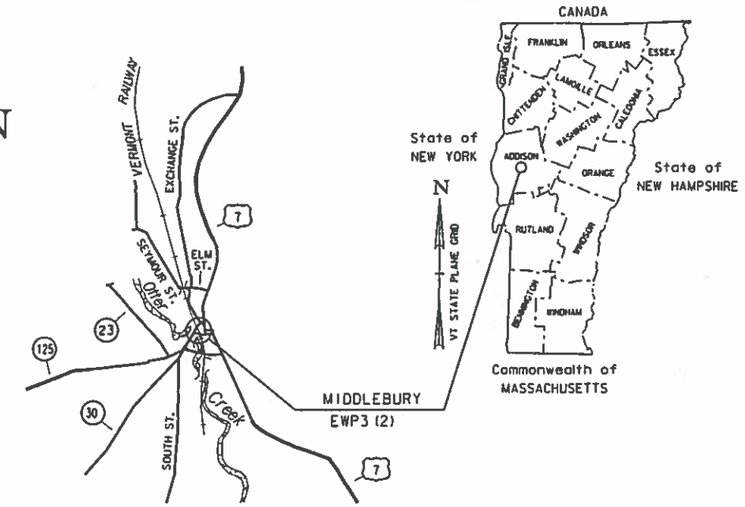
STATE OF VERMONT
AGENCY OF TRANSPORTATION



BRIDGE PROJECT

TOWN OF MIDDLEBURY
COUNTY OF ADDISON
MAIN ST (MINOR ARTERIAL), BRIDGE NO. 102 - MERCHANTS ROW (MINOR ARTERIAL), BRIDGE NO. 2
EWP3 (2)

PROJECT LOCATION: LOCATED IN THE COUNTY OF ADDISON, TOWN OF MIDDLEBURY, ON MAIN STREET (VT 30): BRIDGE NO. 102 OVER VERMONT RAILWAY, APPROXIMATELY 400 FT SOUTHWEST OF THE INTERSECTION OF MAIN STREET AND US ROUTE 7, AND ON MERCHANTS ROW (TH 8): BRIDGE NO. 2 OVER VERMONT RAILWAY, APPROXIMATELY 230 FT WEST OF THE INTERSECTION OF MERCHANTS ROW AND SOUTH PLEASANT STREET (TH 47).

PROJECT DESCRIPTION: WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES THE REMOVAL AND REPLACEMENT OF BRIDGE NO. 102 AND BRIDGE NO. 2 WITH A TUNNEL ALONG THE EXISTING RAILROAD ALIGNMENT, LOWERING OF TRACKS, CONSTRUCTION OF APPROACH RETAINING WALLS, AND ASSOCIATED ROADWAY AND UTILITY WORK.

EARLY WORK PACKAGE 2 LOCATION: TEMPORARY ACCESS ROAD LOCATION IS FROM WATER STREET TO APPROXIMATELY 200 FT SOUTHWEST OF MERCHANTS ROW. MICROTUNNELING LOCATION IS IN TRIANGLE PARK, THE FORMER LAZARUS BUILDING SITE, APPROXIMATELY 190 FT NORTH OF THE FORMER LAZARUS BUILDING SITE, AND WEST TO THE OTTER CREEK.

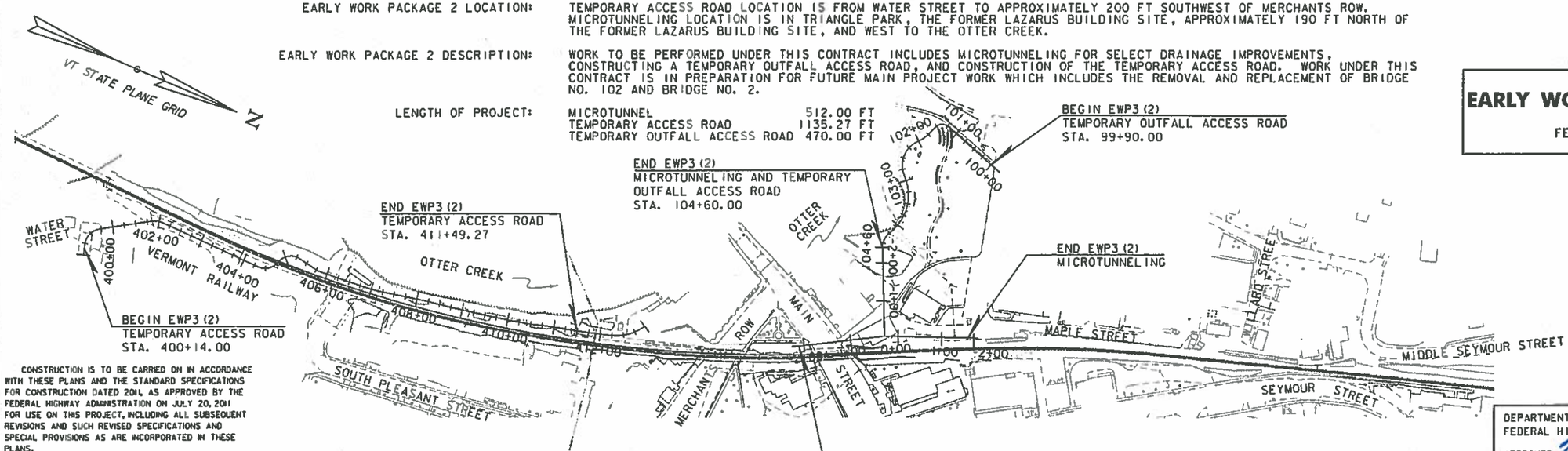
EARLY WORK PACKAGE 2 DESCRIPTION: WORK TO BE PERFORMED UNDER THIS CONTRACT INCLUDES MICROTUNNELING FOR SELECT DRAINAGE IMPROVEMENTS, CONSTRUCTING A TEMPORARY OUTFALL ACCESS ROAD, AND CONSTRUCTION OF THE TEMPORARY ACCESS ROAD. WORK UNDER THIS CONTRACT IS IN PREPARATION FOR FUTURE MAIN PROJECT WORK WHICH INCLUDES THE REMOVAL AND REPLACEMENT OF BRIDGE NO. 102 AND BRIDGE NO. 2.

LENGTH OF PROJECT:

MICROTUNNEL	512.00 FT
TEMPORARY ACCESS ROAD	1135.27 FT
TEMPORARY OUTFALL ACCESS ROAD	470.00 FT

EARLY WORK PACKAGE 2

FEBRUARY 2018



CONSTRUCTION IS TO BE CARRED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

120 0 120
SCALE IN FEET

QUALITY ASSURANCE PROGRAM : LEVEL 1	
SURVEYED BY :	VHB
SURVEYED DATE :	MAY 2013
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83

STATE OF VERMONT
JOHN PAUL JAMES
NO 9019
CIVIL
2/27/2018
PROFESSIONAL ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR
APPROVED _____ DATE 3/12/18

DIRECTOR OF PROJECT DELIVERY
APPROVED _____ DATE 2/28/2018

PROJECT MANAGER : KRISTIN HIGGINS

PROJECT NAME : MIDDLEBURY
PROJECT NUMBER : EWP3 (2)

SHEET 1 OF 135 SHEETS

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T-2	TRAFFIC SIGN GENERAL NOTES	04-25-2016
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013
T-56	STANDARD SIGN PLACEMENT	10-26-2015
D-15	PRECAST REINF CONC. MH-GRATES, CAST IRON GRATE WITH FRAME, TYPE D & E	06-01-1994

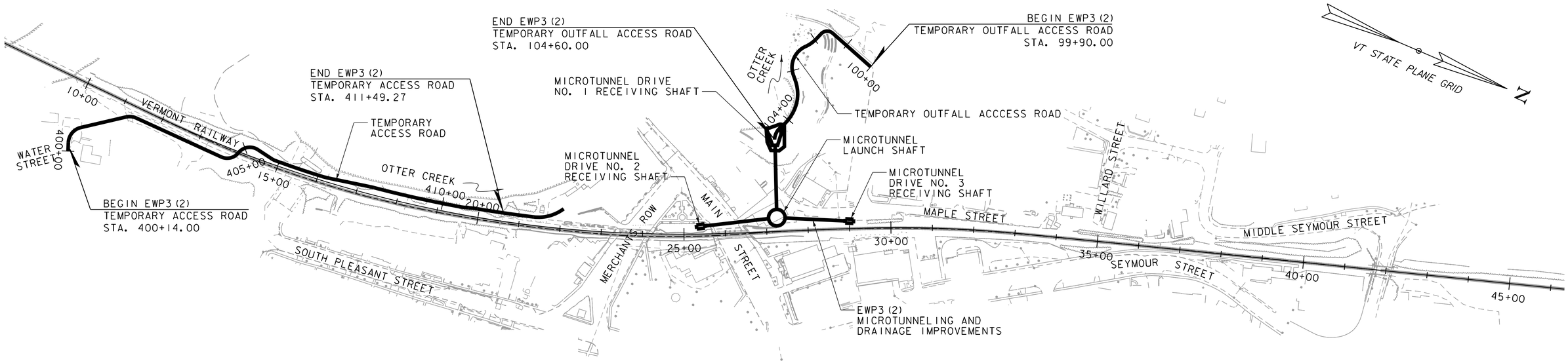
STRUCTURES DETAIL SHEETS

SD-501.00 CONCRETE DETAILS AND NOTES 2/9/2012

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046index.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: M.F. SUFFEL
INDEX OF SHEETS

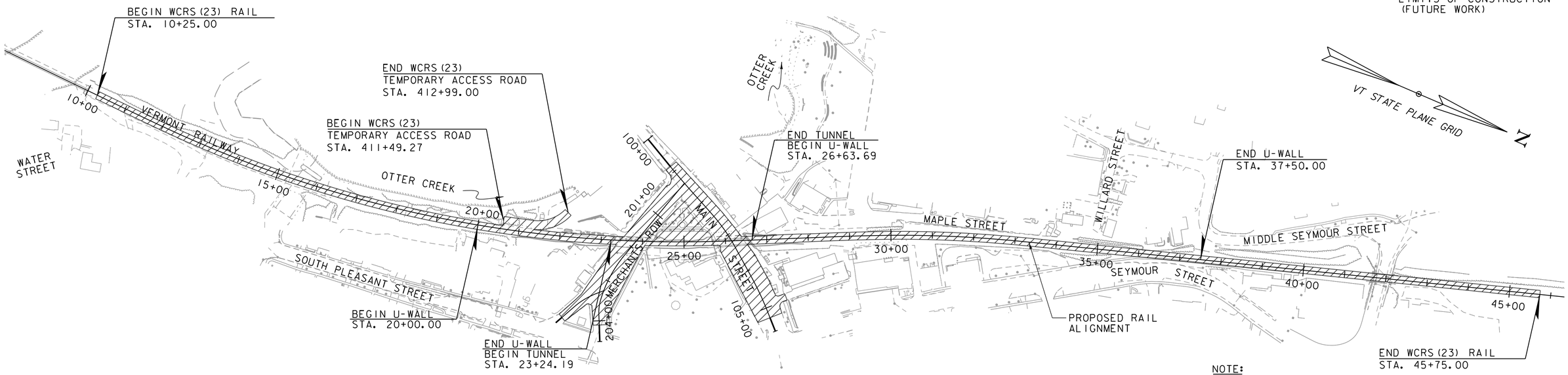
PLOT DATE: 2/27/2018
DRAWN BY: M.F. SUFFEL
CHECKED BY: M.E. OOMS
SHEET 2 OF 135



EWP3(2)

LEGEND

- APPROXIMATE EWP3(2) LIMITS OF CONSTRUCTION
- APPROXIMATE WCRS(23) LIMITS OF CONSTRUCTION (FUTURE WORK)



WCRS(23)

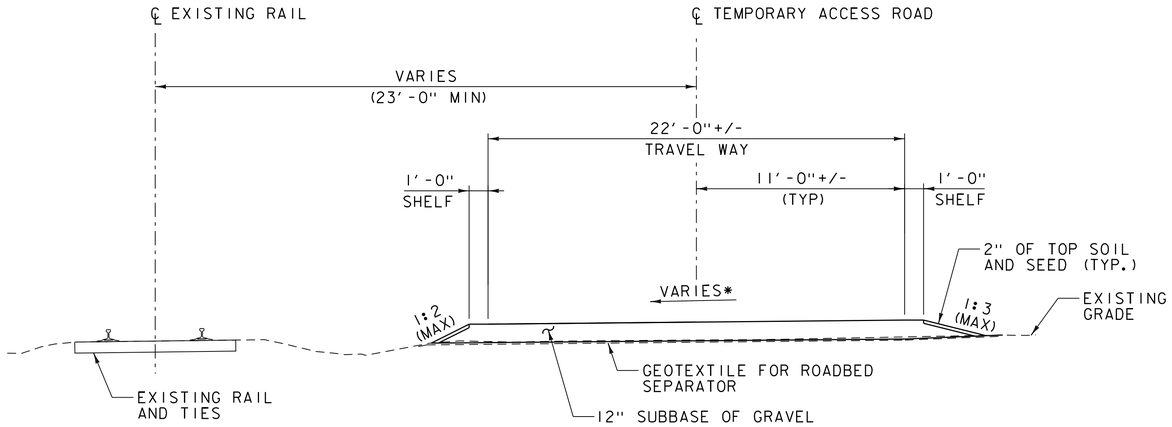
NOTE:

1. THIS PLAN SET DETAILS ALL WORK INCLUDED IN EWP3(2). WCRS(23) PLANS TO BE RELEASED AT A LATER DATE.

CONTRACT BREAKOUT

120 0 120
SCALE IN FEET

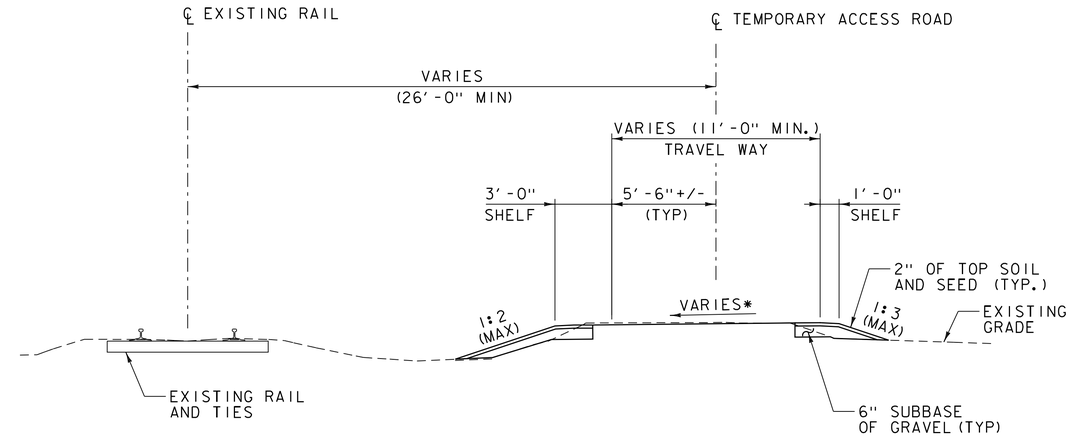
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046key_plan.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: M.F. SUFFEL	CHECKED BY: M.E. OOMS
CONTRACT BREAKOUT SHEET	SHEET 3 OF 135



* SEE CROSS SECTIONS

TYPICAL TEMPORARY ACCESS ROAD SECTION

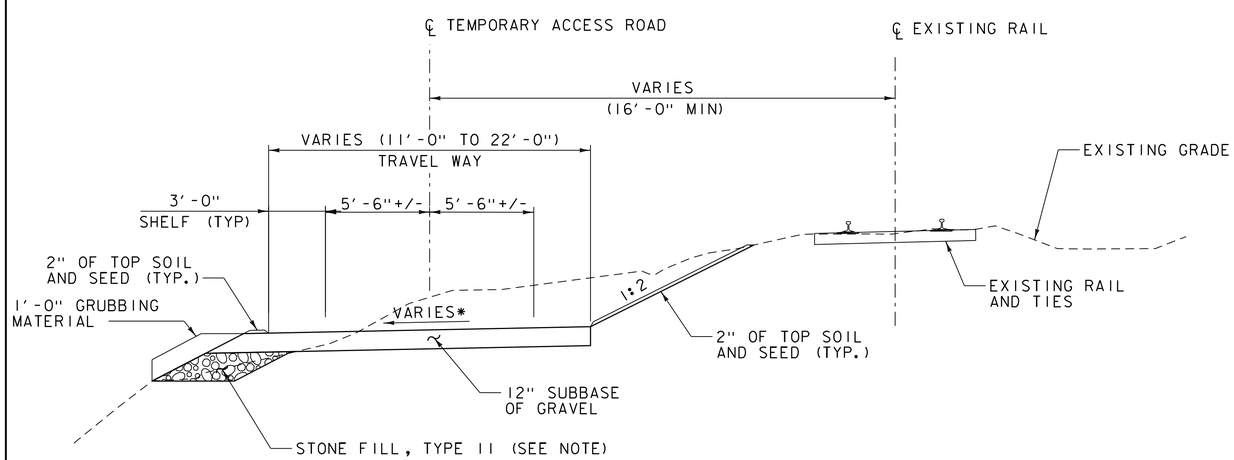
STA. 400+25 - 401+97
SCALE 1/4" = 1'-0"



* SEE CROSS SECTIONS

TYPICAL TEMPORARY ACCESS ROAD STEP BOX SECTION

STA. 401+97 - 404+82
SCALE 1/4" = 1'-0"



* SEE CROSS SECTIONS

TYPICAL TEMPORARY ACCESS ROAD SECTION

STA. 404+75 - 411+49
SCALE 1/4" = 1'-0"

NOTE: GEOTEXTILE UNDER STONE FILL IS NOT USED UNDER STONE FILL, TYPE II AT THE TEMPORARY ACCESS ROAD.

MATERIAL TOLERANCES

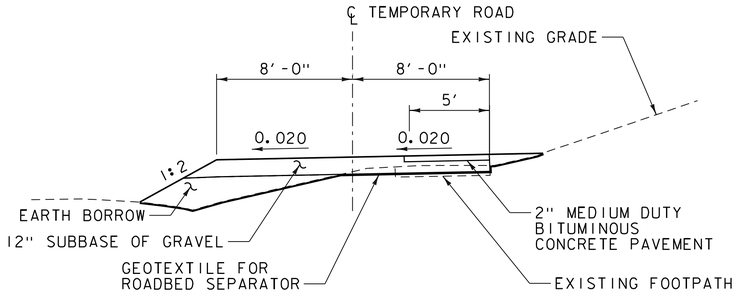
(IF USED ON PROJECT)

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

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

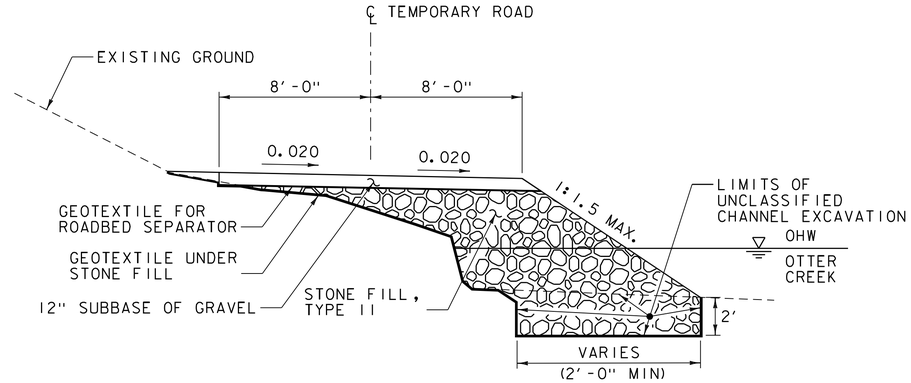
FILE NAME: zl6b046typ.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: K.C. BARRY
TYPICAL SECTIONS (1 OF 2)

PLOT DATE: 2/27/2018
DRAWN BY: K.C. BARRY
CHECKED BY: M.E. OOMS
SHEET 4 OF 135



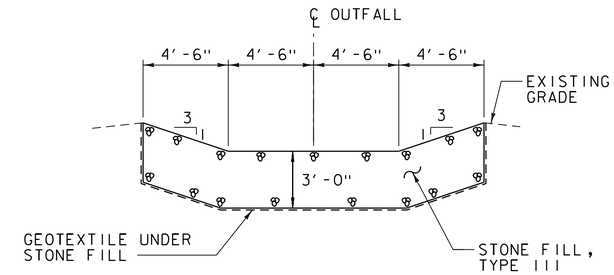
TEMPORARY OUTFALL ACCESS ROAD SECTION

STA. 100+00 - 101+28
NOT TO SCALE



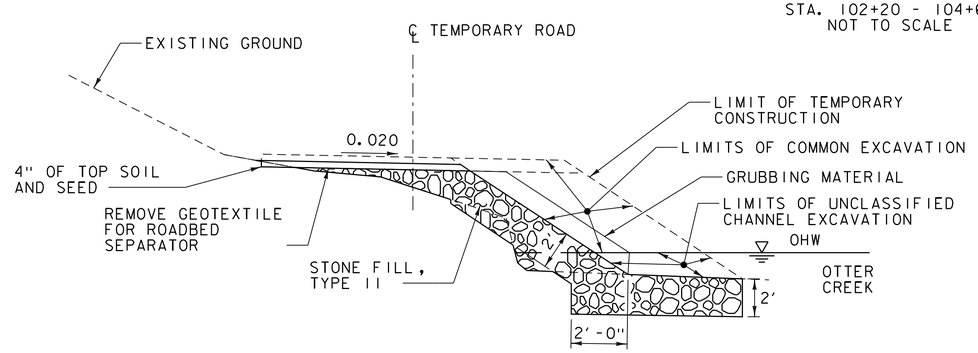
TEMPORARY OUTFALL ACCESS ROAD SECTION

STA. 102+20 - 104+60
NOT TO SCALE



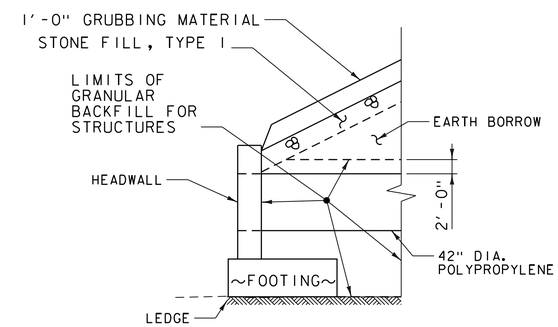
OUTFALL DRAINAGE APRON TYPICAL SECTION

NOT TO SCALE



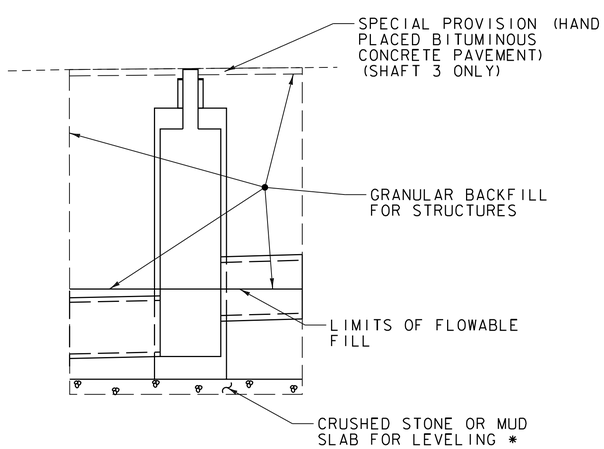
TEMPORARY OUTFALL ACCESS ROAD PERMANENT CONDITION SECTION

STA. 102+20 - 104+60
NOT TO SCALE



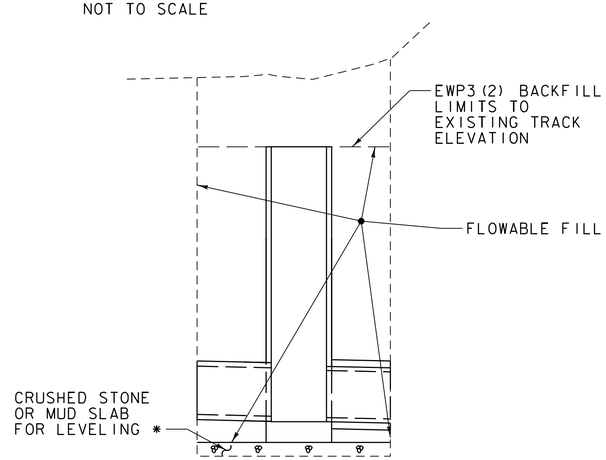
HEADWALL EARTHWORKS TYPICAL SECTION

NOT TO SCALE



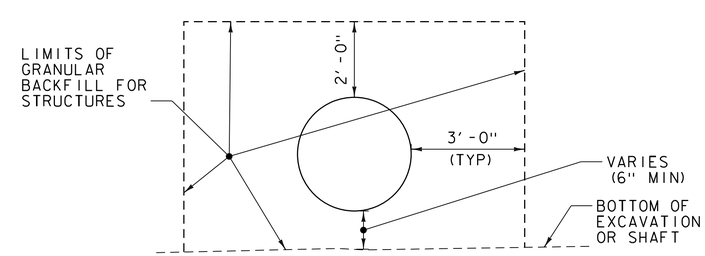
TYPICAL LAUNCH SHAFT AND SHAFT 3 EARTHWORK SECTION

NOT TO SCALE



TYPICAL SHAFT 2 EARTHWORK SECTION

NOT TO SCALE



TYPICAL PIPE EARTHWORK SECTION

NOT TO SCALE

NOTE: FLOWABLE FILL SHALL BE PLACED HALFWAY UP THE SIDE OF THE HIGHEST ELEVATION PIPE WITHIN THE LAUNCH SHAFT

MATERIAL TOLERANCES

(IF USED ON PROJECT)

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

* ALL COSTS ASSOCIATED WITH PLACEMENT OF CRUSHED STONE OR MUD SLAB FOR LEVELING SHALL BE INCIDENTAL TO THE CORRESPONDING LAUNCH SHAFT OR RECEIVING SHAFT ITEM.

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: zl6b046typ.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: D.M. PECK
TYPICAL SECTIONS (2 OF 2)

PLOT DATE: 2/27/2018
DRAWN BY: D.M. PECK
CHECKED BY: S.E. BURBANK
SHEET 5 OF 135

PROJECT NOTES

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION (AREMA) MANUAL FOR RAILWAY ENGINEERING, 2013 AND ITS LATEST REVISIONS, THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION, AND ITS LATEST REVISIONS.

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

3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL BURIED AND AERIAL UTILITIES AND POLES PRIOR TO STARTING THE WORK. SOME UTILITIES HAVE BEEN RELOCATED DURING THE PREPARATION OF THESE PLANS AND THE CONTRACTOR WILL NEED TO COORDINATE WITH ALL UTILITY OWNERS TO CONFIRM ACTUAL LOCATIONS PRIOR TO CONSTRUCTION.

4. ALL ITEMS LISTED AS WCRS(23) ARE NOT A PART OF THIS CONTRACT AND WILL BE INSTALLED AND PAID FOR UNDER WCRS(23).

5. THERE IS BURIED UTILITY INFRASTRUCTURE IN THE VICINITY OF STA. 5+25 THROUGH STA. 10+50 FOR FIBER OPTICS, HOWEVER FIBER HAS BEEN DECOMMISSIONED AND REMOVED.

6. AS PART OF THE REQUIREMENTS FOR COMPLYING WITH OSHA, CONTRACTOR SHALL MAKE SURE THERE IS ADEQUATE FALL PROTECTION TIE OFFS.

TRAFFIC CONTROL

7. THE TRAFFIC CONTROL PLANS (TCP) PROVIDED IN THIS PLAN SET ALONG WITH THE TRANSPORTATION MANAGEMENT PLAN (TMP) SHALL BE USED BY THE CONTRACTOR FOR THEIR TRAFFIC CONTROL FOR ALL STAGES OF CONSTRUCTION.

8. FULL ACCESS TO ALL DRIVES WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES WITH THE EXCEPTION OF PRINTERS ALLEY WHICH SHALL BE CLOSED TO ALL VEHICLES IN ACCORDANCE WITH THE TRAFFIC CONTROL PLAN (TCP) AND TRAFFIC MANAGEMENT PLAN (TMP). THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT WILL BE CONSIDERED INCIDENTAL TO ITEM 641.10, "TRAFFIC CONTROL".

9. UNLESS COVERED UNDER INDIVIDUAL PAY ITEMS OR NOTED OTHERWISE, ALL COSTS FOR TEMPORARY TRAFFIC CONTROL DEVICES WILL BE PAID FOR UNDER THE CONTRACT LUMP SUM PRICE FOR ITEM 641.10, "TRAFFIC CONTROL". THIS INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING ITEMS:

   RETROREFLECTIVE DRUMS & CONES
   BARRICADES
   SIGNS
   SIGN POSTS
   INSTALLATION OF SIGNS AND SIGN POSTS
   LIGHTING TOWERS

10. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS AND MARKINGS" BOOK (SHSM) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).

11. FLAGGERS ARE TO BE USED ON THE TEMPORARY OUTFALL ACCESS ROAD TO CONTROL PEDESTRIAN ACCESS TO THE ROAD AND THE PAVED PATH WHEN THE CONTRACTOR IS DRIVING VEHICLES ALONG THE ACCESS ROAD (NO PLANS PROVIDED).

12. FLAGGERS ARE TO BE USED FOR CONTRACTOR'S OPERATIONS INTO AND OUT OF TRIANGLE PARK AT MAIN STREET AND FOR MAIN STREET LANE CLOSURES REQUIRING ALTERNATING ONE-WAY OPERATIONS BETWEEN THE INTERSECTION WITH MERCHANTS ROW AND THE POST OFFICE CROSSWALK.

13. FLAGGERS ARE TO BE USED FOR MANAGING ACCESS TO THE REAR PARKING AREA AT THE NATIONAL BANK OF MIDDLEBURY DURING CONSTRUCTION OPERATIONS NEAR MAPLE ST AND PRINTERS ALLEY.

14. CONTRACTOR MAY SWING THE TEMPORARY BARRIER OPEN AT PRINTERS ALLEY WITH USE OF A FLAGGER TO ALLOW TRUCKS TO ENTER AND EXIT.

15. FLAGGERS SHALL BE PAID FOR UNDER ITEM 630.15.

EARTHWORK

16. EXCAVATION OF EXISTING GROUND WILL BE PAID FOR UNDER THE APPROPRIATE EXCAVATION ITEM OR WILL BE INCIDENTAL TO THE APPROPRIATE SPECIAL PROVISION.

17. THE INITIAL COST OF EXCAVATION AND STOCKPILING OF CONTAMINATED SOILS WILL BE PAID FOR UNDER THE APPROPRIATE CONTRACT EXCAVATION ITEMS.

18. ALL COSTS FOR REMOVAL AND DISPOSAL OF CONTAMINATED SOILS FROM STOCKPILE AREA SHALL BE INCLUDED IN THE UNIT BID PRICE FOR CONTRACT ITEM 900.608, "SPECIAL PROVISION (MANAGEMENT AND DISPOSAL OF CONTAMINATED SOILS)".

19. ANY WASTE MATERIAL THAT WILL BE TAKEN OFF SITE SHALL BE REMOVED AND HAULED TO AN APPROVED FACILITY IN ACCORDANCE WITH THE CORRECTIVE ACTION PLAN.

20. IN THE EVENT GROSS CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE ENGINEER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.

21. ALL PROJECT SOIL EXCAVATION AND HANDLING SHALL BE COMPLETED IN ACCORDANCE WITH THE CORRECTIVE ACTION PLAN FOR EWP3(2) OF THE MIDDLEBURY WCRS(23) BRIDGE PROJECT.

22. THE CONTRACTOR SHALL HIRE A QUALIFIED ENVIRONMENTAL PROFESSIONAL, KNOWN AS THE ENVIRONMENTAL MANAGER, WHO SHALL MONITOR CONTAMINATION DURING EXCAVATION ACTIVITIES AND GROUNDWATER DISCHARGE ACTIVITIES, IN ACCORDANCE WITH THE CORRECTIVE ACTION PLAN. THE ENVIRONMENTAL MANAGER SHALL ENSURE THAT THE CORRECTIVE ACTION PLAN IS FOLLOWED THROUGHOUT CONSTRUCTION AND THAT PROPER NOTIFICATIONS TO THE VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION ("VT DEC") WASTE MANAGEMENT AND PREVENTION DIVISION ("WMPD") ARE COMPLETED. SPECIFICALLY, THE ENVIRONMENTAL MANAGER WILL BE RESPONSIBLE FOR PROVIDING WEEKLY UPDATES TO THE VT DEC WMPD OF THE MANAGEMENT OF SOIL AND GROUNDWATER, AND SHALL SUBMIT A REPORT TO THE VT DEC WMPD AFTER CONSTRUCTION IS COMPLETE RELATING TO THE MANAGEMENT AND DISPOSAL OF CONTAMINATED SOIL AND THE MANAGEMENT AND DISPOSAL OF GROUNDWATER. ALL COSTS ASSOCIATED WITH HIRING AND PAYING FOR THE ENVIRONMENTAL MANAGER WILL BE INCIDENTAL TO ALL EXCAVATION ITEMS.

23. ALL FINAL GRADES SHALL BE CAPPED WITH IMPERVIOUS SURFACES OR AT LEAST 6 INCHES OF CLEAN FILL SOURCED FROM OFF-SITE AND STABILIZED. BACKFILLING OF MATERIAL IS ALLOWABLE SO LONG AS IT IS RETURNED AS CLOSE TO ITS EXCAVATION AREA AS POSSIBLE.

24. IF AN OFF-SITE STOCKPILE IS NEEDED, THEN THIS SHALL BE COORDINATED WITH THE VT DEC WASTE MANAGEMENT AND PREVENTION DIVISION AND THE VT DEC SOLID WASTE DIVISION. THE STOCKPILE SHALL COMPLY WITH APPROPRIATE SETBACK DISTANCES, AND WILL AT A MINIMUM REQUIRE EROSION CONTROL.

25. MONITORING WELLS TO BE REMOVED AS SHOWN ON THE TEMPORARY ACCESS ROAD LAYOUT SHEETS SHALL BE REMOVED IN ACCORDANCE WITH THE SPECIAL PROVISION. MONITORING WELLS WITHIN THE TEMPORARY ACCESS ROAD LIMITS OF DISTURBANCE SHALL BE REMOVED PRIOR TO EWP3(2) EARTHWORK. ALL REMAINING WELLS SHALL BE REMOVED PRIOR TO COMPLETION OF EWP3(2).

TEMPORARY ACCESS ROAD

26. THE DESIGN VEHICLE FOR THE TEMPORARY ACCESS ROAD IS THE MIDDLEBURY FIRE DEPARTMENT LADDER TRUCK.

27. ALL MATERIALS USED FOR THE TEMPORARY ACCESS ROAD ARE TO REMAIN IN PLACE AFTER THE EWP3(2) WORK IS COMPLETED.

28. PAYMENT FOR MOVEMENT AND/OR RESETTINGOF TEMPORARY TRAFFIC BARRIER SHALL BE CONSIDERED INCIDENTAL TO ITEM 621.90, "TEMPORARY TRAFFIC BARRIER".

CONCRETE

29. CONCRETE FOR THE HEADWALL SHALL BE ITEM 501.34, "CONCRETE, HIGH PERFORMANCE CLASS B".

30. MINIMUM COVER FOR REINFORCING SHALL BE 2" ALONG THE BACK FACES OF WALLS AGAINST EARTH AND 3" ELSEWHERE, UNLESS OTHERWISE NOTED.

31. ITEM 514.10, "WATER REPELLENT, SILANE", SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES.

32. ALL REINFORCEMENT SHALL MEET THE REQUIREMENTS OF LEVEL I EPOXY COATED REINFORCING STEEL IN ACCORDANCE WITH SECTION 507.

RAILROAD

33. THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT CONTINUOUS COORDINATION WITH THE OPERATOR, VTR, WILL BE REQUIRED THROUGHOUT CONSTRUCTION. VTR WILL PROVIDE THE CONTRACTOR WITH FLAGGERS FOR PROTECTION OF RAILROAD TRAFFIC WHILE WORK IS BEING PERFORMED WITHIN THE RAILROAD RIGHT OF WAY (R.O.W.). THE CONTRACTOR SHALL NOT ENTER THE R.O.W. AT ANY TIME WITHOUT VTR AUTHORIZATION. ALL COSTS FOR RAILROAD FLAGGER PROTECTION WILL BE PAID FOR UNDER ITEM 900.615, "SPECIAL PROVISION (MAINTENANCE OF RAILROAD TRAFFIC)(N.A.B.I.)". SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

34. ALL WORK WITHIN THE RAILROAD R.O.W. SHALL BE PERFORMED DURING THE TIME SEGMENTS IN THE CONTRACT DOCUMENTS. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

35. A TEMPORARY RAILROAD CROSSING SHALL BE CONSTRUCTED BY THE CONTRACTOR WHERE THE TEMPORARY ACCESS ROAD CROSSES THE VTR TRACK. THE TEMPORARY CROSSING SHALL BE CONSTRUCTED TO PREVENT DAMAGE TO THE RAILROAD INFRASTRUCTURE DURING CONSTRUCTION OPERATIONS AND SHALL BE IN ACCORDANCE WITH VTR'S REQUIREMENTS. THE TEMPORARY CROSSING WILL BE PAID FOR UNDER ITEM 641.10 "TRAFFIC CONTROL".

MICROTUNNELING AND SUPPORT OF EXCAVATION

36. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF SHAFT EXCAVATION SUPPORT THAT IS IN COMPLIANCE WITH THE CONTRACT SPECIFICATIONS AND COMPATIBLE WITH THEIR SELECTED EQUIPMENT, MEANS, AND METHODS.

37. THE INTERNAL LIMITS OF EXCAVATION SHOWN ON THE DRAWINGS ARE APPROXIMATE DIMENSIONS REQUIRED TO INSTALL AND RETRIEVE THE TUNNELING EQUIPMENT THAT IS ANTICIPATED FOR THIS CONSTRUCTION. THE FINAL INTERNAL LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR AND SUBJECT TO APPROVAL BY THE ENGINEER.

38. SEE GEOTECHNICAL DATA REPORT AND BORINGS FOR THE BEDROCK LOCATION AND ANTICIPATED GROUND AND GROUNDWATER CONDITIONS.

39. THE CONTRACTOR SHALL DESIGN THE SHAFT SUPPORT OF EXCAVATION SYSTEMS TO ACCOMMODATE THE MAXIMUM ANTICIPATED CONSTRUCTION OR LIVE LOAD SURCHARGE.

40. SUPPORT OF EXCAVATION FOR RECEIVING SHAFT 2 IS TEMPORARY, BUT IS TO BE LEFT IN PLACE AT THE COMPLETION OF EWP3(2).

41. MINIPILES SHOWN AT RECEIVING SHAFT 3 ARE INTENDED TO BE UTILIZED FOR BOTH EWP3(2) AND WCRS(23) CONTRACTS. MINIPILES ARE SHOWN ONLY IN THIS LOCATION DUE TO THE CRITICAL NATURE OF THEIR LOCATION FOR USE IN BOTH CONTRACT EWP3(2) AND WCRS(23). IT IS ANTICIPATED THAT MINIPILES WILL BE USED AT THE OTHER SHAFTS BUT ARE NOT SHOWN. THE CONCTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE MINIPILES.

42. MINIPILES TO BE INSTALLED AHEAD OF THE UTILITY VAULTS AND CUT OFF AS NEEDED TO COORDINATE WITH UTILITIES.

43. WITHIN THE MICROTUNNELING LAUNCH SHAFT, RECEIVING SHAFT 2 AND 3, 60" STEEL CASING PIPE SHALL EXTEND AS CLOSE AS POSSIBLE TO THE MANHOLE. ANNULAR SPACE AND TERMINATION AT MANHOLE SHALL BE GROUTED TO PROTECT POLYPROPYNE CARRIER PIPE. THE COST FOR THIS WORK SHALL BE INCIDENTAL TO ITEM 900.640 "SPECIAL PROVISION (PRODUCT PIPE)".

TEMPORARY OUTFALL ACCESS ROAD

44. THE CONTRACTOR SHALL CONSTRUCT A TEMPORARY ACCESS ROAD TO THE PROPOSED NEW OUTFALL LOCATION INTO OTTER CREEK.

45. CONSTRUCTION OF THE TEMPORARY OUTFALL ACCESS ROAD IS NOT INTENDED TO INCLUDE EXCAVATION OF SOILS, BUT RATHER PLACEMENT OF GEOTEXTILE THEN MATERIAL ON TOP OF EXISTING GRADE.

46. ALL EXISTING LANDSCAPING AND PARK FEATURES INTERFERING WITH CONSTRUCTION SHALL BE REMOVED AND STOCKPILED FOR REINSTALLATION. REMOVAL, STOCKPILE, AND REINSTALLATION OF THESE ITEMS WILL BE CONSIDERED INCIDENTAL TO ALL OTHER TEMPORARY OUTFALL ACCESS ROAD ITEMS.

UTILITIES

47. THIS PROJECT INVOLVES RELOCATION OF AERIAL AND UNDERGROUND POWER, CABLE AND TELECOMMUNICATION UTILITIES.

48. ALL AERIAL RELOCATIONS INCLUDING SETTING NEW POLES AND GUY WIRES WILL BE PERFORMED BY THE UTILITY COMPANIES. NEW UTILITY POLES WILL BE SET BY GREEN MOUNTAIN POWER (GMP).

49. UNDERGROUND RELOCATIONS WILL ALSO BE PERFORMED BY THE UTILITY COMPANIES BUT WITH ASSISTANCE FROM THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL EQUIPMENT INSTALLED MEETS THE UTILITY COMPANY MATERIAL AND CONSTRUCTION SPECIFICATIONS.

50. THE UTILITY COMPANIES WILL REMOVE AND DISPOSE OF EXISTING AERIAL POLES, GUY WIRES, LINES AND OTHER AERIAL UTILITY APPURTENANCES THAT ARE MADE OBSOLETE BY THE NEW AERIAL OR UNDERGROUND UTILITY INFRASTRUCTURE.

51. CONTRACTOR SHALL REFER TO UTILITY SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

52. CONTRACTOR TO NOTIFY UTILITY COMPANY REPRESENTATIVES FOR INSPECTION OF CONSTRUCTION PER UTILITY SPECIAL PROVISION.

53. UTILITY DUCT LAYOUTS SHOWN ON THE PLANS ARE SCHEMATIC AND ARE INTENDED TO IDENTIFY DESIRED DUCT ROUTES AND POTENTIAL CONFLICTS. LOCATIONS PROPOSED ON THE PLANS ARE APPROXIMATE. HORIZONTAL AND VERTICAL DUCT LOCATIONS SHALL BE REVIEWED IN THE FIELD AND ADJUSTED AS NECESSARY IF APPROVED BY THE ENGINEER. FINAL LOCATIONS SHALL BE MARKED IN THE FIELD AND APPROVED BY THE ENGINEER AND THE UTILITY COMPANY REPRESENTATIVE RESPONSIBLE FOR CONSTRUCTION OVERSIGHT PRIOR TO INSTALLATION.

54. CONTRACTOR TO PROVIDE ALL CONDUIT FOR ELECTRICAL RISERS TO EXTEND UP THE SIDE OF THE UTILITY POLES. CONDUIT SHALL BE PROVIDED TO THE ELECTRICAL UTILITY COMPANY FOR THEIR USE. PAYMENT FOR CONDUIT RISERS WILL BE MADE UNDER ITEMS 678.21 “ELECTRICAL CONDUIT (3” SUPPLY ONLY)”, 678.21 “ELECTRICAL CONDUIT (4” SUPPLY ONLY)” AND 678.21 “ELECTRICAL CONDUIT (6” SUPPLY ONLY)”.

55. UNLESS IDENTIFIED AS A CONCRETE ENCASED DUCT BANK IN THE PLANS, CONDUITS WILL BE PAID FOR UNDER 678.21, ELECTRICAL CONDUIT. PAYMENT WILL BE FULL COMPENSATION FOR ALL FURNISHING, TRANSPORTING, HANDLING, AND INSTALLING THE MATERIAL SPECIFIED, INCLUDING EXCAVATION, BACKFILL, HARDWARE, SAWCUTTING PAVEMENT, AND FOR ALL LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

56. CONCRETE ENCASED DUCT BANKS WILL BE PAID FOR UNDER ITEM 900.640, SPECIAL PROVISION (CONCRETE ENCASED DUCT BANK, 1-4 DUCTS). PAYMENT WILL BE FULL COMPENSATION FOR ALL FURNISHING, TRANSPORTING, HANDLING, AND INSTALLING THE MATERIAL SPECIFIED, INCLUDING EXCAVATION, BACKFILL, CONCRETE, HARDWARE, SAWCUTTING PAVEMENT, AND FOR ALL LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

57. IN ACCORDANCE WITH SECTION 678, THE CONTRACTOR SHALL INSTALL PULL CORDS IN ALL CONDUITS WITH 5 KIPS MINIMUM PULL STRENGTH WITH AT LEAST ONE DUCT CONTAINING A MEASURING TAPE TO EACH POLE/PEDESTAL LOCATION.

58. WHERE INSTALLATION OF UTILITY CONDUITS WILL RESULT IN EXCAVATION THROUGH A PAVED AREA, SAWCUTTING AND EXCAVATION OF THE PAVEMENT WILL BE PAID FOR UNDER THE RESPECTIVE CONDUIT ITEM. NEW PAVEMENT THAT IS PLACED OVER THE TRENCH AFTER CONDUIT INSTALLATION, WILL BE PAID FOR UNDER ITEM 900.675, SPECIAL PROVISION (HAND-PLACED BITUMINOUS CONCRETE MATERIAL, HAND-PLACED).

59. GMP IS THE ELECTRICAL UTILITY WITHIN THE PROJECT LIMITS. ALL ELECTRICAL UTILITY WORK COMPLETED BY THE CONTRACTOR SHALL BE PERFORMED IN ACCORDANCE WITH GMP CONSTRUCTION SPECIFICATIONS AND TO THE SATISFACTION OF GMP. GMP WILL HAVE ON-SITE REPRESENTATION TO INSPECT THE INSTALLATIONS PERFORMED BY THE CONTRACTOR.

60. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL UNDERGROUND DUCTS INCLUDING CONCRETE ENCASEMENT, VAULTS, PAD AND TERMINATION CABINETS FOR TRANSFORMERS, AND PULL BOXES EXCEPT SINGLE PHASE TRANSFORMER PADS SHOWN ON THE PLANS AND REQUIRED BY THE UTILITY COMPANY.

61. THE CONTRACTOR SHALL INSTALL SWEEPS FOR UTILITY POLE RISERS ADJACENT TO THE UTILITY POLE IN A LOCATION AGREED UPON BY THE ENGINEER AND GMP. SWEEPS SHALL NOT BE INSTALLED UNTIL NEW POLES HAVE BEEN SET BY GMP. THE SWEEPS SHALL BE TEMPORARILY CAPPED UNTIL SUCH TIME GMP BEGINS THEIR RELOCATION WORK. RISERS WILL GENERALLY BE INSTALLED ON THE SIDE OF THE POLE OPPOSITE THE DIRECTION OF TRAFFIC.

62. GMP WILL INSTALL FROST SLEEVES, RISERS, STAND-OFF BRACKETS AND ANY OTHER INCIDENTALS ABOVE THE SWEEP REQUIRED FOR COMPLETE UNDERGROUND TO AERIAL TRANSITION.

63. GMP WILL SUPPLY AND INSTALL TRANSFORMERS AND TRANSFORMER CABINETS AND PULL ALL CONDUCTOR THROUGH THE DUCTS FROM UTILITY POLES, TRANSFORMERS OR PEDESTALS. GMP WILL SUPPLY SINGLE PHASE TRANSFORMER PADS AND SECONDARY PEDESTALS.

64. FAIRPOINT, COMCAST, FIRST LIGHT, AND LEVEL 3 ARE THE CABLE AND TELECOMMUNICATIONS COMPANIES WITHIN THE PROJECT LIMITS. ALL UTILITY WORK COMPLETED BY THE CONTRACTOR SHALL BE PERFORMED IN ACCORDANCE WITH UTILITY CONSTRUCTION SPECIFICATIONS AND TO THE SATISFACTION OF EACH RESPECTIVE CABLE AND TELECOMMUNICATIONS UTILITY. THE UTILITIES WILL HAVE ON -SITE REPRESENTATION TO INSPECT THE INSTALLATIONS PERFORMED BY THE CONTRACTOR.

65. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL UNDERGROUND DUCTS INCLUDING CONCRETE ENCASEMENT, VAULTS, AND FLUSH MOUNTED PULL BOXES SHOWN ON THE PLANS AND REQUIRED BY THE CABLE AND TELECOMMUNICATIONS UTILITIES.

66. THE CONTRACTOR SHALL INSTALL SWEEPS FOR UTILITY POLE RISERS ADJACENT TO THE UTILITY POLE IN A LOCATION AGREED UPON BY THE ENGINEER AND THE CABLE AND TELECOMMUNICATIONS UTILITIES. SWEEPS SHALL NOT BE INSTALLED UNTIL NEW POLES HAVE BEEN SET BY GMP. THE SWEEPS SHALL BE TEMPORARILY CAPPED UNTIL SUCH TIME THE UTILITIES BEGIN THEIR RELOCATION WORK. RISERS ARE TO GENERALLY BE INSTALLED ON THE SIDE OF THE POLE OPPOSITE THE DIRECTION OF TRAFFIC.

67. THE CABLE AND COMMUNICATIONS COMPANIES WILL INSTALL FROST SLEEVES, RISERS, STAND-OFF BRACKETS, AND ANY OTHER INCIDENTALS ABOVE THE SWEEP REQUIRED FOR COMPLETE UNDERGROUND TO AERIAL TRANSITION.

68. CABLE AND TELECOMMUNICATIONS UTILITIES WILL PULL ALL CABLES THROUGH THE DUCTS FROM THE POLES TO THE PULL BOXES AND FROM THE PULL BOXES TO THE BUILDING SERVICE CONNECTIONS. THE UTILITIES WILL DISCONNECT EXISTING SERVICES AND MAKE ALL NECESSARY CONNECTIONS REQUIRED TO RESTORE SERVICE.

69. CABLE AND TELECOMMUNICATIONS UTILITIES WILL PROVIDE ALL LABOR AND MATERIALS REQUIRED ABOVE THE SWEEP ON UTILITY POLES FOR COMPLETE UNDERGROUND TO AERIAL INSTALLATION.

MAINTENANCE OF TEMPORARY BRIDGES

70. TEMPORARY BRIDGES WERE INSTALLED UNDER THE CONSTRUCTION CONTRACT FOR MIDDLEBURY EWP3(1). IT IS ANTICIPATED THAT MAINTENANCE OF THOSE BRIDGE WILL BE REQUIRED TO KEEP THEM FUNCTIONING AND PERFORMING IN A SATISFACTORY MANNER. AS MAINTENACE NEEDS ARE IDENTIFIED, THE ENGINEER WILL NOTIFY THE CONTRACTOR OF THE NEEDS AND REQUEST A WORKPLAN FROM THE CONTRACTOR TO COMPLETE THE NEEDED MAINTENANCE.

71. ALL MAINTENANCE ACTIVITIES WILL BE PAID FOR UNDER ITEM 900.615, SPECIAL PROVISION (MAINTENANCE OF TEMPORARY BRIDGES) (N.A.B.I.).

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES					TOTALS		DESCRIPTIONS			
ROADWAY	EROSION CONTROL	UTILITIES	RAILROAD ITEMS	CONTINGENCY ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
1					1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	
2300					2300		CY	COMMON EXCAVATION	203.15	
40					40		CY	SOLID ROCK EXCAVATION	203.16	
290					290		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	
175					175		CY	EARTH BORROW	203.30	
		1			1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	
		1500			1500		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	
1200					1200		CY	SUBBASE OF GRAVEL	301.15	
12					12		TON	MEDIUM DUTY BITUMINOUS CONCRETE PAVEMENT	406.27	
1					1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	
		19			19		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	
		2400			2400		LB	REINFORCING STEEL, LEVEL I	507.11	
		30			30		LF	DRILLING AND GROUTING DOWELS	507.16	
		1			1		GAL	WATER REPELLENT, SILANE	514.10	
		1000			1000		CY	CONTROLLED DENSITY (FLOWABLE) FILL	541.45	
8					8		LF	18" RCP CLASS IV	601.0816	
82					82		LF	12" CPEP	601.0905	
		3			3		EACH	PRECAST REINFORCED CONCRETE MANHOLE WITH CAST IRON COVER (8' DIAMETER)	604.21	
		3			3		EACH	CHANGING ELEVATION OF DROP INLETS, CATCH BASINS, OR MANHOLES	604.40	
		6			6		EACH	CHANGING ELEVATION OF SEWER MANHOLES	604.42	
	10				10		MGAL	DUST CONTROL WITH WATER	609.10	
	2				2		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15	
	45				45		CY	STONE FILL, TYPE I	613.10	
	900				900		CY	STONE FILL, TYPE II	613.11	
	190				190		CY	STONE FILL, TYPE III	613.12	
		10			10		LF	CAST-IN-PLACE CONCRETE CURB, TYPE B	616.28	
22					22		TON	BITUMINOUS CONCRETE SIDEWALK	618.15	
22					22		SF	DETECTABLE WARNING SURFACE	618.30	
		4			4		EACH	BOLLARDS	619.14	
230					230		LF	TEMPORARY TRAFFIC BARRIER	621.90	
		26			26		LF	SLEEVES FOR UTILITIES (1 x 12")	625.10	
		26			26		LF	SLEEVES FOR UTILITIES (1 x 24")	625.10	
3600					3600		HR	FLAGGERS	630.15	
1					1		LS	MOBILIZATION/DEMOBILIZATION	635.11	
1					1		LS	TRAFFIC CONTROL	641.10	
2					2		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	
1625					1625		SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.11	
	500				500		SY	GEOTEXTILE UNDER STONE FILL	649.31	
	650				650		SY	GEOTEXTILE FOR SILT FENCE	649.51	
	300				300		SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		COMMON EXCAVATION
43	CY	INSTALLING MAINTENANCE OUTFALL ROAD
487	CY	PARTIAL REMOVAL OF MAINTENANCE OUTFALL ROAD
1587	CY	TEMPORARY ACCESS ROAD
29	CY	TRIANGLE PARK
96	CY	DRAINAGE APRON
58	CY	ROUNDING
2300	CY	TOTAL
		SOLID ROCK EXCAVATION
21	CY	LAZARUS BUILDING WALLS
16	CY	TRIANGLE PARK SIDEWALK
1	CY	UTILITY WORK
1	CY	HEADWALL REMOVAL (T4)
1	CY	ROUNDING
40	CY	TOTAL
		UNCLASSIFIED CHANNEL EXCAVATION
114	CY	INSTALLING MAINTENANCE OUTFALL ROAD
150	CY	PARTIAL REMOVAL OF MAINTENANCE OUTFALL ROAD
26	CY	ROUNDING
290	CY	TOTAL
		EARTH BORROW
65	CY	HEADWALL
79	CY	OUTFALL MAINTENANCE ROAD
31	CY	ROUNDING
175	CY	TOTAL
		GRANULAR BACKFILL FOR STRUCTURES
32	CY	HEADWALL
26	CY	PIPE AT HEADWALL/OUTFALL
1595	CY	CHM 212 (LAUNCH PIT)
288	CY	DMH 313 (SHAFT 3)
9	CY	ROUNDING
1950	CY	TOTAL
		SUBBASE OF GRAVEL
267	CY	OUTFALL MAINTENANCE ROAD
854	CY	TEMPORARY ACCESS ROAD
79	CY	ROUNDING
1200	CY	TOTAL
		STONE FILL TYPE II
592	CY	OUTFALL MAINTENANCE ROAD
265	CY	TEMPORARY ACCESS ROAD
43	CY	ROUNDING
900	CY	TOTAL
		TOP SOIL
116	CY	OUTFALL MAINTENANCE ROAD
15	CY	UTILITIES
72	CY	TEMPORARY ACCESS ROAD
47	CY	ROUNDING
250	CY	TOTAL
		GRUBBING MATERIAL
319	SY	TEMPORARY ACCESS ROAD
270	SY	OUTFALL MAINTENANCE ROAD
11	SY	ROUNDING
600	SY	TOTAL
		SPECIAL PROVISION (HAND-PLACED BITUMINOUS CONCRETE MATERIAL, DRIVES)
213	SY	PRINTER'S ALLEY + PARKING LOT
2	SY	ROUNDING
215	SY	TOTAL

REVISION	DATE	DESCRIPTION	BY
1	03/12/2018	NEW ITEM - ITEM NUMBERS GREATER THAN 406.50 SHIFTED DOWN	MFS

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046qs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: M.F. SUFFEL
QUANTITY SHEET #1

PLOT DATE: 3/12/2018
DRAWN BY: M.F. SUFFEL
CHECKED BY: M.E. OOMS
SHEET 8 OF 135

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES							TOTALS		DESCRIPTIONS			
ROADWAY	EROSION CONTROL	UTILITIES	RAILROAD ITEMS	CONTINGENCY ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
	110				110		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61	
	60				60		LB	SEED	651.15	
	450				450		LB	FERTILIZER	651.18	
	2				2		TON	AGRICULTURAL LIMESTONE	651.20	
	2				2		TON	HAY MULCH	651.25	
	250				250		CY	TOPSOIL	651.35	
	600				600		SY	GRUBBING MATERIAL	651.40	
	1				1		LS	EPSC PLAN	652.10	
	320				320		HR	MONITORING EPSC PLAN	652.20	
	1				1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	
	1650				1650		SY	TEMPORARY EROSION MATTING	653.20	
	85				85		CY	VEHICLE TRACKING PAD	653.35	
	4				4		EACH	INLET PROTECTION DEVICE, TYPE I	653.40	
	4				4		EACH	FILTER BAG	653.45	
	1410				1410		LF	BARRIER FENCE	653.50	
	2325				2325		LF	PROJECT DEMARCATION FENCE	653.55	
		80			80		LF	ELECTRICAL CONDUIT (3" SUPPLY ONLY)	678.21	
		115			115		LF	ELECTRICAL CONDUIT (3")(PVC)	678.21	
		100			100		LF	ELECTRICAL CONDUIT (4" SUPPLY ONLY)	678.21	
		1940			1940		LF	ELECTRICAL CONDUIT (4")(PVC)	678.21	
		50			50		LF	ELECTRICAL CONDUIT (6" SUPPLY ONLY)	678.21	
		390			390		LF	ELECTRICAL CONDUIT (6")(PVC)	678.21	
		6			6		EACH	PULL BOX, STANDARD (2'x3')	678.25	
		4			4		EACH	PULL BOX, STANDARD (3'x4')	678.25	
1					1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50	
3800					3800		CY	SPECIAL PROVISION (MANAGEMENT AND DISPOSAL OF CONTAMINATED SOILS)	900.608	
	100000				100000		DL	SPECIAL PROVISION (ENVIRONMENTAL MANAGER) (N.A.B.I)	900.615	
			200000		200000		DL	SPECIAL PROVISION (MAINTENANCE OF RAILROAD TRAFFIC)(N.A.B.I.)	900.615	
100000					100000		DL	SPECIAL PROVISION (MAINTENANCE OF TEMPORARY BRIDGES) (N.A.B.I.)	900.615	
		2			2		EACH	SPECIAL PROVISION (1 PHASE TRANSFORMER PAD)	900.620	
				14	14		EACH	SPECIAL PROVISION (CONTINGENCY ITEM) (TUNNEL BORING MACHINE CUTTER HEAD DISK)	900.620	
12					12		EACH	SPECIAL PROVISION (CPM SCHEDULE)	900.620	
		2			2		EACH	SPECIAL PROVISION (K30.2 UTILITY VAULT)	900.620	
		1			1		EACH	SPECIAL PROVISION (K30.3 UTILITY VAULT)	900.620	
		1			1		EACH	SPECIAL PROVISION (K30.6 UTILITY VAULT)	900.620	
28					28		EACH	SPECIAL PROVISION (REMOVE GROUNDWATER MONITORING WELLS)	900.620	
		1			1		EACH	SPECIAL PROVISION (SECONDARY PEDESTAL)	900.620	
		10			10		HR	SPECIAL PROVISION (MINIPILE OBSTRUCTION DRILLING)	900.630	
		16			16		LF	SPECIAL PROVISION (42" RCP CLASS V)	900.640	
		100			100		LF	SPECIAL PROVISION (CASING PIPE)	900.640	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046qs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: M.F. SUFFEL
QUANTITY SHEET #2

PLOT DATE: 3/12/2018
DRAWN BY: M.F. SUFFEL
CHECKED BY: M.E. OOMS
SHEET 9 OF 135

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 3

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS			
	ROADWAY	EROSION CONTROL	UTILITIES	RAILROAD ITEMS	CONTINGENCY ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
			645			645		LF	SPECIAL PROVISION (CONCRETE ENCASED DUCT BANK, 1-4 DUCTS)	900.640	
					1500	1500		LF	SPECIAL PROVISION (CONTINGENCY ITEM) (ROCK ANCHOR)	900.640	
			40			40		LF	SPECIAL PROVISION (MICROTUNNEL - MIXED)	900.640	
			390			390		LF	SPECIAL PROVISION (MICROTUNNEL - ROCK)	900.640	
			1020			1020		LF	SPECIAL PROVISION (MINIPILE IN EARTH)	900.640	
			440			440		LF	SPECIAL PROVISION (MINIPILE IN ROCK)	900.640	
			550			550		LF	SPECIAL PROVISION (PRODUCT PIPE)	900.640	
			80			80		LF	SPECIAL PROVISION (REMOVE AND RESET RAILROAD TRACKS)	900.640	
					1	1		LS	SPECIAL PROVISION (CONTINGENCY ITEM) (SOIL NAIL WALL)	900.645	
			1			1		LS	SPECIAL PROVISION (FURNISHING EQUIPMENT FOR INSTALLING MINIPILES)	900.645	
	1					1		LS	SPECIAL PROVISION (INDIRECT COSTS)	900.645	
			1			1		LS	SPECIAL PROVISION (MICROTUNNEL SHAFT CONSTRUCTION)(LAUNCH SHAFT)	900.645	
			1			1		LS	SPECIAL PROVISION (MICROTUNNEL SHAFT CONSTRUCTION)(RECEIVING SHAFT 1)	900.645	
			1			1		LS	SPECIAL PROVISION (MICROTUNNEL SHAFT CONSTRUCTION)(RECEIVING SHAFT 2)	900.645	
			1			1		LS	SPECIAL PROVISION (MICROTUNNEL SHAFT CONSTRUCTION)(RECEIVING SHAFT 3)	900.645	
			1			1		LS	SPECIAL PROVISION (MOBILIZATION OF MICROTUNNEL EQUIPMENT)	900.645	
			1			1		LS	SPECIAL PROVISION (REMOVE AND STORE PARK AMENITIES)	900.645	
			1			1		LS	SPECIAL PROVISION (SURVEY, INSTRUMENTATION, AND MONITORING)	900.645	
					2000	2000		SF	SPECIAL PROVISION (CONTINGENCY ITEM) (ROCK NETTING)	900.670	
			215			215		SY	SPECIAL PROVISION (BITUMINOUS CONCRETE MATERIAL, HAND-PLACED)	900.675	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046qs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: M.F. SUFFEL
QUANTITY SHEET #3

PLOT DATE: 3/12/2018
DRAWN BY: M.F. SUFFEL
CHECKED BY: M.E. OOMS
SHEET 10 OF 135

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
	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 RADUIS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE

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+TELEP.
G	GAS LINE
W	WATER LINE
S	SANITARY SEWER (SEPTIC)

ABOVE GROUND UTILITIES (AERIAL)

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

PROJECT CONSTRUCTION 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	PROJECT DEMARCATION FENCE
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	SLOPE RIGHTS
6f	6F PROPERTY BOUNDARY
4f	4F PROPERTY BOUNDARY
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	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

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046LegendSheet.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: M.LONGSTREET
CONVENTIONAL SYMBOLOGY LEGEND

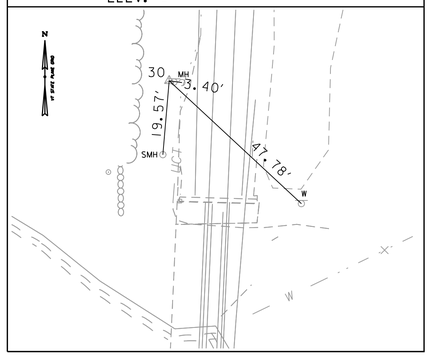
PLOT DATE: 2/27/2018
DRAWN BY: M.LONGSTREET
CHECKED BY: M.LONGSTREET
SHEET 11 OF 135

GPS CONTROL POINTS

TRAVERSE TIES

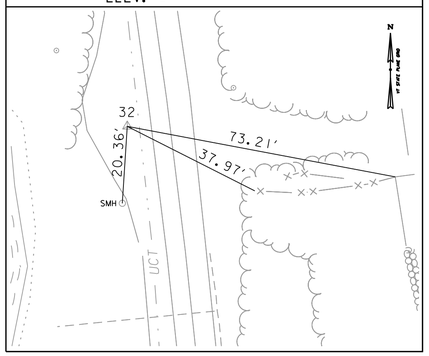
HVCTRL #30

NORTH =	551103.82
EAST =	1464954.18
ELEV. =	



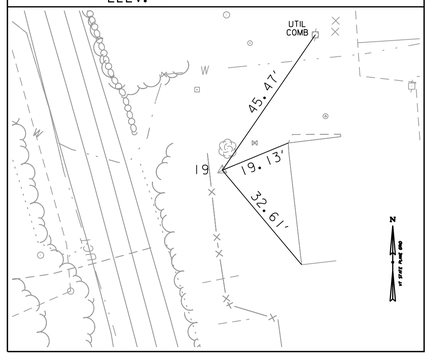
HVCTRL #32

NORTH =	551746.97
EAST =	1464950.79
ELEV. =	



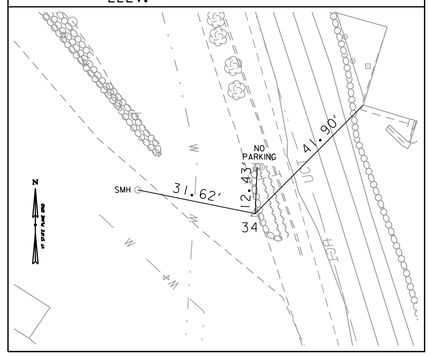
HVCTRL #19

NORTH =	552142.90
EAST =	1464910.03
ELEV. =	



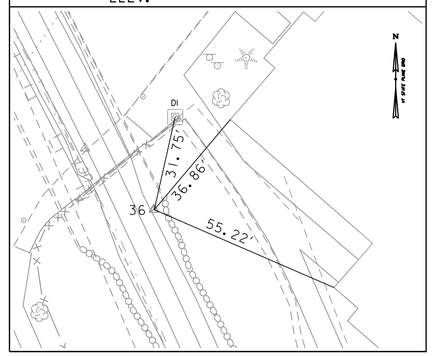
HVCTRL #34

NORTH =	552269.42
EAST =	1464815.75
ELEV. =	



HVCTRL #36

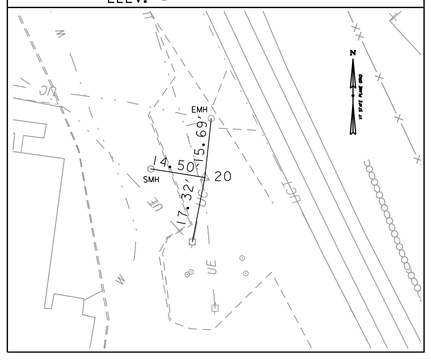
NORTH =	552596.18
EAST =	1464721.40
ELEV. =	



ALIGNMENT TIES

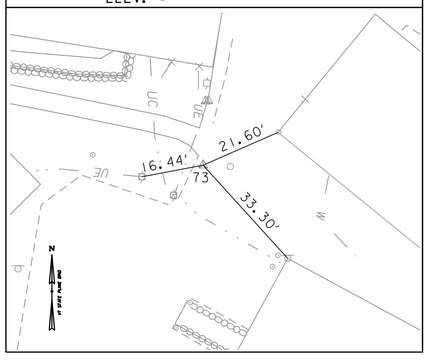
HVCTRL #20

NORTH =	552802.82
EAST =	1464581.94
ELEV. =	



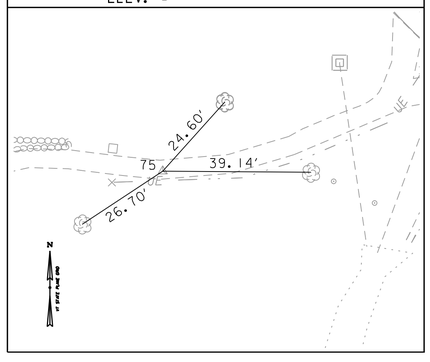
HVCTRL #73

NORTH =	552711.99
EAST =	1464545.58
ELEV. =	



HVCTRL #75

NORTH =	552730.09
EAST =	1464355.52
ELEV. =	



NORTH =	
EAST =	
ELEV. =	

NORTH =	
EAST =	
ELEV. =	

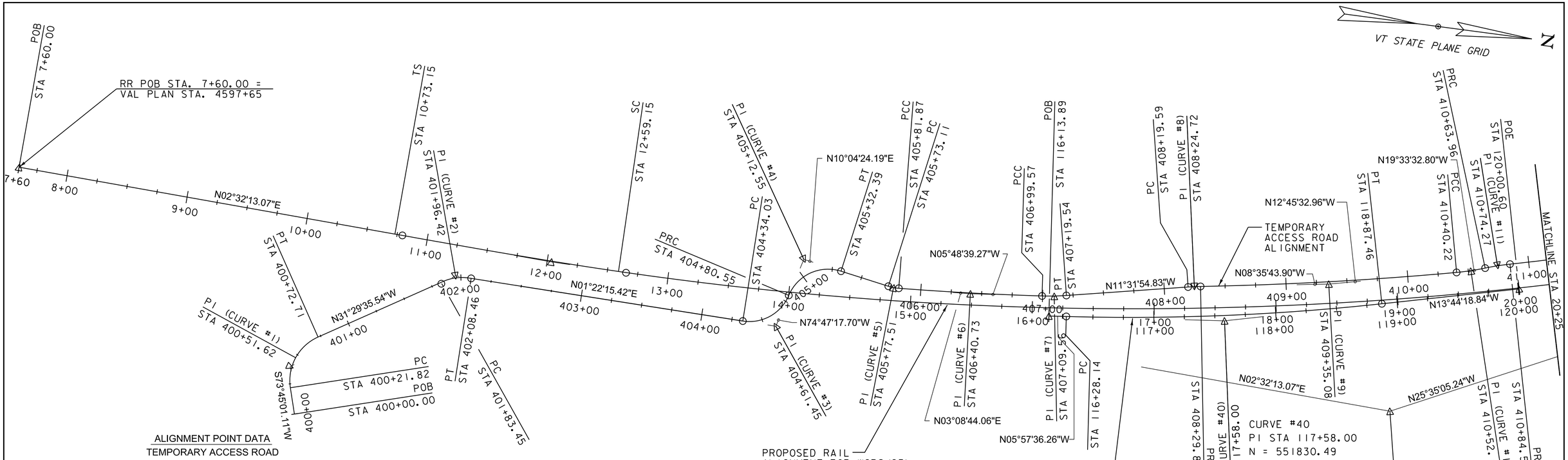
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (2011)
ADJUSTMENT	

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: zl6b046ti.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: A.P GUYETTE
TIE SHEET

PLOT DATE: 2/27/2018
DRAWN BY: J.F. VEAR
CHECKED BY: J.F. VEAR
SHEET 12 OF 135



CURVE #40
PI STA 117+58.00
N = 551830.49
E = 1464951.54
DELTA = 7°46'43"
D = 3°00'00"
R = 1910.08'
L = 259.31'
T = 129.86'
E = 4.41'

CURVE #20
PI STA 18+97.01
N = 551970.1763
E = 1464984.7600
DELTA = 24°29'42"
SL = 186.00'
Dc = 1°57'00"
R = 2938.39'
L = 1256.21'
T = 637.85'
E = 68.43'

ALIGNMENT POINT DATA
TEMPORARY ACCESS ROAD

POINT TYPE	STATION	NORTHING	EASTING
POB	400+00.00	551084.1202	1465127.4681
PC	400+21.82	551078.0133	1465106.5159
PI	400+51.62	551069.6762	1465077.9119
PT	400+72.71	551095.0818	1465062.3474
PC	400+84.89	551190.7414	1465003.7428
PI	401+96.10	551200.2977	1464997.8882
PT	402+06.69	551211.5016	1464998.1563
PC	404+34.03	551438.7782	1465003.5956
PI	404+61.45	551466.1937	1465004.2517
PRC	404+80.55	551473.3893	1464977.7891
PI	405+12.55	551481.7841	1464946.9162
PT	405+32.39	551513.2848	1464952.5122
PC	405+73.11	551553.3734	1464959.6339
PI	405+77.51	551557.7087	1464960.4040
PCC	405+81.87	551562.1052	1464960.1624
PI	406+40.73	551620.8735	1464956.9328
PCC	406+99.57	551679.4281	1464950.9737
PI	407+09.56	551689.3700	1464949.9620
PT	407+19.54	551699.1616	1464947.9642
PC	408+19.59	551797.1985	1464927.9615
PI	408+24.72	551802.2211	1464926.9367
PRC	408+29.84	551807.2896	1464926.1706
PI	409+35.08	551911.3419	1464910.4425
PCC	410+40.22	552013.9777	1464887.2011
PI	410+52.10	552025.5664	1464884.5769
PRC	410+63.96	552036.7629	1464880.5990
PI	410+74.27	552046.4833	1464877.1456
PRC	410+84.57	552056.5074	1464874.7105
PI	411+53.39	552123.3872	1464858.4639
PCC	412+22.19	552189.4106	1464839.0275
PI	412+62.76	552228.3251	1464827.5716
PT/POE	412+99.27	552248.2609	1464792.2426

CURVE #1
PI STA 400+51.62
N = 551069.6762
E = 1465077.9119
DELTA = 74°45'23"
Dc = 146°54'44"
R = 39.00'
L = 50.89'
T = 29.79'
E = 10.08'

CURVE #2
PI STA 401+96.10
N = 551200.2977
E = 1464997.8882
DELTA = 32°51'51"
Dc = 150°46'42"
R = 38.00'
L = 21.80'
T = 11.21'
E = 1.62'

CURVE #3
PI STA 404+61.45
N = 551466.1937
E = 1465004.2517
DELTA = 76°09'33"
Dc = 163°42'08"
R = 35.00'
L = 46.52'
T = 27.42'
E = 9.46'

CURVE #4
PI STA 405+12.55
N = 551481.7841
E = 1464946.9162
DELTA = 84°51'42"
Dc = 163°42'08"
R = 35.00'
L = 51.84'
T = 31.99'
E = 12.42'

CURVE #5
PI STA 405+77.51
N = 551557.7087
E = 1464960.4040
DELTA = 13°13'08"
Dc = 150°46'42"
R = 38.00'
L = 8.77'
T = 4.40'
E = 0.25'

CURVE #6
PI STA 406+40.73
N = 551620.8735
E = 1464956.9328
DELTA = 2°39'55"
Dc = 2°15'53"
R = 2530.00'
L = 117.69'
T = 58.86'
E = 0.68'

CURVE #7
PI STA 407+09.56
N = 551689.3700
E = 1464949.9620
DELTA = 5°43'16"
Dc = 28°38'52"
R = 200.00'
L = 19.97'
T = 9.99'
E = 0.25'

CURVE #8
PI STA 408+24.72
N = 551802.2211
E = 1464926.9367
DELTA = 2°56'11"
Dc = 28°38'52"
R = 200.00'
L = 10.25'
T = 5.13'
E = 0.07'

CURVE #9
PI STA 409+35.08
N = 551911.3419
E = 1464910.4425
DELTA = 4°09'49"
Dc = 1°58'45"
R = 2894.99'
L = 210.38'
T = 105.23'
E = 1.91'

CURVE #10
PI STA 410+52.10
N = 552025.5664
E = 1464884.5769
DELTA = 6°47'60"
Dc = 28°38'52"
R = 200.00'
L = 23.74'
T = 11.88'
E = 0.35'

CURVE #11
PI STA 410+74.27
N = 552046.4833
E = 1464877.1456
DELTA = 5°54'19"
Dc = 28°38'52"
R = 200.00'
L = 20.61'
T = 10.32'
E = 0.27'

ALIGNMENT POINT DATA
INTERIM RAIL

POINT TYPE	STATION	NORTHING	EASTING
POB	116+13.89	551687.1603	1464966.5052
PC	116+28.14	551701.3368	1464965.0252
PI	117+58.00	551830.4907	1464951.5416
PT	118+87.46	551956.6314	1464920.7018
POE	120+00.60	552066.5402	1464893.8305

NOTE:
1. PROPOSED RAILROAD ALIGNMENT INFORMATION CONTINUED ON ALIGNMENT LAYOUT SHEETS 2-3.

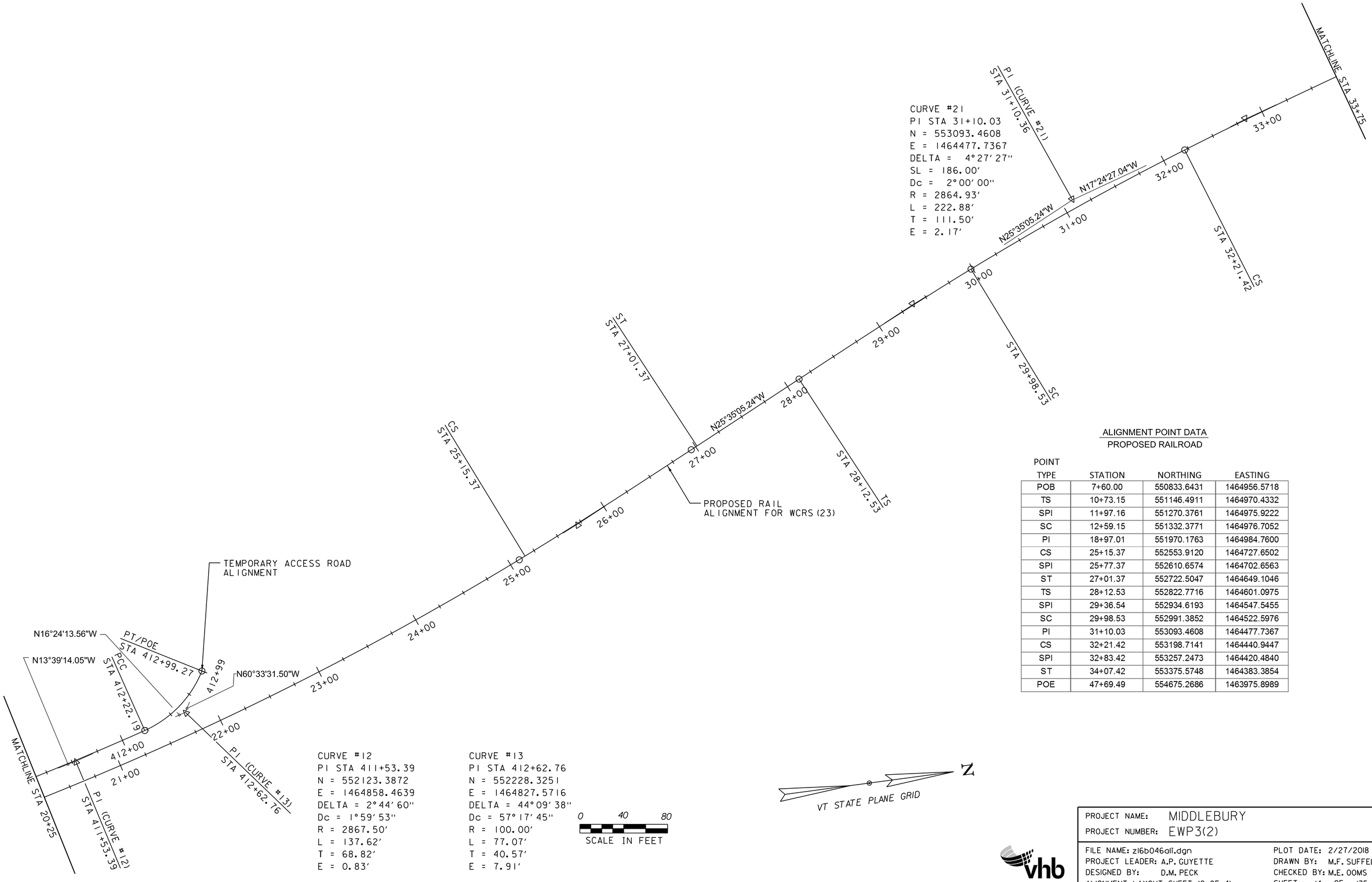
0 40 80
SCALE IN FEET

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: zl6b046all.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: D.M. PECK
ALIGNMENT LAYOUT SHEET (1 OF 4)

PLOT DATE: 2/27/2018
DRAWN BY: M.F. SUFFEL
CHECKED BY: M.E. OOMS
SHEET 13 OF 135



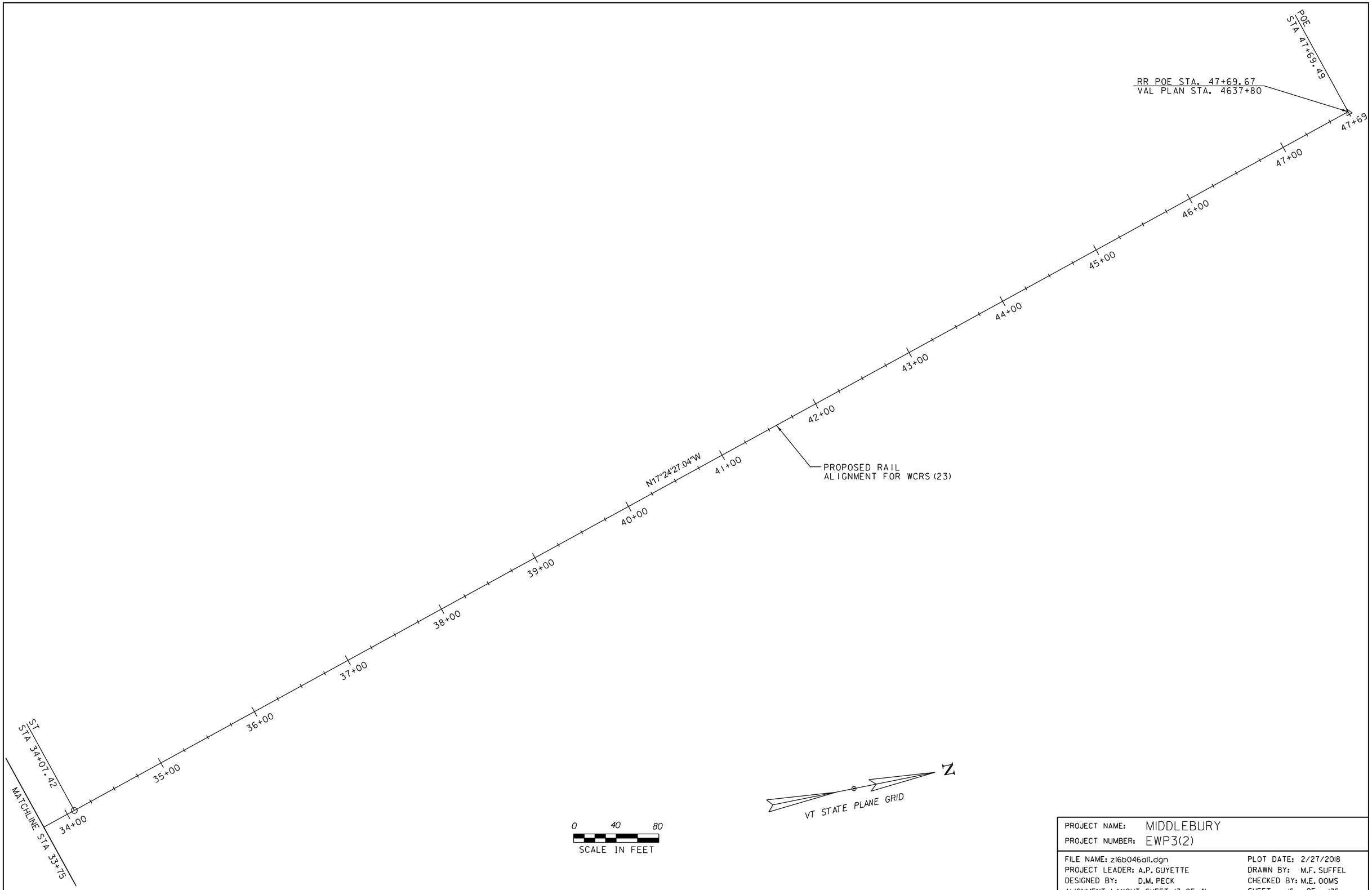
ALIGNMENT POINT DATA
PROPOSED RAILROAD

POINT TYPE	STATION	NORTHING	EASTING
POB	7+60.00	550833.6431	1464956.5718
TS	10+73.15	551146.4911	1464970.4332
SPI	11+97.16	551270.3761	1464975.9222
SC	12+59.15	551332.3771	1464976.7052
PI	18+97.01	551970.1763	1464984.7600
CS	25+15.37	552553.9120	1464727.6502
SPI	25+77.37	552610.6574	1464702.6563
ST	27+01.37	552722.5047	1464649.1046
TS	28+12.53	552822.7716	1464601.0975
SPI	29+36.54	552934.6193	1464547.5455
SC	29+98.53	552991.3852	1464522.5976
PI	31+10.03	553093.4608	1464477.7367
CS	32+21.42	553198.7141	1464440.9447
SPI	32+83.42	553257.2473	1464420.4840
ST	34+07.42	553375.5748	1464383.3854
POE	47+69.49	554675.2686	1463975.8989

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: zl6b046ali.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: D.M. PECK
ALIGNMENT LAYOUT SHEET (2 OF 4)

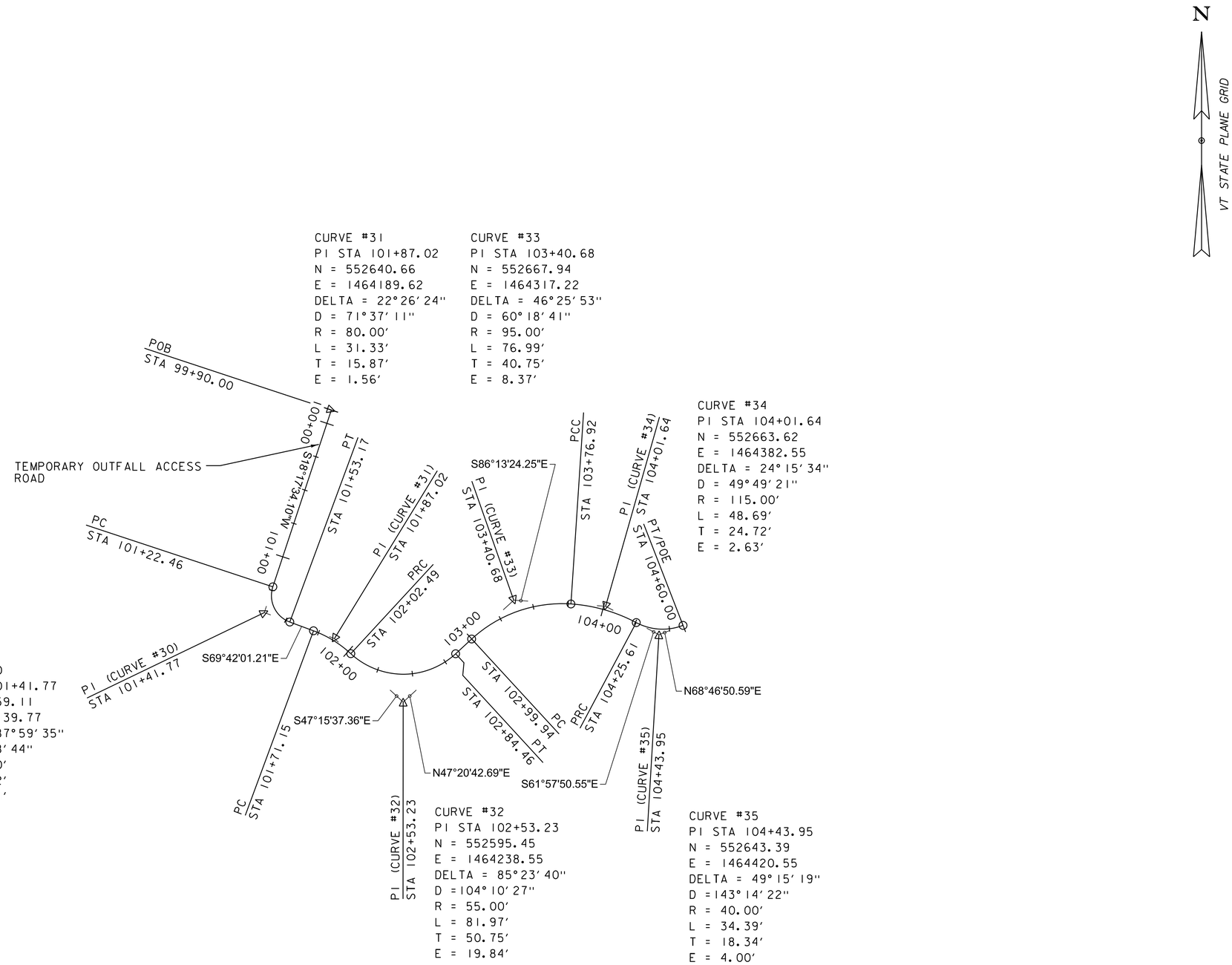
PLOT DATE: 2/27/2018
DRAWN BY: M.F. SUFFEL
CHECKED BY: M.E. OOMS
SHEET 14 OF 135



PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046ali.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: D.M. PECK	CHECKED BY: M.E. OOMS
ALIGNMENT LAYOUT SHEET (3 OF 4)	SHEET 15 OF 135

ALIGNMENT POINT DATA
TEMPORARY OUTFALL ACCESS ROAD

POINT TYPE	STATION	NORTHING	EASTING
POB	99+90.00	552803.2088	1464187.4030
PC	101+22.46	552677.4432	1464145.8276
PI	101+41.77	552659.1077	1464139.7662
PT	101+53.17	552652.4079	1464157.8783
PC	101+71.15	552646.1704	1464174.7409
PI	101+87.02	552640.6648	1464189.6247
PRC	102+02.49	552629.8948	1464201.2799
PI	102+53.23	552595.4540	1464238.5512
PT	102+84.46	552629.8395	1464275.8735
PC	102+99.94	552640.3262	1464287.2557
PI	103+40.68	552667.9361	1464317.2237
PCC	103+76.92	552665.2522	1464357.8831
PI	104+01.64	552663.6242	1464382.5456
PRC	104+25.61	552652.0070	1464404.3614
PI	104+43.95	552643.3883	1464420.5464
PT/POE	104+60.00	552650.0250	1464437.6400



PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046al1.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: D.M. PECK	CHECKED BY: M.E. OOMS
ALIGNMENT LAYOUT SHEET (4 OF 4)	SHEET 16 OF 135

T1 STA 400+89.8, 19.1′ RT - STA 400+81.7, 19.7′ LT
CONST 40 LF x 12" CPEP
12" INV ELEV AT STA 400+89.8, 19.1′ RT = 348.35
12" INV ELEV AT STA 400+81.7, 19.7′ LT = 346.96

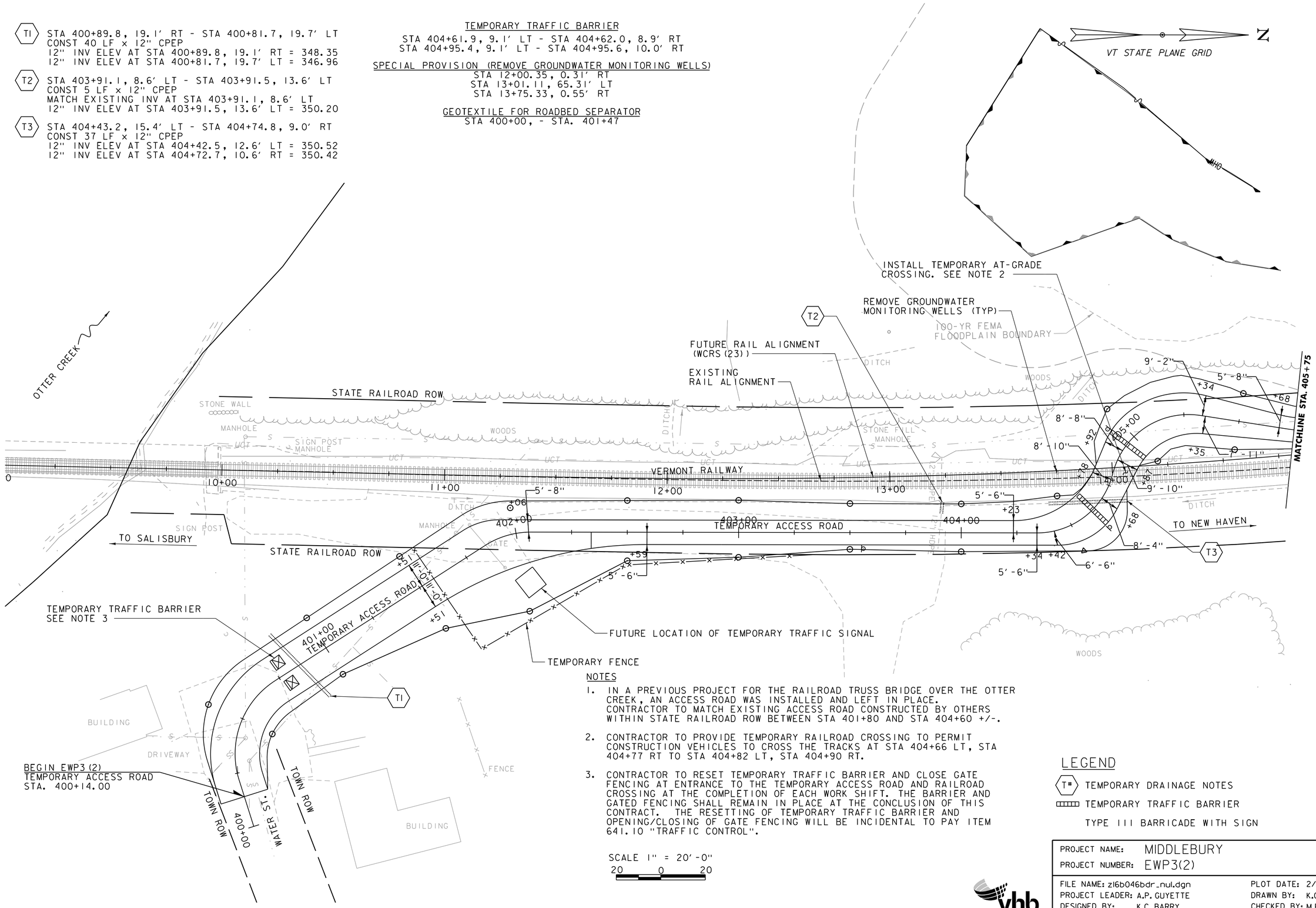
T2 STA 403+91.1, 8.6′ LT - STA 403+91.5, 13.6′ LT
CONST 5 LF x 12" CPEP
MATCH EXISTING INV AT STA 403+91.1, 8.6′ LT
12" INV ELEV AT STA 403+91.5, 13.6′ LT = 350.20

T3 STA 404+43.2, 15.4′ LT - STA 404+74.8, 9.0′ RT
CONST 37 LF x 12" CPEP
12" INV ELEV AT STA 404+42.5, 12.6′ LT = 350.52
12" INV ELEV AT STA 404+72.7, 10.6′ RT = 350.42

TEMPORARY TRAFFIC BARRIER
STA 404+61.9, 9.1′ LT - STA 404+62.0, 8.9′ RT
STA 404+95.4, 9.1′ LT - STA 404+95.6, 10.0′ RT

SPECIAL PROVISION (REMOVE GROUNDWATER MONITORING WELLS)
STA 12+00.35, 0.31′ RT
STA 13+01.11, 65.31′ LT
STA 13+75.33, 0.55′ RT

GEOTEXTILE FOR ROADBED SEPARATOR
STA 400+00, - STA. 401+47



NOTES

1. IN A PREVIOUS PROJECT FOR THE RAILROAD TRUSS BRIDGE OVER THE OTTER CREEK, AN ACCESS ROAD WAS INSTALLED AND LEFT IN PLACE. CONTRACTOR TO MATCH EXISTING ACCESS ROAD CONSTRUCTED BY OTHERS WITHIN STATE RAILROAD ROW BETWEEN STA 401+80 AND STA 404+60 +/-.

2. CONTRACTOR TO PROVIDE TEMPORARY RAILROAD CROSSING TO PERMIT CONSTRUCTION VEHICLES TO CROSS THE TRACKS AT STA 404+66 LT, STA 404+77 RT TO STA 404+82 LT, STA 404+90 RT.

3. CONTRACTOR TO RESET TEMPORARY TRAFFIC BARRIER AND CLOSE GATE FENCING AT ENTRANCE TO THE TEMPORARY ACCESS ROAD AND RAILROAD CROSSING AT THE COMPLETION OF EACH WORK SHIFT. THE BARRIER AND GATED FENCING SHALL REMAIN IN PLACE AT THE CONCLUSION OF THIS CONTRACT. THE RESETTING OF TEMPORARY TRAFFIC BARRIER AND OPENING/CLOSING OF GATE FENCING WILL BE INCIDENTAL TO PAY ITEM 641.10 "TRAFFIC CONTROL".

SCALE 1" = 20′-0"
20 0 20

LEGEND

T# TEMPORARY DRAINAGE NOTES

TEMPORARY TRAFFIC BARRIER

TYPE III BARRICADE WITH SIGN

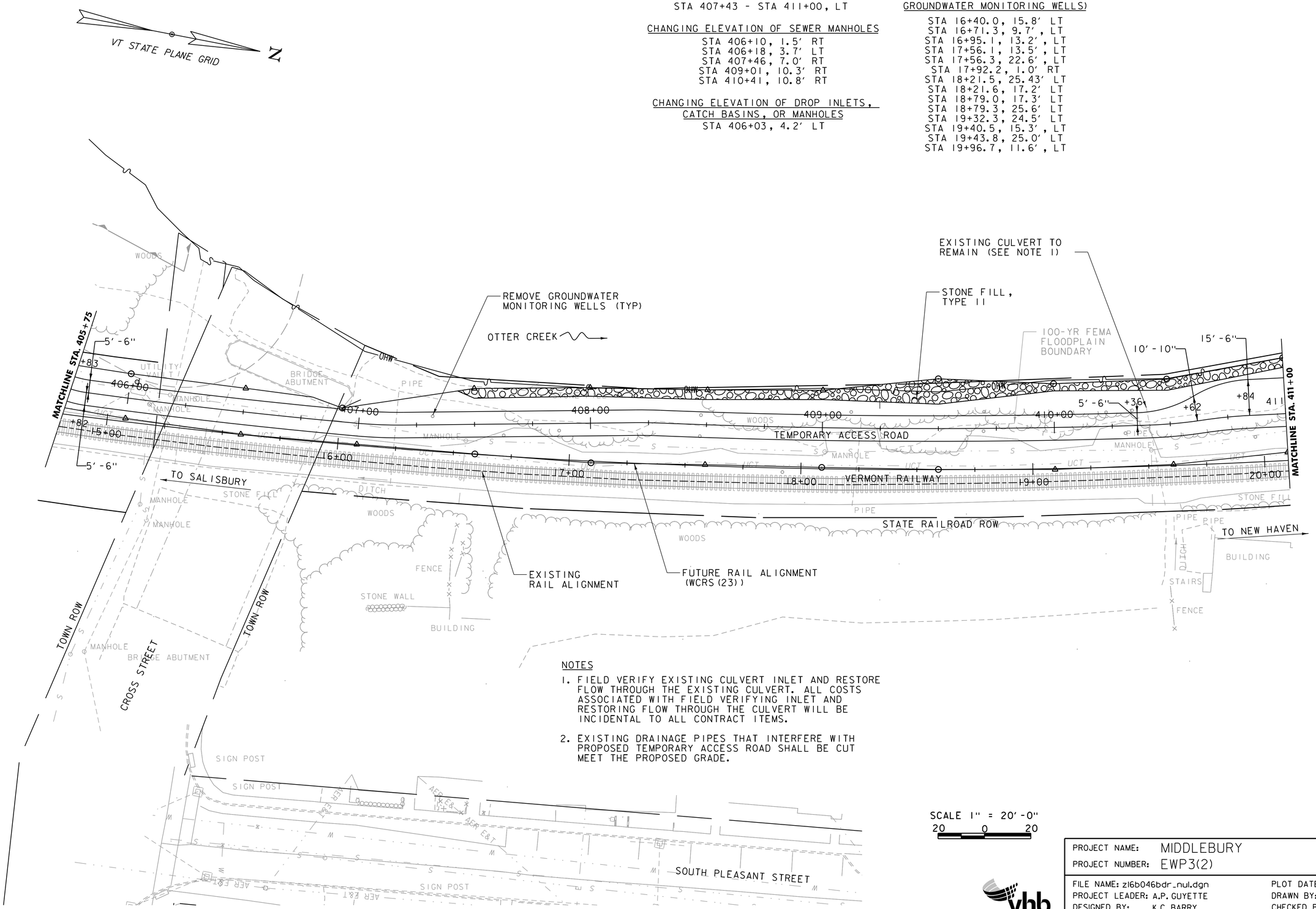
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_nul.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: M.E. OOMS
TEMP ACCESS RD LAYOUT SHEETS (1 OF 3)	SHEET 17 OF 135

STONE FILL, TYPE II
STA 407+43 - STA 411+00, LT

CHANGING ELEVATION OF SEWER MANHOLES
STA 406+10, 1.5′ RT
STA 406+18, 3.7′ LT
STA 407+46, 7.0′ RT
STA 409+01, 10.3′ RT
STA 410+41, 10.8′ RT

CHANGING ELEVATION OF DROP INLETS, CATCH BASINS, OR MANHOLES
STA 406+03, 4.2′ LT

SPECIAL PROVISION (REMOVE GROUNDWATER MONITORING WELLS)
STA 16+40.0, 15.8′ LT
STA 16+71.3, 9.7′, LT
STA 16+95.1, 13.2′, LT
STA 17+56.1, 13.5′, LT
STA 17+56.3, 22.6′, LT
STA 17+92.2, 1.0′ RT
STA 18+21.5, 25.43′ LT
STA 18+21.6, 17.2′ LT
STA 18+79.0, 17.3′ LT
STA 18+79.3, 25.6′ LT
STA 19+32.3, 24.5′ LT
STA 19+40.5, 15.3′, LT
STA 19+43.8, 25.0′ LT
STA 19+96.7, 11.6′, LT



NOTES

1. FIELD VERIFY EXISTING CULVERT INLET AND RESTORE FLOW THROUGH THE EXISTING CULVERT. ALL COSTS ASSOCIATED WITH FIELD VERIFYING INLET AND RESTORING FLOW THROUGH THE CULVERT WILL BE INCIDENTAL TO ALL CONTRACT ITEMS.

2. EXISTING DRAINAGE PIPES THAT INTERFERE WITH PROPOSED TEMPORARY ACCESS ROAD SHALL BE CUT MEET THE PROPOSED GRADE.

SCALE 1" = 20′-0"
20 0 20

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_nul.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: M.E. OOMS
TEMP ACCESS RD LAYOUT SHEETS (2 OF 3)	SHEET 18 OF 135

T4 STA 411+38.8, 21.5′ LT - STA 411+35.0, 13.7′ LT
CONS 8 LF x 18" RCP
MATCH EXISTING INV AT STA 411+35.0, 13.7′ LT
GRADE TO DAYLIGHT

REMOVAL OF EXISTING CONCRETE HEADWALL AND CHECK VALVE TO BE PAID FOR UNDER ITEM 203.16 "SOLID ROCK REMOVAL".

STONE FILL, TYPE II
STA 411+00 - STA 411+49, LT

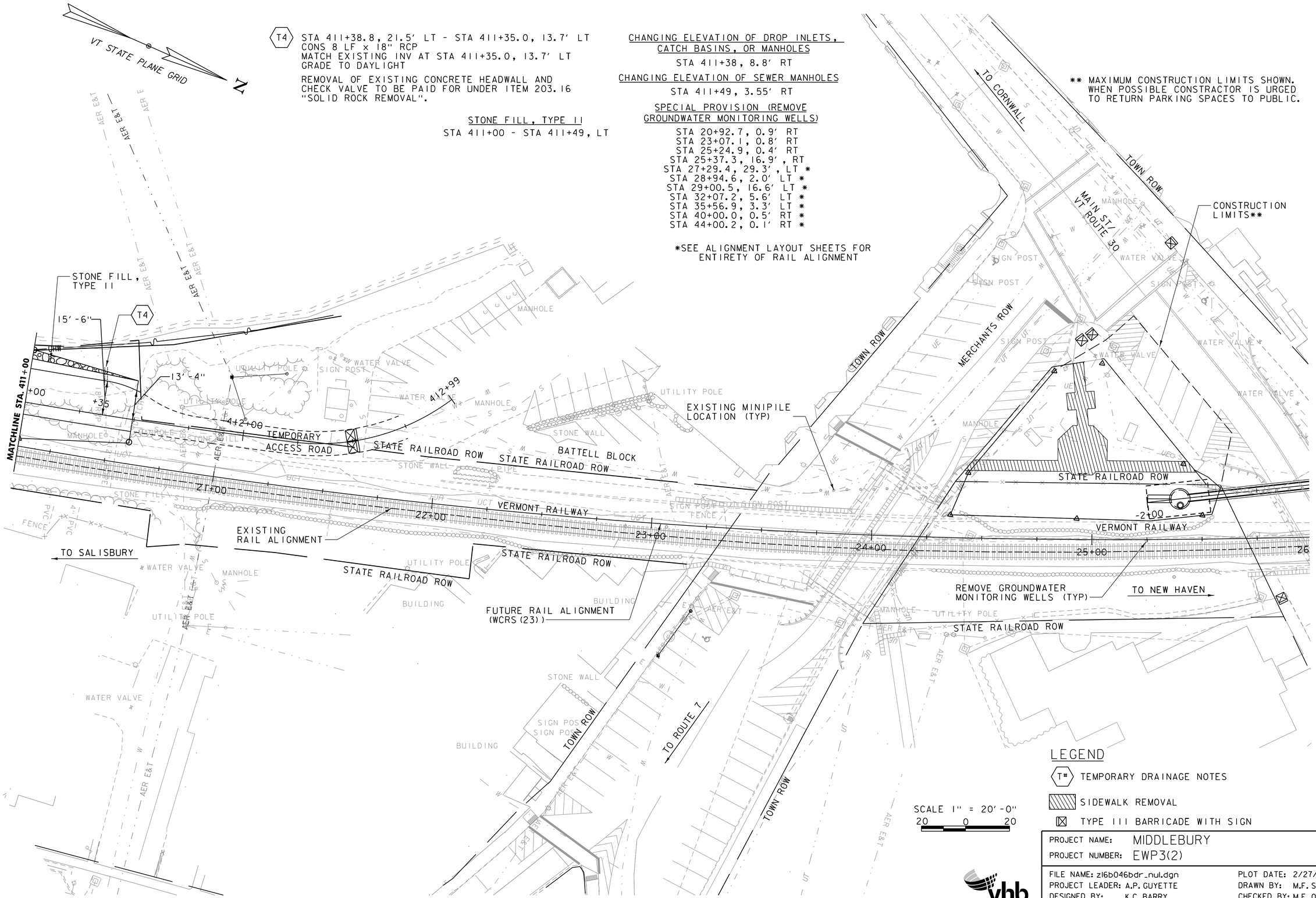
CHANGING ELEVATION OF DROP INLETS, CATCH BASINS, OR MANHOLES
STA 411+38, 8.8′ RT

CHANGING ELEVATION OF SEWER MANHOLES
STA 411+49, 3.55′ RT

SPECIAL PROVISION (REMOVE GROUNDWATER MONITORING WELLS)
STA 20+92.7, 0.9′ RT
STA 23+07.1, 0.8′ RT
STA 25+24.9, 0.4′ RT
STA 25+37.3, 16.9′, RT
STA 27+29.4, 29.3′, LT *
STA 28+94.6, 2.0′ LT *
STA 29+00.5, 16.6′ LT *
STA 32+07.2, 5.6′ LT *
STA 35+56.9, 3.3′ LT *
STA 40+00.0, 0.5′ RT *
STA 44+00.2, 0.1′ RT *

*SEE ALIGNMENT LAYOUT SHEETS FOR ENTIRETY OF RAIL ALIGNMENT

** MAXIMUM CONSTRUCTION LIMITS SHOWN. WHEN POSSIBLE CONSTRACTOR IS URGED TO RETURN PARKING SPACES TO PUBLIC.

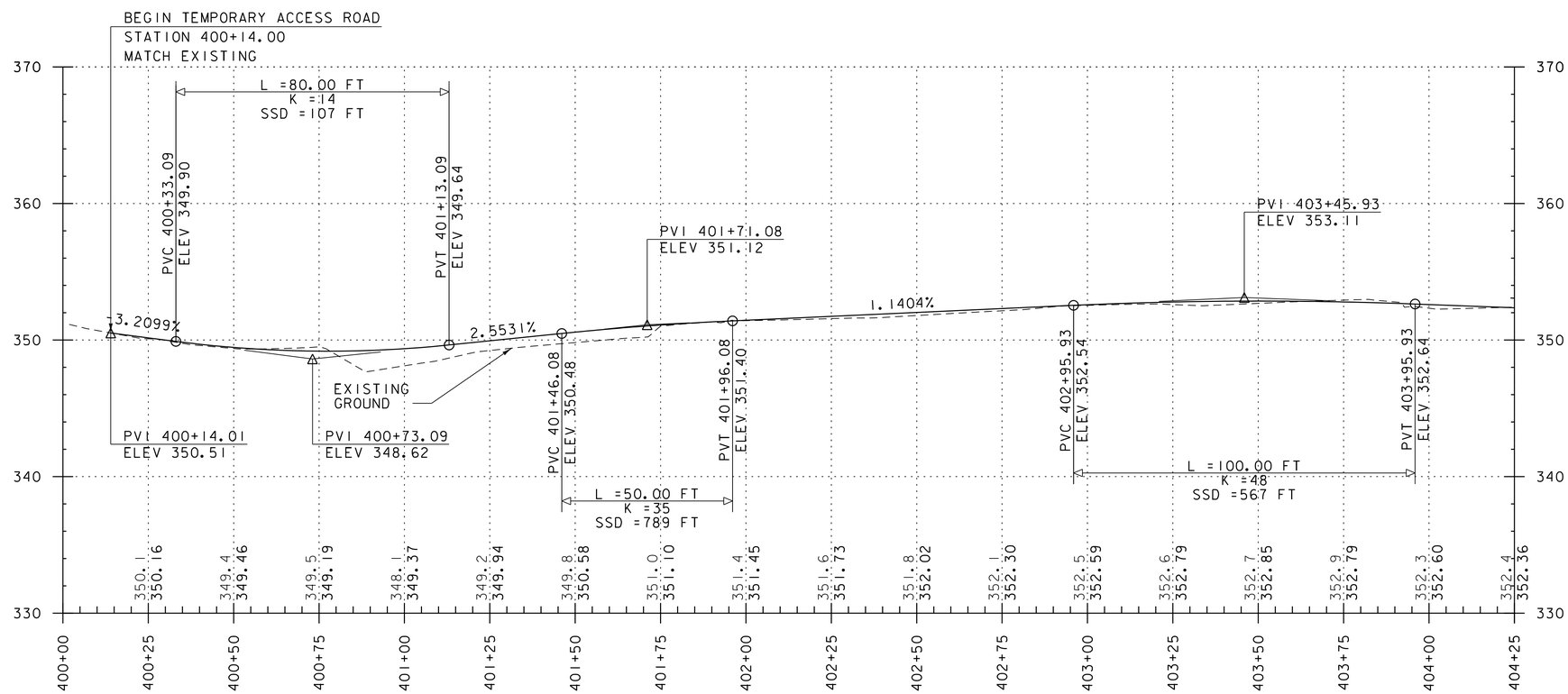


LEGEND

- T# TEMPORARY DRAINAGE NOTES
- SIDEWALK REMOVAL
- TYPE III BARRICADE WITH SIGN

SCALE 1" = 20′-0"
20 0 20

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_nul.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: K.C. BARRY	CHECKED BY: M.E. OOMS
TEMP ACCESS RD LAYOUT SHEETS (3 OF 3)	SHEET 19 OF 135



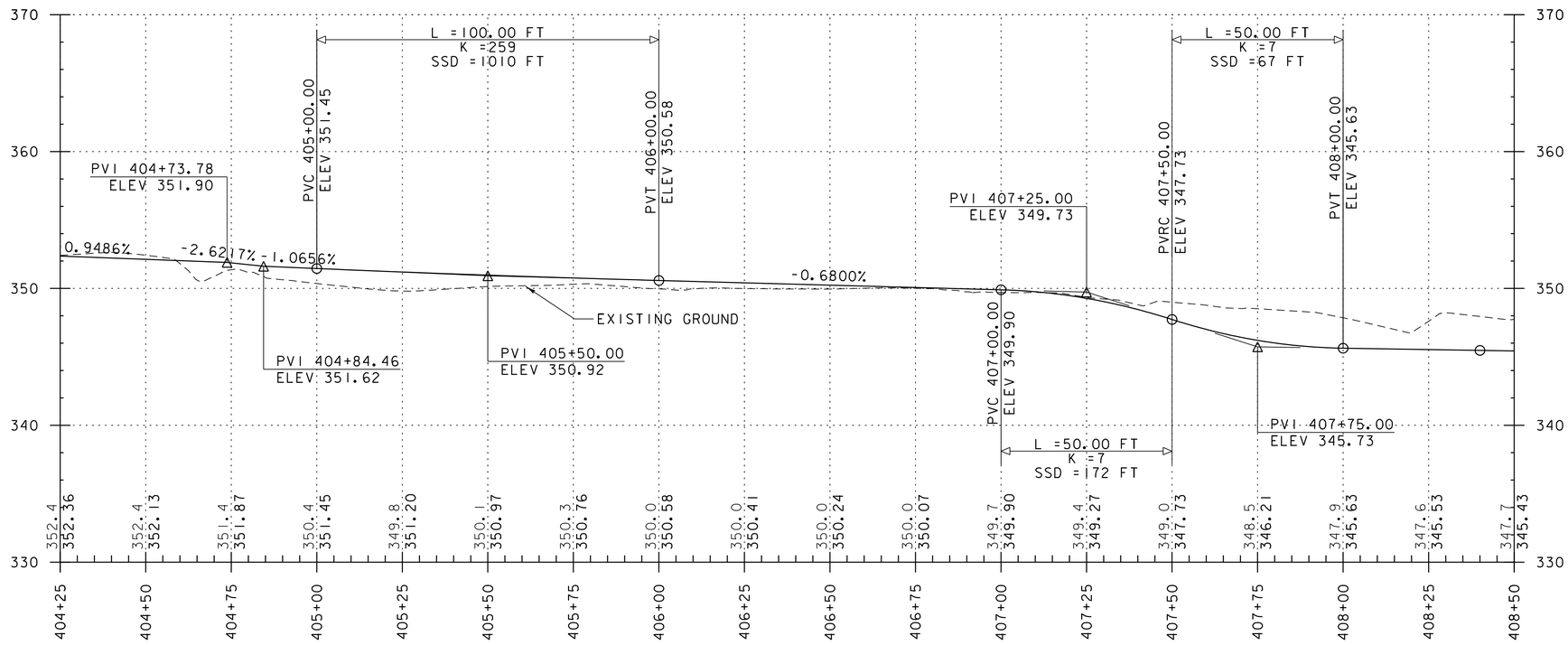
TEMPORARY ACCESS ROAD PROFILE

STA. 400+00 - 404+25
SCALE 1" = 20' HORIZONTAL
1" = 5' VERTICAL

NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISHED GRADE ALONG ℄

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046pro_access_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: D.M. PECK
TEMP ACCESS RD PROFILE SHEET (1 OF 3)	SHEET 20 OF 135



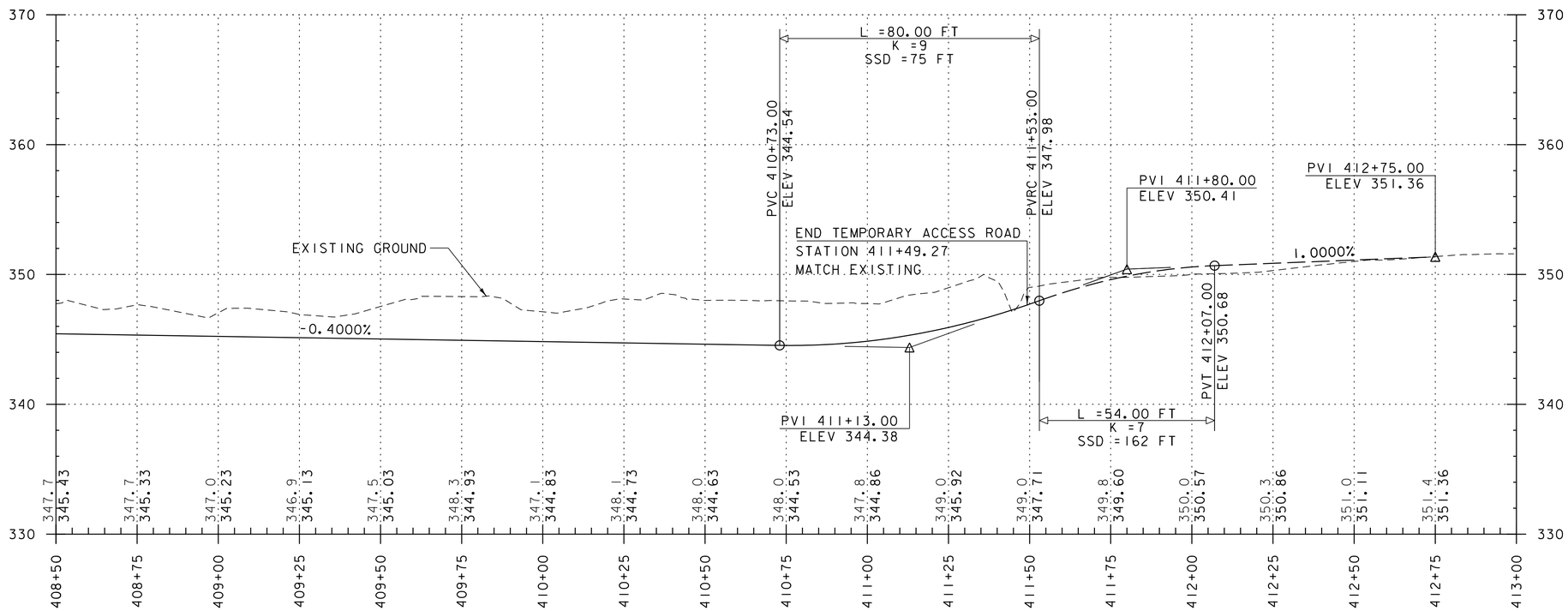
TEMPORARY ACCESS ROAD PROFILE

STA. 404+25 - 408+50
SCALE 1" = 20' HORIZONTAL
1" = 5' VERTICAL

NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISHED GRADE ALONG ℄

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046pro_access_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: D.M. PECK
TEMP ACCESS RD PROFILE SHEET (2 OF 3)	SHEET 21 OF 135



TEMPORARY ACCESS ROAD PROFILE

STA. 408+50 - 413+00
SCALE 1" = 20' HORIZONTAL
1" = 5' VERTICAL

NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISHED GRADE ALONG ℄

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046pro_access_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: D.M. PECK
TEMP ACCESS RD PROFILE SHEET (3 OF 3)	SHEET 22 OF 135

VT STATE PLANE GRID

N

CONSTRUCTION SEQUENCE

1. REMOVE STONES, PLAQUE, AND LIGHT POLE INTERFERING WITH THE TEMPORARY OUTFALL ACCESS ROAD.
2. REMOVE EXISTING PAVED WALKWAY.
3. INSTALL 16'-0" WIDE TEMPORARY ACCESS ROAD.
4. PAVE 5'-0" WIDE STRIP OF THE ACCESS ROAD WITH MEDIUM DUTY BITUMINOUS CONCRETE PAVEMENT.
5. REMOVE TEMPORARY ACCESS ROAD AND 5'-0" WIDE STRIP OF PAVEMENT FOR WALKWAY. PORTION OF THE STONE FILL, TYPE II TO REMAIN FOR BANK STABILIZATION.
6. PAVE PATHWAY WITH BITUMINOUS CONCRETE SIDEWALK.
7. STABILIZATION/RESTORATION OF SURFACES.

CHANGING ELEVATION OF DROP INLETS, CATCH BASINS, OR MANHOLES
STA. 101+10, 2.1' LT (YARD DRAIN)

STONE FILL, TYPE I
STA. 104+26 - 104+60, LT & RT

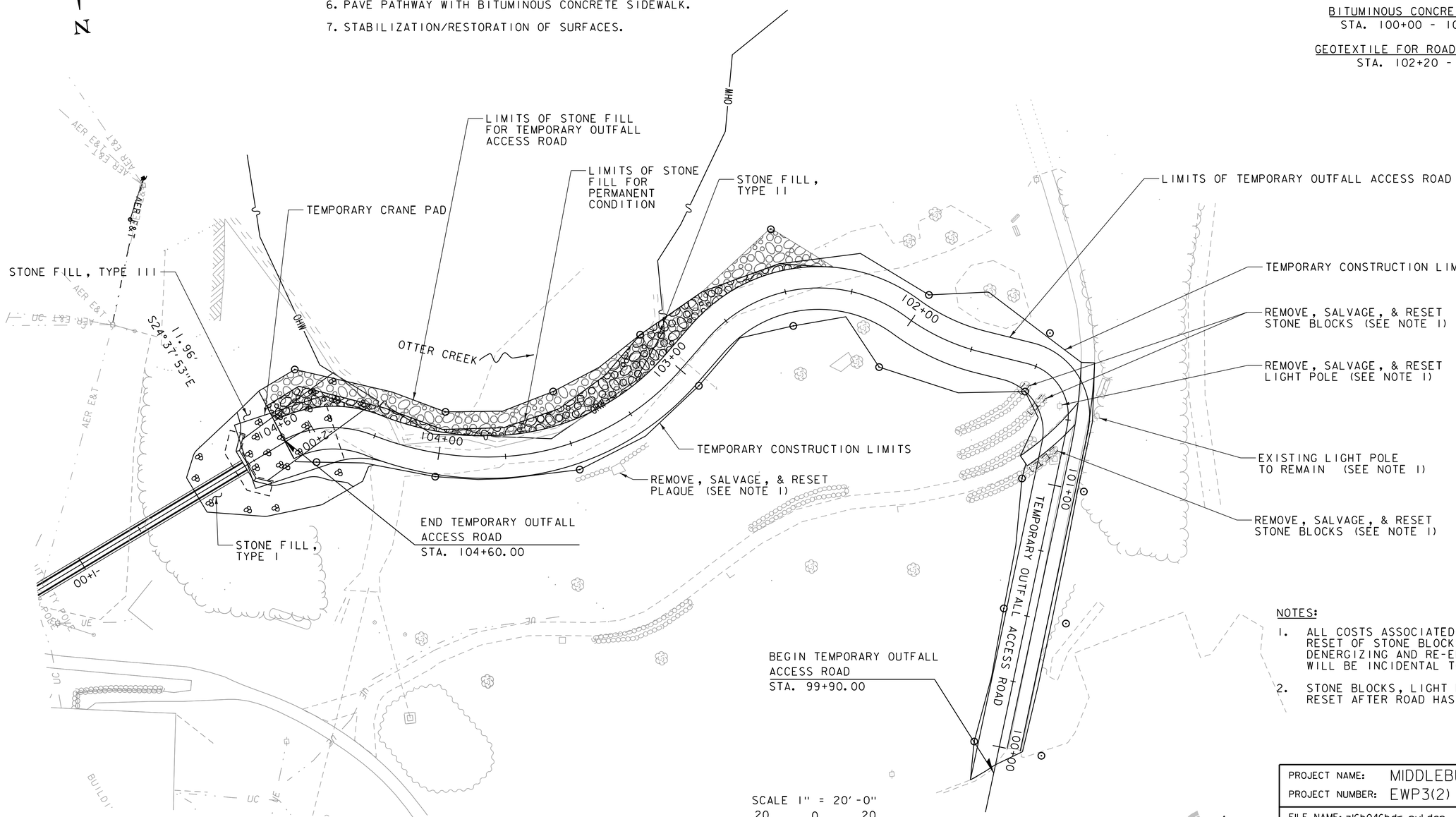
STONE FILL, TYPE II
STA. 102+20 - 104+39, RT

STONE FILL, TYPE III
STA. 104+22 - 104+60 RT

MEDIUM DUTY BITUMINOUS CONCRETE PAVEMENT
STA. 100+00 - 101+39, RT

BITUMINOUS CONCRETE SIDEWALK
STA. 100+00 - 101+39, RT

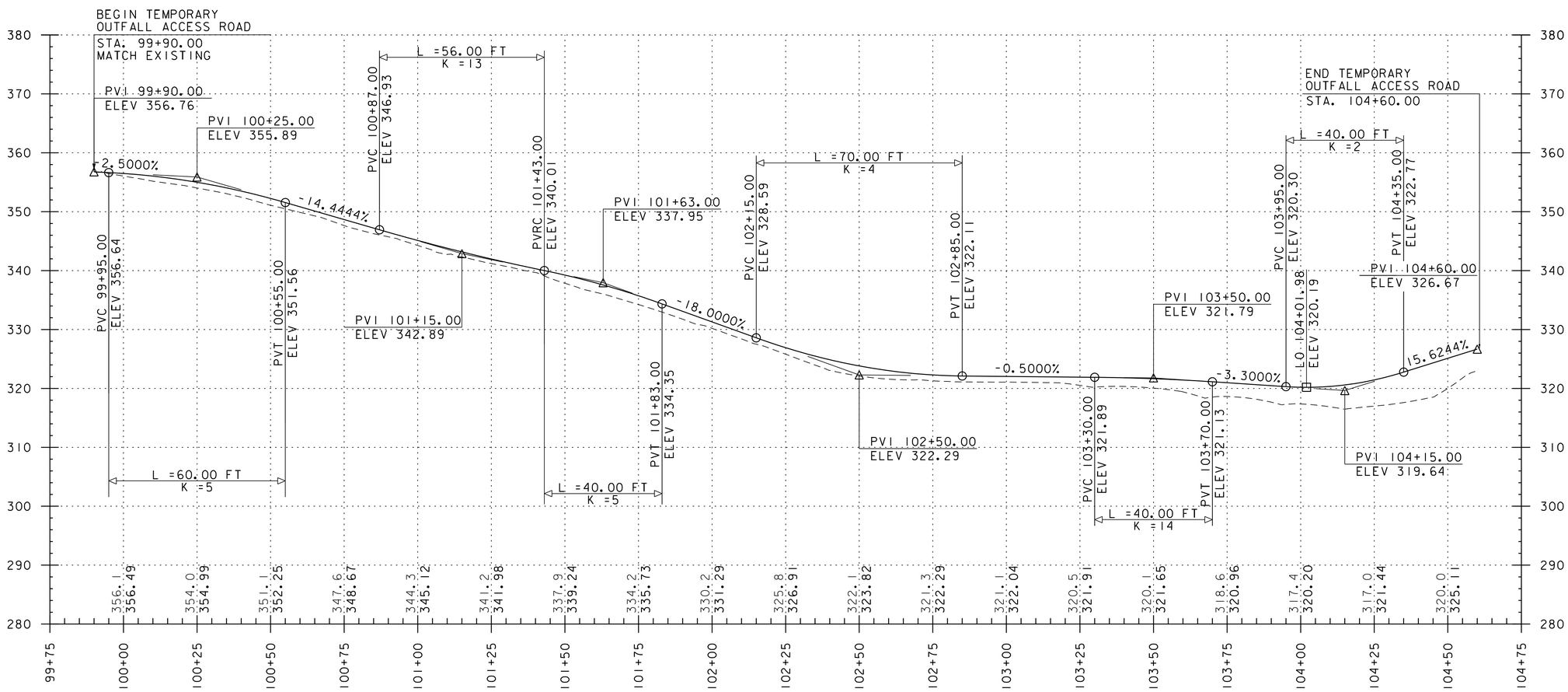
GEOTEXTILE FOR ROADBED SEPARATOR
STA. 102+20 - 104+60



NOTES:

1. ALL COSTS ASSOCIATED WITH THE REMOVAL AND RESET OF STONE BLOCKS, LIGHT POLE (INCLUDING DENERGIZING AND RE-ENERGIZING) AND PLAQUE WILL BE INCIDENTAL TO ALL CONTRACT ITEMS.
2. STONE BLOCKS, LIGHT POLE AND PLAQUE TO BE RESET AFTER ROAD HAS BEEN REMOVED.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_nul.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: D.M. PECK	CHECKED BY: S.E. BURBANK
TEMPORARY OUTFALL ACCESS ROAD LAYOUT	SHEET 23 OF 135



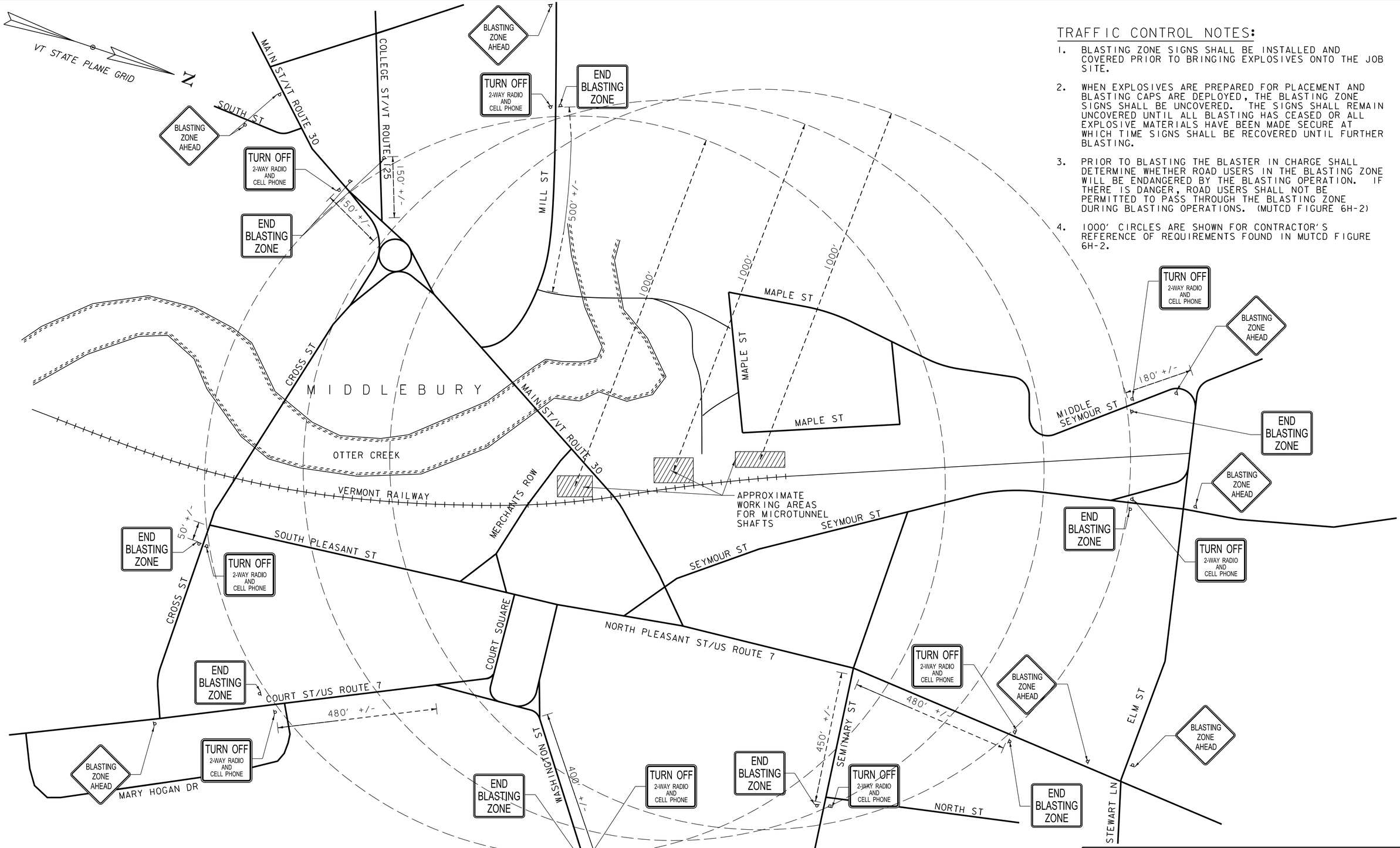
TEMPORARY OUTFALL ACCESS ROAD PROFILE

SCALE 1" = 20' HORIZONTAL
1" = 10' VERTICAL

NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISHED GRADE ALONG ℄

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046pro_outfall_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: E.F. LAWES	CHECKED BY: S.E. BURBANK
TEMP OUTFALL ACCESS ROAD PROFILE SHEET	SHEET 24 OF 135



TRAFFIC CONTROL NOTES:

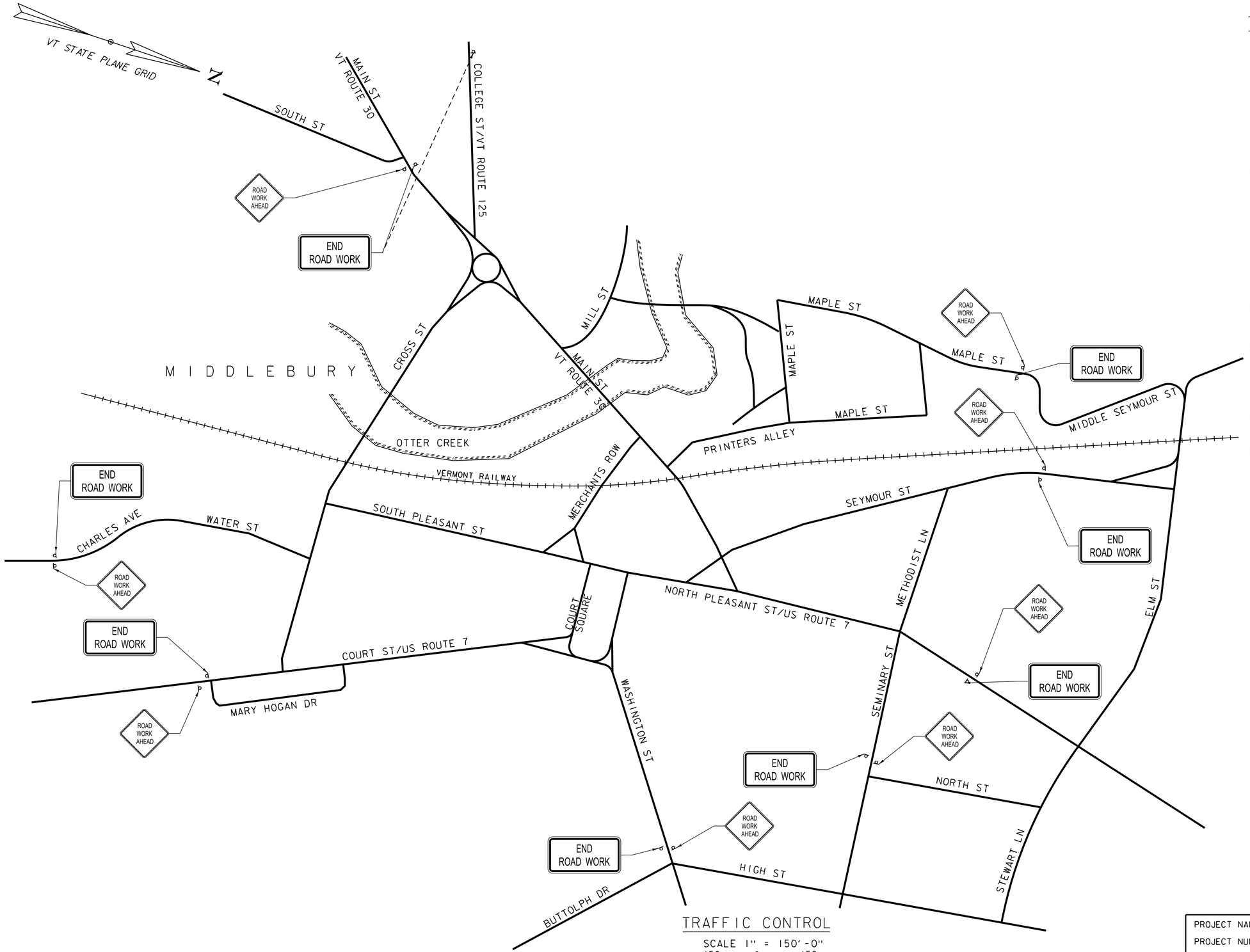
1. BLASTING ZONE SIGNS SHALL BE INSTALLED AND COVERED PRIOR TO BRINGING EXPLOSIVES ONTO THE JOB SITE.
2. WHEN EXPLOSIVES ARE PREPARED FOR PLACEMENT AND BLASTING CAPS ARE DEPLOYED, THE BLASTING ZONE SIGNS SHALL BE UNCOVERED. THE SIGNS SHALL REMAIN UNCOVERED UNTIL ALL BLASTING HAS CEASED OR ALL EXPLOSIVE MATERIALS HAVE BEEN MADE SECURE AT WHICH TIME SIGNS SHALL BE RECOVERED UNTIL FURTHER BLASTING.
3. PRIOR TO BLASTING THE BLASTER IN CHARGE SHALL DETERMINE WHETHER ROAD USERS IN THE BLASTING ZONE WILL BE ENDANGERED BY THE BLASTING OPERATION. IF THERE IS DANGER, ROAD USERS SHALL NOT BE PERMITTED TO PASS THROUGH THE BLASTING ZONE DURING BLASTING OPERATIONS. (MUTCD FIGURE 6H-2)
4. 1000' CIRCLES ARE SHOWN FOR CONTRACTOR'S REFERENCE OF REQUIREMENTS FOUND IN MUTCD FIGURE 6H-2.

BLASTING ZONE

SCALE 1" = 120'-0"

120 0 120

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046tcp.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: J.A. ROBERT
DESIGNED BY: E.G. DREW	CHECKED BY: M.D. SUENNEN
TRAFFIC CONTROL PLAN (SHEET 1 OF 8)	SHEET 25 OF 135



TRAFFIC CONTROL

SCALE 1" = 150'-0"

150 0 150

TRAFFIC CONTROL NOTES:

1. 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.
2. ALL SIGNS SHALL BE LOCATED SO THEY ARE VISIBLE AND ABLE TO BE READ BY THE TRAVELING PUBLIC. SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
3. SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, AND UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
4. WORK ZONE LIMIT SIGNS SHALL BE IN PLACE PRIOR TO ANY CONSTRUCTION ACTIVITIES
5. WORK ZONE LIMIT SIGNS SHALL REMAIN IN PLACE THROUGH THE DURATION OF THIS CONTRACT.
6. FLAGGING OPERATIONS WILL BE REQUIRED AT THE INTERSECTION OF MAPLE STREET AND THE PEDESTRIAN BRIDGE AND PATHWAY DURING THE CONSTRUCTION OF THE OUTFALL ACCESS DRIVEWAY AND CONTINUE THROUGHOUT THE OUTFALL CONSTRUCTION.
7. TEMPORARY TRAFFIC BARRIER EXPOSED TO TRAFFIC SHALL BE DELINEATED.
8. REFLECTORS ON TRAFFIC BARRIER SHALL BE MOUNTED EVERY 20 FEET ALONG THE SIDE OF THE BARRIER EXPOSED TO TRAFFIC, WITH YELLOW ON THE DRIVER'S LEFT AND WHITE ON THE DRIVER'S RIGHT. WHEN TRAFFIC MAY APPROACH THE BARRIER FROM TWO DIRECTIONS THE REFLECTORS SHALL BE WHITE.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046tcp.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: J.A. ROBERT
DESIGNED BY: E.G. DREW	CHECKED BY: M.D. SUENNEN
TRAFFIC CONTROL PLAN (SHEET 2 OF 8)	SHEET 26 OF 135

FENCING TO BE INSTALLED TO CLOSE OFF PARKING SPACES FOR DURATION OF CONSTRUCTION OPERATIONS IN TRIANGLE PARK.

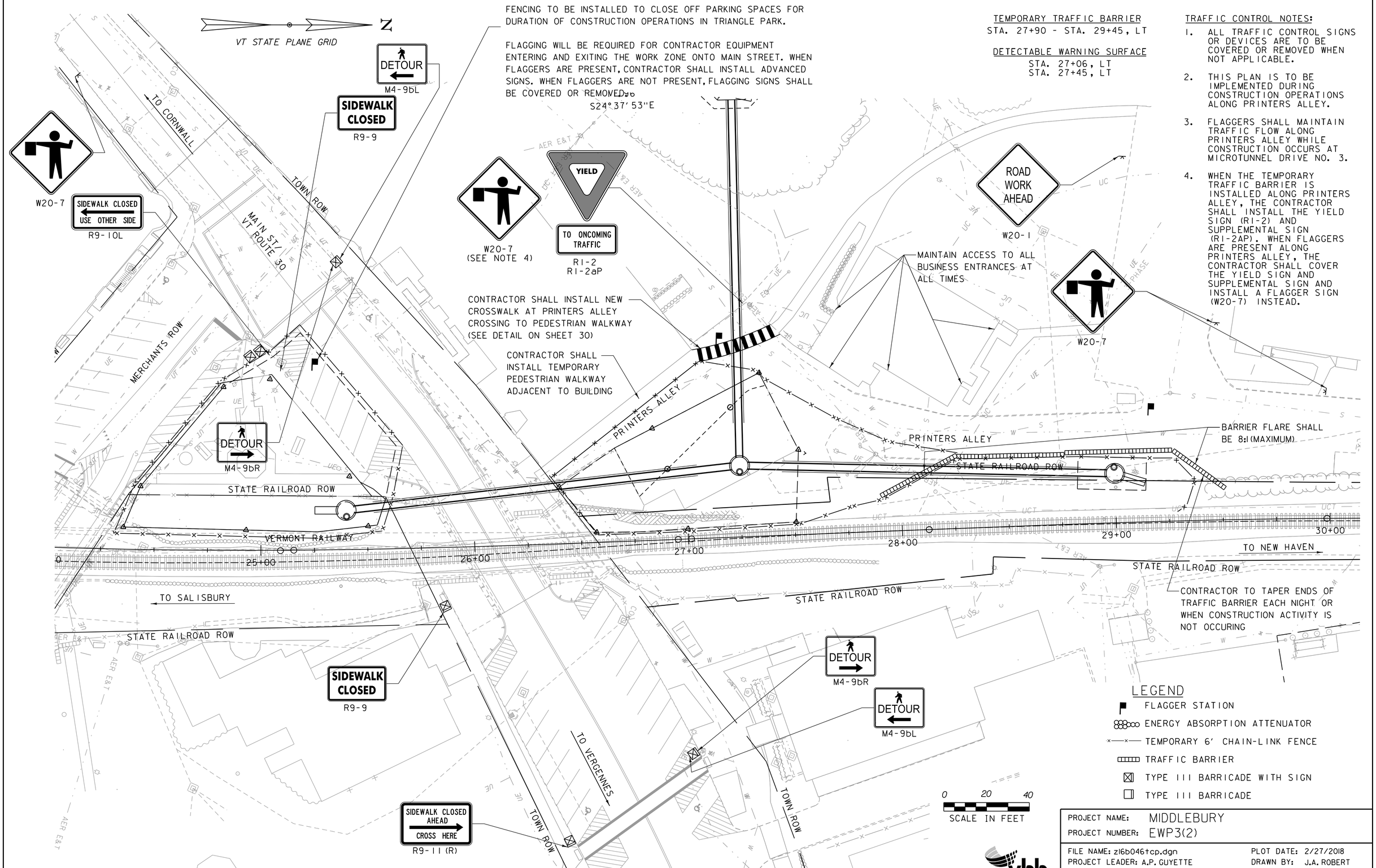
FLAGGING WILL BE REQUIRED FOR CONTRACTOR EQUIPMENT ENTERING AND EXITING THE WORK ZONE ONTO MAIN STREET. WHEN FLAGGERS ARE PRESENT, CONTRACTOR SHALL INSTALL ADVANCED SIGNS. WHEN FLAGGERS ARE NOT PRESENT, FLAGGING SIGNS SHALL BE COVERED OR REMOVED.

TEMPORARY TRAFFIC BARRIER
STA. 27+90 - STA. 29+45, LT

DETECTABLE WARNING SURFACE
STA. 27+06, LT
STA. 27+45, LT

TRAFFIC CONTROL NOTES:

1. ALL TRAFFIC CONTROL SIGNS OR DEVICES ARE TO BE COVERED OR REMOVED WHEN NOT APPLICABLE.
2. THIS PLAN IS TO BE IMPLEMENTED DURING CONSTRUCTION OPERATIONS ALONG PRINTERS ALLEY.
3. FLAGGERS SHALL MAINTAIN TRAFFIC FLOW ALONG PRINTERS ALLEY WHILE CONSTRUCTION OCCURS AT MICROTUNNEL DRIVE NO. 3.
4. WHEN THE TEMPORARY TRAFFIC BARRIER IS INSTALLED ALONG PRINTERS ALLEY, THE CONTRACTOR SHALL INSTALL THE YIELD SIGN (R1-2) AND SUPPLEMENTAL SIGN (R1-2AP). WHEN FLAGGERS ARE PRESENT ALONG PRINTERS ALLEY, THE CONTRACTOR SHALL COVER THE YIELD SIGN AND SUPPLEMENTAL SIGN AND INSTALL A FLAGGER SIGN (W20-7) INSTEAD.



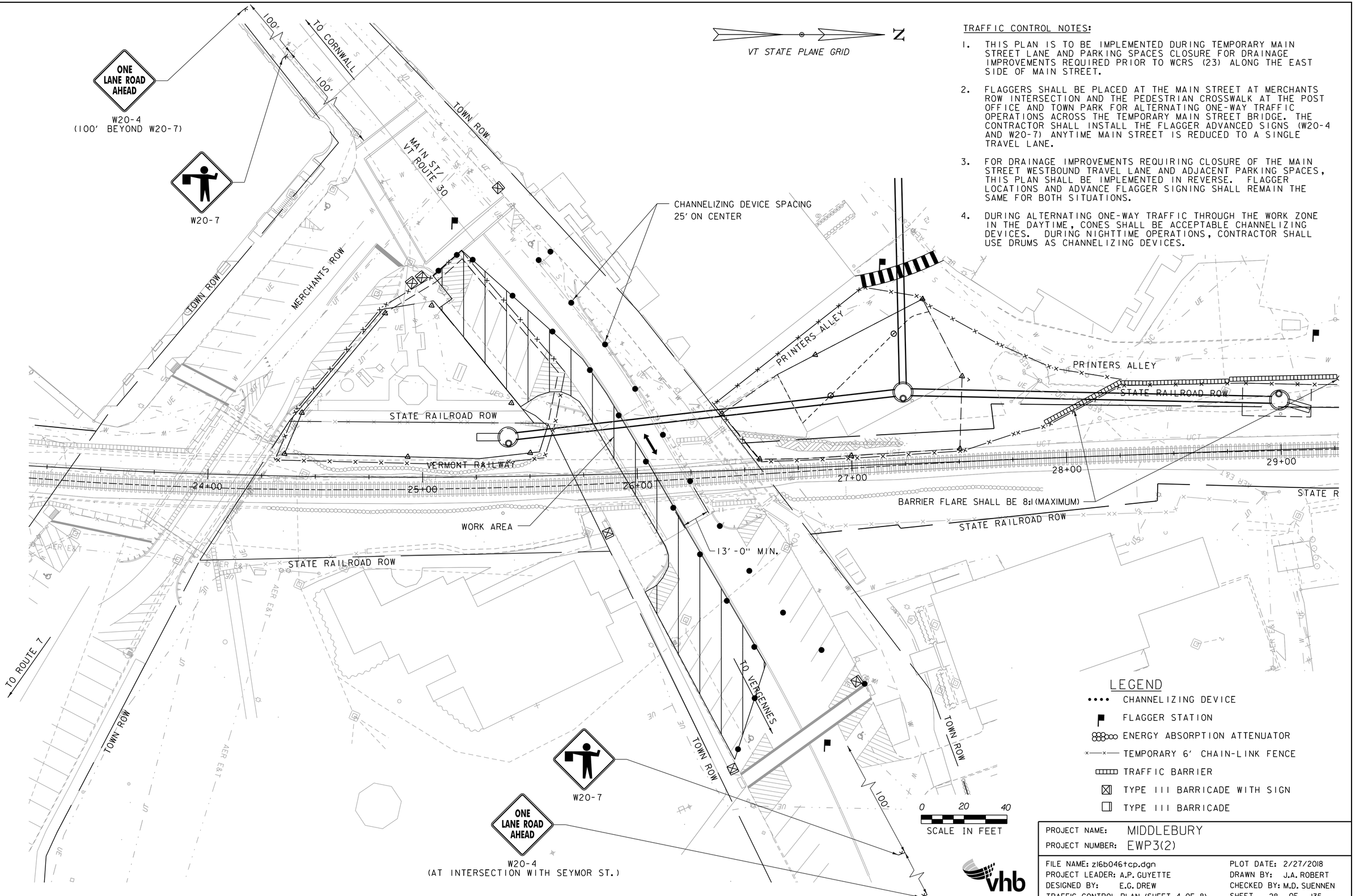
LEGEND

- FLAGGER STATION
- ENERGY ABSORPTION ATTENUATOR
- TEMPORARY 6' CHAIN-LINK FENCE
- TRAFFIC BARRIER
- TYPE III BARRICADE WITH SIGN
- TYPE III BARRICADE

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046tcp.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: J.A. ROBERT
DESIGNED BY: E.G. DREW	CHECKED BY: M.D. SUENNEN
TRAFFIC CONTROL PLAN (SHEET 3 OF 8)	SHEET 27 OF 135

TRAFFIC CONTROL NOTES:

1. THIS PLAN IS TO BE IMPLEMENTED DURING TEMPORARY MAIN STREET LANE AND PARKING SPACES CLOSURE FOR DRAINAGE IMPROVEMENTS REQUIRED PRIOR TO WCRS (23) ALONG THE EAST SIDE OF MAIN STREET.
2. FLAGGERS SHALL BE PLACED AT THE MAIN STREET AT MERCHANTS ROW INTERSECTION AND THE PEDESTRIAN CROSSWALK AT THE POST OFFICE AND TOWN PARK FOR ALTERNATING ONE-WAY TRAFFIC OPERATIONS ACROSS THE TEMPORARY MAIN STREET BRIDGE. THE CONTRACTOR SHALL INSTALL THE FLAGGER ADVANCED SIGNS (W20-4 AND W20-7) ANYTIME MAIN STREET IS REDUCED TO A SINGLE TRAVEL LANE.
3. FOR DRAINAGE IMPROVEMENTS REQUIRING CLOSURE OF THE MAIN STREET WESTBOUND TRAVEL LANE AND ADJACENT PARKING SPACES, THIS PLAN SHALL BE IMPLEMENTED IN REVERSE. FLAGGER LOCATIONS AND ADVANCE FLAGGER SIGNING SHALL REMAIN THE SAME FOR BOTH SITUATIONS.
4. DURING ALTERNATING ONE-WAY TRAFFIC THROUGH THE WORK ZONE IN THE DAYTIME, CONES SHALL BE ACCEPTABLE CHANNELIZING DEVICES. DURING NIGHTTIME OPERATIONS, CONTRACTOR SHALL USE DRUMS AS CHANNELIZING DEVICES.



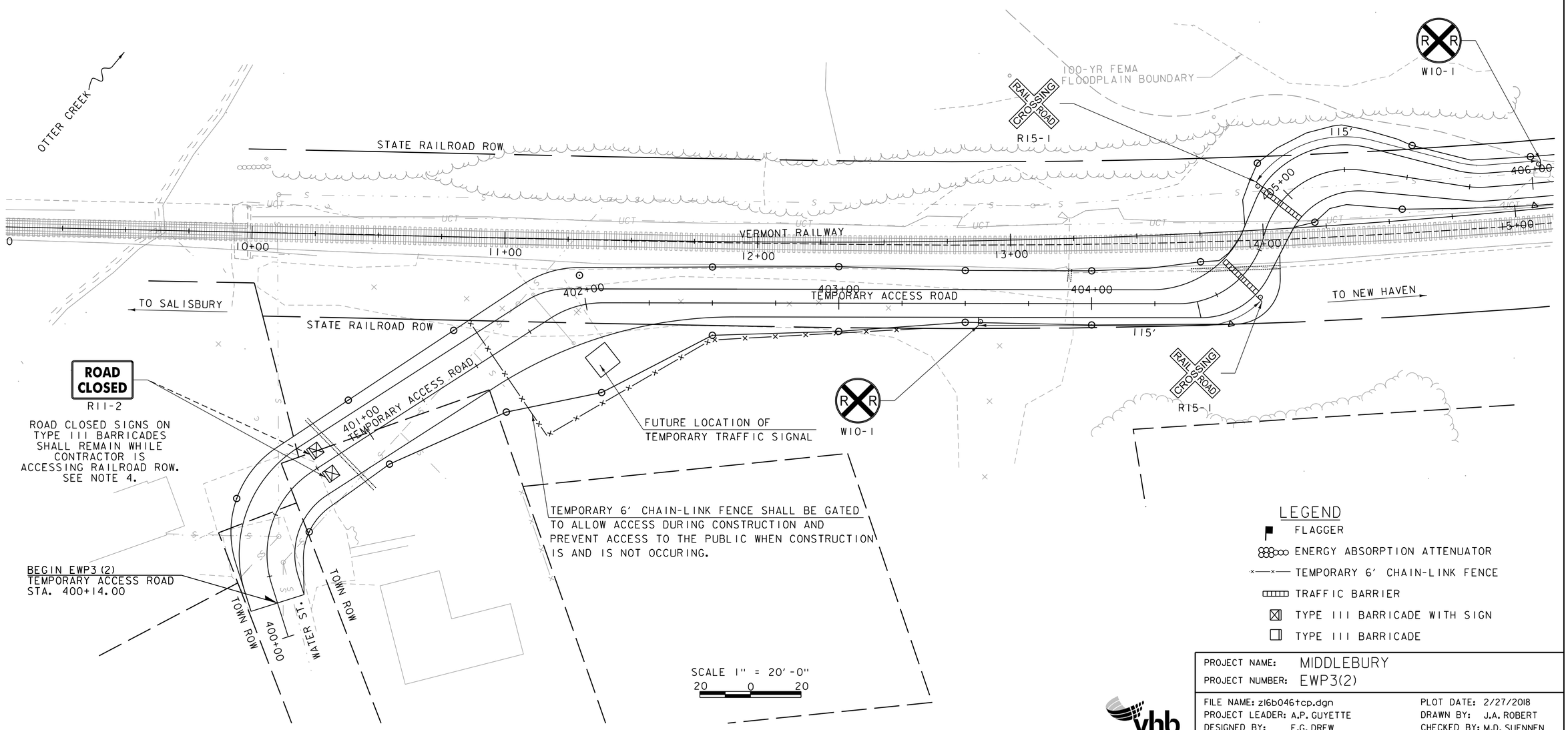
LEGEND

- CHANNELIZING DEVICE
- FLAGGER STATION
- ENERGY ABSORPTION ATTENUATOR
- TEMPORARY 6' CHAIN-LINK FENCE
- TRAFFIC BARRIER
- TYPE III BARRICADE WITH SIGN
- TYPE III BARRICADE

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046tcp.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: J.A. ROBERT
DESIGNED BY: E.G. DREW	CHECKED BY: M.D. SUENNEN
TRAFFIC CONTROL PLAN (SHEET 4 OF 8)	SHEET 28 OF 135

TRAFFIC CONTROL NOTES:

1. CONTRACTOR TO RESET GATE FENCING AT ENTRANCE TO THE TEMPORARY ACCESS ROAD AND RAILROAD CROSSING AT THE COMPLETION OF EACH WORK SHIFT. THE GATED FENCING SHALL REMAIN IN PLACE AT THE CONCLUSION OF THIS CONTRACT.
2. CONSTRACTOR TO INSTALL W10-1 AND R15-1 SIGNS BEFORE ANY CONSTRUCTION VEHICLES MAY CROSS THE RAILROAD TRACKS.
3. RAILROAD CROSSING SIGNS TO REMAIN IN PLACE AT THE CONCLUSION OF THIS CONTRACT.
4. AT THE COMPLETION OF THE ACCESS ROAD CONSTRUCTION, CONTRACTOR SHALL PLACE BARRIERS ACROSS THE ACCESS ROAD AT THE RAILROAD CROSSBUCKS AND RELOCATE THE ROAD CLOSED SIGNS TO THE FENCE GATES.

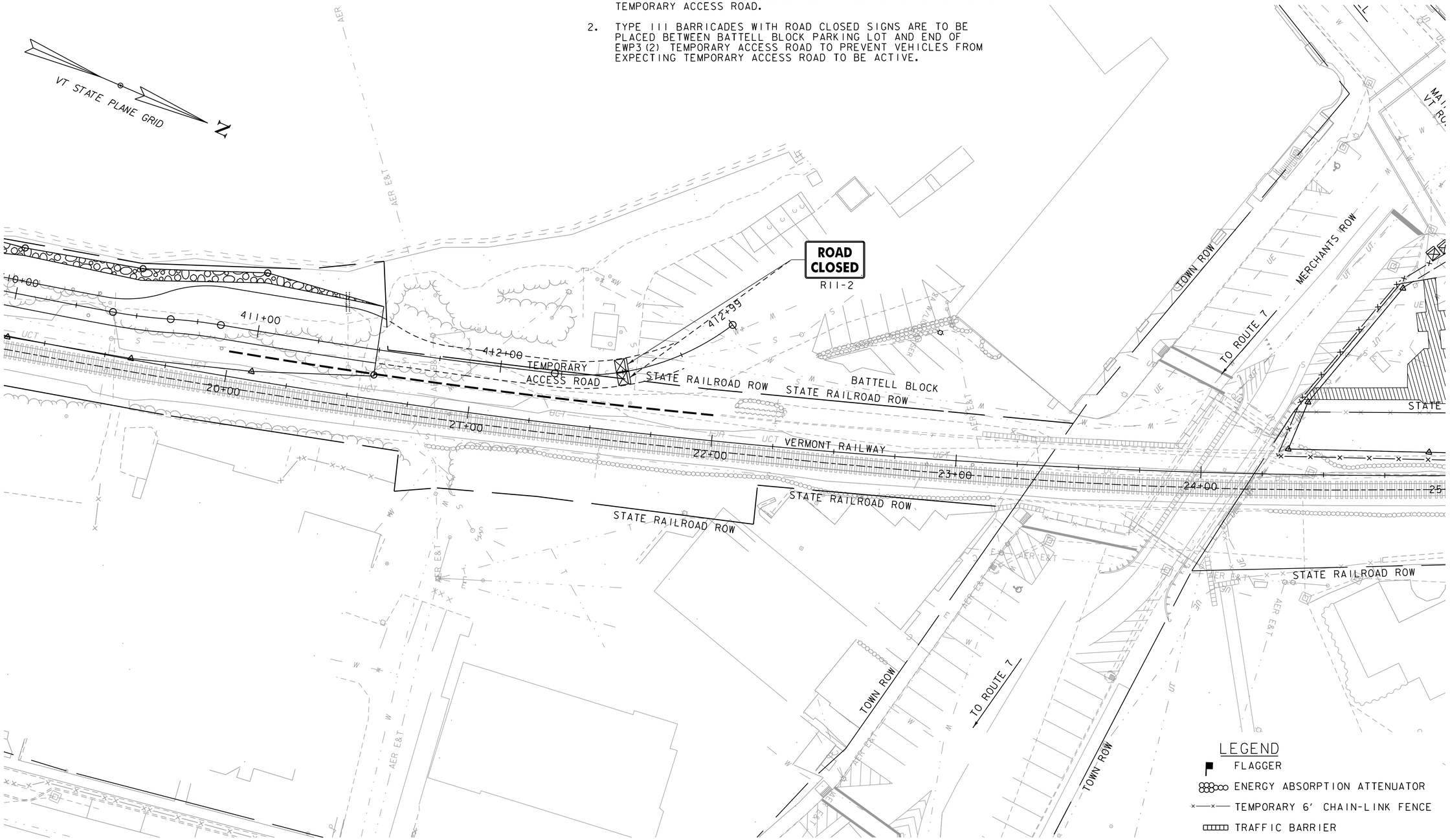


PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046tcp.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: J.A. ROBERT
DESIGNED BY: E.G. DREW	CHECKED BY: M.D. SUENNEN
TRAFFIC CONTROL PLAN (SHEET 5 OF 8)	SHEET 29 OF 135

TRAFFIC CONTROL NOTES:

1. THIS PLAN IS TO BE IMPLEMENTED THROUGHOUT CONSTRUCTION OF TEMPORARY ACCESS ROAD.

2. TYPE III BARRICADES WITH ROAD CLOSED SIGNS ARE TO BE PLACED BETWEEN BATTELL BLOCK PARKING LOT AND END OF EWP3(2) TEMPORARY ACCESS ROAD TO PREVENT VEHICLES FROM EXPECTING TEMPORARY ACCESS ROAD TO BE ACTIVE.



LEGEND

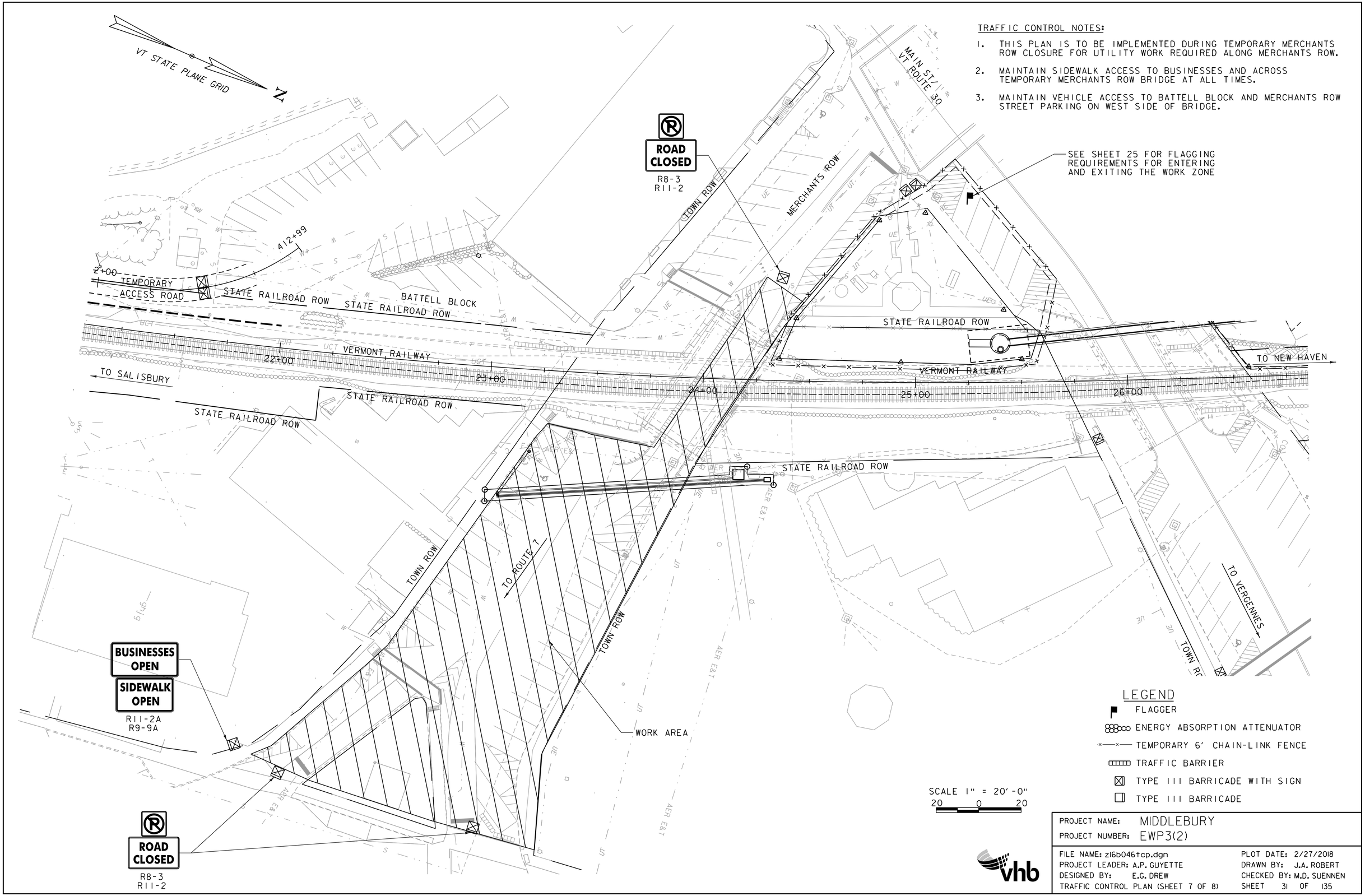
- FLAGGER
- ENERGY ABSORPTION ATTENUATOR
- TEMPORARY 6' CHAIN-LINK FENCE
- TRAFFIC BARRIER
- TYPE III BARRICADE WITH SIGN
- TYPE III BARRICADE

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

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046tcp.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: J.A. ROBERT
DESIGNED BY: E.G. DREW	CHECKED BY: M.D. SUENNEN
TRAFFIC CONTROL PLAN (SHEET 6 OF 8)	SHEET 30 OF 135

TRAFFIC CONTROL NOTES:

1. THIS PLAN IS TO BE IMPLEMENTED DURING TEMPORARY MERCHANTS ROW CLOSURE FOR UTILITY WORK REQUIRED ALONG MERCHANTS ROW.
2. MAINTAIN SIDEWALK ACCESS TO BUSINESSES AND ACROSS TEMPORARY MERCHANTS ROW BRIDGE AT ALL TIMES.
3. MAINTAIN VEHICLE ACCESS TO BATTELL BLOCK AND MERCHANTS ROW STREET PARKING ON WEST SIDE OF BRIDGE.



LEGEND

- FLAGGER
- ENERGY ABSORPTION ATTENUATOR
- TEMPORARY 6' CHAIN-LINK FENCE
- TRAFFIC BARRIER
- TYPE III BARRICADE WITH SIGN
- TYPE III BARRICADE

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

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046tcp.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: J.A. ROBERT
DESIGNED BY: E.G. DREW	CHECKED BY: M.D. SUENNEN
TRAFFIC CONTROL PLAN (SHEET 7 OF 8)	SHEET 31 OF 135

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH (IN)	SIZE OF SIGN HEIGHT (IN)	TEXT	NUMBER OF SIGNS REQ'D	REMARKS
G20-2	36	18	END ROAD WORK	9	MOUNT ON ONE POST
R1-2	36	36	YIELD	1	MOUNT ON ONE POST
R1-2aP	24	18	TO ONCOMING TRAFFIC	1	MOUNT BELOW R1-2
R8-3	24	24		3	MOUNTED ON TYPE III BARRICADE
R9-9	24	12	SIDEWALK CLOSED	2	MOUNTED ON TYPE III BARRICADE
R9-9A	24	12	SIDEWALK OPEN	1	MOUNTED ON TYPE III BARRICADE
R9-10L	24	12	SIDEWALK CLOSED ← USE OTHER SIDE	1	MOUNTED ON TYPE III BARRICADE
R9-11R	24	12	SIDEWALK CLOSED AHEAD → CROSS HERE	1	MOUNTED ON TYPE III BARRICADE
R11-2	48	30	ROAD CLOSED	7	MOUNTED ON TYPE III BARRICADE
R11-2A	60	30	BUSINESSES OPEN	1	MOUNTED ON TYPE III BARRICADE
R15-1	96	9	RAIL CROSSING ROAD	2	MOUNT ON ONE POST
W10-1	36	36	R R	2	MOUNT ON ONE POST
W20-1	48	48	ROAD WORK AHEAD	8	MOUNT ON ONE POST
W20-4	48	48	ONE LANE ROAD AHEAD	2	INSTALLED ON TEMP STANDS

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH (IN)	SIZE OF SIGN HEIGHT (IN)	TEXT	NUMBER OF SIGNS REQ'D	REMARKS
W20-7	48	48		4	INSTALL ON TEMP STANDS
W22-1	48	48	BLASTING ZONE AHEAD	9	MOUNT ON ONE POST
W22-2	42	36	TURN OFF 2-WAY RADIO AND CELL PHONE	9	MOUNT ON ONE POST
W22-3	42	36	END BLASTING ZONE	9	MOUNT ON ONE POST
M4-9bL	30	24	DETOUR ←	2	MOUNTED ON TYPE III BARRICADE
M4-9bR	30	24	DETOUR →	2	MOUNTED ON TYPE III BARRICADE

NOTES:

1. COLORS FOR THE R1-2aP, R9, R11 AND R15 SIGNS SHALL BE BLACK TEXT AND BORDER ON RETROREFLECTIVE WHITE BACKGROUND.
2. COLORS FOR THE W10-1 SIGNS SHALL BE BLACK TEXT AND BORDER ON RETROREFLECTIVE YELLOW BACKGROUND.
3. ALL WARNING SIGNS SHALL BE BLACK TEXT ON RETROREFLECTIVE FLUORESCENT ORANGE (TYPE VII MINIMUM) BACKGROUND.

CROSSWALK MARKING DETAIL

ADJUST SPACING (12" TO 24") TO AVOID WHEEL PATHS.

BLOCKS SHOULD BE INSTALLED PARALLEL TO TRAFFIC FLOW. FOR SKEWED CROSSINGS, OFFSET BLOCKS LATERALLY AS NEEDED.

CROSSWALK MARKINGS SHALL CONFORM TO SUBSECTION 646.06.

SOIL CLASSIFICATION

AASHTO

A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
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ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
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SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
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CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)

N	DESCRIPTIVE TERM
<5	Very Loose
5-10	Loose
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25-50	Dense
>50	Very Dense

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<2	Very Soft
2-4	Soft
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9-15	Stiff
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31-60	Hard
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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
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%Rec.	Percent Recovery
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VTSPG	NAD83 - See Note 7

COLOR

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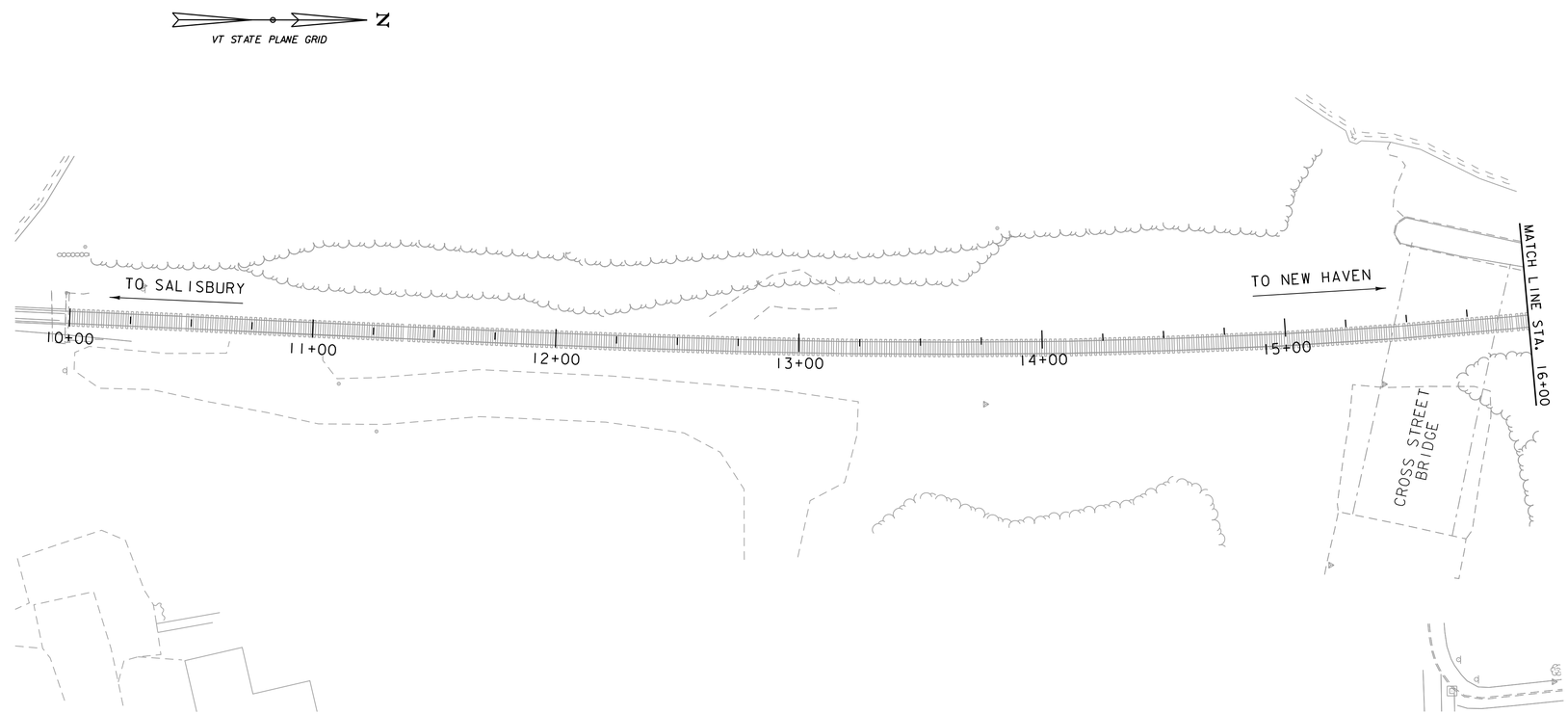
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		



BORING LAYOUT

SCALE 1" = 30'-0"
30 0 30

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB	NORTHING	EASTING
GBD-1	11+98.54	0.38 RT	350.30'	N/A	551271.76	1464975.84
GBD-2(OW)	13+73.47	3.14 RT	351.00'	N/A	551446.76	1464979.44
RR-3	14+97.94	5.21 RT	351.06'	N/A	551571.35	1464975.76

DEFINITIONS (AASHTO)

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vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046bor.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING INFORMATION SHEET (1 OF 6)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 33 OF 135

SOIL CLASSIFICATION

AASHTO

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25-50	Dense	9-15	Stiff
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VS	Field Vane Shear Test
US	Undisturbed Soil Sample
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DC	Diamond Core
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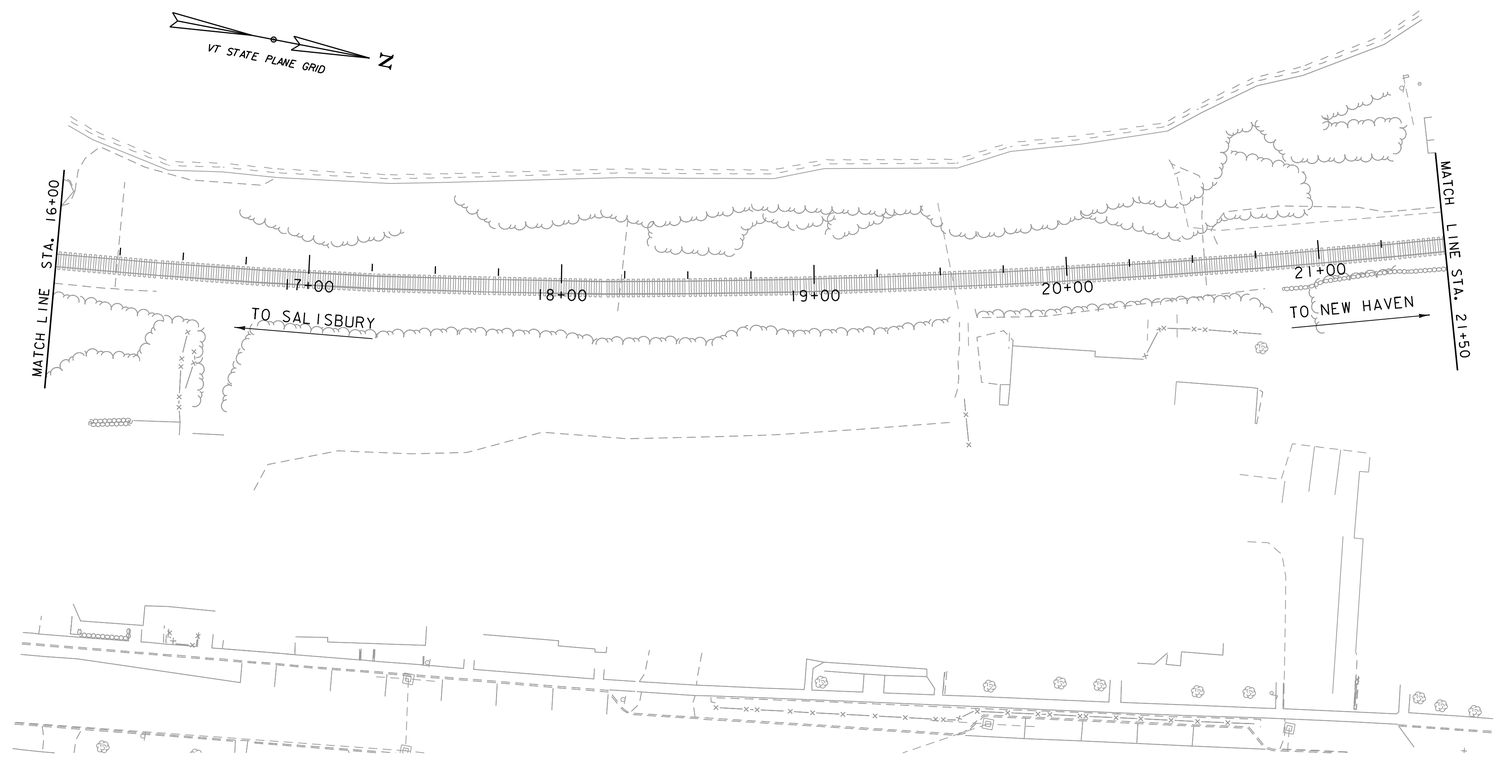

BORING LAYOUT

SCALE 1" = 30'-0"
30 0 30

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB	NORTHING	EASTING
GBD-3	16+05.36	15.68 RT	350.23'	N/A	551679.66	1464976.94
GBD-4	16+99.78	8.03 LT	349.48'	N/A	551770.66	1464942.04
GBD-5(OW)	17+89.97	16.55 RT	349.65'	N/A	551863.66	1464952.64
GBD-6	18+88.46	11.74 LT	349.07'	N/A	551955.36	1464906.74
GBD-7	19+96.41	12.31 RT	349.86'	N/A	552065.96	1464906.64
GBD-8	21+03.59	11.23 LT	349.86'	N/A	552163.66	1464856.64
RR-4	19+97.08	3.89 RT	350.23'	N/A	552064.62	1464898.30
RR-11(OW)	20+96.97	8.43 RT	350.50'	N/A	552162.61	1464877.36

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vhb

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PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046bor.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING INFORMATION SHEET (2 OF 6)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 34 OF 135

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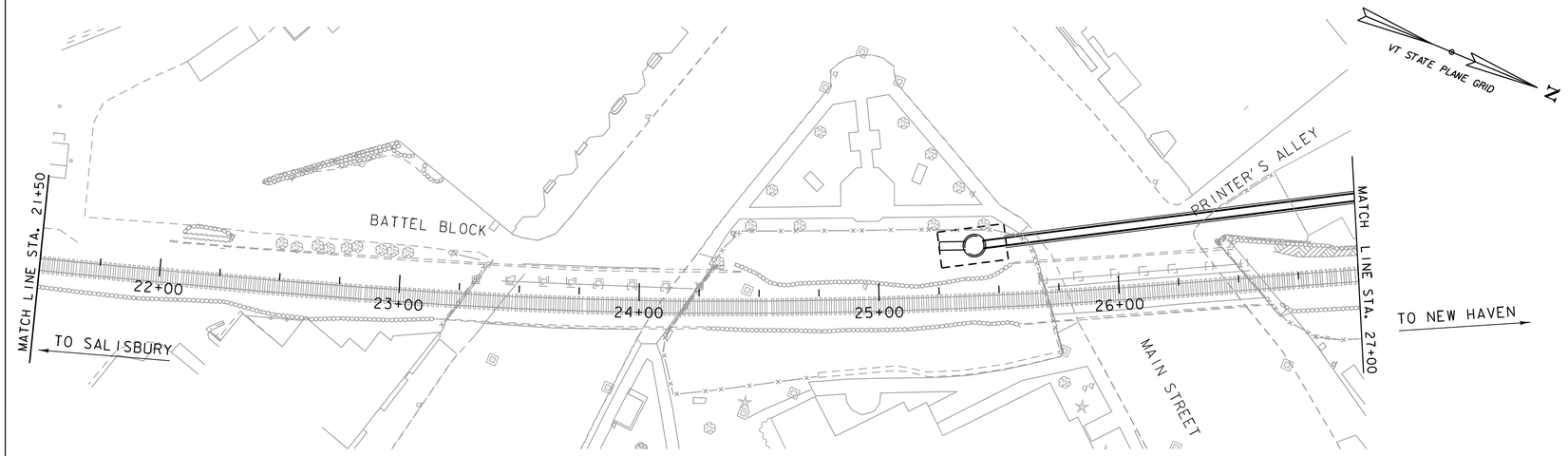

BORING LAYOUT

SCALE 1" = 30'-0"
30 0 30

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB	NORTHING	EASTING
GBD-10(P)	22+56.25	3.72 RT	350.03'	331.5'	552313.66	1464825.64
GDB-33	24+92.96	2.33 RT	350.10'	331.0'	552534.16	1464739.04
GDB-34	25+50.98	9.06 RT	350.33'	335.5'	552590.06	1464721.54
MR-1	24+32.52	30.43 LT	366.71'	337.5'	552466.01	1464732.20
MR-2A	23+90.15	26.60 RT	369.77'	345.7'	552447.91	1464800.88
MR-2B	23+79.44	51.01RT	370.18'	341.3'	552446.67	1464827.56
MS-1A	26+60.15	35.98 RT	370.29'	357.4'	552700.66	1464699.45
MS-1B	26+70.22	42.33 RT	370.30'	344.3'	552712.50	1464700.82
MS-2A	25+64.09	29.57 LT	366.97'	345.7'	552585.87	1464680.97
MS-2B	25+53.66	42.66 LT	366.23'	347.2'	552571.03	1464673.37
MS-101	25+79.06	16.78 LT	368.68'	N/A	552604.76	1464686.34
MS-102	25+85.03	17.00 LT	368.80'	N/A	552610.06	1464683.64
MS-103	25+94.09	17.20 LT	369.00'	347.5'	552618.16	1464679.64
MS-104	25+93.95	23.24 LT	368.57'	358.7'	552615.47	1464674.23
RR-2	26+69.45	1.94 RT	350.92'	349.42'	552694.38	1464664.71
RR-12	21+95.98	8.50 RT	350.30'	332.10'	552257.78	1464849.03
RR-13(OW)	23+08.54	9.69 RT	350.19'	333.10'	552365.10	1464813.95
RR-14	24+28.94	10.88 RT	350.31'	326.30'	552478.33	1464771.79
RR-15	24+94.73	11.53 RT	350.32'	327.32'	522539.45	1464746.77

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB	NORTHING	EASTING
RR-16(OW)	25+61.50	9.75 RT	350.37'	338.40'	552599.93	1464717.78
MR-101	24+20.58	12.85 LT	367.28'	N/A	552461.66	1464752.94
MR-102	24+20.77	15.81LT	367.96'	N/A	552460.72	1464750.13
MR-103	24+20.70	18.74 LT	367.80'	N/A	552459.56	1464747.44
MR-104	24+20.76	21.84 LT	367.59'	N/A	552458.46	1464744.54
MR-105	24+14.62	17.94 LT	367.91'	N/A	552457.06	1464749.34
MR-106	24+17.86	20.78 LT	367.74'	N/A	552456.18	1464746.60
MR-107	24+17.65	17.91LT	367.95'	N/A	552454.26	1464750.44
TP-101	26+43.31	6.88 LT	352.50'	351.5'	552667.00	1464668.00
TP-102	26+04.74	9.62 LT	350.50'	349.0'	552631.00	1464682.00
TP-103	25+77.45	7.98 T	350.40'	N/A	552607.00	1464695.00
TP-104	24+51.09	13.79 RT	350.20'	N/A	552500.00	1464766.00
TP-105	24+30.90	5.37 LT	351.10'	N/A	552474.00	1464756.00
TP-106	23+06.66	9.00 LT	349.60'	N/A	552357.00	1464797.00
TP-107	21+72.60	10.57 RT	350.30'	N/A	552236.00	1464858.00
TP-108	22+36.25	11.08 RT	350.20'	N/A	552297.00	1464839.00
TP-109	23+35.74	13.33 RT	350.10'	N/A	552392.00	1464808.00
TP-110	24+40.76	5.66 LT	351.50'	N/A	552483.00	1464752.00
TP-111	25+98.18	13.81RT	350.40'	N/A	552635.00	1464706.00
TP-201	26+58.54	6.28 LT	350.00'	348.3'	552681.00	1464662.00
TP-202	26+44.69	5.12 LT	350.00'	348.5'	552669.00	1464669.00
TP-203	26+26.80	4.76 LT	350.00'	348.6'	552653.00	1464677.00
TP-204	26+15.61	4.51LT	350.00'	348.0'	552643.00	1464682.00
TP-205	25+96.81	4.50 LT	350.00'	347.3'	552626.00	1464690.00
TP-206	25+87.92	2.02 LT	350.00'	347.0'	552619.00	1464696.00
TP-207	25+71.78	2.89 LT	350.00'	347.0'	552604.00	1464702.00

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vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046bor.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING INFORMATION SHEET (3 OF 6)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 35 OF 135

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)	
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<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
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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
RQD	Rock Quality Designation
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R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

COLOR

blk	Black	pnk	Pink
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gry	Gray	wh	White
gn	Green	yel	Yellow
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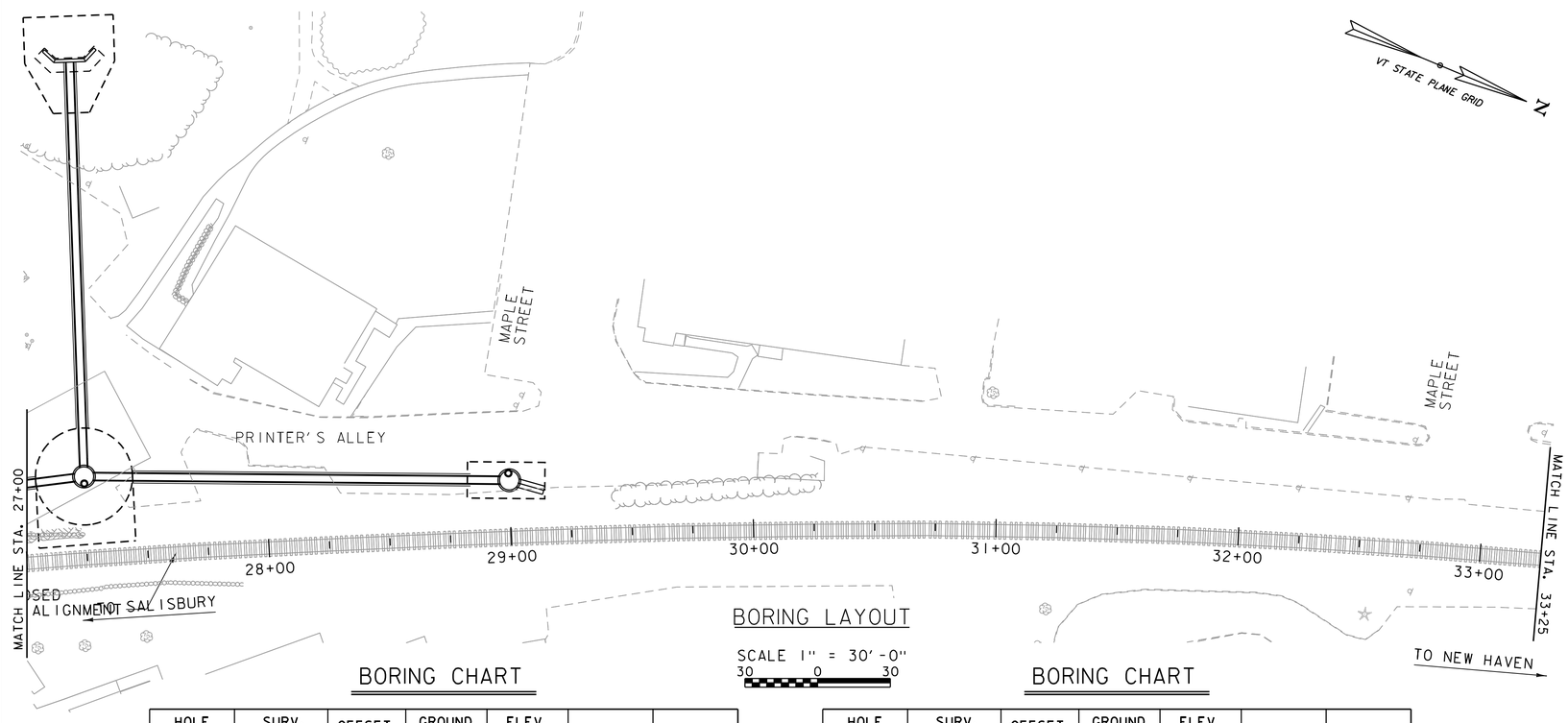
or	Orange		



BORING LAYOUT

SCALE 1" = 30'-0"
30 0 30

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB	NORTHING	EASTING
GDB-13	29+00.48	10.22 RT	352.23'	338.70'	552906.36	1464572.64
GDB-14	29+94.46	9.48 LT	354.29'	N/A	552983.66	1464515.64
GDB-15	30+88.16	9.75 RT	355.63'	N/A	553077.46	1464496.94
GDB-16(OW)	31+97.04	14.78 LT	355.88'	N/A	553170.56	1464435.24
GDB-23(P)	28+83.07	29.73 LT	353.77'	346.6'	552873.56	1464543.94
GDB-17	33+11.71	7.47 RT	357.02'	N/A	553286.46	1464419.44
GDB-24(P)	28+88.43	77.18 LT	353.78'	330.6'	552858.16	1464498.74
GDB-25(P)	28+63.49	158.55 LT	352.22'	330.5'	552800.46	1464436.04
GDB-26(P)	28+11.12	209.49 LT	350.34'	325.7'	552730.86	1464412.84
GDB-27(P)	27+21.29	90.41 LT	360.20'	353.6'	552701.26	1464559.04
GDB-28	27+59.51	133.20 LT	357.57'	352.40'	552717.26	1464503.94
GDB-29	28+93.79	5.64 LT	352.97'	337.8'	552893.56	1464561.14
RR-7	26+93.95	1.34 RT	351.06'	N/A	552716.22	1464653.60
RW-2	27+14.66	33.75 RT	369.60'	349.29'	552748.90	1464673.88

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB	NORTHING	EASTING
GDB-32C	27+25.11	154.44 LT	358.06'	355.50'	552677.06	1464499.64
OP-3	27+22.27	121.87 LT	359.02'	354.30'	552688.56	1464530.24
OP-4	27+27.58	156.36 LT	357.92'	353.00'	552678.46	1464496.84
RR-1(OW)	28+94.34	0.41 RT	353.05'	N/A	552896.63	1464566.37
RR-6	30+94.39	1.11 RT	355.04'	N/A	553080.01	1464486.61
RR-8	27+94.34	0.03 RT	352.04'	348.5'	552806.20	1464609.06
RR-9	32+94.44	0.78 RT	356.74'	N/A	553267.98	1464418.41
RR-10	31+94.43	1.04 RT	355.92'	N/A	553173.45	1464451.01
RW-1	27+88.77	34.89 RT	362.81'	350.28'	552816.23	1464642.91
ST-1	32+46.24	0.77 RT	356.37'	N/A	553222.26	1464433.64
TP-208	27+28.45	207.87 LT	325.70'	321.00'	552657.00	1464450.00
OP-1	27+42.54	24.58 LT	361.25'	N/A	552748.86	1464609.24
OP-2	27+22.04	59.34 LT	360.68'	N/A	552715.36	1464586.74
GDB-30	27+44.52	26.40 LT	361.17'	N/A	552749.86	1464606.74

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vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046bor.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING INFORMATION SHEET (4 OF 6)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 36 OF 135

SOIL CLASSIFICATION

AASHTO	
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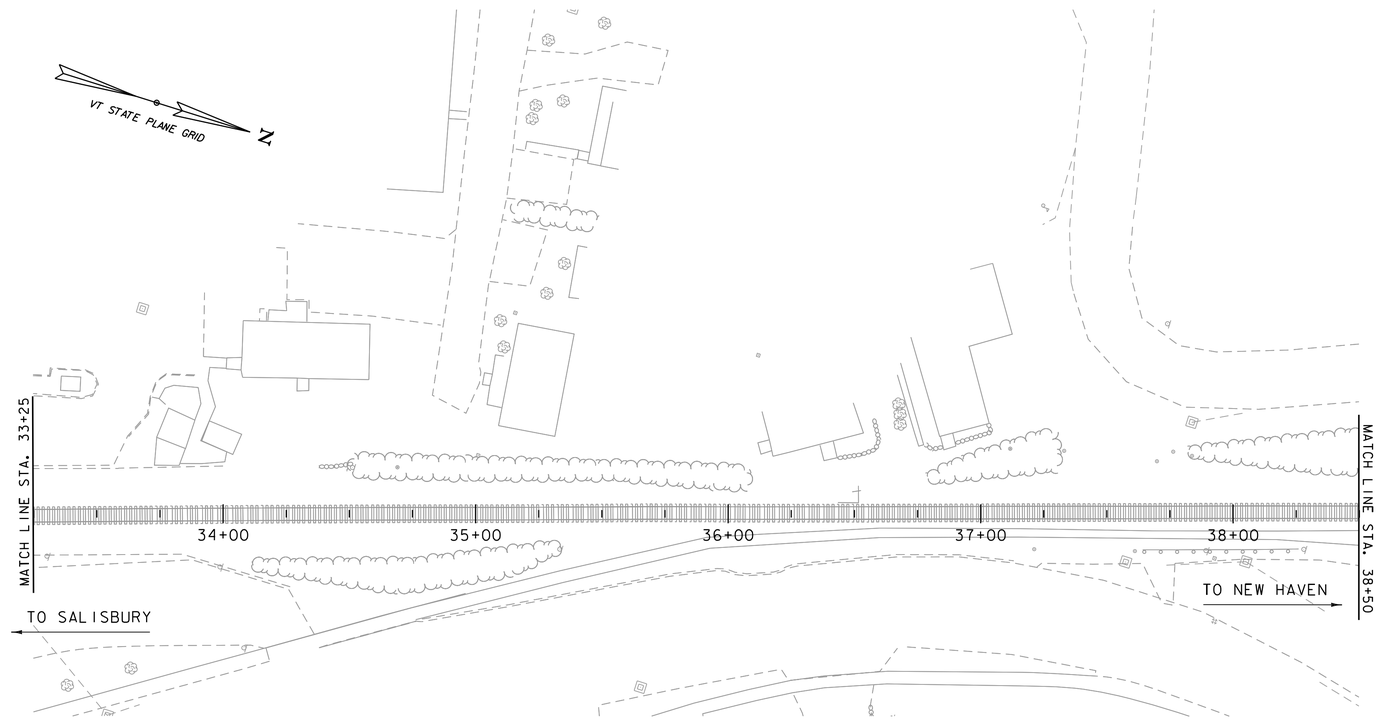

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30 0 30

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GDB-18	34+07.37	12.38 LT	357.31'	N/A	553371.66	1464371.64
GDB-19	34+86.09	11.99 RT	358.72'	N/A	553454.06	1464371.34
GDB-21	37+02.05	10.74 RT	360.36'	N/A	553659.76	1464305.54
RR-5	34+94.52	0.03 LT	358.24'	N/A	553458.51	1464357.36
ST-2	33+54.34	1.09 RT	357.50'	N/A	553325.10	1464400.40
ST-3	38+31.24	3.94 RT	359.50'	N/A	553781.00	1464260.40

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vhb

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PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046bor.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING INFORMATION SHEET (5 OF 6)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 37 OF 135

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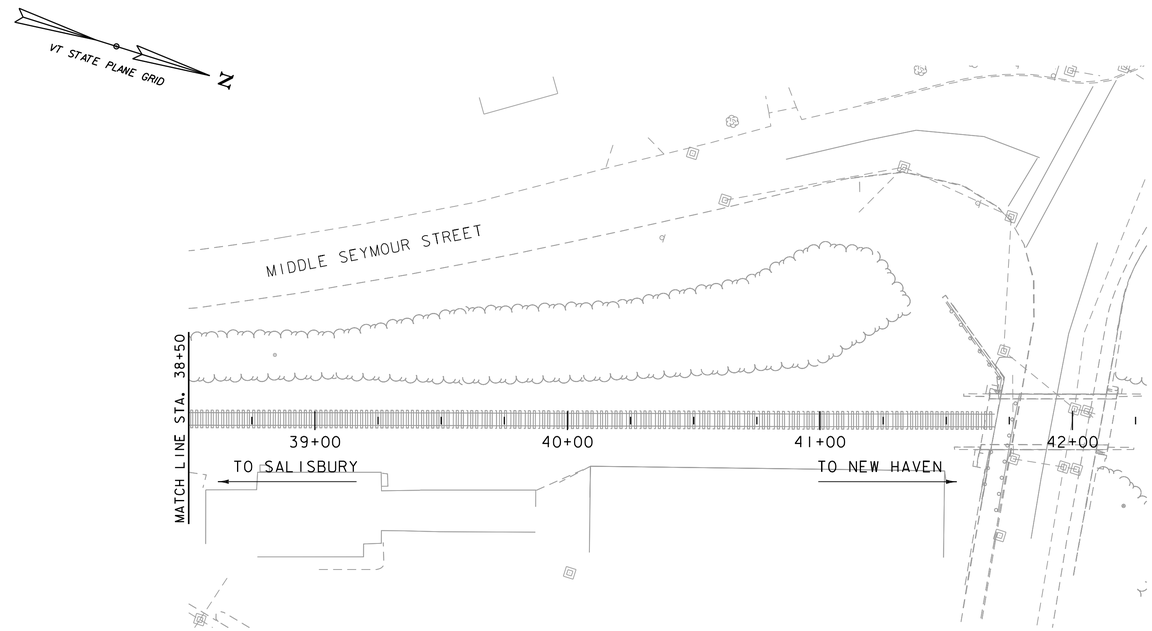

BORING LAYOUT

SCALE 1" = 30'-0"
30 0 30

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB	NORTHING	EASTING
GDB-22	39+18.93	0.78 LT	359.70	N/A	553863.26	1464229.67

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vhb

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PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046bor.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING INFORMATION SHEET (6 OF 6)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 38 OF 135

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: **GDB-1** | Page No.: 1 of 1 | File No.: 837-65.1 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: October 31, 2013 | Date Finished: October 31, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 350.3
Station: 12+00 | Offset: 0 ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 10/31/13, 8:00	12.0	338.3	Wet sampler tip.

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	10	0	5	7	9	9		
		S2	SS	24	12	2	5	4	8	7		
5		S3	SS	24	15	4	2	3	3	4		
		S4	SS	24	24	6	3	5	6	6		
		S5	SS	24	2	8	3	4	5	5		
10		S6	SS	24	21	10	5	12	9	14		
15		S7	SS	24	3	14	8	9	6	2		
20		S8	SS	24	10	19	8	8	9	9		9.4
25		S9	SS	24	24	24	WOR	1	4	5		
30		S10	SS	16	16	29	26	50	50/4"			
35												

Strata Description (Depth & Elevation(feet)) / Sample Description (Classification System: Burmister)

- Fill — S1) Medium dense, black fine to coarse SAND, some Silt, some fine to coarse Gravel, trace Ash, slightly moist.
- 2 Possible Reworked Subsoil (Clayey Silt) 348.3 — S2) Stiff, gray with brown Clayey SILT, little fine Sand, trace fine Gravel, trace Organic Matter, moist.
- 6 Silt & Clay with Organics 344.3 — S3) Medium / Loose, dark brown and gray SILT and Clayey SILT, little fine to medium Sand, trace fine Gravel, trace Organic Matter, moist. Organic odor.
- 8 Gravelly Sand & Silt 342.3 — S4) Stiff, blue-gray with orange mottling SILT & CLAY, trace fine Sand, trace Organic Fibers, moist. Slight Organic Odor.
- S5) Loose, tan-brown SILT, some fine Sand, moist (Possible Auger Cuttings).
- S6) Medium dense, tan-brown SILT , some fine to coarse Sand, little (+) fine Gravel, very moist to wet.
- 16 Gravelly Sand & Silt (with Inferred Cobbles) 334.3 — S7) Medium dense / stiff, gray fine to coarse SAND and SILT & CLAY, little fine Gravel, wet.
- S8) Medium dense, light gray fine to coarse SAND and SILT, little fine Gravel, trace Clay & Silt (in one 1/8" thick layer), wet.
- S9) Loose, gray fine to medium SAND, little (+) Silt, little fine to coarse Gravel, wet.
- 28 Glacial Till 322.3 — S10) Refusal, gray fine to medium SAND, some (+) Silt, little fine Gravel, wet.
- 30.3 Bottom of Exploration at 30.3 ft 320.0

Remarks:
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with augers between consecutive samples) and blow counts do not represent SPT N values.
3) Frequent auger grinding on inferred cobbly soils below 16' deep.
4) Sample S9 at 24' deep appears to have partially liquefied upon sampling. SPT N-values likely reflect a looser condition than that of the undisturbed in-situ soil.
5) Driller maintained a head of water on the borehole beginning at 24' deep.
6) Driller noted an increase in auger resistance at 28' deep on inferred transition to glacial till soils.
7) Boring terminated with split spoon refusal at approximately 30.3 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **GDB-1**

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: **GDB-2(OW)** | Page No.: 1 of 1 | File No.: 837-65.4 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: October 31, 2013 | Date Finished: October 31, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 351
Station: 13+75 | Offset: 0 ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer/Rod Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 10/31/13, 11:15	7.7	343.3	In augers (20 min.)
▼ 11/12/13, 16:00			Dry well (to 9.6')?
▼ 2/3/14, 12:00	3.9	347.1	In well
▼ 6/24/14, 0:00	3.2	347.8	In well
▼ 12/4/15, 10:00	2.7	348.3	In well
▼ 4/7/16, 9:20	1.7	349.3	In well

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	16	0	4	8	16	15		
		S2	SS	24	18	2	10	6	9	12		
5		S3	SS	24	15	4	5	7	6	9		
		S4	SS	24	18	6	4	7	18	27		
		S5	SS	24	9	8	5	14	75	27		
10		S6	SS	24	12	10	16	14	8	7		9.8
15		S7	SS	24	4	14	5	14	15	19		
20		S8	SS	24	11	19	4	8	20	35		
25		S9	SS	12	6	24	28	56/6"				10.2
30												

Strata Description (Depth & Elevation(feet)) / Sample Description (Classification System: Burmister)

- Fill — S1) Medium dense, black-brown fine to coarse SAND, some (+) fine to coarse Gravel, some Silt, slightly moist.
- 3 Sandy Silt 348.0 — S2) Medium dense, S2A - Top 7": Brown fine to medium SAND, trace fine Gravel, trace Silt, slightly moist. S2B - Bottom 11": Brown to olive brown SILT, some fine Sand, trace Organic Matter (concentrated at top of sample), slightly moist.
- 7 Sand & Gravel 344.0 — S3) Medium dense, brown SILT, little fine Sand, moist.
- 10 Gravelly Sand & Silt (with Inferred Cobbles) 341.0 — S4) Medium dense, S4A - Top 9": Olive brown with orange mottling SILT, some fine Sand, little Clayey Silt, very moist. S4B - Bottom 9": Brown fine to coarse SAND, some fine to coarse gravel, some(-) Silt, wet.
- S5) Refusal, brown, fine to coarse SAND and fine to coarse GRAVEL, little (+)Silt, wet.
- S6) Medium dense, gray SILT, some (+) fine to coarse Sand, little fine Gravel, wet.
- 20 Glacial Till 331.0 — S7) Medium dense, gray fine to coarse SAND and SILT, trace fine Gravel, wet.
- S8) Medium dense, light brown fine to medium SAND and SILT, trace fine Gravel, wet.
- 25 Bottom of Exploration at 25.0 ft 326.0 — S9) Refusal, gray fine to coarse SAND and SILT, little fine Gravel, wet.

Remarks:
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with augers between consecutive samples) and blow counts do not represent SPT N values.
3) Frequent auger grinding and chatter below 10' deep through inferred cobbly or gravelly soils.
4) Removed augers and backfilled hole. Offset 2' north and drilled to 10' deep to install observation well. Placed flush mount cover at rail tie level.
5) Boring terminated with split spoon refusal at approximately 25.0 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: **GDB-2(OW)**

ADDITIONAL WLS SMALL REMARK FONT 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 5/27/16

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: **GDB-3** | Page No.: 1 of 1 | File No.: 837-65.1 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: October 31, 2013 | Date Finished: October 31, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 350.3
Station: 16+08 | Offset: 10 ft Right

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 10/31/13, 2:15	3.0	347.3	Wet sample.

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	12	0	1	2	3	3		
		S2	SS	24	12	2	10	4	5	3		
5		S3	SS	24	5	4	1	2	2	3		
		S4	SS	24	24	6	1	2	14	24		
		S5	SS	24	12	8	12	14	16	13		
10		S6	SS	24	16	10	14	12	19	21		
15		S7	SS	23	23	14	16	23	40	50/5"		
20												
25												
30												

Strata Description (Depth & Elevation(feet)) / Sample Description (Classification System: Burmister)

- 1 Topsoil — S1) Loose, black-brown SILT, little fine to coarse SAND, little fine Gravel, trace Organics, moist. (Topsoil).
- Reworked Silt/Clay/Sand Fill 349.3 — S2) Loose / stiff, dark brown SILT & CLAY and fine to coarse SAND, little fine Gravel, trace Organics, moist to wet.
- 4 Probable Fill 346.3 (Gravelly Silt & Sand) — S3) Very loose / medium, dark brown fine to coarse SAND and SILT & CLAY, little fine to coarse Gravel, wet.
- 7 Glacial Till 343.3 — S4) Medium dense / stiff, S4A - Top 18": Brown fine to coarse SAND and SILT & CLAY, little fine Gravel, wet. S4B - Bottom 6": Tan-brown SILT and fine to coarse SAND, some fine to coarse Gravel (fractured), wet.
- S5) Dense, tan-brown fine to coarse SAND, some Silt, some fine to coarse Gravel (occasionally fractured), wet.
- S6) Dense, tan-brown SILT and fine to coarse SAND, little (+) fine to coarse Gravel, wet.
- 15.9 Bottom of Exploration at 15.9 ft 334.4 — S7) Very dense, tan-brown fine to coarse SAND, some (+) Silt, little (+) fine Gravel, wet.

Remarks:
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with augers between consecutive samples) and blow counts do not represent SPT N values.
3) Frequent auger grinding and chatter below 7' deep through inferred cobbly or gravelly soils.
4) Boring terminated without refusal at approximately 15.9 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **GDB-3**

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046borlogs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING LOGS (1 OF 35)

PLOT DATE: 2/27/2018
DRAWN BY:
CHECKED BY: GEODESIGN
SHEET 39 OF 135

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-4
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Joshua Gilman
Date Started: November 5, 2013 Date Finished: November 5, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 349.7
Station: 17+02 Offset: 14 ft Left

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/5/13, 13:45	6.0	343.7	Wet sample

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	8	0	3	3	3	3		
		S2	SS	24	14	2	7	7	9	17		10.0
5		S3	SS	24	8	4	6	10	4	3		
		S4	SS	24	17	6	2	2	2	2		
		S5	SS	24	6	8	4	5	6	4		14.6
10		S6	SS	24	8	10	3	31	44	26		
15		S7	SS	18	16	14	20	43	55/6"			
20												
25												
30												

Strata Description (Depth & Elevation(feet)) / Sample Description (Classification System: Burmister)

- Fill — S1) Loose, dark brown SILT and fine to coarse SAND, little fine to coarse Gravel, trace Glass, trace Organics, wet.
- 2 — Fill (Gravelly Sand and Silt) 347.7 — S2) Medium dense, tan and gray (areas dark brown) fine to coarse SAND, some Silt, some fine to coarse Gravel, moist. Pockets dark brown fine to coarse SAND and SILT, organic odor.
- S3) Medium dense, tan and gray fine to coarse SAND, some Silt, trace fine Gravel, trace Roots moist.
- S4) Loose, tan & gray fine to coarse SAND, some Silt, trace fine Gravel, trace Roots, wet.
- 10 — Glacial Till 339.7 — S5) Medium dense, brown fine to coarse SAND, little Silt, trace fine Gravel, trace Synthetic Fiber/ Grout Chips, wet.
- S6) Very dense, light brown fine to coarse SAND, some fine to coarse Gravel, some Silt, wet.
- S7) Refusal, tan with gray mottling fine to coarse SAND and Silt, wet.
- 15.5 — Bottom of Exploration at 15.5 ft 334.2

Remarks:
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with augers between consecutive samples) and blow counts do not represent SPT N values.
3) Flowing sand observed in Sample S6 upon recovery. Driller maintained head of water in augers for remainder of boring.
4) Boring terminated with split spoon refusal at approximately 15.5 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-4

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: GDB-5(OW)
Page No.: 1 of 1
File No.: 837-65.4
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett / Joshua Gilman
Date Started: November 1, 2013 Date Finished: November 1, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 349
Station: 17+93 Offset: 11 ft Left

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer/Rod Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/1/13, 9:00	1.0	348.0	In augers (30 min.)
▼ 11/4/13, 8:00	1.0	348.0	In open borehole
▼ 11/12/13, 15:50	1.7	347.3	In well
▼ 2/3/14, 12:00	2.9	346.1	In well
▼ 6/24/14, 0:00	1.0	348.0	See note 7
▼ 12/4/15, 10:22	2.6	346.5	In well
▼ 4/7/16, 9:15	1.5	347.5	In well

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	12	0	1	1	3	2		
		S2	SS	24	13	2	2	2	3	3		
5		S3	SS	24	12	4	2	3	3	4		23.5
		S4	SS	13	6	6	2	34	50/1"			
		S5	SS	24	18	8	7	12	20	23		
10		S6	SS	24	11	10	12	21	24	24		
15		S7	SS	2	2	14	50/2"					
20		S8	SS	14	14	19	37	71	50/2"			
25												
30												

Strata Description (Depth & Elevation(feet)) / Sample Description (Classification System: Burmister) / Well Log

- 1 — Topsoil
- Fill 348.0
- S1) Very loose, black SILT, some fine to coarse Sand, trace fine to coarse Gravel, trace Organics, moist. (Topsoil).
- S2) Medium / loose, brown SILT & CLAY and fine to coarse SAND, trace Organics, trace fine Gravel, wet.
- S3) Medium / loose, brown SILT & CLAY and fine to coarse SAND, trace fine Gravel, trace Organics, wet.
- 7 — Silty Sand & Gravel (with Inferred Cobbles & Boulders) 342.0
- S4) Refusal, brown SILT & CLAY and fine to coarse GRAVEL (fractured), little fine to coarse Sand, trace Organics, wet.
- S5) Dense, tan-brown fine to coarse SAND, little fine Gravel, little Silt, wet.
- 10 — Glacial Till 339.0
- S6) Dense, tan-brown fine to coarse SAND, some Silt, little fine Gravel, wet.
- S7) Refusal, tan-brown fractured fine to coarse GRAVEL and SILT, little fine to coarse Sand, wet.
- 20.2 — Bottom of Exploration at 20.2 ft 328.8
- S8) Refusal, tan-brown SILT and fine to coarse SAND, little fine Gravel, wet.

Remarks:
1) Northing, Easting, and Elevation shown based on visual estimates by GeoDesign personnel and an electronic site plan provided by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with augers between consecutive samples) and blow counts do not represent SPT N values.
3) Well installed in adjacent borehole drilled between the rails. First two attempted well locations were abandoned based on refusals on inferred boulders at approximately 4 feet deep.
4) Auger grinding at 7' deep on inferred boulder.
5) Frequent auger grinding and rig chatter below 7' deep through inferred bouldery / cobbly soils.
6) Boring terminated with split spoon refusal at approximately 20.2 feet deep.
7) On 6/24/14 - Water in flush mount box 0.2' below grade.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: GDB-5(OW)

ADDITIONAL WLS SMALL REMARK FONT 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 5/27/16

BORING LOG

GEODESIGN INCORPORATED
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Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-6
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Joshua Gilman
Date Started: November 5, 2013 Date Finished: November 5, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 349.1
Station: 18+91 Offset: 17 ft Left

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/5/13, 15:00	7.7	341.4	Wet Sample

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	0	0	2	2	4	4		
		S2	SS	24	18	2	4	3	4	7		
5		S3	SS	24	14	4	3	4	9	5		9.3
		S4	SS	24	18	6	3	2	2	2		
		S5	SS	24	8	8	1	14	2	2		
10		S6	SS	24	12	10	3	9	9	14		
15		S7	SS	24	16	14	2	14	18	50		
20		S8	SS	8	8	19	50	70/2"				
25												
30												

Strata Description (Depth & Elevation(feet)) / Sample Description (Classification System: Burmister)

- Fill — S1) Loose, no recovery.
- S2) Loose, gray-brown fine to coarse SAND, some Silt, little fine to coarse Gravel, trace Roots, moist (strong petroleum odor).
- 5 — S3) Medium dense, tan and gray fine to coarse SAND, some Silt, little fine to coarse Gravel, trace Roots, moist.
- S4) Loose, tan-gray fine to coarse SAND, some Silt, trace fine Gravel, moist to wet. Slight petroleum odor.
- S5) Medium dense, tan-gray fine to coarse SAND and SILT (slightly plastic), some fine to coarse Gravel, trace Wood, wet.
- 10 — Gravelly Sand & Silt 339.1 — S6) Medium dense, tan-gray fine to coarse SAND and fine to coarse GRAVEL, some Silt, wet.
- S7) Dense, brown fine to medium SAND and SILT, trace fine to coarse Gravel, wet.
- 17.5 — Glacial Till 331.6
- 19.6 — Bottom of Exploration at 19.6 ft 329.5
- S8) Refusal, gray fine to medium SAND and SILT, trace fine Gravel, wet.

Remarks:
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with roller bit between consecutive samples) and blow counts do not represent SPT N values.
3) Boring terminated with split spoon refusal at approximately 19.6 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-6

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (2 OF 35)	SHEET 40 OF 135

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-7
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wirnett
Date Started: October 30, 2013 Date Finished: October 30, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 350.1
Station: 20+00 Offset: 9 ft Right

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
10/30/13, 12:30	1.5	348.6	Wet sample.

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	10	0	2	4	8	6		
		S2	SS	24	2	2	5	4	5	8		
5		S3	SS	24	14	4	5	8	8	6		
		S4	SS	24	12	6	9	14	21	25		
		S5	SS	16	14	8	18	54	100/4"			
10		S6	SS	10	10	10	77	100/4"				
15		S7	SS	4	4	14	50/4"					9.4
20		S8	SS	4	3	19	50/4"					
25		S9	SS	4	0	24	50/4"					
30												

Strata Description: Depth & Elevation(feet)	Sample Description: Classification System: Burmister
Fill	S1) Medium dense, brown fine to medium SAND, some Silt, little fine Gravel, wet.
4	S2) Medium dense, coarse GRAVEL, little Silt, trace fine Sand (rail ballast). Piece of gravel stuck in spoon tip.
Gravelly Sand & Silt 346.1	S3) Medium dense, yellow brown mottled with gray and orange fine to coarse SAND and SILT, little fine to coarse Gravel, wet.
8	S4) Dense, brown fine to coarse SAND, some Silt, some (-) fine to coarse Gravel, wet.
Glacial Till 342.1	S5) Refusal, tan-brown SILT and fine to medium SAND, little fine Gravel, wet.
	S6) Refusal, tan-brown SILT, some fine to medium SAND, little fine Gravel (fractured and pulverized), wet.
	S7) Refusal, gray SILT and fine to medium SAND, little fine Gravel, wet.
	S8) Refusal, gray SILT and coarse GRAVEL (stuck in spoon tip), some fine to medium Sand, wet.
24.3 Bottom of Exploration at 24.3 ft 325.8	S9) Refusal, no recovery.

Remarks
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2 and S4 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with roller bit between consecutive samples) and blow counts do not represent SPT N values.
3) Advanced casing to 10' deep. Performed boring open hole below 10' deep.
4) Occasional rig chatter on inferred cobbles/boulders below 15' deep.
5) BOE at 24.3' deep with SS refusal in glacial till. Bedrock not encountered.
5) Boring terminated with split spoon refusal at approximately 24.3 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-7

SMALL BORING # SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

BORING LOG

GEODESIGN INCORPORATED
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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-8
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Joshua Gilman
Date Started: November 5, 2013 Date Finished: November 5, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 349
Station: 21+07 Offset: 15 ft Left

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
11/5/13, 12:00			See Remark No. 3.

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	0	0	2	2	4	4		
		S2	SS	24	13	2	9	8	8	8		
5		S3	SS	24	8	4	3	5	8	25		
		S4	SS	9	9	6	44	100/3"				
		S5	SS	12	10	8	34	100/6"				5.5
10		S6	SS	4	4	10	100/4"					
		C2	C	18	5	12	[REC= 28%; RQD= 28%]				1.1 -0.3	
15		S7	SS	6	6	14	100/6"					
20		S8	SS	16	12	19	24	28	50/4"			
25		S9	SS	2	0	24	50/2"					
30												

Strata Description: Depth & Elevation(feet)	Sample Description: Classification System: Burmister
Fill	S1) Loose, no recovery.
4	S2) Medium dense, tan and brown (top 2" bluish gray) fine to coarse SAND, some Silt, little fine to coarse Gravel, moist to wet.
Gravelly Sand & Silt 345.0	S3) Medium dense, tan-brown fine to coarse SAND, some fine to coarse Gravel, some Silt, wet.
6	S4) Refusal, tan-brown fine to coarse SAND, some fine to coarse GRAVEL, little Silt, moist.
Glacial Till 343.0	S5) Refusal, tan-brown fine to coarse SAND, some fine to coarse Gravel, some Silt, damp.
	S6) Refusal, tan fine to coarse SAND and SILT, some fine to coarse Gravel, wet.
12	
13 Boulder 337.0	C1) Poor quality, moderately hard, fresh, blue-gray, fine grained DOLOMITE (Boulder). Reaction of powder to dilute HCl.
Glacial Till 336.0	S7) Refusal, gray SILT and fine to coarse SAND, trace fine Gravel, wet.
	S8) Refusal, gray SILT, some fine to coarse SAND, little fine to coarse Gravel, wet.
24.1 Bottom of Exploration at 24.1 ft 324.9	S9) Refusal, no recovery.

Remarks
1) Northing, Easting, and Elevation shown based on visual estimates by GeoDesign personnel and an electronic site plan provided by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with roller bit between consecutive samples) and blow counts do not represent SPT N values.
3) Driller advanced hole with 3.25" I.D. hollow stem augers to 10 feet deep, then switched to wash-and-drive drilling method. Sample moisture descriptions may not accurately reflect in-situ conditions due to water being continuously added to the borehole during roller bit advance.
4) Driller attempted C1 following roller bit refusal at 12 feet deep. Core barrel penetrated boulder at approximately 12 feet, and borehole was continued.
5) Boring terminated with split spoon refusal at approximately 24.1 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-8

SMALL BORING # SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-10(P)
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wirnett
Date Started: November 11, 2013 Date Finished: November 11, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 350
Station: 22+60 Offset: 0 ft

	Casing:	Sampler:
Type:	SSA	N/A
I.D.:	2.5 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	CME 550X ATV	
Hammer Type:		

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
5												
10												
15												
20												
25												
30												

Strata Description: Depth & Elevation(feet)	Sample Description: Classification System:
No sampling	
18.5 Bottom of Exploration at 18.5 ft 331.5	

Remarks
1) Northing, Easting, and Elevation based on taped measurements made in the field by GeoDesign personnel and an electronic topographic plan provided by VHB.
2) Solid stem auger probe performed at an approximate 12 degree angle (from vertical) due to driller being unable to put outrigger down on rail track.
3) Boring terminated with solid stem auger refusal at approximately 18.5' deep on inferred bedrock. (19' of augers at a 12 degree angle. Borehole bottom approximately 4' west of borehole top due to auger angle).

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-10(P)

SMALL BORING # SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046borlogs.dgn
PROJECT LEADER:
DESIGNED BY: GEODESIGN
BORING LOGS (3 OF 35)
PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 41 OF 135

BORING LOG

GEODESIGN INCORPORATED
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Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-13
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: October 30, 2013 — Date Finished: October 30, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 352.2
Station: 29+05 — Offset: 10 ft Right

Casing: Type	HSA/FJ	Sampler: SS
I.D.:	in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations: Date	Depth (ft)	Elev. (ft)	Notes
▼ 10/30/13, 7:30	2.0	350.2	Wet sample.

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	3	0	1	1	1	2		
		S2	SS	16	15	2	1	2	100/4"			
5		S3	SS	24	11	4	1	2	2	2		
		S4	SS	24	15	6	2	5	5	12		
		S5	SS	24	14	8	5	4	7	14		10.4
10		S6	SS	24	12	10	22	36	31	23		
		C1	C	60	60	13.5	[REC= 100%; RQD= 100%]				3	
15											3	
											2	
											2	
											3	
		C2	C	60	58	18.5	[REC= 97%; RQD= 97%]				2	
20											2	
											3	
											2	
											2	
25												
30												

Strata Description — Depth & Elevation(feet) — Symbol — Sample Description (Classification System: Burmister)

Strata	Elevation (feet)	Sample Description
Topsoil	351.9	S1) Very loose, brown SILT, some fine to coarse Sand, trace Organic Matter, moist. (Topsoil).
Fill (with inferred Cobbles / Boulders)		S2) Refusal, dark brown CLAY & SILT and fine to coarse SAND, some fine Gravel, wet.
	6	S3) Medium, dark brown CLAY & SILT, some fine to coarse Sand, trace fine Gravel, trace Organic Matter, wet.
Silty Clay with Organics (Probable Fill)	346.2	S4) Stiff, dark gray-brown Silty CLAY, little fine to coarse SAND, trace fine Gravel, trace Organic Matter, wet.
	8	
Clayey Silt and Sand	344.2	S5) Medium dense, tan-brown with gray Clayey SILT and fine to coarse SAND, trace fine to coarse Gravel, wet.
	10	
Glacial Till	342.2	S6) Very dense, tan-brown fine to coarse SAND, some Silt, some fine to coarse Gravel, wet.
	13.5	
Bedrock (Limestone)	338.7	C1) Excellent quality, moderately hard, fresh, moderate jointing, light gray with dark gray swirls and white bands and swirls LIMESTONE. Strong reaction to dilute HCl. Jointing near horizontal.
		C1) Excellent quality, moderately hard, fresh, moderate jointing, light gray white bands and swirls LIMESTONE. Strong reaction to dilute HCl. Jointing approximately 5 to 30 degrees from horizontal.
	23.5	
Bottom of Exploration at 23.5 ft	328.7	

Remarks
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with augers between consecutive samples) and blow counts do not represent SPT N values.
3) Inferred sample S2 refusal on a boulder or cobble at approximately 3 feet deep.
4) Removed augers and switched to flush joint casing with wash-drive drilling methods after sampling S6 at 10 feet deep.
5) Casing driven to refusal at approximately 13.5 feet deep. Roller bit refusal at 13.5 feet deep and borehole continued with rock core to approximately 23.5 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **GDB-13**

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

BORING LOG

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Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-14
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: November 12, 2013 — Date Finished: November 12, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 355
Station: 29+99 — Offset: 11 ft Left

Casing: Type	Flush	Sampler: SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations: Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/12/13, 0:00			See Remark No. 3

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	6	0	2	2	4	3		
		S2	SS	24	11	2	3	4	2	4		
5		S3	SS	24	0	4	3	3	4	5		
		S4	SS	24	19	6	2	4	5	6		
		S5	SS	24	24	8	3	3	5	5		
10		S6	SS	24	24	10	7	6	7	6		
15		S7	SS	24	24	14	2	2	3	4		43.0
20		S8	SS	24	24	19	1	2	2	2		
25		S9	SS	24	24	24	WOH	WOH	WOH	1		26.3
30		S10	SS	19	12	29	7	25	26	50/1"		
35												

Strata Description — Depth & Elevation(feet) — Symbol — Sample Description (Classification System: Burmister)

Strata	Elevation (feet)	Sample Description
Fill		S1) Loose, dark brown SILT and fine to coarse SAND, trace Coal Ash, trace organics, very moist.
		S2) Medium / Loose, olive brown and black CLAY & SILT and fine to coarse SAND, trace (+) Coal Ash, trace fine Gravel, very moist.
	5	S3) Medium, no recovery.
Layered Clay & Silt	350.0	S4) Stiff, light brown mottled with purple-gray and gray occasionally parted CLAY & SILT, trace fine to coarse Sand, wet.
		S5) Stiff, brown mottled with orange and gray Silty CLAY, trace gray fine Sand partings, wet.
		S6) Stiff, Upper 12": Fibrous Wood Roller Bit Cuttings (no sample). Lower 12": Brown finely parted Silty CLAY, trace gray Silt and fine Sand seams up to 1/16" thick, wet.
	19	S7) Medium, brown occasionally parted Silty CLAY, little Clayey Silt seams (up to 1" thick), wet.
Silty Clay	336.0	S8) Medium, purple gray Silty CLAY, trace fine to medium Sand, trace fine Gravel (in seams up to 1/4" thick), wet.
	29	S9) Very soft, gray Silty CLAY, trace fine Sand, trace Silt (in seams up to 3/4" thick), wet.
Glacial Till	326.0	S10) Very dense, gray fine to coarse SAND and SILT, some (+) fine Gravel, wet.
	30.1	
Bottom of Exploration at 30.1 ft	324.9	

Remarks
1) Northing, Easting, and Elevation based on taped measurements made in the field by GeoDesign personnel and an electronic topographic plan provided by VHB.
2) Sampling of S2 and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with roller bit between consecutive samples) and blow counts do not represent SPT N values.
3) Sample moisture descriptions may not accurately reflect in-situ conditions due to water being continuously added to the borehole during roller bit advance.
4) Inferred sample S3 at 6' deep to have been pushing piece of wood. Wood cuttings observed in wash water.
5) Casing advanced to approximately 6 feet deep. Borehole advanced below 6 feet deep open hole with the roller bit.
6) Samples below 6 feet deep occasionally had wood fibers on the outside of the sample. Not included in the sample description since it was obvious the wood fibers were carried down with the roller bit.
7) Boring terminated without split spoon refusal at approximately 30.1 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **GDB-14**

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

BORING LOG

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Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-15
Page No.: 1 of 2
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: October 29, 2013 — Date Finished: October 29, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 355.6
Station: 30+92 — Offset: 8.5 ft Right

Casing: Type	H.S.A.	Sampler: SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations: Date	Depth (ft)	Elev. (ft)	Notes
▼ 10/29/13, 11:30	4.0	351.6	Wet sample.

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	2	0	1	2	2	2		
		S2	SS	24	16	2	2	3	2	3		
5		S3	SS	24	16	4	1	25	5	2		
		S4	SS	24	24	6	3	3	2	3		
		S5	SS	24	24	8	1	1	2	2		
10		S6	SS	24	24	10	3	2	2	3		
15		S7	SS	24	24	14	WOH	WOH	WOH	1		
20		S8	SS	24	24	19	WOH	WOH	WOH	WOH		43.7
25		S9	SS	24	24	24	WOH	WOH	WOH	WOH		
30		S10	SS	24	3	29	WOR	WOH	2	3		
35		S11	SS	24	9	34	3	5	8	9		

Strata Description — Depth & Elevation(feet) — Symbol — Sample Description (Classification System: Burmister)

Strata	Elevation (feet)	Sample Description
Topsoil	1	S1) Loose, dark brown SILT and fine to coarse Sand, trace fine Gravel, trace Organic Matter, moist. (Topsoil)
Silt/Clay /Sand Re-Worked Fill	354.6	S2) Medium, dark brown to black CLAY & SILT and fine to coarse SAND, trace fine Gravel, trace Ash, trace Plastic Debris, moist.
	5	S3) See remark No. 3 regarding consistency
Layered Clay & Silt / Silty Clay	350.6	S3A - Top 10": Gray CLAY & SILT and fine to coarse SAND, little fine Gravel, wet. S3B - Bottom 4": Light purple-brown layered Silty CLAY, moist. Rolls < 1/16" thread.
	10	S4) Medium, brown occasionally layered Silty CLAY, trace (-) fine to coarse Sand, trace (-) fine Gravel, moist.
Silty Clay	345.6	S5) Soft, brown and gray layered Silty CLAY, trace fine to coarse Sand, moist.
		S6) Soft, gray Silty CLAY, wet.
		S7) Very soft, gray Silty CLAY, trace (-) fine to coarse Sand, wet.
		S8) Very soft, gray Silty CLAY, trace Clayey Silt (in one 2" thick seam), wet.
		S9) Very soft, gray Silty CLAY, trace fine Sand, wet.
	30	S10) Soft, gray Silty CLAY, trace fine to medium Sand, wet.
Clay/Silt /Sand Mixture	325.6	
		S11) Medium dense / Stiff, gray fine to coarse

Remarks
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with augers between consecutive samples) and blow counts do not represent SPT N values.
3) SPT N-values for sample S3 at 4 feet deep do not accurately reflect the soft soil consistency observed in the spoon. Infer sampler may have hit the side of a possible cobble while sampling.
4) Inferred that sampler pushed a piece of gravel during sampling S10 at 29 feet deep.
5) Boring terminated without split spoon refusal at approximately 45.9 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **GDB-15**

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (4 OF 35)	SHEET 42 OF 135

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-15
Page No.: 2 of 2
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: October 29, 2013 Date Finished: October 29, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 355.6
Station: 30+92 Offset: 8.5 ft Right

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
10/29/13, 11:30	4.0	351.6	Wet sample.

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
40		S12	SS	24	11	39	2	6	6	4		19.1
45		S13	SS	23	16	44	13	38	37	50/5"		
50												
55												
60												
65												
70												

Strata Description — Depth & Elevation(feet)

- Clay/Silt /Sand Mixture *(Continued)*
- 44 — Glacial Till 311.6
- 45.9 — Bottom of Exploration at 45.9 ft 309.7

Sample Description — Classification System: Burmister

- SAND and SILT & CLAY, little (-) fine to coarse Gravel, wet.
- S12) Medium dense / Stiff, gray fine to coarse SAND and SILT & CLAY, little fine Gravel, wet.
- S13) Very dense, gray SILT, some (+) fine to coarse Sand, little fine to coarse Gravel, wet.

Remarks

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types; Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-15

BORING LOG

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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: GDB-16(OW)
Page No.: 1 of 2
File No.: 837-65.4
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: November 8, 2013 Date Finished: November 8, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 355.6
Station: 32+00 Offset: 16 ft Left

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X ATV	
Hammer/Rod Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
11/12/13, 15:40	3.3	352.3	In well
2/3/14, 12:00	1.9	353.7	In well
6/24/14, 0:00	4.6	351.0	In well
12/4/15, 11:35	1.8	353.8	In open hole
4/7/16, 8:41	2.3	353.3	In open hole

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
		S1	SS	24	11	0	2	2	4	6		13.6
		S2	SS	24	7	2	4	4	5	6		35.9
5		S3	SS	24	11	4	2	3	3	2		57.1
		S4	SS	24	19	6	3	2	3	3		55.7
		S5	SS	24	24	8	1	2	2	2		43.6
10		S6	SS	24	24	10	3	2	2	2		43.2
15		S7	SS	24	24	14	WOH	WOH	WOH	1		49.5
20		S8	SS	24	24	19	WOH	WOH	WOH	WOH		36.3
25		S9	SS	24	24	24	WOR	WOH	WOH	WOH		68.9
30		S10	SS	24	24	29	WOR	WOH	WOH	2		35.0
35		S11	SS	24	16	34	4	2	3	5		33.1

Strata Description — Depth & Elevation(feet)

- Fill
- 2 — Layered Silty Clay 353.6
- 14 — Silty Clay 341.6
- 30.5 — Sandy Gravelly Clay & Silt 325.1

Sample Description — Classification System: Burmister

- S1) Loose, brown-black fine to coarse SAND, some Silt, little fine to coarse Gravel, trace Coal Ash, trace Organics, slightly moist.
- S2) Stiff / Loose, gray mottled with light brown SILT and brown layered CLAY & SILT, little (-) fine Sand, moist.
- S3) Medium, brown finely parted Silty CLAY, trace fine Sand, trace Root Pinholes, wet.
- S4) Medium, light brown with occasional orange and gray finely parted Silty CLAY, trace fine Sand, trace Silt seams, trace Root Pinholes and decayed Roots, wet.
- S5) Medium, purple gray to brown occasionally parted Silty CLAY, trace Silt, trace fine Sand (partings), wet.
- S6) Medium, purple gray Silty CLAY, trace gray Silt seams, wet.
- S7) Very soft, gray Silty CLAY, wet.
- S8) Very soft, gray Silty CLAY, wet.
- S9) Very soft, gray Silty CLAY, wet.
- S10) Very soft,
  S10A - Top 18": Gray Silty CLAY, wet.
  S10B - Bottom 6": Gray Silty CLAY, some fine to coarse Sand, little fine Gravel, wet.
- S11) Medium, gray CLAY & SILT, some (+)

Well Log

Remarks
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with roller bit between consecutive samples) and blow counts do not represent SPT N values.
3) Moisture observations in the sample descriptions may not accurately reflect in-situ conditions due to continuously adding water to the borehole during roller bit advance.
4) Sample S3 at 4' deep appeared disturbed as if the sampler was pushing a piece of gravel.
5) Driller advanced casing to 5' deep. Borehole was advanced open hole with the roller bit for the remainder of the borehole.
6) Driller noted an increase in roller bit resistance with rig chatter beginning at 31.5' deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types; Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: GDB-16(OW)

BORING LOG

GEODESIGN INCORPORATED
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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: GDB-16(OW)
Page No.: 2 of 2
File No.: 837-65.4
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: November 8, 2013 Date Finished: November 8, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 355.6
Station: 32+00 Offset: 16 ft Left

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X ATV	
Hammer/Rod Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
11/12/13, 15:40	3.3	352.3	In well
2/3/14, 12:00	1.9	353.7	In well
6/24/14, 0:00	4.6	351.0	In well
12/4/15, 11:35	1.8	353.8	In open hole
4/7/16, 8:41	2.3	353.3	In open hole

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
40		S12	SS	24	2	39	3	5	5	4		17.5
45		S13	SS	24	18	44	2	2	4	2		11.6
50		S14	SS	4	1	49	100/4"					7.4
55												
60												
65												
70												

Strata Description — Depth & Elevation(feet)

- Sandy Gravelly Clay & Silt *(Continued)*
- 47 — Glacial Till 308.6
- 49.3 — Bottom of Exploration at 49.3 ft 306.3

Sample Description — Classification System: Burmister

- fine to coarse Sand, little fine Gravel, wet.
- S12) Medium dense, gray fine GRAVEL and fine to coarse SAND, little Silt, wet. (Likely roller bit cuttings).
- S13) Medium / very loose, gray SILT & CLAY and fine to coarse SAND, little fine Gravel, wet.
- S14) Refusal, fractured fine GRAVEL, some fine to coarse Sand, trace Silt, wet. (Possible roller bit cuttings).

Remarks
7) Sample S12 at 39' deep appears to be entirely composed of roller bit cuttings. Infer spoon to be pushing piece of gravel.
8) Driller noted increase in roller bit resistance at 47' deep on inferred transition to glacial till soils.
9) Boring terminated with split spoon refusal at approximately 49.3 feet deep.
10) Upon completion, offset 2.5' north and set well to 15' deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types; Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: GDB-16(OW)

ADDITIONAL WLS SMALL REMARK FONT 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD.GDT 5/27/16

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (5 OF 35)	SHEET 43 OF 135

BORING LOG

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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403 — Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-17 | Page No.: 1 of 2 | File No.: 837-65.1 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: October 28, 2013 — Date Finished: October 29, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 357.2
Station: 33+16 — Offset: 7 ft Right

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 10/28/13, 13:00	10.0	347.2	Wet sample.

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Sample Description (Classification System: Burmister)
		S1	SS	24	6	0	6	4	6	7			Sand / Gravel Fill	S1) Medium dense, brown fine to coarse SAND and fine to coarse GRAVEL, little Silt, moist.
		S2	SS	24	13	2	7	11	14	4			4	S2) Medium dense, brown fine to coarse SAND, little fine Gravel, little Silt, moist.
5		S3	SS	24	0	4	2	3	2	3			Layered Clay & Silt 353.2	S3) Medium, no recovery.
		S4	SS	24	21	6	4	5	5	4			8	S4) Medium, brown layered CLAY & SILT, trace (+) fine to coarse Sand, very moist.
		S5	SS	24	24	8	2	2	2	2			Silty Clay 349.2 ▼	S5) Medium, brown layered Silty CLAY, trace fine Sand, very moist.
10		S6	SS	24	16	10	3	3	3	3				S6) Medium, purple gray with brown Silty CLAY, trace fine to medium Sand, wet.
15		S7	SS	24	24	14	WOH	WOH	WOH	2				S7) Very soft, purple gray Silty CLAY, trace (-) fine Sand, wet.
20		S8	SS	24	24	19	WOH	WOH	WOH	1				S8) Very soft, purple gray Silty CLAY, trace (-) gray Clayey Silt in two 1" thick layers, wet.
25		S9	SS	24	24	24	WOH	WOH	WOH	WOH		51.0		S9) Very soft, purple gray Silty CLAY, wet.
30		S10	SS	24	24	29	WOR	WOH	WOH	WOH				S10) Very soft, purple gray Silty CLAY, wet.

Remarks:
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with augers between consecutive samples) and blow counts do not represent SPT N values.
3) Samples S3 and S4 at 4' and 6' deep respectively appeared disturbed in the sampler as if the spoon was pushing a piece of gravel during sampling.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-17

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

BORING LOG

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Geotechnical / Construction / Environmental Engineers and Scientists
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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403 — Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-17 | Page No.: 2 of 2 | File No.: 837-65.1 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: October 28, 2013 — Date Finished: October 29, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 357.2
Station: 33+16 — Offset: 7 ft Right

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 10/28/13, 13:00	10.0	347.2	Wet sample.

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Sample Description (Classification System: Burmister)
													Silty Clay *(Continued)*	
35		S11	SS	24	24	34	WOR	WOR	WOH	WOH				S11) Very soft, purple gray Silty CLAY, wet.
40		S12	SS	24	24	39	WOR	WOH	1	1				S12) Very soft, purple gray Silty CLAY, wet.
													43 Glacial Till 314.2	
45		S13	SS	15	12	44	6	16	50/3"				45.3	S13) Refusal, gray fine to coarse SAND, some (+) Silt, little fine Gravel, wet.
													Bottom of Exploration at 45.3 ft 311.9	
50														
55														
60														

Remarks:
4) Driller noted increase in auger resistance with grinding beginning at 43' deep on top of inferred Glacial Till.
5) Boring terminated with split spoon refusal at approximately 45.3 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-17

BORING LOG

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Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-18 | Page No.: 1 of 2 | File No.: 837-65.1 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: November 11, 2013 — Date Finished: November 11, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 357
Station: 34+11 — Offset: 13 ft Left

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/11/13, 14:00			See Remark No. 3.

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Sample Description (Classification System: Burmister)
		S1	SS	24	15	0	1	3	5	6			Fill	S1) Loose, black fine to coarse SAND, some Silt, trace fine Gravel, trace Coal Ash, trace Organics, moist.
		S2	SS	24	19	2	4	3	4	4			2.2 Layered Clay & Silt / Silty Clay 354.8	S2) Medium,
5		S3	SS	24	24	4	3	2	4	3				S2A - Top 2": Black COAL ASH and fine to coarse SAND, little Silt, moist.
		S4	SS	24	24	6	3	4	6	6				S2B - Bottom 17": Brown mottled with orange and gray CLAY & SILT, trace fine Sand, trace Root Fibers, moist.
		S5	SS	24	24	8	2	2	2	2		59.3		S3) Medium, brown with purple and gray mottling finely parted Silty CLAY, trace (-) fine Gravel (clay nodules), trace fine to coarse Sand, moist.
10		S6	SS	24	24	10	2	3	4	3				S4) Stiff, brown mottled with purple and gray finely layered Silty CLAY, little (-) gray-olive Clayey Silt (in seams up to 1.5" thick), trace (-) fine Gravel, wet.
													12 Silty Clay 345.0	S5) Medium, finely parted brown mottled with gray and purple grading to purple-gray Silty CLAY, trace fine to medium Sand, trace fine Gravel, moist to wet.
15		S7	SS	24	24	14	1	2	1	1				S6) Medium, purple-gray to gray Silty CLAY, trace fine to coarse Sand, trace fine Gravel (in seams), wet.
														S7) Soft, purple gray Silty CLAY, trace (-) light gray Clayey Silt (in seams up to 1/4" thick), wet.
20		S8	SS	24	24	19	WOH	WOH	WOH	WOH				S8) Very soft, gray Silty CLAY, trace fine Sand, trace Silt (in seams up to 1/16" thick), trace fine Gravel, wet.
25		S9	SS	24	24	24	WOH	WOH	WOH	WOH				S9) Very soft, gray Silty CLAY, trace fine Sand, wet.
30		S10	SS	24	24	29	WOR	WOR	WOH	WOH				S10) Very soft, gray Silty CLAY, trace fine Sand,

Remarks:
1) Northing, Easting, and Elevation based on taped measurements made in the field by GeoDesign personnel and an electronic topographic plan provided by VHB.
2) Sampling of S2, S4, and S6 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with roller bit between consecutive samples) and blow counts do not represent SPT N values.
3) Sample moisture descriptions may not accurately reflect in-situ conditions due to water being continuously added to the borehole during roller bit advance.
4) Casing advanced to 5' deep. Borehole advanced open hole with the roller bit below 5' deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-18

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (6 OF 35)	SHEET 44 OF 135

BORING LOG — GDB-18

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-18 | Page No.: 2 of 2 | File No.: 837-65.1 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: November 11, 2013 | Date Finished: November 11, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 357
Station: 34+11 | Offset: 13 ft Left

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/11/13, 14:00			See Remark No. 3.

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													Silty Clay (Continued)		wet.
35		S11	SS	24	24	34	WOR	WOR	WOR	WOH					S11) Very soft, gray Silty CLAY, trace fine to coarse Sand, trace (-) fine Gravel, wet.
40		S12	SS	24	0	39	WOR	WOH	WOH	WOH					S12) Very soft, no recovery.
													41.5 Glacial Till 315.5		
45		S13	SS	11	3	44	26	50/5"					44.9 Bottom of Exploration at 44.9 ft 312.1		S13) Refusal, gray fine to coarse GRAVEL and SILT, some fine to coarse Sand, wet.
50															
55															
60															

Remarks:
5) Driller notes increase in roller bit resistance with significant rig chatter beginning at 41.5' deep at the inferred transition to glacial till.
6) Boring terminated with split spoon refusal at approximately 44.9 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-18

BORING LOG — GDB-19 (1 of 2)

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-19 | Page No.: 1 of 2 | File No.: 837-65.1 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: October 28, 2013 | Date Finished: October 28, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 358.1
Station: 34+90 | Offset: 12 ft Right

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 10/28/13, 9:45	6.0	352.1	Wet sample.

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		S1	SS	24	11	0	2	3	5	7			1 Topsoil		S1) Loose, black-brown SILT and fine to medium SAND, trace fine Gravel, trace Leaves and Roots, moist.
		S2	SS	24	5	2	7	6	8	7			Re-Worked Silt & Clay Fill 357.1		S2) Stiff, dark brown SILT & CLAY, little fine Sand, trace Root Fibers, trace possible Brick Fragments, slightly moist.
5		S3	SS	24	18	4	3	4	4	2			5 Layered Clay & Silt 353.1 ▼		S3) Stiff, S3A - Top 10": Dark brown SILT & CLAY, little fine to coarse Sand, trace fine Gravel, trace Brick and Ash, trace Root Fibers, slightly moist. S3B - Bottom 8": Mottled gray-brown-orange layered CLAY & SILT, trace fine Sand, trace Root Fibers, moist.
		S4	SS	24	18	6	2	4	4	4					
		S5	SS	24	24	8	2	3	3	4					
10													10 Silty Clay 348.1		S4) Stiff, mottled and layered gray-brown-orange CLAY & SILT, trace 1" layers of Silt, trace (-) fine Sand, wet. S5) Medium, brown with gray Silty CLAY, little Silt (gray layers), moist.
15		S6	SS	24	24	14	1	2	2	3					S6) Soft, purple-gray Silty CLAY, trace fine Sand, trace Organics (mold), wet.
20		S7	SS	24	24	19	WOH	1	2	2					S7) Soft, purple-gray Silty CLAY, little tan-gray Clayey Silt in one 6" seam mid sample,wet.
25		S8	SS	24	24	24	WOH	WOH	WOH	1					S8) Very soft, purple-gray Silty CLAY, wet.
30		S9	SS	24	24	29	WOH	WOH	2	1					S9) Soft, purple-gray Silty CLAY, trace (-) fine to

Remarks:
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2 and S4 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with augers between consecutive samples) and blow counts do not represent SPT N values.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-19

BORING LOG — GDB-19 (2 of 2)

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-19 | Page No.: 2 of 2 | File No.: 837-65.1 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: October 28, 2013 | Date Finished: October 28, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 358.1
Station: 34+90 | Offset: 12 ft Right

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 10/28/13, 9:45	6.0	352.1	Wet sample.

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													Silty Clay (Continued)		coarse Sand, trace (-) fine Gravel, trace (-) Clayey Silt in one 1" layer, wet.
													31.5 Glacial Till 326.6		
35		S10	SS	23	13	34	16	24	30	36/5"			35.9 Bottom of Exploration at 35.9 ft 322.2		S10) Very dense, gray SILT and fine to medium SAND, little fine to coarse Gravel, moist to wet.
40															
45															
50															
55															
60															

Remarks:
3) Driller noted increase in auger resistance with occasional light grinding beginning at 31.5' deep on inferred top of Glacial Till stratum.
4) Boring terminated without split spoon refusal at approximately 35.9 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-19

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (7 OF 35)	SHEET 45 OF 135

BORING LOG — GDB-20(OW)

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: GDB-20(OW) | Page No.: 1 of 1 | File No.: 837-65.4 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: November 6, 2013 | Date Finished: November 6, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 358.9
Station: 35+66 | Offset: 11 ft Left

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer/Rod Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
11/6/13, 9:30	5.0	353.9	Perched in silt seams.
11/6/13, 14:00	23.0	335.9	Stabilized in augers (3 hrs)
11/12/13, 15:30	7.8	351.2	In well
2/3/14, 12:00	6.9	352.0	In well
6/24/14, 0:00	6.0	352.9	In well
12/4/15, 11:15	7.1	351.8	In well
4/7/16, 8:36	4.6	354.3	In well

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)
		S1	SS	24	10	0	1	3	3	3		
		S2	SS	24	17	2	4	4	5	6		
5		S3	SS	24	24	4	2	3	5	5		
		S4	SS	24	24	6	3	3	3	3		
		S5	SS	24	24	8	1	2	2	3		
10		S6	SS	24	24	10	2	2	3	4		
15		S7	SS	24	24	14	1	2	2	3		40.8
20		S8	SS	24	24	19	WOH	WOH	WOH	1		
25		S9	SS	24	24	24	WOR	WOH	WOH	2		
30		S10	SS	24	4	29	8	12	22	24		
		S11	SS	24	24	31	12	27	43	40		
35												

Strata Description (Depth & Elevation (feet)):
- 1 — Fill
- 357.9 — Layered Clay & Silt / Silty Clay
- 14 — Silty Clay 344.9
- 27 — Glacial Till 331.9
- 33 — Bottom of Exploration at 33.0 ft, 325.9

Sample Description (Classification System: Burmister) — Well Log
- S1) Loose, black fine to medium SAND and SILT, little Coal Slag, trace fine Gravel, trace Organics, moist.
- S2) Stiff, brown mottled with gray, olive, and orange layered CLAY & SILT, trace fine Sand, trace (-) fine Gravel, trace (-) Organic Fibers (concentrated in top 5" of sample), moist.
- S3) Stiff, light brown layered CLAY & SILT, little light gray SILT (seams), trace Organic Fibers (in Silt seams), moist with wet seams.
- S4) Medium, light brown parted Silty CLAY, trace fine Gravel, trace fine Sand, trace Root Pinholes and decayed Roots, moist.
- S5) Medium, light brown parted Silty CLAY, trace (-) fine Gravel, trace fine Sand, trace Root Pinholes and decayed Roots, moist.
- S6) Medium, light brown occasionally parted with gray Silty CLAY, trace gray Silt (seams), trace (-) fine Sand (in Silt seams), moist.
- S7) Medium, gray Silty CLAY, trace (-) light gray Silt lenses, moist.
- S8) Very soft, gray Silty CLAY, trace (-) Silt, trace (-) fine Sand seams, wet.
- S9) Very soft, gray Silty CLAY, trace fine to medium Sand (seams to 1/8" thick), wet.
- S10) Dense, gray SILT, some fine to coarse Sand, little fine Gravel, wet.
- S11) Very dense, gray SILT, some fine to coarse Sand, trace fine Gravel, wet.

Remarks
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sampling of S2, S4, S6, and S11 was not performed in accordance with ASTM D 1586 requirements (borehole was not cleared with augers between consecutive samples) and blow counts do not represent SPT N values.
3) Driller noted an increase in auger resistance beginning at 27' at inferred transition to glacial till soils.
4) Boring terminated without split spoon refusal at approximately 33 feet deep.
5) Installed observation well to bottom of borehole. Set flush mount well cover at ground surface.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: GDB-20(OW)

ADDITIONAL WLS SMALL REMARK FONT 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 5/27/16

BORING LOG — GDB-21

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-21 | Page No.: 1 of 1 | File No.: 837-65.1 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Joshua Gilman
Date Started: October 25, 2013 | Date Finished: October 25, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 360
Station: 37+06 | Offset: 11 ft Right

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	3.0 in.	1.38 in.
Hammer Wt.:	300 lbs	140 lbs
Hammer Fall:	24 in.	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
10/25/13, 0:00			See Remark No. 2

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)
		S1	SS	24	8	0	1	3	3	4		
		S2	SS	24	11	2	6	5	4	3		
5		S3	SS	24	14	4	5	2	4	3		
		S4	SS	24	18	6	3	4	5	4		
		S5	SS	24	24	8	2	2	2	3		46.5
10												
15		S6	SS	24	24	14	WOH	WOH	WOH	1		
20		S7	SS	14	11	19	43	40	50/2"			
25												
30												

Strata Description (Depth & Elevation (feet)):
- Fill & Reworked Native
- 5 — Clay & Silt 355.0
- 18 — Glacial Till 342.0
- 20.2 — Bottom of Exploration at 20.2 ft, 339.8

Sample Description (Classification System: Burmister)
- S1) Loose, dark brown fine to coarse SAND, some Silt, trace fine Gravel, trace Roots and Grass, moist.
- S2) Loose, tan, light brown, and gray fine to coarse SAND and CLAY & SILT, trace fine Gravel, moist.
- S3) Loose / Medium;
- S3A (upper 4"): brown fine to coarse SAND and CLAY & SILT,wet.
- S3B (lower 10"): tan and gray layers, CLAY & SILT, trace fine to coarse Sand, trace fine Gravel, wet.
- S4: Stiff, tan brown CLAY & SILT, wet.
- S5: Medium, tannish gray CLAY & SILT, trace coarse Gravel, wet.
- S6: Very soft, purple-gray CLAY & SILT, wet.
- S7: Refusal, gray fine to coarse GRAVEL and fine to coarse SAND (angular, reaction to dilute HCl), little Clay & Silt, wet.

Remarks
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sample moisture descriptions may not accurately reflect in-situ conditions due to water being continuously added to the borehole during roller bit advance.
3) Driller noted increased roller bit resistance from 18 to 19 feet deep.
4) Boring terminated with split spoon refusal at approximately 20.2 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-21

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

BORING LOG — GDB-22

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-22 | Page No.: 1 of 1 | File No.: 837-65.1 | Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Joshua Gilman
Date Started: October 25, 2013 | Date Finished: October 25, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 359.4
Station: 39+23 | Offset: 0 ft

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	3.0 in.	1.38 in.
Hammer Wt.:	300 lbs	140 lbs
Hammer Fall:	24 in.	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
10/24/13, 0:00			See Remark No. 2

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)
		S1	SS	24	13	0	3	3	10	14		
		S2	SS	24	18	2	16	19	20	12		
5		S3	SS	24	6	4	3	3	4	5		
		S4	SS	24	24	6	4	5	5	6		
		S5	SS	24	20	8	2	3	3	3		
10												
15		S6	SS	24	13	14	3	3	3	3		
20												
25												
30												

Strata Description (Depth & Elevation (feet)):
- Fill
- 6.7 — Clay & Silt 352.7
- 16 — Bottom of Exploration at 16.0 ft, 343.4

Sample Description (Classification System: Burmister)
- S1) Medium dense, black fine to coarse SAND, some Silt, little fine to coarse Gravel, trace (-) Coal, moist.
- S2) Dense, tan brown fine to coarse SAND, some fine to coarse Gravel, little Silt, trace (+) Wood (pieces > 1" thick, partially decayed), moist.
- S3) Loose, brown/tan/gray fine GRAVEL (fractured), some fine to coarse Sand, trace Silt, wet.
- S4) Medium dense / Stiff;
- S4A (upper 8"): brown fine to coarse SAND and SILT & CLAY, little fine to coarse Gravel, wet.
- S4B (lower 16"): tannish gray with darker layers, CLAY & SILT, little fine to coarse Sand, trace fine Gravel, wet.
- S5) Medium, tannish gray with darker layers, CLAY & SILT, trace fine to coarse Sand, wet.
- S6) Medium, tan and purple-gray layers, CLAY & SILT, wet.

Remarks
1) Northing, Easting, and Elevation based on survey by VHB.
2) Sample moisture descriptions may not accurately reflect in-situ conditions due to water being continuously added to the borehole during roller bit advance.
3) Boring terminated without split spoon refusal at approximately 16 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-22

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-23(P)
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Joshua Gillman
Date Started: November 4, 2013 — Date Finished: November 4, 2013
N. Coordinate: -------- — E. Coordinate: -------
Ground Surface Elevation (feet): 353.6
Station: N/A — Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.
SSA	2.5 in.	N/A	in.

Hammer Wt.: NA; Hammer Fall: NA; Rig Type: CME 550X ATV; Hammer Type:

Groundwater Observations: Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/4/13, 0:00			See remark No. 3

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Coring Time (min./ft) | Moisture Content (%)

Strata Description (Depth & Elevation(feet)) | Symbol | Sample Description (Classification System:)

Inferred Fill Soil

Bottom of Exploration at 5.0 ft (348.6)

Remarks:
1) Northing, Easting, and Elevation based on survey by VHB.
2) Boring terminated with solid stem auger refusal at approximately 5' deep on inferred bedrock.
3) Unable to discern water elevation from augers upon removal.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-23(P)

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

BORING LOG

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Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-24(P)
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: November 6, 2013 — Date Finished: November 6, 2013
N. Coordinate: -------- — E. Coordinate: -------
Ground Surface Elevation (feet): 353.6
Station: N/A — Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.
SSA	2.5 in.	N/A	in.

Hammer Wt.: NA; Hammer Fall: NA; Rig Type: CME 550X ATV; Hammer Type:

Groundwater Observations: Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/6/13, 12:00	13.0	340.6	Wet augers.

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Coring Time (min./ft) | Moisture Content (%)

Strata Description (Depth & Elevation(feet)) | Symbol | Sample Description (Classification System:)

No sampling

Bottom of Exploration at 23.0 ft (330.6)

Remarks:
1) Northing, Easting, and Elevation based on survey by VHB.
2) Boring terminated with solid stem auger refusal at approximately 23' deep on inferred bedrock.
3) Noted wet augers at 13' deep upon removal.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-24(P)

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

BORING LOG

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Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-25(P)
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jacob Wimett
Date Started: November 6, 2013 — Date Finished: November 6, 2013
N. Coordinate: -------- — E. Coordinate: -------
Ground Surface Elevation (feet): 352
Station: N/A — Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.
SSA	2.5 in.	N/A	in.

Hammer Wt.: NA; Hammer Fall: NA; Rig Type: CME 550X ATV; Hammer Type:

Groundwater Observations: Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/6/13, 1:00			See Remark No. 3

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Coring Time (min./ft) | Moisture Content (%)

Strata Description (Depth & Elevation(feet)) | Symbol | Sample Description (Classification System:)

No sampling

Bottom of Exploration at 21.5 ft (330.5)

Remarks:
1) Northing, Easting, and Elevation based on survey by VHB.
2) Boring terminated with solid stem auger refusal at approximately 21.5' deep on inferred bedrock.
3) Unable to discern water elevation from augers upon removal.
4) Noted slight petroleum odor while drilling.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-25(P)

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

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*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (9 OF 35)	SHEET 47 OF 135

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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BORING LOG

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-26(P)
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jacob Wimett		
Date Started:	November 6, 2013	Date Finished:	November 6, 2013
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	350.7		
Station: N/A	Offset: ft		

Casing:	Sampler:
Type: SSA	N/A
I.D.: 2.5 in.	in.
Hammer Wt.: NA	
Hammer Fall: NA	
Rig Type: CME 550X ATV	
Hammer Type:	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/6/13, 1:30			See Remark No. 3
▼			
▼			
▼			

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Coring Time (min./ft) | Moisture Content (%)

Strata Description: Depth & Elevation(feet) | Symbol | Sample Description: Classification System:

No sampling

Bottom of Exploration at 25.0 ft (325.7)

Remarks:
1) Exploration performed ~2 to 3 feet west of location marked in the field by GeoDesign and VHB to avoid storm drainage.
2) Boring terminated with solid stem auger refusal at approximately 25' deep on inferred bedrock.
3) Unable to discern water elevation from augers upon removal.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-26(P)

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

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BORING LOG

Project Name: Middlebury WCRS (23) Phase B, Middlebury, VT

Boring No.: GDB-27(P)
Page No.: 1 of 1
File No.: 837-65.1
Checked By: DTH

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Joshua Gilman		
Date Started:	November 4, 2013	Date Finished:	November 4, 2013
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	360.3		
Station: N/A	Offset: ft		

Casing:	Sampler:
Type: SSA	N/A
I.D.: 2.5 in.	in.
Hammer Wt.: NA	
Hammer Fall: NA	
Rig Type: CME 550X ATV	
Hammer Type:	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/4/13, 0:00			See Remark No. 3
▼			
▼			
▼			

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Coring Time (min./ft) | Moisture Content (%)

Strata Description: Depth & Elevation(feet) | Symbol | Sample Description: Classification System:

Inferred Fill Soil

Bottom of Exploration at 7.0 ft (353.3)

Remarks:
1) Exploration performed at location marked in the field by GeoDesign and VHB.
2) Boring terminated with solid stem auger refusal at approximately 7' deep on inferred bedrock.
3) Unable to discern water elevation from augers upon removal.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: GDB-27(P)

SMALL BORING # - SMALL REMARK 837-65.1 MIDDLEBURY PHASE B.GPJ GEODESIGN STANDARD .GDT 1/10/14

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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: GDB-28
Page No.: 1 of 1
File No.: 837-65.4
Checked By: DTH

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Joshua Gilman/Jacob Wimett		
Date Started:	November 4, 2013	Date Finished:	November 13, 2013
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	357.9		
Station: N/A	Offset: ft		

Casing:	Sampler:
Type: Flush	SS
I.D.: 4.0 in.	1.38 in.
Hammer Wt.: 140 lbs	140 lbs
Hammer Fall: 30 in.	30 in.
Rig Type: CME 550X ATV	
Hammer Type: Automatic	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/4/13, 0:00			See Remark No. 3
▼			
▼			
▼			

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Coring Time (min./ft) | Moisture Content (%)

Strata Description: Depth & Elevation(feet) | Symbol | Sample Description: Classification System: Burmister

Inferred Fill Soil

Inferred Weathered Bedrock (352.9)

Bedrock (Marble) (352.4)

Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval	Coring Time (min./ft)	Moisture Content (%)
C1	C	54	54	5.5	[REC= 100%; RQD= 69%]	2, 1, 2, 2	
C2	C	60	57	10	[REC= 95%; RQD= 95%]	2/0.5', 2, 3, 2, 2, 3	
C3	C	60	60	15	[REC= 100%; RQD= 97%]	2, 2, 2, 2, 2	
C4	C	60	60	20	[REC= 100%; RQD= 85%]	3, 3, 2, 3, 2	
C5	C	60	60	25	[REC= 100%; RQD= 83%]	2, 2, 2, 3, 3	
C6	C	12	12	30	[REC= 100%; RQD= 75%]	3	

C1) Fair quality, moderately hard, moderately to slightly weathered, close to moderately jointed, gray with frequent white banding and swirls MARBLE. Moderate to strong reaction to dilute HCl. Fracturing near 45 degrees from horizontal.

C2) Excellent quality, moderately hard, moderately jointed, slightly weathered to fresh, light gray with white banding MARBLE. Mild to strong reaction to dilute HCL/ Fracturing near 45 degrees from horizontal.

C3) Excellent quality, moderately hard, fresh, close to moderately jointed, light to dark gray with occasional white banding MARBLE with occasional thin darker bedding. Strong reaction to HCl on lighter portions. Fractures typically along darker bedding near 45 degrees from horizontal.

C4) Good quality, moderately hard, fresh to slightly weathered, very close to moderately jointed, dark gray with occasional white banding and splotches MARBLE with occasional darker bedding and infrequent white Quartz intrusions. Strong reaction to dilute HCL in lighter beds, no reaction in darker beds. Fracturing from approximately 15 to 50 degrees from horizontal.

C5) Good quality, moderately hard, fresh, close to moderately jointed light gray with white banding MARBLE with occasional darker bedding. Strong reaction to dilute HCl in lighter portions, no reaction in darker beds. Fracturing at approximately 15 to 45 degrees from horizontal.

C6) Fair quality, moderately hard, fresh, closely jointed, dark gray MARBLE. Interbedded with light gray Marble. Strong reaction to dilute HCl in lighter portions, no reaction in darker portions.

Bottom of Exploration at 31.0 ft (326.9)

Remarks:
1) Exploration performed at location marked in the field by GeoDesign and VHB.
2) Borehole began as 2" O.D. solid stem auger probe on 11/4/13. Driller reported SSA refusal at 5 feet deep.
3) Returned on 11/12/13 to advance borehole beyond 5' SSA refusal depth using wash-drive drilling methods. Groundwater levels not discernible due to addition of drilling fluid.
4) Four-inch flush joint casing driven to refusal at 5.5' deep. Driller estimated approximately 6" of penetration into weathered rock.
5) Noted loss of water through inferred seam in the bedrock while coring C1 between 5.5' and 10' deep.
6) Upon beginning core run C2 at 10' deep, driller noted complete loss of water through seam inferred at approximately 6.5' below grade. Driller removed core barrel, reamed hole with the roller bit, and telescoped 3" F.J casing to 9.5' deep through the 4" F.J casing prior to continuing borehole advancement with C2.
7) Water lost continuously through seams in rock during borehole advance. Estimated approximately 30 to 40 gallons of water loss per core run.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: GDB-28

SMALL REMARK FOR STANDARD 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 4/20/16

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (10 OF 35)	SHEET 48 OF 135

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: **GDB-29**
Page No.: 1 of 1
File No.: 837-65.4
Checked By: JAG

Boring Company:	QC/QA Laboratories, Inc.		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Alan Baribault/Hilary Jones		
Date Started:	February 16, 2016	Date Finished:	February 18, 2016
N. Coordinate:	---.---	E. Coordinate:	---.---
Ground Surface Elevation (feet):	352.8		
Station:	Offset: ft		

	Casing:	Sampler:
Type:	Flush	N/A
I.D.:	4.0 in.	in.
Hammer Wt.:	140 lbs	
Hammer Fall:	30 in.	
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval (0 - 6, 6 - 12, 12 - 18, 18 - 24) | Coring Time (min./ft) | Moisture Content (%)

Strata Description (Depth & Elevation(feet)) | Symbol | Sample Description (Classification System:)

Depth (ft)	Number	Type	Penetration (inches)	Recovery (inches)	Blows / 6 inch Interval	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Sample Description (Classification System:)
								Fill (Inferred; no sampling. See log of RR-13)	
5									
10									
15	C1	C	60	56	15	[REC= 93%; RQD= 32%]	2.5	15 Bedrock (Marble) 337.8	C1) Poor quality, hard, slightly weathered to moderately weathered (open joints), very closely to closely jointed gray with 1/16-1/4" light gray to white bands MARBLE. Fracturing approximately 0 to 15 degrees from horizontal. Strong reaction to dilute HCl.
							3.25		
							2.5		
							3		
20							3.5		
	C2	C	34	32	20	[REC= 94%; RQD= 65%]	4.75		C2) Fair quality, hard, slightly weathered, closely to moderately jointed gray with 1/4-3/4" light gray to white bands MARBLE. Fracturing approximately 10 to 20 degrees from horizontal. Moderate reaction to dilute HCl.
							4		
							7/10"		
	C3	C	60	60	22.8	[REC= 100%; RQD= 93%]	4		C3) Excellent quality, hard, fresh to slightly weathered, moderately jointed gray with 3" white band and white swirls MARBLE. Fracturing approximately 0 to 45 degrees from horizontal. Strong reaction to dilute HCl.
25							3.5		
							4.5		
							5		
	C4	C	24	23	26.8	[REC= 96%; RQD= 71%]	5		C4) Fair quality, hard, fresh to slightly weathered, closely to moderately jointed gray with white swirls MARBLE. Fracturing approximately 10 to 20 degrees from horizontal. Strong reaction to dilute HCl.
							4.25		
30							4	29.8 Bottom of Exploration at 29.8 ft 323.0	
35									

Remarks:
1) Casing driven to 13.5' deep, washed to 15' and then seated on becrock at 15' deep. Casing blows approximately 30 to 50 per foot (not recorded).
2) Wash water brown to 15 feet, becoming brownish-gray by 16' and gray by 18' deep during C1.
3) Boring advanced to 15 feet on 2/16 with CME 550X ATV rig; returned on 2/18 with CME 55 track rig.
4) Approximately full wash water recovery observed during coring.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: **GDB-29**

SMALL REMARK FONT STANDARD 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 5/19/16

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: **GDB-30**
Page No.: 1 of 2
File No.: 837-65.4
Checked By: JAG

Boring Company:	QC/QA Laboratories, Inc.		
Foreman:	James Burrowbridge		
GeoDesign Rep.:	Alan Baribault/Hilary Jones		
Date Started:	February 9, 2016	Date Finished:	February 15, 2016
N. Coordinate:	---.---	E. Coordinate:	---.---
Ground Surface Elevation (feet):	361.5		
Station:	Offset: ft		

	Casing:	Sampler:
Type:	Flush	N/A
I.D.:	4.0 in.	in.
Hammer Wt.:	140 lbs	
Hammer Fall:	30 in.	
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 2/9/16, 15:30			See note 2.
▼			
▼			
▼			

Depth (ft)	Number	Type	Penetration (inches)	Recovery (inches)	Blows / 6 inch Interval	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Sample Description (Classification System:)
45								Possible Fill (No sampling)	
60									
90									
105									
5 23								5	
	C1	C	60	55	5 [REC= 92%; RQD= 53%]	7.5		Bedrock (Marble) 356.5	C1) Fair quality, hard, slightly weathered along fracture surfaces, fine-grained dark to light gray, very closely to moderately jointed MARBLE. Fracturing approximately 45 to 60 degrees from horizontal. Slickenside and pyrite inclusions noted on fracture surfaces bottom 24". Strong reaction to dilute HCl.
						5.5			
						4.25			
						9.5			
10						3.5			
	C2	C	60	60	10 [REC= 100%; RQD= 55%]	4.5			C2) Fair quality, hard, slightly weathered, fine-grained gray and dark gray with white bands and swirls, very closely to moderately jointed MARBLE. Fracturing approximately 35 to 60 degrees from horizontal. Strong reaction to dilute HCl. Slickenside and pyrite inclusions noted on fracture surfaces bottom 12".
						3.25			
						4.5			
						4.25			
15						3.5			
	C3	C	60	60	15 [REC= 100%; RQD= 57%]	4.75			C3) Fair quality, hard, slightly weathered (except 2" moderately weathered at 17.5 feet), fine-grained dark gray (15 to 16') and lighter gray (16 to 20'), very closely to closely jointed MARBLE. Fracturing approximately 45 degrees (15-16') and 10 to 20 degrees (16 to 20') from horizontal. Strong reaction to dilute HCl.
						3			
						3.75			
						3			
20						4.5			
	C4	C	8	8	20 [REC= 100%; RQD= 50%]	11			C4) Fair quality, hard, slightly weathered, fine-grained light gray, very closely jointed MARBLE. Fracturing approximately 10 to 20 degrees from horizontal. Strong reaction to dilute HCl.
	C5	C	52	50	20.7 [REC= 96%; RQD= 21%]	5			C5) Very poor quality, hard, moderately weathered (upper 20") to slightly weathered along fracture surfaces (lower 30") gray and light gray with occasional white bands (~1/4" to 3" thick in upper
						5.5			
						6			
25						4			

Remarks:
1) Boring located 16' from N corner of old Lazrus bldg, 9' offset from E wall.
2) Drilling performed with drive and wash method; wash water brown, light brown, and occasionally black to 3 feet, becoming brown to 5 feet deep. Four-inch FJ casing driven to refusal at 4.8 feet deep on 2/9/16 and set up for rock coring.
3) Wash water return brown, becoming gray 6.5 to 7 feet deep (light gray with clear water) on 2/9/16.
4) Recirculation pump malfunctioned 2/10 and lack of return water caused excessibe coring bit wear; Lost return water below 17.5 feet deep, est. 75% loss to 18 feet. Fresh water return est. 25% and white. Total loss of water at 19 feet deep.
5) Attempted core advance from 20.7 to 21 feet and removed to inspect for wear (no water return and unclear whether pump was circulating).
6) Partial wash water return at approximately 22.8 feet.
7) Lost water return at 25 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: **GDB-30**

SMALL REMARK FONT STANDARD 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 5/19/16

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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: **GDB-30**
Page No.: 2 of 2
File No.: 837-65.4
Checked By: JAG

Boring Company:	QC/QA Laboratories, Inc.		
Foreman:	James Burrowbridge		
GeoDesign Rep.:	Alan Baribault/Hilary Jones		
Date Started:	February 9, 2016	Date Finished:	February 15, 2016
N. Coordinate:	---.---	E. Coordinate:	---.---
Ground Surface Elevation (feet):	361.5		
Station:	Offset: ft		

	Casing:	Sampler:
Type:	Flush	N/A
I.D.:	4.0 in.	in.
Hammer Wt.:	140 lbs	
Hammer Fall:	30 in.	
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 2/9/16, 15:30			See note 2.
▼			
▼			
▼			

Depth (ft)	Number	Type	Penetration (inches)	Recovery (inches)	Blows / 6 inch Interval	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Sample Description (Classification System:)
	C6	C	60	60	25 [REC= 100%; RQD= 100%]	4.5		Bedrock (Marble) (Continued)	20 inches), shattered to closely jointed MARBLE. Fracturing approximately 20 to 65 degrees from horizontal. Strong reaction to dilute HCl.
						4			C6) Excellent quality, hard, fresh to slightly weathered, gray, moderately to widely jointed MARBLE, with occasional white bands up to ~1/4" thick. Fracturing approximately 30 to 50 degrees from horizontal. Strong reaction to dilute HCl.
						4			
						5			
30						4.5			
	C7	C	60	60	30 [REC= 100%; RQD= 100%]	4			C7) Excellent quality, hard, fresh, gray (with one, 1" thick white band at 42 inches), moderately to widely jointed MARBLE. Fracturing approximately 30 degrees from horizontal. Strong reaction to dilute HCl.
						6			
						6			
						5.5			
35						6.5			
	C8	C	2	2	35.5 [REC= 100%; RQD= 0%]	5			C8) Similar to C7.
	C9	C	18	18	35.7 [REC= 100%; RQD= 55%]	25			C9) Fair quality, hard, fresh to slightly weathered, fine grained gray banded with 1/4" to 1.5" thick white bands, shattered to closely jointed MARBLE. Fracturing approximately 0 to 5 degrees from horizontal. Strong reaction to dilute HCl.
						33			
	C10	C	29	29	37.2 [REC= 100%; RQD= 83%]	18			C10) Good quality, hard, fresh to slightly weathered along fracture surfaces, gray with 1/2" to 2" thick white bands, very closely to moderately jointed MARBLE. Fracturing approximately 0 to 60 degrees from horizontal. Strong reaction to dilute HCl.
						20			
						9		39.5 Bottom of Exploration at 39.5 ft 322.0	
40									
45									
50									

Remarks:
8) At 35.5 feet on 2/11/16, CME 550X drill rig replaced with CME 55 and continued advance on 2/12/16.
9) Approximately 1/2 wash water return during coring of C9 and C10 (35.7 to 39.5 feet)

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: **GDB-30**

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (II OF 35)	SHEET 49 OF 135

BORING LOG

GEODESIGN INCORPORATED
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Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: **GDB-32C**
Page No.: 1 of 2
File No.: 837-65.4
Checked By: JAG

Boring Company:	QC/QA Laboratories, Inc.	Casing:	Sampler:
Foreman:	James Burrowbridge / John Leonhardt	Type: Flush	N/A
GeoDesign Rep.:	Alan Baribault/Hilary Jones	I.D.: 3.0 in.	in.
Date Started:	February 16, 2016	Date Finished: February 17, 2016	Hammer Wt.: 300 lbs
N. Coordinate:	---.---	E. Coordinate: ---.---	Hammer Fall: 24 in.
Ground Surface Elevation (feet):	358.5		Rig Type: CME 55 Track
Station:	Offset: ft		Hammer Type: Automatic

Groundwater Observations: Date | Depth (ft) | Elev. (ft) | Notes

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
													Asphalt (2") 358.3		
													Fill (Inferred)		
													3		
		C1	C	42	37	3			[REC= 88%; RQD= 83%]			11	Bedrock (Marble) 355.5		C1) Good quality, hard, slightly weathered gray with white bands moderately jointed MARBLE. Fracturing approximately 25 to 55 degrees from horizontal. Strong reaction to dilute HCl.
5												14			
												12			
		C2	C	42	32	6.5			[REC= 76%; RQD= 42%]			13			C2) Poor quality, hard, slightly to moderately weathered gray with white bands closely to moderately jointed MARBLE. Fracturing approximately 20 to 35 degrees from horizontal. Strong reaction to dilute HCl.
												13			
												11			
10												13			
		C3	C	24	22	10			[REC= 92%; RQD= 92%]			12			C3) Good quality, hard, slightly weathered gray with 1/16" to 1/2" thick white bands closely to moderately jointed MARBLE. Fracturing approximately 20 to 30 degrees from horizontal. Strong reaction to dilute HCl.
												9			
		C4	C	36	36	12			[REC= 100%; RQD= 86%]			7.5			C4) Good quality, hard, fresh to slightly weathered gray with 1/2" thick white band at approx. 14.5' closely to moderately jointed MARBLE. Fracturing approximately 30 to 40 and 70 degrees from horizontal. Strong reaction to dilute HCl.
												7.75			
15												6.75			
		C5	C	60	60	15			[REC= 100%; RQD= 58%]			6.5			C5) Excellent quality, hard, fresh (top 2/3) to slightly weathered (lower 1/3) dark and light gray with occasional white bands very closely to widely jointed MARBLE. Fracturing approximately 40 to 60 degrees from horizontal. Increasing fissility and phyllitic texture with depth (typical bottom 30"). Strong reaction to dilute HCl.
												4			
												5.5			
												7.5			
20												6			
		C6	C	48	46	20			[REC= 96%; RQD= 58%]			6			C6) Fair quality (top half very poor, bottom half excellent), hard, very closely to moderately jointed, slightly weathered gray with white bands MARBLE. Fracturing approximately 40 to 60 degrees from horizontal. Strong reaction to dilute HCl. Top 15" has some slickenside surfaces.
												5.25			
												5.25			
												7.5			
25		C7	C	60	60	24			[REC= 100%; RQD= 90%]			4.75			C7) Good quality, hard, fresh to slightly weathered, closely to moderately jointed gray with

Remarks:
1) Attempted location A, but unable to seat 4" FJ casing on inferred sloping surface at 5.3 feet. Abandon hole and offset 6 feet South for location B. Casing driven fo refusal at 3 feet deep. Attempted core at location B, lost water return at 3.5 feet from bottom of casing. Attempted to drive casing, unable to seat. Attempted roller bit advance, but carbide buttons damaged upon removal. Casing shoe damaged upon removal. Hole abandoned due to concern of metal debris.
2) Location C offset 2' East and advanced with 3" FJ casing to refusal at 3 feet deep. Water water return brown, becoming white-gray by approximately 3.5 feet during core C1. Wash water return lost completely at 7.5 feet.
3) Advanced stopped at 12 feet on 2/16; return 2/17 and attempt to seal fractures at 7.5 feet with bentonite chips. Wash water return gray.
4) During advance of C4 at approximately 15.5 feet, increased throttle/engine governor to hasten coring (low speed/high torque rig gearing).
5) Core block at 24 feet, unable to continue coring C6.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: **GDB-32C**

SMALL REMARK FONT STANDARD, 837-65.4 MIDDLEBURY ADDL 2016.GPJ, GEODESIGN STANDARD, GDT 5/19/16

BORING LOG

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Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: **GDB-32C**
Page No.: 2 of 2
File No.: 837-65.4
Checked By: JAG

Boring Company:	QC/QA Laboratories, Inc.	Casing:	Sampler:
Foreman:	James Burrowbridge / John Leonhardt	Type: Flush	N/A
GeoDesign Rep.:	Alan Baribault/Hilary Jones	I.D.: 3.0 in.	in.
Date Started:	February 16, 2016	Date Finished: February 17, 2016	Hammer Wt.: 300 lbs
N. Coordinate:	---.---	E. Coordinate: ---.---	Hammer Fall: 24 in.
Ground Surface Elevation (feet):	358.5		Rig Type: CME 55 Track
Station:	Offset: ft		Hammer Type: Automatic

Groundwater Observations: Date | Depth (ft) | Elev. (ft) | Notes

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
											7.25		Bedrock (Marble) (Continued)		white bands and swirls MARBLE. Fracturing approximately 20 to 50 and 70 degrees from horizontal. Strong reaction to dilute HCl.
											4				
											3.5				
											4				
30		C8	C	60	60	29			[REC= 100%; RQD= 78%]		4.25				C8) Good quality, hard, fresh gray with white bands and swirls (primarily 31.5 to 32 feet), closely to moderately jointed MARBLE. Fracturing approximately 40 to 50 degrees from horizontal. Slickensides noted typically bottom 24". Strong reaction to dilute HCl.
											3.75				
											3.5				
											4				
											3.5				
35		C9	C	24	24	34			[REC= 100%; RQD= 75%]		4.75				C9) Fair quality, hard, slightly weathered gray and dark gray and white bands closely to moderately jointed MARBLE. Fracturing approximately 10 to 30 degrees from horizontal. Strong reaction to dilute HCl.
											5.25				
													36 Bottom of Exploration at 36.0 ft 322.5		
40															
45															
50															

Remarks:
6) Lost water at 27 feet: partial return for approximately 1 minute then complete loss.
7) Borehole terminated at approximately 36 feet deep. Backfilled with cement-bentonite grout (1 bag cement, ~10 pounds of hydrated bentonite chips from prior attempt to plug fracture at 7.5 feet). Tremie grouted to 7 feet and removed casing. Added partially hydrated chips and topped off with grout.
8) Borehole topped off with concrete and asphalt patch on 2/18/16. Borehole location A backfilled with cuttings and bentonite, capped with soil/grass/leaves, and borehole location B backfilled with bentonite, sand, and capped with asphalt patch on 2/17.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: **GDB-32C**

SMALL REMARK FONT STANDARD, 837-65.4 MIDDLEBURY ADDL 2016.GPJ, GEODESIGN STANDARD, GDT 5/19/16

BORING LOG

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Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: **GDB-33**
Page No.: 1 of 1
File No.: 837-65.4
Checked By: JAG

Boring Company:	QC/QA Laboratories, Inc.	Casing:	Sampler:
Foreman:	John Leonhardt	Type: Flush	N/A
GeoDesign Rep.:	Hilary Jones	I.D.: 4.0 in.	in.
Date Started:	February 18, 2016	Date Finished: February 18, 2016	Hammer Wt.: 140 lbs
N. Coordinate:	---.---	E. Coordinate: ---.---	Hammer Fall: 30 in.
Ground Surface Elevation (feet):	350.5		Rig Type: CME 55 Track
Station:	Offset: ft		Hammer Type: Automatic

Groundwater Observations: Date | Depth (ft) | Elev. (ft) | Notes

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
													Fill (Inferred)		
5															
10															
15															
20		C1	C	60	60	19.5			[REC= 100%; RQD= 90%]			6.5	19.5 Bedrock (Marble) 331.0		C1) Excellent quality, hard, fresh to slightly weathered, closely to moderately joined gray with 1/4" to 1.5" thick white bands MARBLE. Fracturing approximately 5 to 40 degrees from horizontal. Moderate to strong reaction to dilute HCl.
												5			
												3.5			
												3.75			
												4	24.5 Bottom of Exploration at 24.5 ft 326.0		
25															
30															

Remarks:
1) Casing driven to 19' deep and washed out. Casing blows approximately 50 to 75 per foot (not recorded).
2) Wash water brown to 20.5 feet, becoming gray. Approximately full wash water return.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: **GDB-33**

SMALL REMARK FONT STANDARD, 837-65.4 MIDDLEBURY ADDL 2016.GPJ, GEODESIGN STANDARD, GDT 5/19/16

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*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME:	MIDDLEBURY
PROJECT NUMBER:	EWP3(2)
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (12 OF 35)	SHEET 50 OF 135

BORING LOG — Boring No.: GDB-34

GEODESIGN INCORPORATED
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Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Page No.: 1 of 1 | File No.: 837-65.4 | Checked By: JAG

Boring Company: QC/QA Laboratories, Inc.
Foreman: John Leonhardt
GeoDesign Rep.: Hilary Jones
Date Started: February 22, 2016 | Date Finished: February 23, 2016
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 350.5
Station: | Offset: ft

	Casing:	Sampler:
Type:	Flush	N/A
I.D.:	4.0 in.	in.
Hammer Wt.:	140 lbs	
Hammer Fall:	30 in.	
Rig Type:	CME 55 Track	
Hammer Type:	Automatic	

Groundwater Observations: Date | Depth (ft) | Elev. (ft) | Notes — (none recorded)

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0-6	6-12	12-18	18-24	Coring Time (min./ft)	Moisture Content (%)
5												
		C1	C	18	18	7	[REC= 100%; RQD= 33%]				4.5	
											3.5	
10												
15												
		C2	C	37	37	15	[REC= 100%; RQD= 43%]				8	
											4.75	
											5	
		C3	C	23	22	18.1	[REC= 96%; RQD= 56%]				6.25	
20											4	
25												
30												

Strata Description (Depth & Elevation (feet)):

- Fill (Inferred; no sampling. See log of RR-16)
- 7 — Glacial Till (Inferred) 343.5
- 15 — Bedrock (Marble) 335.5
- 20 — Bottom of Exploration at 20.0 ft 330.5

Sample Description (Classification System:)

C1) Upper 11": Poor quality, hard, fresh to slightly weathered, gray with thin white bands possible, closely jointed MARBLE. Fracturing approximately 45 degrees from horizontal. No reaction to dilute HCl
Lower 7": Fine to coarse GRAVEL (Inferred Glacial Till).

C2) Poor quality, hard, fresh to slightly weathered, dark gray with thin white bands, shattered to moderately jointed MARBLE with occasional thin (<1/8" thick) beds of carbonaceous inclusions. Top 24" phyllitic with fissile fracture. Fracturing approximately 5 - 60 degrees from horizontal. Strong reaction to dilute HCl. Bottom 16" lighter gray, less fractured.

C3) Fair quality, hard, fresh to slightly weathered, gray with thin white bands, very closely to closely jointed MARBLE. Fracturing approximately 30 - 60 degrees from horizontal. Strong reaction to dilute HCl.

Remarks:
1) 4" flush joint casing driven to refusal at 7' deep. Casing blows approximately 30 to 50 per foot (not recorded). Following core C1, 3" casing advanced with spin shoe telescopically to 15' deep.
2) Wash water brown to 15 feet, becoming gray at 16' deep during C2.
3) Nearly full wash water return observed during coring (slight water loss between 3" and 4" casing).

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: **GDB-34**

SMALL REMARK FONT STANDARD 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD.GDT 5/19/16

BORING LOG — Boring No.: MR-1

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102, Middlebury, VT

Page No.: 1 of 1 | File No.: 837-65 | Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Jesse McIntyre
Date Started: March 13, 2013 | Date Finished: March 13, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 366.71
Station: | Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations Date	Depth (ft)	Elev. (ft)	Notes
3/13/13, 9:30	21.0	345.7	Wet sample
3/13/13, 10:35	23.4	343.3	In open hole (30 min.)

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0-6	6-12	12-18	18-24	Coring Time (min./ft)	PID Reading (ppm)
		S1	SS	24	11	1	6	5	4	4		0.7
		S2	SS	24	11	2	3	4	8	13		0.6
5		S3	SS	24	1	5	9	5	3	4		1.1
		S4	SS	24	11	7	5	3	4	5		0.5
10		S5	SS	24	21	10	3	4	5	8		0.1
15		S6	SS	24	24	15	12	21	32	45		0.5
		S7	SS	24	18	17	22	31	29	32		0.2
20		S8	SS	24	12	19	14	16	29	58		0.2
		S9	SS	24	13	21	14	18	23	9		1.1
		S10	SS	24	24	23	10	23	57	33		0.6
25		S11	SS	24	13	25	14	33	20	18		1.2
		S12	SS	24	13	27	13	48	59	50		1.1
30		S13	SS	2	1	29	100/2"					2.3

Strata Description (Depth & Elevation (feet)):

- Asphalt 366.46
- Fill
- 15 — Gravelly Sand & Silt 351.71
- 21 — Silty Sand & Gravel 345.71
- 29.2 — Bottom of Exploration at 29.2 ft 337.51

Sample Description (Classification System: Burmister)

S1: Loose, brown-gray fine to coarse SAND and SILT, little Silt & Clay, little fine to coarse Gravel, trace Root Fibers, dry.

S2: Medium Dense, brown-gray fine to coarse SAND and SILT, little fine to coarse Gravel, trace Clayey Silt, moist.

S3:Loose, black-gray fine to coarse SAND, some Silt, little fine to coarse Gravel, moist.

S4: Medium, brown CLAY & SILT, some fine to coarse Sand, little fine to coarse Gravel, trace Concrete Debris, moist.

S5: Stiff, brown CLAY & SILT and fine to coarse SAND, little fine to coarse Gravel, moist.

S6: Very dense, brown fine to coarse SAND and SILT, little fine to coarse Gravel, moist.

S7: Very dense, brown fine to coarse SAND and SILT, some (+) fine to coarse Gravel, moist.

S8: Dense, gray brown fine to coarse SAND and SILT, some fine to coarse Gravel, moist.

S9: Dense, brown fine to coarse SAND and fine to coarse GRAVEL, some Silt, wet.

S10: Very Dense, brown fine to coarse SAND, some fine to coarse Gravel, little Silt, wet.

S11: Very dense, brown fine to coarse SAND, some fine to coarse Gravel, some (-) Silt, wet.

S12: Very dense, brown fine to coarse SAND, some fine to coarse Gravel, little (+) Silt, wet.

S13: Stone Chips

Remarks:
1) Northing, easting, and ground surface elevation shown are from survey data provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Driller maintained a head of water on the borehole beginning at 27' deep.
4) HSAR at 29' deep.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MR-1**

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/23/13

BORING LOG — Boring No.: MR-2A

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102, Middlebury, VT

Page No.: 1 of 1 | File No.: 837-65 | Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Jesse McIntyre
Date Started: March 13, 2013 | Date Finished: March 13, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 369.66
Station: | Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations Date	Depth (ft)	Elev. (ft)	Notes
3/13/13, 12:00	15.0	354.7	Wet sample

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0-6	6-12	12-18	18-24	Coring Time (min./ft)	PID Reading (ppm)
		S1	SS	18	18	0.25	6	3	4			0
		S2	SS	24	11	2	6	6	5	4		0.6
5		S3	SS	24	13	5	4	3	3	3		0
		S4	SS	24	6	7	2	3	3	4		1.1
10		S5	SS	24	17	10	2	4	4	45		0
15		S6	SS	24	11	15	9	27	23	34		0.2
		S7	SS	24	13	17	21	24	28	25		1.5
20		S8	SS	24	16	19	12	21	24	30		0.1
		S9	SS	17	14	21	31	79	100/5"			1.1
		S10	SS	10	10	23	63	100/4"				1.5
25												
30												

Strata Description (Depth & Elevation (feet)):

- Asphalt 369.41
- Fill
- 15 — Glacial Till (Silt & Sand) 354.66
- 20 — Glacial Till (Silty Sand) 349.66
- 23.8 — Bottom of Exploration at 23.8 ft 345.86

Sample Description (Classification System: Burmister)

S1: Medium, dark brown fine to coarse SAND and SILT & CLAY, little fine to coarse Gravel, trace Cinders, trace Root Fibers, moist.

S2: Medium dense, dark brown fine to coarse SAND and SILT & CLAY, little fine to coarse Gravel, trace Cinders, moist.

S3: Loose, brown fine to coarse SAND and CLAY & SILT, little fine to coarse Gravel, moist.

S4: Loose, brown fine to coarse SAND and CLAY & SILT, little fine to coarse Gravel, moist.

S5: Loose,
S5A - Top 14": Brown CLAY & SILT and fine to coarse SAND, little fine to coarse Gravel, moist.
S5B - Bottom 3": Tan/brown SILT and fine to coarse SAND.

S6: Very dense, gray brown fine to coarse SAND and SILT, little fine to coarse Gravel, wet.

S7: Very dense, gray brown fine to coarse SAND and SILT, little fine to coarse Gravel, wet.

S8: Top 8": Similar to S7
Bottom 8": Dense, gray brown fine to medium SAND, some(+) Silt, trace fine Gravel, wet.

S9: Very dense, gray brown fine to coarse SAND, some Silt, little fine to coarse Gravel, wet.

S10: Very dense, gray brown fine to coarse SAND, some Silt, little fine to coarse Gravel, stone chips in spoon tip wet.

Remarks:
1) Northing, easting, and ground surface elevation shown are from survey data provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Auger grinding on inferred boulders at 10 feet deep.
4) Refusal of split spoon at 23.8 feet on assumed bridge abutment stone blocks.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MR-2A**

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/23/13

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: **MR-2B**
Page No.: 1 of 1
File No.: 837-65
Checked By: JFW

Boring Company:	TransTech Drilling Services		
Foreman:	James Burrowbridge		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	March 14, 2013	Date Finished:	March 14, 2013
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	370.25		
Station:	Offset: ft		

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/14/13, 12:00			See Note 4

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	PID Reading (ppm)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System: Burmister
													Asphalt 370.0		
													No sampling performed in upper 10' of borehole.		
5															
10															
		S1	SS	24	24	10	3	4	7	8	0.4		Sandy Clay & Silt 360.3		S1: Stiff, olive brown Silty CLAY, little fine Sand, moist.
15															
		S2	SS	2	0	15	100/2"						Glacial Till (Silt & Sand) 355.3		S2: No Recovery
20															
		S3	SS	3	0	20	100/3"								S3: No Recovery
		S4	SS	5	7	22	100/5"				1.4				S4: Gray brown fine to coarse SAND and SILT, trace fine to coarse Gravel, wet.
		S5	SS	3	3	23	100/3"				0.7				S5: Gray brown fine to coarse SAND and SILT, little fine to coarse Gravel, wet.
25															
		S6	SS	3	0	25	100/3"-								S6: No Recovery, stone chip in spoon tip.
		S7	SS	5	6	27	100/5"				2.1				S7: Gray brown fine to coarse SAND and SILT, little fine to coarse Gravel, wet.
30		S8	SS	1	1	29	100/1"				0.7		Bottom of Exploration at 29.0 ft 341.2		S8: No Recovery, Stone chips in spoon tip.

Remarks:
1) Northing, easting, and ground surface elevation shown are from survey data provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Strata shown is inferred from nearby Boring MR-2A. Strata changes were not observed in spoon samples or inferred during auger advance.
4) Auger grinding and walking to the west on inferred boulders at 5' deep.
5) Driller began maintaining a head of water on the borehole at 10' deep to prevent possible flowing sands. No groundwater was observed prior to maintaining a head of water on the borehole.
6) HSAR at 29 feet deep.
7) One 5 foot auger section was lost in the hole during auger removal.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580B Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded;
N. A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane;
WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MR-2B**

VT BORING LOG MC-PID WITH SMALLER REMARK FONT 837-65 MIDDLEBURY WCRS (23) GPJ GEODESIGN STANDARD .GDT 4/16/13

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase C Middlebury, VT

Boring No.: **MR-101**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	April 8, 2014	Date Finished:	April 8, 2014
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	367		
Station:	Offset: ft		

	Casing:	Sampler:
Type:	None	None
I.D.:	N/A in.	in.
Hammer Wt.:	N/A	
Hammer Fall:	N/A	
Rig Type:	CME 550X ATV	
Hammer Type:	n/a	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/8/14, 0:00			None Observed

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
			VAC	65		0							No Sampling Performed		
5													5.4 Bottom of Exploration at 5.4 ft 361.6		
10															
15															
20															
25															
30															

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to approximately 65 inches deep.
3) A pipe approximately 4" in diameter crossed the hole in line with the abutment. Top of pipe at 56" from ground surface.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MR-101**

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

BORING LOG

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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase C Middlebury, VT

Boring No.: **MR-102**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	April 8, 2014	Date Finished:	April 8, 2014
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	367		
Station:	Offset: ft		

	Casing:	Sampler:
Type:	None	None
I.D.:	N/A in.	in.
Hammer Wt.:	N/A	
Hammer Fall:	N/A	
Rig Type:	CME 550X ATV	
Hammer Type:	n/a	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/8/14, 0:00			None Observed

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
			VAC	28		0							No Sampling Performed		
													2.3 Bottom of Exploration at 2.3 ft 364.7		
5															
10															
15															
20															
25															
30															

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to approximately 28 inches deep.
3) Refusal at 28 inches deep at top of 14" stone.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MR-102**

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME:	MIDDLEBURY
PROJECT NUMBER:	EWP3(2)
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (14 OF 35)	SHEET 52 OF 135

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **MR-103**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jesse McIntyre
Date Started: April 8, 2014 Date Finished: April 8, 2014
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 367
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
None	N/A in.	None	in.	N/A	N/A	CME 550X ATV	n/a

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/8/14, 0:00			None Observed
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
			VAC	46		0							No Sampling Performed		
													3.8 Bottom of Exploration at 3.8 ft 363.2		
5															
10															
15															
20															
25															
30															

Remarks
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to 46 inches deep.
3) Refusal at 46 inches deep at top of 16" stone.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MR-103**

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **MR-104**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jesse McIntyre
Date Started: April 8, 2014 Date Finished: April 8, 2014
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 367
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
S.S.A.	3.5 in.	None	in.	NA	NA	CME 550X ATV	n/a

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/8/14, 0:00			None Observed
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
			VAC	120		0							No Sampling Performed		
5															
10			A	180		10									
15															
20															
25													25 Bottom of Exploration at 25.0 ft 342.0		
30															

Remarks
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to approximately 10 feet deep.
3) Exploration advanced with 3.5" diameter solid stem augers below 10 feet deep.
4) Driller noted decrease in auger resistance at approximately 13 feet, then auger chatter approximately from 18 to 19 feet deep.
5) Exploration terminated at 25 feet deep without refusal.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MR-104**

SMALL REMARK FONT STANDARD 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

GEODESIGN INCORPORATED
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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

BORING LOG

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **MR-105**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jesse McIntyre
Date Started: April 8, 2014 Date Finished: April 8, 2014
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 367
Station: Offset: ft

Casing: Type	Casing: I.D.	Sampler: Type	Sampler: I.D.	Hammer Wt.	Hammer Fall	Rig Type	Hammer Type
None	N/A in.	None	in.	N/A	N/A	CME 550X ATV	n/a

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/8/14, 0:00			None Observed
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
			VAC	48		0							No Sampling Performed		
													4 Bottom of Exploration at 4.0 ft 363.0		
5															
10															
15															
20															
25															
30															

Remarks
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to approximately 48 inches deep.
3) Refusal at 48 inches deep at top of 14" stone.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MR-105**

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (15 OF 35)	SHEET 53 OF 135

BORING LOG

GEODESIGN INCORPORATED

Geotechnical / Construction / Environmental Engineers and Scientists

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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **MR-106**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	April 8, 2014	Date Finished:	April 8, 2014
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	367		
Station:	Offset: ft		

	Casing:	Sampler:
Type:	S.S.A.	None
I.D.:	3.5 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	CME 550X ATV	
Hammer Type:	n/a	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/8/14, 0:00			None Observed
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)
		1	VAC	94		0						
5												
		2	A	206		7.83						
10												
15												
20												
25												
30												

Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System:
No Sampling Performed		
25 Bottom of Exploration at 25.0 ft (342.0)		

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to approximately 94 inches deep.
3) Exploration advanced with 3.5" diameter solid stem augers below 94 inches deep.
4) Exploration terminated at 25 feet deep without refusal.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Drive; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MR-106**

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

BORING LOG

GEODESIGN INCORPORATED

Geotechnical / Construction / Environmental Engineers and Scientists

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Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **MR-107**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	April 8, 2014	Date Finished:	April 8, 2014
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	367		
Station:	Offset: ft		

	Casing:	Sampler:
Type:	None	None
I.D.:	N/A in.	in.
Hammer Wt.:	N/A	
Hammer Fall:	N/A	
Rig Type:	CME 550X ATV	
Hammer Type:	n/a	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/8/14, 0:00			None Observed
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)
		1	VAC	58		0						
5												
10												
15												
20												
25												
30												

Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System:
No Sampling Performed		
4.8 Bottom of Exploration at 4.8 ft (362.2)		

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to approximately 58 inches deep.
3) Refusal at 58 inches deep at top of stone or boulder (did not appear to be a dimensional / ashlar stone of the abutment).

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Drive; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MR-107**

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

BORING LOG

GEODESIGN INCORPORATED

Geotechnical / Construction / Environmental Engineers and Scientists

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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102, Middlebury, VT

Boring No.: **MS-1A**
Page No.: 1 of 1
File No.: 837-65
Checked By: JFW

Boring Company:	TransTech Drilling Services		
Foreman:	James Burrowbridge		
GeoDesign Rep.:	Joshua Gilman		
Date Started:	March 12, 2013	Date Finished:	March 12, 2013
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	370.35		
Station:	Offset: ft		

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/12/13, 9:00	-	370.4	None observed
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
		S1	SS	18	10	0.5	8	12	6			3.1
		S2	SS	24	14	2	5	6	6	6		1.0
5												
		S3	SS	24	22	5	5	7	5	6		2.2
		S4	SS	24	24	7	2	3	5	7		0.3
10												
		S5	SS	24	24	10	3	3	4	5		1.0
15												
20												
25												
30												

Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
0.8 Asphalt		
Fill 369.55		S1: Medium dense, brownish black fine to coarse SAND, little Silt, trace fine Gravel, dry.
		S2: Top 2" similar to S1. Bottom 12" Stiff, tan brown CLAY & SILT and fine to coarse SAND, trace fine Gravel, moist.
		S3: Top 11" Stiff, tan brown CLAY & SILT, some fine to coarse Sand, trace Wood, moist. Bottom 11" Stiff, gray CLAY & SILT, some fine to coarse Sand, trace Brick, moist.
		S4: Stiff, gray to brown with gray seams, CLAY & SILT (finely parted), trace fine to coarse Sand, moist.
		S5: Top 2" similar to S4. Bottom 22" Stiff, tan brown CLAY & SILT, trace fine to coarse Sand, moist. With 2 to 3" fine to coarse Sand seams.
13 Bottom of Exploration at 13.0 ft (357.35)		

Remarks:
1) Northing, easting, and ground surface elevation shown are from survey data provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
2) HSAR at 13 feet deep. Driller offset 12 feet northeast to resume advance on MS-1B.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Drive; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MS-1A**

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PRDAFTERP 12-04.GDT 4/16/13

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (16 OF 35)	SHEET 54 OF 135

BORING LOG — Boring No.: MS-1B

GEODESIGN INCORPORATED
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Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: MS-1B | Page No.: 1 of 1 | File No.: 837-65 | Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 12, 2013 Date Finished: March 12, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 370.27
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/12/13, 9:30	17.8	352.5	Wet sample
3/12/13, 11:00	21.5	348.8	In augers

Sample Information

Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
S6	SS	24	18	16	4	11	10	7		0.2
S7	SS	24	24	18	5	4	3	7		0.2
S8	SS	24	9	20	2	2	2	4		0
S9	SS	24	6	22	1	3	4	6		0
S10	SS	24	9	24	3	40	43	70		0.1

Strata Description (Depth & Elevation (feet)):
- 0.8 Asphalt
- Fill 369.47
- 16 Silt/ Sand/Clay Mixture 354.27
- 24.5 Possible Weathered Bedrock 345.77
- 26 Bottom of Exploration at 26.0 ft 344.27

Sample Description (Classification System: Burmister):
- S6: Medium dense, tan brown fine to coarse SAND and Clayey SILT, little fine to coarse Gravel, wet bottom 3"'.
- S7: Loose, tan brown fine to coarse SAND and Clayey SILT, little fine to coarse Gravel, wet.
- S8: Loose, tan brown Clayey SILT and fine to coarse SAND, little fine to coarse Gravel, wet.
- S9: Loose, tan brown Clayey SILT and fine to coarse SAND, trace fine Gravel, wet.
- S10: Top 3": Similar to S9 Bottom 6": Very dense, gray brown Clayey SILT and fine to coarse SAND, little fine to coarse Gravel, wet. Stone chips in spoon tip.

Remarks:
1) Northing, easting, and ground surface elevation shown are from survey data provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
2) Refer to MS-1A for data from 0 to 13 feet deep.
3) HSAR at 25 feet deep.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: MS-1B

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

BORING LOG — Boring No.: MS-2A

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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: MS-2A | Page No.: 1 of 1 | File No.: 837-65 | Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Jesse McIntyre
Date Started: March 12, 2013 Date Finished: March 11, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 366.98
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/12/13, 14:15	15.0	352.0	Wet sample

Sample Information

Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
S1	SS	24	15	0.33	15	20	17	16		0.2
S2	SS	24	13	2.33	31	12	6	6		0.2
S3	SS	24	10	5	4	3	3	5		0.1
S4	SS	24	23	7	5	10	11	17		0.1
S5	SS	24	23	10	3	20	17	16		0.1
S6	SS	24	10	15	6	7	7	8		0.0
S7	SS	24	12	17	3	3	4	11		0.0
S8	SS	17	13	19	27	21	100/5"			0.1
S9	SS	3	1	21	100/3"					

Strata Description (Depth & Elevation (feet)):
- Asphalt
- Fill 366.65
- 19 Glacial Till 347.98
- 21.25 Bottom of Exploration at 21.3 ft 345.73

Sample Description (Classification System: Burmister):
- S1: Dense light brown fine to coarse SAND, some fine to coarse Gravel, little Silt, dry.
- S2: Medium Dense, light brown fine to coarse SAND and fine to coarse GRAVEL, little Silt, dry.
- S3: Medium, tan brown Clayey SILT and fine to coarse SAND, little fine Gravel, trace Concrete Debris, moist.
- S4: Medium dense, tan brown SILT and fine to coarse SAND, some fine to coarse Gravel, moist.
- S5: Dense, tan brown SILT and fine to coarse SAND, trace fine Gravel, moist.
- S6: Medium dense, tan brown Clayey SILT, some fine to coarse Sand, some fine to coarse Gravel, moist.
- S7: Loose, gray brown SILT and fine to coarse SAND, little fine to coarse Gravel, wet.
- S8: Very dense, gray brown SILT and fine to coarse SAND, some fine to coarse Gravel, wet. Stone chips in spoon tip.
- S9: Refusal. Stone chips in spoon tip.

Remarks:
1) Northing, easting, and ground surface elevation shown are from survey data provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) HSAR at 21 feet deep. Hole terminated at 21.25 feet deep (bottom of final SS sample).

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: MS-2A

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

BORING LOG — Boring No.: MS-2B

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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: MS-2B | Page No.: 1 of 1 | File No.: 837-65 | Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Jesse McIntyre
Date Started: March 14, 2013 Date Finished: March 14, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 366.22
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/14/13, 0:00			See Note 3

Sample Information

Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
S1	SS	24	24	10	11	29	13	41		0.3
S2	SS	24	16	13	46	33	15	22		1.1
S3	SS	2	0	18	100/2"					
S4	SS	2	0	19	100/2"					

Strata Description (Depth & Elevation (feet)):
- Asphalt 365.89
- No sampling performed in upper 10' of borehole.
- 10 Glacial Till 356.22
- 19.2 Bottom of Exploration at 19.2 ft 347.02

Sample Description (Classification System: Burmister):
- S1: Dense, brown SILT and fine to coarse SAND, little fine to coarse Gravel, moist.
- S2: Dense, brown SILT and fine to coarse SAND, little fine to coarse Gravel, moist.
- S3: Refusal, no recovery.
- S4: Refusal, stone chip in spoon tip.

Remarks:
1) Northing, easting, and ground surface elevation shown are from survey data provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Driller began maintaining a head of water on the borehole to prevent possible heaving sands prior to making note of any groundwater.
4) HSAR at 19 feet deep. Hole terminated at 19.16 feet deep (bottom of final SS sample).

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: MS-2B

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/22/13

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

PROJECT NAME:	MIDDLEBURY
PROJECT NUMBER:	EWP3(2)
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (17 OF 35)	SHEET 55 OF 135

BORING LOG — MS-101

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: MS-101
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	April 9, 2014	Date Finished:	April 9, 2014
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	368		
Station:		Offset:	ft

	Casing:	Sampler:
Type:	S.S.A.	SS
I.D.:	3.5 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/9/14, 0:00			None Observed
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
			VAC	96		0						
			A	180		8						
			S1	SS	1	1	23	60/1"				

Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
No Sampling Performed (8)		
No Sampling Performed (360.0)		
Fill (with Wood) (346.0)		
Glacial Till (344.9)		Refusal, gray SILT and coarse GRAVEL, trace fine to coarse Sand, trace Wood Fibers, moist, slight organic decay odor.
Bottom of Exploration at 23.1 ft (22, 23)		

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to approximately 96 inches deep. Slope of back face appears to be approximately 3H:12V. Refusal of vacuum equipment between back of wall and large stone.
3) Exploration advanced with 3.5" diameter solid stem augers below approximately 8 feet deep.
4) Encountered auger refusal at approximately 22 feet deep. Upon removal of auger, flights were coated with wood fibers and auger tip cutting teeth were sheared off. Auger tip replaced and resumed advance to refusal at approximately 23 feet deep.
5) Following auger refusal at approximately 23 feet deep, augers were removed and a split spoon sampler was advanced to refusal at approximately 23.1 feet deep on inferred bedrock.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Drive; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: MS-101

SMALL REMARK FONT STANDARD 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD.GDT 5/21/14

BORING LOG — MS-102

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Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: MS-102
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	April 9, 2014	Date Finished:	April 9, 2014
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	368		
Station:		Offset:	ft

	Casing:	Sampler:
Type:	S.S.A.	None
I.D.:	3.5 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	CME 550X ATV	
Hammer Type:	n/a	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/9/14, 0:00			None Observed
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
			VAC	72		0						

Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System:
No Sampling Performed (6)		
Bottom of Exploration at 6.0 ft (362.0)		

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to approximately 72 inches deep.
3) Refusal at 72 inches deep on on timbers assumed to be remnants of formwork.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Drive; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: MS-102

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD.GDT 5/21/14

BORING LOG — MS-103

GEODESIGN INCORPORATED
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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: MS-103
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	April 9, 2014	Date Finished:	April 9, 2014
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	368		
Station:		Offset:	ft

	Casing:	Sampler:
Type:	S.S.A.	None
I.D.:	3.5 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	CME 550X ATV	
Hammer Type:	n/a	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/9/14, 0:00			None Observed
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)
			VAC	98		0						
			A	142		8.16						

Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System:
No Sampling Performed (8)		
No Sampling Performed (360.0)		
Bottom of Exploration at 8.2 ft (347.5, 20.5)		

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to approximately 98 inches deep. Refusal of vacuum equipment at top of multiple 8" to 10" cobbles. Back of ashlar stones of abutment visible on sidewall of excavation. Stone abutment appears to be approximately 4 feet thick and stacked vertically.
3) Exploration advanced with 3.5" diameter solid stem augers below approximately 98 inches deep.
4) Exploration terminated at approximately 20.5 feet deep with refusal on inferred bedrock.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Drive; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: MS-103

SMALL REMARK FONT STANDARD 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD.GDT 5/21/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (18 OF 35)	SHEET 56 OF 135

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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BORING LOG

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **MS-104**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	April 9, 2014	Date Finished:	April 9, 2014
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	368		
Station:		Offset:	ft

	Casing:	Sampler:
Type:	S.S.A.	None
I.D.:	3.5 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	CME 550X ATV	
Hammer Type:	n/a	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/9/14, 0:00			None Observed
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
			VAC	111		0							No Sampling Performed		
5															
10			A	135		9.25									
15															
20													20 Bottom of Exploration at 20.0 ft	348.0	
25															
30															

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Water used to jet material during vacuum excavation, all soils encountered were moist to wet. Vacuum truck cleared hole to approximately 111 inches deep. Refusal of vacuum equipment at top of multiple 8" to 10" cobbles.
3) Exploration advanced with 3.5" diameter solid stem augers below approximately 111 inches deep.
4) Exploration terminated at approximately 20 feet deep with refusal on inferred bedrock.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **MS-104**

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BORING LOG

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **OP-1**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	April 11, 2014	Date Finished:	April 11, 2014
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	361		
Station:	~200+25	Offset:	15 ft North

	Casing:	Sampler:
Type:	S.S.A.	None
I.D.:	3.5 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	CME 550X ATV	
Hammer Type:	n/a	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
													No Sampling Performed		
5															
			A	78		6.5							6.5 Bottom of Exploration at 6.5 ft	354.5	
10															
15															
20															
25															
30															

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Exploration advanced with 3.5" diameter solid stem augers to refusal at approximately 6.5 feet deep on inferred bedrock.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **OP-1**

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BORING LOG

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **OP-2**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company:	TransTech Drilling Services		
Foreman:	John Leonhardt		
GeoDesign Rep.:	Jesse McIntyre		
Date Started:	April 9, 2014	Date Finished:	April 9, 2014
N. Coordinate:		E. Coordinate:	
Ground Surface Elevation (feet):	360		
Station:	~200+75	Offset:	10 ft North

	Casing:	Sampler:
Type:	S.S.A.	None
I.D.:	3.5 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	CME 550X ATV	
Hammer Type:	n/a	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			
▼			

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description Classification System:
													No Sampling Performed		
5															
			A	103		8.58							8.6 Bottom of Exploration at 8.6 ft	351.4	
10															
15															
20															
25															
30															

Remarks:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **OP-2**

VT BORING LOG MC-5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (19 OF 35)	SHEET 57 OF 135

BORING LOG

GEODESIGN INCORPORATED
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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **OP-3**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jesse McIntyre
Date Started: April 11, 2014 Date Finished: April 11, 2014
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 359
Station: ~201+75 Offset: 0 ft

Casing:	Sampler:
Type: S.S.A.	None
I.D.: 3.5 in.	in.
Hammer Wt.: NA	
Hammer Fall: NA	
Rig Type: CME 550X ATV	
Hammer Type: n/a	

Groundwater Observations: Date | Depth (ft) | Elev. (ft) | Notes

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval: 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Coring Time (min./ft) | Moisture Content (%)

Depth (ft)	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)
5	A	57		4.7	

Strata Description: Depth & Elevation(feet)

No Sampling Performed

4.7 Bottom of Exploration at 4.7 ft 354.3

Symbol

Sample Description: Classification System:

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Exploration advanced with 3.5" diameter solid stem augers to refusal at approximately 4.7 feet deep on inferred bedrock.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **OP-3**

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

BORING LOG

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Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **OP-4**
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jesse McIntyre
Date Started: April 11, 2014 Date Finished: April 11, 2014
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 358
Station: ~201+58 Offset: 0 ft

Casing:	Sampler:
Type: S.S.A.	None
I.D.: 3.5 in.	in.
Hammer Wt.: NA	
Hammer Fall: NA	
Rig Type: CME 550X ATV	
Hammer Type: n/a	

Groundwater Observations: Date | Depth (ft) | Elev. (ft) | Notes

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval: 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Coring Time (min./ft) | Moisture Content (%)

Depth (ft)	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)
5	A	60		6	

Strata Description: Depth & Elevation(feet)

No Sampling Performed

5 Bottom of Exploration at 5.0 ft 353.0

Symbol

Sample Description: Classification System:

Remarks:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **OP-4**

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: **RR-1(OW)**
Page No.: 1 of 1
File No.: 837-65.4
Checked By: AJB

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 19, 2013 Date Finished: March 19, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 353.05
Station: 19+00 Offset: 0 ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 3.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: CME 550X ATV	
Hammer/Rod Type: Automatic	

Groundwater Observations: Date | Depth (ft) | Elev. (ft) | Notes

Date	Depth (ft)	Elev. (ft)	Notes
3/28/13, 8:45	1.2	351.9	In well
5/1/13, 8:10	1.4	351.7	In well
10/30/13, 11:15	1.8	351.3	In well
11/12/13, 16:30	1.5	351.6	In well
2/3/14, 12:00	1.3	351.8	In well
6/24/14, 0:00	1.7	351.4	In well
12/4/15, 10:46	1.0	352.1	In well
4/7/16, 8:48	1.4	351.7	In well

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval: 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Coring Time (min./ft) | Moisture Content (%)

Depth (ft)	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24
	S1	SS	24	10	2	6	12	13	7
5	S2	SS	24	16	4	2	3	5	6
	S3	SS	24	6	6	3	3	3	4
	S4	SS	24	12	8	4	8	7	6

Strata Description: Depth & Elevation(feet)

Ballast 2

Clay & Silt 351.1

10 Bottom of Exploration at 10.0 ft 343.1

Symbol

Sample Description: Classification System: Burmister

S1: Medium dense, dark brown fine to coarse SAND, some Clayey Silt, trace fine Gravel, moist.

S2: Stiff, gray CLAY & SILT, some fine to coarse Sand, trace fine Gravel, wet.

S3: Medium, gray CLAY & SILT and fine to coarse SAND, trace fine Gravel, wet.

S4: Very stiff, brown CLAY & SILT and fine to coarse SAND, trace fine Gravel, wet.

Well Log

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Exploration terminated at 10 feet with no refusal.
4) Monitoring well installed to bottom of borehole, with PVC cover flush with adjacent ties.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: **RR-1(OW)**

ADDITIONAL VHB SMALL REMARK FONT 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 5/27/16

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: zl6b046borlogs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING LOGS (20 OF 35)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 58 OF 135

BORING LOG — Boring No.: RR-2

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089 — Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403 — Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016 Middlebury, VT

Boring No.: RR-2 | Page No.: 1 of 1 | File No.: 837-65.4 | Checked By: AJB/JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 19, 2013 Date Finished: March 19, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 350.92
Station: 16+75 Offset: 0 ft

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	N/A	140 lbs
Hammer Fall:	N/A	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/19/13, 0:00			No observation

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)
		C1	C	24	24	2	[REC= 100%; RQD= 17%]					
											8	
5		C2	C	24	22	4	[REC= 92%; RQD= 17%]				8	
											6.5	
		C3	C	54	53	6	[REC= 98%; RQD= 62%]				8	
											6.5	
											6.5	
10											7	
											10	
15												
20												
25												
30												

Strata Description (Depth & Elevation (feet)):
- Ballast
- 1.5 — Bedrock (Marble) 349.4
- 10 — Bottom of Exploration at 10.0 ft 340.9

Sample Description — Classification System: Burmister

C1: Very poor quality, moderately hard, fresh to slightly weathered, shattered (upper 12") to very close to closely jointed (lower 12"), gray with occasional white banding MARBLE. Fracturing approximately 35 degrees from horizontal. Strong reaction to dilute HCl. (Possibly overblasted rock).

C2: Very poor quality, moderately hard, fresh to slightly weathered, very close to closely jointed, light gray with thin white banding MARBLE transitioning to dark gray with pyrite inclusions in bottom 6" of core. Fracturing at ~35 to 45 degrees from horizontal. Strong reaction to dilute HCl in limestone portions with no reaction in darker portions.

C3: Fair quality, moderately hard, fresh to slightly weathered, closely jointed light gray with white bands and swirls MARBLE with thin (<1/2" thick) beds of dark gray (upper 15") grading to interbedded (beds from 1/2" to 5" thick) light gray and dark gray (middle 28") grading to dark gray with occasional pyrite inclusions (bottom 10"). Fracturing typically occuring along darker beds at ~50 to 60 degrees from horizontal. Strong reaction to dilute HCl in lighter gray portions with no reaction in the darker portions.

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) Driller noted top of bedrock encountered at 1.5 feet deep. Spun casing to 2 feet prior to start of rock coring.
3) Core runs C1, C2, and C3 were terminated prior to 5-foot run due to core barrel blockages caused by highly fractured rock (mechanical breaks as well as natural fractures). Core C2 recovered 12" that was not of recovered from C1.
4) Exploration terminated at 10 feet deep after coring 8 feet of rock.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: RR-2

SMALL REMARK FONT STANDARD 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 4/28/16

BORING LOG — Boring No.: RR-3

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089 — Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403 — Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-3 | Page No.: 1 of 1 | File No.: 837-65 | Checked By: AJB

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 20, 2013 Date Finished: March 20, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 351.06
Station: 5+00 Offset: 0 ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/20/13, 0:00			No observation

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
		S1	SS	24	18	2	8	6	4	5		0
5		S2	SS	24	16	4	7	5	9	8		0.1
		S3	SS	24	24	6	4	7	11	13		0.1
		S4	SS	24	18	8	6	13	21	36		0.2
10												
15												
20												
25												
30												

Strata Description (Depth & Elevation (feet)):
- Ballast
- 2 — Possible Fill 349.06
- 6 — Gravelly Sand and Silt 345.06
- 10 — Bottom of Exploration at 10.0 ft 341.06

Sample Description — Classification System: Burmister

S1: Medium dense / Stiff;
S1A (Top 11"): Tan brown fine to coarse SAND, trace Silt, dry.
S1B (Bottom 7"): Tan, mottled CLAY & SILT, moist.

S2: Medium dense tan brown fine to coarse SAND and SILT, trace fine Gravel, moist.

S3: Medium dense, tan fine to coarse SAND and SILT, trace fine Gravel, moist.

S4: Dense, gray fine to coarse SAND and SILT, some fine to coarse Gravel, moist.

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Exploration terminated at 10 feet deep with no refusal.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: RR-3

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

BORING LOG — Boring No.: RR-4

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089 — Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403 — Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-4 | Page No.: 1 of 1 | File No.: 837-65 | Checked By: AJB

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 20, 2013 Date Finished: March 20, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 350.23
Station: 10+00 Offset: 0 ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/20/13, 9:30	8.0	342.2	Wet sample

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
		S1	SS	24	12	2	9	8	4	5		1.2
5		S2	SS	24	12	4	3	3	3	4		0.2
		S3	SS	24	14	6	9	20	18	25		0.2
		S4	SS	24	18	8	4	16	12	31		0.2
10												
15												
20												
25												
30												

Strata Description (Depth & Elevation (feet)):
- Ballast
- 2 — Silt & Sand 348.23
- 6 — Silty Gravelly Sand 344.23
- 10 — Bottom of Exploration at 10.0 ft 340.23

Sample Description — Classification System: Burmister

S1: Medium dense, tan gray SILT, some fine Sand, trace (-) fine Gravel, moist.

S2: Loose, tan with mottling, SILT and fine SAND, trace Clayey Silt, very moist.

S3: Dense, tan fine to coarse SAND, little fine to coarse Gravel, little Silt, moist.

S4: Medium dense, tan fine to coarse SAND, little fine to coarse Gravel, little (-) Silt, wet.

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Exploration terminated at 10 feet deep with no refusal.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: RR-4

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046borlogs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING LOGS (21 OF 35)
PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 59 OF 135

BORING LOG — RR-5

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-5
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 20, 2013 Date Finished: March 20, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 358.27
Station: 25+00 Offset: 0 ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 3.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: CME 550X ATV	
Hammer Type: Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/20/13, 0:00			No observation

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													Ballast 2		
		S1	SS	24	17	2	7	9	16	12		0.2	Fill 356.27		S1: Medium dense, tan fine to coarse SAND, little Silt, trace fine Gravel, slightly moist.
5		S2	SS	24	6	4	9	7	6	5		0.6	6		S2: Medium dense, tan and gray fine to coarse SAND, little Silt, trace Wood (in spoon tip), moist.
		S3	SS	24	24	6	3	3	2	3		0.1	Silty Clay 352.27		S3: Medium, gray and reddish brown CLAY & SILT, trace (-) fine Gravel, moist.
		S4	SS	24	24	8	2	2	3	5		0.3			S4: Medium, reddish brown with gray CLAY & SILT, trace (-) fine Gravel, moist.
10													10 Bottom 348.27 of Exploration at 10.0 ft		
15															
20															
25															
30															

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Exploration terminated at 10 feet deep with no refusal.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe;
V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundaries between material types, transitions may be gradual.

Boring No.: RR-5

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23) GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

BORING LOG — RR-6

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-6
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 20, 2013 Date Finished: March 20, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 355.04
Station: 21+00 Offset: 0 ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 3.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: CME 550X ATV	
Hammer Type: Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/20/13, 12:20	2.0	353.0	Wet sample

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													Ballast 2		
		S1	SS	24	9	2	6	5	6	7		0.4	Fill 353.04		S1: Medium dense, brown and black fine to coarse SAND, little fine to coarse Gravel, little Silt, wet.
5		S2	SS	24	24	4	2	2	2	4		0.1	4 Clay & Silt 351.04		S2: Medium, reddish brown (top and bottom 2" gray) CLAY & SILT, trace fine to coarse Sand (on outside likely remaining on split spoon from above), slightly moist.
		S3	SS	24	24	6	1	2	2	3		0.2			S3: Medium, reddish brown Silty CLAY, trace (-) fine to coarse Sand, Trace (-) fine Gravel, moist.
		S4	SS	24	24	8	WOH	2	2	3		0.0			S4: Medium, reddish brown Silty CLAY, trace (-) fine Sand, moist.
10													10 Bottom 345.04 of Exploration at 10.0 ft		
15															
20															
25															
30															

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Exploration terminated at 10 feet deep with no refusal.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe;
V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundaries between material types, transitions may be gradual.

Boring No.: RR-6

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23) GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

BORING LOG — RR-7

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-7
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 20, 2013 Date Finished: March 20, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 351.07
Station: 17+00 Offset: 0 ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 3.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: CME 550X ATV	
Hammer Type: Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/20/13, 1:25	2.0	349.1	Wet sample

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													Ballast 2		
		S1	SS	5	5	2	100/5"					0.5	Fill 349.07		S1: Refusal, gray fine to coarse SAND (pulverized rock fragments, reaction to dilute HCl), some Silt, wet.
													Bottom of Exploration at 2.5 ft 348.57		
5															
10															
15															
20															
25															
30															

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Exploration terminated at 2.5 feet deep SSR and HSAR on inferred bedrock.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe;
V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundaries between material types, transitions may be gradual.

Boring No.: RR-7

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23) GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (22 OF 35)	SHEET 60 OF 135

BORING LOG — RR-8

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-8
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 20, 2013 Date Finished: March 20, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 352.04
Station: 18+00 Offset: 0 ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/20/13, 13:50	2.0	350.0	Wet sample

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
		S1	SS	15	10	2	14	44	100/3"			0.6
		S2	SS	0	0	3.5	50/0"					

Strata Description — Depth & Elevation(feet)
- Ballast
- 2 — Weathered Bedrock 350.04
- 3.5 — Bottom of Exploration at 3.5 ft 348.54

Symbol

Sample Description — Classification System: Burmister
- S1: Refusal, gray fine to coarse GRAVEL and fine to coarse SAND, some Silt, wet (reaction to dilute HCl, possible overblast material).
- S2: Refusal, no recovery.

Remarks
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Exploration terminated at 3.5 feet deep SSR and HSAR on inferred bedrock.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe;
V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundaries between material types, transitions may be gradual.

Boring No.: RR-8

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

BORING LOG — RR-9

GEODESIGN INCORPORATED
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Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-9
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 20, 2013 Date Finished: March 20, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 356.74
Station: 23+00 Offset: 0 ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/20/13, 14:25	4.0	352.7	Wet sample

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
		S1	SS	24	16	2	9	11	14	6		0.3
		S2	SS	24	16	4	4	3	3	5		0.2
		S3	SS	24	24	6	2	2	2	3		0.7
		S4	SS	24	24	8	WOH	2	2	2		0.1

Strata Description — Depth & Elevation(feet)
- Ballast
- 2 — Fill 354.74
- 4 — Silt & Clay 352.74
- 10 — Bottom of Exploration at 10.0 ft 346.74

Symbol

Sample Description — Classification System: Burmister
- S1: Medium dense, brown fine to coarse SAND, little Silt, trace fine Gravel, moist.
- S2: Medium, tan SILT & CLAY, trace fine to medium Sand, trace fine Gravel, wet.
- S3: Medium, tan SILT & CLAY, moist.
- S4: Medium, reddish brown SILT & CLAY, moist.

Remarks
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Exploration terminated at 10 feet deep with no refusal.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe;
V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundaries between material types, transitions may be gradual.

Boring No.: RR-9

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

BORING LOG — RR-10

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Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-10
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB/JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 20, 2013 Date Finished: March 20, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 355.92
Station: 22+00 Offset: 0 ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/20/13, 0:00			No observation

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)

Strata Description — Depth & Elevation(feet)
- Auger Probe (no Sampling Performed)
- 10 — Bottom of Exploration at 10.0 ft 345.92

Symbol

Sample Description — Classification System: Burmister

Remarks
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) Exploration terminated at 10 feet deep with no refusal.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe;
V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundaries between material types, transitions may be gradual.

Boring No.: RR-10

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (23 OF 35)	SHEET 61 OF 135

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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40 Farrell Street, S. Burlington, VT 05403 — Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: RR-11(OW) | Page No.: 1 of 1 | File No.: 837-65.4 | Checked By: AJB

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 21, 2013 — Date Finished: March 21, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 350.5
Station: 11+00 — Offset: 5 ft RT

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 3.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: CME 550X ATV	
Hammer/Rod Type: Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/27/13, 9:15	1.2	349.3	in well
5/1/13, 8:15	0.9	349.6	in well
10/30/13, 11:30	0.8	349.7	in well
11/12/13, 16:10	1.0	349.5	in well
2/3/14, 12:00	0.8	349.7	in well
6/24/14, 0:00	0.8	349.7	in well
12/4/15, 12:05	0.7	349.9	in well
4/7/16, 9:07	0.5	350.0	in well

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Casing Time (min./ft) | Moisture Content (%)

Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24
S1	SS	24	10	2	9	12	13	21
S2	SS	24	9	4	6	14	39	100/6"
S3	SS	14	13	6	31	42	100/2"	
S4	SS	5	5	8	100/5"			

Strata Description — Depth & Elevation(feet) — Symbol — Sample Description — Classification System: Burmister — Well Log

Depth & Elevation(feet)	Sample Description
Ballast 2	
Fill 348.5	S1: Medium dense, brown fine to coarse SAND, some Silt, some fine to coarse Gravel, moist.
6	S2: Very dense, brown fine to coarse SAND and fine to coarse GRAVEL, some Silt, moist (wet top 3").
Glacial Till 344.5	S3: Refusal, brown fine to coarse SAND and SILT, some fine to coarse Gravel, slightly moist.
10	S4: Refusal, brown fine to coarse SAND and SILT, some fine to coarse Gravel, wet.
Bottom of Exploration at 10.0 ft 340.5	

Remarks:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sample; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Monitoring well installed to bottom of borehole, with 6-inch protective flush mount cover.

Notes: 1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sample; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: RR-11(OW)

ADDITIONAL WLS SMALL REMARK FONT 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 5/27/16

BORING LOG

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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403 — Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102, Middlebury, VT

Boring No.: RR-12 | Page No.: 1 of 2 | File No.: 837-65 | Checked By: AJB/JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 21, 2013 — Date Finished: March 22, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 350.3
Station: 12+00 — Offset: 5 ft RT

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 3.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: CME 550X ATV	
Hammer Type: Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/12/13, 16:00	15.0	335.3	Wet sample

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Casing Time (min./ft) | PID Reading (ppm)

Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	PID Reading (ppm)
S1	SS	24	14	2	16	26	13	8	0.5
S2	SS	24	14	4	5	4	11	16	0.2
S3	SS	24	24	6	28	49	84	100/6"	0.2
S4	SS	12	12	8	29	100/6"			1.3
S5	SS	24	12	14	28	17	13	16	0.2
S6	SS	0	0	18	50/0"				
C1	C	18	13	18.5	[REC= 72%; RQD= 0%]				

Strata Description — Depth & Elevation(feet) — Symbol — Sample Description — Classification System: Burmister

Depth & Elevation(feet)	Sample Description
Ballast 2	
Fill 348.3	S1: Dense, brown and gray fine to coarse SAND and fine to coarse GRAVEL, some Silt, trace Wood, moist.
6	S2: Medium dense, gray SILT and fine to coarse SAND, some fine to coarse Gravel, moist.
Glacial Till 344.3	S3: Very dense, tan SILT and fine to coarse SAND, trace fine to coarse Gravel, slightly moist.
	S4: Refusal, tan SILT, some fine to coarse Sand, little fine to coarse Gravel, slightly moist.
	S5: Dense, gray SILT and fine to coarse SAND, some fine to coarse Gravel, moist (to wet bottom half and spoon tip).
18.2 Bedrock 332.1	S6: Refusal, no recovery.
	C1: Very poor quality, moderately hard, slightly weathered, very close jointed, gray with white banding and vertical stripes LIMESTONE.

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Driller noted increase auger resistance and grinding from 16 to 18 feet deep prior to HSAR. Driller removed HSA and advanced with 4" FJ spin casing for bedrock coring.
4) Driller ended C1 at 18" penetration because of train traffic. Resumed with C2.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: RR-12

VT BORING LOG PID 5210A 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTERF-12-24.GDT 4/23/13

BORING LOG

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Project Name: Middlebury WCRS (23) Bridges 2 and 102, Middlebury, VT

Boring No.: RR-12 | Page No.: 2 of 2 | File No.: 837-65 | Checked By: AJB/JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 21, 2013 — Date Finished: March 22, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 350.3
Station: 12+00 — Offset: 5 ft RT

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 3.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type: CME 550X ATV	
Hammer Type: Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/12/13, 16:00	15.0	335.3	Wet sample

Sample Information: Depth (ft) | Casing Blows/ft | Number | Type | Penetration (inches) | Recovery (inches) | Depth (ft) | Blows / 6 inch Interval 0 - 6, 6 - 12, 12 - 18, 18 - 24 | Casing Time (min./ft) | PID Reading (ppm)

Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	PID Reading (ppm)
C2	C	20	20	20	[REC= 100%; RQD= 65%]				
C3	C	60	55	21.7	[REC= 92%; RQD= 21%]				
C4	C	36	36	26.7	[REC= 100%; RQD= 28%]				

Strata Description — Depth & Elevation(feet) — Symbol — Sample Description — Classification System: Burmister

Depth & Elevation(feet)	Sample Description
Bedrock *(Continued)*	Fracturing ~0 to 10 degrees from horizontal. Strong reaction to dilute HCl. Top 2" quartzite cobble with no reaction to dilute HCl. (Possibly overblasted rock).
	C2: Fair quality, moderately hard, fresh to slightly weathered, very close to close jointed, gray with white banding LIMESTONE. Fracturing ~0 to 45 degrees. Strong reaction to dilute HCl.
	C3: Very poor quality, moderately hard, fresh to slightly weathered, close jointed (upper 22") to very close jointed / shattered (lower 33"), gray and white LIMESTONE. Fracturing ~0 to 20 degrees from horizontal. Strong reaction to dilute HCl.
	C4: Poor quality, moderately hard, fresh to slightly weathered, very close jointed / shattered (upper 12") to close jointed (lower 24"), gray and white LIMESTONE. Fracturing ~0 to 20 degrees from horizontal. Strong reaction to dilute HCl.
29.7 Bottom of Exploration at 29.7 ft 320.6	

Remarks:

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: RR-12

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (24 OF 35)	SHEET 62 OF 135

BORING LOG — Boring No.: RR-13(OW)

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016 Middlebury, VT

Boring No.: RR-13(OW) | Page No.: 1 of 1 | File No.: 837-65.4 | Checked By: AJB/JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 25, 2013 | Date Finished: March 25, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 350.1
Station: 13+13 | Offset: 5 ft RT

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer/Rod Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/25/13, 0:00	16.0	334.1	Wet spoon tip
5/1/13, 8:20	1.2	348.9	In well
10/30/13, 13:00	1.3	348.8	In well
11/12/13, 16:20	1.8	348.3	In well
2/3/14, 12:00	1.8	348.3	In well
6/24/14, 0:00	1.6	348.5	In well

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)
		S1	SS	24	16	2	9	29	27	39		
5		S2	SS	24	16	4	21	23	20	26		
		S3	SS	20	18	6	17	60	70	100/2"		
		S4	SS	11	11	8	31	100/5"				
10												
15		S5	SS	24	24	14	35	55	57	67		
		S6	SS	0	0	16.9	50/0"				4	
		C1	C	60	60	17	[REC= 100%; RQD= 51%]					
											5	
20											5	
											5	
											5	
		C2	C	60	60	22	[REC= 100%; RQD= 81%]				4	
											4	
25											4	
											4	
											4	
30												

Strata Description (Depth & Elevation (feet)) / Sample Description (Classification System: Burmister)

Depth	Strata	Elev.	Sample Description
0	Ballast		
2	Fill	348.1	S1: Dense, tan gray fine to coarse GRAVEL (including marble chips) and SILT, some fine to coarse Sand, moist.
4	Glacial Till	346.1	S2: Very dense, tan fine to coarse SAND and SILT, trace fine to coarse Gravel, moist. S3: Very dense, tan gray SILT and fine to coarse SAND, some fine to coarse Gravel, moist to dry (tan, mottled and moist top half of sample, gray and dry bottom half). S4: Refusal, gray SILT and fine to coarse SAND, little fine to coarse Gravel, dry. S5: Very dense, gray SILT and fine to coarse SAND, some fine to coarse Gravel, dry (spoon tip wet).
17	Bedrock	333.1	S6: Refusal, no recovery. C1: Fair quality, moderately hard, fresh to slightly weathered, very close to moderate jointing, gray and white banded MARBLE. Fracturing ~0 to 20 degrees from horizontal. Strong reaction to dilute HCl. C2: Good quality, moderately hard, fresh, close to moderate jointing, gray and white banded MARBLE. Strong reaction to dilute HCl.
27	Bottom of Exploration at 27.0 ft	323.1	

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) HSAR and SSR at 17 feet deep. Driller pulled augers, spun 4" FJ casing and set up to core C1.
4) Groundwater monitoring well installed 3/28/13 by augering adjacent to exploration. Well installed to bottom of borehole, with 6-inch protective flush mount cover.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: RR-13(OW)

ADDITIONAL WLS SMALL REMARK FONT 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 5/27/16

BORING LOG — Boring No.: RR-14

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-14 | Page No.: 1 of 1 | File No.: 837-65 | Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 26, 2013 | Date Finished: March 28, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 350.3
Station: 14+33 | Offset: 5 ft RT

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/26/13, 9:00	6.0	344.3	Wet sample
3/27/13, 9:20	1.0	349.3	In open hole overnight
3/28/13, 8:20	1.2	349.1	In open hole overnight

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
		S1	SS	24	12	2	9	16	28	40		1.7
5		S2	SS	24	14	4	16	47	14	13		1.1
		S3	SS	24	5	6	7	10	16	21		1.2
		S4	SS	24	12	8	8	25	50	44		0.9
10												
15		S5	SS	9	9	14	55	100/3"				0.5
20		S6	SS	5	5	19	100/5"					0.9
		C1	C	60	60	23	[REC= 100%; RQD= 47%]				4	
25											12	
											6	
											6	
											7	
30												

Strata Description (Depth & Elevation (feet)) / Sample Description (Classification System: Burmister)

Depth	Strata	Elev.	Sample Description
0	Ballast		
2	Silty Sand & Gravel	348.3	S1: Very dense, light brown fine to coarse SAND and SILT, little fine to coarse Gravel, moist. S2: Very dense, brown fine to coarse SAND and fine to coarse GRAVEL, some Silt, moist to wet. S3: Medium dense, brown fine to coarse GRAVEL, some fine to coarse Sand, some Silt, wet. S4: Very dense, tan fine to coarse SAND and fine to coarse GRAVEL, little Silt, moist.
14	Glacial Till	336.3	S5: Refusal, gray fine to coarse SAND and SILT, some fine to coarse Gravel, moist. S6: Refusal, gray fine to coarse SAND and SILT, some fine to coarse Gravel, wet.
23	Boulder	327.3	C1: Top 6": Boulder Fragments.
24	Bedrock	326.3	Bottom 54": Poor quality, moderately hard, fresh to slightly weathered, gray 10" white Calcite seam LIMESTONE. Fracturing ~30 to 50 degrees from horizontal. Strong reaction to dilute HCl.
28	Bottom of Exploration at 28.0 ft	322.3	

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Driller maintained head of water in HSA to prevent flowing sands.
4) Driller noted increased auger grinding and rig chatter advancing from approx 6 to 10 feet deep.
5) HSAR and SSR at 23.5 feet deep. Driller pulled augers and spun 4" FJ casing to set up for coring C1.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: RR-14

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

BORING LOG — Boring No.: RR-15

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-15 | Page No.: 1 of 2 | File No.: 837-65 | Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 26, 2013 | Date Finished: March 27, 2013
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 350.32
Station: 15+00 | Offset: 6 ft RT

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
3/26/13, 13:45	6.0	344.3	Wet sample
3/27/13, 9:20	0.5	349.8	In open hole overnight

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
		S1	SS	24	12	2	16	13	15	22		1.1
5		S2	SS	24	8	4	17	22	25	27		2.0
		S3	SS	24	11	6	75	31	23	42		0.5
		S4	SS	24	6	8	50	21	51	30		0.7
10												
15		S5	SS	24	16	14	46	67	55	51		0.1
20		S6	SS	11	10	19	50	100/5"				

Strata Description (Depth & Elevation (feet)) / Sample Description (Classification System: Burmister)

Depth	Strata	Elev.	Sample Description
0	Ballast		
2	Silty Sand & Gravel	348.32	S1: Medium dense, tan brown fine to coarse SAND and fine to coarse GRAVEL, some Silt, moist (wet to 2"). S2: Dense, tan fine to coarse GRAVEL and fine to coarse SAND, little Silt, moist. S3: Very dense, tan fine to coarse GRAVEL and fine to coarse SAND, some Silt, wet. S4: Very dense, tan fine to coarse GRAVEL, some fine to coarse Sand, some Silt, wet.
14	Glacial Till	336.32	S5: Very dense, gray SILT and fine to coarse SAND, little fine to coarse Gravel, dry. S6: Refusal, gray SILT and fine to coarse SAND, some fine to coarse Gravel, dry.

Remarks:
1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Driller maintained head of water in HSA to prevent flowing sands.
4) Driller noted increased auger grinding and rig chatter advancing from approx 6 to 10 feet deep.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: RR-15

VT BORING LOG PID 5/21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PIDAFTER7-12-04.GDT 4/16/13

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

PROJECT NAME:	MIDDLEBURY
PROJECT NUMBER:	EWP3(2)

FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (25 OF 35)	SHEET 63 OF 135

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102 Middlebury, VT

Boring No.: RR-15
Page No.: 2 of 2
File No.: 837-65
Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 26, 2013 Date Finished: March 27, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 350.32
Station: 15+00 Offset: 6 ft RT

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/26/13, 13:45	6.0	344.3	Wet sample
▼ 3/27/13, 9:20	0.5	349.8	In open hole overnight

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)
		C1	C	60	60	23	[REC= 100%; RQD= 60%]				4.5	
25											4	
											4	
											4.5	
											4.5	
		C2	C	60	60	28	[REC= 100%; RQD= 67%]				5	
30											5	
											6	
											6	
											6	
35												
40												

Strata Description (Depth & Elevation(feet)) / Symbol / Sample Description (Classification System: Burmister)

Glacial Till *(Continued)*

23 — Bedrock 327.32

C1: Fair quality, moderately hard, fresh to slightly weathered, gray with frequent white banding and vertical stripes, LIMESTONE. Fracturing ~20 to 40 degrees from horizontal. Strong reaction to dilute HCl.

C2: Fair quality, moderately hard, fresh, gray with white laminates LIMESTONE. Fracturing ~10 to 45 degrees from horizontal. Strong reaction to dilute HCl.

33 — Bottom 317.32 of Exploration at 33.0 ft

Remarks: 5) HSAR at 23 feet deep. Driller to drove 4" FJ casing and cored Day 2.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N/ R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR/H = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundaries between material types, transitions may be gradual.

Boring No.: RR-15

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016 Middlebury, VT

Boring No.: RR-16(OW)
Page No.: 1 of 2
File No.: 837-65.4
Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 26, 2013 Date Finished: March 27, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 350.37
Station: 15+67 Offset: 6 ft RT

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer/Rod Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/26/13, 15:30	6.0	344.4	Wet sample
▼ 3/27/13, 9:20	0.0	350.4	In open hole overnight
▼ 3/28/13, 8:20	1.6	348.8	In well
▼ 5/1/13, 8:30	1.9	348.5	In well
▼ 10/30/13, 13:40	1.8	348.6	In well
▼ 2/3/14, 12:00	0.0	350.4	Frozen @ G.S.
▼ 6/24/14, 0:00	1.6	348.8	Standing H2O 0.1' below tie
▼ 4/7/15, 9:20	1.0	349.4	Below tie

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)
		S1	SS	24	4	2	9	7	7	3		
5		S2	SS	24	12	4	1	3	4	9		
		S3	SS	24	12	6	18	19	13	12		
		S4	SS	13	3	8	11	14	50/1"			
10												
		C1	C	26	26	11	[REC= 100%; RQD= 0%]				4	
											10	
		C2	C	34	34	13.2	[REC= 100%; RQD= 12%]				5.5	
15											4.5	

Strata Description (Depth & Elevation(feet)) / Symbol / Sample Description (Classification System: Burmister) / Well Log

Ballast

2 — Silty Sand & Gravel 348.4

S1: Medium dense, gray fine to coarse SAND and fine to coarse GRAVEL, some Silt, moist to wet.

S2: Loose, gray fine to coarse SAND and SILT, little fine Gravel, moist to wet.

S3: Dense, tan fine to coarse SAND and fine to coarse GRAVEL, little Silt, wet.

S4: Refusal, tan fine to coarse SAND and fine to coarse GRAVEL, some Silt, wet.

9 — Boulder/ Cobbles 341.4

C1:Top 6" Boulder fragments.
Bottom 20": Very poor quality, moderately hard, fresh to slightly weathered, closely jointed light gray with white banding MARBLE (upper 7") grading to very close jointed dark gray MARBLE with occasional thin (<1/8" thick) darker gray beds with pyrite inclusions. Fracturing near horizontal in light gray portions and at ~65 degrees from horizontal in dark gray portions. Strong reaction to HCl in light gray portions with no reaction in dark gray portions.

12 — Bedrock (Marble) 338.4

Remarks: 1) Station and offset shown are based on taped measurements made in the field by GeoDesign personnel from stationing marked in the field by VHB. Ground surface elevation shown is estimated from a topographic site plan provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) Driller noted increased auger grinding and rig chatter advancing from approximately 9 to 11 feet deep (possible fractured/weathered bedrock).

Notes: 1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: RR-16(OW)

ADDITIONAL WLS SMALL REMARK FONT 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 5/27/15

BORING LOG

GEODESIGN INCORPORATED
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Project Name: Middlebury WCRS (23) Additional Drilling 2016 Middlebury, VT

Boring No.: RR-16(OW)
Page No.: 2 of 2
File No.: 837-65.4
Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 26, 2013 Date Finished: March 27, 2013
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 350.37
Station: 15+67 Offset: 6 ft RT

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer/Rod Type:	Automatic	

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/26/13, 15:30	6.0	344.4	Wet sample
▼ 3/27/13, 9:20	0.0	350.4	In open hole overnight
▼ 3/28/13, 8:20	1.6	348.8	In well
▼ 5/1/13, 8:30	1.9	348.5	In well
▼ 10/30/13, 13:40	1.8	348.6	In well
▼ 2/3/14, 12:00	0.0	350.4	Frozen @ G.S.
▼ 6/24/14, 0:00	1.6	348.8	Standing H2O 0.1' below tie
▼ 4/7/15, 9:20	1.0	349.4	Below tie

Sample Information

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)
												10
		C3	C	6	6	16	[REC= 100%; RQD= 0%]					10
		C4	C	36	35	16.5	[REC= 97%; RQD= 63%]					6
												6
20												10
25												
30												

Strata Description (Depth & Elevation(feet)) / Symbol / Sample Description (Classification System: Burmister) / Well Log

Bedrock (Marble) *(Continued)*

C2: Very poor quality, moderately hard fresh to slightly weathered, shattered to close jointed, interbedded dark gray and light gray with occasional white bands MARBLE. Fracturing typically occuring along dark gray beds at ~65 degrees from horizontal. Strong reaction to HCl in light gray beds with no reaction in the dark gray beds.

C3: Very poor quality, moderately hard, fresh to slightly weathered, shattered, gray MARBLE with thin (~1/8" thick) darker bedding. Strong reaction to HCl on lighter surfaces with no reaction on darker bedding.

19.5 — Bottom of Exploration at 19.5 ft 330.9

C4: Fair quality, moderately hard, fresh, close to moderate jointing, interbedded dark gray MARBLE with pyrite inclusions and light gray/white MARBLE (upper 12") grading to light gray with occasional white banding (bottom 24"). Fracturing up to ~ 20 degrees from horizontal. Strong reaction to HCL on lighter gray surfaces with no reaction on darker gray surfaces.

Remarks: 4) HSAR at 11 feet deep. Driller advanced 4" FJ casing with spin shoe and cored Day 2.
5) Monitoring well installed to bottom of borehole, with 6-inch protective flush mount cover.

Notes: 1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: RR-16(OW)

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*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (26 OF 35)	SHEET 64 OF 135

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Additional Drilling 2016, Middlebury, VT

Boring No.: RW-1
Page No.: 1 of 1
File No.: 837-65.4
Checked By: JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Joshua Gilman
Date Started: March 11, 2013 — Date Finished: March 11, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 363.28
Station: — Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/11/13, 14:15	12.0	351.3	Wet sample

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description / Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		S1	SS	23	9	0	1	3	5	100/5"			Topsoil Fill 363.0		S1: Loose, dark brown fine to coarse SAND, some Silt, little fine to coarse Gravel, moist (3" of red brick in top of sample, 4" of Clayey SILT at bottom).
		S2	SS	1	1	2	100/1"								S2: Refusal, dark brown fine to coarse SAND and SILT, trace Root Fibers, rock fragments in spoon tip, moist.
5		S3	SS	24	1	4	2	5	4	6					S3: Stiff, brown Clayey SILT, some fine to coarse Sand, some fine to coarse Gravel moist.
		S4	SS	24	18	6	7	6	16	14					S4: Medium dense, brown fine to coarse SAND and Clayey SILT, trace Root Fibers, moist.
		S5	SS	24	16	8	6	13	12	13			9		S5: Top 4.5" brown fine to coarse SAND, some Clayey Silt, some fine to coarse Gravel, moist. Bottom 11.5" gray fine to coarse SAND and SILT, some fine to coarse Gravel, moist.
10		S6	SS	21	10	10	19	22	77	100/3"			Glacial Till 354.3		
		S7	SS	5	5	12	100/5"						12 ▼ Weathered Bedrock 351.3		S6: Very dense, gray and brown fine to coarse SAND, some Silt, some fine to coarse Gravel, moist.
		C1	C	17	17	13	[REC= 100%; RQD= 74%]				5		13 Bedrock (Marble) 350.3		S7: Refusal, gray fine to coarse SAND, some fine to coarse Gravel, some Clayey SILT, wet.
15		C2	C	42	39	14.5	[REC= 93%; RQD= 64%]				NR NR				C1: Fair quality, moderately hard, fresh, close jointed, gray with white swirls MARBLE. Jointing approximately 30 to 40 degrees. Strong reaction to dilute HCl.
											5				
											5		18		
											5		Bottom of Exploration at 18.0 ft 345.3		C2: Fair quality, moderately hard, fresh, close jointed gray MARBLE (upper 18") grading to thin (< 1/8" thick) darker beds with occasional pyrite inclusions. Jointing approximately 30 to 65 degrees with fracturing typically occuring along darker beds. Strong reaction to dilute HCl in lighter portions, no reaction along darker portions.
20															
25															
30															

Remarks:
1) Northing, easting, and ground surface elevation shown are from survey data provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.
3) HSAR at approximately 2 feet deep (inferred boulder). Driller offset 5 feet east to resume advance.
4) HSAR at 13 feet deep. Driller pulled HSA and drove 3" FJ casing to 13 feet deep to attempt coring C1.
5) Driller terminated core C1 after 1.5 feet due to core barrel blockage.
6) Exploration terminated after coring C2.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR,10=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%

Boring No.: RW-1

SMALL_REMARK_FONT STANDARD 837-65.4 MIDDLEBURY ADDL 2016.GPJ GEODESIGN STANDARD .GDT 4/29/16

BORING LOG

GEODESIGN INCORPORATED
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1233 Shelburne Rd., Suite 360, So. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Bridges 2 and 102, Middlebury, VT

Boring No.: RW-2
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB/JFW

Boring Company: TransTech Drilling Services
Foreman: James Burrowbridge
GeoDesign Rep.: Jesse McIntyre
Date Started: March 15, 2013 — Date Finished: March 15, 2013
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 369.29
Station: — Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	3.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	CME 550X ATV	
Hammer Type:	Automatic	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 3/15/13, 12:00	16.0	353.3	Wet sample

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description / Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
		S1	SS	24	11	0	3	2	2	2		0	Fill		S1: Very loose
		S2	SS	24	6	2	2	2	3	4		0			S1A - Top 4": Brown SILT and fine to coarse SAND, some Silty Clay, trace fine Gravel, trace Roots, trace Cinders, moist. (Topsoil).
5		S3	SS	24	11	4	2	4	4	7		0			S1B - Bottom 7": Mottled Brown Clayey SILT and fine to medium SAND, little (+) fine Gravel, trace Roots, moist.
		S4	SS	24	1	6	3	3	3	5		0			S2: Loose, brown Clayey SILT, some fine to coarse Sand, little fine Gravel (angular), moist.
													8		S3: Loose, dark brown SILT and fine to coarse SAND, trace fine to coarse Gravel, trace Root Fibers and Brick Fragments, moist.
		S5	SS	24	24	8	3	5	7	9		0	Sand/ Silt/Clay Mixture 361.29		
10		S6	SS	24	19	10	5	8	11	12		0			S4: Loose, red Brick Fragments, moist.
		S7	SS	24	14	12	5	8	7	5		0			S5: Stiff, brown and tan Clayey SILT, trace fine to coarse Sand, moist.
															S6: Very Stiff, brown and tan Clayey SILT (layered), some fine to coarse Sand, little fine Gravel, moist.
15		S8	SS	6	6	14	100/6"	-	-	-		1.9			S7: Very Stiff, brown and tan Clayey SILT, some fine to medium Sand, trace fine Gravel, moist.
															S8: Refusal, tan fine to coarse SAND and Clayey SILT, some fine to coarse Gravel, moist.
		S9	SS	24	14	16	3	5	5	6		.2			S9: Medium Dense, tan fine to coarse SAND and Clayey SILT, some fine to coarse Gravel, wet.
		S10	SS	23	23	18	1	1	3	100/6"		.2			S10: Refusal, tan fine to coarse SAND, some fine to coarse Gravel, some Clayey SILT, moist.
20													20		
		C1	C	60	60	20.2	[REC= 100%; RQD= 27%]						Bedrock 349.29		S11) Refusal, no recovery (100 blows / 0" penetration). C1: Poor quality, moderately hard, slightly weathered, very close jointed, gray with white bands, LIMESTONE. Jointing approximately 25 to 90 degrees. Strong reaction to dilute HCl. (Possibly overblasted rock).
25													25.2		
													Bottom of Exploration at 25.2 ft 344.09		
30															

Remarks:
1) Northing, easting, and ground surface elevation shown are from survey data provided by VHB.
2) All samples screened in the field using an Ion Science Phocheck Model 1000 PID calibrated onsite to a 100 ppm isobutylene standard.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; D = Driven; G = Grab; PS = Piston Sample; SS = Split Barrel (Split Spoon); ST = Shelby Tube; Geo = Geoprobe; V = Vane; WOR,10 = Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: RW-2

VT BORING LOG PID 5-21/04 837-65 MIDDLEBURY WCRS (23).GPJ GEODESIGN PDALFTER7-12-04.GDT 4/16/13

BORING LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: ST-1
Page No.: 1 of 1
File No.: 837-65.2
Checked By: SPK

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jesse McIntyre
Date Started: April 10, 2014 — Date Finished: April 10, 2014
N. Coordinate: — E. Coordinate:
Ground Surface Elevation (feet): 357
Station: ~31+50 — Offset: 0 ft

	Casing:	Sampler:
Type:	FJ	SS
I.D.:	3.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X	
Hammer Type:	Automatic	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 4/10/14, 8:45	19.0	338.0	Wet Sample

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description / Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													No Sampling Performed		
5															
10															
15															
													19 ▼		
20		S1	SS	24	24	19	WOR	WOR	WOH	WOH			Clay 338.0		S1) Very Soft, gray CLAY, 1.5" layer of light gray Silty CLAY, trace fine to medium Sand, wet.
		S2	ST	24	24	21	P	U	S	H		48 - 77			S2) Dark gray, brittle CLAY layered with gray SILT, trace fine Sand partings (laboratory sub-sample.
		S3	SS	24	24	23	WOR	WOR	WOH	1					S3) Very Soft, gray CLAY, trace fine Sand, wet.
25													25		
													Bottom of Exploration at 25.0 ft 332.0		
30															

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Boring advanced with drive-and wash method with 4-inch flush joint casing to approximately 25 feet deep without refusal.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR,10=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: ST-1

VT BORING LOG MD 5-21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (27 OF 35)	SHEET 65 OF 135

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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BORING LOG

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **ST-2** | Page No.: 1 of 2 | File No.: 837-65.2 | Checked By: SPK

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jesse McIntyre
Date Started: April 10, 2014 | Date Finished: April 10, 2014
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 357.5
Station: ~33+50 | Offset: 0 ft

	Casing:	Sampler:
Type:	FJ	SS
I.D.:	3.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X	
Hammer Type:	Automatic	

Groundwater Observations: Date | Depth (ft) | Elev. (ft) | Notes

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													No Sampling Performed		
5															
10															
15															
													17 Clay 340.5		
		S1	SS	24	24	17	WOH	WOH	WOH	WOH					S1) Very Soft, gray CLAY, trace fine to medium Sand, wet.
20		S2	ST	24	24	19	P	U	S	H		43 - 44			S2) Dark gray, Silty CLAY layered with gray SILT and dark gray, brittle CLAY, trace fine Sand partings (laboratory sub-sample).
		S3	SS	24	24	21	WOH	1	1	2					S3) Very Soft, gray CLAY, 1" layer light gray Silty CLAY, trace fine to medium Sand, wet.
25															
30															

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Boring advanced with drive-and wash method with 4-inch flush joint casing to approximately 39 feet deep without refusal.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **ST-2**

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

GEODESIGN INCORPORATED
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BORING LOG

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **ST-2** | Page No.: 2 of 2 | File No.: 837-65.2 | Checked By: SPK

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jesse McIntyre
Date Started: April 10, 2014 | Date Finished: April 10, 2014
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 357.5
Station: ~33+50 | Offset: 0 ft

	Casing:	Sampler:
Type:	FJ	SS
I.D.:	3.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X	
Hammer Type:	Automatic	

Groundwater Observations: Date | Depth (ft) | Elev. (ft) | Notes

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													Clay *(Continued)*		
		S4	SS	24	24	33	WOR	WOR	WOH	WOH					S4) Very Soft, gray CLAY, trace fine to medium Sand, wet.
35															
		S5	ST	24	24	35	P	U	S	H		39 - 46			S5) Dark gray, Silty CLAY, trace Sand and Gravel up to 15mm (laboratory description).
		S6	SS	24	24	37	WOH	WOH	WOH	WOH					S6) Very Soft, gray CLAY, trace fine to medium Sand, wet.
													39 Bottom of Exploration at 39.0 ft 318.5		
40															
45															
50															
55															
60															

Remarks:

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **ST-2**

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BORING LOG

Project Name: Middlebury WCRS (23) Phase C, Middlebury, VT

Boring No.: **ST-3** | Page No.: 1 of 1 | File No.: 837-65.2 | Checked By: SPK

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Jesse McIntyre
Date Started: April 10, 2014 | Date Finished: April 10, 2014
N. Coordinate: | E. Coordinate:
Ground Surface Elevation (feet): 359.5
Station: ~38+50 | Offset: 4 ft Right

	Casing:	Sampler:
Type:	FJ	SS
I.D.:	3.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 550X	
Hammer Type:	Automatic	

Groundwater Observations: Date | Depth (ft) | Elev. (ft) | Notes

Depth (ft)	Casing Blows/ft	Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval 0 - 6	6 - 12	12 - 18	18 - 24	Casing Time (min./ft)	Moisture Content (%)	Strata Description Depth & Elevation(feet)	Symbol	Sample Description (Classification System: Burmister)
													No Sampling Performed		
5															
10															
													11 Clay & Silt 348.5		
		S1	SS	24	24	11	1	1	2	3					S1) Soft, light brown (w/ occasional gray) CLAY, trace fine to medium Sand, damp, slight organic decay odor, 1/16" to 1/4" partings.
		S2	ST	24	24	13	P	U	S	H		38 - 55			S2) Stiff, dark gray CLAY (laboratory sub-sample).
15															
		S3	SS	24	24	15	2	2	2	3					S2) Soft, gray-brown CLAY, trace fine to medium Sand, damp, 1/16" to 1/4" partings.
													17 Bottom of Exploration at 17.0 ft 342.5		
20															
25															
30															

Remarks:
1) Location determined by taped measurements and visual estimates to existing site features. Elevation estimated based on topographic plan provided by VHB.
2) Boring advanced with drive-and wash method with 4-inch flush joint casing to approximately 17 feet deep without refusal.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) Water Level Readings Have Been Made At Times And Under Conditions Stated, Fluctuations Of Groundwater May Occur Due To Other Factors Than Those Present At The Time Measurements Were Made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **ST-3**

VT BORING LOG MC 5/21/04 837-65.2 MIDDLEBURY PHASE C.GPJ GEODESIGN STANDARD .GDT 5/21/14

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (28 OF 35)	SHEET 66 OF 135

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-101**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep:	Joshua Gilman		
Weather:	Sunny, 70's		
Date:	May 1, 2013		
Time Started:	09:15	Time Finished:	09:30
N. Coordinate:	1464668.0 ft	E. Coordinate:	552667.0 ft
Ground Surface Elevation (feet):	352.5		
Station: 26+50	Offset: 15 ft West		

Contractor:	Engineers Construction	Groundwater Observations			
Operator:	Nate McAllaster	Inc. Date	Depth (ft)	Elevation (ft)	Notes
Make:	Zaxis	5/1/13, 9:25			None observed
Model:	27U				
Capacity:	1/8				
Reach:	15				

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Fill (Ballast, timbers, debris)				
		351.5	E			Moist
1		Bottom of Exploration at 1.0 ft				
5						
10						
15						

Remarks:
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to top of tie.
2) Exploration terminated at approximately 1 foot deep on inferred bedrock. Poured concrete appears to be founded at 1 foot deep on bedrock (possible formwork timber encountered at top of rock).

Test Pit Plan (feet): 6 × 4

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-101**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

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TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-102**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep:	Joshua Gilman		
Weather:	Sunny, 70's		
Date:	May 1, 2013		
Time Started:	09:35	Time Finished:	09:45
N. Coordinate:	1464682.0 ft	E. Coordinate:	552631.0 ft
Ground Surface Elevation (feet):	350.5		
Station: 26+10	Offset: 14 ft West		

Contractor:	Engineers Construction	Groundwater Observations			
Operator:	Nate McAllaster	Inc. Date	Depth (ft)	Elevation (ft)	Notes
Make:	Zaxis	5/1/13, 9:40	0.1	350.4	See note 3
Model:	27U				
Capacity:	1/8				
Reach:	15				

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Fill (ballast, timber, debris)				
			E	1A		Wet
		349	E			Wet
1.5		Bottom of Exploration at 1.5 ft				
5						
10						
15						

Remarks:
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to top of tie.
2) Exploration terminated at approximately 1.5 feet deep on inferred bedrock. Abutment stone masonry appears to be founded at 1.5 feet deep on bedrock.
3) Observed groundwater flowing into excavation from east wall. Excavation filled within 5 minutes.

Test Pit Plan (feet): 6 × 4

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-102**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

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TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-103**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep:	Joshua Gilman		
Weather:	Sunny, 70's		
Date:	May 1, 2013		
Time Started:	09:45	Time Finished:	10:00
N. Coordinate:	1464695.0 ft	E. Coordinate:	552607.0 ft
Ground Surface Elevation (feet):	350.4		
Station: 25+84	Offset: 14 ft West		

Contractor:	Engineers Construction	Groundwater Observations			
Operator:	Nate McAllaster	Inc. Date	Depth (ft)	Elevation (ft)	Notes
Make:	Zaxis	5/1/13, 0:00	1	349.4	See note 3
Model:	27U				
Capacity:	1/8				
Reach:	15				

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Fill (Ballast, timber, debris)				
		349.4	E			Moist
1		Tan fine to coarse SAND and SILT, little fine to coarse Gravel.				
			E	3A		Moist
			M			Wet
		346.4	M			Wet
4		Bottom of Exploration at 4.0 ft				
5						
10						
15						

Remarks:
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to top of tie.
2) Exploration terminated at approximately 1.5 feet deep on inferred bedrock. Abutment stone masonry appears to be founded at 1.5 feet on bedrock. Bedrock slopes east down along excavation bottom to 4 feet deep.
3) Observed groundwater flowing into excavation from east wall. Excavation filled within 5 minutes.

Test Pit Plan (feet): 6 × 4

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-103**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046borlogs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING LOGS (29 OF 35)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 67 OF 135

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TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-104**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep:	Joshua Gilman		
Weather:	Sunny, 70's		
Date:	May 1, 2013		
Time Started:	10:15	Time Finished:	11:15
N. Coordinate:	1464766.0 ft	E. Coordinate:	552500.0 ft
Ground Surface Elevation (feet):	350.2		
Station: 24+55	Offset: 7 ft East		

		Groundwater Observations			
Contractor:	Engineers Construction	Inc. Date	Depth (ft)	Elevation (ft)	Notes
Operator:	Nate McAllaster				
Make:	Zaxis	5/1/13, 14:00	2	348.2	See note 2
Model:	27U				
Capacity:	1/8				
Reach:	15				

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Ballast				
		349.2	E			Moist
1		Tan fine to coarse SAND and SILT, little fine to coarse Gravel.	E			Moist
			E			Wet
		346.2	E			Wet
4		Bottom of Exploration at 4.0 ft				
5						
10						
15						

Remarks:
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to top of tie.
2) Exploration terminated at approximately 4 feet deep with no refusal. Water filled the excavation and VHB was concerned about hitting 24" VC at unknown location, therefore terminated.
3) Retaining wall stone masonry appears to extend to at least bottom of excavation based on probing with shovel.

Test Pit Plan (feet): 4 × 11

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-104**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

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TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-105**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep:	Joshua Gilman		
Weather:	Sunny, 70's		
Date:	May 1, 2013		
Time Started:	13:00	Time Finished:	13:30
N. Coordinate:	1464756.0 ft	E. Coordinate:	552474.0 ft
Ground Surface Elevation (feet):	351.1		
Station: 24+35	Offset: 12 ft West		

		Groundwater Observations			
Contractor:	Engineers Construction	Inc. Date	Depth (ft)	Elevation (ft)	Notes
Operator:	Nate McAllaster				
Make:	Zaxis	5/1/13, 0:00			None observed
Model:	27U				
Capacity:	1/8				
Reach:	15				

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Ballast, timbers, debris				
			E			Dry
		349.1	E			Dry
2		Tan brown fine to coarse SAND and fine to coarse GRAVEL, some Silt, moist.	E			Moist
			E			Moist
		347.1				
4		Bottom of Exploration at 4.0 ft				
5						
10						
15						

Remarks:
1) Ground surface elevation estimated from topographic plan provided by VHB. Ground surface was recently filled due to work by VTR in the area.
2) A 24" VC pipe was encountered at 3' below the datum (top of the first exposed course of stones visible for most of Merchants Row west abutment). The crown of the pipe was located approximately 14 inches from the abutment wall face.
3) Excavation could not extend below the pipe. A 3' steel bar was driven at an angle between the pipe and abutment, and could not advance under the stone (i.e. embedment of wall extends below pipe).
4) Exploration terminated at approximately 4 feet deep with no refusal.

Test Pit Plan (feet): 6 × 4

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-105**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

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TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-106**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep:	Joshua Gilman		
Weather:	Sunny, 70's		
Date:	May 1, 2013		
Time Started:	13:35	Time Finished:	14:00
N. Coordinate:	1464797.0 ft	E. Coordinate:	552357.0 ft
Ground Surface Elevation (feet):	349.6		
Station: 23+10	Offset: 14 ft West		

		Groundwater Observations			
Contractor:	Engineers Construction	Inc. Date	Depth (ft)	Elevation (ft)	Notes
Operator:	Nate McAllaster				
Make:	Zaxis	5/1/13, 0:00			None observed
Model:	27U				
Capacity:	1/8				
Reach:	15				

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Ballast/Soil				
		348.6	E			Dry
1		Tan fine to coarse SAND and SILT, some fine to coarse Gravel, moist.	E			Dry
			E			Moist
			E			Moist
		345.6				
4		Bottom of Exploration at 4.0 ft				
5						
10						
15						

Remarks:
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to top of tie.
2) A 24" VC pipe was encountered at 3.5' below the datum (top of the first exposed course of stones visible for most of Merchants Row west abutment). The crown of the pipe was located approximately 4.5 feet from the abutment wall face.
3) The embedment of the retaining wall appeared to be at 14 inches below ground surface.
4) Exploration terminated at approximately 4 feet deep with no refusal.

Test Pit Plan (feet): 8 × 4

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-106**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046borlogs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING LOGS (30 OF 35)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 68 OF 135

TEST PIT LOG

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Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-107**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep: Joshua Gilman
Weather: Sunny, 70's
Date: May 1, 2013
Time Started: 15:00 Time Finished: 15:30
N. Coordinate: 1464858.0 ft E. Coordinate: 552236.0 ft
Ground Surface Elevation (feet): 350.3
Station: 21+75 Offset: 7 ft East

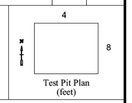
Contractor: Engineers Construction
Operator: Nate McAllaster
Make: Zaxis
Model: 27U
Capacity: 1/8
Reach: 15

Groundwater Observations				
Inc.	Date	Depth (ft)	Elevation (ft)	Notes
▼	5/1/13, 0:00	2	348.3	See note 4

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Ballast				
		349.2	E			Dry
	1.1	Tan brown fine to coarse SAND, little Silt, wet.				
		348.3	E			Wet
	2	Bottom of Exploration at 2.0 ft				
5						
10						
15						

Remarks
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to top of tie.
2) A 4" SDR pipe was encountered at approximately 14 inches deep. The crown of the pipe was located approximately 2.5 feet from the retaining wall face.
3) The embedment of the retaining wall appeared to be at 16 inches below ground surface.
4) Standing water was observed in the bottom of the excavation. Water was observed flowing slowly from sand under wall.
5) Exploration terminated at approximately 2 feet deep with no refusal.



Test Pit Plan (feet)

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-107**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

TEST PIT LOG

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Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-108**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep: Joshua Gilman
Weather: Sunny, 70's
Date: May 1, 2013
Time Started: 15:35 Time Finished: 16:00
N. Coordinate: 1464839.0 ft E. Coordinate: 552297.0 ft
Ground Surface Elevation (feet): 350.2
Station: 22+40 Offset: 7 ft East

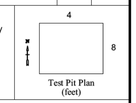
Contractor: Engineers Construction
Operator: Nate McAllaster
Make: Zaxis
Model: 27U
Capacity: 1/8
Reach: 15

Groundwater Observations				
Inc.	Date	Depth (ft)	Elevation (ft)	Notes
▼	5/1/13, 0:00	2	348.2	See note 4

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Ballast				
		349.2	E			Dry
	1	Dark brown, SILT and fine to coarse SAND, moist.				
		348.7	E			Wet
	1.5	Tan brown fine to coarse SAND, little Silt, wet.				
		348.2				
	2	Bottom of Exploration at 2.0 ft				
5						
10						
15						

Remarks
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to top of tie.
2) A 4" SDR pipe was encountered at approximately 14 inches deep. The crown of the pipe was located approximately 2.5 feet from the retaining wall face.
3) The embedment of the retaining wall appeared to be at 18 inches below ground surface.
4) Standing water was observed in the bottom of the excavation. Water was observed flowing slowly from sand under wall.
5) Exploration terminated at approximately 2 feet deep with no refusal.



Test Pit Plan (feet)

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-108**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

TEST PIT LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-109**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep: Joshua Gilman
Weather: Sunny, 70's
Date: May 1, 2013
Time Started: 16:05 Time Finished: 16:20
N. Coordinate: 1464808.0 ft E. Coordinate: 552362.0 ft
Ground Surface Elevation (feet): 350.1
Station: 23+40 Offset: 8 ft East

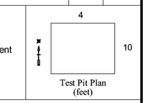
Contractor: Engineers Construction
Operator: Nate McAllaster
Make: Zaxis
Model: 27U
Capacity: 1/8
Reach: 15

Groundwater Observations				
Inc.	Date	Depth (ft)	Elevation (ft)	Notes
▼	5/1/13, 0:00	3	347.1	See note 3

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Ballast				
		349.1	E			Moist
	1	Tan SILT and fine to coarse SAND, some fine to coarse Gravel, moist (possible till; reworked).				
			D			Moist
			D			Wet
			D			Wet
		346.1				
	4	Bottom of Exploration at 4.0 ft				
5						
10						
15						

Remarks
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to top of tie.
2) Operator noted difficult digging due to very dense soil starting at 1 foot deep.
3) Groundwater was observed following from joints around subsurface abutment stones.
4) A 3' steel bar was driven at an angle under what appeared to be the bottom course of stone. Abutment embedment was measured at 3.5 feet deep (two courses of stone below grade).
5) Exploration terminated at approximately 4 feet deep with no refusal.



Test Pit Plan (feet)

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-109**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046borlogs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING LOGS (31 OF 35)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 69 OF 135

GEODESIGN INCORPORATED

Geotechnical / Construction / Environmental Engineers and Scientists

P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943

40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-110**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep:	Joshua Gilman		
Weather:	Sunny, 70's		
Date:	May 1, 2013		
Time Started:	16:25	Time Finished:	16:45
N. Coordinate:	1464752.0 ft	E. Coordinate:	552483.0 ft
Ground Surface Elevation (feet):	351.5		
Station: 24+45	Offset: 12 ft West		

Contractor:	Engineers Construction	Groundwater Observations			
Operator:	Nate McAllaster	Inc. Date	Depth (ft)	Elevation (ft)	Notes
Make:	Zaxis	5/1/13, 0:00			None observed
Model:	27U				
Capacity:	1/8				
Reach:	15				

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Ballast, timbers, debris	E			Dry
			E			Dry
			E			Moist
		348.5 (3) Bottom of Exploration at 3.0 ft				
5						
10						
15						

Remarks
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to top of tie.
2) A 24" VC pipe was encountered at 3' below the datum (top of the first exposed course of stones visible for most of Merchants Row west abutment). The crown of the pipe was located approximately 4 feet from the abutment/wingwall face.
3) Two pipe bells were exposed. It appears that short sections were joined together to accomplish a bend in the pipe alignment.
4) Exploration terminated at approximately 4 feet deep with no refusal.

Test Pit Plan (feet): 4 × 8

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-110**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

GEODESIGN INCORPORATED

Geotechnical / Construction / Environmental Engineers and Scientists

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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-111**
Page No.: 1 of 1
File No.: 837-65
Checked By: SPK

GeoDesign Rep:	Joshua Gilman		
Weather:	Sunny, 70's		
Date:	May 1, 2013		
Time Started:	16:50	Time Finished:	17:00
N. Coordinate:	1464706.0 ft	E. Coordinate:	552635.0 ft
Ground Surface Elevation (feet):	350.4		
Station: 26+00	Offset: 6 ft East		

Contractor:	Engineers Construction	Groundwater Observations			
Operator:	Nate McAllaster	Inc. Date	Depth (ft)	Elevation (ft)	Notes
Make:	Zaxis	5/1/13, 0:00	0.1	350.3	See note 2
Model:	27U				
Capacity:	1/8				
Reach:	15				

Test Pit Sketches & Strata Description (view to)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Ballast				Wet
		348.9 (1.5) Bottom of Exploration at 1.5 ft				Wet
5						
10						
15						

Remarks
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to top of tie.
2) Groundwater immediately filled the excavation to approximately 0.1 feet deep, and excavator could not bail enough to see the bottom.
3) The abutment appears to be founded on bedrock approximately 1.5 feet deep based on probing with a 3' steel bar was driven vertically and at an angle.
4) Excavation was terminated at 1.5 feet deep upon refusal on inferred bedrock.

Test Pit Plan (feet): 4 × 6

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-111**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 10/14/16

GEODESIGN INCORPORATED

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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-201**
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

GeoDesign Rep:	Hilary Jones		
Weather:	Rain, 40's		
Date:	March 28, 2016		
Time Started:	08:55	Time Finished:	09:04
N. Coordinate:	552681.0	E. Coordinate:	1464662.0
Ground Surface Elevation (feet):	350		
Station: 26+60	Offset: 9 ft West		

Contractor:	Engineers Construction	Groundwater Observations			
Operator:	Rick Scandore	Inc. Date	Depth (ft)	Elevation (ft)	Notes
Make:	Zaxis	3/28/16, 9:04			See note 3
Model:	27U				
Capacity:	1/8 cu yd				
Reach:	15 ft				

Test Pit Sketches & Strata Description (view to West)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Fill (Railroad Ballast with sand/silt, cinders, timber, and debris), wet.	E			Wet
		347.3 (0.7) — 348.3 (1.7) Refusal on Bedrock, Bottom of Exploration at 1.7 ft	E			Wet
5						
10						
15						

Remarks
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to adjacent ballast to the east of pier.
2) Test pit located north of pier. (Pier foundation located to left side of sketch above)
3) Groundwater observed at ground surface in shallow ditch adjacent to test pit prior to excavation.
4) Exploration terminated at approximately 1.7 feet deep on bedrock. Pier foundation appears to be founded at 1.7 feet deep on bedrock. Bedrock surface observed to slope downward towards the north.

Test Pit Plan (feet): 2 × 6

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-201**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 3/31/16

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046borlogs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING LOGS (32 OF 35)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 70 OF 135

TEST PIT LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-202**
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

GeoDesign Rep: Hilary Jones
Weather: Rain, 40's
Date: March 28, 2016
Time Started: 09:06 Time Finished: 09:13
N. Coordinate: 552669.0 E. Coordinate: 1464669.0
Ground Surface Elevation (feet): 350
Station: 26+50 Offset: 8 ft West

Contractor: Engineers Construction Inc.
Operator: Rick Scandore
Make: Zaxis
Model: 27U
Capacity: 1/8 cu yd
Reach: 15 ft

Groundwater Observations			
Date	Depth (ft)	Elevation (ft)	Notes
3/28/16, 9:06			See note 3

Depth (feet)	Symbol	Elevation & Depth (feet)	Strata Description	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
			Fill (Railroad Ballast with sand/silt, cinders, timber, and debris), wet.	E			Wet
		348.5 (1.5)	Refusal on Bedrock Bottom of Exploration at 1.5 ft	E			Wet
5							
10							
15							

Remarks
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to adjacent ballast to the east of pier.
2) Test pit located north of pier.
3) Groundwater observed at ground surface in shallow ditch adjacent to test pit prior to excavation.
4) Exploration terminated at approximately 1.5 feet deep on bedrock. Pier foundation appears to be founded at 1.5 feet deep on bedrock.

Test Pit Plan (feet): 2 × 6

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-202**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 3/31/16

TEST PIT LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-203**
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

GeoDesign Rep: Hilary Jones
Weather: Rain, 40's
Date: March 28, 2016
Time Started: 09:15 Time Finished: 09:23
N. Coordinate: 552653.0 E. Coordinate: 1464677.0
Ground Surface Elevation (feet): 350
Station: 26+30 Offset: 9 ft West

Contractor: Engineers Construction Inc.
Operator: Rick Scandore
Make: Zaxis
Model: 27U
Capacity: 1/8 cu yd
Reach: 15 ft

Groundwater Observations			
Date	Depth (ft)	Elevation (ft)	Notes
3/28/16, 9:15			See note 3

Depth (feet)	Symbol	Elevation & Depth (feet)	Strata Description	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
			Fill (Railroad Ballast with sand/silt, cinders, timber, and debris), wet.	E			Wet
		348.6 (1.4)	Refusal on Bedrock Bottom of Exploration at 1.4 ft	E			Wet
5							
10							
15							

Remarks
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to adjacent ballast to the east of pier.
2) Test pit located north of pier.
3) Groundwater observed at ground surface in shallow ditch adjacent to test pit prior to excavation.
4) Exploration terminated at approximately 1.4 feet deep on bedrock. Pier foundation appears to be founded at 1.4 feet deep on bedrock.

Test Pit Plan (feet): 2 × 6

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-203**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 3/31/16

TEST PIT LOG

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
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40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-204**
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

GeoDesign Rep: Hilary Jones
Weather: Rain, 40's
Date: March 28, 2016
Time Started: 09:28 Time Finished: 09:50
N. Coordinate: 552643.0 E. Coordinate: 1464682.0
Ground Surface Elevation (feet): 350
Station: 26+20 Offset: 8 ft West

Contractor: Engineers Construction Inc.
Operator: Rick Scandore
Make: Zaxis
Model: 27U
Capacity: 1/8 cu yd
Reach: 15 ft

Groundwater Observations			
Date	Depth (ft)	Elevation (ft)	Notes
3/28/16, 9:28			See note 3

Test Pit Sketches & Strata Description (view to North)

Depth (feet)	Symbol	Elevation & Depth (feet)	Strata Description	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
			Fill (Railroad Ballast with sand/silt, cinders, timber, and debris), wet.	E			Wet
		348 (2)	Refusal on Bedrock Bottom of Exploration at 2.0 ft	E			Wet
5							
10							
15							

Remarks
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to adjacent ballast to the east of pier.
2) Excavation exposed all four sides of the pier foundation.
3) Groundwater observed at ground surface in shallow ditch adjacent to test pit prior to excavation.
4) Exploration terminated at approximately 2 feet deep on bedrock. Pier foundation appears to be founded at 2 feet deep on bedrock. Bedrock surface observed to slope downward towards the south.

Test Pit Plan (feet): 4.5 × 4.5

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-204**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 3/31/16

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046borlogs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING LOGS (33 OF 35)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 71 OF 135

GEODESIGN INCORPORATED

Geotechnical / Construction / Environmental Engineers and Scientists

P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943

40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-205**
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

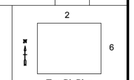
GeoDesign Rep:	Hilary Jones		
Weather:	Rain, 40's		
Date:	March 28, 2016		
Time Started:	09:53	Time Finished:	10:02
N. Coordinate:	552626.0	E. Coordinate:	1464690.0
Ground Surface Elevation (feet):	350		
Station: 26+00	Offset: 9 ft West		

Contractor:	Engineers Construction Inc.	Groundwater Observations			
Operator:	Rick Scandore	Date	Depth (ft)	Elevation (ft)	Notes
Make:	Zaxis	3/28/16, 9:53			See note 4
Model:	27U				
Capacity:	1/8 cu yd				
Reach:	15 ft				

Test Pit Sketches & Strata Description (view to West)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Fill (Railroad Ballast with sand/silt, cinders, timber, and debris), wet.	E			Wet
		348.3 / 1.7	E			Wet
		347.3 / 2.7	E			Wet
		Refusal on Bedrock Bottom of Exploration at 2.7 ft				
5						
10						
15						

Remarks:
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to adjacent ballast to the east of pier.
2) Test pit located south of pier. (Pier foundation located to right side of sketch above)
3) Timber formwork exposed below 1.5 feet. Concrete behind formwork partially exposed. Pier foundation appears to be founded at 2.7 feet deep on bedrock.
4) Groundwater observed at ground surface in shallow ditch adjacent to test pit prior to excavation.
5) Exploration terminated at approximately 2.7 feet deep on bedrock. Bedrock surface observed to step upwards towards the south.



Test Pit Plan (feet)

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-205**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 3/31/16

GEODESIGN INCORPORATED

Geotechnical / Construction / Environmental Engineers and Scientists

P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943

40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-206**
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

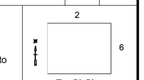
GeoDesign Rep:	Hilary Jones		
Weather:	Rain, 40's		
Date:	March 28, 2016		
Time Started:	10:07	Time Finished:	10:15
N. Coordinate:	552619.0	E. Coordinate:	1464696.0
Ground Surface Elevation (feet):	350		
Station: 25+90	Offset: 7 ft West		

Contractor:	Engineers Construction Inc.	Groundwater Observations			
Operator:	Rick Scandore	Date	Depth (ft)	Elevation (ft)	Notes
Make:	Zaxis	3/28/16, 10:07			See note 4
Model:	27U				
Capacity:	1/8 cu yd				
Reach:	15 ft				

Strata Description

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Fill (Railroad Ballast with sand/silt, cinders, timber, and debris), wet.	E			Wet
			E			Wet
		347.5 / 2.5	E			Wet
		347 / 3 Fill (Gray fine to coarse SAND and SILT, little fine to coarse Gravel), wet.	E			Wet
		Refusal on Bedrock Bottom of Exploration at 3.0 ft				
5						
10						
15						

Remarks:
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to adjacent ballast to the east of pier.
2) Test pit located north of pier.
3) Groundwater observed at ground surface in shallow ditch adjacent to test pit prior to excavation.
4) Timber formwork exposed below 1.5 feet. Concrete behind formwork partially exposed. Pier foundation appears to be founded at 3 feet deep on bedrock.
5) Exploration terminated at approximately 3 feet deep on bedrock.



Test Pit Plan (feet)

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-206**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 3/31/16

GEODESIGN INCORPORATED

Geotechnical / Construction / Environmental Engineers and Scientists

P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943

40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-207**
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

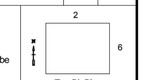
GeoDesign Rep:	Hilary Jones		
Weather:	Rain, 40's		
Date:	March 28, 2016		
Time Started:	10:18	Time Finished:	10:27
N. Coordinate:	552604.0	E. Coordinate:	1464702.0
Ground Surface Elevation (feet):	350		
Station: 25+75	Offset: 8 ft West		

Contractor:	Engineers Construction Inc.	Groundwater Observations			
Operator:	Rick Scandore	Date	Depth (ft)	Elevation (ft)	Notes
Make:	Zaxis	3/28/16, 10:18			See note 4
Model:	27U				
Capacity:	1/8 cu yd				
Reach:	15 ft				

Strata Description

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Fill (Railroad Ballast with sand/silt, cinders, timber, and debris), wet.	E			Wet
			E			Wet
		347 / 3 Gray fine to coarse SAND and SILT, little fine to coarse Gravel, wet. (FILL)	E			Wet
			E			Wet
5			E			Wet
		344.6 / 5.4	E			Wet
		Refusal on Bedrock Bottom of Exploration at 5.4 ft				
10						
15						

Remarks:
1) Ground surface elevation estimated from topographic plan provided by VHB. Depths are referenced to adjacent ballast to the east of pier.
2) Test pit located north of pier.
3) Groundwater observed at ground surface in shallow ditch adjacent to test pit prior to excavation.
4) Timber formwork exposed below 2 feet. Concrete behind formwork partially exposed. Pier foundation appears to be founded at 5.4 feet deep on bedrock.
5) Exploration terminated at approximately 5.4 feet deep on bedrock.



Test Pit Plan (feet)

Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-207**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 3/31/16

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046borlogs.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GEODESIGN
BORING LOGS (34 OF 35)

PLOT DATE: 2/27/2018
DRAWN BY: C.J. HAKEY
CHECKED BY: GEODESIGN
SHEET 72 OF 135

GEODESIGN INCORPORATED
Geotechnical / Construction / Environmental Engineers and Scientists
P.O. Box 699, Windsor, VT 05089, Phone: 802-674-2033/Fax: 802-674-5943
40 Farrell Street, S. Burlington, VT 05403, Phone: 802-652-5140

TEST PIT LOG

Project Name: Middlebury WCRS(23), Middlebury, VT

Test Pit No.: **TP-208**
Page No.: 1 of 1
File No.: 837-65
Checked By: AJB

Geo/Design Rep:	Hilary Jones		
Weather:	Rain, 40's		
Date:	March 28, 2016		
Time Started:	10:48	Time Finished:	11:20
N. Coordinate:	552657.0	E. Coordinate:	1464450.0
Ground Surface Elevation (feet):	325.7		
Station: N/A	Offset: ft		

Contractor:	Engineers Construction Inc.
Operator:	Rick Scandore
Make:	Zaxis
Model:	27U
Capacity:	1/8 cu yd
Reach:	15 ft

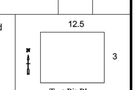
Groundwater Observations

Date	Depth (ft)	Elevation (ft)	Notes
3/28/16, 11:15	3.5	322.2	See note 3

Test Pit Sketches & Strata Description (view to North)

Depth (feet)	Symbol	Elevation & Depth (feet)	Excavation Effort	Boulder Count and Class	PID Reading	Moisture
		Brown SILT, some Sand, little gravel with concrete wood and metal debris, moist. (FILL)	E			Moist
			E			Moist
			E			Moist
		322.1 / 3.6	E			Moist
5		321.0 / 4.7 Refusal on Bedrock. Bottom of Exploration at 4.7 ft				
10						
15						

Remarks
1) Ground surface elevation provided by VHB. Stake location set at location of outfall by VHB. Ground surface sloped downward towards the west.
2) Test pit located at and west of staked location. (Stake located to right side of sketch above)
3) Slow seepage observed within excavation side wall at soil/bedrock interface.
4) Exploration terminated at approximately 4.7 feet below elevation of staked location on bedrock. Bedrock surface observed to step downward towards the west.
5) Test pit backfilled with excavated material and tamped in lifts with the excavator bucket.



Test Pit Plan (feet)

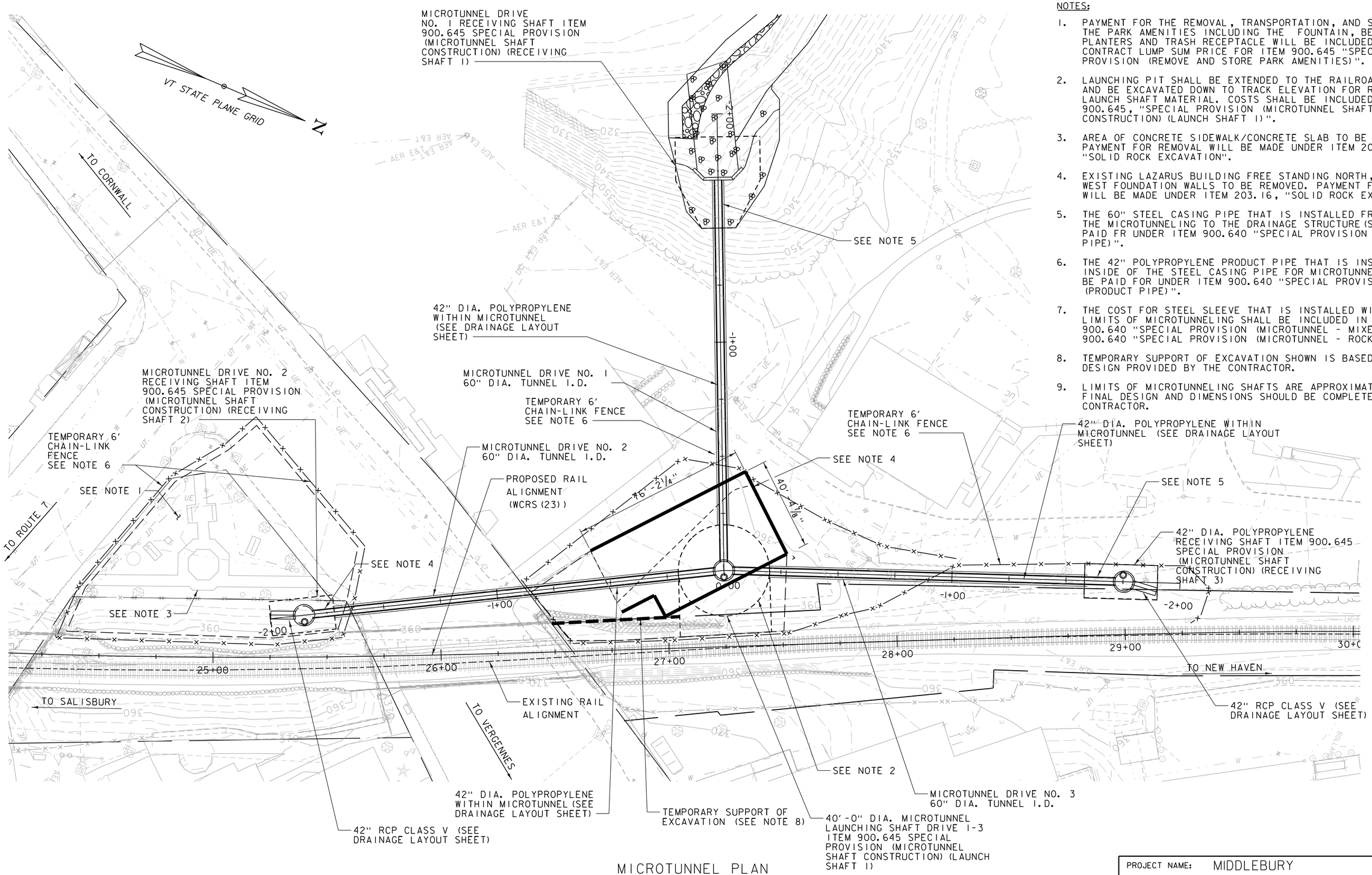
Notes:
1) Soil Samples screened in the field using an Ion Science PhoCheck 1000 Photoionization Detector (unless otherwise noted in Remarks). The meter was calibrated relative to a benzene in air standard. ND = None Detected; NR = Not Recorded; NA = Not Applicable; OR = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time readings were made.
3) Boulder Count Class Designations (diameter range): A = 6"-18" (0.15m - 0.46m) , B = 18"-36" (0.46m - 0.91m), C = >36" (>0.91m).
4) Excavation Effort: E = Easy, M = Moderate, D = Difficult.
5) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
6) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Test Pit No.: **TP-208**

TP LOG STANDARD 837-65 MIDDLEBURY WCRS (23) TEST PITS.GPJ GEOTESTPIT.GDT 3/31/16

*NOTE: SEE BORING CHART ON BORING INFORMATION SHEETS FOR NORTHING AND EASTING INFORMATION

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046borlogs.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: C.J. HAKEY
DESIGNED BY: GEODESIGN	CHECKED BY: GEODESIGN
BORING LOGS (35 OF 35)	SHEET 73 OF 135



MICROTUNNEL PLAN

SCALE 1" = 20'-0"

20 0 20

NOTES:

1. PAYMENT FOR THE REMOVAL, TRANSPORTATION, AND STORAGE OF THE PARK AMENITIES INCLUDING THE FOUNTAIN, BENCHES, PLANTERS AND TRASH RECEPTACLE WILL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR ITEM 900.645 "SPECIAL PROVISION (REMOVE AND STORE PARK AMENITIES)".
2. LAUNCHING PIT SHALL BE EXTENDED TO THE RAILROAD TRACKS AND BE EXCAVATED DOWN TO TRACK ELEVATION FOR REMOVAL OF LAUNCH SHAFT MATERIAL. COSTS SHALL BE INCLUDED IN ITEM 900.645, "SPECIAL PROVISION (MICROTUNNEL SHAFT CONSTRUCTION) (LAUNCH SHAFT 1)".
3. AREA OF CONCRETE SIDEWALK/CONCRETE SLAB TO BE REMOVED. PAYMENT FOR REMOVAL WILL BE MADE UNDER ITEM 203.16, "SOLID ROCK EXCAVATION".
4. EXISTING LAZARUS BUILDING FREE STANDING NORTH, EAST AND WEST FOUNDATION WALLS TO BE REMOVED. PAYMENT FOR REMOVAL WILL BE MADE UNDER ITEM 203.16, "SOLID ROCK EXCAVATION".
5. THE 60" STEEL CASING PIPE THAT IS INSTALLED FROM END OF THE MICROTUNNELING TO THE DRAINAGE STRUCTURE(S) WILL BE PAID FR UNDER ITEM 900.640 "SPECIAL PROVISION (CASING PIPE)".
6. THE 42" POLYPROPYLENE PRODUCT PIPE THAT IS INSTALLED INSIDE OF THE STEEL CASING PIPE FOR MICROTUNNELING WILL BE PAID FOR UNDER ITEM 900.640 "SPECIAL PROVISION (PRODUCT PIPE)".
7. THE COST FOR STEEL SLEEVE THAT IS INSTALLED WITHIN THE LIMITS OF MICROTUNNELING SHALL BE INCLUDED IN ITEMS 900.640 "SPECIAL PROVISION (MICROTUNNEL - MIXED)" AND 900.640 "SPECIAL PROVISION (MICROTUNNEL - ROCK)".
8. TEMPORARY SUPPORT OF EXCAVATION SHOWN IS BASED ON 30% DESIGN PROVIDED BY THE CONTRACTOR.
9. LIMITS OF MICROTUNNELING SHAFTS ARE APPROXIMATE ONLY. FINAL DESIGN AND DIMENSIONS SHOULD BE COMPLETED BY THE CONTRACTOR.

MOTT MACDONALD

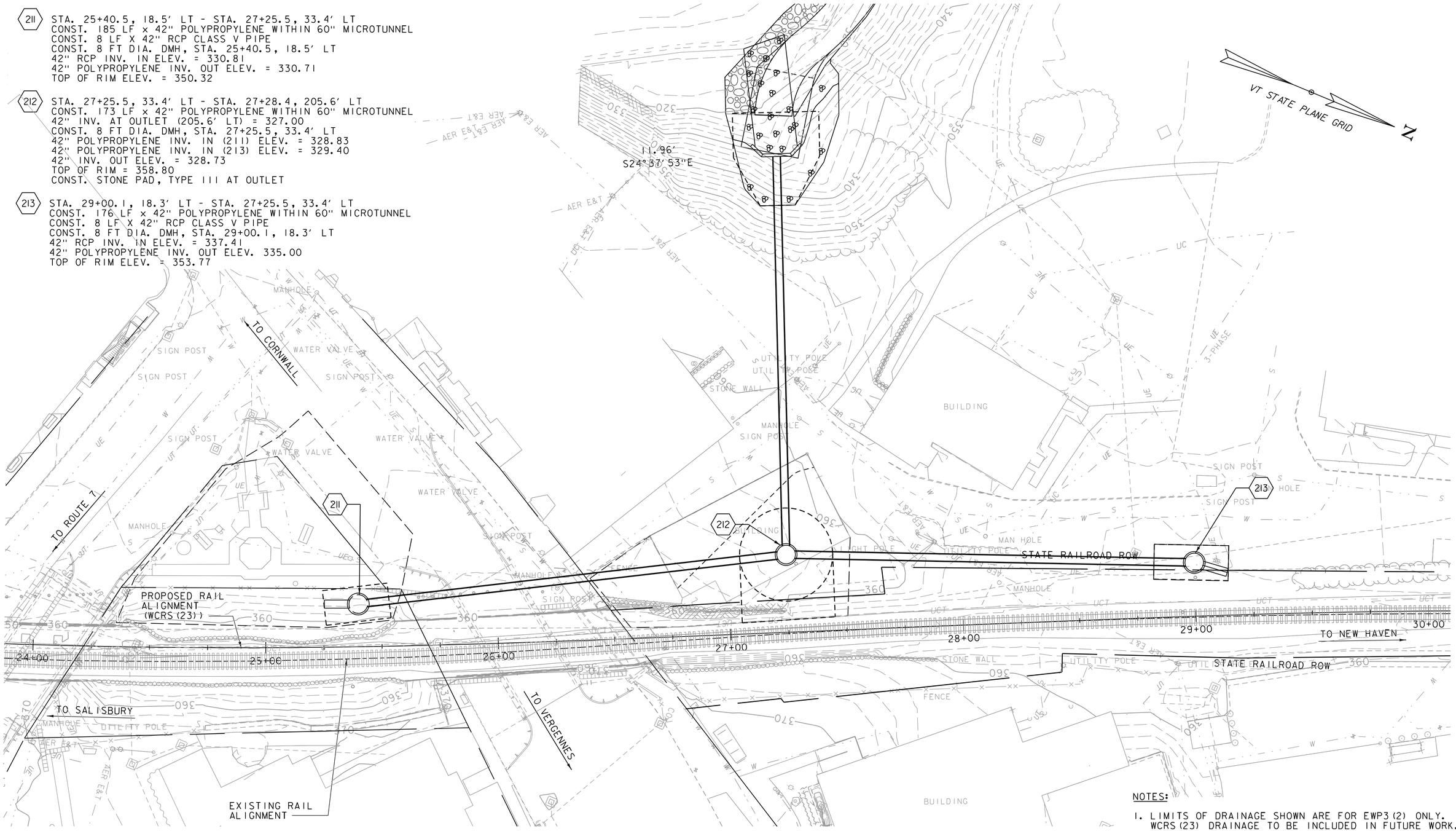
vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046site_plan.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: R. A. LORENZO
DESIGNED BY: J.A. PITTSINGER	CHECKED BY: D. WOTRING
MICROTUNNEL LAYOUT SHEET	SHEET 74 OF 135

(211) STA. 25+40.5, 18.5' LT - STA. 27+25.5, 33.4' LT
CONST. 185 LF x 42" POLYPROPYLENE WITHIN 60" MICROTUNNEL
CONST. 8 LF X 42" RCP CLASS V PIPE
CONST. 8 FT DIA. DMH, STA. 25+40.5, 18.5' LT
42" RCP INV. IN ELEV. = 330.81
42" POLYPROPYLENE INV. OUT ELEV. = 330.71
TOP OF RIM ELEV. = 350.32

(212) STA. 27+25.5, 33.4' LT - STA. 27+28.4, 205.6' LT
CONST. 173 LF x 42" POLYPROPYLENE WITHIN 60" MICROTUNNEL
42" INV. AT OUTLET (205.6' LT) = 327.00
CONST. 8 FT DIA. DMH, STA. 27+25.5, 33.4' LT
42" POLYPROPYLENE INV. IN (211) ELEV. = 328.83
42" POLYPROPYLENE INV. IN (213) ELEV. = 329.40
42" INV. OUT ELEV. = 328.73
TOP OF RIM = 358.80
CONST. STONE PAD, TYPE III AT OUTLET

(213) STA. 29+00.1, 18.3' LT - STA. 27+25.5, 33.4' LT
CONST. 176 LF x 42" POLYPROPYLENE WITHIN 60" MICROTUNNEL
CONST. 8 LF X 42" RCP CLASS V PIPE
CONST. 8 FT DIA. DMH, STA. 29+00.1, 18.3' LT
42" RCP INV. IN ELEV. = 337.41
42" POLYPROPYLENE INV. OUT ELEV. 335.00
TOP OF RIM ELEV. = 353.77



NOTES:

1. LIMITS OF DRAINAGE SHOWN ARE FOR EWP3(2) ONLY. WCRS(23) DRAINAGE TO BE INCLUDED IN FUTURE WORK.
2. LIMITS OF MICROTUNNELING SHAFTS ARE APPROXIMATE ONLY. FINAL DESIGN AND DIMENSIONS SHOULD BE COMPLETED BY THE CONTRACTOR.

UTILITY SYMBOLOGY:

—D— PROPOSED DRAINAGE

PROPOSED DRAINAGE STRUCTURE

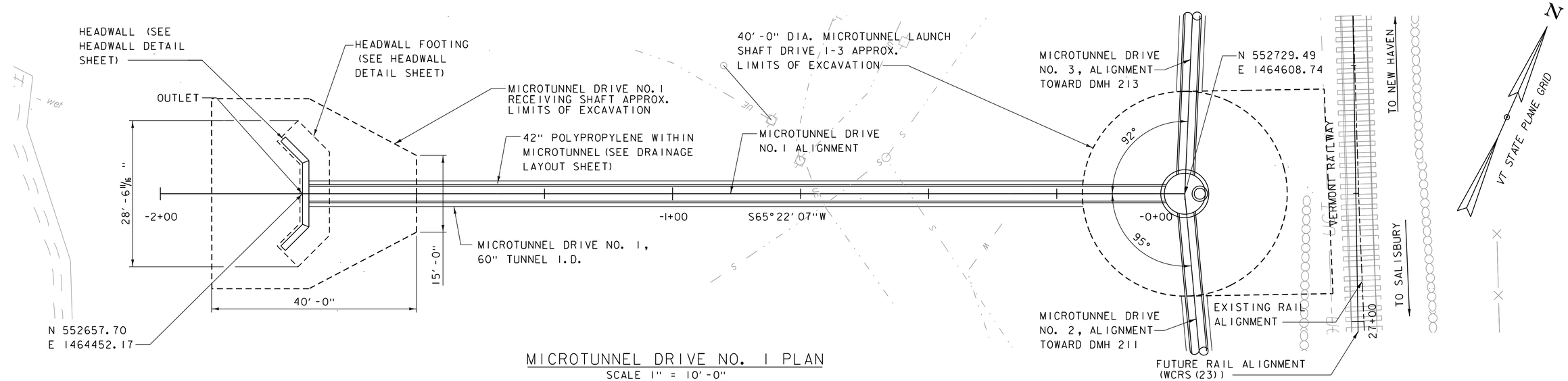
UTILITY ABBREVIATIONS:

DMH DRAINAGE MANHOLE

0 20 40
SCALE IN FEET

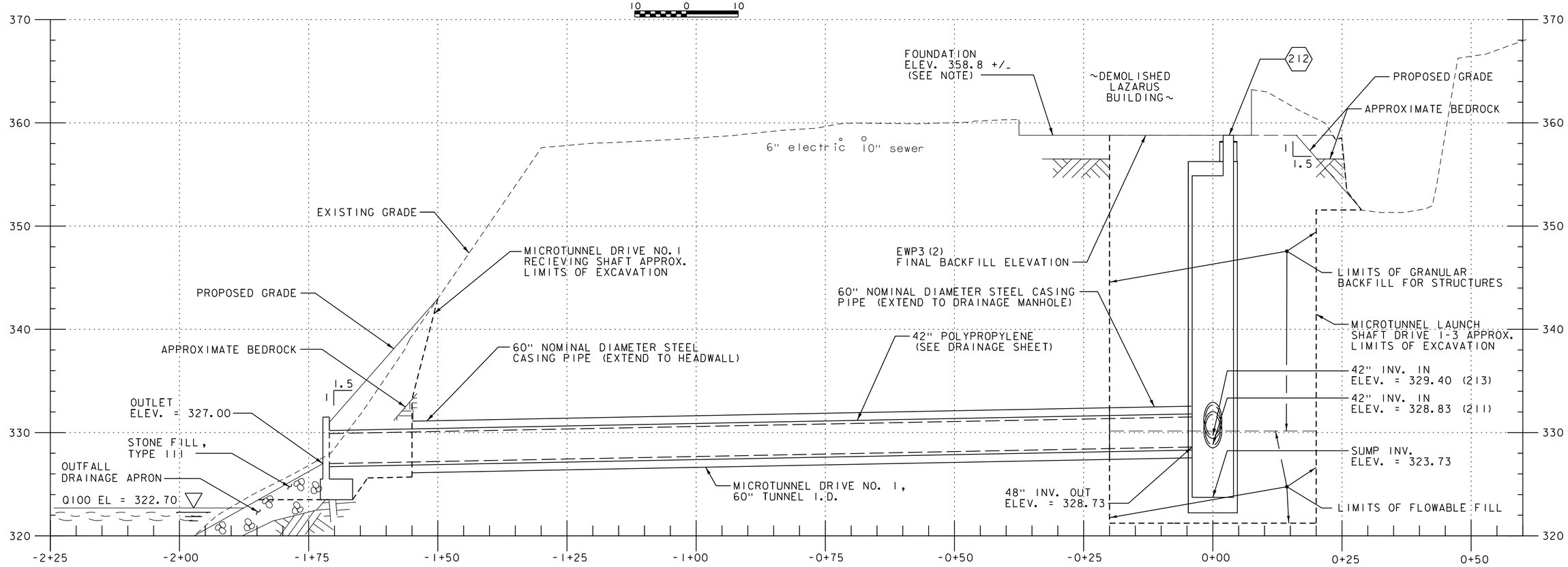
vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_nul_util.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.D. WENTWORTH
DESIGNED BY: M. KEENE	CHECKED BY: P. SMIAR
DRAINAGE LAYOUT SHEET	SHEET 75 OF 135



MICROTUNNEL DRIVE NO. 1 PLAN

SCALE 1" = 10'-0"



MICROTUNNEL DRIVE NO. 1 PROFILE

SCALE 1" = 10' HORIZONTAL
1" = 5' VERTICAL

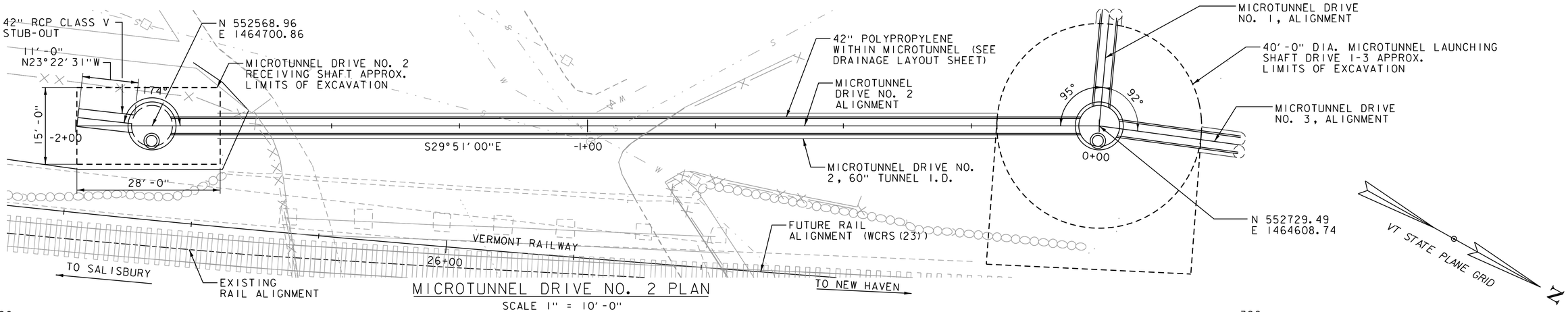
NOTE:

1. TOP OF STRUCTURE ELEVATION BASED ON FOUNDATION LEFT-IN-PLACE FOLLOWING DEMOLITION OF LAZARUS BUILDING.
2. LIMITS OF MICROTUNNELING SHAFTS ARE APPROXIMATE ONLY. FINAL DESIGN AND DIMENSIONS SHOULD BE COMPLETED BY THE CONTRACTOR.
3. CASING NOT SHOWN ON PIPE FOR MICROTUNNEL DRIVE NO. 2 AND 3 FOR CLARITY.

MOTT MACDONALD

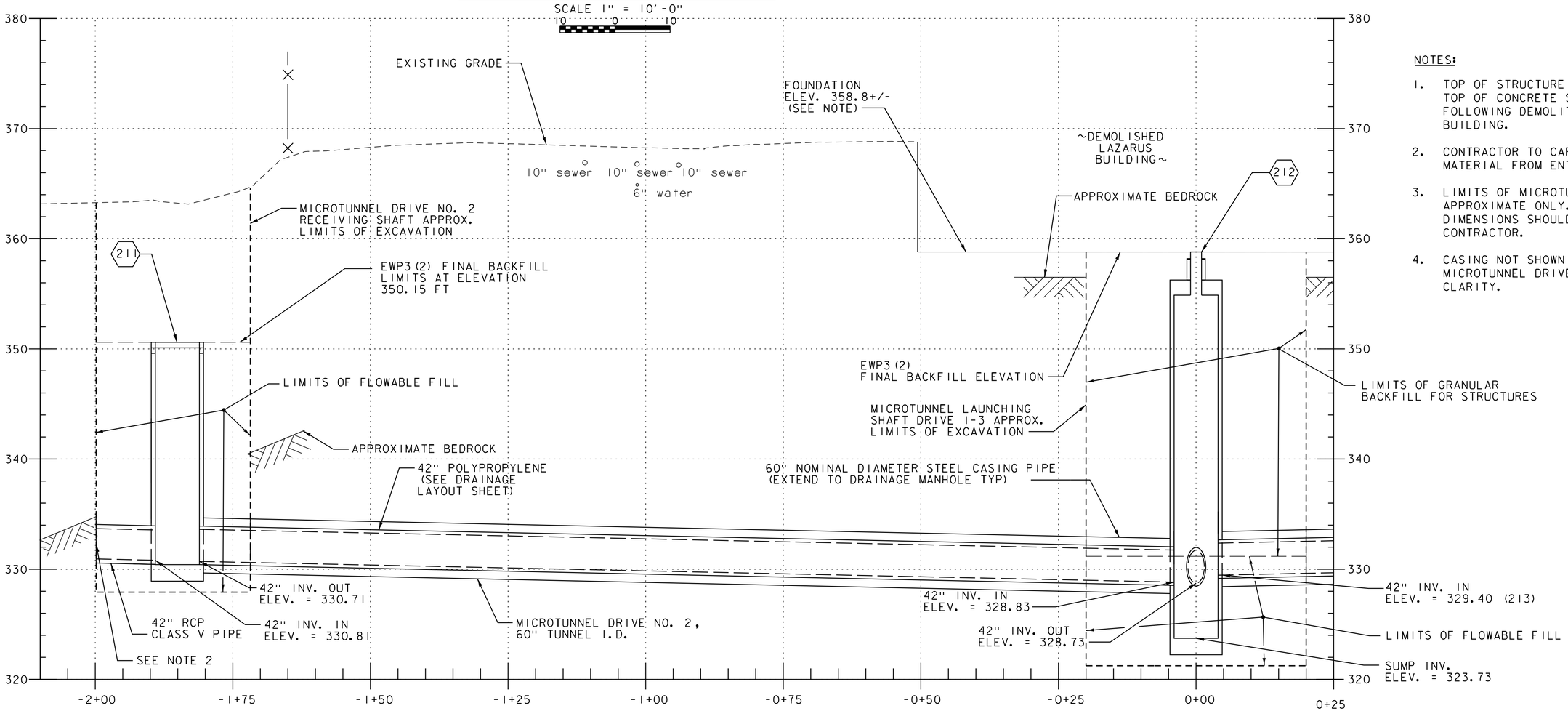
vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046mic_tun_Drl.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: R. A. LORENZO
DESIGNED BY: J.A. PITTSINGER	CHECKED BY: D. WOTRING
MICROTUNNEL PROFILE SHEET (1 OF 3)	SHEET 76 OF 135



MICROTUNNEL DRIVE NO. 2 PLAN

SCALE 1" = 10'-0"



NOTES:

1. TOP OF STRUCTURE ELEVATION BASED ON TOP OF CONCRETE SLAB LEFT-IN-PLACE FOLLOWING DEMOLITION OF LAZARUS BUILDING.
2. CONTRACTOR TO CAP PIPE TO PREVENT MATERIAL FROM ENTERING PIPE
3. LIMITS OF MICROTUNNELING SHAFTS ARE APPROXIMATE ONLY. FINAL DESIGN AND DIMENSIONS SHOULD BE COMPLETED BY THE CONTRACTOR.
4. CASING NOT SHOWN ON PIPE FOR MICROTUNNEL DRIVE NO. 2 AND 3 FOR CLARITY.

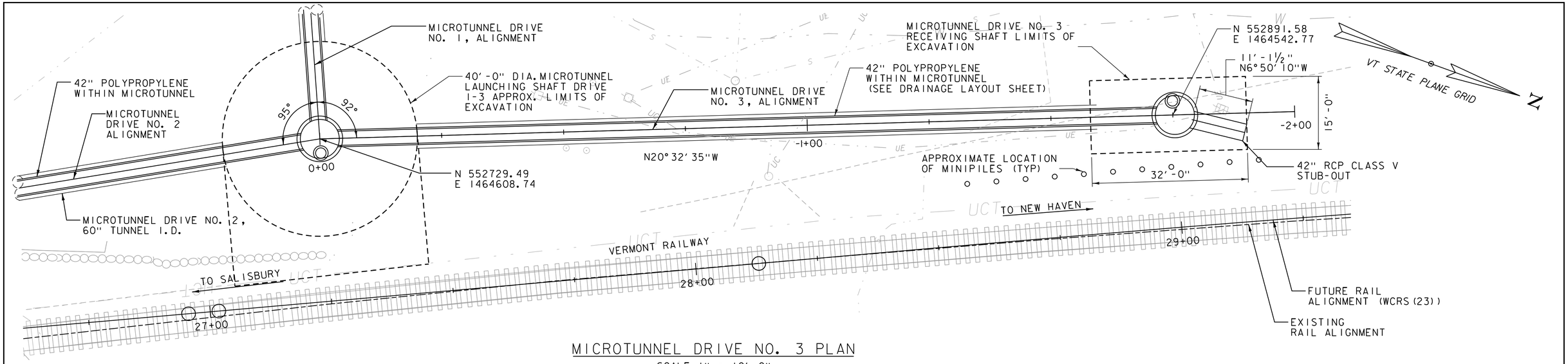
MICROTUNNEL DRIVE NO. 2 PROFILE

SCALE 1" = 10' HORIZONTAL
1" = 5' VERTICAL

MOTT MACDONALD

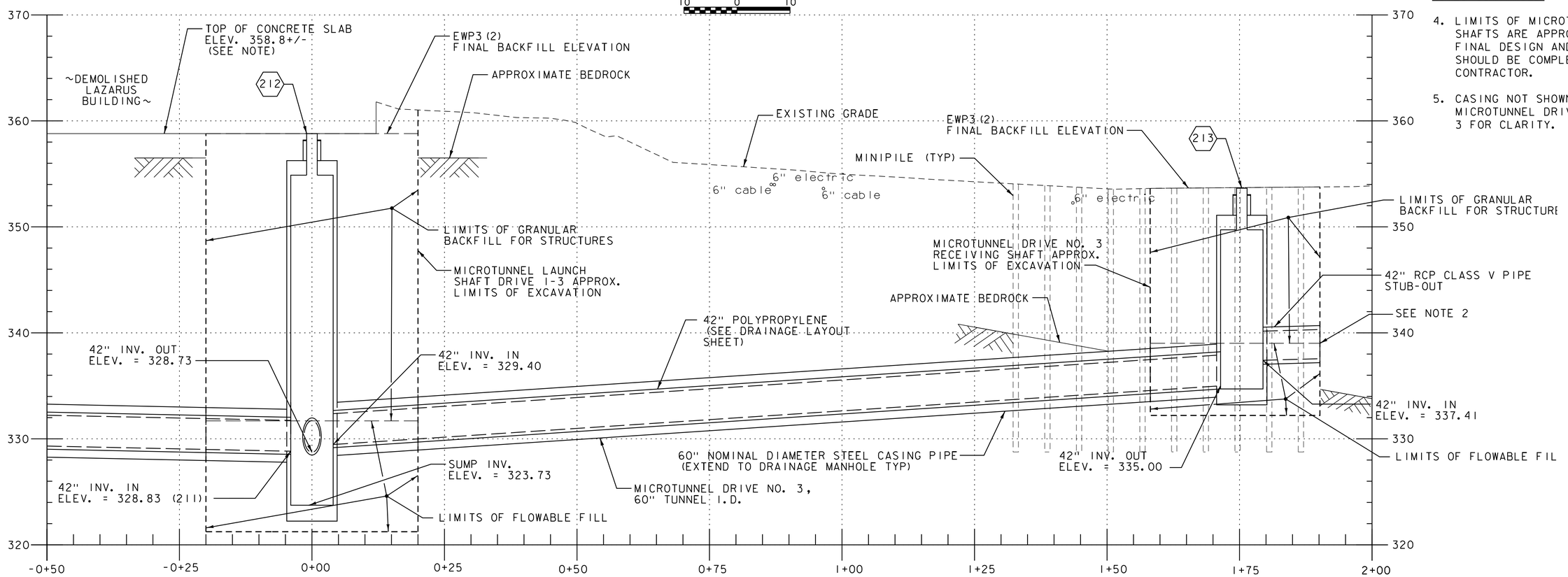
vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046mic_tun_Dr2.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: R. A. LORENZO
DESIGNED BY: J.A. PITTSINGER	CHECKED BY: D. WOTRING
MICROTUNNEL PROFILE SHEET (2 OF 3)	SHEET 77 OF 135



MICROTUNNEL DRIVE NO. 3 PLAN

SCALE 1" = 10'-0"
10 0 10



NOTES CONTINUED:

4. LIMITS OF MICROTUNNELING SHAFTS ARE APPROXIMATE ONLY. FINAL DESIGN AND DIMENSIONS SHOULD BE COMPLETED BY THE CONTRACTOR.

5. CASING NOT SHOWN ON PIPE FOR MICROTUNNEL DRIVE NO. 2 AND 3 FOR CLARITY.

NOTES:

1. TOP OF STRUCTURE ELEVATION BASED ON TOP OF CONCRETE SLAB LEFT-IN-PLACE FOLLOWING DEMOLITION OF LAZARUS BUILDING.

2. CONTRACTOR TO CAP PIPE TO PREVENT MATERIAL FROM ENTERING PIPE.

3. MINIPILES TO BE INSTALLED TO ELEVATION DETERMINED BY CONTRACTOR PRIOR TO CONSTRUCTION OF RECEIVING SHAFT 3. MINIPILES TO BE CUT OFF TO ELEVATION BELOW UTILITY VAULTS AFTER RECEIVING SHAFT 3 IS BACKFILLED.

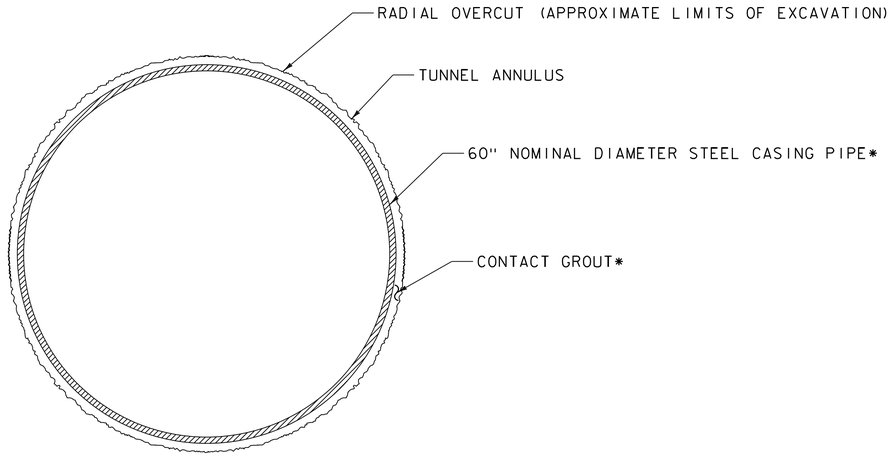
MICROTUNNEL DRIVE NO. 3 PROFILE

SCALE 1" = 10' HORIZONTAL
1" = 5' VERTICAL

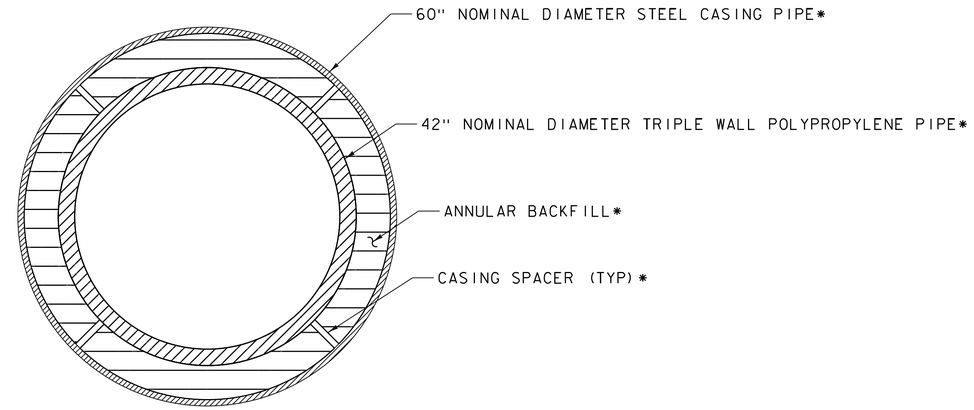
MOTT MACDONALD

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046mic_tun_Dr3.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: R. A. LORENZO
DESIGNED BY: J.A. PITTSINGER	CHECKED BY: D. WOTRING
MICROTUNNEL PROFILE SHEET (3 OF 3)	SHEET 78 OF 135



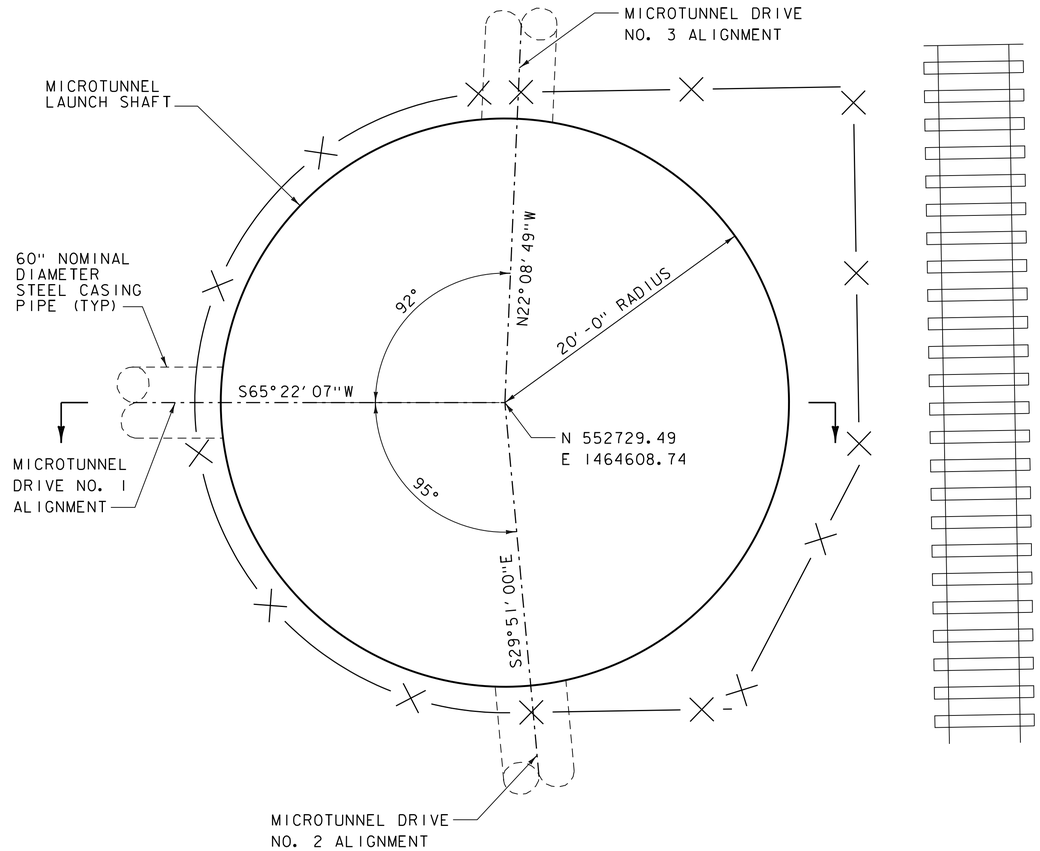
DOUBLE PASS PIPE JACKING
INITIAL SUPPORT DETAIL
SCALE 1" = 1'-0"



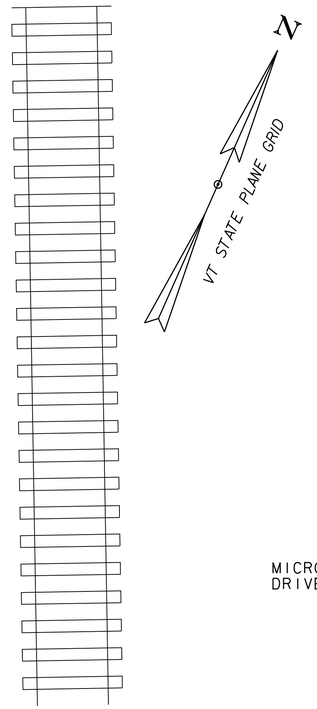
DOUBLE PASS PIPE JACKING
FINAL SUPPORT DETAIL
SCALE 1" = 1'-0"

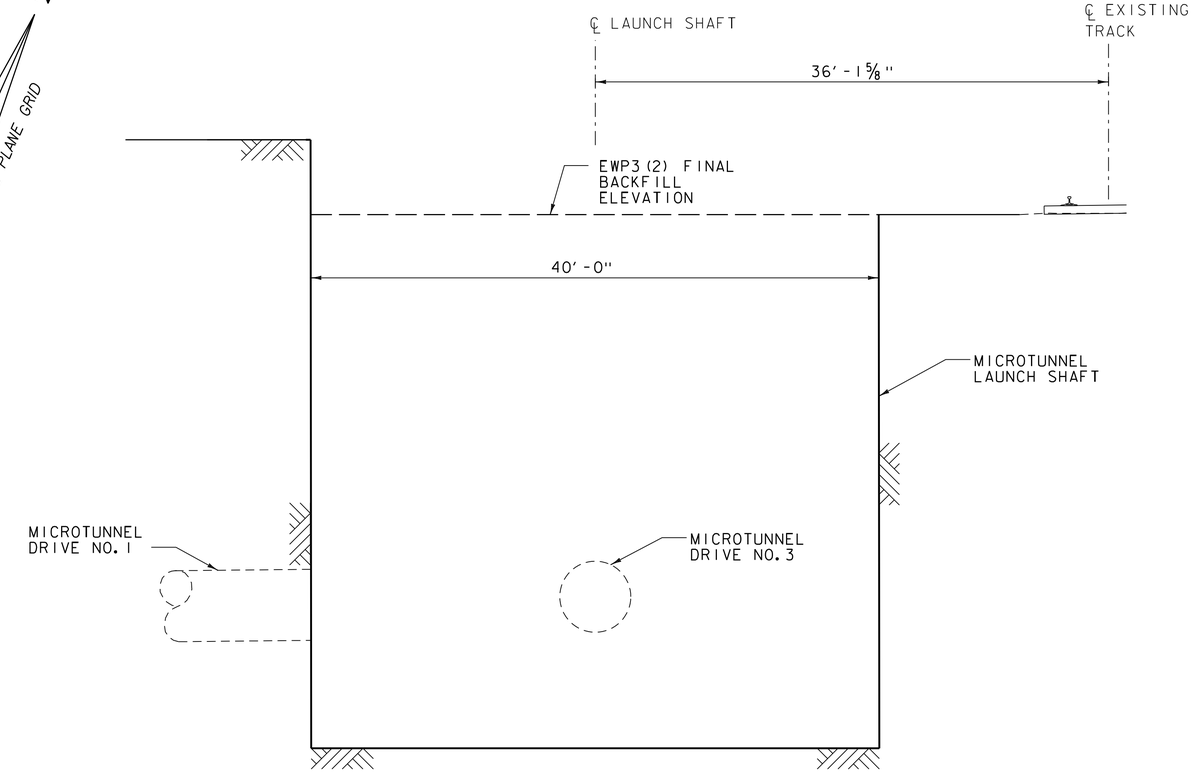
* REFER TO SPECIAL PROVISION SECTION MICROTUNNELING

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046h_pipe_dt.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: R. A. LORENZO
DESIGNED BY: J.A. PITTSINGER	CHECKED BY: D. WOTRING
PIPE DETAILS	SHEET 79 OF 135



LAUNCH SHAFT PLAN
SCALE 3/16" = 1'-0"





LAUNCH SHAFT SECTION
SCALE 3/16" = 1'-0"

NOTES:

1. THE CONTRACTOR SHALL DESIGN AND PROVIDE SAFETY RAILING AROUND EACH SHAFT

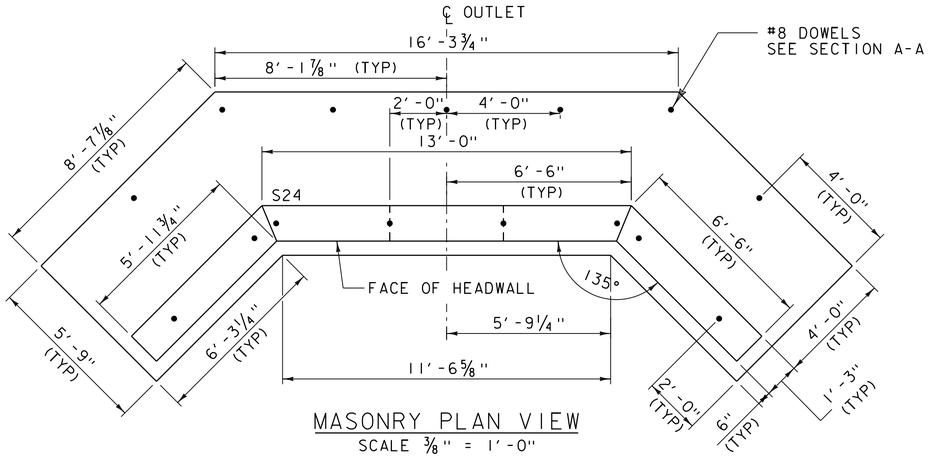
2. ELEVATION OF THE LAUNCH SHAFT SHALL BE DETERMINED BASED ON CONTRACTOR DESIGN. ELEVATION OF TOP OF THE MUD MAT IS ESTIMATED TO BE 321.23FT.

3. THE CONTRACTOR SHALL SEAL THE ANNULAR SPACE BETWEEN THE TUNNEL CASING PIPE AND SUPPORT OF EXCAVATION AT THE INTERFACE. THE CONTRACTOR SHALL DESIGN THE OPENING AND SEAL BASED ON ACTUAL CASING SIZE, HYDROSTATIC PRESSURE, LUBRICATION AND GROUT PRESSURE.

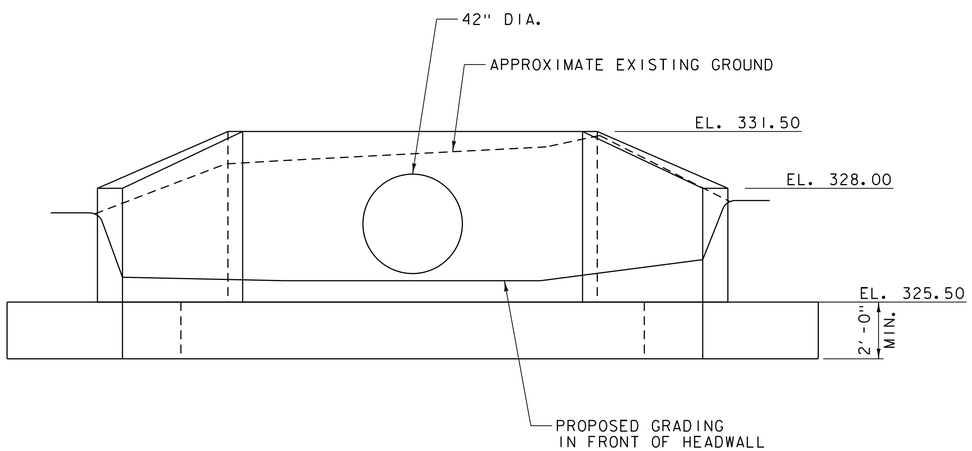
MOTT MACDONALD

vhb

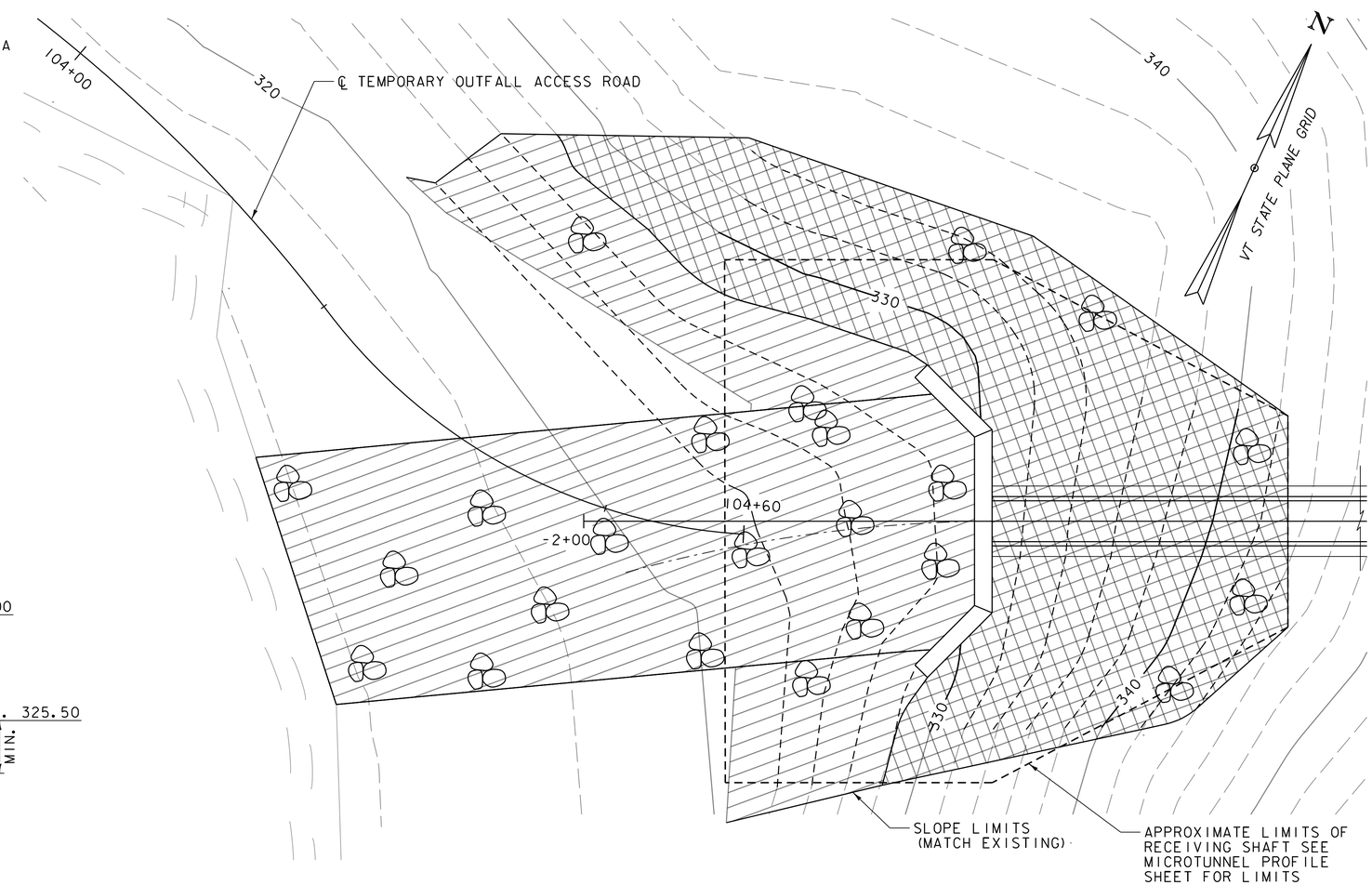
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b0461au_shaft_pl_el.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: R. A. LORENZO
DESIGNED BY: J.A. PITTSINGER	CHECKED BY: D. WOTRING
SHAFT DETAILS	SHEET 80 OF 135



MASONRY PLAN VIEW
SCALE ⅜" = 1'-0"



MASONRY ELEVATION
SCALE ⅜" = 1'-0"



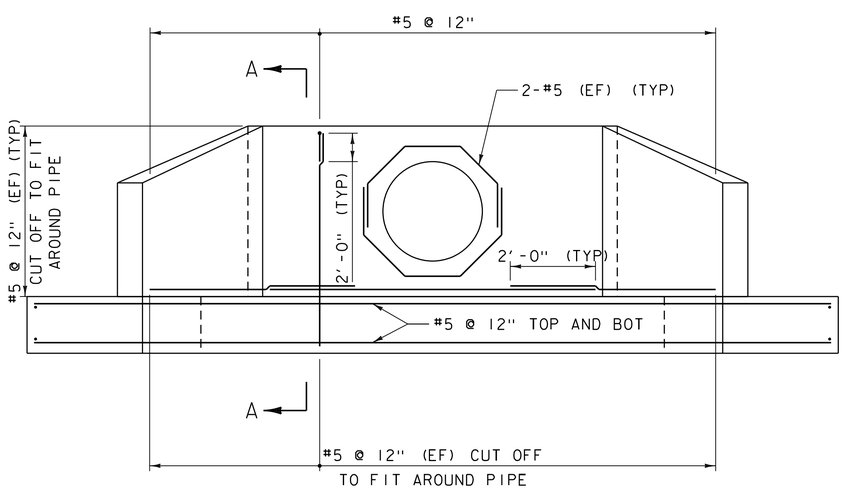
GRADING PLAN
SCALE 1" = 5'-0"

LEGEND:

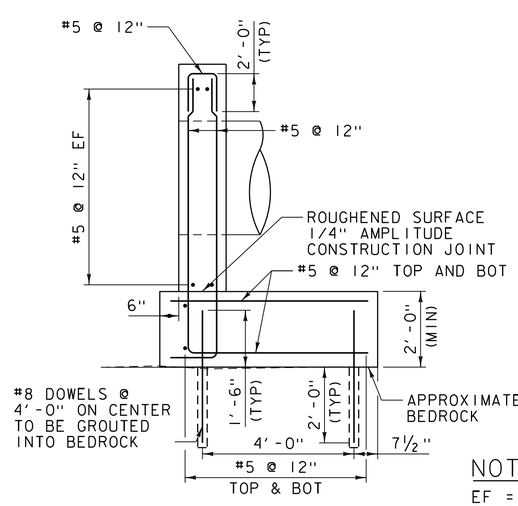
= LIMITS OF STONE FILL, TYPE I

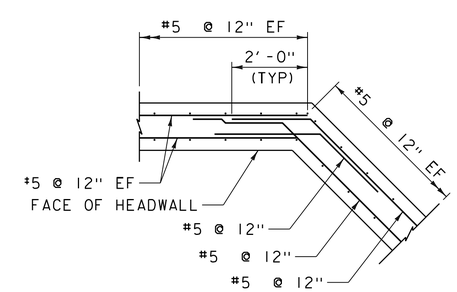
= LIMITS OF STONE FILL, TYPE III

NOTE:
STONE FILL, TYPE II FOR TEMPORARY OUTFALL ACCESS ROAD IS NOT SHOWN FOR CLARITY. STONE FILL, TYPE II FOR TEMPORARY OUTFALL ACCESS ROAD SHALL BE REMOVED IN AREAS WHERE STONE FILL, TYPE III IS SHOWN.



REINFORCING ELEVATION
SCALE ⅜" = 1'-0"



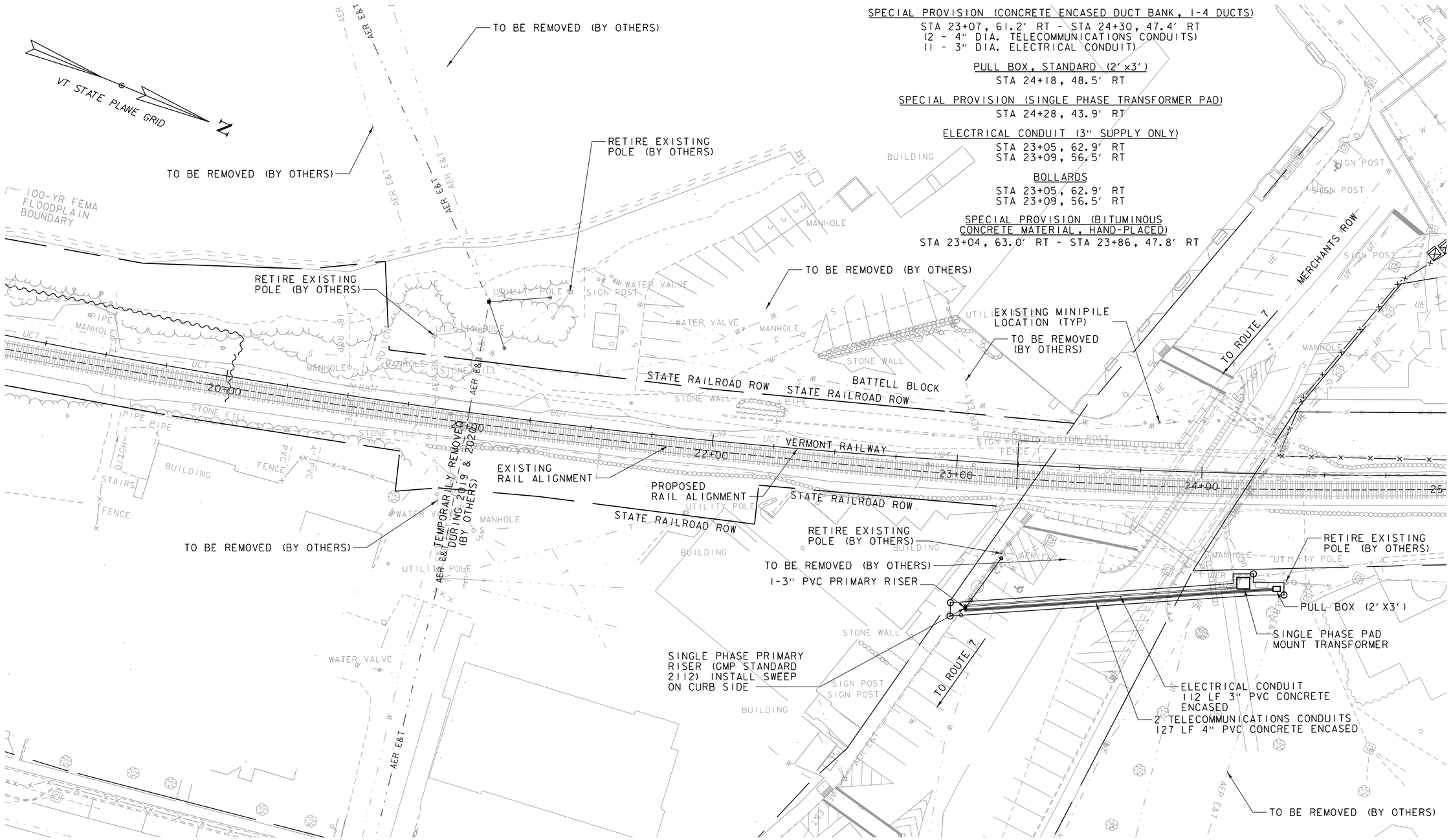


WINGWALL REINFORCING DETAIL
SCALE ½" = 1'-0"

NOTE:
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046headwall_details.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: K.C. BARRY	CHECKED BY: M.E. OOMS
HEADWALL DETAILS	SHEET 81 OF 135



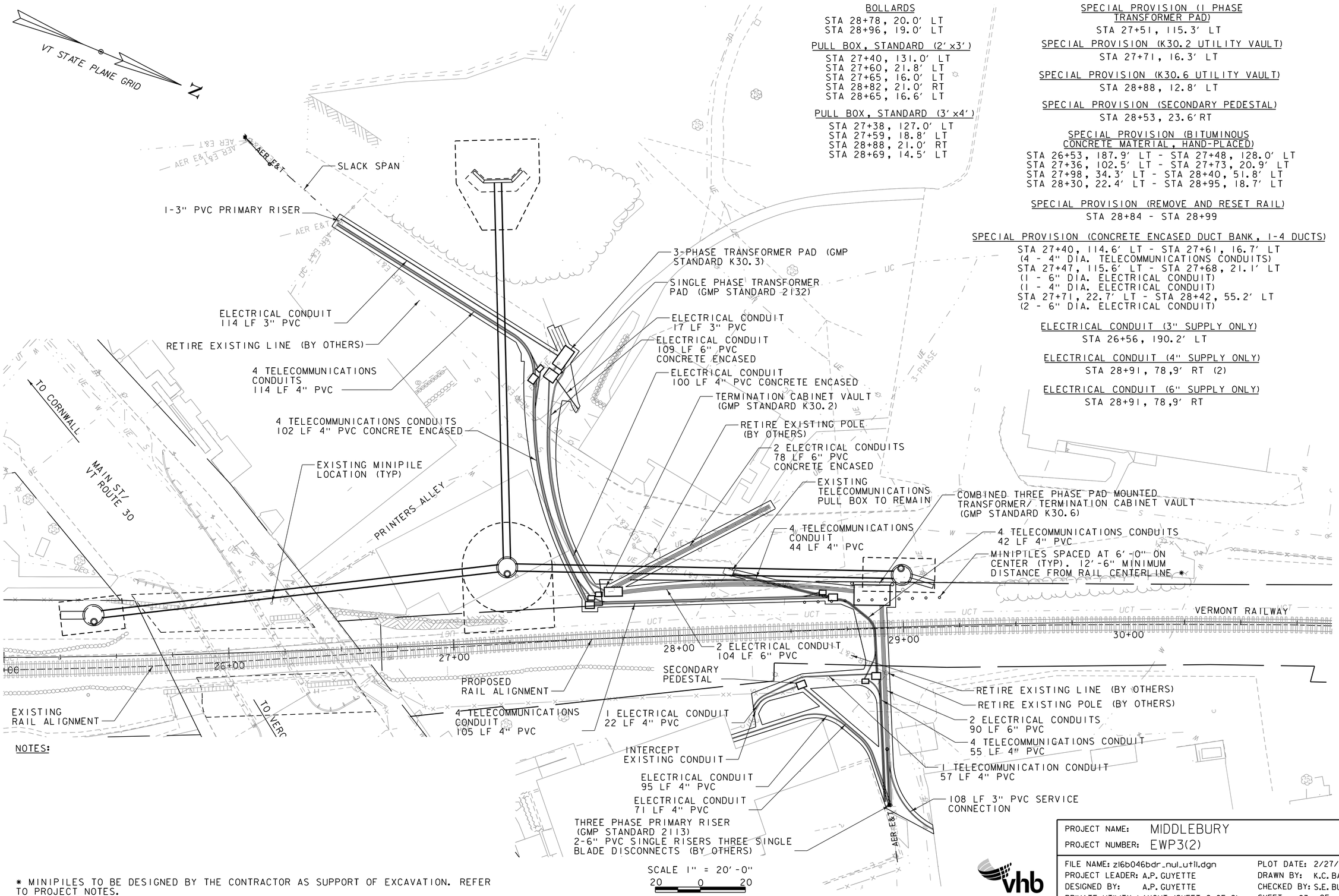
NOTES:

1. WORK BY OTHERS TO BE PERFORMED BY INDIVIDUAL UTILITY OWNERS CONCURRENT WITH THE PERFORMANCE OF THIS CONTRACT. CONTRACTOR TO WORK WITH UTILITY OWNERS TO DEVELOP SEQUENCE AND TIMING OF CONSTRUCTION.

2. IF SIDEWALK IS DISTURBED, CONTRACTOR SHALL REPLACE THE SIDEWALK WITH ITEM 618.15 "BITUMINOUS CONCRETE SIDEWALK".

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

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_nul_util.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: A.P. GUYETTE	CHECKED BY: S.E. BURBANK
PRIVATE UTILITY LAYOUT (SHEET 1 OF 2)	SHEET 82 OF 135



BOLLARDS
STA 28+78, 20.0' LT
STA 28+96, 19.0' LT

PULL BOX, STANDARD (2'x3')
STA 27+40, 131.0' LT
STA 27+60, 21.8' LT
STA 27+65, 16.0' LT
STA 28+82, 21.0' RT
STA 28+65, 16.6' LT

PULL BOX, STANDARD (3'x4')
STA 27+38, 127.0' LT
STA 27+59, 18.8' LT
STA 28+88, 21.0' RT
STA 28+69, 14.5' LT

SPECIAL PROVISION (1 PHASE TRANSFORMER PAD)
STA 27+51, 115.3' LT

SPECIAL PROVISION (K30.2 UTILITY VAULT)
STA 27+71, 16.3' LT

SPECIAL PROVISION (K30.6 UTILITY VAULT)
STA 28+88, 12.8' LT

SPECIAL PROVISION (SECONDARY PEDESTAL)
STA 28+53, 23.6'RT

SPECIAL PROVISION (BITUMINOUS CONCRETE MATERIAL, HAND-PLACED)
STA 26+53, 187.9' LT - STA 27+48, 128.0' LT
STA 27+36, 102.5' LT - STA 27+73, 20.9' LT
STA 27+98, 34.3' LT - STA 28+40, 51.8' LT
STA 28+30, 22.4' LT - STA 28+95, 18.7' LT

SPECIAL PROVISION (REMOVE AND RESET RAIL)
STA 28+84 - STA 28+99

SPECIAL PROVISION (CONCRETE ENCASED DUCT BANK, 1-4 DUCTS)
STA 27+40, 114.6' LT - STA 27+61, 16.7' LT
(4 - 4" DIA. TELECOMMUNICATIONS CONDUITS)
STA 27+47, 115.6' LT - STA 27+68, 21.1' LT
(1 - 6" DIA. ELECTRICAL CONDUIT)
(1 - 4" DIA. ELECTRICAL CONDUIT)
STA 27+71, 22.7' LT - STA 28+42, 55.2' LT
(2 - 6" DIA. ELECTRICAL CONDUIT)

ELECTRICAL CONDUIT (3" SUPPLY ONLY)
STA 26+56, 190.2' LT

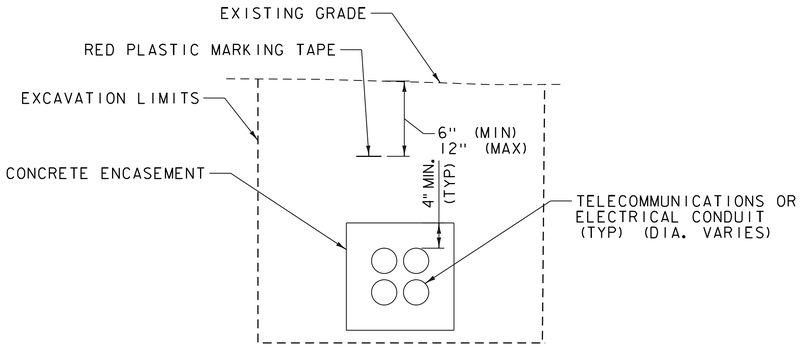
ELECTRICAL CONDUIT (4" SUPPLY ONLY)
STA 28+91, 78,9' RT (2)

ELECTRICAL CONDUIT (6" SUPPLY ONLY)
STA 28+91, 78,9' RT

NOTES:

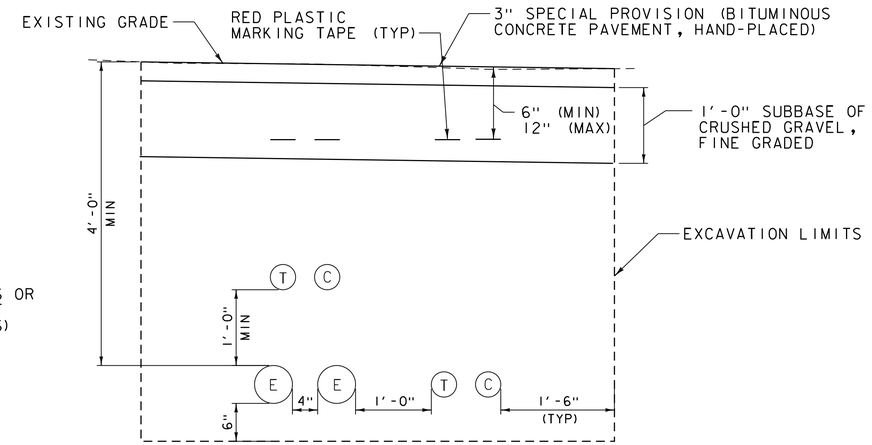
* MINIPILES TO BE DESIGNED BY THE CONTRACTOR AS SUPPORT OF EXCAVATION. REFER TO PROJECT NOTES.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_nul_util.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: A.P. GUYETTE	CHECKED BY: S.E. BURBANK
PRIVATE UTILITY LAYOUT (SHEET 2 OF 2)	SHEET 83 OF 135



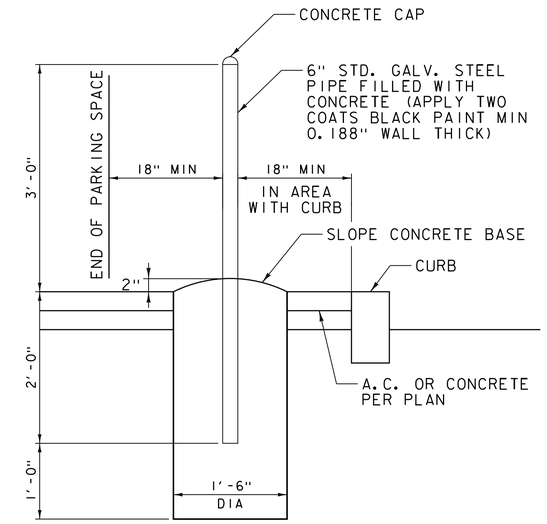
TYPICAL CONDUIT CONCRETE ENCASEMENT SECTION

SCALE 1" = 1'-0"



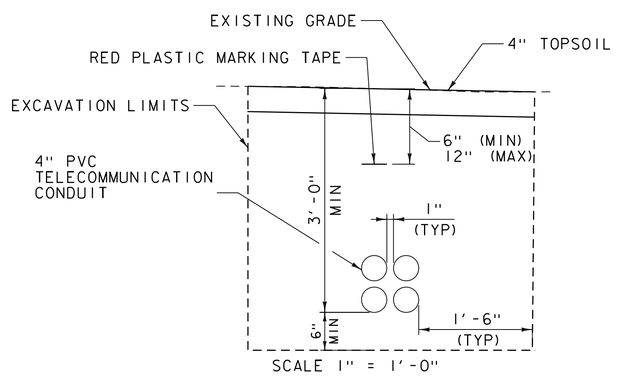
TYPICAL UTILITY CONDUIT SECTION AT EXISTING PAVED AREA

SCALE 1" = 1'-0"

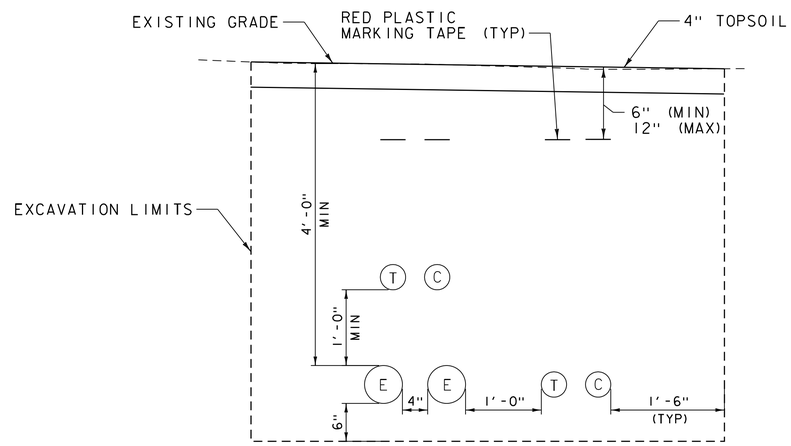


PIPE BOLLARD

NOT TO SCALE

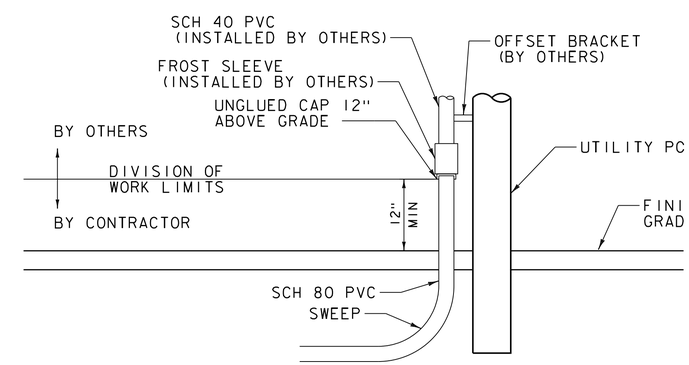


TYPICAL TELECOMMUNICATIONS DUCT BANK SECTION



TYPICAL UTILITY CONDUIT SECTION

SCALE 1" = 1'-0"



CONDUIT RISER DETAIL

NOT TO SCALE

NOTES:

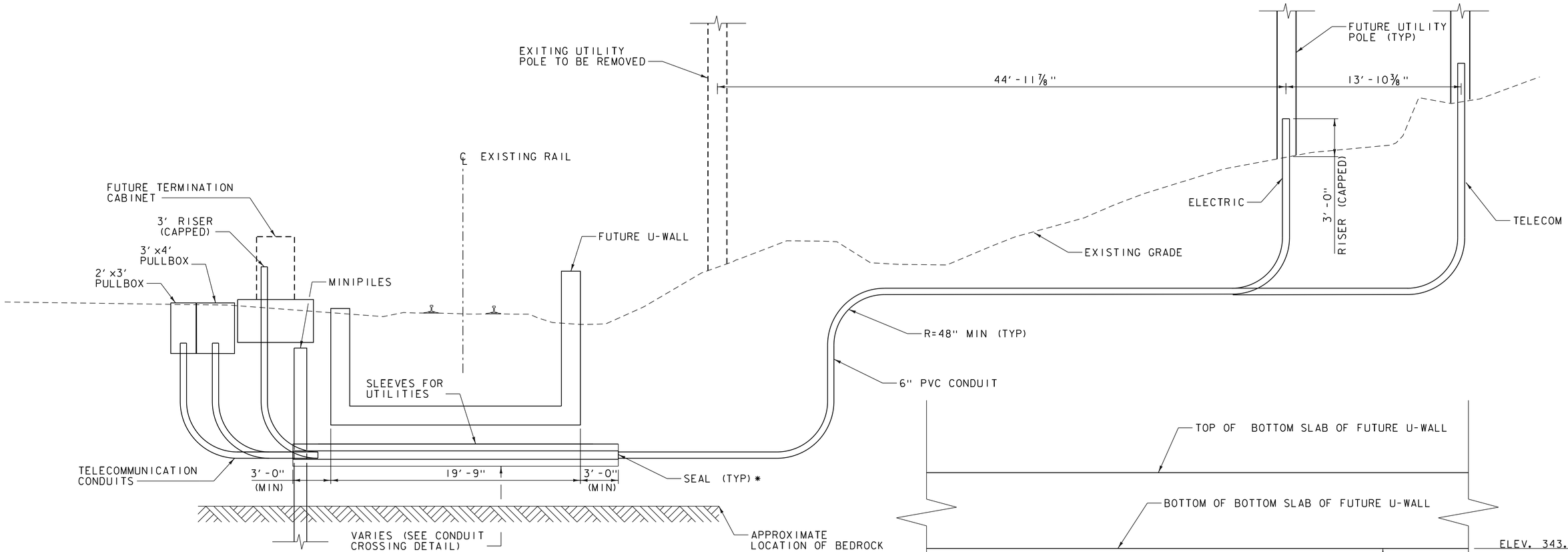
1. SEE TYPICAL DUCT BANK AND CONDUIT SECTIONS FOR ADDITIONAL CONDUIT SPACING AND TRENCH REQUIREMENT DETAILS
2. NUMBER OF CONDUITS AND CONFIGURATION MAY DIFFER BASED ON LOCATION.
3. CONTRACTOR TO COORDINATE WITH GMP AND FOLLOW SPECIFICATIONS AND OTHER REQUIREMENTS, SUCH AS OFFSET DISTANCE FROM UTILITY POLE.

(T) TELECOMMUNICATIONS

(C) CABLE

(E) ELECTRIC

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046util_det.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: K.C. BARRY	CHECKED BY: S.E. BURBANK
UTILITY DETAILS (SHEET 1OF 2)	SHEET 84 OF 135

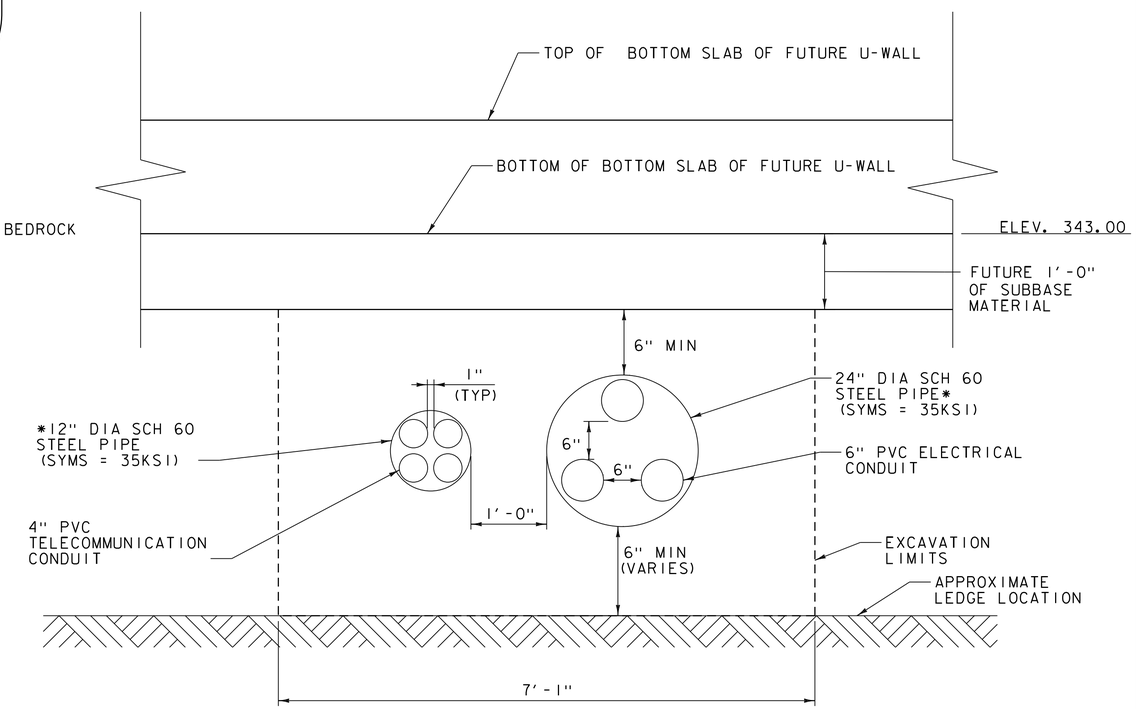


ELECTRICAL CONDUIT CROSSING SECTION AT RAILROAD

(TELECOMMUNICATIONS CONDUIT CROSSING SIMILAR)

STA 28+84 - 28+95

SCALE 1/4" = 1'-0"



CONDUIT CROSSING DETAIL

SCALE 1" = 1'-0"

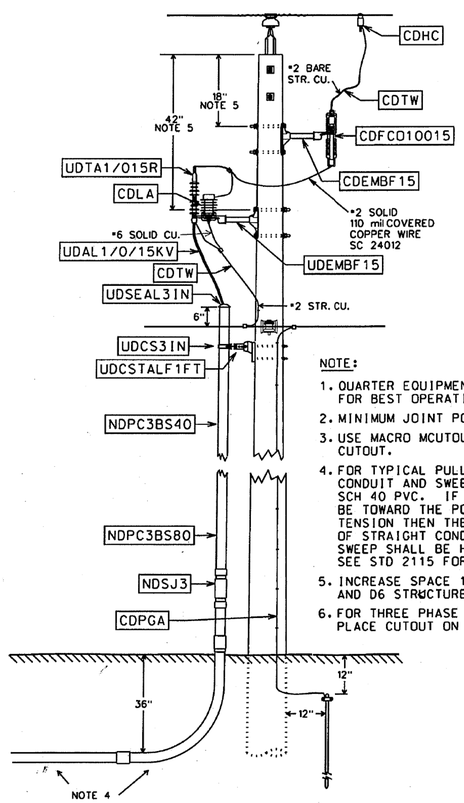
* - ALL COSTS ASSOCIATED WITH FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO INSTALL THE 12" AND 24" DIA SCH 60 STEEL PIPE (SYMS = 35KSI) INCLUDING SEALS WILL BE INCLUDED UNDER ITEM 625.10 "SLEEVES FOR UTILITIES".

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046util_det.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: K.C. BARRY	CHECKED BY: S.E. BURBANK
UTILITY DETAILS (SHEET 2 OF 2)	SHEET 85 OF 135

2112pg1.dgn

SINGLE PHASE PRIMARY RISER CONSTRUCTION 12.5 KV

12RP1PHW/CON



NOTE:

1. QUARTER EQUIPMENT ON POLE FOR BEST OPERATING POSITION.
2. MINIMUM JOINT POLE SIZE 45'.
3. USE MACRO MCUTOUTONLY TO PLACE CUTOUT.
4. FOR TYPICAL PULLS THE BURIED CONDUIT AND SWEEP SHALL BE SCH 40 PVC. IF THE PULL IS TO BE TOWARD THE POLE AND HIGH TENSION THEN THE LAST SECTION OF STRAIGHT CONDUIT AND THE SWEEP SHALL BE HDG STEEL. SEE STD 2115 FOR DETAILS.
5. INCREASE SPACE 12" FOR D4. D5 AND D6 STRUCTURES.
6. FOR THREE PHASE STRUCTURES PLACE CUTOUT ON THE CROSSARM.

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 02/13	STANDARD NUMBER 2112	Page 1

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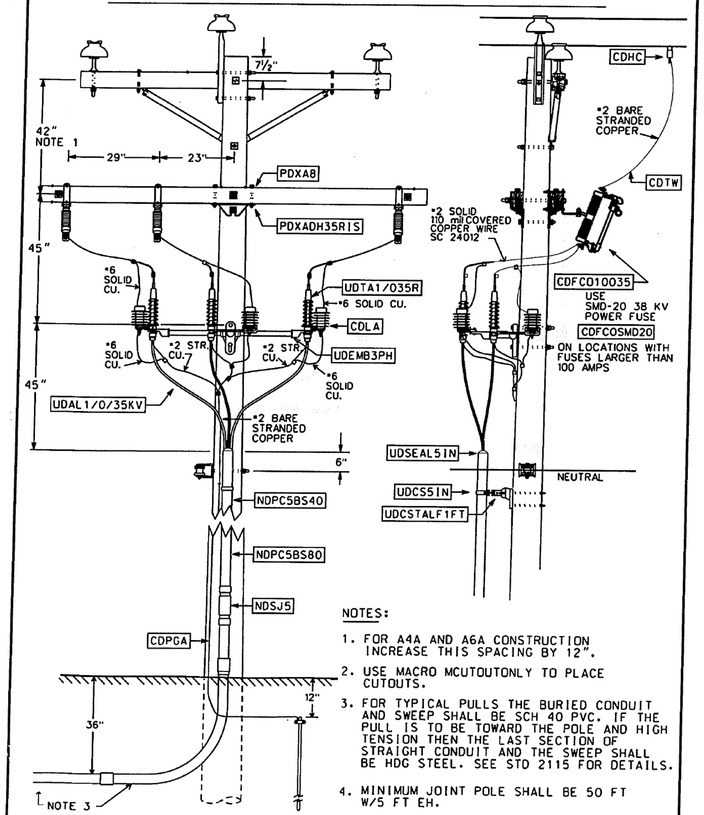
THREE PHASE PRIMARY RISER 34.5 KV

34RP3PHW/CON



NOTES:

1. FOR A4A AND A6A CONSTRUCTION INCREASE THIS SPACING BY 12".
2. USE MACRO MCUTOUTONLY TO PLACE CUTOUTS.
3. FOR TYPICAL PULLS THE BURIED CONDUIT AND SWEEP SHALL BE SCH 40 PVC. IF THE PULL IS TO BE TOWARD THE POLE AND HIGH TENSION THEN THE LAST SECTION OF STRAIGHT CONDUIT AND THE SWEEP SHALL BE HDG STEEL. SEE STD 2115 FOR DETAILS.
4. MINIMUM JOINT POLE SHALL BE 50 FT W/5 FT EH.

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 02/13	STANDARD NUMBER 2113	Page 4

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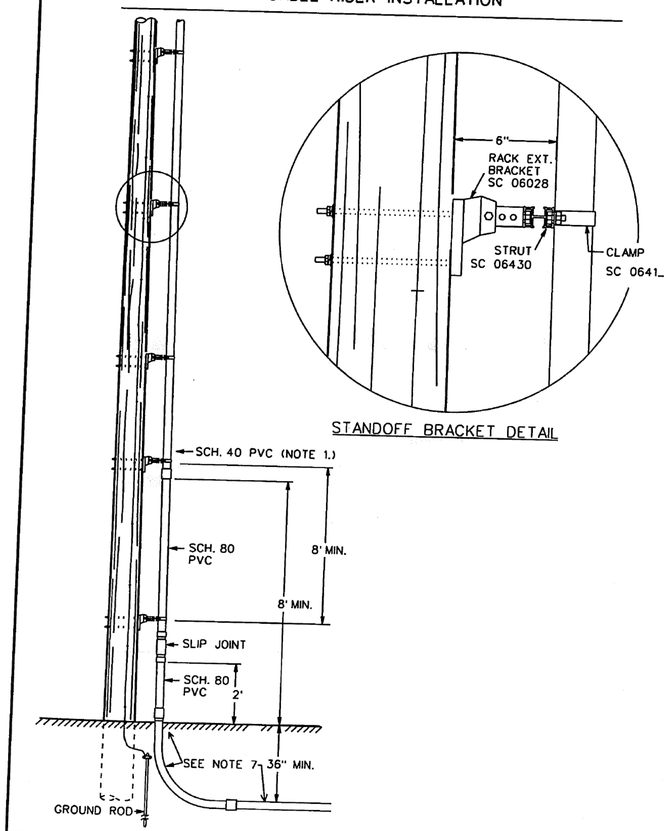
CABLE RISER INSTALLATION



GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 02/13	STANDARD NUMBER 2115	Page 1

NOTE:

VAULTS SHALL HAVE 6" DIAMETER HOLES FOR CONDUITS.

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046util_det2.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: GMP	CHECKED BY: A.P. GUYETTE
UTILITY STANDARD DETAILS (SHEET 1 OF 8)	SHEET 86 OF 135

CABLE RISER - INSTALLATION

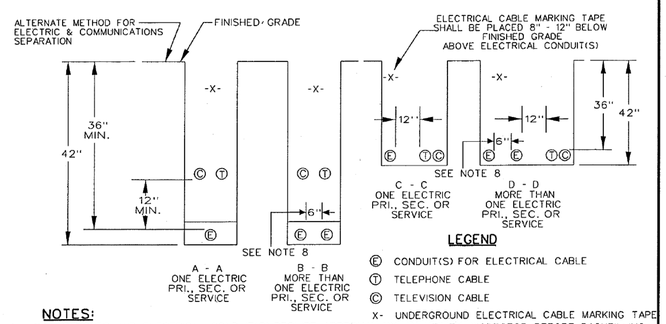
Notes:

1. Minimum 2.5" NEMA Schedule 80 PVC shall be used up to 8 feet above grade. NEMA Schedule 40 PVC to used above 8 feet. 2" NEMA Schedule 80 conduit, for the full height of the riser, may be used for #2 and 1/0 aluminum 100 amp underground services.
2. Attach conduit on the side of the pole away from traffic when possible. If the riser is likely to be damaged, the Designer shall arrange for additional protection such as curbs, bollards or a different location. If those methods are not practical, the Designer shall specify that the riser be constructed with a steel sweep, steel conduit and a steel slip joint. A transition to Schedule 40 PVC may be made 10 feet above grade. The top of the steel conduit shall be supported by a standoff bracket.
3. Install second standoff bracket 8 feet above the lowest standoff bracket. An alternative, acceptable to NESC Rule 217A2c, is to place the lowest standoff bracket a minimum of 8 feet above grade. Space remaining standoff brackets approximately 5 feet apart.
4. Install slip joint approximately two-thirds open.
5. Top riser with service cables up to 350 mcm with a weathercap. Top riser conduit with service cables larger than 350 mcm, or multiple runs, with a Condulator®. An alternative is to cap the riser with spray foam (SC 14088; cleaner SC 14089).
6. Poles shorter than 40 feet and older than 30 years shall be replaced prior to installing riser.
7. For high tension pulls towards the riser the last section of horizontal conduit and the sweep shall be HDG steel. Steel sweeps shall be bonded with a customer supplied clamp. An acceptable clamp is available in SC 0605_.
8. As required, the Designer shall specify riser drainage where the conduit drains downhill to the riser. In those cases approximately 6 – ½" holes shall be drilled at the bottom of the closest section of PVC conduit. The conduit shall be wrapped with geotextile fabric and backfilled with ¾" crushed stone. In extreme circumstances place a Tee in the conduit a run a drainage conduit to an outflow. See Std 2110pg2.
9. Riley standoff brackets are available in SC 06001-060037. Specify block, strap or both. A second riser may be attached to the first by using two Riley straps back-to-back.
10. Refer to Std. 2105 for minimum bend radius of the riser sweep. The PVC sweep shall be listed for above ground use.

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 02/13 2115pg2.doc	STANDARD NUMBER 2115 Page 2

2125pg1.dgn

TYPICAL TRENCH CROSS-SECTION U.G. CABLE IN CONDUIT



LEGEND

- Ⓔ CONDUIT(S) FOR ELECTRICAL CABLE
- Ⓣ TELEPHONE CABLE
- Ⓒ TELEVISION CABLE
- X- UNDERGROUND ELECTRICAL CABLE MARKING TAPE

NOTES:

1. ALL TRENCHES AND ELECTRICAL CONDUIT(S) REQUIRE APPROVAL BY AN UTILITY INSPECTOR BEFORE BACKFILLING.
2. ALL TRENCHES SHALL BE A MINIMUM OF 18 INCHES WIDE. THE CONDUIT SHALL BE EMBEDDED IN NATIVE SOIL, THAT WILL PASS A 4 INCH MESH. THIS MATERIAL SHALL BE A MINIMUM OF 4 INCHES THICK ON ALL SIDES OF THE CONDUIT. THE REMAINDER OF THE BACKFILL SHALL BE CLEAN, AND, SHALL NOT CONTAIN ROCKS LARGER THAN 8 INCHES IN ANY DIMENSION. CAREFULLY COMPACT THE FULL DEPTH OF BACKFILL, UNDER TRAVELLED WAYS AND PARKING LOTS. THE MINIMUM DEPTH, UNDER A HIGHWAY, SHALL BE 48 INCHES RATHER THAN 36 INCHES. MOUNDING THE TRENCH, TO PROVIDE THE REQUIRED DEPTH, IS NOT ALLOWED.
3. UNDER THE FOLLOWING CONDITIONS, PVC CONDUIT SHALL BE ENCASED IN A MINIMUM 4 INCH ENVELOPE OF CONCRETE. IF NECESSARY FOR LOGISTICAL REASONS, RIGID STEEL CONDUIT MAY BE SUBSTITUTED FOR CONCRETE ENCASEMENT.
   - A. BROOK CROSSINGS
   - B. CROSSINGS OF WATER, SEWER, AND GAS PIPES. CROSSINGS SHALL BE DONE AT NINETY DEGREES IF POSSIBLE. NORMALLY, THE ELECTRICAL CONDUIT SHALL BE A MINIMUM OF 18 INCHES ABOVE THE PIPE. CAREFULLY COMPACT THE FILL BELOW THE ELECTRICAL CONDUIT. CONCRETE ENCASEMENT IS REQUIRED FOR 10 FEET ON EACH SIDE OF THE PIPE.
   - C. UNDER THE TRAVELLED WAY OF CITY STREETS. AND, UNDER TOWN HIGHWAYS, IF REQUIRED BY THE TOWN. A PIPE SLEEVE, SURROUNDING THE PVC CONDUIT, MAY BE SUBSTITUTED.
   - D. CONDUIT WITHIN 20 FEET OF TANKS CONTAINING FUELS OR SOLVENTS. THESE TANKS MAY BE ABOVE OR BELOW GRADE.
4. TRENCHES SHOULD BE LOCATED 10 FEET FROM ANY STRUCTURE, UNLESS THE CONDUIT IS GOING TO THE STRUCTURE. CONTACT ENGINEERING IF CLOSER APPROACHES ARE NECESSARY.
5. TRENCHES SHOULD BE LOCATED 10 FEET FROM ANY WATER, SEWER, OR GAS PIPE THAT PARALLELS THE CONDUIT. CONTACT ENGINEERING IF CLOSER APPROACHES ARE NECESSARY.
6. COMMUNICATIONS CABLES AND CONDUITS MAY BE LOCATED IN THE SAME TRENCH WITH ELECTRIC CABLES OR CONDUITS. A MINIMUM HORIZONTAL OR VERTICAL SEPARATION OF 12 INCHES IS REQUIRED. ELECTRICAL CONDUITS SHALL BE SEPARATED BY 4 INCHES. THESE DISTANCES ARE MEASURED SURFACE-TO-SURFACE NOT CENTER-TO-CENTER.
7. DEPTHS SHALLOWER THAN 36 INCHES MAY BE ALLOWED WHERE OBSTRUCTIONS SUCH AS LEDGE ARE ENCOUNTERED. ANY PORTION OF THE CONDUIT SHALLOWER THAN 24 INCHES SHALL BE COVERED WITH A MINIMUM 2 INCH CONCRETE CAP. THE CONCRETE SHALL EXTEND DOWN TO THE LEDGE (OBSTRUCTION). IF THE CONDUIT MUST BE WITHIN 12 INCHES OF THE SURFACE IT SHALL BE ENCASED IN A 4 INCH ENVELOPE OF CONCRETE. THE CONCRETE SHALL NOT BE MOUNDED IN SUCH A WAY AS TO BE A TRIPPING HAZARD. RIGID STEEL SHALL NOT BE USED AS A SUBSTITUTE FOR BURIAL DEPTHS SHALLOWER THAN 24 INCHES. EXCEPTION: WHILE CONCRETE ENCASEMENT IS RECOMMENDED FOR CUSTOMER OWNED SHALLOW BURIED CONDUITS, RIGID METAL CONDUIT MAY BE SUBSTITUTED PER NEC TABLE 300-5 (TABLE 300-50 FOR PRIMARY).
8. OPPOSITE SIDE CONDUITS FOR A LOOP FEED PRIMARY URD MUST HAVE ADEQUATE SEPARATION TO PROVIDE THE DESIRED INCREASE IN RELIABILITY. IF THE TWO CONDUITS ARE TO PARALLEL EACH OTHER, THEY SHALL BE SEPARATED BY A MINIMUM OF 2 FT HORIZONTALLY. THE 6 INCH SEPARATION, SHOWN IN SECTION B-B AND D-D WOULD BE INCREASED TO 24 INCHES. THE DEVELOPER SHOULD BE ADVISED OF THE POSSIBILITY OF INSTALLING CONDUIT PER SECTION B-B. ALTERNATIVELY, THEY SHALL BE ENCASED IN CONCRETE WITH THE CONDUITS SEPARATED BY A MINIMUM OF 3 INCHES; AND, THE CONDUITS SHALL BE A MINIMUM OF 4 INCHES FROM THE SURFACE OF THE CONCRETE.

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2125 Page 1

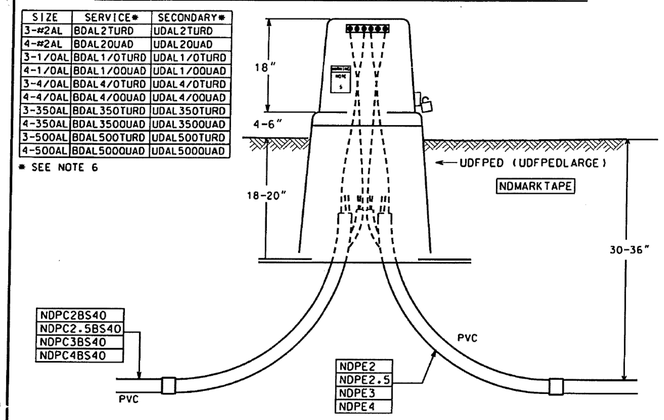
2129pg1.dgn

MSECPEDESTAL

SECONDARY PEDESTAL

SIZE	SERVICE*	SECONDARY*
3-#2AL	BDAL2TURD	UDAL2TURD
4-#2AL	BDAL2OUAD	UDAL2OUAD
3-1/0AL	BDAL1/0TURD	UDAL1/0TURD
4-1/0AL	BDAL1/0OUAD	UDAL1/0OUAD
3-4/0AL	BDAL4/0TURD	UDAL4/0TURD
4-4/0AL	BDAL4/0OUAD	UDAL4/0OUAD
3-350AL	BDAL350TURD	UDAL350TURD
4-350AL	BDAL350OUAD	UDAL350OUAD
3-500AL	BDAL500TURD	UDAL500TURD
4-500AL	BDAL500OUAD	UDAL500OUAD

* SEE NOTE 6



NOTES:

1. CONSULT ENGINEERING FOR SUPPLY CABLE LENGTH GREATER THAN 50FT FOR 350MCM AL (70FT FOR 500MCM AL). BASED ON 1% DROP AND 300 AMP LOADING.
2. IF SERVICES AND SUPPLY CABLES EXCEED THREE RUNS USE THE LARGE PEDESTAL CU - UDFPEDLARGE. DEPTH/HEIGHT DIMENSIONS VARY FROM THOSE SHOWN.
3. IF SERVICES AND SUPPLY CABLES EXCEED SIX RUNS USE A SINGLE PHASE TERMINATING CABINET (UDCUT1PH) ON A GROUND SLEEVE (UDCUT1PHF). USE MOLE CONNECTORS.
4. ADD CONDUIT AND CABLE COMPATIBLE UNITS AS NECESSARY. HIGHER TENSION PULLS, OF GMP OWNED CONDUIT/CABLE, REQUIRE STEEL SWEEPS. IF STEEL SWEEPS ARE USED INSTALL A GROUND ROD, AND BOND CONDUIT BUSHINGS AND NEUTRAL BUS.
5. SPACE SUPPLY CONDUCTOR CONNECTIONS TO SPLIT LOAD AMPS ALONG THE BUS BAR.
6. THE COMPATIBLE UNITS SHOWN ARE GMP OWNED. FOR CUSTOMER OWNED SERVICES USE CU'S BDCUSTTURD AND BDCUSTOURD.
7. BACKFILL AND TAMP INSIDE THE FOUNDATION TO PREVENT DEFLECTION.
8. PEDESTAL INSTALLATIONS ARE RECOMMENDED IF THE NUMBER OF SERVICE RISERS EXCEED, OR ARE EXPECTED TO EXCEED, TWO. LOCATE THE PEDESTAL 10-15 FEET FROM POLE, ON PRIVATE PROPERTY.
9. CHOOSE A HANDHOLE, RATHER THAN PEDESTAL, FOR SIDEWALK OR PARKING LOT LOCATIONS; OR, WHERE NECESSARY TO SECURE EASEMENTS.

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2129 Page 1

vhb

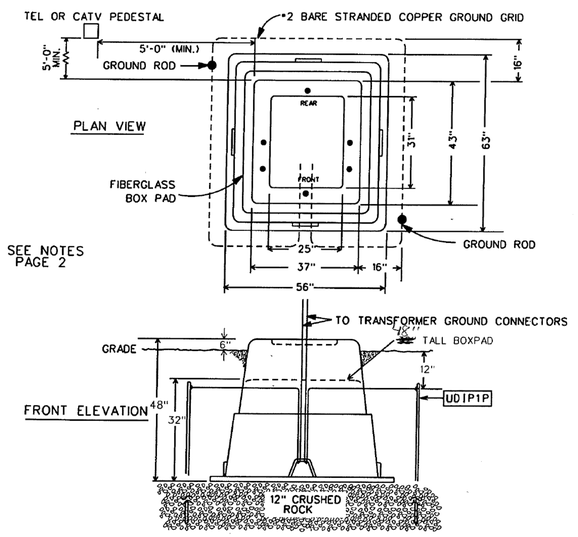
PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

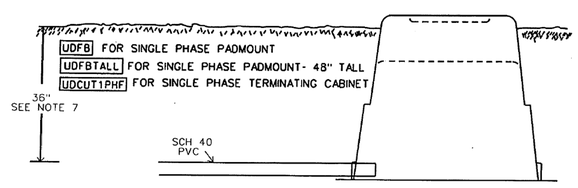
FILE NAME: z16b046util_det2.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: GMP
UTILITY STANDARD DETAILS (SHEET 2 OF 8)

PLOT DATE: 2/27/2018
DRAWN BY: M.F. SUFFEL
CHECKED BY: A.P. GUYETTE
SHEET 87 OF 135

2132pg1. dgn

FOUNDATION
SINGLE PHASE BOX PAD





UDCUT1PHFTLL FOR SINGLE PHASE TERMINATING CABINET-48" TALL
UDCUT3PHF FOR THREE PHASE TERMINATING CABINET

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2132 Page 1

FOUNDATION FIBERGLASS BOXPAD

Notes:

1. Pad shall be protected from vehicular damage by location or suitable barrier. When a barrier is necessary, it shall consist of minimum 4" diameter steel conduits, concrete filled, installed 3' above and below grade. Barriers to be customer installed the quantity and location to be specified by GMP. Alternatively, place a curb, of sufficient height and of suitable location, that doesn't create a pool.

2. Set fiberglass pad to provide adequate drainage away from the pad. If necessary to locate in a low spot, set on a mound a minimum of 18" high with a 1 on 4 slope. Locate the pad so that it is accessible by truck. Direction and location of the wide side of the foundation and the location of conduits in the foundation to be specified by GMP personnel.

3. The transformer, or terminating cabinet, must be secured, to the boxpad, with bolts.

4. Metallic communication pedestals within 6 ft of GMP's metallic cabinets shall be bonded.

5. Leave extra primary or secondary cable in the cable space.

6. Place 12" of crushed rock below boxpad. Level and tamp.

7. Pad dimensions may vary with manufacturer. This Standard applies to single phase padmounts, and, single and three phase terminating cabinet foundations.

8. Boxpads shall be set with the top 6" above final grade.

9. A 500# rated pull string shall be installed in the completed conduit run.

10. Exposed steel conduit shall be bonded to ground grid. Steel conduit is not required.

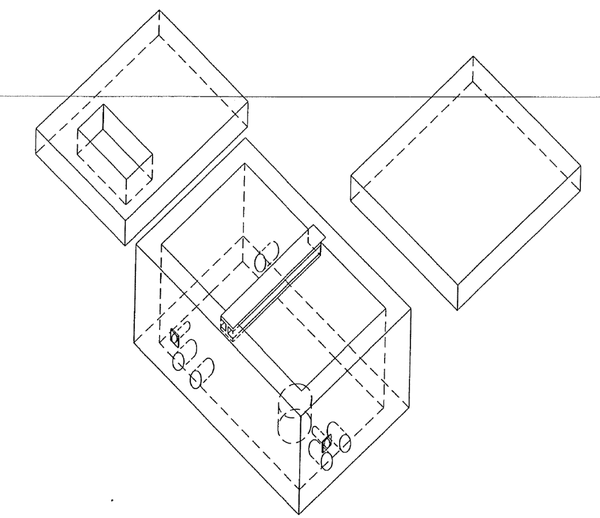
16. The conduit entering the boxpad shall extend 4-6" into the foundation.

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12 2132pg2.doc	STANDARD NUMBER 2132 Page 2

2134pg1.dgn

CONCRETE STRUCTURES FOR PAD EQUIPMENT GENERAL REQUIREMENTS

CONCRETE BASE AND PADS FOR 3-PHASE TRANSFORMERS AND EQUIPMENT



ISOMETRIC VIEW

THIS DESIGN IS INTENDED TO PROVIDE ACCESS TO PRIMARY AND SECONDARY CONDUCTORS FOR INSPECTION AND REPLACEMENT WITHOUT REMOVAL OF THE TRANSFORMER OR EQUIPMENT.

K-30 SERIES STRUCTURES SHALL BE USED FOR ALL NEW INSTALLATIONS.

EXISTING K-15 STRUCTURES SHOULD NORMALLY BE LEFT IN SERVICE FOR THE REMAINDER OF THEIR USEFUL LIVES.

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2134 Page 1

NOTE:

VAULTS SHALL HAVE 6" DIAMETER HOLES FOR CONDUITS.

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046util_det2.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: GMP	CHECKED BY: A.P. GUYETTE
UTILITY STANDARD DETAILS (SHEET 3 OF 8)	SHEET 88 OF 135

2134pg2.dgn

CONCRETE STRUCTURES FOR PAD EQUIPMENT GENERAL REQUIREMENTS

GENERAL:

THESE GENERAL REQUIREMENTS APPLY TO THE FOLLOWING SPECIFIC APPLICATIONS:

K-30.1 SECONDARY TERMINATION CABINET. *

K-30.2 PRIMARY MODULAR TERMINATING CABINET THROUGH 35KV.

K-30.3 PAD TRANSFORMER THROUGH 500KVA (208V) AND 1,000KVA (480V), 15 & 35KV.

K-30.4 PAD TRANSFORMERS 750 & 1,000KVA (208V) AND 1,500 THROUGH 2,500KVA (480V), 15 & 35KV. *

K-30.5 PAD SWITCHGEAR, 4-WAY LOW PROFILE, 15KV. *

* CONTACT ENGINEERING FOR THESE DESIGNS.

I DESIGN LOADS

- THE CONCRETE BOX AND STEEL BEAMS SHALL BE DESIGNED TO SUPPORT STATIC LOADS OF COVER PANELS "A" AND "B" AND DESIGN LOADS SPECIFIED FOR THE EQUIPMENT APPLICATION. THE SIDE WALLS OF THE BOX SHALL WITHSTAND FIELD CONDITIONS OF BACKFILL CONSISTING OF NATIVE FILL AROUND ALL SIDEWALLS AND 12 INCHES OF CRUSHED STONE BENEATH THE STRUCTURE AND WITH THE WATER TABLE AT THE TOP OF THE WALLS.
- COVER PANELS SHALL BE ABLE TO SUPPORT THE LOADS SPECIFIED FOR THE APPLICATION WITH SUITABLE IMPACT FACTORS.
- SET DEPTH OF THE BOX WILL BE WITH APPROXIMATELY 4 INCHES OF WALL ABOVE FINAL GRADE AND WITH NO EARTH COVERING THE SLABS.
- BOUYANCY OF THE STRUCTURE SHALL BE NEGATIVE OR NEUTRAL WITH NO LOAD CONDITIONS ON THE COVER PANELS.

II APPROVED SUPPLIERS

CONCRETE STRUCTURES SHALL BE SUPPLIED FROM CONCRETE PRODUCT MANUFACTURERS AND HARDWARE MANUFACTURERS PRE-APPROVED BY GREEN MOUNTAIN POWER CORPORATION.

PRE-APPROVAL REQUIRES THE FOLLOWING:

SUBMITTAL OF DETAILED SHOP DRAWINGS FOR THE COMPLETE STRUCTURE DESIGN PER THIS SPECIFICATION. THE SHOP DRAWINGS SHALL BE STAMPED AND CERTIFIED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF VERMONT.

THE STRUCTURE SHALL BE IDENTIFIED BY THE CONCRETE MANUFACTURER USING THE K-30."X" UTILITY DESIGNATOR (WHERE THE "X" IS REPLACED BY SPECIFIC 1,2 or 3... IN THE K-30 DESIGN SERIES) AND BY A CONCRETE MANUFACTURER'S UNIQUE CATALOG NUMBER FOR THE COMPLETE STRUCTURE. THIS CATALOG NUMBER SHALL BE PAINTED ON THE END WALL 6 INCHES DOWN ON THE PANEL "A" END IN BLACK COLORED PAINT FORMULATED FOR USE ON CONCRETE.

EACH COMPLETE STRUCTURE, INCLUDING CONCRETE BOX AND COVER PANELS, STEEL BEAM AND ALL REQUIRED PULLING EYES OR IRONS, SHALL BE SUPPLIED BY A SINGLE CONCRETE PRODUCT MANUFACTURER. NO PARTIAL PRODUCTS OR SUBSTITUTIONS WILL BE PERMITTED.

III PRODUCT DOCUMENTATION

PROOF OF PURCHASE FROM AN APPROVED MANUFACTURER SHALL BE PROVIDED ON ORIGINAL LETTERHEAD DOCUMENT OF THE MANUFACTURER AND SHALL INCLUDE THE FOLLOWING INFORMATION:

1. NAME OF PURCHASER (COMPANY).
2. DATE OF PURCHASE.
3. CONCRETE MANUFACTURER CATALOG NUMBER(S) OF STRUCTURES PURCHASED.
4. QUANTITY OF EACH STRUCTURE PURCHASED.
5. NAME AND LOCATION OF PROJECT BY STREET ADDRESS AND TOWN.
6. PRINTED NAME AND SIGNATURE OF AUTHORIZED SALES AGENT FOR CONCRETE PRODUCT MANUFACTURER.

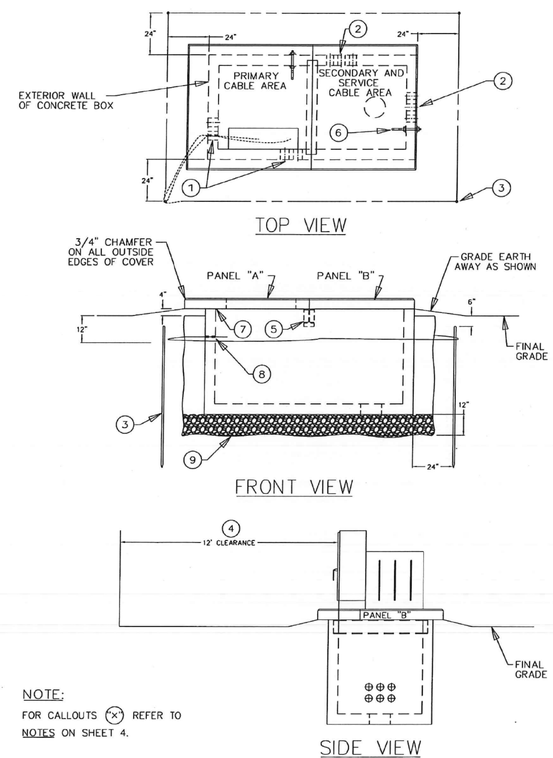
THIS PROOF OF PURCHASE SHALL BE DELIVERED TO THE GREEN MOUNTAIN POWER CORPORATION PROJECT INSPECTOR OR FIELD SERVICE SUPERVISOR.

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2134 Page 2

2134pg3.dgn

CONCRETE STRUCTURES FOR PAD EQUIPMENT GENERAL REQUIREMENTS

INSTALLATION AND GROUNDING DETAILS



NOTE:

FOR CALLOUTS (x) REFER TO NOTES ON SHEET 4.

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2134 Page 3

2134pg4.dgn

CONCRETE STRUCTURES FOR PAD EQUIPMENT GENERAL REQUIREMENTS

NOTES:

1. PRIMARY CONDUIT TERMINATORS, (IN LEFT, FRONT AND REAR WALLS ONLY, FOR TRANSFORMER DESIGNS).
2. SECONDARY CONDUIT TERMINATORS, (IN FRONT, REAR AND RIGHT WALLS ONLY, FOR TRANSFORMER DESIGNS).
3. GROUND RODS, 5/8" x 8' COPPER CLAD; GROUND WIRE, 1/0 BARE COPPER.
4. ACCESS DOORS MUST FACE CLEAR SPACE TO 12' AWAY. CLEAR SPACE SHOULD BE IN GMP R.O.W. OR PUBLIC STREET R.O.W.
5. WIDE FLANGE (WF) STEEL BEAM, HOT DIPPED GALVANIZED OR 2 COATS OF EPOXY PAINT OVER RUST INHIBITING PRIMER. BEAM TO BE INSTALLED FLUSH WITH TOP SURFACE OF BASE UNIT WITH PANELS 1 & 2 IN PLACE AND FIXED IN PLACE BY NON-SHRINK GROUT LAYED AT LEAST 2" IN DEPTH.
6. PULLING EYES INSTALLED IN WALLS OPPOSITE PRIMARY CONDUITS AS SHOWN. APPROVED MATERIAL FOR PULLING EYE IS MFGR: CROSBY GROUP DESC: SHOULDER NUT EYE BOLT TYPE G-277. SIZE: 1 1/4" DIA., 15,200LB WORKING LOAD. USE 3" SQUARE x 1/4" HOT DIPPED GALVANIZED WASHER UNDER NUT.
   ALTERNATE MATERIAL IS: HOT DIPPED GALVANIZED 7/8" DIA. x 9" STEEL LOOP SET INTO CONCRETE WALL OF STRUCTURE. MFGR: CONDUX INT'L INC. CAT.# 838.30-00.
7. 2 LAYERS OF 15lb. BLACK ASPHALT ROOFING FELT BETWEEN ALL CONCRETE TO CONCRETE AND CONCRETE TO STEEL CONTACT SURFACES OF PANELS.
8. 1" DIA. PVC TUBE THROUGH WALL FOR GROUND WIRE. LOCATE THE TUBE 16" DOWN ON THE END WALL WHICH IS OPPOSITE THE SUMP HOLE END OF BOX.
9. EXCAVATION FOR THE BOX SHALL BE 12 INCHES DEEPER THAN SET DEPTH. THE BACKFILL BENEATH THE BOX SHALL BE CRUSHED STONE. NATIVE SOIL OR SAND BACKFILL AROUND THE WALLS IS ACCEPTABLE.

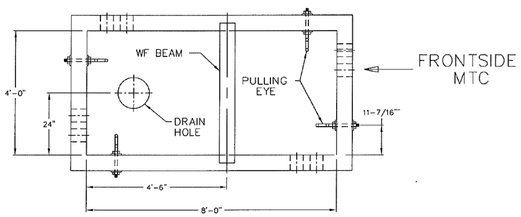
GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2134 Page 4

vhb

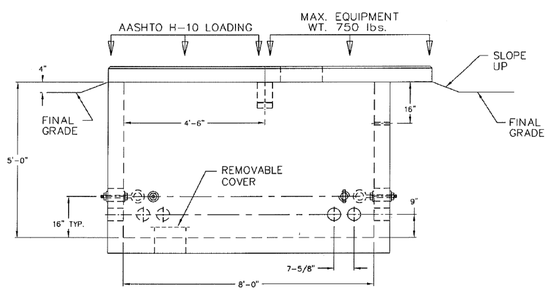
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046util_det2.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: GMP	CHECKED BY: A.P. GUYETTE
UTILITY STANDARD DETAILS (SHEET 4 OF 8)	SHEET 89 OF 135

2138pg1.dgn

K30.2/ 3-PHASE MTC (MODULAR TERMINATING CABINET) 35KV & BELOW



TOP VIEW
(BOX ONLY)



SIDE VIEW
(BOX & COVERS)

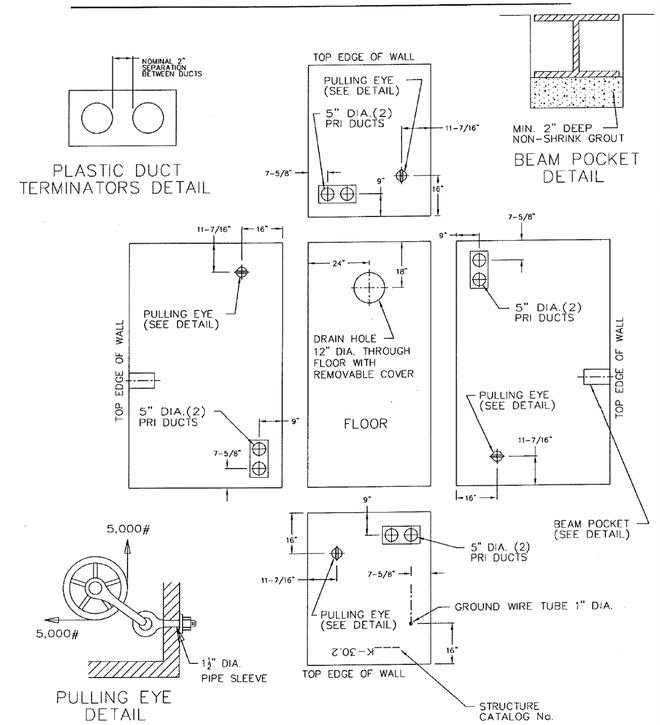
NOTE: Refer to Std. No. K30.0, GENERAL REQUIREMENTS, For design certification, documentation and conditions for APPROVAL.

SCALE: 1" = 3'

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2138 Page 1

2138pg2.dgn

K30.2/ 3-PHASE MTC (MODULAR TERMINATING CABINET) 35KV & BELOW



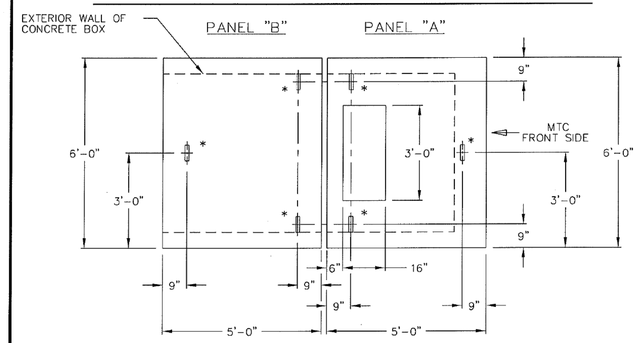
WALL PENETRATIONS
&
ACCESSORY LOCATIONS

SCALE: 1" = 3'

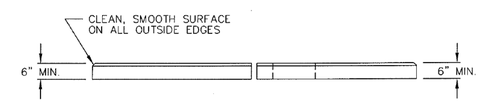
GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2138 Page 2

2138pg3.dgn

K30.2/ 3-PHASE MTC (MODULAR TERMINATING CABINET) 35KV & BELOW



COVER PANELS, TOP VIEW



COVER PANELS, SIDE VIEW

* RECESSED LIFTING EYES, #6 REBAR IN APPROX. 2.5" x 6" SLOT (TOTAL 6 EYES)

NOTES:

1. PANEL "A" DESIGN LOAD 750 lbs.
2. PANEL "B" DESIGN LOAD AASHTO H-10.

SCALE: 1" = 3'

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2138 Page 3

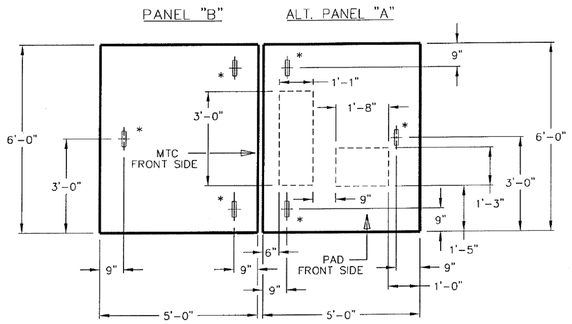
NOTE:

VAULTS SHALL HAVE 6" DIAMETER HOLES FOR CONDUITS.

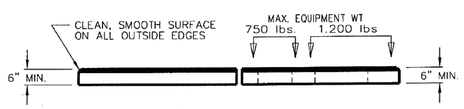
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046util_det2.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: GMP	CHECKED BY: A.P. GUYETTE
UTILITY STANDARD DETAILS (SHEET 5 OF 8)	SHEET 90 OF 135

2138pg4.dgn

K30.2/ 3-PHASE MTC (MODULAR TERMINATING CABINET) 35KV & BELOW



COVER PANELS, TOP VIEW



COVER PANELS, SIDE VIEW

* RECESSED LIFTING EYES, #6 REBAR IN APPROX. 2.5" x 6" SLOT (TOTAL 6 EYES)

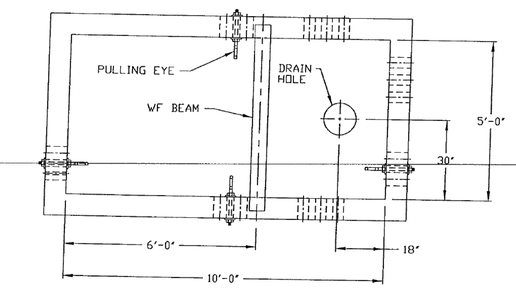
NOTES:

1. ALT. PANEL "A" DESIGN LOAD 1,950lb; 750lb LT AND 1,200lb RT AS SHOWN ABOVE.
2. PANEL "B" DESIGN LOAD AASHTO H-10.

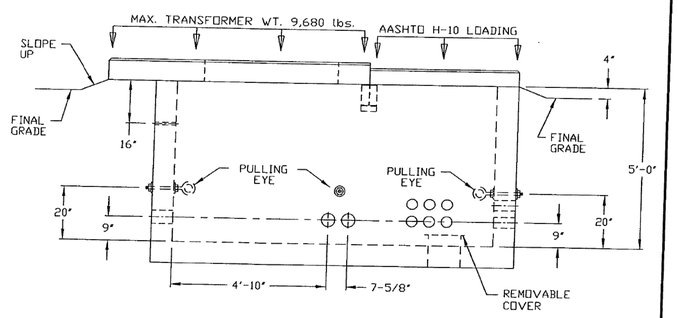
GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/12	STANDARD NUMBER 2138 Page 4

2140pg1A.dgn

K30.3/ 3-PHASE PAD TRANSFORMER 35KV & BELOW THROUGH 500 KVA



TOP VIEW (BOX ONLY)



FRONT VIEW (BOX & COVERS)

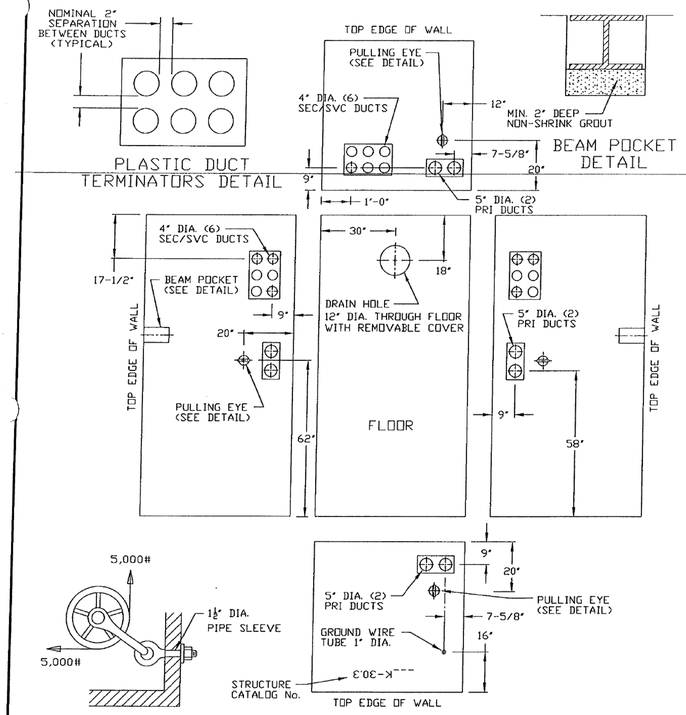
NOTE: Refer to Std. No. K30.0, GENERAL REQUIREMENTS, for design certification, documentation and conditions for APPROVAL.

SCALE: 1" = 3'

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/14	STANDARD NUMBER 2140 Page 1

2140pg2A.dgn

K30.3/ 3-PHASE PAD TRANSFORMER 35KV & BELOW THROUGH 500 KVA



PULLING EYE DETAIL

WALL PENETRATIONS & ACCESSORY LOCATIONS

SCALE 1" = 3'

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/14	STANDARD NUMBER 2140 Page 2

NOTE:

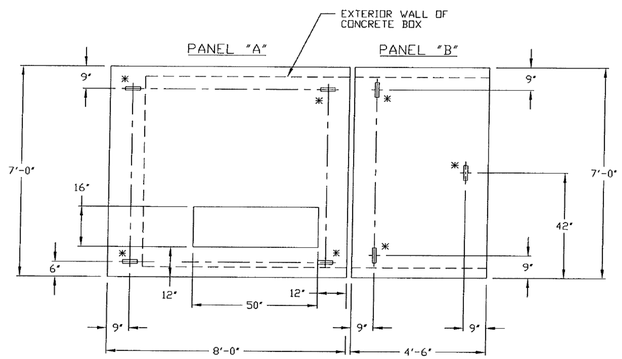
VAULTS SHALL HAVE 6" DIAMETER HOLES FOR CONDUITS.

vhb

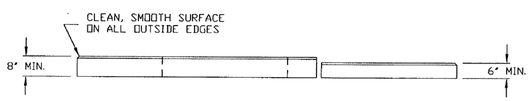
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046util_det2.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: GMP	CHECKED BY: A.P. GUYETTE
UTILITY STANDARD DETAILS (SHEET 6 OF 8)	SHEET 91 OF 135

2140pg3A.dgn

K30.3/ 3-PHASE PAD TRANSFORMER 35KV & BELOW THROUGH 500 KVA



COVER PANELS, TOP VIEW



COVER PANELS, FRONT VIEW

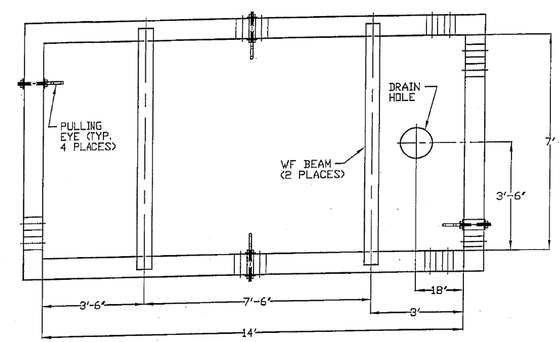
* RECESSED LIFTING EYES, #6 REBAR IN APPROX. 2.5" x 6" SLOT (TOTAL 7 EYES)

NOTES:

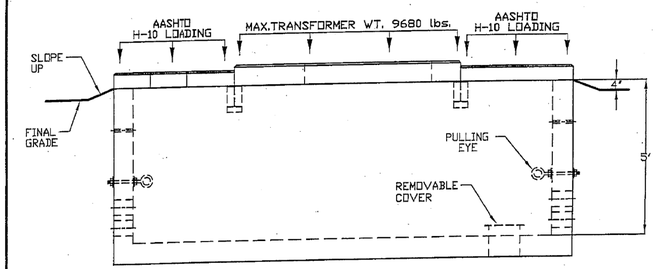
1. PANEL "A" DESIGN LOAD 9,680 lbs.
2. PANEL "B" DESIGN LOAD AASHTO H-10.

SCALE: 1" = 3'

GREEN MOUNTAIN POWER	DISTRIBUTION STANDARD	App'd: RJS DATE: 12/14	STANDARD NUMBER 2140 Page 3



TOP VIEW
(BOX ONLY)

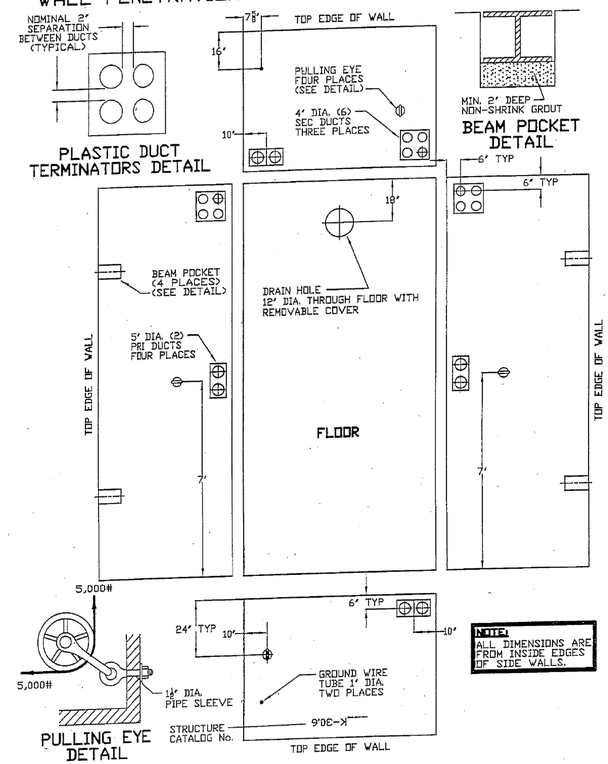


FRONT VIEW
(BOX & COVERS)

NOTE: Refer to Std. No. K30.0, GENERAL REQUIREMENTS, for design certification, documentation and conditions for APPROVAL.

	Latest Revision	Completely Revised	X	New Page	Information Removed
App'd: PK Date: 9-24-07 Issued:	Green Mountain Power Corporation	CONSTRUCTION STANDARD			drawing/standard/distribution (4536)
	K-30.6 / 3-PHASE PAD / LONG MTC (7' x 14') *MAXIMUM TRANSFORMER SIZE 500KVA				4536 Page 1

WALL PENETRATIONS & ACCESSORY LOCATIONS



NOTE:
ALL DIMENSIONS ARE FROM INSIDE EDGES OF SIDE WALLS.

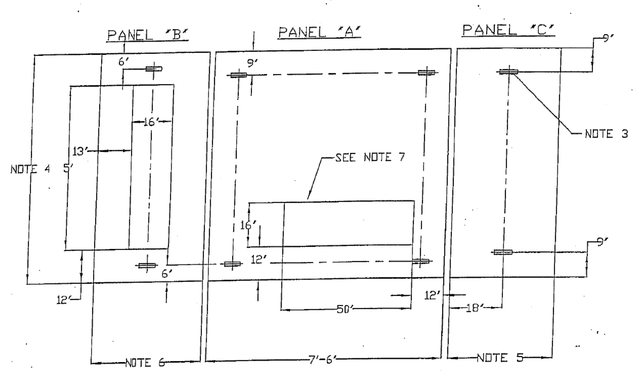
	Latest Revision	Completely Revised	X	New Page	Information Removed
App'd: PK Date: 9-24-07 Issued:	Green Mountain Power Corporation	CONSTRUCTION STANDARD			drawing/standard/distribution (4536)
	K-30.6 / 3-PHASE PAD / LONG MTC (7' x 14') *MAXIMUM TRANSFORMER SIZE 500KVA				4536 Page 2

NOTE:

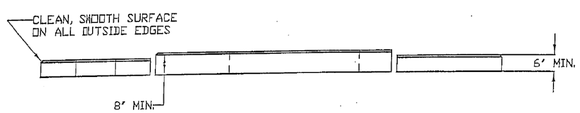
VAULTS SHALL HAVE 6" DIAMETER HOLES FOR CONDUITS.

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046util_det2.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: GMP	CHECKED BY: A.P. GUYETTE
UTILITY STANDARD DETAILS (SHEET 7 OF 8)	SHEET 92 OF 135



COVER PANELS, TOP VIEW



COVER PANELS, FRONT VIEW

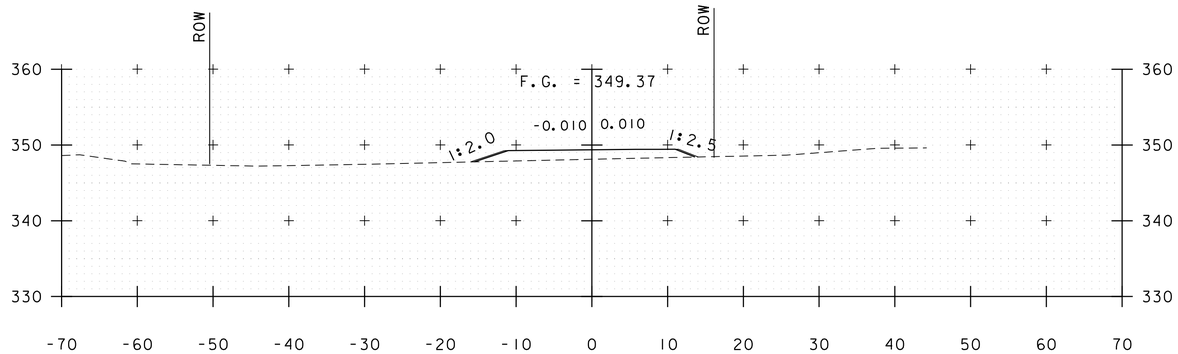
NOTES:

1. PANEL 'A' DESIGN LOAD 9,680 lbs.
2. PANEL 'B' DESIGN LOAD AASHTO H-10.
3. RECESSED LIFTING EYES, #6 REBAR IN APPROX. 2.5"x6" SLOT (TYP. 8 PLACES).
4. DIMENSION TO BE 7' PLUS 2 TIMES WALL THICKNESS.
5. DIMENSION TO BE 3' PLUS WALL THICKNESS.
6. DIMENSION TO BE 3' 6" PLUS WALL THICKNESS.
7. CONTRACTOR TO SPECIFY POSITION OF OPENING IN PANEL A, OPENING SHOULD BE ON ROAD SIDE OF VAULT UNLESS OTHERWISE SPECIFIED.

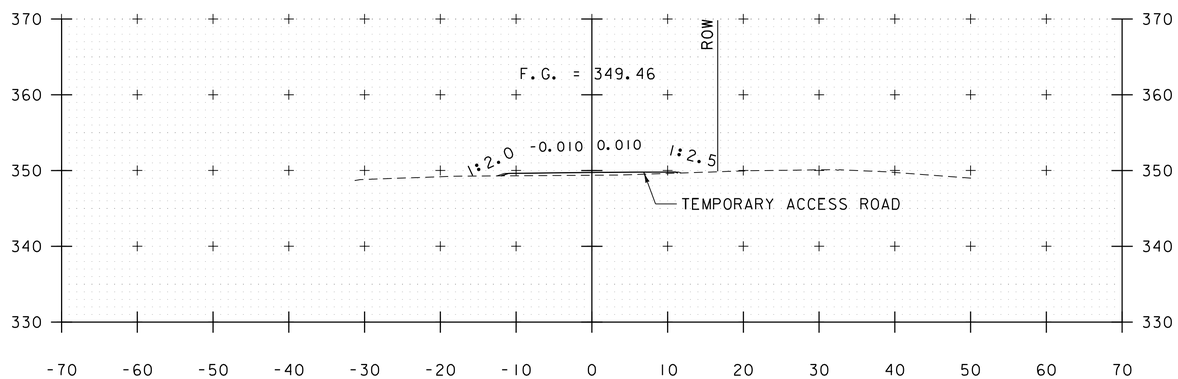
	Latest Revision	Completely Revised	X	New Page	Information Removed
App'd: PK	Green Mountain Power Corporation	CONSTRUCTION STANDARD			drawing/gmpstandards/detail/detail.dgn (4536)
Date: 9-24-07	K-30.6 / 3-PHASE PAD / LONG MTC (7' x 14') *MAXIMUM TRANSFORMER SIZE 500KVA				4536 Page 3
Issued:					

PROJECT NAME:	MIDDLEBURY
PROJECT NUMBER:	EWP3(2)

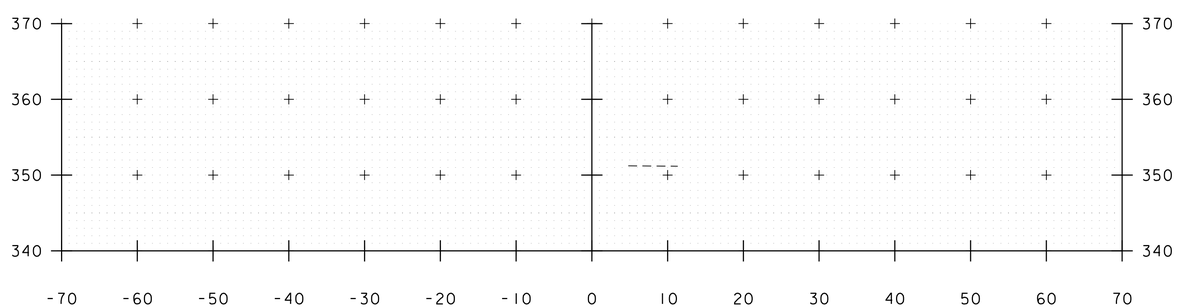
FILE NAME: z16b046util_det2.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: M.F. SUFFEL
DESIGNED BY: GMP	CHECKED BY: A.P. GUYETTE
UTILITY STANDARD DETAILS (SHEET 8 OF 8)	SHEET 93 OF 135



401+00

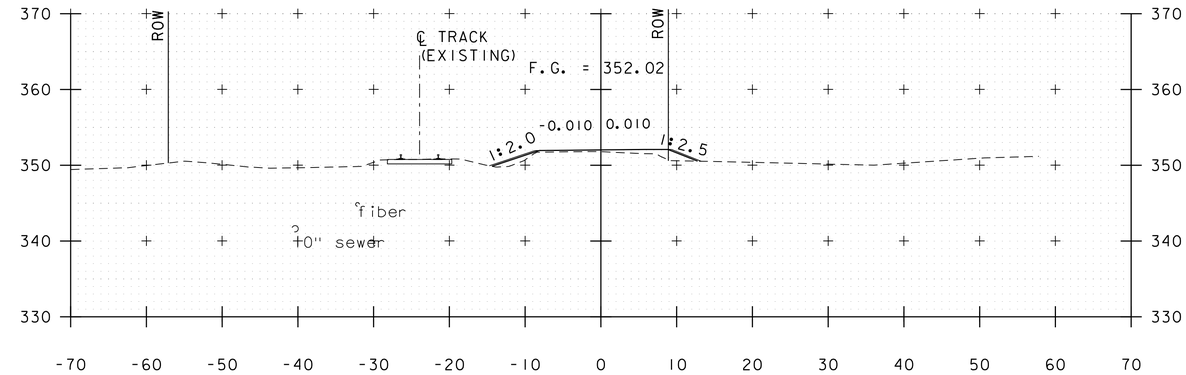


400+50

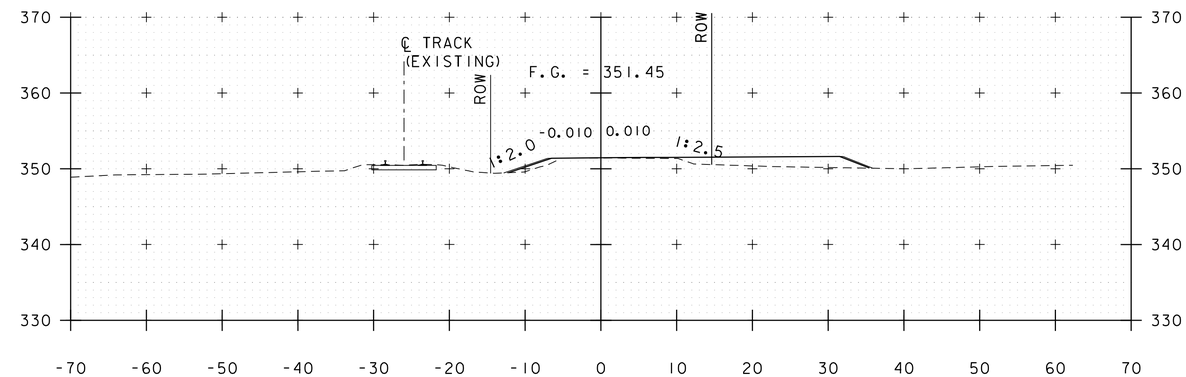


400+00

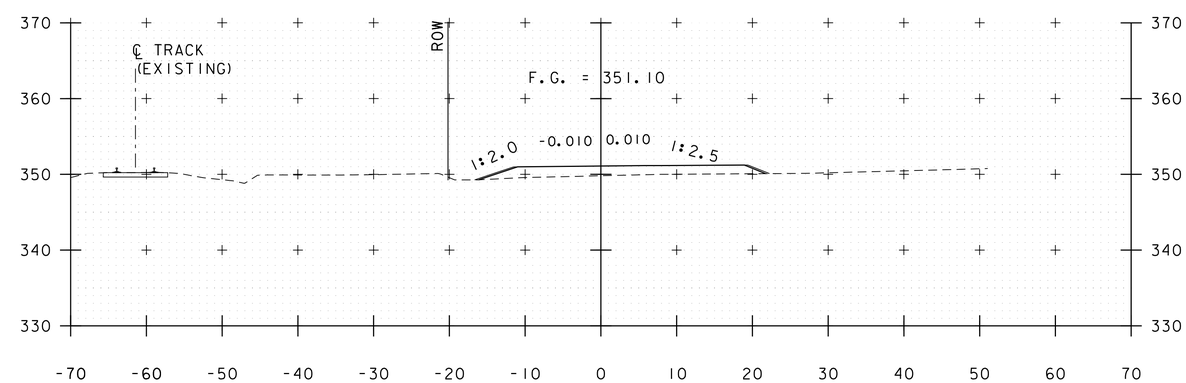
BEGIN TEMPORARY ACCESS ROAD
STA. 400+14.00



402+50



402+00

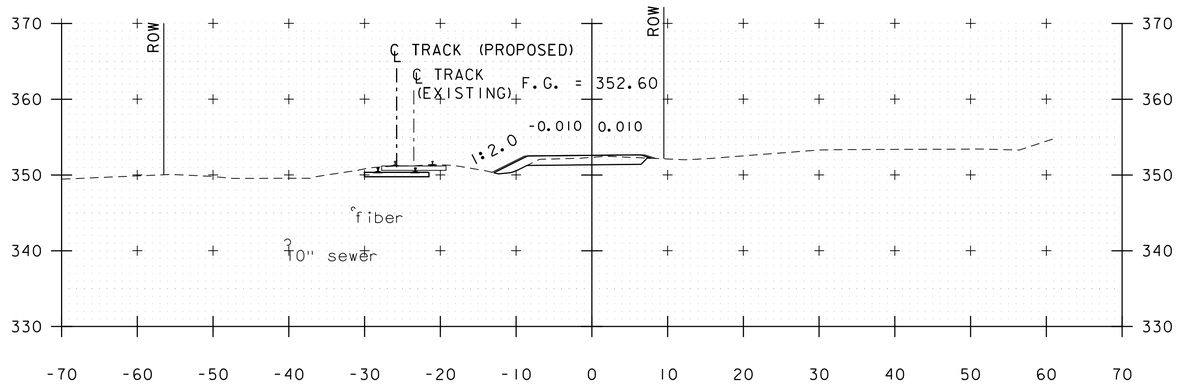


401+50

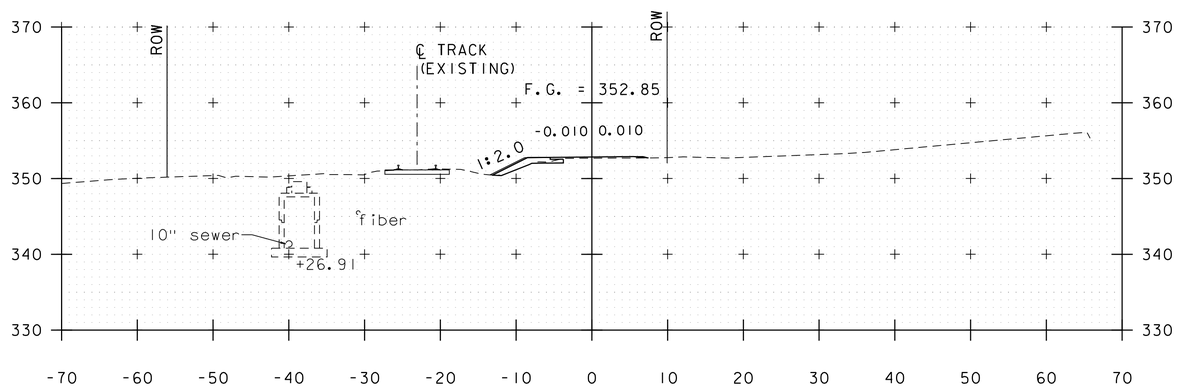
TEMPORARY ACCESS ROAD CROSS SECTIONS

STA. 400+00 - 402+50
SCALE 1" = 10'-0"

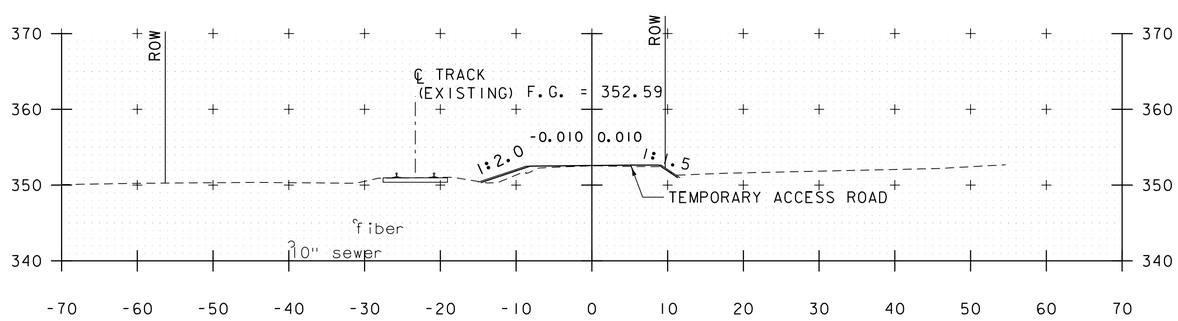
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046xs_access_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: D.M. PECK
TEMPORARY ACCESS ROAD XS (1 OF 6)	SHEET 94 OF 135



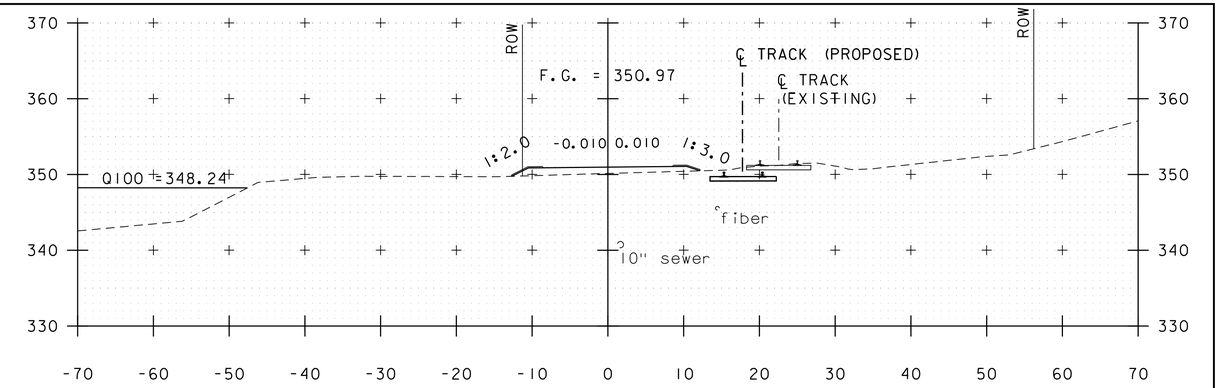
404+00



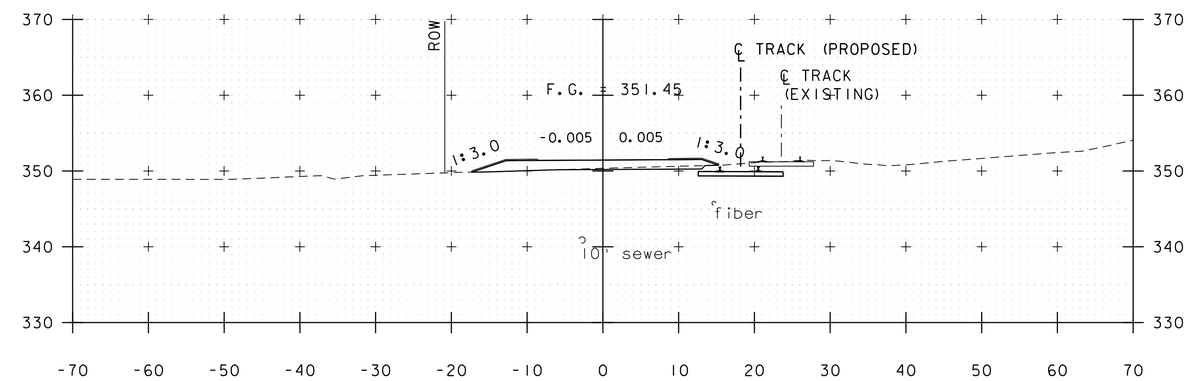
403+50



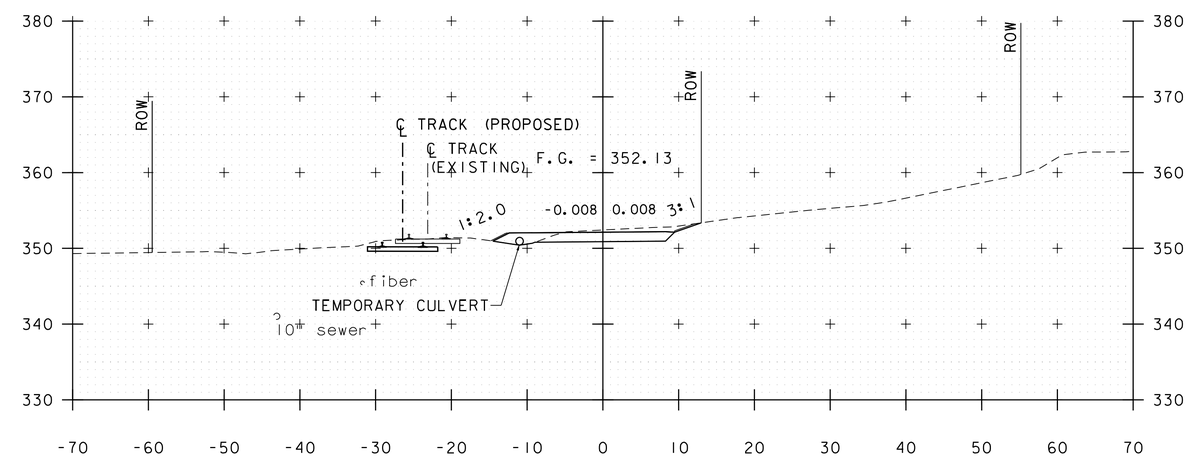
403+00



405+50



405+00

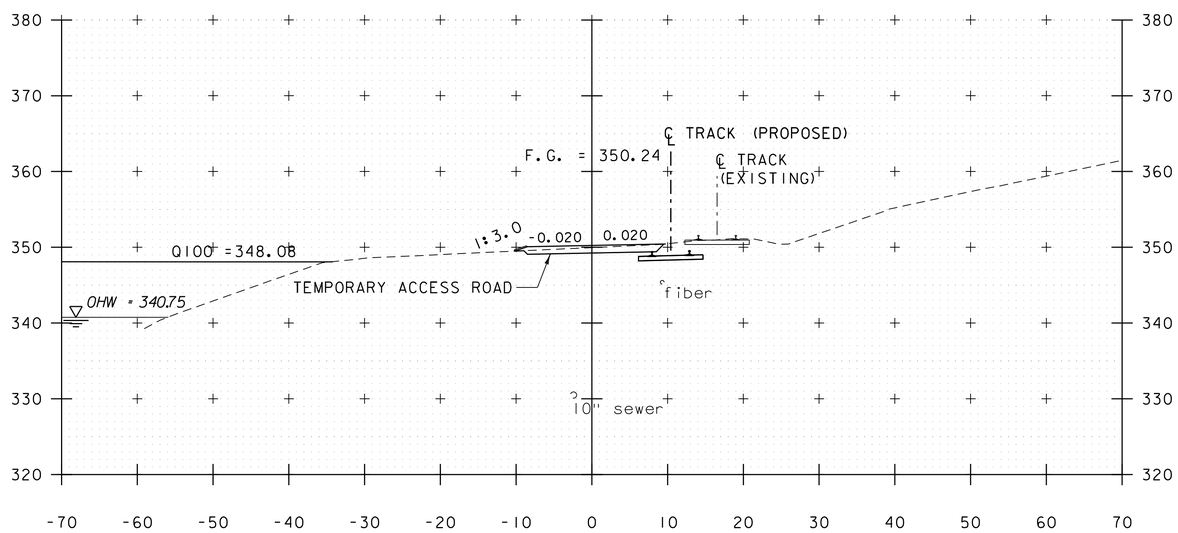


404+50

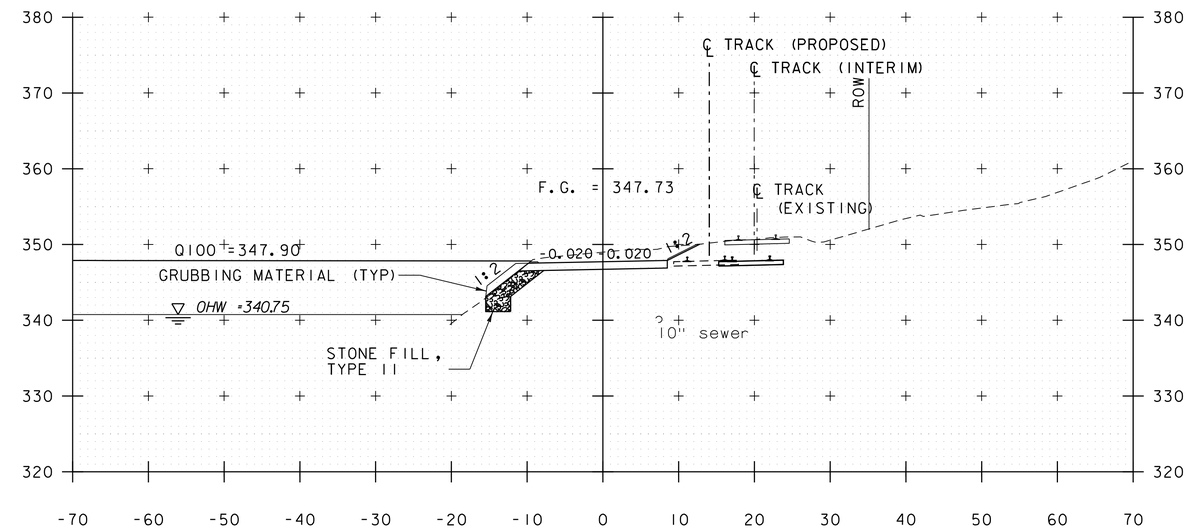
TEMPORARY ACCESS ROAD CROSS SECTIONS

STA. 403+00 - 405+50
SCALE 1" = 10'-0"

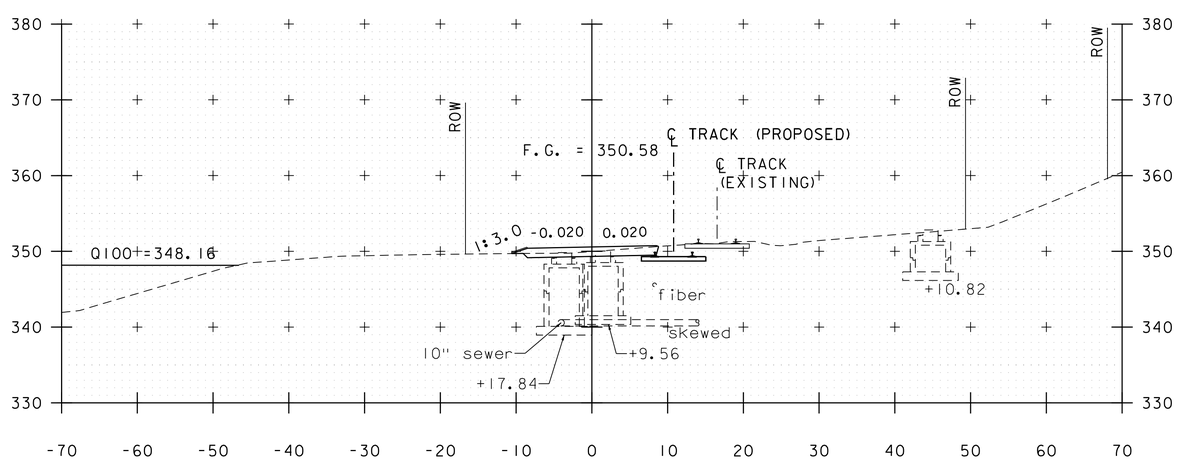
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046xs_access_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: D.M. PECK
TEMPORARY ACCESS ROAD XS (2 OF 6)	SHEET 95 OF 135



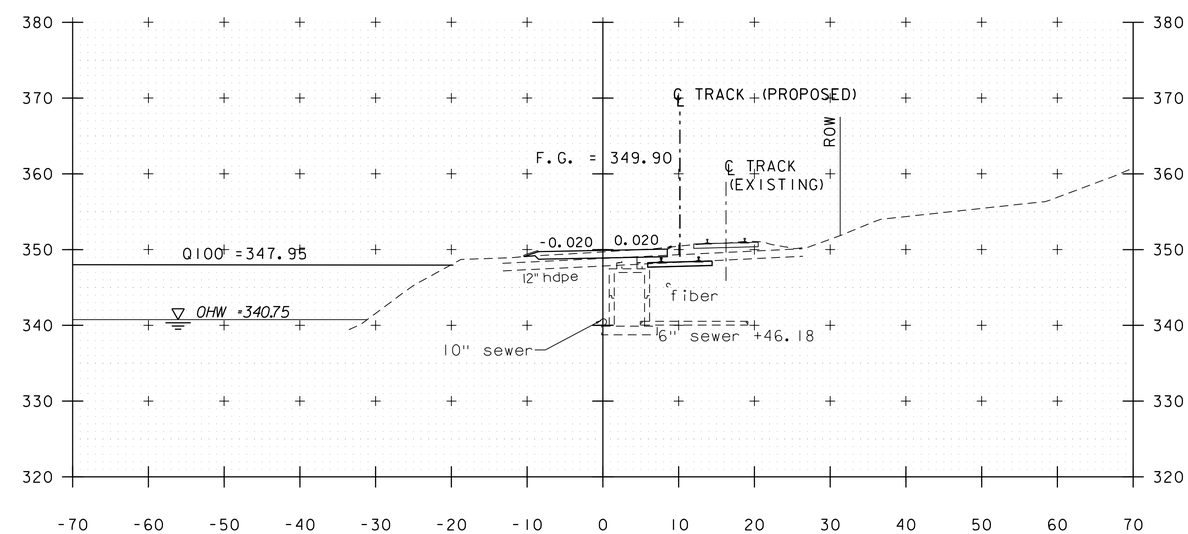
406+50



407+50



406+00

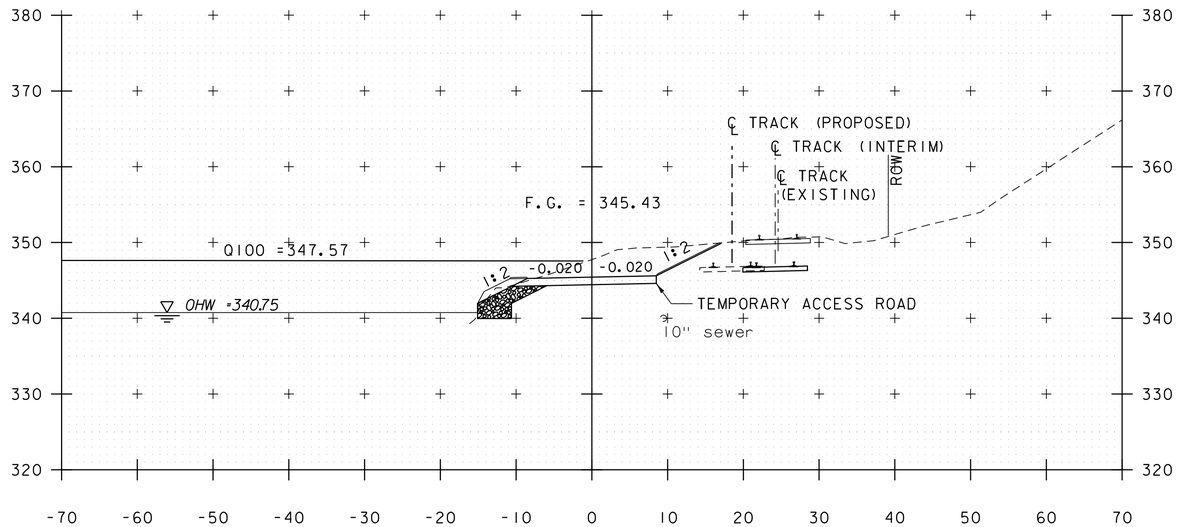


407+00

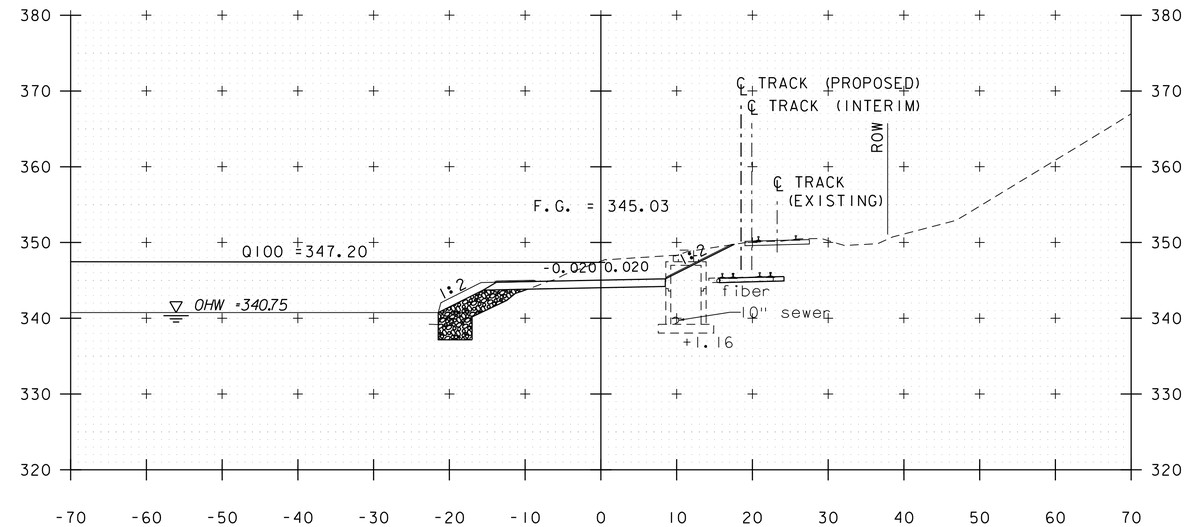
TEMPORARY ACCESS ROAD CROSS SECTIONS

STA. 406+00 - 407+50
SCALE 1" = 10'-0"

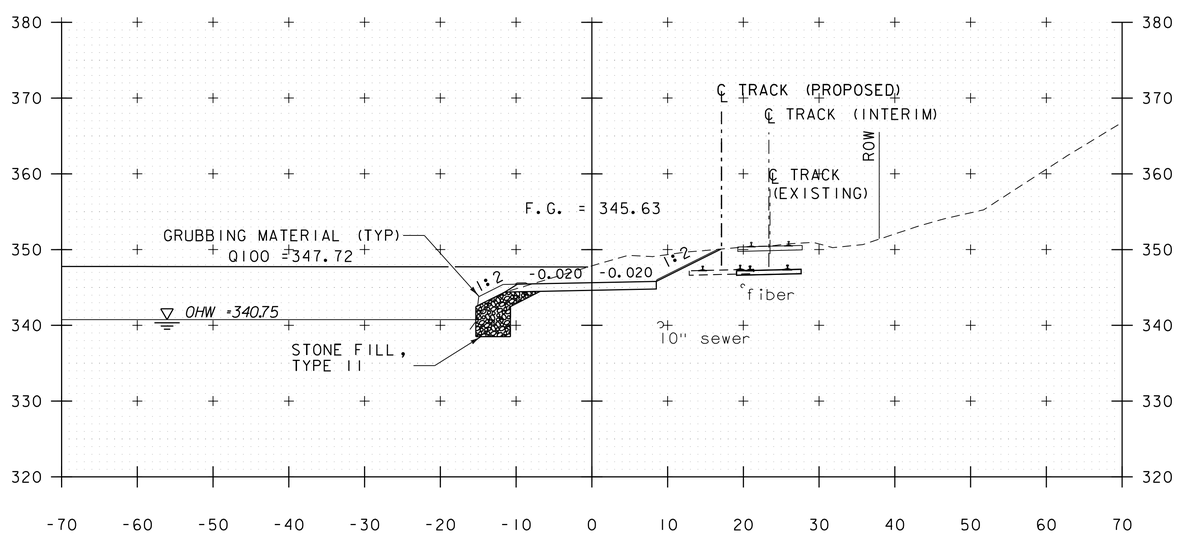
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046xs_access_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: D.M. PECK
TEMPORARY ACCESS ROAD XS (3 OF 6)	SHEET 96 OF 135



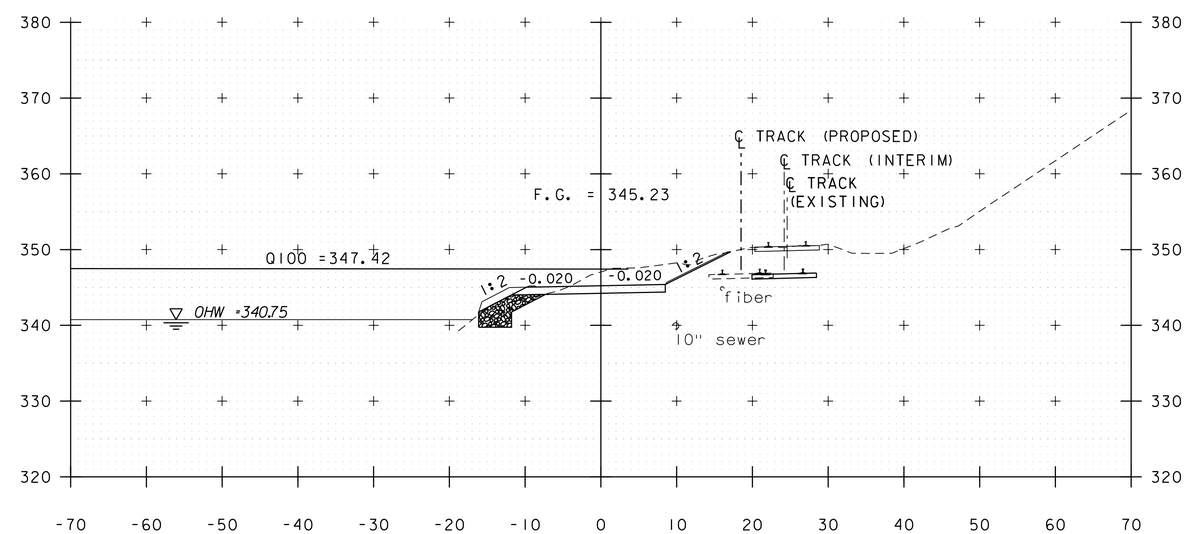
408+50



409+50



408+00

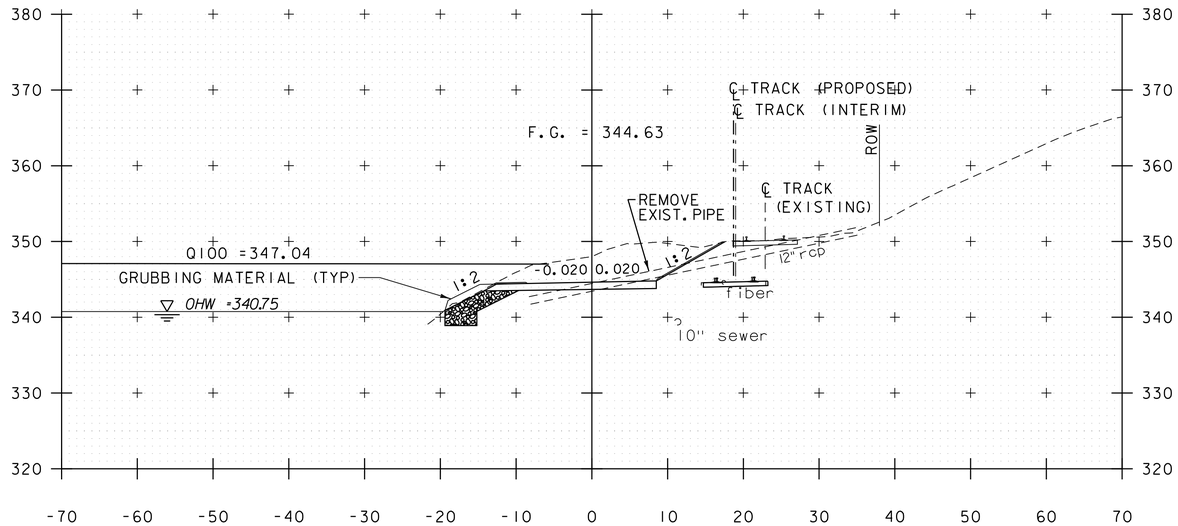


409+00

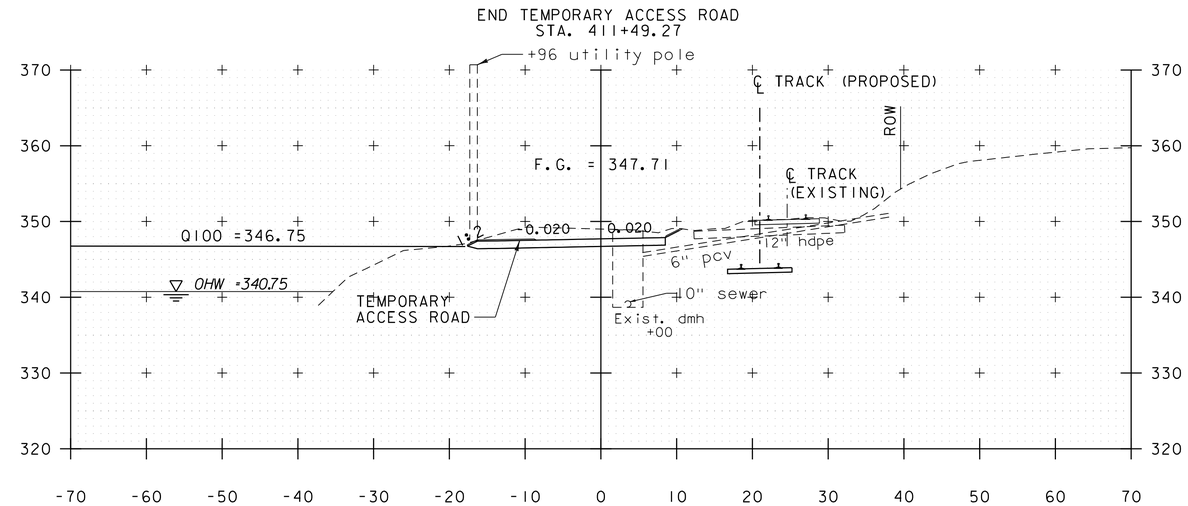
TEMPORARY ACCESS ROAD CROSS SECTIONS

STA. 408+00 - 409+50
SCALE 1" = 10'-0"

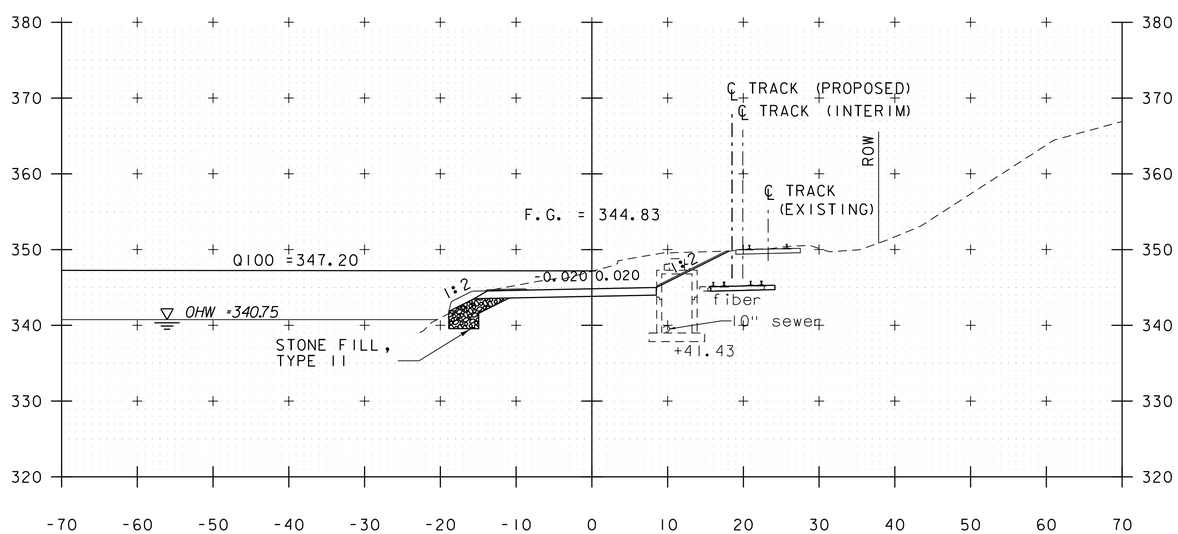
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046xs_access_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: D.M. PECK
TEMPORARY ACCESS ROAD XS (4 OF 6)	SHEET 97 OF 135



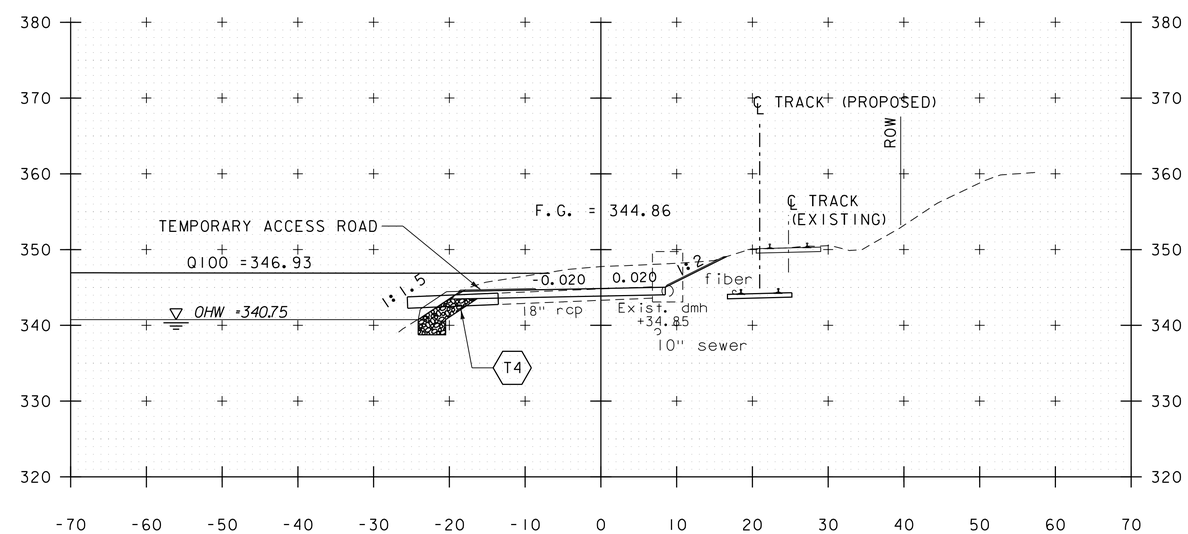
410+50



411+50



410+00

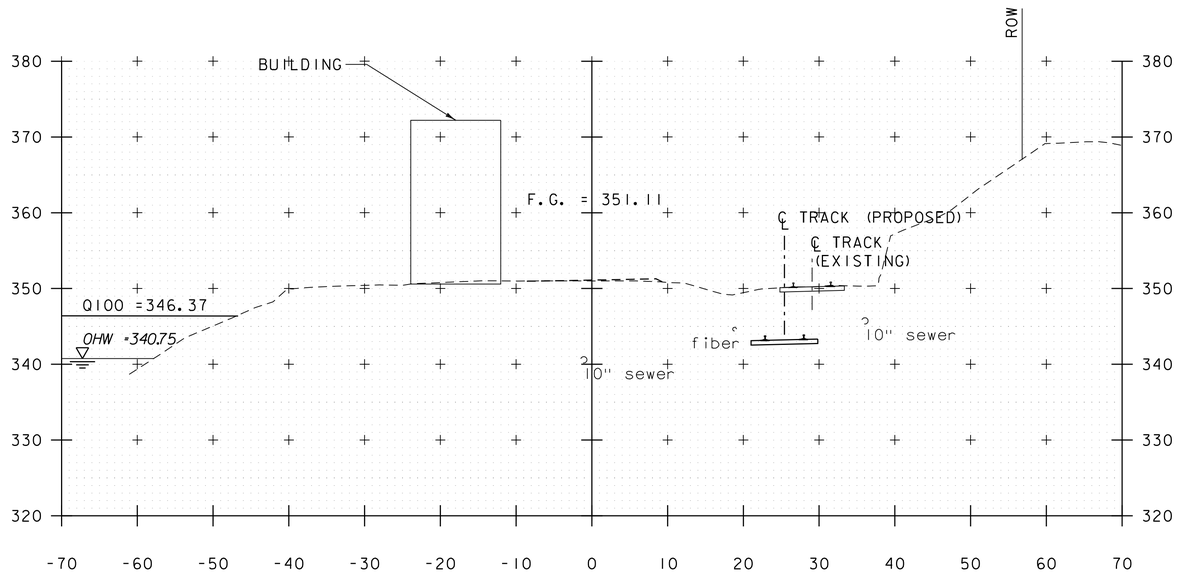


411+00

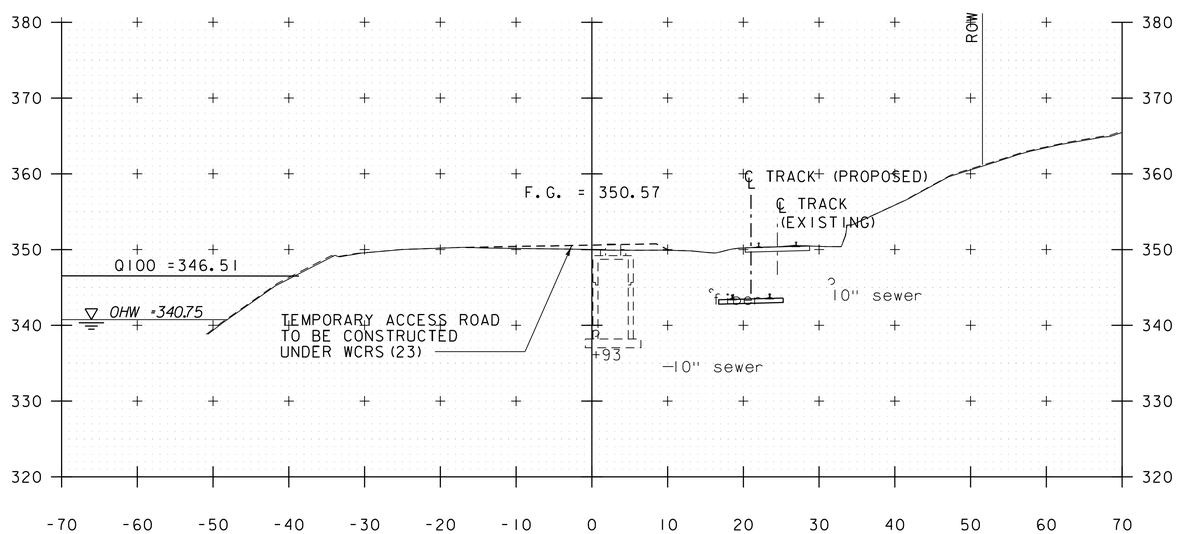
TEMPORARY ACCESS ROAD CROSS SECTIONS

STA. 410+00 - 411+50
SCALE 1" = 10'-0"

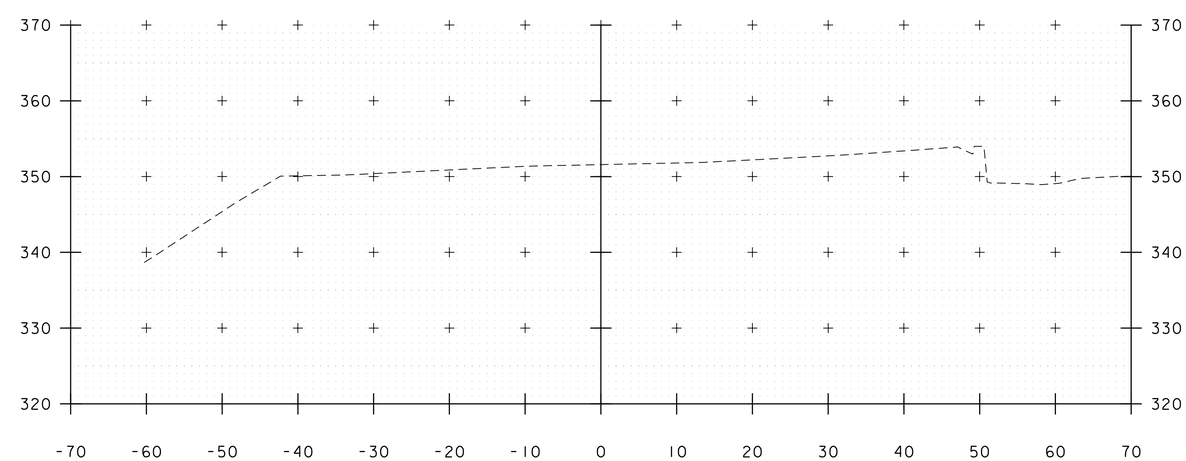
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046xs_access_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: D.M. PECK
TEMPORARY ACCESS ROAD XS (5 OF 6)	SHEET 98 OF 135



412+50



412+00

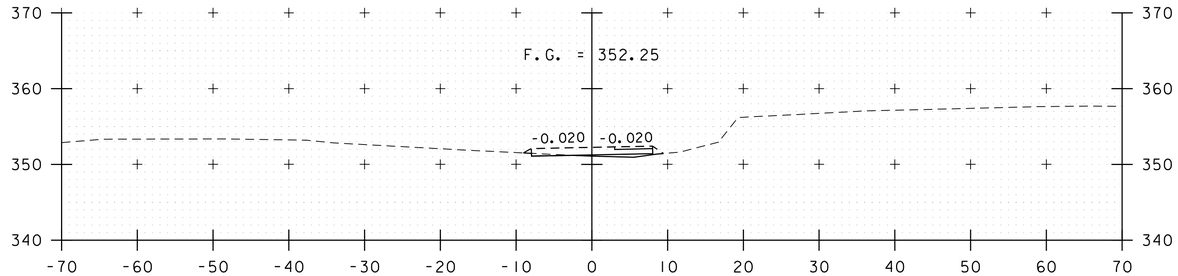


412+99

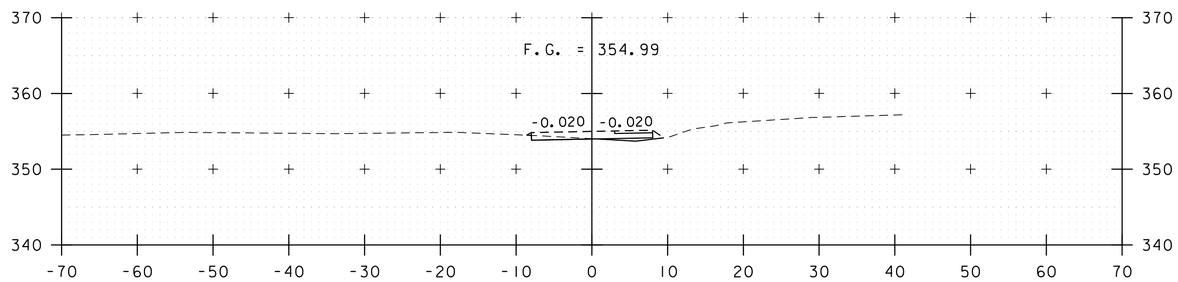
TEMPORARY ACCESS ROAD CROSS SECTIONS

STA. 412+00 - 412+99
SCALE 1" = 10'-0"

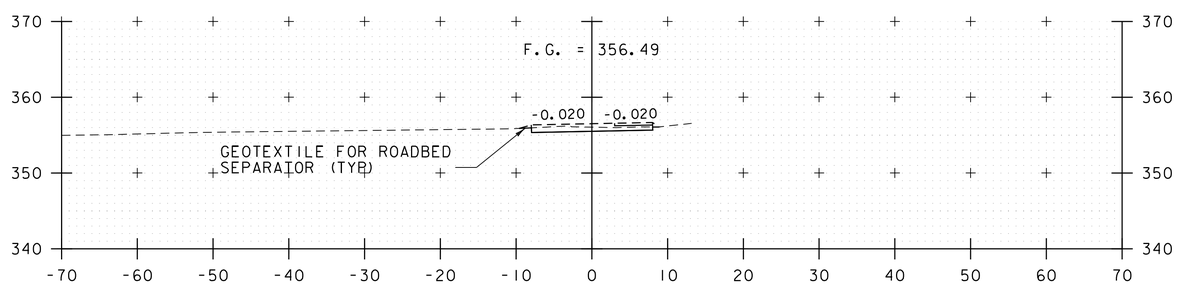
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046xs_access_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: D.M. PECK
TEMPORARY ACCESS ROAD XS (6 OF 6)	SHEET 99 OF 135



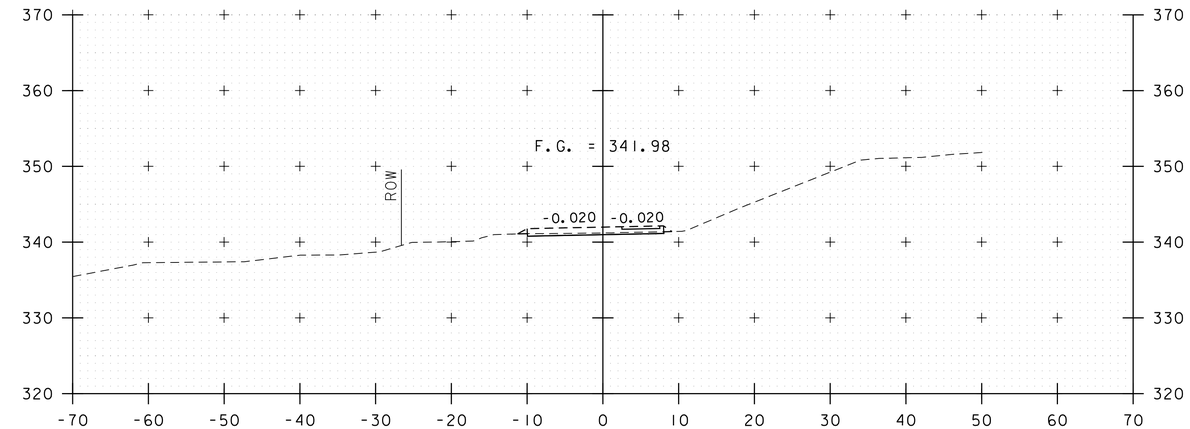
100+50



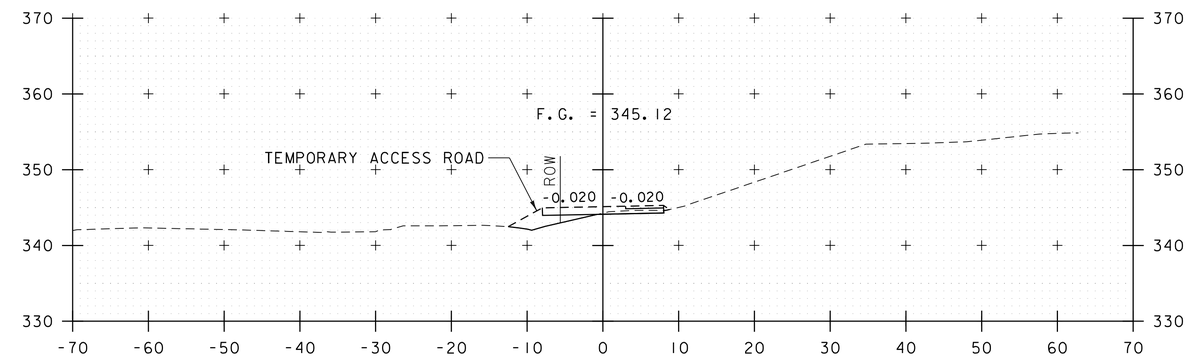
100+25



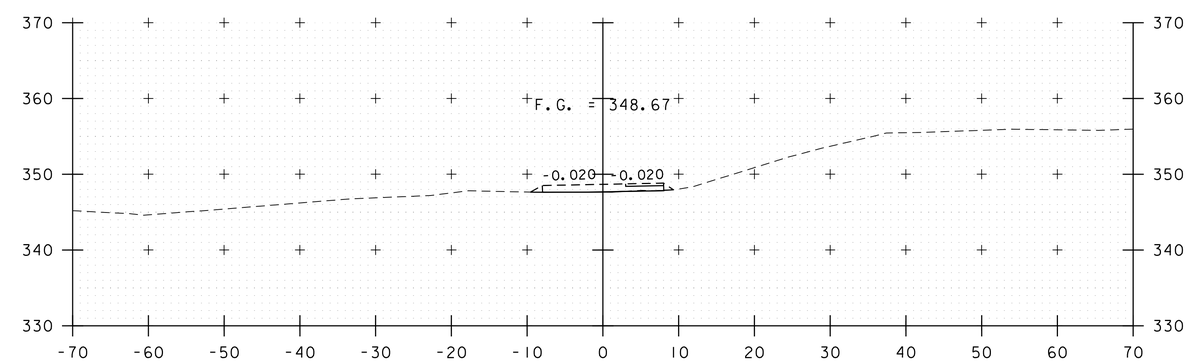
100+00



101+25



101+00

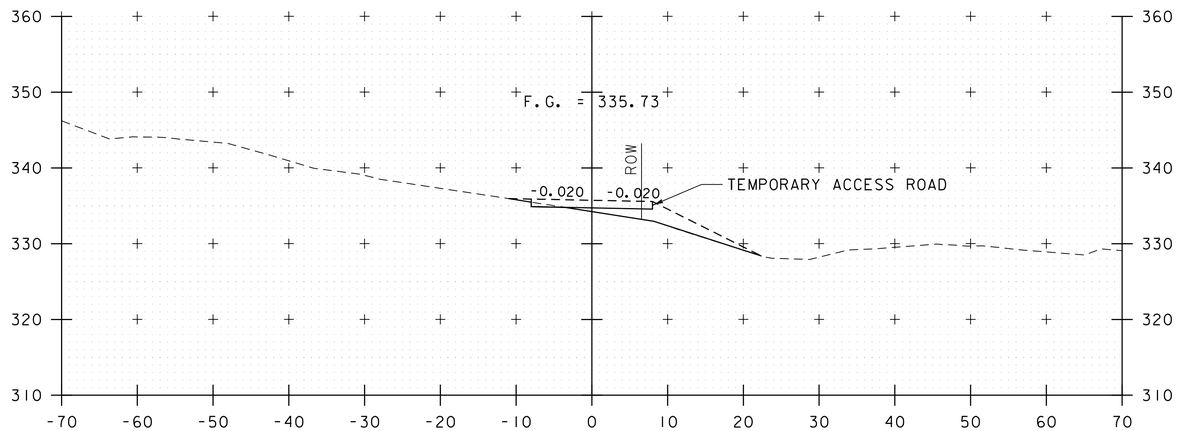


100+75

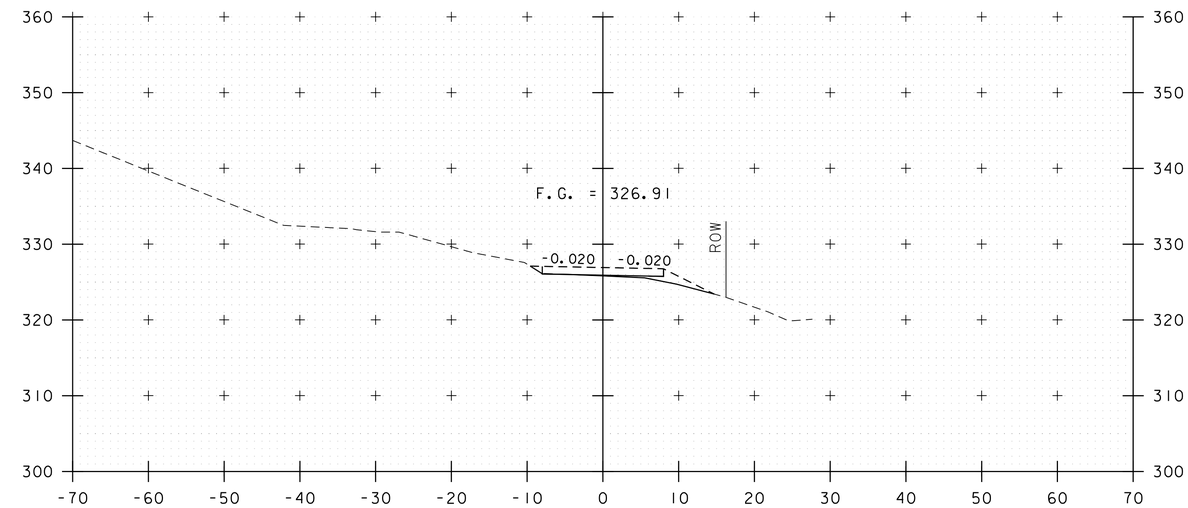
TEMPORARY OUTFALL ACCESS ROAD CROSS SECTIONS

STA. 100+00 - 101+25
SCALE 1" = 10'-0"

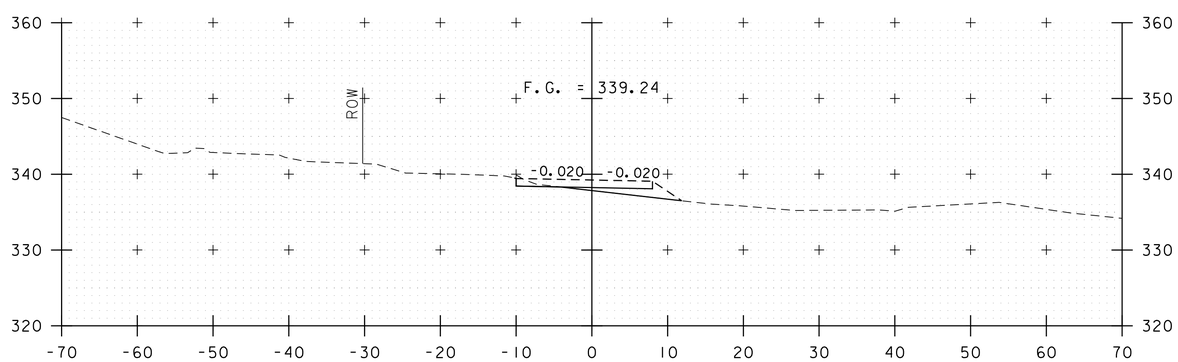
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046xs_outfall_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: D.M. PECK	CHECKED BY: S.E. BURBANK
TEMP OUTFALL ACCESS ROAD XS (1 OF 5)	SHEET 100 OF 135



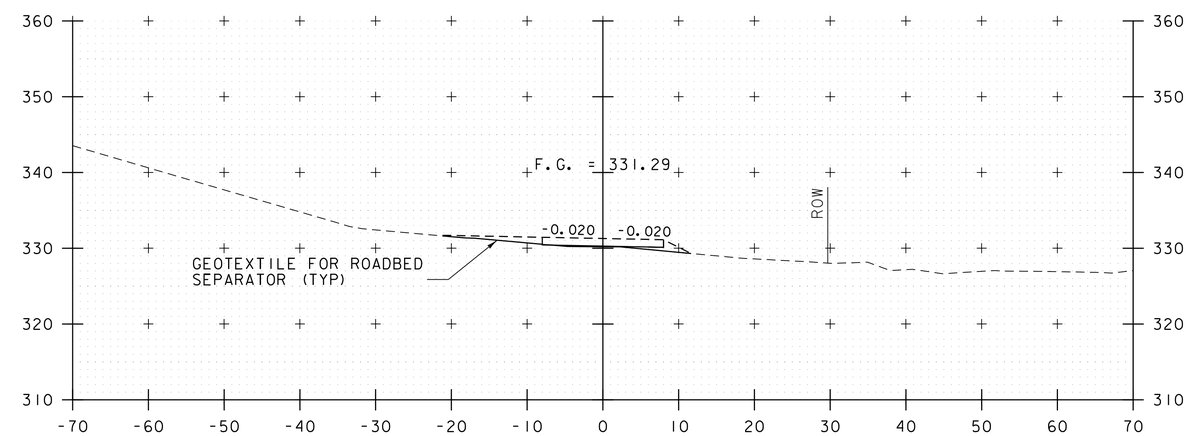
101+75



102+25



101+50

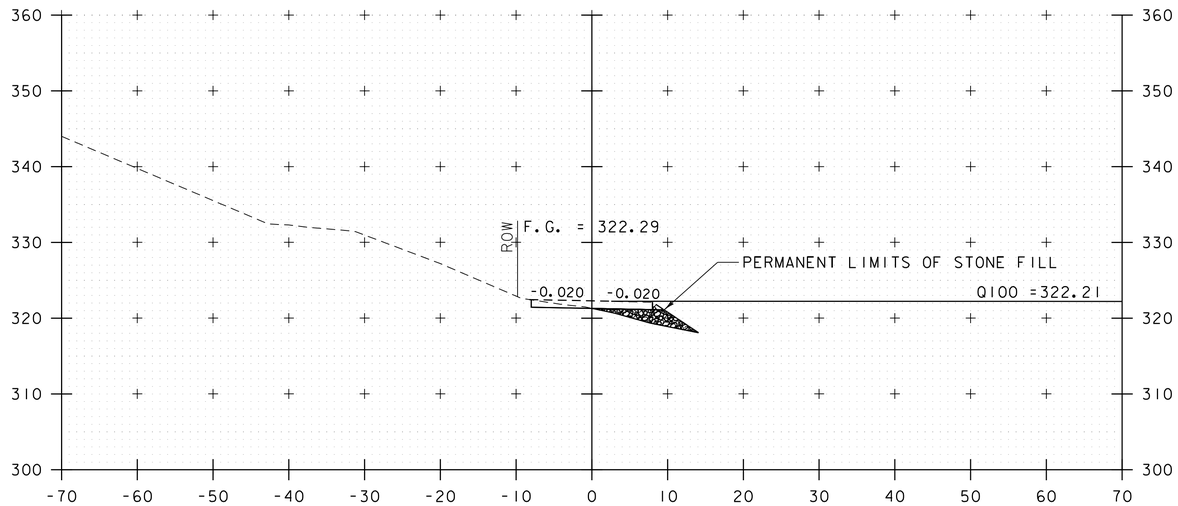


102+00

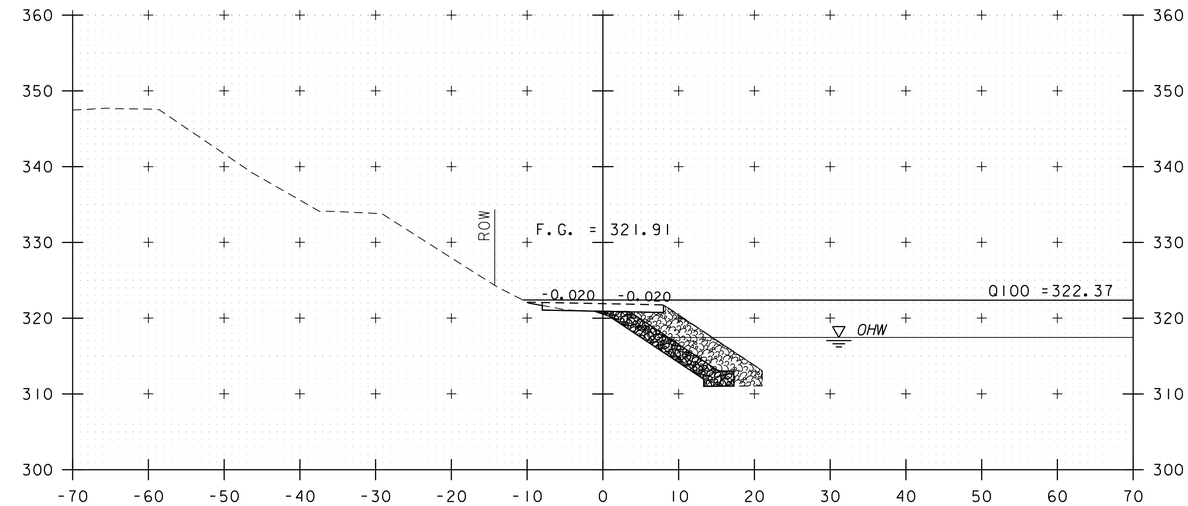
TEMPORARY OUTFALL ACCESS ROAD CROSS SECTIONS

STA. 101+50 - 102+25
SCALE 1" = 10'-0"

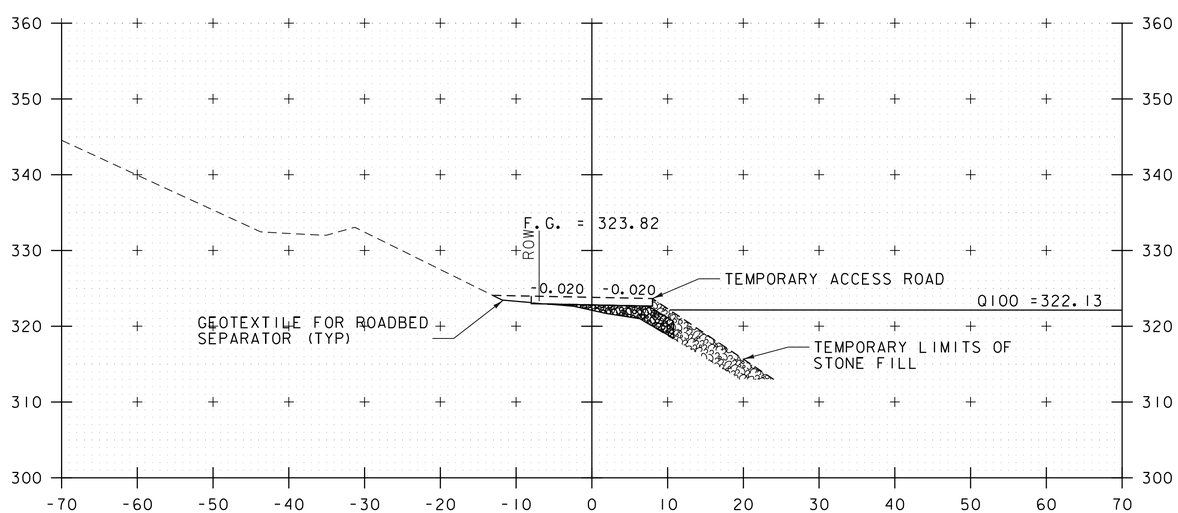
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046xs_outfall_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: D.M. PECK	CHECKED BY: S.E. BURBANK
TEMP OUTFALL ACCESS ROAD XS (2 OF 5)	SHEET 101 OF 135



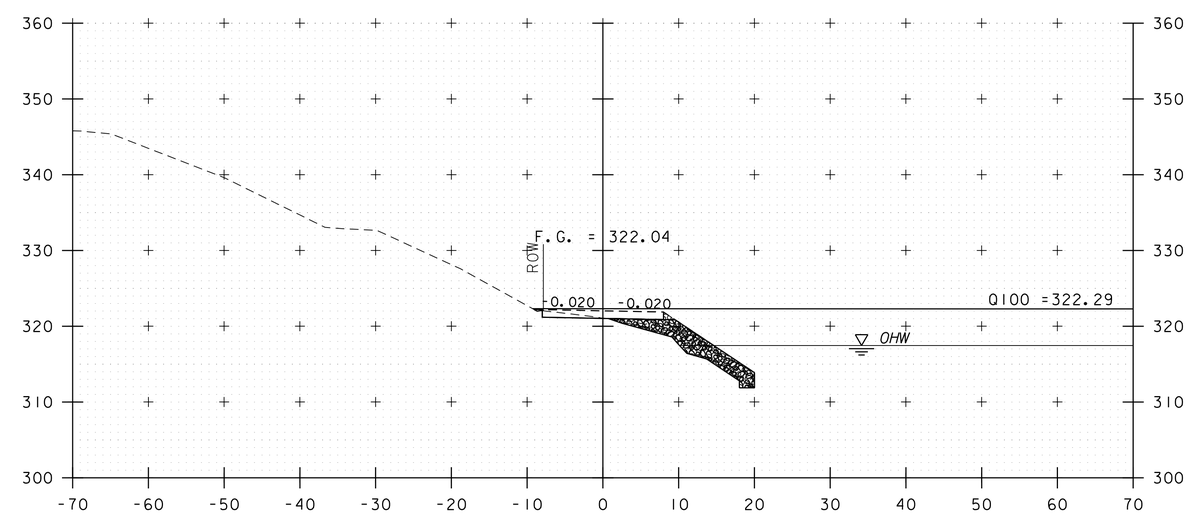
102+75



103+25



102+50



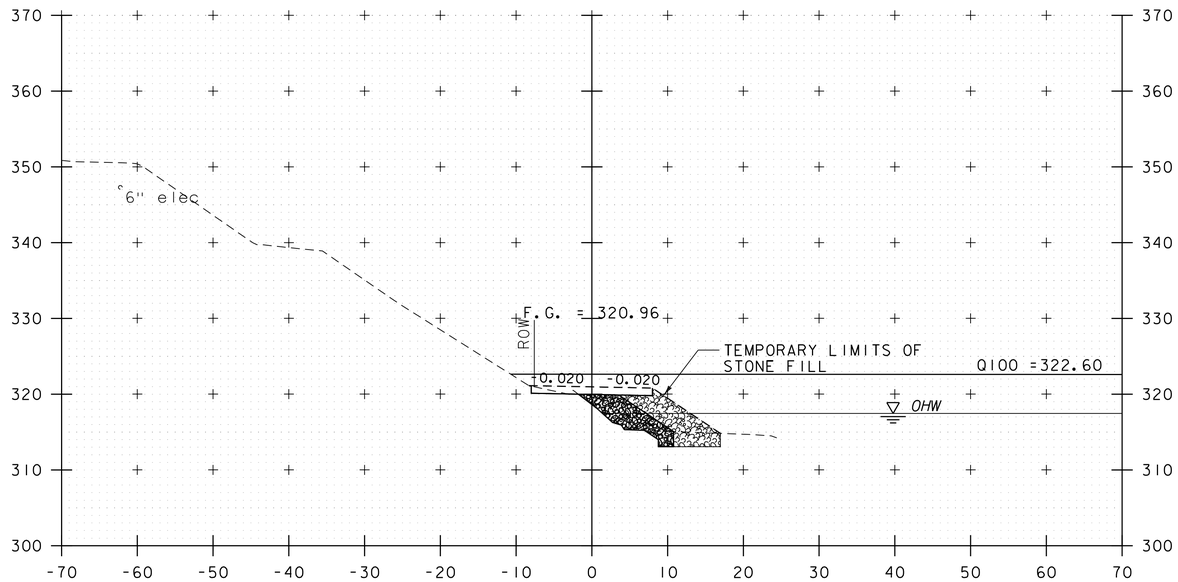
103+00

TEMPORARY OUTFALL ACCESS ROAD CROSS SECTIONS

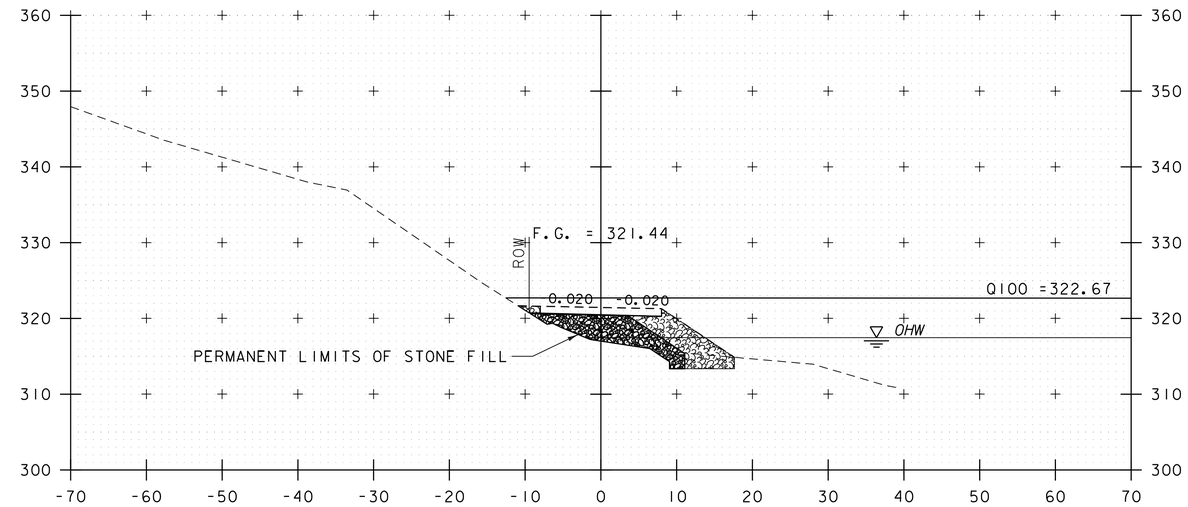
STA. 1012+50 - 103+25
SCALE 1" = 10'-0"

NOTE: 1'-0" OF GRUBBING MATERIAL ON PERMANENT STONE FILL NOT SHOWN FOR CLARITY.

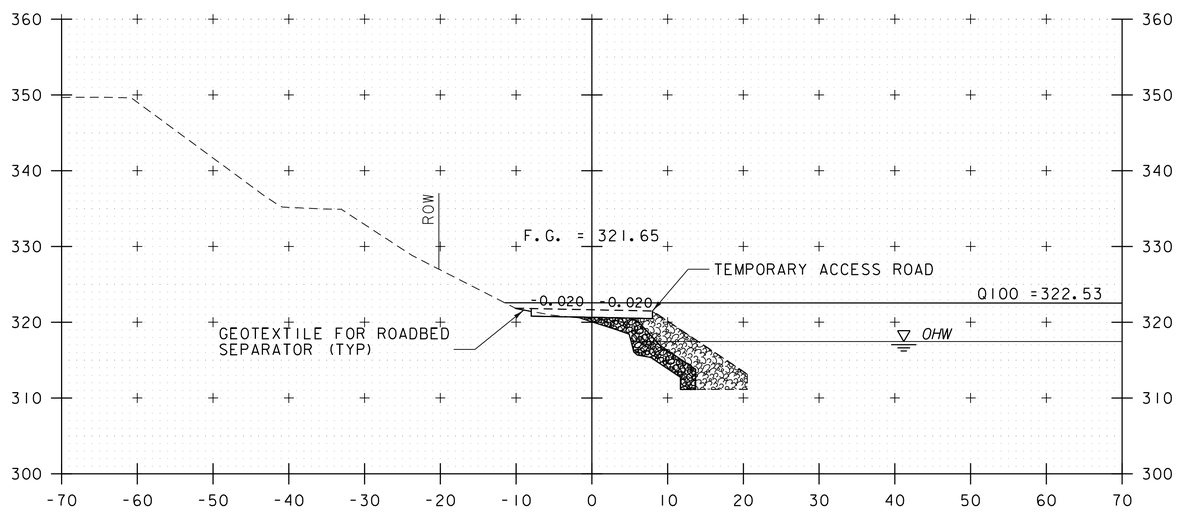
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046xs_outfall_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: D.M. PECK	CHECKED BY: S.E. BURBANK
TEMP OUTFALL ACCESS ROAD XS (3 OF 5)	SHEET 102 OF 135



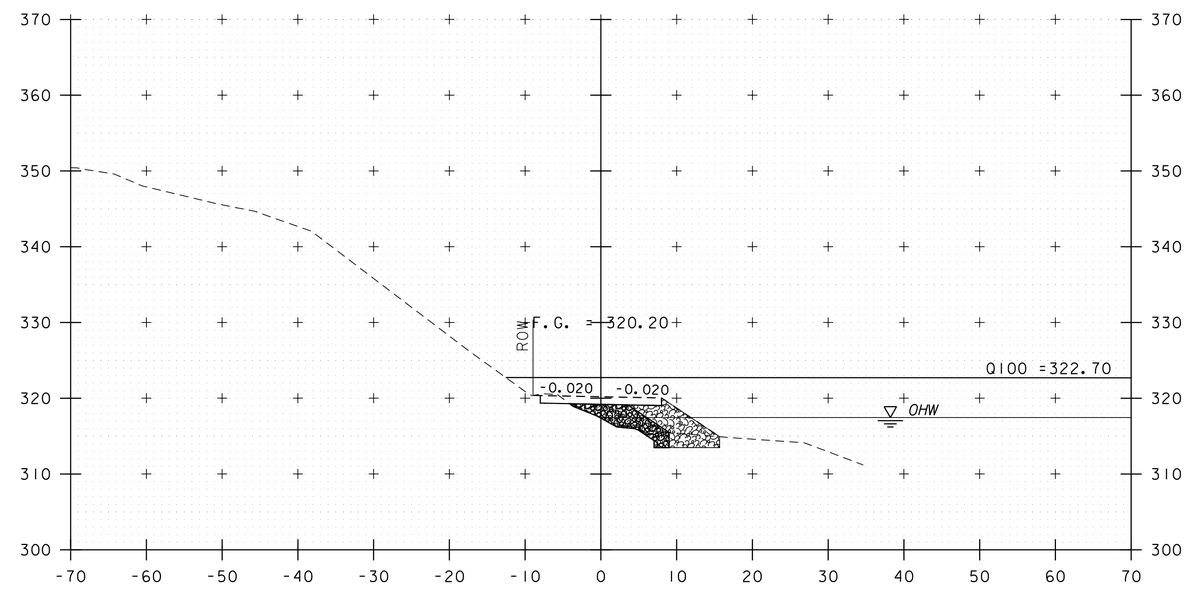
103+75



104+25



103+50



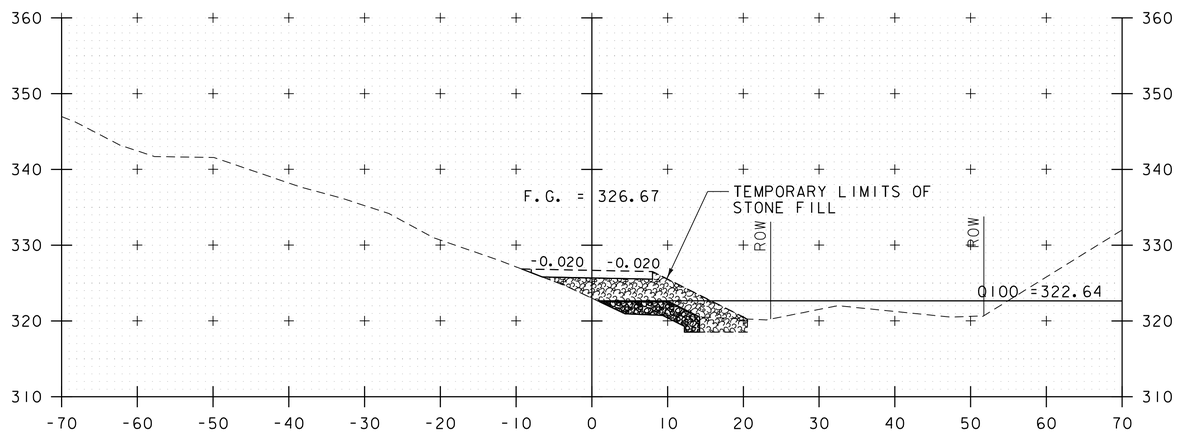
104+00

TEMPORARY OUTFALL ACCESS ROAD CROSS SECTIONS

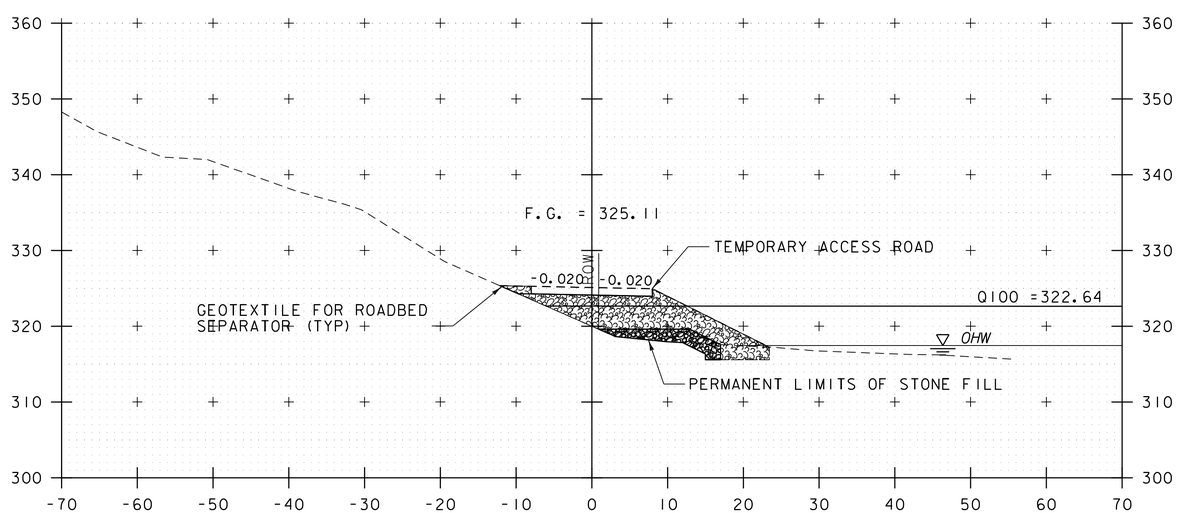
STA. 103+50 - 104+25
SCALE 1" = 10'-0"

NOTE: 1'-0" OF GRUBBING MATERIAL ON PERMANENT STONE FILL NOT SHOWN FOR CLARITY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046xs_outfall_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: D.M. PECK	CHECKED BY: S.E. BURBANK
TEMP OUTFALL ACCESS ROAD XS (4 OF 5)	SHEET 103 OF 135



104+60



104+50

TEMPORARY OUTFALL ACCESS ROAD CROSS SECTIONS

STA. 104+50 - 104+60
SCALE 1" = 10'-0"

NOTE: 1'-0" OF GRUBBING MATERIAL ON PERMANENT STONE FILL NOT SHOWN FOR CLARITY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046xs_outfall_rd.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: K.C. BARRY
DESIGNED BY: D.M. PECK	CHECKED BY: S.E. BURBANK
TEMP OUTFALL ACCESS ROAD XS (5 OF 5)	SHEET 104 OF 135

EPSC PLAN NARRATIVE

1. **PROJECT DESCRIPTION**
PROJECT MIDDLEBURY EWP3(2) AND WCRS(23) IS LOCATED IN THE TOWN OF MIDDLEBURY ALONG VERMONT WESTERN RAIL CORRIDOR IN THE VICINITY OF MAIN STREET AND MERCHANTS ROW IN DOWNTOWN MIDDLEBURY. THE PROJECT WILL BE COMPLETED IN TWO CONTRACTS. THIS NARRATIVE WILL FOCUS ON WCRS(23). WCRS(23) WILL INCLUDE THE REMOVAL OF THE MAIN STREET AND MERCHANTS ROW BRIDGES OVER THE VERMONT WESTERN CORRIDOR. THE BRIDGES WILL BE REPLACED WITH A PRE-CAST CONCRETE TUNNEL ALONG A MODIFIED RAILROAD ALIGNMENT, LOWERING OF THE TRACKS, CONSTRUCTION OF APPROACH RETAINING WALLS (U-WALLS), AND ROADWAY AND UTILITY WORK.

IT IS ANTICIPATED THAT WCRS(23) WILL LAST THREE CONSTRUCTION SEASONS.

2. **AREA OF DISTURBANCE**
FOR WCRS(23), THE AMOUNT OF PROJECT DISTURBANCE IS 3.8 ACRES. THE TOTAL AMOUNT OF PROJECT DISTURBANCE FOR BOTH EWP3(2) AND WCRS(23) IS 7.0 ACRES. THE MAXIMUM AMOUNT OF CONCURRENT EARTH DISTRUBANCE FOR EACH PROJECT IS LIMITED TO 2.0 ACRES. THE AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN. APPROXIMATELY 2.8 ACRES OF THE TOTAL PROJECT DISTURBANCE HAVE BEEN PREVIOUSLY AUTHORIZED UNDER NPDES DISCHARGE PERMIT # 012-0059. DEWATERING DISCHARGES AND INCIDENTAL STORMWATER RUNOFF IN THIS AREA WILL BE COLLECTED AND TREATED PRIOR TO DISCHARGE IN ACCORDANCE WITH THE NPDES PERMIT CONDITIONS. SEE SECTION 5 FOR ADDITIONAL INFORMATION REGARDING DRAINAGE AREAS AND DISCHARGE POINTS.

3. **CONSTRUCTION SEQUENCE**
THE CONTRACTOR SHALL SEQUENCE CONSTRUCTION ACTIVITIES TO MINIMIZE THE EXTENT OF DISTURBED SOILS LEFT OPEN TO EROSION AT ANY GIVEN TIME. A PROPOSED GENERAL SEQUENCE FOR EACH OF THE MAJOR CONSTRUCTION ACTIVITIES IS AS FOLLOWS:

- **RAILROAD TUNNEL CONSTRUCTION**
  1) EXTEND PERIMETER CONTROLS AND MARK BOUNDARIES FOR SENSITIVE RESOURCE AREAS, SUCH AS WETLANDS AND RIPARIAN BUFFER ZONES THAT DIFFER FROM THOSE OF EWP3(2).
  2) INSTALL SEDIMENT CONTROL MEASURES.
  3) PAVE THE TEMPORARY ACCESS ROAD THAT WAS CONSTRUCTED UNDER EWP3(2).
  4) CONSTRUCT SEWER AND DRAINAGE SYSTEMS SOUTH OF MERCHANTS ROW TEMPORARY BRIDGE.
  5) INSTALL SUPPORT OF EXCAVATION ALONG THE RAIL CORRIDOR.
  6) OVER THE COURSE OF A 10 WEEK RAIL CLOSURE, REMOVE BOTH TEMPORARY BRIDGES, LOWER RAILROAD TO THE PROPOSED VERTICAL ALIGNMENT, SHIFT THE RAIL TO THE PROPOSED HORIZONTAL ALIGNMENT UTILIZING THE INTERIM ALIGNMENT TO TEMPORARILY CONNECT THE SOUTHERN PORTION OF THE RAIL TO THE EXISTING, AND INSTALL THE TUNNEL SECTIONS.
  7) CONCURRENTLY CONSTRUCT REMAINING U-WALL SECTIONS ALONG THE RAIL CORRIDOR, THE ROADWAY OVER THE TUNNEL AT MAIN STREET AND MERCHANTS ROW, AND DRAINAGE SYSTEM NORTH OF MAIN STREET THROUGH SEYMOUR STREET.
  8) REMOVE THE TEMPORARY ACCESS ROAD AND ALLOW VEHICLES TO ACCESS THE BATTELL BLOCK FROM MERCHANTS ROW.
  9) REMOVE THE INTERIM ALIGNMENT AND COMPLETE THE PROPOSED RAILROAD HORIZONTAL ALIGNMENT SHIFT.
  10) INSTALL THE REMAINING RETAINING WALLS AND FLOOD PREVENTION BERM ALONG THE RAIL CORRIDOR.
  11) CONSTRUCT REMAINING STORMWATER SWALES AND RESTORE LANDSCAPING TO DISTURBED AREAS.
  12) PERMANENTLY STABILIZE ALL REMAINING EXPOSED SOILS IMMEDIATELY. NO MORE THAN 4' HEIGHT OF EMBANKMENT SHALL BE EXPOSED AT ANY ONE TIME.

- **MERCHANTS ROW AND MAIN STREET ROADWAY CONSTRUCTION**
  1) ESTABLISH PERIMETER CONTROLS AND MARK BOUNDARIES FOR SENSITIVE RESOURCE AREAS, SUCH AS WETLANDS AND RIPARIAN BUFFER ZONES.
  2) INSTALL SEDIMENT CONTROL MEASURES.
  3) CONSTRUCT ROADWAY OVER THE TUNNEL FOR BOTH MERCHANTS ROW AND MAIN STREET.
  4) APPLY STABILIZATION MEASURES TO ALL REMAINING EXPOSED SOIL AREAS AND COMPLETE LANDSCAPING TO ALL PARKS.

4. **STABILIZATION OF EXPOSED SOILS**

- SEED AND MULCH WILL BE USED FOR BOTH PERMANENT AND TEMPORARY STABILIZATION MEASURES. ROLLED EROSION CONTROL PRODUCT (RECP) WILL BE USED IN PLACE OF MULCH FOR SLOPES GREATER THAN 1V:3H.

- DISTURBED AREAS AND SOIL STOCKPILES THAT WILL NOT BE WORKED FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY STABILIZED WITH MULCH/RECP WITHIN 48 HOURS.

- EXPOSED AREAS THAT HAVE ACHIEVED FINAL GRADE SHALL BE PERMANENTLY STABILIZED WITHIN 48 HOURS.

- IN AREAS WHERE VEGETATIVE COVER WILL PROVIDE PERMANENT STABILIZATION, SEEDING TO BE COMPLETED BETWEEN APRIL 15 AND SEPTEMBER 15.

5. **DRAINAGE AREAS AND DISCHARGE POINTS**
THIS PROJECT IS BEING CONSTRUCTED ON EXISTING RAILROAD AND ROADWAY ALIGNMENTS WITHIN A DEVELOPED AREA OF MIDDLEBURY. THE PROJECT AREA GENERALLY EXTENDS FROM THE RAILROAD TRUSS BRIDGE SPANNING OTTER CREEK AT THE SOUTHERN END TO THE RAILROAD BRIDGE SPANNING MIDDLE SEYMOUR STREET AT THE NORTHERN END. THE PROJECT ENCOMPASES DISTURBANCES AT BOTH RAILROAD TRACK LEVEL AND STREET LEVEL NEAR THE INTERSECTION OF MAIN STREET AND MERCHANTS ROW.

DUE TO THE PRESENCE OF CONTAMINATED GROUNDWATER WITHIN PORTIONS OF THE PROJECT AREA, NPDES DISCHARGE PERMIT # VT 0120059 HAS BEEN OBTAINED TO MANAGE AND TREAT DEWATERING DISCHARGES FOR THE ENTIRE PROJECT. WITHIN THE CENTRAL PORTION OF THE PROJECT AREA, DRAINAGE WILL BE COLLECTED USING THE EXISTING TOWN OF MIDDLEBURY STORMWATER SYSTEM AS WELL AS BY PORTABLE DEWATERING TREATMENT DEVICES THAT WILL DISCHARGE FLOW TO THE STORMWATER SYSTEM. STORMWATER IMPROVEMENTS CONSTRUCTED AS PART OF THE PROJECT WILL ALSO DIRECT FLOWS TO OTTER CREEK VIA A NEW DISCHARGE POINT LOCATED DOWNSTREAM FROM THE FALLS.

WCRS(23) HAS THREE EXISTING DISCREET DISCHARGE POINTS TO THE RECEIVING WATER, VIA THE EXISTING TOWN OF MIDDLEBURY CLOSED DRAINAGE SYSTEM AND ONE PROPOSED DISCREET DISCHARGE POINT THAT WILL BE CONSTRUCTED UNDER CONTRACT EWP3(2). WCRS(23) ALSO HAS THREE NON-DISCREET DISCHARGE POINTS TO OTTER CREEK. EACH DISCHARGE POINT CORRESPONDS TO A DRAINAGE AREA IN WHICH THE PROJECT HAS BEEN DIVIDED.

- **DRAINAGE AREA 1**
LOCATED DIRECTLY SOUTH OF MERCHANTS ROW AND INCLUDES DISTURBANCE OF 1.8 ACRES. RUNOFF WILL FLOW FROM EAST TO WEST AND INTO THE CREEK.

- **DRAINAGE AREA 2**
CONSISTS OF PROJECT AREAS SOUTH OF MERCHANTS ROW AND WEST OF THE RAIL CORRIDOR AND INCLUDES DISTURBANCE OF 0.4 ACRES. RUNOFF WILL FLOW FROM NORTH TO SOUTH AND FROM EAST TO WEST, THEN INTO THE CREEK.

- **DRAINAGE AREA 3**
CONSISTS OF PROJECT AREAS WITHIN EXISTING PAVED ROADWAYS AND SIDEWALKS WEST OF THE RAIL CORRIDOR, ALONG MAIN STREET AND MERCHANTS ROW, AND INCLUDES DISTURBANCE OF 0.5 ACRES. RUNOFF WILL BE CAPTURED BY THE EXISTING AND PROPOSED CLOSED DRAINAGE SYSTEMS AND WILL FLOW VIA STORMWATER OUTFALLS TO OTTER CREEK.

- **DRAINAGE AREA 4**
CONSISTS OF PROJECT AREAS WITHIN EXISTING PAVED ROADWAYS AND SIDEWALKS WEST OF THE RAIL CORRIDOR AND NORTH OF MAIN STREET AND INCLUDES DISTURBANCE OF 0.3 ACRES. RUNOFF WILL BE CAPTURED BY THE EXISTING AND PROPOSED CLOSED DRAINAGE SYSTEMS AND WILL FLOW VIA STORMWATER OUTFALLS TO OTTER CREEK.

- **DRAINAGE AREA 5**
CONSISTS OF PROJECT AREAS WITHIN THE EXISTING PAVED ROADWAY OF MIDDLE SEYMOUR STREET AND EXCHANGE STREET, ADJACENT EXISTING PAVED PARKING LOTS, AND THE RAILROAD CORRIDOR, AND INCLUDES DISTURBANCE OF 0.7 ACRES. RUNOFF WILL BE CAPTURED BY THE EXISTING AND PROPOSED CLOSED DRAINAGE SYSTEM AND WILL FLOW VIA A STORMWATER OUTFALL INTO OTTER CREEK.

- **DRAINAGE AREA 6**
CONSISTS OF PROJECT AREAS NORTH OF THE SEYMOUR STREET RAIL BRIDGE AND INCLUDES EARTH DISTURBANCE OF 0.2 ACRES. RUNOFF FROM THE EMBANKMENT WILL FLOW OVERLAND TO OTTER CREEK.

- **DRAINAGE AREA 7**
CONSISTS OF THE AREA SOUTHEAST OF THE MARBLE WORKS PARKING LOT AND INCLUDES EARTH DISTURBANCE OF 0.4 ACRES. RUNOFF FROM THE EMBANKMENT WILL FLOW OVERLAND TO OTTER CREEK. THIS AREA IS NOT PROPOSED TO BE DISTURBED DURING WCRS(23).

DRAINAGE AREA SUMMARY - WCRS(23)

DRAINAGE AREA	TOTAL DISTURBANCE (ACRES)	LIMIT OF CONCURRENT DISTURBANCE (ACRES)	RECEIVING WATER
1	1.8	1.8	OTTER CREEK
2	0.4	0.4	OTTER CREEK
3	0.5	0.5	OTTER CREEK
4	0.3	0.3	OTTER CREEK
5	0.7	0.7	OTTER CREEK
6	0.2	0.2	OTTER CREEK

SEE THE EPSC SUMMARY SHEETS FOR FURTHER DETAIL REGARDING DRAINAGE AREAS AND RELATED SLOPE AND SOIL ERODIBILITY.

6. **WASTE, BORROW, AND STAGING AREAS**

- OFF-SITE WASTE AND BORROW AREAS HAVE NOT BEEN IDENTIFIED FOR THIS PROJECT. LARGE QUANTITIES OF WASTE AND BORROW ARE ANTICIPATED FOR WCRS(23). ALL EXCAVATED SOILS ARE TO BE TREATED AS CONTAMINATED SOILS AND ARE SUBJECT TO TREATMENT AND DISPOSAL THAT WILL BE MANAGED IN ACCORDANCE WITH AN APPROVED CORRECTIVE ACTION PLAN.

7. **WINTER CONSTRUCTION REQUIREMENTS**

IT IS EXPECTED THAT CONSTRUCTION ACTIVITIES WILL CONTINUE INTO THE WINTER CONSTRUCTION SEASON, DEPENDING ON ACTUAL FIELD AND WEATHER CONDITIONS. IF ACTIVITIES ARE ON-GOING BETWEEN OCTOBER 15 AND APRIL 15, THE CONTRACTOR SHALL FOLLOW REQUIREMENTS FOR WINTER CONSTRUCTION, AS DEFINED IN SPECIFIC PERMIT CONDITIONS AND AS FOLLOWS:

- ENLARGED ACCESS POINTS, STABILIZED TO PROVIDE FOR SNOW STOCKPILING.
- LIMITS OF DISTURBANCE MOVED OR REPLACED TO REFLECT BOUNDARY OF WINTER WORK.
- DEVELOPMENT OF A SNOW MANAGEMENT PLAN THAT INCLUDES:
  - ADEQUATE STORAGE AND CONTROL OF MELT-WATER
  - STORAGE OF CLEARED SNOW TO BE PLACED DOWN SLOPE OF DISTURBED AREAS AND OUT OF STORMWATER TREATMENT STRUCTURES
- A MINIMUM 25-FOOT BUFFER SHALL BE MAINTAINED FROM PERIMETER CONTROLS.
- DRAINAGE STRUCTURES MUST BE KEPT OPEN AND FREE OF SNOW AND ICE DAMS.
- SILT FENCE AND OTHER PRACTICES REQUIRING EARTH DISTURBANCE MUST BE INSTALLED AHEAD OF FROZEN GROUND.
- MULCH USED FOR TEMPORARY STABILIZATION MUST BE APPLIED AT DOUBLE THE STANDARD RATE, OR A MINIMUM OF 3 INCHES WITH AN 80-90% COVER.
- IN AREAS OF DISTRUBANCE THAT DRAIN TO A WATER BODY WITHIN 100 FEET, TWO ROWS OF SILT FENCE MUST BE INSTALLED ALONG THE CONTOUR.
- USE STONE TO STABILIZE AREAS SUCH AS THE PERIMETER OF BUILDINGS UNDER CONSTRUCTION OR WHERE CONSTRUCTION VEHICLE TRAFFIC IS ANTICIPATED. STONE PATHS SHOULD BE 10-20 FEET WIDE TO ACCOMMODATE VEHICLE TRAFFIC.
- AREAS OF DISTURBED SOILS MUST BE STABILIZED AT THE END OF EACH WORK DAY, WITH THE FOLLOWING EXCEPTIONS:
  - IF NO PRECIPITATION WITHIN 24 HOURS IS FORECAST AND WORK WILL RESUME IN THE SAME AREA WITHIN 24 HOURS.
  - DISTURBED AREAS THAT COLLECT AND RETAIN RUNOFF, SUCH AS OPEN UTILITY TRENCHES, MUST BE STABILIZED AT THE END OF EACH WORK WEEK.
- PRIOR TO STABILIZATION, SNOW OR ICE MUST BE REMOVED TO LESS THAN 1" THICKNESS.

CONTRACTOR RESPONSIBILITIES, LIMITATIONS & PROHIBITIONS

1. **GENERAL NOTES**

- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO AMEND/UPDATE ALL PLANS AND EXISTING PERMITS WHEN ADDING DETAILED CONSTRUCTION PHASING OR ANYTHING ELSE THAT MAY DEVIATE FROM THE APPROVED PLANS AS DIRECTED BY THE RESIDENT ENGINEER.

- OTHER THAN THOSE SHOWN ON THE PLANS ALL LAND DISTURBANCES WITHIN 50 FEET OF ALL WATER BODIES, MEASURED FROM THE TOP OF BANK, AND WETLANDS, ARE PROHIBITED WITHOUT FURTHER REGULATORY REVIEW.

- CONTRACTOR TO MAINTAIN ALL EXISTING STREAMS AND RIPARIAN BUFFER ZONES IN THEIR NATURAL CONDITION.

- THE FAILURE TO PROMPTLY ABATE THE DISCHARGE OF SEDIMENT OR ANY OTHER WASTE WHICH CAUSES A VISIBLE DISCOLORATION OF SURFACE WATERS (INCLUDING WETLANDS), OR IS FOUND TO BE VIOLATING WATER QUALITY STANDARDS BASED ON MONITORING, IS PROHIBITED. ANY CORRECTIVE ACTION UNDERTAKEN TO REMOVE SEDIMENT FROM A WETLAND IS ALSO PROHIBITED.

- WEATHER CONDITIONS WILL BE MONITORED DURING THE CONSTRUCTION SEASON. IF AN EXTENDED RAIN PERIOD OR HEAVY RAIN IS PREDICTED, EXPOSED SOIL AREAS WILL BE MULCHED PRIOR TO AND DAILY DURING THE RAIN EVENT. IF DETERMINED NECESSARY BY THE RESIDENT ENGINEER, WORK MAY BE SUSPENDED OR LIMITED DURING THE STORM.

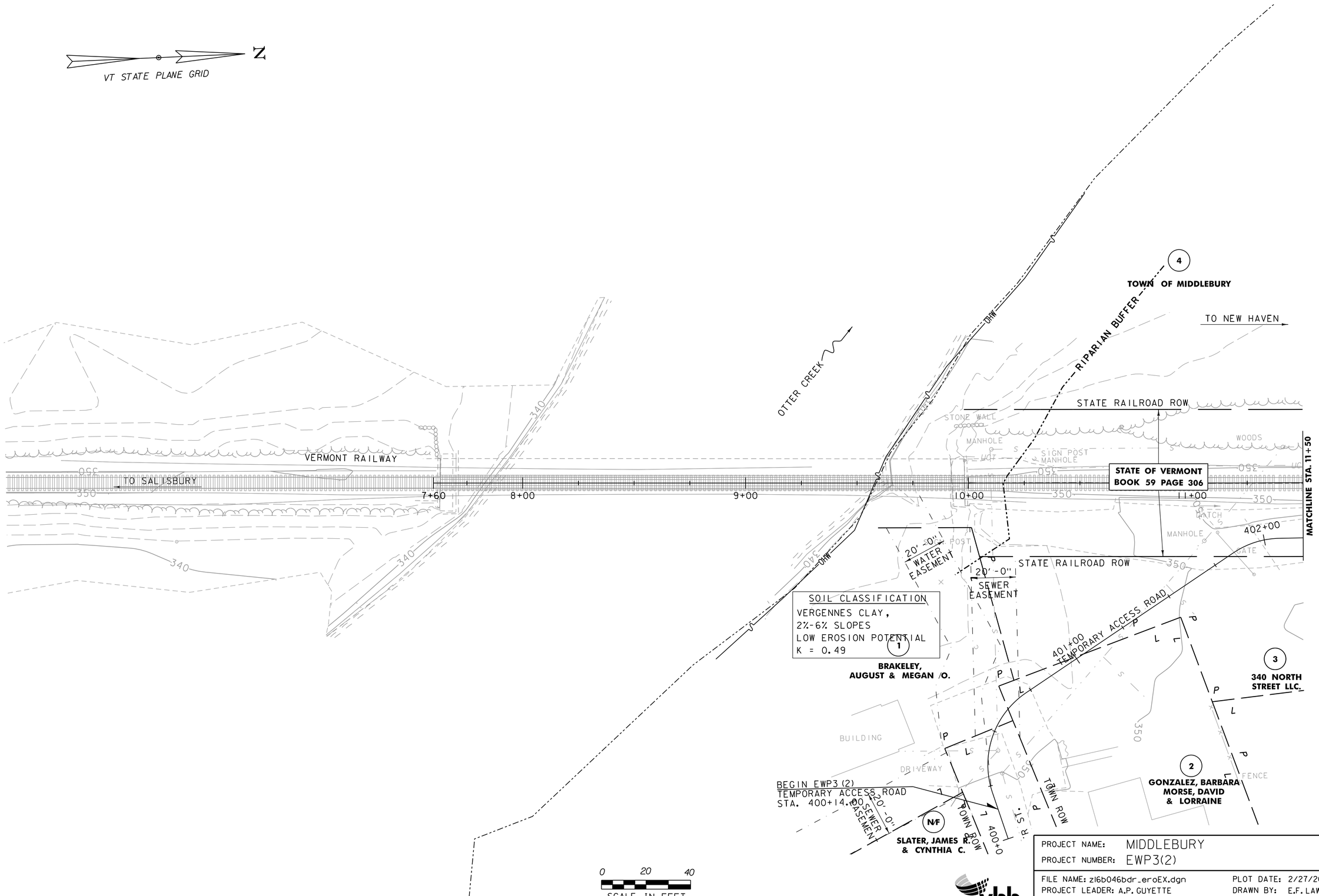
1. EPSC PLAN

THE CONTRACTOR SHALL SUBMIT AN EPSC PLAN IN ACCORDANCE WITH ITEM 652.10 “EPSC PLAN”.

2. INSPECTION & MONITORING NOTES

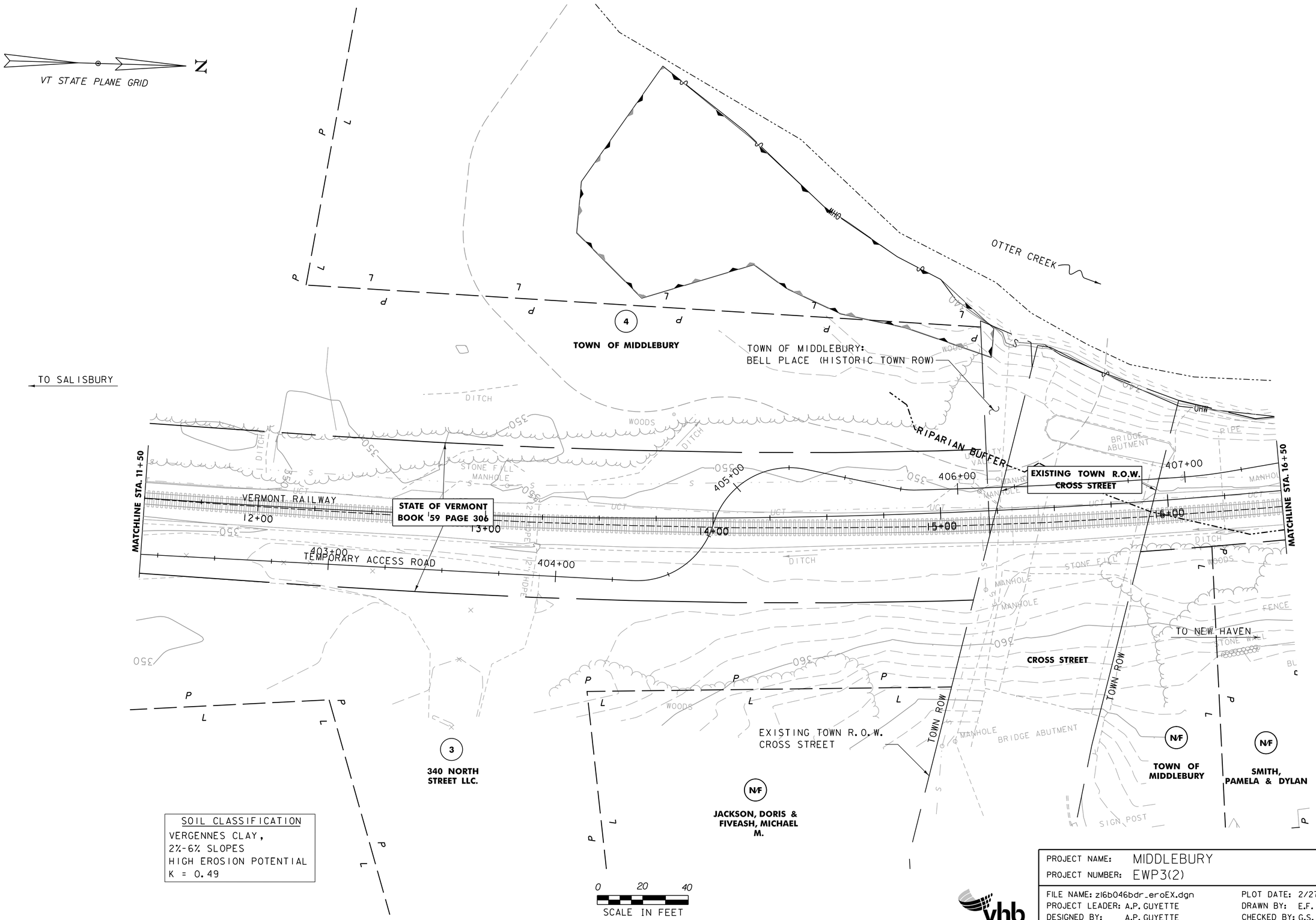
- CONTRACTOR TO CONDUCT INSPECTIONS AND MONITORING IN ACCORDANCE WITH THE SPECIAL PROVISIONS AND PERMIT SPECIFIC REQUIREMENTS.

- THE CONTRACTOR SHALL KEEP TWO (2) TURBIDITY MONITORS ONSITE AND HAVE PERSONNEL ON HAND THAT ARE TRAINED IN THEIR OPERATION.



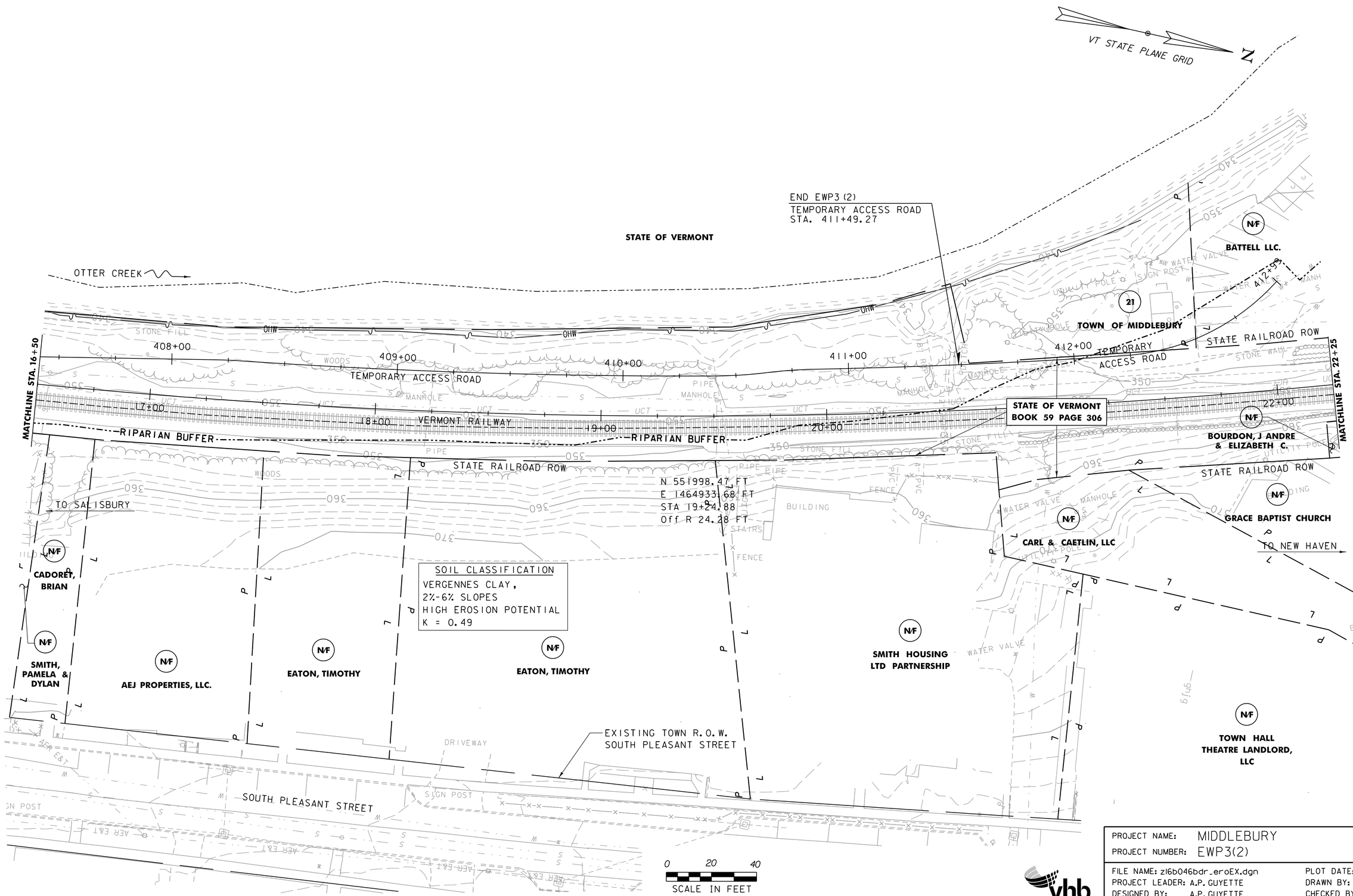
PROJECT NAME:	MIDDLEBURY
PROJECT NUMBER:	EWP3(2)

FILE NAME: z16b046bdr_eroEX.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC EXISTING SITE PLAN (1 OF 9)	SHEET 107 OF 135



SOIL CLASSIFICATION
VERGENNES CLAY,
2%-6% SLOPES
HIGH EROSION POTENTIAL
K = 0.49

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroEX.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC EXISTING SITE PLAN (2 OF 9)	SHEET 108 OF 135



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FILE NAME: z16b046bdr_eroEX.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: A.P. GUYETTE
EPSC EXISTING SITE PLAN (3 OF 9)

PLOT DATE: 2/27/2018
DRAWN BY: E.F. LAWES
CHECKED BY: G.S. GOODRICH
SHEET 109 OF 135

VT STATE PLANE GRID

N

EXISTING TOWN R.O.W.
MAIN STREET

TO CORNWALL

EXISTING TOWN R.O.W.
MERCHANTS ROW

N/F
770 COMPANY, LLC.

12
THEO FULLER-LOWELL & GARY J. DUPOISE

TOWN ROW

MAIN ST.
VT ROUTE 30

11
NATIONAL BANK OF MIDDLEBURY

MATCHLINE SHEET 9 OF 9

N/F
BATTELL LLC.

8
MIDDLEBURY NATIONAL CORPORATION

7
MARBLE WORKS PARTNERSHIP

TOWN ROW

MERCHANTS ROW

5
TOWN OF MIDDLEBURY

PRINTER'S ALLEY
PRINTERS ALLEY

6
TOWN OF MIDDLEBURY

BATTELL BLOCK

STATE RAILROAD ROW

MATCHLINE STA. 22+25

VERMONT RAILWAY

23+00

24+00

25+00

26+00

27+00

28

MATCHLINE STA. 28+00

STATE OF VERMONT
BOOK 59 PAGE 306

STATE RAILROAD ROW

N/F
BOURDON, J ANDRE & ELIZABETH C.

TO SALISBURY

MERCHANTS ROW

STATE RAILROAD ROW

MAIN STREET

STATE RAILROAD ROW

TO NEW HAVEN

N/F
GRACE BAPTIST CHURCH

22
TOWN OF MIDDLEBURY

23
UNITED STATES OF AMERICA

TOWN ROW

TO ROUTE 7

N/F
CARL & CAETLIN, LLC

N/F
TOWN HALL THEATRE LANDLORD, LLC

TOWN ROW

TO VERGENNES

TOWN ROW

TOWN ROW

SOIL CLASSIFICATION
VERGENNES CLAY,
2%-6% SLOPES
HIGH EROSION POTENTIAL
K = 0.49

0 20 40
SCALE IN FEET

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroEX.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC EXISTING SITE PLAN (4 OF 9)	SHEET 110 OF 135

MATCHLINE SHEET 9 OF 9

VT STATE PLANE GRID

N

7

SOIL CLASSIFICATION
VERGENNES CLAY,
2%-6% SLOPES
HIGH EROSION POTENTIAL
K = 0.49

PRINTERS ALLEY

STATE RAILROAD ROW

VERMONT RAILWAY

STATE RAILROAD ROW

MATCHLINE STA. 28+00

MATCHLINE STA. 33+75

29+00

30+00

31+00

32+00

33+00

TO SALISBURY

TO NEW HAVEN

TOWN ROW

10

23

N/F

N/F

N/F

SIGN POST

MAN HOLE

SIGN POST

MANHOLE

UTILITY POLE

UTILITY POLE

UTILITY POLE

FENCE

0 20 40

SCALE IN FEET

vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
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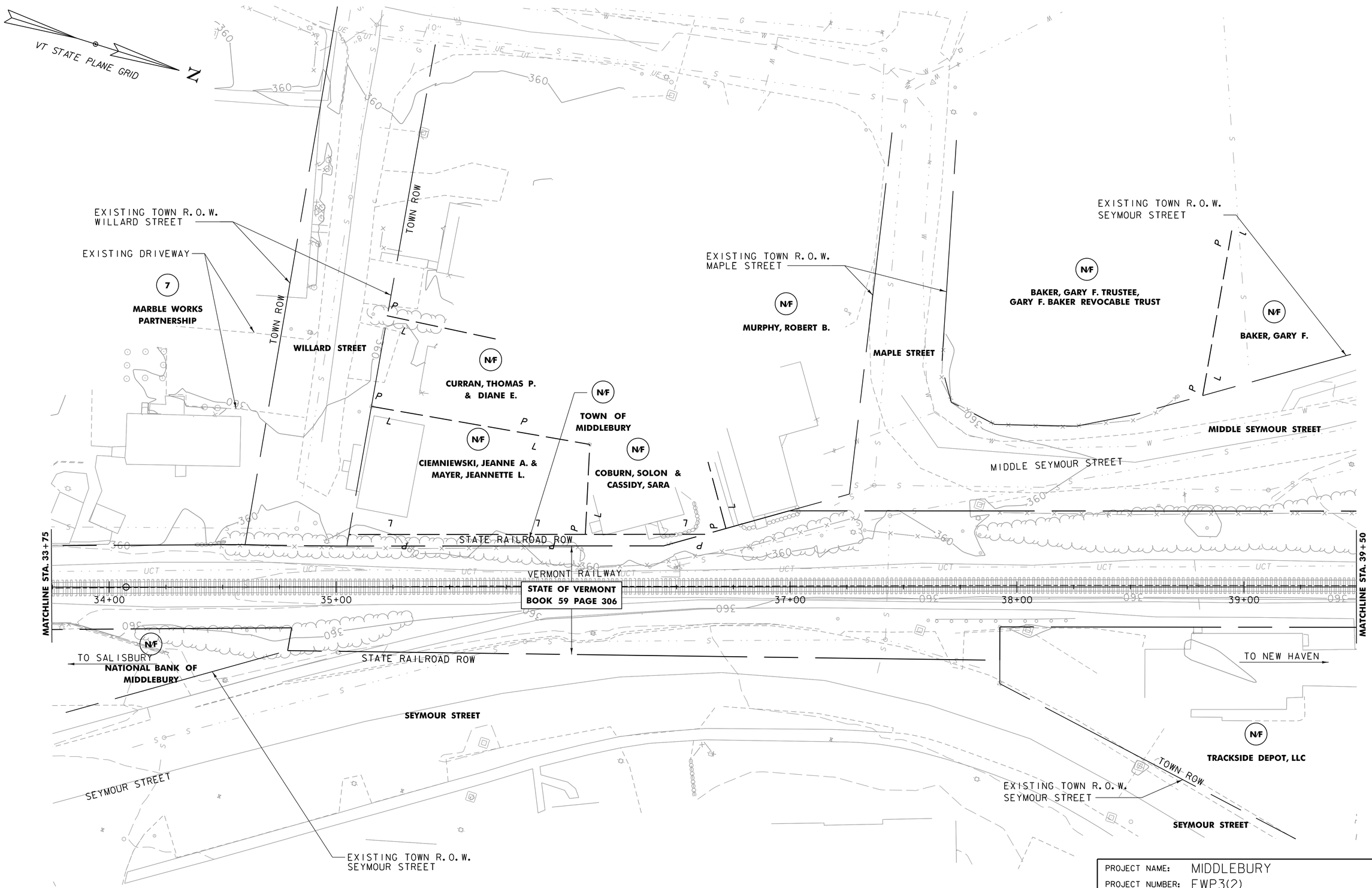
EPSC EXISTING SITE PLAN (5 OF 9)	SHEET III OF 135



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EPSC EXISTING SITE PLAN (6 OF 9)	SHEET 112 OF 135

VT STATE PLANE GRID

N

MIDDLE SEYMOUR STREET

STATE RAILROAD ROW

STATE OF VERMONT
BOOK 59 PAGE 306

VERMONT RAILWAY

STATE OF VERMONT
BOOK 59 PAGE 306

STATE RAILROAD ROW

MATCHLINE STA. 39+50

MATCHLINE STA. 45+25

40+00 41+00 42+00 43+00 44+00 45+00

STATE RAILROAD ROW

TO SALISBURY

TO NEW HAVEN

STATE RAILROAD ROW

N/F

DUPOISE,
STEPHEN F. & MARCIA S.

ELM STREET

EXISTING TOWN R.O.W.
ELM STREET

TOWN ROW

ELM STREET

TOWN ROW

N/F

COTRONEO
PROPERTIES LLC

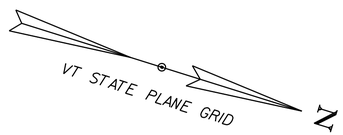
N/F

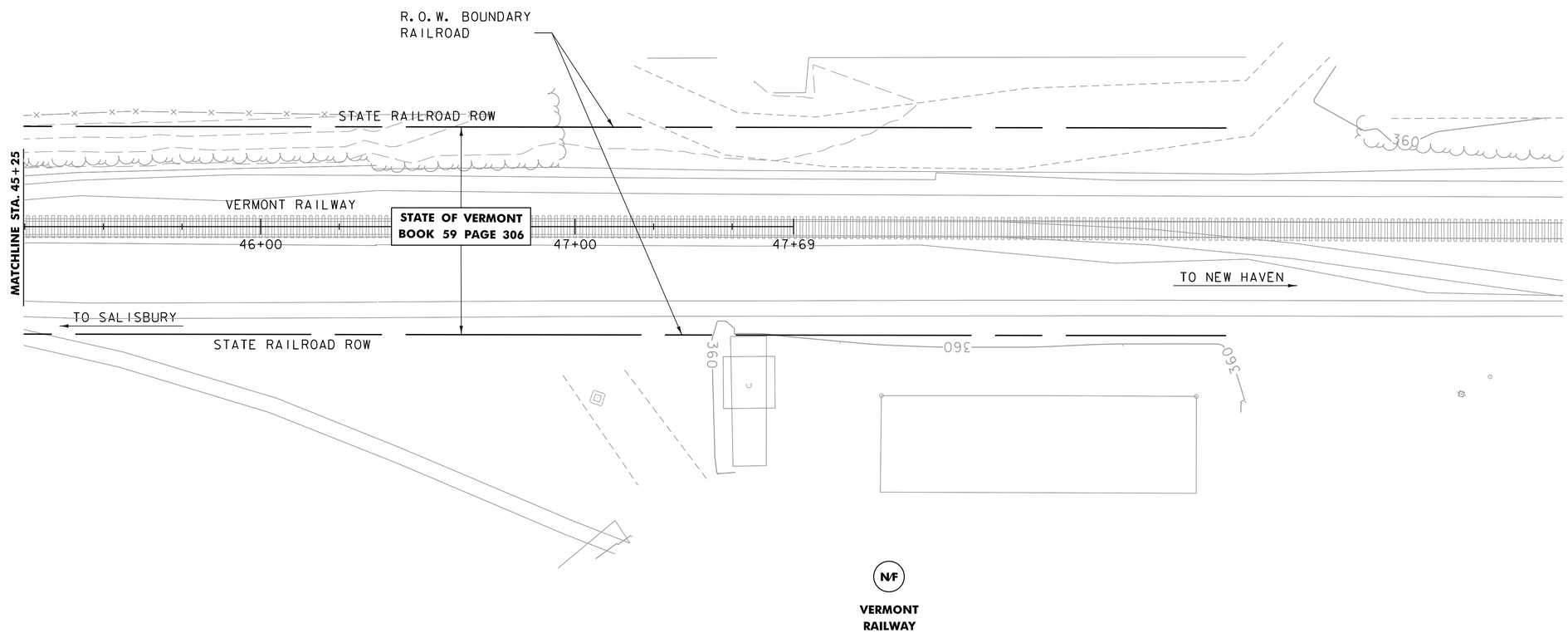
VERMONT
RAILWAY

SEYMOUR STREET

0 20 40
SCALE IN FEET

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroEX.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC EXISTING SITE PLAN (7 OF 9)	SHEET 113 OF 135





0 20 40
SCALE IN FEET

PROJECT NAME: MIDDLEBURY	
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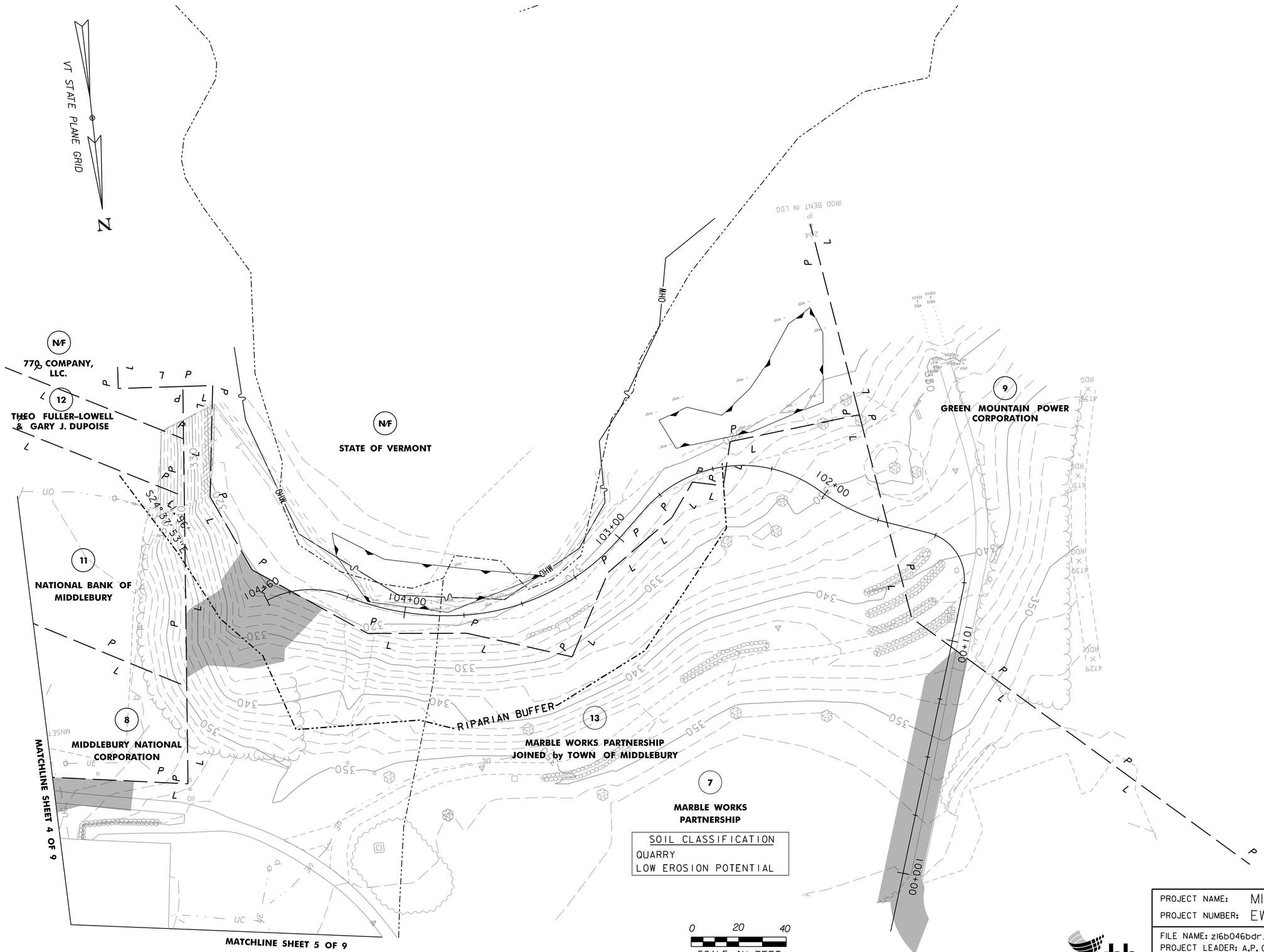
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC EXISTING SITE PLAN (8 OF 9)	SHEET 114 OF 135



PROJECT NAME: MIDDLEBURY
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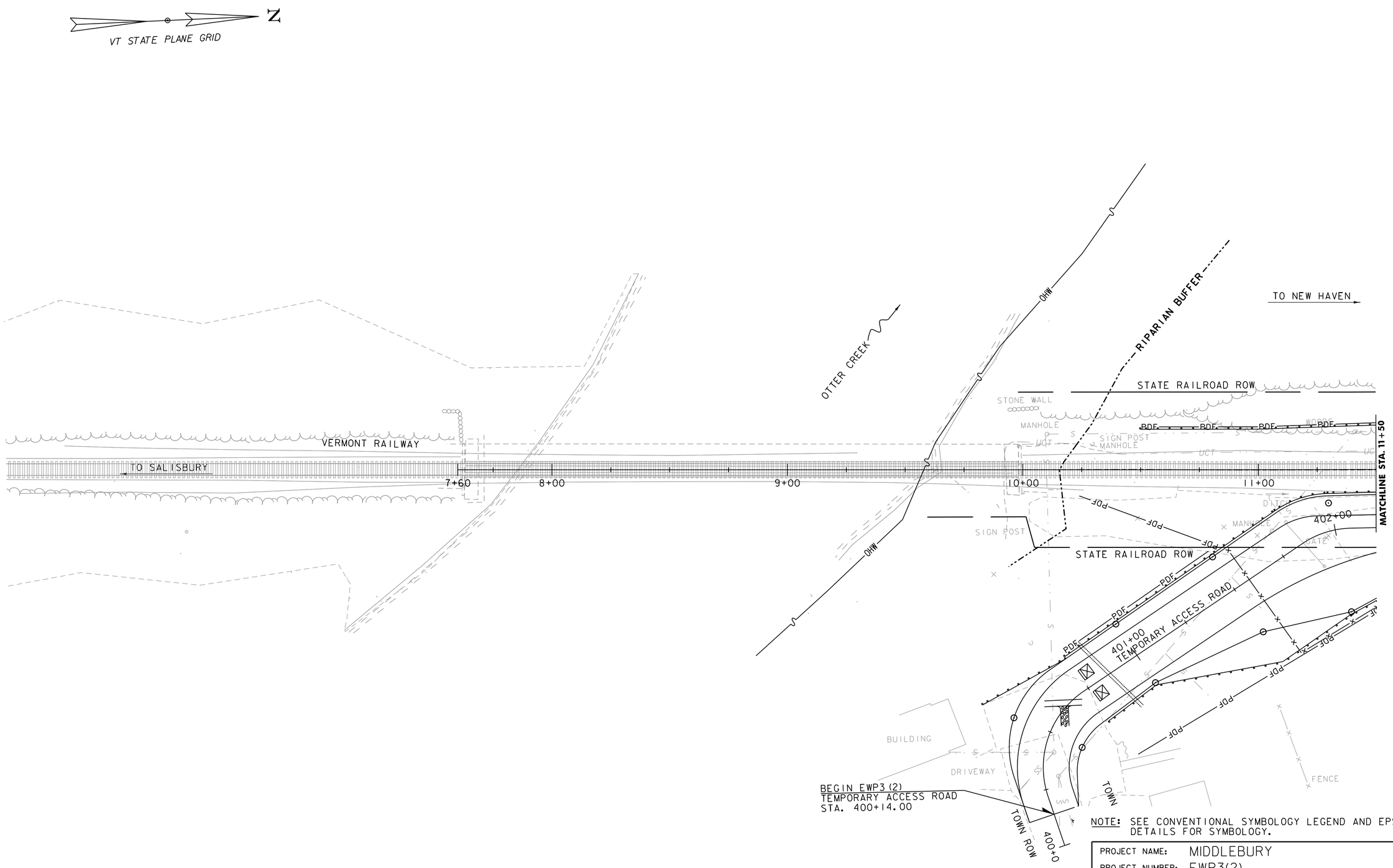
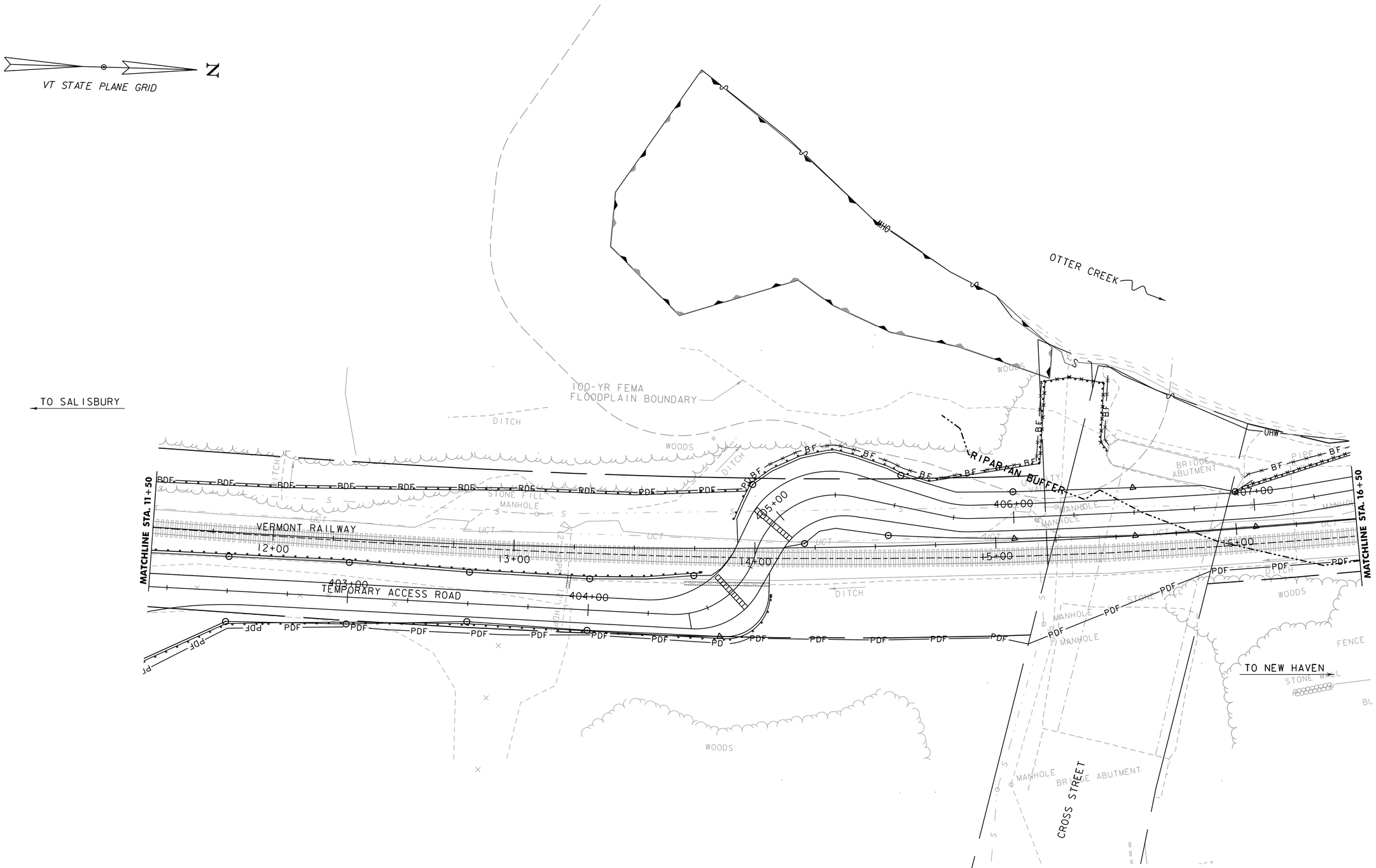
FILE NAME: z16b046bdr_eroEX.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: A.P. GUYETTE
EPSC EXISTING SITE PLAN (9 OF 9)

PLOT DATE: 2/27/2018
DRAWN BY: E.F. LAWES
CHECKED BY: G.S. GOODRICH
SHEET 115 OF 135



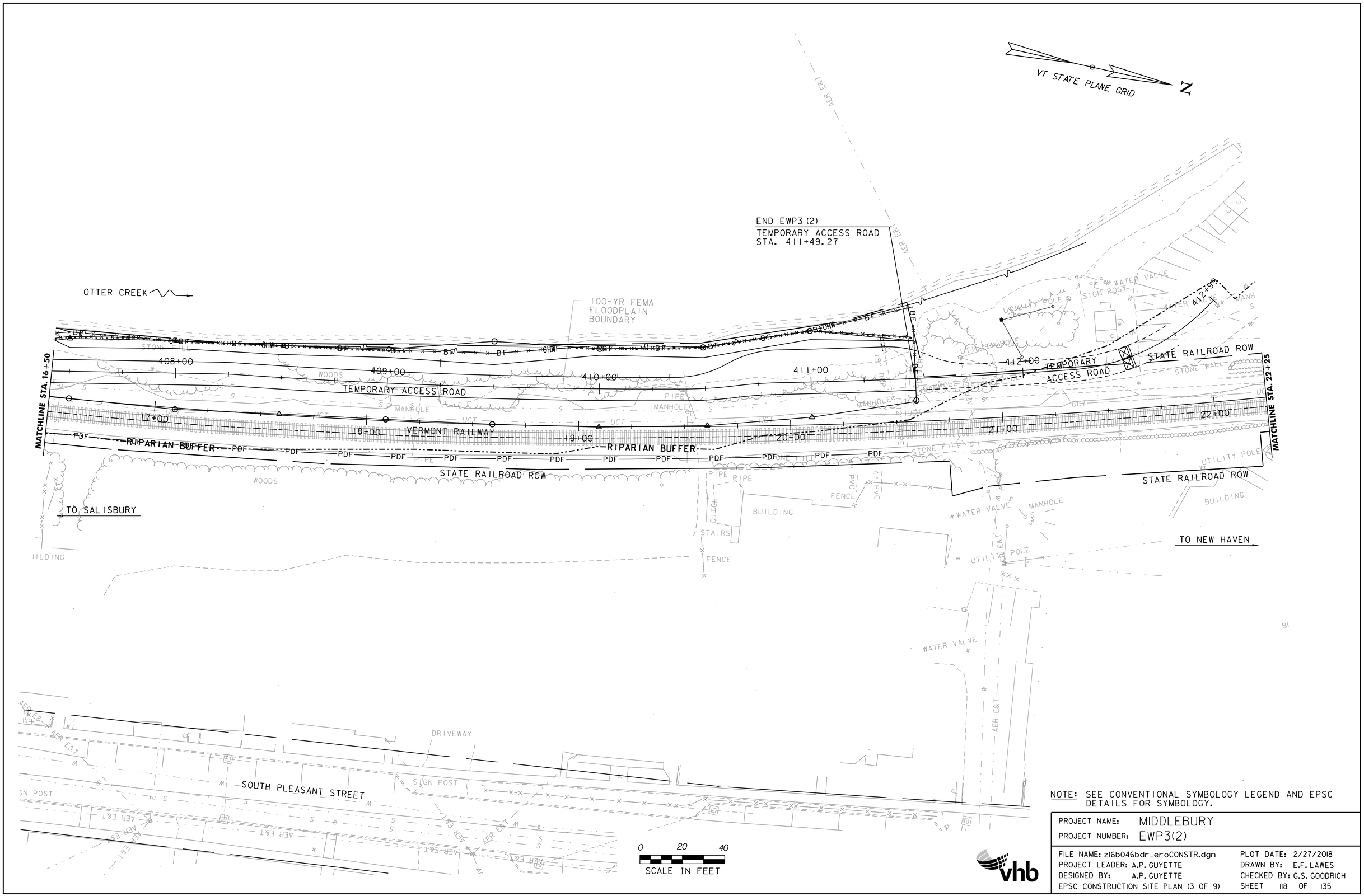
NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroCONSTR.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC CONSTRUCTION SITE PLAN (1 OF 9)	SHEET 116 OF 135



NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroCONSTR.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC CONSTRUCTION SITE PLAN (2 OF 9)	SHEET 117 OF 135



NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroCONSTR.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC CONSTRUCTION SITE PLAN (3 OF 9)	SHEET 118 OF 135

VT STATE PLANE GRID

N

LOCATIONS FOR PORTABLE DEWATERING TREATMENT DEVICES (TYP)

PROVIDE AND MAINTAIN TEMPORARY INLET FILTERS DURING CONSTRUCTION, TYP FOR ALL EXISTING INLETS TAKING CONSTRUCTION RUNOFF

TO CORNWALL

TOWN ROW

MAIN ST / VT ROUTE 30

MERCHANTS ROW

PRINTERS ALLEY

BATTELL BLOCK

STATE RAILROAD ROW

VERMONT RAILWAY

MATCHLINE STA. 22+25

MATCHLINE STA. 28+00

MATCHLINE SHEET 9 OF 9

23+00

24+00

25+00

26+00

27+00

TO SALISBURY

TO NEW HAVEN

TO ROUTE 7

TO VERGENNES

BUILDING

MANHOLE

UTILITY POLE

STONE WALL

SIGN POST

WATER VALVE

FENCE

0 20 40

SCALE IN FEET

NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroCONSTR.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC CONSTRUCTION SITE PLAN (4 OF 9)	SHEET 119 OF 135

MATCHLINE SHEET 9 OF 9

VT STATE PLANE GRID

N

LOCATIONS FOR PORTABLE DEWATERING TREATMENT DEVICES

PRINTERS ALLEY

STATE RAILROAD ROW

VERMONT RAILWAY

STATE RAILROAD ROW

MATCHLINE STA. 28+00

MATCHLINE STA. 33+75

MATCHLINE

29+00

30+00

31+00

32+00

33+00

TO SALISBURY

TO NEW HAVEN

TOWN ROW

SIGN POST

MAN HOLE

SIGN POST

UTILITY POLE

UTILITY POLE

UTILITY POLE

FENCE

AER E&T

0 20 40

SCALE IN FEET

NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046bdr_eroCONSTR.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC CONSTRUCTION SITE PLAN (5 OF 9)	SHEET 120 OF 135

VT STATE PLANE GRID

N

TOWN ROW

TOWN ROW

AER E&T

MIDDLE SEYMOUR STREET

STATE RAILROAD ROW

VERMONT RAILWAY

UCT

MATCHLINE STA. 33+75

MATCHLINE STA. 39+50

34+00

35+00

36+00

37+00

38+00

39+00

TO SALISBURY

TO NEW HAVEN

STATE RAILROAD ROW

SEYMOUR STREET

TOWN ROW

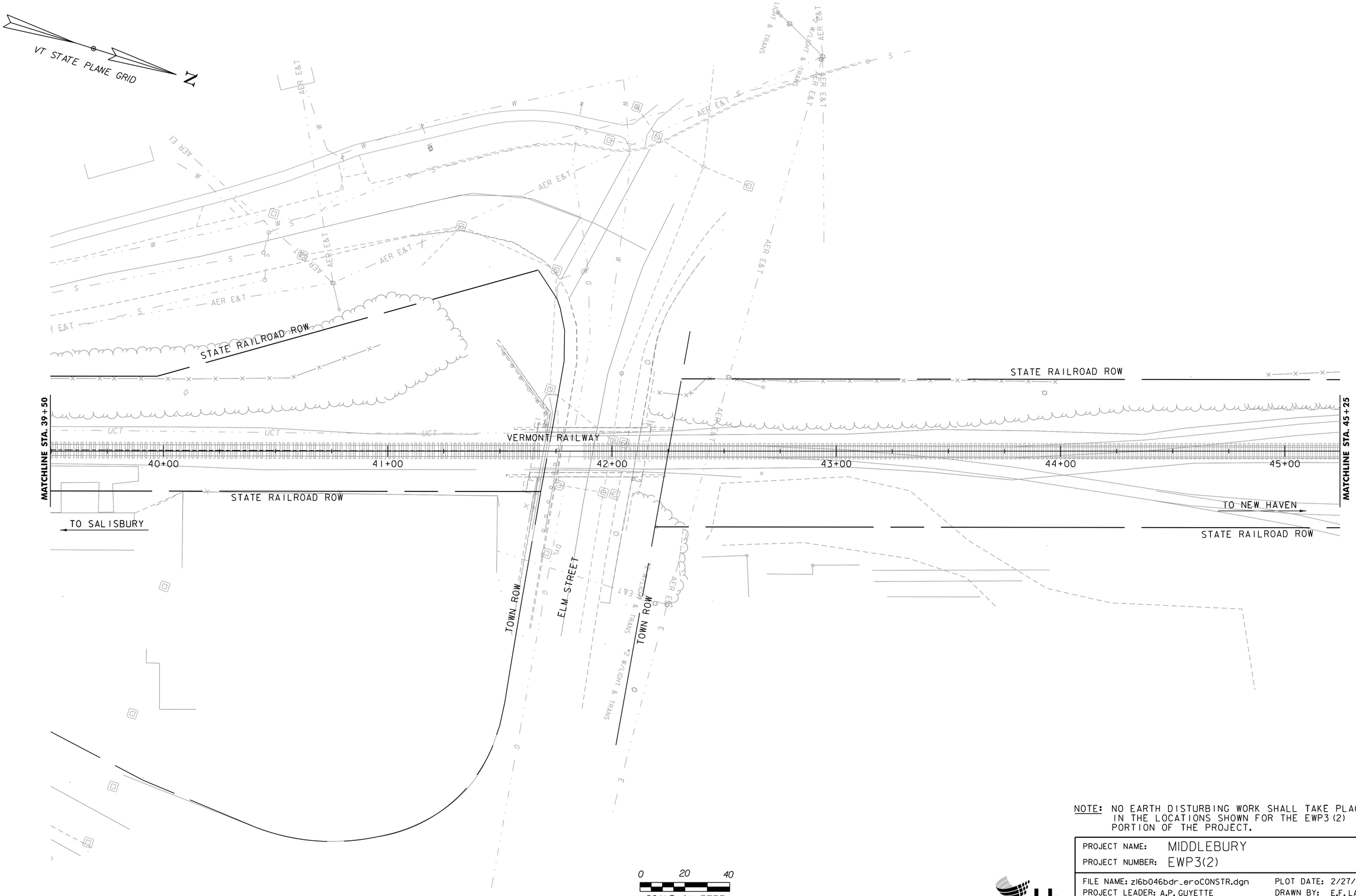
0 20 40

SCALE IN FEET

NOTE: NO EARTH DISTURBING WORK SHALL TAKE PLACE IN THE LOCATIONS SHOWN FOR THE EWP3(2) PORTION OF THE PROJECT.

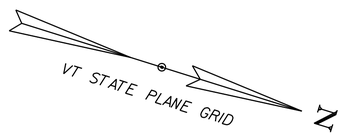
vhb

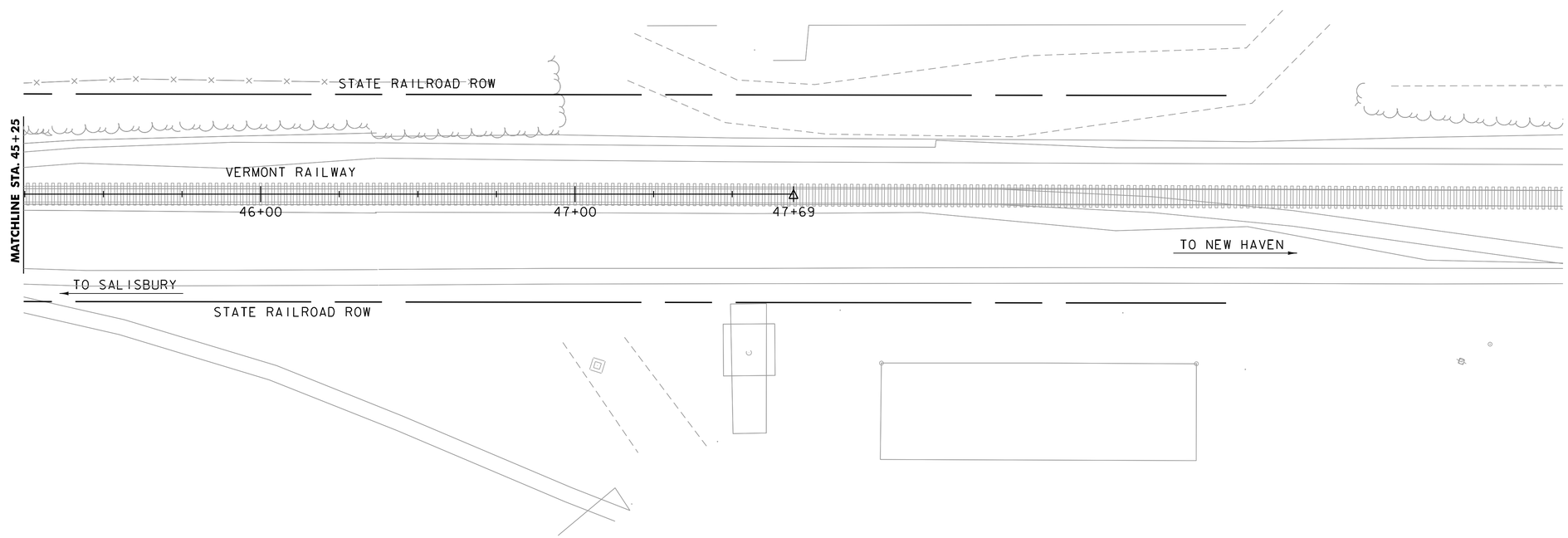
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroCONSTR.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC CONSTRUCTION SITE PLAN (6 OF 9)	SHEET 121 OF 135



NOTE: NO EARTH DISTURBING WORK SHALL TAKE PLACE IN THE LOCATIONS SHOWN FOR THE EWP3(2) PORTION OF THE PROJECT.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroCONSTR.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC CONSTRUCTION SITE PLAN (7 OF 9)	SHEET 122 OF 135

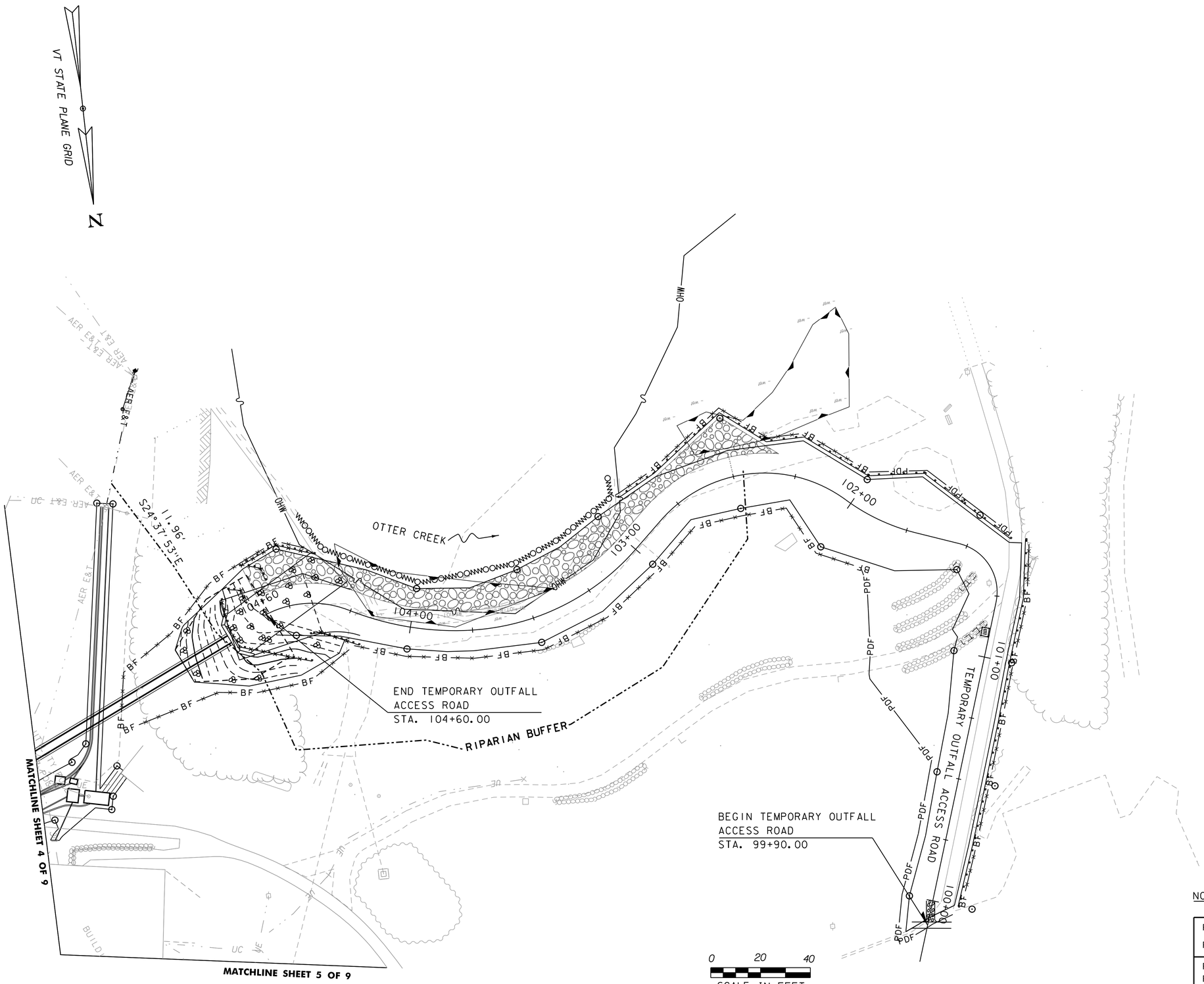




0 20 40
SCALE IN FEET

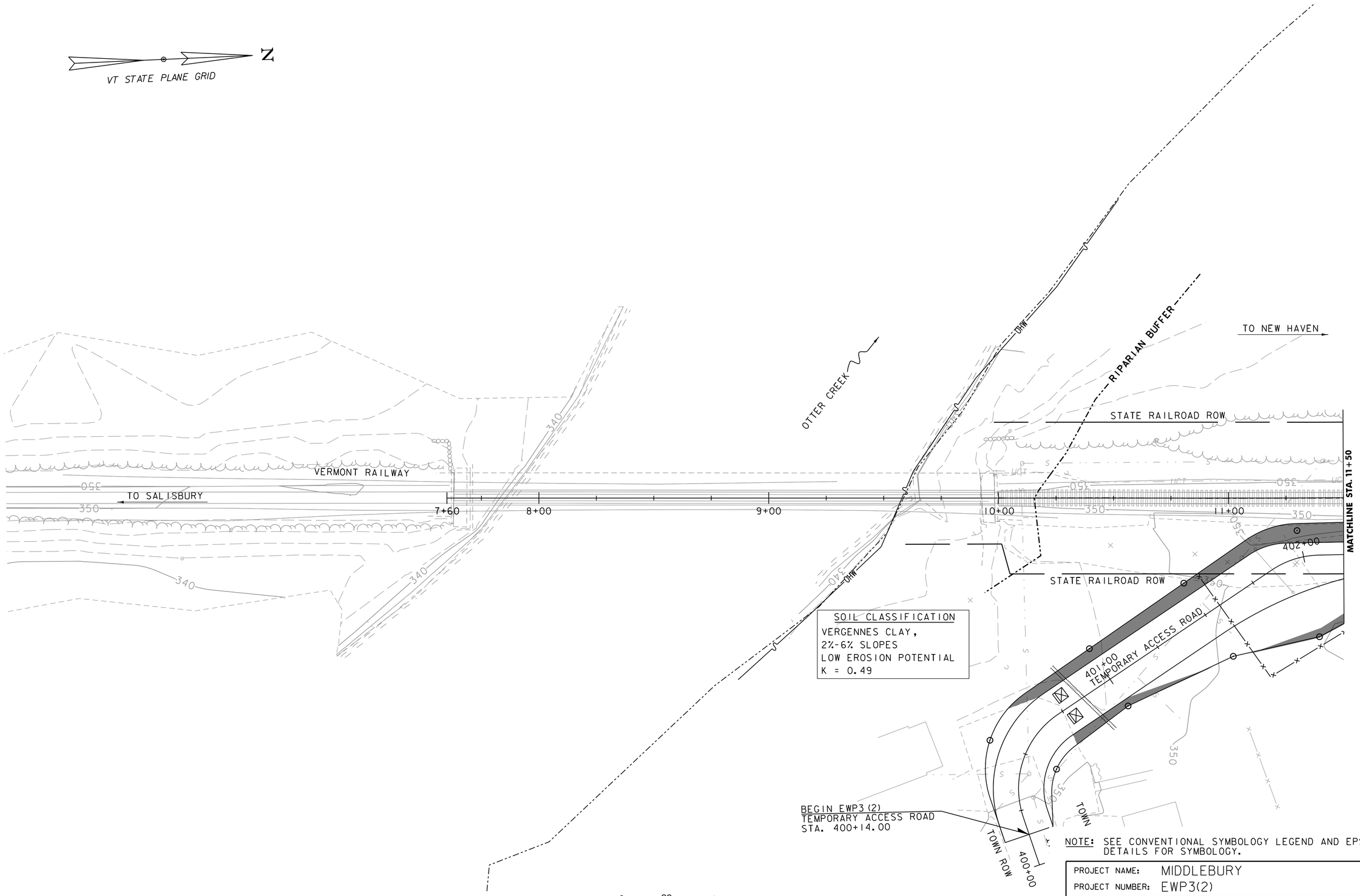
NOTE: NO EARTH DISTURBING WORK SHALL TAKE PLACE IN THE LOCATIONS SHOWN FOR THE EWP3(2) PORTION OF THE PROJECT.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroCONSTR.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC CONSTRUCTION SITE PLAN (8 OF 9)	SHEET 123 OF 135



NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroCONSTR.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC CONSTRUCTION SITE PLAN (9 OF 9)	SHEET 124 OF 135



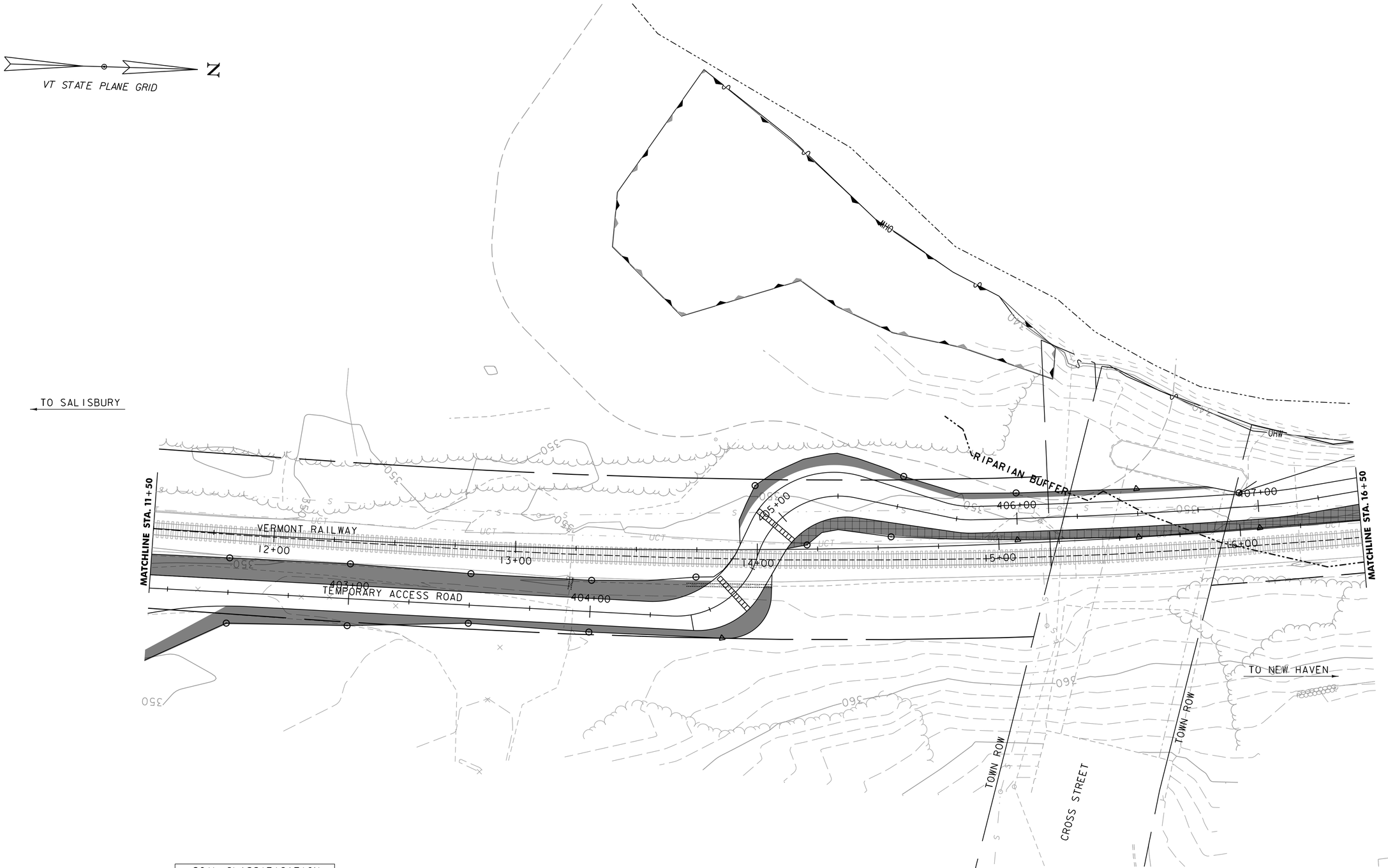
SOIL CLASSIFICATION
VERGENNES CLAY,
2%-6% SLOPES
LOW EROSION POTENTIAL
K = 0.49

NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046bdr_eroFINAL.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: A.P. GUYETTE
EPSC FINAL SITE PLAN (1 OF 9)

PLOT DATE: 2/27/2018
DRAWN BY: E.F. LAWES
CHECKED BY: G.S. GOODRICH
SHEET 125 OF 135

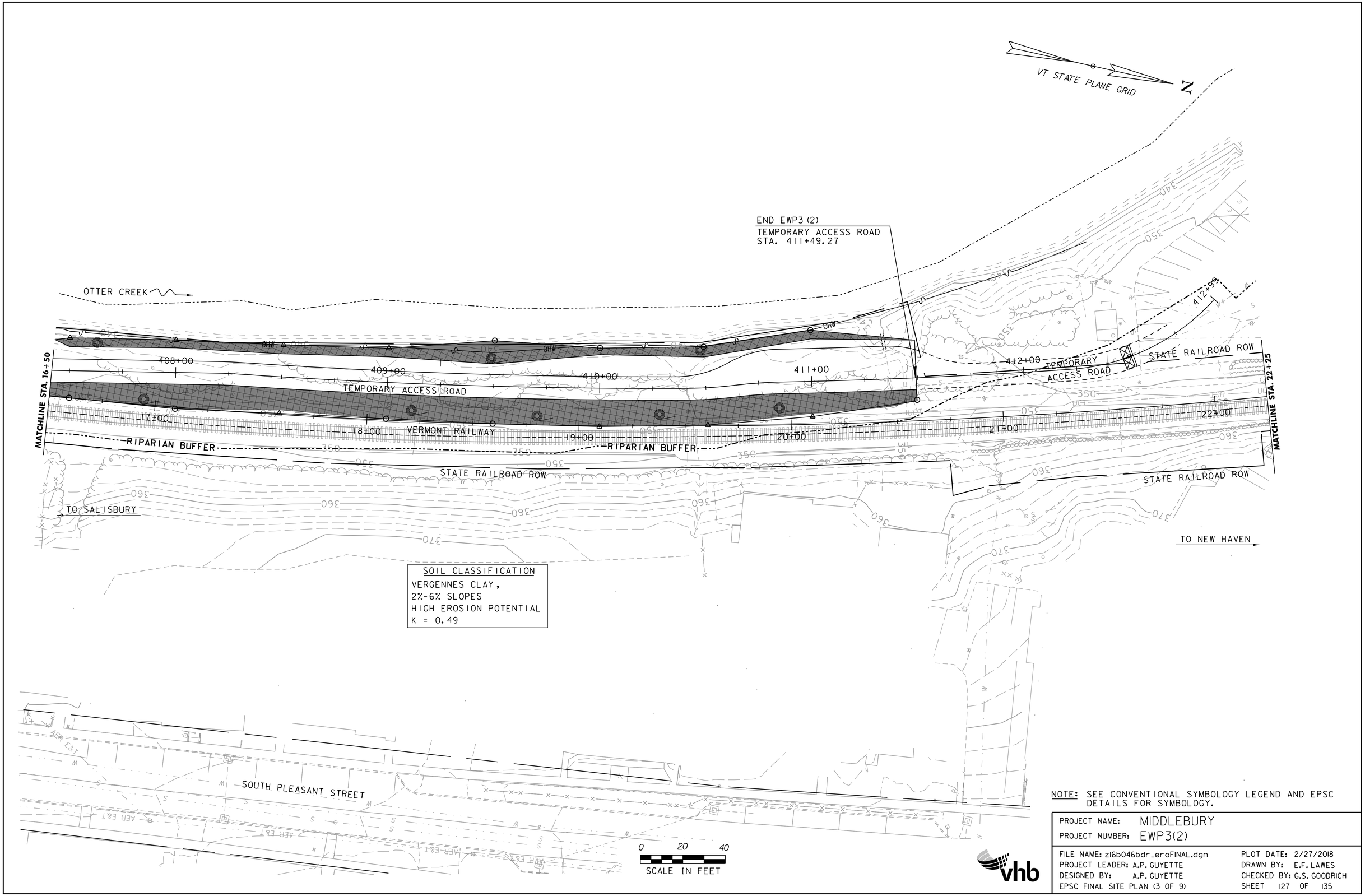


SOIL CLASSIFICATION
VERGENNES CLAY,
2%-6% SLOPES
HIGH EROSION POTENTIAL
K = 0.49

0 20 40
SCALE IN FEET

NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046bdr_eroFINAL.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC FINAL SITE PLAN (2 OF 9)	SHEET 126 OF 135



NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroFINAL.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC FINAL SITE PLAN (3 OF 9)	SHEET 127 OF 135

VT STATE PLANE GRID

N

TO CORNWALL

TOWN ROW

MAIN ST/
VT ROUTE 30

MATCHLINE SHEET 9 OF 9

TOWN ROW

MERCHANTS ROW

PRINTERS ALLEY

BATTELL BLOCK

STATE RAILROAD ROW

VERMONT RAILWAY

MATCHLINE STA. 22+25

23+00

24+00

25+00

26+00

27+00

28

MATCHLINE STA. 28+00

STATE RAILROAD ROW

TO SALISBURY

TO NEW HAVEN

TO ROUTE 7

TOWN ROW

TO VERGENNES

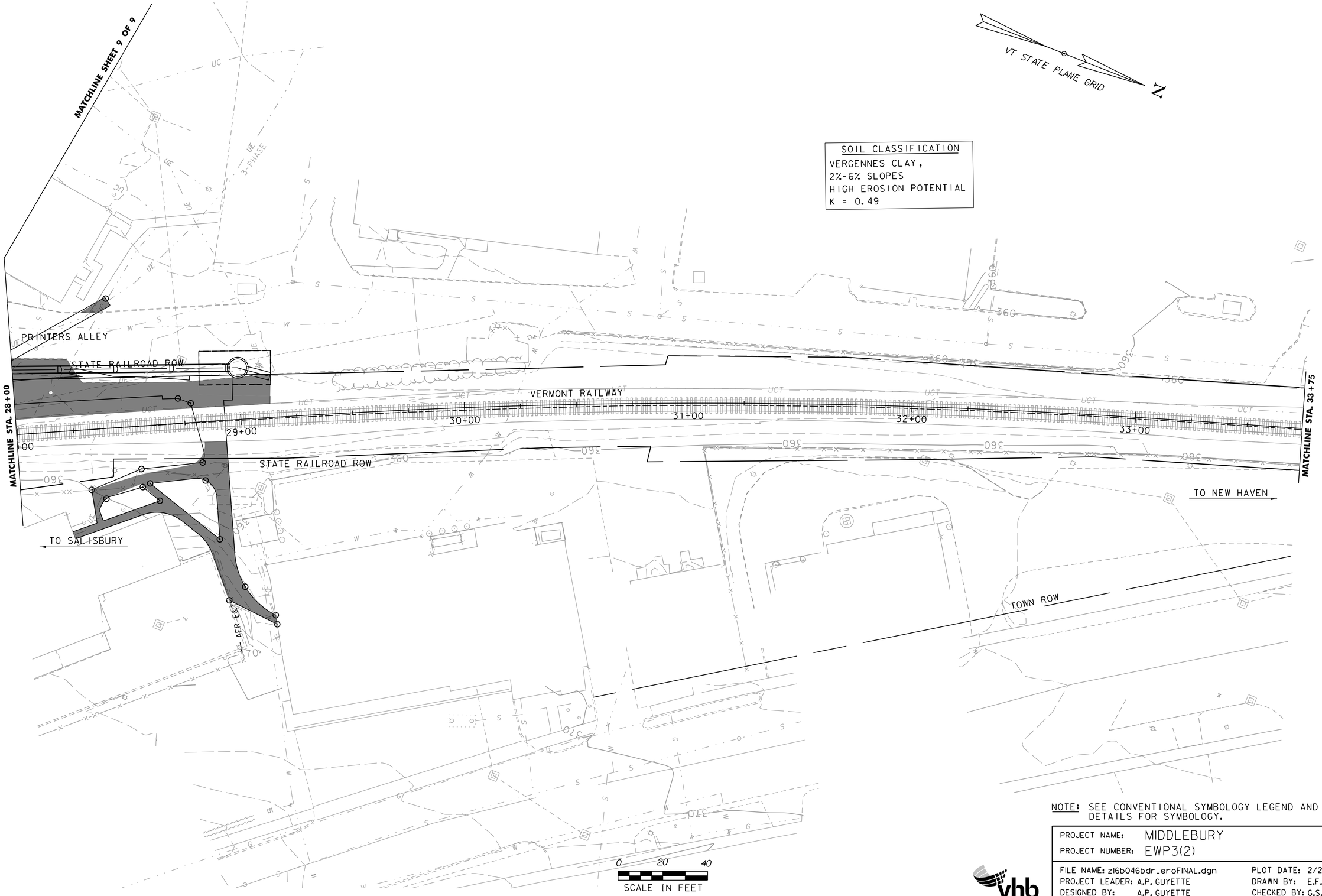
SOIL CLASSIFICATION
VERGENNES CLAY,
2%-6% SLOPES
HIGH EROSION POTENTIAL
K = 0.49

0 20 40
SCALE IN FEET

NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

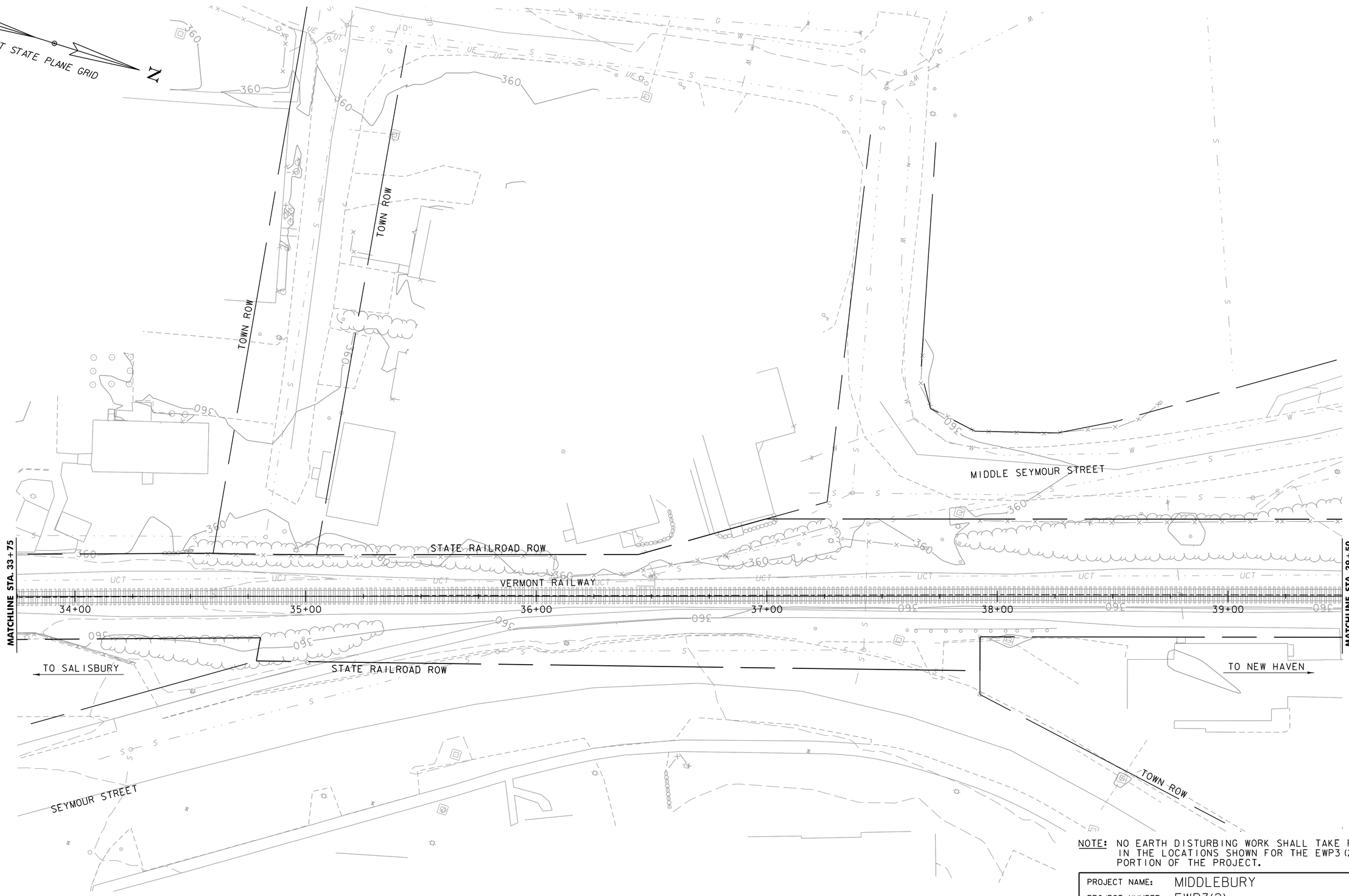
vhb

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046bdr_eroFINAL.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC FINAL SITE PLAN (4 OF 9)	SHEET 128 OF 135



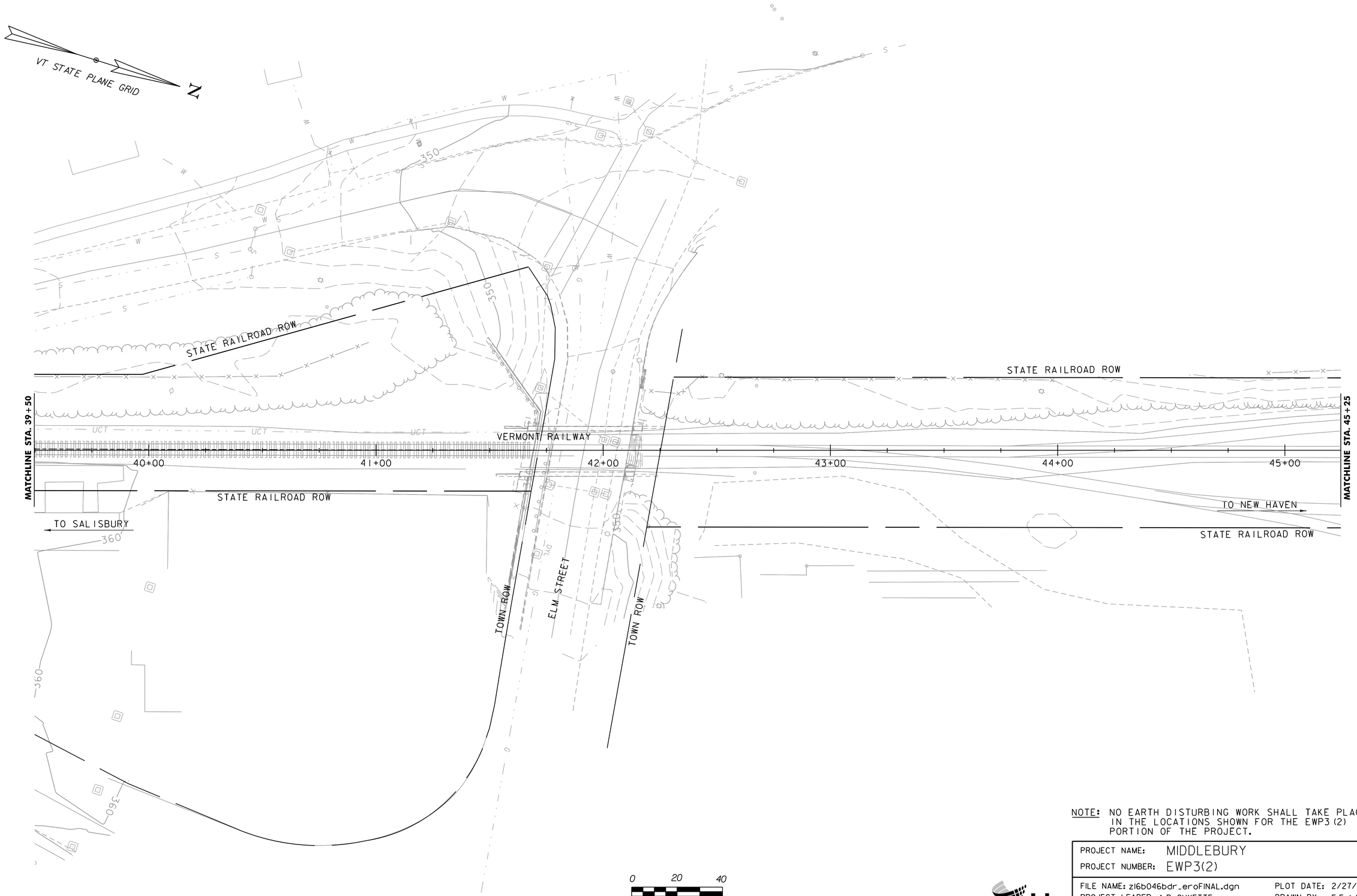
NOTE: SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroFINAL.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC FINAL SITE PLAN (5 OF 9)	SHEET 129 OF 135



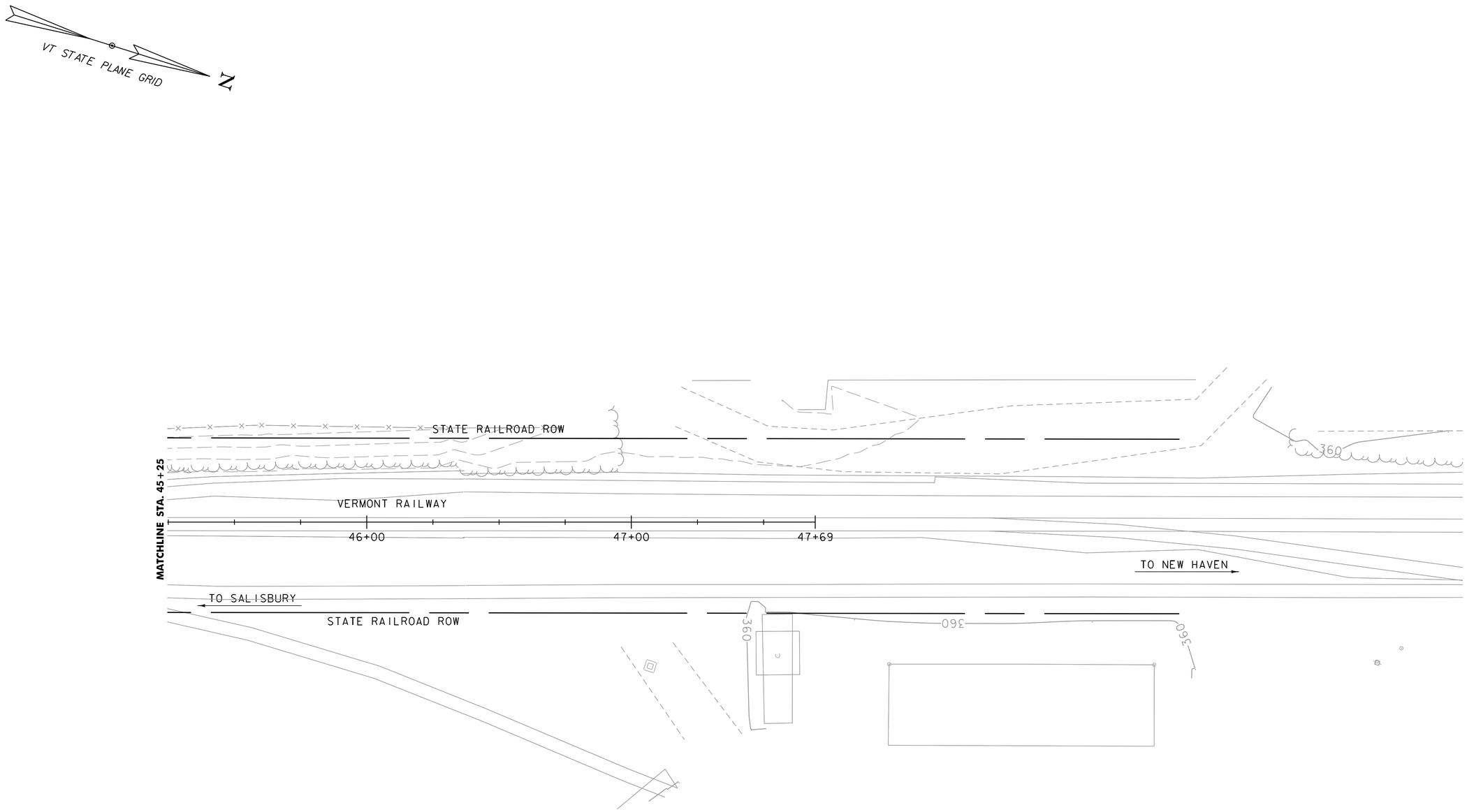
NOTE: NO EARTH DISTURBING WORK SHALL TAKE PLACE IN THE LOCATIONS SHOWN FOR THE EWP3(2) PORTION OF THE PROJECT.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroFINAL.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC FINAL SITE PLAN (6 OF 9)	SHEET 130 OF 135



NOTE: NO EARTH DISTURBING WORK SHALL TAKE PLACE IN THE LOCATIONS SHOWN FOR THE EWP3(2) PORTION OF THE PROJECT.

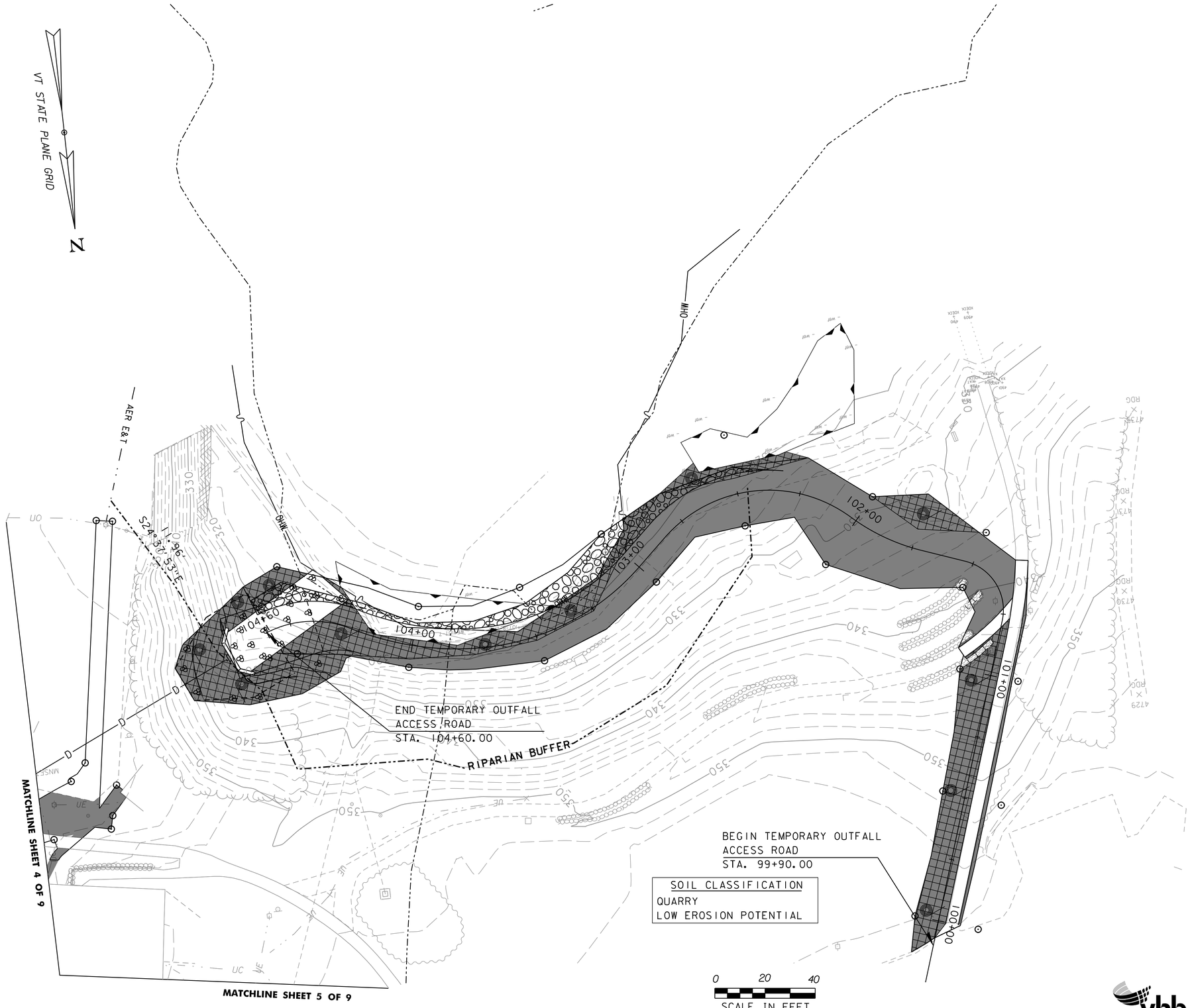
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: zl6b046bdr_eroFINAL.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC FINAL SITE PLAN (7 OF 9)	SHEET 131 OF 135



NOTE: NO EARTH DISTURBING WORK SHALL TAKE PLACE IN THE LOCATIONS SHOWN FOR THE EWP3(2) PORTION OF THE PROJECT.

0 20 40
SCALE IN FEET

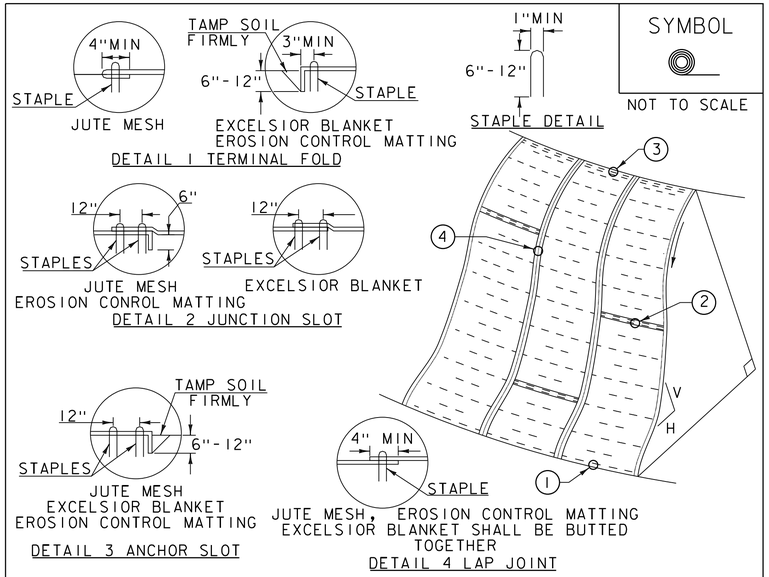
PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroFINAL.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC FINAL SITE PLAN (8 OF 9)	SHEET 132 OF 135



NOTE:

1. SEE CONVENTIONAL SYMBOLOGY LEGEND AND EPSC DETAILS FOR SYMBOLOGY.
2. GRUBBING MATERIAL USED WHERE STONE FILL TYPE I AND STONE FILL TYPE II ARE INDICATED EXCEPT IN LOCATIONS BELOW OHW, IN WETLANDS OR OUTFALL DRAINAGE APRON.

PROJECT NAME: MIDDLEBURY	
PROJECT NUMBER: EWP3(2)	
FILE NAME: z16b046bdr_eroFINAL.dgn	PLOT DATE: 2/27/2018
PROJECT LEADER: A.P. GUYETTE	DRAWN BY: E.F. LAWES
DESIGNED BY: A.P. GUYETTE	CHECKED BY: G.S. GOODRICH
EPSC FINAL SITE PLAN (9 OF 9)	SHEET 133 OF 135



CONSTRUCTION SPECIFICATIONS

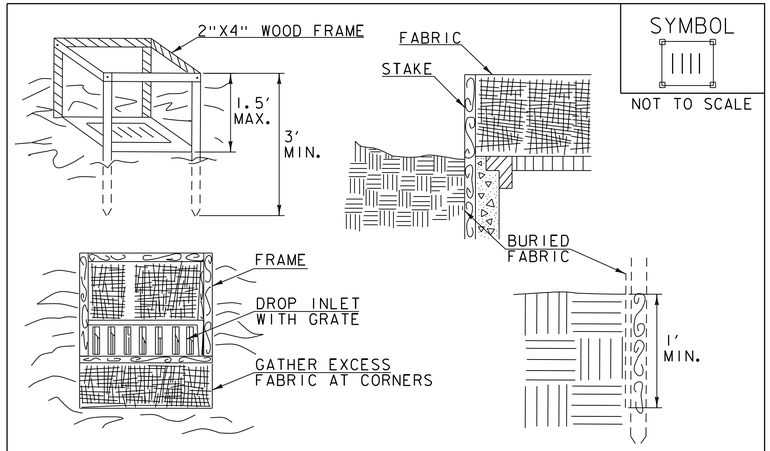
1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN APPARENT OPENING SIZE OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2"x 4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3'.
4. SPACE STAKES EVENLY AROUND INLET 3' APART AND DRIVE A MINIMUM 18" DEEP. SPANS GREATER THAN 3' MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1' MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.
7. MAXIMUM DRAINAGE AREA 1 ACRE

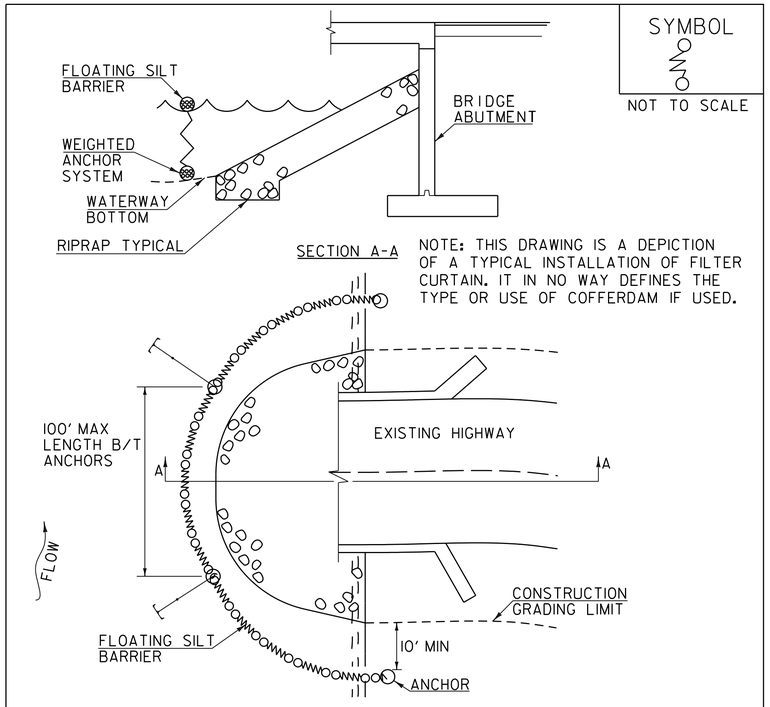
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FILTER FABRIC DROP INLET PROTECTION

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR INLET PROTECTION DEVICE, TYPE I (PAY ITEM 653.40).

REVISIONS	
MARCH 7, 2008	WHF
JANUARY 13, 2009	WHF



NOTE: THIS DRAWING IS A DEPICTION OF A TYPICAL INSTALLATION OF FILTER CURTAIN. IT IN NO WAY DEFINES THE TYPE OR USE OF COFFERDAM IF USED.

CONSTRUCTION SPECIFICATIONS

1. FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FEET/SECOND.
2. MAXIMUM 100' LENGTH BETWEEN ANCHORS.
3. LAST SECTION SHALL TERMINATE A MINIMUM OF 10' BEYOND LIMIT OF DISTURBANCE.
4. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE WHICH ALLOWS THE CURTAIN TO CONFORM TO THE BOTTOM OF THE WATERWAY.
5. THE CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE MINIMIZING THE ESCAPE OF SEDIMENTS INTO WATERWAY.

FILTER CURTAIN

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF
SEPTEMBER 4, 2009	WHF

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046details_ero.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: VTRANS
EROSION CONTROL DETAILS (1 OF 2)

PLOT DATE: 2/27/2018
DRAWN BY: E.F. LAWES
CHECKED BY: S.E. BURBANK
SHEET 134 OF 135

VAOT LOW GROW/FINE FESCUE MIX						
	LBS/AC					
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
38%	57	95	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	90%	98%
29%	43.5	72.5	HARD FESCUE	FESTUCA LONGIFOLIA	85%	95%
15%	22.5	37.5	CHEWINGS FESCUE	FESTUCA RUBRA VAR. COMMUTATA	87%	95%
15%	22.5	37.5	ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	90%	95%
3%	4.5	7.5	INERTS			
100%	150	250				

VAOT RURAL AREA MIX						
	LBS/AC					
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
37.5%	22.5	45	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	22.5	45	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	3	6	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	9	18	WHITE FIELD CLOVER	TRIFOLIUM REPENS	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	LOLIUM MULTIFLORUM	85%	95%
100%	60	120				

GENERAL AMENDMENT GUIDANCE		
FERTILIZER	LIME	
10/20/10	AG LIME	PELLITIZED
500 LBS/AC	2 TONS/AC	1 TONS/AC

CONSTRUCTION GUIDANCE

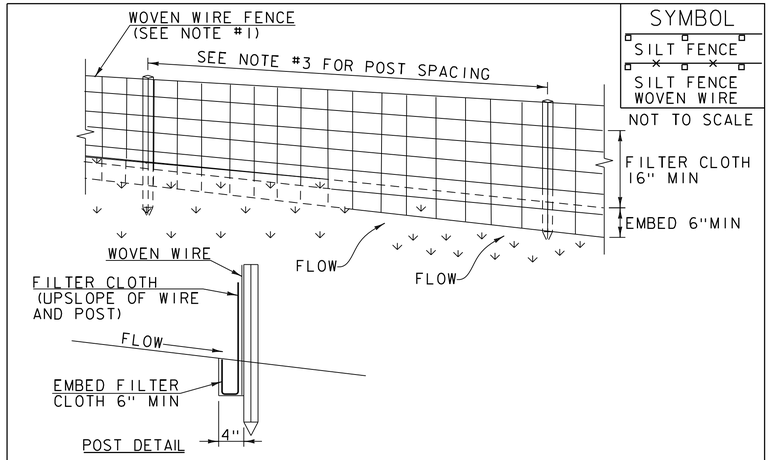
1. SEED MIX: THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER ON WHICH SEED MIX TO USE.
2. SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER.
5. 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.
6. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED PROPOSED FOR USE WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED.
7. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651.15)

REVISIONS	
JANUARY 12, 2015	WHF



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

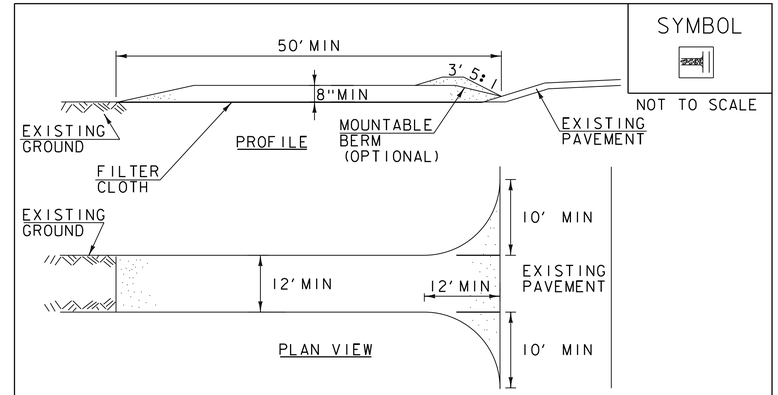
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

NOTE: SILT FENCE AND REINFORCED SILT FENCE TO BE 3'-0" ABOVE GROUND.

vhb

PROJECT NAME: MIDDLEBURY
PROJECT NUMBER: EWP3(2)

FILE NAME: z16b046details_ero.dgn
PROJECT LEADER: A.P. GUYETTE
DESIGNED BY: VTRANS
EROSION CONTROL DETAILS (2 OF 2)

PLOT DATE: 2/27/2018
DRAWN BY: E.F. LAWES
CHECKED BY: S.E. BURBANK
SHEET 135 OF 135

1. TRAFFIC CONTROL DEVICES NOT DETAILED IN THE VERMONT AGENCY OF TRANSPORTATION (VAOT) "STANDARD DRAWINGS" OR THE PROJECT PLANS SHALL BE IN ACCORDANCE WITH THE CURRENT "MANUAL ON TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS AND MARKINGS" BOOK, AND THEIR LATEST REVISIONS, (SHSM) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).

2. CONSTRUCTION SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY OR UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER.

3. DIAMOND SHAPED CONSTRUCTION SIGNS SHALL BE 48 INCH BY 48 INCH.

4. CONSTRUCTION SIGN COVERS SHALL CONSIST OF A PANEL, PAINTED FLAT BLACK, THE SAME SIZE AS THE SIGN IT COVERS. THE PANEL SHALL BE OF WOOD, PLYWOOD, HARDBOARD OR ANY MATERIAL SATISFACTORY TO THE ENGINEER. NO MATERIAL WILL BE APPROVED THAT WILL DETERIORATE BY EXPOSURE TO THE WEATHER DURING THE PROJECT. MOUNTING OF THE PANEL SHALL BE DONE IN SUCH A WAY AS NOT TO DAMAGE THE SIGN FACE MATERIAL.

5. SIGNS SHALL BE MAINTAINED IN A CLEAN AND LEGIBLE CONDITION SATISFACTORY TO THE ENGINEER. THEY SHALL BE KEPT PLUMB AND LEVEL, AND ALWAYS PRESENT A NEAT APPEARANCE. DAMAGED, DEFACED OR DIRTY SIGNS SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE ENGINEER.

6. NO CROSS-BRACING OR BACK-BRACING TO KEEP POSTS PLUMB WILL BE ALLOWED. CONCRETE FOUNDATIONS, COLLARS OR SOIL BEARING PLATES ARE NOT PERMITTED.

7. CONSTRUCTION SIGNS INSTALLED ON POSTS SHALL BE SET SECURELY IN THE GROUND ON TWO POSTS. THE BOTTOM OF A SIGN SHALL BE AT LEAST FIVE FEET ABOVE THE EDGE OF PAVEMENT AND THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST SIX FEET OUTSIDE THE SHOULDER POINT, FOUR FEET OUTSIDE GUARDRAIL, OR TWO FEET OUTSIDE CURBING OR SIDEWALK. THE INSTALLATION OF SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. IN URBAN AREAS, THE BOTTOM OF THE SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE SIDEWALK OR EDGE OF PAVEMENT, WHICHEVER IS HIGHER.

8. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND A MINIMUM OF ONE FOOT ABOVE THE TRAVELED WAY. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL.

9. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.

10. ROLL UP CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE VI AND TYPE VII UNLESS OTHERWISE NOTED.

11. SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE VIII OR IX REQUIREMENTS UNLESS OTHERWISE NOTED.

12. WHERE CONSTRUCTION SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL MEET "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 OR THE AASHTO "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH). THE APPROPRIATE RESOURCE SHALL BE DETERMINED AS DESCRIBED IN THE MASH PUBLICATION. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POSTS. WHEN ANCHORS ARE INSTALLED, STUBS SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.

13. ROADWAY AND SHOULDER WIDTHS DEPICTED ON THE STANDARD DRAWINGS MAY VARY.

14. THESE STANDARD DRAWINGS ARE INTENDED TO SERVE AS VTRANS STANDARD OPERATING PROCEDURE. IT IS NOTED THAT COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL WORK ZONE MAY BE MODIFIED DUE TO FIELD CONDITIONS AT THE DISCRETION OF THE ENGINEER.

REV.	DATE	DESCRIPTION
0	AUG. 6, 2012	ORIGINAL APPROVAL
1	APR. 25, 2016	INSERTED NOTE 3, UPDATED STANDARD NAME

OTHER STANDARDS REQUIRED: NONE

VTRANS AND FHWA APPROVAL ON FILE WITH CONTRACT ADMINISTRATION

TEMPORARY TRAFFIC CONTROL GENERAL NOTES

VTrans Working to Get You There VERMONT AGENCY OF TRANSPORTATION

STANDARD

T-1

VERMONT WARNING SIGN NOTES:

1. UNLESS OTHERWISE SPECIFIED, VERMONT WARNING SIGNS SHALL BE BLACK LEGEND AND BORDER ON YELLOW RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE IV.

VERMONT REGULATORY SIGN NOTES:

1. UNLESS OTHERWISE SPECIFIED, VERMONT REGULATORY SIGNS SHALL BE BLACK LEGEND AND BORDER ON WHITE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE IV.
2. WHEN SPECIFIED, RED RETROREFLECTIVE SHEETING SHALL BE EQUAL TO OR EXCEEDING THE AASHTO M 268 [ASTM D 4956] TYPE III.

GENERAL NOTES:

1. SIGN BASE MATERIAL FOR TRAFFIC SIGN, TYPE A SHALL BE FLAT SHEET ALUMINUM MEETING THE FLAT SHEET ALUMINUM THICKNESS CHART ON THIS SHEET.
2. SIGN BASE MATERIAL FOR TRAFFIC SIGN, TYPE B SHALL BE EXTRUDED ALUMINUM PANELS.
3. ALL SIGN TEXT SHALL BE IN ACCORDANCE WITH THE RESPECTIVE ALPHABET AS IDENTIFIED IN THE CURRENT "STANDARD HIGHWAY SIGNS AND MARKINGS" (SHSM) BOOK, AND ITS LATEST REVISIONS.
4. COLORS SHALL MEET THE REQUIREMENTS AS IDENTIFIED IN THE CURRENT MUTCD, AND ITS LATEST REVISIONS.
5. ALL DIMENSIONS SHOWN IN INCHES.

FLAT SHEET ALUMINUM THICKNESS CHART

THICKNESS	0.080	0.100	0.125
SIGN SIZE	12 X 12	36 X 12	48 X 18
	18 X 12	36 X 15	48 X 24
	18 X 18	36 X 18	48 X 30
	21 X 15	36 X 24	48 X 42
	24 X 8	36 X 36	48 X 48
	24 X 10	36 X 42	48 X 60
	24 X 12	36 X 45	72 X 10
	24 X 18	36 X 48	72 X 12
	24 X 24	36 X 54	72 X 20
	24 X 30		
	30 X 15		
	30 X 18		
	30 X 24		
	30 X 30		
	30 X 42		

REV.	DATE	DESCRIPTION
0	FEB. 12, 2016	ORIGINAL APPROVAL
1	APR. 25, 2016	ADDED VERMONT REGULATORY SIGN NOTE 2

OTHER STANDARDS REQUIRED: NONE

VTRANS AND FHWA APPROVAL ON FILE WITH CONTRACT ADMINISTRATION

TRAFFIC SIGN GENERAL NOTES

VTrans Working to Get You There VERMONT AGENCY OF TRANSPORTATION

STANDARD

T - 2

LEGEND

(A) ROAD WORK AHEAD — W20-1

(B) ROAD WORK 500 FT — W20-1

(C) SIDE ROAD WORK AHEAD — VC-869

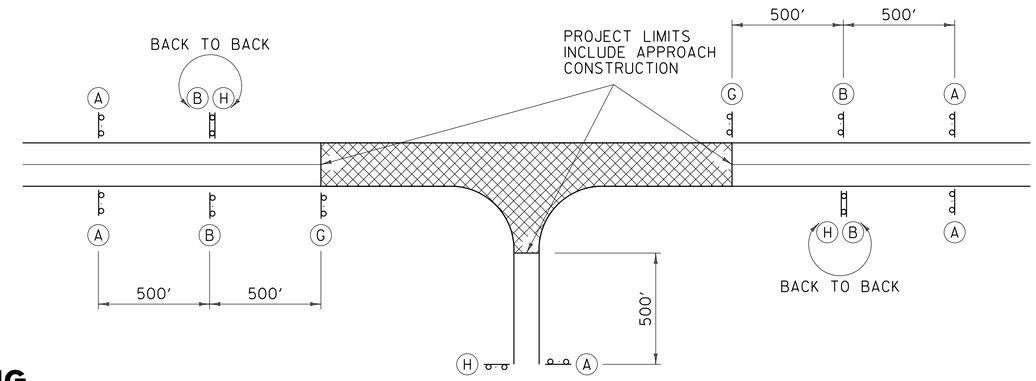
(D) SIDE ROAD WORK 500 FT — VC-869

(E) SIDE ROAD WORK LEFT — VC-869

(F) SIDE ROAD WORK RIGHT — VC-869

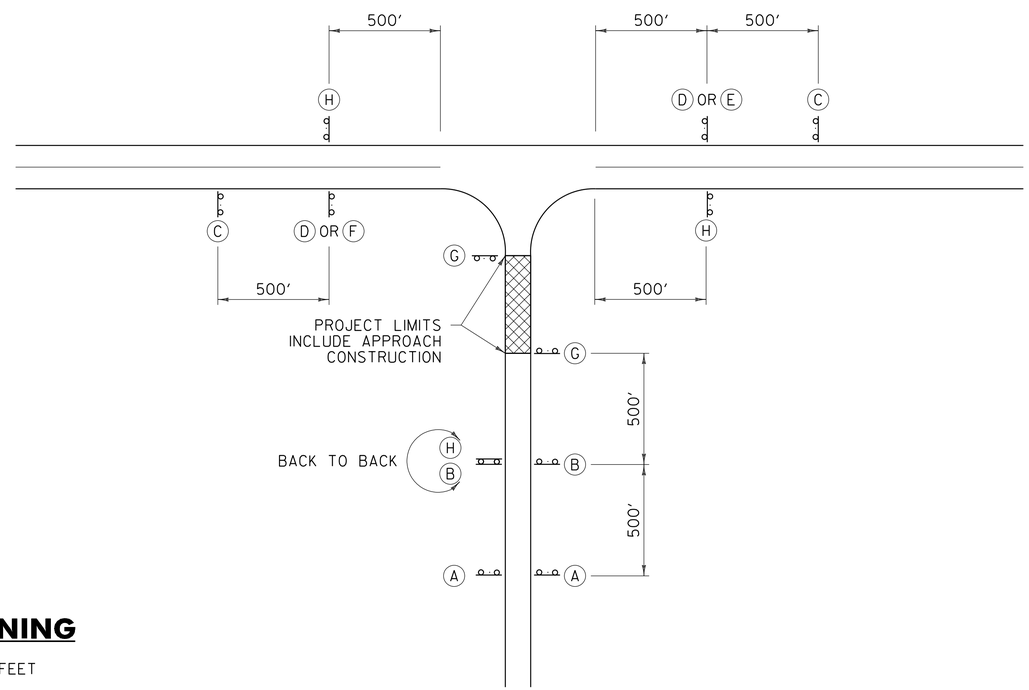
(G) ROAD WORK NEXT XX MILES — G20-1

(H) END ROAD WORK — G20-2



TYPICAL APPROACH SIGNING

FIELD CONDITIONS MAY DICTATE THE ACTUAL PLACEMENT.



SIDE ROAD APPROACH SIGNING

TO BE USED WHEN CONSTRUCTION IS UP TO 1000 FEET FROM THE INTERSECTION. FIELD CONDITIONS MAY DICTATE THE ACTUAL PLACEMENT.

GENERAL NOTES:

1. SIGNS SHOWN ON THIS SHEET ARE INTENDED FOR USE IN PROVIDING ADVANCE WARNING AND INFORMATION ON CONSTRUCTION PROJECTS OVER WHICH TRAFFIC WILL BE MAINTAINED. WHEN ADDITIONAL APPROACH SIGNS OR OTHER TYPES OF ADVANCE SIGNING OR CONTROL ARE NECESSARY, THE PLANS AND/OR THE SPECIFICATIONS FOR THAT PROJECT WILL GIVE THE DETAILS OF THE SIGNS AND DEVICES REQUIRED. FOR ON-PROJECT CONSTRUCTION SIGNS, REFER TO APPROPRIATE STANDARD SHEETS.
2. THE "ROAD WORK NEXT XX MILES" SIGN (G20-1) SHALL BE INSTALLED IN ADVANCE OF TEMPORARY TRAFFIC CONTROL ZONES THAT ARE MORE THAN TWO MILES IN LENGTH OR AS DIRECTED BY THE ENGINEER. DISTANCES SHALL BE STATED TO THE NEAREST WHOLE MILE.
3. SIGNS SHALL BE LOCATED AS DETAILED ON THIS SHEET OR AS OTHERWISE SHOWN ON THE PLANS. THEY SHALL APPEAR AT EACH END OF THE HIGHWAY UNDER CONSTRUCTION AND ON ALL INTERSECTING PUBLIC HIGHWAYS. THE ENGINEER SHALL DETERMINE THE EXACT LOCATIONS.

OTHER STDS. REQUIRED: **T–1, T–28**

REVISIONS AND CORRECTIONS

AUG. 6, 2012 - ORIGINAL APPROVAL DATE

APPROVED

HIGHWAY SAFETY & DESIGN ENGINEER

DIRECTOR OF PROGRAM DEVELOPMENT

Mark D. Richter

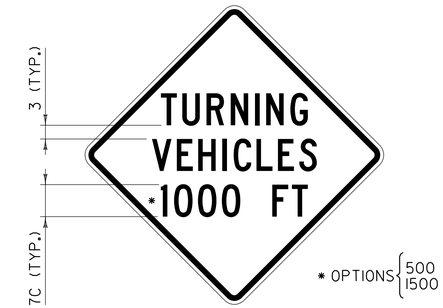
FEDERAL HIGHWAY ADMINISTRATION

CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING

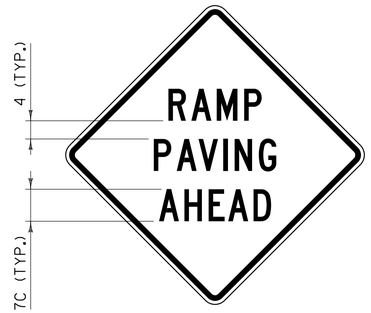
VERMONT AGENCY OF TRANSPORTATION

STANDARD

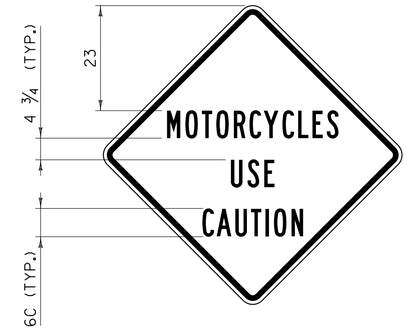
T-10



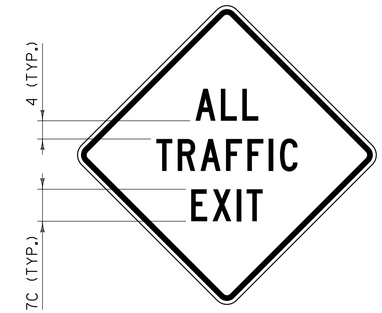
VC–001



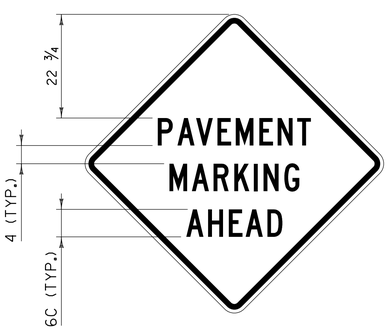
VC–003



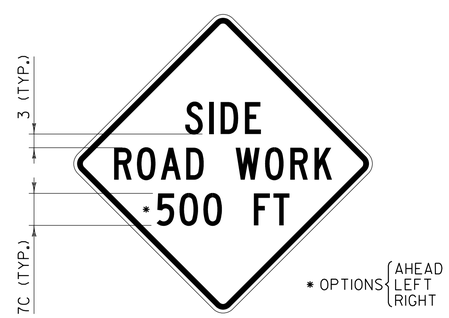
VC–004



VC–008



VC–813



VC–869

VC–874

GENERAL NOTES:

1. COLORS FOR SIGNS SHALL BE BLACK LEGEND AND BORDER ON FLUORESCENT ORANGE BACKGROUND.
2. CONSTRUCTION SIGNS SHALL BE 48 INCH BY 48 INCH. IF SOLID SUBSTRATE SIGNS ARE USED, SIGNS SHALL HAVE CORNERS ROUNDED TO A THREE INCH RADIUS.
3. SIGNS SHALL HAVE 1 1/4 INCH WIDE BORDERS THAT ARE INDENTED 3/4 INCH FROM THE EDGE OF THE SIGN.
4. SIGNS SHALL HAVE THE LEGEND CENTERED HORIZONTALLY AND VERTICALLY ON THE SIGN UNLESS OTHERWISE INDICATED.
5. ALL DIMENSIONS SHOWN IN INCHES.

OTHER STDS. REQUIRED: **T–1**

REVISIONS AND CORRECTIONS

AUG. 6, 2012 - ORIGINAL APPROVAL DATE

APPROVED

HIGHWAY SAFETY & DESIGN ENGINEER

DIRECTOR OF PROGRAM DEVELOPMENT

Mark D. Richter

FEDERAL HIGHWAY ADMINISTRATION

CONSTRUCTION SIGN DETAILS

VERMONT AGENCY OF TRANSPORTATION

STANDARD

T - 28

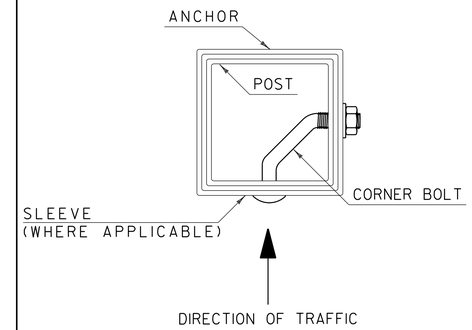
POST AND ANCHOR SELECTION CHART

POST SIZE (IN.)	POST THICKNESS (IN.)	POST WEIGHT (LBS/FT.)	POST GAGE	SECTION MODULUS ($IN.^3$)	ONE POST SV	TWO POST SV	THREE POST SV	POSTS PERMITTED IN 8' PATH	ANCHOR SIZE (IN.)	ANCHOR GAGE	MINIMUM ANCHOR LENGTH
1.75	.083	1.88	14	0.222	45	90	135	TWO	2.00	12	30
2.00	.109	2.42	12	0.393	80	160	240	TWO	2.25	12	48
2.50	.109	3.35	12	0.673	137	274	411	ONE	3.00	7	48

NOTES:

1. ALL SIGN POSTS SHALL HAVE 7/16 INCH HOLES EVERY ONE INCH ON CENTER (ALL FOUR SIDES).
2. THE NUMBER OF SIGN POSTS PERMITTED WITHIN AN EIGHT FOOT PATH ASSUMES THAT THE SIGN ASSEMBLY IS NOT PROTECTED BY GUARDRAIL OR IS LOCATED WITHIN A GUARDRAIL'S DEFLECTION DISTANCE DETERMINED PER THE CURRENT "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) ROADSIDE DESIGN GUIDE. ADDITIONAL POSTS MAY BE INSTALLED USING SLIP BASES THAT MEET "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 OR THE AASHTO "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH). THE APPROPRIATE RESOURCE SHALL BE DETERMINED AS DESCRIBED IN THE MASH PUBLICATION.
3. TO USE THE SELECTION VALUE (SV) COLUMNS IN THE TABLE ABOVE, MULTIPLY A SIGN'S SURFACE AREA IN SQUARE FEET (H x L) BY THE SIGN'S HEIGHT IN FEET MEASURED FROM THE GROUND TO THE CENTROID OF THE SIGN ASSEMBLY (h). THIS RESULT MUST BE LESS THAN OR EQUAL TO THE CORRESPONDING SELECTION VALUE. NOTE THAT FOR SIGNS WITH MULTIPLE POSTS, THE LARGEST HEIGHT DIMENSION SHALL BE USED TO CALCULATE THE POST SELECTION VALUE.
4. THE DESIGN CRITERIA UTILIZED IN SIGN POST AND ANCHOR SELECTION IS AS FOLLOWS: WIND SPEED OF 70 MPH (10 YEAR MEAN RECURRENCE INTERVAL), WIND PRESSURE OF 19 PSF, STEEL MINIMUM YIELD OF 55,000 PSI, AND AN ALLOWABLE STRESS OF 1.4 (0.60 FY).

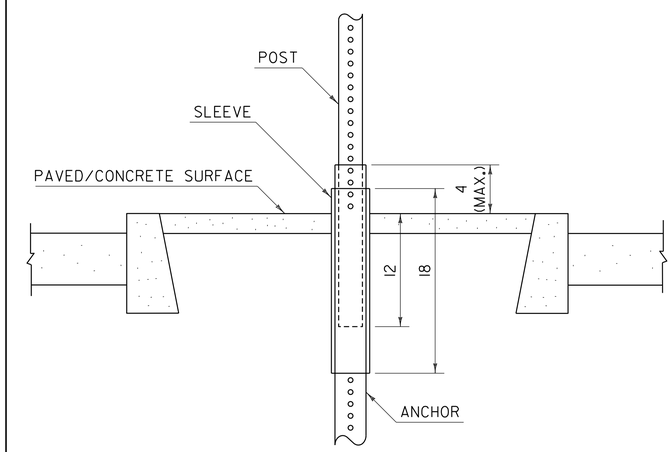
CORNER BOLT INSTALLATION DETAIL



NOTES:

1. CORNER BOLTS SHALL BE 5/16 INCH DIAMETER WITH 18 THREADS PER INCH AND DIMENSIONS SHALL BE DETERMINED BASED ON THE OUTERMOST DIMENSION OF THE SLEEVE, ANCHOR OR POST. THREAD EXPOSURE MUST EXCEED THE CORRESPONDING NUT WIDTH. THE CORNER BOLT AND CORRESPONDING HARDWARE SHALL BE ZINC PLATED, MEETING OR EXCEEDING THE REQUIREMENTS OF THE "AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) A307.

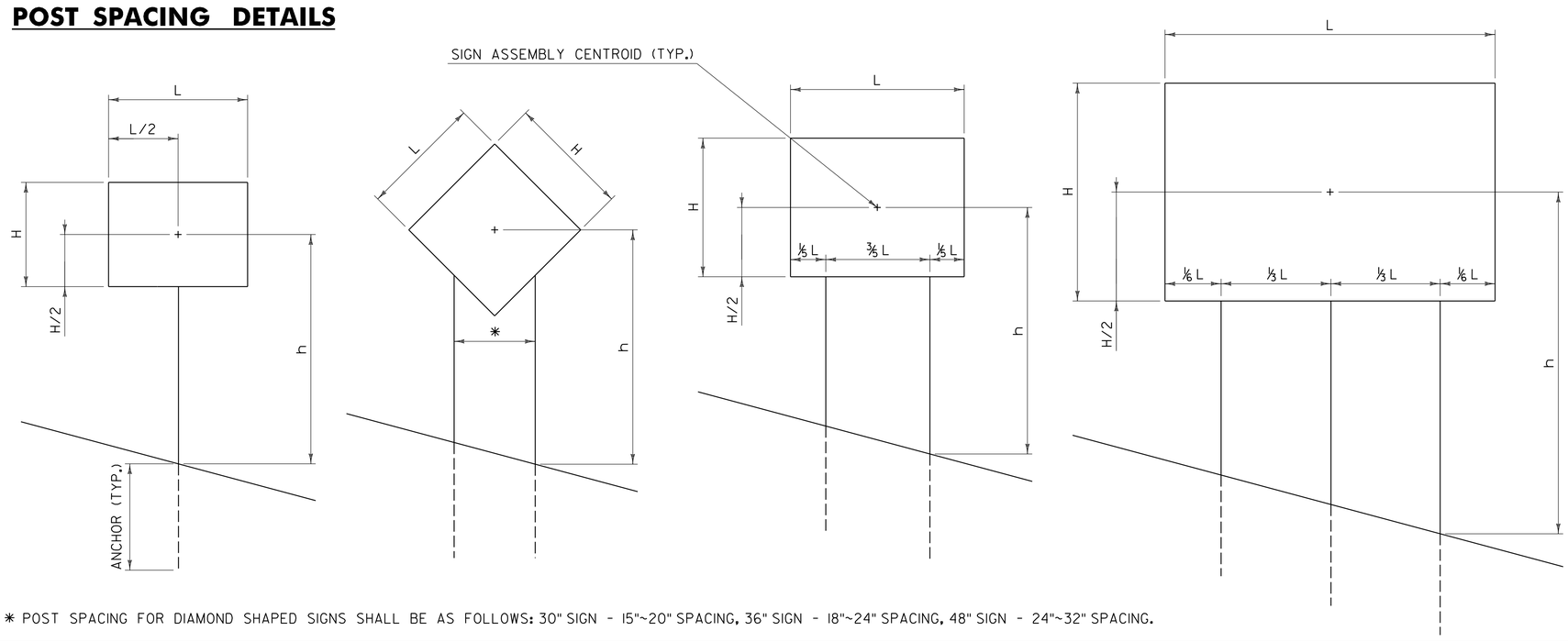
SLEEVE /ANCHOR INSTALLATION DETAIL



NOTES:

1. A SLEEVE SHALL BE INSTALLED FOR SIGN INSTALLATIONS IN CONCRETE OR PAVEMENT.
2. THE SLEEVE SHALL BE 18 INCHES MINIMUM IN LENGTH.
3. THREE INCH SLEEVES THAT DO NOT HAVE HOLES WILL REQUIRE THAT 7/16 INCH HOLES ARE DRILLED TO FACILITATE CONNECTIONS.
4. REFER TO CURRENT EDITION OF THE "VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION" FOR MATERIAL REQUIREMENTS.

POST SPACING DETAILS



* POST SPACING FOR DIAMOND SHAPED SIGNS SHALL BE AS FOLLOWS: 30" SIGN - 15"~20" SPACING, 36" SIGN - 18"~24" SPACING, 48" SIGN - 24"~32" SPACING.

GENERAL NOTES:

1. ALL SQUARE TUBE STEEL POSTS AND ANCHORS SHALL BE FORMED INTO A SIZE AND SHAPE IN SUCH A MANNER THAT NEITHER FLASH NOR WELD SHALL INTERFERE WITH THE TELESCOPING PROPERTIES, NOR DAMAGE THE GALVANIZING.
2. ANCHORS MAY BE DRIVEN OR SET INTO A DUG HOLE AND BACKFILLED. IF DRIVEN, A DRIVING CAP SHALL BE USED. THE DUG HOLE INSTALLATION METHOD SHALL BE UTILIZED IN AREAS WITH POOR SOIL CONDITIONS OR AS DIRECTED BY THE ENGINEER. BACKFILL SHALL BE COMPACTED AS DIRECTED BY THE ENGINEER.
3. THE TOPS OF SIGN POSTS SHALL BE AT OR NEAR THE TOP OF SIGN. THE POST SHALL NOT EXTEND ABOVE THE TOP OF SIGN.
4. SIGN POSTS SHALL BE INSTALLED A MINIMUM OF ONE FOOT BELOW GROUND, INSIDE THE ANCHOR. THE LENGTH OF ANCHOR EXPOSED ABOVE GROUND SHALL NOT EXCEED FOUR INCHES.
5. ALL DIMENSIONS SHOWN IN INCHES.

OTHER STDS. REQUIRED: **NONE**

REVISIONS AND CORRECTIONS

JAN. 2, 2013 - ORIGINAL APPROVAL DATE

APPROVED

HIGHWAY SAFETY & DESIGN ENGINEER

DIRECTOR OF PROGRAM DEVELOPMENT

Mark D. Richter

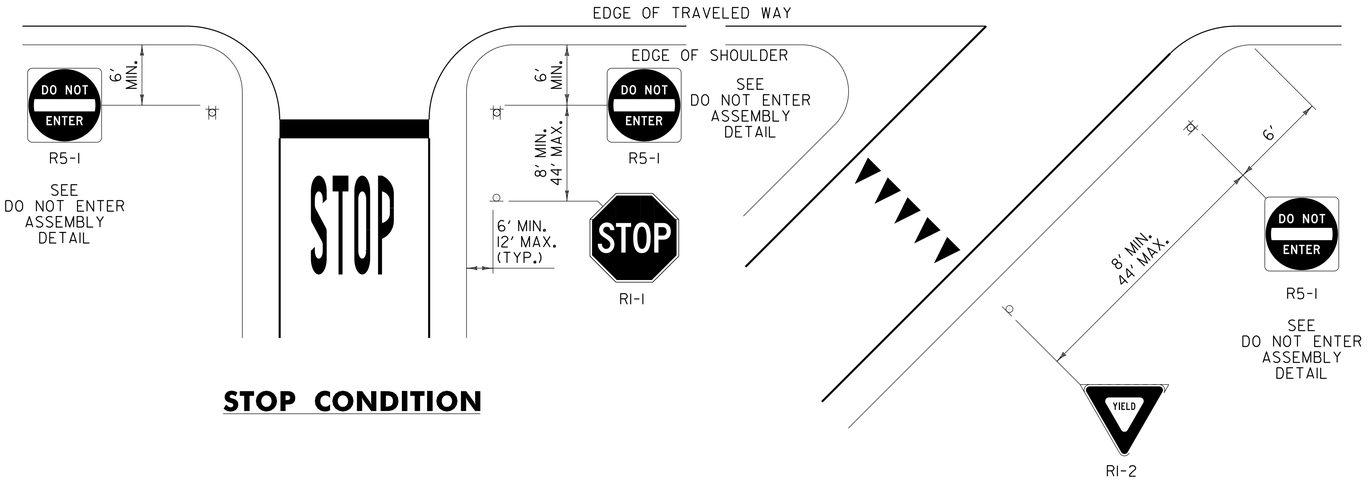
FEDERAL HIGHWAY ADMINISTRATION

SQUARE TUBE SIGN POST AND ANCHOR

VERMONT AGENCY OF TRANSPORTATION

STANDARD

T-45



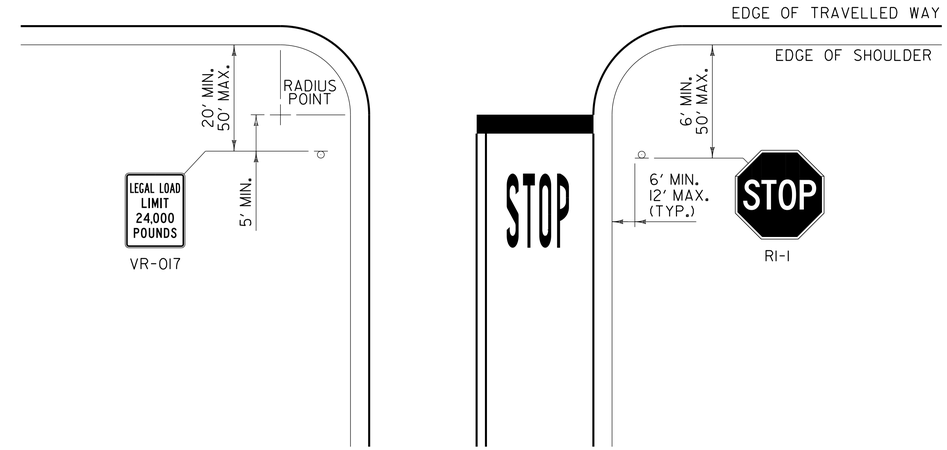
STOP CONDITION

EXIT RAMP SIGN LOCATION DETAILS

YIELD CONDITION

NOTES:

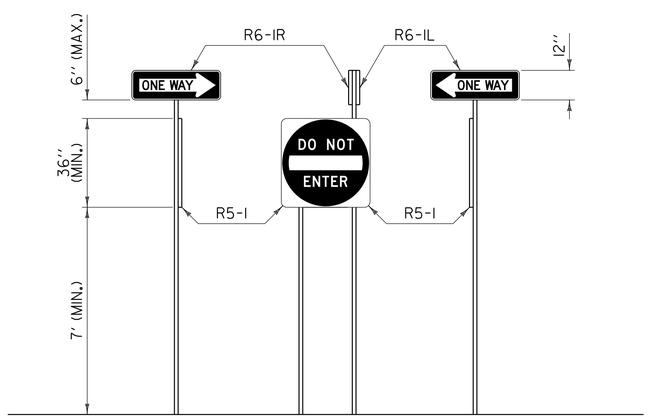
1. THE "STOP" (RI-1) SIGN SHOULD BE PLACED AS NEAR TO THE STOP BAR AS PRACTICAL. THE SIGN SHOULD BE PLACED TO MAXIMIZE VISIBILITY WITHIN THE RANGE OF OFFSETS SHOWN.
2. THE "YIELD" (RI-2) SIGN SHOULD BE PLACED AS NEAR TO THE YIELD MARKINGS AS PRACTICAL. THE SIGN SHOULD BE PLACED TO MAXIMIZE VISIBILITY WITHIN THE RANGE OF OFFSETS SHOWN.



LEGAL LOAD LIMIT AND STOP SIGNS AT INTERSECTIONS WITH TOWN HIGHWAYS

NOTES:

1. THE "STOP" (RI-1) SIGN SHOULD BE PLACED AS NEAR TO THE STOP BAR AS PRACTICAL. THE SIGN SHOULD BE PLACED TO MAXIMIZE VISIBILITY WITHIN THE RANGE OF OFFSETS SHOWN.



DO NOT ENTER ASSEMBLY

GENERAL NOTES:

1. WHEN INSTALLED, STREET NAME SIGNS SHOULD BE INSTALLED PERPENDICULAR TO APPROACHING MAINLINE TRAFFIC AND SHALL BE POSITIONED IN SUCH A WAY AS TO ENSURE THE BEST POSSIBLE VISIBILITY TO APPROACHING MAINLINE TRAFFIC FROM EACH DIRECTION. STREET NAME SIGNS MAY BE INSTALLED ABOVE SIDE ROAD STOP SIGN. IN CASES WHERE THE SIDE ROAD STOP SIGN POSITION WOULD NOT BE SUITABLE FOR A TOP-MOUNTED STREET NAME SIGN, OR OTHER SITE-SPECIFIC CONSTRAINTS, THE STREET NAME SIGN MAY BE INSTALLED INDEPENDENTLY ON EITHER CORNER OF THE INTERSECTION. THE STREET NAME SIGNS SHALL BE INSTALLED A MINIMUM OF SIX FEET FROM EDGE OF PAVEMENT ON THE MAINLINE ROUTE TO THE NEAREST EDGE OF SIGN.
2. STREET NAME SIGNS WITH A LENGTH EXCEEDING 42 INCHES SHALL BE INSTALLED ON TWO POSTS. NO MORE THAN TWO POSTS SHALL OCCUPY AN EIGHT FOOT TRAVEL PATH, UNLESS PROTECTED BY BARRIER.
3. THE "STOP" (RI-1) SIGN SHALL NOT BE MOUNTED LESS THAN FIVE FEET IN HEIGHT TO THE BOTTOM OF THE SIGN.

REV.	DATE	DESCRIPTION
0	OCT. 26, 2015	ORIGINAL APPROVAL

OTHER STANDARDS REQUIRED: NONE

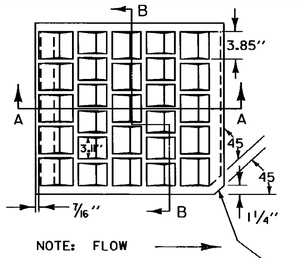
VTRANS AND FHWA APPROVAL ON FILE WITH CONTRACT ADMINISTRATION

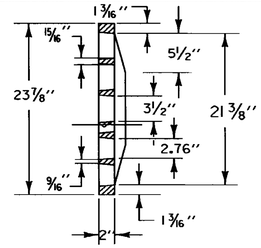
STANDARD SIGN PLACEMENT

VTrans Working to Get You There VERMONT AGENCY OF TRANSPORTATION

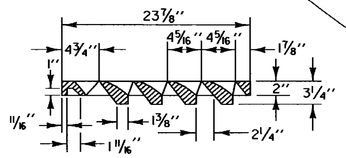
STANDARD

T - 56





SECTION B-B



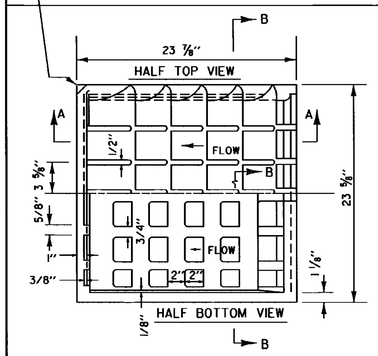
SECTION A-A

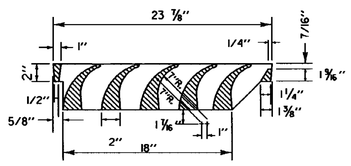
NOTE: THIS CORNER LEFT OFF FOR "RIGHT" GRATE DIAGONALLY OPPOSITE CORNER FOR "LEFT" GRATE TO FIT IN KEYED FRAMES.

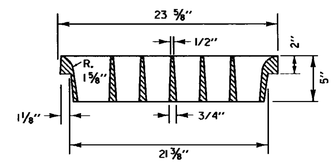
THIS CORNER LEFT OFF FOR "RIGHT" GRATE, DIAG. OPPOSITE CORNER FOR "LEFT" GRATE, TO FIT IN KEYED FRAMES.

TYPE "E" GRATE
(NOT TO SCALE)

NOTE: ALTERNATE TYPE E GRATE BELOW







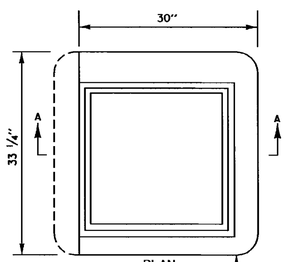
SECTION B-B

CAST IRON GRATE
TYPE E

NOTE: THIS FRAME TO BE PLACED IN DROP INLET TOP BEFORE CONCRETE IS POURED.

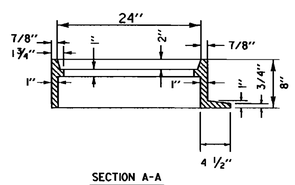
4 FLANGES UNLESS OTHERWISE INDICATED.

FRAMES TO BE FURNISHED WITH 3 FLANGES WHEN USED IN CONJUNCTION WITH CURB OR AS DIRECTED BY THE ENGINEER.



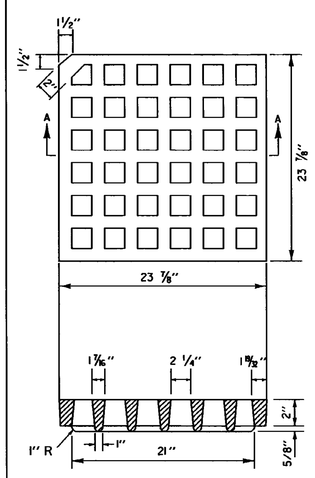
PLAN

MADE WITH 3 OR 4 FLANGES



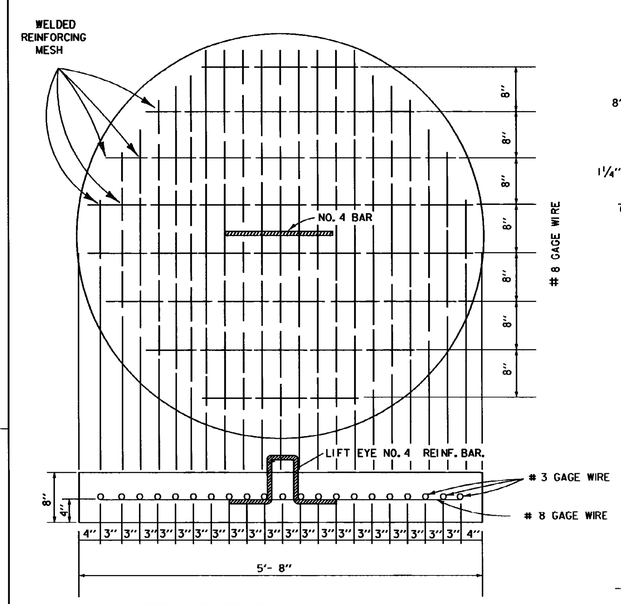
SECTION A-A

FRAME
FOR
TYPE D OR TYPE E
GRATE

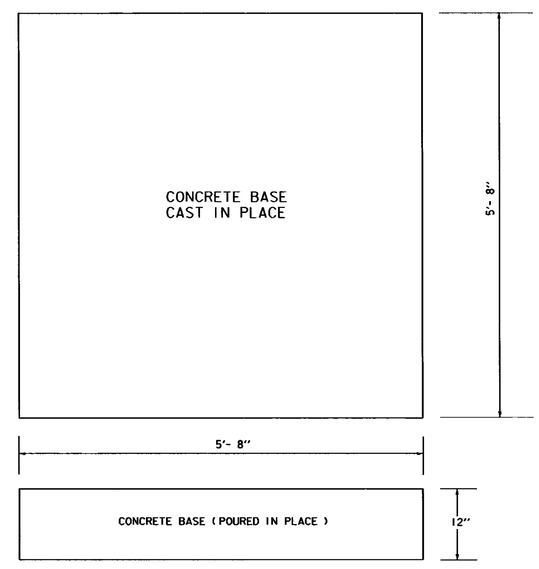


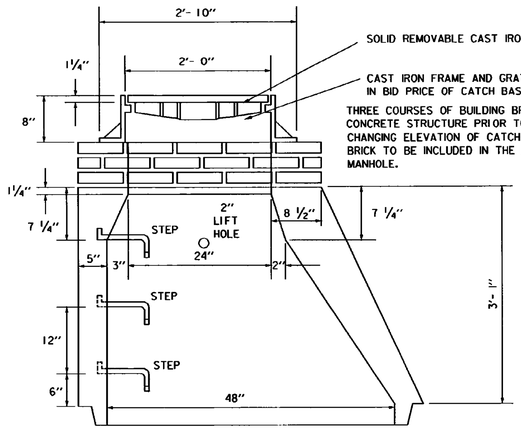
SECTION A-A

CAST IRON GRATE
TYPE D



PRECAST REINFORCED CONCRETE BASE

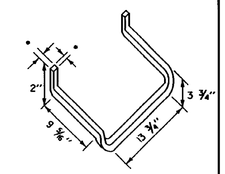




SOLID REMOVABLE CAST IRON COVER OR GRATE

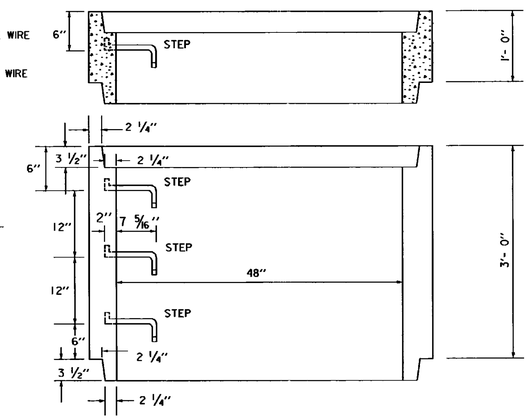
CAST IRON FRAME AND GRATE, OR COVER, TO BE INCLUDED IN BID PRICE OF CATCH BASIN OR MANHOLE.

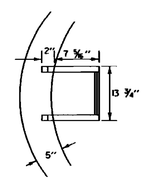
THREE COURSES OF BUILDING BRICK TO BE PLACED ON TOP OF CONCRETE STRUCTURE PRIOR TO PLACING FRAME TO FACILITATE CHANGING ELEVATION OF CATCH BASIN OR MANHOLE WHEN REQUIRED. BRICK TO BE INCLUDED IN THE BID PRICE FOR CATCH BASIN OR MANHOLE.



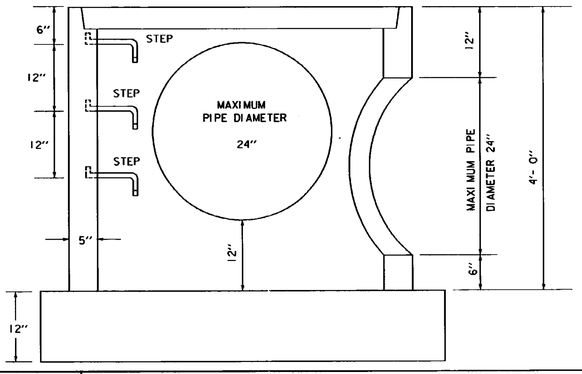
ALUMINUM STEP
(DROP FRONT)

* - INDIVIDUAL METAL RUNGS SHALL HAVE A MINIMUM DIMENSION OF 1" OR SHALL BE PAINTED OR OTHERWISE TREATED TO RESIST CORROSION AND RUSTING.





STEP DETAIL
TOP VIEW



REVISIONS AND CORRECTIONS

DEC. 6, 1971 - ORIGINAL APPROVAL
OCT. 22, 1976 - CAST IRON GRATE WITH FRAME, TYPE E ADDED
OCT. 6, 1978 - TYPE D GRATE ADDED
OCT. 30, 1985 - IMPERFECT TRENCH DETAILS DELETED
FEB. 17, 1993 - SECOND CAST IRON GRATE TYPE E ADDED.
MAR. 23, 1994 - ADDED NOTE FOR STEP DETAILS
JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

APPROVED

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

Gordon S. MacArthur
DIRECTOR OF ENGINEERING

Robert M. Murphy
DESIGN ENGINEER

PRECAST REINFORCED CONCRETE CATCH BASIN W/ CAST IRON GRATE
PRECAST REINFORCED CONCRETE MANHOLE W/ CAST IRON COVER

CAST IRON GRATE WITH FRAME, TYPE D
CAST IRON GRATE WITH FRAME, TYPE E

VERMONT AGENCY OF TRANSPORTATION

STANDARD
D-15