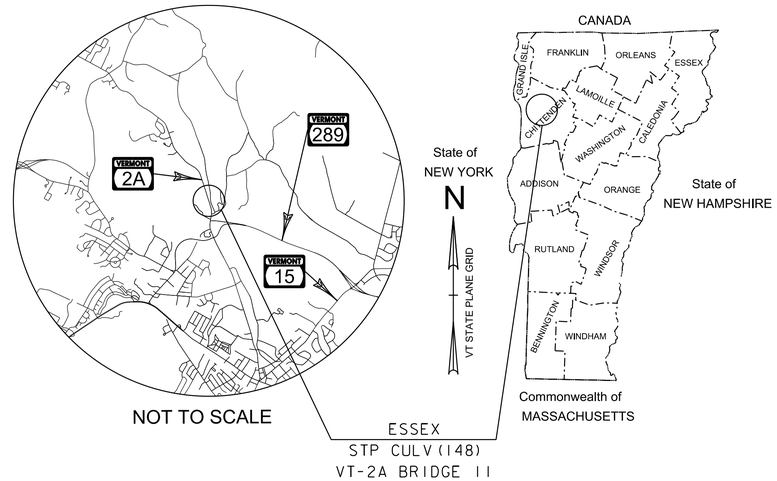
STATE OF VERMONT
AGENCY OF TRANSPORTATION

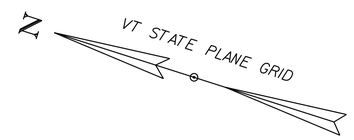


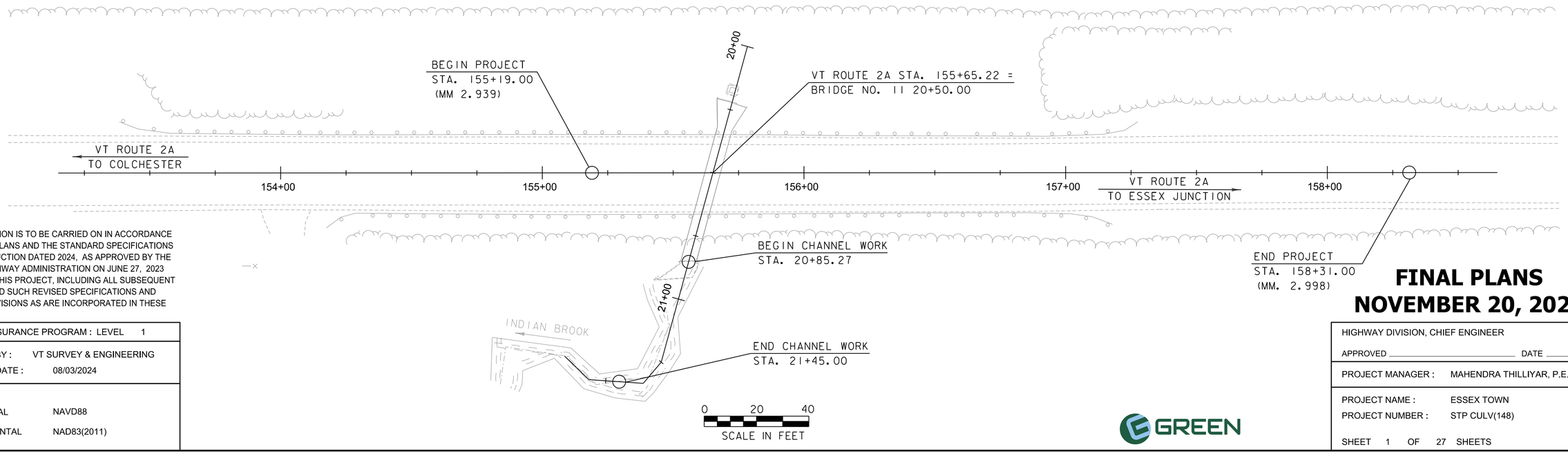
PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF ESSEX
COUNTY OF CHITTENDEN
VT ROUTE 2A BRIDGE 11 (MINOR ARTERIAL)

PROJECT LOCATION: IN THE TOWN OF ESSEX ON VT ROUTE 2A APPROXIMATELY 0.2 MILES NORTH OF THE INTERSECTION WITH VT ROUTE 289.

PROJECT DESCRIPTION: REHABILITATION OF THE CULVERT OVER INDIAN BROOK, CHANNEL RESTORATION, AND OTHER HIGHWAY RELATED ITEMS.

LENGTH OF CHANNEL:	59.73 FEET
LENGTH OF PROJECT:	312.00 FEET





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.

FINAL PLANS
NOVEMBER 20, 2025

QUALITY ASSURANCE PROGRAM : LEVEL 1

SURVEYED BY : VT SURVEY & ENGINEERING
SURVEYED DATE : 08/03/2024

DATUM
VERTICAL NAVD88
HORIZONTAL NAD83(2011)

HIGHWAY DIVISION, CHIEF ENGINEER
APPROVED _____ DATE _____

PROJECT MANAGER : MAHENDRA THILLIYAR, P.E.

PROJECT NAME : ESSEX TOWN
PROJECT NUMBER : STP CULV(148)

SHEET 1 OF 27 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE NO. 11)

INDEX OF SHEETS

PLAN SHEETS

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)	06-24-2025
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	06-24-2025
G-16	STEEL BEAM GUARDRAIL ATTACHMENTS TO EXISTING BRIDGE, TERMINAL	10-02-2018
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	10-02-2018
T-1	TRAFFIC CONTROL GENERAL NOTES	06-24-2025
T-2	TRAFFIC SIGN GENERAL NOTES	06-24-2025
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	06-24-2025
T-28	CONSTRUCTION SIGN DETAILS	06-24-2025
T-30	CONSTRUCTION SIGN DETAILS	02-17-2022
T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	06-24-2025
T-36	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING	06-24-2025
T-40	DELINEATORS AND MILEPOSTS	06-24-2025
T-42	BRIDGE NUMBER PLAQUES	06-24-2025
T-45	SQUARE TUBE SIGN POST AND ANCHOR	06-24-2025
T-56	STANDARD SIGN PLACEMENT	06-24-2025
T-136	STATE ROUTE MARKER SIGN DETAILS	06-24-2025

DETAIL SHEETS

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-621.06	MISCELLANEOUS GUARDRAIL DETAILS	2/27/2017
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 SYSTSEM (MGS) ANCHOR COMPONENTS	4/17/2019
HSD-621.07E	MIDWEST GUARDRAIL SYSTSEM (MGS) ANCHOR COMPONENTS	4/17/2019
HSD-621.07F	MIDWEST GUARDRAIL SYSTEM TRANSITION SECTION	1/4/2021

FINAL HYDRAULIC REPORT

Version: I.R

HYDROLOGIC DATA

Date:

DRAINAGE AREA : 0.79 SQ. MI.
CHARACTER OF TERRAIN : Rolling Hills
STREAM CHARACTERISTICS : Sinuous and wide
NATURE OF STREAMBED : Course Gravel

PEAK FLOW DATA - ANNUAL EXCEEDANCE PROBABILITY (AEP)

43% =	-	2% =	-
10% =	-	1% =	-
4% =	-	0.2% =	-

DATE OF FLOOD OF RECORD -
ESTIMATED DISCHARGE: -
WATER SURFACE ELEV.: -
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: 0.786 sq m HEADWATERS:
UNIFORM: -
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: CIP CONCRETE BOX CULVERT
YEAR BUILT: 1934
CLEAR SPAN(NORMAL TO STREAM): 6'-0"
VERTICAL CLEARANCE ABOVE STREAMBED: 6'-0"
WATERWAY OF FULL OPENING: 36.0 SF
DISPOSITION OF STRUCTURE: Concrete Repairs
TYPE OF MATERIAL UNDER SUBSTRUCTURE: -

WATER SURFACE ELEVATIONS AT:

43% AEP =	*	VELOCITY =	*
10% AEP =	*	"	*
4% AEP =	*	"	*
2% AEP =	3.9 FT	"	*
1% AEP =	4.2 FT	"	*

LONG TERM STREAMBED CHANGES:

IS THE ROADWAY OVERTOPPED BELOW 1% AEP: *
FREQUENCY: *
RELIEF ELEVATION: *
DISCHARGE OVER ROAD @ 1% AEP: *

UPSTREAM STRUCTURE

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

DOWNSTREAM STRUCTURE

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

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEM
TONNAGE							
INVENTORY							
POSTING							
OPERATING							
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE:

CLEAR SPAN(NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED: -
WATERWAY OF FULL OPENING: -

WATER SURFACE ELEVATIONS AT:

43% AEP =	-	VELOCITY=	-
10% AEP =	-	"	-
4% AEP =	-	"	-
2% AEP =	-	"	-
1% AEP =	-	"	-

IS THE ROADWAY OVERTOPPED BELOW 1% AEP: -
FREQUENCY: -
RELIEF ELEVATION: -
DISCHARGE OVER ROAD @ 1% AEP: -

BRIDGE LOW CHORD ELEVATION: -
FREEBOARD: -

SCOUR: -

REQUIRED CHANNEL PROTECTION: -

PERMIT INFORMATION

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

TEMPORARY BRIDGE REQUIREMENTS

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

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON THE EXISTING STRUCTURE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY.

DESIGN VALUES

1.	DESIGN LIVE LOAD		
2.	FUTURE PAVEMENT	d_p:	
3.	DESIGN SPAN	L:	
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'_{ci}:	---
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:	
13.	STRUCTURAL STEEL AASHTO M270 (WEATHERING)	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_s:	---
		S_1:	---
23.			
24.			---
25.			---
26.			---

TRAFFIC DATA

YEAR	AADT	DHV	%D	%T	ADTT
2027	10,683	1,200	66	4.9	702
2047	11,732	1,300	66	6.8	1067

20 year ESAL for flexible pavement from 2027 to 2047 : 3,550,000
40 year ESAL for flexible pavement from 2027 to 20657 : 8,061,000
Design Speed: 30 MPH

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688forms.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
PRELIMINARY INFORMATION SHEET

PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 2 OF 27

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

THE SYMBOLOGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLOGY. THE SYMBOLOGY 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. SYMBOLOGY ON PLANS MAY VARY, PLAN ANNOTATIONS AND NOTES SHOULD BE USED TO CLARIFY AS NEEDED.

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

POINT	CODE	DESCRIPTION
	BF	BARRIER FENCE
	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
	PDF	PROJECT DEMARCATION FENCE
	R&RES	REMOVE & RESET
	R&REP	REMOVE & REPLACE
	R.T.& I.	RIGHT, TITLE, AND INTEREST
	SR	SLOPE RIGHT
	UE	UTILITY EASEMENT
	(P)	PERMANENT EASEMENT
	(T)	TEMPORARY EASEMENT
■	BNDNS	BOUND SET
⧈	BNDNS	BOUND TO BE SET
◎	IPNF	IRON PIN FOUND
●	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 RADIUS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE
CB	CHORD BEARING

UTILITY SYMBOLOGY

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+TELEPHONE
- 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+TELEPHONE
- UTILITY POLE GUY WIRE

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

- CZ — CLEAR ZONE
- PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

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

CONVENTIONAL BOUNDARY SYMBOLOGY

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/L — PROPERTY LINE (P/L)
- SR SR SR — SLOPE RIGHTS
- 6f — 6f — 6F PROPERTY BOUNDARY
- 4f — 4f — 4F PROPERTY BOUNDARY
- HAZ — HAZ — HAZARDOUS WASTE

EPSC LAYOUT PLAN SYMBOLOGY

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 SYMBOLOGY

ENVIRONMENTAL RESOURCES

- WETLAND BOUNDARY
- RIPARIAN BUFFER ZONE
- WETLAND BUFFER ZONE
- SOIL TYPE BOUNDARY
- T&E — THREATENED & ENDANGERED SPECIES
- HAZ — 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

ARCHEOLOGICAL & HISTORIC

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

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

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

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688legend.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
LEGEND SHEET

PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 3 OF 27

GENERAL:

1. ITEM 201.1000, CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS, SHALL CONSIST OF CUTTING AND DISPOSING OF ALL TREES, STUMPS, DOWN TIMBER, BRUSH BUSHES, AND DEBRIS FROM ALL AREAS EXTENDING FROM THE ROADWAY CENTERLINE TO THE CONSTRUCTION LIMITS.

2. 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 (N.A.B.I.).

3. PRIOR TO PLACING MATERIALS IN CHANNELS, PREPARE SLOPE AND SUBGRADE AS FOLLOWS:

   A. CUT OFF TREES AND EXISTING STUMPS TO GROUND LEVEL. LEAVE STUMPS & ROOTS BELOW GRADE IN PLACE WHEN POSSIBLE AND AS APPROVED BY THE ENGINEER.
   B. EXCAVATE VEGETATION AND ORGANIC SOILS FROM SURFACE OF SLOPE.
   C. COMPACT SURFACE OF SLOPE (COMPACTION WITH EXCAVATOR BUCKET ACCEPTABLE).
   D. PLACE MATERIALS AS SHOWN ON THE DETAILS.
   E. THE COST FOR SLOPE PREPARATION WILL BE CONSIDERED INCIDENTAL TO ITS RESPECTIVE EXCAVATION ITEM.

UTILITIES:

4. ALL EXISITING UTILITIES NOTED ON THE PLANS TO BE RETAINED SHALL BE PROTECTED FROM DAMAGE BY THE CONTRACTOR. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

TRAFFIC CONTROL:

5. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE FULLY OPERATIONAL FOR A MINIMUM OF TWO WEEKS PRIOR TO ANY MODIFICATIONS TO NORMAL TRAFFIC OPERATIONS. WHEN IN OPERATING MODE, THE BOTTOM OF THE PCMS MESSAGE PANEL SHALL BE FULLY EXTENDED TO 7 FEET ABOVE THE ROADWAY.

6. PAYMENT FOR ALL TEMPORARY TRAFFIC DEVICES REQUIRED FOR IMPLEMENTING THE DETOUR, INCLUDING BUT NOT LIMITED TO SIGNS AND BARRICADES SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 641.1100 TRAFFIC CONTROL, ALL-INCLUSIVE. PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 641.1500 PORTABLE CHANGEABLE MESSAGE SIGN.

7. THE UPSTREAM LOCATION FOR THE PMCS FROM THE DECISION POINT DEPENDS ON WHAT TYPE OF ACTION IS REQUIRED OF THE MOTORIST. AN EXAMPLE OF A MINOR ACTION IS A LANE CHANGE BY THE MOTORIST. A MAJOR ACTION WOULD BE THE MOTORIST HAVING TO MAKE A DETOUR FROM THE CURRENT ROAD. FOR A MINOR ACTION, THE PCMS SHOULD BE PLACED FROM 500 FT TO 1,000 FT UPSTREAM OF THE DECISION POINT, REGARDLESS OF SPEED. FOR A MAJOR ACTION, IF THE SPEED IS LESS THAN OR EQUAL 40 MILES PER HOUR (MPH), THE PCMS SHOULD BE PLACED AT LEAST 1,000 FT UPSTREAM OF THE DECISION POINT. IF THE SPEED IS GREATER THAN OR EQUAL TO 45 MPH, THEN THE PCMS SHOULD BE PLACED AT LEAST 1 MILE UPSTREAM OF THE DECISION POINT. THERE SHOULD BE A MINIMUM SPACING OF AT LEAST 1,000 FT BETWEEN PCMS UNITS OR A PCMS AND AN ARROW PANEL. MULTIPLE PCMS UNITS SHOULD BE PLACED ON THE SAME SIDE OF THE ROADWAY.

8. PCMS 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. AVOID DISPLAYING OVERLY SIMPLISTIC MESSAGES THAT ADD LITTLE VALUE TO OTHER SIGNS OR DEVICES USED IN THE WORK ZONE. "USE CAUTION", "SLOW", EVEN "ROAD WORK AHEAD" ON A PCMS QUICKLY BECOME IGNORED BY DRIVERS, FORCING PCMS TO LOSE THEIR EFFECTIVENESS IN CHANGING DRIVER BEHAVIOR. PROVIDE DRIVERS WITH CLEAR REASONS FOR FOCUSING THEIR ATTENTION AND CHANGING THEIR DRIVING BEHAVIORS AS THEY ENTER AND DRIVE THROUGH THE WORK ZONE - E.G., "WORKERS IN ROAD" OR "LANE NARROWS".

CAST-IN-PLACE CONCRETE:

9. ALL CAST-IN-PLACE CONCRETE (HEADWALLS AND WINGWALLS) SHALL BE PERFORMANCE-BASED CONCRETE CLASS PCS UNLESS NOTED OTHERWISE.

10. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1" UNLESS NOTED OTHERWISE.

11. WATER REPELLENT, SILANE SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 514 AND SHALL BE FIELD APPLIED TO ALL EXPOSED SURFACES OF THE CAST-IN-PLACE CONCRETE STRUCTURES. PAYMENT FOR WATER REPELLENT, SILANE APPLIED TO EXPOSED SURFACES OF THE PRECAST WINGWALLS WILL BE PAID UNDER ITEM 514.1000 WATER REPELLENT, SILANE.

12. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

REINFORCING STEEL:

13. MINIMUM COVER FOR REINFORCING STEEL CAST AGAINST EARTH SHALL BE 2 INCHES ALONG OUTSIDE FACES OF WALLS AGAINST EARTH, AND 3 INCHES ELSEWHERE.

14. ALL REINFORCING STEEL SHALL BE ITEM NO. 507.1200 LEVEL II.

TEMPORARY RELOCATION OF STREAM:

15. IT IS ANTICIPATED THAT THE MAJORITY OF THE CULVERT INSTALLATION WORK CAN BE PERFORMED WHILE MAINTAINING FLOWS THROUGH THE EXISTING CULVERT. WHEN WORK AT THE UPSTREAM END CONFLICTS WITH THE FLOWS, THE CONTRACTOR SHALL RELOCATE THE STREAM BY A METHOD APPROVED BY THE ENGINEER.

16. SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM) DETAIL IS SCHEMATIC ONLY. ACTUAL LOCATIONS OF EQUIPMENT REQUIRED TO COMPLETE THE TEMPORARY STREAM RELOCATION SHALL BE ADJUSTED TO MATCH FIELD CONDITIONS AS DESIGNED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE DESIGN AND PLANS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF VERMONT AND SHALL BE APPROVED BY VTRANS. ALL WORK AND EQUIPMENT SHALL BE PERFORMED AND PLACED WITHIN THE PROJECT SLOPE LIMITS. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

17. THE WORK WITHIN THE STREAM SHALL BE PERFORMED DURING THE SEASONAL LOW FLOW PERIOD (JULY 1 TO OCTOBER 1). THE DESIGN OF THE SITE SPECIFIC PLANS SHALL BE CAPABLE OF HANDLING AT LEAST TWICE THE FLOWS ASSOCIATED WITH THE AVERAGE DAILY FLOW AS NOTED ON SHEET 2. THE WORK RELATED TO THE CONSTRUCTION OF THE CULVERT SHALL BE PLANNED ACCORDING TO THE WEATHER AND SHOULD NOT BE PERFORMED DURING A PERIOD IN WHICH THE ENGINEER DETERMINES THAT A BAD WEATHER EVENT IS FORECAST.

18. PAYMENT FOR ITEM 900.645 SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM) SHALL INCLUDE PREPARATION OF THE SITE SPECIFIC TEMPORARY RELOCATION PLANS, THE DAM FOR CONTROL OF WATER, TEMPORARY STONE CHECK DAM, TYPE 1, BY-PASS PUMP(S), BY-PASS PIPE, TEMPORARY CHANNEL WORK AND ALL OTHER INCIDENTAL ITEMS REQUIRED TO CONSTRUCT THE CULVERT AND RESTORE THE STREAM BED IN THE DRY.

GREEN

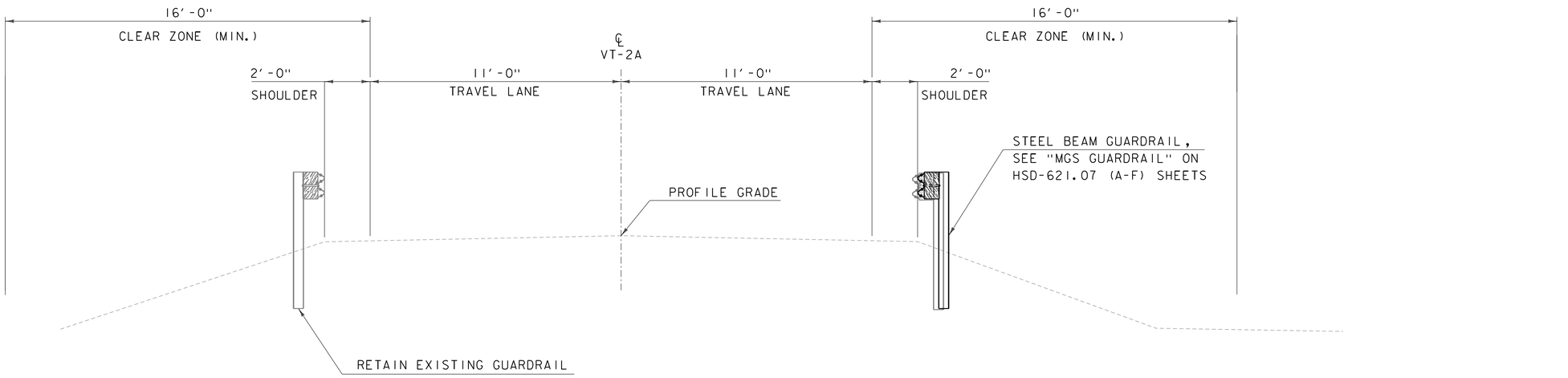
PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688notes.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
GENERAL NOTES SHEET

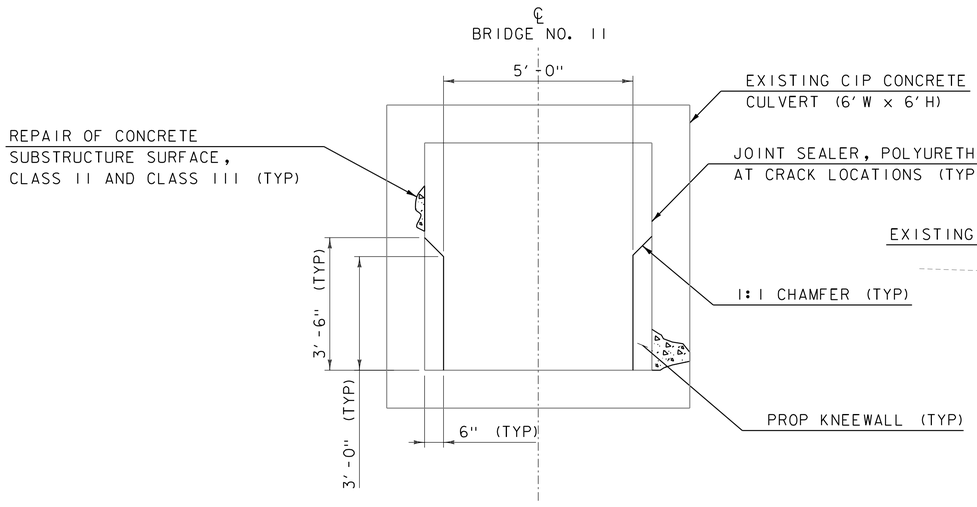
PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 4 OF 27

MATERIAL TOLERANCES
(IF USED ON PROJECT)

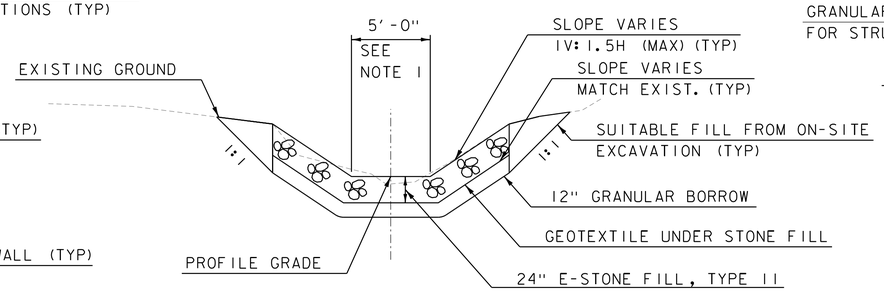
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROWS	+/- 1"



VT ROUTE 2A BRIDGE 11 - TYPICAL APPROACH SECTION
STA. 155+19.00 - STA. 158+31.00
SCALE 3/8" = 1'-0"

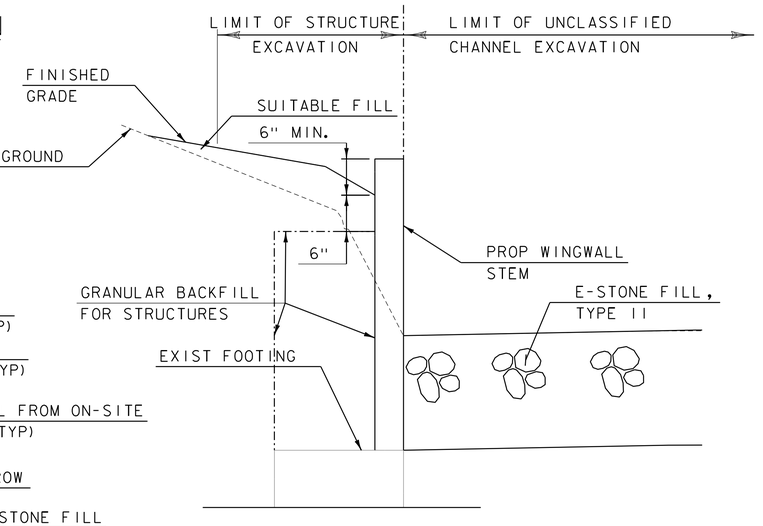


BRIDGE 11 TYPICAL SECTION
SCALE 1/2" = 1'-0"



TYPICAL STREAM SECTION
NOT TO SCALE

NOTE:
1. STREAM BOTTOM WIDTH SHALL MATCH CULVERT WIDTH. CHANNEL WIDTH CAN BE WIDER TO MATCH EXISTING TOPOGRAPHY.



EARTHWORK SECTION AT WINGWALLS
SCALE 3/8" = 1'-0"

PROJECT NAME:	ESSEX
PROJECT NUMBER:	STP CULV(148)
FILE NAME: z23b688typ.dgn	PLOT DATE: 11/20/2025
PROJECT LEADER: D. VERTIYEV	DRAWN BY: J. JENNINGS
DESIGNED BY: S. BIBINSKI	CHECKED BY: T. CARD
TYPICAL SECTION SHEET	SHEET 5 OF 27

GREEN

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES			TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
1011 - ROADWAY	1051 - EROSION CONTROL	1211 - BRIDGE NO. 1	1999 - FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.1000	-			
	126			126		CY	CHANNEL EXCAVATION OF EARTH	203.2500	7			
	13			13		CY	CHANNEL EXCAVATION OF ROCK	203.2600	1			
	60			60		CY	GRANULAR BORROW	203.3200	23			
9				9		TON	AGGREGATE SHOULDERS, RAP	402.1300	-			
		1900		1900		LB	REINFORCING STEEL, LEVEL II	507.1200	20			
		320		320		LF	DRILLING AND GROUTING DOWELS	507.1600	2			
		45		45		LF	JOINT SEALER, POLYURETHANE	524.2100	3			
		15		15		CY	CONCRETE, CLASS B	541.2200	3			
		10		10		SY	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II	580.1102	2			
		3		3		CY	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III	580.1103	1			
	130			130		CY	E-STONE FILL, TYPE II	613.0602	6			
		1		1		EACH	TEMPORARY RELOCATION OF STREAM	614.1000	-			
	1			1		LS	IN-WATER SEDIMENT ISOLATION MEASURES	614.2000	-			
26				26		LF	REMOVAL OF GUARDRAIL	621.0100	1			
135				135		LF	REMOVE AND RESET GUARDRAIL	621.0210	5			
4				4		EACH	REPLACE GUARDRAIL BEAM UNIT, W-BEAM	621.0300	-			
130				130		LF	STEEL BEAM GUARDRAIL	621.1060	5			
1				1		EACH	ANCHOR FOR STEEL BEAM GUARDRAIL, MGS	621.1530	-			
650				650		HR	UNIFORMED TRAFFIC OFFICERS	630.1000	EST.			
3300				3300		HR	FLAGGERS	630.1500	EST.			
			1	1		LS	FIELD OFFICE, ENGINEER'S	631.1000	-			
			1	1		LS	TESTING EQUIPMENT, CONCRETE	631.1600	-			
			1	1		LS	TESTING EQUIPMENT, GROUT	631.1900	-			
			3000	3000		DL	FIELD OFFICE COMMUNICATIONS (N.A.B.I.)	631.2600	-			
9				9		EACH	CPM SCHEDULE	633.1000	-			
1				1		LS	MOBILIZATION/DEMOBILIZATION	635.1100	-			
1				1		LS	TRAFFIC CONTROL, ALL-INCLUSIVE	641.1100	-			
	315			315		SY	GEOTEXTILE UNDER STONE FILL	649.3100	41			
	738			738		SY	TURF ESTABLISHMENT, GENERAL SEED	651.1500	21			
	63			63		CY	TOPSOIL	651.3500	3			
	1			1		LS	EPSC PLAN	653.0100	-			
	66			66		HR	MONITORING EPSC PLAN	653.0200	EST.			
	4000			4000		DL	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	653.0300	-			
	0.3			0.3		TON	HAY MULCH	653.1000	0.02			
	16			16		CY	STABILIZED CONSTRUCTION ENTRANCE	653.3500	-			
	1			1		EACH	FILTER BAG	653.4500	-			
	240			240		LF	SILT FENCE, TYPE I	653.4701	11			
	240			240		LF	BARRIER FENCE	653.5000	11			
8				8		SF	TRAFFIC SIGN, FLAT SHEET ALUMINUM	675.2000	0.92			

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688qty.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
QUANTITY SHEET

PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 6 OF 27

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES											TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
								1011 - ROADWAY	1051 - EROSION CONTROL	1211 - BRIDGE NO. 1	1999 - FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
								35				35		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.3410	-			
								1				1		EACH	SIGN REMOVAL, FLAT SHEET ALUMINUM	675.5000	-			
								1				1		EACH	DELINEATOR WITH STEEL POST	676.1000	-			
										10		10		CY	P-153-6.1 CONTROLLED LOW-STRENGTH MATERIAL (CLSM)	699.1050	-			
										50		50		LF	SS-PLACEHOLDER-LF (STRUCTURAL CRACK REPAIR)	SS012	2			

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688qty.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
QUANTITY SHEET 2

PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 7 OF 27

ITEM DETAIL SHEET

LOCATION			GUARDRAIL						REMARKS
			621.0100	621.0210	621.0300	621.1060	621.1530	676.1000	
STA.	STA.	POSITION	REMOVAL OF GUARDRAIL	REMOVE AND RESET GUARDRAIL	REPLACE GUARDRAIL BEAM UNIT, W-BEAM	STEEL BEAM GUARDRAIL	ANCHOR FOR STEEL BEAM RAIL, MGS	DELINEATOR WITH STEEL POST	
			LF	LF	EACH	LF	EACH	EACH	
155+19	156+50	RT		130.0	4.0				AS DIRECTED BY THE ENGINEER
157+00	157+28	LT	25.0						AS DIRECTED BY THE ENGINEER
157+00	158+25	LT				125.0	1	1	INSTALL IN ACCORDANCE WITH STD. G1-D
ROUNDING			1	5	-	5	0	0	
PROJECT TOTAL			**26**	**135**	**4**	**130**	**1**	**1**	

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688itemdet.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
ITEM DETAIL SHEET

PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 8 OF 27

STATE OF VERMONT
AGENCY OF TRANSPORTATION

EARTHWORKS

STATION	DIST	CHANNEL EXCAVATION OF EARTH AREA	CHANNEL EXCAVATION OF EARTH VOLUME	UNCLASSIFIED CHANNEL EXCAVATION AREA	UNCLASSIFIED CHANNEL EXCAVATION VOLUME	EMBANKMENT AREA	EMBANKMENT VOLUME	AREA	VOLUME
	FT.	S.F.	C.Y.	S.F.	C.Y.	S.F.	C.Y.	S.F.	C.Y.
VT RT 2A									

STATION	DIST	CHANNEL EXCAVATION OF EARTH AREA	CHANNEL EXCAVATION OF EARTH VOLUME	UNCLASSIFIED CHANNEL EXCAVATION AREA	UNCLASSIFIED CHANNEL EXCAVATION VOLUME	EMBANKMENT AREA	EMBANKMENT VOLUME	AREA	VOLUME
	FT.	S.F.	C.Y.	S.F.	C.Y.	S.F.	C.Y.	S.F.	C.Y.
BRIDGE 11									
DOWNSTREAM									
20+85		0.00		0.00		0.00			
	15		555.0		0		0	**CUT**	119
21+00		74.00		0.00		0.00		**ROCK**	12
	25		1887.5		0		0	**R.FAC**	0.495
21+25		77.00		0.00		0.00		**FILL**	0
	20		770.0		0		0	**F.FAC**	1.15
21+45		0.00		0.00		0.00		**EX. C**	119

STATION	DIST	CHANNEL EXCAVATION OF EARTH AREA	CHANNEL EXCAVATION OF EARTH VOLUME	UNCLASSIFIED CHANNEL EXCAVATION AREA	UNCLASSIFIED CHANNEL EXCAVATION VOLUME	EMBANKMENT AREA	EMBANKMENT VOLUME	AREA	VOLUME
	FT.	S.F.	C.Y.	S.F.	C.Y.	S.F.	C.Y.	S.F.	C.Y.

SUMMARY AND BALANCES

STATION TO STATION		TOT EXC. EARTH & ROCK C.Y.	ROCK EXCAV C.Y.	EMBANK C.Y.	EXCESSES CUT	EXCESSES FILL	ACCUMULATIVE EXCESSES CUT	ACCUMULATIVE EXCESSES FILL
VT ROUTE 2A								
0+00	0+00	0	0	0	0		0	
BRIDGE 11								
20+85	21+45	131	12	0	131		131	
	SUB-TOTAL	131	12	0	131	0		
	TOTAL	131	12	0	131	0		

EARTH AND ROCK EXCAVATION	131
SOLID ROCK EXCAVATION	12
EARTH EXCAVATION	119
BACKFILL FOR TRENCH EXCAVATION (DRAINAGE PIPES)	-
PLANIMETERED FILL	0
LESS FACTORED SOLID ROCK	6
LESS DISPLACEMENT OF ANY LARGE STRUCTURES	-
NET PLANIMETERED FILL	-6
FACTOR	1.15
PLANIMETERED FILL INCLUDING FACTOR	-7
MATERIALS AVAILABLE FOR FILLS	-
COMMON EXCAVATION	119
UNCLASSIFIED EXCAVATION	-
UNCLASSIFIED CHANNEL EXCAVATION	-
UNDERDRAIN EXCAVATION	-
STRUCTURE EXCAVATION	-
TRENCH EXCAVATION FOR DRAINAGE	-
TRENCH EXCAVATION OF ROCK	-
TOTAL MATERIAL AVAILABLE FOR FILL	119
TOTAL FILL INCLUDING FACTOR	-7
TOTAL MATERIAL FOR FILL	119
BORROW	0
EXCESS EXCAVATION	126

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688ewqty.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
EARTHWORK SHEET

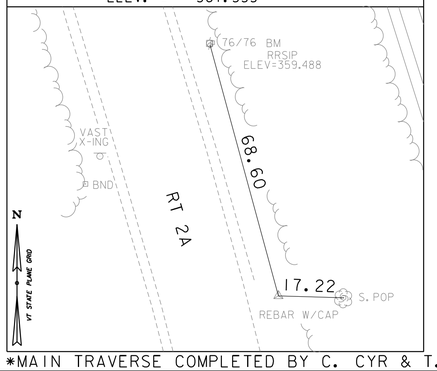
PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 9 OF 27

NETWORK CONTROL

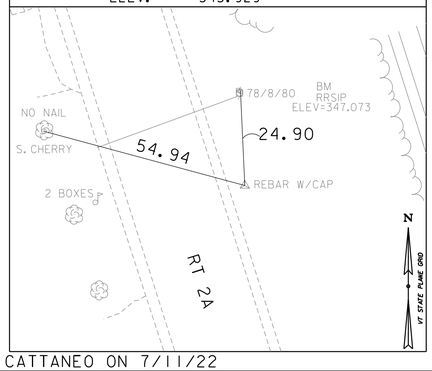
*PT'S 30 & 31 WERE DERIVED; USING PT'S 6 & 7 FROM ESSEX 5700(4) [13D330]

LOCAL CONTROL

HVCTRL #30
NORTH = 737126.4275
EAST = 1477892.8040
ELEV. = 361.555



HVCTRL #31
NORTH = 737895.3728
EAST = 1477649.5999
ELEV. = 345.929



NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

*MAIN TRAVERSE COMPLETED BY C. CYR & T. CATTANEO ON 7/11/22

ALIGNMENT TIES

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83(2011)

ADJUSTMENT COMPASS

PROJECT NAME: ESSEX

PROJECT NUMBER: STP CULV(148)

FILE NAME: x23b688ti.dgn
PROJECT LEADER: L. STONE
DESIGNED BY: VTRANS
TIE SHEET

PLOT DATE: 11/20/2025
DRAWN BY: C. CYR
CHECKED BY: L.MACCORMACK
SHEET 10 OF 27

Element	Point Type	Station	Northing	Easting
Mainline				
Tangent	POB	153+15.00	737804.616	1477659.267
	BEGIN PROJECT	155+19.00	737610.284	1477721.323
	END PROJECT	158+31.00	737313.070	1477816.233
	POE	158+65.00	737280.681	1477826.576
Channel				
Tangent	POB	20+00.00	737568.370	1477785.337
	POT	21+25.00	737563.091	1477660.449
	POT	21+35.61	737567.175	1477650.660
	POT	21+56.47	737587.437	1477645.701
	POE	21+69.30	737598.935	1477651.402

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688horizalg.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
HORIZONTAL ALIGNMENT TABLE

PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 11 OF 27

CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS
STA. 155+19 - 156+50 RT

AGGREGATE SHOULDERS, RAP
STA. 155+19 - 156+50 RT
STA. 157+00 - 158+25 LT

E-STONE FILL, TYPE II
STA. 20+85 - 21+45 RT

REMOVAL OF GUARDRAIL
STA. 157+00 - 157+28 LT

REMOVE AND RESET GUARDRAIL
STA. 155+19 - 156+50 RT

REPLACE GUARDRAIL BEAM UNIT, W-BEAM
STA. 155+19 - 156+50 RT (4 EA)

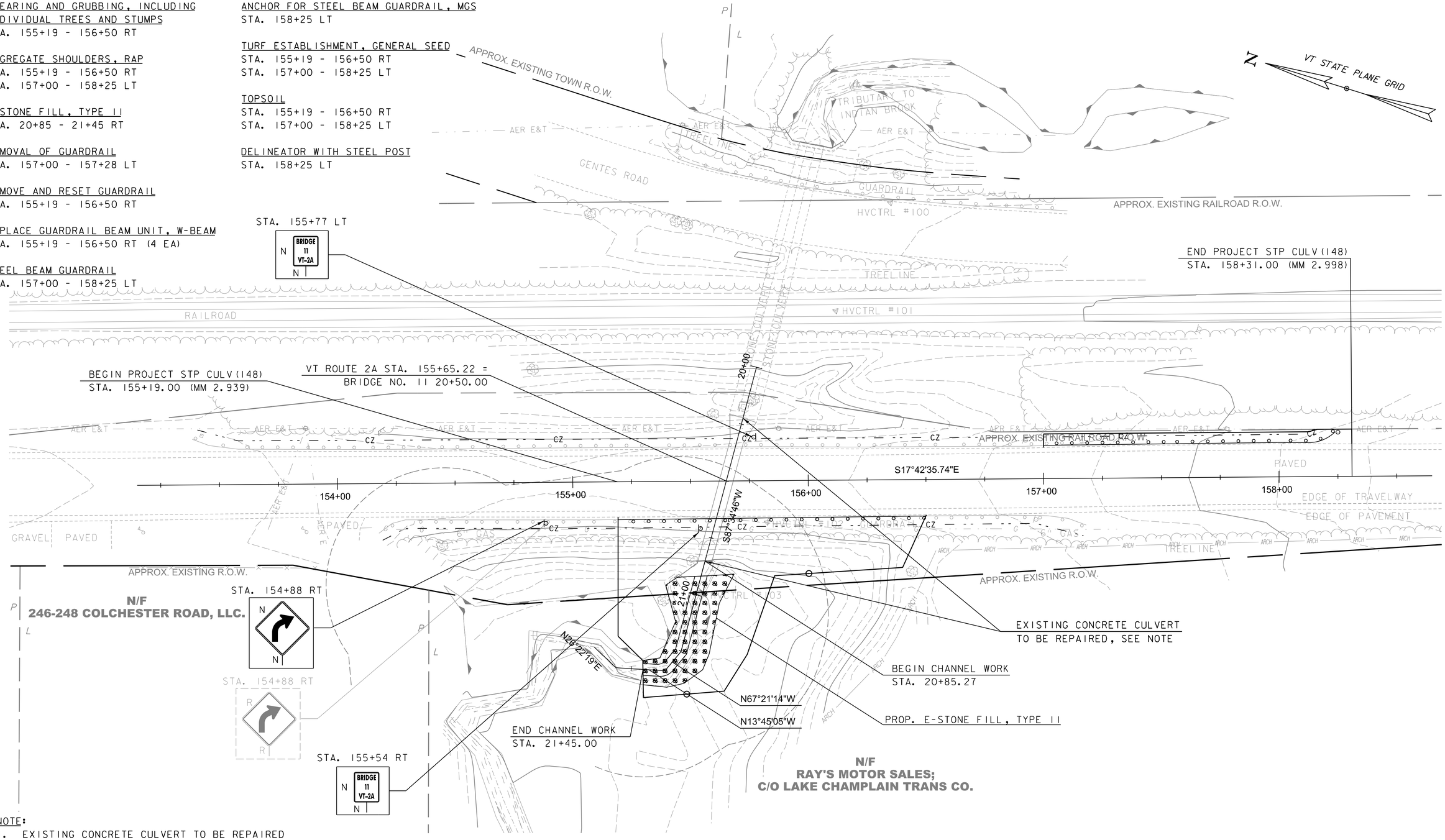
STEEL BEAM GUARDRAIL
STA. 157+00 - 158+25 LT

ANCHOR FOR STEEL BEAM GUARDRAIL, MGS
STA. 158+25 LT

TURF ESTABLISHMENT, GENERAL SEED
STA. 155+19 - 156+50 RT
STA. 157+00 - 158+25 LT

TOPSOIL
STA. 155+19 - 156+50 RT
STA. 157+00 - 158+25 LT

DELINEATOR WITH STEEL POST
STA. 158+25 LT



NOTE:
1. EXISTING CONCRETE CULVERT TO BE REPAIRED USING COMBINATION OF CLASS I THROUGH III SUBSTRUCTURE REPAIR ITEMS, AND CLASS I THROUGH IV CONCRETE REPAIR MATERIALS

EXISTING CULVERT INFORMATION BRIDGE 11
SINGLE SPAN REINFORCED CONCRETE BOX CULVERT
BUILT 1934
6'-0" APPROX. SPAN

0 20 40
SCALE IN FEET

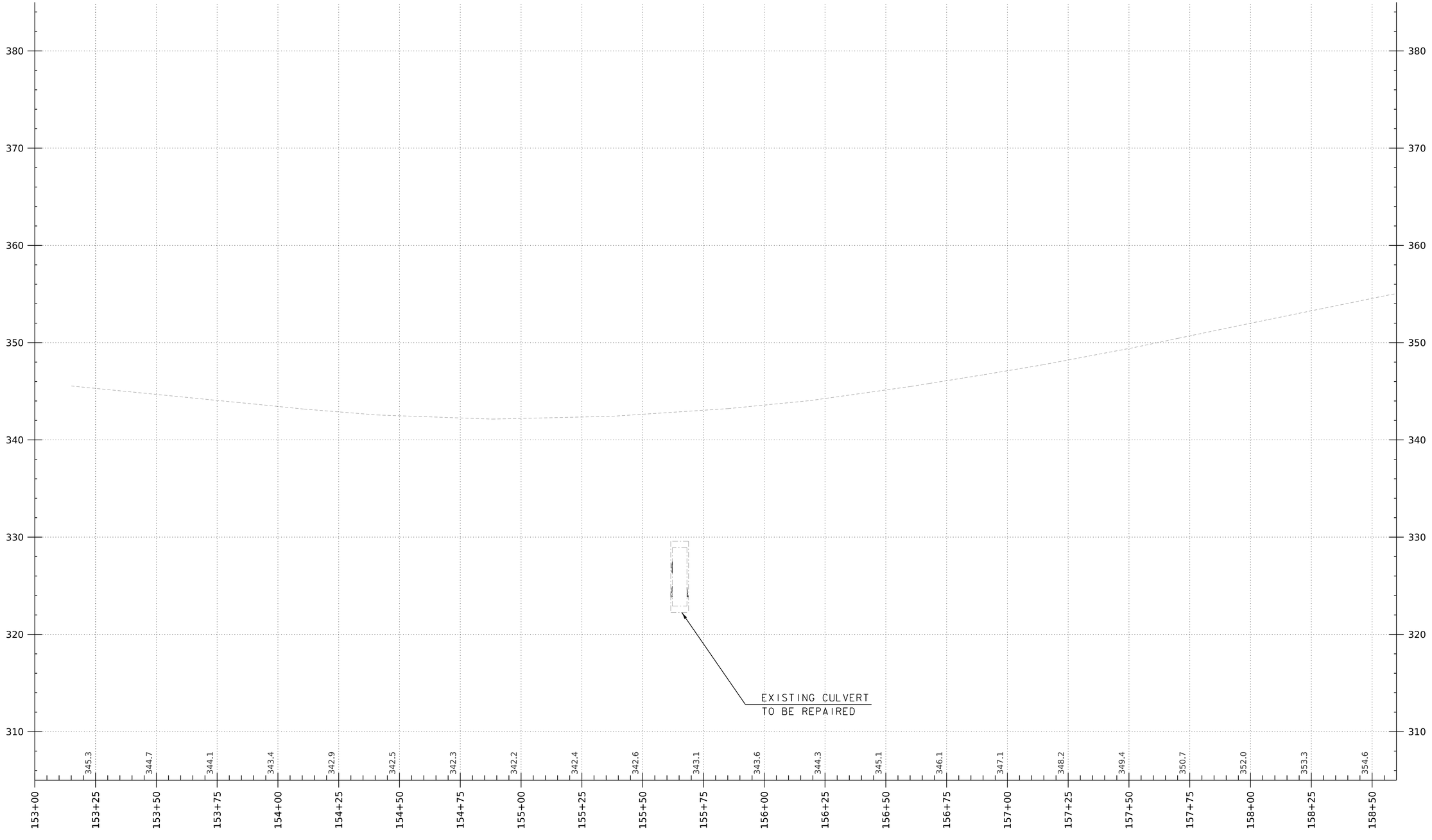
GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688bdr.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
PLAN SHEET

PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 12 OF 27

VT-2A



THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND APPROXIMATE ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

HORIZONTAL SCALE: 20 SCALE
VERTICAL SCALE: 5 SCALE

NOTE:
1. ALL STATIONS AND ELEVATIONS ARE SHOWN IN FEET.

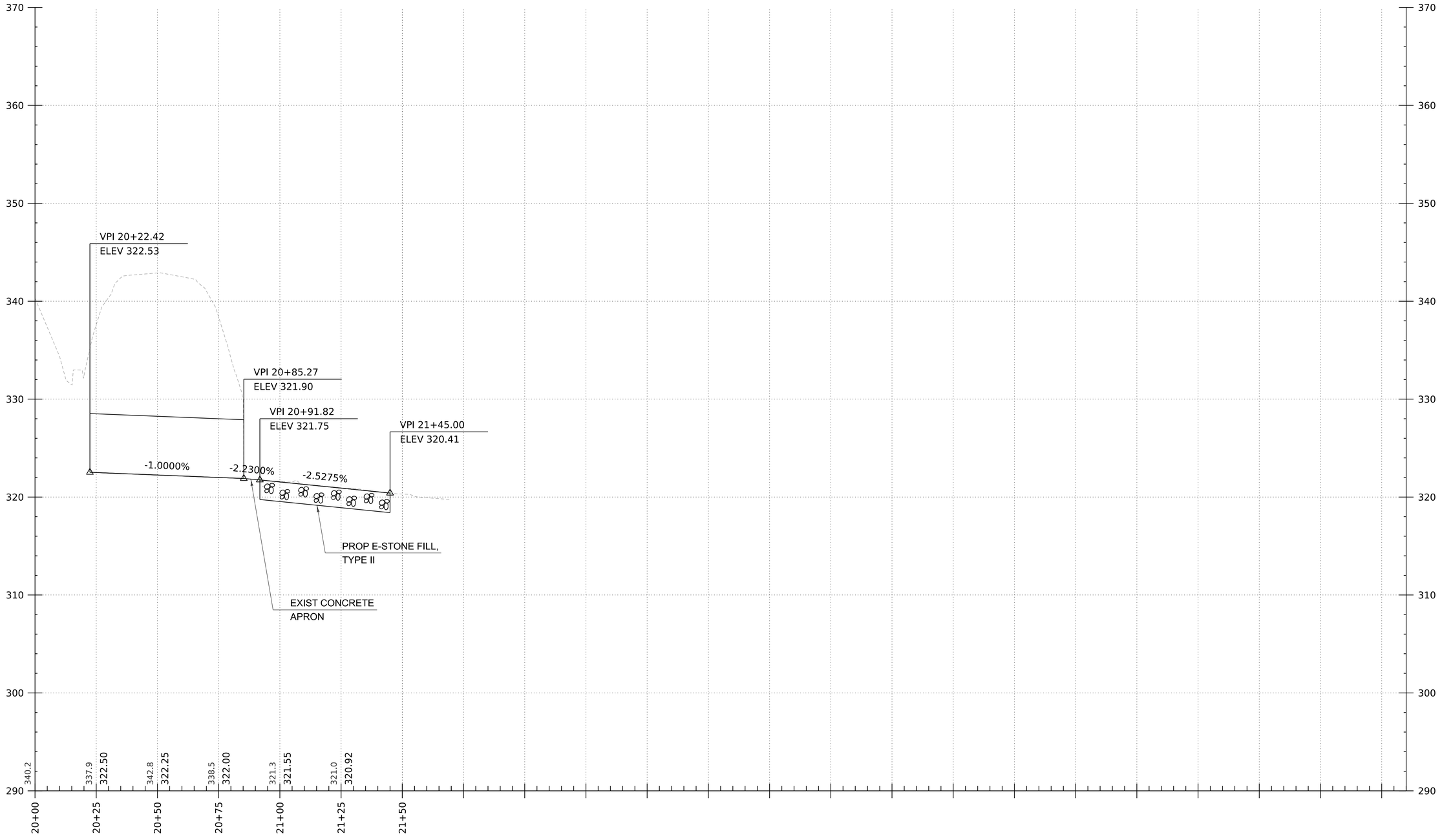
GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688xprof.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
PROFILE SHEET

PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A TSOUKALAS
SHEET 13 OF 27

BRIDGE 11 CHANNEL



THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND APPROXIMATE ELEVATIONS ALONG THE PROPOSED ALIGNMENT. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED PROFILE GRADES FOR THE NEW ALIGNMENT.

HORIZONTAL SCALE: 20 SCALE
VERTICAL SCALE: 5 SCALE

NOTE:
1. ALL STATIONS AND ELEVATIONS ARE SHOWN IN FEET.

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688xprof.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
CHANNEL PROFILE SHEET

PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A TSOUKALAS
SHEET 14 OF 27

STATE OF VERMONT
AGENCY OF TRANSPORTATION

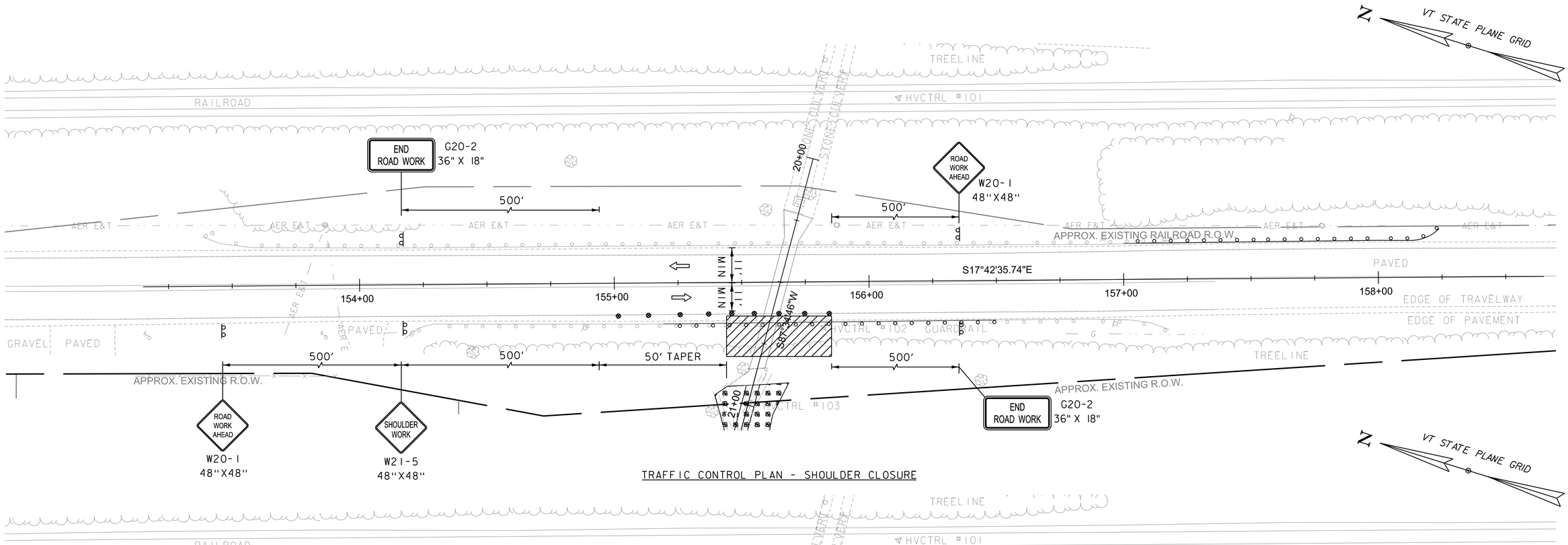
TRAFFIC SIGN SUMMARY SHEET

MILE MARKER, STATION OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW & SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS															REMARKS	SIGN DETAIL		
											NO.	SQUARE STEEL (in)					TUBULAR STEEL Ø (IN)					W-SHAPE STEEL									
		EACH	WIDTH (in)	HEIGHT (in)	FLAT ALUM.	EXT. ALUM.	SALV SIGN	SALV TIS	RETAIN	SALVAGE	POST	1.75 (LB / FT) 1.88	2.00 (LB / FT) 2.42	2.50 (LB / FT) 3.35	ANCHOR	SLEEVE	FOUNDATION	3.00 (LB / FT) 7.60	3.50 (LB / FT) 9.00	4.00 (LB / FT) 10.80	5.00 (LB / FT) 14.60	FTG. SIZE 24"	FTG. SIZE 30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED		S.H.S.M.*	DETAIL ON SHEET	STANDARD SHEET NUMBER
OPTION ITEMS																													
BRIDGE 11																													
STA. 154+88 RT		1	30.0	30.0	6.25						1		1		X											INSTALL NEW SIGN ON NEW POST	W1-2R		
STA. 155+54 RT		1	6.0	10.0	0.42						1	1			X											INSTALL NEW SIGN ON NEW POST VD-701			T-42
STA 155+57 LT		1	6.0	10.0	0.42						1	1			X											INSTALL NEW SIGN ON NEW POST VD-701			T-42
THE TOTAL LENGTH OF EACH POST HAS BEEN ASSUMED TO BE 15 FEET, WITH THE EXCEPTION OF POSTS FOR OBJECT MARKERS AND POSTS FOR BRIDGE PLAQUES AND MILE MARKERS WHICH HAVE BEEN ASSUMED TO BE 8 FEET AND 10 FEET PER POST, RESPECTIVELY. FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE." * STANDARD HIGHWAY SIGNS AND MARKINGS		FT 20.	FT 15.	FT .		EA .		LB .	LB .	LB .	LB .																			
	TOTALS	SF 7.08	SF .	EA. .	SF .		FT 35.		EA.	LB .					EA. .	EA. .	LB .													

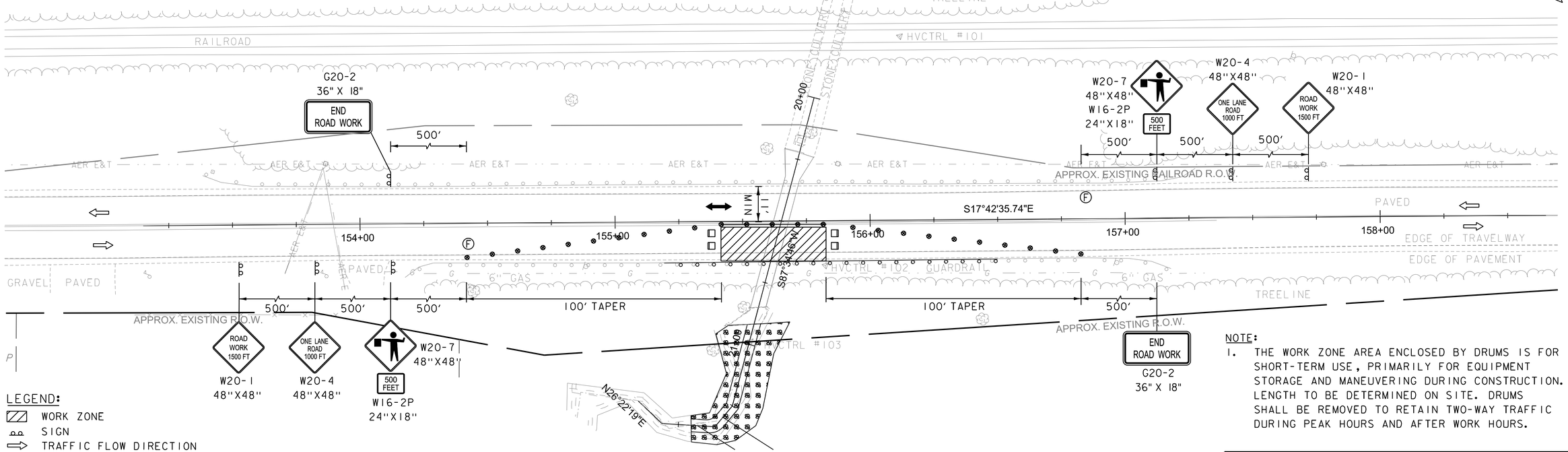
PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688tss.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: H. GAO
TRAFFIC SIGN SUMMARY SHEET

PLOT DATE: 11/20/2025
DRAWN BY: H. GAO
CHECKED BY: A. TSOUKALAS
SHEET 15 OF 27



TRAFFIC CONTROL PLAN - SHOULDER CLOSURE



TRAFFIC CONTROL PLAN - ONE LANE ALTERNATING TRAFFIC WITH FLAGGER

LEGEND:

- WORK ZONE
- SIGN
- TRAFFIC FLOW DIRECTION
- DRUMS
- (F) FLAGGERS
- TYPE III BARRICADE

NOTE:

1. THE WORK ZONE AREA ENCLOSED BY DRUMS IS FOR SHORT-TERM USE, PRIMARILY FOR EQUIPMENT STORAGE AND MANEUVERING DURING CONSTRUCTION. LENGTH TO BE DETERMINED ON SITE. DRUMS SHALL BE REMOVED TO RETAIN TWO-WAY TRAFFIC DURING PEAK HOURS AND AFTER WORK HOURS.

0 20 40
SCALE IN FEET

GREEN

PROJECT NAME:	ESSEX
PROJECT NUMBER:	STP CULV(148)
FILE NAME: z23b688tcp.dgn	PLOT DATE: 11/20/2025
PROJECT LEADER: D. VERTIYEV	DRAWN BY: H. GAO
DESIGNED BY: H. GAO	CHECKED BY: A. TSOUKALAS
TRAFFIC CONTROL PLAN SHEET	SHEET 16 OF 27

GENERAL TRAFFIC MAINTENANCE NOTES:

1. THE CONTRACTOR SHALL SUBMIT A SITE-SPECIFIC TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION. THE TRAFFIC CONTROL PLAN SHALL BE IN COMPLIANCE WITH VTRANS STANDARDS AND THE 11TH EDITION OF MUTCD. WHERE CONFLICTS EXIST, THE 11TH EDITION OF MUTCD SHALL GOVERN. CONSTRUCTION ZONE SIGNS SHALL BE INSTALLED AS SPECIFIED IN THE SPECIAL PROVISIONS.

2. TRAFFIC OFFICERS SHALL PRIORITIZE HEAVY TRAFFIC MOVEMENT, IF/WHEN LONG BACKUPS OCCUR, BY STOPPING ALL CONFLICTING MOVEMENTS AND ALLOWING THE VEHICLE QUEUE TO CLEAR THE APPROACH. THEN ALLOWING FOR THE HEAVY TRAFFIC MOVEMENT TO CONTINUE FLOWING THROUGH THE INTERSECTION.

3. REFER TO THE T-SERIES VERMONT STATE CONSTRUCTION STANDARD DRAWINGS AND THE LATEST EDITION OF THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR DETAILED INFORMATION REGARDING CHANNELIZATION DEVICES, TAPER LENGTHS, BARRICADES, DETOURS, LONGITUDINAL DROP-OFFS AND MISCELLANEOUS TRAFFIC CONTROL DETAILS, IF APPLICABLE.

4. THE CONTRACTOR SHALL INCLUDE A CONSTRUCTION SIGN APPROACH PACKAGE FOR EXPECTED LANE CLOSURES IN COMPLIANCE WITH VTRANS STANDARDS AND THE 11th EDITION OF THE MUTCD. PAYMENT FOR PROVIDING THIS PACKAGE WILL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 641.1100 TRAFFIC CONTROL, ALL-INCLUSIVE.

5. THE CONTRACTOR SHALL RELOCATE OR COVER ALL EXISTING SIGNS WHERE THEY WOULD CONFLICT WITH CONSTRUCTION SIGNAGE. SIGN COVERING SHALL NOT DAMAGE THE RETRO-REFECTIVITY OF THE SIGN FACE AND THE SIGN COVER SHALL NOT DETERIORATE FOR THE DURATION THAT THE SIGN IS COVERED. THE COST SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR ITEM 641.1100 TRAFFIC CONTROL, ALL-INCLUSIVE. CONSTRUCTION APPROACH SIGNING SHALL REMAIN IN PLACE DURING THE ENTIRE CONSTRUCTION PERIOD.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING CONSTRUCTION SIGNAGE SO AS NOT TO INTERFERE OR OBSTRUCT THE VIEW OF EXISTING TRAFFIC CONTROL DEVICES, STOPPING SIGHT DISTANCE AND CORNER SIGHT DISTANCE. EXISTING SIGNS SHALL BE COVERED OR REMOVED WHEN THEY CONFLICT WITH CONSTRUCTION TRAFFIC OPERATIONS.

7. PHASING WORK SHOWN HERE IS SCHEMATIC ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING APPROPRIATE CONSTRUCTION METHODS AND APPLICABLE TRAFFIC MAINTENANCE PLANS FOR ALL TRANSITION WORK BETWEEN PHASES. THE COST SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR ITEM 641.1100 TRAFFIC CONTROL, ALL-INCLUSIVE.

8. ALL WORK AREA AND CONSTRUCTION ENTRANCES SHALL BE SECURED DURING OVERNIGHT AND NON-ACTIVE PERIODS. THE COST SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR ITEM 641.1100 TRAFFIC CONTROL, ALL-INCLUSIVE.

9. FURNISHING, INSTALLING, MAINTENANCE OF, RELOCATING AND REMOVING REFLECTORIZED DRUMS, CONSTRUCTION SIGNING FOR TRAFFIC SHIFTS AND PEDESTRIAN BARRICADES AND SIGNAGE SHALL BE PAID FOR UNDER CONTRACT ITEM 641.1100 - TRAFFIC CONTROL, ALL-INCLUSIVE.

10. A MINIMUM EFFECTIVE TRAVEL WIDTH OF 11 FEET (INCLUDING SHOULDERS) SHALL BE MAINTAINED DURING CONSTRUCTION. WHERE THE TRAVEL LANE ALONE DOES NOT PROVIDE THE FULL 11-FOOT WIDTH, THE SHOULDER MAY BE USED TO MEET THE MINIMUM REQUIRED WIDTH. IF AT ANY POINT THE EFFECTIVE TRAVEL WIDTH (INCLUDING SHOULDERS) IS TO BE REDUCED UNDER 11 FEET, THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF MOTOR VEHICLES AT LEAST 24 HOURS PRIOR TO THE SCHEDULED REDUCTION.

11. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL RESIDENTIAL DRIVEWAYS AND BUSINESS ACCESSES DURING CONSTRUCTION 24 HOURS A DAY. IF AN ACCESS REQUIRES CLOSURE FOR ANY PERIOD OF TIME, THE CONTRACTOR SHALL CONTACT THE RESIDENCE OR BUSINESS 48 HOURS PRIOR TO THE SCHEDULED CLOSURE AND PROVIDE AN ALTERNATIVE ACCESS FOR THE ENTIRE LENGTH OF THE CLOSURE PERIOD.

12. SPECIAL CARE SHALL BE TAKEN TO PROVIDE ACCESS THROUGH THE WORK ZONE FOR EMERGENCY VEHICLES. THE CONTRACTOR SHALL COORDINATE WITH BOTH TOWN OF ESSEX POLICE AND FIRE DEPARTMENTS TO DETERMINE THEIR MINIMUM ACCESS REQUIREMENTS BEFORE PROCEEDING TO THE NEXT PHASE OF CONSTRUCTION. THE CONTRACTOR SHALL ENSURE THAT ACCESS IS AVAILABLE TO ALL PROPERTIES AT ALL TIMES FOR EMERGENCY VEHICLES.

13. PEDESTRIAN AND BICYCLE ACCOMMODATIONS WILL BE REQUIRED FOR ALL PHASES OF CONSTRUCTION. IF THE SHOULDER IS CLOSED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE A TEMPORARY CIRCULATION PATH THAT MAINTAINS THE SAME LEVEL OF ACCESSIBILITY AS EXISTED PRIOR TO THE CLOSURE. THE CONTRACTOR SHALL REFER TO THE VTRANS BICYCLE AND PEDESTRIAN WORK ZONE SAFETY GUIDE FOR ADDITIONAL GUIDANCE.

14. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE KEPT IN THEIR PROPER POSITION AT ALL TIMES AND SHALL BE REPAIRED, REPLACED, OR CLEANED AS NECESSARY TO PRESERVE THEIR APPEARANCE AND CONTINUITY.

15. BICYCLE ACCOMMODATIONS SHOULD BE TAKEN INTO ACCOUNT TO ENSURE THAT OBSTACLES, EQUIPMENT, CONSTRUCTION MATERIALS, TRAFFIC CONTROL DEVICES, ETC. DO NOT ENCROACH INTO THE BICYCLE PATH OF TRAVEL. IT IS IMPORTANT THAT CYCLIST'S ROUTES ARE FREE OF RUTS, SAND, AND MUD TO PREVENT CYCLIST'S CRASHES.

16. FLAGGERS AND/OR TRAFFIC CONTROL PERSONNEL SHALL DIRECT BICYCLISTS THROUGH THE CONSTRUCTION AREA IN THE SAME MANNER AS VEHICULAR TRAFFIC. TRAFFIC CONTROL PERSONNEL MAY ASK BICYCLE RIDERS TO GO LAST TO ENSURE THEIR SAFETY.

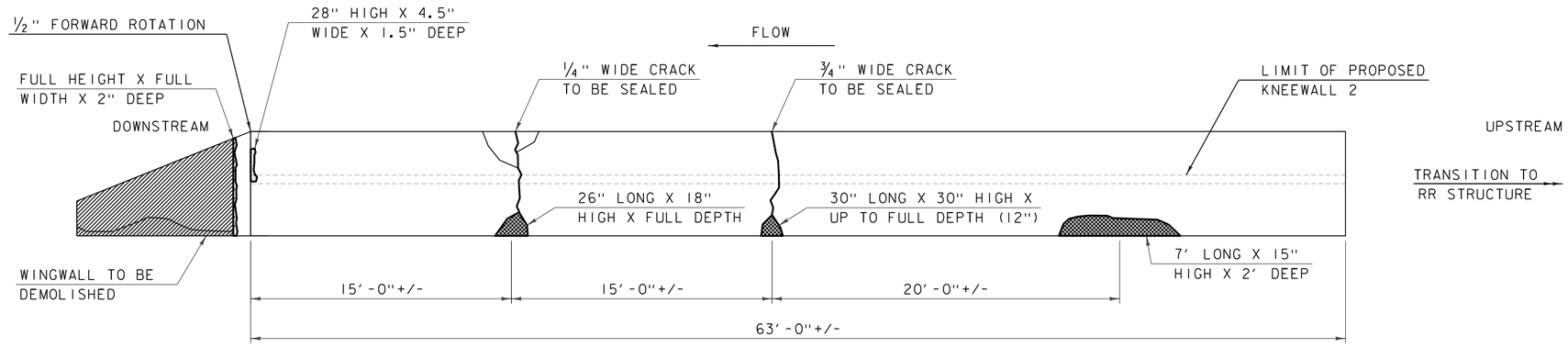
17. COMMUNICATIONS AND ACCOMMODATING FOR POSTAL DELIVERIES, NEWSPAPER ROUTES, TRASH SERVICES, AND/OR OTHER DELIVERY SERVICES INTERRUPTED BY THE PROJECT SHOULD BE COMMUNICATED WITH THE PROPER CONTACTS.

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

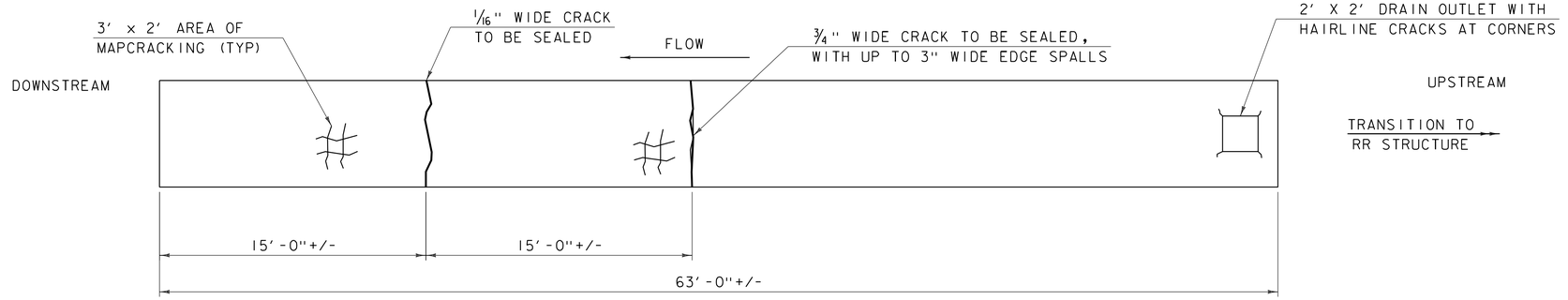
FILE NAME: z23b688tcp.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: H. GAO
TRAFFIC CONTROL NOTES

PLOT DATE: 11/20/2025
DRAWN BY: H. GAO
CHECKED BY: A. TSOUKALAS
SHEET 17 OF 27



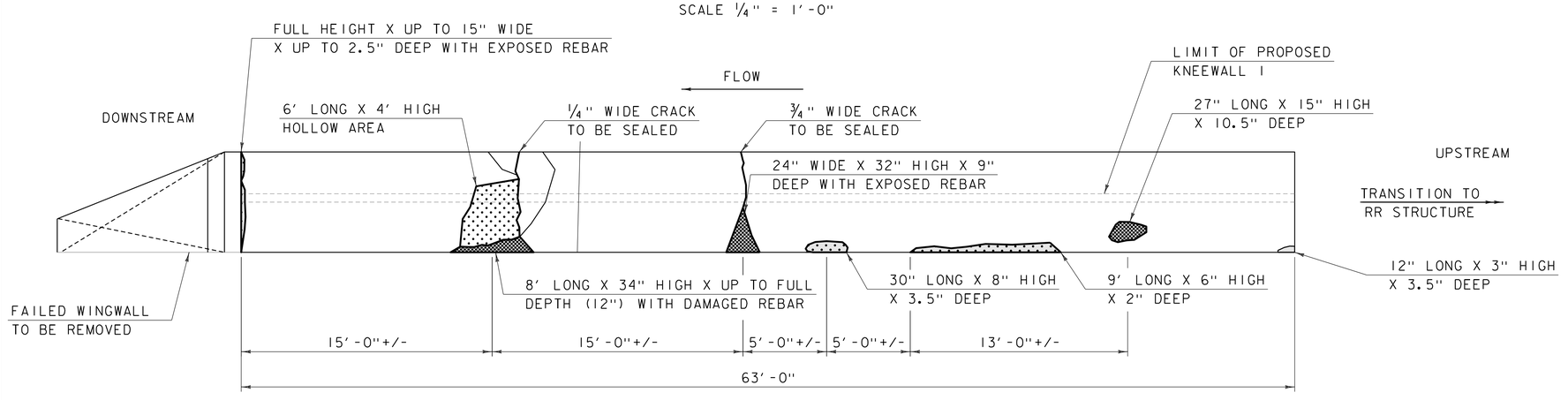
NORTHERLY WALL ELEVATION

SCALE ¼" = 1'-0"



ROOF PLAN

SCALE ¼" = 1'-0"



SOUTHERLY WALL ELEVATION

SCALE ¼" = 1'-0"

CULVERT REPAIR NOTES:

1. THE AREAS OF DETERIORATION SHOWN ON THIS SHEET ARE BASED ON THE JUNE 2024 FIELD INSPECTION. ALL LIMITS OF DETERIORATION TO BE FIELD MEASURED BY THE CONTRACTOR PRIOR TO PERFORMING REPAIRS. SIMILARLY THE RECOMMENDED REPAIR TYPES AND LIMITS SHALL BE FINALIZED BY THE CONTRACTOR BASED ON THEIR FIELD VERIFICATION.

2. HAIRLINE CRACKS ARE NOT INCLUDED IN THE PROPOSED REPAIRS. LOCATIONS HAVE BEEN PROVIDED SO THE CONTRACTOR CAN CONFIRM THESE CRACKS HAVE NOT INCREASED IN WIDTH SINCE THE JUNE 2024 FIELD INSPECTION.

3. CRACKS 1/16" WIDE OR GREATER TO BE SEALED USING ITEM NO. 524.2100 JOINT SEALER, POLYURETHANE. MANUFACTURER'S RECOMMENDATIONS FOR CRACK WIDTH APPLICATION TO BE FOLLOWED. A JOINT SPACER OR BACKER ROD MUST BE USED FOR CRACKS ½" WIDE OR GREATER. FOR ROOF CRACKS A NON-SAG MATERIAL SPECIFIC TO OVERHEAD APPLICATIONS SHALL BE USED.

4. ALL CONCRETE REPAIRS TO BE ITEM NO. 580.1102 REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II OR ITEM NO. 580.1103 REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III.

5. IT IS ASSUMED THAT THE PROPOSED CONCRETE REPAIRS WILL BE PERFORMED IN THE DRY, IN TWO STAGES, WHILE THE TEMPORARY RELOCATION OF THE STREAM MEASURES ARE IN PLACE.

LEGEND:

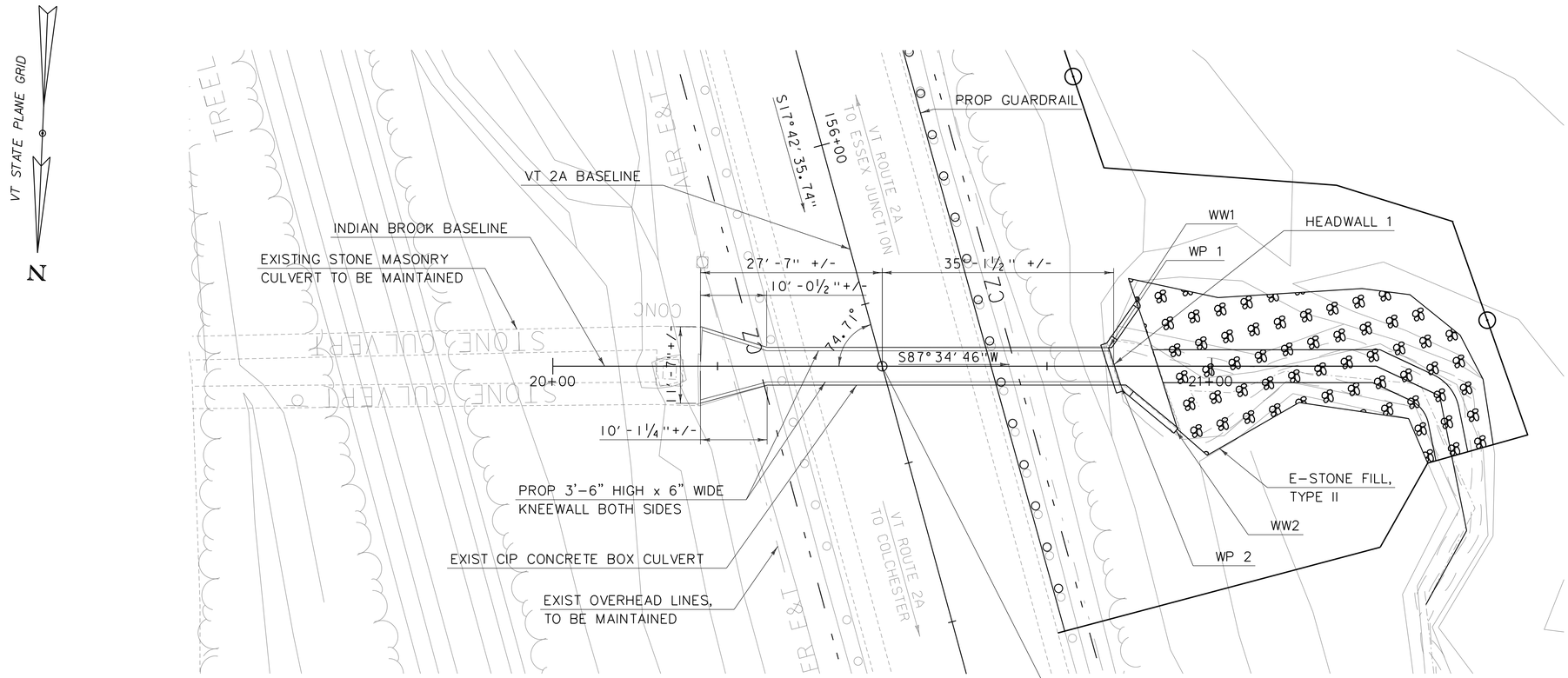
- SPALLED AREA
- DEMOLISH
- REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II
- REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III
- CRACK REPAIR WITH JOINT SEALER, POLYURETHANE
- HAIRLINE CRACK, SEE NOTES

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688fieldsketches.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS

EXISTING CULVERT DETERIORATION & REPAIRS SHEET 18 OF 27

GREEN

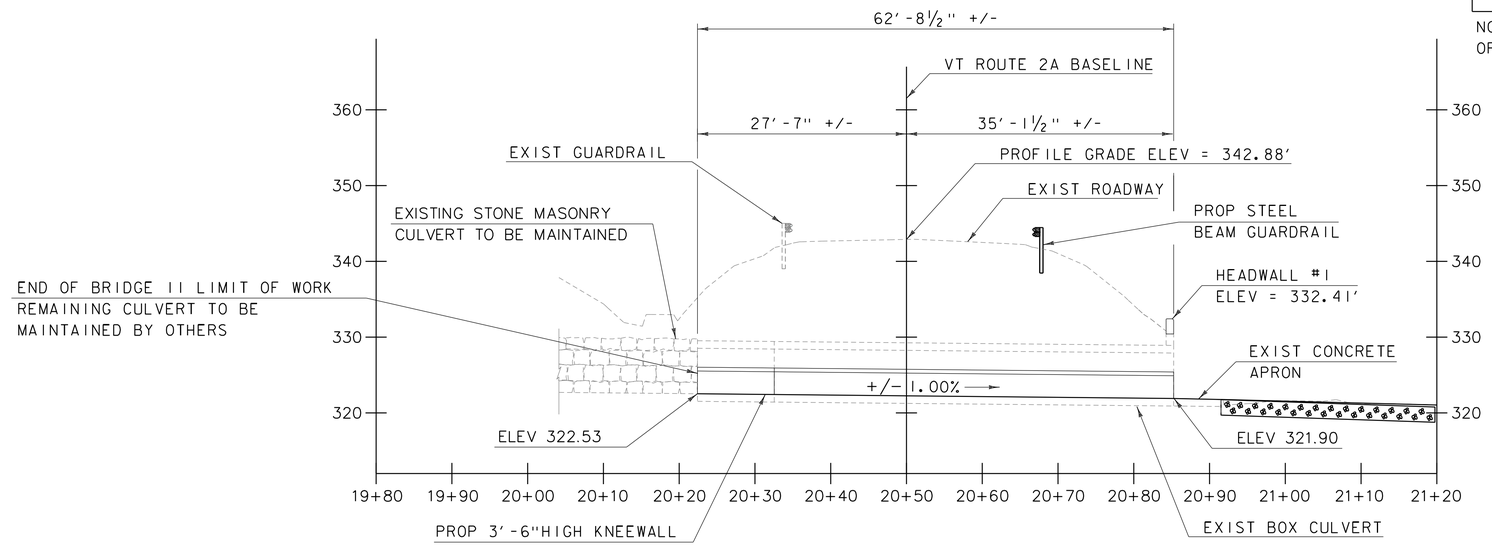


CULVERT PLAN

SCALE 1" = 10'-0"

WORKING POINTS	STA	OFFSET, FT	NORTHING	EASTING
WP 1	155+58.89	33.88 RT	1477699.10	737567.58
WP 2	155+52.94	34.16 RT	1477701.18	737561.99

NOTE: WORKNG POINTS PROVIDED TO TOP OF HEADWALL AT EACH CORNER OF THE WINGWALLS.

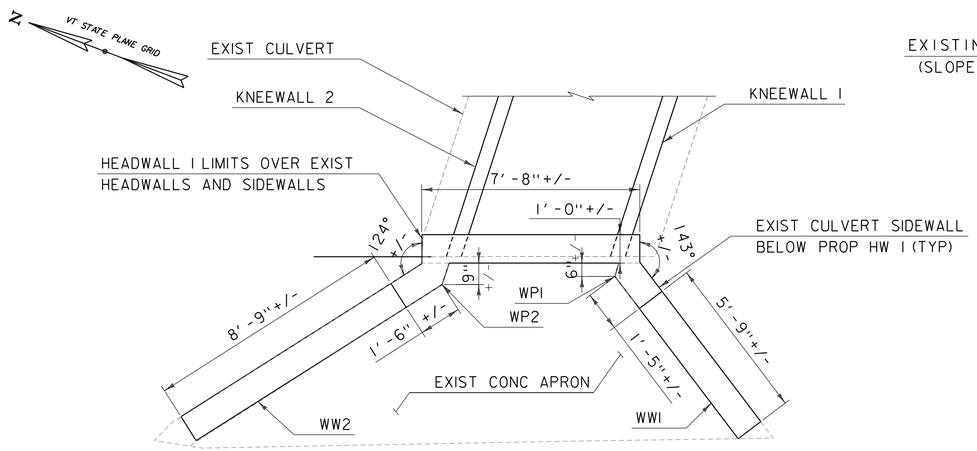


SECTION AT CULVERT CENTER LINE

SCALE 1" = 10'-0"

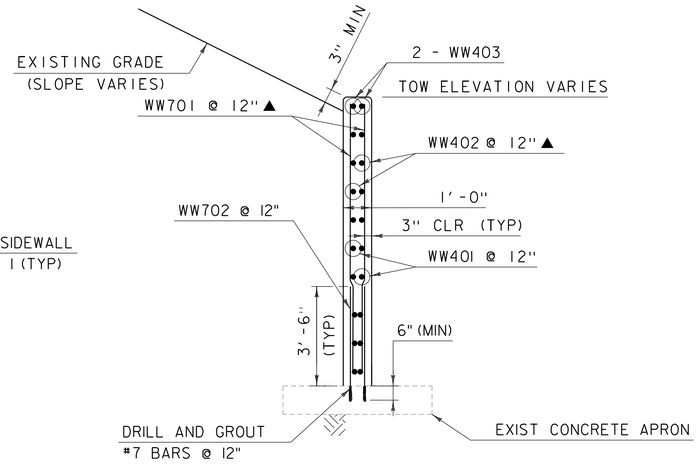
GREEN

PROJECT NAME:	ESSEX
PROJECT NUMBER:	STP CULV(148)
FILE NAME: z23b688pel.dgn	PLOT DATE: 11/20/2025
PROJECT LEADER: D. VERTIYEV	DRAWN BY: J. JENNINGS
DESIGNED BY: S. BIBINSKI	CHECKED BY: T. CARD
PLAN AND SECTION	SHEET 19 OF 27



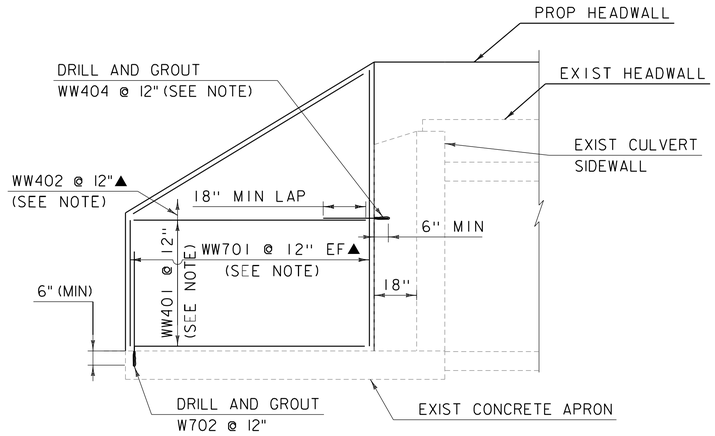
OUTLET PLAN

SCALE 3/8" = 1'-0"



WINGWALL TYPICAL SECTION

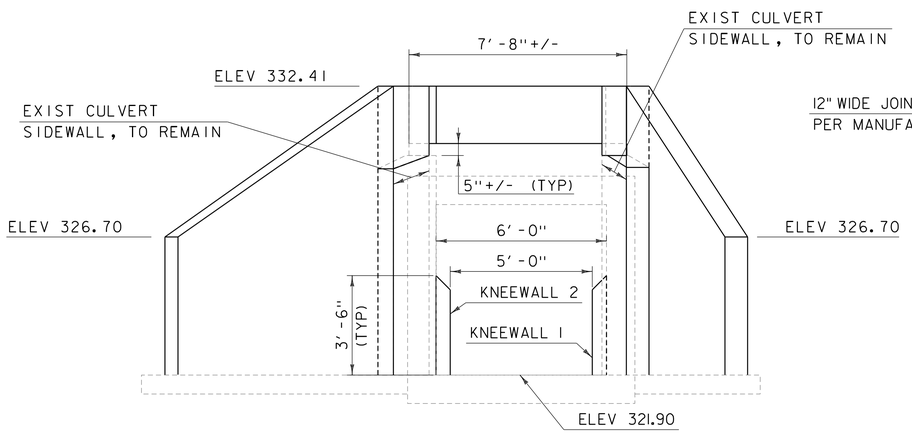
SCALE 3/8" = 1'-0"



NOTE: LENGTH OF BARS TO VARY AS NEEDED TOWARDS TOP OF WINGWALL DUE TO THE TOP OF WALL SLOPE

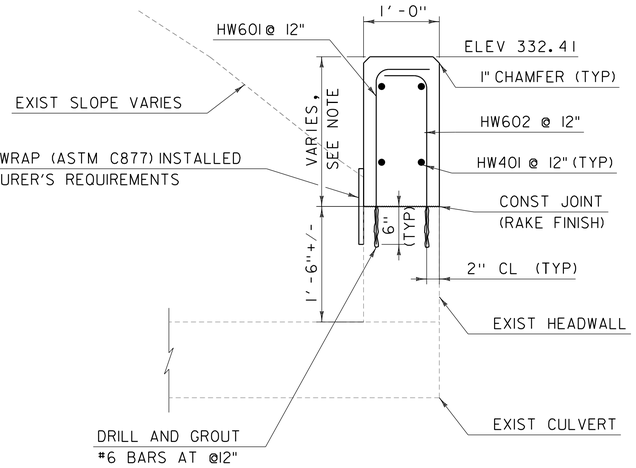
WINGWALL REINFORCING ELEVATION

SCALE 3/8" = 1'-0"



OUTLET ELEVATION

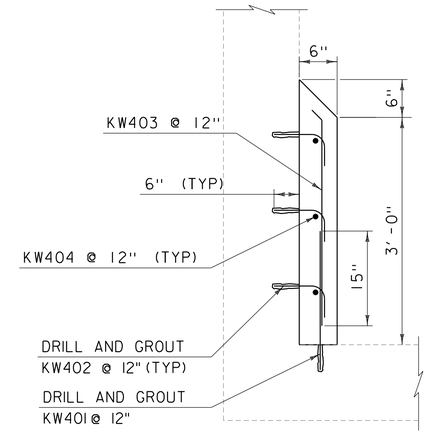
SCALE 3/8" = 1'-0"



NOTE: PROP HEADWALL HEIGHT TO VARY BETWEEN 2'-0" MIN, AND 2'-6" MAX. BASED ON ANCHORING INTO THE EXISTING HEADWALL AND SIDEWALLS AS SHOWN IN THE ELEVATION.

HEADWALL 1 TYPICAL SECTION

SCALE 1" = 1'-0"



KNEEWALL TYPICAL SECTION

SCALE 1" = 1'-0"

NOTES:

1. ALL EXISTING CULVERT DIMENSIONS TO BE VERIFIED BY THE CONTRACTOR WITH FIELD SURVEY AND MEASUREMENTS. IF ANY NOTABLE DIFFERENCES ARE FOUND RELATIVE TO THE PLANS, THEY SHOULD BE SUBMITTED TO THE ENGINEER FOR REIVEW.

2. FIELD VERIFICATION OF THE EXISTING STRUCTURE DIMENSIONS BY THE CONTRACTOR TO BE PERFORMED PRIOR TO PREPARING AND SUBMITTING SHOP DRAWINGS FOR THE NEW WINGWALLS, HEADWALL, AND KNEEWALLS.

3. NEW CONCRETE ELEMENTS CANNOT BE INSTALLED AND CONNECTED TO THE EXISTING CULVERT UNTIL ALL PROPOSED CONCRETE REPAIRS TO THE EXISTING STRUCTURE AT THAT INTERFACE ARE COMPLETE.

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688det.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: S. BIBINSKI
BRIDGE & CULVERT DETAILS

PLOT DATE: 11/20/2025
DRAWN BY: R. STICKLES
CHECKED BY: T. CARD
SHEET 20 OF 27

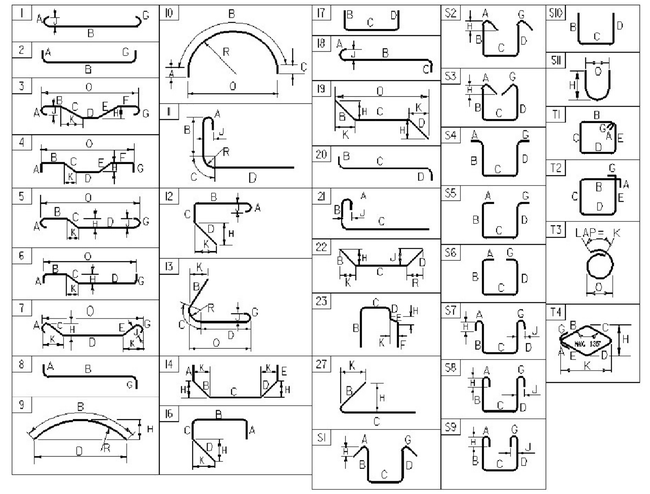
STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
HEADWALL #1																	
	7	6	3'- 1"	HW601	17		0'- 8"	2'- 5"									
	7	6	2'- 11"	HW602	17		0'- 8"	2'- 3"									
	4	4	7'- 5"	HW401	STR												
KNEEWALL #1																	
	62	4	2'- 0"	KW401	STR												
	62	4	1'- 4"	KW402	17		0'- 4"	1'- 0"									
	62	4	3'- 3"	KW403	19		0'- 3"	3'- 0"									
	3	4	62'- 8"	KW404	STR												
KNEEWALL #2																	
	62	4	2'- 0"	KW401	STR												
	62	4	1'- 4"	KW402	17		0'- 4"	1'- 0"									
	62	4	3'- 3"	KW403	19		0'- 3"	3'- 0"									
	3	4	62'- 8"	KW404	STR												
WINGWALL #1																	
▲	10	7	10'- 4"	1WW701	STR												
	10	7	3'- 6"	1WW702	STR												
	10	4	5'- 5"	1WW401	STR												
▲	10	4	5'- 5"	1WW402	STR												
	2	4	5'- 6"	1WW403	STR												
	20	4	2'- 3"	1WW404	STR												
WINGWALL #2																	
▲	16	7	10'- 4"	2WW701	STR												
	16	7	3'- 6"	2WW702	STR												
	10	4	8'- 5"	2WW401	STR												
▲	10	4	8'- 5"	2WW402	STR												
	2	4	9'- 6"	2WW403	STR												
	20	4	2'- 3"	1WW404	STR												

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. ALL BARS EPOXY COATED REINFORCING STEEL.
12. ● DENOTES BARS TO BE BENT IN FIELD



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES^2	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

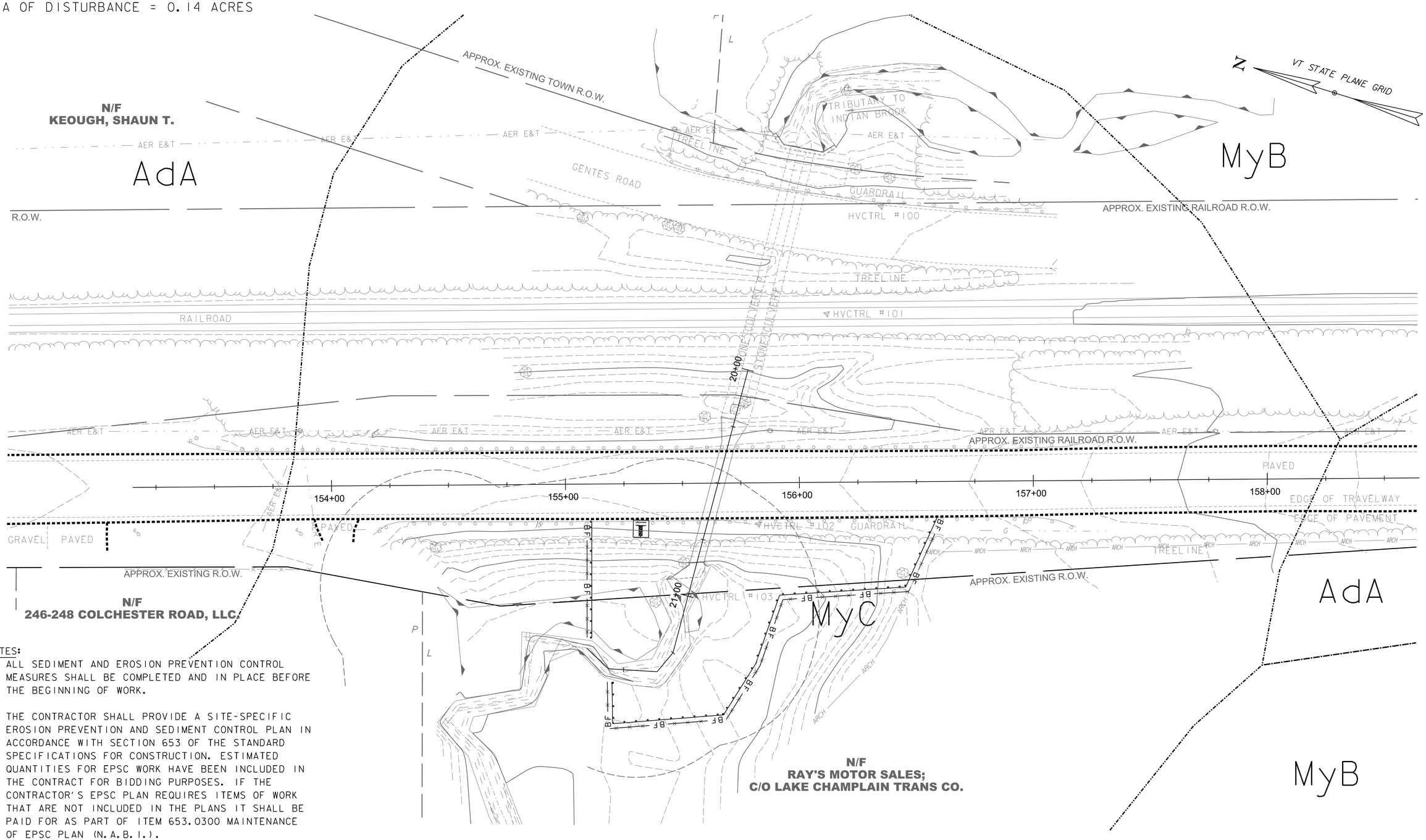
GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688rss.dgn
PROJECT LEADER: T. CARD
DESIGNED BY: S. BIBINSKI
BRIDGE 11 REINFORCING STEEL SCHEDULE

PLOT DATE: 11/20/2025
DRAWN BY: R. STICKLES
CHECKED BY: S. BIBINSKI
SHEET 21 OF 27

AREA OF DISTURBANCE = 0.14 ACRES



NOTES:

1. ALL SEDIMENT AND EROSION PREVENTION CONTROL MEASURES SHALL BE COMPLETED AND IN PLACE BEFORE THE BEGINNING OF WORK.

2. 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 (N.A.B.I.).

SOIL LEGEND

SOIL DESIGNATION	HYDROLOGIC SOIL GROUP CLASSIFICATION	SOIL ERODIBILITY COEFFICIENTS (K)
AdA = ADAMS AND WINDSOR LOAMY SANDS, 0 TO 5 PERCENT SLOPES	A	0.10
MyB = MUNSON AND RAYNHAM SILT LOAMS, 2 TO 6 PERCENT SLOPES	C/D	0.49
MyC = MUNSON AND RAYNHAM SILT LOAMS, 6 TO 12 PERCENT SLOPES	C/D	0.49

0 20 40
SCALE IN FEET

GREEN

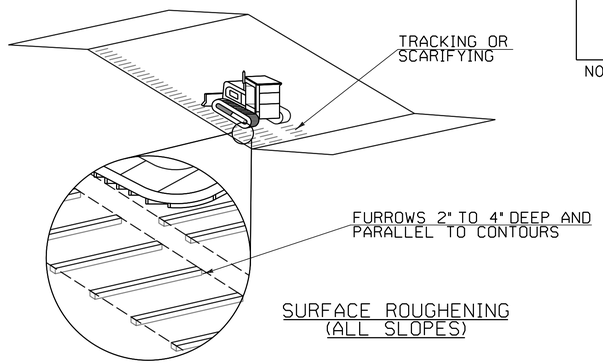
PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688eroex.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
EPSC EXISTING CONDITIONS SHEET

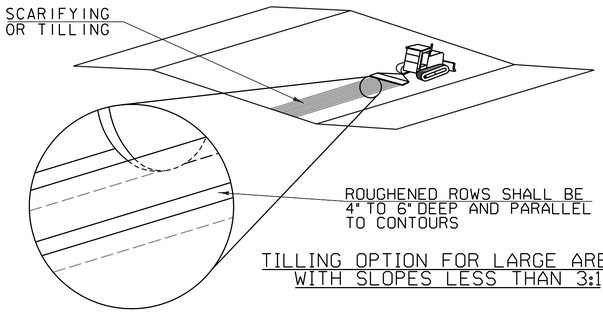
PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 22 OF 27

SYMBOL

NOT TO SCALE



SURFACE ROUGHENING (ALL SLOPES)



TILLING OPTION FOR LARGE AREAS WITH SLOPES LESS THAN 3:1

NOTES:

1. GROOVES MAY BE MADE WITH ANY APPROPRIATE PIECE OF EQUIPMENT THAT CAN BE SAFELY OPERATED ON, OR ADJACENT TO, THE SLOPE. SURFACE ROUGHENING SHALL BE ACCOMPLISHED IN A MANNER THAT LIMITS SOIL COMPACTION AND PROMOTES TURF ESTABLISHMENT.

2. FOR AREAS THAT WILL BE MOWED, SURFACE ROUGHENING SHOULD CONSIST OF GROOVES CREATED BY NORMAL TILLING, DISKING, HARROWING, OR USE OF A CULTIPACKER SEEDER. SURFACE ROUGHENING SHALL NOT CREATE A SURFACE THAT CAN NOT BE MOWED.

ADAPTED FROM DETAILS DEVELOPED BY:
VERMONT DEPARTMENT OF CONSERVATION

MILE HIGH FLOOD DISTRICT STORMWATER BEST MANAGEMENT PRACTICES

SURFACE ROUGHENING

NOTES:
REFER TO LATEST EDITION OF "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ALL OTHER CONTRACT ITEMS.

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF
NOVEMBER 25, 2024	CMMJ

VAOT NATURALIZED AREA TYPE I

WEIGHT	NAME	LATIN NAME	GERM	PURITY
38%	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	90%	98%
29%	HARD FESCUE	FESTUCA LONGIFOLIA	85%	95%
15%	CHEWINGS FESCUE	FESTUCA RUBRA VAR. COMMUTATA	87%	95%
15%	ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	90%	95%
3%	INERTS			
100%				

VAOT NATURALIZED AREA TYPE II

WEIGHT	NAME	LATIN NAME	GERM	PURITY
37.5%	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	WHITE FIELD CLOVER	TRIFOLIUM REPENS	85%	98%
5.0%	ANNUAL RYE GRASS	LOLIUM MULTIFLORUM	85%	95%
100%				

SEED RATE: BROADCAST: 75 LBS/ACRE
HYDROSEED: PER MANUFACTURER'S RECOMMENDATIONS

APPLY AMENDMENTS PER SOIL TEST RESULTS

FERTILIZER (755.06):
IF NO SOIL TEST IS PERFORMED, A SLOW OR CONTROLLED RELEASE FERTILIZER SHALL BE APPLIED AT A RATIO OF 1:1:1 (N:P:K). NITROGEN AND PHOSPHORUS SHALL BE APPLIED AT NO MORE THAN 1 LB. PER 1,000 SQ.FT.

LIMESTONE (755.08 & 755.09):
IF NO SOIL TEST IS PERFORMED, APPLY LIMESTONE PER MANUFACTURER'S RECOMMENDATIONS.

COMPOST (755.05):
COMPOST MAY BE APPLIED PER SOIL TEST RESULTS.

CONSTRUCTION GUIDANCE

1. THESE SEED MIXES SHALL BE USED IN AREAS THAT WILL NATURALIZE, RECEIVING LIMITED ANNUAL MOWING THROUGH THE GROWING SEASON.
2. USE SEED MIX AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON-WETLAND) AREAS DISTURBED BY THE CONTRACTOR. IF THE PLANS DO NOT SPECIFY A SEED TYPE, NATURALIZED AREA TYPE I OR TYPE II SHALL BE USED.
3. SEED MIXES SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. HAY MULCH TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE. ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
5. FERTILIZER SHOULD NOT BE APPLIED WITHIN 2 WEEKS OF APPLYING LIMESTONE.
6. FOR BEST ESTABLISHMENT, REAPPLY FERTILIZER 2-3 WEEKS AFTER GERMINATION.

TURF ESTABLISHMENT

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651.1500 TURF ESTABLISHMENT, GENERAL SEED)

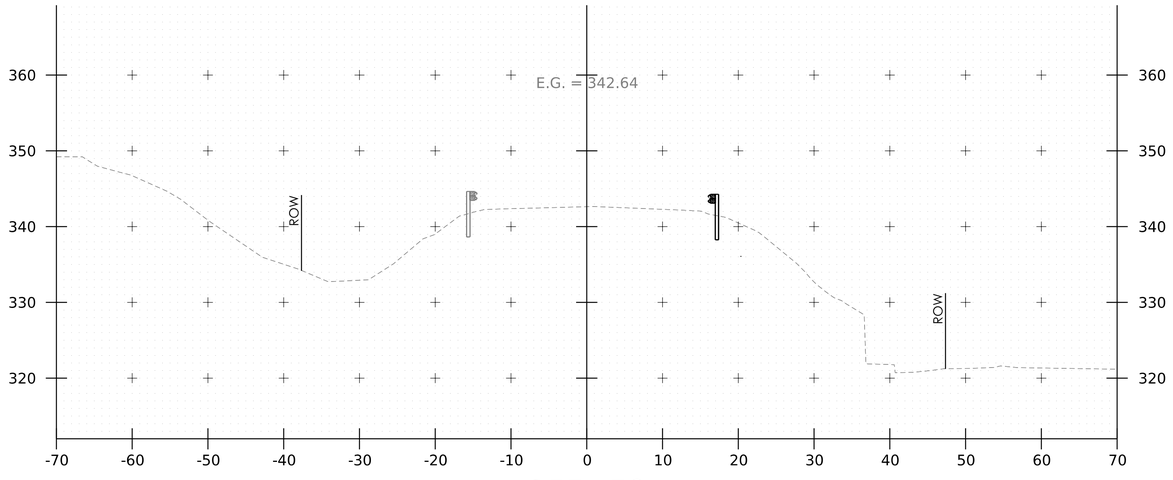
REVISIONS	
JANUARY 12, 2015	WHF
JUNE 15, 2023	BKD

GREEN

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

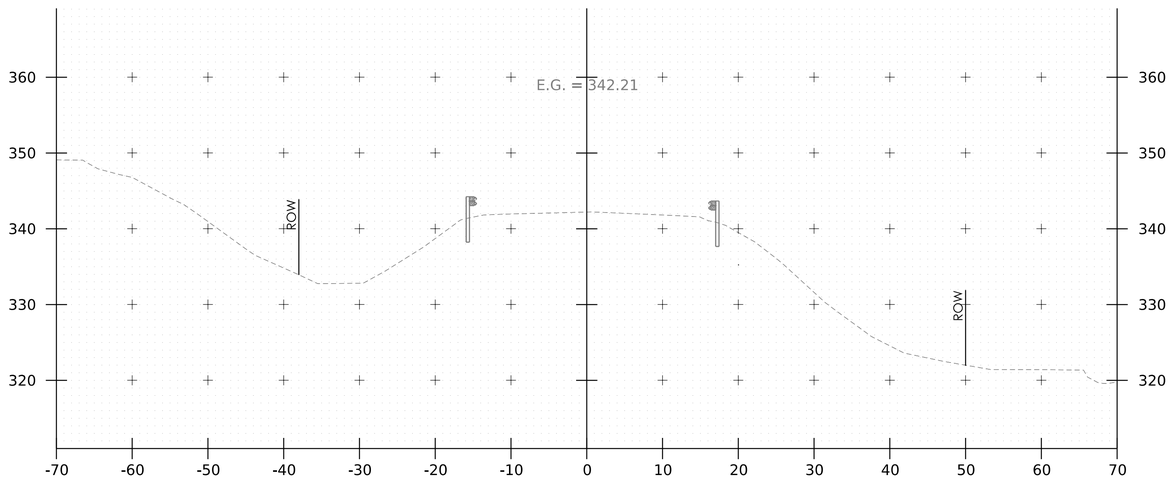
FILE NAME: z23b688erodet.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
EPSC DETAILS SHEET

PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A. TSOUKALAS
SHEET 23 OF 27



155+50

BEGIN STP CULV(148) STA. 155+19



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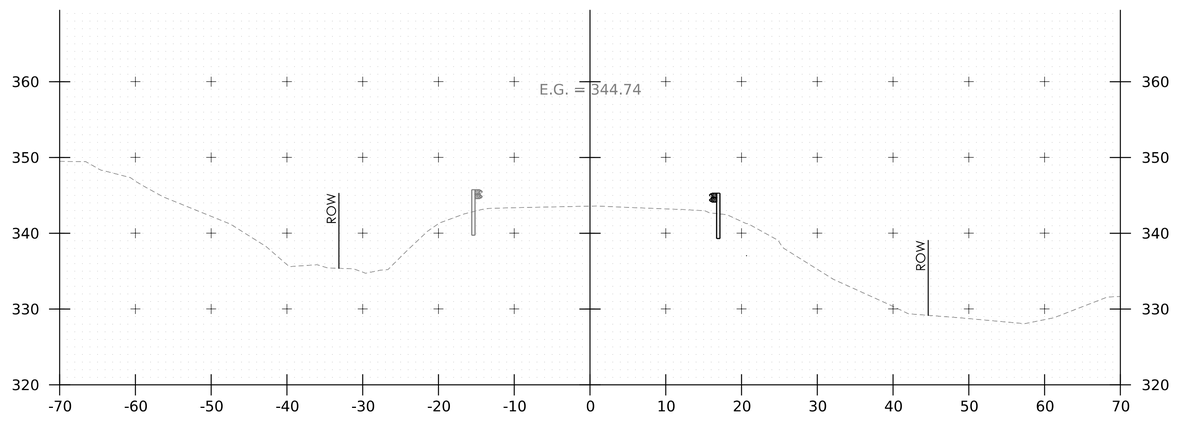

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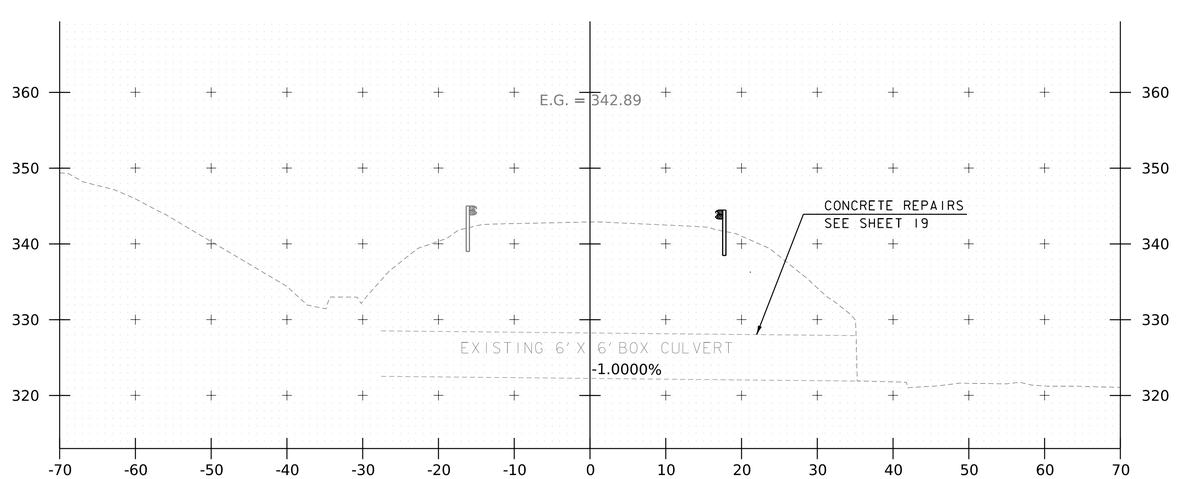
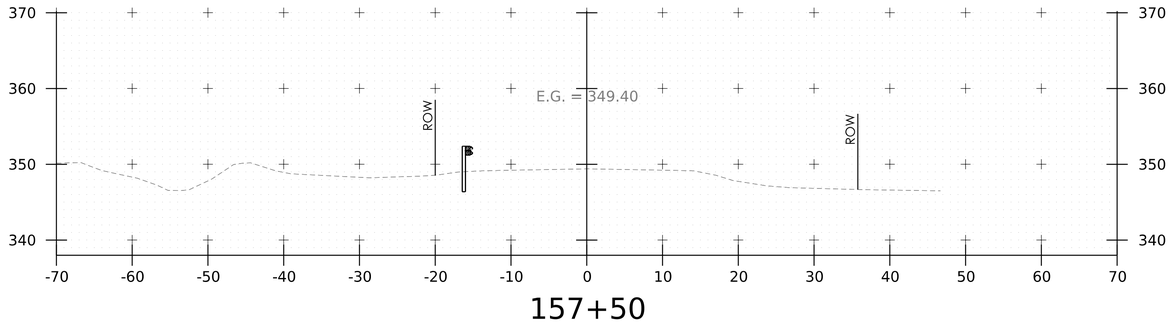


155+65

SKEWED AT 15.29°

PROJECT NAME:	ESSEX
PROJECT NUMBER:	STP CULV(148)
FILE NAME: z23b688xsl.dgn	PLOT DATE: 11/20/2025
PROJECT LEADER: D. VERTIYEV	DRAWN BY: C. WEBSTER
DESIGNED BY: E. NOONAN	CHECKED BY: A TSOUKALAS
ROADWAY CROSS SECTIONS SHEET 1	SHEET 24 OF 27

GREEN



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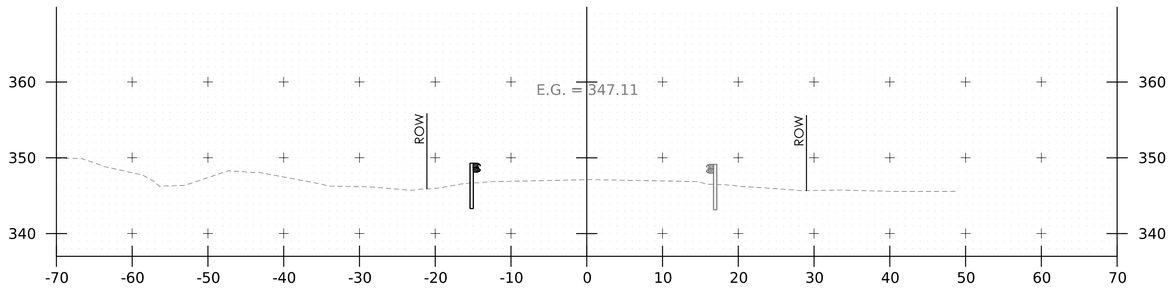
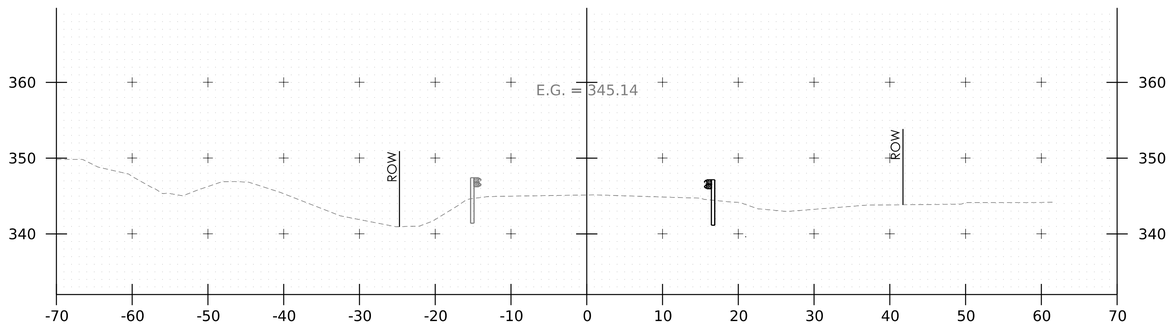


157+00



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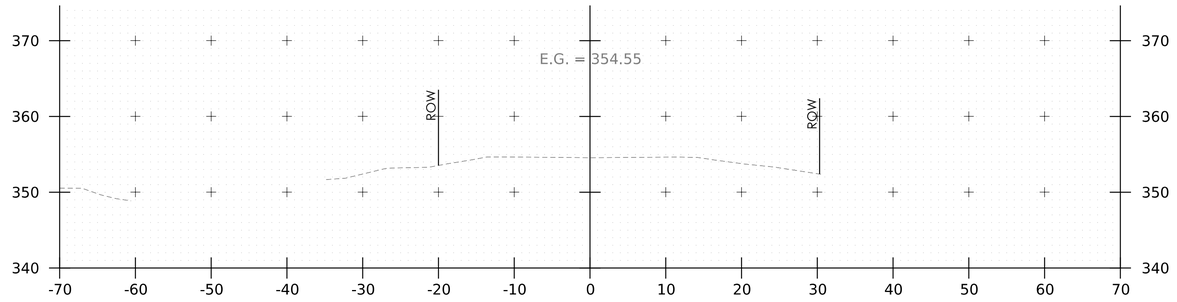

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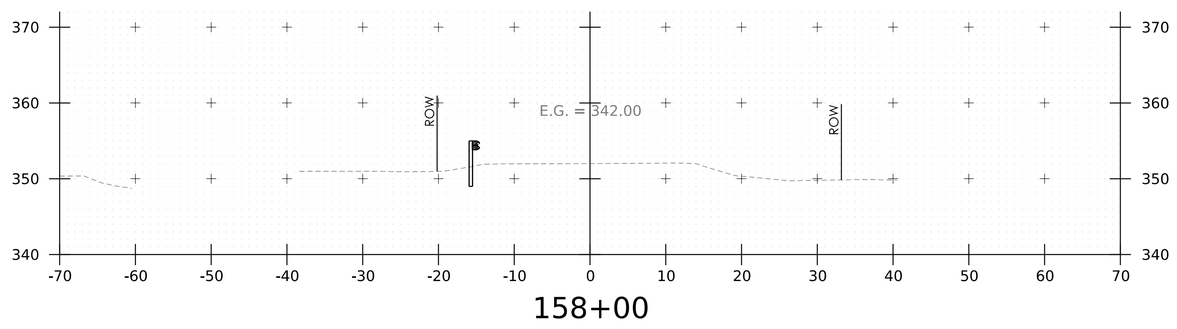
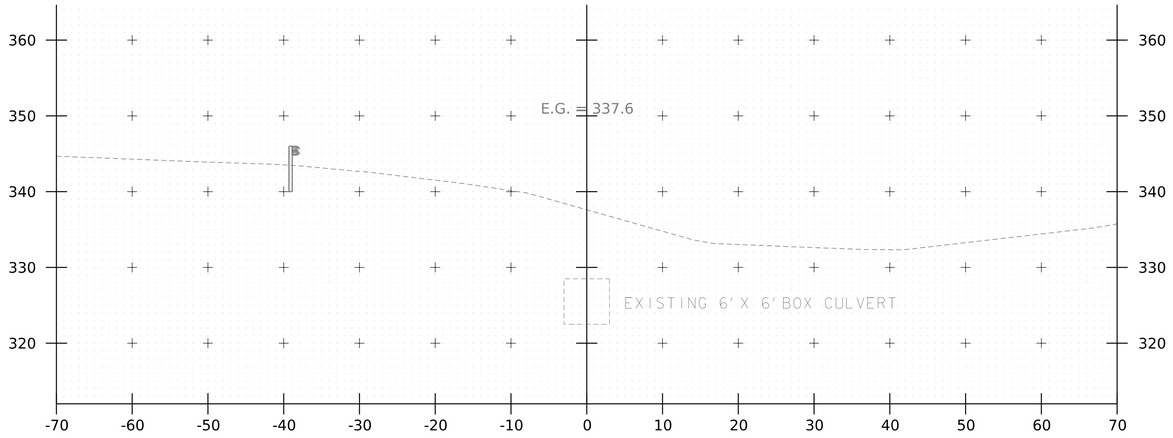
END STP CULV(148) STA. 158+31



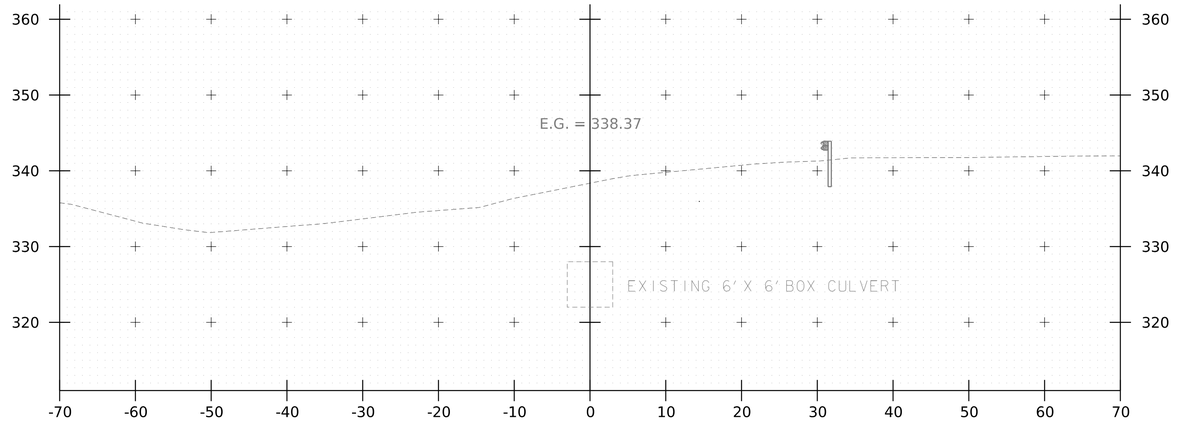
158+00

PROJECT NAME:	ESSEX
PROJECT NUMBER:	STP CULV(148)
FILE NAME: z23b688xsl.dgn	PLOT DATE: 11/20/2025
PROJECT LEADER: D. VERTIYEV	DRAWN BY: C. WEBSTER
DESIGNED BY: E. NOONAN	CHECKED BY: A TSOUKALAS
ROADWAY CROSS SECTIONS SHEET 2	SHEET 25 OF 27

GREEN



20+25



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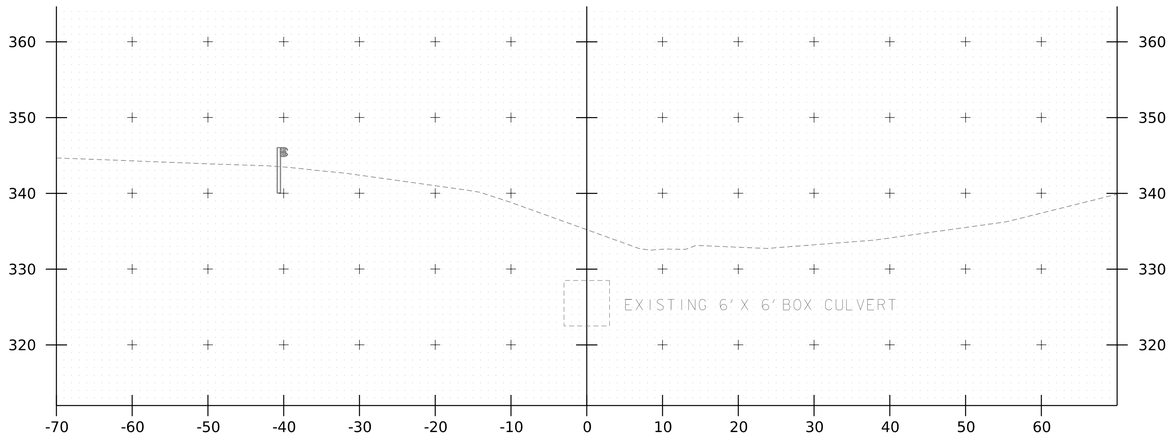
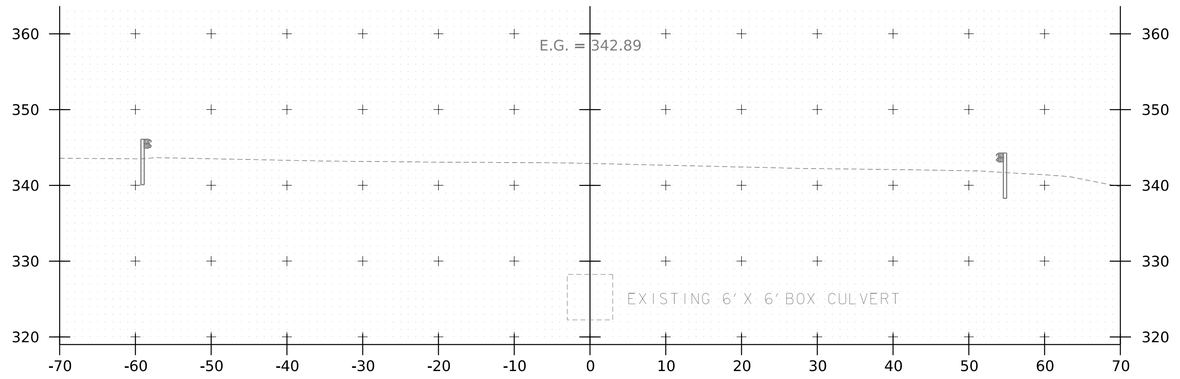


20+22
FACE OF CULVERT

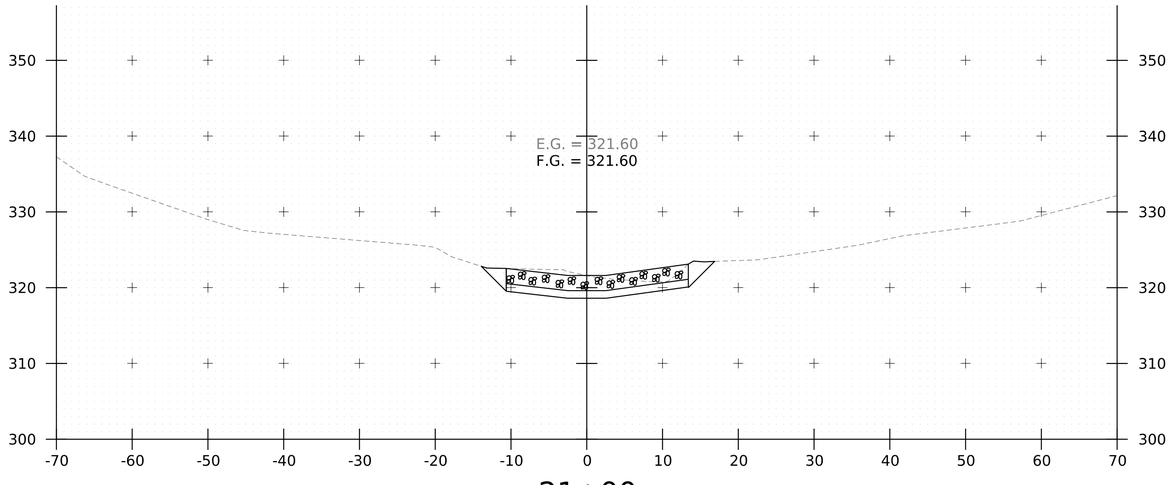


20+50

PROJECT NAME:	ESSEX
PROJECT NUMBER:	STP CULV(148)

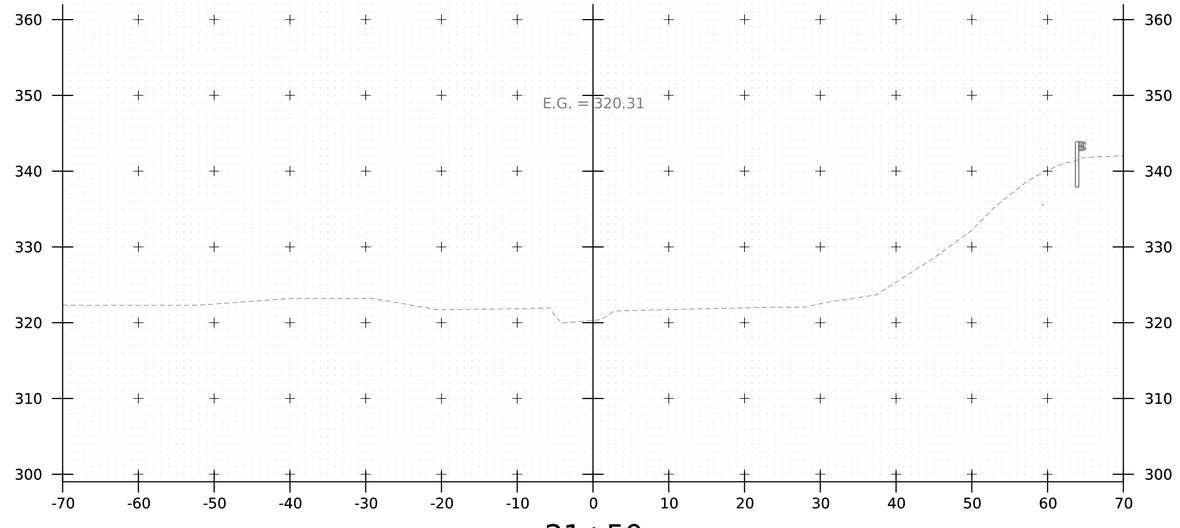
FILE NAME: z23b688xsl.dgn	PLOT DATE: 11/20/2025
PROJECT LEADER: D. VERTIYEV	DRAWN BY: C. WEBSTER
DESIGNED BY: E. NOONAN	CHECKED BY: A TSOUKALAS
CHANNEL CROSS SECTIONS SHEET 1	SHEET 26 OF 27

GREEN



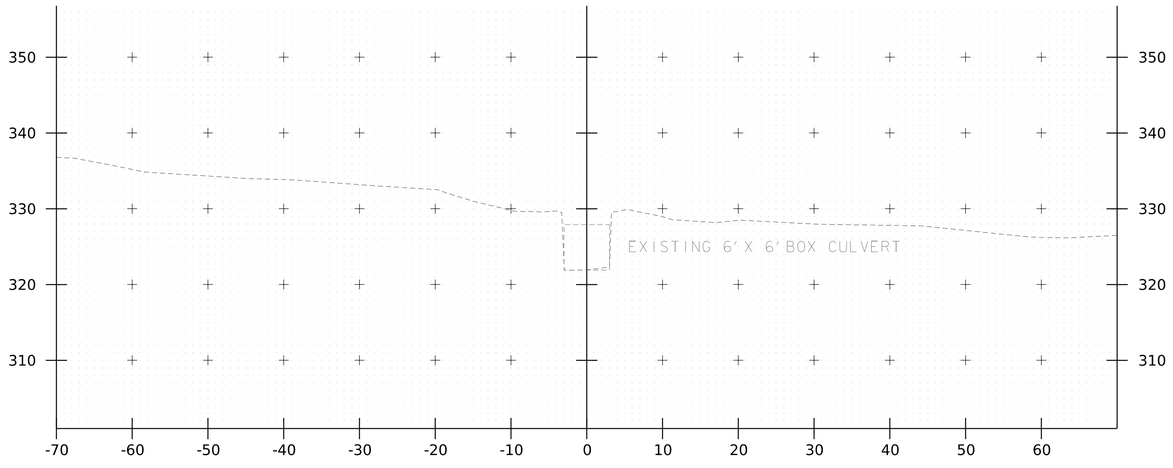
21+00

BEGIN CHANNEL WORK STA. 20+85



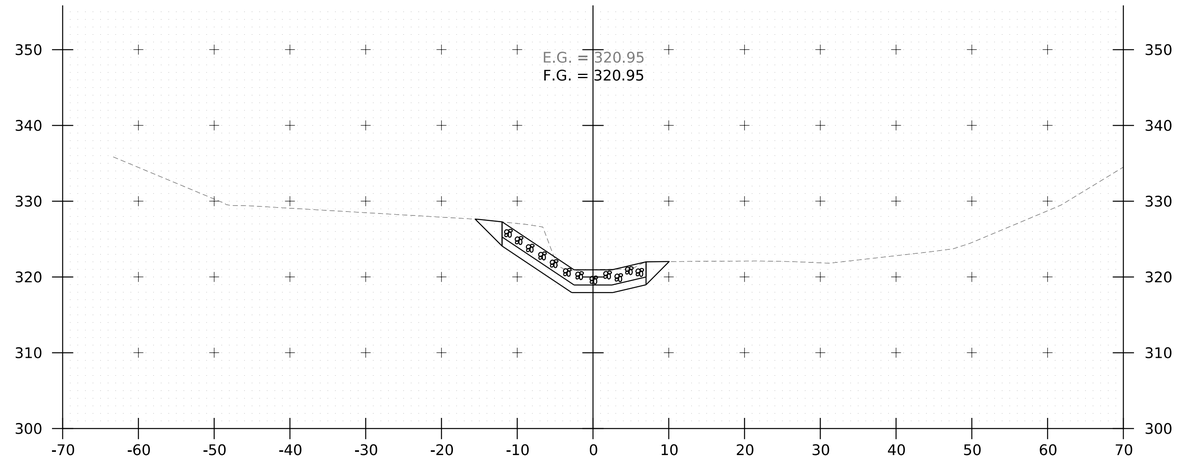
21+50

END CHANNEL WORK STA. 21+45



20+85

FACE OF CULVERT

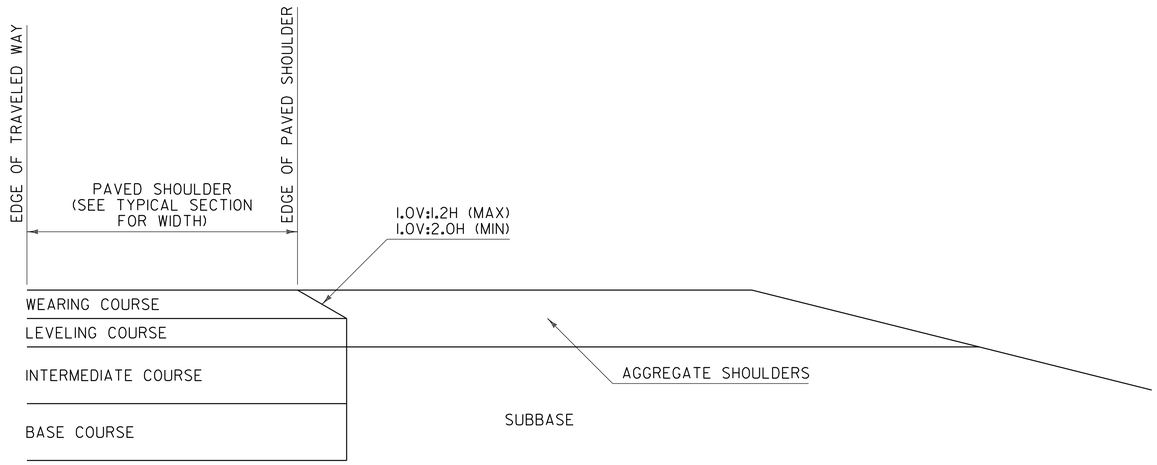


21+25

PROJECT NAME: ESSEX
PROJECT NUMBER: STP CULV(148)

FILE NAME: z23b688xsl.dgn
PROJECT LEADER: D. VERTIYEV
DESIGNED BY: E. NOONAN
CHANNEL CROSS SECTIONS SHEET 2

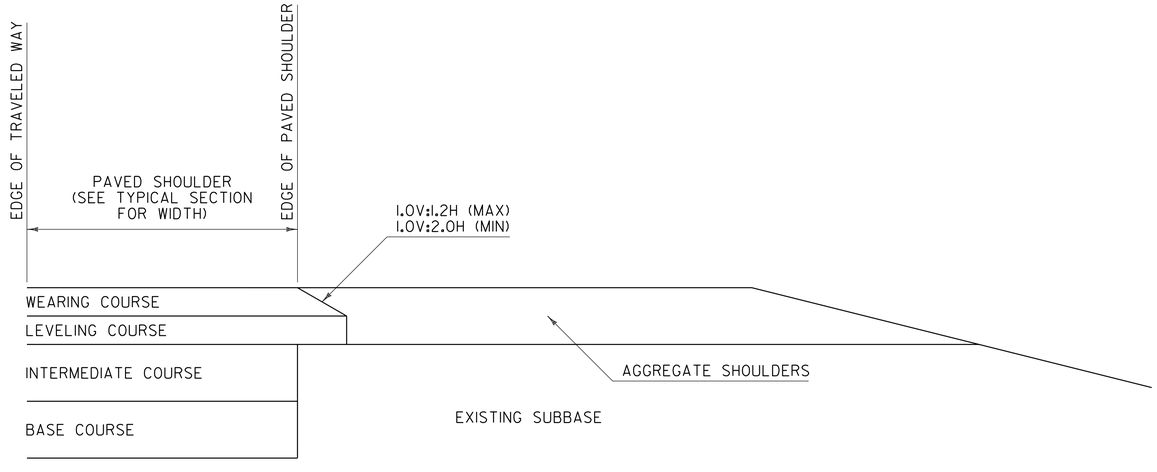
PLOT DATE: 11/20/2025
DRAWN BY: C. WEBSTER
CHECKED BY: A TSOUKALAS
SHEET 27 OF 27



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 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.

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

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

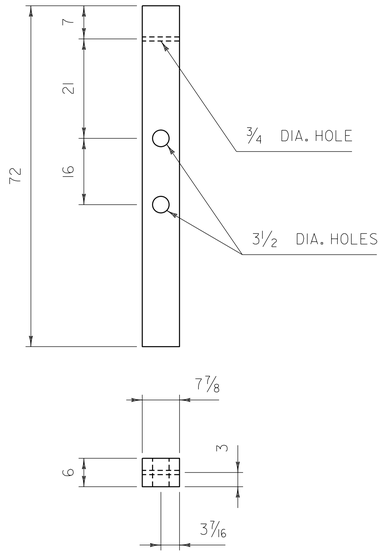
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN

SAFETY EDGE DETAILS

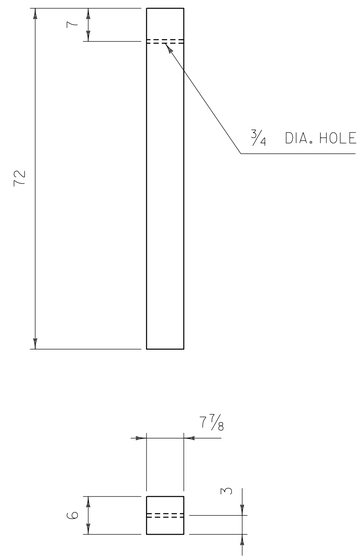
VTrans Working to Get You There
VERMONT AGENCY OF TRANSPORTATION

HIGHWAY SAFETY & DESIGN DETAIL

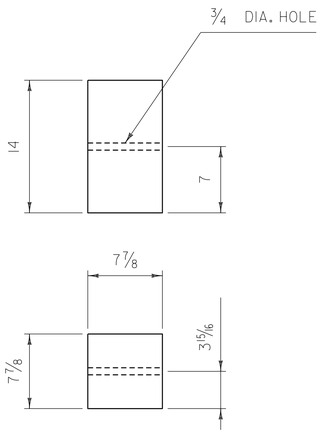
HSD-400.01



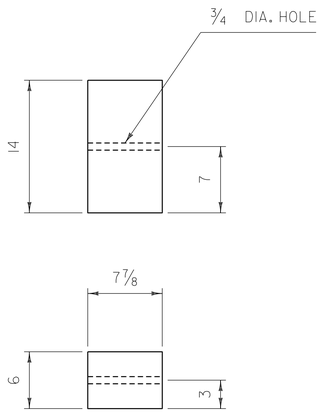
CONTROLLED RELEASING TERMINAL (CRT) TIMBER POST (PDE09)



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 1/2 INCH HOLE IS AT GROUND LEVEL.
3. ALL TIMBER SHALL RECEIVE A PRESERVATION TREATMENT IN ACCORDANCE WITH AASHTO M133 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

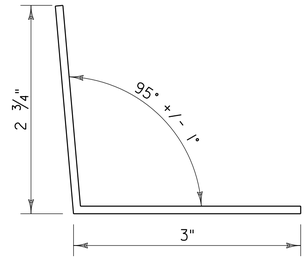
POST AND BLOCKOUT DETAILS FOR STEEL BEAM GUARDRAIL, GALVANIZED

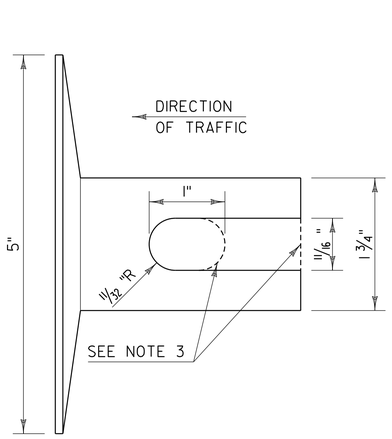
VTrans Working to Get You There
VERMONT AGENCY OF TRANSPORTATION

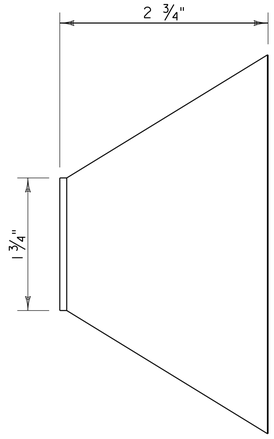
HIGHWAY SAFETY & DESIGN DETAIL

HSD-621.01

GUARDRAIL DELINEATOR DETAIL







NOTES:

1. GUARDRAIL DELINEATOR BASE MATERIAL SHALL BE 0.10 INCH THICK ALUMINUM IN ACCORDANCE WITH SUBSECTION 728.04 DELINEATION DEVICES.
2. GUARDRAIL DELINEATORS SHALL HAVE WHITE RETROREFLECTIVE SHEETING, EQUAL TO OR EXCEEDING TYPE III IN ACCORDANCE WITH SUBSECTION 750.08(B)(3) ON THE RIGHT SIDE OF THE TRAVELED WAY AND YELLOW RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING TYPE VII IN ACCORDANCE WITH SUBSECTION 750.08(B)(7) ON THE LEFT SIDE OF THE TRAVELED WAY IN RESPECT TO APPROACHING TRAFFIC. ON ONE DIRECTIONAL ROADWAYS RETROREFLECTIVE SHEETING MAY BE OMITTED ON FACES WHERE THERE WILL BE NO APPROACHING TRAFFIC.
3. HOLE MAY BE USED IN PLACE OF SLOT.

GUARDRAIL TERMINAL LABEL DETAIL

NOTES:

1. LINE ONE SHALL INDICATE THE INSTALLATION YEAR (YYYY).
2. LINE TWO SHALL INDICATE THE MODEL AS IDENTIFIED ON THE APPROVED PRODUCTS LIST. FOR GENERIC INSTALLATIONS THE STANDARD DRAWING DESIGNATION OR NAME AS IDENTIFIED IN THE FHWA ELIGIBILITY LETTER SHALL BE USED.
3. LINE THREE SHALL SHALL INDICATE ADDITIONAL MODEL INFORMATION IF NECESSARY.
4. LINE FOUR SHALL INDICATE FLARED (FLRD) OR TANGENT (TANG).
5. LEGEND SHALL BE SIZE 3/4 INCH ARIEL FONT.
6. LEGEND SHALL BE BLACK ON A WHITE BACKGROUND, LEGEND AND BACKGROUND SHALL NOT BE REFLECTIVE.
7. SUITABLE MATERIAL SHALL BE USED SO AS TO NOT DETERIORATE DURING EXPOSURE TO WEATHER.
8. LABELS SHALL BE APPLIED IN SUCH A WAY THAT THEY REMAIN INTACT DURING THE LIFE OF THE TERMINAL.
9. FOR W-BEAM GUARDRAIL, LABEL SHALL BE PLACED ON THE TOP OF POST ONE FACING AWAY FROM TRAFFIC.
10. FOR BOX BEAM GUARDRAIL, LABEL SHALL BE PLACED ON THE BOX BEAM ADJACENT TO POST ONE FACING AWAY FROM TRAFFIC.
11. PAYMENT SHALL BE INCIDENTAL TO OTHER TRAFFIC BARRIER ITEMS.

REV.	DATE	DESCRIPTION
0	NOV. 3, 2015	ORIGINAL APPROVAL
1	FEB. 27, 2017	UPDATED NAME, MINOR CORRECTIONS AND ADDED GUARDRAIL DELINEATOR DETAIL

OTHER DETAILS REQUIRED: NONE

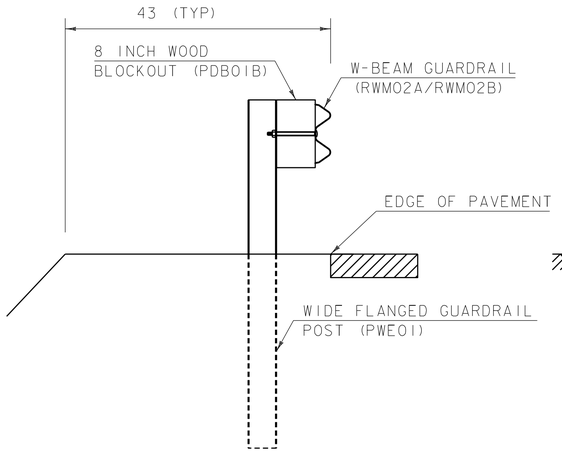
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN

MISCELLANEOUS GUARDRAIL DETAILS

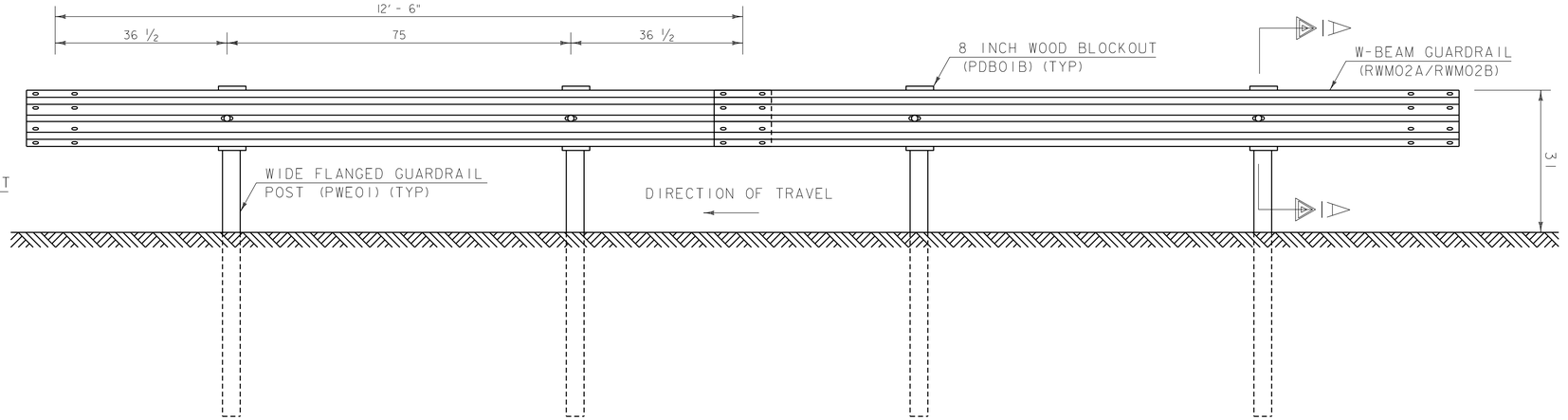
VTrans Working to Get You There
VERMONT AGENCY OF TRANSPORTATION

HIGHWAY SAFETY & DESIGN DETAIL

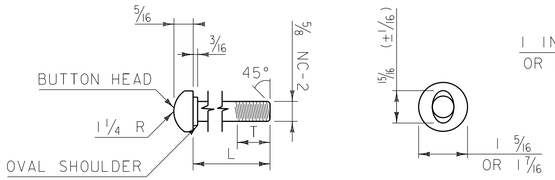
HSD-621.06



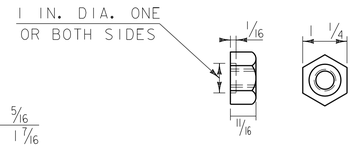
TYPICAL GUARDRAIL DETAIL
SECTION A-A



GUARDRAIL ELEVATION

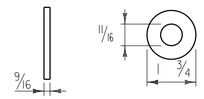


GUARDRAIL BOLT



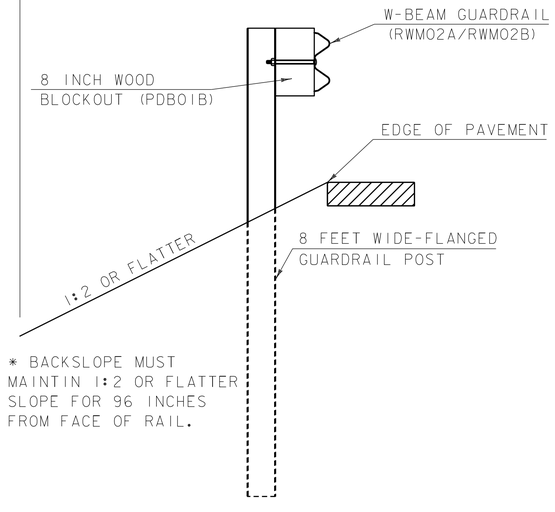
RECESSED NUT FOR GUARDRAIL BOLT

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

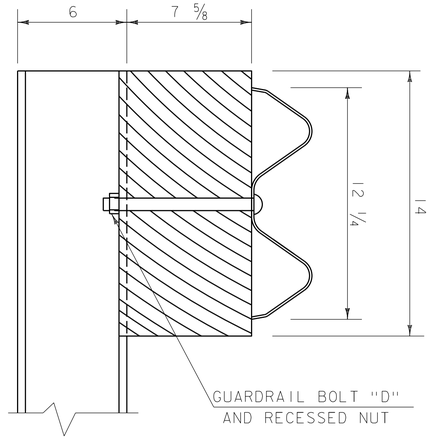


WASHER FOR 5/8" BOLTS
ARTBA F-13-73

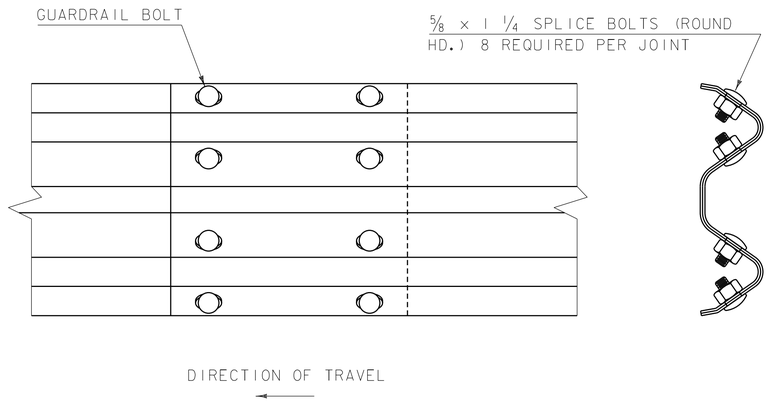
GUARDRAIL BOLTS				FASTENER USED IN	
BOLT DES.	ARTBA REF. NO.	L	T (MIN.)	STEEL POSTS	WOOD POSTS
"A"	F-3[1¼]-76	1¼"	1"	X	X
"C"	F-3[9½]-76	9½"	1¾"	X	
"D"	F-3[18]-76	18"	2½"		X
"F"	F-3[25]-76	25"	2"		X



8 FEET POSTS GUARDRAIL DETAIL
SECTION A-A



POST ATTATCHMENT DETAIL



SPLICE DETAIL

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. 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.
4. 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.
5. FOR TEST LEVEL 3 APPLICATIONS, AS APPROVED IN THE FEDERAL HIGHWAY ADMINISTRATION'S ELIGIBILITY LETTER, HSST/B-240, DATED NOVEMBER 8, 2012.
6. ALL DIMENSION IN INCHES, UNLESS OTHERWISE NOTED.

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL
1	JAN. 4, 2021	CORRECTED REFERENCE IN NOTE 3

OTHER DETAILS REQUIRED: 621.07B

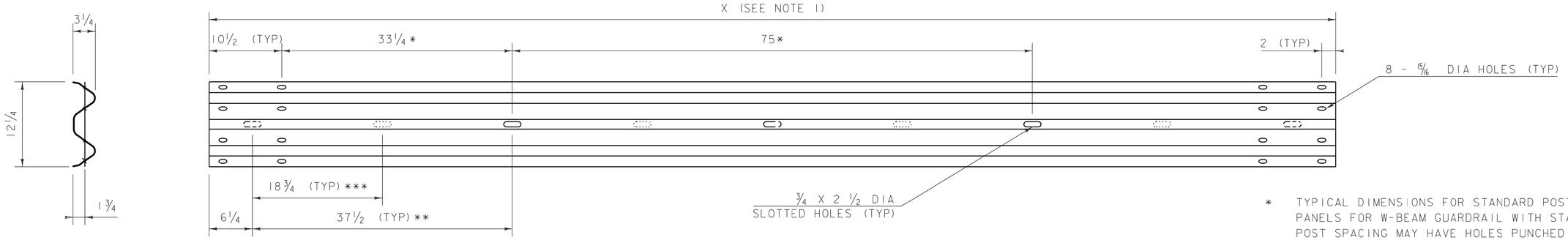
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN

MIDWEST GUARDRAIL SYSTEM (MGS)

VTrans Working to Get You There
VERMONT AGENCY OF TRANSPORTATION

HIGHWAY SAFETY & DESIGN DETAIL

HSD-621.07A



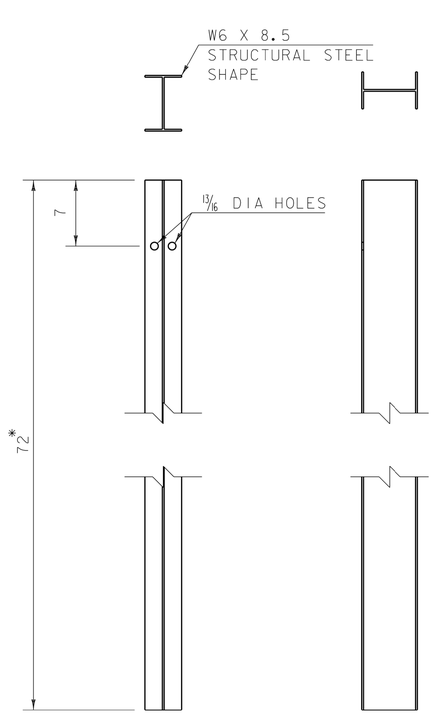
1. TANGENT W-BEAM RAIL LENGTHS SHALL BE 13'-6 1/2" OR 26'-1/2", UNLESS OTHERWISE SPECIFIED.
2. W-BEAM THICKNESS SHALL BE 1/8" FOR STANDARD W-BEAM GUARDRAIL (RWM02A) AND 5/64" FOR HEAVY DUTY GUARDRAIL (RWM02B).

* 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.

W-BEAM GUARDRAIL (RWM02A/ RWM02B)

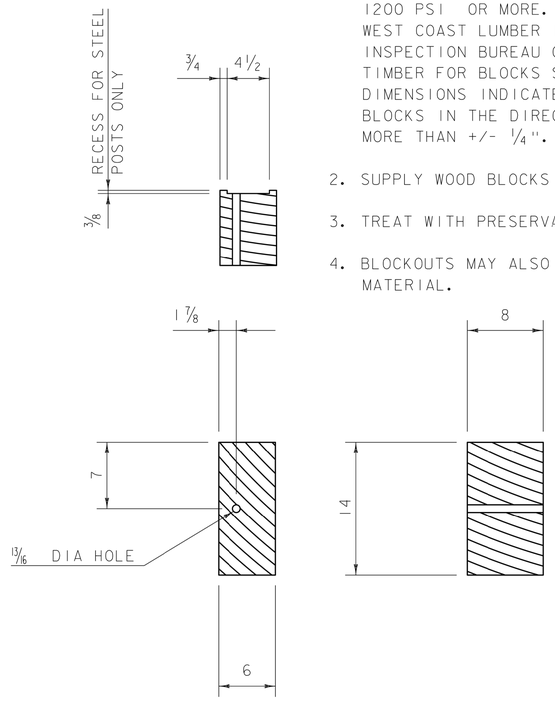
NOTES:

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.

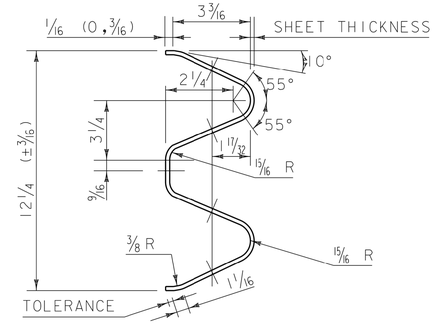


WIDE FLANGED GUARDRAIL POST (PWE01)

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



8 INCH WOOD BLOCKOUT (PDB01B)



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

TYPICAL GUARDRAIL SECTION

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.

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL

OTHER DETAILS REQUIRED: NONE

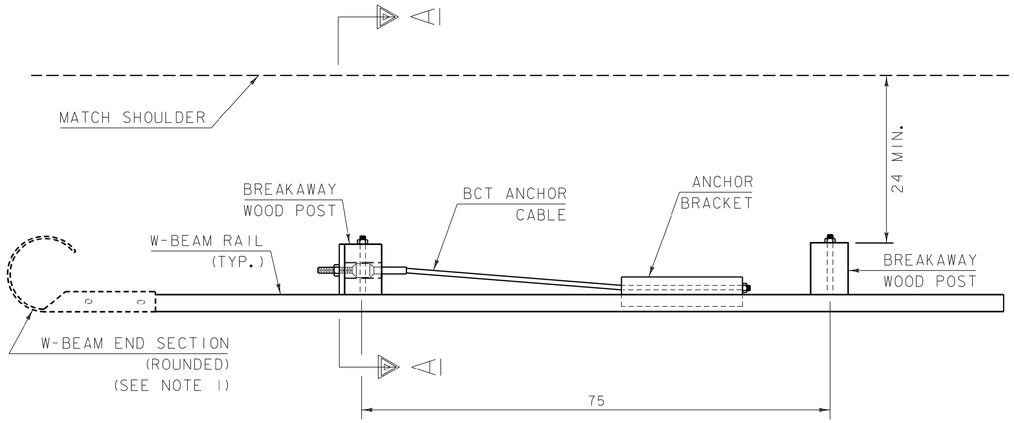
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN

W-BEAM GUARDRAIL COMPONENTS

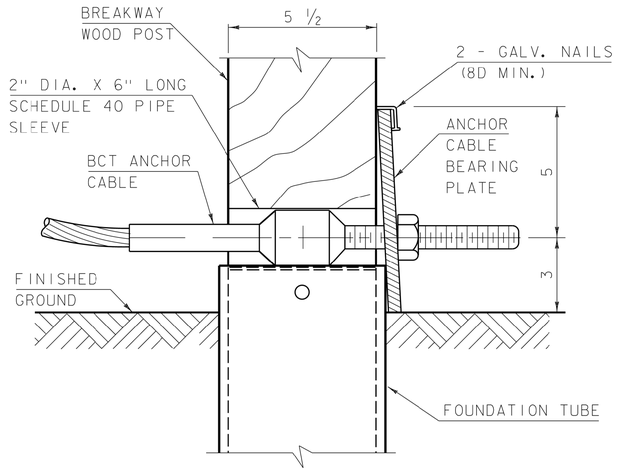
VTrans Working to Get You There — VERMONT AGENCY OF TRANSPORTATION

HIGHWAY SAFETY & DESIGN DETAIL

HSD-621.07B

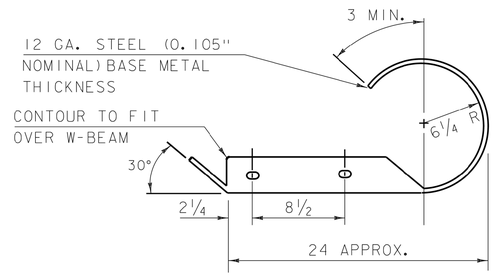


PLAN VIEW

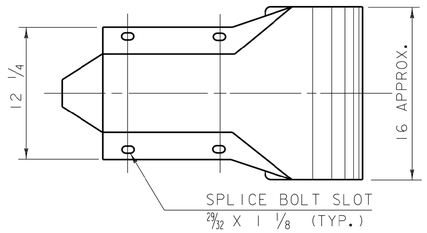


DETAIL A

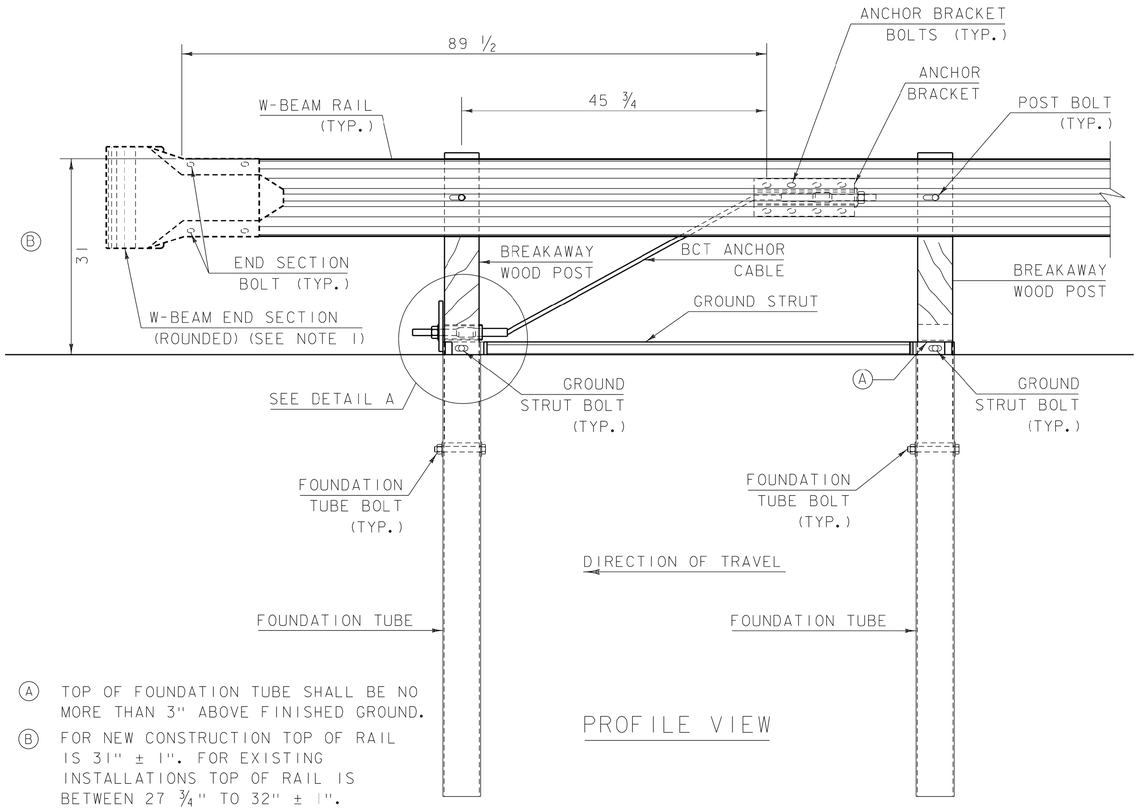
POST NO. 1
GROUND STRUT NOT SHOWN FOR CLARITY.



PLAN VIEW



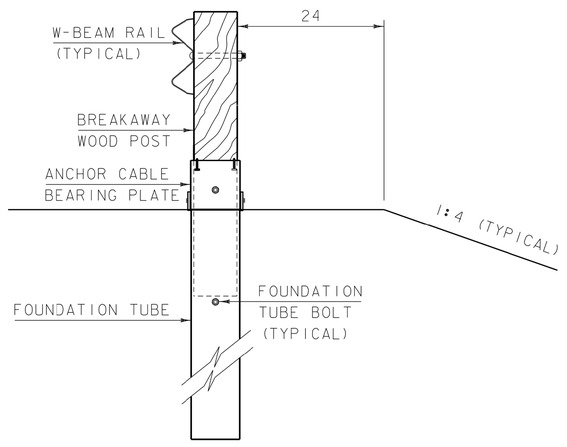
PROFILE VIEW
W-BEAM END SECTION (ROUNDED)



Ⓐ TOP OF FOUNDATION TUBE SHALL BE NO MORE THAN 3" ABOVE FINISHED GROUND.

Ⓑ FOR NEW CONSTRUCTION TOP OF RAIL IS 31" ± 1". FOR EXISTING INSTALLATIONS TOP OF RAIL IS BETWEEN 27 ¾" TO 32" ± 1".

PROFILE VIEW



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 ⅞" DIAMETER ASTM A307 HEX HEAD BOLT. FOUNDATION TUBE BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 ⅞" DIAMETER FLAT WASHERS. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.
6. ANCHOR BRACKET AND GROUND STRUT BOLTS ARE A ⅝" DIAMETER ASTM A307 HEX HEAD BOLT. ANCHOR BRACKET BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 ⅝" 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.

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL

OTHER DETAILS REQUIRED: HSD-621.07D, HSD-621.07E

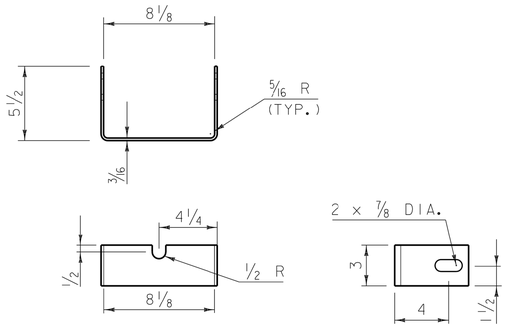
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN

MIDWEST GUARDRAIL SYSTEM (MGS) ANCHOR

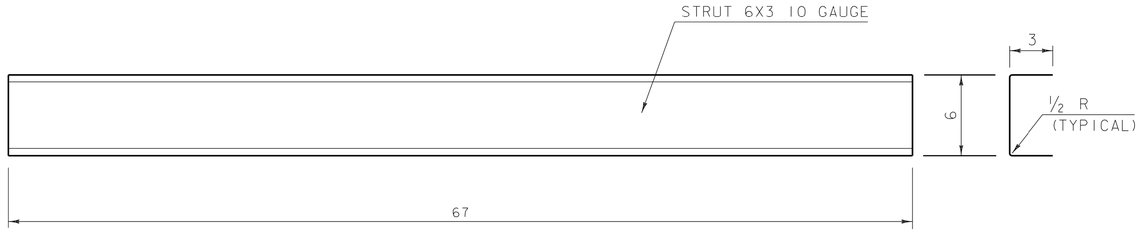
VTrans Working to Get You There — VERMONT AGENCY OF TRANSPORTATION

HIGHWAY SAFETY & DESIGN DETAIL

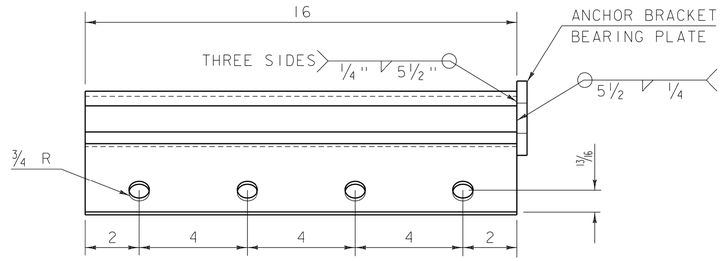
HSD-621.07C

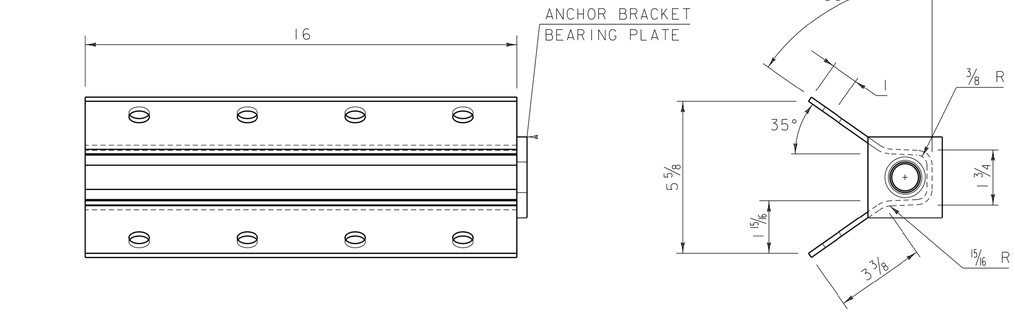


YOKE DETAIL

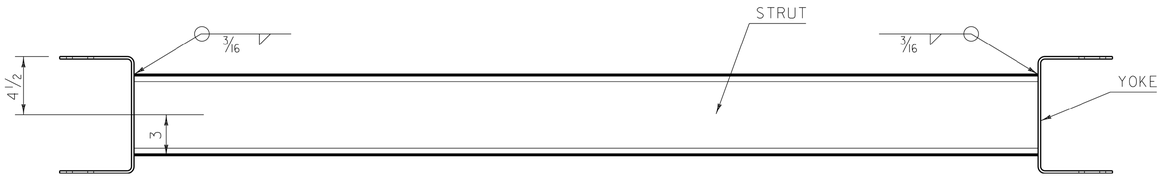


STRUT DETAIL

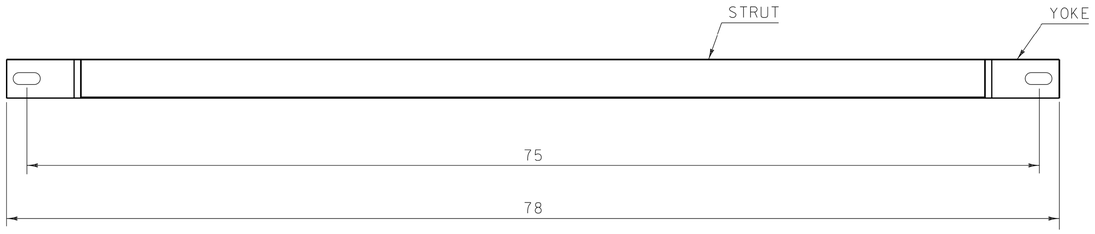




ANCHOR BRACKET

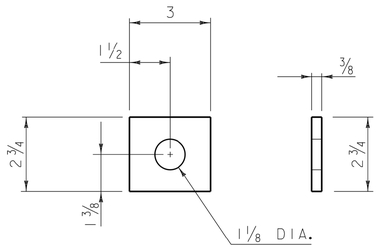


PLAN VIEW



PROFILE VIEW

GROUND STRUT DETAIL



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

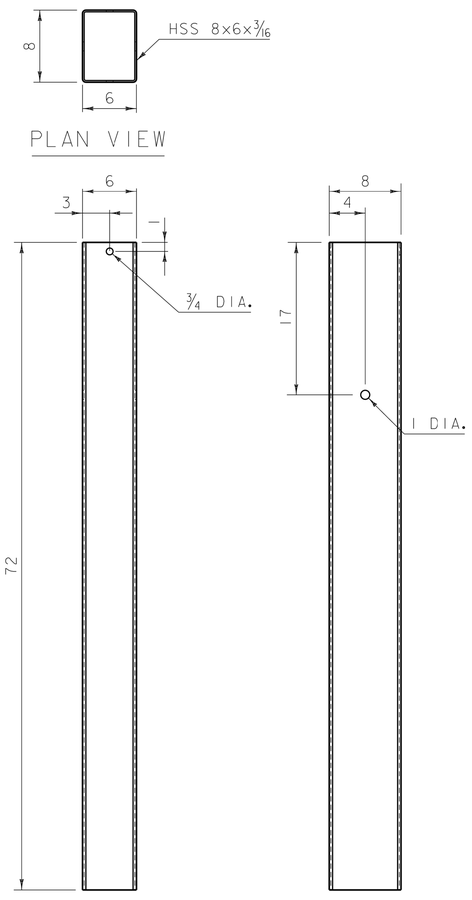
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN

MIDWEST GUARDRAIL SYSTEM (MGS) ANCHOR COMPONENTS

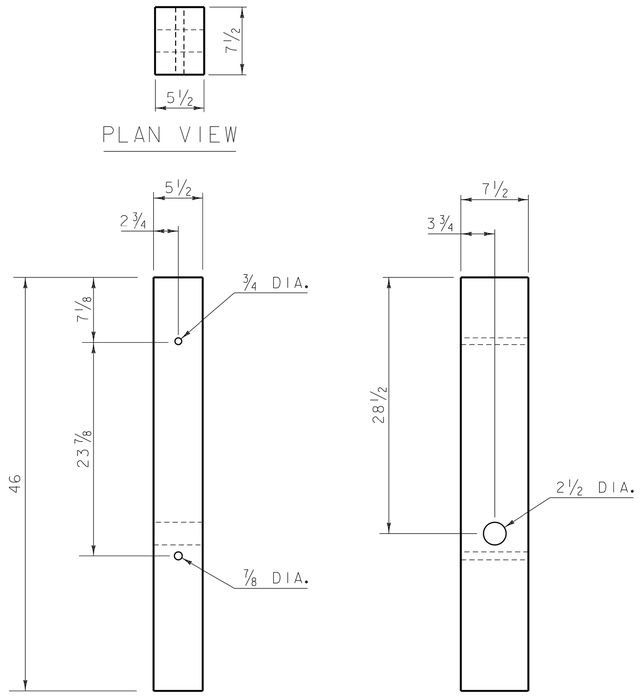
VTrans Working to Get You There VERMONT AGENCY OF TRANSPORTATION

HIGHWAY SAFETY & DESIGN DETAIL

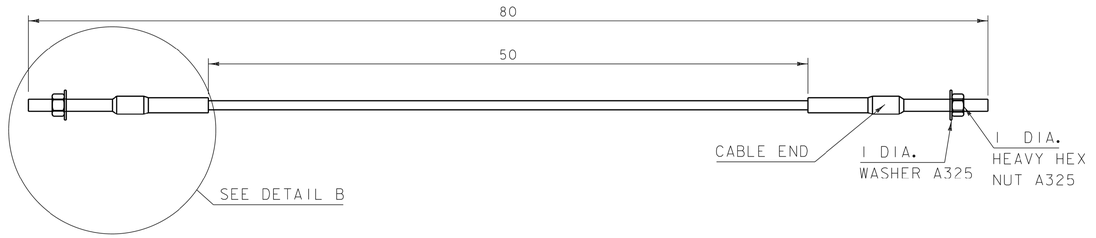
HSD-621.07D



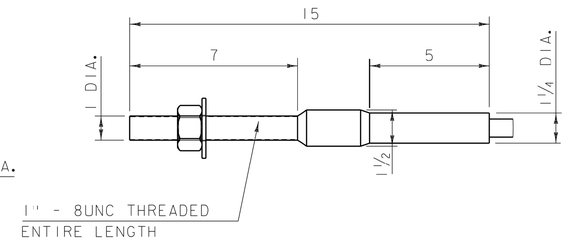
FOUNDATION TUBE



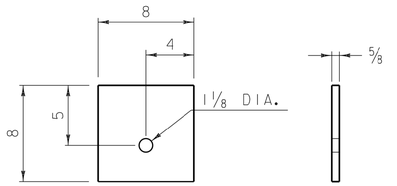
BREAKAWAY WOOD POST



BCT ANCHOR CABLE



DETAIL B



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

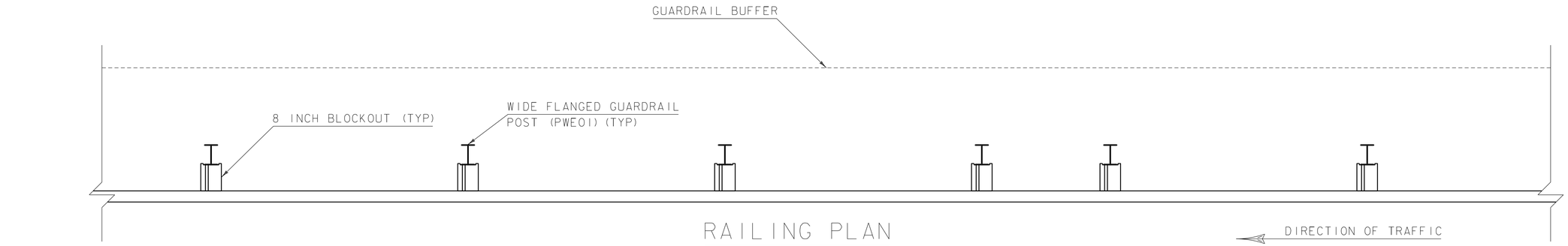
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN

MIDWEST GUARDRAIL SYSTEM (MGS) ANCHOR COMPONENTS

VTrans Working to Get You There
VERMONT AGENCY OF TRANSPORTATION

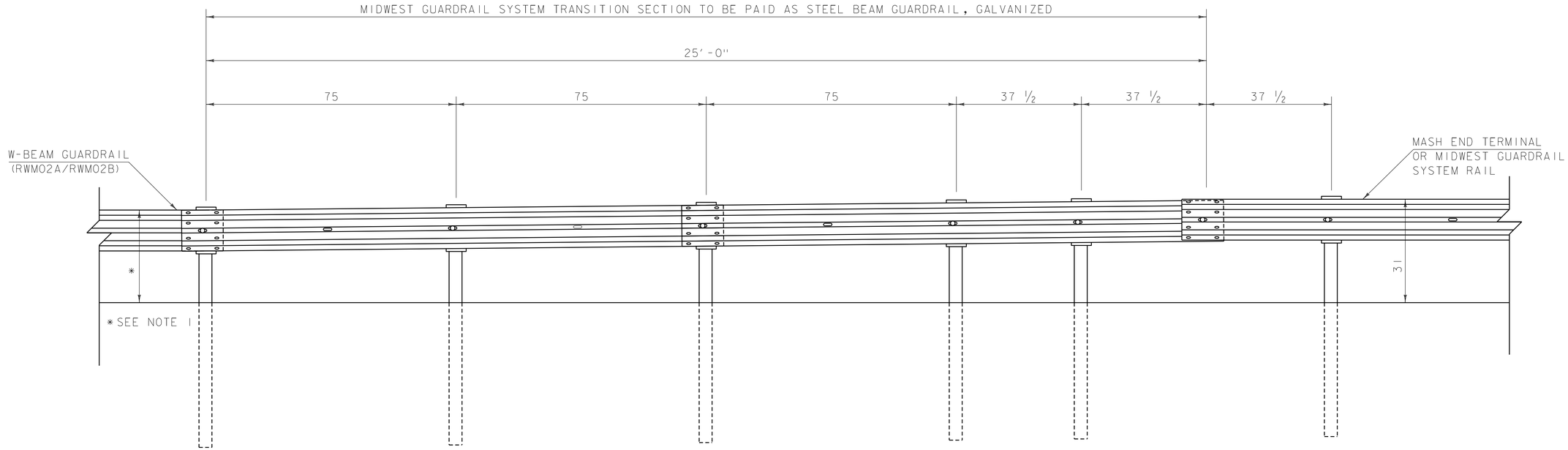
HIGHWAY SAFETY & DESIGN DETAIL

HSD-621.07E



RAILING PLAN

DIRECTION OF TRAFFIC



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 12½ 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 MEASURMENTS ARE IN INCHES UNLESS OTHERWISE NOTED.

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL
1	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

VTrans Working to Get You There
VERMONT AGENCY OF TRANSPORTATION

HIGHWAY SAFETY & DESIGN DETAIL

HSD-621.07F