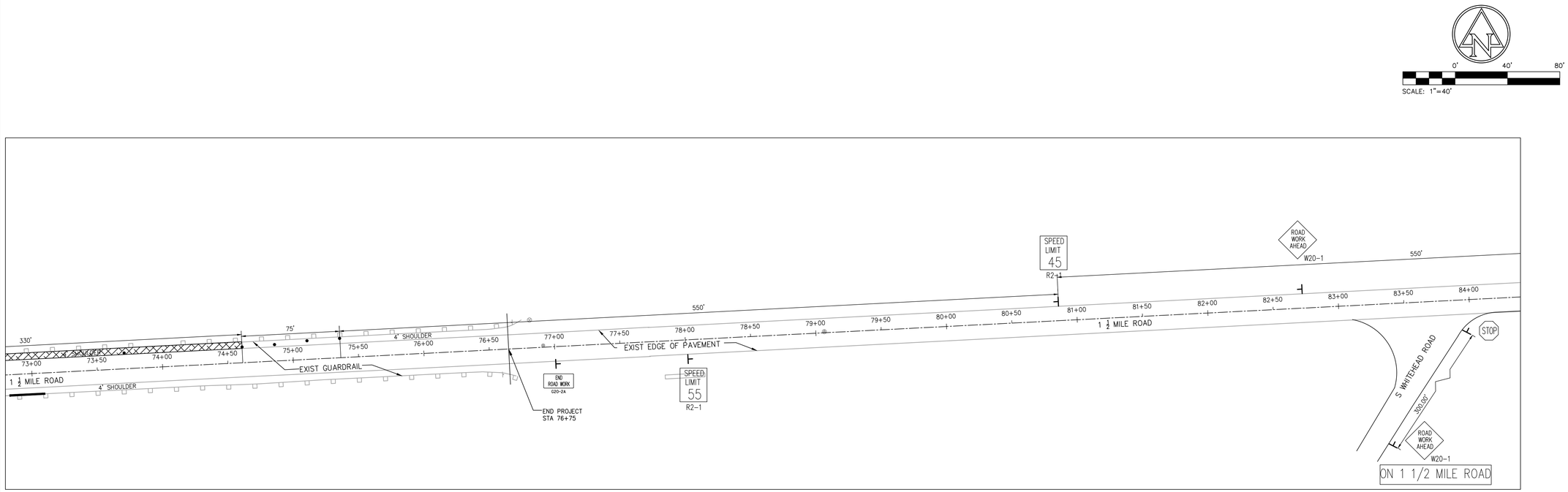
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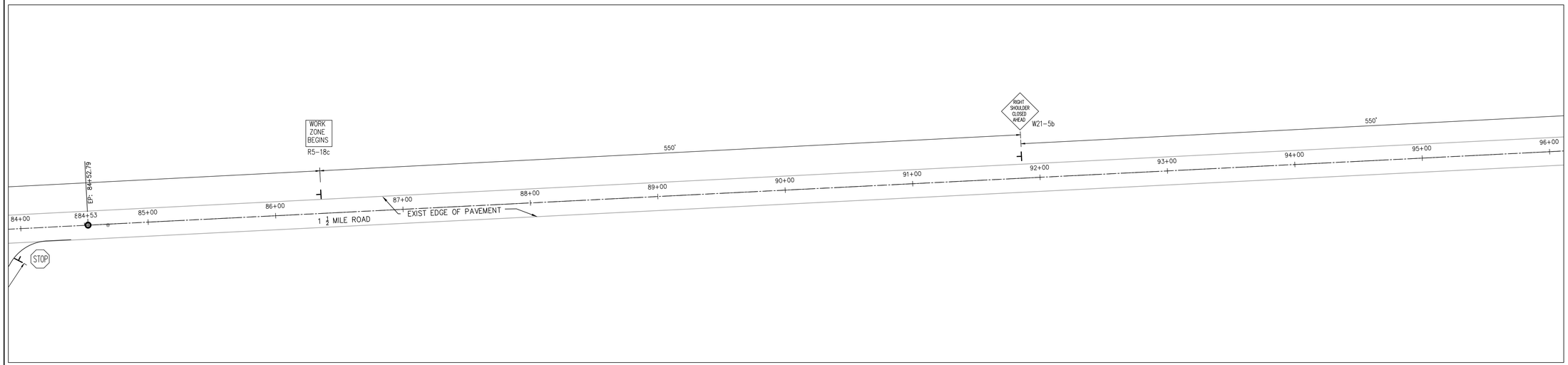
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 3 TRAFFIC-REMOVAL OF TEMPORARY TRAFFIC ROAD

73-76 Stage 3 Traffic.dwg
5/2/2016





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LITTLE RAPIDS HABITAT RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

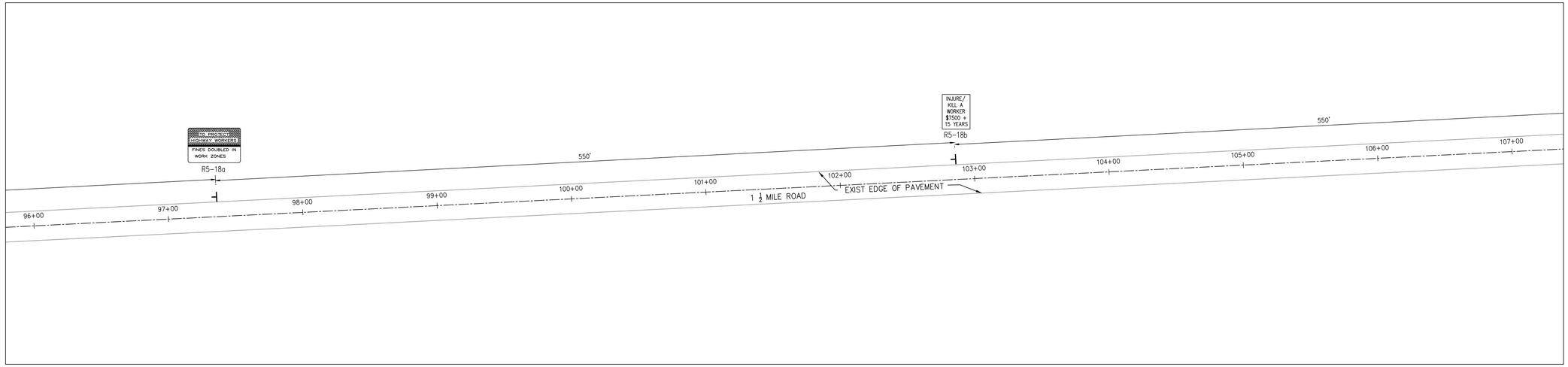
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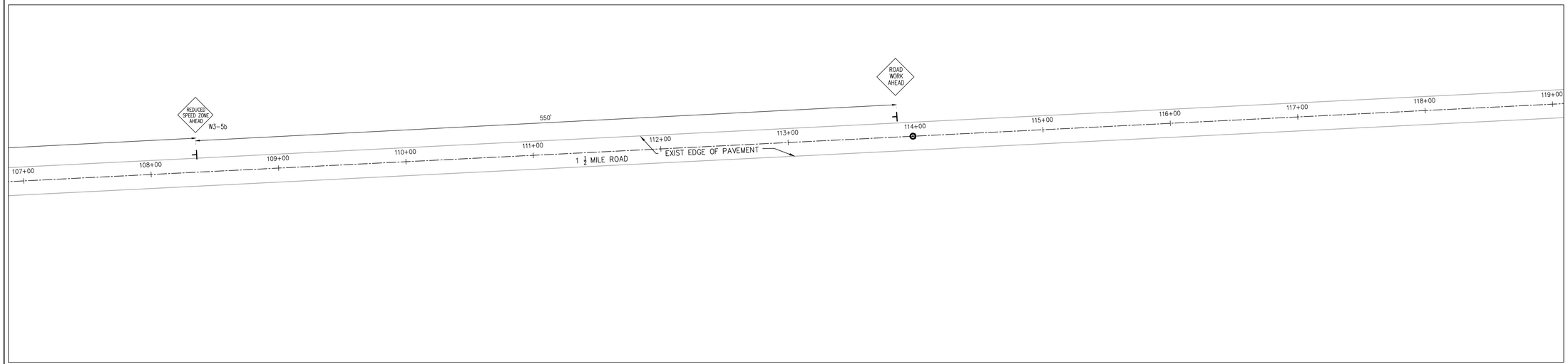
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 3 TRAFFIC-REMOVAL OF TEMPORARY TRAFFIC ROAD

73-76 Stage 3 Traffic.dwg
5/2/2016





0' 40' 80'

SCALE: 1"=40'

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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

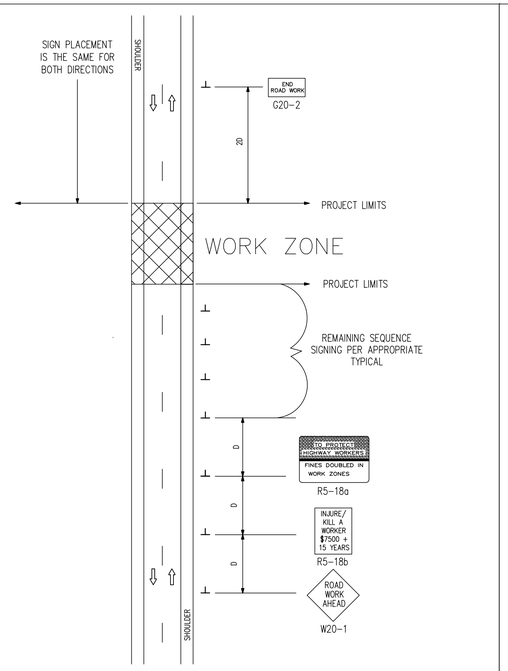
RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	1" = 40'

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

STAGE 3 TRAFFIC-REMOVAL OF TEMPORARY TRAFFIC ROAD



SIGN = 68 ft2 – TYPE B
FOR ONE DIRECTION OF TRAFFIC
W20-1 QUANTITY INCLUDED
WITH APPROPRIATE TYPICAL
FOR SEQUENCE SIGNING

NOT TO SCALE

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL ADVANCE SIGNING TREATMENT FOR LONG, INTERMEDIATE AND SHORT TERM STATIONARY WORK ZONE OPERATIONS OF LESS THAN TWO MILES IN LENGTH WHERE TRAFFIC CONTROL DEVICES MAY REMAIN AT END OF WORK DAY ON AN UNDIVIDED TWO-WAY ROADWAY		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0040a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0040a.dgn	REV. 10/13/2011		

NOTES

30. THE APPROPRIATE ADVANCE SIGNING SEQUENCE(S), (M0030a THROUGH M0080a) SHALL BE USED ON ALL PROJECTS.

32. THESE SIGNS SHALL BE LEFT IN PLACE AT THEIR PRESCRIBED LOCATIONS FOR THE DURATION OF THE PROJECT AND UNTIL ALL TEMPORARY TRAFFIC CONTROL HAS BEEN REMOVED.

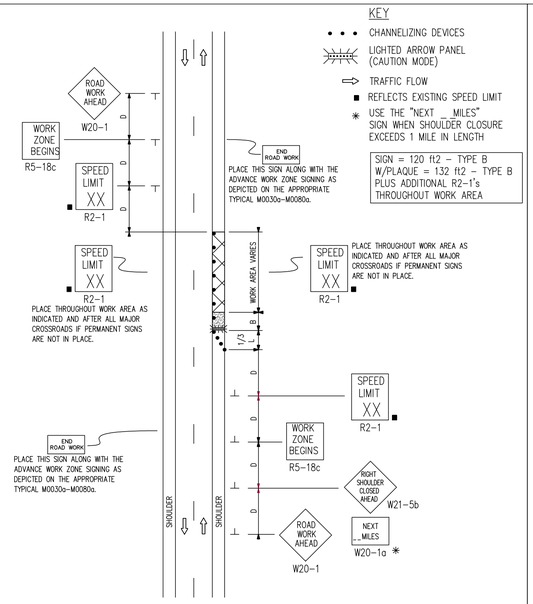
35. THESE SIGNS ARE INTENDED TO BE USED WITHIN THE LIMITS OF THE TEMPORARY SEQUENCE SIGNING AS IS SHOWN ON 1 OF 2. THESE SIGNS ARE NOT TO BE INTERMINGLED WITH ANY OTHER TEMPORARY SEQUENCE SIGNING EXCEPT AS SHOWN.

SIGN SIZES

G20-2	–	48" x 24"
R5-18a	–	96" x 60"
R5-18b	–	48" x 60"
W20-1	–	48" x 48"

NOT TO SCALE

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL ADVANCE SIGNING TREATMENT FOR LONG, INTERMEDIATE AND SHORT TERM STATIONARY WORK ZONE OPERATIONS OF LESS THAN TWO MILES IN LENGTH WHERE TRAFFIC CONTROL DEVICES MAY REMAIN AT END OF WORK DAY ON AN UNDIVIDED TWO-WAY ROADWAY		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0040a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0040a.dgn	REV. 10/13/2011		



NOTES

1. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
   1/3 L = MINIMUM LENGTH OF TAPER
   B = LENGTH OF LONGITUDINAL BUFFER
   SEE M0020aFOR "D," "L," AND "B" VALUES

2. ALL NON–APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5–18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

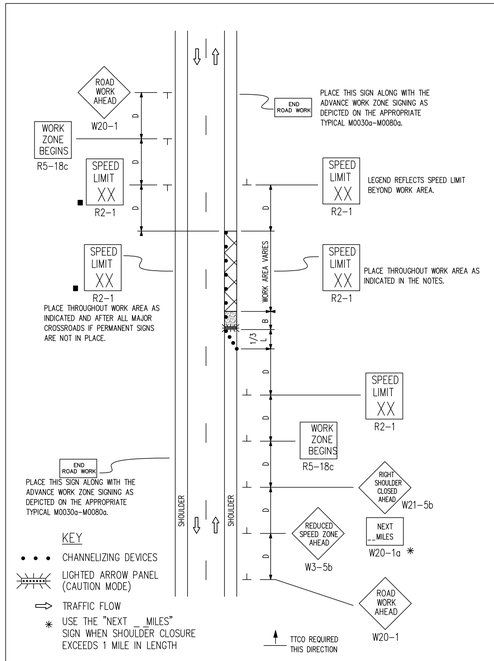
29A. THE TYPE OF REFLECTIVE SHEETING USED FOR THE W20–1a PLAQUE SHALL BE THE SAME AS THE TYPE USED FOR THE PARENT SIGN.

SIGN SIZES

DIAMOND WARNING	–	48" x 48"
W20–1a PLAQUE	–	48" x 36"
R2–1 REGULATORY	–	48" x 60"
R5–18c REGULATORY	–	48" x 48"

	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON A TWO LANE TWO–WAY ROADWAY NO SPEED REDUCTION		
CON:AE:djf	OCTOBER 2011	M0110a	1 of 2
BMM:CRB			
PW RD/TS/Typicals/Signs/MT NON FWY/M0110a.dgn		10/04/2011	

	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON A TWO LANE TWO–WAY ROADWAY NO SPEED REDUCTION		
CON:AE:djf	OCTOBER 2011	M0110a	2 of 2
BMM:CRB			
PW RD/TS/Typicals/Signs/MT NON FWY/M0110a.dgn		10/04/2011	



NOT TO SCALE

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON A TWO LANE TWO–WAY ROADWAY USING A SINGLE STEP DOWN IN SPEED LIMIT IN ONE DIRECTION ONLY		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0120a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0120a.dgn	REV. 10/04/2011		

NOTES

1. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
   1/3 L = MINIMUM LENGTH OF TAPER
   B = LENGTH OF LONGITUDINAL BUFFER
   SEE M0020aFOR "D," "L," AND "B" VALUES

2. ALL NON–APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5–18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

16A. ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED SHALL BE PLACED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK AREA WHERE THE REDUCED SPEED IS IN EFFECT, AND AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED ARE MORE THAN TWO MILES APART.

16B. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED SHALL BE PLACED BEYOND THE LIMITS OF THE REDUCED SPEED AS INDICATED.

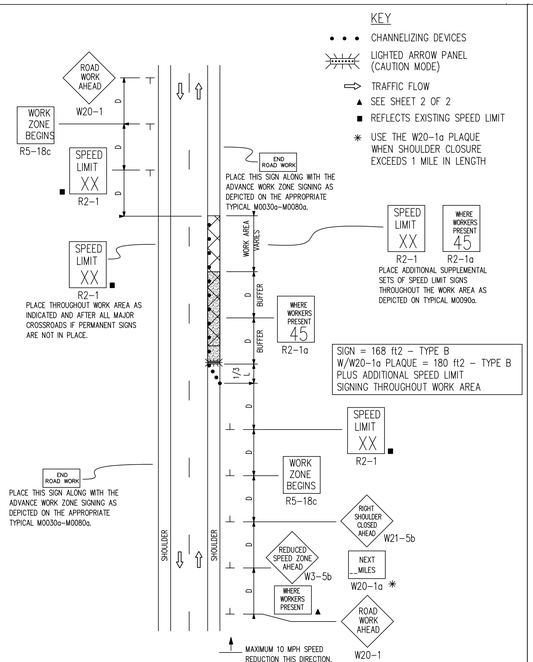
16E. WHEN EXISTING SPEED LIMITS ARE REDUCED MORE THAN 10 MPH, THE SPEED LIMIT SHALL BE STEPPED DOWN IN NO MORE THAN 10 MPH INCREMENTS.

29A. THE TYPE OF REFLECTIVE SHEETING USED FOR THE W20–1a PLAQUE SHALL BE THE SAME AS THE TYPE USED FOR THE PARENT SIGN.

SIGN SIZES

DIAMOND WARNING	–	48" x 48"
W20–1a PLAQUE	–	48" x 36"
R2–1 REGULATORY	–	48" x 60"
R5–18c REGULATORY	–	48" x 48"

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON A TWO LANE TWO–WAY ROADWAY USING A SINGLE STEP DOWN IN SPEED LIMIT IN ONE DIRECTION ONLY		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0120a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0120a.dgn	REV. 10/04/2011		



NOT TO SCALE

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON AN UNDIVIDED ROADWAY USING A REDUCED SPEED LIMIT WHERE WORKERS PRESENT IN ONE DIRECTION ONLY		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0130a	SHEET 1 OF2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0130a.dgn	REV. 10/04/2011		

NOTES

1G. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS
1/3 L = MINIMUM LENGTH OF TAPER
SEE M0020aFOR "D" AND "L" VALUES

2. ALL NON–APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5–18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4D. THE SPACING OF CHANNELIZING DEVICES SHOULD NOT EXCEED 45 FEET WHEN USED FOR TAPER CHANNELIZATION, AND SHOULD NOT EXCEED 90 FEET WHEN USED FOR TANGENT CHANNELIZATION.

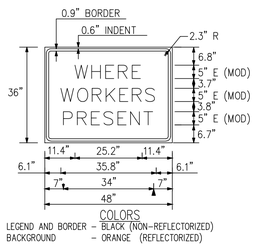
5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

29C. THE TYPE OF REFLECTIVE SHEETING USED FOR THE W20–1a PLAQUE AND THE "WHERE WORKERS PRESENT" PLAQUE SHALL BE THE SAME AS THE TYPE USED FOR THE PARENT SIGN.



SIGN SIZES

DIAMOND WARNING	–	48" x 48"
"WORKERS PRESENT" PLAQUE	–	48" x 36"
W20–1a PLAQUE	–	48" x 36"
R2–1 REGULATORY	–	48" x 60"
R5–18c REGULATORY	–	48" x 48"

NOT TO SCALE

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON AN UNDIVIDED ROADWAY USING A REDUCED SPEED LIMIT WHERE WORKERS PRESENT IN ONE DIRECTION ONLY		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0130a	SHEET 2 OF2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0130a.dgn	REV. 10/04/2011		

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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

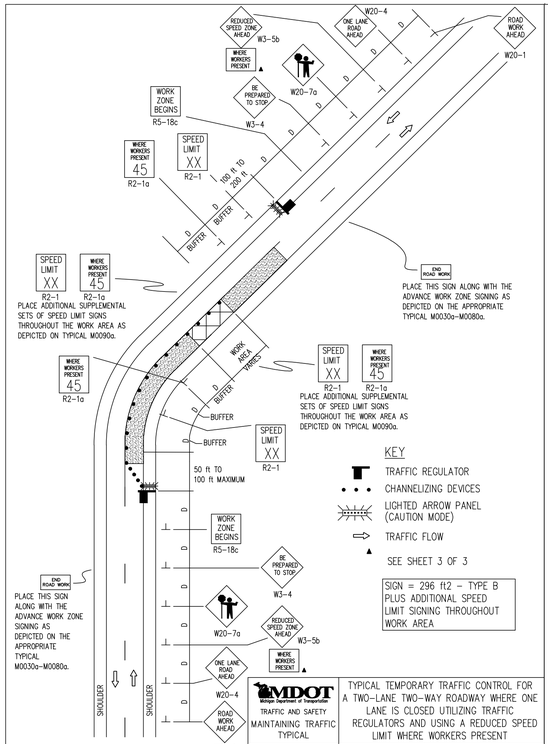
RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

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5/2/2016



NOT TO SCALE

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS AND USING A REDUCED SPEED LIMIT WHERE WORKERS PRESENT		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0160a	SHEET 1 OF 3
CHECKED BY: BMM:CRB	PLAN DATE: —		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0160a.dgn	REV. 10/05/2011		

NOTES

1H. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS SEE M0020aFOR "D" VALUES.

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE SPACING OF CHANNELIZING DEVICES SHOULD NOT EXCEED 15 FEET WHEN USED FOR TAPER CHANNELIZATION, AND SHOULD NOT EXCEED 90 FEET WHEN USED FOR TANGENT CHANNELIZATION.

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

9. ALL TRAFFIC REGULATORS SHALL BE PROPERLY TRAINED AND SUPERVISED.

9A. IN ANY OPERATION INVOLVING MORE THAN ONE TRAFFIC REGULATOR, ONE PERSON SHOULD BE DESIGNATED AS HEAD TRAFFIC REGULATOR.

10. ALL TRAFFIC REGULATORS' CONDUCT, THEIR EQUIPMENT, AND TRAFFIC REGULATING PROCEDURES SHALL CONFORM TO THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE CURRENT EDITION OF THE MDOT HANDBOOK ENTITLED "TRAFFIC REGULATORS INSTRUCTION MANUAL."

11. WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS, APPROPRIATE LIGHTING SHALL BE PROVIDED TO SUFFICIENTLY ILLUMINATE THE TRAFFIC REGULATOR'S STATIONS.

12E. THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS SHALL BE NO MORE THAN 2 MILES IN LENGTH UNLESS RESTRICTED FURTHER IN THE SPECIAL PROVISIONS FOR MAINTAINING TRAFFIC. ALL SEQUENCES OF MORE THAN 2 MILES IN LENGTH WILL REQUIRE WRITTEN PERMISSION FROM THE ENGINEER BEFORE PROCEEDING.

13. WHEN INTERSECTING ROADS OR SIGNIFICANT TRAFFIC GENERATORS (SHOPPING CENTERS, MOBILE HOME PARKS, ETC.) OCCUR WITHIN THE ONE-LANE TWO-WAY OPERATION, INTERMEDIATE TRAFFIC REGULATORS AND APPROPRIATE SIGNING SHALL BE PLACED AT THESE LOCATIONS.

NOT TO SCALE

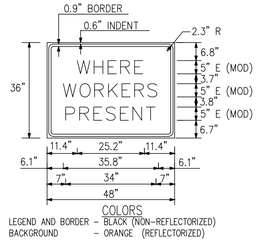
MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS AND USING A REDUCED SPEED LIMIT WHERE WORKERS PRESENT		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0160a	SHEET 2 OF 3
CHECKED BY: BMM:CRB	PLAN DATE: —		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0160a.dgn	REV. 10/05/2011		

14. ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W3-4 SIGNS.

15. THE HAND HELD (PADDLE) SIGNS REQUIRED BY THE MMUTCD TO CONTROL TRAFFIC WILL BE PAID FOR AS PART OF FLAG CONTROL.

28E. THE TRAFFIC REGULATORS SHOULD BE POSITIONED AT OR NEAR THE SIDE OF THE ROAD SO THAT THEY ARE SEEN CLEARLY AT A MINIMUM DISTANCE OF 500 FEET. THIS MAY REQUIRE EXTENDING THE BEGINNING OF THE LANE CLOSURE TO OVERCOME VIEWING PROBLEMS CAUSED BY HILLS AND CURVES.

29D. THE TYPE OF REFLECTIVE SHEETING USED FOR THE "WHERE WORKERS PRESENT" PLAQUE SHALL BE THE SAME AS THE TYPE USED FOR THE PARENT SIGN.



COLORS
LEGEND AND BORDER - BLACK (NON-REFLECTORIZED)
BACKGROUND - ORANGE (REFLECTORIZED)

SIGN SIZES

DIAMOND WARNING	- 48" x 48"
"WORKERS PRESENT" PLAQUE	- 48" x 36"
RECTANGULAR REGULATORY	- 48" x 60"
R5-18c REGULATORY	- 48" x 48"

NOT TO SCALE

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO-WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS AND USING A REDUCED SPEED LIMIT WHERE WORKERS PRESENT		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0160a	SHEET 3 OF 3
CHECKED BY: BMM:CRB	PLAN DATE: —		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0160a.dgn	REV. 10/05/2011		

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

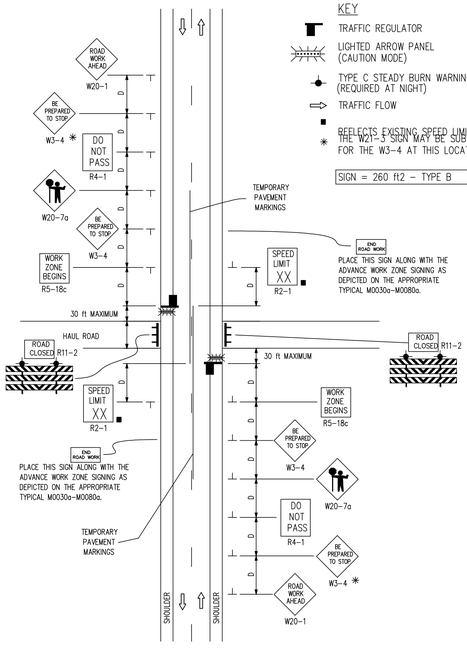
SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

RFC ROADWAY PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011



NOT TO SCALE

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A HAUL ROAD ON A TWO-LANE TWO WAY ROADWAY WHERE A TOTAL TRAFFIC STOPPAGE IS REQUIRED UTILIZING TRAFFIC REGULATORS, NO SPEED REDUCTION		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0170a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0170a.dgn	REV. 10/06/2011		

NOTES

1A. SEE M0020aFOR "D" VALUES.

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

9. ALL TRAFFIC REGULATORS SHALL BE PROPERLY TRAINED AND SUPERVISED.

9A. IN ANY OPERATION INVOLVING MORE THAN ONE TRAFFIC REGULATOR, ONE PERSON SHOULD BE DESIGNATED AS HEAD TRAFFIC REGULATOR.

10. ALL TRAFFIC REGULATORS' CONDUCT, THEIR EQUIPMENT, AND TRAFFIC REGULATING PROCEDURES SHALL CONFORM TO THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE CURRENT EDITION OF THE MDOT HANDBOOK ENTITLED "TRAFFIC REGULATORS INSTRUCTION MANUAL."

11. WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS, APPROPRIATE LIGHTING SHALL BE PROVIDED TO SUFFICIENTLY ILLUMINATE THE TRAFFIC REGULATOR'S STATIONS.

14. ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W3-4 SIGNS.

15. THE HAND HELD (PADDLE) SIGNS REQUIRED BY THE MMUTCD TO CONTROL TRAFFIC WILL BE PAID FOR AS PART OF FLAG CONTROL.

17. THE HAND HELD (PADDLE) SIGNS USED FOR THIS SEQUENCE SHALL DISPLAY "STOP" ON BOTH SIDES. WHEN THE TRAFFIC REGULATOR IS RELEASING TRAFFIC, THE "STOP" PADDLE SHALL BE TURNED 1/4 TURN AWAY FROM TRAFFIC.

18. CARE SHOULD BE TAKEN IN THE SELECTION OF THE LOCATION FOR THE HAUL ROAD TO ASSURE GOOD SIGHT DISTANCE FOR THE MOTORIST. HORIZONTAL AND VERTICAL CURVES AND INTERSECTING ROADWAYS IN CLOSE PROXIMITY TO THE HAUL ROAD LOCATION SHOULD BE AVOIDED AS MUCH AS POSSIBLE. THE LOCATION AND WIDTH OF THE HAUL ROAD REQUIRES PRIOR APPROVAL OF THE ENGINEER.

19. ALL EQUIPMENT OPERATORS WHO USE THE HAUL ROAD SHALL STOP AND VERIFY THAT THE TRAFFIC REGULATORS HAVE TRAFFIC STOPPED AND UNDER CONTROL BEFORE ENTERING ONTO THE HIGHWAY.

20. WHEN THE HAUL ROAD IS NOT IN USE, LIGHT TYPE III BARRICADES WITH "ROAD CLOSED" SIGNS SHALL BE IN PLACE, AND SHALL EXTEND COMPLETELY ACROSS THE HAUL ROAD.

SIGN SIZES

DIAMOND WARNING	- 48" x 48"
R2-1 REGULATORY	- 48" x 60"
R4-1 REGULATORY	- 48" x 60"
R5-18c REGULATORY	- 48" x 48"
R11-2 REGULATORY	- 48" x 30"

NOT TO SCALE

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO-LANE TWO WAY ROADWAY WHERE A TOTAL TRAFFIC STOPPAGE IS REQUIRED UTILIZING TRAFFIC REGULATORS, NO SPEED REDUCTION		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0170a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0170a.dgn	REV. 10/06/2011		

MINIMUM MERGING TAPER LENGTH "L" (FEET)

OFFSET	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
FEET	25	30	35	40	45	50	55	60	65	70	TAPER LENGTH "L" IN FEET
1	10	15	20	27	45	50	55	60	65	70	
2	21	30	41	53	90	100	110	120	130	140	
3	31	45	61	80	135	150	165	180	195	210	
4	42	60	82	107	180	200	220	240	260	280	
5	52	75	102	133	225	250	275	300	325	350	
6	63	90	123	160	270	300	330	360	390	420	
7	73	105	143	187	315	350	385	420	455	490	
8	83	120	163	213	360	400	440	480	520	560	
9	94	135	184	240	405	450	495	540	585	630	
10	104	150	204	267	450	500	550	600	650	700	
11	115	165	225	293	495	550	605	660	715	770	
12	125	180	245	320	540	600	660	720	780	840	
13	135	195	266	347	585	650	715	780	845	910	
14	146	210	286	374	630	700	770	840	910	980	
15	157	225	307	400	675	750	825	900	975	1050	

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

$"L" = \frac{W \times S^2}{60}$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = S x W WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

L = MINIMUM LENGTH OF MERGING TAPER
S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
W = WIDTH OF OFFSET

TYPES OF TAPERS

UPSTREAM TAPERS
MERGING TAPER
SHIFTING TAPER
SHOULDER TAPER
TWO-WAY TRAFFIC TAPER

DOWNSTREAM TAPERS (USE IS OPTIONAL)

TAPER LENGTH

L - MINIMUM
1/2 L - MINIMUM
1/3 L - MINIMUM
100 ' - MAXIMUM
100 ' - MINIMUM (PER LANE)

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L", "D" AND "B" VALUES		
DRAWN BY: CON:AE:djf	JUNE 2006	M0020a	SHEET 1 2
CHECKED BY: BMM	PLAN DATE:		
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn	REV. 08/21/2006		

DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D" AND LENGTH OF LONGITUDINAL BUFFER SPACE ON "WHERE WORKERS PRESENT" SEQUENCES

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
D (FEET)	25	30	35	40	45	50	55	60	65	70
	250	300	350	400	450	500	550	600	650	700

GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE "B"

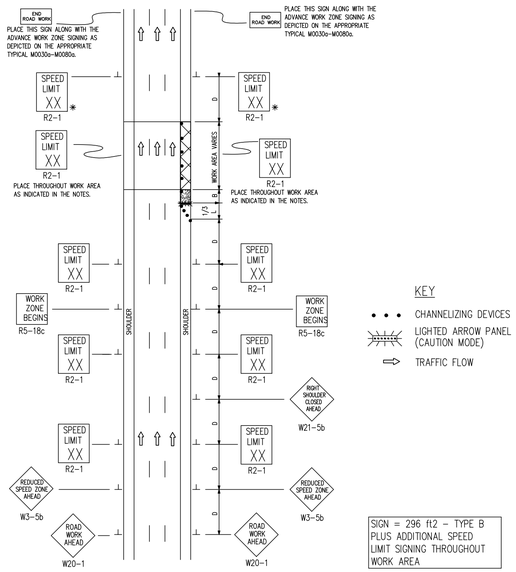
SPEED* MPH	LENGTH FEET
20	33
25	50
30	83
35	132
40	181
45	230
50	279
55	329
60	411
65	476
70	542

* POSTED SPEED, OFF PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

1 BASED UPON AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) BRAKING DISTANCE PORTION OF STOPPING SIGHT DISTANCE FOR WET AND LEVEL PAVEMENTS (A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS), AASHTO. THIS AASHTO DOCUMENT ALSO RECOMMENDS ADJUSTMENTS FOR THE EFFECT OF GRADE ON STOPPING AND VARIATION FOR TRUCKS.

MDOT Michigan Department of Transportation — TRAFFIC AND SAFETY — MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L", "D" AND "B" VALUES		
DRAWN BY: CON:AE:djf	JUNE 2006	M0020a	SHEET 2 2
CHECKED BY: BMM	PLAN DATE:		
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn	REV. 08/21/2006		

77-79 Maintaining Traffic Typicals.dwg
5/2/2016



NOT TO SCALE

MDOT Michigan Department of Transportation	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON A FREEWAY, USING A TRIPLE STEP DOWN IN SPEED LIMIT		
TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL			
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0930a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT FWY/M0930a.dgn	REV. 10/05/2011		

NOTES

1H. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES AND LENGTH OF LONGITUDINAL BUFFERS SEE M0020aFOR "D" VALUES.

2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.

3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.

4E. THE SPACING OF CHANNELIZING DEVICES SHOULD NOT EXCEED 15 FEET WHEN USED FOR TAPER CHANNELIZATION, AND SHOULD NOT EXCEED 90 FEET WHEN USED FOR TANGENT CHANNELIZATION.

5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.

6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.

7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

16B. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED SHALL BE PLACED BEYOND THE LIMITS OF THE REDUCED SPEED AS INDICATED.

16D. ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED SHALL BE PLACED AFTER EACH ENTRANCE RAMP THAT COMES ONTO THE FREEWAY WHERE THE REDUCED SPEED IS IN EFFECT AND AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS REFLECTING THE REDUCED SPEED ARE MORE THAN TWO MILES APART.

16E. WHEN EXISTING SPEED LIMITS ARE REDUCED MORE THAN 10 MPH, THE SPEED LIMIT SHALL BE STEPPED DOWN IN NO MORE THAN 10 MPH INCREMENTS.

SIGN SIZES

DIAMOND WARNING - 48" x 48"
R2-1 REGULATORY - 48" x 60"
R5-18c REGULATORY - 48" x 48"

NOT TO SCALE

MDOT Michigan Department of Transportation	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON A FREEWAY, USING A TRIPLE STEP DOWN IN SPEED LIMIT		
TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL			
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0930a	SHEET 2 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT FWY/M0930a.dgn	REV. 10/05/2011		

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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
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MICHIGAN

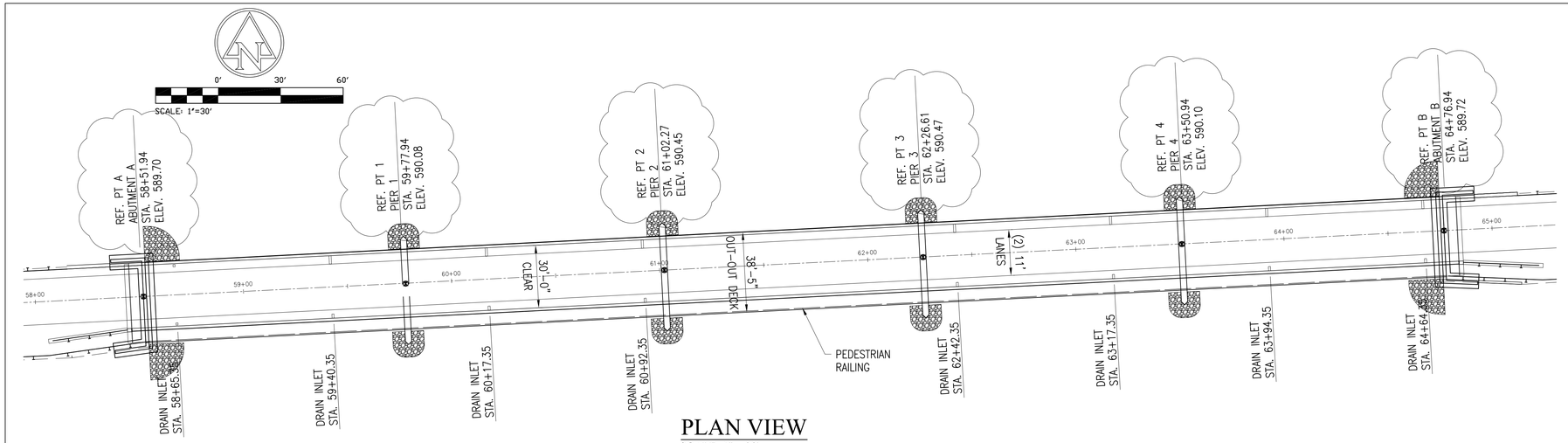
RFC ROADWAY
PLANS

ADMINISTRATION	
DATE:	05/02/2016
ENGINEER:	BTS
DRAWN BY:	SPK
CHECKED BY:	BTS
SCALE:	

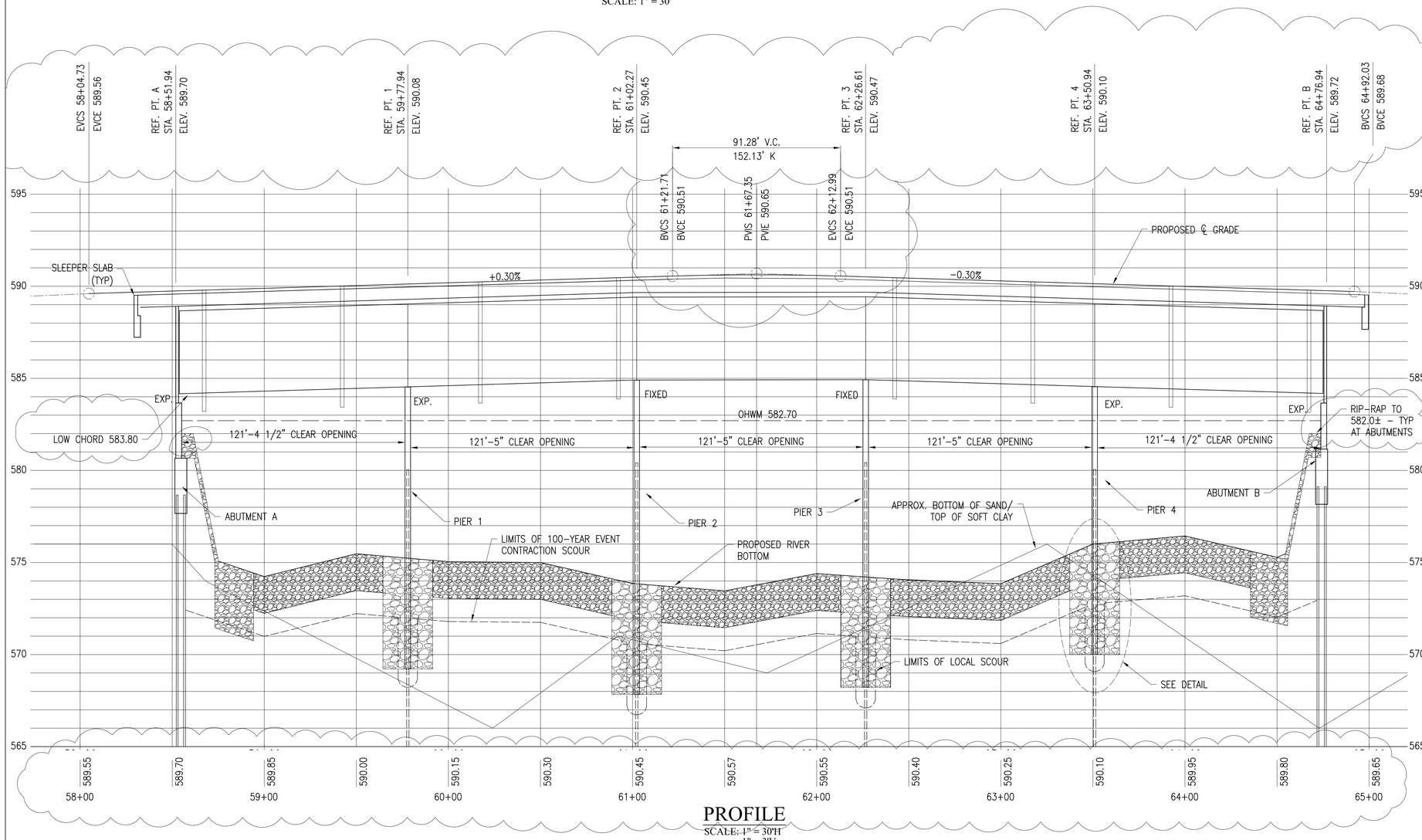
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

Project Number 490011

77-79 Maintaining Traffic Typicals.dwg
5/2/2016



PLAN VIEW
SCALE: 1" = 30'



PROFILE
SCALE: ~~1" = 30'~~
1" = 3'V

A. THE DESIGN OF THE STRUCTURAL MEMBERS IS BASED ON MATERIAL OF THE FOLLOWING GRADES AND STRESSES:

CONCRETE: GRADE S2	f'c =	3,000 PSI
CONCRETE: GRADE D	f'c =	4,000 PSI
STEEL REINFORCEMENT	fy =	60,000 PSI
STEEL REINFORCEMENT: (STIRRUPS FOR PRESTRESSED BEAMS)	fy =	60,000 PSI
STRUCTURAL STEEL: AASHTO M270, GRADE 36	Fy =	36,000 PSI
STRUCTURAL STEEL: AASHTO M270, GRADE 50	Fy =	50,000 PSI
STRUCTURAL STEEL: AASHTO M270, GRADE 50W	Fy =	50,000 PSI
PRESTRESSED CONCRETE	f'c =	8,000 PSI
PRESTRESSED CONCRETE COMPRESSIVE STRENGTH AT RELEASE	f'c =	6,800 PSI
PRESTRESSING STRANDS	f's =	270,000 PSI

B. ALL EXPOSED CONCRETE CORNERS SHOWN SQUARE ON THE PLANS SHALL BE BEVELED WITH ¾" TRIANGULAR MOLDINGS EXCEPT AS OTHERWISE NOTED.

C. THE DESIGN OF THE FOUNDATION PILING IS BASED ON MATERIAL OF THE FOLLOWING GRADES AND STRESSES
FOUNDATION PILING (STEEL H-PILING):
AASHTO M270, GRADE 50 Fy = 50,000 PSI

D. UNLESS OTHERWISE SHOWN ON THE PLANS, PROVIDE MINIMUM CONCRETE CLEAR COVER FOR REINFORCEMENT ACCORDING TO THE FOLLOWING:
CONCRETE CAST AGAINST EARTH: 3 IN.
PRESTRESSED BEAMS: 1 IN.
ALL OTHER UNLESS SHOWN ON PLANS 2 IN.

E. THE WORK COVERED BY THESE PLANS INCLUDES CHANNEL EXCAVATION, MAINTAINING TRAFFIC, CONSTRUCTION OF THE PROPOSED BRIDGE AND PLACING RIP-RAP TO THE LIMITS SHOWN. ALL OTHER WORK IS INCLUDED IN THE ROAD PLANS THAT ARE A PART OF THIS CONTRACT.

F. THE CONTRACTOR SHALL LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.

G. PLAN ELEVATIONS REFER TO IGLD 1985 DATUM.

H. WATER LEVEL IS SUBJECT TO CHANGE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.

I. EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS, OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION 2012 EDITION.

J. MEASURES SHALL BE TAKEN TO PREVENT DEBRIS FROM FALLING FROM THE STRUCTURE. IF DEBRIS FALLS INTO THE WATERWAY, IT SHALL BE REMOVED WITHIN 24 HOURS. SINCE DISTURBANCE OF THE WATERWAY BOTTOM MAY BE HARMFUL AS THE DEBRIS ITSELF, THE PREVENTIVE MEASURES MUST BE EFFECTIVE.

K. IMMEDIATELY AFTER THE CONSTRUCTION OF AN ABUTMENT IS COMPLETED, SLOPE PROTECTION AND SEEDING OR SODDING SHALL BE PLACED ON THE ADJACENT EMBANKMENT SLOPES.

L. THE DESIGN OF THIS STRUCTURE IS BASED ON 1.2 TIMES THE CURRENT AASHTO LRFD BRIDGE DESIGN SPECIFICATION HL-93 LOADING WITH THE EXCEPTION THAT THE DESIGN TANDEM PORTION OF THE HL-93 LOAD DEFINITION SHALL BE REPLACED BY A SINGLE 60 KIP AXLE LOAD BEFORE THE APPLICATION OF THIS 1.2 FACTOR. THE RESULTING LOAD IS DESIGNATED HL-93 MOD. LIVE LOAD PLUS DYNAMIC ALLOWANCE DEFLECTION DOES NOT EXCEED 1/1000 OF SPAN LENGTH.

M. DESIGN SPEED = 60 MPH

N. THE DESIGN OF THE DECK SLAB IS BASED UPON THE STRIP METHOD AS DEFINED IN THE CURRENT AASHTO LRFD BRIDGE DESIGN SPECIFICATION.

O. WITHOUT THE PREVENTIVE MEASURES SHOWN ON THESE PLANS, THERE IS A POSSIBILITY THAT STREAM BED SCOUR MAY OCCUR. THE ESTIMATED TOTAL SCOUR DEPTH IS CALCULATED TO BE 7.4 FEET AT THE PIERS. THESE DEPTHS ARE BASED ON A 100 YEAR RUNOFF EVENT.

P. TRAFFIC IS TO BE DETOURED OVER THE TEMPORARY ROAD.

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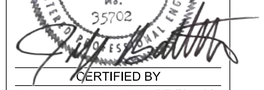
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P.O. Box 766 • St. Joseph, Michigan 49085
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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

MEMBER
7/29/2016

FINAL BRIDGE PLANS



CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
0	TS&L APPROVAL	02/11/2016
1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016
3	PROFILE REVISED	07/29/2016

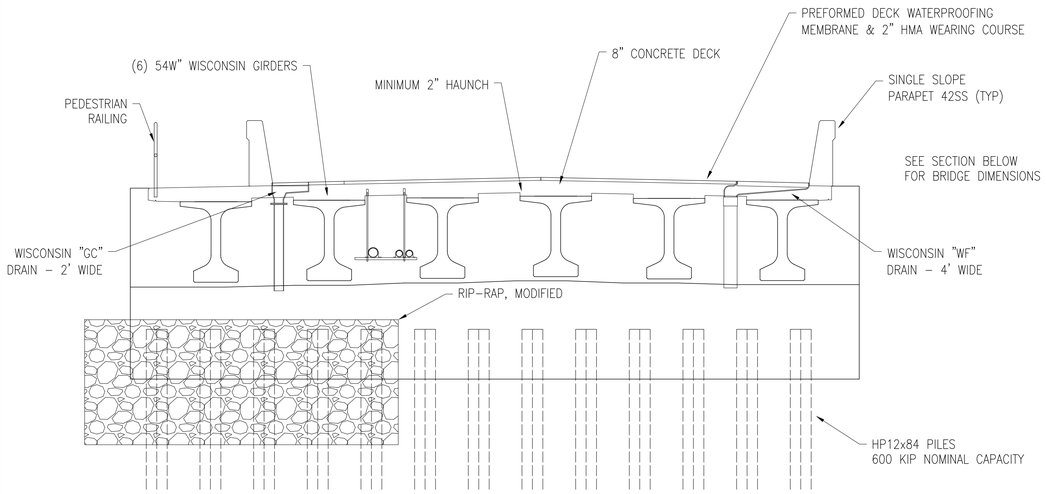
Project Number 15092

GENERAL PLAN OF STRUCTURE & PROFILE

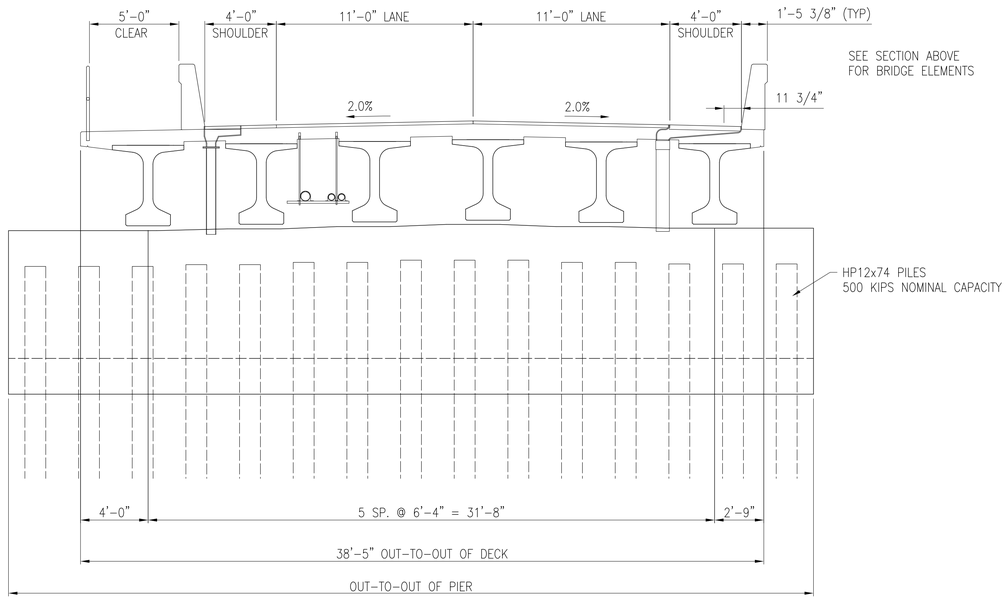
B-1

A. A COFFERDAM HAS NOT BEEN PROVIDED FOR THIS STRUCTURE. OTHER MEANS OF WATER CONTROL MAY BE USED, PROVIDED THEY DO NOT DISTURB THE STREAM BED.

B. THE RIPRAP QUANTITY IS BASED ON THE LATERAL DIMENSIONS OF THE AREA TO BE PROTECTED, REGARDLESS OF THE NUMBER OF LAYERS REQUIRED. THE ESTIMATED WEIGHT OF RIPRAP IS 3500 TONS, (NOT INCLUDING RIVERBED ARMORING).



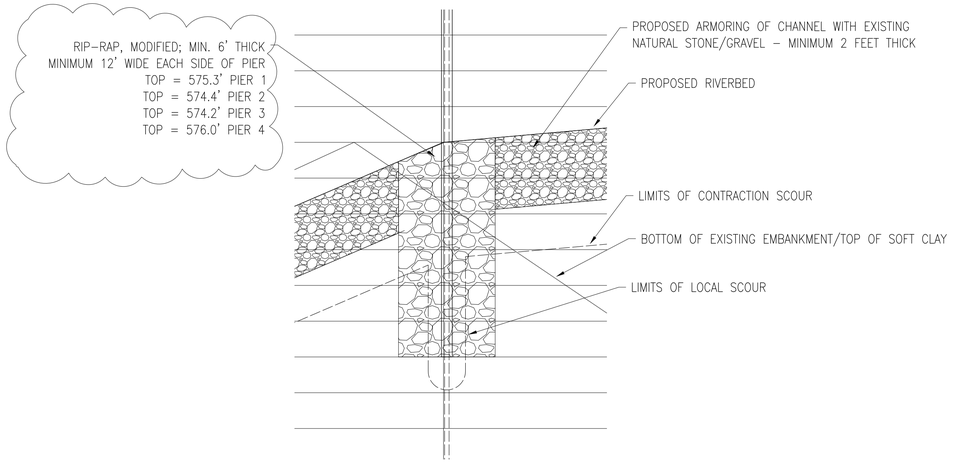
DECK SECTION WITH ABUTMENT - LOOKING WEST



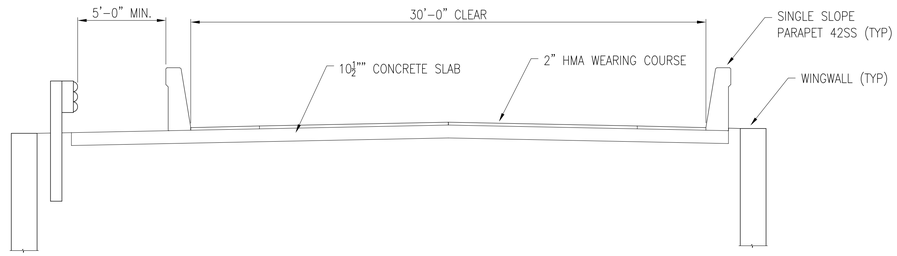
DECK SECTION WITH PIER - LOOKING WEST

SUMMARY OF HYDRAULIC ANALYSIS							
EXISTING				PROPOSED			
FLOOD DATA	DISCHARGE (CFS)	WATER SURFACE ELEV. @ U/S FACE OF STRUCTURE	VELOCITY IN D/S CHANNEL (FT/SEC)	WATER SURFACE ELEV. @ U/S FACE OF STRUCTURE	VELOCITY IN D/S CHANNEL (FT/SEC)	WATERWAY AREA (SFT) @ D/S FACE	CHANGE IN W/S PROPOSED STRUCTURE
100 YEAR	N/A	N/A	N/A	582.70	9.0	4327	N/A
500 YEAR	N/A	N/A	N/A	585.10	6.0	5218	N/A
MAXIMUM BRIDGE AREA BELOW LOW CHORD IS 5218 SQUARE FEET							

THE DRAINAGE AREA CONTRIBUTORY TO THIS CROSSING IS 99 SQUARE MILES.



RIP-RAP AT PIERS



SECTION AT APPROACH SLAB - LOOKING WEST

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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

STATE OF MICHIGAN – REGISTERED PROFESSIONAL ENGINEER
JEFFREY BARTOSZEK
ENGINEER
No. 35702
Member
07/20/16

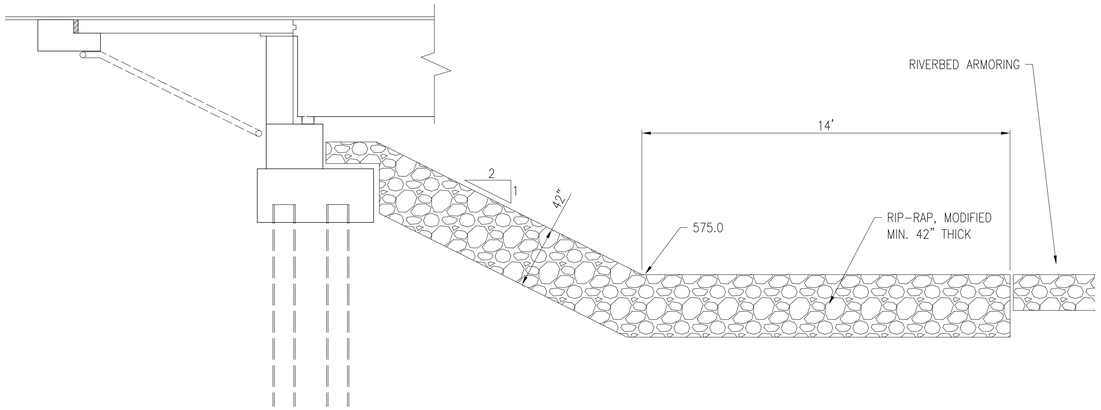
CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

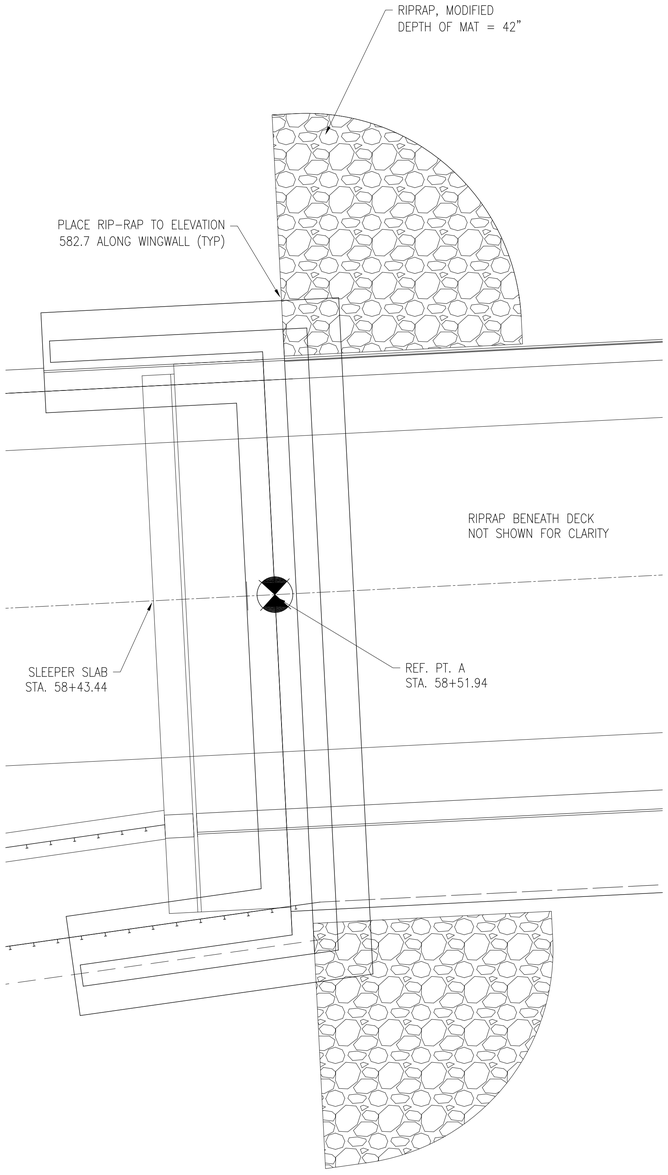
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
0	TS&L APPROVAL	02/11/2016
1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016
3	PROFILE REVISED	07/20/2016

Project Number 15092

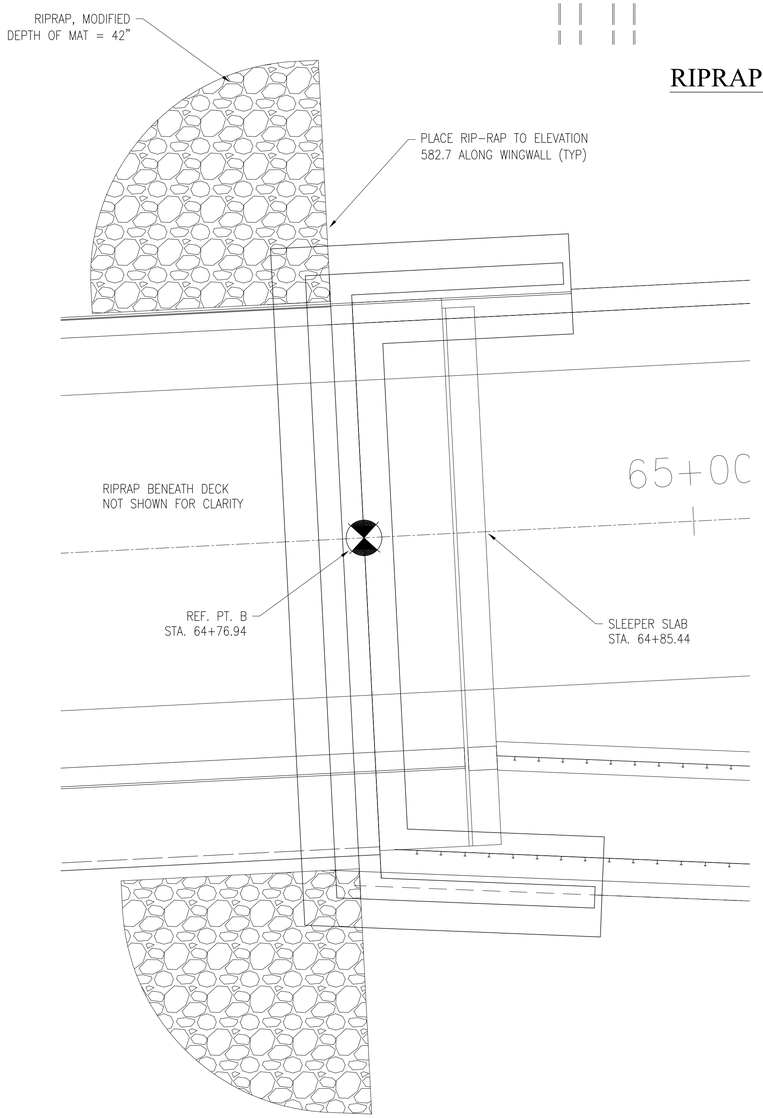
SECTIONS & DETAILS



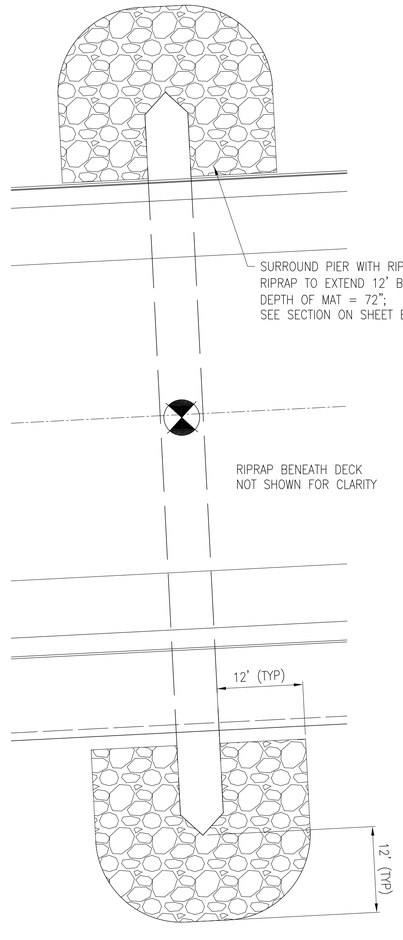
RIPRAP SECTION AT ABUTMENT



GENERAL PLAN - WEST APPROACH



GENERAL PLAN - EAST APPROACH



RIPRAP PLAN AT PIERS

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

STATE OF MICHIGAN · REGISTERED PROFESSIONAL ENGINEER
JEFFREY BARTOSZEK
ENGINEER
No. 35702

MEMBER
06/07/2016

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

REVISION SCHEDULE

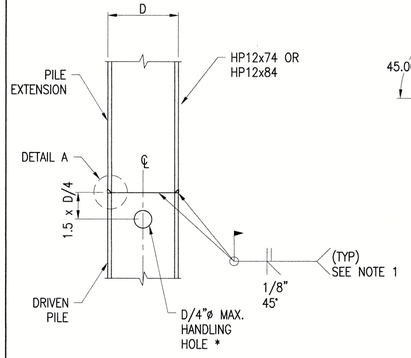
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1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016

Project Number 15092

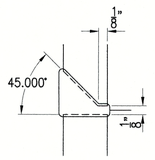
RIPRAP DETAILS

B-3

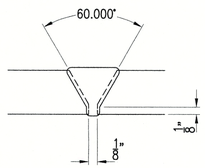
NOTES:
1. JWP DENOTES JOINT WATERPROOFING.
2. NS DENOTES NEAR SIDE.
3. FS DENOTES FAR SIDE.
4. ES DENOTES EACH SIDE.
5. T&B DENOTES TOP & BOTTOM.
6. FOR BEVEL AND MOLDING DETAILS, SEE STANDARD PLAN B-103-SERIES.
7. THE CONTRACTOR MAY ADHESIVE ANCHOR BOLTS IN HOLES DRILLED IN THE CONCRETE AT ABUTMENTS A & B.
8. LOW TEMPERATURE PROTECTION OF CONCRETE SHALL BE APPLIED ACCORDING TO SECTION 706.03 J. OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
9. ADHESIVE ANCHORS SHALL USE A NON-SHRINK GROUT (WHICH IS CEMENTITIOUS) LISTED IN MDOT'S QUALIFIED PRODUCTS LIST.
10. SUBSTRUCTURE HORIZONTAL SURFACE SEALER SHALL BE APPLIED TO THE TOP HORIZONTAL SURFACES OF THE ABUTMENT BRIDGE SEATS. COATING UNDER THE BRIDGE BEARINGS IS ALLOWED. PENETRATING WATER REPELLENT TREATMENT SHALL BE APPLIED TO THE FRONT FACE OF INDEPENDENT BACKWALLS AND WINGWALLS.
11. DRIVE ALL ABUTMENT PILES (HP12x84) TO A NOMINAL PILE DRIVING RESISTANCE NOT LESS THAN 600 KIPS. DETERMINE NOMINAL PILE DRIVING RESISTANCE (Rndr) USING THE FHWA MODIFIED GATES DYNAMIC FORMULA.
12. THE ESTIMATED PILE LENGTH IS BASED ON THE STATIC ANALYSIS.
13. STEEL PILES FOR ABUTMENTS SHALL BE HP12x84.
14. USE STEEL FOR H-PILES AND SPLICES THAT HAVE A YIELD STRENGTH NOT LESS THAN 50,000 PSI.
15. THE ESTIMATED LOSS OF NOMINAL PILE RESISTANCE DUE TO SCOUR AFTER DRIVING IS 0 KIPS.
16. THE ESTIMATED FACTORED DOWNDRAG AFTER PILE DRIVING IS 133 KIPS FOR ABUTMENT A, 174 KIPS FOR ABUTMENT B AND 0 KIPS FOR PIERS.
17. THE FACTORED PILE RESISTANCE AVAILABLE TO RESIST ALL FACTORED LOADS (INCLUDING THE ESTIMATED FACTORED DOWNDRAG) IS EQUAL TO 50% OF NOMINAL PILE DRIVING RESISTANCE.
18. ALL ABUTMENT PILE SPLCES SHALL BE FULL PENETRATION WELDED, PER DETAIL SHOWN.



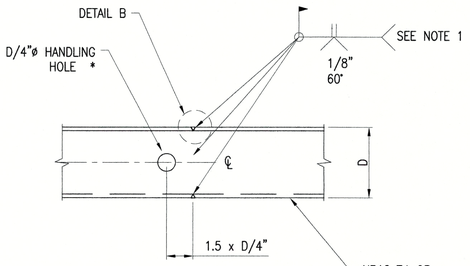
SPLICE DETAIL
FOR PILES IN PLACE (HORIZONTAL JOINT)



DETAIL A



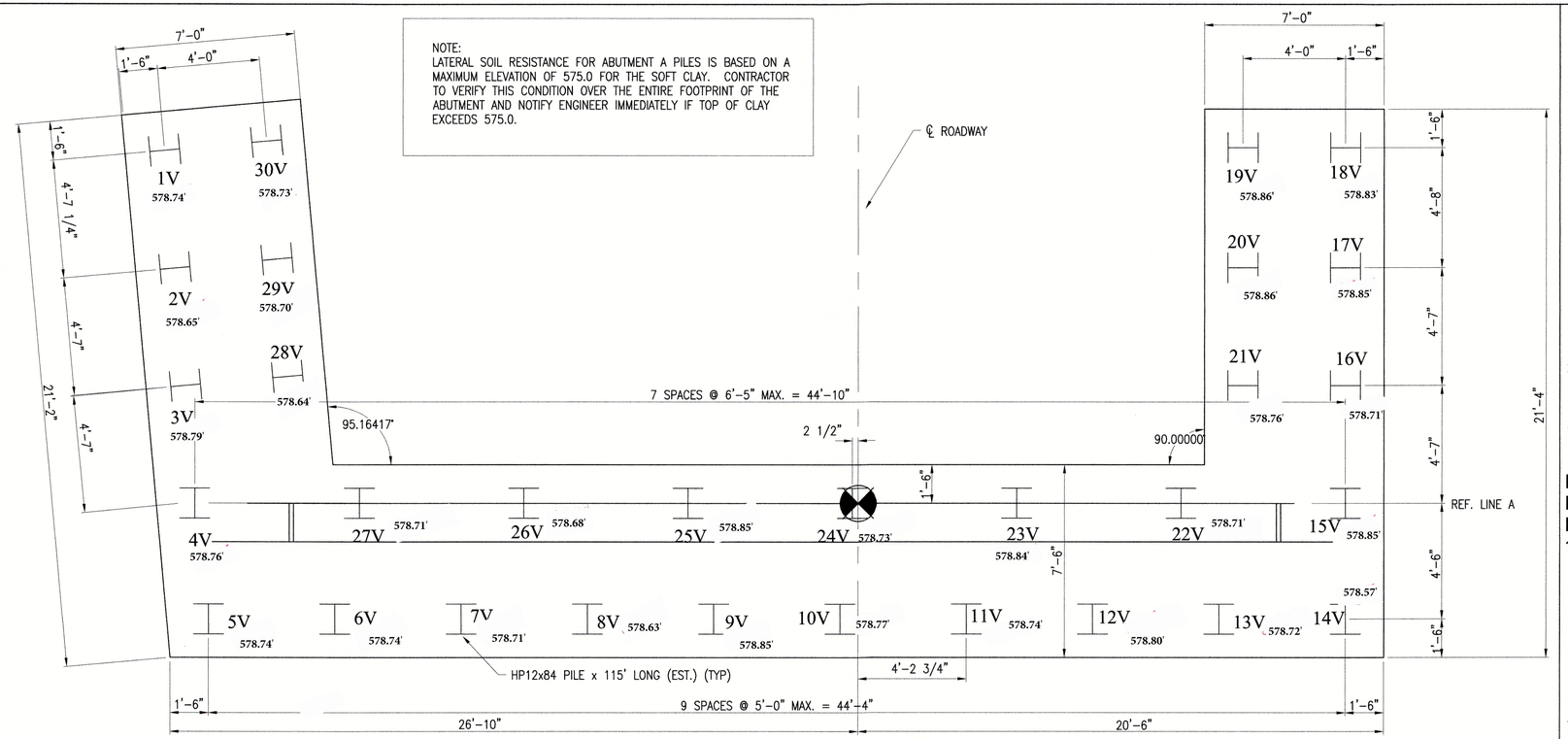
DETAIL B



SPLICE DETAIL
FOR PILES IN HORIZONTAL POSITION

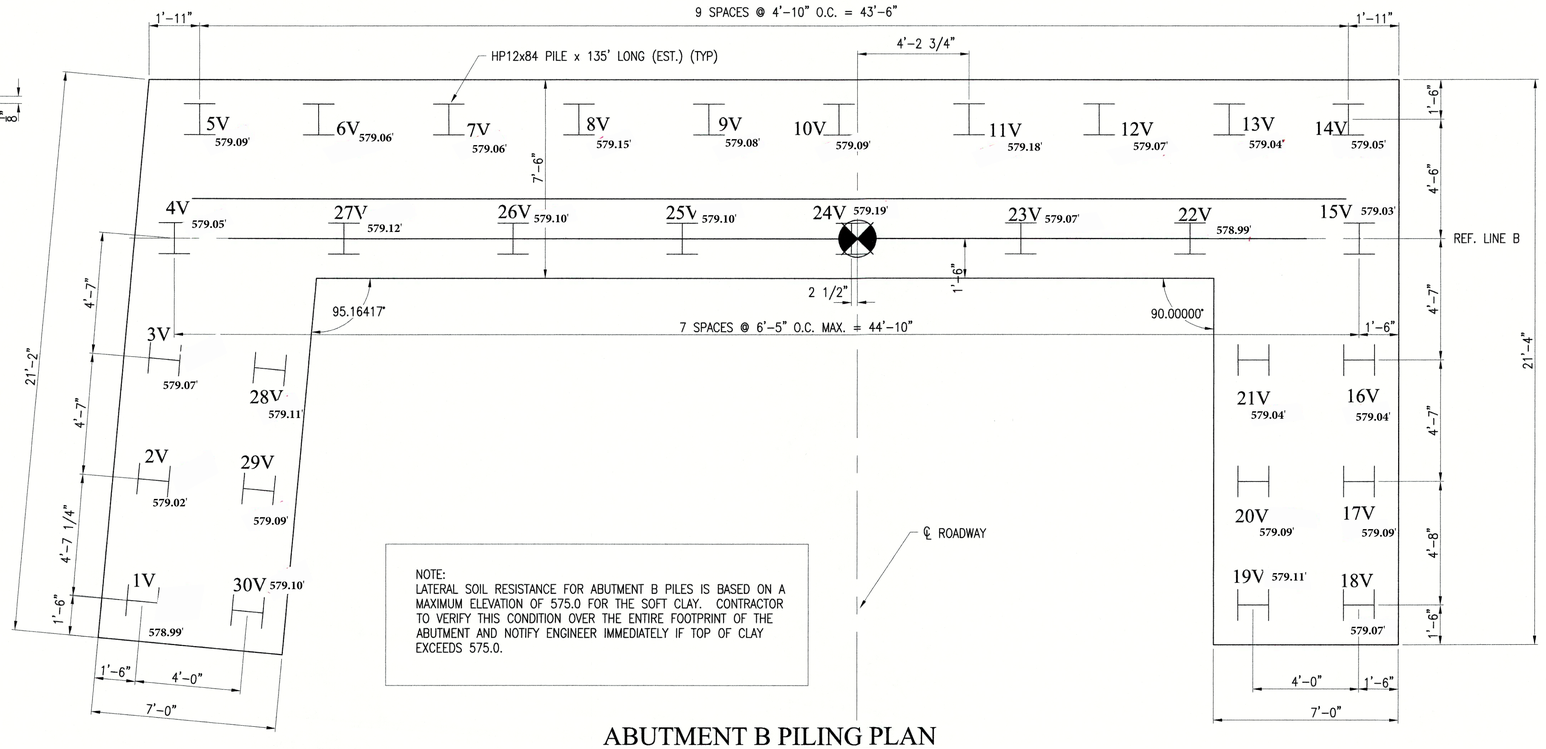
NOTE 1:
BACK GOUGE AND GRIND EDGE PREPARATION SMOOTH.
* DRILL OR FLAME CUT CIRCULAR HANDLING HOLE. GRIND FLAME CUT HOLE TO MAKE CIRCULAR AND REMOVE HARDENED EDGE OR CUT OFF SECTION OF PILE WITH FLAME CUT HOLE PRIOR TO SPLICING OR CONCRETE PLACEMENT. HOLES IN FLANGES ARE PERMITTED FOR HANDLING ONLY IF THAT PORTION OF THE PILE IS CUT OFF PRIOR TO SPLICING OR EMBEDMENT INTO CONCRETE.

NOTE:
LATERAL SOIL RESISTANCE FOR ABUTMENT A PILES IS BASED ON A MAXIMUM ELEVATION OF 575.0 FOR THE SOFT CLAY. CONTRACTOR TO VERIFY THIS CONDITION OVER THE ENTIRE FOOTPRINT OF THE ABUTMENT AND NOTIFY ENGINEER IMMEDIATELY IF TOP OF CLAY EXCEEDS 575.0.



ABUTMENT A PILING PLAN

NOTE:
LATERAL SOIL RESISTANCE FOR ABUTMENT B PILES IS BASED ON A MAXIMUM ELEVATION OF 575.0 FOR THE SOFT CLAY. CONTRACTOR TO VERIFY THIS CONDITION OVER THE ENTIRE FOOTPRINT OF THE ABUTMENT AND NOTIFY ENGINEER IMMEDIATELY IF TOP OF CLAY EXCEEDS 575.0.



ABUTMENT B PILING PLAN

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HABITAT
RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

STATE OF MICHIGAN
JEFFREY BARTOSZEK
ENGINEER
No. 35702
REGISTERED PROFESSIONAL ENGINEER

MEMBER
6/6/2016

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
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SCALE:	AS NOTED

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NO.	DESCRIPTION	DATE
0	TS&L APPROVAL	02/11/2016
1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016

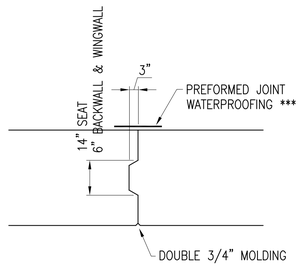
Project Number 15092

ASBUILT
ABUTMENT PLAN

B-4

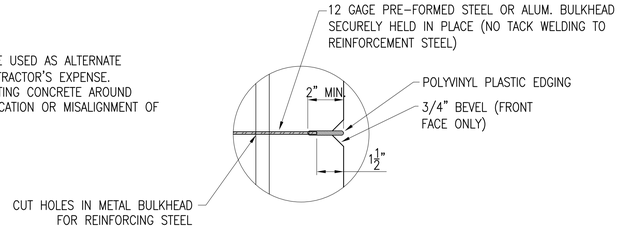
*** JOINT WATERPROOFING MEMBRANE (JWP) MAY BE USED AS AN ALTERNATE.

℄ Replacement of PVC edging with elastomeric sealant

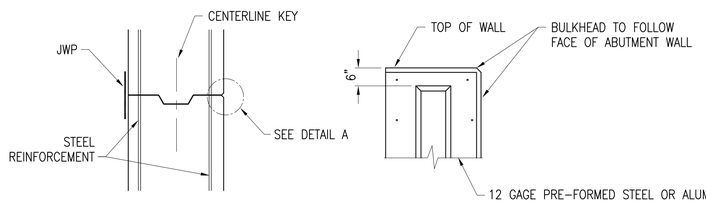


CONSTRUCTION JOINT

NOTES:
THE METAL BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT AT CONTRACTOR'S EXPENSE. CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

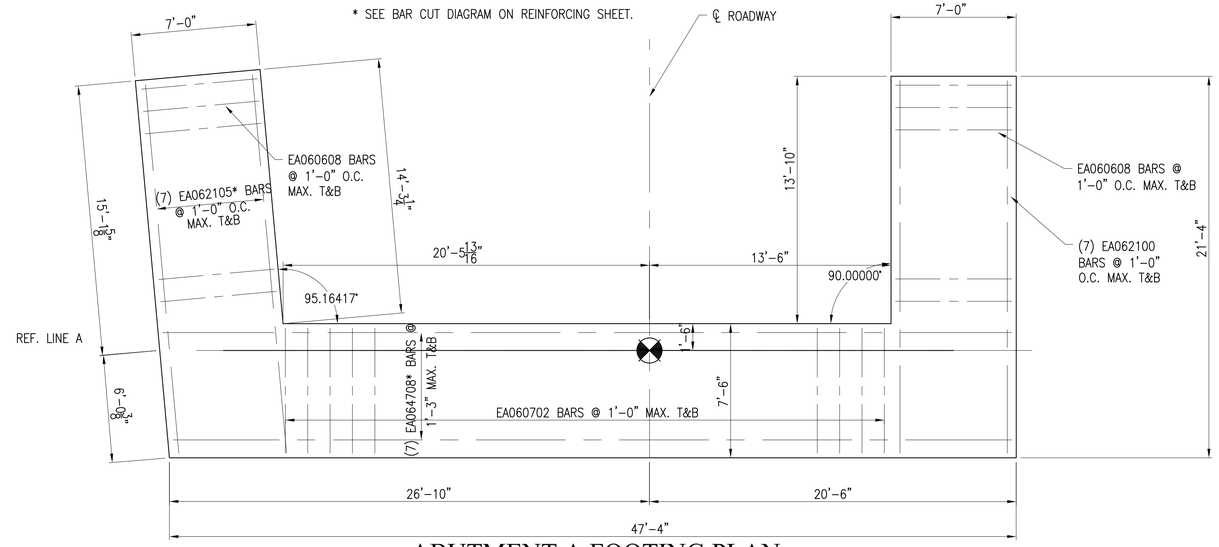


DETAIL A

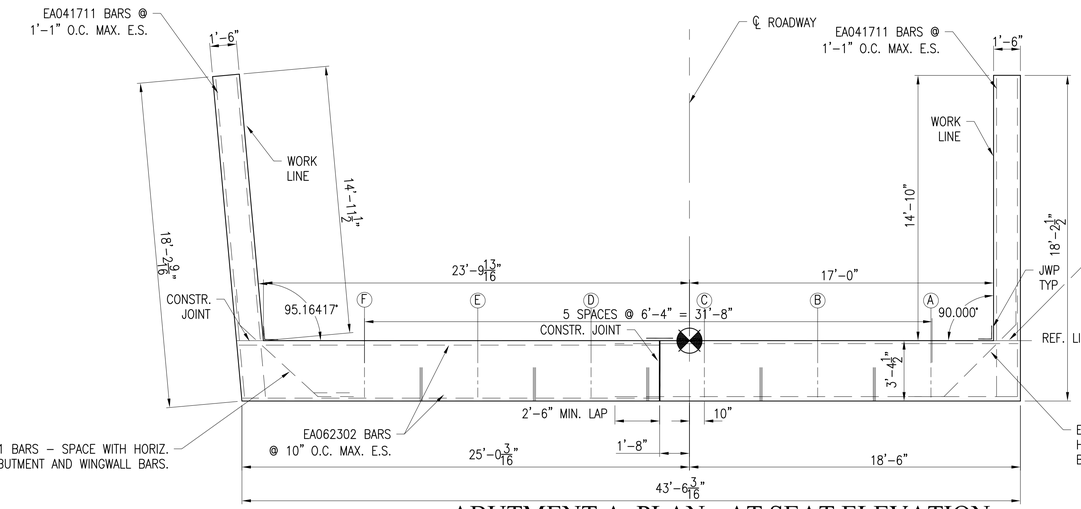


METAL BULKHEAD CONSTRUCTION JOINT

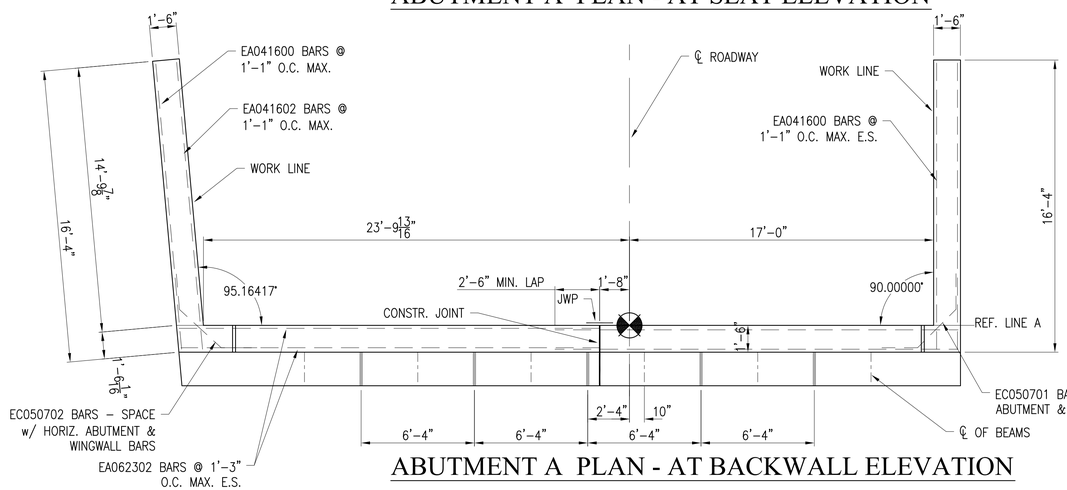
* SEE BAR CUT DIAGRAM ON REINFORCING SHEET.



ABUTMENT A FOOTING PLAN



ABUTMENT A PLAN - AT SEAT ELEVATION



ABUTMENT A PLAN - AT BACKWALL ELEVATION

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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

STATE OF MICHIGAN REGISTERED PROFESSIONAL ENGINEER
JEFFREY BARTOSZEK
ENGINEER
No. 35702
MEMBER 6/6/2016

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

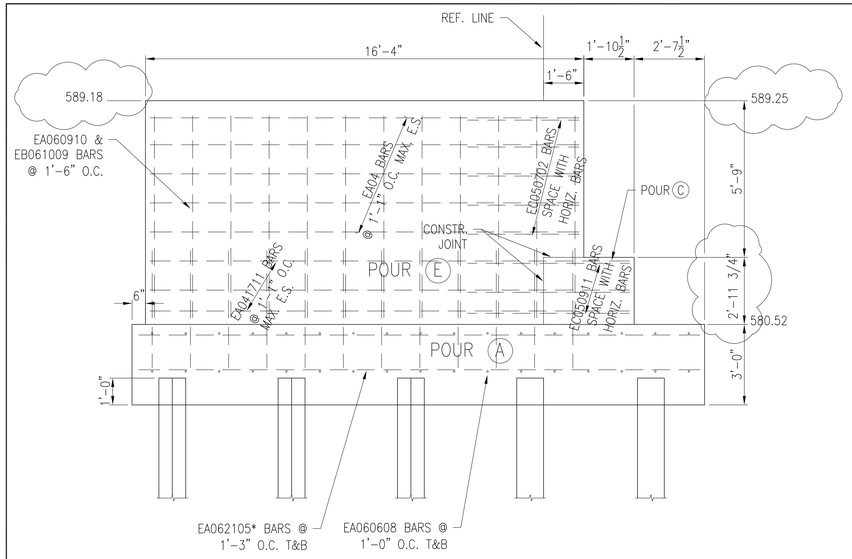
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NO.	DESCRIPTION	DATE
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1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016

Project Number 15092

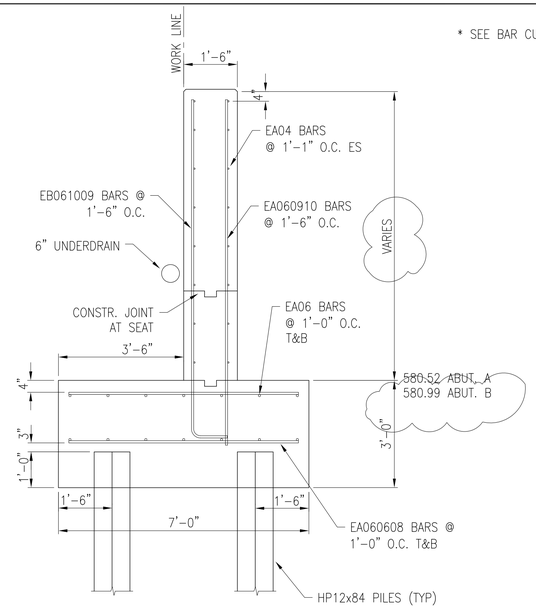
ABUTMENT A DETAILS

B-5

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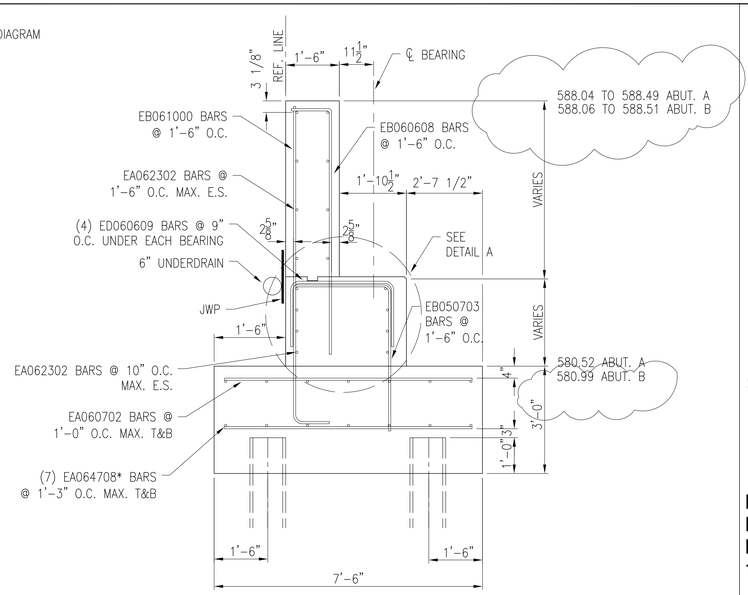


ELEVATION SW WINGWALL

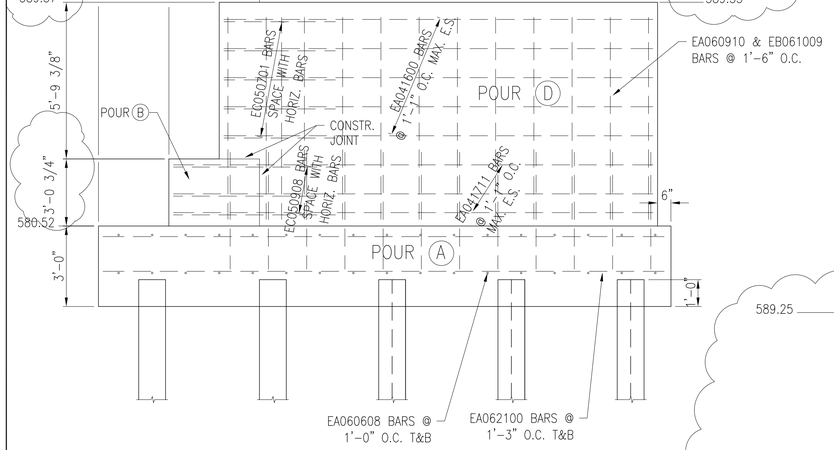


SECTION WINGWALL

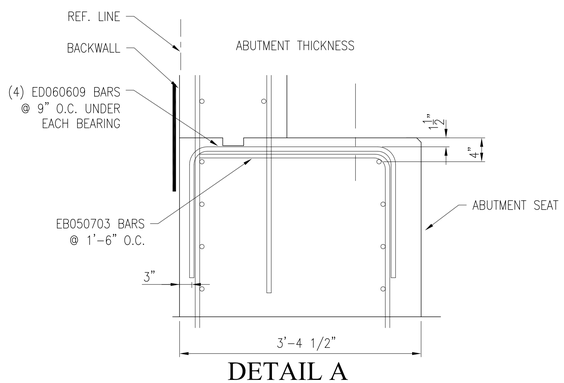
* SEE BAR CUT DIAGRAM



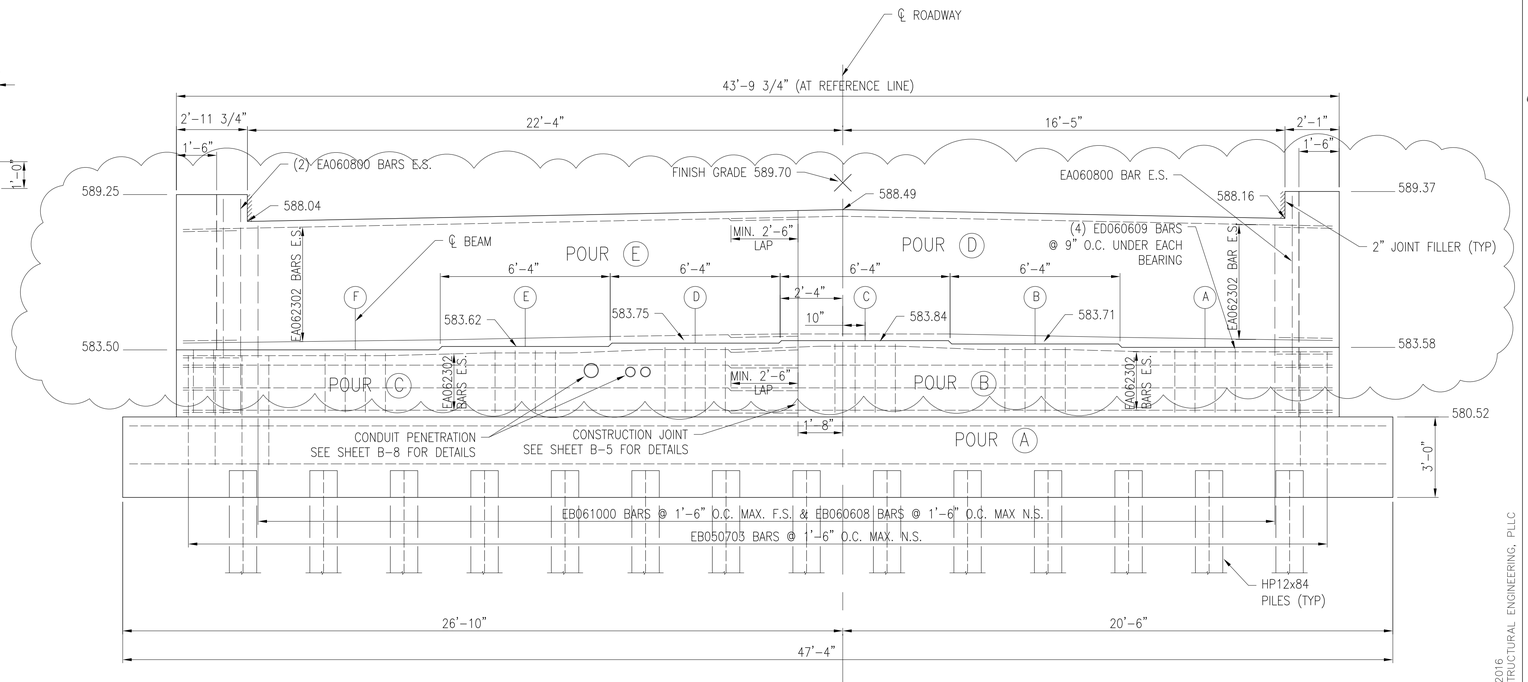
SECTION ABUTMENT



ELEVATION NW WINGWALL



DETAIL A



ELEVATION ABUTMENT A - LOOKING WEST

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LITTLE RAPIDS
HABITAT
RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

Member 07/20/16

JEFFREY BARTOSZEK
ENGINEER
No. 35702
STATE OF MICHIGAN
REGISTERED PROFESSIONAL ENGINEER

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
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SCALE:	AS NOTED

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Project Number 15092

ABUTMENT A DETAILS

B-6

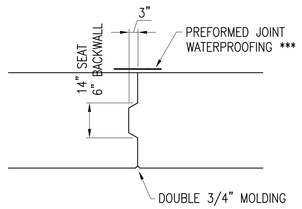
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NOTES:

1. JWP DENOTES JOINT WATERPROOFING.
2. NS DENOTES NEAR SIDE.
3. FS DENOTES FAR SIDE.
4. ES DENOTES EACH SIDE.
5. T&B DENOTES TOP & BOTTOM.
6. FOR BEVEL AND MOLDING DETAILS, SEE STANDARD PLAN B-103-SERIES.
7. THE CONTRACTOR MAY ADHESIVE ANCHOR BOLTS IN HOLES DRILLED IN THE CONCRETE AT ABUTMENTS A & B.
8. LOW TEMPERATURE PROTECTION OF CONCRETE SHALL BE APPLIED ACCORDING TO SECTION 706.03 J. OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
9. ADHESIVE ANCHORS SHALL USE A NON-SHRINK GROUT (WHICH IS CEMENTITIOUS) LISTED IN MDOT'S QUALIFIED PRODUCTS LIST.
10. PENETRATING WATER REPELLENT TREATMENT SHALL BE APPLIED TO THE TOP SURFACES OF ALL SUBSTRUCTURE UNITS (ABUTMENTS AND PIERS) AND THE FRONT FACE OF INDEPENDENT BACKWALLS COATING UNDER THE BRIDGE BEARINGS IS ALLOWED.
11. DRIVE ALL ABUTMENT PILES (HP12x84) TO A NOMINAL PILE DRIVING RESISTANCE NOT LESS THAN 600 KIPS. DETERMINE NOMINAL PILE DRIVING RESISTANCE (Rndr) USING THE FHWA MODIFIED GATES DYNAMIC FORMULA.
12. THE ESTIMATED PILE LENGTH IS BASED ON THE STATIC ANALYSIS.
13. STEEL PILES FOR ABUTMENTS SHALL BE HP12x84.
14. PILES ARE TO BE DRIVEN TO SUCH ACCURACY THAT THE ENDS OF THE PILES TO BE EMBEDDED IN THE CONCRETE ARE WITHIN 3" OF THE LOCATION SHOWN ON THE PLANS.
15. USE STEEL FOR H-PILES AND SPLICES THAT HAVE A YIELD STRENGTH NOT LESS THAN 50,000 PSI.
16. THE ESTIMATED LOSS OF NOMINAL PILE RESISTANCE DUE TO SCOUR AFTER DRIVING IS 0 KIPS.
17. THE ESTIMATED FACTORED DOWNDRAG AFTER PILE DRIVING IS 133 KIPS FOR ABUTMENT A, 174 KIPS FOR ABUTMENT B AND 0 KIPS FOR PIERS.
18. THE FACTORED PILE RESISTANCE AVAILABLE TO RESIST ALL FACTORED LOADS (INCLUDING THE ESTIMATED FACTORED DOWNDRAG) IS EQUAL TO 50% OF NOMINAL PILE DRIVING RESISTANCE.

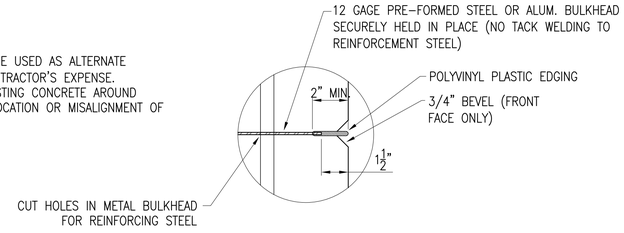
- Replacement of PVC edging with elastomeric sealant

*** JOINT WATERPROOFING MEMBRANE (JWP) MAY BE USED AS AN ALTERNATE.

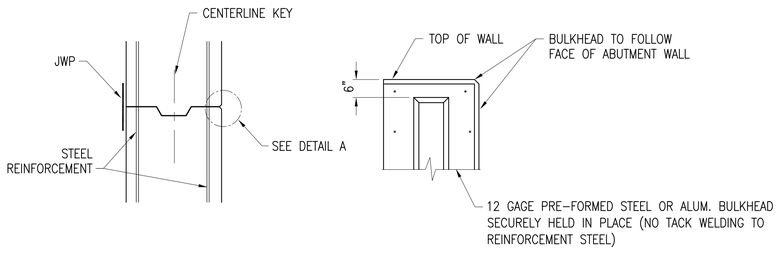


CONSTRUCTION JOINT

NOTES:
THE METAL BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT AT CONTRACTOR'S EXPENSE. CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

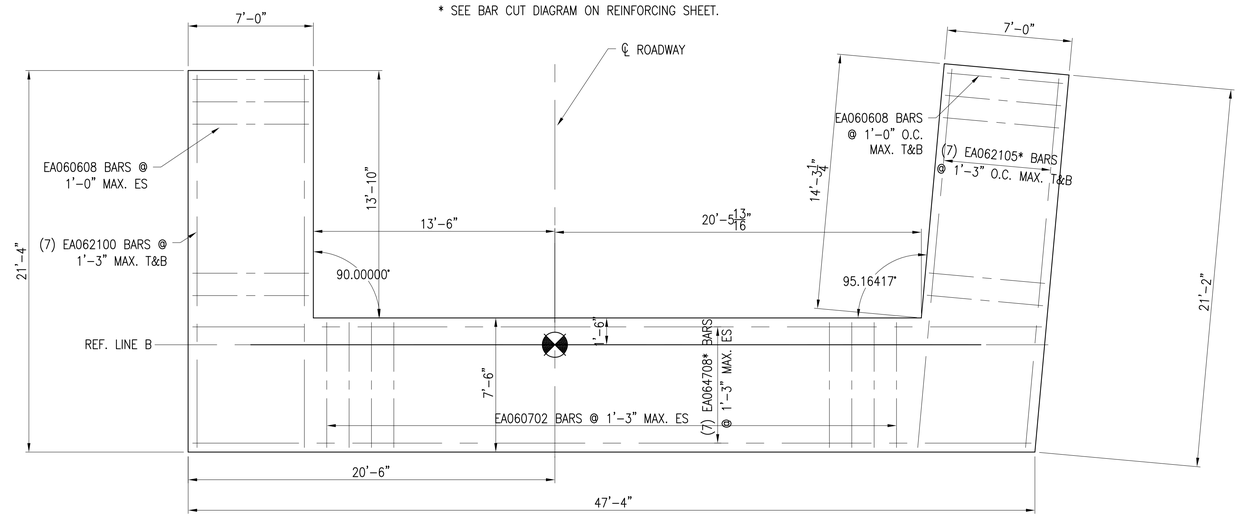


DETAIL A

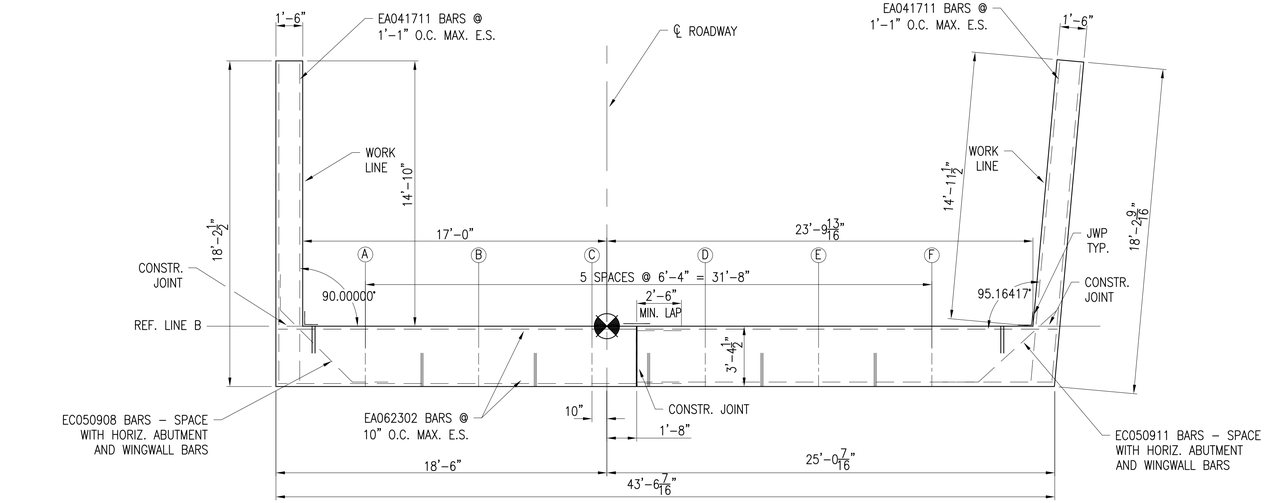


METAL BULKHEAD CONSTRUCTION JOINT

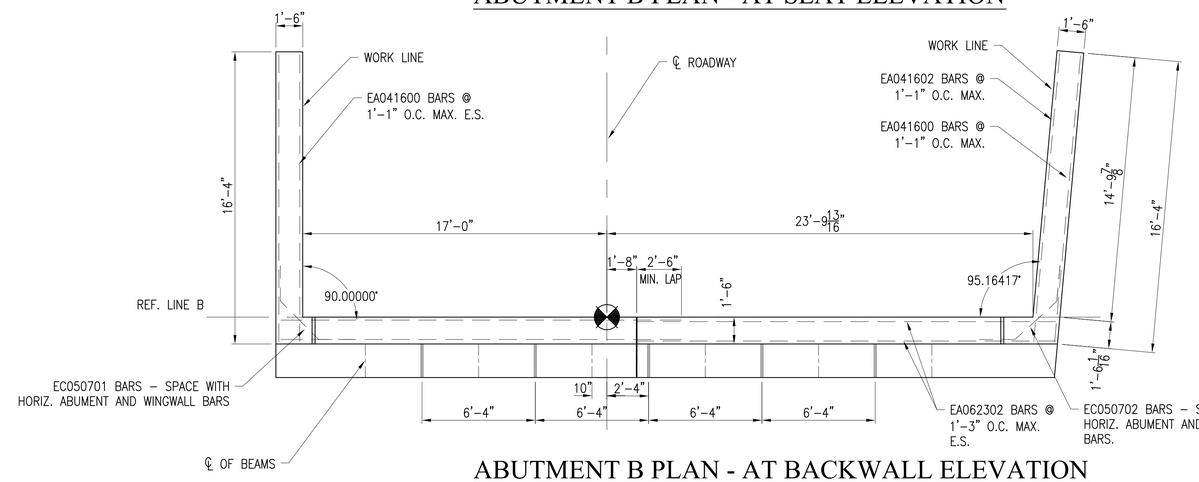
* SEE BAR CUT DIAGRAM ON REINFORCING SHEET.



ABUTMENT B FOOTING PLAN



ABUTMENT B PLAN - AT SEAT ELEVATION



ABUTMENT B PLAN - AT BACKWALL ELEVATION

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1 ½ MILE ROAD

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MICHIGAN

FINAL BRIDGE PLANS

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ENGINEER
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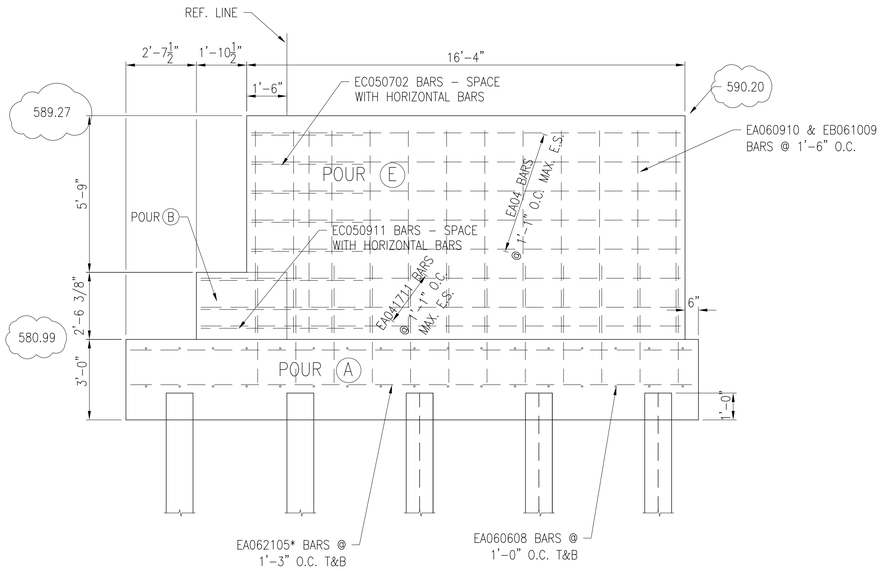
REVISION SCHEDULE

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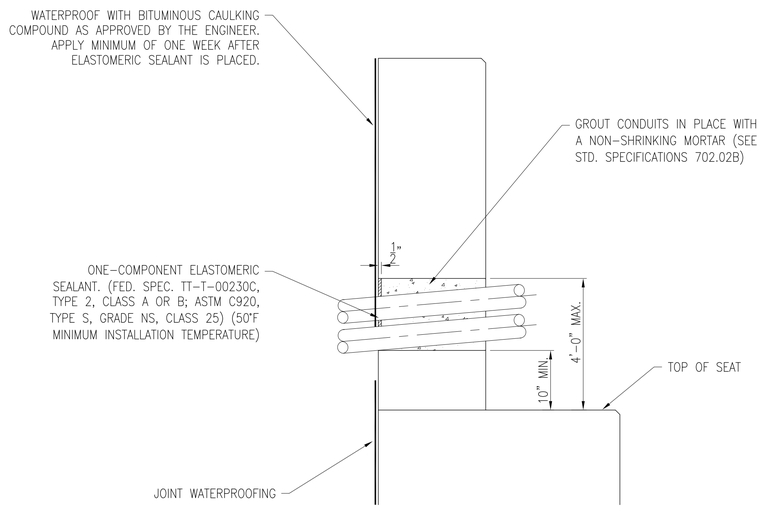
Project Number 15092

ABUTMENT B PLAN

B-7

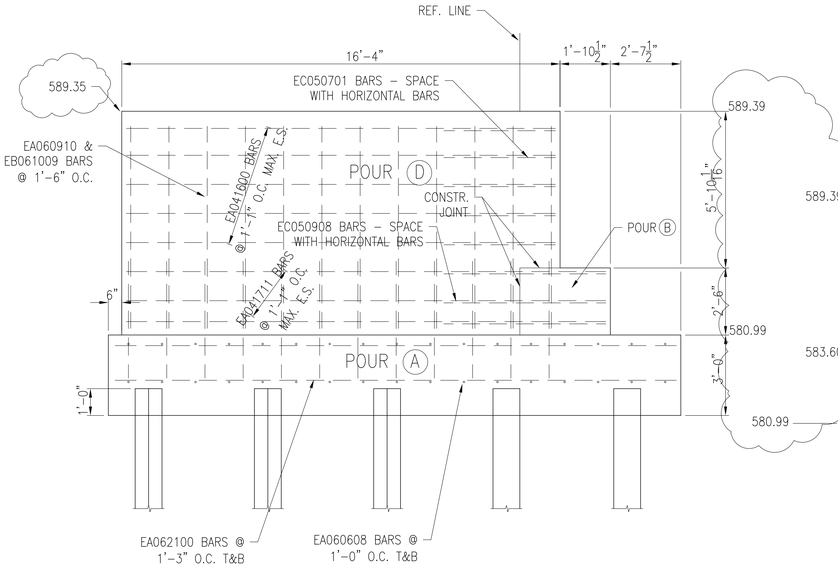


ELEVATION SE WINGWALL

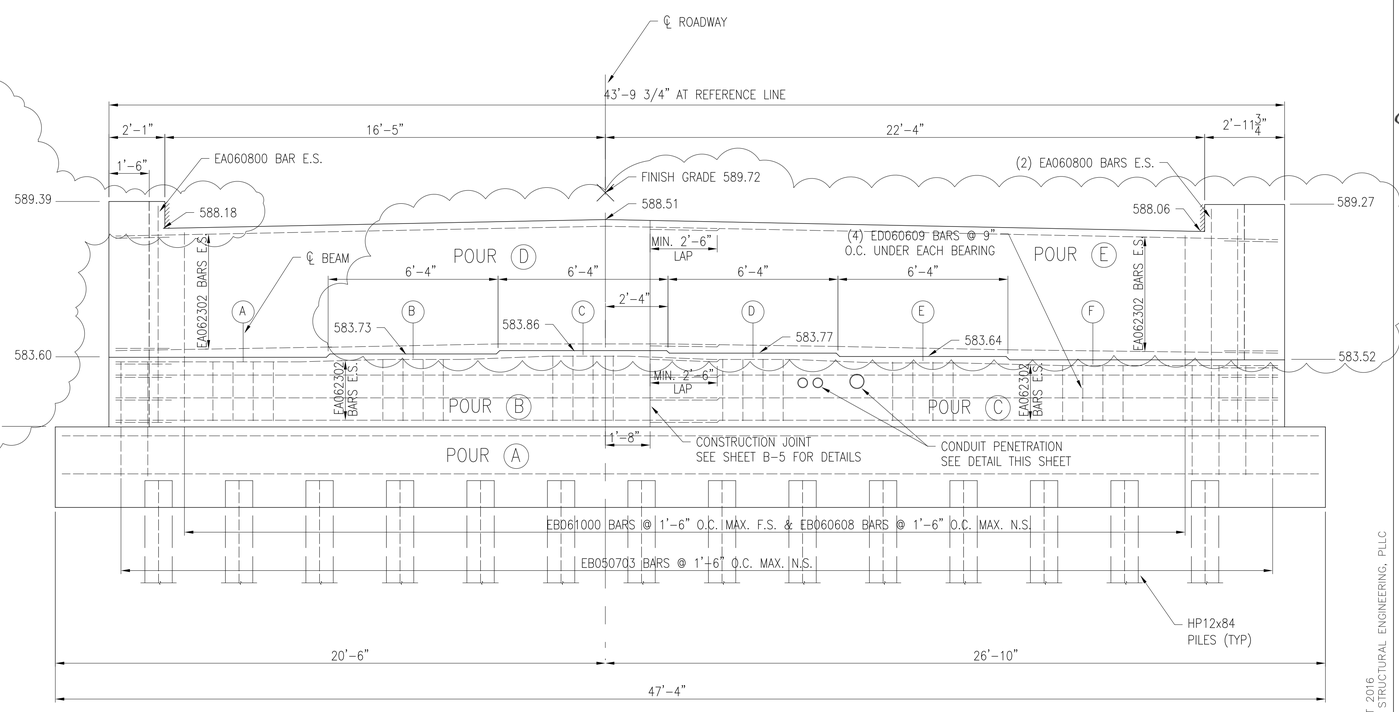


BACKWALL CONDUIT DETAIL

- Raised bottom of diaphragm approximately 8" at A abutments to allow clearance for phone and electrical conduits.



ELEVATION NE WINGWALL



ELEVATION ABUTMENT B LOOKING EAST

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LITTLE RAPIDS HABITAT RESTORATION 1½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

Member 07/20/16

JEFFREY BARTOSZEK ENGINEER No. 35702

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
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SCALE:	AS NOTED

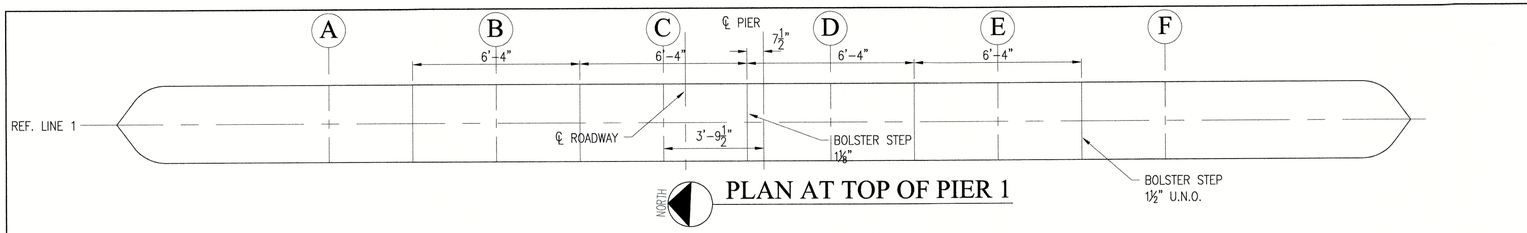
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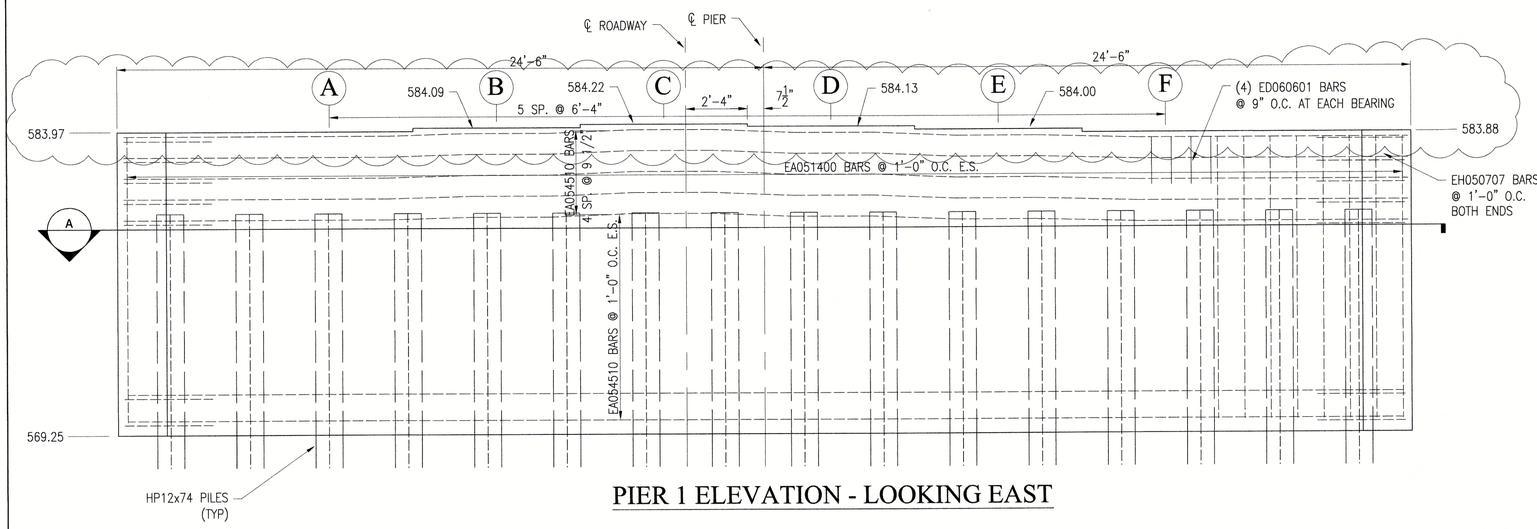
ABUTMENT B DETAILS

B-8

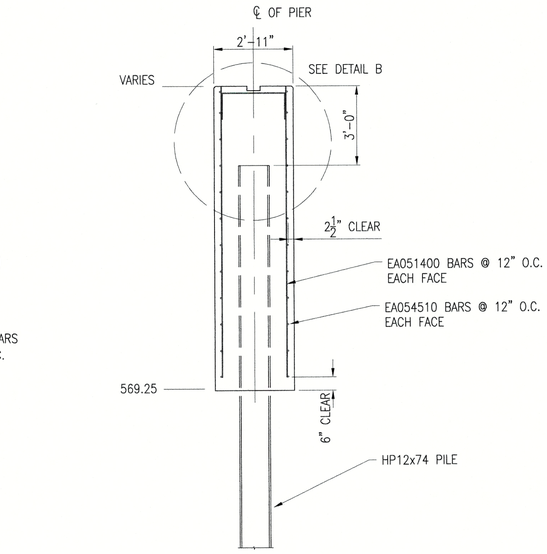
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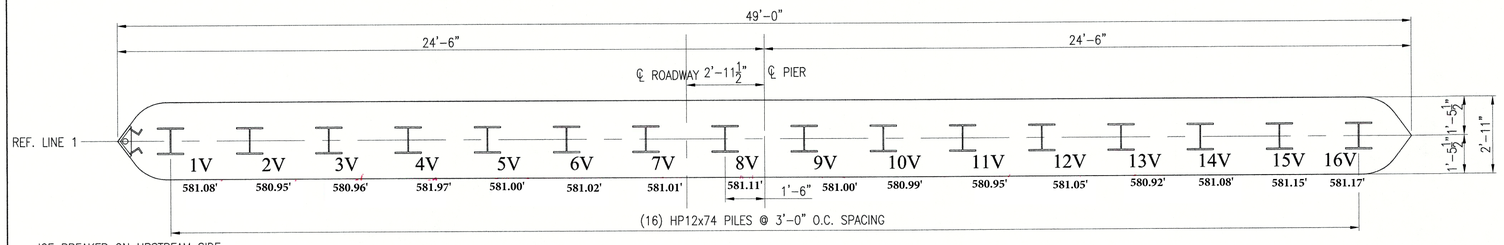
PLAN AT TOP OF PIER 1



PIER 1 ELEVATION - LOOKING EAST

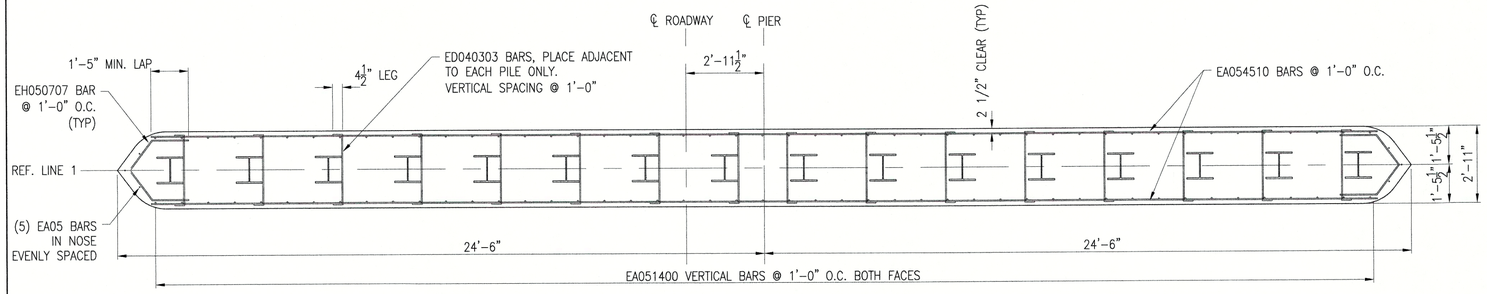


END VIEW

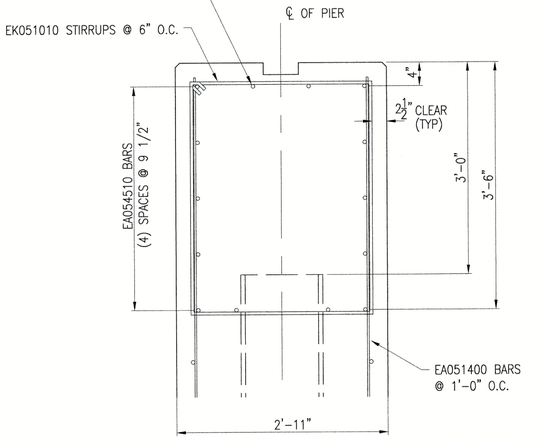


PILING PLAN PIER 1

SEE SHEET B-4 FOR PILE
SPLICE DETAILS



SECTION A-A



DETAIL B

- Keyways on top of piers between girders in diaphragm areas not installed.

NOTES:

1. PENETRATING WATER REPELLENT TREATMENT SHALL BE APPLIED TO THE ENTIRE EXPOSED SURFACE OF PIERS 1–4. COATING BENEATH THE BEARINGS WITH THE PENETRATING WATER REPELLENT TREATMENT IS ALLOWED.
2. DRIVE ALL PIER PILES (HP12x74) TO A NOMINAL PILE DRIVING RESISTANCE NOT LESS THAN 375 KIPS. DETERMINE NOMINAL PILE DRIVING RESISTANCE (Rndr) USING THE FHWA MODIFIED GATES DYNAMIC FORMULA.
3. ES DENOTES EACH SIDE.
4. FOR BEVEL AND MOLDING DETAILS, SEE STANDARD PLAN B-103 SERIES.
5. THE ESTIMATED PILE LENGTH IS BASED ON THE STATIC ANALYSIS.
6. STEEL PILES FOR PIERS SHALL BE HP12x74.
7. PILES ARE TO BE DRIVEN TO SUCH ACCURACY THAT THE ENDS OF THE PILES TO BE EMBEDDED IN THE CONCRETE ARE WITHIN 3" OF THE LOCATION SHOWN ON THE PLANS.
8. USE STEEL FOR H-PILES AND SPLICES THAT HAVE A YIELD STRENGTH NOT LESS THAN 50,000 PSI.
9. THE ESTIMATED LOSS OF NOMINAL PILE RESISTANCE DUE TO SCOUR AFTER DRIVING IS 0 KIPS.
10. THE ESTIMATED FACTORED DOWNDRAG AFTER PILE DRIVING IS 0 KIPS FOR PIER PILING.
11. THE FACTORED PILE RESISTANCE AVAILABLE TO RESIST ALL FACTORED LOADS (INCLUDING THE ESTIMATED FACTORED DOWNDRAG) IS EQUAL TO 50% OF NOMINAL PILE DRIVING RESISTANCE.
12. THE CONTRACTOR MAY USE ADHESIVE ANCHOR BOLTS IN HOLES DRILLED IN THE CONCRETE AT PIERS 1 AND 4.
13. LOW TEMPERATURE PROTECTION OF CONCRETE SHALL BE APPLIED ACCORDING TO SECTION 706.03 J. OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
14. ALL PIER PILE SPLICES SHALL BE FULL PENETRATION WELDED, PER DETAIL ON SHEET B-4.

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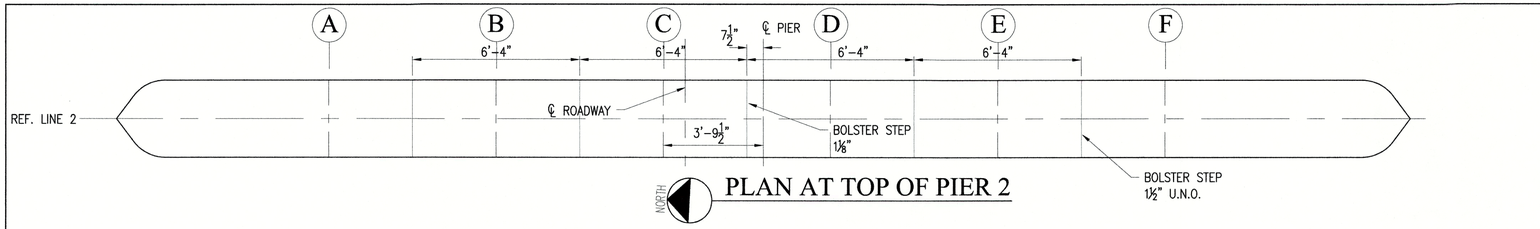
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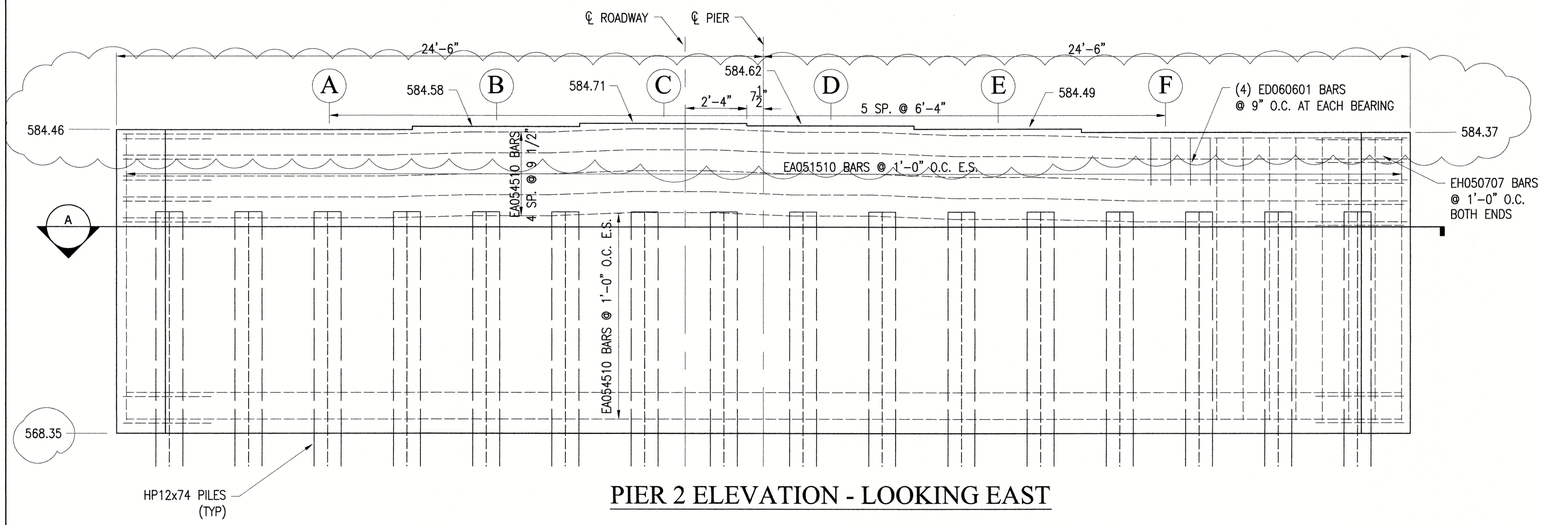
Project Number 15092

ASBUILT
PIER 1 PLAN

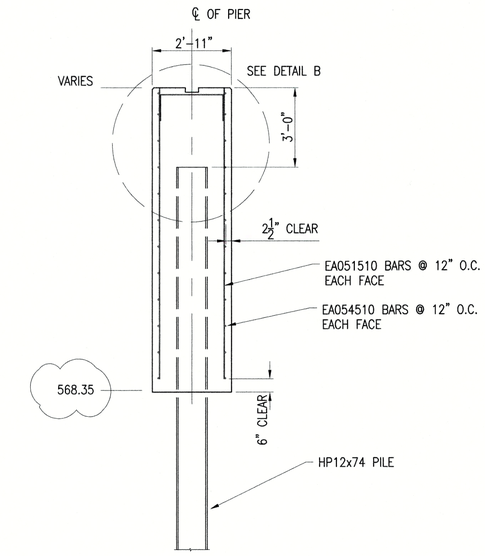
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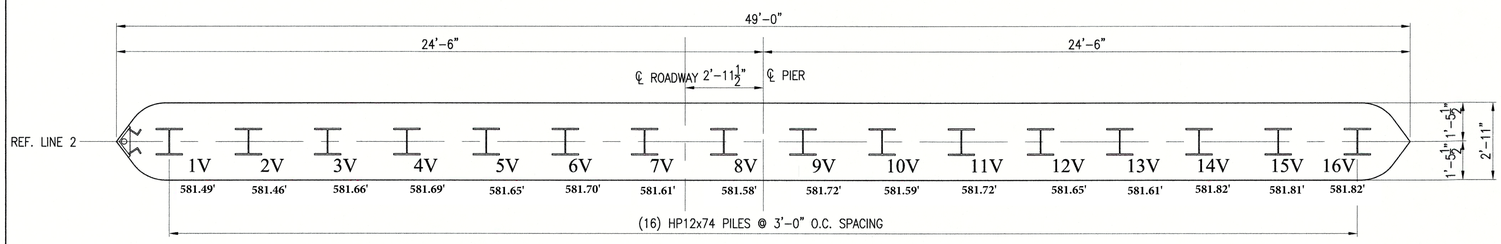
PLAN AT TOP OF PIER 2



PIER 2 ELEVATION - LOOKING EAST



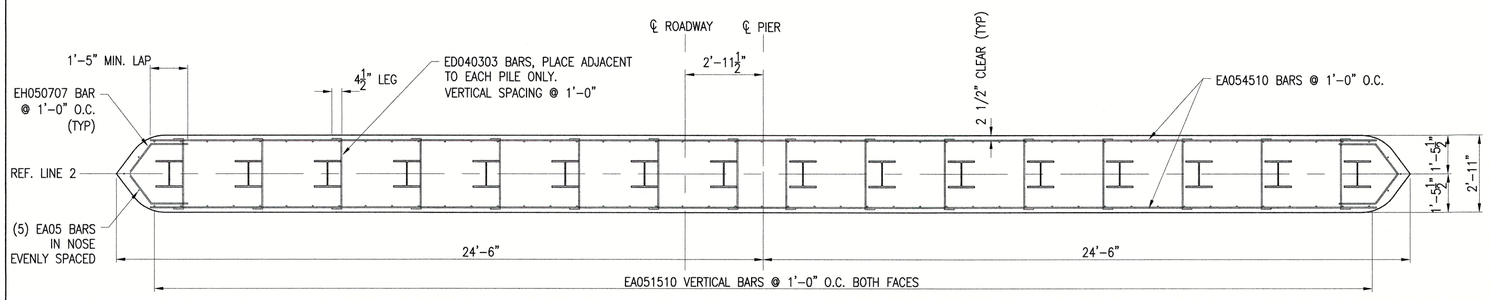
END VIEW



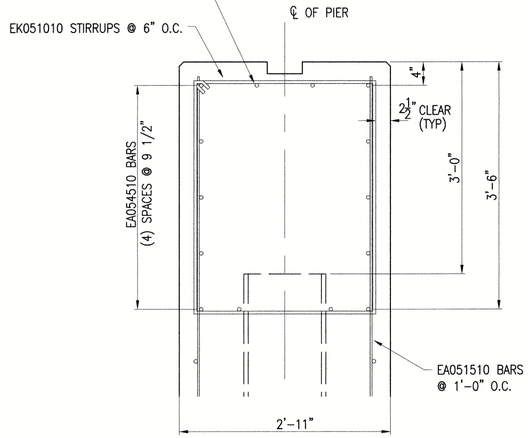
ICE BREAKER ON UPSTREAM SIDE
SEE DETAIL ON SHEET B-13

PILING PLAN PIER 2

SEE SHEET B-4 FOR PILE
SPLICE DETAILS



SECTION A-A



DETAIL B

NOTES:

1. DRIVE ALL PIER PILES (HP12x74) TO A NOMINAL PILE DRIVING RESISTANCE NOT LESS THAN 375 KIPS. DETERMINE NOMINAL PILE DRIVING RESISTANCE (Rndr) USING THE FHWA MODIFIED GATES DYNAMIC FORMULA.
2. THE ESTIMATED PILE LENGTH IS BASED ON THE STATIC ANALYSIS.
3. STEEL PILES FOR PIERS SHALL BE HP12x74.
4. PILES ARE TO BE DRIVEN TO SUCH ACCURACY THAT THE ENDS OF THE PILES TO BE EMBEDDED IN THE CONCRETE ARE WITHIN 3" OF THE LOCATION SHOWN ON THE PLANS.
5. USE STEEL FOR H-PILES AND SPLICES THAT HAVE A YIELD STRENGTH NOT LESS THAN 50,000 PSI.
6. THE ESTIMATED LOSS OF NOMINAL PILE RESISTANCE DUE TO SCOUR AFTER DRIVING IS 0 KIPS.
7. THE ESTIMATED FACTORED DOWNDRAG AFTER PILE DRIVING IS 0 KIPS FOR PIER PILING.
8. THE FACTORED PILE RESISTANCE AVAILABLE TO RESIST ALL FACTORED LOADS (INCLUDING THE ESTIMATED FACTORED DOWNDRAG) IS EQUAL TO 50% OF NOMINAL PILE DRIVING RESISTANCE.
9. LOW TEMPERATURE PROTECTION OF CONCRETE SHALL BE APPLIED ACCORDING TO SECTION 706.03 J. OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
10. ALL PIER PILE SPLICES SHALL BE FULL PENETRATION WELDED, PER DETAIL ON SHEET B-4.

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LITTLE RAPIDS
HABITAT
RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE
PLANS

STATE OF MICHIGAN
JEFFREY
BARTOSZEK
ENGINEER
No.
35702
PROFESSIONAL ENGINEER

MEMBER
7/29/2016

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

REVISION SCHEDULE

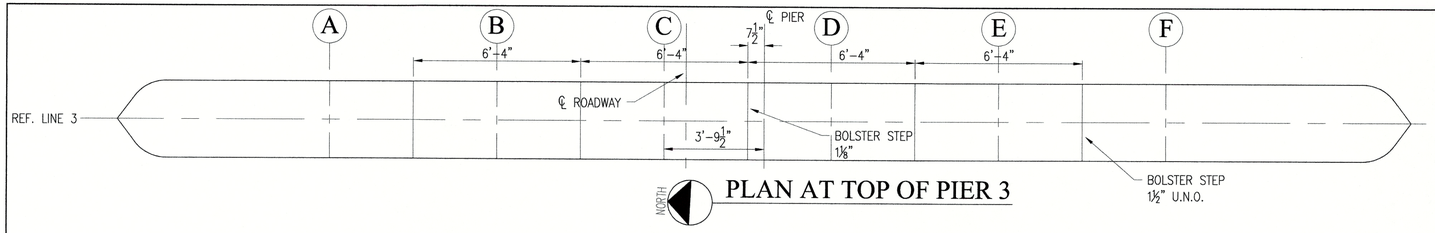
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3	PROFILE REVISED	07/29/2016

Project Number 15092

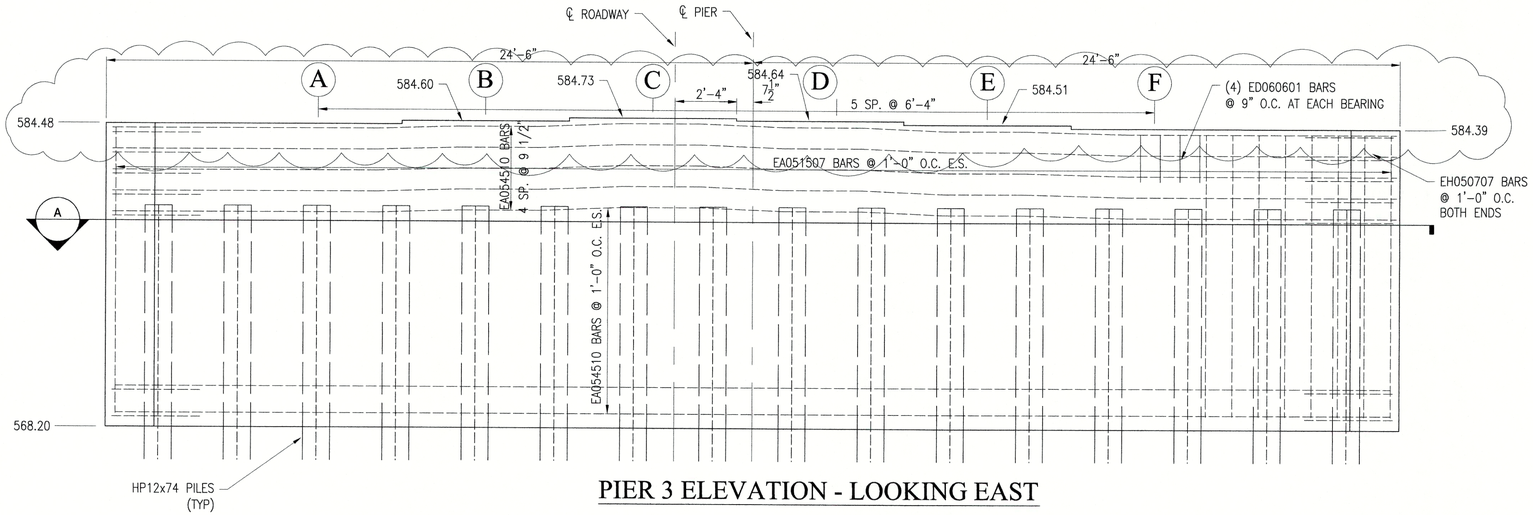
ASBUILT
PIER 2 PLAN

B-10

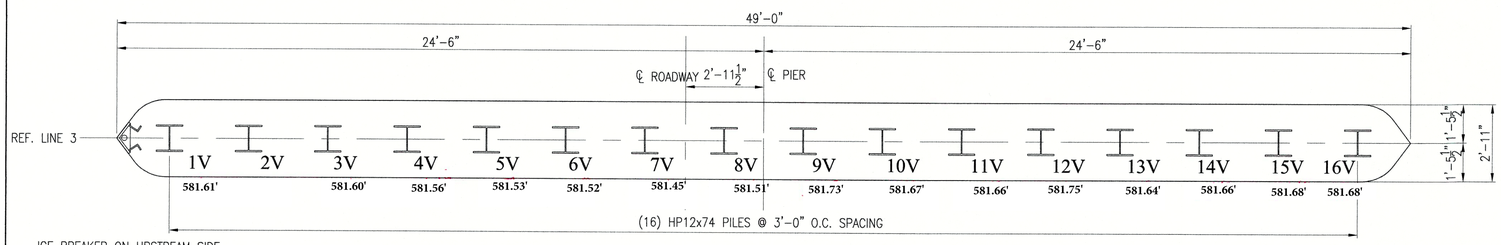
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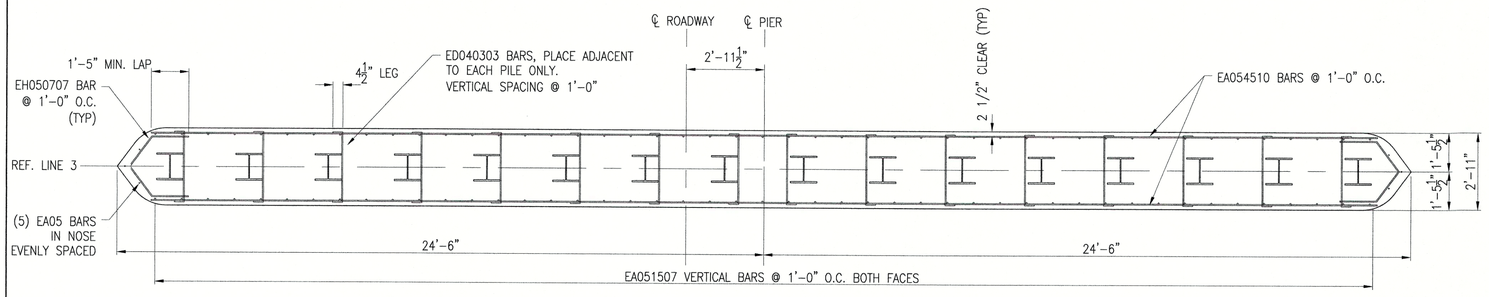
PLAN AT TOP OF PIER 3



PIER 3 ELEVATION - LOOKING EAST

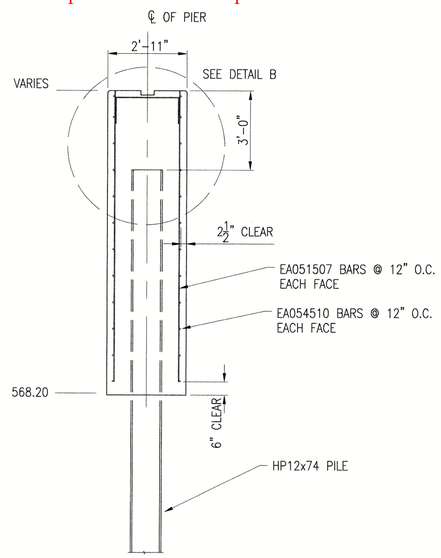


PILING PLAN PIER 3

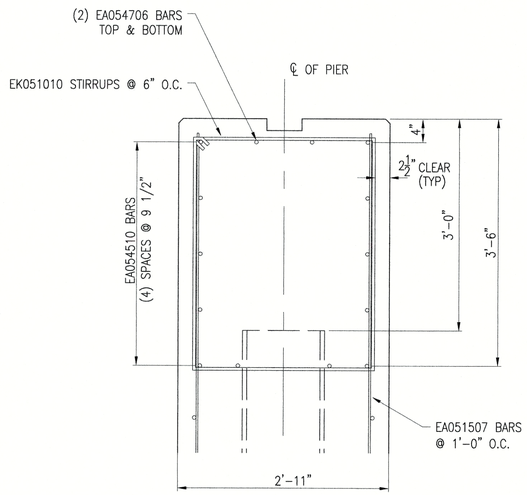


SECTION A-A

Pile #2 was eliminated. Other piles driven to 400 kips.



END VIEW



DETAIL B

NOTES:

1. DRIVE ALL PIER PILES (HP12x74) TO A NOMINAL PILE DRIVING RESISTANCE NOT LESS THAN 375 KIPS. DETERMINE NOMINAL PILE DRIVING RESISTANCE (Rndr) USING THE FHWA MODIFIED GATES DYNAMIC FORMULA.
2. THE ESTIMATED PILE LENGTH IS BASED ON THE STATIC ANALYSIS.
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10. ALL PIER PILE SPLICES SHALL BE FULL PENETRATION WELDED, PER DETAIL ON SHEET B-4.

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LITTLE RAPIDS
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SUGAR ISLAND
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FINAL BRIDGE
PLANS

STATE OF MICHIGAN
JEFFREY
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ENGINEER
No.
35702
REGISTERED PROFESSIONAL ENGINEER
Member
07/20/16

CERTIFIED BY

JEFF BARTOSZEK	PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

REVISION SCHEDULE

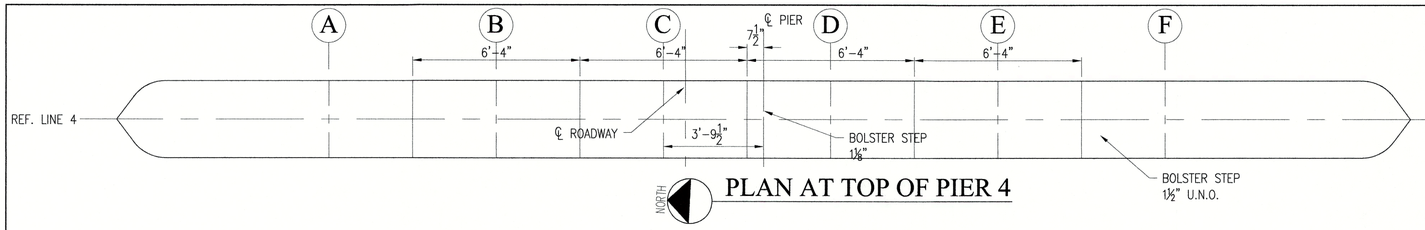
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Project Number 15092

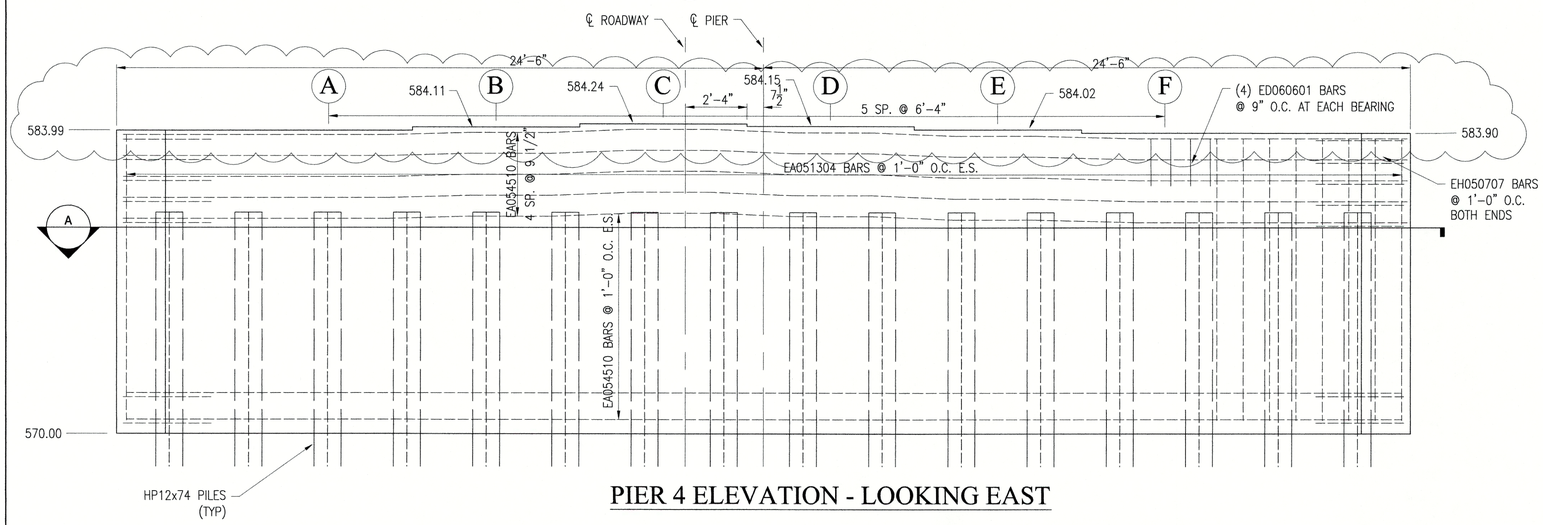
ASBUILT
PIER 3 PLAN

B-11

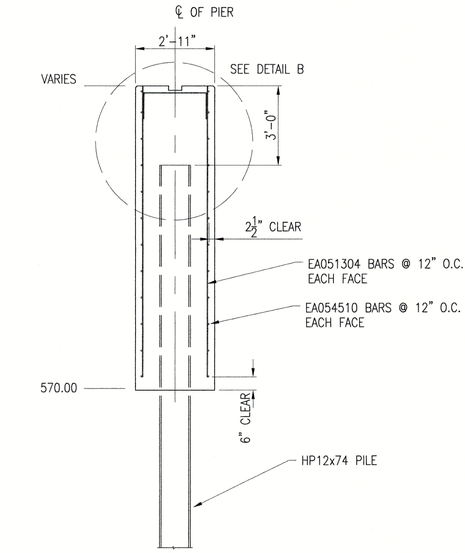
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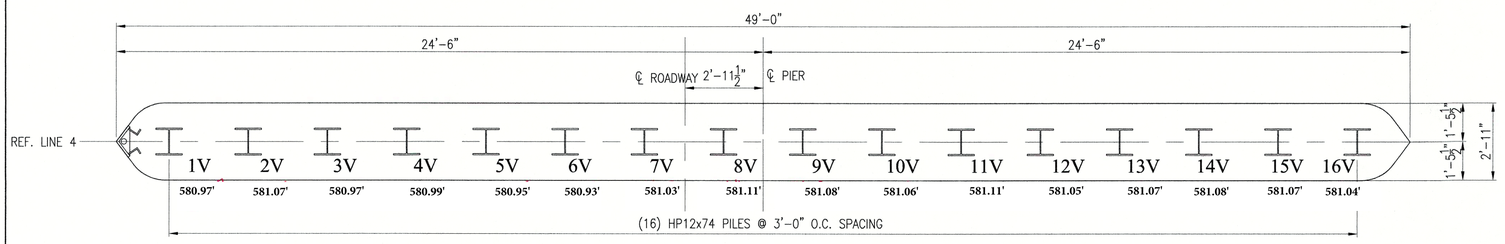
PLAN AT TOP OF PIER 4



PIER 4 ELEVATION - LOOKING EAST



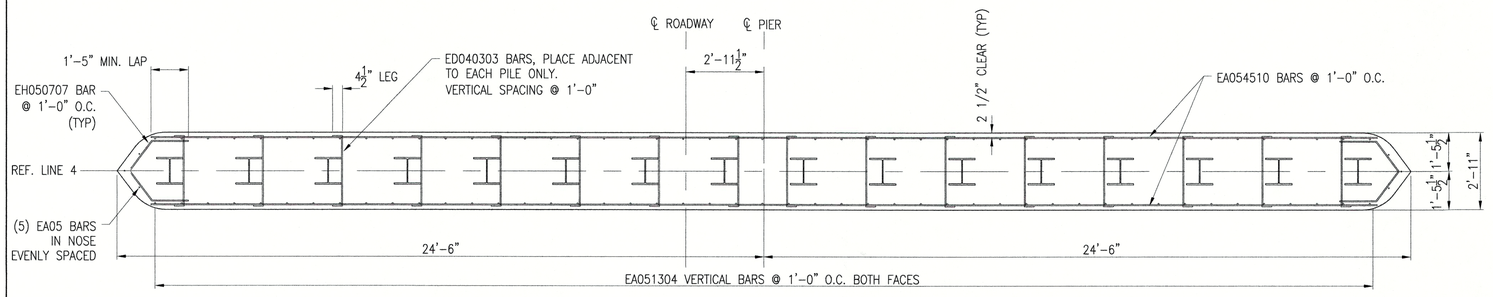
END VIEW



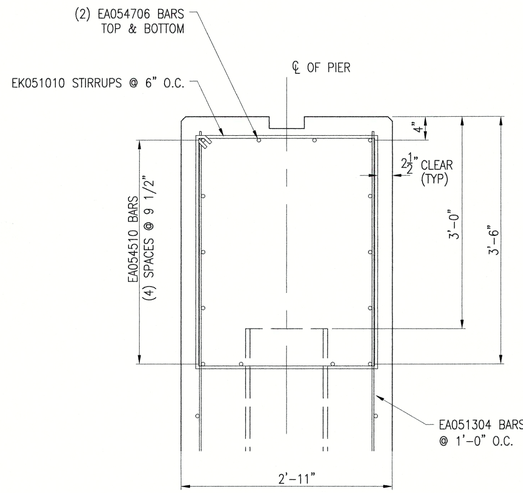
ICE BREAKER ON UPSTREAM SIDE
SEE DETAIL ON SHEET B-13

PILING PLAN PIER 4

SEE SHEET B-4 FOR PILE SPLICE DETAILS



SECTION A-A



DETAIL B

NOTES:

1. DRIVE ALL PIER PILES (HP12x74) TO A NOMINAL PILE DRIVING RESISTANCE NOT LESS THAN 375 KIPS. DETERMINE NOMINAL PILE DRIVING RESISTANCE (Rndr) USING THE FHWA MODIFIED GATES DYNAMIC FORMULA.
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LITTLE RAPIDS
HABITAT
RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

Member 07/20/16

JEFFREY BARTOSZEK ENGINEER No. 35702 STATE OF MICHIGAN REGISTERED PROFESSIONAL ENGINEER

CERTIFIED BY

JEFF BARTOSZEK	PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

REVISION SCHEDULE

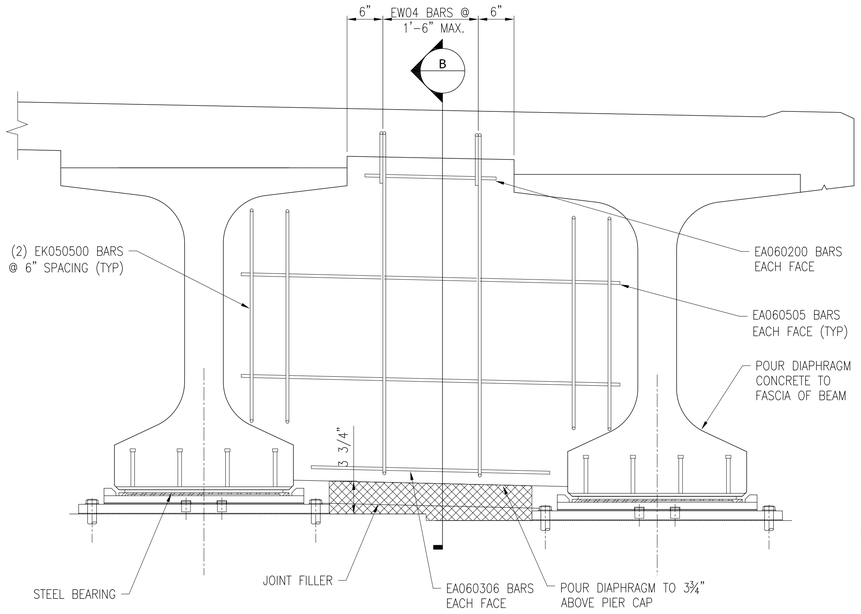
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1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016
3	PROFILE REVISED	07/20/2016

Project Number 15092

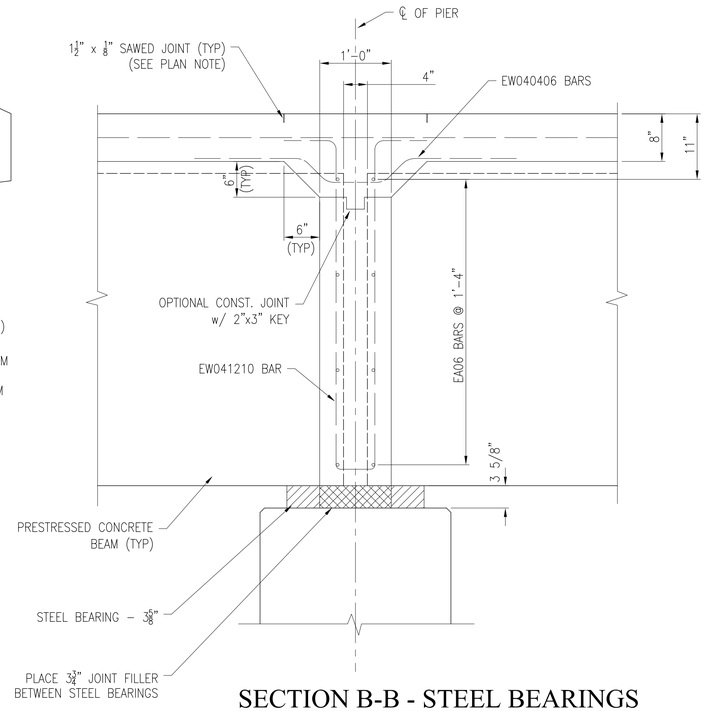
ASBUILT
PIER 4 PLAN

B-12

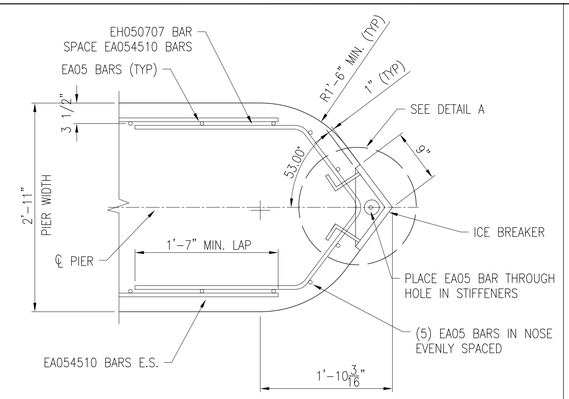
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PIER DIAPHRAGM ELEVATION @ PIERS 1 & 4

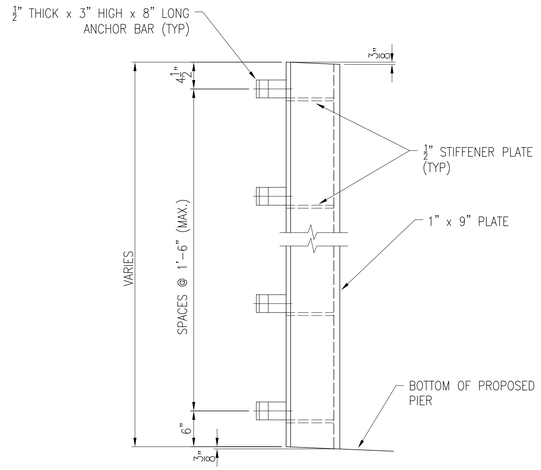


SECTION B-B - STEEL BEARINGS



PIER NOSING DETAIL

PROPOSED ICE BREAKERS SHALL BE SET IN PLACE BEFORE POURING CONCRETE. ICE BREAKER SHALL BE MADE OF ASTM A709 GRADE 36 STEEL AND HOT-DIPPED GALVANIZED ACCORDING TO AASHTO M232.



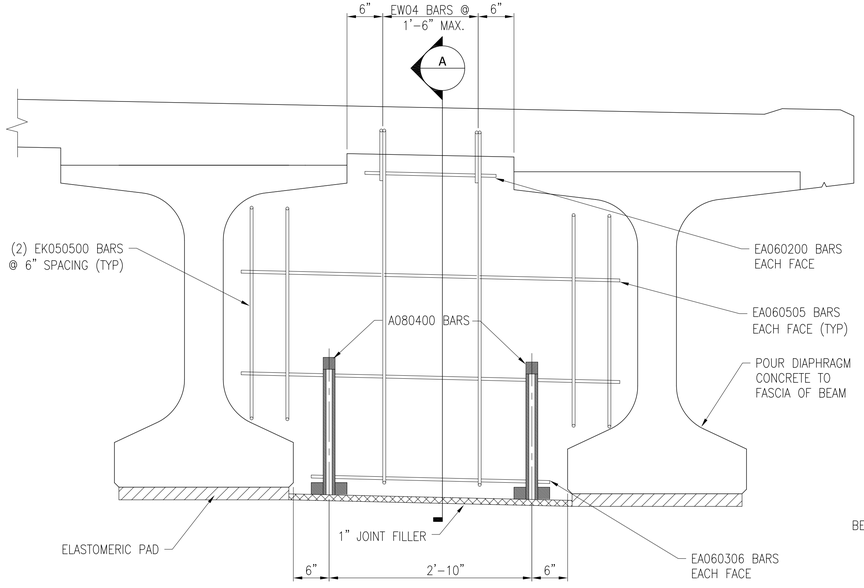
ELEVATION
SCALE: 1" = 1'-0"

NOTES:
BLOCK OUT CONCRETE AT STEEL BEARINGS. ATTACH NO. 30 ASPHALT FELT WITH ROOFING TAR/ASPHALT TO SIDES OF BEAMS FROM BEAM END TO 1" PAST EDGE OF PIER DIAPHRAGM. REMOVE 1" EXCESS ON OUTSIDE OF FASCIA BEAMS AFTER DIAPHRAGM FORM REMOVAL.

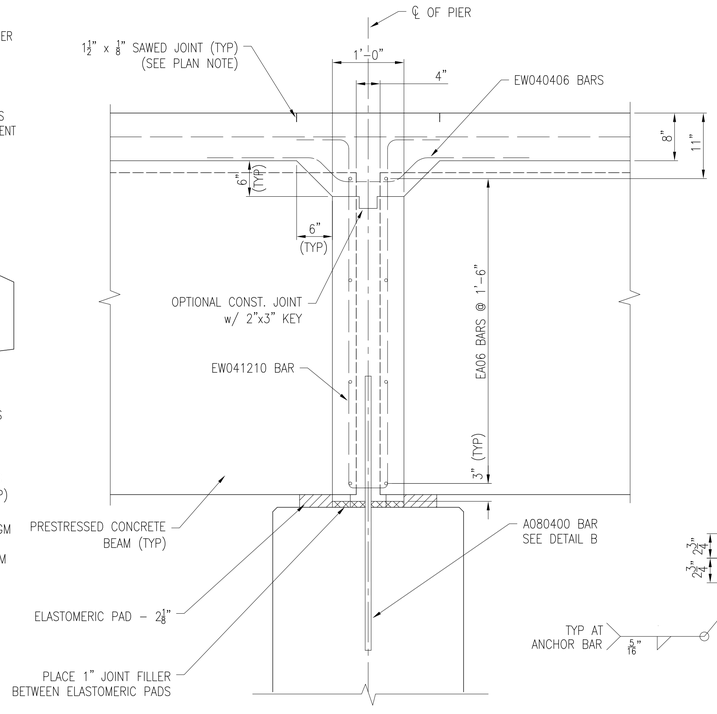
JOINT BETWEEN BEAM ENDS SHALL BE FILLED WITH CONCRETE.

THE CONTRACTOR IS TO PROVIDE A SAWED JOINT ½" DEEP x ⅛" WIDE (MIN.) IN THE TOP OF SLAB AT THE LOCATIONS SHOWN IN SECTIONS A–A AND B–B. THE JOINT IS TO BE SAWED WITHIN 4 HOURS OF REMOVING THE CURING AND IS TO BE FILLED WITH HOT–POURED JOINT SEALANT OR COLD–APPLIED JOINT SEALANT, SINGLE COMPONENT TYPE.

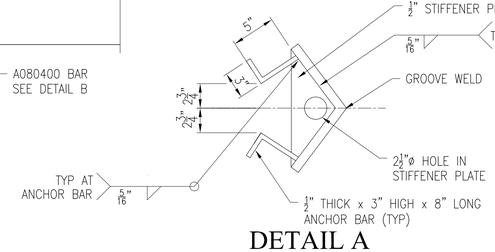
- Top diaphram bars for Piers #2 & 3 were lowered approximately 4", initially tied at 1'-6" spacing.



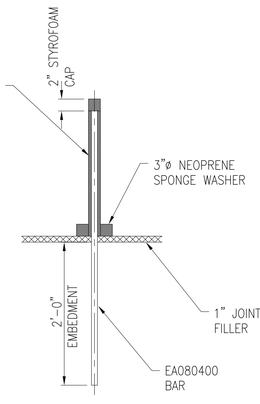
PIER DIAPHRAGM ELEVATION @ PIERS 2 & 3



SECTION A-A - ELASTOMERIC BEARINGS



DETAIL A



DETAIL B
SCALE: 1" = 1'-0"

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ADMINISTRATION	
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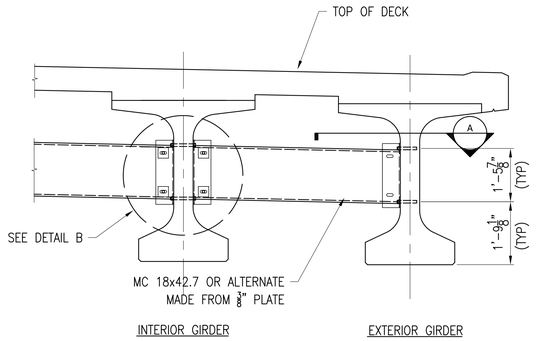
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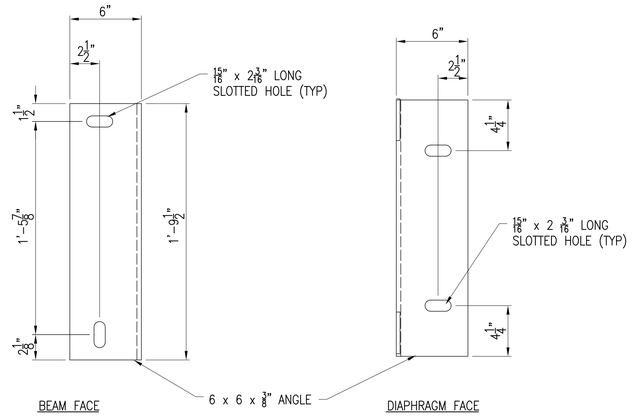
Project Number 15092

PIER DETAILS

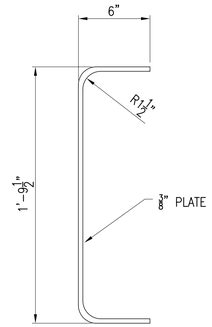
B-13



PARTIAL ELEVATION AT DIAPHRAGM D-2



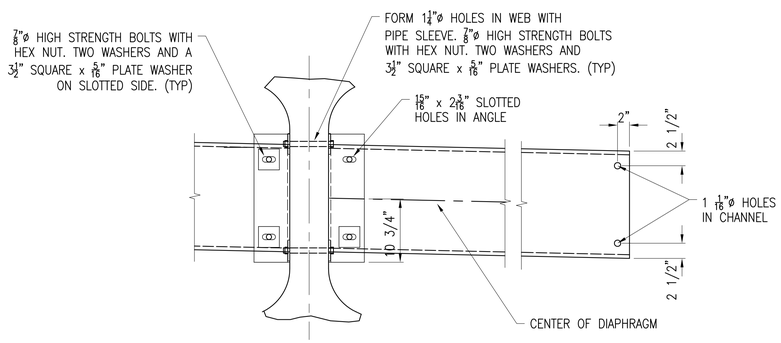
DIAPHRAGM SUPPORT



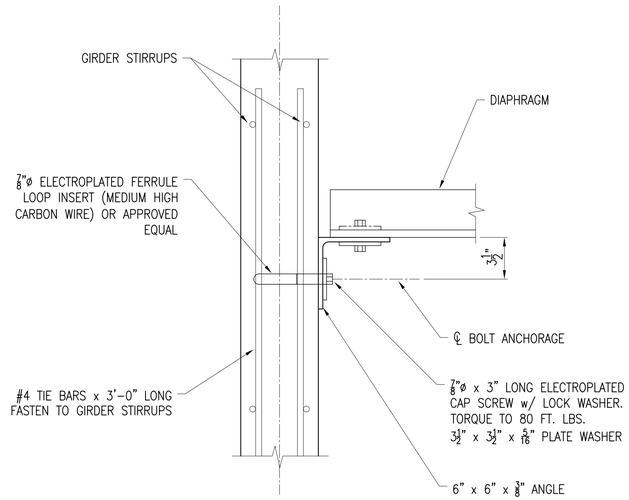
ALTERNATE DIAPHRAGM

NOTES:
ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36. ALL BOLTS, NUTS AND WASHERS SHALL BE ASTM A325 TYPE 1.

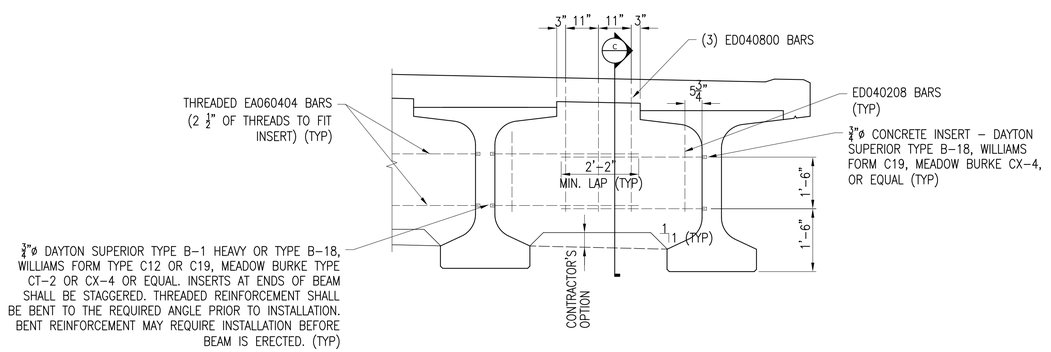
ALL DIAPHRAGM STRUCTURAL STEEL SHOWN SHALL BE HOT-DIPPED GALVANIZED. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C. GALVANIZED NUTS SHALL BE TAPPED OVERSIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A563 AND SHALL MEET THE REQUIREMENTS OF SUPPLEMENTARY REQUIREMENTS S1 OF ASTM A563, "LUBRICANT AND TEST FOR COATED NUTS".



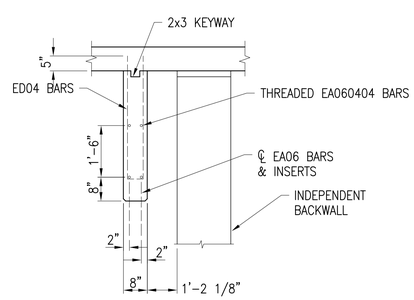
DETAIL B



SECTION A-A
(EXTERIOR GIRDER)



PARTIAL ELEVATION AT DIAPHRAGM D-1



SECTION C-C

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INTEGRITY STRUCTURAL ENGINEERING, PLLC
P.O. Box 766 • St. Joseph, Michigan 49085
269-983-6214 • www.IntegritySE.com

LITTLE RAPIDS
HABITAT
RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

MEMBER
6/6/2016

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

REVISION SCHEDULE

NO.	DESCRIPTION	DATE
0	TS&L APPROVAL	02/11/2016
1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016

Project Number 15092

DIAPHRAGM DETAILS

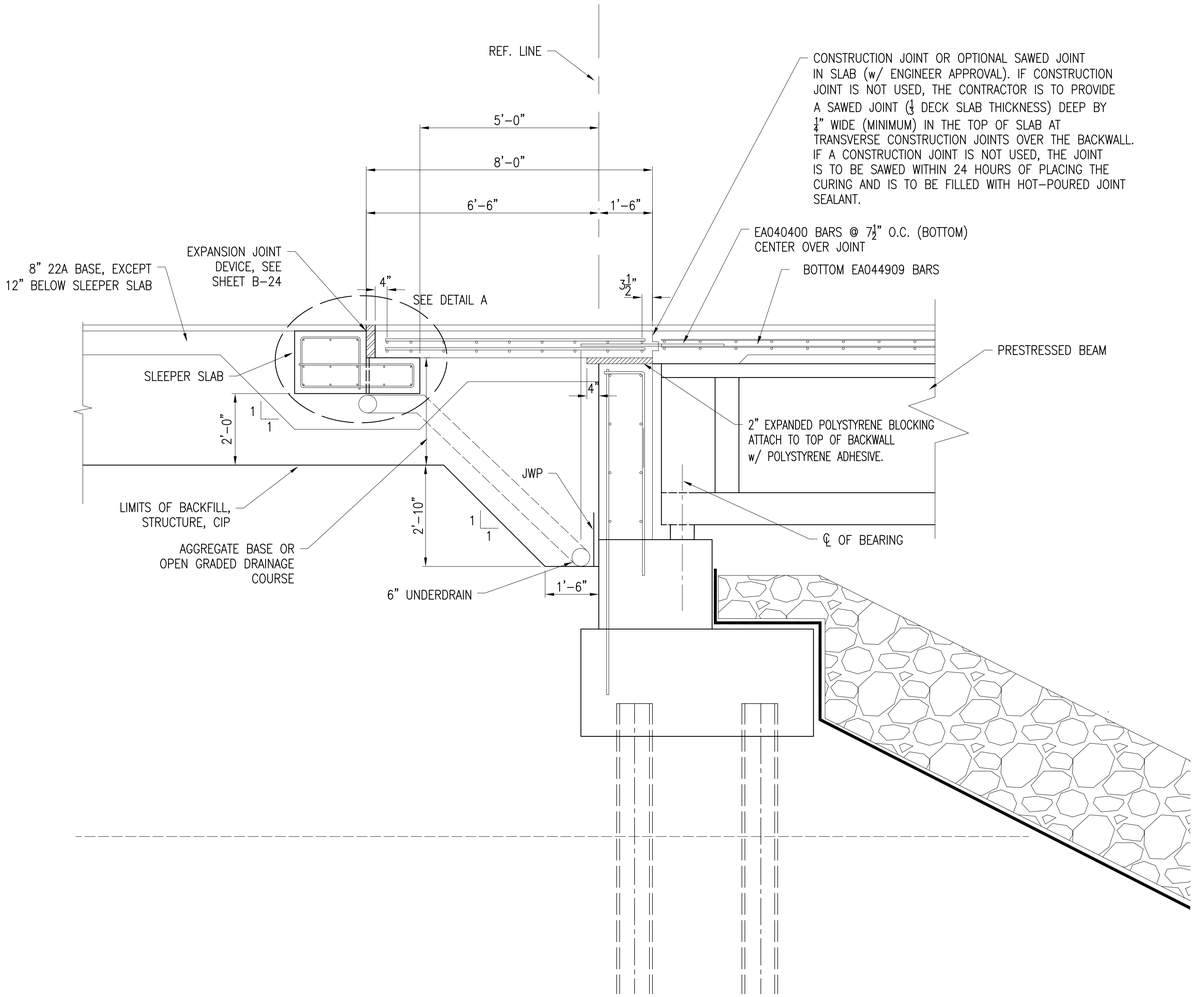
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NOTES:
METAL STAY IN PLACE FORMS AT INDEPENDENT BACKWALLS SHALL STOP AT END OF BEAM TO ALLOW FOR EXPANSION OF DECK SLAB/BEAM WITH RESPECT TO BACKWALL.

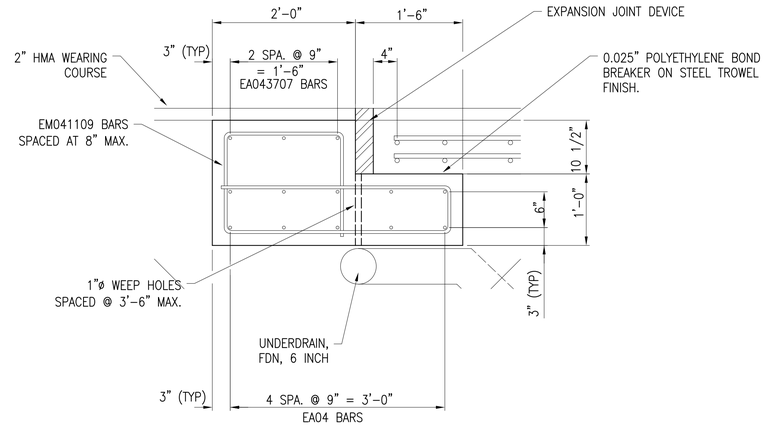
AGGREGATE BASE IS TO BE COMPACTED TO 98%. SEE SPECIAL PROVISION FOR "AGGREGATE BASE DENSITY, BRIDGE APPROACH".

DO NOT USE WHEELED, ROLLER BASED OR MACHINE MOUNTED COMPACTION EQUIPMENT TO COMPACT THE SUBGRADE, SUBBASE, AND BASE WITHIN 10' OF THE SLEEPER SLAB AFTER IT IS BUILT. USE ONLY HAND/PLATE COMPACTORS. CONTACT PRESSURE OF COMPACTION EQUIPMENT SHALL NOT EXCEED 10 PSI.

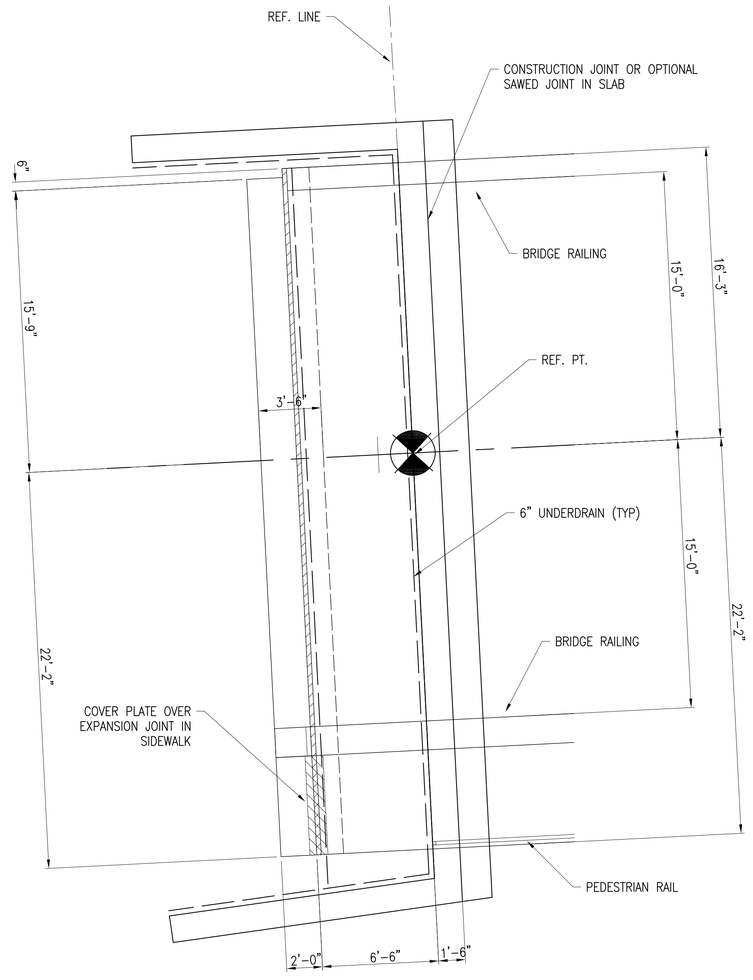
APPROACH SLABS TO BE CAST AT NIGHT WITH NIGHT TIME CASTING OF SUPERSTRUCTURE CONCRETE. POUR APPROACH SLABS FROM EXPANSION JOINT LOCATION TOWARDS REFERENCE LINE.



SECTION THRU INDEPENDENT BACKWALL w/ SLIDING SLAB



DETAIL A



PLAN OF SLEEPER & APPROACH SLAB
(ABUT. B MIRRORED)

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LITTLE RAPIDS HABITAT RESTORATION 1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

STATE OF MICHIGAN — REGISTERED PROFESSIONAL ENGINEER
JEFFREY BARTOSZEK
ENGINEER
No. 35702
MEMBER
6/6/2016

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

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Project Number 15092

SLEEPER SLAB DETAILS

B-15

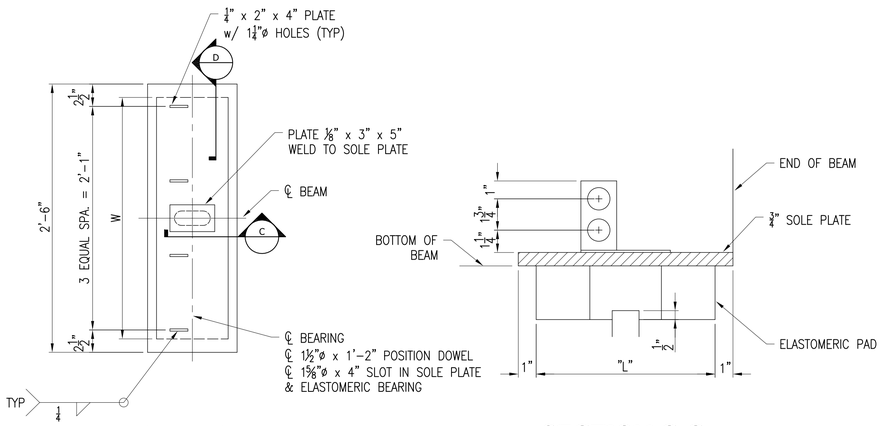
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ELASTOMERIC PAD AND SHIM DIMENSIONS

	SPAN 2	SPAN 3		SPAN 4
	PIER 2	PIER 2	PIER 3	PIER 3
PAD THICKNESS	2 1/8"	2 1/8"	2 1/8"	2 1/8"
L PARALLEL TO BEAM	8 1/2"	8 1/2"	8 1/2"	8 1/2"
W PERPENDICULAR TO BEAM	27"	27"	27"	27"
GG	1/8"	1/8"	1/8"	1/8"
LAYERS	3 @ 3/8"	3 @ 3/8"	3 @ 3/8"	3 @ 3/8"
SHIMS	4 @ 3/16"	4 @ 3/16"	4 @ 3/16"	4 @ 3/16"

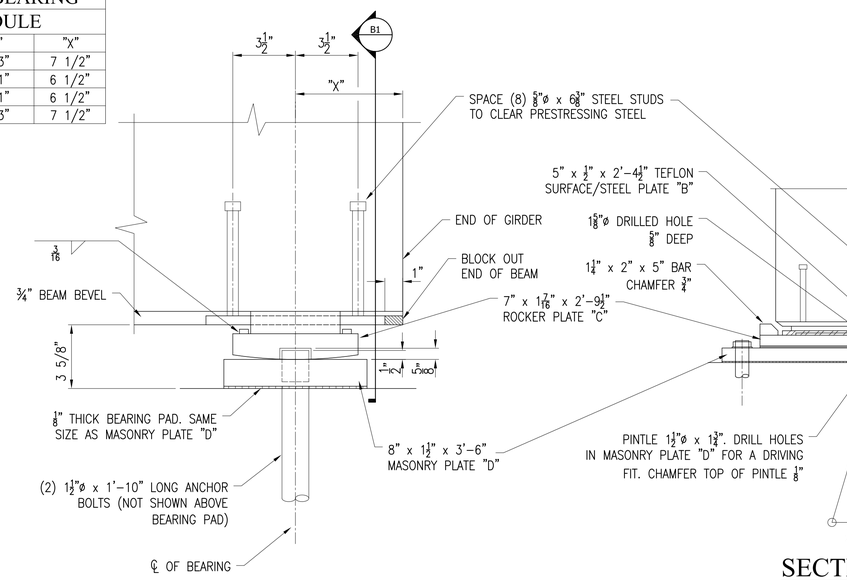
STEEL BEARING SCHEDULE

LOCATION	"A"	"X"
ABUT A	13"	7 1/2"
PIER 1	11"	6 1/2"
PIER 4	11"	6 1/2"
ABUT B	13"	7 1/2"

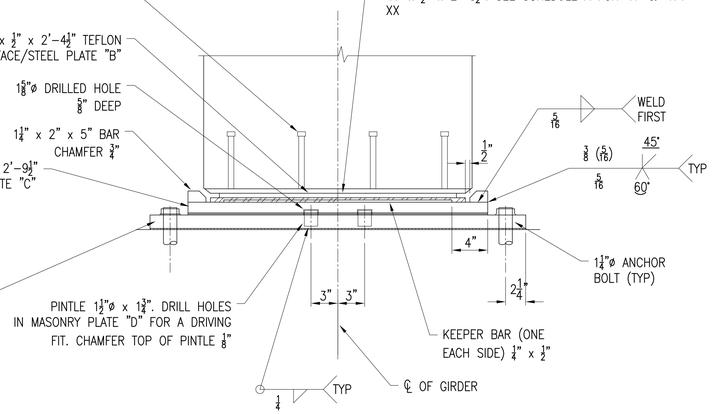


PAD PLAN

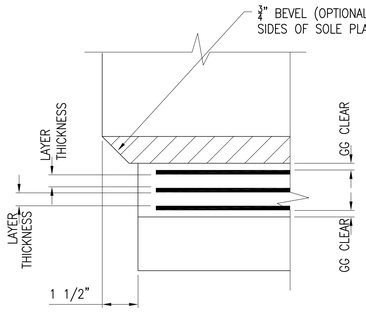
SECTION C-C



EXPANSION BEARING ASSEMBLY



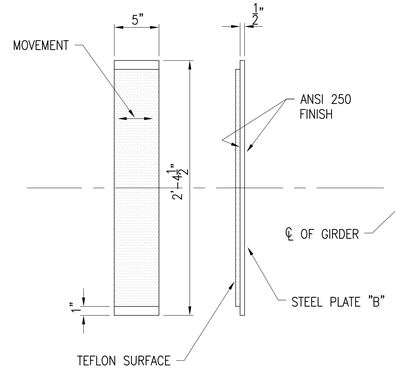
SECTION B1-B1



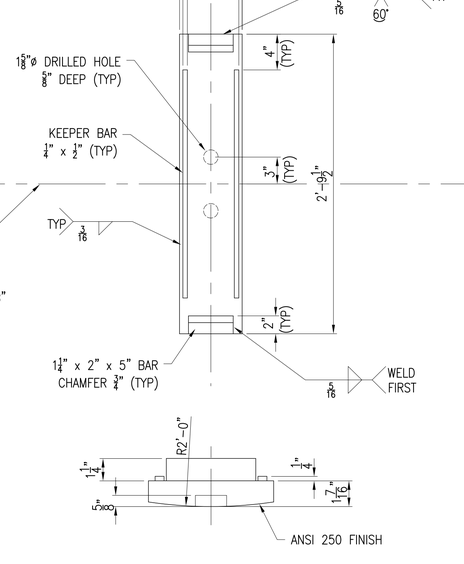
SECTION D-D

BEARING NOTES:

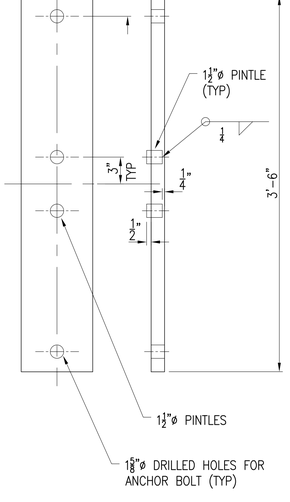
1. ALL BEARINGS ARE SYMMETRICAL ABOUT ℄ OF GIRDER AND ℄ OF BEARING.
2. ALL MATERIAL IN BEARINGS, BUT EXCLUDING STAINLESS STEEL PLATE, TEFLON SURFACE, PINTLES, ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A709 GRADE 50W.
3. STAINLESS STEEL PLATE SHALL CONFORM TO ASTM A240, TYPE 304.
4. STEEL PINTLES SHALL CONFORM TO ASTM A449 OR MATERIAL OF EQUIVALENT YIELD STRENGTH AND ELONGATION.
5. ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A709 GRADE 36, OR MATERIAL OF EQUIVALENT YIELD STRENGTH AND ELONGATION.
6. ALL STRUCTURAL STEEL BEARING PLATES SHALL BE FLAT ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT, AND VERTICAL.
7. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.
8. ALL FINISHED SURFACES SHALL BE MACHINE FINISHED BY AN AUTOMATIC PROCESS.
9. ANCHOR BOLTS SHALL BE THREADED 3". PROVIDE ONE STANDARD WROUGHT WASHER AND ONE HEX NUT PER BOLT. PROJECT ANCHOR BOLTS, MASONRY PLATE "D" THICKNESS + 2¼" ABOVE TOP OF CONCRETE.
10. CHAMFER ANCHOR BOLTS PRIOR TO THREADING.
11. MASONRY PLATE "D", ROCKER PLATE "C", ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153, CLASS "C". STEEL PLATE "B" SHALL BE SHOP PAINTED. DO NOT PAINT TEFLON SURFACE.
12. DRILLED HOLES FOR ANCHOR BOLTS IN MASONRY PLATE "D" SHALL HAVE A DIAMETER ⅜" LARGER THAN ANCHOR BOLT.
13. TEFLON SURFACE, USE UNFILLED WITH MINIMUM 1/16" THICKNESS. PLACE WITH SCRIVE MARKS IN DIRECTION OF MOVEMENT. BOND STEEL PLATE "B" AND TEFLON WITH ADHESIVE MATERIAL MEETING FEDERAL SPECIFICATION MMM-A-134, FEP FILM OR EQUAL.
14. PROVIDE A METHOD FOR HANDLING ROCKER PLATE "C" DURING GALVANIZING.
15. AT INSTALLATION, ENSURE STAINLESS STEEL SLIDING FACE OF THE UPPER ELEMENT AND THE SLIDING FACE OF THE LOWER ELEMENT HAVE THE SURFACE FINISH SPECIFIED AND ARE CLEAN AND FREE OF ALL DUST, MOISTURE, AND ANY OTHER FOREIGN MATTER.
16. IF TEH POSITION DOWELS AT PIERS 2 & 3 ARE MISALIGNED, IN RELATIONSHIP TO THE CENTERLINE OF BEARINGS, DUE TO TEMPERATURE EFFECTS ON THE BEAMS, HOLES IN ELASTOMERIC BEARINGS SHALL BE CENTERED ON THE DOWELS.



TEFLON SURFACE ON PLATE "B"



ROCKER PLATE "C"



MASONRY PLATE "D"

BEARING SCHEDULE

	SPAN 1		SPAN 2		SPAN 3		SPAN 4		SPAN 5	
	ABUT A	PIER 1	PIER 1	PIER 2	PIER 2	PIER 3	PIER 3	PIER 4	PIER 4	ABUT B
BEARING TYPE	SB	SB	SB	EB	EB	EB	EB	SB	SB	SB

SB – STEEL BEARING
EB – ELASTOMERIC BEARING

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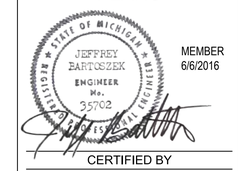
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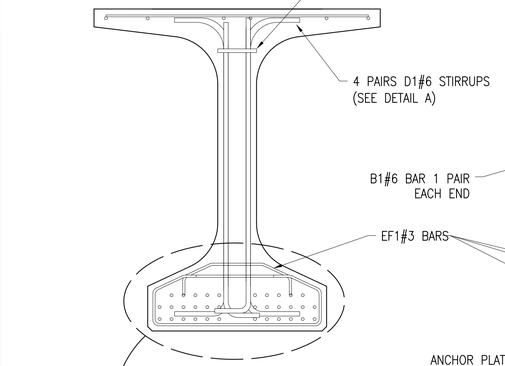
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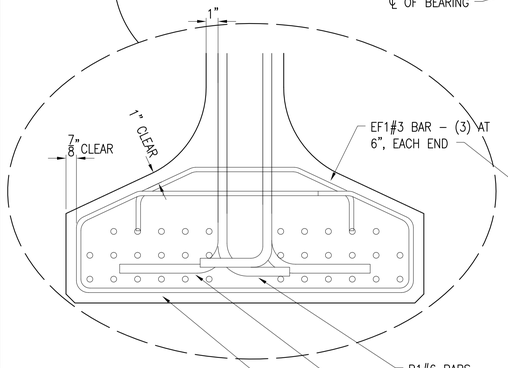
BEARING PAD DETAILS

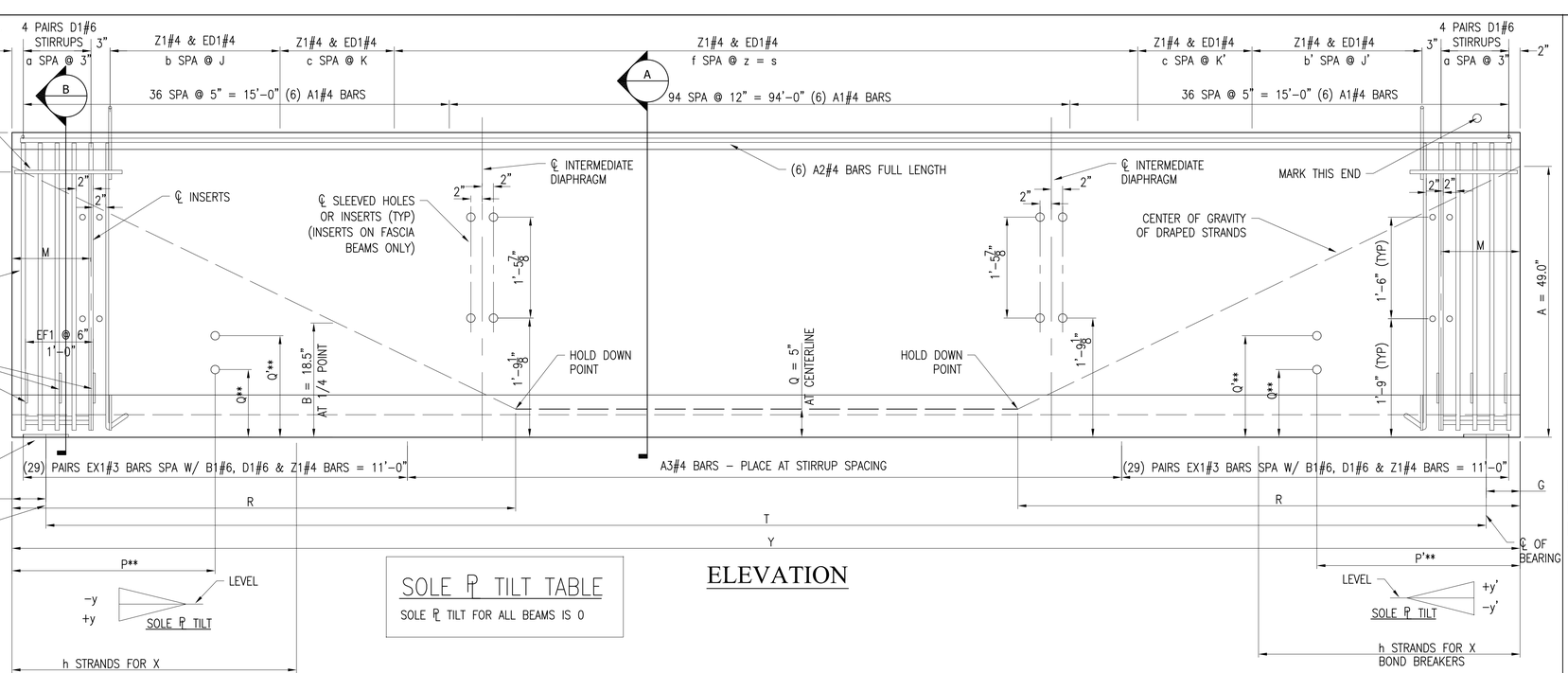
B-16

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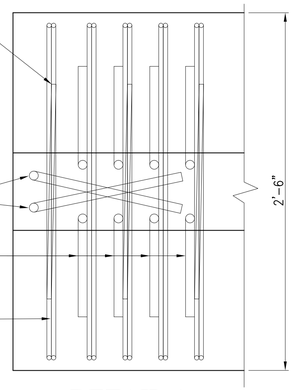
SECTION A-A
SCALE: 1" = 1'-0"



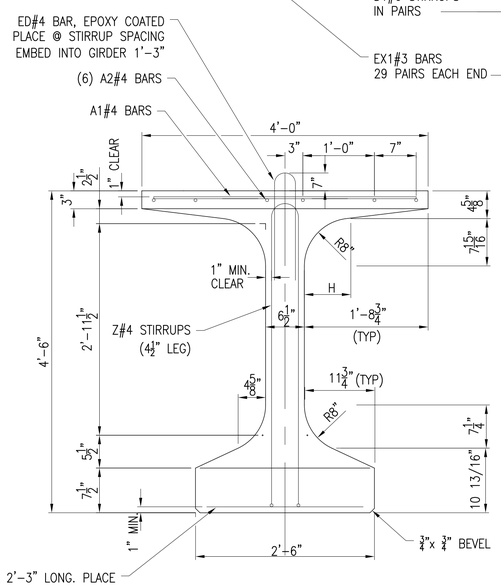


ELEVATION

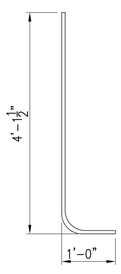
SOLE ℙ TILT TABLE
SOLE ℙ TILT FOR ALL BEAMS IS 0



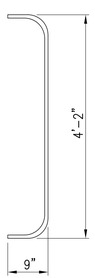
DETAIL A
BOTTOM FLANGE



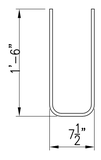
SECTION THRU GIRDER
STRANDS NOT SHOWN



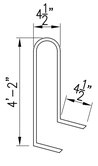
B1#6 BAR – 2 @ EA. END



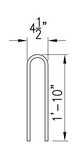
D1#6 BAR – 8 @ EA. END



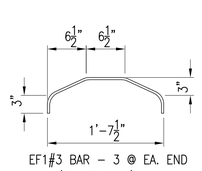
D2#5 BAR – 1 @ EA. END



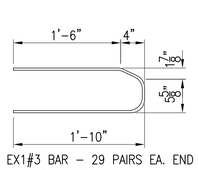
Z1#4 BAR



ED1#4 BAR



EF1#3 BAR – 3 @ EA. END (EPOXY COAT)



EX1#3 BAR – 29 PAIRS EA. END (EPOXY COATED)

BEAM DATA

MARK	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
NO. REQ	1	3	1	1	1	3	1	1	1	3	1	1	1	3	1	1	1	3	1	1
a	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
b	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
b'	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
c	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
c'	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
E	7½"	7½"	7½"	7½"	6½"	6½"	6½"	6½"	5¼"	5¼"	5¼"	5¼"	5¼"	5¼"	5¼"	5¼"	6½"	6½"	6½"	6½"
f	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
g																				
G	6½"	6½"	6½"	6½"	5¼"	5¼"	5¼"	5¼"	5¼"	5¼"	5¼"	5¼"	6½"	6½"	6½"	6½"	7½"	7½"	7½"	7½"
h	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
J	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"
J'	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"
K	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"
K'	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"
L*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
L'*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M+	1'-2⅜"	1'-2⅜"	1'-2⅜"	1'-2⅜"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"
N+	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	1'-2⅜"	1'-2⅜"	1'-2⅜"	1'-2⅜"
P**	13'-7"	N/A	13'-7"	N/A	39'-3"	N/A	39'-3"	N/A	N/A	N/A	N/A	N/A	15'-7"	N/A	15'-7"	N/A	41'-3"	N/A	41'-3"	N/A
P'**	35'-5"	N/A	35'-5"	N/A	9'-9"	N/A	9'-9"	N/A	N/A	N/A	N/A	N/A	33'-5"	N/A	33'-5"	N/A	7'-9"	N/A	7'-9"	N/A
Q**	1'-8"	N/A	1'-8"	N/A	1'-8"	N/A	1'-8"	N/A	N/A	N/A	N/A	N/A	1'-8"	N/A	1'-8"	N/A	1'-8"	N/A	1'-8"	N/A
Q'**	3'-4"	N/A	N/A	N/A	3'-4"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3'-4"	N/A	N/A	N/A	3'-4"	N/A	N/A	N/A
R	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"	43'-6"
S	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"	102'-0"
T	122'-10"	122'-10"	122'-10"	122'-10"	122'-11¼"	122'-11¼"	122'-11¼"	122'-11¼"	122'-11½"	122'-11½"	122'-11½"	122'-11½"	122'-11¼"	122'-11¼"	122'-11¼"	122'-11¼"	122'-10"	122'-10"	122'-10"	122'-10"
U																				
V																				
X	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"	0'-0"
Y	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"	124'-0"
Z	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"
APPROX. MASS	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons	52 tons

* FORMING DIMENSION. IF L OR L' IS COMPUTED TO BE BETWEEN −1/2" AND +1/2", USE l=0 OR L'=0

** ADJUST AS REQUIRED TO CLEAR STRANDS AND BARS.

\+ MEASURED ALONG BEAM ℄.

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LITTLE RAPIDS HABITAT RESTORATION
1½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

STATE OF MICHIGAN · REGISTERED · JEFFREY BARTOSZEK · ENGINEER No. 35702 · PROFESSIONAL ENGINEER

MEMBER 6/6/2016

CERTIFIED BY

JEFF BARTOSZEK	PE #35702

ADMINISTRATION

DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

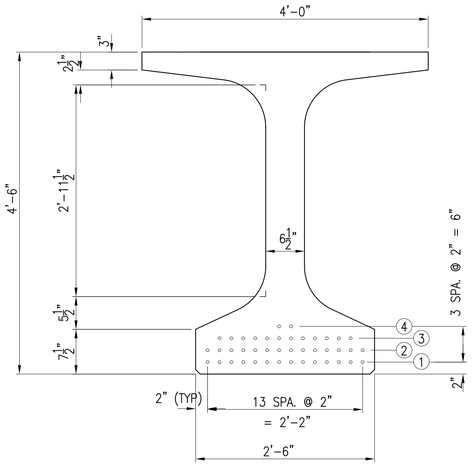
REVISION SCHEDULE

NO.	DESCRIPTION	DATE
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1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016

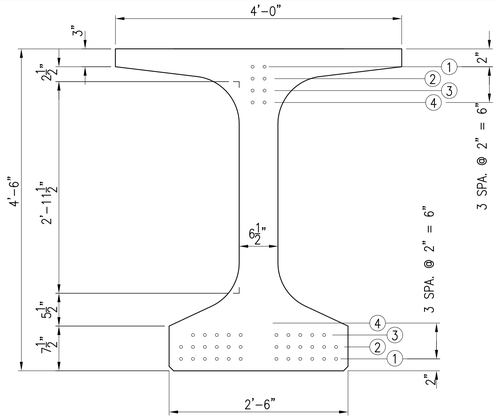
Project Number 15092

BEAM DETAILS

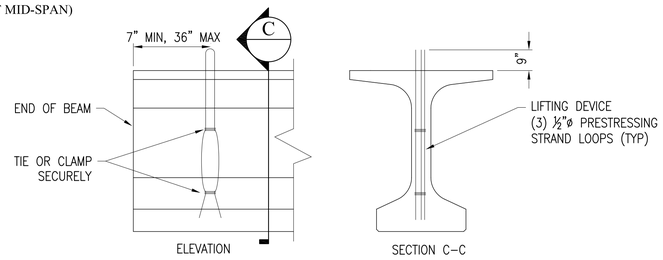
B-17



SECTION A-A (AT MID-SPAN)
SCALE: 1" = 1'-0"



SECTION B-B (AT END FACE)
SCALE: 1" = 1'-0"



LIFTING DEVICE DETAILS

NOTES:
ITEMS CAST INTO THE BEAMS TO FACILITATE BRIDGE CONSTRUCTION (FORMING, FINISHING, ETC.) SHALL BE GALVANIZED OR EPOXY COATED.

DURING HANDLING AND TRANSPORTATION, BEAMS CAN BE SUPPORTED 4.5 FEET FROM THE END.

STEEL FOR THE SOLE PLATES AND OTHER BEARING COMPONENTS SHALL MEET THE REQUIREMENTS OF AASHTO M270 GRADE 36.

TOTAL ESTIMATES CHANGE IN LENGTH OF BOTTOM FLANGE AT TRANSFER OF PRESTRESS FORCE IS 0.61 INCH.

THE ESTIMATED BEAM CAMBER AT RELEASE IS 3.2 INCHES. THIS CAMBER IS DUE TO PRESTRESS AND DEAD LOAD OF THE BEAM ONLY AND IS MEASURED IN THE ERECTED POSITION.

CONCRETE INSERTS SHALL BE ¾" DIAMETER; DAYTON SUPERIOR, TYPE B-1 HEAVY OR TYPE B-18; WILLIAMS, TYPE C-12 OR TYPE C-19; MEADOWS BURKE, TYPE CT-2 OR TYPE CX-4; OR EQUAL. INSERTS SHALL BE CAST WITH THE BEAMS. FIELD INSTALLATION OF INSERTS IS NOT ALLOWED.

CONCRETE SLEEVES FOR DRAIN CASTING ASSEMBLY BRACKETS SHALL BE AS SHOWN ON "FLOOR DRAIN TYPE "WF"" DRAWING. SLEEVES SHALL BE CAST WITH THE BEAMS. FIELD INSTALLATION OF SLEEVES IS NOT ALLOWED.

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 6" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH TROWEL FINISH. AN APPROVED DE-BONDING COMPOUND SHALL BE APPLIED TO THE OUTER 6" PER STANDARD SPECIFICATIONS SECTION 708.03.A.13.c.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. LIFTING DEVICES SHALL BE REMOVED AFTER BEAMS ARE ERECTED.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS AND EXPOSED STRAND ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN ALTERNATE EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A497 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE ENGINEER.

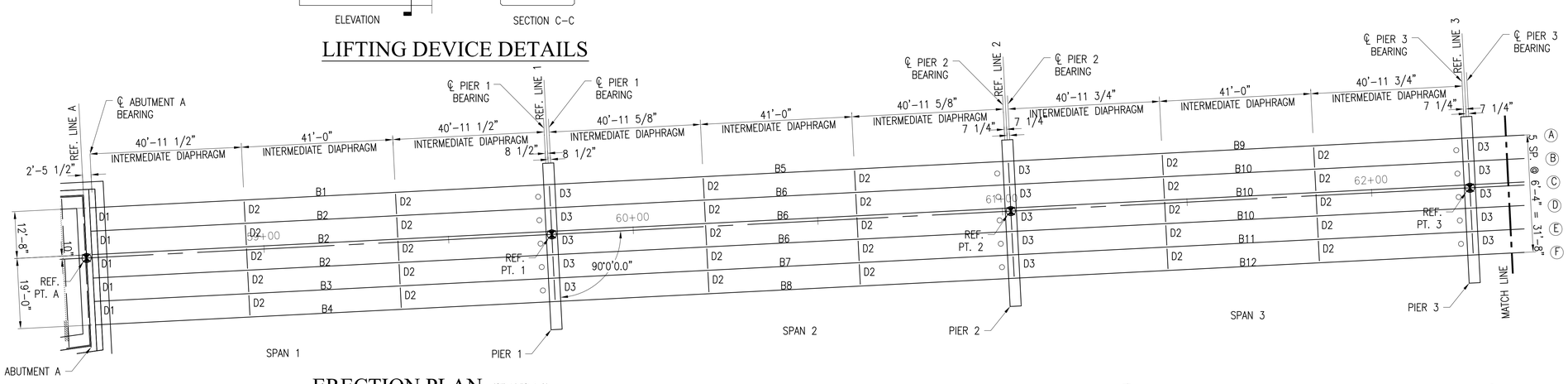
PRESTRESSING STRANDS SHALL BE 0.6" NOMINAL DIA. 7-WIRE, MEETING THE REQUIREMENTS OF AASHTO M203, GRADE 270, LOW-RELAXATION STRANDS
28-DAY COMPRESSIVE STRENGTH TO BE 8000 PSI. STRENGTH AT RELEASE TO BE 6800 PSI.

STRANDS SHALL BE GIVEN AN INITIAL PRESTRESS OF 44,000 LBS.

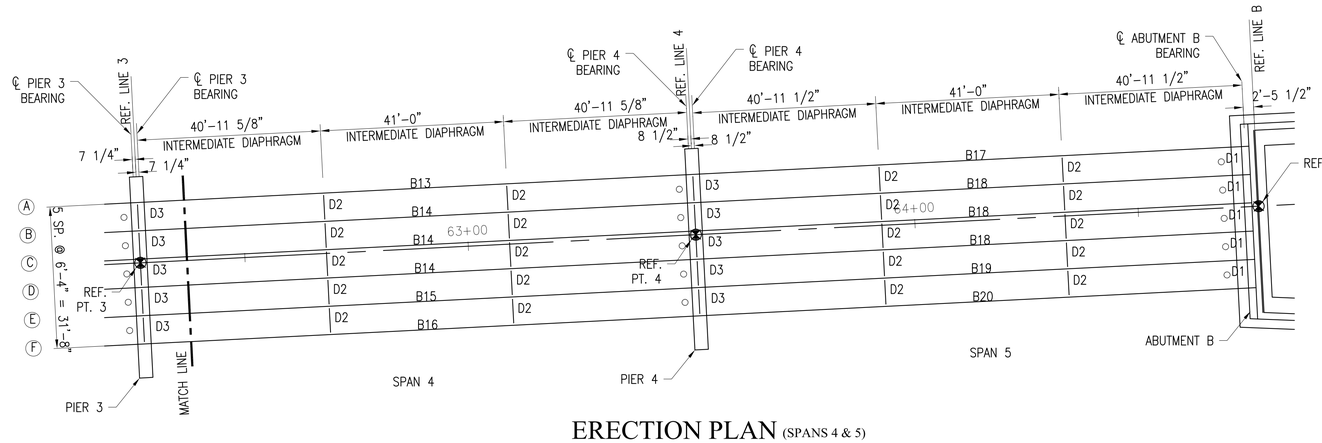
ANY HOLES CAST OR FORMED IN THE BEAM SHALL BE FILLED WITH NON-SHRINKING GROUT.

POSITION DOWELS SHALL BE IN ACCORDANCE WITH AASHTO M270 GRADE 36 AND HOT-DIPPED GALVANIZED ACCORDING TO AASHTO M111.

o INDICATES MARKED BEAM END.



ERECTION PLAN (SPANS 1-3)



ERECTION PLAN (SPANS 4 & 5)

STRAND LOCATION TABLE

SPAN	MID SPAN (SECTION A-A) BOTTOM ① ② ③ ④					END FACE (SECTION B-B) BOTTOM ① ② ③ ④				TOP ① ② ③ ④				TOTAL NUMBER	REQ'D CONCRETE COMPRESSIVE STRENGTH (PSI) 28-DAY	AT RELEASE	APPROX. MASS OF BEAM (TON)
1	14	14	12	2		12	12	10	0	2	2	2	2	42	8000	6800	52
2	14	14	12	2		12	12	10	0	2	2	2	2	42	8000	6800	52
3	14	14	12	2		12	12	10	0	2	2	2	2	42	8000	6800	52
4	14	14	12	2		12	12	10	0	2	2	2	2	42	8000	6800	52
5	14	14	12	2		12	12	10	0	2	2	2	2	42	8000	6800	52

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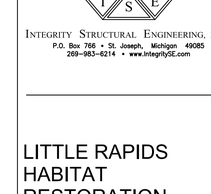
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LITTLE RAPIDS HABITAT RESTORATION 1½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS



MEMBER
6/7/2016

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

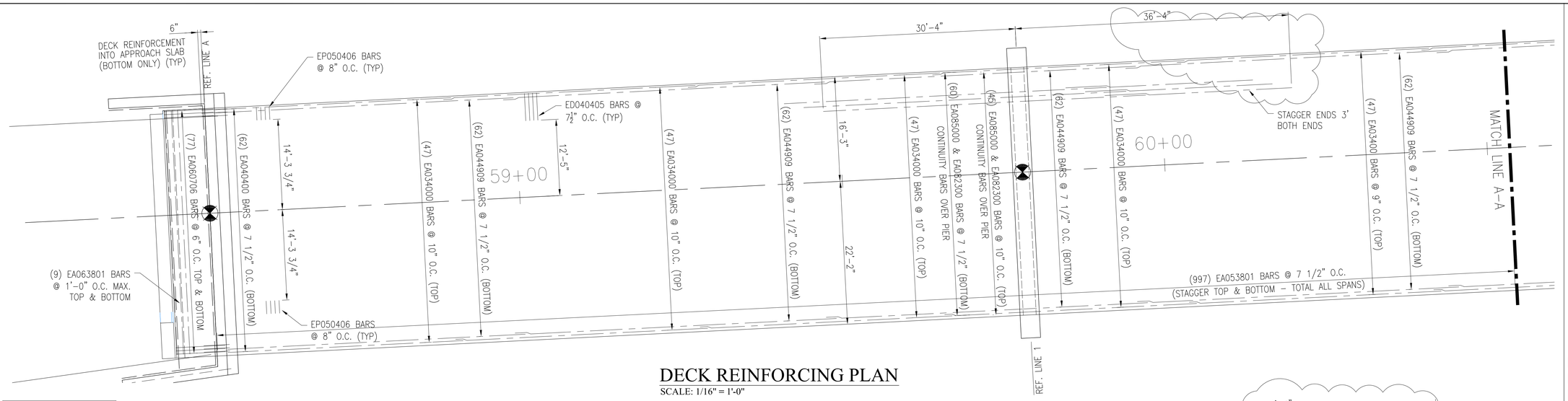
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
0	TS&L APPROVAL	02/11/2016
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2	FINAL PLANS	06/03/2016

Project Number 15092

PRECAST BEAM DETAILS

B-18

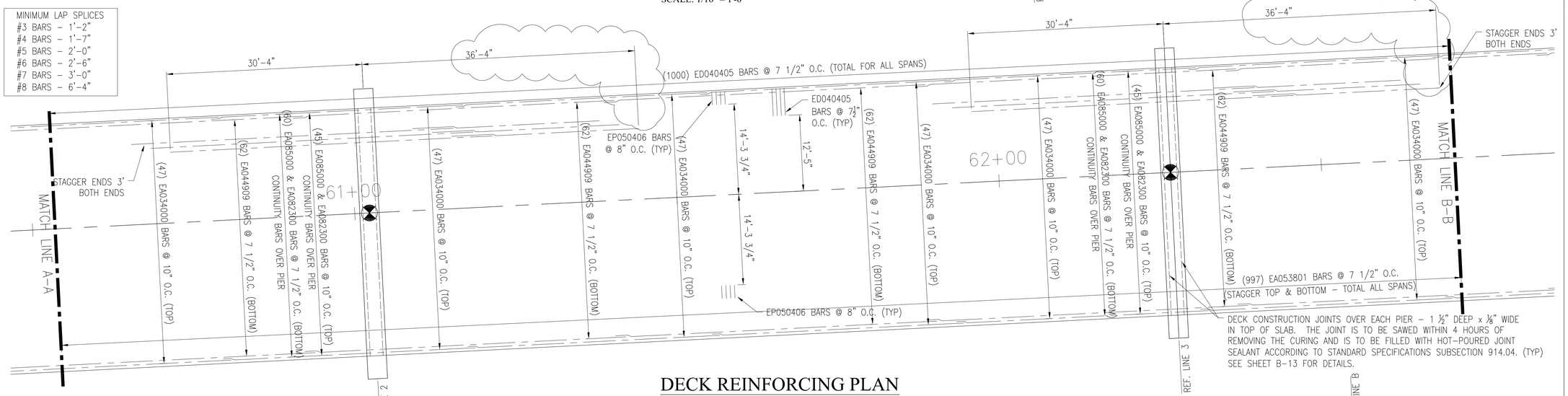
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DECK REINFORCING PLAN

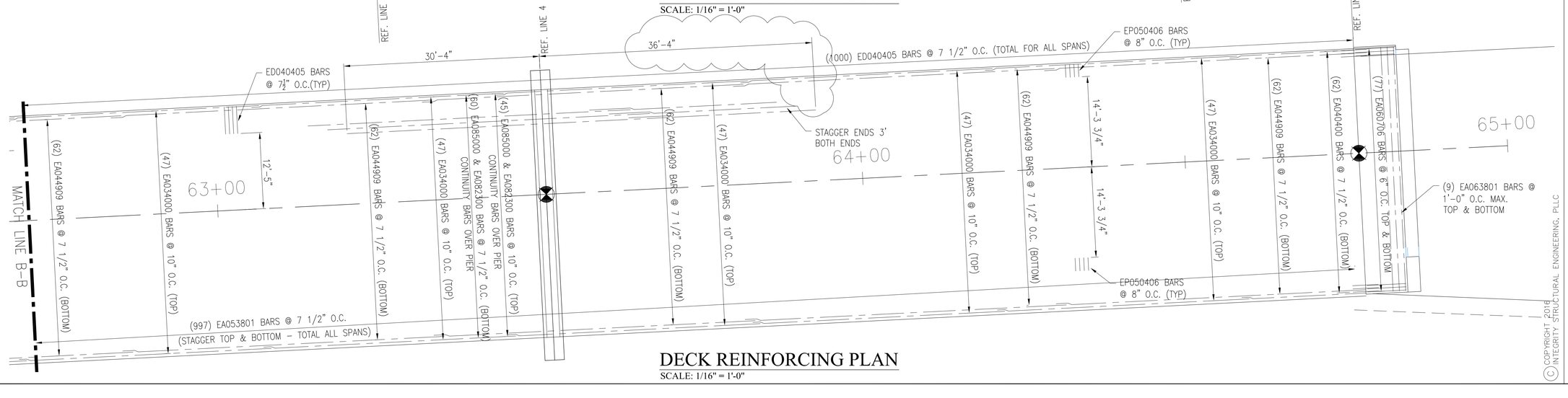
SCALE: 1/16" = 1'-0"

MINIMUM LAP SPLICES
#3 BARS - 1'-2"
#4 BARS - 1'-7"
#5 BARS - 2'-0"
#6 BARS - 2'-6"
#7 BARS - 3'-0"
#8 BARS - 6'-4"



DECK REINFORCING PLAN

SCALE: 1/16" = 1'-0"



DECK REINFORCING PLAN

SCALE: 1/16" = 1'-0"

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LITTLE RAPIDS HABITAT RESTORATION 1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

Member 07/20/16

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
0	TS&L APPROVAL	02/11/2016
1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016
3	PROFILE REVISED	07/20/2016

Project Number 15092

DECK PLAN

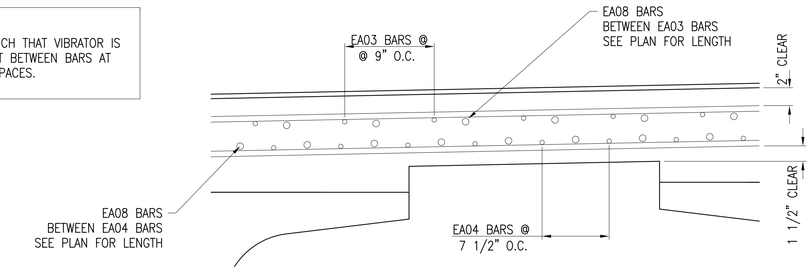
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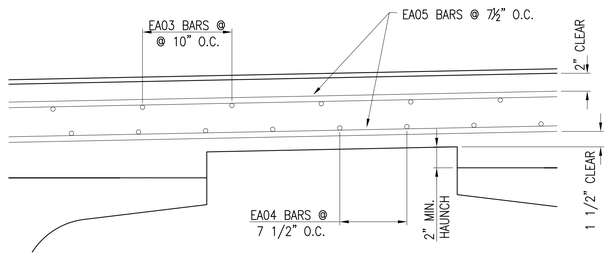
NOTES:

1. JWP DENOTES JOINT WATERPROOFING.
2. HPJS DENOTES HOT–POURED JOINT SEALANT.
3. FOR ANCHORAGE FOR GUARDRAIL AND NAME PLATE MOUNTING DETAILS, SEE STANDARD PLAN R–67–SERIES. FOR DETAILS OF NAME PLATES, MOLDINGS AND BEVELS, SEE STANDARD PLAN B–103–SERIES.
4. FOR DETAILS OF DRAIN CASTING ASSEMBLIES, SEE STANDARD DETAILS ON SHEET B–23.
5. "EDGE" OR "GROOVE" DENOTES EDGING OR GROOVING WITH AN APPROVED TOOL.
6. LOW TEMPERATURE PROTECTION OF CONCRETE SHALL BE APPLIED ACCORDING TO SECTION 706.03 J. OF THE STANDARD SPECIFICATION FOR CONSTRUCTION.
7. THE UTILITY COMPANY SHALL BE NOTIFIED ONE WEEK IN ADVANCE OF THE TIME OF INSTALLATION OF THE DUCTS BENEATH THE DECK.
8. DO NOT POUR DECK CONCRETE UNTIL DIAPHRAGM CONCRETE ATTAINS A COMPRESSIVE STRENGTH OF 3,000 PSI.
9. THIS DECK POUR IS DESIGNATED A NIGHT POUR, AND THEREFORE SUBJECT TO THE RESTRICTIONS OF SECTION 706.03 I. OF THE STANDARD SPECIFICATIONS.
10. THE CONTRACTOR MAY USE METAL STAY IN PLACE FORMS. IF USED, ELIMINATING THE POLYSTYRENE AND FILLING THE CORRUGATIONS WITH CONCRETE IS PROHIBITED.
11. FILL PERPENDICULAR RAILING JOINTS WITH 1" JOINT FILLER TO ½" FROM THE BEVELS OF RAILING AND SEAL REMAINING ½" WITH A SILICONE RUBBER SEALANT.
12. THE CONTRACTOR IS TO PROVIDE A SAWED JOINT 1 ½" DEEP BY ⅛" WIDE (MINIMUM) IN THE TOP OF SLAB AT TRANSVERSE CONSTRUCTION JOINTS, THE LOCATIONS SHOWN IN SECTION B ON PAGE B–13. THE JOINT IS TO BE SAWED WITHIN 4 HOURS OF REMOVING THE CURING AND IS TO BE FILLED WITH HOT–POURED JOINT SEALANT.
13. TRAPEZE HANGER TO BE ANVIL FIG. 50, GALVANIZED OR EQUAL ⅜" ANCHOR RODS INTO DECK WITH ADHESIVE (MIN. 3" EMBEDMENT) OR WITH INSERT. ADHESIVE ANCHORS SHALL USE A NON–SHRINK GROUT (WHICH IS CEMENTITIOUS) LISTED IN MDOT'S QUALIFIED PRODUCTS LIST.

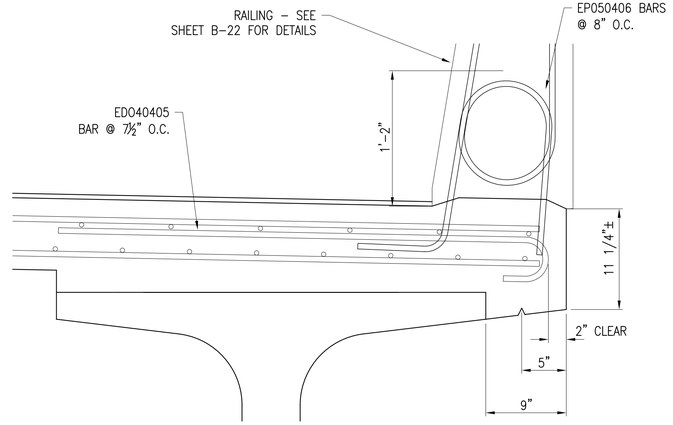
NOTE:
PLACE EA08 SUCH THAT VIBRATOR IS ALLOWED TO FIT BETWEEN BARS AT APPROPRIATE SPACES.



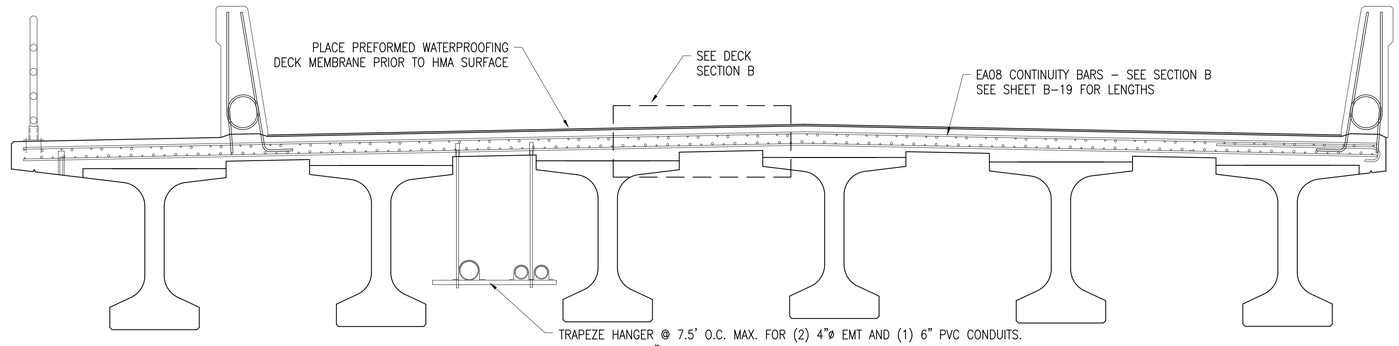
DECK SECTION B - WITH CONTINUITY REINFORCING



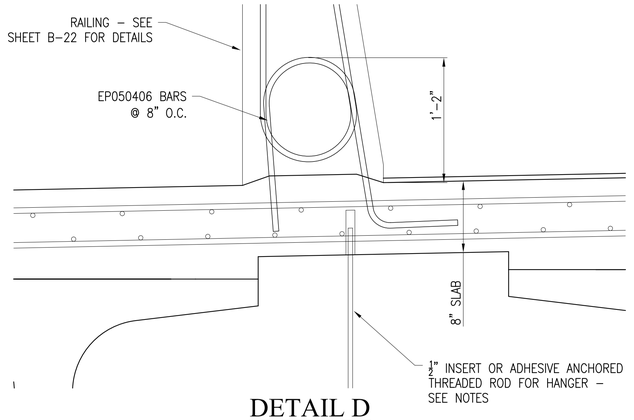
DECK SECTION A



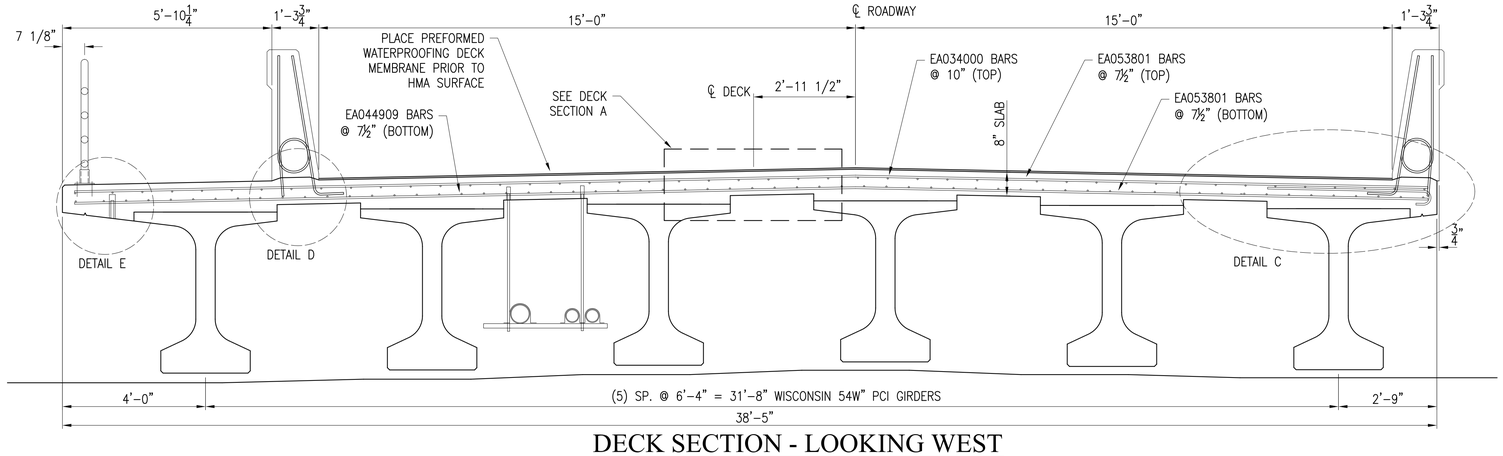
DETAIL C



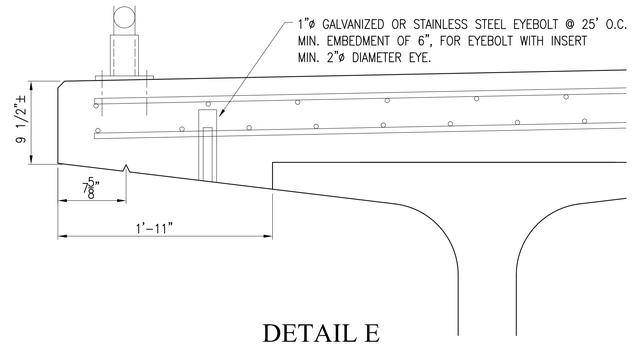
DECK SECTION AT PIERS (SHOWING CONTINUITY REINFORCING) - LOOKING WEST



DETAIL D



DECK SECTION - LOOKING WEST



DETAIL E

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LITTLE RAPIDS
HABITAT
RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE
PLANS

STATE OF MICHIGAN – JEFFREY BARTOSZEK – ENGINEER – No. 35702 – PROFESSIONAL ENGINEER
MEMBER
6/6/2016

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
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SCALE:	AS NOTED

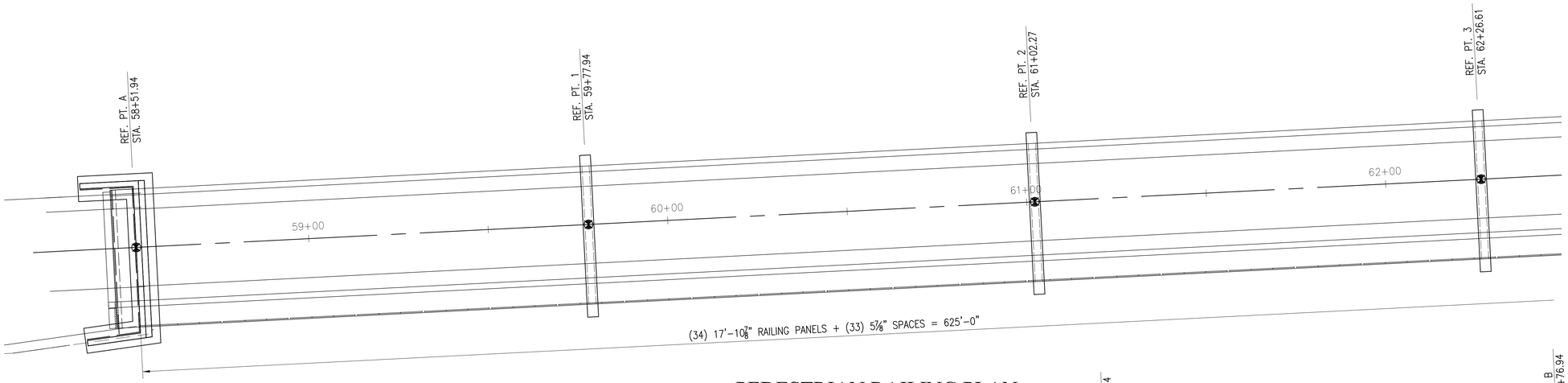
REVISION SCHEDULE

NO.	DESCRIPTION	DATE
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2	FINAL PLANS	06/03/2016

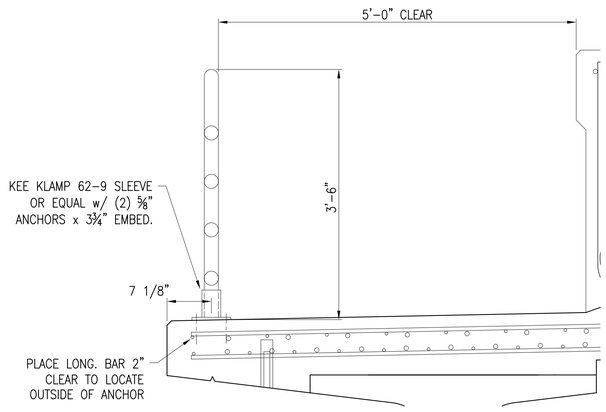
Project Number 15092

DECK DETAILS

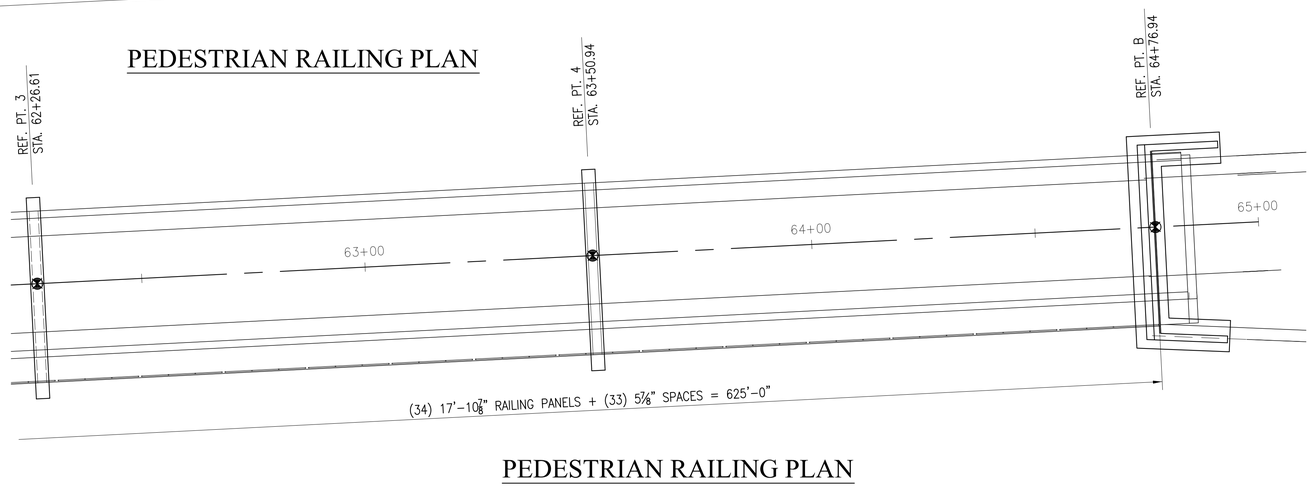
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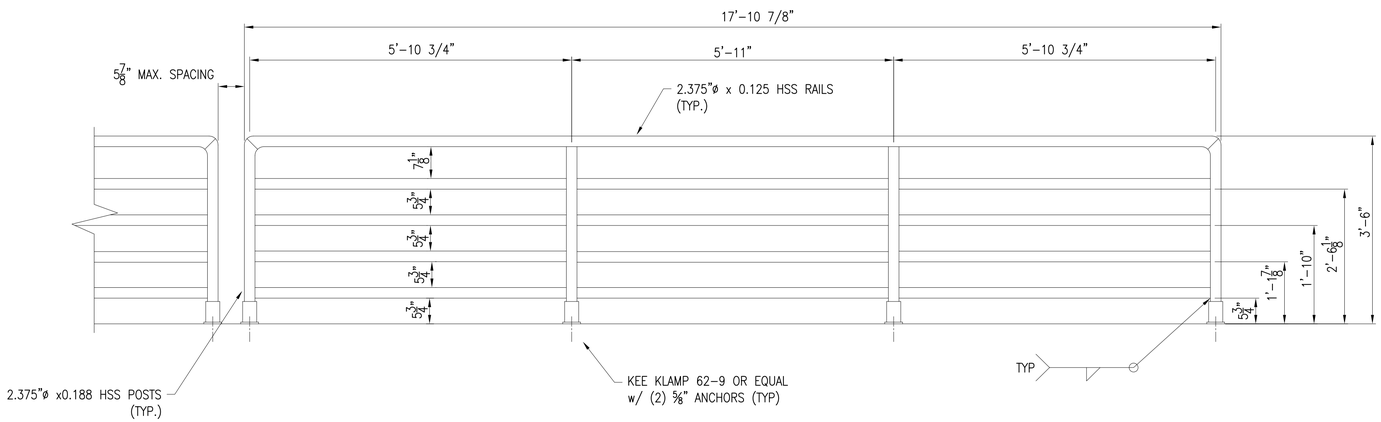
PEDESTRIAN RAILING PLAN



PEDESTRIAN RAILING ELEVATION



PEDESTRIAN RAILING PLAN



PEDESTRIAN RAILING SECTION

NOTES:
1. ALL RAILING MATERIAL INCLUDING BASES SHALL BE HOT DIPPED GALVANIZED.
2. ALL RAILINGS AND POSTS TO BE ASTM A500 GRADE B.

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LITTLE RAPIDS
HABITAT
RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE
PLANS

STATE OF MICHIGAN · JEFFREY BARTOSZEK · ENGINEER · No. 35702 · REGISTERED PROFESSIONAL ENGINEER

MEMBER
6/6/2016

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

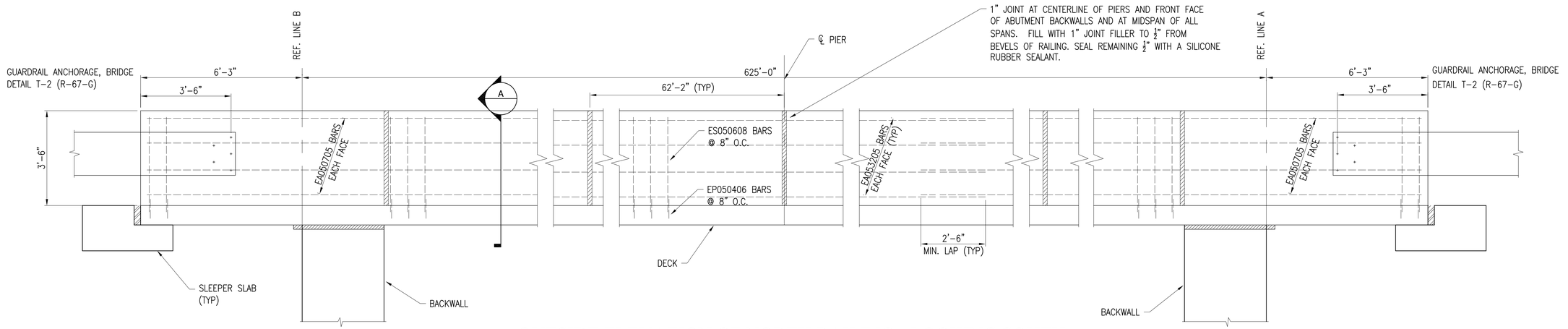
REVISION SCHEDULE		
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1	60% SUBMITTAL	03/25/2016
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Project Number 15092

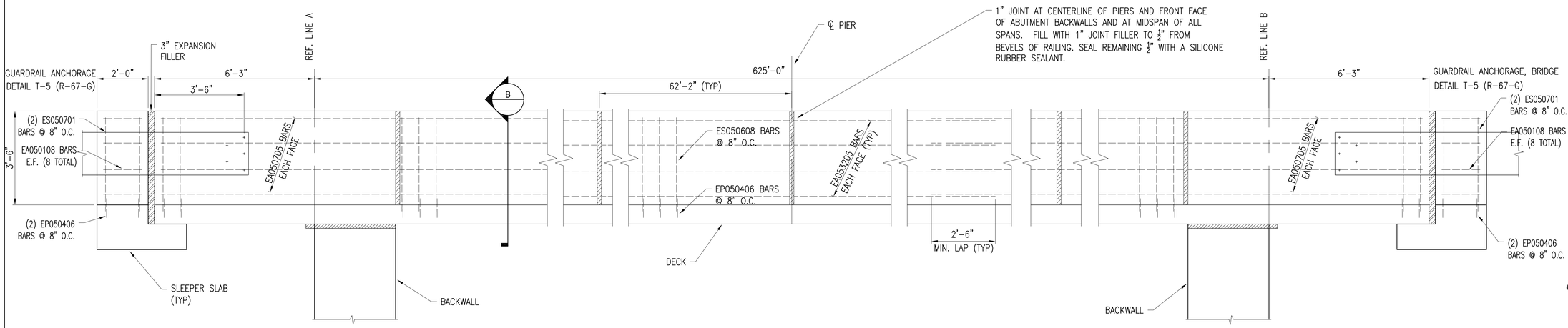
PEDESTRIAN
RAILING DETAILS

B-21

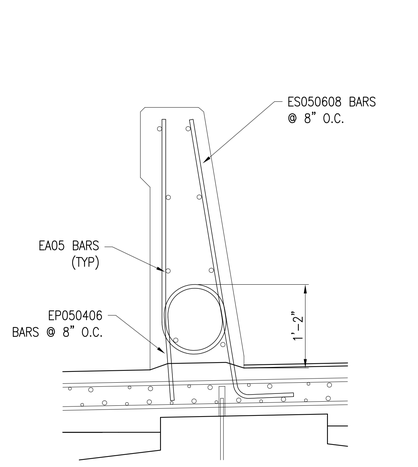
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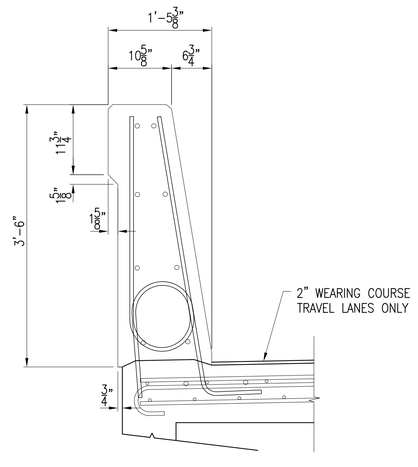
OUTSIDE ELEVATION OF NORTH RAILING - LOOKING SOUTH



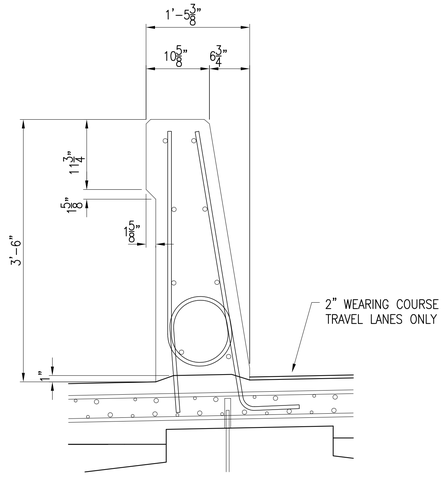
OUTSIDE ELEVATION OF SOUTH RAILING - LOOKING NORTH



SECTION (SHOWING REBAR DIMENSIONS)
SCALE: 1"= 1'-0"



SECTION A-A (NORTH)
SCALE: 1"= 1'-0"



SECTION B-B (SOUTH)
SCALE: 1"= 1'-0"

PAYNE & DOLAN
INCORPORATED
W6380 Design Drive | Greenville, Wisconsin 54942
TEL 920.757.7550 | FAX 920.757.2906
www.paynedolan.com

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INTEGRITY STRUCTURAL ENGINEERING, PLLC
P.O. Box 766 • St. Joseph, Michigan 49085
269-983-6214 • www.IntegritySE.com

LITTLE RAPIDS
HABITAT
RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

STATE OF MICHIGAN
JEFFREY BARTOSZEK
ENGINEER
No. 35702
REGISTERED PROFESSIONAL ENGINEER

MEMBER
6/7/2016

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
0	TS&L APPROVAL	02/11/2016
1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016

Project Number 15092

BARRIER RAILING DETAILS

B-22

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GENERAL NOTES

ALL MATERIAL FOR TYPE "WF" CASTING AND 8" DIA. CONNECTION PIPE, EXCLUDING GRATE HOLD DOWN SCREWS, SHALL BE GRAY IRON CONFORMING TO ASTM A48, CLASS 30.

MATERIAL FOR BRACKETS SHALL CONFORM TO ASTM A36.

THE CONTRACTOR MAY PROPOSE AN ALTERNATE TYPE OF BRACKET. THE PROPOSED ALTERNATE DETAILS SHALL BE SUBMITTED AND SUBJECT TO THE APPROVAL OF THE ENGINEER.

■ 8" DIA. DOWNSPOUTS SHALL BE REINFORCED THERMOSETTING RESIN PIPE CONFORMING TO SECTION 514 OF THE STANDARD SPECIFICATIONS.

● TRANSVERSE & LONGITUDINAL SLAB BAR REINFORCING STEEL IN PARAPET SHALL BE CUT AT DRAIN FRAME. DISPLACE BARS WHERE POSSIBLE.

DESIGNER NOTES

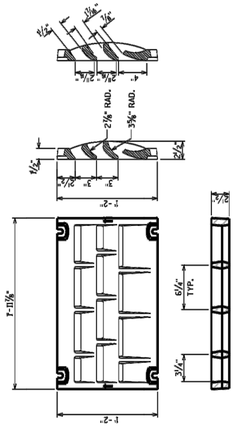
ALL MATERIAL FOR FLOOR DRAINS AS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE BID ITEM "FLOOR DRAINS TYPE 'WF'".

ALL MATERIAL FOR DOWNSPOUTS, CONNECTORS, AND BRACKETS AS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE BID ITEM "DOWNSPOUT 8-INCH".

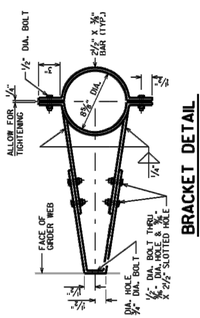
ON THE PRESTRESSED GIRDER SHEET, SHOW LOCATION OF HOLES FOR BRACKET ANCHORAGE FROM TOP/BOTTOM AND END OF GIRDER.

GRATE CASTING DETAILS

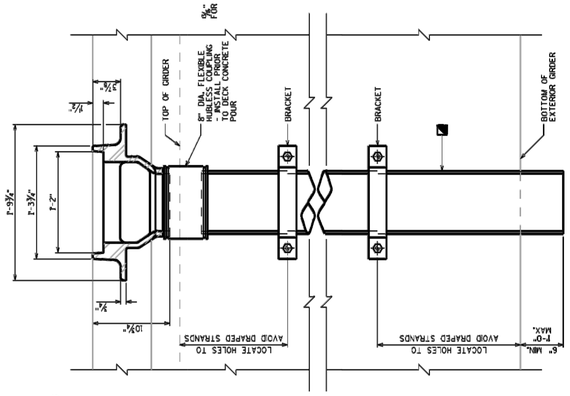
ATTACH GRATES TO FRAME FOR SHIPMENT



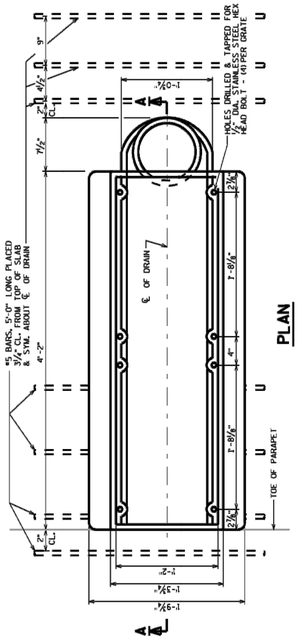
BRACKET DETAIL



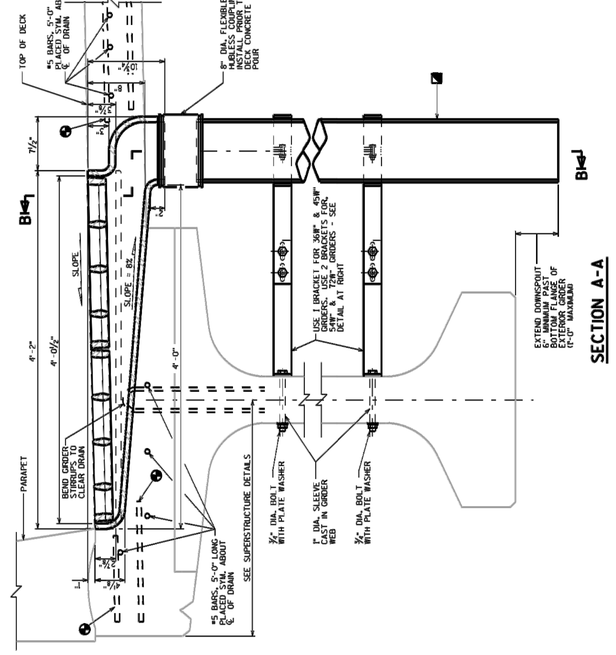
SECTION B-B



PLAN



SECTION A-A



FLOOR DRAIN TYPE 'WF'

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: *Bill Oliva* DATE: 7-14

STANDARD 29.03

GENERAL NOTES

ALL MATERIAL FOR TYPE "GC" CASTING, EXCLUDING GRATE HOLD DOWN SCREWS, SHALL BE GRAY IRON CONFORMING TO ASTM A48, CLASS 30. (APPROXIMATE WEIGHT = 225#)

MATERIAL FOR BRACKETS SHALL CONFORM TO ASTM A36.

THE CONTRACTOR MAY PROPOSE AN ALTERNATE TYPE OF BRACKET. THE PROPOSED ALTERNATE DETAILS SHALL BE SUBMITTED AND SUBJECT TO THE APPROVAL OF THE ENGINEER.

FLANGED 6" DIA DOWNSPOUTS SHALL BE EITHER STEEL OR REINFORCED THERMOSETTING RESIN PIPE CONFORMING TO SECTION 514 OF THE STANDARD SPECIFICATIONS.

DESIGNER NOTES

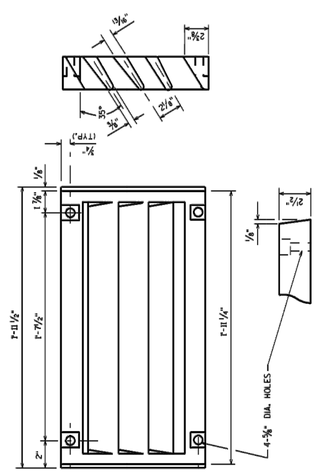
ALL MATERIAL FOR FLOOR DRAINS AS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE BID ITEM "FLOOR DRAINS TYPE 'GC'".

ALL MATERIAL FOR DOWNSPOUTS AND BRACKETS AS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE BID ITEM "DOWNSPOUT 6-INCH".

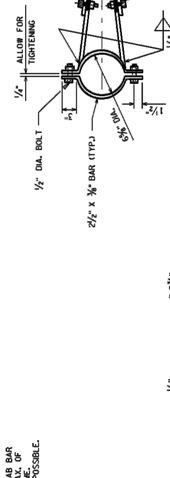
ON THE PRESTRESSED GIRDER SHEET, SHOW LOCATION OF HOLES FOR BRACKET ANCHORAGE FROM TOP/BOTTOM AND END OF GIRDER.

GRATE CASTING DETAIL

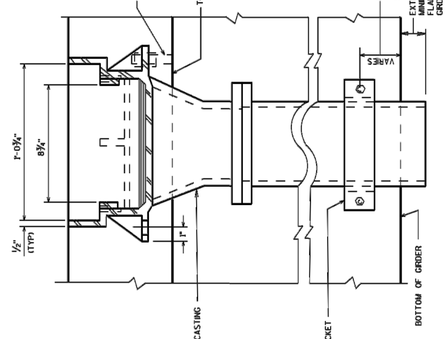
ATTACH GRATE TO FRAME FOR SHIPMENT



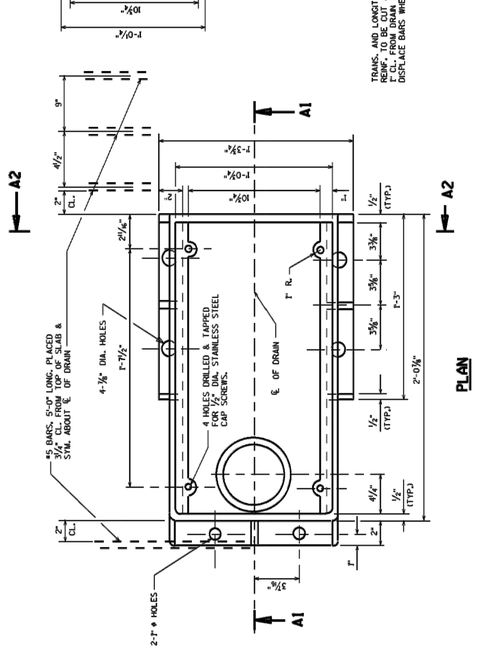
BRACKET DETAIL



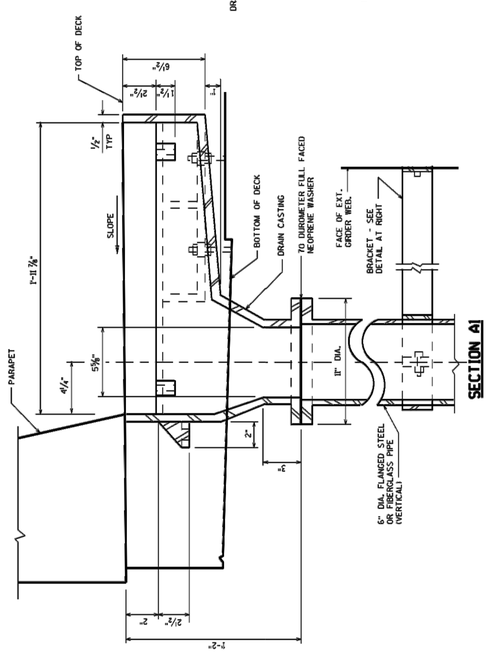
SECTION A2



PLAN



SECTION A1



FLOOR DRAIN TYPE 'GC'

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: DATE: 7-14

STANDARD 29.01

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LITTLE RAPIDS HABITAT RESTORATION 1½ MILE ROAD

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FINAL BRIDGE PLANS

STATE OF MICHIGAN
JEFFREY BARTOSZEK
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REGISTERED PROFESSIONAL ENGINEER

MEMBER
6/6/2016

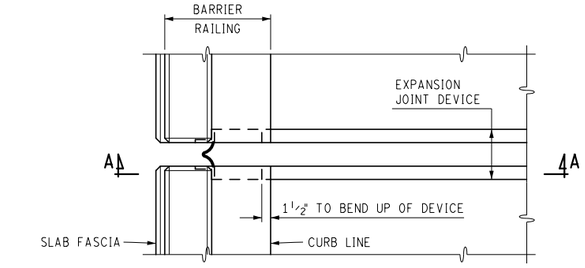
CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

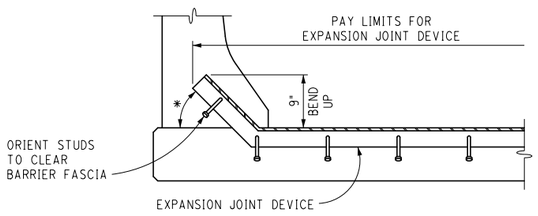
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
0	TS&L APPROVAL	02/11/2016
1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016

Project Number 15092

DRAIN CASTINGS

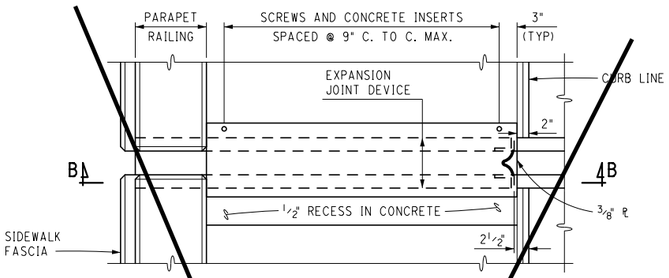


PLAN AT BARRIER RAILING

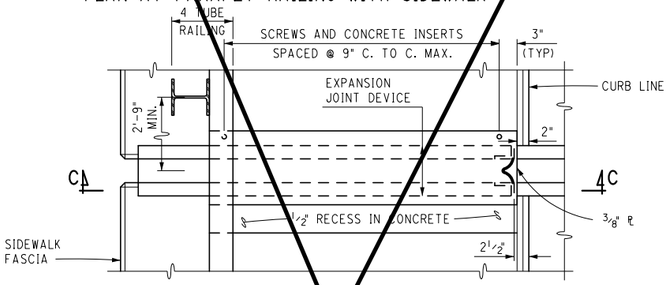


SECTION A – A

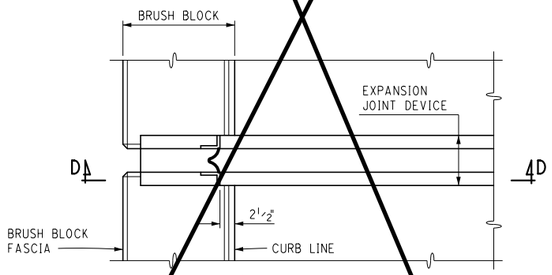
* BEND ANCHORAGE UP 45° ALONG ℄ OF EXPANSION JOINT.



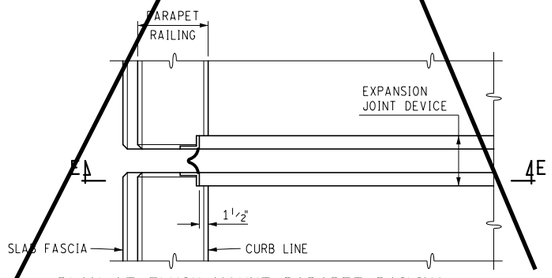
PLAN AT PARAPET RAILING WITH SIDEWALK



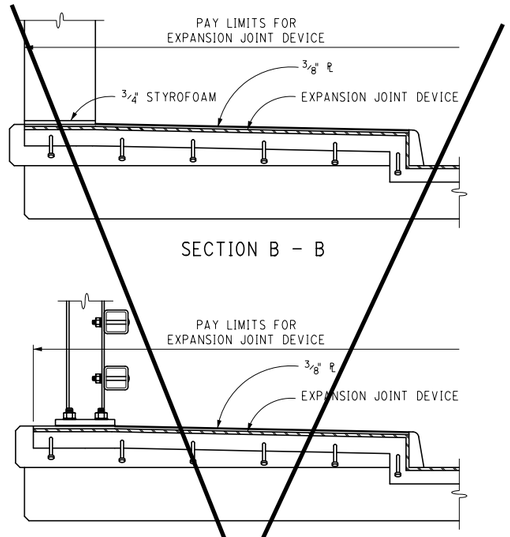
PLAN AT 4 TUBE (PEDESTRAIN) STEEL RAILING



PLAN AT 2 TUBE & 4 TUBE (BICYCLE) STEEL RAILING

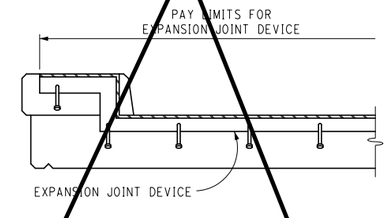


PLAN AT FLUSH MOUNT PARAPET RAILING

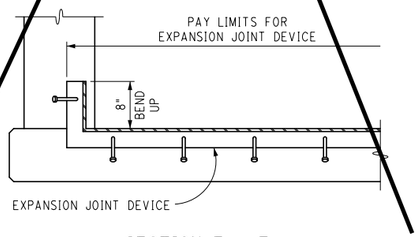


SECTION B – B

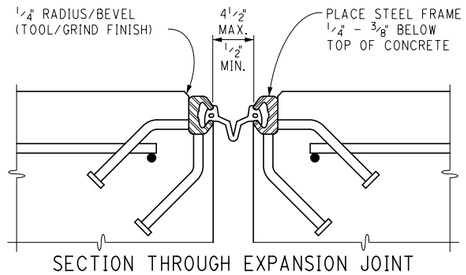
SECTION C – C



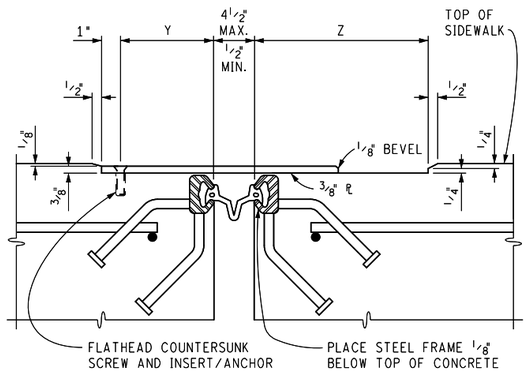
SECTION D – D



SECTION E – E



SECTION THROUGH EXPANSION JOINT



SECTION THROUGH EXPANSION JOINT AND COVER PLATE

WABO STRIP SEAL TYPE M			
TOTAL TRAVEL *	PLATE WIDTH	Y	Z
< 1"	10"	3 3/4"	5 3/4"
1" – 2"	11"	3 3/4"	6 3/4"
2" – 3"	12"	3 3/4"	7 3/4"
> 3"	13"	3 3/4"	8 3/4"

ALL OTHER DEVICES			
TOTAL TRAVEL *	PLATE WIDTH	Y	Z
< 1 1/2"	8"	2 1/2"	5"
1 1/2" – 3 1/2"	10"	2 1/2"	7"
> 3 1/2"	12"	2 1/2"	9"

* SEE TABLE FOR MINIMUM TOTAL TRAVEL ALONG CENTERLINE OF BRIDGE

SIDEWALK SECTIONS

ALL STEEL FOR COVER PLATE SHALL BE AASHTO M270, GRADE 36, MEET THE REQUIREMENTS OF ASTM A786 AND GALVANIZED (ASTM A123).

USE ASTM F 593 (TYPE 304) STAINLESS STEEL 3/4" OR 1/2" DIAMETER FLATHEAD COUNTERSUNK SCREWS WITH 3/4" OR 1/2" DIAMETER INSERTS OR FLUSH TYPE EXPANSION ANCHORS WITH A MINIMUM ALLOWABLE OR SAFE WORKING TENSION LOAD CAPACITY OF 1200 POUNDS.

CAST CURBS AND SIDEWALKS WITH 3/8" SLIDING PLATES IN PLACE TO INSURE THAT INSERTS AND SCREWS ARE ALIGNED PROPERLY. APPLY BOND BREAKER TO SLIDING PLATES PRIOR TO INSTALLATION.

FORM CONCRETE RECESS AREA IN SIDEWALK AND GRIND TO PROVIDE SMOOTH SURFACE. TOOL OR GRIND CONCRETE EDGES TO 1/4" RADIUS. APPLY ONE COAT OF EPOXY RESIN ADHESIVE TO ALLOW BENT SLIDING PLATE TO MOVE FREELY WITHOUT FRICTION. CARE SHALL BE TAKEN SO THAT NO ADHESIVE COMES IN CONTACT WITH ANY PART OF THE EXPANSION JOINT DEVICE OR GLAND. REMOVE ANY FOREIGN PARTICLES FROM THE SURFACE PRIOR TO INSTALLING PLATES.

INSTALL PLATES SO THAT THE SCREWS AND INSERTS ARE SET ON THE HIGH SIDE OF LONGITUDINAL SIDEWALK GRADE.

THE COST OF ALL MATERIALS AND LABOR REQUIRED FOR PROPER INSTALLATION OF THE COVER PLATE IS INCLUDED IN THE PAYMENT FOR THE EXPANSION JOINT DEVICE COVER PLATE.

NOTES:

JOINT TYPES

THE EXPANSION JOINT DEVICE SHALL BE OF A TYPE THAT INCLUDES A CONTINUOUS NEOPRENE (OR EQUIVALENT) SEAL ACROSS THE DECK. UNLESS OTHERWISE NOTED ON THE PLANS, THE CONTRACTOR HAS THE OPTION OF USING ANY OF THE DEVICES LISTED BELOW:

DEVICE	MANUFACTURER
WABO STRIP SEAL – TYPE M	WATSON-BOWMAN & ACME, INC.
WABO STRIP SEAL – TYPE A	WATSON-BOWMAN & ACME, INC.
STEELFLEX-SSA2	D.S. BROWN
STEELFLEX-SSCM	D.S. BROWN
ONFLEX 40 SS	STRUCTURAL RUBBER PRODUCTS CO.
ONFLEX 40 SSA	STRUCTURAL RUBBER PRODUCTS CO.

THE MODEL OF THE JOINT TYPE SELECTED SHALL BE SUITABLE TO ACCOMMODATE THE TOTAL MOVEMENT NOTED ON THE PLANS.

COMPLETE WORKING DRAWINGS OF ALL DETAILS OF FABRICATION OF THE EXPANSION JOINT DEVICE SHALL BE SUBMITTED FOR REVIEW IN ACCORDANCE WITH STANDARD SPECIFICATION 104.02. THIS REQUIREMENT IS WAIVED FOR EXPANSION JOINT DEVICES FOR WHICH A SET OF STANDARD INSTALLATION DETAILS HAS BEEN APPROVED. STANDARD INSTALLATION DETAILS CAN BE OBTAINED FROM THE DESIGN DIVISION.

FABRICATION AND INSTALLATION

REMOVE SHIPPING BOLTS PRIOR TO PLACEMENT OF CONCRETE.

THE EXPANSION JOINT SHALL BE SHOP FABRICATED TO CONFORM TO THE CONTOUR OF THE BRIDGE DECK, BARRIERS, ETC. IT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS SUBJECT TO NOTES HEREIN AND THE APPROVAL OF THE ENGINEER.

TIE DECK REINFORCING STEEL TO STEEL FRAME ANCHORS TO MAXIMUM EXTENT PRACTICABLE WITHOUT DAMAGING GALVANIZED OR EPOXY COATINGS.

THE TOP OF THE EXPANSION JOINT DEVICE SHALL BE SET 1/4" – 3/8" BELOW THE CONCRETE SLAB (PAVEMENT).

THE STEEL ANCHORAGE FOR STRIP SEAL GLANDS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SUBSECTION 707.03C.17 OF THE STANDARD SPECIFICATIONS.

THE AREA OF THE STEEL ANCHORAGE AND SEALING GLAND WHICH WILL BE IN CONTACT WITH A SEALANT, OR LUBRICANT-ADHESIVE SHALL BE CLEANED WITH TOLUENE OR OTHER APPROVED SOLVENT.

IN THE EVENT THAT SPLICING IS REQUIRED OF THE SEALING GLAND, IT SHALL BE SPLICED BY AN APPROVED METHOD (SUCH AS COLD VULCANIZATION) BY A TRAINED REPRESENTATIVE OF THE MANUFACTURER.

DETAILS AT CURBS OR BARRIERS

THE DETAILS ON THIS SHEET SHOW AN APPROVED MEANS OF TERMINATING THE EXPANSION JOINT DEVICE AT CURBS OR BARRIERS. VARIATIONS OR ALTERNATIVE SCHEMES WILL BE CONSIDERED AND MAY BE USED IF APPROVED BY THE ENGINEER.

MATERIALS

THE COST OF ALL MATERIALS AND LABOR REQUIRED FOR PROPER INSTALLATION OF THE EXPANSION JOINT AND THE TERMINAL ASSEMBLIES AT THE CURBS, SIDEWALKS, OR BARRIERS IS INCLUDED IN THE PAYMENT FOR THE EXPANSION JOINT DEVICE.

STRUCTURE NUMBER	ANGLE OF CROSSING TO NEAREST 10°	LOCATION OF JOINT	MIN. TOT. TRAVEL ALONG CENTERLINE OF BRIDGE *	REQUIRED LENGTH OF EXPANSION JOINT DEVICE
	0d0'0"	WEST APPR.	3.0"	37'-7 1/2"
	0d0'0"	EAST APPR.	3.0"	37'-7 1/2"

- Steel plates were removed from sidewalk ends.

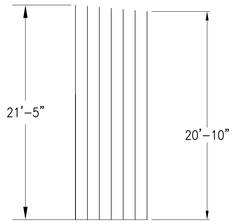
QUANTITY		
ITEM	UNIT	AMOUNT
Expansion Joint Device	Ft	75'-3"
Expansion Joint Device, Cover Plate	Ft	10'-6"

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

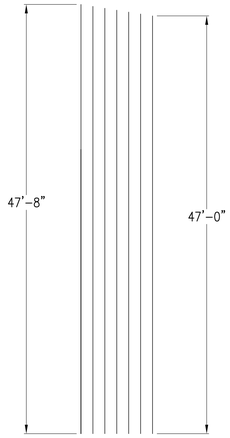
MDOT Michigan Department of Transportation

NO SCALE

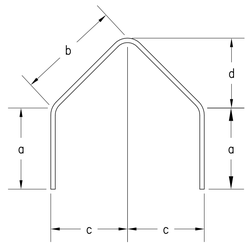
	DATE:	CS:	EXPANSION JOINT DETAILS	DRAWING	SHEET
	DESIGN UNIT:	JN:	EJ3AB (02-10-2016)		B-24
FILE:	TSC:				



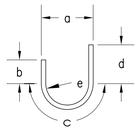
ABUTMENT FOOTING CUT DIAGRAM - EA062105



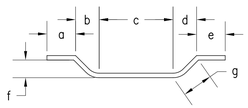
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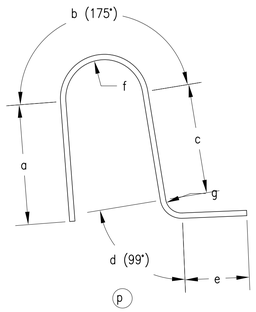
(H)



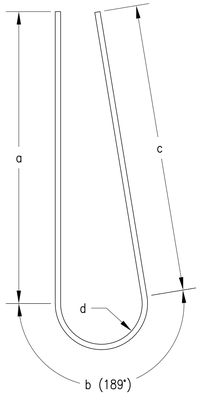
(u)



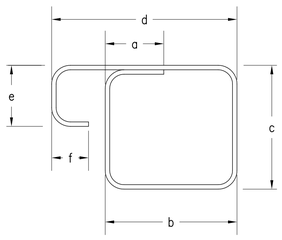
(w)



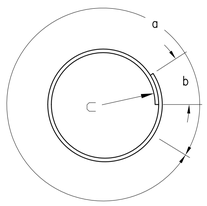
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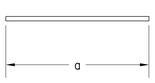
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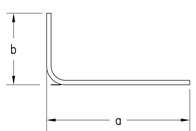
(T)



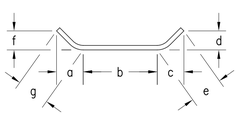
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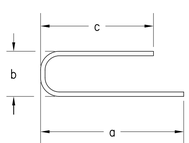
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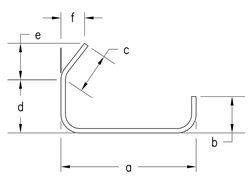
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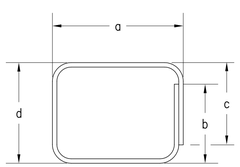
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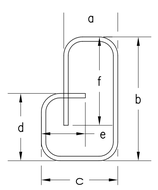
(D)



(F)



(K)



(m)

	BAR	DIMENSIONS										NO. REQ'D	TOTAL WT.
		SIZE	a	b	c	d	e	f	g	h	j		
ABUTMENTS	EA041600	#4	16'-0"									30	321
	EA041602	#4	16'-2"									10	108
	EA041711	#4	17'-11"									24	287
	EA060404	#6	4'-4"	THREADED								80	521
	EA060608	#6	6'-8"									112	1120
	EA060702	#6	7'-2"									140	1507
	EA060800	#6	8'-0"									12	144
	EA060910	#6	9'-10"									48	709
	EA062100	#6	21'-0"									28	883
	EA062105*	#6	21'-5"									28	901
	EA062302	#6	23'-2"									64	2227
	EA064708*	#6	47'-8"									28	2005
	EB050703	#5	4'-4"	2'-10 1/4"								60	454
	EB060608	#6	5'-5"	1'-3"								54	541
	EB061000	#6	9'-0"	1'-0"								54	811
	EB061009	#6	9'-9"	1'-0"								48	775
	EC050701	#5	1'-5"	3'-1"	1'-5"	1'-5"	2'-0"	1'-5"	2'-0"			10	74
	EC050702	#5	1'-5 3/4"	3'-2"	1'-5 3/4"	1'-4 1/4"	2'-0"	1'-4 1/4"	2'-0"			10	75
	EC050908	#5	1'-5"	5'-8"	1'-5"	1'-5"	2'-0"	1'-5"	2'-0"			6	60
	EC050911	#5	1'-5 3/4"	5'-11"	1'-5 3/4"	1'-4 1/4"	2'-0"	1'-4 1/4"	2'-0"			6	62
	ED040408	#4	2'-1"	5 3/4"	2'-1"							20	62
	ED040800	#4	3'-9"	5 3/4"	3'-9"							30	160
	ED060609	#6	1'-11"	2'-10 5/8"	1'-11"							48	487
PIERS	EA051304	#5	13'-4"									104	1448
	EA051400	#5	14'-0"									104	1520
	EA051507	#5	15'-7"									104	1692
	EA051510	#5	15'-10"									104	1719
	EA054510	#5	45'-10"									132	6316
	EA054706	#5	47'-6"									16	793
	EA060200	#6	2'-0"									40	120
	EA060306	#6	3'-6"									40	210
	EA060505	#6	5'-5"									80	651
	EA080400	#8	4'-0"									20	214
	ED040303	#4	4 1/2"	2'-6"	4 1/2"							1008	2188
	ED060601	#6	1'-10"	2'-5 3/8"	1'-10"							96	877
	EH050707	#5	2'-4"	1'-5 1/4"	1'-2"	1'-5 1/4"						132	1045
	EK050500	#5	3'-0"	8"	8"	8"						80	418
	EK051010	#5	3'-4"	2'-6"	2'-6"	2'-6"						372	4207
	EW040406	#4	1'-3"	6"	8"	6"	1'-3"	6"	8"	8"	6"	40	120
	EW041210	#4	10"	0	8"	0	10"	5'-3"	5'-3"	5'-3"	5'-3"	40	343
	SUB TOTAL SUBSTRUCTURE												38175
DECK	EA034000	#3	40'-0"									752	11310
	EA044909	#4	49'-9"									806	26786
	EA053801	#5	38'-1"									1994	79279
	EA082300	#8	23'-0"									420	25792
	EA085000	#8	50'-0"									420	56070
	ED040405	#4	3'-8"	4"	5"							1000	2950
APPROACH SLAB	EA040400	#4	4'-0"									124	745
	EA043707	#4	37'-7"									26	653
	EA060706	#6	7'-6"									308	3470
	EA063801	#6	38'-1"									36	2059
	EM041109	#4	1'-8"	1'-6 1/2"	3'-2"	8"	3'-2"	1'-6 1/2"				116	910
RAILING	EA050108	#5	1'-8"									16	28
	EA050705	#5	7'-5"									32	248
	EA053205	#5	32'-5"									320	10830
	EP050406	#5	1'-2"	1'-3 1/2"	1'-0 3/4"	3/4"	8"	4 1/2"	1 7/8"			1918	9011
	ES050608	#5	2'-8"	1'-5"	2'-7 1/4"	4 1/2"						1918	13349
	SUB TOTAL SUPERSTRUCTURE												243490
	TOTAL REINFORCEMENT, STEEL, EPOXY COATED												281665

* – SEE BAR CUT DIAGRAM

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W6380 Design Drive | Greenville, Wisconsin 54942
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LITTLE RAPIDS
HABITAT
RESTORATION
1 1/2 MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE PLANS

STATE OF MICHIGAN
JEFFREY BARTOSZEK
ENGINEER
No. 35702
REGISTERED PROFESSIONAL ENGINEER

MEMBER
6/7/2016

CERTIFIED BY

JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
0	TS&L APPROVAL	02/11/2016
1	60% SUBMITTAL	03/25/2016
2	FINAL SUBMITTAL	06/03/2016

Project Number 15092

GENERAL STEEL REINFORCING

B-25

BOTTOM OF SLAB ELEVATIONS

		REF. A											REF. 1											REF. 2											REF. 3
		SPAN 1											SPAN 2											SPAN 3											
A	FASCIA	588.28	588.40	588.52	588.62	588.69	588.74	588.77	588.76	588.74	588.70	588.65	588.65	588.78	588.89	588.99	589.07	589.12	589.14	589.14	589.11	589.07	589.02	589.02	589.15	589.27	589.35	589.41	589.43	589.42	589.36	589.28	589.17	589.04
	RIGHT	588.64	588.77	588.88	588.98	589.06	589.11	589.13	589.13	589.11	589.06	589.01	589.02	589.14	589.26	589.36	589.43	589.48	589.51	589.50	589.48	589.43	589.38	589.39	589.51	589.63	589.71	589.77	589.80	589.78	589.72	589.64	589.53	589.41
B	LEFT	588.69	588.81	588.93	589.03	589.11	589.16	589.18	589.18	589.15	589.11	589.06	589.07	589.19	589.30	589.40	589.48	589.53	589.55	589.55	589.52	589.48	589.43	589.44	589.56	589.68	589.76	589.82	589.84	589.83	589.77	589.69	589.58	589.46
	RIGHT	588.77	588.89	589.01	589.11	589.19	589.24	589.26	589.26	589.23	589.19	589.14	589.15	589.27	589.38	589.48	589.56	589.61	589.63	589.63	589.60	589.56	589.51	589.52	589.64	589.76	589.84	589.90	589.92	589.91	589.85	589.77	589.66	589.54
C	LEFT	588.82	588.94	589.06	589.16	589.23	589.28	589.31	589.30	589.28	589.24	589.19	589.19	589.31	589.43	589.53	589.61	589.66	589.68	589.68	589.65	589.61	589.56	589.56	589.69	589.81	589.89	589.95	589.97	589.96	589.90	589.82	589.71	589.58
	RIGHT	588.85	588.97	589.09	589.19	589.27	589.32	589.34	589.34	589.31	589.27	589.22	589.23	589.35	589.46	589.56	589.64	589.69	589.71	589.71	589.68	589.64	589.59	589.60	589.72	589.84	589.92	589.98	590.00	589.99	589.93	589.85	589.74	589.62
D	LEFT	588.80	588.93	589.04	589.14	589.22	589.27	589.29	589.29	589.27	589.22	589.17	589.18	589.30	589.42	589.52	589.59	589.64	589.67	589.66	589.64	589.59	589.54	589.55	589.67	589.79	589.87	589.93	589.96	589.94	589.88	589.80	589.69	589.57
	RIGHT	588.72	588.85	588.96	589.06	589.14	589.19	589.21	589.21	589.19	589.14	589.09	589.10	589.22	589.34	589.44	589.51	589.56	589.59	589.58	589.56	589.51	589.46	589.47	589.59	589.71	589.79	589.85	589.88	589.86	589.80	589.72	589.61	589.49
E	LEFT	588.68	588.80	588.92	589.02	589.09	589.14	589.17	589.16	589.14	589.10	589.05	589.05	589.17	589.29	589.39	589.47	589.52	589.54	589.54	589.51	589.47	588.42	589.42	589.55	589.67	589.75	589.81	589.83	589.82	589.76	589.68	589.57	589.44
	RIGHT	588.60	588.72	588.84	588.94	589.01	589.06	589.09	589.08	589.06	589.02	588.97	588.97	589.09	589.21	589.31	589.39	589.44	589.46	589.46	589.43	589.39	589.34	589.34	589.47	589.59	589.67	589.73	589.75	589.74	589.68	589.60	589.49	589.36
F	LEFT	588.55	588.67	588.79	588.89	588.97	589.02	589.04	589.04	589.01	588.97	588.92	588.93	589.05	589.16	589.26	589.34	589.39	589.41	589.41	589.38	589.34	589.29	589.30	589.42	589.54	589.62	589.68	589.70	589.69	589.63	589.55	588.44	589.32
	FASCIA	588.30	588.42	588.53	588.63	588.71	588.76	588.78	588.78	588.76	588.71	588.67	588.67	588.79	588.91	589.01	589.08	589.13	589.16	589.15	589.13	589.09	589.04	589.04	589.16	589.28	589.37	589.42	589.45	589.43	589.38	589.29	589.18	589.06

BOTTOM OF SLAB ELEVATIONS

		REF. 3											REF. 4											REF. B
		SPAN 4											SPAN 5											
A	FASCIA	589.04	589.09	589.13	589.16	589.16	589.14	589.09	589.01	588.91	588.80	588.67	588.67	588.72	588.76	588.78	588.79	588.76	588.71	588.64	588.54	588.42	588.30	
	RIGHT	589.40	589.45	589.50	589.52	589.53	589.50	589.45	589.38	589.28	589.16	589.04	589.03	589.08	589.13	589.15	589.15	589.13	589.08	589.00	588.90	588.79	588.66	
B	LEFT	589.45	589.50	589.54	589.57	589.57	589.55	589.50	589.42	589.32	589.21	589.09	589.08	589.13	589.17	589.20	589.20	589.18	589.13	589.05	588.95	588.83	588.71	
	RIGHT	589.53	589.58	589.62	589.65	589.65	589.63	589.58	589.50	589.40	589.29	589.17	589.16	589.21	589.25	589.28	589.28	589.26	589.21	589.13	589.03	588.91	588.79	
C	LEFT	589.58	589.63	589.67	589.70	589.70	589.68	589.63	589.55	589.45	589.33	589.21	589.21	589.26	589.30	589.32	589.33	589.30	589.25	589.18	589.08	588.96	588.84	
	RIGHT	589.61	589.66	589.70	589.73	589.73	589.71	589.66	589.58	589.48	589.37	589.25	589.24	589.29	589.33	589.36	589.36	589.34	589.29	589.21	589.11	588.99	588.87	
D	LEFT	589.56	589.61	589.66	589.68	589.69	589.66	589.61	589.54	589.44	589.32	589.20	589.19	589.24	589.29	589.31	589.31	589.29	589.24	589.16	589.06	588.95	588.82	
	RIGHT	589.48	589.53	589.58	589.60	589.61	589.58	589.53	589.46	589.36	589.24	589.12	589.11	589.16	589.21	589.23	589.23	589.21	589.16	589.08	588.98	588.87	588.74	
E	LEFT	589.44	589.49	589.53	589.56	589.56	589.54	589.49	589.41	589.31	589.19	589.07	589.07	589.12	589.16	589.18	589.19	589.16	589.11	589.04	588.94	588.82	588.70	
	RIGHT	589.36	589.41	589.45	589.48	589.48	589.46	589.41	589.33	589.23	589.11	588.99	588.99	589.04	589.08	589.10	589.11	589.08	589.03	588.96	588.86	588.74	588.62	
F	LEFT	589.31	589.36	589.40	589.43	589.43	589.41	589.36	589.28	589.18	589.07	588.95	588.94	588.99	589.03	589.06	589.06	589.04	588.99	588.91	588.81	588.69	588.57	
	FASCIA	589.06	589.11	589.15	589.17	589.18	589.15	589.10	589.03	588.93	588.81	588.69	588.69	588.73	588.78	588.80	588.80	588.78	588.73	588.65	588.55	588.44	588.32	

NOTES:

1. BOTTOM OF SLAB ELEVATIONS ARE AT RIGHT ANGLES TO THE BEAM CENTERLINE AND ARE BASED ON THE CONDITION THAT THE BEAMS AND DIAPHRAGMS ARE COMPLETELY ERECTED WITH NO OTHER LOADS APPLIED. THESE ELEVATIONS INCLUDE ALLOWANCE FOR VERTICAL CURVE AND DEFLECTION DUE TO FORMS, STEEL REINFORCEMENT, CONCRETE SLAB, BARRIERS AND UTILITIES.
2. SCREED ELEVATIONS ARE BASED ON THE CONDITION THAT NO SLAB CONCRETE HAS BEEN CAST AND THAT FORM WORK AND STEEL REINFORCEMENT ARE IN PLACE.
3. THE TRANSVERSE FINISHING SHALL BE PARALLEL TO THE REFERENCE LINES.
4. SECTIONS FOR BOTTOM OF SLAB AND/OR SCREED ELEVATIONS ARE GIVEN ALONG BEAM CENTERLINES FROM CENTERLINE OF BEARING TO CENTERLINE OF BEARING AT EQUAL SPACINGS.
5. SCREED RAILS FOR FINISHING OF STRUCTURAL CONCRETE SHALL BE LOCATED OVER FASCIA BEAMS.

	REF. A										REF. 1
	SPAN 1										
NORTH RAILING	589.24	589.35	589.46	589.55	589.62	589.67	589.70	589.70	589.68	589.65	589.61
SOUTH RAILING	589.24	589.35	589.46	589.55	589.62	589.67	589.70	589.70	589.68	589.65	589.61
SOUTH SIDEWALK	589.10	589.21	589.32	589.41	589.48	589.53	589.55	589.56	589.54	589.51	589.47

	REF. 1										REF. 2
	SPAN 2										
NORTH RAILING	589.62	589.73	589.83	589.93	590.00	590.05	590.07	590.07	590.05	590.02	589.98
SOUTH RAILING	589.62	589.73	589.83	589.93	590.00	590.05	590.07	590.07	590.05	590.02	589.98
SOUTH SIDEWALK	589.47	589.58	589.69	589.78	589.85	589.90	589.93	589.93	589.91	589.88	589.84

	REF. 2										REF. 3
	SPAN 3										
NORTH RAILING	589.99	590.10	590.21	590.28	590.34	590.36	590.35	590.29	590.22	590.12	590.01
SOUTH RAILING	589.99	590.10	590.21	590.28	590.34	590.36	590.35	590.29	590.22	590.12	590.01
SOUTH SIDEWALK	589.84	589.96	590.07	590.14	590.20	590.22	590.21	590.15	590.08	589.98	589.86

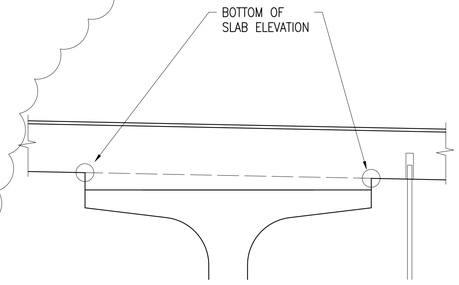
	REF. 3										REF. 4
	SPAN 4										
NORTH RAILING	590.00	590.04	590.07	590.09	590.09	590.07	590.02	589.95	589.85	589.75	589.64
SOUTH RAILING	590.00	590.04	590.07	590.09	590.09	590.07	590.02	589.95	589.85	589.75	589.64
SOUTH SIDEWALK	589.86	589.90	589.93	589.95	589.95	589.92	589.87	589.80	589.71	589.60	589.49

	REF. 4										REF. B
	SPAN 5										
NORTH RAILING	589.63	589.67	589.70	589.72	589.72	589.69	589.64	589.57	589.48	589.37	589.26
SOUTH RAILING	589.63	589.67	589.70	589.72	589.72	589.69	589.64	589.57	589.48	589.37	589.26
SOUTH SIDEWALK	589.49	589.53	589.56	589.58	589.57	589.55	589.50	589.43	589.34	589.23	589.12

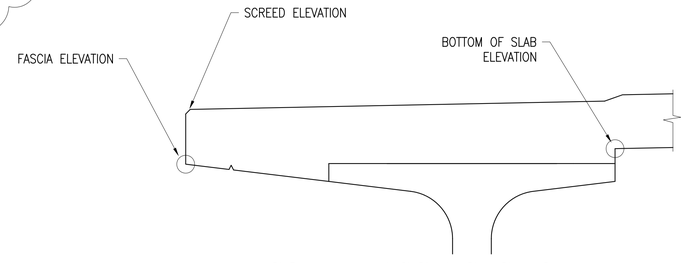
SCREED ELEVATIONS

	REF. LINE A	REF. LINE B
A	589.26	589.28
B	589.39	589.41
C	589.52	589.54
D	589.42	589.44
E	589.30	589.32
F	589.17	589.19

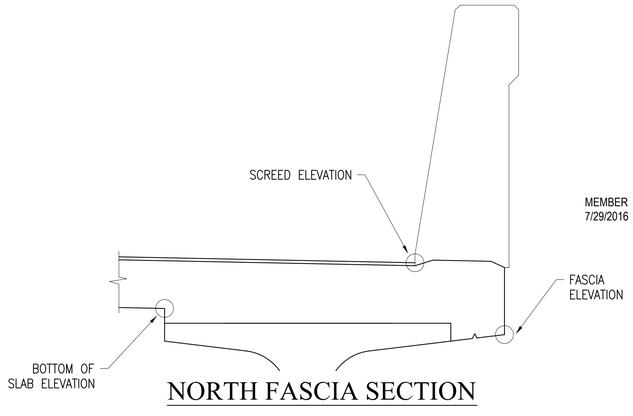
BULKHEAD ELEVATIONS
(TOP OF SLAB)



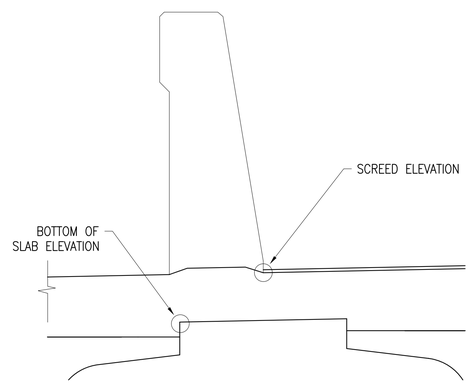
TYPICAL INTERIOR SECTION



SOUTH FASCIA SECTION



NORTH FASCIA SECTION



SOUTH RAILING

MEMBER
7/29/2016

PAYNE & DOLAN
INCORPORATED
W6380 Design Drive | Greenville, Wisconsin 54942
TEL 920.757.7550 | FAX 920.757.2906
www.paynedolan.com

CLIENT

INTEGRITY STRUCTURAL ENGINEERING, PLLC
P.O. Box 766 • St. Joseph, Michigan 49085
269-983-6214 • www.IntegritySE.com

LITTLE RAPIDS
HABITAT
RESTORATION
1 ½ MILE ROAD

SUGAR ISLAND
CHIPPEWA COUNTY
MICHIGAN

FINAL BRIDGE
PLANS

STATE OF MICHIGAN
JEFFREY
BARTOSZEK
ENGINEER
No.
35702
REGISTERED PROFESSIONAL ENGINEER

CERTIFIED BY
JEFF BARTOSZEK PE #35702

ADMINISTRATION	
DATE:	12/21/2015
ENGINEER:	JAB
DRAWN BY:	BKV
CHECKED BY:	JAB
SCALE:	AS NOTED

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
0	TS&L APPROVAL	02/11/2016
1	60% SUBMITTAL	03/25/2016
2	FINAL PLANS	06/03/2016
3	REVISE PROFILE	07/29/2016

Project Number 15092

SCREED DETAILS

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