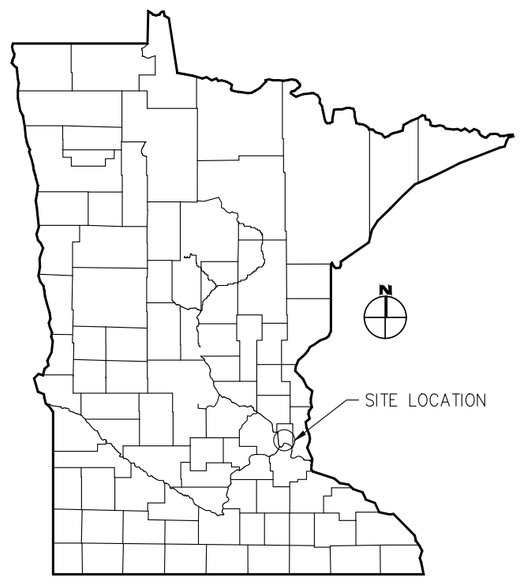
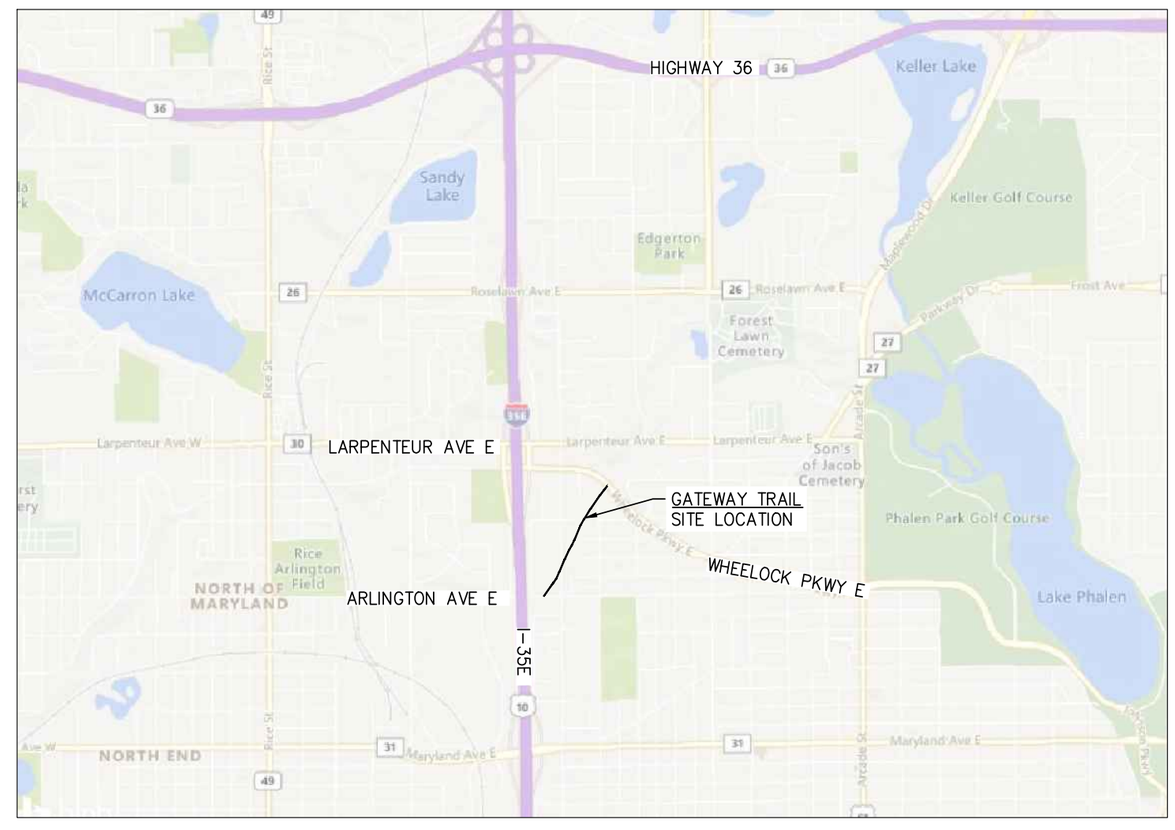
MINNESOTA DEPARTMENT OF NATURAL RESOURCES - PARKS AND TRAILS DIVISION

GATEWAY STATE TRAIL

GATEWAY STATE TRAIL
WESTMINSTER STREET SEGMENT

Proposed Bridge Info	
Existing MNDNR Bridge #	BR01062
Proposed MNDNR Bridge #	BR01618
Existing MNDOT Bridge #	90410
Proposed MNDOT Bridge #	62664
Carries	Gateway State Trail
Crosses	Westminster Street
Northing	4,981,396
Easting	493,197





NOTES:

EXISTING UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED BY THE UTILITY OWNER. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY GOPHER STATE ONE-CALL 1-800-252-1166 OR 651-454-0002.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS IN PROJECT MANUAL, DIVISION 1, SECTION 1.531 (01 30 00) INVASIVE SPECIES PREVENTION IN COMPLETING THE WORK

ALL NECESSARY EASEMENTS, PERMITS AND RIGHTS OF WAY FOR THE PROJECT SHALL BE SECURED BY THE OWNER OR SPONSOR BEFORE CONSTRUCTION WORK IS COMMENCED UNLESS OTHERWISE SPECIFIED.

VERIFY ALL DIMENSIONS AND LOCATIONS ON THE JOB. REPORT ALL DISCREPANCIES TO OPERATIONS SERVICES DIVISION.

NO TREE CLEARING (4" DIAMETER AND GREATER) IS ALLOWED BETWEEN JUNE 1ST AND AUGUST 15TH.

NOTE WORK IN WATER EXCLUSION DATES OUTLINED IN DOW'S PERMITS.

PREBID SITE EXAMINATION SHALL BE COORDINATED WITH PARKS & TRAILS DIVISION STAFF. ANY MOTORIZED VEHICLE ALLOWED ON THE TRAIL SHALL BEAR THE COMPANY'S IDENTIFICATION ON THE SIDES OF THE VEHICLE. VEHICLES MUST UTILIZE FLASHERS, TRAVEL UNDER 20 MPH, AND YIELD THE RIGHT OF WAY (BY PULLING TO THE SIDE OF THE TRAIL AND STOPPING) TO ALL TRAIL USERS.

DO NOT SCALE DRAWINGS.

CALL BEFORE YOU DIG
GOPHER STATE ONE CALL
811

CLEAN WATER LAND & LEGACY AMENDMENT

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Approval

Parks And Trails Division — Date

Operations Services Division — Date

DEPARTMENT OF NATURAL RESOURCES

FINAL REVIEW

Operations Services
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BRIDGE REPLACEMENT & TRAIL REHAB
GATEWAY STATE TRAIL
DNR Parks And Trails Division
Ramsey County — St. Paul
Section: 19 Township: 29N Range: 22W

Revisions
Date By

Title: TITLE SHEET

Survey:	WL	03/19	Designed:	MH	08/19
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EARTHWORK BALANCE SUMMARY					
	COMMON EXCAVATION	EMBANKMENT	GRANULAR BORROW	SELECT GRANULAR BORROW	CLASS 5 BASE
	CY	CY	CY	CY	CY
TRAIL CORRIDOR STA 100+58 TO 105+33 AND SPUR TRAIL STA 20+08 TO 22+70	840	480	410	0	170
TRAIL CORRIDOR STA 107+60 TO 122+45	5770	1190	0	3660	530
TOTALS (LV)	6610	1670	410	3660	700

1. SALVAGED TOPSOIL SHALL BE USED TO MEET TOPSOIL BORROW NEEDS.
2. EMBANKMENT COMMON TO COME FROM EXCESS COMMON EXCAVATION MATERIAL.
3. ALL EXCESS AND UNSUITABLE MATERIALS TO BE HAULED OFF SITE AND SHALL BE INCLUDED IN THE UNIT PRICE FOR EXCAVATION.
4. TABLES PROVIDED FOR INFORMATION ONLY.

CONSTRUCTION, SURVEY AND SOIL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2018 Mn/DOT STANDARD SPECIFICATIONS FOR CONSTRUCTION INCLUDING APPLICABLE SUPPLEMENTAL SPECIFICATIONS.
2. STRIP TOPSOIL FROM AREAS TO BE DISTURBED BY CONSTRUCTION AND REUSE AS SLOPE DRESSING. THE DEPTH OF TOPSOIL AVAILABLE IS ASSUMED TO BE 4". TOPSOIL EXCAVATION AND PLACEMENT IS PAID FOR UNDER COMMON EXCAVATION.
3. EMBANKMENT MATERIAL SHALL BE EXCAVATED MATERIAL FROM THE SITE. THE EMBANKMENT MUST BE CONSTRUCTED IN ACCORDANCE WITH Mn/DOT SPECIFICATION 2105.
4. THE CONTRACTOR SHALL VERIFY UTILITY LOCATIONS BEFORE COMMENCING CONSTRUCTION BY CALLING GOPHER STATE ONE CALL.
5. SUITABLE GRADING MATERIALS ON THIS PROJECT SHALL CONSIST OF ALL MINERAL SOILS ENCOUNTERED IN EXCAVATION MATCHING THE TEXTURAL CLASSIFICATION OF THE MATERIALS IN THE AREA OF CONSTRUCTION AND NOT DEFINED AS UNSUITABLE MATERIAL. GRANULAR MATERIAL MAY BE SUBSTITUTED FOR SUITABLE GRADING MATERIAL WITH NO ADDITIONAL COMPENSATION.
6. UNSUITABLE MATERIALS ARE DEFINED AS TOPSOIL, PEAT, MUCK, DEBRIS, ORGANIC, AND OR OTHER UNSTABLE SOILS. UNSUITABLE MATERIALS MAY NOT BE PLACED WITH A 1V:1.5H SLOPE DOWNWARD AND OUTWARD FROM THE OUTSIDE EDGE OF THE PROPOSED BASE. ALL EARTH MATERIALS NOT DESIGNATED FOR SALVAGE, AND ALL DEBRIS, SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OUTSIDE OF THE RIGHT-OF-WAY.
7. BITUMINOUS AND CONCRETE ITEMS DISTURBED BY CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND MAY BE RECYCLED OR DISPOSED OF OFF THE RIGHT-OF-WAY.
8. PROVIDE A 1V:20H TAPER WHEN CHANGING FROM SUBCUT DEPTHS. TAPERS BETWEEN PLASTIC AND GRANULAR SOILS SHALL BE CONSTRUCTED SO THAT GRANULAR SOILS OVERLAY PLASTIC SOILS.
9. SOILS AT THE BOTTOM OF SHALLOW EXCAVATIONS AND IN CUT AREAS SHALL BE SCARIFIED TO A DEPTH OF 12 INCHES, BLENDED, AND COMPACTED TO MNDOT SPECIFICATION 2105.F1 "SPECIFIED DENSITY METHOD"
10. THE FOLLOWING COMPACTION REQUIREMENTS SHALL BE USED:

MATERIAL	DENSITY
GRANULAR BORROW	ORDINARY COMPACTION
CLASS 5 AGGREGATE BASE	ORDINARY COMPACTION

11. BITUMINOUS TRAIL PAVEMENTS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SPECIFICATION 2360 AND COMPACTION SHALL BE OBTAINED IN ACCORDANCE WITH THE "ORDINARY COMPACTION METHOD".
12. SIDE SLOPES ARE TO BE ROUNDED AS DIRECTED BY THE ENGINEER AND ALL WORK WILL BE CONSIDERED INCIDENTAL TO COMMON EXCAVATION.
13. NO WORK, INCLUDING THE STOCKPILING OF TOPSOIL, SHALL EXTEND BEYOND THE RIGHT-OF-WAY UNLESS THE CONTRACTOR HAS PROVIDED THE STATE WITH A COPY OF THE OWNERS' WRITTEN PERMISSION FOR SUCH WORK AND IS APPROVED BY THE ENGINEER.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A STABLE SUBGRADE FOR THE BITUMINOUS TRAIL. THE CONTRACTOR WILL NOT BE ALLOWED TO PLACE BITUMINOUS SURFACES UNTIL THE ENGINEER HAS APPROVED THE SUBGRADE AND AGGREGATE BASE.
15. PLACE A MINIMUM OF 4 INCHES OF TOPSOIL ON ALL AREAS SCHEDULED FOR PERMANENT TURF ESTABLISHMENT.

CONSTRUCTION SCHEDULE AND TIMING

1. CLEARING OF TREES WITH A DBH (DIAMETER AT BREAST HEIGHT) LARGER THAN 3" WILL ONLY BE ALLOWED BETWEEN AUGUST 15TH AND OCTOBER 30TH. ALL VEGETATIVE DEBRIS TO BE HAULED OFFSITE AND LEGALLY DISPOSED OF.
2. GRADING OPERATIONS FOR TRAIL CONSTRUCTION WILL ONLY BE ALLOWED BETWEEN AUGUST 1ST AND OCTOBER 30TH. NO NEW GRADING OR MAJOR SOIL DISTURBANCE WITHIN THE TRAIL CORRIDOR WILL BE ALLOWED BETWEEN OCTOBER 30TH AND AUGUST 1ST OF THE FOLLOWING YEAR.
3. THE NPDES PERMIT CANNOT BE APPLIED FOR UNTIL THE NOTICE TO PROCEED IS ISSUED.

STANDARD PLATES	
THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT	
PLATE NO.	DESCRIPTION
7038A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100H	CONCRETE CURB AND GUTTER (DESIGN B AND DESIGN V)
3131C	PRECAST CONCRETE HEADWALL FOR SUBSURFACE DRAINS

SHEET LIST	
SHEET NUMBER	SHEET TITLE
C-001	TITLE SHEET
C-002	STANDARD NOTES & PLATES
C-003	TYPICAL SECTION
C-004	TRAFFIC CONTROL PLAN
C-005	PEDESTRIAN CONTROL PLAN
C-201	REMOVALS & EROSION CONTROL
C-202	REMOVALS & EROSION CONTROL
C-203	BRIDGE DEMOLITION & REMOVALS
C-301	TRAIL PLAN & PROFILE
C-302	TRAIL PLAN & PROFILE
C-303	TRAIL PLAN & PROFILE
C-304	TRAIL PLAN & PROFILE
C-305	BRIDGE PLAN, PROFILE, & SECTION
C-401	TRAIL SECTIONS
C-402	TRAIL SECTIONS
C-403	TRAIL SECTIONS
C-404	TRAIL SECTIONS
C-405	TRAIL SECTIONS
C-406	TRAIL SECTIONS
C-501	PAVEMENT MARKINGS & SIGNAGE
C-502	PAVEMENT MARKINGS & SIGNAGE
C-601	PILE FOUNDATION & FOOTING DETAILS
C-602	ABUTMENT DETAILS
C-603	CIVIL DETAILS
C-701	SWPPP
C-702	EROSION CONTROL DETAILS
C-703	EROSION CONTROL DETAILS
C-704	EROSION CONTROL DETAILS
C-705	EROSION CONTROL DETAILS

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BRIDGE REPLACEMENT & TRAIL REHAB
GATEWAY STATE TRAIL
DNR Parks And Trails Division

Ramsey County St. Paul
Section: 19 Township: 29N Range: 22W

Revisions
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Title: STANDARD NOTES & PLATES

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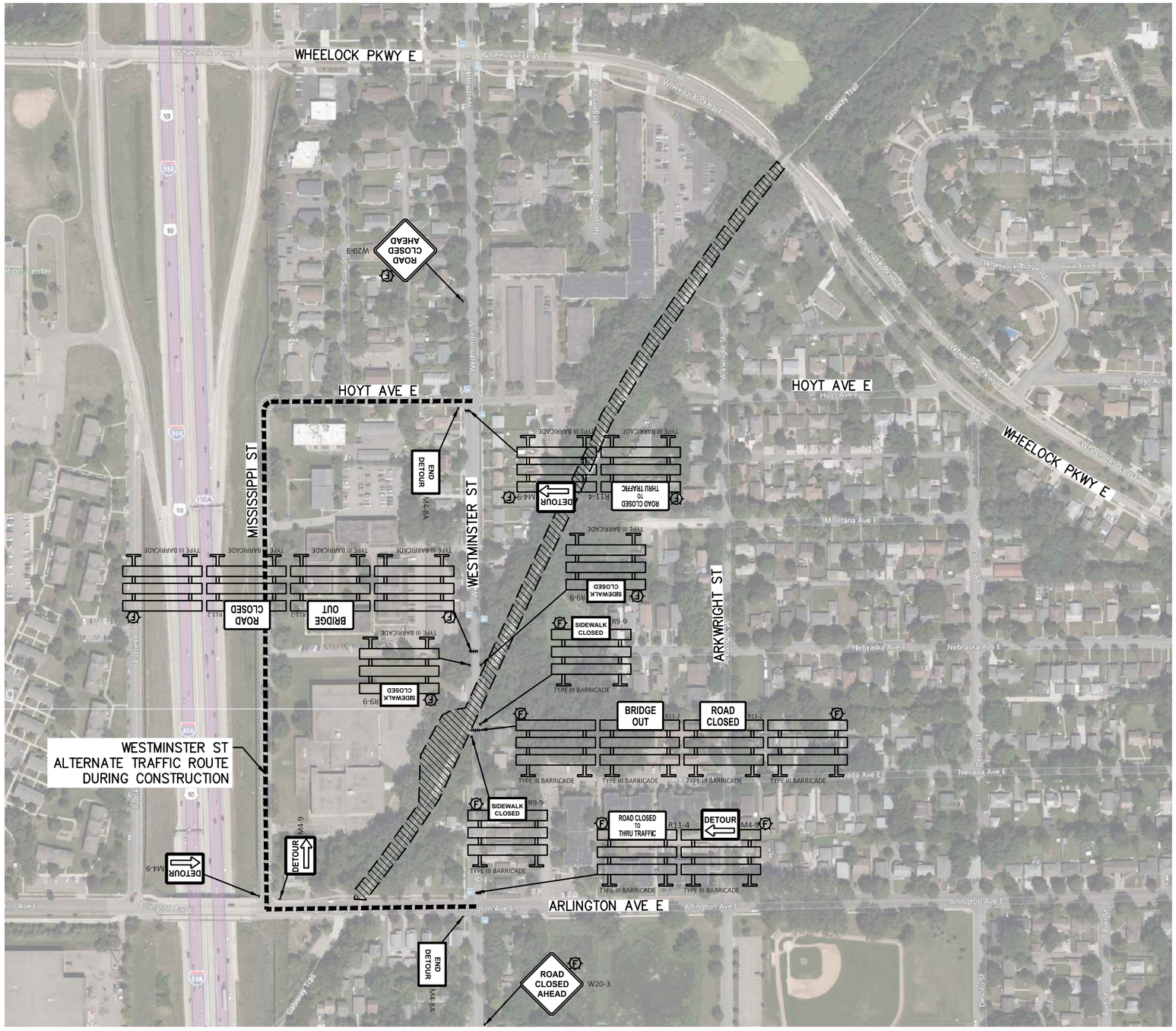

NOTES & GUIDELINES:

GENERAL INFORMATION:

1. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MNMUTCD) INCLUDING THE TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL.
2. CONSTRUCTION ZONE SIGNING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL INCLUDE BUT NOT BE LIMITED TO THE SIGNS IDENTIFIED IN THIS TRAFFIC CONTROL PLAN. THE NUMBER AND LOCATION OF THE ADDITIONAL SIGNS REQUIRED FOR THE DETOUR AND ROAD CLOSURE WILL BE DETERMINED BY THE CONTRACTOR OPERATIONS. THE CONTRACTOR SHALL PROVIDE A ROAD CLOSURE AND DETOUR PLAN TO RAMSEY COUNTY FOR APPROVAL A MINIMUM OF 14 DAYS IN ADVANCE OF THE PROPOSED CLOSURE.
3. EQUIPMENT AND MATERIAL SHALL BE STAGED WITHIN THE TRAIL RIGHT-OF-WAY AND OUTSIDE OF CITY AND MnDOT RIGHT-OF-WAY.
4. CONTRACTOR TO PROVIDE A DETAILED ROAD CLOSURE AND DETOUR PLAN FOR PLACING BRIDGE SPANS. SIGN TABLES IN THE PLAN SET DOES NOT INCLUDE QUANTITY OR IDENTIFY SIGNS REQUIRED FOR THIS CLOSURE BUT MUST BE INCLUDED IN THE LUMP SUM BID ITEM FOR TRAFFIC CONTROL.
   - 4.1. THE CONTRACTOR WILL BE REQUIRED TO OBTAIN ALL REQUIRED PERMITS (MnDOT, RAMSEY COUNTY, AND CITY OF ST. PAUL).
   - 4.2. DETOUR ROUTE ALONG ARLINGTON AVENUE E, WHEELOCK PARKWAY E, AND WESTMINSTER STREET WILL REQUIRE THE CONTRACTOR TO OBTAIN A PERMIT FROM MnDOT (TYPICALLY TAKES SEVERAL WEEKS FOR REVIEW AND APPROVAL).

TIMING:

1. PROJECT ENGINEER, COUNTY, CITY, RESIDENTS, POLICE DEPARTMENTS, AND FIRE DEPARTMENTS SHALL BE NOTIFIED A MINIMUM OF 14 DAYS PRIOR TO ROAD RESTRICTIONS/CLOSURES BEGINNING. CONTRACTOR WILL NOTIFY RAMSEY COUNTY AND THE PROJECT ENGINEER IN ORDER TO PUBLISH THE REQUIRED NEWS RELEASES.
2. WESTMINSTER STREET WILL BE ALLOWED TO BE CLOSED FOR A MAXIMUM OF 7 HRS FROM 9AM TO 4PM FOR ONE DAY BETWEEN MONDAY AND THURSDAY TO PLACE THE CENTER BRIDGE SPAN. OTHERWISE WESTMINSTER STREET SHALL REMAIN OPEN TO TRAFFIC. ACCESS TO BUSINESSES AND RESIDENCES ON WESTMINSTER STREET AND ADJACENT STREETS SHALL BE MAINTAINED. CONTRACTOR SHALL BE FINED $1000 PER HOUR FOR EACH HOUR THAT THE LANE OR ROAD CLOSURES EXTEND BEYOND THE PREVIOUSLY STATED TIME RESTRICTIONS.
3. CONTRACTOR TO PROVIDE TWO POLICE OFFICERS FOR DAY TIME ROAD CLOSURE OF WESTMINSTER STREET.

SIGNING:

1. ALL TRAFFIC CONTROL DEVICES, INCLUDING OVERHEAD SIGNS ON ROADS OPEN TO TRAFFIC THAT ARE NOT CONSISTENT WITH TRAFFIC OPERATION SHALL BE COVERED, REMOVED OR REVISED AS DIRECTED BY ENGINEER.
2. WHEN SIGNS ARE PLACED, THEY SHALL BE MOUNTED ON POSTS DRIVEN INTO THE GROUND AT THE PROPER HEIGHT AND LATERAL OFFSET AS DETAILED IN THE MNMUTCD. IF THIS IS NOT POSSIBLE, THEY WILL BE MOUNTED ON PORTABLE SUPPORTS. WHEN THE SIGNS ARE REMOVED, THE SIGN POSTS SHALL ALSO BE REMOVED AS SOON AS POSSIBLE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EXTRA SIGNING NEEDED TO FACILITATE TRAFFIC SWITCH OR FOR TRANSITIONING TRAFFIC FROM ONE STATE TO ANOTHER.
4. ALL ORANGE WARNING AND ORANGE GUIDE SIGNS SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MnDOT APPROVED PRODUCT LIST FOR "SHEETING AND RIGID TEMPORARY WORK ZONE SIGNS".
   BARRICADES SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MnDOT APPROVED PRODUCT LIST FOR BARRICADE SHEETING. NOTE THAT ASTM TYPE VII SHEETING IS NOT ALLOWED ON BARRICADES AFTER JANUARY 1, 2010.

N

0 150 300 Feet

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BRIDGE REPLACEMENT & TRAIL REHAB
GATEWAY STATE TRAIL
DNR Parks And Trails Division

Ramsey County St. Paul
Section: 19 Township: 29N Range: 22W

Revisions	
Date	By

Title: TRAFFIC CONTROL PLAN

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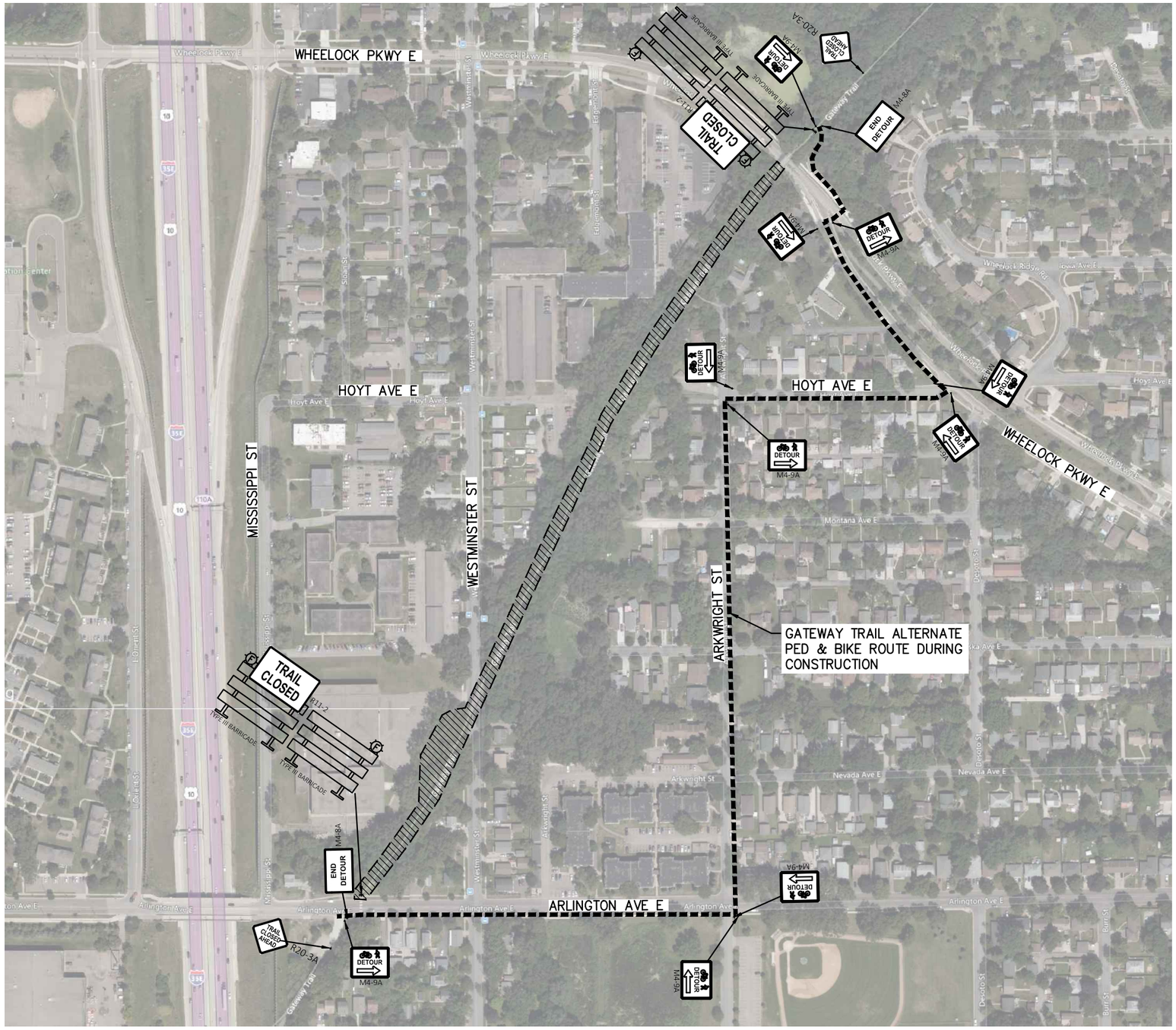

NOTES & GUIDELINES:

1. REFERENCE NOTES ON SHEET C-004.

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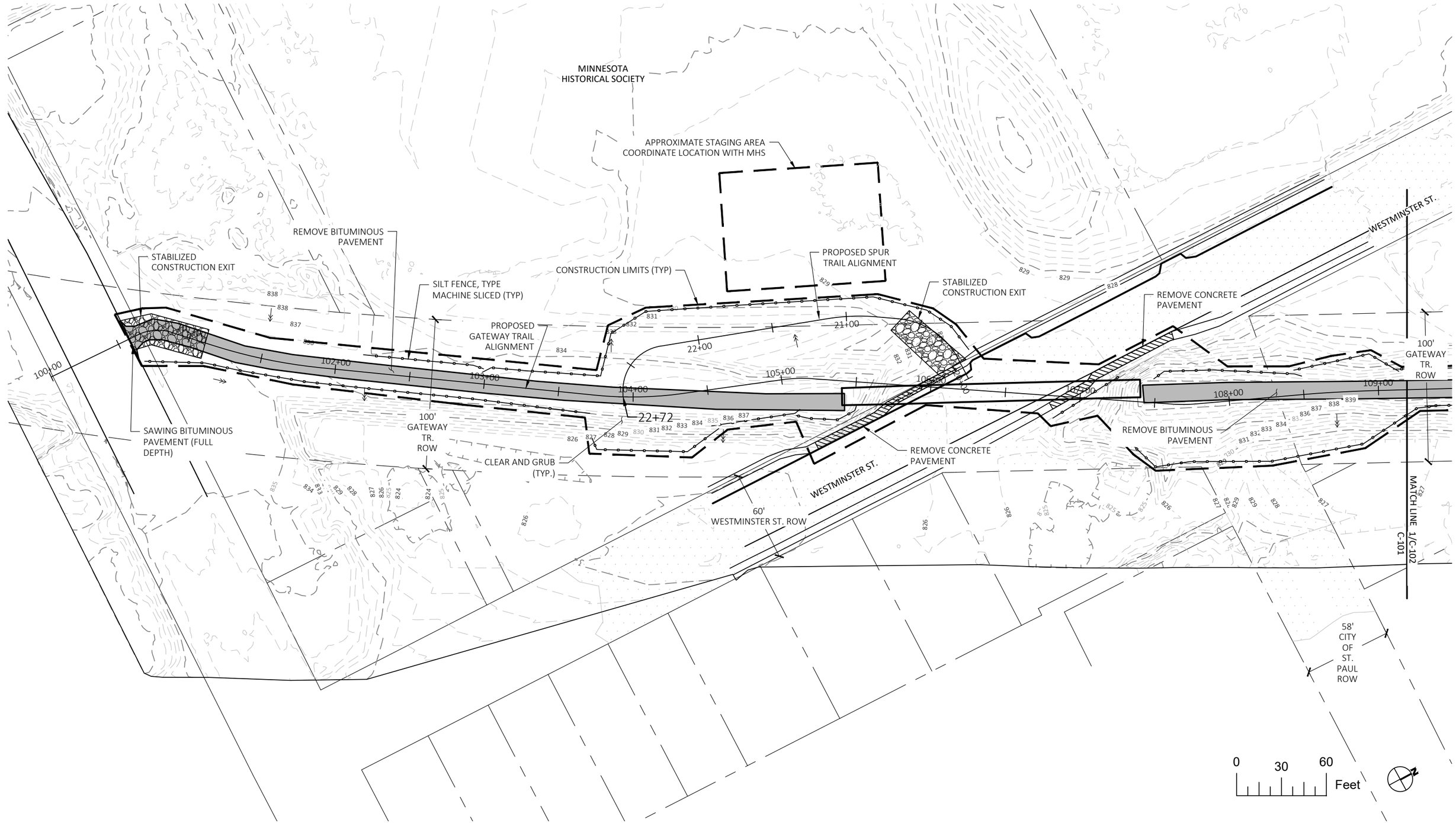

1 REMOVALS & EROSION CONTROL PLAN

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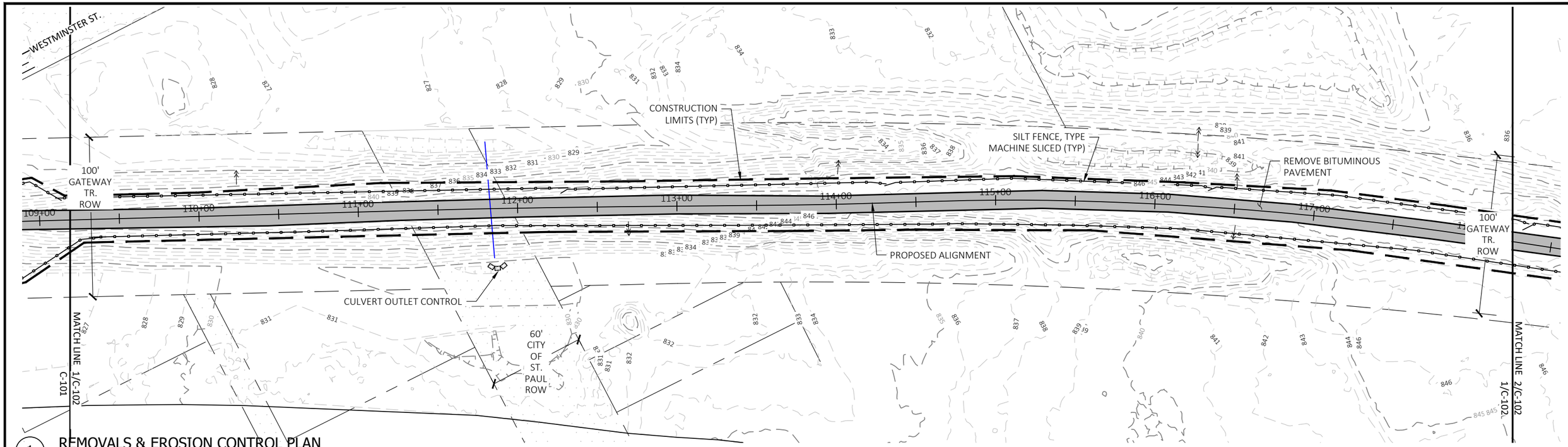
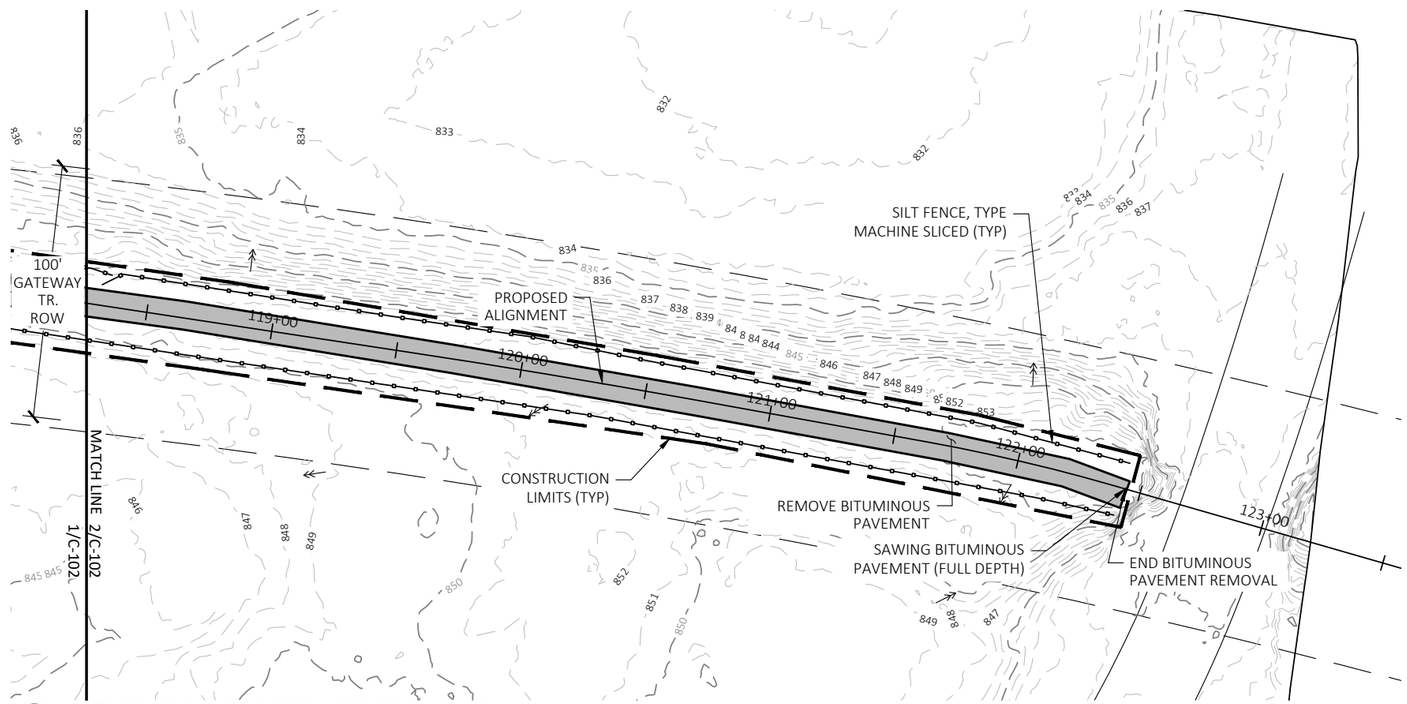


1 REMOVALS & EROSION CONTROL PLAN



2 REMOVALS & EROSION CONTROL PLAN

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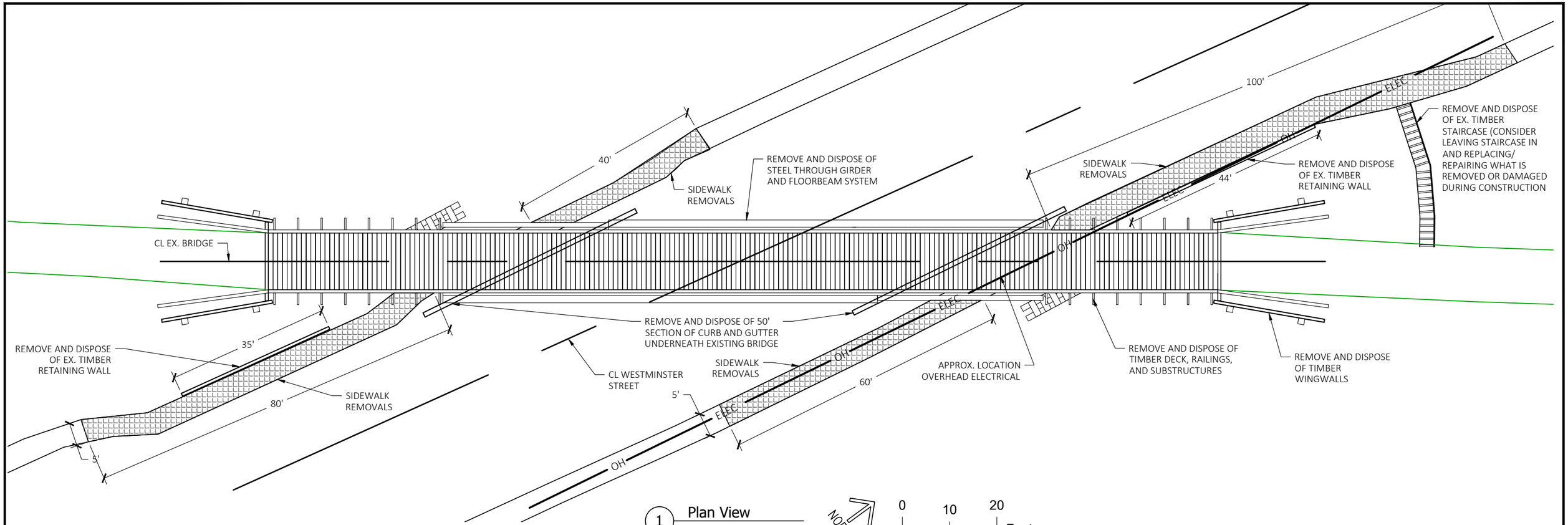

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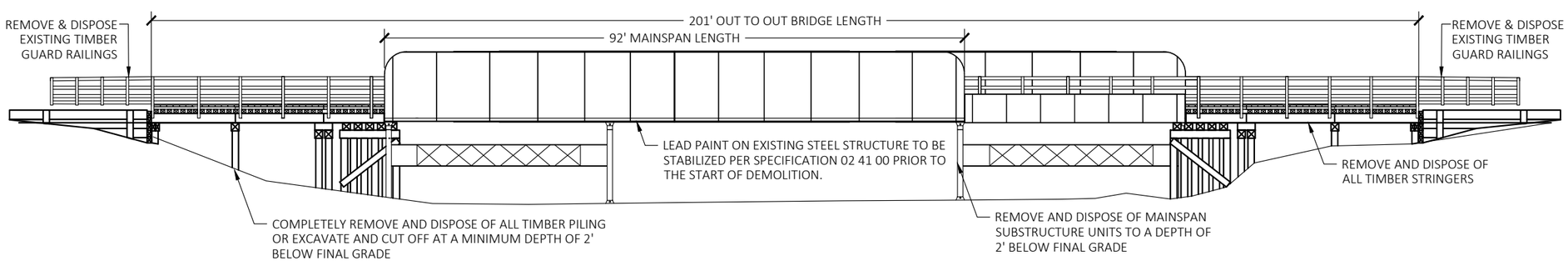

2 Profile View

NOTES:

1. EXISTING BRIDGE STRUCTURE SHALL BE REMOVED IN ITS ENTIRETY INCLUDING THE SUPERSTRUCTURE, SUBSTRUCTURE, DECK, RAILINGS, ETC.
2. CURB, GUTTER, AND SIDEWALK DAMAGE OUTSIDE OF THE PROPOSED REMOVALS SHALL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE DNR.
3. CARE SHALL BE TAKEN TO ENSURE NO DAMAGE IS DONE TO THE ROADWAY AND ANY ADJACENT APPURTENANCES
4. ANY DAMAGE TO THE BITUMINOUS ROADWAY SHALL BE REPAIRED OR REPLACED AT THE DIRECTION OF THE ENGINEER AT NO COST TO THE DNR.
5. REGULATED WASTE DISPOSAL
   - 5.1. ALL TIMBER SHALL BE DISPOSED OF OFF SITE IN ACCORDANCE WITH APPLICABLE LAWS.
   - 5.2. ALL STEEL COMPONENTS ARE ASSUMED TO HAVE LEAD PAINT AND THUS SHALL BE ENCAPSULATED RPIOR TO DISPOSAL AND DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL APPLICABLE LAWS. SEE ASBESTOS AND REGULATED WASTE INSPECTION REPORT FOR MORE INFORMATION.

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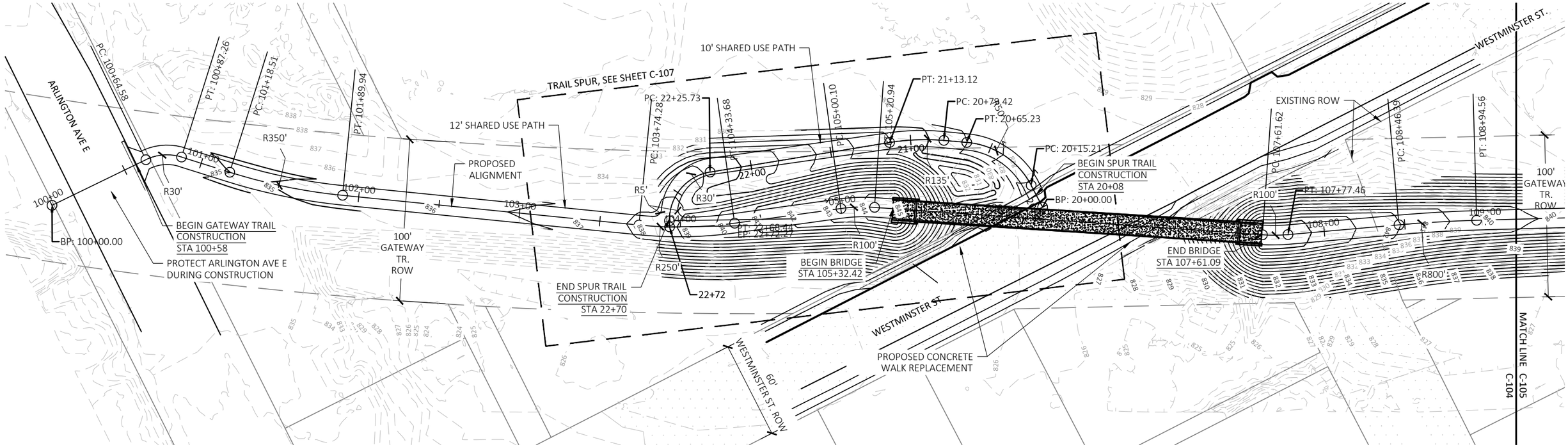

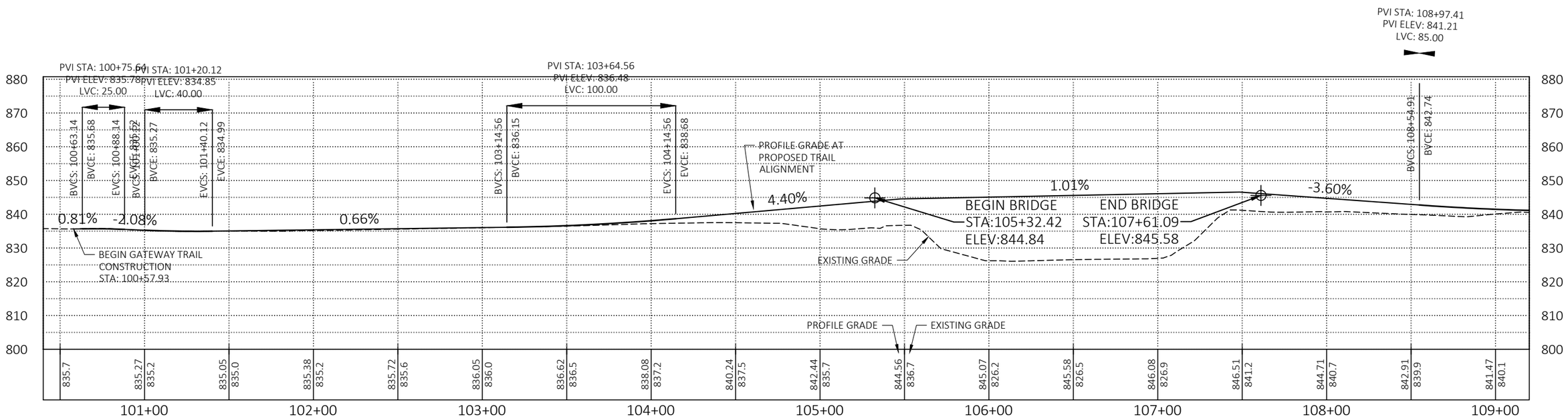

1 PLAN & PROFILE

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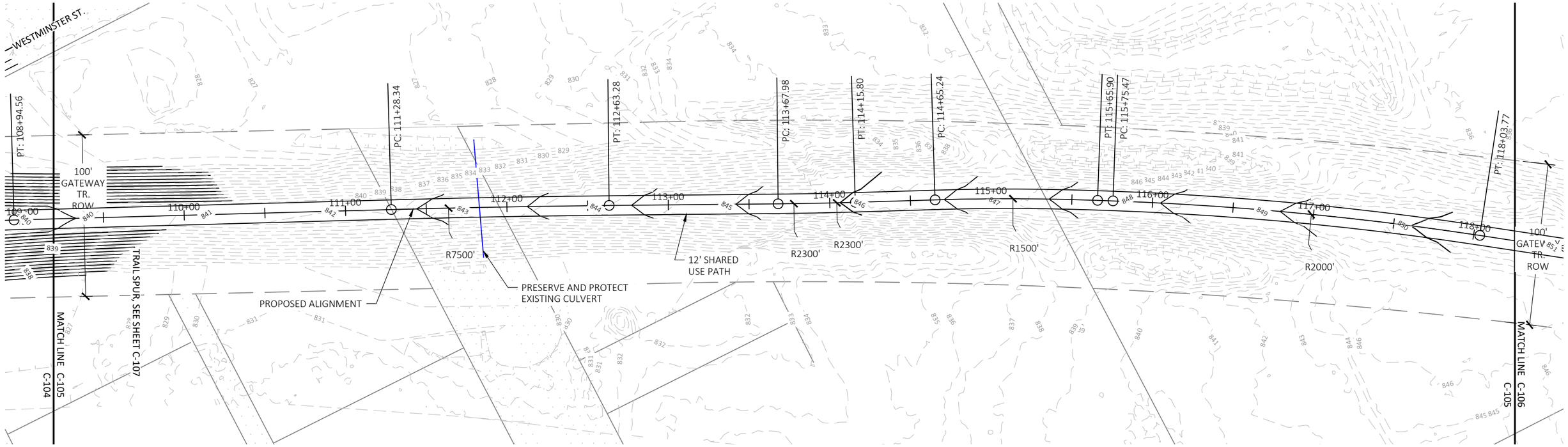

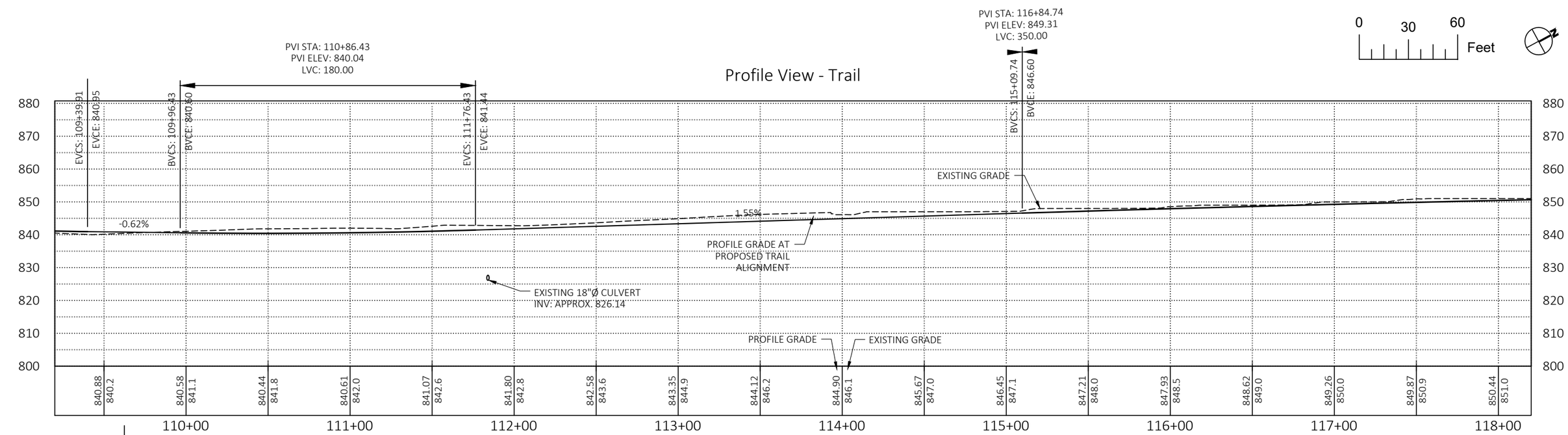

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Title: TRAIL PLAN & PROFILE

Survey:	WL	03/19	Designed:	MH	08/19
Drawn:	WL	03/19	Drawn:	MH	08/19
Checked:	NA	03/19	Checked:	YS	08/19
Horz. datum	NAD 83		Vert. datum:	NAVD 88	

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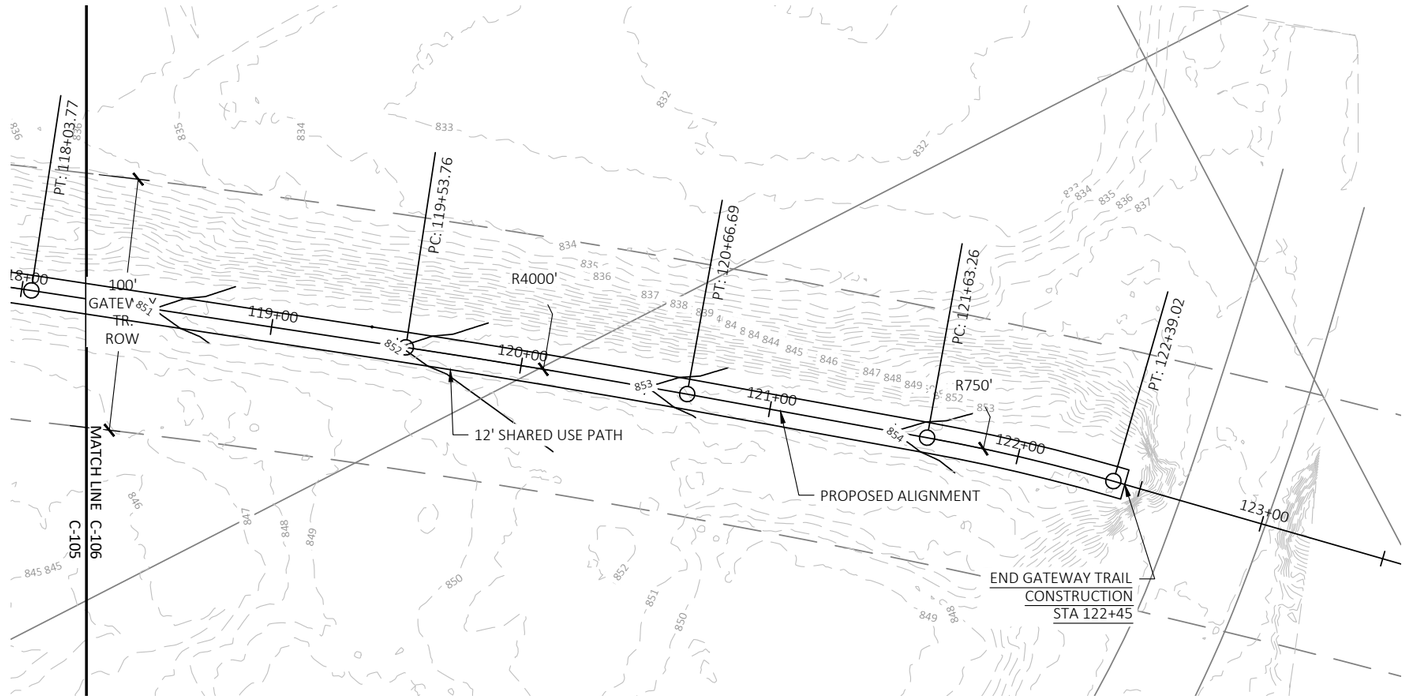

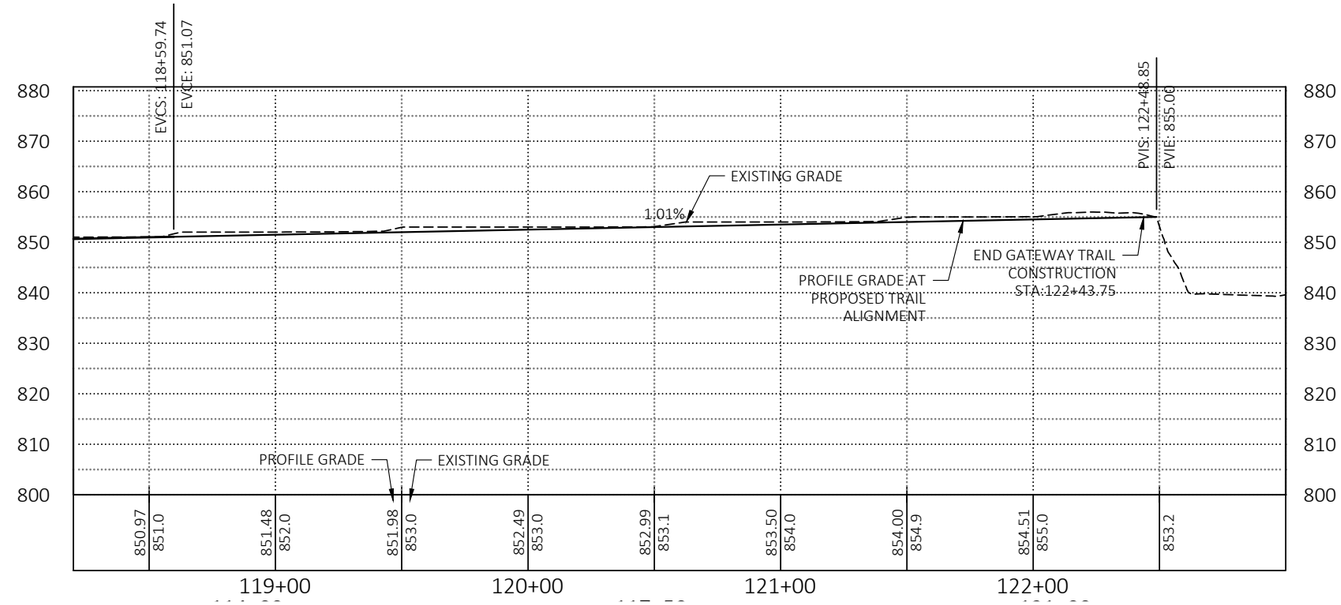

0 30 60 Feet

1 PLAN & PROFILE

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BRIDGE REPLACEMENT & TRAIL REHAB
GATEWAY STATE TRAIL
DNR Parks And Trails Division

Ramsey County St. Paul
Section: 19 Township: 29N Range: 22W

Revisions
Date By

Title: TRAIL PLAN & PROFILE

Survey:	WL	03/19	Designed:	MH	08/19
Drawn:	WL	03/19	Drawn:	MH	08/19
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Horz. datum NAD 83 Vert. datum: NAVD 88

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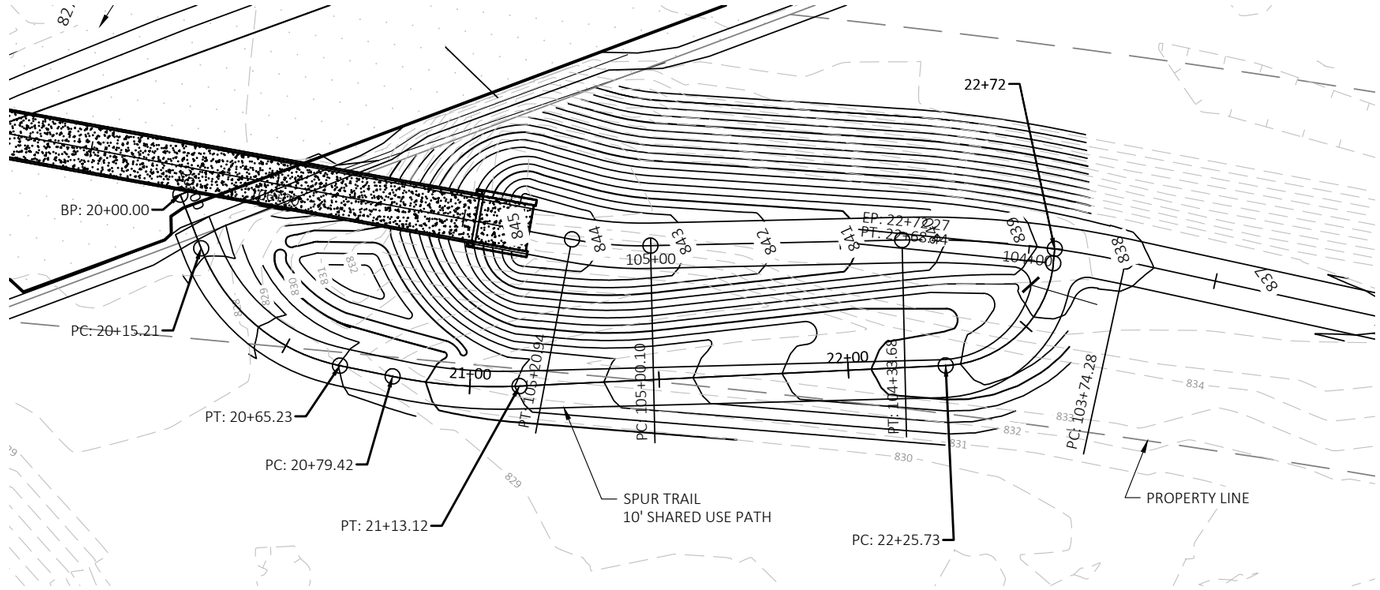

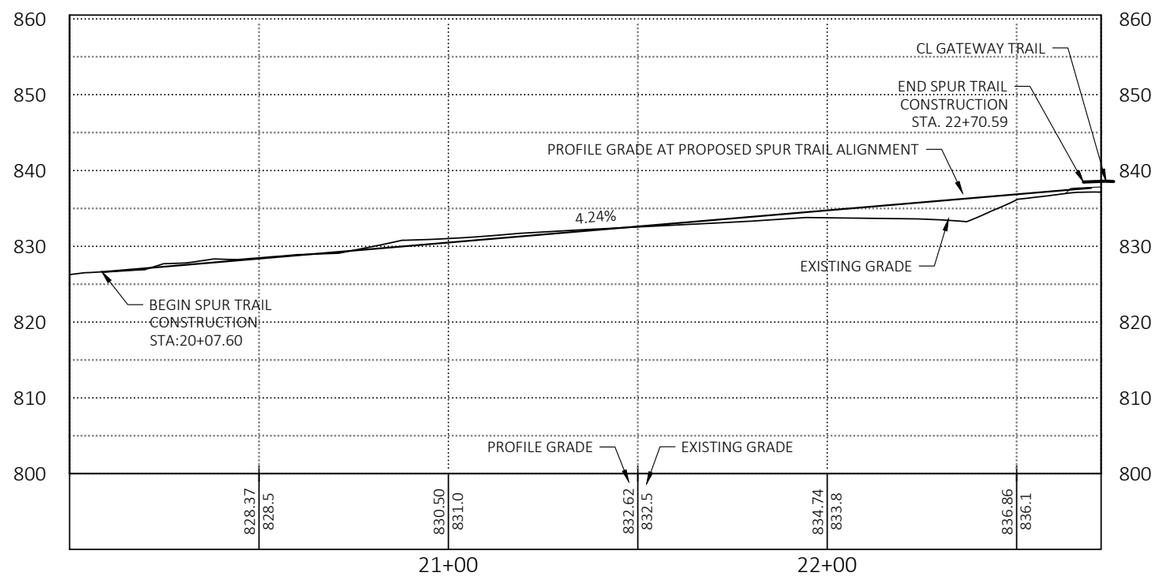

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DNR Parks And Trails Division

Ramsey County St. Paul
Section: 19 Township: 29N Range: 22W

Revisions
Date By

Title: TRAIL PLAN & PROFILE

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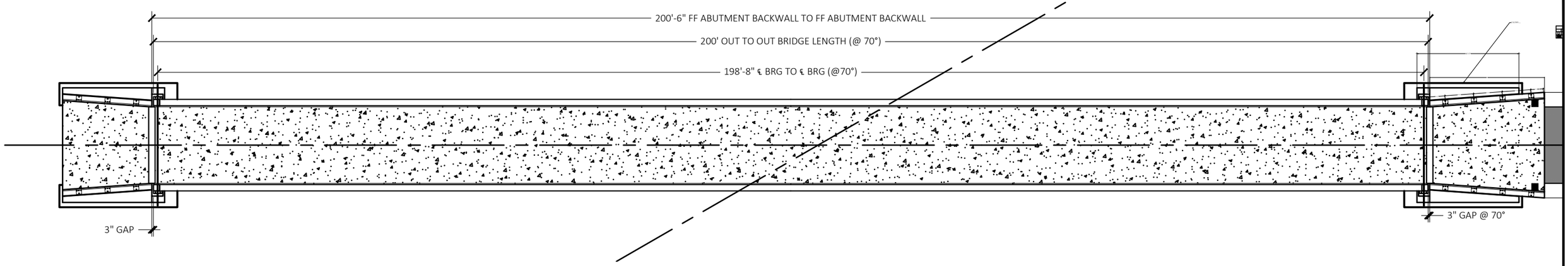

1 Plan View

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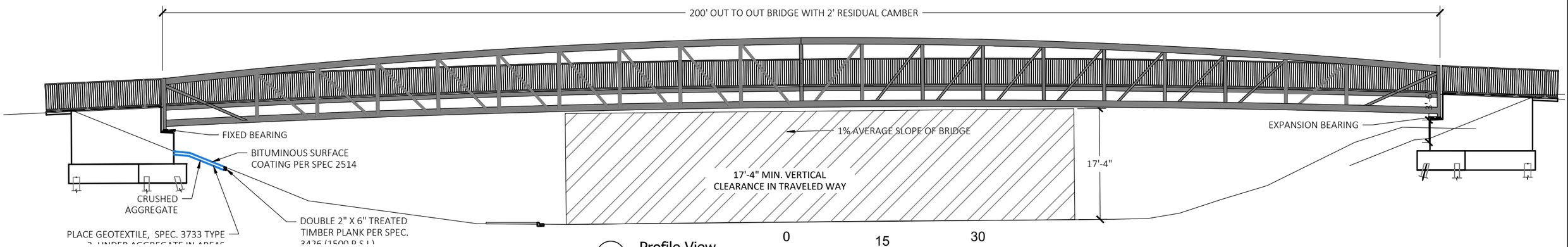

2 Profile View

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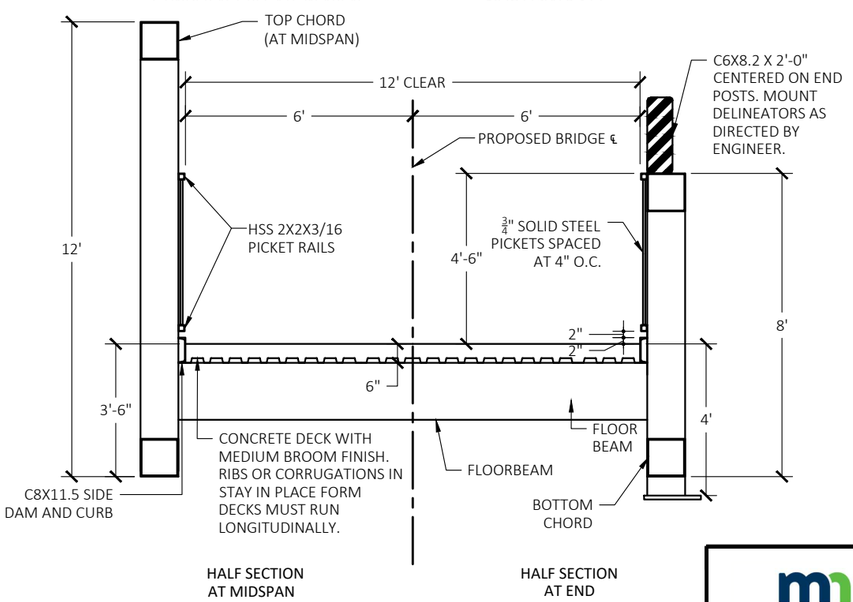
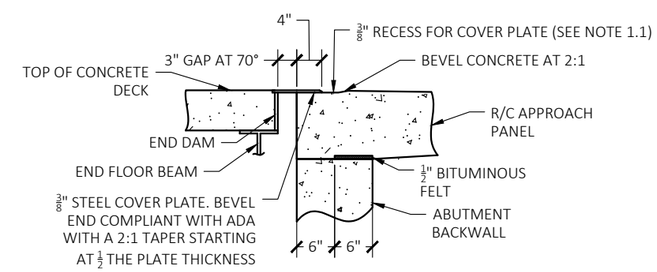


3 Section View

NTS

NOTES:

1. COVER PLATES
   - 1.1. COVER PLATE RECESS SHALL BE 6" ON THE EXPANSION END AND 5" ON THE FIXED END. THIS TRANSLATES TO A 1" GAP BETWEEN THE COVER PLATE AND THE CONCRETE BEVEL ON THE FIXED END AND 2" ON THE EXPANSION END AT 70°.
2. WEEP HOLES
   - 2.1. PROVIDE DRILLED $\frac{7}{16}$"- $\frac{1}{2}$" DIAMETER WEEP HOLES AT THE LOW POINTS OF ALL STEEL TUBING MEMBERS AS ORIENTED IN THE IN-PLACE, COMPLETED STRUCTURE.
   - 2.2. PROVIDE ONE WEEP HOLE AT EACH END IN MEMBERS THAT ARE LEVEL OR FLAT.
   - 2.3. FLAME CUT HOLES ARE PROHIBIITED.
   - 2.4. WEEP HOLES ARE NOT REQUIRED AT FREE DRAINING OPEN ENDED LOCATIONS.
   - 2.5. SHOW WEEP HOLES AND WEEP HOLE LOCATIONS ON THE SHOP DRAWINGS.



4 Cover Plate

NTS

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GATEWAY STATE TRAIL
DNR Parks And Trails Division

Ramsey County St. Paul
Section: 19 Township: 29N Range: 22W

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Date	By

Title: BRIDGE PLAN, PROFILE, & SECTION

Survey:	WL	03/19	Designed:	MH	08/19
Drawn:	WL	03/19	Drawn:	MH	08/19
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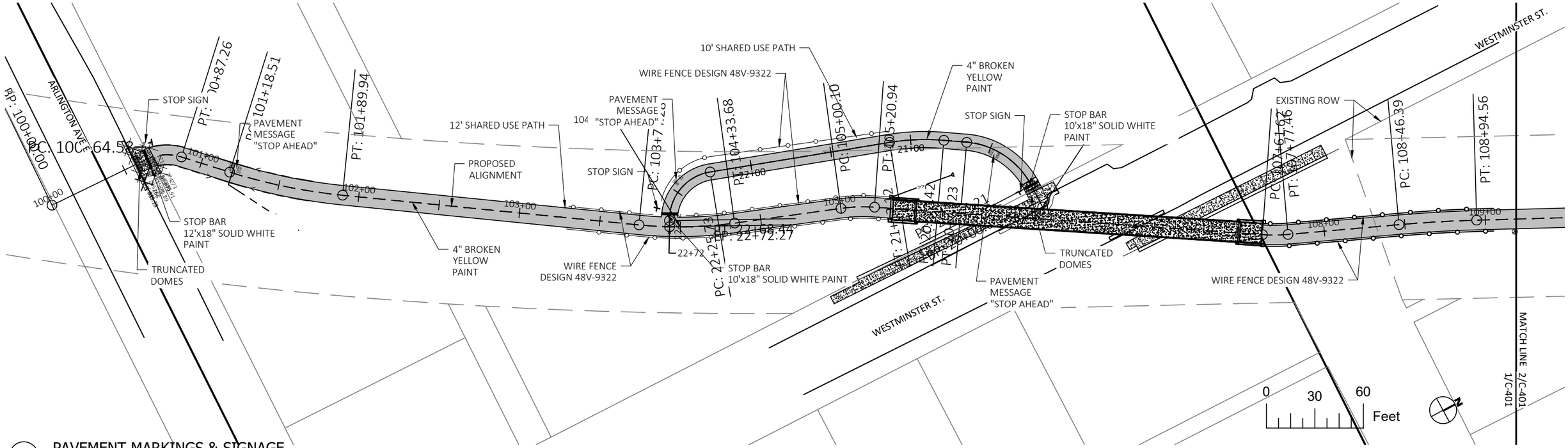
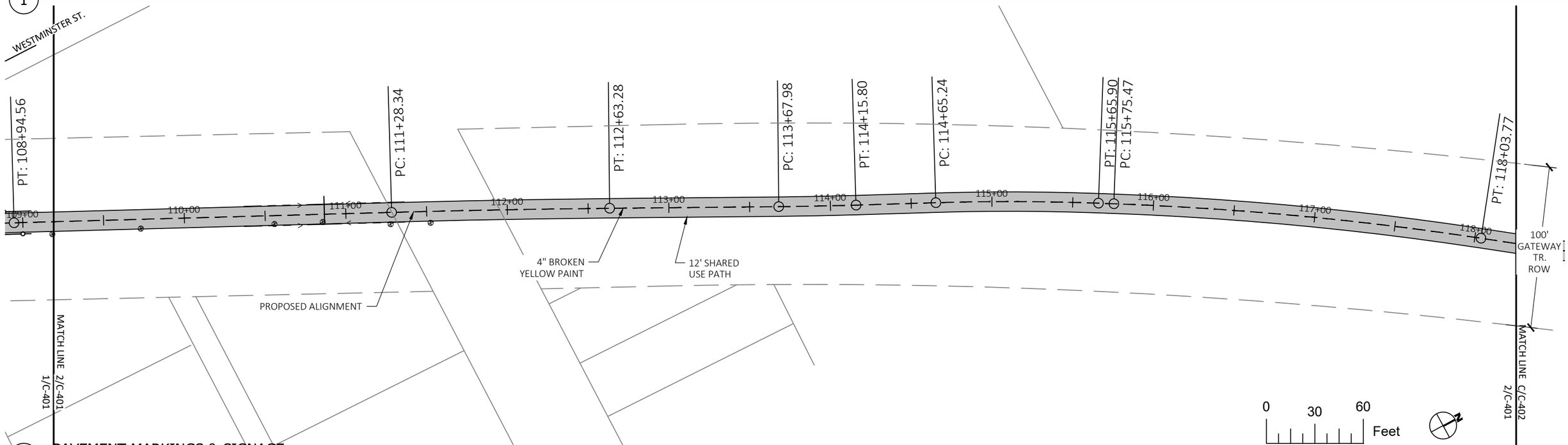


1 PAVEMENT MARKINGS & SIGNAGE



2 PAVEMENT MARKINGS & SIGNAGE

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Date	By

Title: PAVEMENT MARKINGS & SIGNAGE

Survey:	WL	03/19	Designed:	MH	08/19
Drawn:	WL	03/19	Drawn:	MH	08/19
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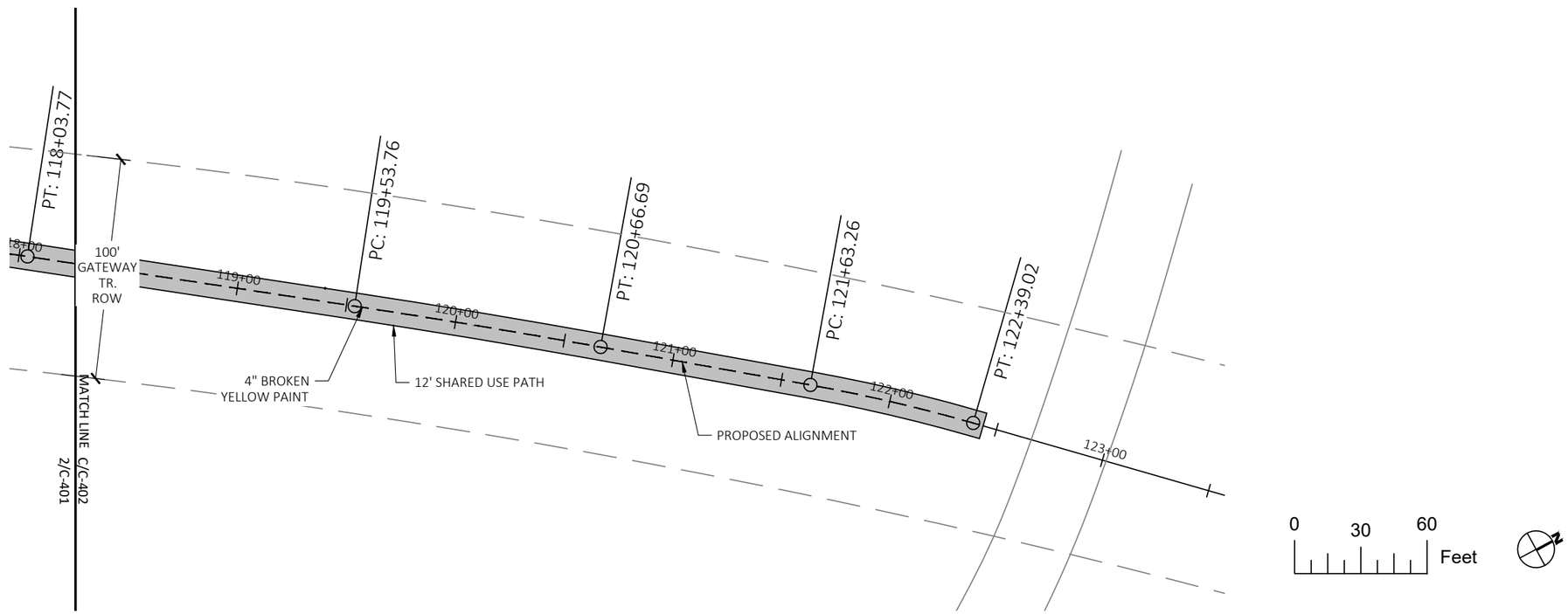

1 PAVEMENT MARKINGS & SIGNAGE

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GATEWAY STATE TRAIL
DNR Parks And Trails Division

Ramsey County St. Paul
Section: 19 Township: 29N Range: 22W

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Date	By

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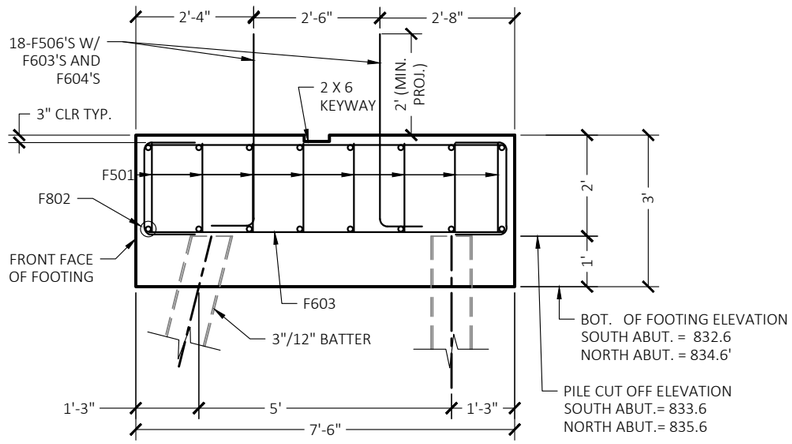

1 Footing - Elev. View

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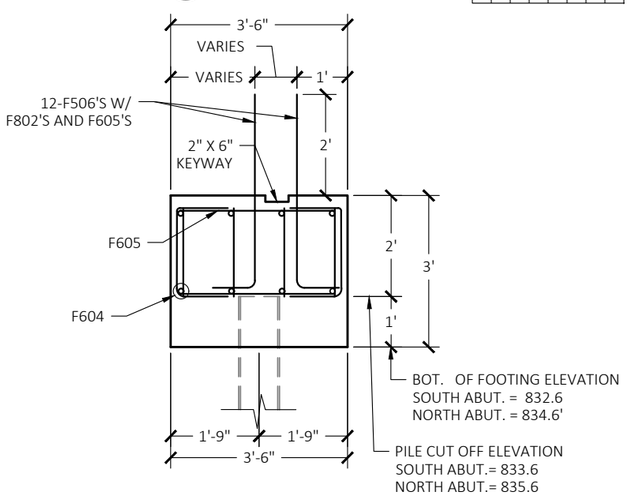

2 Wingwall Footing - Elev. View

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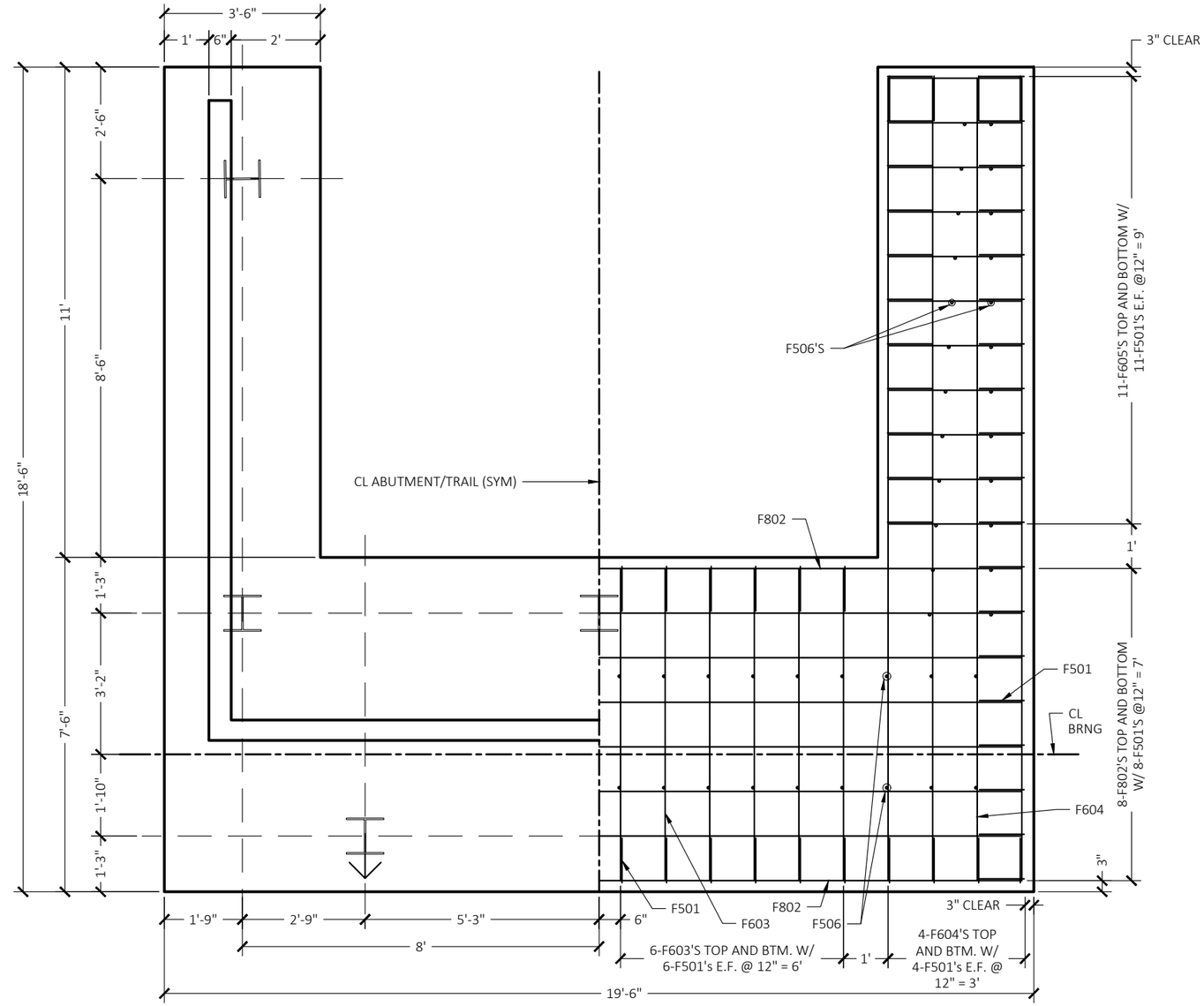

3 Footing - Plan View

0 1.5 3 Feet

NOTES:

1. DRIVEN PILE FOUNDATION
   - 1.1. VIBRATION MITIGATION PLAN
     - 1.1.1. THE CONTRACTOR SHALL NOT PROCEED WITH PILE DRIVING UNTIL A VIBRATION MITIGATION AND CONTROL PLAN HAS BEEN SUBMITTED AND APPROVED BY THE ENGINEER.
   - 1.2. H-PILES:
     - 1.2.1. ALL H-PILE SHALL BE A MINIMUM OF AN HP 10 X 42. (MINIMUM WEIGHT OF 42 LBS/FT, MINIMUM DEPTH OF 9.75", MINIMUM FLANGE WIDTH OF 101/8", MINIMUM THICKNESS OF FLANGES AND WEB OF 0.415", MINIMUM AREA OF 12.4 IN^2, MINIMUM SECTION MODULUS (X-AXIS) OF 43.4 IN^3).
     - 1.2.2. ALL H-PILE SHALL BE FITTED WITH SPECIFIED DRIVING POINTS.
     - 1.2.3. ↑ INDICATES A BATTERED PILE (3"/12" IN DIRECTION SHOWN).
   - 1.3. DESIGN LOADS/ESTIMATED LENGTHS:
     - 1.3.1. TEST PILES SHALL BE DRIVEN TO 115% OF THE LOAD SHOWN IN THE APPROPRIATE TABLE ON THIS PAGE
     - 1.3.2. ALL OTHER PILES SHALL BE DRIVEN TO THE DESIGN LOAD SHOWN IN THE TABLE.
     - 1.3.3. ESTIMATED LENGTH OF PILE FOR THE SOUTH ABUTMENT IS 50'/EACH PILE.
     - 1.3.4. ESTIMATED LENGTH OF PILE FOR THE NORTH ABUTMENT IS 50'/EACH PILE.
2. NOTATION
   - 2.1. SYM. = SYMMETRICAL
   - 2.2. TYP. = TYPICAL
   - 2.3. E.F. = EACH FACE
   - 2.4. B.F. = BACK FACE
   - 2.5. F.F. = FRONT FACE

REQUIRED NOMINAL PILE BEARING RESISTANCE R_n - TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MNDOT PILE FORMULA 2012 (MPF12) $R_n = 20\ x \sqrt{\frac{WxH}{1000}}\ x\ LOG\left(\frac{10}{S}\right)$	0.6	142
PDA	0.65	131

* R_n = (FACTORED DESIGN LOAD)/ ϕ_{dyn}

COMPUTED PILE LOAD - TONS/PILE

*FACTORED DESIGN LOAD	85

*BASED ON STRENGTH I LOAD COMBINATION

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Title: PILE FOUNDATION & FOOTING DETAILS

Survey:	WL	03/19	Designed:	MH	08/19
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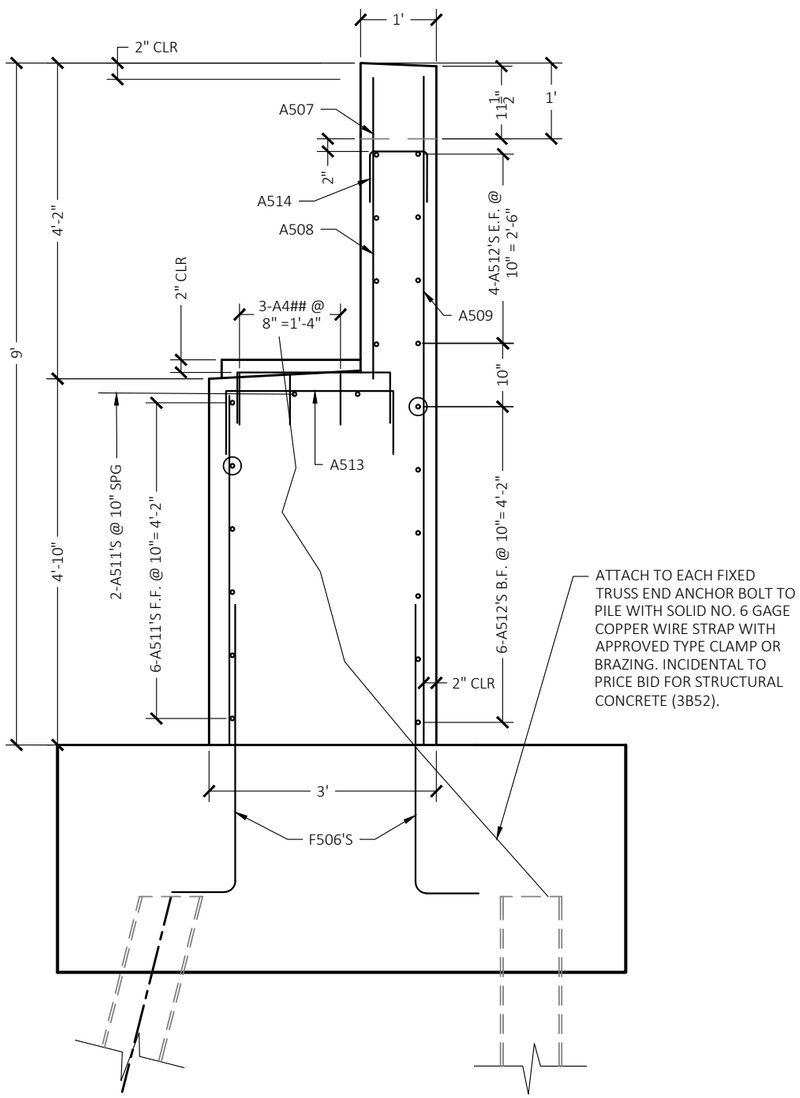
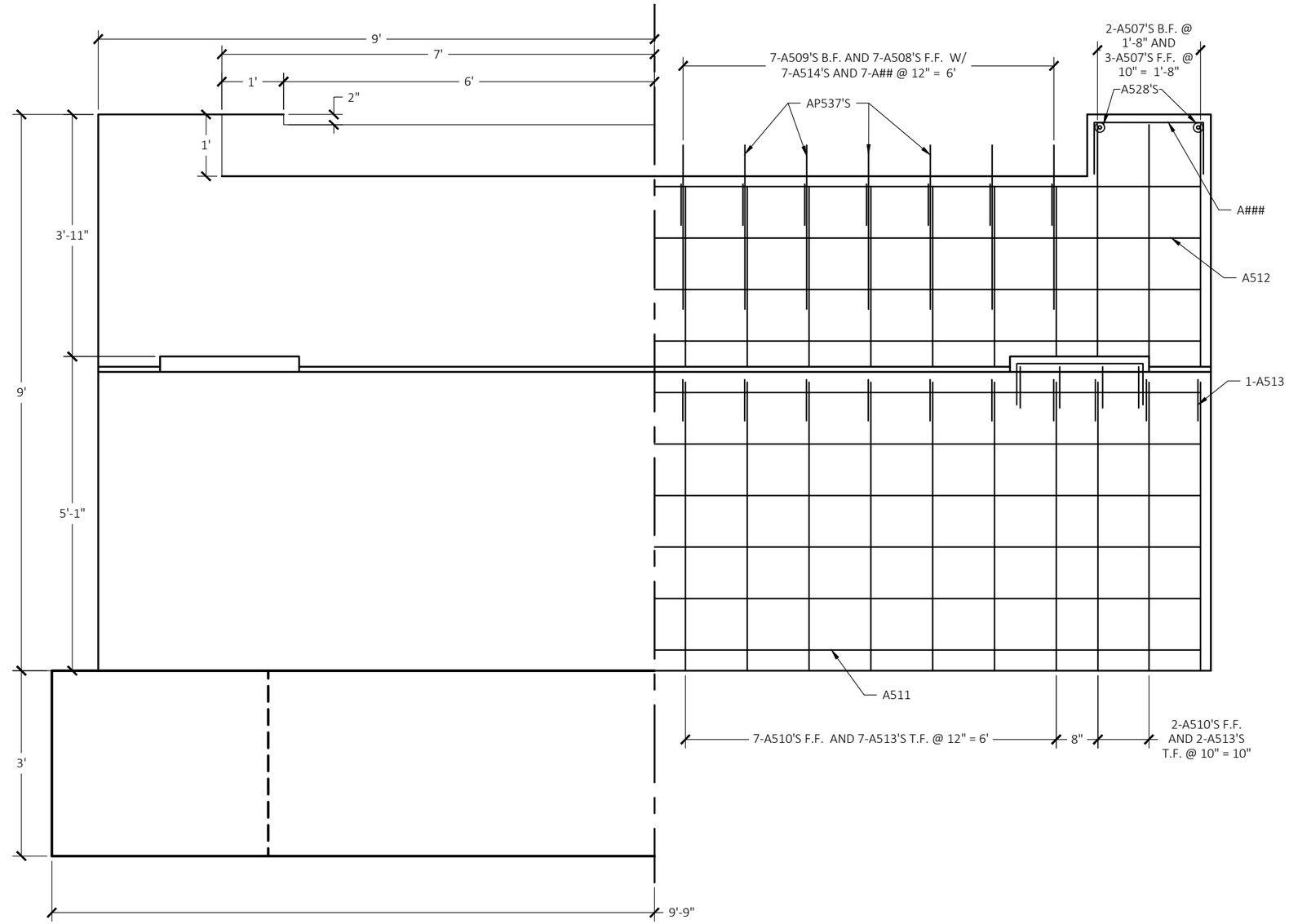


1 Abut. - Section View

0 1 2 Feet



5 Abutment- Elev. View

0 1 2 Feet

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Title: ABUTMENT DETAILS

Survey:	WL	03/19	Designed:	MH	08/19
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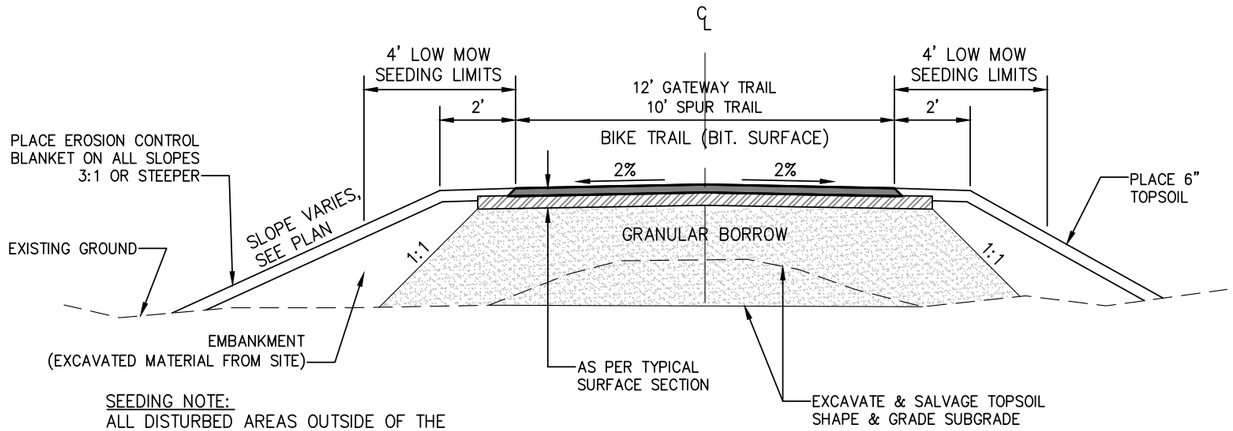
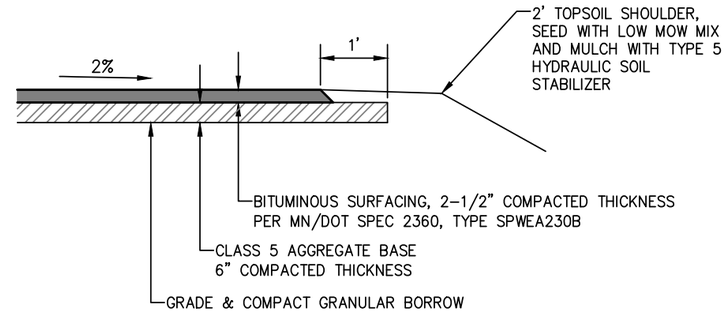


SEEDING NOTE:
ALL DISTURBED AREAS OUTSIDE OF THE LOW MOW SEEDING LIMITS SHALL BE SEEDED WITH NATIVE MIX 35-641 MESIC PRAIRIE SOUTHEAST AND MULCHED WITH TYPE 5 HYDRAULIC SOIL STABILIZER.

TRAIL & SPUR TRAIL TYPICAL

N.T.S.
APPLIES: STA. 100+58 TO 105+33
STA. 20+08 TO 22+70

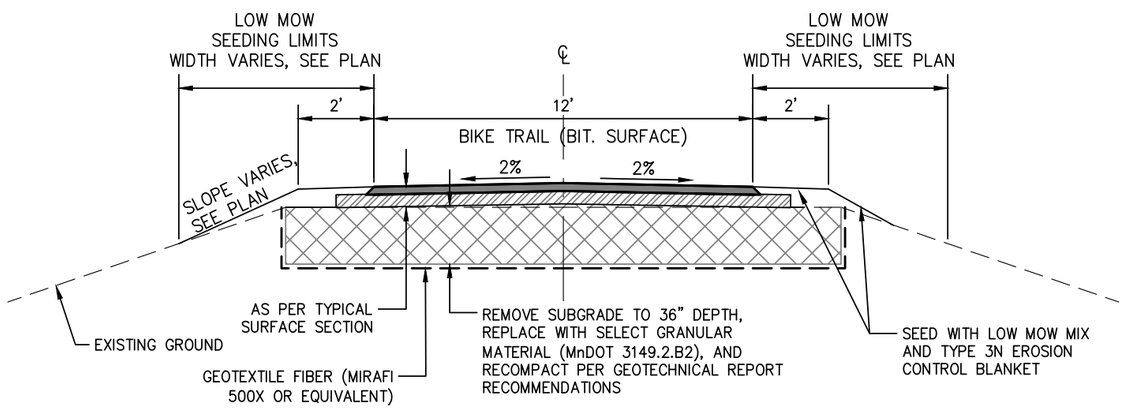


TYPICAL SURFACE SECTION

N.T.S.

PERFORATED PIPE DRAIN TABULATION			
BEGIN STA	END STA	LENGTH (FT)	NO. HEADWALLS
100+70	101+70	200	1
110+36	111+36	200	1
	TOTAL	400	2

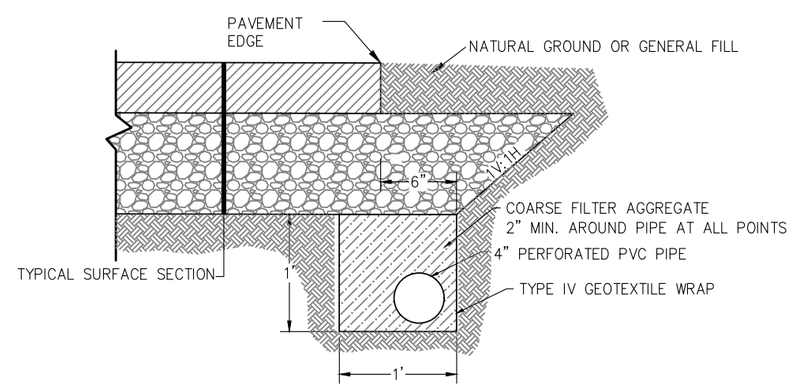
PERFORATED PIPE DRAIN NOTES
1. DAYLIGHT SUBDRAIN AT SIDES OF EMBANKMENT VIA PRECAST HEADWALLS (MnDOT STD PLATE 3131C) AT PROFILE SAGS.
2. PERF PIPE TO BE ADDED IN LOCATIONS IN ADDITION TO SAGS AS DIRECTED BY THE GEOTECHNICAL ENGINEER.



SUBGRADE REPLACEMENT TRAIL TYPICAL

N.T.S.
APPLIES: STA. 107+60 TO 122+45

SUBGRADE REPLACEMENT NOTES
1. IF AREAS OF UNSUITABLE SOILS ARE OBSERVED, THE SUBGRADE EXCAVATION WILL NEED TO BE CARRIED DEEPER. GEOTECHNICAL ENGINEER TO VERIFY SUBGRADE EXCAVATION AND REPLACEMENT DEPTHS ON-SITE.



PAVEMENT EDGE DRAIN DETAIL

N.T.S.

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Revisions
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Title: CIVIL DETAILS

Survey:	WL	03/19	Designed:	MH	08/19
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