

REVIEWER NOTES:

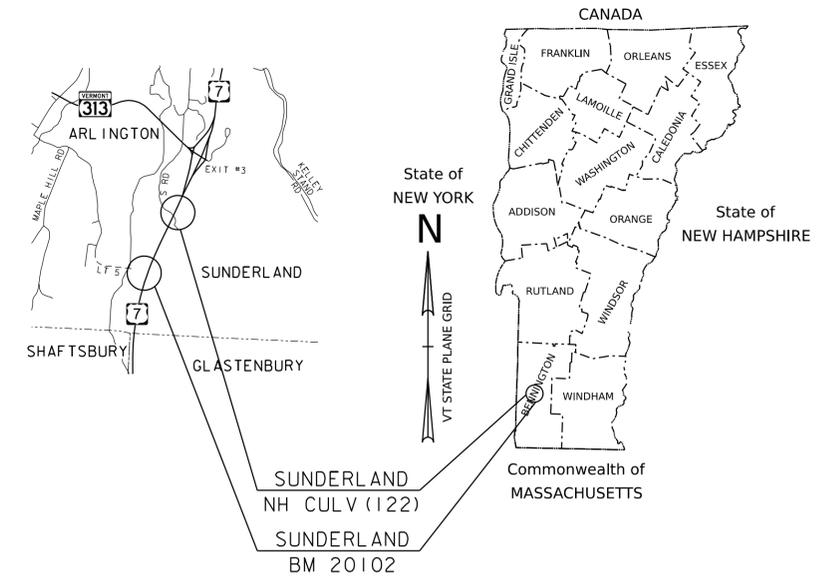
1. NO ROW IMPACTS ARE ANTICIPATED.
2. DUE TO CHALLENGES IN PROCURING SAND FOR CONSTRUCTION, NO SAND IS REQUIRED FOR THE ROADWAY BASE. DENSE GRADED CRUSHED STONE SHALL BE CONSTRUCTED TO THE LIMIT OF THE DESIGN FROST DEPTH AS INDICATED ON THE TYPICAL SECTIONS.
3. FOR BM 20102, THE PROJECTED AREA OF DISTURBANCE WITHIN THE SLOPE LIMITS IS 0.72 AC. THE PROJECTED AREA OF DISTURBANCE INCLUDING TEMPORARY CONSTRUCTION CONSIDERATION IS 0.92 AC.
4. FOR NH CULV(122), THE PROJECTED AREA OF DISTURBANCE WITHIN THE SLOPE LIMITS IS 0.81 AC. THE PROJECTED AREA OF DISTURBANCE INCLUDING TEMPORARY CONSTRUCTION CONSIDERATION IS 0.91 AC.
5. FOR NH CULV(122) GUARDRAIL DESIGN ASSUMES MATCH TO EXISTING 29" RAIL TO THE SOUTH.

STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT BRIDGE PROJECT

TOWN OF SUNDERLAND
COUNTY OF BENNINGTON

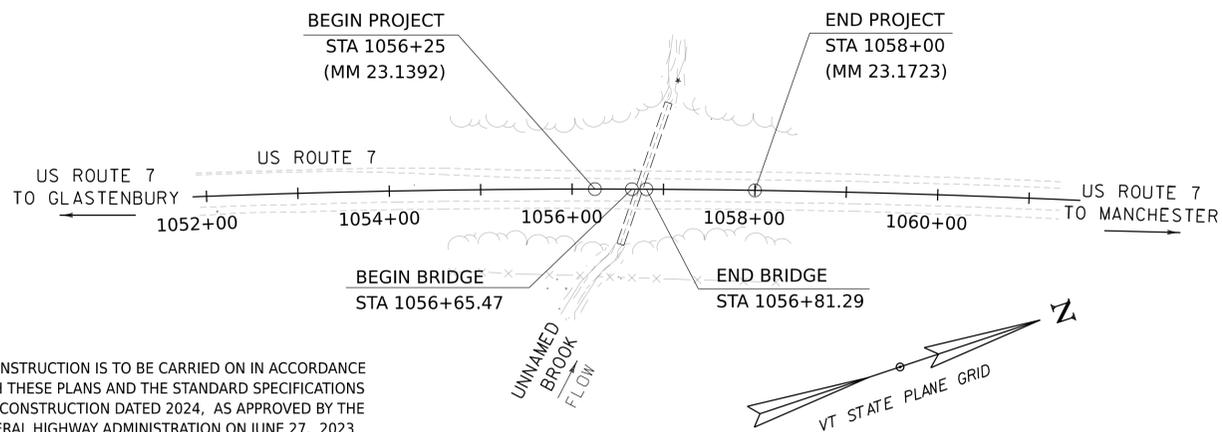


SUNDERLAND BM 20102
ROUTE NO : US ROUTE 7 PRINCIPAL ARTERIAL
BRIDGE NO : 19-5

PROJECT LOCATION: 1.10 MILE SOUTH OF VT ROUTE 313, AT UNNAMED BROOK.

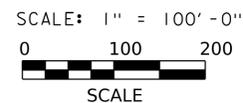
PROJECT DESCRIPTION: REPLACEMENT OF EXISTING BRIDGE STRUCTURE (BRIDGE 19-5) WITH A NEW STRUCTURE WITH RELATED APPROACH ROADWAY AND CHANNEL WORK.

PROJECT LENGTH: LENGTH OF ROADWAY: 375 FT
 LENGTH OF STRUCTURE: 15.82 FT
 LENGTH OF PROJECT: 175 FT



CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2024, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 27, 2023 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

QUALITY ASSURANCE PROGRAM : LEVEL 1
SURVEYED BY : R. GILMAN SURVEYED DATE : 6-20-2022
DATUM VERTICAL NAVD 88 HORIZONTAL NAD 83 (2011)

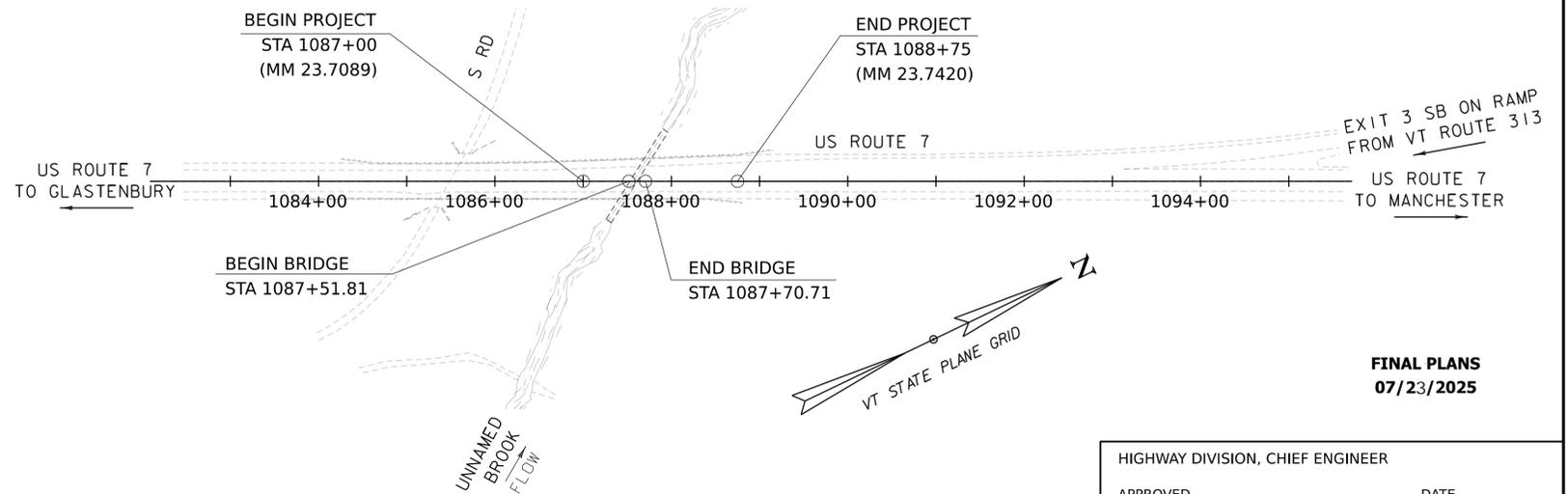


SUNDERLAND NH CULV(122)
ROUTE NO : US ROUTE 7 PRINCIPAL ARTERIAL
BRIDGE NO : 19-7

PROJECT LOCATION: 0.52 MILE SOUTH OF VT ROUTE 313 AT UNNAMED BROOK

PROJECT DESCRIPTION: REPLACEMENT OF EXISTING BRIDGE STRUCTURE (BRIDGE 19-7) WITH A NEW STRUCTURE WITH RELATED APPROACH ROADWAY AND CHANNEL WORK.

PROJECT LENGTH: LENGTH OF ROADWAY: 375 FT
 LENGTH OF STRUCTURE: 18.90 FT
 LENGTH OF PROJECT: 175 FT



**FINAL PLANS
07/23/2025**

HIGHWAY DIVISION, CHIEF ENGINEER
APPROVED _____ DATE _____
PROJECT MANAGER : G. LAROCHE P. E.
PROJECT NAME : SUNDERLAND PROJECT NUMBER : BM 20102 & NH CULV (122)
SHEET 1 OF 65 SHEETS



COMPOSITE SHEETS

1	COMBINED TITLE SHEET
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3	CONVENTIONAL SYMBOLOGY LEGEND SHEET

BM 20102 BRIDGE 19-5

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11	LAYOUT PLAN
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13	US7 PROFILE - BANKING DIAGRAM
14	MATERIAL TRANSITION
15	TRAFFIC CONTROL SHEET
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20	CULVERT LAYOUT PLAN
21	SUBSTRUCTURE DETAILS
22-25	MAINLINE CROSS SECTIONS (1-4)
26-30	CULVERT CROSS SECTIONS (1-5)
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32	LANDSCAPE PLAN

NH CULV(122) BRIDGE 19-7

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43	MATERIAL TRANSITION
44	TRAFFIC CONTROL SHEET
45	BORING INFORMATION SHEET
46	BORING LOGS SHEET 1
47	PLAN AND ELEVATION SHEET
48	CULVERT LAYOUT PLAN
49	SUBSTRUCTURE DETAILS
50-54	MAINLINE CROSS SECTIONS (1-5)
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60	EXISTING EPSC SITE PLAN
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COMPOSITE SHEETS

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COMPOSITE DETAILS

HSD-400.01	SAFETY EDGE DETAILS	1/5/2018
HSD-621.01	POST AND BLOCKOUT DETAILS FOR STEEL BEAM GUARDRAIL, GALVANIZED	6/9/2015
HSD-621.07A	MIDWEST GUARDRAIL SYSTEM (MGS)	1/4/2021
HSD-621.07B	W-BEAM GUARDRAIL COMPONENTS	4/17/2019
HSD-621.07C	MIDWEST GUARDRAIL SYSTEM (MGS) ANCHOR	4/17/2019
HSD-621.07D	MIDWEST GUARDRAIL SYSTEM (MGS) ANCHOR COMPONENTS	4/17/2019
HSD-621.07E	MIDWEST GUARDRAIL SYSTEM (MGS) ANCHOR COMPONENTS 2	4/17/2019
HSD-621.07F	MIDWEST GUARDRAIL SYSTEM TRANSITION SECTION	1/4/2021

STANDARDS LIST

E-10	ROLLED EROSION CONTROL PRODUCT, TYPE I	04-07-2020
E-12	STABILIZED CONSTRUCTION ENTRANCE	04-07-2020
E-15	SILT FENCE	04-07-2020
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	03-10-2017
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	03-10-2017
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	10-02-2018
S-500	CONCRETE DETAILS AND NOTES	02-15-2023
S-501	CONCRETE DETAILS AND NOTES	02-15-2023
T-1	TRAFFIC CONTROL GENERAL NOTES	04-25-2016
T-2	TRAFFIC SIGN GENERAL NOTES	04-07-2020
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-11	CONSTRUCTION APPROACH SIGNING DIVIDED HIGHWAY ONE LANE CLOSED	08-06-2012
T-12	TRAFFIC CONTROL DIVIDED HIGHWAY ONE LANE CLOSED	08-06-2012
T-13	TRAFFIC CONTROL DIVIDED HIGHWAY ONE LANE CLOSED	08-06-2012
T-17	TRAFFIC CONTROL MISCELLANEOUS DETAILS	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-29	CONSTRUCTION SIGN DETAILS	08-06-2012
T-30	CONSTRUCTION SIGN DETAILS	02-17-2022
T-31	CONSTRUCTION SIGN DETAILS	08-06-2012
T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	08-06-2012
T-36	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING	08-06-2012
T-40	DELINEATORS AND MILEPOSTS	01-02-2013
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013



PROJECT NAME:	SUNDERLAND
PROJECT NUMBER:	BM 20102 & NH CULV(122)
FILE NAME:	z20bl55ind.dgn
PROJECT LEADER:	A. STOCKIN
DESIGNED BY:	M. GROTE
INDEX OF SHEETS	
PLOT DATE:	7/2/2025
DRAWN BY:	M. HERMIS
CHECKED BY:	T. HIGGINSON
SHEET	2 OF 65

GENERAL INFORMATION

SYMBOLGY LEGEND NOTE

THE SYMBOLGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLGY. THE SYMBOLGY IS USED FOR EXISTING & PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROJECT ANNOTATION, AS NOTED ON PROJECT PLAN SHEETS. THIS LEGEND SHEET COVERS THE BASICS. SYMBOLGY ON PLANS MAY VARY, PLAN ANNOTATIONS AND NOTES SHOULD BE USED TO CLARIFY AS NEEDED.

R. O. W. ABBREVIATIONS (CODES) & SYMBOLS

POINT CODE	DESCRIPTION
CH	CHANNEL EASEMENT
CONST	CONSTRUCTION EASEMENT
CUL	CULVERT EASEMENT
D&C	DISCONNECT & CONNECT
DIT	DITCH EASEMENT
DR	DRAINAGE EASEMENT
DRIVE	DRIVEWAY EASEMENT
EC	EROSION CONTROL
HWY	HIGHWAY EASEMENT
I&M	INSTALL & MAINTAIN EASEMENT
LAND	LANDSCAPE EASEMENT
R&RES	REMOVE & RESET
R&REP	REMOVE & REPLACE
SR	SLOPE RIGHT
UE	UTILITY EASEMENT
(P)	PERMANENT EASEMENT
(T)	TEMPORARY EASEMENT
■	BNDNS BOUND SET
□	BNDNS BOUND TO BE SET
●	IPNS IRON PIN SET
⊙	IPNS IRON PIN TO BE SET
⊠	CALC EXISTING ROW POINT
○	PROW PROPOSED ROW POINT
[LENGTH]	LENGTH CARRIED ON NEXT SHEET

COMMON TOPOGRAPHIC POINT SYMBOLS

POINT CODE	DESCRIPTION
⊕	APL BOUND APPARENT LOCATION
□	BM BENCHMARK
□	BND BOUND
⊠	CB CATCH BASIN
⊕	COMB COMBINATION POLE
⊠	DITHR DROP INLET THROATED DNC
⊕	EL ELECTRIC POWER POLE
○	FPOLE FLAGPOLE
○	GASFIL GAS FILLER
○	GP GUIDE POST
×	GSO GAS SHUT OFF
○	GUY GUY POLE
○	GUYW GUY WIRE
×	GV GATE VALVE
⊕	H TREE HARDWOOD
△	HCTRL CONTROL HORIZONTAL
△	HVCTRL CONTROL HORIZ. & VERTICAL
◇	HYD HYDRANT
○	IP IRON PIN
○	IPIPE IRON PIPE
□	LI LIGHT - STREET OR YARD
⊕	MB MAILBOX
○	MH MANHOLE (MH)
○	MM MILE MARKER
○	PM PARKING METER
○	PMK PROJECT MARKER
○	POST POST STONE/WOOD
⊕	RRSIG RAILROAD SIGNAL
⊕	RRSL RAILROAD SWITCH LEVER
⊕	S TREE SOFTWOOD
⊕	SAT SATELLITE DISH
⊕	SHRUB SHRUB
⊕	SIGN SIGN
⊕	STUMP STUMP
⊕	TEL TELEPHONE POLE
○	TIE TIE
⊕	TSIGN SIGN W/DOUBLE POST
⊕	VCTRL CONTROL VERTICAL
○	WELL WELL
×	WSO WATER SHUT OFF

THESE ARE COMMON VAOT SURVEY POINT SYMBOLS FOR EXISTING FEATURES, ALSO USED FOR PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROPOSED ANNOTATION.

PROPOSED GEOMETRY CODES

CODE	DESCRIPTION
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
CC	CENTER OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
POB	POINT OF BEGINNING
POE	POINT OF ENDING
STA	STATION PREFIX
AH	AHEAD STATION SUFFIX
BK	BACK STATION SUFFIX
D	CURVE DEGREE OF (100FT)
R	CURVE RADUIS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE

UTILITY SYMBOLGY

UNDERGROUND UTILITIES

— UGU —	UTILITY (GENERIC-UNKNOWN)
— UT —	TELEPHONE
— UE —	ELECTRIC
— UC —	CABLE (TV)
— UEC —	ELECTRIC+CABLE
— UET —	ELECTRIC+TELEPHONE
— UCT —	CABLE+TELEPHONE
— UECT —	ELECTRIC+CABLE+TELEP.
— G —	GAS LINE
— W —	WATER LINE
— S —	SANITARY SEWER (SEPTIC)

ABOVE GROUND UTILITIES (AERIAL)

— AGU —	UTILITY (GENERIC-UNKNOWN)
— T —	TELEPHONE
— E —	ELECTRIC
— C —	CABLE (TV)
— EC —	ELECTRIC+CABLE
— ET —	ELECTRIC+TELEPHONE
— AER E&T —	ELECTRIC+TELEPHONE
— CT —	CABLE+TELEPHONE
— ECT —	ELECTRIC+CABLE+TELEP.
—	UTILITY POLE GUY WIRE

PROJECT CONSTRUCTION SYMBOLGY

PROJECT DESIGN & LAYOUT SYMBOLGY

— CZ —	CLEAR ZONE
—	PLAN LAYOUT MATCH LINE

PROJECT CONSTRUCTION FEATURES

—	TOP OF CUT SLOPE
—	TOE OF FILL SLOPE
⊗	STONE FILL
—	BOTTOM OF DITCH
—	CULVERT PROPOSED
—	STRUCTURE SUBSURFACE
PDF	PROJECT DEMARCATION FENCE
BF	BARRIER FENCE
XXXXXXXXXXXXXXXXXXXX	TREE PROTECTION ZONE (TPZ)
////	STRIPING LINE REMOVAL
~~~~	SHEET PILES

**CONVENTIONAL BOUNDARY SYMBOLGY**

**BOUNDARY LINES**

— TOWN LINE —	TOWN BOUNDARY LINE
— COUNTY LINE —	COUNTY BOUNDARY LINE
— STATE LINE —	STATE BOUNDARY LINE
—	PROPOSED STATE R.O.W. (LIMITED ACCESS)
—	PROPOSED STATE R.O.W.
—	STATE ROW (LIMITED ACCESS)
—	STATE ROW
—	TOWN ROW
—	PERMANENT EASEMENT LINE (P)
—	TEMPORARY EASEMENT LINE (T)
—	SURVEY LINE
P P	PROPERTY LINE (P/L)
L L	SLOPE RIGHTS
SR SR SR	6F PROPERTY BOUNDARY
6f	4F PROPERTY BOUNDARY
4f	HAZARDOUS WASTE
HAZ	

**EPSC LAYOUT PLAN SYMBOLGY**

**EPSC MEASURES**

—	FILTER CURTAIN
—	SILT FENCE
—	SILT FENCE WOVEN WIRE
—	CHECK DAM
—	DISTURBED AREAS REQUIRING RE-VEGETATION
—	EROSION MATTING

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLGY

**ENVIRONMENTAL RESOURCES**

—	WETLAND BOUNDARY
—	RIPARIAN BUFFER ZONE
—	WETLAND BUFFER ZONE
—	SOIL TYPE BOUNDARY
— T&E —	THREATENED & ENDANGERED SPECIES
HAZ	HAZARDOUS WASTE AREA
— AG —	AGRICULTURAL LAND
— HABITAT —	FISH & WILDLIFE HABITAT
— FLOOD PLAIN —	FLOOD PLAIN
— OHW —	ORDINARY HIGH WATER (OHW)
—	STORM WATER
—	USDA FOREST SERVICE LANDS
—	WILDLIFE HABITAT SUIT/CONN
— BAT —	BAT HABITAT

**ARCHEOLOGICAL & HISTORIC**

— ARCH —	ARCHEOLOGICAL BOUNDARY
— HISTORIC DIST —	HISTORIC DISTRICT BOUNDARY
— HISTORIC —	HISTORIC AREA
(H)	HISTORIC STRUCTURE

**CONVENTIONAL TOPOGRAPHIC SYMBOLGY**

**EXISTING FEATURES**

—	ROAD EDGE PAVEMENT
—	ROAD EDGE GRAVEL
—	DRIVEWAY EDGE
—	DITCH
—	FOUNDATION
—	FENCE (EXISTING)
—	FENCE WOOD POST
—	FENCE STEEL POST
—	GARDEN
—	ROAD GUARDRAIL
—	RAILROAD TRACKS
—	CULVERT (EXISTING)
—	STONE WALL
—	WALL
—	WOOD LINE
—	BRUSH LINE
—	HEDGE
—	BODY OF WATER EDGE
—	LEDGE EXPOSED

PROJECT NAME:	SUNDERLAND
PROJECT NUMBER:	BM 20102 & NH CULV(I22)
FILE NAME:	z20b155legend.dgn
PROJECT LEADER:	A. STOCKIN
DESIGNED BY:	M. GROTE
CONVENTIONAL SYMBOLGY LEGEND SHEET	
PLOT DATE:	7/2/2025
DRAWN BY:	M. HERMIS
CHECKED BY:	T. HIGGINSON
SHEET	3 OF 65





# PRELIMINARY INFORMATION SHEET (CULVERT)

### INDEX OF SHEETS

#### PLAN SHEETS

SEE INDEX OF SHEETS FOR SUNDERLAND BM 20102 INDEX

#### DETAIL SHEETS

### STANDARDS LIST

### FINAL HYDRAULIC REPORT

#### HYDROLOGIC DATA

Date: 12/05/2024

DRAINAGE AREA : 0.36 Sq.mi  
 CHARACTER OF TERRAIN :  
 STREAM CHARACTERISTICS :  
 NATURE OF STREAMBED :

#### PEAK FLOW DATA

Q 2.33 = 32 cfs                      Q 50 = 140 cfs  
 Q 10 = 76 cfs                      Q 100 = 180 cfs  
 Q 25 = 110 cfs                      Q 500 =

DATE OF FLOOD OF RECORD : Unknown  
 ESTIMATED DISCHARGE: Unknown  
 WATER SURFACE ELEV.: Unknown  
 NATURAL STREAM VELOCITY :  
 ICE CONDITIONS :  
 DEBRIS:  
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY?  
 IS ORDINARY RISE RAPID?  
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS?  
 IF YES, DESCRIBE:

WATERSHED STORAGE: 0.0%      HEADWATERS:  
 UNIFORM:  
 IMMEDIATELY ABOVE SITE:

#### EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Corrugated Metal Pipe Plate Arch  
 YEAR BUILT: 1978  
 CLEAR SPAN(NORMAL TO STREAM): 8.2 ft  
 VERTICAL CLEARANCE ABOVE STREAMBED: 5.8 ft  
 WATERWAY OF FULL OPENING: 162 ft  
 DISPOSITION OF STRUCTURE: Replacement  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See Borings

#### WATER SURFACE ELEVATIONS AT:

Q2.33 =                      VELOCITY =  
 Q10 =                      "  
 Q25 =                      "  
 Q50 =                      "  
 Q100 =                      "

#### LONG TERM STREAMBED CHANGES:

IS THE ROADWAY OVERTOPPED BELOW Q100: N/A  
 FREQUENCY: N/A  
 RELIEF ELEVATION: N/A  
 DISCHARGE OVER ROAD @Q100: N/A

#### UPSTREAM STRUCTURE

TOWN:                      DISTANCE:  
 HIGHWAY # :                      STRUCTURE #:  
 CLEAR SPAN:                      CLEAR HEIGHT:  
 YEAR BUILT:                      FULL WATERWAY:  
 STRUCTURE TYPE:

#### DOWNSTREAM STRUCTURE

TOWN:                      DISTANCE:  
 HIGHWAY # :                      STRUCTURE #:  
 CLEAR SPAN:                      CLEAR HEIGHT:  
 YEAR BUILT:                      FULL WATERWAY:  
 STRUCTURE TYPE:

#### LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER						

#### CULVERT DESIGN CRITERIA

- PROPOSED CULVERT IS A PRECAST CONCRETE BOX (14'-0" X 8'-0" X 125'-0" BOX).
- CULVERT WILL REQUIRE AQUATIC ORGANISM PASSAGE (AOP).

#### PROPOSED STRUCTURE

STRUCTURE TYPE: Concrete Box Culvert  
 CLEAR SPAN(NORMAL TO STREAM): 14.0 ft  
 VERTICAL CLEARANCE ABOVE STREAMBED: 6.0 ft  
 WATERWAY OF FULL OPENING: 923.84 ft

#### WATER SURFACE ELEVATIONS AT:

Q2.33 = 930.16 ft                      VELOCITY= 4.11 fps  
 Q10 = 930.79 ft                      " 5.76 fps  
 Q25 = 931.24 ft                      " 6.67 fps  
 Q50 = 931.59 ft                      " 7.33 fps  
 Q100 = 932.02 ft                      " 8.10 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: N/A  
 FREQUENCY: N/A  
 RELIEF ELEVATION: N/A  
 DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE:  
 VERTICAL CLEARANCE: @ Q =

SCOUR: N/A

REQUIRED CHANNEL PROTECTION: Stone Fill, Type II

#### PERMIT INFORMATION

AVERAGE DAILY FLOW:                      DEPTH OR ELEVATION:  
 ORDINARY LOW WATER:                      "  
 ORDINARY HIGH WATER:                      "

#### TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: N/A  
 CLEAR SPAN (NORMAL TO STREAM): N/A  
 VERTICAL CLEARANCE ABOVE STREAMBED: N/A  
 WATERWAY AREA OF FULL OPENING: N/A

#### ADDITIONAL INFORMATION

E-Stone Fill, Type II to be used for all in-channel work

#### TRAFFIC MAINTENANCE NOTES

- MAINTAIN TRAFFIC ON AN OFF SITE DETOUR DURING THE TIME THE EXISTING ROADWAY WILL BE CLOSED.
- SIDEWALKS ARE NOT NECESSARY.

#### DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 0.0 INCH
3. CULVERT OPENING	D: 14.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	f _y : ---
6. PRESTRESSED CONCRETE STRENGTH	f'c: ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'cr: ---
8. HIGH PERFORMANCE CONCRETE, CLASS PCD	f'c: ---
9. HIGH PERFORMANCE CONCRETE, CLASS PCS	f'c: ---
10. CONCRETE HIGH PERFORMANCE, CLASS SCC	f'c: ---
11. CONCRETE, CLASS C	f'c: ---
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f _y : ---
14. NOMINAL BEARING RESISTANCE OF SOIL	q _n : ---
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
16. NOMINAL BEARING RESISTANCE OF ROCK	q _n : ---
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
18. PILE RESISTANCE FACTOR	φ: ---
19. LATERAL PILE DEFLECTION	Δ: ---
20. BASIC WIND SPEED	V _{3s} : ---
21. MINIMUM GROUND SNOW LOAD	p _g : ---
22. SEISMIC DATA	PGA: --- S ₁ : --- S ₂ : ---
23.	---
24.	---
25.	---
26.	---

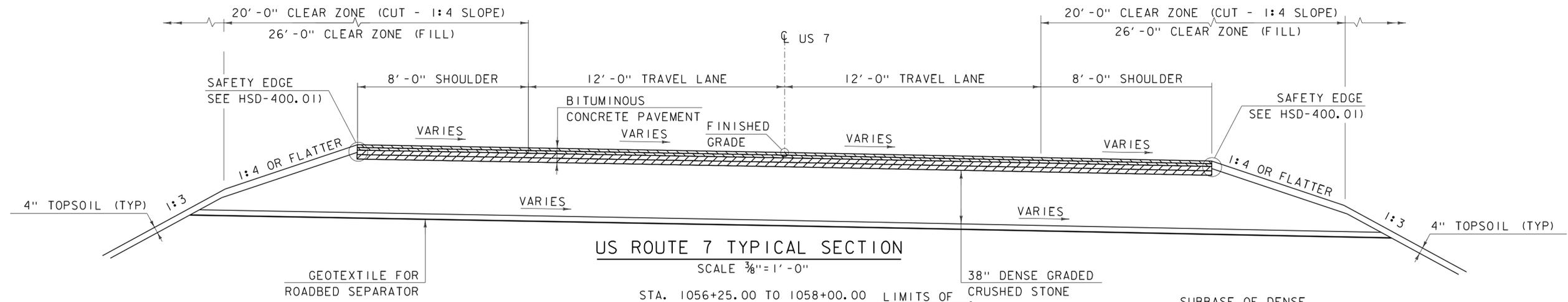
PROJECT NAME: SUNDERLAND  
 PROJECT NUMBER: BM 20102  
 FILE NAME: X20B155FORMS.DGN                      PLOT DATE: 6/12/2025  
 PROJECT LEADER: A. STOCKIN                      DRAWN BY: M. HERMIS  
 DESIGNED BY: M. GROTE                      CHECKED BY: T. HIGGINSON  
**PRELIMINARY INFORMATION SHEET 1**                      SHEET 5 OF 65

#### TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2027	7760	950	51	5.3	470
2047	8520	1050	51	6.3	615

AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

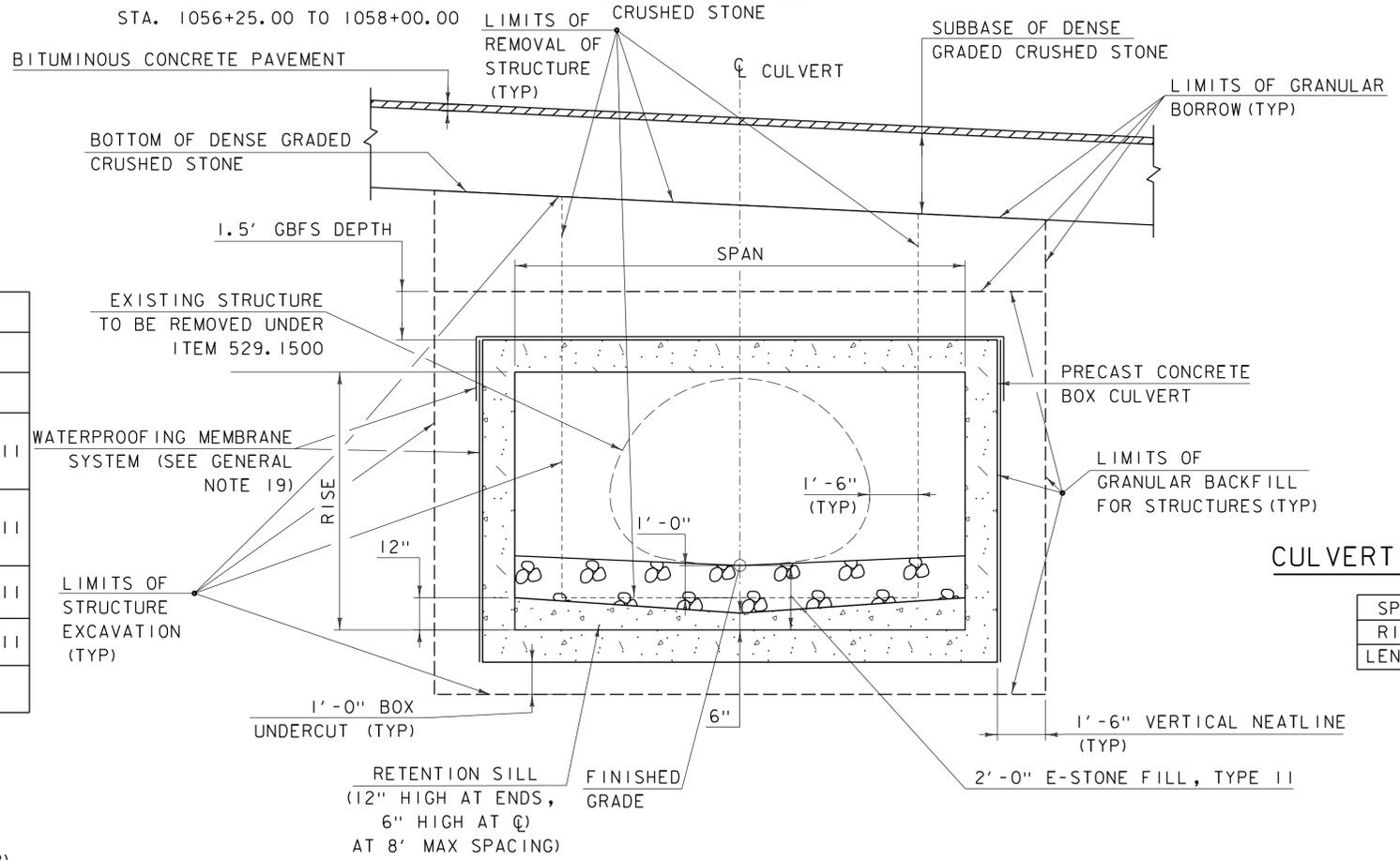
20 year ESAL for flexible pavement from 2027 to 2047 : 3341500  
 40 year ESAL for flexible pavement from 2027 to 2067 : 7072000  
 Design Speed : 55 mph



**US ROUTE 7 TYPICAL SECTION**  
SCALE 3/8" = 1' - 0"

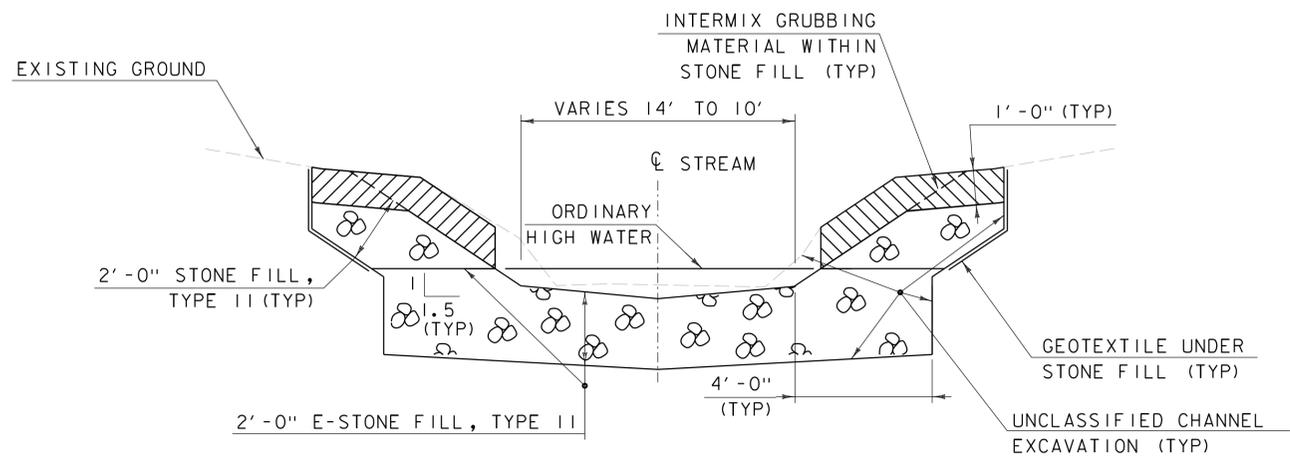
**BITUMINOUS CONCRETE PAVEMENT MATERIAL REQUIREMENTS**

	THICKNESS	DESCRIPTION
BINDER	58E-28	PERFORMANCE GRADE ASPHALT BINDER
GYRATION	65	DESIGN NUMBER OF GYRATIONS
WEARING COURSE	1 1/2"	BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER III
INTERMEDIATE COURSE	1 1/2"	BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER III
BASE COURSE #2	2 1/2"	BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER III
BASE COURSE #1	2 1/2"	BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER III
BASE	38"	DENSE GRADED CRUSHED STONE



**CULVERT REQUIREMENTS**

SPAN	14' - 0"
RISE	8' - 0"
LENGTH	125' - 0"



**TYPICAL CHANNEL SECTION**  
(NOT TO SCALE)

**CULVERT TYPICAL SECTION**  
(NOT TO SCALE)

**NOTE:**

- WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF THE ROADWAY SUBBASE.
- THE CONTRACTOR SHALL CREATE A LOW FLOW CHANNEL IN THE STREAM BED MATERIAL AS DIRECTED BY THE ENGINEER.
- WHENEVER BEDROCK IS ENCOUNTERED DURING EXCAVATION OF THE CHANNEL KEY OR FILL SLOPES, THE ENGINEER WILL COORDINATE WITH THE RIVER MANAGEMENT ENGINEER FOR APPROVAL OF HOW TO CONSTRUCT THE CHANNEL.
- REUSE OF NATIVE MATERIAL MEETING THE SPECIFICATION OF GRANULAR BORROW IS PERMITTED.

MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	
SAND BORROW	+/- 1"

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: BM 20102  
FILE NAME: z20bl55typ.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
TYPICAL SECTIONS

PLOT DATE: 7/6/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 6 OF 65



GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION 2024, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATION 9TH EDITION, DATED 2020, AND ITS LATEST REVISIONS.
2. THE MANUFACTURE OF THE PRECAST UNITS AND ALL DIMENSIONAL TOLERANCES SHALL BE IN ACCORDANCE WITH PCIMNL-I16 AND PCIMNL-I35, OR WITH THE NPCA QUALITY CONTROL MANUAL FOR PRECAST CONCRETE/PLANTS, UNLESS OTHERWISE NOTED IN THE CONTRACT OR AS APPROVED BY THE ENGINEER.
3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING CONSISTENCY BETWEEN THE FABRICATOR'S SHOP DRAWINGS AND ENSURING THAT ALL PRECAST COMPONENTS FIT TOGETHER.
4. ALL DIMENSIONS ARE GIVEN AT 68 DEGREES FAHRENHEIT UNLESS NOTED OTHERWISE.

EARTHWORK NOTES:

5. THE REMOVAL OF THE EXISTING STRUCTURE WILL BE PAID UNDER ITEM 529.1500 "REMOVAL OF STRUCTURE". THIS WORK INCLUDES REMOVAL OF THE ENTIRE PIPE AND ANY PORTIONS OF THE EXISTING HEADWALLS AND ALL PARTS OF THE EXISTING STRUCTURE THAT MAY FALL OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION, AS WELL AS ANY MATERIAL LOCATED WITHIN THE LIMITS OF "REMOVAL OF STRUCTURE" IDENTIFIED IN THE PLANS.
6. THE USE OF EQUIPMENT AND THE METHOD OF BACKFILLING AROUND THE BURIED STRUCTURE SHALL BE IN ACCORDANCE WITH THE FABRICATOR'S RECOMMENDATIONS. CARE SHALL BE TAKEN WHEN BACKFILLING AGAINST JOINT SEALING MATERIALS.
7. ALL STONE FILL SHALL BE KEYED IN AS SHOWN IN THE PLANS. IF BEDROCK IS ENCOUNTERED IN LOCATIONS THAT PROHIBIT THE INSTALLATION OF THE KEY, THE CONTRACTOR SHALL CONTACT THE ENGINEER PRIOR TO ANY PLACEMENT. NO PERMANENT STONE FILL SHALL BE PLACED DIRECTLY ON BEDROCK WITHOUT APPROVAL FROM THE ENGINEER.

CONCRETE NOTES:

8. ALL CORNERS OF CONCRETE SHALL BE CHAMFERED 1" PER SD-501.00, UNLESS NOTED OTHERWISE.
9. ALL LIFTING POINTS SHALL BE REMOVABLE OR COVERABLE TO THE MINIMUM CLEAR COVER FOR REINFORCING STEEL SPECIFIED IN THE PLANS. THE LIFTING POINTS SHALL BE DETAILED IN THE APPROPRIATE FABRICATION DRAWING. PAYMENT FOR THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE PRECAST ITEM.
10. ALL RECESSED LIFTING POINTS AND BLOCK OUTS SHALL BE FILLED WITH A TYPE IV MORTAR PER SUBSECTION 540.11 AND 707.01(e). PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE PRECAST ITEM.
11. WATER REPELLENT, SILANE SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 514 AND SHALL BE FIELD APPLIED TO ALL EXPOSED EXTERIOR SURFACES OF THE PRECAST CONCRETE STRUCTURE. SILANE WILL BE PAID UNDER ITEM 514.1000 "WATER REPELLENT, SILANE".

REINFORCING STEEL NOTES:

12. CUTTING AND REPAIRING DAMAGED AREAS OF COATED REINFORCING STEEL SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 507.04.
13. REINFORCING STEEL CLEAR COVER REQUIREMENTS ARE STATED ACCORDING TO THE FOLLOWING, UNLESS OTHERWISE NOTED IN THE PLANS:
 

A. INSIDE FACES OF BOX	1.5 INCHES
B. EXPOSED TO EARTH OR WEATHER	2.0 INCHES
C. TOP OF OUTSIDE FACES OF BOX	2.5 INCHES
D. DIRECT EXPOSURE TO DEICING SALTS (FRAME FASCIA OR CURB)	3.0 INCHES
E. CAST AGAINST EARTH	3.0 INCHES
14. TEST BARS SHALL BE PROVIDED IN ACCORDANCE WITH THE "VERMONT AGENCY OF TRANSPORTATION MATERIAL SAMPLING MANUAL" AVAILABLE ON THE AGENCY WEBSITE. ALL COSTS ASSOCIATED WITH PROVIDING BARS FOR TESTING WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.

PRECAST BOX CULVERT / RETAINING WALLS - DESIGN CRITERIA

15. THE PRECAST CONCRETE BOX CULVERT AND WINGWALLS SHALL BE DESIGNED BY THE FABRICATOR IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS REFERENCED IN PROJECT NOTE 1. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS AND CALCULATIONS TO THE ENGINEER IN ACCORDANCE WITH SECTION 105. USE THE FOLLOWING DESIGN CRITERIA AND GEOMETRIC REQUIREMENTS DEFINED IN THE PLANS:

PRECAST BOX CULVERT / RETAINING WALLS - DESIGN CRITERIA (CONTINUED)

- A. DESIGN CODE = AASHTO LRFD LATEST EDITION/HL93
- B. DESIGN FILL OVER BOX CULVERT (MAX) = 12.5 FEET
- C. REQUIRED DESIGN LIFE = 75 YEARS
16. THE PRECAST BOX CULVERT DETAILS ARE SHOWN FOR REFERENCE ONLY. THE ACTUAL DIMENSIONS AND CONFIGURATION WILL BE DEPENDENT ON THE FABRICATOR. THE INSIDE CLEAR DIMENSION, INSIDE HEIGHT, AND LENGTH OF THE BOX CULVERT MAY BE NO LESS THAN SHOWN IN THE TYPICAL SECTIONS AND STRUCTURE DETAILS.
17. THE FABRICATOR SHALL SUPPLY THE STATE WITH THE LRFD LOAD RATING FACTORS FOR THE BOX CULVERT TO COMPLETE THE LOAD RATING TABLE ON THE PRELIMINARY INFORMATION SHEET.
18. BOX CULVERT INLET AND OUTLET FACES SHALL BE PLUMB IN THEIR FINAL POSITION.
19. WATER PROOFING MEMBRANE SYSTEM, TYPE III - MEETING THE REQUIREMENTS OF 726.08(c) - SHALL BE APPLIED IN TWO-FOOT STRIPS OVER JOINTS IN THE BOX CULVERT. EXTEND THE SHEET MEMBRANE DOWN THE ENTIRE SIDE AND ACROSS THE TOP OF EACH STRUCTURE. COVER THE SIDES OF THE STRUCTURES PRIOR TO THE TOPS. ANY OVERLAPPING OF MEMBRANE SHALL BE DONE IN A SHINGLED STYLE WITH A MINIMUM OVERLAP OF ONE FOOT. A 1" THICK POLYSTYRENE INSULATION BOARD - MEETING THE REQUIREMENTS OF 735.01 - SHALL BE PLACED OVER THE MEMBRANE PRIOR TO BACKFILLING. PAYMENT FOR THIS WORK AND MATERIALS IS INCIDENTAL TO ITEM 540.1000 PRECAST CONCRETE STRUCTURE.
20. A BRIDGE PLAQUE FURNISHED BY THE AGENCY SHALL BE CAST INTO WING WALL NO. 2. SEE SD-502.00 FOR FURTHER DETAILS.
21. THE BOX CULVERT HEADWALLS, CUTOFF WALLS, RETENTION SILLS AND WINGWALLS SHALL BE CONSIDERED INCIDENTAL TO ITEM 540.1000 PRECAST CONCRETE STRUCTURE (14 FT x 8 FT x 125 FT BOX CULVERT).

TRAFFIC CONTROL NOTES:

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF A SITE-SPECIFIC TRAFFIC CONTROL PLAN FOR ALL STAGES OF CONSTRUCTION. CLEARLY DETAIL HOW TRAFFIC WILL BE MAINTAINED. SPECIFY ALL CONSTRUCTION ACTIVITIES REQUIRING ALTERNATING ONE-WAY TRAFFIC AND ROAD CLOSURE, RELATE THOSE ACTIVITIES TO THE CONSTRUCTION SCHEDULE, AND SHOW APPROPRIATE TEMPORARY TRAFFIC CONTROL. PAYMENT FOR ALL ACTIVITIES AND MATERIALS ASSOCIATED WITH THIS WORK WILL BE INCLUDED IN ITEM 641.1100, "TRAFFIC CONTROL, ALL INCLUSIVE".
23. US ROUTE 7 WILL BE CLOSED AT THE PROJECT BRIDGE FOR THE DURATION OF EACH BRIDGE CLOSURE PERIOD (BCP). SIGNED REGIONAL AND LOCAL DETOURS SHALL BE PROVIDED AS SHOWN IN THE PLANS. PAYMENT FOR ALL DETOUR SIGNS SHALL BE INCLUDED IN ITEM 641.1100 "TRAFFIC CONTROL, ALL-INCLUSIVE".
24. FOR GENERAL TRAFFIC CONTROL NOTES SEE VTRANS STANDARD T-1.
25. PAYMENT FOR SIGNAGE, TEMPORARY PAVEMENT MARKINGS, TRAFFIC BARRELS, AND TEMPORARY IMPACT ATTENUATORS WILL BE MADE UNDER ITEM 641.1100.
26. TRAFFIC CONTROL FOR UNIFORMED OFFICERS AND ROADWAY FLAGGERS ARE TO BE PAID FOR UNDER ITEM 630.1000, "UNIFORMED TRAFFIC OFFICERS", AND ITEM 630.1500, "FLAGGERS".
27. SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
28. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF SIGNS SHALL BE REMOVED.
29. THE CONTRACTOR SHALL PROVIDE ACCESS THROUGH THE WORK ZONE FOR EMERGENCY VEHICLES AT ALL TIMES OR COORDINATE EMERGENCY ROUTES VIA PROJECT DETOUR PRIOR TO THE START OF CONSTRUCTION.
30. THE CONTRACTOR SHALL PROVIDE ACCESS THROUGH THE WORK ZONE FOR POSTAL DELIVERY, NEWSPAPER ROUTES, TRASH SERVICES AND/OR OTHER DELIVERY SERVICES OR COORDINATE WITH THE PROPER CONTACTS TO USE THE PROJECT DETOUR PRIOR TO THE START OF CONSTRUCTION.
31. PROJECT APPROACH SIGNING AND TEMPORARY TRAFFIC CONTROL SHALL BE IN PLACE BEFORE ANY WORK BEGINS.
32. PORTABLE CHANGEABLE MESSAGE SIGNS WILL BE PAID FOR SEPARATELY UNDER ITEM 641.1500 AND SHALL BE INSTALLED A MINIMUM OF 2 WEEKS PRIOR TO THE START OF THE BRIDGE CLOSURE PERIOD. MESSAGES SHALL BE REVISED AS NECESSARY AS CHANGES IN ACTIVITIES WARRANT. ANY CHANGES TO THE MESSAGE TO BE DISPLAYED, AND THEIR PROPOSED LOCATIONS, SHALL BE SUBMITTED TO THE RESIDENT ENGINEER IN ADVANCE FOR APPROVAL. TURN OFF OR REMOVE PCMS IF MESSAGES DO NOT CONVEY ANY MORE INFORMATION THAN STATIC SIGNS - COORDINATE WITH RESIDENT ENGINEER PRIOR TO TURNING OFF. WHEN IN OPERATING MODE, THE BOTTOM OF THE PCMS MESSAGE PANEL SHALL BE FULLY EXTENDED TO 7 FEET ABOVE THE ROADWAY

TRAFFIC CONTROL NOTES (CONTINUED):

33. TEMPORARY TRAFFIC BARRIER SHALL MEET THE REQUIREMENTS OF SUBSECTION 621.07. PAYMENT FOR FURNISHING, MAINTAINING, INSTALLATION, REMOVAL, AND RESETTING WILL BE INCLUDED UNDER ITEM 641.1100, "TRAFFIC CONTROL, ALL-INCLUSIVE".

MISCELLANEOUS NOTES:

34. THE CONTRACTOR SHALL PROVIDE A SITE-SPECIFIC EROSION PREVENTION AND SEDIMENT CONTROL PLAN IN ACCORDANCE WITH SECTION 653 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. ESTIMATED QUANTITIES FOR EPSC WORK HAVE BEEN INCLUDED IN THE CONTRACT FOR BIDDING PURPOSES. IF THE CONTRACTOR'S EPSC PLAN REQUIRES ITEMS OF WORK THAT ARE NOT INCLUDED IN THE PLANS IT SHALL BE PAID FOR AS PART OF ITEM 653.0300 MAINTENANCE OF EPSC PLAN.
35. ALL EXISTING MATERIAL REMOVED AND NOT REUSED OR RESET AS PART OF THIS PROJECT AND ALL WASTE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF ONLY AT AN APPROVED FACILITY.
36. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STATUTES AND REGULATIONS RELATING TO THE PREVENTION AND ABATEMENT OF ALL POLLUTION.

TEMPORARY TRAFFIC SIGNAL NOTES:

37. SIGNAL TIMING/TIMING ADJUSTMENTS SHALL BE ACCOMPLISHED WITHIN A 48 HOUR PERIOD AND PAYMENT WILL BE INCIDENTAL TO ITEM 641.2200 TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE, ALL-INCLUSIVE. SIGNAL FACES SHALL BE LED AND CONSIST OF 12 INCH LENSES (RED, YELLOW AND GREEN).
38. THE BOTTOM OF THE HOUSING OF A SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 16.5 FEET NOR MORE THAN 19.0 FEET ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE ROADWAY. THE BOTTOM OF A SIGNAL FACE NOT MOUNTED OVER A ROADWAY SHALL NOT BE LESS THAN 8.0 FEET NOR MORE THAN 15.0 FEET ABOVE THE GROUND. CAUTION SHOULD BE USED TO ENSURE COMPLIANCE WITH THE HEIGHT REQUIREMENT IN THE EVENT THE NEW APPROACH GRADE DIFFER SIGNIFICANTLY FROM THE FULL ROADWAY GRADE.
39. SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 8 FEET APART MEASURED HORIZONTALLY BETWEEN CENTER FACES.
40. THE CONTRACTOR SHALL HAVE THE OPTION OF INSTALLING SPAN WIRE OR CANTILEVER MAST ARM TRAFFIC SIGNALS IN PLACE OF A PORTABLE SIGNAL SYSTEM. DESIGN OF SUCH SYSTEM, INCLUDING REQUIRED POLE LOCATIONS, ANY REQUIRED GUYING, AND POWER CONNECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PAYMENT WILL BE CONSIDERED INCIDENTAL TO ITEM 641.2200 TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE, ALL-INCLUSIVE.
41. SIGNAL HEAD PLACEMENT IS CRITICAL. HEADS SHALL BE ADJUSTED TO REFLECT LANE LOCATION CHANGES AS REQUIRED.
42. POLES SUPPORTING SPAN WIRES AND/OR MAST ARMS SHALL BE ADEQUATELY BRACED OR GUYED AND SHALL BE PLACED SO AS NOT TO CREATE A HAZARD TO THE TRAVELLING PUBLIC.
43. LUMINAIRES SHALL BE INSTALLED AT EACH OF THE APPROACHES TO ADEQUATELY LIGHT THE STOP BAR AREAS. HIGH PRESSURE SODIUM OR LED LUMINAIRES ARE ACCEPTABLE FORMS OF LAMPS. THE MOUNTING HEIGHT FOR LUMINAIRES SHALL BE DETERMINED BY THE CONTRACTOR. ILLUMINANCE SHALL BE MEASURED AT NIGHTTIME AFTER INSTALLATION AT EACH STOP BAR. ILLUMINANCE SHALL BE NO LESS THAN 1.0 FOOT-CANDLES AND NOT TO EXCEED 2.0 FOOT-CANDLES. PAYMENT WILL BE CONSIDERED INCIDENTAL TO ITEM 641.2200 TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE, ALL-INCLUSIVE.
44. ALL TEMPORARY SIGNAL EQUIPMENT, SIGNS, ETC. SHALL BELONG TO THE CONTRACTOR AT THE END OF THE PROJECT AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR REMOVAL INCLUDING UTILITY POLES, WIRES, ETC. PAYMENT WILL BE CONSIDERED INCIDENTAL TO ITEM 641.2200 TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE, ALL-INCLUSIVE.
45. STOP BARS SHALL BE LOCATED A MINIMUM OF 40 FT. AND A MAXIMUM OF 120 FT. FROM THE NEAREST SIGNAL HEAD. STOP BARS SHALL BE REMOVED COMPLETELY AFTER SIGNALS ARE REMOVED.
46. DRIVEWAY ASSISTANCE DEVICE(S) [DADS] WILL BE UTILIZED FOR THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSURING COMPATIBILITY BETWEEN ALL TRAFFIC SYSTEM HARDWARE AND SOFTWARE TO INCORPORATE THE DADS IN THE OVERALL TEMPORARY TRAFFIC CONTROL SYSTEM. ALL LABOR, TOOLS, AND MATERIALS REQUIRED TO INSTALL, MAINTAIN, AND REMOVE DADS WILL BE INCLUDED IN THE PAYMENT OF THE ITEM 641.2200 DRIVEWAY ASSISTANCE DEVICES.
47. ONE ADDITIONAL DRIVEWAY ASSISTANCE DEVICE SHALL BE AVAILABLE FOR DEPLOYMENT IN THE EVENT OF DEVICE MALFUNCTION. THE CONTRACTOR SHALL REPORT AVAILABILITY TO THE ENGINEER VIA A MEMORANDUM INDICATING WHERE THE DEVICE WILL BE SOURCED. ANY MALFUNCTION DEVICE SHALL BE REPLACED/REPAIRED AND OPERATIONAL WITHIN 24 HOURS OF MALFUNCTION.

PROJECT NAME: SUNDERLAND	
PROJECT NUMBER: BM 20102	
FILE NAME: z20b155gen.dgn	PLOT DATE: 7/2/2025
PROJECT LEADER: A. STOCKIN	DRAWN BY: M. HERMIS
DESIGNED BY: M. GROTE	CHECKED BY: T. HIGGINSON
PROJECT NOTES SHEET	SHEET 7 OF 65



# QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
				1011 - ROADWAY	1051 - EROSION CONTROL	1101 - RAILROAD - BID ITEMS	1199 - RAILROAD - TRAIN DELAY LIQUIDATED	1211 - BRIDGE NO. 1	1999 - FULL C.E. ITEMS	3041 - LANDSCAPING	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
				1.00							1.00		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS (BRIDGE 19-5)	201.1000				
				1,625.00							1,625.00		CY	COMMON EXCAVATION	203.1500				
				400.00							400.00		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.2700				
				60.00							60.00		CY	EARTH BORROW	203.3000				
				380.00							380.00		CY	GRANULAR BORROW	203.3200				
								950.00			950.00		CY	STRUCTURE EXCAVATION	204.2500				
								400.00			400.00		CY	GRANULAR BACKFILL FOR STRUCTURES	204.3000				
				675.00							675.00		SY	COARSE-MILLING, BITUMINOUS PAVEMENT	210.1000				
				1,450.00							1,450.00		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.3500				
				21.00							21.00		QWT	TACK COAT, EMULSIFIED ASPHALT	404.1100				
				315.00							315.00		TON	BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER II	406.0230				
				270.00							270.00		TON	BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER III	406.0430				
				1.00							1.00		DL	PAY ADJUSTMENT, BCP MIXTURE PROPERTIES (N.A.B.I.)	406.9100				
				1.00							1.00		DL	PAY ADJUSTMENT, BCP MAT DENSITY (N.A.B.I.)	406.9200				
				585.00							585.00		TON	MATERIAL TRANSFER VEHICLE	410.1000				
								4.00			4.00		GALLON	WATER REPELLENT, SILANE	514.1000				
								1.00			1.00		EACH	REMOVAL OF STRUCTURE (8.2 FT X 5.8 FT X 162 FT OGMPPA)	529.1500				
								1.00			1.00		LS	PRECAST CONCRETE STRUCTURE (14 FT X 8 FT X 125 FT BOX CULVERT)	540.1000				
								250.00			250.00		CY	E-STONE FILL, TYPE II	613.0802				
								10.00			10.00		CY	STONE FILL, TYPE I	613.1001				
								120.00			120.00		CY	STONE FILL, TYPE II	613.1002				
								1.00			1.00		EACH	TEMPORARY RELOCATION OF STREAM (BRIDGE 19-5)	614.1000				
				126.00							126.00		HR	UNIFORMED TRAFFIC OFFICERS	630.1000				
				210.00							210.00		HR	FLAGGERS	630.1500				
								1.00			1.00		LS	FIELD OFFICE, ENGINEERS	631.1000				
								1.00			1.00		LS	TESTING EQUIPMENT, BITUMINOUS (BRIDGE 19-5)	631.1700				
								1.00			1.00		LS	TESTING EQUIPMENT, GROUT (BRIDGE 19-5)	631.1900				
								3,000.00			3,000.00		DL	FIELD OFFICE COMMUNICATIONS (N.A.B.I.)	631.2600				
				1.00							1.00		LS	MOBILIZATION/DEMobilIZATION (BRIDGE 19-5)	635.1100				
				1.00							1.00		LS	TRAFFIC CONTROL, ALL-INCLUSIVE (BRIDGE 19-5)	641.1100				
				4.00							4.00		EA	PORTABLE CHANGEABLE MESSAGE SIGN	641.1500				
				5.00							5.00		EA	TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE	641.2200				
				1.00							1.00		EA	DRIVEWAY ASSISTANCE DEVICE	641.2200001				
				750.00							750.00		LF	4 INCH WHITE LINE, WATERBORNE PAINT	646.2010				
				750.00							750.00		LF	4 INCH YELLOW LINE, WATERBORNE PAINT	646.2111				
				2,000.00							2,000.00		SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.1100				
								360.00			360.00		SY	GEOTEXTILE UNDER STONE FILL	649.3100				
					2,148.03						2,148.03		SY	TURF ESTABLISHMENT, SPECIALTY SEED	651.1600				
					180.00						180.00		CY	TOPSOIL	651.3500				
					49.90						49.90		SY	GRUBBING MATERIAL, 12 INCH	651.4012				
					1.00						1.00		LS	EPSC PLAN (BRIDGE 19-5)	653.0100				

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: BM 20102  
FILE NAME: z20b155qs.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
QUANTITY SHEET 1

PLOT DATE: 7/23/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 8 OF 65



# QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
				1011 - ROADWAY	1051 - EROSION CONTROL	1101 - RAILROAD - BID ITEMS	1199 - RAILROAD - TRAIN DELAY LIQUIDATED	1211 - BRIDGE NO. 1	1999 - FULL C.E. ITEMS	3041 - LANDSCAPING	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
					100.00						100.00		HR	MONITORING EPSC PLAN	653.0200				
					4,000.00						4,000.00		DL	MAINTENANCE OF EPSC PLAN (N.A.B.I.) (BRIDGE 19-5)	653.0300				
					1,600.00						1,600.00		SY	ROLLED EROSION CONTROL PRODUCT, TYPE I	653.2001				
					17.00						17.00		CY	STABILIZED CONSTRUCTION ENTRANCE	653.3500				
					2.00						2.00		EA	FILTER BAG	653.4500				
					830.00						830.00		LF	SILT FENCE, TYPE I	653.4701				
					830.00						830.00		LF	BARRIER FENCE	653.5000				
										18.00	18.00		EACH	DECIDUOUS TREES, MEDIUM	656.3002				
										24.00	24.00		EACH	DECIDUOUS SHRUBS	656.3500				
										7.80	7.80		MGAL	LANDSCAPE WATERING	656.6500				
										7.31	7.31		CY	LANDSCAPE BACKFILL, TRUCK MEASUREMENT	656.8000				
					2.00						2.00		EACH	SIGN REMOVAL, FLAT SHEET ALUMINUM	675.5000				
					2.00						2.00		EACH	RESETTING SIGNS	675.6000				
					1.00						1.00		EACH	REMOVAL AND REPLACE DELINEATOR	676.1500				
					1.00						1.00		DL	PRICE ADJUSTMENT, ASPHALT (N.A.B.I.)	690.0300				

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: BM 20102

FILE NAME: z20bl55qs.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
QUANTITY SHEET 2



PLOT DATE: 7/21/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 9 OF 65

PRIMARY CONTROL

HVCTRL #1  
 NORTH = 201276.5510  
 EAST = 1472675.7500  
 ELEV. = - 871.7600

LOCATED AT THE ROUTE 7 SOUTH BOUND EXIT #3 FOR ARLINGTON AND SUNDERLAND. IN THE GRASS ISLAND FORMED BY ROUTE 7 AND THE SOUTH BOUND OFF RAMP.

THE MARK IS A 3/4 INCH REBAR WITH RED CAP SET FLUSH WITH GROUND SURFACE.

IT IS 22.5' WEST OF AND 2' BELOW THE WEST EDGE OF US7, 25.7' EAST OF AND 1' BELOW THE EAST EDGE OF THE OFF RAMP, 30.5' SE OF A DROP INLET, 81.0' W OF AND DIRECTLY OPPOSITE A NORTH US 7 SIGN AND 129' NW OF MILE MARKER 0070/0215/0180.

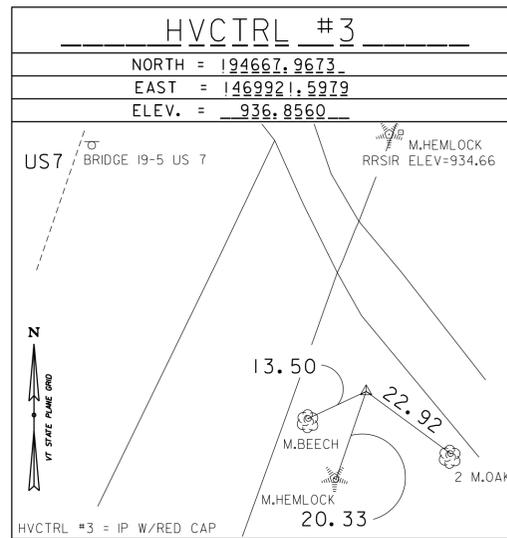
HVCTRL #2  
 NORTH = 194779.8680  
 EAST = 1469822.5340  
 ELEV. = - 943.8400

TO REACH FROM THE ROUTE 7 BRIDGE OVER ROUTE 313/ORVIS RD, IN SUNDERLAND, GO SOUTH ALONG ROUTE 7 FOR 1.1 MILES TO THE SITE OF THE MARK ON THE RIGHT.

THE MARK IS A 3/4 INCH REBAR WITH RED CAP SET 0.2 FEET BELOW GROUND SURFACE.

IT IS 1.0' WEST OF THE WEST EDGE OF US7, 11.5' SOUTH OF THE CENTERLINE OF A 72" CULVERT, 300' SW OF MILE MARKER 23.2 AND 167' SW OF A BRIDGE SIGN.

SECONDARY CONTROL



*TRAVERSE COMPLETED ON 9/10/2020 BY R.GILMAN H.MCGOWAN

HVCTRL # _____

NORTH = _____

EAST = _____

ELEV. = _____

NORTH = _____

EAST = _____

ELEV. = _____

NORTH = _____

EAST = _____

ELEV. = _____

NORTH = _____

EAST = _____

ELEV. = _____

ALIGNMENT TIES

NORTH = _____

EAST = _____

ELEV. = _____

NORTH = _____

EAST = _____

ELEV. = _____

NORTH = _____

EAST = _____

ELEV. = _____

NORTH = _____

EAST = _____

ELEV. = _____

NORTH = _____

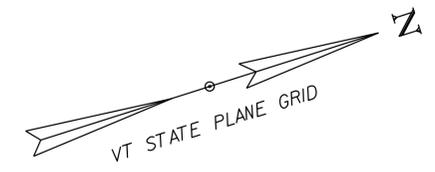
EAST = _____

ELEV. = _____

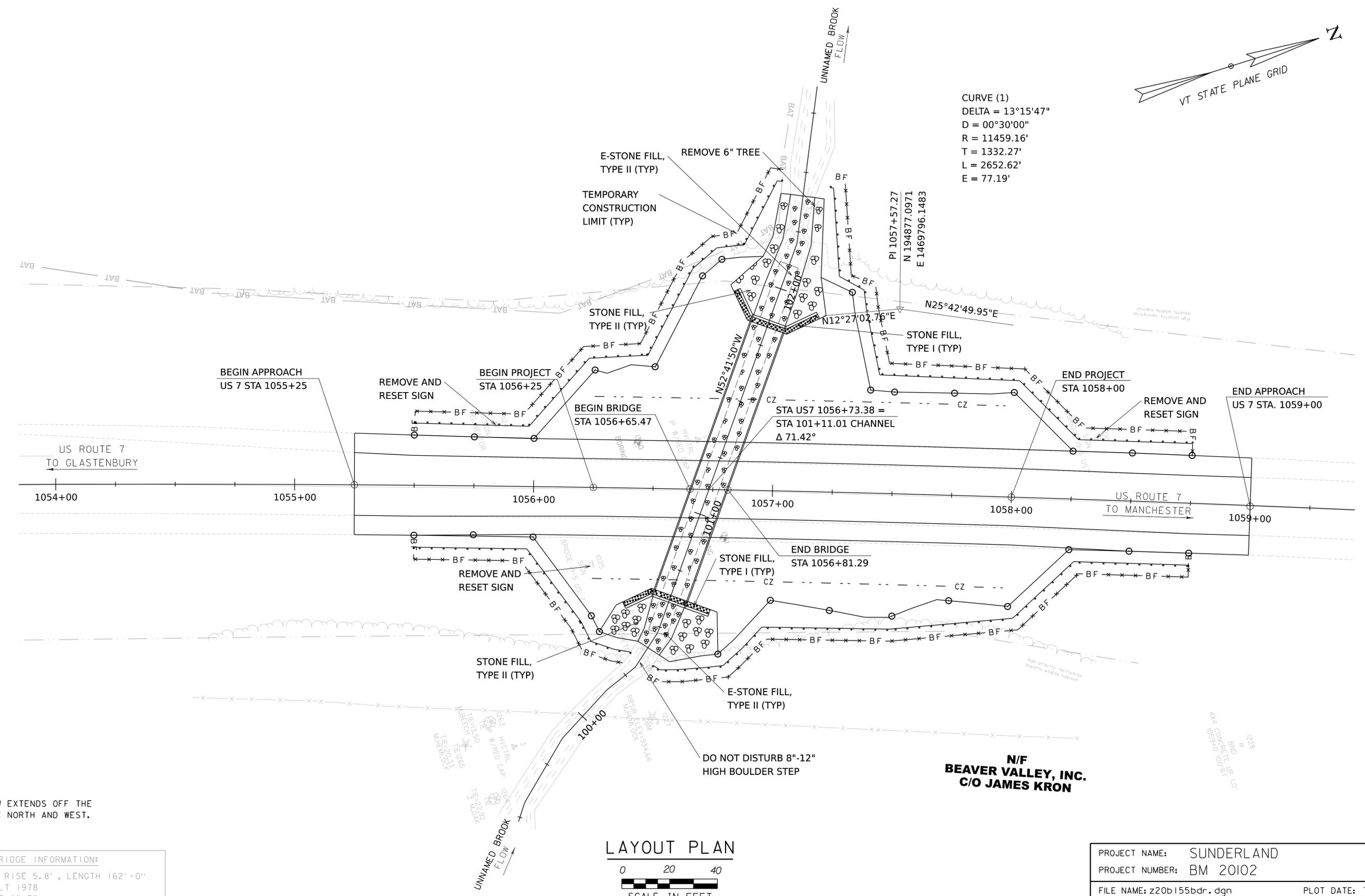
DATUM  
 VERTICAL NAVD 88  
 HORIZONTAL NAD83 (2011)  
 ADJUSTMENT COMPASS

PROJECT NAME: SUNDERLAND  
 PROJECT NUMBER: BM 20102  
 FILE NAME: X20B155TI.DGN  
 PROJECT LEADER: J.SALVATORI  
 DESIGNED BY: VTRANS  
 TIE SHEET  
 PLOT DATE: 7/2/2025  
 DRAWN BY: H.MCGOWAN  
 CHECKED BY: R. GILMAN  
 SHEET 10 OF 65

COARSE-MILLING, BITUMINOUS PAVEMENT  
 STA. 1055+25.00 - 1056+00.00  
 STA. 1058+25.00 - 1059+00.00

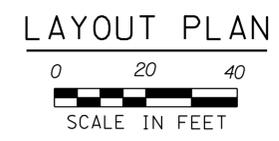


CURVE (1)  
 DELTA = 13°15'47"  
 D = 00°30'00"  
 R = 11459.16'  
 T = 1332.27'  
 L = 2652.62'  
 E = 77.19'



NOTE:  
 EXISTING ROW EXTENDS OFF THE SHEET TO THE NORTH AND WEST.

EXISTING BRIDGE INFORMATION:  
 SPAN 8.2', RISE 5.8', LENGTH 162'-0"  
 CGMPPA BUILT 1978  
 13' AVERAGE COVER  
 48 SF WATERWAY AREA

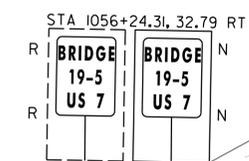
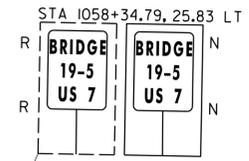
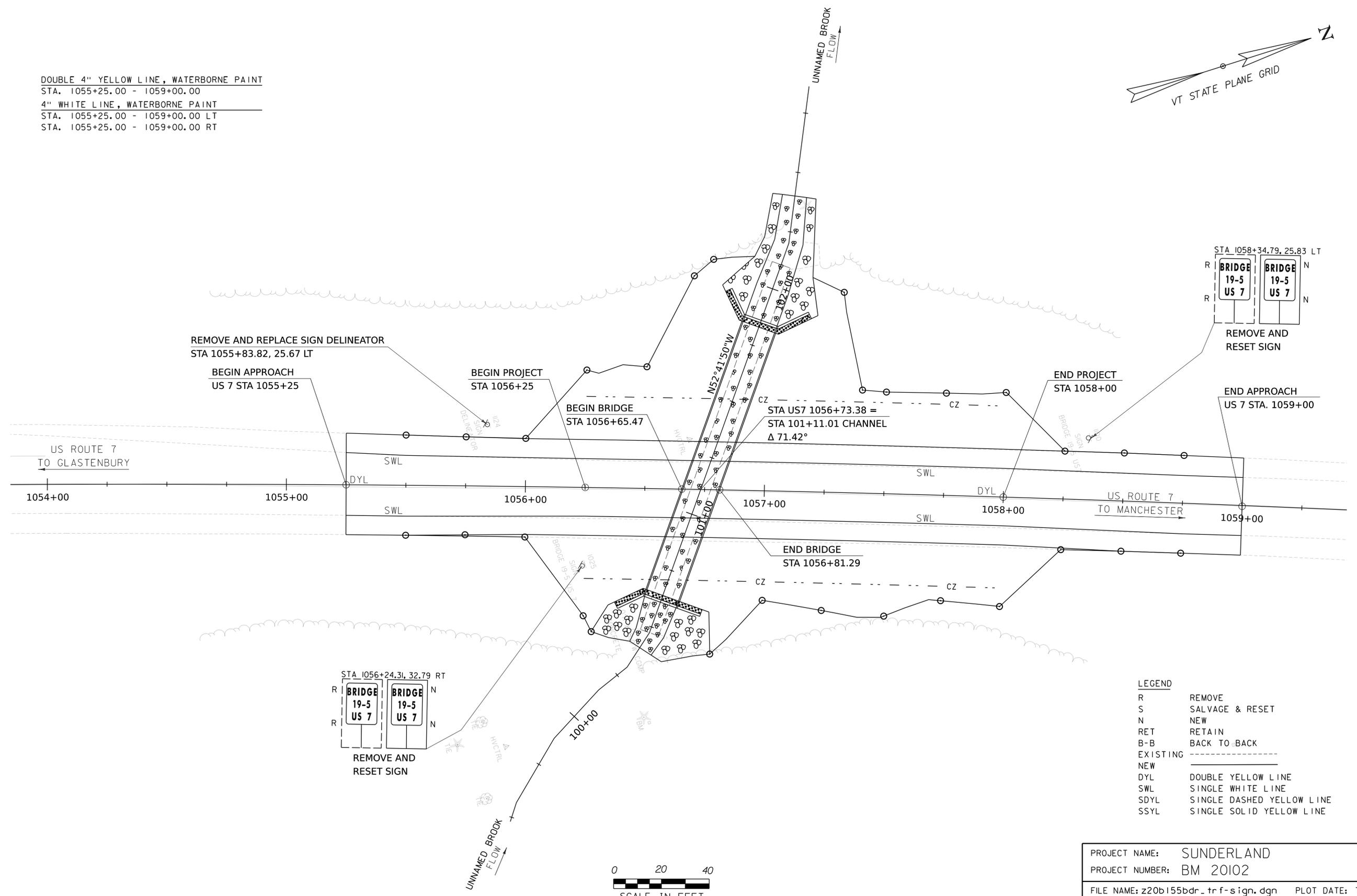
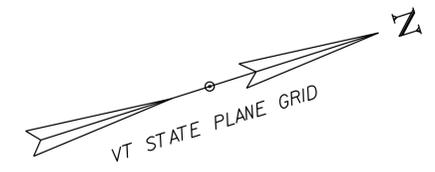


**N/F  
 BEAVER VALLEY, INC.  
 C/O JAMES KRON**

PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/2/2025
PROJECT NUMBER:	BM 20102	DRAWN BY:	M. HERMIS
FILE NAME:	z20b155bdr.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	SHEET	II OF 65
DESIGNED BY:	M. GROTE		
LAYOUT PLAN			



DOUBLE 4" YELLOW LINE, WATERBORNE PAINT  
 STA. 1055+25.00 - 1059+00.00  
 4" WHITE LINE, WATERBORNE PAINT  
 STA. 1055+25.00 - 1059+00.00 LT  
 STA. 1055+25.00 - 1059+00.00 RT

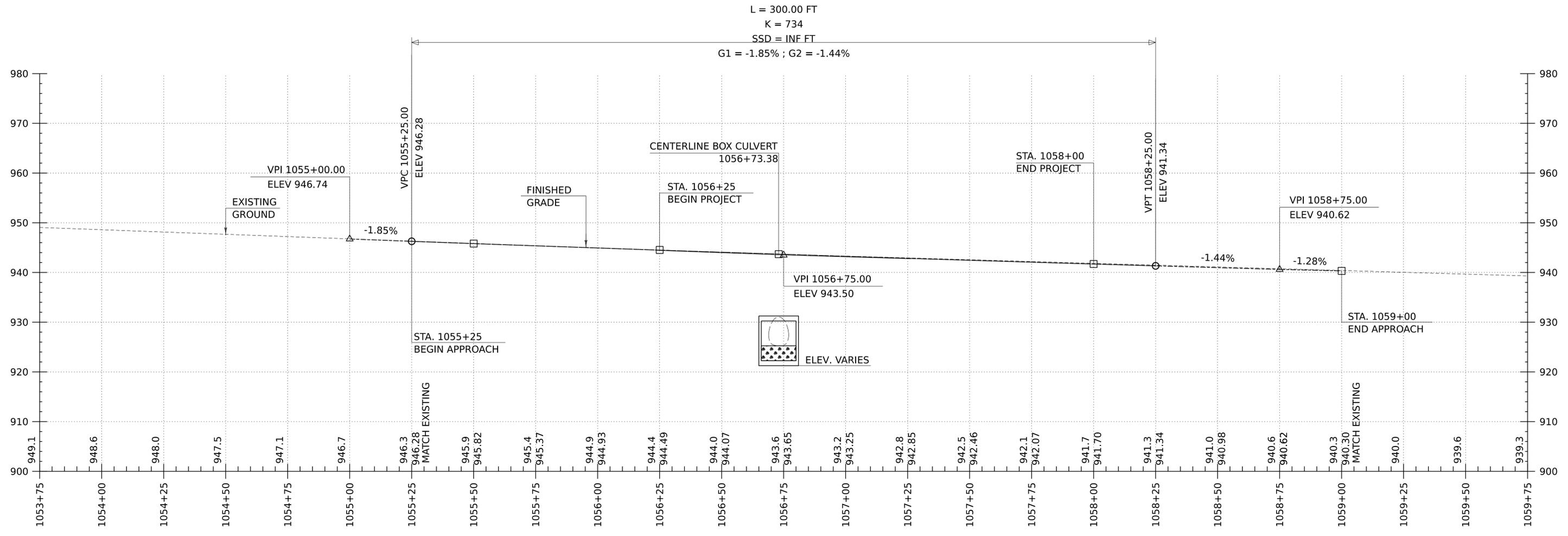


**LEGEND**

R	REMOVE
S	SALVAGE & RESET
N	NEW
RET	RETAIN
B-B	BACK TO BACK
EXISTING	-----
NEW	_____
DYL	DOUBLE YELLOW LINE
SWL	SINGLE WHITE LINE
SDYL	SINGLE DASHED YELLOW LINE
SSYL	SINGLE SOLID YELLOW LINE

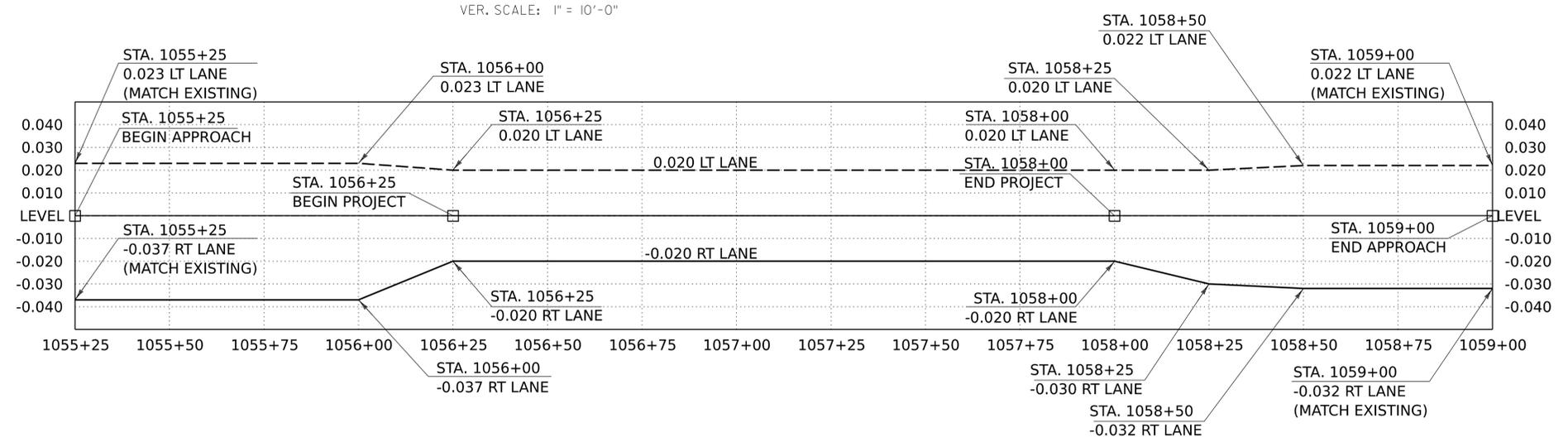
PROJECT NAME:	SUNDERLAND	FILE NAME:	z20b155bdr_trf-sign.dgn	PLOT DATE:	7/15/2025
PROJECT NUMBER:	BM 20102	PROJECT LEADER:	A. STOCKIN	DRAWN BY:	M. HERMIS
		DESIGNED BY:	M. GROTE	CHECKED BY:	T. HIGGINSON
		TRAFFIC SIGN AND LINE LAYOUT		SHEET	12 OF 65





**US ROUTE 7 PROFILE**

HOR. SCALE: 1" = 20'-0"  
VER. SCALE: 1" = 10'-0"



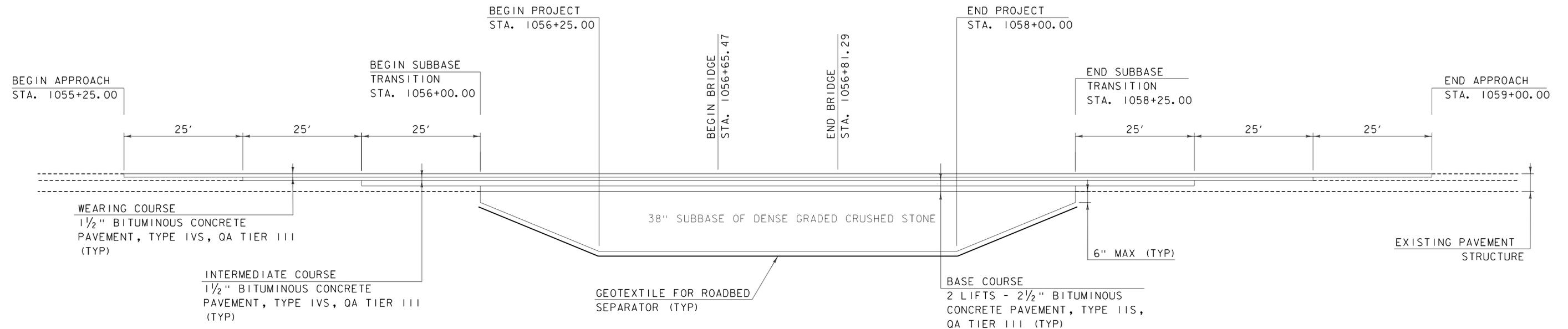
**BANKING DIAGRAM - US ROUTE 7**

(NOT TO SCALE)

- NOTES:
- ELEVATIONS SHOWN TO THE NEAREST TENTH DEPICT THE EXISTING GROUND ELEVATION.
  - ELEVATIONS SHOWN TO THE NEAREST HUNDRETH DEPICT THE PROPOSED PROFILE GRADE ELEVATION.



PROJECT NAME: SUNDERLAND	
PROJECT NUMBER: BM 20102	
FILE NAME: z20b155pro1.dgn	PLOT DATE: 7/2/2025
PROJECT LEADER: A. STOCKIN	DRAWN BY: M. HERMIS
DESIGNED BY: M. GROTE	CHECKED BY: T. HIGGINSON
US 7 PROFILE - BANKING DIAGRAM	
SHEET 13 OF 65	



**US ROUTE 7 MATERIAL TRANSITION**  
(NOT TO SCALE)

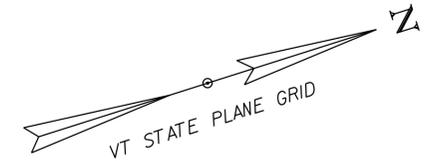
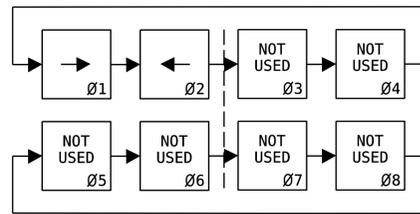
PROJECT NAME: SUNDERLAND	
PROJECT NUMBER: BM 20102	
FILE NAME: z20bl55d+1.dgn	PLOT DATE: 7/2/2025
PROJECT LEADER: A. STOCKIN	DRAWN BY: M. HERMIS
DESIGNED BY: M. GROTE	CHECKED BY: T. HIGGINSON
MATERIAL TRANSITION	SHEET 14 OF 65



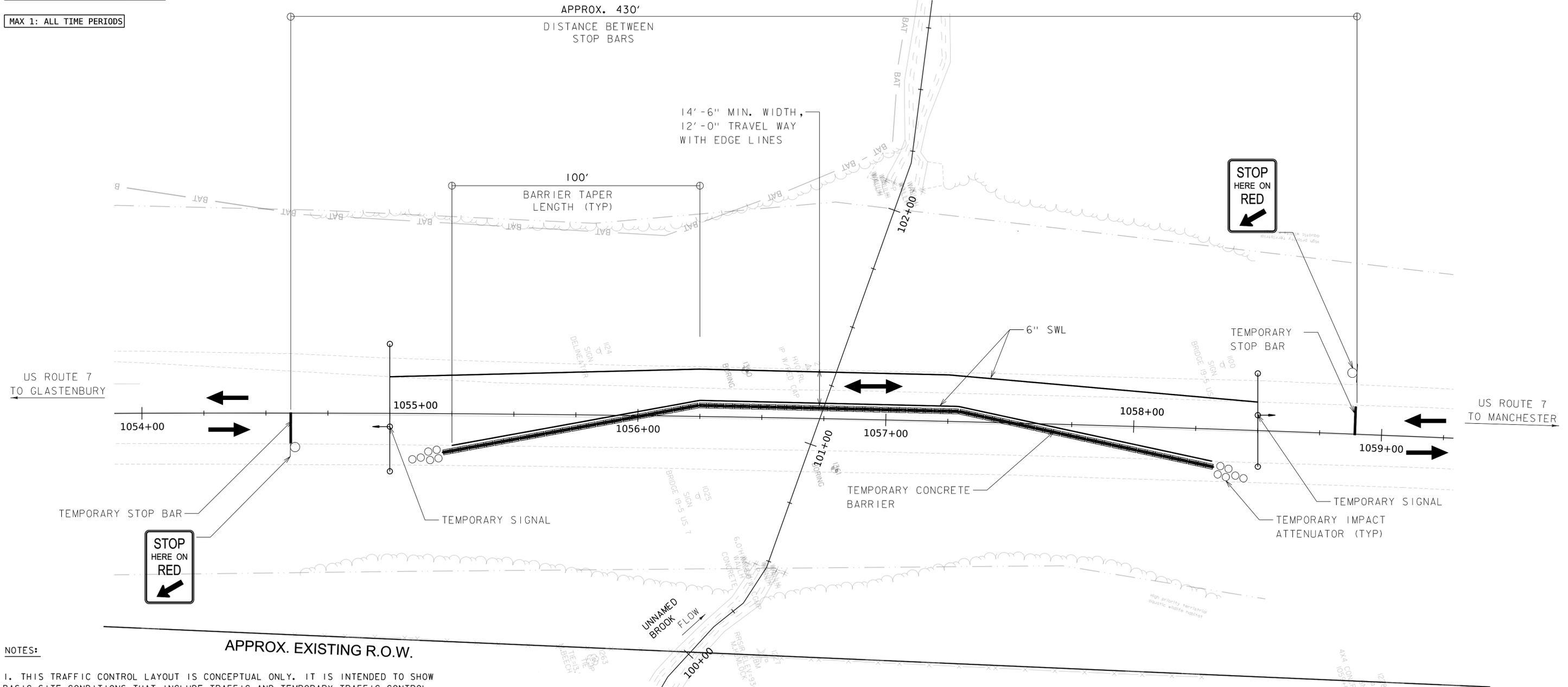
**SIGNAL PHASING**

	Ø 1	Ø 2
TIMING IN SECONDS	→	←
INITIAL INTERVAL	10	10
VEHICLE EXTENSION	3	3
MAX 1	38	38
YELLOW	5.0	5.0
ALL RED	7.0	7.0
RECALL	MIN	MIN
DETECTOR MEMORY	LOCK	LOCK
FLASH	RED	RED

**NEMA STD 8Ø CONTROLLER**



MAX 1: ALL TIME PERIODS



**NOTES:**

1. THIS TRAFFIC CONTROL LAYOUT IS CONCEPTUAL ONLY. IT IS INTENDED TO SHOW BASIC SITE CONDITIONS THAT INCLUDE TRAFFIC AND TEMPORARY TRAFFIC CONTROL DEVICE LOCATIONS WITH THEIR REQUIRED DIMENSIONS LABELED FOR REFERENCE. THIS SHEET SHOWS TRAFFIC SHIFTED TO THE WEST SIDE OF THE ROAD, HOWEVER, CONSTRUCTION MAY ALSO REQUIRE TRAFFIC SHIFT TO THE EAST SIDE OF THE ROAD. REFERENCE MUTCD SECTION 6P.01 FIGURE 6P-12 FOR CONCEPT APPROACH SIGNAGE AND SPACING. REFERENCE TA-12 FOR SIGNALIZED LANE CLOSURE ON A TWO-LANE ROAD.

2. ONE-LANE ALTERNATING TRAFFIC MAY BE USED 10 DAYS LEADING UP TO AND 10 DAYS AFTER FULL-CLOSURE OF ROUTE 7 FOR SETUP AND FINISHING WORK. FULL-CLOSURE DURATION SHALL BE 7 DAYS, SEE DETOUR SHEETS FOR CLOSURE DETOUR. ONE-LANE ALTERNATING TRAFFIC WILL BE LIMITED TO NON-PEAK PERIODS. MON-THURS, 9AM-2PM.

3. SIGNAL FACE SHALL BE INSTALLED NO LESS THAN 40 FEET BEYOND THE STOP LINE, AND NO MORE THAN 180 FEET BEYOND THE STOP LINE, UNLESS SUPPLEMENTAL NEAR-SIDE SIGNAL FACE IS PROVIDED, AND AS NEAR AS PRACTICAL TO THE LINE OF THE DRIVER'S NORMAL VIEW, IF MOUNTED ABOVE THE ROADWAY. (11TH EDITION MUTCD SECTION 4D.08).

4. IMPACT ATTENUATORS ARE CONCEPTUAL ONLY. MANUFACTURER'S RECOMMENDATIONS SHALL BE FOLLOWED FOR THE SELECTED ATTENUATION DEVICE AND INSTALLED ACCORDING TO THE PROPER ARRAY FOR THE POSTED SPEED LIMIT.

5. TEMPORARY SIGNAL SHALL BE CAPABLE OF DETECTING SLOW MOVING VEHICLES WITHIN THE WORK ZONE TO EXTEND THE ALL RED TIME TO PROVIDE SAFE PASSAGE. TEMPORARY SIGNAL SHALL BE SET TO "REST IN RED" TO ENSURE VEHICLES COME TO A FULL STOP PRIOR TO ENTERING WORK ZONE.

6. CONTRACTOR SHALL IMPLEMENT SIGNAL TIMINGS SHOWN IN THIS PLAN DURING ONE-LANE ALTERNATING TRAFFIC. SIGNALS SHALL BE MONITORED DURING CONSTRUCTION AND FURTHER ADJUSTED IF NECESSARY WITH VTRANS APPROVAL.

**N/F  
BEAVER VALLEY, INC.  
C/O JAMES KRON**

**TRAFFIC CONTROL PLAN**



PROJECT NAME: SUNDERLAND

PROJECT NUMBER: BM 20102

FILE NAME: z20b155bdr - tcp.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
TRAFFIC CONTROL SHEET

PLOT DATE: 7/3/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 15 OF 65

### SOIL CLASSIFICATION

AASHTO	
A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

### ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

### SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

### CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

### COMMONLY USED SYMBOLS

▼	Water Elevation
⊕	Standard Penetration Boring
⊗	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O. D. Sampler 1 3/8" I. D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/2"
BX	Core Size 1 3/4"
NX	Core Size 2 1/2"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
w	Non Plastic
D	Moisture Content (Dry Wgt. Basis)
NP	Dry
M	Moist
MTW	Moist To Wet
W	Wet
SAT	Saturated
BO	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

### COLOR

blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

### DEFINITIONS (AASHTO)

**BEDROCK (LEDGE)** - Rock in its native location of indefinite thickness.

**BOULDER** - A rock fragment with an average dimension > 12 inches.

**COBBLE** - Rock fragments with an average dimension between 3 and 12 inches.

**GRAVEL** - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

**SAND** - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

**SILT** - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

**CLAY** - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

**VARVED** - Alternate layers of silt and clay.

**HARDPAN** - Extremely dense soil, cemented layer, not softened when wet.

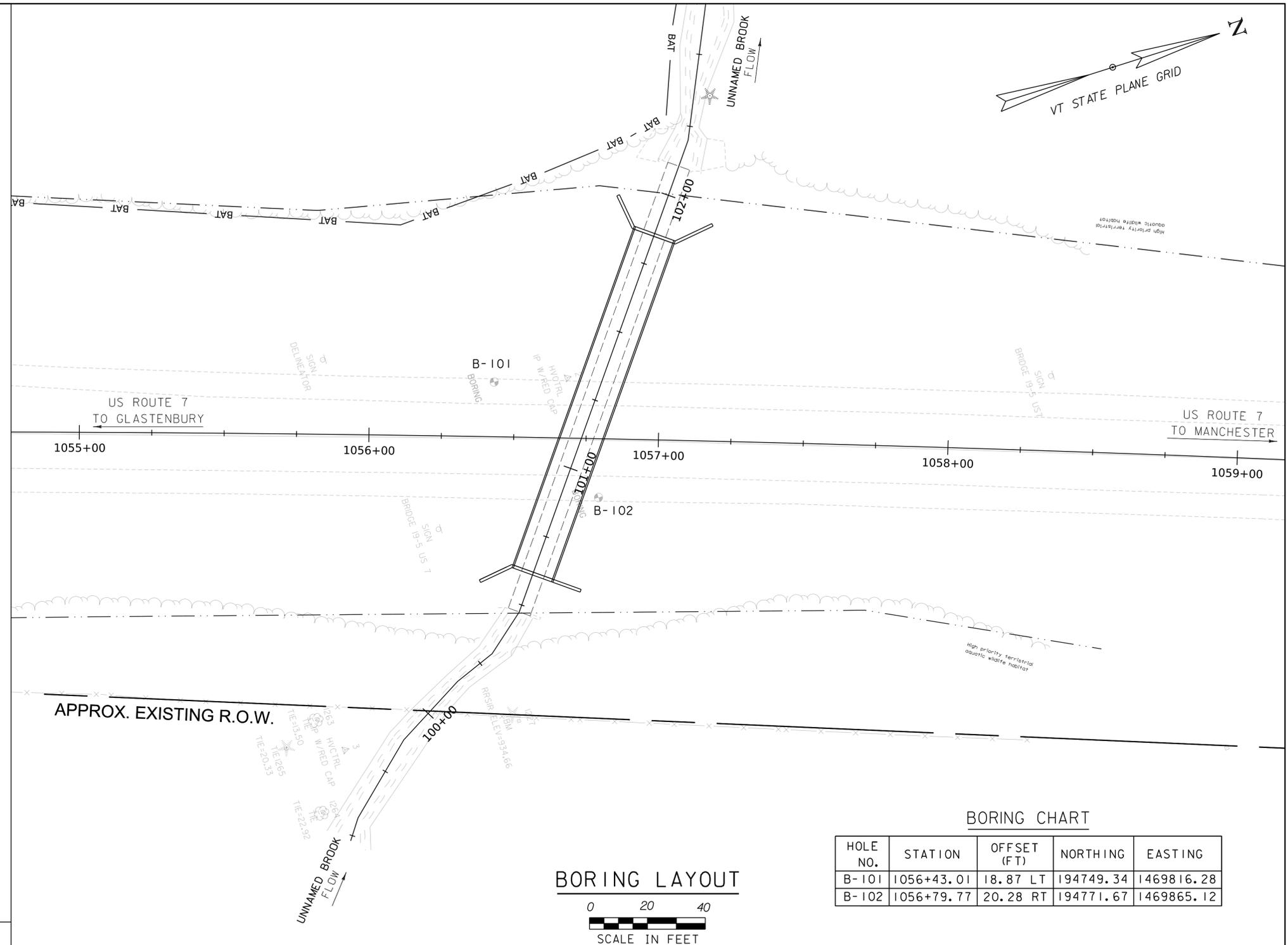
**MUCK** - Soft organic soil (containing > 10% organic material).

**MOISTURE CONTENT** - Weight of water divided by dry weight of soil.

**FLOWING SAND** - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

**STRIKE** - Angle from magnetic north to line of intersection of bed with a horizontal plane.

**DIP** - Inclination of bed with a horizontal plane.



### BORING LAYOUT



### BORING CHART

HOLE NO.	STATION	OFFSET (FT)	NORTHING	EASTING
B-101	1056+43.01	18.87 LT	194749.34	1469816.28
B-102	1056+79.77	20.28 RT	194771.67	1469865.12

### GENERAL NOTES

- The subsurface explorations shown herein were made between 4/10/23 and 4/12/23 by WSP.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
- Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.



PROJECT NAME: **SUNDERLAND**  
PROJECT NUMBER: **BM 20102**

FILE NAME: z20b155bor1.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
BORING INFORMATION SHEET

PLOT DATE: 7/2/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 16 OF 65

VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: <b>B-101</b>		
				Sunderland BM 20102 Bridge 19-5 Culvert US Route 7		Page No.: 1 of 2		
						Pin No.: 20b155		
						Checked By: MA		
Boring Crew: Michael Jordan (Platform), Kaitlin Berube (WSP)				Casing		Sampler		
Date Started: 4/10/23 Date Finished: 4/11/23				Type: HSA & WB SS		Groundwater Observations		
VTSPG NAD83: N 194749.34 ft E 1469816.28 ft				I.D.: 4 in 1.5 in		Date Depth (ft) Notes		
Station: 1056+43.01 Offset: 18.87 ft L				Hammer Wt: 140 lb. 140 lb.		04/11/23 13.6 8:45 AM (AD 16hrs)		
Ground Elevation: 944.54 ft				Hammer Fall: 30 in. 30 in.				
				Hammer/Rod Type: Auto/NWJ				
				Rig: Geoprobe 7822DT C _F = 1.68				
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		0.0 ft - 0.5 ft, Asphalt						
		0.5 ft - 2.5 ft, Nested cobble zone						
5		5.0 ft - 7.0 ft, A-1-b, SM, reddish-brown, dry, medium dense gravelly fine to coarse SAND, some silt, well-graded., Rec. = 1.1 ft		1-7-8-6 (15)				
10		10.0 ft - 12.0 ft, A-1-b, SM, reddish-brown, dry, very dense gravelly fine to coarse SAND, some silt, well-graded., Rec. = 1.0 ft		70-44-30-20 (74)	10.6	38.8	41.0	20.2
15		15.0 ft - 17.0 ft, A-1-b, SM, reddish-brown, moist, dense gravelly fine to coarse SAND, some silt, well-graded., Rec. = 0.5 ft		8-11-35-39 (46)				
20		20.0 ft - 22.0 ft, A-1-b, SM, reddish-brown, moist, medium dense GRAVEL, some sand, some silt, well-graded., Rec. = 0.8 ft		17-13-9-7 (22)	10.7	41.3	33.8	24.9
25		25.0 ft - 27.0 ft, A-1-b, SM, reddish-brown, moist, medium dense GRAVEL, some sand, some silt, well-graded., Rec. = 0.8 ft		15-11-10-10 (21)				
		27.0 ft - 28.0 ft, During boring advancement driller used a roller bit to advance through a boulder from approximately 27 feet to 28 feet bgs.						
30		30.0 ft - 32.0 ft, A-2-4, SM, reddish-brown, moist to wet, medium dense GRAVEL, some sand, some silt., Rec. = 0.85 ft		16-10-17-28 (27)	10.1	38.4	30.4	31.2
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C _F is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.								

BORING LOG 31405712.002 VTRANS SUNDERLAND (1).GPJ VERMONT AOT.GDT 6/2/23

VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: <b>B-101</b>		
				Sunderland BM 20102 Bridge 19-5 Culvert US Route 7		Page No.: 2 of 2		
						Pin No.: 20b155		
						Checked By: MA		
Boring Crew: Michael Jordan (Platform), Kaitlin Berube (WSP)				Casing		Sampler		
Date Started: 4/10/23 Date Finished: 4/11/23				Type: HSA & WB SS		Groundwater Observations		
VTSPG NAD83: N 194749.34 ft E 1469816.28 ft				I.D.: 4 in 1.5 in		Date Depth (ft) Notes		
Station: 1056+43.01 Offset: 18.87 ft L				Hammer Wt: 140 lb. 140 lb.		04/11/23 13.6 8:45 AM (AD 16hrs)		
Ground Elevation: 944.54 ft				Hammer Fall: 30 in. 30 in.				
				Hammer/Rod Type: Auto/NWJ				
				Rig: Geoprobe 7822DT C _F = 1.68				
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
35		35.0 ft - 37.0 ft, A-1-b, GM, reddish-brown, moist to wet, very dense, GRAVEL, some sand, some silt., Rec. = 0.55 ft		46-47-43-44 (90)	8.4	51.8	27.7	20.5
40		40.0 ft - 41.75 ft, A-4, SM, reddish-brown, dry, very dense, GRAVEL, some sand, some silt., Rec. = 0.8 ft		114-48-76-50/3" (124)	11.2	37.1	27.8	35.1
		42.0 ft - 45.0 ft, Roller bit and casing refusal at 42 ft bgs. Advanced core barrel through cobbles and boulders 42 to 45 ft bgs.						
45		Hole stopped @ 45.0 ft Boring backfilled with drill cuttings.						
50		Remarks: - Groundwater level recorded 16 hours after drilling (AD), at the time the groundwater level was recorded the steel casing was advanced 25 feet below the ground surface (bgs). - AASHTO and USCS classifications are based on visual description of sample recovery at depths where lab testing not performed. - Boring was backfilled with drill cuttings and capped with cold-patch asphalt to the existing ground surface by Platform. - Boring coordinates and elevation were provided to WSP by VTrans on 5/18/2023.						
55								
60								
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C _F is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.								

BORING LOG 31405712.002 VTRANS SUNDERLAND (1).GPJ VERMONT AOT.GDT 6/2/23

PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/2/2025
PROJECT NUMBER:	BM 20102	DRAWN BY:	M. HERMIS
FILE NAME:	z20b155bor1.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	SHEET	17 OF 65
DESIGNED BY:	M. GROTE		
BORING LOGS SHEET 1			



VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: <b>B-102</b>			
				Sunderland BM 20102 Bridge 19-5 Culvert US Route 7		Page No.: 1 of 2			
						Pin No.: 20b155			
						Checked By: MA			
Boring Crew: Michael Jordan (Platform), Kaitlin Berube (WSP)				Casing		Sampler		Groundwater Observations	
Date Started: 4/12/23 Date Finished: 4/12/23				Type: HSA & WB SS				Date	
VTSPG NAD83: N 194771.67 ft E 1469865.12 ft				I.D.: 4 in 1.5 in				Depth (ft)	
Station: 1056+79.77 Offset: 20.28 ft R				Hammer Wt: 140 lb. 140 lb.				Notes	
Ground Elevation: 942.45 ft				Hammer Fall: 30 in. 30 in.				04/12/23 10.8 4:40 PM (ATD 3 min)	
				Hammer/Rod Type: Auto/NWJ					
				Rig: Geoprobe 7822DT C _F = 1.68					
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	
		0.0 ft - 0.5 ft, Asphalt							
		0.5 ft - 2.5 ft, Nested cobble zone							
5		5.0 ft - 7.0 ft, A-4, SM, reddish-brown, moist, medium dense, SILT, some gravel, some sand, Rec. = 1.0 ft		5-8-7-10 (15)	12.6	30.9	32.2	36.9	
10		10.0 ft - 12.0 ft, A-4, SM, reddish-brown, dry to moist, dense, SILT, some gravel, some sand, Rec. = 1.5 ft		39-15-18-25 (33)					
15		14.0 ft, Driller switched from hollow stem augers to drive and wash.							
		15.0 ft - 17.0 ft, A-2-4, SM, brownish-grey, moist, loose, SAND, little silt, trace gravel, Rec. = 0.3 ft		5-3-2-5 (5)	17.2	8.9	72.1	19.0	
20		20.0 ft - 22.0 ft, A-2-4, GP-GM, reddish-brown, moist, very dense, SAND, some gravel, some silt, Rec. = 0.45 ft		19-34-29-18 (63)					
25		25.0 ft - 27.0 ft, A-2-4, SM, reddish-brown, moist, dense, SAND, some gravel, some silt, Rec. = 0.65 ft		36-16-15-13 (31)	10.8	34.4	39.5	26.1	
30		29.0 ft, During boring advancement driller noted gravel in the wash water from approximately 29 feet to 30 feet below ground surface (bgs). 30.0 ft - 31.25 ft, A-2-4, GP-GM, reddish-brown, wet, very dense, GRAVEL, trace sand, trace silt, trace quartzite pieces, Rec. = 0.5 ft		30-45-50/3* (R)					
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C _F is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.									

BORING LOG 31405712.002 VTRANS SUNDERLAND (1).GPJ VERMONT AOT.GDT 6/2/23

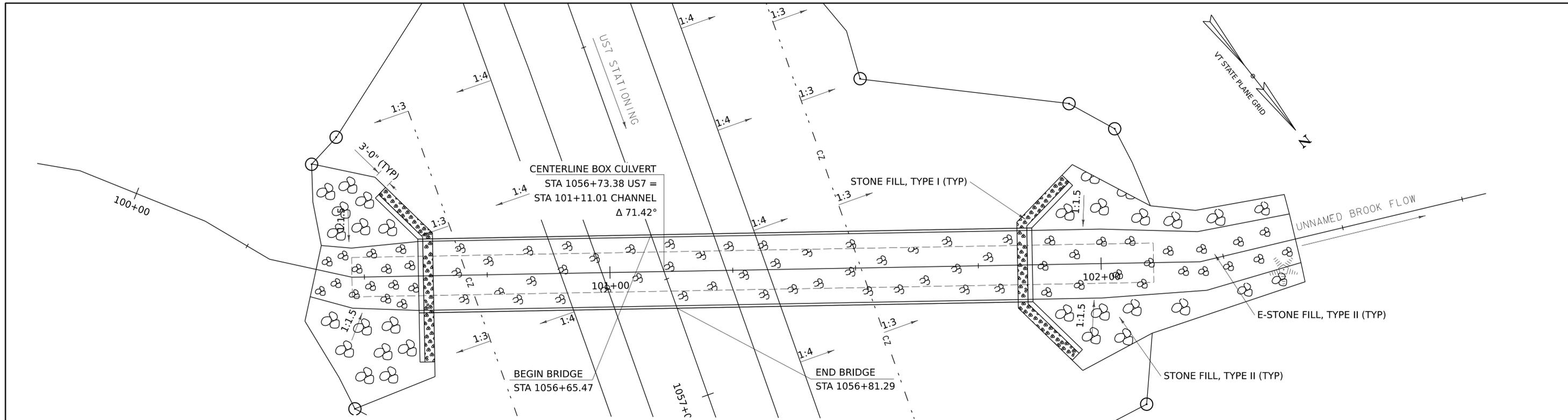
VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: <b>B-102</b>			
				Sunderland BM 20102 Bridge 19-5 Culvert US Route 7		Page No.: 2 of 2			
						Pin No.: 20b155			
						Checked By: MA			
Boring Crew: Michael Jordan (Platform), Kaitlin Berube (WSP)				Casing		Sampler		Groundwater Observations	
Date Started: 4/12/23 Date Finished: 4/12/23				Type: HSA & WB SS				Date	
VTSPG NAD83: N 194771.67 ft E 1469865.12 ft				I.D.: 4 in 1.5 in				Depth (ft)	
Station: 1056+79.77 Offset: 20.28 ft R				Hammer Wt: 140 lb. 140 lb.				Notes	
Ground Elevation: 942.45 ft				Hammer Fall: 30 in. 30 in.				04/12/23 10.8 4:40 PM (ATD 3 min)	
				Hammer/Rod Type: Auto/NWJ					
				Rig: Geoprobe 7822DT C _F = 1.68					
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	
35		35.0 ft - 37.0 ft, A-2-4, GM, reddish-brown, moist, very dense, GRAVEL, some sand, some silt, well-graded, Rec. = 0.9 ft		21-64-49-20 (113)	9.3	39.8	27.9	32.3	
40		38.0 ft - 40.0 ft, During boring advancement driller used a roller bit to advance through a cobble zone from approximately 38 feet to 40 feet bgs.							
45		43.0 ft - 45.0 ft, A-2-4, SM, reddish-brown, dry, very dense, GRAVEL, some sand, some silt, well-graded, Rec. = 1.0 ft		12-86-42-37 (128)	10.6	35.1	32.3	32.6	
		Hole stopped @ 45.0 ft Boring backfilled with drill cuttings.							
		Remarks: - Groundwater level recorded 3 minutes after drilling (AD), at the time the groundwater level was recorded the steel casing was advanced 43 feet below the ground surface (bgs). - AASHTO and USCS classifications are based on visual description of sample recovery at depths where lab testing not performed. - Boring was backfilled with drill cuttings and capped with cold-patch asphalt to the existing ground surface by Platform. - Boring coordinates and elevation were provided to WSP by VTrans on 5/18/2023.							
50									
55									
60									
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C _F is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.									

BORING LOG 31405712.002 VTRANS SUNDERLAND (1).GPJ VERMONT AOT.GDT 6/2/23

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: BM 20102

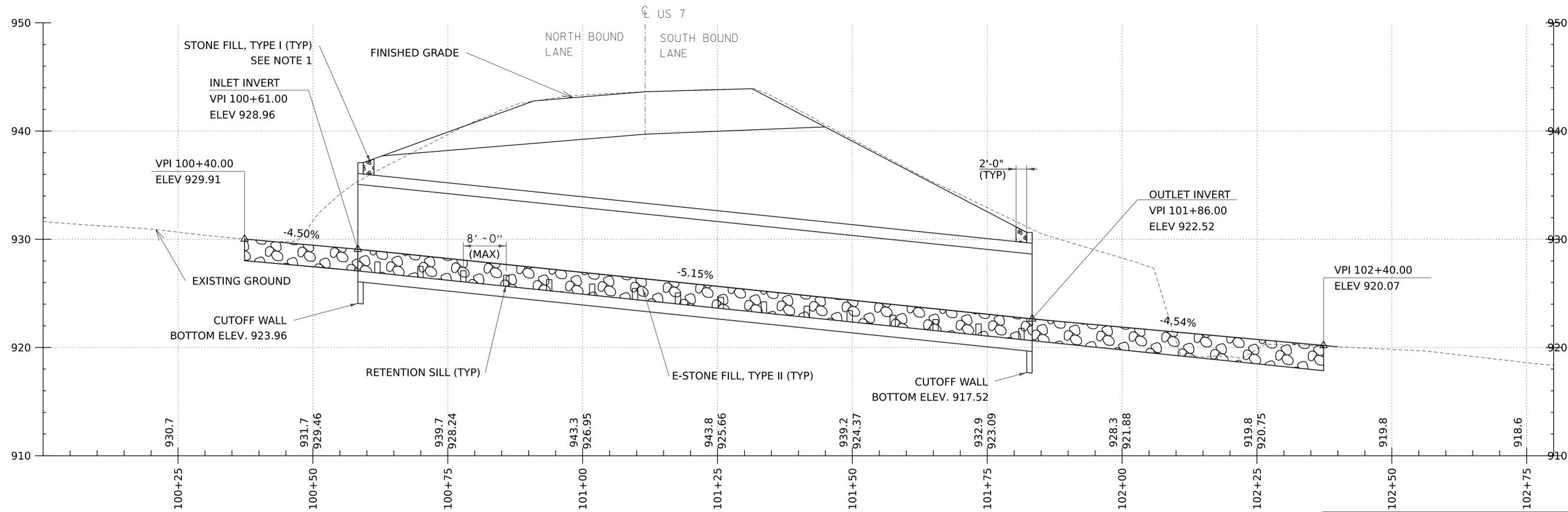
FILE NAME: z20b155bor1.dgn PLOT DATE: 7/2/2025  
PROJECT LEADER: A. STOCKIN DRAWN BY: M. HERMIS  
DESIGNED BY: M. GROTE CHECKED BY: T. HIGGINSON  
BORING LOGS SHEET 2 SHEET 18 OF 65





STRUCTURE PLAN

SCALE: 1" = 10'-0"



STRUCTURE CHANNEL PROFILE

SCALE: 1" = 10'-0"

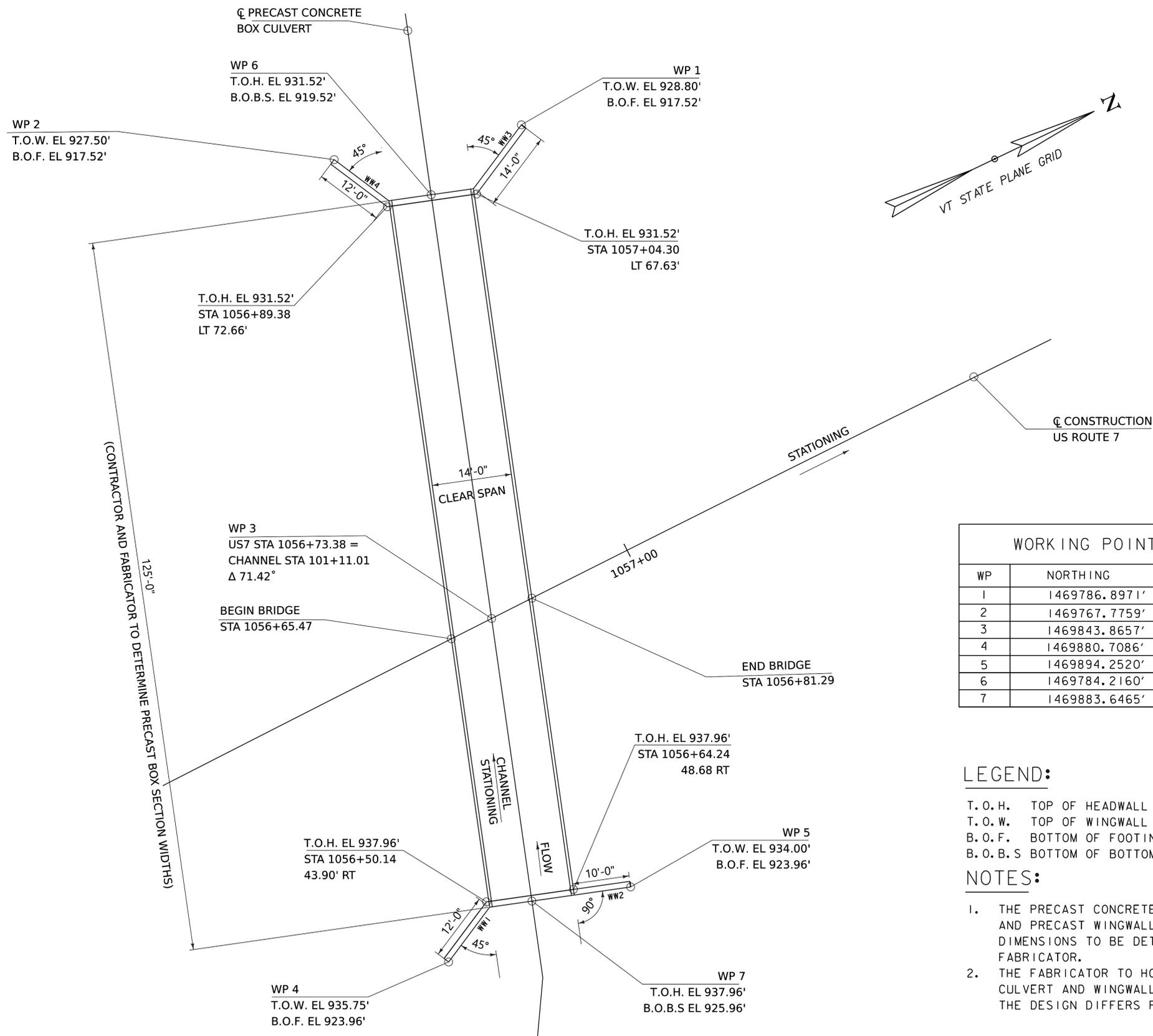
- NOTES:
- 1) STONE FILL TYPE I SHALL BE WRAPPED UP IN GEOTEXTILE

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: BM 20102

FILE NAME: z20b155pro2.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
PLAN AND ELEVATION [SHEET]

PLOT DATE: 7/15/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 19 OF 65





WORKING POINT COORDINATES		
WP	NORTHING	EASTING
1	1469786.8971'	194843.4127'
2	1469767.7759'	194816.0095'
3	1469843.8657'	194778.1278'
4	1469880.7086'	194729.9623'
5	1469894.2520'	194761.7402'
6	1469784.2160'	194823.5733'
7	1469883.6465'	194747.8200'

**LEGEND:**

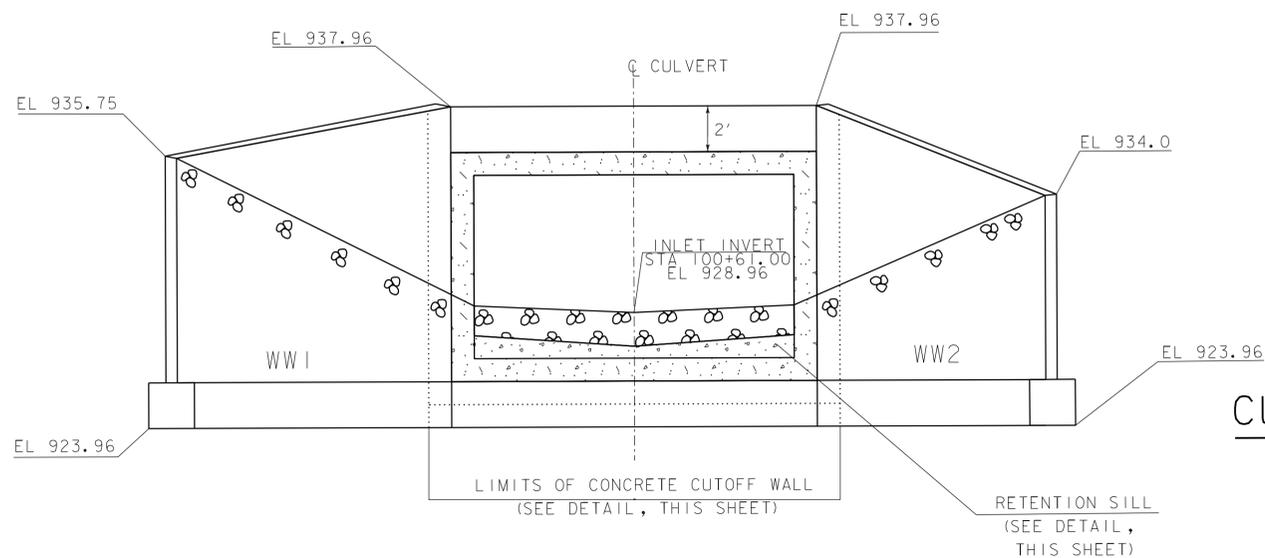
- T.O.H. TOP OF HEADWALL
- T.O.W. TOP OF WINGWALL
- B.O.F. BOTTOM OF FOOTING
- B.O.B.S BOTTOM OF BOTTOM SLAB

**NOTES:**

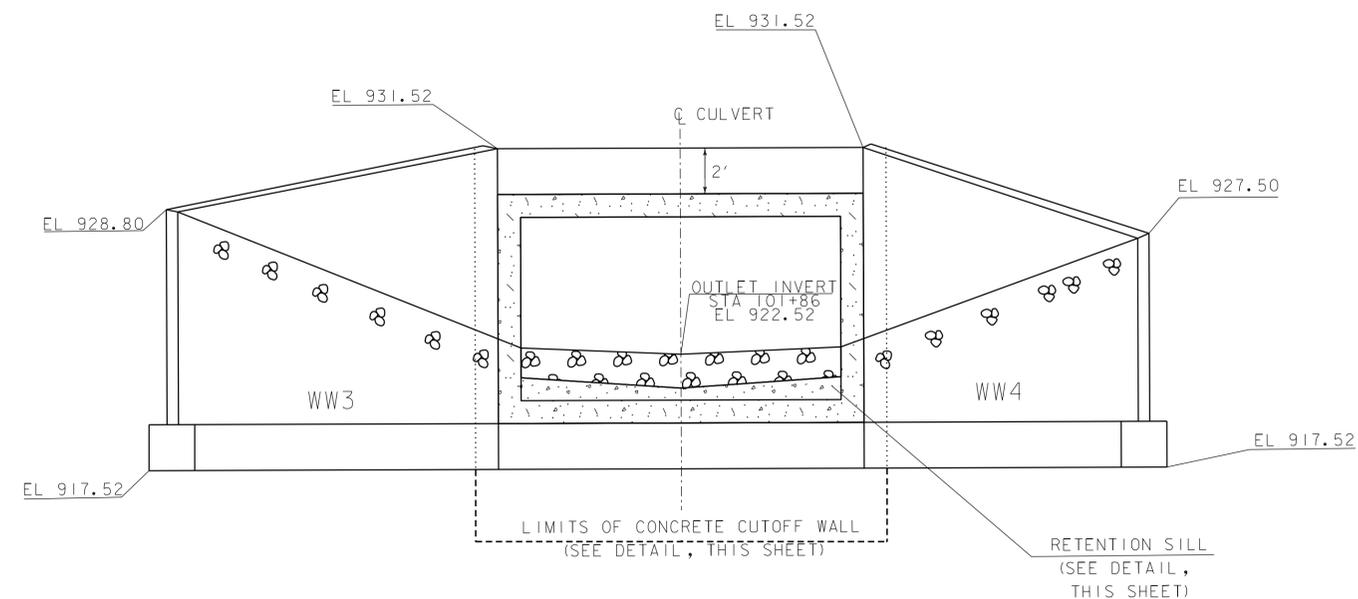
1. THE PRECAST CONCRETE BOX CULVERT WALLS AND SLABS, AND PRECAST WINGWALL THICKNESS ARE ASSUMED. ACTUAL DIMENSIONS TO BE DETERMINED BY CONTRACTOR'S FABRICATOR.
2. THE FABRICATOR TO HOLD THE FRONT FACE OF THE BOX CULVERT AND WINGWALLS AND ADJUST THE BACK FACE IF THE DESIGN DIFFERS FROM WHAT IS SHOWN.



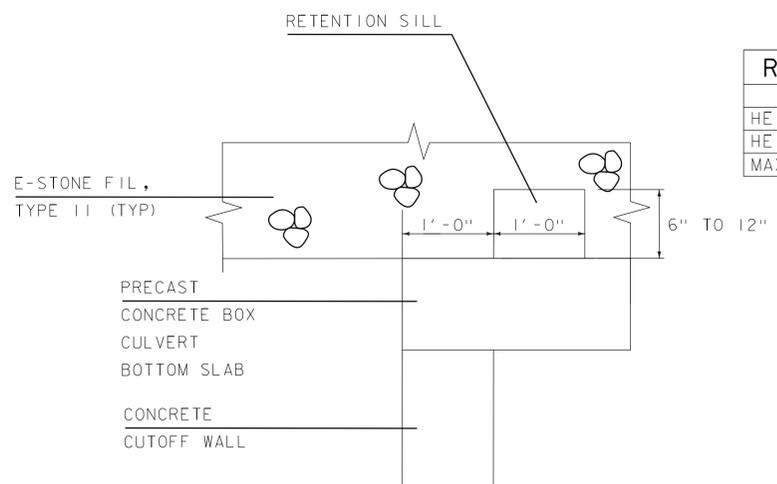
PROJECT NAME: SUNDERLAND	PLOT DATE: 7/3/2025
PROJECT NUMBER: BM 20102	DRAWN BY: M. HERMIS
FILE NAME: z20b155sub.dgn	CHECKED BY: T. HIGGINSON
PROJECT LEADER: A. STOCKIN	SHEET 20 OF 65
DESIGNED BY: M. GROTE	
CULVERT LAYOUT PLAN	



**INLET ELEVATION**  
SCALE 1/4" = 1' - 0"



**OUTLET ELEVATION**  
SCALE 1/4" = 1' - 0"

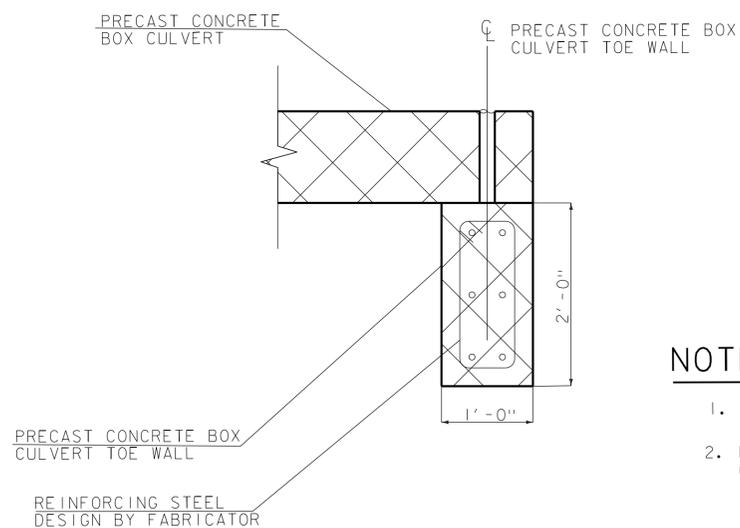


**CULVERT RETENTION SILL DETAIL**  
NOT TO SCALE

RETENTION SILL REQUIREMENTS	
	DIMENSION
HEIGHT AT ENDS	12"
HEIGHT AT CENTER	6"
MAX SPACING (O.C.)	8' - 0"

**NOTES:**

1. PLACE A RETENTION SILL AT THE INLET AND OUTLET OF THE STRUCTURE, AS SHOWN, AS WELL AS CONTINUOUSLY THROUGHOUT THE STRUCTURE AT NO MORE THAN THE MAX SPACING SPECIFIED.
2. BOX CULVERT FABRICATOR SHALL DESIGN AND DETAIL THE PRECAST RETENTION SILL TO BE CAST INTEGRAL WITH THE BOX CULVERT.



**PRECAST CONCRETE CUTOFF WALL DETAIL**  
NOT TO SCALE

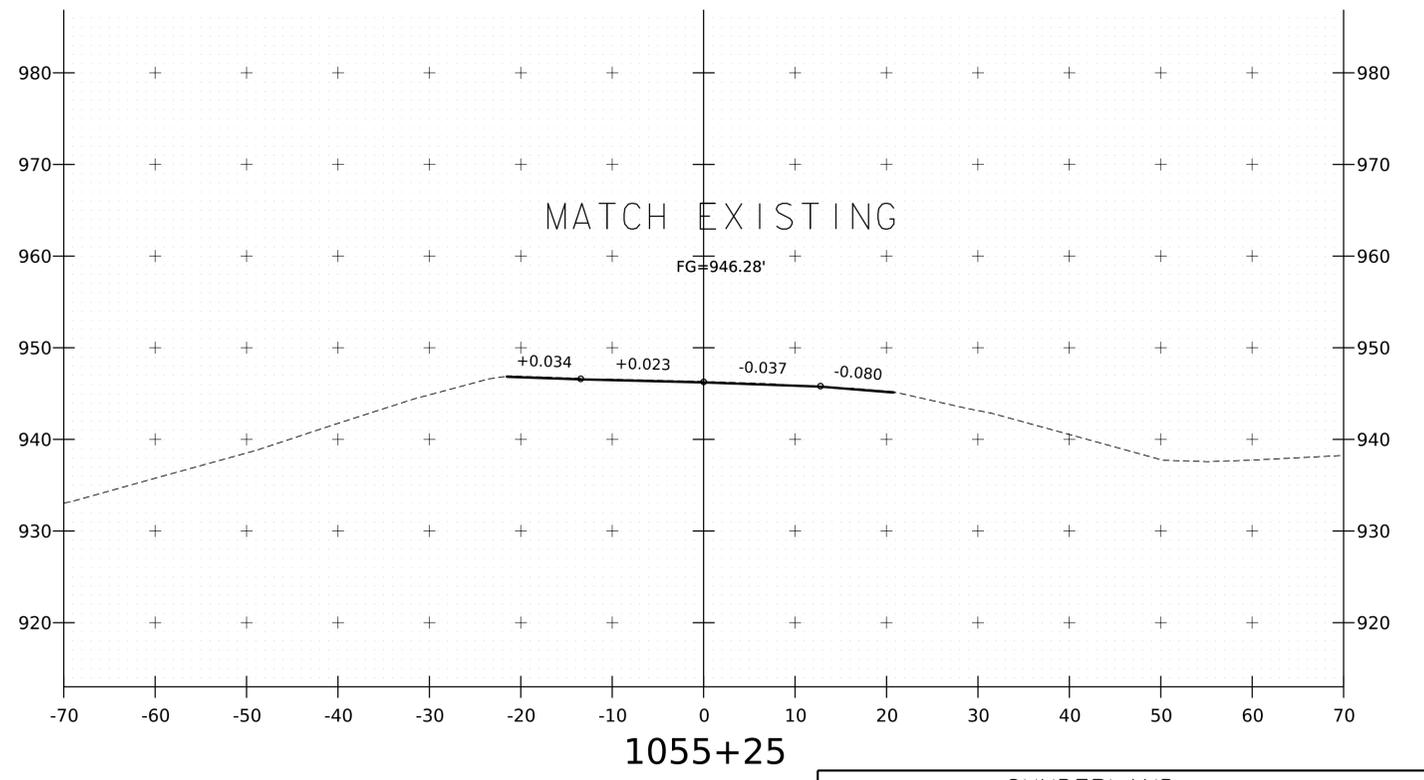
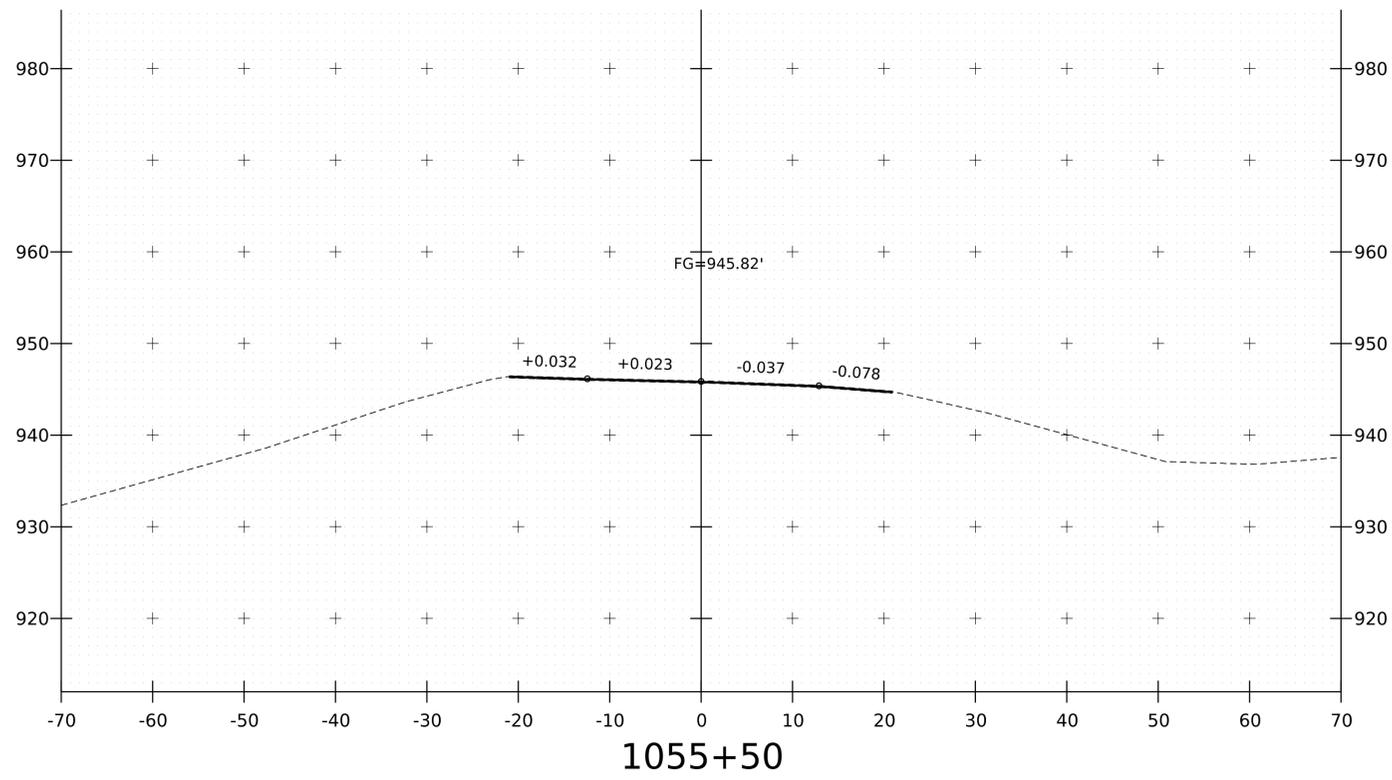
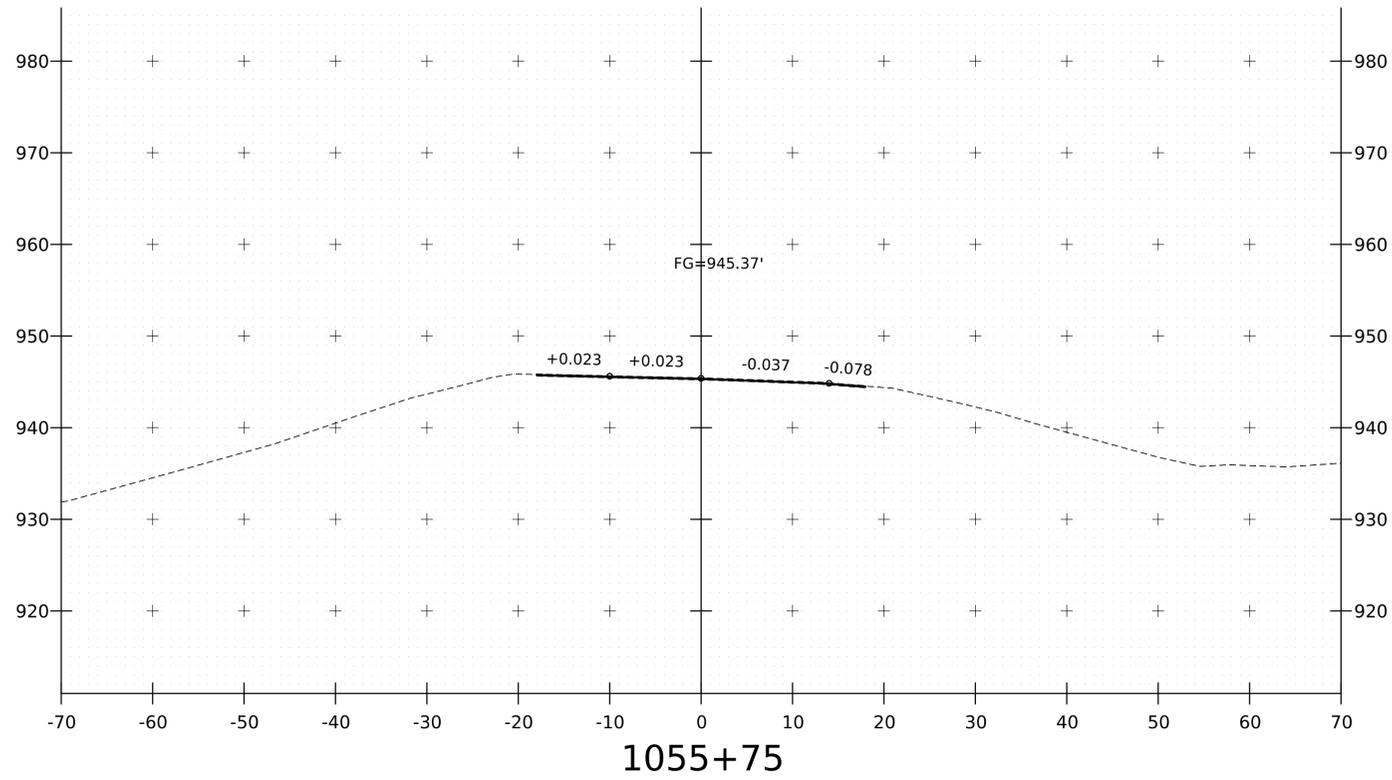
**NOTES:**

1. LENGTH OF CUTOFF WALL TO MATCH TOTAL WIDTH OF CULVERT.
2. REFERENCE ELEVATION VIEWS THIS SHEET FOR BOTTOM OF CUTOFF WALL ELEVATIONS.

**NOTES:**

1. THE PRECAST SECTIONS ARE SHOWN FOR REFERENCE ONLY. THE ACTUAL DIMENSIONS AND SHAPE WILL BE DEPENDENT ON THE FABRICATOR.
2. FOR BOX PROFILE SEE CULVERT PLAN AND PROFILE SHEET.
3. THE CONTRACTOR/FABRICATOR TEAM IS RESPONSIBLE FOR THE DESIGN OF THE BOX CULVERT, WINGWALLS, CUTOFF WALLS, AND ALL CONNECTIONS BETWEEN PRECAST ELEMENTS.

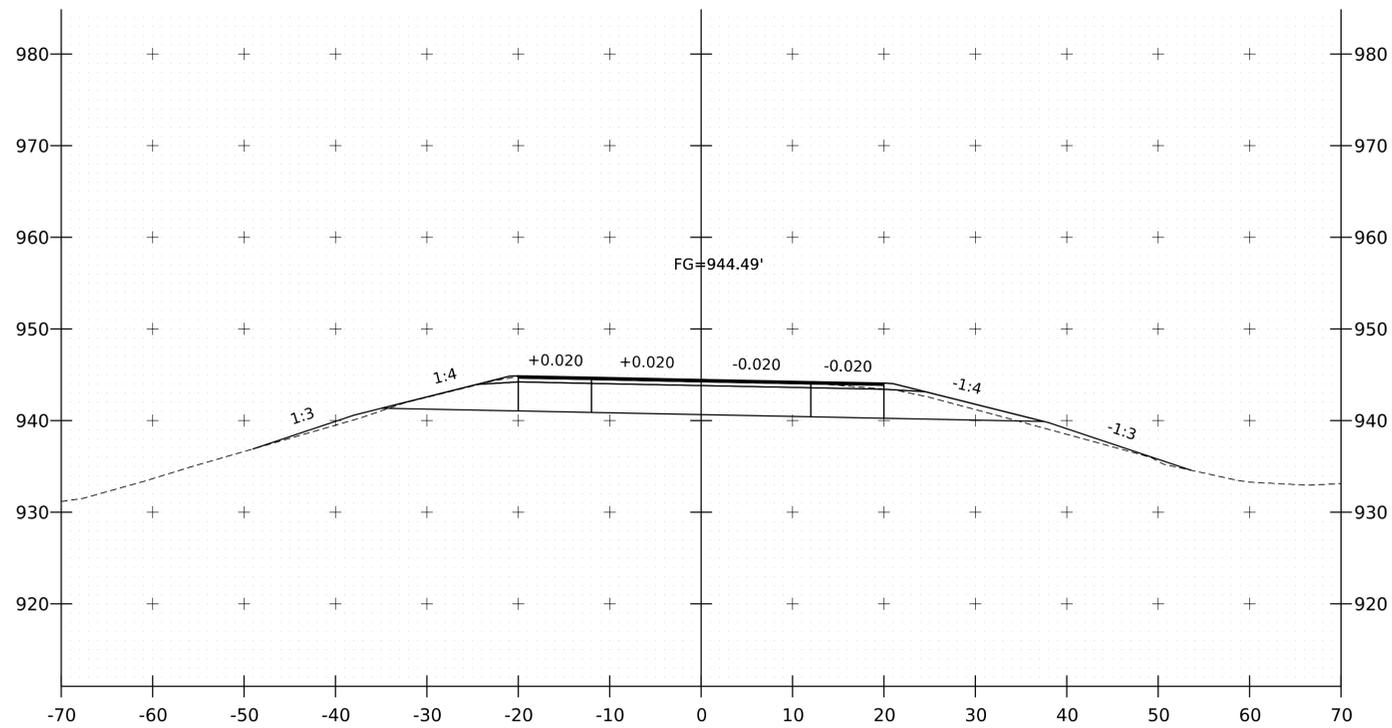
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PROJECT NUMBER:	BM 20102	PROJECT LEADER:	A. STOCKIN	DRAWN BY:	M. HERMIS
		DESIGNED BY:	M. GROTE	CHECKED BY:	T. HIGGINSON
		SUBSTRUCTURE DETAILS 1		SHEET	21 OF 65



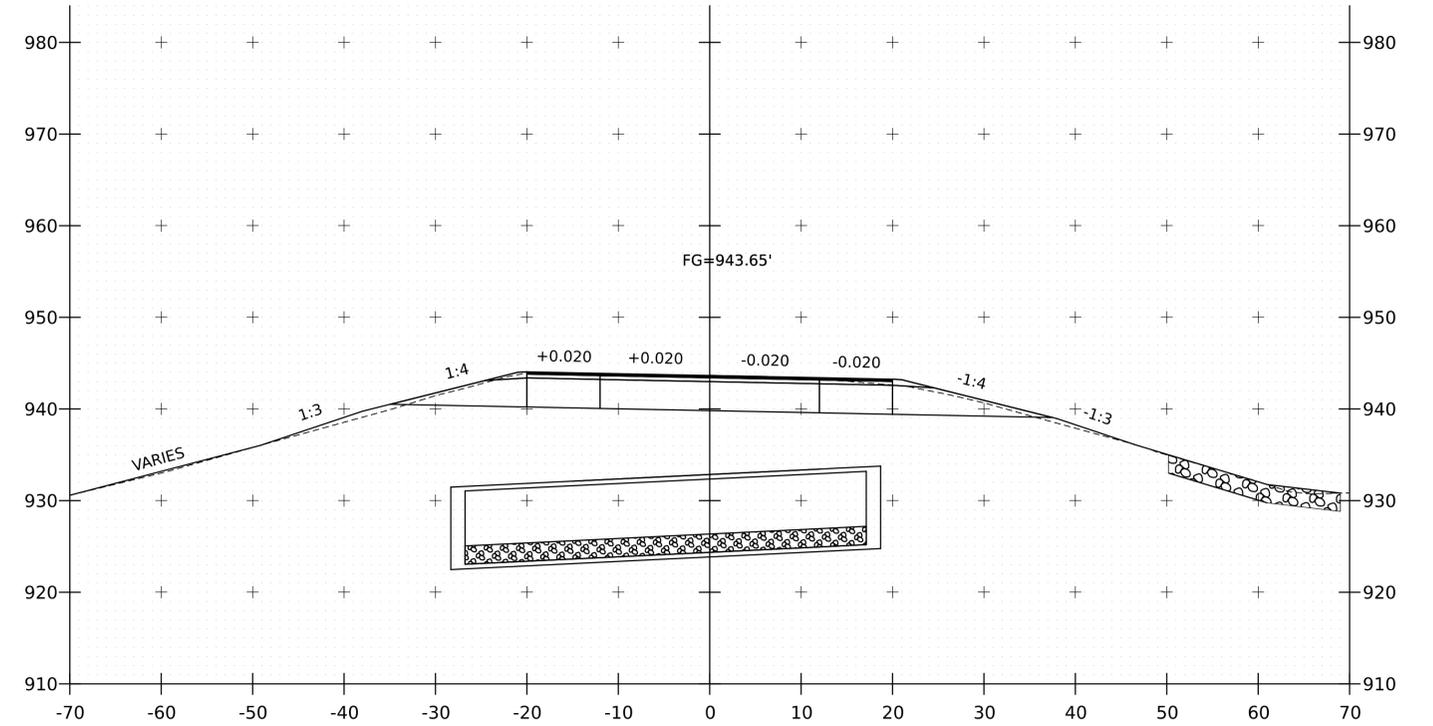
BEGIN APPROACH



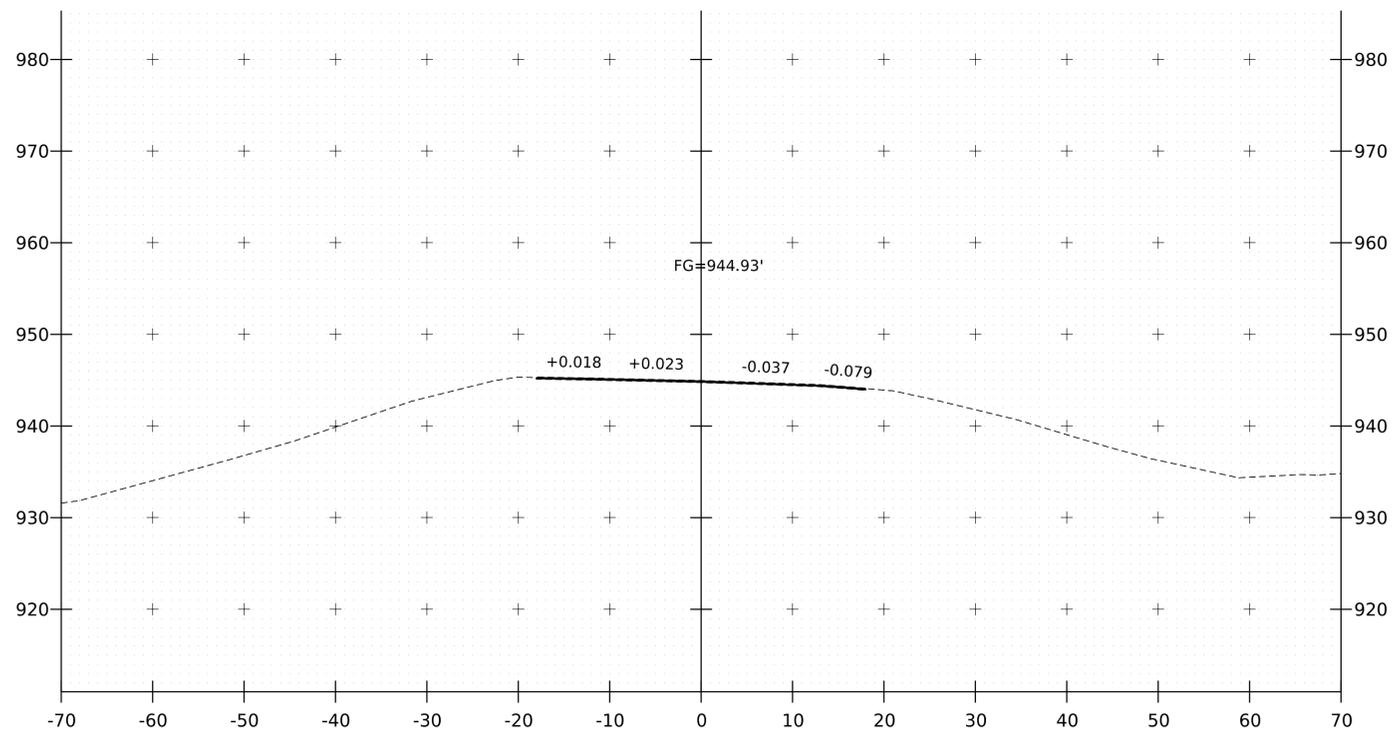
PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/15/2025
PROJECT NUMBER:	BM 20102	DRAWN BY:	M. HERMIS
FILE NAME:	z20b155xs1.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	SHEET	22 OF 65
DESIGNED BY:	M. GROTE		
MAINLINE CROSS SECTIONS 1			



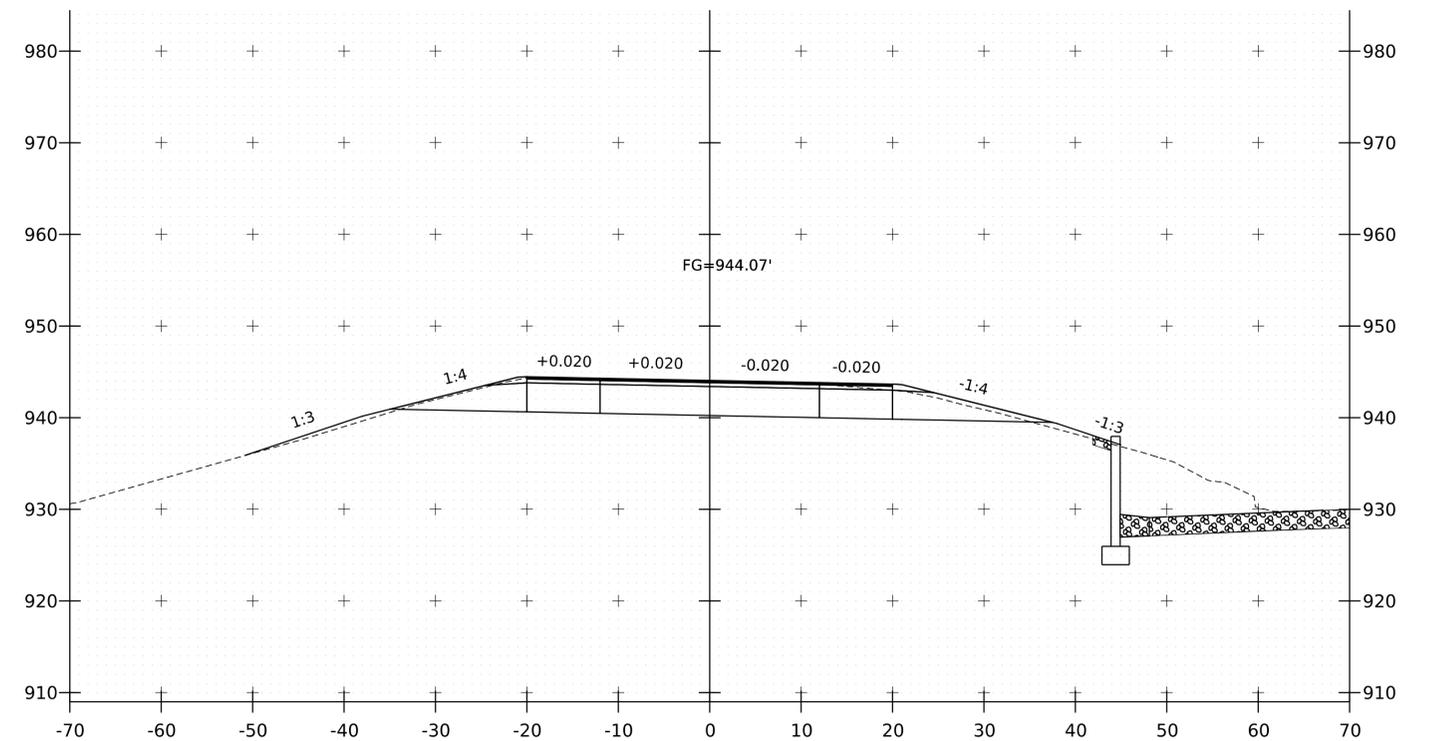
1056+25  
BEGIN PROJECT



1056+75  
STA. 1056+65.47 BEGIN BRIDGE  
STA. 1056+81.29 END BRIDGE



1056+00



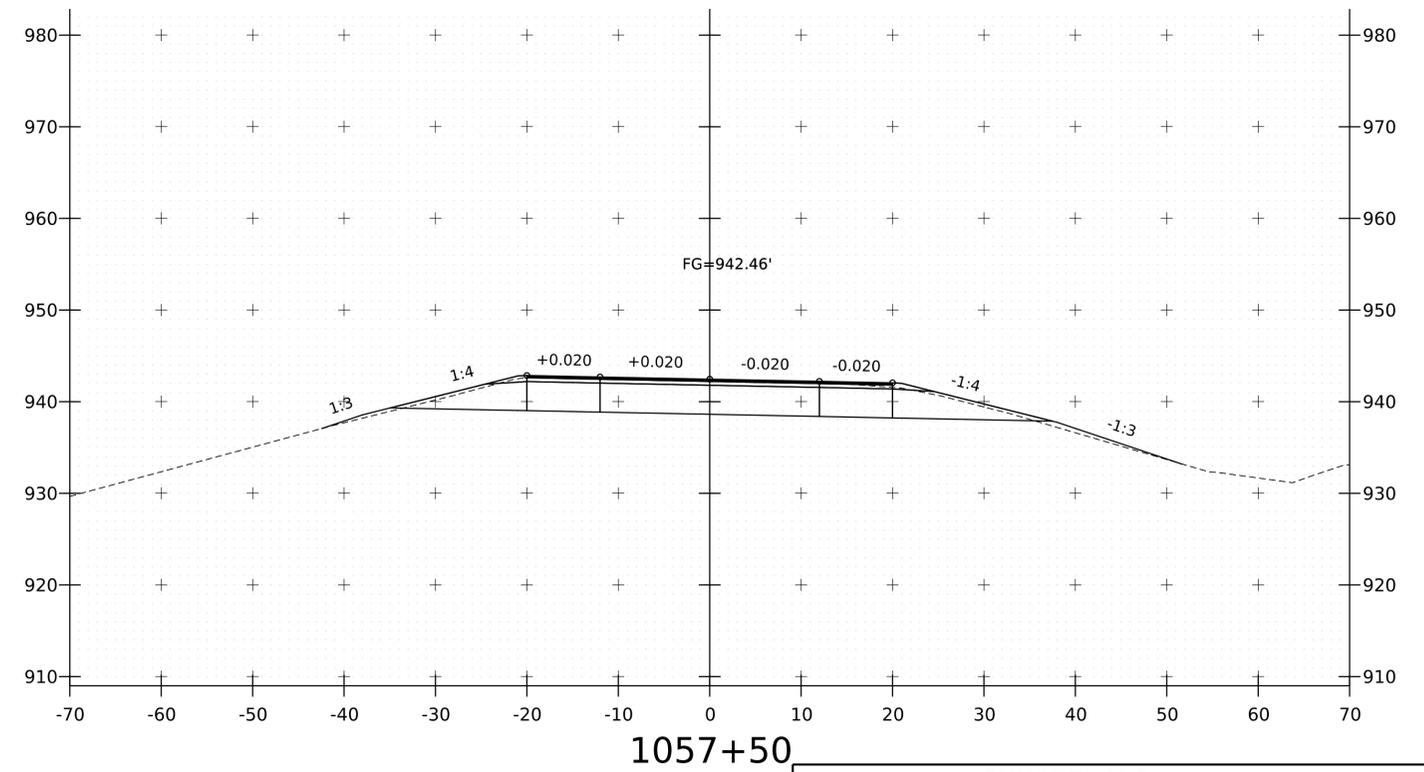
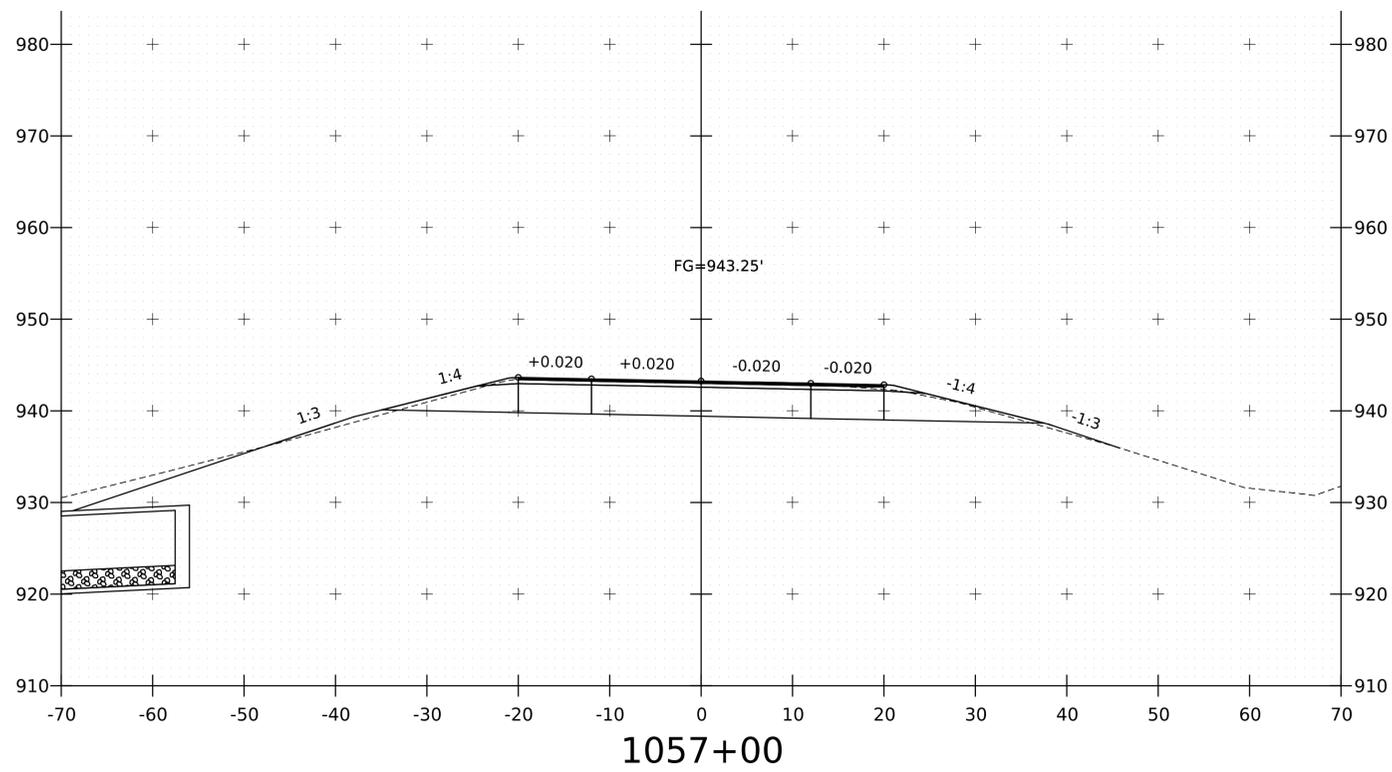
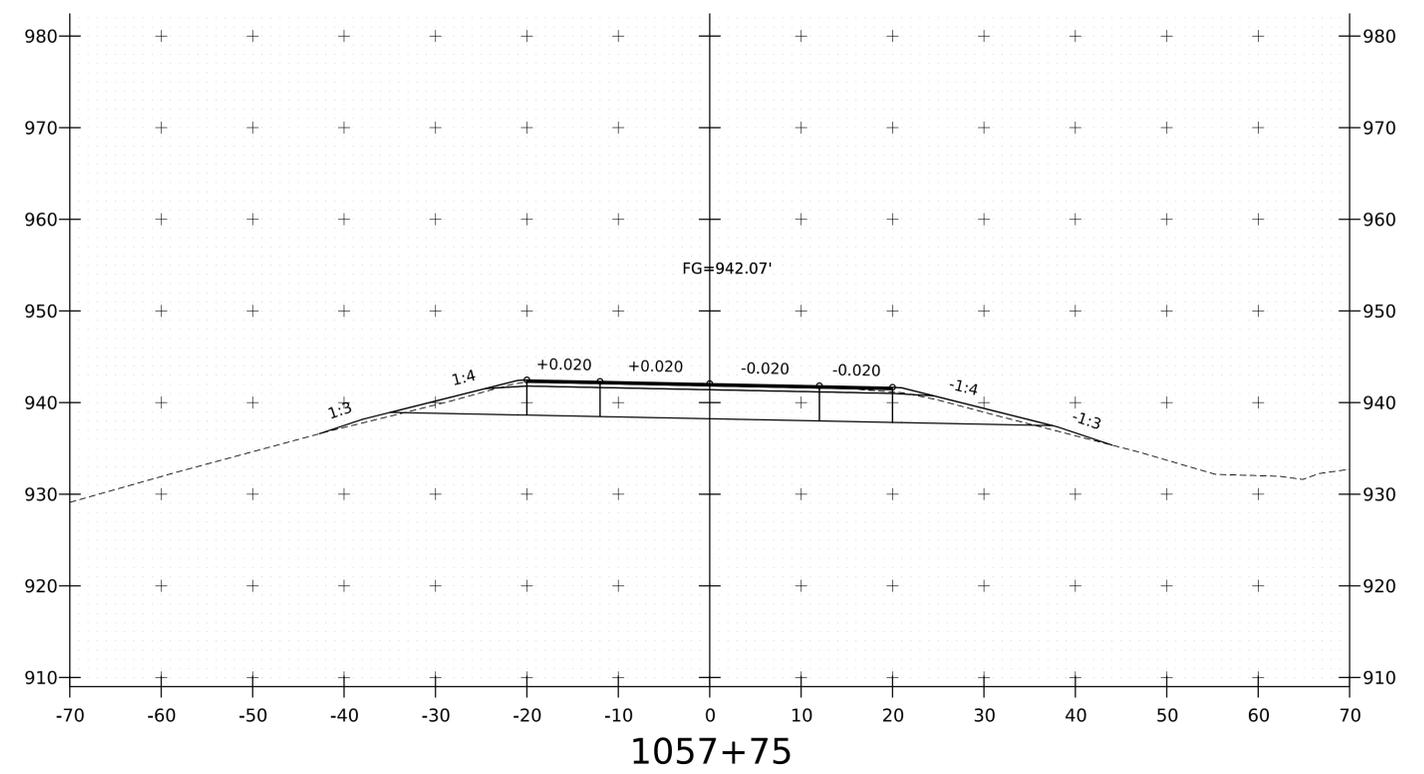
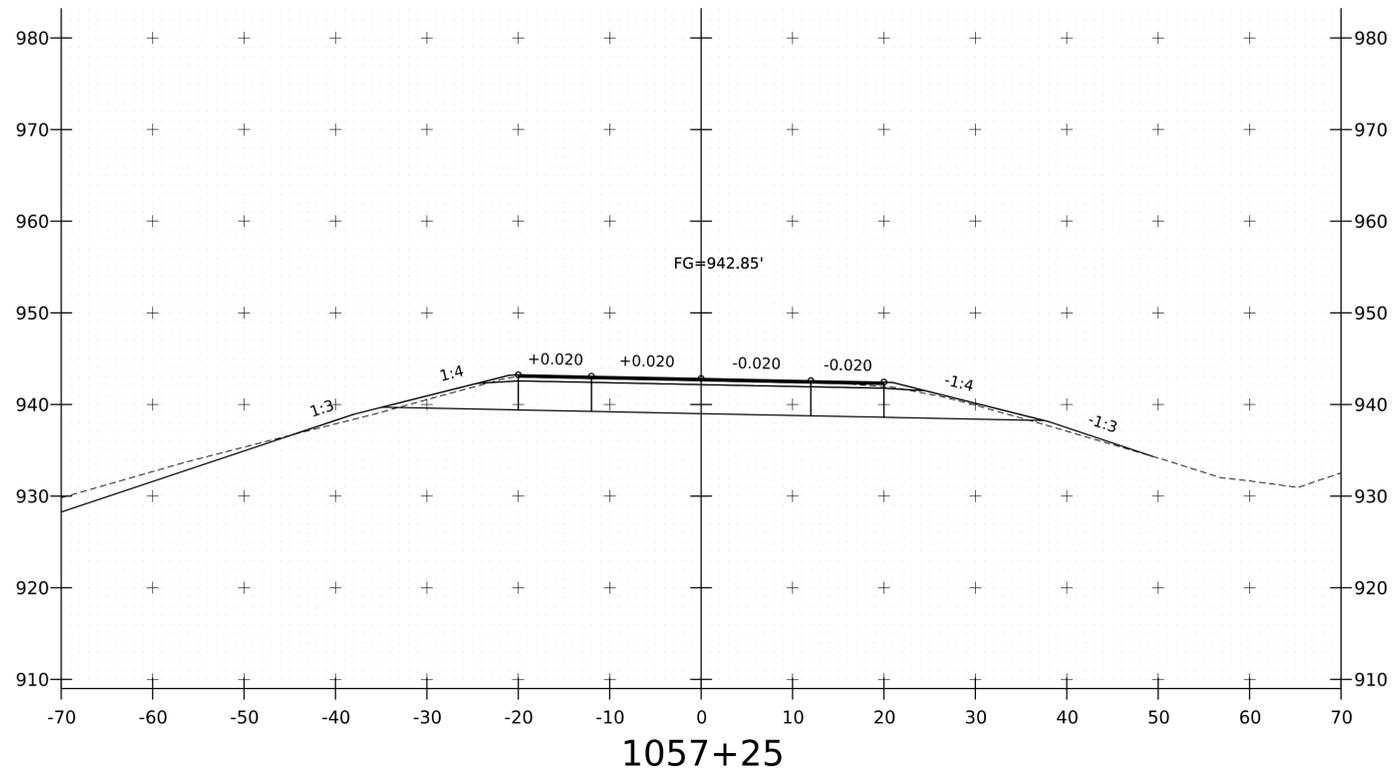
1056+50

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: BM 20102

FILE NAME: z20b155xs1.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
MAINLINE CROSS SECTIONS 2

PLOT DATE: 7/15/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 23 OF 65



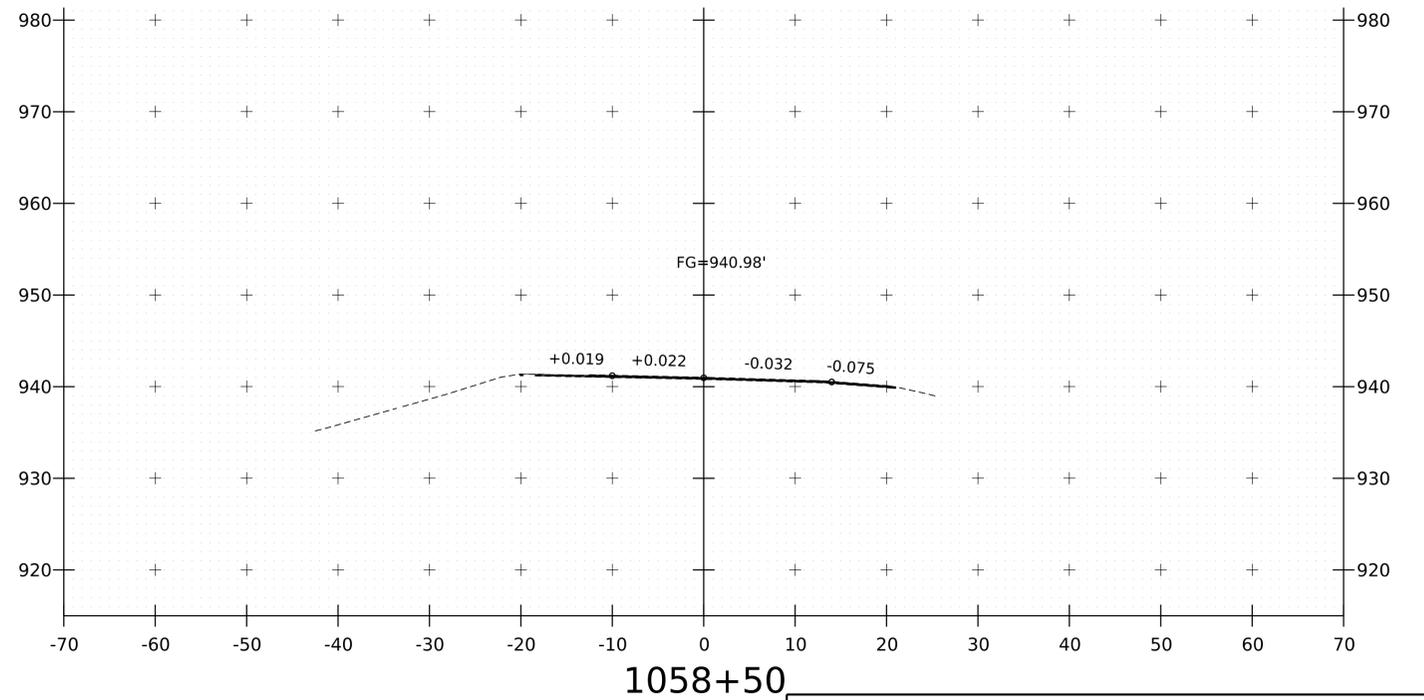
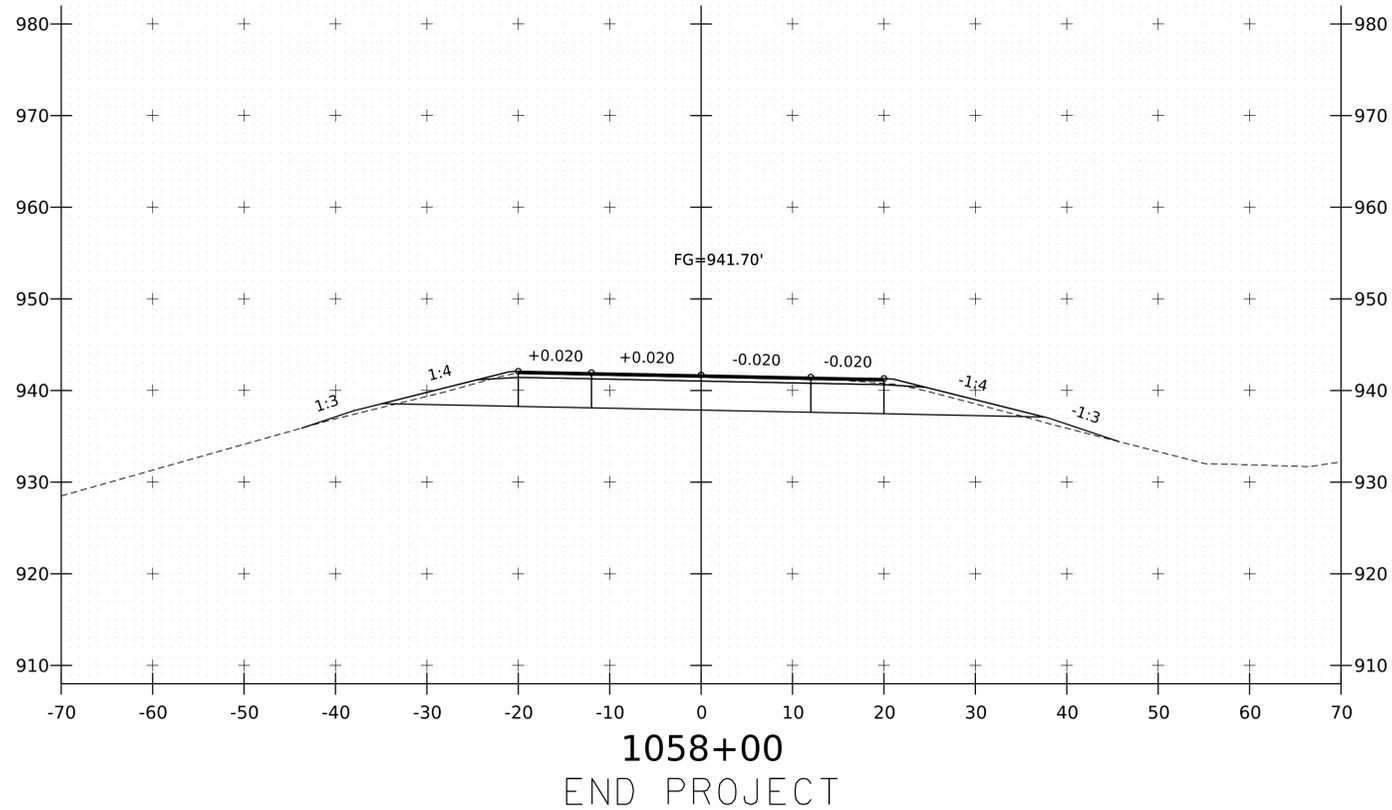
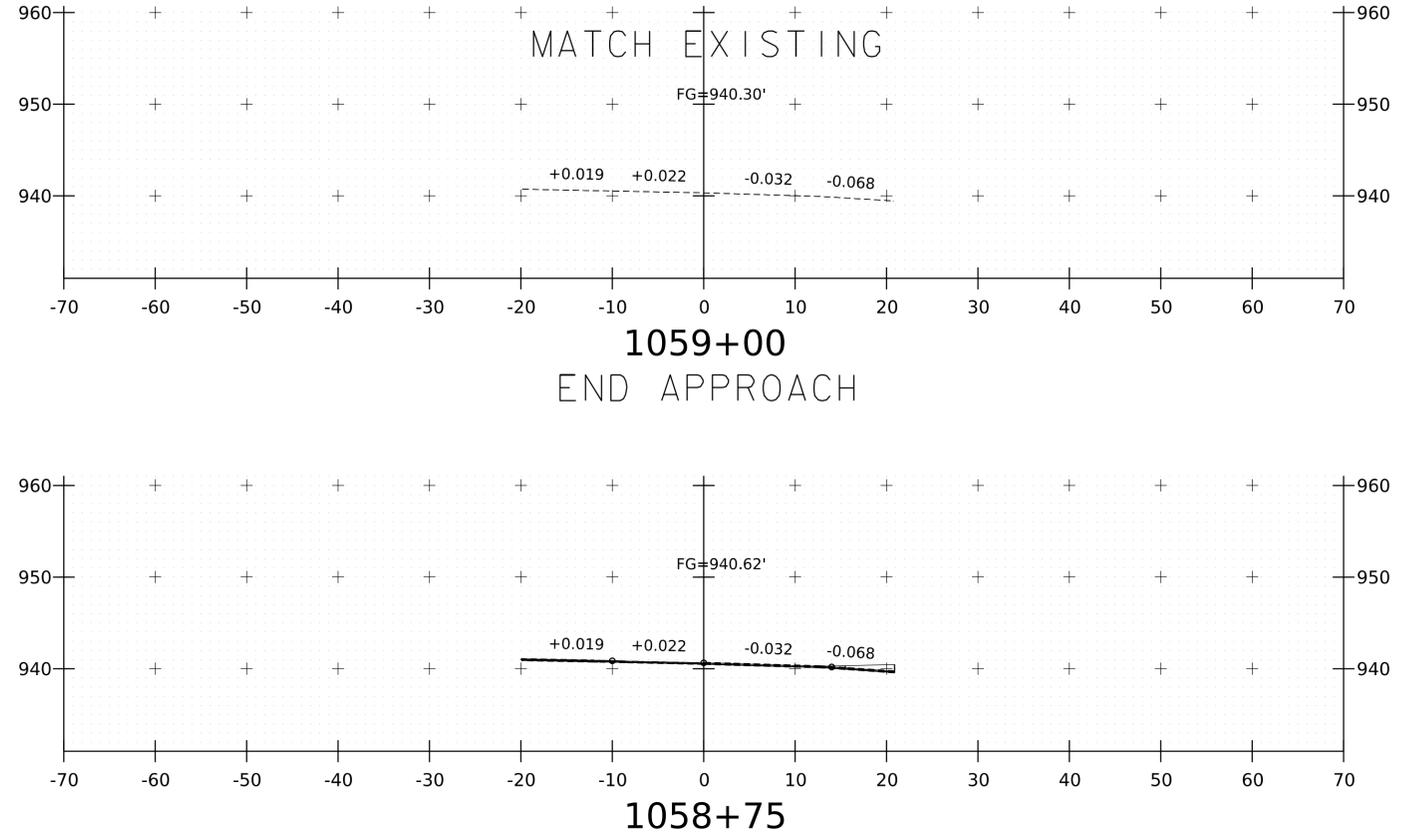
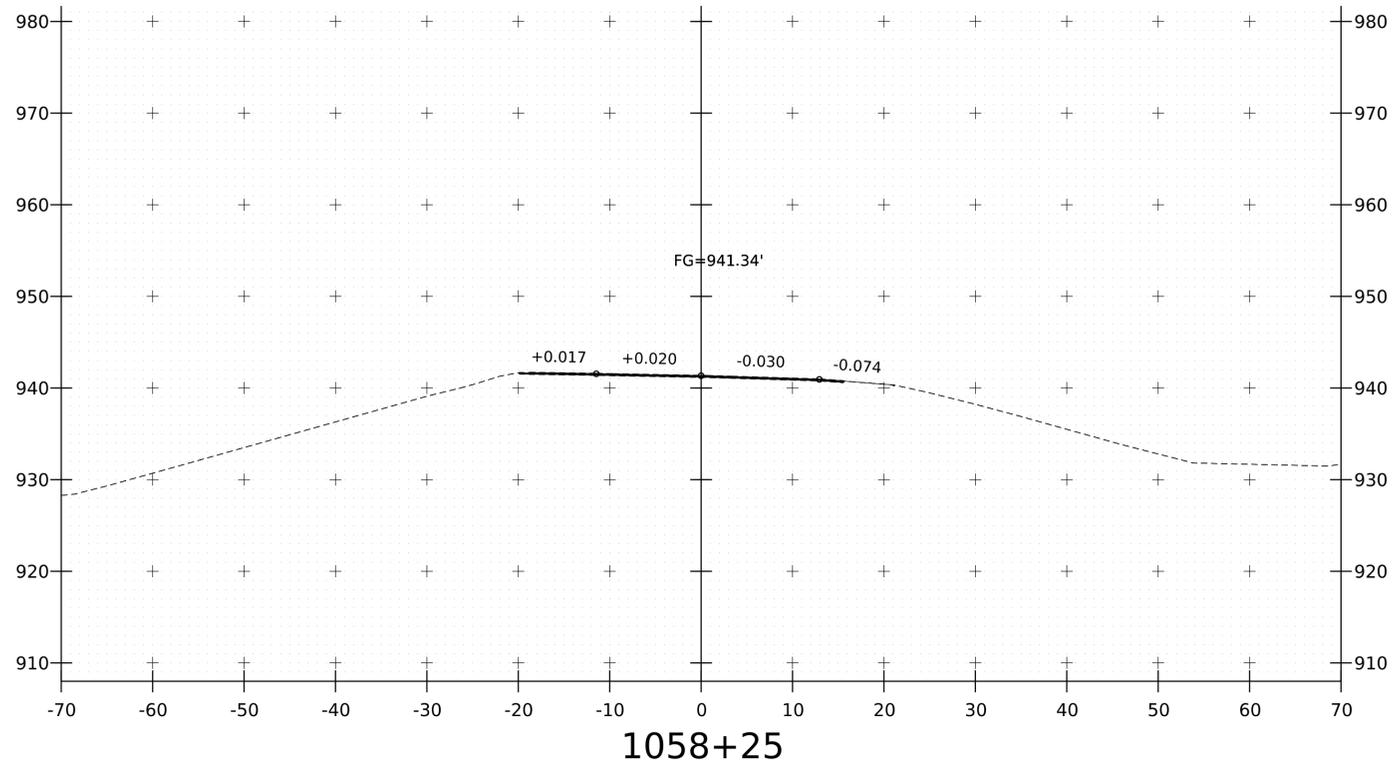


PROJECT NAME: SUNDERLAND  
 PROJECT NUMBER: BM 20102

FILE NAME: z20b155xs1.dgn  
 PROJECT LEADER: A. STOCKIN  
 DESIGNED BY: M. GROTE  
 MAINLINE CROSS SECTIONS 3

PLOT DATE: 7/17/2025  
 DRAWN BY: M. HERMIS  
 CHECKED BY: T. HIGGINSON  
 SHEET 24 OF 65



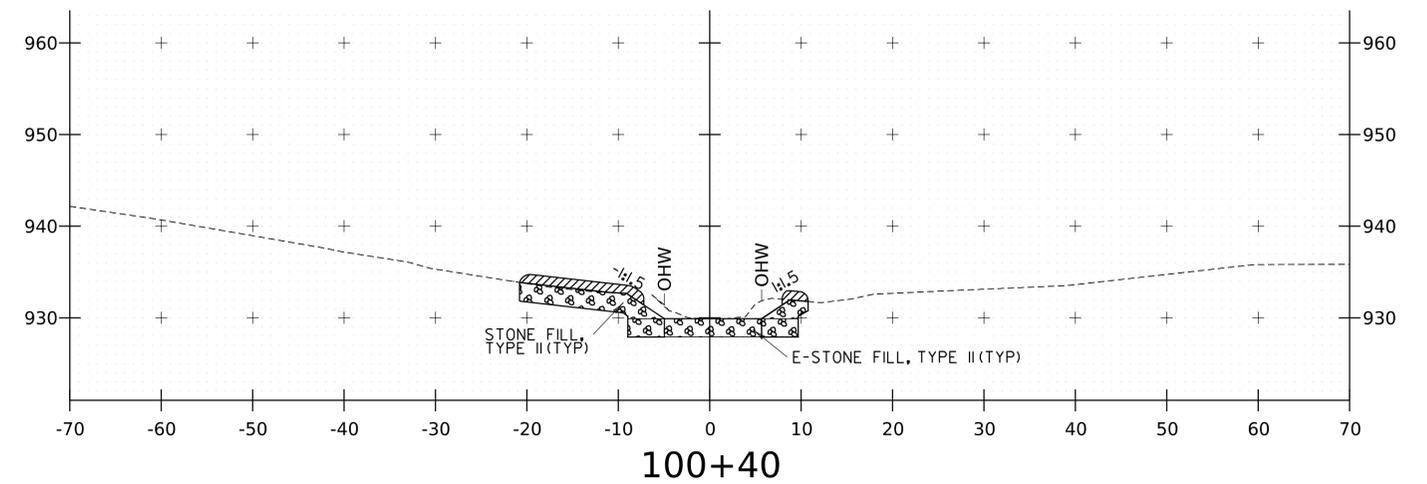
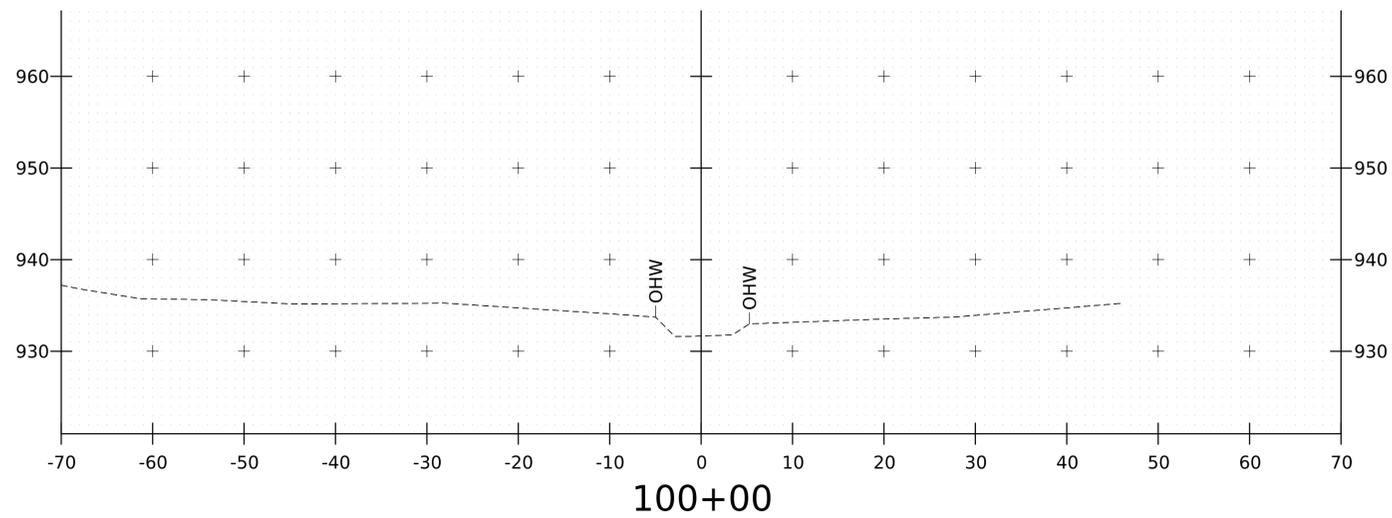
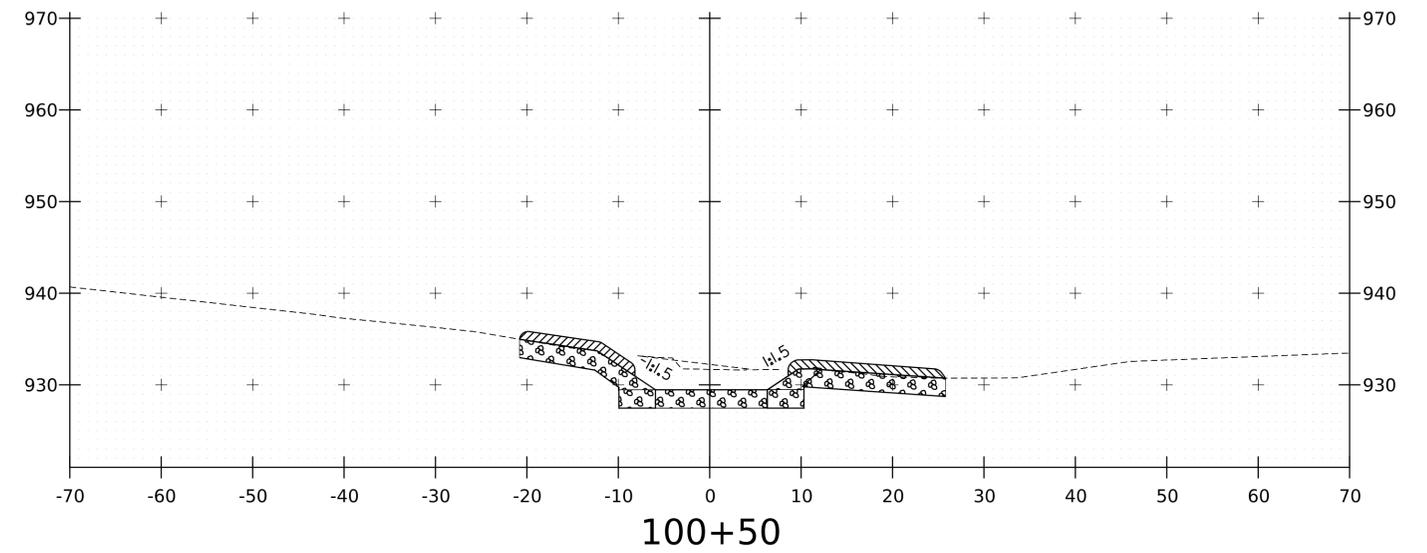
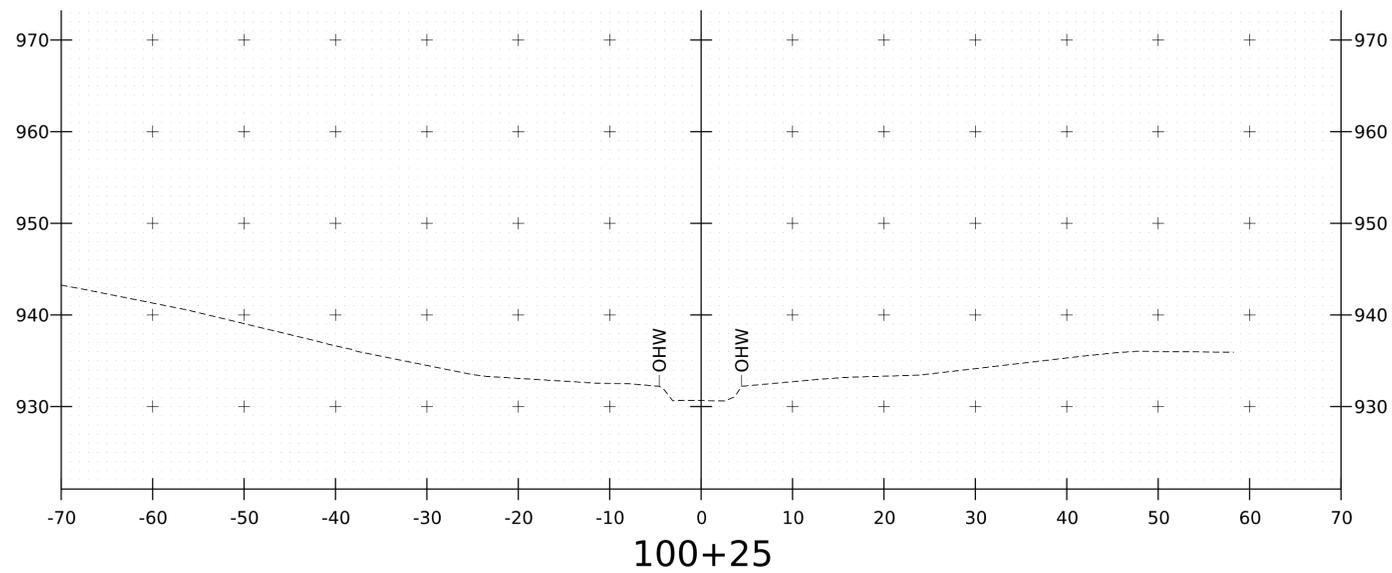


PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: BM 20102

FILE NAME: z20b155xs1.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
MAINLINE CROSS SECTIONS 4

PLOT DATE: 7/15/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 25 OF 65

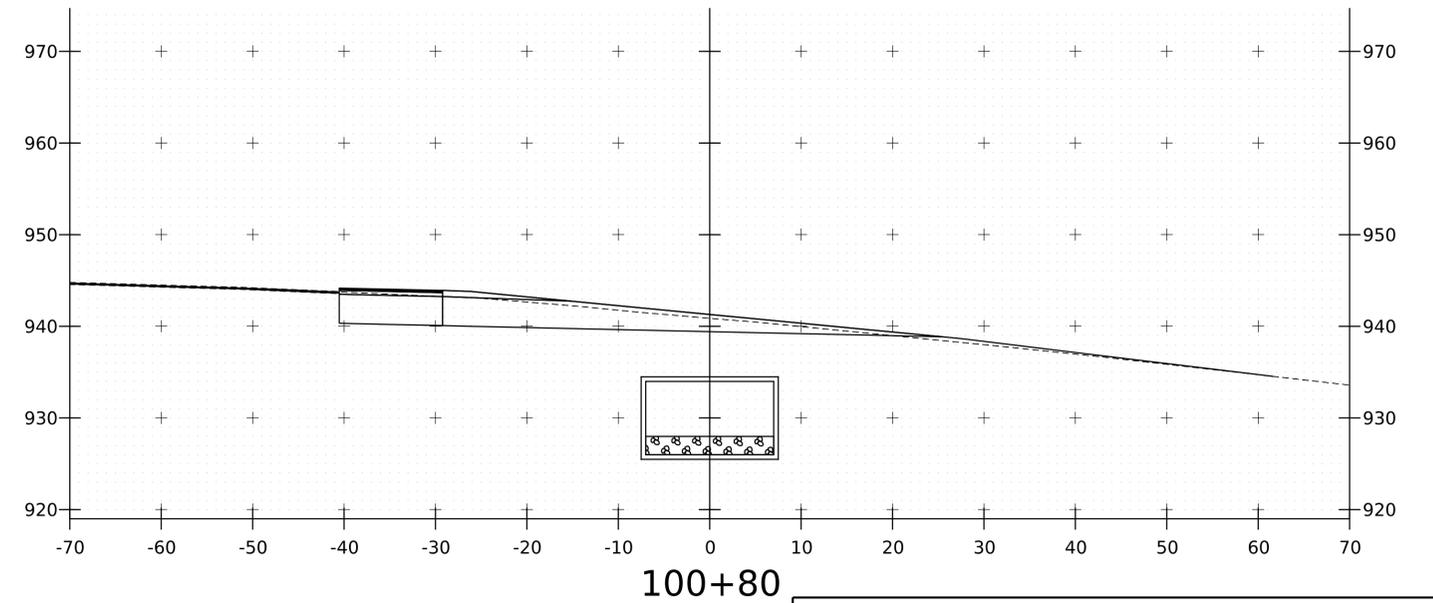
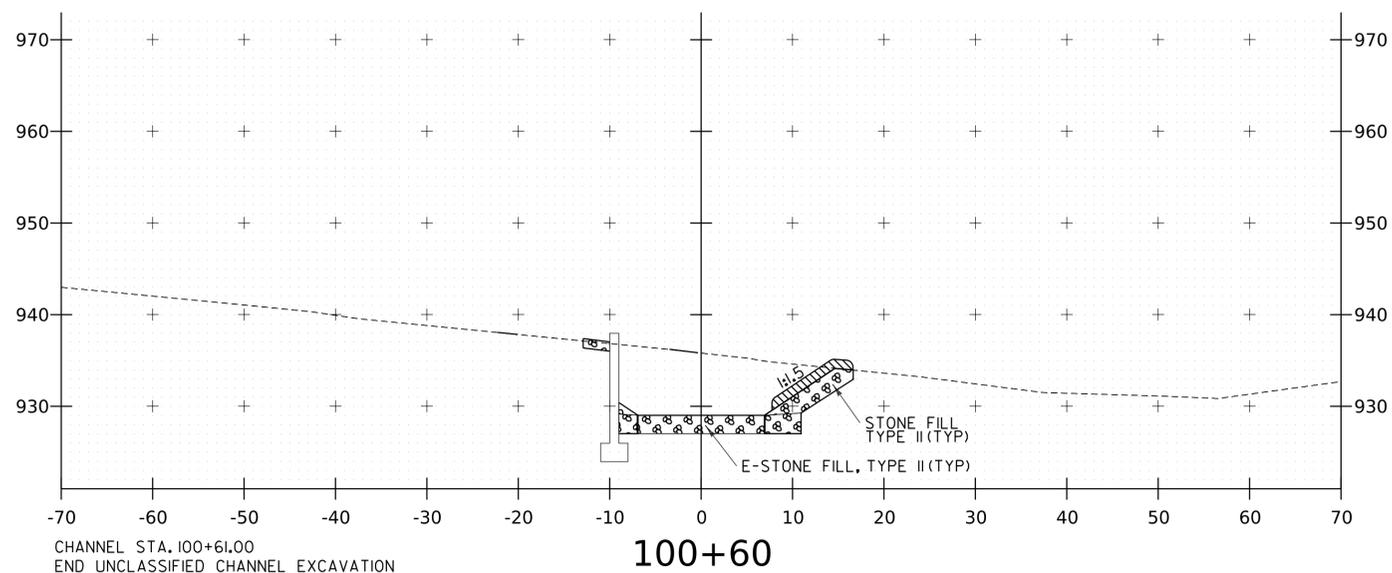
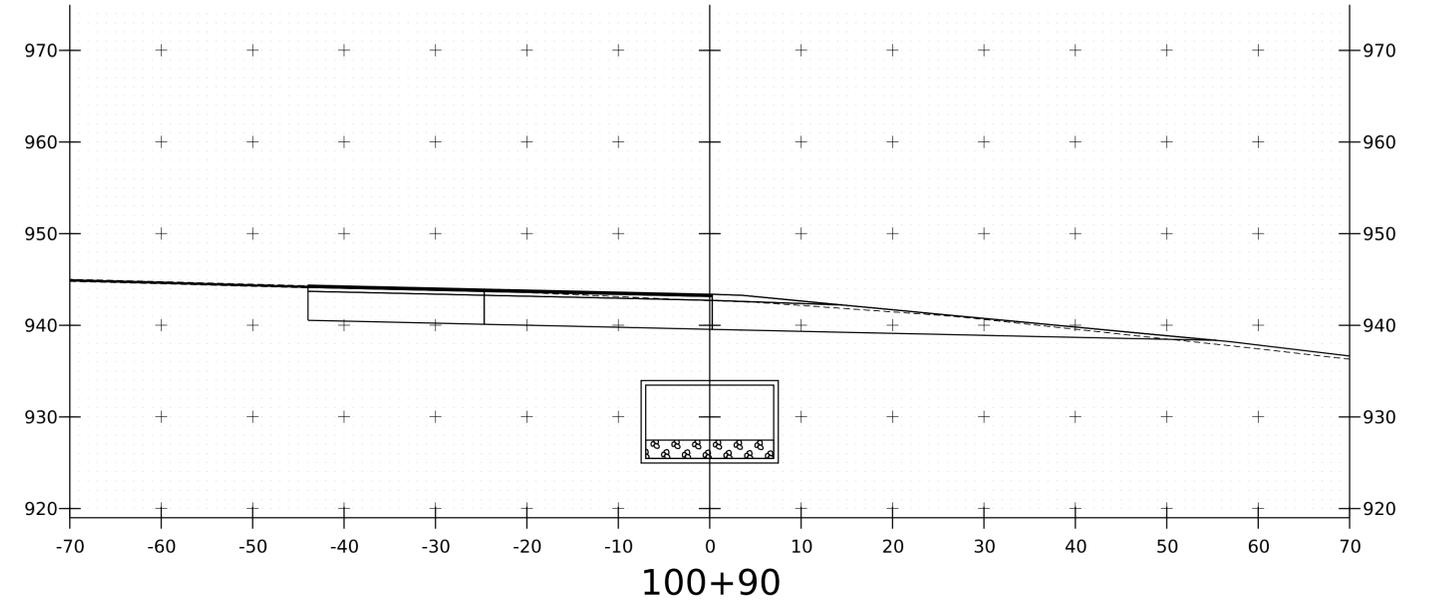
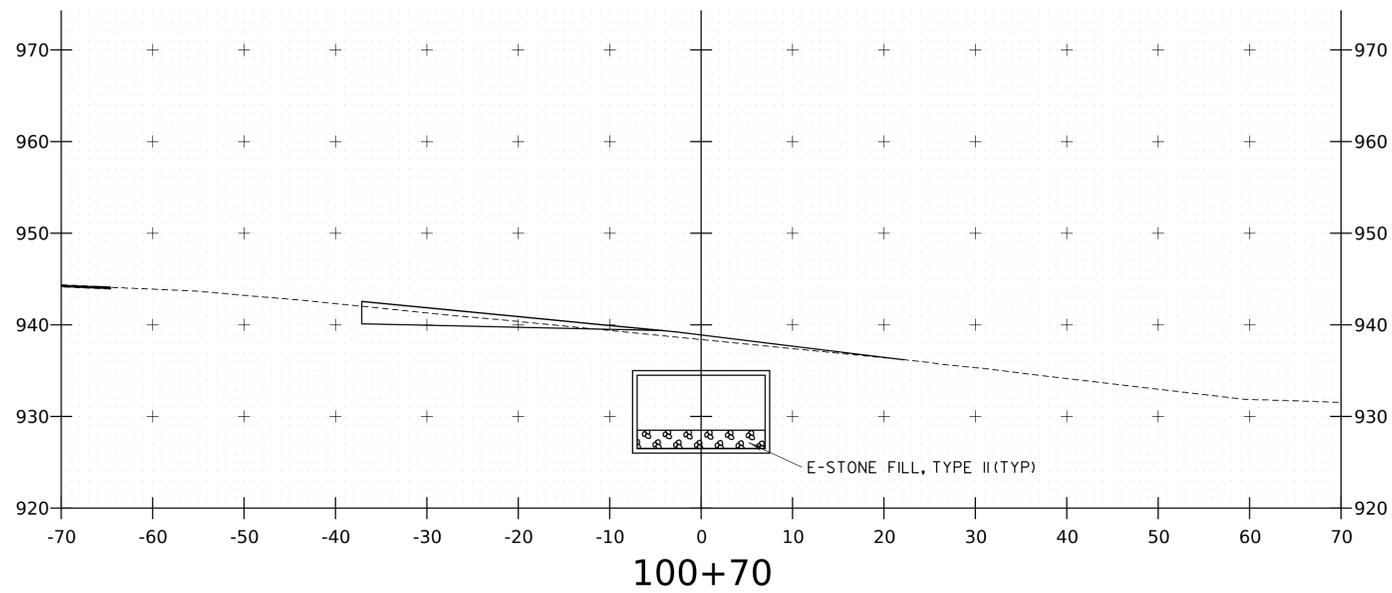




CHANNEL STA. 100+40.00  
 BEGIN UNCLASSIFIED CHANNEL EXCAVATION  
 BEGIN STONE FILL, TYPE II  
 BEGIN E-STONE FILL, TYPE II (SEE NOTE 2 ON TYPICAL SECTIONS FOR LOW-FLOW CHANNEL)  
 BEGIN GRUBBING MATERIAL (SEE TYPICAL CHANNEL SECTION FOR MORE INFORMATION)  
 BEGIN GEOTEXTILE UNDER STONE FILL



PROJECT NAME:	SUNDERLAND
PROJECT NUMBER:	BM 20102
FILE NAME:	z20b155xs2.dgn
PROJECT LEADER:	A. STOCKIN
DESIGNED BY:	M. GROTE
CULVERT CROSS SECTIONS 1	
PLOT DATE:	7/15/2025
DRAWN BY:	M. HERMIS
CHECKED BY:	T. HIGGINSON
SHEET	26 OF 65



CHANNEL STA. 100+61.00  
 END UNCLASSIFIED CHANNEL EXCAVATION  
 END STONE FILL, TYPE II  
 END E-STONE FILL, TYPE II  
 END GRUBBING MATERIAL  
 END GEOTEXTILE UNDER STONE FILL  
 BEGIN STRUCTURE EXCAVATION

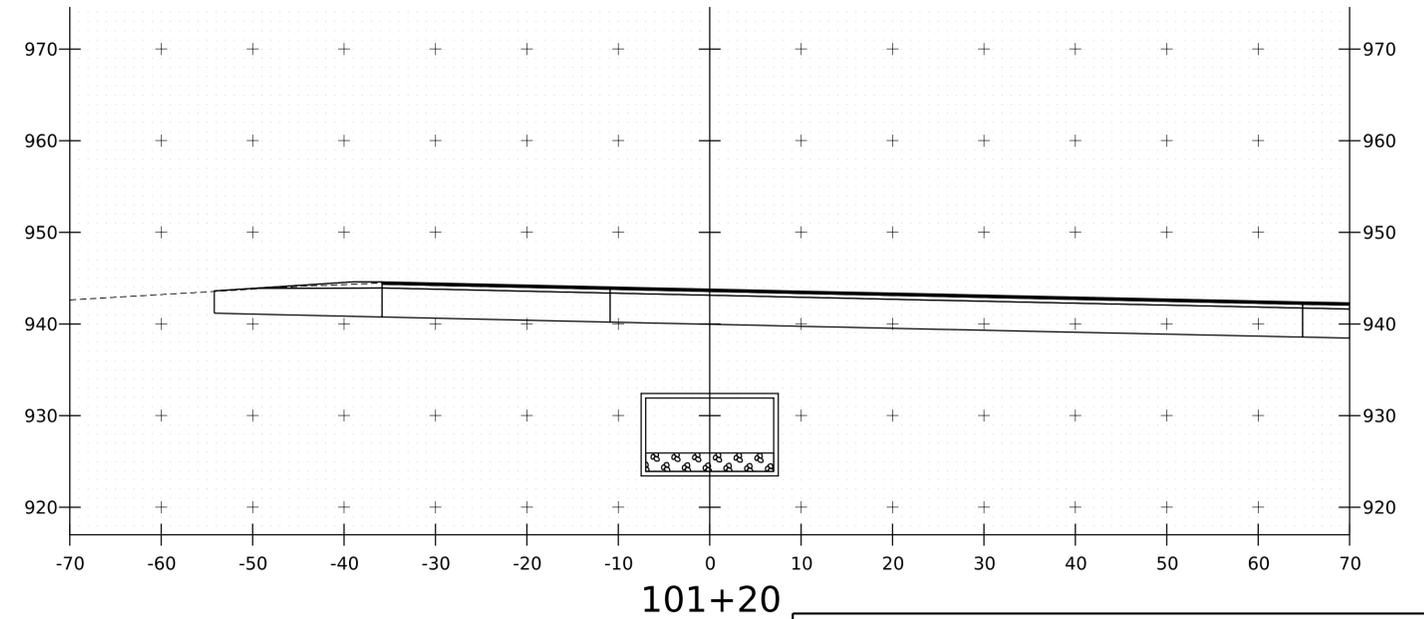
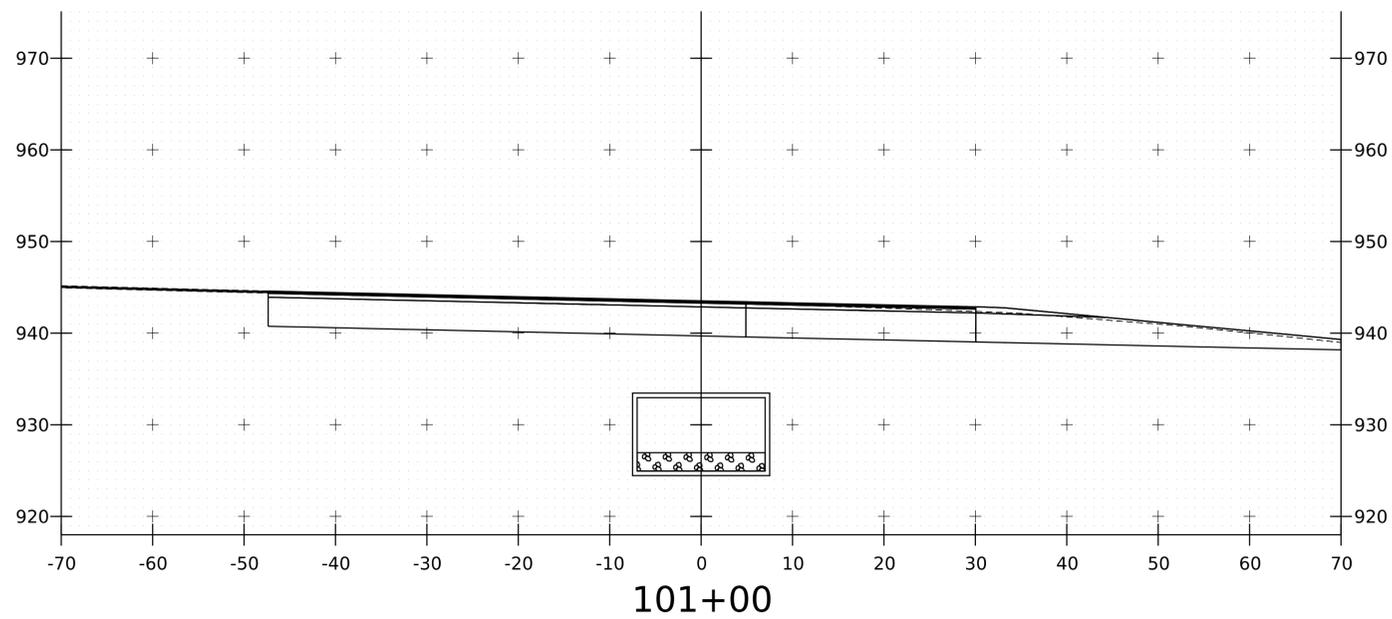
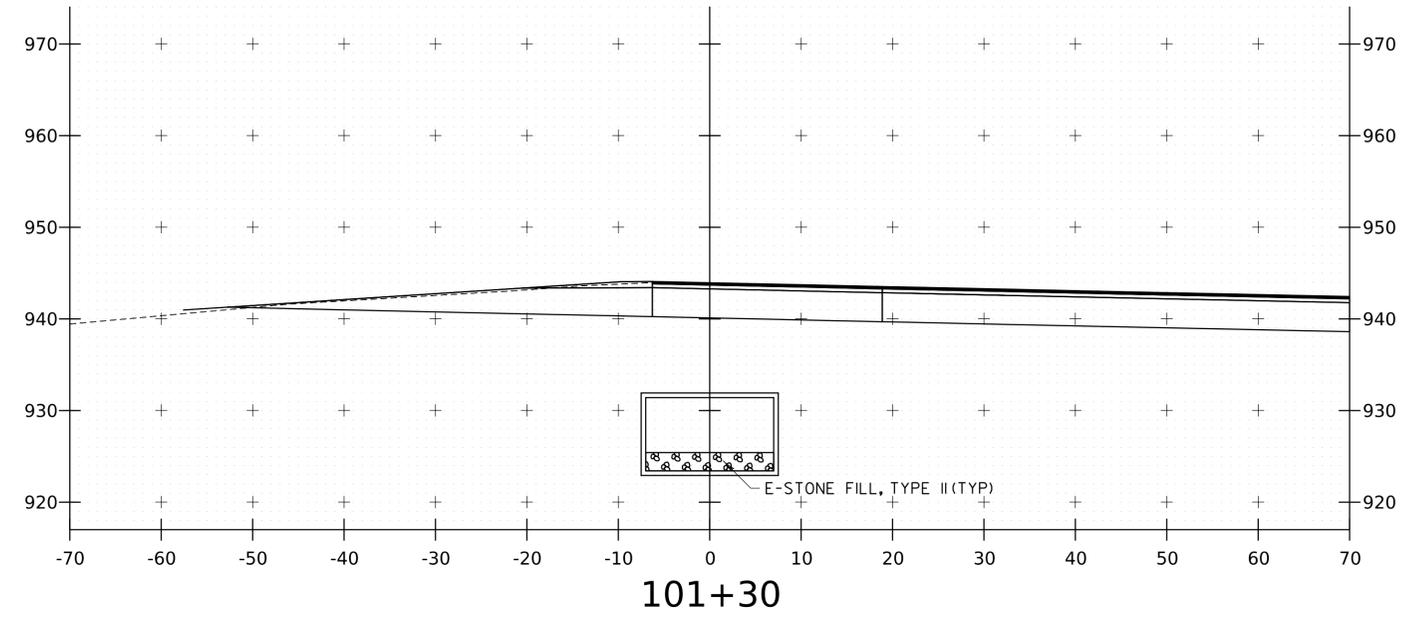
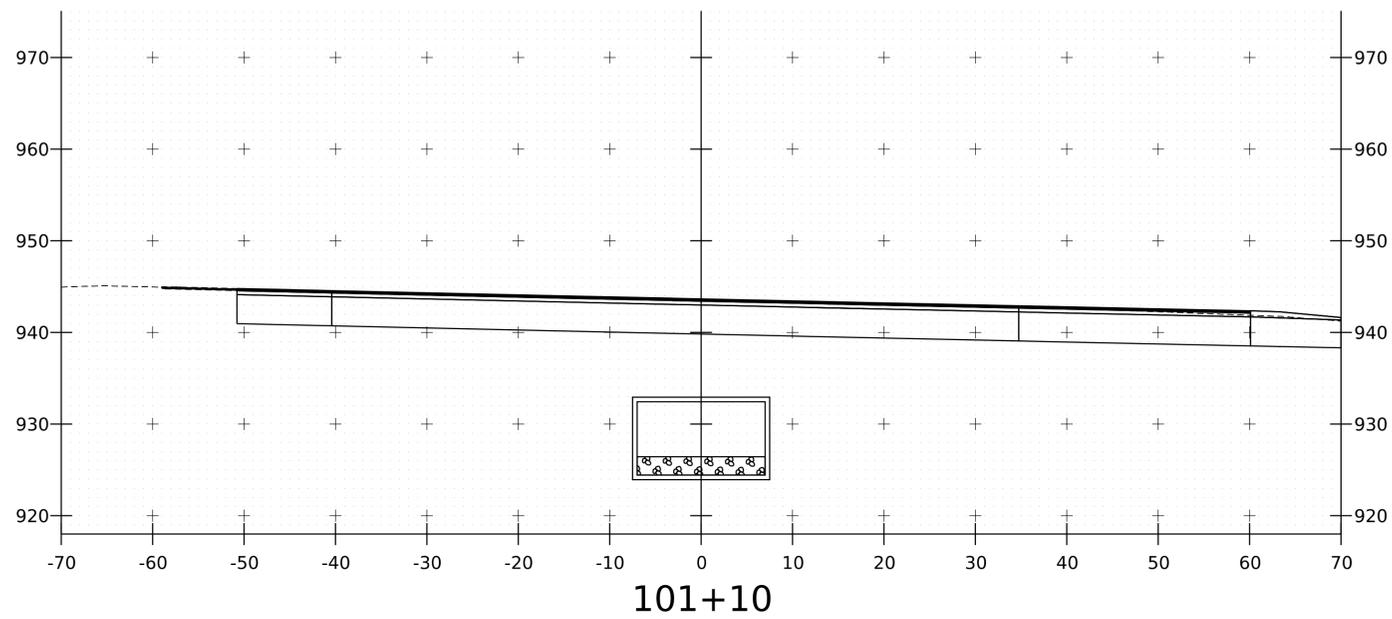
STA. 100+61 BEGIN BOX



PROJECT NAME: SUNDERLAND  
 PROJECT NUMBER: BM 20102

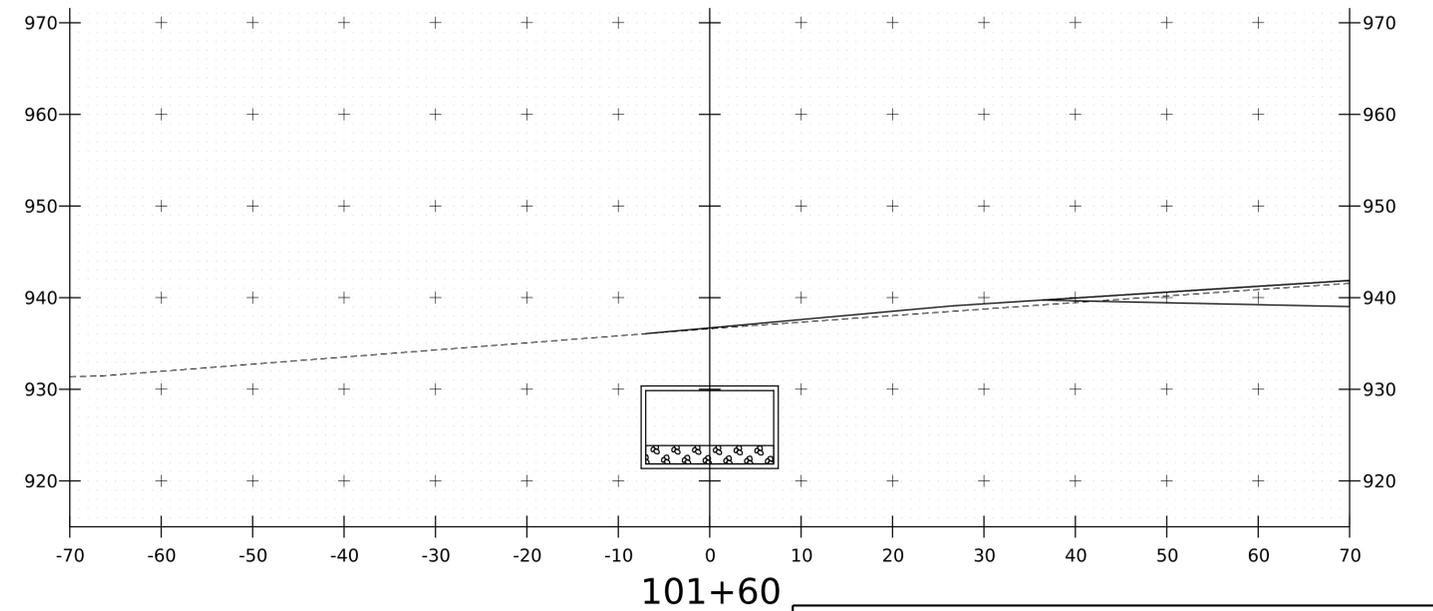
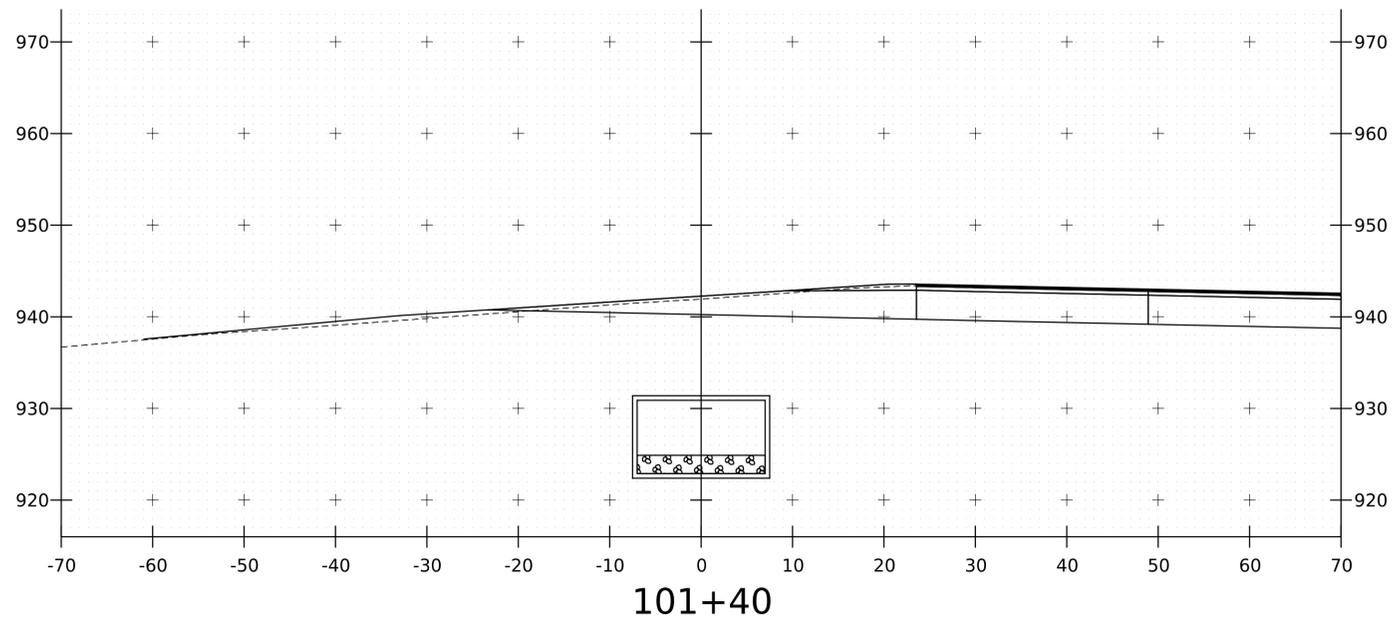
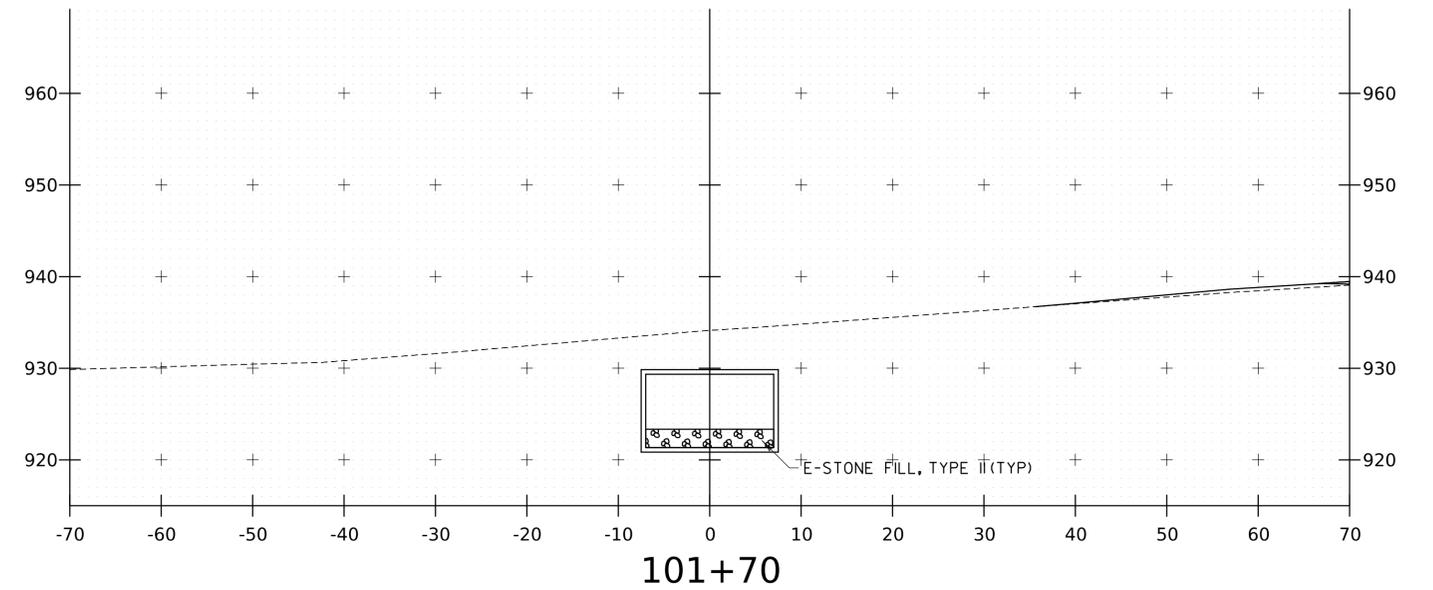
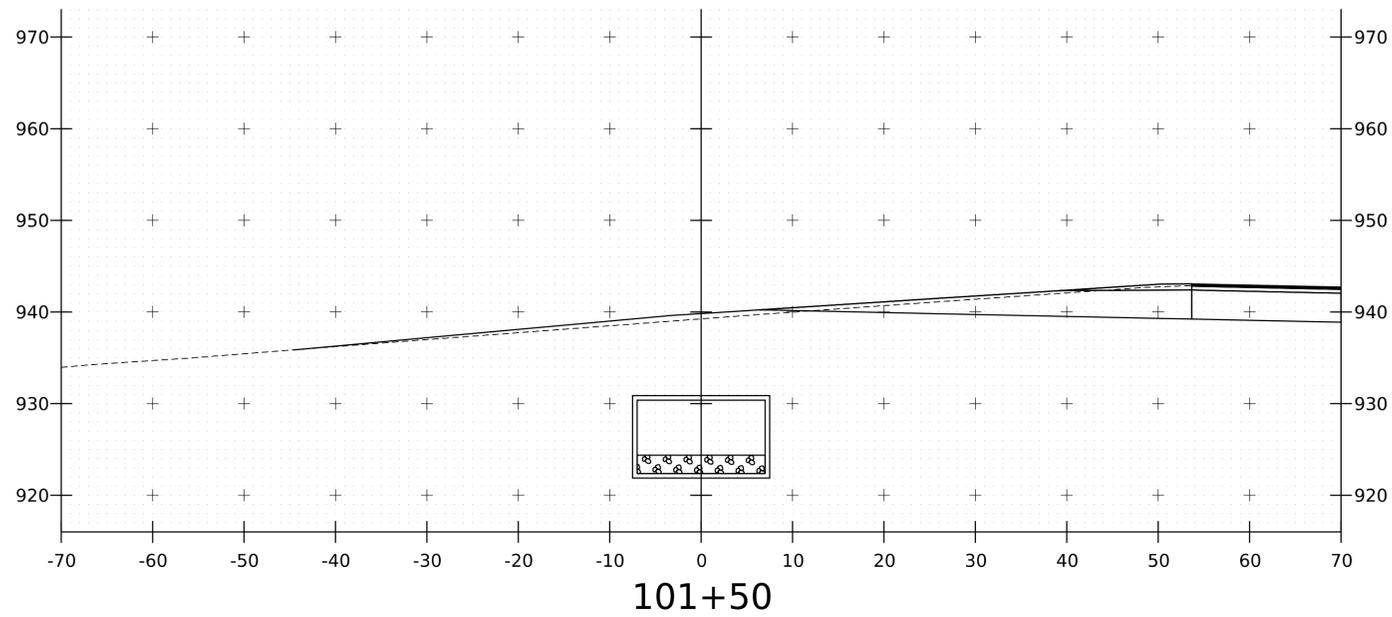
FILE NAME: z20b155xs2.dgn  
 PROJECT LEADER: A. STOCKIN  
 DESIGNED BY: M. GROTE  
 CULVERT CROSS SECTIONS 2

PLOT DATE: 7/15/2025  
 DRAWN BY: M. HERMIS  
 CHECKED BY: T. HIGGINSON  
 SHEET 27 OF 65



PROJECT NAME:	SUNDERLAND
PROJECT NUMBER:	BM 20102
FILE NAME:	z20b155xs2.dgn
PROJECT LEADER:	A. STOCKIN
DESIGNED BY:	M. GROTE
CULVERT CROSS SECTIONS 3	
PLOT DATE:	7/2/2025
DRAWN BY:	M. HERMIS
CHECKED BY:	T. HIGGINSON
SHEET	28 OF 65



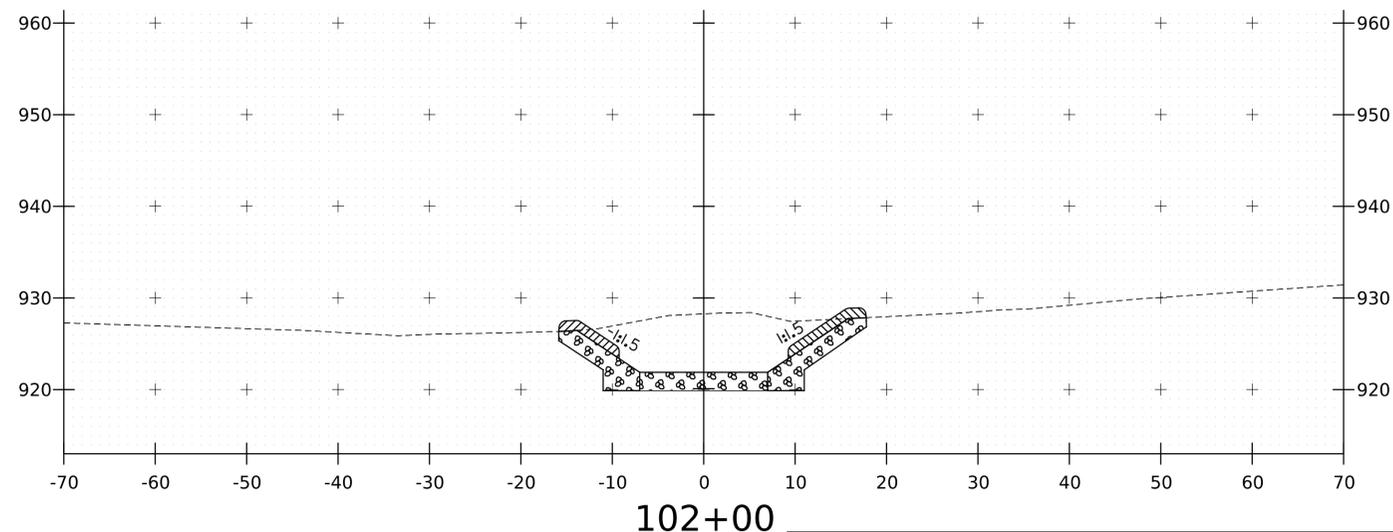
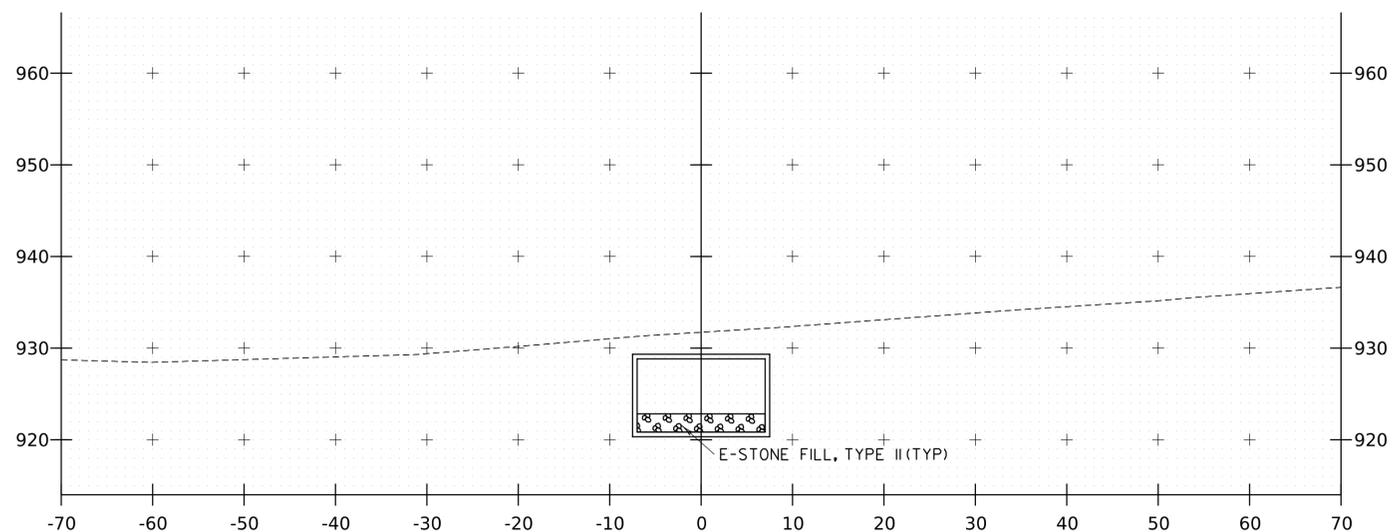
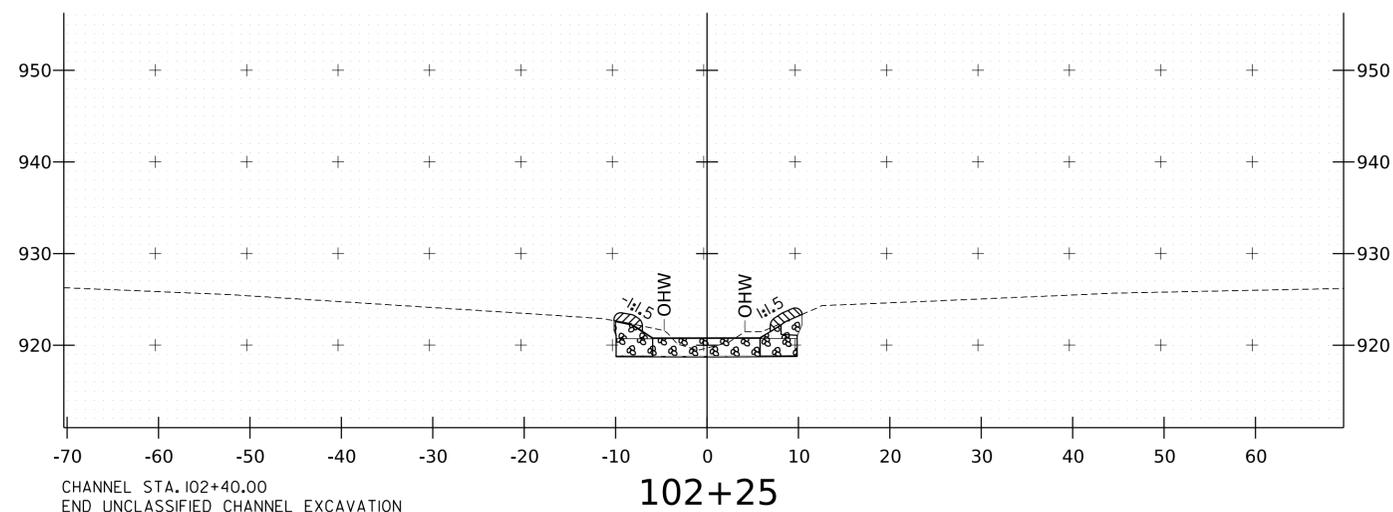
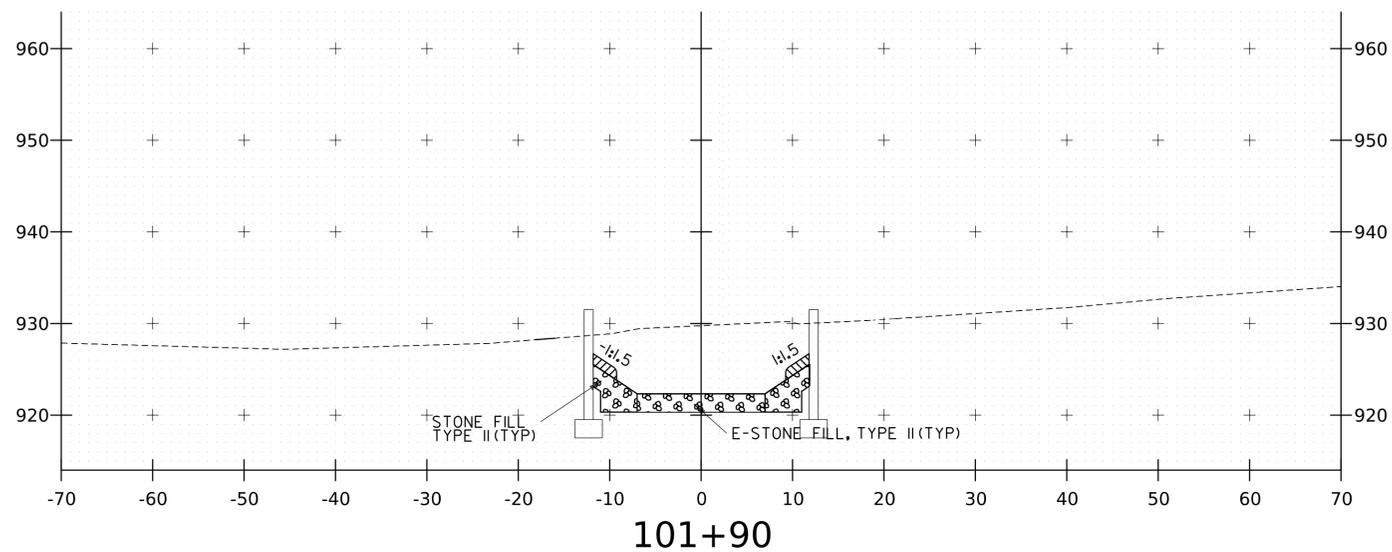


PROJECT NAME: SUNDERLAND  
 PROJECT NUMBER: BM 20102

FILE NAME: z20b155xs2.dgn  
 PROJECT LEADER: A. STOCKIN  
 DESIGNED BY: M. GROTE  
 CULVERT CROSS SECTIONS 4

PLOT DATE: 7/2/2025  
 DRAWN BY: M. HERMIS  
 CHECKED BY: T. HIGGINSON  
 SHEET 29 OF 65





CHANNEL STA. 101+86  
 END STRUCTURE EXCAVATION  
 BEGIN UNCLASSIFIED CHANNEL EXCAVATION  
 BEGIN STONE FILL, TYPE II  
 BEGIN E-STONE FILL, TYPE II (SEE NOTE 2 ON TYPICAL SECTIONS FOR LOW-FLOW CHANNEL)  
 BEGIN GRUBBING MATERIAL (SEE TYPICAL CHANNEL SECTION FOR MORE INFORMATION)  
 BEGIN GEOTEXTILE UNDER STONE FILL

STA. 101+86 END BOX

CHANNEL STA. 102+40.00  
 END UNCLASSIFIED CHANNEL EXCAVATION  
 END STONE FILL, TYPE II  
 END E-STONE FILL, TYPE II  
 END GRUBBING MATERIAL  
 END GEOTEXTILE UNDER STONE FILL

PROJECT NAME: SUNDERLAND  
 PROJECT NUMBER: BM 20102

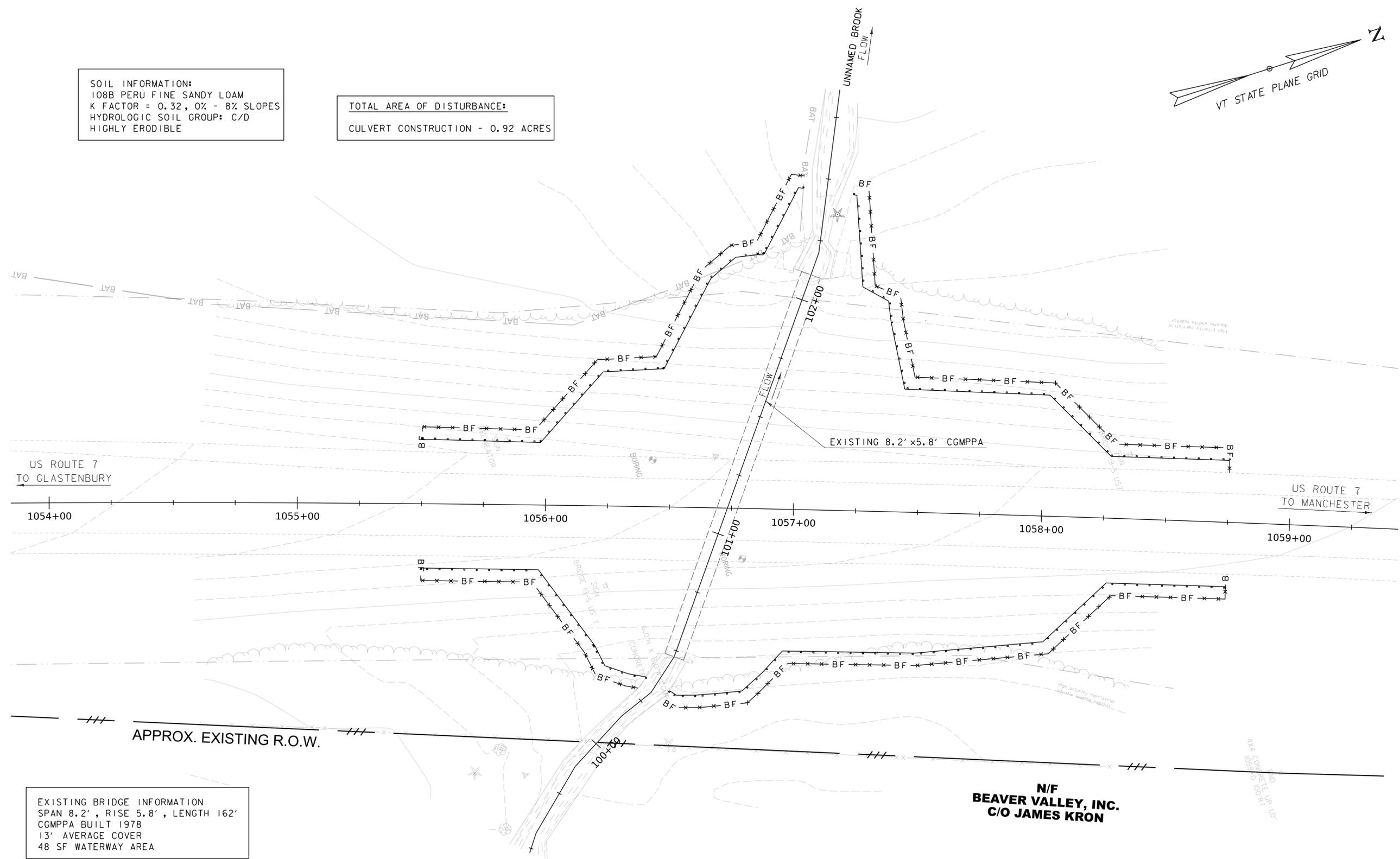
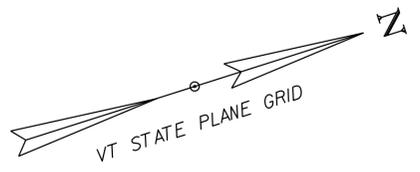
FILE NAME: z20b155xs2.dgn  
 PROJECT LEADER: A. STOCKIN  
 DESIGNED BY: M. GROTE  
 CULVERT CROSS SECTIONS 5

PLOT DATE: 7/15/2025  
 DRAWN BY: M. HERMIS  
 CHECKED BY: T. HIGGINSON  
 SHEET 30 OF 65



SOIL INFORMATION:  
 108B PERU FINE SANDY LOAM  
 K FACTOR = 0.32, 0% - 8% SLOPES  
 HYDROLOGIC SOIL GROUP: C/D  
 HIGHLY ERODIBLE

TOTAL AREA OF DISTURBANCE:  
 CULVERT CONSTRUCTION - 0.92 ACRES



EXISTING BRIDGE INFORMATION  
 SPAN 8.2', RISE 5.8', LENGTH 162'  
 CGMPA BUILT 1978  
 13' AVERAGE COVER  
 48 SF WATERWAY AREA

N/F  
**BEAVER VALLEY, INC.**  
 C/O JAMES KRON

EXISTING EPSC SITE PLAN



PROJECT NAME:	SUNDERLAND	FILE NAME:	z20b155rs.dgn	PLOT DATE:	7/2/2025
PROJECT NUMBER:	BM 20102	PROJECT LEADER:	A. STOCKIN	DRAWN BY:	M. HERMIS
		DESIGNED BY:	M. GROTE	CHECKED BY:	T. HIGGINSON
		EXISTING EPSC SITE PLAN			SHEET 31 OF 65

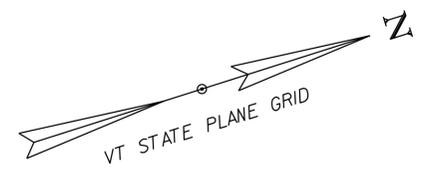


**LEGEND:**

 VAOT POLLINATOR DRY SEED MIX

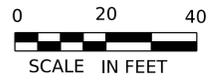
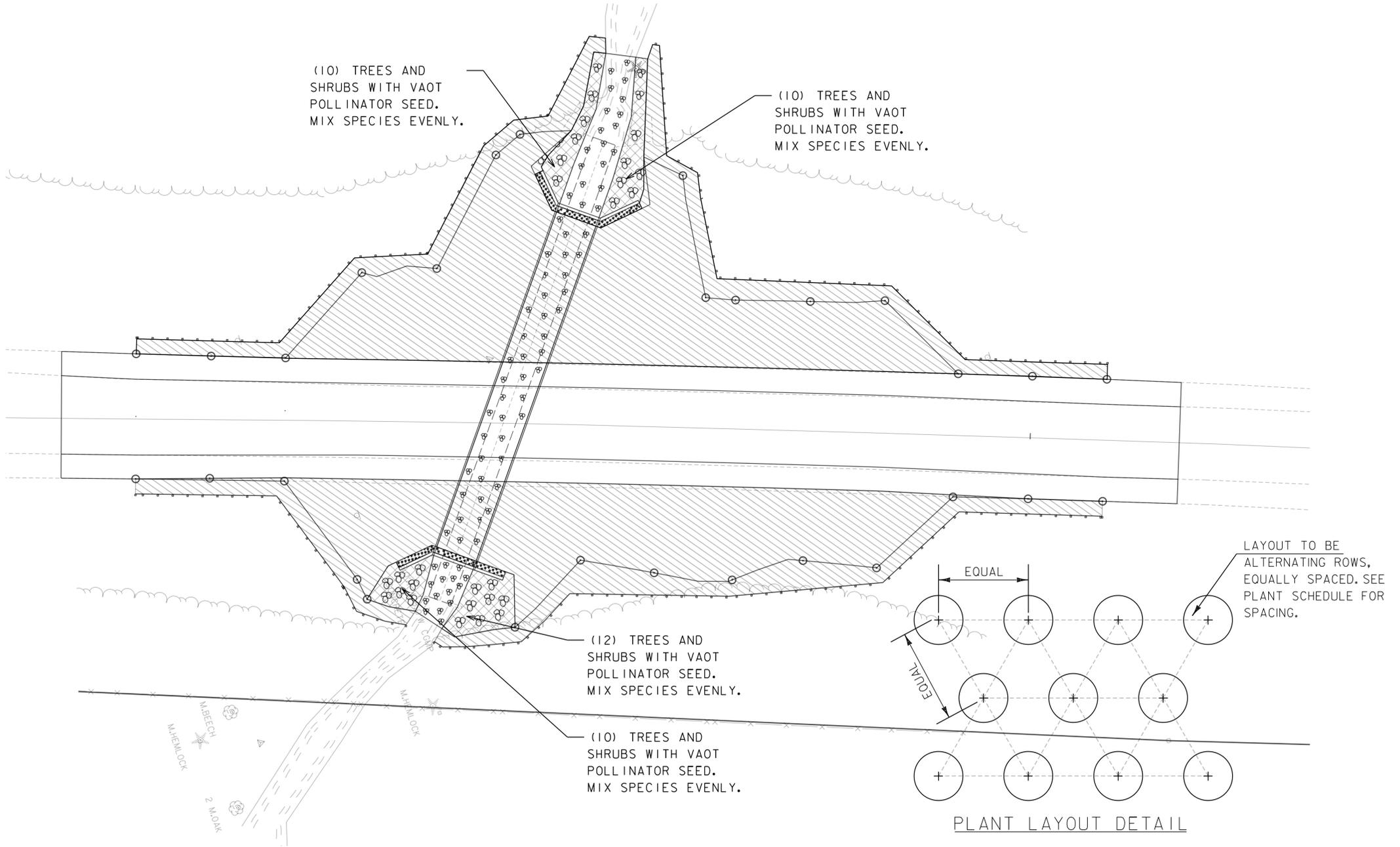
 TREES & SHRUBS W/ VAOT POLLINATOR DRY SEED MIX

KEY	QUANTITY	SCIENTIFIC NAME	COMMON NAME	SIZE	CONTAINER	SPACING (ON CENTER)	NOTES
<b>TREES - DECIDUOUS</b>							
AR	6	<i>Acer rubrum</i>	Red Maple	5-6' height	CONT.	4' O.C.	Straight species only. No cultivars.
AS	6	<i>Acer saccharum</i>	Sugar Maple	5-6' height	CONT.	4' O.C.	Straight species only. No cultivars.
TA	6	<i>Tilia americana</i>	Basswood	5-6' height	CONT.	4' O.C.	Straight species only. No cultivars.
<b>SHRUBS - DECIDUOUS</b>							
CS	6	<i>Cornus sericea</i>	Red twig dogwood	2 GAL	CONT.	4' O.C.	Straight species only. No cultivars.
RT	6	<i>Rhus typhina</i>	Staghorn sumac	2 GAL	CONT.	4' O.C.	Straight species only. No cultivars.
SD	6	<i>Salix discolor</i>	Common pussy willow	2 GAL	CONT.	4' O.C.	Straight species only. No cultivars.
SE	6	<i>Salix eriocephala</i>	Wooly headed willow	2 GAL	CONT.	4' O.C.	Straight species only. No cultivars.



**NOTES:**

1. A LANDSCAPE-SPECIFIC COORDINATION MEETING WILL BE HELD AT LEAST 30 CALENDAR DAYS PRIOR TO LANDSCAPE INSTALLATION WITH THE LANDSCAPE SUBCONTRACTOR, PRIME CONTRACTOR, ENGINEER, AOT CONSTRUCTION ENVIRONMENTAL ENGINEER, AND EITHER THE AOT LANDSCAPE ARCHITECT OR THE CONSTRUCTION LANDSCAPE INSPECTOR
2. THE AOT LANDSCAPE ARCHITECT OR CONSTRUCTION LANDSCAPE INSPECTOR SHALL BE ON SITE TO CONFIRM PLANT SPECIES AND HEALTH, APPROVE PLANT LAYOUT, AND OBSERVE INSTALLATION. NOTIFY THE AOT LANDSCAPE ARCHITECT OR CONSTRUCTION LANDSCAPE INSPECTOR AT LEAST 7 CALENDAR DAYS PRIOR TO INSTALLATION. FAILURE TO INCLUDE THE AOT LANDSCAPE ARCHITECT OR CONSTRUCTION LANDSCAPE INSPECTOR MAY RESULT IN THE REJECTION OF PLANT MATERIAL AFTER INSTALLATION. NOTE: THE ENGINEER MAY EXERCISE THEIR AUTHORITY TO SUSPEND PLANT INSTALLATION UNTIL THE AOT LANDSCAPE ARCHITECT OR CONSTRUCTION LANDSCAPE INSPECTOR IS PRESENT, PER SUBSECTION 105.01 (B).
3. SEEDED AREAS SHALL BE PROTECTED IN ACCORDANCE WITH SPECIFICATION SUBSECTION 651.07 PROTECTION. WHERE WETLANDS OR WETLAND BUFFERS ARE PRESENT, STRAW MULCH SHALL BE USE INSTEAD OF HAY MULCH.
4. IF AREAS WITHIN PDF OR BARRIER FENCE ARE NOT DISTURBED, THEY SHOULD REMAIN VEGETATED, AND ADDITIONAL REVEGETATION IS NOT REQUIRED.
5. PROVIDING SUFFICIENT MOISTURE IS CRITICAL DURING THE ENTIRE PLANT ESTABLISHMENT PERIOD. WATERING TO BE PAID FOR UNDER 656.6500 LANDSCAPE WATERING.
6. IN AREAS RECEIVING PLANTINGS ON STONE FILL, THE CONTRACTOR SHALL VERIFY THAT THE GRUBBING LAYER, AFTER PLACEMENT, STILL MEETS THE SPECIFIED DEPTH AND HAS NOT DISAPPEARED INTO GAPS. TOP LAYER OF STONE FILL MAY BE BROKEN DOWN INTO SMALLER PIECES TO PREVENT SOIL LOSS AS DIRECTED BY THE ENGINEER.
7. APPLY MYCORRHIZAL FUNGI PER MANUFACTURERS RECOMMENDATIONS TO TREES AND SHRUBS.



PROJECT NAME:	<b>SUNDERLAND</b>	PLOT DATE:	18-JUL-2025
PROJECT NUMBER:	<b>BM 20102</b>	DRAWN BY:	B. DONAHUE
FILE NAME:	"NAME\$DGN"	CHECKED BY:	G. LAROCHE
PROJECT LEADER:	GARY LAROCHE	LANDSCAPE PLAN	SHEET 32 OF 65
DESIGNED BY:	B. DONAHUE		

# STATE OF VERMONT AGENCY OF TRANSPORTATION



## PROPOSED IMPROVEMENT BRIDGE PROJECT

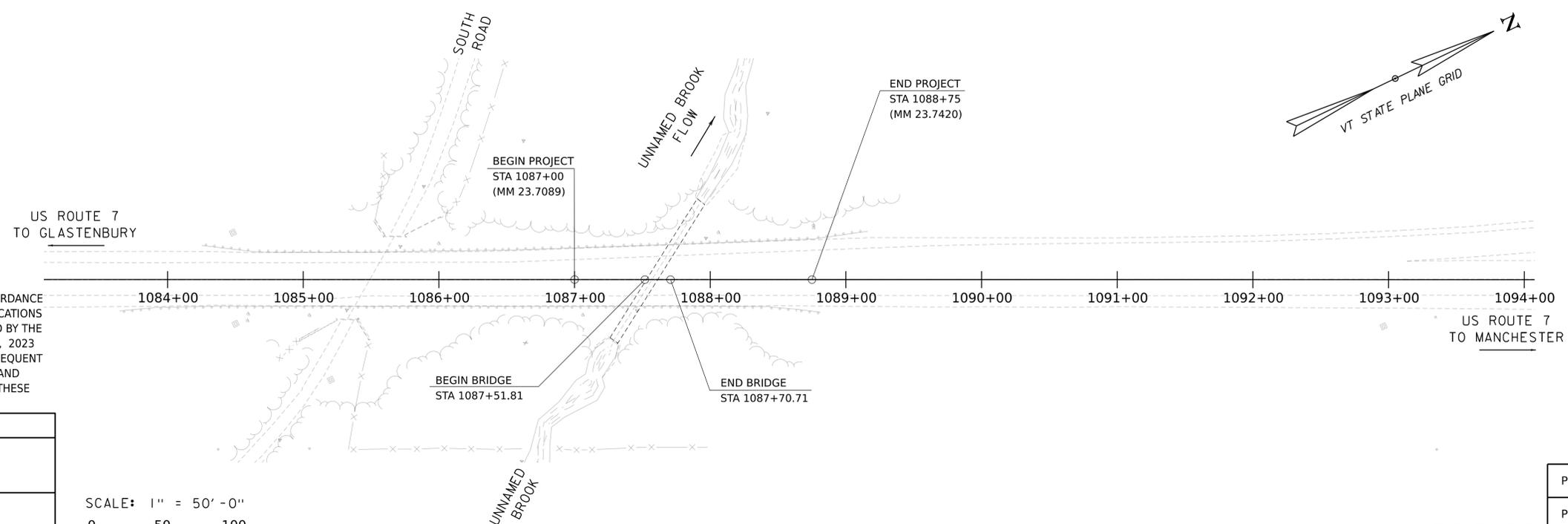
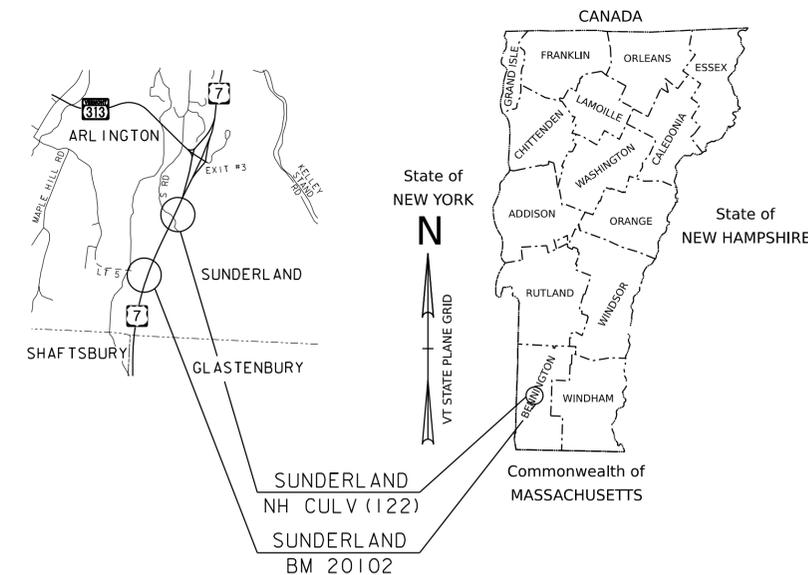
TOWN OF SUNDERLAND  
COUNTY OF BENNINGTON

ROUTE NO : US ROUTE 7 PRINCIPAL ARTERIAL      BRIDGE NO : 19-7

PROJECT LOCATION: 0.52 MILE SOUTH OF VT ROUTE 313, AT UNNAMED BROOK.

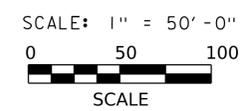
PROJECT DESCRIPTION: REPLACEMENT OF EXISTING BRIDGE STRUCTURE (BRIDGE 19-7) WITH A NEW STRUCTURE WITH RELATED APPROACH ROADWAY AND CHANNEL WORK.

PROJECT LENGTH:                      LENGTH OF ROADWAY:    375 FT  
                                                    LENGTH OF STRUCTURE: 18.90 FT  
                                                    LENGTH OF PROJECT:    175 FT



CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2024, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 27, 2023 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

QUALITY ASSURANCE PROGRAM : LEVEL 1
SURVEYED BY : R. GILMAN SURVEYED DATE : 6-20-2022
DATUM VERTICAL    NAVD 88 HORIZONTAL    NAD 83 (2011)



PROJECT MANAGER : G. LAROCHE, P.E.
PROJECT NAME : SUNDERLAND PROJECT NUMBER : NH CULV (122)
SHEET 33 OF 65 SHEETS



# PRELIMINARY INFORMATION SHEET (CULVERT)

INDEX OF SHEETS

PLAN SHEETS

SEE INDEX OF SHEETS FOR SUNDERLAND BM 20102 INDEX

DETAIL SHEETS

STANDARDS LIST

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: 12/05/2024

DRAINAGE AREA : 1.28 sq.mi  
CHARACTER OF TERRAIN :  
STREAM CHARACTERISTICS :  
NATURE OF STREAMBED :

PEAK FLOW DATA

Q 2.33 = 100 cfs                      Q 50 = 390 cfs  
Q 10 = 220 cfs                      Q 100 = 480 cfs  
Q 25 = 310 cfs                      Q 500 =

DATE OF FLOOD OF RECORD : Unknown  
ESTIMATED DISCHARGE: Unknown  
WATER SURFACE ELEV.: Unknown  
NATURAL STREAM VELOCITY :  
ICE CONDITIONS :  
DEBRIS:  
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY?  
IS ORDINARY RISE RAPID?  
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS?  
IF YES, DESCRIBE:

WATERSHED STORAGE: 0.0%      HEADWATERS:  
UNIFORM:  
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Corrugated Metal Pipe Plate  
YEAR BUILT: 1979  
CLEAR SPAN(NORMAL TO STREAM): 7 ft  
VERTICAL CLEARANCE ABOVE STREAMBED:  
WATERWAY OF FULL OPENING: 120 ft  
DISPOSITION OF STRUCTURE: Replacement  
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See Borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =                      VELOCITY =  
Q10 =                      "  
Q25 =                      "  
Q50 =                      "  
Q100 =                      "

LONG TERM STREAMBED CHANGES:

IS THE ROADWAY OVERTOPPED BELOW Q100: N/A  
FREQUENCY: N/A  
RELIEF ELEVATION: N/A  
DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN:                      DISTANCE:  
HIGHWAY #:                      STRUCTURE #:  
CLEAR SPAN:                      CLEAR HEIGHT:  
YEAR BUILT:                      FULL WATERWAY:  
STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN:                      DISTANCE:  
HIGHWAY #:                      STRUCTURE #:  
CLEAR SPAN:                      CLEAR HEIGHT:  
YEAR BUILT:                      FULL WATERWAY:  
STRUCTURE TYPE:

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							

COMMENTS: TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER

CULVERT DESIGN CRITERIA

- PROPOSED CULVERT IS A PRECAST CONCRETE BOX (14'-0" X 8'-0" X 125'-0" BOX).
- CULVERT WILL REQUIRE AQUATIC ORGANISM PASSAGE (AOP).

PROPOSED STRUCTURE

STRUCTURE TYPE: Concrete Culvert Box  
CLEAR SPAN(NORMAL TO STREAM): 14 ft  
VERTICAL CLEARANCE ABOVE STREAMBED: 6 ft  
WATERWAY OF FULL OPENING: 884.25 ft

WATER SURFACE ELEVATIONS AT:

Q2.33 = 100 cfs                      VELOCITY= 6.14 fps  
Q10 = 220 cfs                      " 8.37 fps  
Q25 = 310 cfs                      " 9.57 fps  
Q50 = 390 cfs                      " 10.46 fps  
Q100 = 480 cfs                      " 11.34 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: N/A  
FREQUENCY: N/A  
RELIEF ELEVATION: N/A  
DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE:  
VERTICAL CLEARANCE: @ Q =

SCOUR: N/A

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW:                      DEPTH OR ELEVATION:  
ORDINARY LOW WATER:                      "  
ORDINARY HIGH WATER:                      "

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: N/A  
CLEAR SPAN (NORMAL TO STREAM): N/A  
VERTICAL CLEARANCE ABOVE STREAMBED: N/A  
WATERWAY AREA OF FULL OPENING: N/A

ADDITIONAL INFORMATION

E-Stone Fill, Type II to be used for all in-channel work.

TRAFFIC MAINTENANCE NOTES

- MAINTAIN TRAFFIC ON AN OFF SITE DETOUR DURING THE TIME THE EXISTING ROADWAY WILL BE CLOSED.
- SIDEWALKS ARE NOT NECESSARY.

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	$d_p$ : 0.0 INCH
3. CULVERT OPENING	$D$ : 14.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	$\Delta$ : ---
5. PRESTRESSING STRAND	$f_y$ : ---
6. PRESTRESSED CONCRETE STRENGTH	$f'_c$ : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	$f'_{cr}$ : ---
8. HIGH PERFORMANCE CONCRETE, CLASS PCD	$f'_c$ : ---
9. HIGH PERFORMANCE CONCRETE, CLASS PCS	$f'_c$ : ---
10. CONCRETE HIGH PERFORMANCE, CLASS SCC	$f'_c$ : ---
11. CONCRETE, CLASS C	$f'_c$ : ---
12. REINFORCING STEEL	$f_y$ : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	$f_y$ : ---
14. NOMINAL BEARING RESISTANCE OF SOIL	$q_n$ : ---
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	$\phi$ : ---
16. NOMINAL BEARING RESISTANCE OF ROCK	$q_n$ : ---
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	$\phi$ : ---
18. PILE RESISTANCE FACTOR	$\phi$ : ---
19. LATERAL PILE DEFLECTION	$\Delta$ : ---
20. BASIC WIND SPEED	$V_{3s}$ : ---
21. MINIMUM GROUND SNOW LOAD	$p_g$ : ---
22. SEISMIC DATA	$PGA$ : --- $S_s$ : --- $S_1$ : ---
23.	---
24.	---
25.	---
26.	---

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: BM 20102  
FILE NAME: X23B027FORMS.DGN      PLOT DATE: 6/12/2025  
PROJECT LEADER: A. STOCKIN      DRAWN BY: M. HERMIS  
DESIGNED BY: M. GROTE      CHECKED BY: T. HIGGINSON  
PRELIMINARY INFORMATION SHEET 1      SHEET 34 OF 65

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2027	7760	950	51	5.3	470
2047	8520	1050	51	6.3	615

20 year ESAL for flexible pavement from 2027 to 2047 : 3341500  
40 year ESAL for flexible pavement from 2027 to 2067 : 7072000  
Design Speed : 55 mph

AS BUILT "REBAR" DETAIL

LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:



GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION 2024, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATION 9TH EDITION, DATED 2020, AND ITS LATEST REVISIONS.
2. THE MANUFACTURE OF THE PRECAST UNITS AND ALL DIMENSIONAL TOLERANCES SHALL BE IN ACCORDANCE WITH PCIMNL-I16 AND PCIMNL-I35, OR WITH THE NPCA QUALITY CONTROL MANUAL FOR PRECAST CONCRETE/PLANTS, UNLESS OTHERWISE NOTED IN THE CONTRACT OR AS APPROVED BY THE ENGINEER.
3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING CONSISTENCY BETWEEN THE FABRICATOR'S SHOP DRAWINGS AND ENSURING THAT ALL PRECAST COMPONENTS FIT TOGETHER.
4. ALL DIMENSIONS ARE GIVEN AT 68 DEGREES FAHRENHEIT UNLESS NOTED OTHERWISE.

EARTHWORK NOTES:

5. THE REMOVAL OF THE EXISTING STRUCTURE WILL BE PAID UNDER ITEM 529.1500 "REMOVAL OF STRUCTURE". THIS WORK INCLUDES REMOVAL OF THE ENTIRE PIPE AND ANY PORTIONS OF THE EXISTING HEADWALLS AND ALL PARTS OF THE EXISTING STRUCTURE THAT MAY FALL OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION, AS WELL AS ANY MATERIAL LOCATED WITHIN THE LIMITS OF "REMOVAL OF STRUCTURE" IDENTIFIED IN THE PLANS.
6. THE USE OF EQUIPMENT AND THE METHOD OF BACKFILLING AROUND THE BURIED STRUCTURE SHALL BE IN ACCORDANCE WITH THE FABRICATOR'S RECOMMENDATIONS. CARE SHALL BE TAKEN WHEN BACKFILLING AGAINST JOINT SEALING MATERIALS.
7. ALL STONE FILL SHALL BE KEYED IN AS SHOWN IN THE PLANS. IF BEDROCK IS ENCOUNTERED IN LOCATIONS THAT PROHIBIT THE INSTALLATION OF THE KEY, THE CONTRACTOR SHALL CONTACT THE ENGINEER PRIOR TO ANY PLACEMENT. NO PERMANENT STONE FILL SHALL BE PLACED DIRECTLY ON BEDROCK WITHOUT APPROVAL FROM THE ENGINEER.

CONCRETE NOTES:

8. ALL CORNERS OF CONCRETE SHALL BE CHAMFERED 1" PER SD-501.00, UNLESS NOTED OTHERWISE.
9. ALL LIFTING POINTS SHALL BE REMOVABLE OR COVERABLE TO THE MINIMUM CLEAR COVER FOR REINFORCING STEEL SPECIFIED IN THE PLANS. THE LIFTING POINTS SHALL BE DETAILED IN THE APPROPRIATE FABRICATION DRAWING. PAYMENT FOR THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE PRECAST ITEM.
10. ALL RECESSED LIFTING POINTS AND BLOCK OUTS SHALL BE FILLED WITH A TYPE IV MORTAR PER SUBSECTION 540.11 AND 707.01(e). PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE PRECAST ITEM.
11. WATER REPELLENT, SILANE SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 514 AND SHALL BE FIELD APPLIED TO ALL EXPOSED EXTERIOR SURFACES OF THE PRECAST CONCRETE STRUCTURE. SILANE WILL BE PAID UNDER ITEM 514.1000 "WATER REPELLENT, SILANE".

REINFORCING STEEL NOTES:

12. CUTTING AND REPAIRING DAMAGED AREAS OF COATED REINFORCING STEEL SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 507.04.
13. REINFORCING STEEL CLEAR COVER REQUIREMENTS ARE STATED ACCORDING TO THE FOLLOWING, UNLESS OTHERWISE NOTED IN THE PLANS:
 

A. INSIDE FACES OF BOX	1.5 INCHES
B. EXPOSED TO EARTH OR WEATHER	2.0 INCHES
C. TOP OF OUTSIDE FACES OF BOX	2.5 INCHES
D. DIRECT EXPOSURE TO DEICING SALTS (FRAME FASCIA OR CURB)	3.0 INCHES
E. CAST AGAINST EARTH	3.0 INCHES
14. TEST BARS SHALL BE PROVIDED IN ACCORDANCE WITH THE "VERMONT AGENCY OF TRANSPORTATION MATERIAL SAMPLING MANUAL" AVAILABLE ON THE AGENCY WEBSITE. ALL COSTS ASSOCIATED WITH PROVIDING BARS FOR TESTING WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.

PRECAST BOX CULVERT / RETAINING WALLS - DESIGN CRITERIA

15. THE PRECAST CONCRETE BOX CULVERT AND WINGWALLS SHALL BE DESIGNED BY THE FABRICATOR IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS REFERENCED IN PROJECT NOTE 1. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS AND CALCULATIONS TO THE ENGINEER IN ACCORDANCE WITH SECTION 105. USE THE FOLLOWING DESIGN CRITERIA AND GEOMETRIC REQUIREMENTS DEFINED IN THE PLANS:

PRECAST BOX CULVERT / RETAINING WALLS - DESIGN CRITERIA (CONTINUED)

- A. DESIGN CODE = AASHTO LRFD LATEST EDITION/HL93
- B. DESIGN FILL OVER BOX CULVERT (MAX) = 13.5 FEET
- C. REQUIRED DESIGN LIFE = 75 YEARS
16. THE PRECAST BOX CULVERT DETAILS ARE SHOWN FOR REFERENCE ONLY. THE ACTUAL DIMENSIONS AND CONFIGURATION WILL BE DEPENDENT ON THE FABRICATOR. THE INSIDE CLEAR DIMENSION, INSIDE HEIGHT, AND LENGTH OF THE BOX CULVERT MAY BE NO LESS THAN SHOWN IN THE TYPICAL SECTIONS AND STRUCTURE DETAILS.
17. THE FABRICATOR SHALL SUPPLY THE STATE WITH THE LRFD LOAD RATING FACTORS FOR THE BOX CULVERT TO COMPLETE THE LOAD RATING TABLE ON THE PRELIMINARY INFORMATION SHEET.
18. BOX CULVERT INLET AND OUTLET FACES SHALL BE PLUMB IN THEIR FINAL POSITION.
19. WATER PROOFING MEMBRANE SYSTEM, TYPE III - MEETING THE REQUIREMENTS OF 726.08(c) - SHALL BE APPLIED IN TWO-FOOT STRIPS OVER JOINTS IN THE BOX CULVERT. EXTEND THE SHEET MEMBRANE DOWN THE ENTIRE SIDE AND ACROSS THE TOP OF EACH STRUCTURE. COVER THE SIDES OF THE STRUCTURES PRIOR TO THE TOPS. ANY OVERLAPPING OF MEMBRANE SHALL BE DONE IN A SHINGLED STYLE WITH A MINIMUM OVERLAP OF ONE FOOT. A 1" THICK POLYSTYRENE INSULATION BOARD - MEETING THE REQUIREMENTS OF 735.01 - SHALL BE PLACED OVER THE MEMBRANE PRIOR TO BACKFILLING. PAYMENT FOR THIS WORK AND MATERIALS IS INCIDENTAL TO ITEM 540.1000 PRECAST CONCRETE STRUCTURE.
20. A BRIDGE PLAQUE FURNISHED BY THE AGENCY SHALL BE CAST INTO WING WALL NO. 2. SEE SD-502.00 FOR FURTHER DETAILS.
21. THE BOX CULVERT HEADWALLS, CUTOFF WALLS, RETENTION SILLS AND WINGWALLS SHALL BE CONSIDERED INCIDENTAL TO ITEM 540.1000 PRECAST CONCRETE STRUCTURE (14 FT x 8 FT x 125 FT BOX CULVERT).

TRAFFIC CONTROL NOTES:

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF A SITE-SPECIFIC TRAFFIC CONTROL PLAN FOR ALL STAGES OF CONSTRUCTION. CLEARLY DETAIL HOW TRAFFIC WILL BE MAINTAINED. SPECIFY ALL CONSTRUCTION ACTIVITIES REQUIRING ALTERNATING ONE-WAY TRAFFIC AND ROAD CLOSURE, RELATE THOSE ACTIVITIES TO THE CONSTRUCTION SCHEDULE, AND SHOW APPROPRIATE TEMPORARY TRAFFIC CONTROL. PAYMENT FOR ALL ACTIVITIES AND MATERIALS ASSOCIATED WITH THIS WORK WILL BE INCLUDED IN ITEM 641.1100, "TRAFFIC CONTROL, ALL INCLUSIVE".
23. US ROUTE 7 WILL BE CLOSED AT THE PROJECT BRIDGE FOR THE DURATION OF EACH BRIDGE CLOSURE PERIOD (BCP). SIGNED REGIONAL AND LOCAL DETOURS SHALL BE PROVIDED AS SHOWN IN THE PLANS. PAYMENT FOR ALL DETOUR SIGNS SHALL BE INCLUDED IN ITEM 641.1100 "TRAFFIC CONTROL, ALL-INCLUSIVE".
24. FOR GENERAL TRAFFIC CONTROL NOTES SEE VTRANS STANDARD T-1.
25. PAYMENT FOR SIGNAGE, TEMPORARY PAVEMENT MARKINGS, TRAFFIC BARRELS, AND TEMPORARY IMPACT ATTENUATORS WILL BE MADE UNDER ITEM 641.1100.
26. TRAFFIC CONTROL FOR UNIFORMED OFFICERS AND ROADWAY FLAGGERS ARE TO BE PAID FOR UNDER ITEM 630.1000, "UNIFORMED TRAFFIC OFFICERS", AND ITEM 630.1500, "FLAGGERS".
27. SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
28. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF SIGNS SHALL BE REMOVED.
29. THE CONTRACTOR SHALL PROVIDE ACCESS THROUGH THE WORK ZONE FOR EMERGENCY VEHICLES AT ALL TIMES OR COORDINATE EMERGENCY ROUTES VIA PROJECT DETOUR PRIOR TO THE START OF CONSTRUCTION.
30. THE CONTRACTOR SHALL PROVIDE ACCESS THROUGH THE WORK ZONE FOR POSTAL DELIVERY, NEWSPAPER ROUTES, TRASH SERVICES AND/OR OTHER DELIVERY SERVICES OR COORDINATE WITH THE PROPER CONTACTS TO USE THE PROJECT DETOUR PRIOR TO THE START OF CONSTRUCTION.
31. PROJECT APPROACH SIGNING AND TEMPORARY TRAFFIC CONTROL SHALL BE IN PLACE BEFORE ANY WORK BEGINS.
32. PORTABLE CHANGEABLE MESSAGE SIGNS WILL BE PAID FOR SEPARATELY UNDER ITEM 641.1500 AND SHALL BE INSTALLED A MINIMUM OF 2 WEEKS PRIOR TO THE START OF THE BRIDGE CLOSURE PERIOD. MESSAGES SHALL BE REVISED AS NECESSARY AS CHANGES IN ACTIVITIES WARRANT. ANY CHANGES TO THE MESSAGE TO BE DISPLAYED, AND THEIR PROPOSED LOCATIONS, SHALL BE SUBMITTED TO THE RESIDENT ENGINEER IN ADVANCE FOR APPROVAL. TURN OFF OR REMOVE PCMS IF MESSAGES DO NOT CONVEY ANY MORE INFORMATION THAN STATIC SIGNS - COORDINATE WITH RESIDENT ENGINEER PRIOR TO TURNING OFF. WHEN IN OPERATING MODE, THE BOTTOM OF THE PCMS MESSAGE PANEL SHALL BE FULLY EXTENDED TO 7 FEET ABOVE THE ROADWAY

TRAFFIC CONTROL NOTES (CONTINUED):

33. TEMPORARY TRAFFIC BARRIER SHALL MEET THE REQUIREMENTS OF SUBSECTION 621.07. PAYMENT FOR FURNISHING, MAINTAINING, INSTALLATION, REMOVAL, AND RESETTING WILL BE INCLUDED UNDER ITEM 641.1100, "TRAFFIC CONTROL, ALL-INCLUSIVE".

MISCELLANEOUS NOTES:

34. THE CONTRACTOR SHALL PROVIDE A SITE-SPECIFIC EROSION PREVENTION AND SEDIMENT CONTROL PLAN IN ACCORDANCE WITH SECTION 653 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. ESTIMATED QUANTITIES FOR EPSC WORK HAVE BEEN INCLUDED IN THE CONTRACT FOR BIDDING PURPOSES. IF THE CONTRACTOR'S EPSC PLAN REQUIRES ITEMS OF WORK THAT ARE NOT INCLUDED IN THE PLANS IT SHALL BE PAID FOR AS PART OF ITEM 653.0300 MAINTENANCE OF EPSC PLAN.
35. ALL EXISTING MATERIAL REMOVED AND NOT REUSED OR RESET AS PART OF THIS PROJECT AND ALL WASTE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF ONLY AT AN APPROVED FACILITY.
36. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STATUTES AND REGULATIONS RELATING TO THE PREVENTION AND ABATEMENT OF ALL POLLUTION.

TEMPORARY TRAFFIC SIGNAL NOTES:

37. SIGNAL TIMING/TIMING ADJUSTMENTS SHALL BE ACCOMPLISHED WITHIN A 48 HOUR PERIOD AND PAYMENT WILL BE INCIDENTAL TO ITEM 641.2200 TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE, ALL-INCLUSIVE. SIGNAL FACES SHALL BE LED AND CONSIST OF 12 INCH LENSES (RED, YELLOW AND GREEN).
38. THE BOTTOM OF THE HOUSING OF A SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 16.5 FEET NOR MORE THAN 19.0 FEET ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE ROADWAY. THE BOTTOM OF A SIGNAL FACE NOT MOUNTED OVER A ROADWAY SHALL NOT BE LESS THAN 8.0 FEET NOR MORE THAN 15.0 FEET ABOVE THE GROUND. CAUTION SHOULD BE USED TO ENSURE COMPLIANCE WITH THE HEIGHT REQUIREMENT IN THE EVENT THE NEW APPROACH GRADE DIFFER SIGNIFICANTLY FROM THE FULL ROADWAY GRADE.
39. SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 8 FEET APART MEASURED HORIZONTALLY BETWEEN CENTER FACES.
40. THE CONTRACTOR SHALL HAVE THE OPTION OF INSTALLING SPAN WIRE OR CANTILEVER MAST ARM TRAFFIC SIGNALS IN PLACE OF A PORTABLE SIGNAL SYSTEM. DESIGN OF SUCH SYSTEM, INCLUDING REQUIRED POLE LOCATIONS, ANY REQUIRED GUYING, AND POWER CONNECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PAYMENT WILL BE CONSIDERED INCIDENTAL TO ITEM 641.2200 TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE, ALL-INCLUSIVE.
41. SIGNAL HEAD PLACEMENT IS CRITICAL. HEADS SHALL BE ADJUSTED TO REFLECT LANE LOCATION CHANGES AS REQUIRED.
42. POLES SUPPORTING SPAN WIRES AND/OR MAST ARMS SHALL BE ADEQUATELY BRACED OR GUYED AND SHALL BE PLACED SO AS NOT TO CREATE A HAZARD TO THE TRAVELLING PUBLIC.
43. LUMINAIRES SHALL BE INSTALLED AT EACH OF THE APPROACHES TO ADEQUATELY LIGHT THE STOP BAR AREAS. HIGH PRESSURE SODIUM OR LED LUMINAIRES ARE ACCEPTABLE FORMS OF LAMPS. THE MOUNTING HEIGHT FOR LUMINAIRES SHALL BE DETERMINED BY THE CONTRACTOR. ILLUMINANCE SHALL BE MEASURED AT NIGHTTIME AFTER INSTALLATION AT EACH STOP BAR. ILLUMINANCE SHALL BE NO LESS THAN 1.0 FOOT-CANDLES AND NOT TO EXCEED 2.0 FOOT-CANDLES. PAYMENT WILL BE CONSIDERED INCIDENTAL TO ITEM 641.2200 TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE, ALL-INCLUSIVE.
44. ALL TEMPORARY SIGNAL EQUIPMENT, SIGNS, ETC. SHALL BELONG TO THE CONTRACTOR AT THE END OF THE PROJECT AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR REMOVAL INCLUDING UTILITY POLES, WIRES, ETC. PAYMENT WILL BE CONSIDERED INCIDENTAL TO ITEM 641.2200 TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE, ALL-INCLUSIVE.
45. STOP BARS SHALL BE LOCATED A MINIMUM OF 40 FT. AND A MAXIMUM OF 120 FT. FROM THE NEAREST SIGNAL HEAD. STOP BARS SHALL BE REMOVED COMPLETELY AFTER SIGNALS ARE REMOVED.
46. DRIVEWAY ASSISTANCE DEVICE(S) [DADS] WILL BE UTILIZED FOR THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSURING COMPATIBILITY BETWEEN ALL TRAFFIC SYSTEM HARDWARE AND SOFTWARE TO INCORPORATE THE DADS IN THE OVERALL TEMPORARY TRAFFIC CONTROL SYSTEM. ALL LABOR, TOOLS, AND MATERIALS REQUIRED TO INSTALL, MAINTAIN, AND REMOVE DADS WILL BE INCLUDED IN THE PAYMENT OF THE ITEM 641.2200 DRIVEWAY ASSISTANCE DEVICES.
47. ONE ADDITIONAL DRIVEWAY ASSISTANCE DEVICE SHALL BE AVAILABLE FOR DEPLOYMENT IN THE EVENT OF DEVICE MALFUNCTION. THE CONTRACTOR SHALL REPORT AVAILABILITY TO THE ENGINEER VIA A MEMORANDUM INDICATING WHERE THE DEVICE WILL BE SOURCED. ANY MALFUNCTION DEVICE SHALL BE REPLACED/REPAIRED AND OPERATIONAL WITHIN 24 HOURS OF MALFUNCTION.

PROJECT NAME: SUNDERLAND	
PROJECT NUMBER: NH CULV(122)	
FILE NAME: z23b027gen.dgn	PLOT DATE: 7/2/2025
PROJECT LEADER: A. STOCKIN	DRAWN BY: M. HERMIS
DESIGNED BY: M. GROTE	CHECKED BY: T. HIGGINSON
PROJECT NOTES	SHEET 36 OF 65



# QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
			1011 - ROADWAY	1051 - EROSION CONTROL	1101 - RAILROAD - BID ITEMS	1199 - RAILROAD - TRAIN DELAY LIQUIDATED	1211 - BRIDGE NO. 2	1999 - FULL C.E. ITEMS	3041 - LANDSCAPING	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
			1.00							1.00		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS (BRIDGE 19-7)	201.1000				EARTHWORK SUMMARY
			1,850.00							1,850.00		CY	COMMON EXCAVATION	203.1500				FILL AVAILABLE
							450.00			450.00		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.2700		1,850	CY	COMMON EXCAVATION (1850 x 1.0)
																135	CY	UNCLASSIFIED CHANNEL EXCAVATION (450 x 0.3)
			120.00							120.00		CY	EARTH BORROW	203.3000		360	CY	STRUCTURE EXCAVATION (1200 x 0.3)
																0	CY	ROUNDING
			500.00							500.00		CY	GRANULAR BORROW	203.3200		2,345	CY	TOTAL FILL AVAILABLE
							1,200.00			1,200.00		CY	STRUCTURE EXCAVATION	204.2500				FILL REQUIRED
																138	CY	FACTORED FILL REQUIRED (120 x 1.15)
																2	CY	ROUNDING
			775.00							775.00		SY	COARSE-MILLING, BITUMINOUS PAVEMENT	210.1000		140	CY	TOTAL FILL REQUIRED
			1,600.00							1,600.00		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.3500				BORROW OR WASTE
																2,205	CY	WASTE
			55.00							55.00		CY	AGGREGATE SURFACE COURSE	401.1000				
			23.00							23.00		CWT	TACK COAT EMULSIFIED ASPHALT	404.1100				
			361.00							361.00		TON	BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER III	406.0230				
			302.00							302.00		TON	BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER III	406.0430				
			1.00							1.00		DL	PAY ADJUSTMENT, BCP, MIXTURE PROPERTIES (N.A.B.I.)	406.9100				
			1.00							1.00		DL	PAY ADJUSTMENT, BCP, MAT DENSITY (N.A.B.I.)	406.9200				
			663.00							663.00		TON	MATERIAL TRANSFER VEHICLE	410.1000				
							4.00			4.00		GALLON	WATER REPELLENT, SILANE	514.1000				
							1.00			1.00		EACH	REMOVAL OF STRUCTURE (7 FT DIA. X 120 FT CGMPP)	529.1500				
							1.00			1.00		LS	PRECAST CONCRETE STRUCTURE (14 FT X 8 FT X 125 FT BOX CULVERT)	540.1000				
							270.00			270.00		CY	E-STONE FILL, TYPE II	613.0602				
							10.00			10.00		CY	STONE FILL, TYPE I	613.1001				
							225.00			225.00		CY	STONE FILL, TYPE II	613.1002				
							1.00			1.00		EACH	TEMPORARY RELOCATION OF STREAM (BRIDGE 19-7)	614.1000				
			560.00							560.00		LF	REMOVAL OF GUARDRAIL	621.0100				
			575.00							575.00		LF	STEEL BEAM GUARDRAIL	621.1060				
			2.00							2.00		EA	MTS, MGS, TANGENT, TL-3	621.3030				
			126.00							126.00		HR	UNIFORMED TRAFFIC OFFICERS	630.1000				
			210.00							210.00		HR	FLAGGERS	630.1500				
								1.00		1.00		LS	FIELD OFFICE, ENGINEERS	631.1000				
								1.00		1.00		LS	TESTING EQUIPMENT, BITUMINOUS (BRIDGE 19-7)	631.1700				
								1.00		1.00		LS	TESTING EQUIPMENT, GROUT (BRIDGE 19-7)	631.1900				
								3,000.00		3,000.00		DL	FIELD OFFICE COMMUNICATIONS (N.A.B.I.)	631.2600				
			1.00							1.00		LS	MOBILIZATION/DEMOBILIZATION (BRIDGE 19-7)	635.1100				
			1.00							1.00		LS	TRAFFIC CONTROL, ALL-INCLUSIVE (BRIDGE 19-7)	641.1100				
			4.00							4.00		EA	PORTABLE CHANGEABLE MESSAGE SIGN	641.1500				
			5.00							5.00		EA	TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE	641.2200				
			1.00							1.00		EA	DRIVEWAY ASSISTANCE DEVICE	641.2200001				
			750.00							750.00		LF	4 INCH WHITE LINE, WATERBORNE PAINT	646.2010				
			750.00							750.00		LF	4 INCH YELLOW LINE, WATERBORNE PAINT	646.2111				
			2,100.00							2,100.00		SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.1100				

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: NH CULV(I22)

FILE NAME: z23b027qs.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
QUANTITY SHEET 1



PLOT DATE: 7/23/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 37 OF 65

# QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
				1011 - ROADWAY	1051 - EROSION CONTROL	1101 - RAILROAD - BID ITEMS	1199 - RAILROAD - TRAIN DELAY LIQUIDATED	1211 - BRIDGE NO. 2	1999 - FULL C.E ITEMS	3041 - LANDSCAPING	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
								510.00			510.00		SY	GEOTEXTILE UNDER STONE FILL	649.3100				
					1,537.44						1,537.44		SY	TURF ESTABLISHMENT, SPECIALTY SEED	651.1600				
					160.00						160.00		CY	TOPSOIL	651.3500				
					100.00						100.00		SY	GRUBBING MATERIAL, 12INCH	651.4012				
					1.00						1.00		LS	EPSC PLAN (BRIDGE 19-7)	653.0100				
					100.00						100.00		HR	MONITORING EPSC PLAN	653.0200				
					4,000.00						4,000.00		DL	MAINTENANCE OF EPSC PLAN (N.A.B.I.) (BRIDGE 19-7)	653.0300				
					1,375.00						1,375.00		SY	ROLLED EROSION CONTROL PRODUCT, TYPE I	653.2001				
					17.00						17.00		CY	STABILIZED CONSTRUCTION ENTRANCE	653.3500				
					2.00						2.00		EA	FILTER BAG	653.4500				
					950.00						950.00		LF	SILT FENCE, TYPE I	653.4701				
					950.00						950.00		LF	BARRIER FENCE	653.5000				
										24.00	24.00		EACH	DECIDUOUS TREES, MEDIUM	656.3002				
										32.00	32.00		EACH	DECIDUOUS SHRUBS	656.3500				
										10.40	10.40		MGAL	LANDSCAPE WATERING	656.6500				
										9.74	9.74		CY	LANDSCAPE BACKFILL, TRUCK MEASUREMENT	656.8000				
				3.00							3.00		EACH	SIGN REMOVAL, FLAT SHEET ALUMINUM	675.5000				
				3.00							3.00		EACH	RESETTING SIGNS	675.6000				
				2.00							2.00		EACH	DELINEATOR WITH STEEL POST	676.1000				
				1.00							1.00		DL	PRICE ADJUSTMENT, ASPHALT (N.A.B.I.)	690.0300				

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: NH CULV(I22)

FILE NAME: z23b027qs.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
QUANTITY SHEET 2

PLOT DATE: 7/22/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 38 OF 65



PRIMARY CONTROL

HVCTRL #1  
 NORTH = 201276.5510  
 EAST = 1472675.7500  
 ELEV. = 871.7600

LOCATED AT THE ROUTE 7 SOUTH BOUND EXIT #3 FOR ARLINGTON AND SUNDERLAND. IN THE GRASS ISLAND FORMED BY ROUTE 7 AND THE SOUTH BOUND OFF RAMP.

THE MARK IS A 3/4 INCH REBAR WITH RED CAP SET FLUSH WITH GROUND SURFACE.

IT IS 22.5' WEST OF AND 2' BELOW THE WEST EDGE OF US7, 25.7' EAST OF AND 1' BELOW THE EAST EDGE OF THE OFF RAMP, 30.5' SE OF A DROP INLET, 81.0' W OF AND DIRECTLY OPPOSITE A NORTH US 7 SIGN AND 129' NW OF MILE MARKER 0070/0215/0180.

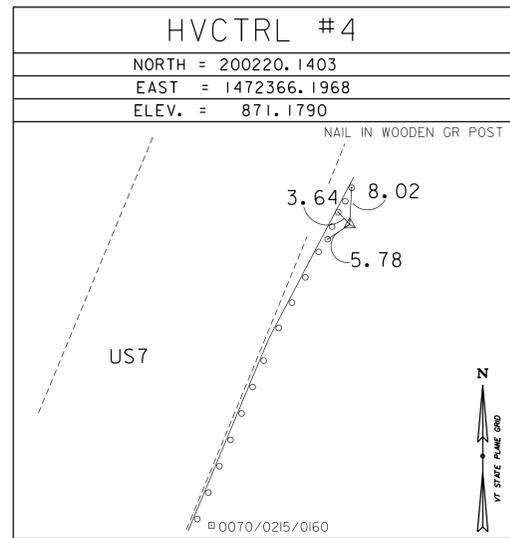
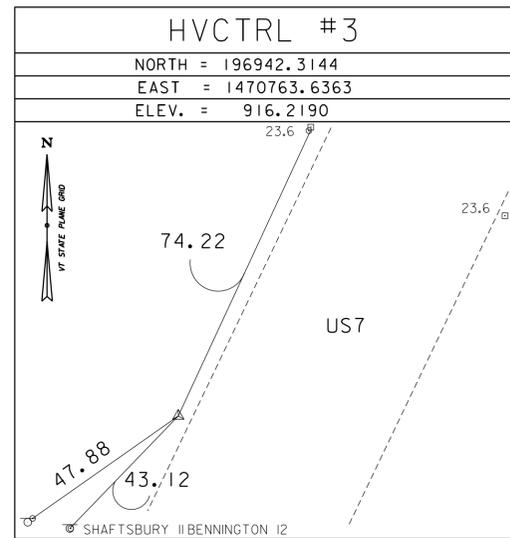
HVCTRL #2  
 NORTH = 194779.8680  
 EAST = 1469822.5340  
 ELEV. = 943.8400

TO REACH FROM THE ROUTE 7 BRIDGE OVER ROUTE 313/ORVIS RD, IN SUNDERLAND, GO SOUTH ALONG ROUTE 7 FOR 1.1 MILES TO THE SITE OF THE MARK ON THE RIGHT.

THE MARK IS A 3/4 INCH REBAR WITH RED CAP SET 0.2 FEET BELOW GROUND SURFACE.

IT IS 1.0' WEST OF THE WEST EDGE OF US7, 11.5' SOUTH OF THE CENTERLINE OF A 72" CULVERT, 300' SW OF MILE MARKER 23.2 AND 167' SW OF A BRIDGE SIGN.

SECONDARY CONTROL



NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

*TRAVERSE COMPLETED ON 6/6/2022 BY R.GILMAN R.GAUVIN

ALIGNMENT TIES

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD83 (2011)
ADJUSTMENT	COMPASS

PROJECT NAME: SUNDERLAND	
PROJECT NUMBER: NH CULV(122)	
FILE NAME: X23B027T1.DGN	PLOT DATE: 7/2/2025
PROJECT LEADER: C. COTA	DRAWN BY: H.MCGOWAN
DESIGNED BY: VTRANS	CHECKED BY: R. GILMAN
TIE SHEET	SHEET 39 OF 65

COARSE-MILLING, BITUMINOUS PAVEMENT

STA. 1086+00.00 - 1086+75.00

STA. 1089+00.00 - 1089+75.00

REMOVAL OF GUARDRAIL

STA. 1086+25.00 - 1089+16.00 LT

STA. 1086+25.00 - 1088+81.00 RT

STEEL BEAM GUARDRAIL

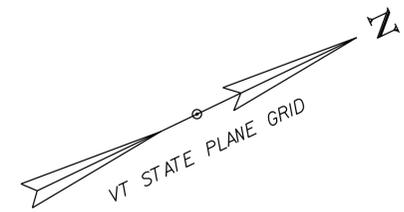
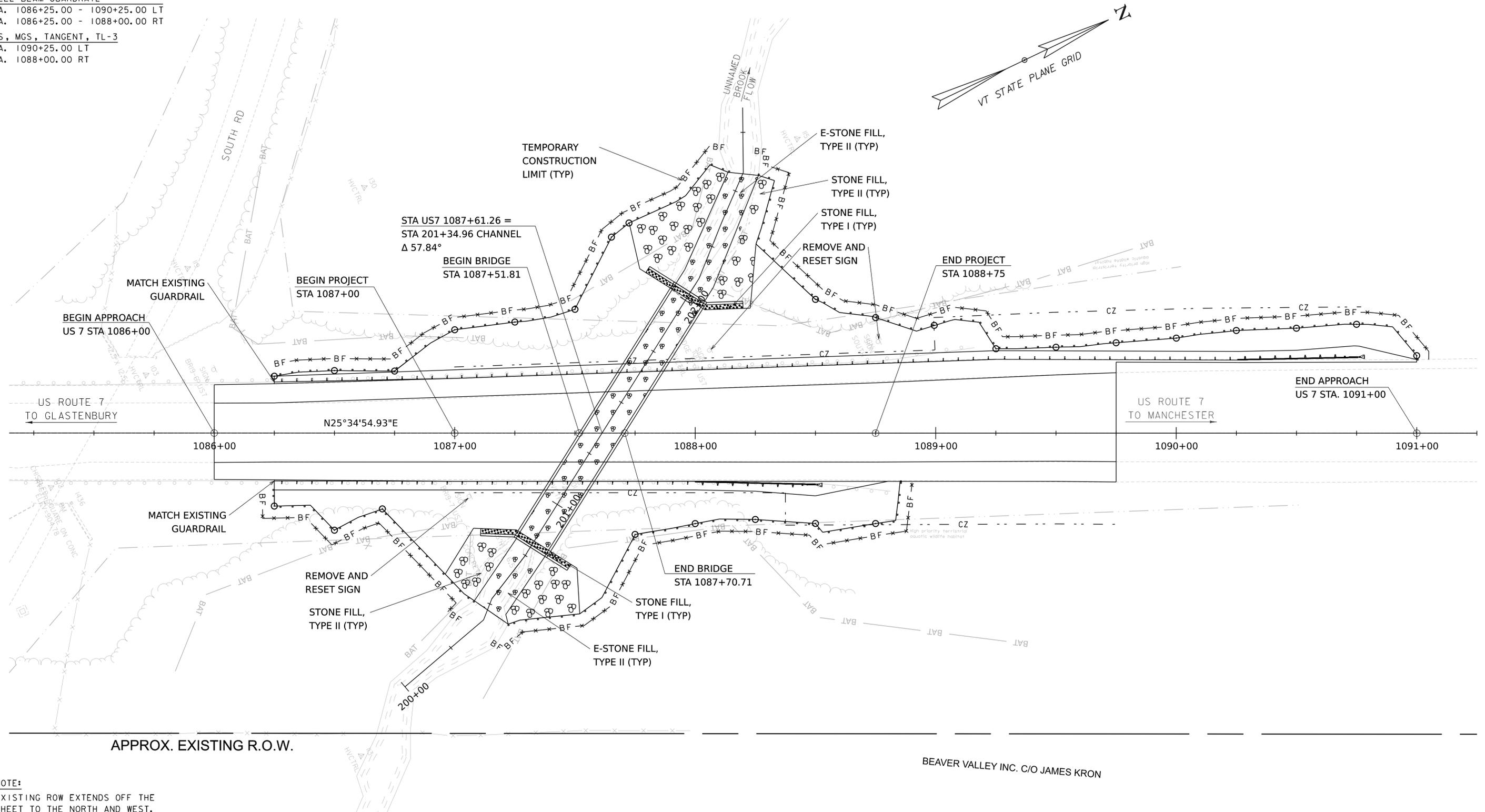
STA. 1086+25.00 - 1090+25.00 LT

STA. 1086+25.00 - 1088+00.00 RT

MTS, MGS, TANGENT, TL-3

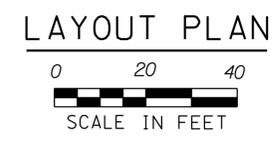
STA. 1090+25.00 LT

STA. 1088+00.00 RT



NOTE:  
 EXISTING ROW EXTENDS OFF THE SHEET TO THE NORTH AND WEST.

EXISTING BRIDGE INFORMATION:  
 SPAN 7' DIAMETER, LENGTH 120'-0"  
 CGMPP BUILT 1979  
 10' AVERAGE COVER  
 38 SF WATERWAY AREA

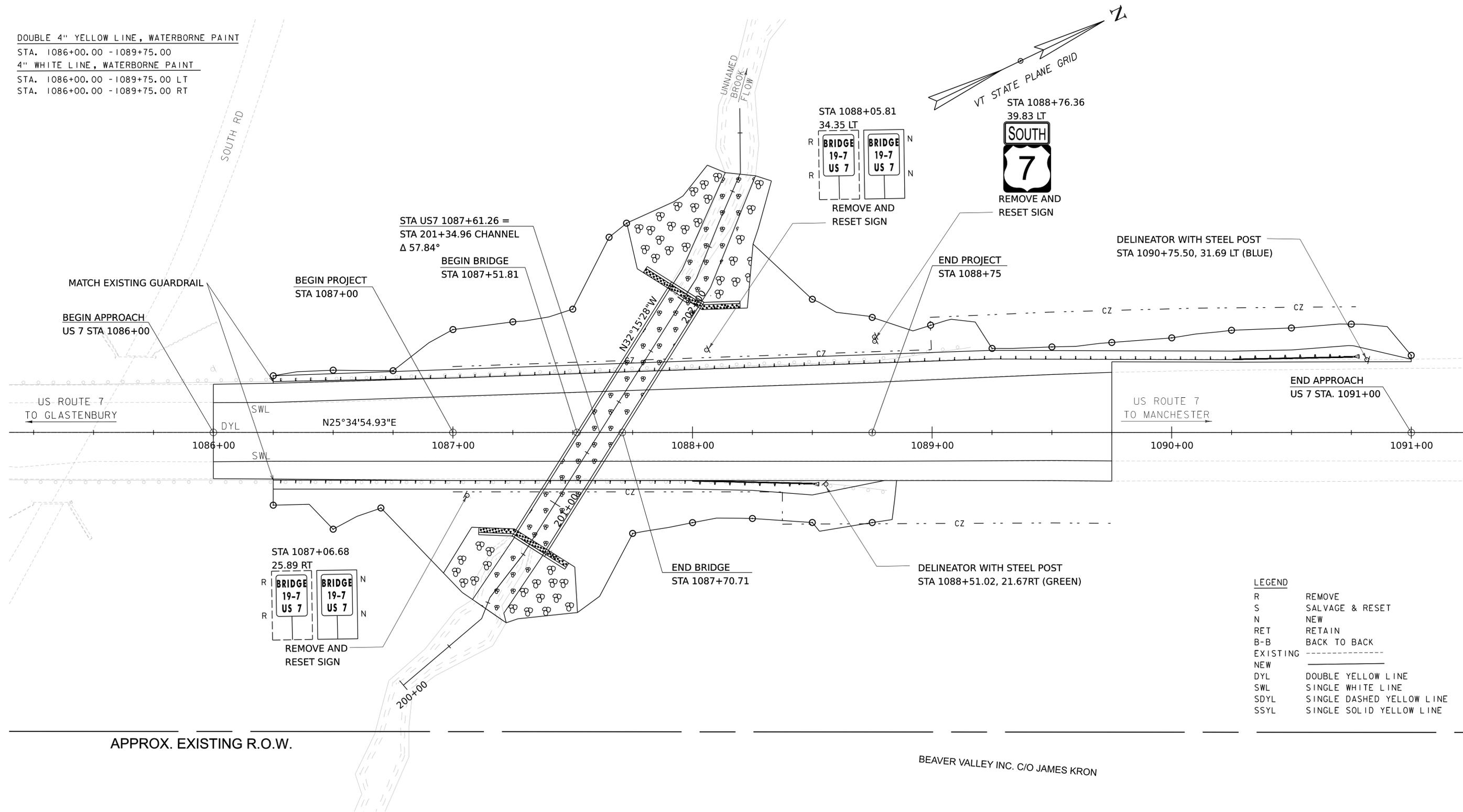


BEAVER VALLEY INC. C/O JAMES KRON



PROJECT NAME: SUNDERLAND	
PROJECT NUMBER: NH CULV(122)	
FILE NAME: z23b027bdr.dgn	PLOT DATE: 7/2/2025
PROJECT LEADER: A. STOCKIN	DRAWN BY: M. HERMIS
DESIGNED BY: M. GROTE	CHECKED BY: T. HIGGINSON
LAYOUT PLAN	SHEET 40 OF 65

DOUBLE 4" YELLOW LINE, WATERBORNE PAINT  
 STA. 1086+00.00 - 1089+75.00  
 4" WHITE LINE, WATERBORNE PAINT  
 STA. 1086+00.00 - 1089+75.00 LT  
 STA. 1086+00.00 - 1089+75.00 RT



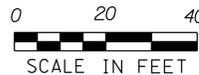
**LEGEND**

R	REMOVE
S	SALVAGE & RESET
N	NEW
RET	RETAIN
B-B	BACK TO BACK
EXISTING	-----
NEW	-----
DYL	DOUBLE YELLOW LINE
SWL	SINGLE WHITE LINE
SDYL	SINGLE DASHED YELLOW LINE
SSYL	SINGLE SOLID YELLOW LINE

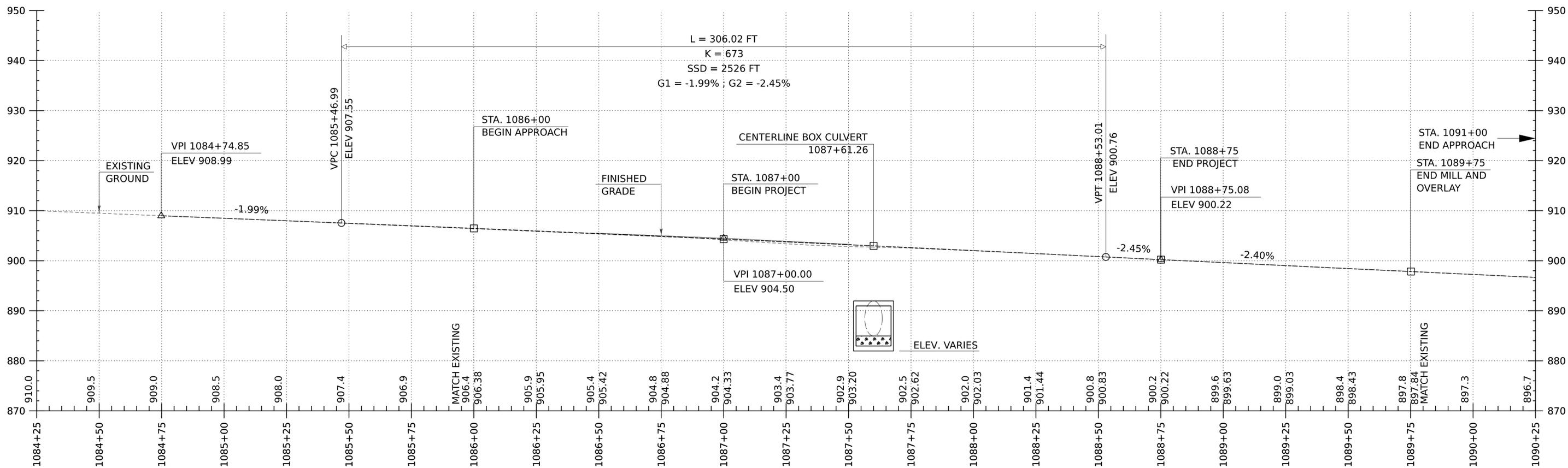
APPROX. EXISTING R.O.W.

BEAVER VALLEY INC. C/O JAMES KRON

LAYOUT PLAN

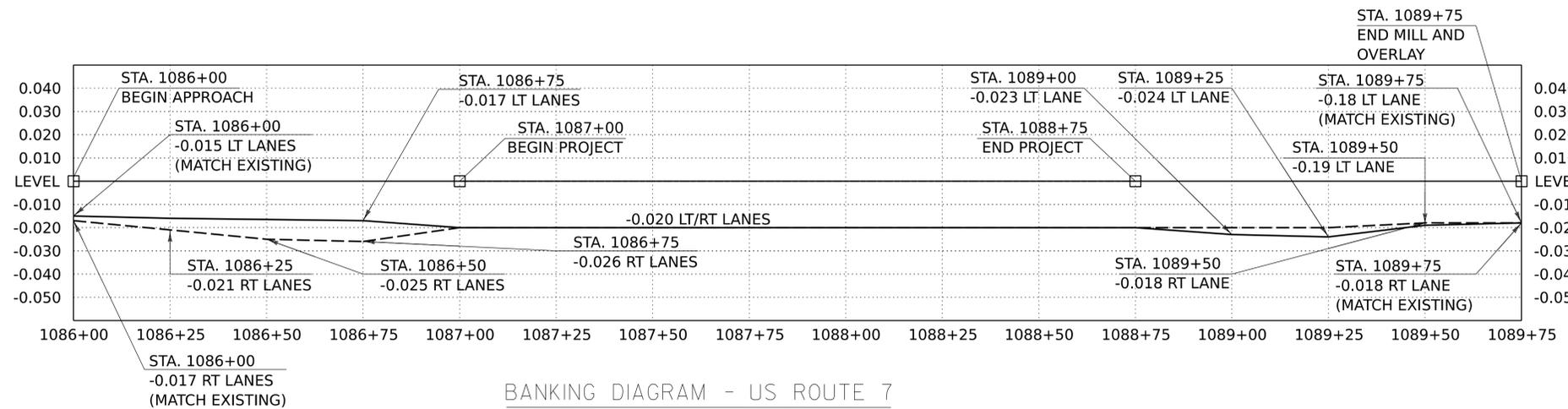


PROJECT NAME:	SUNDERLAND	FILE NAME:	z23b027bdr_trf-sign.dgn	PLOT DATE:	7/2/2025
PROJECT NUMBER:	NH CULV(122)	PROJECT LEADER:	A. STOCKIN	DRAWN BY:	M. HERMIS
		DESIGNED BY:	M. GROTE	CHECKED BY:	T. HIGGINSON
		TRAFFIC SIGN AND LINE LAYOUT		SHEET	41 OF 65



US ROUTE 7 PROFILE

HOR. SCALE: 1" = 20'-0"  
 VERT. SCALE: 1" = 10'-0"



BANKING DIAGRAM - US ROUTE 7

(NOT TO SCALE)

NOTES:

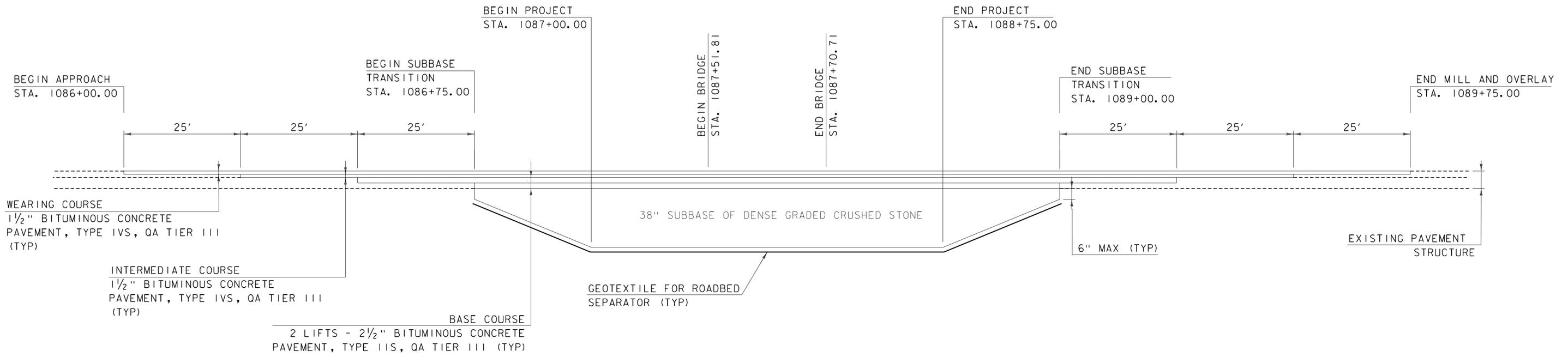
- ELEVATIONS SHOWN TO THE NEAREST TENTH DEPICT THE EXISTING GROUND ELEVATION.
- ELEVATIONS SHOWN TO THE NEAREST HUNDRETH DEPICT THE PROPOSED PROFILE GRADE ELEVATION.



PROJECT NAME: SUNDERLAND  
 PROJECT NUMBER: NH CULV(122)

FILE NAME: z23b027pro1.dgn  
 PROJECT LEADER: A. STOCKIN  
 DESIGNED BY: M. GROTE  
 US7 PROFILE - BANKING DIAGRAM

PLOT DATE: 7/6/2025  
 DRAWN BY: M. HERMIS  
 CHECKED BY: T. HIGGINSON  
 SHEET 42 OF 65



**US ROUTE 7 MATERIAL TRANSITION**  
(NOT TO SCALE)



PROJECT NAME: SUNDERLAND	
PROJECT NUMBER: NH CULV(I22)	
FILE NAME: z23b027dt1.dgn	PLOT DATE: 7/2/2025
PROJECT LEADER: A. STOCKIN	DRAWN BY: M. HERMIS
DESIGNED BY: M. GROTE	CHECKED BY: T. HIGGINSON
MATERIAL TRANSITION	SHEET 43 OF 65

**NOTES:**

1. THIS TRAFFIC CONTROL LAYOUT IS CONCEPTUAL ONLY. IT IS INTENDED TO SHOW BASIC SITE CONDITIONS THAT INCLUDE TRAFFIC AND TEMPORARY TRAFFIC CONTROL DEVICES LOCATIONS WITH THEIR REQUIRED DIMENSIONS LABELED FOR REFERENCE. THIS SHEET SHOWS TRAFFIC SHIFTED TO THE WEST SIDE OF THE ROAD, HOWEVER, CONSTRUCTION MAY ALSO REQUIRE TRAFFIC SHIFT TO THE EAST SIDE OF THE ROAD. REFERENCE MUTCD SECTION 6P.01 FIGURE 6P-12 FOR CONCEPT APPROACH SIGNAGE AND SPACING. REFERENCE TA-12 FOR SIGNALIZED LANE CLOSURE ON A TWO-LANE ROAD.
2. ONE-LANE ALTERNATING TRAFFIC MAY BE USED 10 DAYS LEADING UP TO AND 10 DAYS AFTER FULL-CLOSURE OF ROUTE 7 FOR SETUP AND FINISHING WORK. FULL-CLOSURE DURATION SHALL BE 7 DAYS, SEE DETOUR SHEETS FOR CLOSURE DETOUR. ONE-LANE ALTERNATING TRAFFIC WILL BE LIMITED TO NON-PEAK PERIODS. MON-THURS, 9AM-2PM.
3. SIGNAL FACE SHALL BE INSTALLED NO LESS THAN 40 FEET BEYOND THE STOP LINE, AND NO MORE THAN 180 FEET BEYOND THE STOP LINE, UNLESS SUPPLEMENTAL NEAR-SIDE SIGNAL FACE IS PROVIDED, AND AS NEAR AS PRACTICAL TO THE LINE OF THE DRIVER'S NORMAL VIEW, IF MOUNTED ABOVE THE ROADWAY. (11TH EDITION MUTCD SECTION 4D.08).

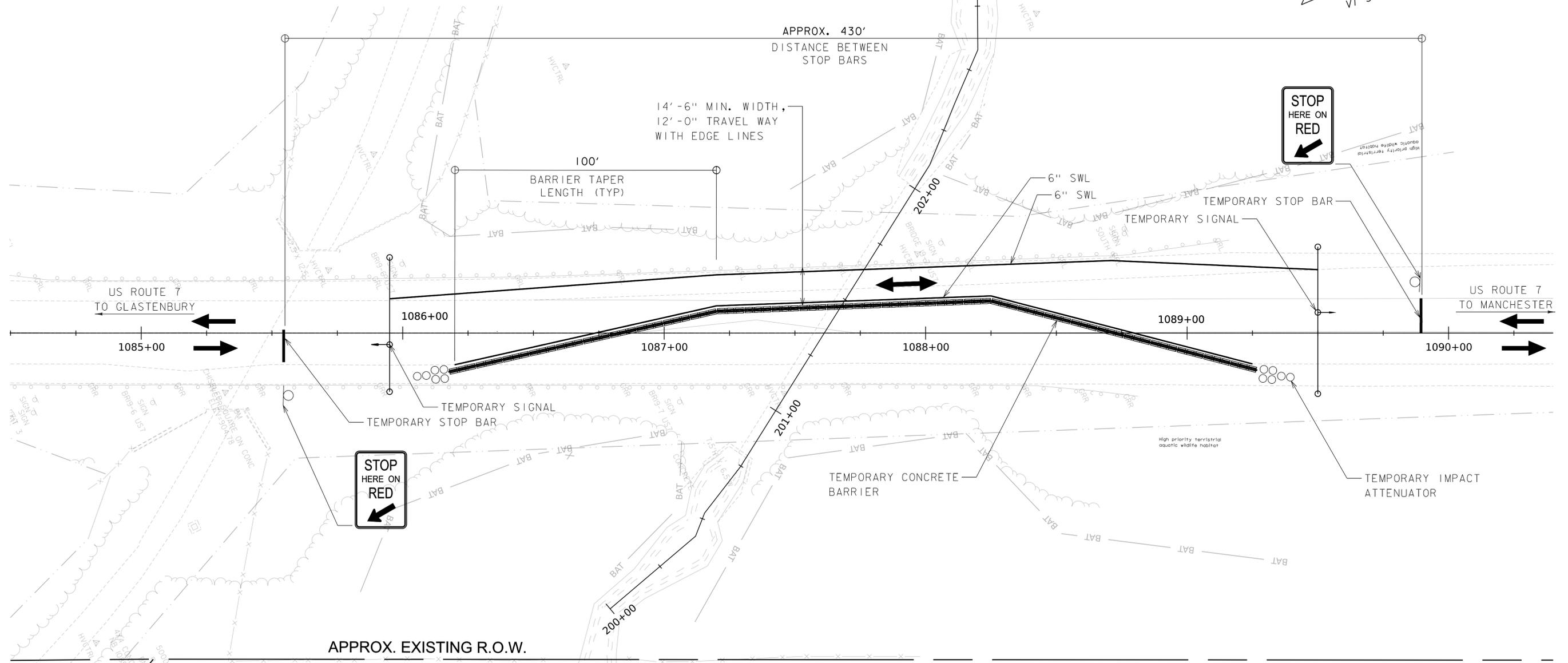
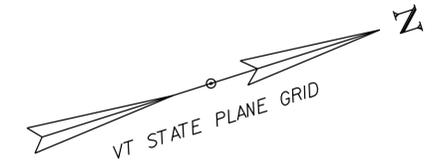
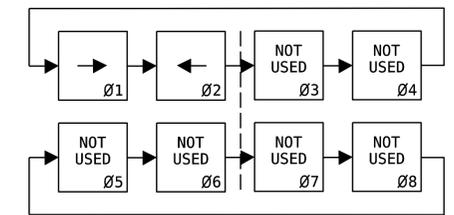
4. IMPACT ATTENUATORS ARE CONCEPTUAL ONLY. MANUFACTURER'S RECOMMENDATIONS SHALL BE FOLLOWED FOR THE SELECTED ATTENUATION DEVICE AND INSTALLED ACCORDING TO THE PROPER ARRAY FOR THE POSTED SPEED LIMIT.
5. TEMPORARY SIGNAL SHALL BE CAPABLE OF DETECTING SLOW MOVING VEHICLES WITHIN THE WORK ZONE TO EXTEND THE ALL RED TIME TO PROVIDE SAFE PASSAGE. TEMPORARY SIGNAL SHALL BE SET TO "REST IN RED" TO ENSURE VEHICLES COME TO A FULL STOP PRIOR TO ENTERING WORK ZONE.
6. CONTRACTOR SHALL IMPLEMENT SIGNAL TIMINGS SHOWN IN THIS PLAN DURING ONE-LANE ALTERNATING TRAFFIC. SIGNALS SHALL BE MONITORED DURING CONSTRUCTION AND FURTHER ADJUSTED IF NECESSARY WITH VTRANS APPROVAL.

**SIGNAL PHASING**

TIMING IN SECONDS	Ø 1	Ø 2
INITIAL INTERVAL	10	10
VEHICLE EXTENSION	3	3
MAX 1	38	38
YELLOW	5.0	5.0
ALL RED	7.0	7.0
RECALL	MIN	MIN
DETECTOR MEMORY	LOCK	LOCK
FLASH	RED	RED

MAX 1: ALL TIME PERIODS

**NEMA STD 8Ø CONTROLLER**



**TRAFFIC CONTROL PLAN**



BEAVER VALLEY INC. C/O JAMES KRON

PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/2/2025
PROJECT NUMBER:	NH CULV(I22)	DRAWN BY:	M. HERMIS
FILE NAME:	z23b027bdr - tcp.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	TRAFFIC CONTROL SHEET	SHEET 44 OF 65
DESIGNED BY:	M. GROTE		



### SOIL CLASSIFICATION

#### AASHTO

A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

### ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

### SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

### CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

### COMMONLY USED SYMBOLS

▼	Water Elevation
⊕	Standard Penetration Boring
⊗	Auger Boring
⊙	Rod Sounding
○	Sample
S	Standard Penetration Test
N	Blow Count Per Foot For: 2" O. D. Sampler 1 3/8" I. D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/2"
BX	Core Size 1 3/4"
NX	Core Size 2 1/2"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
w	Non Plastic
D	Moisture Content (Dry Wgt. Basis)
NP	Dry
M	Moist
MTW	Moist To Wet
W	Wet
SAT	Saturated
BO	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

COLOR			
blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

### DEFINITIONS (AASHTO)

**BEDROCK (LEDGE)** - Rock in its native location of indefinite thickness.

**BOULDER** - A rock fragment with an average dimension > 12 inches.

**COBBLE** - Rock fragments with an average dimension between 3 and 12 inches.

**GRAVEL** - Rounded particles of rock < 3" and > 0.075" (#10 sieve).

**SAND** - Particles of rock < 0.075" (#10 sieve) and > 0.0025" (#200 sieve).

**SILT** - Soil < 0.0025" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

**CLAY** - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

**VARVED** - Alternate layers of silt and clay.

**HARDPAN** - Extremely dense soil, cemented layer, not softened when wet.

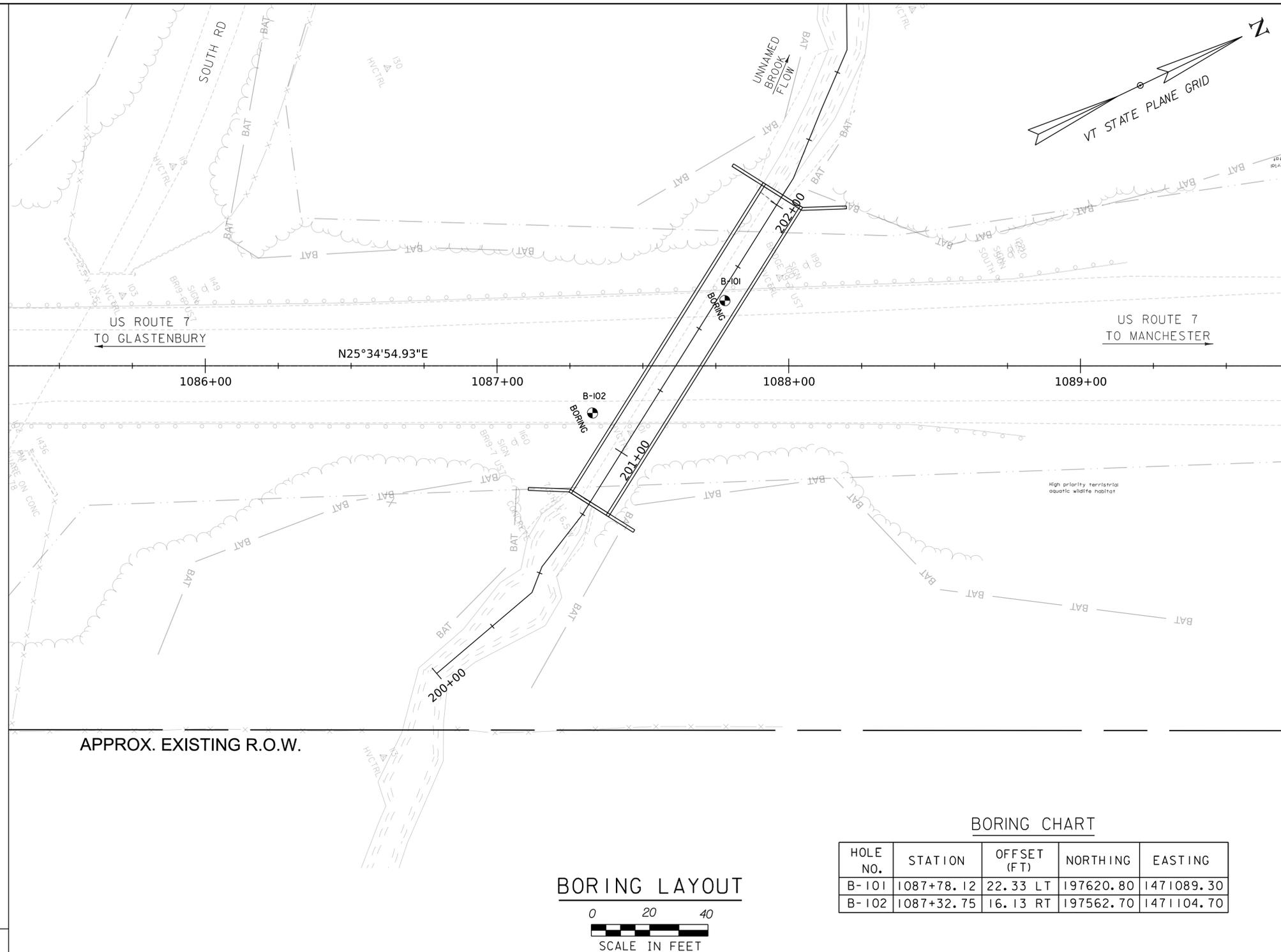
**MUCK** - Soft organic soil (containing > 10% organic material).

**MOISTURE CONTENT** - Weight of water divided by dry weight of soil.

**FLOWING SAND** - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

**STRIKE** - Angle from magnetic north to line of intersection of bed with a horizontal plane.

**DIP** - Inclination of bed with a horizontal plane.



APPROX. EXISTING R.O.W.

### BORING LAYOUT



### BORING CHART

HOLE NO.	STATION	OFFSET (F T)	NORTHING	EASTING
B-101	1087+78.12	22.33 LT	197620.80	1471089.30
B-102	1087+32.75	16.13 RT	197562.70	1471104.70

### GENERAL NOTES

- The subsurface explorations shown herein were made between 8/17/22 and 8/31/22 by VTrans.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
- Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.



PROJECT NAME: **SUNDERLAND**  
PROJECT NUMBER: **NH CULV(122)**

FILE NAME: z23b027bor1.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
BORING INFORMATION SHEET

PLOT DATE: 7/2/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 45 OF 65

VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: <b>B-101 (Br. 19-7)</b>		
				Statewide-Southwest NH CULV(122) Sunderland, US 7 BR 19-7		Page No.: 1 of 1 Pin No.: 23b027 Checked By: END		
Boring Crew: McGinley, Aubut, Arles		Type: Casing WB, Sampler SS		Groundwater Observations				
Date Started: 8/17/22 Date Finished: 8/17/22		I.D.: 3 in 1.5 in		Date	Depth (ft)	Notes		
VTSPG NAD83: N 197620.80 ft E 1471089.30 ft		Hammer Wt: N.A. 140 lb.		08/17/22	10.6	WT After Drilling		
Station: 1087+78.12 Offset: 22.33 ft LT		Hammer Fall: N.A. 30 in.						
Ground Elevation: 902.1 ft		Hammer/Rod Type: Auto/AWJ						
		Rig: CME 55 TRACK C _F = 1.52						
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Field Note: Asphalt 0.0'-1.0'						
		Visual Description: Poorly graded Gravel, white, Dry, Rec. = 1.5 ft, Split sample		10-7-7-12 (14)				
		Visual Description: Sand with Silt and Gravel, Lt brn, Dry, Split sample						
5		A-2-4, SiSa, Lt brn, MTD, Rec. = 1.7 ft		16-15-19-21 (34)	8.7	10.8	58.7	30.5
		Visual Description: Poorly graded Sand with Silt, Lt brn, Dry, Rec. = 1.3 ft		13-22-22-22 (44)				
		Visual Description: Poorly graded Sand with Silt and trace Gravel, Lt brn, Dry, Rec. = 1.2 ft, Gravel in end of sampler		15-14-20-26 (34)				
10		A-1-b, SaGr, brn, Dry, Rec. = 0.7 ft		13-19-16-14 (35)	5.2	46.3	41.5	12.2
		Visual Description: Poorly graded Sand trace Gravel, brn, Wet, Rec. = 0.4 ft		9-6-4-8 (10)				
20		Field Note: Attempted NX core. Appears to be nested cobbles 19.6'-22.0', NX cleanout 18.5'-19.6'						
		Field Note: No recovery		15-14-21-26 (35)				
30		A-4, SaSi, Rec. = 1.0 ft, Gravel in end of sampler		9-15-19-27 (34)	21.0	18.8	20.1	61.1
35		Visual Description: Poorly graded Gravel with Silt, Lt brn, Wet, Rec. = 0.2 ft, Refusal at 35.8' 50 blows per 6"		16-R@3" (R)				
		Hole stopped @ 35.8 ft						
40		Remarks: Hole collapsed @ 11.0'						
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C _F is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.								

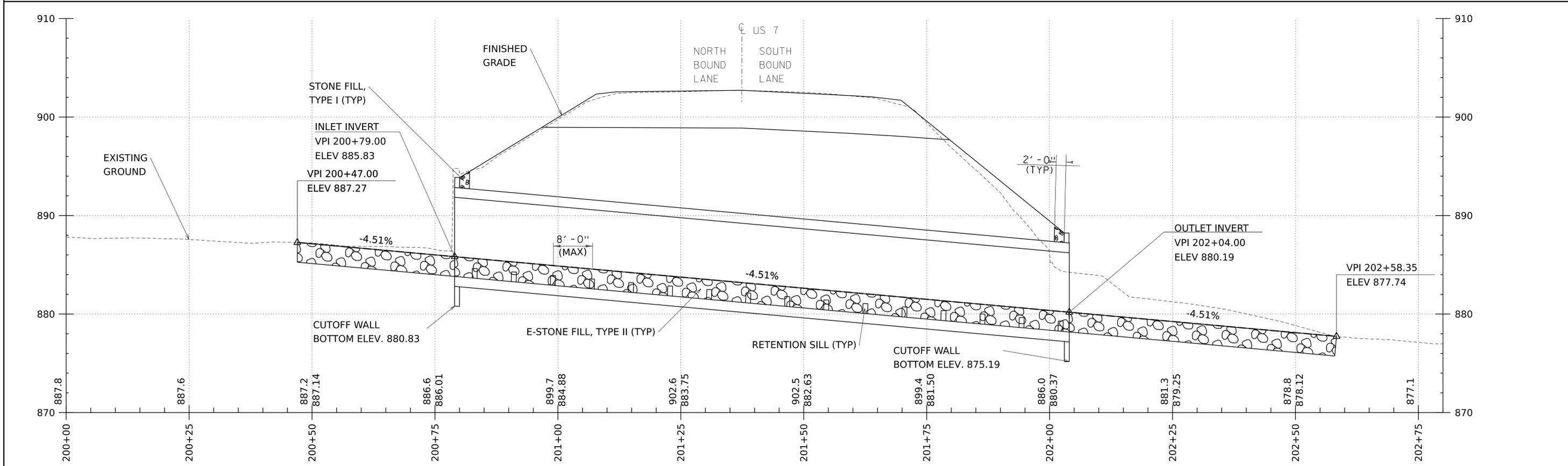
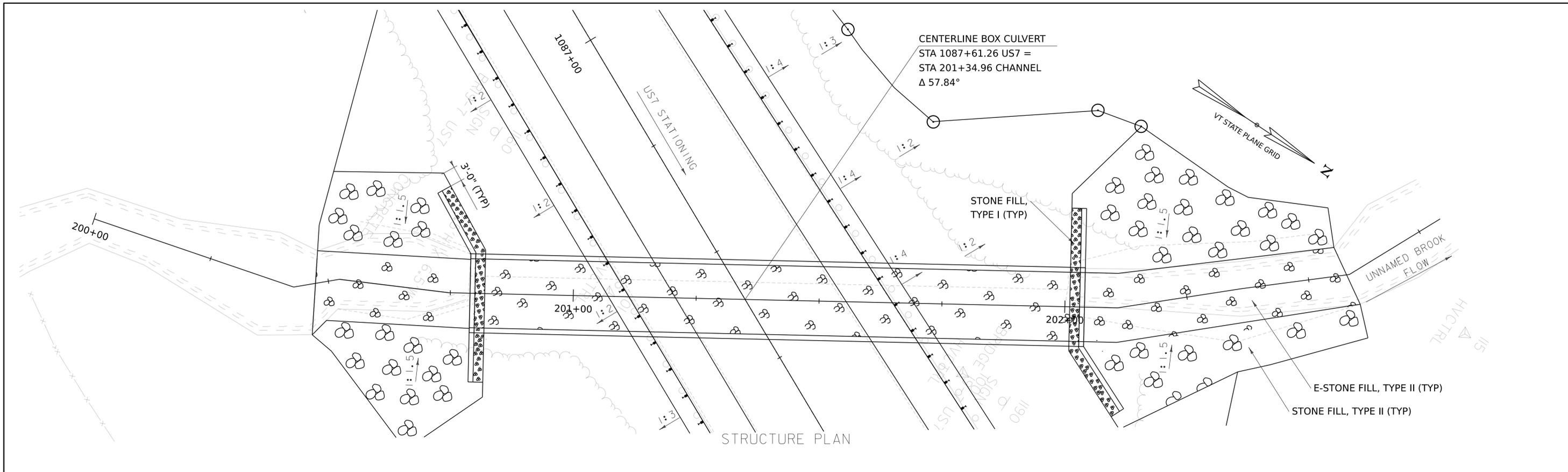
VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: <b>B-102 (Br. 19-7)</b>		
				Statewide-Southwest NH CULV(122) Sunderland, US 7 BR 19-7		Page No.: 1 of 1 Pin No.: 23b027 Checked By: END		
Boring Crew: McGinley, Aubut, Arles		Type: Casing WB, Sampler SS		Groundwater Observations				
Date Started: 8/18/22 Date Finished: 8/31/22		I.D.: 3 in 1.5 in		Date	Depth (ft)	Notes		
VTSPG NAD83: N 197562.70 ft E 1471104.70 ft		Hammer Wt: N.A. 140 lb.		08/09/22		No water to depth		
Station: 1087+32.75 Offset: 16.13 ft RT		Hammer Fall: N.A. 30 in.						
Ground Elevation: 902.6 ft		Hammer/Rod Type: Auto/AWJ						
		Rig: CME 55 TRACK C _F = 1.52						
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Field Note: Asphalt 0.0'-0.8'						
		Visual Description: Poorly graded Gravel with trace Sand, white, Dry, Rec. = 1.0 ft		12-13-15-16 (28)				
5		A-4, SaSi, Lt brn, Dry, Rec. = 1.6 ft		16-18-23-26 (41)	7.7	19.3	43.4	37.3
		Field Note: No recovery, Gravel in end of sampler. Rollercone cleanout 5.9'-6.0'		33-R@3" (R)				
		Field Note: Attempted core at 6' appears to be cobbles/boulders						
		Visual Description: Silt and Sand with little Gravel, Lt brn, Dry, Rec. = 0.6 ft		8-7-5-9 (12)				
10		Visual Description: Coarse to medium Sand and Gravel with trace Silt, Lt brn, Wet, Rec. = 0.7 ft		8-7-11-12 (18)				
		A-2-4, SiGrSa, Lt brn, Wet, Rec. = 0.6 ft		12-13-13-13 (26)	12.0	31.5	41.7	26.8
15		Visual Description: Coarse to medium Gravel with little coarse Sand, Lt brn, Wet, Rec. = 0.3 ft		5-28-17-7 (45)				
20		Field Note: No recovery, Refusal @ 5", 50 blows per 6". Rollercone cleanout 20.5'-25.0'		R@5" (R)				
25		A-4, SaSi, Lt brn, MTW, Rec. = 0.6 ft		17-16-20-24 (36)	18.2	17.0	30.9	52.1
30		A-4, SaSi, Lt brn/white, MTD, Rec. = 1.5 ft		10-12-9-16 (21)	26.2	1.9	26.5	71.6
35		Visual Description: Clay with Gravel, Lt brn, MTW, Rec. = 2.0 ft		6-8-11-14 (19)				
		Hole stopped @ 37.0 ft						
40		Remarks: Hole collapsed @ 12.7'						
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C _F is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.								

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: NH CULV(122)  
FILE NAME: z23b027bor1.dgn PLOT DATE: 7/2/2025  
PROJECT LEADER: A. STOCKIN DRAWN BY: M. HERMIS  
DESIGNED BY: M. GROTE CHECKED BY: T. HIGGINSON  
BORING LOGS SHEET 1 SHEET 46 OF 65



2010 COPY SUNDERLAND.GPJ VERMONT AOT.GDT 10/28/22

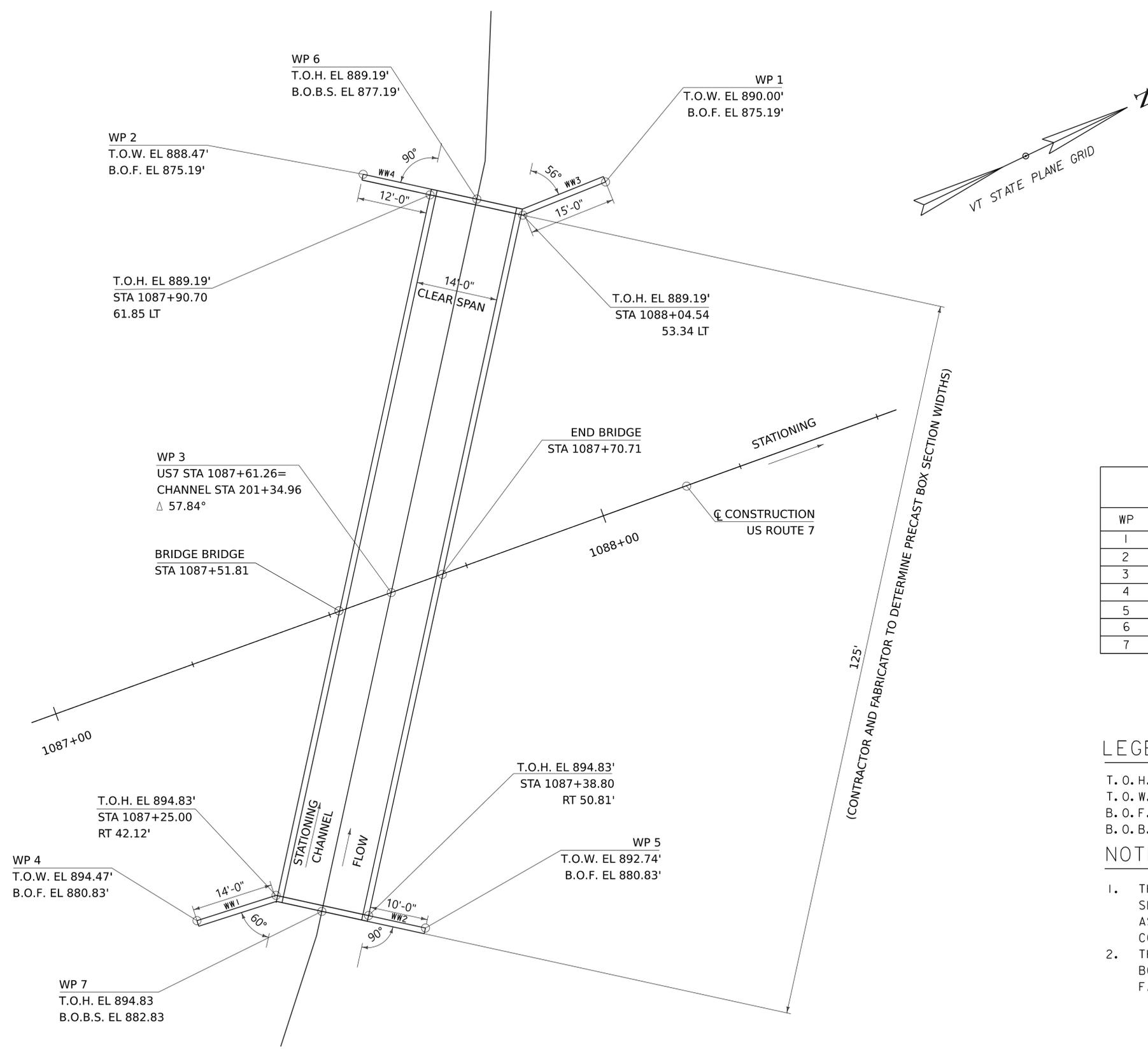
2010 COPY SUNDERLAND.GPJ VERMONT AOT.GDT 10/28/22



SCALE: 1" = 10'-0"

PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/6/2025
PROJECT NUMBER:	NH CULV(I22)	DRAWN BY:	M. HERMIS
FILE NAME:	z23b027pro2.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	SHEET	47 OF 65
DESIGNED BY:	M. GROTE	PLAN AND ELEVATION SHEET	





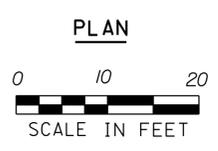
WORKING POINT COORDINATES		
WP	NORTHING	EASTING
1	1471079.3126'	197671.4008'
2	1471048.7151'	197643.1075'
3	1471102.4857'	197595.3854'
4	1471118.1741'	197531.8845'
5	1471147.0295'	197558.5325'
6	1471066.1637'	197652.9327'
7	1471132.3425'	197548.0794'

**LEGEND:**

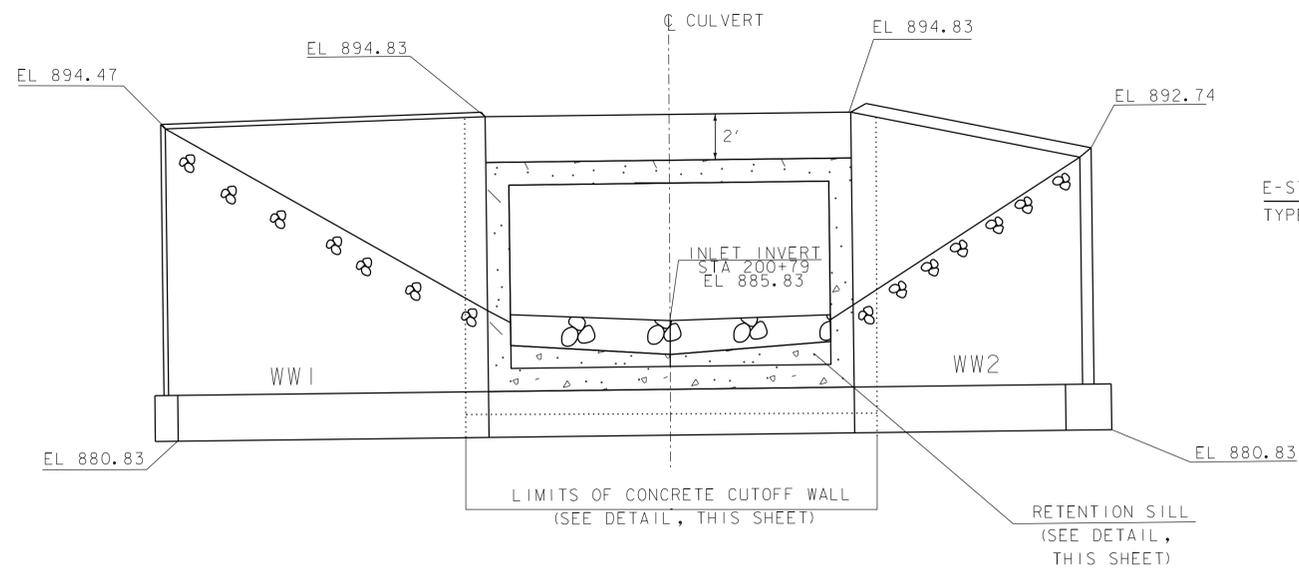
- T.O.H. TOP OF HEADWALL
- T.O.W. TOP OF WINGWALL
- B.O.F. BOTTOM OF FOOTING
- B.O.B.S. BOTTOM OF BOTTOM SLAB

**NOTES:**

1. THE PRECAST CONCRETE BOX CULVERT WALLS AND SLABS, AND PRECAST WINGWALL THICKNESS ARE ASSUMED. ACTUAL DIMENSIONS TO BE DETERMINED BY CONTRACTOR'S FABRICATOR.
2. THE FABRICATOR TO HOLD THE FRONT FACE OF THE BOX CULVERT AND WINGWALLS AND ADJUST THE BACK FACE IF THE DESIGN DIFFERS FROM WHAT IS SHOWN.

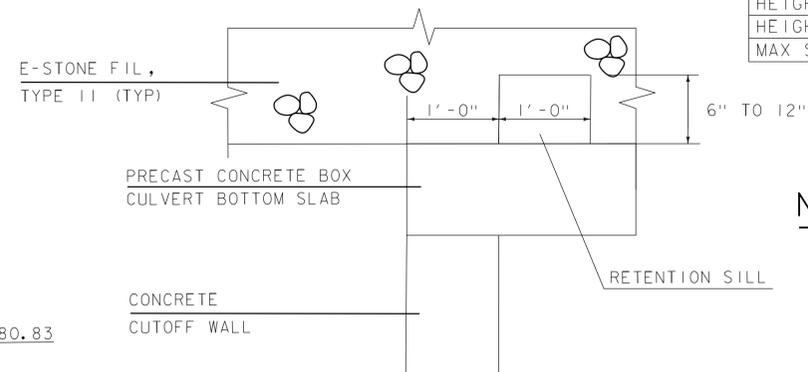


PROJECT NAME: SUNDERLAND	
PROJECT NUMBER: NH CULV(122)	
FILE NAME: z23b027sub.dgn	PLOT DATE: 7/2/2025
PROJECT LEADER: A. STOCKIN	DRAWN BY: M. HERMIS
DESIGNED BY: M. GROTE	CHECKED BY: T. HIGGINSON
CULVERT LAYOUT PLAN	SHEET 48 OF 65



**INLET ELEVATION**

SCALE 1/4" = 1' - 0"



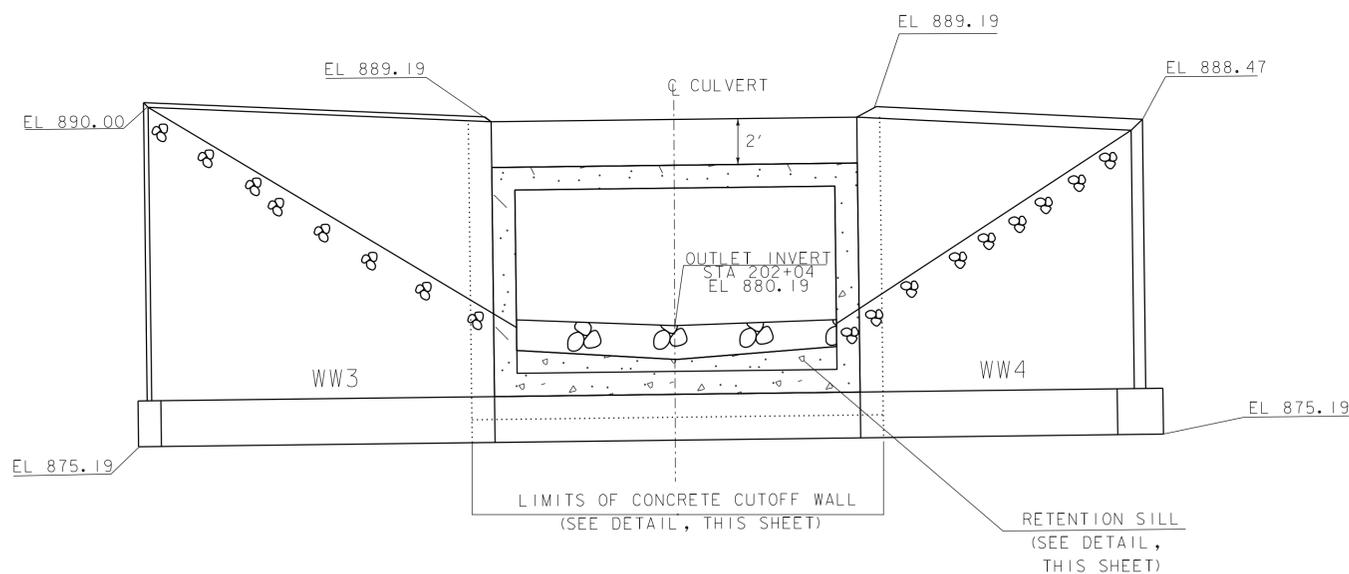
**CULVERT RETENTION SILL DETAIL**

NOT TO SCALE

RETENTION SILL REQUIREMENTS	
	DIMENSION
HEIGHT AT ENDS	12"
HEIGHT AT CENTER	6"
MAX SPACING (O.C.)	8' - 0"

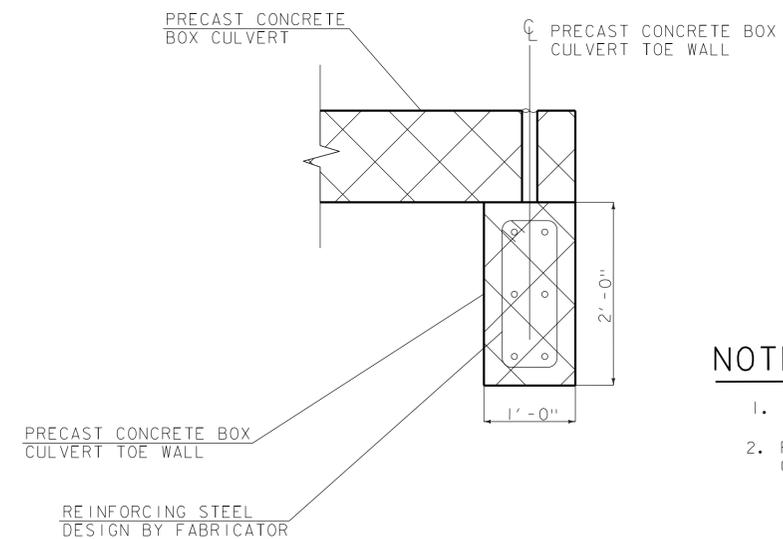
**NOTES:**

1. PLACE A RETENTION SILL AT THE INLET AND OUTLET OF THE STRUCTURE, AS SHOWN, AS WELL AS CONTINUOUSLY THROUGHOUT THE STRUCTURE AT NO MORE THAN THE MAX SPACING SPECIFIED.
2. BOX CULVERT FABRICATOR SHALL DESIGN AND DETAIL THE PRECAST RETENTION SILL TO BE CAST INTEGRAL WITH THE BOX CULVERT.



**OUTLET ELEVATION**

SCALE 1/4" = 1' - 0"



**PRECAST CONCRETE CUTOFF WALL DETAIL**

NOT TO SCALE

**NOTES:**

1. LENGTH OF CUTOFF WALL TO MATCH TOTAL WIDTH OF CULVERT.
2. REFERENCE ELEVATION VIEWS THIS SHEET FOR BOTTOM OF CUTOFF WALL ELEVATIONS.

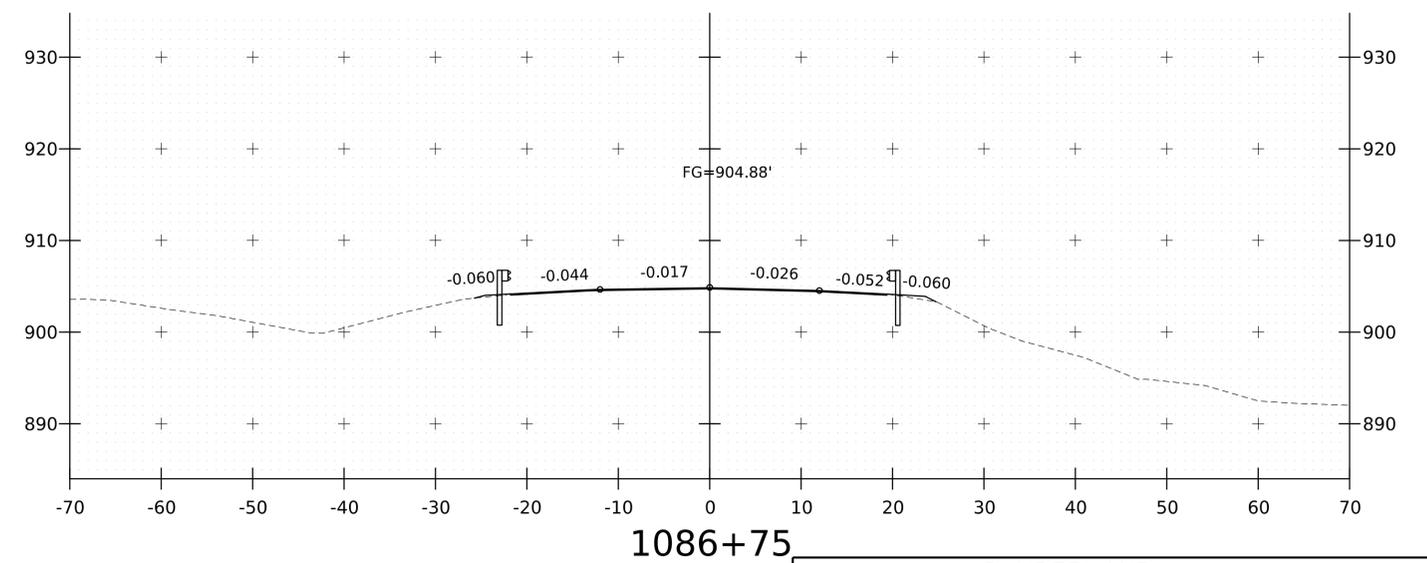
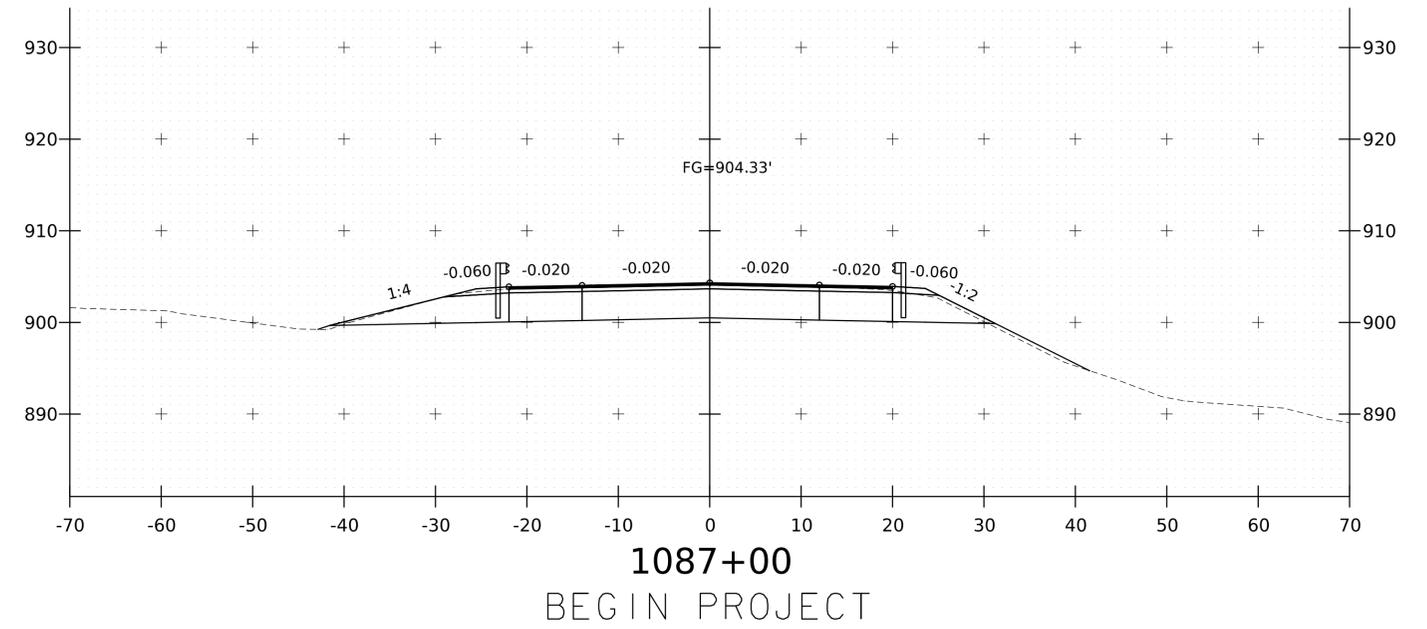
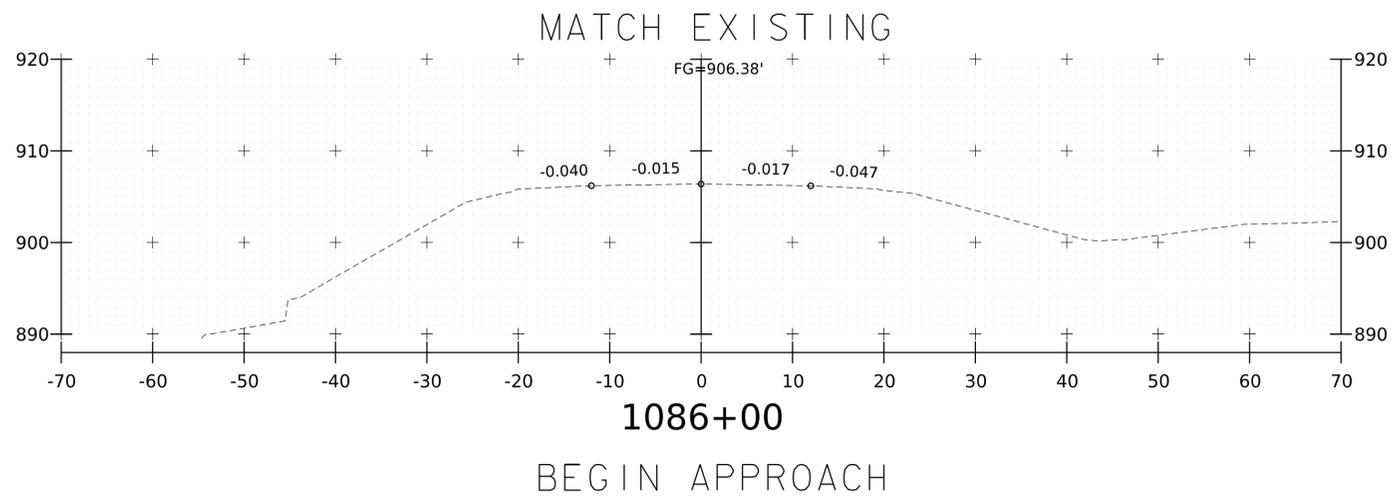
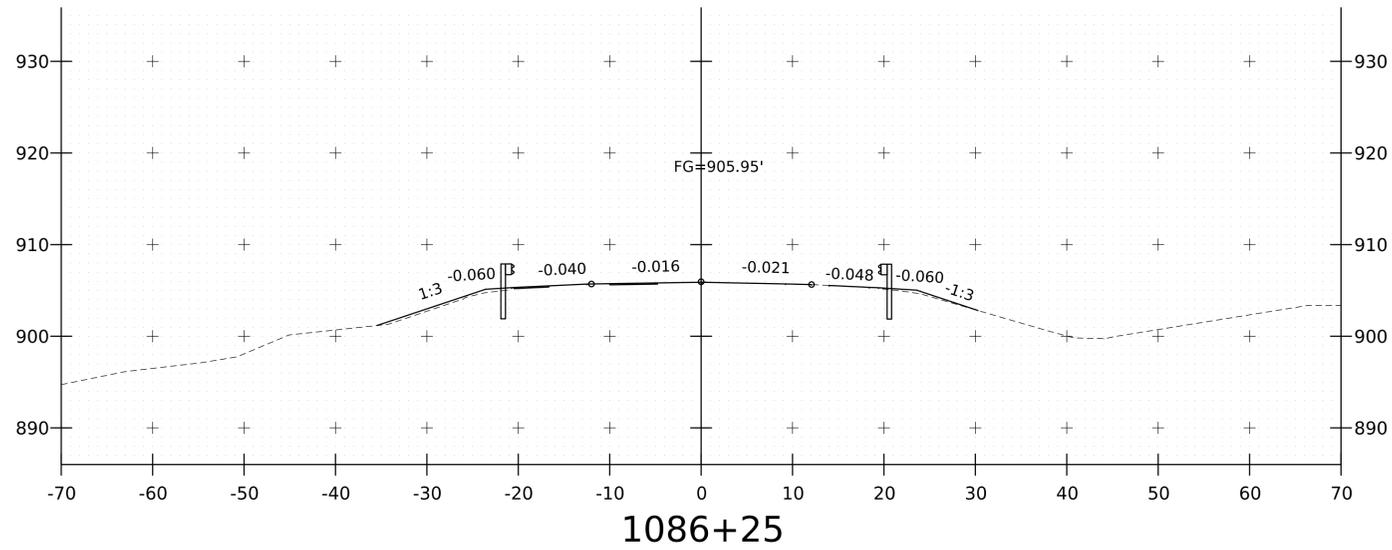
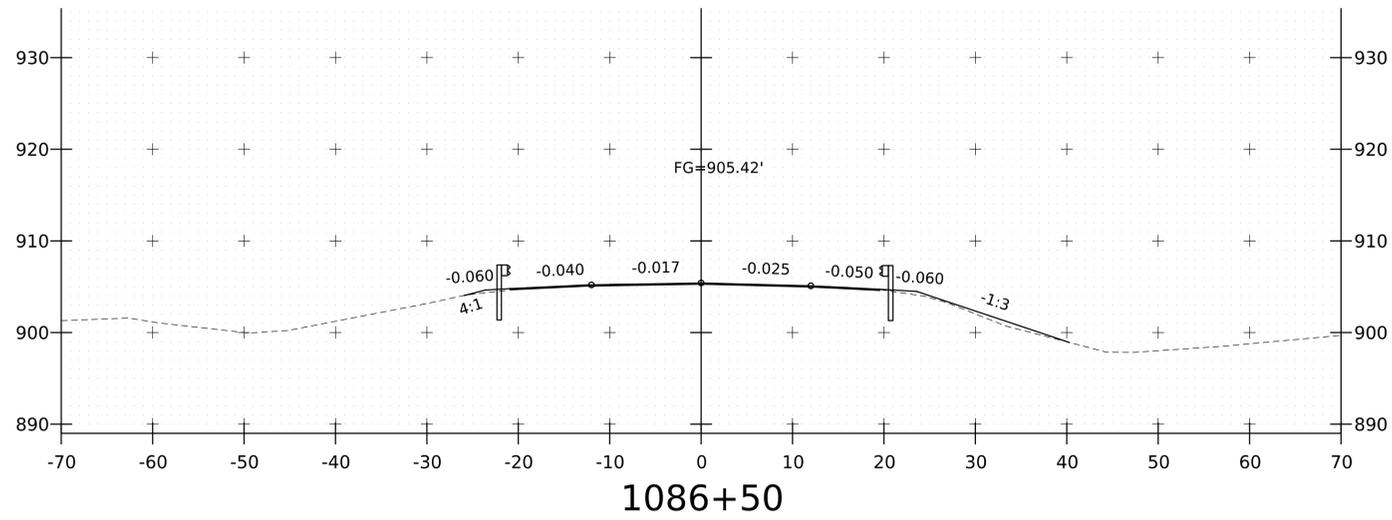
**NOTES:**

1. THE PRECAST SECTIONS ARE SHOWN FOR REFERENCE ONLY. THE ACTUAL DIMENSIONS AND SHAPE WILL BE DEPENDENT ON THE FABRICATOR.
2. FOR BOX PROFILE SEE CULVERT PLAN AND PROFILE SHEET.
3. THE CONTRACTOR/FABRICATOR TEAM IS RESPONSIBLE FOR THE DESIGN OF THE BOX CULVERT, WINGWALLS, CUTOFF WALLS, AND ALL CONNECTIONS BETWEEN PRECAST ELEMENT.

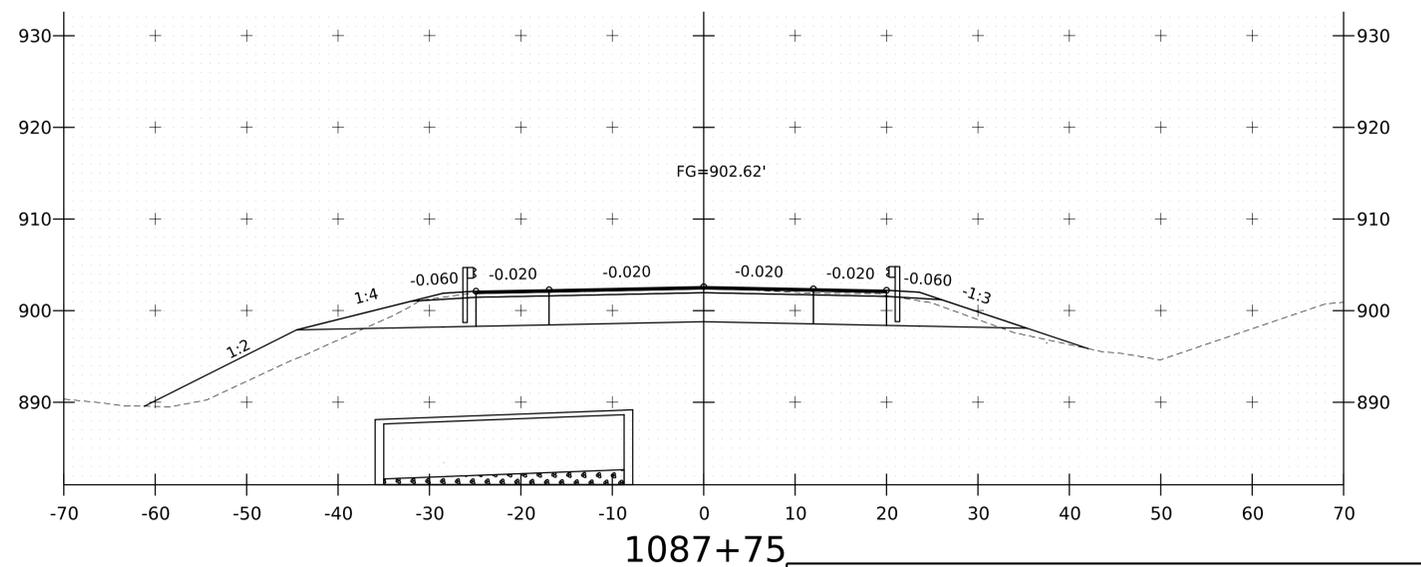
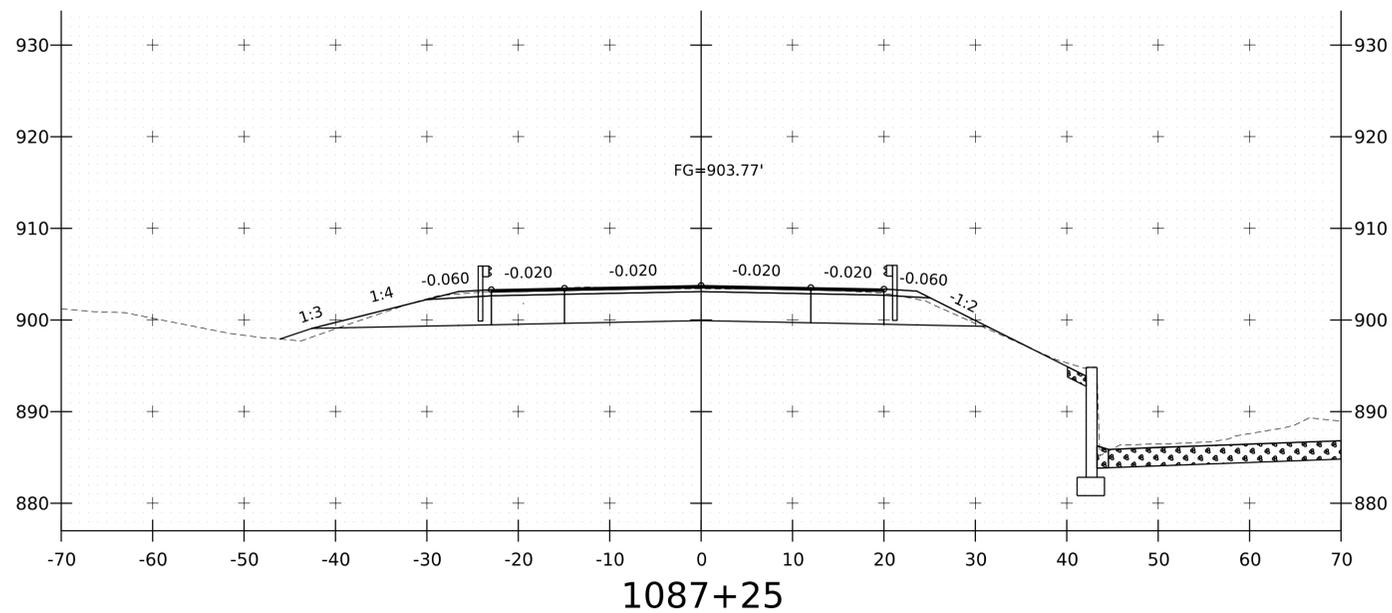
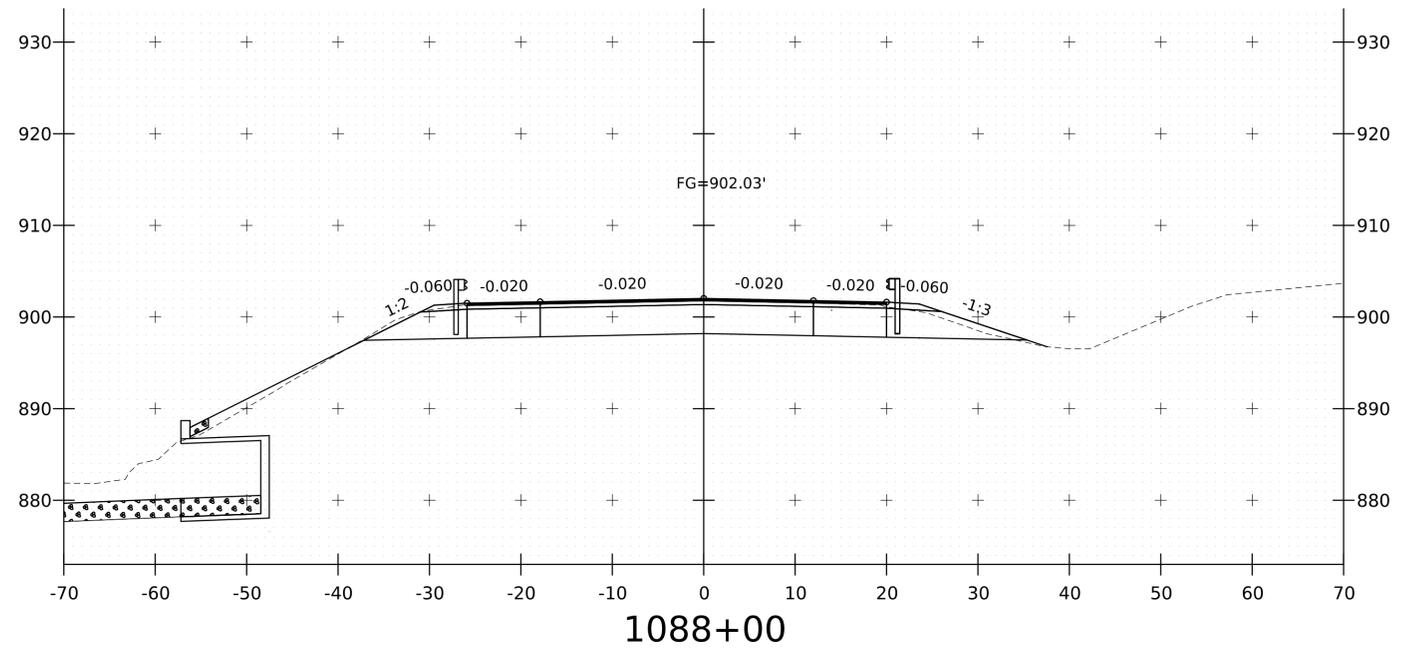
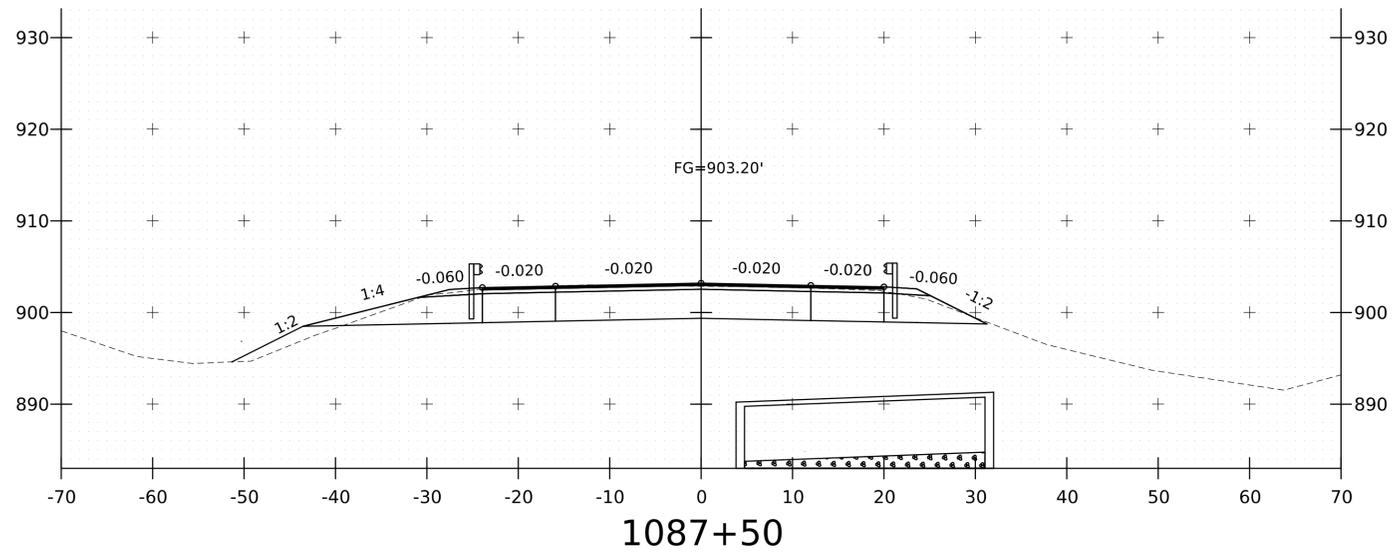
PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: NH CULV(122)

FILE NAME: z23b072ubl.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
SUBSTRUCTURE DETAILS I

PLOT DATE: 7/2/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 49 OF 65



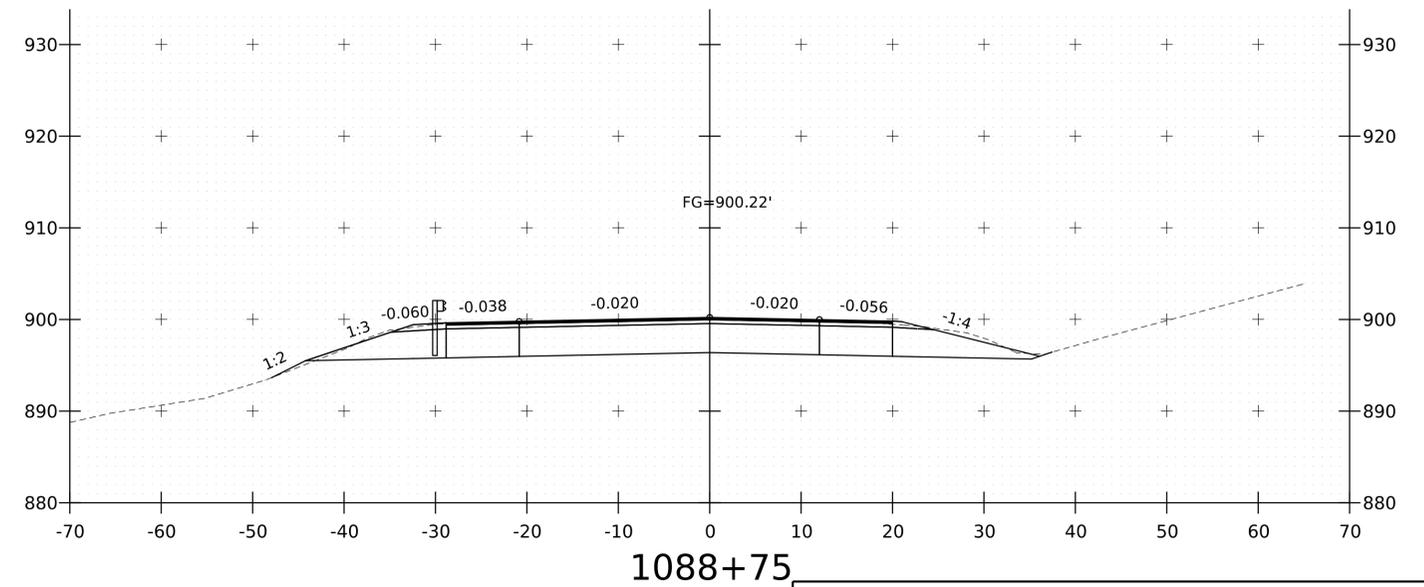
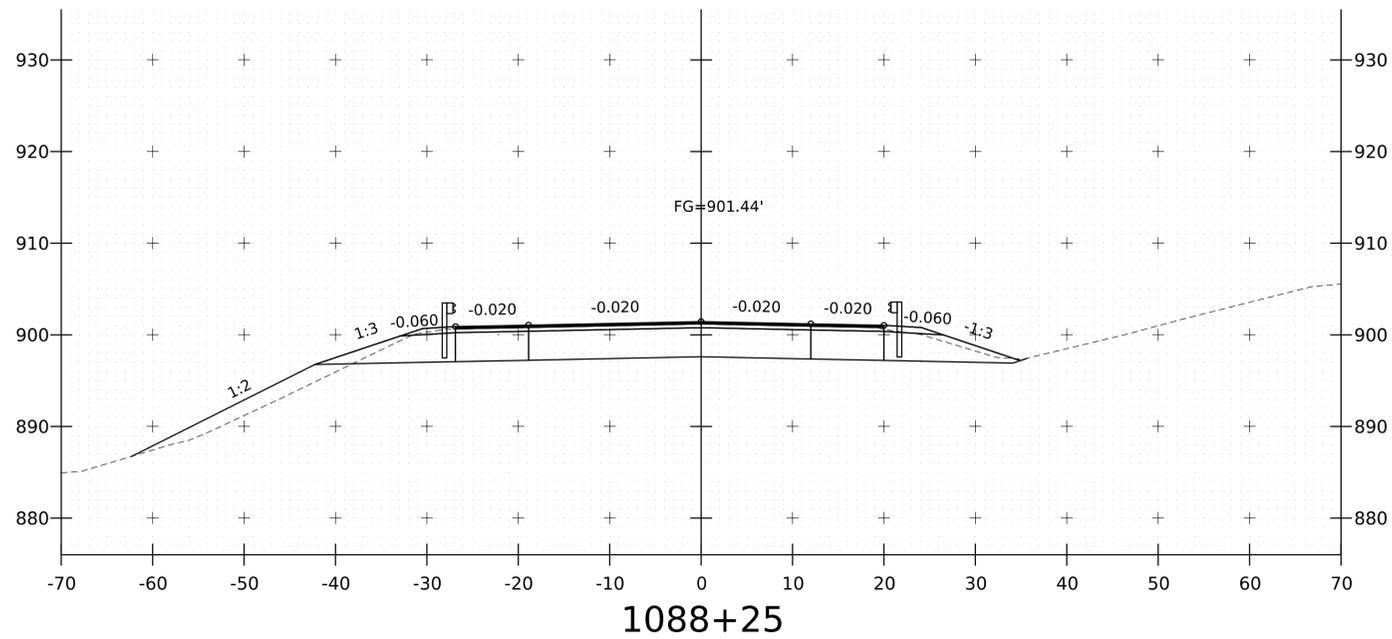
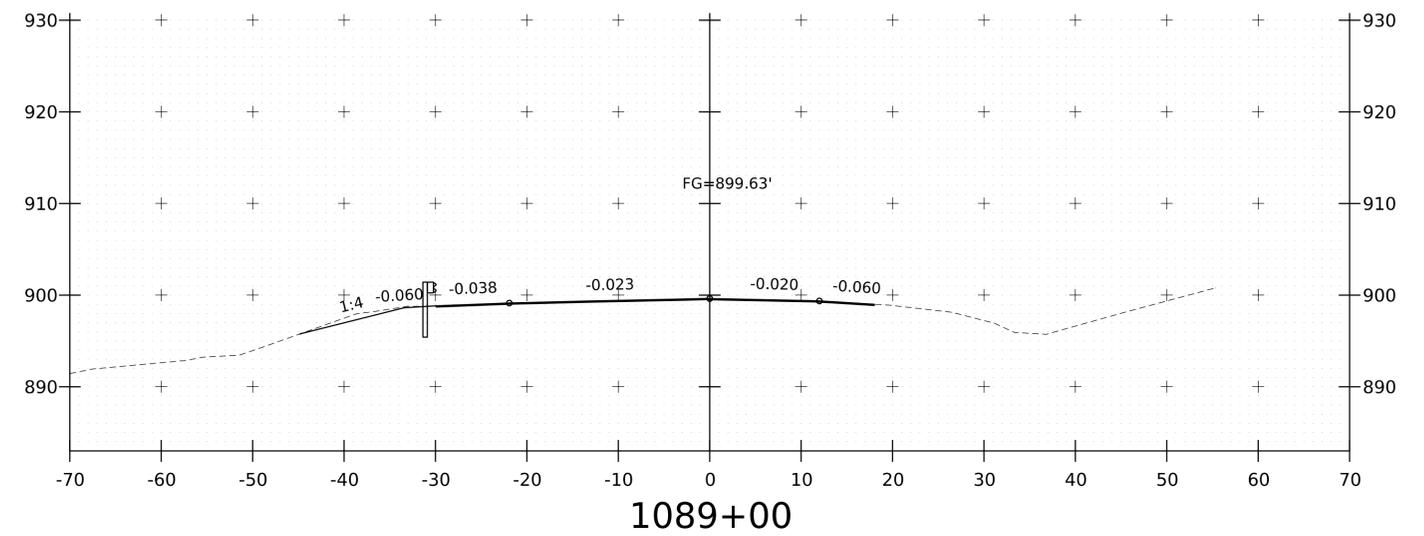
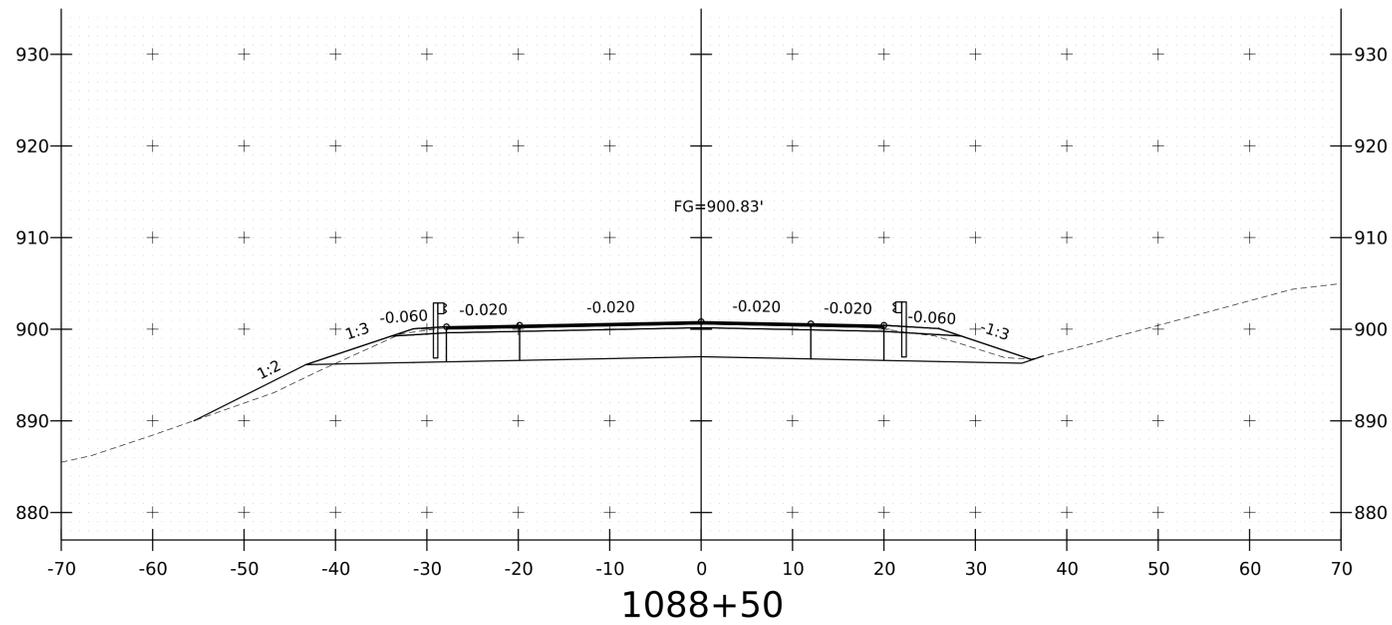
PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/6/2025
PROJECT NUMBER:	NH CULV(122)	DRAWN BY:	M. HERMIS
FILE NAME:	z23b027xs1.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	MAINLINE CROSS SECTIONS 1	SHEET 50 OF 65
DESIGNED BY:	M. GROTE		



STA. 1087+51.81 BEGIN BRIDGE  
 STA. 1087+70.71 END BRIDGE



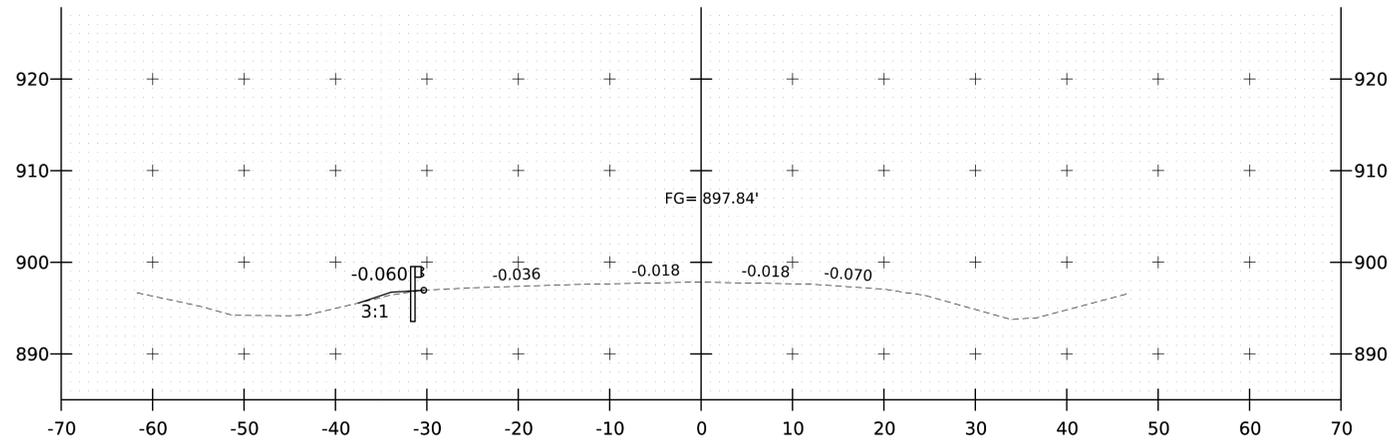
PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/2/2025
PROJECT NUMBER:	NH CULV(122)	DRAWN BY:	M. HERMIS
FILE NAME:	z23b027xs1.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	SHEET	51 OF 65
DESIGNED BY:	M. GROTE		
MAINLINE CROSS SECTIONS 2			



END PROJECT

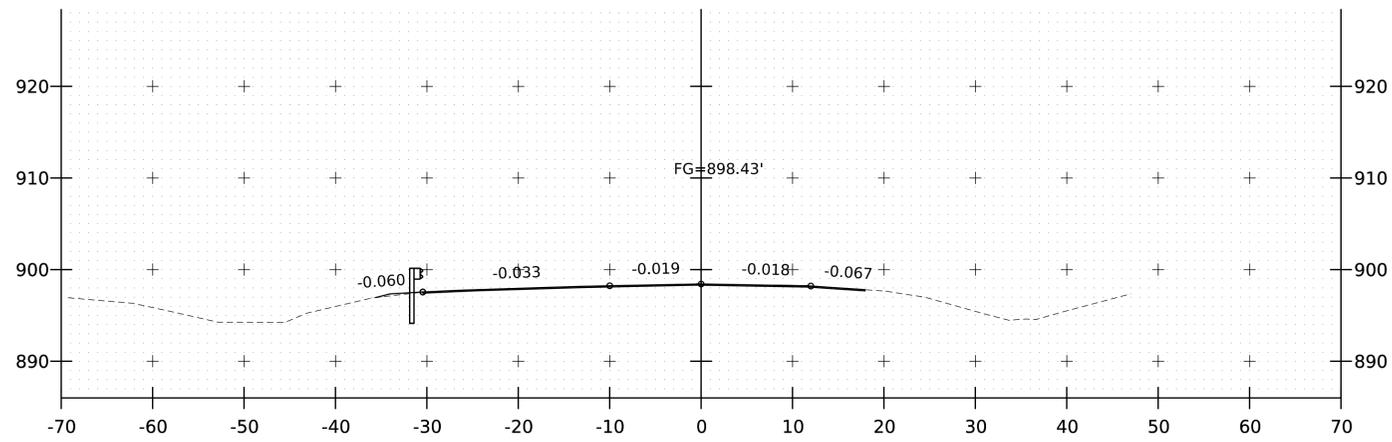


PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/2/2025
PROJECT NUMBER:	NH CULV(122)	DRAWN BY:	M. HERMIS
FILE NAME:	z23b027xs1.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	SHEET	52 OF 65
DESIGNED BY:	M. GROTE		
MAINLINE CROSS SECTIONS 3			

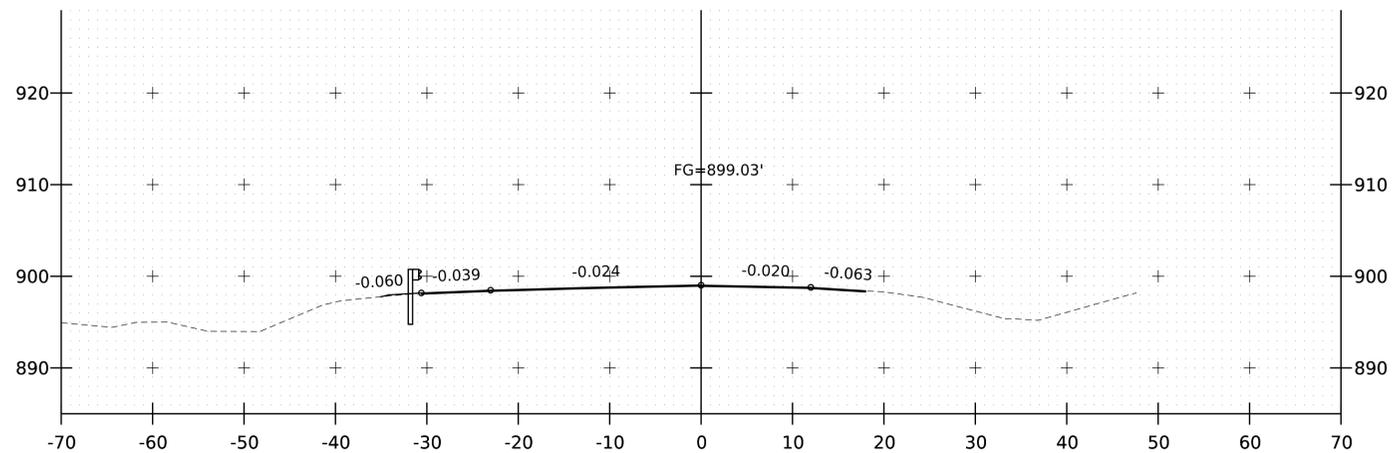


1089+75

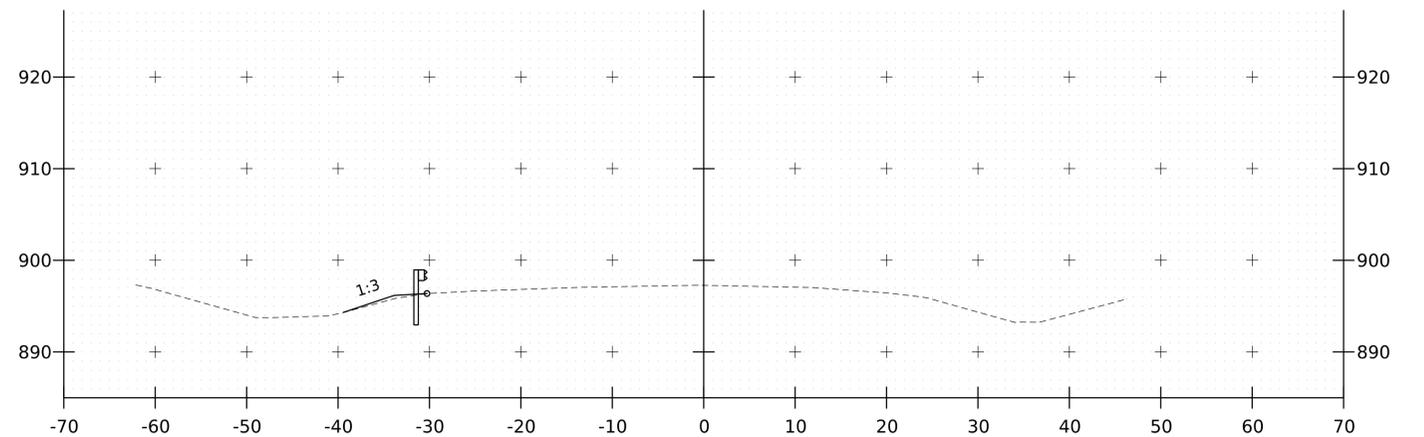
END MILL AND OVERLAY



1089+50



1089+25



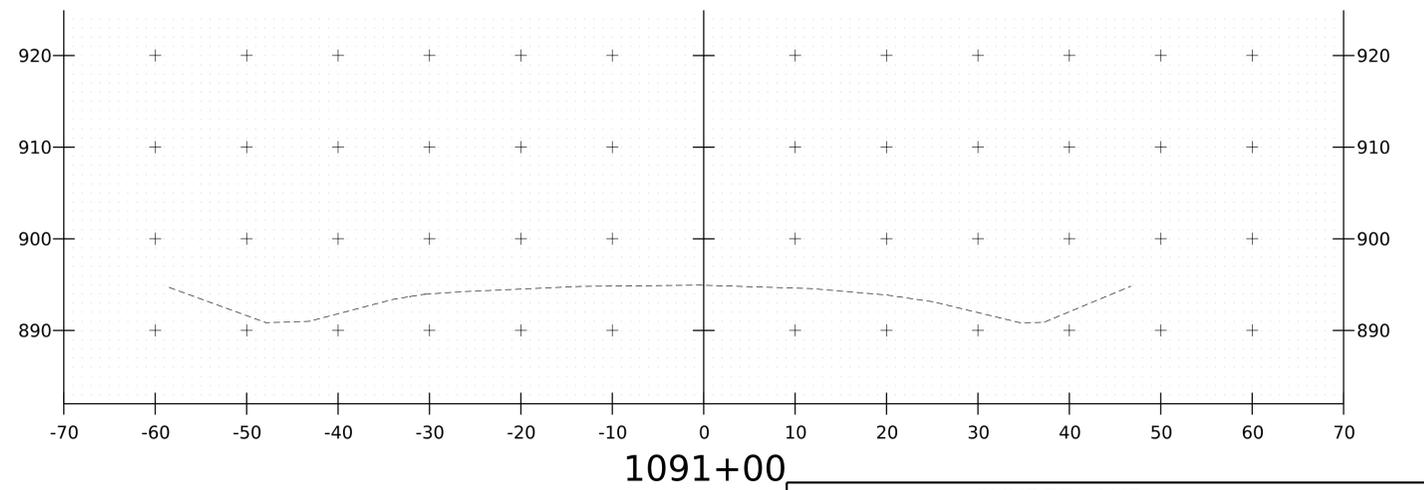
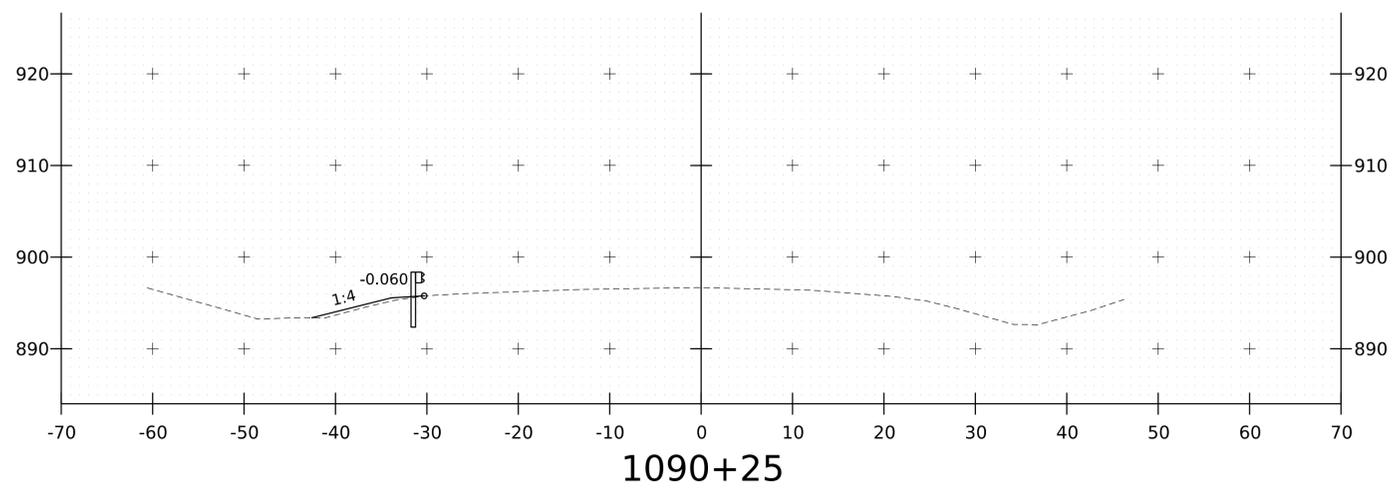
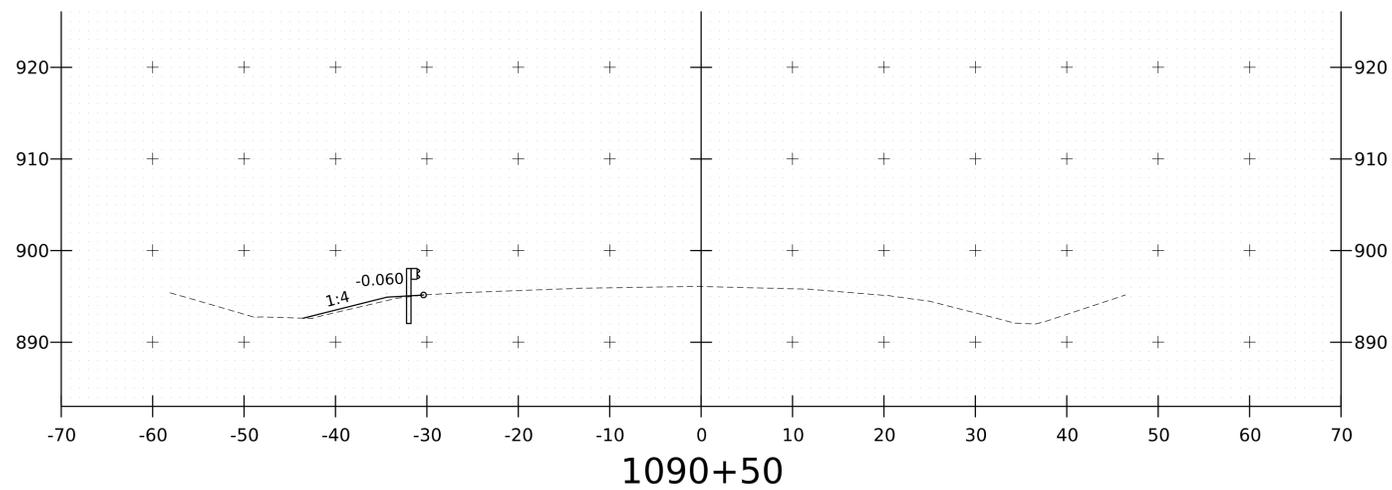
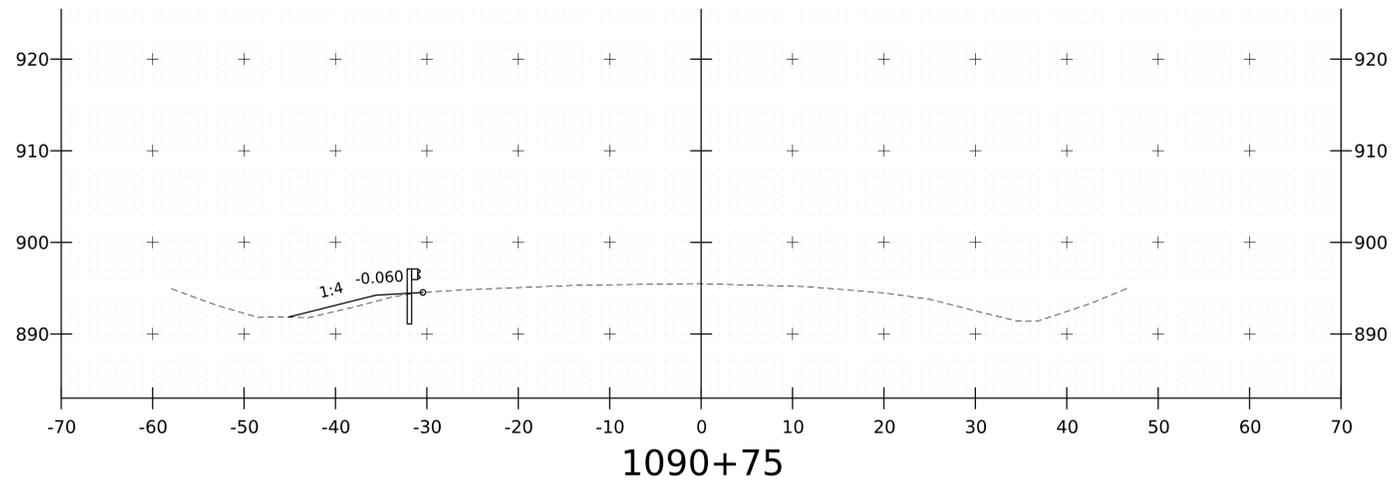
1090+00

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: NH CULV(122)

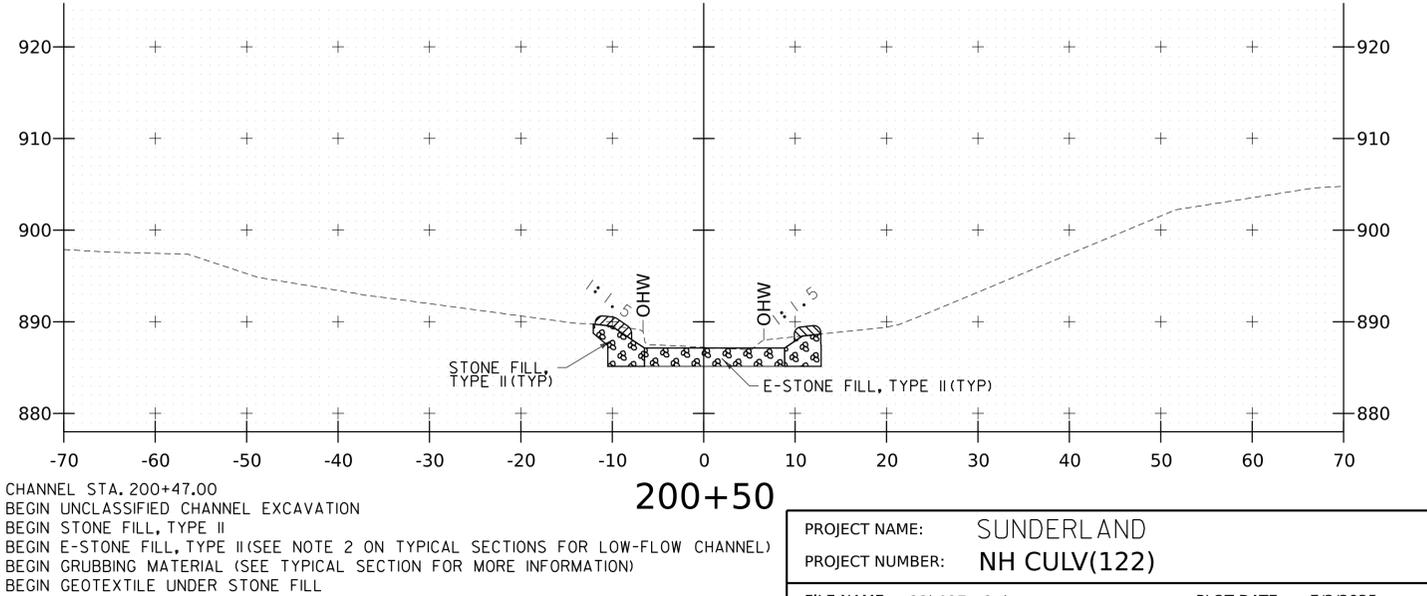
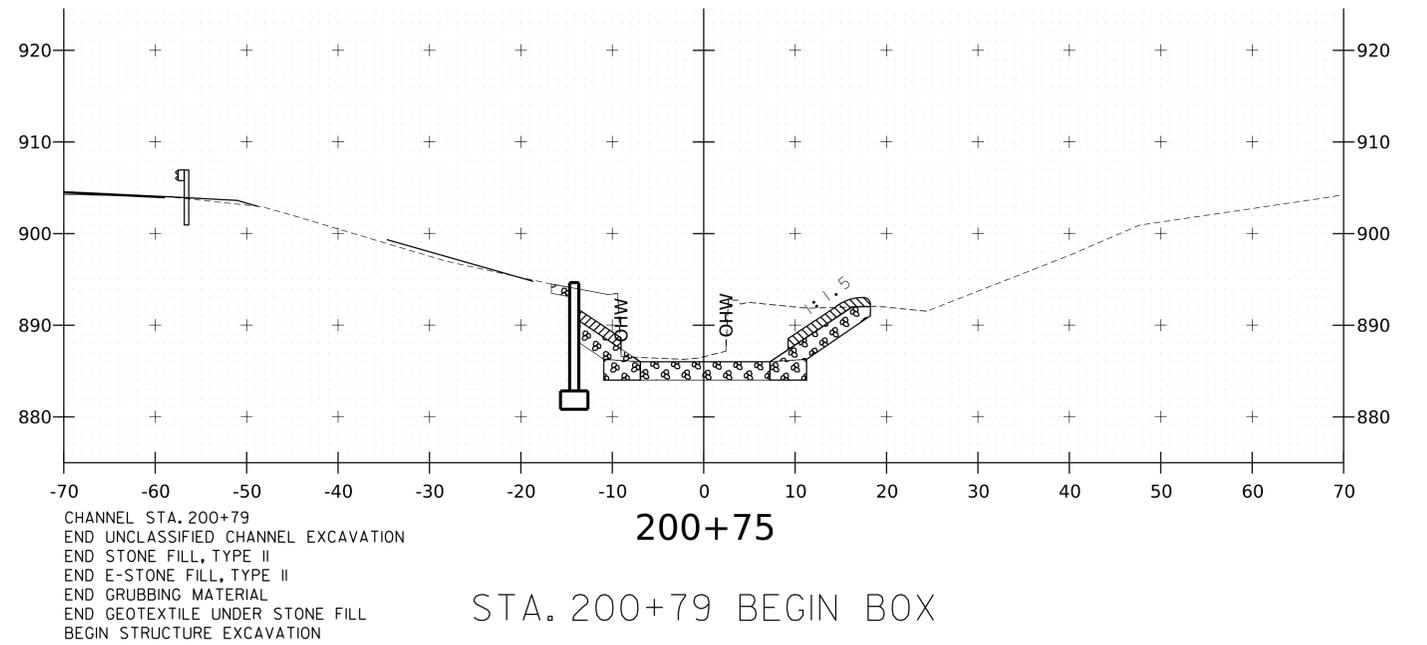
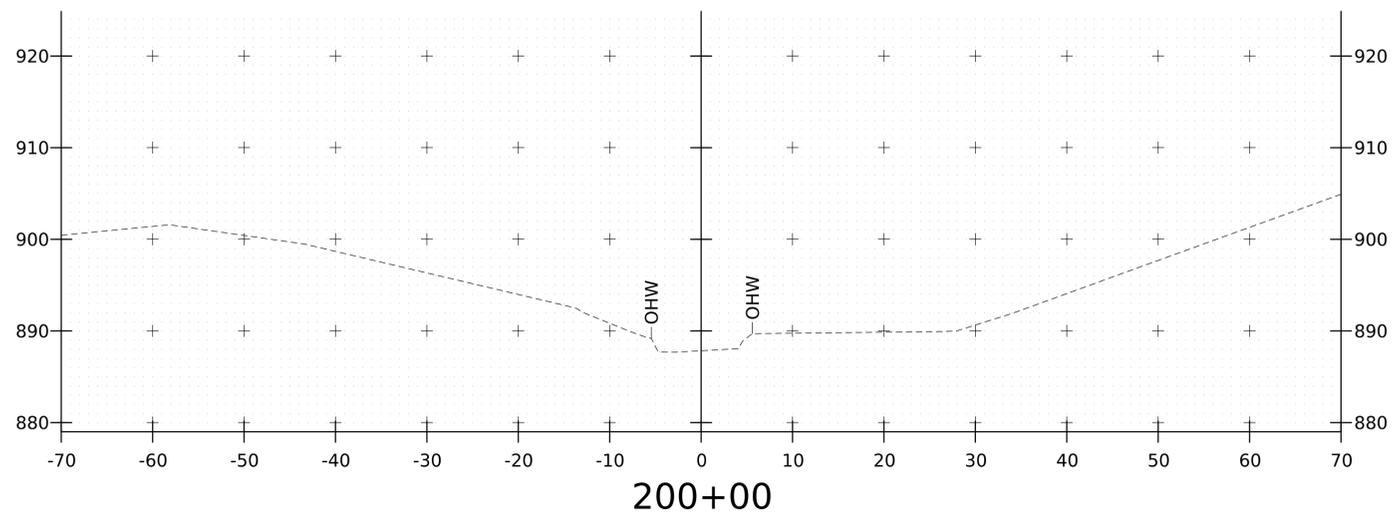
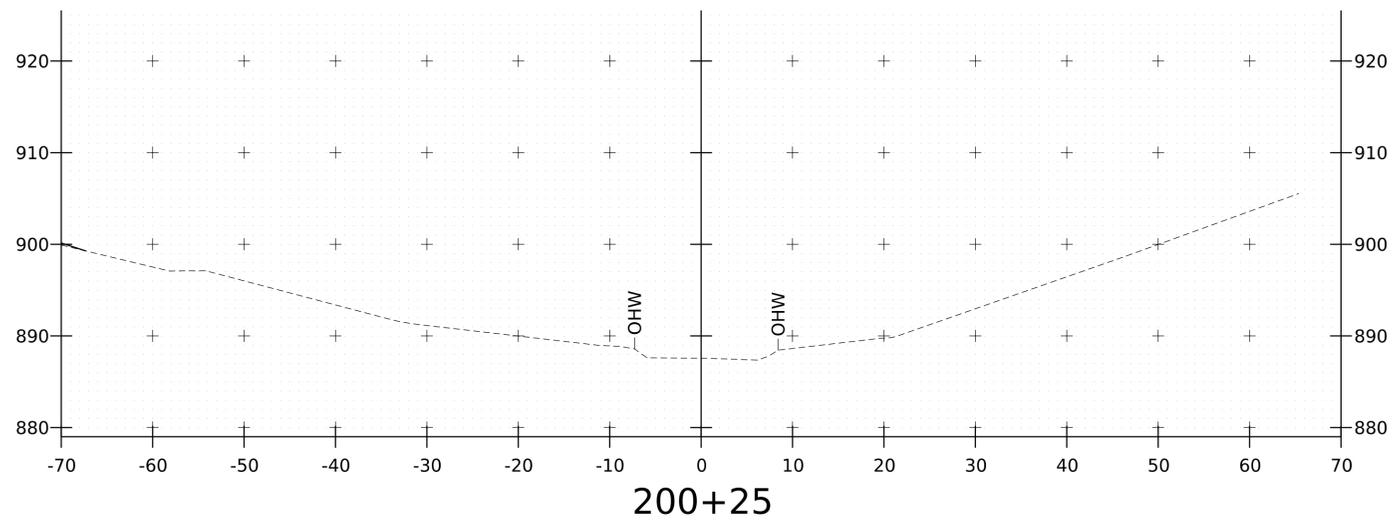
FILE NAME: z23b027xs1.dgn  
PROJECT LEADER: A. STOCKIN  
DESIGNED BY: M. GROTE  
MAINLINE CROSS SECTIONS 4

PLOT DATE: 7/2/2025  
DRAWN BY: M. HERMIS  
CHECKED BY: T. HIGGINSON  
SHEET 53 OF 65

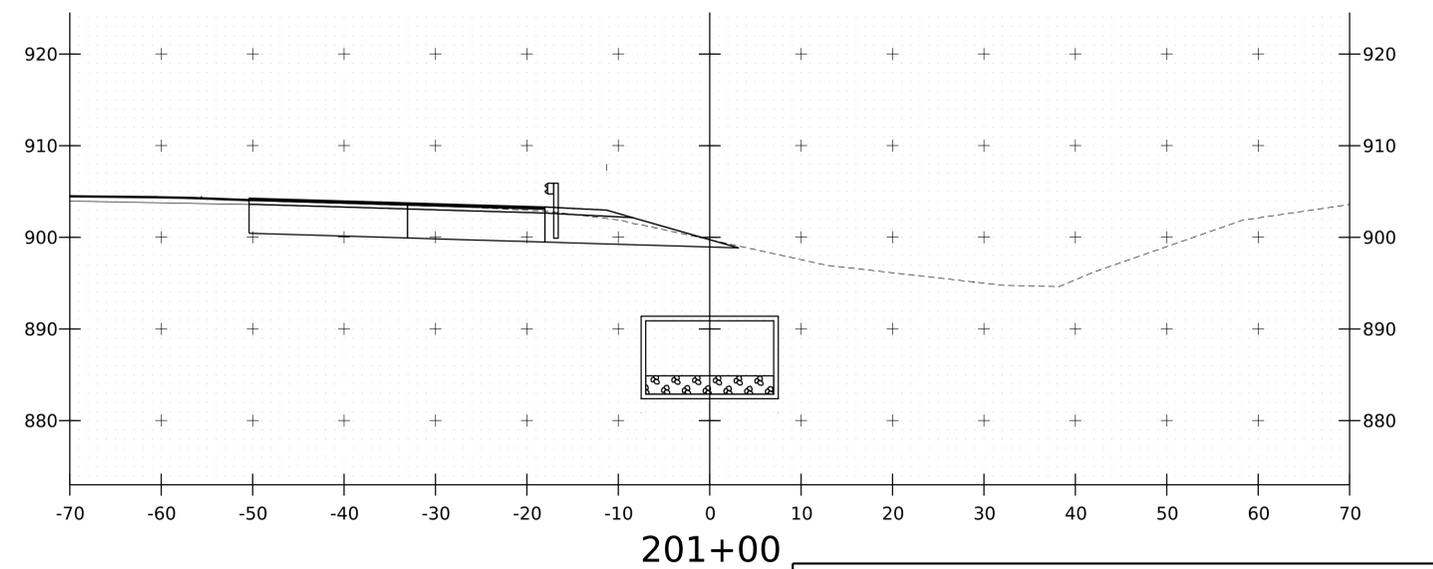
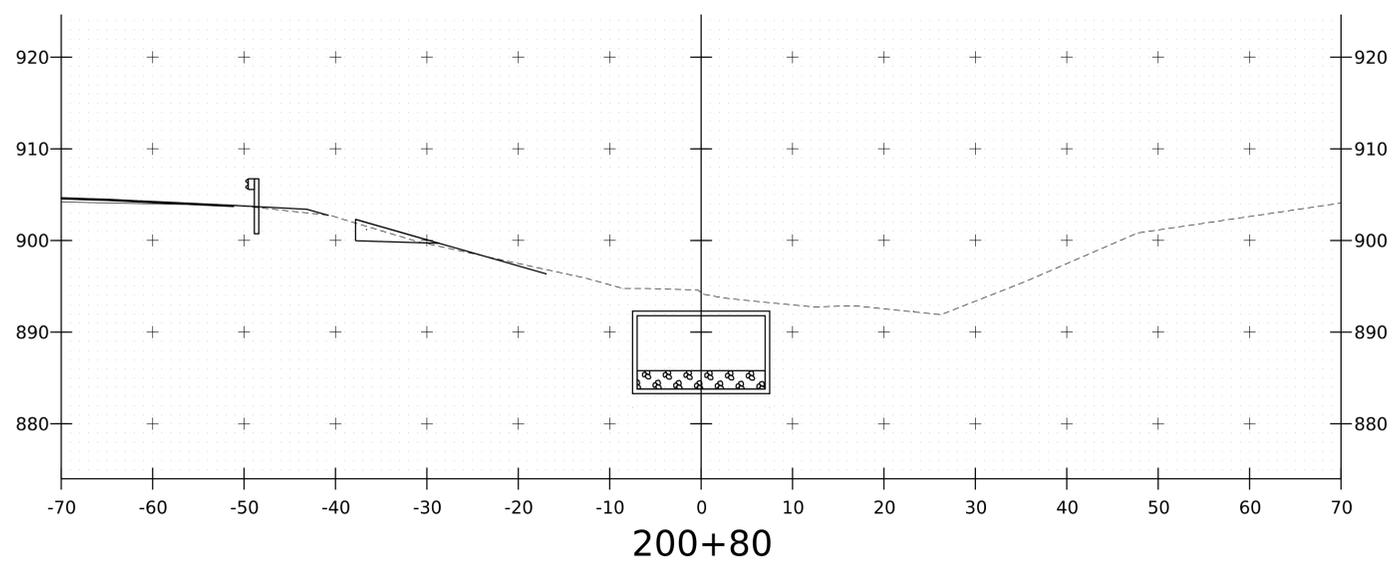
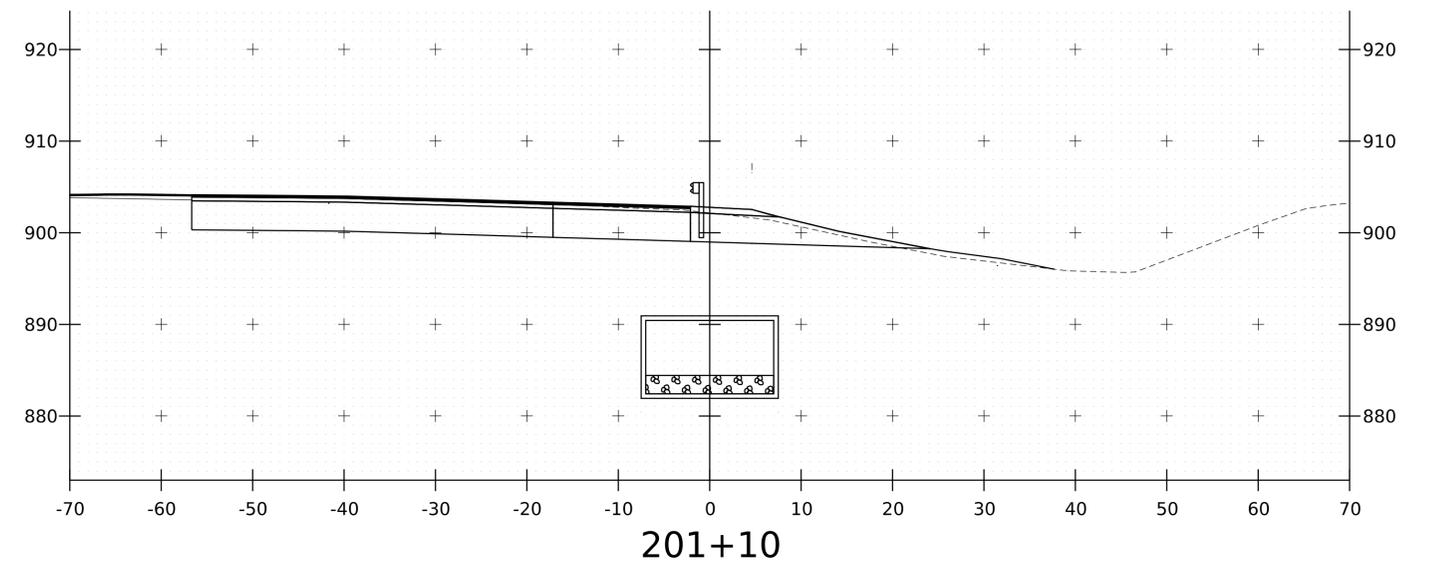
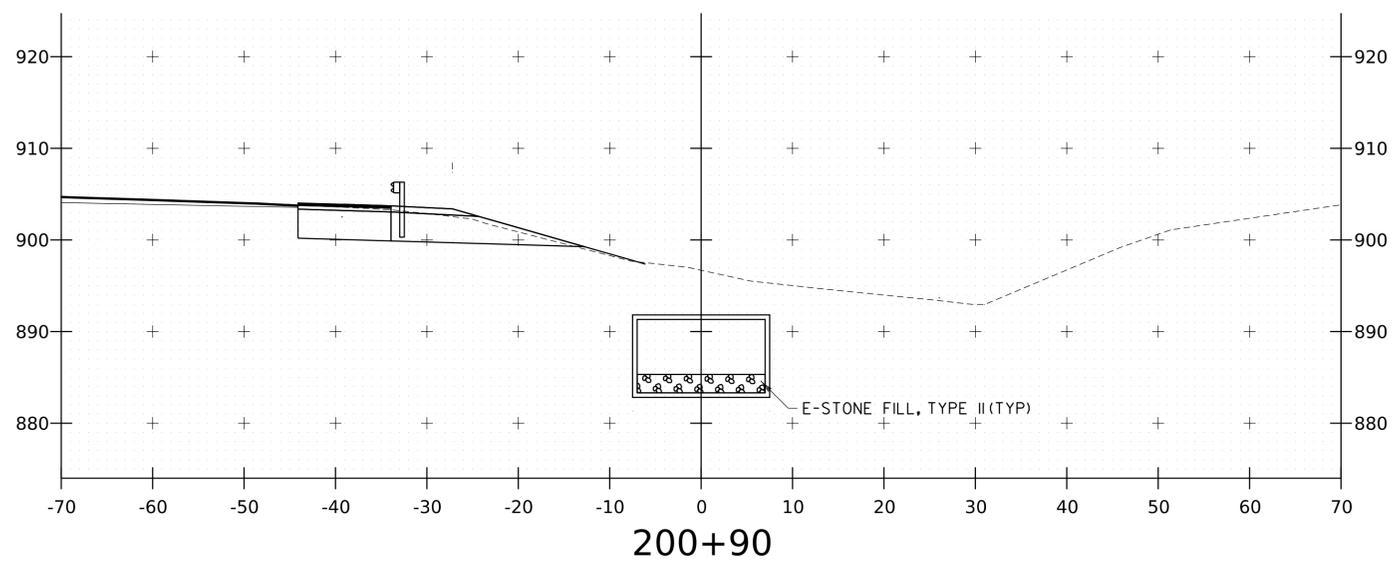




PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/2/2025
PROJECT NUMBER:	NH CULV(122)	DRAWN BY:	M. HERMIS
FILE NAME:	z23b027xs1.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	SHEET	54 OF 65
DESIGNED BY:	M. GROTE		
MAINLINE CROSS SECTIONS	5		



PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/2/2025
PROJECT NUMBER:	NH CULV(122)	DRAWN BY:	M. HERMIS
FILE NAME:	z23b027xs2.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	CULVERT CROSS SECTIONS 1	SHEET 55 OF 65
DESIGNED BY:	M. GROTE		

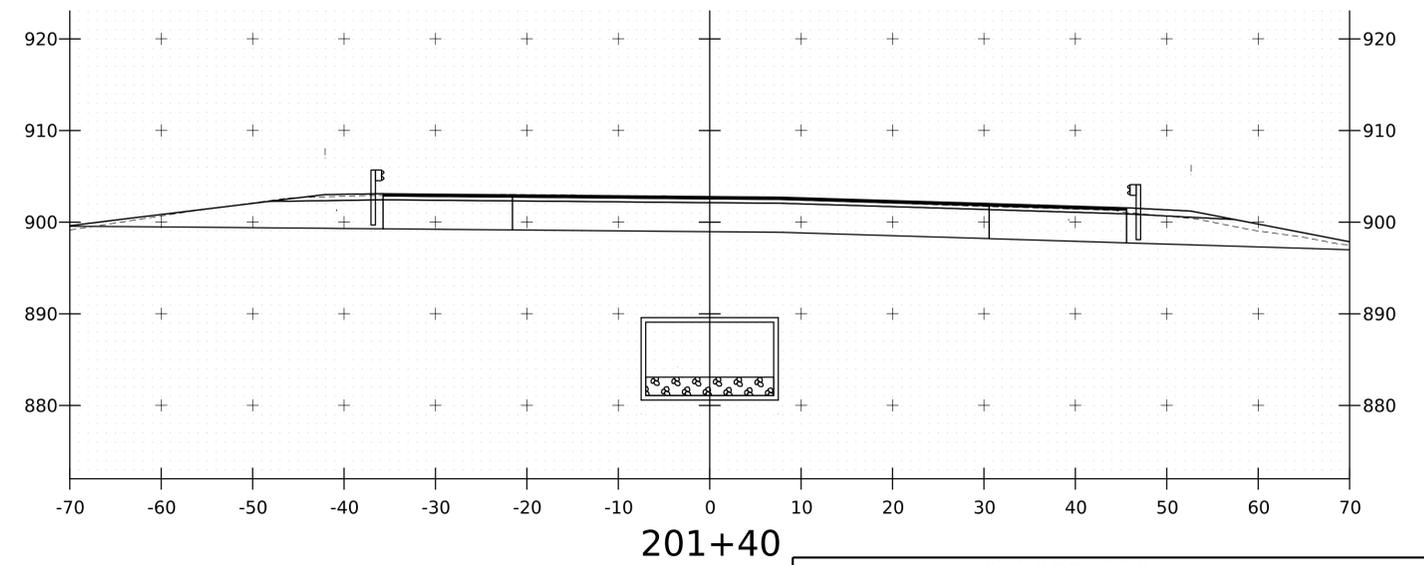
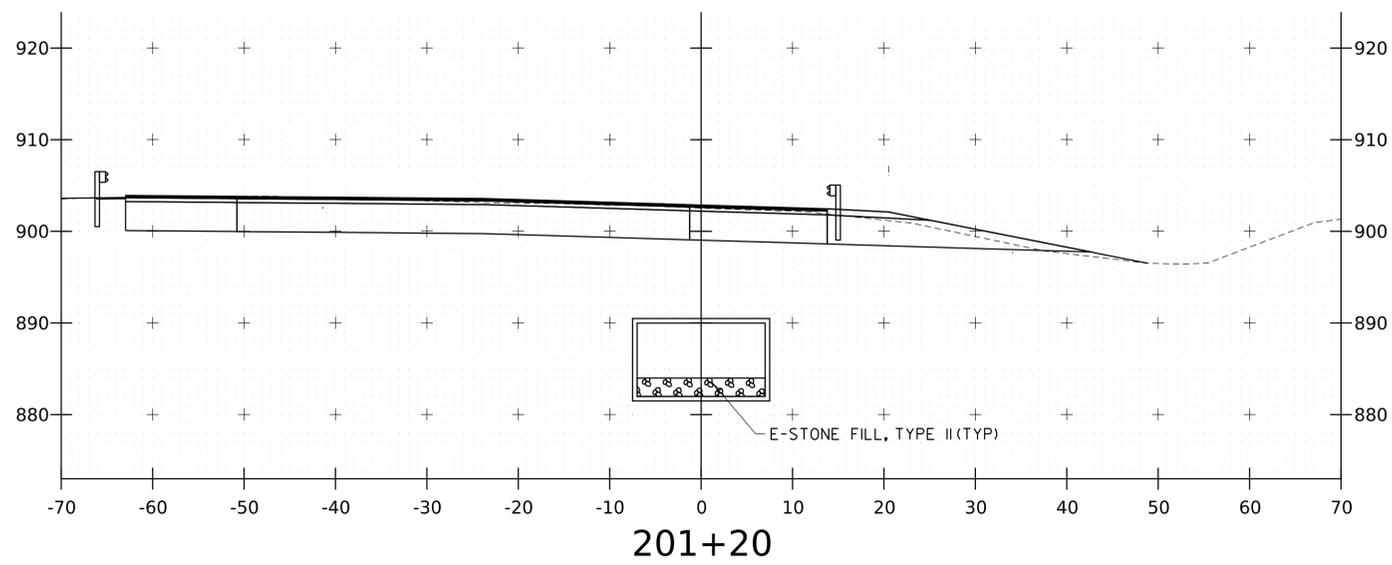
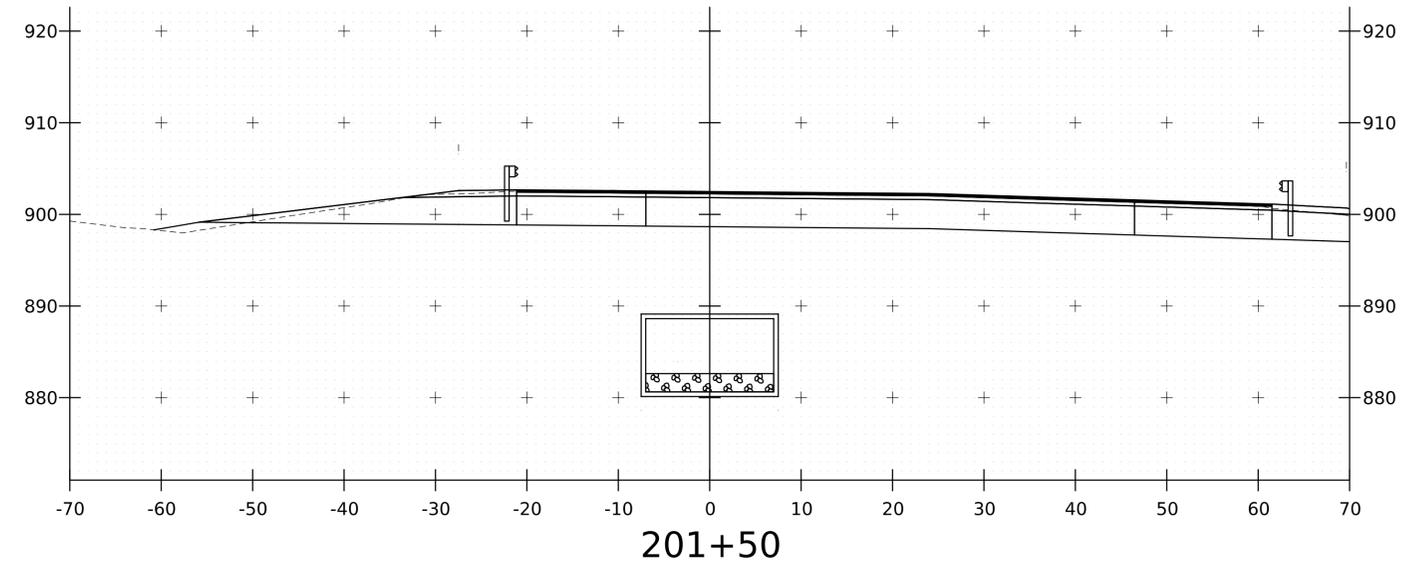
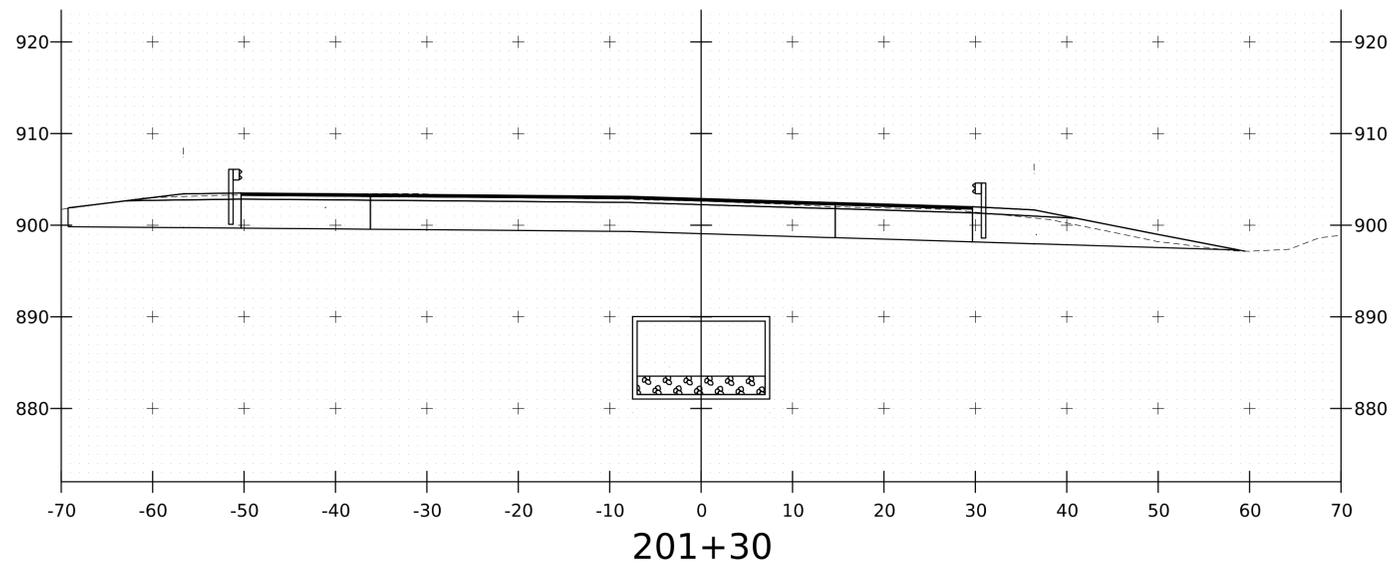


PROJECT NAME: SUNDERLAND  
 PROJECT NUMBER: NH CULV(122)

FILE NAME: z23b027xs2.dgn  
 PROJECT LEADER: A. STOCKIN  
 DESIGNED BY: M. GROTE  
 CULVERT CROSS SECTIONS 2

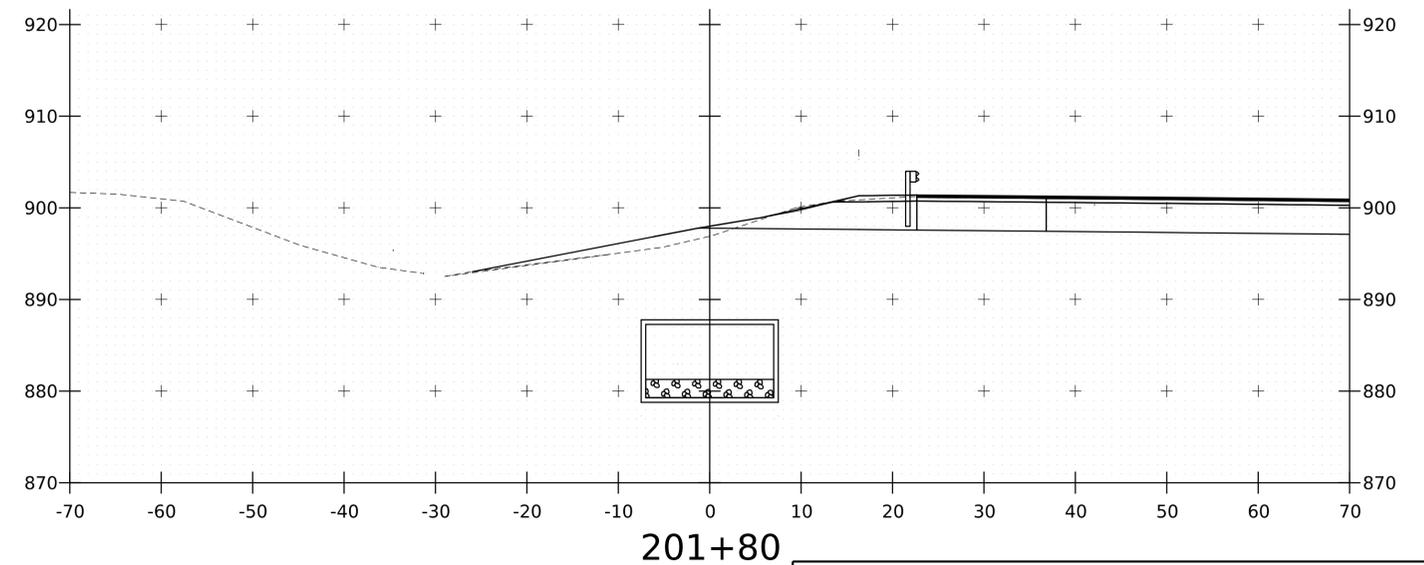
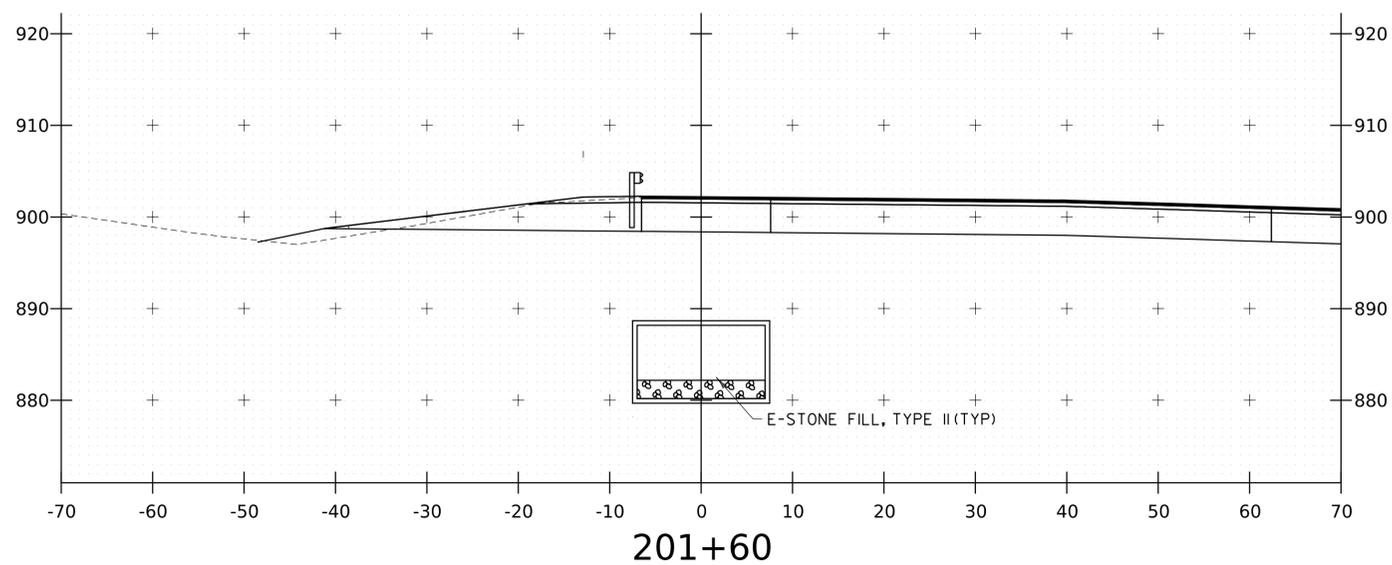
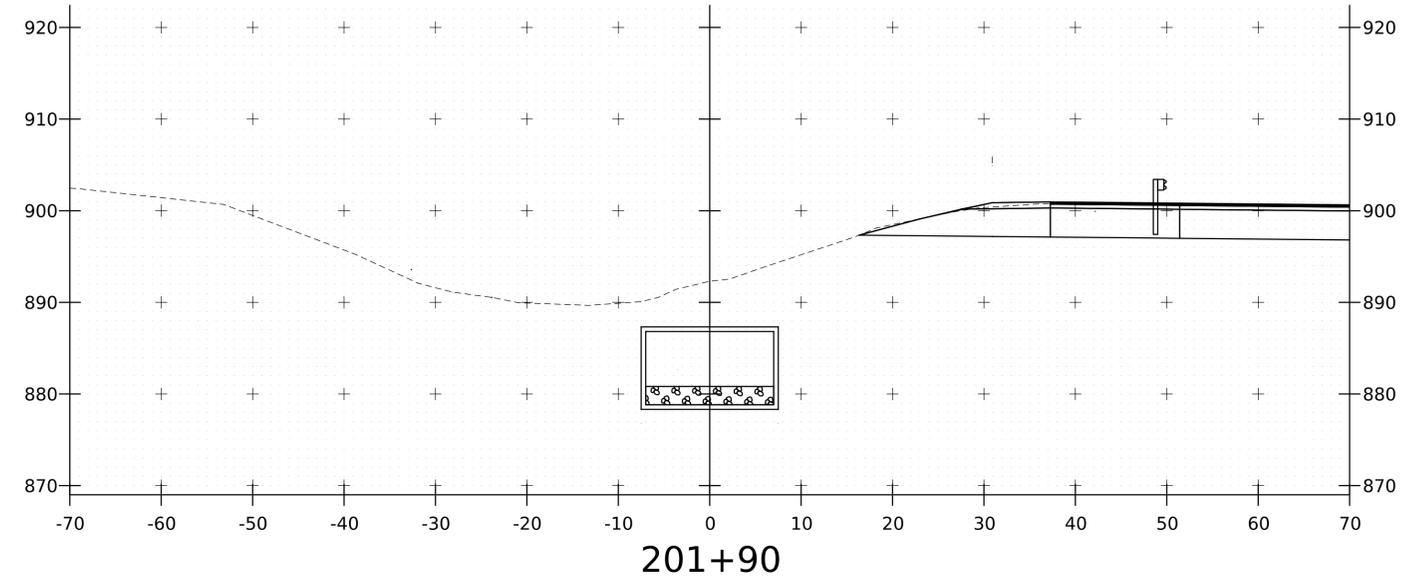
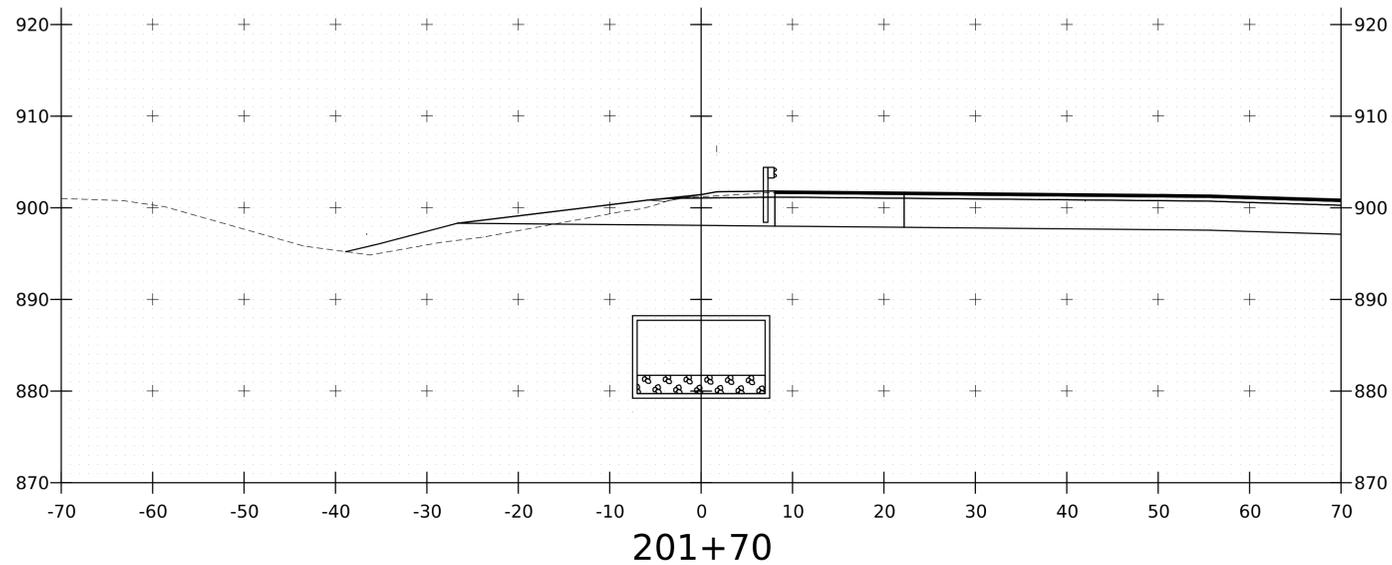
PLOT DATE: 7/2/2025  
 DRAWN BY: M. HERMIS  
 CHECKED BY: T. HIGGINSON  
 SHEET 56 OF 65





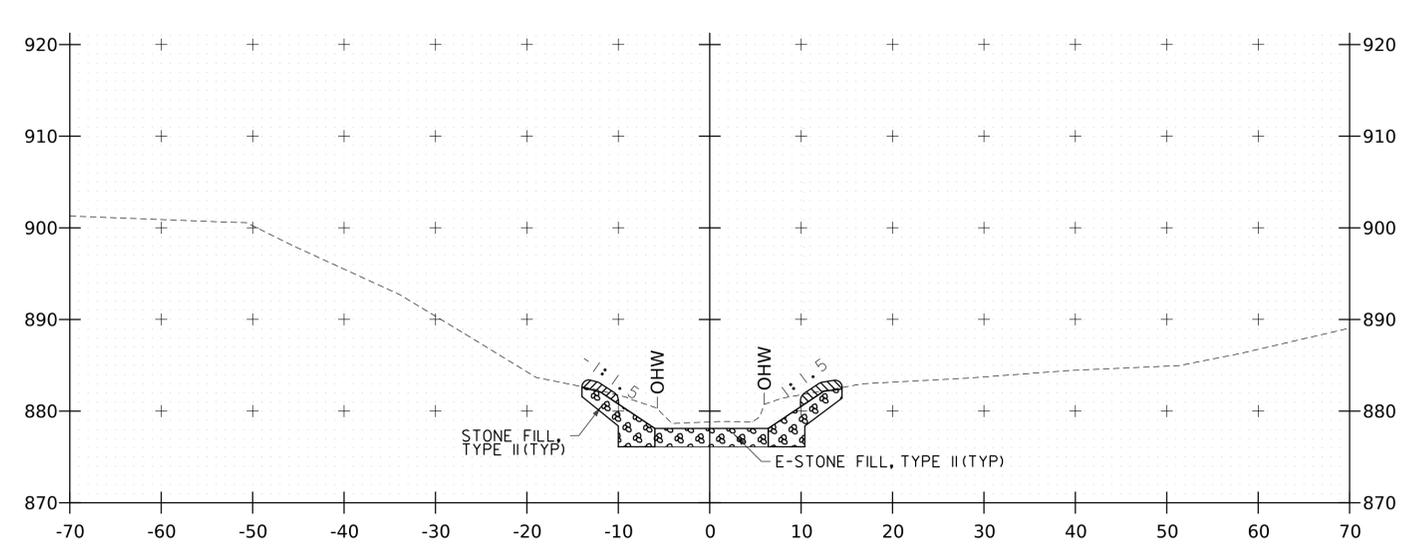
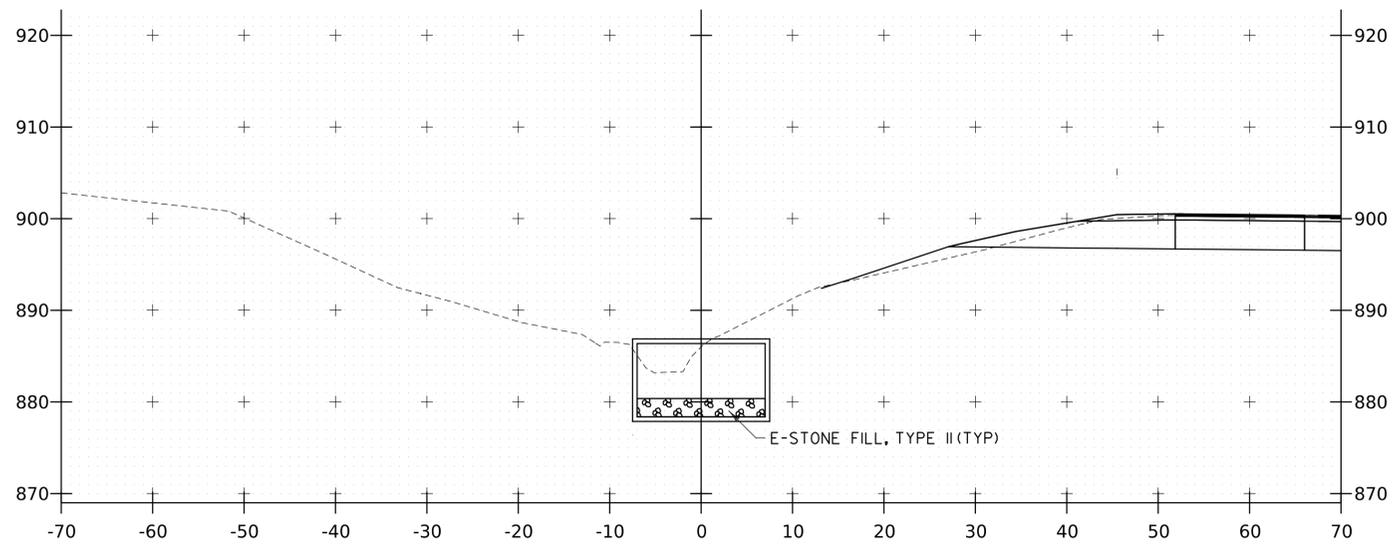
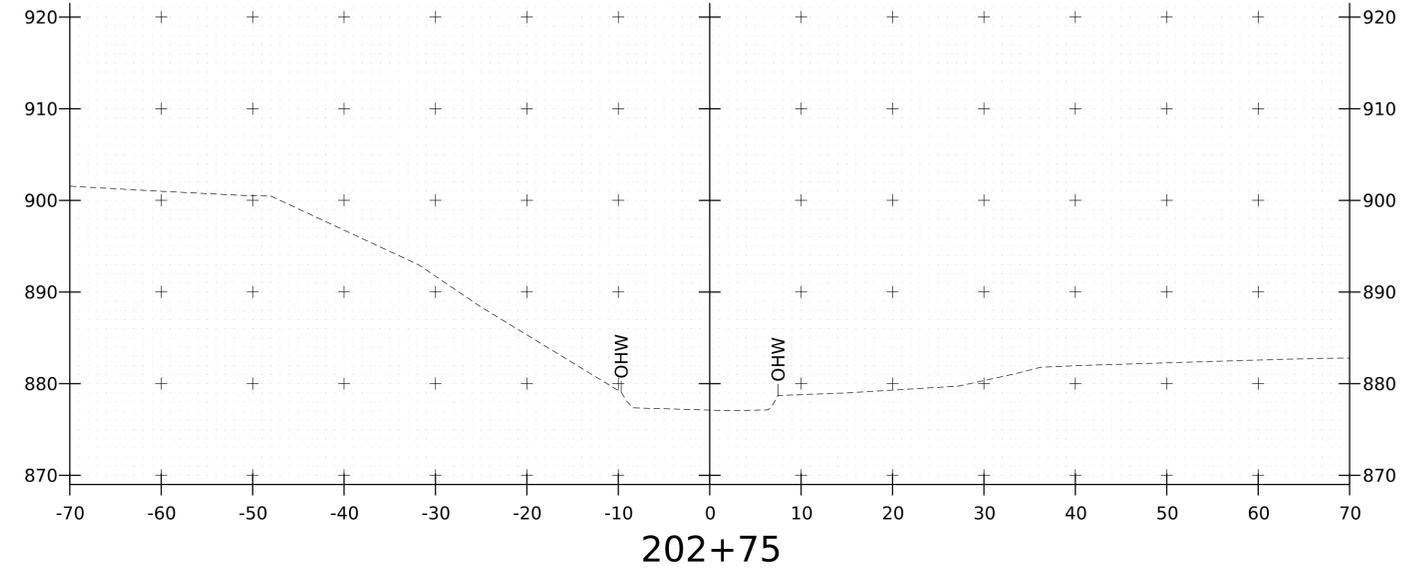
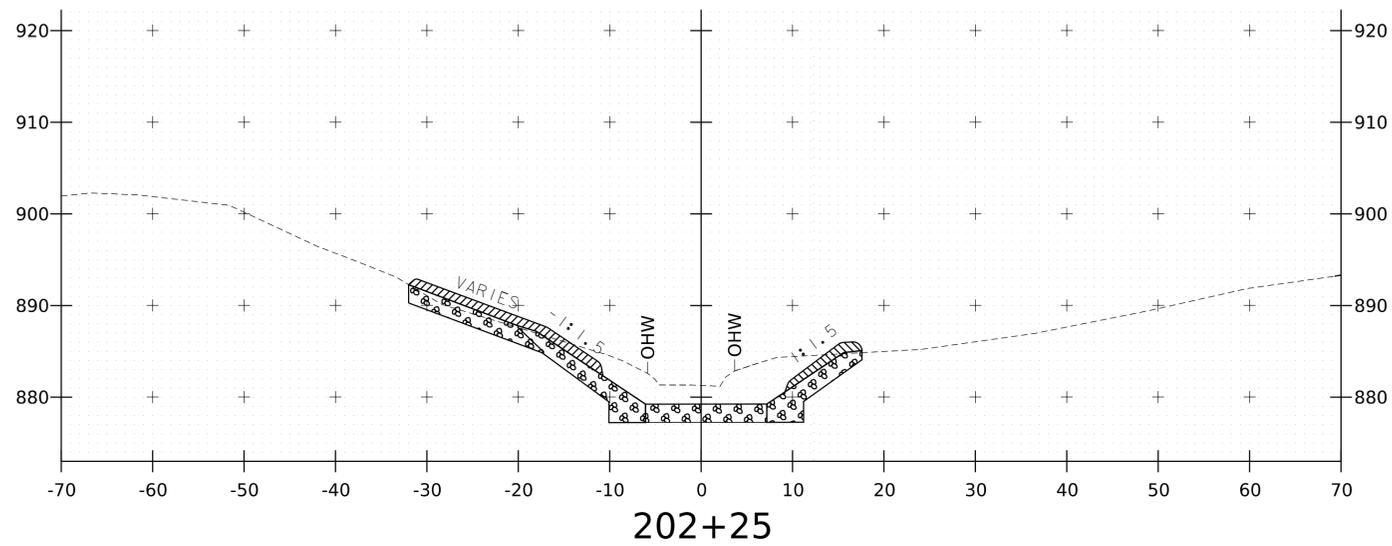
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PROJECT NUMBER:	NH CULV(122)	DRAWN BY:	M. HERMIS
FILE NAME:	z23b027xs2.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	CULVERT CROSS SECTIONS 3	SHEET 57 OF 65
DESIGNED BY:	M. GROTE		





PROJECT NAME:	SUNDERLAND	PLOT DATE:	7/2/2025
PROJECT NUMBER:	NH CULV(122)	DRAWN BY:	M. HERMIS
FILE NAME:	z23b027xs2.dgn	CHECKED BY:	T. HIGGINSON
PROJECT LEADER:	A. STOCKIN	SHEET	58 OF 65
DESIGNED BY:	M. GROTE		
CULVERT CROSS SECTIONS 4			





CHANNEL STA. 202+04  
 BEGIN UNCLASSIFIED CHANNEL EXCAVATION  
 BEGIN STONE FILL, TYPE II  
 BEGIN E-STONE FILL, TYPE II (SEE NOTE 2 ON TYPICAL SECTIONS FOR LOW-FLOW CHANNEL)  
 BEGIN GRUBBING MATERIAL (SEE TYPICAL SECTION FOR MORE INFORMATION)  
 BEGIN GEOTEXTILE UNDER STONE FILL  
 END STRUCTURE EXCAVATION

202+00  
 STA. 202+04 END BOX

CHANNEL STA. 202+58.35  
 END UNCLASSIFIED CHANNEL EXCAVATION  
 END STONE FILL, TYPE II  
 END E-STONE FILL, TYPE II  
 END GRUBBING MATERIAL  
 END GEOTEXTILE UNDER STONE FILL

202+50

PROJECT NAME: SUNDERLAND  
 PROJECT NUMBER: NH CULV(122)

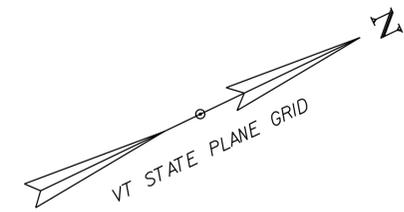
FILE NAME: z23b027xs2.dgn  
 PROJECT LEADER: A. STOCKIN  
 DESIGNED BY: M. GROTE  
 CULVERT CROSS SECTIONS 5

PLOT DATE: 7/15/2025  
 DRAWN BY: M. HERMIS  
 CHECKED BY: T. HIGGINSON  
 SHEET 59 OF 65

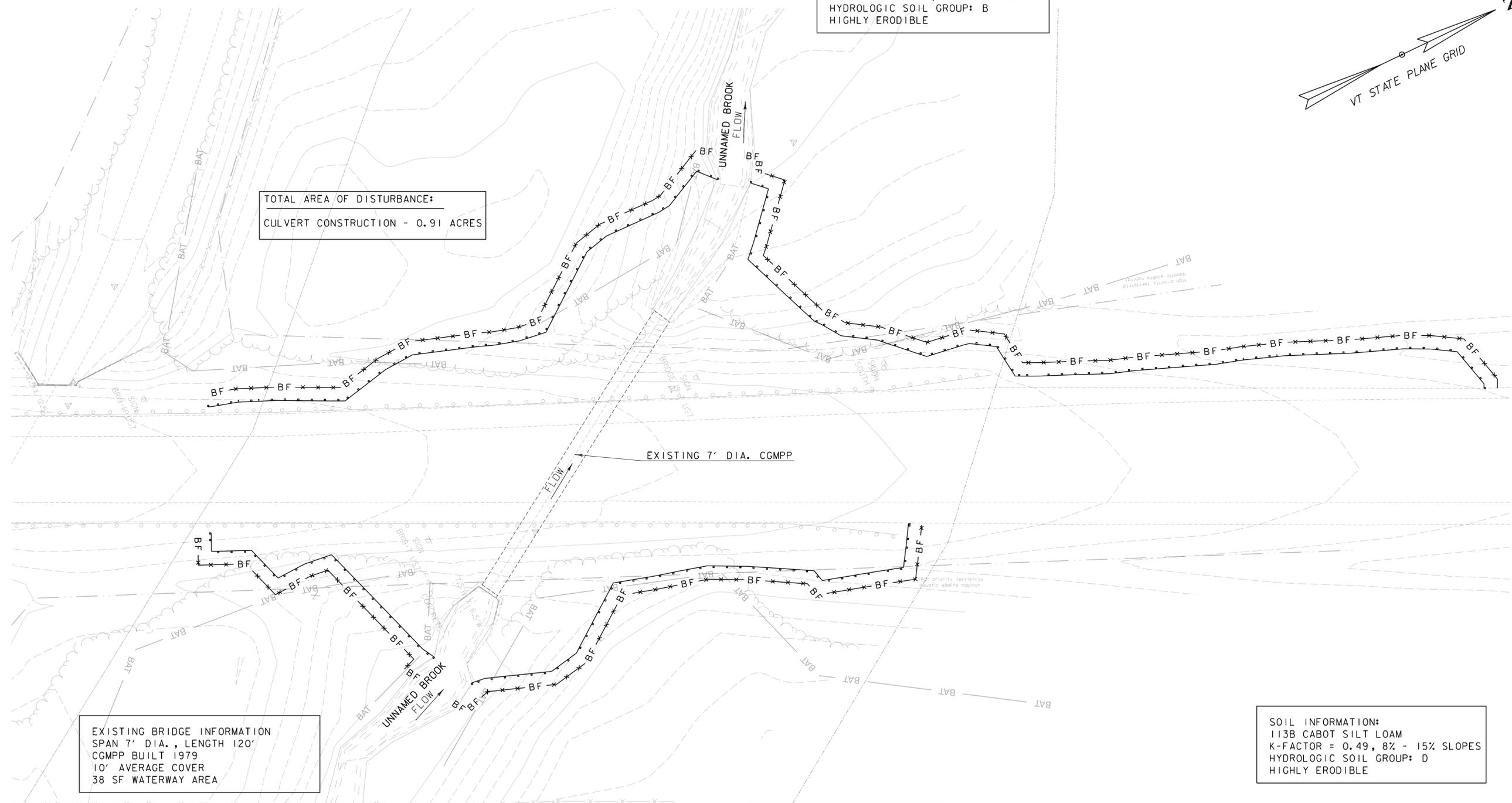


SOIL INFORMATION:  
 108B PERU FINE SANDY LOAM  
 K-FACTOR = 0.32, 0% - 8% SLOPES  
 HYDROLOGIC SOIL GROUP: C/D  
 HIGHLY ERODIBLE

SOIL INFORMATION:  
 105C MONADNOCK FINE SANDY LOAM  
 K-FACTOR = 0.37, 8% - 15% SLOPES  
 HYDROLOGIC SOIL GROUP: B  
 HIGHLY ERODIBLE



TOTAL AREA OF DISTURBANCE:  
 CULVERT CONSTRUCTION - 0.91 ACRES



EXISTING BRIDGE INFORMATION  
 SPAN 7' DIA., LENGTH 120'  
 CGMP BUILT 1979  
 10' AVERAGE COVER  
 38 SF WATERWAY AREA

SOIL INFORMATION:  
 113B CABOT SILT LOAM  
 K-FACTOR = 0.49, 8% - 15% SLOPES  
 HYDROLOGIC SOIL GROUP: D  
 HIGHLY ERODIBLE

APPROX. EXISTING R.O.W.

BEAVER VALLEY INC. C/O JAMES KRON

EXISTING EPSC SITE PLAN

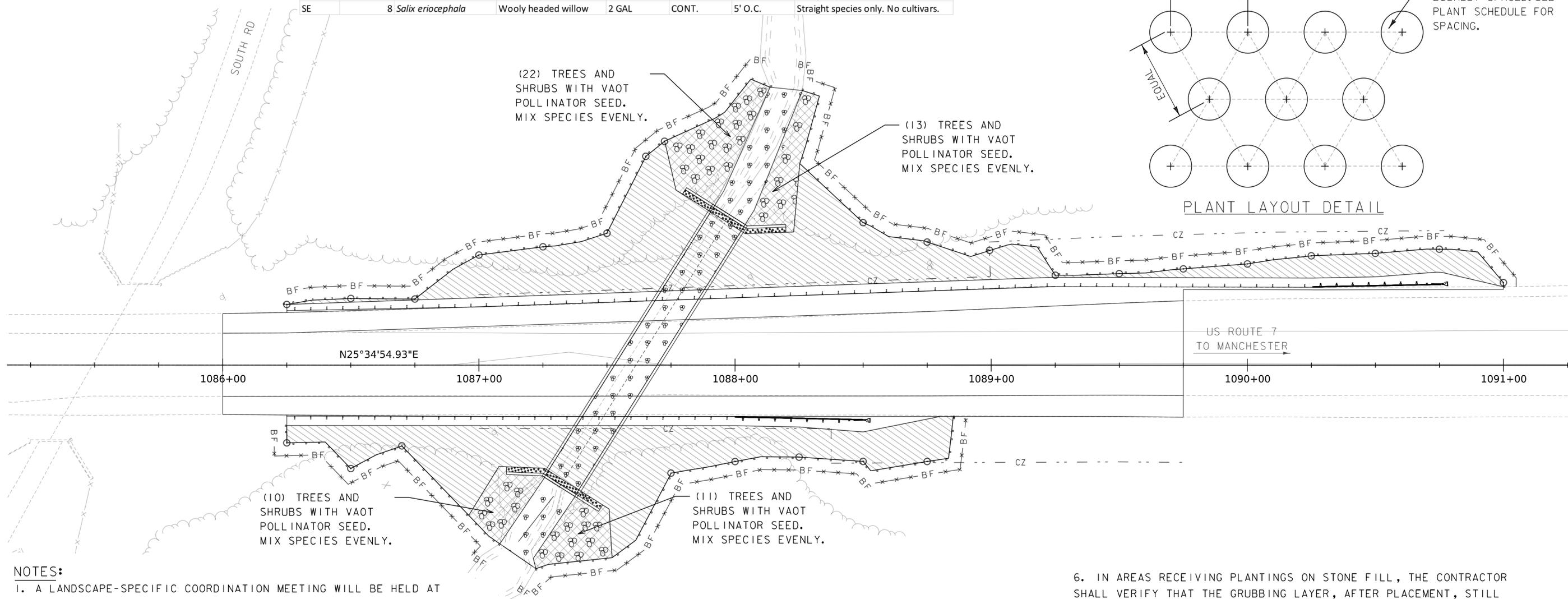
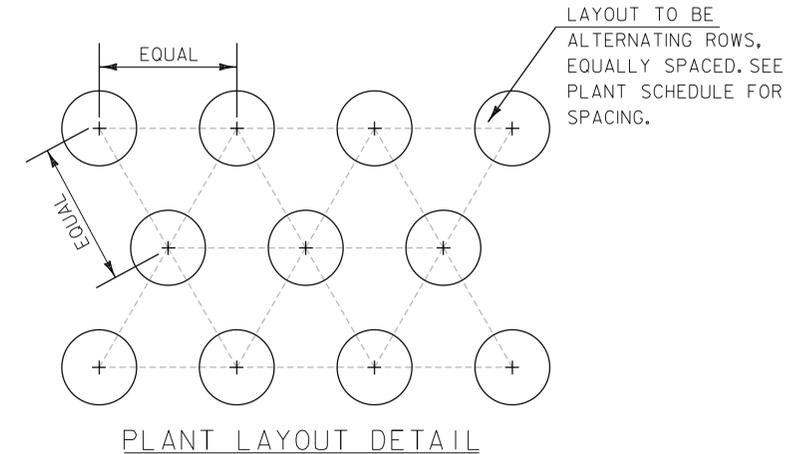
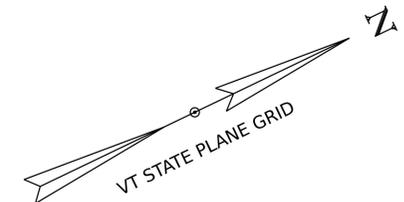


PROJECT NAME: SUNDERLAND	PLOT DATE: 7/2/2025
PROJECT NUMBER: NH CULV(122)	DRAWN BY: M. HERMIS
FILE NAME: z23b027r.s.dgn	CHECKED BY: T. HIGGINSON
PROJECT LEADER: A. STOCKIN	SHEET 60 OF 65
DESIGNED BY: M. GROTE	
EXISTING EPSC SITE PLAN	

LEGEND:

-  VAOT POLLINATOR DRY SEED MIX
-  TREES & SHRUBS W/ VAOT POLLINATOR DRY SEED MIX

KEY	QUANTITY	SCIENTIFIC NAME	COMMON NAME	SIZE	CONTAINER	SPACING (ON CENTER)	NOTES
<b>TREES - DECIDUOUS</b>							
AR	8	<i>Acer rubrum</i>	Red Maple	5-6' height	CONT.	5' O.C.	Straight species only. No cultivars.
AS	8	<i>Acer saccharum</i>	Sugar Maple	5-6' height	CONT.	5' O.C.	Straight species only. No cultivars.
TA	8	<i>Tilia americana</i>	Basswood	5-6' height	CONT.	5' O.C.	Straight species only. No cultivars.
<b>SHRUBS - DECIDUOUS</b>							
CS	8	<i>Cornus sericea</i>	Red twig dogwood	2 GAL	CONT.	5' O.C.	Straight species only. No cultivars.
RT	8	<i>Rhus typhina</i>	Staghorn sumac	2 GAL	CONT.	5' O.C.	Straight species only. No cultivars.
SD	8	<i>Salix discolor</i>	Common pussy willow	2 GAL	CONT.	5' O.C.	Straight species only. No cultivars.
SE	8	<i>Salix eriocephala</i>	Wooly headed willow	2 GAL	CONT.	5' O.C.	Straight species only. No cultivars.



NOTES:

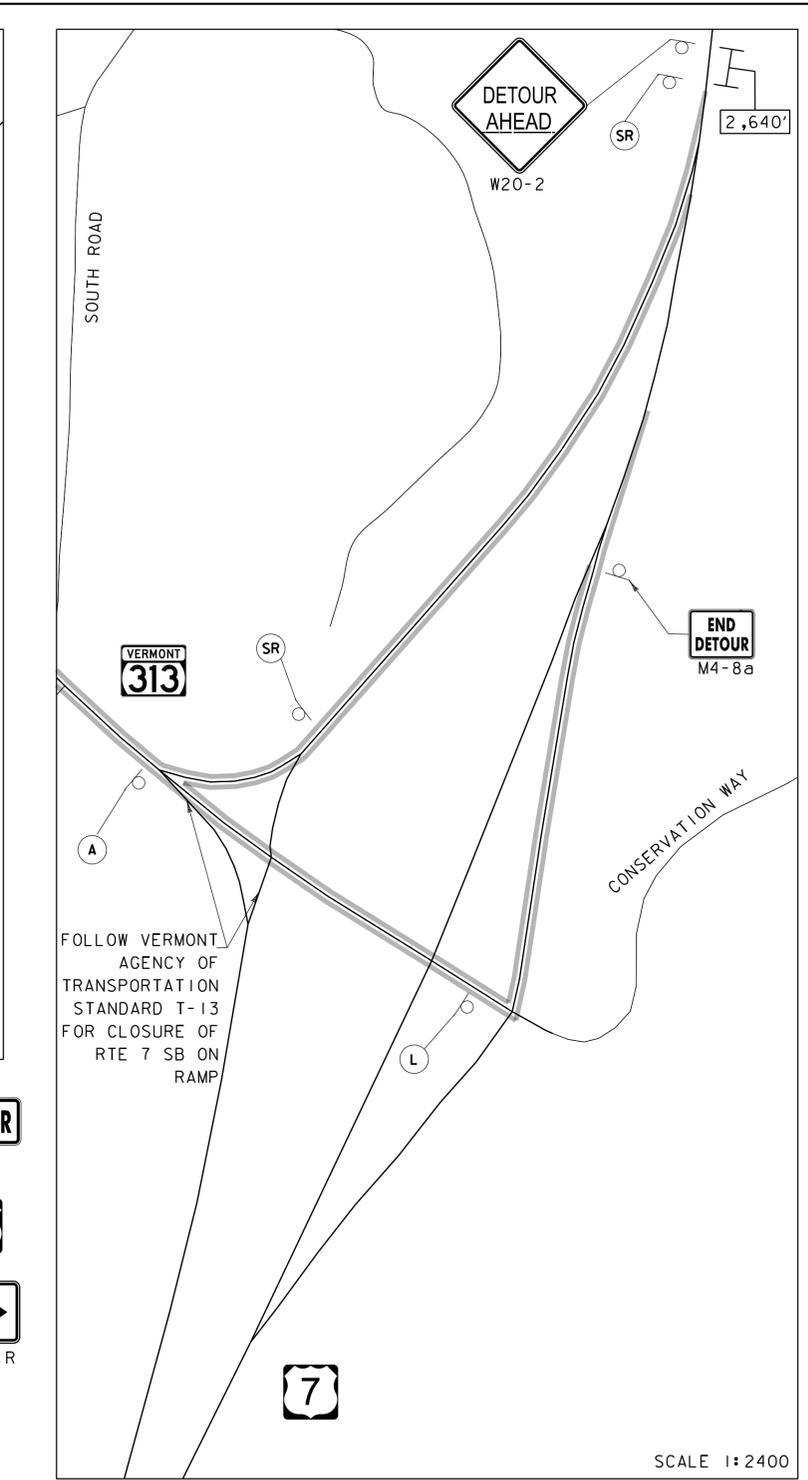
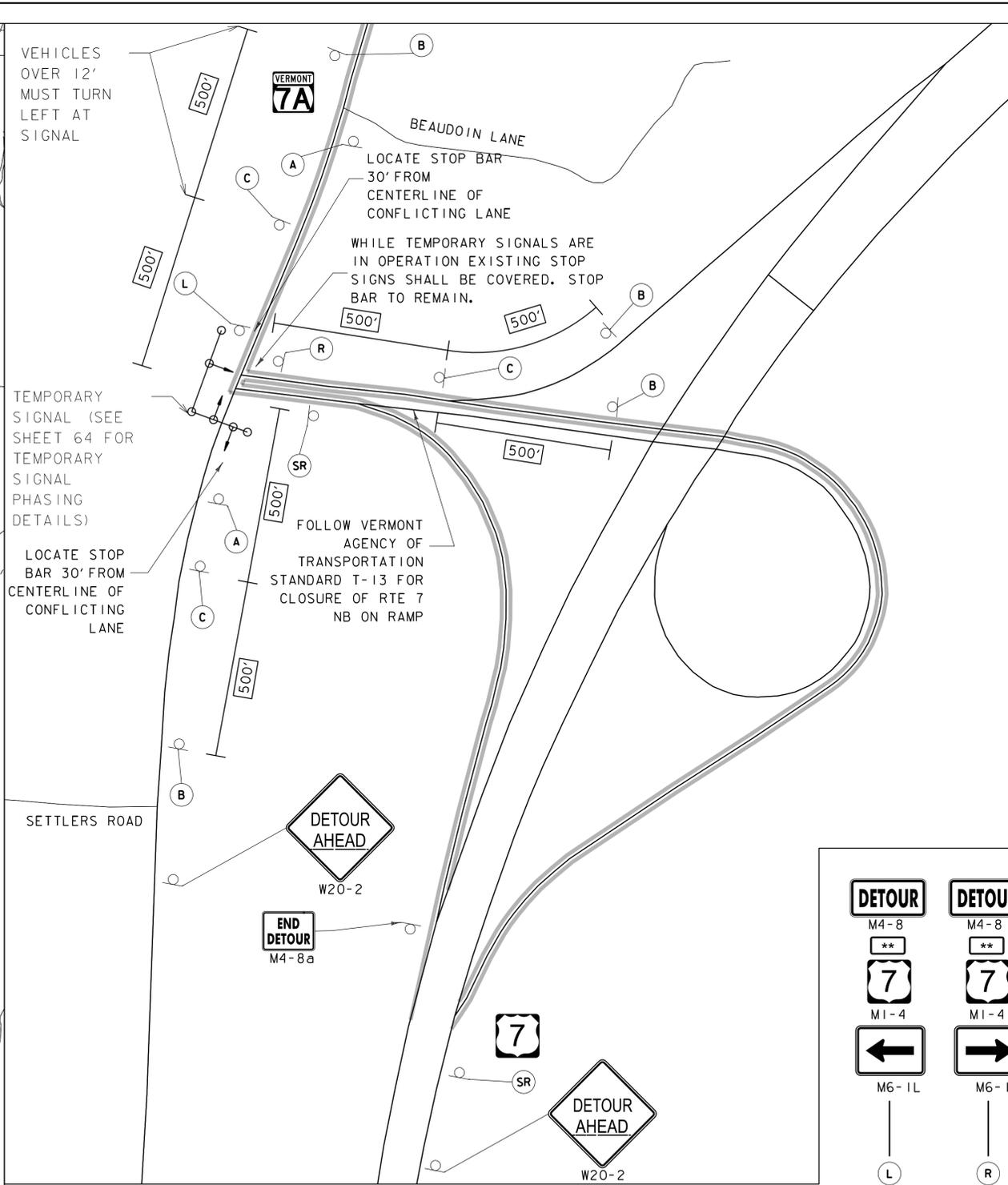
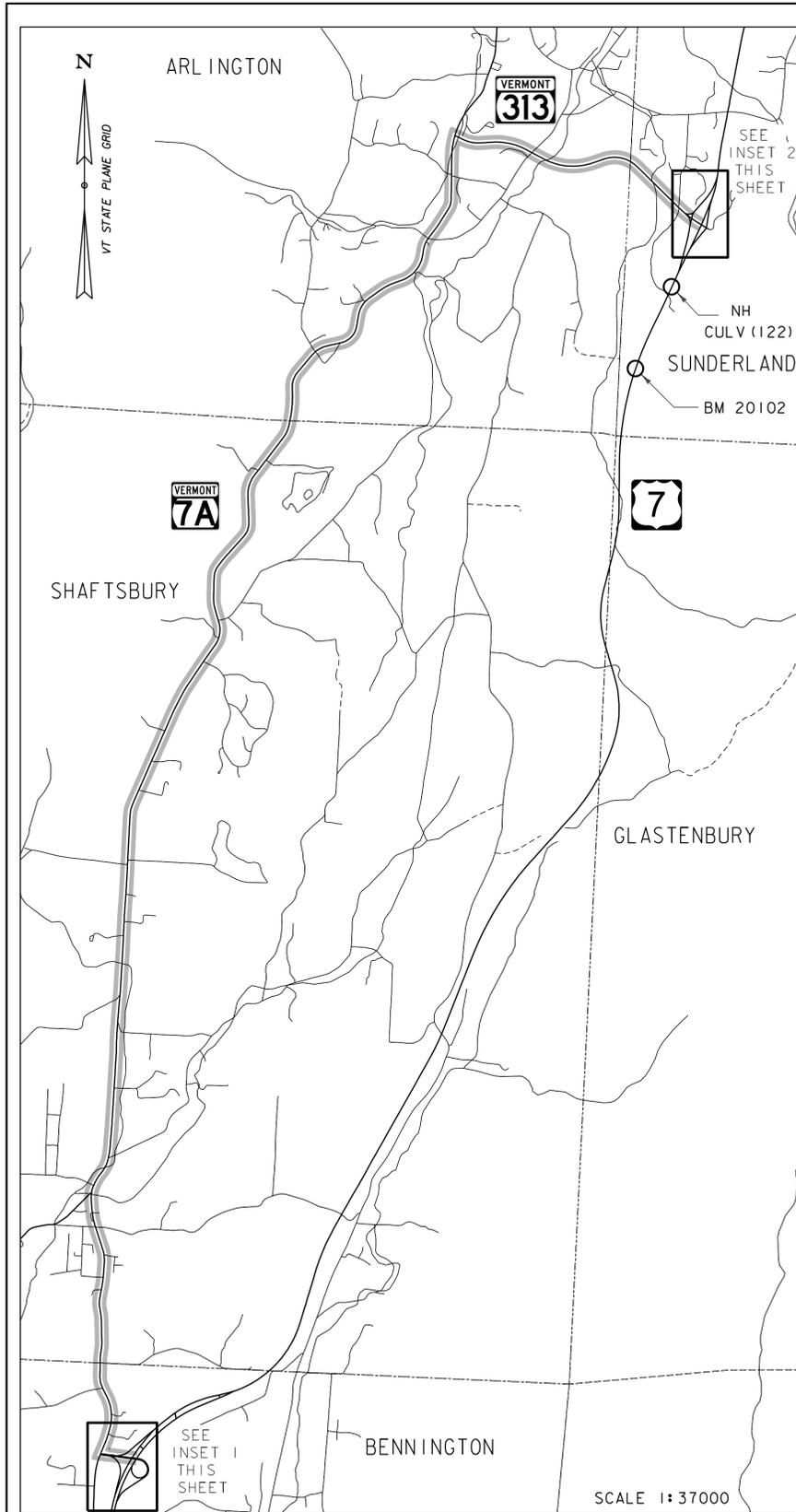
1. A LANDSCAPE-SPECIFIC COORDINATION MEETING WILL BE HELD AT LEAST 30 CALENDAR DAYS PRIOR TO LANDSCAPE INSTALLATION WITH THE LANDSCAPE SUBCONTRACTOR, PRIME CONTRACTOR, ENGINEER, AOT CONSTRUCTION ENVIRONMENTAL ENGINEER, AND EITHER THE AOT LANDSCAPE ARCHITECT OR THE CONSTRUCTION LANDSCAPE INSPECTOR
2. THE AOT LANDSCAPE ARCHITECT OR CONSTRUCTION LANDSCAPE INSPECTOR SHALL BE ON SITE TO CONFIRM PLANT SPECIES AND HEALTH, APPROVE PLANT LAYOUT, AND OBSERVE INSTALLATION. NOTIFY THE AOT LANDSCAPE ARCHITECT OR CONSTRUCTION LANDSCAPE INSPECTOR AT LEAST 7 CALENDAR DAYS PRIOR TO INSTALLATION. FAILURE TO INCLUDE THE AOT LANDSCAPE ARCHITECT OR CONSTRUCTION LANDSCAPE INSPECTOR MAY RESULT IN THE REJECTION OF PLANT MATERIAL AFTER INSTALLATION. NOTE: THE ENGINEER MAY EXERCISE THEIR AUTHORITY TO SUSPEND PLANT INSTALLATION UNTIL THE AOT LANDSCAPE ARCHITECT OR CONSTRUCTION LANDSCAPE INSPECTOR IS PRESENT, PER SUBSECTION 105.01 (B).

3. SEEDED AREAS SHALL BE PROTECTED IN ACCORDANCE WITH SPECIFICATION SUBSECTION 651.07 PROTECTION. WHERE WETLANDS OR WETLAND BUFFERS ARE PRESENT, STRAW MULCH SHALL BE USE INSTEAD OF HAY MULCH.
4. IF AREAS WITHIN PDF OR BARRIER FENCE ARE NOT DISTURBED, THEY SHOULD REMAIN VEGETATED, AND ADDITIONAL REVEGETATION IS NOT REQUIRED.
5. PROVIDING SUFFICIENT MOISTURE IS CRITICAL DURING THE ENTIRE PLANT ESTABLISHMENT PERIOD. WATERING TO BE PAID FOR UNDER 656.6500 LANDSCAPE WATERING.

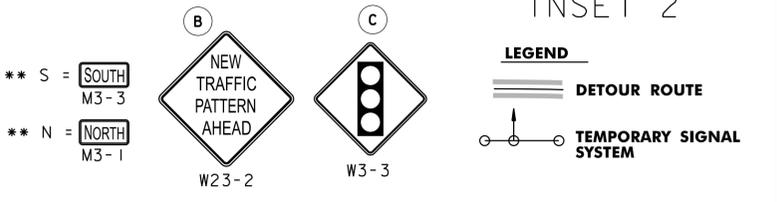
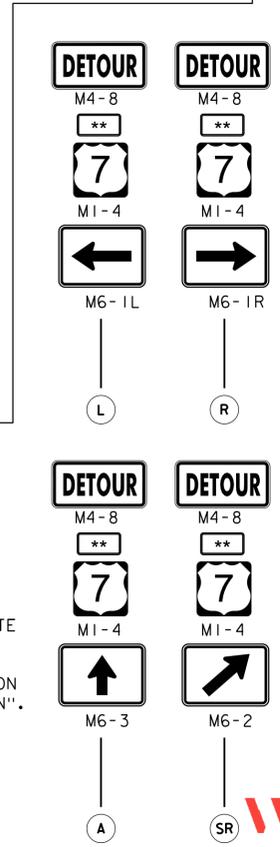
6. IN AREAS RECEIVING PLANTINGS ON STONE FILL, THE CONTRACTOR SHALL VERIFY THAT THE GRUBBING LAYER, AFTER PLACEMENT, STILL MEETS THE SPECIFIED DEPTH AND HAS NOT DISAPPEARED INTO GAPS. TOP LAYER OF STONE FILL MAY BE BROKEN DOWN INTO SMALLER PIECES TO PREVENT SOIL LOSS AS DIRECTED BY THE ENGINEER.
7. TUBELING TREES SHALL NOT BE PLANTED WITHIN 15' OF OVERHEAD POWER LINES.
8. APPLY MYCORRHIZAL FUNGI PER MANUFACTURERS RECOMMENDATIONS TO TREES AND SHRUBS.



PROJECT NAME:	<b>SUNDERLAND</b>		
PROJECT NUMBER:	<b>NH CULV(122)</b>		
FILE NAME: "NAME\$.DGN"	PLOT DATE:	22-JUL-2025	
PROJECT LEADER: G. LAROCHE	DRAWN BY:	B. DONAHUE	
DESIGNED BY: B. DONAHUE	CHECKED BY:	G. LAROCHE	
LANDSCAPE SHEET	SHEET	61	OF 65

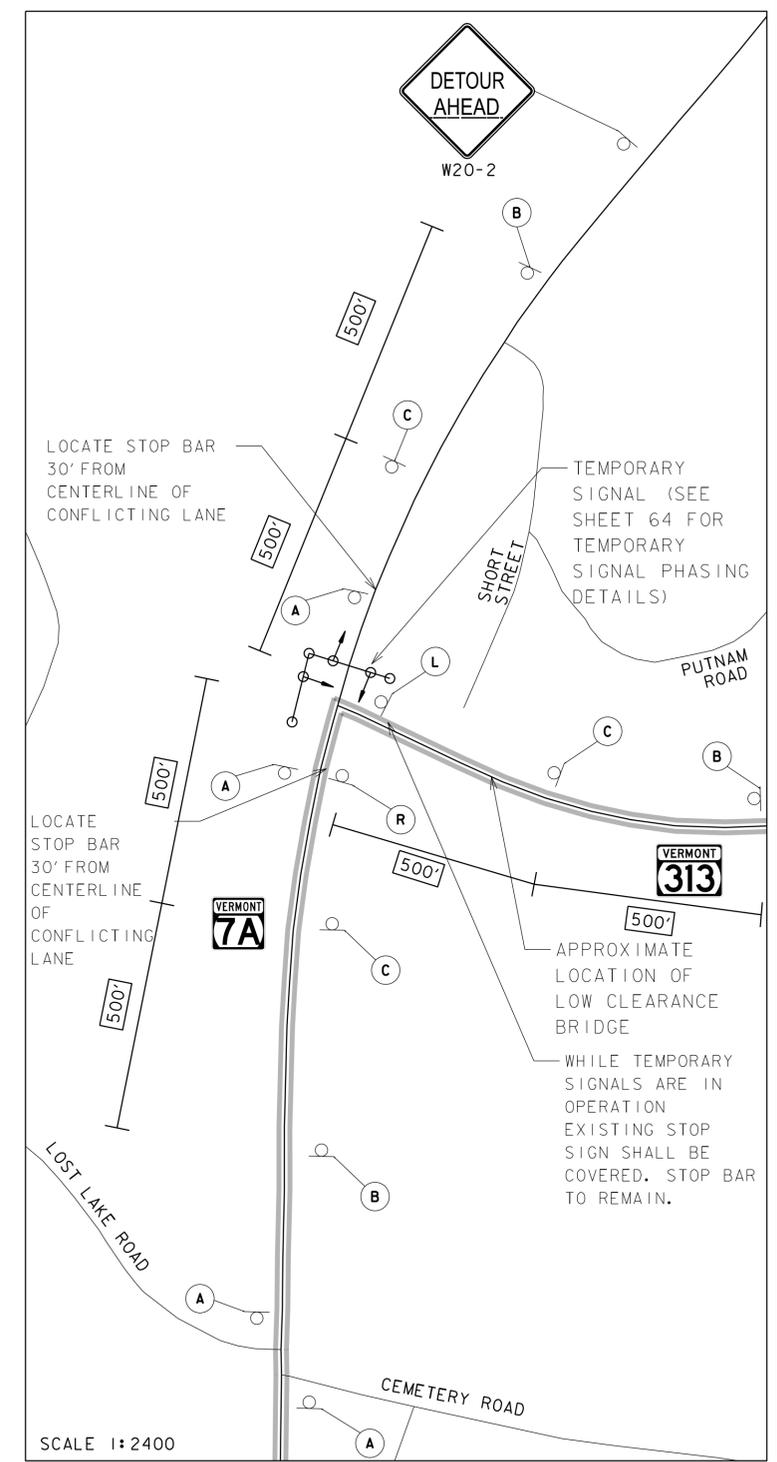
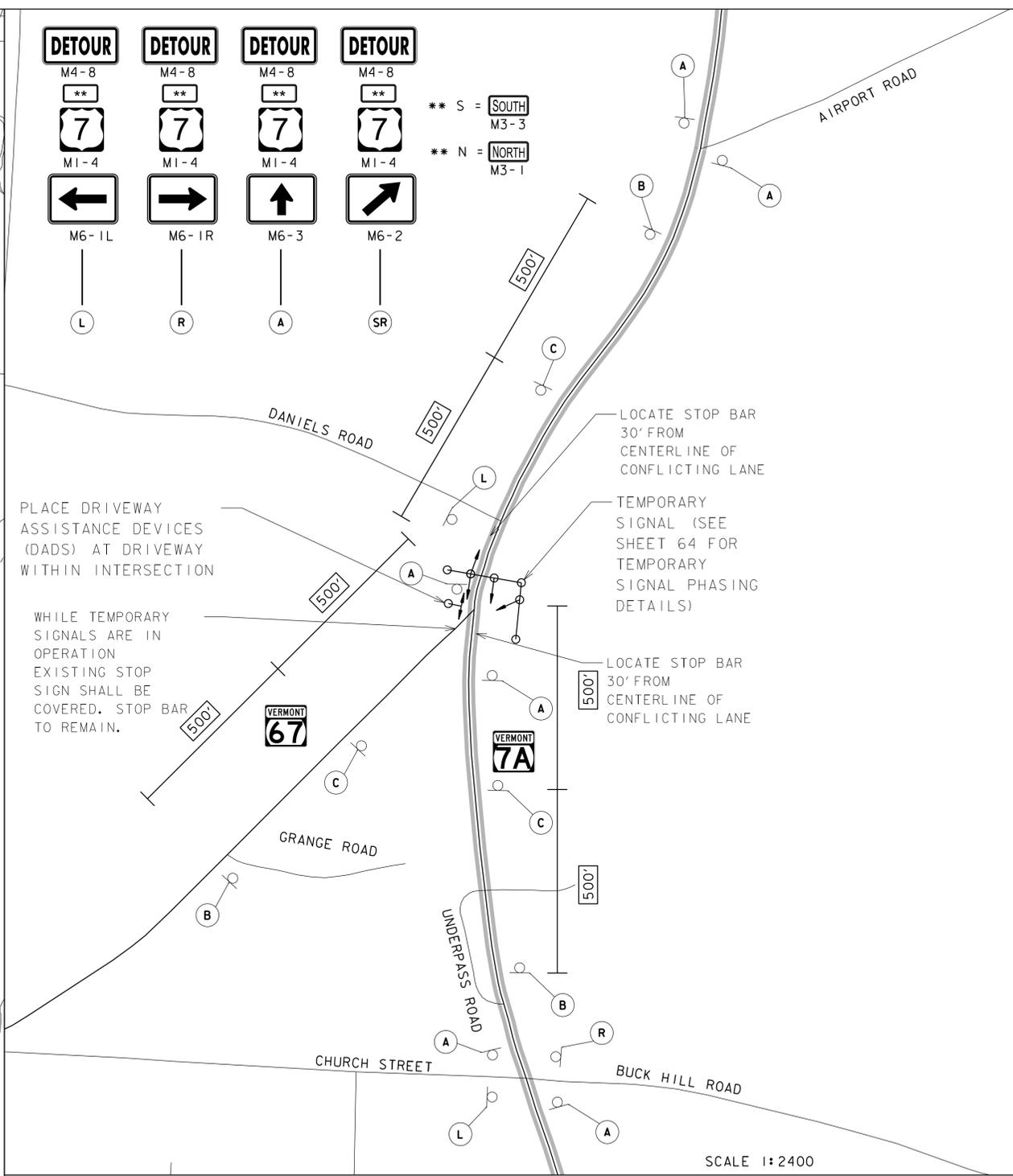
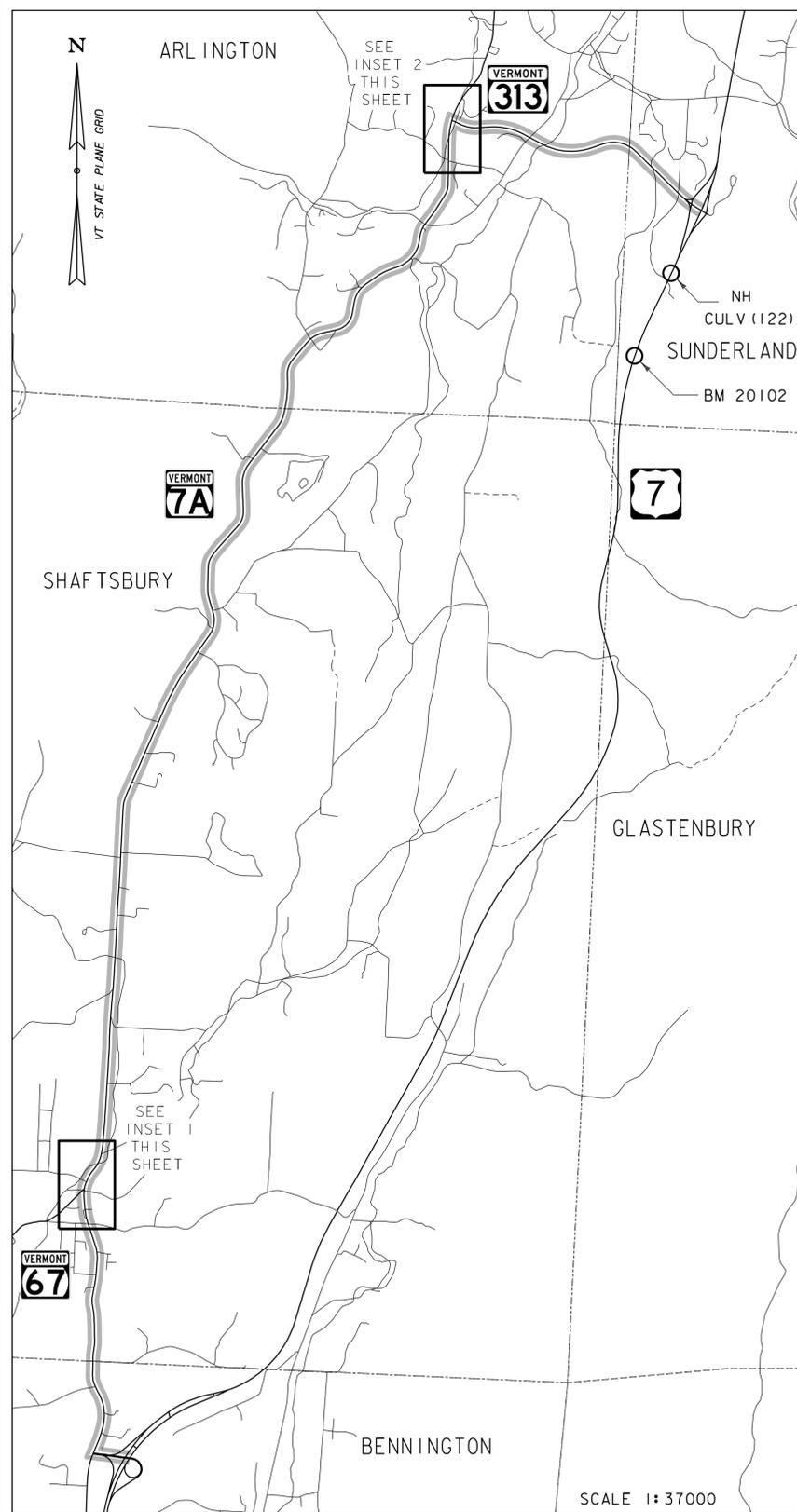


- NOTES:**
1. VT ROUTE 313 IN ARLINGTON HAS A LOW CLEARANCE BRIDGE (RR OVERPASS) WHICH IS POSTED FOR 14- FEET. AS SUCH, LARGE VEHICLES AND SUPER LOADS CAN'T COME UP THE VT ROUTE 7A DETOUR THROUGH BENNINGTON. THESE LARGER VEHICLES WILL NEED TO GO UP THROUGH MANCHESTER OR UTILIZE US ROUTE 4 THROUGH NY. VT DMV WILL NEED TO BE NOTIFIED EARLY TO REROUTE THESE LOADS AND ANY ANNUAL HAULER PERMITS THAT MAY USE US-7 DURING THE CLOSURE PERIODS. NY DMV TO BE NOTIFIED OF CLOSURE.
  2. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE PLACED OFF THE EDGE OF THE ROADWAY, OUTSIDE THE CLEAR ZONE, BUT SHALL BE VISIBLE FROM THE ROADWAY. ANY VEGETATION THAT INTERFERES WITH THE VISIBILITY OF THE PCMS SHALL BE REMOVED, REMOVAL OF THE VEGETATION WILL BE INCIDENTAL TO ITEM 641.1500, "PORTABLE CHANGEABLE MESSAGE SIGN".
  3. PCMS SIGN TO READ "ROUTE 7 BRIDGE CLOSED XX,XXX" TWO WEEKS PRIOR TO CLOSURE.
  4. PCMS SIGN TO READ "ROUTE 7 BRIDGE CLOSED" DURING BRIDGE CLOSURE.
  5. PCMS SIGNS ALONG ROUTE 7 TO BE LOCATED APPROXIMATELY 1 MILE UPSTREAM OF THE DECISION POINT.
  6. PCMS SIGNS ALONG BOTH NORTHBOUND AND SOUTHBOUND VT ROUTE 7A TO READ "SIGNAL AHEAD" DURING BRIDGE CLOSURE. PCMS TO BE LOCATED APPROXIMATELY 1/2 MILE PRIOR TO TEMPORARY SIGNAL LOCATIONS.
  7. FOLLOW VERMONT AGENCY OF TRANSPORTATION STANDARD T-20 FOR TEMPORARY CLOSURE OF ROUTE 7 NORTHBOUND AND SOUTHBOUND.
  8. PLACE DETOUR ROUTE CONFIRMATION SIGN ASSEMBLY EVERY 1-2 MILES ALONG ROUTE 7A DETOUR AND AFTER EVERY MAJOR INTERSECTION.
  9. FOLLOW VERMONT AGENCY OF TRANSPORTATION STANDARD T-1 FOR TEMPORARY TRAFFIC CONTROL GENERAL NOTES.



PROJECT NAME: SUNDERLAND  
 PROJECT NUMBER: BM 20102 & NH CULV(122)  
 FILE NAME: z20b155traf.dgn  
 PROJECT LEADER: A. STOCKIN  
 DESIGNED BY: M. GROTE  
 DETOUR SHEET 1  
 PLOT DATE: 7/15/2025  
 DRAWN BY: M. HERMIS  
 CHECKED BY: T. HIGGINSON  
 SHEET 62 OF 65



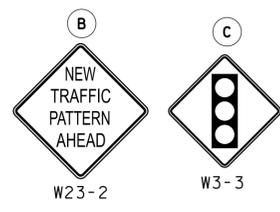


VT-7A @ VT-67  
INSET 1

- NOTES:
1. VT ROUTE 313 IN ARLINGTON HAS A LOW CLEARANCE BRIDGE (RR OVERPASS) WHICH IS POSTED FOR 14- FEET. AS SUCH, LARGE VEHICLES AND SUPER LOADS CAN'T COME UP THE VT ROUTE 7A DETOUR THROUGH BENNINGTON. THESE LARGER VEHICLES WILL NEED TO GO UP THROUGH MANCHESTER OR UTILIZE US ROUTE 4 THROUGH NY. VT DMV WILL NEED TO BE NOTIFIED EARLY TO REROUTE THESE LOADS AND ANY ANNUAL HAULER PERMITS THAT MAY USE US-7 DURING THE CLOSURE PERIODS. NY DMV TO BE NOTIFIED OF CLOSURE.
  2. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE PLACED OFF THE EDGE OF THE ROADWAY, OUTSIDE THE CLEAR ZONE, BUT SHALL BE VISIBLE FROM THE ROADWAY. ANY VEGETATION THAT INTERFERES WITH THE VISIBILITY OF THE PCMS SHALL BE REMOVED, REMOVAL OF THE VEGETATION WILL BE INCIDENTAL TO ITEM 641.1500, "PORTABLE CHANGEABLE MESSAGE SIGN".
  3. PCMS SIGN TO READ "ROUTE 7 BRIDGE CLOSED XX,XXXX" TWO WEEKS PRIOR TO CLOSURE.
  4. PCMS SIGN TO READ "ROUTE 7 BRIDGE CLOSED" DURING BRIDGE CLOSURE.
  5. PCMS SIGNS ALONG ROUTE 7 TO BE LOCATED APPROXIMATELY 1 MILE UPSTREAM OF THE DECISION POINT.
  6. PCMS SIGNS ALONG BOTH NORTHBOUND AND SOUTHBOUND VT ROUTE 7A TO READ "SIGNAL AHEAD" DURING BRIDGE CLOSURE. PCMS TO BE LOCATED APPROXIMATELY 1/2 MILE PRIOR TO TEMPORARY SIGNAL LOCATIONS.
  7. FOLLOW VERMONT AGENCY OF TRANSPORTATION STANDARD T-20 FOR TEMPORARY CLOSURE OF ROUTE 7 NORTHBOUND AND SOUTHBOUND.
  8. PLACE DETOUR ROUTE CONFIRMATION SIGN ASSEMBLY EVERY 1-2 MILES ALONG ROUTE 7A DETOUR AND AFTER EVERY MAJOR INTERSECTION.
  9. FOLLOW VERMONT AGENCY OF TRANSPORTATION STANDARD T-1 FOR TEMPORARY TRAFFIC CONTROL GENERAL NOTES.

VT-7A @ VT-313  
INSET 2

- LEGEND
- DETOUR ROUTE
  - TEMPORARY SIGNAL SYSTEM
  - DRIVEWAY ASSISTANCE DEVICES (DADS)



DETOUR

PROJECT NAME:	SUNDERLAND	FILE NAME:	z20b155traf2.dgn	PLOT DATE:	7/15/2025
PROJECT NUMBER:	BM 20102 & NH CULV(122)	PROJECT LEADER:	A. STOCKIN	DRAWN BY:	M. HERMIS
		DESIGNED BY:	M. GROTE	CHECKED BY:	T. HIGGINSON
		DETOUR SHEET 2			SHEET 63 OF 65

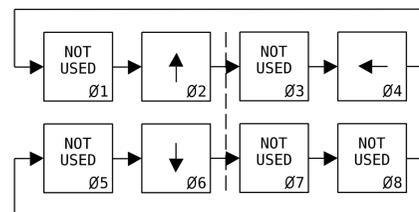


VT 7A & VT 313

SIGNAL PHASING			
TIMING IN SECONDS	Ø 2 ↑	Ø 4 ←	Ø 6 ↓
INITIAL INTERVAL	5	5	5
VEHICLE EXTENSION	3	3	3
MAX 1	30	35	30
YELLOW	5.0	5.0	5.0
ALL RED	2.0	2.0	2.0
RECALL	MIN	OFF	MIN
DETECTOR MEMORY	LOCK	NON-LOCK	LOCK
FLASH	YELLOW	RED	YELLOW

MAX 1: ALL TIME PERIODS  
 Ø2 IS NORTHBOUND TRAFFIC ON VT 7A  
 Ø4 IS WESTBOUND TRAFFIC ON VT 313  
 Ø6 IS SOUTHBOUND TRAFFIC ON VT 7A

NEMA STD 8Ø CONTROLLER

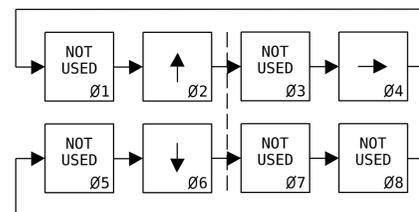


VT 7A & VT 67

SIGNAL PHASING			
TIMING IN SECONDS	Ø 2 ↑	Ø 4 →	Ø 6 ↓
INITIAL INTERVAL	5	5	5
VEHICLE EXTENSION	3	3	3
MAX 1	40	20	40
YELLOW	4.5	4.5	4.5
ALL RED	2.0	2.0	2.0
RECALL	MIN	OFF	MIN
DETECTOR MEMORY	LOCK	NON-LOCK	LOCK
FLASH	YELLOW	RED	YELLOW

MAX 1: ALL TIME PERIODS  
 Ø2 IS NORTHBOUND TRAFFIC ON VT 7A  
 Ø4 IS EASTBOUND TRAFFIC ON VT 67  
 Ø6 IS SOUTHBOUND TRAFFIC ON VT 7A

NEMA STD 8Ø CONTROLLER

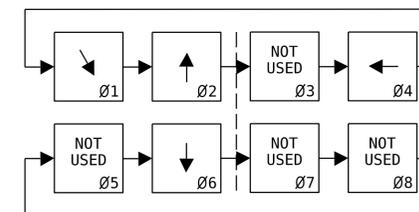


VT 7A & US 7 RAMPS

SIGNAL PHASING				
TIMING IN SECONDS	Ø 1 ↙	Ø 2 ↑	Ø 4 ←	Ø 6 ↓
INITIAL INTERVAL	5	5	5	5
VEHICLE EXTENSION	3	3	3	3
MAX 1	20	10	15	35
YELLOW	5.0	5.0	5.0	5.0
ALL RED	2.0	2.0	2.0	2.0
RECALL	MIN	MIN	OFF	MIN
DETECTOR MEMORY	LOCK	LOCK	NON-LOCK	LOCK
FLASH	YELLOW	YELLOW	RED	YELLOW

MAX 1: ALL TIME PERIODS  
 Ø1 SHALL BE PROTECTED+PERMISSIVE  
 Ø1 IS SOUTHBOUND LEFT TURN TRAFFIC ON VT 7A  
 Ø2 IS NORTHBOUND TRAFFIC ON VT 7A  
 Ø4 IS WESTBOUND TRAFFIC ON US 7 RAMPS  
 Ø6 IS SOUTHBOUND TRAFFIC ON VT 7A

NEMA STD 8Ø CONTROLLER



TEMPORARY TRAFFIC SIGNAL NOTES:

- CONTRACTOR SHALL IMPLEMENT SIGNAL TIMINGS SHOWN IN THIS PLAN DURING THE DETOUR. SIGNALS SHALL BE MONITORED AND FURTHER ADJUSTED IF NECESSARY WITH VTRANS APPROVAL.
- SIGNAL SHALL OPERATE IN ACTUATED MODE. MANUAL OR PRETIMED MODES MAY BE USED AT THE DIRECTION OF THE ENGINEER.
- TEMPORARY TRAFFIC SIGNALS TO BE LOCATED SO THAT AT LEAST 425 FEET OF SIGHT DISTANCE IS PROVIDED TO APPROACHING TRAFFIC ON VT 7A.

PROJECT NAME:	SUNDERLAND
PROJECT NUMBER:	BM 20102 & NH CULV(I22)
FILE NAME:	z20bl55traf3.dgn
PROJECT LEADER:	A. STOCKIN
DESIGNED BY:	M. GROTE
DETOUR SHEET 3	
PLOT DATE:	7/3/2025
DRAWN BY:	M. HERMIS
CHECKED BY:	T. HIGGINSON
SHEET	64 OF 65



VAOT POLLINATOR DRY			
% OF MIX	LATIN NAME	COMMON NAME	CULTIVAR/ ECOTYPE
6	AGROSTIS PERENNANS	AUTUMN BENTGRASS,	APB (NY)
25.2	ANDROPOGON GERARDII	BIG BLUESTEM	APB (NY)
0.5	ASCLEPIAS SYRIACA	COMMON MILKWEED	ANY
0.8	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	PA
25	ELYMUS VIRGINICUS	VIRGINIA WILDRYE	MADISON OR PA
0.6	MONARDA FISTULOSA	WILD BERGAMOT	FIG (PA)
20	PANICUM CLANDESTINUM	DEERTONGUE	TIOGA
1.5	RUDBECKIA HIRTA	BLACK EYED SUSAN	ANY
20	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	ANY
0.2	SOLIDAGO JUNCEA	EARLY GOLDENROD	PA
0.2	SOLIDAGO RUGOSA	WRINKLE LEAF GOLDENROD	PA
<b>100%</b>			

**SEED RATE:** 60 LBS/ACRE PURE LIVE SEED (PLS)  
30 LBS/ACRE OF NURSE CROP  
30 LBS/ACRE OF BULKING AGENT

*PREFERRED SEEDING PERIOD FOR POLLINATOR SEED MIX IS BEFORE MAY 1 (AFTER SNOWMELT) AND AFTER SEPTEMBER 15 (BEFORE SNOWPACK). IF SEEDING OCCURS DURING THE PREFERRED PERIOD, SEEDING RATE SHALL BE REDUCED BY 30%. NO ADJUSTMENT IS REQUIRED FOR NURSE CROPS OR BULKING AGENTS).

#### DESIGN GUIDANCE

1. THIS SEED MIX SHALL BE USED IN AREAS THAT WILL NATURALIZE, RECEIVING MOWING ONCE EVERY 3 YEARS OR LESS.
2. USE SEED MIX FOR AREAS THAT ARE SLOPED OR FLAT, WITH NORMAL TO DRY CONDITIONS, OR AS INDICATED IN THE PLANS.

#### CONSTRUCTION GUIDANCE

1. SEE VAOT POLLINATOR SEED CONSTRUCTION GUIDANCE DETAIL FOR MORE INFORMATION ON INSTALLATION AND BULKING AGENT.

TURF ESTABLISHMENT

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651.1600 TURF ESTABLISHMENT, SPECIALTY SEED)

REVISIONS  
JUNE 21, 2023 BKD

#### VAOT POLLINATOR SEED CONSTRUCTION GUIDANCE

1. PREPARE SOIL FOR POLLINATOR SEED MIX APPLICATION SITES IN ACCORDANCE WITH VTRANS SUBSECTION 651.04 & 651.05 FOR TURF ESTABLISHMENT.
2. APPLY SOIL AMENDMENTS PER SOIL TEST RESULTS.
3. MIX POLLINATOR SEED, NURSE CROP SEEDS, AND BULKING AGENT PRIOR TO APPLICATION. ENSURE THAT THE MATERIALS ARE EVENLY DISTRIBUTED THROUGHOUT THE MIX.
  - A. NURSE CROP: USE GRAIN OATS (AVENA SATIVA) AS A NURSE CROP IF PLANTING BETWEEN JANUARY 1 AND JULY 31 OR USE WINTER RYE (SECALE CEREALE) IF PLANTING BETWEEN AUGUST 1 AND DECEMBER 31.
  - B. BULKING AGENT: ADD AN INERT CARRIER AND BULKING AGENT SUCH AS GRANULAR SODIUM BENTONITE CLAY, NON-CLUMPING & NON-SCENTED KITTY LITTER, OR APPROVED EQUIVALENT TO ALLOW FOR EVEN SEED DISTRIBUTION AND AS A VISUAL AID OF COVERAGE DURING THE SEED INSTALLATION. BULKING AGENTS SHALL BE MIXED WITH THE SEED MIX AND NURSE CROP AT THE RATES SPECIFIED ON THE POLLINATOR SEED MIX DETAILS. PAYMENT FOR BULKING AGENT AND NURSE CROP SHALL BE INCIDENTAL TO THE CORRESPONDING SEED PAY ITEMS.
4. APPLY POLLINATOR SEED MIXES, NURSE CROP SEEDS, AND BULKING AGENT CONCURRENTLY IN ACCORDANCE WITH THE RATES SHOWN ON THE POLLINATOR SEED MIX TABLES. DO NOT EXCEED THE RECOMMENDED NURSE CROP SEEDING RATES TO AVOID SMOTHERING THE POLLINATOR SEED MIX AND PREVENTING GERMINATION.
5. SPREAD SEED BY HAND OR USE BROADCAST SEEDING EQUIPMENT WITH AN INTERNAL AGITATOR AND AN ADJUSTABLE FLOW GATE TO CREATE A SLOW, STEADY SEED FLOW, ALLOWING FOR EVEN DISTRIBUTION OF THE SMALLER SEEDS.
6. USE A LANDSCAPE-TYPE ROLLER, CULTIPACKER, OR LEAF RAKE TO LIGHTLY PRESS SEED INTO SOIL BED AFTER BROADCAST SPREADING. THIS PROMOTES ADEQUATE SEED TO SOIL CONTACT. DO NOT TILL OR COVER SEED WITH SOIL.
7. MULCH WITH A LIGHT COVER OF WEED-FREE OAT STRAW AT A RATE OF 3,000 LB./ACRE.
8. IF HYDROSEEDING, A TWO-STEP PROCESS SHALL BE USED. FIRST PASS: APPLY SEED WITH 1/3 THE NORMAL RATE OF HYDRAULIC MULCH. SECOND PASS: APPLY REMAINDER OF HYDRAULIC MULCH. RATE OF HYDROSEED SHALL BE PER MANUFACTURERS RECOMMENDATIONS. NO BULKING AGENT SHALL BE USED.

TURF ESTABLISHMENT

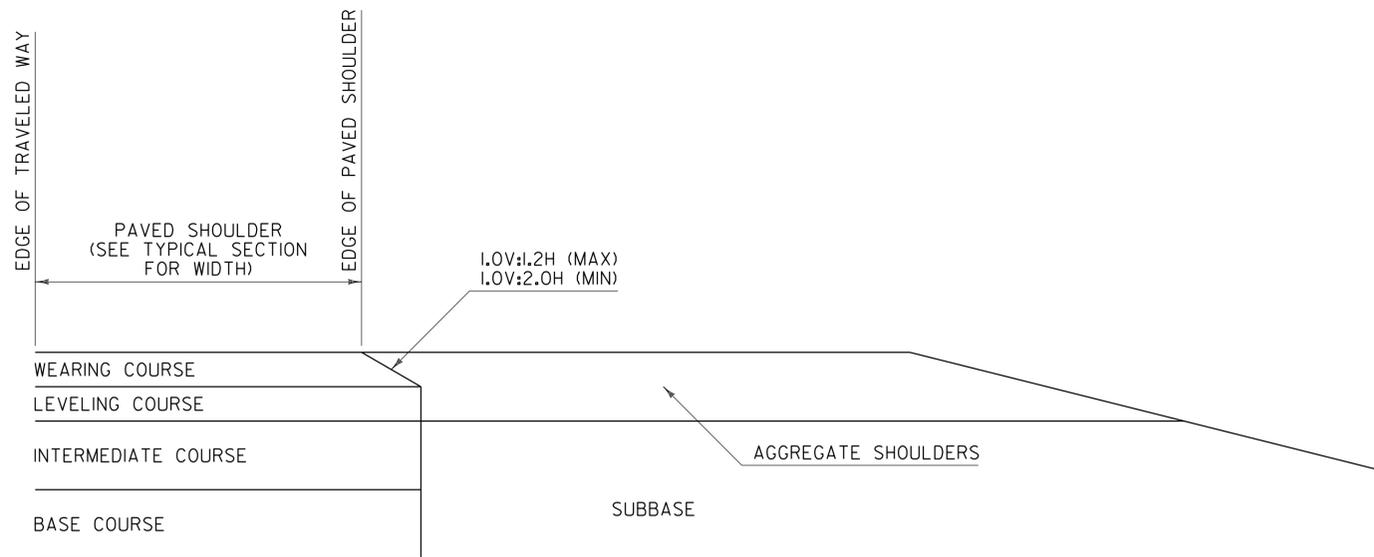
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651.1600 TURF ESTABLISHMENT, SPECIALTY SEED)

REVISIONS  
JUNE 21, 2023 BKD

PROJECT NAME: SUNDERLAND  
PROJECT NUMBER: BM 20102 & NH CULV(122)

FILE NAME: z20bl55epsc_det.dgn PLOT DATE: 7/2/2025  
PROJECT LEADER: A. STOCKIN DRAWN BY: M. HERMIS  
DESIGNED BY: M. GROTE CHECKED BY: T. HIGGINSON  
EPSC DETAILS SHEET 65 OF 65



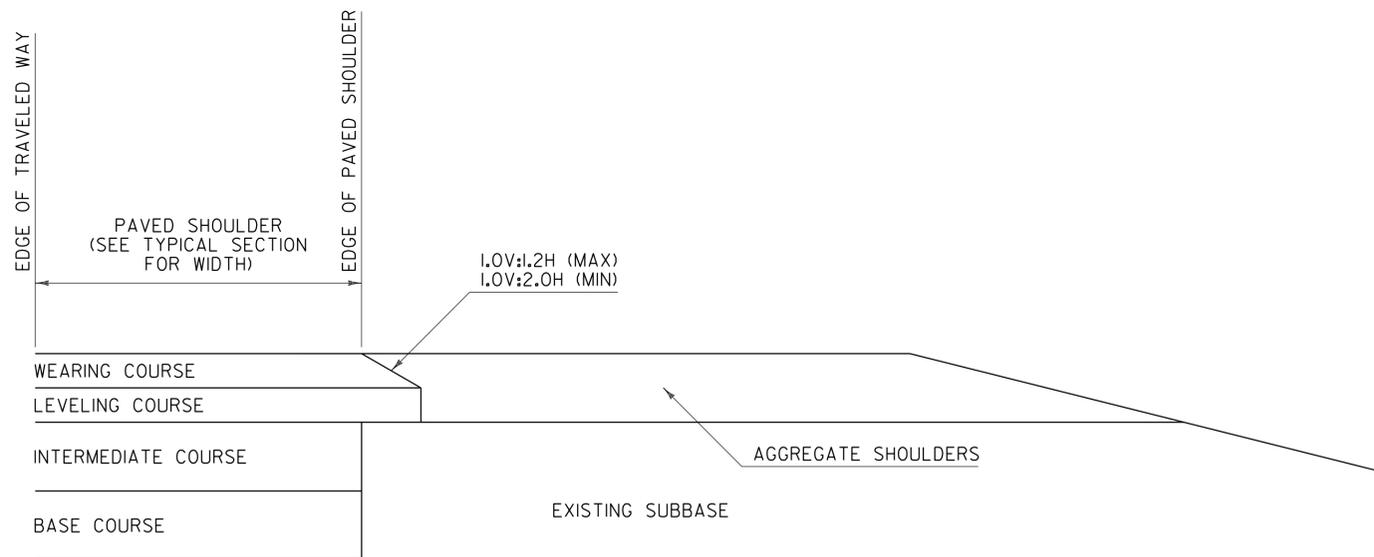


**SAFETY EDGE DETAIL  
FOR PAVING BELOW WEARING COURSE**

**NOTES:**

1. THIS DETAIL IS INTENDED FOR WHEN PAVING EXTENDS BELOW THE WEARING COURSE.
2. PRIOR TO PLACEMENT OF THE LEVELING AND/OR WEARING COURSE, THE SUBBASE LOCATED BENEATH THE AGGREGATE SHOULDERS SHALL BE PREPARED FLUSH WITH THE BOTTOM OF THE LEVELING COURSE.
3. BASE COURSE LIMITS MAY VARY, SEE TYPICAL SECTIONS FOR WIDTH.

SAFETY EDGE WIDTH BASED ON WEARING COURSE THICKNESS AND A 1V:1.6H SLOPE	
WEARING COURSE THICKNESS (INCHES)	NOMINAL SAFETY EDGE WIDTH (INCHES)
1.25	2.000
1.50	2.375
1.75	2.750
2.00	3.125
2.25	3.500
2.50	4.000



**SAFETY EDGE DETAIL  
FOR PAVING WEARING COURSE ONLY**

**NOTES:**

1. THIS DETAIL IS INTENDED FOR WHEN ONLY THE LEVELING AND/OR WEARING COURSE IS TO BE PLACED.
2. PAVEMENT COURSES MAY VARY, SEE TYPICAL SECTIONS FOR ACTUAL PAVEMENT COURSES REQUIRED.

**GENERAL NOTES:**

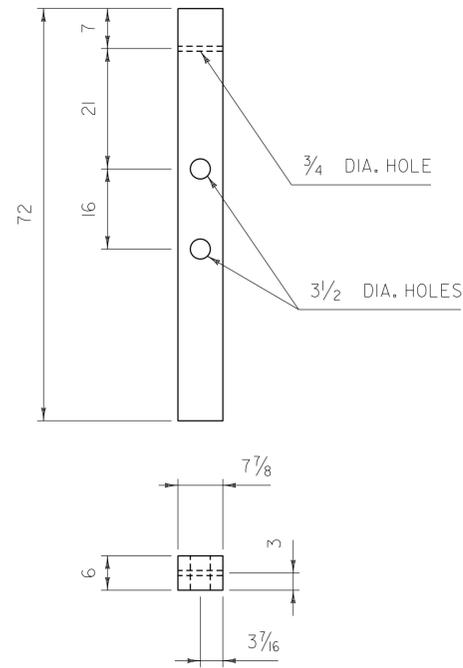
1. PLACEMENT OF THE WEARING COURSE SHALL INCLUDE THE SAFETY EDGE, UNLESS THE FOLLOWING APPLIES:
  - A. THE ADJACENT SLOPE IS STEEPER THAN THE SAFETY EDGE.
  - B. THE EDGE OF PAVEMENT BEING PLACED ABUTS BOUND MATERIAL.
  - C. VEHICLES ARE RESTRICTED FROM LEAVING THE PAVED SURFACE (EXAMPLE: GUARDRAIL).
2. THE SAFETY EDGE SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE SLOPE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.
3. THE SAFETY EDGE SHALL NOT BE CONSIDERED PART OF THE PAVED SHOULDER.
4. THIS WORK SHALL BE INCIDENTAL TO THE RESPECTIVE BITUMINOUS CONCRETE PAVEMENT ITEM.

REV.	DATE	DESCRIPTION
0	MAR. 29, 2016	ORIGINAL APPROVAL
1	JAN. 5, 2018	ANNOTATION CORRECTIONS
OTHER DETAILS REQUIRED: NONE		
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN		

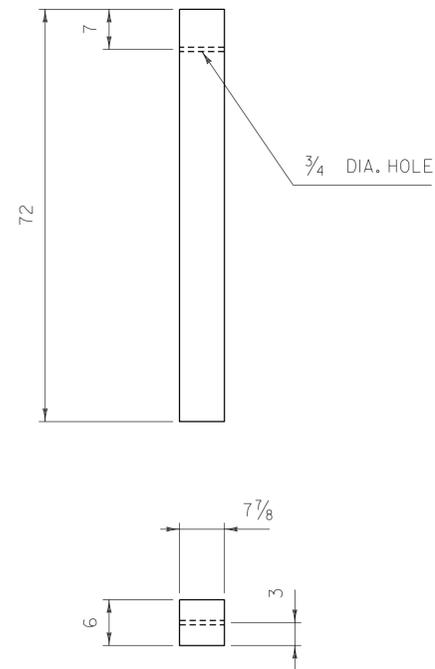
**SAFETY EDGE DETAILS**



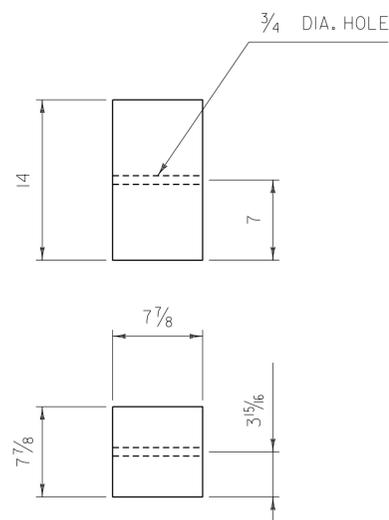
HIGHWAY SAFETY  
& DESIGN DETAIL  
HSD-400.01



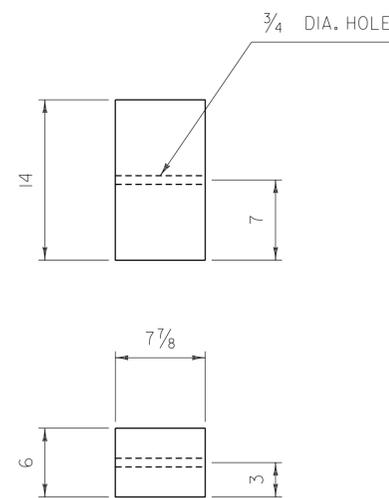
**CONTROLLED RELEASING TERMINAL  
(CRT) TIMBER POST (PDE09)**



**TIMBER GUARDRAIL POST (PDE07)**



**TRANSITION SPACER BLOCKOUTS (PDB07)**



**W-BEAM TIMBER BLOCKOUT (PDB01)**

**GENERAL NOTES:**

1. ALL MATERIAL DESIGNATIONS ARE AS IDENTIFIED IN "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE" AS PUBLISHED BY THE "AMERICAN ASSOCIATION OF STATE AND HIGHWAY TRANSPORTATION OFFICIALS" (AASHTO), ASSOCIATED GENERAL CONTRACTORS OF AMERICA (AGC) AND THE AMERICAN ROAD AND TRANSPORTATION BUILDERS ASSOCIATION (ARTBA).
2. CRT TIMBER POSTS SHALL BE INSTALLED SO THAT THE CENTER OF THE TOP 3/2 INCH HOLE IS AT GROUND LEVEL.
3. ALL TIMBER SHALL RECEIVE A PRESERVATION TREATMENT IN ACCORDANCE WITH AASHTO M33 AFTER ALL HOLES ARE DRILLED AND END CUTS ARE MADE.
4. ALL DIMENSIONS IN INCHES.

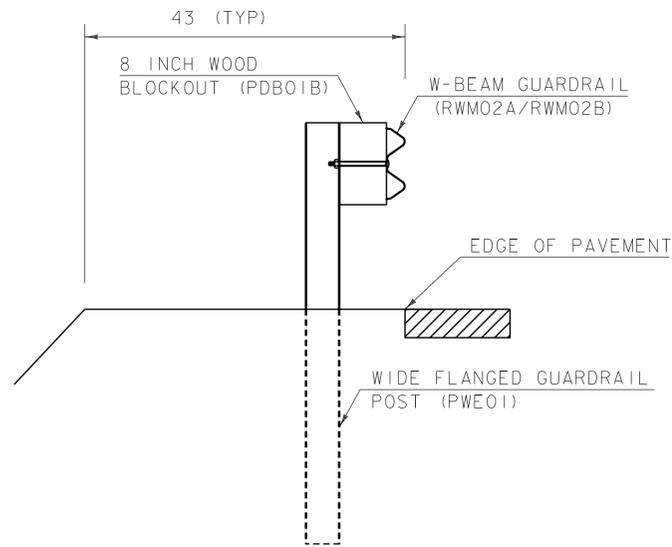
REV.	DATE	DESCRIPTION
0	JUN. 9, 2015	ORIGINAL APPROVAL
OTHER DETAILS REQUIRED: NONE		
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN		

POST AND BLOCKOUT DETAILS  
FOR STEEL BEAM GUARDRAIL, GALVANIZED

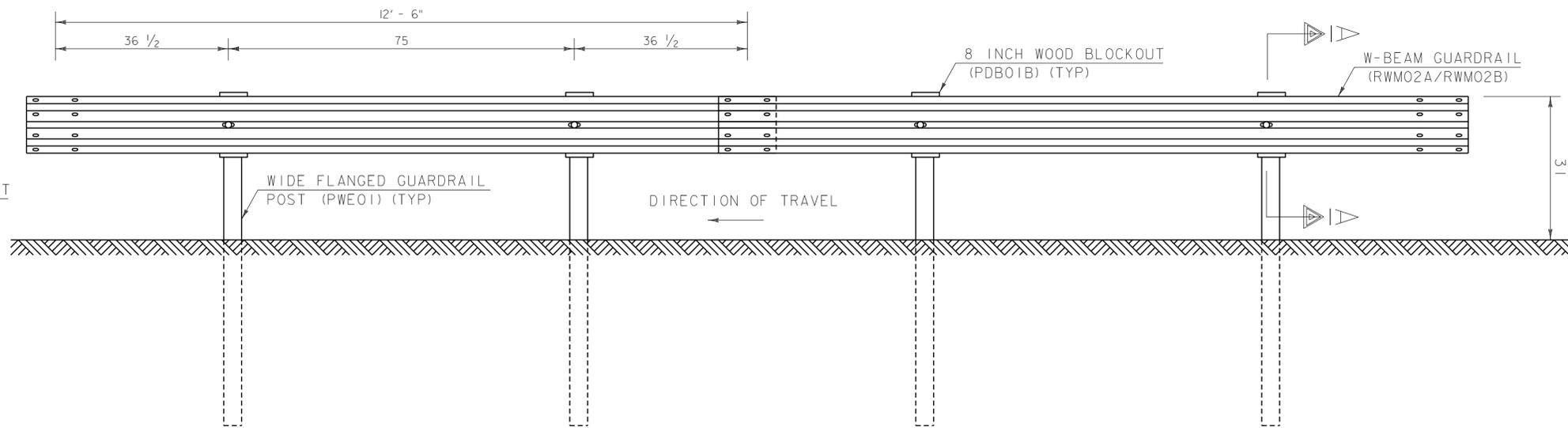


HIGHWAY SAFETY  
& DESIGN DETAIL

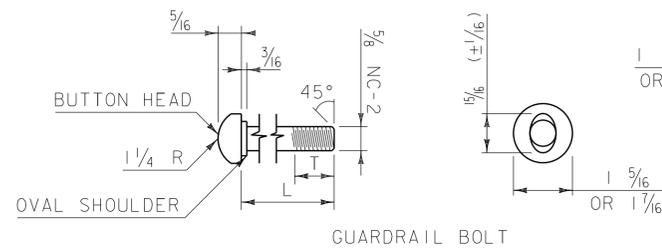
HSD - 621.01



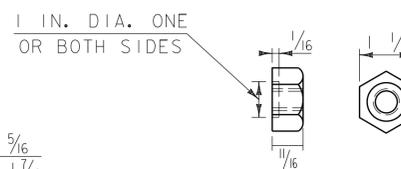
TYPICAL GUARDRAIL DETAIL  
SECTION A-A



GUARDRAIL ELEVATION

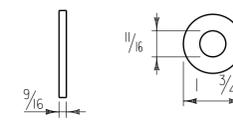


GUARDRAIL BOLT



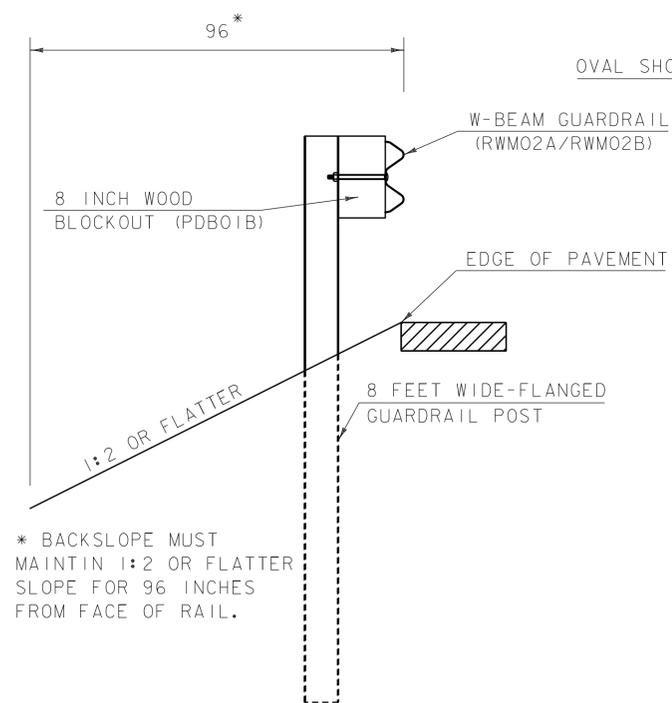
RECESSED NUT FOR GUARDRAIL BOLT

NOTE: WASHER IS USED UNDER RECESSED NUT WHERE GUARDRAIL BOLT IS USED WITH WOOD POSTS.



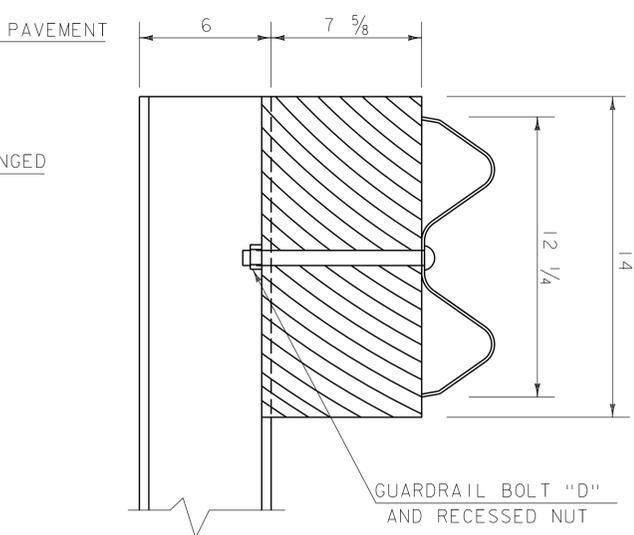
WASHER FOR 5/8" BOLTS  
ARTBA F-13-73

GUARDRAIL BOLTS				FASTENER USED IN	
BOLT DES.	ARTBA REF. NO.	L	T (MIN.)	STEEL POSTS	WOOD POSTS
"A"	F-3[1 1/4]-76	1 1/4"	1"	X	X
"C"	F-3[9 1/2]-76	9 1/2"	1 3/4"	X	
"D"	F-3[18]-76	18"	2 1/2"		X
"F"	F-3[25]-76	25"	2"		X

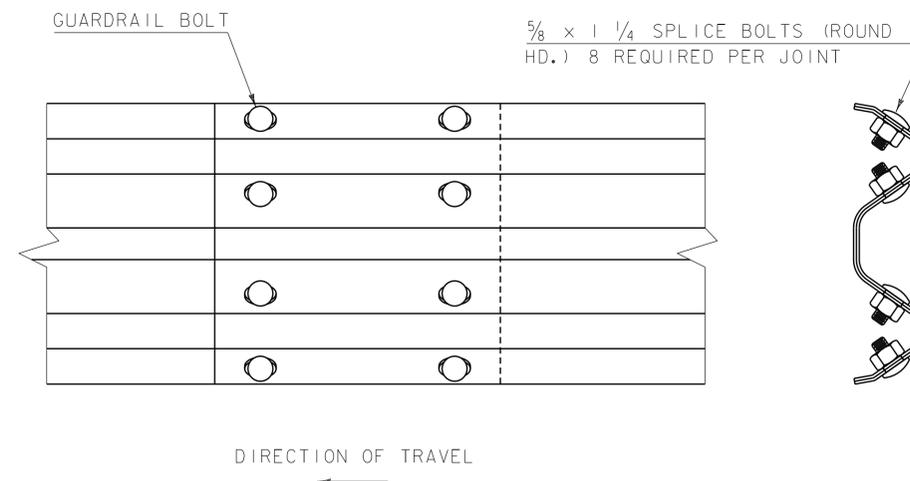


8 FEET POSTS GUARDRAIL DETAIL  
SECTION A-A

* BACKSLOPE MUST MAINTAIN 1:2 OR FLATTER SLOPE FOR 96 INCHES FROM FACE OF RAIL.



POST ATTACHMENT DETAIL



SPLICE DETAIL

GENERAL NOTES

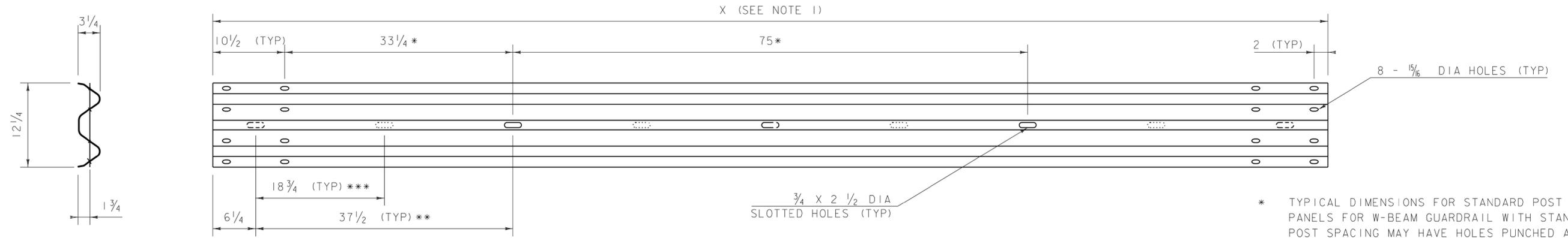
- DESIGNATIONS ARE AS IDENTIFIED IN "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE" AS PUBLISHED BY THE "AMERICAN ASSOCIATION OF STATE AND HIGHWAY TRANSPORTATION OFFICIALS" (AASHTO), "ASSOCIATED GENERAL CONTRACTORS OF AMERICA" (AGC) AND THE "AMERICAN ROAD AND TRANSPORTATION BUILDERS ASSOCIATION" (ARTBA).
- MATERIALS SHALL BE IN ACCORDANCE WITH SECTION 728 OF THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION, AND ITS LATEST REVISIONS, AS APPLICABLE.
- WHEN W-BEAM GUARDRAIL, 8 FEET POSTS IS SPECIFIED ON THE PLANS, WIDE FLANGED GUARDRAIL POST (PWE01) SHALL BE INCREASED FROM 72 INCHES TO 96 INCHES, SEE DETAIL HSD-621.07B.
- THE DYNAMIC DEFLECTION DISTANCE OF 57 INCHES FOR W BEAM GUARDRAIL SHALL BE MAINTAINED CLEAR OF OBSTACLES, TO BE MEASURED FROM THE BACK OF POST.
- FOR TEST LEVEL 3 APPLICATIONS, AS APPROVED IN THE FEDERAL HIGHWAY ADMINISTRATION'S ELIGIBILITY LETTER, HSST/B-240, DATED NOVEMBER 8, 2012.
- ALL DIMENSION IN INCHES, UNLESS OTHERWISE NOTED.

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL
I	JAN. 4, 2021	CORRECTED REFERENCE IN NOTE 3
OTHER DETAILS REQUIRED:		621.07B
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN		

MIDWEST GUARDRAIL SYSTEM (MGS)



HIGHWAY SAFETY  
& DESIGN DETAIL  
HSD-621.07A



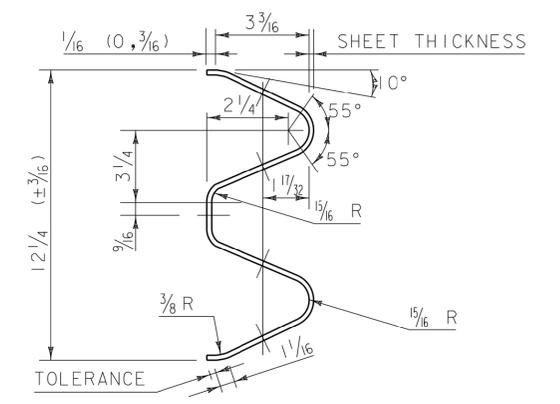
1. TANGENT W-BEAM RAIL LENGTHS SHALL BE 13' - 6 1/2" OR 26' - 1/2", UNLESS OTHERWISE SPECIFIED.
2. W-BEAM THICKNESS SHALL BE 1/8" FOR STANDARD W-BEAM GUARDRAIL (RWM02A) AND 3/4" FOR HEAVY DUTY GUARDRAIL (RWM02B).

**W-BEAM GUARDRAIL**  
(RWM02A/ RWM02B)

- * TYPICAL DIMENSIONS FOR STANDARD POST SPACING. PANELS FOR W-BEAM GUARDRAIL WITH STANDARD POST SPACING MAY HAVE HOLES PUNCHED AT ONE-HALF POST SPACING FOR INVENTORY PURPOSES.
- ** TYPICAL DIMENSION FOR ONE-HALF POST SPACING.
- *** TYPICAL DIMENSION FOR ONE-QUARTER POST SPACING.

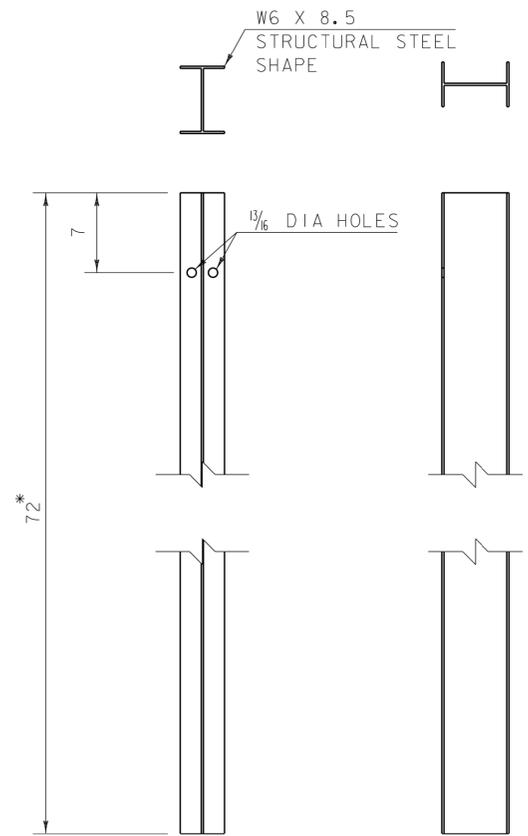
**NOTES:**

1. BLOCKS SHALL BE MADE OF TIMBER WITH A STRESS GRADE OF 1200 PSI OR MORE. TESTING SHALL BE IN ACCORDANCE WITH WEST COAST LUMBER INSPECTION BUREAU, SOUTHERN PINE INSPECTION BUREAU OR OTHER APPROPRIATE ASSOCIATION. TIMBER FOR BLOCKS SHALL BE ROUGH SAWN (UNPLANED) WITH DIMENSIONS INDICATED. THE SIZE TOLERANCE OF ROUGH SAWN BLOCKS IN THE DIRECTION OF THE BOLT HOLES SHALL BE NOT MORE THAN +/- 1/4".
2. SUPPLY WOOD BLOCKS PER AASHTO M 168.
3. TREAT WITH PRESERVATIVE PER AASHTO M 133.
4. BLOCKOUTS MAY ALSO BE MADE OF APPROVED ALTERNATIVE MATERIAL.

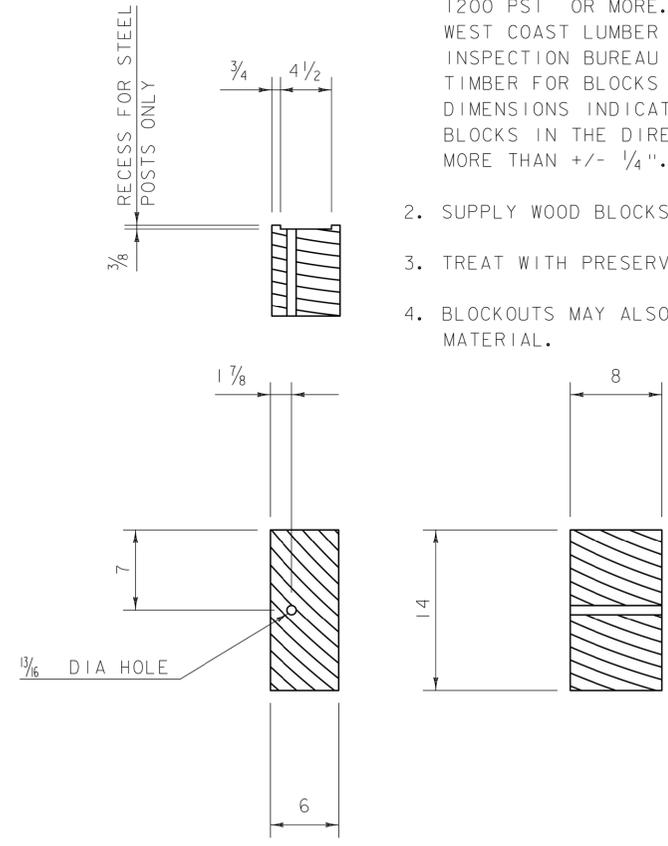


ARTBA RE-3 (2@6' - 3" = 12' - 6" CLASS A, TYPE 1) - 73

**TYPICAL GUARDRAIL SECTION**



**WIDE FLANGED GUARDRAIL POST**  
(PWE01)



**8 INCH WOOD BLOCKOUT**  
(PDB01B)

**GENERAL NOTES**

1. DESIGNATIONS ARE AS IDENTIFIED IN "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE" AS PUBLISHED BY THE "AMERICAN ASSOCIATION OF STATE AND HIGHWAY TRANSPORTATION OFFICIALS" (AASHTO), "ASSOCIATED GENERAL CONTRACTORS OF AMERICA" (AGC) AND THE "AMERICAN ROAD AND TRANSPORTATION BUILDERS ASSOCIATION" (ARTBA).
2. MATERIALS SHALL BE IN ACCORDANCE WITH SECTION 728 OF THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION, AND ITS LATEST REVISIONS, AS APPLICABLE.
3. ALL DIMENSION IN INCHES, UNLESS OTHERWISE NOTED.

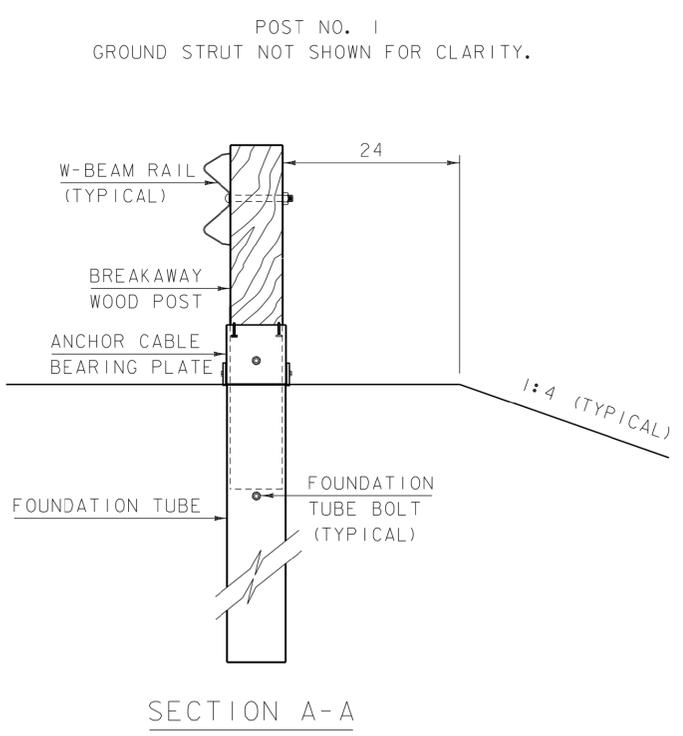
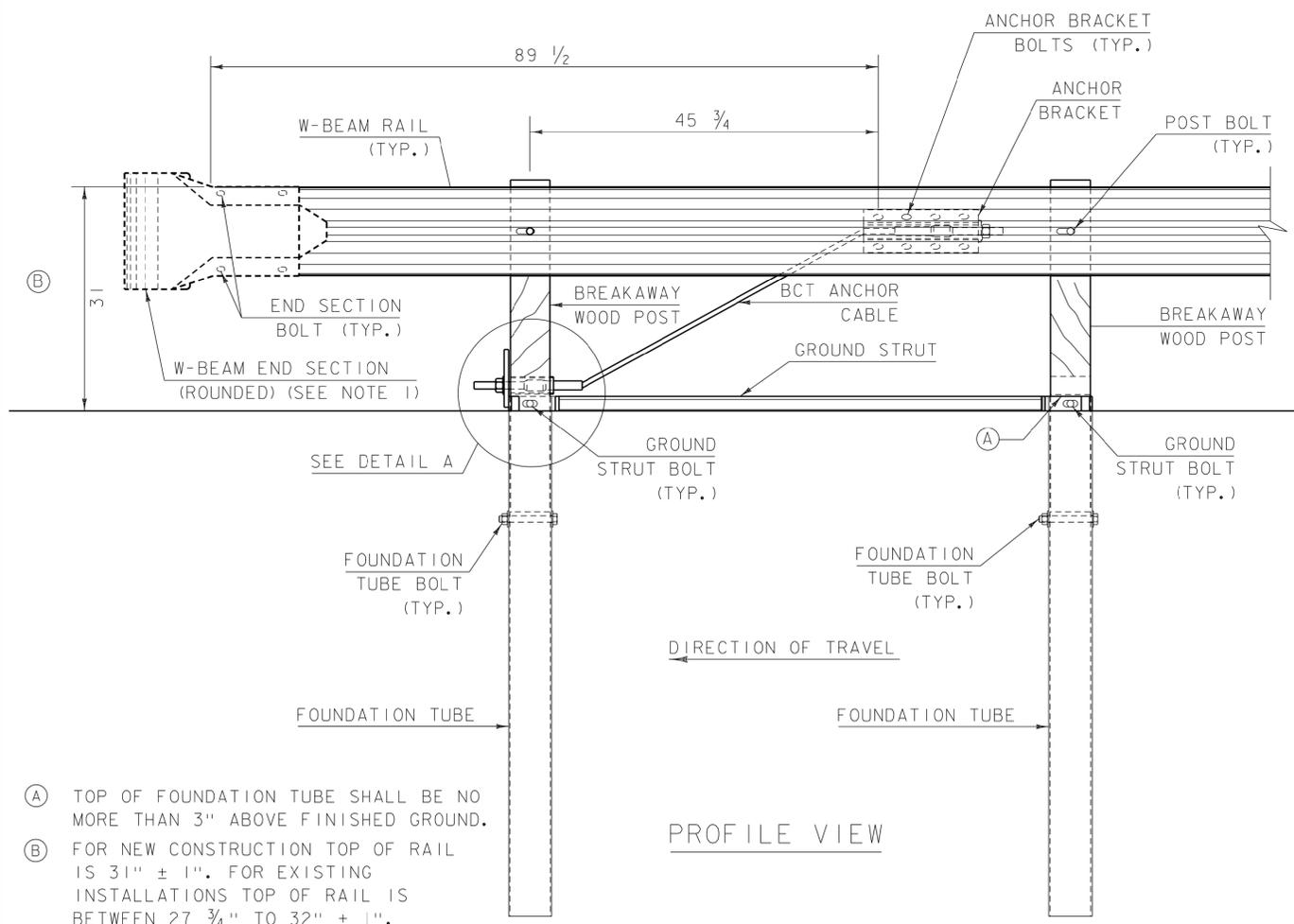
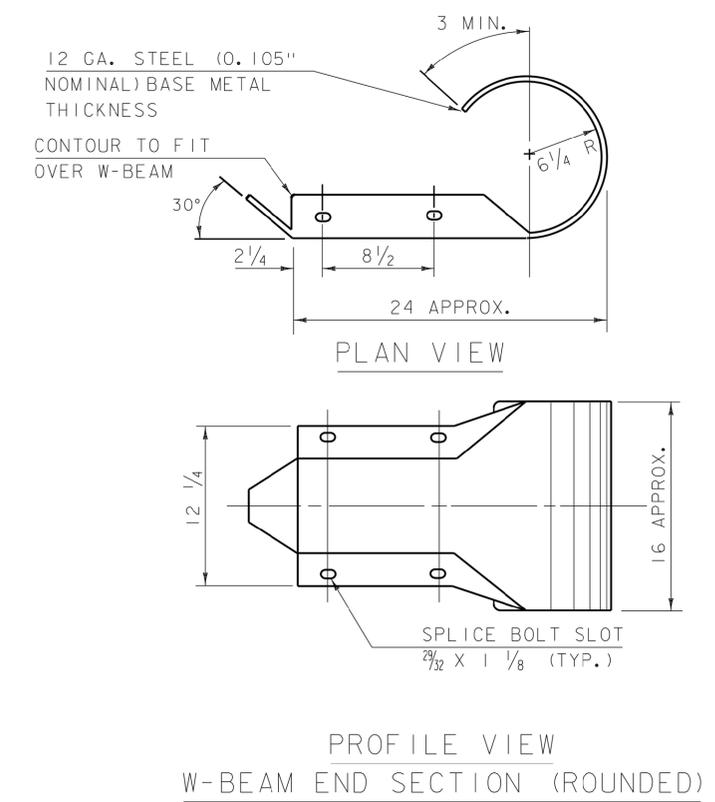
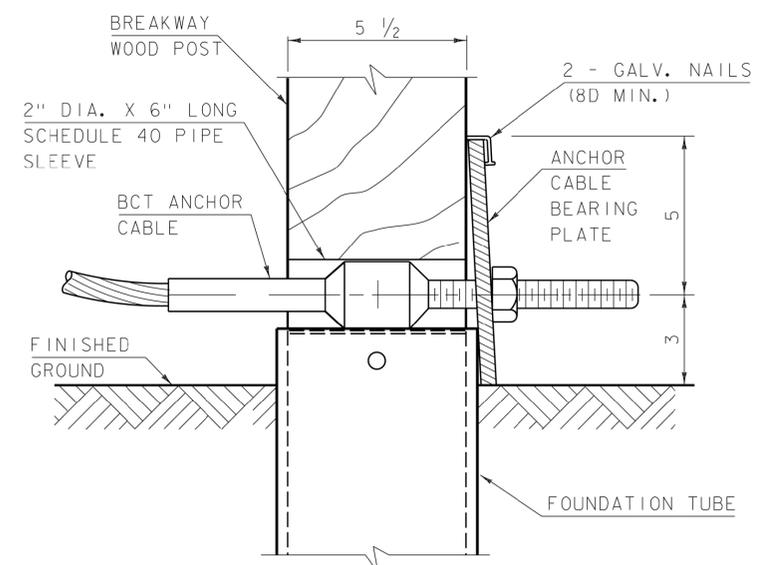
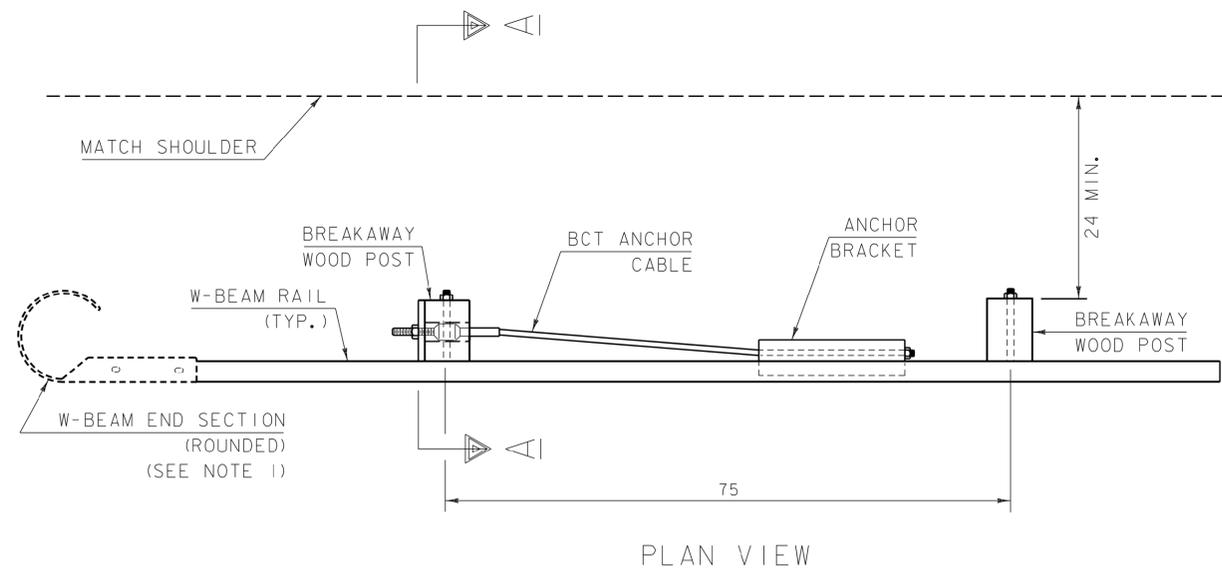
* POST LENGTH SHALL BE INCREASED TO 96 INCHES WHEN W BEAM GUARDRAIL, 8 FEET POSTS IS SPECIFIED.

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL
OTHER DETAILS REQUIRED: NONE		
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN		

**W-BEAM GUARDRAIL COMPONENTS**



**HIGHWAY SAFETY**  
**& DESIGN DETAIL**  
**HSD - 621.07B**



POST NO. 1  
GROUND STRUT NOT SHOWN FOR CLARITY.

SECTION A-A

GENERAL NOTES

1. WHEN AN ANCHOR IS USED IN THE MIDDLE OF A GUARDRAIL RUN A STANDARD W-BEAM MID-SPLICE CONNECTION SHALL BE UTILIZED.
2. END SECTION SHALL ONLY BE INSTALLED AS TRAILING END ON ONE-WAY TRAFFIC ROADS.
3. W-BEAM END SECTION ROUNDED HAS THE SAME MATERIAL PROPERTIES AS STANDARD STEEL RAIL.
4. END SECTION BOLTS AND NUTS HAVE THE SAME MATERIAL REQUIREMENTS AS SPLICE BOLTS.
5. FOUNDATION TUBE BOLTS ARE 7/8" DIAMETER ASTM A307 HEX HEAD BOLT. FOUNDATION TUBE BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 7/8" DIAMETER FLAT WASHERS. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.
6. ANCHOR BRACKET AND GROUND STRUT BOLTS ARE A 5/8" DIAMETER ASTM A307 HEX HEAD BOLT. ANCHOR BRACKET BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 5/8" DIAMETER FLAT WASHERS. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.
7. W-BEAM END SECTION (ROUNDED) AND W-BEAM RAIL SHALL BE PAID FOR UNDER ITEM 621.20 STEEL BEAM GUARDRAIL GALVANIZED. ALL OTHER COMPONENTS SHALL BE PAID FOR UNDER ITEM 621.60 ANCHOR FOR STEEL BEAM RAIL.
8. ALL MEASUREMENTS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

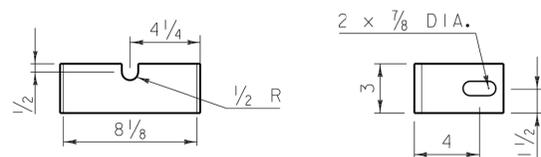
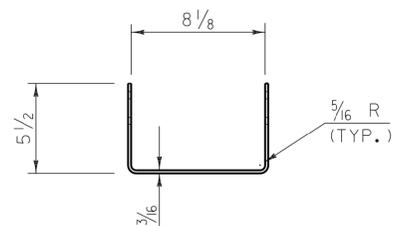
- (A) TOP OF FOUNDATION TUBE SHALL BE NO MORE THAN 3" ABOVE FINISHED GROUND.
- (B) FOR NEW CONSTRUCTION TOP OF RAIL IS 31" ± 1". FOR EXISTING INSTALLATIONS TOP OF RAIL IS BETWEEN 27 3/4" TO 32" ± 1".

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL
OTHER DETAILS REQUIRED: HSD-621.07D, HSD-621.07E		
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN		

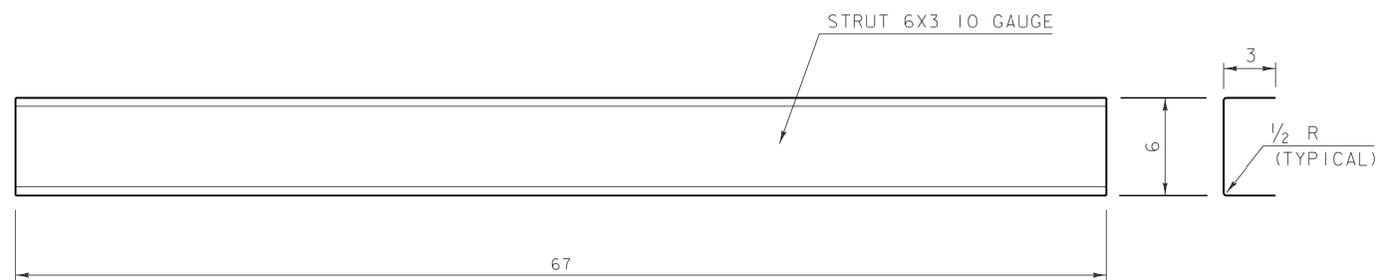
# MIDWEST GUARDRAIL SYSTEM (MGS) ANCHOR



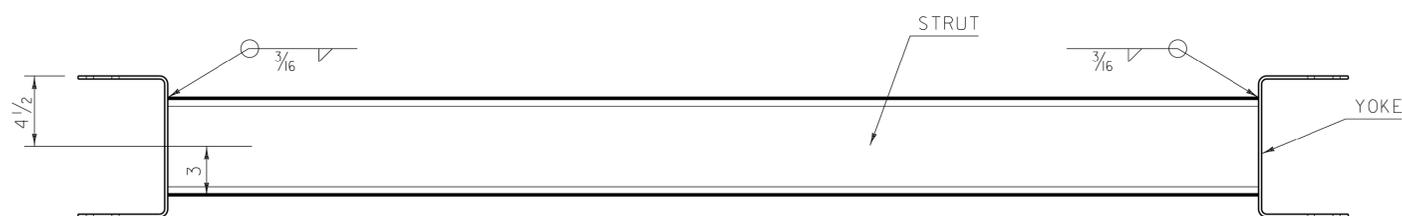
HIGHWAY SAFETY  
& DESIGN DETAIL  
HSD-621.07C



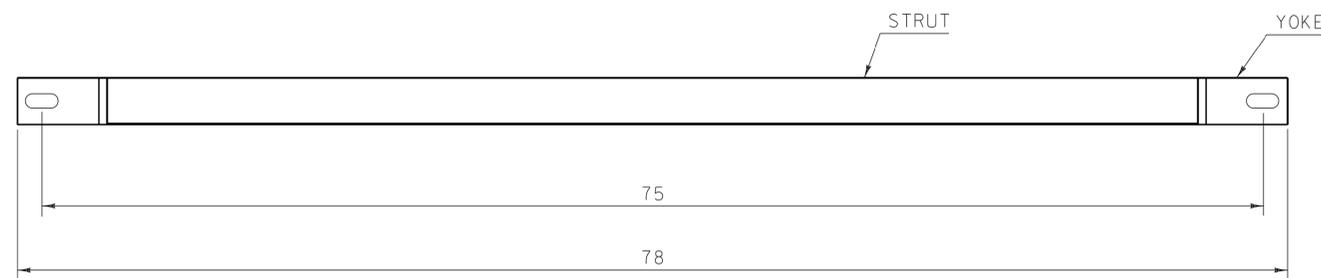
YOKE DETAIL



STRUT DETAIL

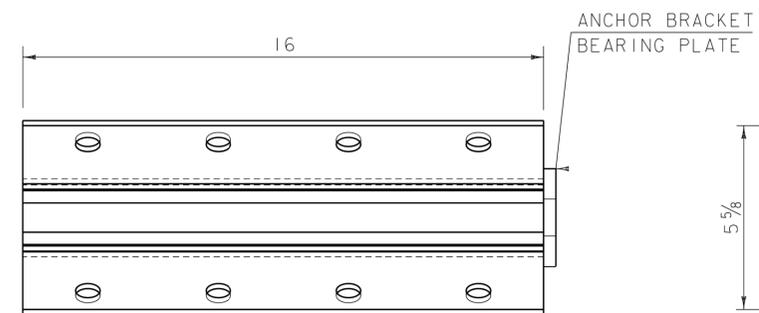
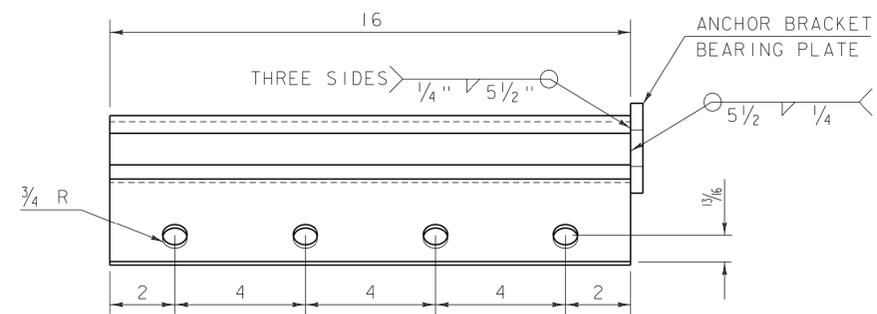


PLAN VIEW

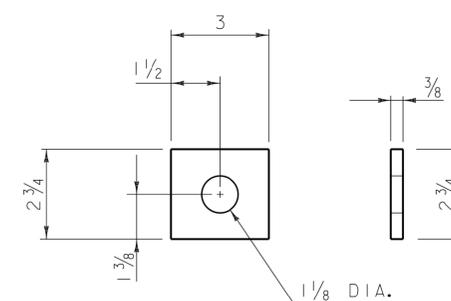
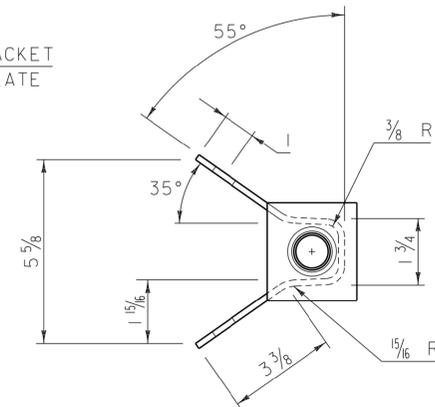


PROFILE VIEW

GROUND STRUT DETAIL



ANCHOR BRACKET



ANCHOR BRACKET BEARING PLATE

GENERAL NOTES

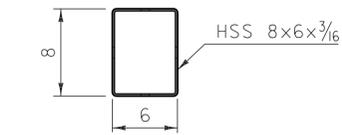
1. ALL MEASUREMENTS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL
OTHER DETAILS REQUIRED: HSD-621.07C, HSD-621.07E		
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN		

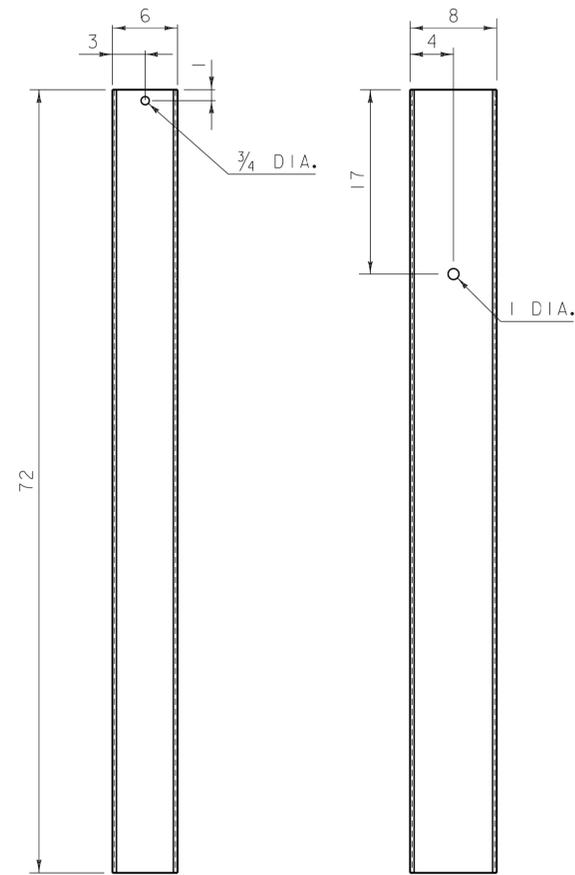
# MIDWEST GUARDRAIL SYSTEM (MGS) ANCHOR COMPONENTS



HIGHWAY SAFETY  
& DESIGN DETAIL  
HSD-621.07D



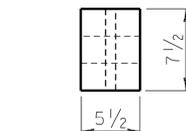
PLAN VIEW



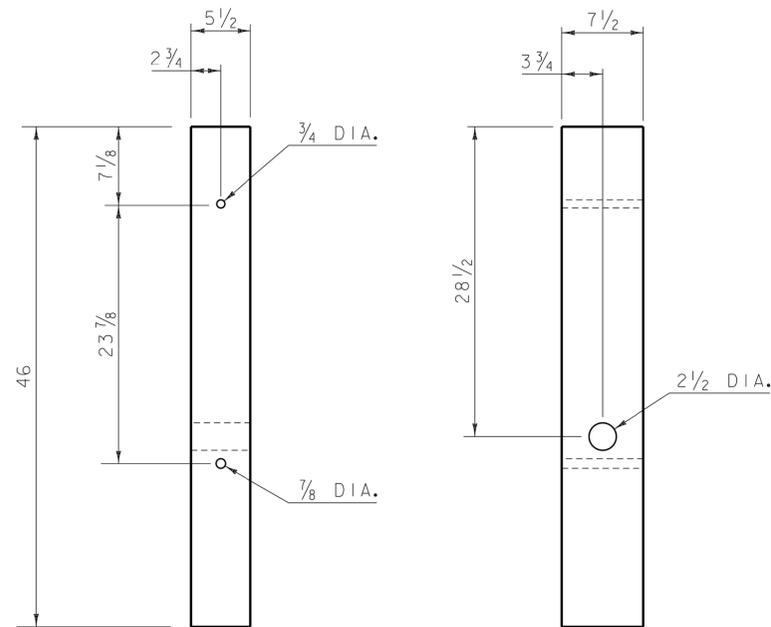
FRONT VIEW

SIDE VIEW

FOUNDATION TUBE



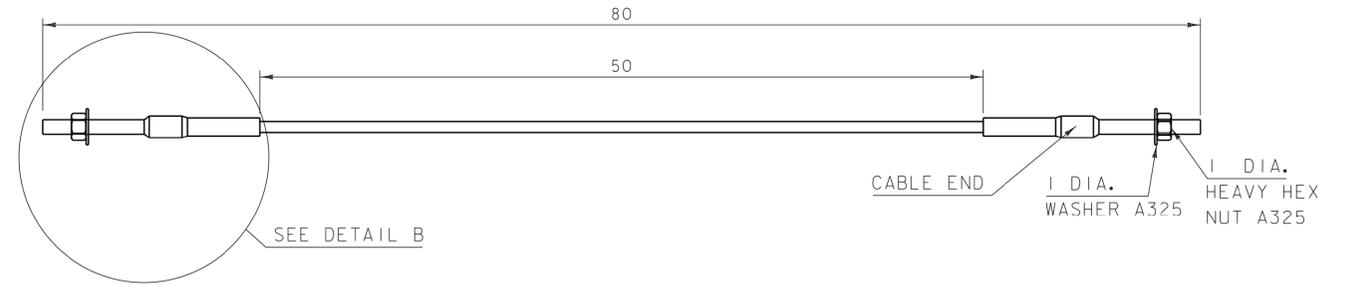
PLAN VIEW



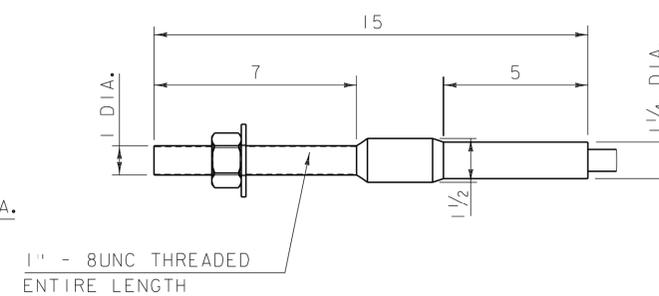
FRONT VIEW

SIDE VIEW

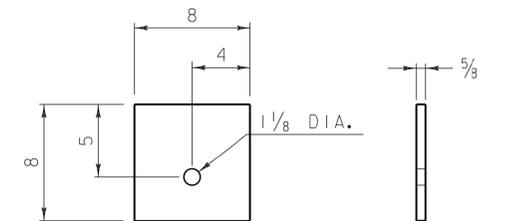
BREAKAWAY WOOD POST



BCT ANCHOR CABLE



DETAIL B



SIDE VIEW

FRONT VIEW

ANCHOR CABLE BEARING PLATE

GENERAL NOTES

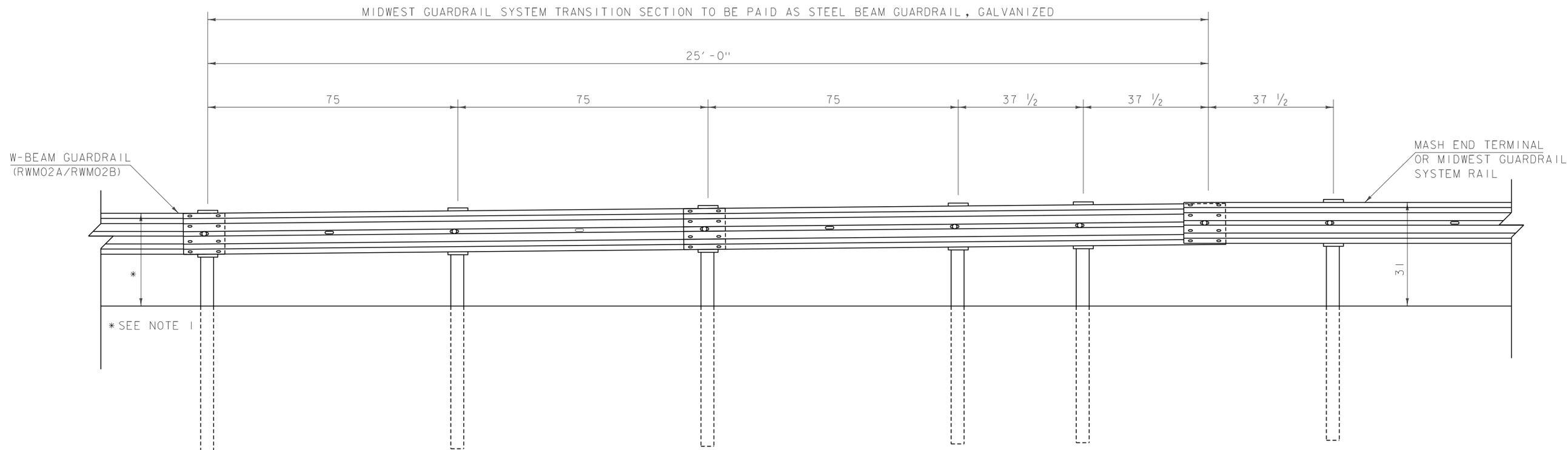
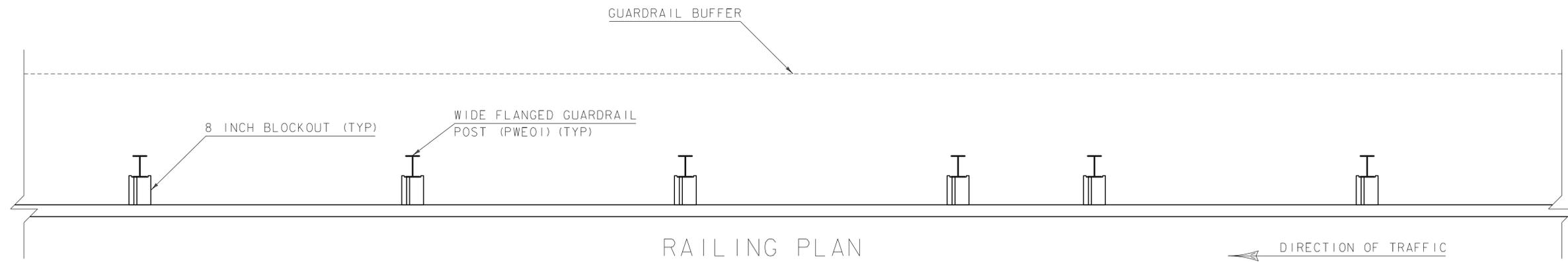
1. BCT ANCHOR CABLE IS A 3/4" DIAMETER 6X19 IWRC IPS GALVANIZED WIRE ROPE. THE SWAGED FITTINGS AND STUD ARE REQUIRED.
2. END FITTING SHALL BE MACHINED FROM HOT-ROLLED CARBON STEEL CONFORMING TO ASTM A576 GRADE 1035 AND GALVANIZED ACCORDING TO ASTM A123.
3. TREADED STUD SHALL CONFORM TO ASTM A325 OR SAE GRADE 5.
4. MINIMUM BREAKING STRENGTH OF WIRE ROPE IS 43,000 LB.
5. WIRE ROPE IS TO BE TAUT.
6. ALL MEASUREMENTS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL
OTHER DETAILS REQUIRED: HSD-621.07C, HSD-621.07D		
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN		

MIDWEST GUARDRAIL SYSTEM (MGS)  
ANCHOR COMPONENTS



HIGHWAY SAFETY  
& DESIGN DETAIL  
HSD-621.07E



RAILING ELEVATION

GENERAL NOTES

1. THE HEIGHT OF RAIL AT THE END OF THIS TRANSITION SHALL MATCH THE DESIGN FOR THE APPLICABLE GUARDRAIL SYSTEM.
2. TRANSITIONS FROM 31 INCH HIGH MIDWEST GUARDRAIL SYSTEM TO OTHER RAIL SYSTEMS SHALL BE ACCOMPLISHED WITH 2 STANDARD 12 1/2 FOOT SECTIONS OF W-BEAM RAIL.
3. POSTS, BLOCKOUTS AND SPLICES SHALL BE IN ACCORDANCE WITH DETAILS HSD-621.07A AND HSD-621.07B AND LOCATED AS SHOWN IN THE DETAILS ABOVE.
4. STANDARD 6 FOOT POSTS SHALL BE USED UNLESS OTHERWISE NOTED ON PLANS.
5. END TERMINAL SHALL BE A VTRANS APPROVED PRODUCT MEETING MASH TESTING CRITERIA. ANY TERMINAL USED SHALL BE FROM THE VTRANS APPROVED PRODUCTS LIST.
6. ALL MEASUREMENTS ARE IN INCHES UNLESS OTHERWISE NOTED.

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL
I	JAN. 4, 2021	CORRECTED NOTE 3 REFERENCES
OTHER DETAILS REQUIRED: HSD-621.07A, HSD-621.07B		
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN		

## MIDWEST GUARDRAIL SYSTEM TRANSITION SECTION



HIGHWAY SAFETY  
& DESIGN DETAIL  
HSD-621.07F

**Vermont Agency of Transportation**

SUNDERLAND BM20102

Estimate PRELIMINARY - Preliminary Engineering (19-5)

Phase: PRELIMINARY	Designed By:
Estimate Date: 23 July, 2025	Reviewed By:
Specification: Standard Specifications for Construction	Approved By:
Region: SOUTHWEST	Work Type: ROADS & HIGHWAY CONSTRUCTION
Town: SUNDERLAND	Highway Type: OTHER PRINCIPAL ARTERIAL
Advertising Season: CONSTRUCTION SEASON	Urban/Rural: RURAL
Description: REPLACEMENT OF EXISTING BRIDGE STRUCTURE (BRIDGE 19-5) WITH A NEW STRUCTURE WITH RELATED APPROACH ROADWAY AND CHANNEL WORK.	

Category

**1011 - ROADWAY**

Item Number	Description	Supplemental Description	Quantity	Unit	Unit Price	Amount
201.1000	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	(BRIDGE 19-5)	1.00	LS	\$10,000.000	\$10,000.00
203.1500	COMMON EXCAVATION		1,625.00	CY	\$26.775	\$43,509.38
203.3000	EARTH BORROW		60.00	CY	\$27.703	\$1,662.18
203.3200	GRANULAR BORROW		380.00	CY	\$48.640	\$18,483.20
210.1000	COARSE-MILLING, BITUMINOUS PAVEMENT		675.00	SY	\$19.682	\$13,285.35
301.3500	SUBBASE OF DENSE GRADED CRUSHED STONE		1,450.00	CY	\$56.681	\$82,187.45
404.1100	TACK COAT, EMULSIFIED ASPHALT		21.00	CWT	\$73.740	\$1,548.54
406.0230	BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER III		315.00	TON	\$208.027	\$65,528.51
406.0430	BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER III		270.00	TON	\$226.698	\$61,208.46
406.9100	PAY ADJUSTMENT, BCP, MIXTURE PROPERTIES (N.A.B.I.)		1.00	DL	\$1.000	\$1.00
406.9200	PAY ADJUSTMENT, BCP, MAT DENSITY (N.A.B.I.)		1.00	DL	\$1.000	\$1.00
410.1000	MATERIAL TRANSFER VEHICLE		585.00	TON	\$1.874	\$1,096.29
630.1000	UNIFORMED TRAFFIC OFFICERS		126.00	HR	\$68.958	\$8,688.71
630.1500	FLAGGERS		210.00	HR	\$49.544	\$10,404.24
635.1100	MOBILIZATION/DEMOBILIZATION	(BRIDGE 19-5)	1.00	LS	\$120,000.000	\$120,000.00
641.1100	TRAFFIC CONTROL, ALL-INCLUSIVE	(BRIDGE 19-5)	1.00	LS	\$60,000.000	\$60,000.00
641.1500	PORTABLE CHANGEABLE MESSAGE SIGN		4.00	EACH	\$4,774.863	\$19,099.45
641.2200	TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE	(BRIDGE 19-5)	5.00	EACH	\$20,000.000	\$100,000.00
641.2200001	DRIVEWAY ASSISTANCE DEVICE	(BRIDGE 19-5)	1.00	EACH	\$7,000.000	\$7,000.00
646.2010	4 INCH WHITE LINE, WATERBORNE PAINT		750.00	LF	\$1.677	\$1,257.75
646.2111	4 INCH YELLOW LINE, WATERBORNE PAINT		750.00	LF	\$1.588	\$1,191.00
649.1100	GEOTEXTILE FOR ROADBED SEPARATOR		2,000.00	SY	\$2.723	\$5,446.00

# Vermont Agency of Transportation

SUNDERLAND BM20102

Estimate PRELIMINARY - Preliminary Engineering (19-5)

675.5000	SIGN REMOVAL, FLAT SHEET ALUMINUM	2.00	EACH	\$46.938	\$93.88
675.6000	RESETTING SIGNS	2.00	EACH	\$100.077	\$200.15
676.1500	REMOVE AND REPLACE DELINEATOR	1.00	EACH	\$5.000	\$5.00
690.0300	PRICE ADJUSTMENT, ASPHALT (N.A.B.I.)	1.00	DL	\$1.000	\$1.00
Category total:					\$631,898.53

Category  
**1051 - EROSION CONTROL**

Item Number	Description	Supplemental Description	Quantity	Unit	Unit Price	Amount
651.1600	TURF ESTABLISHMENT, SPECIALTY SEED		2,148.03	SY	\$0.950	\$2,040.63
651.3500	TOPSOIL		180.00	CY	\$66.411	\$11,953.98
651.4012	GRUBBING MATERIAL, 12 INCH		49.90	SY	\$30.462	\$1,520.05
653.0100	EPSC PLAN	(BRIDGE 19-5)	1.00	LS	\$5,000.000	\$5,000.00
653.0200	MONITORING EPSC PLAN		100.00	HR	\$42.005	\$4,200.50
653.0300	MAINTENANCE OF EPSC PLAN (N.A.B.I.)		4,000.00	DL	\$1.000	\$4,000.00
653.2001	ROLLED EROSION CONTROL PRODUCT, TYPE I		1,600.00	SY	\$3.443	\$5,508.80
653.3500	STABILIZED CONSTRUCTION ENTRANCE		17.00	CY	\$56.932	\$967.84
653.4500	FILTER BAG		2.00	EACH	\$539.505	\$1,079.01
653.4701	SILT FENCE, TYPE I		830.00	LF	\$4.863	\$4,036.29
653.5000	BARRIER FENCE		830.00	LF	\$3.296	\$2,735.68
Category total:						\$43,042.79

Category  
**1211 - BRIDGE NO. 1**

Description  
Bridge 19-5

Item Number	Description	Supplemental Description	Quantity	Unit	Unit Price	Amount
203.2700	UNCLASSIFIED CHANNEL EXCAVATION		400.00	CY	\$38.393	\$15,357.20
204.2500	STRUCTURE EXCAVATION		950.00	CY	\$38.724	\$36,787.80
204.3000	GRANULAR BACKFILL FOR STRUCTURES		400.00	CY	\$67.420	\$26,968.00
514.1000	WATER REPELLENT, SILANE		4.00	GAL	\$128.255	\$513.02
529.1500	REMOVAL OF STRUCTURE	(8.2 FT X 5.8 FT X 162 FT CGMPPA)	1.00	EACH	\$147,826.452	\$147,826.45
540.1000	PRECAST CONCRETE STRUCTURE	(14 FT X 8 FT X 125 FT BOX CULVERT)	1.00	LS	\$525,000.000	\$525,000.00
613.0602	E-STONE FILL, TYPE II		250.00	CY	\$97.042	\$24,260.50
613.1001	STONE FILL, TYPE I		10.00	CY	\$121.029	\$1,210.29
613.1002	STONE FILL, TYPE II		120.00	CY	\$94.327	\$11,319.24
614.1000	TEMPORARY RELOCATION OF STREAM	(BRIDGE 19-5)	1.00	EACH	\$50,000.000	\$50,000.00
649.3100	GEOTEXTILE UNDER STONE FILL		360.00	SY	\$5.183	\$1,865.88

Vermont Agency of Transportation

SUNDERLAND BM20102

Estimate PRELIMINARY - Preliminary Engineering (19-5)

Category total: \$841,108.38

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Category

**1999 - FULL C.E. ITEMS**

Item Number	Description	Supplemental Description	Quantity	Unit	Unit Price	Amount
631.1000	FIELD OFFICE, ENGINEER'S	(BRIDGE 19-5)	1.00	LS	\$40,000.000	\$40,000.00
631.1700	TESTING EQUIPMENT, BITUMINOUS	(BRIDGE 19-5)	1.00	LS	\$1.000	\$1.00
631.1900	TESTING EQUIPMENT, GROUT	(BRIDGE 19-5)	1.00	LS	\$1.000	\$1.00
631.2600	FIELD OFFICE COMMUNICATIONS (N.A.B.I.)		3,000.00	DL	\$1.000	\$3,000.00
Category total:						\$43,002.00

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Category

**3041 - LANDSCAPING**

Item Number	Description	Supplemental Description	Quantity	Unit	Unit Price	Amount
656.3002	DECIDUOUS TREES, MEDIUM		18.00	EACH	\$400.000	\$7,200.00
656.3500	DECIDUOUS SHRUBS		24.00	EACH	\$60.920	\$1,462.08
656.6500	LANDSCAPE WATERING		7.80	MGAL	\$210.000	\$1,638.00
656.8000	LANDSCAPE BACKFILL, TRUCK MEASUREMENT		7.31	CY	\$62.340	\$455.71
Category total:						\$10,755.79

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**Grand Total:** \$1,569,807.48

**Vermont Agency of Transportation**

SUNDERLAND NH CULV(122)

Estimate PRELIMINARY - Preliminary Engineering (19-7)

Phase: PRELIMINARY	Designed By:
Estimate Date: 23 July, 2025	Reviewed By:
Specification: Standard Specifications for Construction	Approved By:
Region: SOUTHWEST	Work Type: ROADS & HIGHWAY CONSTRUCTION
Town: SUNDERLAND	Highway Type: OTHER PRINCIPAL ARTERIAL
Advertising Season: CONSTRUCTION SEASON	Urban/Rural: RURAL
Description: REPLACEMENT OF EXISTING BRIDGE STRUCTURE (BRIDGE 19-7) WITH A NEW STRUCTURE WITH RELATED APPROACH ROADWAY AND CHANNEL WORK.	

Category

**1011 - ROADWAY**

Item Number	Description	Supplemental Description	Quantity	Unit	Unit Price	Amount
201.1000	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	(BRIDGE 19-7)	1.00	LS	\$10,000.000	\$10,000.00
203.1500	COMMON EXCAVATION		1,850.00	CY	\$26.167	\$48,408.95
203.3000	EARTH BORROW		120.00	CY	\$22.676	\$2,721.12
203.3200	GRANULAR BORROW		500.00	CY	\$47.471	\$23,735.50
210.1000	COARSE-MILLING, BITUMINOUS PAVEMENT		775.00	SY	\$18.457	\$14,304.18
301.3500	SUBBASE OF DENSE GRADED CRUSHED STONE		1,600.00	CY	\$55.995	\$89,592.00
401.1000	AGGREGATE SURFACE COURSE		55.00	CY	\$66.213	\$3,641.72
404.1100	TACK COAT, EMULSIFIED ASPHALT		23.00	CWT	\$71.622	\$1,647.31
406.0230	BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER III		361.00	TON	\$203.850	\$73,589.85
406.0430	BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER III		302.00	TON	\$222.700	\$67,255.40
406.9100	PAY ADJUSTMENT, BCP, MIXTURE PROPERTIES (N.A.B.I.)		1.00	DL	\$1.000	\$1.00
406.9200	PAY ADJUSTMENT, BCP, MAT DENSITY (N.A.B.I.)		1.00	DL	\$1.000	\$1.00
410.1000	MATERIAL TRANSFER VEHICLE		663.00	TON	\$1.860	\$1,233.18
621.0100	REMOVAL OF GUARDRAIL		560.00	LF	\$1.794	\$1,004.64
621.1060	STEEL BEAM GUARDRAIL		575.00	LF	\$30.715	\$17,661.13
621.3030	MTS, MGS, TANGENT, TL-3		2.00	EACH	\$2,954.197	\$5,908.39
630.1000	UNIFORMED TRAFFIC OFFICERS		126.00	HR	\$68.958	\$8,688.71
630.1500	FLAGGERS		210.00	HR	\$49.544	\$10,404.24
635.1100	MOBILIZATION/DEMOBILIZATION	(BRIDGE 19-7)	1.00	LS	\$130,000.000	\$130,000.00
641.1100	TRAFFIC CONTROL, ALL-INCLUSIVE	(BRIDGE 19-7)	1.00	LS	\$60,000.000	\$60,000.00
641.1500	PORTABLE CHANGEABLE MESSAGE SIGN		4.00	EACH	\$4,774.863	\$19,099.45
641.2200	TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, PORTABLE		5.00	EACH	\$20,000.000	\$100,000.00

**Vermont Agency of Transportation**

SUNDERLAND NH CULV(122)

Estimate PRELIMINARY - Preliminary Engineering (19-7)

641.2200001	DRIVEWAY ASSISTANCE DEVICE		1.00	EACH	\$7,000.000	\$7,000.00
646.2010	4 INCH WHITE LINE, WATERBORNE PAINT		750.00	LF	\$1.677	\$1,257.75
646.2111	4 INCH YELLOW LINE, WATERBORNE PAINT		750.00	LF	\$1.588	\$1,191.00
649.1100	GEOTEXTILE FOR ROADBED SEPARATOR		2,100.00	SY	\$2.695	\$5,659.50
675.5000	SIGN REMOVAL, FLAT SHEET ALUMINUM		3.00	EACH	\$43.092	\$129.28
675.6000	RESETTING SIGNS		3.00	EACH	\$87.804	\$263.41
676.1000	DELINEATOR WITH STEEL POST		2.00	EACH	\$148.898	\$297.80
690.0300	PRICE ADJUSTMENT, ASPHALT (N.A.B.I.)		1.00	DL	\$1.000	\$1.00
Category total:						\$704,697.49

Category

**1051 - EROSION CONTROL**

Item Number	Description	Supplemental Description	Quantity	Unit	Unit Price	Amount
651.1600	TURF ESTABLISHMENT, SPECIALTY SEED		1,537.00	SY	\$0.950	\$1,460.15
651.3500	TOPSOIL		160.00	CY	\$67.330	\$10,772.80
651.4012	GRUBBING MATERIAL, 12 INCH		100.00	SY	\$25.876	\$2,587.60
653.0100	EPSC PLAN	(BRIDGE 19-7)	1.00	LS	\$5,000.000	\$5,000.00
653.0200	MONITORING EPSC PLAN		100.00	HR	\$42.005	\$4,200.50
653.0300	MAINTENANCE OF EPSC PLAN (N.A.B.I.)		4,000.00	DL	\$1.000	\$4,000.00
653.2001	ROLLED EROSION CONTROL PRODUCT, TYPE I		1,375.00	SY	\$3.481	\$4,786.38
653.3500	STABILIZED CONSTRUCTION ENTRANCE		17.00	CY	\$56.932	\$967.84
653.4500	FILTER BAG		2.00	EACH	\$539.505	\$1,079.01
653.4701	SILT FENCE, TYPE I		950.00	LF	\$4.800	\$4,560.00
653.5000	BARRIER FENCE		950.00	LF	\$3.295	\$3,130.25
Category total:						\$42,544.53

Category

**1221 - BRIDGE NO. 2**

Description

Bridge 19-7

Item Number	Description	Supplemental Description	Quantity	Unit	Unit Price	Amount
203.2700	UNCLASSIFIED CHANNEL EXCAVATION		450.00	CY	\$37.808	\$17,013.60
204.2500	STRUCTURE EXCAVATION		1,200.00	CY	\$36.170	\$43,404.00
204.3000	GRANULAR BACKFILL FOR STRUCTURES		400.00	CY	\$67.420	\$26,968.00
514.1000	WATER REPELLENT, SILANE		4.00	GAL	\$128.255	\$513.02
529.1500	REMOVAL OF STRUCTURE	(7 FT DIA. X 120 FT CGMPP)	1.00	EACH	\$147,826.452	\$147,826.45
540.1000	PRECAST CONCRETE STRUCTURE	(14 FT X 8 FT X 125 FT BOX CULVERT)	1.00	LS	\$550,000.000	\$550,000.00
613.0602	E-STONE FILL, TYPE II		270.00	CY	\$96.829	\$26,143.83

**Vermont Agency of Transportation**

SUNDERLAND NH CULV(122)

Estimate PRELIMINARY - Preliminary Engineering (19-7)

613.1001	STONE FILL, TYPE I		10.00	CY	\$121.029	\$1,210.29
613.1002	STONE FILL, TYPE II		225.00	CY	\$94.458	\$21,253.05
614.1000	TEMPORARY RELOCATION OF STREAM	(BRIDGE 19-7)	1.00	EACH	\$50,000.000	\$50,000.00
649.3100	GEOTEXTILE UNDER STONE FILL		510.00	SY	\$4.846	\$2,471.46
Category total:						\$886,803.70

Category  
**1999 - FULL C.E. ITEMS**

Item Number	Description	Supplemental Description	Quantity	Unit	Unit Price	Amount
631.1000	FIELD OFFICE, ENGINEER'S	(BRIDGE 19-7)	1.00	LS	\$40,000.000	\$40,000.00
631.1700	TESTING EQUIPMENT, BITUMINOUS	(BRIDGE 19-7)	1.00	LS	\$1.000	\$1.00
631.1900	TESTING EQUIPMENT, GROUT	(BRIDGE 19-7)	1.00	LS	\$1.000	\$1.00
631.2600	FIELD OFFICE COMMUNICATIONS (N.A.B.I.)		3,000.00	DL	\$1.000	\$3,000.00
Category total:						\$43,002.00

Category  
**3041 - LANDSCAPING**

Item Number	Description	Supplemental Description	Quantity	Unit	Unit Price	Amount
656.3002	DECIDUOUS TREES, MEDIUM		24.00	EACH	\$400.000	\$9,600.00
656.3500	DECIDUOUS SHRUBS		32.00	EACH	\$60.920	\$1,949.44
656.6500	LANDSCAPE WATERING		10.00	MGAL	\$210.000	\$2,100.00
656.8000	LANDSCAPE BACKFILL, TRUCK MEASUREMENT		10.00	CY	\$62.340	\$623.40
Category total:						\$14,272.84

**Grand Total:** \$1,691,320.56

SPECIAL PROVISIONS

1. NOTICE TO BIDDERS – CONTRACT COMPLETION DATE. This Contract shall be completed on or before September 15, 2026.
2. NOTICE TO BIDDERS – PROHIBITION OF RUSSIAN GOODS. The Contractor is hereby notified that, pursuant to Vermont Executive Order No. 02-22, dated March 3rd, 2022, the purchase of Russian-sourced goods and goods produced by Russian entities (defined as institutions or companies that are headquartered in Russia or have their principal place of business in Russia) is prohibited. The awarded Contractor must fill out and sign the Executive Order 02-22 Vendor Certification as part of the Contract awarding process
3. NOTICE TO BIDDERS – WORK REQUIREMENTS. The Contractor is hereby notified that tree clearing shall be completed prior to March 31.
4. NOTICE TO BIDDERS – ELECTRONIC DOCUMENT MANAGEMENT. The Contractor is hereby notified that the Contractor, their subcontractors, and suppliers shall create both a Doc Express and an iCXWeb account. The Contractor shall use these applications for collection and management of electronic documents. Doc Express can be accessed at the following link: <https://docexpress.com>. iCXWeb can be accessed at the following link: [vtrans.exevision.com/icx/Index.aspx](https://vtrans.exevision.com/icx/Index.aspx).

All costs associated with the use of Doc Express and iCXWeb will be considered incidental to Item 635.1100, Mobilization/Demobilization. The State will manage the applications including Contract setup upon Contract execution.

To create an account and for more information regarding the use of Doc Express see the information at the following link:

<https://outside.vermont.gov/agency/vtrans/external/docs/construction/Contracting/DocExpressOverviewforContractors.docx>.

To create an account and for more information regarding the use of iCXWeb see the information at the following link: <https://vtrans.vermont.gov/icx>.

5. NOTICE TO BIDDERS – ELECTRONIC TICKETING VTRANS PORTAL. The Contractor is hereby notified that the Contractor, their subcontractors, and suppliers shall connect to the VTrans Portal and use the application for distribution and management of electronic tickets (e-tickets). VTrans Portal is a state cloud-based e-ticket database, including a web-based user interface and a jobsite mobile e-ticket application. VTrans Portal will interface with the Contractor's supplier existing point of sales or e-ticketing platform and will allow VTrans to manage bituminous material e-tickets.

All costs associated with the use of VTrans Portal will be considered incidental to the appropriate Section 406 and Section 407 pay items. The Agency will manage the VTrans Portal application including Contract setup upon Contract execution.

To create an account, connect to the VTrans Portal, and for more information regarding the use of VTrans Portal see the information at the following link: <https://www.haulhub.com/vermont-agency-transport-22/>

6. NOTICE TO BIDDERS – CONTACT WITH THE AGENCY. From the time of advertising until the actual bid opening for this Contract, all prospective Contractors, subcontractors, and suppliers shall direct all inquiries related to this Contract solely to the Agency's Contract Administration Section at [AOT.ConstructionContractingInquiry@vermont.gov](mailto:AOT.ConstructionContractingInquiry@vermont.gov).

The deadline for submitting inquiries related to this Contract is 4:30 p.m. Eastern Time on November 19, 2025. Inquiries received prior to this time will receive a response from the Agency. Inquiries received after this time may receive a response at the Agency's discretion.

7. NOTICE TO BIDDERS – OTHER SPECIFICATIONS AND CONTRACT REQUIREMENTS.

**[Project Permits]**

Impact Plans

FHWA 1273 – Required Contract Provisions for Federal Aid Construction Contracts (Applies to all FHWA funded Projects)

USDOL Davis Bacon Wage Rates by County (Applies to all Federal Aid Projects)

Disadvantaged Business Enterprise (DBE) Policy Contract Requirements - CR-110

Attachment C - Standard State Provisions for Contracts and Grants

USDOT Standard Title VI Nondiscrimination Assurances Appendices A, E

Standard Federal Equal Employee Opportunity (EEO) Construction Contract Specifications CA26

Contractor Equal Employment Opportunity (EEO) Certification Form – CA109

Vermont Agency of Transportation Certificate of Compliance – CA271

Vermont Agency of Transportation Minimum Labor and Truck Rates – CA101

Commodity Index Prices – CA170

Schedule of Pay Items

8. **NOTICE TO BIDDERS – PENDING PERMIT.** The Contractor is hereby notified that approval of the **permit name** permit is currently pending. The Agency will not award this Contract until this permit has been approved. It is expected that the project will be built as shown in the Contract. In the event that future conditions of the permit require work to be added to the Contract, the work will be reimbursed to the Contractor as Extra Work per Subsection 109.06

9. NOTICE TO BIDDERS – NEW PREQUALIFICATION FORM. The Contractor is hereby notified that the Agency is required by the U.S. Department of Transportation to develop and maintain a list of information about all firms that bid on federally funded Contracts in accordance

with 49 C.F.R. § 26.11. The Agency has developed a new electronic form to collect this information. The Contractor shall fill out this form as part of their project-specific prequalification for every Contract that they bid on. A link to this form is provided in the prequalification form available through iCX and the Agency's website

10. NOTICE TO BIDDERS – DAVIS-BACON. U.S. Department of Labor Davis-Bacon wage rates are applicable to this Contract. Copies of the applicable rates are included in this proposal.

*In the included wage rates, the requirements of Executive Order 13658 and 14026 do not apply to this Contract.*

11. NOTICE TO BIDDERS – STANDARD DRAWINGS. The Vermont Agency of Transportation Standard Drawings listed on the Index of Sheets are not included in the plan set, but may be found at the following address:  
[https://resources.vtrans.vermont.gov/resources/cadd/VAOTconSTD_Name.xml?_gl=1*6cpy62*_ga*MTU5MTQ3NTcyNi4xNzIwMjM5NjI0*_ga_V9WQH77KLW*czeE3NTI3NTYyMzQkbzE3NCRnMSR0MTc1Mjc1NjkwMyRqNjAkBDaKaDA](https://resources.vtrans.vermont.gov/resources/cadd/VAOTconSTD_Name.xml?_gl=1*6cpy62*_ga*MTU5MTQ3NTcyNi4xNzIwMjM5NjI0*_ga_V9WQH77KLW*czeE3NTI3NTYyMzQkbzE3NCRnMSR0MTc1Mjc1NjkwMyRqNjAkBDaKaDA).

12. NOTICE TO BIDDERS – INFORMATIONAL DOCUMENTS. The Contractor is hereby notified that the following informational documents for this Contract are available on iCXWeb and the VTrans Bid Opportunities website. These documents are being provided during the bid solicitation period for informational purposes only.

(a) Traffic Management Plan (TMP) Checklist

(b) Geotechnical Report

(c) Record Plans

13. NOTICE TO BIDDERS – SURFACE WATER WITHDRAWAL. The Contractor is hereby notified that the Vermont state law, Act 135 of 2022, requires any person withdrawing surface water (as defined in 10 V.S.A. § 1002 (20)) to register with and report the water withdrawal and usage to the Vermont Department of Environmental Conservation beginning January 1, 2023. Guidance can be found here: <https://dec.vermont.gov/watershed/rivers/streamflow-protection/act-135-surface-water-withdrawal-registration-and-reporting>

14. NOTICE TO BIDDERS – ENVIRONMENTAL COMMITMENTS. **Contract Commitments as written – found on Environmental Commitments Memo.**

15. NOTICE TO BIDDERS – UTILITIES. **Utility Special Provisions as written.**

16. NOTICE TO BIDDERS – CONCURRENT CONSTRUCTION. The Contractor is made aware of the following VTrans construction project(s) which are expected to be in progress within the area of this project during its construction.

TABLE 1 – CONCURRENT CONSTRUCTION PROJECTS

Project	Contractor	Anticipated Contract Completion Date
STATEWIDE - SOUTHERN REGION STP CRAK(44)	TBD	Aug 2022 - Jun 2024
ARLINGTON STP BP17(2)	TBD	Jun 2025 - Oct 2025
ARLINGTON VTRY(61) (Crosses VT 313)	TBD	TBD
HOOSICK-BENNINGTON-RUTLAND VTRY(59) (Crosses VT 313)	TBD	Oct 2025 - Jul 2026
ARLINGTON STP 319-1(29)	TBD	Dec 2025 - Jun 2026
VT Real Estate Holdings 1 LLC Shaftsbury Solar Array – Temporary Access from US7	TBD	2024 – Dec 2026

This list is not all-inclusive and it is possible there may be other VTrans, municipal, or private construction projects within the area of this project during its construction.

The Contractor shall coordinate construction schedules and traffic control with the work required for these projects.

There will be no extra compensation paid to the Contractor for any inconvenience caused by working around these or other projects.

17. NOTICE TO BIDDERS – SPECIAL CONSTRUCTION REQUIREMENTS.

(a) The Contractor shall maintain a safe access to all ramps and U-turns at all times during the construction of this project.

(b) During construction it will be necessary for the Contractor to maintain one-lane traffic for extended periods of time. In no case shall the paved width for this one-lane traffic, including shoulders, be reduced to less than 14 feet 6 inches. This paved width shall remain free of obstructions and obstacles at all times.

(c) The Contractor shall position Portable Changeable Message Signs at locations determined by the Engineer properly warning motorists of the roadway conditions ahead. As directed by the Engineer, these locations may change during construction as needs arise based on daily work activities. The message to be displayed shall be submitted to the Engineer in advance for approval. The displayed message should accurately reflect what motorists can expect to encounter through the project area. The cost of providing the Portable Changeable Message Signs will be paid for under Contract item 641.1500 or 641.1700, as applicable. The Contractor shall also install and

maintain appropriate construction signing warning the traveling public of the expected roadway surface conditions.

(d) Prior to final acceptance of the project, all drop inlets and bridge joints within the project limits shall be cleaned and all material within the drop inlets and bridge joints shall be removed. All paved areas adjacent to curbs shall be swept and cleaned of all extraneous material. Costs for this work will not be paid for directly, but will be considered incidental to all Contract items.

(e) There are special events throughout the year that may require close communication and coordination between the Contractor and the municipality to reduce conflicts. The municipality will advise the Engineer and Contractor of the specifics of each event and the Engineer will direct the Contractor as to what actions, if any, will be necessary on the Contractor's part to minimize impacts to the event. Special events that may conflict with Contractor operations are not limited to those which may be listed in this Notice to Bidders. There will be no extra compensation paid to the Contractor for any inconvenience caused by working around any listed or unlisted special events.

18. NOTICE TO BIDDERS – AFAD. The Contractor is hereby notified that Automated Flagger Assistance Devices (AFADs) are remotely operated devices that enable a certified flagger to be positioned out of the lane of traffic and are used to control motorists through work zones.

AFADs shall only be used in situations where there is no more than one lane of approaching traffic that needs to be controlled. Additionally, since AFADs are not traffic control signals, they shall not be used to replace traffic signals or other continuously operating traffic control devices.

These devices may be used as a safety enhancement to flaggers on an hour-for-hour basis. AFADs shall meet the following requirements:

(a) All AFAD applications shall meet the requirements of the applicable sections of the current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

(b) All AFAD applications shall be in accordance with NCHRP Report 350 or the MASH for the applicable test level and device weight. Documentation of the crashworthiness of the device shall be submitted to the Engineer for approval prior to use on the project.

(c) AFAD applications shall always be controlled by a flagger who has been trained in the operation of the AFAD and who meets the requirements of Section 630. The flagger shall not flag traffic and operate an AFAD at the same time.

(d) Should an AFAD malfunction or otherwise not function as intended they shall be replaced by another AFAD or flagger(s) or work shall cease and the roadway shall be opened to unrestricted traffic flow immediately.

(e) Each AFAD will be considered equivalent to one flagger and will be measured and paid for on an hourly basis under Item 630.1500 Flaggers. One hour of AFAD use shall be paid for as one hour of flagging.

(f) Flaggers will only be measured for payment when actually performing flagging duties. Flaggers controlling AFADs but not actually flagging will not be measured for payment, but will be considered incidental to the Contract lump sum price for Item 641.1000 Traffic Control, or Item 641.1100 Traffic Control, All-Inclusive, as applicable.

(g) The use of AFADs may be suspended at the discretion of the Engineer.

19. NOTICE TO BIDDERS – DESIRED QUANTITY OF LUMP SUM ITEMS FOR MULTI-PROJECT CONTRACTS. The Contractor is hereby notified that all items paid by the lump sum have been assigned a separate item for each project in the Contract. For the items specified in Table 1, the Agency only intends for the Contractor to supply 1 Lump Sum for the entire Contract. The Contractor shall distribute its bid price appropriately over all associated lump sum items in the Contract. For all items not listed in Table 1, the Contractor shall supply the quantity of items indicated in the Schedule of Items.

TABLE 1 – DESIRED QUANTITY OF LUMP SUM ITEMS

Item Number	Item Name	Desired Quantity
631.1000	Field Office, Engineers	1
631.1700	Testing Equipment, Bituminous	1
631.1900	Testing Equipment, Grout	1
635.1100	Mobilization/Demobilization	1
641.1000	Traffic Control	1
641.1100	Traffic Control, All-Inclusive	1

20. NOTICE TO BIDDERS – SUBSECTION 105.11(b). Subsection 105.11(b) is hereby modified by being deleted in its entirety and replaced with the following:

(b) Permanent Marking Layout. The Contractor shall be responsible for the layout of the permanent traffic markings in accordance with the Plans. The Engineer will verify the layout of the permanent traffic markings, including passing zones and breaks for town highways.

21. NOTICE TO BIDDERS – SUBSECTION 646.04(d). Subsection 646.04(d) is hereby modified by deleting the first sentence of the first paragraph in its entirety and replacing it with the following:

The Contractor shall be responsible for the layout for the permanent traffic markings as specified in Subsection 105.11(b).

- 22. NOTICE TO BIDDERS – SUBSECTION 107.21(b). Subsection 107.21(b) is hereby modified by deleting the phrase “M-22-11” from the second sentence and replacing it with the phrase “M-24-02”.
- 23. NOTICE TO BIDDERS – TABLE 108.12A. Table 108.12A is hereby modified by being deleted in its entirety and replaced with the following:

TABLE 108.12A – DAILY LIQUIDATED DAMAGES CHARGE PER WORKING DAY OF DELAY

Original Contract Amount		Daily Charge per Working Day of Delay
From More Than	To and Including	
\$0	\$1,500,000	\$3,200
\$1,500,000	\$3,000,000	\$3,400
\$3,000,000	\$5,000,000	\$3,600
\$5,000,000	\$10,000,000	\$4,100
\$10,000,000	\$15,000,000	\$4,700
\$15,000,000	\$20,000,000	\$5,200
\$20,000,000	--	\$5,800

- 24. NOTICE TO BIDDERS – SUBSECTION 728.02. When material is supplied in accordance with Subsection 728.02(b) or Subsection 728.02(e), material in accordance with AASHTO M 180-18 may be substituted in place of material meeting AASHTO M 180-23.

**TMP CHECKLIST**

**Purpose:** To make a preliminary determination of whether the following issues are present or should be considered during project development through a more detailed TMP.

**Project Name and Number/PIN:** Sunderland BM 20102 & Sunderland NH CULV(122)

**Initial Project Significance Level** (as determined in Table 4):  C

**Project Manager during Project Definition:**

Name:  Gary M. Laroche, PE  Date: _____

**Modified or Approved by** (Project Manager at Preliminary Design for Significant Projects):

Name:  Gary M. Laroche, PE  Date: _____

**Modified or Approved by** (Project Manager at PS&E for Significant Projects):

Name:  Gary M. Laroche, PE  Date: _____

**Project Description** (Location, Activity, Anticipated Duration):

Replacement of existing bridge structure (Bridge 19-5) with a new structure (precast concrete box) with related approach roadway and channel work located on US Route 7, 1.10 miles south of VT Route 313. Replacement of existing bridge structure (Bridge 19-7) with a new structure (precast concrete box) with related approach roadway and channel work located on US Route 7, 0.52 miles south of VT Route 313. Anticipated approx. 10d alt. one-way traffic prep period on Route 7 (non-peak times M-Th, 9am-2pm); 7d closure (VT-7A through Shaftsbury) and detour; 10d alt. one-way traffic on Route 7 closeout period. Independent construction closure periods anticipated for each site.

	Yes	No	Poss	N/A	Comments
1. Does the project require a long-term (greater than 3 days) ¹ lane or roadway/bridge closure?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Anticipated 10d alt. one-way traffic prep period on US-7 (non-peak hours M-Th 9am-2pm); 7d closure (VT-7A through Shaftsbury) and detour; 10d alt. one-way traffic on US-7 (non-peak hours Mon-Th 9am-2pm) closeout period. Independent construction closure periods anticipated for each site – therefore 2 closures. Coordination will continue with town services.

	Yes	No	Poss	N/A	Comments
2. Are there any restrictions or considerations regarding construction timeframes due to traffic concerns (e.g., time of day, site specific time of year limits)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Culvert construction anticipated to be limited to low flow periods (Ant. July-Sept). Local events list being compiled to identify traffic concerns to avoid on VT-7A detour timing. Use of one-way alternating traffic on US-7 to be restricted to non-peak hours Mon-Th 9am-2pm.
3. Can typical applications for traffic control be used? Are there any limitations to when typical applications can be used (time of year, times, days)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No known limitations. Work to be conducted when schools are not in session.
4. Is there a sidewalk, pedestrian/bicycle lane, path, trail, or access that needs to be maintained during construction?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Roadway shoulder, maintain in construction.
5. Is a speed reduction proposed (consistent with state guidance)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes, with regards to the function of the alternating one-way traffic configuration on US-7.  The team has discussed and determined that a speed reduction along the VT-7A detour is not warranted (see Traffic Memo dated May 31, 2024).
6. Will temporary roadways or additional width be needed on culverts, bridges, or shoulders to maintain traffic?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not anticipated at this time.
7. Will construction impact access to businesses?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	VT-7A detour would not affect business access. Higher traffic on VT-7A may slow turn movements to businesses through the detour corridor. \$30,000 has been budgeted for VSP enforcement during the bridge closures.
8. Are there other projects (utility, district maintenance, construction, municipal) in the area that should be coordinated or avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Project schedule to be coordinated with the following projects for construction signs overlap, and equipment and material deliveries. This is subject to change based on funding availability as the

	Yes	No	Poss	N/A	Comments
					<p>project is scheduled for 2028 now, but may still be advertised by end of 2025 if there is an influx of funds:</p> <p>STATEWIDE - SOUTHERN REGION STP CRAK(44)  Project Description: Crack sealing in the Southwest and Southeast Regions.  Construction: Aug 2022 - Jun 2024</p> <p>ARLINGTON STP BP17(2)  Project Description: Restoring approximately 470 feet of existing marble sidewalk, constructing approximately 260 feet of new concrete sidewalk, installing a crosswalk across VT7A (with a rectangular rapid flash beacon), and constructing approximately 760 feet of new asphalt path.  Construction: Jun 2025 - Oct 2025</p> <p>ARLINGTON VTRY(61) (Crosses VT 313)  Project Description: Rehab bridge 61 in Arlington on the VTR B&amp;R, MP 12.45. Supplement to "Arlington VTRY(24)". Part of the FRA BUILD Grant.  Construction: -</p> <p>HOOSICK-BENNINGTON-RUTLAND VTRY(59) (Crosses VT 313)  Project Description: Preliminary engineering for rail track replacement on the VTR</p>

	Yes	No	Poss	N/A	Comments
					<p>B&amp;R and VTR Hoosick rail lines.</p> <p>Construction: Oct 2025 - Jul 2026</p> <p>ARLINGTON STP 319-1(29)</p> <p>Project Description: HSIP site. Safety improvement to intersection of VT 313 and Warm Brook Rd. in Arlington at MM 7.11.</p> <p>Construction: Dec 2025 - Jun 2026</p> <p>POWNAL-DORSET NHG SIGN(71)</p> <p>Project Description: Sign replacement along US 7 from Pownal MM 0.00 to Dorset MM 1.815 (ETE 39.175), including ramps. Class 1 signs excluded.</p> <p>Construction: Apr 2023 - Jun 2024</p> <p>VT Real Estate Holdings 1 LLC Shaftsbury Solar Array – Temporary Access from US-7 20-MW Solar Array construction located off Holy Smoke Road (TH27) Construction 2024-12/1/2026 VTrans Permit ID 46323</p>
9. Will/Can the traffic be reasonably detoured? If no or N/A, proceed to #10. If yes or possibly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	VT-7A
a. Is the detour route roadway type equivalent to closed roadway?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US-7 is a Principal Arterial, National Highway System. 12' lanes 8/10' shoulder. 55mph. VT-7A is a Major Collector 12' lanes 1-5' shoulder. 25-50mph.

	Yes	No	Poss	N/A	Comments
b. Is the local alternate detour route in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Will the detour route have a detrimental impact on emergency vehicles, school buses, or other sensitive traffic?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Coordinated (coordinating) with stakeholders to define events calendar and prepared a tentative construction schedule which avoids these dates.
d. Are there load limit restrictions on the detour?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Are there bridge/culvert width or height restrictions on the detour?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>VT Rte. 313 in Arlington has a low clearance bridge posted for 14'. Super loads cannot use VT-7A and would need to continue through Manchester on VT-7A or utilize US-4 in NY.</p> <p>VT DMV will need to be notified early to reroute these loads and any annual hauler permits that may use US-7 during the closure periods.</p> <p>New York DMV will need to be notified of the closure periods.</p> <p>Note: Once a permit is issued the applicant/hauler has 10 days to move their load. This requires additional notice time to capture the 10-day window.</p>
f. Are modifications needed at intersections on detour/alternate routes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Turn movements checked no modification required. Temporary signals to be installed at the intersections of the Exit 2 ramps, VT Route 67 and 313. Advanced warning signs and possibly message boards to be installed to indicate the "new" traffic control.
10. Will traffic signal timing need to be adjusted for the project (with or without a detour)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Yes	No	Poss	N/A	Comments
11. Are there truck facilities or routes that would be impacted by the project or by a detour (turning radii, weight restrictions, etc.)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>VT Rte. 313 in Arlington has a low clearance bridge posted for 14'. Super loads cannot use VT-7A and would need to continue through Manchester on VT-7A or utilize US-4 in NY.</p> <p>VT DMV will need to be notified early to reroute these loads and any annual hauler permits that may use US-7 during the closure periods.</p> <p>New York DMV will need to be notified of the closure periods.</p> <p>Note: Once a permit is issued the applicant/hauler has 10 days to move their load. This requires additional notice time to capture the 10-day window.</p>
12. Are there special events or traffic generators (schools and bus routes, large employers, hospitals) that may be affected by the project and/or detour?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>PIO is under contract and communications ongoing. Public meeting held in Shaftsbury 9/30/24. A list of events, school routes etc. has been developed with refinements ongoing.</p>
13. Will the emergency vehicle routing, mail delivery, school bus routes, or trash services be interrupted by the project (with or without a detour)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Access to US-7 for all properties abutting the project will be maintained. However, during the full closure periods, access will not be available across the construction sites.</p>
14. Are there specific stakeholders to engage regarding the work zone impacts?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Towns of Shaftsbury/Arlington/Sunderland/Manchester/Bennington/EMS providers.</p> <p>Solar Array (20-MW) off Holy Smoke Road has a temp. access permit to Route 7 from 2024 through 12/1/2026, SB right in/right out access from US-7 will be affected during closure.</p>

	Yes	No	Poss	N/A	Comments
					Regional concerns initial meeting held 10/2023, followed by Public Meeting in Shaftsbury 9/30/24. Another public meeting anticipated fall 2025.  A project stakeholder list has been developed with updates on going.
15. Does the project occur within a high crash location?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16. Are there other maintenance of traffic issues to consider? Specify.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1. MUTCD definition of long-term work is occupying a location more than 3 days.

**Additional Narrative for Projects with issues identified above:**

The construction phasing approach is to allow the contractor to use a one lane alternating traffic configuration (non-peak times M-Th, 9am-2pm) on US-7 for preparatory work, a 7 day duration full closure of US-7 and detour via VT-7A and VT 313 (US-7 Exit 2 to 3), followed by allowing the contractor to use a one lane alternating traffic configuration (non-peak times M-Th, 9am-2pm); on US-7 for closing work. It is anticipated that the closures would be independent for each culvert location.

US Route 7 through the project areas is a limited access highway, with no driveways or Town Highways to maintain.

Manchester Village/Shaftsbury/Arlington would be affected by the increase in traffic and as such the closure duration should be kept as short as possible.

A Regional Concerns meeting was held on October 9, 2023, at the Sunderland selectboard meeting during which an approach of two 14-day closure periods was presented. Shaftsbury selectboard drafted a letter to Representative David Durfee on November 20, 2023, outlining concerns with the detour. A Public Information Meeting was held on 9/30/24 in Shaftsbury to share the approach of a reduced closure and detour duration. Another public meeting is planned for the Fall of 2025. A site review meeting was held with Shaftsbury officials on 4/14/2025 to review concern areas along VT-7A.

VT Route 313 in Arlington has a low clearance bridge (RR overpass) which is posted for 14-feet. As such, large vehicles and super loads can't come up VT Route 7A through Bennington. These larger vehicles will need to continue on VT-7A through Manchester or utilize US Route 4 through New York. VT DMV and New York DMV will need to be notified early to reroute these loads and any annual hauler permits that may use US 7 during the closure periods. It should be

noted that once a permit is issued the applicant/hauler has 10 days to move their load. This requires additional notice time to capture that 10-day window.ly

A traffic memorandum has been developed documenting traffic operations during the alternating one-way traffic condition on US-7 and Detour on VT-7A, summarizing detour route intersection traffic evaluation and turning movement analysis. A summary of finding of this memorandum follows:

*WSP has completed a construction stage traffic analysis to support the replacement of culverts 19-5 and 19-7 which included two scenarios: a full closure of the highway with a detour evaluation for US Route 7, as well as a single lane closure with a one-way alternating traffic on US Route 7.*

*A full road closure with a detour along VT Route 313 and VT Route 7A would increase the delays for the westbound left turns at the VT Route 313 & VT 7A intersection and the VT Route 7A & US Route 7 Ramps intersection. These two intersections are unsignalized, therefore, the additional traffic would have a harder time to find a gap and proceed through the intersection. Because of this we recommend installing temporary traffic signals at these two intersections plus the intersection of VT 7A and VT 67 to reduce delays and avoid any safety concerns. WSP also recommends installing advanced warning signs on VT Route 7A to inform drivers of the new traffic controls at these intersections.*

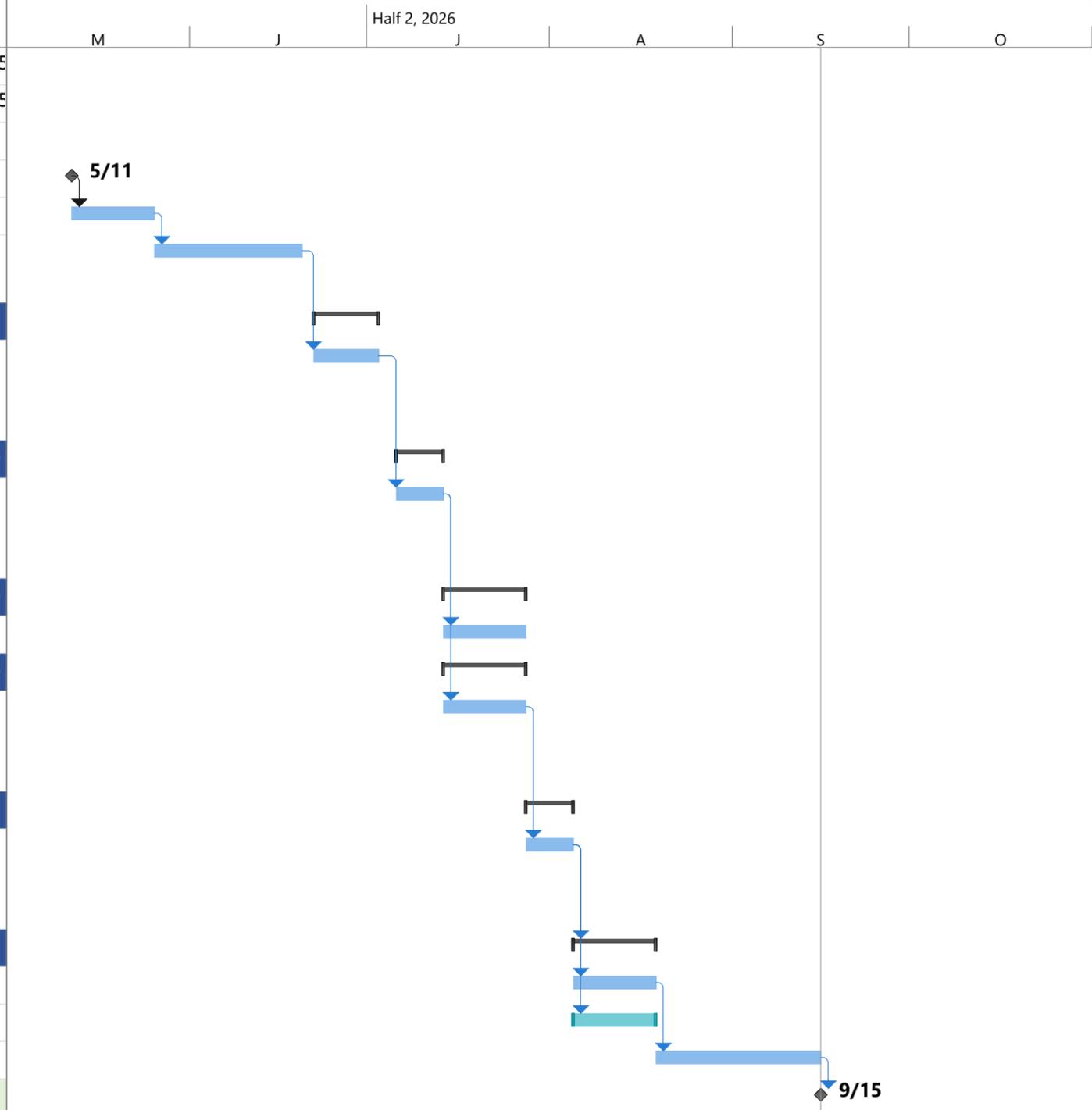
*The single lane closure with one-way alternating traffic would operate at acceptable conditions with LOS D, with the highest queue being just over 400' for the southbound direction on the Route 7 mainline during the PM peak hour. A smart workzone setup to warn drivers of the full roadway closure and delays through the workzone should be considered. Advanced message boards should inform drivers well in advance, and standard lane closures should be implemented so that motorists understand they will need to come to a complete stop, due to the temporary signal, through the work zone. Additionally traffic will be required to divert from US 7 mainline to off ramps to follow the detour. Refer to T-20 for additional sign layout and information.*

*The vehicle turning path analysis concludes that no additional pavement or accommodations are required for the two main intersections.*



# BM 20102 & NH CULV(122) Sunderland Bridges 19-5 & 19-7 Construction Schedule

ID	Task Mode	Task Name	Duration	Start	Finish	Half 2, 2026					
						M	J	J	A	S	O
1		Advertisement	14 days	Wed 11/5/25	Mon 11/24/25						
2		Contract Award	25 days	Tue 11/25/25	Mon 12/29/25						
3		Pre-Construction	67 days	Tue 12/30/25	Wed 4/1/26						
4		Anticipated Construction Start	1 day	Mon 5/11/26	Mon 5/11/26						
5		Mobilization	2 wks	Tue 5/12/26	Mon 5/25/26						
6		Prepare for Bridges Alt. One Way & Closure, Detour Signage, Prep work	19 days	Tue 5/26/26	Fri 6/19/26						
7		<b>Bridge 19-5 Alternating One-Way Traffic</b>	<b>9 days</b>	<b>Mon 6/22/26</b>	<b>Thu 7/2/26</b>						
8		Culvert Prep work - Access road/pads prepped at inlet/outlet. Cofferdam and water diversion installation, misc. prep work	9 days	Mon 6/22/26	Thu 7/2/26						
9		<b>Bridge 19-5 Closure (Detour Route 7A Active)</b>	<b>6 days</b>	<b>Mon 7/6/26</b>	<b>Mon 7/13/26</b>						
10		Excavation and existing culvert removal; Prep subgrade for box culvert; Box culvert placement, streambed material and backfill; Cleanup, guardrail and pave	6 days	Mon 7/6/26	Mon 7/13/26						
11		<b>Bridge 19-5 Alternating One-Way Traffic</b>	<b>10 days</b>	<b>Tue 7/14/26</b>	<b>Mon 7/27/26</b>						
12		Post installation cleanup; final paving; striping	10 days	Tue 7/14/26	Mon 7/27/26						
13		<b>Bridge 19-7 Alternating One-Way Traffic</b>	<b>10 days</b>	<b>Tue 7/14/26</b>	<b>Mon 7/27/26</b>						
14		Culvert Prep work - Access road/pads prepped at inlet/outlet. Cofferdam and water diversion installation, misc. prep work	10 days	Tue 7/14/26	Mon 7/27/26						
15		<b>Bridge 19-7 Closure (Detour Route 7A Active)</b>	<b>6 days</b>	<b>Tue 7/28/26</b>	<b>Tue 8/4/26</b>						
16		Excavation and existing culvert removal; Prep subgrade for box culvert; Box culvert placement, streambed material and backfill; Cleanup, guardrail and pave	6 days	Tue 7/28/26	Tue 8/4/26						
17		<b>Bridge 19-7 Alternating One-Way Traffic</b>	<b>10 days</b>	<b>Wed 8/5/26</b>	<b>Tue 8/18/26</b>						
19		Post installation cleanup; final paving; striping	10 days	Wed 8/5/26	Tue 8/18/26						
20		Detour signage/temp. signals removal & demobilization	10 days	Wed 8/5/26	Tue 8/18/26						
21		Punch List	1 mon	Wed 8/19/26	Tue 9/15/26						
22		<b>Project Completion</b>	<b>0 days</b>	<b>Tue 9/15/26</b>	<b>Tue 9/15/26</b>						



Project: Sunderland 19-5_19-7  
Date: 7/23/2025

Task		Project Summary		Manual Task		Start-only		Deadline	
Split		Inactive Task		Duration-only		Finish-only		Progress	
Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
Summary		Inactive Summary		Manual Summary		External Milestone			