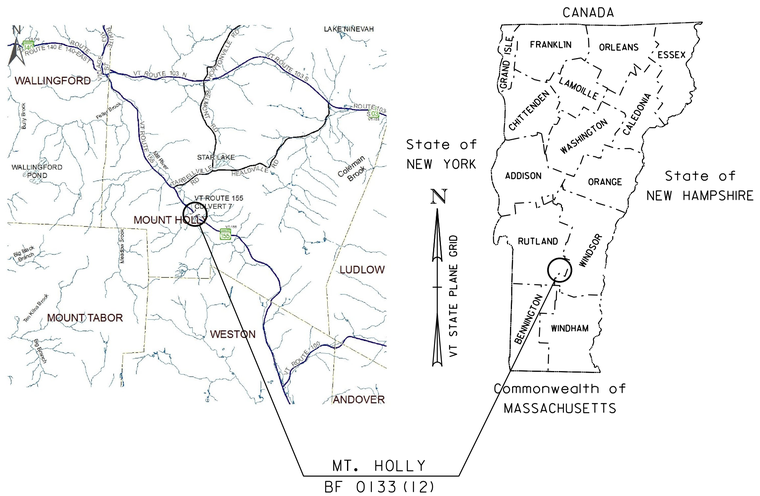
STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF MT. HOLLY

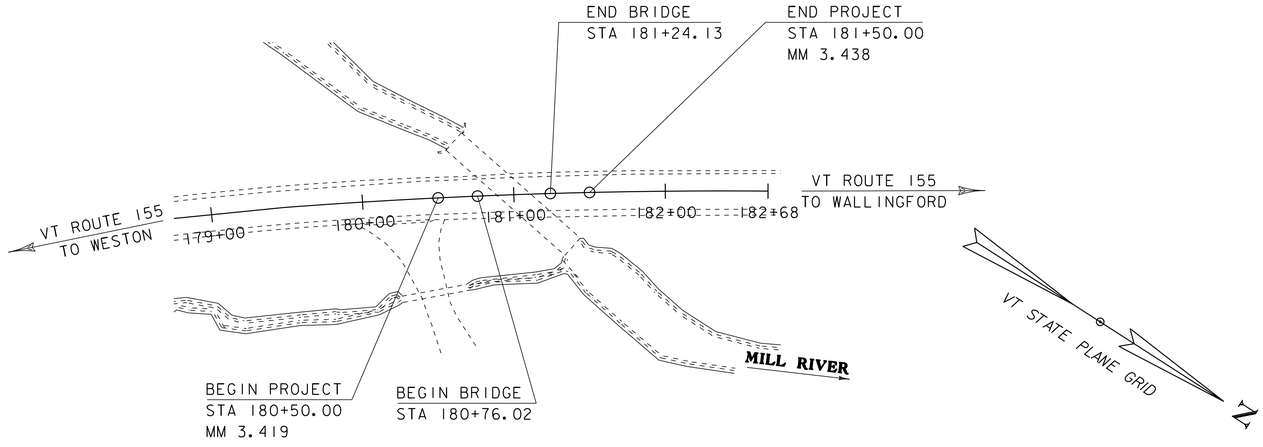
COUNTY OF RUTLAND

ROUTE NO : VT ROUTE 155, RURAL MAJOR COLLECTOR BRIDGE NO : 7

PROJECT LOCATION : APPROXIMATELY 5.8 MILES NORTH OF THE JUNCTION BETWEEN VT ROUTE 100 AND VT ROUTE 155

PROJECT DESCRIPTION : REMOVAL OF EXISTING CULVERT, AND REPLACEMENT WITH A NEW OPEN BOTTOMED BURIED STRUCTURE.

LENGTH OF STRUCTURE :	48.11 FEET.
LENGTH OF ROADWAY :	51.89 FEET.
LENGTH OF PROJECT :	100.00 FEET.



CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2018, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON APRIL 13, 2018 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 2	
SURVEYED BY :	H. MCGOWAN
SURVEYED DATE :	12-22-2015
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (2011)

SCALE 1" = 50'-0"
50 0 50

FINAL PLANS
03-JUL-2019

HIGHWAY DIVISION, CHIEF ENGINEER

APPROVED _____ DATE _____

PROJECT MANAGER : ROB YOUNG P.E.

PROJECT NAME : MT. HOLLY
PROJECT NUMBER : BF 0133(12)

SHEET 1 OF 32 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (CULVERT)

Version 2018.12.18.10

LRFD

INDEX OF SHEETS

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STANDARDS LIST

B-71	STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
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
J-3	MAIL BOX SUPPORT DETAILS	08-07-1995
T-1	TRAFFIC CONTROL GENERAL NOTES	04-25-2016
T-2	TRAFFIC SIGN GENERAL NOTES	04-25-2016
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
T-56	STANDARD SIGN PLACEMENT	10-26-2015

DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-502.00	CONCRETE DETAILS AND NOTES	5/7/2010
HSD-621.07A	MGS	4/17/2019
HSD-621.07B	MGS COMPONENTS	4/17/2019
HSD-621.07C	MGS ANCHOR	4/17/2019
HSD-621.07D	MGS ANCHOR COMPONENTS 1	4/17/2019
HSD-621.07E	MGS ANCHOR COMPONENTS 2	4/17/2019
HSD-621.07F	MGS TRANSITION	4/17/2019

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2018	570	85	54	2	25
2038	580	65	54	3.1	40

20 year ESAL for flexible pavement from 2018 to 2038 : 113000

40 year ESAL for flexible pavement from 2018 to 2058 : 254000

Design Speed : 50 mph

AS BUILT "REBAR" DETAIL

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

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: January, 2019

DRAINAGE AREA : 5.4 square miles
CHARACTER OF TERRAIN : Hilly and forested with some clearings and a small pond
STREAM CHARACTERISTICS : Gradual slope, wetland complex 0.5 miles upstream
NATURE OF STREAMBED : Sand, gravel and cobbles, some silt and boulders

PEAK FLOW DATA - ANNUAL EXCEEDANCE PROBABILITY (AEP)

43% =	240 cfs	2% =	730 cfs
10% =	450 cfs	1% =	870 cfs
4% =	600 cfs	0.2% =	1,300 cfs

DATE OF FLOOD OF RECORD : Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ 2% AEP = 11.3 fps *
ICE CONDITIONS : Unknown
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
IS ORDINARY RISE RAPID? No
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Upstream
IF YES, DESCRIBE: The wetland complex upstream will attenuate water resulting in a more shallow yet elongated hydrograph.

WATERSHED STORAGE: 5% HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: CGMPPA
YEAR BUILT: 1969
CLEAR SPAN(NORMAL TO STREAM): 15 feet 4 inches
VERTICAL CLEARANCE ABOVE STREAMBED: 9 feet 3 inches
WATERWAY OF FULL OPENING: 110 square feet
DISPOSITION OF STRUCTURE: Remove and replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

43% AEP =	1610.7 feet	VELOCITY =	12.0 fps **
10% AEP =	1612.5 feet	"	14.4 fps
4% AEP =	1613.6 feet	"	15.6 fps
2% AEP =	1614.5 feet	"	16.4 fps
1% AEP =	1615.7 feet	"	17.2 fps

LONG TERM STREAMBED CHANGES: A large scour hole at the structure outlet has formed due to the undersized width of the existing structure.

IS THE ROADWAY OVERTOPPED BELOW 1% AEP: No
FREQUENCY: -
RELIEF ELEVATION: 1619.3 feet
DISCHARGE OVER ROAD @ 1% AEP: -

UPSTREAM STRUCTURE

TOWN: Mount Holly DISTANCE: 0.4 miles
HIGHWAY # : TH-15 STRUCTURE #: -
CLEAR SPAN: Unknown CLEAR HEIGHT: Unknown
YEAR BUILT: Unknown FULL WATERWAY: -
STRUCTURE TYPE: Unknown

DOWNSTRUCTURE STRUCTURE

TOWN: Mount Holly DISTANCE: 1.1 miles
HIGHWAY # : TH-1 STRUCTURE #: -
CLEAR SPAN: 28 feet CLEAR HEIGHT: Unknown
YEAR BUILT: 1974 FULL WATERWAY: -
STRUCTURE TYPE: Unknown

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

1. PROPOSED CULVERT IS A PRECAST CONCRETE STRUCTURE.
2. CULVERT ENDS ARE SKEWED BY AN ANGLE OF VARIES°
3. CULVERT WILL BE SET AT A SLOPE OF 24.00 IN. ON 100 FT.
4. CULVERT CONSTRUCTION MAY REQUIRE A TEMPORARY PIPE.
5. CULVERT WILL PROVIDE FISH PASSAGE ACCOMMODATIONS.

PROPOSED STRUCTURE

STRUCTURE TYPE: Open Bottom Arch or Frame

CLEAR SPAN(NORMAL TO STREAM): 32 feet
VERTICAL CLEARANCE ABOVE STREAMBED: 8 feet
WATERWAY OF FULL OPENING: 240 square feet

WATER SURFACE ELEVATIONS AT:

43% AEP =	1610.4 feet	VELOCITY=	7.7 fps ***
10% AEP =	1611.2 feet	"	10.0 fps
4% AEP =	1611.6 feet	"	11.2 fps
2% AEP =	1611.9 feet	"	12.1 fps
1% AEP =	1612.3 feet	"	12.9 fps

IS THE ROADWAY OVERTOPPED BELOW 1% AEP: No
FREQUENCY: -
RELIEF ELEVATION: 1619.9 feet
DISCHARGE OVER ROAD @ 1% AEP: -

BRIDGE LOW CHORD ELEVATION: 1613.9 feet (inlet)
FREEBOARD: @ 2% AEP = 2.0 feet

SCOUR: @ 1% AEP = 4.2 feet of contraction scour

REQUIRED CHANNEL PROTECTION: E-stone, Type III

PERMIT INFORMATION

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

TEMPORARY BRIDGE REQUIREMENTS

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

ADDITIONAL INFORMATION

* - Largest velocity observed in natural channel condition with structure removed.
** - Largest velocities, reported about the culvert outlet cross section.
*** - Largest velocities, reported about the bridge up cross section. Note the proposed structure results in increased velocities upstream and decreased velocities downstream.

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

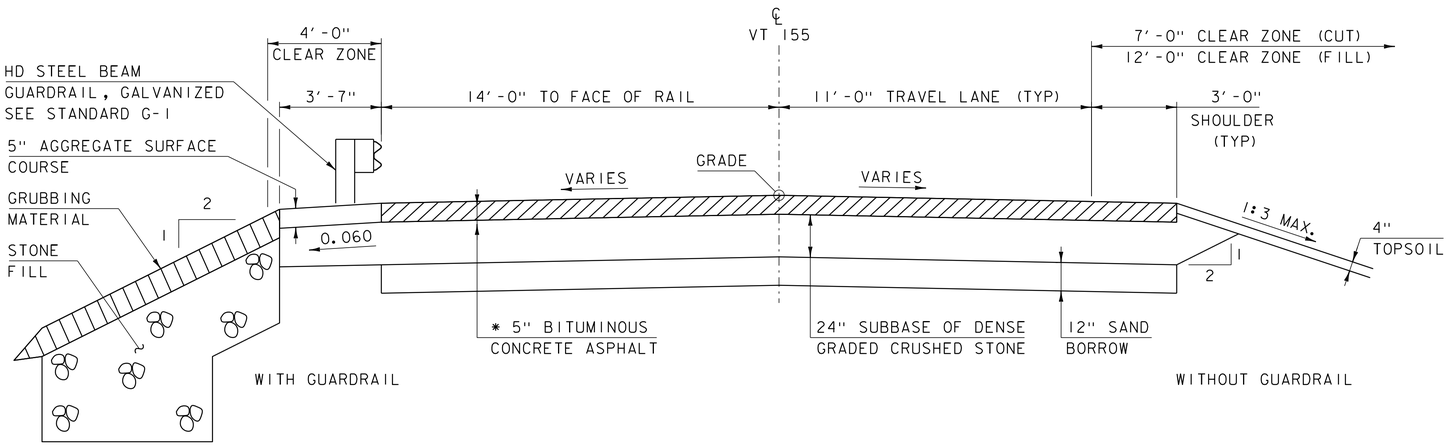
DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	dp:	- - -
3. CULVERT OPENING	A:	240 SF
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:	4.0 KSI
9. HIGH PERFORMANCE CONCRETE, CLASS PCS	f'_c:	3.5 KSI
10. CONCRETE HIGH PERFORMANCE, CLASS SCC	f'_c:	4.0 KSI
11. CONCRETE, CLASS C	f'_c:	3.0 KSI
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270	f_y:	- - -
14. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	SEE
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	NOTE 23
16. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	ON
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	SHEET 4
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.		- - -

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: s12c594_PI Sheet Builder.xls
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
PRELIMINARY INFORMATION SHEET

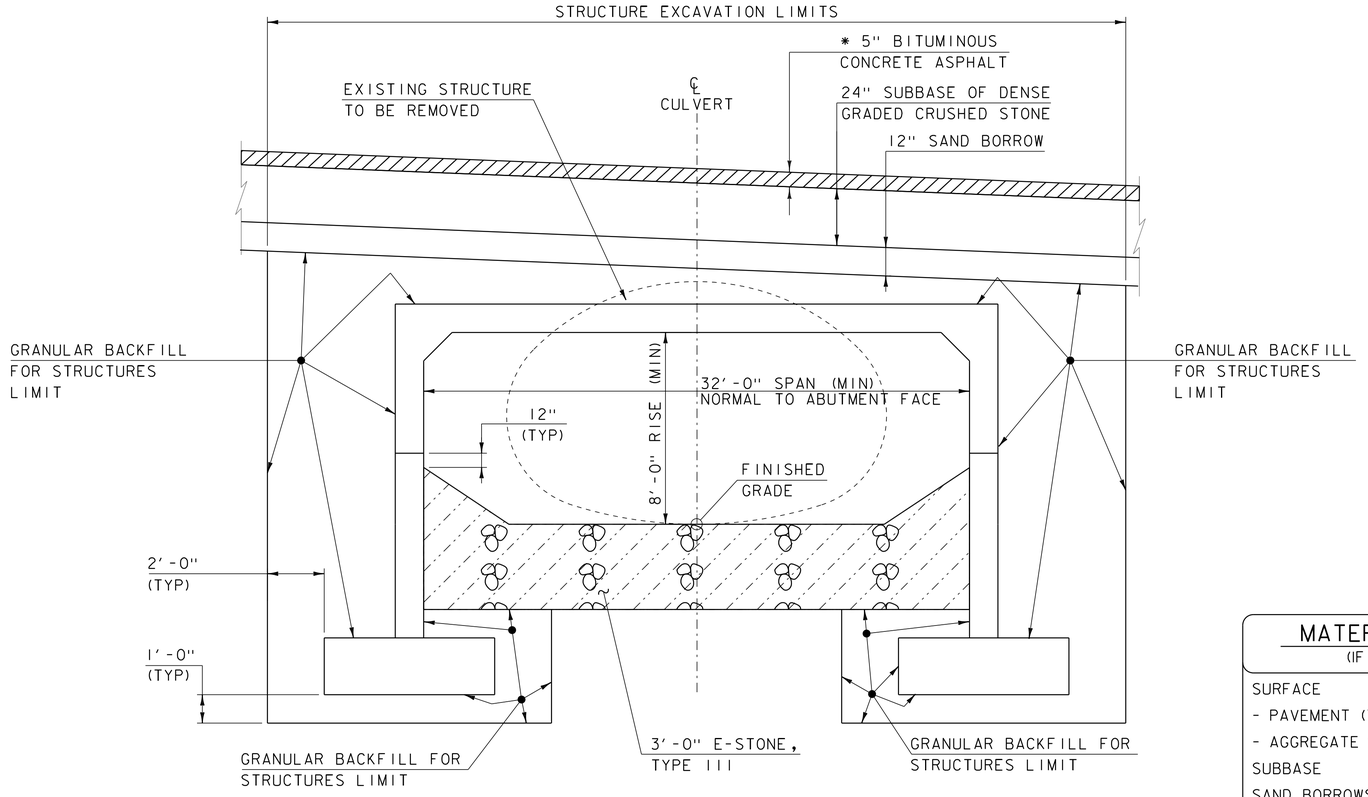
PLOT DATE: 7/3/2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY



PROPOSED VT 155 TYPICAL SECTION

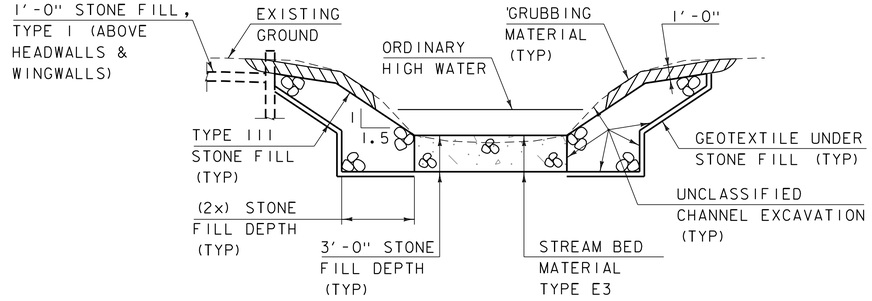
SCALE 3/8" = 1'-0"

* BITUMINOUS CONCRETE ASPHALT MATERIAL SECTION
VT-155
1½" TYPE IVS OVER
1½" TYPE IVS OVER
2" TYPE IIIS



PROPOSED TYPICAL SECTION

NOT TO SCALE



TYPICAL CHANNEL SECTION

(NOT TO SCALE)

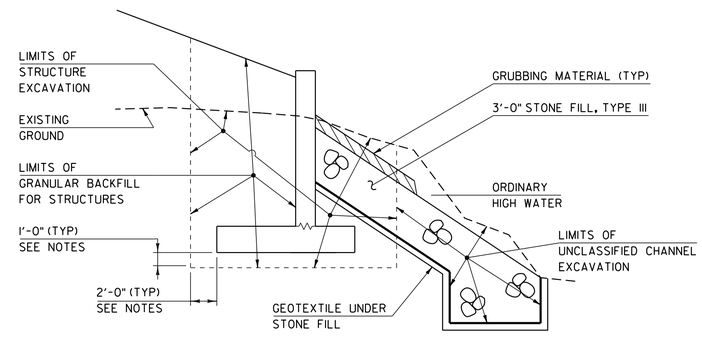
1. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

2. THE CONTRACTOR SHALL CREATE A LOW FLOW CHANNEL IN THE STREAM BED MATERIAL AS DIRECTED BY THE ENGINEER.

3. GRUBBING MATERIAL SHALL BE PLACED UNDERNEATH STRUCTURES WHERE THERE IS MORE THAN 6 FEET VERTICALLY FROM ORDINARY HIGH WATER (OHW) TO THE BOTTOM OF SUPERSTRUCTURE AND MORE THAN 6 FEET HORIZONTALLY FROM OHW LINE TO FRONT FACE OF ABUTMENT. THIS MATERIAL SHALL START JUST ABOVE THE OHW ELEVATION AND TERMINATE 3 FEET HORIZONTALLY FROM THE FRONT FACE OF THE ABUTMENT. THIS MATERIAL SHALL NOT BE PLACED IN AREAS THAT WILL SEE CONCENTRATED FLOWS RESULTING FROM SURFACE WATER RUNOFF. GRUBBING MATERIAL MAY BE OMITTED IF LESS THAN 3 FEET IN WIDTH BENEATH A STRUCTURE. SEE CHANNEL SECTIONS FOR ADDITIONAL DETAILING.

STONE FILL NOTES

1. 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 THE CHANNEL SHALL BE CONSTRUCTED.



TYPICAL WINGWALL SECTION

(NOT TO SCALE)

MATERIAL TOLERANCES

(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- ¼"
- AGGREGATE SURFACE COURSE	+/- ½"
SUBBASE	+/- 1"
SAND BORROWS	+/- 1"

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: s12b594typ.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
TYPICAL SECTIONS SHEET 1

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE VERMONT AGENCY OF TRANSPORTATION 2018 STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, AND THEIR LATEST REVISIONS.

2. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES F UNLESS OTHERWISE NOTED.

3. ITEM 404.65 "EMULSIFIED ASPHALT" IS TO BE APPLIED AT A RATE OF 0.04 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT, OR AS DIRECTED BY THE ENGINEER.

4. ALL PRECAST ELEMENTS TO BE FABRICATED TO THE SPECIFIED DIMENSIONS WITHIN THE TOLERANCES DICTATED IN THE PRECAST/PRESTRESSED CONCRETE INSTITUTE TOLERANCE MANUAL, FOR PRECAST AND PRESTRESSED CONCRETE CONSTRUCTION, MNL135-00 SECTION 10.25 – BOX CULVERT, AND ITS LATEST REVISIONS.

5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING CONSISTENCY BETWEEN THE FABRICATOR'S SHOP DRAWINGS AND ENSURING THAT ALL PRECAST COMPONENTS FIT TOGETHER.

TRAFFIC CONTROL

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF A SITE-SPECIFIC TRAFFIC CONTROL PLAN FOR ALL STAGES OF CONSTRUCTION. THE PLAN SHALL CLEARLY DETAIL HOW TRAFFIC WILL BE MAINTAINED. THE PLAN SHALL SPECIFY ALL CONSTRUCTION ACTIVITIES REQUIRING ALTERNATING ONE-WAY TRAFFIC, RELATE THOSE ACTIVITIES TO THE CONSTRUCTION SCHEDULE, AND SHOW APPROPRIATE TEMPORARY TRAFFIC CONTROL. ALL COSTS WILL BE INCLUDED IN ITEM 641.11 TRAFFIC CONTROL, ALL-INCLUSIVE.

7. PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE FULLY OPERATIONAL A MINIMUM OF TWO WEEKS PRIOR TO THE BRIDGE CLOSURE PERIOD.

8. DETOUR SIGNS SHALL BE LOCATED ADJACENT TO EXISTING INTERSECTION ROUTE MARKER ASSEMBLIES WHERE APPLICABLE.

9. CONFIRMATION ROUTE MARKERS SHALL BE INSTALLED IMMEDIATELY FOLLOWING EACH TURN AND AT ALL LOCATIONS ALONG DETOUR WHERE ROUTE MARKERS EXIST FOR THE PARENT ROUTE.

10. COVER ANY CONFLICTING EXISTING SIGNS AS DIRECTED BY THE ENGINEER.

EPSC

11. 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 653.03 MAINTAINENCE OF EPSC PLAN.

12. THE AREA OF DISTURBANCE FOR THIS PROJECT AT THE TIME OF ADVERTISEMENT IS 0.69 ACRES.

EARTHWORK

13. CRUSHED STONE BEDDING MEETING THE REQUIREMENTS OF SUBSECTION 704.02 TABLE B, MAY BE SUBSTITUTED FOR "GRANULAR BACKFILL FOR STRUCTURES", UNDER THE PROPOSED STRUCTURE ONLY.

14. THE STONE FILL AND STREAM BED MATERIAL UNDER THE BRIDGE SHALL BE PLACED AS SHOWN IN THE PLANS PRIOR TO THE INSTALLATION OF THE RIGID FRAME.

15. THE REMOVAL OF EXISTING STRUCTURE WILL BE PAID FOR UNDER ITEM 529.15 "REMOVAL OF STRUCTURE (15'-4" X 9'-3" X 104'-0" CGMPPA)". THIS WORK SHALL INCLUDED ANY PORTIONS OF THE EXISTING STRUCTURE THAT FALLS OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION.

16. EXCAVATED STREAM BED MATERIAL SUPPLMEMENTED WITH STONE FILL, TYPE IV SHALL BE PLACED INSIDE THE BOX SECTIONS AND AS SHOWN IN THE PLANS. PAYMENT SHALL BE UNDER ITEM 613.06 "STONE FILL, STREAM BED MATERIAL (TYPE III)".

17. THE CONTRACTOR SHALL CONTACT RIVER MANAGEMENT ENGINEER, JOSH CARVAJAL (802-490-6163), A MINIMUM OF TWO WEEKS PRIOR TO THE (CLOSURE PERIOD/CONSTRUCTION) FOR APPROVAL OF STREAM BED MATERIAL AND FOR CONSULTATION REGARDING FINAL GRADING OF THE CHANNEL.

PRECAST CONCRETE

18. ALL CONCRETE SHALL BE PRECAST. NO SUBSTITUTIONS WILL BE ALLOWED.

19. CONTRACTOR/FABRICATOR ARE RESPONSIBLE TO SHOP VERIFY THE PROPER FIT OF THE CONNECTION BETWEEN THE PRECAST ABUTMENT SECTIONS PRIOR TO SHIPMENT TO PROJECT SITE.

20. THE CONNECTION OF THE PRECAST WINGWALL TO THE PRECAST ABUTMENTS SHALL BE KEYED AND GROUTED IN ACCORDANCE WITH 510.12. THE JOINT DETAIL SHALL BE INCLUDED IN THE FABRICATION DRAWINGS SUBMITTED FOR ENGINEER APPROVAL.

21. ITEMS 540.10, PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1) AND PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 2) INCLUDES ALL PRECAST CONCRETE COMPONENTS INCLUDING ALL FOOTINGS, PEDESTAL WALLS AND ALL CONNECTIONS BETWEEN THESE COMPONENTS SHALL BE DESIGNED BY THE PRECAST FABRICATOR.

22. ITEM 540.10, PRECAST CONCRETE STRUCTURE (32'-0" X 6'-0" X 65'-0" RIGID FRAME) INCLUDES ALL PRECAST CONCRETE COMPONENTS INCLUDING ALL RIGID FRAME OR ARCH SEGMENTS, HEADWALLS, WINGWALLS AND ALL CONNECTIONS BETWEEN THESE COMPONENTS SHALL BE DESIGNED BY THE PRECAST FABRICATOR.

23. THE SOIL PROPERTIES AND DESIGN PARAMETERS USED FOR THIS PROJECT ARE AS INDICATED BELOW.

    A. SOIL UNIT WEIGHT = 140 PCF
    B. DESIGN LIVE LOAD = HL-93
    C. NOMINAL BEARING RESISTANCE (BEDROCK) = 10 KSF
    D. NOMINAL BEARING RESISTANCE (GRANULAR BACKFILL) = 4.0 KSF
    E. BEARING RESISTANCE FACTOR = 0.45
    F. DESIGN FILL OVER BOX = 6 FEET
    G. AT-REST EARTH PRESSURE (Ko) = 0.44
    H. CONCRETE COMPRESSIVE STRENGTH = SEE SUBSECTION 540.05(e)

24. THE PRECAST CONCRETE STRUCTURE SHALL BE DESIGNED FOR HYDROSTATIC PRESSURE UNLESS RAPID DRAINING MATERIAL MEETING THE REQUIREMENTS OF SUBSECTION 704.18 IS USED. WILL BE CONSIDERED INCIDENTAL TO ITEM 204.30 GRANULAR BACKFILL FOR STRUCTURES.

25. THE PRECAST SECTIONS ARE SHOWN FOR REFERENCE ONLY. THE ACTUAL DIMENSIONS AND SHAPE WILL BE DEPENDENT ON THE FABRICATOR. THE MINIMUM DIMENSIONS SHALL BE 32'-0" IN WIDTH INSIDE THE STRUCTURE AND 6'-0" IN HEIGHT OVERALL. THE OVERALL LENGTH OF THE RIGID FRAME SHALL BE 65'-0" ALONG THE STREAMBED GRADE. THE EXPOSED ENDS OF THE FIRST AND LAST UNITS SHALL BE VERTICAL.

26. 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.

27. ALL RECESSED LIFTING POINTS AND BLOCK OUTS SHALL BE FILLED WITH A TYPE IV MORTAR PER SUBSECTION 540.11 AND 707.03. PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE PRECAST ITEM. NO MEMBRANE IS PERMITTED TO BE PLACED OVER CURING GROUT UNTIL THE GROUT HAS REACHED A MOISTURE CONTENT OF 6% OR LESS.

28. NO ADDITIONAL WORK (I.E. BACKFILLING OR MEMBRANE) IS ALLOWED UNTIL THE GROUT HAS REACHED A STRENGTH OF 2000 PSI OR 30% OF MAXIMUM.

29. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1".

30. 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. PAYMENT FOR SILANE WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 514.10.

31. A TWO (2) FOOT WIDE STRIP OF SHEET MEMBRANE WATERPROOFING, TORCH APPLIED WILL BE PLACED AT EACH JOINT, CENTERED. THE SIDES OF THE RIGID FRAME SHALL BE COVERED PRIOR TO THE TOP. ANY OVERLAPPING OF MEMBRANE SHALL BE DONE IN A SHINGLE TYPE STYLE AND SHALL OVERLAP A MINIMUM OF ONE FOOT. PAYMENT FOR MEMBRANE WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 540.10.

32. A BRIDGE PLAQUE FURNISHED BY THE AGENCY SHALL BE CAST INTO WINGWALL 2. SEE SD-502.00 FOR FURTHER DETAILS.

REINFORCING STEEL

33. REINFORCING STEEL CLEAR COVER REQUIREMENTS ARE STATED ACCORDING TO THE FOLLOWING, UNLESS OTHERWISE NOTED IN THE PLANS:

A.	UNDERSIDE OF FRAME ROOF	1.5 INCHES
B.	EXPOSED TO EARTH OR WEATHER	2.0 INCHES
C.	TOP OF FRAME	2.5 INCHES
D.	DIRECT EXPOSURE TO DEICING SALTS (FRAME FASCIA OR CURB)	3.0 INCHES
E.	CAST AGAINST EARTH	3.0 INCHES

34. TEST BARS SHALL BE PROVIDED IN ACCORDANCE WITH THE "VERMONT AGENCY OF TRANSPORTATION MATERIAL SAMPLING MANUAL" AVAILABLE ON THE AGENCY WEBSITE. A MINIMUM OF TWO TEST SECTIONS ARE REQUIRED FOR EACH SIZE, BRAND, AND GRADE OR TYPE OF REINFORCING. SEE THE MANUAL FOR ACCEPTABLE DIMENSIONS OF TEST SECTIONS. ALL COSTS ASSOCIATED WITH PROVIDING BARS FOR TESTING WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.

STRUCTURAL ELEMENT	CONCRETE		REINFORCING STEEL	
	TO MEET THE REQUIREMENTS FOR:	PAYMENT TO BE INCLUDED IN:	TO MEET THE REQUIREMENTS FOR:	PAYMENT TO BE INCLUDED IN:
RIGID FRAME OR ARCH TYPE PRECAST CONCRETE STRUCTURE	540.10 "PRECAST CONCRETE STRUCTURE (32'-0" X 6'-0" X 65'-0" RIGID FRAME)"	ITEM 540.10 "PRECAST CONCRETE STRUCTURE (32'-0" X 6'-0" X 65'-0" RIGID FRAME)"	507.11 "REINFORCING STEEL, LEVEL I (EPOXY COATED)"	ITEM 540.10 "PRECAST CONCRETE STRUCTURE (32'-0" X 6'-0" X 65'-0" RIGID FRAME)"
ABUTMENTS (PEDESTAL WALLS)	540.10 "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)"	ITEM 540.10 "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)"	507.11 "REINFORCING STEEL, LEVEL I (EPOXY COATED)"	ITEM 540.10 "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)"

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594forms.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
PROJECT NOTES SHEET

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 4 OF 32

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
						ROADWAY	EROSION CONTROL	BRIDGE	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	201.10				
						740				740		CY	COMMON EXCAVATION	203.15				
								730		730		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
						10				10		CY	EARTH BORROW	203.30				
						110				110		CY	SAND BORROW	203.31				
						1				1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
								2140		2140		CY	STRUCTURE EXCAVATION	204.25				
								980		980		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
						550				550		SY	COARSE-MILLING, BITUMINOUS PAVEMENT	210.10				
						350				350		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35				
						30				30		CY	AGGREGATE SURFACE COURSE	401.10				
						10				10		CWT	EMULSIFIED ASPHALT	404.65				
						1				1		LU	MAT DENSITY PAY ADJUSTMENT (N.A.B.I.)	406.29				
						1				1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
								40		40		GAL	WATER REPELLENT, SILANE	514.10				
								1		1		EACH	REMOVAL OF STRUCTURE (15'-4" x 9'-3" x 104'-0" CGMPPA)	529.15				
								1		1		LS	PRECAST CONCRETE STRUCTURE (32'-0" X 6'-0" X 65'-0" RIGID FRAME)	540.10				
								1		1		LS	PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)	540.10				
								1		1		LS	PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 2)	540.10				
						10				10		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25				
						10				10		HR	POWER BROOM RENTAL, TYPE I	608.30				
						10				10		HR	TRUCK RENTAL	608.37				
						10				10		HR	LOADER RENTAL, TYPE I	608.40				
							1			1		MGAL	DUST CONTROL WITH WATER	609.10				
							1			1		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15				
								420		420		CY	STONE FILL, STREAM BED MATERIAL (E-STONE TYPE III)	613.06				
						21				21		CY	STONE FILL, TYPE I	613.10				
								250		250		CY	STONE FILL, TYPE III	613.12				
						441				441		LF	HD STEEL BEAM GUARDRAIL, GALVANIZED	621.21				
						1				1		EACH	MANUFACTURED TERMINAL SECTION, TANGENT	621.51				
						2				2		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60				
						414				414		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
						80				80		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
						240				240		HR	FLAGGERS	630.15				
									1	1		LS	FIELD OFFICE, ENGINEERS	631.10				
									1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
									1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
									3000	3000		DL	FIELD OFFICE COMMUNICATIONS (N.A.B.I.)	631.26				
						6				6		EACH	CPM SCHEDULE	633.10				
						1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11				

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594forms.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
QUANTITY SHEET #1

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 5 OF 32

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES / TOTALS / DESCRIPTIONS

ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
1				1		LS	TRAFFIC CONTROL, ALL-INCLUSIVE	641.11	
2				2		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	
750				750		LF	4 INCH WHITE LINE, WATERBORNE PAINT	646.201	
750				750		LF	4 INCH YELLOW LINE, WATERBORNE PAINT	646.2111	
		300		300		SY	GEOTEXTILE UNDER STONE FILL	649.31	
	10			10		LB	SEED	651.15	
	10			10		LB	SEED, WINTER RYE	651.17	
	100			100		LB	FERTILIZER	651.18	
	1			1		TON	AGRICULTURAL LIMESTONE	651.20	
	930			930		CY	TOPSOIL	651.35	
	240			240		SY	GRUBBING MATERIAL	651.40	
	1			1		LS	EPSC PLAN	653.01	
	50			50		HR	MONITORING EPSC PLAN	653.02	
	1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	653.03	
	1			1		TON	HAY MULCH	653.10	
	310			310		SY	ROLLED EROSION CONTROL PRODUCT, TYPE I	653.20	
	14			14		CY	CHECK DAM, TYPE I	653.25	
	70			70		CY	STABILIZED CONSTRUCTION ENTRANCE	653.35	
	1			1		EACH	FILTER BAG	653.45	
	544			544		LF	SILT FENCE, TYPE I	653.475	
	710			710		LF	PROJECT DEMARCATION FENCE	653.55	
2				2		SF	TRAFFIC SIGN, TYPE A	675.20	
60				60		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341	
4				4		EACH	REMOVING SIGNS	675.50	
2				2		EACH	RESETTING SIGNS	675.60	
3				3		EACH	DELINEATOR WITH STEEL POST	676.10	
1				1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50	
1				1		DL	SPECIAL PROVISION (INCENTIVE/DISINCENTIVE) (N.A.B.I.)	900.615	
		1		1		LS	SPECIAL PROVISION TEMPORARY RELOCATION OF STREAM	900.645	
1				1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY) (N.A.B.I.)	900.650	
1				1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT) (N.A.B.I.)	900.650	
266				266		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: s12c594forms.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
QUANTITY SHEET #2

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY

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
	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
	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
- Ⓗ 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

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594forms.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
SYMBOLOGY LEGEND

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 7 OF 32

CONTROL POINTS

HVCTRL #1

SANDY
NORTH = 325689.4990
EAST = 1555757.1140
ELEV. = 1733.1650

GENERAL LOCATION, MOUNT HOLLY, VT.

TO REACH FROM THE INTERSECTION OF VT ROUTE 155 AND VT ROUTE 140 IN EAST WALLINGFORD, GO SOUTHEAST ALONG VT ROUTE 155 FOR 5.1 MI (8.2 KM) TO THE INTERSECTION OF DANA LANE (PRIVATE) RIGHT AND THE SITE OF THE MARK ON THE RIGHT.

THE MARK IS SET 35 CM (14 INCHES) BELOW GROUND SURFACE IN THE TOP OF A 30 CM (12 INCH) DIAMETER CONCRETE MONUMENT. IT IS 11.0 M (36.1 FT) SOUTHWEST OF AND 1.0 M (3.3 FT) LOWER THAN THE CENTERLINE OF VT ROUTE 155, 9.5 M (31.2 FT) SOUTHEAST OF THE CENTERLINE OF DANA LANE, 4.3 M (14.1 FT) NORTHEAST OF POLE NO 1/106-4/2-4-9-29, 37.9 M (124.3 FT) NORTHEAST OF THE EAST CORNER OF HOUSE NO 44, 14.9 M (48.9 FT) SOUTHEAST OF THE MOST SOUTHEASTERLY WOODEN POST IN A ROW AND 0.3 M (1.0 FT) NORTHEAST OF A FIBERGLASS WITNESS POST.

HVCTRL #2

SANDY AZ MK
NORTH = 326774.3220
EAST = 1554102.2470
ELEV. = 1692.9590

GENERAL LOCATION, MOUNT HOLLY, VT.

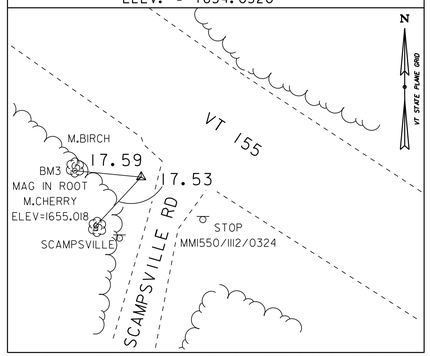
TO REACH FROM THE INTERSECTION OF VT ROUTE 155 AND VT ROUTE 140 IN EAST WALLINGFORD, GO SOUTHEAST ALONG VT ROUTE 155 FOR 4.7 MI (7.6 KM) TO THE SITE OF THE MARK ON THE RIGHT, ABOUT 0.1 MI (0.2 KM) NORTHWEST OF MAPLE HILL ROAD.

THE MARK IS SET 10 CM (4 INCHES) BELOW GROUND SURFACE IN THE TOP OF A FENO STYLE MONUMENT. IT IS 12.1 M (39.7 FT) SOUTHWEST OF AND LEVEL WITH THE CENTERLINE OF VT ROUTE 155, 24.0 M (78.7 FT) EAST OF AND ACROSS THE ROAD FROM THE CENTER OF THE NORTHWEST (OUTLET) END OF A 45 CM (18 INCH) METAL DRIVE CULVERT, 50.2 M (164.7 FT) SOUTHEAST OF AND ACROSS THE ROAD FROM THE SOUTHWEST END OF A GATED GRAVEL DRIVE AND 72.9 M (239.2 FT) NORTHWEST OF THE CENTER OF THE SOUTHWEST (INLET) END OF A 30 CM (12 INCH) DIAMETER CONCRETE CULVERT WITH HEADWALL AND STEEL MARKER POST.

TRAVERSE TIES

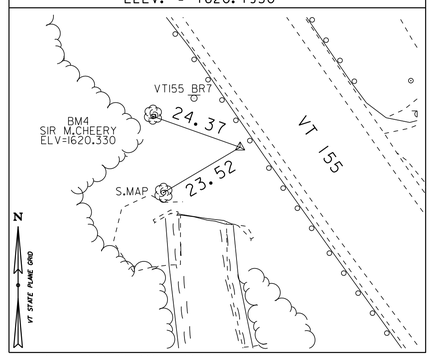
HVCTRL 3

NORTH = 327238.4798
EAST = 1553331.7014
ELEV. = 1654.0320



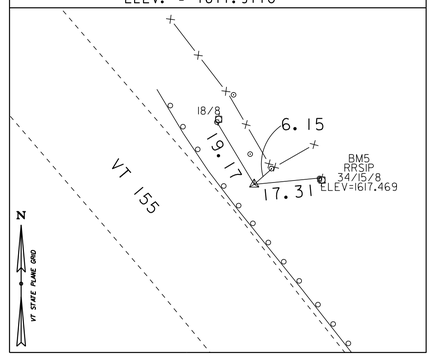
HVCTRL 4

NORTH = 327825.9086
EAST = 1552756.7522
ELEV. = 1620.1930



HVCTRL 5

NORTH =328402.1807
EAST = 1552415.1462
ELEV. = 1617.9770



NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

TRAVERSE COMPLETED BY H. MCGOWAN P.C. & T. CATTANEO ON 12/18/2015

ALIGNMENT TIES

VT155

	STATION	NORTHING	EASTING
POB	179+47.78	327735.8073	1552845.6830
PC	179+47.79	327735.8183	1552845.6746
PI	181+07.89	327863.5247	1552749.1184
	Radius:		3850.00
	Delta:		4°45'44.93" Right
	Degree of Curvature(Arc):		1°29'17.53"
	Length:		320.02
	Tangent:		160.10
	Chord:		319.92
	Middle Ordinate:		3.32
	External:		3.33
PT	182+67.81	327998.8067	1552663.4983
POE	182+67.82	327998.8202	1552663.4898

DRIVEWAY

	STATION	NORTHING	EASTING
POB	100+00.00	327810.7026	1552790.4653
PC	100+41.73	327835.0590	1552824.3513
PI	100+49.53	327839.6120	1552830.6858
	Radius:		50.00
	Delta:		17°44'08.47" Left
	Degree of Curvature(Arc):		114°35'29.61"
	Length:		15.48
	Tangent:		7.80
	Chord:		15.42
	Middle Ordinate:		0.60
	External:		0.60
PT	100+57.21	327845.8784	1552835.3322
POE	101+00.00	327880.2479	1552860.8170

CHANNEL

	STATION	NORTHING	EASTING
POB	20+50.00	328006.6532	1552782.7953
POE	23+50.00	327711.3696	1552729.8090

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83 (2011)
ADJUSTMENT COMPASS

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2b594tie.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: G.HITCHCOCK
TIE SHEET

PLOT DATE: 03-JUL-2019
DRAWN BY: G.HITCHCOCK
CHECKED BY: C.MOONEY
SHEET 8 OF 32

EPSC EXISTING CONDITIONS

SCALE 1" = 20'-0"

PROJECT NAME:	MT. HOLLY
PROJECT NUMBER:	BF 0133(12)

FILE NAME: s12c594epsc.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: R.PELLETT
DESIGNED BY: K.CHEVIOT	CHECKED BY: C.MOONEY
EPSC EXISTING CONDITIONS	SHEET 9 OF 32

COLD PLANE
STA 178+75 - 180+00
STA 182+00 - 182+50

CONSTRUCT DRIVE
STA 179+86 RT - 180+67 RT

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 179+38 LT - 181+38 LT
STA 180+50 RT - 182+50 RT

MANUFACTURED TERMINAL SECTION
(FOR HDSB GUARDRAIL)
STA 181+75 - 182+25 LT

HDSB GUARDRAIL
STA 179+48 LT - 181+75 LT
STA 180+50 RT - 182+50 RT

DELINEATOR WITH STEEL POST
STA 179+48 LT (GREEN)
STA 180+50 RT (BLUE)
STA 181+75 LT (BLUE)

BENCHMARK 4
SPIKE IN ROOT
MEDIUM CHERRY
ELEV= 1620.33

VT STATE PLANE GRID

N

STA 180+40.83 =
POB 100+00.00
Δ=90° 00' 00" RT

BEGIN PROJECT
STA 180+50.00

BEGIN BRIDGE
STA 180+76.02

STONE FILL, TYPE III
(TYP BELOW ELEV. 1616')

STA 181+00.00 AH=
CHAN 22+00.00
Δ=45° 00' 00" RT

END BRIDGE
STA 181+24.13

END APPROACH
STA 182+50.00

PI
STA 181+07.89

POE
STA 182+67.82

BURIED CABLE TO BE ABANDONED BY THE UTILITY COMPANY PRIOR TO THE PROJECT

APPROX. EXISTING R.O.W.

APPROX. EXISTING R.O.W.

APPROX. EXISTING R.O.W.

APPROX. EXISTING R.O.W.

VT ROUTE 155
TO WALLINGFORD

VT ROUTE 155
TO WESTON

23+50

23+00

100+00

179+00

180+00

181+00

182+00

182+68

R = 20'
(TYP)

R = 16'

PC
STA 100+41.73

PI
STA 100+49.53

PT
STA 100+57.21

POE
STA 101+00.00

21+00

20+50

MILL RIVER
FLOW

TEMPORARY
CONSTRUCTION
LIMITS

STONE FILL, TYPE I
(TYP ABOVE ELEV. 1616')

POB
STA 178+75.00

PC
STA 179+47.79

BEGIN APPROACH
STA 178+75.00

END PROJECT
STA 181+50.00

BARBED WIRE FENCE

GUY WIRE

EXISTING BRIDGE DATA
15'-4" X 9'-3" CGMPPA
104' LONG, BUILT 1969
109 SQ FT WATERWAY AREA
6 FT AVERAGE COVER

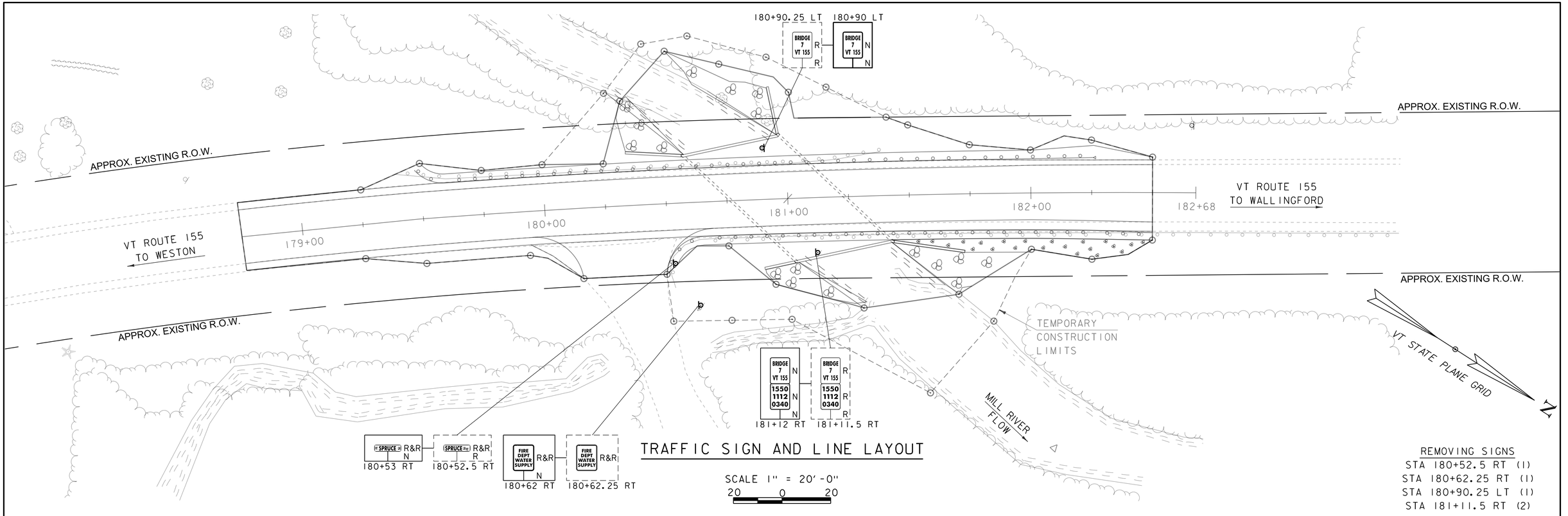
LAYOUT PLAN

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594border.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
LAYOUT PLAN

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 10 OF 32



TRAFFIC SIGN AND LINE LAYOUT

SCALE 1" = 20'-0"
20 0 20

REMOVING SIGNS
STA 180+52.5 RT (1)
STA 180+62.25 RT (1)
STA 180+90.25 LT (1)
STA 181+11.5 RT (2)

TRAFFIC SIGN, TYPE A
STA 180+90 LT (1)
STA 181+12 RT (2)

4" YELLOW LINE (DOUBLE)
STA 178+75 - 182+50

4" WHITE LINE
STA 178+75 - 182+50 LT
STA 178+75 - 182+50 RT

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS WIDTH (in)	SIGN DIMENSIONS HEIGHT (in)	NEW & SALVAGED SIGN "A"	NEW & SALVAGED SIGN SALV SIGN	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	NEW SIGN POSTS SQUARE STEEL (in) 1.75 lb/ft 1.88	2.0 lb/ft 2.42	2.5 lb/ft 3.35	ANCHOR	SLEEVE	REMARKS	SIGN DETAIL STD. SHEET NUMBER
180+52.5 RT	SPRUCE LN PVT				X			1		X		X			
180+62.25 RT	FIRE DEPT WATER SUPPLY				X			1		X		X			
180+90.25 LT	BRIDGE 7 VT 155	6	10	0.42				1		X		X		VD-701	T-42
181+11.5 RT	BRIDGE 7 VT 155	6	10	0.42				1		X		X		VD-701	T-42
181+11.5 RT	1550 1112 0340	6	10	0.42				X		-		-		VD-700 (NEED NEW NUMBERS)	T-44
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."									FT	FT 60	FT		EA		
	TOTALS			SF 1.26	EACH					FT 60					

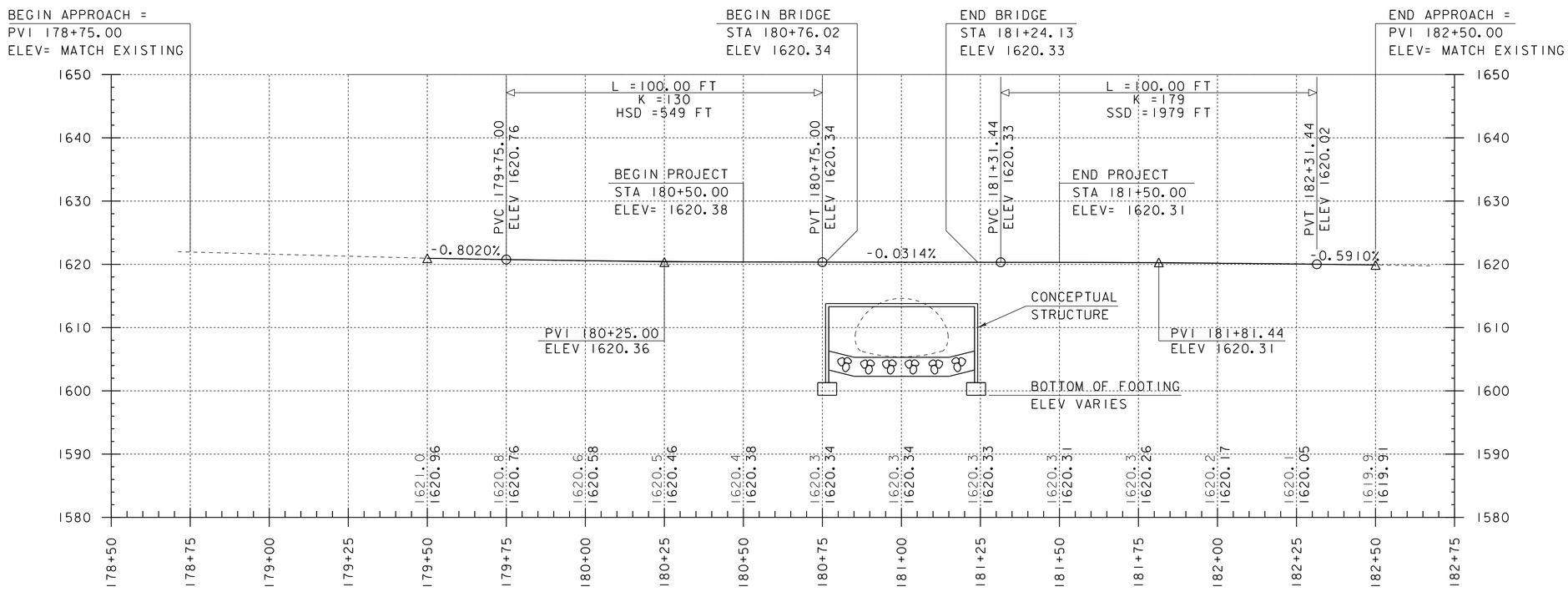
SIGN LEGEND

N = NEW
R = REMOVE
R&R = REMOVE & RESET

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

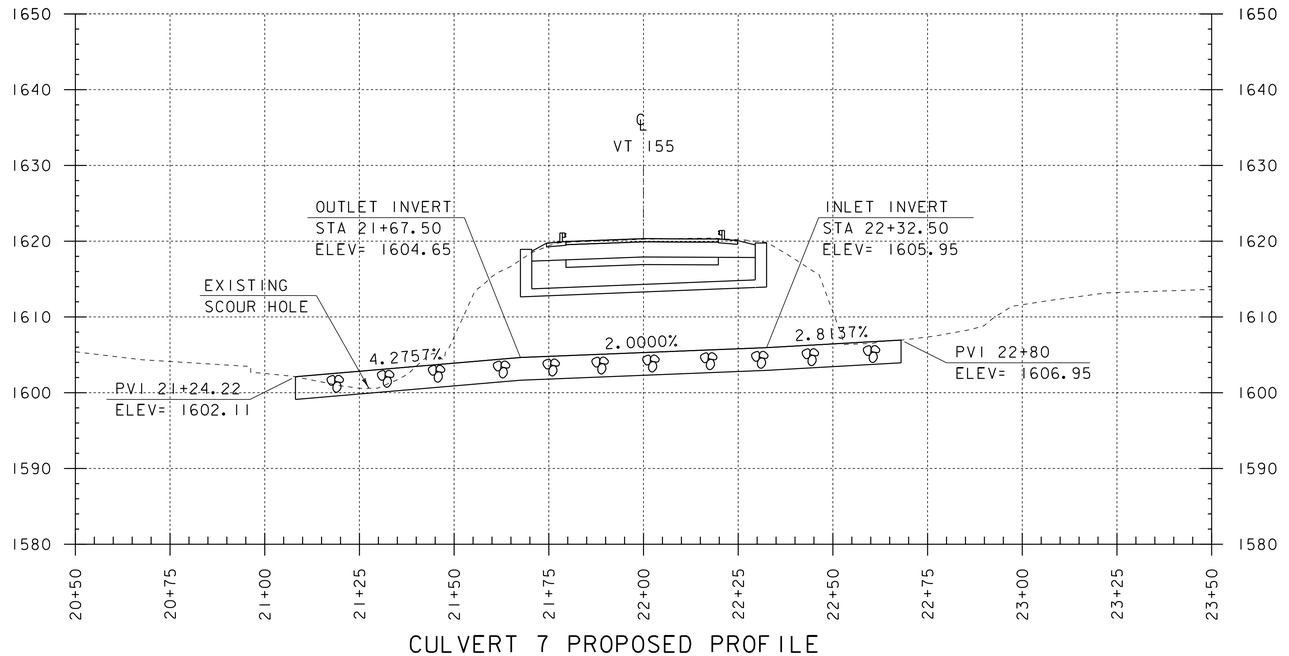
FILE NAME: sl2c594signs.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: R.PELLETT
TRAFFIC SIGNS AND LINES LAYOUT

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 11 OF 32



VT ROUTE 155 PROFILE

SCALE: HORIZONTAL 1"=20'-0"
VERTICAL 1"=10'-0"



CULVERT 7 PROPOSED PROFILE

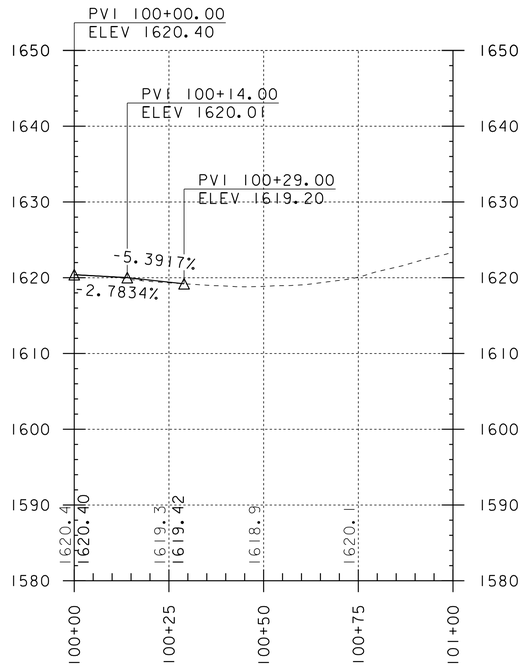
SCALE: HORIZONTAL 1"=20'-0"
VERTICAL 1"=10'-0"

NOTE:
GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG ℄

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594pro.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
PROFILE SHEET 1

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 12 OF 32



DRIVEWAY #1

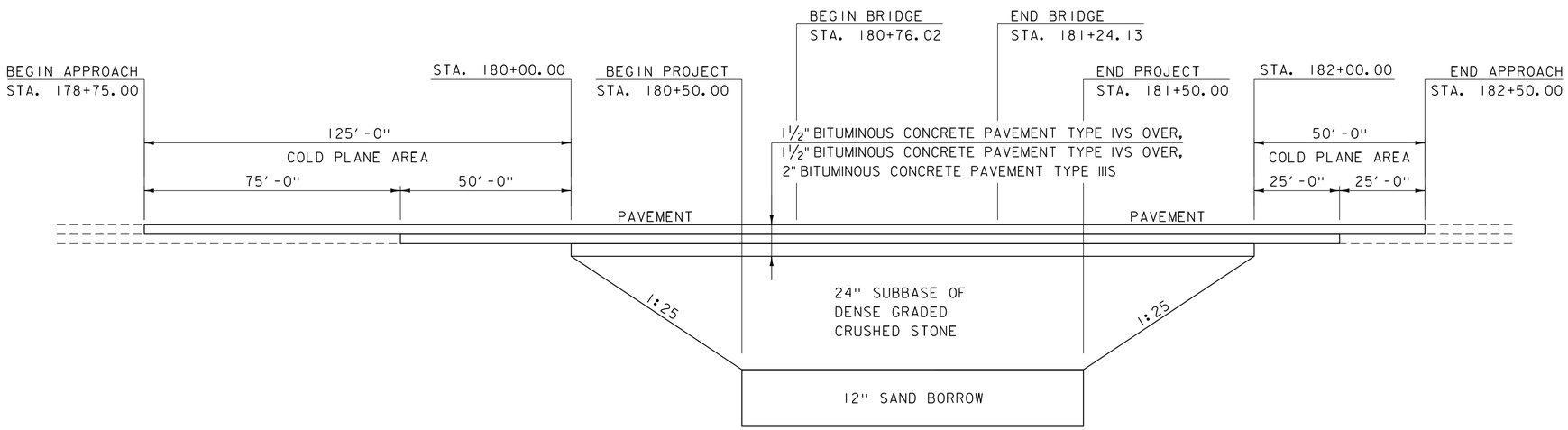
SCALE: HORIZONTAL 1"=20'-0"
VERTICAL 1"=10'-0"

NOTE:
GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG ℄

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

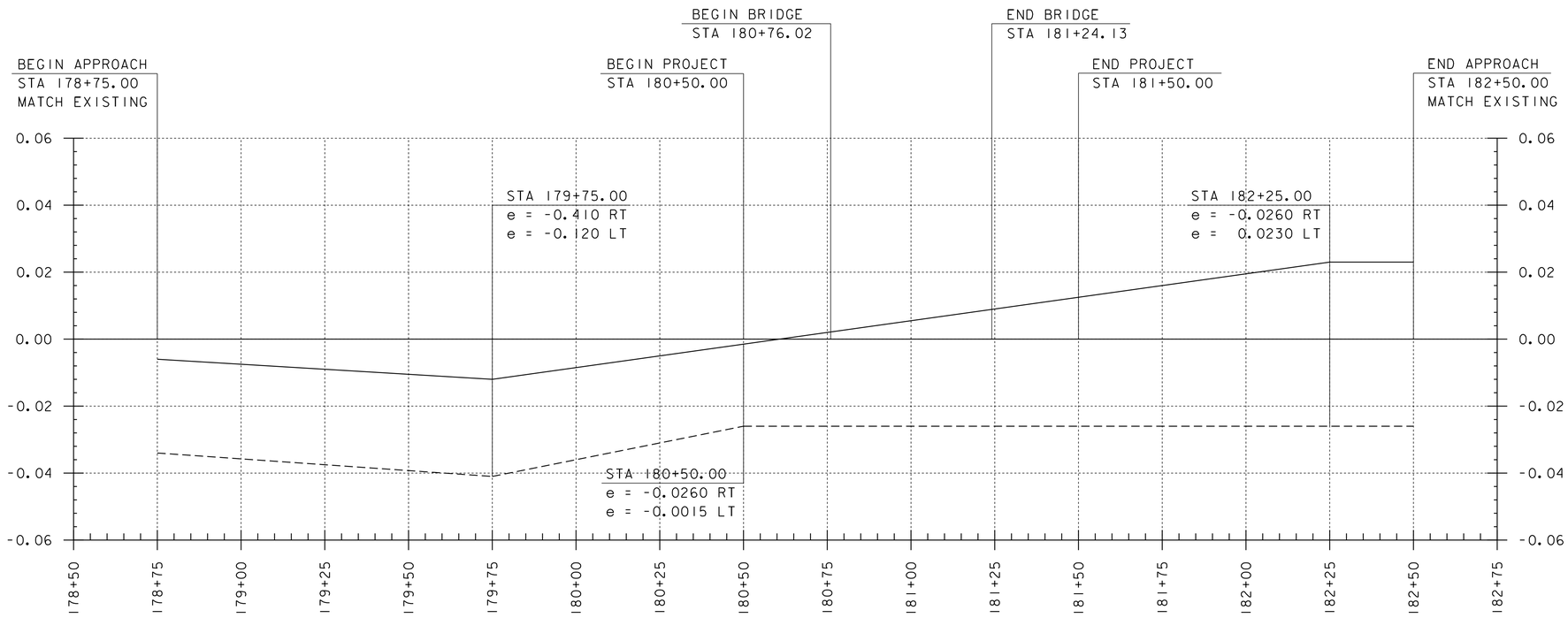
FILE NAME: sl2c594pro.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
PROFILE SHEET 2

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 13 OF 32



VT 155 MATERIAL TRANSITION

NOT TO SCALE



VT 155 BANKING DIAGRAM

NOT TO SCALE

PROJECT NAME:	MT. HOLLY
PROJECT NUMBER:	BF 0133(12)
FILE NAME: sl2c594xs.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: R.PELLETT
DESIGNED BY: K.CHEVIOT	CHECKED BY: C.MOONEY

BANKING AND MATERIAL TRANSITION DIAGRAMS SHEET 14 OF 32

VT STATE PLANE GRID

N

23+50

23+00

BURIED CABLE TO BE ABANDONED BY THE UTILITY COMPANY PRIOR TO THE PROJECT

APPROX. EXISTING R.O.W.

UT

APPROX. EXISTING R.O.W.

VT ROUTE 155 TO WESTON

179+00

180+00

100+00

22+80

182+00

182+68

VT ROUTE 155 TO WALLINGFORD

GUY WIRE

COMB 6 3-9-11

DRY HYDRANT

ECT

GUY WIRE

COMB 6X 3-9-10

APPROX. EXISTING R.O.W.

APPROX. EXISTING R.O.W.

21+00

MILL RIVER FLOW

20+50

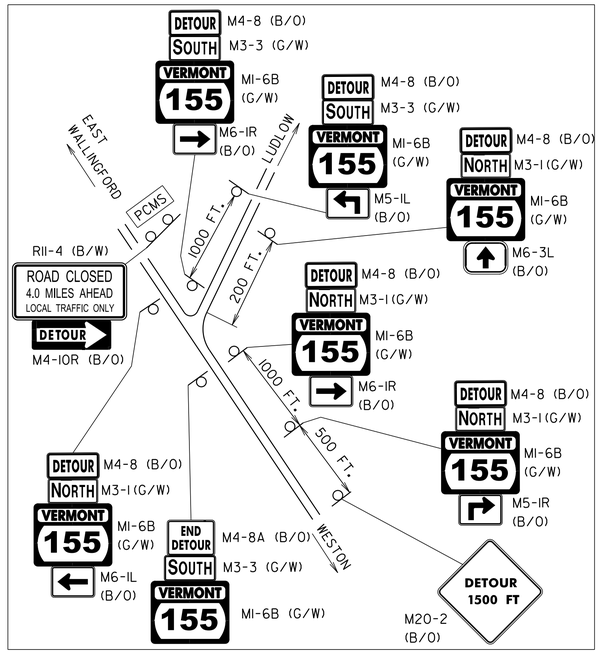
101+00

UTILITY LAYOUT PLAN

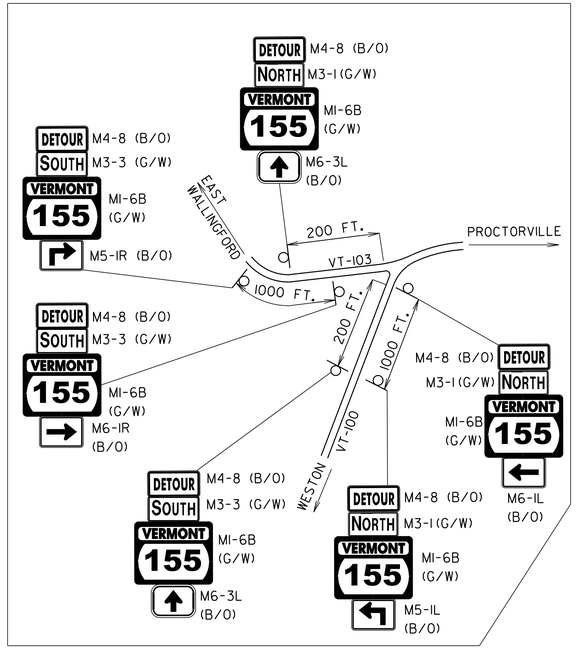
SCALE 1" = 20'-0"

20 0 20

PROJECT NAME:	MT. HOLLY
PROJECT NUMBER:	BF 0133(12)
FILE NAME: s12c594util1.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: R.PELLETT
DESIGNED BY: K.CHEVIOT	CHECKED BY: C.MOONEY
UTILITY LAYOUT PLAN	SHEET 15 OF 32

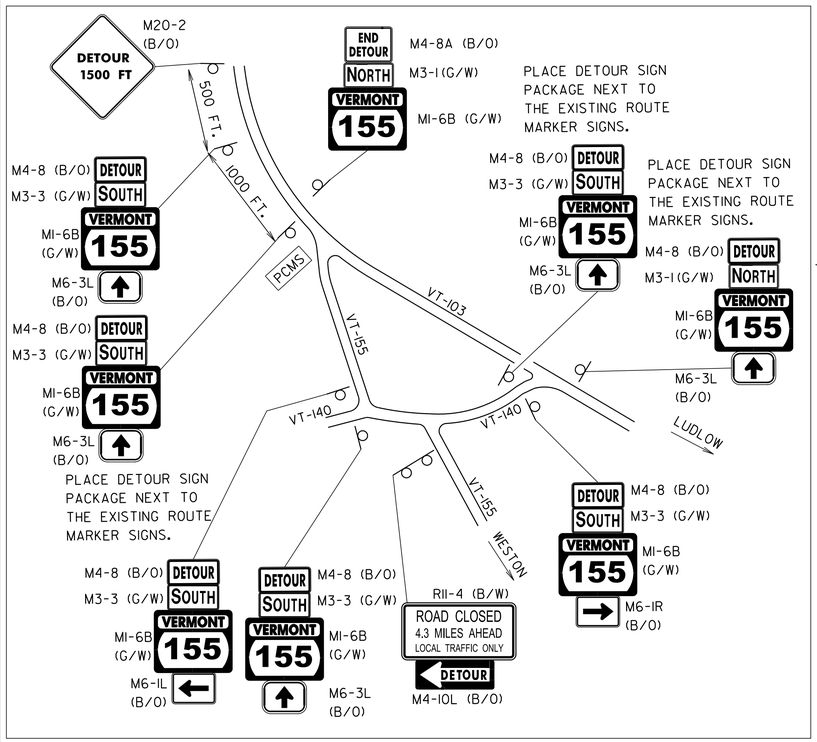


A DETAIL
NTS



B DETAIL
NTS

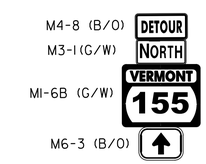
LAYOUT VIEW
NTS



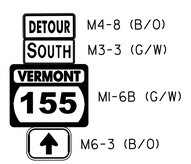
C DETAIL
NTS

NOTES:

1. 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 VISIBILITY OF THE PCMS SHALL BE REMOVED. REMOVAL OF THE VEGETATION WILL BE INCIDENTAL TO ITEM 641.15, "PORTABLE CHANGEABLE MESSAGE SIGN".
2. ORANGE FLAGS SHALL BE USED WITH TEMPORARY DETOUR SIGNS WITH BLACK LETTERING ON WHITE BACKGROUNDS TO HIGHLIGHT INFORMATION FOR THE TRAVELING PUBLIC.
3. SEE CONTRACT DOCUMENTS FOR CLOSURE DATES.
4. WHEN EXISTING ROUTE MARKER ASSEMBLIES ARE LOCATED AT THE INTERSECTIONS OR ALONG THE DETOUR ROUTE, THE DETOUR ROUTE MARKER ASSEMBLIES SHALL BE INSTALLED ADJACENT TO THE EXISTING ROUTE MARKER ASSEMBLIES AND THE ROUTE MARKER SHALL BE COVERED.
5. DETOUR CONFIRMATION SIGNS ARE TO BE INSTALLED AFTER EACH INTERSECTION. A DETOUR FOLLOW-UP SIGNS SHALL BE INSTALLED EVERY MILE THEREAFTER.



TYPICAL NORTH ASSEMBLY

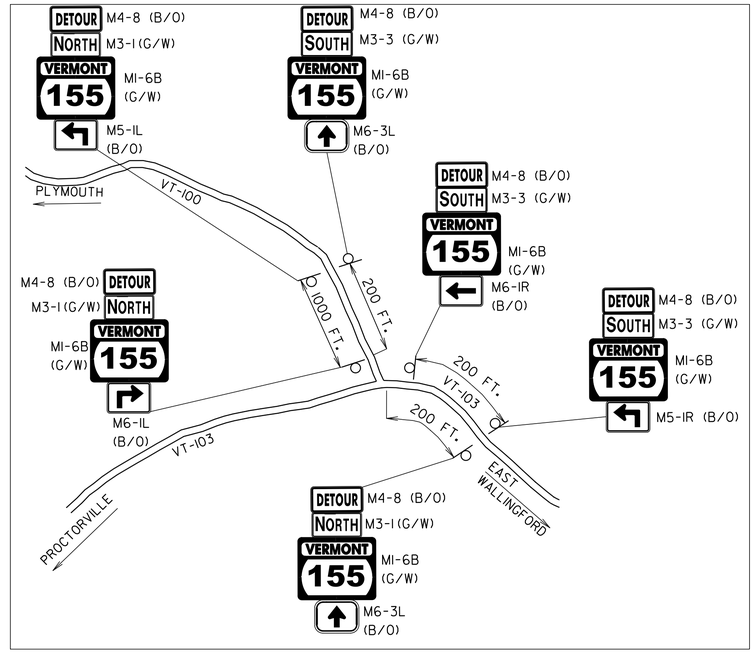


TYPICAL SOUTH ASSEMBLY

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594det.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: G.ROKES
OFFSITE DETOUR LAYOUT 1

PLOT DATE: 03-JUL-2019
DRAWN BY: G.ROKES
CHECKED BY: C.MOONEY
SHEET 16 OF 32



D DETAIL
NTS

PROJECT NAME:	MT. HOLLY
PROJECT NUMBER:	BF 0133(12)

FILE NAME: sl2c594det.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: G.ROKES
DESIGNED BY: G.ROKES	CHECKED BY: C.MOONEY
OFFSITE DETOUR LAYOUT 2	SHEET 17 OF 32

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

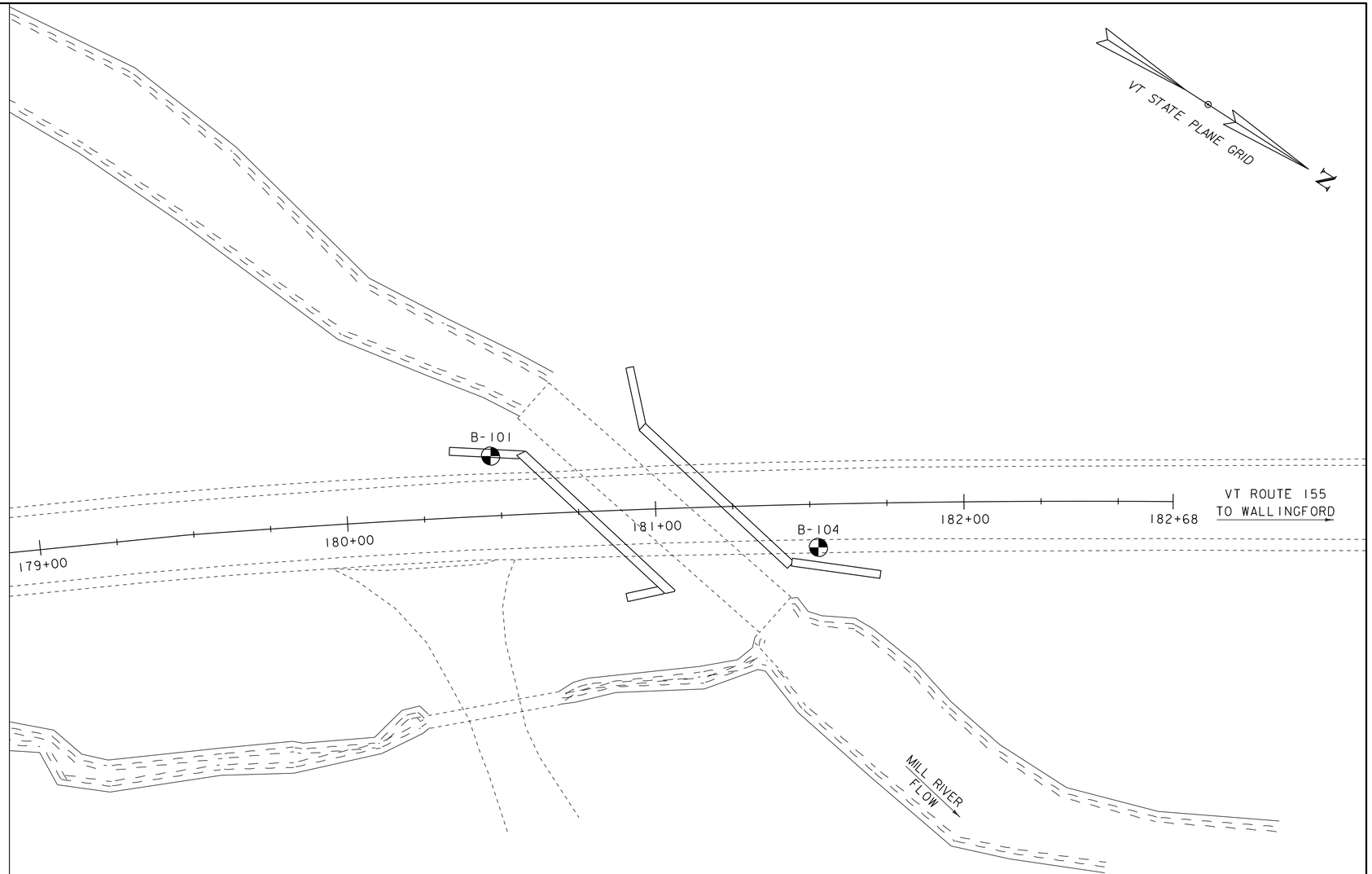
CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

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 1/8"
BX	Core Size 1 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	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
ROD	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		



BORING LAYOUT

SCALE 1" = 20'-0"

20 0 20

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.

GENERAL NOTES

1. The subsurface explorations shown herein were made between 09/19/16 and 09/30/16 by the Agency.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
B-101	178+88	20.0LT	1620.0	1570.0
B-104	179+95	14.4RT	1619.9	1557.2

PROJECT NAME: MT. HOLLY

PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594Boring.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
BORING INFORMATION SHEET

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

Mount Holly
BF 0133(12)
VT 155 Culv. 7

Boring No.: B-101
Page No.: 1 of 2
Pin No.: 12c594
Checked By: SPM

Boring Crew: Garrow, Emerson
Date Started: 9/27/16 Date Finished: 9/30/16
VTSPG NAD83: N 327803.89 ft E 1552774.05 ft
Station: 178+88 Offset: -20.00
Ground Elevation: 1620.0 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/AWJ
Rig:	CME 45C SKID	CE = 1.42

Groundwater Observations		
Date	Depth (ft)	Notes
09/28/16	10.2	W.T. before drilling
09/29/16	9.8	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-2-4, Sa, brn, Moist, Rec. = 0.4 ft				1-1-1-1 (2)	9.5	19.3	63.9	16.8
		A-1-a, SaGr, brn, Moist, Rec. = 0.8 ft				2-4-6-3 (10)	3.9	55.1	38.1	6.8
5		A-1-a, SaGr, brn, Moist, Rec. = 0.8 ft, Lab Note: Broken rock was within sample Field Note:, NXDC, Cleaned out casing				5-6-10-8 (16)	4.2	61.8	31.6	6.6
		A-1-a, SaGr, blk-brn, Moist, Rec. = 0.2 ft				5-3-2-2 (5)	14.4	70.8	26.5	2.7
		Field Note:, NXDC, Cleaned out casing								
		A-1-b, SiSaGr, gry-brn, Moist, Rec. = 1.0 ft, Lab Note: Broken rock was within sample				4-3-8-7 (11)	10.0	47.6	29.4	23.0
10		Field Note:, NXDC, Cleaned out casing A-1-a, SaGr, gry-brn, Moist, Rec. = 0.7 ft, Lab Note: Broken rock was within sample				3-4-15-19 (19)	11.8	61.8	29.5	8.7
		Field Note:, NXDC, Cleaned out casing Field Note:, No Recovery				2-7-2-1 (9)				
		Field Note:, NXDC, Cleaned out casing								
15		A-4, GrSaSi, gry, Moist, Rec. = 1.3 ft, Lab Note: Broken rock was within sample Field Note:, NXDC, Cleaned out casing				10-21-25-35 (46)	9.9	24.7	31.9	43.4
		A-4, SaSi, brn, Moist, Rec. = 1.1 ft				26-46-28-R@0" (74)	11.6	17.3	31.8	50.9
		Field Note:, NXDC, Cleaned out casing								
		A-4, SaSi, brn, Moist, Rec. = 1.4 ft				23-33-26-R@3.5" (59)	13.2	19.3	30.7	50.0
20		A-4, GrSaSi, brn, Moist, Rec. = 1.4 ft				23-28-32-R@3.5" (60)	13.0	22.1	41.1	36.8
		Field Note:, NXDC, Cleaned out casing								
25		A-4, GrSaSi, gry-brn, Moist, Rec. = 0.7 ft				40-R@2.5" (R)	9.7	20.0	36.7	43.3
		Field Note:, Cobbles								
30		A-1-a, SaGr, gry-brn, Moist, Rec. = 0.4 ft, Lab Note: Broken rock was within sample				R@3.5" (R)	7.6	60.0	25.8	14.2

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE 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 2 MT. HOLLY BF0133(12).GPJ VERMONT AOT.GDT 11/21/18

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

Mount Holly
BF 0133(12)
VT 155 Culv. 7

Boring No.: B-101
Page No.: 2 of 2
Pin No.: 12c594
Checked By: SPM

Boring Crew: Garrow, Emerson
Date Started: 9/27/16 Date Finished: 9/30/16
VTSPG NAD83: N 327803.89 ft E 1552774.05 ft
Station: 178+88 Offset: -20.00
Ground Elevation: 1620.0 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/AWJ
Rig:	CME 45C SKID	CE = 1.42

Groundwater Observations		
Date	Depth (ft)	Notes
09/28/16	10.2	W.T. before drilling
09/29/16	9.8	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
35		Field Note:, NXDC, Cleaned out casing A-4, SiSa, brn, Moist, Rec. = 1.2 ft				21-38-R@3.5" (R)	16.2	9.4	49.1	41.5
		Field Note:, NXDC, Cleaned out casing								
40		A-4, SiSa, Lt/brn, Moist, Rec. = 0.2 ft Field Note:, NXDC, Cleaned out casing				R@2.5" (R)	15.1	0.2	52.1	47.7
45		Field Note:, No Recovery				R@0" (R)				
50		50.0 ft - 55.0 ft, Tan/white, Muscovite-biotite-plagioclase-quartz GRANITIC GNEISS, with rust and brown staining along joints. Medium hard, Moderately weathered, Poor rock, NX, RMR=27	1 (45)	82 (0)	4 5 4 4 3	Top of Bedrock @ 50.0 ft				
55		55.0 ft - 60.0 ft, Tan/white, Muscovite-biotite-quartz GRANITIC GNEISS, with rust and brown staining along joints. Vertical joints at 57.0 feet to 57.3 feet and 58.3 feet to 58.6 feet. Medium hard, Moderately weathered, Poor rock, NX, RMR=36	2 (40)	100 (0)	4 3 4 3 6					
60		Hole stopped @ 60.0 ft								
65		Remarks: Hole collapsed at 9.0 feet. 1. Sample was attempted at 50 feet. No penetration, no recovery.								

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE 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 2 MT. HOLLY BF0133(12).GPJ VERMONT AOT.GDT 11/21/18

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594Boring.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
BORING LOGS I

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 19 OF 32

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

Mount Holly
BF 0133(12)
VT 155 Culv. 7

Boring No.: B-104
Page No.: 1 of 2
Pin No.: 12c594
Checked By: SPM

Boring Crew: Garrow, Judkins, Emerson
Date Started: 9/19/16 Date Finished: 9/23/16
VTSPG NAD83: N 327911.67 ft E 1552737.07 ft
Station: 179+95 Offset: 14.40
Ground Elevation: 1619.9 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/AWJ
Rig:	CME 55 TRACK	CE = 1.41

Groundwater Observations		
Date	Depth (ft)	Notes
09/21/16	13.2	W.T. before drilling
09/22/16	11.8	W.T. before drilling
09/23/16	11.6	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft – 0.6 ft								
		A-1-a, Gr, brn, Moist, Rec. = 0.4 ft, Lab Note: A lot of broken rock was within sample				11-20-10 (30)	3.8	86.2	8.8	5.0
		A-1-a, SaGr, brn, Moist, Rec. = 0.6 ft, Lab Note: A lot of broken rock was within sample				8-8-16-16 (24)	4.8	58.3	31.1	10.6
		Field Note:, NXDC, Cleaned out casing				R@5" (R)				
5		A-1-a, SaGr, blk-brn, Moist, Rec. = 0.3 ft, Lab Note: Sample consisted of clean broken rock					7.4	79.2	20.8	
		Field Note:, NXDC, Cleaned out casing				7-6-4-4 (10)	4.6	71.7	20.2	8.1
		A-1-a, SaGr, blk, Moist, Rec. = 0.1 ft, Lab Note: Broken rock was within sample								
		Field Note:, NXDC, Cleaned out casing				7-6-21-19 (27)	9.1	65.0	29.4	5.6
		A-1-a, SaGr, brn-blk, Moist, Rec. = 0.8 ft, Lab Note: Broken rock was within sample								
10		Field Note:, NXDC, Cleaned out casing				4-2-2-2 (4)	28.1	7.0	72.6	20.4
		A-2-4, SiSa, brn, Moist, Rec. = 0.2 ft								
		Field Note:, No Recovery				1-2-5-5 (7)				
		Field Note:, NXDC, Cleaned out casing				19-23-14-14 (37)	6.6	81.5	15.2	3.3
15		A-1-a, Gr, gry, Moist, Rec. = 0.2 ft, Lab Note: Broken rock was within sample								
		Field Note:, NXDC, Cleaned out casing				8-33-26-29 (59)	10.6	21.0	29.0	50.0
		A-4, GrSaSi, gry, Moist, Rec. = 1.5 ft								
		Field Note:, NXDC, Cleaned out casing				19-29-R@5" (R)	10.4	28.3	32.9	38.8
		A-4, GrSaSi, gry, Moist, Rec. = 1.2 ft								
20		Field Note:, NXDC, Cleaned out casing				R@5" (R)				
		Field Note:, No Recovery								
		Field Note:, NXDC, Cleaned out casing								
25		Field Note:, NXDC, Cleaned out casing				R@0" (R)				
		Field Note:, No Recovery								
30		Field Note:, No Recovery				R@2.5" (R)				
		Field Note:, NXDC, Cleaned out casing								
35		A-4, SaSi, brn, Moist, Rec. = 0.9 ft				15-R@5" (R)	17.9	3.5	47.0	49.5

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE 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 2 MT. HOLLY BF0133(12).GPJ VERMONT AOT.GDT 11/21/18

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

Mount Holly
BF 0133(12)
VT 155 Culv. 7

Boring No.: B-104
Page No.: 2 of 2
Pin No.: 12c594
Checked By: SPM

Boring Crew: Garrow, Judkins, Emerson
Date Started: 9/19/16 Date Finished: 9/23/16
VTSPG NAD83: N 327911.67 ft E 1552737.07 ft
Station: 179+95 Offset: 14.40
Ground Elevation: 1619.9 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/AWJ
Rig:	CME 55 TRACK	CE = 1.41

Groundwater Observations		
Date	Depth (ft)	Notes
09/21/16	13.2	W.T. before drilling
09/22/16	11.8	W.T. before drilling
09/23/16	11.6	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
40		Field Note:, NXDC, Cleaned out casing								
		A-2-4, GrSiSa, brn, MTD, Rec. = 0.4 ft				R@5" (R)	13.1	20.9	48.3	30.8
		Field Note:, NXDC, Cleaned out casing								
45		A-2-4, GrSiSa, brn-white, Moist, Rec. = 0.1 ft				R@1" (R)	10.6	25.3	46.8	27.9
		Field Note:, NXDC, Cleaned out casing								
50		Field Note:, No Recovery				R@0" (R)				
		Field Note:, NXDC, Cleaned out casing								
55		A-4, SaSi, Lt/brn, MTD, Rec. = 0.4 ft				R@5" (R)	13.2	7.0	43.7	49.3
		Field Note:, NXDC, Cleaned out casing								
60		Field Note:, No Recovery				R@0" (R)				
		62.7 ft – 67.7 ft, Light gray, Muscovite-biotite-quartz-plagioclase GNEISS, with a near vertical joint at 64.7 feet to 65.2 feet. Brown staining along joints. Hard, Very slightly weathered, Good rock, NX, RMR=66	1 (30)	72 (75)	5 5 4 4 5	Top of Bedrock @ 62.7 ft				
65		67.7 ft – 71.2 ft, Light gray &white, Quartzose biotite-muscovite-plagioclase GNEISS, Hard, Unweathered, Fair rock, NX, RMR=60	2 (60)	96 (79)	6 7 5 6 5					
70		71.2 ft – 72.7 ft, Dark gray, Micaceous plagioclase GNEISS, Moderately hard, Unweathered								
		Hole stopped @ 72.7 ft								
75		Remarks: Hole collapsed at 6.5 feet.								

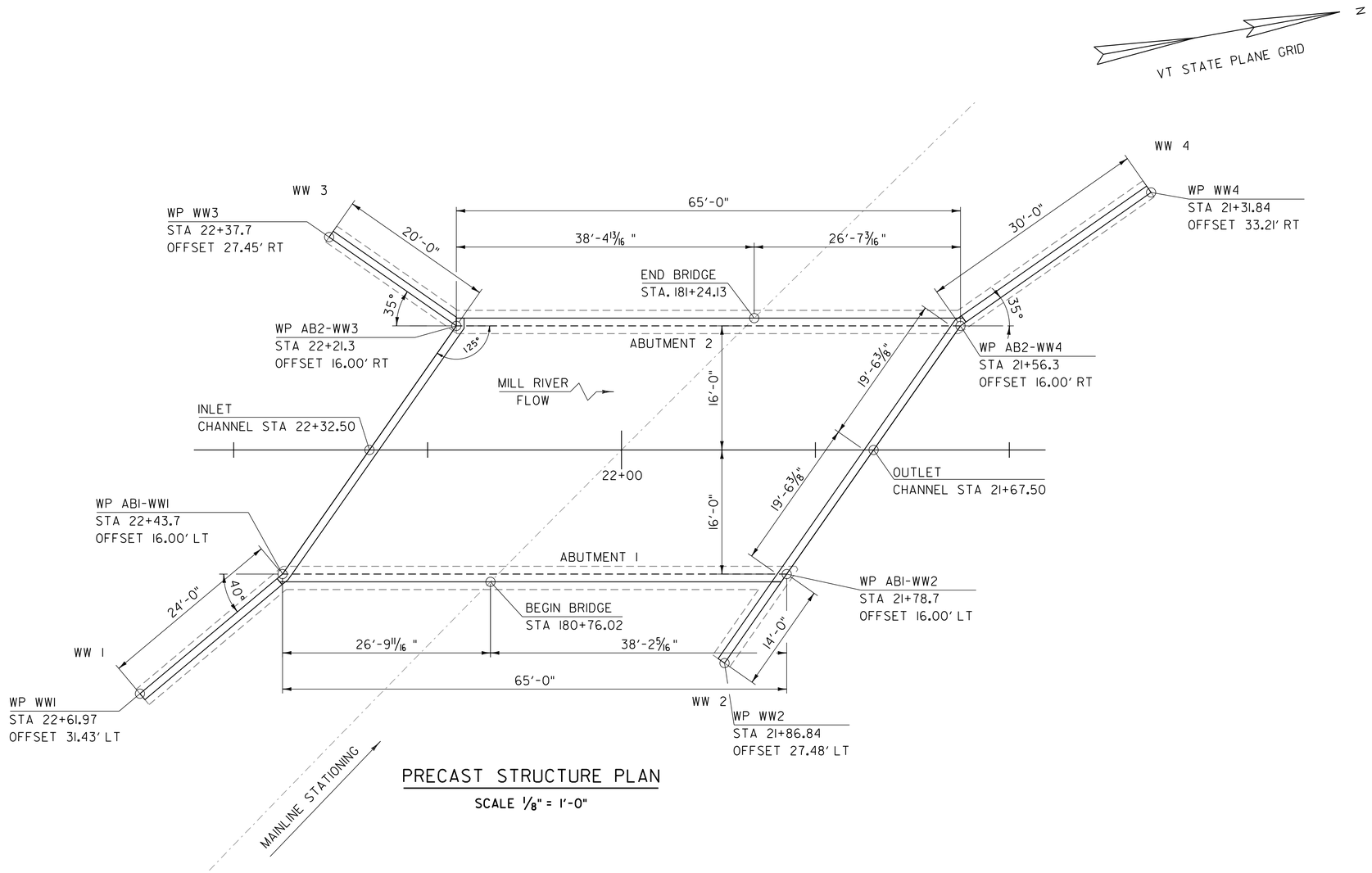
Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 MT. HOLLY BF0133(12).GPJ VERMONT AOT.GDT 11/21/18

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: s12c594Boring.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
BORING LOGS 2

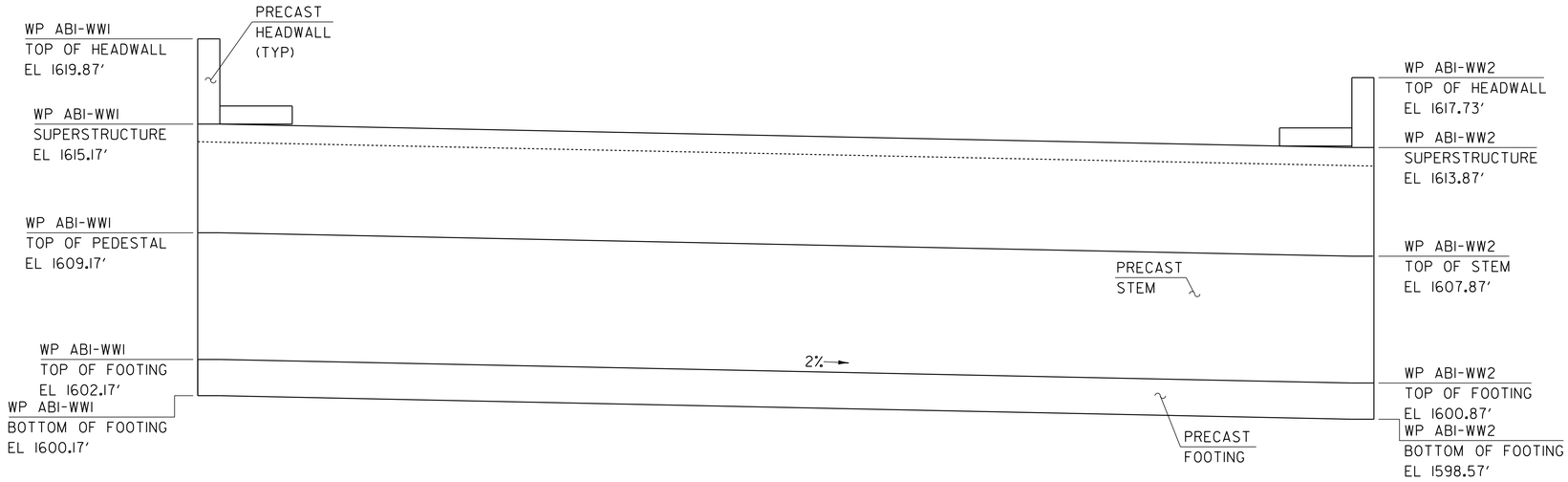
PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 20 OF 32



PRECAST STRUCTURE PLAN

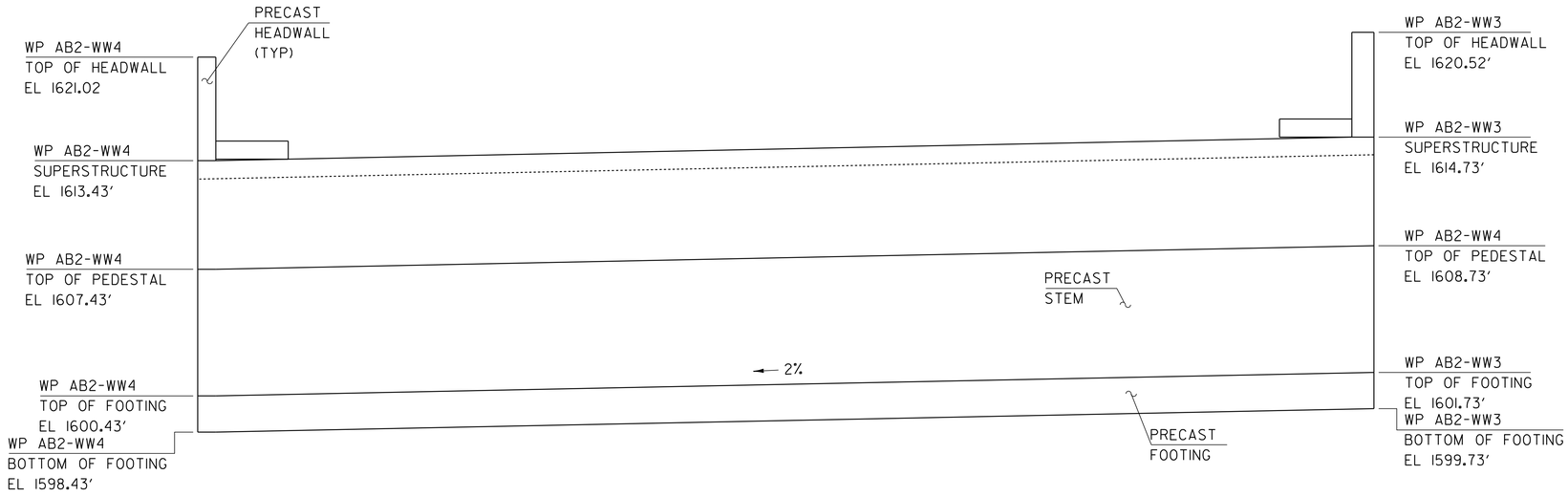
SCALE 1/8" = 1'-0"

PROJECT NAME:	MT. HOLLY
PROJECT NUMBER:	BF 0133(12)
FILE NAME: sl2c594sub.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: K.CHEVIOT
DESIGNED BY: C.MOONEY	CHECKED BY: C.MOONEY
PRECAST STRUCTURE PLAN	SHEET 21 OF 32



ABUTMENT NO.1 ELEVATION

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

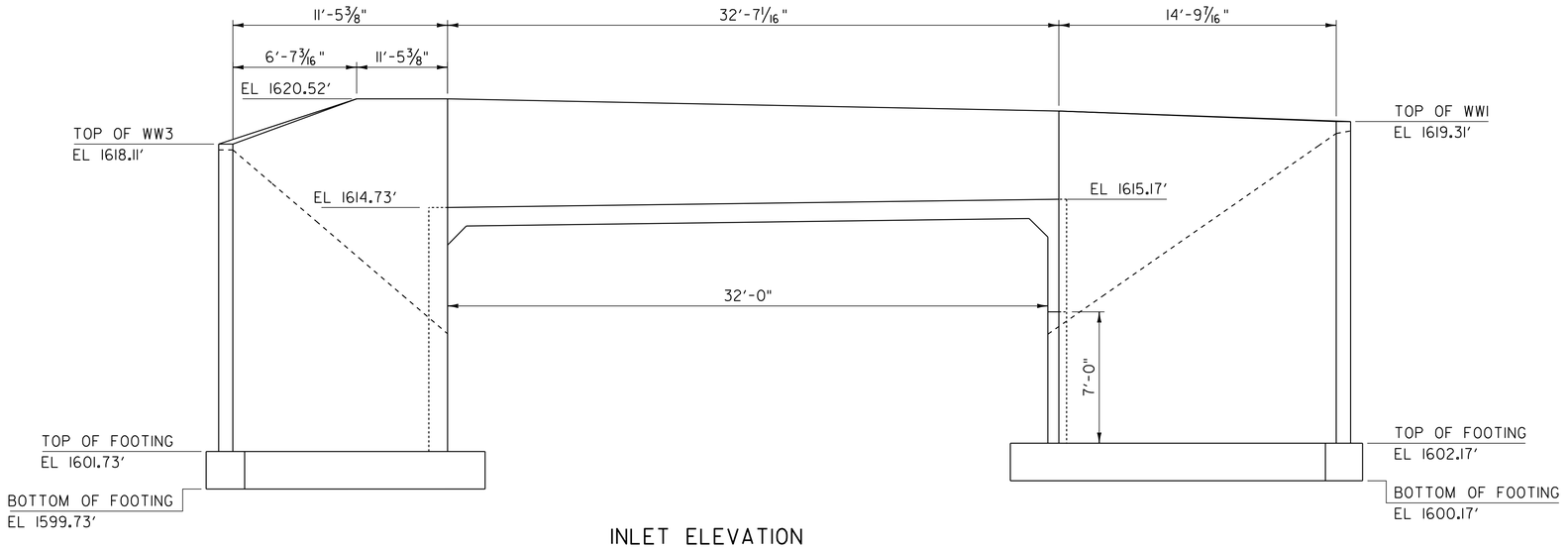


ABUTMENT NO.2 ELEVATION

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

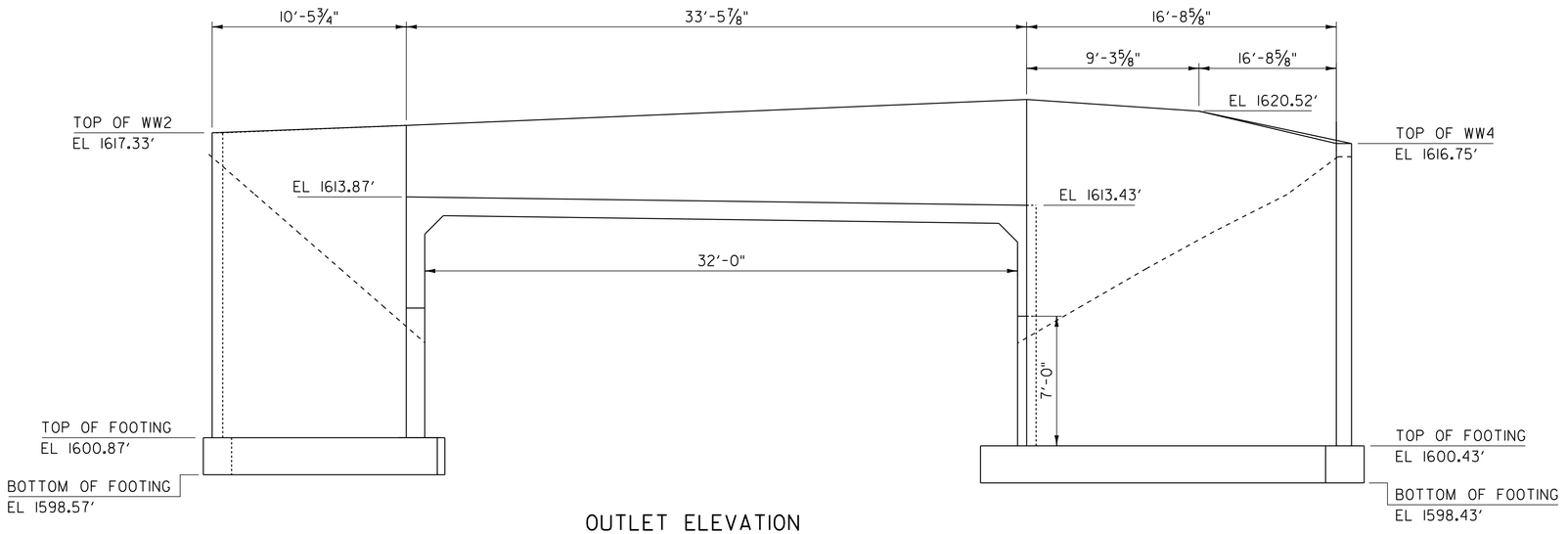
PROJECT NAME:	MT. HOLLY
PROJECT NUMBER:	BF 0133(12)

FILE NAME: sl2c594sub.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: K.CHEVIOT
DESIGNED BY: C.MOONEY	CHECKED BY: C.MOONEY
ABUTMENT ELEVATIONS	SHEET 22 OF 32



INLET ELEVATION

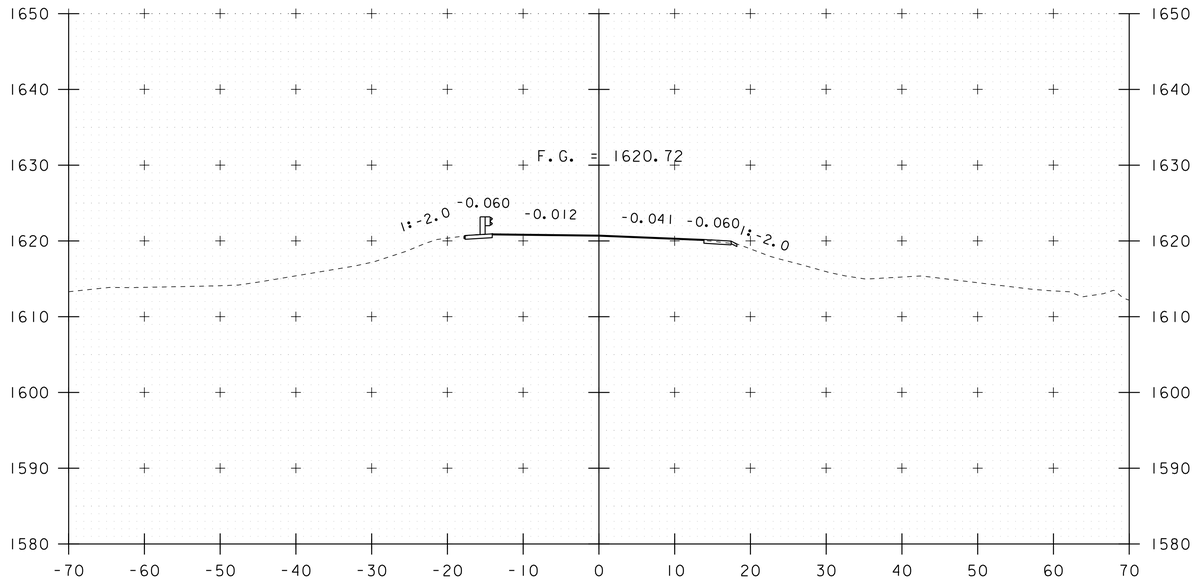
SCALE: 1/4" = 1′-0"



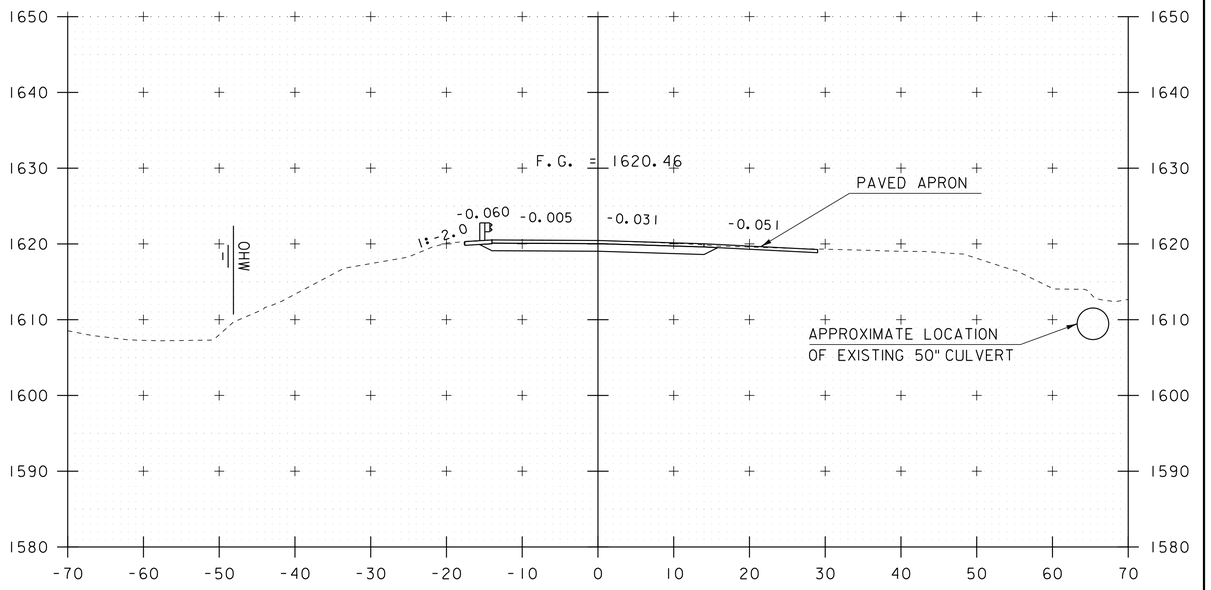
OUTLET ELEVATION

SCALE: 1/4" = 1′-0"

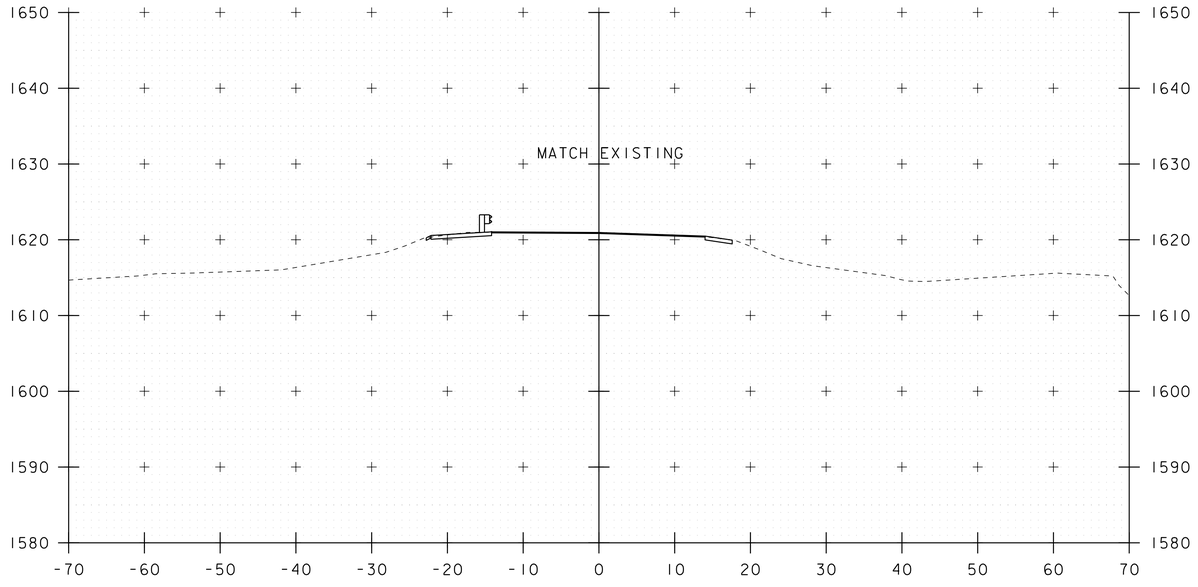
PROJECT NAME: MT. HOLLY	
PROJECT NUMBER: BF 0133(12)	
FILE NAME: sl2c594sub.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: K.CHEVIOT
DESIGNED BY: C.MOONEY	CHECKED BY: C.MOONEY
HEADWALL ELEVATIONS	SHEET 23 OF 32



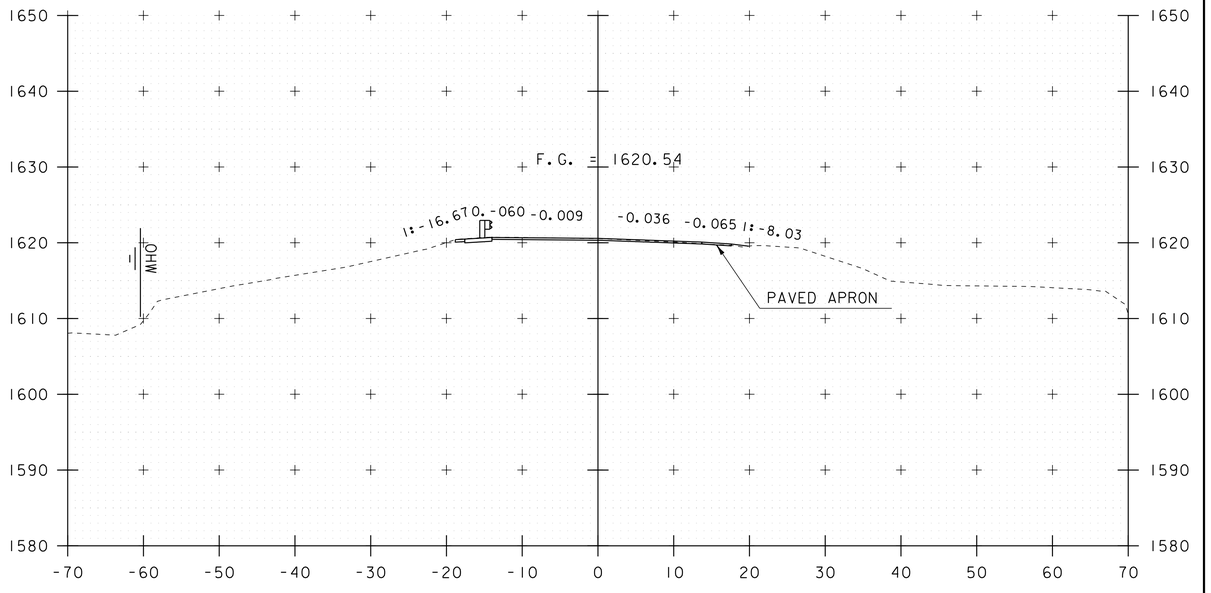
179+75



180+25



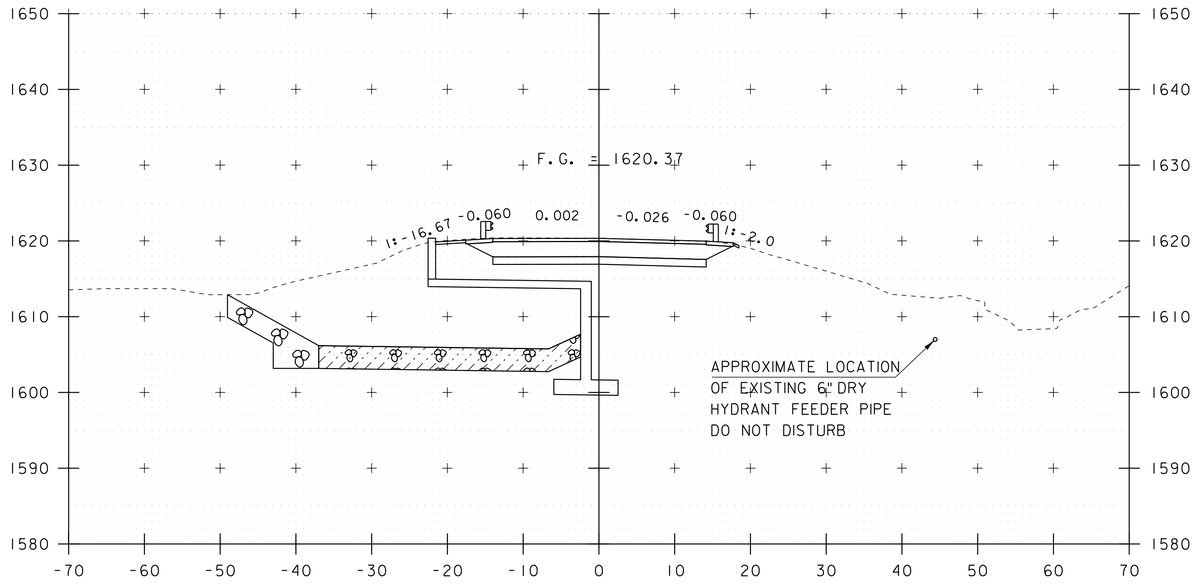
179+50



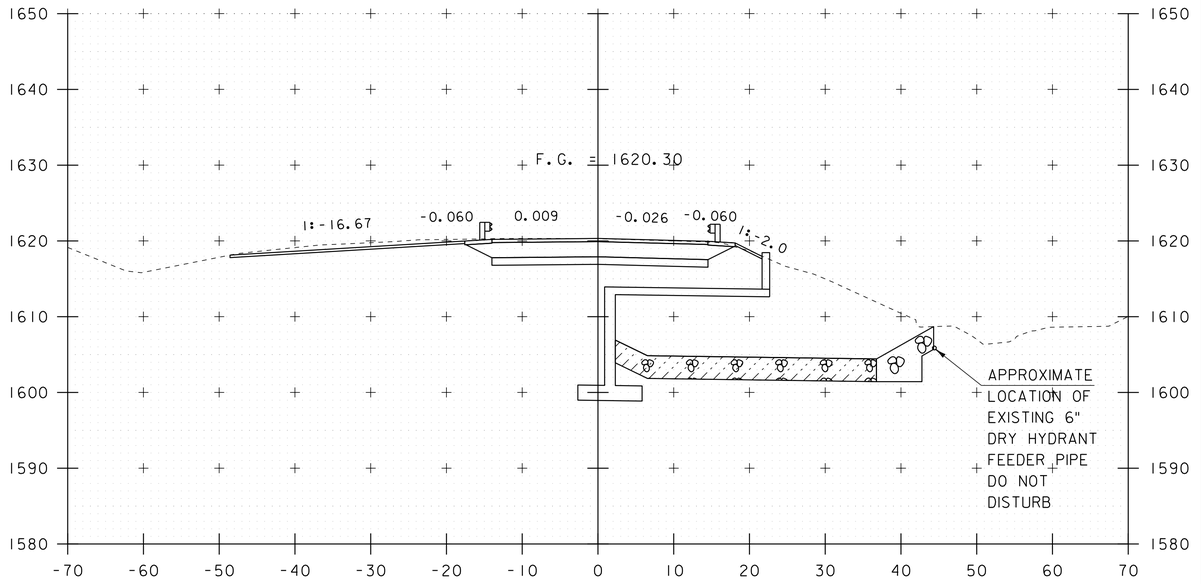
180+00

STA. 179+50 TO STA. 180+25

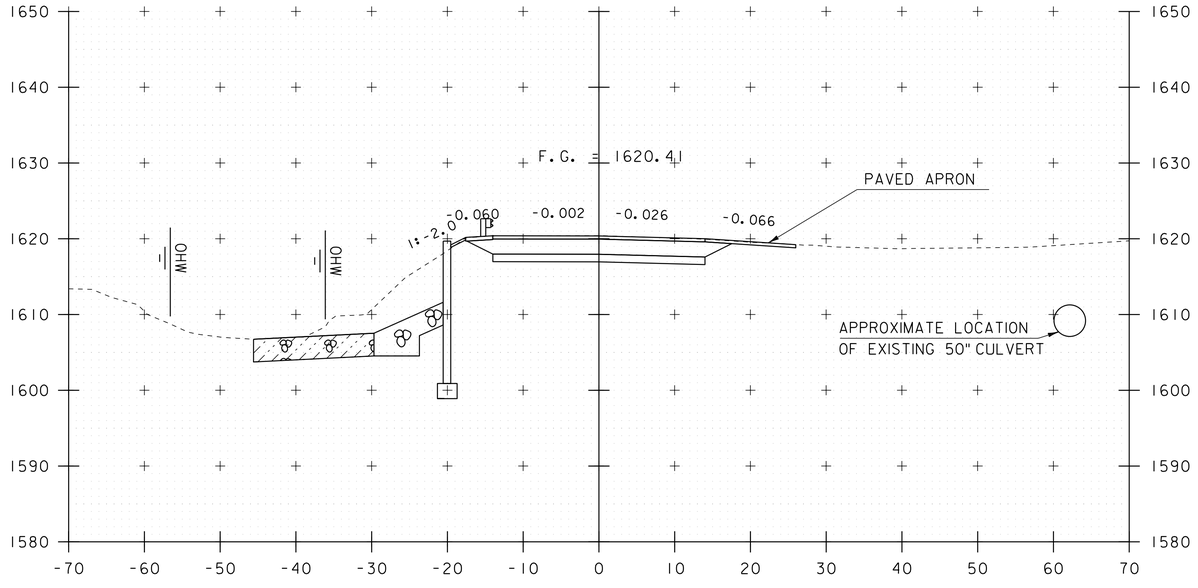
PROJECT NAME: MT. HOLLY	
PROJECT NUMBER: BF 0133(12)	
FILE NAME: sl2c594xs.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: R.PELLETT
DESIGNED BY: K.CHEVIOT	CHECKED BY: C.MOONEY
VT-I55 CROSS SECTIONS SHEET I	SHEET 24 OF 32



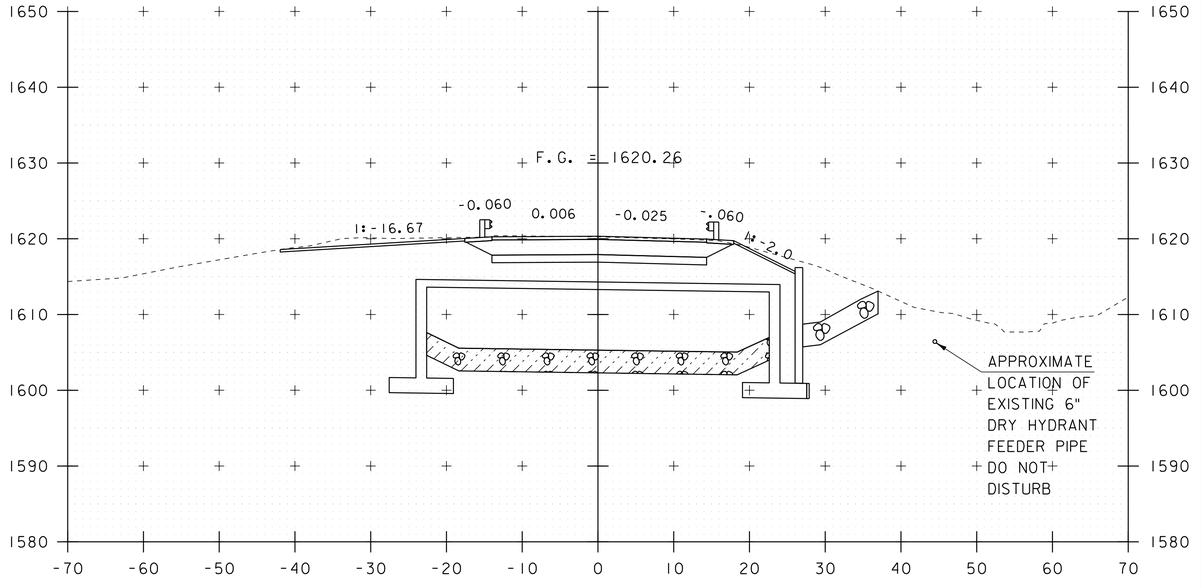
180+75



181+25



180+50



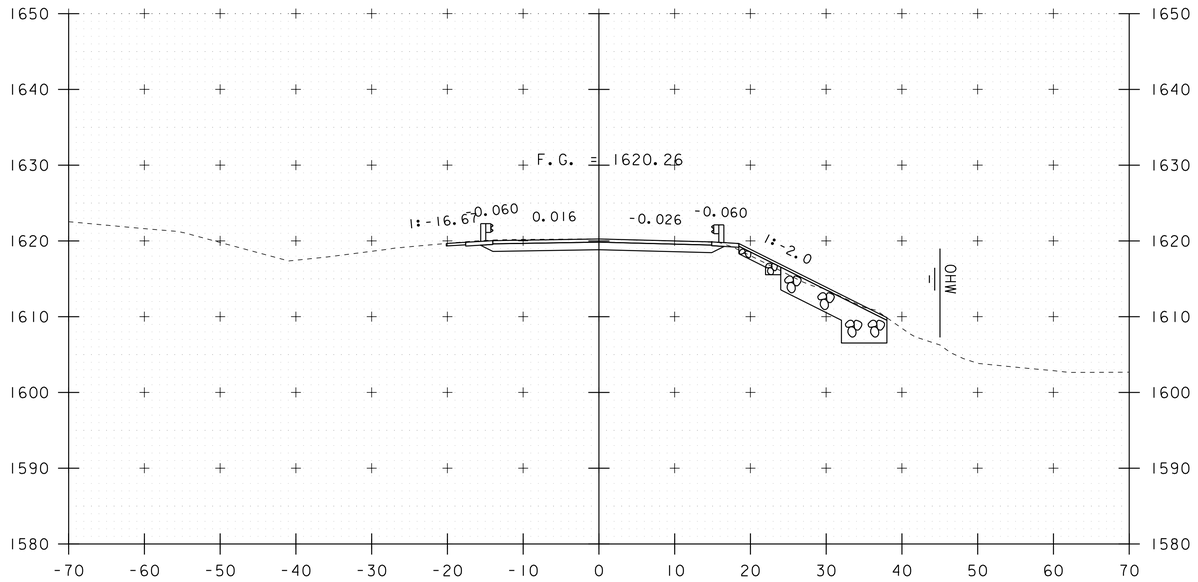
181+00

STA. 180+50 TO STA. 181+25

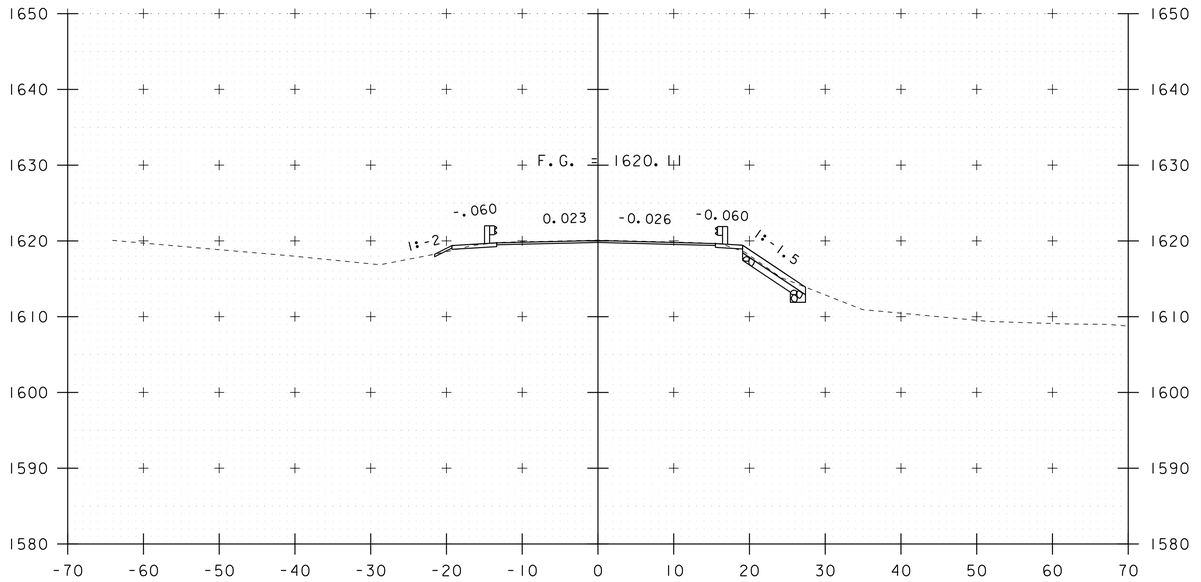
PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594xs.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
VT-155 CROSS SECTIONS SHEET 2

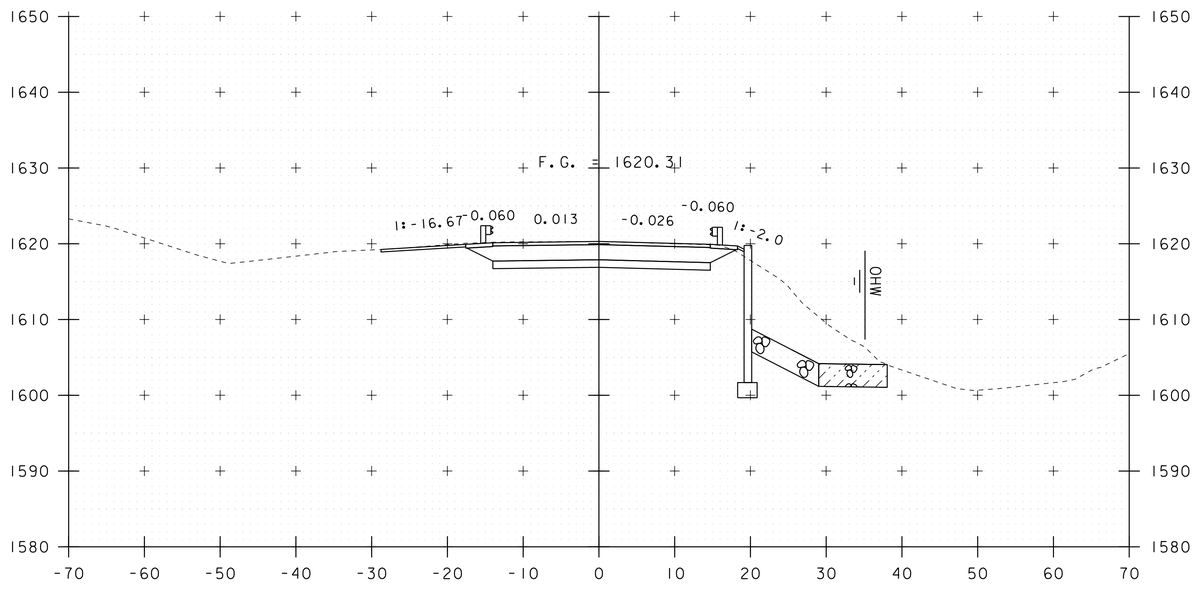
PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 25 OF 32



181+75

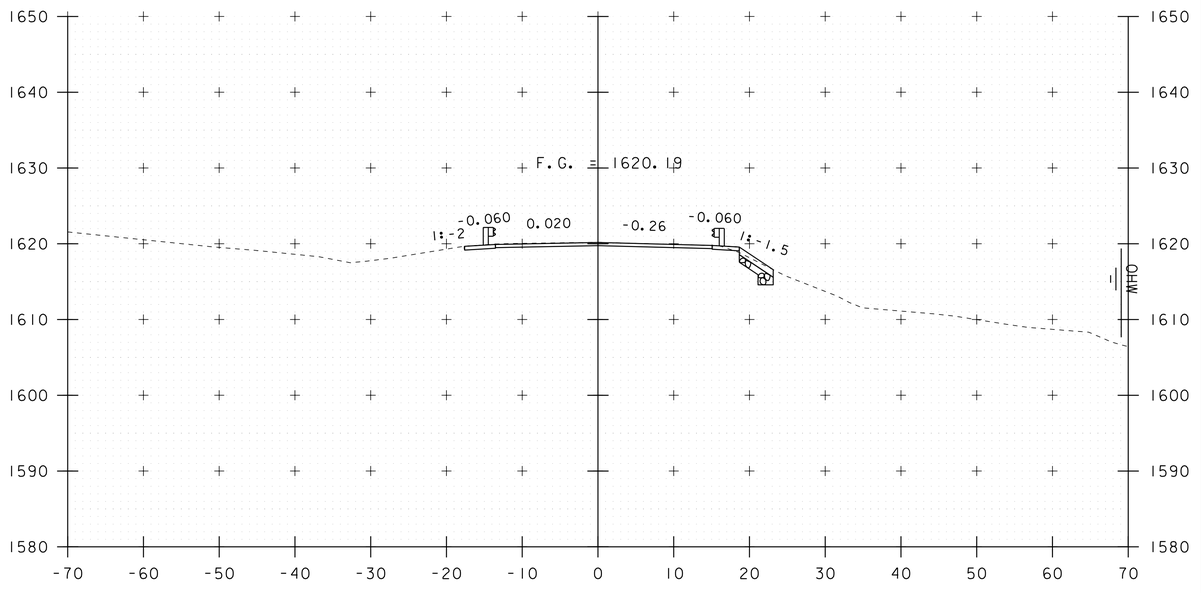


182+25



END PROJECT

181+50



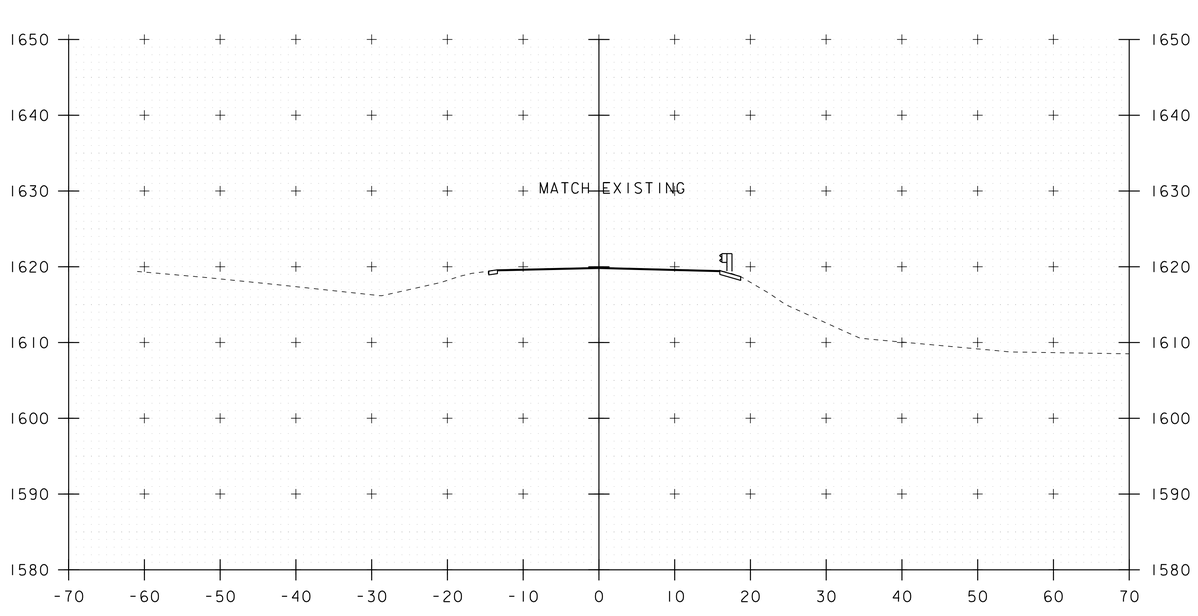
182+00

STA. 181+50 TO STA. 182+25

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594xs.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
VT-155 CROSS SECTIONS SHEET 3

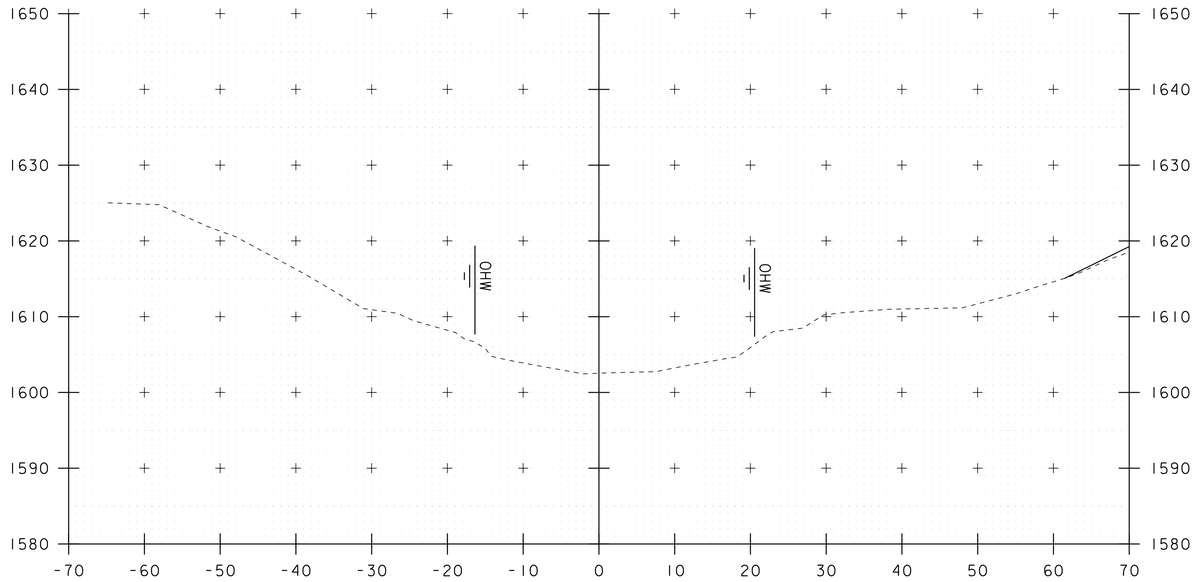
PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 26 OF 32



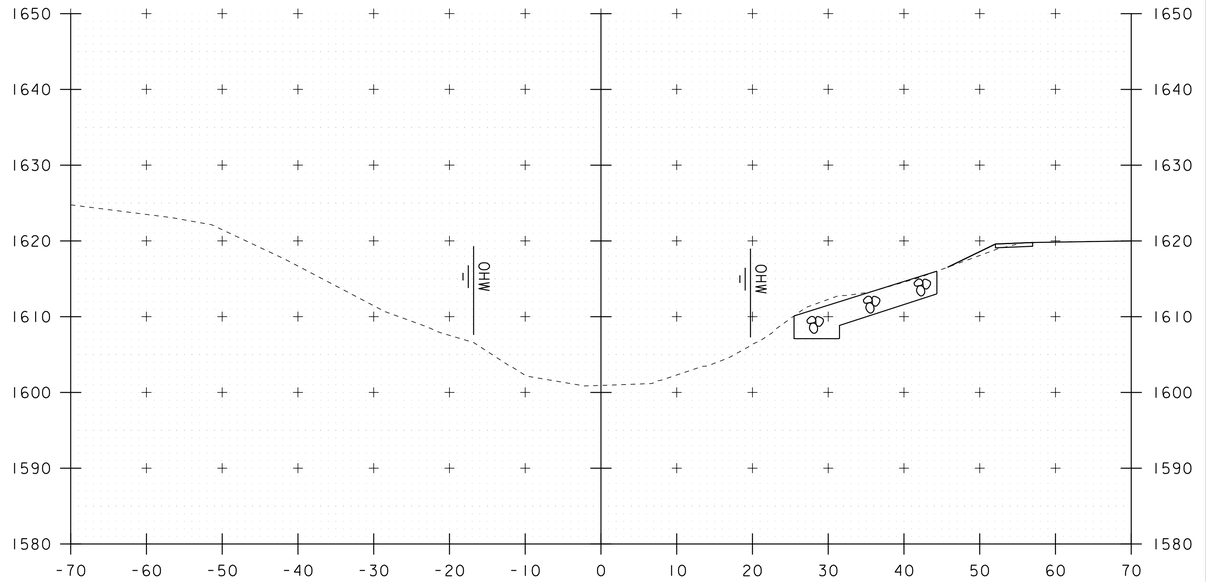
182+50

STA. 182+50

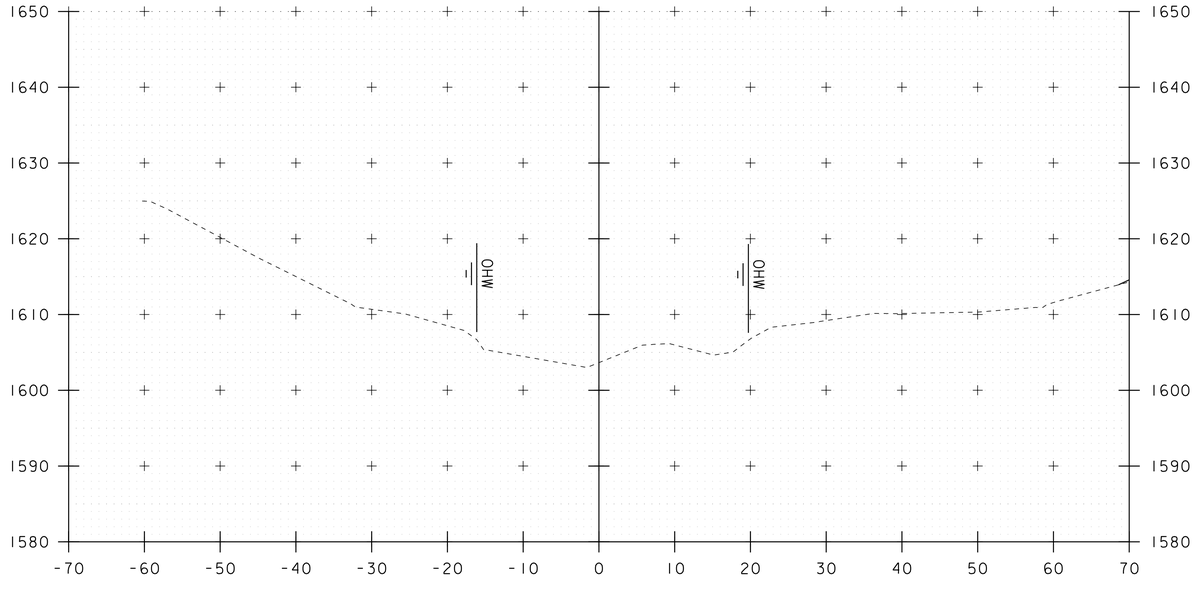
PROJECT NAME: MT. HOLLY	
PROJECT NUMBER: BF 0133(12)	
FILE NAME: sl2c594xs.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: R.PELLETT
DESIGNED BY: K.CHEVIOT	CHECKED BY: C.MOONEY
VT-155 CROSS SECTIONS SHEET 4	SHEET 27 OF 32



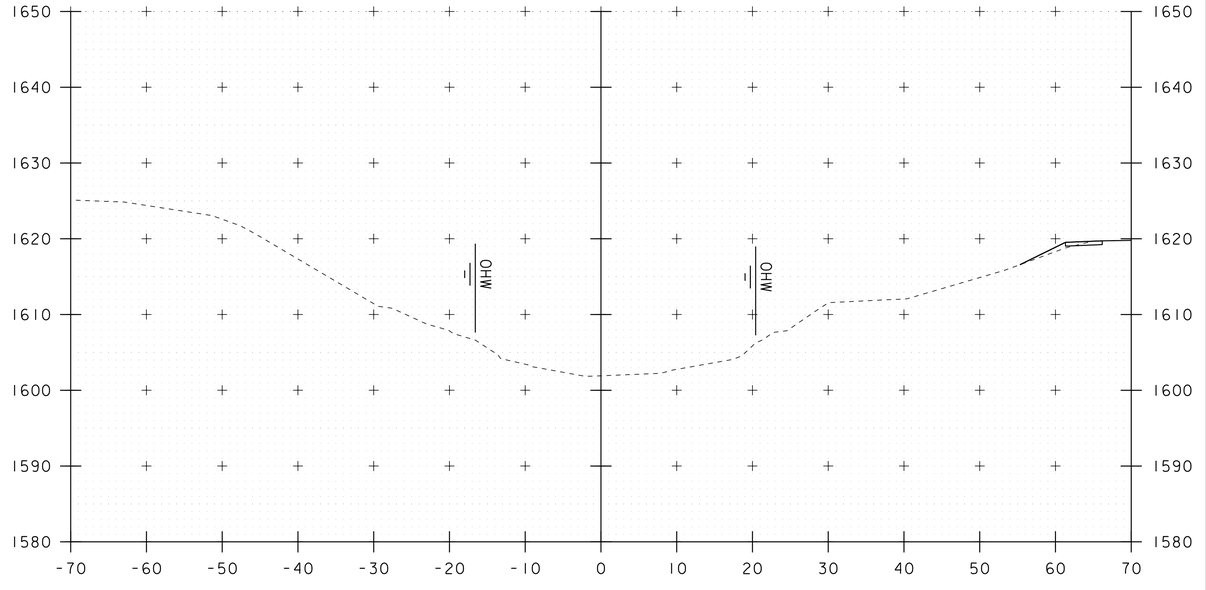
21+00



21+20



20+90

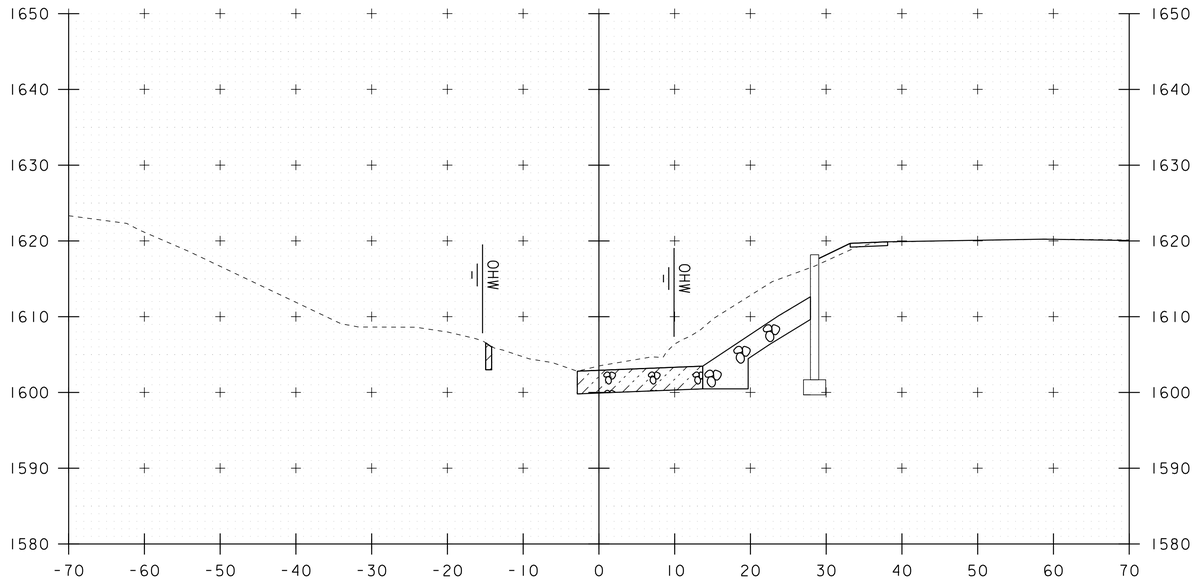


21+10

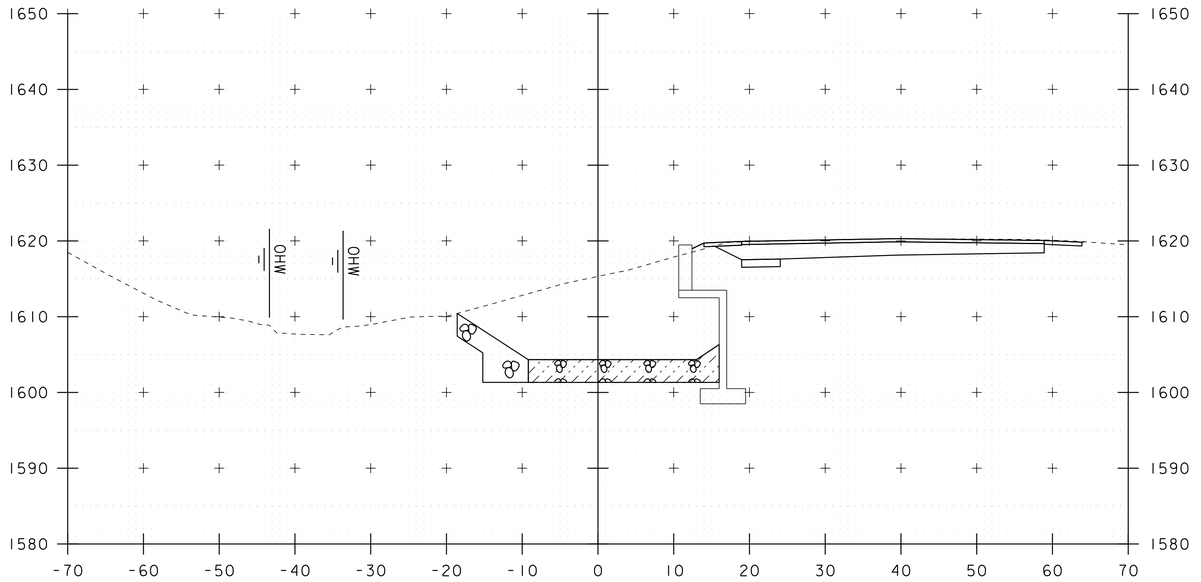
PROJECT NAME:	MT. HOLLY
PROJECT NUMBER:	BF 0133(12)

FILE NAME: sl2c594xs.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: R.PELLETT
DESIGNED BY: K.CHEVIOT	CHECKED BY: C.MOONEY
CHANNEL SECTIONS SHEET 1	SHEET 28 OF 32

STA. 20+90 TO STA. 21+20

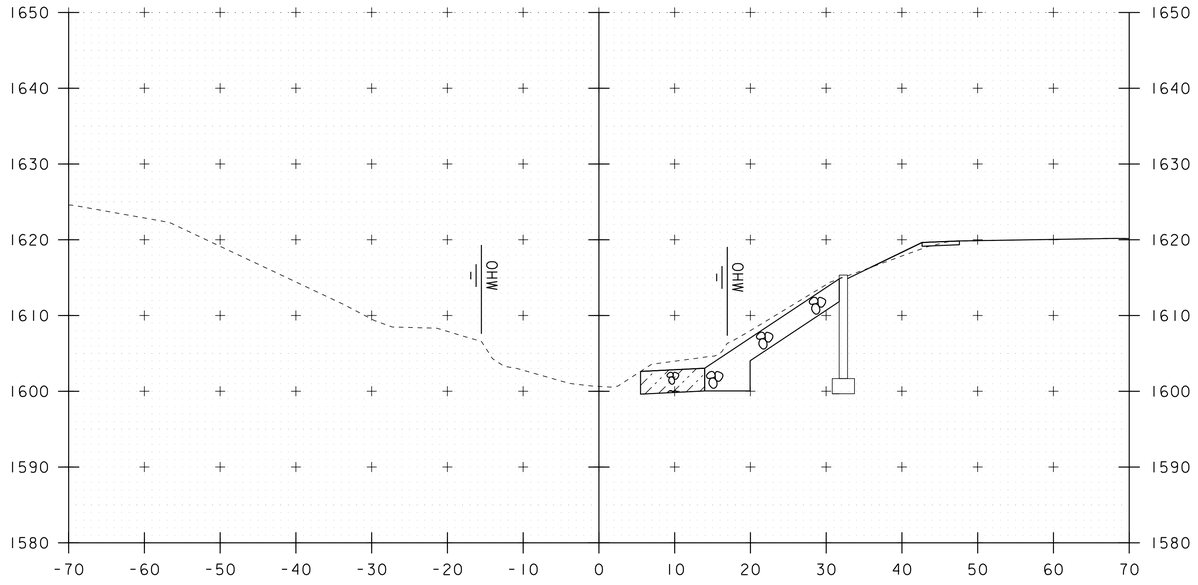


21+40



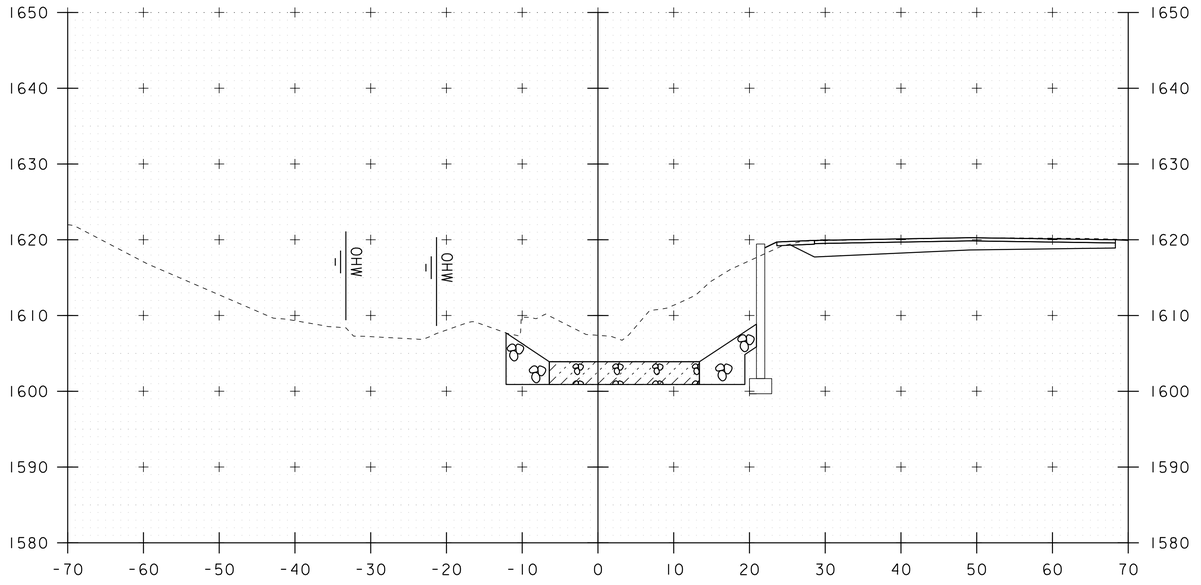
21+60

BEGIN 21+47 LT
UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL TYPE III
E-STONE FILL TYPE III
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL



21+30

BEGIN 21+20 RT
UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL TYPE III
E-STONE FILL TYPE III
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL



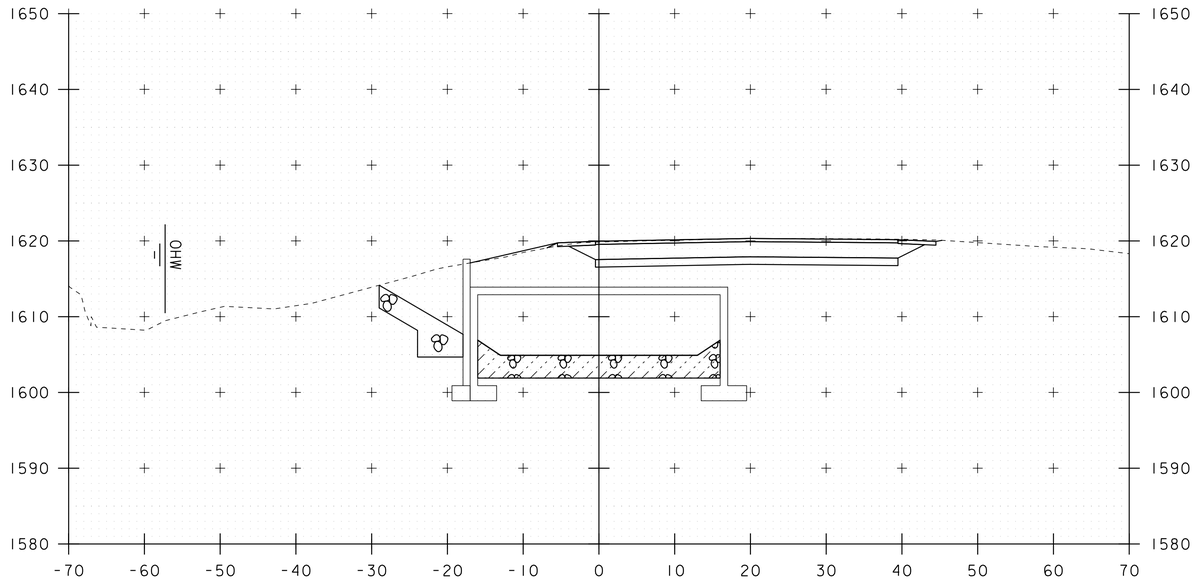
21+50

STA. 21+30 TO STA. 21+60

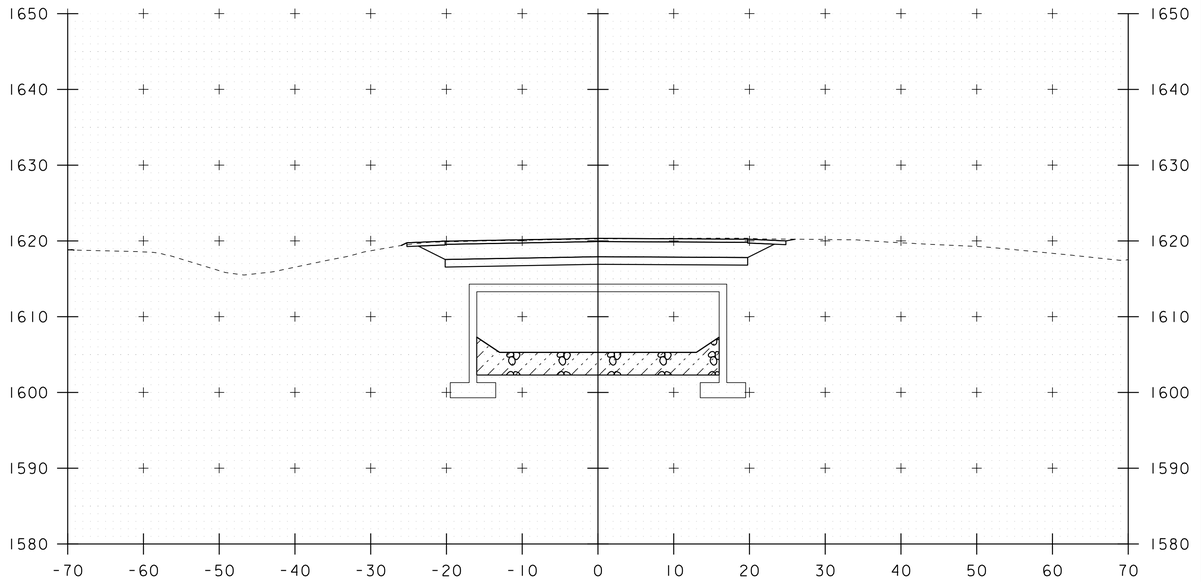
PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594xs.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
CHANNEL SECTIONS SHEET 2

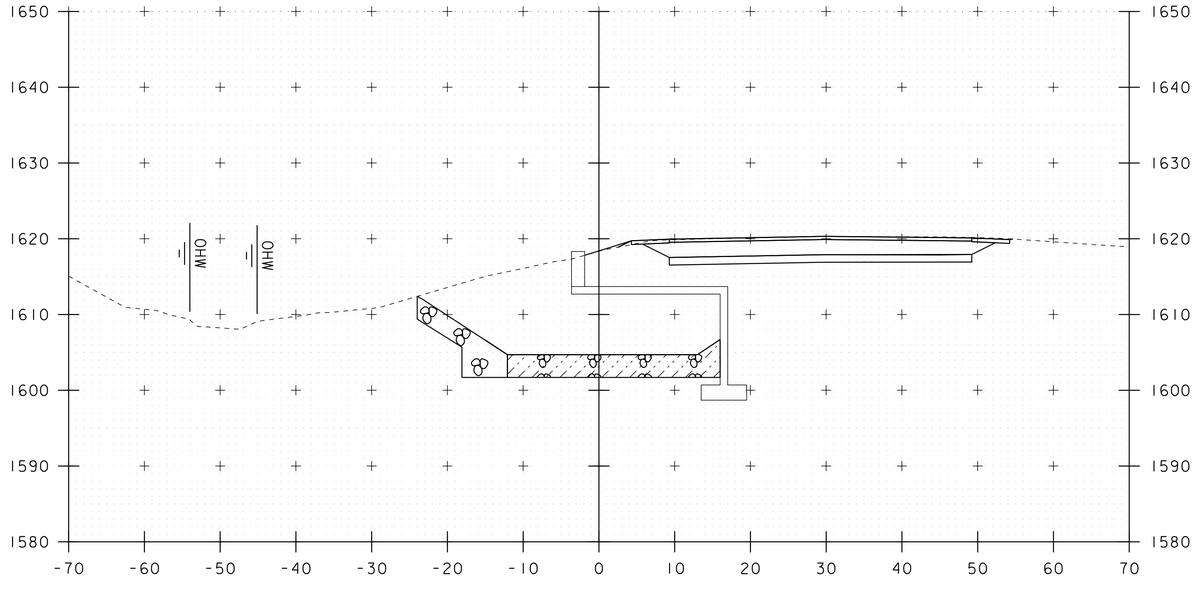
PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 29 OF 32



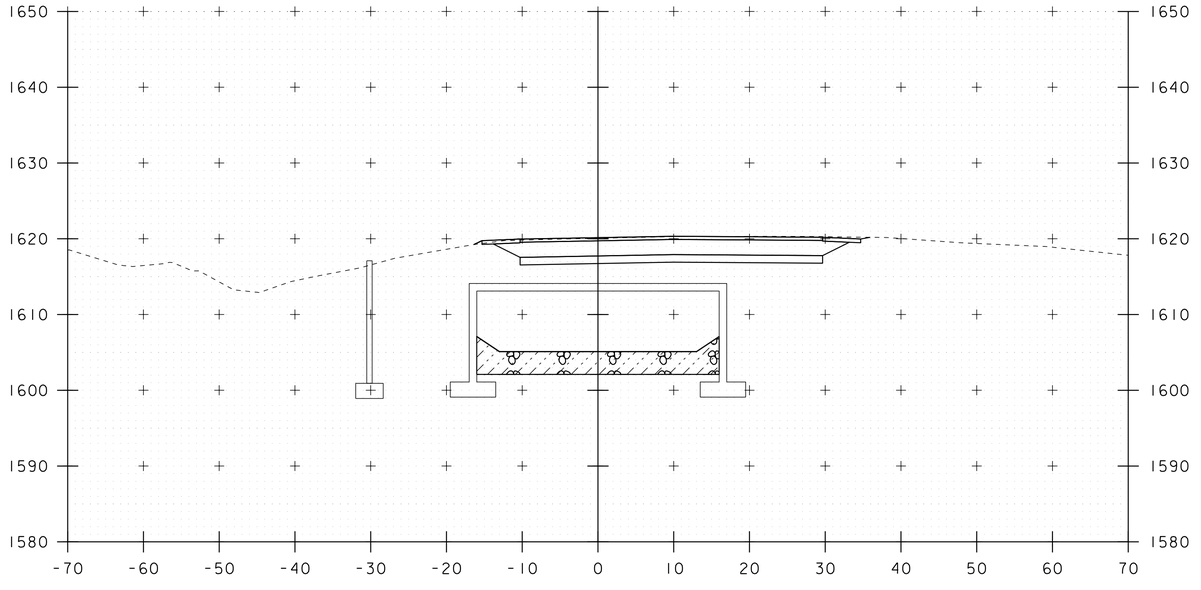
21+80



22+00



21+70



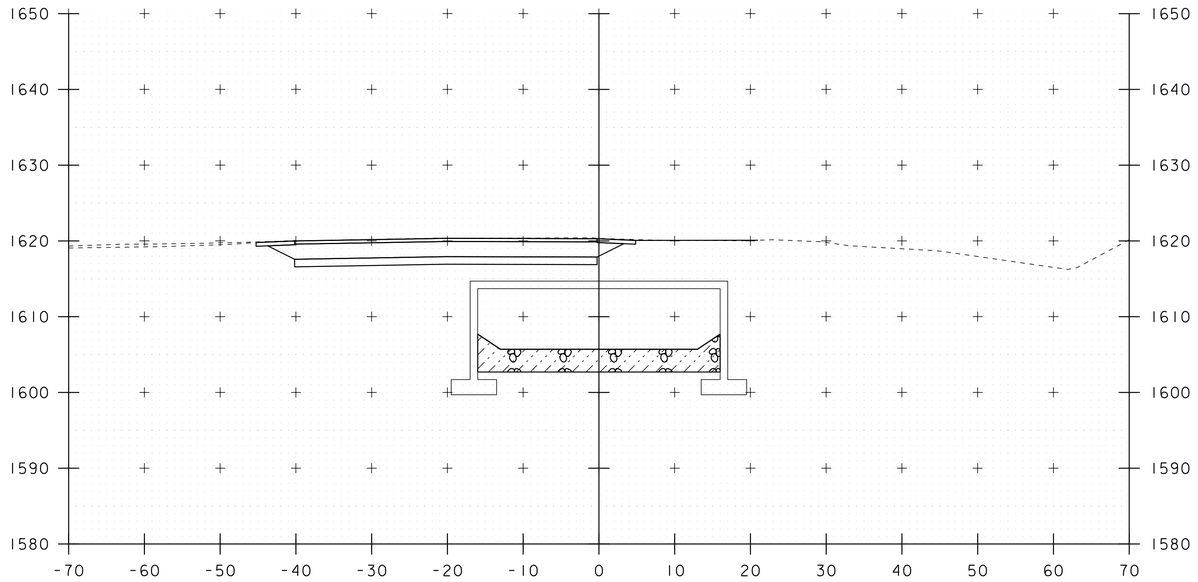
21+90

STA. 21+70 TO STA. 22+00

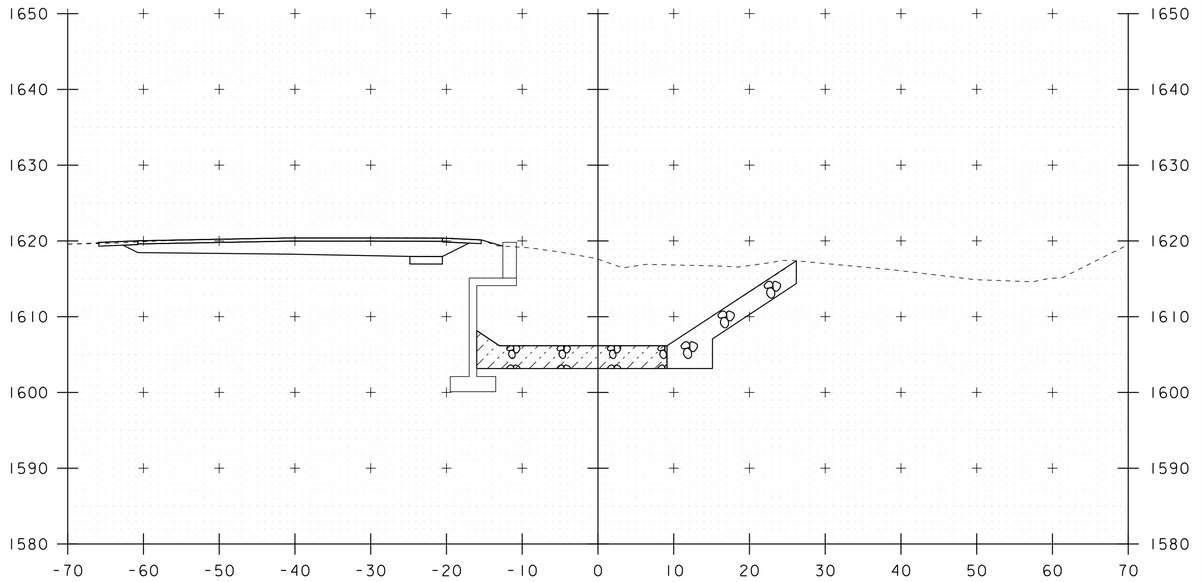
PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594xs.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
CHANNEL SECTIONS SHEET 3

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 30 OF 32



22+20



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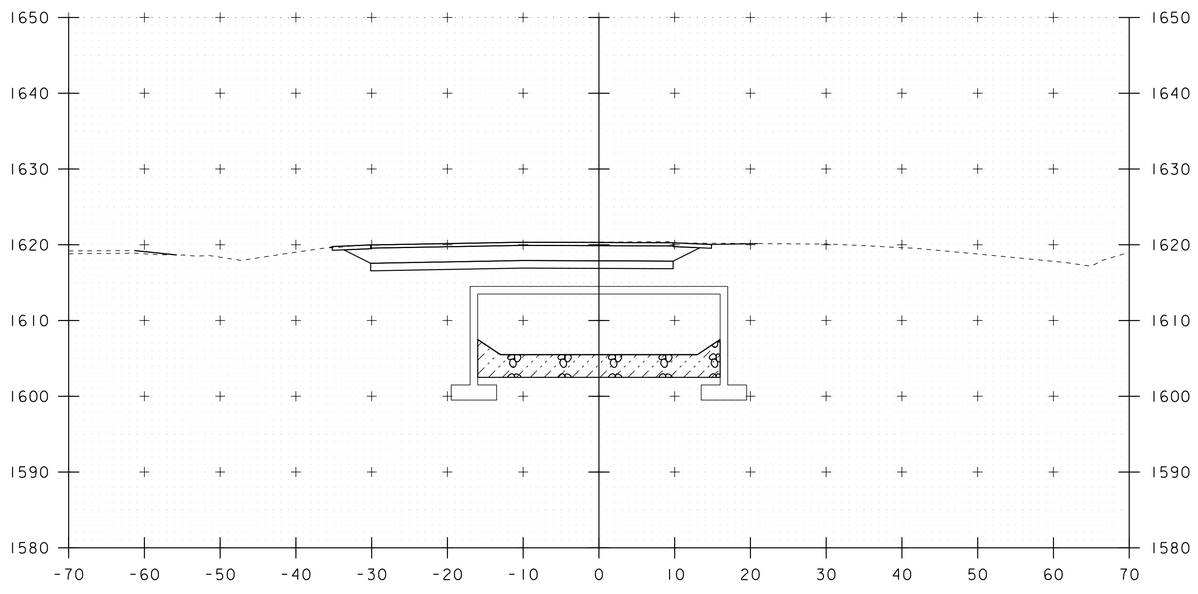
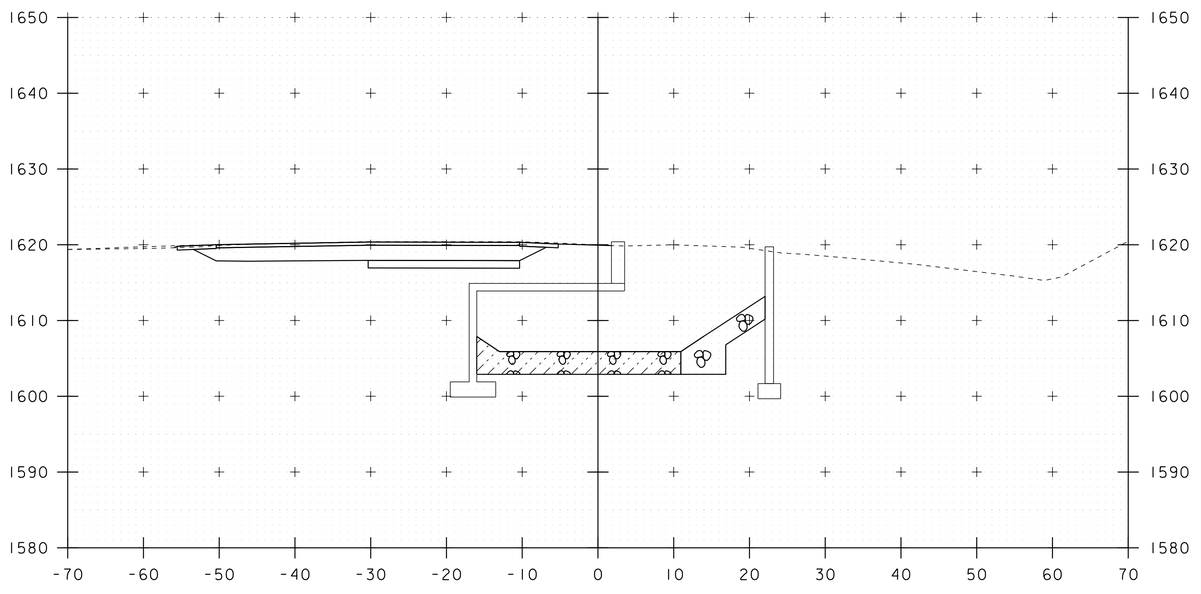


22+10

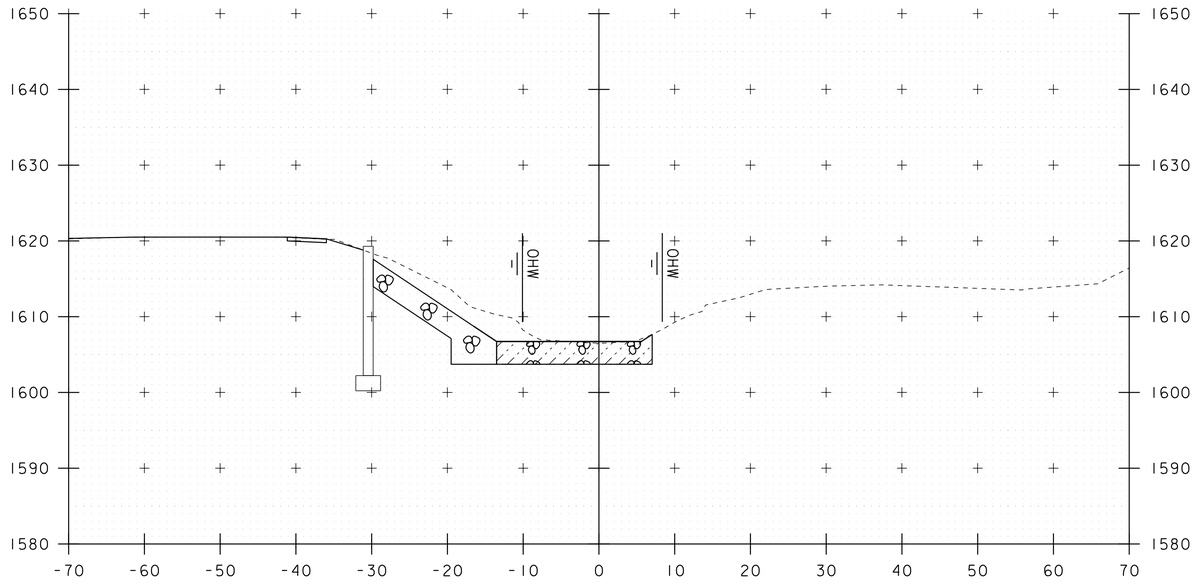


22+30

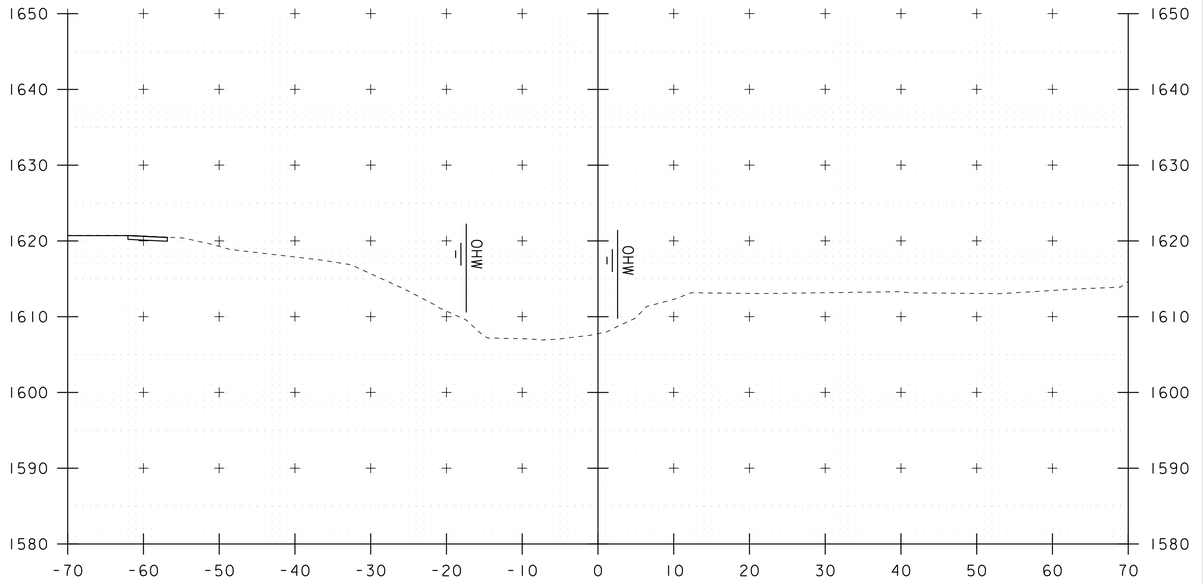
PROJECT NAME:	MT. HOLLY
PROJECT NUMBER:	BF 0133(12)

FILE NAME: sl2c594xs.dgn	PLOT DATE: 03-JUL-2019
PROJECT LEADER: R.YOUNG	DRAWN BY: R.PELLETT
DESIGNED BY: K.CHEVIOT	CHECKED BY: C.MOONEY
CHANNEL SECTIONS SHEET 4	SHEET 31 OF 32

STA. 22+10 TO STA. 22+40



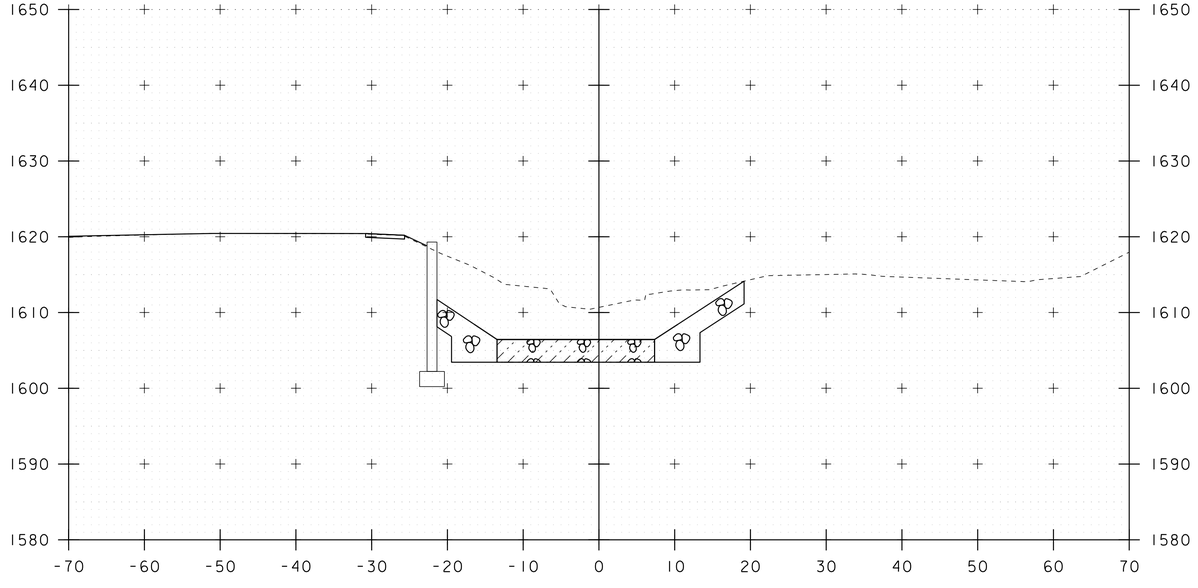
22+60



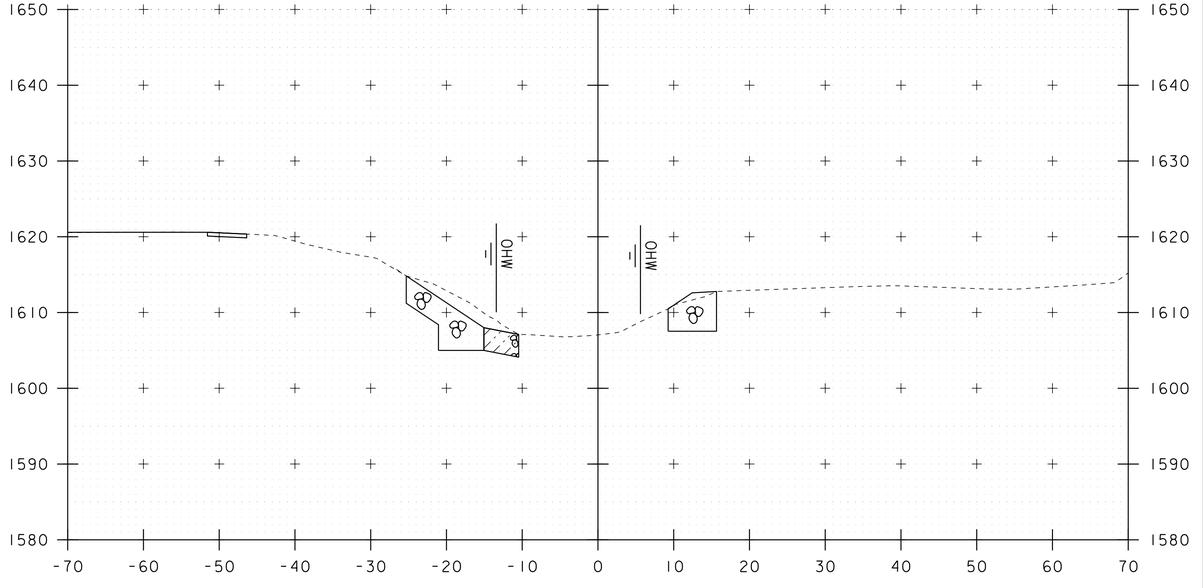
END 22+78 LT
UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL TYPE III
E-STONE FILL TYPE III
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL

22+80

END 21+78 RT
UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL TYPE III
E-STONE FILL TYPE III
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL



22+50



22+70

STA. 22+50 TO STA. 22+80

PROJECT NAME: MT. HOLLY
PROJECT NUMBER: BF 0133(12)

FILE NAME: sl2c594xs.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: K.CHEVIOT
CHANNEL SECTIONS SHEET 5

PLOT DATE: 03-JUL-2019
DRAWN BY: R.PELLETT
CHECKED BY: C.MOONEY
SHEET 32 OF 32