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STANDARDS

B-5	06-01-1994
E-100A	01-02-2004
E-101	05-30-2003
E-102	06-30-2003
E-102A	05-01-2004
E-106	03-01-2004
E-107	06-30-2003
E-107A	08-08-1995
E-108	08-18-1995
E-121	08-08-1995
E-151	05-01-2004
E-155	05-01-2004
E-160	05-20-1999
G-1	01-03-2000
G-1d	01-03-2000
G-18	06-01-1994

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	
R.O.W. LINE	
PROPERTY LINE	
R.O.W. TAKING LINE	
SLOPE RIGHTS	
CLEAR ZONE	
TOP OF CUT	
TOE OF SLOPE	
EDGE OF RIVER	
EDGE OF WETLAND	

DATUM

VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (96)
ADJUSTMENT	Compass

STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT BRIDGE PROJECT

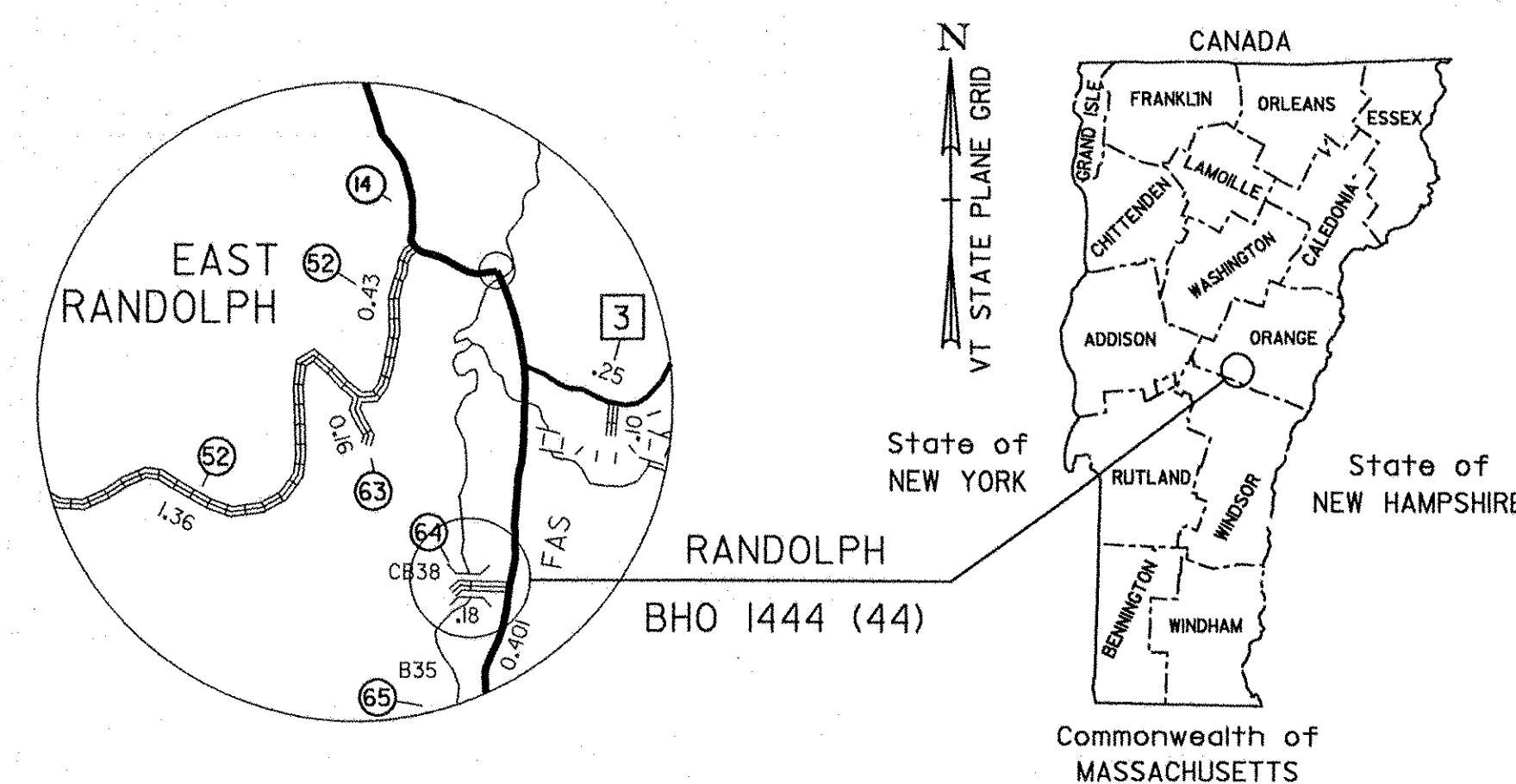
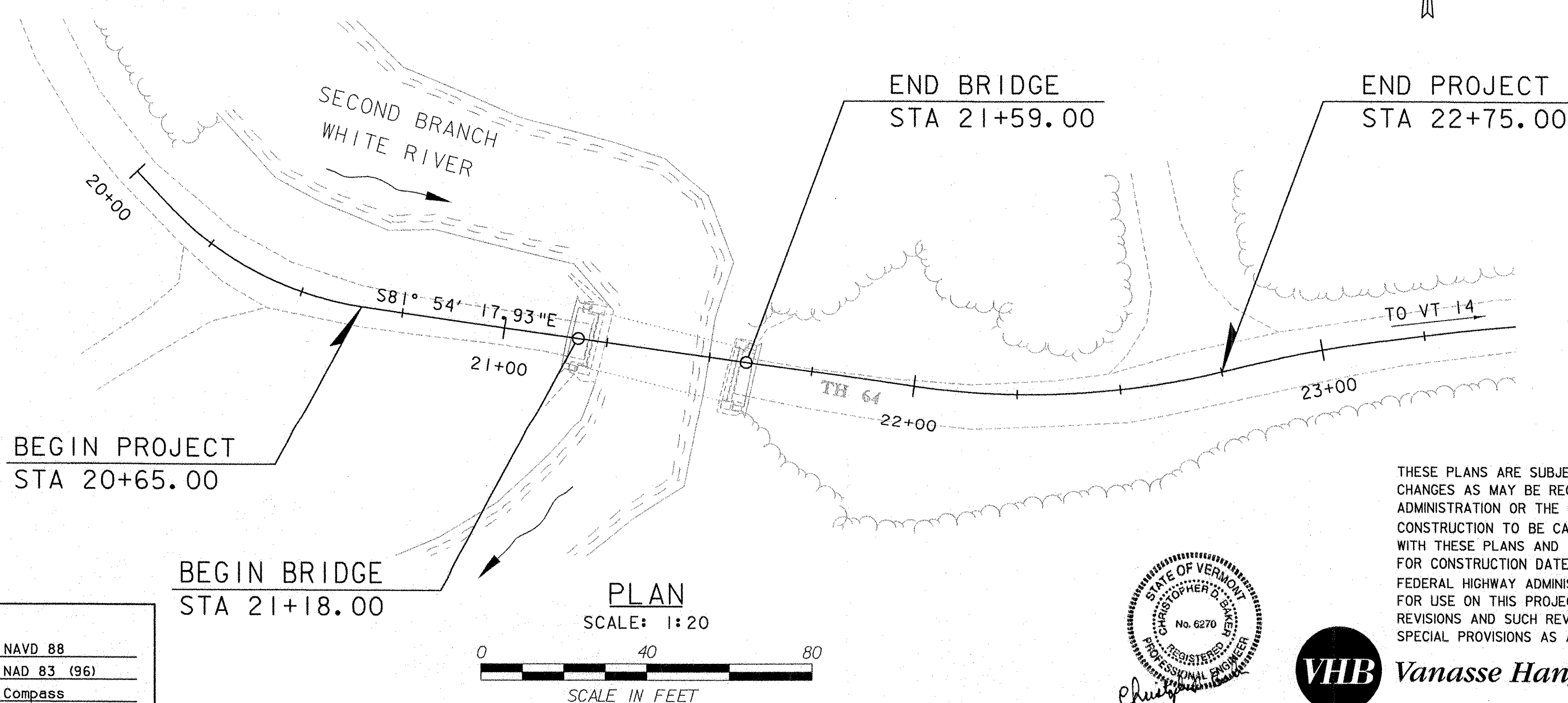
TOWN OF RANDOLPH
COUNTY OF ORANGE

TH 64 (CLASS III - LOCAL ROAD) BRIDGE NO. 38

PROJECT LOCATION: BEGINNING ON TOWN HIGHWAY 64, APPROXIMATELY 0.1 MILES WEST OF ITS INTERSECTION WITH VT ROUTE 14.

PROJECT DESCRIPTION: THE REHABILITATION OF THE BRALEY COVERED BRIDGE (#38).

LENGTH OF STRUCTURE: 41 FEET
LENGTH OF PROJECT: 210 FEET



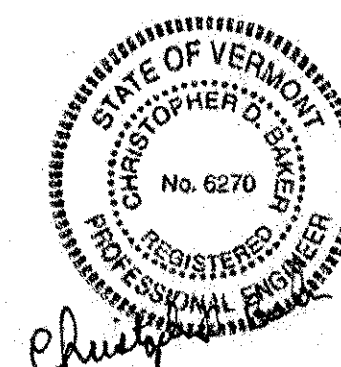
LOCATION MAP

RECORD PLANS

CONTRACTOR:	MILLER CONSTRUCTION - WINDSOR, VT
RESIDENT ENGINEER:	DARYL BASSETT
CONSTRUCTION BEGAN:	SEPTEMBER 14, 2007
CONSTRUCTION COMPLETE:	NOVEMBER 14, 2008
RECORD PLANS BY:	DARYL BASSETT & BEN LOGAN
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.	
BY	RESIDENT ENGINEER
DATE 6/10/09	

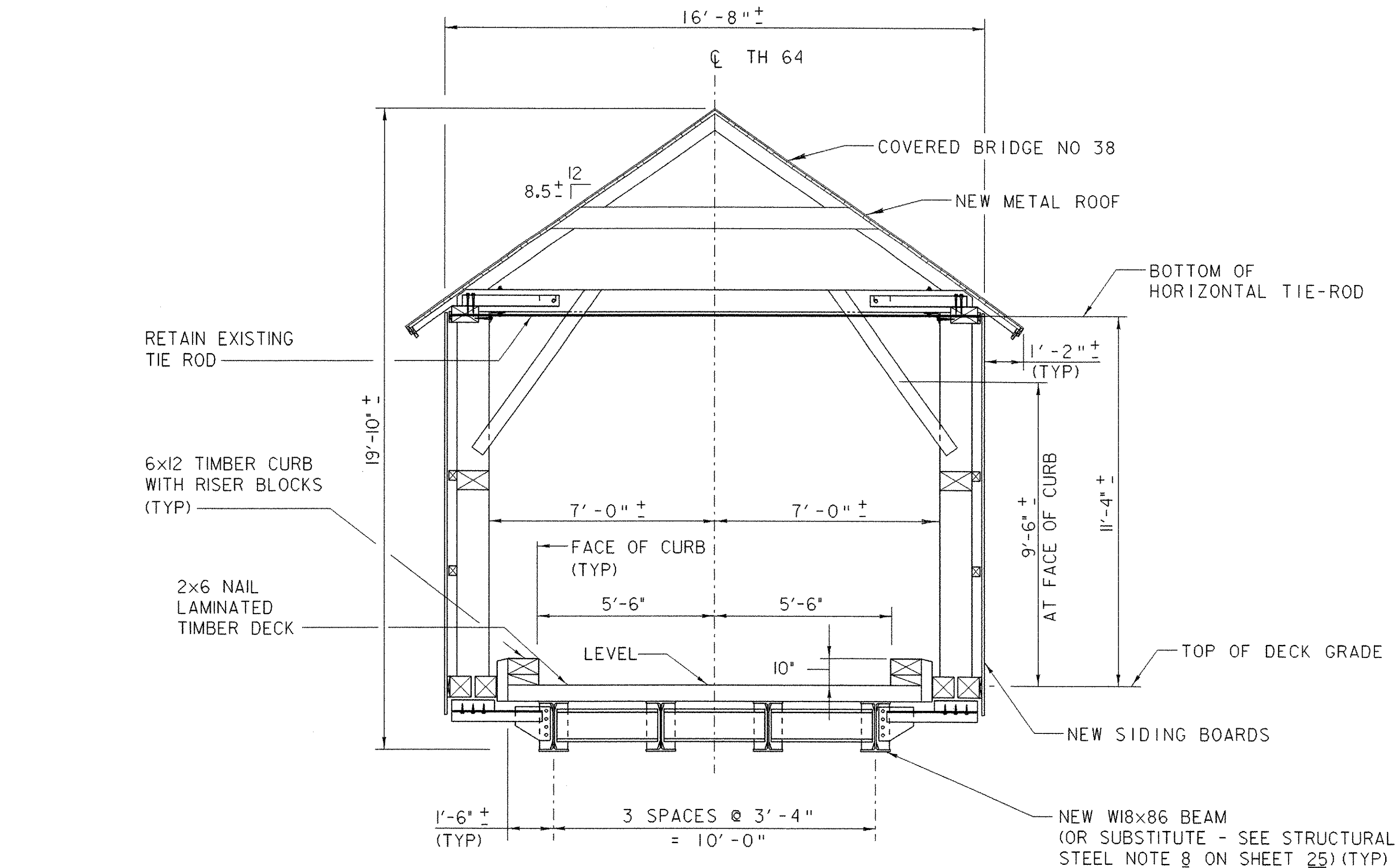
NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT. CONSTRUCTION TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 15, 2006 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

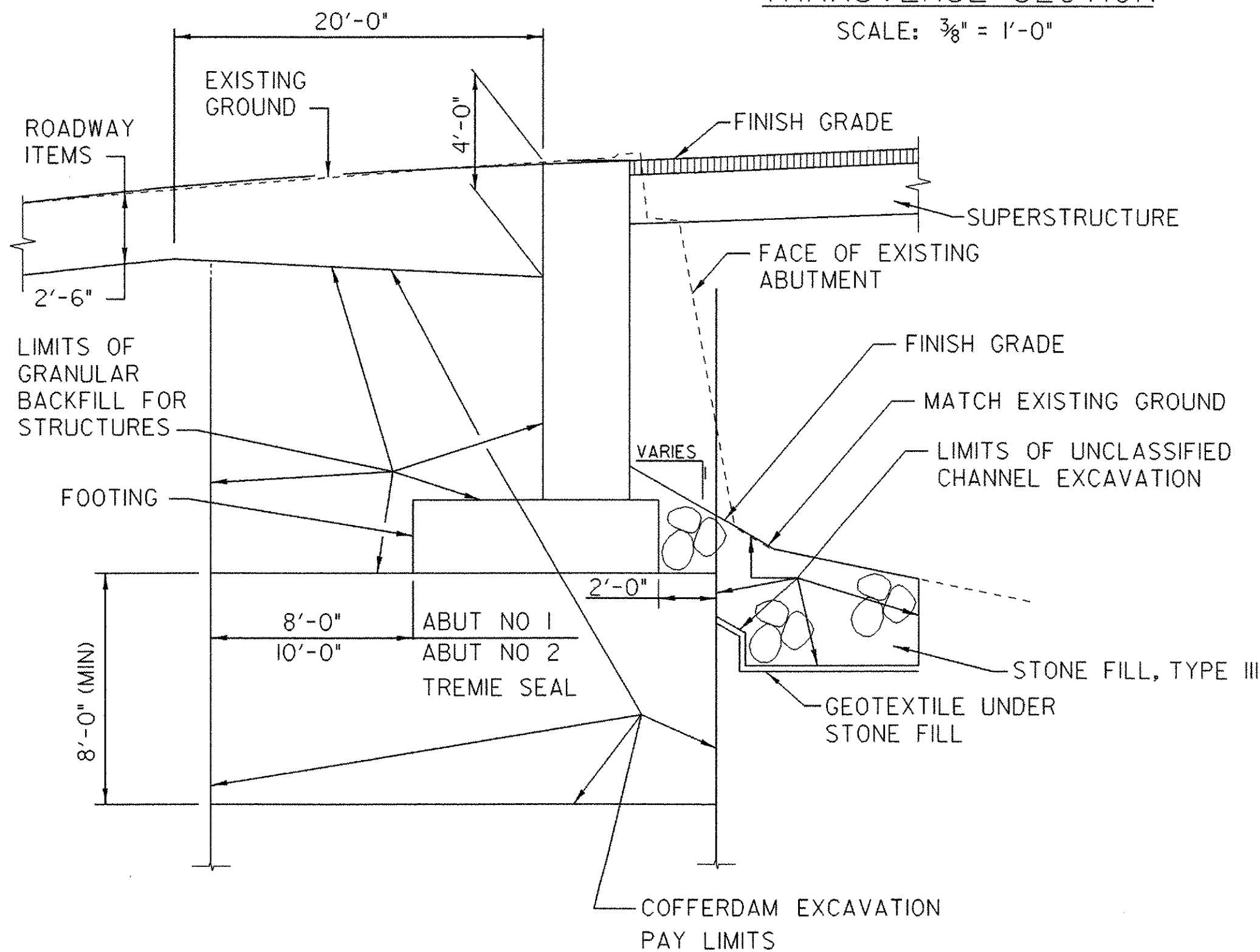


VHB Vanasse Hangen Brustlin, Inc.

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATOR	
APPROVED <i>Paul Kimball</i>	DATE 7-5-07
DIRECTOR OF PROGRAM DEVELOPMENT	
APPROVED <i>Richard Peters</i>	DATE 6-13-07
PROJECT MANAGER : JOHN WEAVER	
PROJECT NAME : RANDOLPH	
PROJECT NUMBER : BHO 1444 (44)	
SHEET 1 OF 39 SHEETS	



TRANSVERSE SECTION
SCALE: 3/8" = 1'-0"



TYPICAL ABUTMENT EARTHWORK SECTION
NOT TO SCALE

NOTES:

1. COFFERDAM SIZE TO BE DETERMINED BY THE CONTRACTOR. THE MINIMUM SIZE SHALL ACCOMMODATE THE TREMIE SEAL DIMENSIONS SHOWN ON THE PLANS.
2. THE PAY LIMITS OF "COFFERDAM EXCAVATION, EARTH" AND "COFFERDAM EXCAVATION, ROCK" SHALL BE 2'-0" OUTSIDE THE PERIMETER OF THE FOOTING EXCEPT AS NOTED.
3. IF A COFFERDAM IS CONSTRUCTED WHICH IS LARGER THAN THE COFFERDAM EXCAVATION PAY LIMITS, PAYMENT FOR ALL UNCLASSIFIED CHANNEL EXCAVATION, INCLUDING THAT PORTION WHICH IS INSIDE THE COFFERDAM BUT OUTSIDE THE COFFERDAM EXCAVATION PAY LIMITS, WILL BE MADE AT THE CONTRACT UNIT PRICE FOR UNCLASSIFIED CHANNEL EXCAVATION.
4. THE COST FOR TREMIE SEALS SHALL BE INCLUDED IN ITEM 208.40.
5. PORTIONS OF THE EXISTING ABUTMENTS THAT ARE OUTSIDE THE COFFERDAM LIMITS SHALL BE REMOVED AS NECESSARY TO ACCOMMODATE THE NEW GRADING AND STONE FILL. COST SHALL BE INCLUDED IN ITEM 203.27, "UNCLASSIFIED CHANNEL EXCAVATION."
6. EXCAVATION REQUIRED FOR ROADWAY ITEMS (ABOVE COFFERDAM EXCAVATION PAY LIMITS) IS INCLUDED IN ITEM 203.15, "COMMON EXCAVATION".

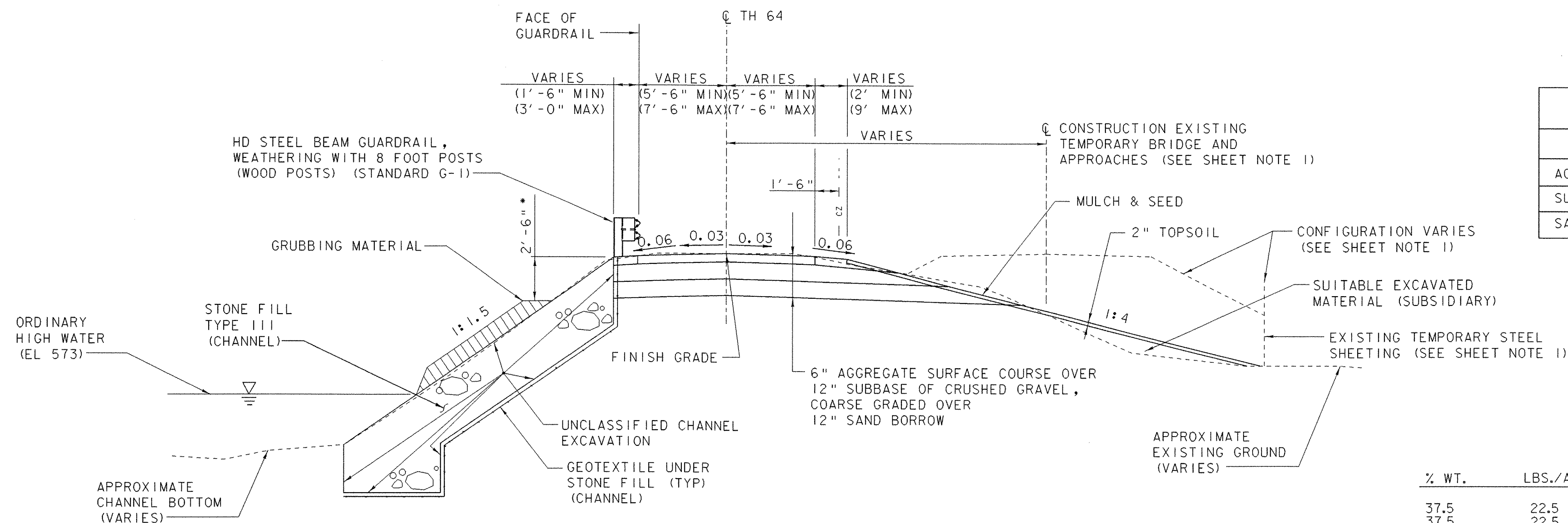
FINAL HYDRAULICS REPORT

HYDROLOGIC DATA Date: June 2006		PROPOSED STRUCTURE	
DRAINAGE AREA: 46.9 sq. mi. CHARACTER OF TERRAIN: Hilly to mountainous. Mostly forested with some open areas. STREAM CHARACTERISTICS: Incised, sinuous and laterally unstable in the project area. NATURE OF STREAMBED: Mostly gravel and sand with some cobbles.		STRUCTURE TYPE: Rehabilitate existing covered bridge on new abutments	
PEAK FLOW DATA Q 2.33 = 1,500 cfs Q 10 = 3,700 cfs Q 25 = 5,950 cfs Q 50 = 7,000 cfs Q 100 = 8,550 cfs Q 500 = 13,700 cfs		CLEAR SPAN(NORMAL TO STREAM): 35' VERTICAL CLEARANCE ABOVE STREAMBED: 14' WATERWAY OF FULL OPENING: 408 sq. ft.	
DATE OF FLOOD OF RECORD: November 1927 ESTIMATED DISCHARGE: unknown WATER SURFACE ELEV.: unknown NATURAL STREAM VELOCITY: @ Q25 = 8.3 fps ICE CONDITIONS: Moderate to heavy 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:		WATER SURFACE ELEVATIONS AT: Q2.33 = 575.0' VELOCITY= 7.1 fps Q10 = 578.9' " 10.7 fps Q25 = 580.4' " 10.7 fps Q50 = 582.3' " 9.0 fps Q100 = 582.9' " 9.8 fps	
WATERSHED STORAGE: 1.0% HEADWATERS: UNIFORM: X IMMEDIATELY ABOVE SITE:		IS THE ROADWAY OVERTOPPED BELOW Q100: Yes FREQUENCY: Between Q2.33 and Q10 RELIEF ELEVATION: 577.2' DISCHARGE OVER ROAD @Q100: 4,355 cfs	
EXISTING STRUCTURE INFORMATION STRUCTURE TYPE: Single span covered bridge YEAR BUILT: 1904 CLEAR SPAN(NORMAL TO STREAM): 31' VERTICAL CLEARANCE ABOVE STREAMBED: 14' WATERWAY OF FULL OPENING: 362 sq. ft. DISPOSITION OF STRUCTURE: Rehabilitate superstructure on new abutments TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown		AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 580.0' VERTICAL CLEARANCE: @ Q10 = 1.1'	
WATER SURFACE ELEVATIONS AT: Q2.33 = 575.2' VELOCITY = 8.1 fps Q10 = 579.3' " 11.6 fps Q25 = 581.8' " 7.9 fps Q50 = 582.4' " 9.2 fps Q100 = 583.2' " 10.0 fps		SCOUR: Maximum contraction scour depth = 4' and occurs at Q25.	
LONG TERM STREAMBED CHANGES: There is a 2' deep scour hole starting upstream of the bridge and extending through the bridge. There has been some undermining of abutments. FREQUENCY: Between Q2.33 and Q10 RELIEF ELEVATION: 577.2' DISCHARGE OVER ROAD @Q100: 4,693 cfs		REQUIRED CHANNEL PROTECTION: Stone Fill, Type III	
UPSTREAM STRUCTURE TOWN: Randolph HIGHWAY #: VT 14 CLEAR SPAN: 54' YEAR BUILT: 1989 STRUCTURE TYPE: Steel beam bridge DISTANCE: 5,400' STRUCTURE #: 36 CLEAR HEIGHT: 10' FULL WATERWAY: 430 sq. ft.		PERMIT INFORMATION AVERAGE DAILY FLOW: 100 cfs DEPTH OR ELEVATION: ORDINARY LOW WATER: 50 cfs Elev. 569.0' ORDINARY HIGH WATER: 650 cfs Elev. 573'	
DOWNSTREAM STRUCTURE TOWN: Randolph HIGHWAY #: T.H. 65 CLEAR SPAN: 28' YEAR BUILT: 1919 STRUCTURE TYPE: Steel beam bridge DISTANCE: 2,500' STRUCTURE #: 35 CLEAR HEIGHT: 10' FULL WATERWAY:		TEMPORARY BRIDGE REQUIREMENTS STRUCTURE TYPE: The temporary bridge will be constructed under a separate project. CLEAR SPAN (NORMAL TO STREAM): VERTICAL CLEARANCE ABOVE STREAMBED: WATERWAY AREA OF FULL OPENING:	
DESIGN CRITERIA: 1. DESIGN LIVE LOAD AASHTO HS20-44 2. DESIGN SPAN 37'-0" 3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 3.3 KSF ON LEDGE N/A 4. ALLOWABLE LOAD FOR PILING N/A TYPE N/A ESTIMATED LENGTH N/A 5. STRUCTURAL STEEL AASHTO GRADE 50 6. REINFORCING STEEL GRADE 60 7. HIGH PERFORMANCE CONCRETE CLASS A f'c = 4000 PSI HIGH PERFORMANCE CONCRETE CLASS B f'c = 3500 PSI CONCRETE CLASS C f'c = 3000 PSI (TREMIE)		TRAFFIC DATA 2007 ADT = 40 2007 DHV < 10 2007 %D = 64 2007 %T = 4.0 2007 ADTT < 5 2007-2027 ESAL'S < 10,000 DESIGN SPEED = N/A (REFER TO VERMONT STATE STANDARDS SECTION 6.6)	
TRAFFIC MAINTENANCE: 1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE NO OR ON TEMPORARY BRIDGE YES 2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY ONE-WAY TRAFFIC CONTROL SIGNALS REQUIRED NO MINIMUM ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE? N/A		ADDITIONAL INFORMATION	

WORKING STRESS LOAD RATING (TONS)							
STRESS LEVELS (LOAD FACTOR)	TRUCK						
	H	HS	SS2	6 AXLE	3A STR	4A STR	5A SEMI
INVENTORY Fb'	26	48					
POSTED 1.2x Fb'	32	58	119		64	93	115
OPERATING 1.33x Fb'		64	132	157	71	103	
LOAD RATING BASED ON NO 1 OR NO 2 S-P-F LAMINATED DECK WITH Fb' = 1.46x875 PSI							

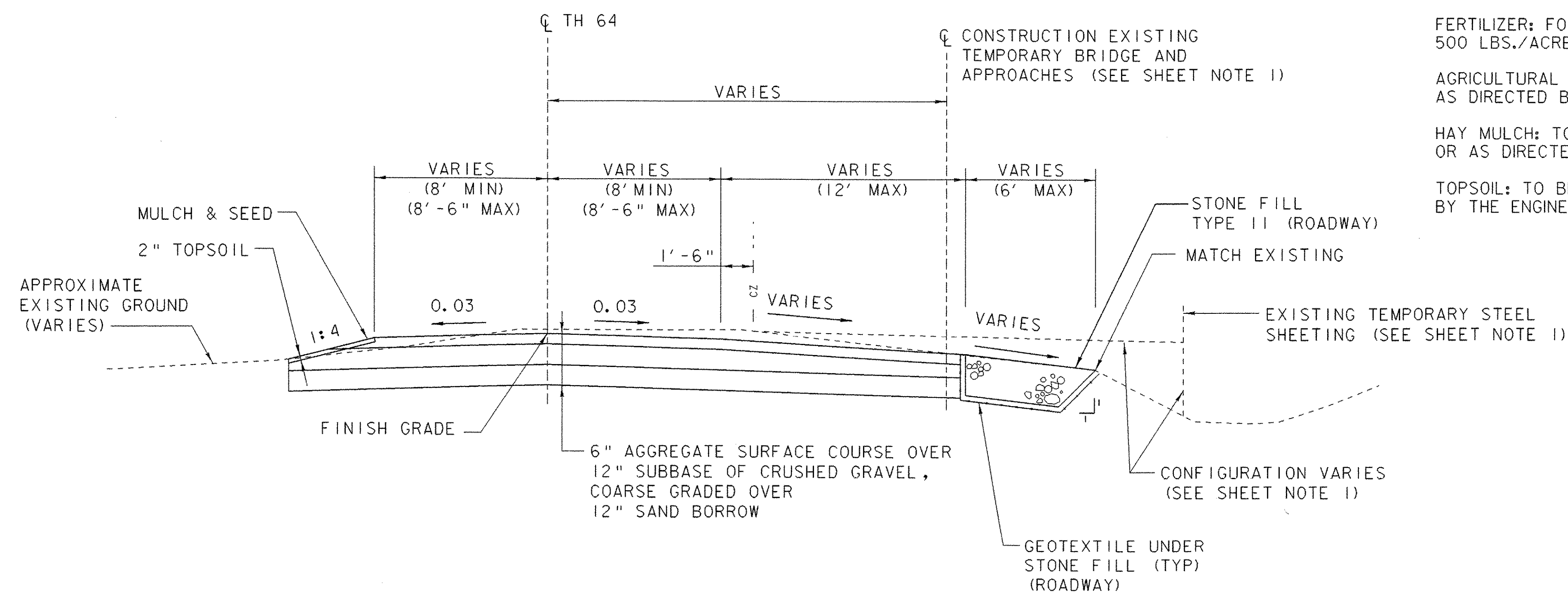


STATE OF VERMONT	
AGENCY OF TRANSPORTATION	
Town Of RANDOLPH	Bridge No. 38
Highway No. TH 64	Log Sta.
	Surv. Sta.
PRELIMINARY INFORMATION SHEET	
Designed By K. ZIENKIEWICZ	Drawn By M. WILLIAMS
Checked By S. HODGDON	Date 6/07
Bridge Design Supervisor S. HODGDON	Date 6/07
PROJECT RANDOLPH	PROJECT NO. BHO 1444 (44)
I.G.C. Info.	
Bridge Sheet No. z04j146pisht.dgn	Sheet 2 of 39



TYPICAL WEST APPROACH SECTION

SCALE: 1/4" = 1'0"



TYPICAL EAST APPROACH SECTION

SCALE: 1/4" = 1'0"

(SEE WEST APPROACH SECTION
FOR TYPICAL GUARDRAIL DETAIL
AND ROADWAY WIDTH AT BRIDGE)

MATERIAL TOLERANCES

MATERIAL ITEM	TOLERANCE
AGGREGATE SURFACE COURSE	$\pm \frac{1}{2}$ "
SUBBASE	± 1 "
SAND BORROW	± 1 "

SEEDING FORMULA RURAL AREAS

% WT.	LBS./A.	NAME	PUR %	GERM %
37.5	22.5	CREeping RED FESCUE	98	85
37.5	22.5	TALL FESCUE	95	90
5.0	3.0	RED TOP	95	90
15.0	9.0	BIRDSFOOT TREFOIL	98	85
5.0	3.0	ANNUAL RYEGRASS	95	85
100.0	60.0			

GENERAL NOTES

SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.

SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.

FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 LBS./ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

SHEET NOTE:

1. SEE SHEET 25 FOR TEMPORARY BRIDGE AND APPROACH
NOTE AND BRIDGE REMOVAL NOTES.

PROJECT NAME: RANDOLPH

PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146typ.dgn

PROJECT LEADER: S. HODGDON

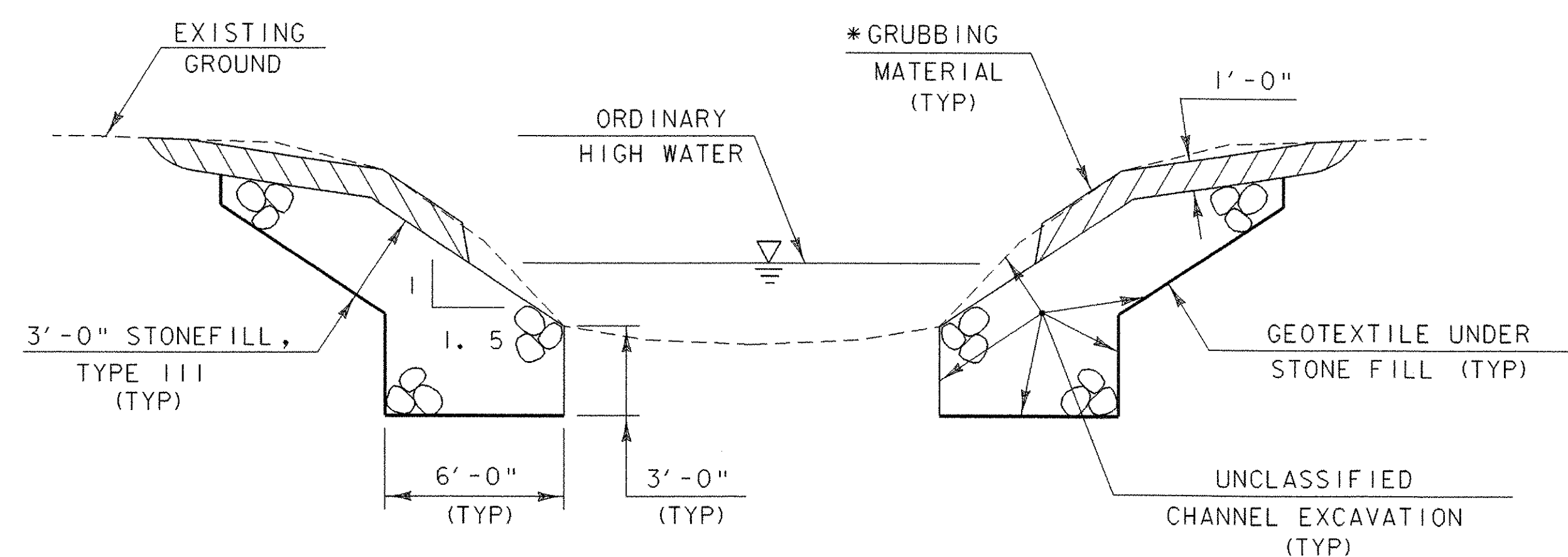
DESIGNED BY: K. ZIENKIEWICZ

TYPICAL SECTIONS & DETAILS SHEET (1 OF 2) SHEET 3 OF 39

PLOT DATE: 26-JUN-2007

DRAWN BY: K. WENTWORTH

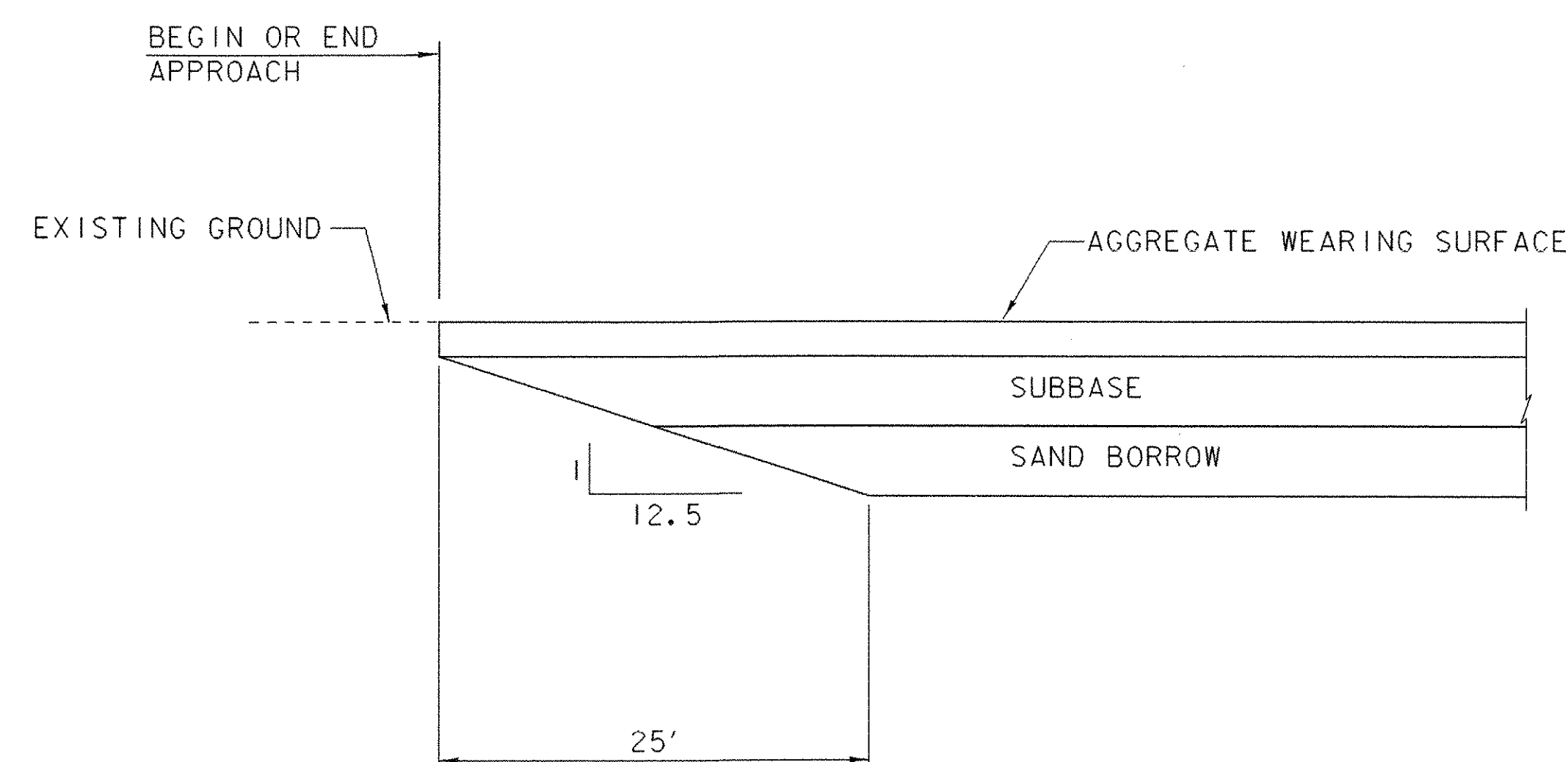
CHECKED BY: S. HODGDON



TYPICAL CHANNEL SECTION

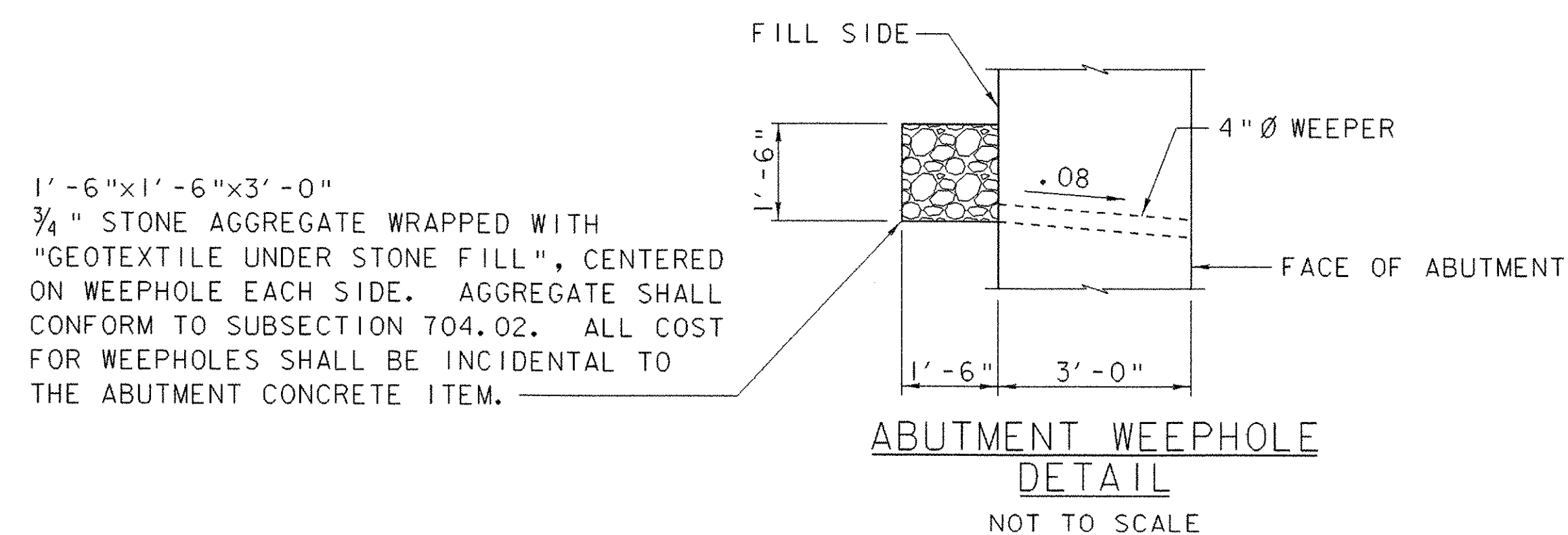
NOT TO SCALE

*GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE. SEE PLAN SHEETS AND CROSS SECTIONS FOR LOCATIONS AND LIMITS OF STONE FILL.



SUBBASE TRANSITION DETAIL

NOT TO SCALE



QUANTITY SHEET (1 OF 3)

[illegible]

PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BHO 1444 (44)	
FILE NAME: z04j146qnty.xls	PLOT DATE: 7/2/2007
PROJECT MANAGER: S. HODGDON (VHB)	DRAWN BY: K. WENTWORTH
DESIGNED BY: S. HODGDON	CHECKED BY: K. ZIENKIEWICZ
QUANTITY SHEET (1 OF 3)	SHEET 5 OF 39

QUANTITY SHEET (2 OF 3)

[illegible]

PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BHO 1444 (44)	
FILE NAME: z04j146qnty.xls	PLOT DATE: 7/2/2007
PROJECT MANAGER: S. HODGDON (VHB)	DRAWN BY: K. WENTWORTH
DESIGNED BY: S. HODGDON	CHECKED BY: K. ZIENKIEWICZ
QUANTITY SHEET (2 OF 3)	SHEET 6 OF 39

QUANTITY SHEET (3 OF 3)

[illegible]

PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BHO 1444 (44)	
FILE NAME: z04j146qnty.xls	PLOT DATE: 7/2/2007
PROJECT MANAGER: S. HODGDON (VHB)	DRAWN BY: K. WENTWORTH
DESIGNED BY: S. HODGDON	CHECKED BY: K. ZIENKIEWICZ
QUANTITY SHEET (3 OF 3)	SHEET 7 OF 39

GPS CONTROL POINTS

HVCTRL # 1

STANDARD DISK STAMPED

East Randolph

N = 521893.79
E = 1626547.81
ELEV. = 657.60

* To reach from the intersection of VT route 14 and VT route 66 in East Randolph go south along route 14 for 0.9 mi to the intersection of a gravel drive left, at the south edge of a cemetery, and the site of the mark on the left, south of the gravel drive. The mark is set 1 in below the ground surface in the top of a 12 in diameter concrete monument poured 4 ft deep. It is 21.7 ft east of and about 1.6 ft higher than the centerline of route 14, 16.7 ft south of the centerline of the gravel drive, 43 ft east of pole # 30T/7/122/61/30, 48.6 ft southwest of the southwest corner of the gravestone of Blodgett, and 1 ft west of a fiberglass witness post.

HVCTRL # 2

STANDARD DISK STAMPED

East Randolph Az Mk

N = 520093.26
E = 1626438.54
ELEV. = 647.11

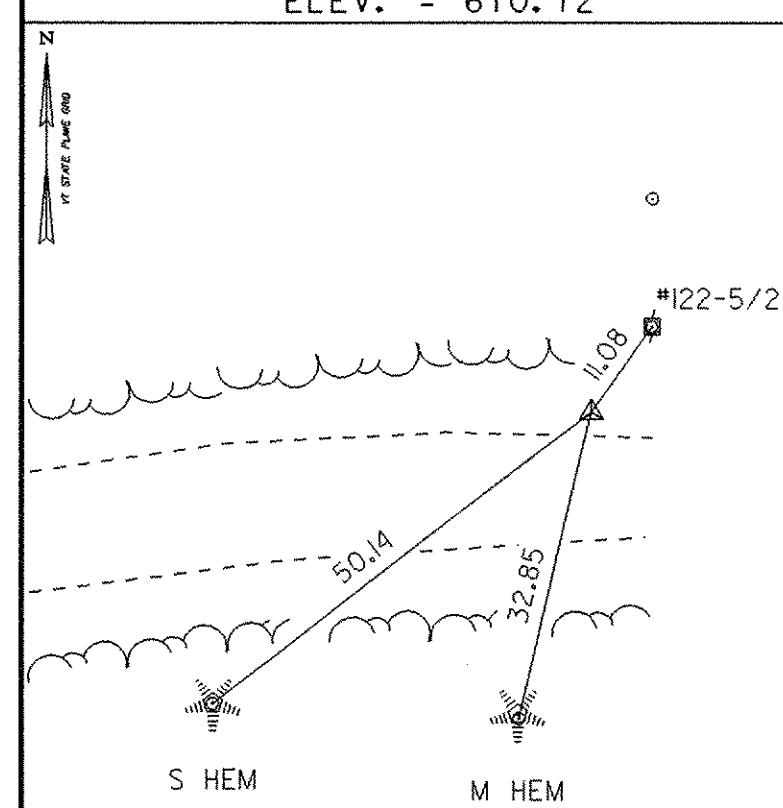
* To reach from the intersection of VT route 14 and VT route 66 in East Randolph go south along route 14 for 0.6 mi to the East Randolph School on the left and the site of the mark on the left, in a lawn in front of the school. The mark is set 4 in below the ground surface in the top of a 12 in diameter concrete monument poured 4 ft deep. It is 22 ft east of and about 0.3 ft lower than the centerline of route 14, 42.7 ft north of the centerline of the most southern entrance drive to the school, 89 ft west northwest of the southwest corner of the school building, and 59 ft southwest of pole # 61/20 and a fiberglass witness post.

* DESCRIPTION PROVIDED BY VERMONT AGENCY OF TRANSPORTATION GEODETIC SURVEY UNIT

TRAVERSE TIES

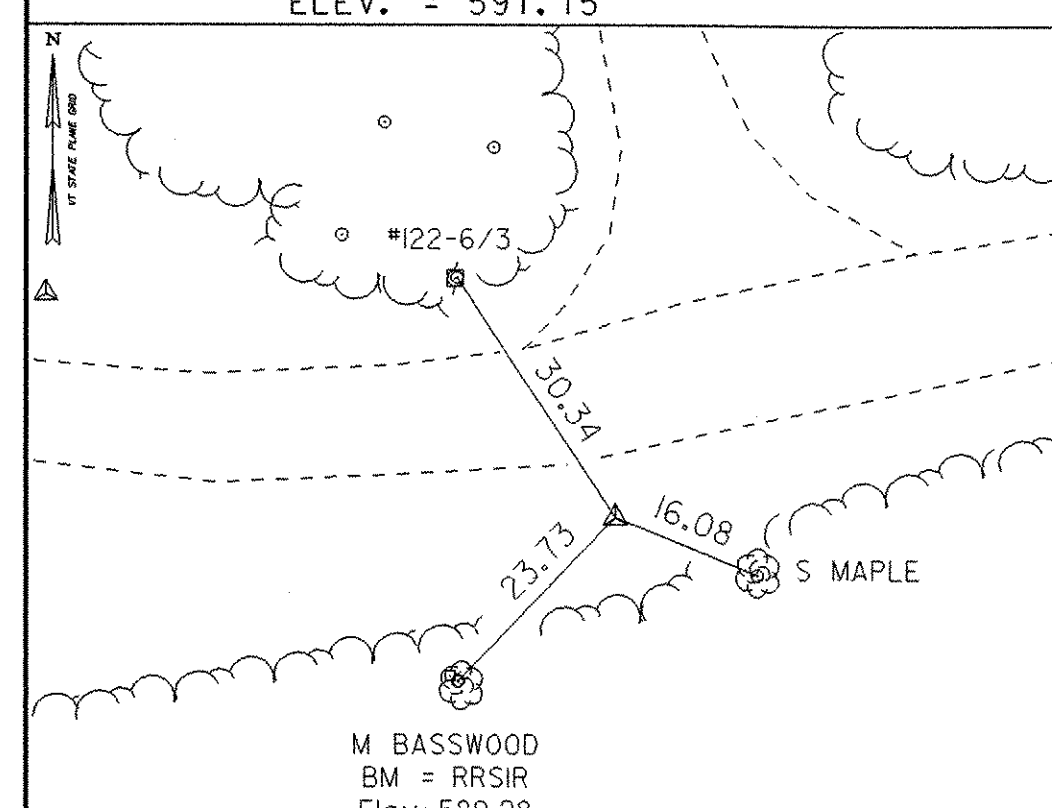
HVCTRL #4

NORTH = 520686.55
EAST = 1626117.80
ELEV. = 610.72



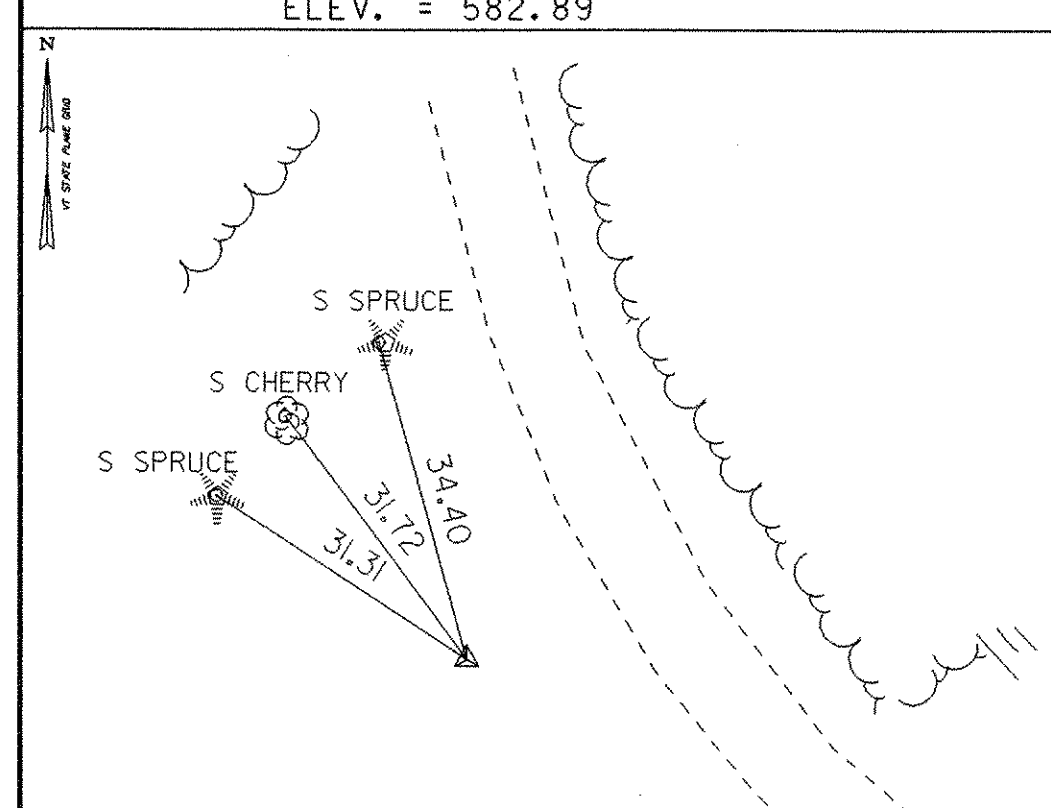
HVCTRL #5

NORTH = 520647.42
EAST = 1625994.71
ELEV. = 591.15



HVCTRL #6

NORTH = 520725.38
EAST = 1625715.30
ELEV. = 582.89



NORTH =
EAST =
ELEV. =

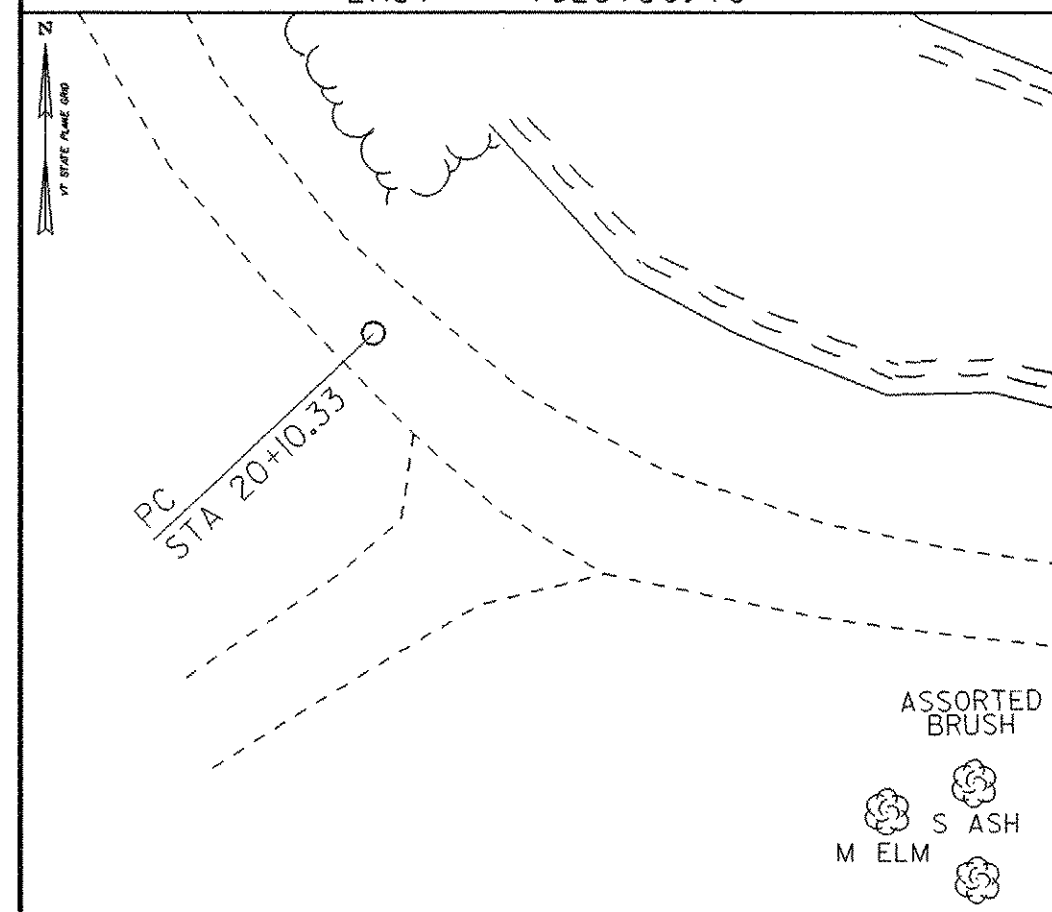
NORTH =
EAST =
ELEV. =

MAIN TRAVERSE COMPLETED 08/24/05 by R. Gilman P.C. & P. Winters (VTrans)

ALIGNMENT
COORDINATES

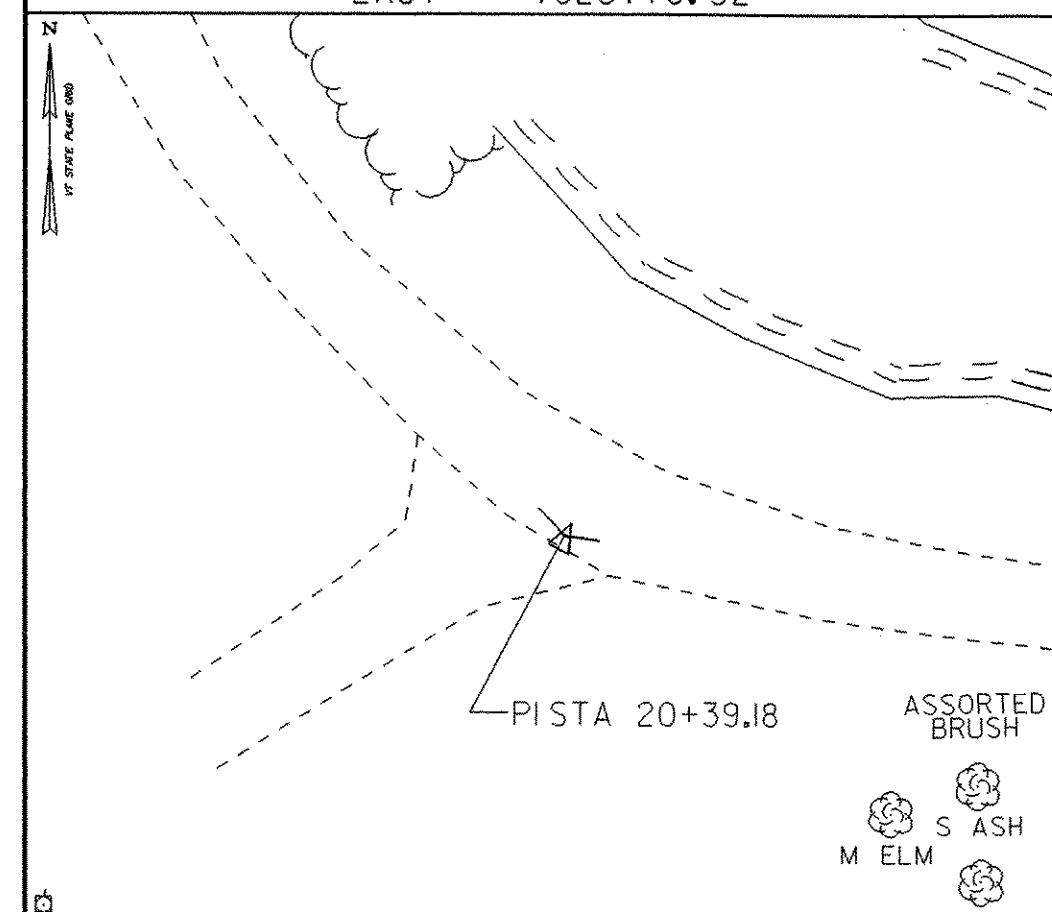
PC 20+10.33

NORTH = 520706.29
EAST = 1625756.79



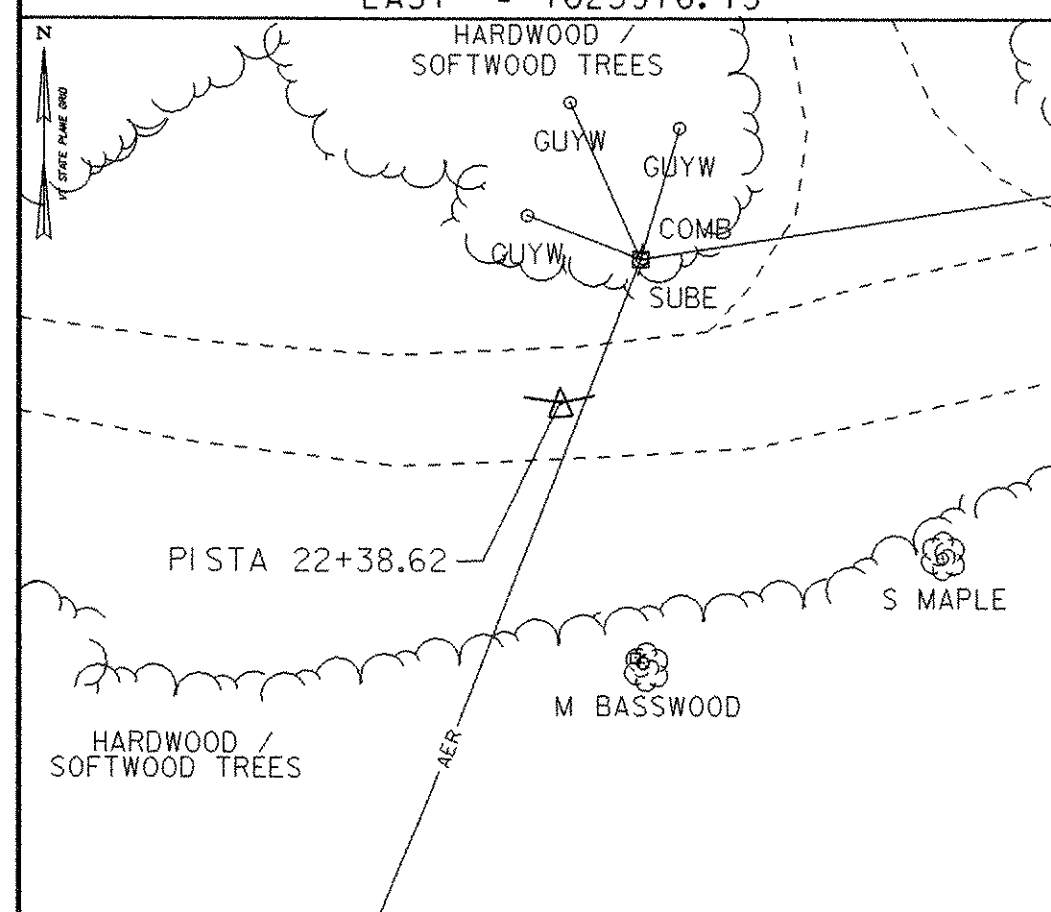
PI 20+39.18

NORTH = 520685.24
EAST = 1625776.52



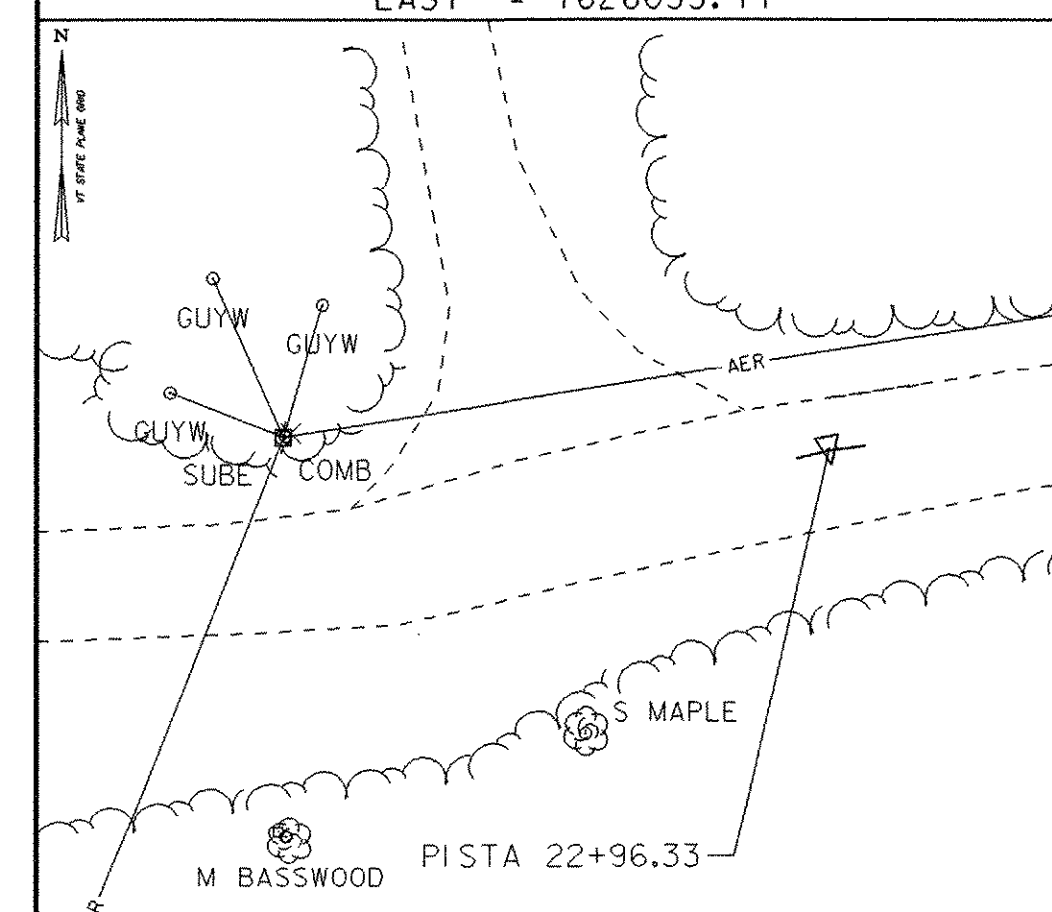
PI 22+38.62

NORTH = 520656.67
EAST = 1625976.15



PI 22+96.33

NORTH = 520670.95
EAST = 1626033.11



NORTH =
EAST =

DATUM

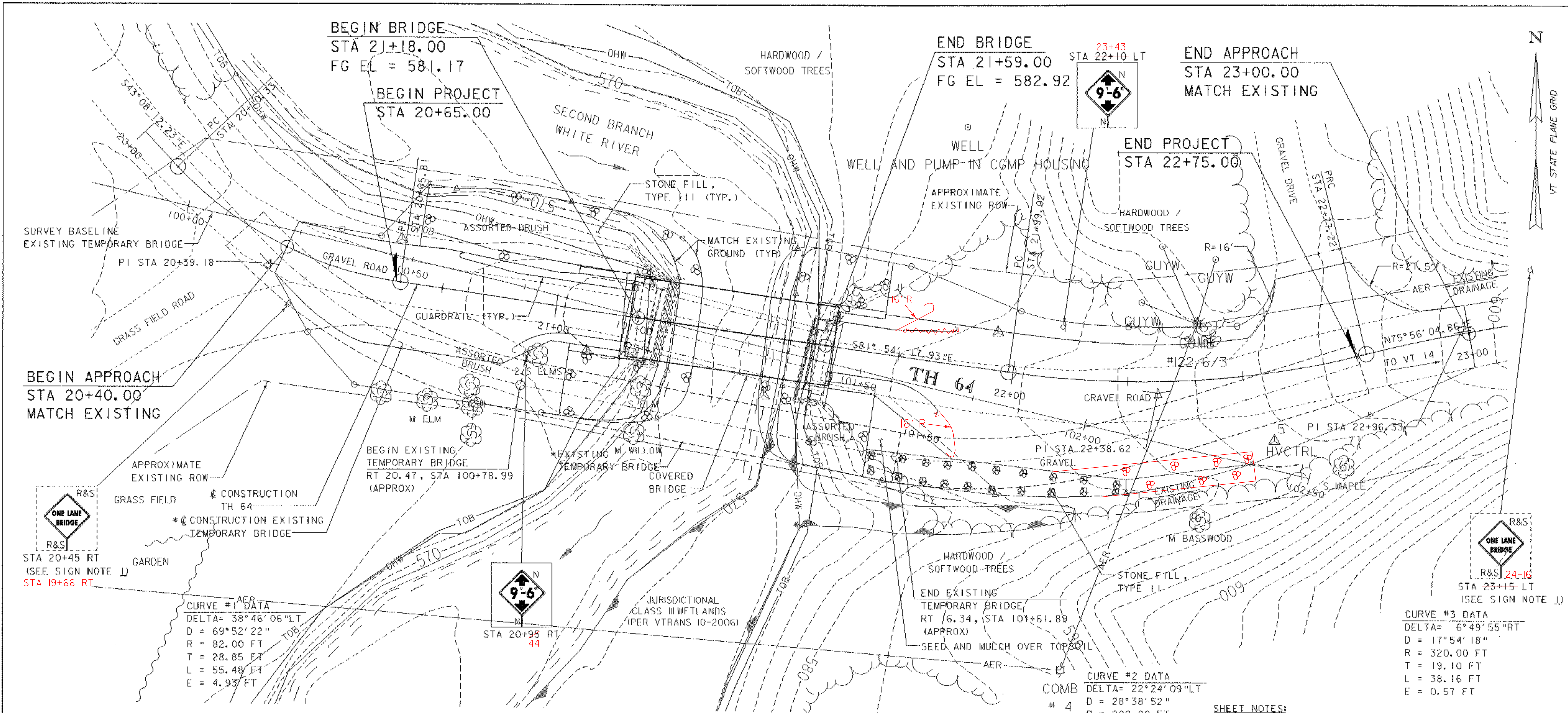
VERTICAL NAVD88
HORIZONTAL NAD 83(96)
ADJUSTMENT Compass

VHB Vanasse Hangen Brustlin, Inc.

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146+1e.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: K. ZIENKIEWICZ
TIE SHEET

PLOT DATE: 26-JUN-2007
DRAWN BY: VTRANS/KDW
CHECKED BY: S. HODGDON
SHEET 8 OF 39



CONSTRUCTION NOTES

STEEL BEAM GUARDRAIL
(WITH ROUNDED W-BEAM END SECTIONS)

STA 20+79.40, 7.0 LT - STA 21+16.00, 5.5 LT
STA 20+92.20, 10.2 RT - STA 21+16.00, 5.5 LT
STA 21+61.00, 5.5 LT - STA 21+86.00, 7.0 LT **REVISED AS SHOWN**
STA 21+61.00, 5.5 RT - STA 21+84.80, 10.2 RT **REVISED AS SHOWN**

LANDSCAPING NOTES

1-SALIX NIGRA (HEIGHT 4' - 6') (BLACK WILLOW) STA 20+85.00, 24.0' RT
1-ACER SACCHARINUM (HEIGHT 4' - 6') (SILVER MAPLE) STA 20+65.00, 24.0' RT

TYPE III STONE FILL

STA 20+69.00 LT - STA 21+31.00 LT
STA 21+04.00 RT - STA 21+31.00 RT
STA 21+46.00 LT - STA 21+71.00 LT
STA 21+46.00 RT - STA 21+71.00 RT

TYPE II STONE FILL

STA 21+71.00 RT - STA 22+25.00 RT

SIGN LEGEND

N = NEW SIGN OR POST
S = SALVAGED SIGN OR POST
R&S = REMOVE AND SALVAGE SIGN OR POST

SHEET NOTES:

1. VARIABLE WIDTH TRAVEL WAY LINES NOT SHOWN FOR CLARITY. SEE CROSS SECTIONS FOR TRAVEL WAY AND SLOPE BREAK INFORMATION.

SIGN NOTES:

1. REMOVE AND SALVAGE EXISTING ONE LANE BRIDGE SIGNS PLACED DURING THE TEMPORARY BRIDGE CONTRACT. REINSTALL ONE AT EACH APPROACH AS DIRECTED BY THE RESIDENT ENGINEER FOR BEST SIGHT DISTANCE.

2. COST FOR REMOVAL OF SALVAGED SIGNS SHALL BE INCLUDED IN ITEM 675.50. COST FOR ERECTING SALVAGED SIGNS AND POSTS SHALL BE INCLUDED IN ITEMS 675.60 AND 675.61 RESPECTIVELY.

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146plansht.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: K. ZIENKIEWICZ
PLAN SHEET

PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: S. HODGDON
SHEET 9 OF 39

DATUM

VERTICAL NAVD88
HORIZONTAL NAD 83(96)
ADJUSTMENT Compass

CONSTRUCTION NOTES

* SEE TEMPORARY BRIDGE AND APPROACHES NOTE ON SHEET 25.

PLAN

SCALE: 1" = 10'

0 10 20

SCALE IN FEET

SIGN LEGEND

N = NEW SIGN OR POST
S = SALVAGED SIGN OR POST
R&S = REMOVE AND SALVAGE SIGN OR POST

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

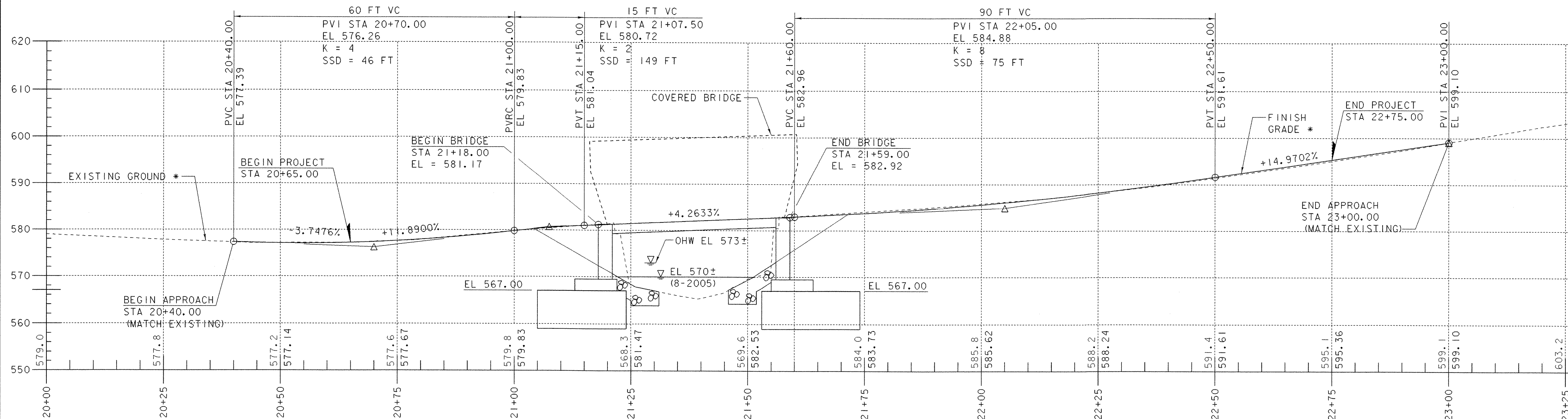
FILE NAME: z04j146plansht.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: K. ZIENKIEWICZ
PLAN SHEET

PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: S. HODGDON
SHEET 9 OF 39

DATUM

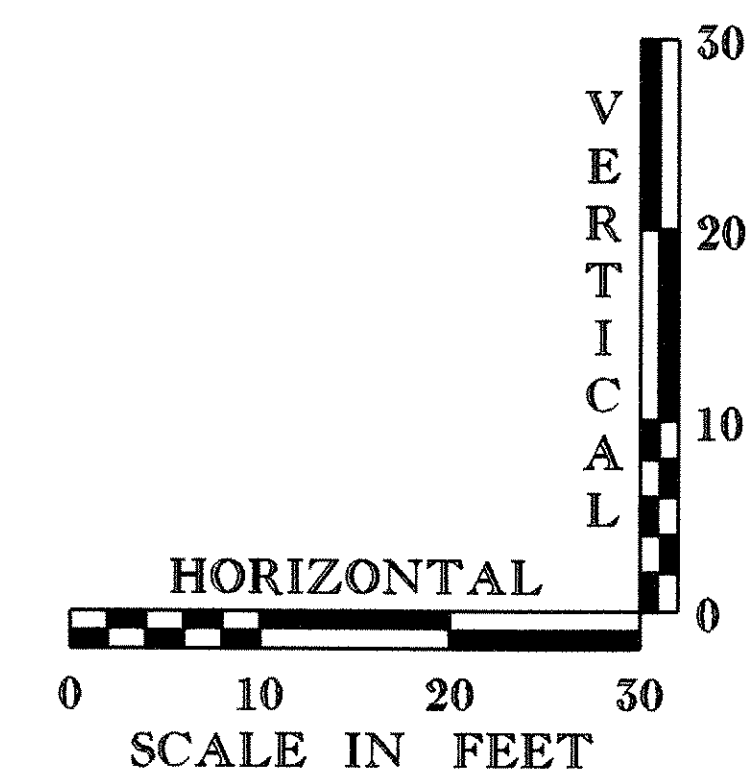
VERTICAL NAVD88
HORIZONTAL NAD 83(96)
ADJUSTMENT Compass





* ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG THE NEW $\mathcal{C}$. ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG THE NEW $\mathcal{C}$.

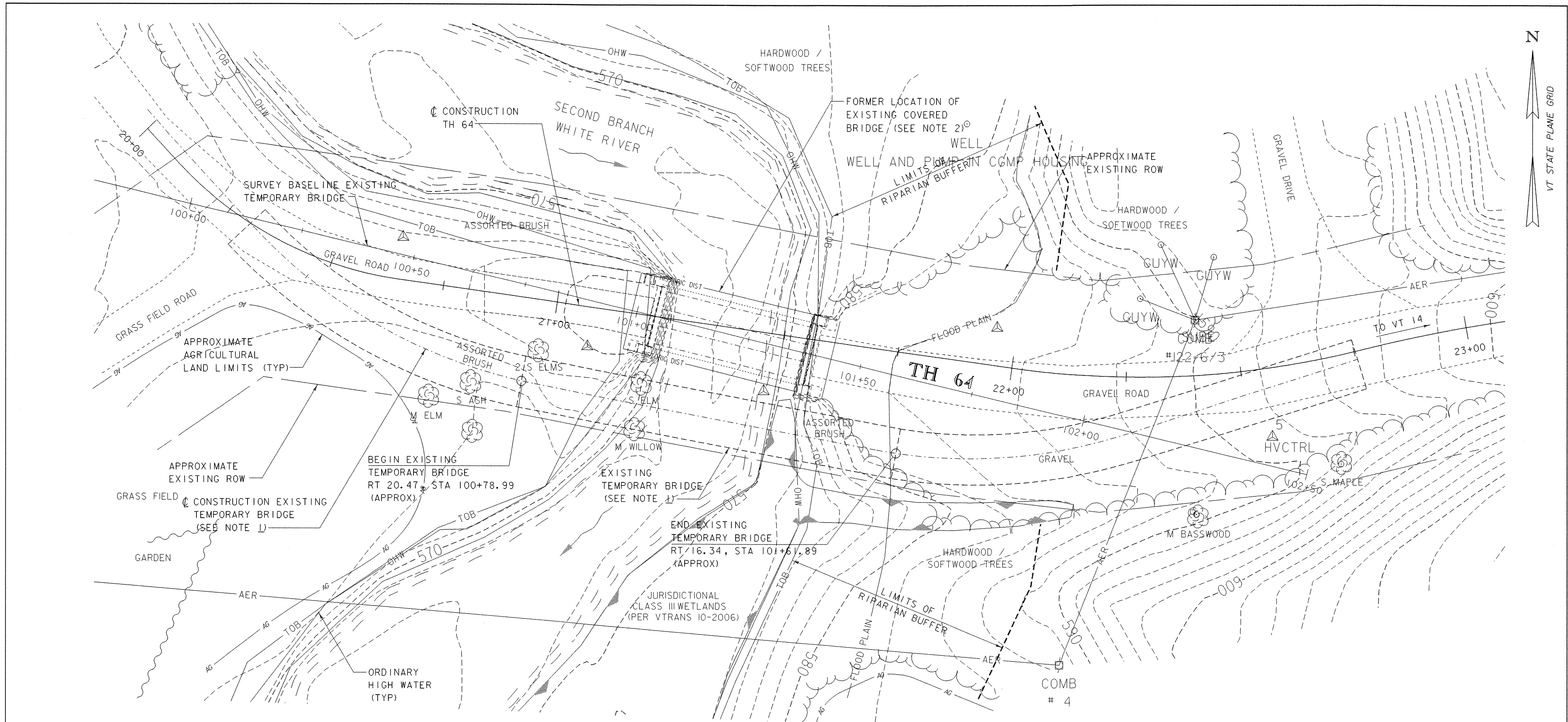
PROFILE TH 64
SCALE: 1" = 10'



PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BHO 1444 (44)	
FILE NAME: z04j146pro.dgn	PLOT DATE: 26-JUN-2007
PROJECT LEADER: S. HODGDON	DRAWN BY: K. WENTWORTH
DESIGNED BY: K. ZIENKIEWICZ	CHECKED BY: S. HODGDON
PROFILE SHEET	SHEET 10 OF 39

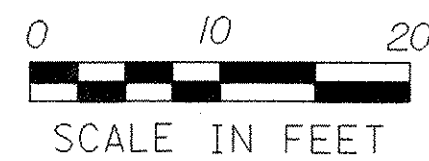
TRAFFIC SIGN SUMMARY SHEET

PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BHO 1444 (44)	
FILE NAME: z04j146traf.dgn	PLOT DATE: 26-JUN-2007
PROJECT LEADER: S. HODGDON	DRAWN BY: K. WENTWORTH
DESIGNED BY: S. HODGDON	CHECKED BY: K. ZIENKIEWICZ
TRAFFIC SIGN SUMMARY SHEET	SHEET 11 OF 39



PLAN

SCALE: 1"=10'



NOTE:

1. THE TEMPORARY BRIDGE WAS CONSTRUCTED UNDER A SEPARATE PROJECT PRIOR TO THIS CONTRACT. APPROXIMATE LIMITS SHOWN. SEE TEMPORARY BRIDGE AND APPROACHES NOTE ON SHEET 25.
2. PRIOR TO THIS CONTRACT, THE EXISTING COVERED BRIDGE SUPERSTRUCTURE WAS REMOVED FROM THE SITE AND STORED AT A TOWN HIGHWAY GARAGE. SEE SHEET 25, BRIDGE REMOVAL NOTES, NOTE #1.

ENVIRONMENTAL RESOURCE	LEVEL	LINESTYLE NAME	CHECKED BY	DATE
Wetlands	EWB_P	wetland-lt, wetland-rt	SMH	11-6-06
Historic/Historic District	MHBC	historic dist.	SMH	11-6-06
Archeological Site	LAAS	arch. area	SMH	11-6-06
4f Property	MPL	4f property	SMH	11-6-06
6f Property	MPL	6f property	SMH	11-6-06
Agricultural Land	LAPB	agricult. land	SMH	11-6-06
Fish & Wildlife Habitat	EHA	critical hab.	SMH	11-6-06
Flood Plains	EWB_P	fld. plains	SMH	11-6-06
Endangered Species	EHA	thr. & end. spec.	SMH	11-6-06
Hazardous Waste	EDEFAULT	haz. waste	SMH	11-6-06
Stormwater	DDEFAULT	Diamond	SMH	11-6-06

VHB Vanasse Hangen Brustlin, Inc.

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146res.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: S. HODGDON
RESOURCE LAYOUT SHEET

PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: K. ZIENKIEWICZ
SHEET 12 OF 39

DESCRIPTION OF PROJECT

This project involves the rehabilitation of the historic Braley Covered Bridge (No. 38) carrying Town Highway 64 over the Second Branch White River in the Town of Randolph. The bridge is approximately 41 feet long and 16 feet wide. The total length of the approach work is approximately 219 feet.

Under a separate contract, a single lane temporary detour bridge was constructed adjacent (downstream) to the existing bridge. This separate contract also included the removal of the covered bridge superstructure where it is stored at a Town garage until it is rehabilitated and reinstalled under this contract.

During this contract, the remaining superstructure portions and both abutments will be removed. The alignment of TH 64 will be shifted north about three feet at the east approach; however the roadway profile will essentially be unchanged. New concrete abutments will be constructed within closed cofferdams and flanked with stone fill slope protection. During construction, traffic will be maintained on the temporary bridge. Following completion of the bridge rehabilitation, the temporary bridge will be removed and the temporary approach work will be regraded. It is anticipated that this project will last one construction season.

The site is located at Latitude 43 degrees 55.6 minutes N., Longitude 72 degrees 33.4 minutes W.

Total disturbed area (excluding waste, borrow and staging areas): 0.21 ac.

No "Threatened & Endangered Species" have been identified in the project area. In addition, no prehistoric or historic sites (except for the covered bridge itself) have been identified.

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:

The land within the project consists of a relatively steep and well vegetated river valley with a narrow floodplain. TH 64 is a single lane class III dirt road with brush and a narrow band of mixed hardwood and softwood forest on each side. Off-site drainage from the east is collected and conveyed in a well defined, deep, stone-lined ditch that runs along the south edge of the road and discharges to the river. A small portion of the roadway runoff entering from the east is conveyed via overland flow along the roadway and north of the road. There is no significant off-site drainage from the west within the project.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The Second Branch White River is located within the project. There are no other bodies of water. The drainage basin for this river is generally characterized by steep slopes with little to no storage and the floodplains tend to be relatively narrow with high stream banks. During flood events, the river rises rapidly and the flow is moderate. The channel bed material consists of fine silty sand and the banks are highly susceptible to erosion. The contributing drainage area at the bridge is approximately 47 square miles.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project is characterized by steep slopes along the east and west approaches with a relatively narrow, flat floodplain near the bridge. The floodplain at the southeast corner of the project is a cultivated agricultural field.

TH 64 runs parallel to the river along the west approach to the bridge until the river bends sharply south under the bridge. TH 64 continues east and quickly ascends up a relatively steep grade unit it intersects with VT 14 (approx. 0.1 miles). TH 64 is a dead end road that serves several dwellings on the west side of the river. There is also a drive to a dwelling on the east side of the river on the north side of TH 64 (approximately 100 feet from the bridge).

Existing overhead utilities run along the northeast side of TH 64 until they cross over to the south side of the road about 75 feet east of the bridge. The wires continue along the south side of the road and cross the river. Utility relocations for this project are not anticipated.

VEGETATION:

In general, the east approach is lightly forested with a mix of hardwoods and softwoods and the west approach is comprised of assorted brush, a couple of small to medium sized hardwood trees, and some field grass. Several small hardwoods and areas of brush will be removed within the existing right-of-way and around the bridge to allow for the stone fill slope protection and to accommodate the temporary detour bridge. Following the construction of the new abutments and the removal of the temporary bridge, the embankment slopes will be stabilized with stone fill and/or vegetation will be reestablished with standard seed and mulch practices.

SOILS:

The Soil Conservation Service has mapped soils throughout Orange County. The soil types identified within the project area are Winooski Very Fine Sandy Loam (Wo) and Hartland Silt Loam (HdE). The Winooski soil is the primary soil type near the bridge and west approach. Test pits indicate that this soil type is approximately 2.5 feet deep near the project site. East of the bridge, the soil is Hartland Silt Loam.

Both of the loam type soils have a listed erodability coefficient (K-value) of 0.49. Generally, K-value indicates the following: 0.0 - 0.23 = low erodability; 0.24 - 0.36 = moderate erodability; 0.37 and higher = high erodability.

The majority of the project is within the previously disturbed area comprising the existing roadway and bridge embankments. Much of this soil is fill comprised of silty gravelly sand or silty sand. The erodability of these fill materials shall be considered relatively high based on the silt content and relatively steep grades within the project limits.

Approach roadway construction will be limited to minor widening and reconstruction. The small amount of fill material needed for approach roadway widening will be subject to engineering requirements for selective fill and will need to be brought in from an off-site source. Since the borrow pit source location is unknown, the erodability properties of the new fill cannot be provided.

SENSITIVE RESOURCE AREAS:

No "Threatened & Endangered Species" have been identified with the project limits.

The existing bridge is Historic and the rehabilitation is based on the objectives of the Vermont Historic Covered Bridge Plan along with the participation of the Town and the Historic Covered Bridge Committee.

Based on the Phase I Site Identification Survey completed for this project and the limited impact of the project, there will be no adverse effect to archaeological features or prime agricultural land.

The limits of the Riparian Buffer for the Second Branch White River are identified on the following sheets. All work within these limits shall be completed with extreme care so as to minimize impacts to this buffer zone.

During construction, in-stream work will be restricted. Refer to project permit conditions.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

Disturbance of soils near natural or man-made water ways consist of that which is necessary to replace the existing abutments, armor the banks upstream and downstream from the bridge, and to remove the temporary detour bridge and regrade the associated approaches. Stabilization of disturbances to the river banks will be accomplished with cofferdams and Stone Fill, Type III.

TEMPORARY EROSION & SEDIMENT CONTROL

TEMPORARY EROSION PREVENTION MEASURES TO BE UTILIZED INCLUDE:

"Project Demarcation Fencing," denoted -PDF- on the plans, to delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

Seeding, mulching and biodegradable erosion control matting, or an equivalent product, will be utilized on all slopes steeper than 3:1 that are not lined with stone fill. These slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction activity.

Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. Any slopes to be exposed for several days prior to final grading shall be tracked and mulched. The forecast of rainfall events shall also trigger protection of exposed slopes.

TEMPORARY MEASURES TO CONTROL SEDIMENT TRANSPORT INCLUDE:

Silt fence will be installed to prevent sediment transport to down gradient areas. Each line of silt fence shall be installed per Silt Fence Detail (EPSC-1). Silt fence shall be installed prior to any upslope earthwork.

Measures such as silt fence and check dams shall be checked regularly for accumulation of sediment. Sediment build-up shall be removed when the level of sediment reaches one-half the height of the control measure. Sediments shall be disposed of in an approved area such that they will not be subject to erosion.

Temporary sediment settling basins may be used on this project for dewatering cofferdams.

PERMANENT EROSION CONTROL MEASURES

SEVERAL PERMANENT EROSION CONTROL MEASURES WILL BE UTILIZED:

Stone lining of the river banks with Stone Fill, Type III is specified. This stone will protect from river bank erosion during design storm events. Grubbing material will be placed on top of the stone fill that is adjacent to the channel except for directly under the bridge.

Grass will be established outside of the roadway limits where stone lining has not been specified. These areas shall be seeded and mulched promptly upon achieving final grade. (Refer to Seeding Formula on sheet 3).

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Prevention and Sediment Control Plans are meant as a guideline for preventing erosion and controlling sediment transport. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sedimentation of receiving waters. The measures include stabilization and structural practices, stormwater controls and other pollution prevention controls.

Coordinate the installation, use, and removal of erosion and sediment control measures with construction activities to ensure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds. The Contractor will use additional erosion control measures as necessitated by the sequence of construction and as directed by the Engineer. See Subsection 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2006.

Install all erosion and sediment control measures as shown in the Erosion Control Plan or as directed by the Engineer. Do not modify the type, size or location of any control or practice without approval of the Engineer. Any changes shall be noted on the plans, in the weekly inspection report, and reported to the appropriate authority in a timely manner. Inspect all control measures weekly and after each rainfall event.

Preventing initial soil erosion is much more effective than treating eroded sediment. Therefore, stabilize all disturbed areas promptly after construction activity has temporarily or permanently ceased. Temporary vegetation shall be established if the area is to be without construction activity for a period of 14 days. Perimeter control measures shall be installed following clearing, but prior to the start of any grubbing or grading activity; install other temporary controls in incremental stages as construction proceeds.

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.

Control only sediment-laden runoff generated by the project site. Collect and route clean offsite runoff around or through the project site using diversion berms, diversion to channels, culverts and/or temporary pipes.

Do not allow construction equipment to operate on the down slope side of perimeter control measures.

* The anticipated areas of disturbance for this project (0.21ac.) and the temporary bridge project (0.12ac.) total approximately 0.33ac. The estimated area of waste, borrow, and staging is less than 0.67 acres for an overall total of less than 1.00 acres. Should conditions change and result in one or more total acres of earth disturbance, then the Contractor will be responsible for additional permitting with the Agency of Natural Resources.

SEDIMENT SETTLING BASIN SIZING CRITERIA

PUMP FLOW RATE		REQUIRED SURFACE AREA		LENGTH / WIDTH = 2:1			
Q (gpm)	Q (m^3/s)	(ft^2)	(m^2)	L (ft)	W (ft)	L (m)	W (m)
50	0.0032	595	55	35.0	17.0	10.6	5.3
100	0.0063	1200	111	49.0	24.5	15.0	7.5
150	0.0095	1776	165	59.6	29.8	18.2	9.1
200	0.0126	2368	220	68.8	34.4	21.0	10.5
250	0.0158	2970	276	77.0	38.5	23.4	11.7
300	0.0189	3560	330	84.4	42.2	25.8	12.9
350	0.0221	4155	386	91.2	45.6	27.8	13.9

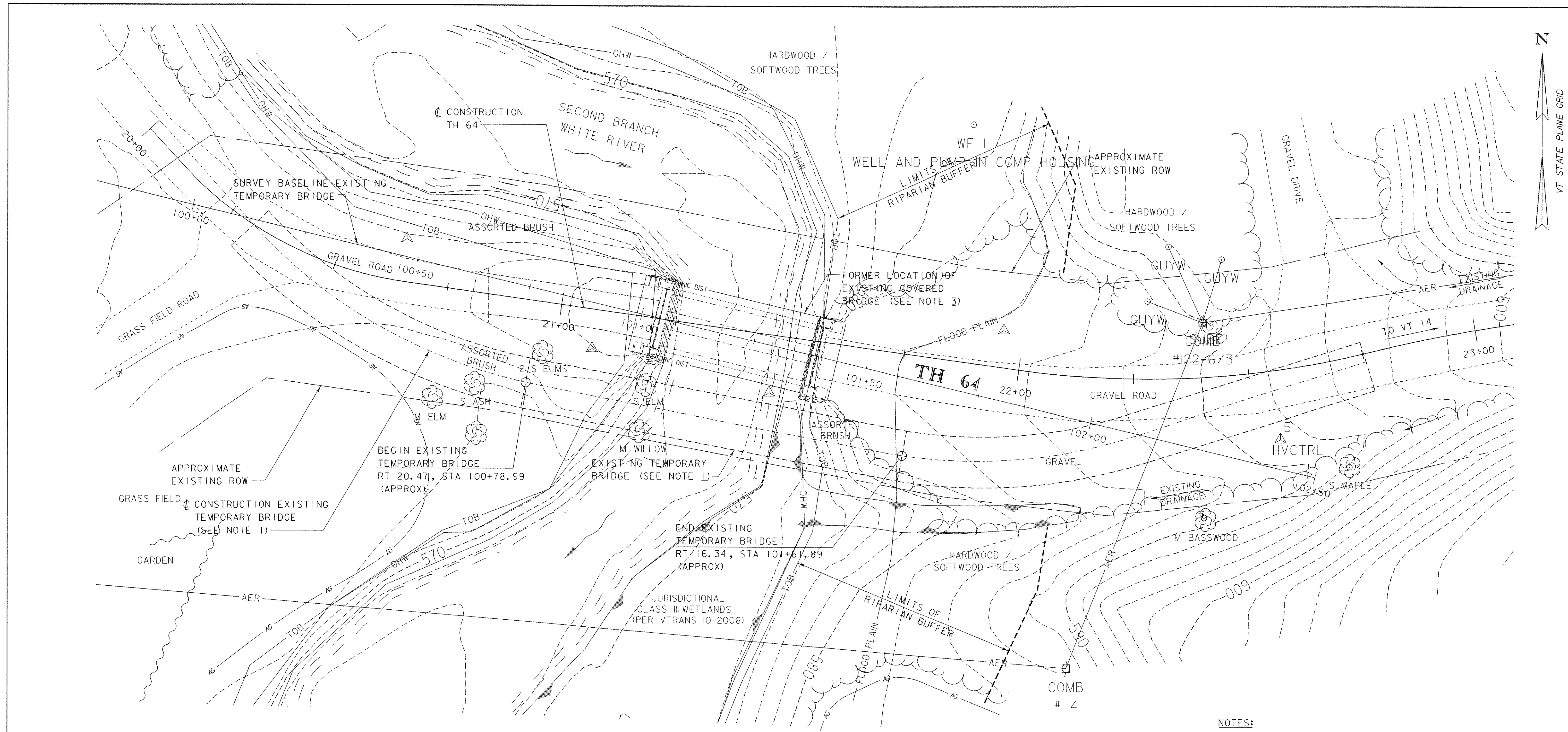


Vanasse Hangen Brustlin, Inc.

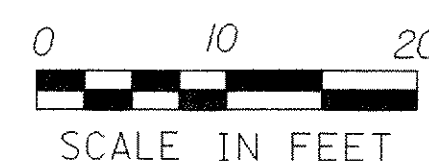
PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146ecnar.dgn
PROJECT LEADER: S.HODGDON
DESIGNED BY: S.HODGDON
EROSION CONTROL NARRATIVE

PLOT DATE: 26-JUN-2007
DRAWN BY: K.WENTWORTH
CHECKED BY: K.ZIENKIEWICZ
SHEET 13 OF 39



PLAN
SCALE: 1"=10'



NOTES:

1. THE TEMPORARY BRIDGE WAS CONSTRUCTED UNDER A SEPARATE PROJECT PRIOR TO THIS CONTRACT. APPROXIMATE LIMITS SHOWN. SEE TEMPORARY BRIDGE AND APPROACHES NOTE ON SHEET 25
2. PROPERTY BOUNDARY LINES ARE NOT AVAILABLE.
3. PRIOR TO THIS CONTRACT, THE EXISTING COVERED BRIDGE SHELL WAS REMOVED FROM THE SITE AND STORED AT A TOWN HIGHWAY GARAGE. SEE SHEET 25, BRIDGE REMOVAL NOTES, NOTE #1.

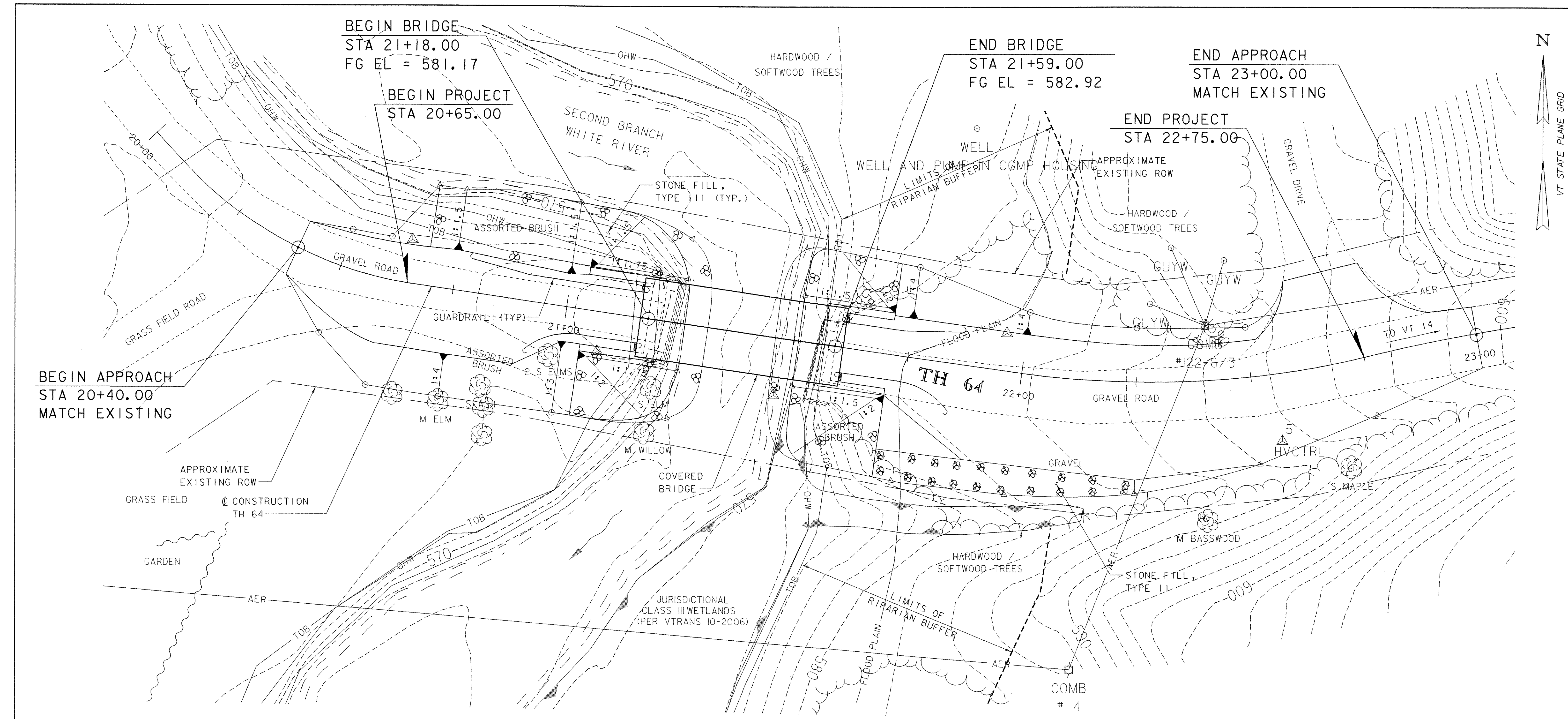
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD 83(96)
ADJUSTMENT	Compass



PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

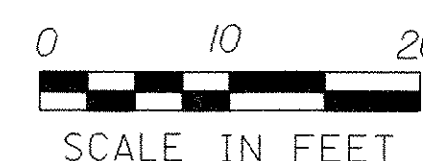
FILE NAME: z04j146exconpln.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: S. HODGDON
EXISTING CONDITIONS PLAN

PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: K. ZIENKIEWICZ
SHEET 14 OF 39



PLAN

SCALE: 1" = 10'



NOTES:

1. FINAL CONTOURS NOT SHOWN FOR CLARITY. SEE CROSS SECTIONS FOR ADDITIONAL INFORMATION.
2. VARIABLE WIDTH TRAVEL WAY LINES NOT SHOWN FOR CLARITY. SEE CROSS SECTIONS FOR ROADWAY TRAVEL WAY AND SLOPE BREAK INFORMATION.

DATUM

VERTICAL NAVD88
HORIZONTAL NAD 83(96)
ADJUSTMENT Compass

VHB Vanasse Hangen Brustlin, Inc.

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146fncnopl.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: S. HODGDON
FINAL CONDITIONS PLAN

PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: K. ZIENKIEWICZ
SHEET 16 OF 39

SILT FENCE

APPLICATION NOTES:

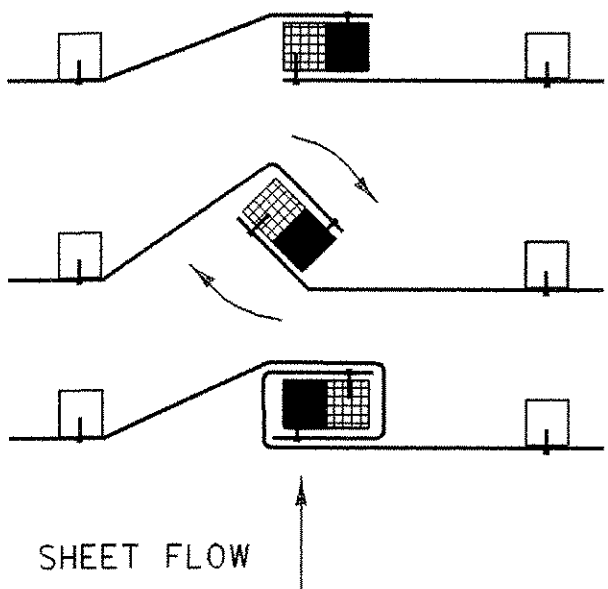
- A. THE PRIMARY PURPOSE OF SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.
- B. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.
- C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

GENERAL NOTES:

- 1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 5 FEET BEYOND TOE OF SLOPE, 10 FEET PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA. SILT FENCE MAY BE PLACED LESS THAN 5 FEET BEYOND THE TOE OF SLOPE IF SHOWN IN THE PLANS OR DIRECTED BY THE RESIDENT ENGINEER.
- 2. ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.
- 3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.
- 4. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 6 INCHES BELOW GROUND, AND KEYED IN 4 INCHES. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.
- 5. MAXIMUM DRAINAGE AREA TRIBUTARY TO 100 FEET OF SILT FENCE SHALL BE 0.25 ACRES.
- 6. THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS FOR THESE MEASURES:

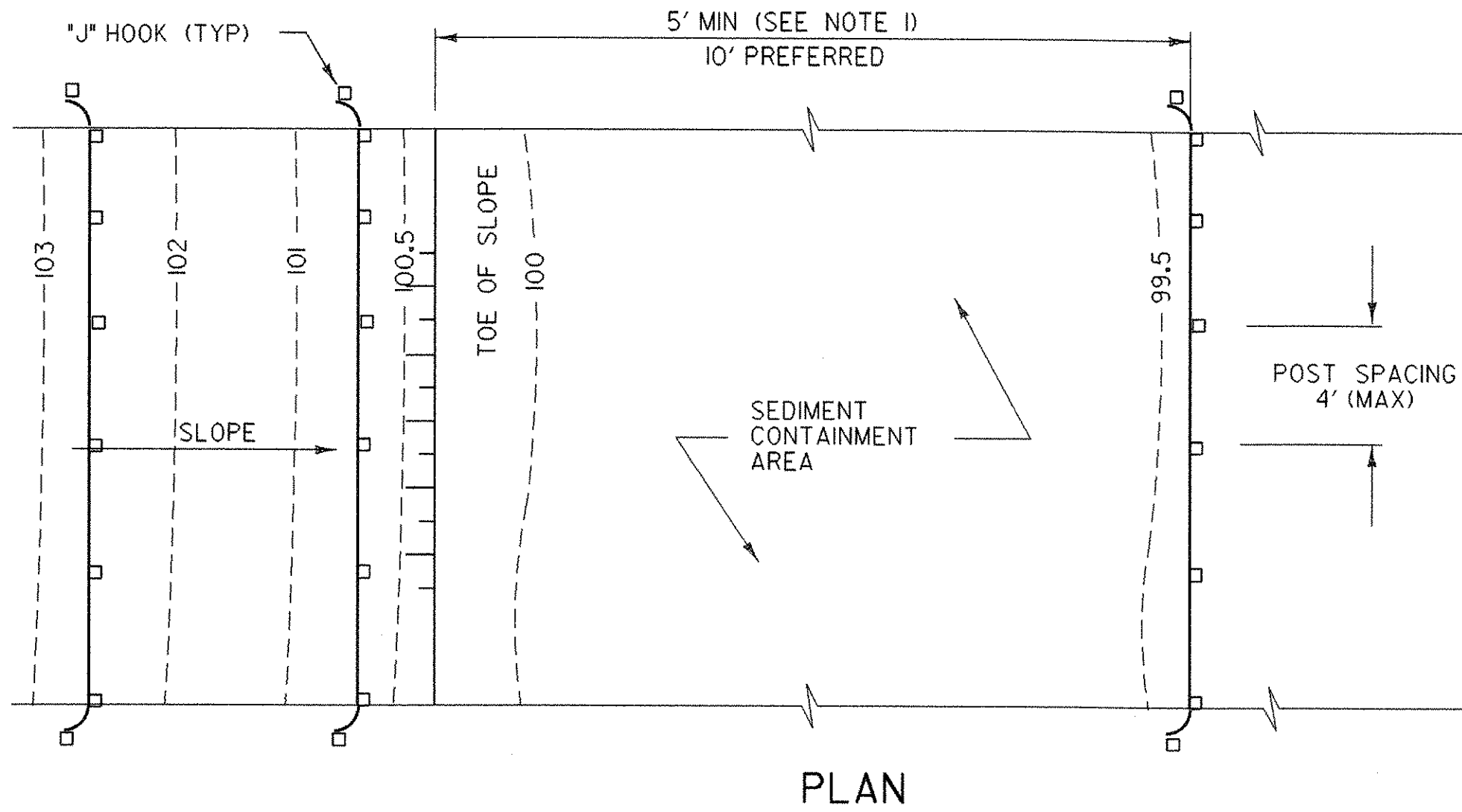
CONSTRUCTED SLOPE	SLOPE LENGTH (LS) FT	HORIZONTAL LENGTH (LH) FT
3 : 1	80	75
4 : 1	130	125
5 : 1	200	200
> 5 : 1	250	250

- 7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
- 8. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
- 9. SILT FENCE SHALL BE REMOVED WHEN THE AREA HAS BEEN STABILIZED. AT TIME OF REMOVAL OF THE SILT FENCE, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
- 10. PAYMENT FOR INSTALLATION AND REMOVAL OF SILT FENCE SHALL BE MADE UNDER THE GEOTEXTILE FOR SILT FENCE ITEM.
- 11. PAYMENT FOR MONITORING SILT FENCE SHALL BE MADE UNDER THE MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM.
- 12. PAYMENT FOR MAINTAINING SILT FENCE SHALL BE MADE UNDER THE MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

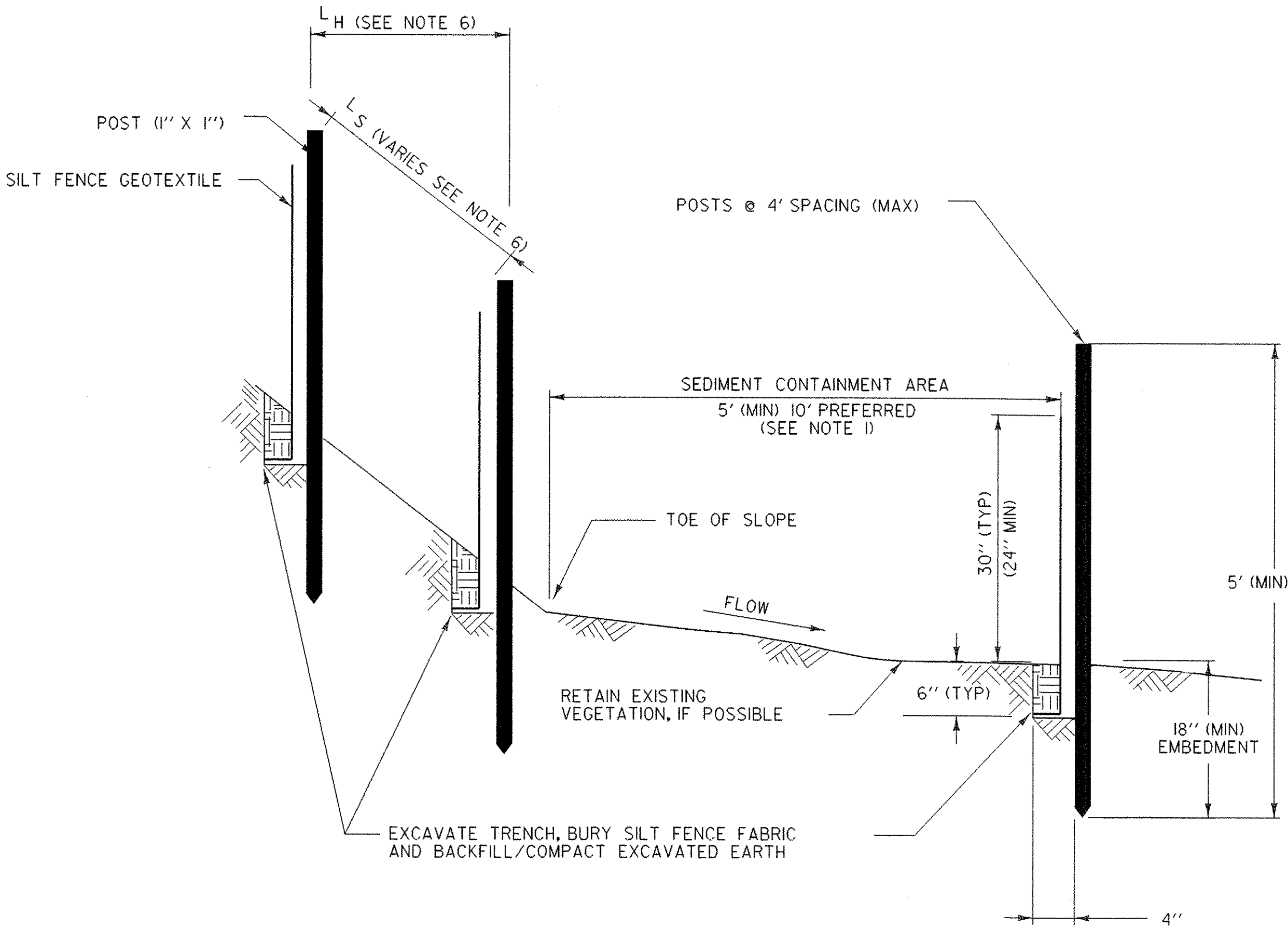


- 1. PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE.
- 2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL
- 3. DRIVE BOTH POSTS 18 INCHES INTO THE GROUND AND BURY THE FLAP IN THE TRENCH.

SPLICING DETAIL

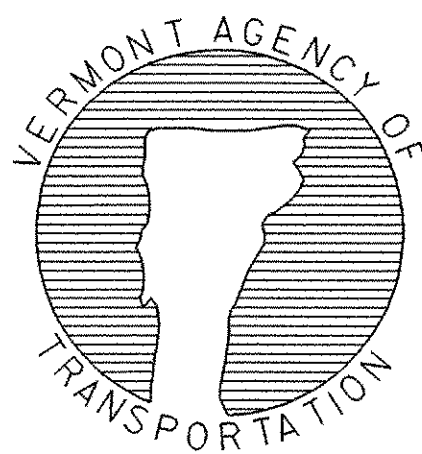


PLAN



SECTION
SILT FENCE - TEMPORARY

REVISIONS AND CORRECTIONS
MAY 18, 2004 N. GARBACK



EROSION PREVENTION &
SEDIMENT CONTROL DETAILS
SILT FENCE

DETAIL EPSC-1

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146epscl.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: VTRANS
EPSC-1

PLOT DATE: 26-JUN-2007
DRAWN BY: VTRANS
CHECKED BY: S. HODGDON
SHEET 17 OF 39

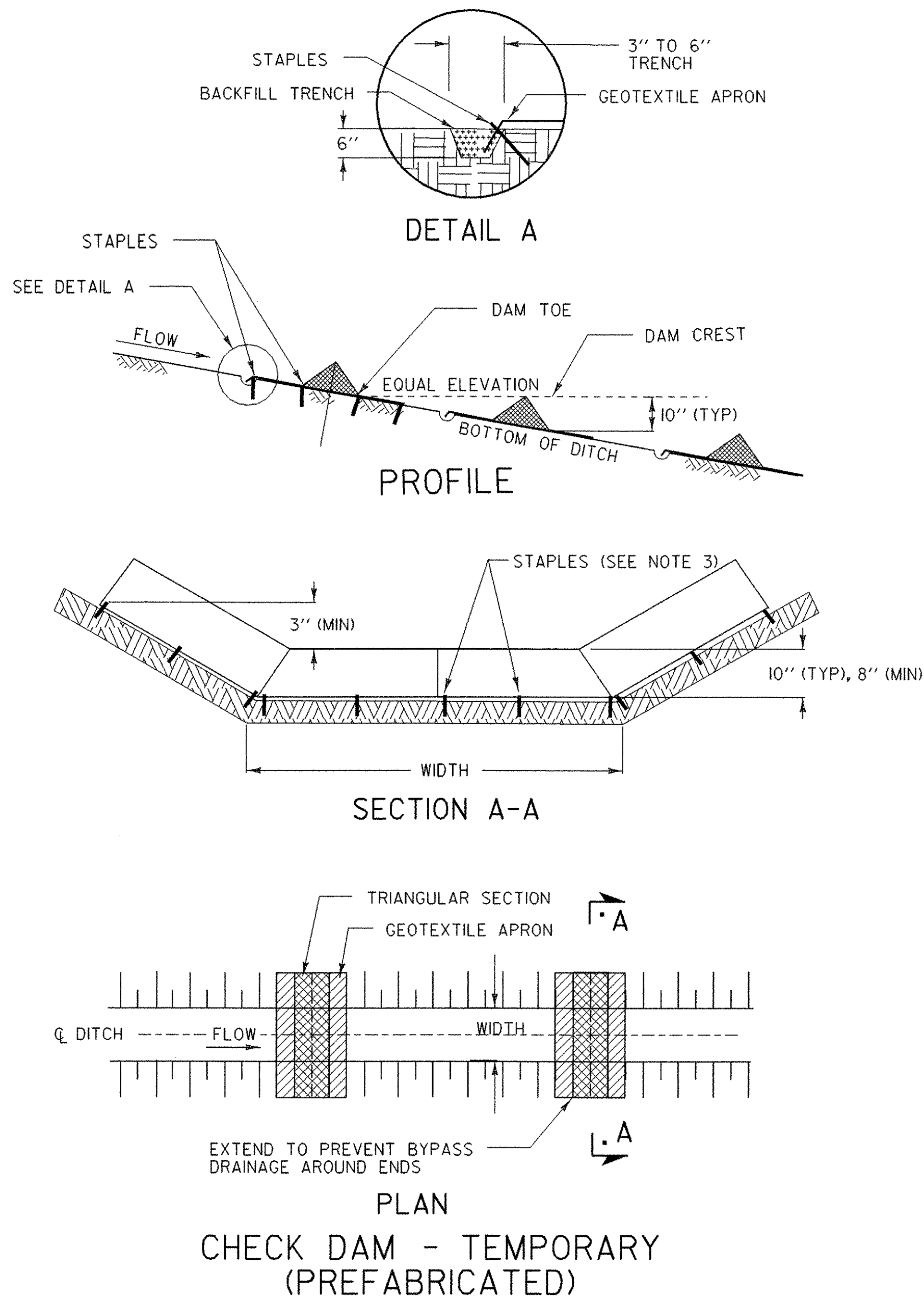
CHECK DAMS

APPLICATION NOTES:

- A. THE PRIMARY PURPOSE OF A CHECK DAM IS TO REDUCE EROSION IN A CHANNEL BY REDUCING FLOW VELOCITY.
- B. CHECK DAMS WILL CAPTURE SEDIMENT THAT FALLS OUT OF SUSPENSION BEHIND THE CHECK DAM DUE TO DECREASED VELOCITY.
- C. CHECK DAMS ARE NOT INTENDED TO FILTER SEDIMENT FROM TURBID WATER.
- D. DETAILS SHOWN SHALL BE USED FOR TEMPORARY INSTALLATION ONLY.
- E. PREFABRICATED DAMS ARE NOT TO BE USED ON SLOPES GREATER THAN 5% OR PER MANUFACTURER'S SPECIFICATIONS.
- F. PREFABRICATED DAM SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

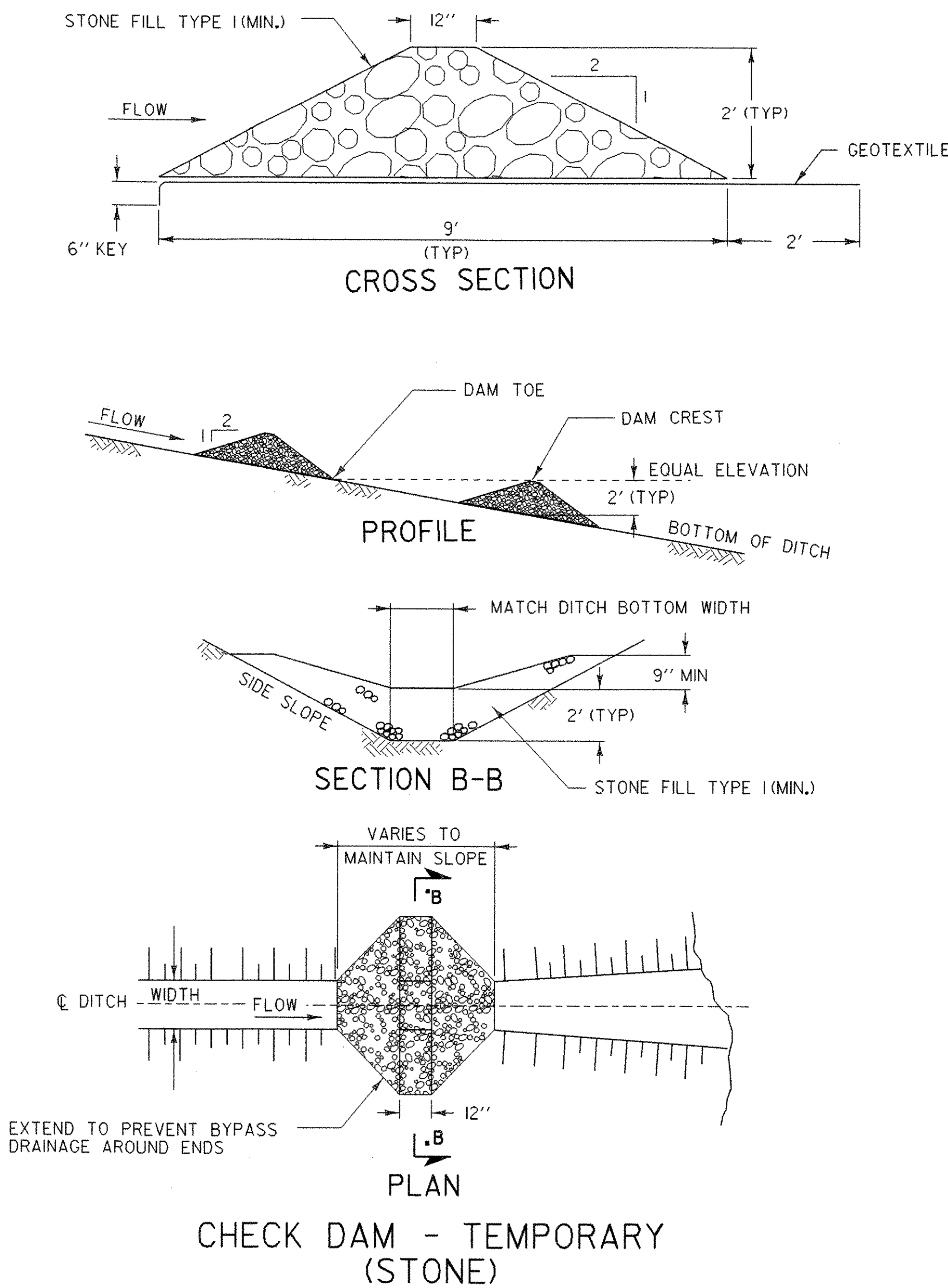
GENERAL NOTES:

- 1. GEOTEXTILE SHALL BE INSTALLED UNDER STONE FILL. IT SHALL BE KEYED IN ON THE UP HILL END AND SHALL EXTEND 2 FEET BEYOND THE STONE ON THE DOWN HILL END.
- 2. CORE MATERIAL FOR THE STONE CHECK DAM SHALL MEET THE GRADATION REQUIREMENTS OF STONE FILL TYPE I (MIN.). STONE SIZE SHOULD BE INCREASED WITH INCREASED SLOPE AND VELOCITY.
- 3. THE UPHILL END OF THE APRON FOR THE PREFABRICATED CHECK DAM SHALL BE STAPLED AND BURIED AS SHOWN IN DETAIL 'A' OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.
- 4. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
- 5. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
- 6. AT TIME OF REMOVAL OF THE CHECK DAMS, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
- 7. PAYMENT FOR INSTALLATION AND REMOVAL OF CHECK DAMS SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM.
- 8. PAYMENT FOR MONITORING CHECK DAMS SHALL BE MADE UNDER THE MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM.
- 9. PAYMENT FOR MAINTAINING CHECK DAMS SHALL BE MADE UNDER THE MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



PREFABRICATED CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1 %	50 FT
2 %	40 FT
3 %	25 FT
4 %	20 FT
5 %	15 FT

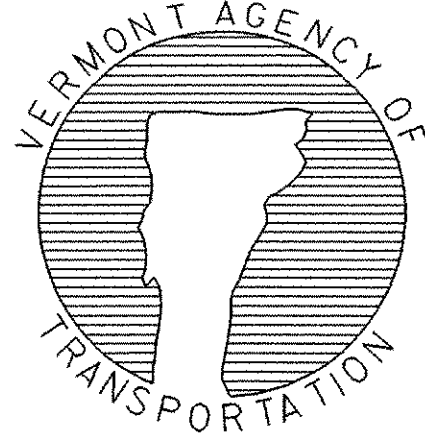
** BASED ON 10" TYPICAL HEIGHT



STONE CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1 %	200 FT
2 %	100 FT
3 %	65 FT
4 %	50 FT
5 %	40 FT
6 %	30 FT
8 %	25 FT
10 %	20 FT

** BASED ON 2' TYPICAL HEIGHT

REVISIONS AND CORRECTIONS
MAY 18, 2004 N. GARBACIK



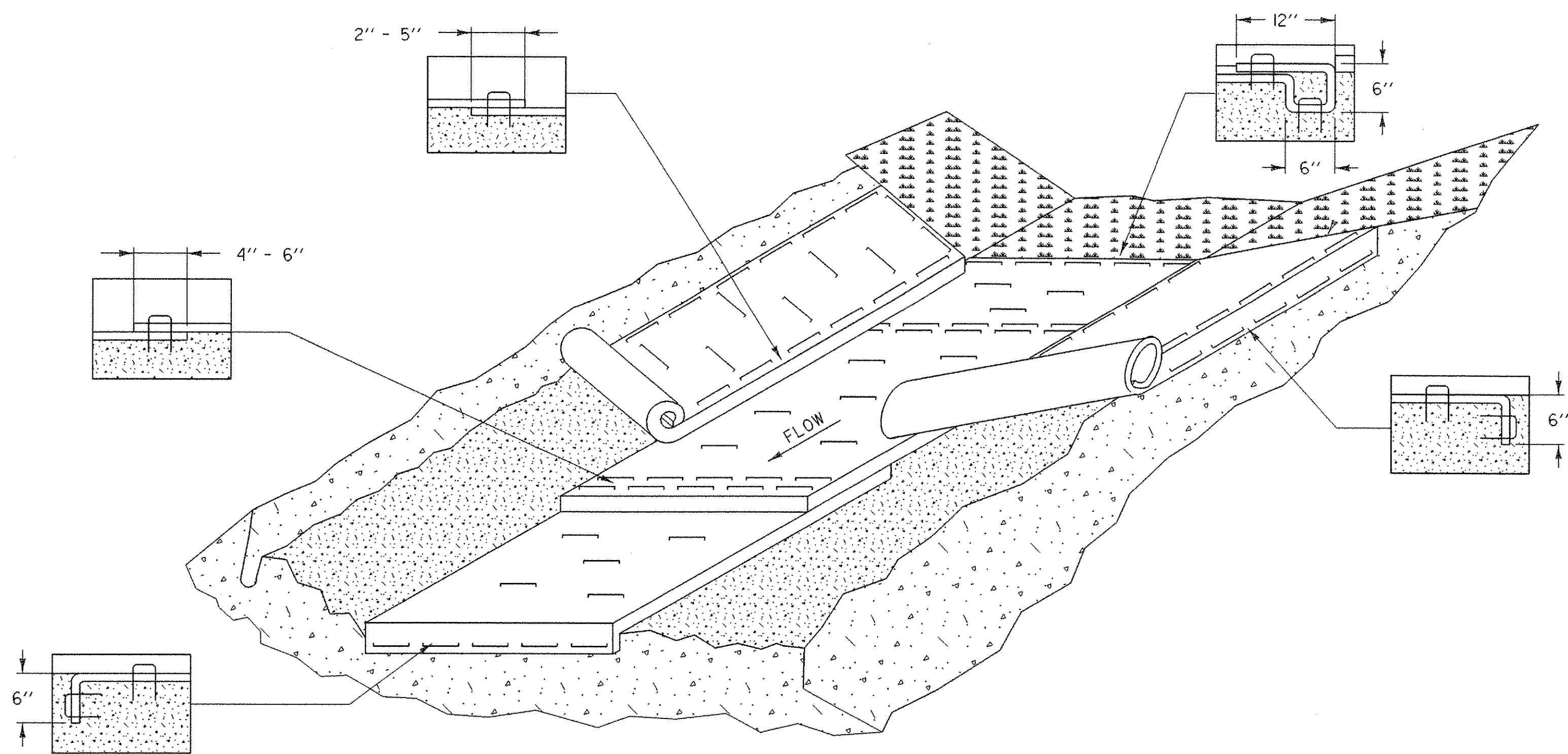
EROSION PREVENTION &
SEDIMENT CONTROL DETAILS
CHECK DAMS

DETAIL EPSC-2

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146epsc2.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: VTRANS
EPSC-2

PLOT DATE: 26-JUN-2007
DRAWN BY: VTRANS
CHECKED BY: S. HODGDON
SHEET 18 OF 39



EROSION PROTECTION FOR DITCHES

APPLICATION NOTES:

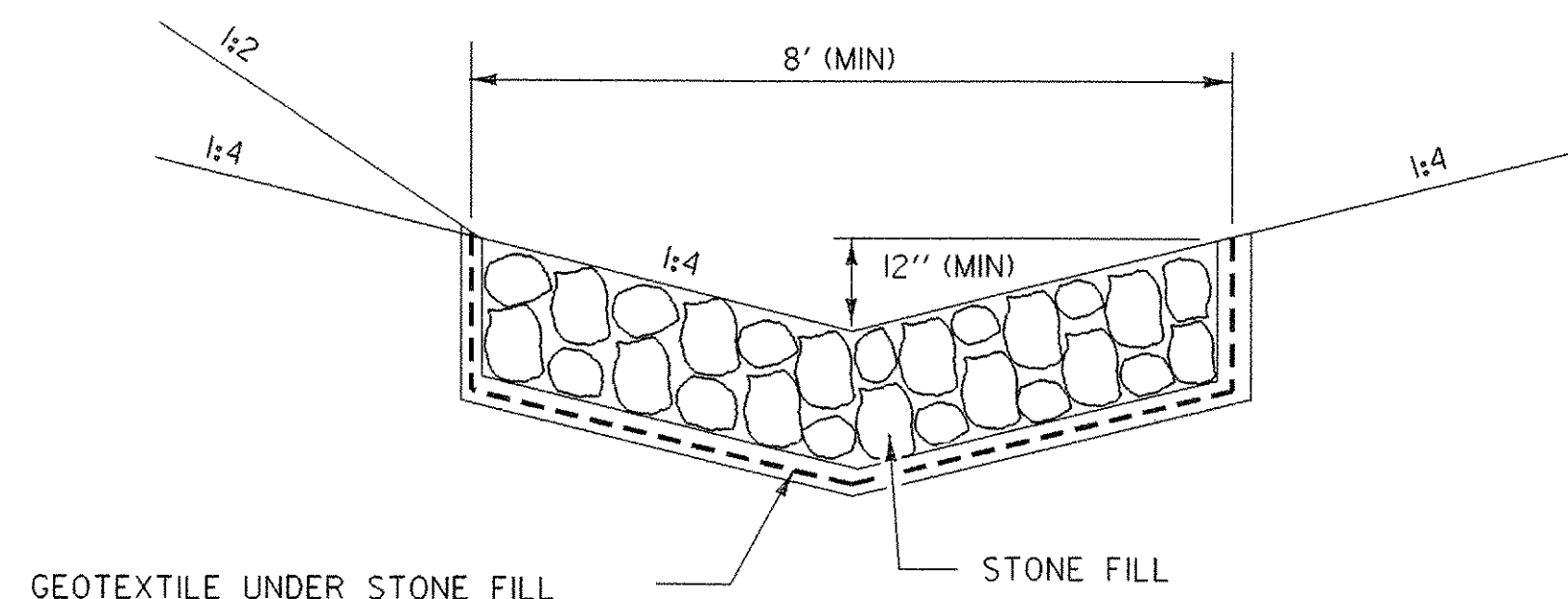
- A. THE PURPOSE OF LINING THE DITCH WITH EROSION MATTING IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION AT LOW VELOCITIES.
- B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

DITCH AND CHANNEL PROTECTION	
SLOPE	LINING
< 1%	GRASS
1% TO 4 %	EROSION MATTING
4 % TO 10 %	STONE FILL, TYPE I
> 10 %	STONE FILL, TYPE II

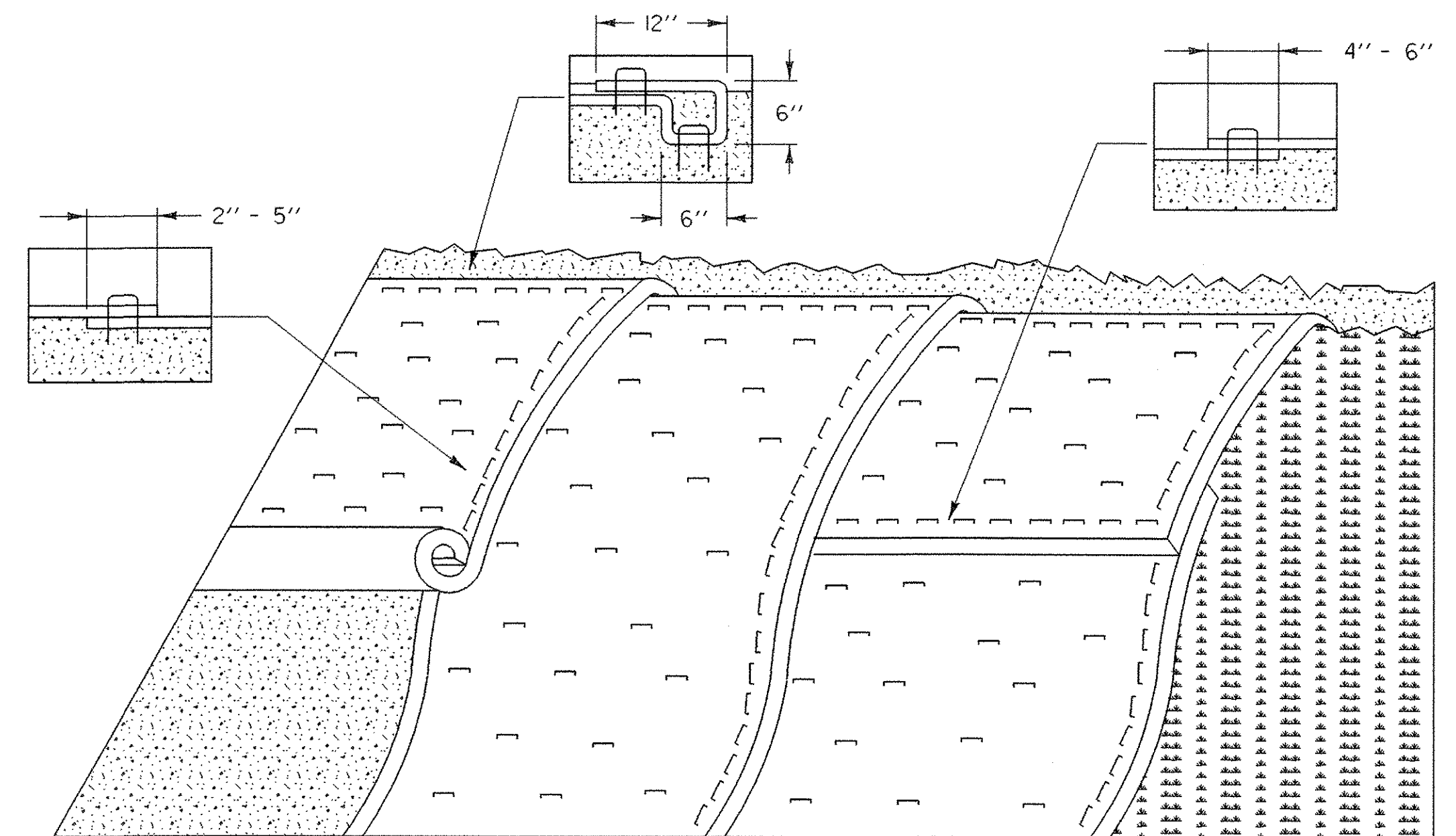
STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	1 FT
TYPE II	2 FT

GENERAL NOTES:

1. WATER MAY NEED TO BE DIVERTED TO ALLOW PROPER MATTING INSTALLATION.
2. GRADE AND SMOOTH CHANNEL TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
3. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
4. INSTALL MATTING IN THE CENTER OF THE CHANNEL, IN THE DIRECTION OF THE WATER FLOW.
5. INSTALL MATTING ON THE SIDE SLOPES OF THE CHANNEL, OVERLAPPING THE CENTER MAT.
6. ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.
9. PAYMENT FOR INSTALLATION OF MATTING SHALL BE MADE UNDER THE EROSION MATTING ITEM.
10. PAYMENT FOR MONITORING EROSION CONTROL MATTING SHALL BE MADE UNDER THE MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM.
11. PAYMENT FOR MAINTAINING DITCH PROTECTION SHALL BE MADE UNDER THE MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



TEMPORARY
STONE LINED
DITCH



EROSION PREVENTION FOR SIDE SLOPES

APPLICATION NOTES:

- A. THE PURPOSE OF MATTING ON SIDE SLOPES IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION
- B. EROSION CONTROL MATTING SHALL BE USED FOR THE FOLLOWING REASONS:
- * SIDE SLOPES > 3:1 (H:V)
 - * AREAS WHERE SEED AND MULCH WILL NOT STAY IN PLACE ALONE
 - * WHERE SEEDING IS OUTSIDE THE GROWING SEASON.

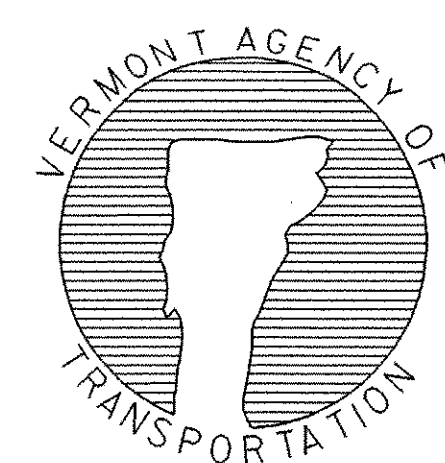
GENERAL NOTES:

1. GRADE AND SMOOTH THE SLOPE TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
2. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
3. ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
4. UNROLL MATTING VERTICALLY DOWN SLOPE IN THE DIRECTION OF WATER FLOW.
5. OVERLAP UPPER MATTING OVER LOWER MATTING AS SHOWN.
6. OVERLAP ADJACENT MATTING AS SHOWN.
7. CUT EXCESS MATTING AT END OF SLOPE AND ANCHOR THE END.
8. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
9. MATTING SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.
10. PAYMENT FOR INSTALLATION OF MATTING SHALL BE MADE UNDER THE EROSION MATTING ITEM.
11. PAYMENT FOR MONITORING EROSION CONTROL MATTING SHALL BE MADE UNDER THE MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM.
12. PAYMENT FOR MAINTAINING SLOPE PROTECTION SHALL BE MADE UNDER THE MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

REVISIONS AND CORRECTIONS

MAY 18, 2004

N. GARBACK



EROSION PREVENTION & SEDIMENT CONTROL DETAILS DITCH & SLOPE PROTECTION

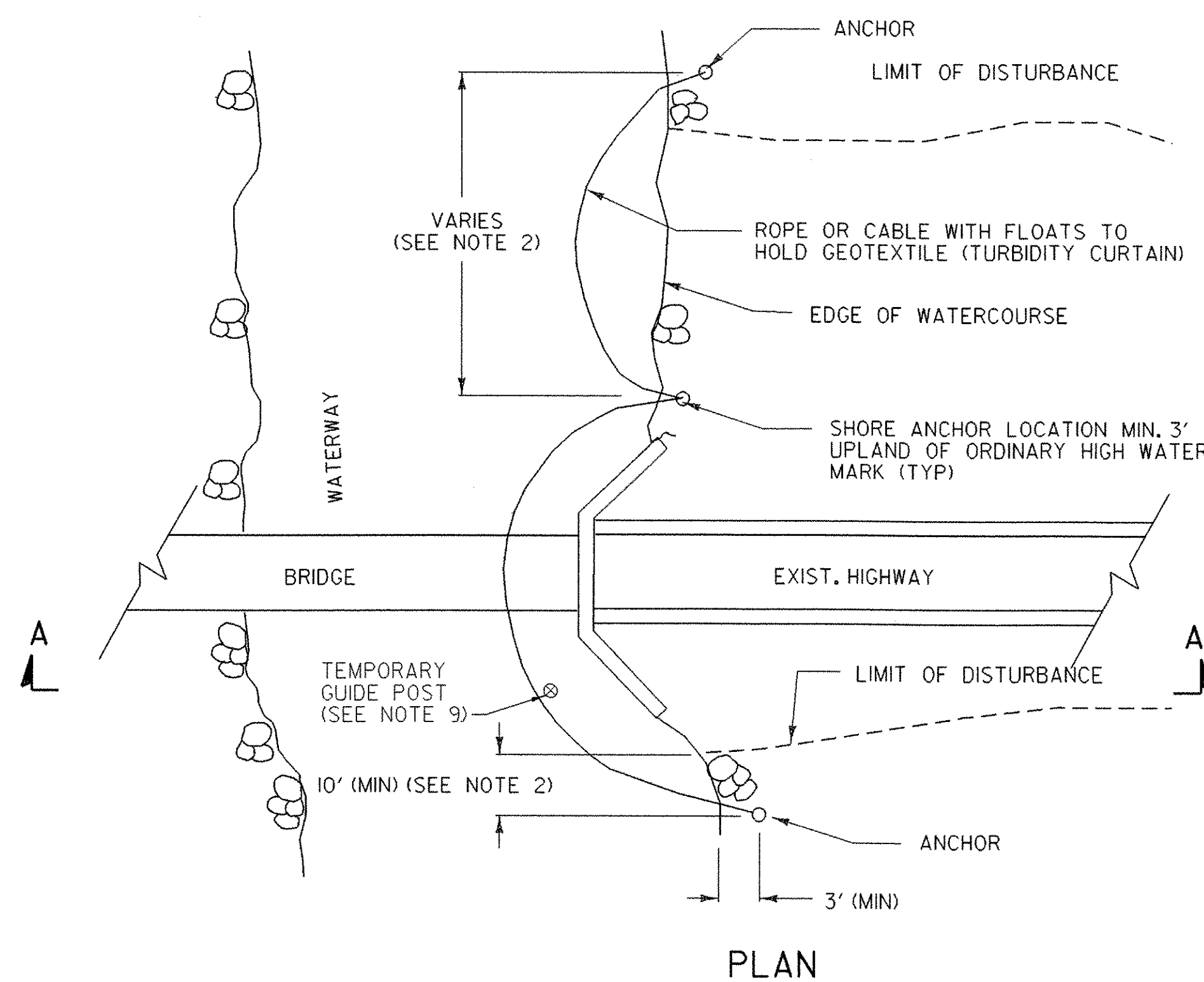
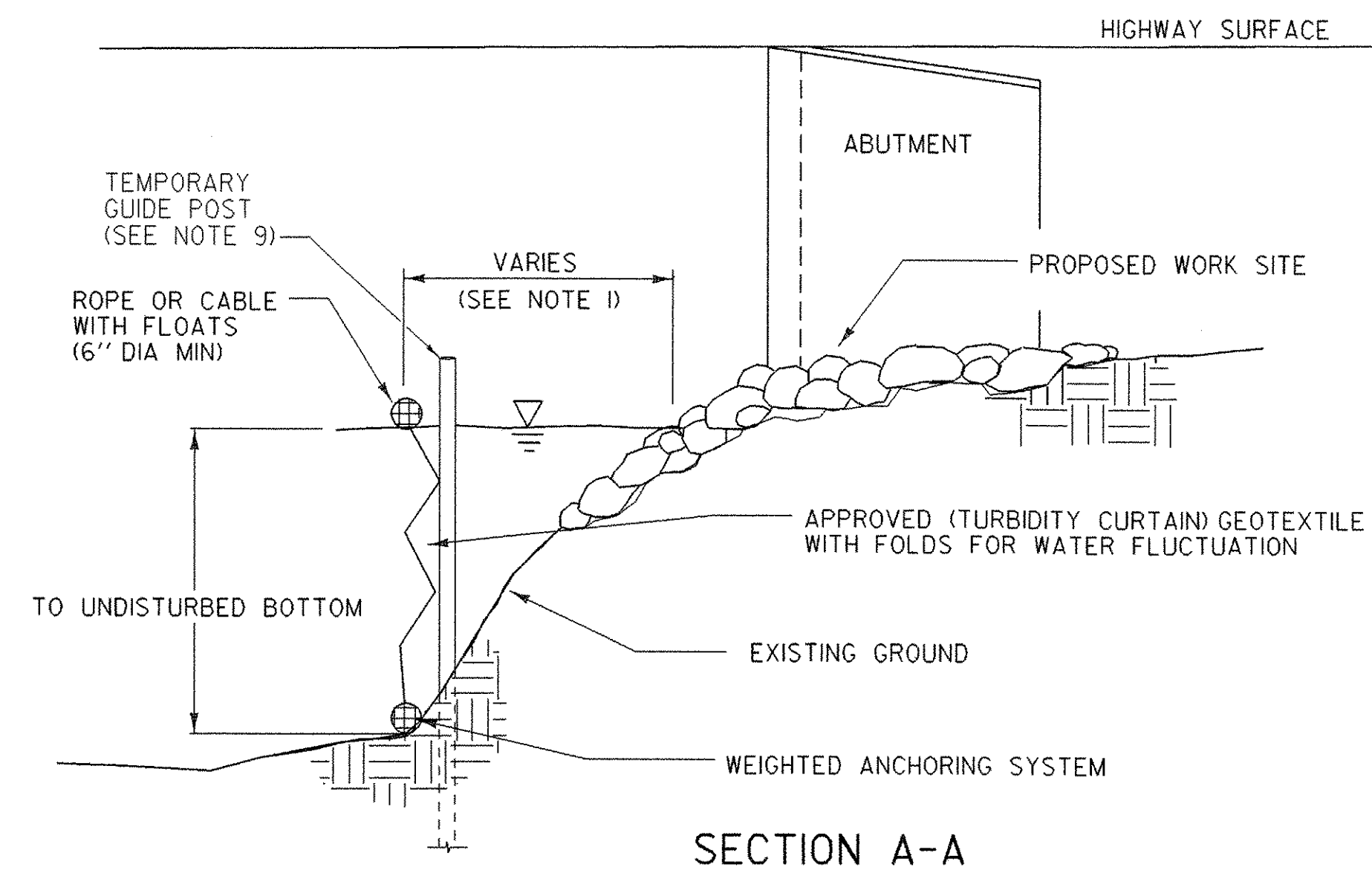
DETAIL EPSC-5

PROJECT NAME: RANDOLPH

PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146epsc5.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: VTRANS
EPSC-5

PLOT DATE: 26-JUN-2007
DRAWN BY: VTRANS
CHECKED BY: S. HODGDON
SHEET 19 OF 39



TURBIDITY CURTAIN

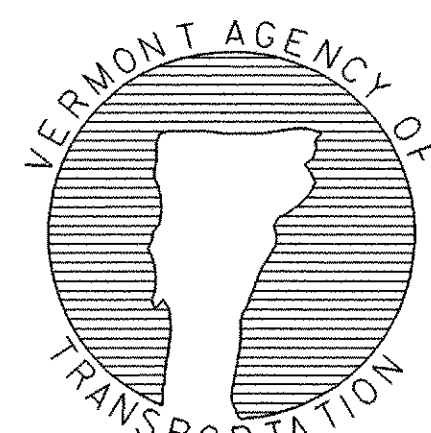
APPLICATION NOTES:

- THE PURPOSE OF A TURBIDITY CURTAIN IS TO SEPARATE WORK AREAS IN OR ADJACENT TO WATERS, TO PREVENT SEDIMENT FROM ENTERING THE WATERS.
- TURBIDITY CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FT/SEC.
- TURBIDITY CURTAIN SHALL NOT BE PLACED AT THE OUTLET OF A CULVERT OR DITCH UNLESS THE VELOCITY DOES NOT EXCEED 1.5 FT/SEC.
- THE DETAIL DEPICTS WORK AT A BRIDGE LOCATION, BUT TURBIDITY CURTAIN MAY BE APPLIED AT OTHER LOCATIONS.

GENERAL NOTES:

- THE TURBIDITY CURTAIN SHALL BE PLACED AS CLOSE TO THE WORK AS POSSIBLE WITHOUT INTERFERING WITH CONSTRUCTION OPERATIONS.
- THE TURBIDITY CURTAIN SHALL BE A MAXIMUM OF 100 FEET LONG BETWEEN ANCHORS. LAST SECTION SHALL GENERALLY TERMINATE A MINIMUM OF 10 FEET BEYOND THE LIMIT OF DISTURBANCE. TURBIDITY CURTAIN MAY BE PLACED LESS THAN 10 FEET BEYOND THE LIMIT OF DISTURBANCE IF SHOWN IN THE PLANS OR DIRECTED BY THE RESIDENT ENGINEER.
- THE CONTRACTOR SHALL MONITOR THE TURBIDITY CURTAIN, TAKING INTO ACCOUNT WEATHER PATTERNS AND PREVAILING WIND DIRECTIONS THAT MAY AFFECT WATER LEVELS, VELOCITY AND MOVEMENT OF THE TURBIDITY CURTAIN.
- THE TURBIDITY CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE TO MINIMIZE ESCAPE OF SEDIMENTS INTO THE WATERWAY.
- THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE THAT ALLOWS THE CURTAIN TO CONFORM TO THE CONTOUR ON THE BOTTOM OF THE WATERWAY.
- PAYMENT FOR INSTALLATION AND REMOVAL OF THE TURBIDITY CURTAIN SHALL BE MADE UNDER THE GEOTEXTILE FOR FILTER CURTAIN ITEM.
- PAYMENT FOR MONITORING TURBIDITY CURTAIN SHALL BE MADE UNDER THE MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM.
- PAYMENT FOR MAINTAINING TURBIDITY CURTAIN SHALL BE MADE UNDER THE MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.
- INSTALL TEMPORARY GUIDE POSTS AS NECESSARY TO MAINTAIN THE REQUIRED POSITION OF THE TURBIDITY CURTAIN WHEN STREAM VELOCITIES EXCEED 1.5 FT/SECOND. POST MATERIAL SHALL BE CLEAN, UNTREATED WOOD OR STEEL WITH A GENERALLY CIRCULAR CROSS SECTION. POSTS SHALL BE OF SUFFICIENT SIZE AND LENGTH, WITH ADEQUATE EMBEDMENT AND SPACING TO ENSURE THE TURBIDITY CURTAIN LAYOUT IS MAINTAINED.

REVISIONS AND CORRECTIONS
MAY 18, 2004 N. GARBACIK



EROSION PREVENTION & SEDIMENT CONTROL DETAILS TURBIDITY CURTAIN

DETAIL EPSC-6

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146epsc6.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: VTRANS
EPSC-6

PLOT DATE: 26-JUN-2007
DRAWN BY: VTRANS
CHECKED BY: S. HODGDON
SHEET 20 OF 39

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 3/8"
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
Sl	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	To Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)

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

BORING CHART

BORING NO.	SURVEY STATION	OFFSET	GROUND ELEV.
B-1	100+81	1' LEFT	579.4'
B-2	100+96	5' RIGHT	580.8'
B-3	101+46	5' LEFT	582.7'
B-4	101+55	14' RIGHT	582.4'

NOTE:
SURVEY STATIONING AND OFFSETS ARE
BASED ON TEMPORARY SURVEY BASELINE

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 > 0.075" (#10 sieve).
SAND - Particles of rock < 0.075" (#10 sieve) and > 0.0025" (#200 sieve).
SILT - Soil < 0.0025" (#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

- The subsurface explorations shown herein were made between 1/20/2006 and 2/22/2006 by the Agency.
- 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.
- 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 judgement 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 judgement 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.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of RANDOLPH	Bridge No. 38
Highway No. TH 64	Log Sta.
	Surv. Sta.

BORING INFORMATION SHEET

Designed By VTRANS	Drawn By VTRANS
Checked By S. HODGDON	Date 6/07
Bridge Design Supervisor S. HODGDON	Date 6/07
PROJECT RANDOLPH	PROJECT NO. BHO 1444(44)
I.G.C. Info.	
FILE NAME: z04j146borinfo.dgn Sheet 21 of 39	

			STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION			BORING NUMBER: B-1 SHEET 1 of 1 DATE STARTED: 1/26/06 DATE COMPLETED: 2/08/06					
PROJECT NAME: RANDOLPH SITE NAME: TH-64 STATION: 100+81.0 OFFSET: -1.00 VTSPG: N 520679.569 ft E 1625838.865 ft						PROJECT NUMBER: BHO 1444(44) SITE NUMBER: Braley Covered Bridge GROUND ELEVATION: 579.4 ft GROUNDWATER DEPTH: 10.3 ft 2/08/06					
BORING CREW CREW CHIEF: GARROW DRILLER: GARROW LOGGER: DAVISON						BORING RIG: LARGE SKID RIG w/AUTO HAMMER BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL CHECKED BY: DLG					
DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)				
			RUN	REC (%)	ROD (%)	Dip (deg)	Drill Rate (min/ft)				
10		A-1-b, SiGrSa, brn, Moist, Rec. = 2.0 ft, Frozen material	R	11.8	31.1	45.3	23.6				
		A-1-b, GrSiSa, brn, Moist, Rec. = 1.4 ft	27	13.4	24.5	50.2	25.3				
		A-1-b, SiGrSa, brn, Moist, Rec. = 0.8 ft	11	6.7	29.0	50.3	20.7				
		A-1-b, SiGrSa, brn, Moist, Rec. = 1.45 ft	10	11.1	23.5	56.3	20.2				
		A-2-4, SiSa, brn, Moist, Rec. = 2.0 ft	8	24.3	10.4	57.5	32.1				
		A-1-b, GrSa, brn, Wet, Rec. = 0.8 ft	9	18.9	24.4	61.9	13.7				
		A-1-b, SaGr, brn, MTW, Rec. = 0.8 ft	10	16.4	43.8	43.0	13.2				
		No Recovery, 14.0 ft - 16.0 ft	8								
		No Recovery, 16.0 ft - 18.0 ft	18								
	20		A-4, Si, gry, Moist, Rec. = 1.05 ft, Sample tested "NP" for Limits	10	32.5	0.0	1.7	98.3			
		A-4, Si, gry, Moist, Rec. = 1.7 ft, Sample tested "NP" for Limits	10	27.5	0.0	12.1	87.9				
		A-4, SiSa, brn-gry, Moist, Rec. = 1.0 ft	10	24.5	2.7	54.0	43.3				
30											
		A-2-4, Sa, brn, MTW, Rec. = 1.2 ft	8	24.8	8.3	76.9	14.8				
		A-2-4, Sa, brn, MTW, Rec. = 1.15 ft	17	23.6	9.9	73.2	16.9				
40		A-2-4, SiSa, brn, MTW, Rec. = 1.4 ft, Started using drillers mud	16	24.4	7.8	64.0	28.2				
		A-4, SiSa, brn-gry, Moist, Rec. = 1.3 ft	17	20.1	0.1	54.6	45.3				
50		A-2-4, SiSa, gry, Moist, Rec. = 1.0 ft	9	22.3	0.8	66.4	32.8				
60		Gray, Meta-Limestone, with interbedded phyllite. Moderately hard. Drilling breaks from 55.5 feet to 56.2 feet. Intact rock is unweathered. Rock fragments from 55.5 feet to 56.2 feet are slightly weathered. Poor competency., Moderately hard, NXMDC, 53.5 ft - 58.5 ft, Rec. = 3.5 ft	1	70	44	35	6 5 6 6				
		Gray, Phyllite, Fair competency., Moderately soft, Slightly weathered, NXMDC, 58.5 ft - 59.5 ft, Rec. = 1.0 ft	2	100	60	40	7				
		Gray, Meta-Limestone, with interbedded phyllite. Competent., Moderately hard, Unweathered, NXMDC, 59.5 ft - 61.5 ft, Rec. = 2.0 ft	3	100	100	40	13				
							17				

LOG OF BORING: RANDOLPH BHO 1444(44).DPT_VT_AOT.GIT 2/25/06

Hole stopped @ 61.5 ft

LOG OF BORING RANDOLPH BHO 1444(44).GPJ VT AOT.GBT 3/23/06

BOTTOM OF ABUTMENT NO 1
TREMIE SEAL EL=559.00

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING NUMBER: B-2
SHEET 1 of 1
DATE STARTED: 2/09/06
DATE COMPLETED: 2/14/06

PROJECT NAME: RANDOLPH
SITE NAME: TH-64
STATION: 100+96.0
OFFSET: 5.00
VTSPG: N 520670.311 ft E 1625851.411 ft

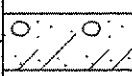
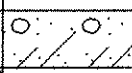
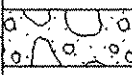
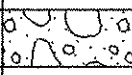
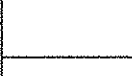
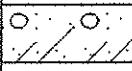
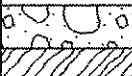
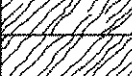
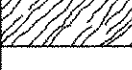
PROJECT NUMBER: BHO 1444(44)
SITE NUMBER: Braley Covered Bridge
GROUND ELEVATION: 580.83 ft
GROUNDWATER DEPTH: 10.0 ft 2/14/06

BORING CREW
CREW CHIEF: GARROW
DRILLER: GARROW
LOGGER: DAVISON

BORING RIG: LARGE SKID RIG w/AUTO HAMMER
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: DLG

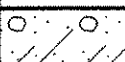
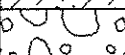
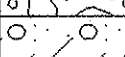
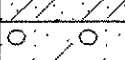
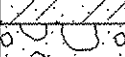
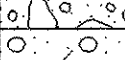
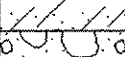
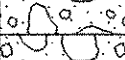
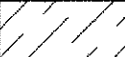
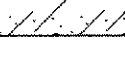
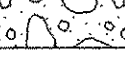
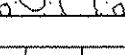
DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
			RUN	REC (%)	ROD (%)	Dip (deg)	Drill Rate (min/ft)
		A-1-b, SiGrSa, brn-gry, Moist, Rec. = 0.7 ft, Material was frozen.	R	12.3	27.4	47.5	25.1
		4.3 ft - 5.0 ft, Cleaned out casing A-2-4, SiSa, brn, Moist, Rec. = 0.8 ft	7	18.6	19.6	53.1	27.3
10		A-2-4, SiGrSa, brn, Moist, Rec. = 0.7 ft	6	19.6	27.8	48.5	23.7
		12.0 ft - 14.0 ft, Cobble stones					
		No Recovery. Trace of sand in sampler, brn, Moist, 15.0 ft - 17.0 ft	11				
20		A-2-4, SiSa, brn, MTW, Rec. = 1.2 ft	11	25.9	3.7	67.2	29.1
		A-2-4, Sa, brn, MTW, Rec. = 0.9 ft, Some fine graded broken rock material was within sample.	12	18.3	2.0	81.9	16.1
30		No Recovery. Appears to be fine sand, 30.0 ft - 32.0 ft	16				
		A-1-b, Sa, gry-brn, MTW, Rec. = 1.4 ft	13	19.7	4.3	80.1	15.6
		37.0 ft - 40.0 ft, Casing plugged up, Started using mud, Lost our water					
40		A-2-4, SiSa, gry-brn, MTW, Rec. = 1.2 ft	18	19.8	1.6	68.9	29.5
		A-4, SiSa, gry, MTW, Rec. = 1.1 ft	18	19.1	7.2	55.8	37.0
50		50.0 ft - 50.25 ft, No Rec., Hit Bedrock	R				
		Gray, Meta-Limestone, with thin phyllite beds. Competent., Medium hard, Unweathered, NXMD, 50.25 ft - 55.25 ft, Rec. = 4.7 ft	1	94	86	40	14 18 14 12 11
		Hole stopped @ 55.25 ft					
60							

LOG OF BORING: RANDOLPH BHO 1444(44).PJ VT AOT-001 3/23/06

 STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION			BORING NUMBER: B-3 SHEET 1 of 1 DATE STARTED: 2/15/06 DATE COMPLETED: 2/22/06				
PROJECT NAME: RANDOLPH SITE NAME: TH-64 STATION: 101+46.0 OFFSET: -5.00 VTSPG: N 520668.394 ft E 1625902.209 ft			PROJECT NUMBER: BHO 1444(44) SITE NUMBER: Braley Covered Bridge GROUND ELEVATION: 582.71 ft GROUNDWATER DEPTH: 13.0 ft 2/22/06				
BORING CREW CREW CHIEF: GARROW DRILLER: GARROW LOGGER: RUSSELL			BORING RIG: LARGE SKID RIG w/AUTO HAMMER BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL CHECKED BY: DLG				
DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
			RUN	REC (%)	ROD (%)	Dip (deg)	Drill Rate (min/ft)
10	✕ ✕ ✕	Fill Material, No sample, 0.0 ft - 2.0 ft					
		A-2-4, SiSa with some Wood material, brn, Moist, Rec. = 0.5 ft	2	16.8	5.3	70.2	24.5
		A-2-4, SiSa with some Wood material, brn, Moist, Rec. = 0.9 ft	4	27.5	10.1	65.8	24.1
		A-1-b, GrSa, brn, MTW, Rec. = 0.7 ft	8	22.5	20.3	66.6	13.1
20		A-1-b, GrSa, brn, MTW, Rec. = 1.0 ft	6	18.9	27.4	60.1	12.5
		Cleaned out casing, 23.6 ft - 25.0 ft					
		A-1-b, GrSa, gry-brn, MTW, Rec. = 1.2 ft	16	15.0	32.2	51.8	16.0
		A-4, SaSi, gry-brn, MTW, Rec. = 1.2 ft	15	25.7	2.0	43.0	55.0
30		A-2-4, Sa, brn-gry, MTW, Rec. = 1.1 ft	18	18.3	18.0	68.1	13.9
		Cleaned out casing, 39.2 ft - 40.0 ft					
		A-1-b, GrSa, brn-gry, MTW, Rec. = 1.1 ft	17	16.4	24.7	59.8	15.5
		A-2-4, Sa, gry, MTW, Rec. = 1.0 ft	13	22.1	5.1	80.2	14.7
50		A-1-b, Sa, gry, MTW, Rec. = 0.5 ft	15	18.3	18.9	66.5	14.6
		A-1-b, SaGr with Broken Rock within sample, gry, MTW, Rec. = 1.3 ft	R	9.9	52.7	31.2	16.1
		Gray, Phyllite, Poor competency, Moderately soft, Unweathered, BXMDC, 56.5 ft - 58.0 ft, Rec. = 0.5 ft	1	33	0	40	
		Gray, Phyllite, Fair competency, Moderately soft, Unweathered, BXMDC, 58.0 ft - 61.0 ft, Rec. = 1.8 ft	2	60	50	40	
60		Gray, Phyllite, Competent, Moderately soft, Unweathered, BXMDC, 61.0 ft - 64.0 ft, Rec. = 2.7 ft	3	90	73	40	
		Hole stopped @ 64.0 ft					

BOTTOM OF ABUTMENT NO 2
 TREMIE SEAL EL=559.00

LOG OF BORING RANDOLPH BHO 1444(44) 3/23/06

			STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION			BORING NUMBER: B-4 SHEET 1 of 1 DATE STARTED: 1/20/06 DATE COMPLETED: 1/25/06		
PROJECT NAME: RANDOLPH SITE NAME: TH-64 STATION: 101+54.5 OFFSET: 14.00 VTSPG: N 520647.972 ft E 1625906.016 ft						PROJECT NUMBER: BHO 1444(44) SITE NUMBER: Braley Covered Bridge GROUND ELEVATION: 582.43 ft GROUNDWATER DEPTH: 12.0 ft 1/25/06		
BORING CREW CREW CHIEF: GARROW DRILLER: GARROW LOGGER: DAVISON						BORING RIG: LARGE SKID RIG w/AUTO HAMMER BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL CHECKED BY: DLG		
DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	
			RUN	REC (%)	ROD (%)	Dip (deg)	Drill Rate (min/ft)	
10		A-2-4, GrSiSa, brn, Moist, Rec. = 1.1 ft	2	19.0	22.8	51.7	25.5	
		A-1-a, SaGr, brn, Moist, Rec. = 0.75 ft	5	6.9	52.2	38.6	9.2	
		A-2-4, SiSa, brn, Moist, Rec. = 0.9 ft	2	14.5	18.6	58.8	22.6	
		A-2-4, GrSiSa, brn, Moist, Rec. = 1.0 ft	5	17.9	26.6	41.2	32.2	
		A-1-b, GrSa, brn, Moist, Rec. = 0.5 ft	14	12.9	29.4	51.3	19.3	
		A-2-4, GrSiSa, brn, MTW, Rec. = 1.0 ft, Cleaned out casing	7	23.6	20.2	56.4	23.4	
		A-1-b, Sa, brn, MTW, Rec. = 0.8 ft	7	20.4	20.0	63.6	16.4	
		A-1-b, GrSa, brn, MTW, Rec. = 0.55 ft	6	23.6	21.8	61.6	16.6	
		A-1-b, GrSa, brn, Wet, Rec. = 1.0 ft	6	22.4	26.9	59.0	14.1	
		A-1-b, GrSa, brn, MTW, Rec. = 0.75 ft	7	18.6	31.8	54.5	13.7	
20		A-1-b, GrSa, brn, Wet, Rec. = 0.8 ft	11	15.5	32.7	49.4	17.9	
		A-4, SaSi, brn, MTW, Rec. = 1.15 ft	13	26.0	0.0	49.2	50.8	
30								
		A-1-b, GrSa, brn, MTW, Rec. = 1.15 ft	35	14.5	28.8	57.3	13.9	
		A-1-b, Sa, brn, MTW, Rec. = 1.15 ft	14	21.7	5.8	77.1	17.1	
40								
		A-2-4, Sa, brn, Wet, Rec. = 1.0 ft	12	21.9	8.3	75.4	16.3	
		A-1-b, SaGr, brn, Wet, Rec. = 0.95 ft	32	12.8	48.0	36.2	15.8	
50								
		A-1-b, SiGrSa, gry, MTW, Rec. = 0.5 ft	R	12.1	31.6	46.5	21.9	
				Top of Bedrock @ 51.7 ft				
60		Gray, Meta-Limestone, interbedded with phyllite. Competent, Moderately hard, Unweathered, NXMDC, 51.7 ft - 56.7 ft, Rec. = 5.0 ft	1	100	86	50	7 10 8 7 6	
		Gray, Meta-Limestone, interbedded with phyllite. Competent, Moderately hard, Unweathered, NXMDC, 56.7 ft - 61.7 ft, Rec. = 4.75 ft	2	95	95	50	6 5 4 4 5	
		Hole stopped @ 61.7 ft						

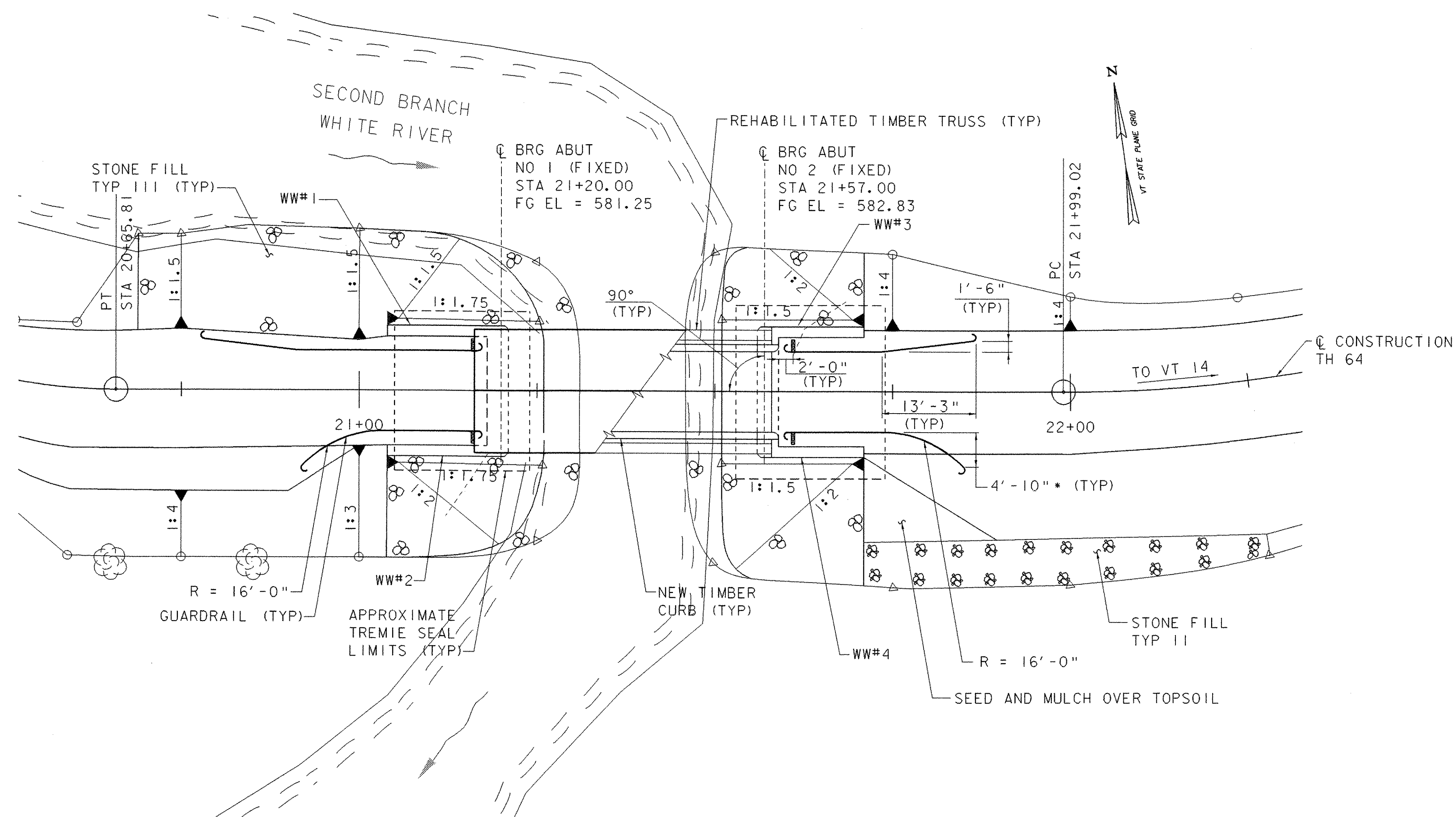
LOG OF BORING: RANDOLPH BHO 1444(44).SFL1 VT DOT.GDT 3/23/06

LOG OF BORING RANDOLPH BHO 1444(44) 3/23/06

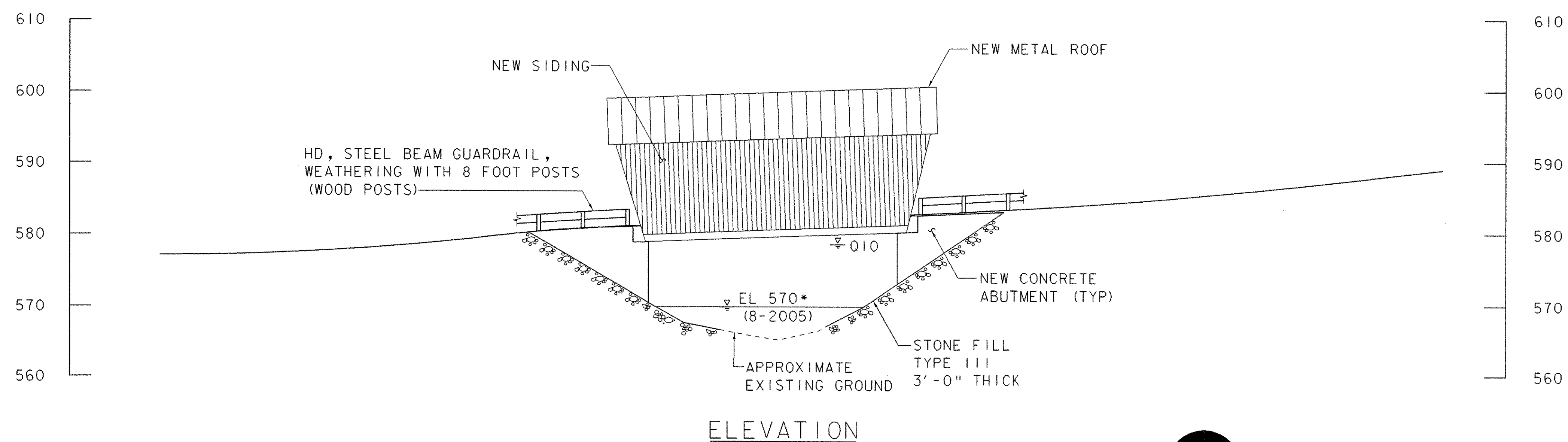
PROJECT NAME: RANDOLPH
 PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146bor2.dgn
 PROJECT LEADER: S. HODGDON
 DESIGNED BY: VTRANS
 BORING LOG SHEET (2 OF 2)

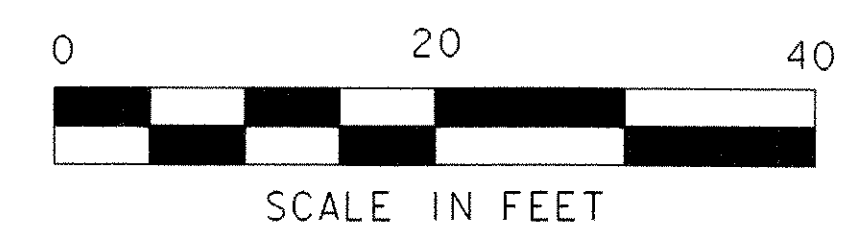
PLOT DATE: 26-JUN-2007
 DRAWN BY: K. WENTWORTH
 CHECKED BY: S. HODGDON
 SHEET 23 OF 39



PLAN



ELEVATION



- NOTES:
1. SEE ROADWAY PLAN SHEET FOR GUARDRAIL STATIONING.
 2. VARIABLE WIDTH TRAVEL WAY LINES NOT SHOWN FOR CLARITY. SEE CROSS SECTIONS FOR ROADWAY TRAVEL WAY AND SLOPE BREAK INFORMATION.

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146pe.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: K. ZIENKIEWICZ
PLAN AND ELEVATION SHEET

PLOT DATE: 03-JUL-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: S. HODGDON
SHEET 24 OF 39

GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SEVENTEENTH EDITION, AND ITS LATEST REVISIONS.
2. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES F UNLESS OTHERWISE NOTED.
3. IN-STREAM CONSTRUCTION SHALL BE RESTRICTED TO JUNE 1 TO OCTOBER 1, UNLESS THE CONTRACTOR OBTAINS WRITTEN PERMISSION FROM THE AGENCY OF NATURAL RESOURCES TO DO WORK OUTSIDE OF THIS TIME FRAME.
4. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SILTATION OR POLLUTION, ESPECIALLY THE DISCHARGE OF CONCRETE, INTO ANY BROOK, STREAM OR RIVER.
5. THE COST OF ON-PROJECT SIGNS AND BARRICADES REQUIRED SHALL BE INCLUDED IN THE TRAFFIC CONTROL ITEM. THE REMOVAL AND/OR RESETTING OF TRAFFIC SIGNS, AS DEEMED NECESSARY BY THE RESIDENT ENGINEER WILL ALSO BE INCLUDED IN THE TRAFFIC CONTROL ITEM.
6. TRAFFIC SHALL BE MAINTAINED ON THE EXISTING ROAD AND EXISTING TEMPORARY DETOUR BRIDGE DURING CONSTRUCTION. COST SHALL BE INCLUDED IN ITEM 527.10, "MAINTENANCE OF STRUCTURES AND APPROACHES."
7. THE STONE FILL IN FRONT OF THE ABUTMENTS SHALL BE PLACED BEFORE THE BEAMS OR COVERED BRIDGE ARE ERECTED.
8. THERE ARE NO ORIGINAL PLANS AVAILABLE OF THE EXISTING COVERED BRIDGE AND RUBBLE MASONRY ABUTMENTS. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAKING FIELD MEASUREMENTS OF ALL EXISTING CONDITIONS THAT AFFECT OR ARE IMPACTED BY THE NEW WORK TO ASSURE CONSISTENCY WITH THE PROPOSED CONSTRUCTION. ANY DISCREPANCIES IN DIMENSIONS, CHARACTER OR EXTENT OF THE EXISTING FEATURES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE ADVANCING THE WORK.
9. ONLY A THREE ROD (49.5 FEET) RIGHT-OF-WAY (R.O.W.) IS AVAILABLE FOR CONSTRUCTION ACTIVITY. IF ADDITIONAL R.O.W. IS NEEDED FOR CONSTRUCTION OR STAGING PURPOSES, THE CONTRACTOR SHALL SECURE ALL NECESSARY EASEMENTS. COST SHALL BE INCIDENTAL TO ALL CONTRACT ITEMS.

CONCRETE NOTES:

1. CONCRETE USED IN SUPERSTRUCTURE (CURTAIN WALL AND CONCRETE CURB) SHALL BE HIGH PERFORMANCE CLASS "A". ALL OTHER CONCRETE, EXCEPT FOR THE TREMIE SEAL CONCRETE, SHALL BE HIGH PERFORMANCE CLASS "B". TREMIE SEAL CONCRETE WILL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 208.40.
2. ALL EXPOSED CONCRETE (EXCEPT FOR TOP OF CURTAIN WALL) AND CONCRETE SURFACES WITHIN ONE FOOT OF FINISH GRADE SHALL BE COATED WITH AN APPROVED DARK GRAY STAIN AND PROTECTIVE SEALANT. SEE CONTRACT SPECIAL PROVISIONS.
3. THE KEY IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT. ANY UPWARD KEY SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.
4. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1".
5. JOINTS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
6. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH THE APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).
7. REINFORCING PLACEMENT TOLERANCES SHALL BE:
SPACING: $\pm 1"$
CLEARANCE: $\pm \frac{1}{4}"$
8. MINIMUM COVER FOR REINFORCING STEEL SHALL BE TWO (2) INCHES ALONG THE BACK FACES OF WALLS AGAINST EARTH AND THREE (3) INCHES ELSEWHERE, UNLESS OTHERWISE NOTED.
9. WHEN EPOXY COATED REINFORCING IS CUT, THE UNCOATED ENDS SHALL BE REPAIRED WITH MATERIALS AND PROCEDURES APPROVED BY THE COATING MANUFACTURER. FLAME CUTTING OF EPOXY COATED REINFORCING STEEL IS NOT PERMITTED.
10. TOP SURFACES OF TRUSS PEDESTALS SHALL BE LEVEL.
11. NO TRAFFIC SHALL BE ALLOWED ON THE NEW FLOOR SYSTEM UNTIL THE CURE PERIOD FOR THE CURTAIN WALL HAS LAPSED OR THE 28 DAY COMPRESSIVE STRENGTH IS ATTAINED, AS EVIDENCED BY TEST CYLINDERS CURED UNDER FIELD CONDITIONS.

STRUCTURAL STEEL NOTES:

1. BEAMS, DIAPHRAGMS, CONNECTION PLATES, GUSSET PLATES, AND TRUSS RETAINER BRACKETS SHALL CONFORM TO AASHTO M270 GRADE 50 AND SHALL BE PAID FOR UNDER ITEM 506.50, "STRUCTURAL STEEL, ROLLED BEAM". THESE MEMBERS SHALL BE GALVANIZED AND PAINTED IN ACCORDANCE WITH SECTION 513 (COLOR SHALL BE DARK BROWN COLOR CHIP # 20059).
2. THE BEAM HOLD-DOWN ANGLES AND TRUSS HOLD-DOWN ANGLES SHALL CONFORM TO AASHTO M270 GRADE 50 AND SHALL BE PAID UNDER ITEM 506.60, "STRUCTURAL STEEL." THE TRUSS HOLD-DOWN BOLTS AND ANCHOR RODS SHALL CONFORM TO ASTM A307 AND SUBSECTION 714.08. THE COST OF THESE BOLTS AND RODS SHALL BE INCIDENTAL TO ITEM 506.60.
3. ALL BOLTS FOR STRUCTURAL STEEL SHALL BE $\frac{3}{8}"$ DIAMETER, TYPE 1, GALVANIZED AND PAINTED UNLESS OTHERWISE NOTED.
4. STANDARD HOLES SHALL BE USED IN ALL CONNECTIONS UNLESS OTHERWISE NOTED.
5. BEAMS SHALL MEET THE CHARPY V-NOTCH REQUIREMENTS FOR MAIN MEMBERS AS INDICATED IN SUBSECTION 714.01 OF THE SPECIFICATIONS.
6. BEAMS SHALL BE FABRICATED WITH ZERO CAMBER. ACCEPTABLE CAMBER TOLERANCE SHALL BE MINUS 0" AND PLUS $\frac{1}{4}"$.
7. ANY CONNECTIONS THAT ARE NOT DESIGNED SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED FOR APPROVAL.
8. IN LIEU OF THE W18X86 BEAM SHOWN IN THE PLANS, AN EQUIVALENT PLATE GIRDER (PLATE DIMENSIONS AND THICKNESS COMPARABLE TO THE ROLLED BEAM SECTION WITH $\frac{3}{8}"$ FLANGE TO WEB FILLET WELDS ON EACH SIDE) OR A W18X97 ROLLED BEAM MAY BE SUBSTITUTED AT NO ADDITIONAL COST TO THE AGENCY.

TEMPORARY BRIDGE AND APPROACHES NOTE:

1. AT THE TIME THESE PLANS WERE PREPARED FOR THE REHABILITATION OF THE BRALEY COVERED BRIDGE, THE CONTRACT TO CONSTRUCT THE TEMPORARY BRIDGE, ITS RELATED APPROACHES, AND THE RELOCATION OF THE EXISTING COVERED BRIDGE WAS UNDER WAY BUT NOT COMPLETE. ACCORDINGLY, THESE PLANS DO NOT REFLECT THE ACTUAL, AS-BUILT CONDITION OF THE TEMPORARY BRIDGE AND THE SITE AS IT CURRENTLY EXISTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THE EXISTING SITE CONDITIONS AND TO CONSTRUCT THE WORK IN ACCORDANCE WITH THE CONTRACT.

BRIDGE REMOVAL NOTES:

1. UNDER A SEPARATE CONTRACT, THE EXISTING COVERED BRIDGE SHELL WAS PARTIALLY DISMANTLED, REMOVED FROM THE SITE, AND STORED AT TOWN GARAGE FACILITY. CONTACT PETER BUTTERFIELD, TOWN OF RANDOLPH TOWN MANAGER, FOR ADDITIONAL INFORMATION.
2. THE EXISTING ABUTMENT STONE MASONRY SHALL BE SALVAGED AND LOADED ON TO TOWN OF RANDOLPH TRUCKS. THE CONTRACTOR SHALL COORDINATE THIS WORK WITH PETER BUTTERFIELD, TOWN OF RANDOLPH TOWN MANAGER. REMOVAL OF THE STONE MASONRY WITHIN THE COFFERDAM PAY LIMITS SHALL BE INCLUDED IN ITEM 208.30 OR ITEM 208.35 AS APPROPRIATE. REMOVAL OF STONE MASONRY OUTSIDE THE COFFERDAM PAY LIMITS SHALL BE INCLUDED IN ITEM 203.27. A NOMINAL (ASSUMED) QUANTITY FOR COFFERDAM EXCAVATION, ROCK IS INCLUDED FOR EACH ABUTMENT TO ALLOW FOR ROCKS OR BOULDERS MEASURING 0.5 CY OR MORE.
3. TO THE SATISFACTION OF THE ENGINEER, ITEM 529.15, "REMOVAL OF STRUCTURE" SHALL INCLUDE THE REMOVAL OF THE EXISTING TEMPORARY BRIDGE INCLUDING RELATED APPROACHES AND SHEETING. ANY CONCRETE OR STEEL AT THE EXISTING BRIDGE SHALL ALSO BE REMOVED AND THE COST SHALL BE INCLUDED IN ITEM 529.15.
4. THE STEEL BEAMS USED FOR THE EXISTING TEMPORARY BRIDGE ARE COATED WITH A MATERIAL THAT MAY CONTAIN LEAD AND THE EXISTING TIMBERS IN THE TEMPORARY BRIDGE MAY CONTAIN HAZARDOUS WOOD PRESERVATIVES. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE, ITS OFFICERS, AND EMPLOYEES HARMLESS REGARDING THE CONTRACTOR'S HANDLING OF THESE MATERIALS AND SUBSEQUENT USE, RE-USE, OR DISPOSAL OF THESE BEAMS AND TIMBERS.

STRUCTURAL LUMBER AND TIMBER NOTES:

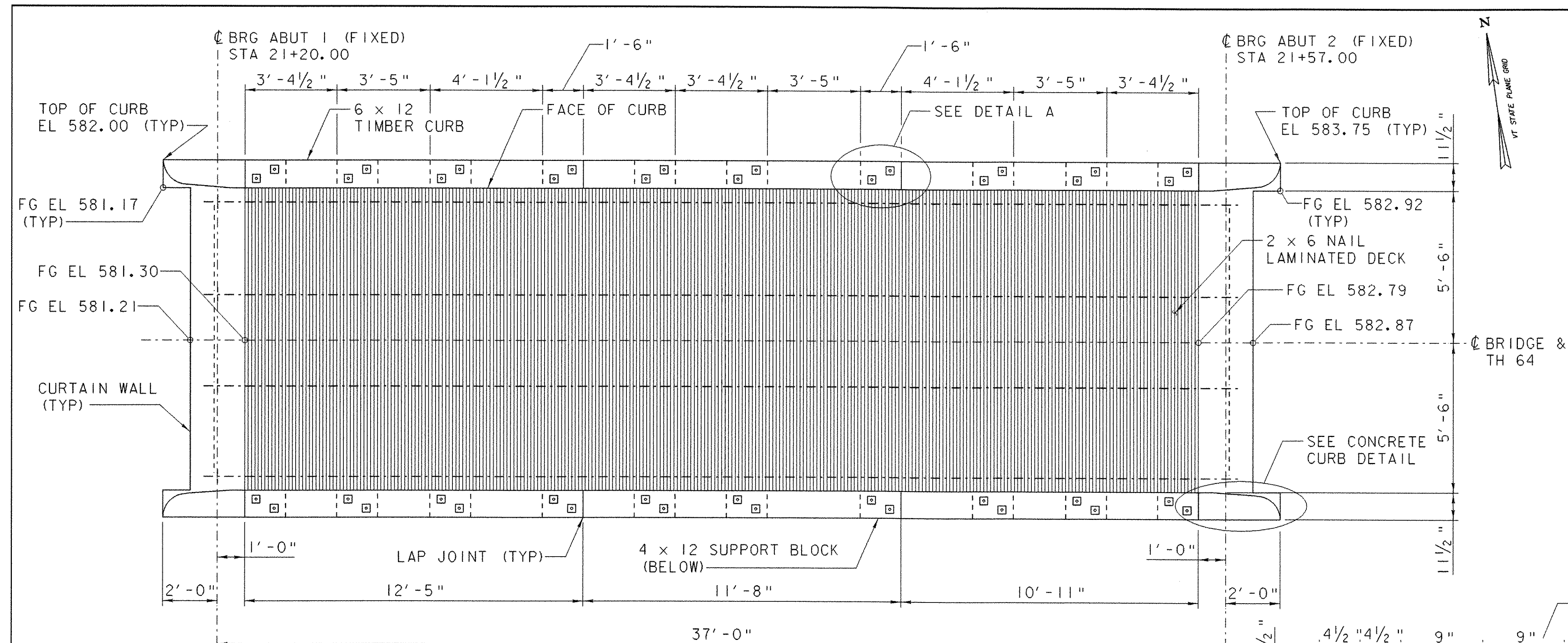
1. NAIL LAMINATED DECKING SHALL BE TREATED, S-P-F GRADE NO 2 OR BETTER (DRESSED). ALL COST SHALL BE INCLUDED UNDER ITEM 522.25, "STRUCTURAL LUMBER AND TIMBER, TREATED." TREATMENT FOR DECKING SHALL CONFORM TO A TYPE II PRESERVATIVE PER SECTION 726.
2. THE NAIL LAMINATED DECKING SHALL BE ATTACHED TO THE SUPPORTING STEEL FLANGES WITH THE APPROVED GALVANIZED METAL CLIPS. COST WILL BE INCIDENTAL TO ITEM 522.25.
3. TIMBER CURB, RISER BLOCKING, AND CURB BLOCKS SHALL BE TREATED WOOD, GRADE NO 1 OR BETTER. COST SHALL BE INCLUDED IN ITEM 522.25. TREATMENT FOR CURB AND BLOCKING SHALL CONFORM TO A TYPE II PRESERVATIVE PER SECTION 726.
4. TRUSS CHORD TIMBER SHALL BE EASTERN SPRUCE, GRADE NO 1 OR BETTER (FULL SAWN). OTHER LUMBER OR TIMBER SHALL BE EASTERN HEMLOCK, GRADE NO 1 OR BETTER (FULL SAWN) UNLESS OTHERWISE NOTED. ALL COST SHALL BE INCLUDED UNDER ITEM 522.20, "STRUCTURAL LUMBER AND TIMBER, UNTREATED". IF THE SPECIFIED SEASONED WOOD IS NOT READILY AVAILABLE IN A MANNER THAT ACCOMMODATES THE CONSTRUCTION SCHEDULE, ALTERNATIVE SEASONED WOOD SPECIES MAY BE SUBMITTED TO THE AGENCY FOR CONSIDERATION. NAILERS 2" OR MORE IN THICKNESS SHALL BE EASTERN (LOCAL) MATERIAL, GRADE #1 OR BETTER.
5. HARDWOOD TIMBER AND LUMBER NOTED IN THE PLANS SHALL BE UNTREATED, SEASONED WHITE OAK, GRADE NO 1 OR BETTER (FULL SAWN). ALTERNATIVE UNTREATED, SEASONED HARDWOOD SPECIES MAY BE SUBMITTED TO THE AGENCY FOR CONSIDERATION. COST SHALL BE INCLUDED UNDER ITEM 522.20.
6. WOOD DOWELS OR TRUNNELS AND WEDGES SHALL BE RETAINED UNLESS THEY ARE DAMAGED, DETERIORATED, OR LOOSE. DOWELS OR WEDGES THAT ARE MISSING OR REQUIRE REPLACEMENT SHALL BE REPLACED IN-KIND WITH UNTREATED, SEASONED WHITE OAK, GRADE NO 1 OR BETTER AND SHALL BE SIZED TO FIT TIGHTLY AND SECURE. PAYMENT WILL BE INCIDENTAL TO ITEM 522.20.
7. WHERE NOT SPECIFIED, ALL LUMBER AND TIMBER DIMENSIONS ARE IN INCHES.
8. ALL DIMENSIONAL LUMBER, AS INDICATED BY 1" OR 2" THICKNESS, SHALL BE ~~NOMINAL~~ (DRESSED) AND ALL OTHER LUMBER SHALL BE FULL WIDTH AND THICKNESS (FULL-SAWN) UNLESS OTHERWISE NOTED. (S4S)
NOTE: REPLACED WITH CONTRACT SP#62.

COVERED BRIDGE REHABILITATION NOTES:

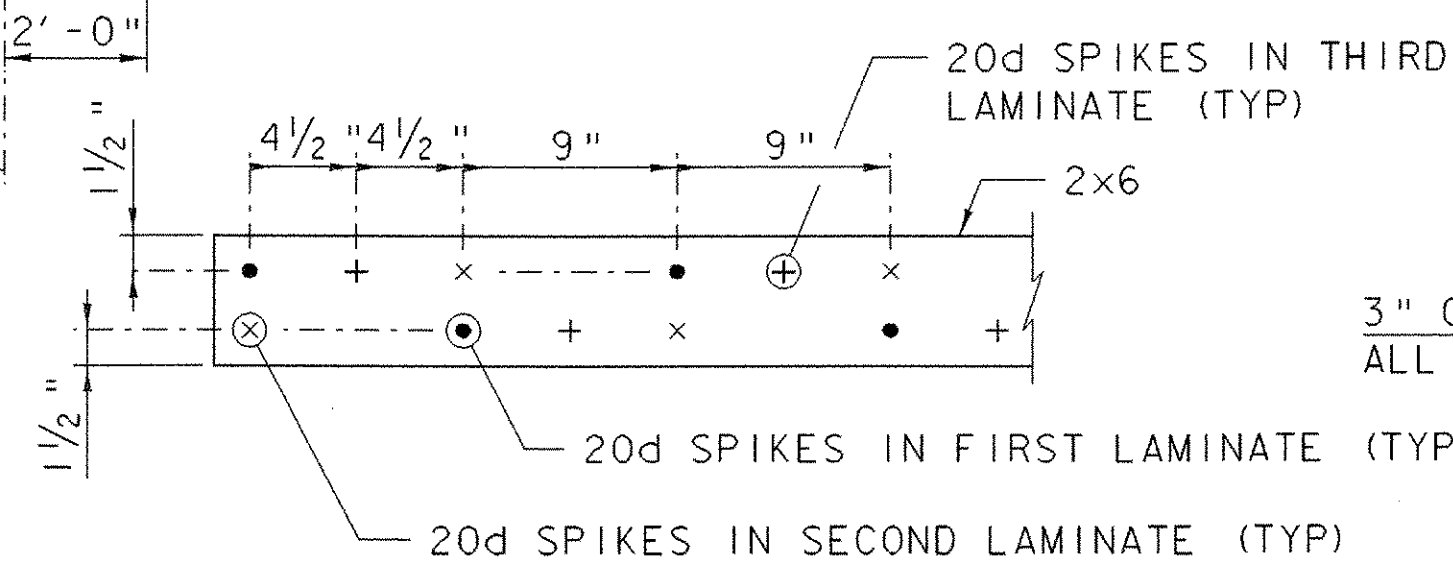
1. THE CONTRACTOR SHALL TAKE SPECIAL CARE TO NOT DAMAGE ANY PORTIONS OF THE EXISTING COVERED BRIDGE THAT ARE RETAINED DURING THE REHABILITATION PROJECT.
2. ITEM 900.645, SPECIAL PROVISION (INCORPORATING SALVAGED BRIDGE COMPONENTS) SHALL INCLUDE ALL COSTS ASSOCIATED WITH HANDLING, TRANSPORTING, AND ERECTING THE COVERED BRIDGE. THIS ITEM SHALL ALSO INCLUDE ALL COSTS ASSOCIATED WITH TIMBER MODIFICATIONS/REMOVAL/DISPOSAL AND THE PROTECTION/REUSE OF ALL SALVAGED TIMBER AND HARDWARE. THE EXISTING COVERED BRIDGE TIMBERS MAY CONTAIN HAZARDOUS WOOD PRESERVATIVES. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE, ITS OFFICERS, AND EMPLOYEES HARMLESS REGARDING THE CONTRACTOR'S HANDLING OF THESE MATERIALS AND SUBSEQUENT USE, RE-USE, OR DISPOSAL OF THESE TIMBERS.
3. NEW SIDING BOARDS, TRIM, AND NAILERS (LESS THAN 2" THICK) SHALL BE INCLUDED IN ITEM 522.30, "NONSTRUCTURAL LUMBER, UNTREATED". NAILERS 2" OR MORE IN THICKNESS SHALL BE INCLUDED IN ITEM 522.20, "STRUCTURAL LUMBER AND TIMBER, UNTREATED." EXPOSED SIDING SHALL BE PRIMED AND PAINTED RED. ROOFING AND EYE TRIM SHALL BE PRIMED AND PAINTED RED. SEE SPECIAL PROVISIONS FOR TIMBER PAINTING INFORMATION AND REQUIREMENTS.
4. NEW ROOFING SHALL PAID UNDER SPECIAL PROVISION ITEM 900.670. NEW RAFTERS, RAFTER TAILS, COLLAR BOARDS, AND ANY ROOFING BOARDS THAT REQUIRE REPLACEMENT, AS DETERMINED BY THE ENGINEER, SHALL BE PAID UNDER ITEM 522.20. RAFTERS, RAFTER TAILS, ROOFING BOARDS AND COLLAR BOARDS SHALL BE EASTERN (LOCAL) MATERIAL, GRADE #1 OR BETTER.
5. COVERED BRIDGE LUMBER AND TIMBER SHALL BE CLEANED AND COATED WITH INSECTICIDE/FUNGICIDE AND A FIRE RETARDANT. COST SHALL BE INCLUDED UNDER THE APPROPRIATE SPECIAL PROVISION ITEM 900.645.
6. THE CONTRACTOR MAY TEMPORARILY SUPPORT OR BRACE THE TIMBER TRUSSES TO THE NEW FLOOR SYSTEM DURING THE ASSEMBLY OF THE COVERED BRIDGE UNTIL THE BRIDGE IS SUFFICIENTLY STABLE. CONSTRUCTION DRAWINGS OF TEMPORARY SUPPORT DETAILS SHALL BE SUBMITTED TO THE AGENCY FOR APPROVAL IN ACCORDANCE WITH SUBSECTION 105.03. ALL TEMPORARY SUPPORTS SHALL BE REMOVED PRIOR TO OPENING THE BRIDGE TO VEHICULAR TRAFFIC. COST SHALL BE INCLUDED IN ITEM 900.645 SPECIAL PROVISION (INCORPORATING SALVAGED BRIDGE COMPONENTS).
7. STRUCTURAL TIMBER AND LUMBER CONSTRUCTION SHALL BE PERFORMED IN A "NO LOAD" CONDITION WHERE PRACTICAL.
8. THE TERM "REPLACE IN-KIND", AS USED IN THESE PLANS, SHALL MEAN REPLACEMENT OF AN EXISTING MEMBER WITH A MEMBER IDENTICAL IN DIMENSION AND CONFIGURATION AS THE MEMBER ORIGINALLY USED IN THE STRUCTURE (INCLUDING MORTISES, TENONS, NOTCHES, HOLES, FIT TOLERANCES, SURFACE (DRESSED OR ROUGH), ETC.). THE CONTRACTOR SHALL REQUEST CLARIFICATION FROM THE ENGINEER PRIOR TO FABRICATING A REPLACEMENT MEMBER WHEN THE EXTENTS OF DETERIORATION OR MODIFICATIONS MAKE THE DIMENSIONS OR CONFIGURATION OF THE ORIGINAL MEMBER UNCLEAR.



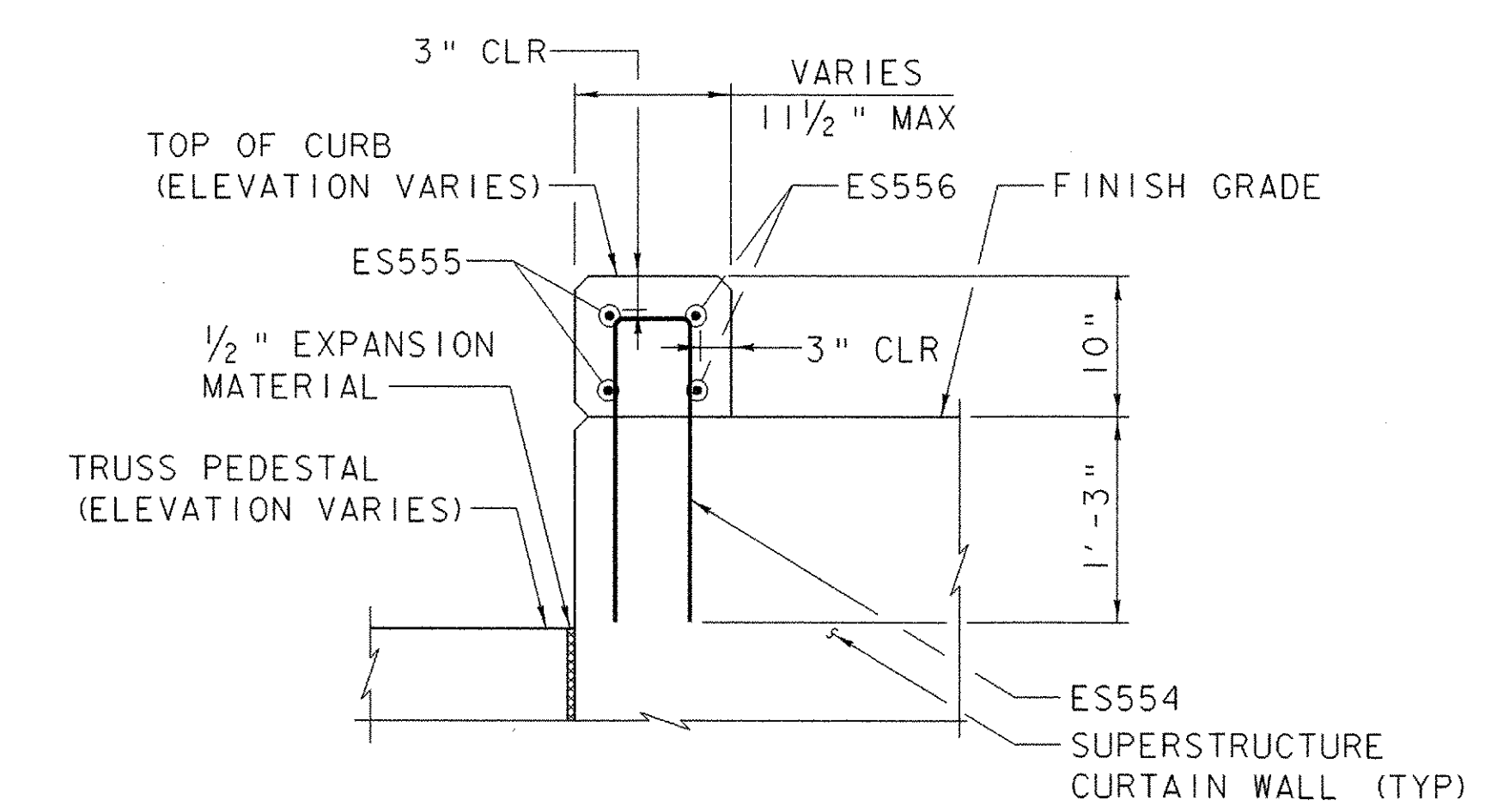
PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BHD 1444 (44)	
FILE NAME: z04j146gn.dgn	PLOT DATE: 06-JUL-2007
PROJECT LEADER: S.HODGSON	DRAWN BY: K.WENTWORTH
DESIGNED BY: S.HODGSON	CHECKED BY: K.ZIENKIEWICZ
GENERAL NOTES	SHEET 25 OF 39



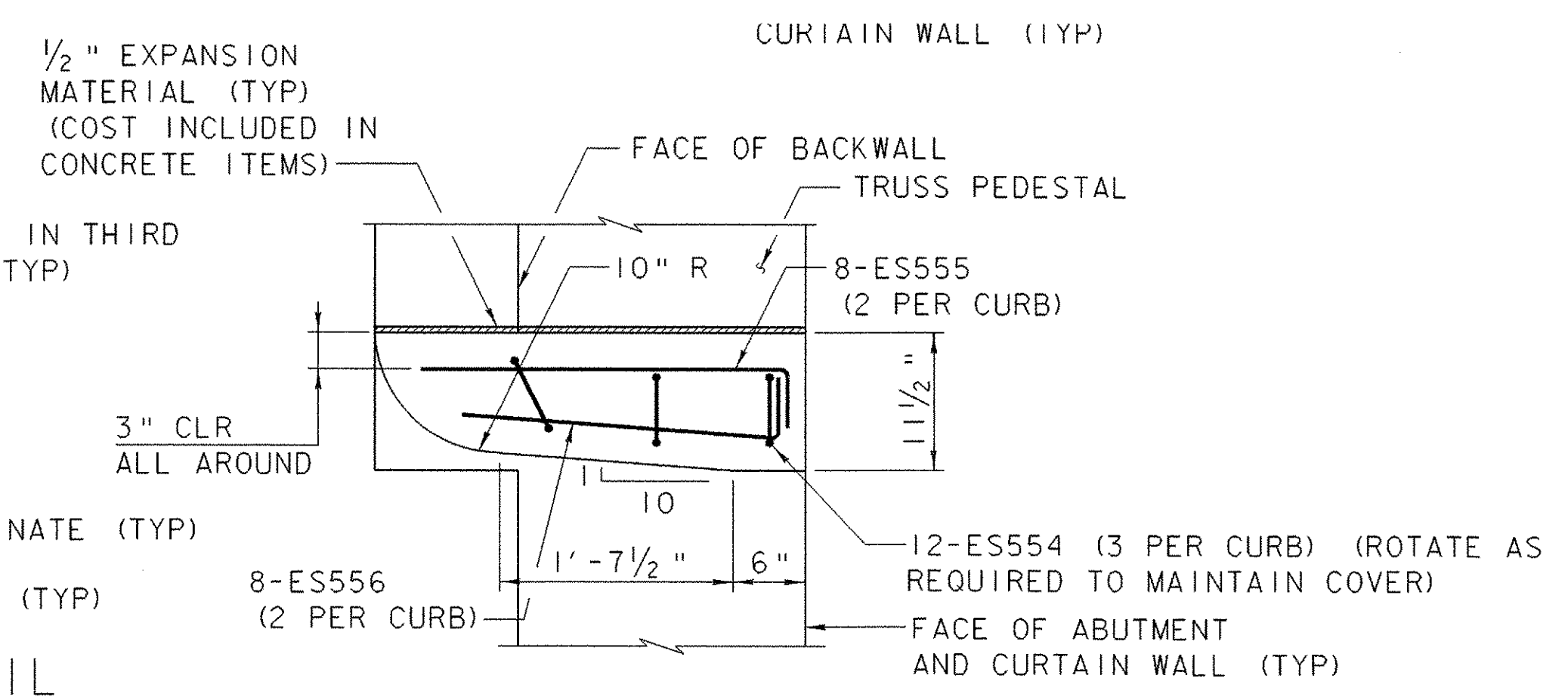
SUPERSTRUCTURE PLAN
(TRUSS, RETAINER BRACKET, AND GUIDE BLOCK NOT SHOWN)
SCALE: 3/8" = 1'-0"



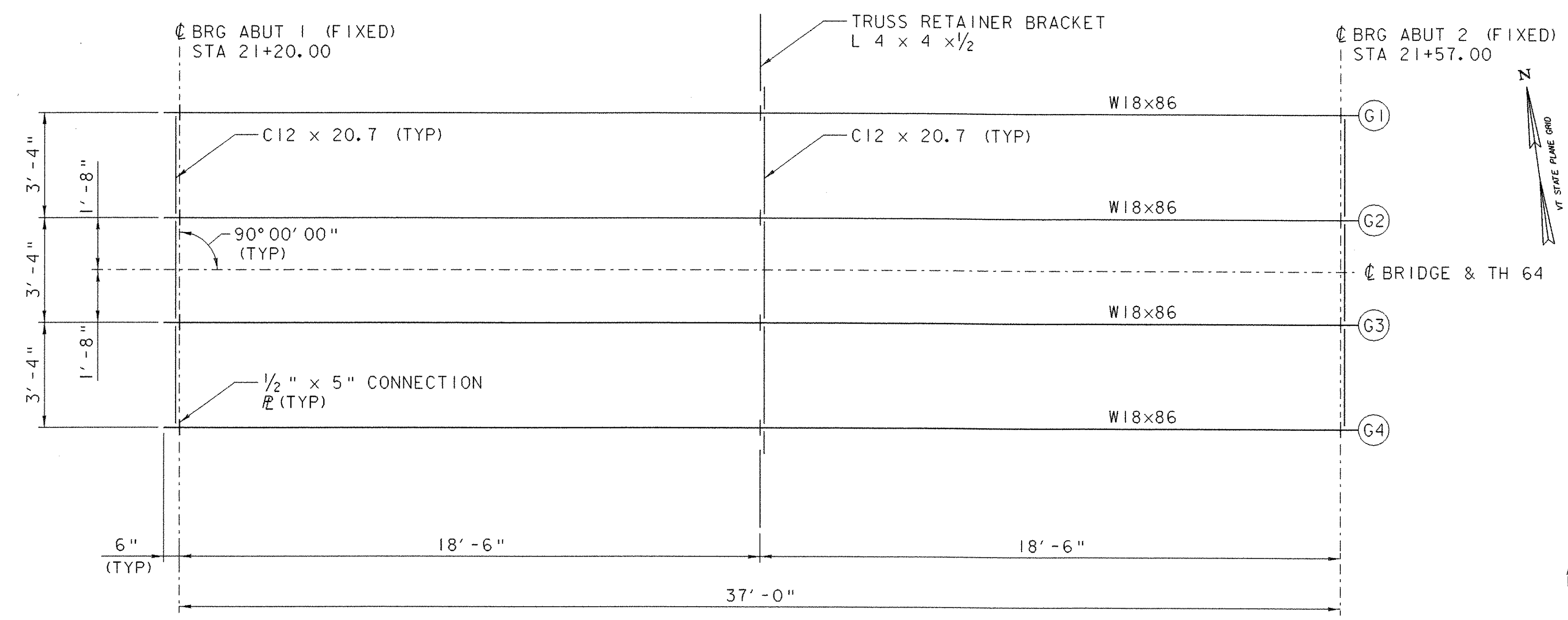
NAIL LAMINATED DECK DETAIL
NOT TO SCALE



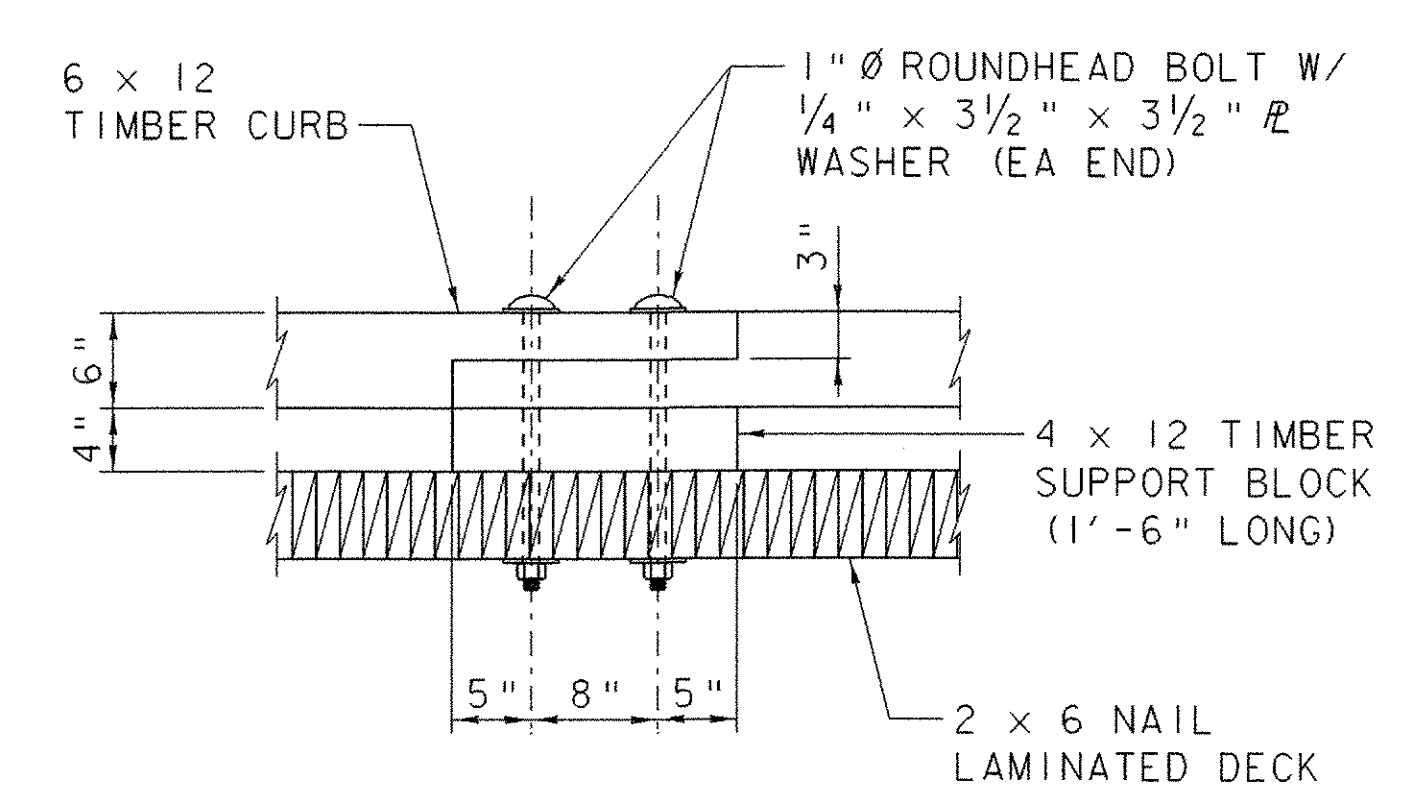
CONCRETE CURB DETAIL SECTION
SCALE: 1" = 1'-0"



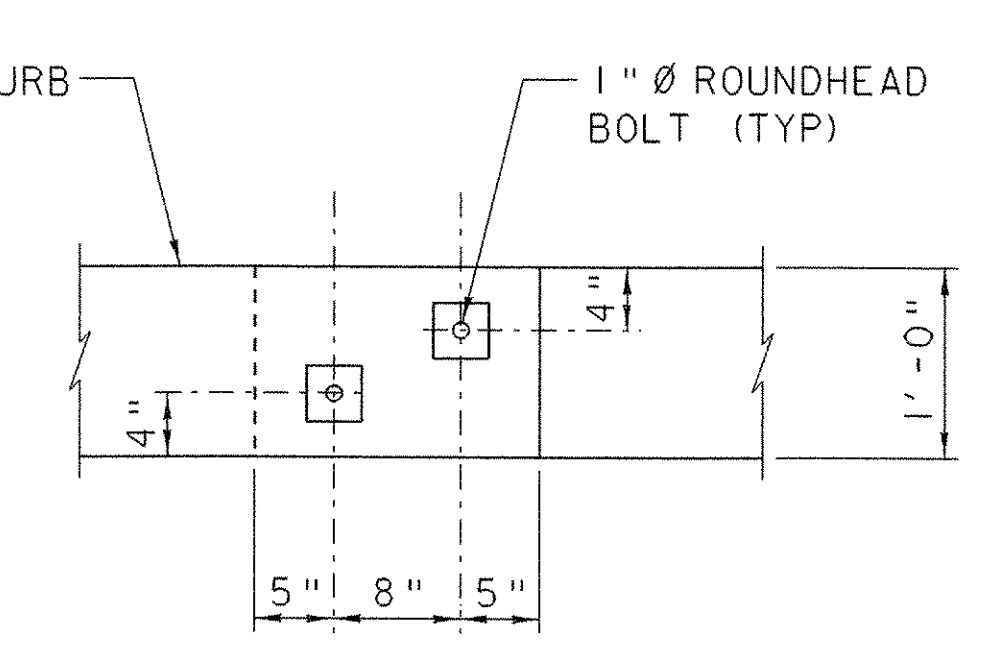
CONCRETE CURB DETAIL PLAN
SCALE: 1" = 1'-0"



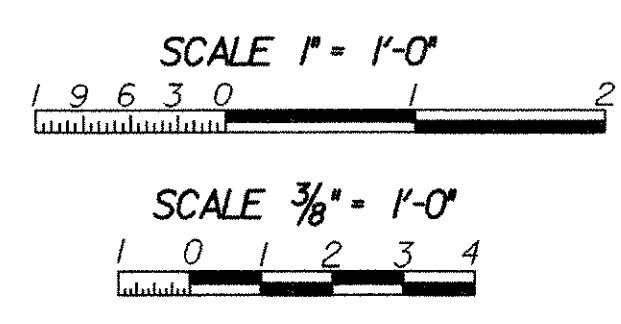
FRAMING PLAN
SCALE: 3/8" = 1'-0"



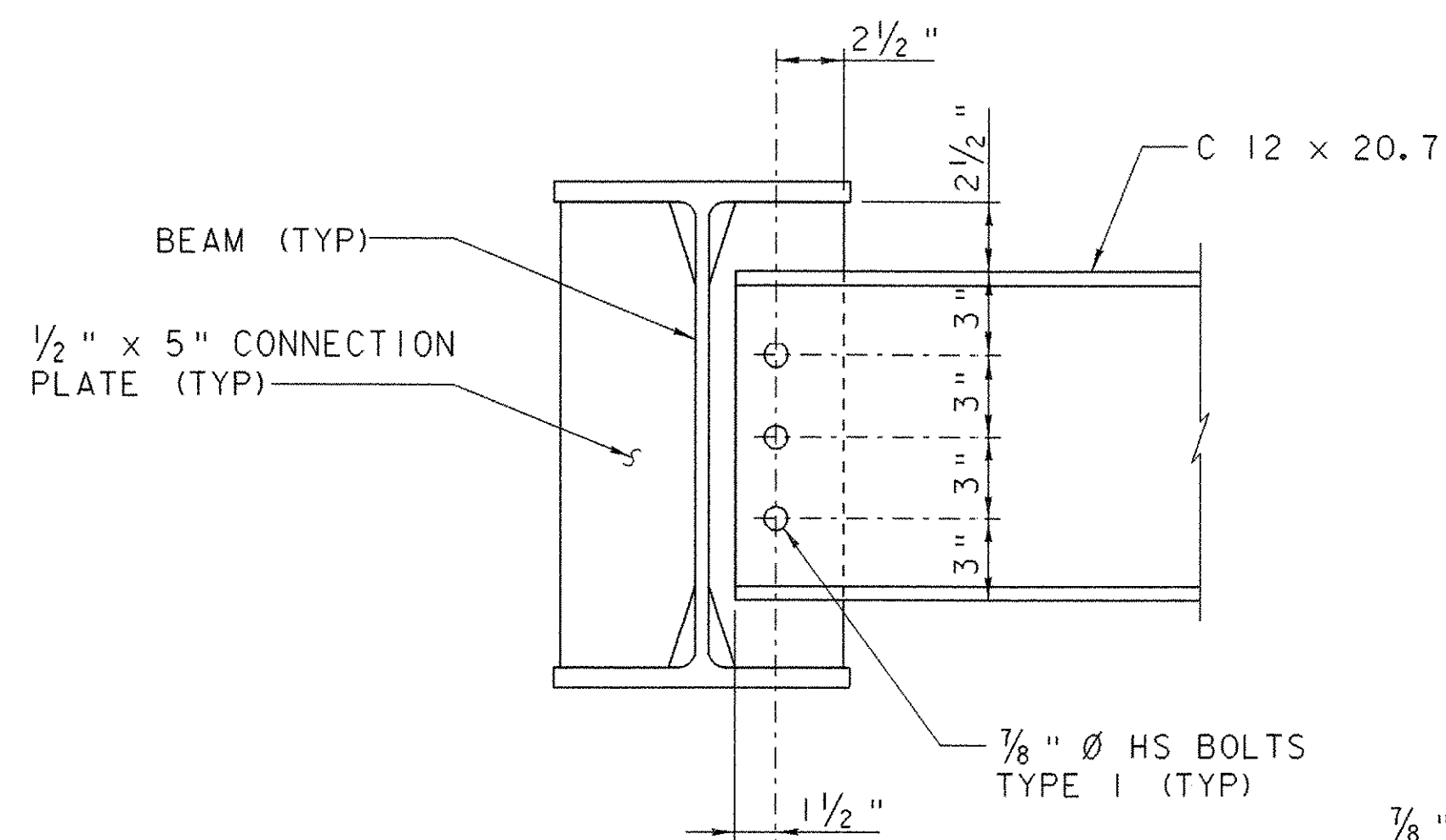
DETAIL 'A' ELEVATION
SCALE: 1" = 1'-0"



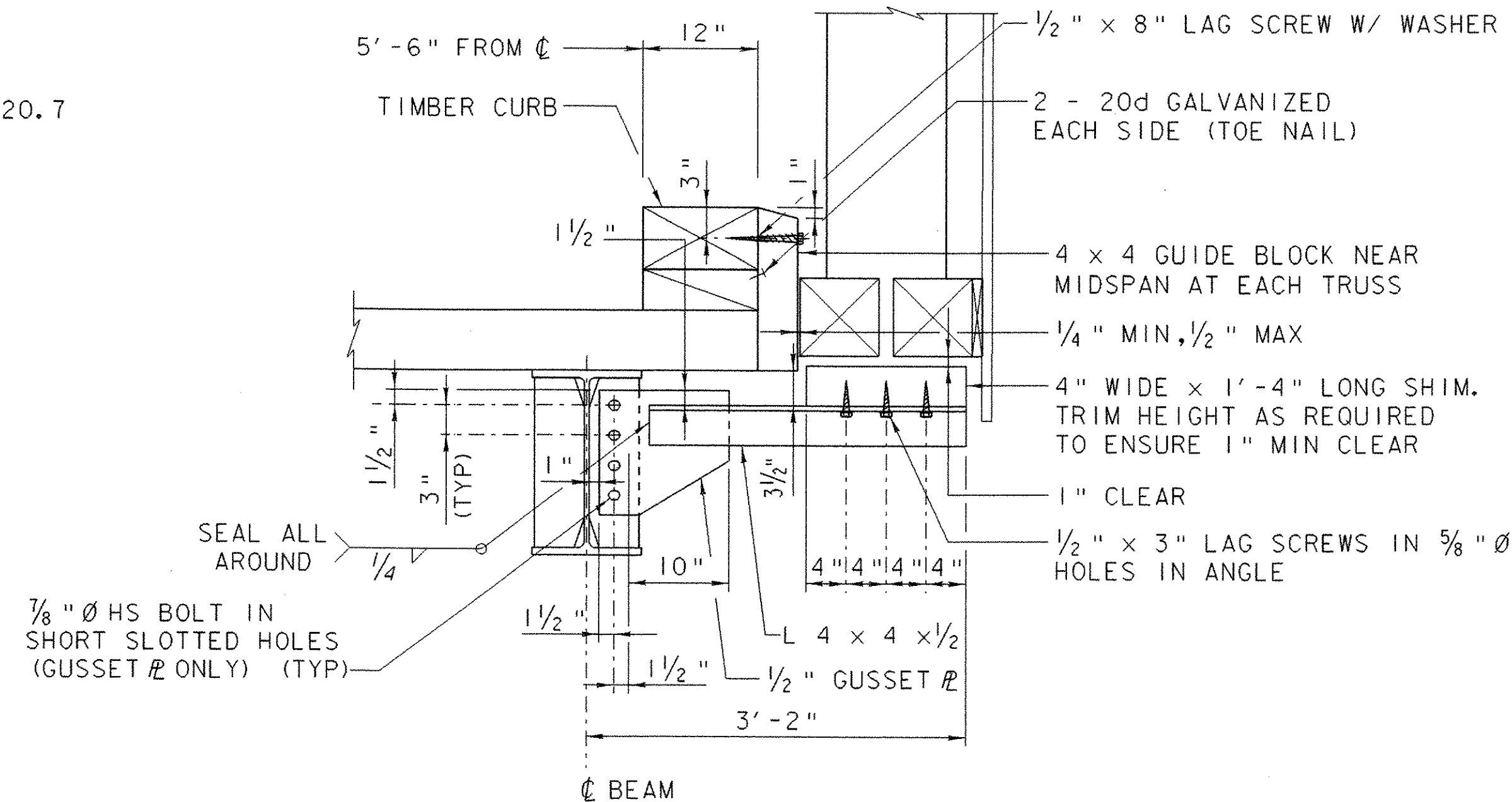
DETAIL 'A' PLAN
SCALE: 1" = 1'-0"



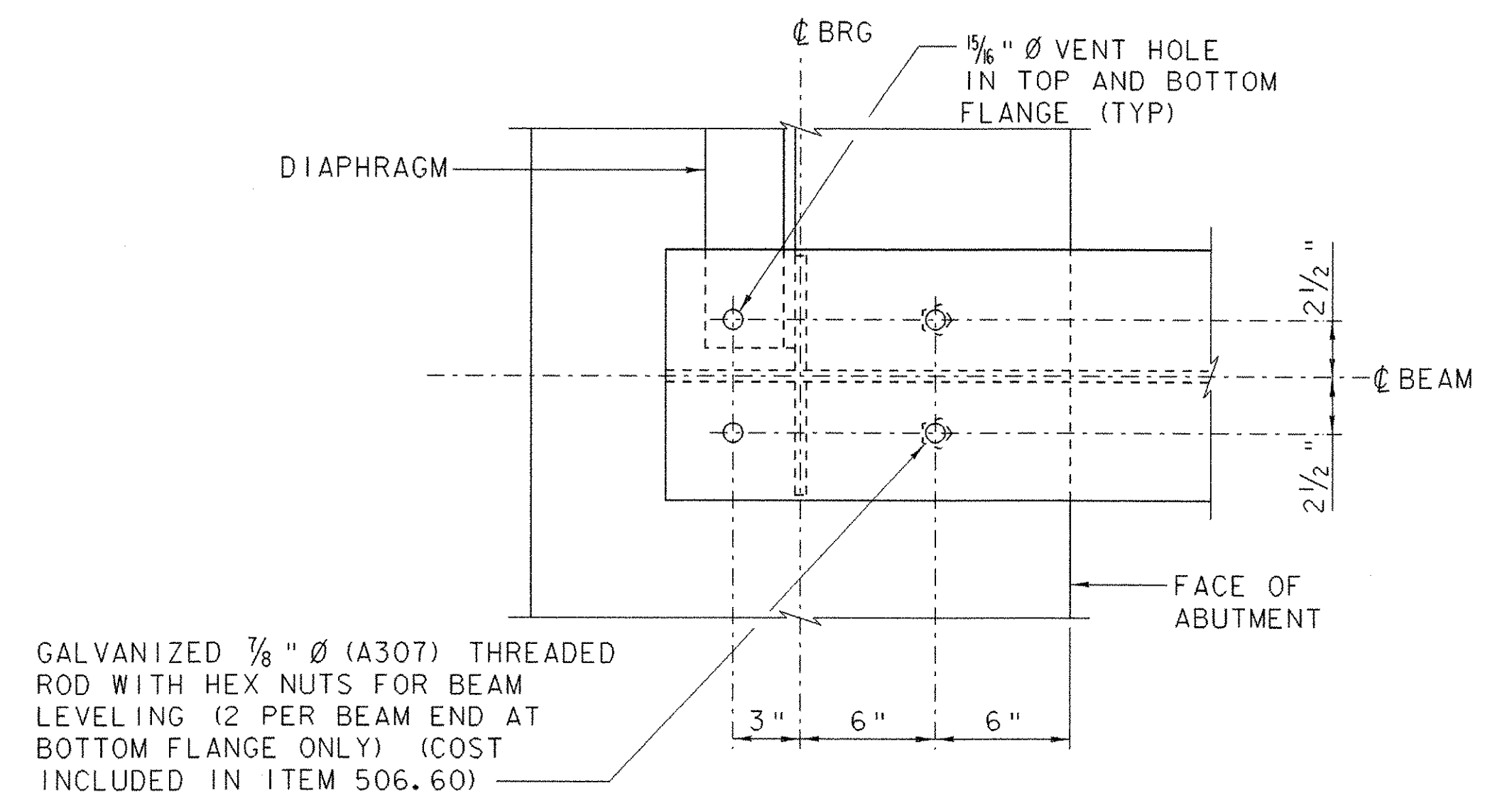
PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BHO 1444 (44)	
FILE NAME: z04j146ssdl.dgn	PLOT DATE: 26-JUN-2007
PROJECT LEADER: S. HODGDON	DRAWN BY: K. WENTWORTH
DESIGNED BY: K. ZIENKIEWICZ	CHECKED BY: S. HODGDON
SUPERSTRUCTURE DETAILS SHEET (10 OF 2)	SHEET 26 OF 39



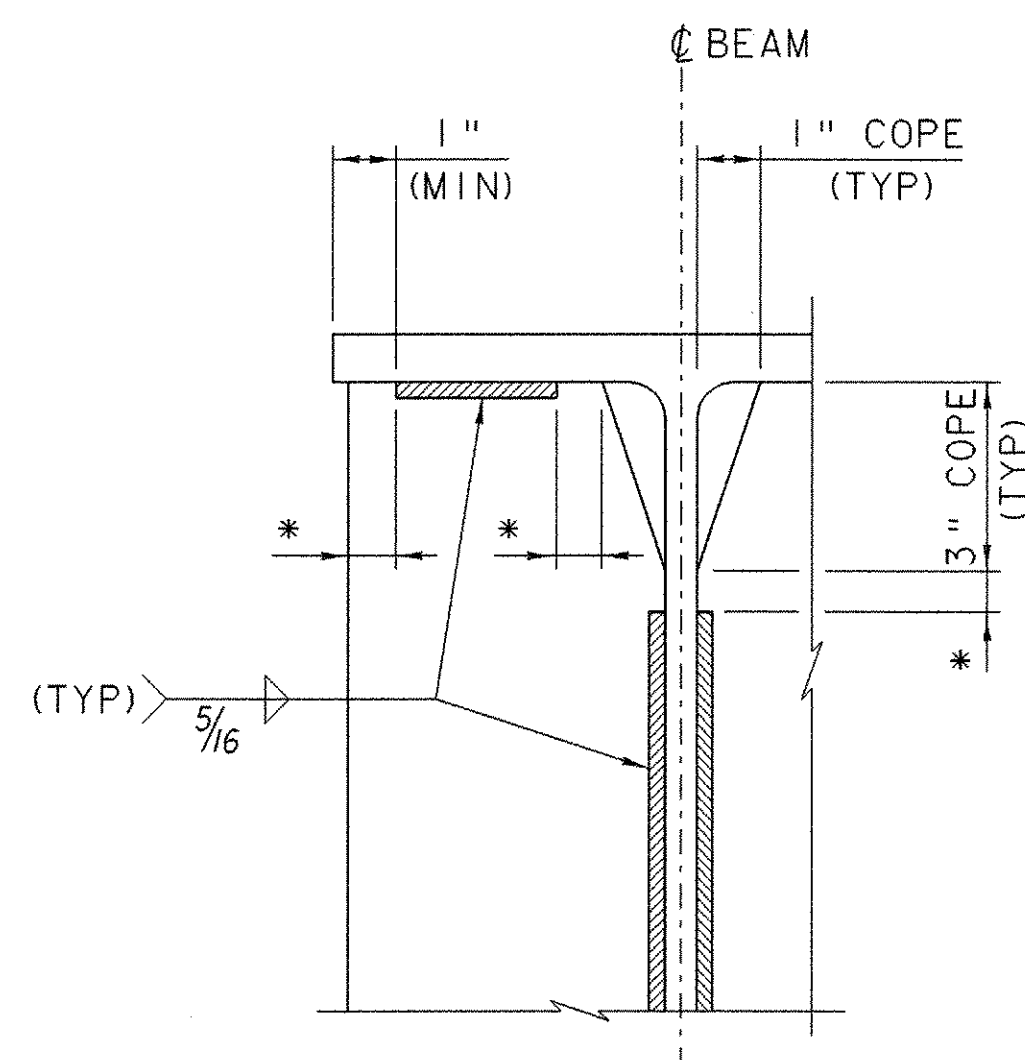
DIAPHRAGM CONNECTION
DETAIL
NOT TO SCALE



TRUSS RETAINER BRACKET DETAIL
SCALE: 1" = 1'-0"

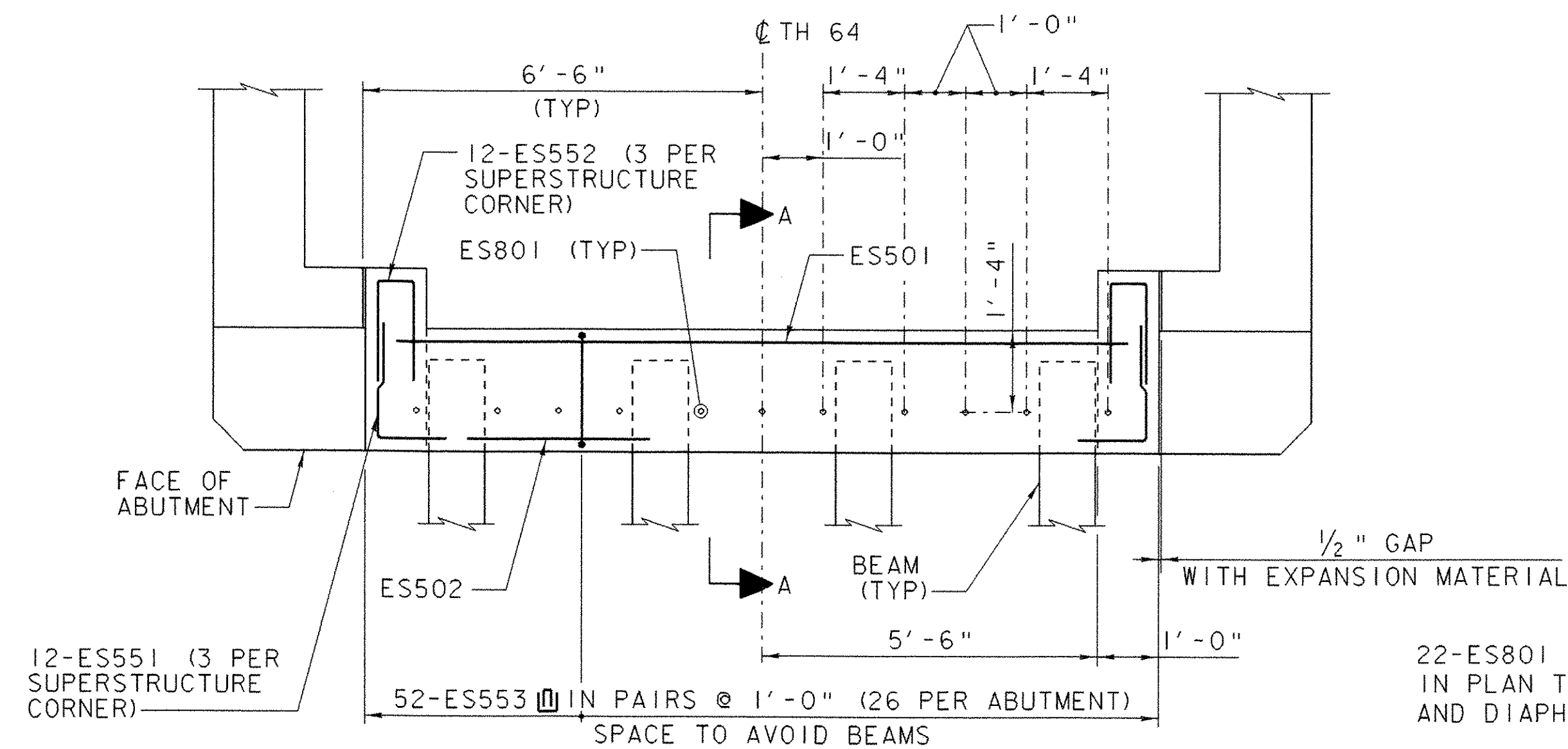


VENT HOLE DETAIL
AT FLANGE ENDS
NOT TO SCALE

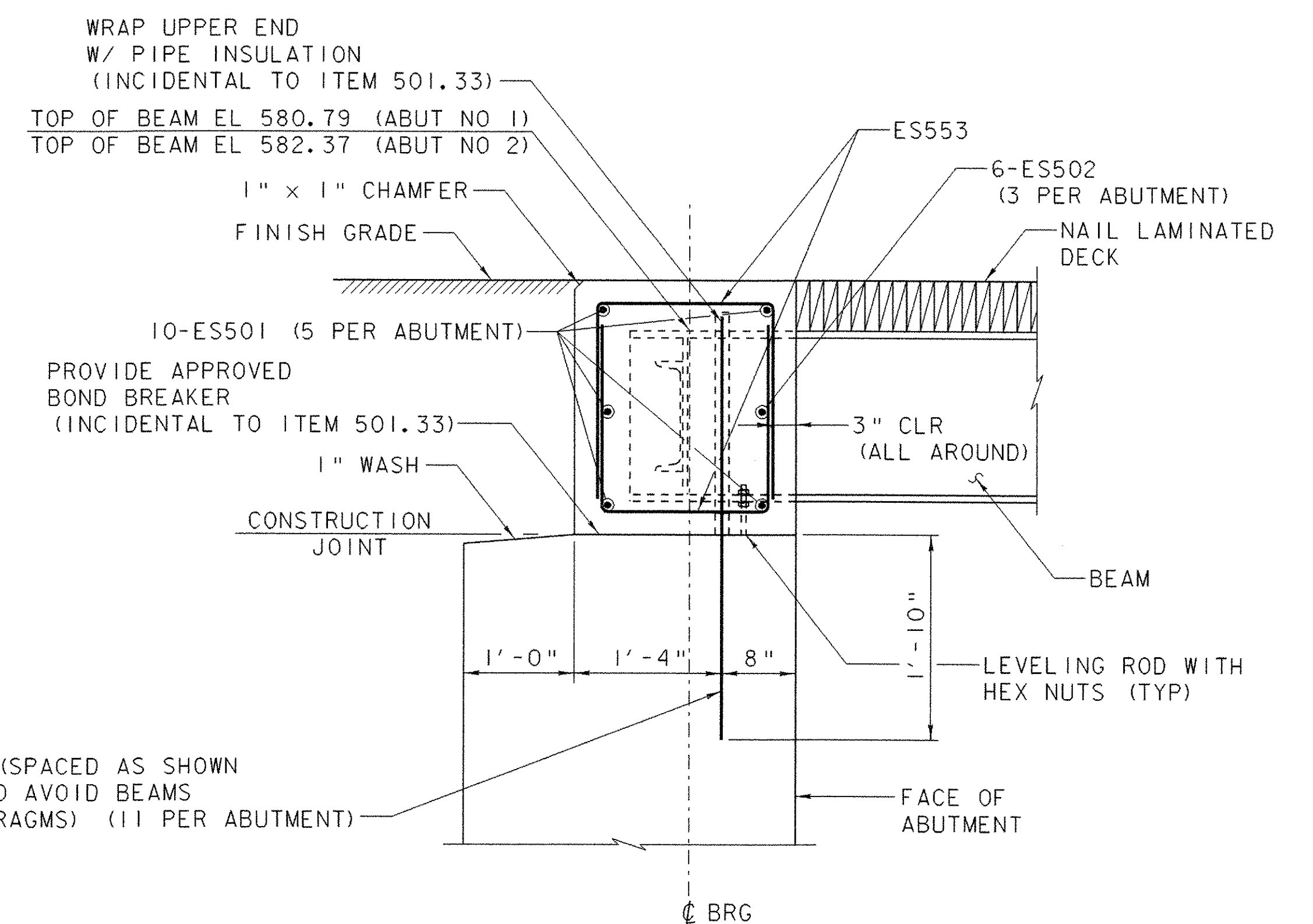


CONNECTION PLATE DETAIL
NOT TO SCALE

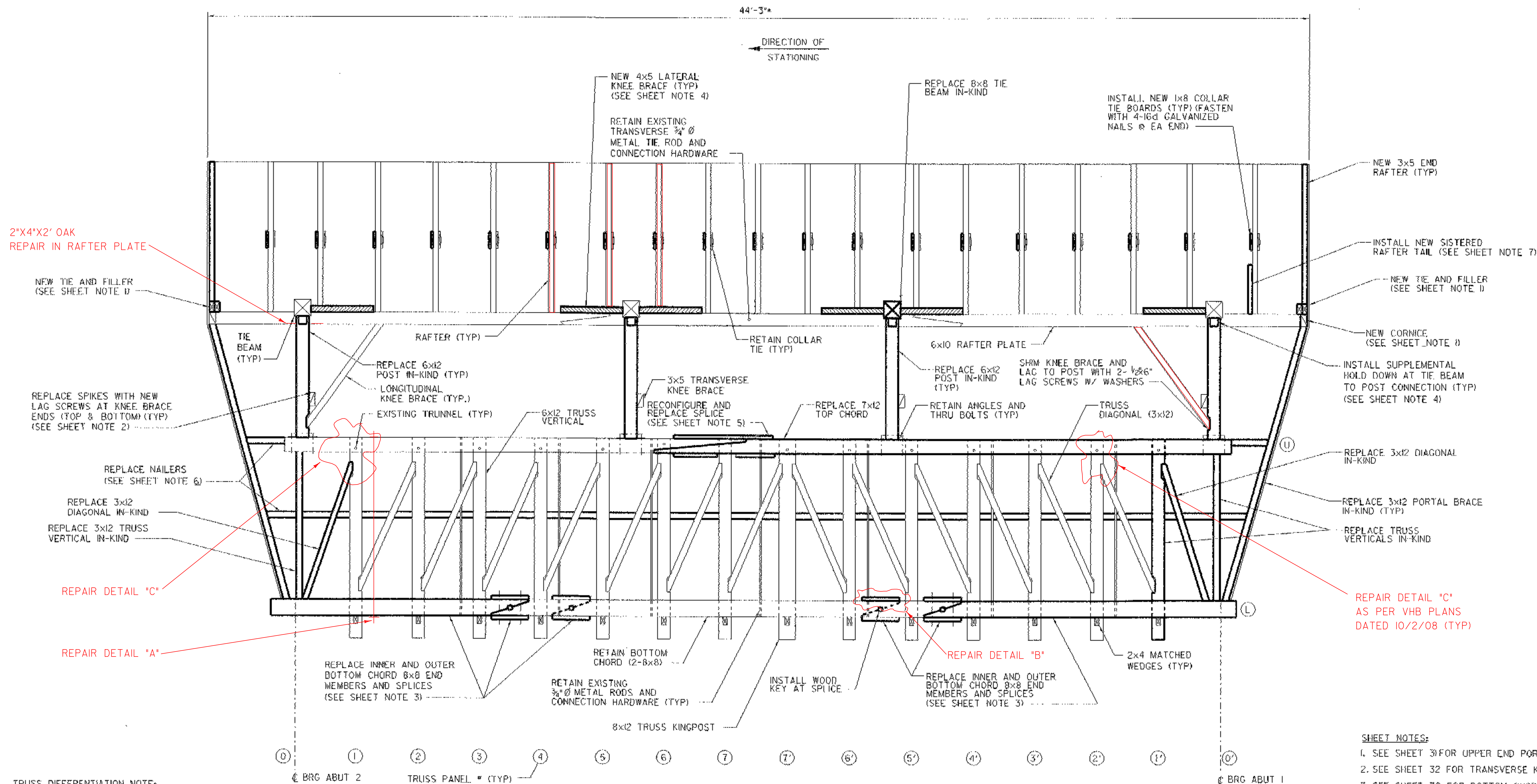
* = NO WELD FOR 3/8" MIN, 3/4" MAX,
(EXCEPT MUST MAINTAIN 1" MINIMUM FROM
EDGE OF FLANGE)



SUPERSTRUCTURE CURTAIN WALL PLAN
SCALE: 1/2" = 1'-0"



SECTION A-A
SCALE: 1" = 1'-0"



TRUSS DIFFERENTIATION NOTE:

TO DIFFERENTIATE BETWEEN THE EXISTING UPSTREAM TRUSS AND FRAMING VERSUS THE EXISTING DOWNSTREAM TRUSS AND FRAMING, NOTE THE FOLLOWING:

THE EXISTING UPSTREAM TRUSS TOP CHORD CONTAINS ONE SPLICE (PANEL POINT 7) AND THE EXISTING DOWNSTREAM TRUSS TOP CHORD CONTAINS TWO SPLICES (PANEL POINT 7 AND BETWEEN PANEL POINT 4' AND 5').

THE EXISTING UPSTREAM TRUSS BOTTOM CHORD CONSISTS OF 2-8x7 MEMBERS (BETWEEN PANEL POINTS 2 AND 4') AND THE EXISTING DOWNSTREAM TRUSS BOTTOM CHORD CONSISTS OF 2-8x8 MEMBERS.

THE EXISTING UPSTREAM TRUSS SUPPORTS FOUR POSTS IN THE UPPER FRAMING THAT ALL CONTAIN NOTCHES FOR BRACES (BRACES PRESENT AT PANEL POINTS 0 AND 0' ONLY) JUST ABOVE THE CONNECTION TO THE TOP CHORD. THE EXISTING DOWNSTREAM TRUSS SUPPORTS SIMILAR POSTS EXCEPT THERE IS NO NOTCH IN THE POST LOCATED BETWEEN PANEL POINTS 6' AND 5'.

NEARLY ALL OF THE RAFTER TAILS SUPPORTED BY THE UPSTREAM TRUSS ARE BROKEN. WHEREAS THE RAFTER TAILS SUPPORTED BY THE DOWNSTREAM TRUSS ARE GENERALLY IN TACT.

DOWNSTREAM TRUSS ELEVATION

SCALE: 1/2" = 1'-0"

(LOOKING DOWNSTREAM)

(SHEATHING, ROOF BOARDS, AND BEDDING TIMBERS NOT SHOWN)



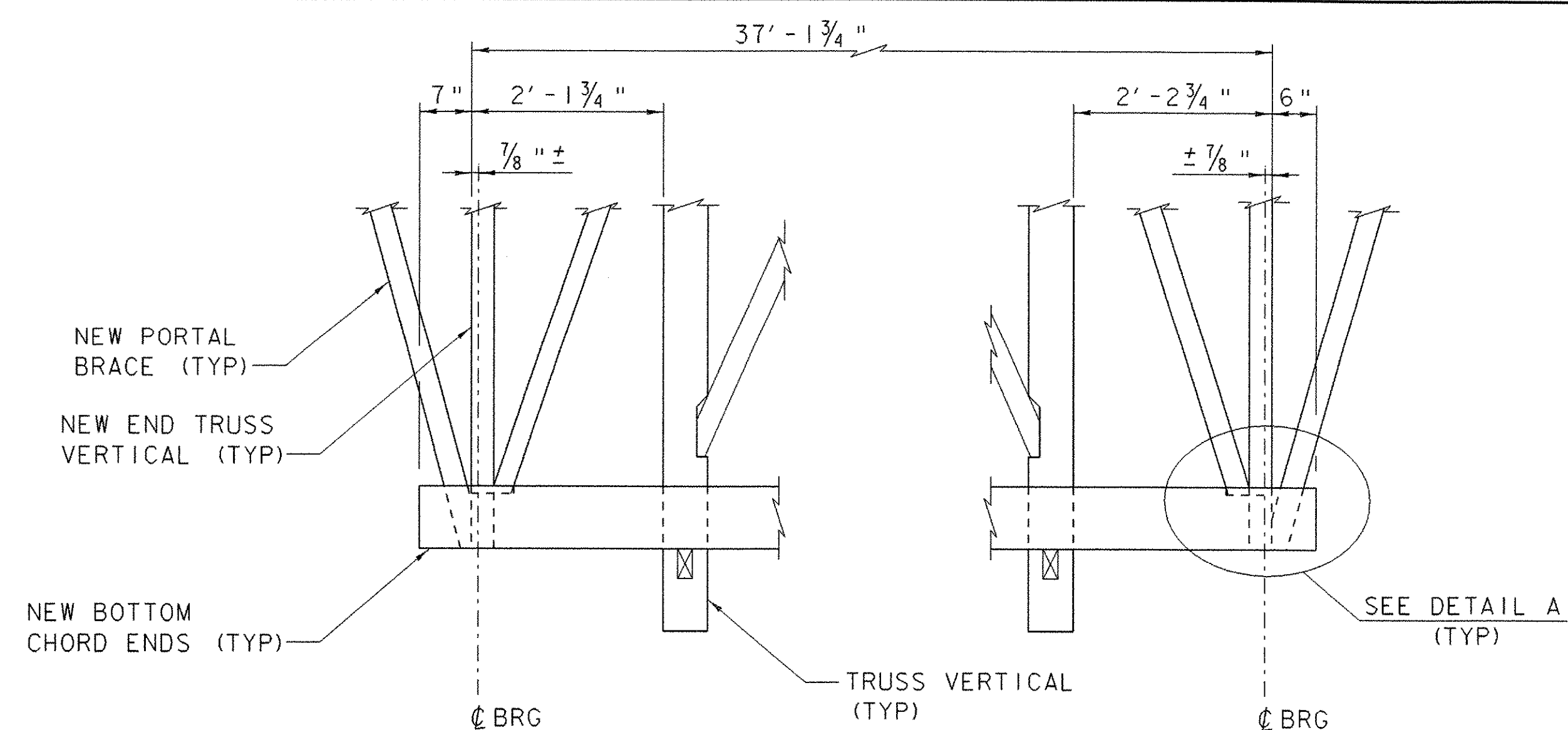
SHEET NOTES:

1. SEE SHEET 31 FOR UPPER END PORTAL DETAILS.
2. SEE SHEET 32 FOR TRANSVERSE KNEE BRACE DETAIL.
3. SEE SHEET 30 FOR BOTTOM CHORD DETAILS AND END OF TRUSS MODIFICATIONS.
4. SEE SHEET 31 FOR UPPER LATERAL KNEE BRACE AND TIE BEAM HOLD DOWN DETAILS.
5. SEE SHEET 31 FOR TOP CHORD SPLICE DETAIL.
6. SEE SHEET 32 FOR NAILER DETAILS.
7. SEE SHEET 32 FOR RAFTER TAIL DETAIL.

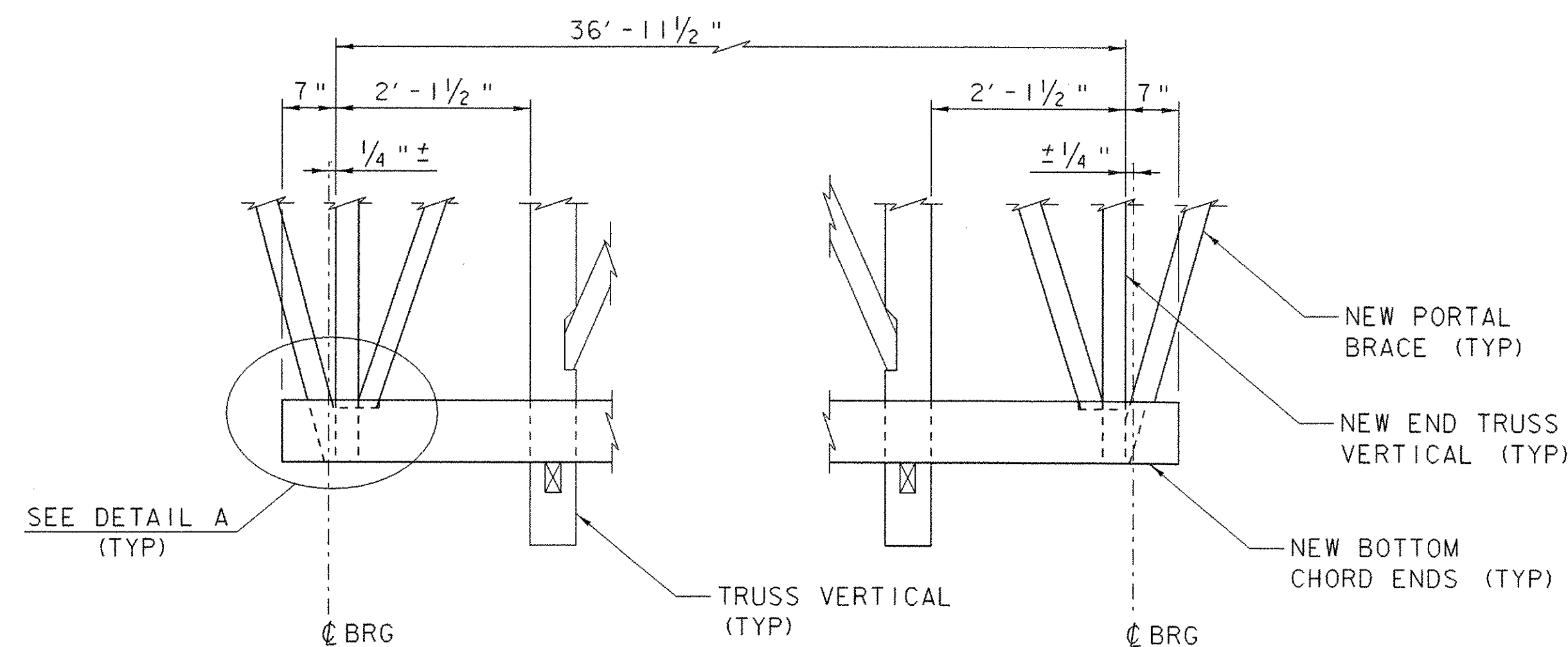
PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j46cbrshf2.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: S. HODGDON
BRIDGE REHABILITATION SHEET (2 OF 2)

PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: K. ZIENKIEWICZ
SHEET 29 OF 39

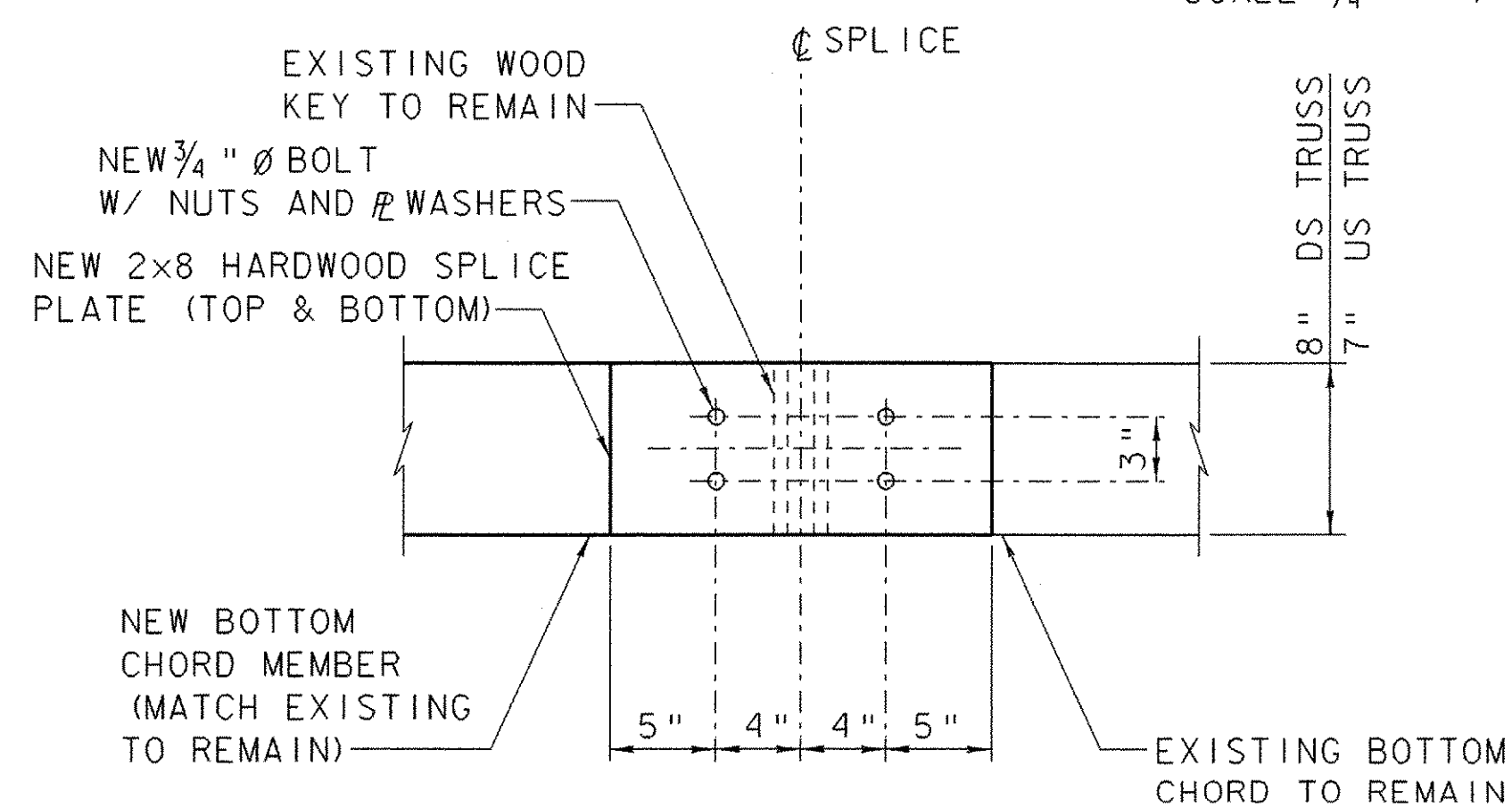


UPSTREAM TRUSS
(LOOKING UPSTREAM)

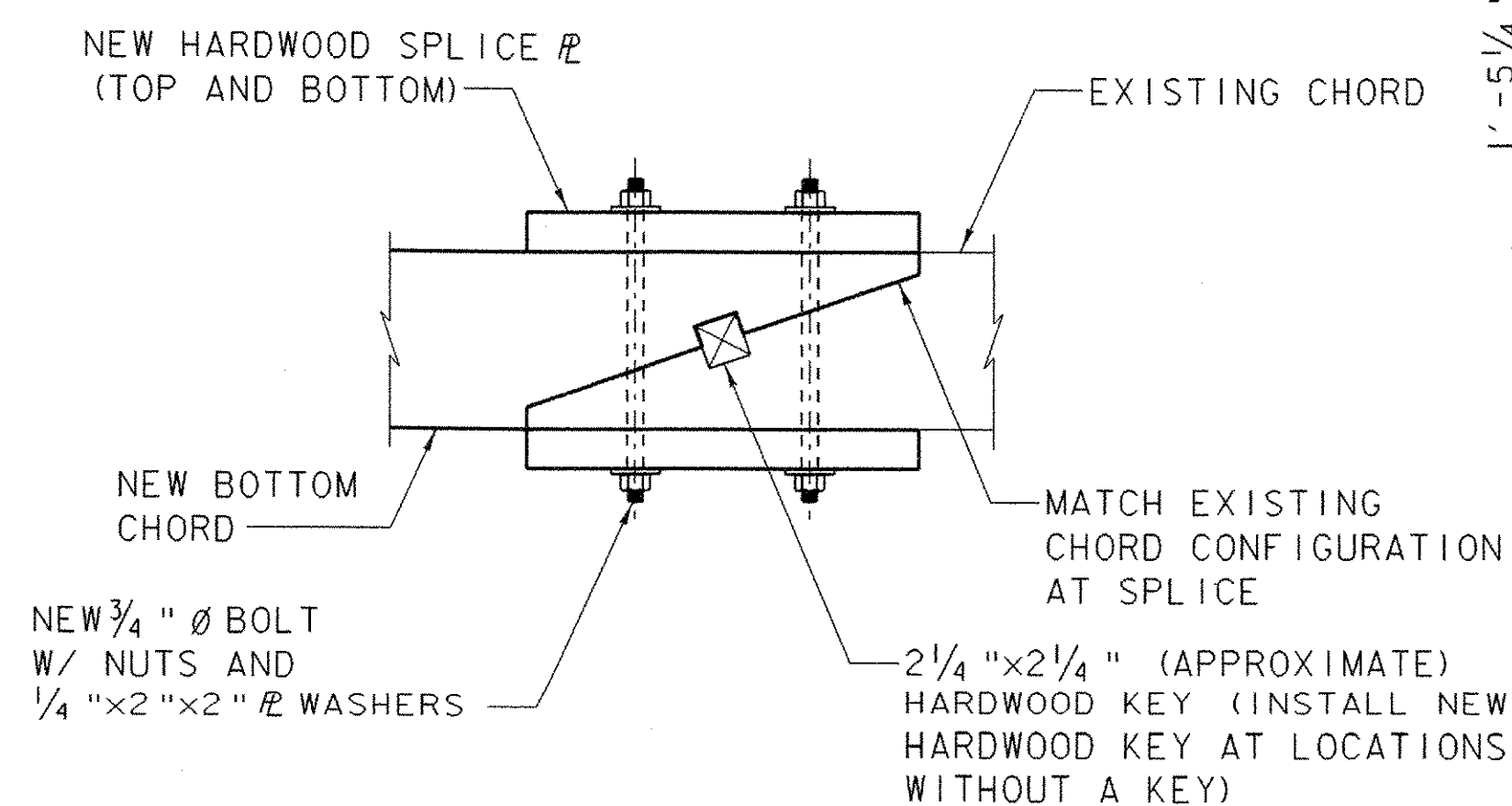


DOWNSTREAM TRUSS
(LOOKING DOWNSTREAM)

TRUSS END PANEL LENGTH MODIFICATIONS
SCALE: 3/4" = 1'-0"



TOP VIEW
(ONE CHORD MEMBER SHOWN)



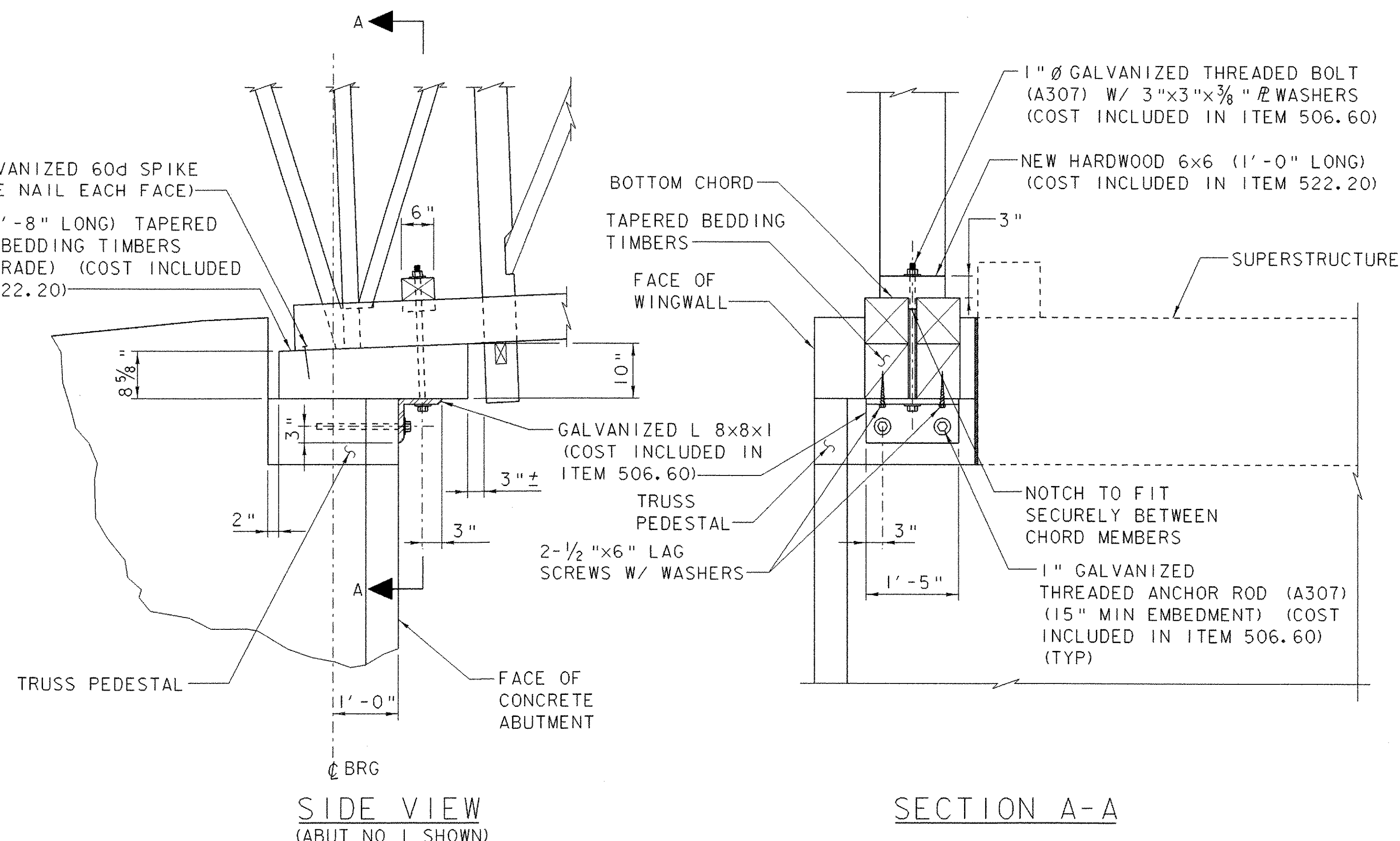
SIDE VIEW

TYPICAL BOTTOM CHORD SPLICE DETAIL

(TRUSS VERTICALS NOT SHOWN)
SCALE: 1 1/2" = 1'-0"

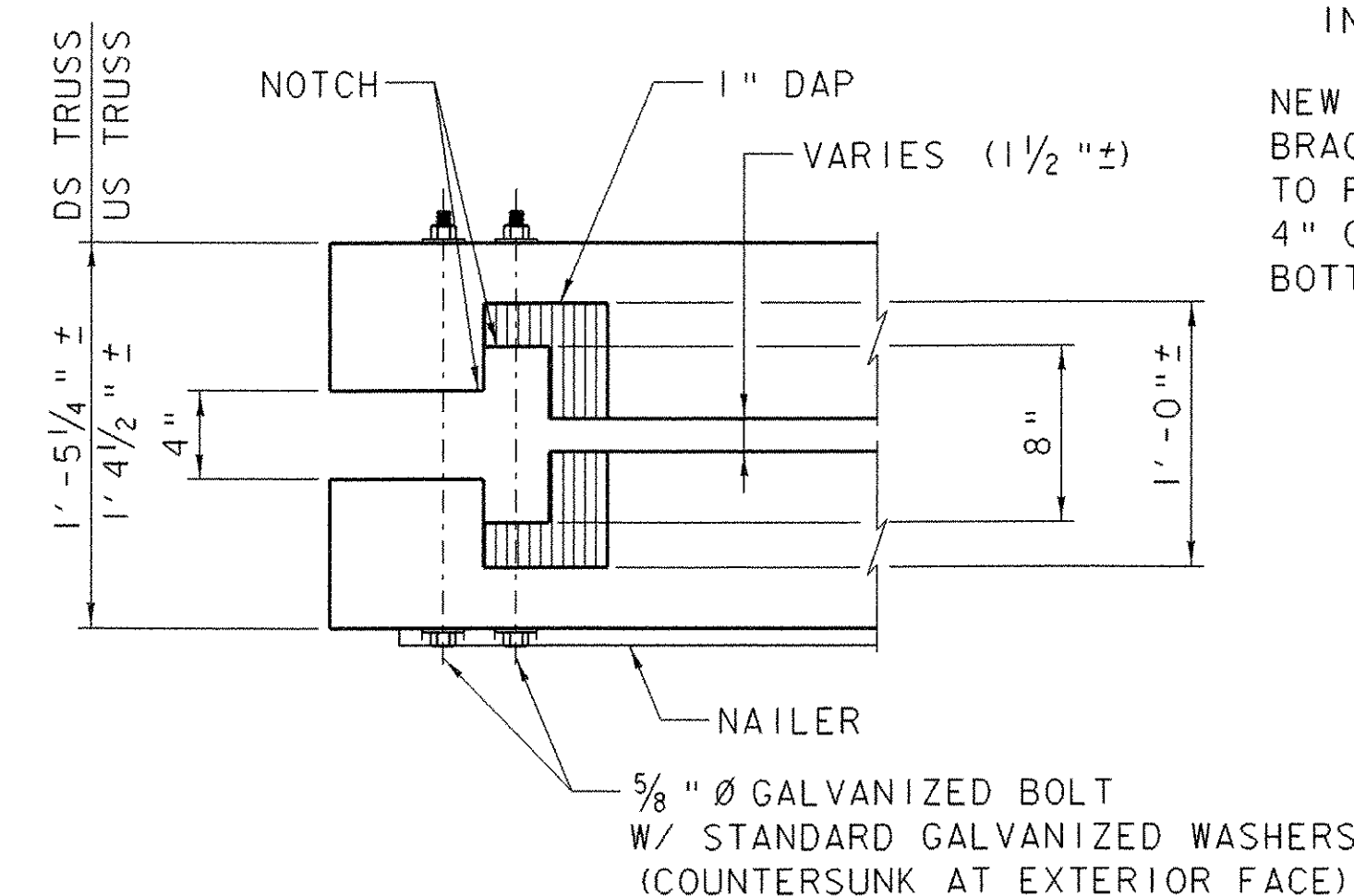
GALVANIZED 60d SPIKE (TOE NAIL EACH FACE)

2-8x10 (2'-8" LONG) TAPERED HARDWOOD BEDDING TIMBERS (FIT TO GRADE) (COST INCLUDED IN ITEM 522.20)



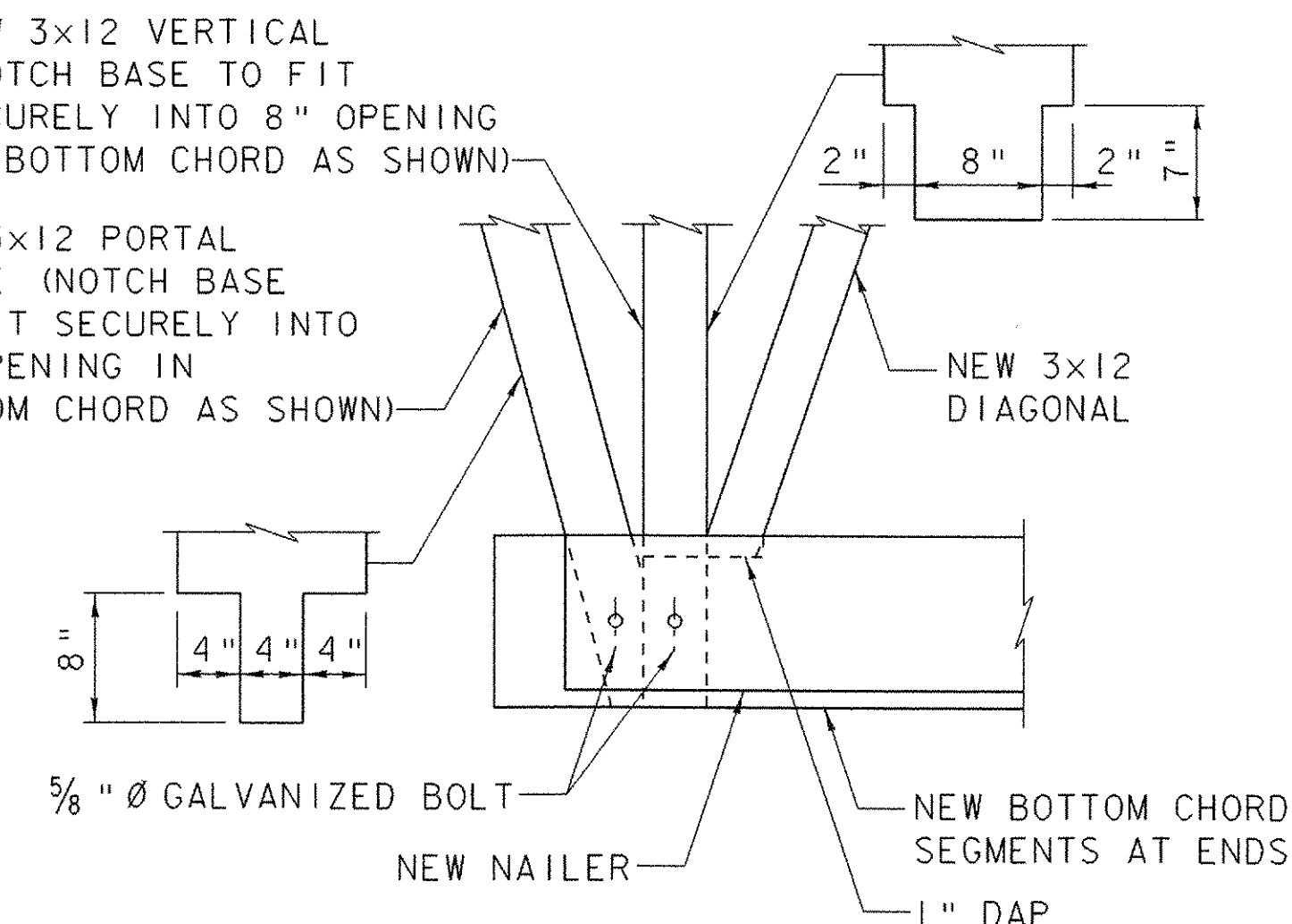
SIDE VIEW
(ABOUT NO 1 SHOWN)

TRUSS HOLD-DOWN DETAIL
(SIDING AND NAILERS NOT SHOWN)
SCALE: 3/4" = 1'-0"



TOP VIEW
(DIAGONAL, PORTAL BRACE, & VERTICAL NOT SHOWN)

DETAIL A
(SIDING NOT SHOWN)
SCALE: 1 1/2" = 1'-0"



SIDE VIEW

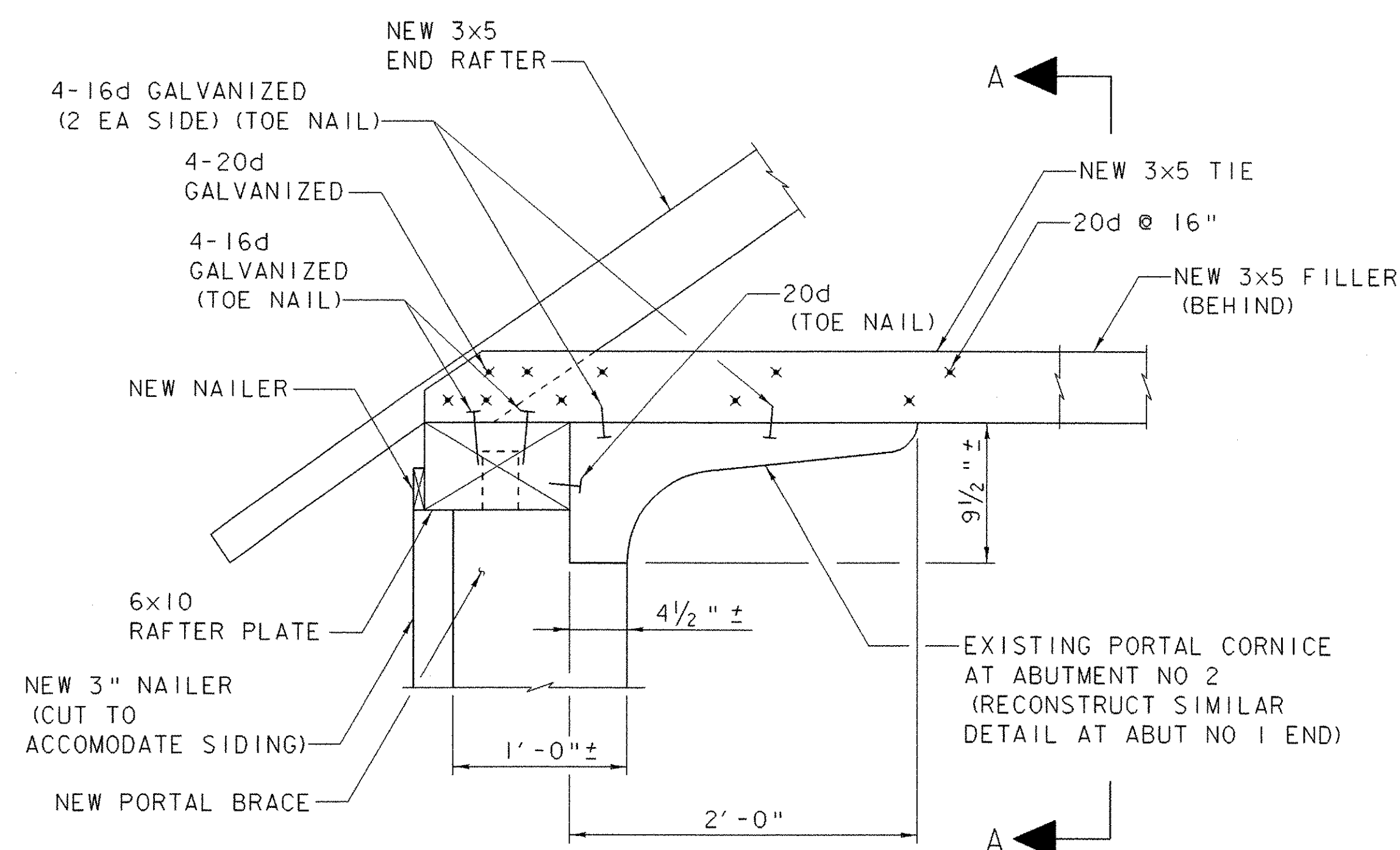
SCALE 3/4" = 1'-0"

SCALE 1 1/2" = 1'-0"

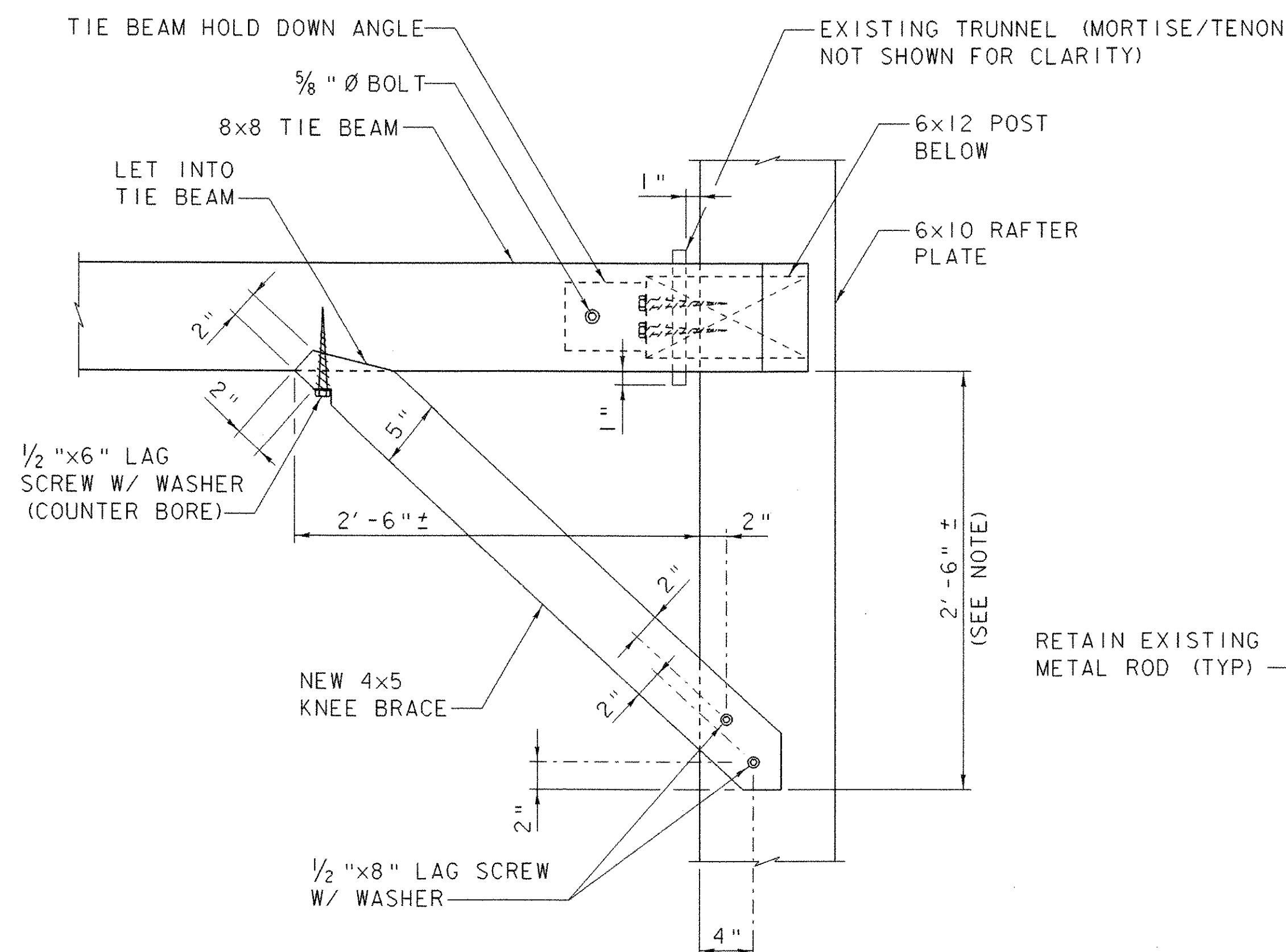
PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146det1.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: S. HODGDON
BRIDGE DETAILS SHEET (1 OF 3)

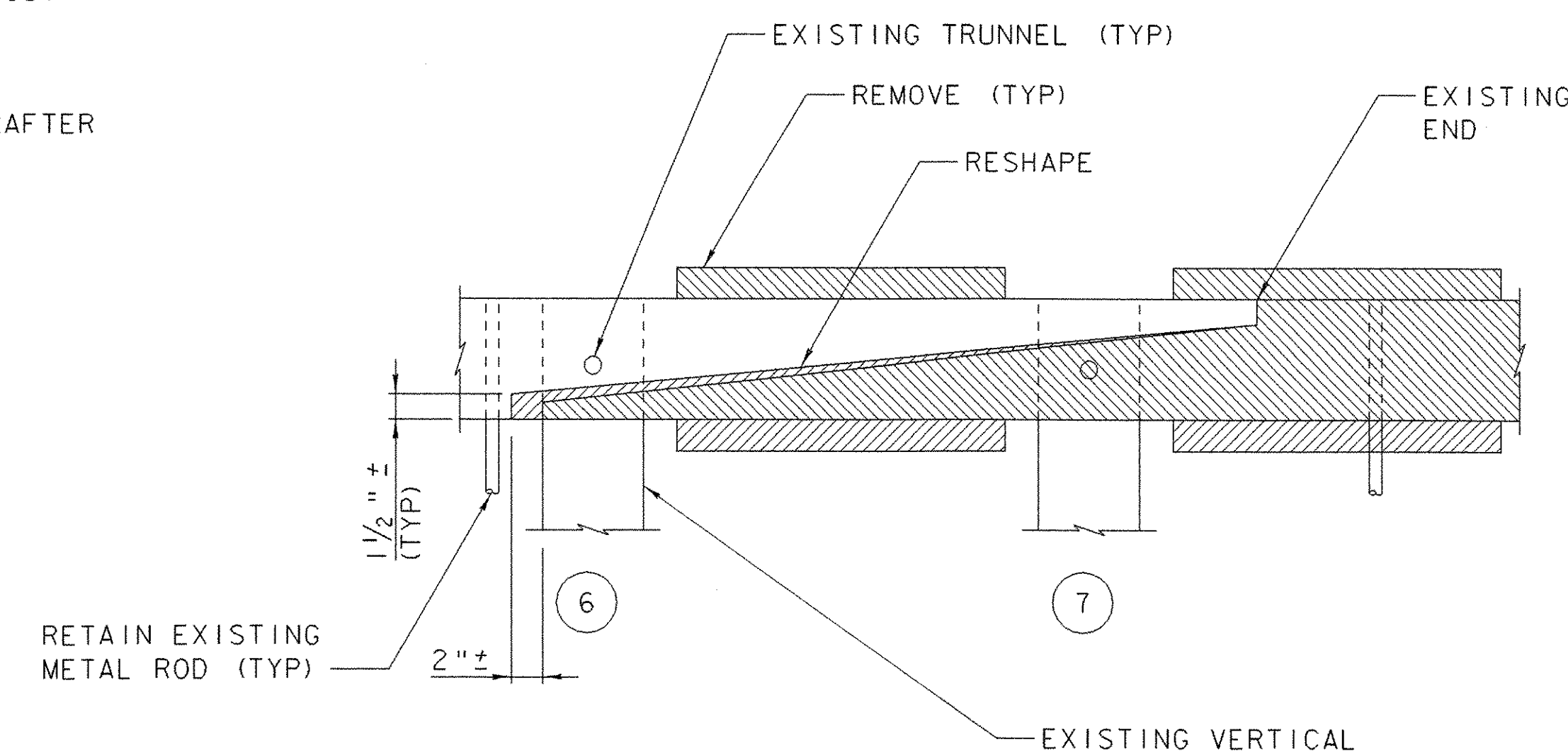
PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: K. ZIENKIEWICZ
SHEET 30 OF 39



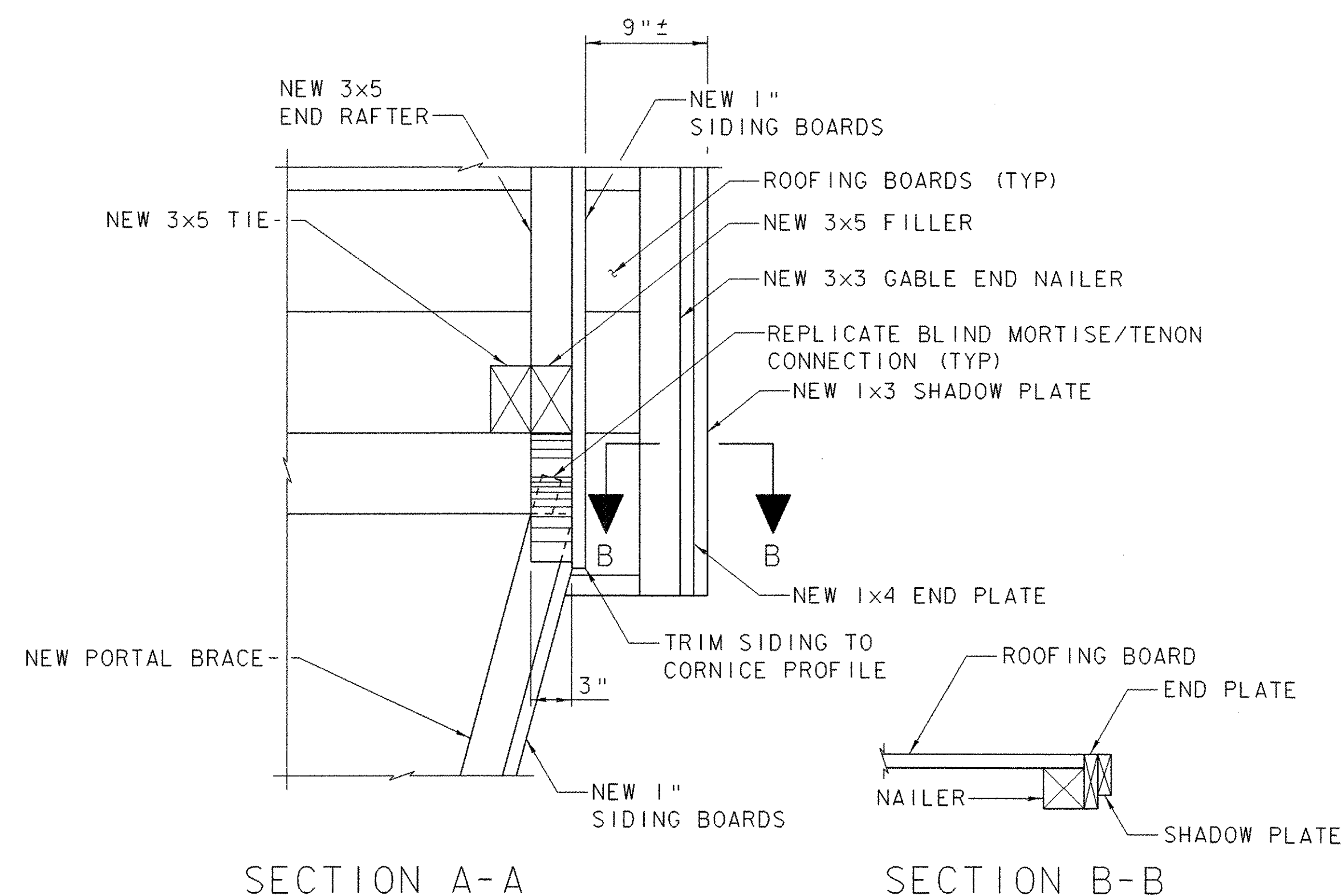
INSIDE END VIEW



PLAN



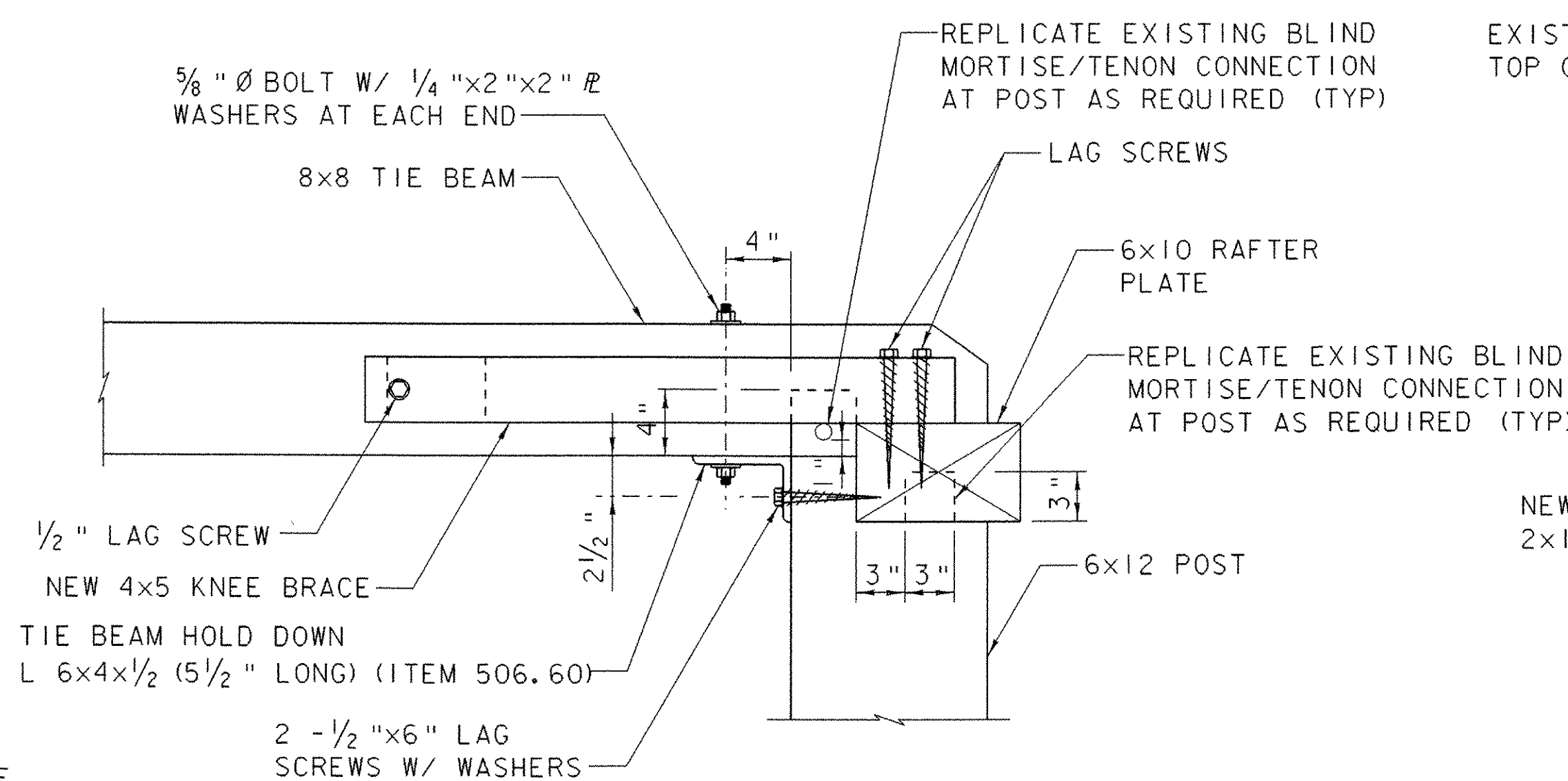
TIMBER REMOVAL ELEVATION



SECTION A-A

SECTION B-B

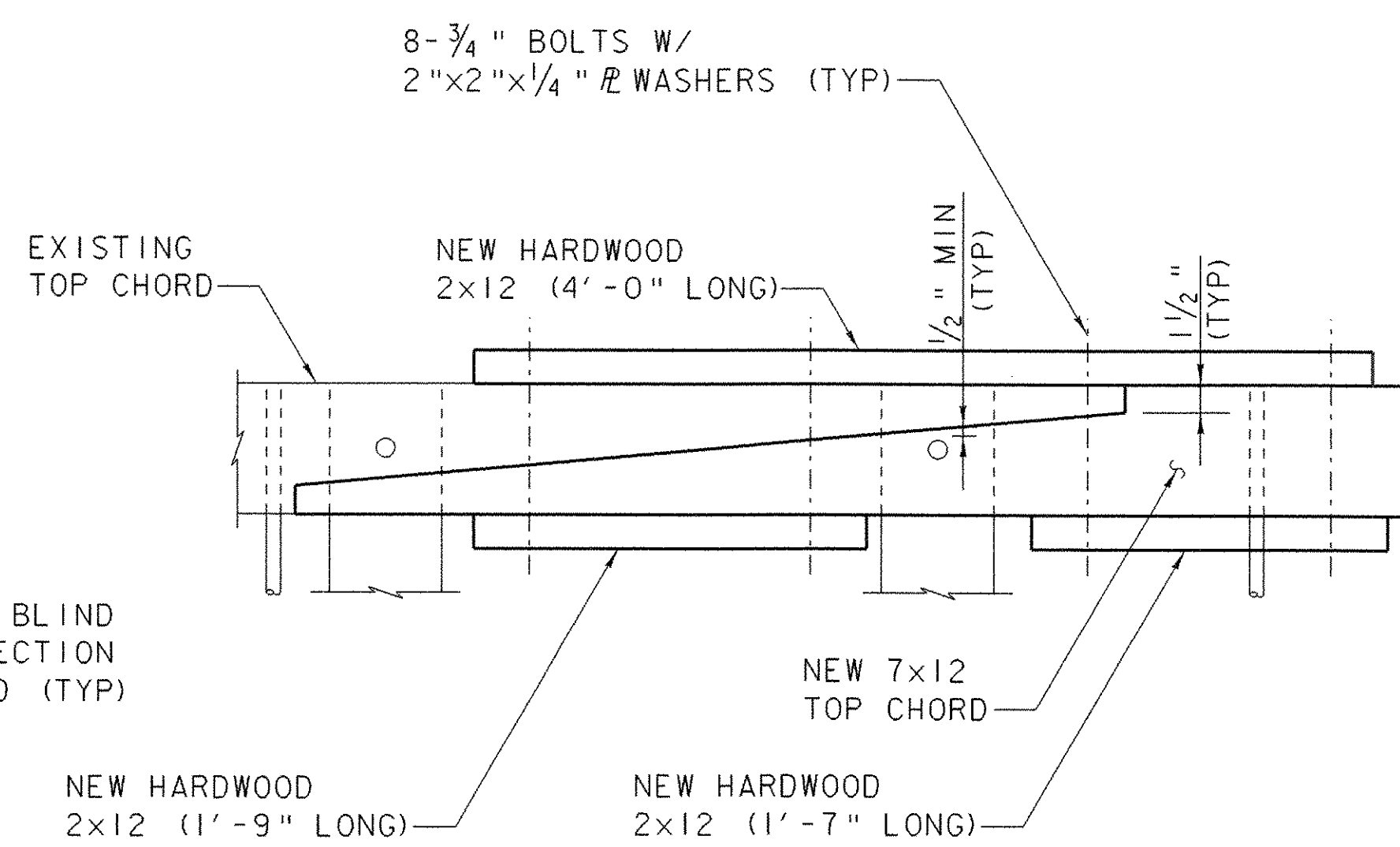
UPPER END PORTAL DETAILS



ELEVATION

NOTE: ADJUST KNEE BRACE LOCATION SLIGHTLY TO AVOID RAFTERS AND/OR ADJUST RAFTER POSITION SLIGHTLY AS DIRECTED BY THE ENGINEER.

UPPER LATERAL KNEE BRACE DETAIL



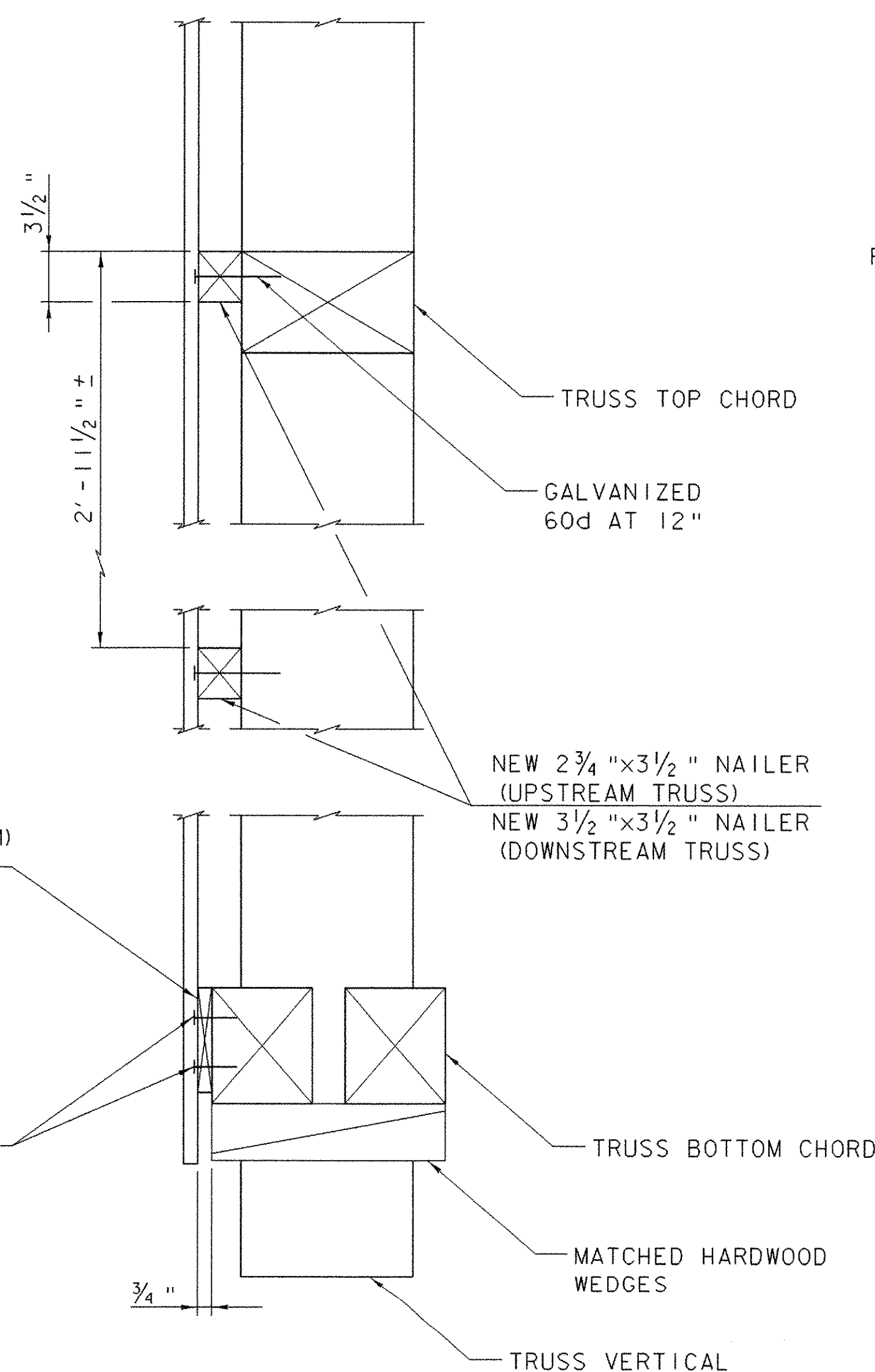
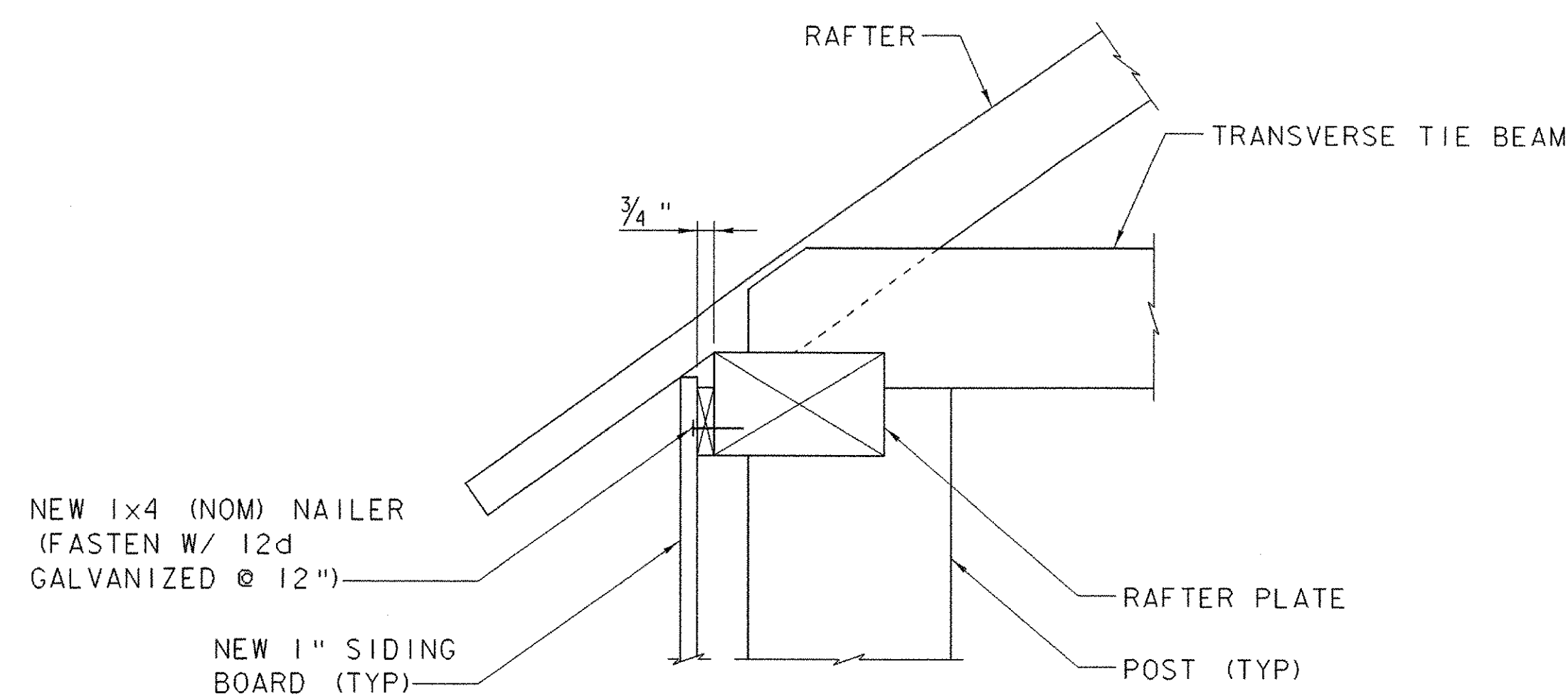
NEW SPLICE AND TIMBER ELEVATION

TOP CHORD SPLICE MODIFICATIONS FOR DOWNSTREAM TRUSS

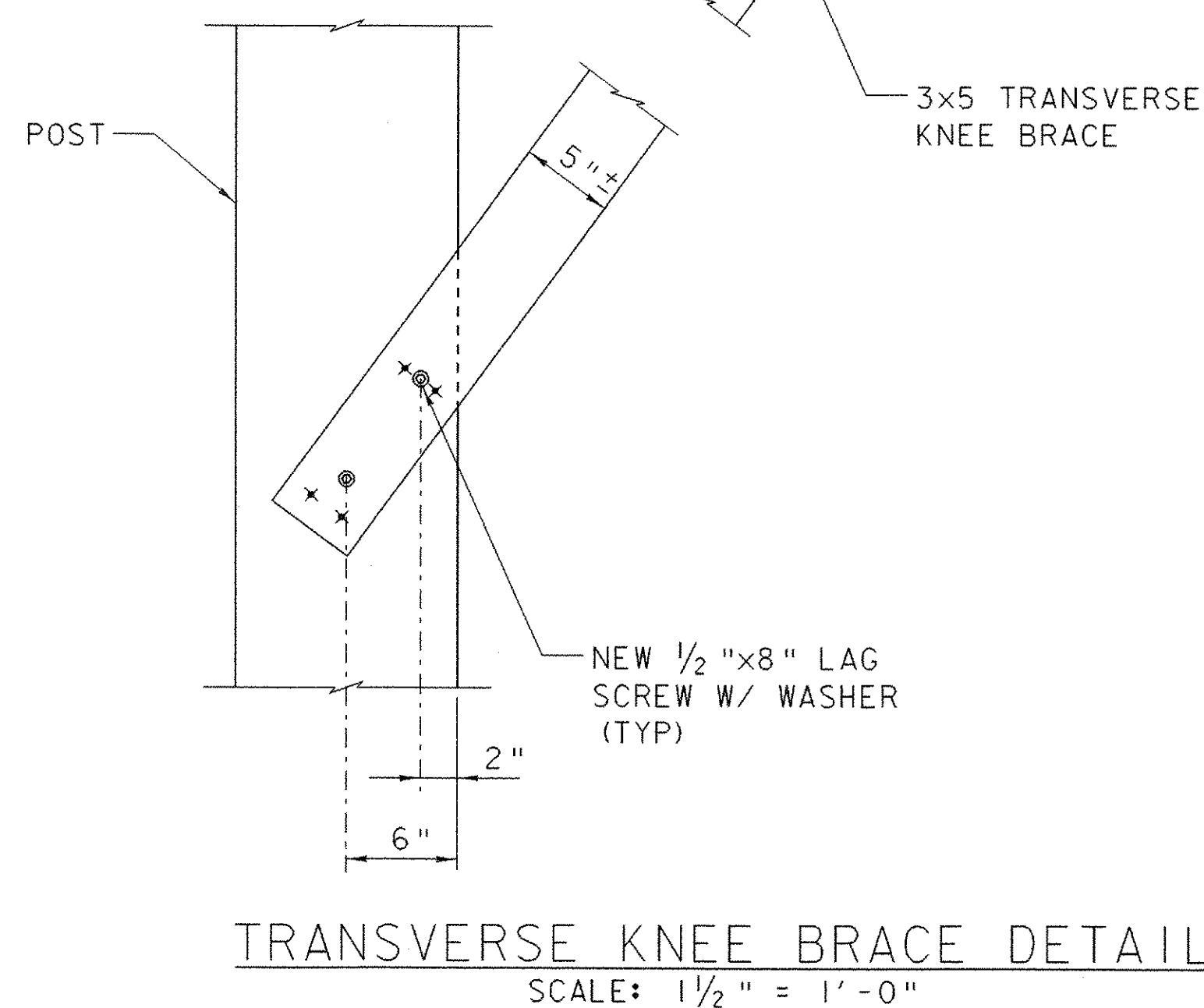
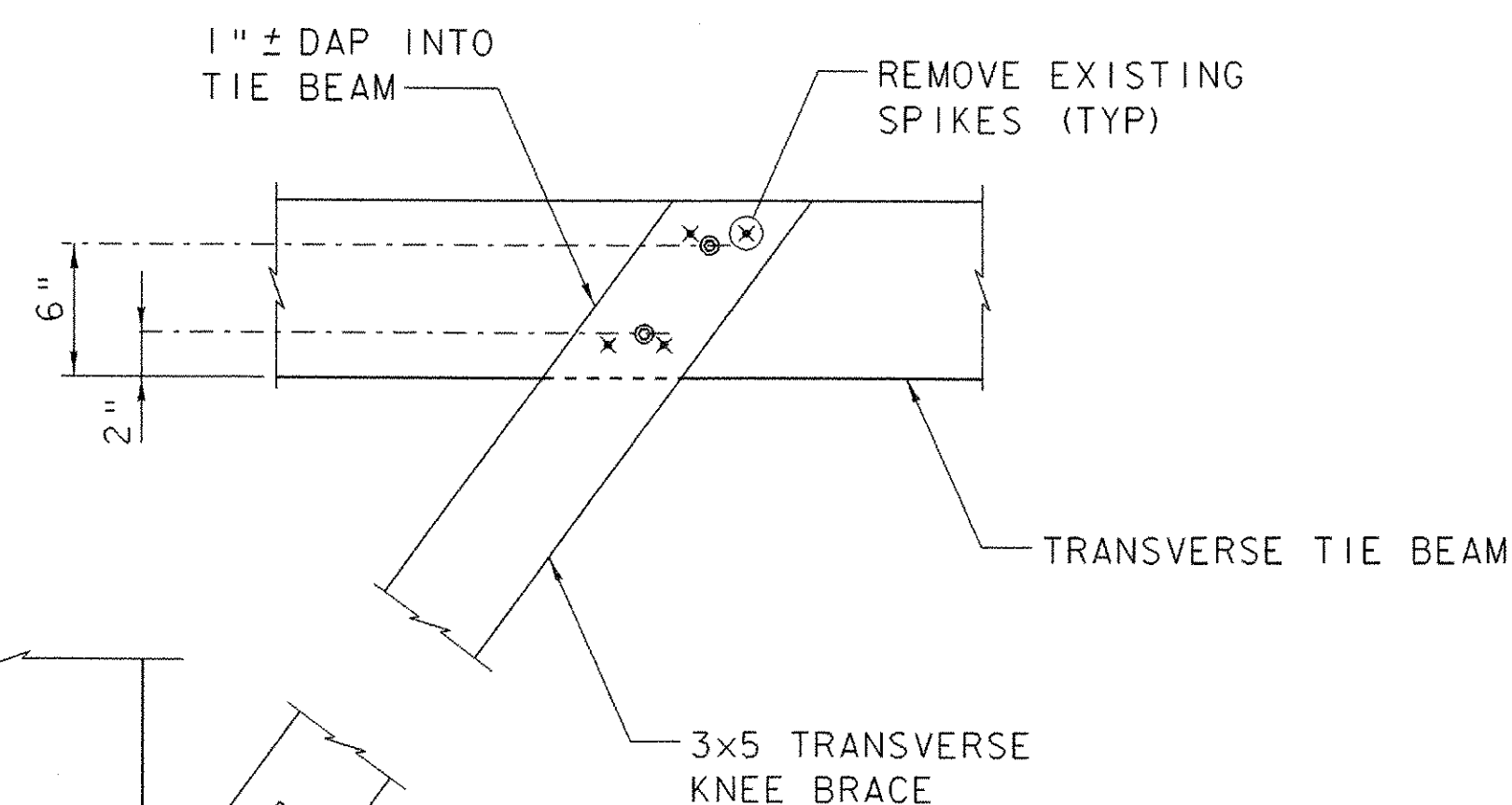
SCALE 1 1/2" = 1'-0"



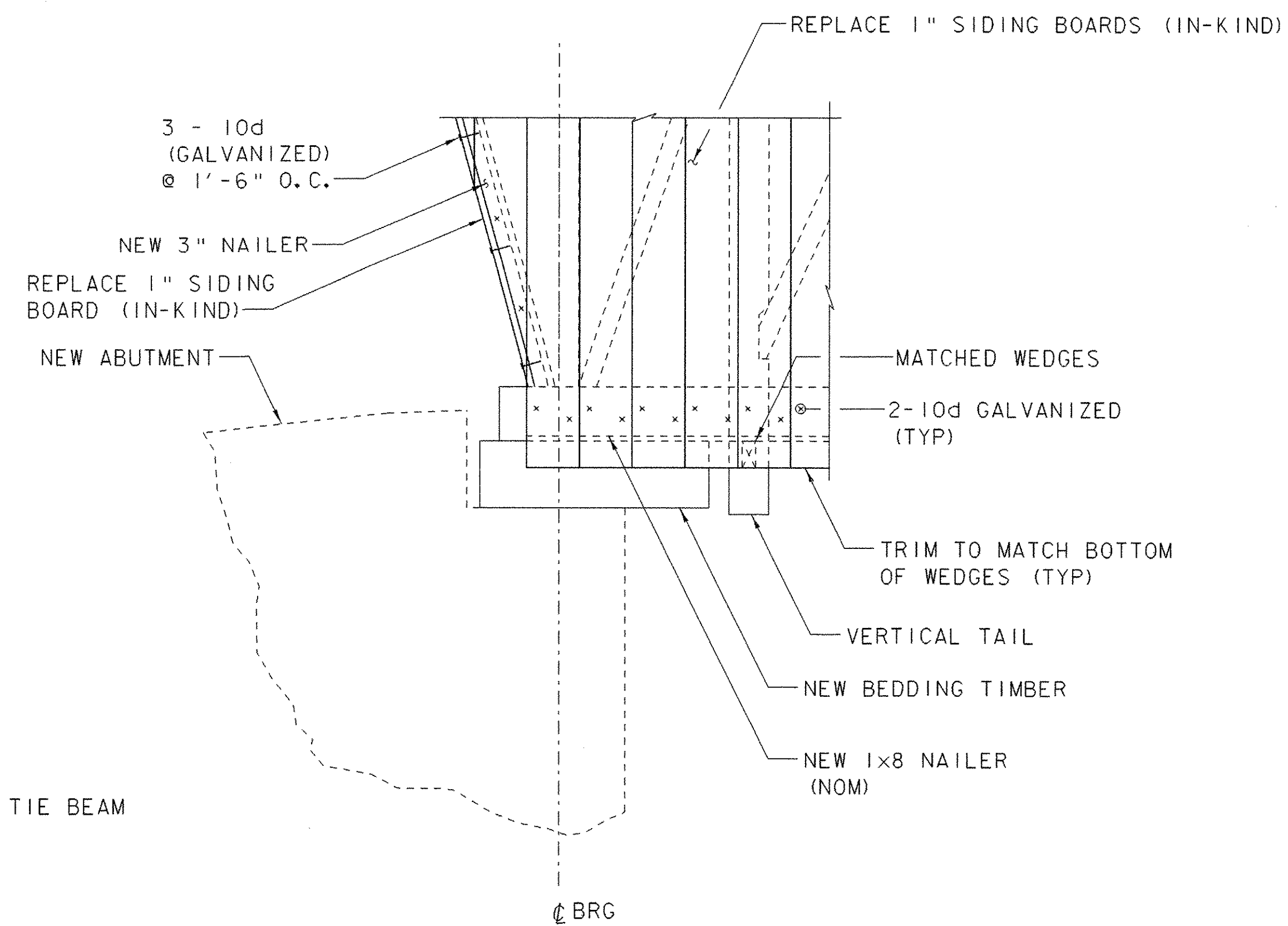
PROJECT NAME: RANDOLPH	PLOT DATE: 26-JUN-2007
PROJECT NUMBER: BHO 1444 (44)	DRAWN BY: K. WENTWORTH
FILE NAME: z04j146det2.dgn	CHECKED BY: K. ZIENKIEWICZ
PROJECT LEADER: S. HODGDON	SHEET 31 OF 39
DESIGNED BY: S. HODGDON	
BRIDGE DETAILS SHEET (2 OF 3)	



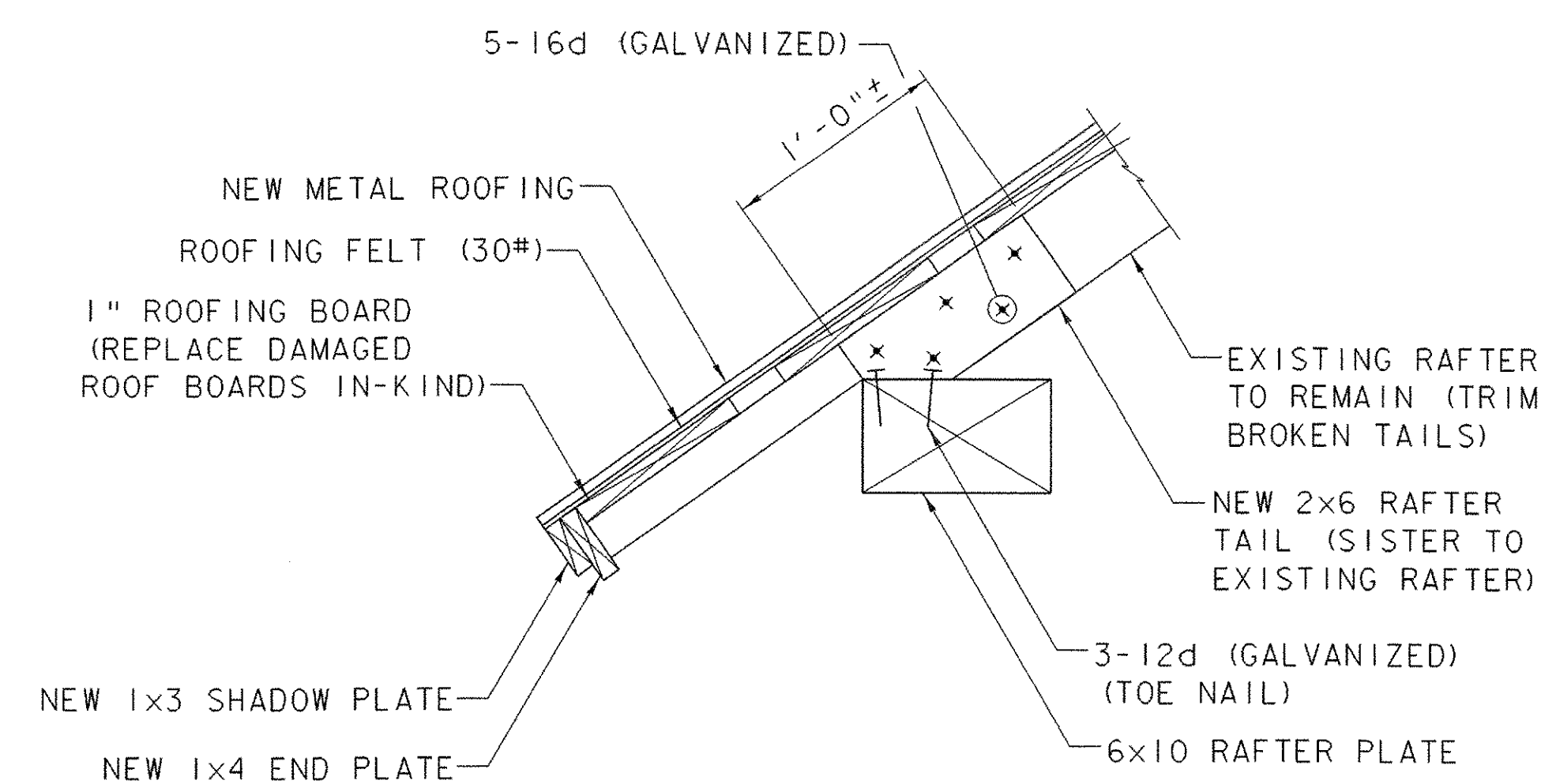
SIDING SECTION DETAIL
SCALE: 1 1/2" = 1'-0"



TRANSVERSE KNEE BRACE DETAIL
SCALE: 1 1/2" = 1'-0"



SIDING ELEVATION DETAIL
NOT TO SCALE



RAFTER TAIL DETAIL
SCALE: 1 1/2" = 1'-0"

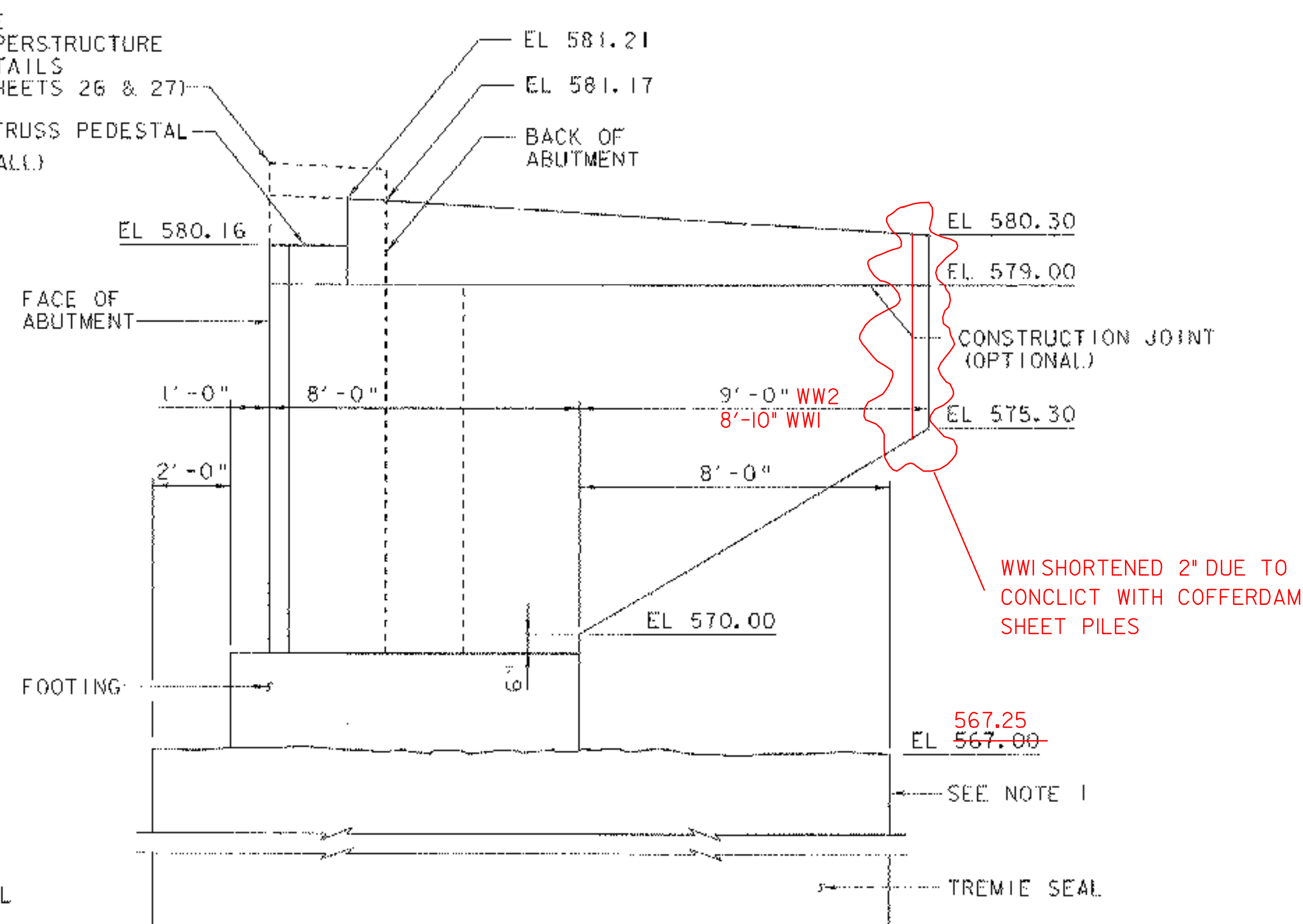
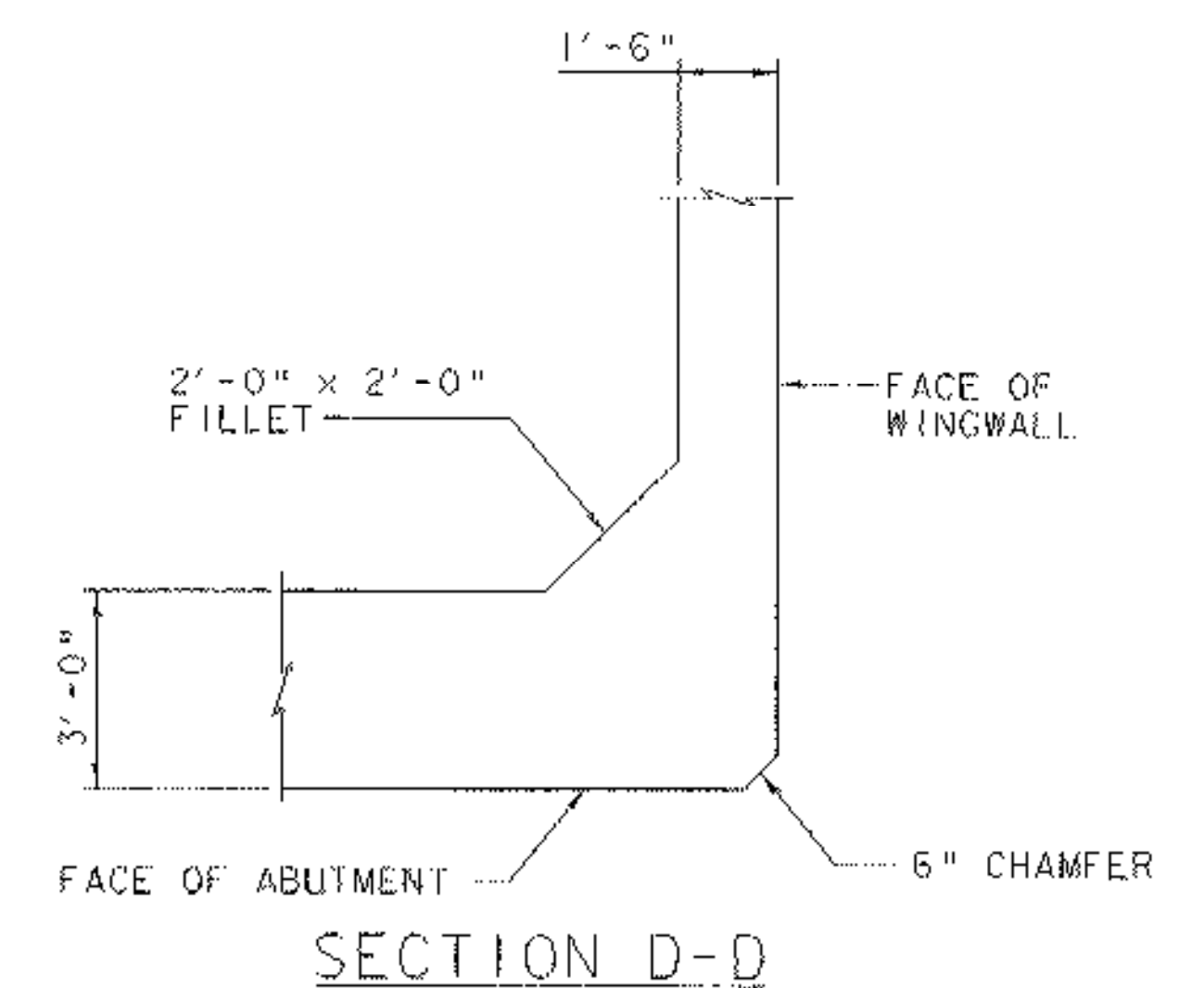
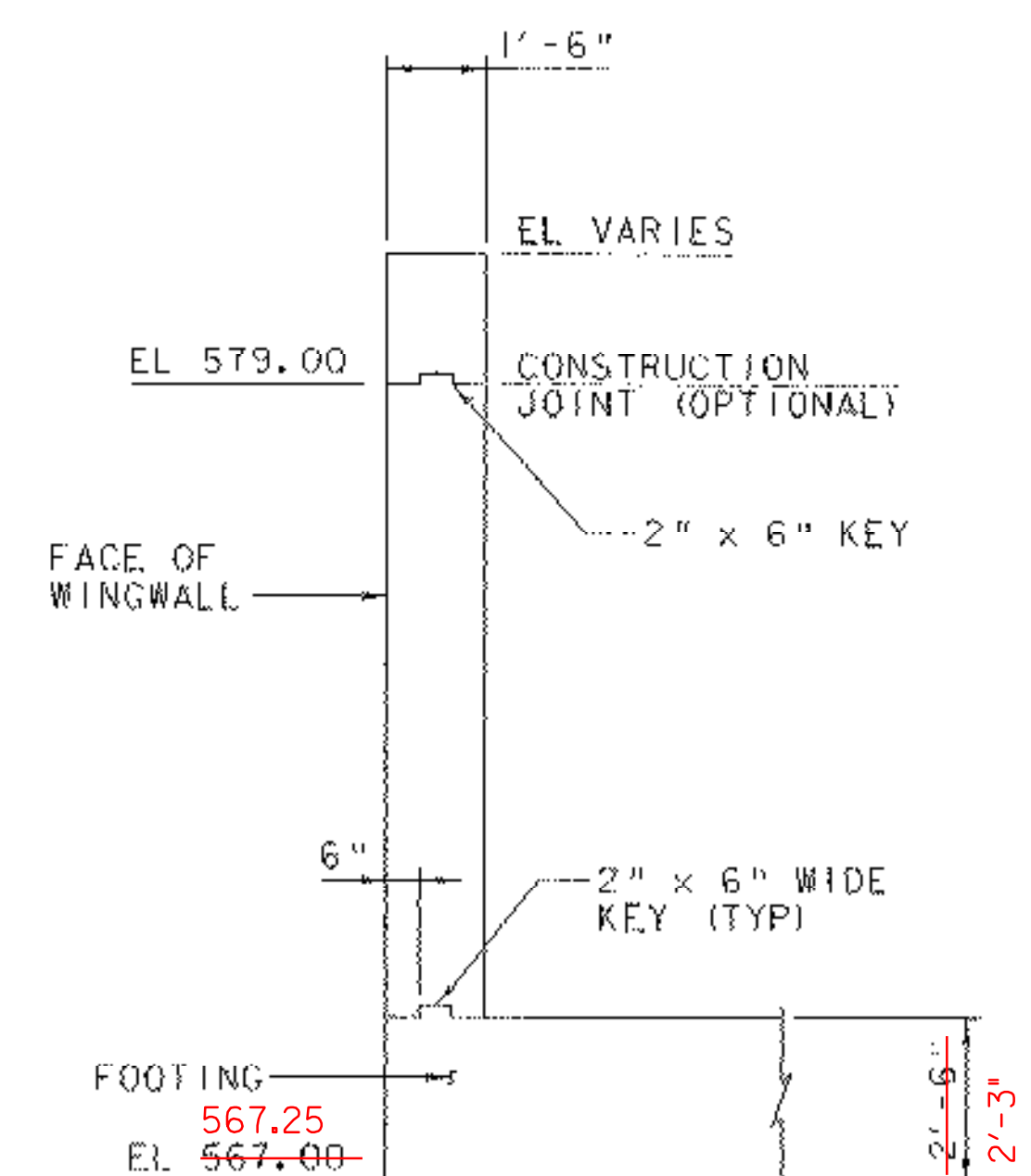
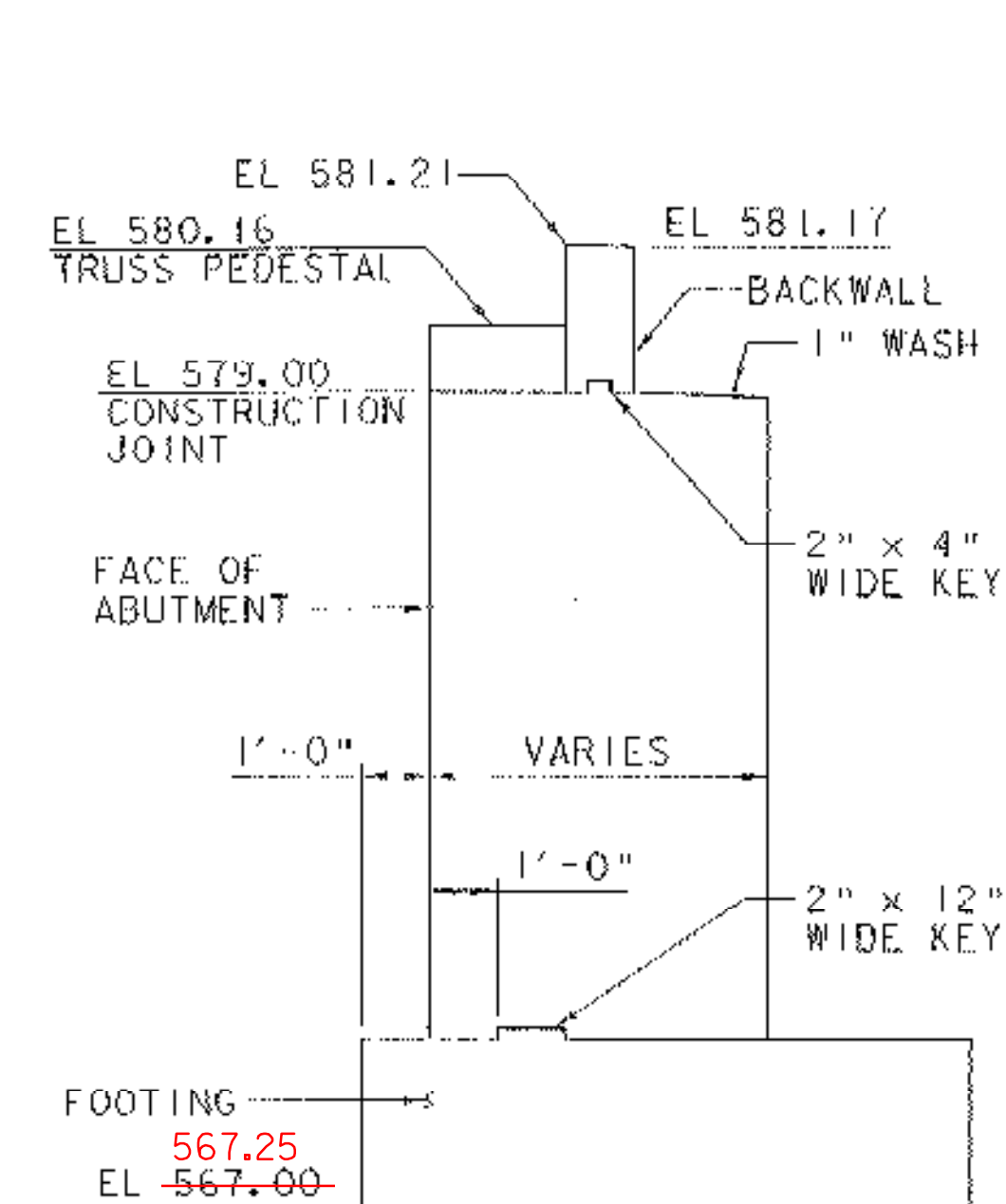
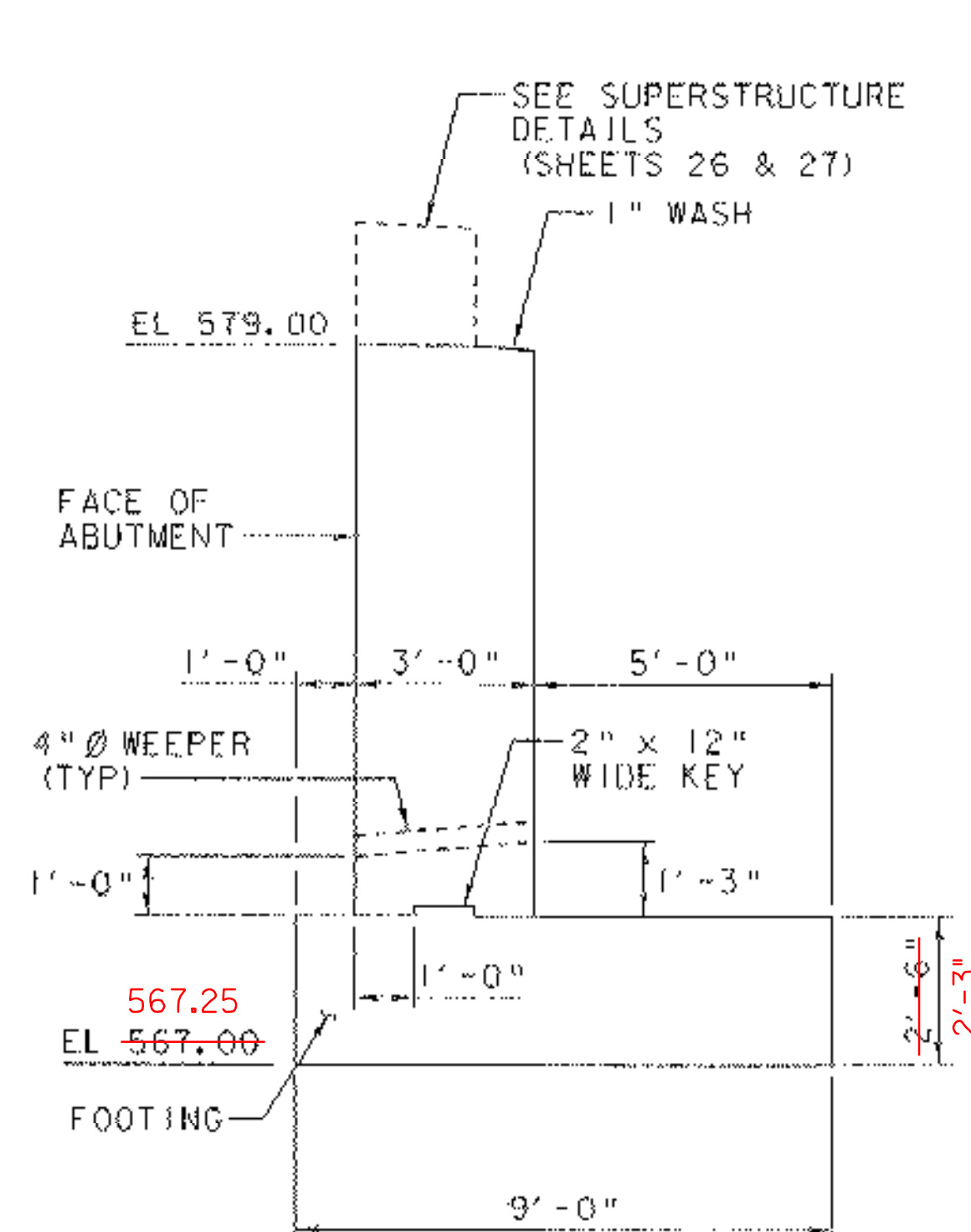
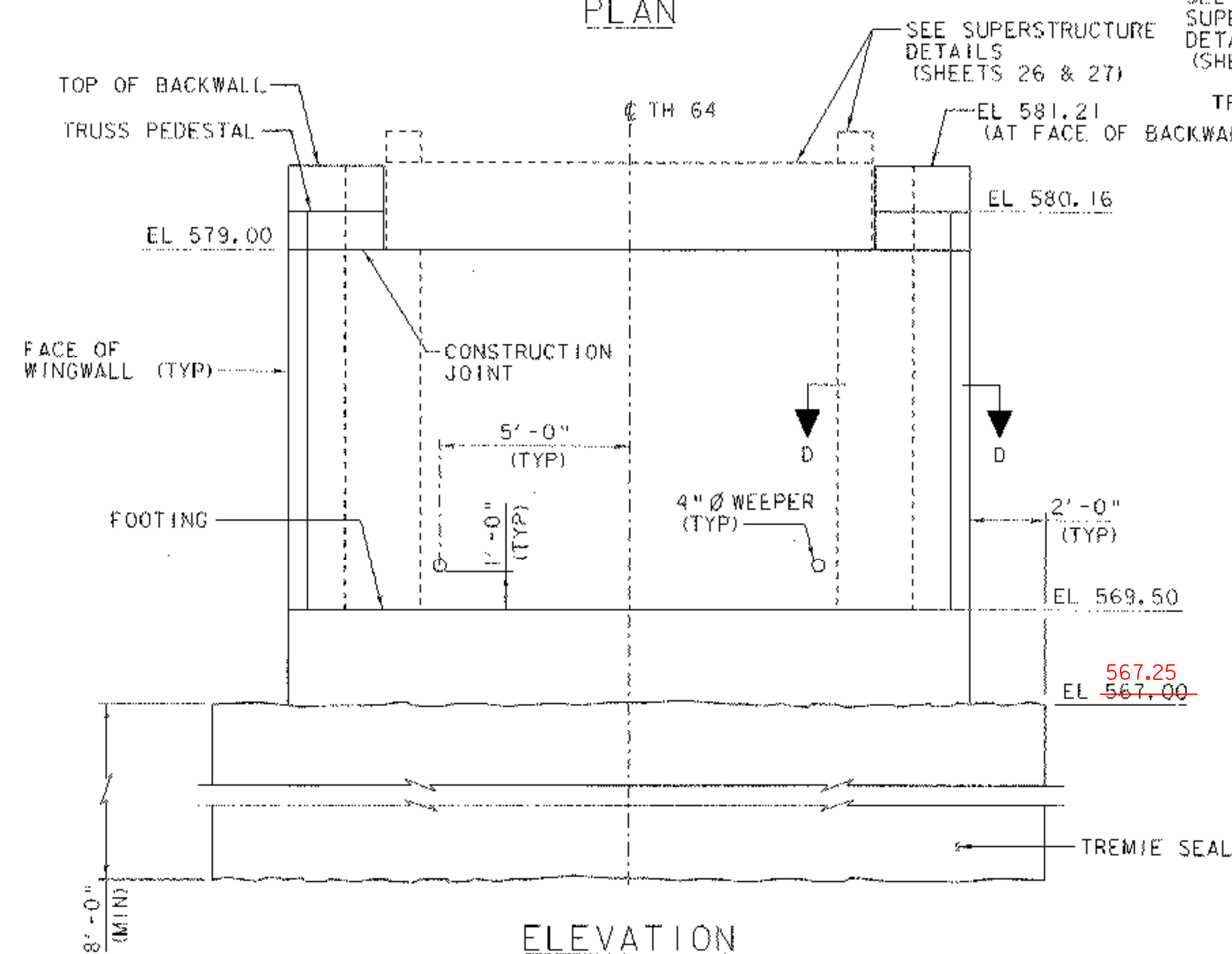
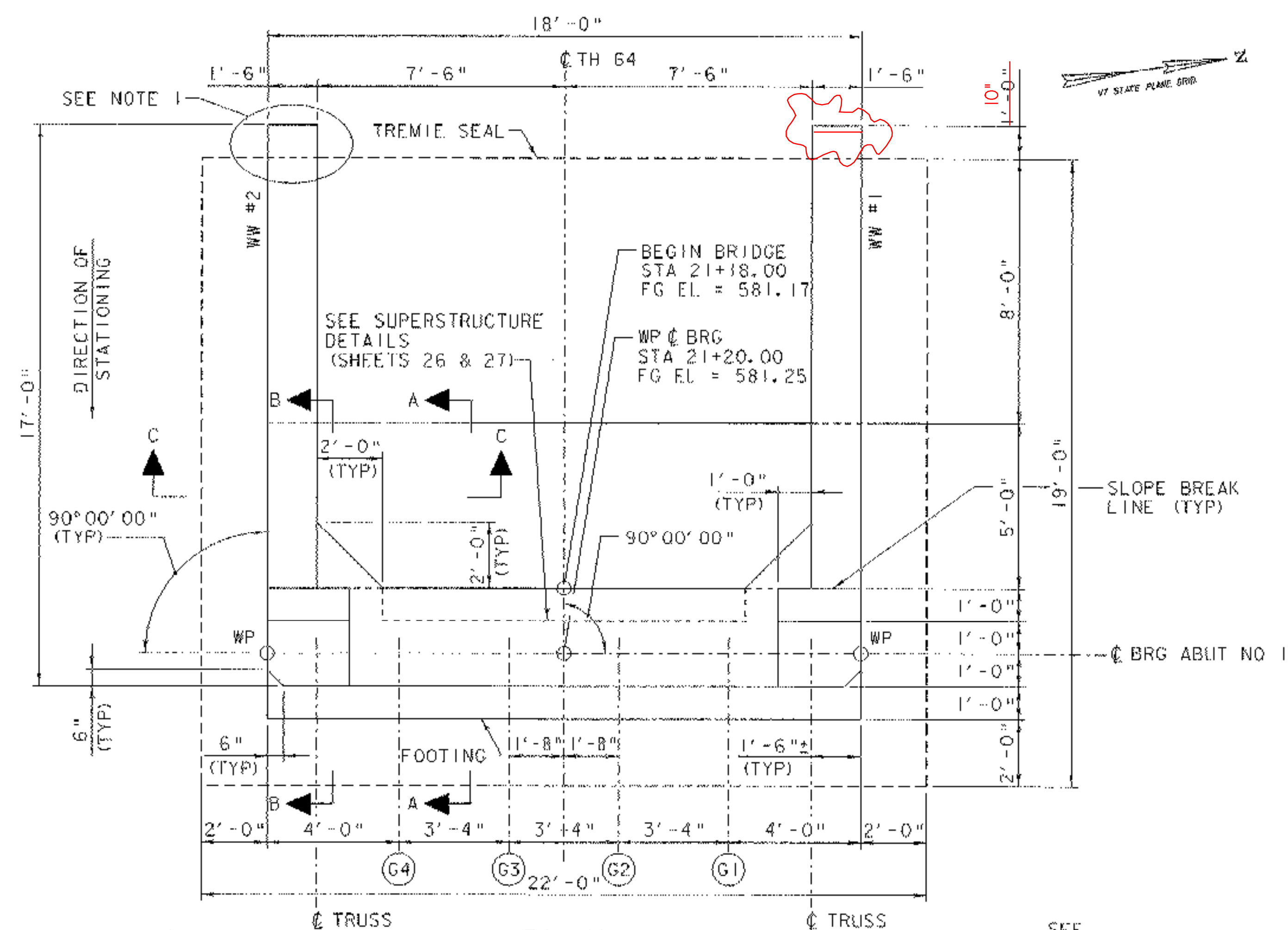
SCALE 1 1/2" = 1'-0"
1 9 6 3 0

VHB Vanasse Hangen Brustlin, Inc.

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04jl46de+3.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: S. HODGDON
BRIDGE DETAILS SHEET (3 OF 3)

PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: K. ZIENKIEWICZ
SHEET 32 OF 39



NOTE:
1. CONTRACTOR MAY ADJUST TREMIE SEAL CONFIGURATION
SLIGHTLY AT THE ENDS OF WINGWALL 1 AND 3 TO ACCOMMODATE
SHEETING REMOVAL AT NO ADDITIONAL COST TO THE AGENCY.

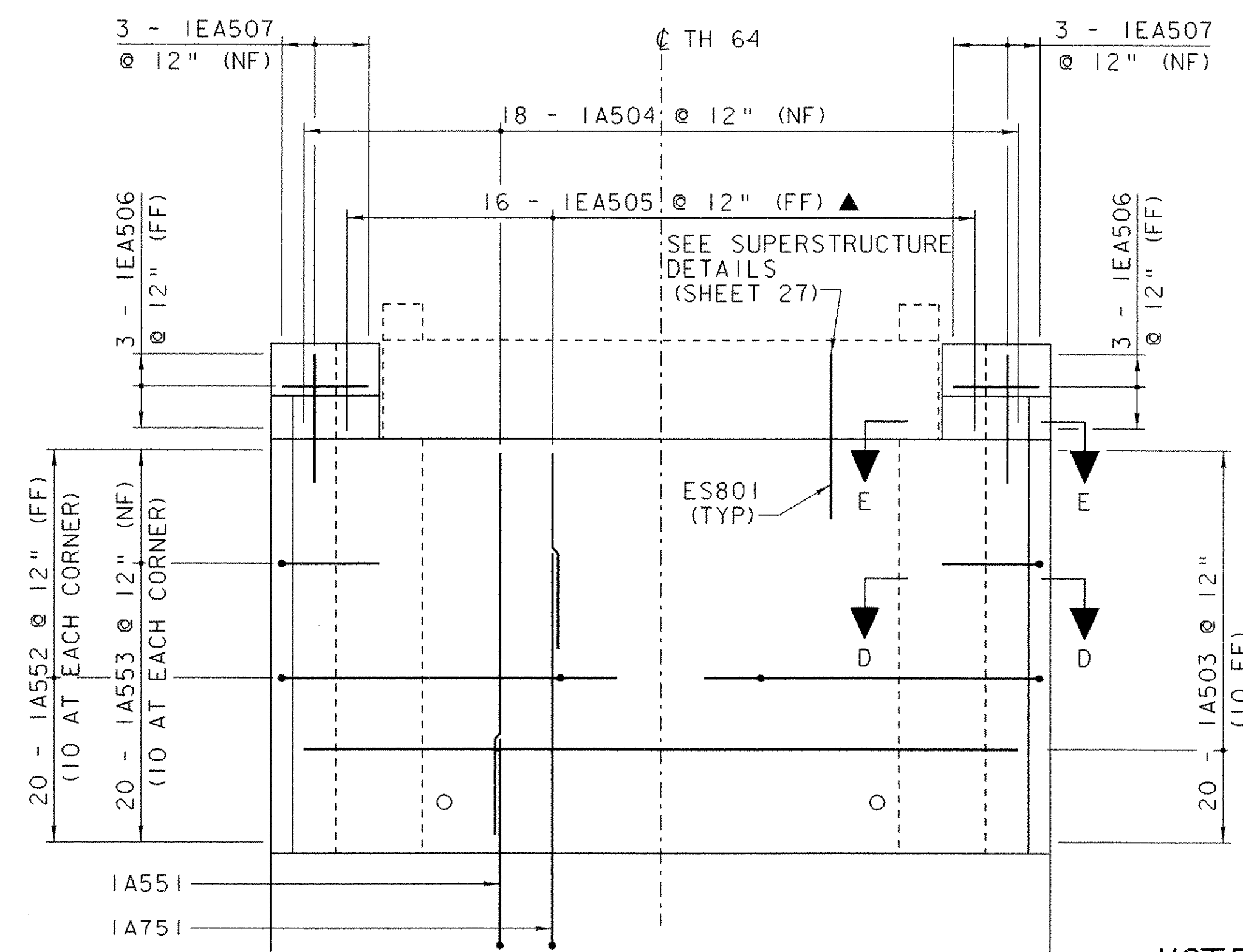
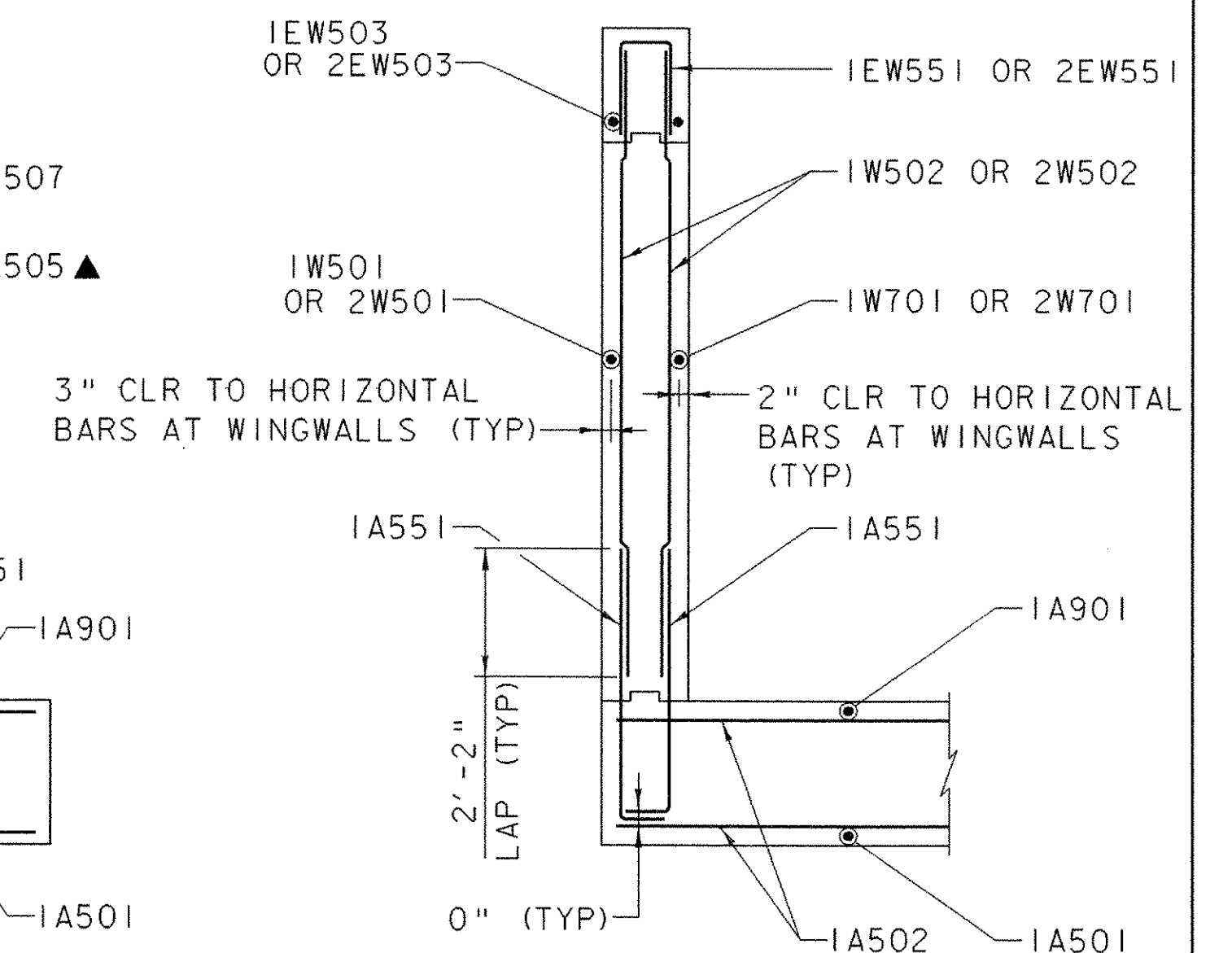
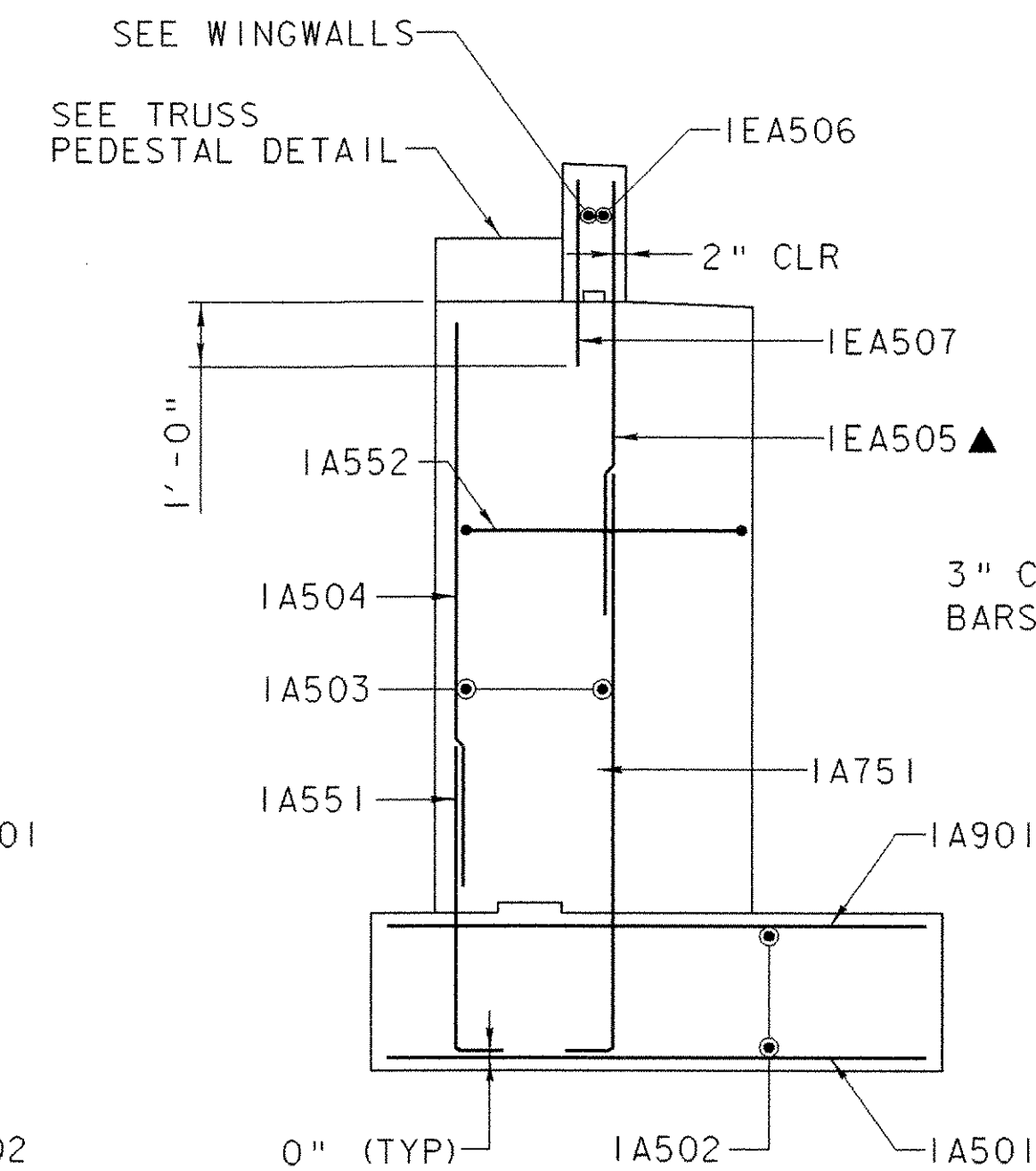
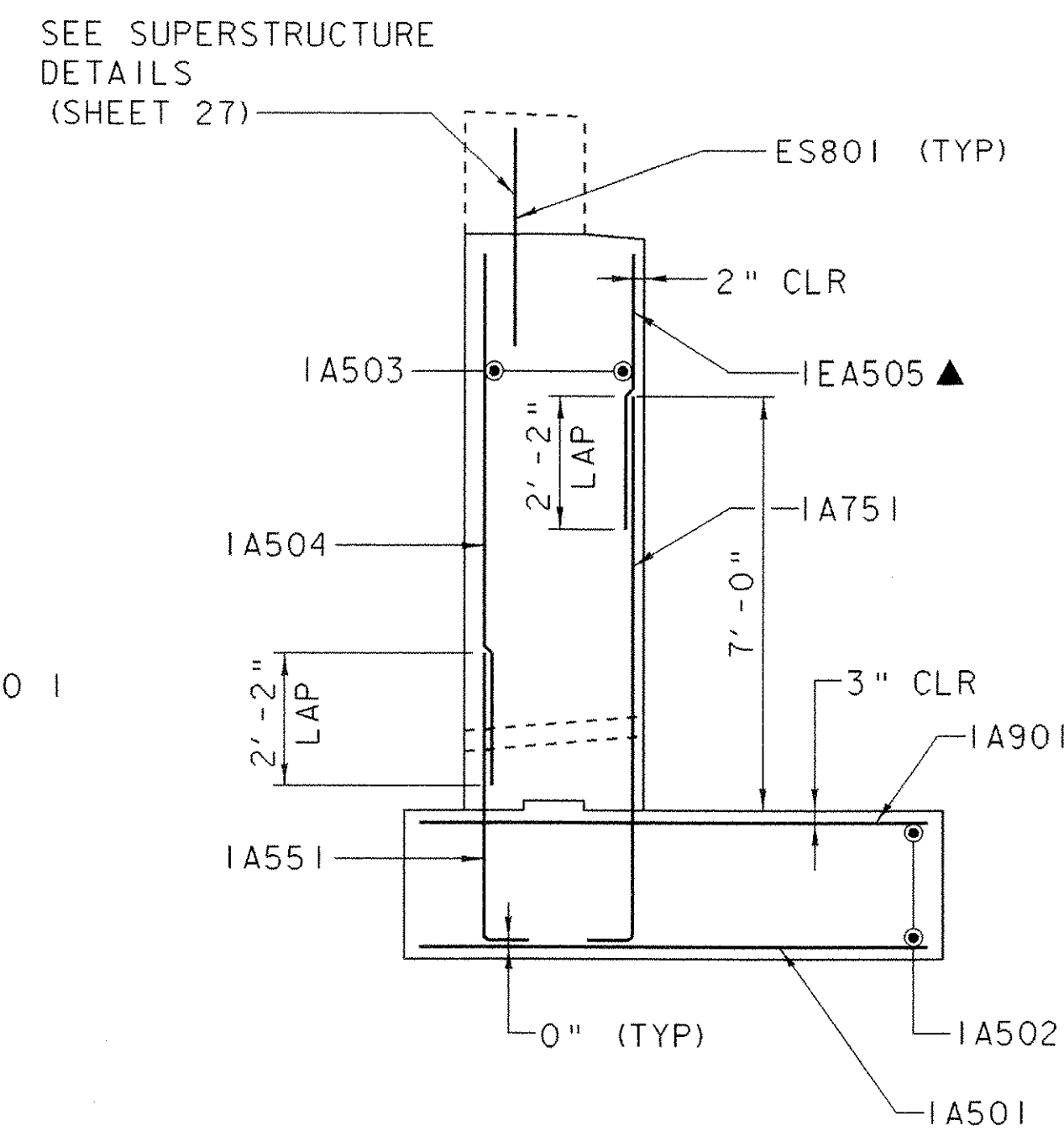
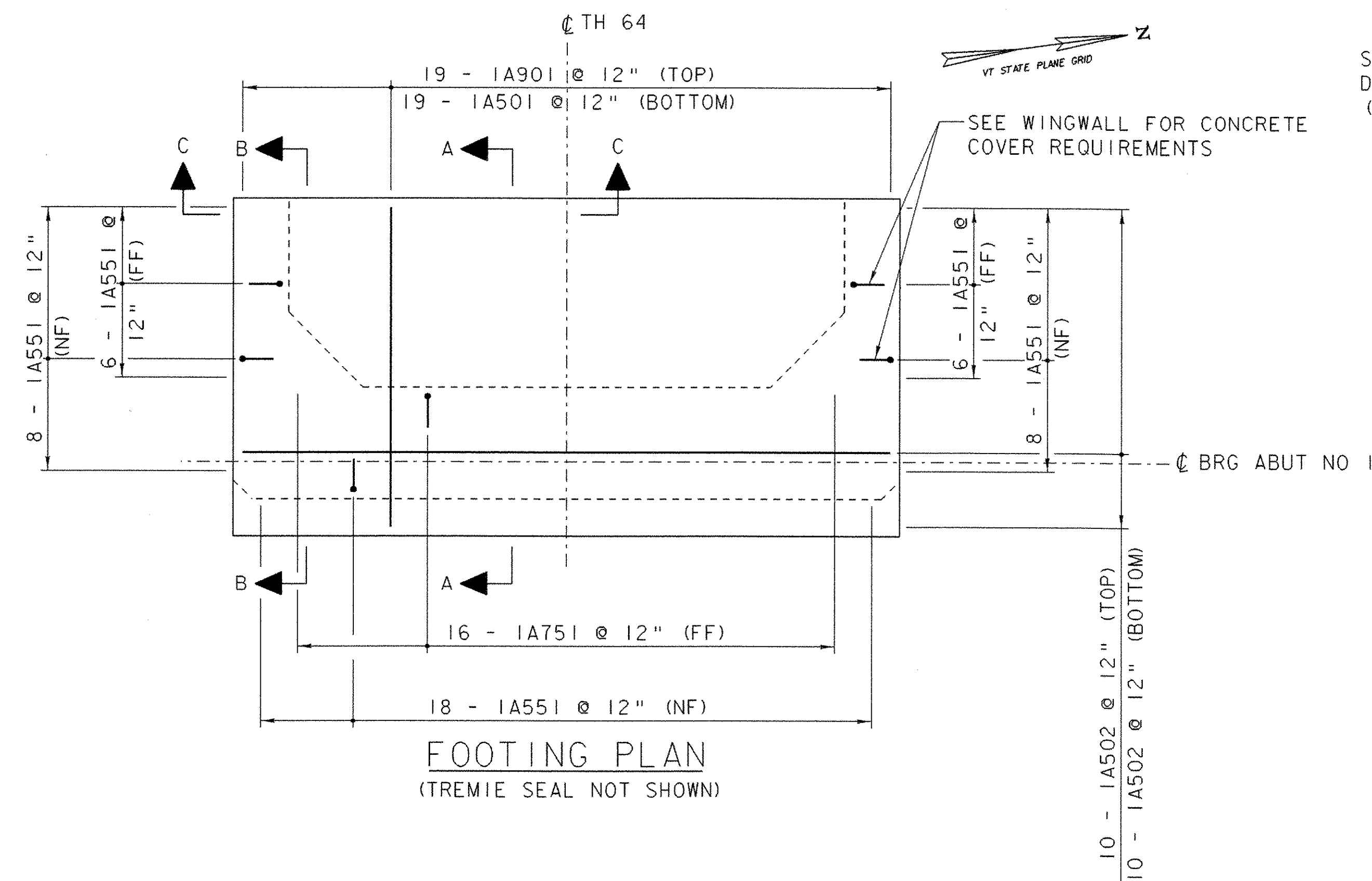
SCALE $\frac{3}{8}" = 1'-0"$

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

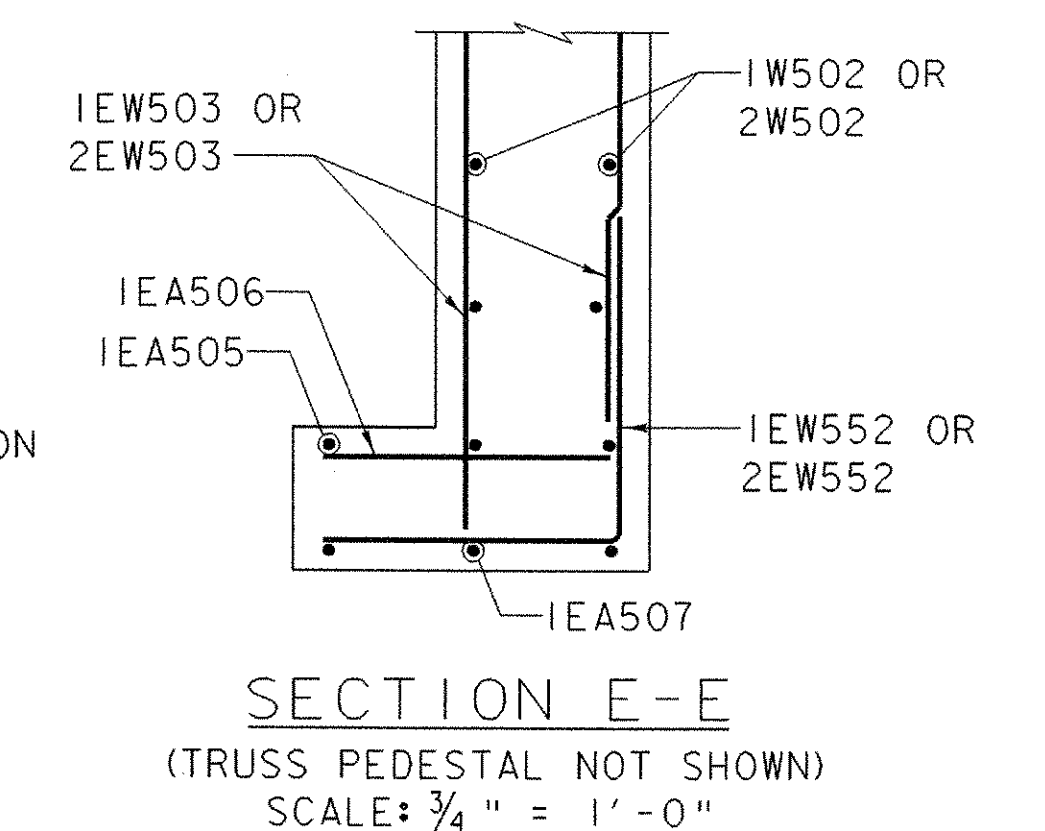
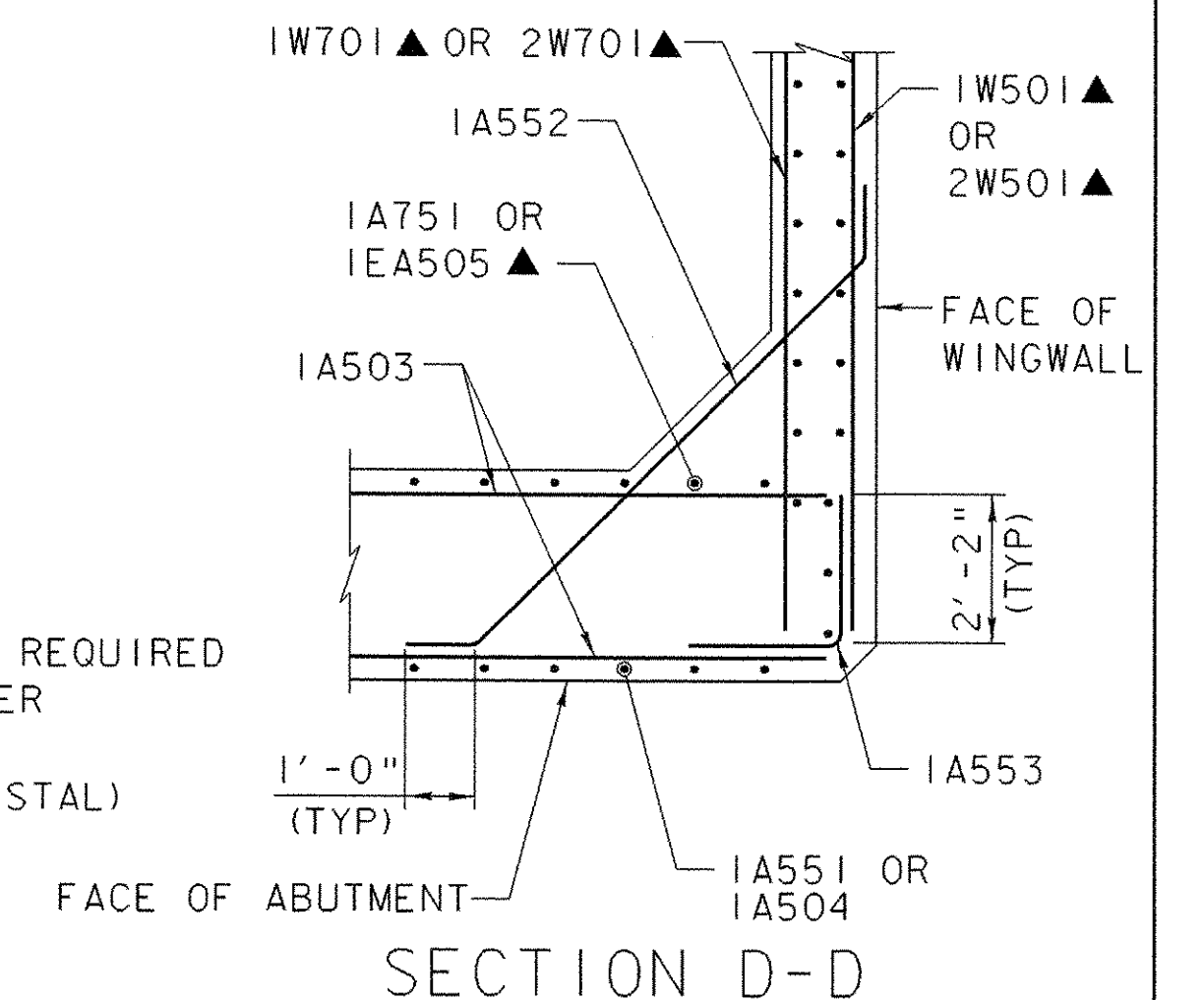
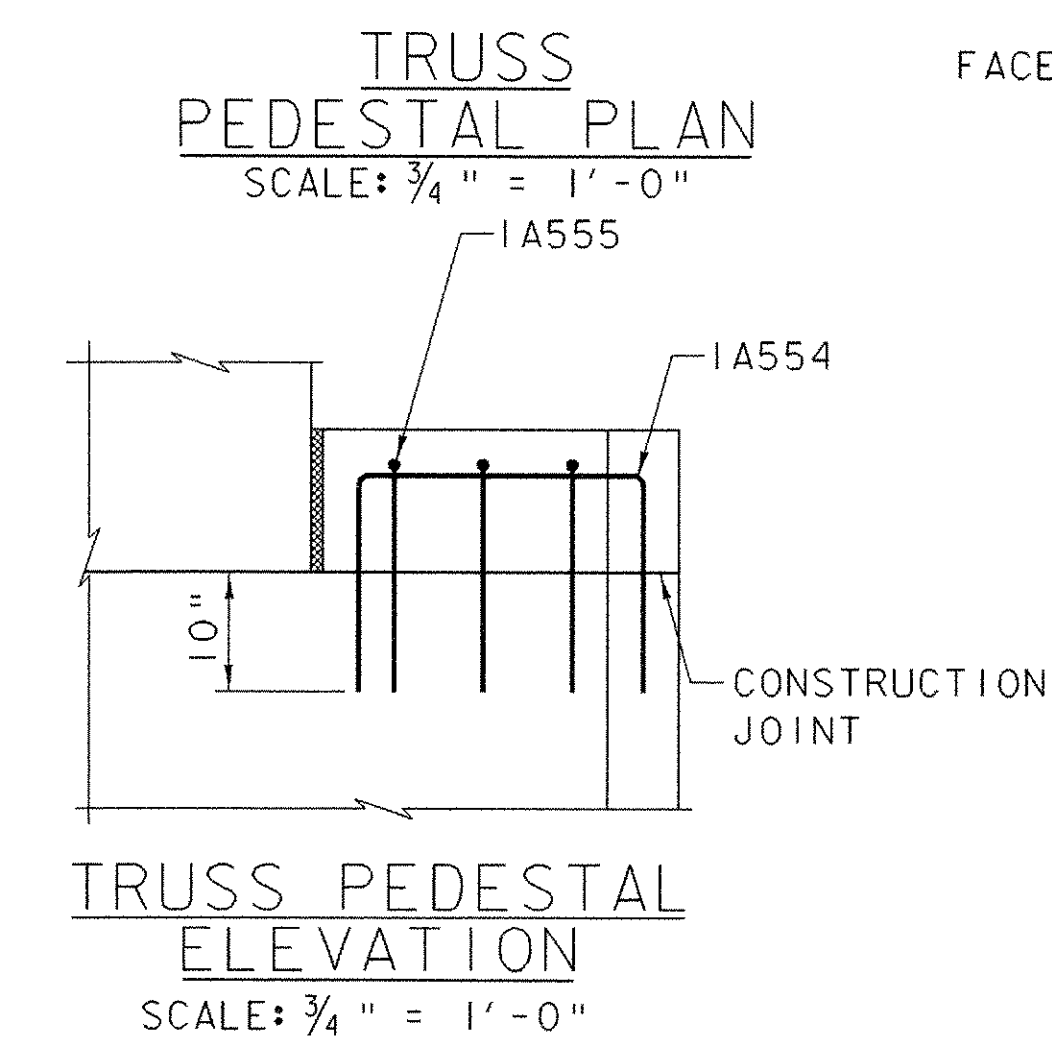
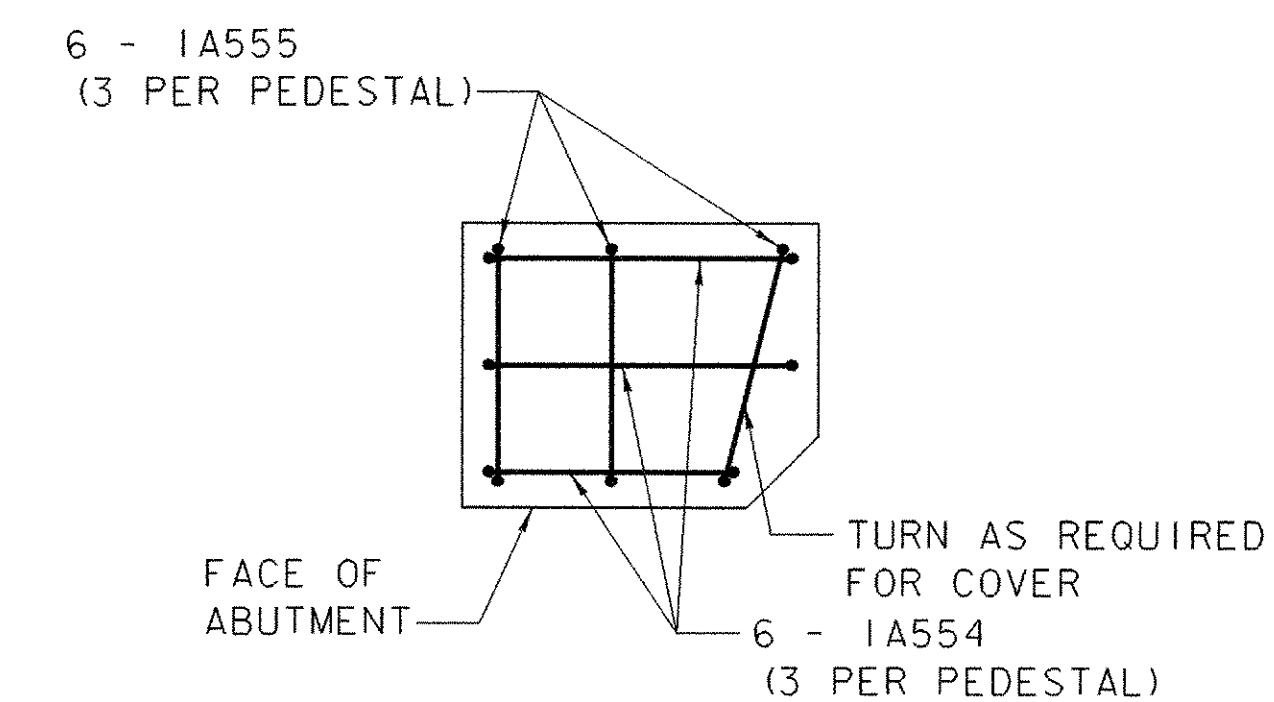
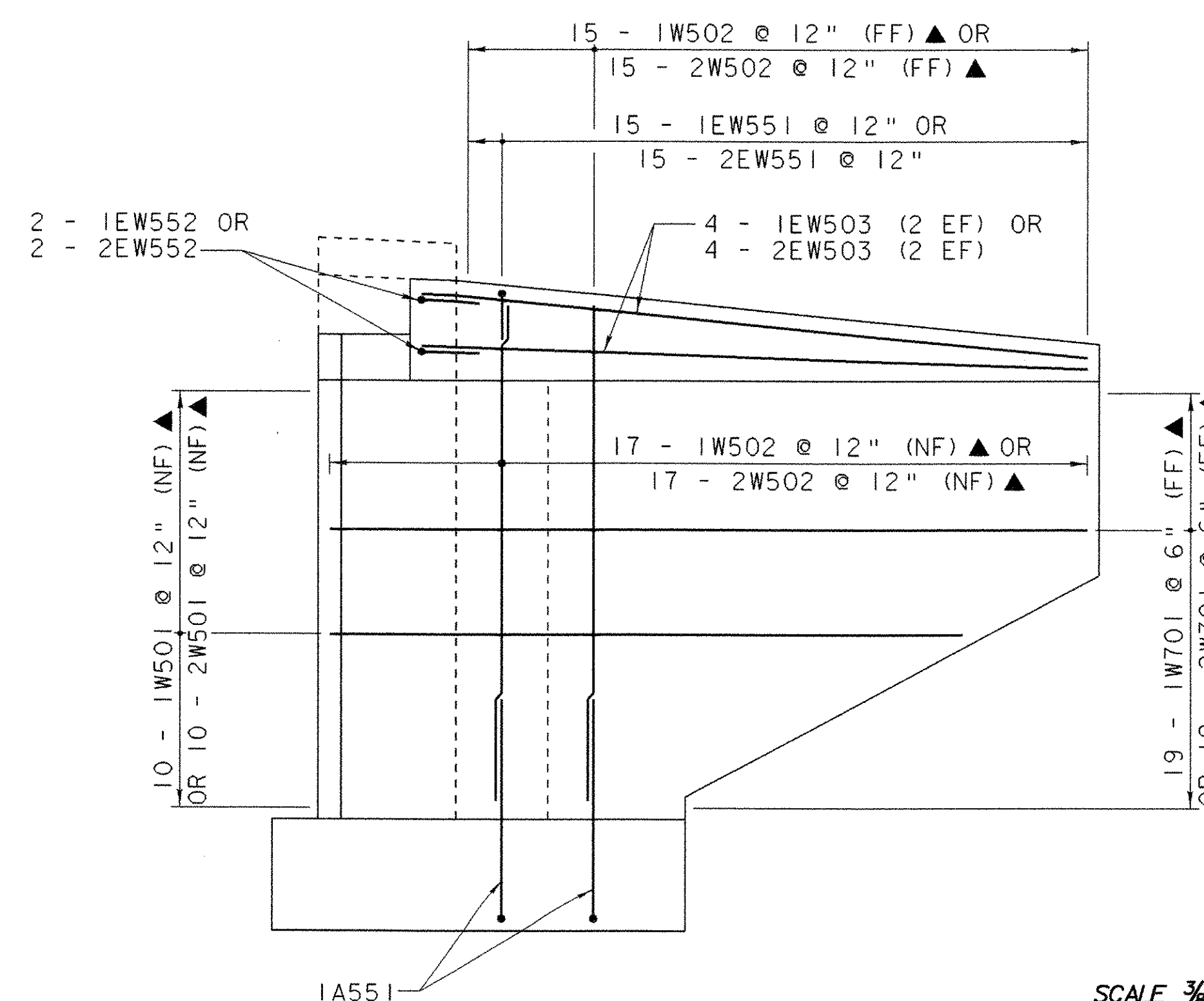
FILE NAME: Z04J46abut1.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: S. HODGDON
ABUTMENT NO 1 DETAILS SHEET

PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: K. ZIENKIEWICZ
SHEET 33 OF 39





NOTE:
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLR, UNLESS OTHERWISE
SPECIFIED ON THE PLANS.



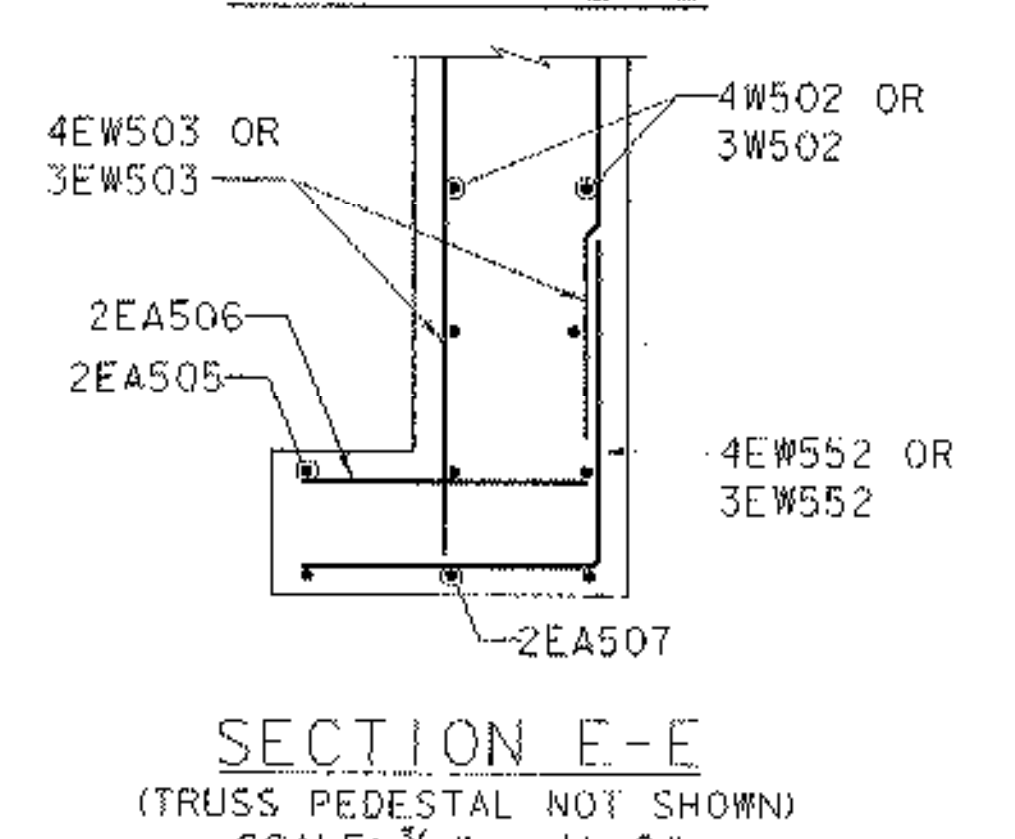
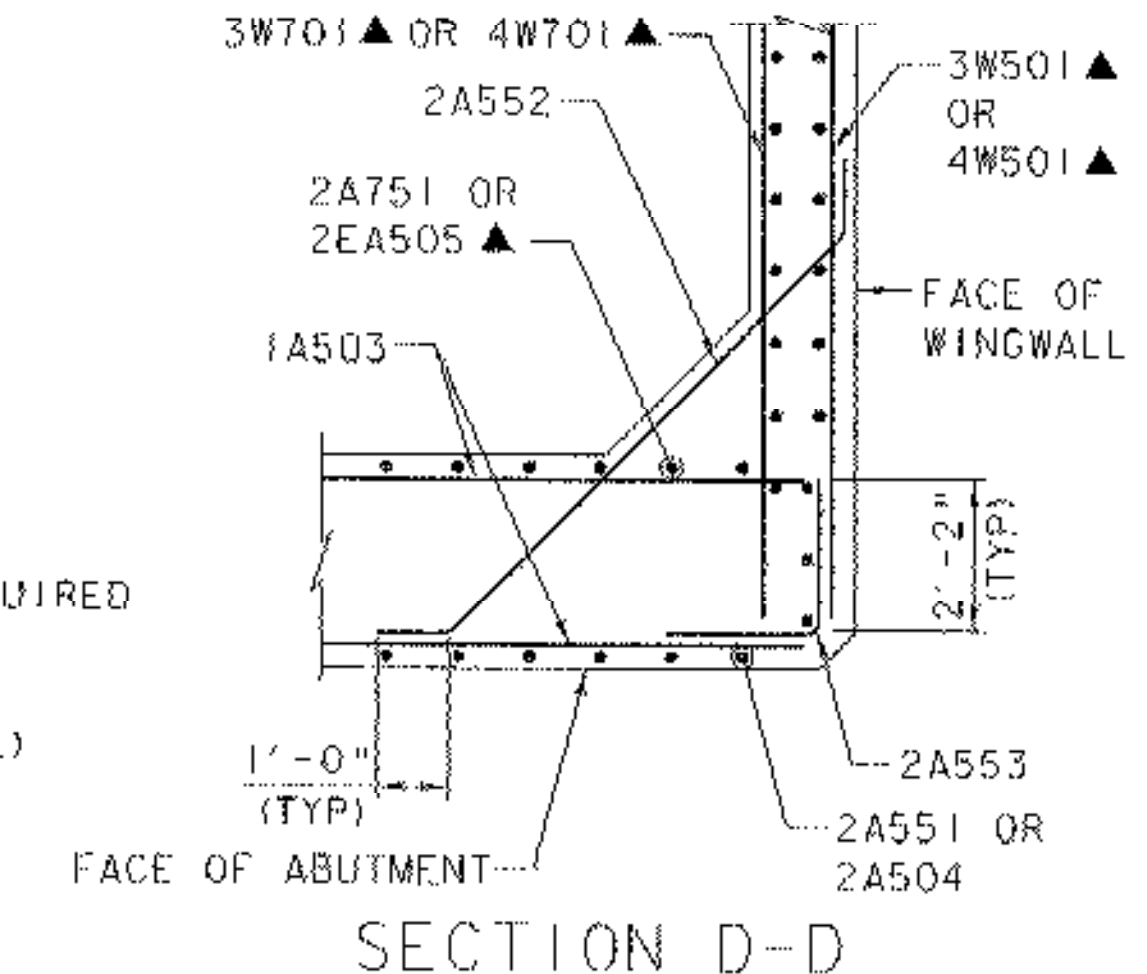
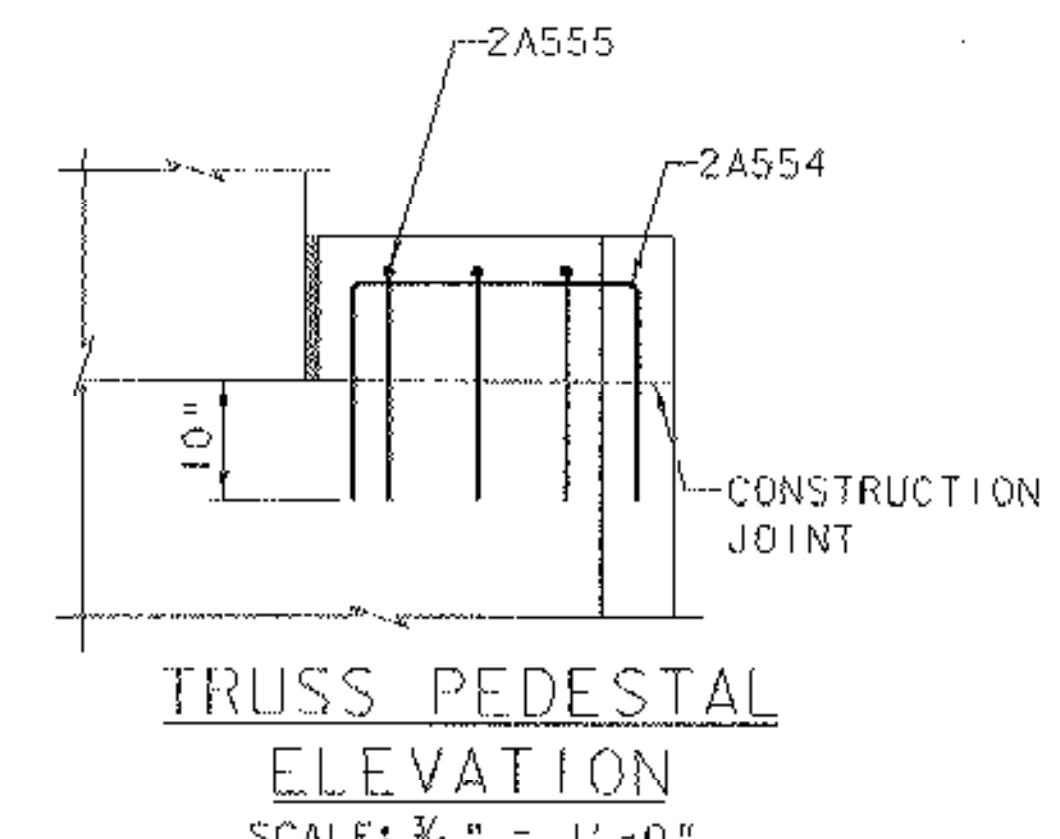
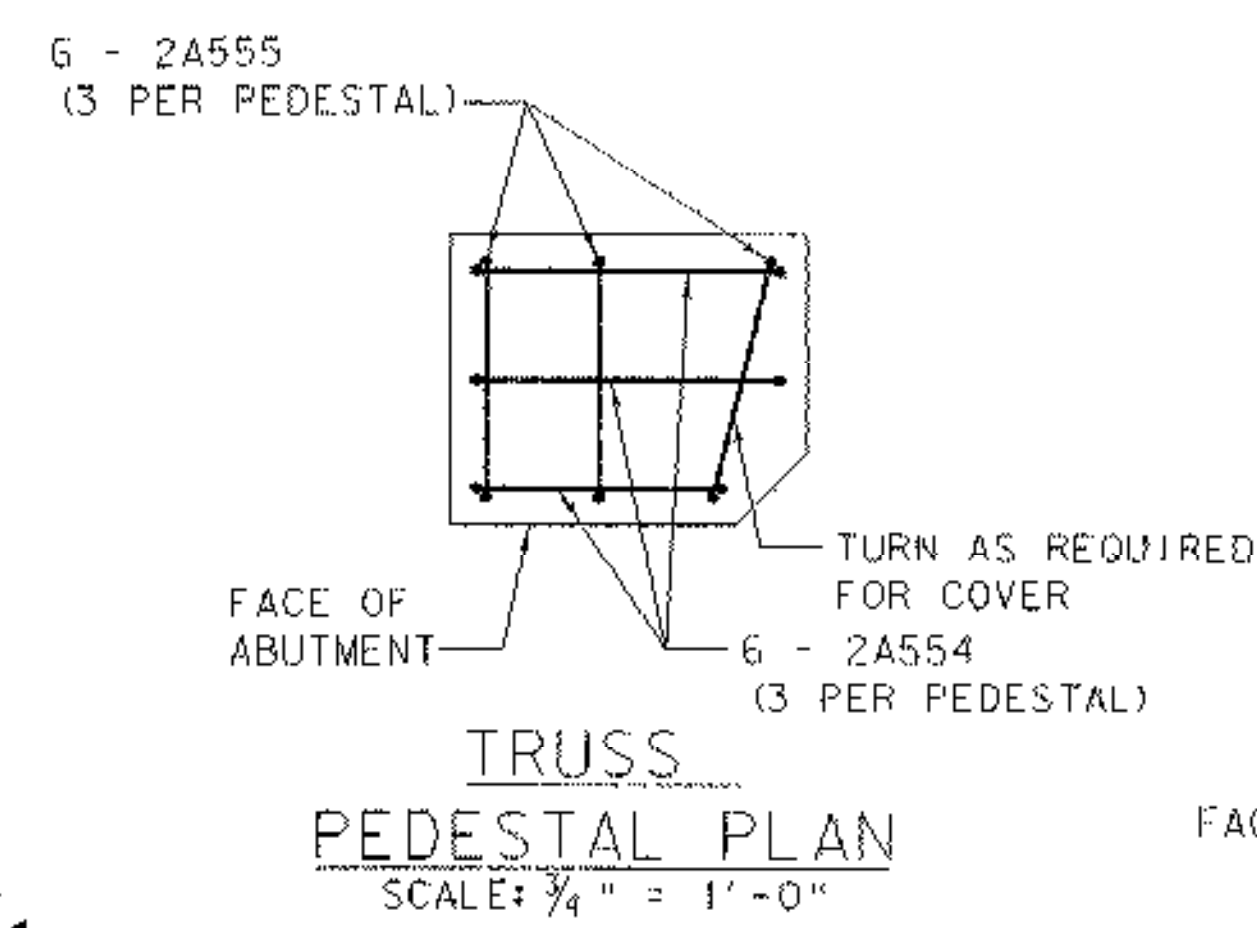
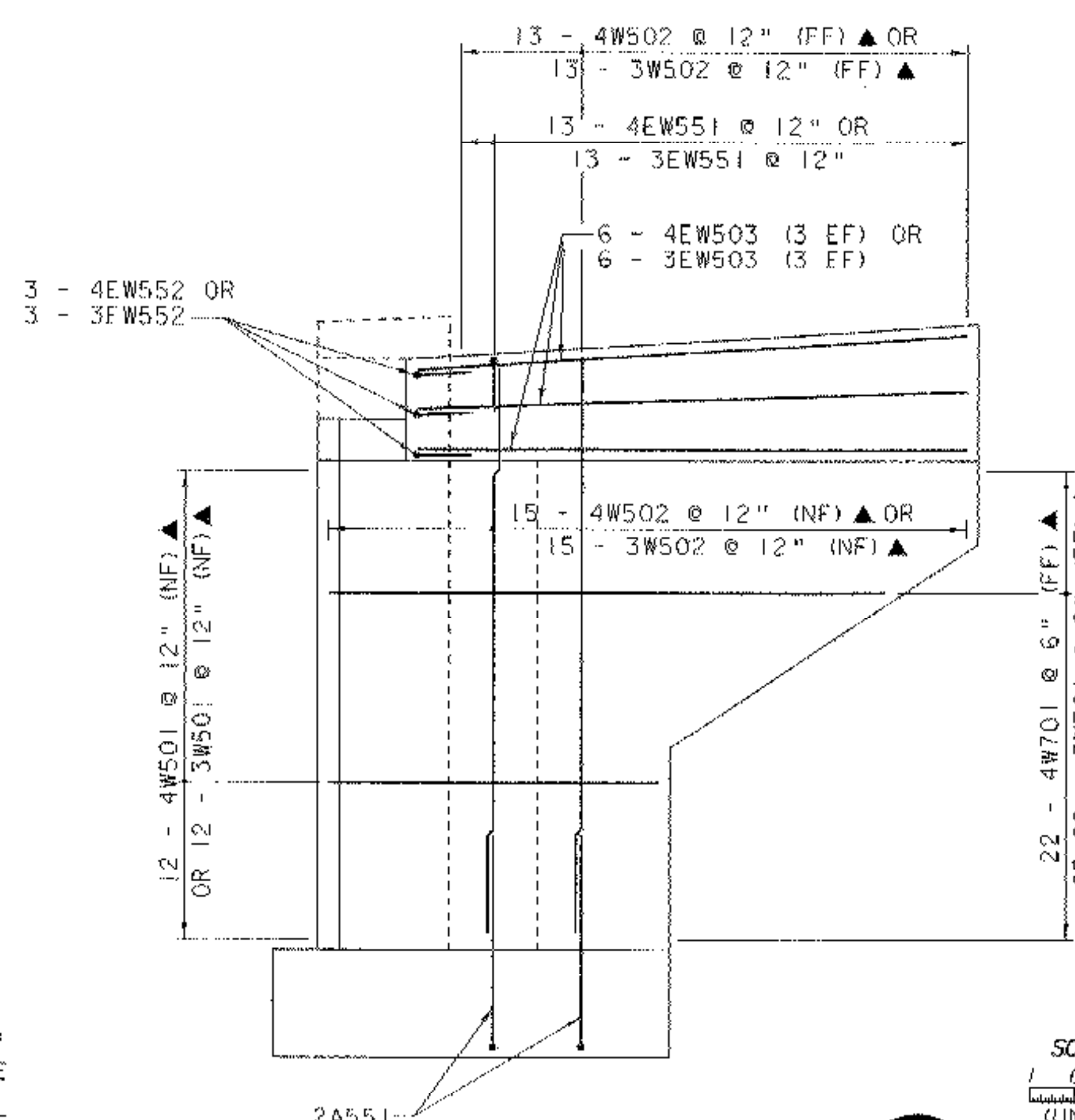
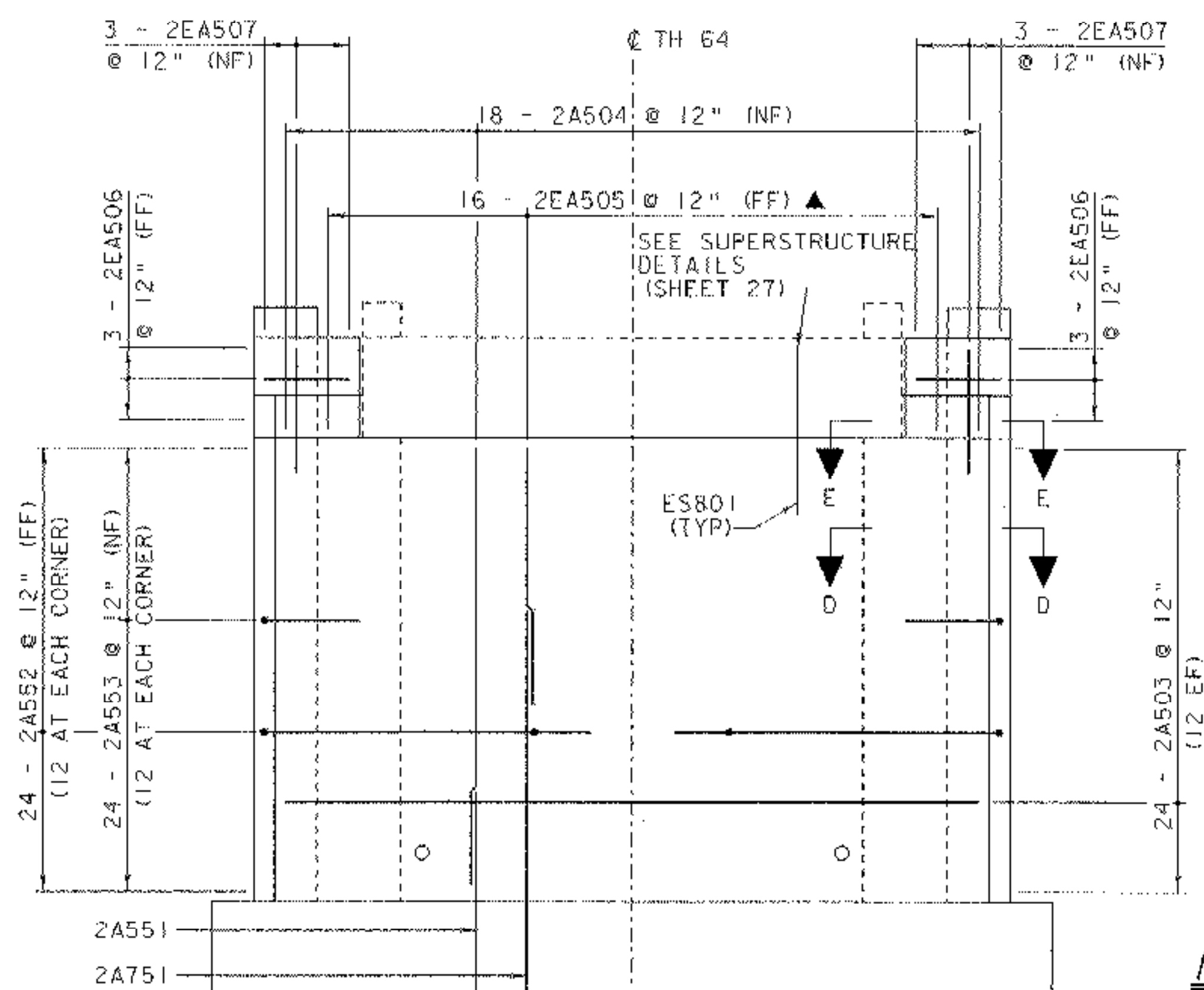
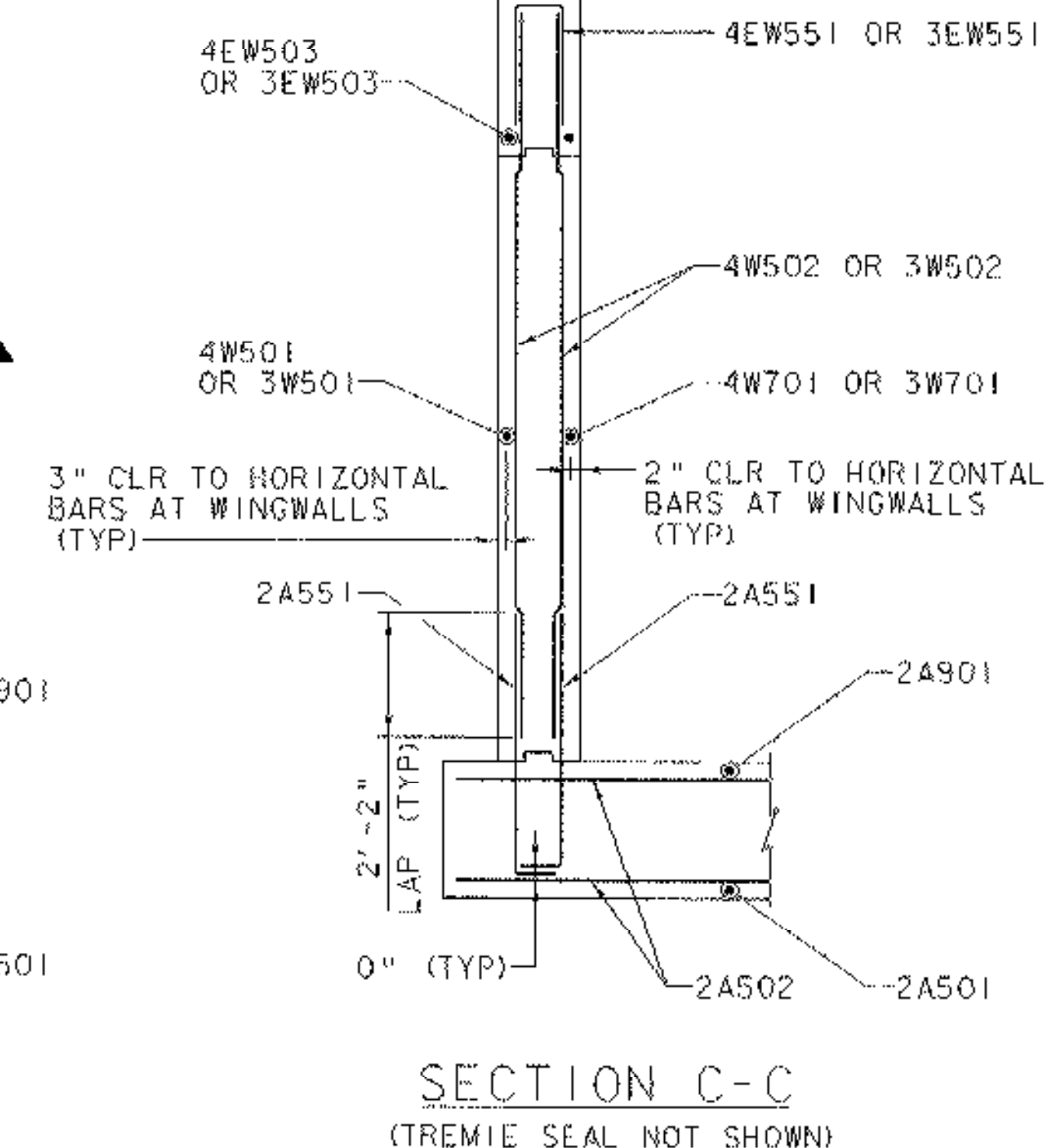
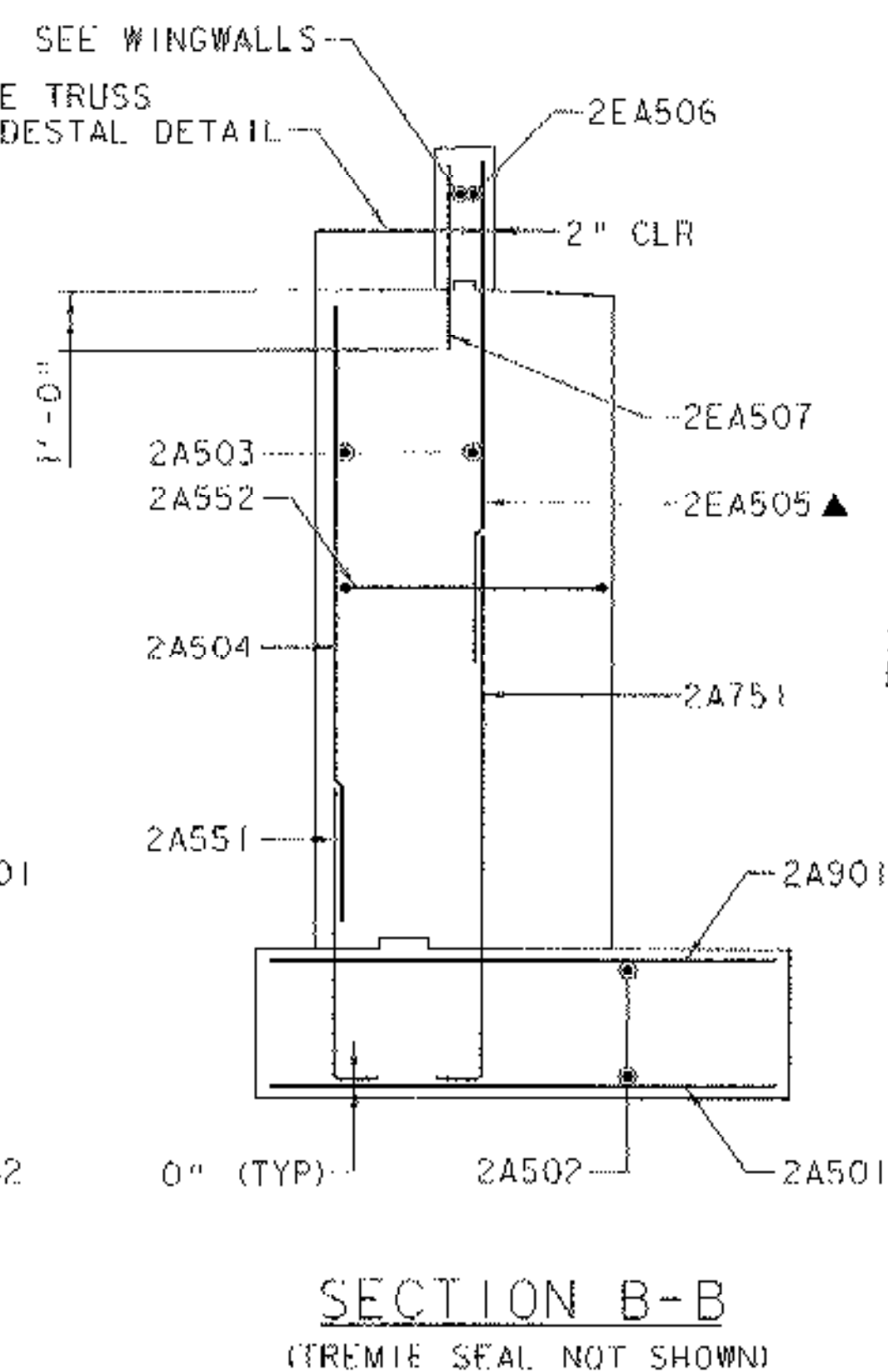
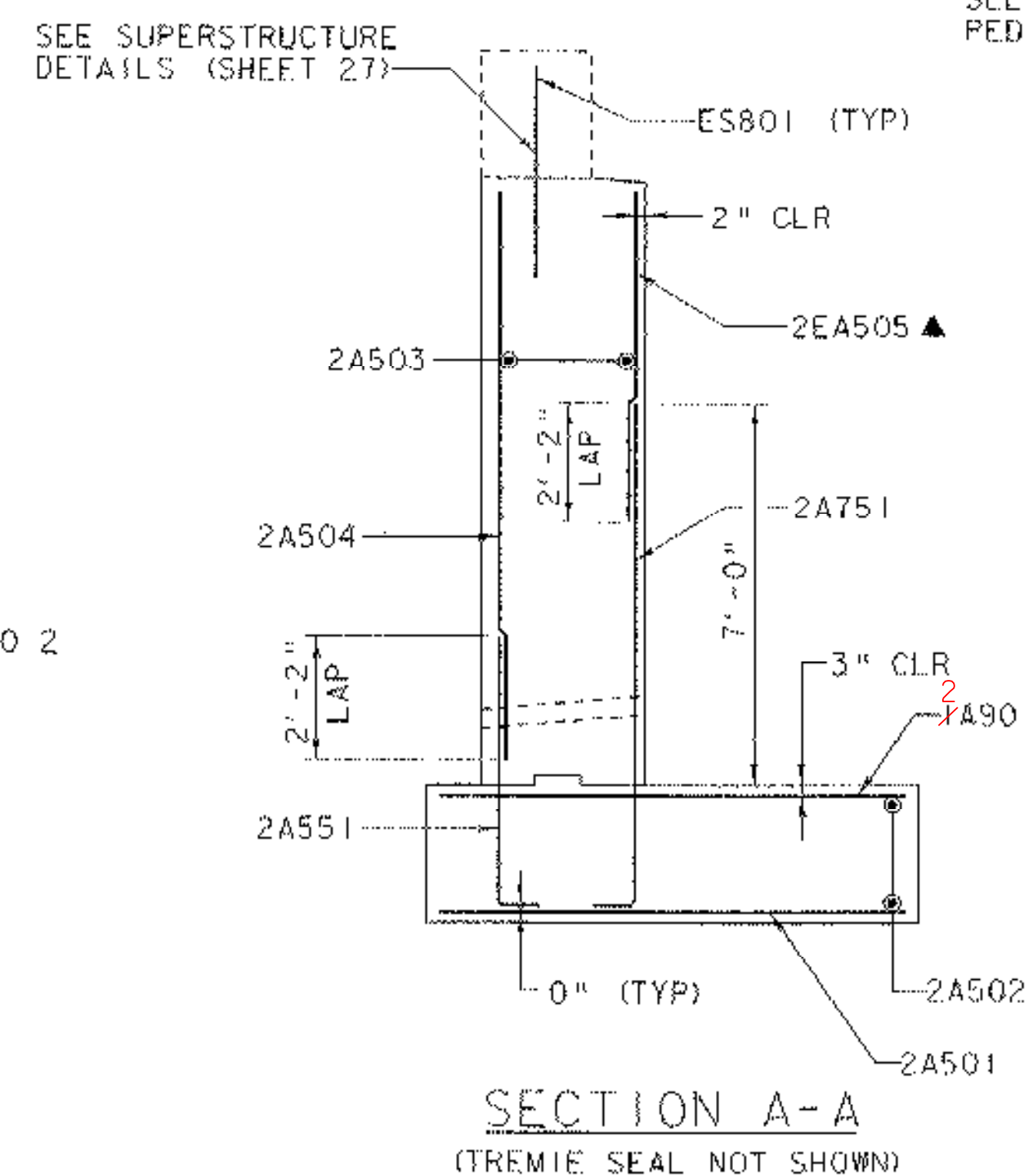
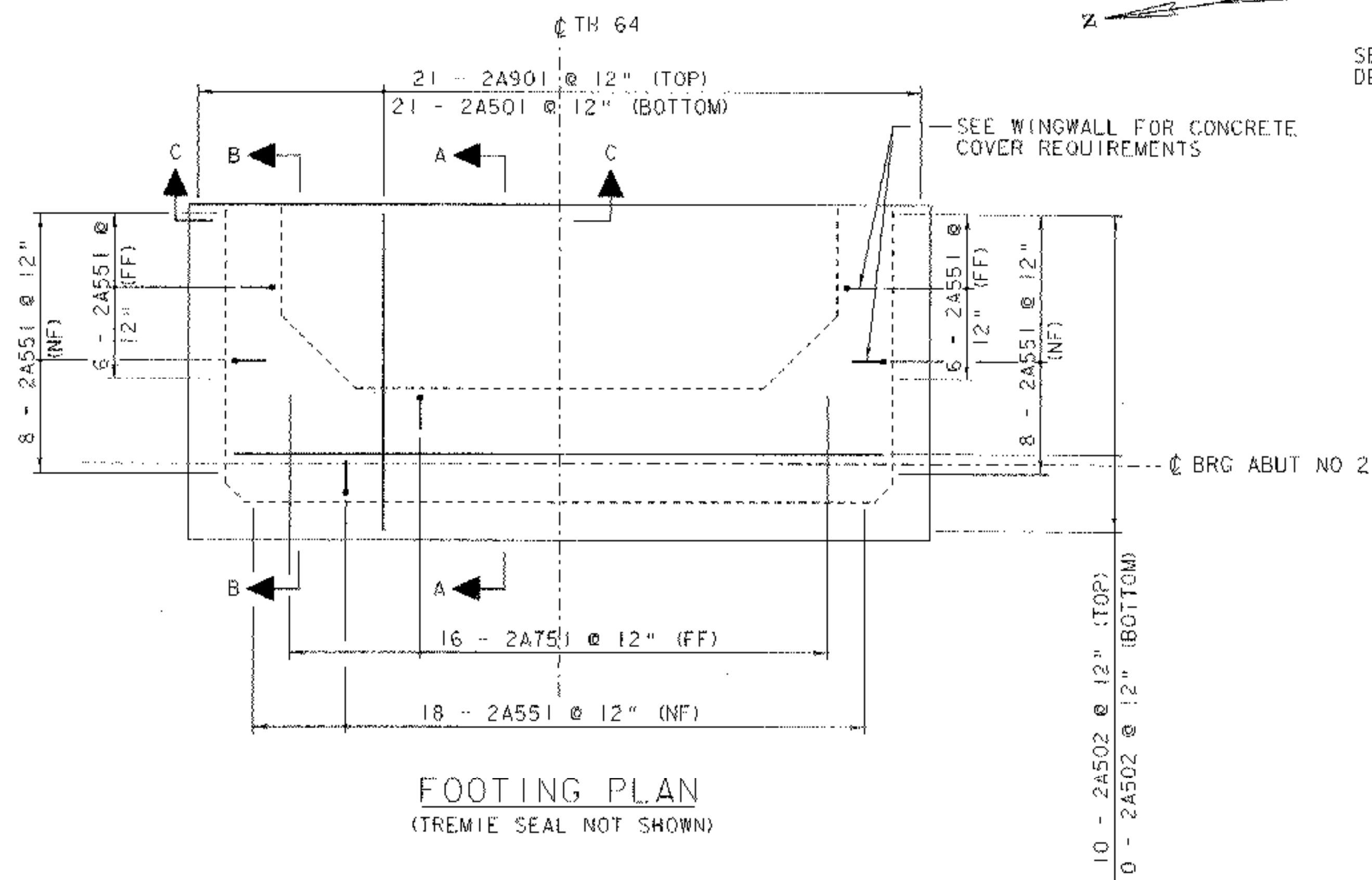
SCALE 3/8" = 1'-0"
1 0 1 2 3 4
(UNLESS NOTED)

VHB Vanasse Hangen Brustlin, Inc.

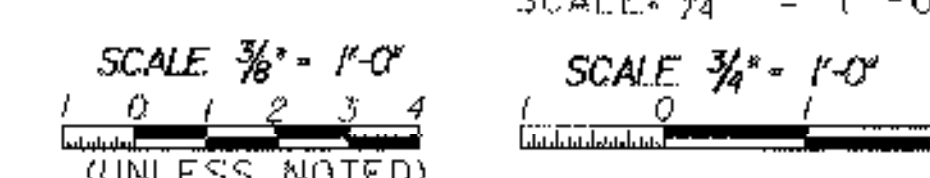
PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)

FILE NAME: z04j146abutirein.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: S. HODGDON
ABUTMENT NO 1 REINFORCEMENT

PLOT DATE: 26-JUN-2007
DRAWN BY: K. WENTWORTH
CHECKED BY: K. ZIENKIEWICZ
SHEET 34 OF 39



NOTE:
NF - NEAR FACE
FF - FAR FACE
EF - EACH FACE
▲ - CUT TO FIT IN FIELD
3" CLR, UNLESS OTHERWISE
SPECIFIED ON THE PLANS.



VHB Vanasse Hangen Brustlin, Inc.

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BHO 1444 (44)
FILE NAME: 2041460bu2rein.dgn
PROJECT LEADER: S. HODGDON
DESIGNED BY: S. HODGDON
ABUTMENT NO 2 REINFORCEMENT
PLOT DATE: 26-JUN-2007
DRAWN BY: J. WENTWORTH
CHECKED BY: K. ZIENKIEWICZ
SHEET 36 OF 39

REINFORCING STEEL SCHEDULE

~ NOTES ~

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

ASTM STANDARD REINFORCING BARS

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

PROJECT NAME: **RANDOLPH**

PROJECT NUMBER: **BHO 1444 (44)**

FILE NAME: z04j146rss.xls

PROJECT MANAGER: **S. HODGDON (VHB)**

DESIGNED BY: **S. HODGDON**

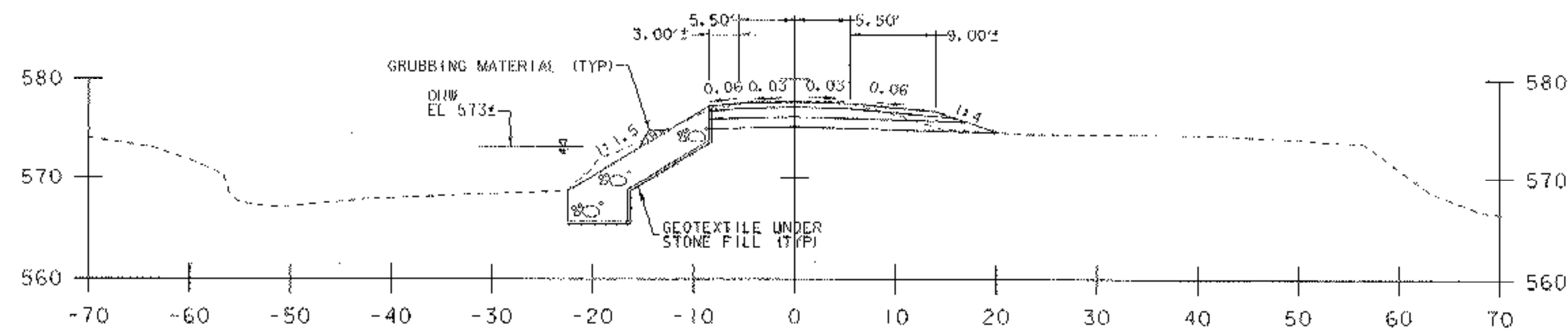
REINFORCING STEEL SCHEDULE

PLOT DATE: **6/12/2007**

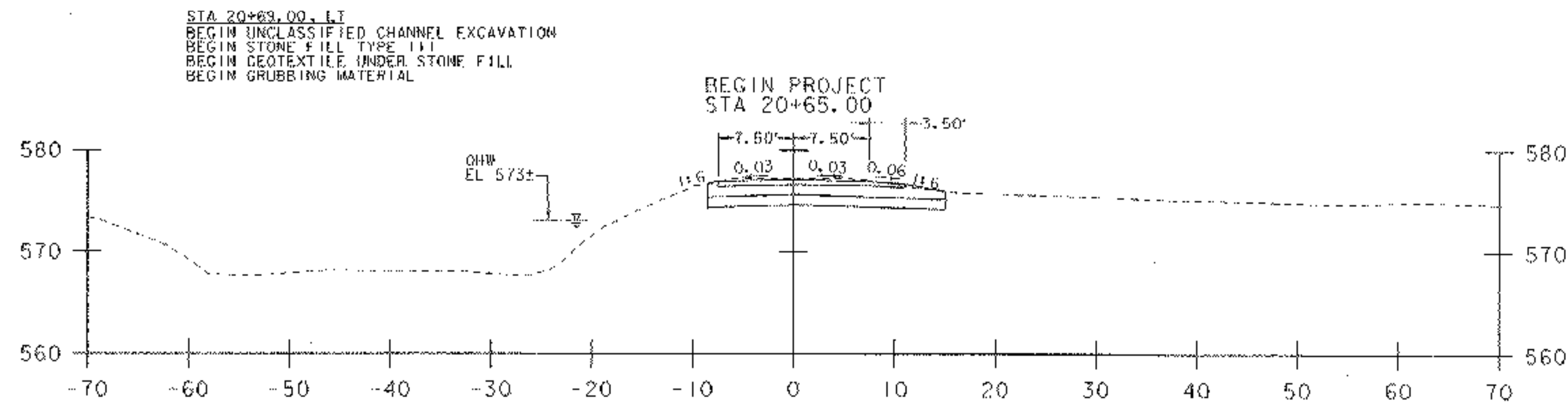
DRAWN BY: **K. WENTWORTH**

CHECKED BY: **K. ZIENKIEWICZ**

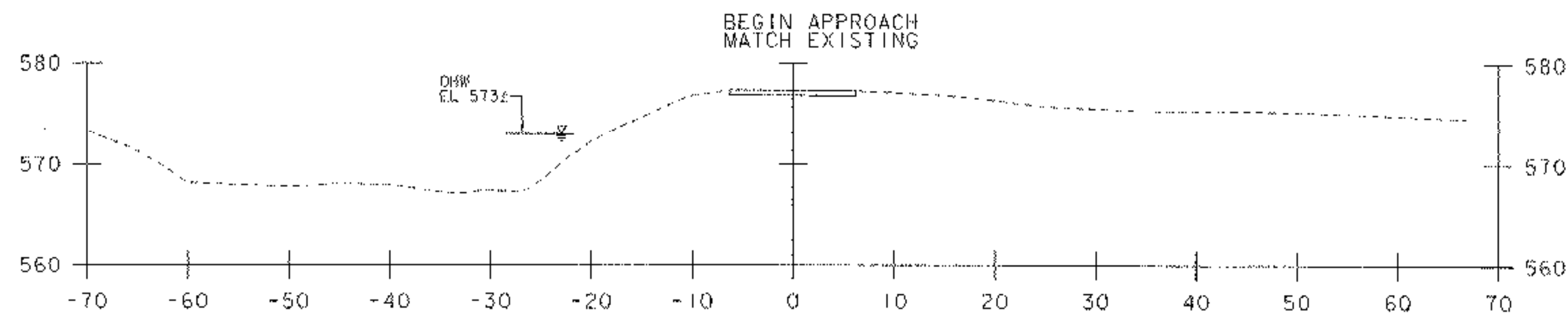
SHEET **37** OF **39**



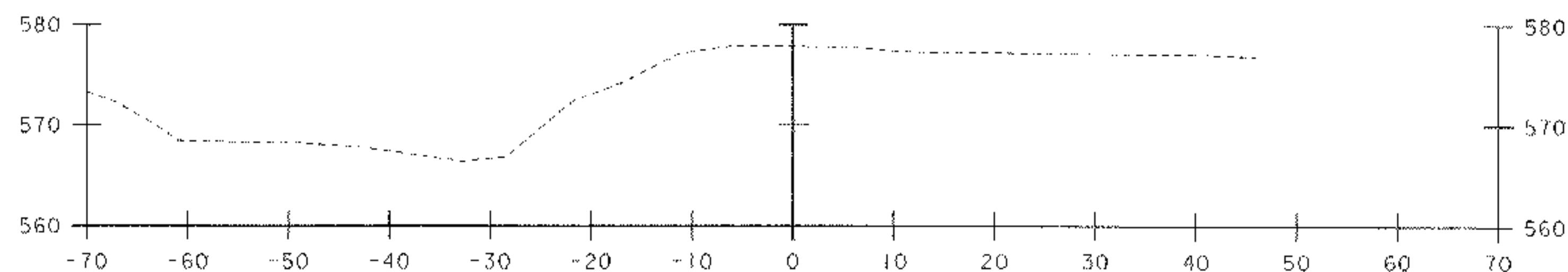
20+75



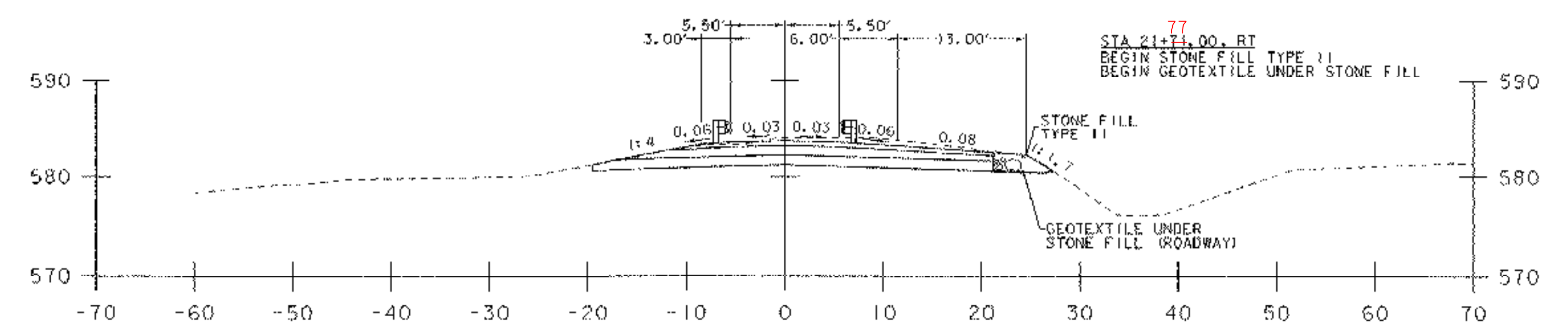
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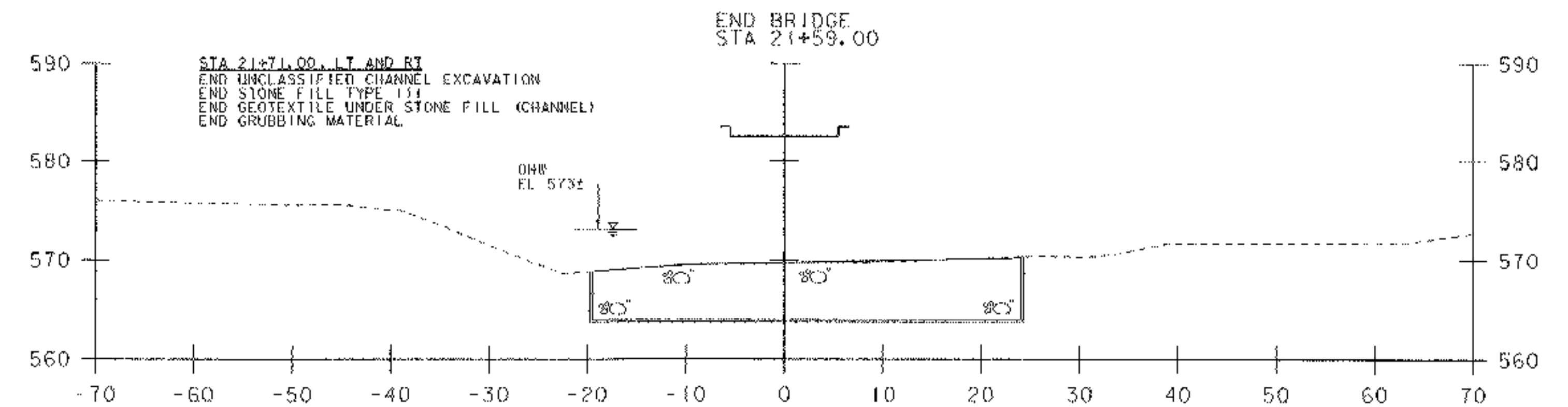
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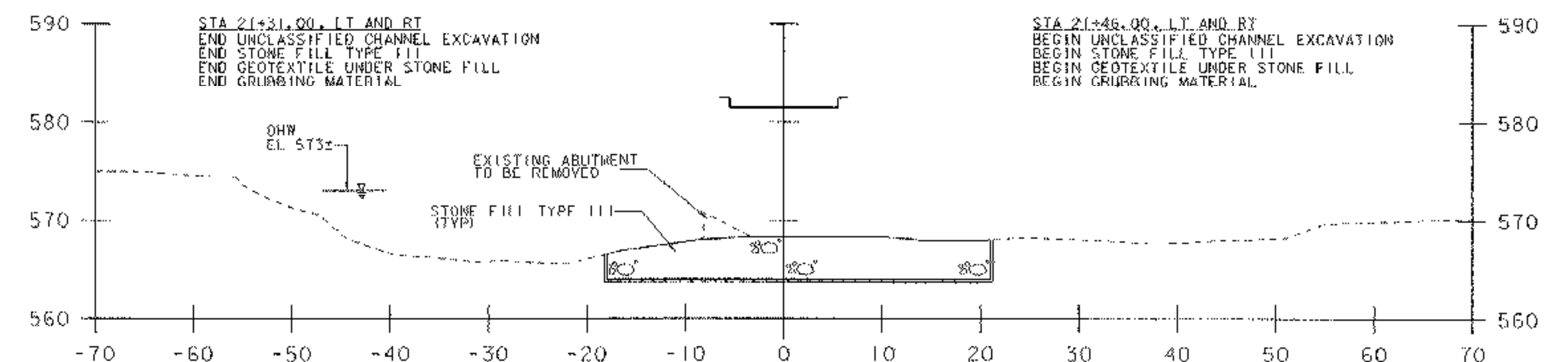
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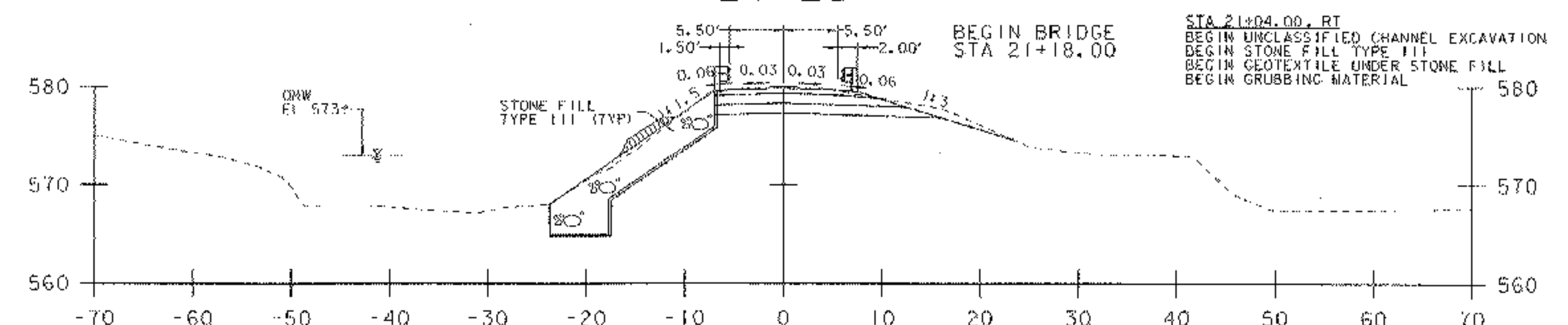
21+75



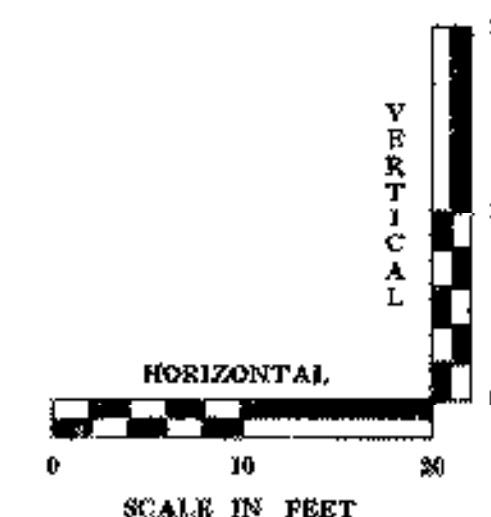
21+50



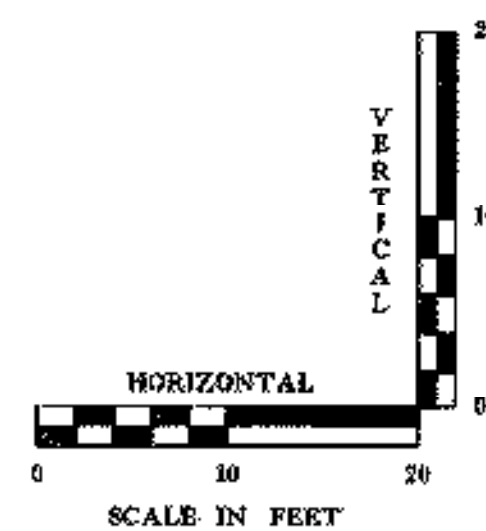
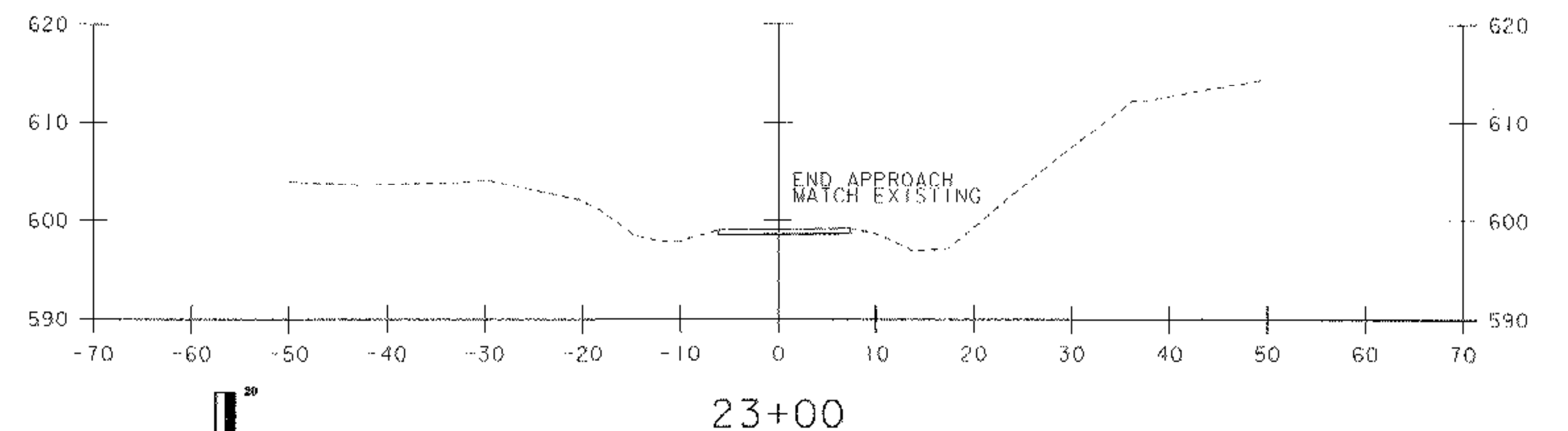
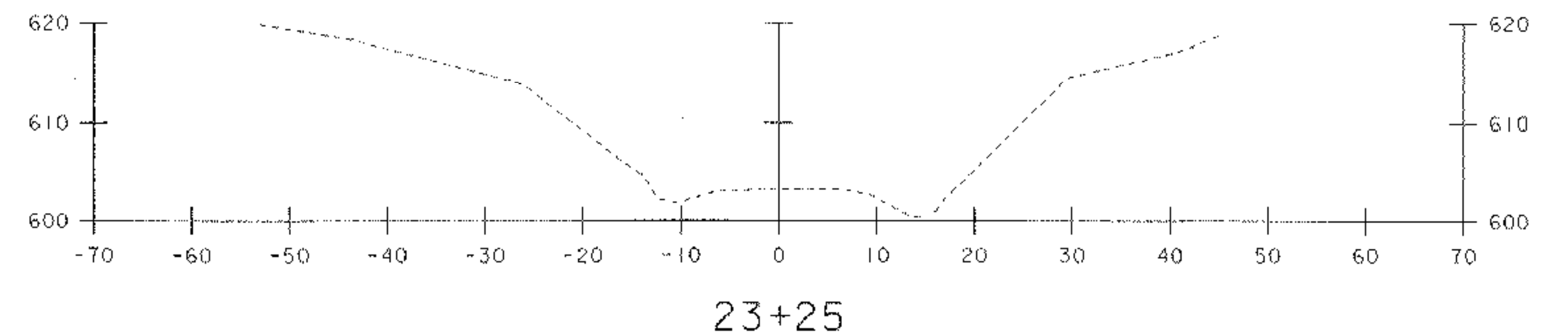
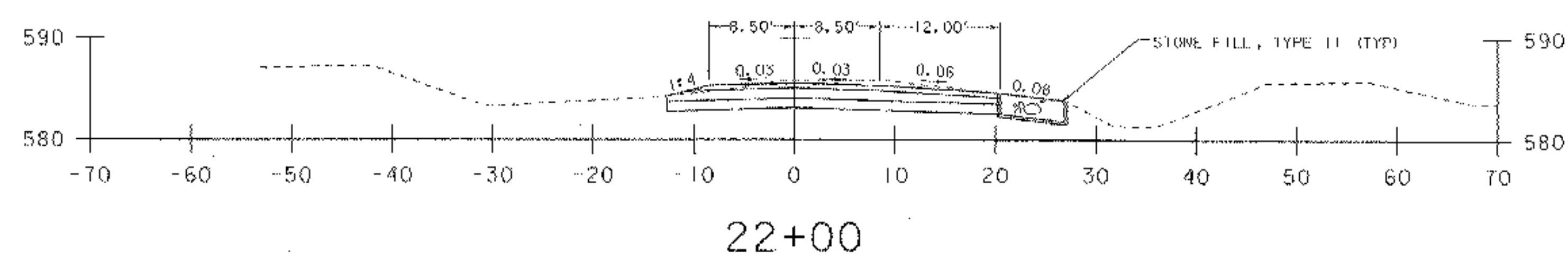
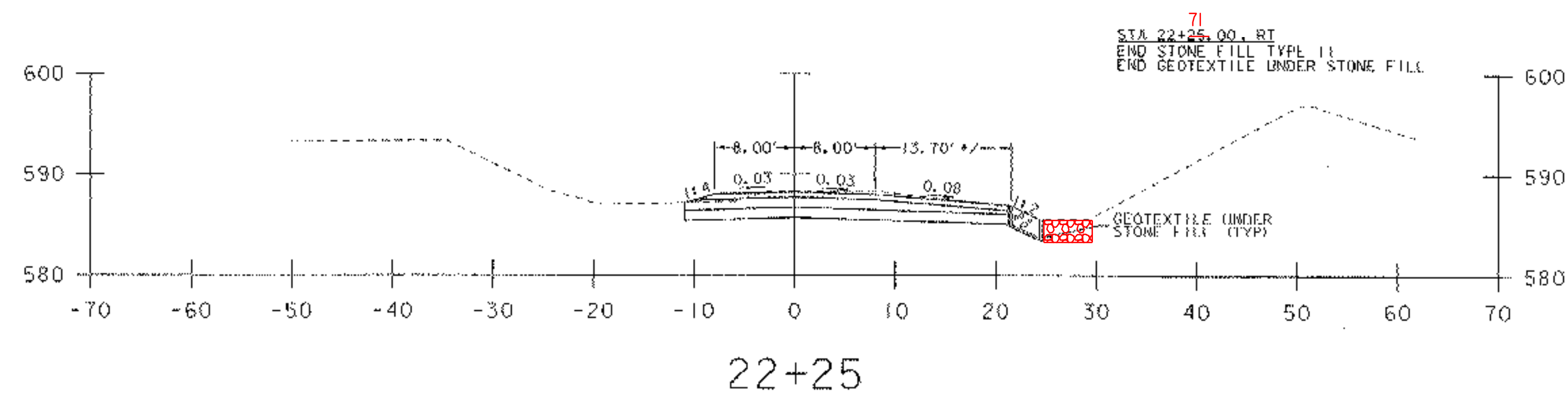
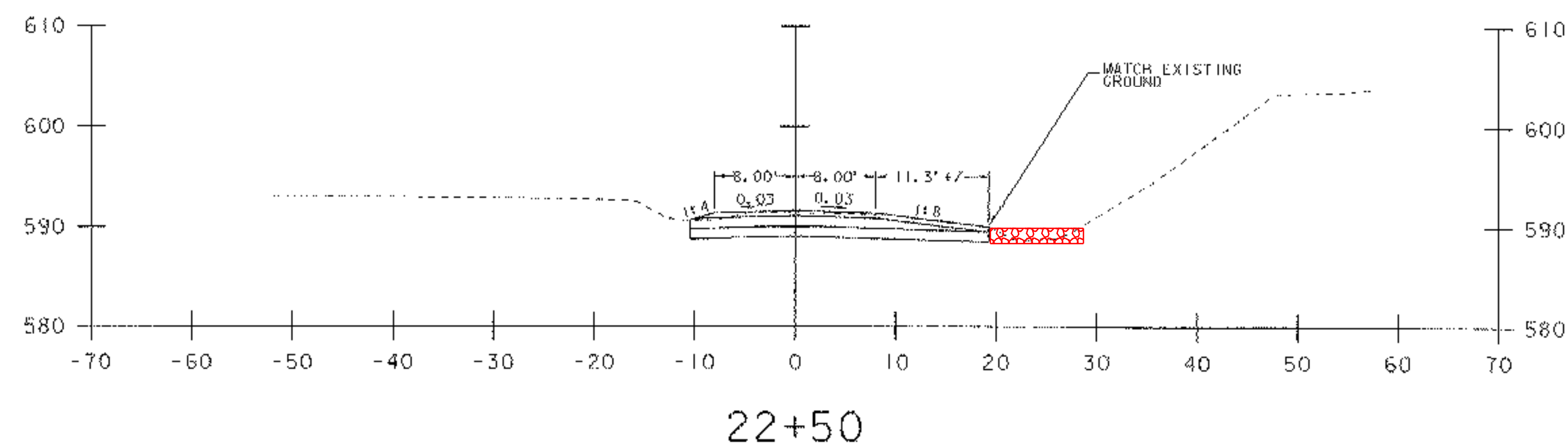
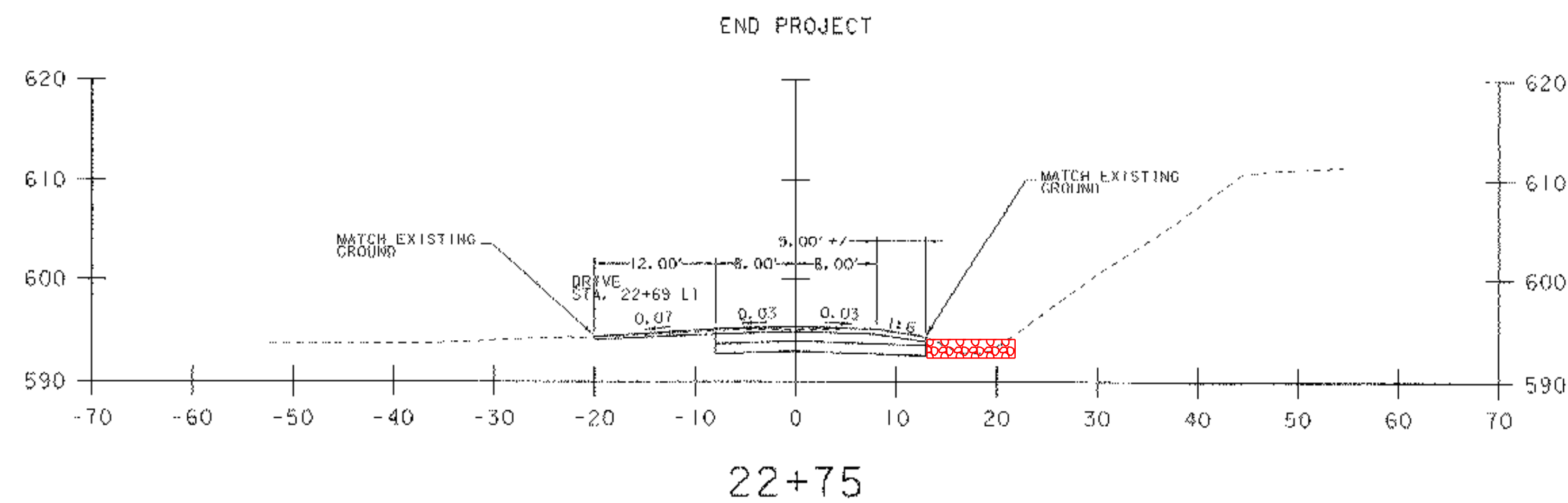
21+25



21+00



PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BHO 1444 (44)	
FILE NAME: z04j146.s.dgn	PLOT DATE: 26-JUN-2007
PROJECT LEADER: S. HODGDON	DRAWN BY: K. WENTWORTH
DESIGNED BY: K. ZIENKIEWICZ	CHECKED BY: S. HODGDON
CROSS SECTIONS (OF 2)	SHEET 38 OF 39



PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BHO 1444 (44)	
FILE NAME: z04146xs.dgn	PLOT DATE: 26-JUN-2007
PROJECT LEADER: S. HODGDON	DRAWN BY: K. WENTWORTH
DESIGNED BY: K. ZIENKIEWICZ	CHECKED BY: S. HODGDON
CROSS SECTIONS (2 OF 2)	SHEET 39 OF 39

To: John Weaver, P.E. Structures Section

Vermont Agency of Transportation

National Life Building, Drawer 33

Montpelier, VT 05633

Date: December 12, 2007

VHB
Project No.: 51752

Re: Randolph BHO 1444(44)

Braley Covered Bridge # 38

Structural Steel Shop Drawings and

Duncan Colorgalv® Specifications

We are sending you: ☒ Enclosed ☐ Under Separate cover via Regular Mail the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Diskettes ☐ Specifications ☐ Copy of Letter ☐ Change Order

☐ Other _____

Copies	Date	No.	Description
1	12/4/07	1 p	Transmittal from Miller Construction, Inc.
2	11/8/2007	* see note	Structural Steel Shop Drawings (2 nd submittal – Casco Bay Steel Structures, Inc.)
2	10/19/07	13 pp	Duncan Colorgalv® Specifications (Fax copy to Casco Bay Steel Structures, Inc.)
			* Note: Drawing Nos. GNI, E1, 1, and 2

These are transmitted as checked below:

☐ For approval
☒ For your use
☒ As requested
☐ For review and comment
☐ Returned prints on loan to VHB

☐ Approved as submitted
☐ Approved as noted
☐ Return for corrections
☐ For bids due

☐ Resubmit
☐ Submit
☐ Return

Copies for approval

Copies for distribution

Corrected prints

REMARKS: VHB has reviewed the attached shop drawings and stamped them as “approved”. These drawings have incorporated the comments from the shop drawings that were stamped “furnish as corrected” by VHB on 10/23/07.

Copy to: _____ By:

Steven M. Hodgdon, P.E.

RECEIVED
DEC 07 2007
MILLER CONSTRUCTION, INC.
P.O. BOX 96 ASCUTNEY BLVD WINDSOR, VERMONT 05089-0096
TELEPHONE (802) 674-6626 / FAX (802) 674-6246

VHB, INC.


TRANSMITTAL

To: Stephen Hodgdon Vanasse Hangen Brustlin-VHB 6 Bedford Farms Drive, Suite 607 Bedford, NH 03110-6532	DATE 12/4/2007	PROJECT NO. BHO 1444 (44)
	PROJECT Randolph BHO 1444 (44)	

X

WE ENCLOSE THE FOLLOWING:

UNDER SEPARATE COVER WE ARE SENDING THE FOLLOWING

COPIES	NUMBER	DESCRIPTION	CODE
2		Final distribution structural steel shop drawings	m
2		galv specs	m

CODE:

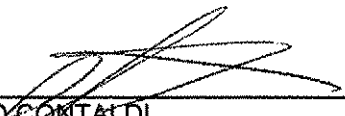
A FOR INITIAL APPROVAL
B FOR FINAL APPROVAL
C APPROVED AS NOTED-RESUBMISSION REQUIRED
D APPROVED AS NOTED-RESUBMISSION NOT REQUIRED
E DISAPPROVED-RESUBMIT
F QUOTATION REQUESTED
G APPROVED

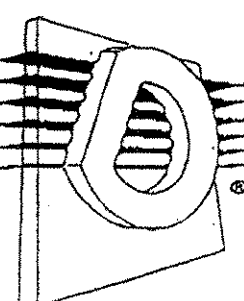
H FOR APPROVAL
I AS REQUESTED OR REQUIRED
J FOR USE IN ERECTION
K LETTER FOLLOWS
L FOR FIELD CHECK
M FOR YOUR USE

N Sent direct to VHB per Daryl Bassett-Resident Engineer

O 1-copy to Resident Engineer

REMARKS:

BY 
CHAD CORTALDI



FAX
COVER
SHEET

- ☐ **The Duncan Group**
69 Norman Street • Everett, MA 02149-1987 USA
(617) 389-8440 • (800) 638-1011 • Fax (617) 389-2831
- ☐ **Duncan Galvanizing Corp.** ☐ **The Tinning Company, Inc.** ☐ **Hi-Tech Plating, Inc.**
(617) 389-8440 (617) 389-3400 (617) 389-3400
(800) 638-1011 (800) 638-1011 (800) 638-1011
Fax (617) 389-2831 Fax (617) 389-9277 Fax (617) 389-9277

Date: 10/19/07 Number of Pages to Follow: _____

Direct This Information To: B. W.

Company: Carco

Address: _____

City, State, Zip: _____

Fax Number: _____

Please Direct Your Response To: PLP

Notes/Comments: Let me know!

TK
PU
Have a nice Day!
☺



Industrial
&
Marine
Coatings

RECOATABLE EPOXY PRIMER

PART G B67A5 GRAY
PART G B67H5 TAN
PART G B67R5 RED OXIDE
PART H B67V5 HARDENER

4.45

PRODUCT INFORMATION		Revised 8/05																												
PRODUCT DESCRIPTION	RECOMMENDED USES																													
RECOATABLE EPOXY PRIMER is a rust inhibitive high build catalyzed polyamide/bisphenol A epoxy primer designed for fast dry and quick or extended recoatability. • Meets Class A requirements for Slip Coefficient .50 • Long pot life • High build coating for economical application • One year recoatability • Low temperature application - down to 35°F • Corrosion resistant	For use as a shop or field applied epoxy primer where a variable recoat window is required due to construction schedules, distribution logistics and environmental considerations. Attords flexibility in projects when completion schedules cannot be specified. • Primer for structural steel • Paper mills • Power plants • Suitable for use in USDA inspected facilities • Marine applications • Storage tanks																													
PRODUCT CHARACTERISTICS	PERFORMANCE CHARACTERISTICS																													
Finish: Flat Color: Red Oxide, Tan, Gray Volume Solids: 65% ± 2%, mixed Weight Solids: 81% ± 2%, mixed VOC (EPA Method 24): Unreduced: <320g/L; 2.67 lb/gal mixed Reduced 5%: <340 g/L; 2.88 lb/gal Mix Ratio: 1:1 by volume Recommended Spreading Rate per gal: Wet mils: 6.0 - 9.0 Dry mils: 4.0 - 6.0 Coverage: 175 - 250 sq ft/gal approximate NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance. Drying Schedule 6.0 mils wet @ 50% RH: <table><tr><th></th><th>@ 35°F</th><th>@ 77°F</th><th>@ 120°F</th></tr><tr><td>To touch:</td><td>1 hour</td><td>15 minutes</td><td>10 minutes</td></tr><tr><td>Tack free:</td><td>2 hours</td><td>30 minutes</td><td>15 minutes</td></tr><tr><td>To recoat:</td><td></td><td></td><td></td></tr><tr><td>minimum:</td><td>8 hours</td><td>2 hours</td><td>30 minutes</td></tr><tr><td>maximum:</td><td>1 year</td><td>1 year</td><td>1 year</td></tr><tr><td>To cure:</td><td>14 days</td><td>14 days</td><td>2 days</td></tr></table> Pot Life: 8+ hours 8 hours 3 hours Sweat-In-Time: 1 hour 30 minutes 10 minutes If maximum recoat time is exceeded, abrade surface before recoating. Drying time is temperature, humidity, and film thickness dependent. Shelf Life: 36 months, unopened Store indoors at 40°F to 100°F. Flash Point: 80°F, PMCC, mixed Reducer/Clean Up: Below 80°F - Reducer #54, R7K54 Above 80°F - Reducer #100, R7K100		@ 35°F	@ 77°F	@ 120°F	To touch:	1 hour	15 minutes	10 minutes	Tack free:	2 hours	30 minutes	15 minutes	To recoat:				minimum:	8 hours	2 hours	30 minutes	maximum:	1 year	1 year	1 year	To cure:	14 days	14 days	2 days	System Tested: (unless otherwise indicated) Substrate: Steel Surface Preparation: SSPC-SP6/NACE 3 1 qt. Recoatable Epoxy Primer @ 5.0 mils dft Abrasion Resistance: Method: ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load Result: 200 mg loss Accelerated Weathering - QUV, Acrolon 218 HS topcoat: Method: ASTM D4587, QUV-A, 5,000 hours Results: passes Adhesion: Method: ASTM D4541 Result: 1050 psi Corrosion Weathering: Method: ASTM D5594, 13 cycles, 4,368 hours Result: Rating 10 per ASTM D714 for blistering Rating 7 per ASTM D610 for rusting Direct Impact Resistance: Method: ASTM D2784 Result: 160 in. lbs. Dry Heat Resistance: Method: ASTM D2485 Result: 250°F (discolors) Flexibility: Method: ASTM D522, 180° bend, 1" mandrel Result: Passes Moisture Condensation Resistance: Method: ASTM D4585, 100°F, 2000 hours Result: Passes, no cracking or delamination Pencil Hardness: Method: ASTM D3363 Result: 3H Salt Fog Resistance, Acrolon 218 HS topcoat: Method: ASTM B117, 5,600 hours Result: Passes, no cracking or delamination Slip Coefficient, Red Oxide: Method: AISC Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts Result: Class A, 0.50 Epoxy coatings may darken or yellow following application and curing. Provides performance comparable to products formulated to federal specifications: Mil-P-23377, Mil-P-53022	
	@ 35°F	@ 77°F	@ 120°F																											
To touch:	1 hour	15 minutes	10 minutes																											
Tack free:	2 hours	30 minutes	15 minutes																											
To recoat:																														
minimum:	8 hours	2 hours	30 minutes																											
maximum:	1 year	1 year	1 year																											
To cure:	14 days	14 days	2 days																											



Industrial
&
Marine
Coatings

4.45

RECOATABLE EPOXY PRIMER

PART G
PART G
PART G
PART H

B67A5
B67H5
B67R5
B67V5

GRAY
TAN
RED OXIDE
HARDENER

PRODUCT INFORMATION	
RECOMMENDED SYSTEMS	SURFACE PREPARATION
Steel, catalyzed epoxy topcoat: 1 ct. Recoatable Epoxy Primer @ 4.0 - 6.0 mils dft 2 cts. Tile-Clad HS Epoxy @ 2.5 - 4.0 mils dft/ct Steel, polyurethane topcoat: 1 ct. Recoatable Epoxy Primer @ 4.0 - 6.0 mils dft 1-2 cts. Hi-Solids Polyurethane @ 3.0 - 4.0 mils dft/ct Steel, acrylic epoxy topcoat: 1 ct. Recoatable Epoxy Primer @ 4.0 - 6.0 mils dft 2 cts. Water Based Catalyzed Epoxy @ 2.5 - 3.0 mils dft/ct Steel, acrylic topcoat: 1 ct. Recoatable Epoxy Primer @ 4.0 - 6.0 mils dft 2 cts. DTM Acrylic Coating @ 2.5 - 4.0 mils dft/ct Galvanized: 1 ct. Recoatable Epoxy Primer @ 4.0 - 6.0 mils dft 2 cts. Tile-Clad HS Epoxy @ 2.5 - 4.0 mils dft/ct	Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion. Refer to product Application Bulletin for detailed surface preparation information. Minimum recommended surface preparation: Iron & Steel: SSPC-SP6/NACE 3, 2 mil profile Galvanizing: SSPC-SP1
TINTING	
Do not tint.	
APPLICATION CONDITIONS	
Temperature: air and surface: 35°F minimum, 140°F maximum material: 50°F minimum At least 5°F above dew point Relative humidity: 85% maximum Refer to product Application Bulletin for detailed application information.	
ORDERING INFORMATION	
Packaging: Part G: 1 gallon and 5 gallon containers Part H: 1 gallon and 5 gallon containers Weight per gallon: 13.26 ± 0.2 lb, mixed	
SAFETY PRECAUTIONS	
Refer to the MSDS sheet before use.	
Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.	
DISCLAIMER	WARRANTY
The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data information and Application Bulletin.	The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accordance with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

044-55



Industrial
&
Marine
Coatings

5.21

HI-SOLIDS POLYURETHANE

PART S B65-300 GLOSS SERIES
PART S B65-350 SEMI-GLOSS SERIES
PART T B60V30 HARDENER

PART 1

BUY 3U

HARDEN

PRODUCT INFORMATION

Revised 8/05

PRODUCT DESCRIPTION

HI-SOLIDS POLYURETHANE is a two-component, low VOC, aliphatic, acrylic polyurethane resin coating. It is designed for high performance protection with outstanding exterior gloss and color retention.

- Good/excellent resistance to corrosion and weathering
- Outstanding color and gloss retention
- Chemical resistant
- Part of a system tested for nuclear irradiation and decontamination, Level II
- Suitable for use in USDA inspected facilities

RECOMMENDED USES

For use over prepared substrates in industrial environments

- Heavy duty interior and exterior structural coating
- A chemical and abrasion resistant equipment and machinery finish
- A gloss and color retentive heavy duty maintenance coating for use in "high visibility" areas
- Exterior surfaces of steel tanks
- Refineries
- Clean rooms
- Chemical processing equipment
- Conveyors
- Handrails
- Exterior metal siding and trim
- Rolling stock
- Paper mills
- Marine Applications
- Power plants
- Oil Field Machinery
- Offshore structures

Suitable for use in USDA inspected facilities
Conforms to NAWQA D102-03 CCS #5 & #6.
Acceptable for use in high performance architectural applications.

PRODUCT CHARACTERISTICS

Finish: High Gloss or Semi-Gloss

Color: Wide range of colors possible

Volume Solids: 65% ± 2%, mixed, may vary by color

Weight Solids: 77% ± 2%, mixed, may vary by color

VOC (EPA Method 24):
Unraduced: <340g/L, 2.80 lb/gal
Reduced: 15% <370 g/L, 3.08 lb/gal
mixed
May vary by color

Mix Ratio: 4:1 by volume

Recommended Spreading Rate per coat:
Wet mils: 4.5 - 6.0
Dry mils: 3.0 - 4.0
Coverage: 260 - 347 sq ft/gal approximate

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 4.5 mils wet @ 50% RH:

	@ 40°F	@ 77°F	@ 120°F
To touch:	4 hours	2 hours	1 hour
To handle:	16 hours	8 hours	6 hours
To recoat:			
minimum:	24 hours	16 hours	10 hours
maximum:	14 days	14 days	14 days
To cure:	14 days	10 days	7 days
Pat Life:	8 hours	4 hours	2 hours

If maximum recoat time is exceeded, brush surface before recoating.
Drying time is temperature, humidity, and film thickness dependent.

Sweat-In Time: None required

Shelf Life: Part S 36 months, unopened
Part T 24 months, unopened
Store indoors at 40°F at 100°F

Flash Point: 80°F, PMCC, mixed

Reducer/Clean Up: Reducer #68, R7K69
Below 80°F: Reducer #68, R7K68 or R6K32
Above 80°F:

PERFORMANCE CHARACTERISTICS

System Tested: (unless otherwise indicated)

Substrate: Steel

Surface Preparation: SSPC-SP6

1 ct. Recoatable Epoxy Primer @ 4.0 mils dft

1 ct. HI-Solids Polyurethane Gloss @ 3.0 mils dft

Abrasion Resistance:
Method: ASTM D4060, CS17 wheel, 1000 cycles
Result: 87.1 mg loss

Adhesion:
Method: ASTM D4541
Result: 1050 psi

Corrosion Weathering:
Primer - Zinc Clad II Plus, Intermediate - Recoatable Epoxy Primer
Method: ASTM D5894, 21 cycles, 7,096 hours
Result: Rating 10 per ASTM D714 for blistering
Rating 9 per ASTM D610 for rusting

Direct Impact Resistance:
Method: ASTM D2794
Result: >26 in. lbs

Dry Heat Resistance:
Method: ASTM D2495
Result: 200°F

Flexibility:
Method: ASTM D522 180° bend, 1/8" mandrel
Result: Passes

Moisture Condensation Resistance:
Method: ASTM D4585, 100°F, 1000 hours
Result: No rusting, blistering, or delamination

Pencil Hardness:
Method: ASTM D3363
Result: F

Salt Fog Resistance:
Primer - Zinc Clad II Plus, Intermediate - Recoatable Epoxy Primer
Method: ASTM B117, 9,000 hours
Result: Rating 10 per ASTM D714 for blistering
Rating 9 per ASTM D610 for rusting

Thermal Shock:
Method: ASTM D2246, 15 cycles
Result: Excellent

Meets the requirements of SSPC Paint No. 36, Level 3.

continued on back

045-SS



Industrial
&
Marine
Coatings

5.21

HI-SOLIDS POLYURETHANE

PART S B65-300
PART S B65-350
PART T B60V30

GLOSS SERIES
SEMI-GLOSS SERIES
HARDENER

PRODUCT INFORMATION

RECOMMENDED SYSTEMS	SURFACE PREPARATION
Steel: Epoxy Primer 1 ct. Recoatable Epoxy Primer @ 4.0 - 6.0 mils dft 1-2 cts. Hi-Solids Polyurethane @ 3.0 - 4.0 mils dft/ct	Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion. Refer to product Application Bulletin for detailed surface preparation information.
Steel: Epoxy Primer 1 ct. Dura-Plate 235 @ 4.0 - 8.0 mils dft 1-2 cts. Hi-Solids Polyurethane @ 3.0 - 4.0 mils dft/ct	Minimum recommended surface preparation: • Iron & Steel: SSPC-SP6/NACE 3, 2 mil profile • Aluminum: SSPC-SP1 • Galvanizing: SSPC-SP1 • Concrete & Masonry: SSPC-SP13/NACE 6, or ICRI 03732 CSP 1-3
Steel: Zinc Rich Primer 1 ct. Zinc Clad II Plus @ 3.0 - 5.0 mils dft 1 ct. Macropoxy 646 @ 5.0 - 10.0 mils dft 1-2 cts. Hi-Solids Polyurethane @ 3.0 - 4.0 mils dft/ct	• Primer Required
Steel: Epoxy Mastic Primer 1 ct. Macropoxy 646 @ 5.0 - 10.0 mils dft 1-2 cts. Hi-Solids Polyurethane @ 3.0 - 4.0 mils dft/ct	TINTING Tint with 644 Colorants only into Part S. Extra White tints at 200% tint strength. Ultradeep tints at 150% tint strength. Five minutes minimum mixing on a mechanical shaker is required for complete mixing of color.
Steel: Universal Primer 1 ct. Kern Bond HS Metal @ 2.0 - 5.0 mils dft 1-2 cts. Hi-Solids Polyurethane @ 3.0 - 4.0 mils dft/ct	APPLICATION CONDITIONS Temperature: 40°F minimum, 120°F maximum (air, surface, and material) At least 5°F above dew point Relative humidity: 85% maximum Refer to product Application Bulletin for detailed application information.
Aluminum: 1 ct. DTM Wash Primer @ 0.7 - 1.3 mil dft 1-2 cts. Hi-Solids Polyurethane @ 3.0 - 4.0 mils dft/ct	ORDERING INFORMATION Packaging: Part S: 1 gallon and 4 gallon kits Part T: quarts and gallons Weight per gallon: 10.7 ± 0.2 lb mixed, may vary with color
Concrete: 1 ct. Kern Coat-Coat Epoxy HS Filler/Sealer @ 10.0 - 15.0 mils dft 1-2 cts. Hi-Solids Polyurethane @ 3.0 - 4.0 mils dft/ct	SAFETY PRECAUTIONS Refer to the MSDS sheet before use. Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.
Galvanized Metal: 1 ct. Recoatable Epoxy Primer @ 4.0 - 6.0 mils dft 1-2 cts. Hi-Solids Polyurethane @ 3.0 - 4.0 mils dft/ct	
The systems listed above are representative of the product's use. Other systems may be appropriate.	
DISCLAIMER The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.	WARRANTY The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

SHORT-FORM SPECIFICATIONS

FACTORY-APPLIED METAL COATINGS

- A. Use the paragraphs on the following pages to specify hot-dip galvanizing and factory-applied metal coatings for your project. Typically these paragraphs would be inserted in the appropriate specification section, such as Section 02800 - Site Improvements, Section 05500 - Metal Fabrications or Section 05120 - Structural Steel.
- B. For complex projects, use Section 05080 - Factory-Applied Metal Coatings.
- C. Duncan Galvanizing provides a wide range of factory-applied metal coatings. Contact Duncan Galvanizing at 617-389-8440 for samples.

Type of System	Trade Reference
1. Hot-dip galvanizing	Duregalv®
2. Hot-dip galvanizing and factory-applied primer	Primergalv®
3. Hot-dip galvanizing and factory-applied architectural finish	Colorgalv®
4. Hot-dip galvanizing and factory-applied architectural finish with clearcoat	Colorgalv Clearcoat®
5. High-performance thermoplastic based coating for uncoated steel and aluminum	Duncan Thermoplex®
6. Hot-dip galvanizing and high-performance Thermoplex® thermoplastic based coating	Duncan Colorgalv
7. High-performance polyester based coating for uncoated steel and aluminum	Duncan Thermoset®
8. Hot-dip galvanizing and high-performance Thermoset® polyester based coating	Duncan Colorgalv
9. Hot-dip galvanizing, zinc polyester based tie-coat, and high-performance polyester based topcoat	Duncan Colorgalv Thermoset 5®
10. Hot-dip galvanizing, zinc polyester based tie-coat, polyester based color coat and high-performance clear topcoat	Duncan Colorgalv Thermoset 10®
11. Hot-dip galvanizing and high-performance fluoropolymer based coating	Duncan Colorgalv Thermoset 20®

SHORT-FORM SPECIFICATIONS - Insert into Paragraph 2 of applicable specification sections

2.XX HOT-DIP GALVANIZING AND FACTORY-APPLIED ARCHITECTURAL FINISH

- A. Hot-Dip Galvanizing: Provide coating for iron and steel fabrications applied by the hot-dip process, Duragalv[®] by Duncan Galvanizing. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware. Provide thickness of galvanizing specified in referenced standards. The galvanizing bath shall contain high grade zinc, nickel, and other earthly materials. Galvanizing shall exhibit a rugosity (smoothness) not greater than 4 rug (16-20 microns of vanation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1 micron increments.
1. Surface blasting prior to application of factory-applied post galvanizing wet coatings will produce a high rugosity and not be acceptable.
- B. Architectural Finish: Provide factory-applied architectural coating over hot-dip galvanized steel, Colorgalv[®] by Duncan Galvanizing matching approved samples.
1. Primer coat shall be factory-applied prime coating. Apply primer within 12 hours after galvanizing at the galvanizer's plant in a controlled environment meeting applicable environmental regulations and as recommended by the primer coating manufacturer.
2. Finish coat shall be factory-applied high performance architectural finish. Apply finish coating at the galvanizer's plant, in a controlled environment meeting applicable environmental regulations and as recommended by the finish coating manufacturer.
3. Coatings shall be certified VOC compliant and conform to applicable regulations and EPA standards.
4. Apply the galvanizing, primer and coating within the same facility and provide single-source responsibility for galvanizing, priming and finish coating.
5. Blast cleaning of the galvanized surface is not acceptable.
- C. Performance Criteria: Coatings must meet or exceed the criteria for the following categories as stipulated by the coatings manufacturer:

Primer:

ABRASION - Method: ASTM D 4060 (CS17 Wheel, 1,000 grams load).
ADHESION - Method: ASTM D 3359, (Method B, 5 mm Crosshatch).
HUMIDITY - Method: ASTM D 4585
SALT SPRAY (FOG) - Method: ASTM B 117

Topcoat:

ABRASION - Method: ASTM D 4060 (CS17 Wheel, 1,000 grams load).
ADHESION - Method: ASTM D 3359, (Method B, 5 mm Crosshatch).
GRAFFITI RESISTANCE - Method: The following graffiti materials applied to coating and allowed to dry for seven days: acrylic, epoxy-ester and alkyl spray paints, ballpoint ink, crayon, Markert marker, black shoe polish and lipstick.
EXTERIOR EXPOSURE - Method: Exposed at 45 degrees facing south
SURFACE BURNING CHARACTERISTICS - Method: ASTM E-84
QUV - Method: ASTM G 53 (ES-40 bulbs, 4 hours light, 4 hours dark)
SALT SPRAY (FOG) - Method: ASTM B 117
FLEXIBILITY
PENCIL HARDNESS

- D. Quality Assurance for Hot-Dip Galvanizing and Factory-Applied Metal Coatings:
1. Galvanizing shall be performed by a company with a minimum of five years experience in the successful application of hot-dip galvanizing utilizing the dry kettle process.
 2. Factory-applied metal coatings shall be performed in a facility acceptable to the coating manufacturer.
 3. Submit two 3 inch by 6 inch samples of factory-applied coatings and colors proposed for use for approval prior to coating application.
 4. Engage the services of a galvanizer who has demonstrated a minimum of five (5) years experience in the successful performance of the processes outlined in this specification in the facility where the work is to be done and who will apply the galvanizing and coatings within the same facility as outlined herein. The Architect has the right to inspect and approve or reject the galvanizer/galvanizing facility.
 5. Handle and install materials with factory-applied coatings as recommended by galvanizer and coating manufacturer to prevent damage to coatings prior to and after installation.
 6. Touch-up factory-applied metal coatings as recommended by galvanizer and coating manufacturer.
 7. Coatings not matching approved submittals shall be removed and replaced at no additional expense to the Owner.
 8. Certificate of compliance that the galvanizer has certified weighers on premises with a certification from the local municipality, and a certified scale or municipal scale has been utilized by the galvanizer.
 9. Fabricator shall provide a notarized statement from the galvanizer, along with a description of the material processed, indicating that all work has been done in conformance with this specification prior to receiving payment.

SHORT-FORM SPECIFICATIONS - Insert into Paragraph 2 of applicable specification sections.

2.XX HOT-DIP GALVANIZING

- A. Hot-Dip Galvanizing: Provide coating for iron and steel fabrications applied by the hot-dip process, Duragal[®] by Duncan Galvanizing. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware. Provide thickness of galvanizing specified in referenced standards. The galvanizing bath shall contain high grade zinc, nickel, and other earthy materials.
- B. Galvanizing shall exhibit a rugosity (smoothness) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1 micron increments.
 - 1. Surface blasting prior to application of factory-applied post galvanizing wet coatings will produce a high rugosity and not be acceptable.
- C. Quality Assurance for Hot-Dip Galvanizing:
 - 1. Galvanizing shall be performed by a company with a minimum of five years experience in the successful application of hot-dip galvanizing utilizing the dry kettle process.
 - 2. Engage the services of a galvanizer who has demonstrated a minimum of five (5) years experience in the successful performance of the processes outlined in this specification in the facility where the work is to be done and who will apply the galvanizing and coatings within the same facility as outlined herein. The Architect has the right to inspect and approve or reject the galvanizer/galvanizing facility.
 - 3. The galvanizer/galvanizing facility must have an ongoing Quality Control/Quality Assurance program acceptable to the Architect which has been in effect for a minimum of five years and shall provide the Architect with process and final inspection documentation.
 - 4. Touch-up damaged galvanizing after installation using organic zinc coating complying with ASTM A780 and as recommended by galvanizer.
 - 5. Certificate of compliance that the galvanizer has certified weighers on premises with a certification from the local municipality, and a certified scale or municipal scale has been utilized by the galvanizer.
 - 6. Fabricator shall provide a notarized statement from the galvanizer, along with a description of the material processed, indicating that all work has been done in conformance with this specification prior to receiving payment.

SHORT-FORM SPECIFICATIONS - Insert into Paragraph 2 of applicable specification sections

X 2.XX HOT-DIP GALVANIZING AND FACTORY-APPLIED PRIMER

- A. Hot-Dip Galvanizing: Provide coating for iron and steel fabrications applied by the hot-dip process, Duragalv[®] by Duncan Galvanizing. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware. Provide thickness of galvanizing specified in referenced standards. The galvanizing bath shall contain high grade zinc, nickel, and other earthy materials. Galvanizing shall exhibit a rugosity (smoothness) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1 micron increments.
1. Surface blasting prior to application of factory-applied post galvanizing wet coatings will produce a high rugosity and not be acceptable.
- B. Factory-Applied Primer: Provide factory-applied prime coat, Primergalv[®] by Duncan Galvanizing, certified VOC compliant, conforming to applicable regulations and EPA standards. Apply primer within 12 hours after galvanizing at the galvanizer's plant in a controlled environment meeting applicable environmental regulations and as recommended by the primer coating manufacturer. Blast cleaning of the surface is unacceptable for surface preparation.
- C. Performance Criteria: Coatings must meet or exceed the criteria for the following categories as stipulated by the coatings manufacturer:
ABRASION - Method: ASTM D 4060 (CS17 Wheel, 1,000 grams load)
ADHESION - Method: ASTM D 3359, (Method B, 5 mm Crosshatch)
HUMIDITY - Method: ASTM D 4585
SALT SPRAY (FOG) - Method: ASTM B 117
- D. Quality Assurance for Hot-Dip Galvanizing and Factory-Applied Metal Coatings:
1. Galvanizing shall be performed by a company with a minimum of five years experience in the successful application of hot-dip galvanizing utilizing the dry kettle process.
2. Factory-applied metal coatings shall be performed in a facility acceptable to the coating manufacturer.
3. Submit two 3 inch by 6 inch samples of factory-applied coatings and colors proposed for use for approval prior to coating application.
4. Engage the services of a galvanizer who has demonstrated a minimum of five (5) years experience in the successful performance of the processes outlined in this specification in within the same facility as outlined herein. The Architect has the right to inspect and the facility where the work is to be done and who will apply the galvanizing and coatings approve or reject the galvanizer/galvanizing facility.
5. Handle and instal materials with factory-applied coatings as recommended by galvanizer and coating manufacturer to prevent damage to coatings prior to end after installation.
6. Touch-up factory-applied metal coatings as recommended by galvanizer and coating manufacturer.
7. Coatings not matching approved submittals shall be removed and replaced at no additional expense to the Owner.
8. Certificate of compliance that the galvanizer has certified weighers on premises with a certification from the local municipality, and a certified scale or municipal scale has been utilized by the galvanizer.
9. Fabricator shall provide a notarized statement from the galvanizer, along with a description of the material processed, indicating that all work has been done in conformance with this specification prior to receiving payment.

2.XX HOT-DIP GALVANIZING - DURAGALV

- A. Hot-Dip Galvanizing: Provide coating for iron and steel fabrications applied by the hot-dip process, Duragalv® by Duncan Galvanizing. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware. Provide thickness of galvanizing specified in referenced standards. The galvanizing bath shall contain high grade zinc, nickel, and other earthy materials.
- B. Galvanizing shall exhibit a rugosity (smoothness) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1 micron increments.
1. Surface blasting prior to application of factory-applied post-galvanizing wet coatings will produce a high rugosity and not be acceptable.
- C. Quality Assurance for Hot-Dip Galvanizing:
1. Galvanizing shall be performed by a company with a minimum of five years experience in the successful application of hot-dip galvanizing utilizing the dry kettle process.
2. Engage the services of a galvanizer who has demonstrated a minimum of five years experience in the successful performance of the processes outlined in this specification in the facility where the work is to be done and who will apply the galvanizing and coatings within the same facility as outlined herein. The Architect has the right to inspect and approve or reject the galvanizer/galvanizing facility.
3. The galvanizer/galvanizing facility must have an ongoing Quality Control/Quality Assurance program acceptable to the Architect which has been in effect for a minimum of five years and shall provide the Architect with process and final inspection documentation.
4. Touch-up damaged galvanizing after installation using organic zinc coating complying with ASTM A780 and as recommended by galvanizer.
5. Certificate of compliance that the galvanizer has certified weighers on premises with a certification from the local municipality, and a certified scale of municipal scale has been utilized by the galvanizer.
6. Fabricator shall provide a notarized statement from the galvanizer, along with a description of the material processed, indicating that all work has been done in conformance with this specification prior to receiving payment.
7. Certificate of Compliance for Shop Drawing Review by Galvanizer: Submit galvanizer's certification that shop drawings for metal fabrications to receive metal coatings have been reviewed and that fabrications are acceptable to galvanizer for proper application of galvanizing and metal coatings. All drawings should be stamped by the galvanizer to indicate approval of design for galvanizing.

2.XX HOT-DIP GALVANIZING AND FACTORY-APPLIED PRIMER - PRIMERGALV

- A. Hot-Dip Galvanizing: Provide coating for iron and steel fabrications applied by the hot-dip process, Duragalv® by Duncan Galvanizing. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware. Provide thickness of galvanizing specified in referenced standards. The galvanizing bath shall contain high grade zinc, nickel, and other earthy materials.
- NTS: Delete paragraph B if priming is over "black steel" or aluminum**
- B. Galvanizing shall exhibit a rugosity (smoothness) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1 micron increments.
1. Surface blasting prior to application of factory-applied post galvanizing wet coatings will produce a high rugosity and not be acceptable.
- C. Factory-Applied Primer: Provide factory-applied prime coat, Primergalv® by Duncan Galvanizing, certified VOC compliant, conforming to applicable regulations and EPA standards. Apply primer within 12 hours after galvanizing at the same facility where the galvanizing is done in a controlled environment meeting applicable environmental regulations and as recommended by the primer coating manufacturer. Blast cleaning of the surface is unacceptable for surface preparation.
- D. Performance Criteria: Coatings must meet or exceed the criteria for the following categories as stipulated by the coatings manufacturer:
- ABRASION - Method: ASTM D 4080 (CS17 Wheel, 1,000 grams load).
- ADHESION - Method: ASTM D 3359, (Method B, 5 mm Crosshatch).
- HUMIDITY - Method: ASTM D 4585.
- SALT SPRAY (FOG) - Method: ASTM B 117.
- E. Quality Assurance for Hot-Dip Galvanizing and Factory-Applied Metal Coatings:

- Galvanizing shall be performed by a company with a minimum of five years experience in the successful application of hot-dip galvanizing utilizing the dry kettle process.
- Factory-applied metal coatings shall be performed in a facility acceptable to the coating manufacturer.
- Submit two 3 inch by 6 inch samples of factory-applied coatings and colors proposed for use for approval prior to coating application.
- Engage the services of a galvanizer who has demonstrated a minimum of five years experience in the successful performance of the processes outlined in this specification within the same facility as outlined herein. The Architect has the right to inspect and the facility where the work is to be done and who will apply the galvanizing and coatings approve or reject the galvanizer/galvanizing facility.
- Handle and install materials with factory-applied coatings as recommended by galvanizer and coating manufacturer to prevent damage to coatings prior to and after installation.
- Touch-up factory-applied metal coatings as recommended by galvanizer and coating manufacturer.
- Coatings not matching approved submittals shall be removed and replaced at no additional expense to the Owner.
- Certificate of compliance that the galvanizer has certified weighers on premises with a certification from the local municipality, and a certified scale or municipal scale has been utilized by the galvanizer.
- Fabricator shall provide a notarized statement from the galvanizer, along with a description of the material processed, indicating that all work has been done in conformance with this specification prior to receiving payment.
- Certificate of Compliance for Shop Drawing Review by Galvanizer: Submit galvanizer's certification that shop drawings for metal fabrications to receive metal coatings have been reviewed and that fabrications are acceptable to galvanizer for proper application of galvanizing and metal coatings. All drawings should be stamped by the galvanizer to indicate approval of design for galvanizing.

2.XX HOT-DIP GALVANIZING AND FACTORY-APPLIED ARCHITECTURAL FINISH - COLORGALV

- A. Hot-Dip Galvanizing: Provide coating for iron and steel fabrications applied by the hot-dip process, Duragalv® by Duncan Galvanizing. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware. Provide thickness of galvanizing specified in referenced standards. The galvanizing bath shall contain high grade zinc, nickel, and other earthy materials.
- B. Galvanizing shall exhibit a roughness (smoothness) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1 micron increments.
- Surface blasting prior to application of factory-applied post galvanizing wet coatings will produce a high roughness and not be acceptable.
- C. Architectural Finish: Provide factory-applied architectural coating over hot-dip galvanized steel, Colorgalv® by Duncan Galvanizing matching approved samples.
- Primer coat shall be factory-applied prime coating. Apply primer within 12 hours after galvanizing at the same facility where the galvanizing is done in a controlled environment meeting applicable environmental regulations and as recommended by the primer coating manufacturer.
 - Finish coat shall be factory-applied high performance architectural finish. Apply finish coating at the galvanizer's plant, in a controlled environment meeting applicable environmental regulations and as recommended by the finish coating manufacturer.
 - Coatings shall be certified VOC compliant and conform to applicable regulations and EPA standards.
 - Apply the galvanizing, primer and coating within the same facility and provide single-source responsibility for galvanizing, priming and finish coating.
 - Blast cleaning of the galvanized surface is not acceptable.
- D. Performance Criteria: Coatings must meet or exceed the criteria for the following categories as stipulated by the coatings manufacturer:
- Primer:
 - ABRASION - Method: ASTM D 4060 (CS17 Wheel, 1,000 grams load).
 - ADHESION - Method: ASTM D 3359, (Method B, 5 mm Crosshatch).
 - HUMIDITY - Method: ASTM D 4585
 - SALT SPRAY (FOG) - Method: ASTM B 117
 - Topcoat:
 - ABRASION - Method: ASTM D 4060 (CS17 Wheel, 1,000 grams load).
 - ADHESION - Method: ASTM D 3359, (Method B, 5 mm Crosshatch).
 - GRAFFITI RESISTANCE - Method: The following graffiti materials applied to coating and allowed to dry for seven days: acrylic, epoxy-ester and alkyl spray paints, ballpoint ink, crayon, Markert marker, black shoe polish and lipstick.
 - EXTERIOR EXPOSURE - Method: Exposed at 45 degrees facing south
 - SURFACE BURNING CHARACTERISTICS: - Method: ASTM E-84

QUV - Method: ASTM G 53 (ES-40 bulbs, 4 hours light, 4 hours dark)
SALT SPRAY (FOG) - Method: ASTM B 117
FLEXIBILITY
PENCIL HARDNESS

E. Quality Assurance for Hot-Dip Galvanizing and Factory-Applied Metal Coatings:

- Galvanizing shall be performed by a company with a minimum of five years experience in the successful application of hot-dip galvanizing utilizing the dry kettle process.
- Factory-applied metal coatings shall be performed in a facility acceptable to the coating manufacturer.
- Submit two 3 inch by 6 inch samples of factory-applied coatings and colors proposed for use for approval prior to coating application.
- Engage the services of a galvanizer who has demonstrated a minimum of five years experience in the successful performance of the processes outlined in this specification in within the same facility as outlined herein. The Architect has the right to inspect and the facility where the work is to be done and who will apply the galvanizing and coatings approve or reject the galvanizer/galvanizing facility.
- Handle and install materials with factory-applied coatings as recommended by galvanizer and coating manufacturer to prevent damage to coatings prior to and after installation.
- Touch-up factory-applied metal coatings as recommended by galvanizer and coating manufacturer.
- Coatings not matching approved submittals shall be removed and replaced at no additional expense to the Owner.
- Certificate of compliance that the galvanizer has certified weighers on premises with a certification from the local municipality, and a certified scale or municipal scale has been utilized by the galvanizer.
- Fabricator shall provide a notarized statement from the galvanizer, along with a description of the material processed, indicating that all work has been done in conformance with this specification prior to receiving payment.
- Certificate of Compliance for Shop Drawing Review by Galvanizer: Submit galvanizer's certification that shop drawings for metal fabrications to receive metal coatings have been reviewed and that fabrications are acceptable to galvanizer for proper application of galvanizing and metal coatings. All drawings should be stamped by the galvanizer to indicate approval of design for galvanizing.

2.XX HOT-DIP GALVANIZING AND FACTORY-APPLIED ARCHITECTURAL FINISH WITH CLEARCOAT -
COLORGALV CLEARCOAT

- Hot-Dip Galvanizing: Provide coating for iron and steel fabrications applied by the hot-dip process, Duragalv® by Duncan Galvanizing. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware. Provide thickness of galvanizing specified in referenced standards. The galvanizing bath shall contain high grade zinc, nickel, and other sacrificial materials.
- Galvanizing shall exhibit a rugosity (smoothness) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1 micron increments.
 - Surface blasting prior to application of factory-applied post galvanizing wet coatings will produce a high rugosity and not be acceptable.
- Architectural Finish: Provide factory-applied architectural coating over hot-dip galvanized steel, Colorgalv® by Duncan Galvanizing matching approved samples.
 - Primer coat shall be factory-applied prime coat. Apply primer within 12 hours after galvanizing at the same facility where the galvanizing is done in a controlled environment meeting applicable environmental regulations and as recommended by the primer coating manufacturer.
 - Finish coat shall be factory-applied color-pigmented architectural finish. Apply finish coating at the galvanizer's plant, in a controlled environment meeting applicable environmental regulations and as recommended by the finish coating manufacturer.
 - Coatings shall be certified VOC compliant and conform to applicable regulations and EPA standards.
 - Apply the galvanizing, primer and coating within the same facility and provide single-source responsibility for galvanizing, priming and finish coating.
 - Blast cleaning of the galvanized surface is not acceptable.
- Performance Criteria: Coatings must meet or exceed the criteria for the following categories as stipulated by the coatings manufacturer:
 - Primer:
ABRASION - Method: ASTM D 4060 (CS17 Wheel, 1,000 grams load).
ADHESION - Method: ASTM D 3359, (Method B, 5 mm Crosshatch).
HUMIDITY - Method: ASTM D 4585
SALT SPRAY (FOG) - Method: ASTM B 117
PENCIL HARDNESS

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS

- 1). ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006 WITH LATEST REVISIONS AND THE SPECIAL PROVISIONS.

MATERIAL SPECIFICATIONS

- 1). UNLESS OTHERWISE NOTED, ALL STEEL TO BE AASHTO M270 (ASTM A709) GRADE 50.
- 2). MATERIAL NOTED "CVN" OR "H2-3" ON DETAIL DRAWINGS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF VERMONT STANDARD SPECIFICATIONS SECTION 714.01.
- 3). HIGH STRENGTH BOLTS: ASTM A325 TYPE 1 7/8" DIAMETER - GALVANIZED (AND PAINTED AFTER INSTALLATION). IN 15/16" DIAMETER HOLES, UNLESS NOTED OTHERWISE. BOLTS & NUTS SHALL BE ROTATIONAL CAPACITY TESTED. DO NOT MIX NUTS & BOLTS FROM DIFFERENT CONTAINERS UNLESS ALL BOLTS & NUTS HAVE THE SAME LOT NUMBER.

FABRICATION

- 1). ALL HOLES SHALL BE PUNCHED OR DRILLED FULL SIZE (UN).

WELDING

- 1). THE CONFIGURATION OF THE WELD JOINTS AND ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH AASHTO/AWS D1.5-02 BRIDGE WELDING CODE AND IN ADDITION TO SPECIFICATIONS SHOWN ABOVE. ALL WELDING WILL BE DETAILED TO PRE-QUALIFIED JOINTS, UNLESS PROHIBITED BY THE DESIGNER.
- 2). WELDING OF MAIN LOAD CARRYING MEMBERS AND ATTACHMENTS SHALL BE PERFORMED USING THE AUTOMATIC SUBMERGED ARC & SHIELDED METAL ARC PROCESSES. ALL WELDS ARE CONTINUOUS U.N.
- 3). NON DESTRUCTIVE TESTING OF WELDS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATION.
- 4). SEE DETAIL "WS1" ON THIS DRAWING FOR WELD TERMINATION DETAIL.

GALVANIZING AND PAINTING

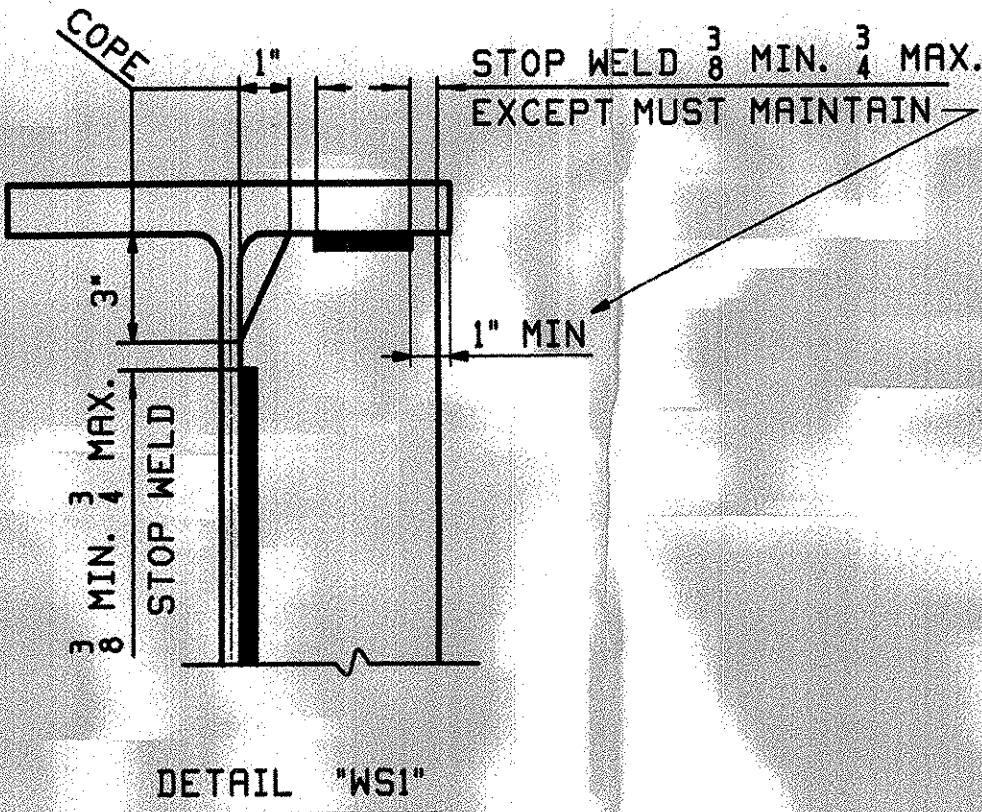
- 1). ALL STEEL SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111 (FABRICATED MATERIALS) OR AASHTO M232 (FASTENERS).
△ COLORGALV COATING BY DUNCAN GALVANIZING.
- 2). WHERE NOTED, STEEL SHALL BE PAINTED AFTER GALVANIZING WITH THE PAINT SYSTEM DESCRIBED IN NO. 3). BELOW AND IN ACCORDANCE WITH VERMONT STD. SPECIFICATION 513. THE COLOR OF THE TOP COAT SHALL BE DARK BROWN, CHIP #20059.

	DFT (MILS)	
	MIN.	MAX.
MANUFACTURER: SHERWIN WILLIAMS		
△ P PRIMER = HOT DIP GALVANIZING		
I INTERMEDIATE = RECOATABLE EPOXY PRIMER (OVER HOT-DIP GALVANIZING)	4.0	8.0
T TOPCOAT = HI-SOLIDS POLYURETHANE	3.0	5.0

- △ 4.) INTERMEDIATE AND TOP COATS SHALL BE STAGGERED A MINIMUM OF 12mm (1/2 INCH) FROM THE FAYING SURFACES AND EACH OTHER.

FIELD CONNECTIONS

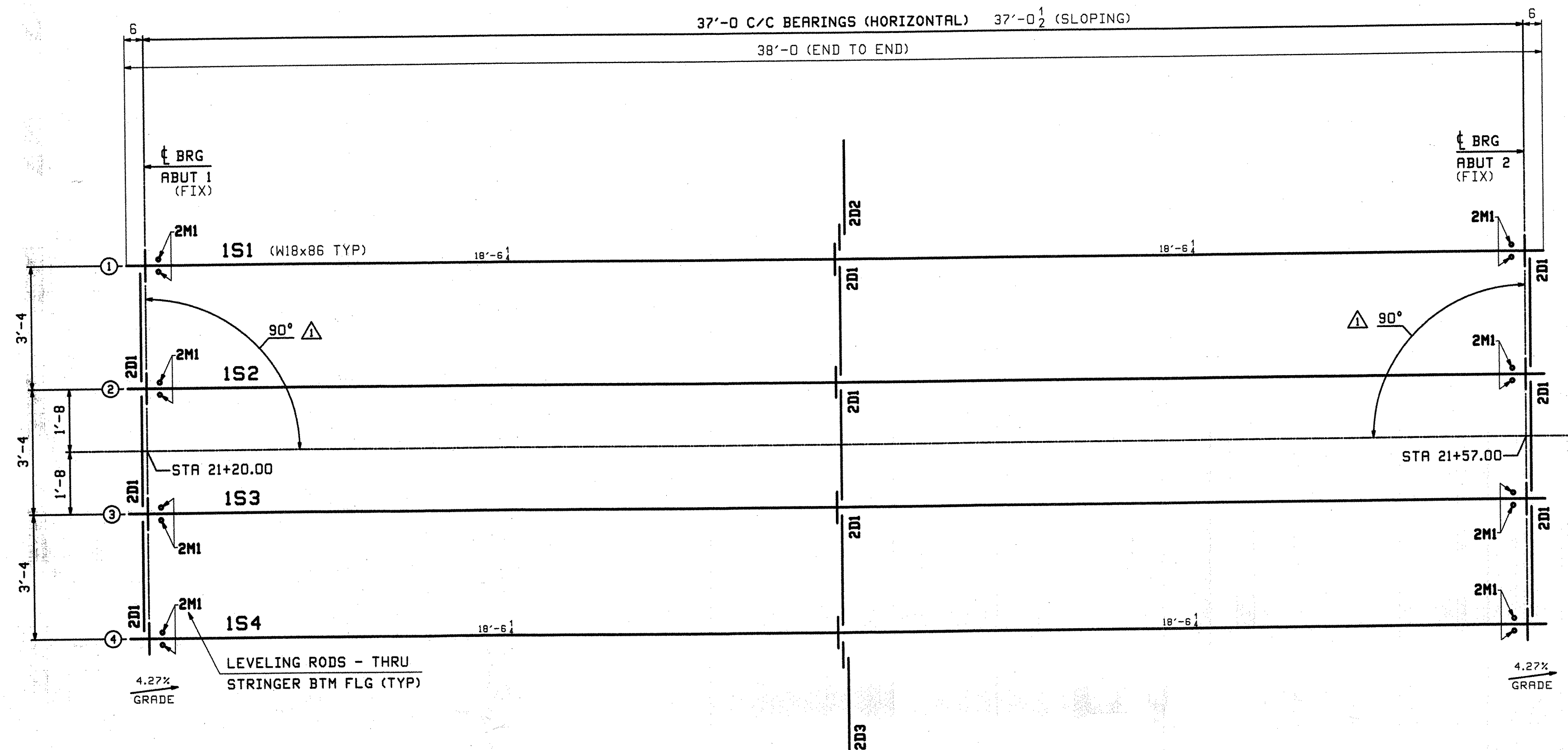
- 1). ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH STRENGTH A-325 BOLTS (UN), INSTALLED PER SECTION 506.19(c). SEE DWG E1 FOR FIELD BOLT SIZES.
- 2). BOLTS SHALL HAVE HEAVY HEX NUT, HEAVY HEX HEAD, AND AT LEAST ONE FLAT WASHER EACH. WASHER TO BE PLACED UNDER TURNED ELEMENT.
- 3). PIECE MARKS WILL BE LOCATED AS SHOWN ON ERECTION DRAWINGS.



SHOP DRAWING REVIEW	
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☐ REJECTED	☐ REVISE AND RESUBMIT
☐ FURNISH AS CORRECTED	
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VHB Vanasse Hangen Brustlin, Inc. Engineers, Planners, and Scientists 86 Bedford Farm, Kilton Rd. Bedford, NH 03110 603 644 0868	
Job Number: 51752 Reviewed By: S. HUDSPON Date: 12-13-07	

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
11/06/07	APPROVAL COMMENTS	JTB	DBH			
10/18/07	REVISED PRINT NOTES	JSS	WL	11/8/07	11/9/07	
MATERIAL:		SURFACE PREP. & PAINT:		HOLES:		SHOP BOLTS:
DESCRIPTION: GENERAL NOTES						
CASCO BAY STEEL STRUCTURES, INC. 75 SPRING HILL ROAD SACO, MAINE 04072 PHONE (207) 282-7360 FAX. (207) 282-1179						
STRUCTURE:		REHAB. OF BRLEY COVERED BRIDGE TH 64 (CLASS III - LOCAL ROAD) BRIDGE NO. 38		DRAWN:	DATE:	
				JTB	09/16	
				CHKD:	DATE:	
				DBH	10/04	
LOCATION:		TOWN OF RANDOLPH, VERMONT		JOB NO.	DWG NO.	
PROJ NO.		BHO 1444(44)		340	GN1	
CUSTOMER:		VERMONT R.O.T.		REV.	△	

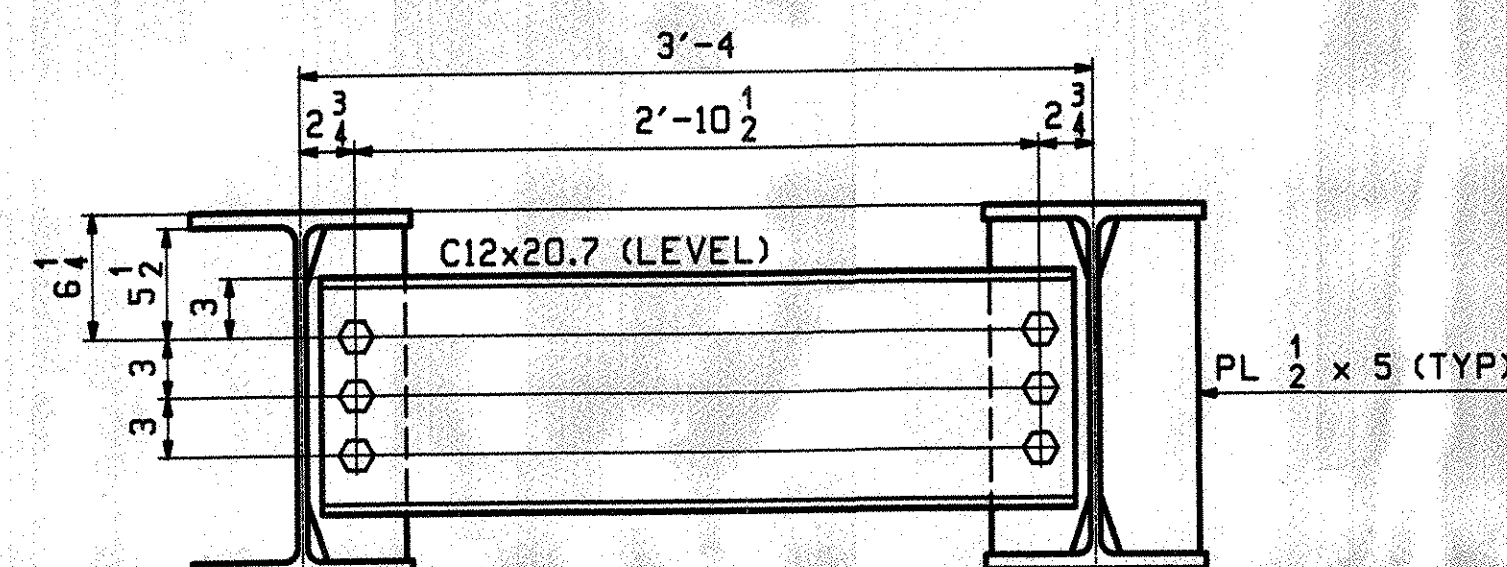
NOTE TO ENGINEER:
THESE NOTES ARE NOT INTENDED TO BE ALL INCLUSIVE AND COMPLIANCE WITH RELEVANT SPECIFICATIONS REMAIN UNCHANGED.



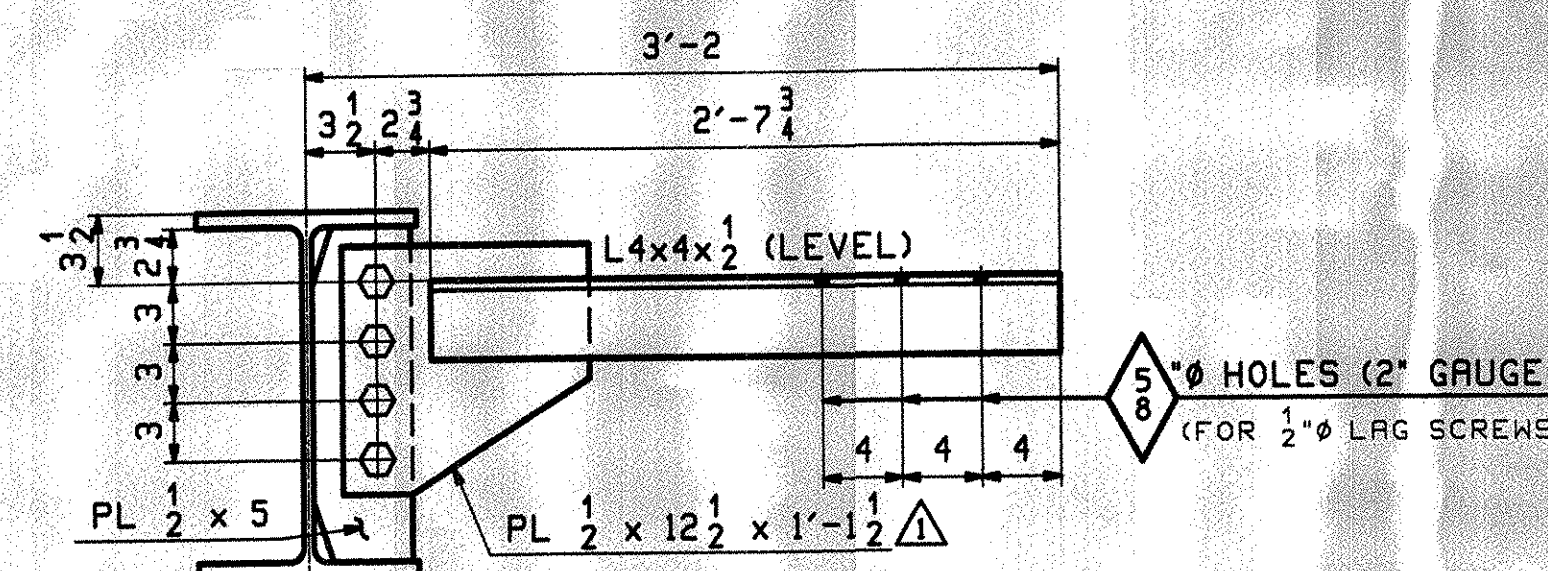
FRAMING PLAN

ERECTOR NOTE:

1. TRUSS HOLD-DOWNS (REFERENCE DESIGN SHEET 30 of 39) CONSIST OF SHIPPING MARKS 2M2 (HOLD DOWN ROD), 2M3 (ANCHOR BOLTS) & 2M4 (CONNECTION ANGLE).
2. TIE BEAM HOLD DOWNS (REF. UPPER LATERAL KNEE BRACE DETAIL ON DESIGN SHEET 31 of 39) CONSIST OF SHIPPING MARKS 2M5 (CONNECTION ANGLE) AND 2M6 (HOLD DOWN ROD).



DIAPHRAGMS



TRUSS RETAINER BRACKET

(NORTH BRACKET AS SHOWN)
(SOUTH SIMILAR)

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☐	REJECTED
☐	REVISE AND RESUBMIT
☐	FURNISH AS CORRECTED
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VHB Vanasse Hangen Brustlin, Inc. Engineers, Planners, and Scientists Six Bedford Farms, Milton Rd. Bedford, NH 03110 603 844 0988	
Job Number: 51752 Reviewed By: J. HODGSON Date: 12-12-07	

APPROVED 12/23/07

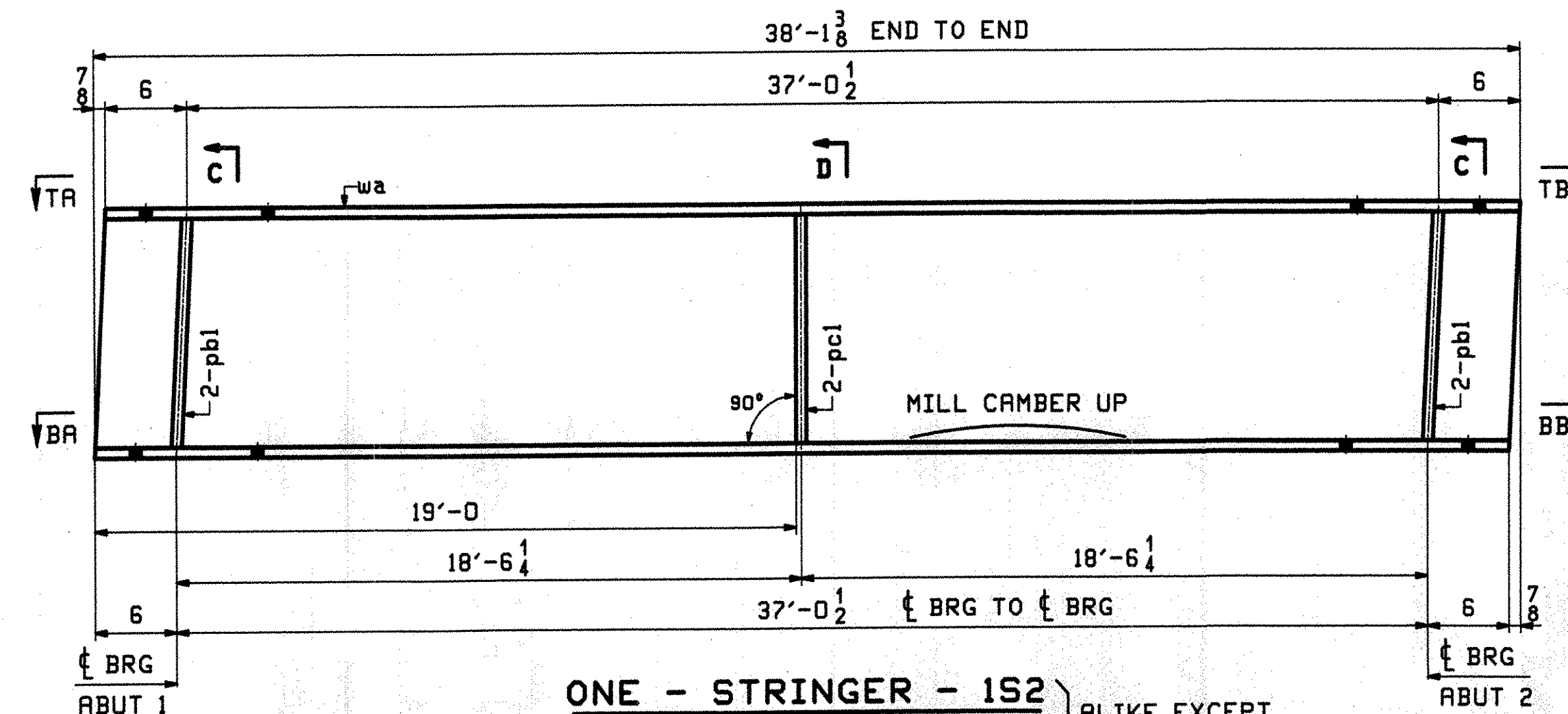
REV.	DATE	APPROVAL COMMENTS	JTB	DBH	APVL	SHOP
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2	11/08/07					
3	11/09/07					
4	11/09/07					
5	11/09/07					
6	11/09/07					
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100	11/09/07					

FIELD BOLT LIST									
A325 Type 1 BOLTS (GALV)									
LINE	NO. REQ'D.	BOLT DIA.	BOLT LEN.	BOLTS / CONN.	WASHER CODE	THICKNESS OF PCS. CONNECTED	WASHER CODE	PIECES CONNECTED AND REMARKS	
1	54	7/8	2 1/4	3	18	5/16	1/2	1	WEB TO CONNECTION PLATE
2	8	7/8	2 1/4	4	2	1/2	1/2	2	GUSSET PLATE TO CONNECTION PLATE
3									
4									
5									

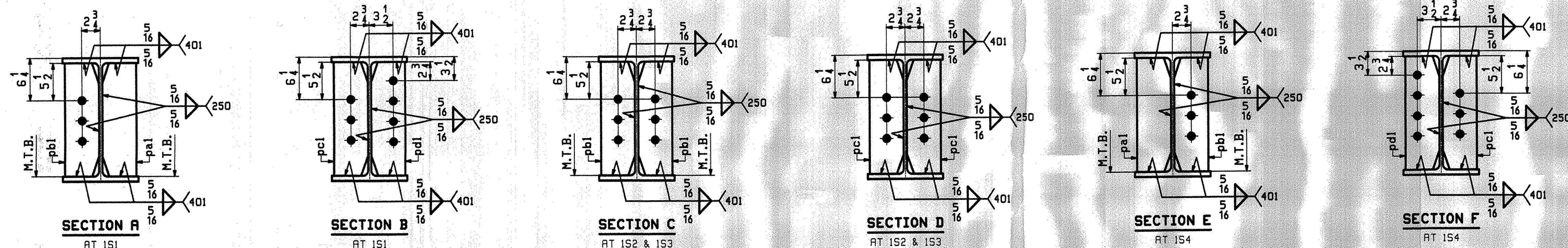
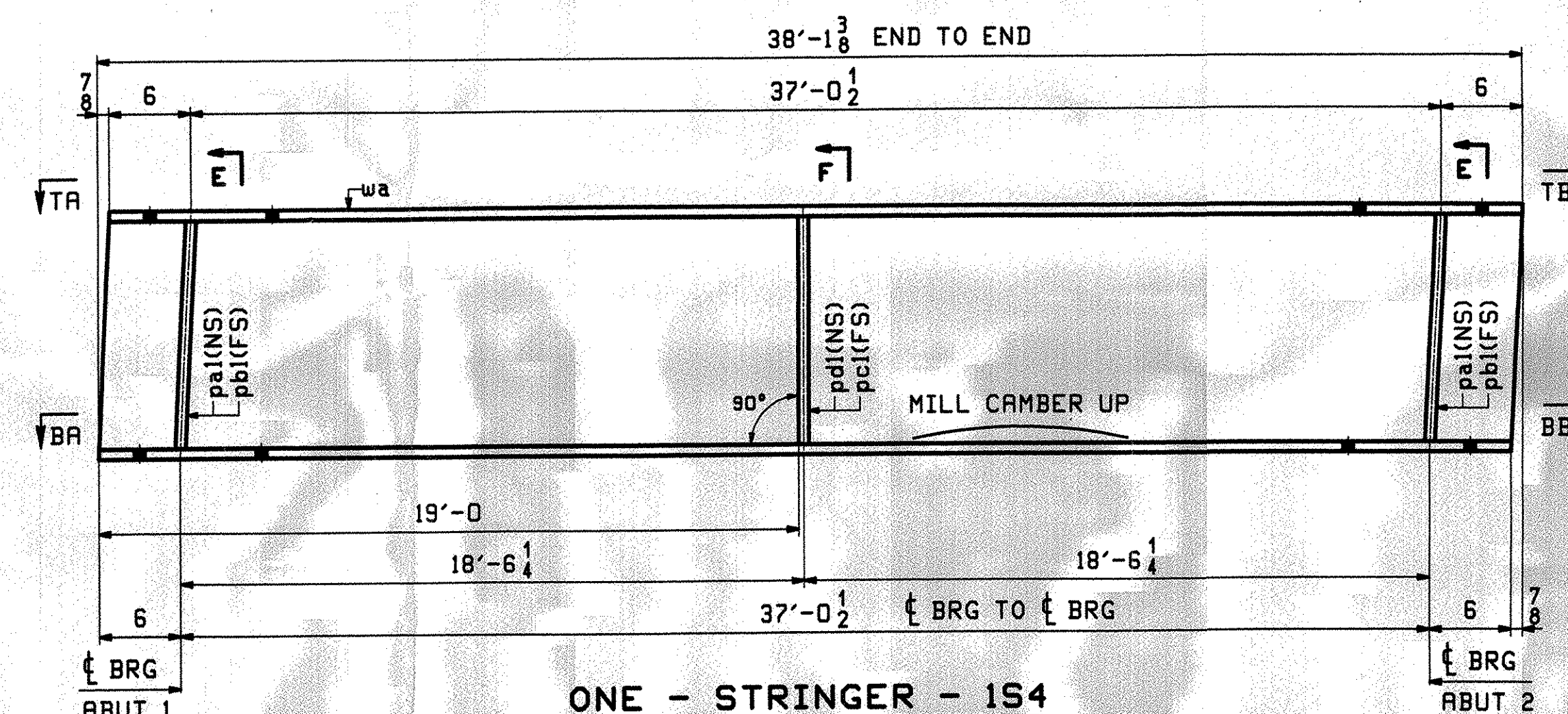
WASHER CODES

1: 1 Hard Flat Washer
2: 2 Hard Flat Washers

FIELD BOLT SUMMARY									
EXACT COUNT - NONE EXTRA									
LINE	NO. OF BOLTS	BOLT DIA.	TYPE	BOLT LEN.	ACTUAL COUNT	REMARKS			
1	54	7/8	A325 Type 1	2 1/4	54	GALVANIZED			
2	8	7/8	A325 Type 1	2 1/4	8	GALVANIZED			
3									
4	70		Hard Flat Washers for 7/8" BOLT			GALVANIZED (F436)			
5									
6									
7									



⚠ MATERIAL LISTED ABOVE INCLUDED IN CONTRACT
ITEM 506.50, STRUCTURAL STEEL, ROLLED BEAM.



SHOP DRAWING REVIEW

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☒ RELEASED ☐ REVISE AND RESUBMIT ☐ FURNISH AS CORRECTED

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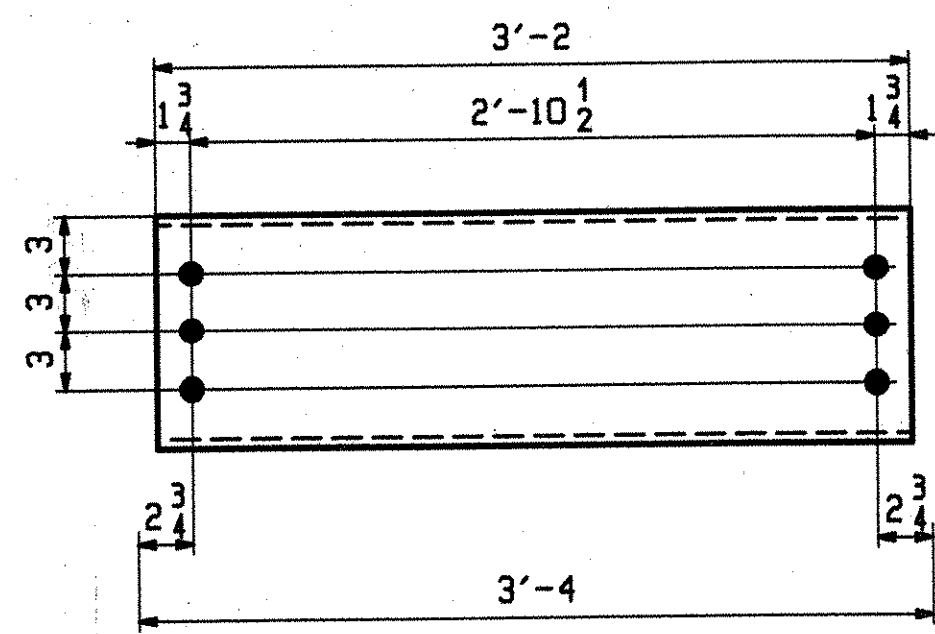
VHB Vanarsdale Hargens Brustin, Inc.
Engineers, Planners, and Scientists
36 Bedford Plains, Natick, MA
Boston, MA 01913 603 644 0566

Job Number: **51752**
Reviewed By: **S. Hargaben**
Date: **12-12-10**

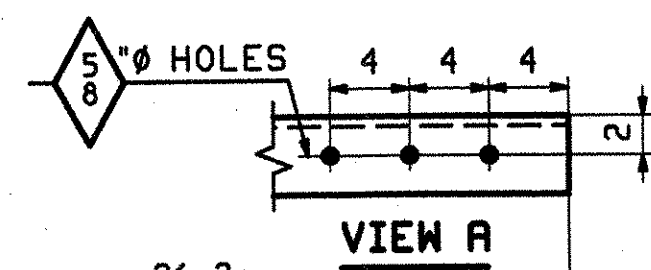
NOTES:

1. FOR GENERAL NOTES SEE DRAWING GNI.
2. CVN DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.
3. ALL MATERIAL ON THIS DRAWING SHALL BE GALVANIZED AND PAINTED PER DRAWING GNI.

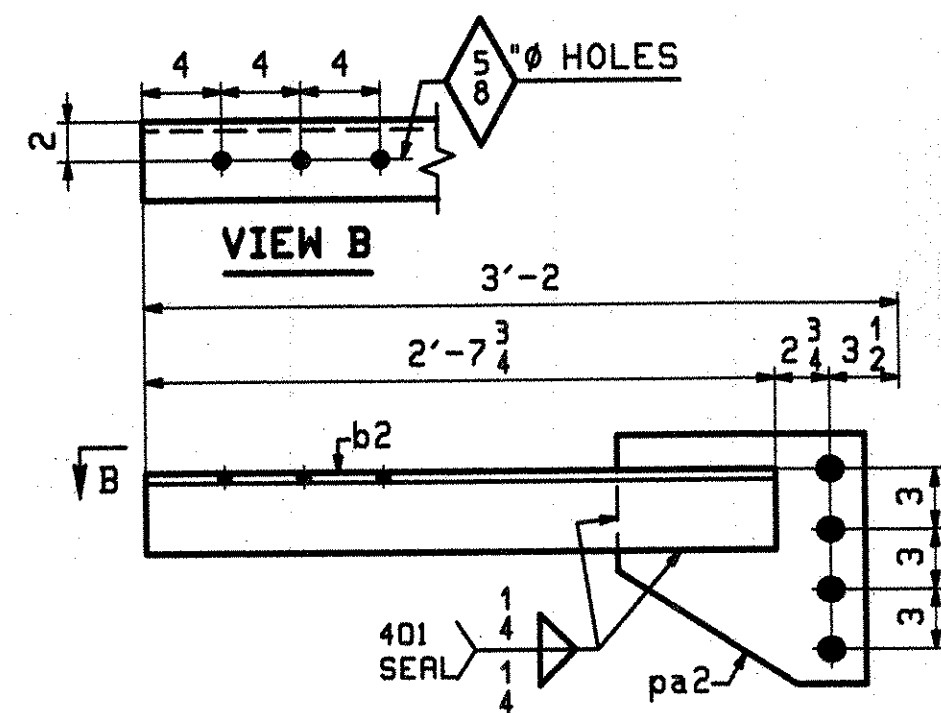
PRINTED PER DRAWING GNI.				APPROVED 10/23/02			
		11/08/07 APPROVAL COMMENTS		JTB DBH		10/8/07	
0						11/8/07 11/8/07	
REV.		DATE		REMARKS		DWN CHK APVL SHOP	
MATERIAL:		SURFACE PREP. & PAINT:		HOLES:		SHOP BOLTS:	
A709-50 (UN)		SEE DWG GNI		15 16 Ø		NONE	
DESCRIPTION: STRINGERS							
CASCO HILL STEEL STRUCTURES, INC.							
75 SPRING BAY ROAD				SACO, MAINE 04072			
PHONE (207) 282-7360				FAX. (207) 282-1179			
							
STRUCTURE:		REHAB. OF BRALEY COVERED BRIDGE				DRAWN: JTB	
		TH 64 (CLASS III - LOCAL ROAD)				DATE: 09/24	
		BRIDGE NO. 38				CHKD: DBH	
						DATE: 10/04	
LOCATION:		TOWN OF RANDOLPH, VERMONT				JOB NO.	
PROJ NO.		BHO 1444(44)				340	
CUSTOMER:		VERMONT R.O.T.				REV. 	



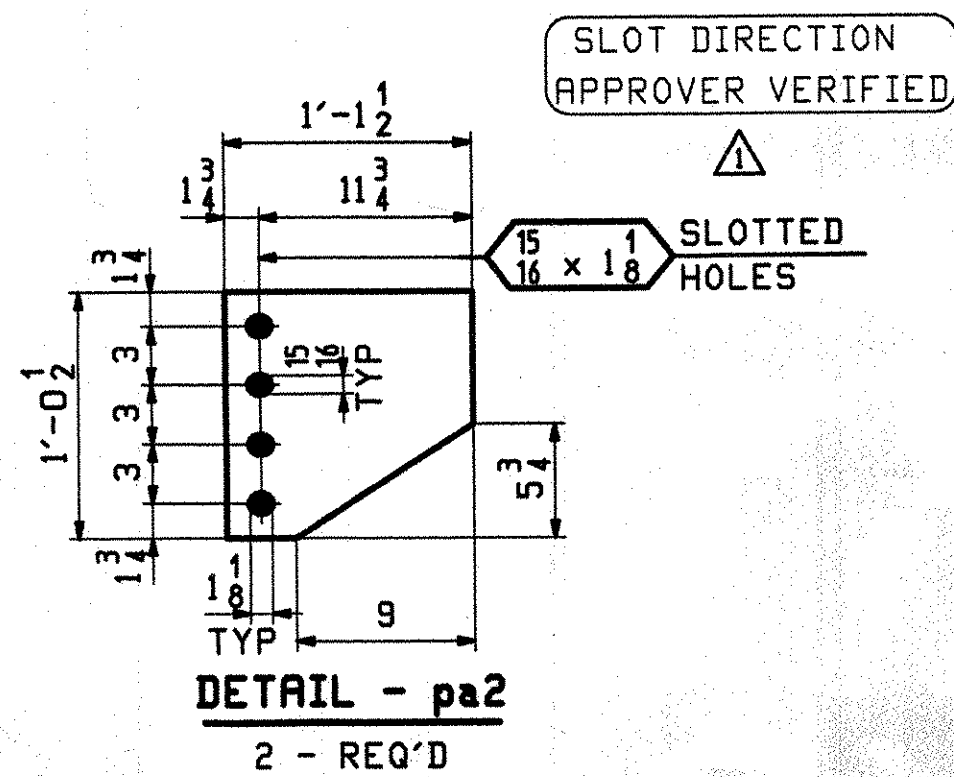
9 ~ DIAPHRAGMS - 2D1
(GALVANIZED AND PRINTED)



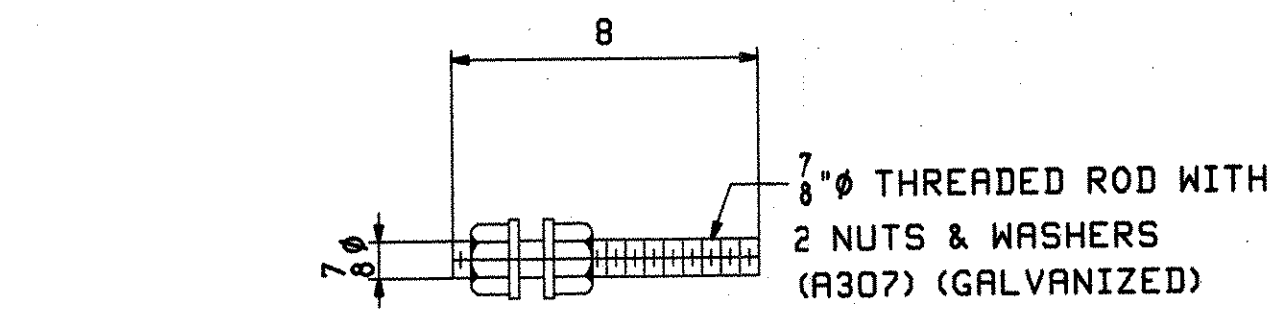
ONE ~ BRACKET - 2D2
(GALVANIZED AND PRINTED)



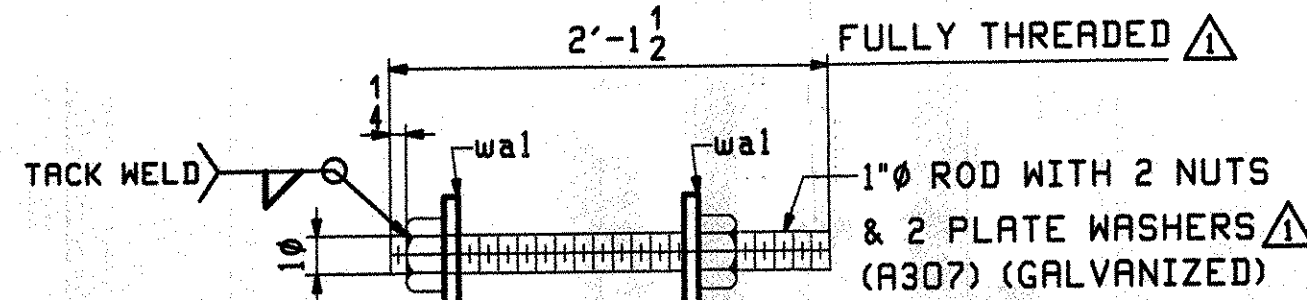
ONE ~ BRACKET - 2D3
(GALVANIZED AND PRINTED)



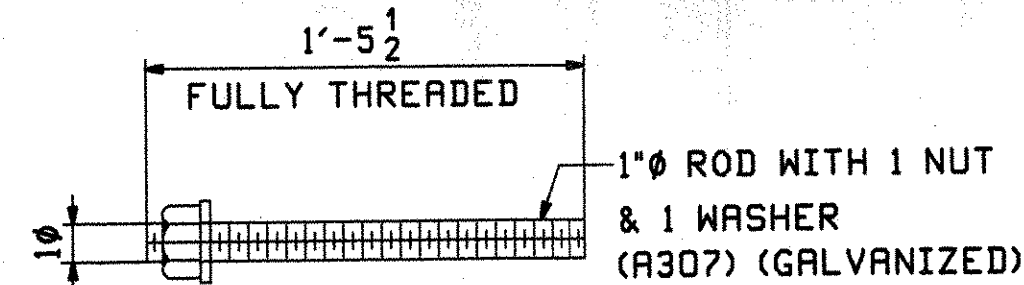
DETAIL - pa2
2 - REQ'D



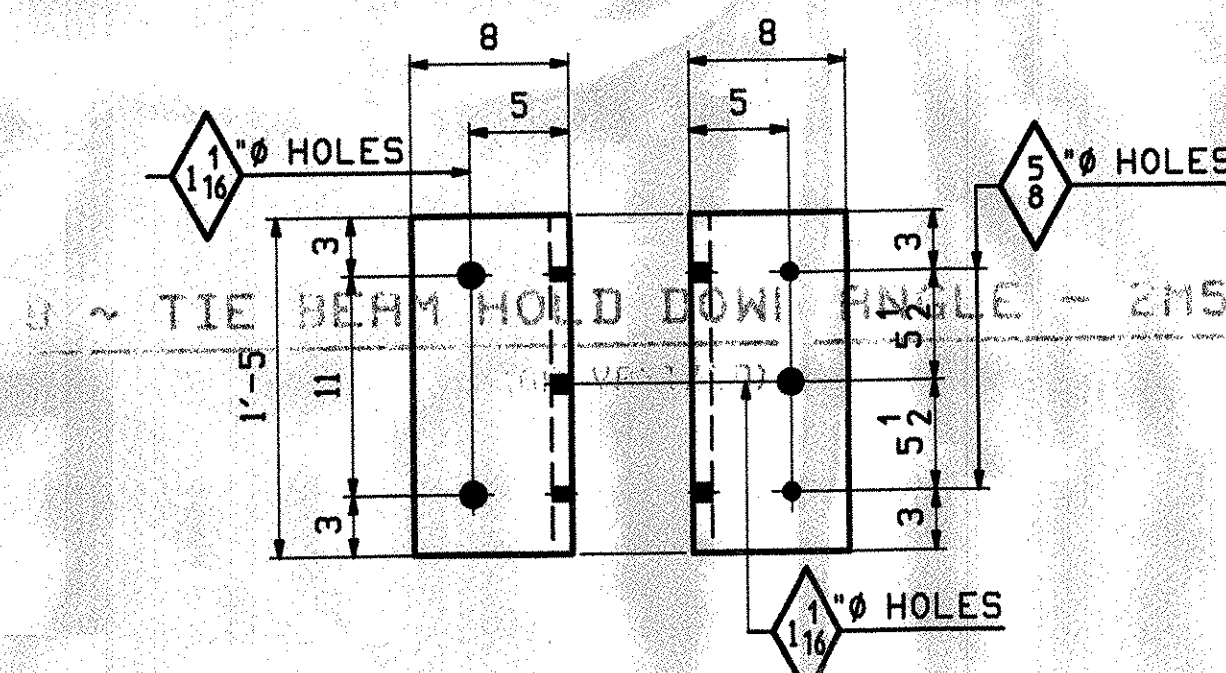
16 ~ LEVELING RODS - 2M1



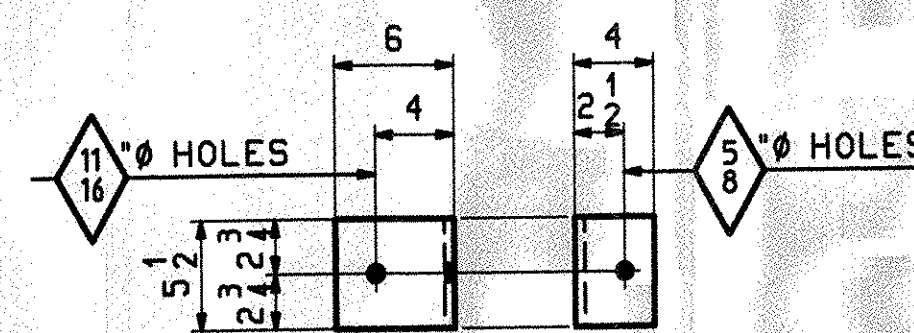
4 ~ TRUSS HOLD DOWN RODS - 2M2



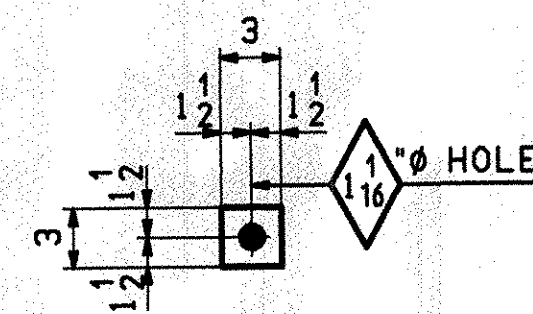
8 ~ ANCHOR BOLTS - 2M3



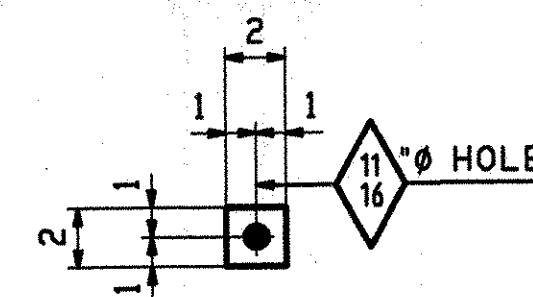
4 ~ TIE BEAM HOLD DOWN ANGLE - 2M4
(GALVANIZED)



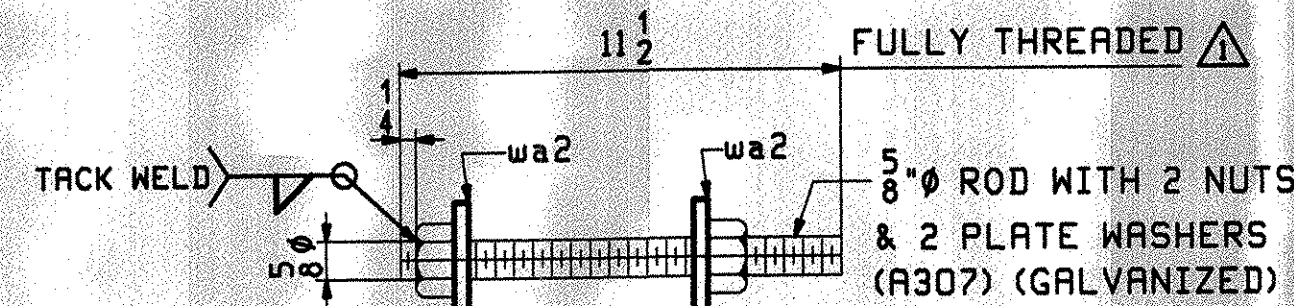
8 ~ TIE BEAM HOLD DOWN ANGLE - 2M5
(GALVANIZED)



DETAIL - wa1
8 - REQ'D



DETAIL - wa2
16 - REQ'D



8 ~ TIE BEAM HOLD DOWN RODS - 2M6

BILL OF MATERIAL						JOB NO.	DRAWING NO.	REV.
						340	2	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	REMARKS	WT	PROCUREMENT NOTES
					DIAPHRAGMS	(GALVANIZED & PRINTED)		
1	H	2D1	9		C 12x20.7		66	
		2D2	1		RETAINER BRACKET	(GALVANIZED & PRINTED)	56	
1	L		1	a2	L 4x4x1/2			
1	M		1	pa2	PL 2x12 1/2			
		2D3	1		RETAINER BRACKET	(GALVANIZED & PRINTED)	56	
1	L		1	b2	L 4x4x1/2			
1	M		1	pa2	PL 2x12 1/2			
		2M1	16		LEVELING ROD	HOT DIPPED GALV. (A307) (FULLY THREADED)		
2	B		16		7/8" ROD	(A307) (FULLY THREADED)		
2	C		32		8" HHN	(A563)		
2	D		32		8" HSW	(F436)		
		2M2	4		TRUSS HOLD DOWN ROD	HOT DIPPED GALV. (A307) (FULLY THREADED)		
2	G		4		1" ROD	(A307) (FULLY THREADED)		
2	H		1	wa1	PL 3x3	(A709-36)		
2	J		8		1" HHN	(A563)		
		2M3	8		ANCHOR BOLTS	HOT DIPPED GALV. (A307) (FULLY THREADED)		
2	M		8		1" ROD	(A307) (FULLY THREADED)		
2	N		8		1" HHN	(A563)		
2	P		8		1" HSW	(F436)		
					HOLD DOWN ANGLES			
2	T	2M4	4		L 8x8x1/2	HOT DIPPED GALV. (A307) (FULLY THREADED)		
2	U	2M5	8		L 6x4x1/2	HOT DIPPED GALV. (A307) (FULLY THREADED)		
		2M6	8		TIE BEAM HOLD DOWN ROD	HOT DIPPED GALV. (A307) (FULLY THREADED)		
2	X		8		5/8" ROD	(A307) (FULLY THREADED)		
2	Y		16	wa2	PL 1x2	(A709-36)		
2	Z		16		8" HHN	(A563)		

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VHB Vannese Hagen Brustlin, Inc. Engineers, Planners, and Scientists Six Bedford Farms, Kilton Rd. Bedford, NH 03110-1010 603 844 0088	Job Number: 51752 Reviewed By: S.H.DYDOW Date: 12-12-07

							10/8/07	
	11/08/07	APPROVAL COMMENTS		JTB	DBH			
0							11/8/07	11/8/07
REV.	DATE	REMARKS			DWN	CHK	APVL	SHOP
MATERIAL:		SURFACE PREP. & PAINT:			HOLES:		SHOP BOLTS:	
A709-50 (UN)		SEE DWG GNI			15" Ø (UN)		NONE	
DESCRIPTION: DIAPHRAGMS & MISC.								
CASCO BAY STEEL STRUCTURES, INC.								
75 SPRING HILL ROAD				SACO, MAINE 04072				
PHONE (207) 282-7360				FAX. (207) 282-1179				
				 TENSAR 5744				
STRUCTURE:				DRAWN:			DATE:	
REHAB. OF BRALEY COVERED BRIDGE				JTB			09/24	
TH 64 (CLASS III - LOCAL ROAD)				CHKD:			DATE:	
BRIDGE NO. 38				DBH			10/04	
LOCATION: TOWN OF RANDOLPH, VERMONT				JOB NO.			DWG NO.	
PROJ. NO. BHO 1444(44)				340			2	
CUSTOMER: VERMONT R.O.T.							REV. 	