
BANDEMER
PARK


BARTON NATURE AREA


BARTON NATURE AREA


Railroad on top, behind mandatory fence.
Block wall informal seating area
Note uplighting in tunnel.
BANDEMER PARK
Split stone facade
Metal panel concept for artwork (both sides)
"Picture Frame" concrete finishing
New trail. View from Barton Nature Area side, facing Bandemer Park

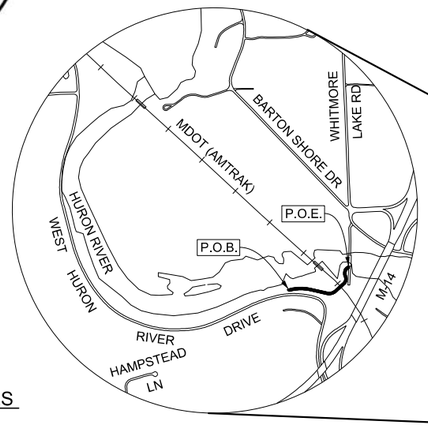

Existing B2B Trail and park road in Bandemer Park
Block wall informal seating area
Existing railroad and railroad bridge
Tunnel (facade will be stone texture per other image)
Huron River
New trail. This view is from the Bandemer Park Side looking towards Huron River Drive
BARTON NATURE AREA

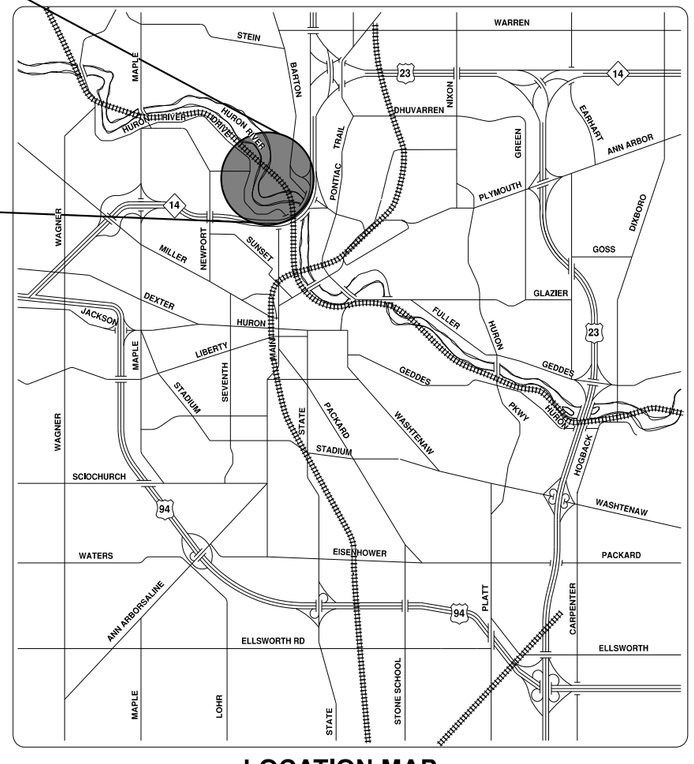

BARTON NATURE AREA
Metal panels for artwork

BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT
CITY OF ANN ARBOR PARKS AND RECREATION SERVICES &
WASHTENAW COUNTY PARKS AND RECREATION COMMISSION

CITY RFP# 24-23

This is a partial plan set including relevant pages from the engineering and contrsuction documentation for the tunnel project. It is provided as a reference only and is subject to changes as required during construction and fabrication. Notes in red are intended to call attention to specific elements but more detail is available by reading the plan notes and labels from the engineer.





N

LOCATION MAP
N.T.S.

GENERAL NOTES

ANDREW W. SCHRIPSEMA (PS NO. 4001055483) IS THE MICHIGAN LICENSED SURVEYOR ON THIS PROJECT. SURVEY WAS COMPLETED JANUARY 8-17, 2019 AND SUPPLEMENTAL SURVEY WAS CONDUCTED MAY 10, 2022, JUNE 2-3, 2022, AND JANUARY 23-24, 2023.

THE RECONSTRUCTION DESIGN 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 APPLICATION OF THIS 1.2 FACTOR. THE RESULTING LOAD IS DESIGNATED HL-93 MOD. LIVE LOAD PLUS DYNAMIC LOAD ALLOWANCE DEFLECTION DOES NOT EXCEED 1/800 OF SPAN LENGTH. THE ORIGINAL STRUCTURE DESIGN LOADING IS HS-20.

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS, OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, PERFORM ALL WORK ACCORDING TO THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION 2020 EDITION, THE CURRENT AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION SPECIFICATIONS, THE 2015 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR RAILROAD WORK, AMTRAK MW1000 STANDARDS, AASHTO'S 2011 A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, THE 2011 MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND AASHTO'S 2012 GUIDE TO THE DEVELOPMENT OF BICYCLE FACILITIES.

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

CONCRETE: GRADE 3500HP	f'c = 3,000 psi
CONCRETE: GRADE 4500HP	f'c = 4,000 psi
STEEL REINFORCEMENT:	
GRADE 60	fy = 60,000 psi

UNLESS OTHERWISE SHOWN ON THE PLANS PROVIDE MINIMUM CONCRETE CLEAR COVER FOR REINFORCEMENT ACCORDING TO THE FOLLOWING:

CONCRETE CAST AGAINST EARTH:	3 IN.
ALL OTHER UNLESS SHOWN ON PLANS:	2 IN.

BEVEL ALL EXPOSED CONCRETE CORNERS SHOWN SQUARE ON THE PLANS WITH ½" TRIANGULAR MOLDINGS EXCEPT AS OTHERWISE NOTED.

THIS PROJECT HAS BEEN EVALUATED USING THE FAA NOTICE CRITERIA TOOL FOR THE FOLLOWING STRUCTURE HEIGHTS ABOVE GROUND LEVEL ELEVATIONS AND NO PERMITS ARE REQUIRED.

THE LOCATION OF ALL PUBLIC UTILITIES SHOWN ON THESE PLANS IS TAKEN FROM THE BEST AVAILABLE DATA. THE CITY OF ANN ARBOR, AND WASHTENAW COUNTY PARKS AND RECREATION COMMISSION WILL NOT BE RESPONSIBLE FOR ANY OMISSION OR VARIATION FROM THE LOCATIONS SHOWN. PURSUANT TO ACTS 173 & 174 OF THE P.A. OF 2013, AS A CONDITION OF THIS CONTRACT, NOTICE SHALL BE GIVEN TO MISS DIG PRIOR TO UNDERGROUND WORK TO BE PERFORMED IN ACCORDANCE WITH THIS CONTRACT, PHONE (800) 482-7171 OR 811. UTILITY SERVICE CONNECTIONS ARE NOT SHOWN ON THE PLANS AND ARE NOT THE RESPONSIBILITY OF THE OWNER.

THE ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON NAVD 1988 VERTICAL DATUM.

APPLICATION DATE	PERMITS	APPROVAL DATE
04/05/2024	EGLE JOINT PERMIT	
BY CONTRACTOR	CITY OF ANN ARBOR SESC PERMIT	
BY CONTRACTOR	CITY OF ANN ARBOR ROW PERMIT	
BY CONTRACTOR	AMTRAK PERMIT TO ENTER (PTE)	

CONTRACT FOR:
PEDESTRIAN TUNNEL UNDER THE MDOT RAILROAD RIGHT-OF-WAY.

Colliers Engineering & Design
7050 W. SAGINAW HWY, SUITE 200
LANSING, MI 48917
P (517) 272-9835
F (517) 272-9836

PREPARED UNDER THE SUPERVISION OF:

STATE OF MICHIGAN · JEREMY A. HEDDEN · ENGINEER · No. 50409 · LICENSED PROFESSIONAL ENGINEER

50409
Registration No.

JEREMY A. HEDDEN, P.E.

APRIL 12, 2024
Date

OHM
34000 PLYMOUTH ROAD
LIVONIA, MI 48150
P (734) 522-6711
F (734) 522-6427

PREPARED UNDER THE SUPERVISION OF:

STATE OF MICHIGAN · CHRISTOPHER JAY ELENBAAS · ENGINEER · No. 6201056730 · LICENSED PROFESSIONAL ENGINEER

6201056730
Registration No.

CHRISTOPHER J. ELENBAAS, P.E.

APRIL 12, 2024
Date

CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734-794-6410
www.a2gov.org

REVISIONS

PROJECT NO.	SHEET NO.
1022-18-0011	1 OF 80

O:\WCPRC\015514.00 WCPRC - Bandemer Barton Trail Design\4.0 Dwgs\4.3 Bridge\xxxx_title_001.dgn

WATER & SEWER UTILITY SYMBOLS

EXISTING

- ST — STORM MANHOLE
- SQUARE CATCH BASIN
- ROUND CATCH BASIN
- CULVERT
- CULVERT W/O END SECTION
- CULVERT W/END SECTION
- S — SANITARY MANHOLE
- CO — CLEAN OUT
- GW — GATE VALVE & WELL
- GATE VALVE & BOX
- W — WATER STOP BOX
- FIRE HYDRANT
- MP — METER PIT
- WATER METER
- SH — SPRINKLER HEAD
- IRRIGATION VALVE

PROPOSED

- STORM MANHOLE
- INLET/CATCH BASIN
- CULVERT END SECTION
- SANITARY MANHOLE
- GV&W — GATE VALVE & WELL
- GV&B — GATE VALVE & BOX
- TSV&W — TAPPING SLEEVE VALVE & WELL
- TSV&B — TAPPING SLEEVE VALVE & BOX
- FIRE HYDRANT

REAL ESTATE SYMBOLS

- CONTIGUOUS PROPERTY SYMBOL
- XXXX — PARCEL NUMBER BOX
- XXXX — NO ROW IMPACTS

MISCELLANEOUS UTILITY SYMBOLS

EXISTING

- GUY WIRE
- GP — GUY POLE
- U — UTILITY POLE
- U — UTILITY POLE W/LIGHT
- LIGHT/DECOR LAMP POLE
- FLOOD LIGHT
- GAS VALVE
- G — GAS VENT
- G — GAS METER
- G — GAS RISER
- TRAFFIC SIGNAL
- P — PEDESTRIAN RISER
- E — TRANSFORMER PAD
- U — PRIVATE UTILITY MANHOLE
- R X R — RAILROAD CROSSING
- E — ELECTRIC METER
- PB — PHONE BOOTH
- TS — TRAFFIC SIGNAL CONTROLLER
- HAND HOLE
- E — ELECTRIC RISER
- T — TELEPHONE RISER
- C — CABLE TV RISER
- W — MONITORING WELL
- UNDERGROUND MARKER

MISCELLANEOUS SYMBOLS

EXISTING

- RIPRAP
- SIGN
- FLOW DIRECTION
- STUMP
- WETLAND
- CONIFEROUS TREE — CL 1 1" TO 5", CL 2 6" TO 17", CL 3 18" TO 35", CL 4 36" AND UP
- DECIDUOUS TREE — CL 1 1" TO 5", CL 2 6" TO 17", CL 3 18" TO 35", CL 4 36" AND UP
- CONIFEROUS SHRUB
- DECIDUOUS SHRUB
- SB# — SOIL BORING
- SECTION CORNER
- MON — MONUMENT
- IRON ROD/PIPE
- PK — PK NAIL
- BM# — BENCHMARK
- TP# — TRAVERSE POINT
- MAIL/NEWSPAPER BOX
- FP — FLAG POLE
- POST
- HAZARDOUS OR FLAMMABLE MATERIAL — USED WITH UNDERGROUND GAS & ELECTRICAL LINES
- CAUTION – CRITICAL UNDERGROUND UTILITY — USED WITH TELEPHONE & FIBER OPTIC LINES

PROPOSED

- RIPRAP
- SIGN
- FLOW DIRECTION
- XX XX XXX — STRUCTURE NUMBER WM SAN STM
- ADA SIDEWALK RAMP
- GRAVEL

UTILITY PATTERN

EXISTING

- ELEC — ELECTRICAL *
- 6" (COMPANY) GAS — GAS\OIL
- (COMPANY) CABLE/TEL — CABLE/TELEPHONE *
- FIBER OPTIC — FIBER OPTIC *
- 12" WM — WATER
- 12" SAN — SANITARY
- 12" STM — STORM

PROPOSED

- 12" — STORM/SANITARY/WATER
- 12" — PRIMARY UTILITY WILL HAVE A CONTINUOUS LINESTYLE, WITH THE SECONDARY UTILITY MATCHING ITS RESPECTIVE EXISTING UTILITY LINESTYLE

*OH = OVERHEAD , UG = UNDERGROUND

ROW PATTERN

EXISTING

- ROW — ROW
- SECTION
- PROPERTY/PARCEL

PROPOSED

- ROW — ROW

TOPO PATTERN

EXISTING

- HEDGE/TREE
- FENCE
- GUARDRAIL
- CENTERLINE OF DITCH
- RAILROAD
- WETLAND/EDGE OF WATER
- 100 YEAR FLOODPLAIN

PROPOSED

- GRADING LIMIT (SLOPE STAKE)
- CENTERLINE OF DITCH
- TREE LINE
- FENCE
- EROSION CONTROL, SILT FENCE
- EROSION CONTROL, WATTLES

REMOVAL LEGEND

- SIDEWALK REMOVAL
- HMA SURFACE REMOVAL
- PAVEMENT REMOVAL
- COLD MILLING HMA SURFACE
- HMA BASE CRUSHING AND SHAPING
- EXCAVATION, EARTH, MODIFIED
- REMOVE GRAVEL & PLANT SEED
- CURB AND GUTTER, REM
- TREE, REM
- S-XXXXXX — SALVAGE
- B-XXXXXX — BULKHEAD
- A-XXXXXX — ABANDON
- R-XXXXXX — REMOVE
- ADJ-XXXXXX — ADJUST
- REL-XXXXXX — RELOCATE
- REC-XXXXXX — RECONSTRUCT
- R B/O-XXXXXX — REMOVE BY OTHERS
- ADJ B/O-XXXXXX — ADJUST BY OTHERS
- REL B/O-XXXXXX — RELOCATE BY OTHERS

IF NECESSARY FOR CLARITY

- (S) — SALVAGE
- (B) — BULKHEAD
- (A) — ABANDON
- (C) — CLEARING
- (R) — REMOVE
- (REL) — RELOCATE
- (REC) — RECONSTRUCT
- (REL B/O) — RELOCATE BY OTHERS
- (ADJ B/O) — ADJUST BY OTHERS

SPECIAL LEGEND

- Riprap, Cobblestone
- Infiltration Trench, Det A

OHM
ARCHITECTS ENGINEERS PLANNERS
34000 Plymouth Road
Livonia, MI 48150
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OHM-ADVISORS.COM

REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE		HORIZ DATUM	VERT DATUM
6/30/2022	1022-184011	MB	CE	JK	WASHTENAW	CITY OF ANN ARBOR	H:	N/A	NAD83	NAVD88
							V:	N/A		

CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

LEGEND SHEET

Sheet Title & Details

SHEET 5 of 80

DRAWING PATH: P:\1000_1999\1022\180010_Bandemer-Barton_Trail\Drawings\Civil\Misc\180010LEG.dwg Apr 12, 2024 - 9:20am

TIMBER BRIDGE COORDINATES

REF PT	NORTH	EAST	ELEV
A	292997.47	13290745.39	783.08
B	292992.93	13290763.84	782.57

COORDINATES PROVIDED ARE TO ESTABLISH THE GEOGRAPHIC LOCATION OF THE STRUCTURE, HOWEVER SHALL NOT TAKE PRECEDENCE OVER STRUCTURAL DIMENSIONS.

PED CULVERT COORDINATES

REF PT	NORTH	EAST	ELEV
A	293006.02	13290998.37	774.16
B	293045.46	13291043.59	774.16

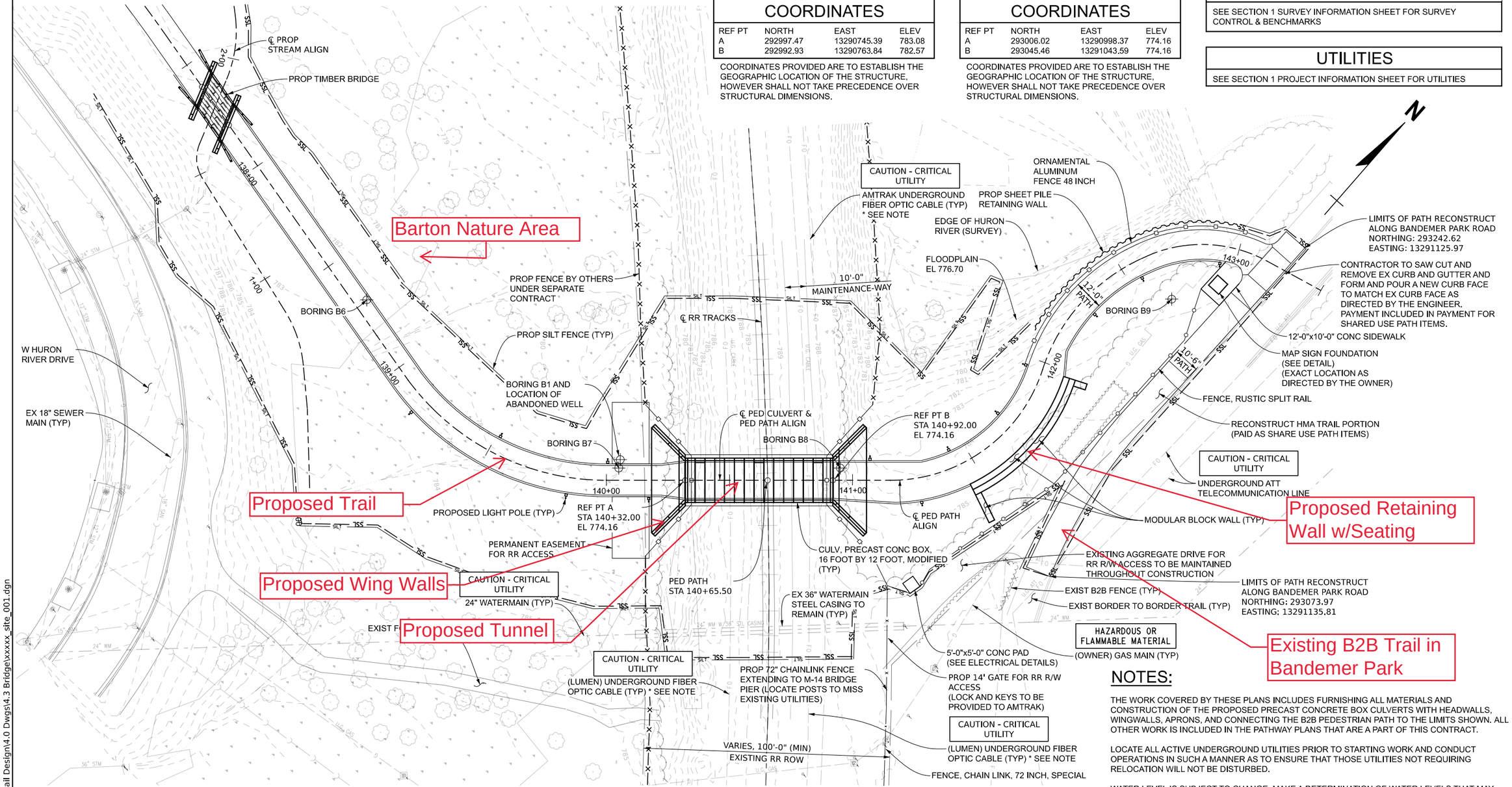
COORDINATES PROVIDED ARE TO ESTABLISH THE GEOGRAPHIC LOCATION OF THE STRUCTURE, HOWEVER SHALL NOT TAKE PRECEDENCE OVER STRUCTURAL DIMENSIONS.

SURVEY CONTROL & BENCHMARKS

SEE SECTION 1 SURVEY INFORMATION SHEET FOR SURVEY CONTROL & BENCHMARKS

UTILITIES

SEE SECTION 1 PROJECT INFORMATION SHEET FOR UTILITIES



PLAN

EXISTING TOPOGRAPHY SHOWN

LEGEND

SILT — SILT FENCE

SSL — SSL — SLOPE STAKE LINE

NOTES:

THE WORK COVERED BY THESE PLANS INCLUDES FURNISHING ALL MATERIALS AND CONSTRUCTION OF THE PROPOSED PRECAST CONCRETE BOX CULVERTS WITH HEADWALLS, WINGWALLS, APRONS, AND CONNECTING THE B2B PEDESTRIAN PATH TO THE LIMITS SHOWN. ALL OTHER WORK IS INCLUDED IN THE PATHWAY PLANS THAT ARE A PART OF THIS CONTRACT.

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

WATER LEVEL IS SUBJECT TO CHANGE. MAKE A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.

IMPLEMENT MEASURES TO PREVENT DEBRIS FROM FALLING FROM THE STRUCTURE. IF DEBRIS FALLS INTO THE WATERWAY, REMOVE IT WITHIN 24 HOURS. SINCE DISTURBANCE OF THE WATERWAY BOTTOM MAY BE AS HARMFUL AS THE DEBRIS ITSELF, THE PREVENTIVE MEASURES MUST BE EFFECTIVE. REMOVAL OF DEBRIS IS INCLUDED IN RELATED ITEMS OF WORK.

IMMEDIATELY AFTER THE CONSTRUCTION OF A CULVERT STAGE IS COMPLETED, PLACE SLOPE PROTECTION AND SEEDING OR SODDING ON THE ADJACENT EMBANKMENT SLOPES.

* FIBER OPTIC LINES WILL REMAIN. CONTRACTOR TO TEMPORARILY SUPPORT THE FIBER OPTIC LINES WHILE EXCAVATING AND PLACING CULVERT. ONCE CULVERTS ARE IN PLACE, FIBER OPTIC OWNER WILL PLACE THE LINES INSIDE SPLIT STEEL CONDUIT. PAYMENT FOR TEMPORARILY SUPPORTING AND PROTECTING THE FIBER OPTIC CABLE IS INCLUDED IN UTILITY WORK.

THE RAILROAD WILL PERMIT THE CONTRACTOR TO UTILIZE THE MAINTENANCE OF WAY ON THE NORTH SIDE OF THE TRACKS FOR TRANSPORTING MATERIALS AND EQUIPMENT TO THE SITE WITH ACCESS AT LAKE SHORE DRIVE LOCATED ½ MILE TO THE SOUTHEAST. USE OF THE R/W MUST BE COORDINATED WITH AMTRAK, REQUIRES FLAGGING, AND MAY HAVE RESTRICTIONS BASED ON AMTRAK OPERATIONS.

Colliers Engineering & Design
7050 W. SAGINAW HWY. SUITE 200
LANSING, MI 48917
P (517) 272-9835 | F (517) 272-9836

REVISIONS

DATE 4/12/2024
PROJ NUMBER
ENG JAH
PROJ MGR JAH
CADD JAH
COUNTY WASHTENAW
CITY/VILLAGE/TOWNSHIP CITY OF ANN ARBOR
SCALE H: 1" = 40' V: NONE
HORIZ DATUM NAD83
VERT DATUM NAVD88

HORIZ. (FT) 0 40
VERT. (FT) 0 NONE

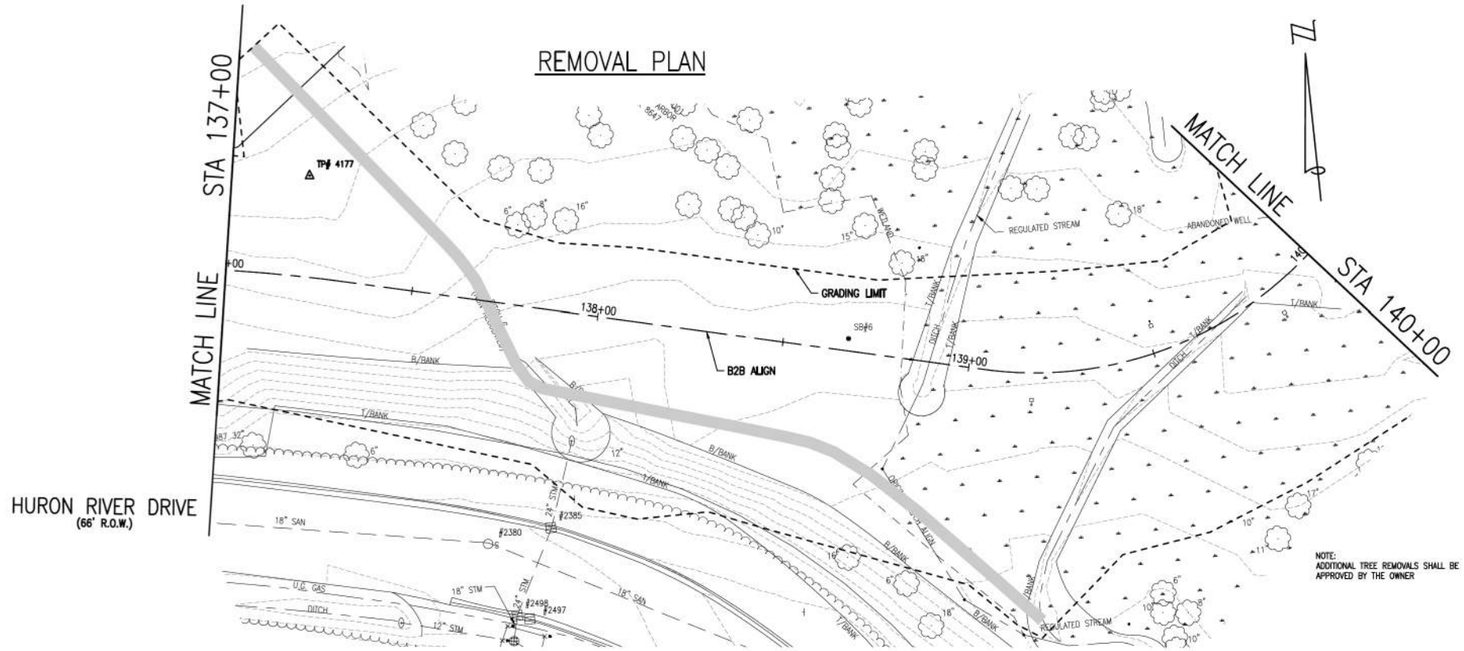
CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

GENERAL PLAN OF SITE

O:\WCPRC\015514.00 WCPRC - Bandemer Barton Trail Design\4.0 Dwgs\4.3 Bridge\xxxx_site_001.dgn

SOIL BORING #5	
N 293009.00	
E 13290678.00	ELEV 781.05
SOIL BORING #6	
N 292975.00	
E 13290849.00	ELEV 782.53

REMOVAL PLAN



MISCELLANEOUS QUANTITIES

1100	Cyd	Excavation, Earth

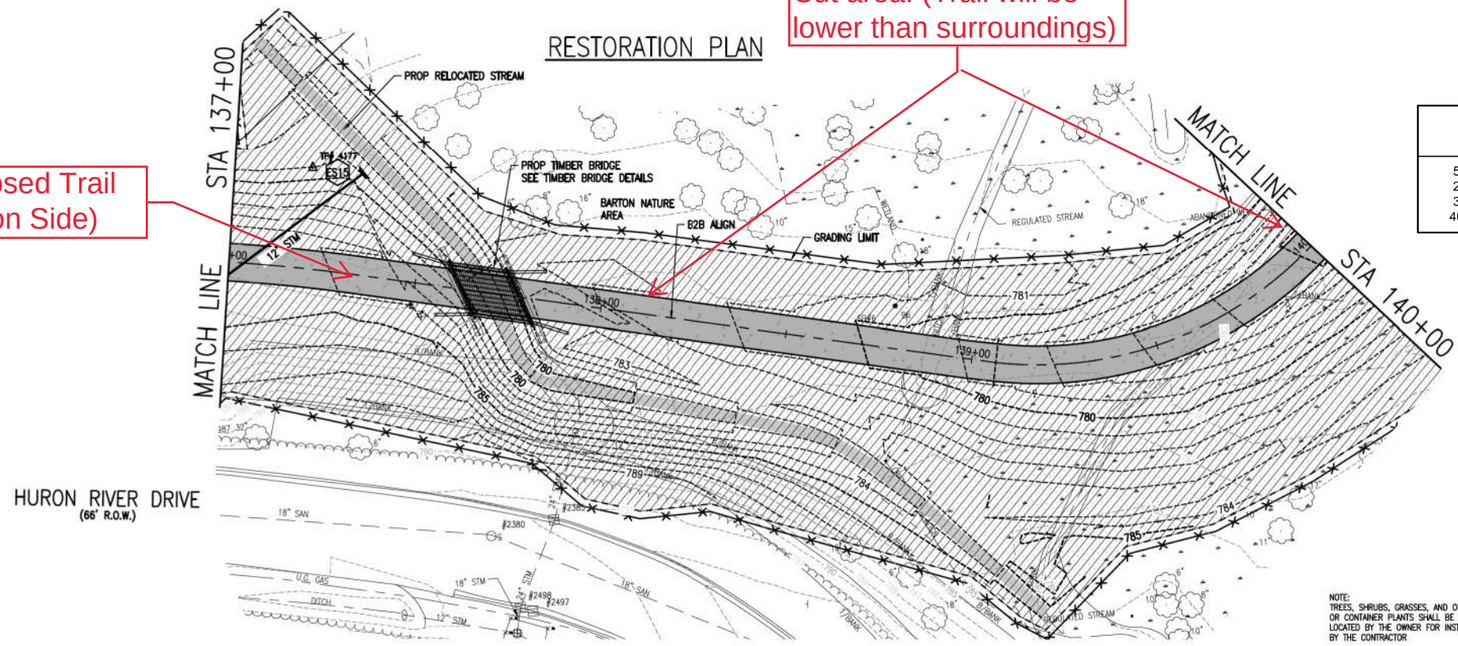
LEGEND

- Tree, Rem, _____
- Erosion Control, Inlet Protection, Fabric Drop
- Erosion Control, Silt Fence
- TURF ESTABLISHMENT
- CONCRETE SHARED USE PATH SEE DETAIL SHEET 6

RESTORATION PLAN

Cut area. (Trail will be lower than surroundings)

Proposed Trail (Barton Side)



MISCELLANEOUS QUANTITIES

582	Ft	Erosion Control, Silt Fence
250	Syd	Live Staking
340	Syd	Turf Establishment, Turf Grass, Performance
4000	Syd	Turf Establishment, Native Seed Mix, Mesic Woodland Mix, Performance

Know what's below. Call before you dig.

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34000 Plymouth Road
Livonia, MI 48150
P (734) 522-6711 | F (734) 522-6427
OHM-ADVISORS.COM

REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
12/21/2023	1022-184011	MB	CE	JK	WASHTENAW	CITY OF ANN ARBOR	H: 1"=20' V:	NAD83	NAVD88

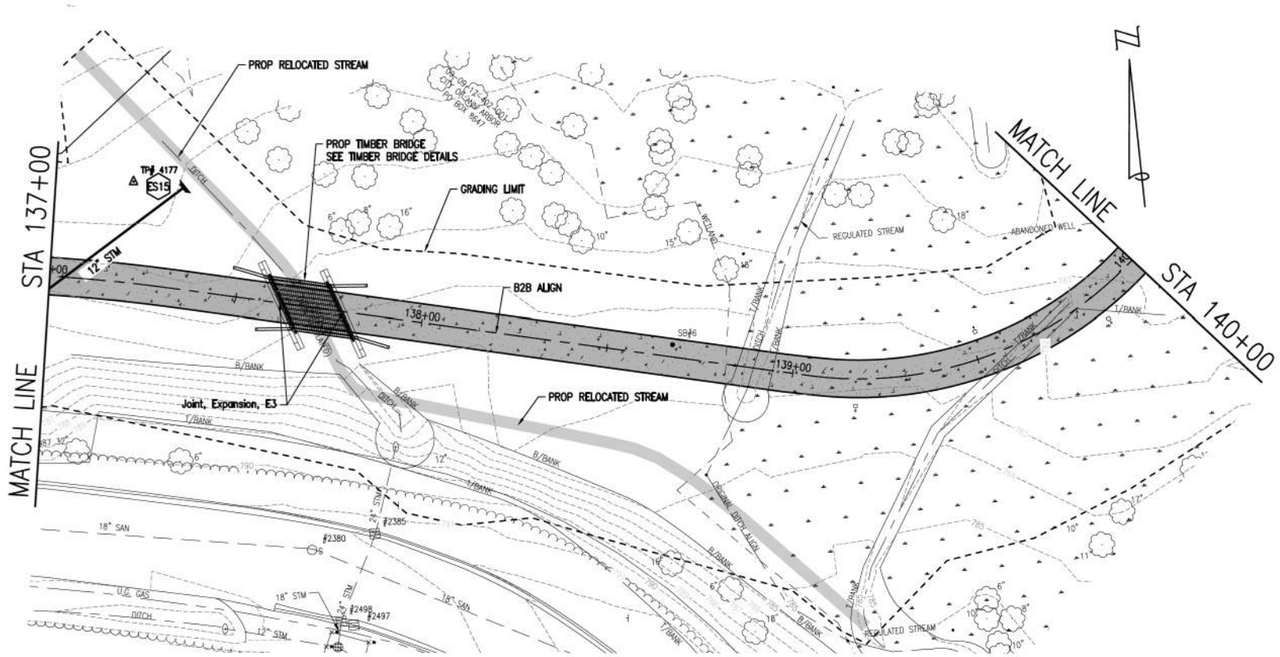
CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

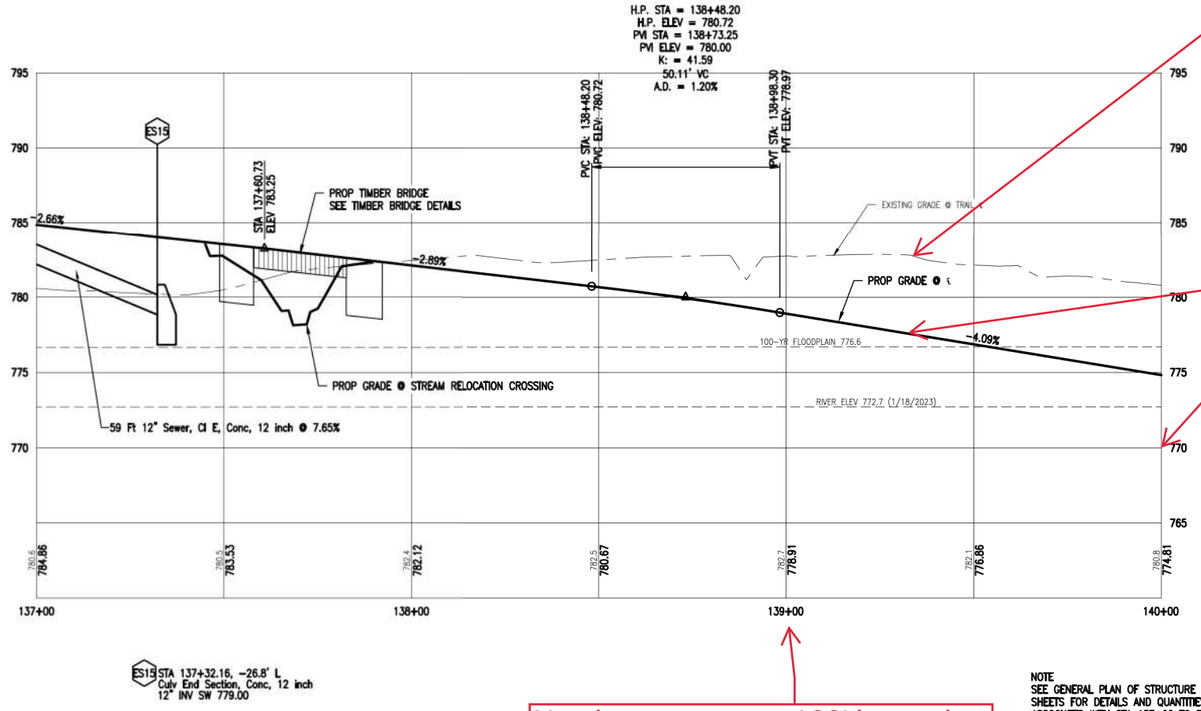
GRADING AND RESTORATION PLAN
STA 137+00 TO STA 140+00

SHEET 15 of 80

DRAWING PATH: P:\1000_1999\1022\180010_Bandemer-Barton_Trail\Drawings\Civil\Plans_Const\180010GRD_RES_03.dwg Apr 29, 2024 - 3:40pm

SOIL BORING #5	
N 293009.00	
E 13290678.00	ELEV 781.05
SOIL BORING #6	
N 292975.00	
E 13290849.00	ELEV 782.53





ES15 STA 137+32.16, -26.8' L
Culv End Section, Conc, 12 inch
12" INV SW 779.00

NOTE
SEE GENERAL PLAN OF STRUCTURE SHEETS FOR DETAILS AND QUANTITIES ASSOCIATED WITH STA 137+00 TO POE.

Existing grade

Proposed path grade

Exaggerated vertical scale

Numbers represent 100' intervals along path centerline (CL)

MISCELLANEOUS QUANTITIES

30	Ft	Joint, Expansion, E3
430	Ft	Curb, Conc, Det E1
300	Ft	Shared use Path, Grading, Modified
467	Syd	Shared use Path, Aggregate, 8 inch, Modified
400	Syd	Shared use Path, Concrete, 6 Inch

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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM	VERT DATUM
12/21/2023	1022-184011	MB	CE	JK	WASHTENAW	CITY OF ANN ARBOR	H: 1"=20' V: 1"=4'	NAD83	NAVD88

CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

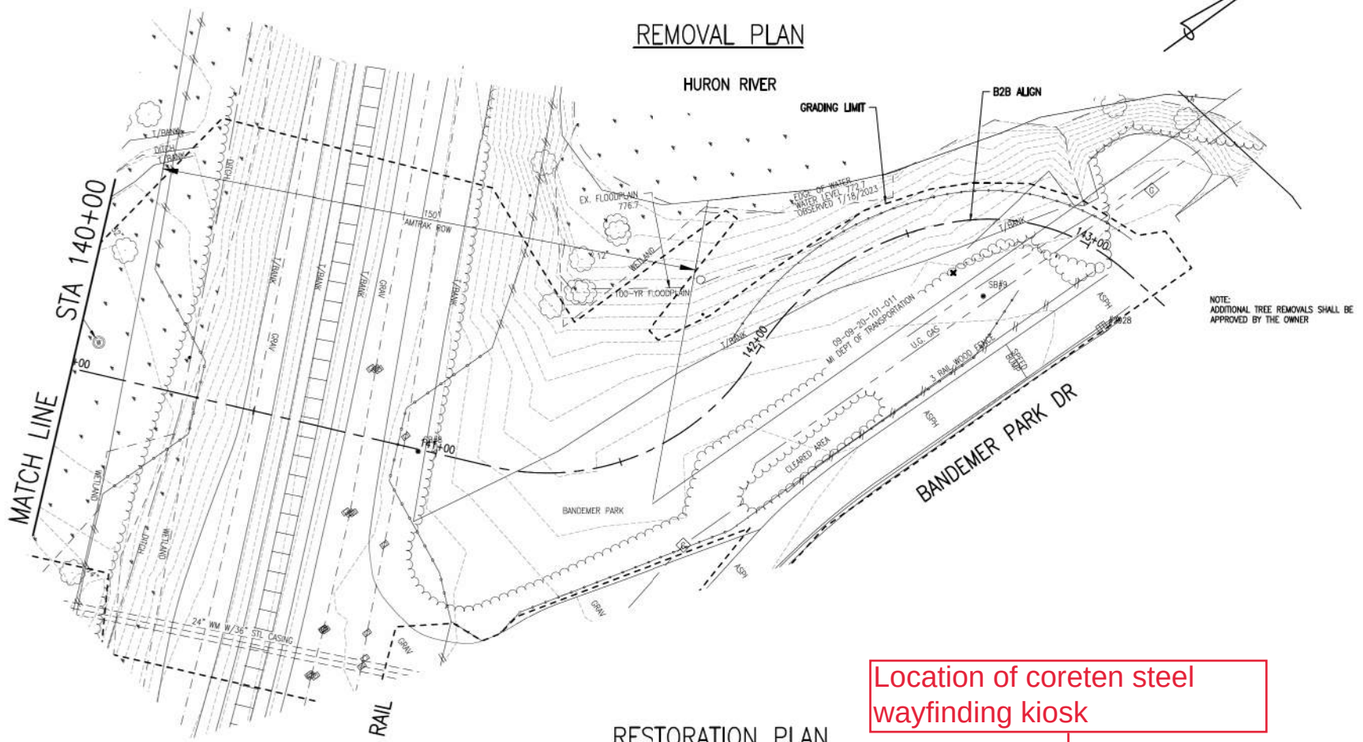
CONSTRUCTION PLAN
STA 137+00 TO STA 140+00

Know what's below. Call before you dig.

SHEET 16 of 80

SOIL BORING #8	
N 293047.00	
E 1329104 6.00	ELEV 787.46
SOIL BORING #9	
N 293194.00	
E 1329110 1.00	ELEV 783.64

REMOVAL PLAN



MISCELLANEOUS QUANTITIES

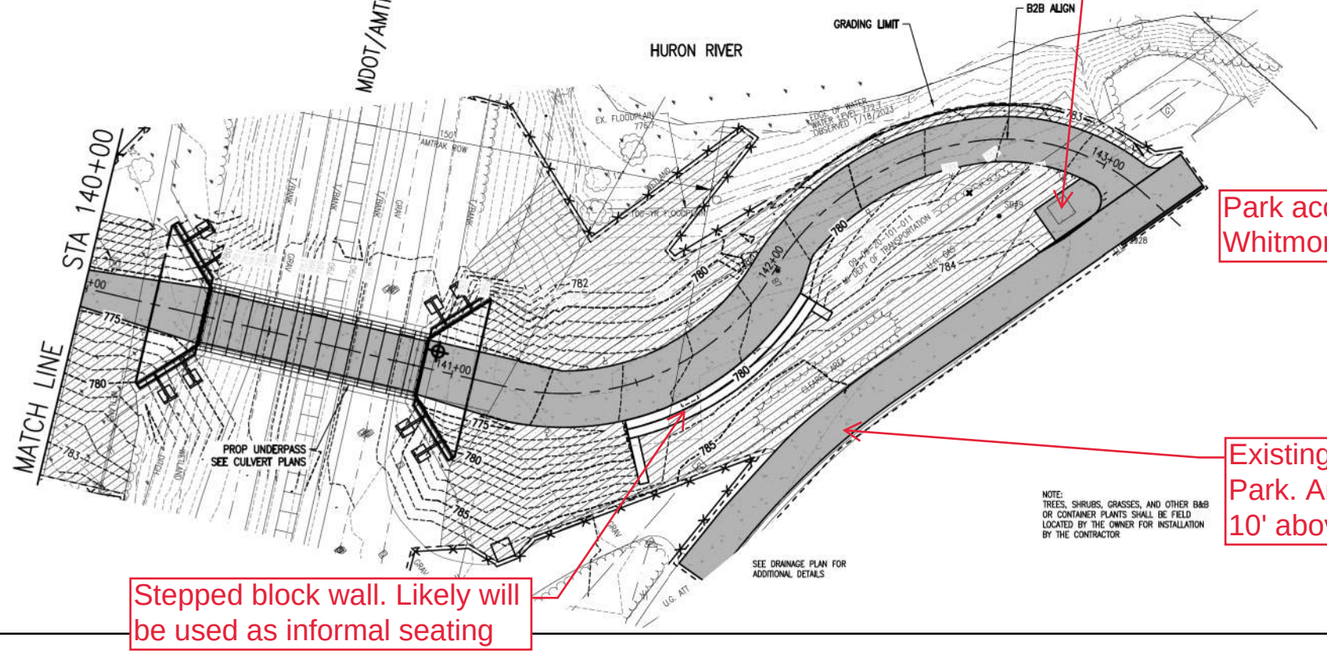
117	Ft	Fence, Rem
1260	Cyd	Excavation, Earth
215	Syd	HMA Surface, Rem *

* BID ITEM "Hma Surface, Rem" INCLUDES PARTIAL CURB REMOVAL TO THE LIMITS SHOWN ON THE DETAILS. ADDITIONAL REMOVALS SHALL BE APPROVED BY OWNER.

LEGEND

- Tree, Rem, _____
- Erosion Control, Inlet Protection, Fabric Drop
- Erosion Control, Silt Fence
- TURF ESTABLISHMENT
- CONCRETE SHARED USE PATH SEE DETAIL SHEET 6

RESTORATION PLAN



Location of coreten steel wayfinding kiosk

Park access bridge off Whitmore Lake Road

Existing path in Bandemer Park. Area will be more than 10' above the tunnel bottom

Stepped block wall. Likely will be used as informal seating

MISCELLANEOUS QUANTITIES

703	Ft	Erosion Control, Silt Fence
110	Syd	Turf Establishment, Turf Grass, Performance
1700	Syd	Turf Establishment, Native Seed Mix, Mesic Woodland Mix, Performance

Know what's **below.** **Call** before you dig.

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Livonia, MI 48150
P (734) 522-6711 | F (734) 522-6427
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REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM	VERT DATUM
12/21/2023	1022-154011	MB	CE	JK	WASHTENAW	CITY OF ANN ARBOR	H: 1"=20' V:	NAD83	NAVD88

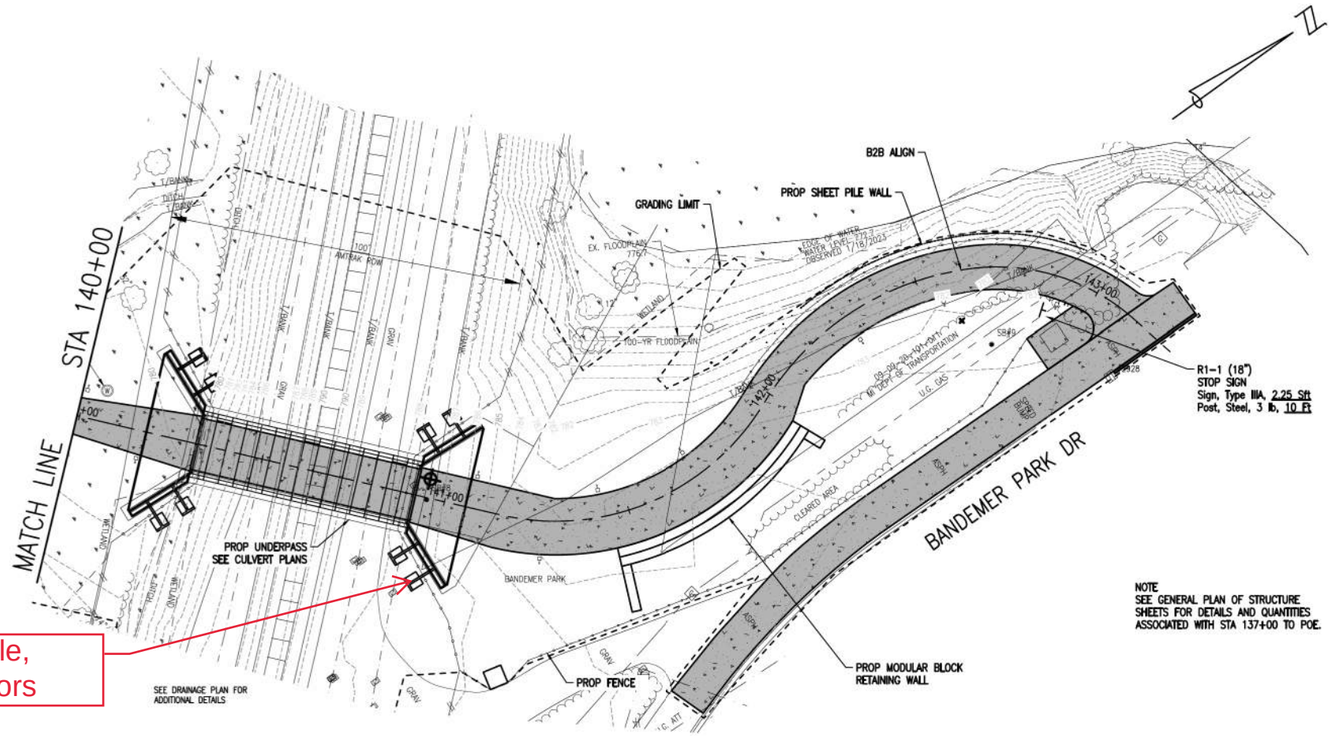
CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

GRADING AND RESTORATION PLAN
STA 140+00 TO POE

SHEET 17 of 80

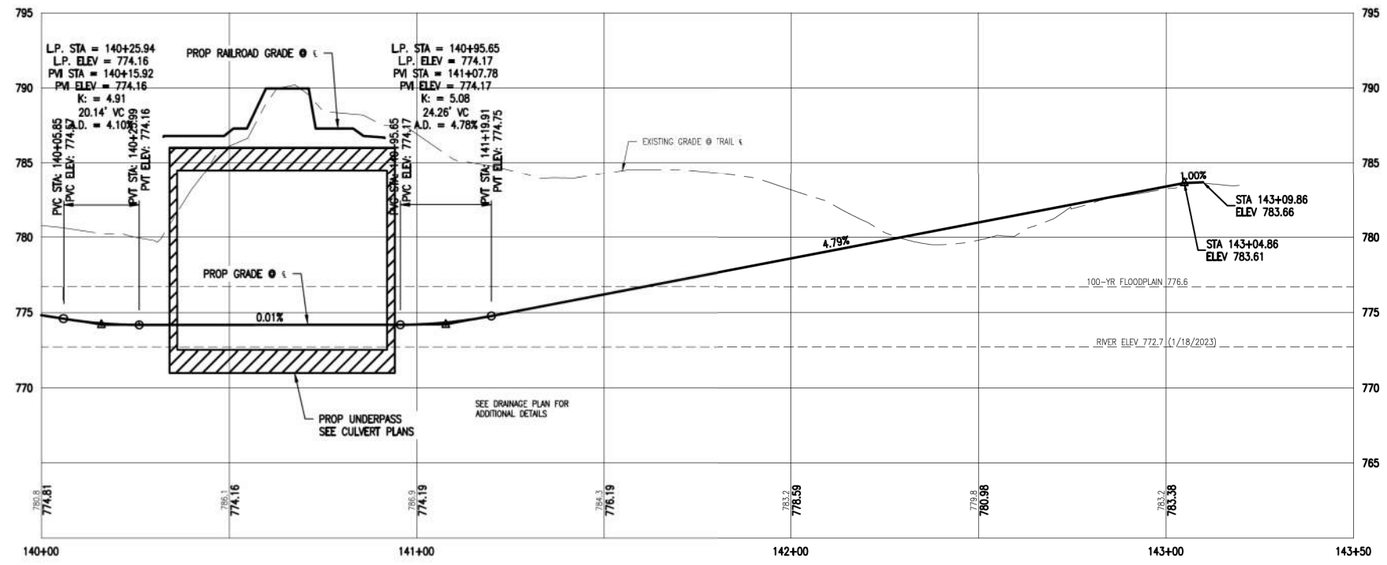
DRAWING PATH: P:\1000_1999\1022180010_Bandemer-Barton_Trail\Drawings\Civil\Plans_Const\180010GRD_RES_03.dwg Apr 30, 2024 - 1:21pm

SOIL BORING #8	
N 293047.00	
E 13291046.00	ELEV 787.46
SOIL BORING #9	
N 293194.00	
E 13291101.00	ELEV 783.64



NOTE
SEE GENERAL PLAN OF STRUCTURE SHEETS FOR DETAILS AND QUANTITIES ASSOCIATED WITH STA 137+00 TO POE.

Boxes will not be visible, these are buried anchors



MISCELLANEOUS QUANTITIES

305	Ft	Curb, Conc, Det E1
394	Ft	Shared use Path, Grading, Modified
698	Syd	Shared use Path, Aggregate, 8 inch, Modified
542	Syd	Shared use Path, Concrete, 6 inch
148	Syd	Shared use Path, Concrete, 6 inch, Decorative
66	Cyd	Shared use Path, Aggregate, Tunnel

Know what's below. Call before you dig.

OHM
ARCHITECTS ENGINEERS PLANNERS
34000 Plymouth Road
Livonia, MI 48150
P (734) 522-6711 | F (734) 522-6427
OHM-ADVISORS.COM

REVISIONS:

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORZ DATUM	VERT DATUM
12/21/2023	1022-19-0011	MB	CE	JK	WASHTENAW	CITY OF ANN ARBOR	H: 1"=20' V: 1"=4'	NAD83	NAVD88

CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

CONSTRUCTION PLAN
STA 140+00 TO POE

SHEET 18 of 80

DRAWING PATH: P:\1000_1999\1022180010_Bandemer-Barton_Trail\Drawings\Civil\Plans_Const\180010CON3.dwg Apr 30, 2024 - 1:21pm

REMOVE EXISTING CONCRETE FDNS TO 1FT BELOW FINISHED GRADE WHERE REQUIRED FOR GRADING THE PROPOSED STREAM (INCLUDED IN EXCAVTION, EARTH)

℄ PROP STREAM ALIGN

PROP TIMBER BRIDGE

W HURON RIVER DRIVE

EX 18" SEWER MAIN (TYP)

℄ PROPOSED STREAM

REGULATED STREAM

PROP SILT FENCE (TYP)

℄ RR TRACKS

CLEAN OUT #1
RIM: 770.00
INV OUT: 773.59 6"

CLEAN OUT #4
RIM: 776.95
INV OUT: 776.95 6"

CAUTION - CRITICAL UTILITY
24" WATERMAIN (TYP)

CAUTION - CRITICAL UTILITY
AMTRAK UNDERGROUND FIBER OPTIC CABLE (TYP) * SEE NOTE

CAUTION - CRITICAL UTILITY
(LUMEN) UNDERGROUND FIBER OPTIC CABLE (TYP) * SEE NOTE

VARIES, 100'-0" (MIN)
EXISTING RR ROW

CAUTION - CRITICAL UTILITY
(LUMEN) UNDERGROUND FIBER OPTIC CABLE (TYP) * SEE NOTE

69 LF, PVC, 6 INCH @ -0.4%

GATE VALVE AND BOX, 6 INCH

CLEAN OUT #3
RIM: 777.17
INV OUT: 772.95 6"

40 LF, PVC, 6 INCH @ -0.4%

48' LF, CSP, 6 INCH

12' LF, SLOTTED DRAIN, 6 INCH @ -0.4%

℄ PED PATH ALIGN

CLEAN OUT #2
RIM: 778.23
INV OUT: 773.08 6"

5 LF, PVC, 6 INCH @ -0.4%

14'-8" LF, SLOTTED DRAIN, 6 INCH @ -0.4%

14'-8" LF, SLOTTED DRAIN, 6 INCH @ -0.4%

EDGE OF HURON RIVER (SURVEY)

FLOODPLAIN EL 776.70

MAP STATION FDN AND SIDEWALK

EXISTING GAS MAIN TO REMAIN

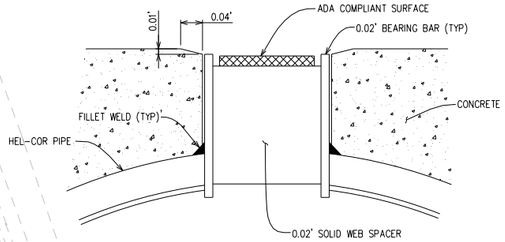
CAUTION - CRITICAL UTILITY
UNDERGROUND ATT TELECOMMUNICATION LINE

RECONSTRUCT HMA TRAIL PORTION (PAID AS SHARED USE PATH ITEMS)

HAZARDOUS OR FLAMMABLE MATERIAL
(OWNER) GAS MAIN (TYP)

Note this is the center of the railroad tracks

This is a good overall plan view to show the tunnel and approaches on each side



6" SLOTTED DRAIN DETAIL

MISCELLANEOUS QUANTITIES

42	Ft	Slotted Drain, Galv, 6 inch
153	Ft	Sewer, PVC, 6 inch, Tr Det B
48	Ft	Corrugated Steel Pipe, Galv, 6 inch
2	Ea	Dr Structure, Tap, 6 inch
4	Ea	Clean Out
172	Ft	Underdrain, Fdn, 6 inch
1	Ea	Gate Valve and Box, 6 inch

PLAN

EXISTING TOPOGRAPHY SHOWN

Colliers Engineering & Design
7050 W. SAGINAW HWY. SUITE 200
LANSING, MI 48917
P (517) 272-9835 | F (517) 272-9836

REVISIONS

HORZ DATUM: NAD83 | VERT DATUM: NAVD88
SCALE: H: 1" = 40' | V: NONE
CITY/VILLAGE/TOWNSHIP: CITY OF ANN ARBOR
COUNTY: WASHTENAW
CADD: JAH
PROJ MGR: JAH
ENG: JAH
PROJ NUMBER:
DATE: 4/12/2024

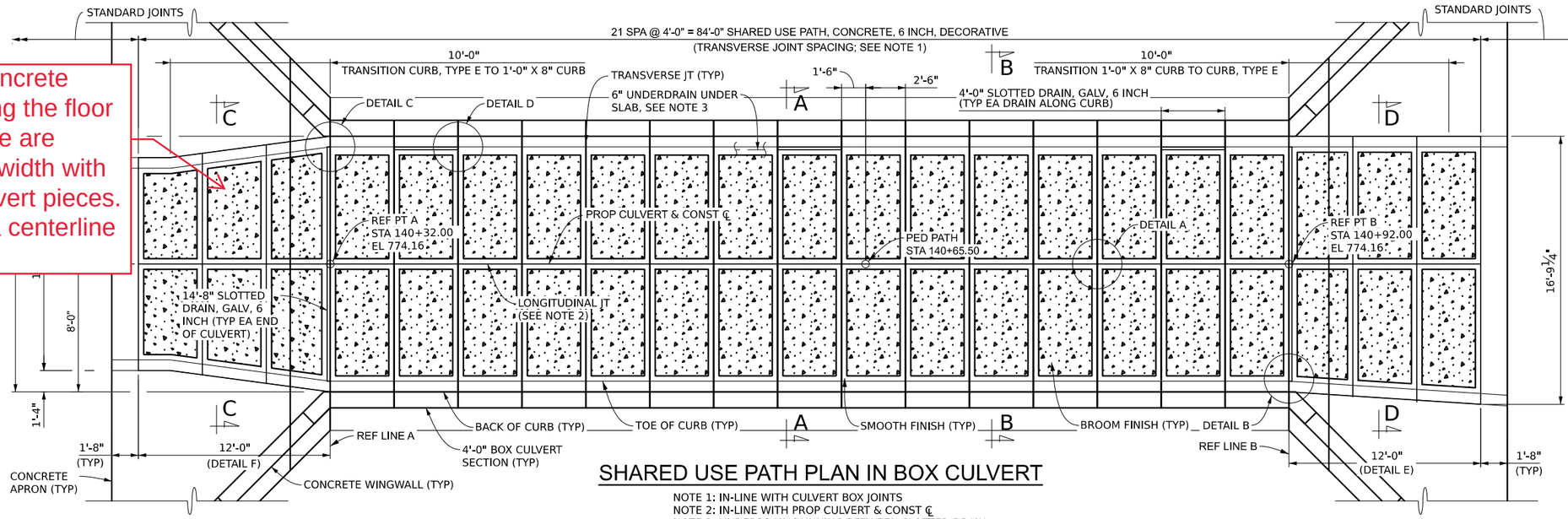
CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

DRAINAGE PLAN

SHEET 19 of 80

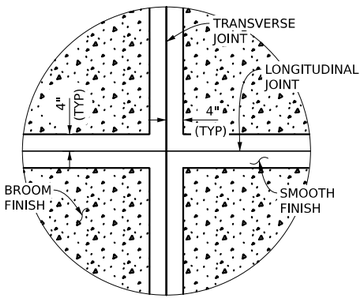
O:\WCPRC\015514.00 WCPRC - Bandemer Barton Trail Design\4.0 Dwgs\4.3 Bridge\xxxxx_drain_001.dgn

"Picture Frame" concrete finishing details long the floor of the tunnel. These are intended to match width with the panels and culvert pieces. This also creates a centerline for tunnel traffic.

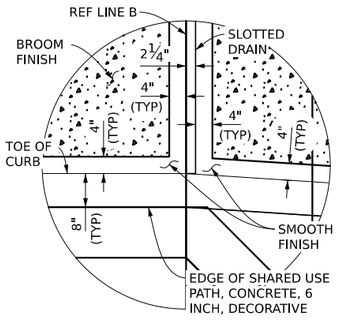


SHARED USE PATH PLAN IN BOX CULVERT

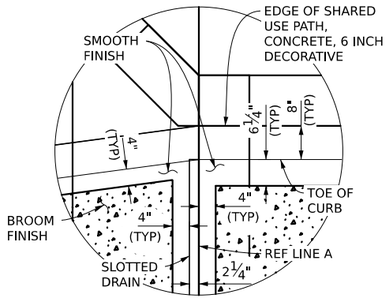
NOTE 1: IN-LINE WITH CULVERT BOX JOINTS
NOTE 2: IN-LINE WITH PROP CULVERT & CONST ℄
NOTE 3: UNDERDRAIN RUNNING BETWEEN SLOTTED DRAIN INCLUDED IN PAY ITEM "Corrugated Steel Pipe, Galv, 6 inch", SEE drain_001.dgn FOR PAY LIMITS AND QUANTITY.



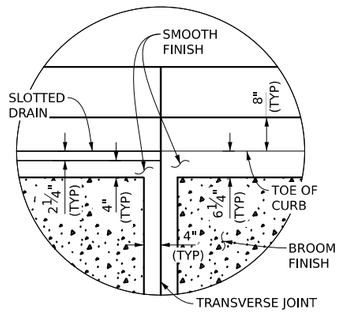
DETAIL A



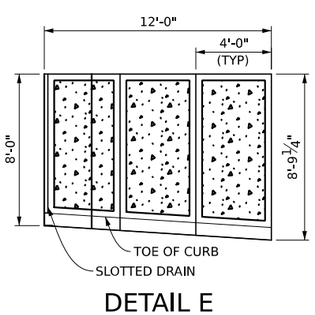
DETAIL B



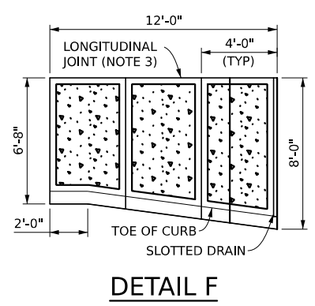
DETAIL C



DETAIL D

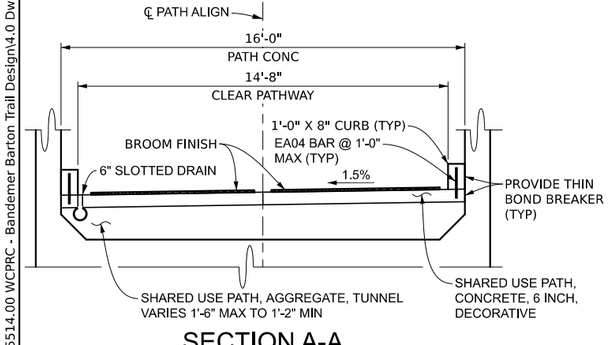


DETAIL E



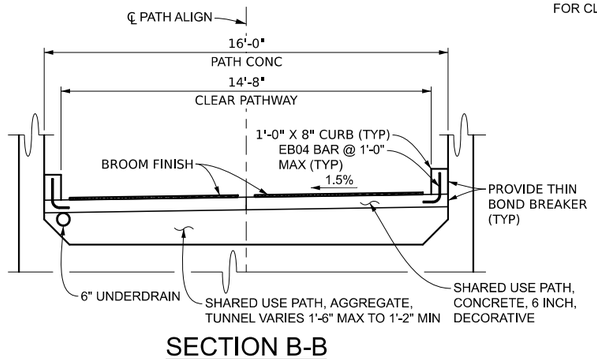
DETAIL F

NOTE 3: DIMENSIONS SYMMETRICAL ABOUT LONGITUDINAL JOINT



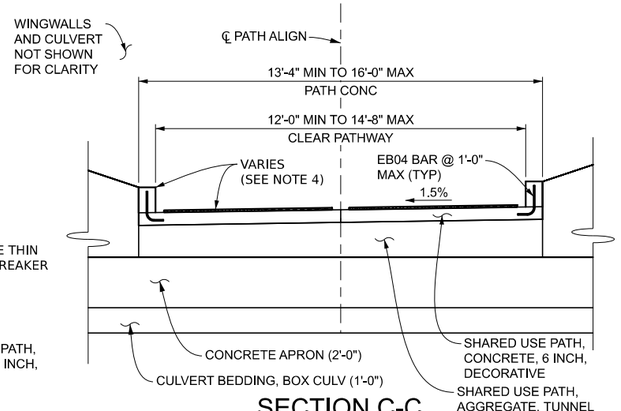
SECTION A-A

TYPICAL PATH SECTION INSIDE CULVERT WITH SLOTTED DRAIN



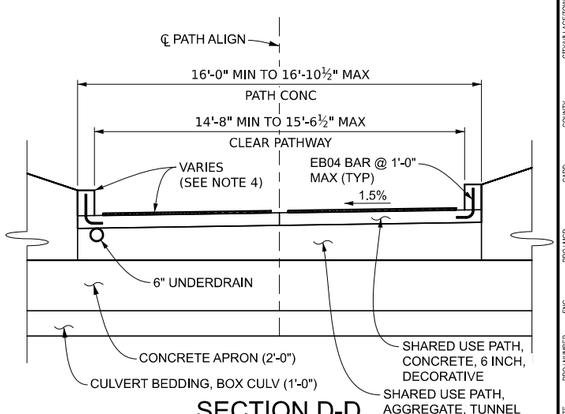
SECTION B-B

TYPICAL PATH SECTION INSIDE CULVERT WITHOUT SLOTTED DRAIN



SECTION C-C

TYPICAL PATH SECTION ON APRON
NOTE 4: SEE LIMITS IN SHARED USE PATH PLAN



SECTION D-D

TYPICAL PATH SECTION ON APRON

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LANSING, MI 48917
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REVISIONS

VERT DATUM	NAVD88
HORIZ DATUM	NAD83
SCALE	V: 1" = 30' H: 1" = 30'
CITY/VILLAGE/TOWNSHIP	CITY OF ANN ARBOR
COUNTY	WASHTENAW
CADD	JAH
PROJ MGR	JAH
ENG	JAH
PROJ NUMBER	
DATE	4/12/2024

HORIZ. (FT) 30 0
VERT. (FT) 30 0

CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

PATH DETAILS

SHEET

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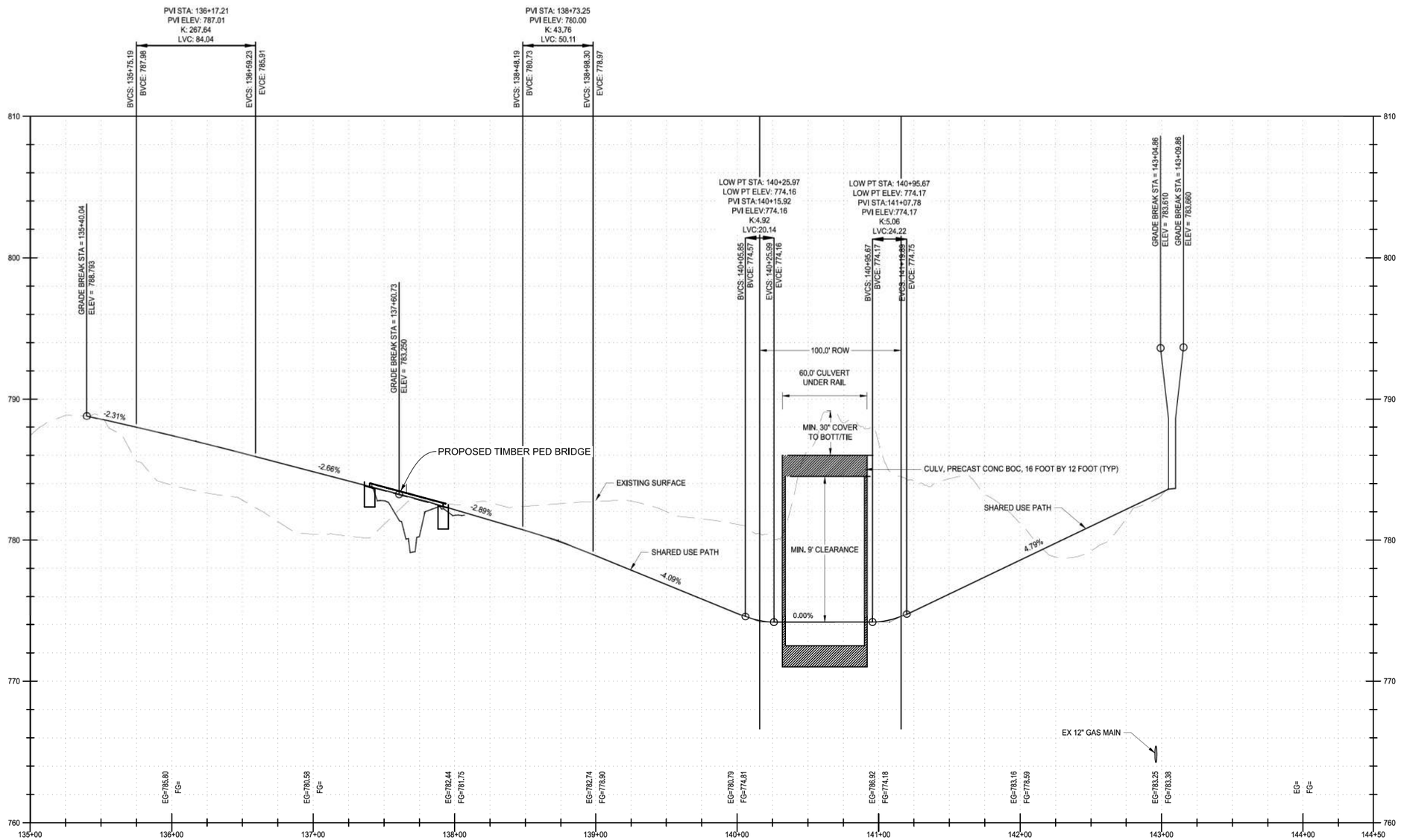

Misc. Tunnel Information

PROFILE THROUGH PROPOSED CULVERT

1" = 8' VERTICAL
1" = 80' HORIZONTAL

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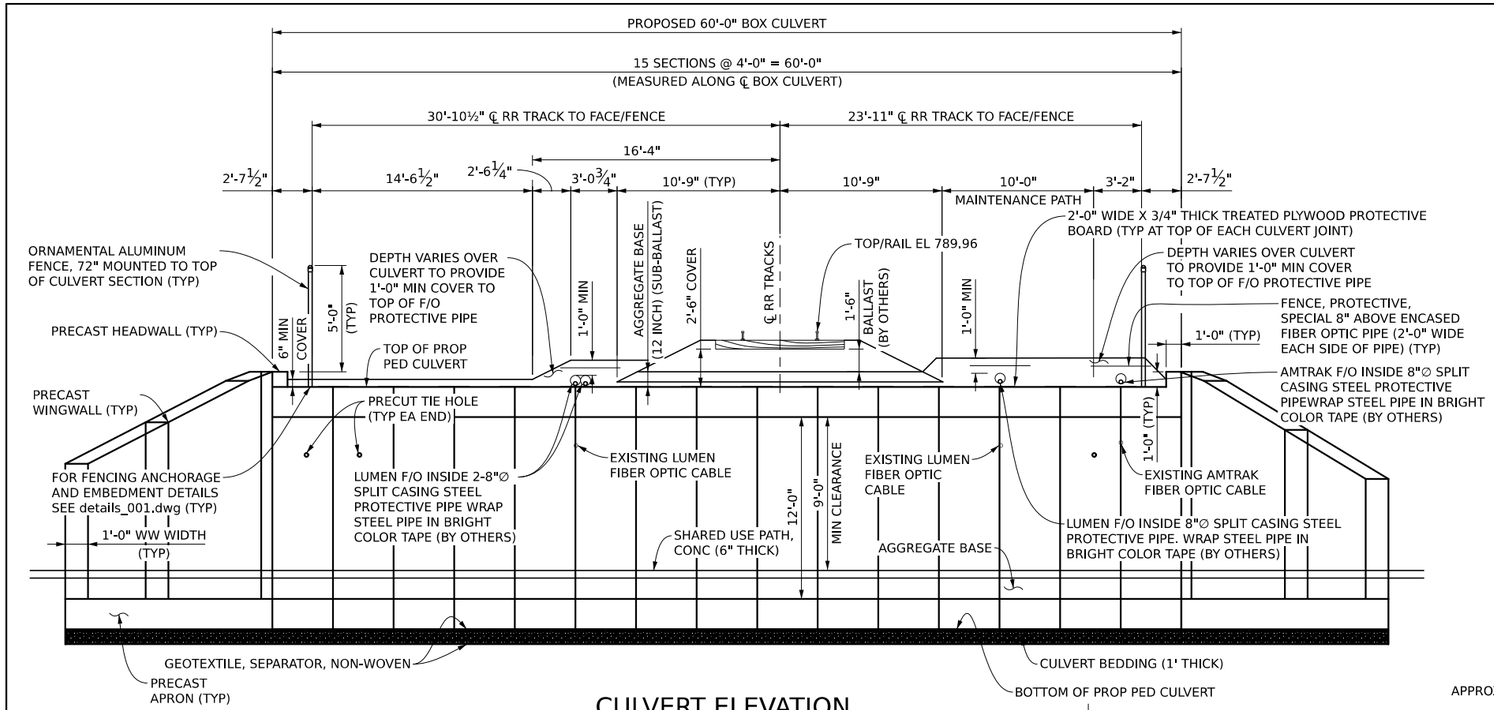
REVISIONS

DATE 4/12/2024
PROJ NUMBER
ENG JAH
PROJ MGR JAH
CADD JAH
COUNTY WASHTENAW
CITY/VILLAGE/TOWNSHIP CITY OF ANN ARBOR
SCALE H: 1" = 50' V: 1" = 5'
HORIZ DATUM NAD83
VERT DATUM NAVD88

CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT
GENERAL PLAN OF STRUCTURE

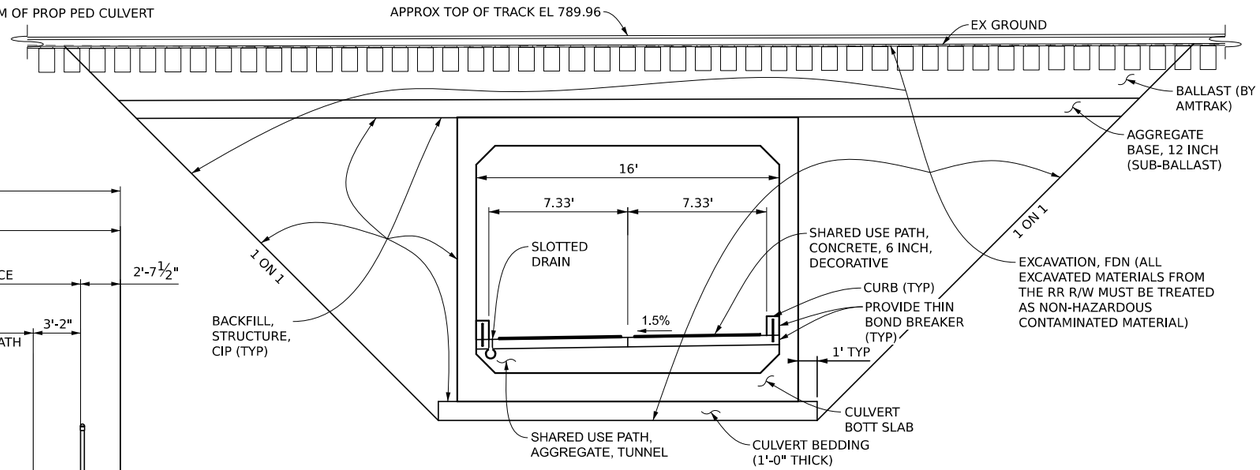
HORIZ. (FT) 0 80
VERT. (FT) 0 8

SHEET 45 of 80



CULVERT ELEVATION

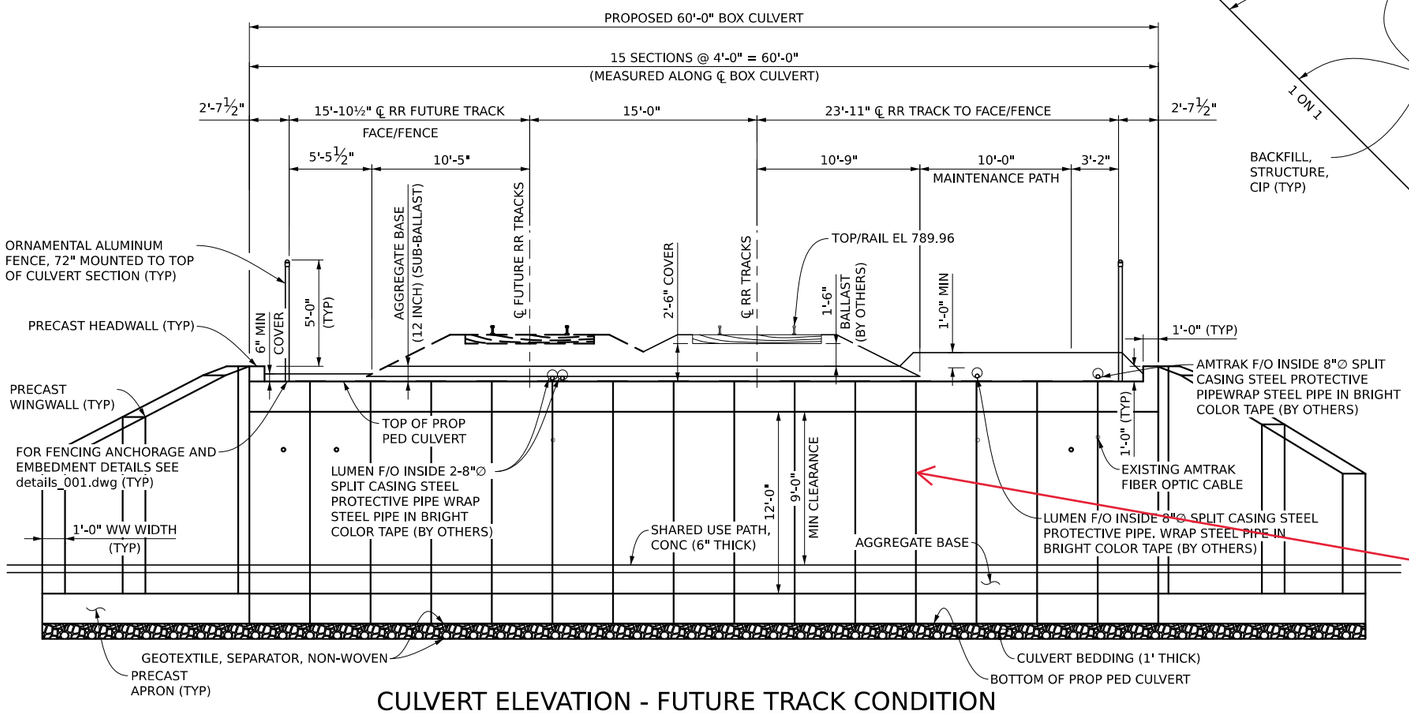
(VIEW PERPENDICULAR TO ℄ BOX CULVERT)



SECTION THRU BOX CULVERT

(LOOKING UPSTATION)

Misc. Tunnel elevations and sections



CULVERT ELEVATION - FUTURE TRACK CONDITION

(VIEW PERPENDICULAR TO ℄ BOX CULVERT)

Note these vertical lines are the segments of box culvert. These will be visible on the tunnel interior

NOTES:

THE DESIGN OF THE PEDESTRIAN CULVERT IS BASED ON THE CURRENT AMERICAN RAILWAY ENGINEERING AND MAINTENACNCE-OF-WAY ASSOCIATION SPECIFICATIONS, COOPERS E80 LOADING, AND 50 PERCENT OF THE SPECIFIED IMPACT. FOR ADDITIONAL DESIGN REQUIREMENTS, SEE SUBSECTION 406.03.A OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION

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7050 W. SAGINAW HWY. SUITE 200
LANSING, MI 48917
P (517) 272-9835 | F (517) 272-9836

REVISIONS

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
4/12/2024		JAH	JAH	JAH	WASHTENAW	CITY OF ANN ARBOR	H: 1" = 10' V: 1" = 10'	NAD83	NAVD88

HORIZ (FT) 10 0 VERT. (FT) 10 0

CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT
GENERAL PLAN OF STRUCTURE

SHEET 46 of 80

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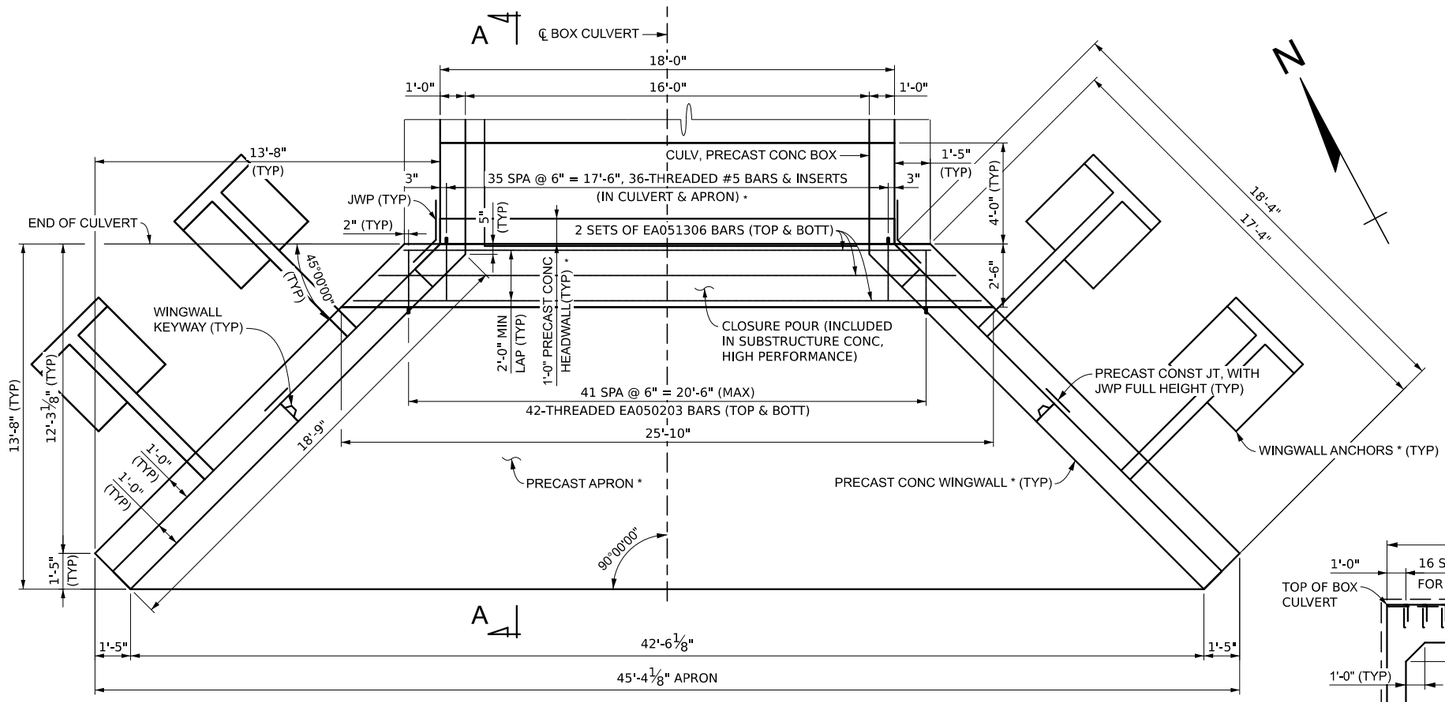
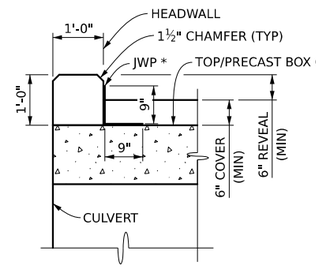
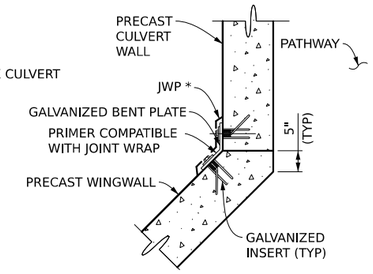


CULVERT END PLAN

* INCLUDED IN "CULV, PRECAST CONC BOX, 16 FOOT BY 12 FOOT, MODIFIED" (TYP)



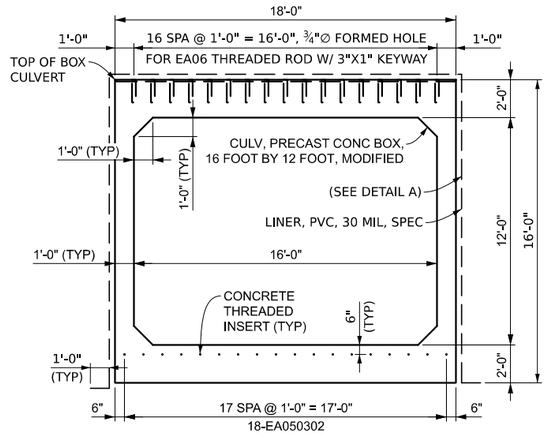
HEADWALL TO CULVERT



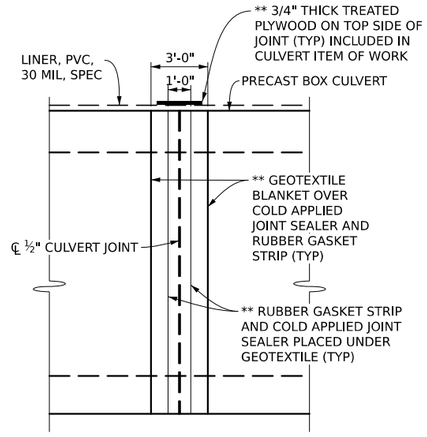
WINGWALL TO CULVERT

CONNECTION DETAILS

* 18" WIDE JOINT WATERPROOFING TO COVER THE JOINT BETWEEN THE HEADWALL, WINGWALL, AND THE CULVERT (ENTIRE LENGTH)



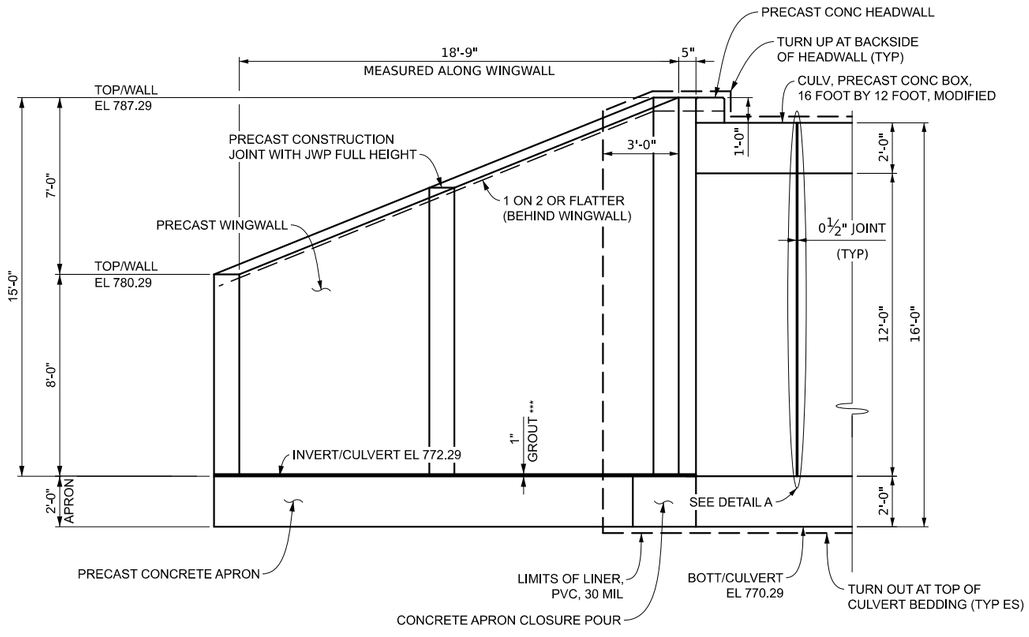
END CULVERT ELEVATION



DETAIL A

(TYPICAL ELEVATION AT CULVERT JOINT)

** THESE ITEMS WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE INCLUDED IN THE PAY ITEM "CULV, PRECAST CONC BOX, 16 FOOT BY 12 FOOT, MODIFIED"

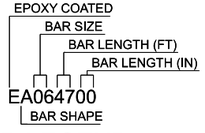


SECTION A-A

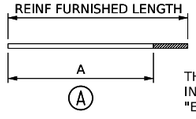
(TYP ALL QUADRANTS)

*** WINGWALL GROUT SUPPLIED WITH PRECAST WINGWALLS INCLUDED IN "CULV, PRECAST CONC BOX, 16 FOOT BY 12 FOOT, MODIFIED" (TYP)

CLOSURE BAR	DIMENSIONS									NO	TOTAL
	A	B	C	D	E	F	G	H	J	REQ'D	WEIGHT
EA050203	2'-3"									168	395
EA051306	13'-6"									24	338
									TOTAL REINFORCEMENT:		733



BAR LEGEND



THREADING OF REINFORCEMENT INCLUDED IN THE BID ITEM "ENFORCEMENT STEEL, EPOXY COAT"

MISCELLANEOUS QUANTITIES

60	Ft	Culv, Precast Conc Box, 16 foot by 12 foot
733	Lb	Reinforcement, Steel, Epoxy Coated
9	Cyd	Substructure Conc, High Performance
415	Syd	Liner, PVC, 30 mil

NOTES:

FOR BEVEL AND MOLDING DETAILS, SEE STANDARD PLAN B-103.

APPLY LOW TEMPERATURE PROTECTION OF CONCRETE ACCORDING TO SECTION 706.03 J. OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. LOW TEMPERATURE PROTECTION OF CONCRETE IS INCLUDED IN RELATED ITEMS OF WORK.

FOR THE PURPOSE OF PLAN DEVELOPMENT, PRECAST CONCRETE BOX CULVERT TOP AND BOTTOM FLANGES HAS BEEN ASSUMED TO BE 12 INCHES THICK, AND THE SIDE WALLS HAVE BEEN ASSUMED TO BE 12 INCHES THICK. IF THE CULVERT THICKNESS MUST VARY FROM THIS ASSUMPTION THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.

Colliers Engineering & Design
7050 W. SAGINAW HWY, SUITE 200
LANSING, MI 48917
P (517) 272-9835 | F (517) 272-9836

REVISIONS

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/TWP/VILLAGE/TOWNSHIP	SCALE	Ht: NONE	V: NONE	HORZ DATUM	VERT DATUM
4/12/2024		JAH	JAH	JAH	WASHTENAW	CITY OF ANN ARBOR				NAD83	NAVD88

HORZ. (FT) 0 NONE
VERT. (FT) 0 NONE

CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

BOX CULVERT DETAILS

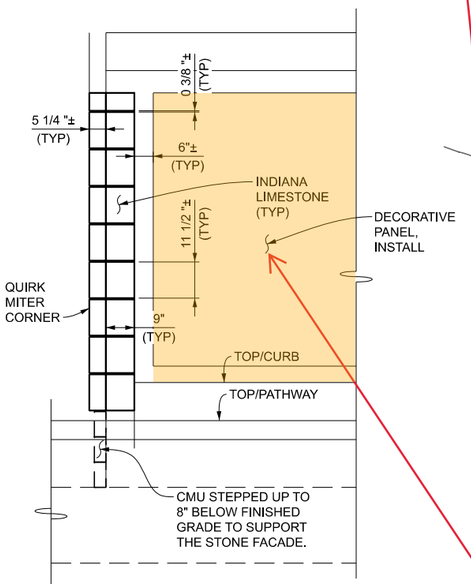
SHEET 47 of 80

\\minerva\cadd\WCPRC\015514.00 WCPRC - Bandemer Barton Trail Design\4.0 Dwgs\4.3 Bridge\xxxxx_details_001.dgn

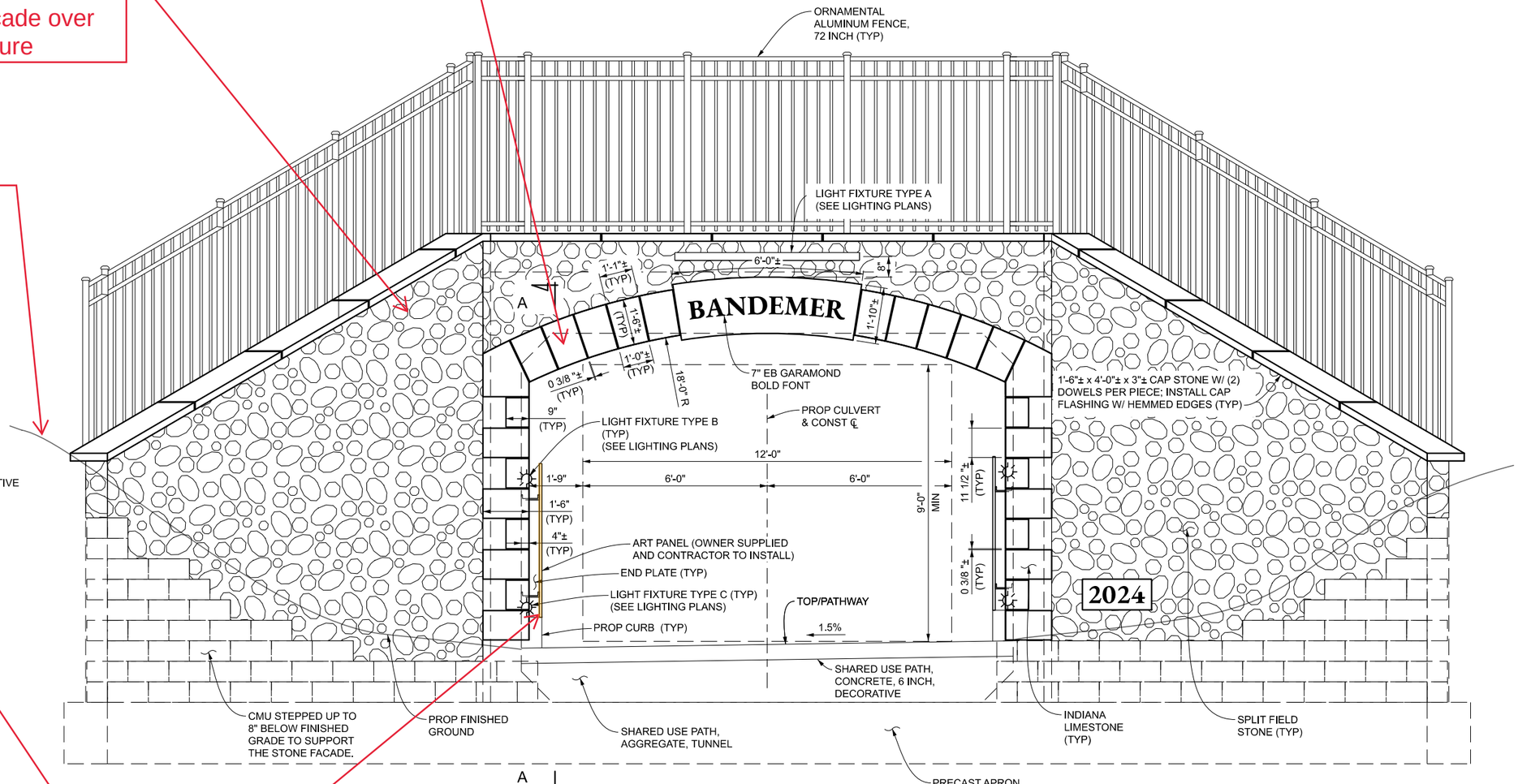
Use of stone to hide edges of the box culvert to give a more arched appearance

Sheet details general aesthetic plan for the exterior. Of note, the project will use real, split stone facade over the concrete structure

Note proposed finished grade for approaches



VIEW A-A



SOUTH ELEVATION

(LOOKING NORTH)

Note all of these labels for general placement of metal art panels, lights, & curb

MISCELLANEOUS QUANTITIES

117	Ft	Limestone Cap
132	Sft	Limestone Block
637	Sft	Split Field Stone
1	Ea	Limestone Sign, "Bandemer"
1	Ea	Limestone Sign, "Barton"
2	Ea	Limestone Sign, "2024"

Colliers Engineering & Design
7050 W. SAGINAW HWY. SUITE 200
LANSING, MI 48917
P (517) 272-9835 | F (517) 272-9836

REVISIONS

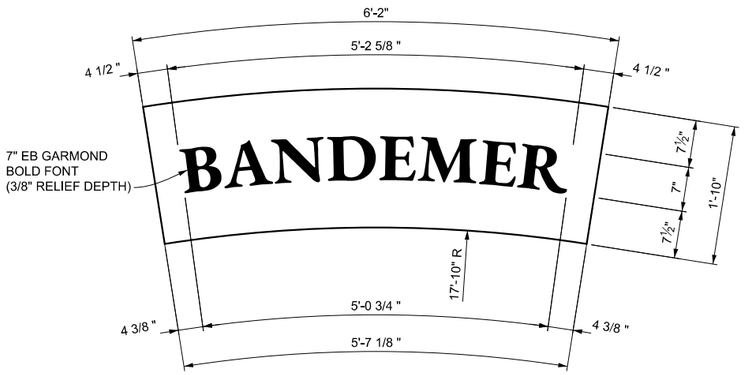
DATE 4/12/2024
PROJ NUMBER JAH
ENG JAH
PROJ MGR JAH
CADD JAH
COUNTY WASHTENAW
CITY/VILLAGE/TOWNSHIP CITY OF ANN ARBOR
SCALE H: 1"=4' V: 1"=4'
HORIZ DATUM NAD83
VERT DATUM NAVD88
HORIZ. (FT) 0 4
VERT. (FT) 0 4

CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

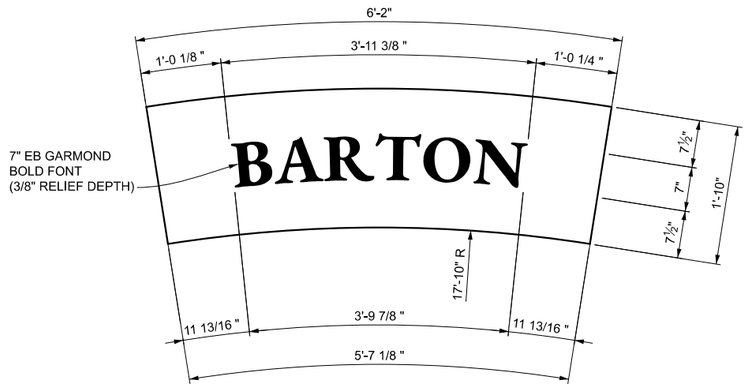
AESTHETIC TREATMENT DETAILS

SHEET 49 of 80

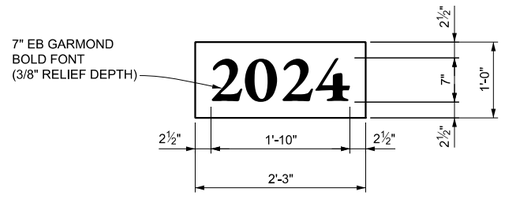
\\minervas\cadd\WCPRC\015514.00 WCPRC - Bandemer Barton Trail Design\4.0 Dwgs\4.3 Bridge\xxxxx_details_004.dgn



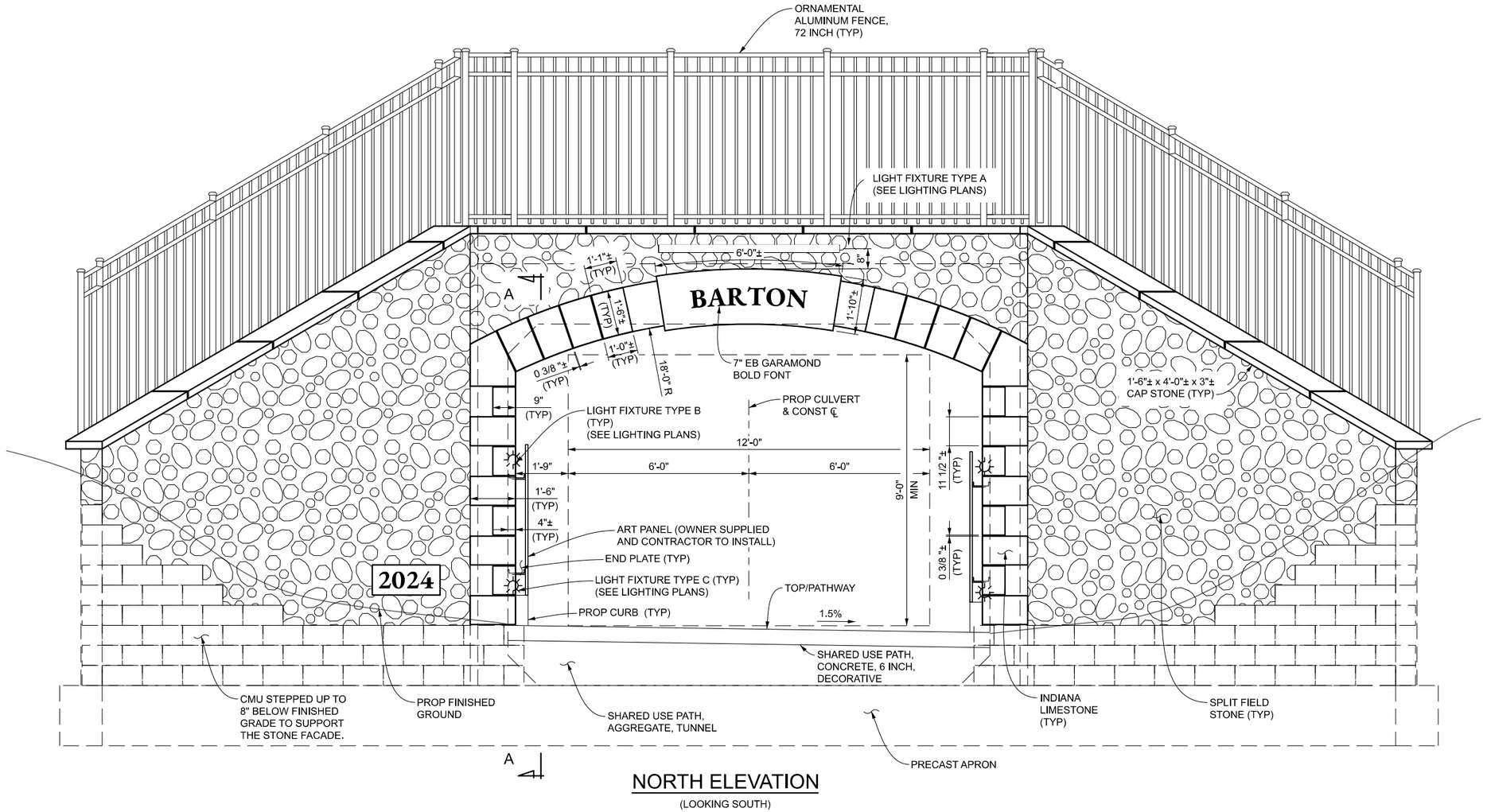
BANDEMER STONE DETAIL



BARTON STONE DETAIL



2024 STONE DETAIL



NORTH ELEVATION

(LOOKING SOUTH)

Colliers Engineering & Design
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REVISIONS

DATE	PROJ NUMBER	ENG	PROJ MGR	CADD	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
4/12/2024		JAH	JAH	JAH	WASHTENAW	CITY OF ANN ARBOR	H: 1"=4' V: 1"=4'	NAD83	NAVD88

CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

AESTHETIC TREATMENT DETAILS

HORIZ. (FT) 0 4 VERT. (FT) 0 4

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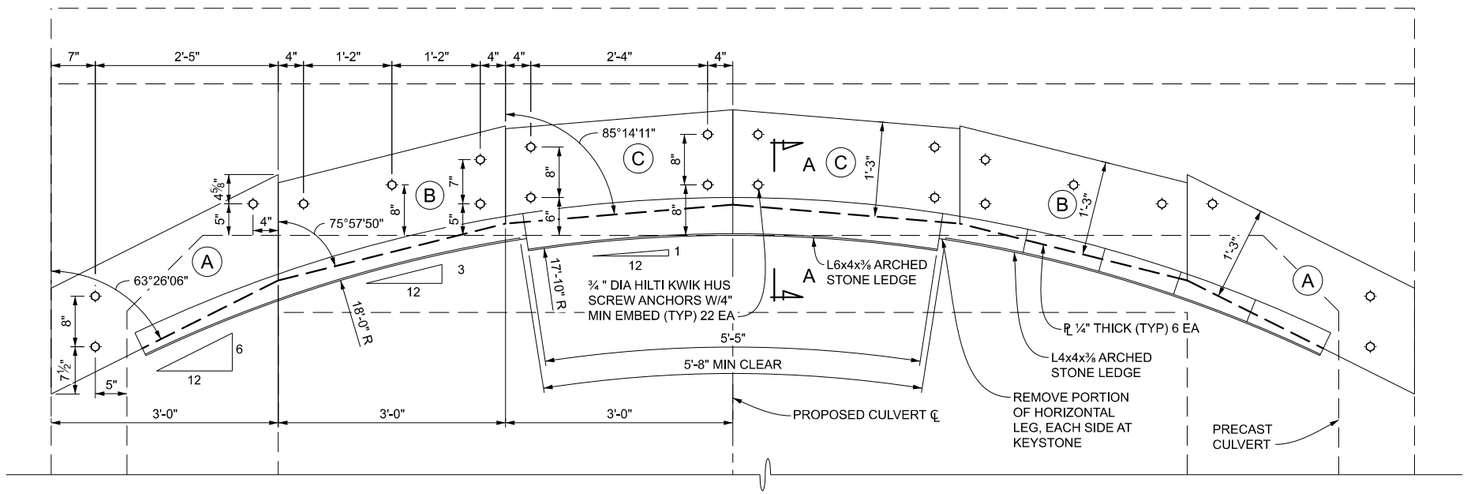
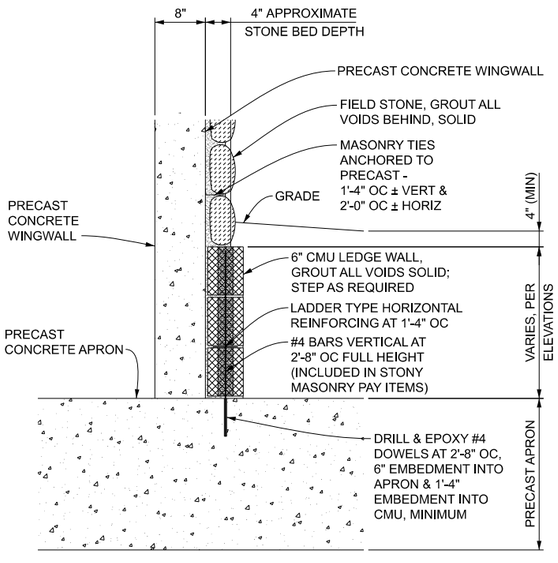


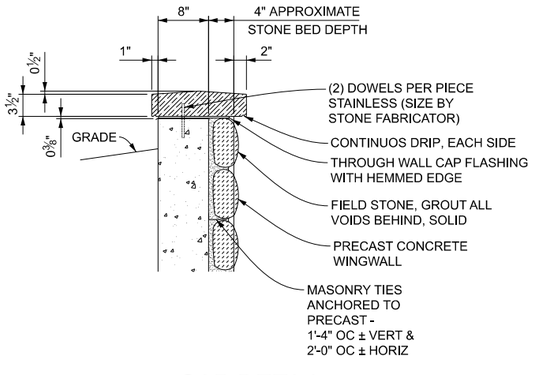
LINTEL PLATE DETAIL ELEVATION

STONE LEDGE, PLATES AND ANCHORS ARE
SYMETRICAL ACROSS CULVERT CENTERLINE

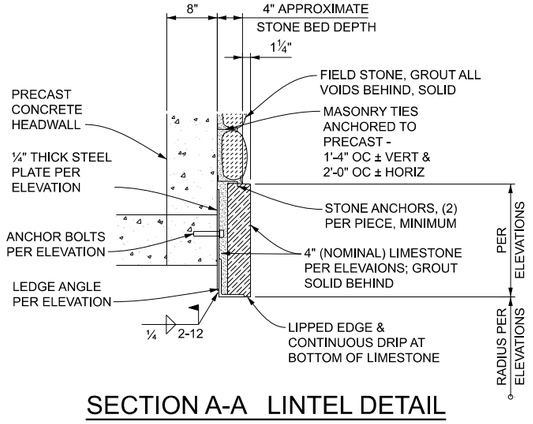
Details for how to hide the box shape and make it look more like an arch



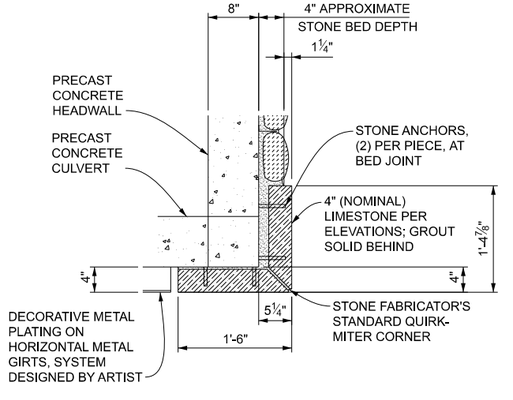
BASE DETAIL



CAP DETAIL



SECTION A-A LINTEL DETAIL



JAMB DETAIL

NOTES:

NOTCH BACK OF STONE AS REQUIRED BY STEEL PLATE AND ANCHORS

ALL STEEL IS TO BE GALVANIZED AND POWDERED COATED BLACK

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PRO. NUMBER
ENG JAH
PROJ MGR JAH
CADD JAH
COUNTY WASHTENAW
CITY/VILLAGE/TOWNSHIP CITY OF ANN ARBOR
SCALE H: 1"=4' V: 1"=4'
HORIZ DATUM NAD83
VERT DATUM NAVD88
HORIZ. (FT) 4 0
VERT. (FT) 4 0

CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
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AESTHETIC TREATMENT DETAILS

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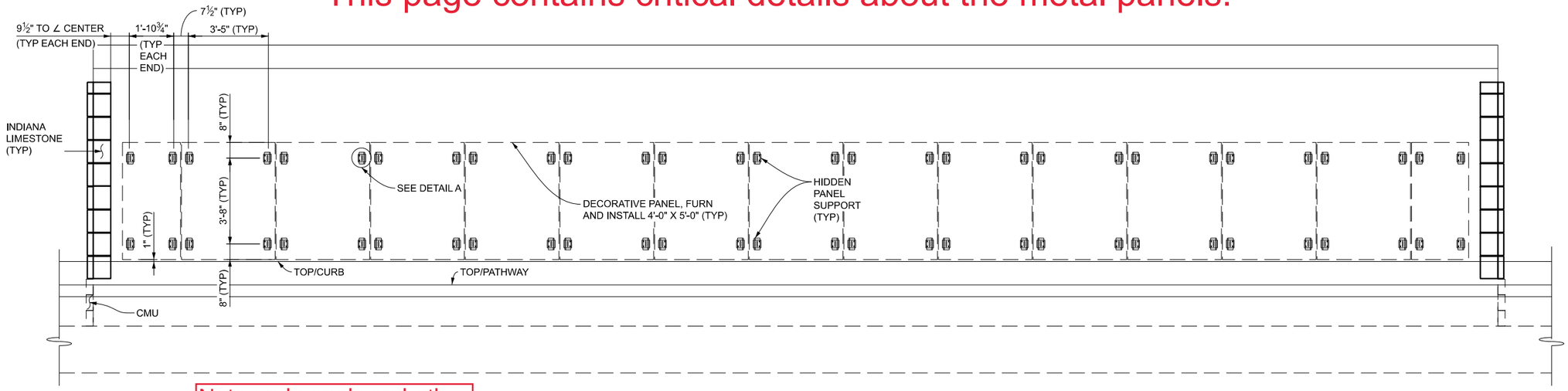
This page contains critical details about the metal panels.



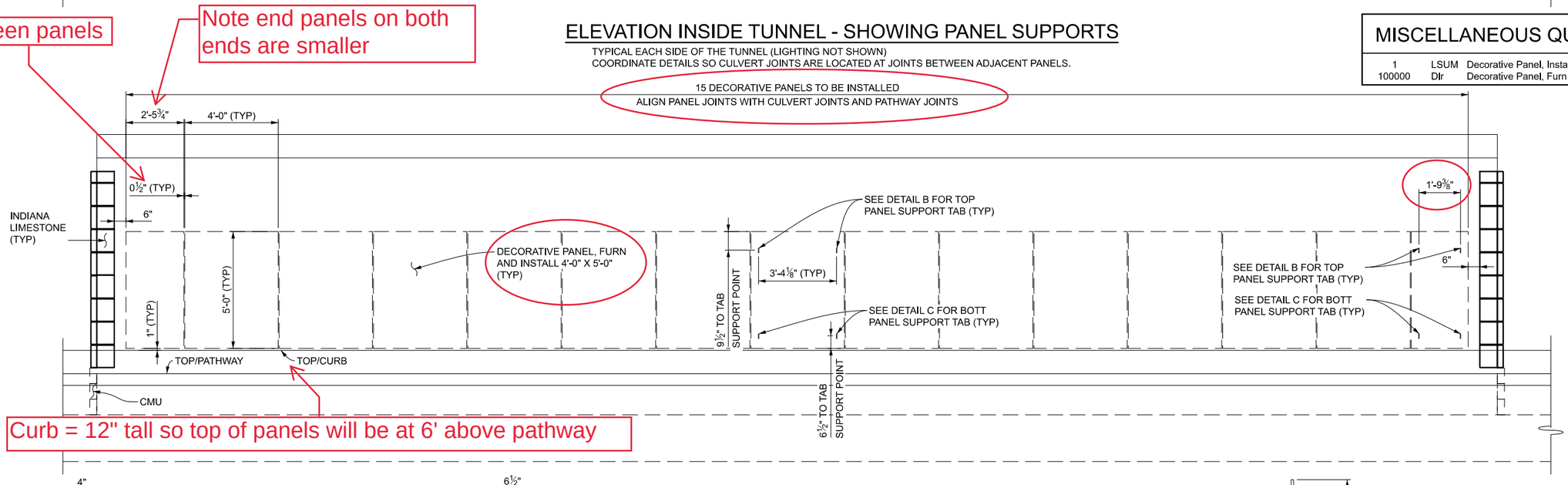
ELEVATION INSIDE TUNNEL - SHOWING PANEL SUPPORTS

TYPICAL EACH SIDE OF THE TUNNEL (LIGHTING NOT SHOWN)
COORDINATE DETAILS SO CULVERT JOINTS ARE LOCATED AT JOINTS BETWEEN ADJACENT PANELS.

15 DECORATIVE PANELS TO BE INSTALLED
ALIGN PANEL JOINTS WITH CULVERT JOINTS AND PATHWAY JOINTS

Gap between panels

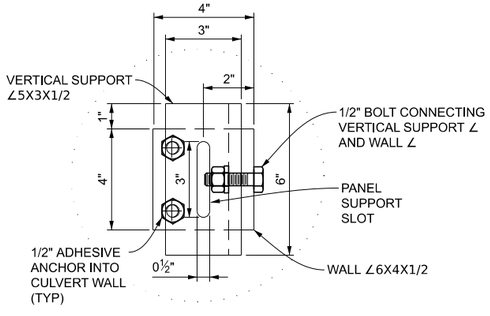
Note end panels on both ends are smaller



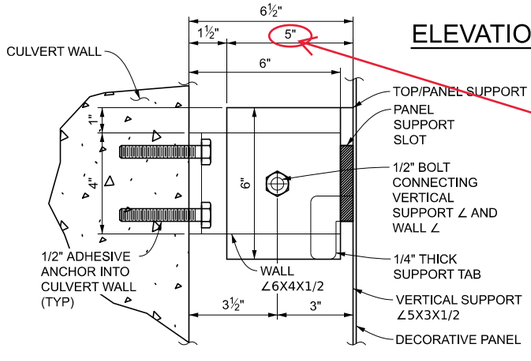
Curb = 12" tall so top of panels will be at 6' above pathway

MISCELLANEOUS QUANTITIES

1	LSUM	Decorative Panel, Install
100000	Dlr	Decorative Panel, Furn



DETAIL A

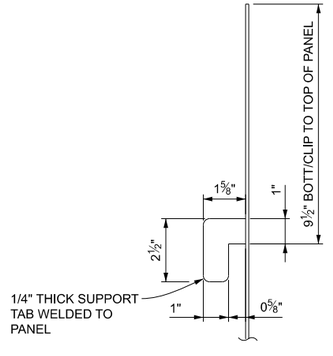


SECTION THRU WALL

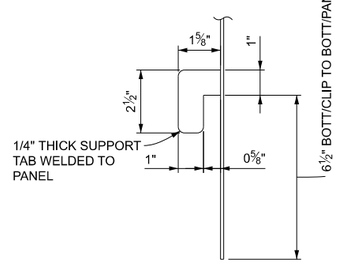
ELEVATION INSIDE TUNNEL - PANELS INSTALLED

TYPICAL EACH SIDE OF THE TUNNEL (LIGHTING NOT SHOWN)

Wall offset



DETAIL B



DETAIL C

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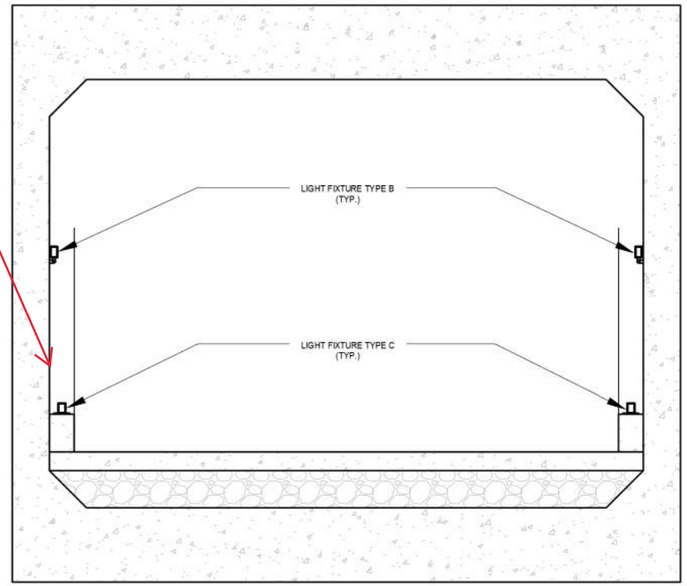
CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

AESTHETIC TREATMENT DETAILS

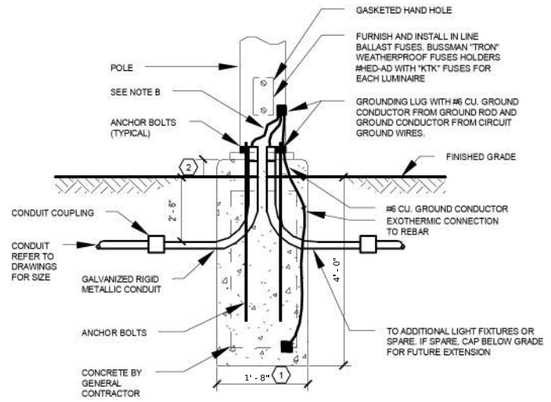
SHEET

Detail shows end section with panel, light and curb placement



2 TUNNEL SECTION

SCALE : 1/4" = 1'-0"



3 TYPICAL LIGHT POLE BASE - GRASS DETAIL

GENERAL NOTES:

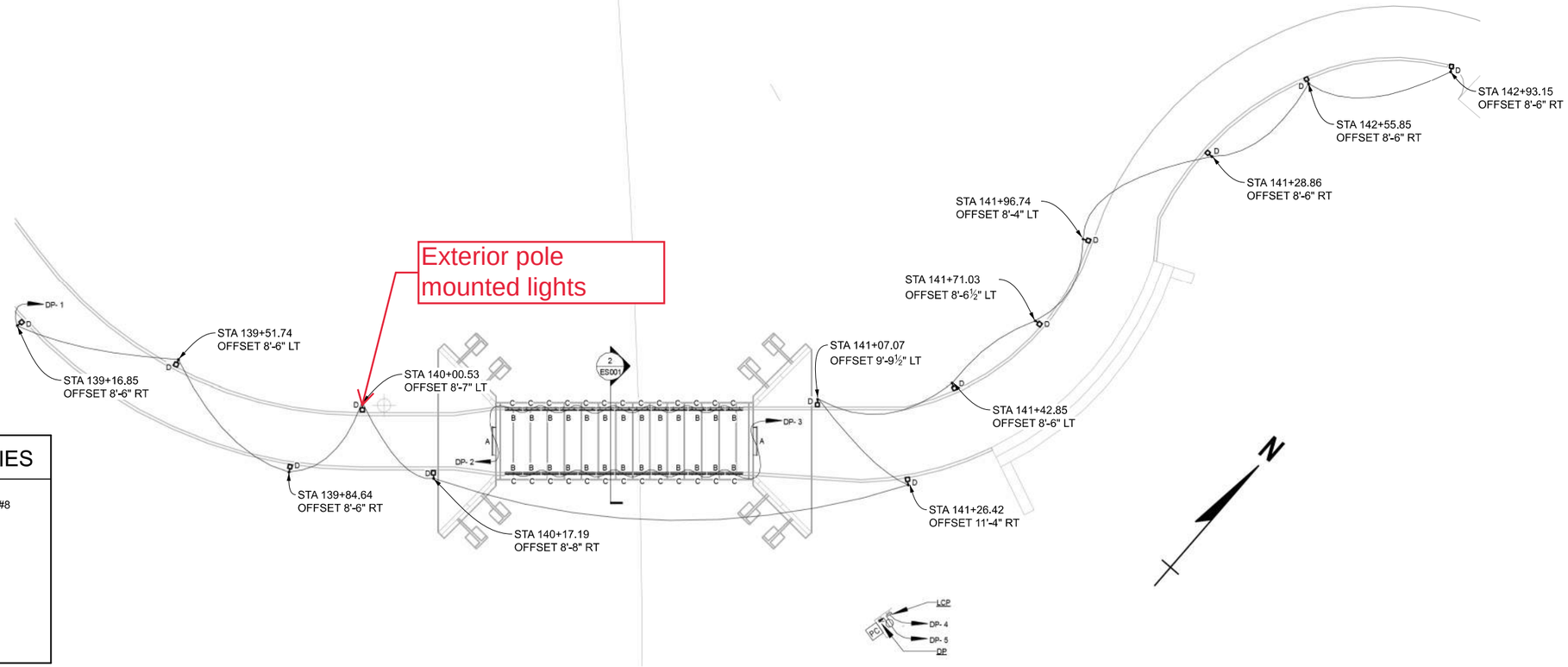
A. FURNISH POLE BASE TEMPLATE TO GENERAL CONTRACTOR PRIOR TO CONCRETE REBAR.

B. PROVIDE GROUNDING BUSHINGS PER NEC.

KEYNOTES: ⟨#⟩

1. REFER TO STRUCTRUAL AND ARCHITECTURAL DRAWINGS FOR BASE SIZE AND REBAR REQUIREMENTS.
2. COORDINATE DIMENSIONS WITH ARCHITECT.

Exterior pole mounted lights



1 ELECTRICAL SITEPLAN

SCALE : 1" = 30'-0"

MISCELLANEOUS QUANTITIES

600	Ft	Conduit, Schedule 40, 1 inch
850	Ft	Cable, Equipment Grounding Wire, 1/C#8
2500	Ft	Cable, 600V, 1, 3/C#2
700	Ft	Cable, Grounding Wire, 1/C#12
1350	Ft	Cable, 600V, 1, 2/C#12
1	Ea	Lighting Control Panel
2	Ea	Luminaire, Wall Mount, Type A
28	Ea	Luminaire, Linear, Type B
28	Ea	Luminaire, Linear, Type C
13	Ea	Luminaire, Pole Mount, Type D
13	Ea	Light Pole Foundation
13	Ea	Light Pole, Type D Pole
20000	Dlr	Electrical Utility Service

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BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT

ELECTRICAL DETAILS

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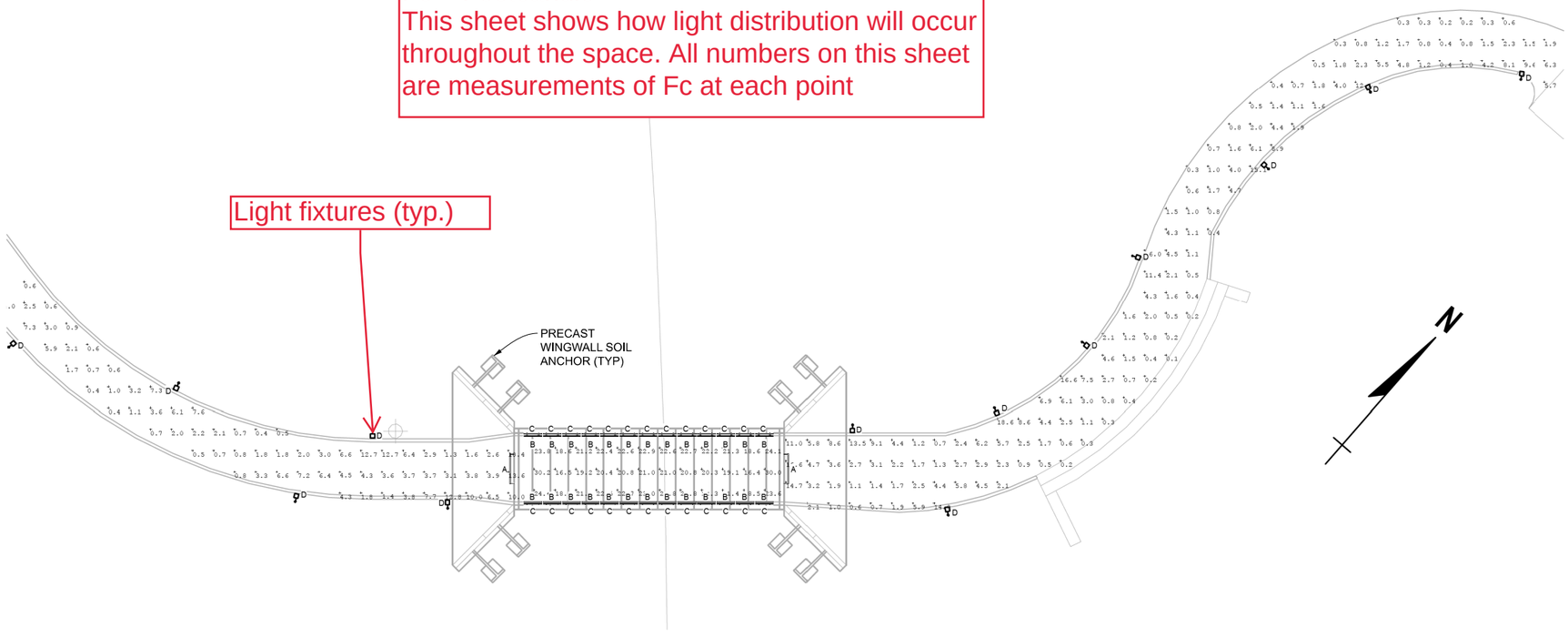
O:\WCPRC\015514.00 WCPRC - Bandemer Barton Trail Design\4.0 Dwgs\4.3 Bridge\xxxxx_elec_001.dgn

Calculation Summary						
AREA	UNITS	AVG	MAX	MIN	AVG/MIN	MAX/MIN
E PATH	Fc	3.31	18.6	0.1	33.10	186.00
TUNNEL WALKWAY	Fc	21.75	30.2	16.4	1.33	1.84
W PATH	Fc	3.89	13.6	0.4	9.73	34.00

Fc = Footcandle
This sheet shows how light distribution will occur throughout the space. All numbers on this sheet are measurements of Fc at each point



1 PHOTOMETRIC SITEPLAN
SCALE : 1" = 30'-0"

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CITY OF ANN ARBOR PRS & WASHTENAW COUNTY PRC
BARTON/BANDEMER PARK PEDESTRIAN TUNNEL PROJECT
ELECTRICAL DETAILS

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