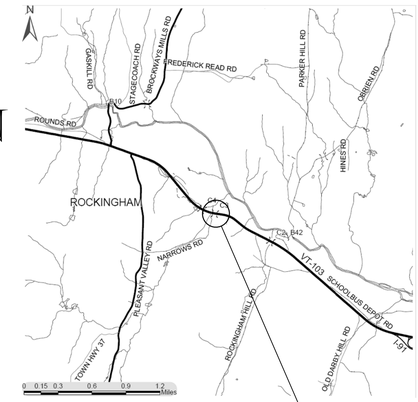
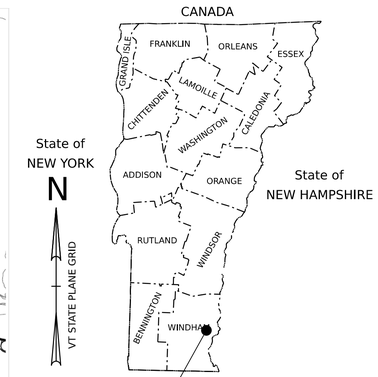
REVIEWER NOTES:

1. THE BRIDGE REPLACEMENT WILL BE CONSTRUCTED USING A TEMPORARY BRIDGE FOR TRAFFIC CONTROL.
2. IT IS ANTICIPATED THAT R.O.W. ACQUISITION WILL BE NECESSARY.
3. IT IS ANTICIPATED UTILITIES WILL BE RELOCATED.

# STATE OF VERMONT
# AGENCY OF TRANSPORTATION




ROCKINGHAM
BF 025-1(48)

# PROPOSED IMPROVEMENT
# BRIDGE PROJECT

## TOWN OF ROCKINGHAM

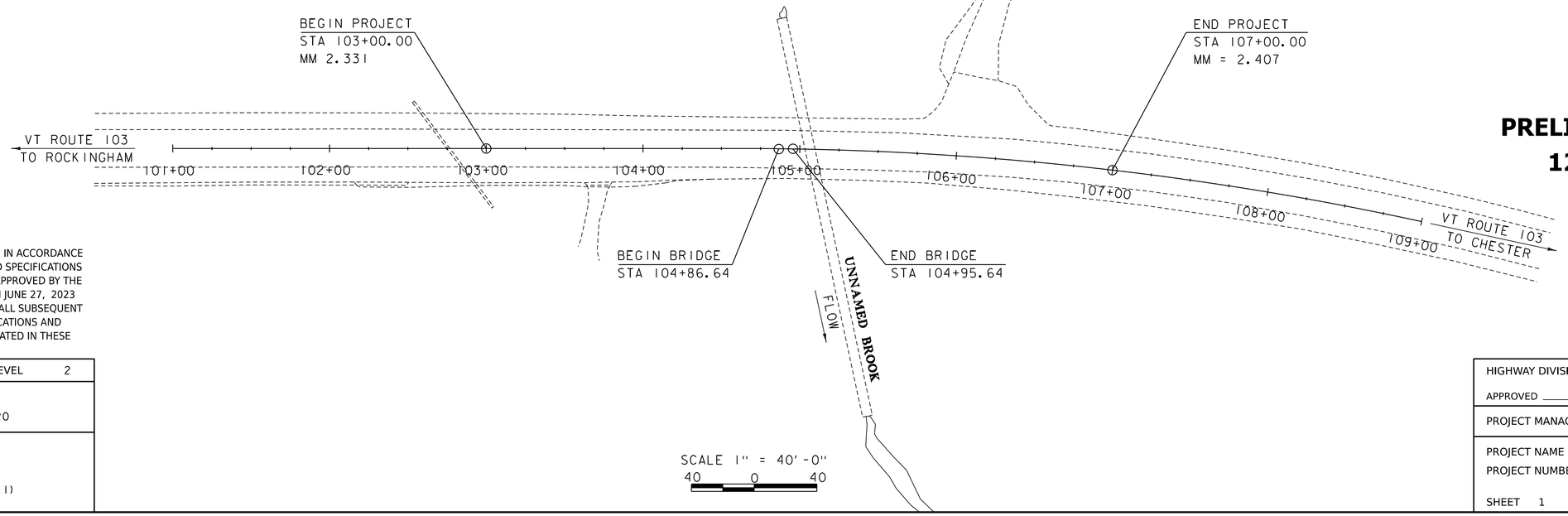
## COUNTY OF WINDHAM

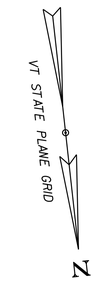
ROUTE NO : VT RTE 103; PRINCIPAL ARTERIAL  BRIDGE NO : 3

PROJECT LOCATION : LOCATED ON VT ROUTE 103 APPROXIMATLEY 2.4 MILES WEST OF JUNCTION WITH US ROUTE 5 IN THE TOWN OF ROCKINGHAM.

PROJECT DESCRIPTION : REPLACEMENT OF EXISTING CULVERT WITH A NEW PRECAST CONCRETE BOX CULVERT STRUCTURE ALONG WITH RELATED ROADWAY AND CHANNEL WORK.

| | |
|---|---|
| LENGTH OF STRUCTURE : | 9.00 FEET. |
| LENGTH OF ROADWAY : | 391.00 FEET. |
| LENGTH OF PROJECT : | 400.00 FEET. |




**PRELIMINARY PLANS**
**12-MAR-2024**

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

| | |
|---|---|
| QUALITY ASSURANCE PROGRAM : LEVEL | 2 |
| SURVEYED BY : | R. GILMAN |
| SURVEYED DATE : | 01/10/2020 |
| DATUM | |
| VERTICAL | NAVD88 |
| HORIZONTAL | NAD83 (2011) |

HIGHWAY DIVISION, CHIEF ENGINEER

APPROVED _____ DATE _____

| | |
|---|---|
| PROJECT MANAGER : | ROBERT YOUNG, P.E. |
| PROJECT NAME : | ROCKINGHAM |
| PROJECT NUMBER : | BF 025-1(48) |
| SHEET 1 OF 47 SHEETS | |

STATE OF VERMONT
AGENCY OF TRANSPORTATION

# PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
**LRFD**

## INDEX OF SHEETS

### PLAN SHEETS


| | |
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| 2 | PRELIMINARY INFORMATION SHEET |
| 3 - 4 | TYPICAL SECTIONS 1-2 |
| 5 | CONVENTIONAL SYMBOLOGY LEGEND |
| 6 | TIE SHEET |
| 7 - 9 | LAYOUT 1-3 |
| 10 - 11 | VT ROUTE 103 PROFILE 1-2 |
| 12 | SIDE ROAD PROFILE |
| 13 | BANKING & MATERIAL TRANSITION DIAGRAMS |
| 14 | CHANNEL PROFILE |
| 15 - 17 | UTILITY LAYOUT 1-3 |
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| 33 | SIDEROAD CROSS SECTIONS |
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| 44 - 46 | EPSC FINAL SITE PLAN 1-3 |
| 47 | EPSC DETAIL |


### STANDARDS LIST

| | | |
|---|---|---|
| A-76 | STANDARDS FOR TOWN & DEVELOPMENT ROADS | 03-03-2003 |
| E-1 | TREE PLANTING | 07-11-2017 |
| E-2 | SHRUB PLANTING | 07-11-2017 |
| E-3 | PERENNIAL GROUND COVERS AND VINES | 07-11-2017 |
| E-10 | ROLLED EROSION CONTROL PRODUCT, TYPE I | 04-07-2020 |
| E-11 | CHECK DAM, TYPE I | 04-07-2020 |
| E-12 | STABILIZED CONSTRUCTION ENTRANCE | 04-07-2020 |
| E-15 | SILT FENCE | 04-07-2020 |
| E-121 | STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD | 08-08-1995 |
| E-163 | TUBULAR STEEL SIGN POST | 04-07-2020 |
| E-191 | PAVEMENT MARKING DETAILS | 02-01-1999 |
| E-192 | PAVEMENT MARKING DETAILS | 10-12-2000 |
| E-193 | PAVEMENT MARKING DETAILS | 08-18-1995 |
| G-19 | GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS | 10-02-2018 |
| S-500 | CONCRETE DETAILS AND NOTES | 02-15-2023 |
| S-501 | CONCRETE DETAILS AND NOTES | 02-15-2023 |
| T-1 | TRAFFIC CONTROL GENERAL NOTES | 04-25-2016 |
| T-2 | TRAFFIC SIGN GENERAL NOTES | 04-07-2020 |
| T-28 | CONSTRUCTION SIGN DETAILS | 08-06-2012 |
| T-30 | CONSTRUCTION SIGN DETAILS | 02-17-2022 |
| T-35 | CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS | 08-06-2012 |
| T-36 | CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING | 08-06-2012 |
| T-40 | DELINEATORS AND MILEPOSTS | 01-02-2013 |
| T-42 | BRIDGE NUMBER PLAQUE | 04-09-2014 |
| T-45 | SQUARE TUBE SIGN POST AND ANCHOR | 01-02-2013 |
| T-56 | STANDARD SIGN PLACEMENT | 10-26-2015 |

### DETAIL SHEETS

| | | |
|---|---|---|
| HSD-400.01 | SAFETY EDGE DETAILS | 01-05-2018 |
| HSD-621.06 | MISCELLANEOUS GUARDRAIL DETAILS | 02-27-2017 |
| HSD-621.07 | MIDWEST GUARDRAIL SYSTEM (MGS) | 01-04-2021 |
| HSD-621.07 | W-BEAM GUARDRAIL COMPONENTS | 04-17-2019 |
| HSD-621.07 | MIDWEST GUARDRAIL SYSTEM ANCHOR | 04-17-2019 |
| HSD-621.07 | MIDWEST GUARDRAIL SYSTEM ANCHOR COMPONENTS | 04-17-2019 |
| HSD-621.07 | MIDWEST GUARDRAIL SYSTEM ANCHOR COMPONENTS | 04-17-2019 |

## FINAL HYDRAULIC REPORT

## TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY
4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

## DESIGN VALUES

| | | |
|---|---|---|
| 1. DESIGN LIVE LOAD | | HL-93 |
| 2. FUTURE PAVEMENT | $d_p$: | - - - |
| 3. DESIGN SPAN | $L$: | 10.00 FT |
| 4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS) | $\Delta$: | - - - |
| 5. PRESTRESSING STRAND | $f_y$: | - - - |
| 6. PRESTRESSED CONCRETE STRENGTH | $f'_c$: | - - - |
| 7. PRESTRESSED CONCRETE RELEASE STRENGTH | $f'_{ci}$: | - - - |
| 8. HIGH PERFORMANCE CONCRETE, CLASS PCD | $f'_c$: | - - - |
| 9. HIGH PERFORMANCE CONCRETE, CLASS PCS | $f'_c$: | - - - |
| 10. CONCRETE HIGH PERFORMANCE, CLASS SCC | $f'_c$: | - - - |
| 11. CONCRETE, CLASS C | $f'_c$: | - - - |
| 12. REINFORCING STEEL | $f_y$: | 60 KSI |
| 13. STRUCTURAL STEEL AASHTO M270 | $f_y$: | - - - |
| 14. NOMINAL BEARING RESISTANCE OF SOIL | $q_n$: | - - - |
| 15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) | $\phi$: | pending |
| 16. NOMINAL BEARING RESISTANCE OF ROCK | $q_n$: | - - - |
| 17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) | $\phi$: | - - - |
| 18. PILE RESISTANCE FACTOR | $\phi$: | - - - |
| 19. LATERAL PILE DEFLECTION | $\Delta$: | - - - |
| 20. BASIC WIND SPEED | $V_{3s}$: | - - - |
| 21. MINIMUM GROUND SNOW LOAD | $p_g$: | - - - |
| 22. SEISMIC DATA | $PGA$: - - - | $S_s$: - - - |
| | | $S_1$: - - - |
| 23. | | |
| 24. | | - - - |
| 25. | | - - - |
| 26. | | - - - |

## LRFR LOAD RATING FACTORS

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

## TRAFFIC DATA

| YEAR | ADT | DHV | % D | % T | ADTT |
|---|---|---|---|---|---|
| 2023 | 6600 | 970 | 56 | 13.2 | 890 |
| 2043 | 7300 | 1100 | 56 | 18.7 | 1400 |

20 year ESAL for flexible pavement from 2023 to 2043 : 6731000

40 year ESAL for flexible pavement from 2023 to 2063 : 14665000

Design Speed : 50 mph

## AS BUILT "REBAR" DETAIL

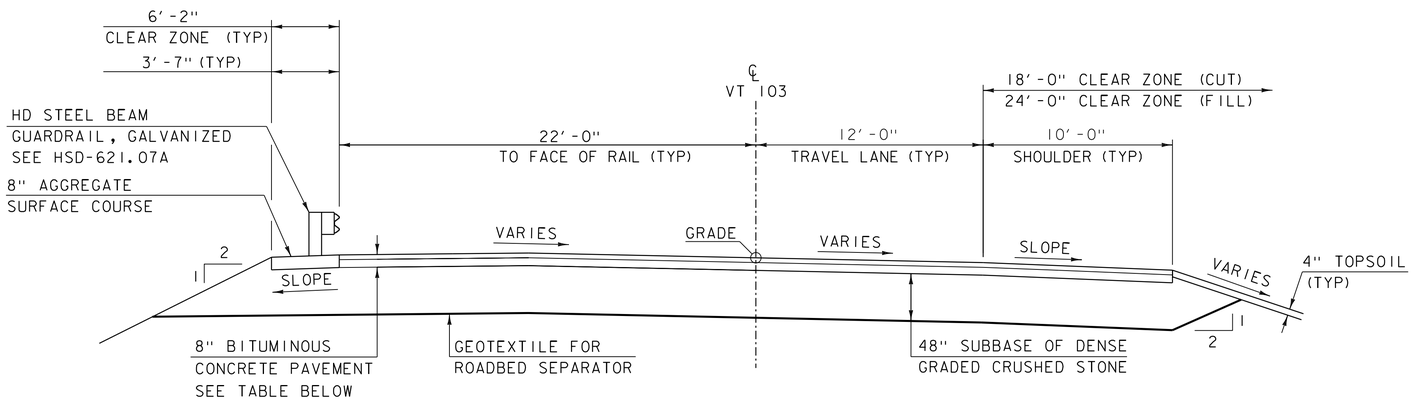
| LEVEL I | LEVEL II | LEVEL III |
|---|---|---|
| TYPE: | TYPE: | TYPE: |
| GRADE: | GRADE: | GRADE: |

PROJECT NAME: **ROCKINGHAM**

PROJECT NUMBER: **BF 025-1(48)**

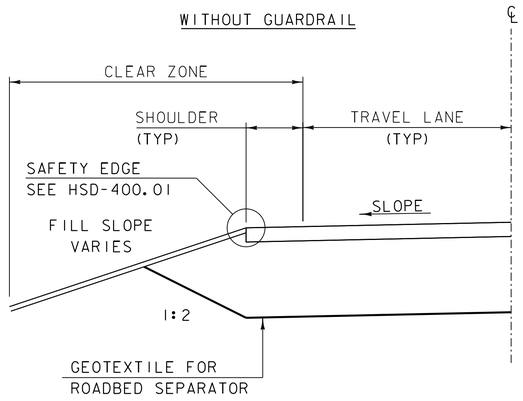
FILE NAME: **s19b209pi.dgn**
PROJECT LEADER: **R. YOUNG**
DESIGNED BY: **K. LIHIC**
**PRELIMINARY INFORMATION SHEET**

PLOT DATE: 3/11/2024
DRAWN BY: **K. LIHIC**
CHECKED BY: **D. PETERSON**
SHEET 2 OF 47



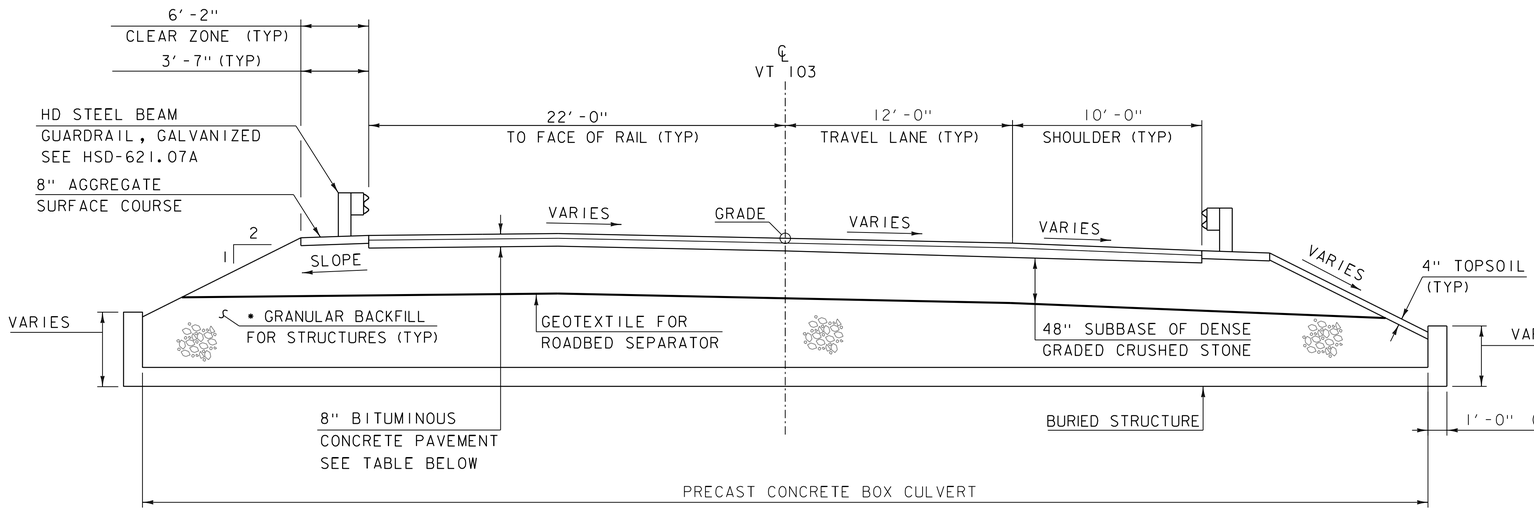

## VT 103 TYPICAL SECTION

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




## ROADWAY TYPICAL SECTION

NOT TO SCALE




## VT 103 BURIED STRUCTURE TYPICAL SECTION

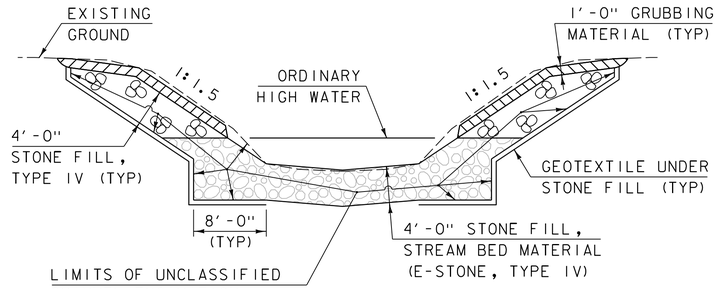
SCALE: 1/4" = 1'-0"

| | |
|---|---|
| DESIGN LANE/DESIGN LIFE ESALS | 888,492 |
| PERFORMANCE GRADE ASPHALT BINDER-PAVER PLACED | 58E-28 |
| PERFORMANCE GRADE ASPHALT BINDER-NON PAVER PLACED | 58S-28 |
| DESIGN NUMBER OF GYRATIONS | 50 |

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT A RATE OF 0.025 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AND 0.080 GAL/SY ON COLD PLANED SURFACES AS DIRECTED BY THE ENGINEER.

## MATERIAL INFORMATION

| | THICKNESS | TYPE |
|---|---|---|
| WEARING COURSE | 1½" | BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER III |
| BINDER COURSE | 1½" | BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER III |
| BASE COURSE #2 | 2½" | BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER III |
| BASE COURSE #1 | 2½" | BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER III |




## TYPICAL CHANNEL SECTION

NOT TO SCALE

## MATERIAL INFORMATION

| | THICKNESS | TYPE |
|---|---|---|
| STONE FILL | 4'-0" | TYPE IV |
| STONE FILL, CULVERT LINING | 4'-0" | E-STONE TYPE IV |
| STONE FILL, STREAM BED MATERIAL | 4'-0" | E-STONE TYPE IV |

## MATERIAL TOLERANCES

(IF USED ON PROJECT)

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

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

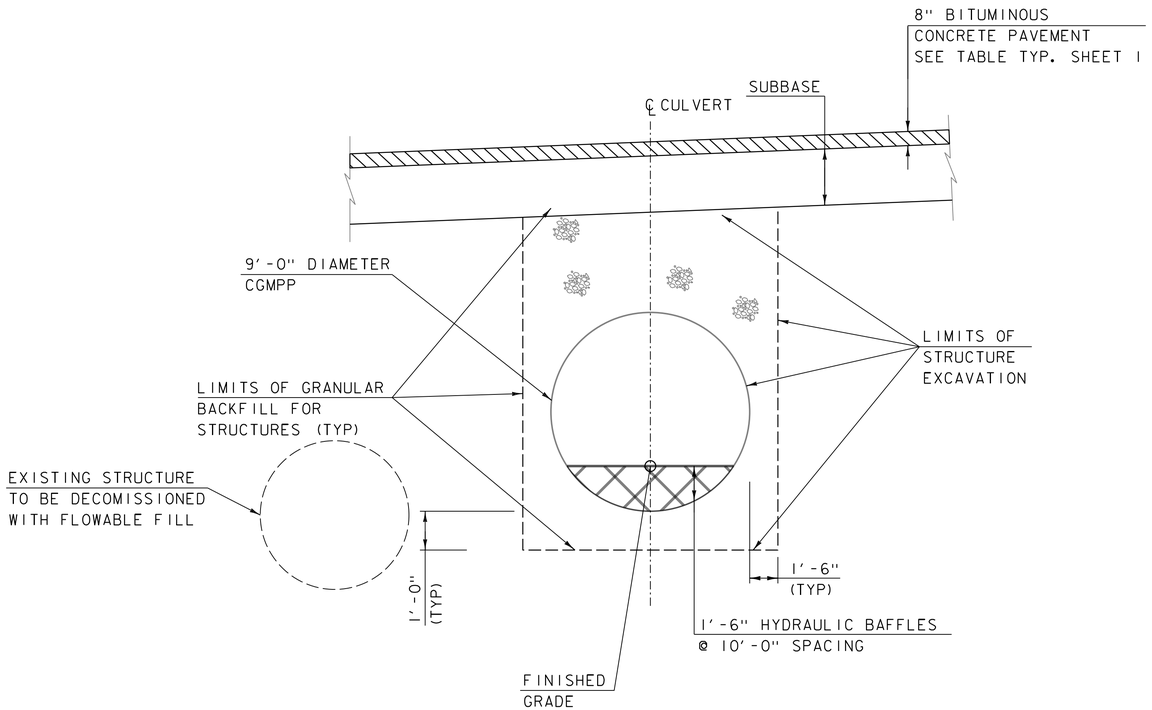
2) THE CONTRACTOR SHALL CREATE A LOW FLOW CHANNEL IN THE STREAM BED MATERIAL AS DIRECTED BY THE ENGINEER.

3) GRUBBING MATERIAL SHALL BE PLACED UNDERNEATH STRUCTURES WHERE THERE IS MORE THAN 6 FEET VERTICALLY FROM ORDINARY HIGH WATER (OHW) TO THE BOTTOM OF SUPERSTRUCTURE AND MORE THAN 6 FEET HORIZONTALLY FROM OHW LINE TO FRONT FACE OF ABUTMENT. THIS MATERIAL SHALL START JUST ABOVE THE OHW ELEVATION AND TERMINATE 3 FEET HORIZONTALLY FROM THE FRONT FACE OF THE ABUTMENT. THIS MATERIAL SHALL NOT BE PLACED UNDERNEATH DOWNSPOUTS. SEE THE CHANNEL SECTIONS FOR ADDITIONAL DETAILING.

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

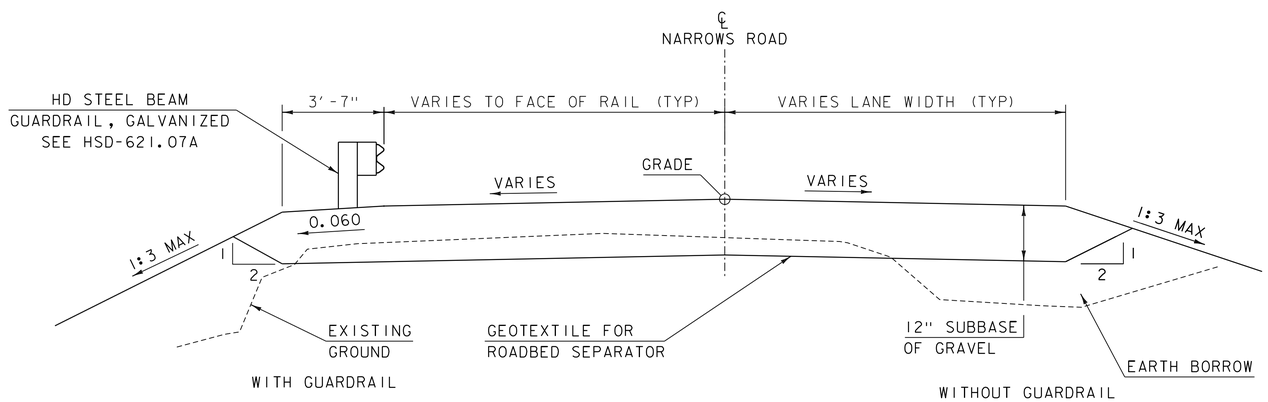
FILE NAME: sl9b209typ.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
TYPICAL SECTIONS 1

PLOT DATE: 12-MAR-2024
DRAWN BY: R. PELLETT
CHECKED BY: D. PETERSON
SHEET 3 OF 47




## CULVERT TYPICAL SECTION

NOT TO SCALE




## NARROWS ROAD TYPICAL SECTION

SCALE 3/8" = 1'-0"

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209typ.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| TYPICAL SECTIONS 2 | SHEET 4 OF 47 |

## GENERAL INFORMATION

### SYMBOLOGY LEGEND NOTE

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

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

| POINT | CODE | DESCRIPTION |
|---|---|---|
| | BF | BARRIER FENCE |
| | CH | CHANNEL EASEMENT |
| | CONST | CONSTRUCTION EASEMENT |
| | CUL | CULVERT EASEMENT |
| | D&C | DISCONNECT & CONNECT |
| | DIT | DITCH EASEMENT |
| | DR | DRAINAGE EASEMENT |
| | DRIVE | DRIVEWAY EASEMENT |
| | EC | EROSION CONTROL |
| | HWY | HIGHWAY EASEMENT |
| | I&M | INSTALL & MAINTAIN EASEMENT |
| | LAND | LANDSCAPE EASEMENT |
| | PDF | PROJECT DEMARCATION FENCE |
| | R&RES | REMOVE & RESET |
| | R&REP | REMOVE & REPLACE |
| | R.T.& I. | RIGHT, TITLE, AND INTEREST |
| | SR | SLOPE RIGHT |
| | UE | UTILITY EASEMENT |
| | (P) | PERMANENT EASEMENT |
| | (T) | TEMPORARY EASEMENT |
| ■ | BNDNS | BOUND SET |
| ⧈ | BNDNS | BOUND TO BE SET |
| ◎ | IPNF | IRON PIN FOUND |
| ● | IPNS | IRON PIN TO BE SET |
| ⊠ | CALC | EXISTING ROW POINT |
| ○ | PROW | PROPOSED ROW POINT |
| [LENGTH] | | LENGTH CARRIED ON NEXT SHEET |

## COMMON TOPOGRAPHIC POINT SYMBOLS

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

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

## PROPOSED GEOMETRY CODES

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

## UTILITY SYMBOLOGY

### UNDERGROUND UTILITIES

- UTILITY (GENERIC-UNKNOWN)
- TELEPHONE
- ELECTRIC
- CABLE (TV)
- ELECTRIC+CABLE
- ELECTRIC+TELEPHONE
- CABLE+TELEPHONE
- ELECTRIC+CABLE+TELEPHONE
- GAS LINE
- WATER LINE
- SANITARY SEWER (SEPTIC)

### ABOVE GROUND UTILITIES (AERIAL)

- UTILITY (GENERIC-UNKNOWN)
- TELEPHONE
- ELECTRIC
- CABLE (TV)
- ELECTRIC+CABLE
- ELECTRIC+TELEPHONE
- ELECTRIC+TELEPHONE
- CABLE+TELEPHONE
- ELECTRIC+CABLE+TELEPHONE
- UTILITY POLE GUY WIRE

## PROJECT CONSTRUCTION SYMBOLOGY

### PROJECT DESIGN & LAYOUT SYMBOLOGY

- CZ — CLEAR ZONE
- PLAN LAYOUT MATCHLINE

### PROJECT CONSTRUCTION FEATURES

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

## CONVENTIONAL BOUNDARY SYMBOLOGY

### BOUNDARY LINES

- TOWN BOUNDARY LINE
- COUNTY BOUNDARY 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
- PROPERTY LINE (P/L)
- SLOPE RIGHTS
- 6F PROPERTY BOUNDARY
- 4F PROPERTY BOUNDARY
- HAZARDOUS WASTE

## EPSC LAYOUT PLAN SYMBOLOGY

### EPSC MEASURES

- SEDIMENT ISOLATION
- 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
- 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

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209legend.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
CONVENTIONAL SYMBOLOGY LEGEND

PLOT DATE: 12-MAR-2024
DRAWN BY: R. PELLETT
CHECKED BY: D. PETERSON
SHEET 5 OF 47

## GPS CONTROL POINTS

### DUMMERSTON CORS ARP

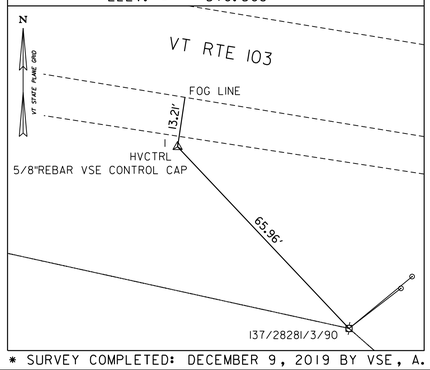
PID DJ8953
NORTH = 152472.487
EAST = 1631008.470
ELLIP HT = 321.387

STATION IS A GPS CONTINOUSLY OPERATING REFERENCE STATION. STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA. LOCATED AT THE DUMMERSTON VERMONT DISTRICT 2 GARAGE, THE MONUMENT IS ATTACHED TO THE TOP FLANGE OF A (W 12X26) STEEL BEAM WHICH IS PART OF THE ROOF STRUCTURE FOR A TWO STORY STEEL FRAMED WOOD SIDED BUILDING WITH A 5 FT CONCRETE FOUNDATION BUILT IN 1986. THE MAST IS A 0.5 INCH DIA GALV PIPE THAT IS 108 INCHES LONG. THE MAST IS FITTED WITH A 5.5 X 5.5 X 1 INCH BASE PLATE THAT IS WELDED TO THE BOTOM OF THE MAST. THE BASE PLATE IS DRILLED AND TAPPED WITH (4) 3/8 INCH HOLES AND IS SECURED TO THE FLANGE OF THE STEEL BEAM WITH 4 3/8 INCH SS BOLTS. THE MAST PROJECTS THROUGH THE ROOF STRUCTURE, AND HAS BEEN WEATHER PROOFED.

## TRAVERSE TIES

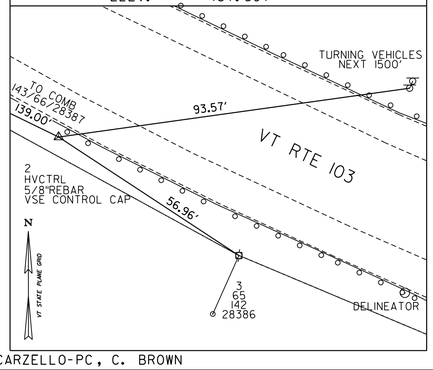
### HVCTRL #1

NORTH = 253126.184
EAST = 1641084.759
ELEV. = 510.508



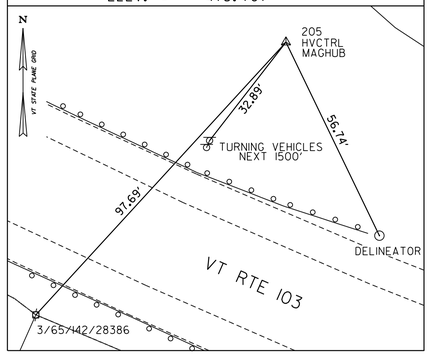

### HVCTRL #2

NORTH = 253374.963
EAST = 1640116.152
ELEV. = 481.691



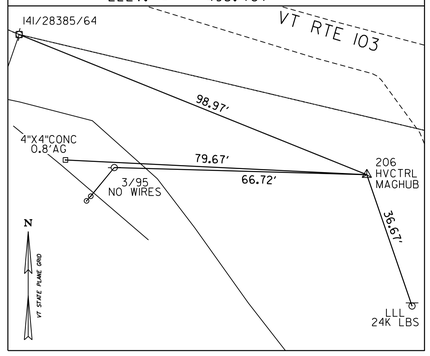

### HVCTRL #205

NORTH = 253415.670
EAST = 1640229.796
ELEV. = 473.707



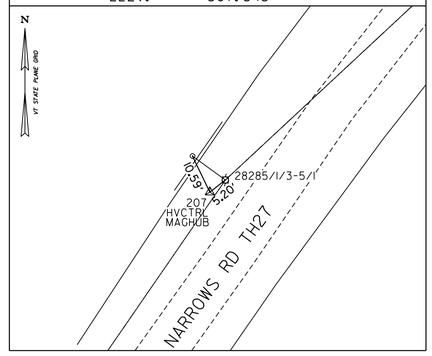

### HVCTRL #206

NORTH = 253206.337
EAST = 1640494.369
ELEV. = 493.181




### HVCTRL #207

NORTH = 253066.935
EAST = 1640439.538
ELEV. = 507.343

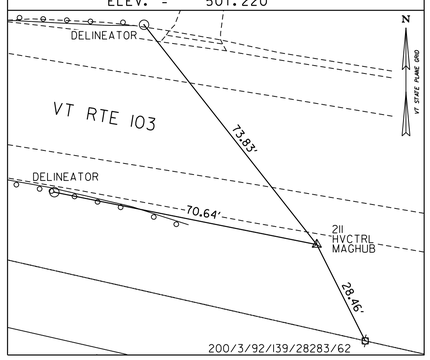



* SURVEY COMPLETED: DECEMBER 9, 2019 BY VSE, A. SCARZELLO-PC, C. BROWN

## TRAVERSE TIES

### HVCTRL #211

NORTH = 253169.734
EAST = 1640819.515
ELEV. = 501.220




**CONTROL LINE DATA - VT ROUTE 103**

| POINT ID | BEARING | DISTANCE (FEET) | NORTHING (Y) | EASTING (X) | PC | PI | PT | DELTA | R | L | T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| POB | N80.750°W | 462.057 | 253141.082 | 1641150.157 | | 10000.000 | | | | | |
| PI | N60.750°W | | 253273.458 | 1640337.339 | 10462.057 | 10823.527 | 11177.642 | 20.00° | 2050.000 | 715.585 | 361.470 |

**CONTROL LINE DATA - CHANNEL**

| POINT ID | BEARING | DISTANCE (FEET) | NORTHING (Y) | EASTING (X) | PC | PI | PT | DELTA | R | L | T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| POB | N21.000°W | 64.278 | 252909.594 | 1640620.263 | | 100.000 | | | | | |
| PI | N71.000°E | 28.991 | 252988.938 | 1640589.805 | 164.278 | 184.989 | 196.392 | 92.000° | 20.000 | 32.114 | 20.711 |
| PI | N47.000°W | 47.040 | 253009.214 | 1640648.689 | 204.673 | 237.958 | 245.863 | 118.000° | -20.000 | 41.190 | 33.286 |
| PI | N58.000°E | 37.130 | 253046.628 | 1640608.567 | 259.617 | 267.437 | 270.613 | 105.000° | 6.000 | 10.996 | 7.819 |
| PI | N10.029°E | 55.605 | 253078.092 | 1640658.921 | 299.923 | 322.170 | 341.786 | 47.971° | -50.000 | 41.863 | 22.246 |
| PI | N2.899°W | 160.942 | 253138.426 | 1640669.591 | 375.145 | 380.810 | 386.427 | 12.928° | -50.000 | 11.281 | 5.665 |
| PI | N11.909°W | 95.783 | 253303.096 | 1640661.252 | 541.703 | 545.643 | 549.566 | 9.010° | -50.000 | 7.863 | 3.939 |
| POE | | | 253396.818 | 1640641.487 | | 641.409 | | | | | |

**CONTROL LINE DATA - NARROWS RD**

| POINT ID | BEARING | DISTANCE (FEET) | NORTHING (Y) | EASTING (X) | PC | PI | PT | DELTA | R | L | T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| POB | S13.500°W | 48.494 | 253245.259 | 1640545.398 | | 0.000 | | | | | |
| PI | S34.250°W | 40.689 | 253162.500 | 1640525.529 | 48.494 | 85.111 | 120.925 | 20.750° | 200.000 | 72.431 | 36.617 |
| POE | | | 253128.867 | 1640502.629 | | 124.998 | | | | | |

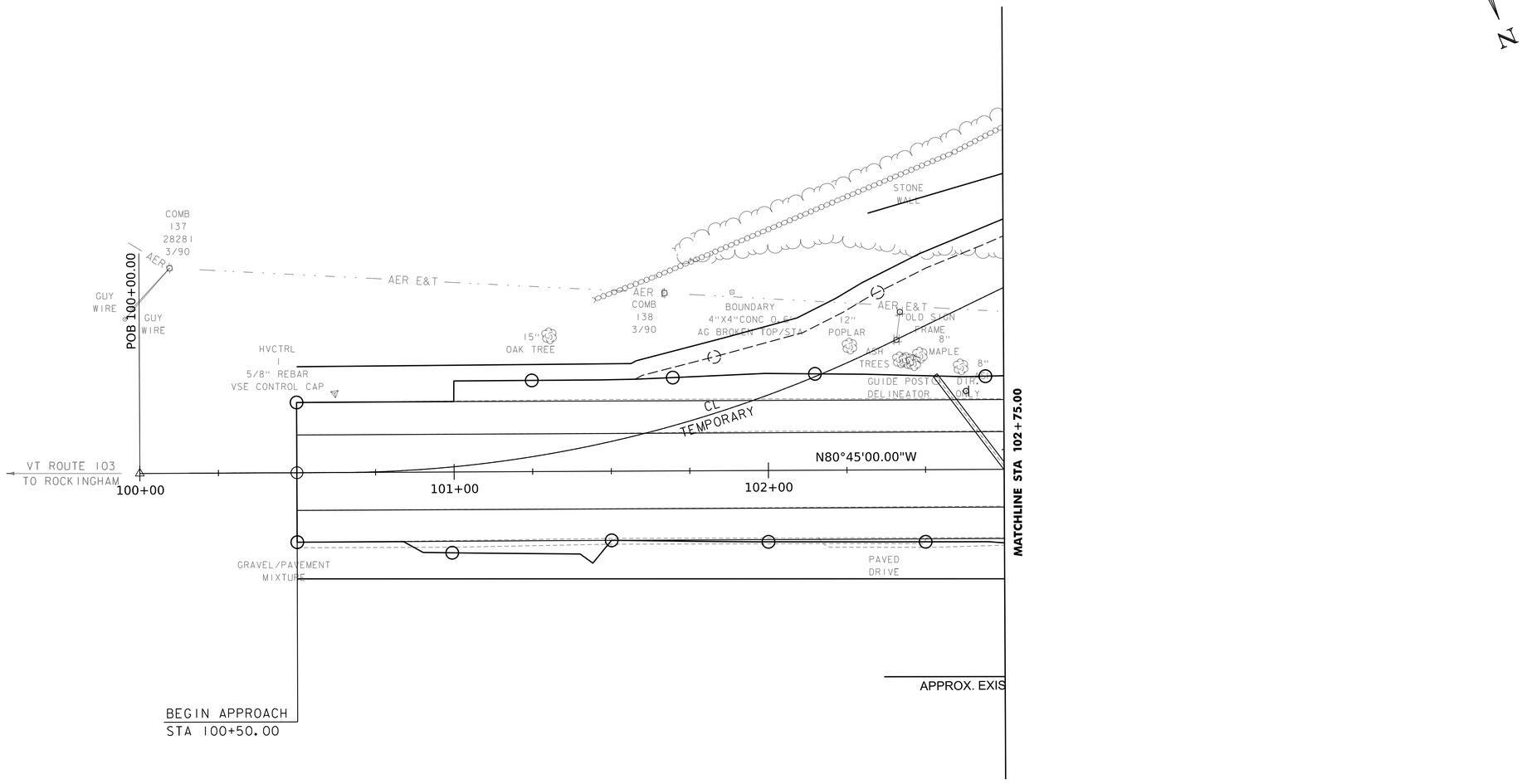
DATUM
VERTICAL NAVD88
HORIZONTAL NAD83(2011)
ADJUSTMENT LSQ

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209tie.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: VSE
TIE SHEET

PLOT DATE: 12-MAR-2024
DRAWN BY: VSE
CHECKED BY: VSE
SHEET 6 OF 47

18" CPAP
STA 102+53.23 LT - STA 102+75.00




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

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209border.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| LAYOUT 1 | SHEET 7 OF 47 |

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 103+65.4 LT - STA 105+84.8 LT
STA 103+87.8 RT - STA 106+14.6 RT

HD STEEL BEAM GUARDRAIL, GALVANIZED
STA 103+42.8 LT - STA 105+90.2 LT
STA 104+30.3 RT - STA 106+09.4 RT

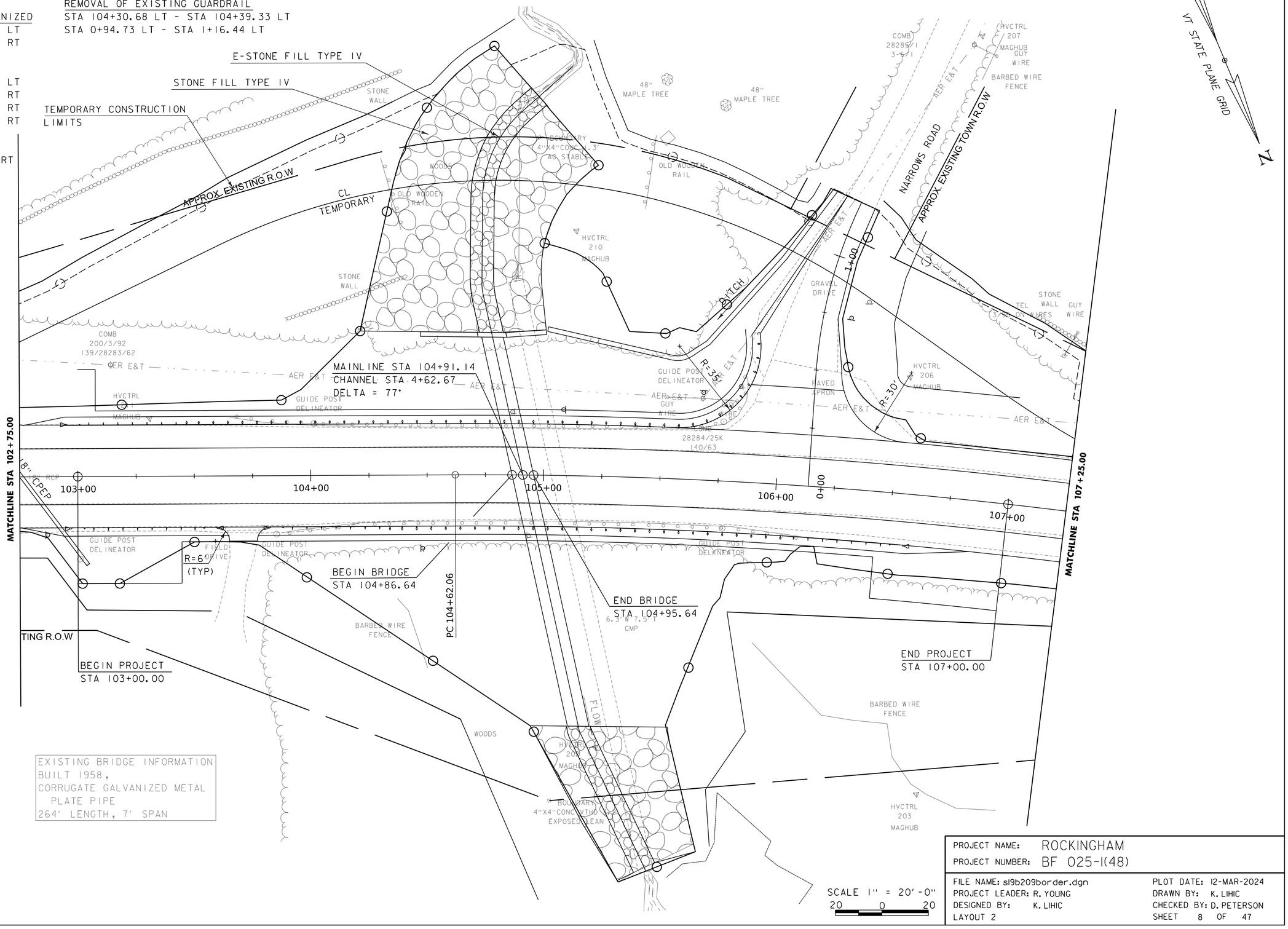
MTS, BOX BEAM, TANGENT, TL-3
STA 102+92.8 LT - STA 103+42.8 LT
STA 102+96.3 RT - STA 103+62.6 RT
STA 103+80.3 RT - STA 104+30.3 RT
STA 106+09.4 RT - STA 106+59.4 RT

18" CPEP
STA 102+75.00 - STA 103+04.32 RT

DRAINAGE DITCH
ML STA 105+00.0 LT -
NR STA 1+25.0 LT

REMOVAL OF EXISTING FENCE
STA 104+37.01 RT - STA 104+49.86 RT

REMOVAL OF EXISTING GUARDRAIL
STA 104+30.68 LT - STA 104+39.33 LT
STA 0+94.73 LT - STA 1+16.44 LT



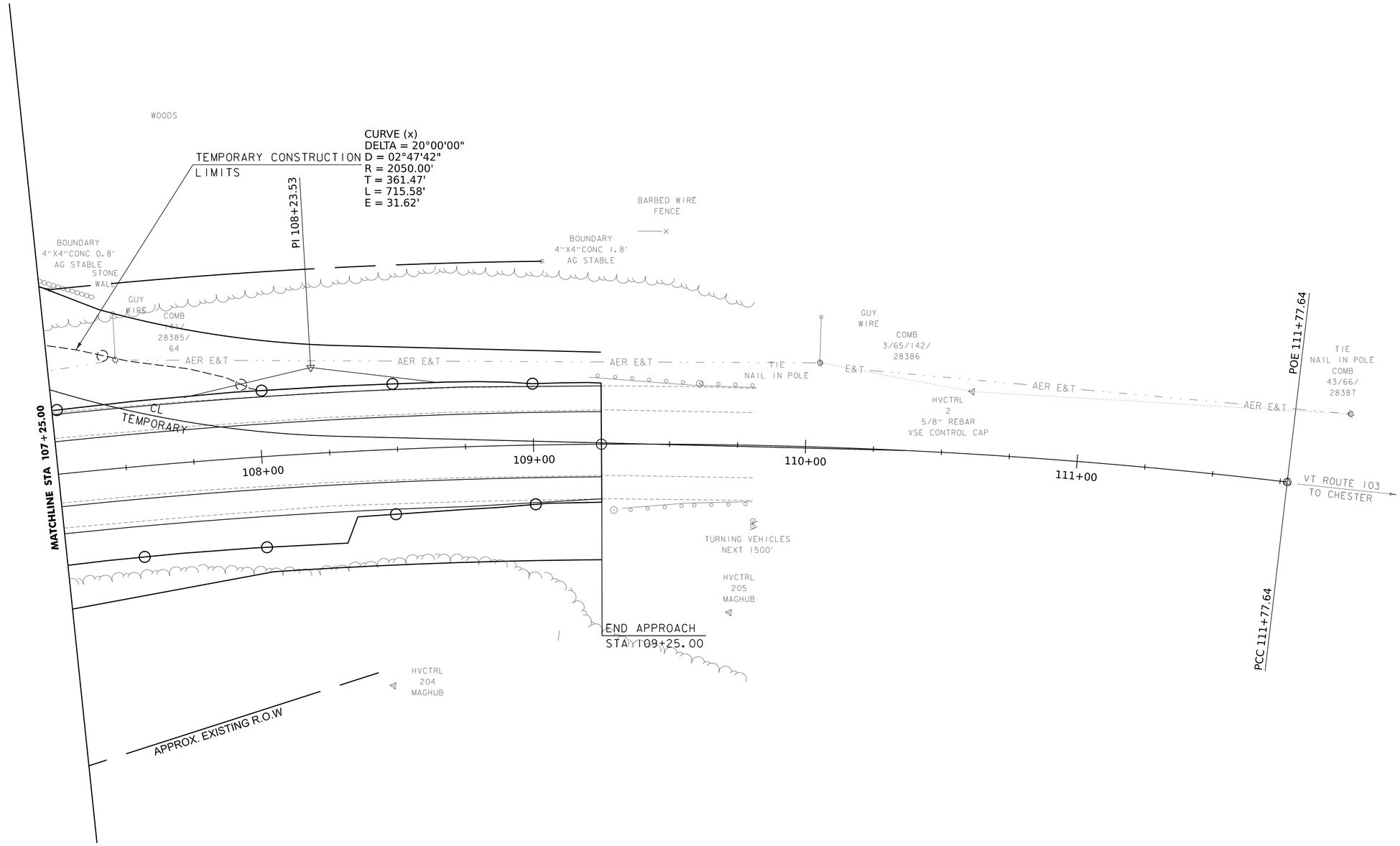

EXISTING BRIDGE INFORMATION
BUILT 1958,
CORRUGATE GALVANIZED METAL PLATE PIPE
264' LENGTH, 7' SPAN

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

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

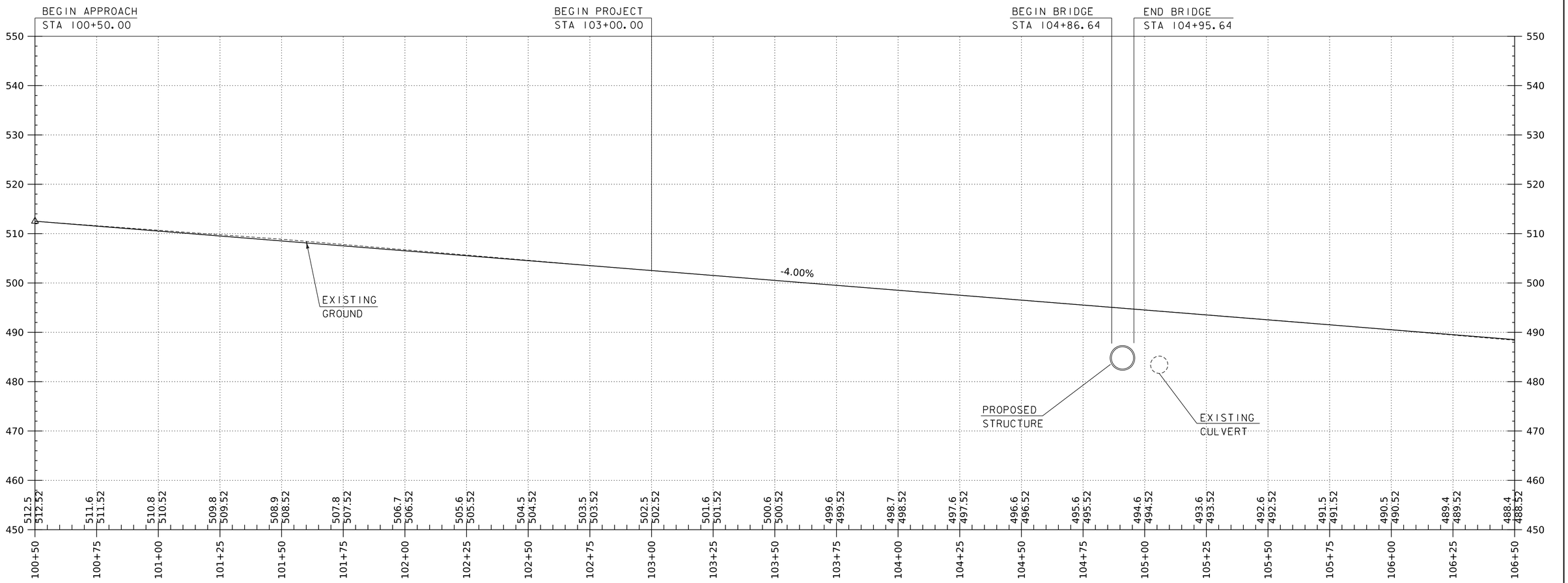
FILE NAME: s19b209border.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
LAYOUT 2

PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET 8 OF 47




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

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209border.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| LAYOUT 3 | SHEET 9 OF 47 |



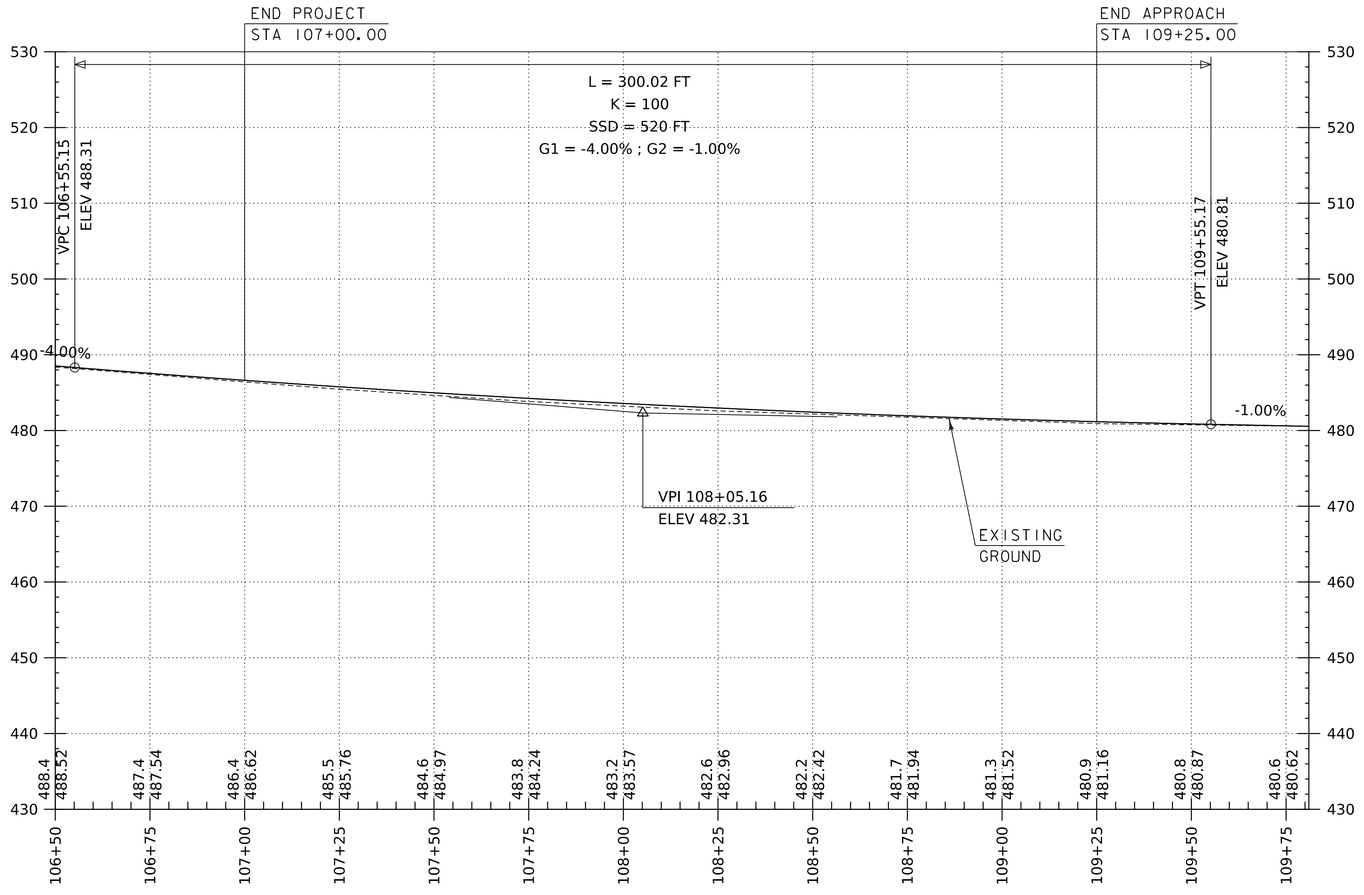

## VT 103 PROFILE

VERTICAL
30
20
10
0

HORIZONTAL
0 20 40 60
SCALE IN FEET

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

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: s19b209Route103_Pro.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| VT RTE 103 PROFILE 1 | SHEET 10 OF 47 |




VT 103 PROFILE

VERTICAL 0 10 20 30

HORIZONTAL 0 20 40 60

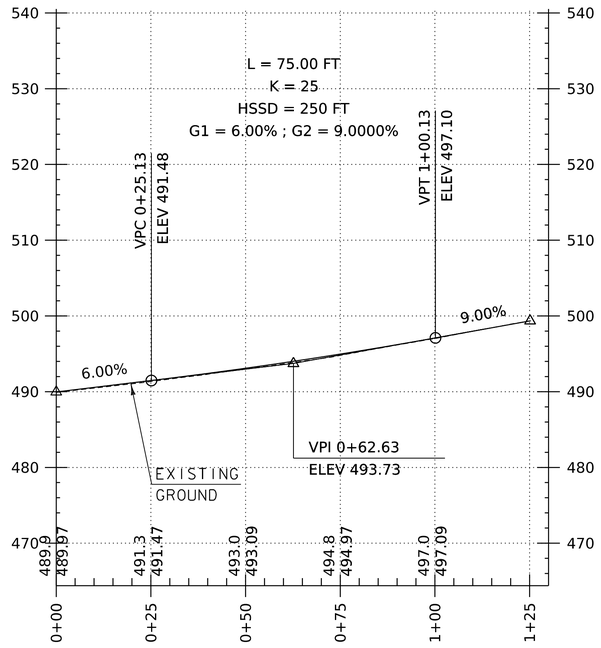
SCALE IN FEET

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

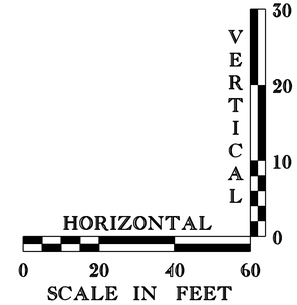
PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209Route103_Pro.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
VT RTE 103 PROFILE 2

PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET 11 OF 47



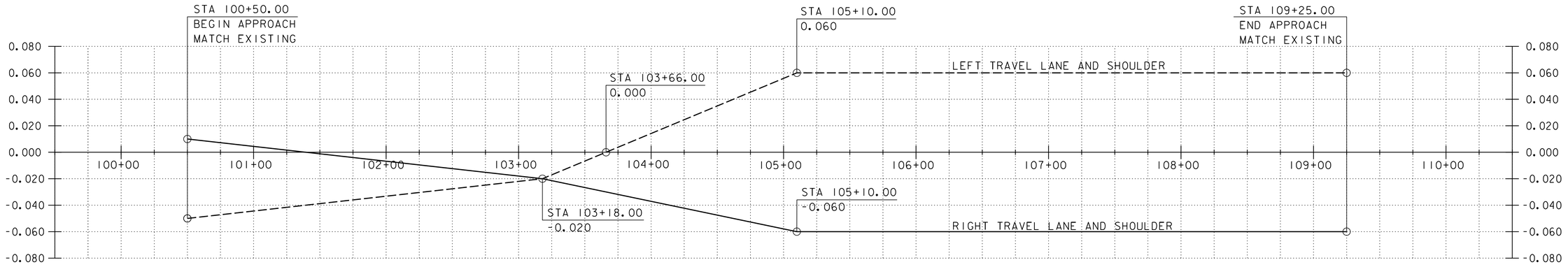

NARROWS ROAD PROFILE




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

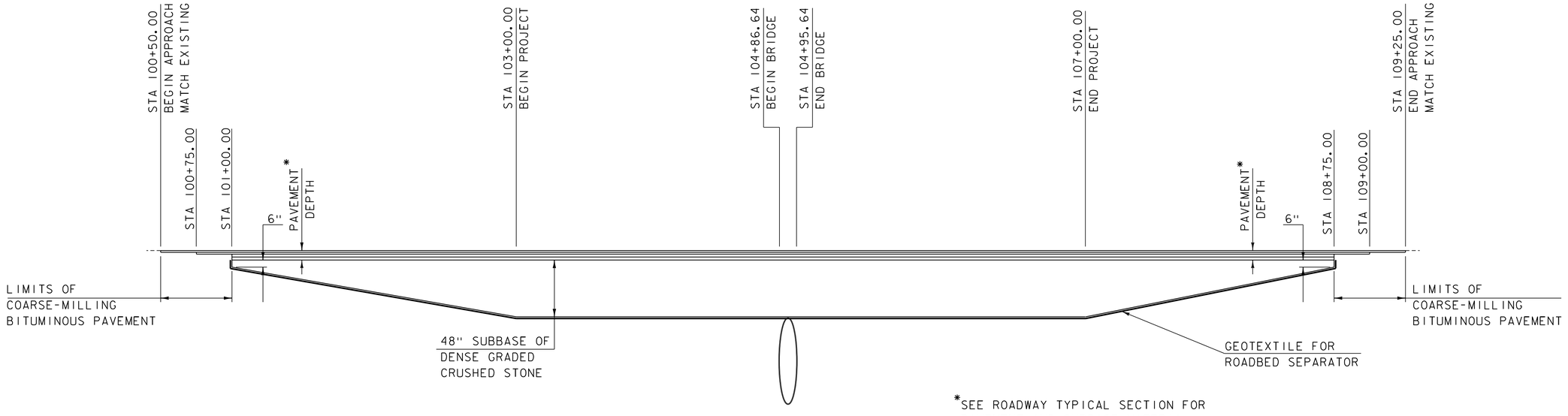
PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209Route103_Pro Sideroad.d
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
SIDE ROAD PROFILE
PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET 12 OF 47




## VT 103 BANKING DIAGRAM

HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 0.020'/'



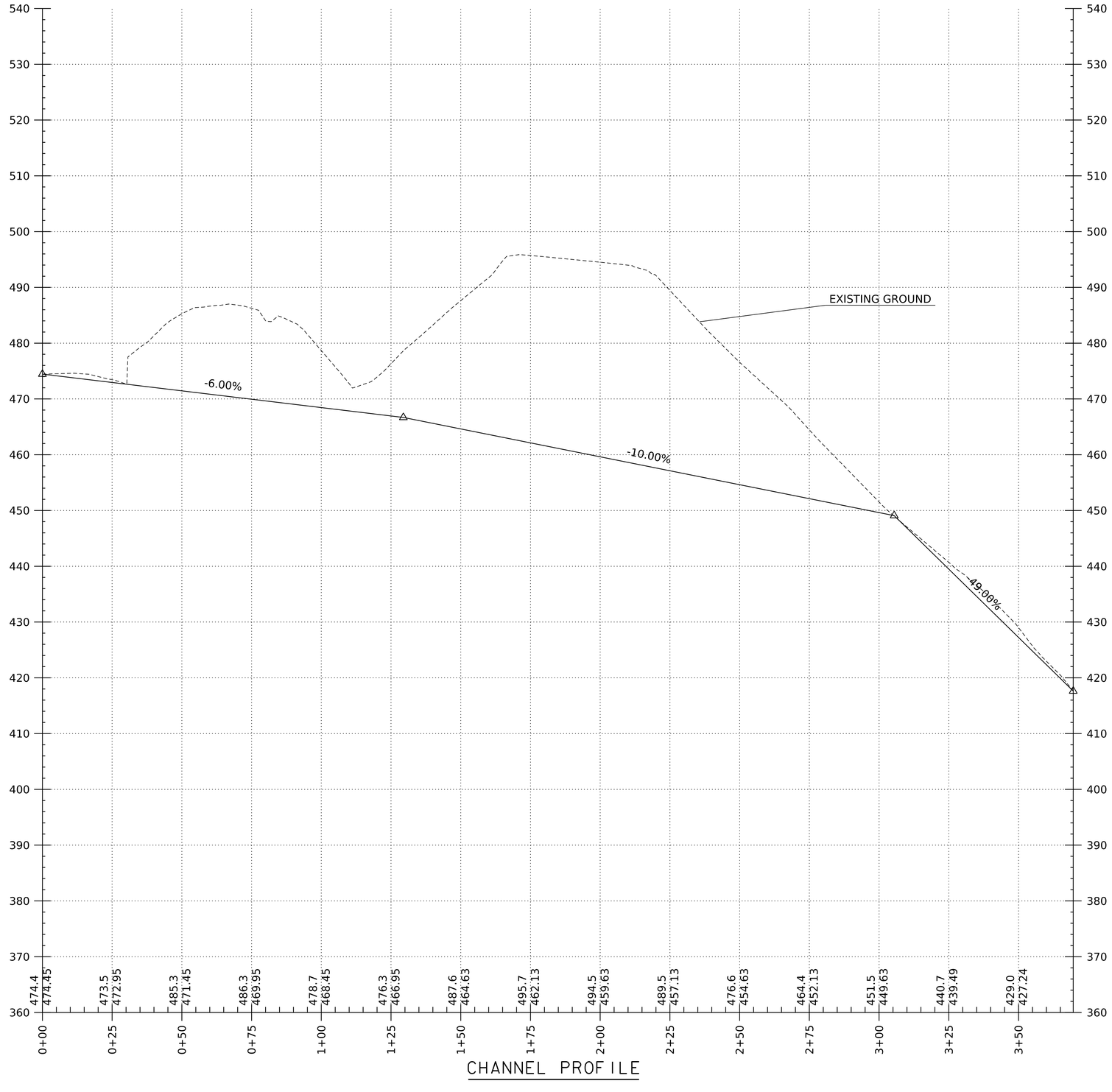

*SEE ROADWAY TYPICAL SECTION FOR PAVEMENT AND SUBBASE MATERIAL DESIGN INFORMATION.

## VT 103 MATERIAL TRANSITION

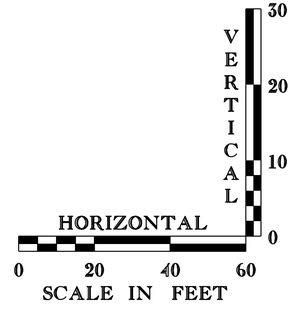
NTS

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |

| | |
|---|---|
| FILE NAME: sl9b209Route103_Pro.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| BANKING & MATERIAL TRANSITION DIAGRAMS | SHEET 13 OF 47 |




CHANNEL PROFILE

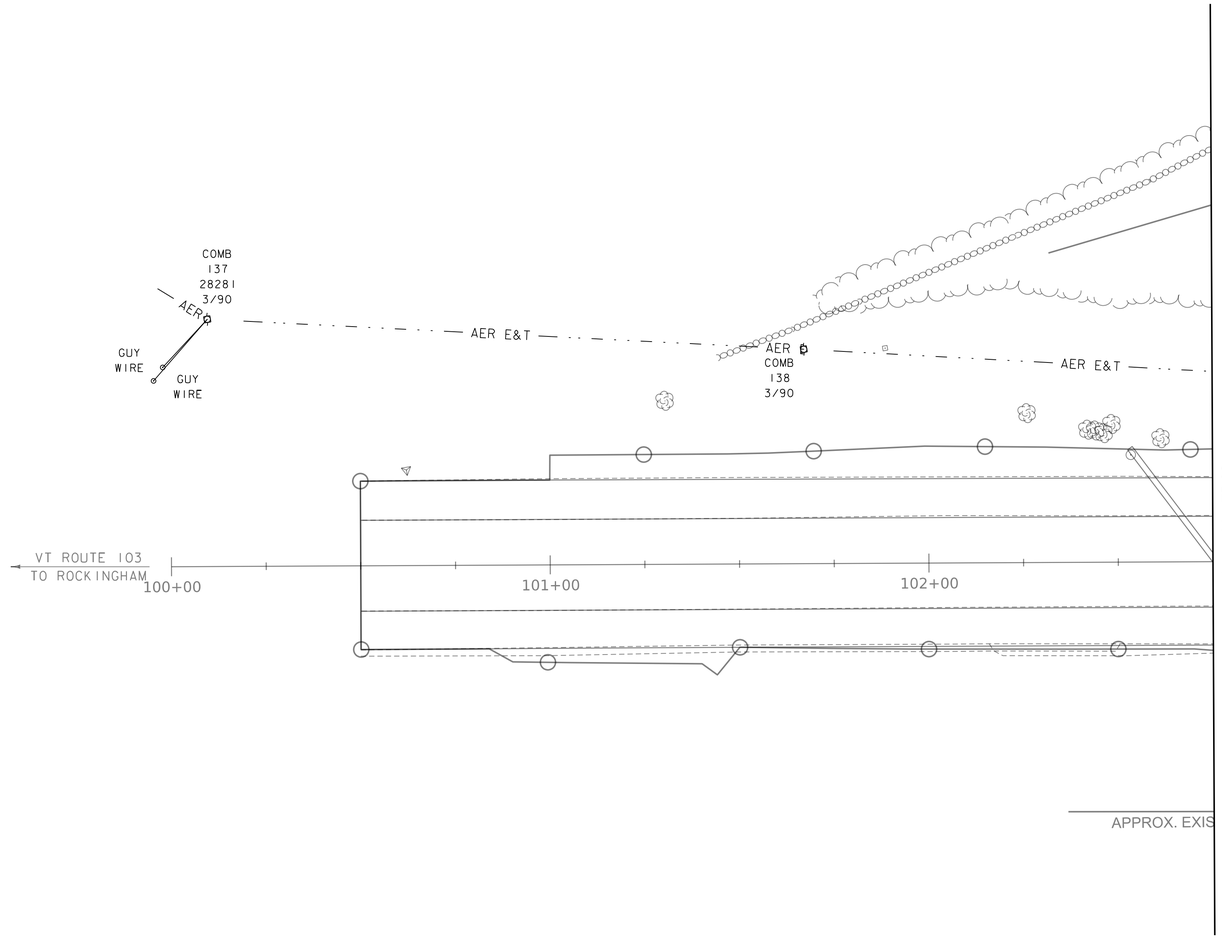


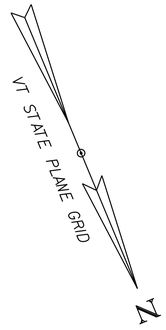

PROJECT NAME: ROCKINGHAM BF 025-1(48)

PROJECT NUMBER:

FILE NAME: s19b209Route103_Pro Channel.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
CHANNEL PROFILE

PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET OF

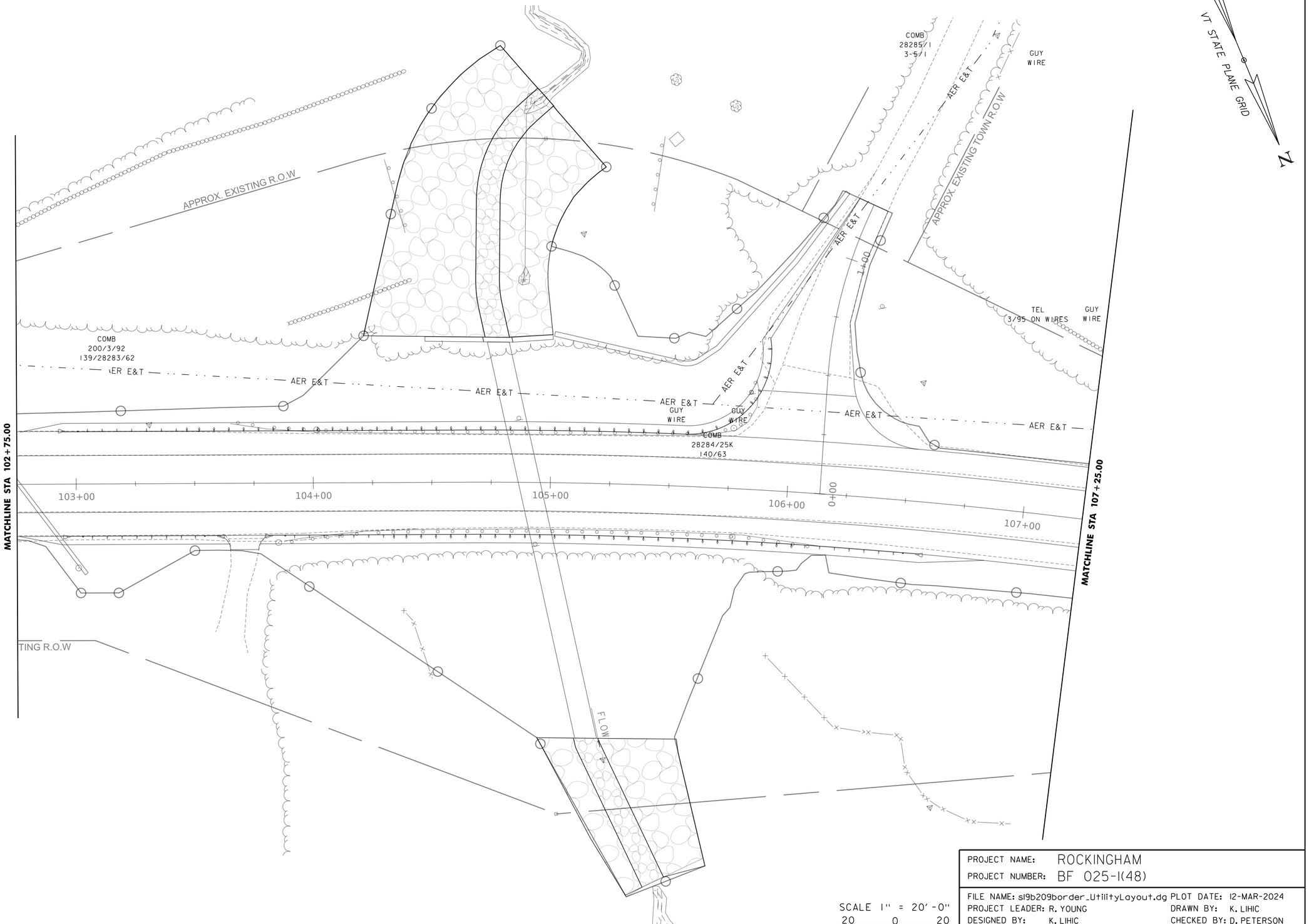



SCALE 1" = 20'-0"
20 0 20

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |

| | | | |
|---|---|---|---|
| FILE NAME: sl9b209border_UtilityLayout.dg | | PLOT DATE: | 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | | DRAWN BY: | K. LIHIC |
| DESIGNED BY: | K. LIHIC | CHECKED BY: | D. PETERSON |
| UTILITY LAYOUT 1 | | SHEET | 15 OF 47 |




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

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209border_UtilityLayout.dg PLOT DATE: 12-MAR-2024
PROJECT LEADER: R. YOUNG DRAWN BY: K. LIHIC
DESIGNED BY: K. LIHIC CHECKED BY: D. PETERSON
UTILITY LAYOUT 2 SHEET 16 OF 47

VT STATE PLANE GRID

N

GUY WIRE

COMB 141/ 28385/ 64

AER E&T

GUY WIRE

COMB 3/65/142/ 28386

E&T

AER E&T

COMB 43/66/ 28387

MATCHLINE STA 107+25.00

108+00

109+00

110+00

111+00

VT ROUTE 103 TO CHESTER

APPROX. EXISTING R.O.W

SCALE 1" = 20'-0"

20 0 20

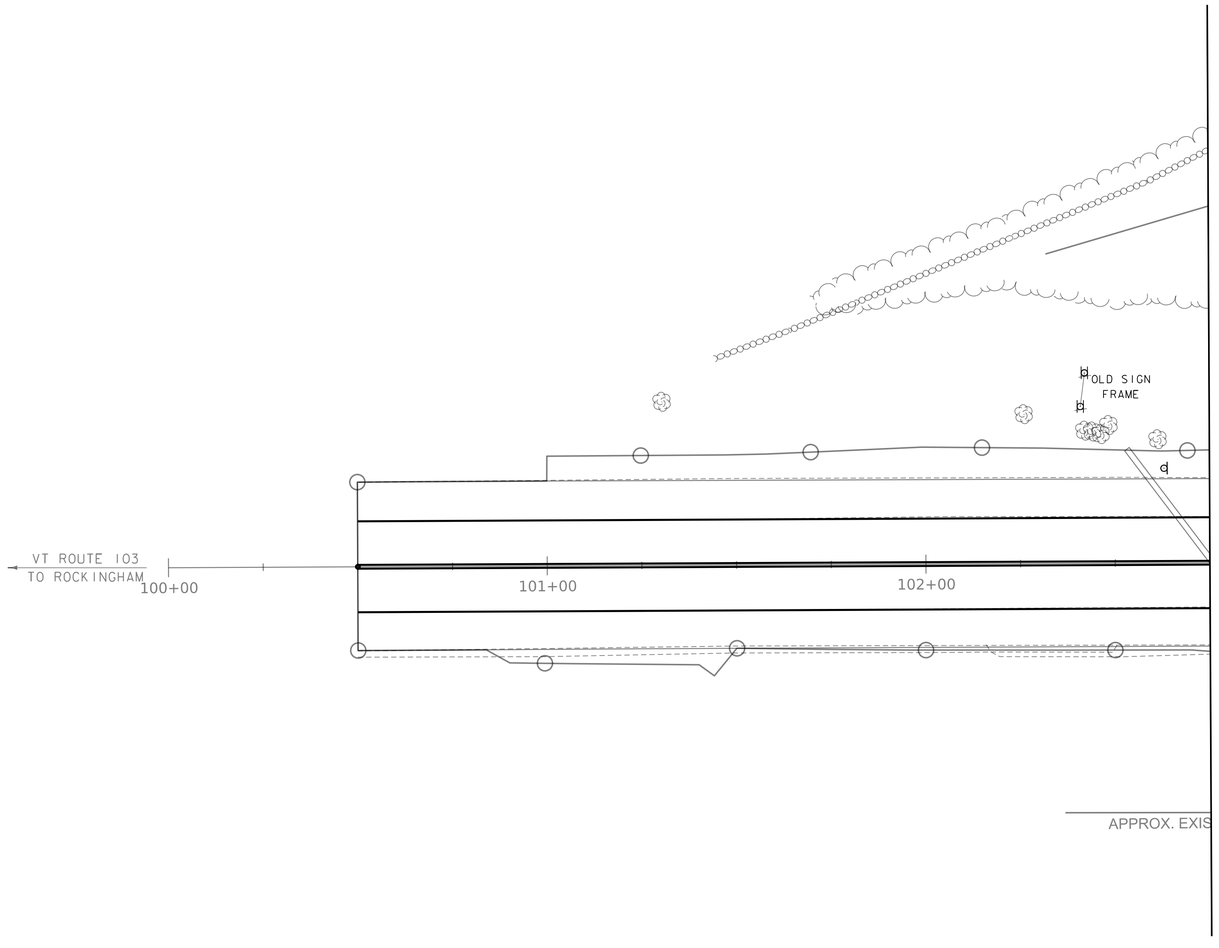
| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209border_UtilityLayout.dg | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| UTILITY LAYOUT 3 | SHEET 17 OF 47 |

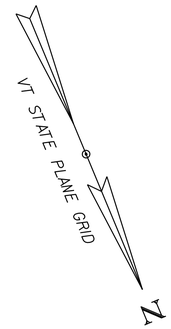
4 INCH YELLOW LINE (DOUBLE)
STA 100+50.00 - STA 102+75.00 CTR

4 INCH WHITE LINE
STA 100+50.00 - STA 102+75.00 LT & RT

REMOVE SIGN
STA 102+40.97 LT

DELINEATOR WITH STEEL POST
STA 102+63.00 LT (GREEN)




BRIDGE 3 VT-103

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

| | |
|---|---|
| PROJECT NAME: ROCKINGHAM | |
| PROJECT NUMBER: BF 025-1(48) | |
| FILE NAME: sl9b209border_Signs.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| SIGNS & LINES LAYOUT 1 | SHEET 18 OF 47 |

4 INCH YELLOW LINE (DOUBLE)
STA 102+75.00 - STA 105+87.00 CTR
STA 106+26.00 - STA 107+25.00 CTR
STA 0+22.00 - STA 0+42.00 CTR

4 INCH WHITE LINE
STA 102+75.00 LT - STA 0+42.00 LT
STA 0+42.00 LT - STA 107+25.00 LT
STA 102+75.00 RT - STA 107+25.00 RT

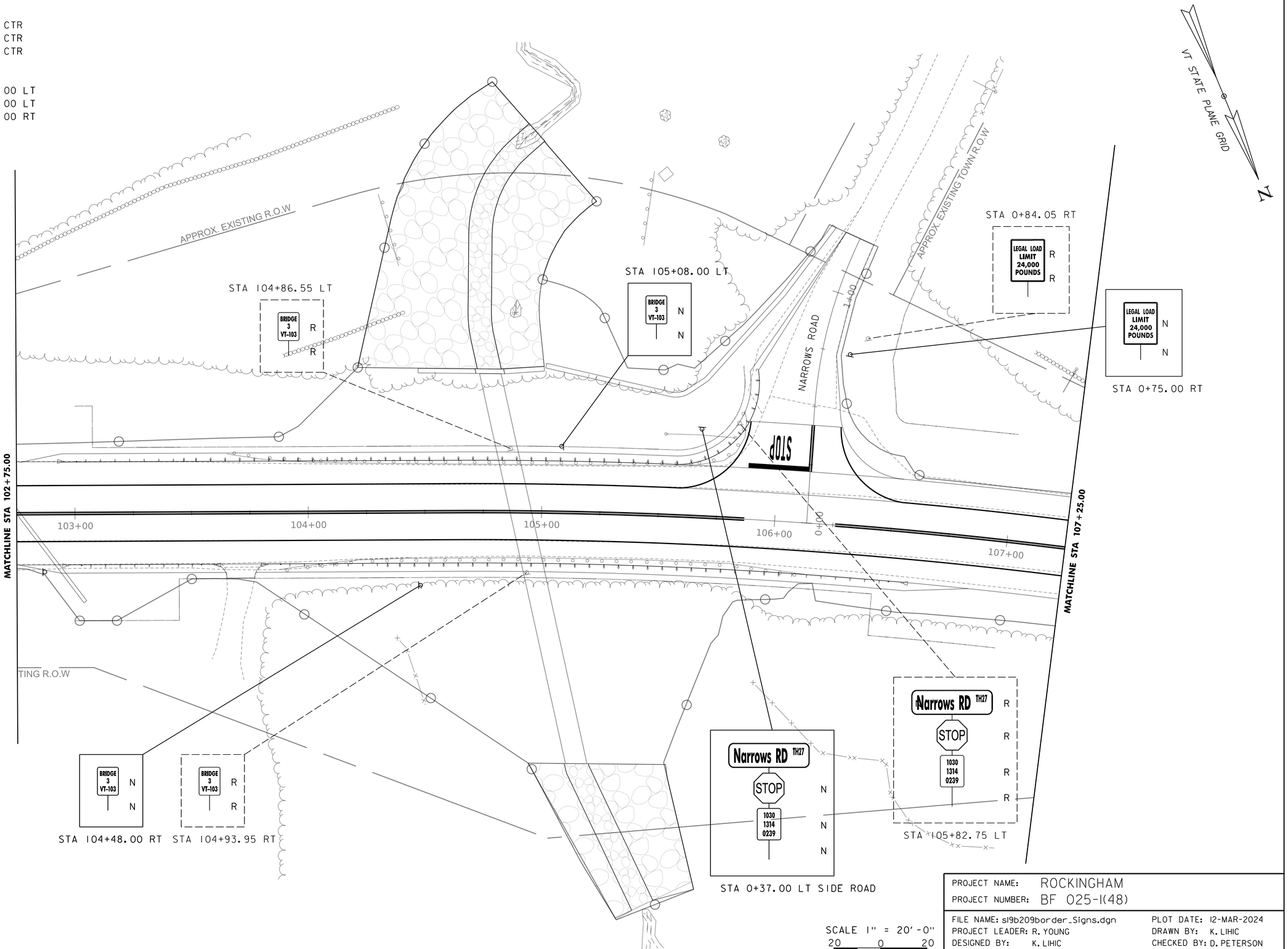
24 INCH STOP BAR
STA 0+22.00 LT

LETTER (STOP)
STA 0+30.00 LT

REMOVE SIGNS
STA 104+86.55 LT
STA 104+93.95 RT
STA 105+82.76 LT
STA 0+84.05 RT

TRAFFIC SIGNS
STA 104+48.00 RT
STA 105+08.00 LT
STA 0+37.00 LT
STA 0+75.00 RT

DELINEATOR WITH STEEL POST
STA 102+87.00 RT (BLUE)



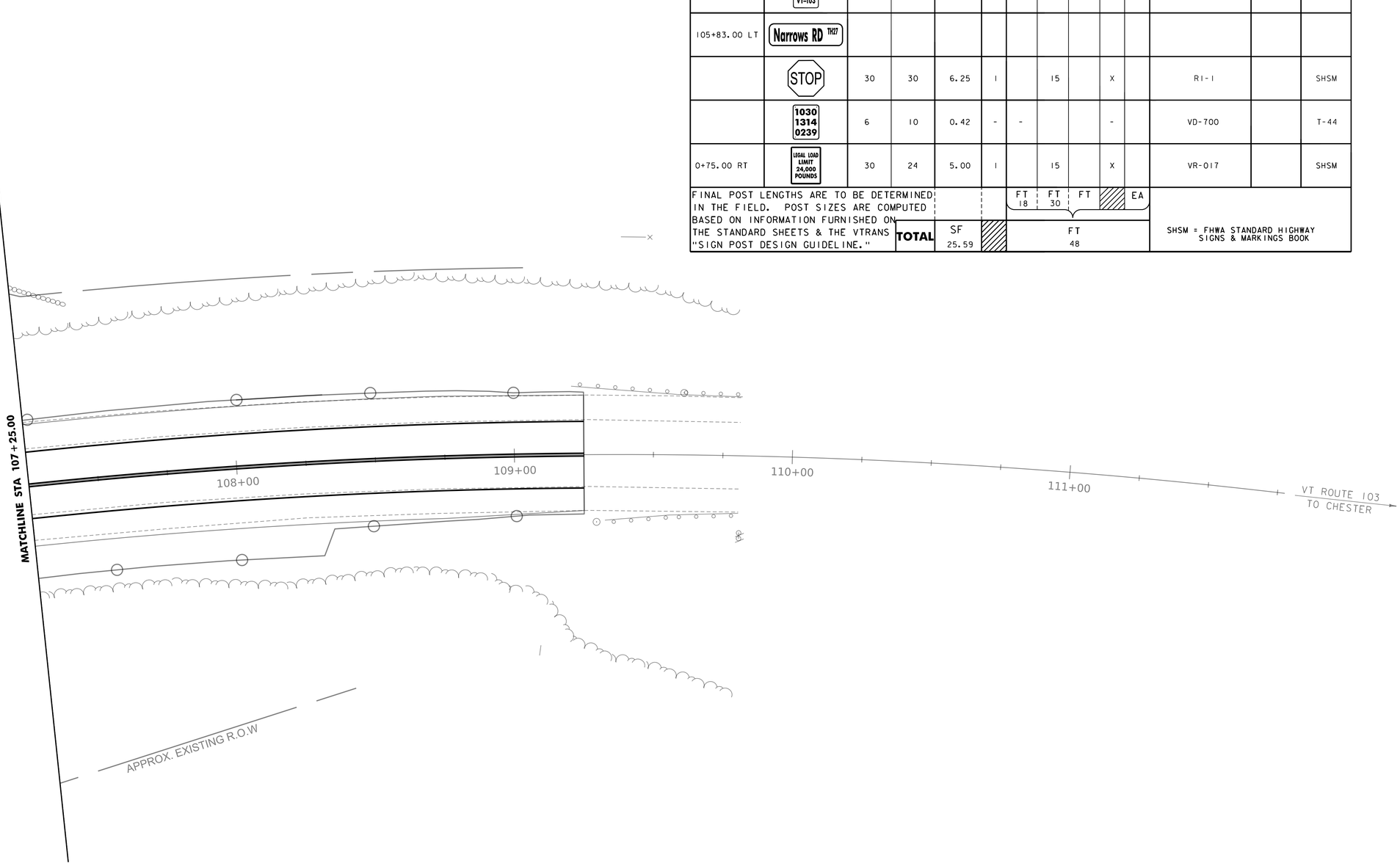

SCALE 1" = 20'-0"
20 0 20

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209border_Signs.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| SIGNS & LINES LAYOUT 2 | SHEET 19 OF 47 |

4 INCH YELLOW LINE (DOUBLE)
STA 107+25.00 - STA 109+25.00 CTR

4 INCH WHITE LINE
STA 107+25.00 - STA 109+25.00 LT & RT

| MILEMARKER, STATION, OR SIGN NUMBER | SIGN LEGEND | SIGN DIMENSIONS WIDTH (in) | SIGN DIMENSIONS HEIGHT (in) | NEW SIGN "A" | NEW SIGN POSTS NO. OF POSTS | SQUARE STEEL (in) 1.75 lb/ft 1.88 | 2.0 lb/ft 2.42 | 2.5 lb/ft 3.35 | ANCHOR | SLEEVE | REMARKS | SIGN DETAIL DETAIL ON SHEET NUMBER | SIGN DETAIL STD. SHEET NUMBER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 104+57.00 RT | BRIDGE 3 VT-103 | 6 | 10 | 0.42 | 1 | 9 | | | X | | VD-701 | | T-42 |
| 105+17.00 LT | BRIDGE 3 VT-103 | 6 | 10 | 0.42 | 1 | 9 | | | X | | VD-701 | | T-42 |
| 105+83.00 LT | Narrows RD TH27 | | | | | | | | | | | | |
| | STOP | 30 | 30 | 6.25 | 1 | | 15 | | X | | RI-1 | | SHSM |
| | 1030 1314 0239 | 6 | 10 | 0.42 | - | - | | | - | | VD-700 | | T-44 |
| 0+75.00 RT | LEGAL LOAD LIMIT 24,000 POUNDS | 30 | 24 | 5.00 | 1 | | 15 | | X | | VR-017 | | SHSM |
| FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS & THE VTRANS "SIGN POST DESIGN GUIDELINE." | | | **TOTAL** | SF 25.59 | | FT 18 | FT 30 | FT 48 | | EA | SHSM = FHWA STANDARD HIGHWAY SIGNS & MARKINGS BOOK | | |




VT STATE PLANE GRID
N

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

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209border_Signs.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
SIGNS & LINES LAYOUT 3

PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET 20 OF 47

## SOIL CLASSIFICATION

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

## ROCK QUALITY DESIGNATION

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

## SHEAR STRENGTH

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

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

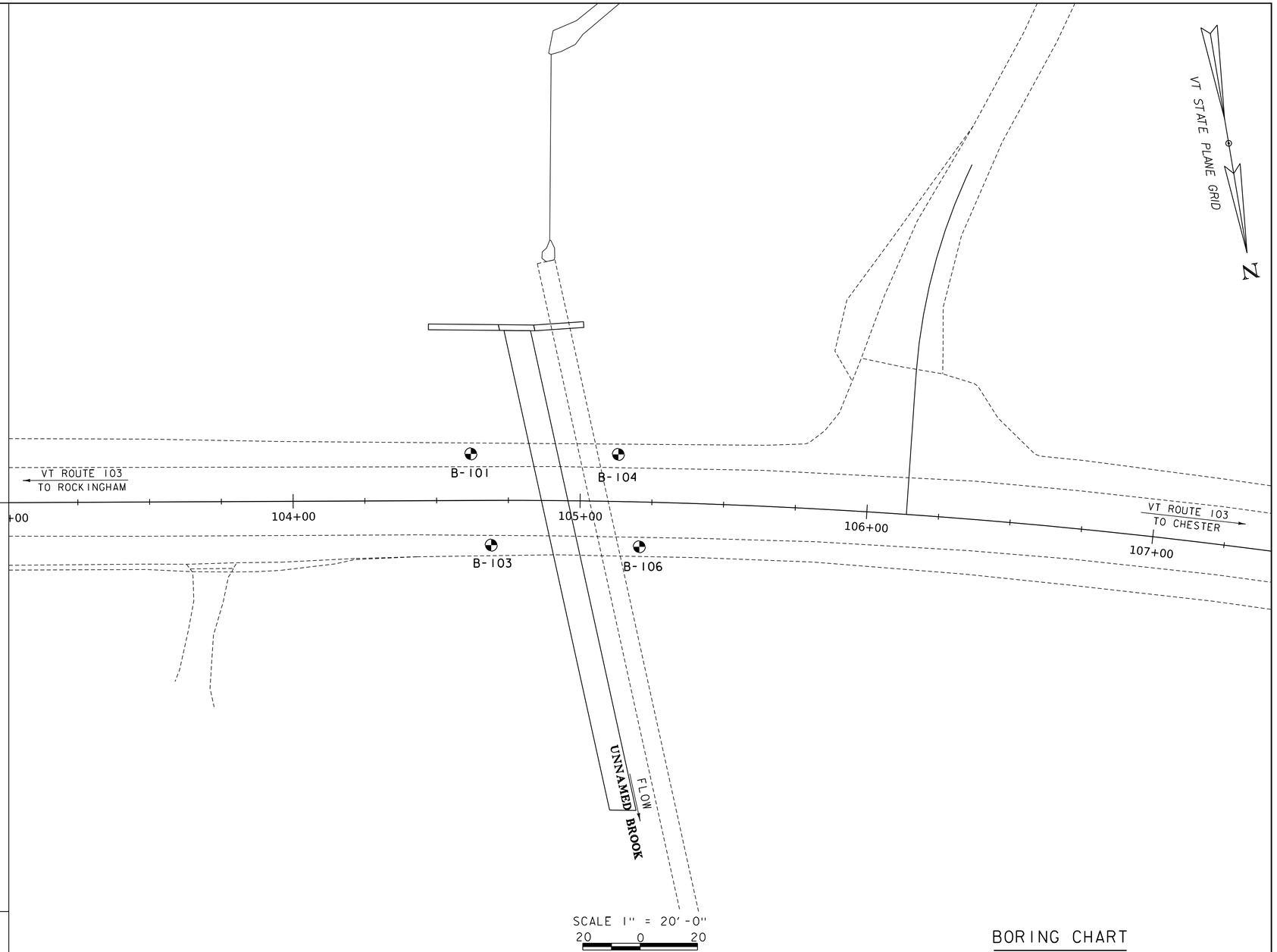
| DENSITY (GRANULAR SOILS) | | CONSISTENCY (COHESIVE SOILS) | |
|---|---|---|---|
| N | DESCRIPTIVE TERM | N | DESCRIPTIVE TERM |
| <5 | Very Loose | <2 | Very Soft |
| 5-10 | Loose | 2-4 | Soft |
| 11-24 | Med. Dense | 5-8 | Med. Stiff |
| 25-50 | Dense | 9-15 | Stiff |
| >50 | Very Dense | 16-30 |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

## COMMONLY USED SYMBOLS

| | |
|---|---|
| ▼ | Water Elevation |
| ⊕ | Standard Penetration Boring |
| ⊕ | Auger Boring |
| ⊙ | Rod Sounding |
| S | Sample |
| N | Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30" |
| VS | Field Vane Shear Test |
| US | Undisturbed Soil Sample |
| B | Blast |
| DC | Diamond Core |
| MD | Mud Drill |
| WA | Wash Ahead |
| HSA | Hollow Stem Auger |
| AX | Core Size 1 1/8" |
| BX | Core Size 1 5/8" |
| NX | Core Size 2 1/8" |
| M | Double Tube Core Barrel Used |
| LL | Liquid Limit |
| PL | Plastic Limit |
| PI | Plasticity Index |
| NP | Non Plastic |
| w | Moisture Content (Dry Wgt. Basis) |
| D | Dry |
| M | Moist |
| MTW | Moist To Wet |
| W | Wet |
| Sat | Saturated |
| Bo | Boulder |
| Gr | Gravel |
| Sa | Sand |
| Si | Silt |
| Cl | Clay |
| HP | Hardpan |
| Le | Ledge |
| NLTD | No Ledge To Depth |
| CNPF | Can Not Penetrate Further |
| TLOB | Top of Ledge Or Boulder |
| NR | No Recovery |
| Rec. | Recovery |
| %Rec. | Percent Recovery |
| ROD | Rock Quality Designation |
| CBR | California Bearing Ratio |
| < | Less Than |
| > | Greater Than |
| R | Refusal (N > 100) |
| VTSPG | NAD83 - See Note 7 |

### COLOR

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




## DEFINITIONS (AASHTO)

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

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

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

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

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

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

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

VARVED - Alternate layers of silt and clay.

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

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

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

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

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

DIP - Inclination of bed with a horizontal plane.

## GENERAL NOTES

1. The subsurface explorations shown herein were made between 01/11/23 and 01/19/23 New England Boring Contractors and observed by Geodesign.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

## BORING CHART

| HOLE NO. | SURV. STATION | OFFSET | GROUND ELEVATION | ELEV. TLOB |
|---|---|---|---|---|
| B-101 | 104+62 | 16.5' LT | 496.0' | - |
| B-103 | 104+69 | 15.6' RT | 495.5' | - |
| B-104 | 105+13 | 16.4 LT | 495.0' | - |
| B-106 | 105+21 | 15.6' RT | 493.0' | - |

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209Boring.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
BORING INFORMATION SHEET

PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET 21 OF 47

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: **B-101 (OW)**
Page No.: 1 of 3
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/09/23 Date Finished: 1/10/23
VTSPG NAD83: N 253199.1 ft E 1640691.4 ft
Station: 104+62 Offset: 16.5 LT
Ground Elevation: 496.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| 01/11/23 | 28.7 | In well |
| 02/11/23 | 73.2 | In well |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Well Diagram | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Approx. 0.7' Asphalt | | | | | | | | |
| | | S1 (0.7' - 2.7'): Dense, brown fine to coarse GRAVEL and fine to coarse SAND, little Silt. Moist. Rec. = 0.9 ft (A-1-a.) | | 42-16-16-11 (32) | 6.3 | 56.3 | 32.0 | 11.7 | NP | NP |
| | | S2 (2.7' - 4.7'): Medium dense, brown SILT and fine to medium SAND, trace fine Gravel, trace wood pieces. Moist. Rec. = 1.2 ft | | 2-6-4-5 (10) | | | | | | |
| 5 | | S3 (4.5' - 6'): Loose, brown SILT and fine to medium SAND, little fine to coarse Gravel. Wood in tip. Moist. Rec. = 1.1 ft | | 3-5-10 (15) | | | | | | |
| | | S4 (6' - 8'): Medium dense, brown fine to coarse Sand, some Silt, trace fine Gravel. Moist. Rec. = 1.4 ft | | 9-7-19-18 (26) | | | | | | |
| 10 | | S5 (9' - 11'): Medium dense, gray and brown fine to coarse SAND and SILT, trace fine Gravel, trace root fibers. Moist. Rec. = 1.2 ft (A-4.) | | 17-14-13-15 (27) | 11.3 | 15.6 | 49.1 | 35.3 | NP | NP |
| | | S6 (11' - 13'): Dense, gray fine to medium SAND, some SILT, trace fine to coarse Gravel. Moist. Rec. = 1.3 ft | | 11-18-21-22 (39) | | | | | | |
| 15 | | S7 (14' - 16'): Medium dense, gray SILT, some fine to coarse Sand, trace fine to coarse Gravel. Moist. Rec. = 0.9 ft | | 14-10-8-11 (18) | | | | | | |
| 20 | | S8 (19' - 21'): Medium dense, gray fine to medium SAND, some Silt, trace fine Gravel, trace wood. Organic odor. Moist. Rec. = 1.2 ft (A-2-4.) | | 13-7-4-7 (11) | 14.3 | 12.0 | 56.3 | 31.7 | NP | NP |
| 25 | | S9 (24' - 26'): Loose, no recovery. Rec. = 0.0 ft | | 11-7-1-3 (8) | | | | | | |
| 30 | | S10 (29' - 31'): Very dense / Refusal, gray SILT, some fine Sand, trace fine to coarse Gravel. Moist. Rec. = 1.3 ft | | 50-69-58-84 (R) | | | | | | |
| 35 | | S11 (34' - 36'): Very dense / Refusal, gray to dark gray fine to coarse SAND, some Silt, some (-) fine to coarse Gravel. Gravel appeared weathered. Moist. Rec. = 1.4 ft (A-2-4.) | | 36-52-55-100 (R) | 7.6 | 26.4 | 43.7 | 29.9 | NP | NP |
| | | S12 (39' - 41'): Very dense / Refusal, gray fine to coarse SAND, | | 35-47- | | | | | | |

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT.AOT.GDT 2/24/23

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. 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.

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: **B-101 (OW)**
Page No.: 2 of 3
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/09/23 Date Finished: 1/10/23
VTSPG NAD83: N 253199.1 ft E 1640691.4 ft
Station: 104+62 Offset: 16.5 LT
Ground Elevation: 496.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| 01/11/23 | 28.7 | In well |
| 02/11/23 | 73.2 | In well |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Well Diagram | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | some Silt, little fine to coarse Gravel. Moist. Rec. = 1.7 ft | | 60-56 (R) | | | | | | |
| 45 | | S13 (44' - 46'): Very dense, gray fine to coarse SAND, some Silt, some fine to coarse Gravel. Moist. Rec. = 1.8 ft | | 36-40-48-96 (88) | | | | | | |
| 50 | | S14 (49' - 50.6'): Very dense / Refusal, gray fine to coarse SAND, some Silt, some fine to coarse Gravel. Moist. Rec. = 1.6 ft (A-2-4.) | | 35-52-52-100/3" (R) | 9.6 | 32.2 | 39.8 | 28.0 | NP | NP |
| 55 | | S15 (54' - 56'): Very dense, gray fine to coarse SAND, some Silt, some fine to coarse Gravel. 2" thick sand seam noted ~8" from tip. Moist. Rec. = 1.3 ft | | 30-48-46-45 (94) | | | | | | |
| 60 | | S16 (59' - 60.8'): Very dense, gray fine to coarse SAND, some Silt, some fine to coarse Gravel. Moist. Rec. = 1.3 ft | | 32-43-44-50/4" (87) | | | | | | |
| 65 | | S17 (64' - 66'): Very dense / Refusal, gray fine to coarse SAND, some Silt, some fine to coarse Gravel. Moist. Rec. = 1.0 ft | | 32-68-63-50/3" (R) | | | | | | |
| 70 | | S18 (69' - 71'): Very dense, gray fine to coarse SAND, some Silt, little (+) fine to coarse Gravel. Moist. Rec. = 1.3 ft (A-2-4.) | | 42-44-37-49 (81) | 9.8 | 29.0 | 41.0 | 29.9 | NP | NP |
| 75 | | S19 (74' - 76'): Very dense, gray fine to coarse SAND, some Silt, some fine to coarse Gravel. Moist. Rec. = 1.4 ft | | 14-36-41-67 (77) | | | | | | |
| | | S20 (79' - 81'): Refusal, gray fine to coarse SAND, some Silt, little | | 51- | | | | | | |

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT.AOT.GDT 2/24/23

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. 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.

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: **B-101 (OW)**
Page No.: 3 of 3
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/09/23 Date Finished: 1/10/23
VTSPG NAD83: N 253199.1 ft E 1640691.4 ft
Station: 104+62 Offset: 16.5 LT
Ground Elevation: 496.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| 01/11/23 | 28.7 | In well |
| 02/11/23 | 73.2 | In well |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Well Diagram | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | fine to coarse Gravel. Moist. Rec. = 0.4 ft | | 100/4" (R) | | | | | | |
| | | Hole stopped @ 81.0 ft no refusal | | | | | | | | |

Remarks:
1) Samples S1 and S2 were driven consecutively staring below pavement prior to casing installation to a depth of approximately 4.7 feet. The driller then advanced casing to 4 feet, and soil slough that accumulated at the bottom of the boring due to driving casing was cleaned back out with roller bit to 4 feet. The Driller then performed the standard penetration test (SPT) for S3 from 4 to 6 feet. The first approximate 6 inches of the SPT penetration for S3 was through sloughed material and so is not recorded on the boring log. This also explains the overlap in depths of samples S2 and S3.
2) slight petroleum odor noted in S5 during testing in lab.
3) Visual descriptions are based on Modified Burmister system. Laboratory gradations (% gravel, sand and silt as applicable) are per AASHTO M145.

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT.AOT.GDT 2/24/23

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. 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.

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: s19b209Boring.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
BORING LOGS 1

PLOT DATE: 12-MAR-2024
DRAWN BY: R. PELLETT
CHECKED BY: D. PETERSON
SHEET 22 OF 47

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: B-103
Page No.: 1 of 3
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/13/23 Date Finished: 1/17/23
VTSPG NAD83: N 253231.9 ft E 1640689.7 ft
Station: 104+69 Offset: 15.6 RT
Ground Elevation: 495.5 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| 01/17/23 | 23.9 | See note 1 |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|
| | | Approx. 0.5' Asphalt | | | | | | | |
| | | S-1 (0.5' - 2.5'): Medium dense, light brown fine to coarse GRAVEL, little fine to coarse SAND, trace Silt. Moist. Rec. = 0.6 ft | 15-17-12-7 (29) | | | | | | |
| | | S2 (2.5' - 4.5'): Medium dense, gray fine to coarse SAND some Silt, little fine to coarse Gravel, trace roots. Gravel appears weathered. Moist. Rec. = 1.0 ft (A-2-4.) | 4-8-7-13 (15) | 14.7 | 19.5 | 50.1 | 30.4 | NP | NP |
| 5 | | S3 (4.5' - 6'): Medium dense, gray fine to coarse SAND, little Silt, trace fine to coarse Gravel. Moist. Rec. = 1.3 ft | 14-14-14 (28) | | | | | | |
| | | S4 (6' - 8'): Very dense, light brown fine to coarse SAND, some Silt, some fine to coarse Gravel. Moist. Rec. = 1.0 ft (A-2-4.) | 15-30-37-15 (67) | 9.7 | 32.3 | 45.6 | 22.1 | NP | NP |
| | | S5 (9' - 11'): Medium dense, gray to light brown, fine to coarse SAND, some Silt, little fine Gravel. Moist. Rec. = 0.9 ft | 11-15-14-14 (29) | | | | | | |
| 10 | | S6 (11' - 13'): Dense;<br>S-6A (Top 0.6'): light brown to brown fine to coarse SAND and SILT, trace fine Gravel, moist.<br>S-6B ( Bottom 0.5'): dark orange-brown to light brown fine to coarse SAND, little Silt, moist. Rec. = 1.1 ft | 11-16-19-23 (34) | | | | | | |
| | | S-7 (14' - 16'): Medium dense, gray fine to coarse SAND, some Silt, little fine to coarse Gravel, trace roots. Moist. Rec. = 1.2 ft (A-2-4.) | 9-12-12-12 (24) | 14.6 | 21.7 | 49.7 | 28.6 | NP | NP |
| 15 | | | | | | | | | |
| | | S8 (19' - 21'): Medium dense, gray fine to coarse SAND, some Silt , little fine to coarse Gravel. Moist. Rec. = 1.0 ft | 6-8-15-23 (23) | | | | | | |
| 20 | | | | | | | | | |
| | | S9 (24' - 26'): Medium dense, gray fine to coarse SAND, some (-) Silt , some fine Gravel, with 3/4" root. Moist. Rec. = 1.0 ft (A-1-b.) | 10-14-15-15 (29) | 13.4 | 33.2 | 45.9 | 20.9 | NP | NP |
| 25 | | | | | | | | | |
| | | S10 (29' - 31'): Loose, brown fine to coarse Sand, little Silt, trace fine Gravel. Moist. Rec. = 1.4 ft | 4-5-5-7 (10) | | | | | | |
| 30 | | | | | | | | | |
| | | S11 (34' - 35.8'): Very dense, gray fine to coarse SAND, some Silt, little fine to coarse Gravel. Moist. Rec. = 1.3 ft | 18-36-46-50/4" (82) | | | | | | |
| 35 | | | | | | | | | |
| | | S12 (39' - 40.4'): Refusal, gray fine to coarse SAND, some Silt, little fine to | 45-70- | | | | | | |

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. 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.

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT AOT.GDT 2/24/23

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: B-103
Page No.: 2 of 3
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/13/23 Date Finished: 1/17/23
VTSPG NAD83: N 253231.9 ft E 1640689.7 ft
Station: 104+69 Offset: 15.6 RT
Ground Elevation: 495.5 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| 01/17/23 | 23.9 | See note 1 |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|
| | | coarse Gravel. Moist. Rec. = 1.0 ft | 100/5" (R) | | | | | | |
| 45 | | S13 (44' - 46'): Very dense / Refusal, gray fine to coarse SAND, some Silt, little fine Gravel. Moist. Rec. = 1.2 ft (A-2-4.) | 34-62-61-77 (R) | 9.7 | 24.2 | 44.7 | 31.1 | NP | NP |
| 50 | | S14 (49' - 50.6'): Very dense / Refusal;<br>S14A (Top 0.7'): gray fine to coarse SAND, some Silt, little fine Gravel.<br>S14B (Bottom 0.3'): white to light gray fine to coarse SAND, trace fine Gravel, trace Silt. Inferred weathered cobble. Moist. Rec. = 1.0 ft | 28-40-84-50/2" (R) | | | | | | |
| 55 | | | | | | | | | |
| 60 | | S15 (59' - 61'): Very dense / Refusal, gray fine to coarse SAND, some Silt, some (-) fine to coarse Gravel. Inferred cobbles with 2" cobble core in tip. Moist. Rec. = 1.3 ft (A-2-4.) | 53-62-86-54 (R) | 9.8 | 28.4 | 41.2 | 30.4 | NP | NP |
| 65 | | | | | | | | | |
| 70 | | S16 (69' - 71'): Very dense, gray fine to coarse SAND, some Silt, little fine to coarse Gravel. Moist. Rec. = 1.3 ft | 31-51-44-35 (95) | | | | | | |
| 75 | | | | | | | | | |
| | | S17 (79' - 80.3'): Refusal, gray fine to coarse SAND, some Silt, trace fine to | 32-52- | | | | | | |

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. 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.

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT AOT.GDT 2/24/23

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: B-103
Page No.: 3 of 3
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/13/23 Date Finished: 1/17/23
VTSPG NAD83: N 253231.9 ft E 1640689.7 ft
Station: 104+69 Offset: 15.6 RT
Ground Elevation: 495.5 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| 01/17/23 | 23.9 | See note 1 |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|
| | | coarse Gravel. Gravel appeared weathered. Rec. = 1.0 ft | 100/4" (R) | | | | | | |
| | | Hole stopped @ 81.0 ft<br>no refusal | | | | | | | |
| 85 | | | | | | | | | |
| 90 | | | | | | | | | |
| 95 | | | | | | | | | |
| 100 | | | | | | | | | |
| 105 | | | | | | | | | |
| 110 | | | | | | | | | |
| 115 | | | | | | | | | |

Remarks:
1) Samples S1 and S2 were driven consecutively staring below pavement prior to casing installation to a depth of approximately 4.5 feet. The driller then advanced casing to 4 feet, and soil slough that accumulated at the bottom of the boring due to driving casing was cleaned back out with roller bit to 4 feet. The Driller then performed the standard penetration test (SPT) for S3 from 4 to 6 feet. The first approximate 6 inches of the SPT penetration for S3 was through sloughed material and so is not recorded on the boring log.
2) WL taken from boring with casing at 35' deep, left undisturbed over 3 day weekend. Drilling resumed following reading. WL likely affected by water added for wash rotary drilling.
3) slight petroleum odor noted in S9 during testing in lab.
4) Visual descriptions are based on Modified Burmister system. Laboratory gradations (% gravel, sand and silt as applicable) are per AASHTO M145.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. 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.

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT AOT.GDT 2/24/23

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209Boring.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
BORING LOGS 2

PLOT DATE: 12-MAR-2024
DRAWN BY: R. PELLETT
CHECKED BY: D. PETERSON
SHEET 23 OF 47

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: **B-104**
Page No.: 1 of 2
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/11/23 Date Finished: 1/19/23
VTSPG NAD83: N 253208.1 ft E 1640640.8 ft
Station: 105+13 Offset: 16.4 LT
Ground Elevation: 495.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|
| | | Approx. 0.7' Asphalt | | | | | | | |
| | | (A-1-b.) | 38-18-20-20 (38) | 7.0 | 44.8 | 42.3 | 12.9 | NP | NP |
| | | S1 (0.7' - 2.7'): Dense, brown fine to coarse SAND and (-) fine to coarse GRAVEL, little Silt. Moist. Rec. = 0.7 ft | | | | | | | |
| | | S2 (2.7' - 4.7'): Medium dense, no recovery. Rec. = 0.0 ft | 19-15-6-3 (21) | | | | | | |
| 5 | | S3 (4.5' - 6'): Loose, gray fine to coarse SAND and SILT, trace fine Gravel. Moist. Rec. = 0.6 ft (A-4.) | 2-2-3 (5) | 17.3 | 10.5 | 49.5 | 40.0 | NP | NP |
| | | S4 (6' - 8'): Dense, brown fine to medium Sand, some Silt, little fine to coarse Gravel. Organic odor. Moist. Rec. = 1.2 ft | 8-15-20-21 (35) | | | | | | |
| 10 | | S5 (9' - 11'): Dense, brown to dark gray SILT and fine to coarse SAND, some fine to coarse Gravel. Moist. Rec. = 0.5 ft (A-4.) | 18-19-23-24 (42) | 13.4 | 26.8 | 33.5 | 39.7 | NP | NP |
| | | S6 (11' - 13'): Very dense, dark brown fine to coarse SAND, little fine Gravel, trace Silt. Moist. Rec. = 0.3 ft | 27-25-25-19 (50) | | | | | | |
| 15 | | S7 (14' - 16'): Dense, brown SILT and fine to coarse SAND, little fine to coarse Gravel. Moist. Rec. = 1.0 ft (A-4.) | 12-18-19-14 (37) | 15.2 | 24.0 | 31.0 | 45.0 | NP | NP |
| 20 | | S8 (19' - 21'): Medium dense, gray fine to coarse SAND, some Silt, trace fine Gravel, trace roots. Moist. Rec. = 1.2 ft (A-2-4.) | 6-4-6-14 (10) | 15.2 | 12.9 | 56.0 | 31.2 | NP | NP |
| 25 | | S9 (24' - 26'): Dense, light brown fine to coarse SAND, some Silt, trace fine to coarse Gravel. Moist. Rec. = 0.8 ft | 13-18-17-12 (35) | | | | | | |
| 30 | | S10 (29' - 31'): Medium dense, light brown SILT and fine to coarse SAND, trace fine Gravel. Moist. Rec. = 1.0 ft | 6-6-5-6 (11) | | | | | | |
| 35 | | S11 (34' - 36'): Loose, dark brown fine to medium SAND, some Silt, trace fine Gravel, trace Roots. Moist. Rec. = 1.2 ft | 6-3-3-5 (6) | | | | | | |
| | | S12 (39' - 41'): Dense, dark gray fine to coarse SAND, some Silt, little fine to | 10-13- | 11.8 | 23.4 | 41.7 | 34.9 | NP | NP |

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy, $C_E$ is the hammer energy correction factor.
3. 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.

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT AOT.GDT 2/24/23

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: **B-104**
Page No.: 2 of 2
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/11/23 Date Finished: 1/19/23
VTSPG NAD83: N 253208.1 ft E 1640640.8 ft
Station: 105+13 Offset: 16.4 LT
Ground Elevation: 495.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|
| | | coarse Gravel. Moist. Rec. = 14.0 ft (A-2-4.) | 19-45 (32) | | | | | | |
| 45 | | S13 (44' - 46'): Very dense, light brown fine to coarse SAND, some Silt, little fine to coarse Gravel. Moist. Rec. = 1.9 ft | 20-26-30-41 (56) | | | | | | |
| | | Hole stopped @ 48.0 ft no refusal | | | | | | | |
| 50 | | | | | | | | | |
| 55 | | | | | | | | | |
| 60 | | | | | | | | | |
| 65 | | | | | | | | | |
| 70 | | | | | | | | | |
| 75 | | | | | | | | | |

Remarks:
1) Samples S1 and S2 were driven consecutively staring below pavement prior to casing installation to a depth of approximately 4.5 feet. The driller then advanced casing to 4 feet, and soil slough that accumulated at the bottom of the boring due to driving casing was cleaned back out with roller bit to 4 feet. The Driller then performed the standard penetration test (SPT) for S3 from 4 to 6 feet. The first approximate 6 inches of the SPT penetration for S3 was through sloughed material and so is not recorded on the boring log. This also explains the overlap in depths of samples S2 and S3.
2) 1/11/23: Hard casing driving at 48'deep (EOD). Will resume in the AM with roller bit.
3) 1/12/23: Plow hit casing head overnight. Hole abandoned until further noice.
4) 1/19/23: Casing removed, boring backfilled with cuttings.
5) slight petroleum odor noted in S5 and S7 during testing in lab.
6) Visual descriptions are based on Modified Burmister system. Laboratory gradations (% gravel, sand and silt as applicable) are per AASHTO M145.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy, $C_E$ is the hammer energy correction factor.
3. 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.

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT AOT.GDT 2/24/23

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209Boring.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
BORING LOGS 3

PLOT DATE: 12-MAR-2024
DRAWN BY: R. PELLETT
CHECKED BY: D. PETERSON
SHEET 24 OF 47

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: **B-106 (OW)**
Page No.: 1 of 3
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/18/23 Date Finished: 1/19/23
VTSPG NAD83: N 253240.9 ft E 1640639.2 ft
Station: 105+21 Offset: 15.6 RT
Ground Elevation: 493.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

| Groundwater Observations | | |
|---|---|---|
| Date | Depth (ft) | Notes |
| 01/19/23 | 32.1 | In well |
| 02/11/23 | | dry to 40' |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Well Diagram | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Approx. 0.7' Asphalt | | | | | | | | |
| | | S1 (0.7' - 2.7'): Medium dense, dark brown to black fine to coarse SAND, little Silt, little fine to coarse Gravel. Moist. Rec. = 0.3 ft | | 13-12-16-10 (28) | | | | | | |
| | | S2 (2.7' - 4.7'): Medium dense, dark brown to black fine to coarse SAND, little Silt, little fine to coarse Gravel. Moist. Rec. = 0.2 ft | | 7-6-8-22 (14) | | | | | | |
| 5 | | S3 (4.5' - 6'): Very dense, gray fine to coarse SAND, some Silt, some (-) fine to coarse Gravel. Inferred Cobbles with cobble core in spoon. Moist. Rec. = 1.4 ft (A-2-4.) | | 46-32-28 (60) | 11.7 | 27.9 | 41.2 | 30.9 | NP | NP |
| | | S4 (6' - 8'): Very dense, gray fine to coarse SAND, some Silt, little fine to coarse Gravel. Gravel appears weathered. Moist. Rec. = 1.2 ft (A-2-4.) | | 31-28-37-33 (65) | 9.6 | 21.7 | 45.0 | 33.3 | NP | NP |
| 10 | | S5 (9' - 11'): Medium dense, gray fine to coarse SAND, some Silt, trace fine to coarse Gravel. Moist. Rec. = 1.1 ft | | 12-11-11-10 (22) | | | | | | |
| | | S6 (11' - 13'): Dense;<br>S6A (Top 0.4'): Gray SILT and fine to coarse SAND, trace fine Gravel.<br>S6B (Bottom 0.7'): light to dark brown fine to medium SAND, trace Silt. Moist. Rec. = 1.1 ft | | 9-12-22-27 (34) | | | | | | |
| 15 | | S7 (14' - 16'): Medium dense SILT, some (+) fine to coarse Sand, trace fine Grave, trace Organics. ~1" thick sand seam observed. Moist. Rec. = 1.1 ft (A-4.) | | 10-6-10-14 (16) | 18.7 | 8.4 | 31.2 | 60.4 | NP | NP |
| 20 | | S8 (19' - 21'): Dense, light to dark gray fine to coarse SAND, some Silt, little fine to coarse Gravel. Moist. Rec. = 1.3 ft | | 15-14-19-27 (33) | | | | | | |
| 25 | | S9 (24' - 26'): Dense, gray fine to coarse SAND, some (+) Silt, little (-) fine Gravel. Moist. Rec. = 0.8 ft (A-2-4.) | | 10-12-18-16 (30) | 15.9 | 26.1 | 39.5 | 34.4 | NP | NP |
| 30 | | S10 (29' - 31'): Medium dense, gray fine to coarse SAND and SILT, trace fine Gravel. Moist. Rec. = 1.1 ft | | 11-10-11-10 (21) | | | | | | |
| 35 | | S11 (34' - 36'): Medium dense, gray fine to coarse SAND, some fine to coarse Gravel, little Silt, trace roots. Moist. Rec. = 0.4 ft | | 8-8-6-6 (14) | | | | | | |
| | | S12 (39' - 41'): Very dense, gray fine to coarse SAND, some Silt, | | 21-34- | | | | | | |

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. 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.

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT AOT.GDT 2/24/23

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: **B-106 (OW)**
Page No.: 2 of 3
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/18/23 Date Finished: 1/19/23
VTSPG NAD83: N 253240.9 ft E 1640639.2 ft
Station: 105+21 Offset: 15.6 RT
Ground Elevation: 493.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

| Groundwater Observations | | |
|---|---|---|
| Date | Depth (ft) | Notes |
| 01/19/23 | 32.1 | In well |
| 02/11/23 | | dry to 40' |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Well Diagram | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | some fine to coarse Gravel. Moist. Rec. = 1.1 ft | | 35-42 (69) | | | | | | |
| 45 | | S13 (44' - 44.8'): Refusal;<br>S13A (Spoon): Gray fine to coarse SAND, some Silt, little fine to coarse Gravel.<br>S13B (Tip): Black and gray mottling, fine to coarse GRAVEL, little fine to coarse Sand. Moist. Rec. = 0.6 ft | | 48-60/4" (R) | | | | | | |
| 50 | | S14 (49' - 51'): Very dense, gray fine to coarse SAND, some Silt, little fine to coarse Gravel. Moist. Rec. = 1.4 ft (A-2-4.) | | 48-48-47-41 (95) | 11.5 | 24.6 | 42.6 | 32.8 | NP | NP |
| 55 | | S15 (54' - 56'): Very dense / Refusal, gray fine to coarse SAND, some Silt, little fine to coarse Gravel. Gravel appears weathered. Moist. Rec. = 1.2 ft | | 32-48-91-98 (R) | | | | | | |
| 60 | | S16 (59' - 61'): Very dense / Refusal, gray fine to coarse SAND, some (+) Silt, little fine to coarse Gravel. Inferred cobbles with cobble core in spoon. Moist. Rec. = 1.4 ft (A-2-4.) | | 36-48-74-82 (R) | 10.8 | 22.9 | 42.5 | 34.6 | NP | NP |
| 65 | | | | | | | | | | |
| 70 | | S17 (69' - 71'): Very dense / Refusal, gray fine to coarse SAND, some Silt, little fine to coarse Gravel. Moist. Rec. = 1.3 ft | | 26-57-57-59 (R) | | | | | | |
| 75 | | | | | | | | | | |
| | | S18 (79' - 80.8'): Very dense / Refusal, gray fine to coarse SAND, | | 24-47- | | | | | | |

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. 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.

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT AOT.GDT 2/24/23

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

# BORING LOG

**Rockingham**
**BF 025-1(48)**
**VT Route 103, Br. 3**

Boring No.: **B-106 (OW)**
Page No.: 3 of 3
Pin No.: 19b209
Checked By: DTH

Boring Crew: G. Peacock, NEBC, B. Andrews, GEODesign
Date Started: 1/18/23 Date Finished: 1/19/23
VTSPG NAD83: N 253240.9 ft E 1640639.2 ft
Station: 105+21 Offset: 15.6 RT
Ground Elevation: 493.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | FJ | SS |
| I.D.: | 4 in | 1.38 in |
| Hammer Wt: | 140 lb. | 140 lb. |
| Hammer Fall: | 30 in. | 30 in. |
| Hammer/Rod Type: | Auto | |
| Rig: Mobile B-53 Truck | $C_E$ = 1.45 | |

| Groundwater Observations | | |
|---|---|---|
| Date | Depth (ft) | Notes |
| 01/19/23 | 32.1 | In well |
| 02/11/23 | | dry to 40' |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Well Diagram | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % | LL % | PI % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | some Silt, little fine to coarse Gravel. Moist. Rec. = 1.0 ft | | 67-75/3" (R) | | | | | | |
| | | Hole stopped @ 81.0 ft<br>no refusal | | | | | | | | |
| 85 | | | | | | | | | | |
| 90 | | | | | | | | | | |
| 95 | | | | | | | | | | |
| 100 | | | | | | | | | | |
| 105 | | | | | | | | | | |
| 110 | | | | | | | | | | |
| 115 | | | | | | | | | | |

Remarks:
1) Samples S1 and S2 were driven consecutively staring below pavement prior to casing installation to a depth of approximately 4.7 feet. The driller then advanced casing to 4 feet, and soil slough that accumulated at the bottom of the boring due to driving casing was cleaned back out with roller bit to 4 feet. The Driller then performed the standard penetration test (SPT) for S3 from 4 to 6 feet. The first approximate 6 inches of the SPT penetration for S3 was through sloughed material and so is not recorded on the boring log. This also explains the overlap in depths of samples S2 and S3.
2) Rig chatter at ~12' deep.
3) Casing advanced to 38' deep, hole cave-in occured with casing at 33' deep.
4) Boring was backfilled with pea gravel to 42 feet deep before setting well.
5) strong petroleum odor noted in S4 and slight petroleum odor noted in S9 during testing in lab.
6) Visual descriptions are based on Modified Burmister system. Laboratory gradations (% gravel, sand and silt as applicable) are per AASHTO M145.

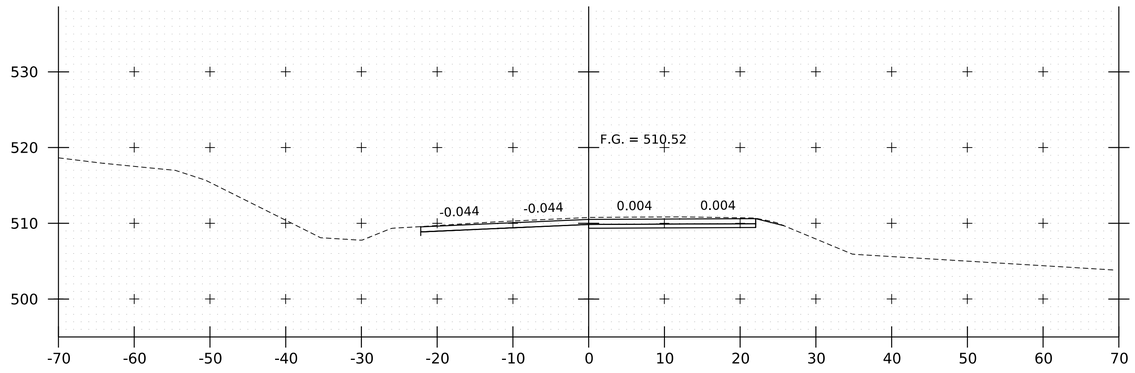
Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations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

GEODESIGN BORING LOG ROCKINGHAM BF 025-1(48).GPJ VERMONT AOT.GDT 2/24/23

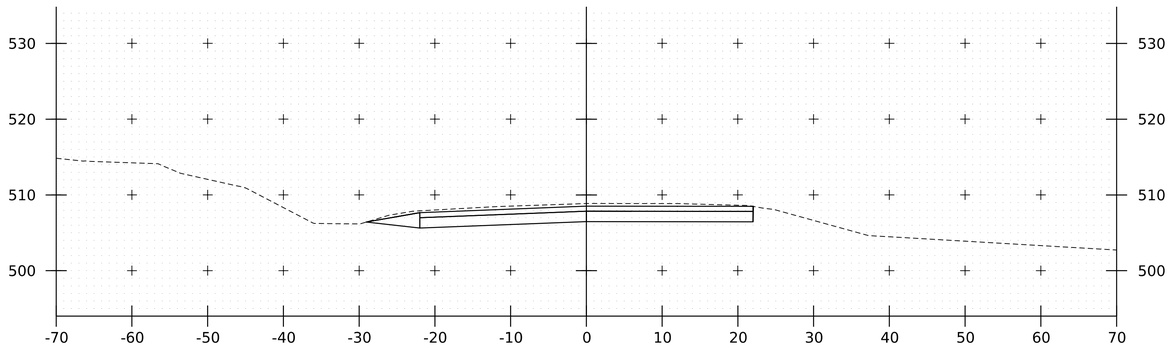
PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: s19b209Boring.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
BORING LOGS 4

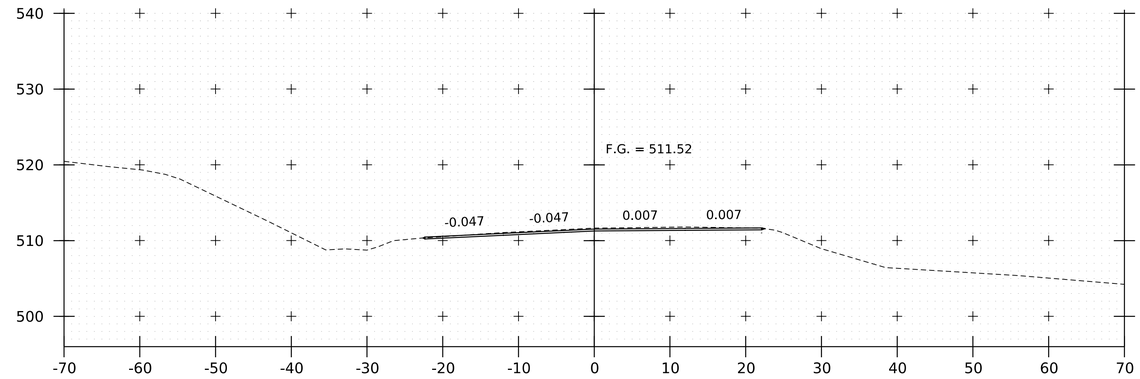
PLOT DATE: 12-MAR-2024
DRAWN BY: R. PELLETT
CHECKED BY: D. PETERSON
SHEET 25 OF 47




101+00

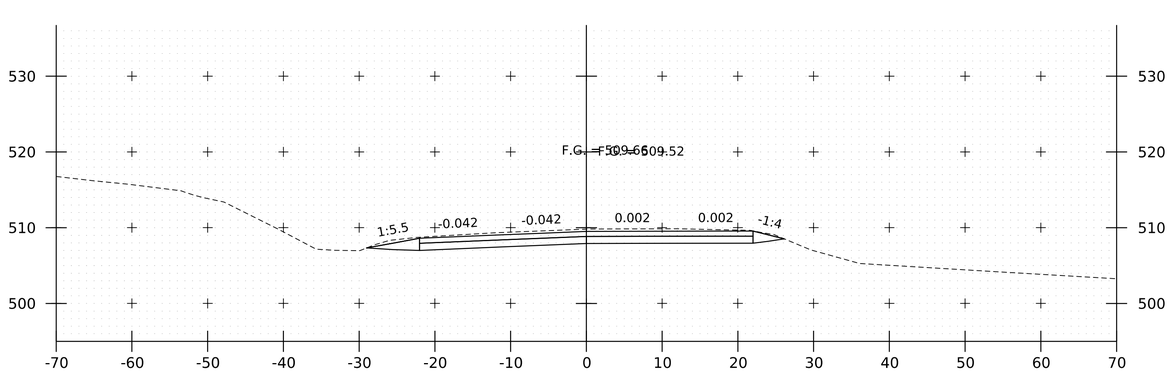


101+50




100+75

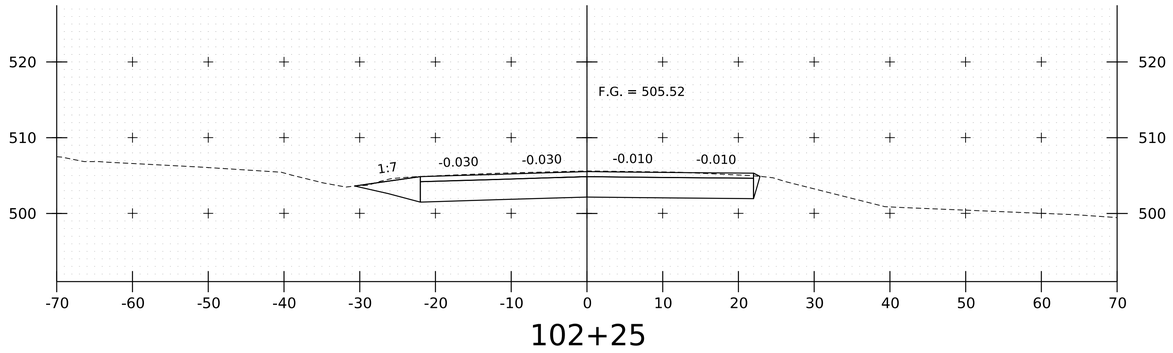
BEGIN APPROACH STA 100+50.00



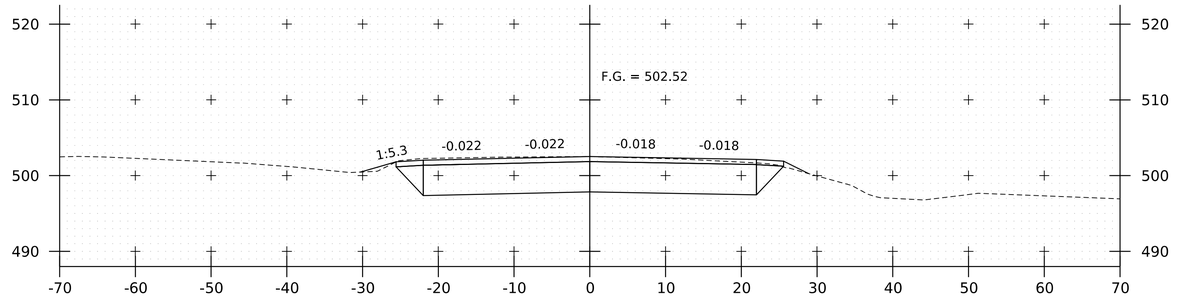

101+25

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |

| | |
|---|---|
| FILE NAME: sl9b209Route103_XS.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| ROADWAY CROSS SECTIONS 1 | SHEET 26 OF 47 |

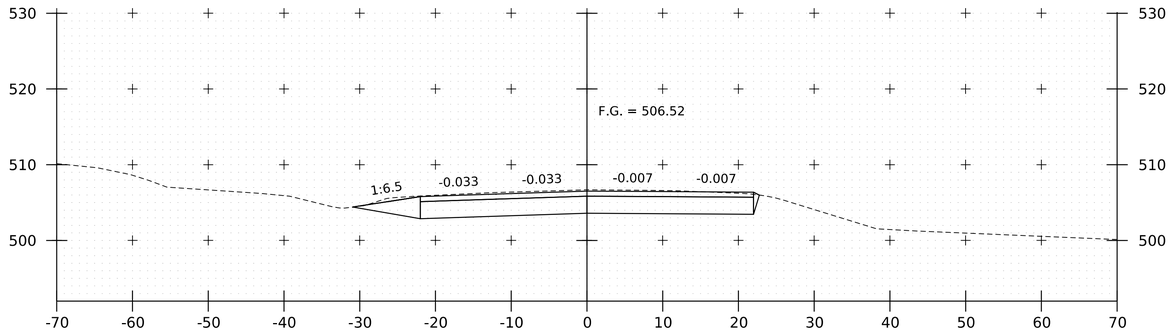



102+25

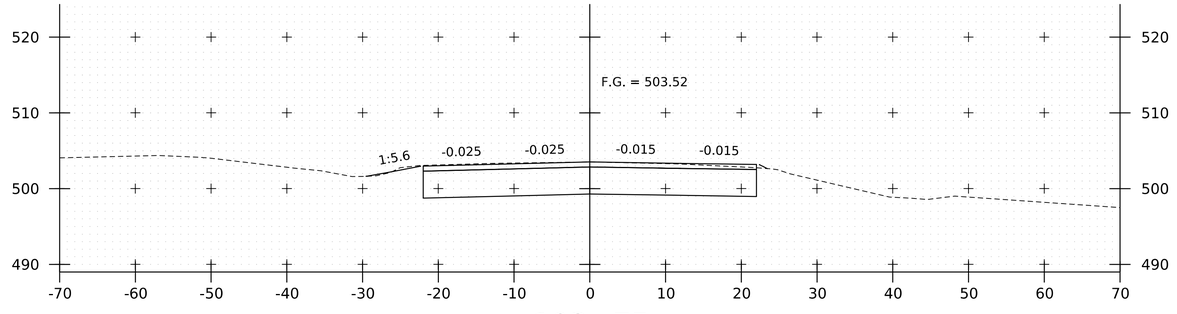



103+00

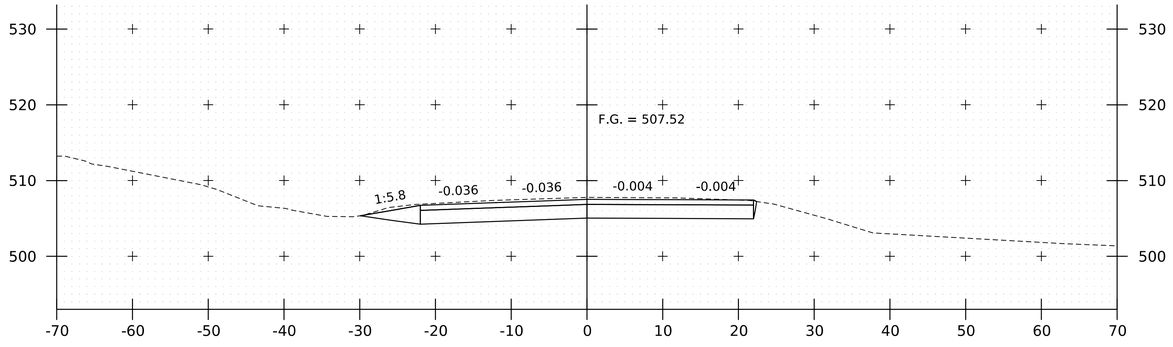
BEGIN PROJECT



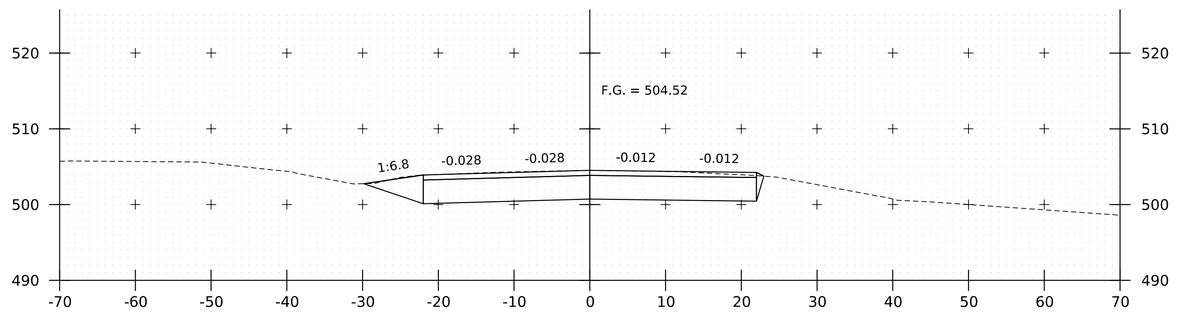

102+00




102+75

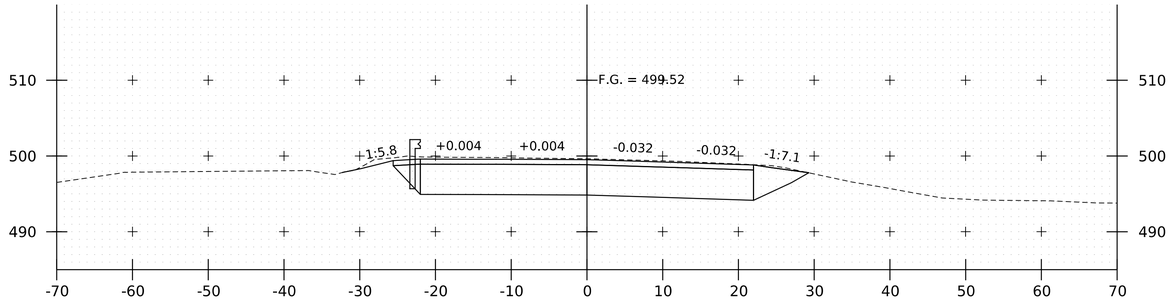



101+75

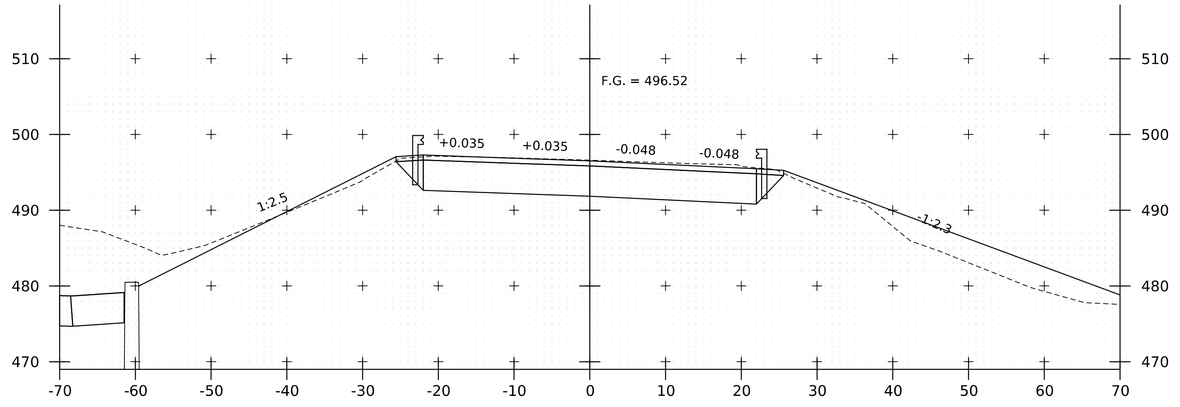



102+50

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: s19b209Route103_XS.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| ROADWAY CROSS SECTIONS 2 | SHEET 27 OF 47 |




103+75

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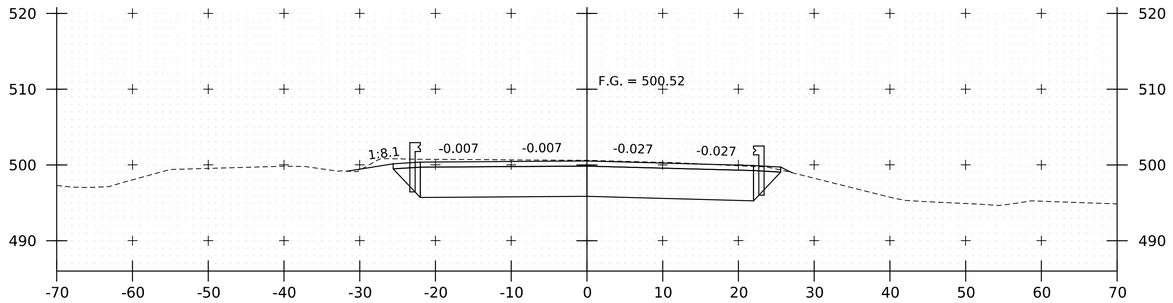
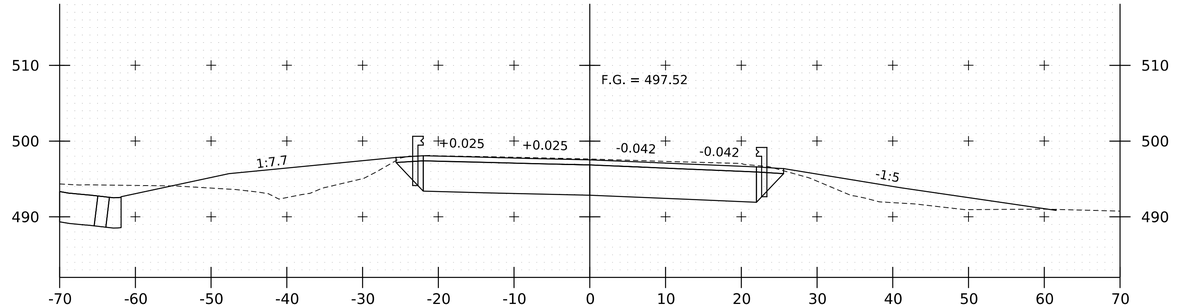



103+50

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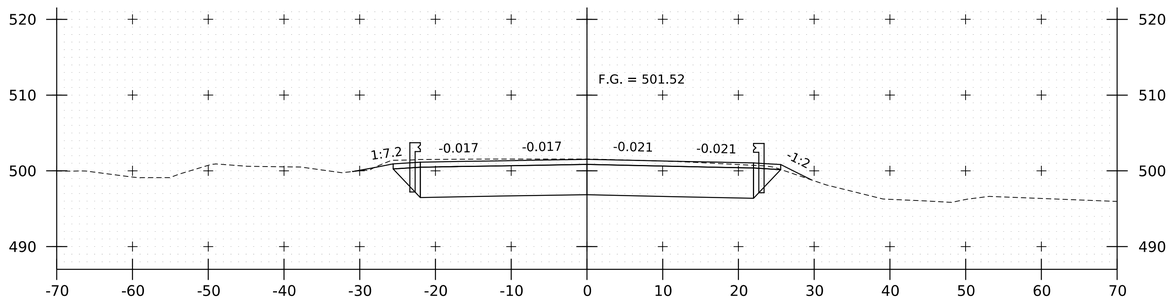
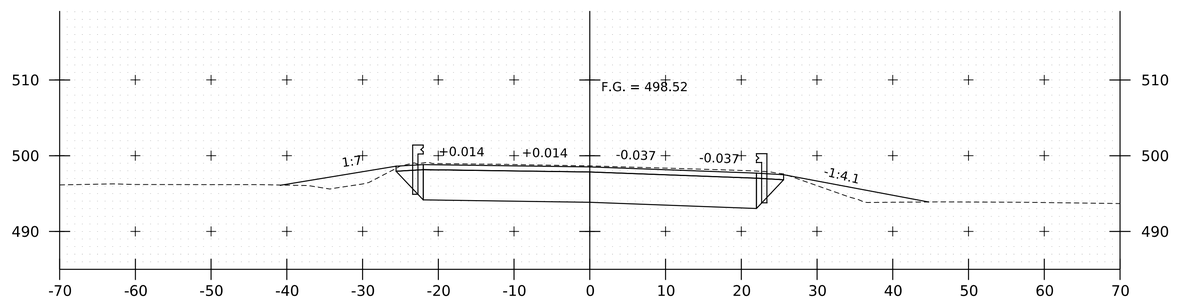


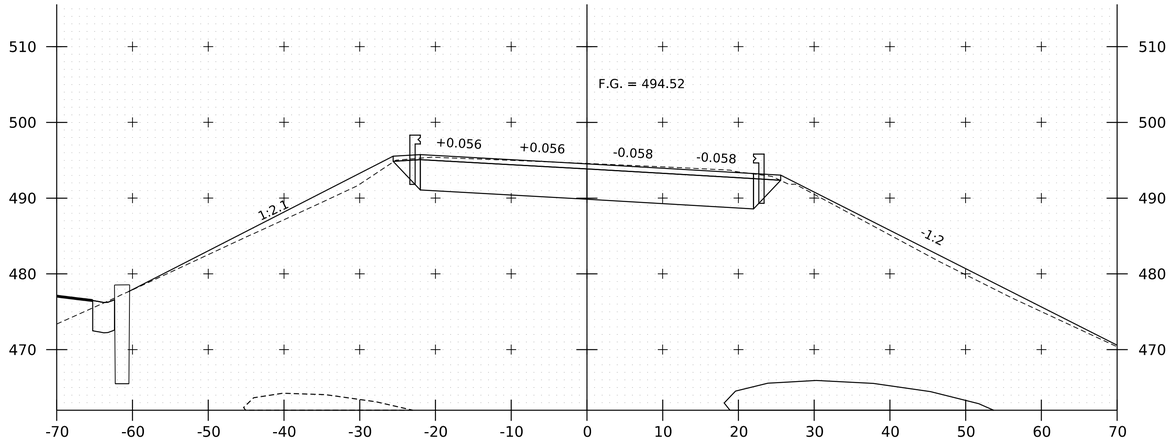

103+25




104+00

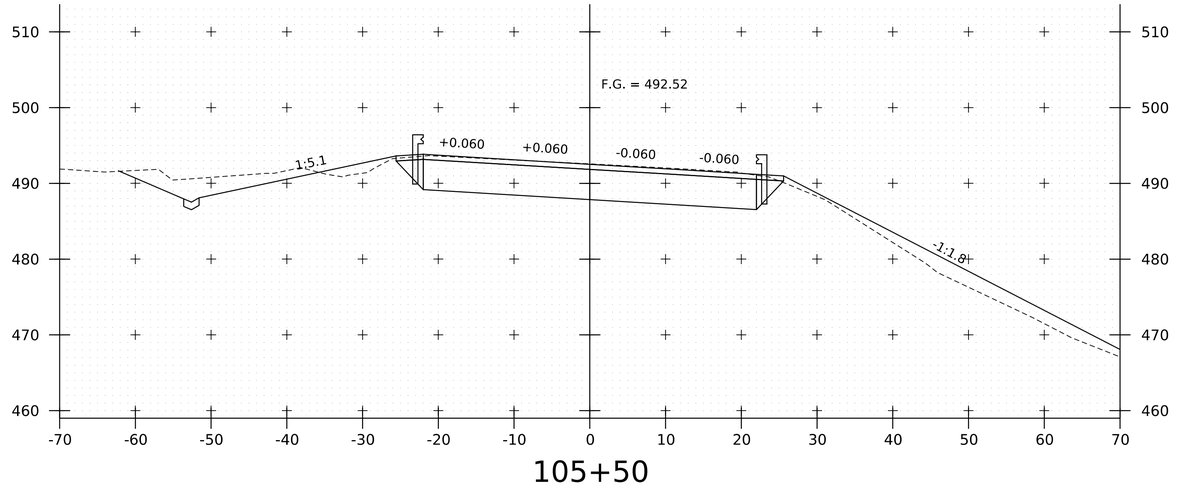
| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |

| | |
|---|---|
| FILE NAME: sl9b209Route103_XS.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| ROADWAY CROSS SECTIONS 3 | SHEET 28 OF 47 |

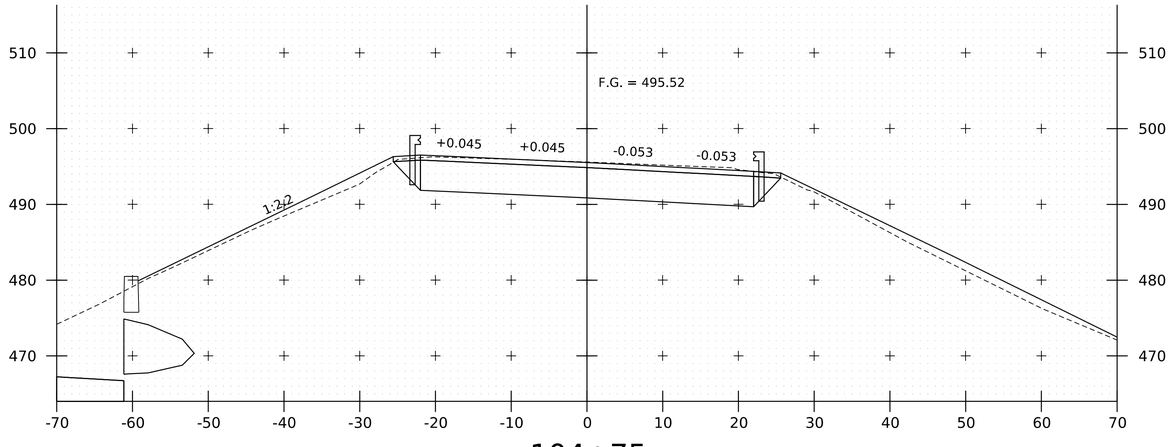



105+00

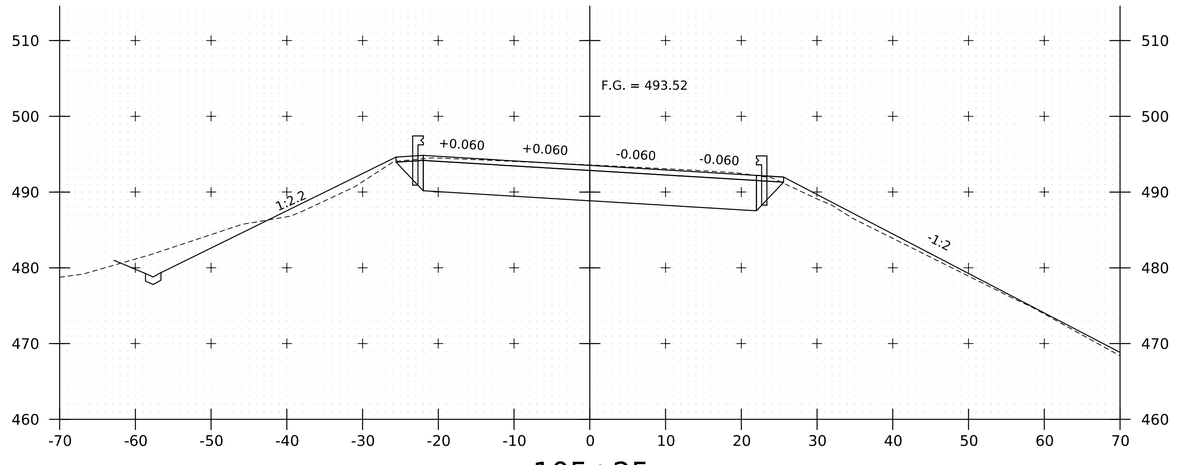
BEGIN BRIDGE STA 104+85.00
END BRIDGE STA 104+97.00




105+50




104+75

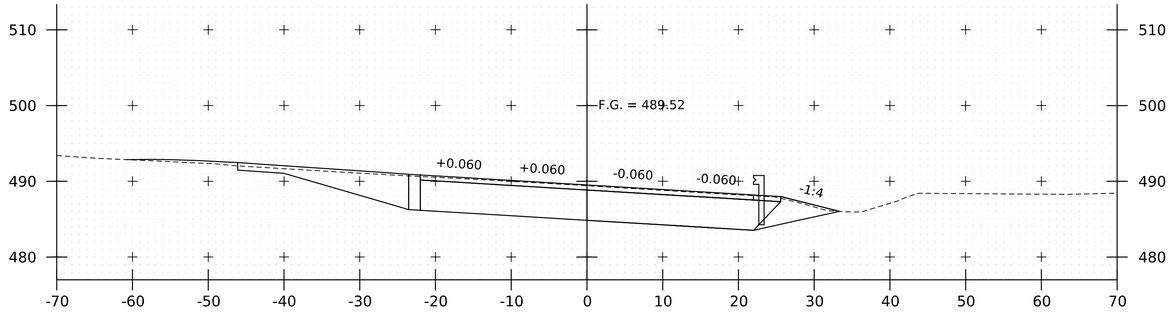



105+25

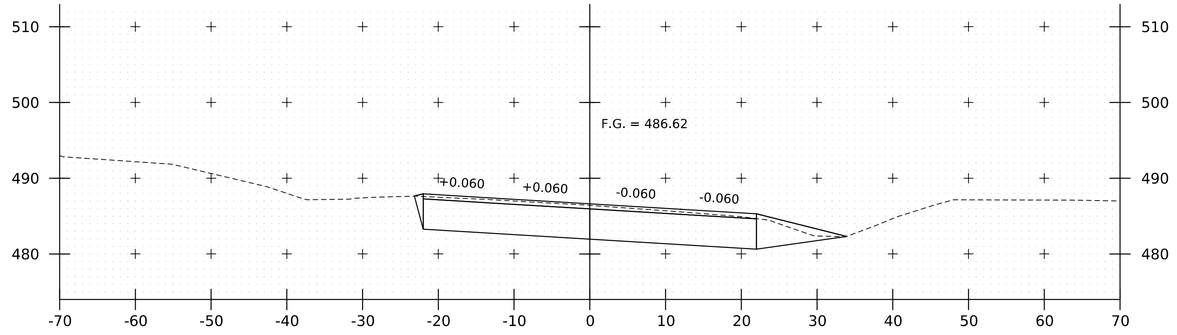
PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209Route103_XS.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
ROADWAY CROSS SECTIONS 4

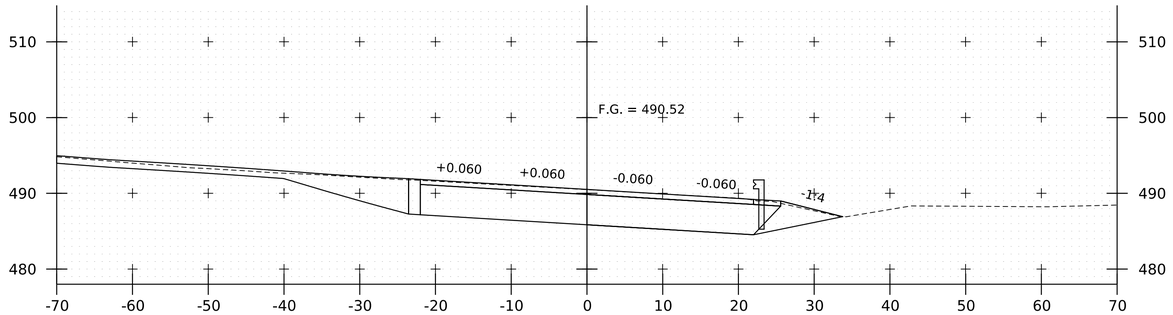
PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET 29 OF 47



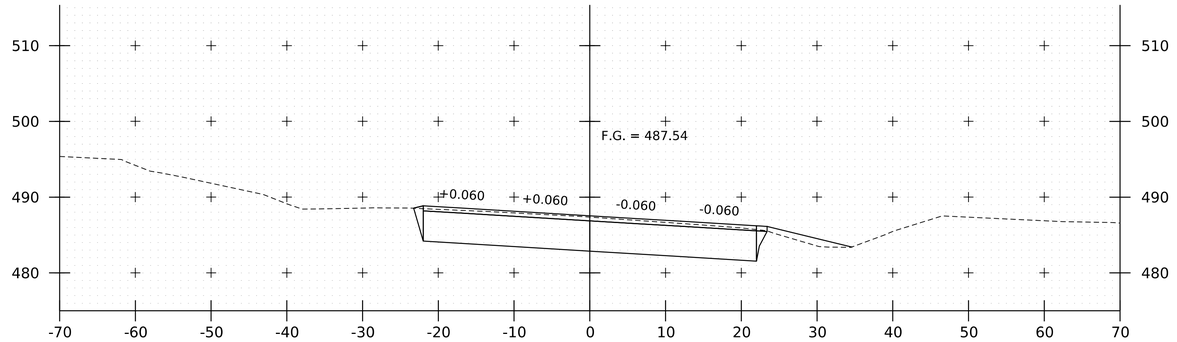

106+25




107+00
END PROJECT




106+00

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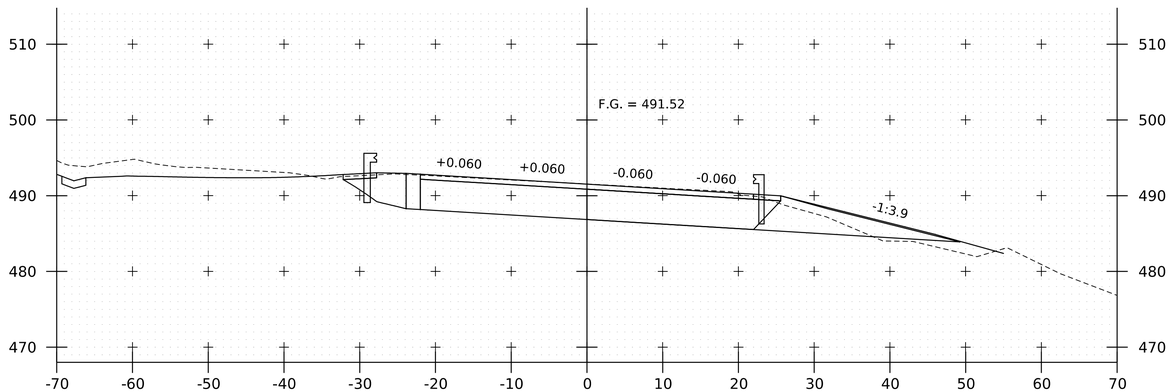
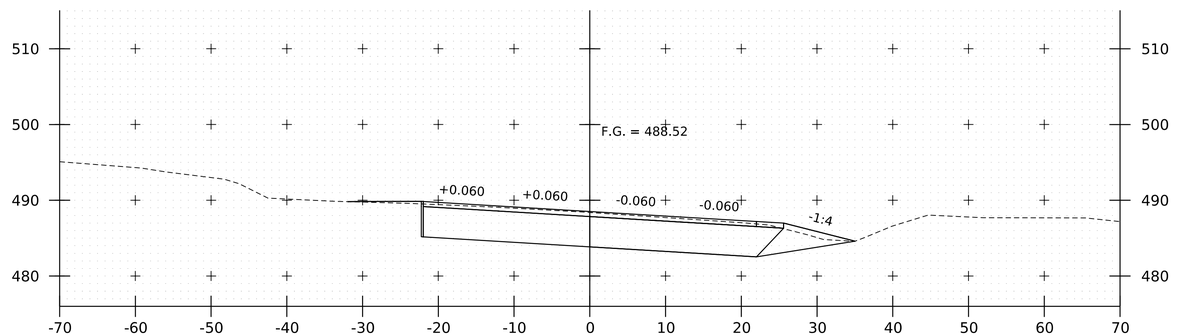
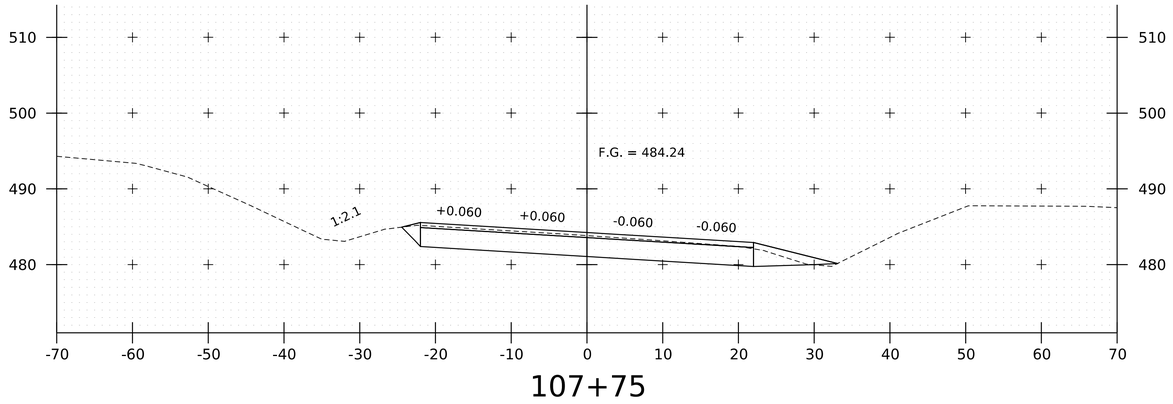



105+75

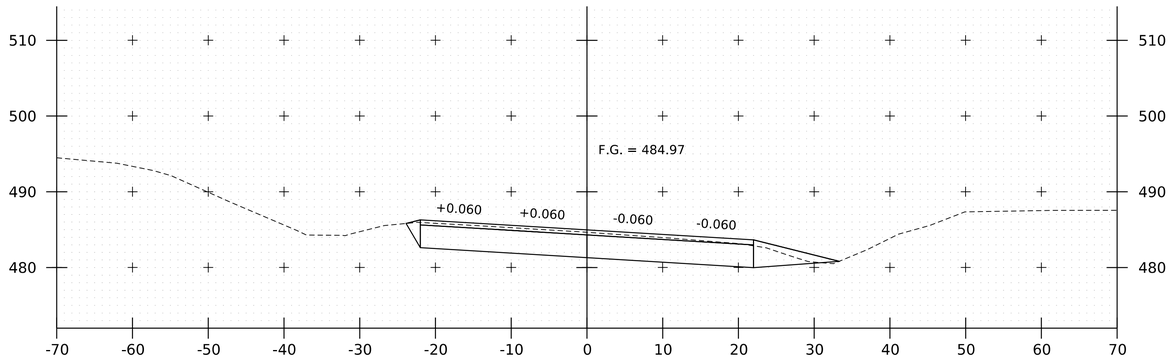



106+50

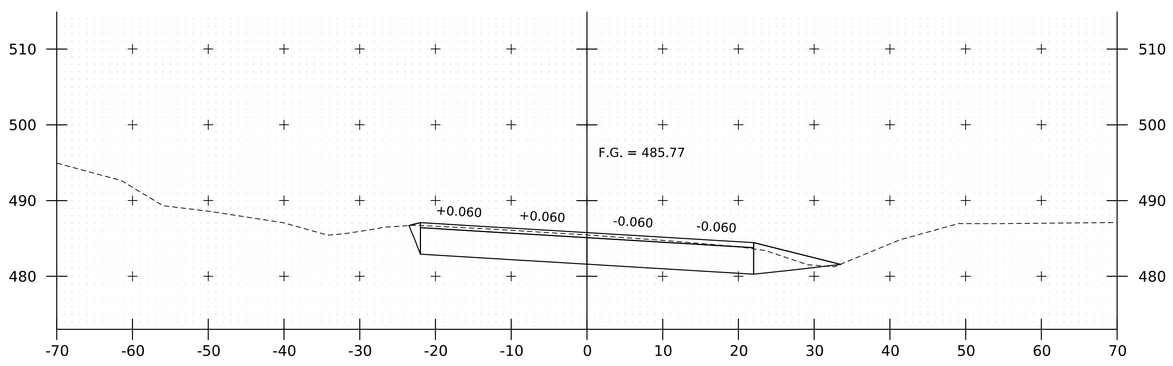
| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209Route103_XS.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| ROADWAY CROSS SECTIONS 5 | SHEET 30 OF 47 |



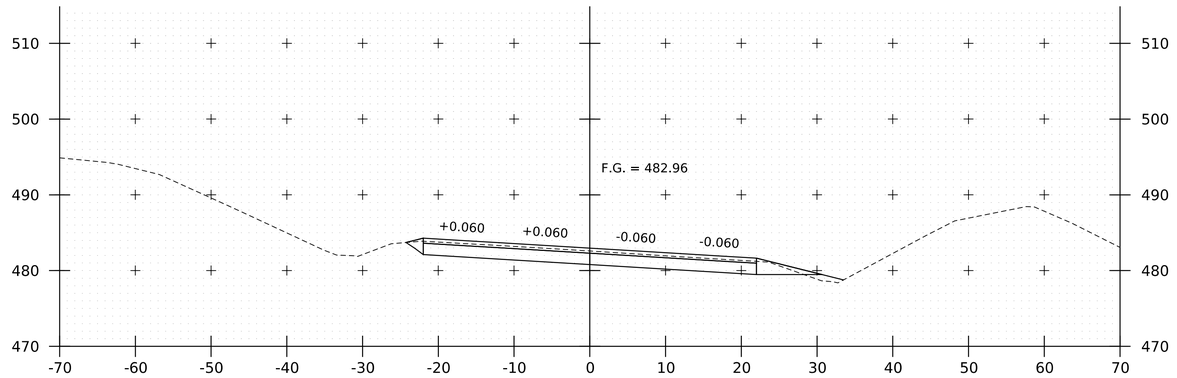

107+75



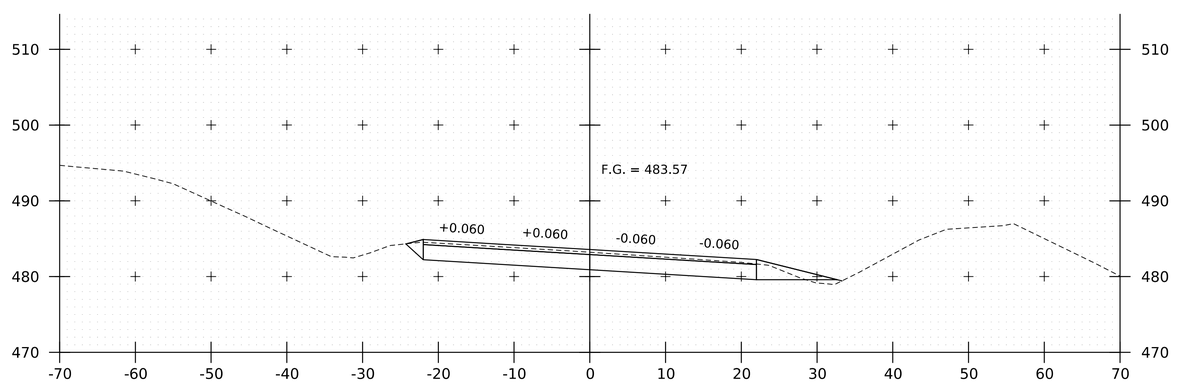

107+50




107+25




108+25

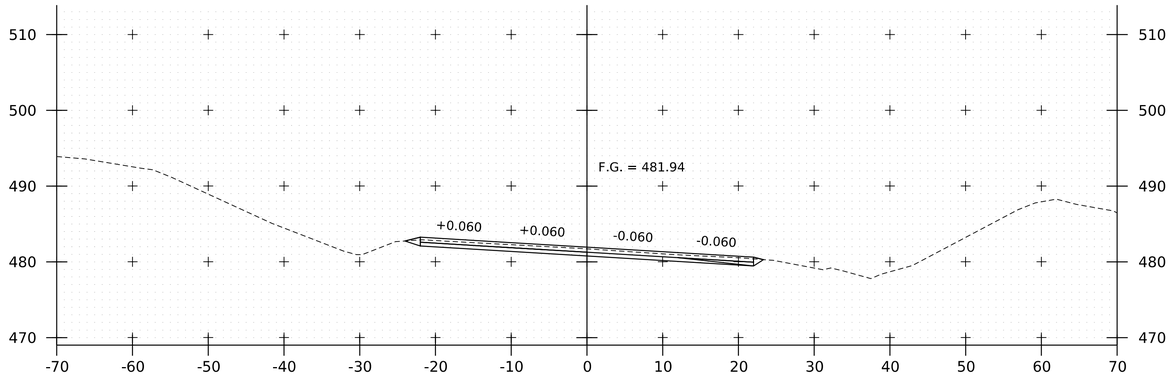



108+00

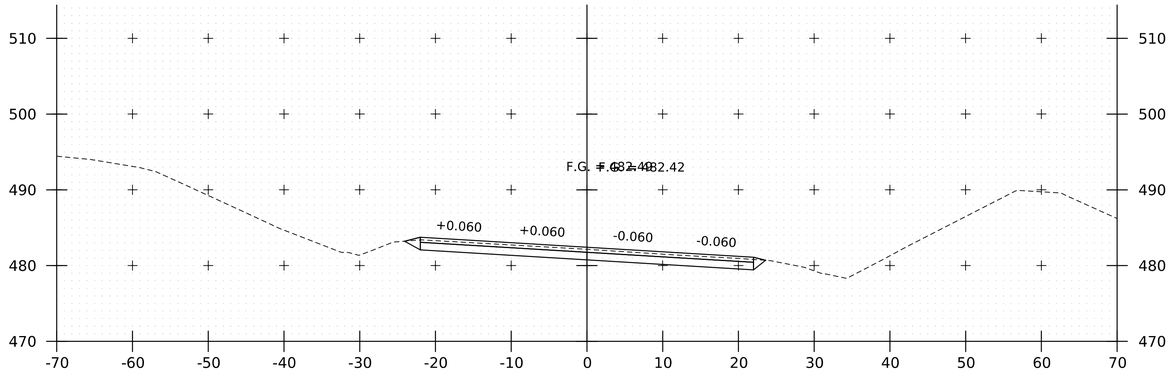
PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: sl9b209Route103_XS.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
ROADWAY CROSS SECTIONS 6

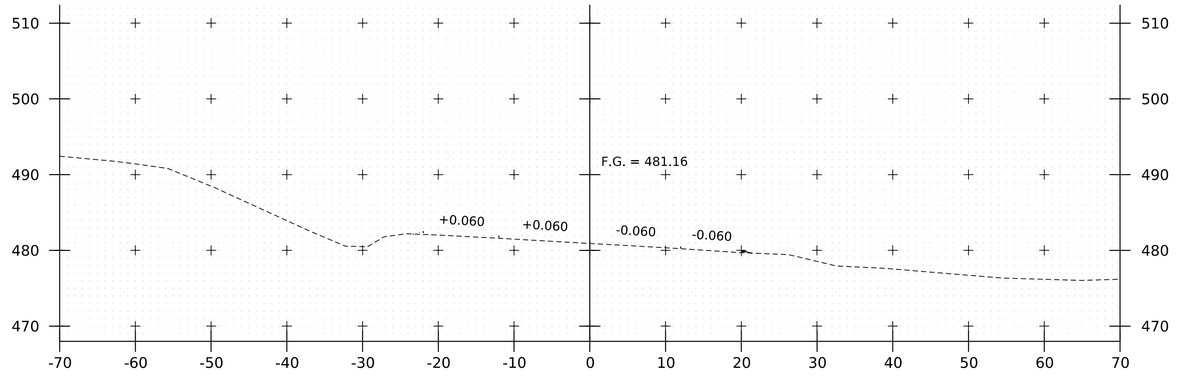
PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET 31 OF 47




108+75




108+50




109+25
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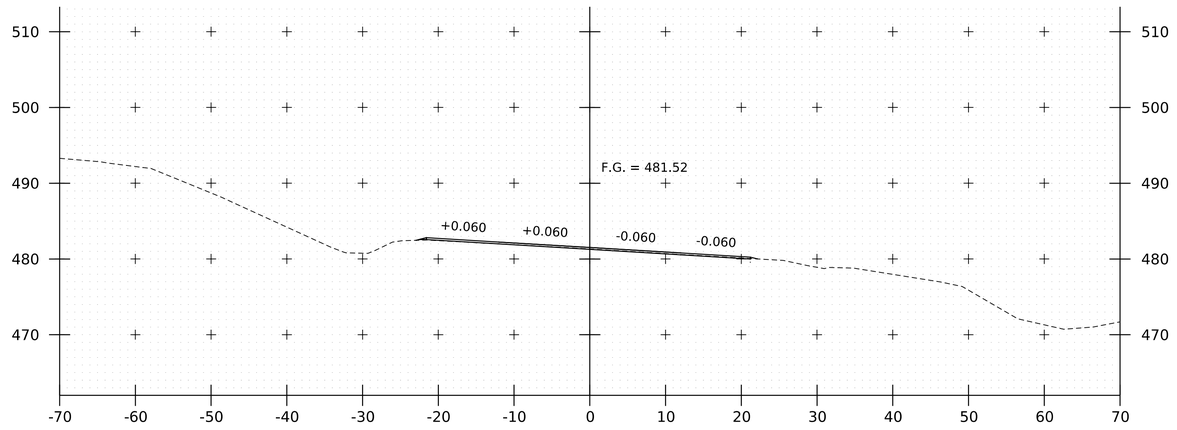
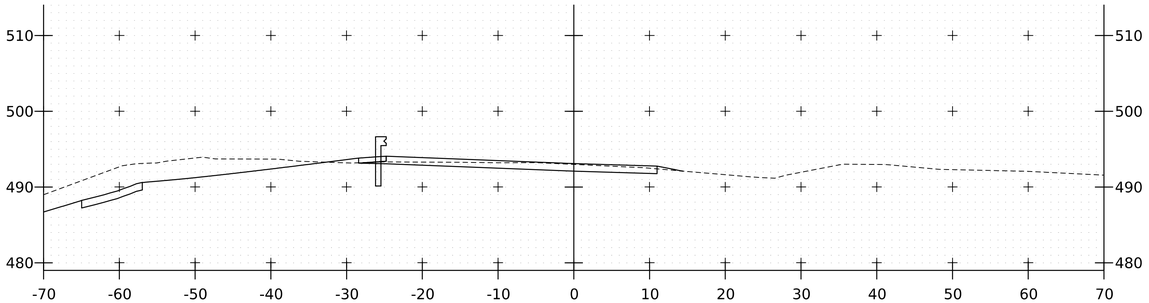



109+00

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |

| | |
|---|---|
| FILE NAME: sl9b209Route103_XS.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| ROADWAY CROSS SECTIONS 7 | SHEET 32 OF 47 |

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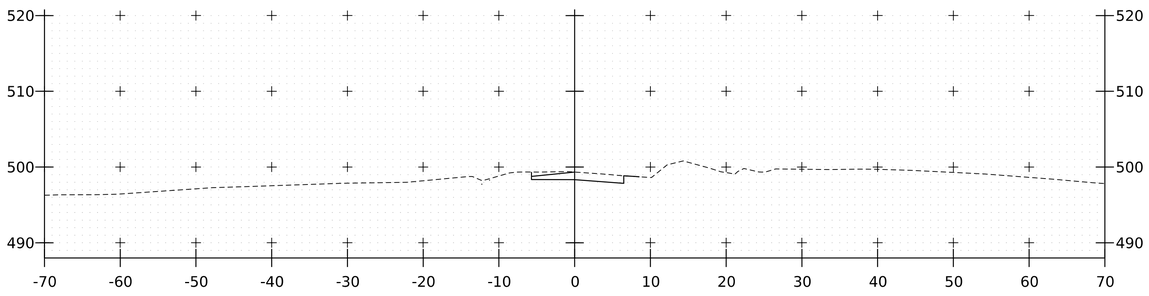


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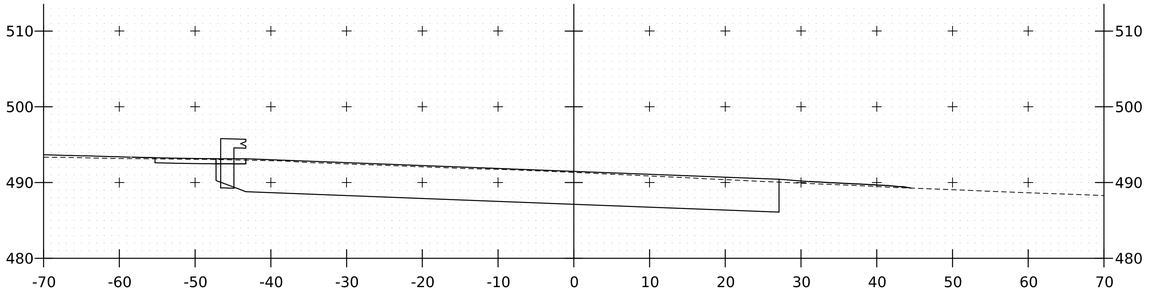


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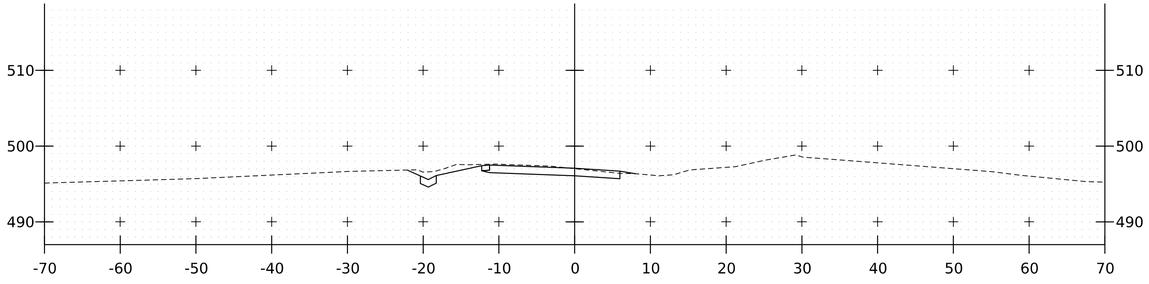
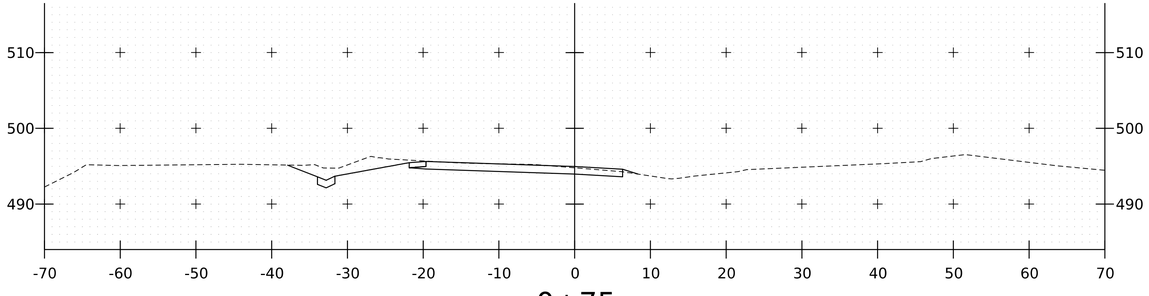


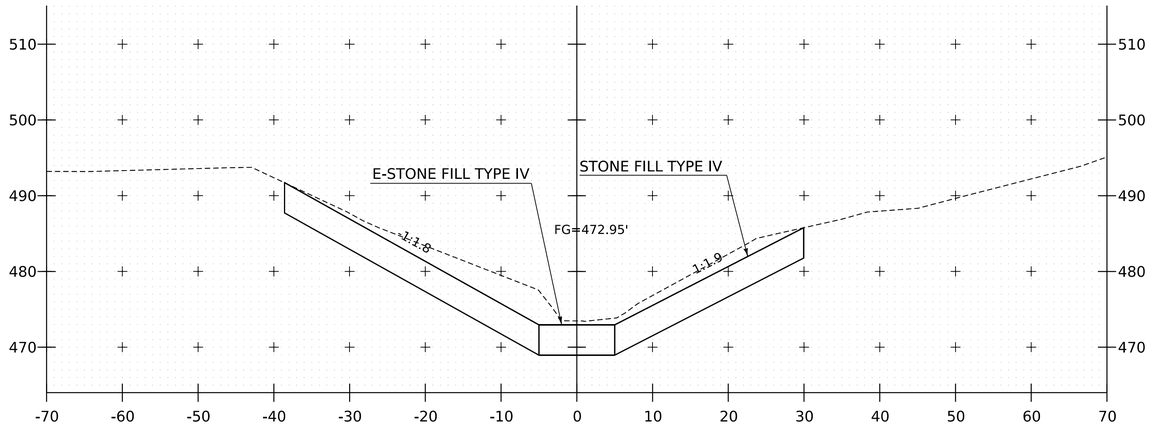

1+00




0+75

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BF 025-1(48)

FILE NAME: s19b209Route103_XS Sideroad.dgn PLOT DATE: 12-MAR-2024
PROJECT LEADER: R. YOUNG DRAWN BY: K. LIHIC
DESIGNED BY: K. LIHIC CHECKED BY: D. PETERSON
SIDEROAD CROSS SECTIONS SHEET 33 OF 47

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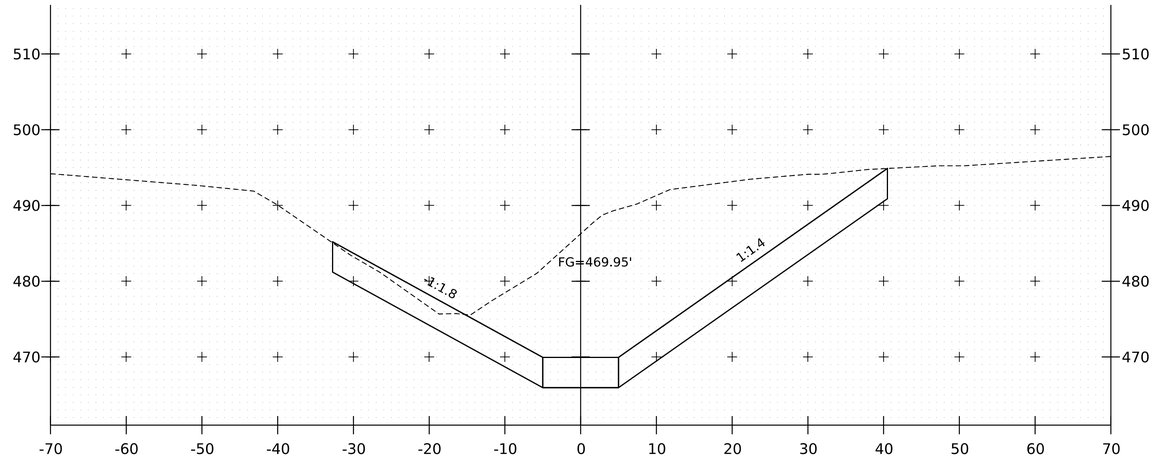
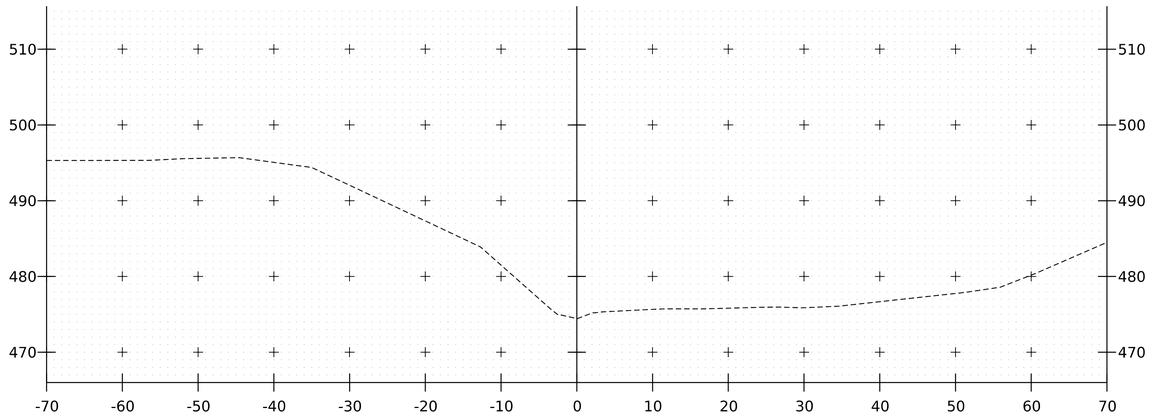
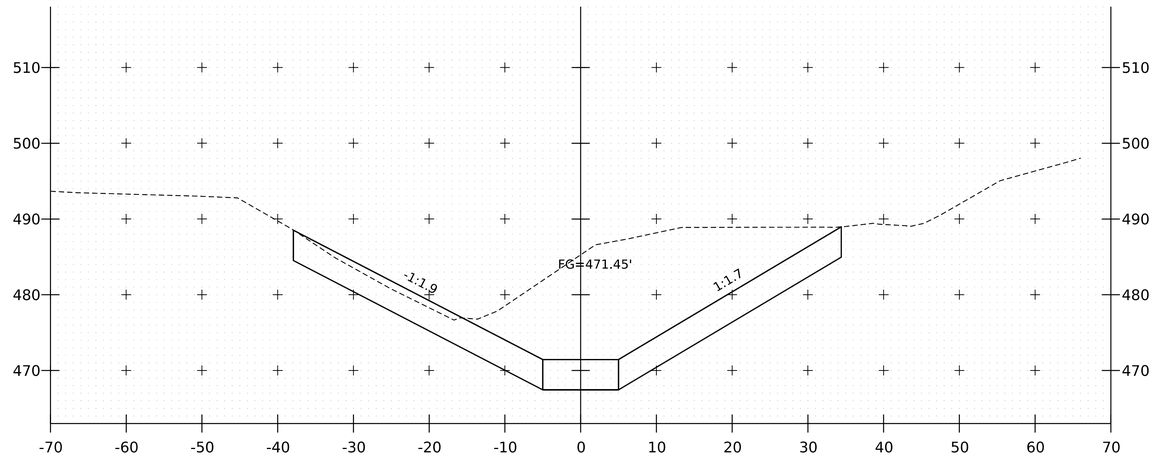



0+75




0+00




0+50

GEOTEXTILE UNDER STONE FILL

BEGIN STA 0+19.4 LT/RT

STONE FILL TYPE IV

BEGIN STA 0+19.4 LT/RT

E-STONE FILL TYPE IV

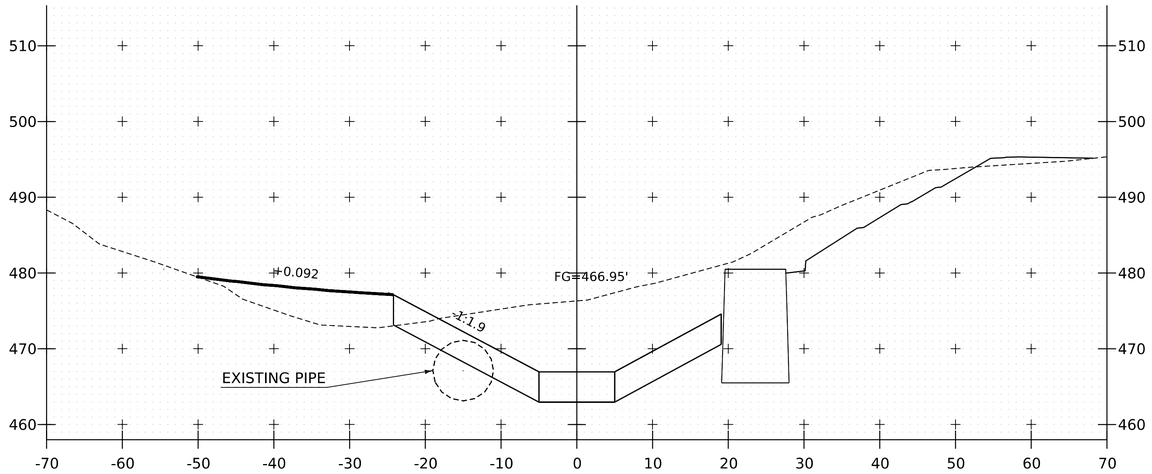
BEGIN STA 0+19.4 LT/RT

PROJECT NAME: ROCKINGHAM

PROJECT NUMBER: BF 025-1(48)

FILE NAME: s19b209Route103_XS Channel..dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
CHANNEL CROSS SECTIONS 1

PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET OF

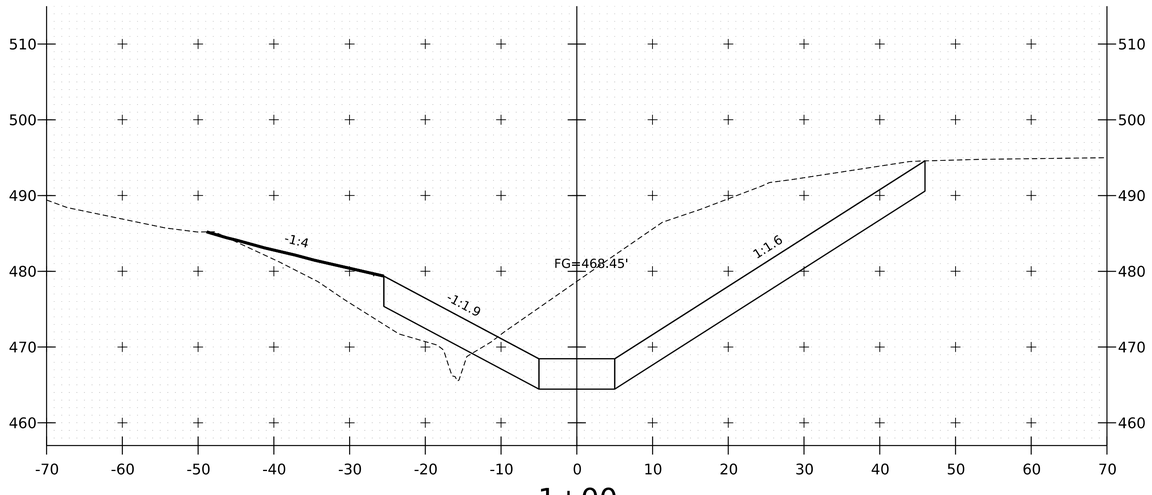



1+25

STONE FILL TYPE IV
END STA 1+29.4 LT/RT

GEOTEXTILE UNDER STONE FILL
END STA 1+29.4 LT/RT

E-STONE FILL TYPE IV
END STA 1+29.4 LT/RT

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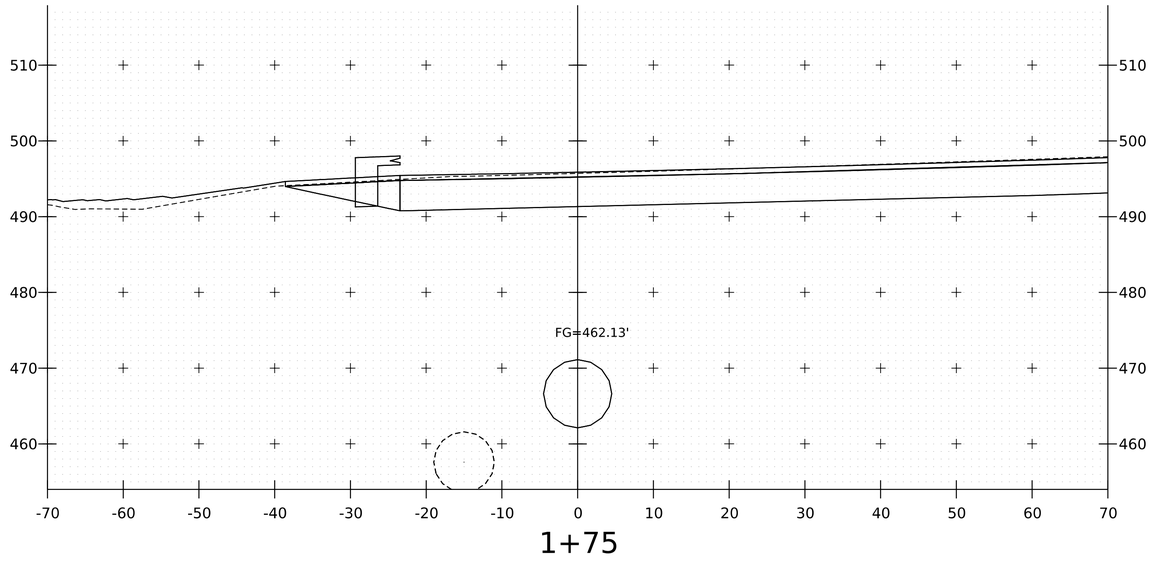


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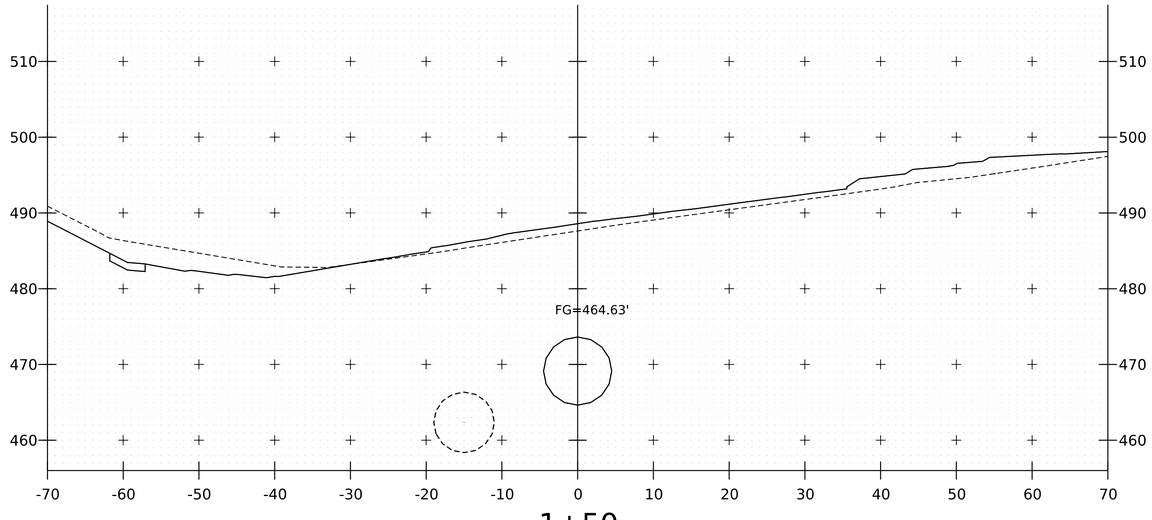


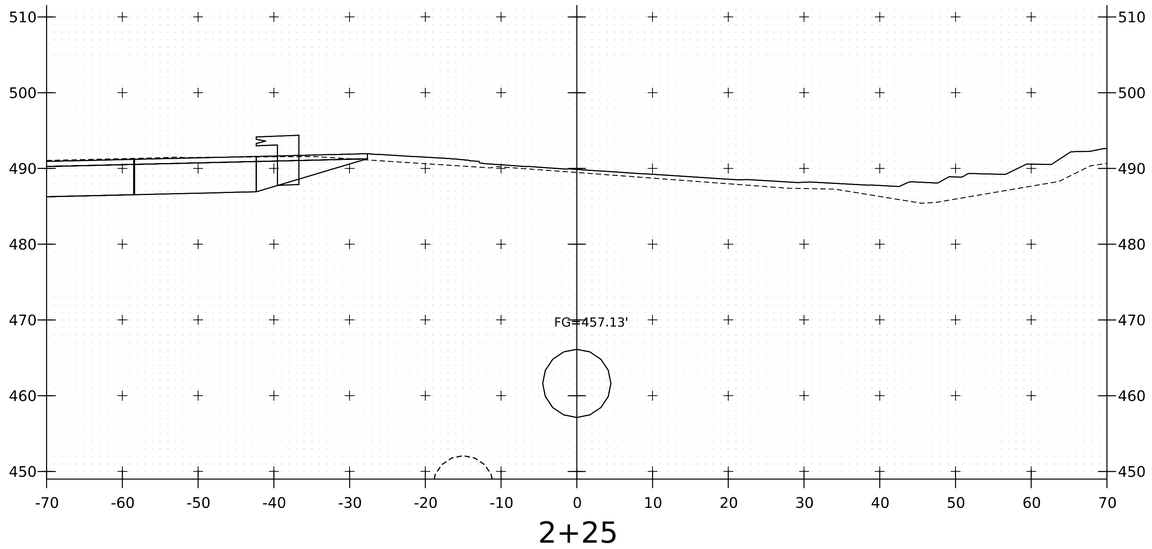

1+50

PROJECT NAME: ROCKINGHAM

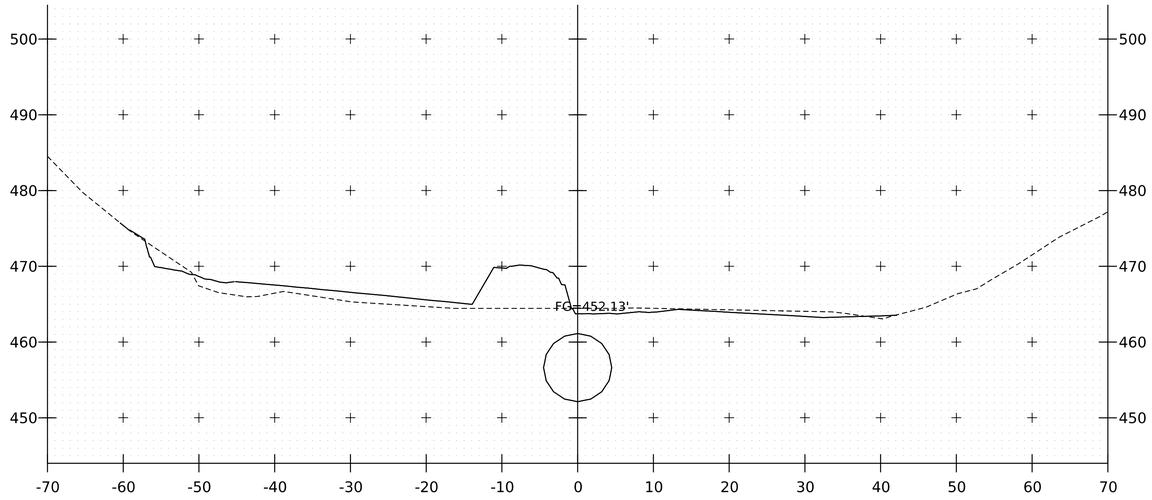
PROJECT NUMBER: BF 025-1(48)

FILE NAME: s19b209Route103_XS Channel..dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
CHANNEL CROSS SECTIONS 2

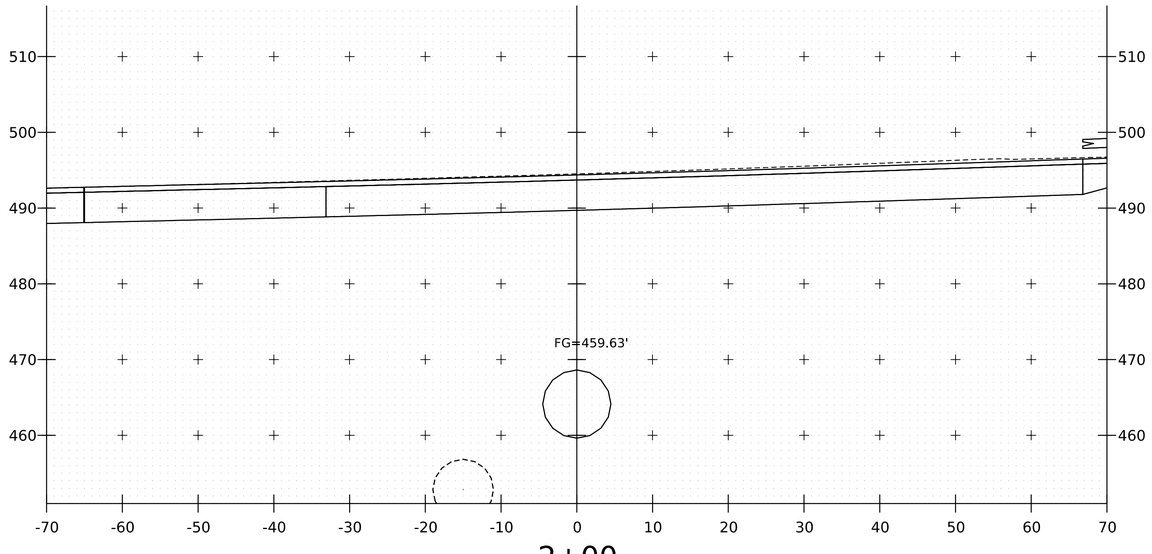
PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET OF



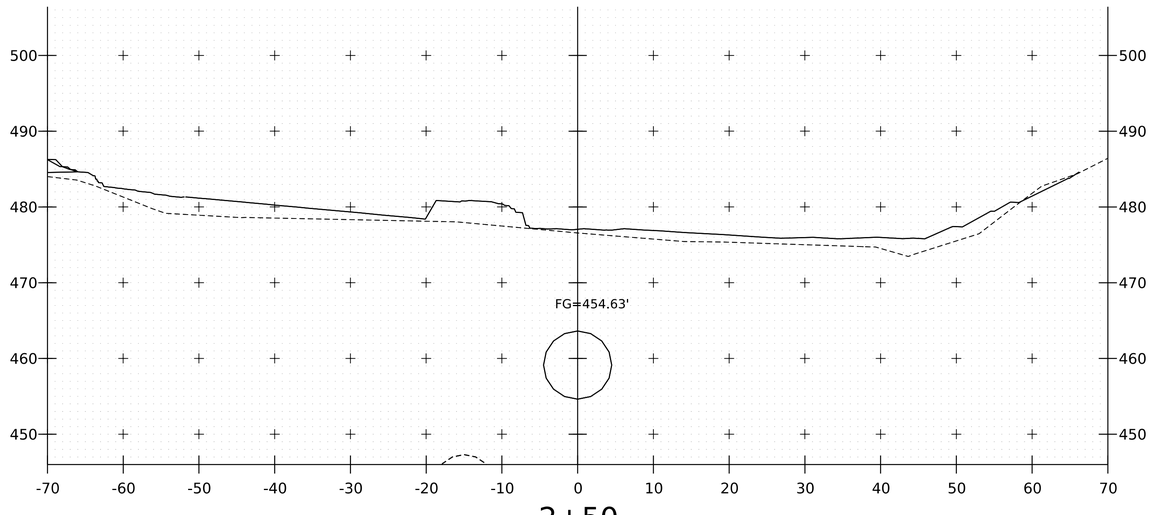

2+25




2+75




2+00



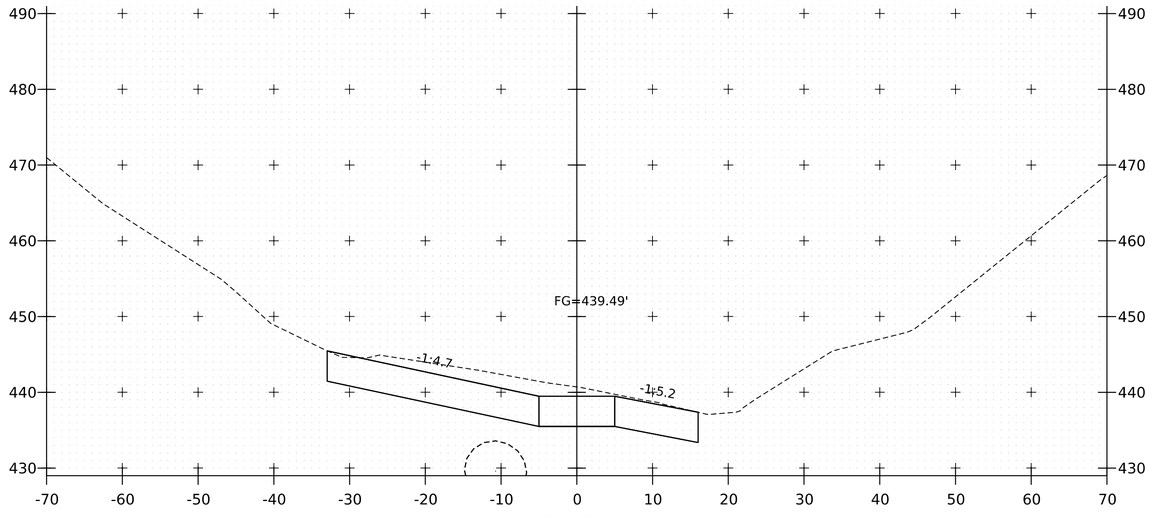

2+50

PROJECT NAME: ROCKINGHAM

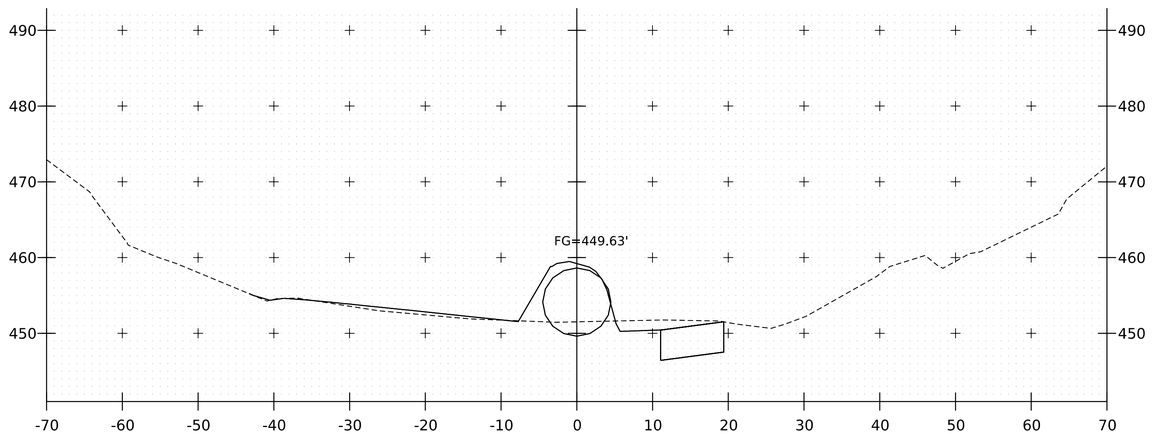
PROJECT NUMBER: BF 025-1(48)

FILE NAME: s19b209Route103_XS Channel..dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
CHANNEL CROSS SECTIONS 3

PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET OF




3+25




3+00

STONE FILL TYPE IV

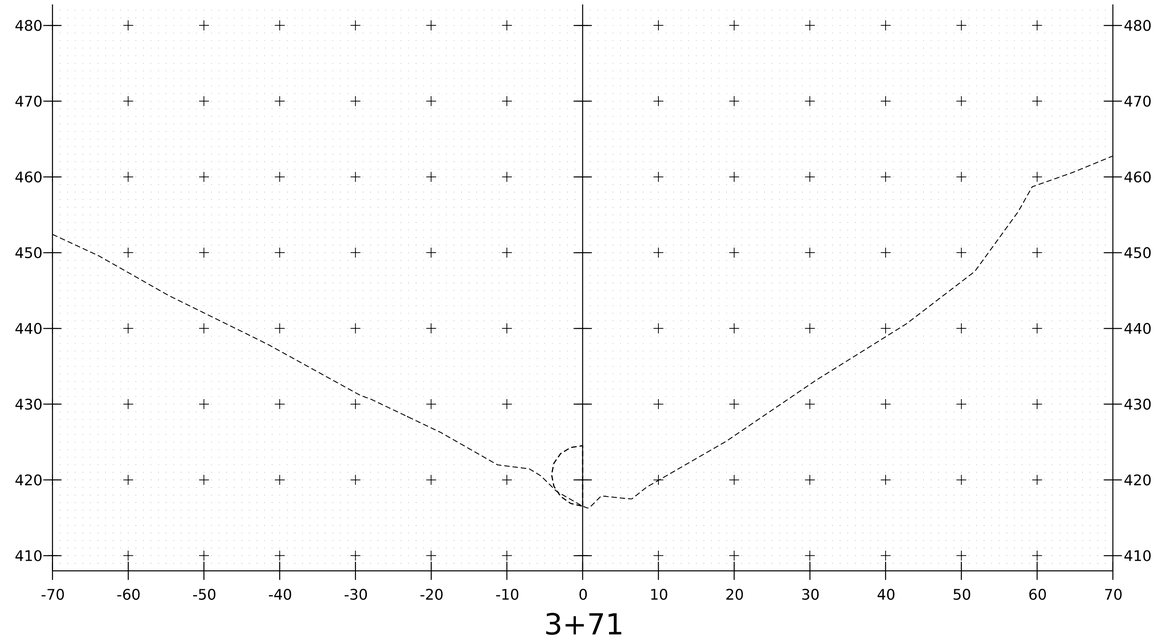
BEGIN STA 3+02.6 LT/RT

E-STONE FILL TYPE IV

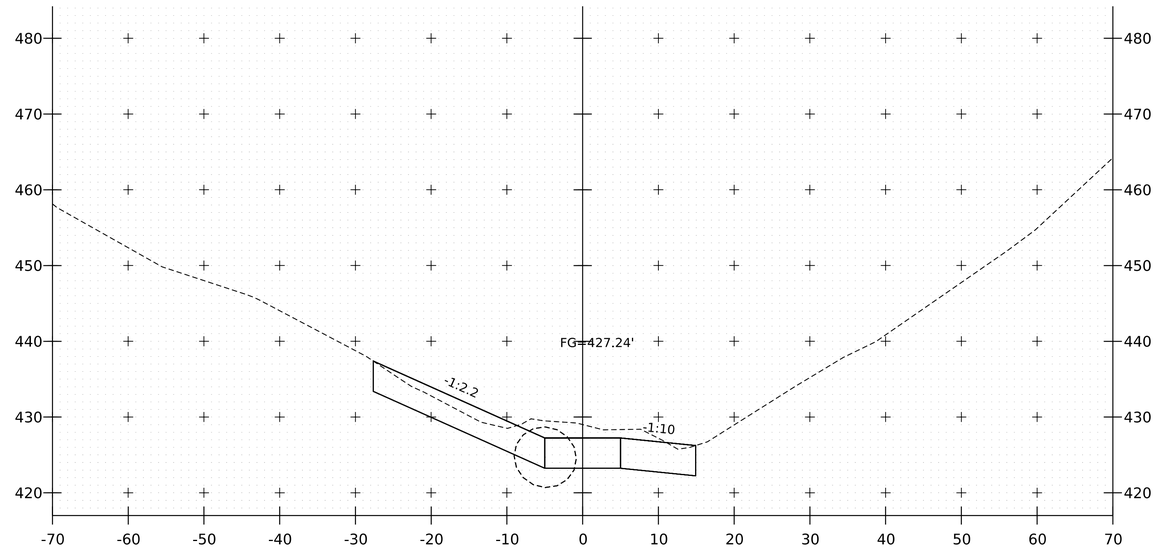
BEGIN STA 3+02.6 LT/RT

GEOTEXTILE UNDER STONE FILL

BEGIN STA 3+02.6 LT/RT



3+71




3+50

E-STONE FILL TYPE IV

END STA 3+69.6 LT/RT

STONE FILL TYPE IV

END STA 3+69.6 LT/RT

GEOTEXTILE UNDER STONE FILL

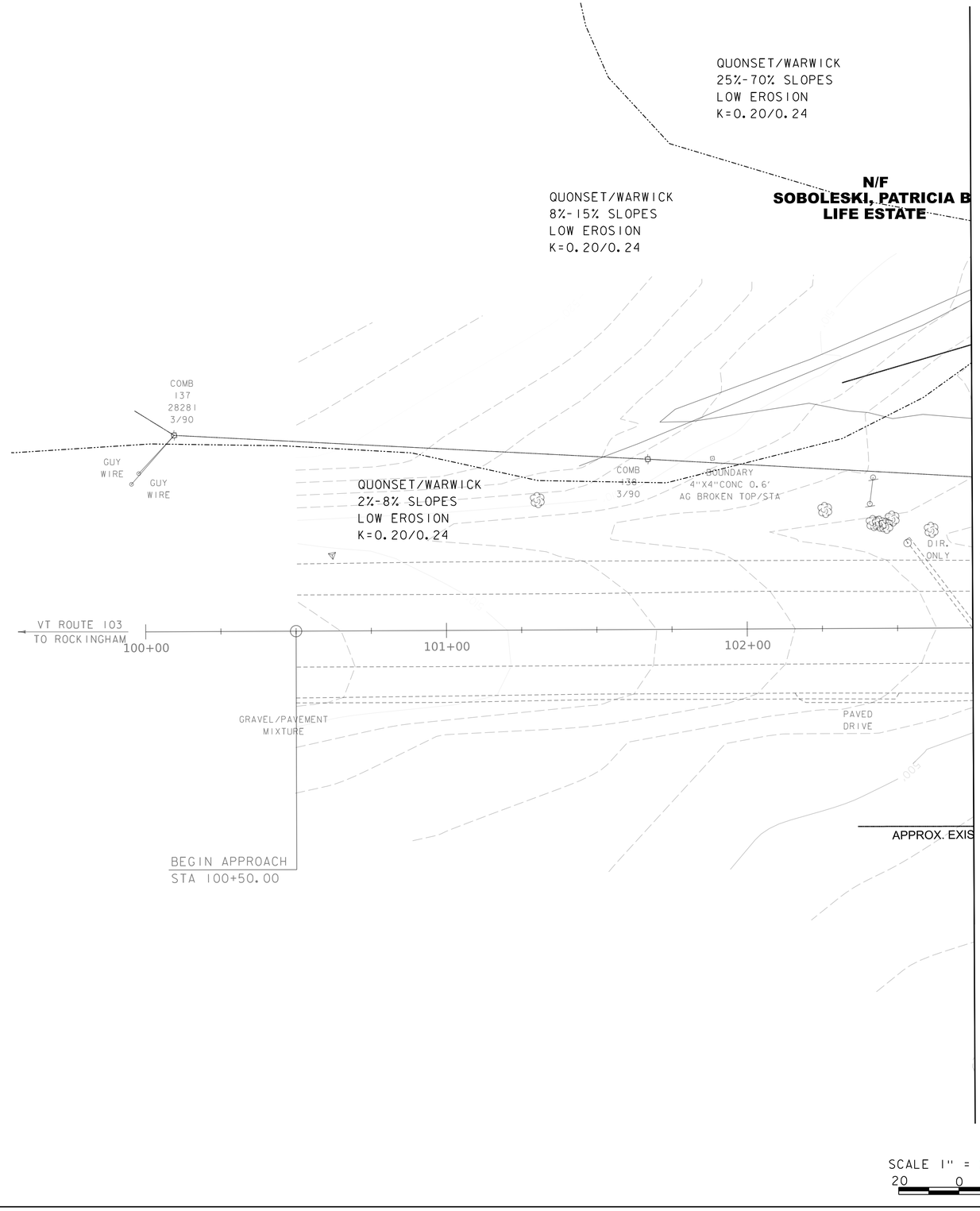
END STA 3+69.6 LT/RT

PROJECT NAME: ROCKINGHAM

PROJECT NUMBER: BF 025-1(48)

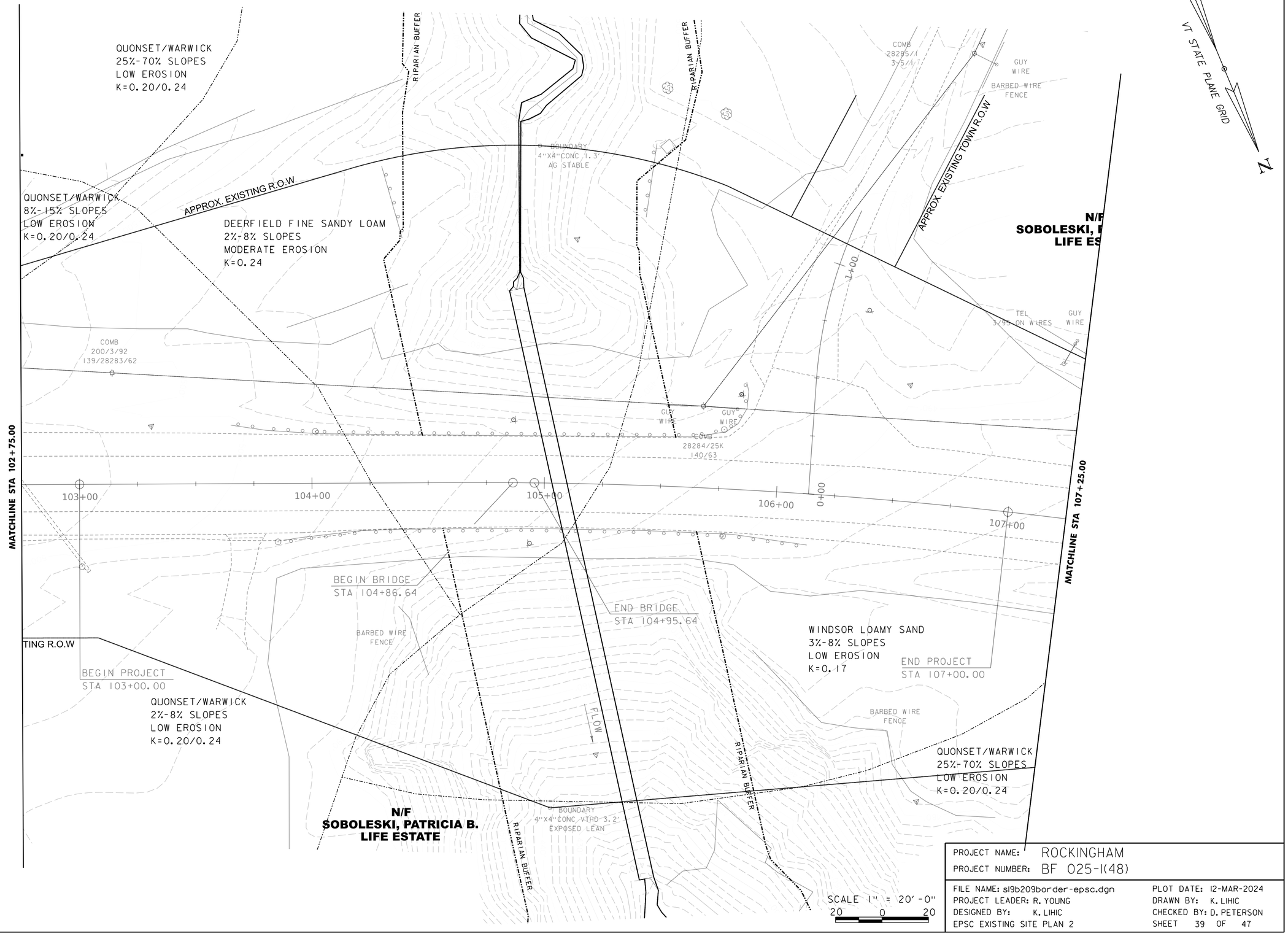
FILE NAME: s19b209Route103_XS Channel..dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: K. LIHIC
CHANNEL CROSS SECTIONS 4

PLOT DATE: 12-MAR-2024
DRAWN BY: K. LIHIC
CHECKED BY: D. PETERSON
SHEET OF

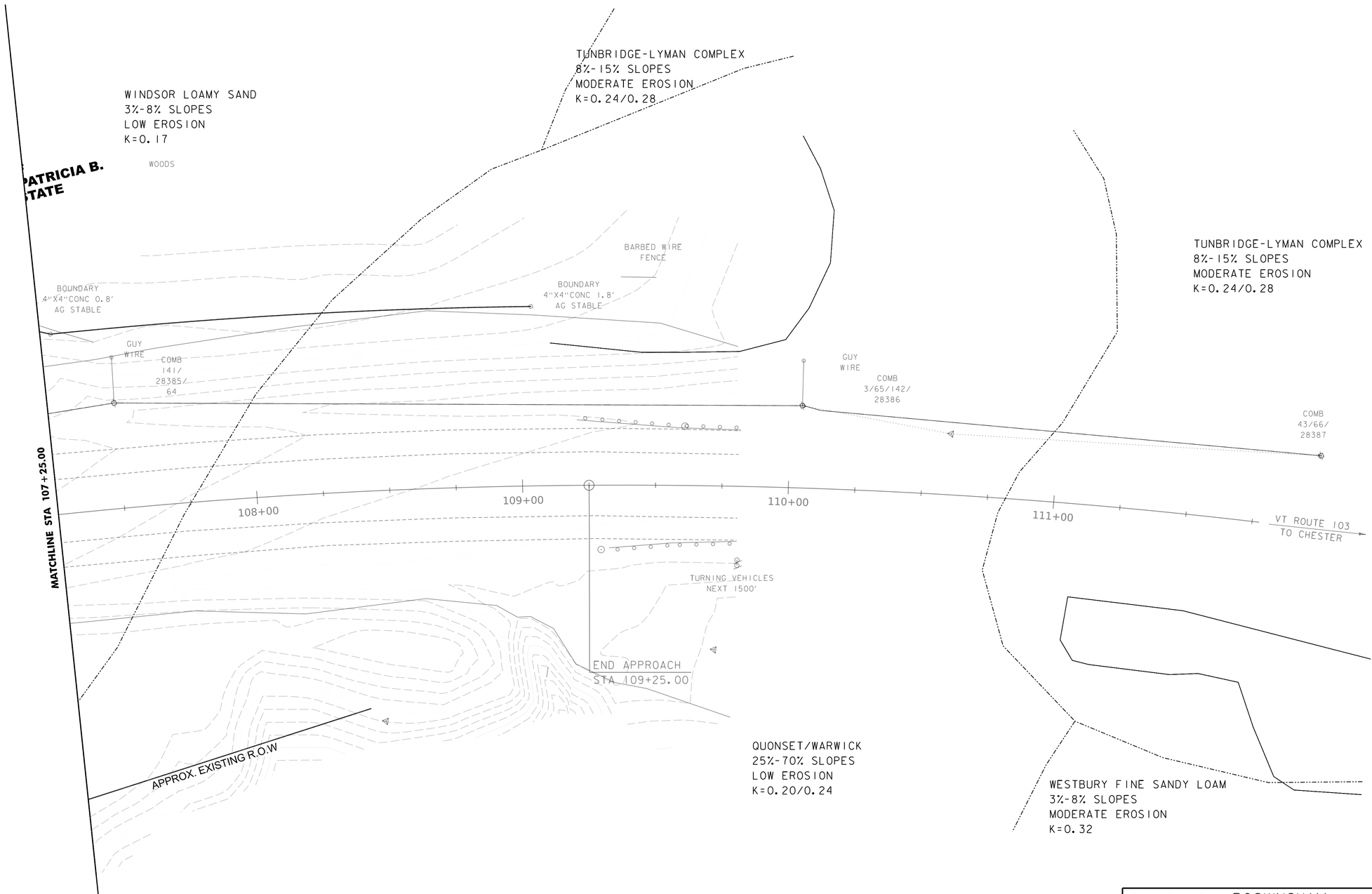



SCALE 1" = 20'-0"
20 0 20

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209border-epsc.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| EPSC EXISTING SITE PLAN 1 | SHEET 38 OF 47 |

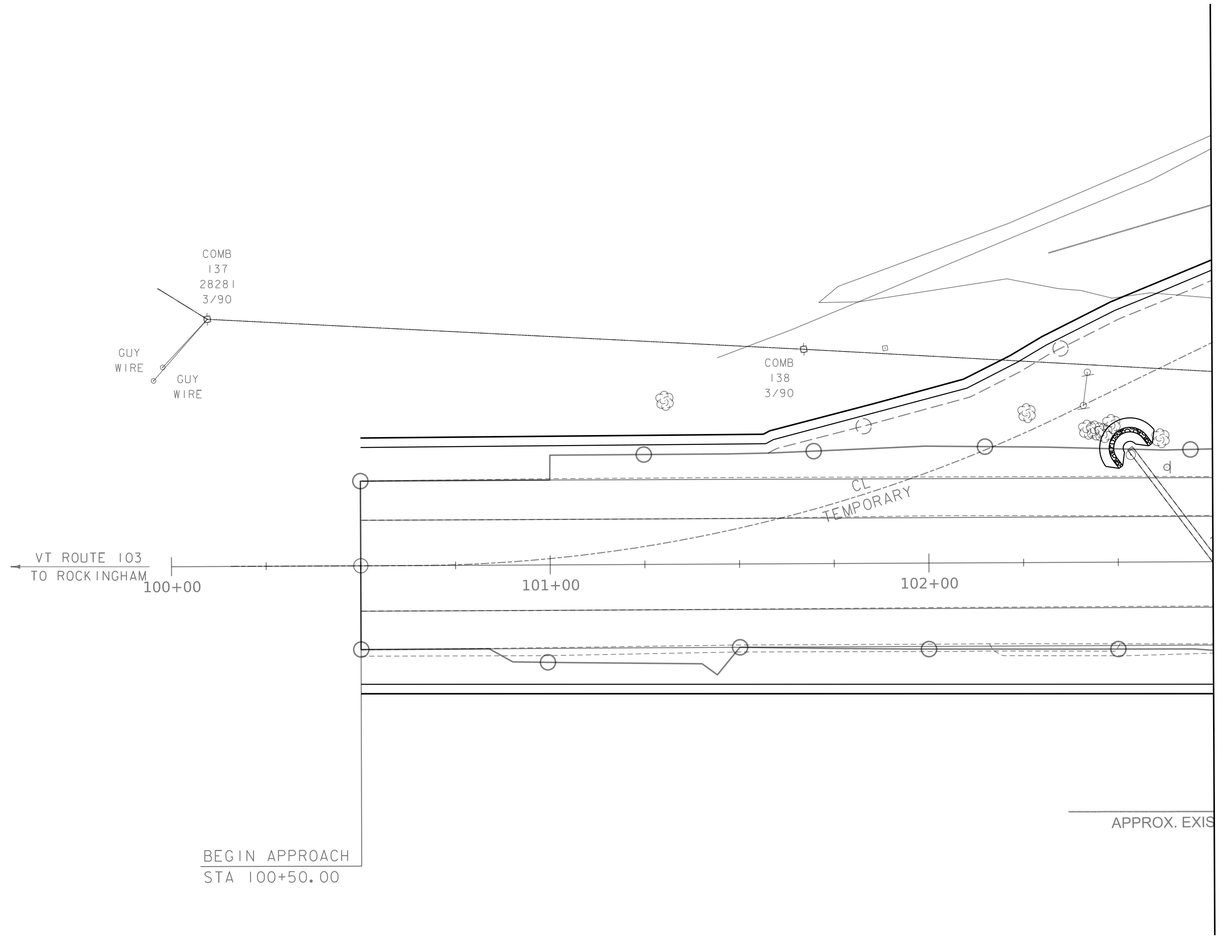



| | |
|---|---|
| PROJECT NAME: ROCKINGHAM | |
| PROJECT NUMBER: BF 025-1(48) | |
| FILE NAME: s19b209border-epsc.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| EPSC EXISTING SITE PLAN 2 | SHEET 39 OF 47 |




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

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209border-epsc.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| EPSC EXISTING SITE PLAN 3 | SHEET 40 OF 47 |




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

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209border-epsc.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| EPSC CONSTRUCTION SITE PLAN 1 | SHEET 41 OF 47 |

E-STONE FILL TYPE IV

STONE FILL TYPE IV

TEMPORARY CONSTRUCTION LIMITS

STONE WALL

APPROX. EXISTING R.O.W

CL TEMPORARY

WOODS

BOUNDARY 4"X4"CONC. 3' AG STABLE

48" MAPLE TREE

48" MAPLE TREE

BF-

COMB 28285/1 3-5/1

HVCTRL 207 MAGHUB GUY WIRE

BARBED WIRE FENCE

APPROX. EXISTING TOWN R.O.W

HVCTRL 210 MAGHUB

STONE WALL

DITCH

1+00

STONE WALL GUY WIRE

TEL WIRES

COMB 200/3/92 139/28283/62

HVCTRL MAGHUB

GUY WIRE

COMB 28284/25K 140/63

HVCTRL 206 MAGHUB

MATCHLINE STA 102+75.00

18" RCP

103+00

104+00

105+00

106+00

107+00

MATCHLINE STA 107+25.00

BEGIN BRIDGE STA 104+86.64

END BRIDGE STA 104+95.64

BARBED WIRE FENCE

TING R.O.W

BEGIN PROJECT STA 103+00.00

END PROJECT STA 107+00.00

FLOW

WOODS

HVCTRL 205 MAGHUB

BOUNDARY 4"X4"CONC.W/THD 5.2' EXPOSED LEAN

BARBED WIRE FENCE

HVCTRL 203 MAGHUB

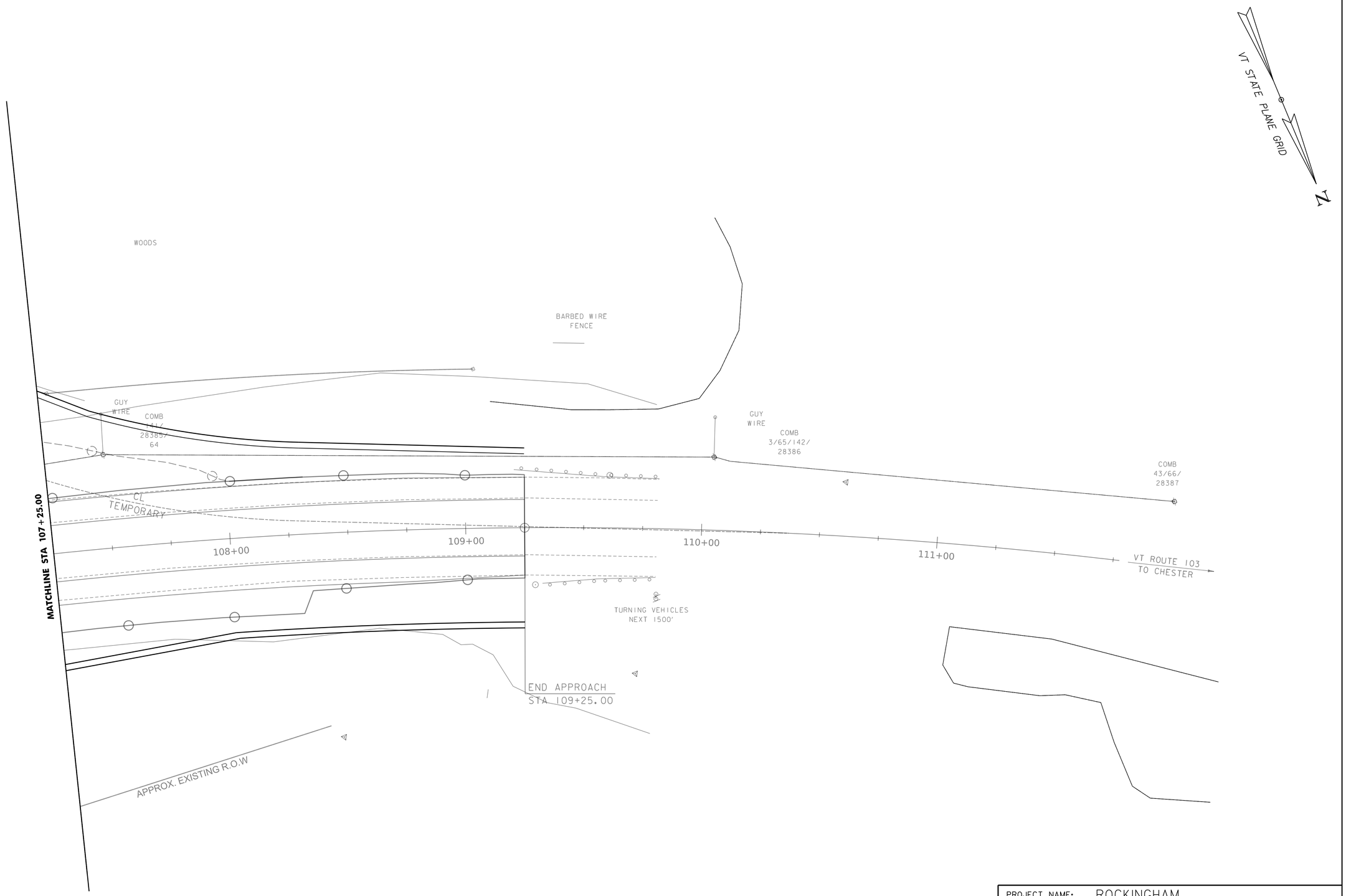
VT STATE PLANE GRID

N

SCALE 1" = 20'-0"

20 0 20

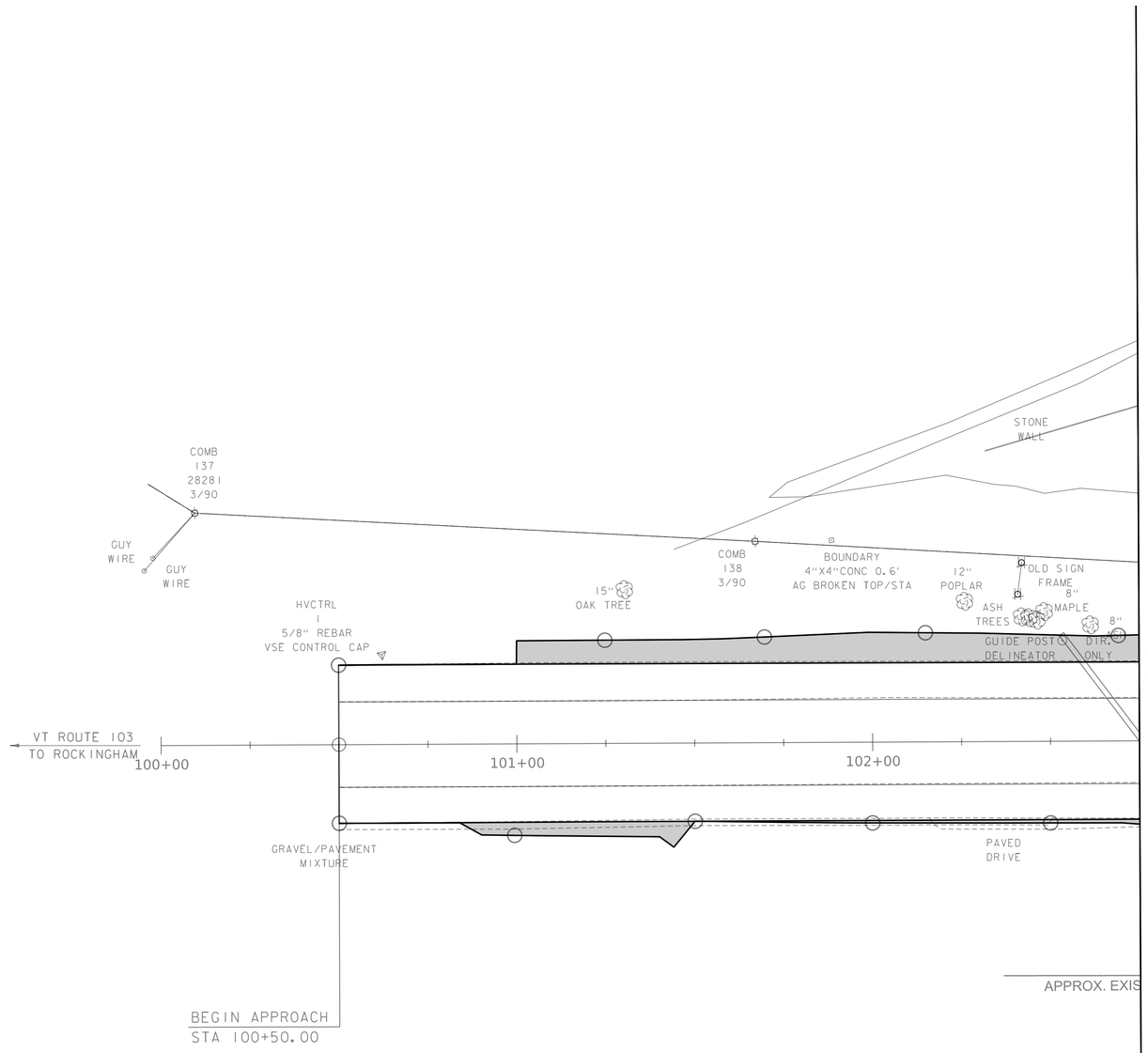
| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: s19b209border-epsc.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| EPSC CONSTRUCTION SITE PLAN 2 | SHEET 42 OF 47 |




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

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |

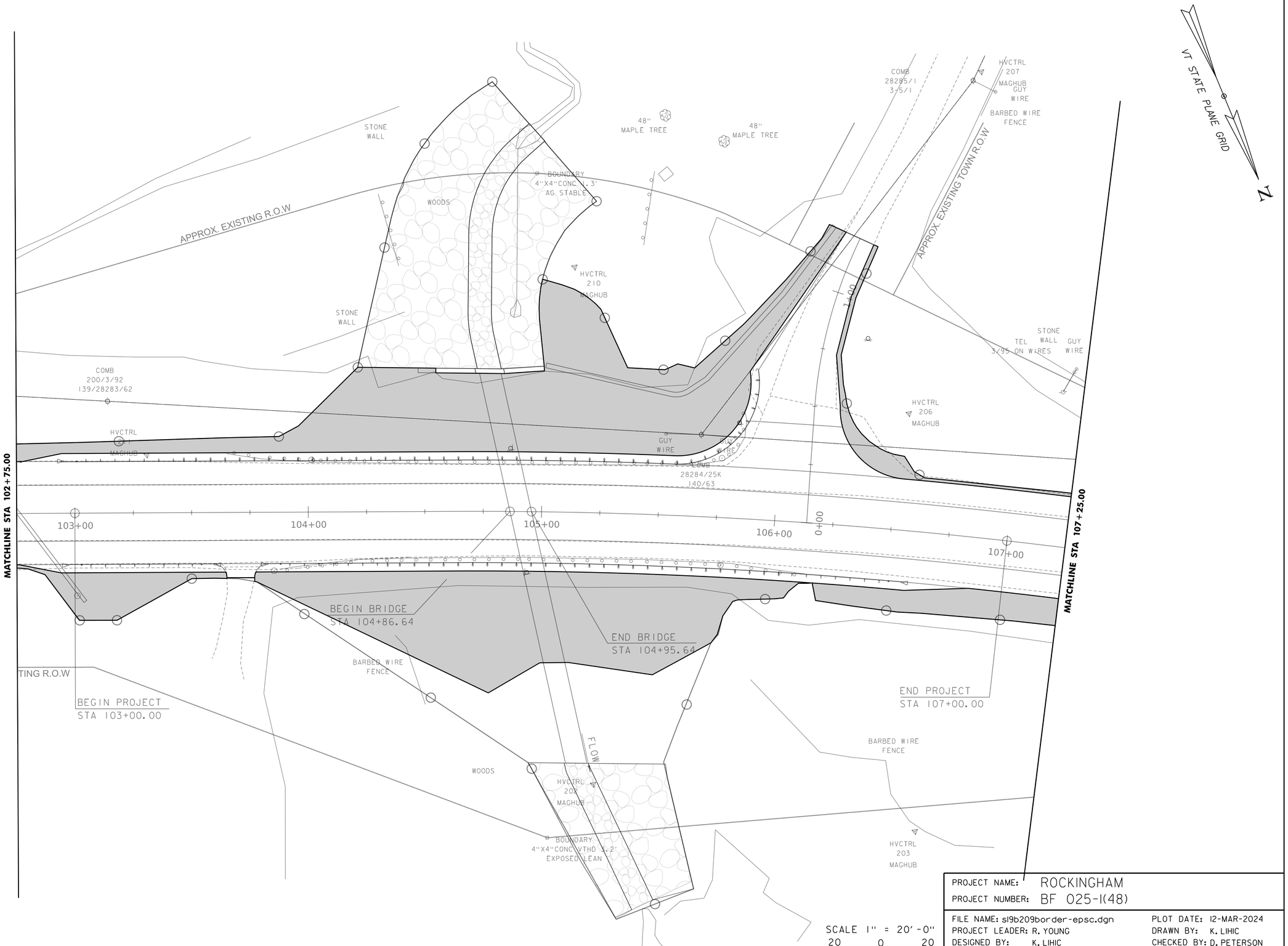
| | |
|---|---|
| FILE NAME: sl9b209border-epsc.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| EPSC CONSTRUCTION SITE PLAN 3 | SHEET 43 OF 47 |




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

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |

| | |
|---|---|
| FILE NAME: sl9b209border-epsc.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| EPSC FINAL SITE PLAN 1 | SHEET 44 OF 47 |




| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209border-epsc.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| EPSC FINAL SITE PLAN 2 | SHEET 45 OF 47 |

VT STATE PLANE GRID

N

WOODS

BARBED WIRE FENCE

BOUNDARY
4"X4"CONC 0.8'
AG STABLE

STONE WALL

BOUNDARY
4"X4"CONC 1.8'
AG STABLE

GUY WIRE

COMB
141/
28385/
64

GUY WIRE

COMB
3/65/142/
28386

TIE
NAIL IN POLE

TIE
NAIL IN POLE
COMB
43/66/
28387

HVCTRL
2
5/8" REBAR
VSE CONTROL CAP

MATCHLINE STA 107+25.00

108+00

109+00

110+00

111+00

VT ROUTE 103
TO CHESTER

TURNING VEHICLES
NEXT 1500'

HVCTRL
205
MAGHUB

END APPROACH
STA 109+25.00

HVCTRL
204
MAGHUB

APPROX. EXISTING R.O.W

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

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BF 025-1(48) |
| FILE NAME: sl9b209border-epsc.dgn | PLOT DATE: 12-MAR-2024 |
| PROJECT LEADER: R. YOUNG | DRAWN BY: K. LIHIC |
| DESIGNED BY: K. LIHIC | CHECKED BY: D. PETERSON |
| EPSC FINAL SITE PLAN 3 | SHEET 46 OF 47 |

| 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 651FOR SEED (PAY ITEM 651.15)

REVISIONS

JANUARY 12, 2015 WHF

PROJECT NAME: ROCKINGHAM

PROJECT NUMBER: BF 025-1(48)

FILE NAME: s19b209epsc details.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: R. PELLETT
EPSC DETAILS

PLOT DATE: 12-MAR-2024
DRAWN BY: R. PELLETT
CHECKED BY: D. PETERSON
SHEET 47 OF 47