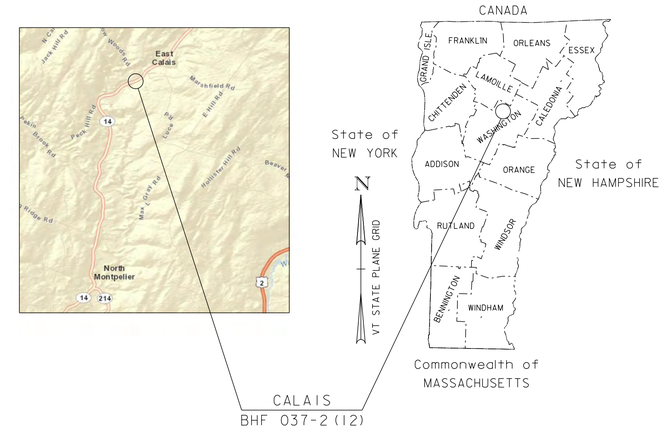
STATE OF VERMONT
AGENCY OF TRANSPORTATION

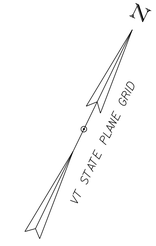


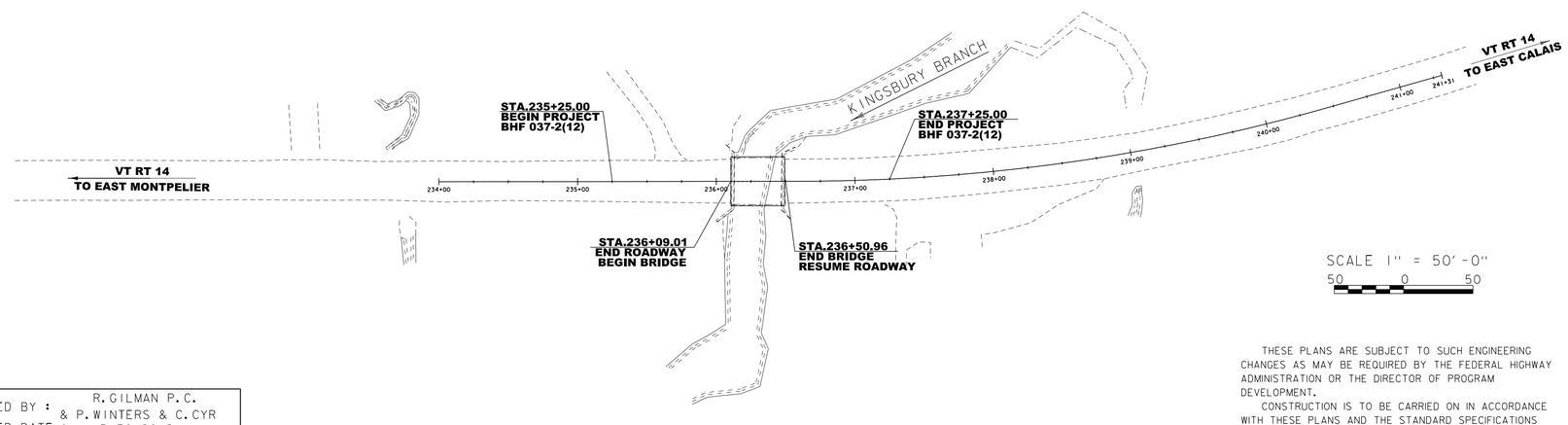
PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF CALAIS
COUNTY OF WASHINGTON
BRIDGE #77
VT ROUTE 14 (RURAL MINOR ARTERIAL)

PROJECT LOCATION: 9.3 MILES NORTH OF JUNCTION WITH US ROUTE 2

PROJECT DESCRIPTION: REMOVAL OF EXISTING SUPERSTRUCTURE, AND REPLACEMENT WITH NEW SUPERSTRUCTURE

LENGTH OF STRUCTURE: 41.95 FEET
LENGTH OF ROADWAY: 158.05 FEET
LENGTH OF PROJECT: 200.00 FEET





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

QUALITY ASSURANCE PROGRAM: LEVEL 3

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS
TOP OF CUT
TOE OF SLOPE

SURVEYED BY : R. GILMAN P.C. & P. WINTERS & C. CYR
SURVEYED DATE : 5/30/2012

DATUM
VERTICAL NAVD 88
HORIZONTAL NAV83 (07)

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

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

PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED _____ DATE _____

PROJECT MANAGER : M. SARGENT

PROJECT NAME : CALAIS
PROJECT NUMBER : BHF 037-2(12)

SHEET 1 OF 22 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
LRFD

INDEX OF SHEETS

PLAN SHEETS

1	TITLE SHEET
2	PRELIMINARY INFORMATION SHEET
3	TYPICAL SECTIONS
4	SURVEY TIE SHEETS
5	LAYOUT SHEET
6	PROFILE SHEETS
7	EPSC PLAN NARRATIVE
8	EPSC EXISTING CONDITIONS SITE PLAN
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10	EPSC FINAL CONDITIONS SITE PLAN
11	EPSC DETAILS
12	TRAFFIC CONTROL SHEETS
13	PLAN AND ELEVATION SHEET
14-17	MAINLINE CROSS SECTIONS
18	BANKING DIAGRAM AND MATERIAL TRANSITION SHEET
19-22	CHANNEL CROSS SECTIONS

STANDARDS LIST

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	06-01-1994
D-4	VARIOUS DRAINAGE DETAILS	08-13-2007
D-30	UNDERDRAIN CONSTRUCTION DETAILS	08-13-2007
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-30	CONSTRUCTION SIGN DETAILS	08-06-2012
T-17	TRAFFIC CONTROL MISCELLANEOUS DETAILS	08-06-2012
T-40	DELINEATORS AND MILEPOSTS	01-02-2013
E-152	WARNING SIGN DETAILS	05-01-2004
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	01-03-2000
G-1b	BOX BEAM GUARD RAIL	01-03-2000
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G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11-15-2002
S-364A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: February 2014

DRAINAGE AREA : 18.6 sq. mi.
CHARACTER OF TERRAIN : Hilly to mountainous. Mix of forest, field, lakes and ponds.
STREAM CHARACTERISTICS : Alluvial, sinuous, probably incised
NATURE OF STREAMBED : Gravel and cobbles

PEAK FLOW DATA

Q 2.33 =	960 cfs	Q 50 =	2500 cfs
Q 10 =	1675 cfs	Q 100 =	2830 cfs
Q 25 =	2160 cfs	Q 500 =	3790 cfs

DATE OF FLOOD OF RECORD : Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q50 = 11.7 fps
ICE CONDITIONS : Moderate
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
IS ORDINARY RISE RAPID? No
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE:

WATERSHED STORAGE: 4%
HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single Span Concrete T-Beam Bridge
YEAR BUILT: 1928
CLEAR SPAN(NORMAL TO STREAM): 34'
VERTICAL CLEARANCE ABOVE STREAMBED: 10'
WATERWAY OF FULL OPENING: 290 sq. ft.
DISPOSITION OF STRUCTURE: Replace superstructure on existing abutments
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 =	753.7'	VELOCITY =	8.5 fps
Q10 =	755.8'	"	10.7 fps
Q25 =	757.0'	"	11.9 fps
Q50 =	758.5'	"	13.3 fps
Q100 =	759.2'	"	13.8 fps

LONG TERM STREAMBED CHANGES: The streambed scoured and/or degraded several feet since the bridge was built, especially along abutment 1. It appears stable now.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 759.9'
DISCHARGE OVER ROAD @Q100: 0 cfs

UPSTREAM STRUCTURE

TOWN: Calais
DISTANCE: 2,600'
HIGHWAY # : TH 5
STRUCTURE #: 27
CLEAR SPAN:
CLEAR HEIGHT:
YEAR BUILT:
FULL WATERWAY:
STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN: Calais
DISTANCE: 13,000'
HIGHWAY # : TH 52
STRUCTURE #: 29
CLEAR SPAN:
CLEAR HEIGHT:
YEAR BUILT:
FULL WATERWAY:
STRUCTURE TYPE:

LRFR LOAD RATING FACTORS

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

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span concrete beam bridge

CLEAR SPAN(NORMAL TO STREAM): 34'
VERTICAL CLEARANCE ABOVE STREAMBED: 10'
WATERWAY OF FULL OPENING: 290 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	753.7'	VELOCITY=	8.5 fps
Q10 =	755.8'	"	10.7 fps
Q25 =	757.0'	"	11.9 fps
Q50 =	758.6'	"	13.3 fps
Q100 =	759.2'	"	13.8 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 760.0'
DISCHARGE OVER ROAD @Q100: 0 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 757.3'
VERTICAL CLEARANCE: @ Q50 = -1.3'. Water up to beams just above Q25

SCOUR: Contraction scour = 4' up to Q500. The channel alignment into the bridge will cause additional scour through the bridge. There will also be additional abutment scour.
REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW:	40 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	20 cfs	Elevation 749'
ORDINARY HIGH WATER:	410 cfs	Elevation 752'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required.
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

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

DESIGN VALUES

1.	DESIGN LIVE LOAD		HL-93
2.	FUTURE PAVEMENT	d_p:	3.0 INCH
3.	DESIGN SPAN	L:	38.50 FT
4.	MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	- - -
5.	PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f_y:	270 KSI
6.	PRESTRESSED CONCRETE STRENGTH	f'_c:	6.0 KSI
7.	PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	5.0 KSI
8.	CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	4.0 KSI
9.	CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10.	CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11.	CONCRETE, CLASS C	f'_c:	3.0 KSI
12.	REINFORCING STEEL	f_y:	60 KSI
13.	STRUCTURAL STEEL AASHTO M270	f_y:	- - -
14.	NOMINAL BEARING RESISTANCE OF SOIL	q_n:	- - -
15.	SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	- - -
16.	NOMINAL BEARING RESISTANCE OF ROCK	q_n:	- - -
17.	ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	- - -
18.	PILE RESISTANCE FACTOR	ϕ:	- - -
19.	LATERAL PILE DEFLECTION	Δ:	- - -
20.	BASIC WIND SPEED	V_{3s}:	- - -
21.	MINIMUM GROUND SNOW LOAD	p_g:	- - -
22.	SEISMIC DATA PGA: 0	S_s:	- - -
		S_1:	- - -
23.			
24.			- - -
25.			- - -
26.			- - -

AS BUILT "REBAR" DETAIL

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

TRAFFIC DATA

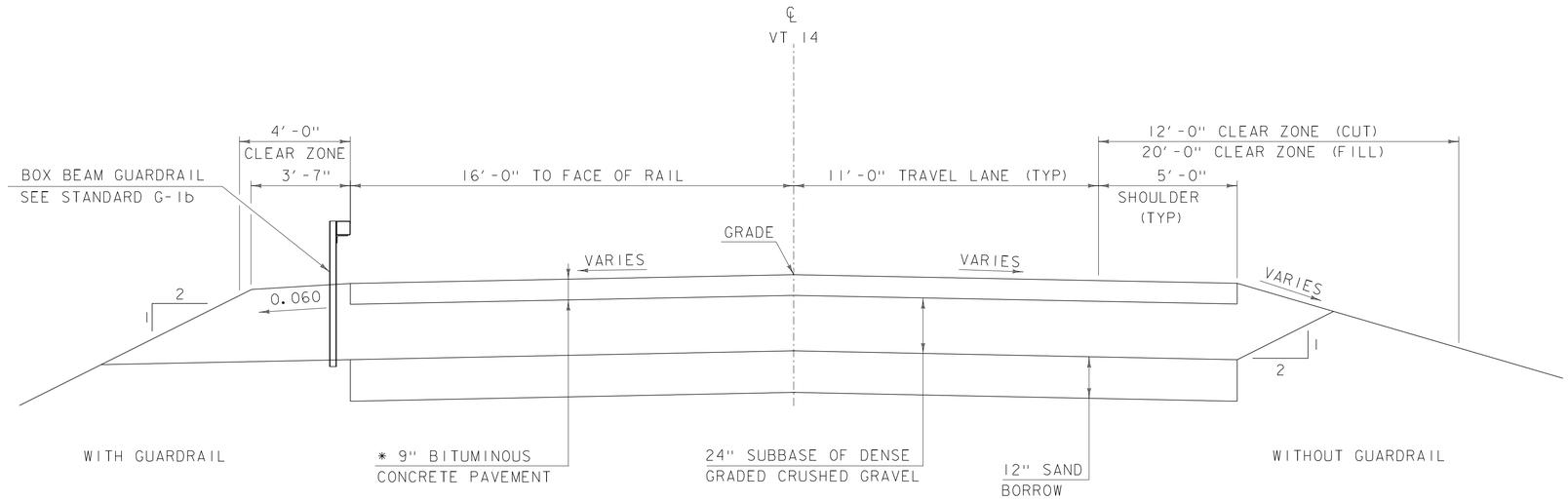
YEAR	ADT	DHV	% D	% T	ADTT
2015	3100	360	72	6.7	290
2035	3300	390	72	9.5	440

20 year ESAL for flexible pavement from 2015 to 2035 : 2609000
40 year ESAL for flexible pavement from 2015 to 2055 : 5803000
Design Speed : 50 mph

PROJECT NAME: **Calais**
PROJECT NUMBER: **BHF 037-2(12)**

FILE NAME: **PI Sheet Builder_77.xls**
PROJECT LEADER: **G.K.DONINGTON**
DESIGNED BY: **S.BROWN**
PRELIMINARY INFORMATION SHEET 1

PLOT DATE:
DRAWN BY: **S.BROWN**
CHECKED BY: **A.STOCKIN**
SHEET 2 OF 22



* 1½" TYPE IV OVER
1½" TYPE IV OVER
3" TYPE II OVER
3" TYPE II

PROPOSED VT 14 TYPICAL SECTION

SCALE ⅜" = 1'-0"

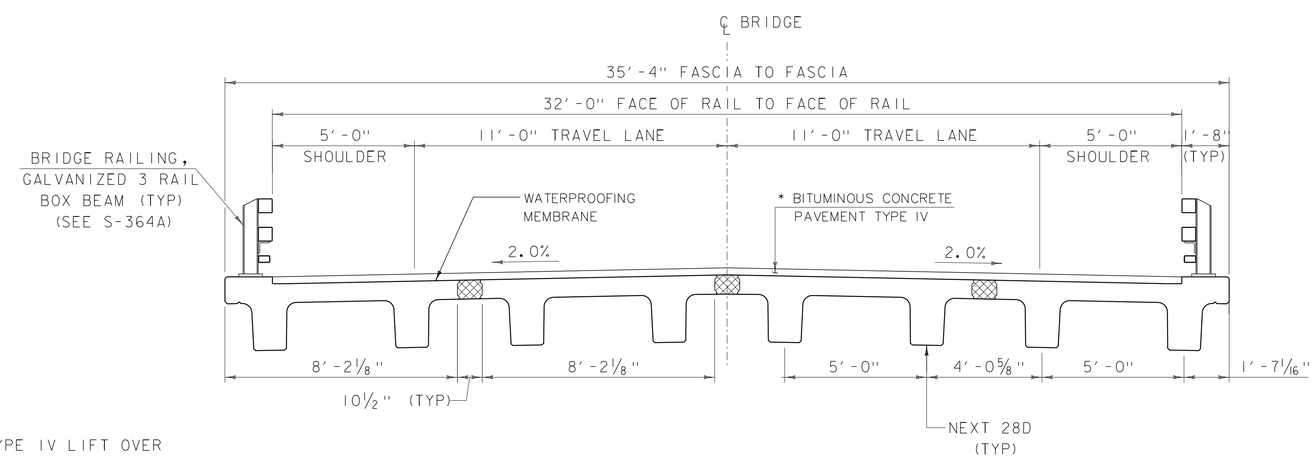
GENERAL NOTES

MARKER POSTS: TO BE PLACED AS INDICATED BY THE ENGINEER.

SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B - 5.

PAY LIMITS OF SAND BORROW: WHEN USED IN CONJUNCTION WITH UNDERDRAIN - SEE STANDARD SHEET D -2.

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.015 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.



* 1½" TYPE IV LIFT OVER
1½" TYPE IV LIFT

BRIDGE TYPICAL SECTION

SCALE ⅜" = 1'-0"

MATERIAL TOLERANCES

(IF USED ON PROJECT)

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

PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

FILE NAME: z12b148typical.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: A.STOCKIN
TYPICAL SECTIONS

PLOT DATE: 17-APRIL-2014
DRAWN BY: S.BROWN
CHECKED BY: A.STOCKIN
SHEET 3 OF 22

GPS CONTROL POINTS

C771

GENERAL LOCATION: CALAIS
FROM THE JUNCTION OF VT 14 AND VT 214 IN N. MONTPELIER PROCEED NORTHERLY ALONG VT 14 FOR APPROXIMATELY 4.1 MI. TO THE MARK ON THE RIGHT, 37' SOUTHERLY OF MILE MARKER 0140/1205/0380. THE MARK IS A 3/4" REBAR SET FLUSH WITH ALUMINUM CAP MARKED "CONTROL POINT". SEE HVCTRL #1 BELOW FOR COORDINATES.

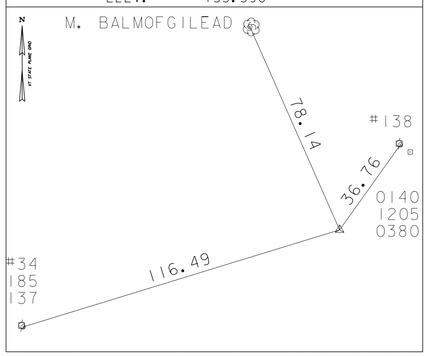
C772

GENERAL LOCATION: CALAIS
FROM THE JUNCTION OF VT 14 AND VT 214 IN N. MONTPELIER PROCEED NORTHERLY ALONG VT 14 FOR APPROXIMATELY 4.3 MI. TO THE MARK ON THE LEFT, OPPOSITE POLE #196/138. THE MARK IS A 3/4" REBAR SET FLUSH WITH ALUMINUM CAP MARKED "CONTROL POINT". SEE HVCTRL #2 BELOW FOR COORDINATES.

TRAVERSE TIES

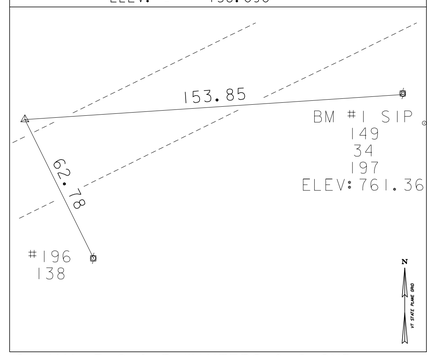
HVCTRL #1

NORTH =	677337.090
EAST =	1655841.470
ELEV. =	753.390



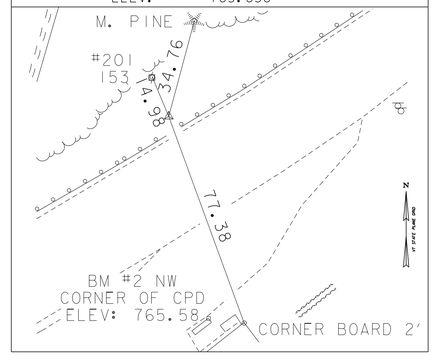
HVCTRL #2

NORTH =	678423.820
EAST =	1656887.650
ELEV. =	758.090



HVCTRL #3

NORTH =	678771.293
EAST =	1657576.224
ELEV. =	765.638



* MAIN TRAVERSE COMPLETED 5/30/2012 BY R.GILMAN P.C & P.WINTERS & C.CYR

ALIGNMENT TIES

POB 234+00.00

NORTH =	678559.1796
EAST =	1657214.0995
ELEV. =	

NOT TIED

PC 236+61.12

NORTH =	678673.7889
EAST =	1657448.7210
ELEV. =	

NOT TIED

PT 240+44.98

NORTH =	678887.1580
EAST =	1657766.3710
ELEV. =	

NOT TIED

POE 241+31.20

NORTH =	678944.5673
EAST =	1657830.7049
ELEV. =	

NOT TIED

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD83 (07)
ADJUSTMENT	NONE

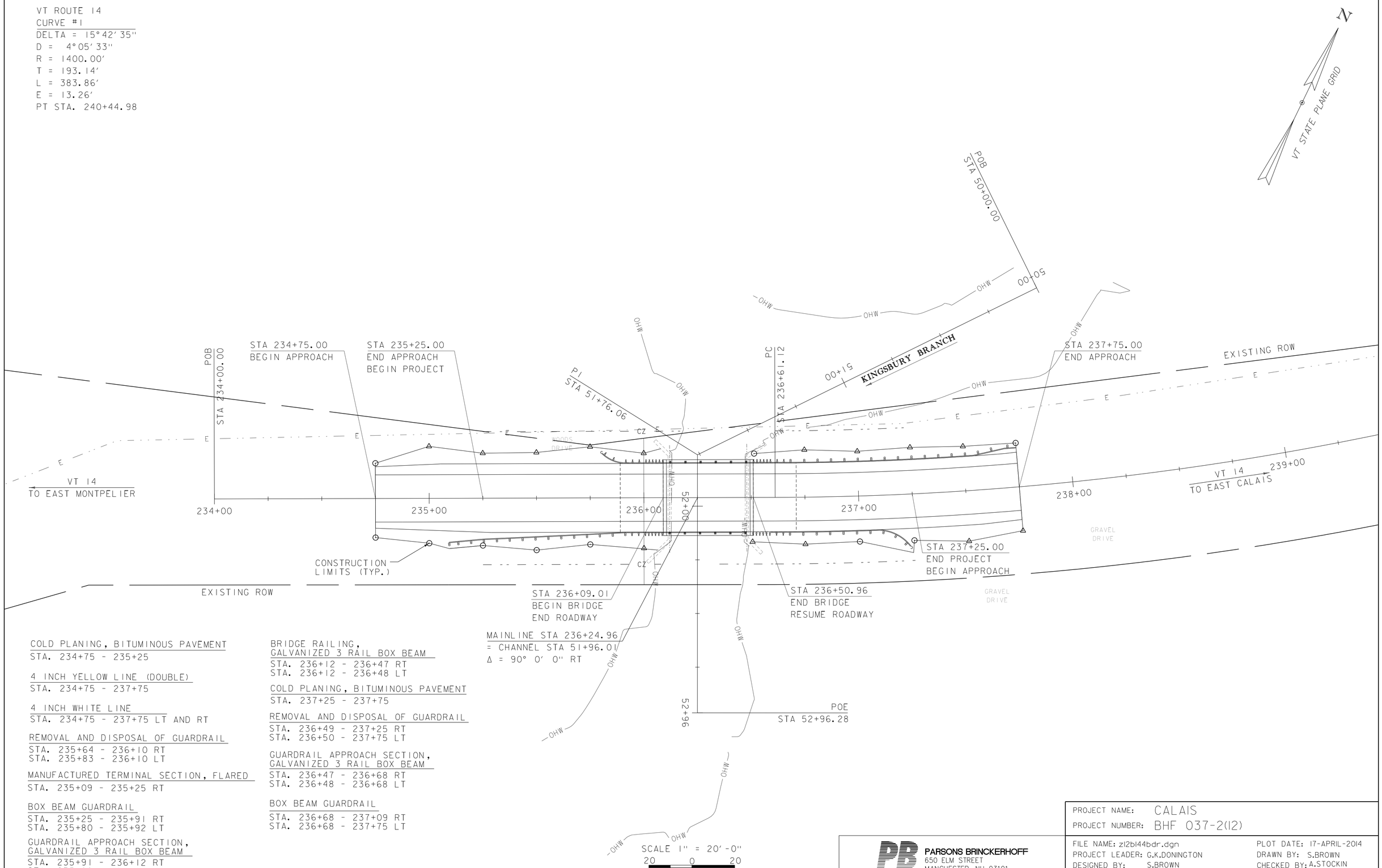
PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

FILE NAME: z12b148ti.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: S.BROWN
SURVEY TIE SHEET

PLOT DATE: 17-APRIL-2014
DRAWN BY: S.BROWN
CHECKED BY: R.BENJAMIN
SHEET 4 OF 22

VT ROUTE 14
CURVE #1
DELTA = 15°42′35″
D = 4°05′33″
R = 1400.00′
T = 193.14′
L = 383.86′
E = 13.26′
PT STA. 240+44.98



COLD PLANING, BITUMINOUS PAVEMENT
STA. 234+75 - 235+25

4 INCH YELLOW LINE (DOUBLE)
STA. 234+75 - 237+75

4 INCH WHITE LINE
STA. 234+75 - 237+75 LT AND RT

REMOVAL AND DISPOSAL OF GUARDRAIL
STA. 235+64 - 236+10 RT
STA. 235+83 - 236+10 LT

MANUFACTURED TERMINAL SECTION, FLARED
STA. 235+09 - 235+25 RT

BOX BEAM GUARDRAIL
STA. 235+25 - 235+91 RT
STA. 235+80 - 235+92 LT

GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM
STA. 235+91 - 236+12 RT
STA. 235+92 - 236+12 LT

BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM
STA. 236+12 - 236+47 RT
STA. 236+12 - 236+48 LT

COLD PLANING, BITUMINOUS PAVEMENT
STA. 237+25 - 237+75

REMOVAL AND DISPOSAL OF GUARDRAIL
STA. 236+49 - 237+25 RT
STA. 236+50 - 237+75 LT

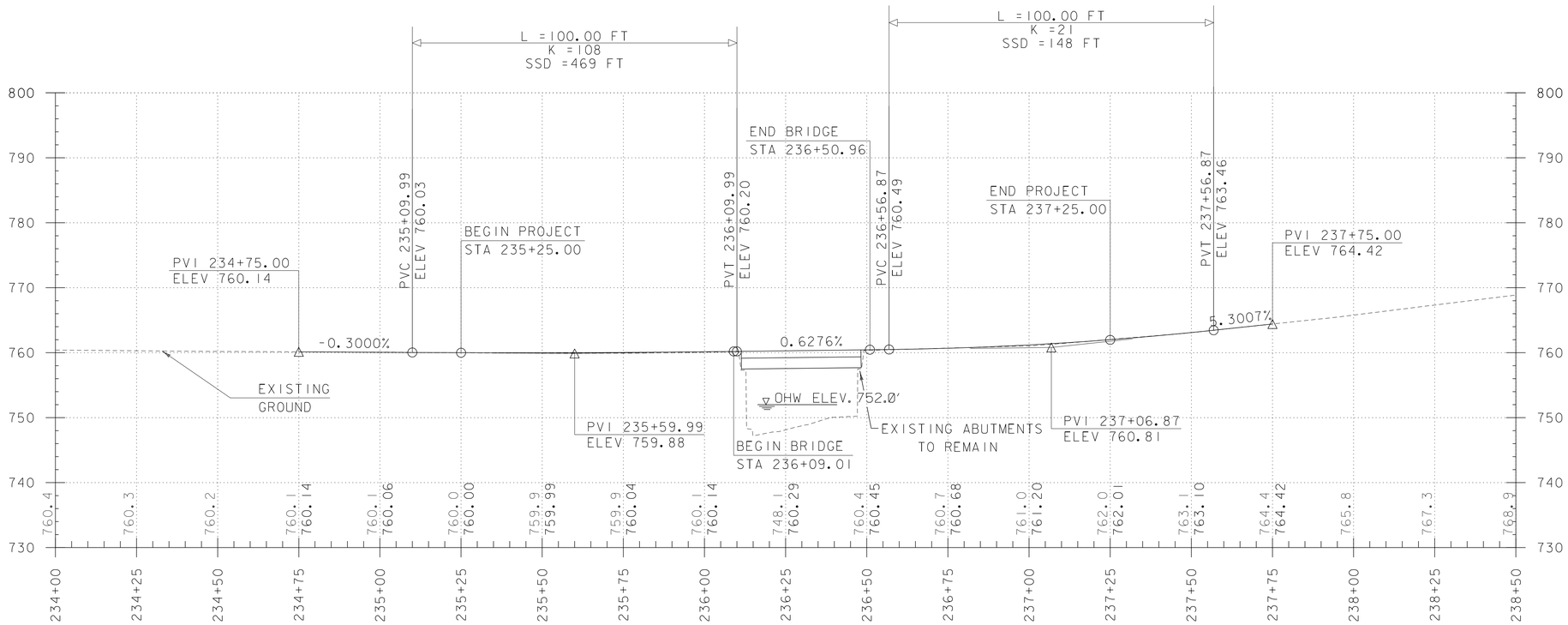
GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM
STA. 236+47 - 236+68 RT
STA. 236+48 - 236+68 LT

BOX BEAM GUARDRAIL
STA. 236+68 - 237+09 RT
STA. 236+68 - 237+75 LT

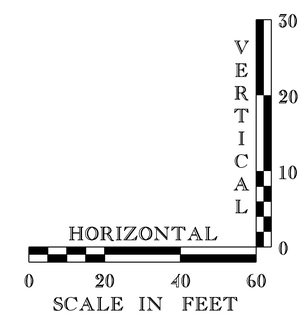
PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

PROJECT NAME: CALAIS	
PROJECT NUMBER: BHF 037-2(12)	
FILE NAME: zl2bl44bdr.dgn	PLOT DATE: 17-APRIL-2014
PROJECT LEADER: G.K.DONINGTON	DRAWN BY: S.BROWN
DESIGNED BY: S.BROWN	CHECKED BY: A.STOCKIN
LAYOUT SHEET	SHEET 5 OF 22

PROFILE ALONG CENTERLINE VT ROUTE 14



STATIONING AND ELEVATIONS ARE IN FEET



NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG ℄

PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

PROJECT NAME: CALAIS	
PROJECT NUMBER: BHF 037-2(12)	
FILE NAME: z12b148profile.dgn	PLOT DATE: 17-APRIL-2014
PROJECT LEADER: G.K.DONINGTON	DRAWN BY: J.KHERA
DESIGNED BY: J.KHERA	CHECKED BY: R.BENJAMIN
PROFILE SHEET	SHEET 6 OF 22

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE SUPERSTRUCTURE REPLACEMENT OF A 38' - 1 SPAN BRIDGE. THE BRIDGE SUPERSTRUCTURE WILL BE REPLACED WITH 37.5' SINGLE SPAN PRESTRESSED CONCRETE NEXT D BEAM BRIDGE OVER THE KINGSBURY BRANCH. THE BRIDGE IS LOCATED IN THE TOWN OF CALAIS, ON VT ROUTE 14.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.07 ACRES.

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST ONE CONSTRUCTION SEASON.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE AREA IS MOSTLY WELL ESTABLISHED FOREST WITH OCCASIONAL OPEN AREAS. VT ROUTE 14 IS WITHIN THE PROJECT SITE. THERE IS A RESIDENTIAL DWELLING APPROXIMATELY 80' NORTH OF THE STRUCTURE WHICH ABUTS THE PROJECT LIMITS, AS WELL AS OTHER RESIDENCES WITHIN A GENERAL PROXIMITY ALONG VT ROUTE 14.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

KINGSBURY BRANCH IS THE ONLY OPEN WATER SOURCE ON THIS PROJECT. THE BROOK IS CLASSIFIED AS A GRADUAL, INCISED CHANNEL WITH STEEP BANKS, AND A STREAM BED CONSISTING MOSTLY OF GRAVELLY SAND WITH COBBLES.
VT ROUTE 14 HAS CROSS PIPES WHICH ARE OUTSIDE THE PROJECT LIMITS.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF HARDWOOD TREES AND UNDERGROWTH. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY THE REPLACEMENT OF THE EXISTING BRIDGE SUPERSTRUCTURE.DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

ALL SOIL DATA CAME FROM THE AGENCY OF NATURAL RESOURCES:

CoB - COLTON, GRAVELLY LOAMY SAND, SLOPES 3 TO 8%, "K FACTOR"=0.17, POTENTIALLY HIGHLY ERODIBLE.

Ru - RUMNEY FINE SANDY LOAM, SLOPES 0 TO 2%, "K FACTOR"=0.24, NOT HIGHLY ERODIBLE.

ME - MACHIAS FINE SANDY LOAM, SLOPES 3 TO 8%, "K FACTOR"=0.17, POTENTIALLY HIGHLY ERODIBLE.

BuB - BUCKLAND SILT LOAM, SLOPES 15 TO 35%, "K FACTOR"=0.32, HIGHLY ERODIBLE.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:
0.0-0.23 = LOW EROSION POTENTIAL
0.24-0.36 = MODERATE EROSION POTENTIAL
0.37 AND HIGHER = HIGH EROSION POTENTIAL

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: NO
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: KINGSBURY BRANCH

1.3 RISK EVALUATION

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES
SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.

1.4.2 LIMIT DISTURBANCE AREA
PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

1.4.3 SITE ENTRANCE/EXIT STABILIZATION
TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MNIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTORS PROGRESS SCHEDULE.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

1.4.4 INSTALL SEDIMENT BARRIERS
SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

1.4.5 DIVERT UPLAND RUNOFF
DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCITON SITE.

THE PROJECT AREA IS RELATIVELY FLAT. THERFORE IT IS NOT ANTICPIATED THAT DIVERSION MEASURES WILL BE NECESSARY.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF
CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSIVE POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

1.4.7 CONSTRUCT PERMANENT CONTROLS
PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION
ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION
VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

1.4.10 STABILIZE SOIL AT FINAL GRADE
EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION.

1.4.11 DE-WATERING ACTIVITIES
DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

DEWATERING IS NOT ANTICIPATED FOR THIS PROJECT. IF DEWATERING IS NECESSARY THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE PROVIDED BY THE CONTRACTOR.

1.4.12 INSPECT YOUR SITE
INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

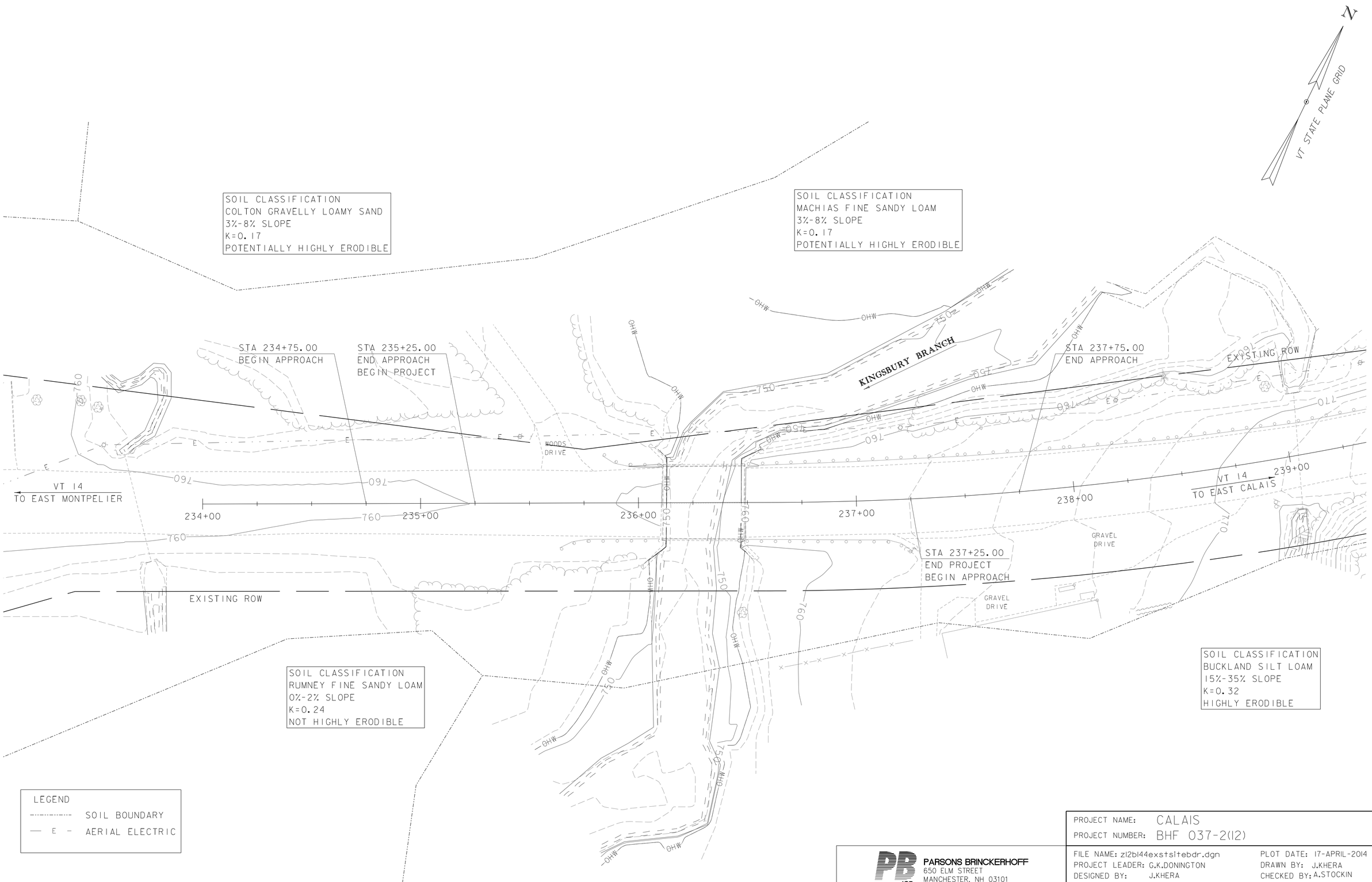
1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 CONSTRUCTION SEQUENCE

1.5.2 OFF-SITE ACTIVITIES
IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SPECIFICATION 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

1.5.3 UPDATES

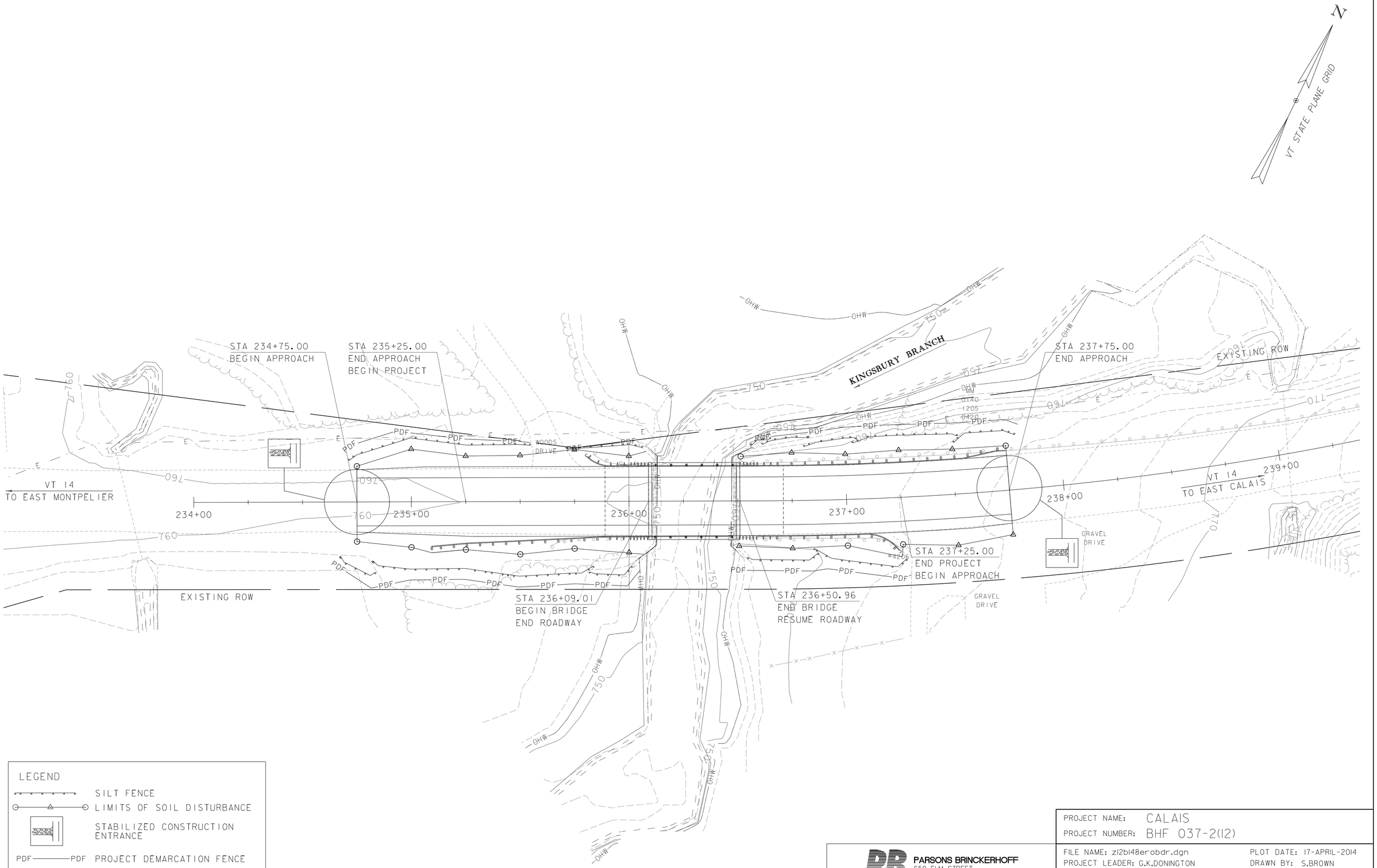


PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

FILE NAME: z12b144exstsitebdr.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: J.KHERA
EPSC EXISTING CONDITIONS SITE PLAN

PLOT DATE: 17-APRIL-2014
DRAWN BY: J.KHERA
CHECKED BY: A.STOCKIN
SHEET 8 OF 22

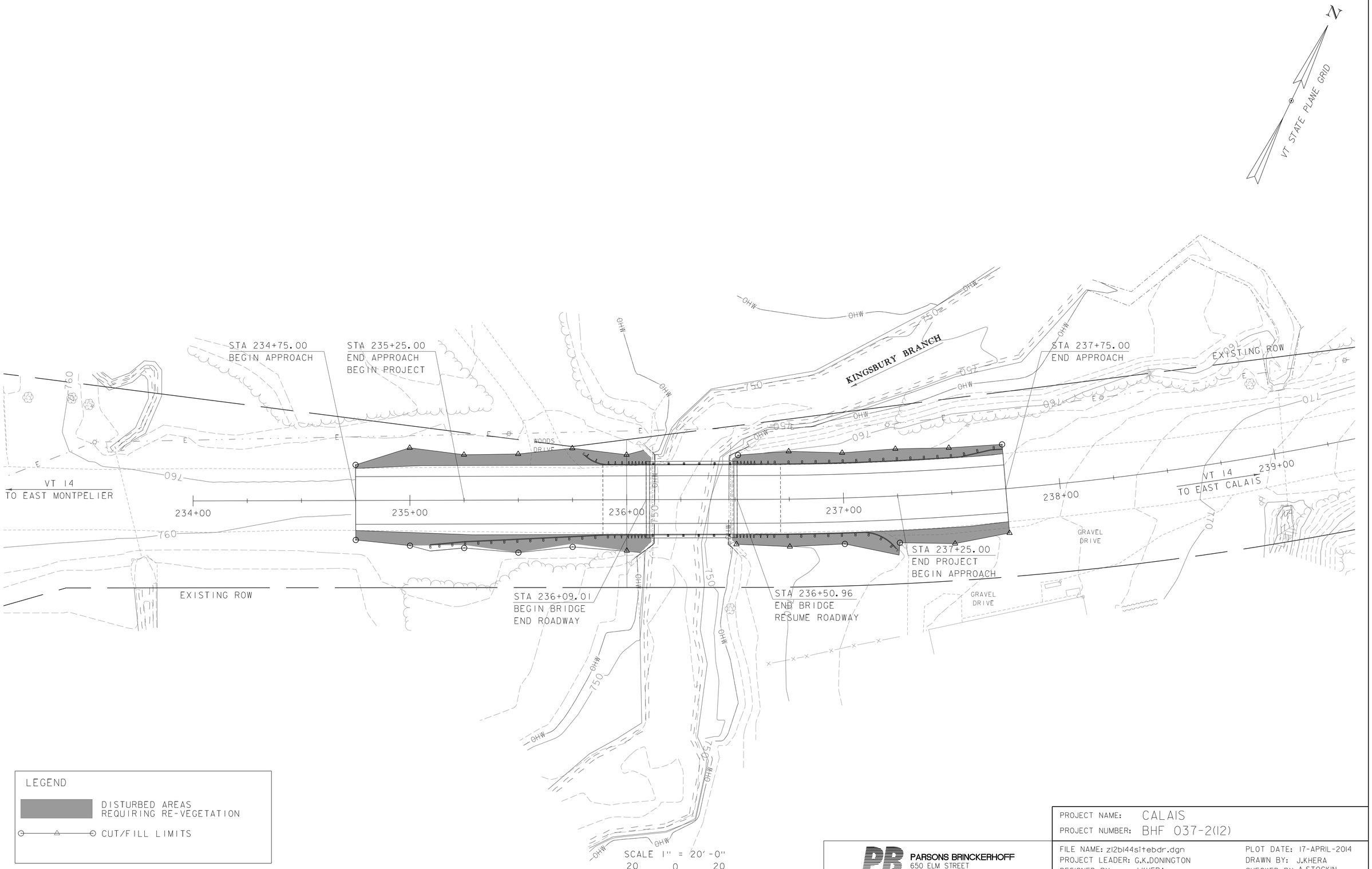


PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

FILE NAME: zl2b148erobdr.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: S.BROWN
EPSC CONST. CONDITIONS SITE PLAN

PLOT DATE: 17-APRIL-2014
DRAWN BY: S.BROWN
CHECKED BY: A.STOCKIN
SHEET 9 OF 22

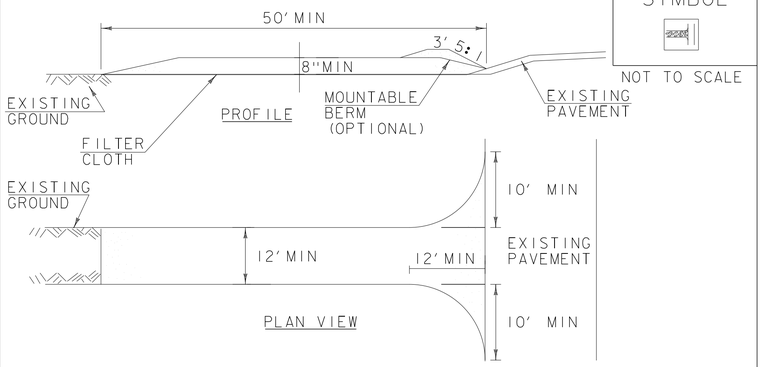


PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

FILE NAME: z12b144sitebdr.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: J.KHERA
EPSC FINAL CONDITIONS SITE PLAN

PLOT DATE: 17-APRIL-2014
DRAWN BY: J.KHERA
CHECKED BY: A.STOCKIN
SHEET 10 OF 22



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

VAOT RURAL AREA MIX

	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
37.5%	22.5	45	CREEPING RED FESCUE	85%	98%
37.5%	22.5	45	TALL FESCUE	90%	95%
5.0%	3	6	RED TOP	90%	95%
15.0%	9	18	BIRDSFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX

	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
42.5%	34	68	CREEPING RED FESCUE	85%	98%
10.0%	8	16	PERENNIAL RYE GRASS	90%	95%
42.5%	34	68	KENTUCKY BLUE GRASS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	85%	95%
100%	80	160			

SOIL AMENDMENT GUIDANCE

FERTILIZER		LIME	
BROADCAST	HYDROSEED	BROADCAST	HYDROSEED
10-20-10	*FOLLOW*	PELLETIZED	*FOLLOW*
500 LBS/AC	*MANUFACTURER*	2 TONS/AC	*MANUFACTURER*

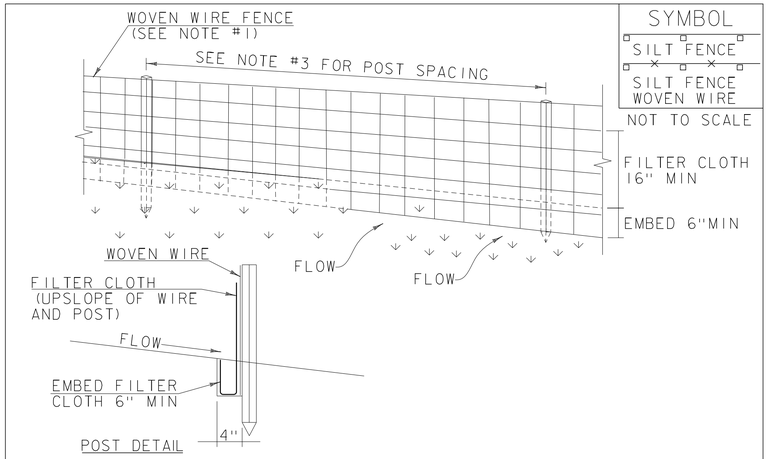
CONSTRUCTION GUIDANCE

1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN 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. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
7. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED
8. 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

REVISIONS	
JUNE 23, 2009	WHF
JANUARY 15, 2010	WHF
FEBRUARY 16, 2011	WHF



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

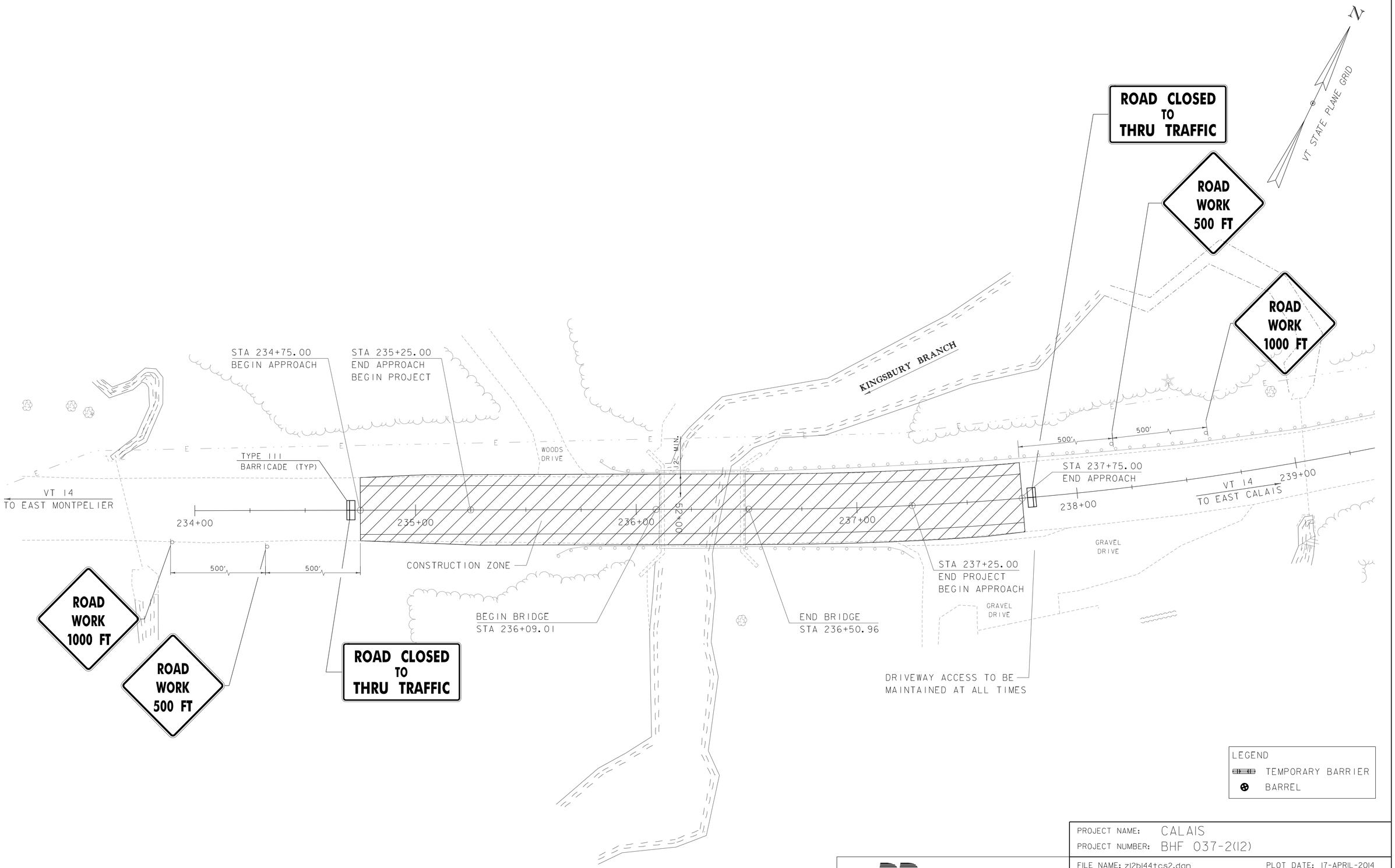
REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF

PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

FILE NAME: z12b148epscdet.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: S.BROWN
EPSC DETAILS

PLOT DATE: 17-APRIL-2014
DRAWN BY: S.BROWN
CHECKED BY: A.STOCKIN
SHEET 11 OF 22

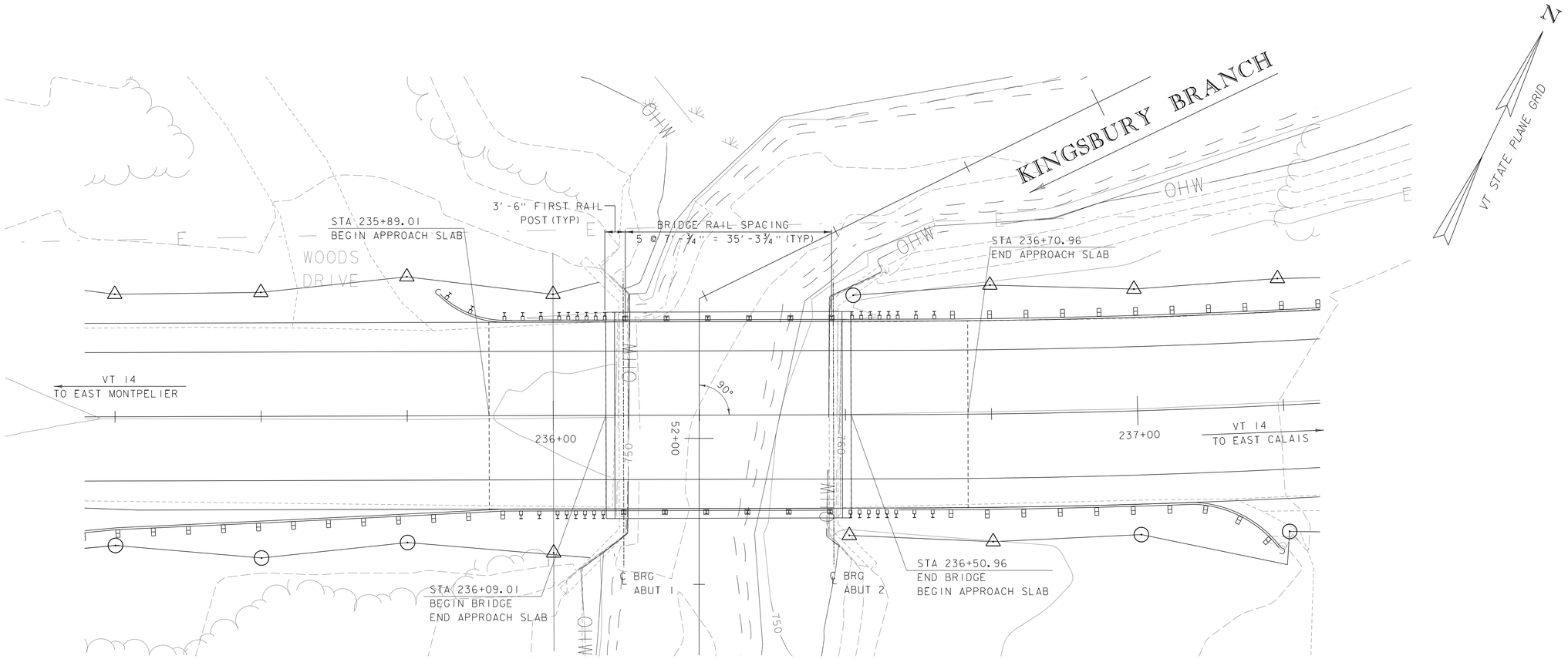


PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

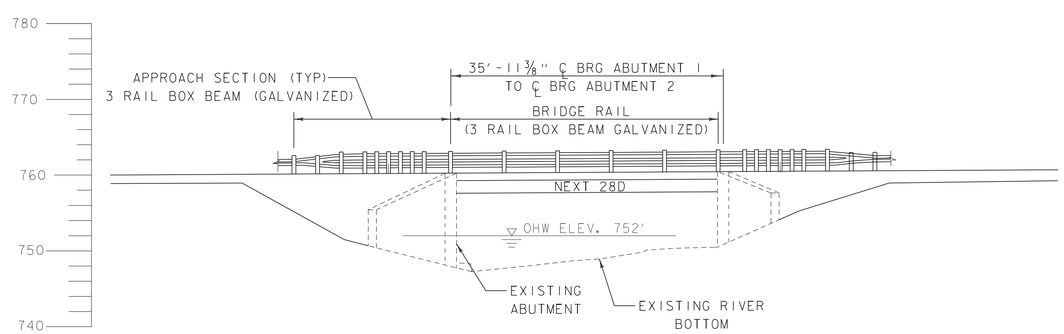
PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

FILE NAME: z12bl44tcs2.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: S.BROWN
TRAFFIC CONTROL SHEET

PLOT DATE: 17-APRIL-2014
DRAWN BY: S.BROWN
CHECKED BY: A.STOCKIN
SHEET 12 OF 22



PLAN



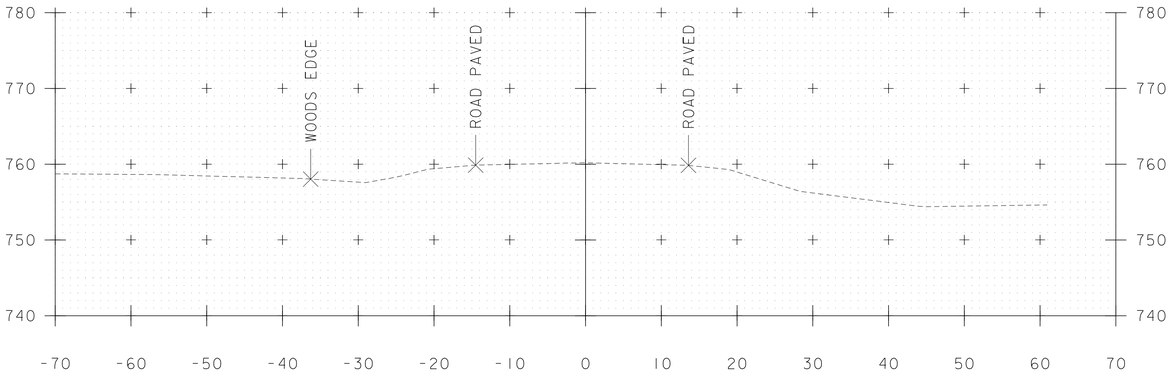
ELEVATION

SCALE 1" = 10'-0

10 0 10

PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

PROJECT NAME: CALAIS	
PROJECT NUMBER: BHF 037-2(12)	
FILE NAME: z12b148pe.dgn	PLOT DATE: 17-APRIL-2014
PROJECT LEADER: G.K.DONINGTON	DRAWN BY: S.BROWN
DESIGNED BY: S.BROWN	CHECKED BY: A.STOCKIN
PLAN AND ELEVATION SHEET	SHEET 13 OF 22



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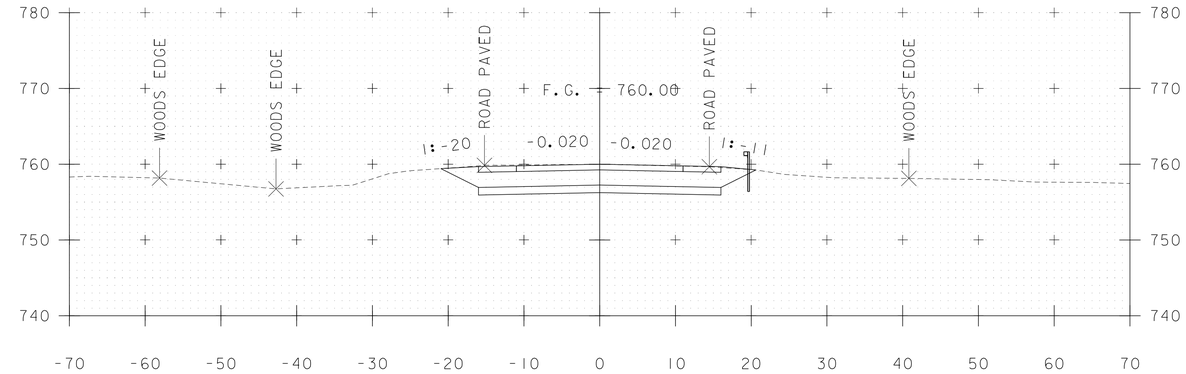

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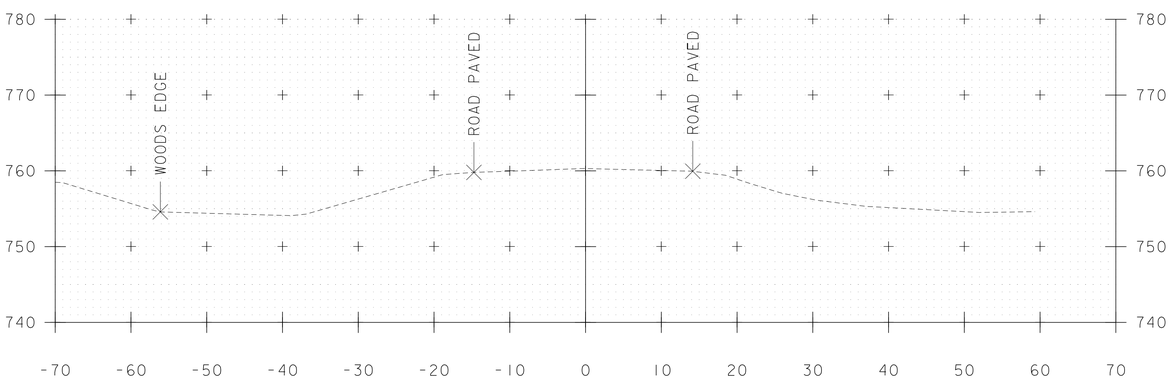

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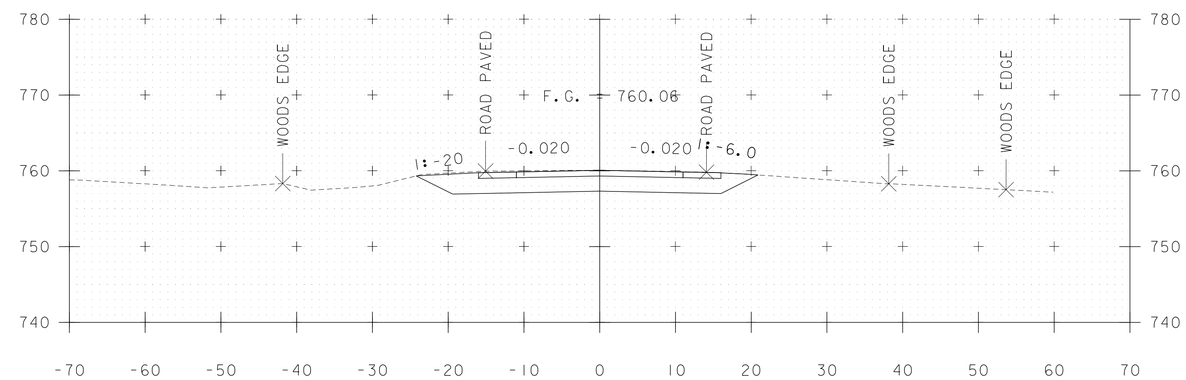

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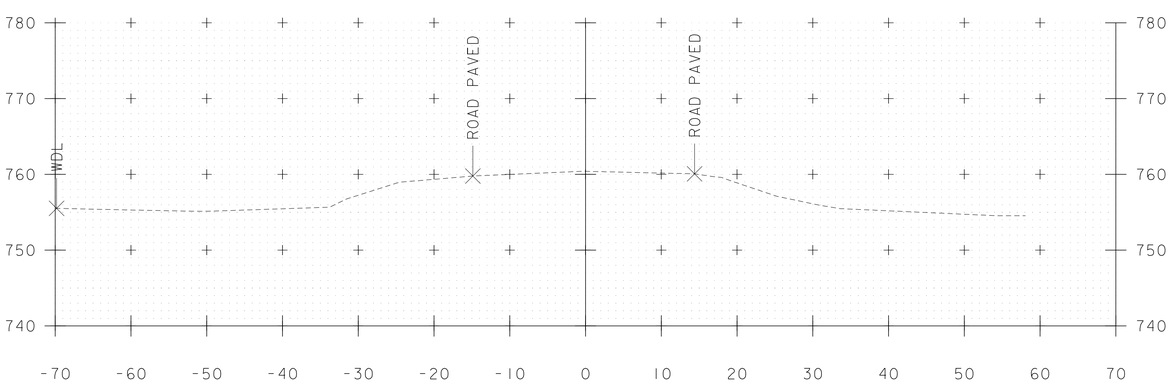

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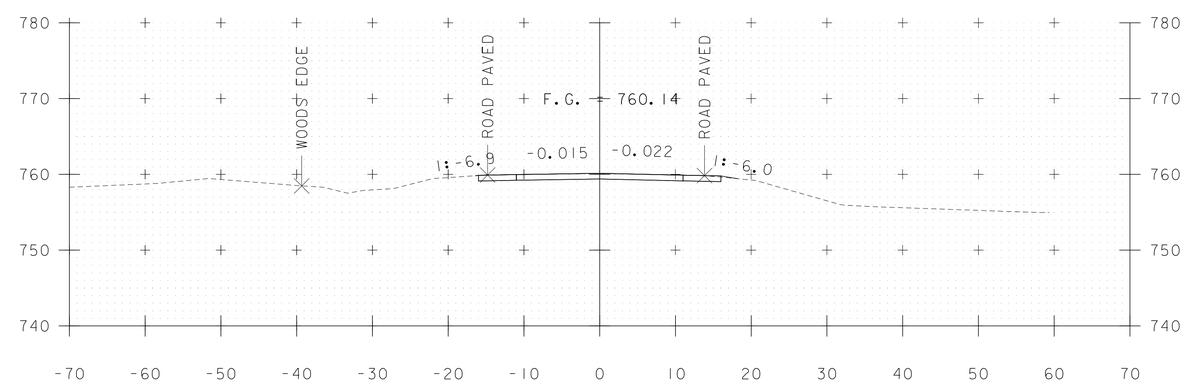


STA 234+75.00
BEGIN APPROACH
MATCH EXISTING CROSS SLOPES

234+75

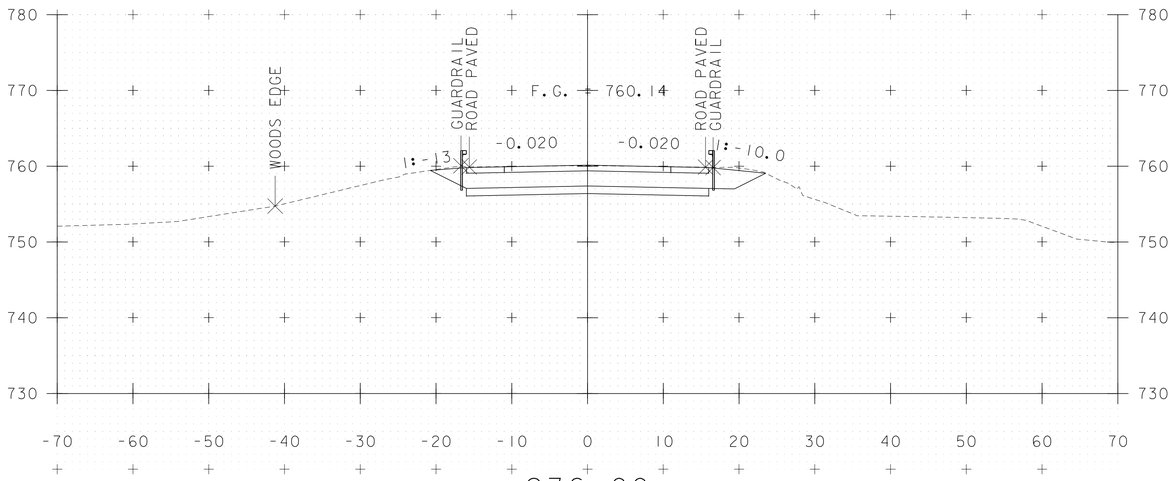
PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

STA. 234+00 TO STA. 235+25

PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

FILE NAME: z12b148xsl.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: J.KHERA
MAINLINE CROSS SECTIONS

PLOT DATE: 17-APRIL-2014
DRAWN BY: J.KHERA
CHECKED BY: A.STOCKIN
SHEET 14 OF 22



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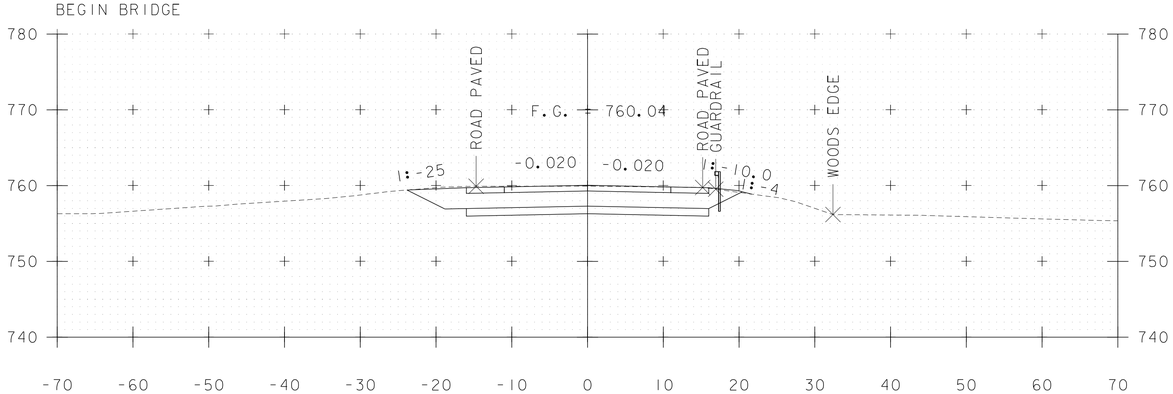

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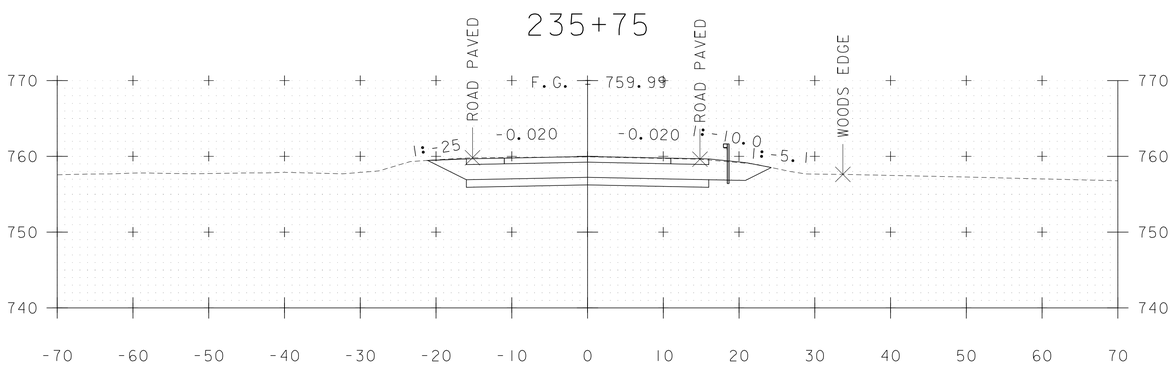

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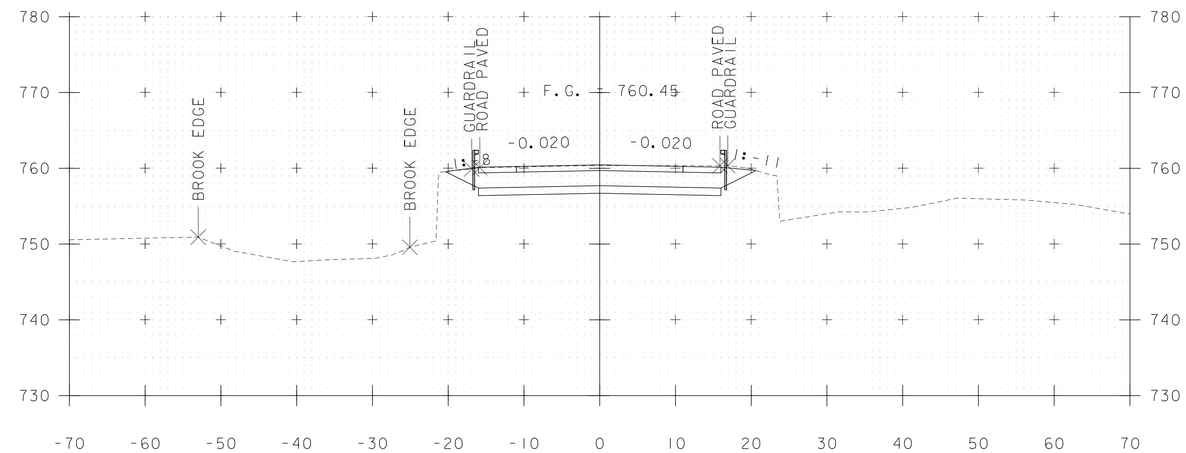

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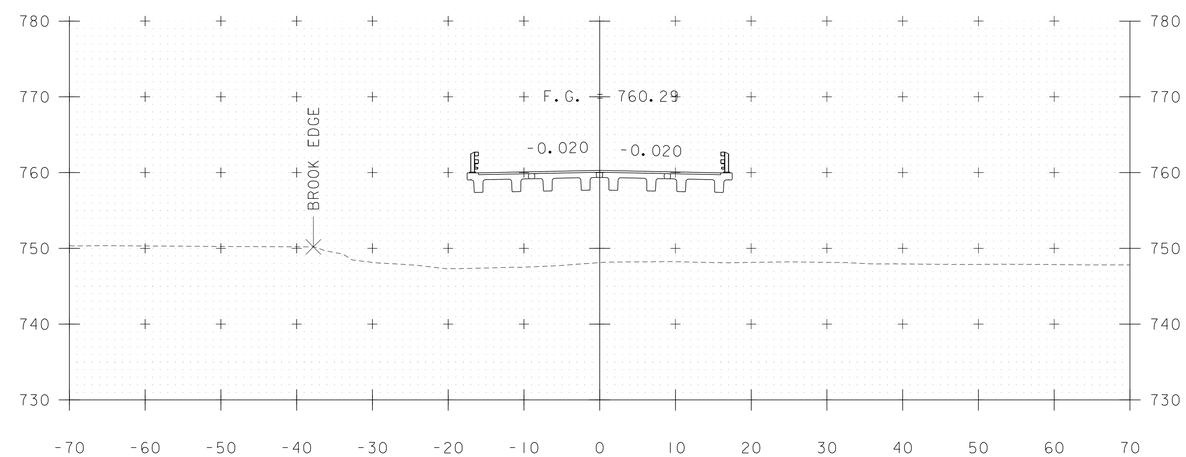


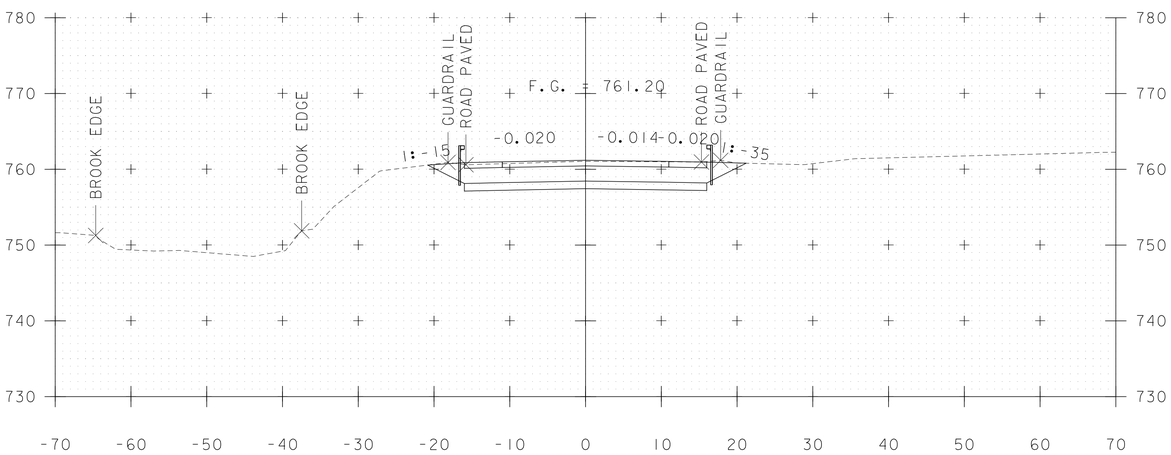
STA 236+50.96
END BRIDGE

236+25

PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

STA. 235+50 TO STA. 236+50

PROJECT NAME: CALAIS	
PROJECT NUMBER: BHF 037-2(12)	
FILE NAME: z12b148xsl.dgn	PLOT DATE: 17-APRIL-2014
PROJECT LEADER: G.K.DONINGTON	DRAWN BY: J.KHERA
DESIGNED BY: J.KHERA	CHECKED BY: A.STOCKIN
MAINLINE CROSS SECTIONS	SHEET 15 OF 22



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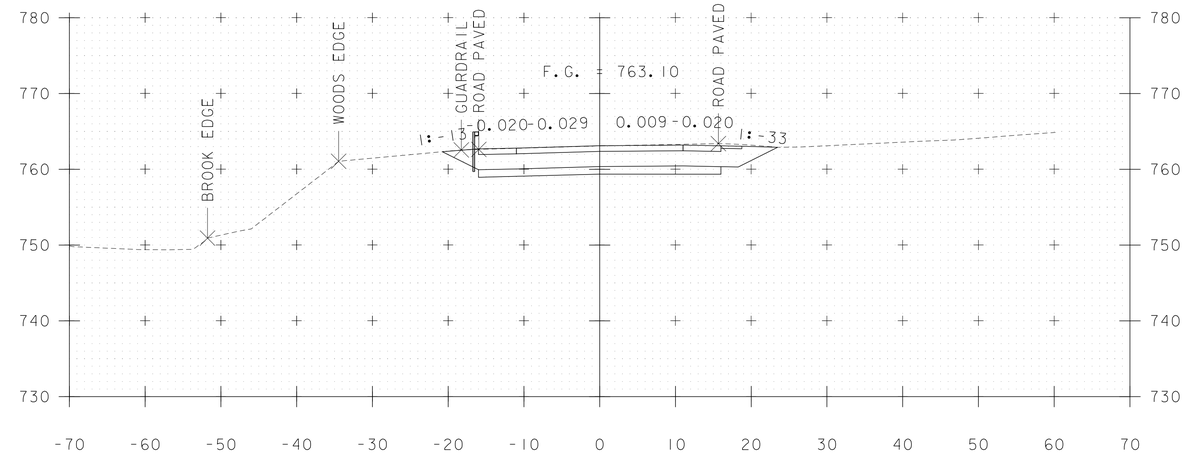

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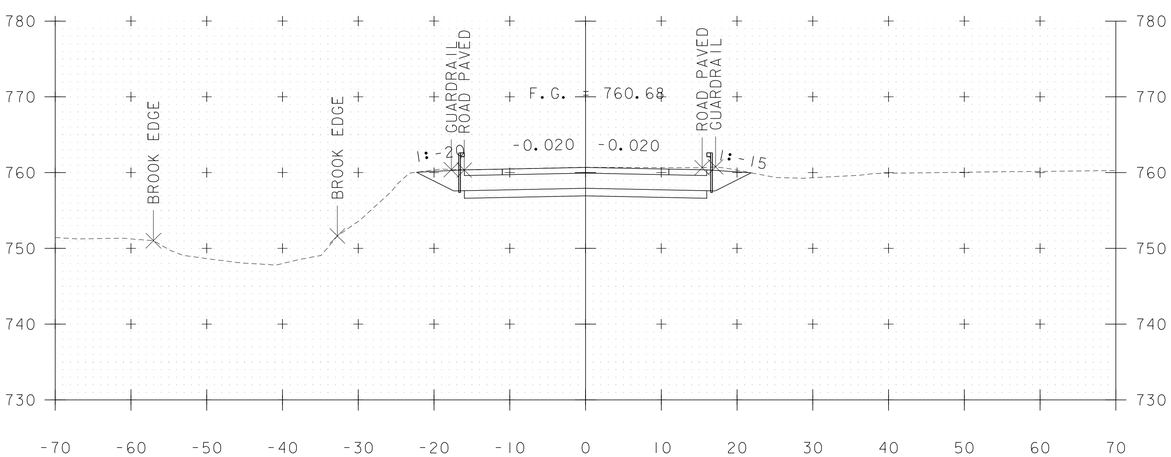
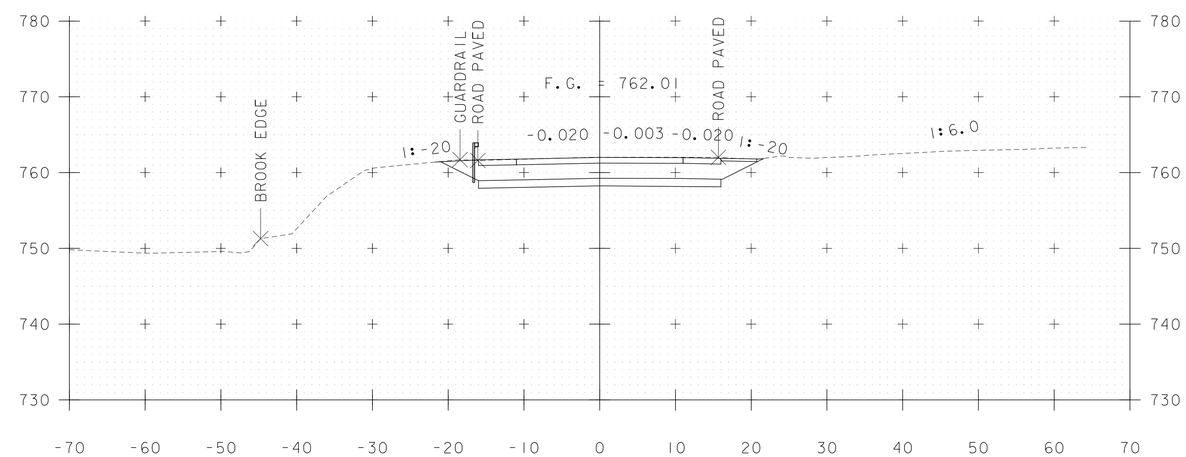


236+75



STA 237+25.00
END PROJECT

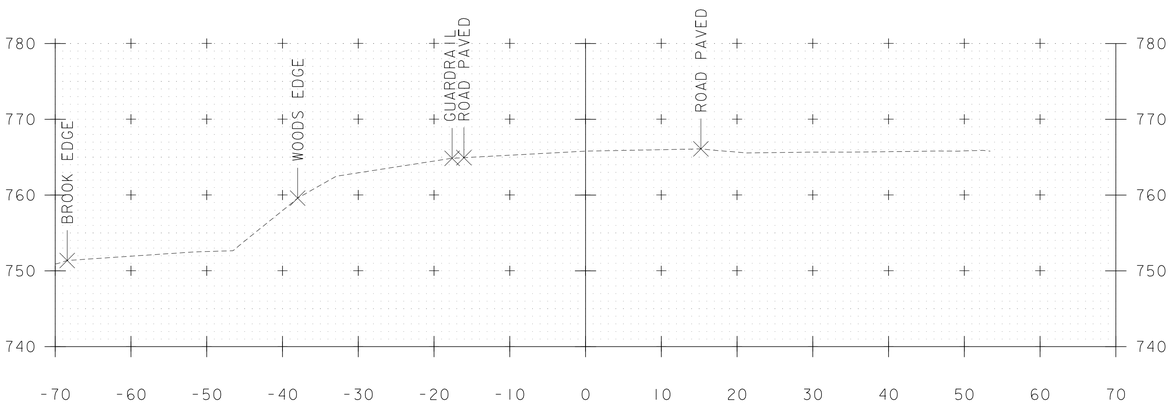
MATCH EXISTING CROSS SLOPES

237+25

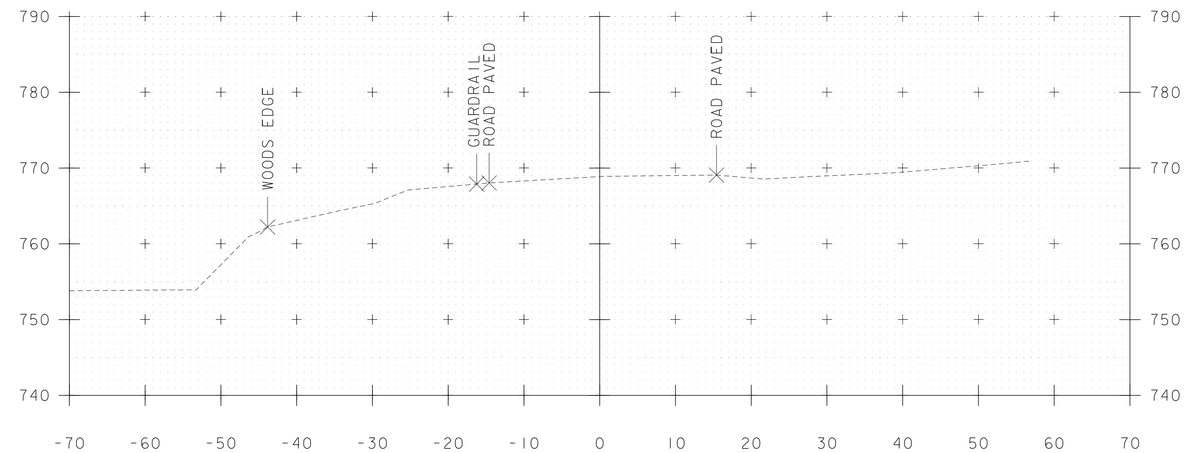
PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

STA. 236+75 TO STA. 237+50

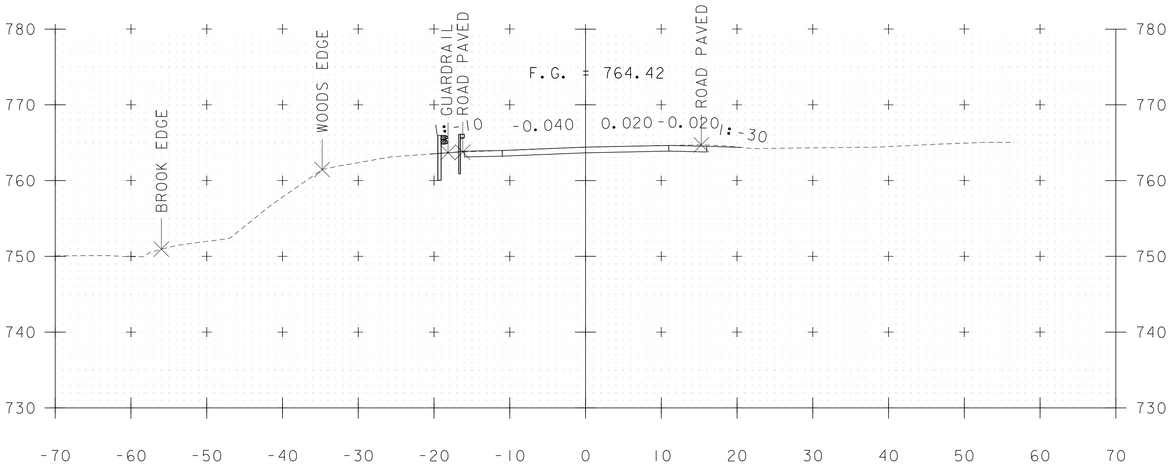
PROJECT NAME: CALAIS	
PROJECT NUMBER: BHF 037-2(12)	
FILE NAME: z12b148xsl.dgn	PLOT DATE: 17-APRIL-2014
PROJECT LEADER: G.K.DONINGTON	DRAWN BY: J.KHERA
DESIGNED BY: J.KHERA	CHECKED BY: A.STOCKIN
MAINLINE CROSS SECTIONS	SHEET 16 OF 22



238+00

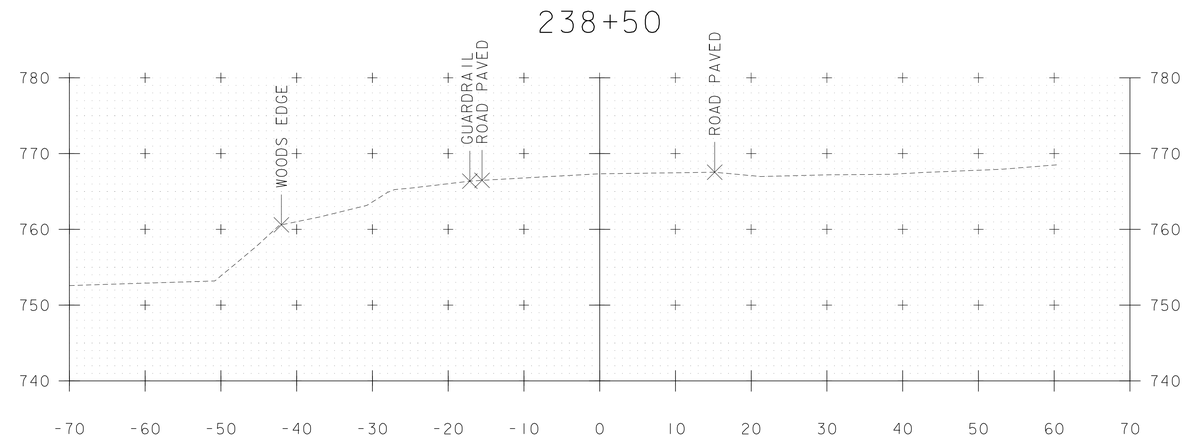


238+50



STA 237+75.00
END APPROACH

237+75

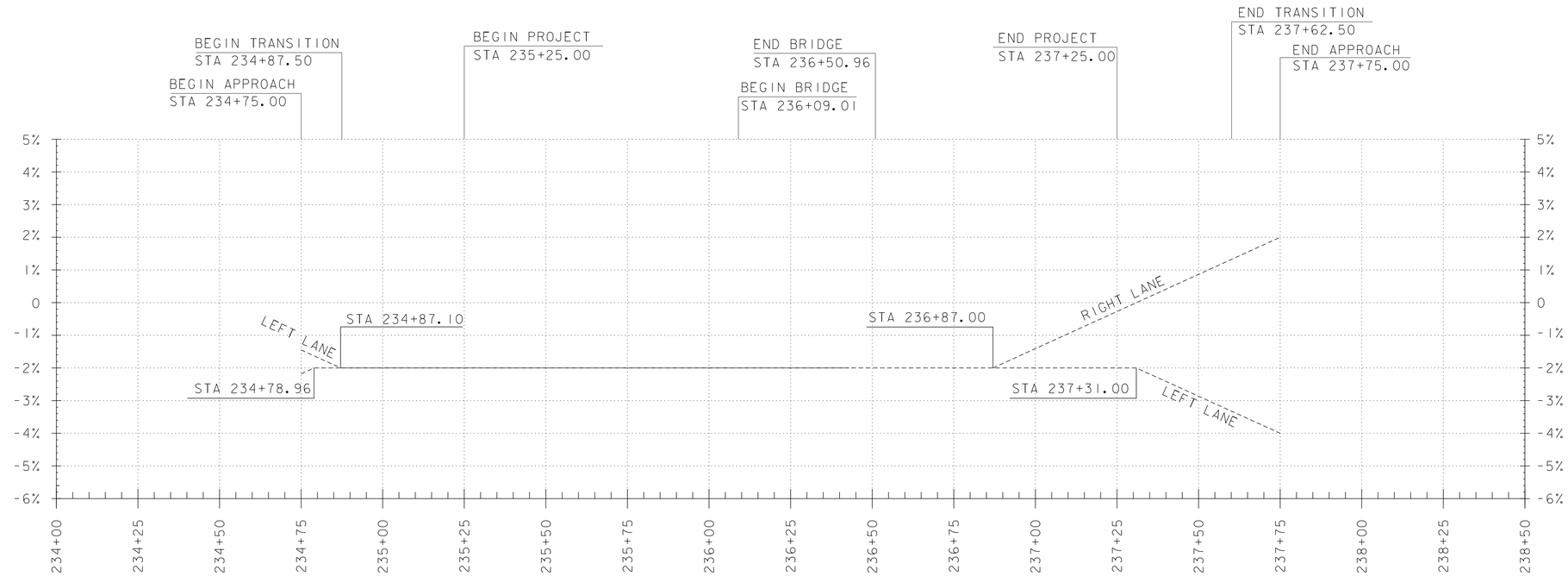


238+25

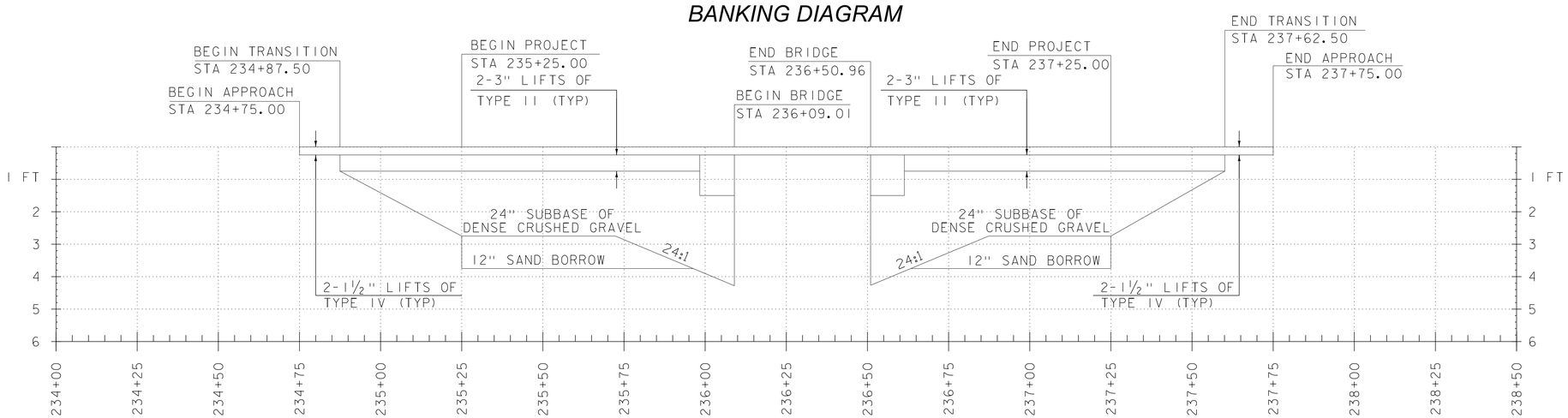
PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

STA. 237+75 TO STA. 238+50

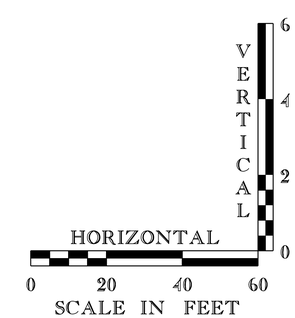
PROJECT NAME: CALAIS	
PROJECT NUMBER: BHF 037-2(12)	
FILE NAME: z12b148xsl.dgn	PLOT DATE: 17-APRIL-2014
PROJECT LEADER: G.K.DONINGTON	DRAWN BY: J.KHERA
DESIGNED BY: J.KHERA	CHECKED BY: A.STOCKIN
MAINLINE CROSS SECTIONS	SHEET 17 OF 22



BANKING DIAGRAM



MATERIAL TRANSITIONS

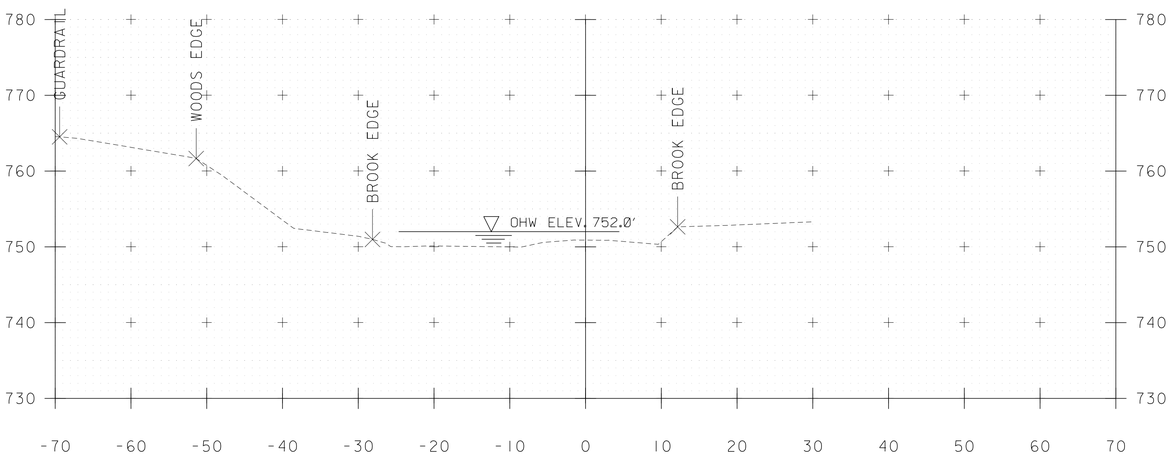


PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

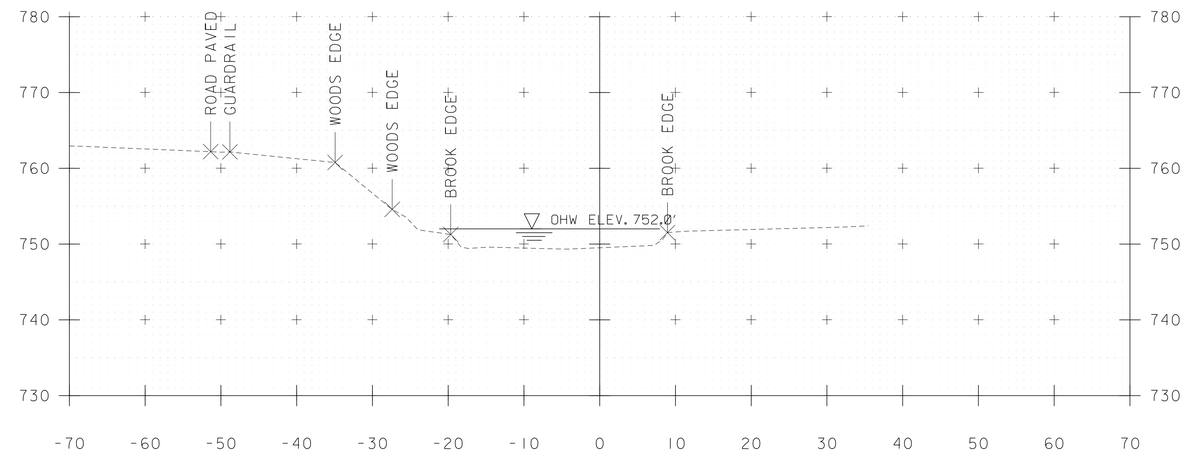
PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

FILE NAME: z12b148Pro.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: J.KHERA
BANKING DIAGRAM AND MATERIAL TRANSITION

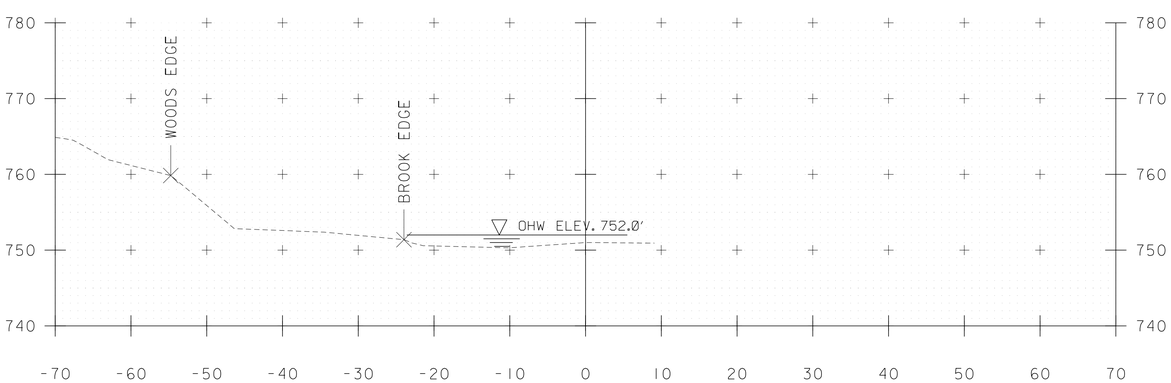
PLOT DATE: 17-APRIL-2014
DRAWN BY: J.KHERA
CHECKED BY: R.BENJAMIN
SHEET 18 OF 22



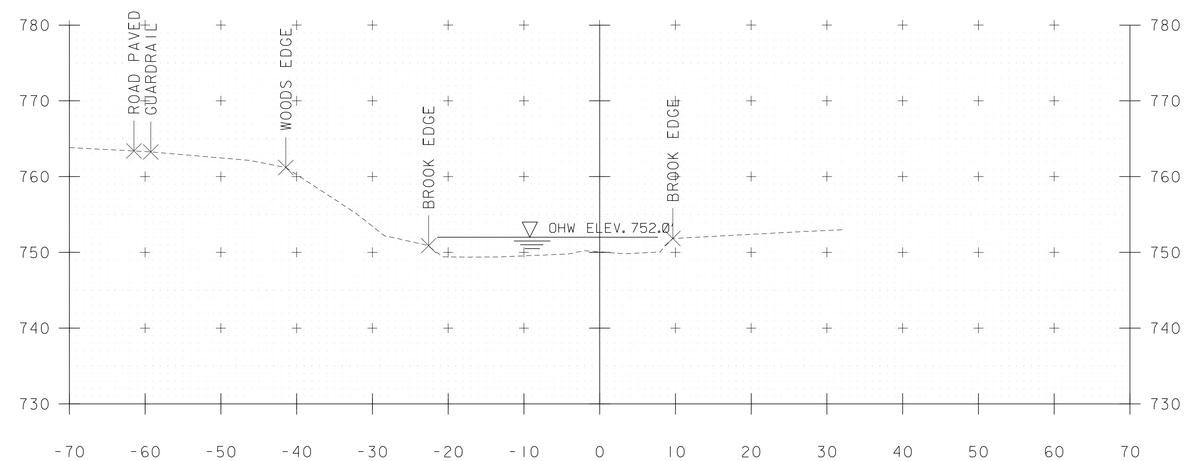
50+25



50+75



50+00



50+50

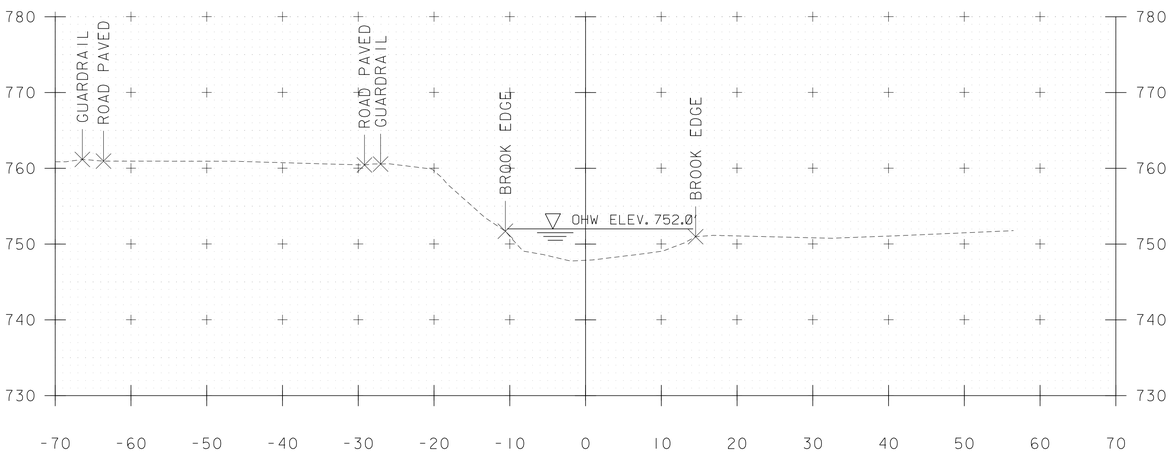
PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

STA. 50+00 TO STA. 50+75

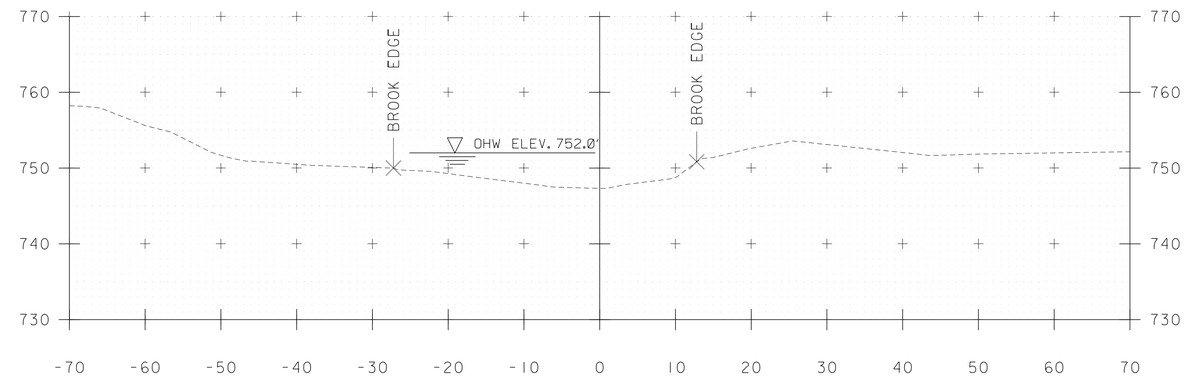
PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

FILE NAME: z12b148xsl.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: J.KHERA
MAINLINE CROSS SECTIONS

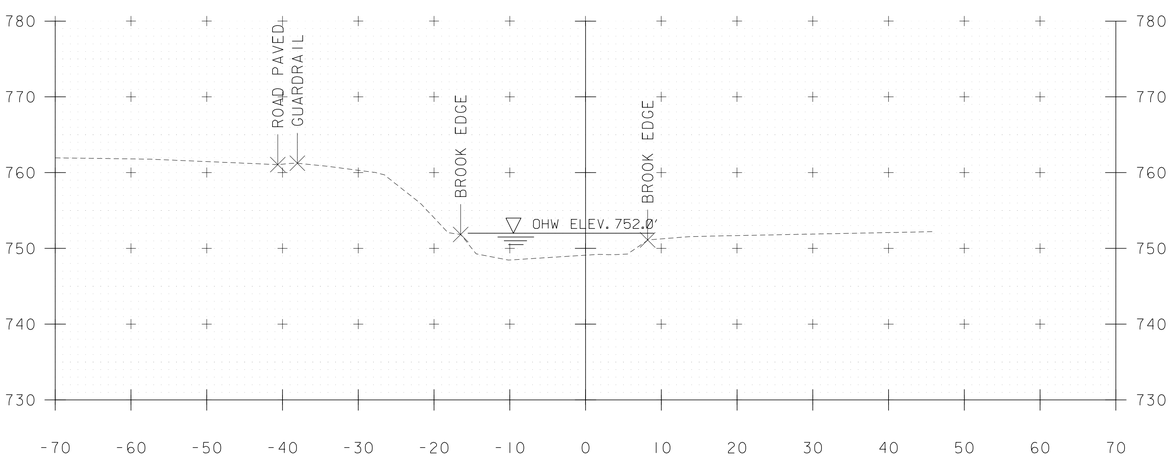
PLOT DATE: 17-APRIL-2014
DRAWN BY: J.KHERA
CHECKED BY: A.STOCKIN
SHEET 19 OF 22



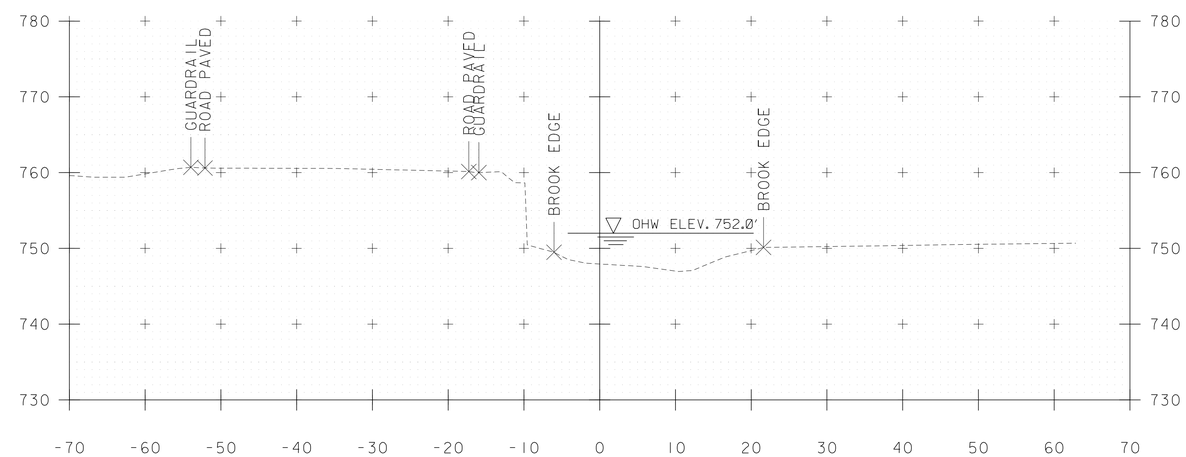
51+25



51+75



51+00



51+50

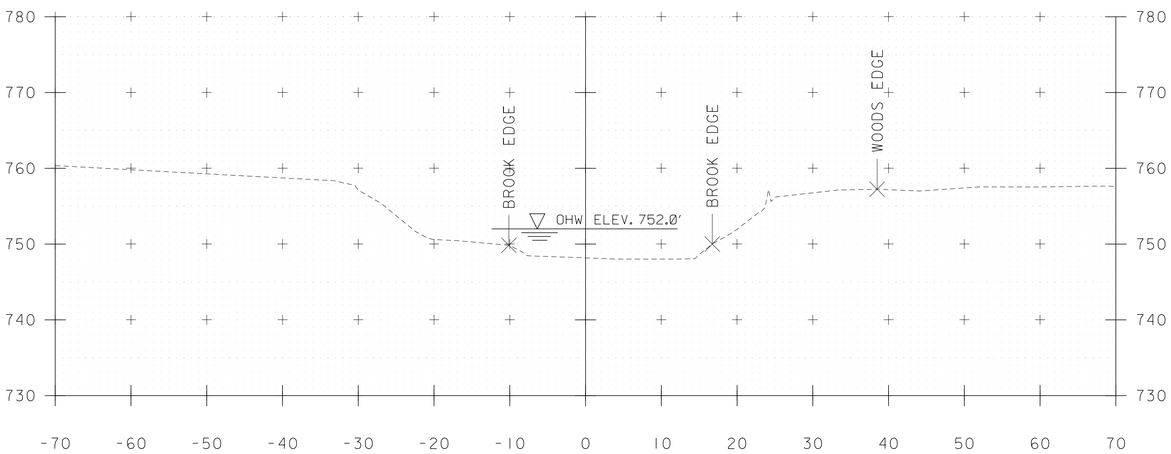
PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

STA. 51+00 TO STA. 51+75

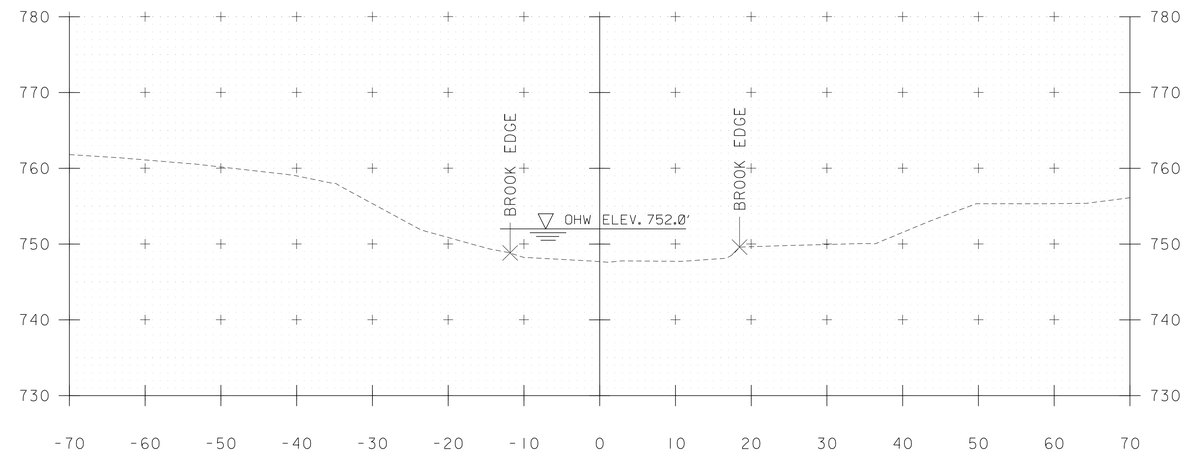
PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

FILE NAME: z12b148xsl.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: J.KHERA
MAINLINE CROSS SECTIONS

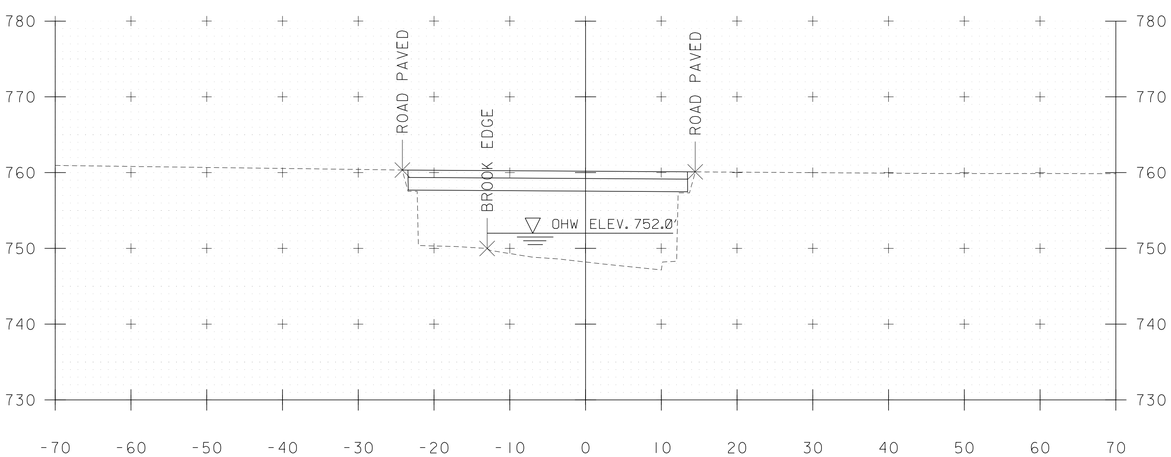
PLOT DATE: 17-APRIL-2014
DRAWN BY: J.KHERA
CHECKED BY: A.STOCKIN
SHEET 20 OF 22



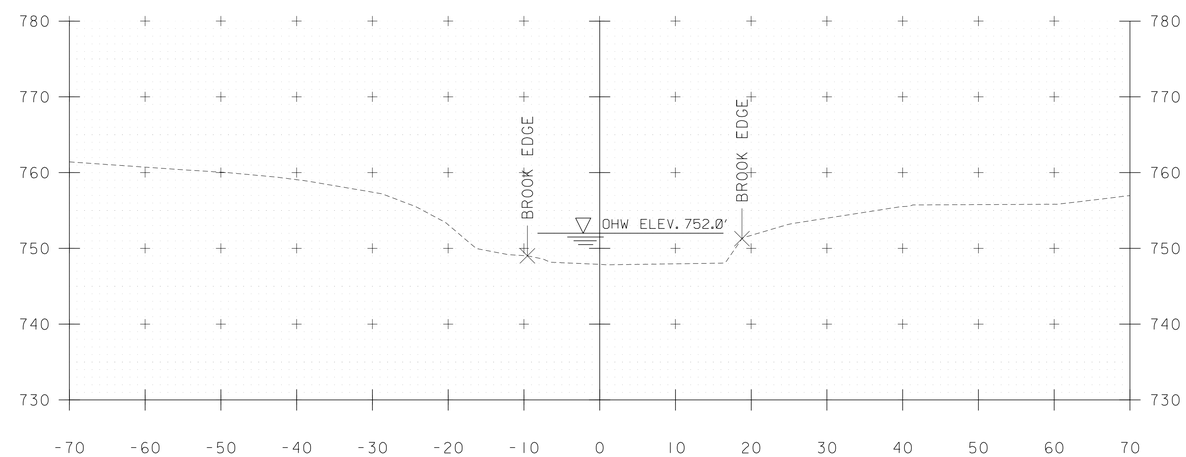
52+25



52+75



52+00



52+50

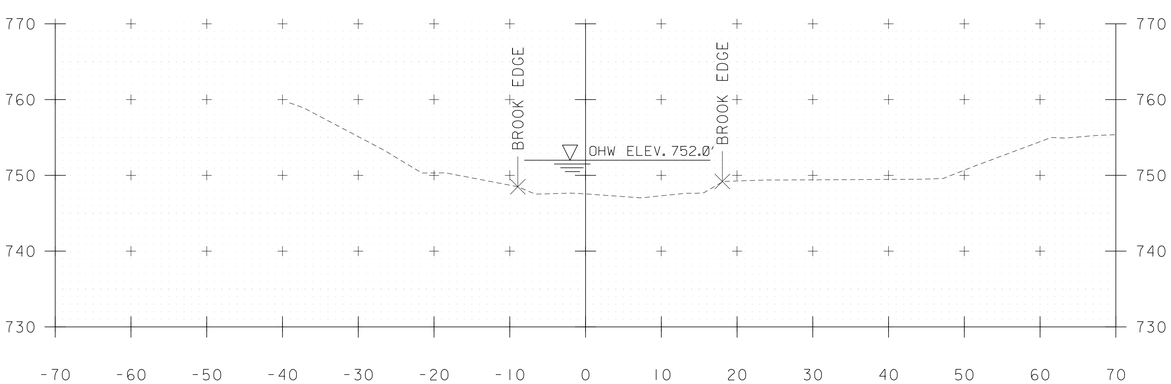
PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

STA. 52+00 TO STA. 52+75

PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

FILE NAME: z12b148xsl.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: J.KHERA
MAINLINE CROSS SECTIONS

PLOT DATE: 17-APRIL-2014
DRAWN BY: J.KHERA
CHECKED BY: A.STOCKIN
SHEET 21 OF 22



52+96

PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

STA. 52+96 TO STA. 52+96

PROJECT NAME: CALAIS
PROJECT NUMBER: BHF 037-2(12)

FILE NAME: z12b148xsl.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: J.KHERA
MAINLINE CROSS SECTIONS

PLOT DATE: 17-APRIL-2014
DRAWN BY: J.KHERA
CHECKED BY: A.STOCKIN
SHEET 22 OF 22