

SHERWARD G. FARNSWORTH, P.E.
 Project Manager - Structures Section
 VERMONT AGENCY OF TRANSPORTATION
 National Life Building - Drawer 33
 MONTPELIER, VERMONT 05633-6001
 Telephone (802) 828-3874 Fax (802) 828-3566

LETTER OF TRANSMITTAL	
DATE:	2-13-2002
CONTRACT No.	
PROJECT Name:	SR BURLINGTON
PROJECT NO.:	IM 0209(36)

TO:
 STEVE W. JOHNSON, P.E.
 Senior Project Engineer
 Vanasse Hangen Brustlin, Inc.
 Six Bedford Farms, Kilton Road
 BEDFORD, NH 03110

WE ARE SENDING TO YOU THE FOLLOWING:		BY FAX
<input checked="" type="checkbox"/> ATTACHED	<input type="checkbox"/> UNDER SEPARATE COVER VIA	Fax Number
<input type="checkbox"/> DRAWINGS	<input checked="" type="checkbox"/> PRINTS	Total number of sheets being Faxed
<input type="checkbox"/> COPY OF LETTER	<input type="checkbox"/> CHANGE ORDER	
	<input type="checkbox"/> SAMPLE	
	<input type="checkbox"/> PLANS	
	<input type="checkbox"/> OTHER	

COPIES	DATE	NO.	DESCRIPTION
1	2/12/02	1	ROW PLANS FOR CONDUIT ACCESS GATES. Sheet 1 to 6 of 6 1- FULL SIZE 1- HALF SIZE

THESE ARE TRANSMITTED AS CHECKED BELOW		
<input type="checkbox"/> FOR APPROVAL	<input type="checkbox"/> APPROVAL AS SUBMITTED	<input type="checkbox"/> RESUBMIT COPIES FOR
<input checked="" type="checkbox"/> FOR YOUR USE	<input type="checkbox"/> APPROVED AS NOTED	<input type="checkbox"/> SUBMIT COPIES FOR
<input checked="" type="checkbox"/> AS REQUESTED	<input type="checkbox"/> RETURNED FOR CORRECTIONS	<input type="checkbox"/> RETURN CORRECTED
<input type="checkbox"/> FOR REVIEW AND COMMENT	<input type="checkbox"/> OTHER	<input type="checkbox"/> PRINTS RETURNED AFTER
<input type="checkbox"/> FOR BIDS DUE		

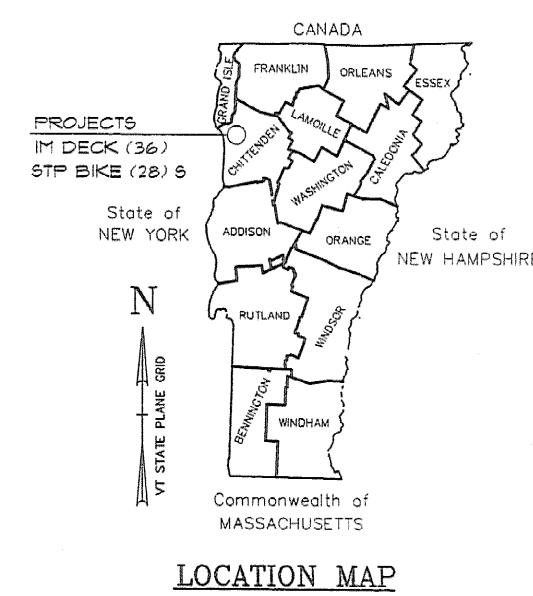
REMARKS:

COPY TO: BOB SUTHER - SIGNED: Sherward Farnsworth
 ATT: DAVE HOSKINS
 PRO FILE

STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT CITY OF SOUTH BURLINGTON COUNTY OF CHITTENDEN

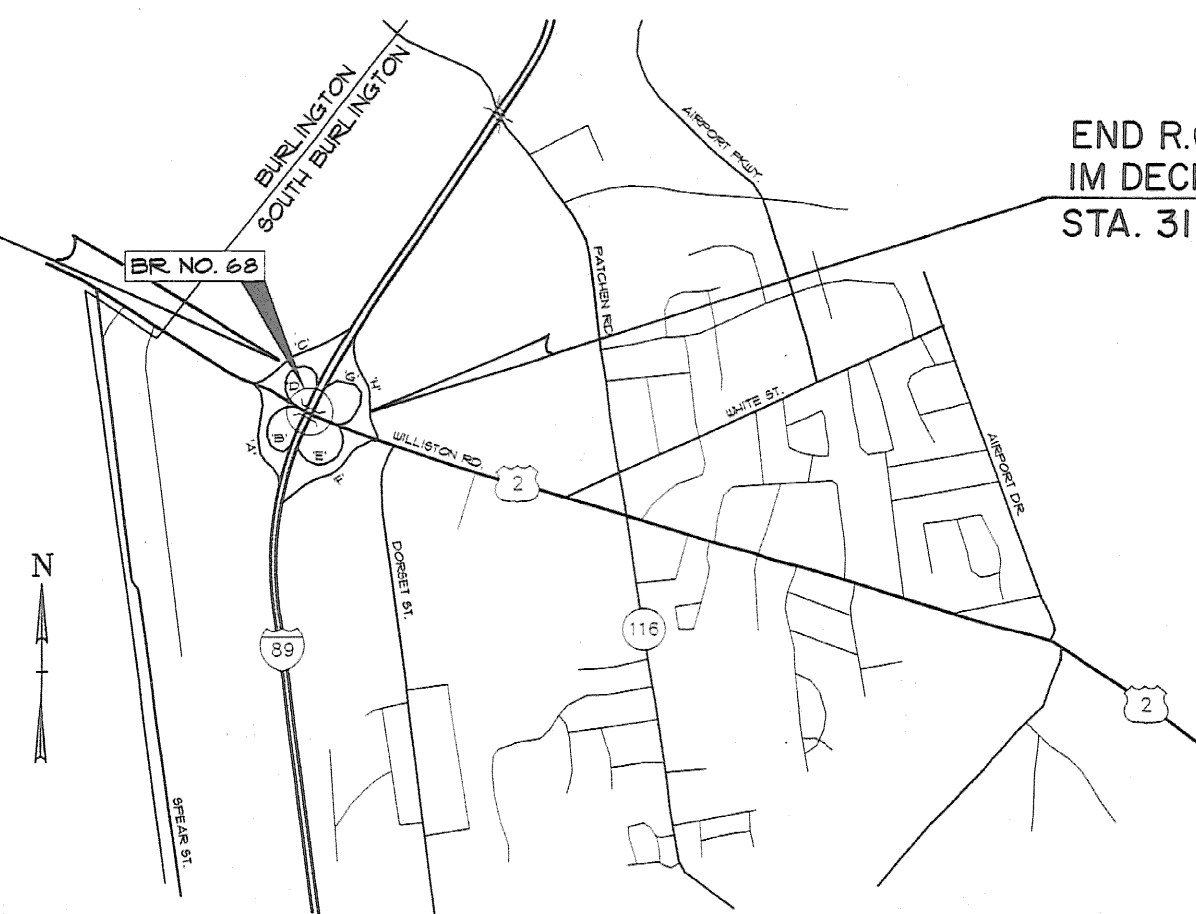


R.O.W. PLANS

IM DECK (36)	STP BIKE (28) S
ROUTE NO. : 1-89	BRIDGE NO. : 68
PROJECT LOCATION: U.S. 2 (WILLISTON RD.) OVER I-89	PROJECT LOCATION: U.S. 2 (WILLISTON RD.) OVER I-89
PROJECT DESCRIPTION: INSTALL TRAFFIC CONTROL, REHABILITATE STRUCTURE, REMOVE TRAFFIC CONTROL	PROJECT DESCRIPTION: CONSTRUCT SIDEWALK AND BIKEWAY ALONG U.S. 2 BETWEEN STA. 21+00 AND 36+61
LENGTH OF STRUCTURE: 261.00'	LENGTH OF PROJECT: 1561.00'
LENGTH OF PROJECT: 1723.00'	
LENGTH OF R.O.W. PROJECT: 1141'11"	

BEGIN R.O.W. PROJECT
IM DECK (36)
STA. 20+13 11' LT.

END R.O.W. PROJECT
IM DECK (36)
STA. 31+67 60' LT.



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

DATUM	
VERTICAL	N/A
HORIZONTAL	N/A

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE CHIEF ENGINEER. CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON MARCH 15, 1990 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

APPROVED: *[Signature]* DATE: 12/10/11
DIRECTOR OF PROJECT DEVELOPMENT

APPROVED: *[Signature]* DATE: 1/15/12
Chief, Right-of-Way

PROJECT: SOUTH BURLINGTON IM DECK(36)
SOUTH BURLINGTON STP BIKE (28) S
R.O.W. SHEET 1 OF 6 SHEETS

VANASSE HANGEN BRUSTLIN, INC.

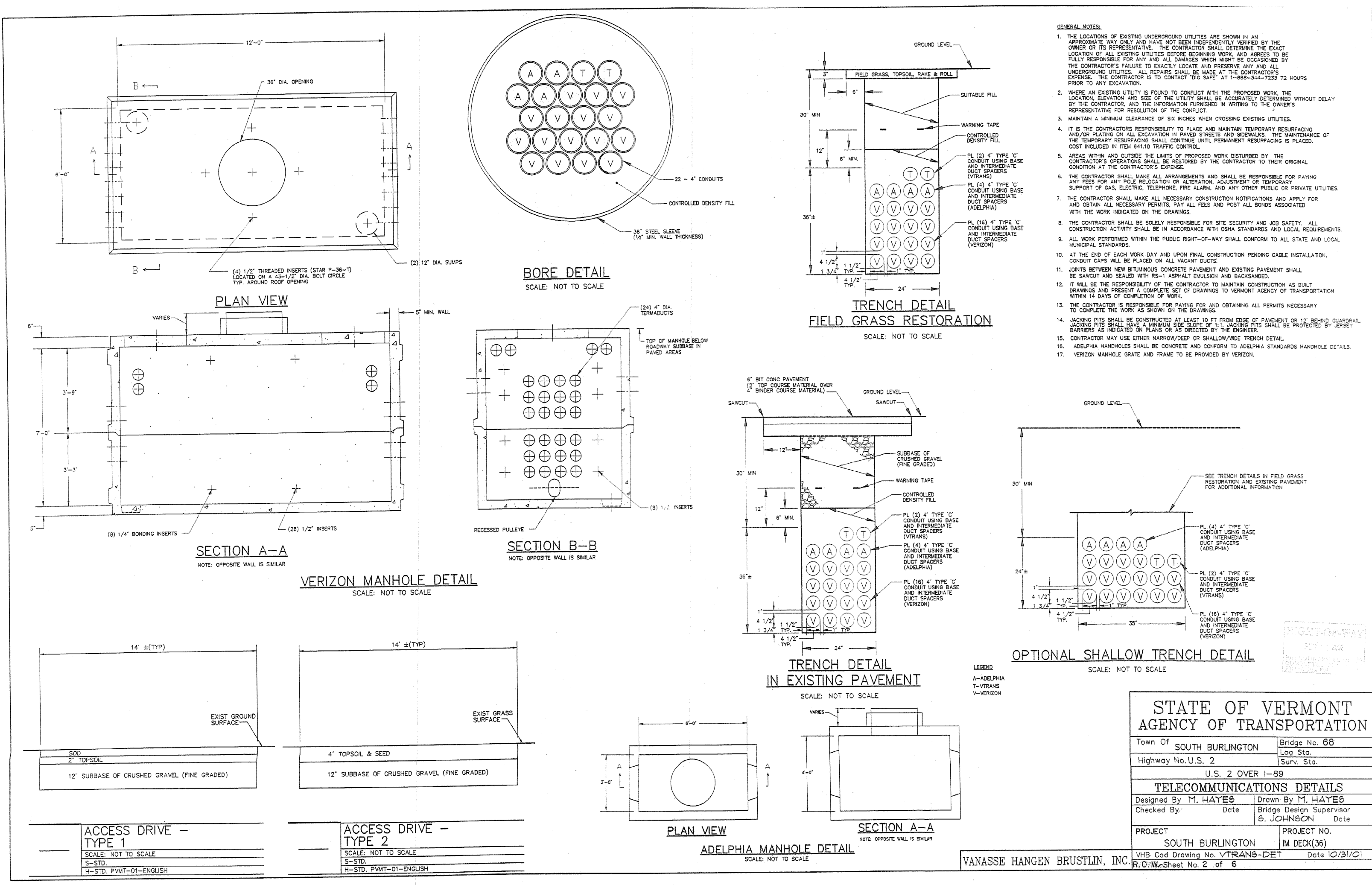


TABLE OF PROJECT PROPERTY ACQUISITION

STATE OF VERMONT
AGENCY OF TRANSPORTATION
RIGHT OF WAY PLANS
DETAIL SHEET

PARCEL NO.	GRANTOR	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKING	REM.	RIGHTS	TITLE TAKEN	DATE	TOWN OR CITY RECORDED	BK.	PG.	REMARKS	REVISION NO.	SHEET	DESCRIPTION OF REVISION	DATE	MADE BY	APPROVED BY		
1	FILCOR/WM S-7 HOLDINGS, L.P.	4.5	20+13 LT. 20+18 LT. 20+42 LT.	20+34 LT. 20+39 LT. 20+57 LT.			CONST. (T) 380 S.F. ± DRIVE (P) 720 S.F. ± REMOVE & RESET (T) ACCESS (P)						14' WIDE 12" DIA. PIPE FROM U.S. RTE. 2 TO GATE IN ROW FENCE								
2	HARPER HOTELS, INC.	4.6	31+42 LT. 31+47 LT.	31+67 LT. 31+62 LT.			CONST. (T) 60 S.F. ± DRIVE (P) 35 S.F. ± ACCESS (P)						14' WIDE FROM U.S. RTE. 2 TO GATE IN ROW FENCE								
3	VERIZON - NEW ENGLAND, INC.												UTILITY								
4	ADELPHI CABLE COMMUNICATIONS												UTILITY								

RIGHT-OF-WAY
FEB 14 2002
SOUTH BURLINGTON
IM DECK (36)

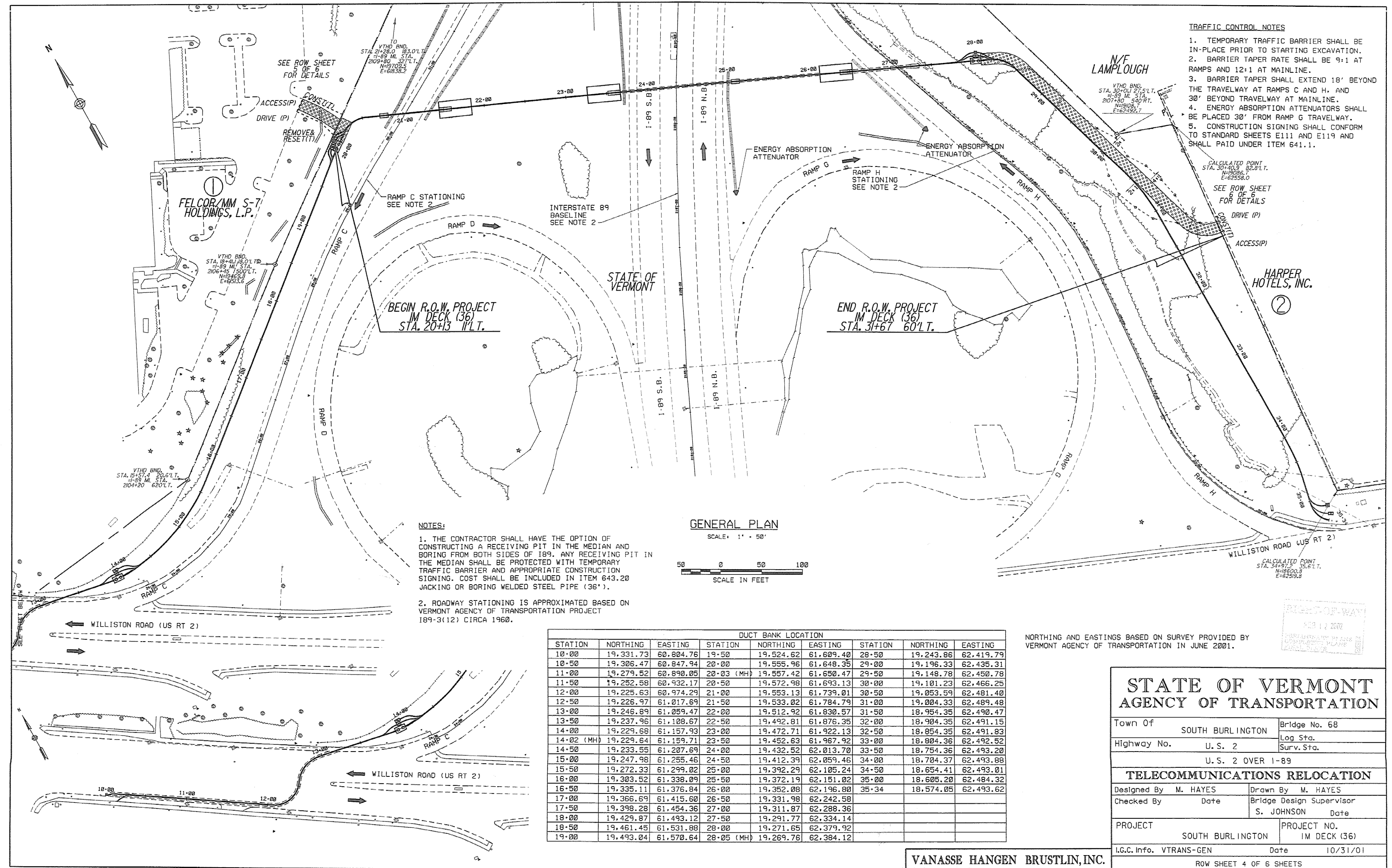
DR. (P) - DRAINAGE RIGHT
DIT. (P) - DITCHING RIGHT
CH. (P) - CHANNEL RT.
DRIVE (T) - DRIVE RIGHT
CUL. (P) - CULVERTY RIGHT
W - WATER SOURCES

PRESENT R.O.W.
TAKING WITHOUT ACCESS
TAKING WITHOUT ACCESS ALONG PROPERTY LINE
TAKING WITH ACCESS
PERMANENT EASEMENT
TEMPORARY EASEMENT

LEGEND
--- CLIP --- CLEARING & TRIMMING
--- F4 PT --- CLEAR ZONE
--- CONST. (T) --- CONSTRUCTION EASEMENT
--- SR --- SLOPE RIGHTS
--- P --- PROPERTY LINE
--- T --- TOP OF CUT
--- O --- TIDE OF SLOPE
--- U.E. (P) --- PERMANENT UTILITY EASEMENT

APPROVED: ROGER P. DIMAS DATE: 02-04-02
CHIEF, PLANS & TITLES

R.O.W. PLANS
SOUTH BURLINGTON
IM DECK (36)
SHEET 3 OF 6



TRAFFIC CONTROL NOTES

1. TEMPORARY TRAFFIC BARRIER SHALL BE IN-PLACE PRIOR TO STARTING EXCAVATION.
2. BARRIER TAPER RATE SHALL BE 9:1 AT RAMP AND 12:1 AT MAINLINE.
3. BARRIER TAPER SHALL EXTEND 18' BEYOND THE TRAVELWAY AT RAMP C AND 14' AND 30' BEYOND TRAVELWAY AT MAINLINE.
4. ENERGY ABSORPTION ATTENUATORS SHALL BE PLACED 30' FROM RAMP C TRAVELWAY.
5. CONSTRUCTION SIGNING SHALL CONFORM TO STANDARD SHEETS E111 AND E119 AND SHALL PAID UNDER ITEM 641.1.

NOTES:

1. THE CONTRACTOR SHALL HAVE THE OPTION OF CONSTRUCTING A RECEIVING PIT IN THE MEDIAN AND BORING FROM BOTH SIDES OF DR. ANY RECEIVING PIT IN THE MEDIAN SHALL BE PROTECTED WITH TEMPORARY TRAFFIC BARRIER AND APPROPRIATE CONSTRUCTION SIGNING. COST SHALL BE INCLUDED IN ITEM 643.00 JACKING OR BORING WELDED STEEL PIPE (36").
2. ROADWAY STATIONING IS APPROXIMATED BASED ON VERMONT AGENCY OF TRANSPORTATION PROJECT 189-31(2) CIRCA 1960.

GENERAL PLAN
SCALE: 1" = 50'

DUCT BANK LOCATION					
STATION	NORTHING	EASTING	STATION	NORTHING	EASTING
10+00	14,531.73	60,884.76	14+50	14,524.62	61,689.40
10+50	14,506.47	60,847.94	20+00	14,559.96	61,648.35
11+00	14,274.62	60,786.00	20+50	14,557.43	61,688.17
11+50	14,252.58	60,432.17	21+00	14,572.98	61,693.13
12+00	14,226.63	60,474.29	21+50	14,553.13	61,739.81
12+50	14,228.97	61,577.89	22+00	14,533.85	61,734.78
13+00	14,248.89	61,259.47	22+50	14,512.93	61,838.57
13+50	14,227.88	61,186.57	23+00	14,473.71	61,876.39
14+00	14,204.69	61,157.93	23+50	14,452.63	61,927.92
14+02	14,224.64	61,159.71	24+00	14,433.25	62,013.78
14+50	14,233.65	61,207.89	24+50	14,412.39	62,099.46
15+00	14,247.98	61,255.46	25+00	14,392.20	62,185.24
15+50	14,272.23	61,249.82	25+50	14,371.19	62,151.82
16+00	14,283.62	61,238.99	26+00	14,350.88	62,118.40
16+50	14,325.11	61,278.84	26+50	14,330.80	62,176.80
17+00	14,366.69	61,415.80	27+00	14,311.87	62,289.36
17+50	14,398.28	61,454.36	27+50	14,291.77	62,324.14
18+00	14,426.87	61,459.12	28+00	14,271.69	62,374.52
18+50	14,451.43	61,433.88	28+50	14,251.61	62,424.90
19+00	14,493.84	61,578.64	29+00	14,229.78	62,484.12

NORTHING AND EASTINGS BASED ON SURVEY PROVIDED BY VERMONT AGENCY OF TRANSPORTATION IN JUNE 2001.

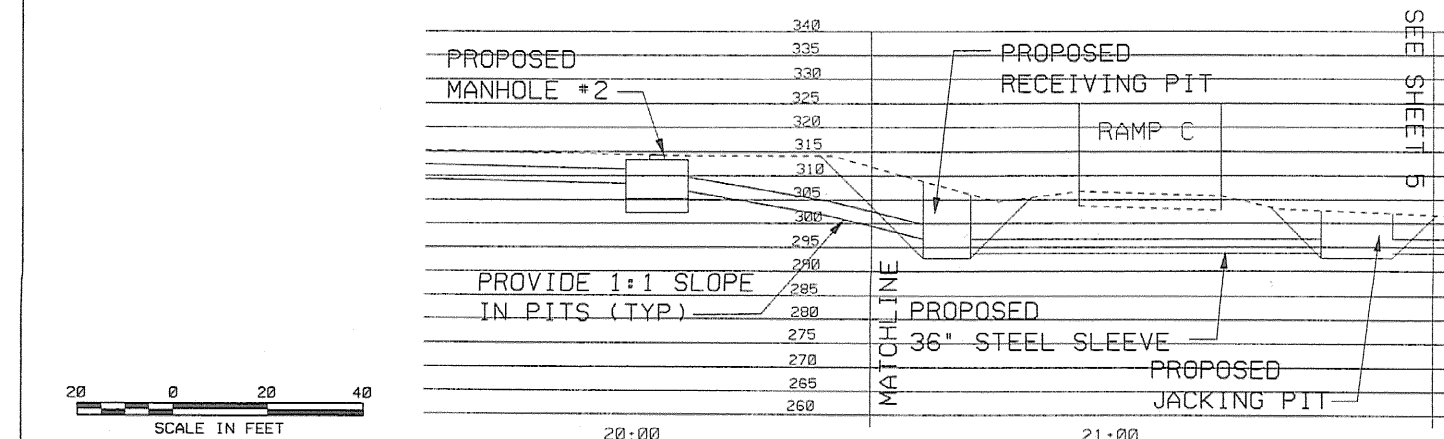
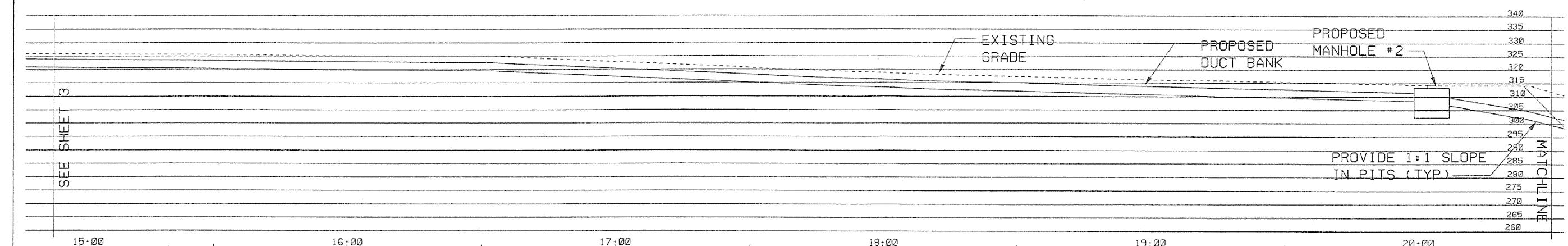
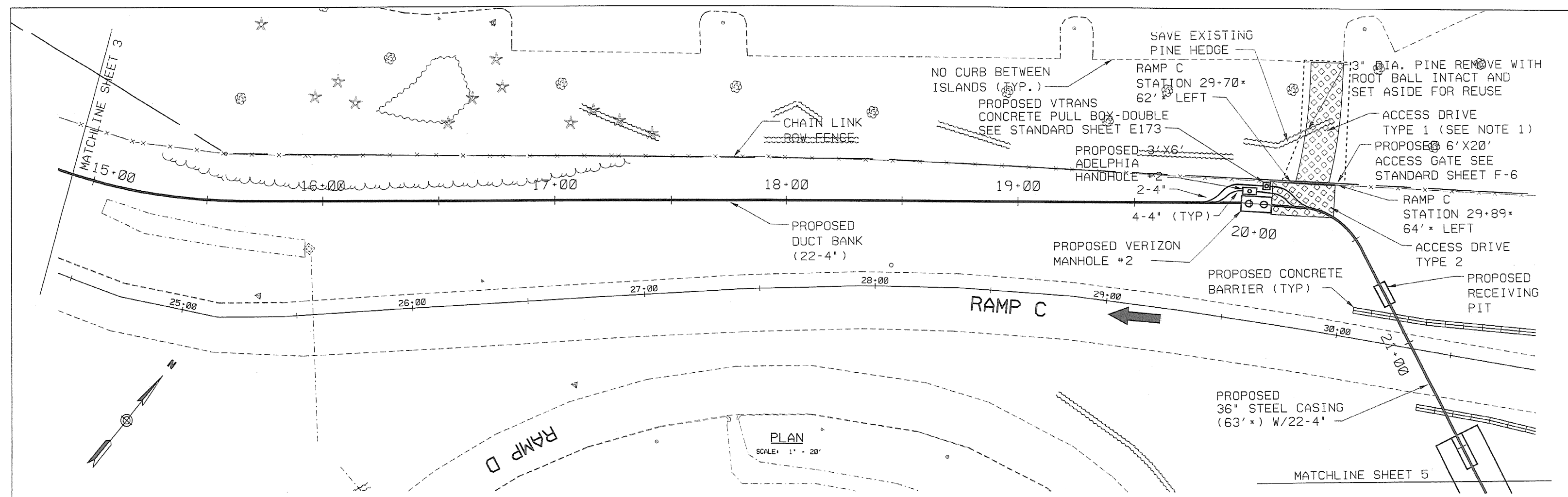
STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of SOUTH BURLINGTON Bridge No. 68
 Highway No. U.S. 2 Log. Sta. _____
 U.S. 2 OVER 1-89 Surv. Sta. _____

TELECOMMUNICATIONS RELOCATION

Designed By M. HAYES Drawn By M. HAYES
 Checked By _____ Date _____
 Bridge Design Supervisor S. JOHNSON Date _____

PROJECT SOUTH BURLINGTON PROJECT NO. _____
 I.G.C. Info. VTRANS-GEN Date 10/31/01
 ROW SHEET 4 OF 6 SHEETS



PROFILE
SCALE 1" = 20'

NOTES:
1. CONTRACTOR TO PERFORM NO WORK OUTSIDE OF ACCESS DRIVE, EXCEPT REMOVAL OF 3" DIAMETER PINE.

**STATE OF VERMONT
AGENCY OF TRANSPORTATION**

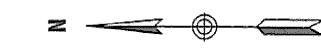
Town Of SOUTH BURLINGTON Bridge No. 68
Highway No. U.S. 2 Loc. 516 Burv. Sta.
U.S. 2 OVER I-89

TELECOMMUNICATIONS RELOCATION

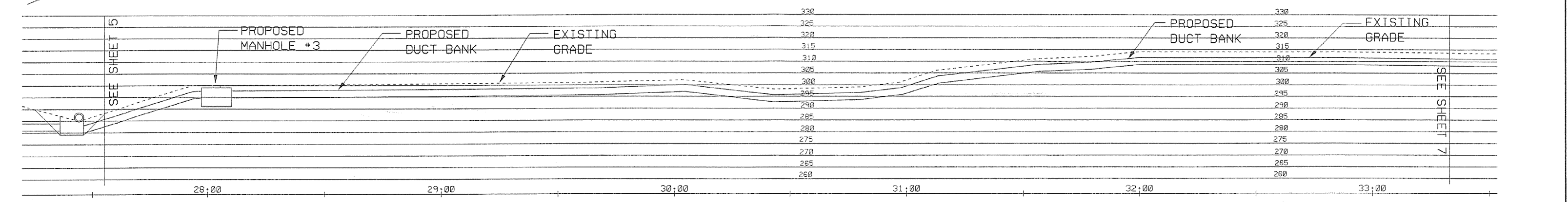
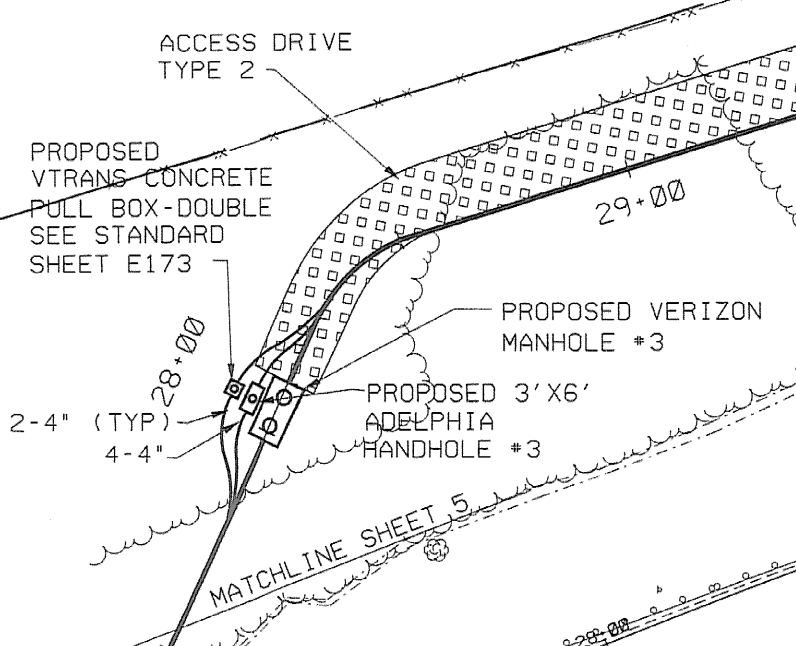
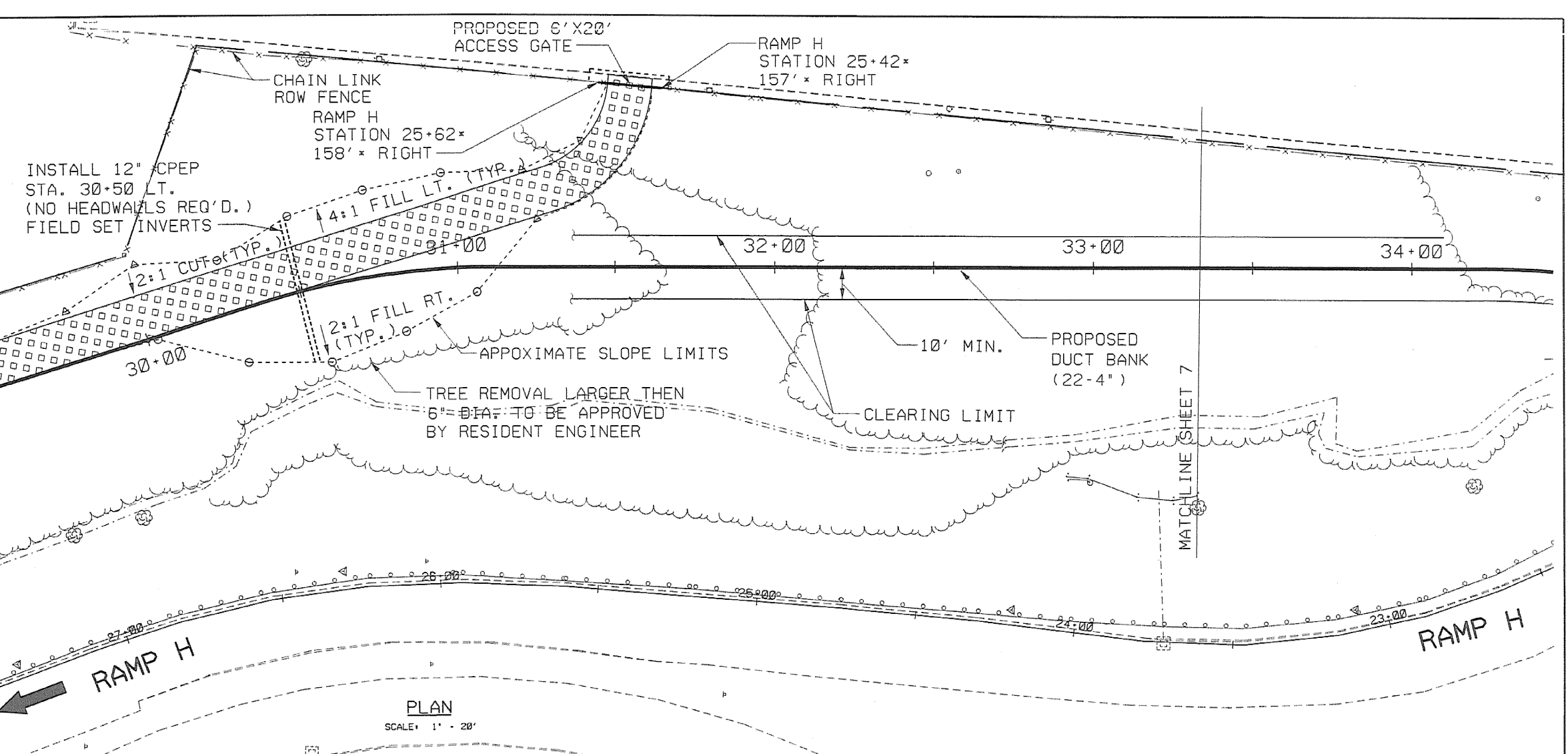
Designed By M. HAYES Drawn By M. HAYES
Checked By Date Bridge Design Supervisor
S. JOHNSON Date

PROJECT SOUTH BURLINGTON PROJECT NO. IM DECK 1361
L.C. Info. VTRANS-GEN Date 10/31/01
R.O.W. SHEET 5 OF 6 SHEETS

VANASSE HANGEN BRUSTLIN, INC.



THE FINAL CONFIGURATION OF THE ACCESS DRIVE SHALL BE LAID OUT IN THE FIELD AND SHALL GENERALLY FOLLOW THE EXISTING GROUND EXCEPT FILL SHALL BE ADDED TO PROVIDE A CONSTANT GRADE BETWEEN STATIONS 29+50 TO 31+50.



PROFILE
SCALE: 1" = 20'

**STATE OF VERMONT
AGENCY OF TRANSPORTATION**

Town 0*	SOUTH BURLINGTON	Bridge No. 68	
Highway No.	U.S. 2	Log Sta.	
		Surv. Sta.	
		U.S. 2 OVER 1-89	
TELECOMMUNICATIONS RELOCATION			
Designed By	M. HAYES	Drawn By	M. HAYES
Checked by		Bridge Design Supervisor	S. JOHNSON
PROJECT	SOUTH BURLINGTON	PROJECT NO.	1M DECK 1361
L.C. Info.	VTRANS-GEN	Date	10/31/01
	R.O.W. SHEET 6 OF 6 SHEETS		



PROJECT DEVELOPMENT DIVISION – Structures Section

TO: DISTRIBUTION LIST
FROM: Sherward G. Farnsworth, P.E., Project Manager *Sof*
DATE: October 1, 2001
SUBJECT: Semi-Final Plans - South Burlington IM DECK(36) I-89, Exit 14
Relocation of Verizon conduit's and future relocation of Adelphia's conduits from Williston Road bridge over I-89 >>>> Duct Bank Relocation <<<<

Final line and grade have been established for the relocation of Verizon conduits and future relocation of Adelphia's conduits from Williston Road Bridge over I-89.

Attached are Semi-Final Plans showing relocated duct bank relocations. Also attached is the scope of work, estimated quantities, and specifications for duct bank conduit, manholes, and sleeves under roadway.

Details that are missing from plans but will be added to final set are:

1. Stationing to Ramps C & H and main line to tie in ROW fence 12 foot openings and conduit crossings.
2. Optional trench details for 6 wide by 4 high conduits under road or grass areas so that a trench box is not needed to install conduits.
3. Vermont State plain grid coordinates for conduit locations.
4. Details for Adelphia and State of Vermont pull boxes.
5. Adding note giving the contractor the option of boring receiving pit in I-89 median and boring from NB side.
6. Adding stationing to conduit profile views, estimated final quantities, and minimum steel sleeve gauge.

DISTRIBUTION LIST:

- DTA Richard Hosking, District # 5. One set of plans is attached for your review and comment.
- Environmental Services Engineer, John Narowski. One set of plans is attached for your review and comment.
- Chief of Utilities & Permits, Al Wright – ATT. Pete Dye Two sets of plans are attached for your review and comment.
- Chief of Right-of-Way Section, Allen Blake - One set of plans is attached for your review and comment.
- Regional Construction Engineer, Alan Campo - One set of plans is attached for your review and comment.
- Resident Engineer, Bob Suckert - Two sets of plans are attached for your review and comment. Please share one with contractor.
- FHWA Bridge Engineer, Mike Canavan – One set of plans and estimate are attached for your review and comment.
- VERIZON – Gary Sundberg and Mary Groom – One set of plans for each of you are attached for your review and comment.
- ALDELPHIA Green Mt. System – Wayne Deslaurier – One set of plans are attached for your review and comment.

We are on a fast track to install these conduits this fall. Therefore we would like your review comments no later than Tuesday, Oct 9, 2001, noontime. These comments should be faxed to me at 802-828-3566 or email at Sherward.Farnsworth@state.vt.us. If you have any questions I can be reached at 802-828-3874. I will not be in on 10/8/01.

Attachment: VHB Plans, specs, and quantities
Cc JB McCarthy w/Est. & plans, Steve Johnson-VHB, Central files, Project file, Chrono

Vanasse Hangen Brustlin, Inc. IM DECK (36) South Burlington, VT
 VHB Project No.: 50929 US 2 over I-89 NB and SB
 Bridge 68 Rehabilitation

CONSTRUCTION QUANTITY ESTIMATE - DUCT BANK RELOCATION

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
201.11	CLEARING & GRUBBING	ACRE	1
220.10	SAWING BITUMINOUS CONCRETE PAVEMENT	LF	650
301.26	SUBBASE OF CRUSHED GRAVEL (FINE GRADED)	CY	115
406.25	BITUMINOUS CONCRETE PAVEMENT (PG64-28)	TON	55
541.21	CONCRETE VAULT (MOD. - TELEPHONE)	EA	3
541.21	CONCRETE VAULT (MOD. - CATV)	EA	4
616.40	REMOVING AND RESETTING CURB	LF	10
618.10	PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH	SY	6
620.16	GATE FOR CHAIN LINK FENCE, 6 FEET (MOD.)	LF	24
621.90	TEMPORARY TRAFFIC BARRIER	LF	1,600
624.20	DUCTS, CONCRETE ENCASED (MOD. - DUCT BANK)	LF	1,860
624.20	DUCTS, CONCRETE ENCASED (MOD. - DUCT BANK, ROADWAY)	LF	330
624.20	DUCTS, CONCRETE ENCASED (MOD. - DUCT BANK, THROUGH SLEEVE)	LF	370
625.10	SLEEVES FOR UTILITIES (MOD. - JACK AND BORE)	LF	370
630.10	UNIFORMED TRAFFIC OFFICER	HR	150
641.10	TRAFFIC CONTROL	LS	1
651.15	SEED	LB	6
651.30	SODDING	SY	130
651.35	TOPSOIL	CY	140
678.25	PULL BOX	EA	4

SCOPE OF WORK

The work under this Contract consists of the construction of approximately 2600 feet of 4" PVC Duct Bank in the City of South Burlington, Vermont. The work includes the installation of Manholes and Handholes along the proposed Duct Bank. The proposed route will be located within the Highway Right Of Way and the City Roadway Layout. Installation of a Steel Sleeve, by Auger Boring, will be required beneath the Interstate roadways.

All work done under this Contract shall be in conformance with the Vermont Agency of Transportation Standard Specifications for Construction, 1990 Edition, the Supplemental Specifications, Construction Standards, the 2000 Manual on Uniform Traffic Control, and the American Standards for Nursery Stock (ANSI-Z60.1-1990), as amended, the Plans, and these Special Provisions.

The General Conditions, Supplementary Conditions and Special Provisions shall take precedence over the General Requirements of Division 100 of the Standard Specifications.

WORK SCHEDULE

No work shall be done on Saturdays, Sundays or holidays or on the day before or the day after a long weekend which involves a holiday without prior approval by the Engineer.

Work on Williston Road with lane closure will be permitted from 7 PM to 6 AM. One lane closures for work on the Interstate will be permitted between 7 PM and 6 AM, in accordance with the traffic control procedures.

PROVISIONS FOR TRAVEL AND PROSECUTION OF THE WORK
(Supplementing Subsection 104.04)

Before starting any work under this Contract, the Contractor shall prepare, and submit to the Engineer for approval, a plan (based on the Contract traffic management plans) that indicates the traffic routing proposed by the Contractor during the various stages and time periods of the work and the temporary barricades, signs, drums and other traffic control devices to be employed during each stage and time period of the work to maintain traffic and access to abutting properties.

Particular care shall be taken to establish and maintain methods and procedures that will not create unnecessary or unusual hazards to public safety. Traffic control devices required only during working hour operations shall be removed at the end of each working day.

Signs having messages that are irrelevant to normal traffic conditions shall be removed or properly covered at the end of each work period. Signs shall be kept clean at all times and legends shall be distinctive and unmarred.

PUBLIC SAFETY AND CONVENIENCE (Supplementing Subsection 107.07)

The Contractor shall provide necessary access for fire apparatus and other emergency vehicles through the work zones to abutting properties at all times.

At the end of each working day where trenches in areas of public travel are covered with steel plates, each edge of the plates shall be either beveled or protected by a bituminous concrete ramp at a slope of 2 feet horizontally to 1 inch vertically. Any temporary patching material may be used to construct the ramps. The cost of necessary patching materials, and their maintenance and removal, will be considered incidental to the item involved with no separate payment.

10F2
10-1-2001

Sweeping and cleaning of surfaces beyond the limits of the project required to clean up material caused by spillage or vehicular tracking during the various phases of the work shall be considered as incidental to the work being performed under the Contract and there will be no additional compensation.

PROTECTION OF UTILITIES AND PROPERTY (Supplementing Subsection 107.13)

The Contractor, in constructing or installing facilities alongside or near sanitary sewers, storm drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls, vaults or other structures shall sustain them securely in place, cooperating with the officers and agents of the various utility companies and municipal departments which control them, so that the services of these structures shall be maintained. The Contractor shall also be responsible for the repair or replacement of any damage to such structures caused by construction, and shall leave them in the same condition as they existed prior to commencement of the work. In case of damage to utilities, the Contractor shall promptly notify the utility owner and shall, if requested by the Engineer, furnish labor and equipment to work temporarily under the utility owner's direction in providing access to the utility. Pipes or other structures damaged by the operation of the Contractor may be repaired by the Department or by the utility owner which suffers the loss. The cost of such repairs shall be paid by the Contractor, without compensation therefor.

If, as the work progresses, it is found that any of the utility structures are so placed as to render it impracticable, in the judgment of the Engineer, to do the work called for under this Contract, the Contractor shall protect and maintain the services in such utilities and structures and the Engineer will, as soon thereafter as reasonable, cause the position of the utilities to be changed or take such other actions deemed suitable and proper.

If live service connections are to be interrupted by excavations of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall be plugged off or otherwise made secure.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work involved in protecting or repairing property as specified in this section, shall be considered included in the prices paid for the various Contract items of work and no additional compensation will be allowed therefore.

202
10-1-2001

SECTION 541- PRECAST CONCRETE MANHOLES AND HANDHOLES

SECTION 541- PRECAST CONCRETE MANHOLES AND HANDHOLES, is hereby made a new section of the specifications, superceding all previous editions and their modifications.

541.01. DESCRIPTION. This work shall consist of manufacturing, transporting, and placing precast concrete utility manholes and handholes as specified in the contract. The type, size, details and locations of the vaults shall be as shown on the plan or established by the Engineer.

541.02. MATERIALS. Materials shall meet the requirements of the following subsections of Division 700- Materials:

Portland Cement	701.02
Air-Entraining Portland Cement	701.03
High Early Strength Portland Cement	701.04
Fine Aggregate for Concrete	704.01
Coarse Aggregate for Concrete	704.02
Mortar, Type IV	707.03
Bar Reinforcement	713.01
Air-Entraining Admixtures	725.02(b)
Retarding Admixtures	725.02(c)
Water Reducing Admixtures	725.02(f)
Water Reducing and Retarding Admixtures	725.02(g)
Water	745.01

Unless otherwise specified in the contract all bar reinforcements shall conform to the requirements of AASHTO M31-94 Grade 60, and all mesh shall conform to AASHTO M55M/M55-94.

Concrete shall meet the requirements of Concrete Class A, Section 501.

Concrete for precast utility vaults shall have a compressive strength at 28 days, as determined in accordance with AASHTO T22, of not less than 5000 psi. Where a 28 day test results as defined herein or in the contract is below specified strength, all concrete represented by that test shall be unacceptable for the requirements of this specification, and the Engineer reserves the right to reject all members containing that substrength concrete. The cement factor in mix design shall be not less than 611 lb. per cubic yard of concrete. The percent of air entrainment shall be 6.0 with a tolerance of plus or minus one percent and the slump shall be between one and three inches.

The proposed concrete mix design, including performance history and all requests for variance from the material requirements of these specifications, shall be submitted for approval in accordance with these specifications. Six weeks may be required for testing and approval of the mix design.

To check the Fabricator's mix design, test specimens of concrete may be required to be made from the aggregate, cement and admixtures which he/she proposes to use. The Fabricator shall furnish, at their own expense, whatever quantities of these materials may be required for the tests.

Any admixture containing calcium chloride shall not be used. Type II or Type III Portland Cement may be used. Only one type of cement and only one source of that type shall be used for anyone structure.

VERTICAL MANHOLES. Utility Manholes shall be precast units meeting the requirements for H-20 wheel loads, 30% impact and soil pressure of 130 lbs/ft³. The vaults shall be fabricated to the sizes detailed on the plans.

1 of 0
10-1-2001

They shall be designed for tongue-and-groove placement between upper and lower sections with a mastic sealant between sections (Rotondo Model #998-547-509, or equal). Other references that apply to the utility holes but not limited to the following: ASTM A153, A48, A123, ACI301, 318, 347 and CRSI. The complete utility manhole shall include a 36" diameter cast iron reversible frames and covers (Neenah 5900-J or equal). The top of the cover shall have a logo in stand-up letters to read "TELEPHONE"

The Contractor shall install the frame to accommodate the distance from the top of manhole to the finish surface, including throats and extensions. The precast throats shall be 36" inside diameter opening to match utility hole with 8" thick wall. Wherever utility holes are located in streets, the throat shall be concrete from the top of the utility hole up to 10" below finish grade. Adjustments for finish grade from the top of the concrete to cover ring shall be accomplished with mortared brick. A sealant shall be applied to all joint locations (throat-utility hole, throat-brick, brick-covering). Elsewhere the throat from the top of utility hole to the ring shall be concrete with a sealant provided between the throat, ring and top of utility hole. The concrete throat shall be installed so that the cover ring is flush with the finish surface. The actual height of the throat shall be determined on location prior to construction of forms. Further, each vault shall have one (1), 12" diameter sump hole directly under a 36" diameter hole in the roof. The floor of the utility hole shall slope towards the sump hole at the rate of 1/8" per 1' -0".

All vaults shall be equipped with 1-1/4" galvanized shank pulling eyes with 2" eye and 4" square washer on each side of the walls each wall opposite conduit penetrations. The pulling eye shall be suitable for a minimum 15,200 lbs @ 180 degree pull, and 3800 lbs @ 90 degree pull. Also, the vaults shall be manufactured with conduit penetration knockouts, (Condux Formex Duct Terminators or equal) and waterproof duct plugs for all ducts. A break membrane shall be on all terminators connected to ducts.

CATV HANDHOLES. Utility Handholes shall be precast units meeting the requirements for H-20 wheel loads, 30% impact and soil pressure of 130 lbs/ft³. The Handholes shall be heavy duty adjust to grade type composite concrete box with collar and cover 3'x6'x4' deep (CDR Systems Corporation, Menlo Park, California - CDR Model or equal)

The complete utility hole shall include a 36" diameter cast iron reversible frame and cover (Neenah 5900-J or equal). The top of the cover shall have a logo in stand-up letters to read "CATV"

The Contractor shall install the frame to accommodate the distance from the top of manhole to the finish surface, including throats and extensions. The handhole shall be equipped with 1-1/4" galvanized shank pulling eyes with 2" eye and 4" square washer on each side of the walls.

541.03. DESIGN AND DRAWINGS. The Fabricator shall submit concrete mix design, design calculations, and working drawings in accordance with subsection 105.03. The precast concrete utility manholes and handholes shall be designed for 0' to 5' of earth cover, high water table at finish grade, and H-20 wheel loads in accordance with the current AASHTO Standard Specifications for Highway Bridges and shall be designed to protect against buoyancy.

541.04. QUALITY CONTROL. The Fabricator shall demonstrate a level of quality control testing that satisfies the Agency as to his/her ability and commitment to produce concrete to the requirements of this specification. A satisfactory program of quality control shall include gradation and moisture determinations of the aggregates, as well as slump, air content, and strength determinations of the concrete. These tests shall be performed at regular and suitable

intervals and actively used to maintain the quality of the concrete within the specified requirements.

541.05. INSPECTION. Materials furnished and the work performed under this Section shall be inspected by the Agency or their approved representative. The Engineer shall have the authority to reject any material or work which does not meet the requirements of these specifications. Advance notification of at least three weeks must be provided by the Fabricator to the Agency concerning his/her intention to commence work.

541.06. CONCRETE TESTING.

General. Precast manholes and handholes shall be manufactured in a plant which maintains a quality control laboratory complete with equipment for measuring the properties of fresh and hardened concrete. As a minimum, the laboratory shall be equipped with a compression testing machine, curing room or chamber, apparatus for measuring slump and air entrainment, and a complete sets of aggregate sieves and sieve shakers. The compression testing machine shall be calibrated yearly by an independent laboratory using equipment which is certified by the National Bureau of Standards.

Testing of Compressive Strength. Specimens shall be six inch by twelve inch standard cylinders, made by the Fabricator in accordance with AASHTO T23. Fabrication of test specimens shall conform to AASHTO M205 and shall be supplied by the Fabricator. For each member the Fabricator shall make for the Agency the following minimum number of specimens:

Four specimens to determine compliance with the 28-day strength requirement. The specimens shall be cured under the same conditions as the member from the time of casting until member is removed from the form. At that time, the specimens shall be moved to storage where curing shall continue under standard conditions in accordance with AASHTO T23. These specimens shall be retained by the Fabricator for testing by the Agency.

The average of the compressive strength of each of two specimens shall constitute a test result. Specimens shall be tested either at the Materials and Research Division Central Laboratory, or at the manufacturer's plant laboratory. An Agency representative shall witness all tests.

541.07. CURING. The precast vaults shall be cured for sufficient length of time so that the concrete will develop 5000psi strength in 28 days or less. Any one of the following methods of curing or combinations thereof may be used;

Steam Curing. The vaults may be low pressure, steam-cured by a system that will maintain a moist atmosphere.

Water Curing. The vaults may be water-cured by any method that will keep the sections moist.

Membrane Curing. A sealing membrane conforming to the requirements of AASHTO M48 may be applied and shall be left intact until the required concrete compressive strength is attained. The concrete temperature at the time of application shall be within 10°F of the atmospheric temperature. All surfaces shall be kept moist prior to the application of the compounds and shall be damp when the compound is applied.

541.08. HANDLING AND INSTALLATION. Care shall be taken during storage, hoisting, and handling of the precast units to prevent cracking or damage. No units shall be shipped until a

compressive strength of 5000psi has been attained. Units damaged by improper storing or handling shall be replaced by the Contractor at his/her expense.

Vaults shall be placed on approved level foundations as detailed on the plans or these specifications. The Contractor shall install the frame and cover. The conduit shall be brought into the vault as shown on the plans and as directed by the Engineer with concurrence of the utility company inspector.

Excavation for vaults shall be to the required depth and shall include 6" beneath the floor, and twelve (12) inches beyond the perimeter of the floor, for a level, compacted base of material specified on the plans.

All excavation shall be confined to as little surface area as possible, keeping within all applicable safety requirements.

All frame and covers shall be constructed to final grade unless otherwise directed by the Engineer.

At manhole and handhole locations, conduits shall maintain a minimum separation of at least 3 inches of clearance from the outside surfaces of the vault walls, floor or roof and power or other foreign conduits. A minimum of 12 inches of clearance shall separate gas, water, oil mains, etc. from the outside surfaces of vault walls, floor or roof.

541.09. METHODS OF MEASUREMENT. The quantity to be measured for payment will be the number of the type and size of precast concrete utility vaults specified, complete and accepted in place.

541.10. BASIS OF PAYMENT. Precast concrete utility vaults will be paid for at the contract unit price each for the type specified, which price shall be full compensation for detailing, fabricating, quality control testing, furnishing, transporting, handling and installing the material specified, including the concrete, reinforcement, manhole necks, manhole frames and covers, and any other material contained within, or attached to the unit(s), and the furnishing of all labor, tools, equipment, and incidentals necessary to complete the installation of the work specified including but not limited to, excavation and backfill.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
541.21	Concrete Vault (Mod. - Telephone)	Each
541.21	Concrete Vault (Mod. - CATV)	Each

SECTION 620 - FENCES

620.10 BASIS OF PAYMENT is hereby modified by deleting paragraph three and replacing it with the following:

Payment at the unit price for installation of new gates in existing fence lines shall include removal of existing fencing, and posts, adding new posts, brace rods, truss rods, gate frames, fabric ties, and all incidentals and appurtenances necessary to complete the work as detailed in the plans and standards.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
620.16	Gate for Chain - Link Fence, 6 Feet (Mod.)	Linear Foot

5 OF 10

SECTION 624 – UNDERGROUND UTILITY SYSTEMS

SECTION 624 – UNDERGROUND UTILITY SYSTEMS, is hereby made a new section of the specifications, superceding all previous editions and their modifications.

624.01. DESCRIPTION This work shall consist of the construction of cable telephone underground conduit systems, an underground television conduit system and a VTans underground conduit system. This work shall also include conduit termination in this specification.

All work described above shall be in accordance with these specifications and in conformity with the lines, grades, dimensions, locations and details shown on the plans or established by the Engineer. The terms "Duct" and "Conduit" are used interchangeably in this specification.

Verizon shall provide a full time inspector when necessary during excavation, installation and backfill operation. Prior to backfilling trenches the Contractor shall notify the Engineer and Verizon (tel. 802-263-0702). Inspections will be scheduled for the construction of the new conduit system location and depth. All work must be accepted by Verizon and the engineer. Non-complying construction will be brought into compliance as directed at the expense of the Contractor. It is the responsibility of the installer to notify the Engineer and Verizon prior to backfilling. If notice is not given, Verizon (through approval of the Engineer) shall have the right to require any or all work to be exposed for visual inspection at the expense of the Contract.

624.02. MATERIALS:

CATV Conduit: (size noted on the plans)
PVC Schedule 40 Heavy Wall Rigid Conduit, conforming to subsection 710.06 of Division 700 - Materials, and to NEMA Standard TC-2.

Verizon Conduit: (size noted on the plans)
PVC Schedule 40 Heavy Wall Rigid Conduit, conforming to subsection 710.06 of Division 700 - Materials, and to NEMA Standard TC-2.

Vermont Agency of Transportation Conduit: (size noted on the plans)
PVC Schedule 40 Heavy Wall Rigid Conduit, conforming to subsection 710.06 of Division 700 - Materials, and to NEMA Standard TC-2.

Conduit Spacers: Interlocking high-density polyethylene module spacers for direct burial including base pad, base spacer, intermediate modules and module cap as required. Spacer systems to be used as noted on the plans. Other systems may be used subject to approval by the Engineer.

Controlled Density Fill - Excavatable: The Contractor shall be responsible for producing a mix design meeting the requirements of this section. Controlled density fill is to be batched at a ready mix plant and is to be used at a slump of approximately 10 to 12 inches. It shall be flowable, require no vibration and after it has been placed can be excavated by hand tools and/or small machines. Compressive strength at 28 days shall be a minimum of 30 psi and a maximum of 80 psi; compressive strength at 90 days shall be less than 200 psi. Materials shall meet the requirements of the following Sections of Division 700 - Materials.

Portland Cement	701.02
Portland-Pozzolan Cement	701.05
Fine Aggregate for Concrete	704.01
Air-Entraining Admixtures	725.02(b)
Water	745.01

6 of 10

The mix design shall be submitted for approval and shall be accompanied by compression test data at 90 days for at least five cylinders cast with the proposed mix design. Cylinders shall be prepared in accordance with ASTM D 4832. At the Engineer's discretion, evidence of successful past performance for a proposed mix design may be accepted in lieu of compression tests.

624.03. GENERAL. Verizon representative shall inform the Engineer of any improper construction techniques and/or inferior materials observed during their inspections. The engineer shall have the authority to reject any material or work which does not meet the requirements of these specifications. The Contractor shall request the services of DIG SAFE and where needed UVM "DIG SAFE" for the purposes of utility location.

The conduit system shall be constructed in a continuous manner, from cable vault to cable vault, rather than in segments.

624.04. EXCAVATION. The conduit trench shall be excavated to the required depth and to a width sufficient to install the conduit. Method of installation shall be in accordance with conduit manufacturer's specifications and recommendations.

Where an existing utility is found to conflict with the proposed work, the location, elevation and size of the utility shall be accurately determined without delay by the Contractor and the information shall be furnished, in writing, to the Engineer for resolution of the conflict. Excavation for handholes shall be to the required depth and shall include 6-inch depth beneath the bottom for a level compacted sand base.

All excavation shall be confined to as little surface area as possible, keeping within all applicable safety requirements.

624.05. INSTALLATION OF CONDUIT. Conduit shall not be placed until the trench has been approved by the Engineer. Also, prior to backfilling conduits, the Contractor shall contact (through the Engineer) Verizon for inspection and approval.

The conduits shall be placed in accordance with the configuration(s) shown on the plans, with spacers placed as indicated. Joints for conduit shall be made with the type of joint cement supplied and recommended by the conduit manufacturer.

Where conduit is stubbed, caps shall be provided. After backfilling, the end of the stub shall be prominently marked.

No preformed bends are required. No heat source or additional tools shall be used. The CATV conduit shall be installed with minimum bends in such a manner as to insure that during the coaxial cable installation no cable is subjected to pulling tensions greater than the following maximums:

For .500" cable 200 lbs.
For .750" cable 420 lbs.

Verizon conduit bends shall be as noted on the plans.

Random conduits shall be mandreled, at the direction of the Engineer, with a 4-inch diameter solid mandrel.

Mandrel the four corners plus one conduit in each intermediate tier of the conduit structure.

Conduit spacers, as approved, must be used to insure 1-inch separation between conduits. Spacers to be placed at 6-foot intervals or as recommended by the conduit manufacturer, and not more than 2 feet from manhole walls.

70F/10

Rubber type conduit plugs or PVC plastic caps, as approved by the engineer, shall be placed in all conduits which are terminated in vaults, closures, etc.

The Contractor shall furnish and install a nylon pull cord, which is rated at 500 lbs. Minimum tension, in all conduits. The pull cords shall be installed and the completed ducts shall be capped and plugged as directed by the Engineer with concurrence of the utility company inspector. The installed conduit shall be inspected and approved by the Engineer before backfilling.

The Contractor shall install plastic warning tape, describing buried lines and cables, along entire length of duct bank. The warning tape shall be placed 12" above the top of conduit.

Plastic duct joints shall be made watertight by the use of a brush applied comment as recommended by the manufacturer.

Duct bends required for passing duct under existing line of duct banks shall be made up by the use of 22 degree or 30 degree elbows. Field bends shall be avoided whenever possible.

Ducts entering manhole or vault walls shall terminate with bell ends grouted into manhole or vault wall. Entry into existing manholes shall be accomplished by use of core drill.

Ducts entering existing manhole shall be grouted in place with minimum 2500 psi concrete. All existing cables and equipment in a manhole shall be protected from possible damage. All work in existing manholes shall be coordinated and approved by Verizon.

Prior to pouring controlled density fill (CDF), the duct shall be securely anchored to prevent movement during the pour. Anchors shall be within 2 ft and on each side of a joint, at each end of a bend, and at a maximum distance of 10 ft between anchors.

The Contractor shall confirm, before placing duct lines, that the surface on which CDF is to be poured is undisturbed original ground or firmly compacted earth free from voids, rock or rubble.

Where a new entry for conduit must be made into the wall of an existing vault, the Contractor shall core drill or otherwise remove the concrete to provide a neat opening of the size shown on the plans. Conduit entry shall be done as provided in the previous paragraph. Conduit shall be grouted in place. No entry into existing vaults shall be allowed without the presence or permission of the utility company inspector.

All frame and covers shall be constructed to final grade unless otherwise directed by the Engineer.

624.06. BACKFILL. All Duct Banks shall be backfilled with CDF to the elevations shown on the plans. After the CDF has cured for a minimum of 24 hours and has obtained sufficient strength to support the weight of foot traffic without deformation for earthen backfill or vehicle traffic for paving operations, approved material shall be placed over the encased ducts. The material shall be brought to subgrade beneath roadway, grass belt, sidewalk, bike path, and any other paved or gravel areas. For grassed areas the material shall be brought to within three inches of the finished grade, a three inch layer of topsoil placed and the area seeded and mulched in accordance with the applicable requirements of Section 651. Paved, concrete or gravel areas shall be replaced in kind as directed by the Engineer.

Controlled Density Fill shall be pumped into the sleeved duct bank to fill the spaces between the ducts and sleeve.

624.07. ADJACENT UTILITIES. In excavating for conduits, the Contractor shall be attentive to the adjacent utilities with respect to type of materials, size, age, condition, type of construction, couplings and joints and pressure within. These factors shall determine the allowable separation. Damage to other utilities shall be repaired by the Contractor at his expense.

0 of 0

When crossing foreign structures, the conduit shall be located either above or below the foreign structure depending on grade. The minimum separation between utility conduit systems and other conduit systems or foreign pipes such as water, gas mains, etc., shall be at least 6 inches of clearance when crossing and 12 inches when paralleling.

At vault and other locations, conduit shall maintain a minimum separation of at least 3 inches of clearance from the outside surfaces of the vault walls, floor or roof and power or other foreign conduits.

When crossing water laterals to hydrants, if lateral valve is located between the main and hydrant, the conduit shall be located so as to provide a minimum of 12 inches clearance from the valve.

When a condition is encountered other than above, such as the requirement for rerouting or relocation of another utility, bypasses, etc., the Engineer shall be notified immediately of consultation and agreement with both utility companies involved.

624.08. METHOD OF MEASUREMENT. The quantity of Ducts Concrete Encased-Duct Bank, Ducts Concrete Encased-Duct Bank Roadway, and Ducts Concrete Encased-Duct Bank Through Sleeve will be paid for at the contract unit price per linear foot. Measurement for Duct Banks will be made along the centerline of the main duct bank from the face of Verizon Manhole #116B to the face of Verizon Manhole #119A. No deduction shall be made for the length through intermediate manholes and no additional measurement shall be made for the two and four duct runs to handholes off the centerline of the main duct bank.

624.09. BASIS OF PAYMENT. The accepted quantities of each type duct bank will be paid at the contract unit price per unit for the item specified in the contract, which price shall be full compensation for furnishing, transporting, handling and installing the conduit material (including conduit, conduit spacers, transition couplings, elbows and other fittings, caps, plugs, pulling wire, marking tape, and all other material needed for a complete direct burial duct system), controlled density fill, and concrete grout, including but not limited to excavation and backfill, loading and transporting to the job site all materials required, disposal of unused materials off-site, making new entries into existing vaults and the furnishing of labor, tools, equipment and incidentals necessary to complete the work. Any additional depth of excavation required to construct conduit under other utilities, and the cost thereof, shall be included.

Backfill above the level of the controlled density fill will be paid at the unit prices of the following items as applicable: Topsoil, Subbase of Crushed Gravel (Fine Graded), Bituminous Concrete Pavement (PG 64-28), and Portland Cement Concrete Sidewalk, 5 inch.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
624.20	Ducts, Concrete Encased (Mod. - Duct Bank)	Linear Foot
624.20	Ducts, Concrete Encased (Mod. - Duct Bank, Roadway)	Linear Foot
624.20	Ducts, Concrete Encased (Mod. - Duct Bank, Through Sleeve)	Linear Foot

9 of 10

SECTION 625 - SLEEVES FOR UTILITIES

625.03. INSTALLATION, is hereby modified by deleting paragraph one and two and replacing them with the following:

Sleeves shall be installed by boring or drilling, jetting or jacking without boring will not be permitted. Before any work has begun within the limits of operation, the CONTRACTOR shall have assembled all tools, materials, and equipment which will be required. When the CONTRACTOR has started the boring and jacking operations, he will proceed in a continuous operation without stopping.

During boring and jacking, the pavement shall not be disturbed. sleeve pipe shall be positively joined in accordance with standard procedures.

After the sleeve has been installed, the boring operation trenches or pits shall be backfilled in layers not exceeding 8" compacted depth, with each layer thoroughly compacted. Any surplus material shall be disposed off-site.

Submittals: The Contractor shall submit a detailed work plan to the Engineer for approval a minimum of 2 weeks prior to commencing construction. The work plan shall describe the proposed means and methods including; equipment design, equipment dimensions, methods of operation, methods of dealing with obstructions, proposed materials, equipment layout, procedures and manpower schedule for use in the pipe casing installation.

625.05. BASIS OF PAYMENT, is hereby modified by deleting paragraph two and three and replacing them with the following:

Excavation and backfill of trenches and boring or jacking pits for the placement of sleeves shall not be paid separately, but shall be included in the unit price for this item.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
625.10	Sleeves for Utilities (Mod. - Jack and Bore)	Linear Foot

ADDITIONAL SPEC TO FOLLOW TO RESIDENT ENGINEER/CONTRACTOR @ DTA.
SGP
10/1/2001

VERSION SPECIS

**B PLASTIC POLYVINYL CHLORIDE (PVC)
AND B POLYPROPYLENE CONDUIT
CONCRETE ENCASED
MAIN CONDUIT**

CONTENTS	PAGE	
1. GENERAL	1	1.04 The B plastic conduit (thin wall) is made of virgin PVC with expanded bell on one end. It is fully compatible with B or C polypropylene conduit.
2. PRECAUTIONS	2	
3. HANDLING	2	1.05 The B polypropylene conduit (rust colored) has an expanded bell on one end to fit the barrel of the mating conduit. The polypropylene conduit is fully compatible with B or C plastic conduit.
4. TRENCHING	3	
5. LAYING CONDUIT	5	1.06 Section 622-100-010 outlines the various permits that may be required before start of construction.
6. ENCASING	10	
7. BACKFILLING	12	1.07 When laying conduit, labor-saving equipment such as excavators, concrete cutting machines, etc. should be utilized to reduce trench opening time, minimize physical effort, and provide overall economy.
8. MANDRELING	12	
9. PLUGGING DUCTS	13	
1. GENERAL		1.08 To ascertain that conduit has been properly laid, the conduit work should be inspected throughout the construction period by a thoroughly trained inspector who is completely familiar with job and construction specifications. The inspector should confirm that the conduit run is in the correct location, proper conduit depth is maintained, the trench bottom is level, no cracked or broken duct sections are used, all joints are properly made, horizontal and vertical alignment is maintained, the conduit is properly encased in concrete, selected backfill is used, and all specifications are met. In the event that underground obstructions or special field conditions require minor deviations from work plans, the inspector should note such changes with appropriate measurements on his copy of the work print for future posting to permanent records.
1.01 This section covers the methods of laying concrete encased 4-inch diameter B plastic and B polypropylene conduit encased.		
1.02 This section is being reissued to add reference to the B polypropylene conduit. Since this issue is a general revision, no revision arrows have been used to denote significant changes.		
1.03 The B plastic PVC and B polypropylene conduit are 4-inch (id), single-bore conduit intended for use in single- or multiple-duct construction with concrete encasement. They can be used in structures such as bridges, viaducts, etc. where they can be cast in the concrete of the structure.		1.09 To facilitate subsequent cable placing operations, particular care should be taken concern-

**Reprinted to comply with modified final judgement.

SECTION 622-340-200

ing direction changes and the construction of joints. Curves, sweeps, and grade changes should be detailed on the work print. The ideal conduit structure is one that is essentially straight and level between manholes but allows grading for drainage into manholes. Direction changes should be as gradual as possible.

1.10 The types and uses of plastic conduit, couplings, and bends are covered in Section 622-020-100.

2. PRECAUTIONS

2.01 Both the cement used to join plastic PVC conduit and the adhesive used to join polypropylene conduit contains materials that are toxic and highly flammable. Concentrated vapors can be harmful and explosive. The following precautions must be observed when using or storing each of these materials.

- (a) Do not use near heat, sparks, or flames.
- (b) Use with adequate ventilation. Forced ventilation shall always be used to ventilate manholes whenever anyone is working in the manhole. See Section 620-140-501.
- (c) Standard manhole testing procedures shall be used for testing the manhole atmosphere.
- (d) Avoid breathing vapors and prolonged contact of these materials with the skin. After use, wash hands thoroughly. Do not take internally. In case of contact with eyes, flush immediately with water and get medical attention.
- (e) Do not leave the cement containers where they can be exposed to contact by the public.
- (f) When not in use, close containers tightly.
- (g) Dispose of used containers as outlined in local practices. Do not pour the contents of these containers into manholes, manhole excavations, or conduit excavations. Do not discard these containers in incinerators, refuse piles, etc.
- (h) A natural bristle brush must be used to apply the cement. Synthetic bristles will dissolve in these materials.

2.02 The requirements for shoring excavations as specified in Section 622-020-020 shall be observed.

2.03 Safety headgear and eye protection should be worn at all times when trenching and when handling or laying conduit.

2.04 Where blasting is necessary, it shall be done only by a licensed contractor.

2.05 At the excavation site, particularly near natural gas areas, landfills, and similar areas, the excavation should be tested for gas by following the procedures for testing manholes, as covered in Section 620-140-501.

2.06 The applicable precautions covered in Sections 620-102-010 and 622-100-010 shall be considered a part of this section and shall be observed.

3. HANDLING

3.01 If practical, distribute the conduit along the route of the trench, as shown in Fig. 1. Where conduit cannot be distributed along the trench, route delivery and storage procedures should be determined locally.

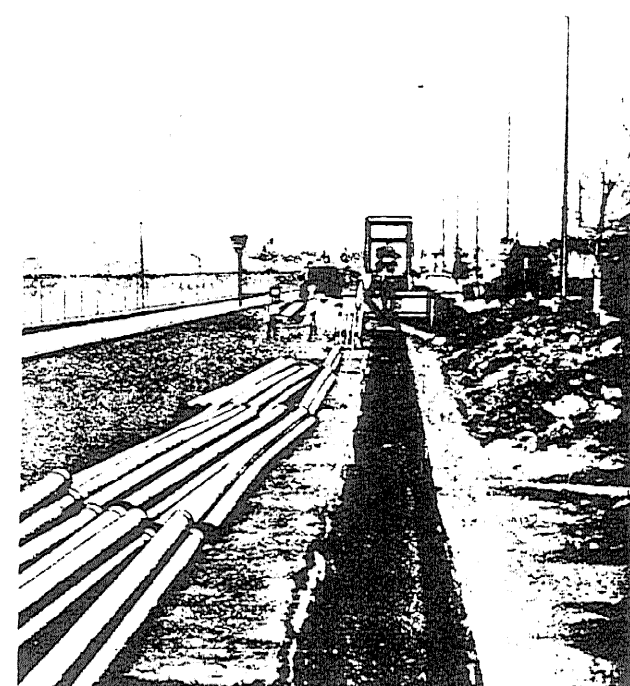


Fig. 1 — Conduit Along Trench Site

3.02 Do not let banded or single units of conduit drop in a free fall.

3.03 When moving or carrying conduit, be careful not to strike the ends against a hard surface. Damage to the ends can cause defective joints.

3.04 Both PVC and polypropylene have a tendency to assume the shape of whatever they are resting on, particularly when the storage area is warm. Store both types of conduit in accordance with the following:

(a) Conduit should be stored in the shipping pallet. Individual pallets should be stacked frame on top of frame to transfer the weight of the conduit to the pallet frame.

(b) When stacking loose conduit, place the conduit in a tightly packed orderly arrangement with all pieces oriented in the same direction.

(1) *Outside:* Place on a smooth surface of soil or sand.

(2) *Inside:* Place on a smooth level floor.

(c) Do not stack higher than 5 feet.

(d) Do not place wood strips under stacks of conduit.

(e) Conduit to be stored for more than 30 days should be protected from direct sunlight.

(f) If possible, store conduit in a cool location.

4. TRENCHING

4.01 In most cases, the trench sidewalls will act as a form for the concrete encasement of the conduit. The trench width should be no wider than is necessary to provide a minimum of 1-1/2 inches of concrete along each side of the duct structure. An excess width of even a few inches can greatly increase the amount of concrete required to complete the encasement.

4.02 Pavement should be carefully cut mechanically to prevent unnecessary widths at the top of the trench and thus reduce the amount of surface that must be repaved.

4.03 The total width of the trench will depend upon the number of ducts placed plus horizontal separation between ducts. The total depth of the trench will depend upon the number of ducts, vertical separation (if required) between ducts, and the depth of cover (Section 919-240-100).

4.04 Table A indicates the trench width, concrete depth, and volume of concrete required for various duct formations where there is no vertical separation and 1-inch horizontal separation between ducts. Figure 2 illustrates a nine-duct formation of this type in a straight conduit section.

TABLE A
8 PLASTIC PVC AND 8
POLYPROPYLENE CONDUIT
NO VERTICAL SEPARATION
TRENCH DIMENSIONS

DUCT FORMATION		TRENCH WIDTH	CONCRETE DEPTH	APPROX CU
NO.	NO.	(NOTE 1)	(NOTE 2)	YDS CONCRETE PER 100 TRENCH FEET
WIDE	HIGH	(INCHES)	(INCHES)	
3	2	18-1/2	12-1/2	3-1/2
3	3	18-1/2	17	4-1/2
3	4	18-1/2	21-1/2	5-1/2
4	2	23-1/2	12-1/2	4-1/2
4	3	23-1/2	17	6
4	4	23-1/2	21-1/2	7

Note 1: Includes 1-1/2 inches from each side of duct formation to trench wall and 1 inch between ducts.

Note 2: Includes 1-1/2 inches below bottom tier and 2 inches above top tier.

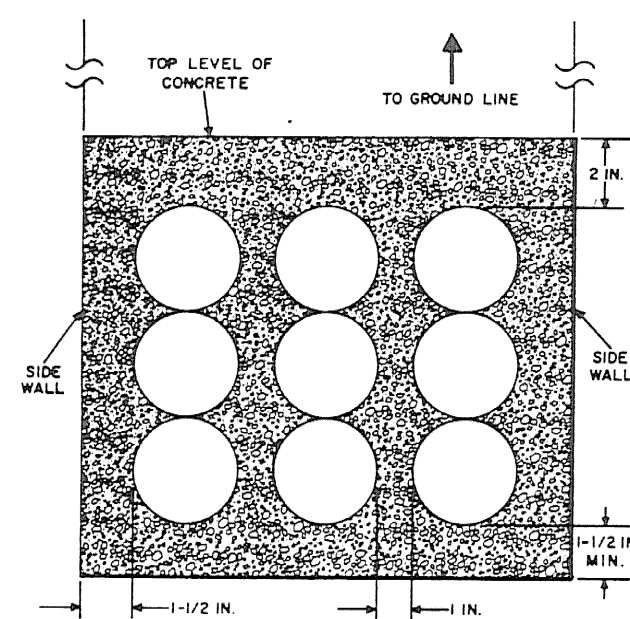


Fig. 2—Trench Dimensions—No Vertical Separation

For formations not listed in Table A, the approximate cubic yards of concrete required per 100 trench feet can be obtained with the following formula:

$$\text{Formula: } V = [9.2WH + 9H + 18.7W + 7]0.026$$

V = volume of concrete (cubic yards/100 trench feet)

W = number of ducts wide

H = number of ducts high

Example: Duct formation 5 wide by 10 high

$$[(9.2 \times 5 \times 10) + (9 \times 10) + (18.7 \times 5) + 7]0.026$$

$$[460 + 90 + 93.5 + 7]0.026$$

$$[650.5 \times 0.026] = 16.9 \text{ cubic yards.}$$

4.05 Table B indicates the trench width, concrete depth, and volume of concrete required for various duct formations where there is 1-inch vertical and horizontal separation between ducts. Figure 3 illustrates a nine-duct formation of this type in a straight conduit section or at curves and grade changes.

TABLE B
8 PLASTIC PVC AND 8
POLYPROPYLENE CONDUIT
1-INCH VERTICAL SEPARATION
TRENCH DIMENSIONS

DUCT FORMATION		TRENCH WIDTH	CONCRETE DEPTH	APPROX CU
NO. WIDE	NO. HIGH	(NOTE 1) (INCHES)	(NOTE 2) (INCHES)	YDS CONCRETE PER 100 TRENCH FEET
3	2	18-1/2	12-1/2	4
3	3	18-1/2	15	5
3	4	18-1/2	24-1/2	6-1/2
4	2	23-1/2	12-1/2	5
4	3	23-1/2	15	6-1/2
4	4	23-1/2	24-1/2	8-1/2

Note 1: Includes 1-1/2 inches from each side of duct formation to trench wall and 1 inch between ducts.

Note 2: Includes 1-1/2 inches below bottom tier, 2 inches above top tier, and 1 inch between top ducts.

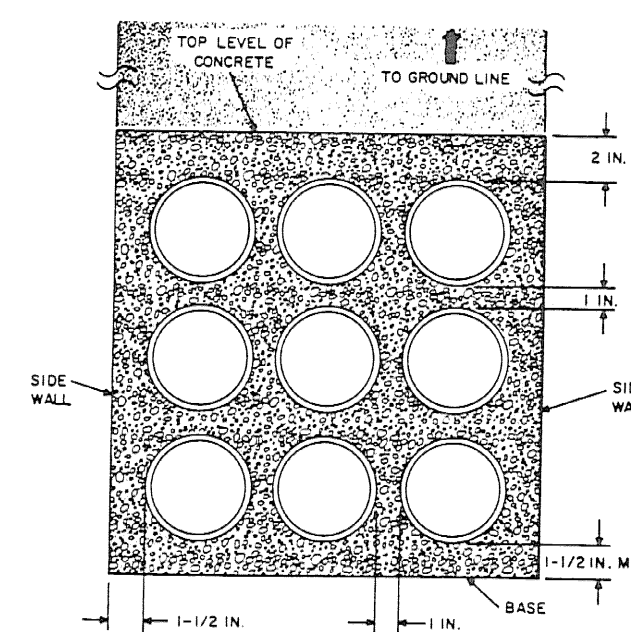


Fig. 3—Trench Dimensions—1-Inch Vertical and Horizontal Separation



For formations not listed in Table B, the approximate cubic yards of concrete required per 100 trench feet can be obtained with the following formula:

$$\text{Formula: } V = [13.8WH + 10.7H + 13.4W + 4]0.026$$

V = volume of concrete (cubic yards/100 trench feet)

W = number of ducts wide

H = number of ducts high

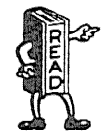
Example: Duct formation 5 wide by 10 high

$$[(13.8 \times 5 \times 10) + (10.7 \times 10) + (13.4 \times 5) + 4]0.026$$

$$[690 + 107 + 67 + 4]0.026$$

$$[868 \times 0.026] = 22.6 \text{ cubic yards.}$$

5. LAYING CONDUIT



At the trench site, examine each conduit length and remove all mud and other debris such as lath, paper, stones, etc, from the ducts before placing them in the trench.

5.01 Place and join the duct sections in the trench. Lengths shorter than 5 feet should not be used at manholes or the cable entrance facility. Do not run polypropylene conduit into buildings.



Use only cement suitable for the kind of duct material being used; cement containers for use with ABS are marked for use with ABS; similarly marked are the containers to

be used with PVC. Use only the adhesive supplied with B polypropylene conduit on polypropylene conduit. Solvent cement which is shipped with ABS and PVC conduit must not be used with polypropylene conduit.

5.02 Join the conduit as follows (Fig. 4):

(1) Wipe any mud or dirt from the end of the duct and from the inside of the coupling or bell.

(2) Apply cement to the **spigot end** of the duct with a natural bristle brush up to the insertion depth line.

(3) Polypropylene conduit has been designed with an interference fit bell and spigot joint. If the spigot does not seat in the bell to the insertion line drive the conduit home using a mallet and a wooden block as a buffer.

Note: If PVC cement seizes before the spigot end is fully seated, use a handsaw to cut out the defective joint. If polypropylene adhesive dries on the spigot end before the joint is made, recoat the spigot end and insert into bell to complete joint.

5.03 The PVC cement and polypropylene adhesive should each have about the same consistency; as oil base house paint. If it becomes too thick, discard and open a new can. When using polypropylene conduit and if immediate joint strength is required (eg. at field bends and manhole terminators), apply a thin coating of adhesive to the inside of the mating bell (or terminator). Allow a minimum of 5 minutes for adhesive to dry before completing the joint following Steps (2) and (3) of paragraph 5.02.

SECTION 622-340-200

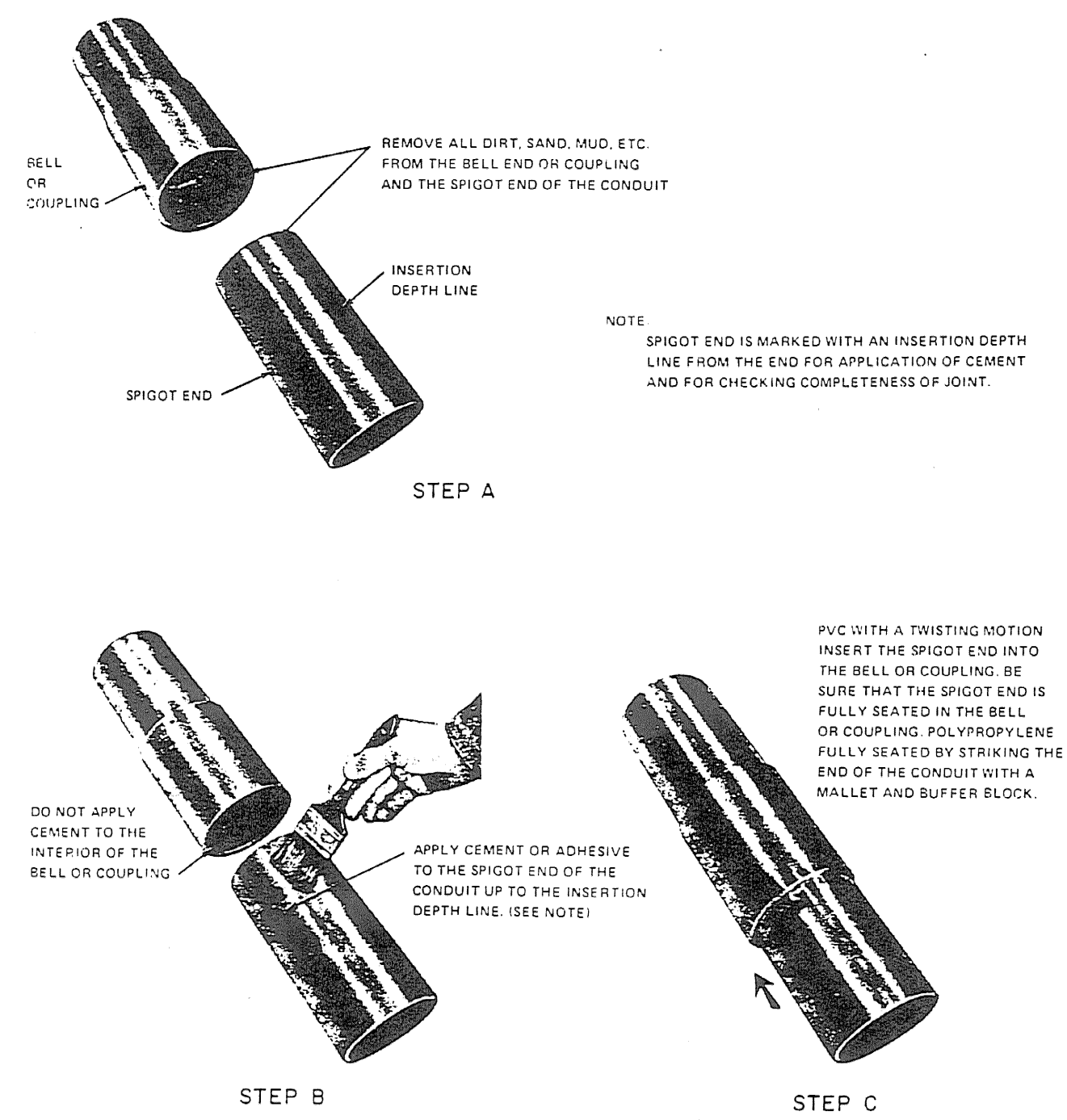


Fig. 4—Joining Conduit

SECTION 622-340-200

5.05 In straight sections up to and including three tiers high, stack the ducts one upon the other with no vertical separation. A minimum separation of 1 inch between vertical columns is obtained by use of temporary fork-type separators (Fig. 6). A monolithic (single pour) concrete encasement may be made with this duct formation.

(1) Place a wood or plastic strip approximately every 4 feet along the trench bottom so as to provide a minimum of 1-1/2 inches of clearance between the first tier of ducts and the trench bottom.

(2) Build up the duct structure in full formation; i.e., when each tier of full lengths is laid 20 to 60 feet in the trench, place the second tier, and then the third tier. As the ducts are laid, do not follow deviations in trench alignment to maintain side clearance. Lay the duct as straight as possible, even though it may reduce side clearance for short distances. This is important to ensure against excessive pulling loads when placing cable.

(3) To provide the required horizontal separation between vertical columns of ducts, and from the trench sidewalls during construction, place locally fabricated separators. These should be on not more than 8-foot centers (Fig. 6).

5.06 In straight sections over three tiers high, either of two arrangements can be used, depending on the concrete encasing procedure:

(a) A monolithic (single pour) concrete encasement can be made in duct formations up to and including ten tiers high, provided that a minimum horizontal and vertical separation of 1 inch is obtained between adjacent ducts. These separations can be obtained by using permanent, commercially available plastic spacers. A minimum of 1-1/2 inches clearance is required between the first tier of ducts and the trench bottom.

(1) The base spacers should be placed along the trench bottom at intervals of not more than 8 feet. Set the first tier of ducts into the spacer grooves. Then place a tier of intermediate spacers, then the second tier of ducts, etc., and finally the spacer over the top tier, making cer-

tain that each tier of spacers is securely locked to the next lower tier. If the formation will exceed ten tiers, place approximately one-half the total number of tiers but not more than ten so that the concrete can be poured in successive stages.

(2) Where the formation will be wider than the maximum width of spacer available, slightly offset groups of four unit spacers in the same tier.

(b) The ducts can be stacked one upon the other up to four tiers high, with a minimum clearance of 1 inch between vertical columns obtained by the use of temporary fork-type separators. Place a wood or plastic strip approximately every 4 feet along the trench bottom so as to provide a minimum of 1-1/2 inches of clearance between the first tier of ducts and the trench bottom. The concrete is then poured to encase to the top of the third tier; then up to three additional tiers can be added. Where the duct structure is wider than the maximum width of spacer available, slightly offset groups of four unit spacers in the same tier. Always provide a cap spacer tier over the top tier of conduit to help prevent duct flotation.

5.07 At Bends, Sweeps, or Grade Changes: At bends having radii of 80 feet or less, or at grade changes of 20 percent (11.3 degrees) or more, permanent spacers are required to provide a minimum horizontal and vertical separation of 1 inch between adjacent ducts and a minimum clearance of 1-1/2 inches between the first tier of ducts and the trench bottom. The spacers should be located on not more than 8-foot centers and should be held in place with reinforcing rods driven 6 to 12 inches into the ground. A monolithic (single pour) concrete encasement can be made, provided the formation does not exceed ten tiers high. If the formation will exceed ten tiers, place approximately one-half the total number of tiers, but not more than ten, so the concrete can be poured in successive stages.

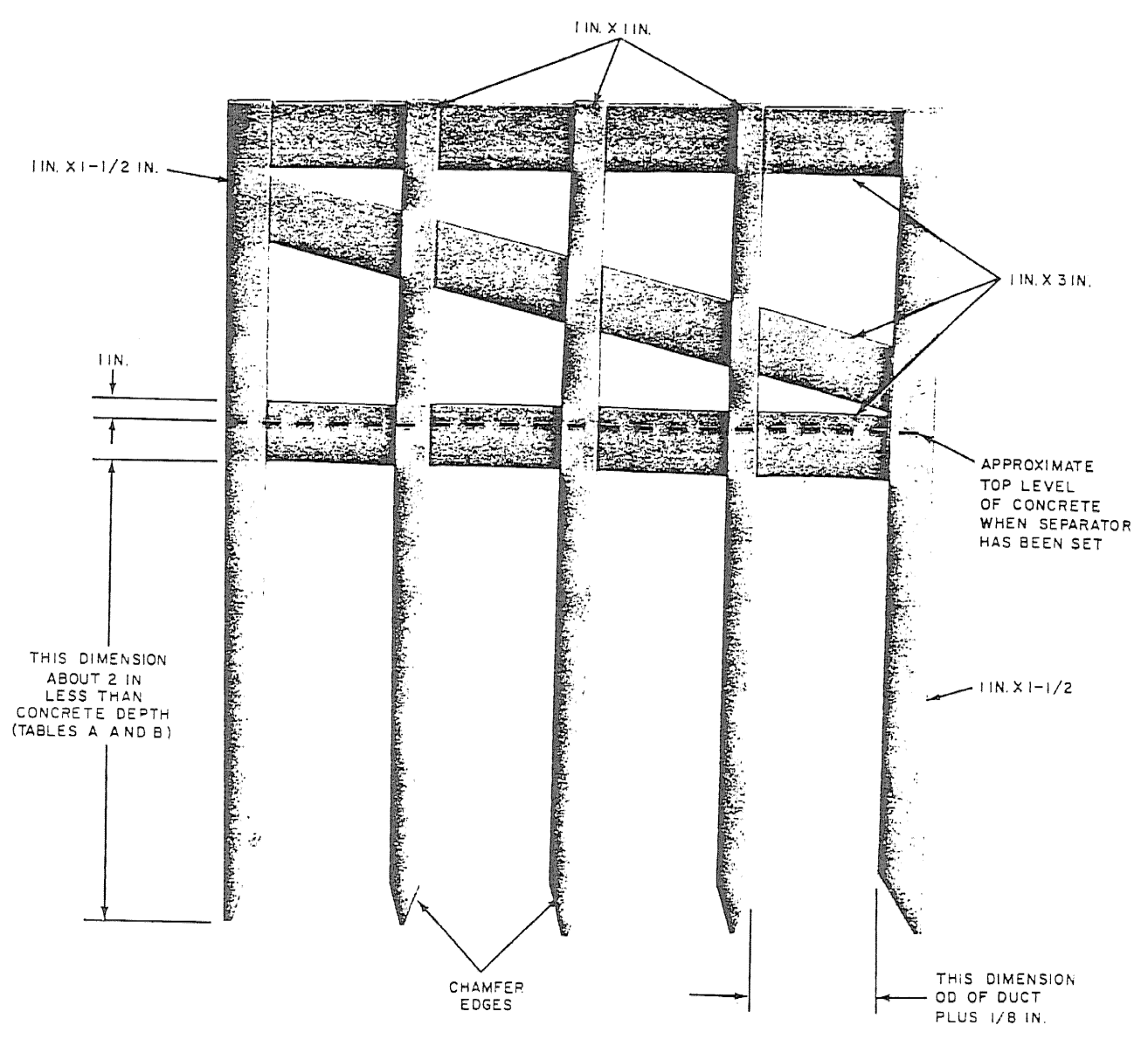


Fig. 6—Fork-Type Separator

5.08 Straight lengths of conduit can be used to construct horizontal or vertical bends or sweeps with a radius of 40 feet or more. Duct joints for the entire bend section should be made outside the trench at least 2 hours before placing to help ensure an effective joint. An example of a partially completed bend constructed with straight lengths of conduit is shown in Fig. 7.

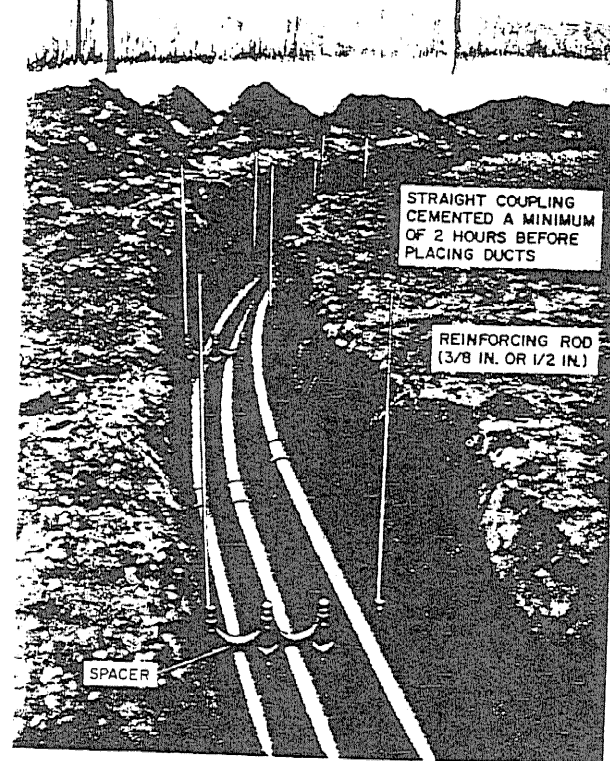


Fig. 7—Partially Completed Bend

When constructing bends with the bend segments, assemble the components on a flat surface alongside the trench to be sure the completed bend lies in a single plane.

5.09 The preformed 7-degree and 30-degree, 15-foot radius bend segments should be used to construct bends where a direction change with a radius of less than 40 feet is needed. The bend segments may be used singly or in combination to achieve the required direction change.

5.10 For mainline conduit, never use less than a 15-foot radius bend.

5.11 When it is necessary to stop construction in a section, 4-inch universal plugs can be used to temporarily seal the ducts against mud, dirt, etc (Fig. 8). Such plugs also can be used to advantage during manhole construction to keep duct entrances at manholes free of debris.

6. ENCASING

6.01 The concrete used to encase conduit is described in Section 622-020-020. It has a nominal compression strength of 2500 pounds per square inch. The slump should be 9 inches. It is important to use concrete of this type in order to permit adequate distribution and ensure proper support of the conduit. When the mix is too dry, flow to the bottom and between the layers of the duct formation will be difficult. When it is too wet, the ducts will float.

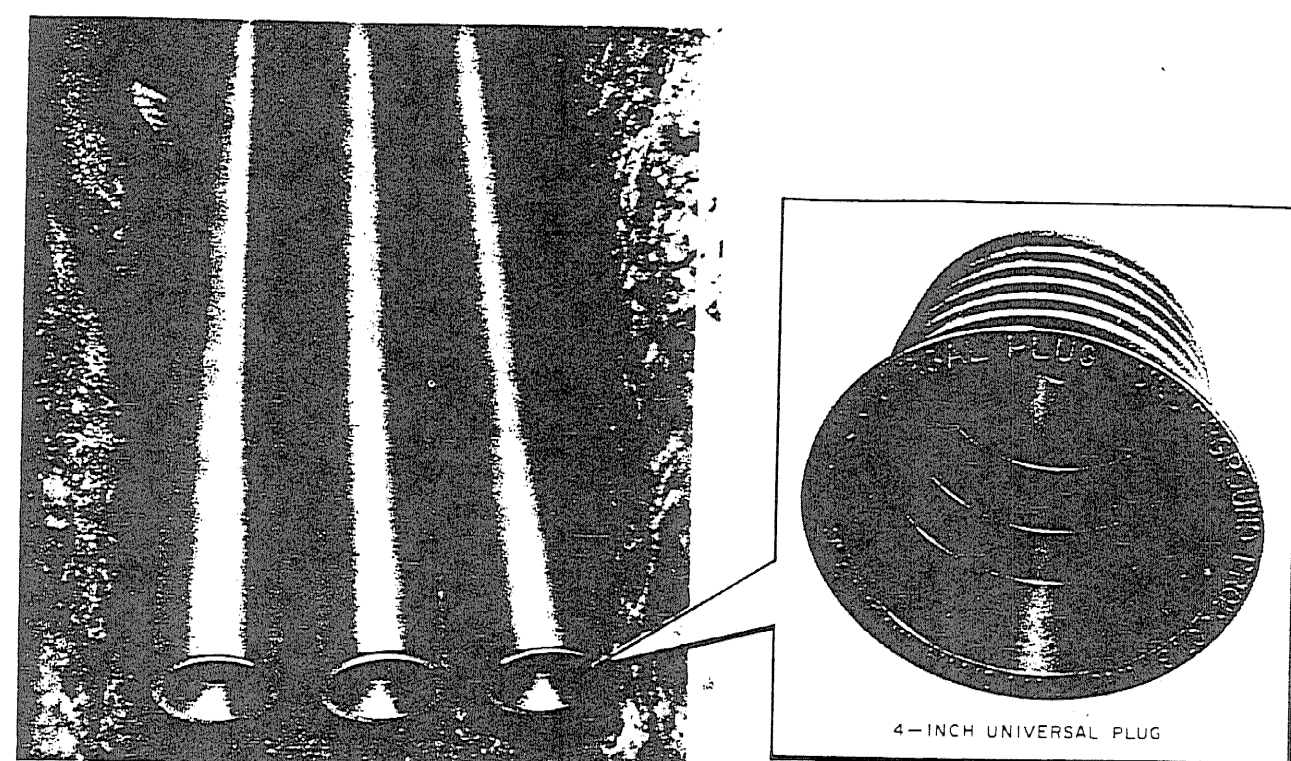


Fig. 8—Ducts Temporarily Plugged

6.02 When pouring concrete, adjust the delivery chute so the fall of concrete into the trench is as short as practicable. Use a splash board to divert the flow of concrete away from the trench sides to avoid dislodging soil and stones.

6.03 Encasement can begin as soon as enough of the duct structure has been completed so that pouring the concrete will not interfere with placing the conduit. Encase the conduit structure by pouring the concrete toward the free ends of the ducts. As the concrete is poured, use slicing bars or other similar tools to work the concrete down the sides of the formation and between ducts. It should be possible to see the concrete flowing along the bed of the trench just ahead of the point where it falls from the chute. This will assure the required minimum of 1-1/2 inches of concrete between the first tier of ducts and the bottom of the trench.

6.04 If separators are used, leave the separators in place until the concreting has been completed for at least 10 feet beyond the separator. When removing the separator, rock it slightly from side to side to ensure a good flow of concrete. Fill any remaining voids. Weights or ties should not be necessary to keep the ducts from floating if the separators are constructed so the lower crosspieces bear on the top duct. The lower crosspiece of the separator can be used as an approximate measure for the 2-inch cover required over the ducts.

6.05 To ensure complete encasement, use the methods described in the following paragraphs.

Formations With No Vertical Separation (Stacked With Separation Between Vertical Columns)

(a) **Three Ducts High:** Pour the concrete in a single pour to provide a 2-inch top cover. Work concrete down the sides of the formation and between the vertical columns.

SECTION 622-340-200

(b) **Four or More Ducts High:** Stack ducts four tiers high. Pour the concrete to encase to the top of the third tier. Raise the separators and add up to three additional tiers. Pour concrete to encase three tiers. Continue adding tiers until structure is complete, encasing three tiers at a time. On final pour, provide a 2-inch top cover.

Formations With Vertical and Horizontal Separation Between Ducts

(a) **Ten or Fewer Ducts High:** Where there is vertical and horizontal separation of 1 inch or more between the ducts and the duct structure is ten or fewer ducts high, a monolithic (single pour) encasement can be made. Work the concrete sufficiently to be assured of a good flow of concrete around the individual ducts. Pour sufficient concrete to provide a 2-inch top cover.

(b) **Eleven or More Ducts High:** Where there is vertical and horizontal separation of 1 inch or more between the ducts and the duct structure is more than ten ducts high, place half the total number of tiers and pour concrete to the bottom of the top tier. Place the remaining tiers and pour sufficient concrete to provide a 2-inch top cover. If the duct structure is more than 20 tiers high, place any number of tiers that is convenient but does not exceed ten. Encase to the bottom of the top tier. Place and encase successive portions of the duct structure. In all cases, work the concrete sufficiently to be assured of a good flow of concrete around the individual ducts.

7. BACKFILLING

7.01 Before backfilling, allow the concrete to cure for 1 to 2 hours. Because of the limited stiffness of the plastic conduit, it is important to allow sufficient time for the encasing concrete to develop some strength before backfill is placed. If the 1- to 2-hour waiting period will cause problems in some sections of the conduit run because of traffic, place temporary load-bearing plates over the trench or use C plastic conduit so backfill can be placed as soon as the concrete has been poured. Protect the concrete from weather—from drying too rapidly as well as from freezing (Section 622-020-020).

7.02 The first 12 inches of fill should be sand or other granular material. This fill should be thoroughly tamped using lightweight equipment, such as pneumatic or vibrating tampers. Complete the backfill with selected materials free of large stones, frozen material, etc.

8. MANDETLING

8.01 After backfilling, but before any required repaving begins, pull a D conduit mandrel (Fig. 9) through selected ducts. The mandrel will pass a curve of 15-foot radius. The conduit structure should be mandreled as follows:

(a) **Ten Ducts or Less:** Mandrel two diametrically opposite ducts.

(b) **Eleven Through Twenty Ducts:** Mandrel the four corners and a center duct.

(c) **Twenty-one or More Ducts:** Mandrel the four corner ducts plus one duct in each intermediate tier.

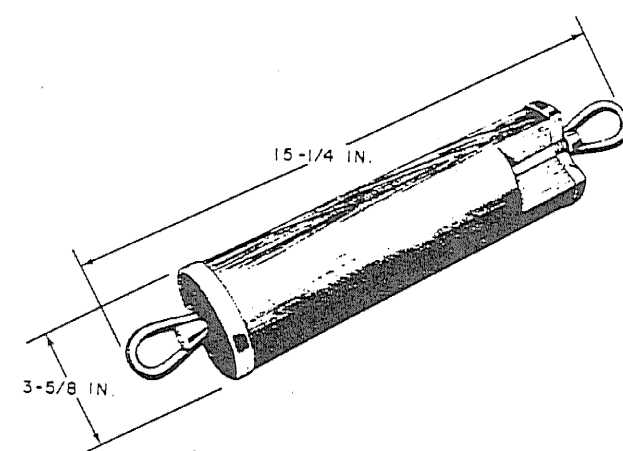


Fig. 9—D Conduit Mandrel

ISS 4, SECTION 622-340-200

8.02 If the mandrel fails to pass through the duct being tested, either the duct is obstructed or misaligned, or the curve has too small a radius. The conduit must be exposed and the defect corrected. Encase the duct with concrete, backfill, and repeat the mandrel test in that unit of conduit.

9. PLUGGING DUCTS

9.01 At the completion of a manhole section, ducts are to be sealed, where required, in accordance with Section 628-220-200. Where duct sealing is not mandatory, it may be desirable, at local option, to

close each duct entrance with a 4-inch universal plug to keep the duct clean.

9.02 If ducts are dead-ended short of a terminating point with the intention of extending the run at a later date, they are to be sealed with solid rubber conduit plugs.

9.03 At the close of each work day, install temporary plugs, such as 4-inch universal plugs, in the ducts to keep out foreign materials.

AS-BUILT/RECORDED DRAWINGS

STANDARD SHEETS

E-111 03-11-97
 E-115 06-06-95
 E-113 06-06-95
 F6 06-01-84

FINAL CONTRACT
 PLANS 10/31/01

QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	FINAL
201.11	CLEARING & GRUBBING (INCLUDING INDIVIDUAL TREES AND STUMPS)	ASFE	1	
203.15	COMMON EXCAVATION	CY	260	
307.25	SUBBASE OF CRUSHED GRAVEL (FINE GRADED)	CY	330	
406.25	BITUMINOUS CONCRETE PAVEMENT (PS4-28)	TON	60	
541.21	CONCRETE VAULT (MOD-TELEPHONE)	EA	3	
541.21	CONCRETE VAULT (MOD-CATV)	EA	4	
601.0415	18" WOOD PIPE (2'-0" DIA. x 1/2')	LF	48	
616.40	REMOVING AND RESETTING CURB	LF	10	
618.10	PORTLAND CEMENT CONCRETE SIDEWALK 3" THICK	SY	8	
620.16	GATE FOR CHAIN LINK FENCE, 8 FEET (MOD.)	LF	40	
621.57	ENERGY ABSORPTION ATTENUATOR	EA	2	
621.60	TEMPORARY TRAFFIC BARRIER	LF	843	
624.20	BUCKS, CONCRETE ENCASED (MOD-DUCT BANK-18 TO 22)	LF	1,860	
624.20	BUCKS, CONCRETE ENCASED (MOD-DUCT BANK, ROADWAY-18 TO 22)	LF	330	
624.20	BUCKS, CONCRETE ENCASED (MOD-DUCT BANK, THROUGH SLEEVES-18 TO 22)	LF	375	
630.10	UNIFORMED TRAFFIC OFFICER	HR	150	
635.10	MOBILIZATION - MOD 1	LS	1	
641.10	TRAFFIC CONTROL - MOD 2	LS	1	
643.00	JACKING OR BORING WELDED STEEL PIPE (36")	LF	370	
651.15	SEED	LB	10	
651.18	FERTILIZER	LB	70	
651.20	AGRICULTURAL LIMESTONE	TON	0.3	
651.30	SODDING	SY	90	
651.35	TOPSOIL	CY	78	
676.27	PULL BOX-DOUBLE	EA	4	

STATE OF VERMONT
 AGENCY OF TRANSPORTATION

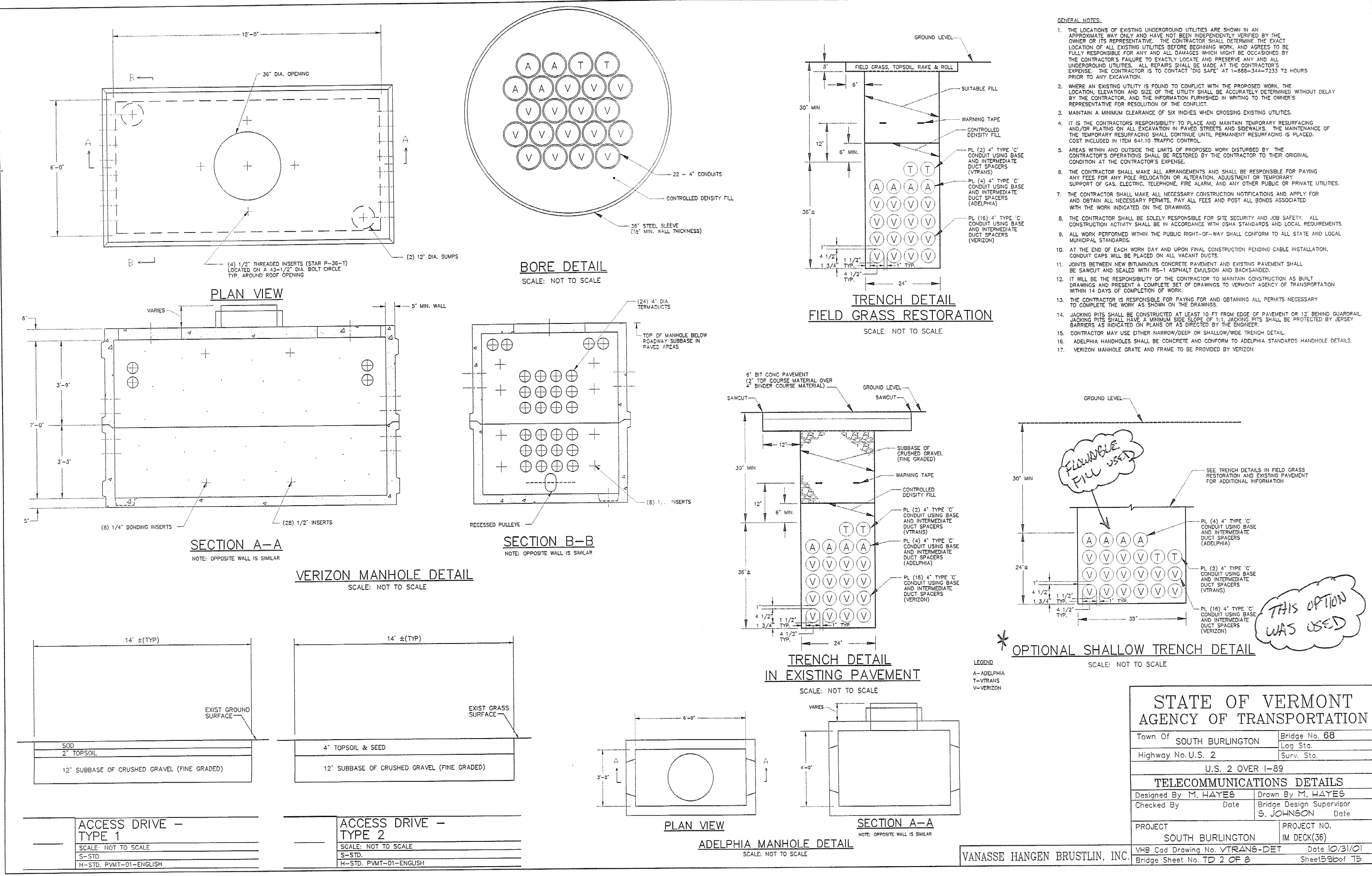
Town Of SOUTH BURLINGTON Bridge No. 68
 Highway No. U.S. 2 Span 51a
 U.S. 2 OVER I-89

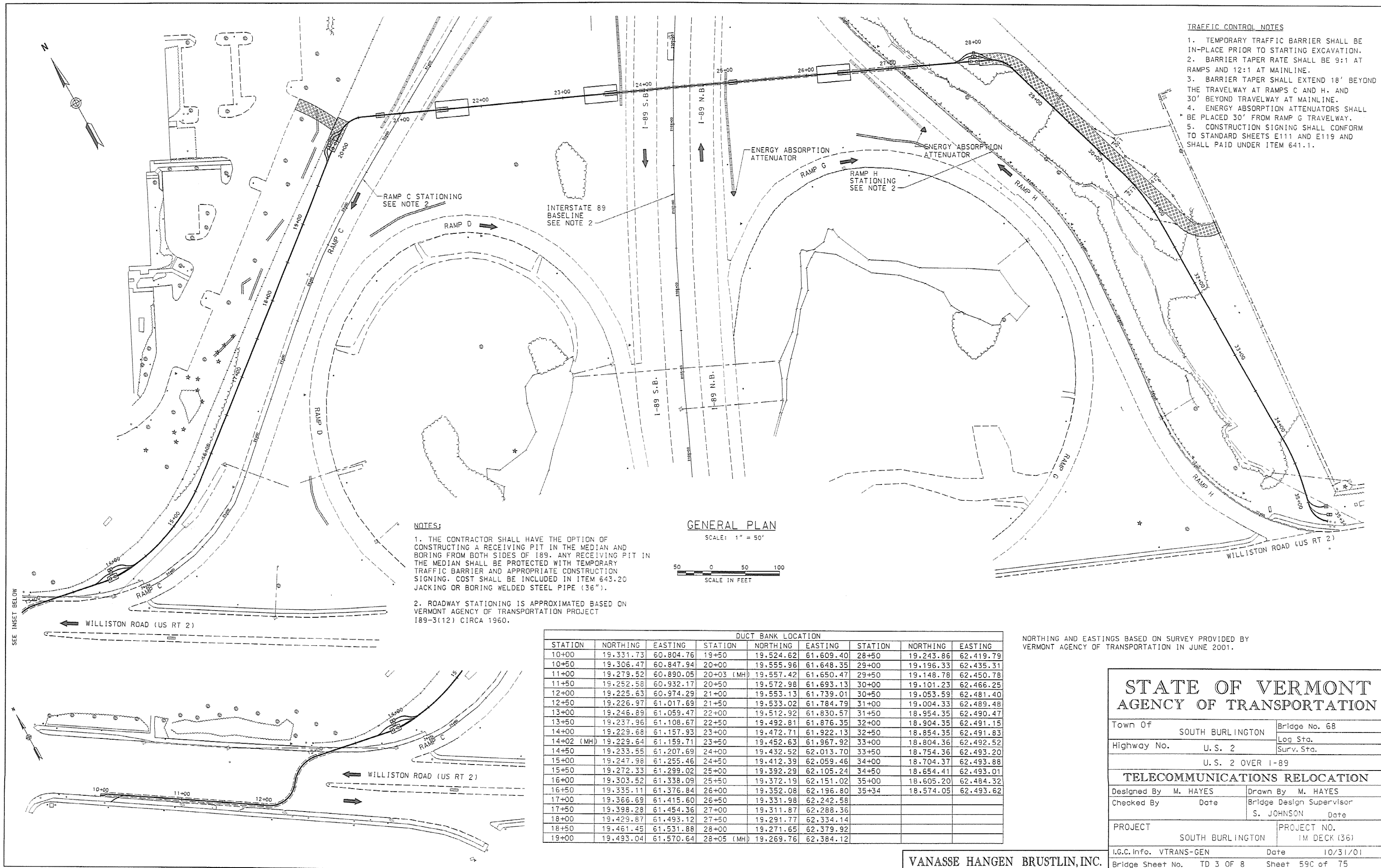
TELECOMMUNICATIONS DETAILS

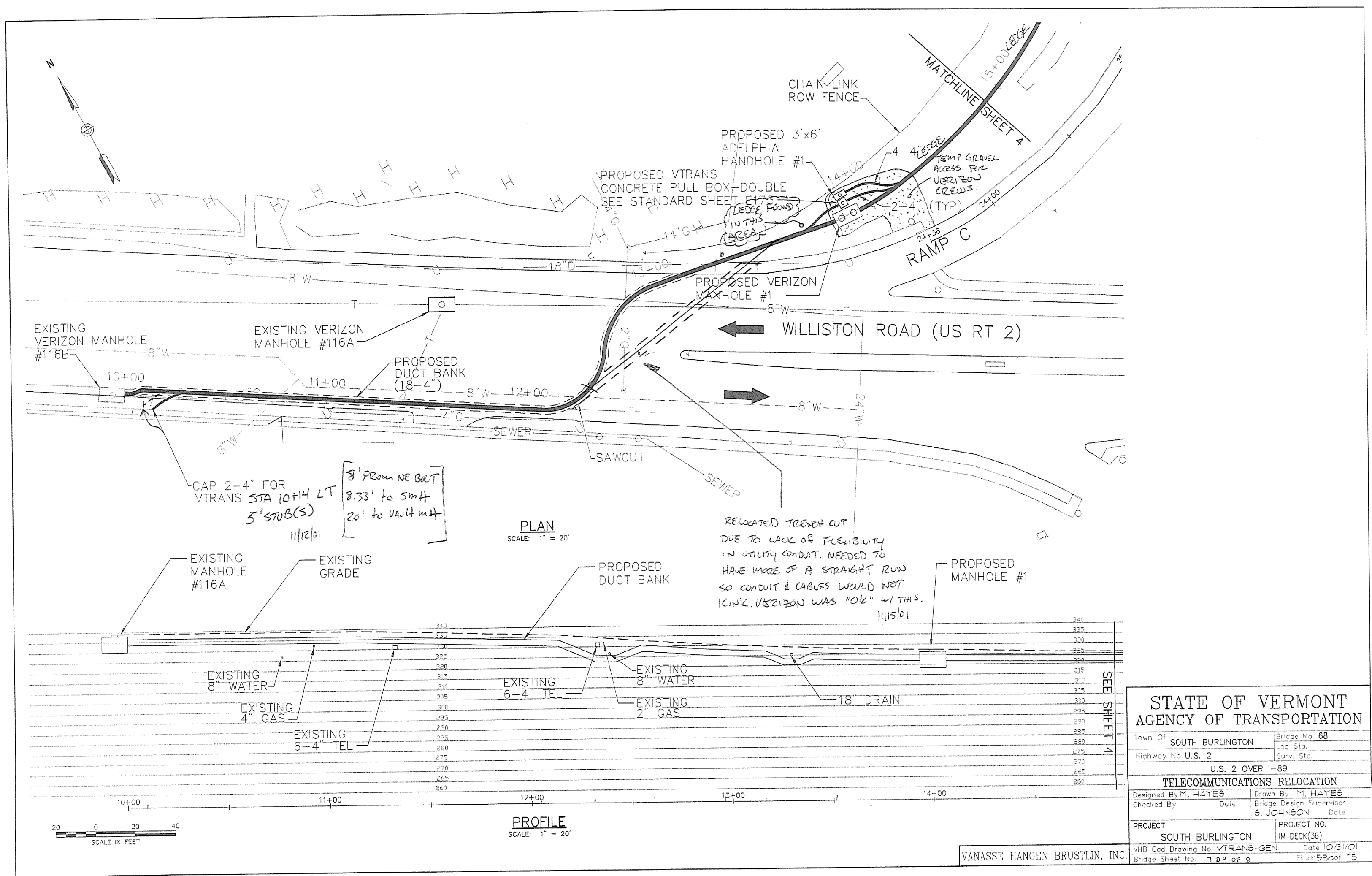
Designed By: M. HAYES Drawn By: M. HAYES
 Checked By: Date Bridge Design Supervisor: S. JOHNSON Date

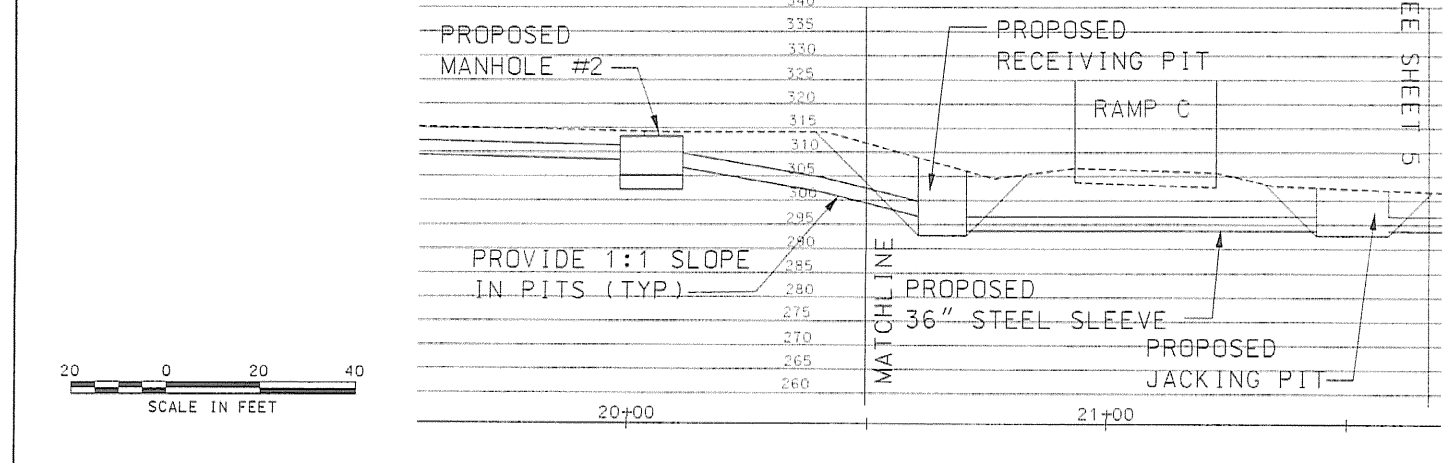
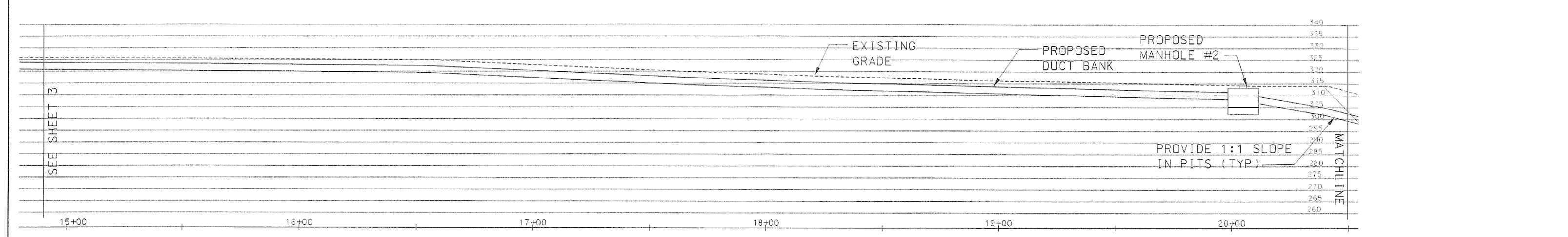
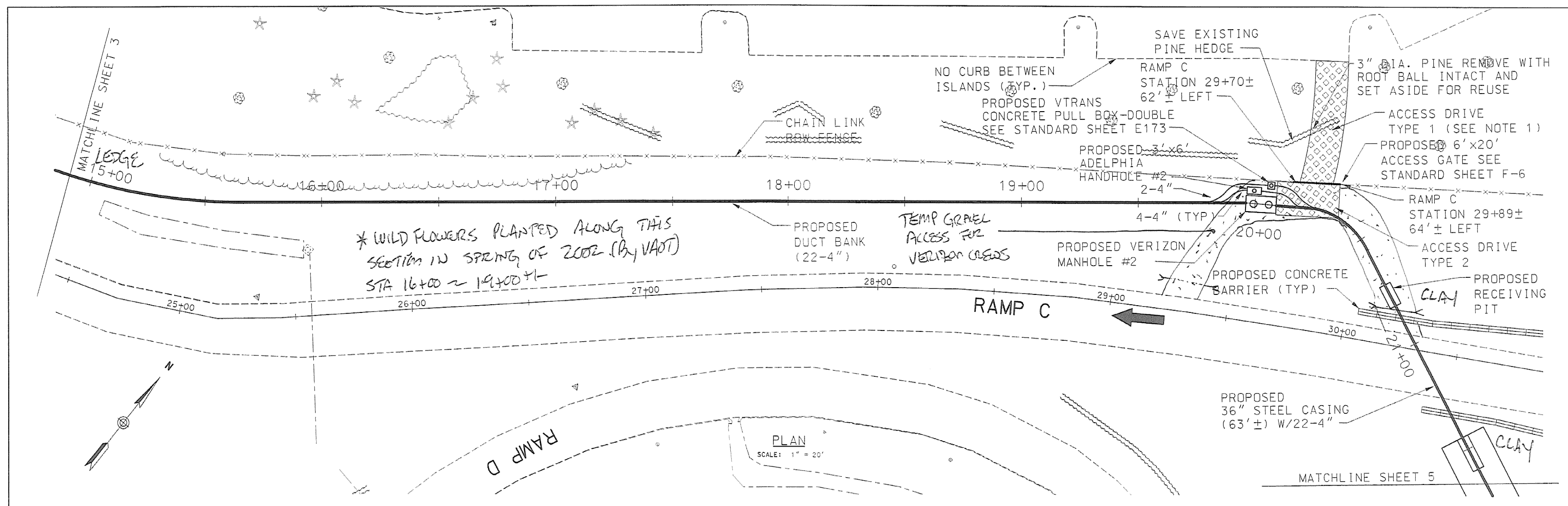
PROJECT SOUTH BURLINGTON PROJECT NO. M (20X)34
 VHB Cod Drawing No. VTrans-Telecom.dwg Date 10/31/01
 Bridge Sheet No. TD 1 OF 8 Sheet 59 of 75

VANASSE HANGEN BRUSTLIN, INC.







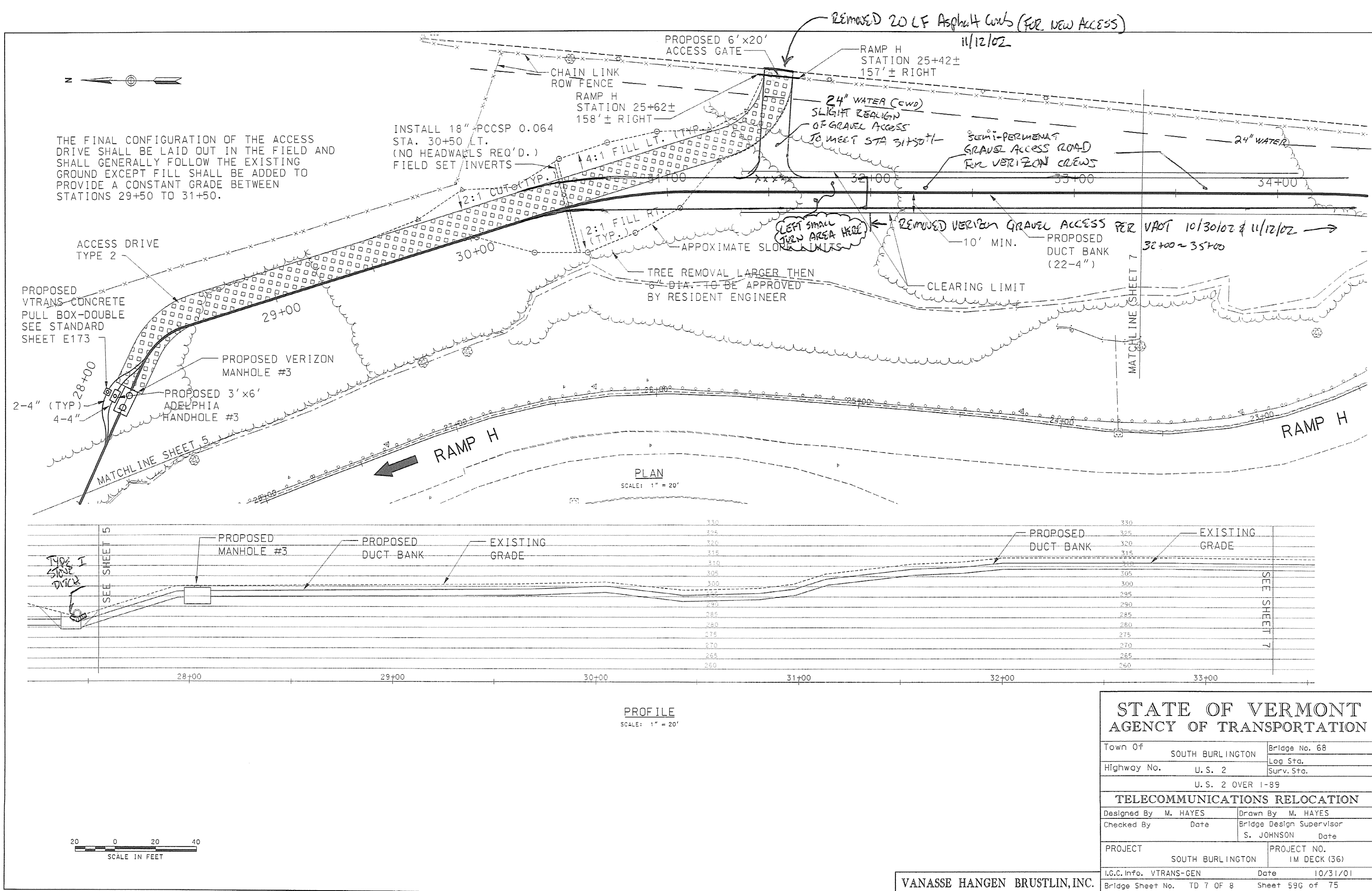


PROFILE
SCALE: 1" = 20'

NOTES:
1. CONTRACTOR TO PERFORM NO WORK OUTSIDE OF ACCESS DRIVE, EXCEPT REMOVAL OF 3" DIAMETER PINE.

**STATE OF VERMONT
AGENCY OF TRANSPORTATION**

Town Of	SOUTH BURLINGTON	Bridge No.	68
Highway No.	U.S. 2	Log. Sta.	
		Surv. Sta.	
		U.S. 2 OVER	1-89
TELECOMMUNICATIONS RELOCATION			
Designed By	M. HAYES	Drawn By	M. HAYES
Checked By	Date	Bridge Design Supervisor	S. JOHNSON Date
PROJECT	SOUTH BURLINGTON	PROJECT NO.	1M DECK (36)
LOG. PITS, VTRANS-GEN	Date	10/31/01	
Bridge Sheet No.	TD 5 OF 8	Sheet	55E OF 75



STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	SOUTH BURLINGTON	Bridge No.	68
Highway No.	U. S. 2	Leg. Sta.	
		Surv. Sta.	
		U. S. 2 OVER 1-89	
TELECOMMUNICATIONS RELOCATION			
Designed By	M. HAYES	Drawn By	M. HAYES
Checked By		Bridge Design Supervisor	S. JOHNSON
		Date	
PROJECT	SOUTH BURLINGTON	PROJECT NO.	1M DECK (36)
Loc. Info.	VTRANS-GEN	Date	10/31/01
Bridge Sheet No.	10 7 OF 8	Sheet	590 OF 75

VANASSE HANGEN BRUSTLIN, INC.

SOUTH BURLINGTON
IM DECK (36)
UTILITY STAKEOUT

DAVE HOSKING
10/23/01

*FOR UTILITY DUCT BANK
CONSTRUCTION*

#	NORTHINGS	EASTINGS	ELEV.	DESC.
1	19709.8499	61835.1770	312.890	'HVCTRL
2	18832.3418	61630.1310	332.200	'HVCTRL
3	19043.2313	61168.3588	337.500	'HVCTRL
4	18829.3407	61624.3792	330.770	'HVCTRL
5	18709.8905	61894.4721	326.120	'HVCTRL
20	18866.4915	61179.6047	328.829	'HVCTRL
30	19275.0775	61039.0093	341.186	'HVCTRL
31	19409.4257	61347.0395	331.660	'HVCTRL
32	19588.1616	61519.6638	319.115	'HVCTRL
33	19760.7107	61688.5056	316.187	'HVCTRL
34	19709.7579	61835.1641	312.893	'HVCTRL
40	19254.6226	61342.0664	329.660	'HVCTRL
41	19310.8905	61472.0105	323.220	'HVCTRL
42	19375.2736	61754.0091	306.921	'HVCTRL
43	19171.5994	61848.5160	301.790	'HVCTRL
44	19234.0415	62039.9038	296.325	'HVCTRL
45	19341.4913	62290.3197	291.027	'HVCTRL
46	19140.9569	62364.7358	299.638	'HVCTRL
47	19039.1263	62394.3923	303.627	'HVCTRL
48	18828.6901	62385.5657	307.990	'HVCTRL
49	18720.8346	62387.1219	309.443	'HVCTRL
50	18652.8806	62420.4555	309.476	'HVCTRL
51	18557.1726	62554.2279	313.088	'HVCTRL
52	19091.2935	62574.8767	312.757	'HVCTRL
53	18850.0191	62513.8078	312.795	'HVCTRL
100	19331.7316	60804.7525	338.707	'CL 10+00 NAILPVT
101	19306.4653	60847.9600	338.626	'CL 10+50 NAILPVT
102	19279.5203	60890.0349	338.417	'CL 11+00 NAILPVT
103	19252.5853	60932.1898	338.306	'CL 11+50 NAILPVT
104	19225.6146	60974.2713	338.286	'CL 12+00 NAILPVT
105	19226.9373	61017.6761	338.572	'CL 12+50 NAILPVT
106	19246.8968	61059.4645	337.951	'CL 13+00 NAILPVT
107	19237.9922	61109.6071	341.538	'CL 13+50 T.WIT
108	19229.7233	61157.8190	340.140	'CL 14+00 T.WIT
109	19229.7291	61159.4749	340.233	'CL 14+02 MH TWIT
110	19233.5804	61207.8977	336.912	'CL 14+50 T.WIT
111	19247.9937	61255.6471	333.102	'CL 15+00 T.WIT
112	19272.2417	61299.2345	331.394	'CL 15+50 T.WIT
113	19303.4846	61338.0926	331.215	'CL 16+00 T.WIT
114	19335.1406	61376.8522	330.335	'CL 16+50 T.WIT
115	19366.7580	61415.6448	328.677	'CL 17+00 T.WIT
116	19398.2356	61454.3456	325.641	'CL 17+50 T.WIT
117	19429.8917	61493.1283	323.574	'CL 18+00 T.WIT
118	19461.4987	61531.9234	321.733	'CL 18+50 T.WIT
119	19493.0494	61570.6497	320.366	'CL 19+00 T.WIT
120	19524.5807	61609.3601	319.437	'CL 19+50 T.WIT
121	19555.8880	61648.2741	318.525	'CL 20+00 T.WIT
122	19587.3849	61680.4348	318.642	'CL 20+03 MH TWIT
123	19572.9651	61693.1120	316.552	'CL 20+50 T.WIT
124	19553.1440	61739.0343	307.132	'CL 21+00 NAILPVT
125	19532.8667	61784.7778	305.347	'CL 21+50 T.WIT
126	19512.9119	61830.5635	304.015	'CL 22+00 T.WIT
127	19492.5698	61876.0981	301.815	'CL 22+50 T.WIT
128	19472.5761	61921.8931	294.701	'CL 23+00 T.WIT
129	19452.5067	61967.5834	289.580	'CL 23+50 T.WIT

130	19412.3921	62059.4868	296.011	!CL 24+50 T.WIT
131	19392.2194	62105.4821	295.276	!CL 25+00 T.WIT
132	19372.1526	62151.1744	284.143	!CL 25+50 T.WIT
133	19352.0530	62197.0353	282.235	!CL 26+00 T.WIT
134	19332.0170	62242.7501	290.930	!CL 26+50 T.WIT
135	19311.9330	62288.3639	292.429	!CL 27+00 NALLPVT
136	19311.9363	62288.3645	292.513	!CL 27+50 NALLPVT
137	19291.9122	62334.0187	292.037	!CL 27+50 T.WIT
138	19271.7359	62379.9300	304.041	!CL 28+00 T.WIT
139	19269.6810	62384.1074	304.018	!CL 28+05 MH TWIT
140	19243.8600	62419.7889	304.215	!CL 28+50 T.WIT
141	19196.2503	62435.2079	304.622	!CL 29+00 T.WIT
142	19148.7674	62450.6527	305.859	!CL 29+50 T.WIT
143	19101.3106	62466.0453	306.385	!CL 30+00 T.WIT
144	19053.6890	62481.2686	300.290	!CL 30+50 T.WIT
145	19004.6214	62489.2146	304.040	!CL 31+00 T.WIT
146	18954.2674	62490.4882	315.276	!CL 31+50 T.WIT
147	18904.3960	62491.1266	316.018	!CL 32+00 T.WIT
148	18854.4011	62491.8089	316.406	!CL 32+50 T.WIT
149	18804.5775	62492.6219	315.963	!CL 33+00 T.WIT
150	18754.4978	62493.2308	314.132	!CL 33+50 T.WIT
151	18704.3056	62493.8710	314.641	!CL 34+00 T.WIT
152	18654.5726	62493.0294	315.431	!CL 34+50 T.WIT
153	18605.2839	62484.3295	315.229	!CL 35+00 T.WIT

STANDARD SHEETS

E-III 03-11-97
 E-II9 08-08-95
 E-173 08-09-95
 F6 06-01-94

QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	FINAL
201.11	CLEARING & GRUBBING (INCLUDING INDIVIDUAL TREES AND STUMPS)	ACRE	1	
203.15	COMMON EXCAVATION	CY	260	
301.26	SUBBASE OF CRUSHED GRAVEL (FINE GRADED)	CY	330	
406.25	BITUMINOUS CONCRETE PAVEMENT (PG64-28)	TON	60	
541.21	CONCRETE VAULT (MOD.-TELEPHONE)	EA	3	
541.21	CONCRETE VAULT (MOD.-CATV)	EA	4	
601.0415	18" PCCSP 0.064 (2 - 2/3 x 1/2)	LF	46	
616.40	REMOVING AND RESETTING CURB	LF	10	
618.10	PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH	SY	6	
620.16	GATE FOR CHAIN LINK FENCE, 6 FEET (MOD.)	LF	40	
621.57	ENERGY ABSORPTION ATTENUATOR	EA	2	
621.90	TEMPORARY TRAFFIC BARRIER	LF	840	
624.20	DUCTS, CONCRETE ENCASED (MOD.-DUCT BANK-18 TO 22)	LF	1,860	
624.20	DUCTS, CONCRETE ENCASED (MOD.-DUCT BANK, ROADWAY-18 TO 22)	LF	330	
624.20	DUCTS, CONCRETE ENCASED (MOD.-DUCT BANK, THROUGH SLEEVE-18 TO 22)	LF	370	
630.10	UNIFORMED TRAFFIC OFFICER	HR	150	
635.10	MOBLIZATION - MOD.2	LS	1	
641.10	TRAFFIC CONTROL-MOD 2	LS	1	
643.20	JACKING OR BORING WELDED STEEL PIPE (36")	LF	370	
651.15	SEED	LB	10	
651.18	FERTILIZER	LB	70	
651.20	AGRICULTURAL LIMESTONE	TON	0.3	
651.30	SODDING	SY	90	
651.35	TOPSOIL	CY	75	
678.27	PULL BOX-DOUBLE	EA	4	

STATE OF VERMONT
 AGENCY OF TRANSPORTATION

Town Of SOUTH BURLINGTON Bridge No. 68
 Log Sta.
 Highway No. U.S. 2 Surv. Sta.

U.S. 2 OVER I-89

TELECOMMUNICATIONS DETAILS

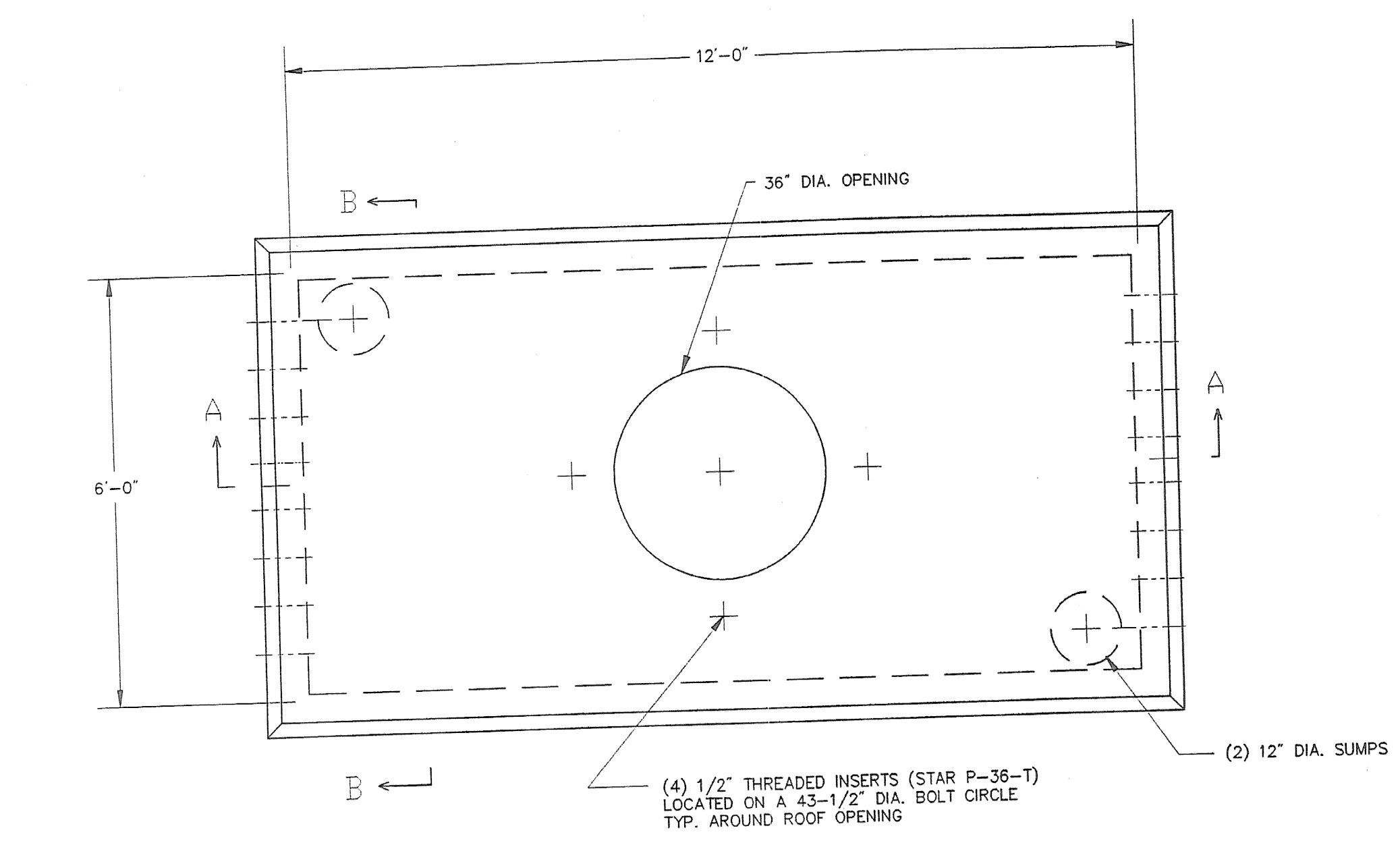
Designed By M. HAYES Drawn By M. HAYES
 Checked By Date Bridge Design Supervisor
 S. JOHNSON Date

PROJECT SOUTH BURLINGTON PROJECT NO.
 IM DECK(36)

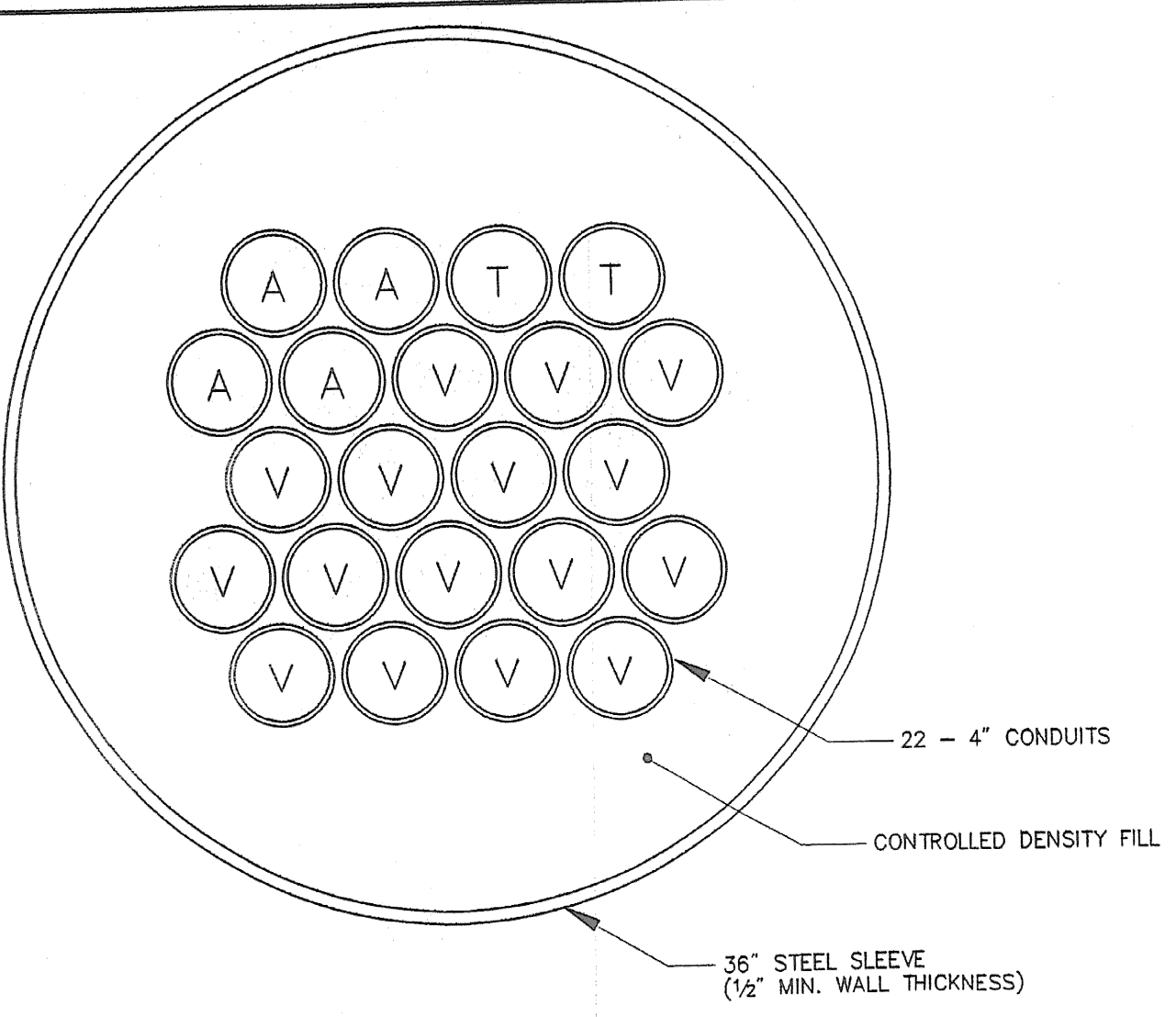
VANASSE HANGEN BRUSTLIN, INC.

VHB Cad Drawing No. VTrans-Telecomant Date 10/31/01
 Bridge Sheet No. TD 1 OF 8 Sheet 59 of 75

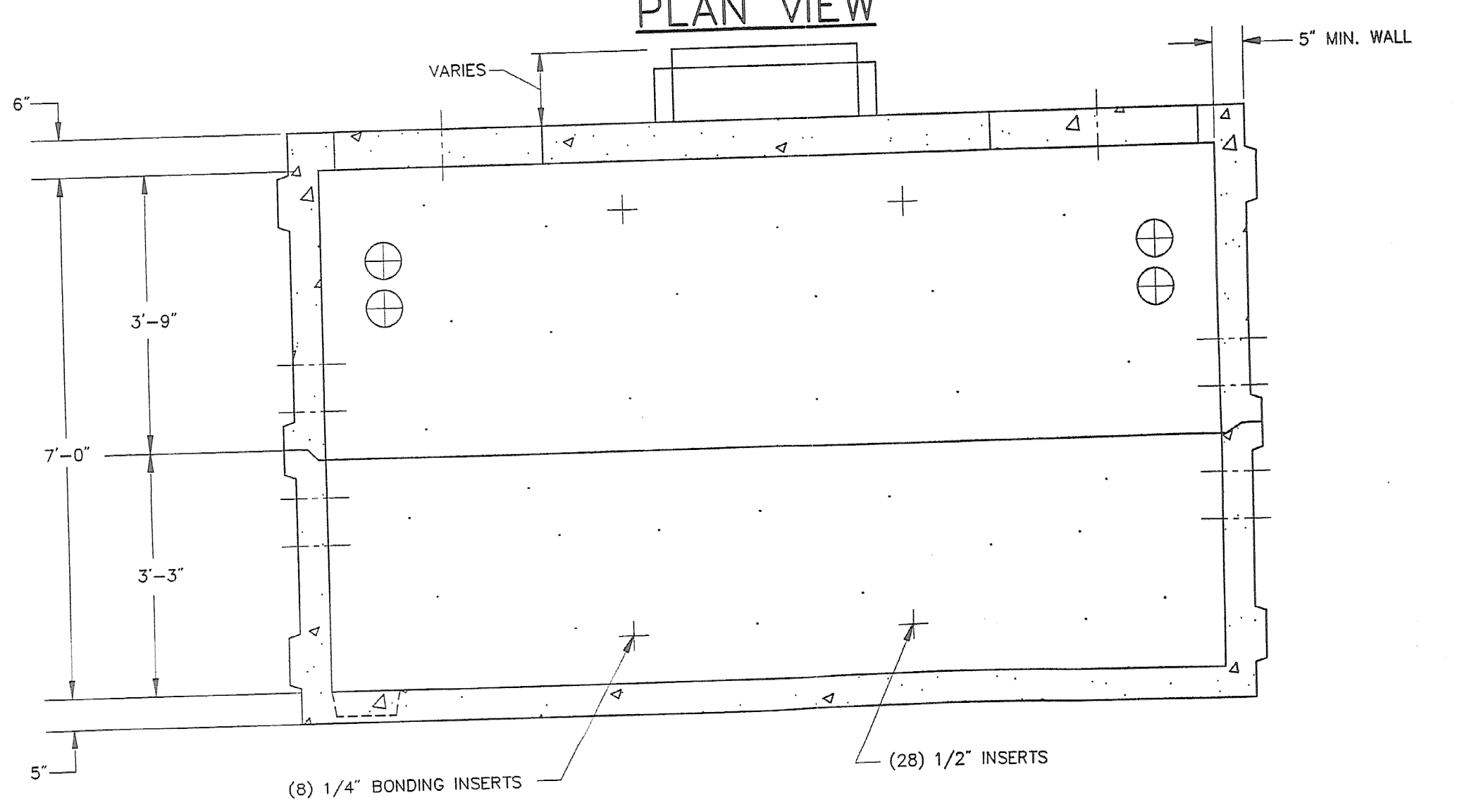
- GENERAL NOTES:**
1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE BEGINNING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. ALL REPAIRS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR IS TO CONTACT 'DIG SAFE' AT 1-888-344-7233 72 HOURS PRIOR TO ANY EXCAVATION.
 2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION OF THE CONFLICT.
 3. MAINTAIN A MINIMUM CLEARANCE OF SIX INCHES WHEN CROSSING EXISTING UTILITIES.
 4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN TEMPORARY RESURFACING AND/OR PLATING ON ALL EXCAVATION IN PAVED STREETS AND SIDEWALKS. THE MAINTENANCE OF THE TEMPORARY RESURFACING SHALL CONTINUE UNTIL PERMANENT RESURFACING IS PLACED. COST INCLUDED IN ITEM 641.10 TRAFFIC CONTROL.
 5. AREAS WITHIN AND OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
 6. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS AND SHALL BE RESPONSIBLE FOR PAYING ANY FEES FOR ANY POLE RELOCATION OR ALTERATION, ADJUSTMENT OR TEMPORARY SUPPORT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PUBLIC OR PRIVATE UTILITIES.
 7. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY PERMITS, PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS.
 8. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. ALL CONSTRUCTION ACTIVITY SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
 9. ALL WORK PERFORMED WITHIN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM TO ALL STATE AND LOCAL MUNICIPAL STANDARDS.
 10. AT THE END OF EACH WORK DAY AND UPON FINAL CONSTRUCTION PENDING CABLE INSTALLATION, CONDUIT CAPS WILL BE PLACED ON ALL VACANT DUCTS.
 11. JOINTS BETWEEN NEW BITUMINOUS CONCRETE PAVEMENT AND EXISTING PAVEMENT SHALL BE SAWCUT AND SEALED WITH RS-1 ASPHALT EMULSION AND BACKSANDS.
 12. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN CONSTRUCTION AS BUILT DRAWINGS AND PRESENT A COMPLETE SET OF DRAWINGS TO VERMONT AGENCY OF TRANSPORTATION WITHIN 14 DAYS OF COMPLETION OF WORK.
 13. THE CONTRACTOR IS RESPONSIBLE FOR PAYING FOR AND OBTAINING ALL PERMITS NECESSARY TO COMPLETE THE WORK AS SHOWN ON THE DRAWINGS.
 14. JACKING PITS SHALL BE CONSTRUCTED AT LEAST 10 FT FROM EDGE OF PAVEMENT OR 12' BEHIND GUARDRAIL. JACKING PITS SHALL HAVE A MINIMUM SIDE SLOPE OF 1:1. JACKING PITS SHALL BE PROTECTED BY JERSEY BARRIERS AS INDICATED ON PLANS OR AS DIRECTED BY THE ENGINEER.
 15. CONTRACTOR MAY USE EITHER NARROW/DEEP OR SHALLOW/WIDE TRENCH DETAIL.
 16. ADELPHIA HANDHOLES SHALL BE CONCRETE AND CONFORM TO ADELPHIA STANDARDS HANDHOLE DETAILS.
 17. VERIZON MANHOLE GRATE AND FRAME TO BE PROVIDED BY VERIZON.



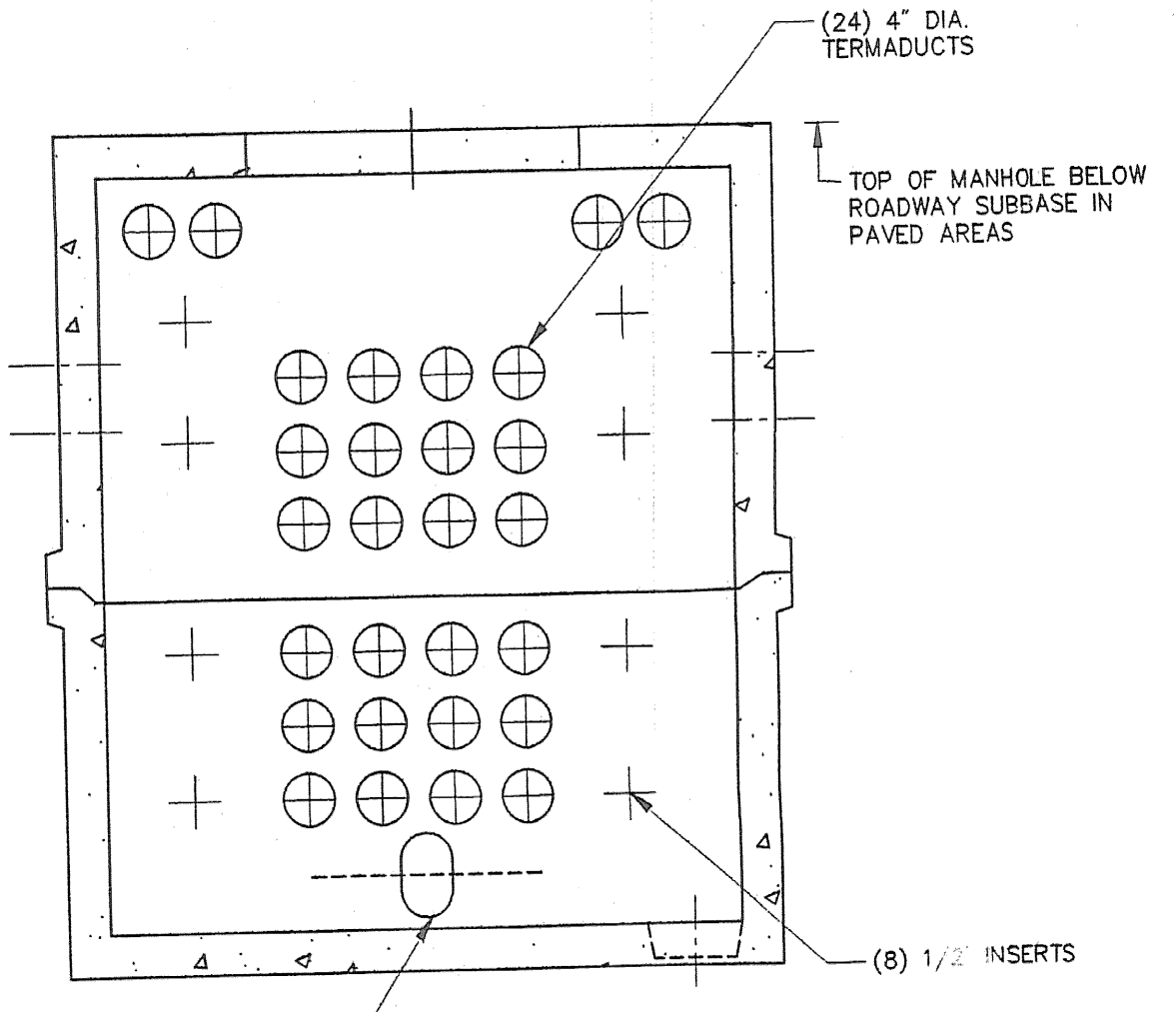
PLAN VIEW



BORE DETAIL
SCALE: NOT TO SCALE

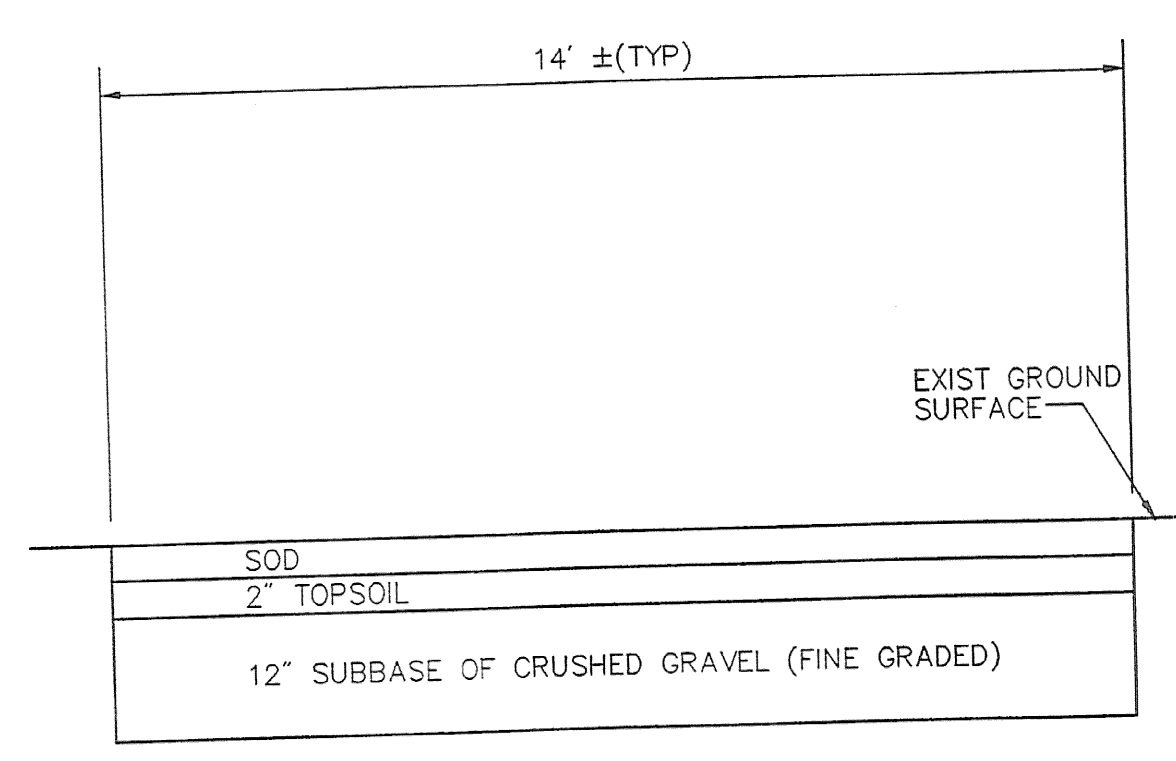


SECTION A-A
NOTE: OPPOSITE WALL IS SIMILAR

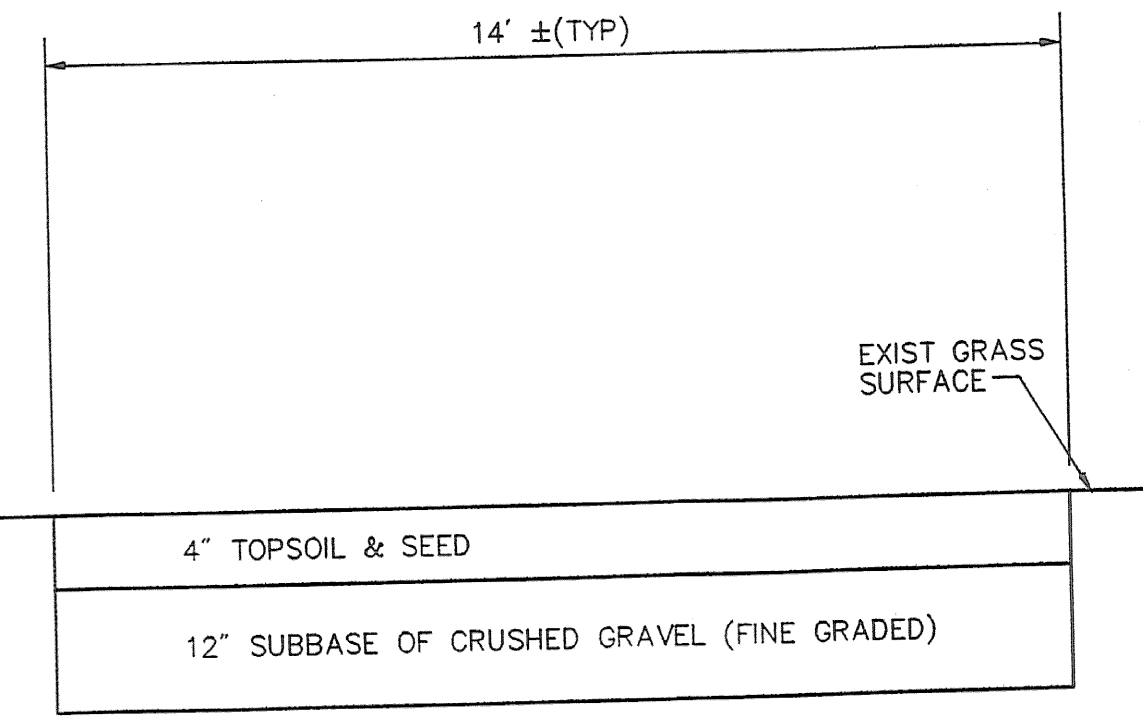


SECTION B-B
NOTE: OPPOSITE WALL IS SIMILAR

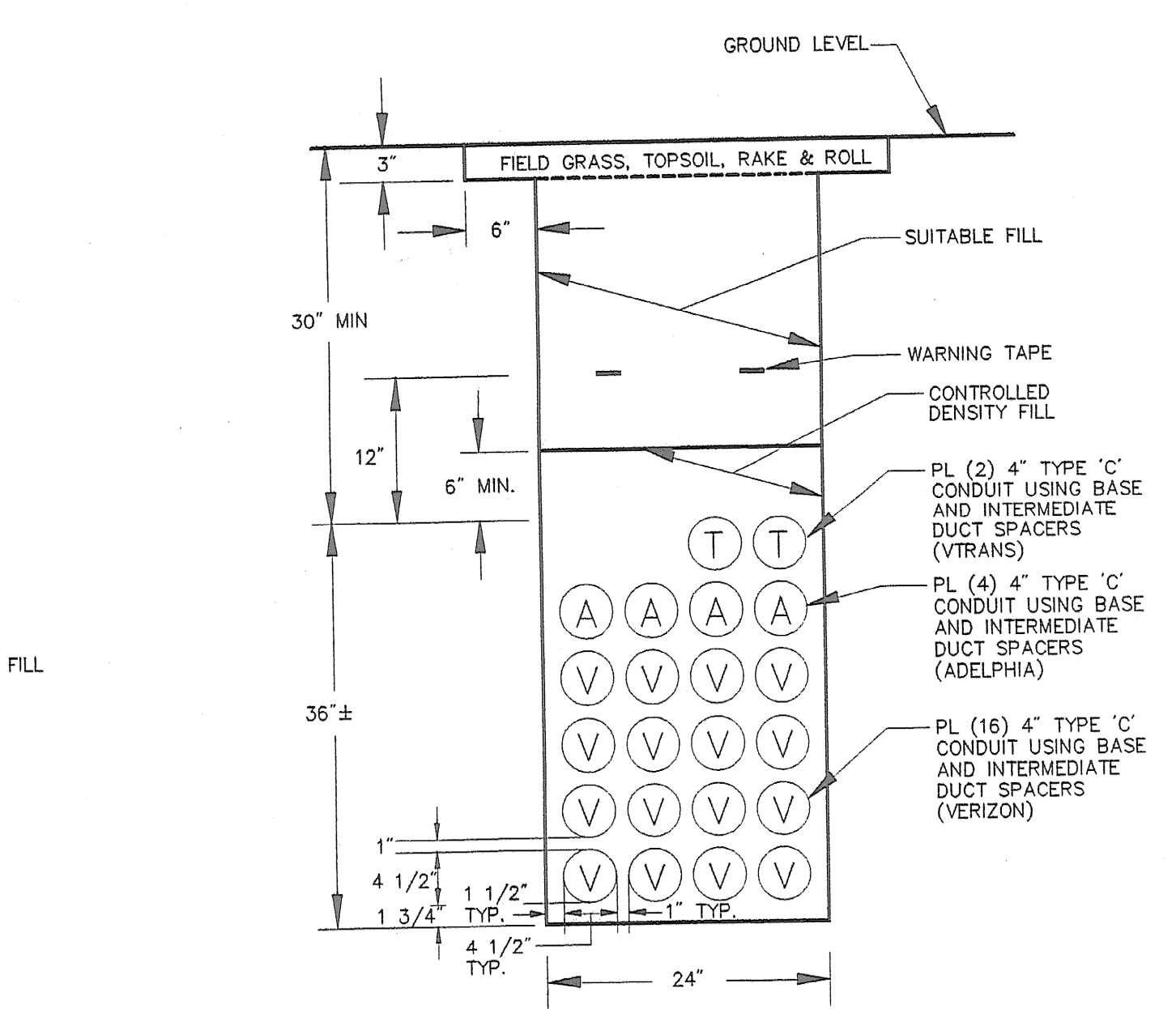
VERIZON MANHOLE DETAIL
SCALE: NOT TO SCALE



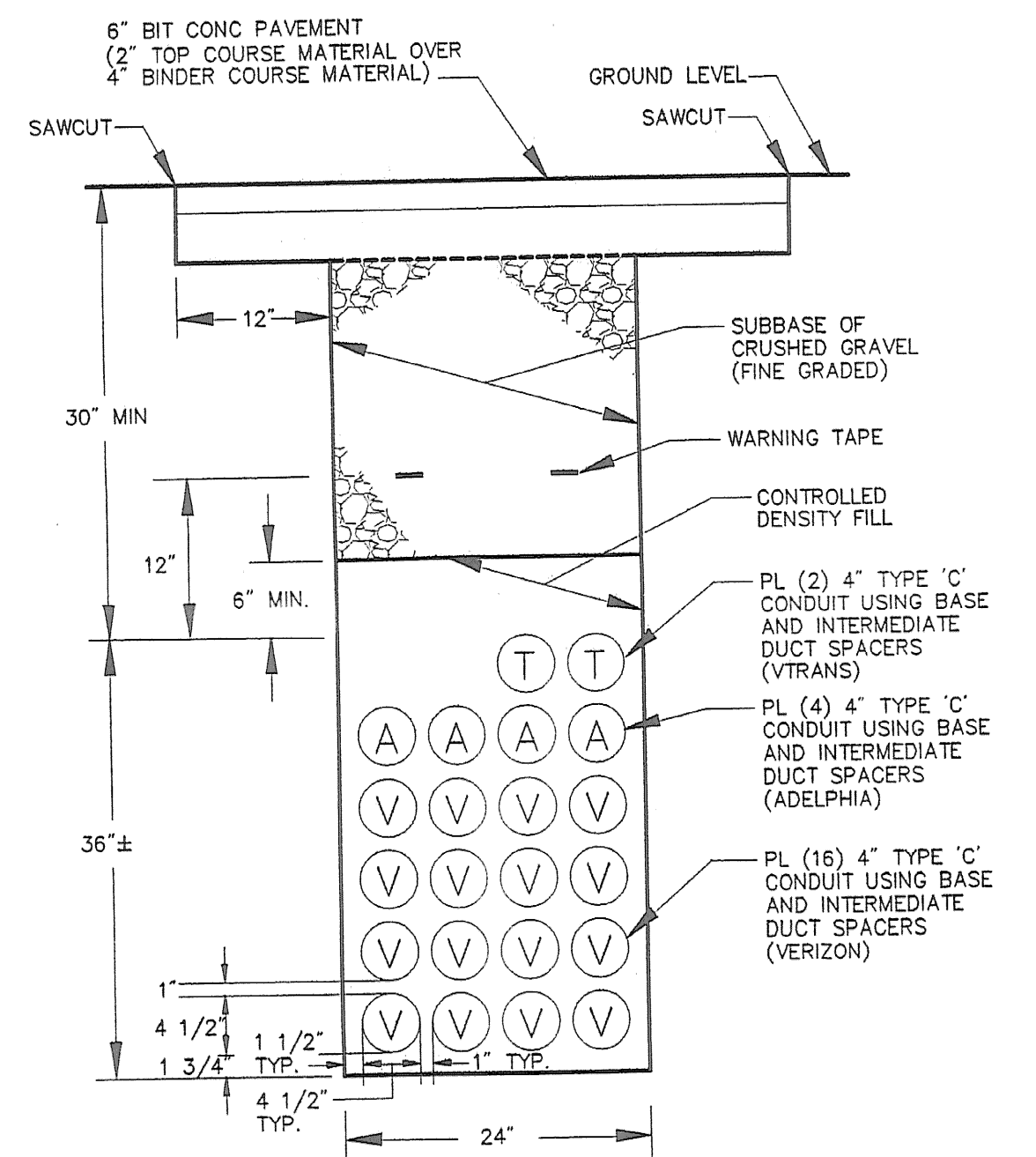
ACCESS DRIVE -- TYPE 1
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H--STD. PVMT-01-ENGLISH



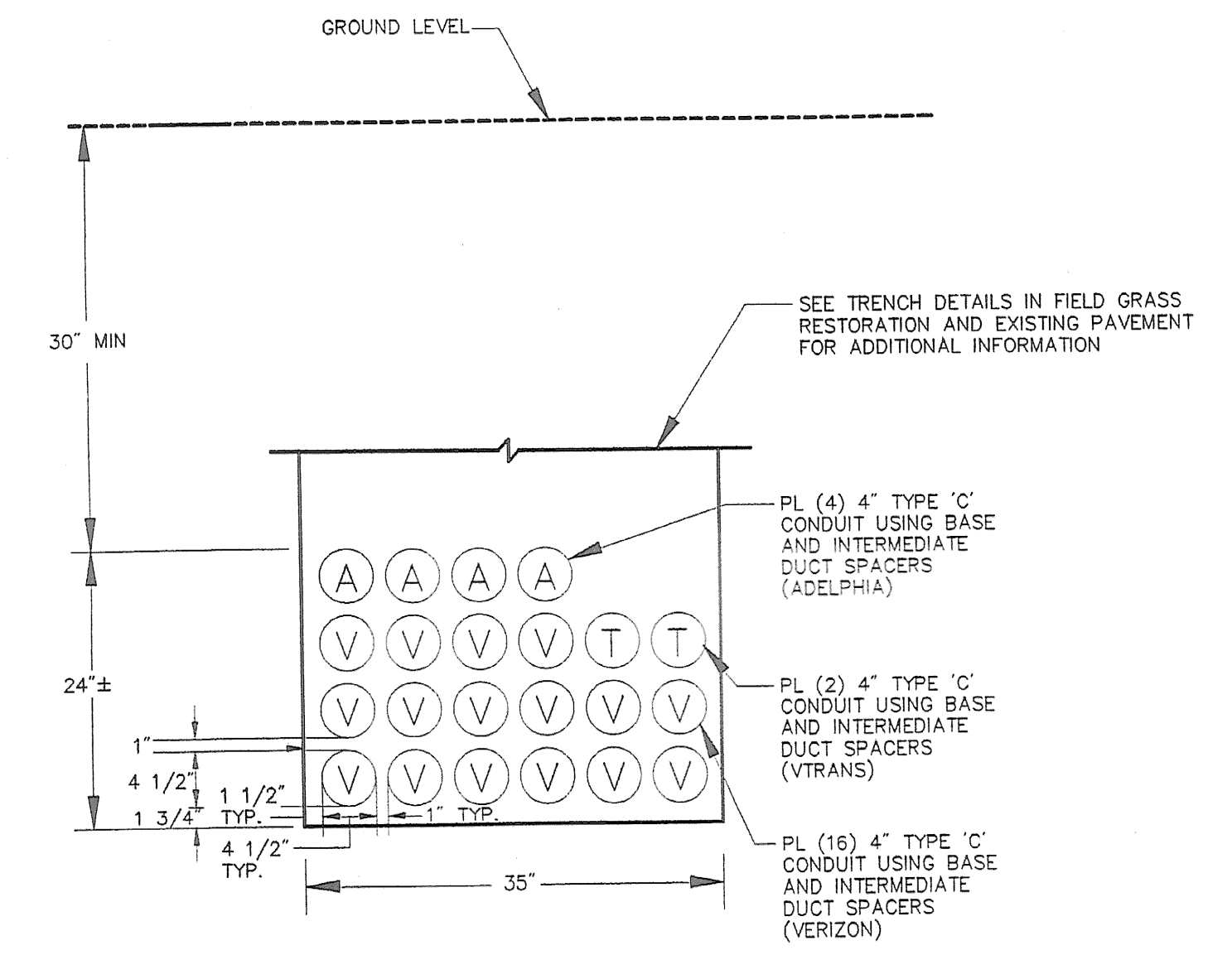
ACCESS DRIVE -- TYPE 2
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S--STD.
H--STD. PVMT-01-ENGLISH



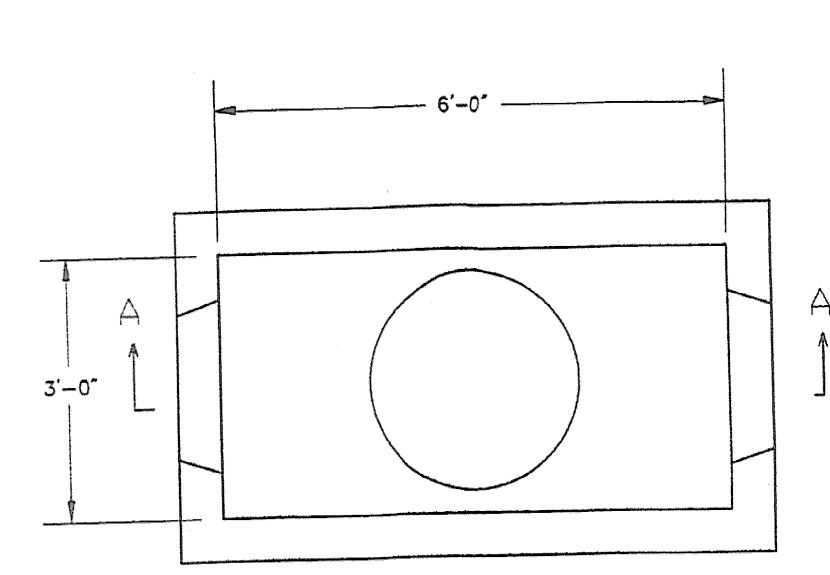
TRENCH DETAIL
FIELD GRASS RESTORATION
SCALE: NOT TO SCALE



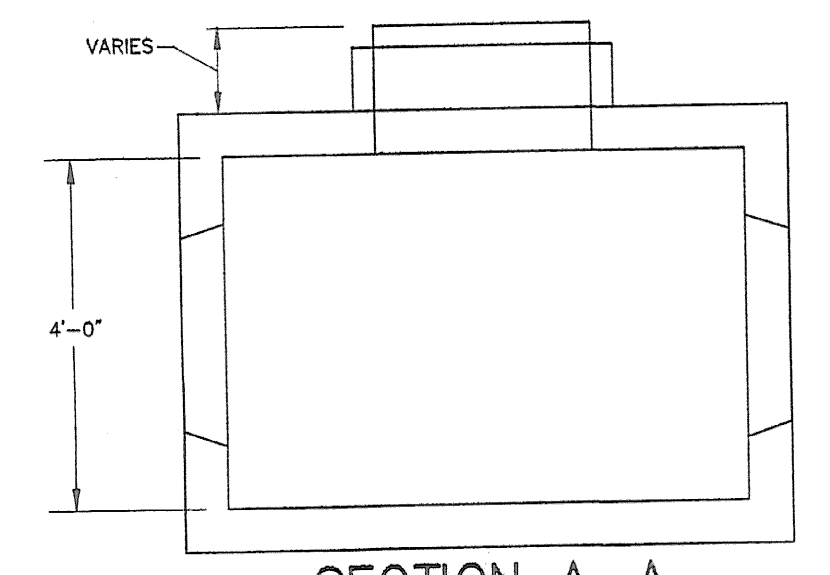
TRENCH DETAIL
IN EXISTING PAVEMENT
SCALE: NOT TO SCALE



OPTIONAL SHALLOW TRENCH DETAIL
SCALE: NOT TO SCALE



PLAN VIEW
ADELPHIA MANHOLE DETAIL
SCALE: NOT TO SCALE



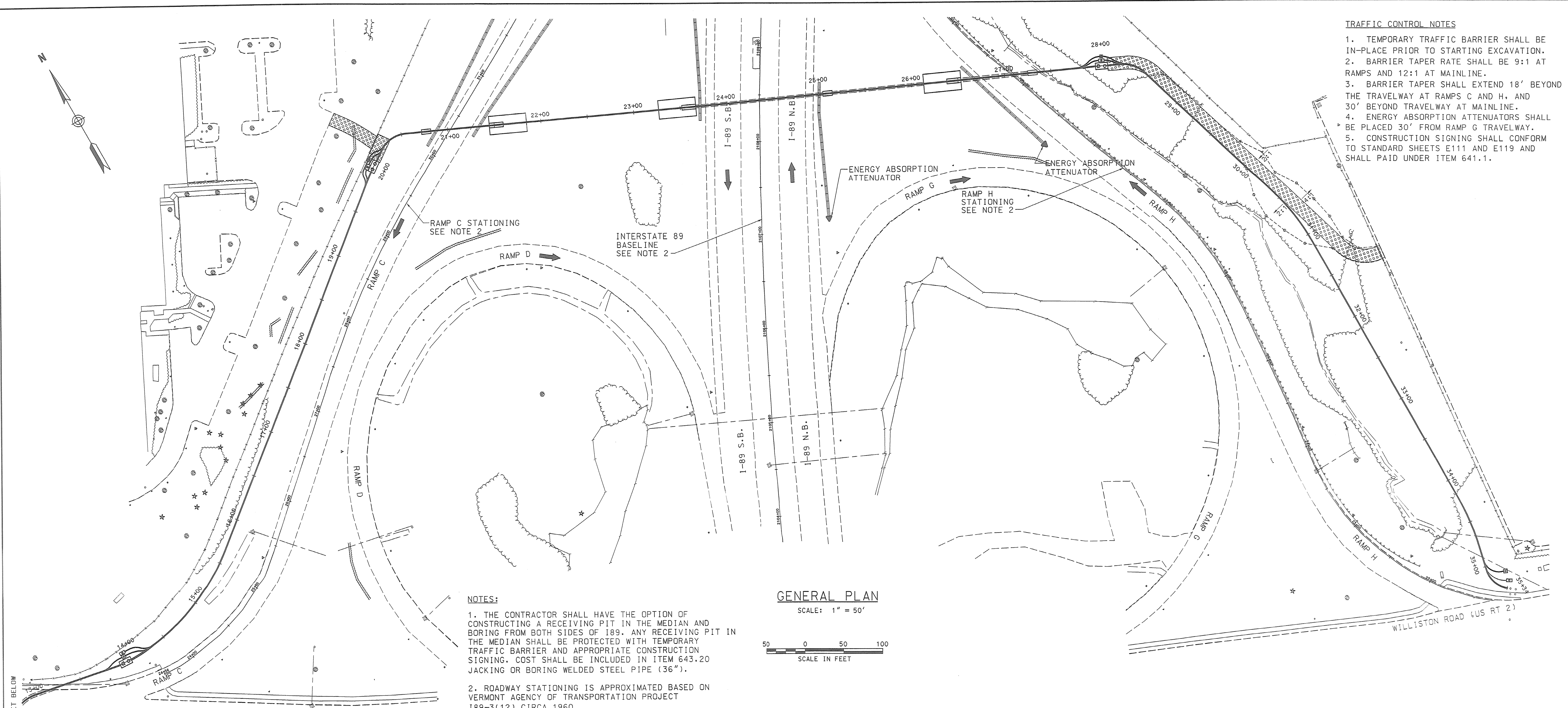
SECTION A-A
NOTE: OPPOSITE WALL IS SIMILAR

LEGEND
A--ADELPHIA
T--VTRANS
V--VERIZON

STATE OF VERMONT	
AGENCY OF TRANSPORTATION	
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log Sta. _____
U.S. 2 OVER I-89	
TELECOMMUNICATIONS DETAILS	
Designed By M. HAYES	Drawn By M. HAYES
Checked By _____ Date _____	Bridge Design Supervisor S. JOHNSON Date _____
PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cad Drawing No. VTRANS-DET	Date 10/31/01
Bridge Sheet No. TD 2 OF 8	Sheet 59 of 75

VANASSE HANGEN BRUSTLIN, INC.

- TRAFFIC CONTROL NOTES**
1. TEMPORARY TRAFFIC BARRIER SHALL BE IN-PLACE PRIOR TO STARTING EXCAVATION.
 2. BARRIER TAPER RATE SHALL BE 9:1 AT RAMP AND 12:1 AT MAINLINE.
 3. BARRIER TAPER SHALL EXTEND 18' BEYOND THE TRAVELWAY AT RAMP C AND H, AND 30' BEYOND TRAVELWAY AT MAINLINE.
 4. ENERGY ABSORPTION ATTENUATORS SHALL BE PLACED 30' FROM RAMP G TRAVELWAY.
 5. CONSTRUCTION SIGNING SHALL CONFORM TO STANDARD SHEETS E111 AND E119 AND SHALL PAID UNDER ITEM 641.1.



- NOTES:**
1. THE CONTRACTOR SHALL HAVE THE OPTION OF CONSTRUCTING A RECEIVING PIT IN THE MEDIAN AND BORING FROM BOTH SIDES OF I89. ANY RECEIVING PIT IN THE MEDIAN SHALL BE PROTECTED WITH TEMPORARY TRAFFIC BARRIER AND APPROPRIATE CONSTRUCTION SIGNING. COST SHALL BE INCLUDED IN ITEM 643.20 JACKING OR BORING WELDED STEEL PIPE (36").
 2. ROADWAY STATIONING IS APPROXIMATED BASED ON VERMONT AGENCY OF TRANSPORTATION PROJECT I89-3(12) CIRCA 1960.

DUCT BANK LOCATION								
STATION	NORTHING	EASTING	STATION	NORTHING	EASTING	STATION	NORTHING	EASTING
10+00	19,331.73	60,804.76	19+50	19,524.62	61,609.40	28+50	19,243.86	62,419.79
10+50	19,306.47	60,847.94	20+00	19,555.96	61,648.35	29+00	19,196.33	62,435.31
11+00	19,279.52	60,890.05	20+03 (MH)	19,557.42	61,650.47	29+50	19,148.78	62,450.78
11+50	19,252.58	60,932.17	20+50	19,572.98	61,693.13	30+00	19,101.23	62,466.25
12+00	19,225.63	60,974.29	21+00	19,553.13	61,739.01	30+50	19,053.59	62,481.40
12+50	19,226.97	61,017.69	21+50	19,533.02	61,784.79	31+00	19,004.33	62,489.48
13+00	19,246.89	61,059.47	22+00	19,512.92	61,830.57	31+50	18,954.35	62,490.47
13+50	19,237.96	61,108.67	22+50	19,492.81	61,876.35	32+00	18,904.35	62,491.15
14+00	19,229.68	61,157.93	23+00	19,472.71	61,922.13	32+50	18,854.35	62,491.83
14+02 (MH)	19,229.64	61,159.71	23+50	19,452.63	61,967.92	33+00	18,804.36	62,492.52
14+50	19,233.55	61,207.69	24+00	19,432.52	62,013.70	33+50	18,754.36	62,493.20
15+00	19,247.98	61,255.46	24+50	19,412.39	62,059.46	34+00	18,704.37	62,493.88
15+50	19,272.33	61,299.02	25+00	19,392.29	62,105.24	34+50	18,654.41	62,493.01
16+00	19,303.52	61,338.09	25+50	19,372.19	62,151.02	35+00	18,605.20	62,484.32
16+50	19,335.11	61,376.84	26+00	19,352.08	62,196.80	35+34	18,574.05	62,493.62
17+00	19,366.69	61,415.60	26+50	19,331.98	62,242.58			
17+50	19,398.28	61,454.36	27+00	19,311.87	62,288.36			
18+00	19,429.87	61,493.12	27+50	19,291.77	62,334.14			
18+50	19,461.45	61,531.88	28+00	19,271.65	62,379.92			
19+00	19,493.04	61,570.64	28+05 (MH)	19,269.76	62,384.12			

NORTHING AND EASTINGS BASED ON SURVEY PROVIDED BY VERMONT AGENCY OF TRANSPORTATION IN JUNE 2001.

**STATE OF VERMONT
AGENCY OF TRANSPORTATION**

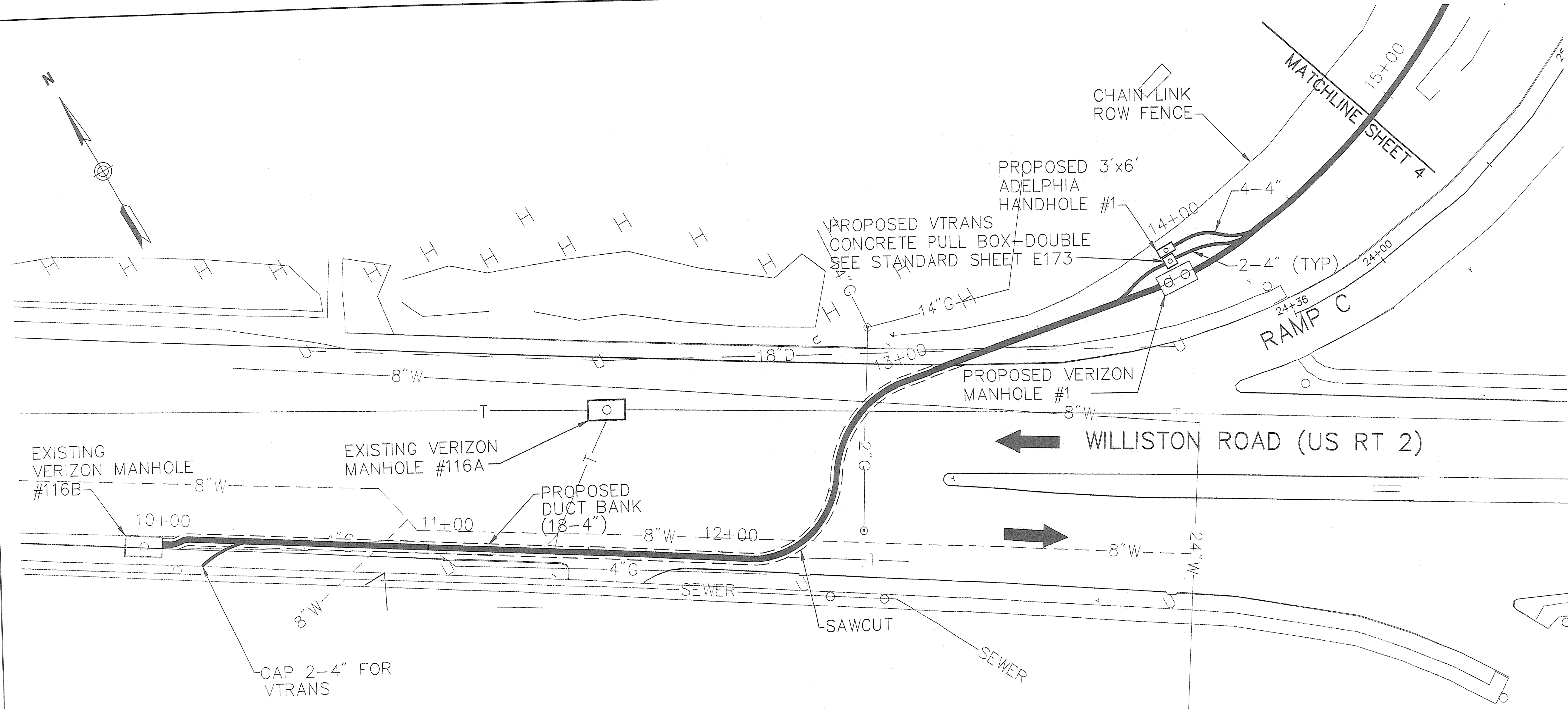
Town Of	SOUTH BURLINGTON	Bridge No.	68
Highway No.	U. S. 2	Log Sta.	
		Surv. Sta.	
U. S. 2 OVER I-89			

TELECOMMUNICATIONS RELOCATION

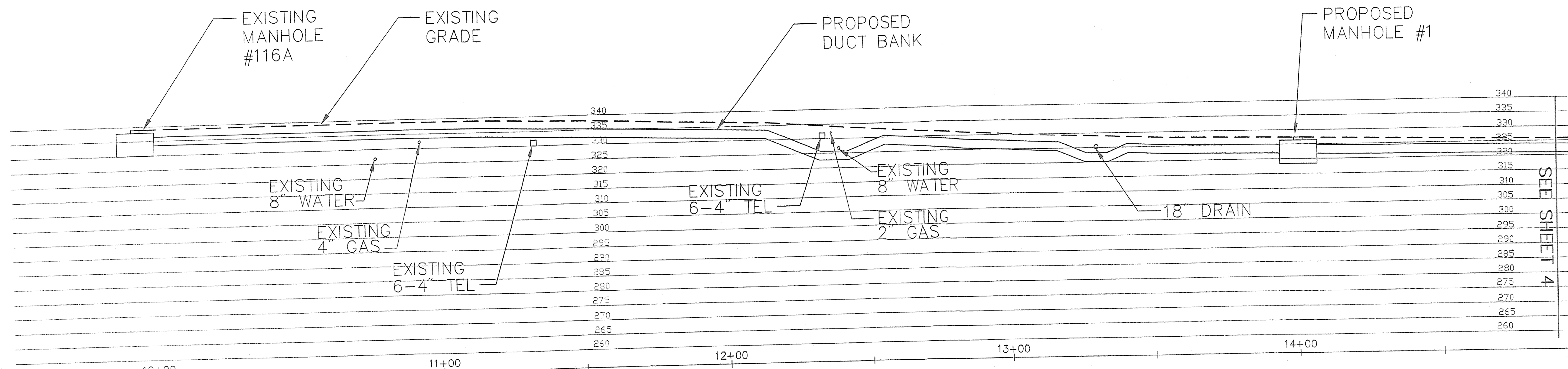
Designed By	M. HAYES	Drawn By	M. HAYES
Checked By	Date	Bridge Design Supervisor	S. JOHNSON
		Date	

PROJECT	SOUTH BURLINGTON	PROJECT NO.	1M DECK (36)
I.G.C. Info.	VTRANS-GEN	Date	10/31/01
Bridge Sheet No.	TD 3 OF 8	Sheet	59C of 75

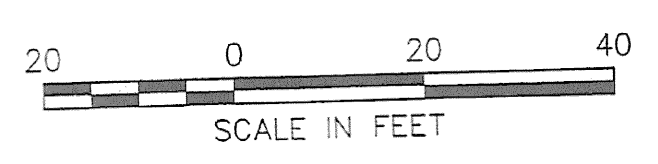
VANASSE HANGEN BRUSTLIN, INC.



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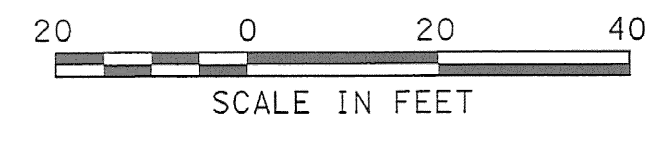
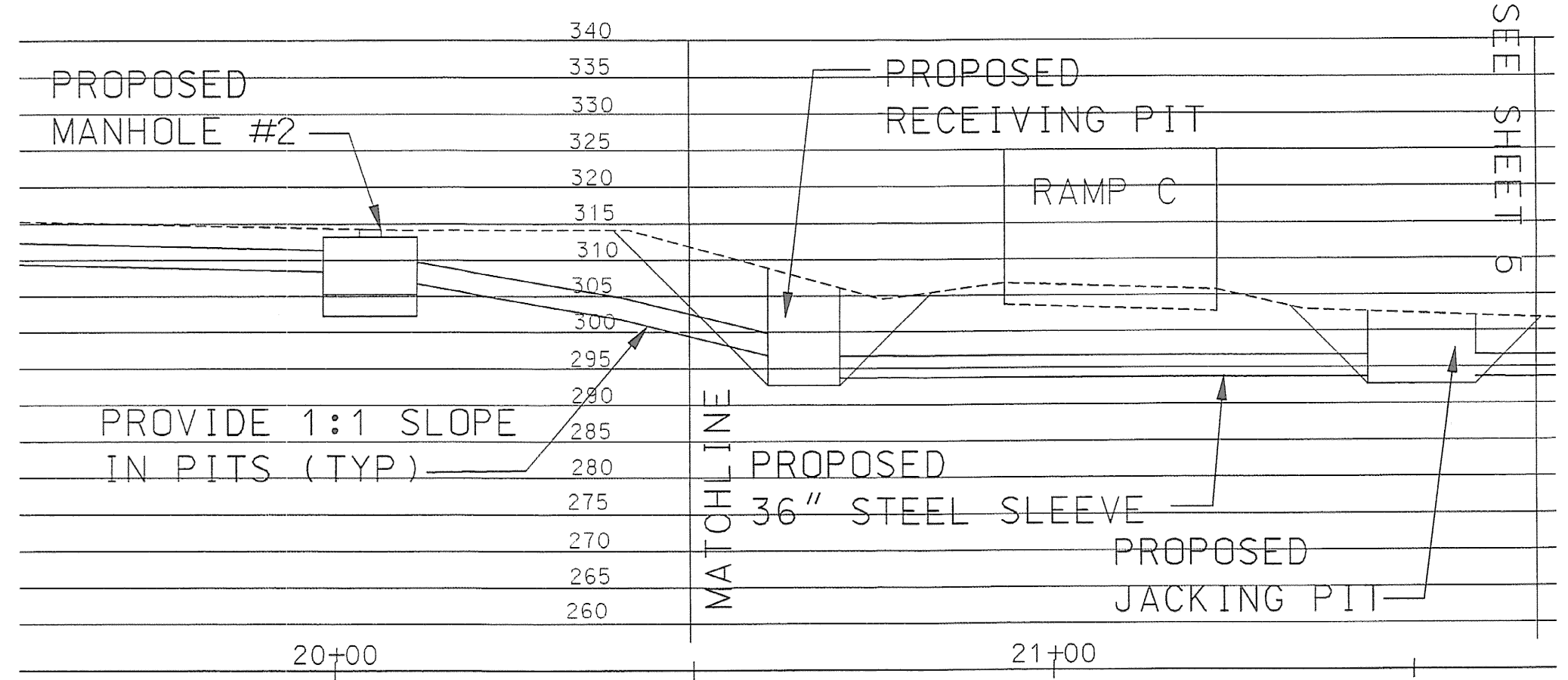
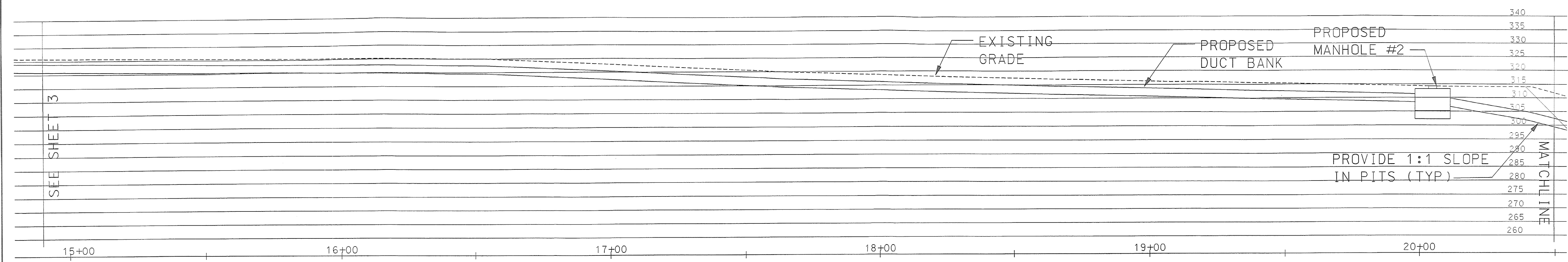
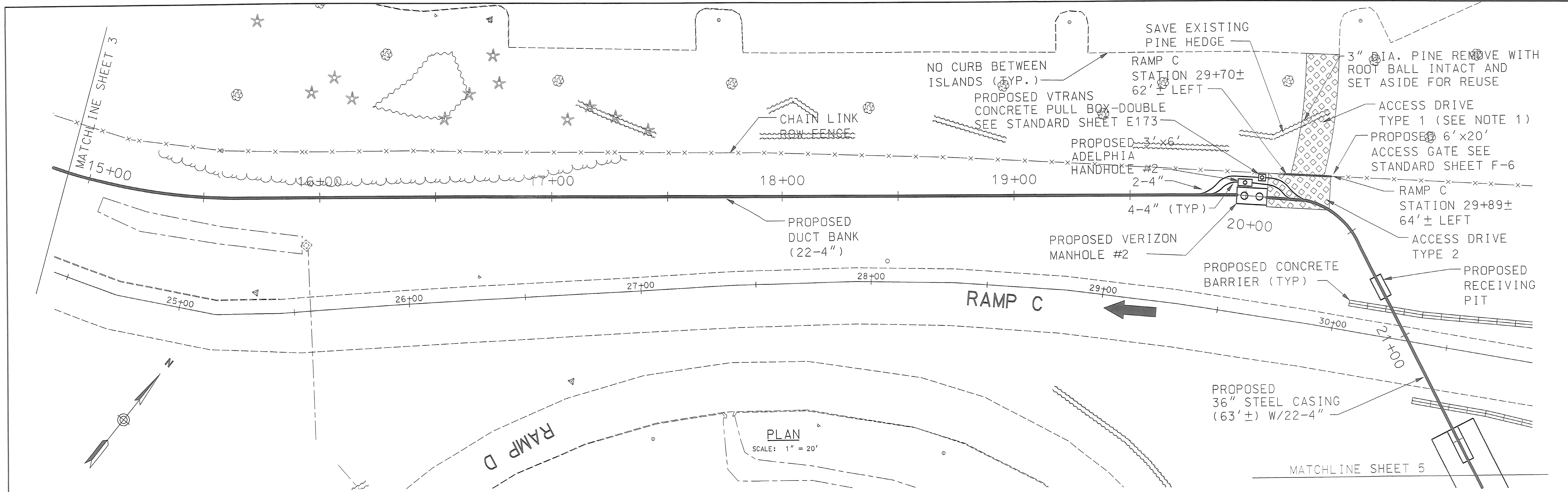


PROFILE
SCALE: 1" = 20'



STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log Sta.
U.S. 2 OVER I-89	
TELECOMMUNICATIONS RELOCATION	
Designed By M. HAYES	Drawn By M. HAYES
Checked By	Date
S. JOHNSON	
Date	
PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cad Drawing No. VTRANS-GEN	Date 10/31/01
Bridge Sheet No. T04 of 8	Sheet 59 of 75

VANASSE HANGEN BRUSTLIN, INC.



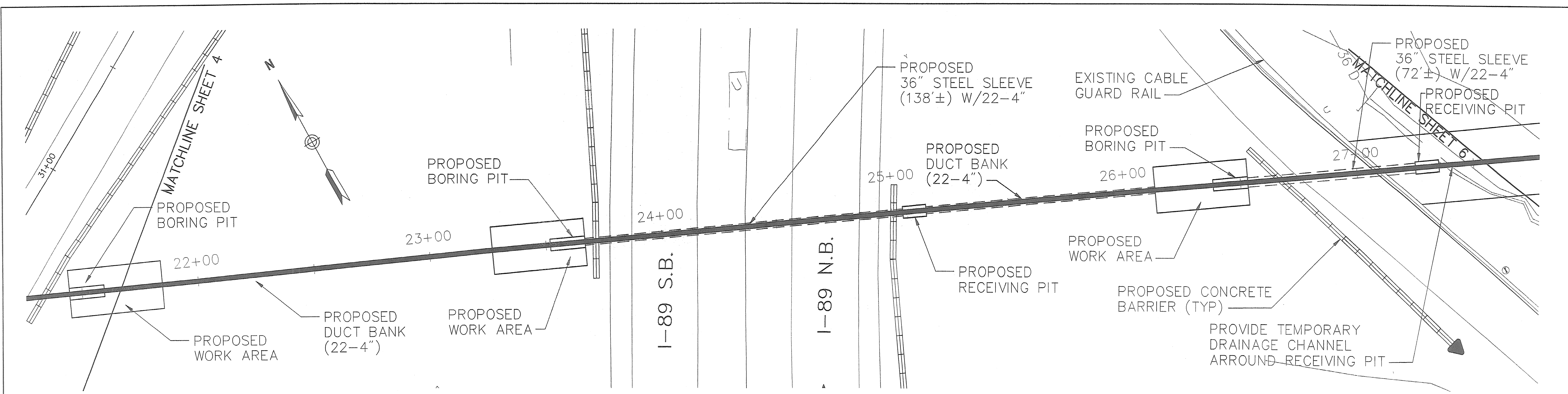
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SCALE: 1" = 20'

NOTES:
1. CONTRACTOR TO PERFORM NO WORK OUTSIDE OF ACCESS DRIVE, EXCEPT REMOVAL OF 3" DIAMETER PINE.

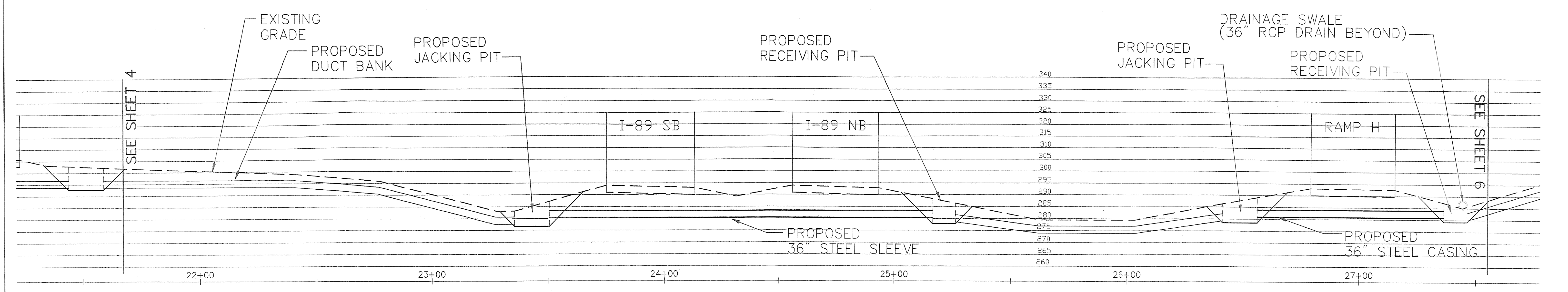
**STATE OF VERMONT
AGENCY OF TRANSPORTATION**

Town Of	SOUTH BURLINGTON	Bridge No. 68
Highway No.	U.S. 2	Log Sta.
		Surv. Sta.
U.S. 2 OVER I-89		
TELECOMMUNICATIONS RELOCATION		
Designed By	M. HAYES	Drawn By M. HAYES
Checked By	Date	Bridge Design Supervisor S. JOHNSON Date
PROJECT	SOUTH BURLINGTON	PROJECT NO. IM DECK (36)
I.G.C. Info.	VTRANS-GEN	Date 10/31/01
Bridge Sheet No.	TD 5 OF 8	Sheet 59E of 75

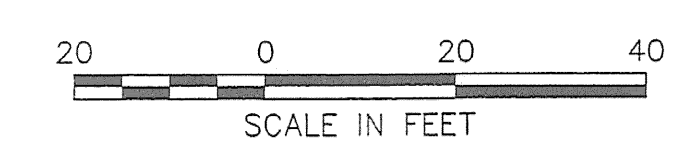
VANASSE HANGEN BRUSTLIN, INC.



PLAN
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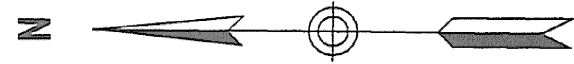


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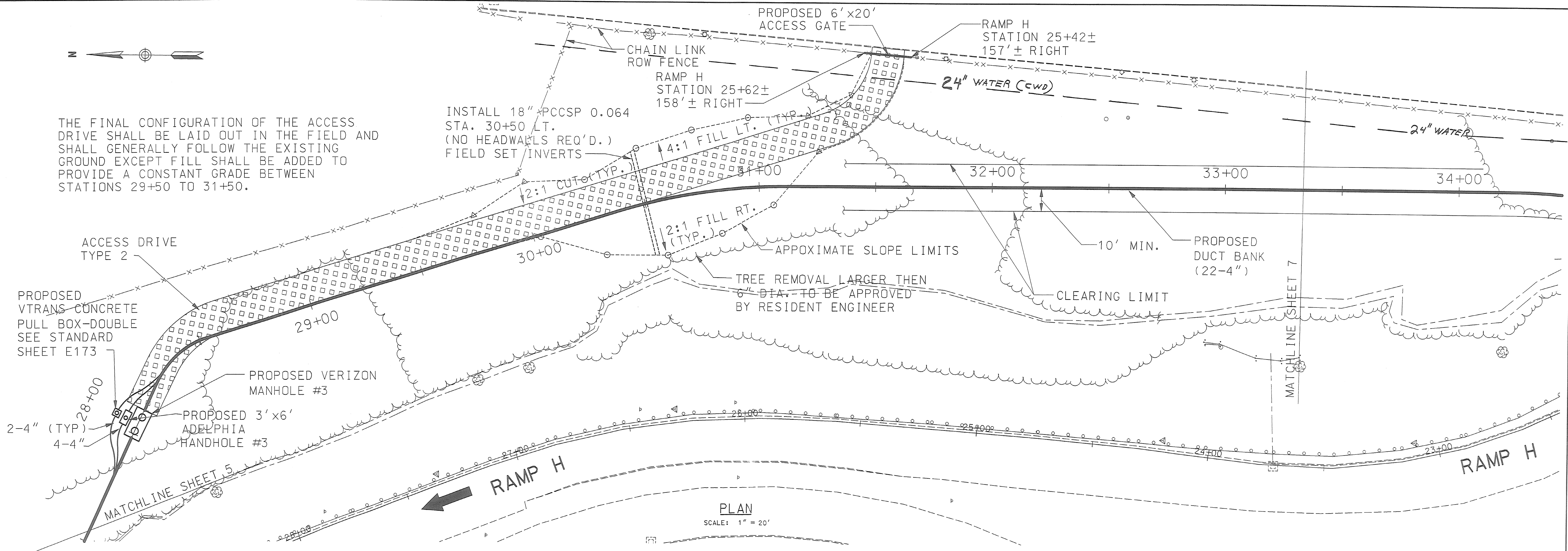


VANASSE HANGEN BRUSTLIN, INC.

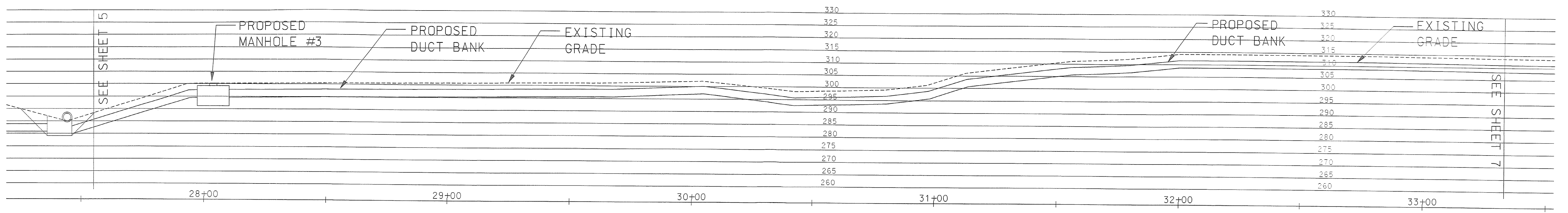
STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log Sta. Surv. Sta.
U.S. 2 OVER I-89	
TELECOMMUNICATIONS RELOCATION	
Designed By M. HAYES	Drawn By M. HAYES
Checked By _____ Date _____	Bridge Design Supervisor S. JOHNSON Date _____
PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cad Drawing No. VTRANS-GEN	Date 10/31/01
Bridge Sheet No. 26 of 8	Sheet 59 of 75



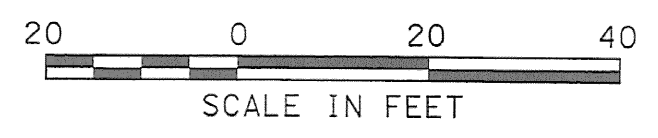
THE FINAL CONFIGURATION OF THE ACCESS DRIVE SHALL BE LAID OUT IN THE FIELD AND SHALL GENERALLY FOLLOW THE EXISTING GROUND EXCEPT FILL SHALL BE ADDED TO PROVIDE A CONSTANT GRADE BETWEEN STATIONS 29+50 TO 31+50.



PLAN
SCALE: 1" = 20'



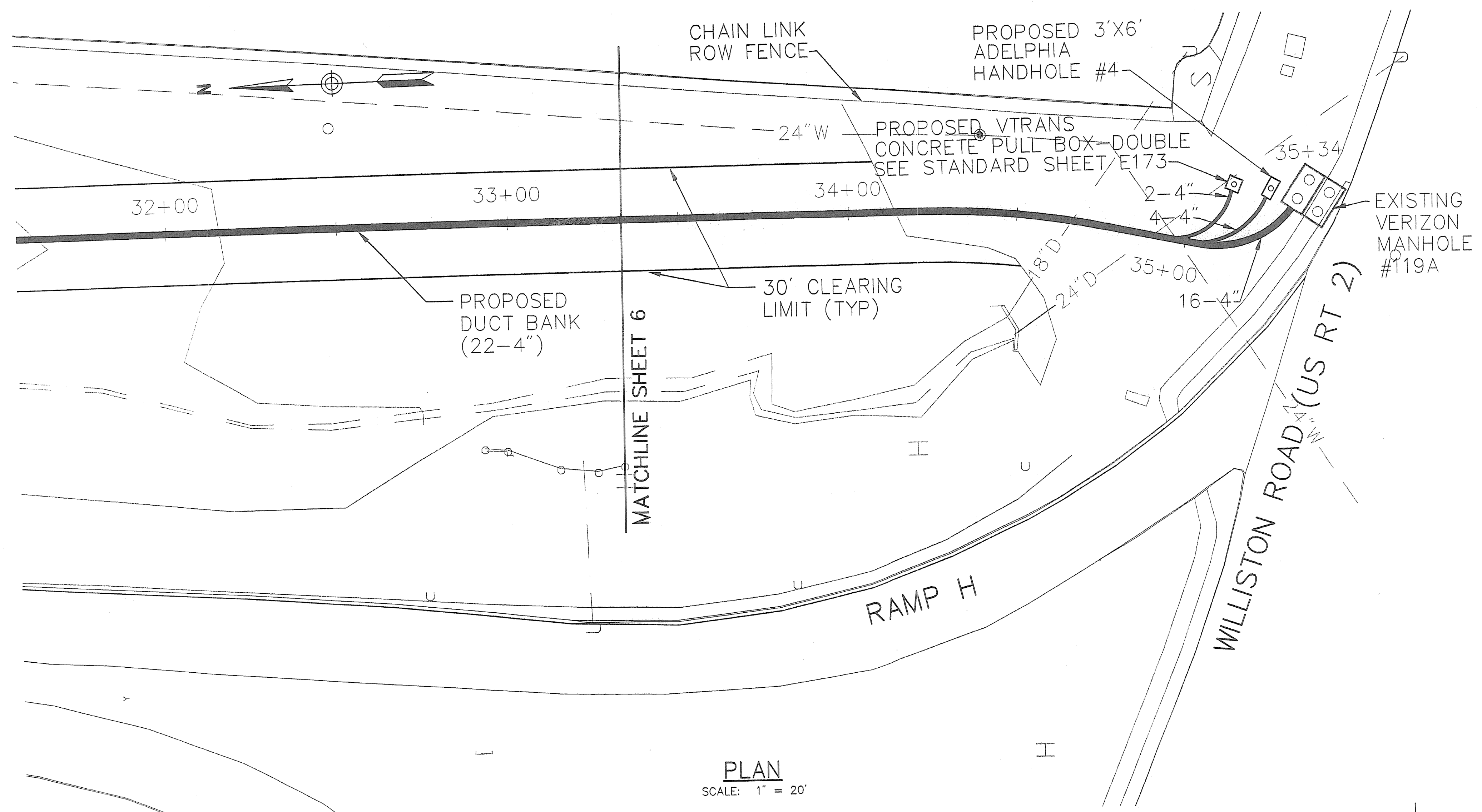
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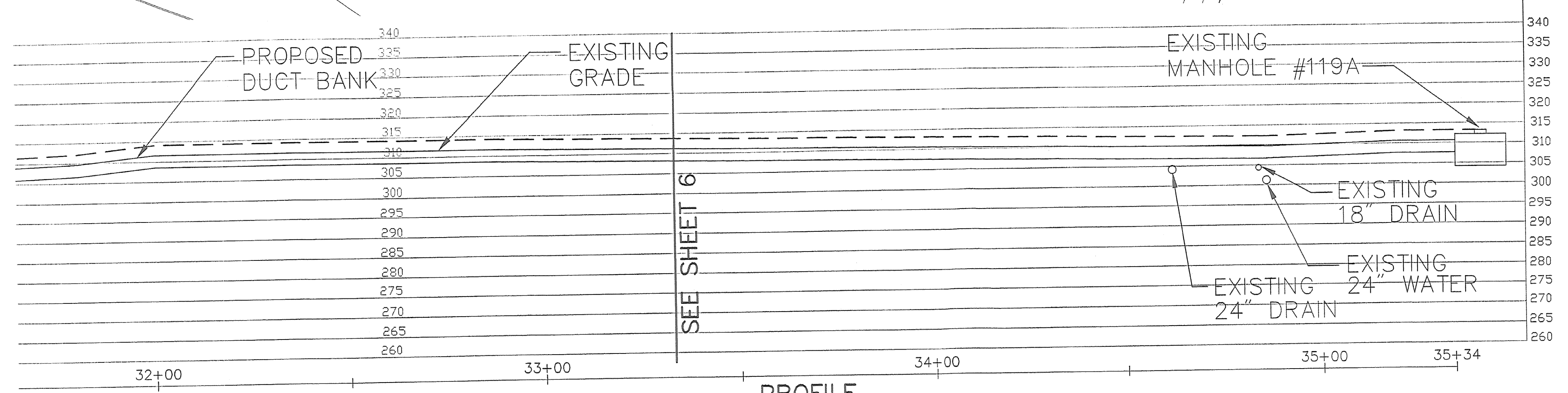
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	SOUTH BURLINGTON	Bridge No. 68
Highway No.	U. S. 2	Log Sta.
		Surv. Sta.
U. S. 2 OVER I-89		
TELECOMMUNICATIONS RELOCATION		
Designed By	M. HAYES	Drawn By M. HAYES
Checked By	Date	Bridge Design Supervisor S. JOHNSON Date
PROJECT	SOUTH BURLINGTON	PROJECT NO. 1M DECK (36)
I.G.C. Info.	VTRANS-GEN	Date 10/31/01
Bridge Sheet No.	TD 7 OF 8	Sheet 59G of 75

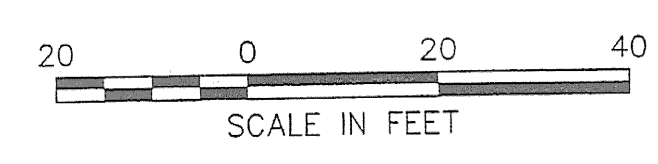
VANASSE HANGEN BRUSTLIN, INC.



PLAN
SCALE: 1" = 20'



PROFILE
SCALE: 1" = 20'



STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log Sta. Surv. Sta.
U.S. 2 OVER I-89	
TELECOMMUNICATIONS RELOCATION	
Designed By M. HAYES	Drawn By M. HAYES
Checked By _____ Date _____	Bridge Design Supervisor S. JOHNSON Date _____
PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cad Drawing No. VTRANS-GEN	Date 10/31/01
Bridge Sheet No. TP 8 OF 8	Sheet 33 of 75

VANASSE HANGEN BRUSTLIN, INC.

5.04 At the manhole or cable entrance facility, separate the ducts vertically and horizontally by a minimum of 2 inches (Fig. 5). Separation between ducts can be obtained with preformed, plastic spacers. Do not use wood for spacers. Join the conduit to duct terminators in the wall using the cement (or adhesive) supplied with the conduit. If the conduit is to be cast into the manhole (CEF) wall, attach the duct terminators to the termination end of the conduit prior to encasement in the wall. Place wooden bulkheads in front of the ducts inside the manhole to prevent the flow of concrete into the manhole, and pour concrete (2500 psi, 3/8-inch aggregate, 9-inch slump) around the ducts outside the manhole. To prevent the concrete from flowing along the trench, ei-

ther backfill or place a wooden form 12 to 18 inches from the manhole end wall. Pour the concrete to a minimum depth of 2 inches above the duct entrance.

Before pouring concrete at the duct entrance, remove all dirt, mud, etc. from the area of the end wall where the concrete will contact the wall. To prevent concrete from entering the ducts, seal each duct with a conduit plug.

Note: Section 622-512-200 outlines the special methods recommended for sealing conduit entrances into manholes.

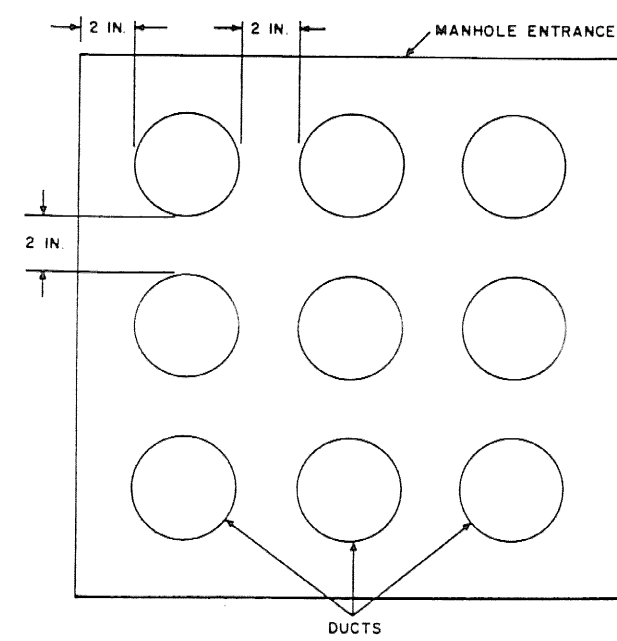
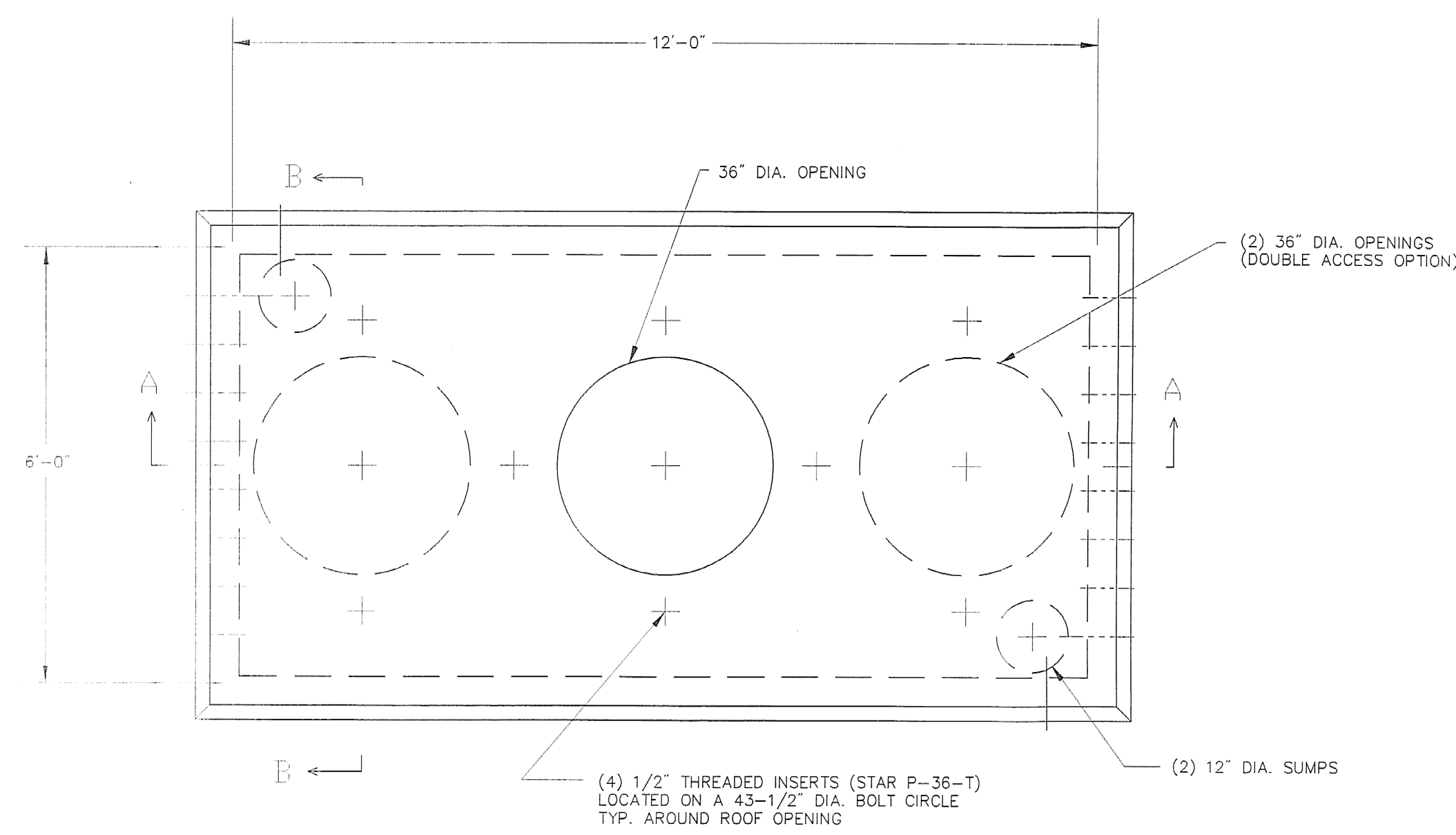
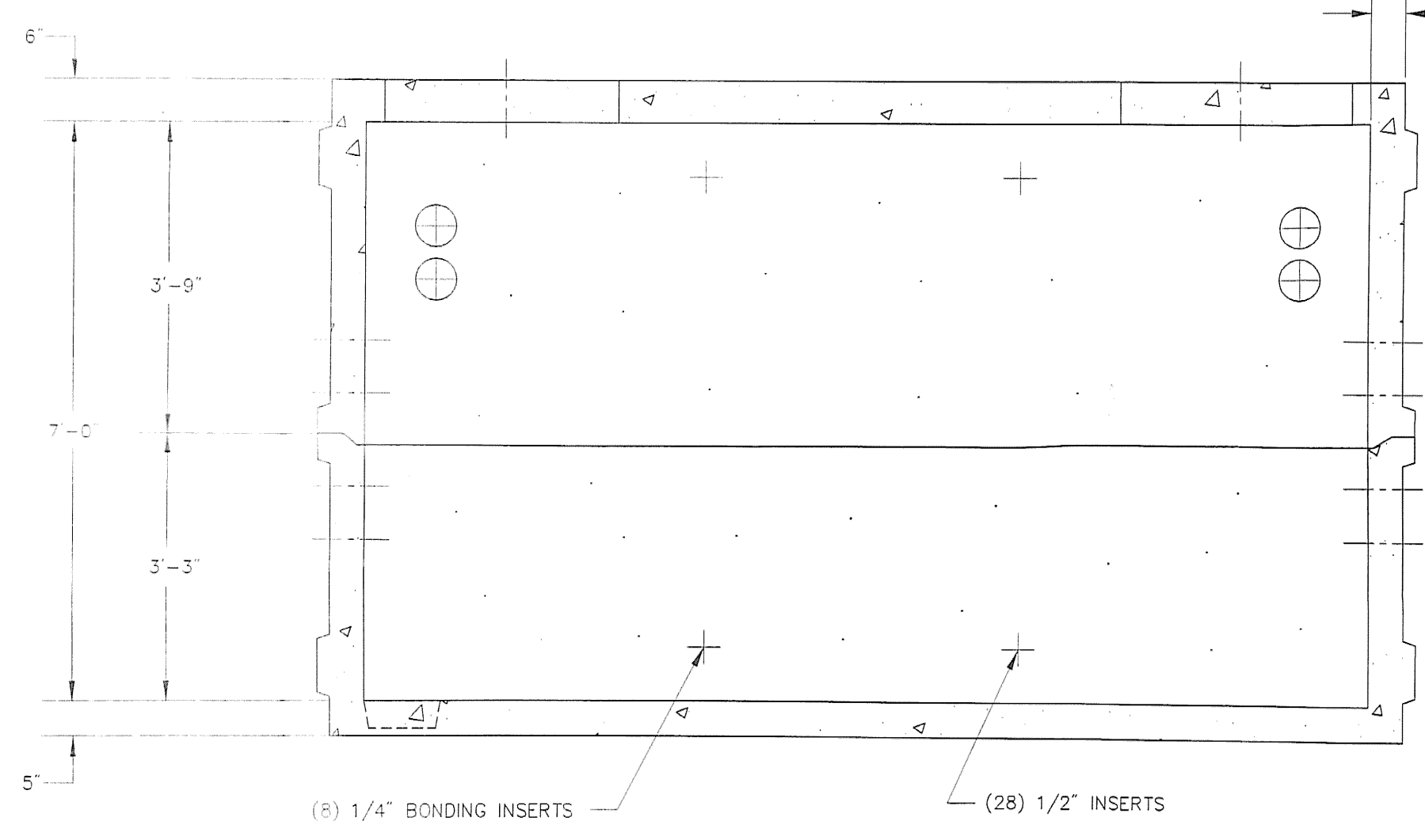


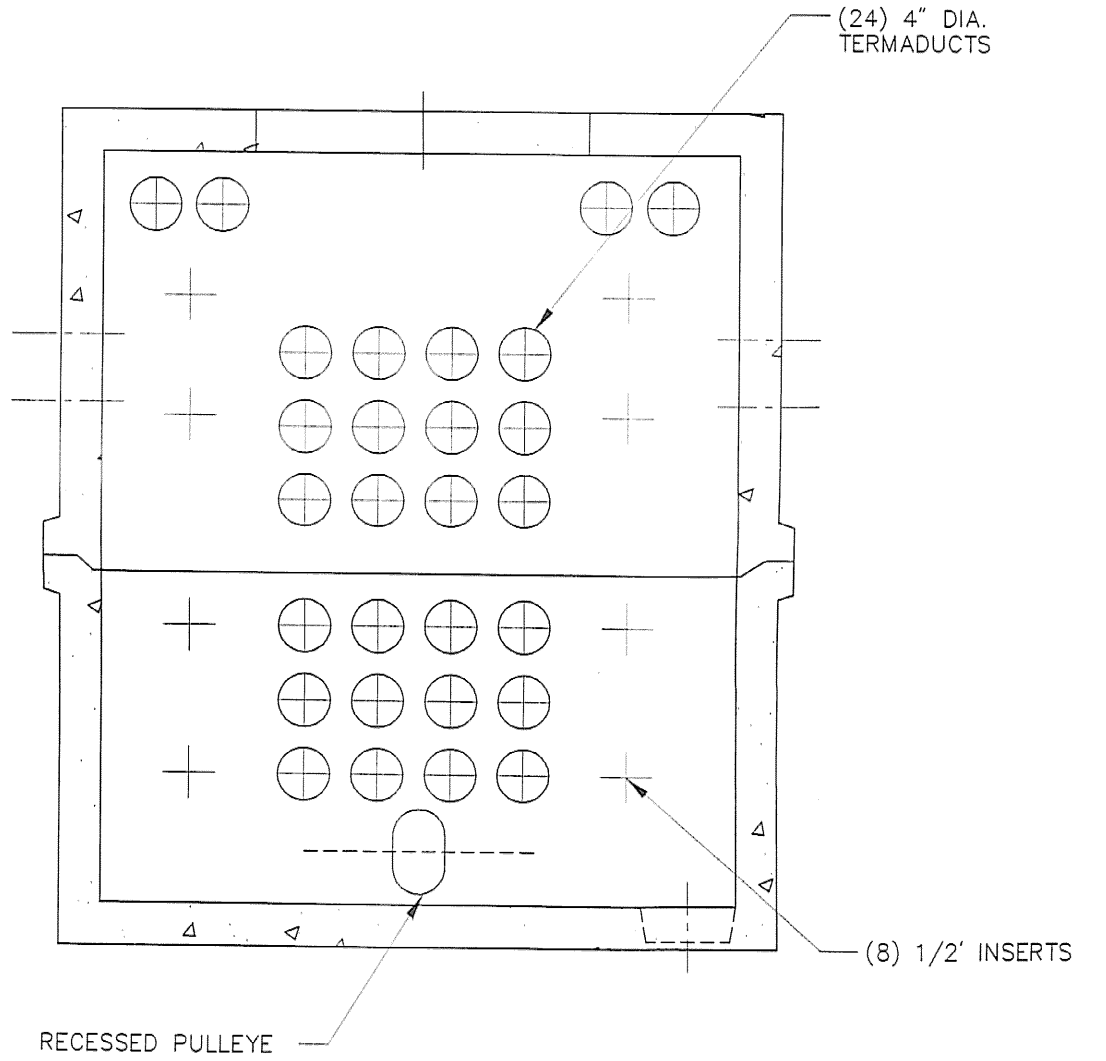
Fig. 5—Separation of Ducts of Manhole and Cable Vault Entrances



PLAN VIEW

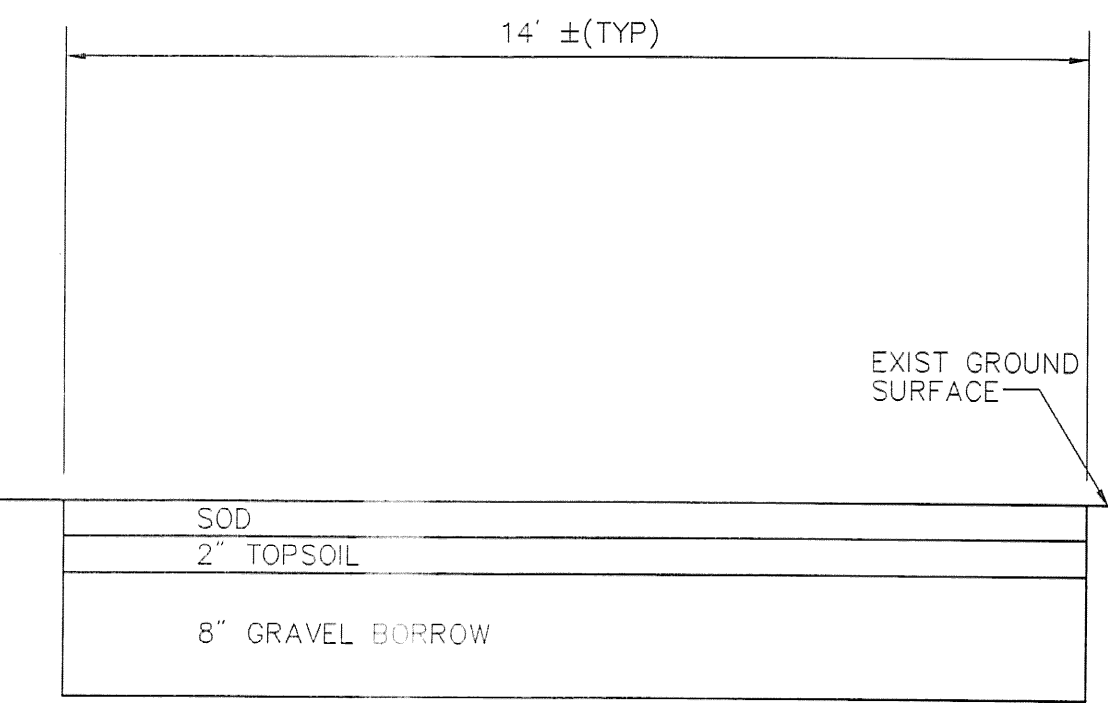


SECTION A-A
NOTE: OPPOSITE WALL IS SIMILAR

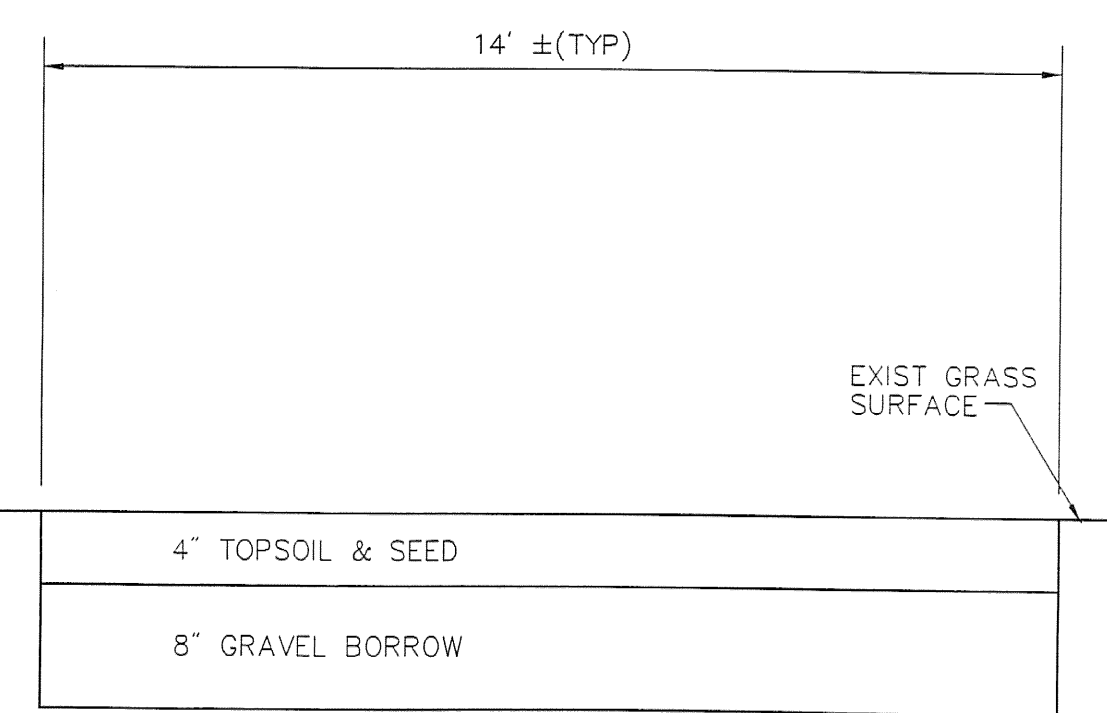


SECTION B-B
NOTE: OPPOSITE WALL IS SIMILAR

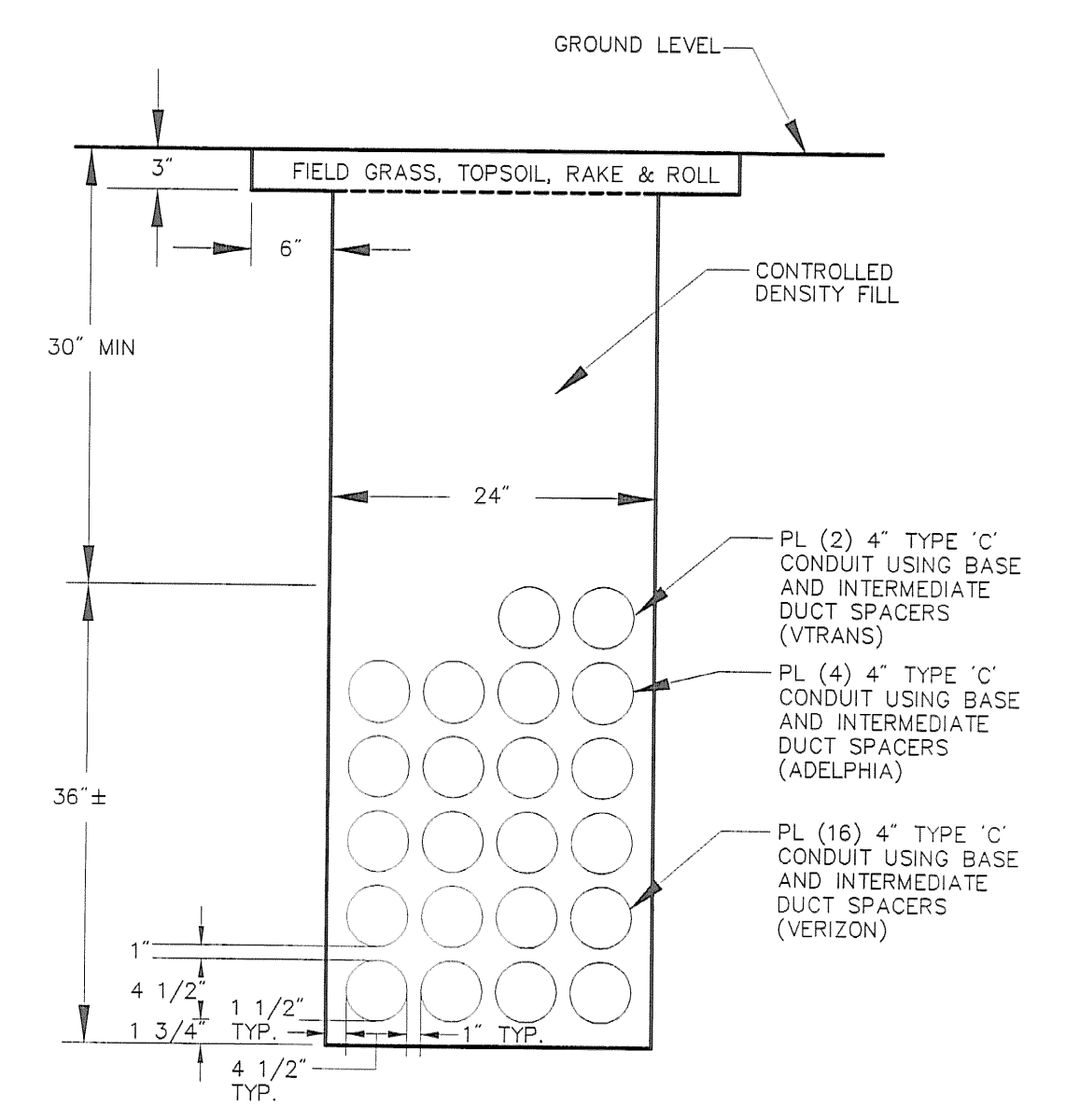
VERIZON MANHOLE DETAIL
SCALE: NOT TO SCALE



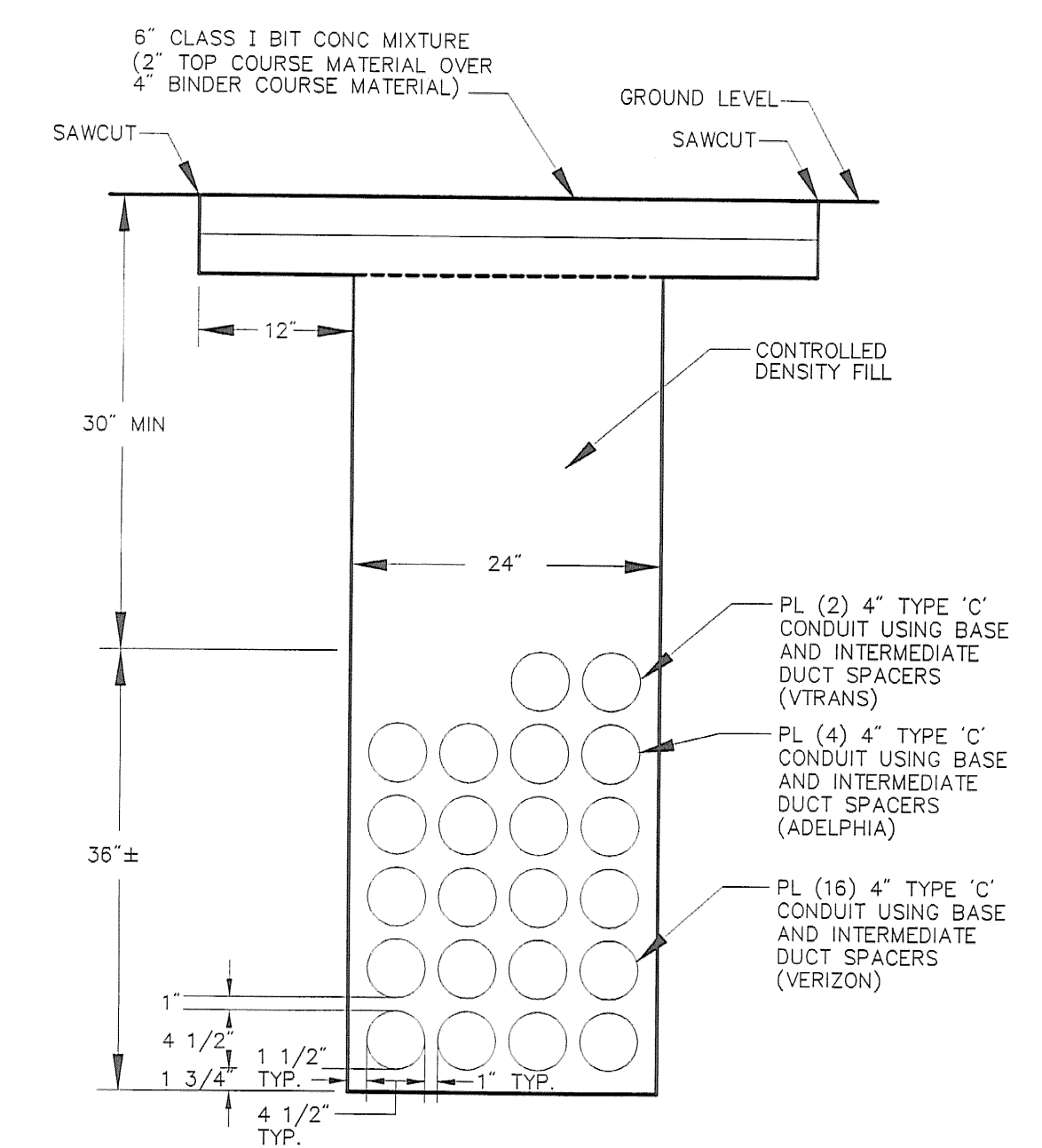
ACCESS DRIVE - TYPE 1
SCALE: NOT TO SCALE
S-STD.
H-STD. PVMT-01-ENGLISH



ACCESS DRIVE - TYPE 2
SCALE: NOT TO SCALE
S-STD.
H-STD. PVMT-01-ENGLISH

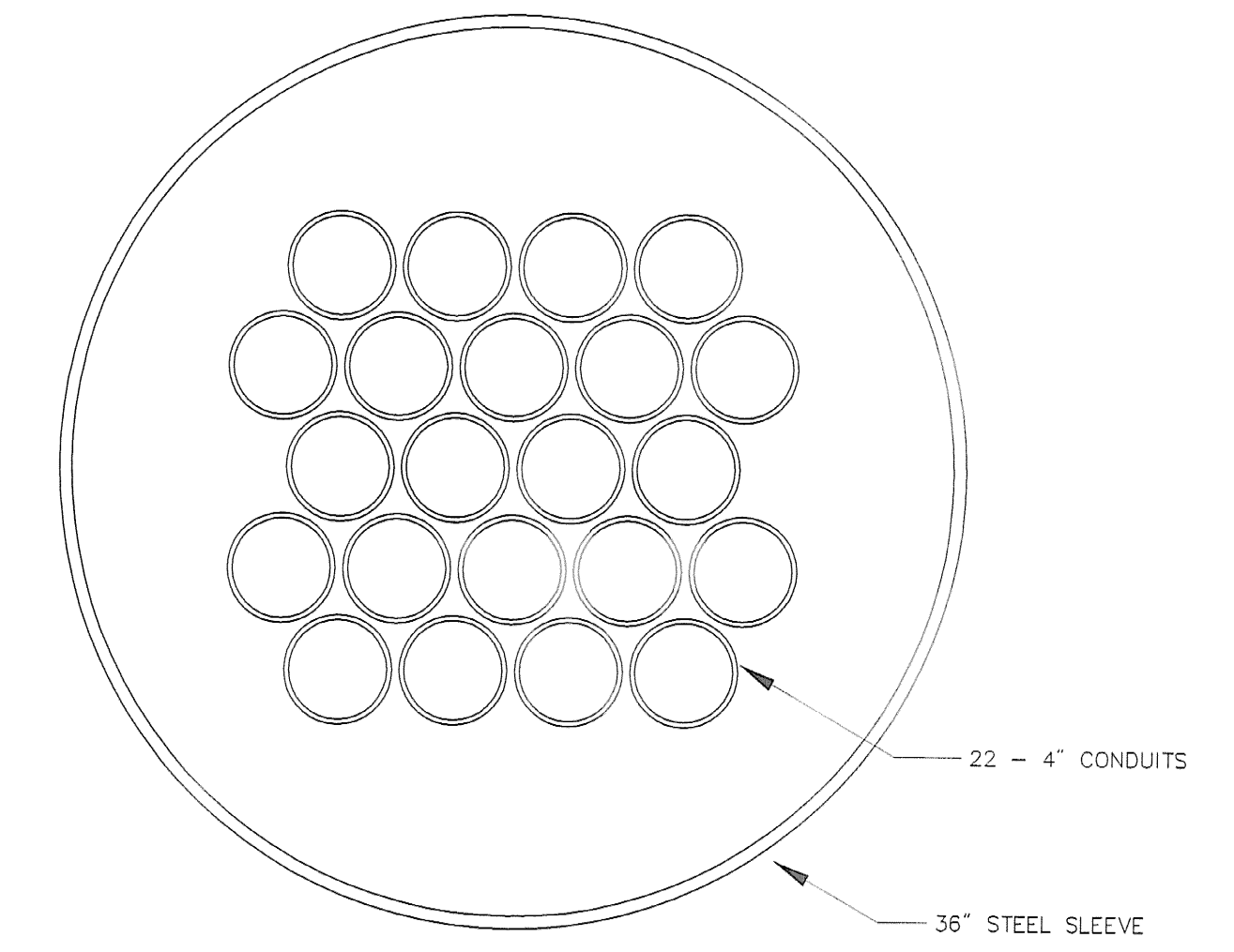


TRENCH DETAIL FIELD GRASS RESTORATION
SCALE: NOT TO SCALE



TRENCH DETAIL IN EXISTING PAVEMENT
SCALE: NOT TO SCALE

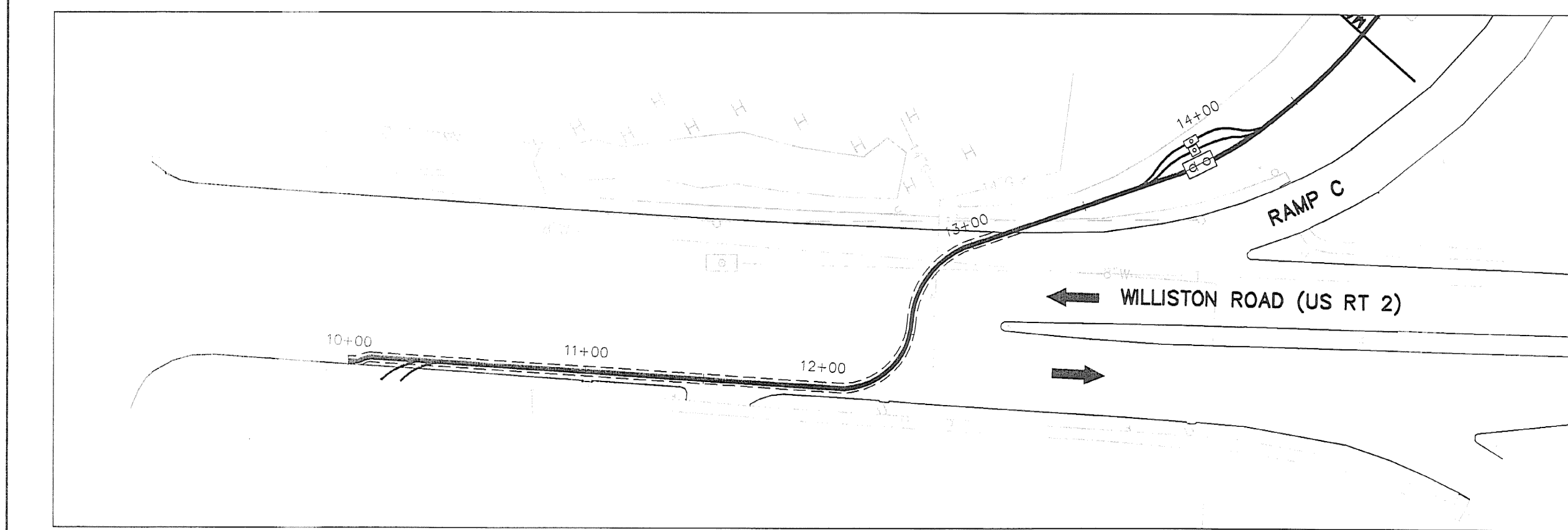
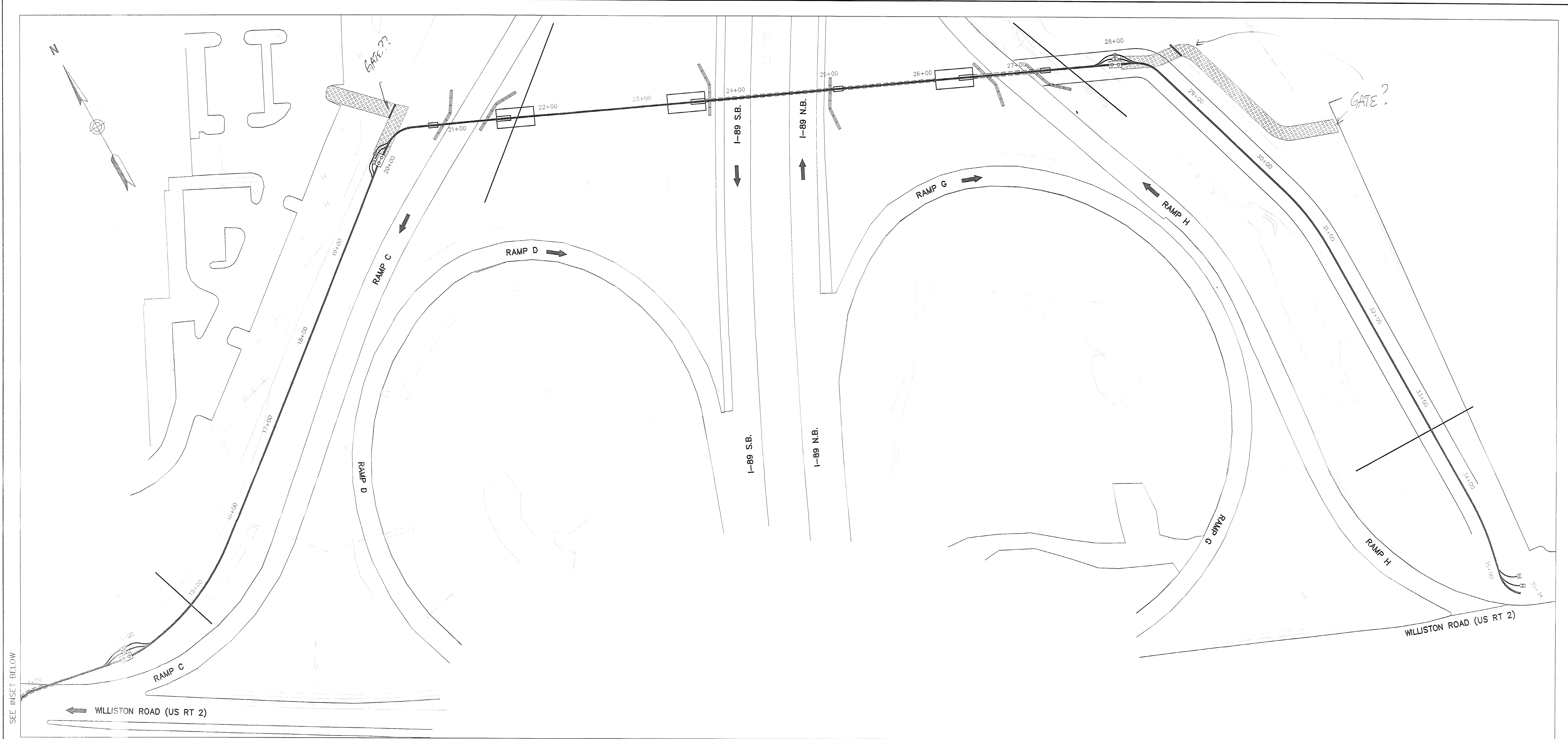
- GENERAL NOTES:**
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE BEGINNING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. ALL REPAIRS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR IS TO CONTACT "DIG SAFE" AT 1-888-344-7233 72 HOURS PRIOR TO ANY EXCAVATION.
 - WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION OF THE CONFLICT.
 - MAINTAIN A MINIMUM CLEARANCE OF SIX INCHES WHEN CROSSING EXISTING UTILITIES.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN TEMPORARY RESURFACING AND/OR PLATING ON ALL EXCAVATION IN PAVED STREETS AND SIDEWALKS. THE MAINTENANCE OF THE TEMPORARY RESURFACING SHALL CONTINUE UNTIL PERMANENT RESURFACING IS PLACED.
 - AREAS WITHIN AND OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
 - THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS AND SHALL BE RESPONSIBLE FOR PAYING ANY FEES FOR ANY POLE RELOCATION OR ALTERATION, ADJUSTMENT OR TEMPORARY SUPPORT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PUBLIC OR PRIVATE UTILITIES.
 - THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY PERMITS, PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS.
 - THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. ALL CONSTRUCTION ACTIVITY SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
 - ALL WORK PERFORMED WITHIN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM TO ALL LOCAL MUNICIPAL STANDARDS.
 - AT THE END OF EACH WORK DAY AND UPON FINAL CONSTRUCTION PENDING CABLE INSTALLATION, CONDUIT CAPS WILL BE PLACED ON ALL VACANT DUCTS.
 - JOINTS BETWEEN NEW BITUMINOUS CONCRETE PAVEMENT AND EXISTING PAVEMENT SHALL BE SAWCUT AND SEALED WITH RS-1 ASPHALT EMULSION AND BACKSANDS.
 - IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN CONSTRUCTION AS BUILT DRAWINGS AND PRESENT A COMPLETE SET OF DRAWINGS TO LEVEL 3 COMMUNICATIONS, LLC, WITHIN 14 DAYS OF COMPLETION OF WORK.
 - THE CONTRACTOR IS RESPONSIBLE FOR PAYING FOR AND OBTAINING ALL PERMITS NECESSARY TO COMPLETE THE WORK AS SHOWN ON THE DRAWINGS.
 - JACKING PITS SHALL BE CONSTRUCTED AT LEAST 10 FT FROM EDGE OF PAVEMENT. JACKING PITS SHALL HAVE A MINIMUM SIDE SLOPE OF 1:1. JACKING PITS SHALL BE PROTECTED BY JERSEY BARRIERS AS INDICATED ON PLANS OR AS DIRECTED BY THE ENGINEER.



BORE DETAIL
SCALE: NOT TO SCALE

STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log Sta. Surv. Sta.
U.S. 2 OVER I-89	
TELECOMMUNICATIONS DETAILS	
Designed By M. HAYES	Drawn By M. HAYES
Checked By _____ Date _____	Bridge Design Supervisor S. JOHNSON Date _____
PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cad Drawing No. VTRANS-DET	Date 8/24/01
Bridge Sheet No. _____	Sheet 1 of 7

VANASSE HANGEN BRUSTLIN, INC.



GENERAL PLAN

SCALE: 1" = 50'

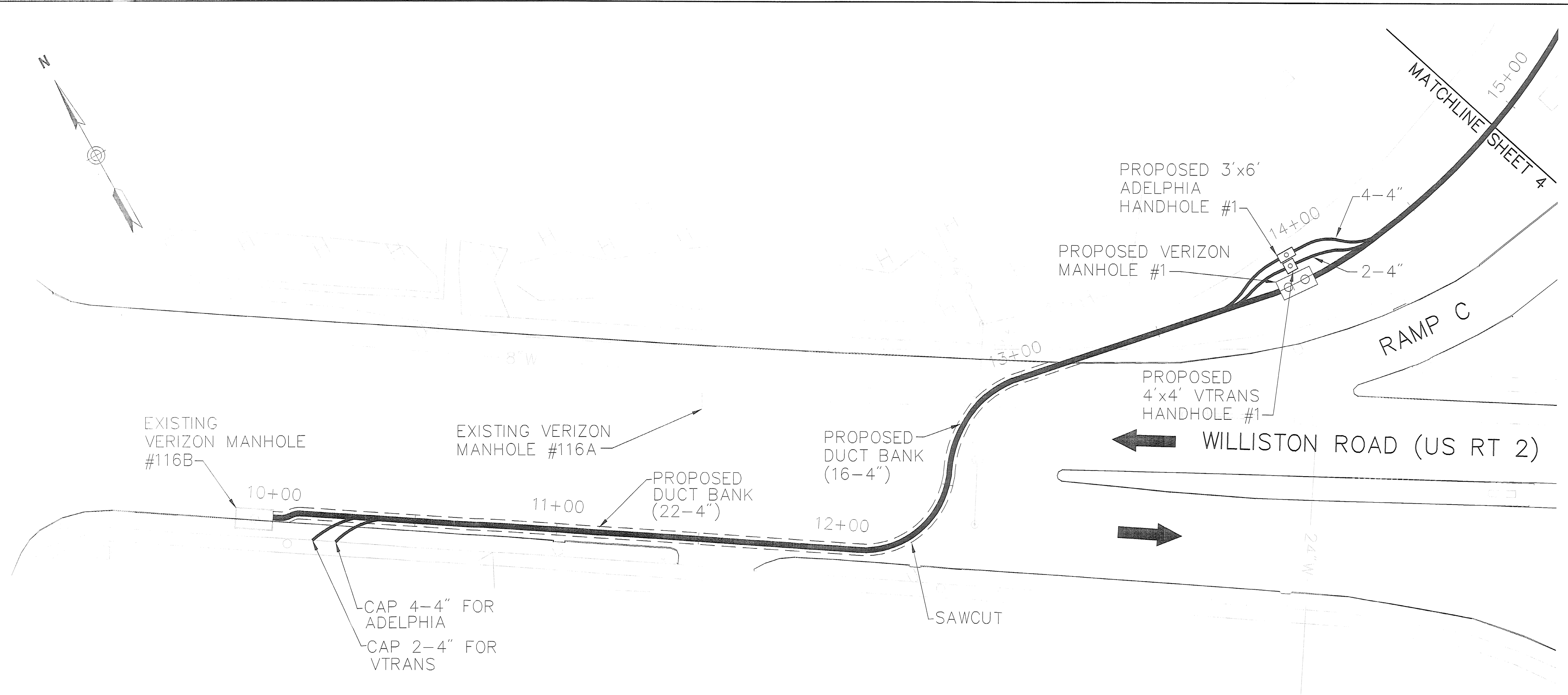
GENERAL NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE BEGINNING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCURRED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. ALL REPAIRS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR IS TO CONTACT "DIG SAFE" AT 1-888-344-7233 72 HOURS PRIOR TO ANY EXCAVATION.
2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION OF THE CONFLICT.
3. MAINTAIN A MINIMUM CLEARANCE OF TWELVE INCHES WHEN CROSSING EXISTING UTILITIES.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN TEMPORARY RESURFACING AND/OR PLATING ON ALL EXCAVATION IN PAVED STREETS AND SIDEWALKS. THE MAINTENANCE OF THE TEMPORARY RESURFACING SHALL CONTINUE UNTIL PERMANENT RESURFACING IS PLACED.
5. AREAS WITHIN AND OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
6. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS AND SHALL BE RESPONSIBLE FOR PAYING ANY FEES FOR ANY POLE RELOCATION OR ALTERATION, ADJUSTMENT OR TEMPORARY SUPPORT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PUBLIC OR PRIVATE UTILITIES.
7. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY PERMITS, PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS.
8. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. ALL CONSTRUCTION ACTIVITY SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
9. ALL WORK PERFORMED WITHIN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM TO ALL LOCAL MUNICIPAL STANDARDS.
10. AT THE END OF EACH WORK DAY AND UPON FINAL CONSTRUCTION PENDING CABLE INSTALLATION, CONDUIT CAPS WILL BE PLACED ON ALL VACANT DUCTS.
11. JOINTS BETWEEN NEW BITUMINOUS CONCRETE PAVEMENT AND EXISTING PAVEMENT SHALL BE SAWCUT AND SEALED WITH RS-1 ASPHALT EMULSION AND BACKSAND.
12. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN CONSTRUCTION AS BUILT DRAWINGS AND PRESENT A COMPLETE SET OF DRAWINGS TO VERMONT AGENCY OF TRANSPORTATION WITHIN 14 DAYS OF COMPLETION OF WORK.
13. THE CONTRACTOR IS RESPONSIBLE FOR PAYING FOR AND OBTAINING ALL PERMITS NECESSARY TO COMPLETE THE WORK AS SHOWN ON THE DRAWINGS.
14. JACKING PITS SHALL BE CONSTRUCTED AT LEAST 10 FT FROM EDGE OF PAVEMENT. JACKING PITS SHALL HAVE A MINIMUM SIDE SLOPE OF 1:1. JACKING PITS SHALL BE PROTECTED BY JERSEY BARRIERS AS INDICATED ON PLANS OR AS DIRECTED BY THE ENGINEER.

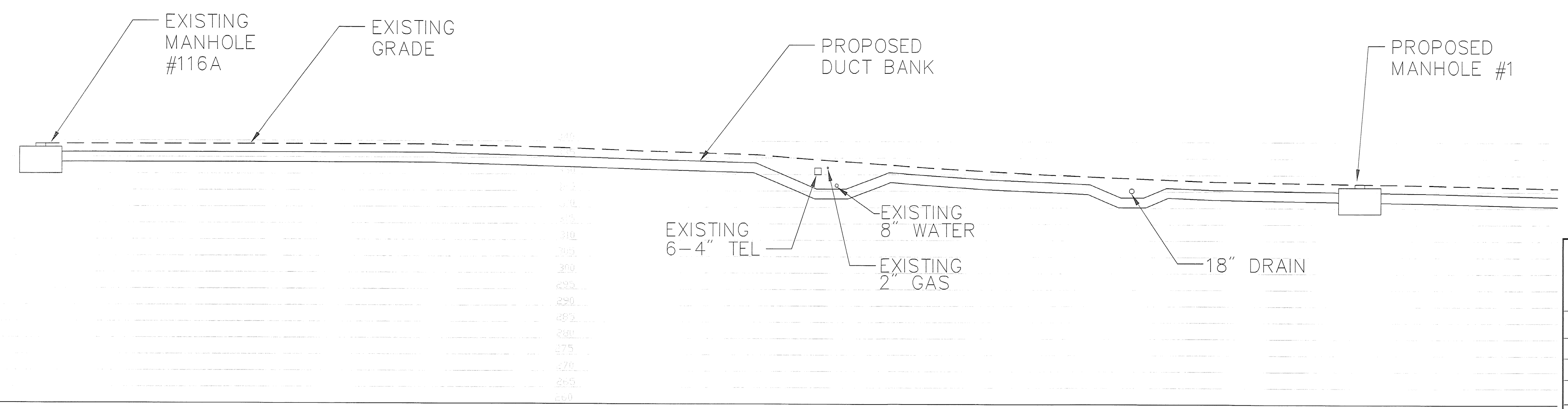


VANASSE HANGEN BRUSTLIN, INC.

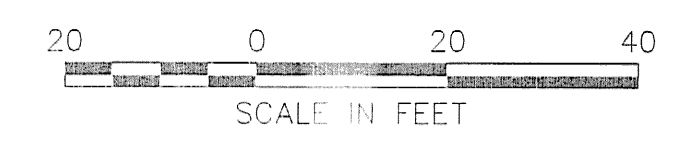
STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log Sta. Surv. Sta.
U.S. 2 OVER I-89 TELECOMMUNICATIONS RELOCATION	
Designed By M. HAYES	Drawn By M. HAYES
Checked By _____ Date _____	Bridge Design Supervisor S. JOHNSON Date _____
PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cad Drawing No. VTRANG-GEN	Date 9/24/01
Bridge Sheet No. _____	Sheet 2 of 7



PLAN
SCALE: 1" = 20'

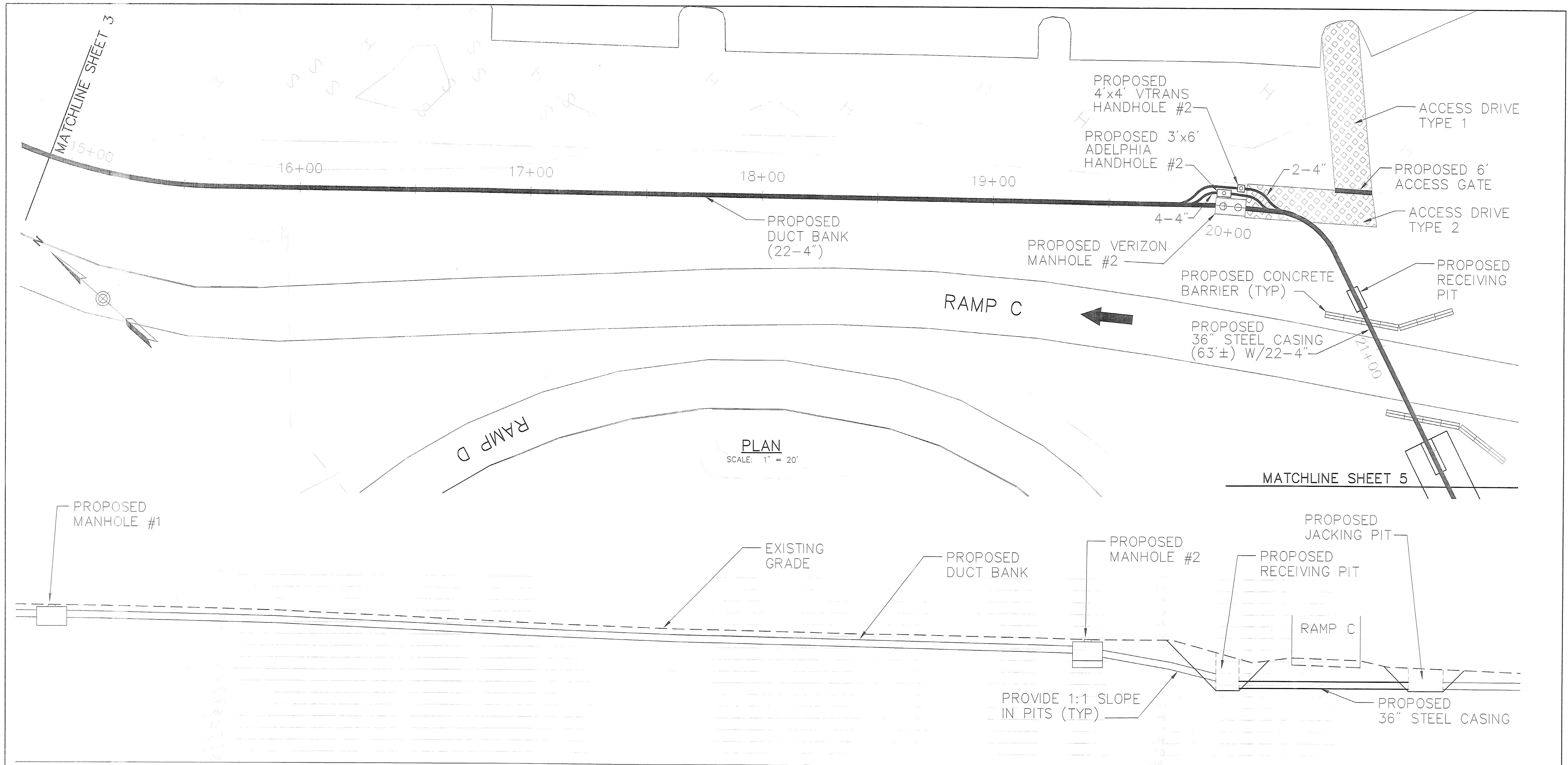


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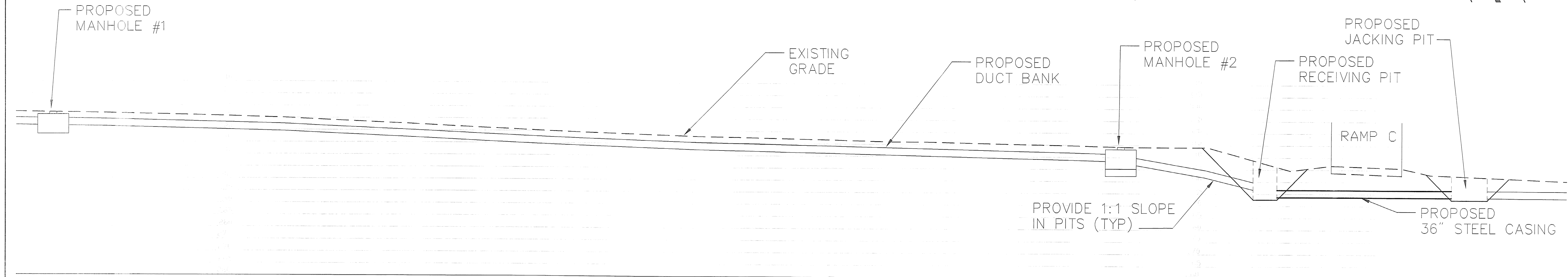


STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log Sta. Surv. Sta.
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TELECOMMUNICATIONS RELOCATION	
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Checked By _____ Date _____	Bridge Design Supervisor S. JOHNSON Date _____
PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cad Drawing No. VTRANS-GEN	Date 9/24/01
Bridge Sheet No. _____	Sheet 3 of 7

VANASSE HANGEN BRUSTLIN, INC.



PLAN
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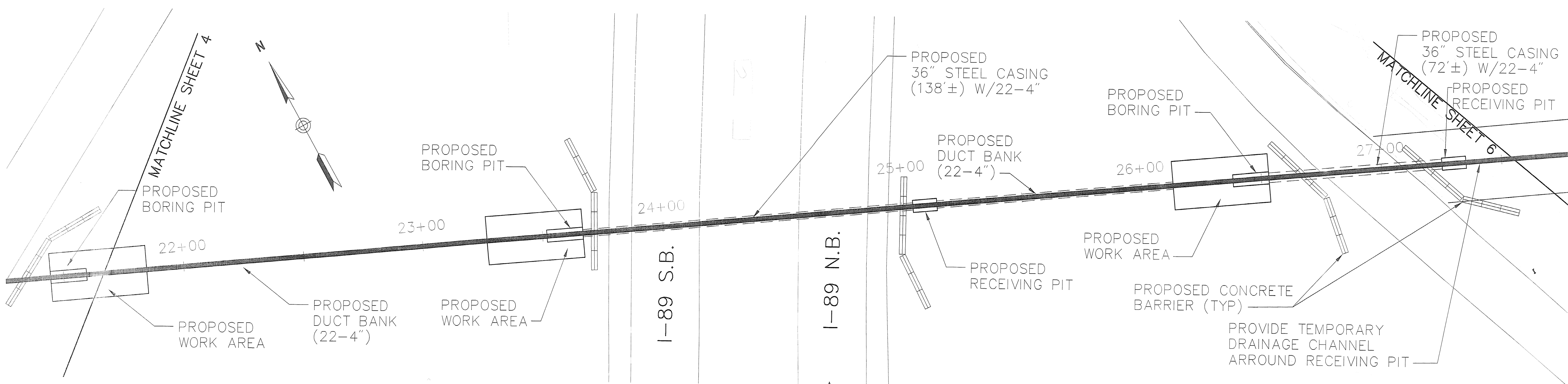


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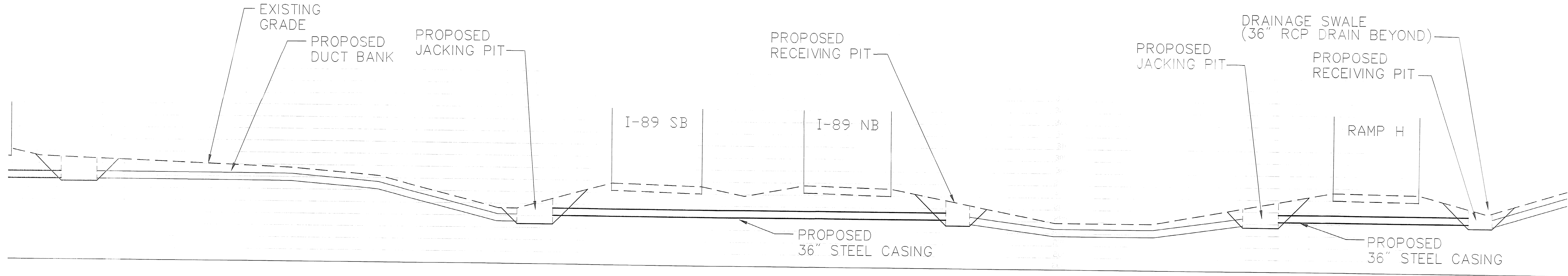


STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log Sta.
	Surv. Sta.
U.S. 2 OVER I-89	
TELECOMMUNICATIONS RELOCATION	
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Checked By _____ Date _____	Bridge Design Supervisor S. JOHNSON Date _____
PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cad. Drawing No. VTRANS-GEN	Date 9/24/01
Bridge Sheet No. _____	Sheet 4 of 7

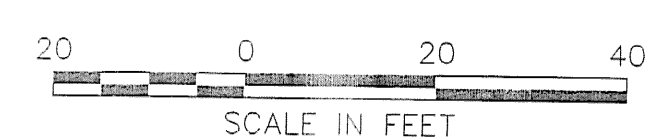
VANASSE HANGEN BRUSTLIN, INC.



PLAN
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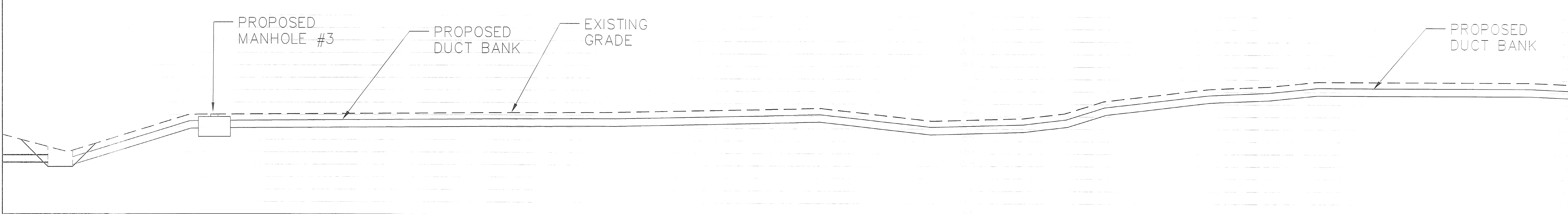
PROFILE
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**STATE OF VERMONT
AGENCY OF TRANSPORTATION**

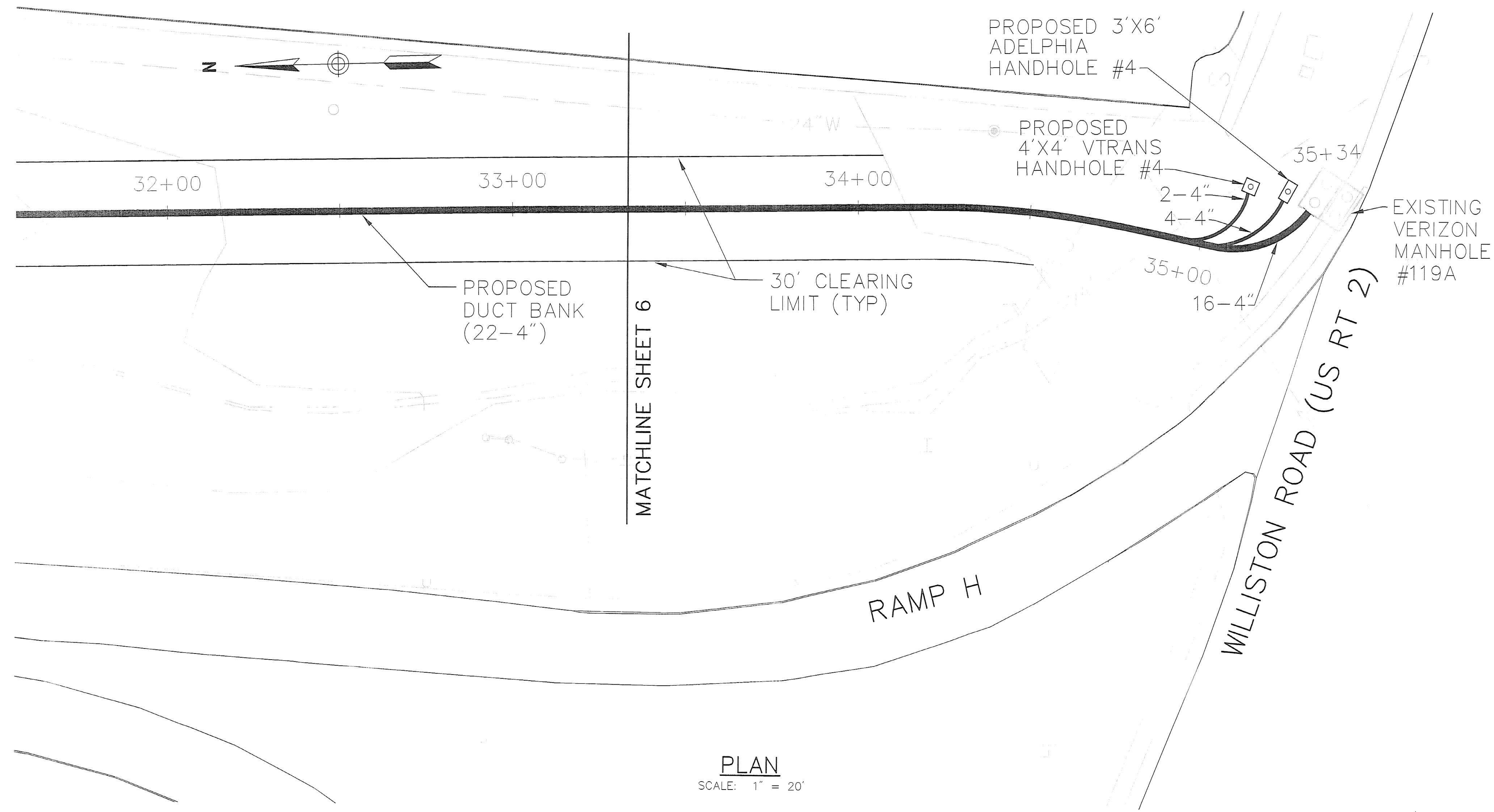
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log Sta. Surv. Sta.
U.S. 2 OVER I-89	
TELECOMMUNICATIONS RELOCATION	
Designed By M. HAYES	Drawn By M. HAYES
Checked By _____ Date _____	Bridge Design Supervisor S. JOHNSON Date _____
PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cad Drawing No. VTRANS-GEN	Date 9/24/01
Bridge Sheet No. _____	Sheet 5 of 7

VANASSE HANGEN BRUSTLIN, INC.

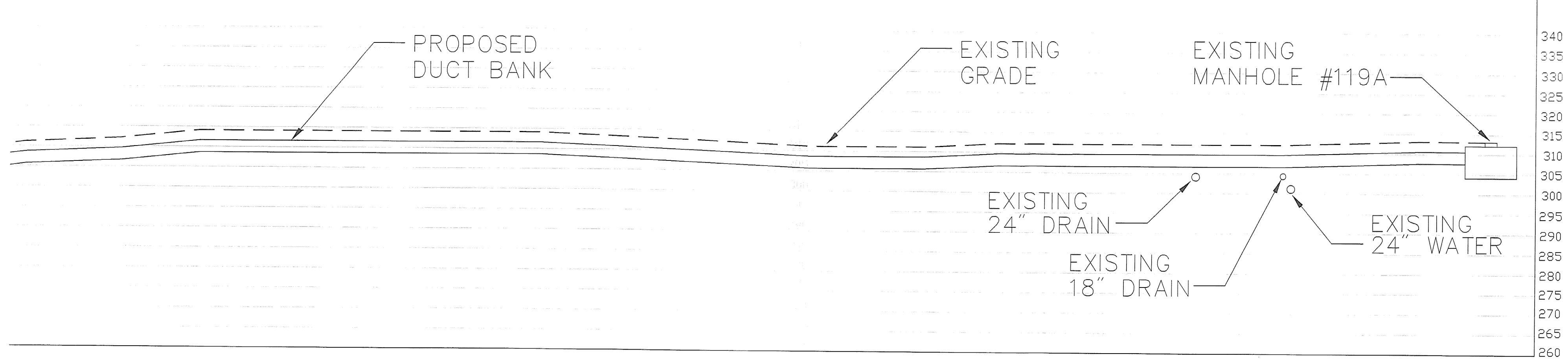


STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log. Sta.
	Surv. Sta.
U.S. 2 OVER I-89	
TELECOMMUNICATIONS RELOCATION	
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Checked By _____ Date _____	Bridge Design Supervisor S. JOHNSON Date _____
PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cad Drawing No. VTRANS-GEN	Date 9/24/01
Bridge Sheet No. _____	Sheet 6 of 7

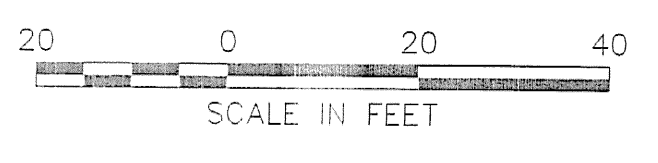
VANASSE HANGEN BRUSTLIN, INC.



PLAN
SCALE: 1" = 20'



PROFILE
SCALE: 1" = 20'



STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of SOUTH BURLINGTON	Bridge No. 68
Highway No. U.S. 2	Log Sta.
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U.S. 2 OVER I-89	
TELECOMMUNICATIONS RELOCATION	
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PROJECT SOUTH BURLINGTON	PROJECT NO. IM DECK(36)
VHB Cod Drawing No. VTRANS-GEN	Date 9/24/01
Bridge Sheet No. _____	Sheet 7 of 7

VANASSE HANGEN BRUSTLIN, INC.



Vanasse Hangen Brustlin, Inc. TRANSMITTAL

Transportation
Land Development
Environmental Services

Kilton Road
Six Bedford Farms, Suite 607
Bedford, NH 03110-6572
603 644 0888
FAX 603 644 2385

Date: July 5, 2000	VHB Project No.: 50929
Re: South Burlington IM DECK 36 Bridge No. 68 and STP BIKE (28) S	

To: Robert Suckert, PE, Resident Engineer
Vermont Agency of Transportation
209 South Pinnacle Ridge Road
Waterbury, VT 05676

We are sending you: Attached Under Separate cover via Regular Mail the following items:

- Shop drawings Prints Plans Diskettes Specifications Copy of Letter Change Order
 Other _____

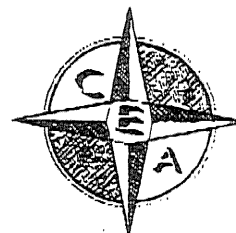
Copies	Date	No.	Description
1	6-27-00		Structural Drawings for Bridge Shoring Sheet S1 -Sections and Details

These are transmitted as checked below:

- Reviewed as required by the construction contract documents and approved, but only for conformance to the design concept of the work, and subject to further limitations and requirements contained in the construction contract documents. Rejected Revise and Resubmit Furnish as Corrected

Copy to: VTrans Resident Engineer, Robert E. Suckert, P.E. w/prints
Contractor, J.A. McDonald, Inc. w/prints
Civil Engineering Associates w/prints
VTrans Consultant Project Manager, Sherward Farnsworth, PE w/prints
VHB Project Manager, Steve Johnson, PE, VHB Project File

By: Athanasia S. Robinson, VHB Inc.
Athanasia S. Robinson



CIVIL ENGINEERING ASSOCIATES, INC.

928 Falls Road
P.O. Box 485
Shelburne, VT 05482

Phone: 802-985-2323
Fax: 802-985-2271
E-Mail: cea@together.net

July 5, 2000

Mr. Steve Johnson
Vanasse, Hangen, Brustlin, Inc.
Six Bedford Farms, Kilton Road
Bedford, New Hampshire 03110

**Subject: South Burlington IM Deck
End Support for Existing Stringers**

Dear Steve:

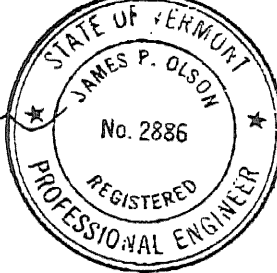
As a follow-up to your conversation with Lyn Wheatley, we are submitting the following description for securing the bridge stringers on the top of the temporary support frames.

1. One end of each set of stringers will be "fixed" to the beam seat (stub columns) with two heavy duty C-clamps (Proto model 6-HDL shown on attached sheet). Lateral restraint at this "fixed" end will be a 6-inch length of minimum 1/2 inch thick steel welded to the top of the stub column bearing plate adjacent to stringer bottom flange.
2. The "free" end will be restrained against vertical and lateral movement by the detail shown as "E" on our drawing S1 revised June 27, 2000.

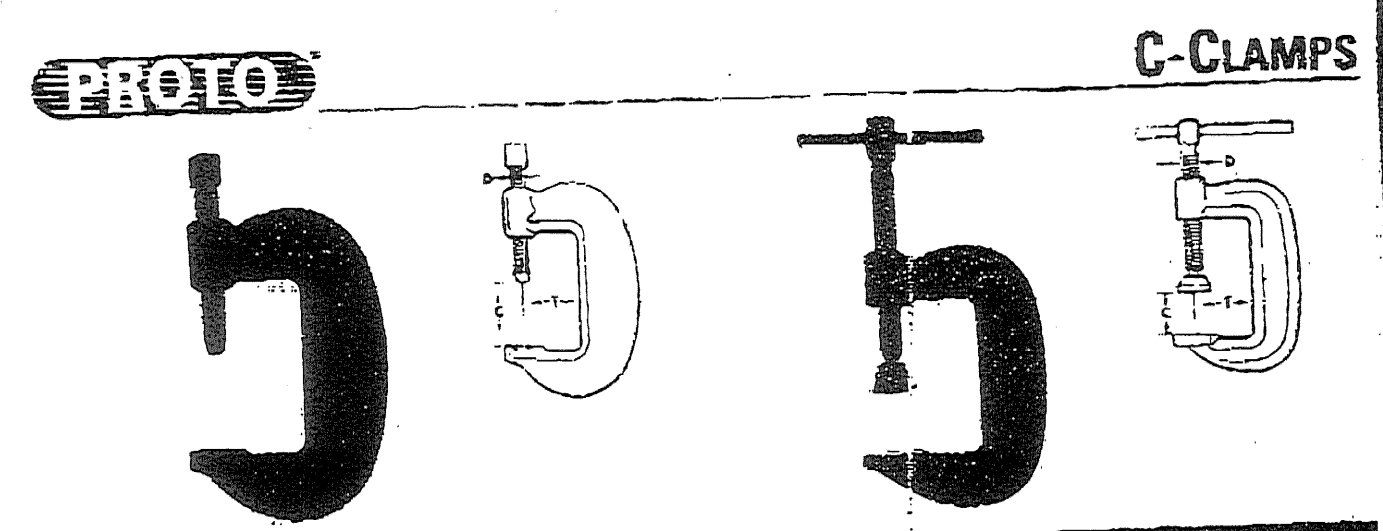
Please call either Lyn Wheatley or me if you have any questions or if you require additional information.

Very truly yours,

James P. Olson
James P. Olson, P.E.



JPO:pao
Enclosure



C-CLAMPS—EXTRA HEAVY SERVICE STANDARD SCREW

- Standard C-clamp design
- Heavy-duty threaded hub provides maximum screw support
- Forcing screws have a square head to be turned with a wrench
- Forcing screws have a hardened tip

No.	C	T	D	Min. Test Load Pounds	Capacity
0-HD	0"-1/4"	3/8"	3/8"	2,800	0.4
1-HD	0"-1/2"	5/8"	3/4"	5,600	0.7
1 1/2-HD	0"-3/4"	1 1/8"	7/8"	8,750	1.0
2-HD	1"-6/8"	1 3/4"	1"	20,000	10.1

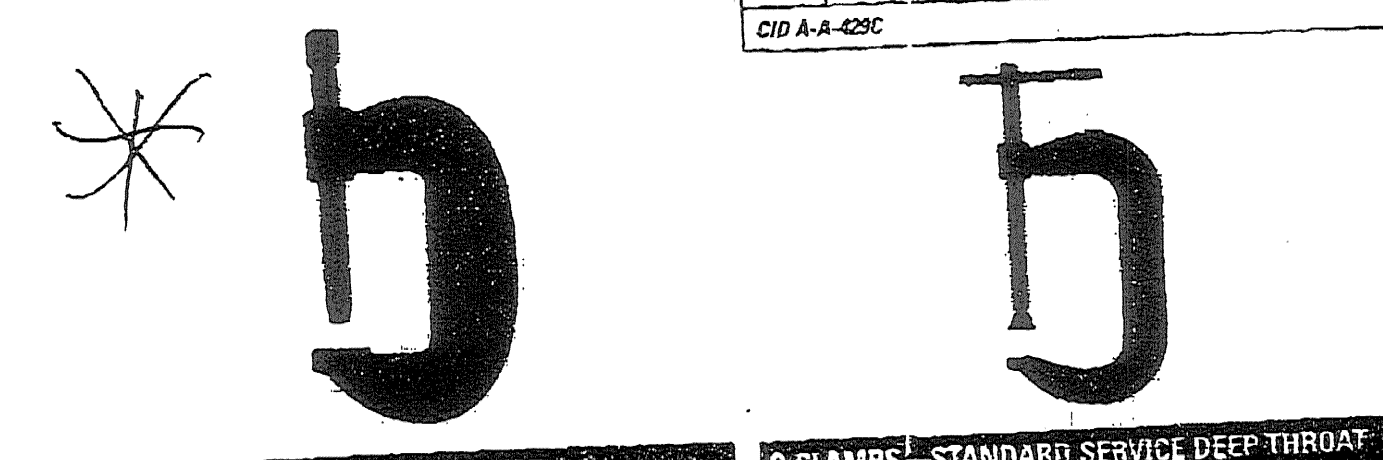
CID A-A-429C

C-CLAMPS—HEAVY SERVICE STANDARD SCREW

- Designed for heavy service applications where the strength of the cast-iron body is not required
- Cast-iron body with a high strength steel frame with a hardened tip
- Forcing screws are lined with impact resistant plastic

No.	C	T	D	Min. Test Load Pounds	Capacity
102SS	0"-2"	1/2"	3/8"	7,200	1.3
103SS	0"-3"	3/4"	3/4"	8,750	2.6
104SS	0"-4"	1"	3/4"	10,000	4.1
106SS	2"-6"	2 1/4"	3/4"	11,250	5.9
108SS	4"-8"	2 1/2"	3/4"	13,500	8.0
110SS	6"-10"	2 3/4"	3/4"	15,000	11.6
112SS	8"-12"	2 3/4"	3/4"	16,250	15.8
115SS	10"-15"	2 3/4"	3/4"	17,500	18.2
118SS	12"-18"	2 3/4"	3/4"		

CID A-A-429C



C-CLAMPS—EXTRA HEAVY SERVICE FULL LENGTH SCREW

- Full length forcing screws provide greater versatility with the maximum capacity always being "T"
- Heavy-duty threaded hub provides maximum screw support
- Forcing screws have a square head to be turned with a wrench
- Forcing screws have a hardened tip

No.	C	T	D	Min. Test Load Pounds	Capacity
2-HDL	0"-2 1/4"	1 1/4"	3/4"	12,500	3.4
3-HDL	0"-3 1/4"	2"	3/4"	16,250	6.1
4-HDL	0"-4 1/4"	2 3/4"	1"	20,000	10.3
5-HDL	0"-5 1/4"	3 1/4"	1 1/4"	23,800	14.2
6-HDL	0"-6 1/4"	4 1/4"	1 1/2"	27,500	20.2
8-HDL	0"-8 1/4"	6 1/4"	1 3/4"	31,250	28.1
10-HDL	0"-10 1/4"	8 1/4"	1 3/4"	35,000	32.3
12-HDL	0"-12 1/4"	10 1/4"	1 3/4"	40,000	49.8

C-CLAMPS—STANDARD SERVICE DEEP THROAT FULL LENGTH SCREW

- Standard service deep throat style for the extra depth in deep throat
- Max torque for strength and hard use
- Forcing screw has heavy rolled flange should allow the screw to turn easily under pressure and is free to rotate in the device
- Forcing screw has a sliding T handle and an impact resistant pad
- Full length forcing screws provide greater versatility with the maximum capacity always being "T"

No.	C	T	D	Min. Test Load Pounds	Capacity
402	0"-2"	2"	3/4"	2,500	1.3
403	0"-3"	2 1/2"	3/4"	3,500	2.0
404	0"-4"	3"	3/4"	5,500	2.5
406	0"-6"	3 1/2"	3/4"	6,800	5.0
408	0"-8"	4 1/2"	3/4"	6,900	7.0
410	0"-10"	5 1/2"	3/4"	8,000	10.5
412	0"-12"	6 1/2"	3/4"	9,500	15.5

TABLE NO.1 - PRO-POXY 300 FAST TENSION VALUES (lbs) FOR
 THREADED ROD INSTALLED IN NORMAL WEIGHT CONCRETE ^{1,2,3,4,5,6}

Anchor Diameter (Inches)	Bit Diameter (Inches)	Embedment (Inches)	Ultimate Bond Strength (lbs)				Allowable Steel Strength (lbs)		
			Concrete Strength, f'c				A36	A193 B7	300 Series
			2000 psi	2500 psi	4000 psi	5500 psi			
3/8	7/16	3-3/8	6530	7300	8250	9200	2110	4550	3100
3/8	9/16	3-3/8	8550	9560			2110	4550	3100
3/8	7/16	5-5/8	9820	10980	11360	11740	2110	4550	3100
1/2	9/16	4-1/2	9430	10540	11730	12920	3750	8100	5680
1/2	11/16	4-1/2	13090	14640			3750	8100	5680
1/2	9/16	7-1/2	13110	14660	17010	19360	3750	8100	5680
5/8	3/4	5-5/8	13240	14800	18870	22940	5880	12660	9040
5/8	7/8	5-5/8	20880	23340			5880	12660	9040
5/8	3/4	9-3/8	19280	21560	26260	30960	5880	12660	9040
3/4	7/8	6-3/4	20020	22380	25870	29360	8460	18220	11290
3/4	1	6-3/4	26700	29850			8460	18220	11290
3/4	7/8	11-1/4	27120	30320	34340	38360	8460	18220	11290
7/8	1	7-7/8	20420	22830	29235	35640	11500	24800	15580
7/8	1-1/8	7-7/8	32520	36360			11500	24800	15580
7/8	1	13-1/8	26670	29820			11500	24800	15580
1	1-1/8	9	20840	23300	28780	34260	15020	32400	20440
1	1-1/4	9	36440	40740			15020	32400	20440
1	1-1/8	15	34650	38340			15020	32400	20440
1-1/4	1-3/8	11-1/4	33240	37160	46760	56360	23480	50610	32700
1-1/4	1-3/8	18	44880	50180			23480	50610	32700

¹ The tabulated shear and tension values are for anchors installed in normal weight concrete having reached the designated ultimate compressive strength at the time of installation. Linear interpolation may be used for concrete strengths between those listed.

² Spacing and edge distance shall be in accordance with Table No. 5.

³ For other steel grades compare allowable tension values with table bond values and use the lesser. Stainless steel values are based on ASTM F 593, cold worked condition strength.

⁴ Allowable loads may be increased by 33-1/3% for short term loading due to earthquakes or wind.

⁵ 2000 psi ultimate loads were determined in accordance with Section 7.5 of ICBO-ES AC-58, by multiplying 2500 psi test results by a reduction factor of (2000/2500) ² 1/2 = 0.894.

⁶ Pro-Poxy 300 Fast is recognized for installation in water-filled or moist holes, for use in locations subject to severe exterior weathering conditions and for resisting tension and shear loads due to earthquake and wind.

TABLE NO. 2 - PRO-POXY 300 FAST ALLOWABLE SHEAR VALUES FOR
 THREADED ROD INSTALLED IN MINIMUM 2000 PSI CONCRETE ^{1,2,3,4,5}

Anchor Diameter (Inches)	B _a Diameter (Inches)	Embedment (Inches)	Allowable Steel Strength (lbs)		
			A36 A307	A193 B7	300 Series Stainless
3/8	7/16	3-3/8	1080	2350	1565
1/2	9/16	4-1/2	1930	4170	2900
5/8	3/4	5-5/8	3030	6520	4660
3/4	7/8	6-3/4	4360	9390	5880
7/8	1	7-7/8	5930	12780	8170
1	1-1/8	9	7740	16690	10730
1-1/4	1-3/8	11-1/4	12100	26070	17340

¹ The tabulated shear and tension values are for anchors installed in normal weight concrete having reached a minimum ultimate compressive strength f_c of 2000 psi at the time of installation.
² Spacing and edge distance shall be in accordance with Table No. 5.
³ Stainless steel values are based on ASTM F-593, cold worked condition strength.
⁴ Allowable loads may be increased by 33-1/3% for short term loading due to earthquakes or wind.
 A 36 & A 307 values must be used instead of listed values for higher strength steels for these loading conditions.
⁵ Pro-Poxy 300 Fast is recognized for installation in water-filled or moist holes, for use in locations subject to severe exterior weathering conditions and for resisting tension and shear loads due to earthquake and wind.

TABLE NO.5 - PRO-POXY 300 FAST
ALLOWABLE SPACING AND EDGE DISTANCE
(D = Anchor Diameter)

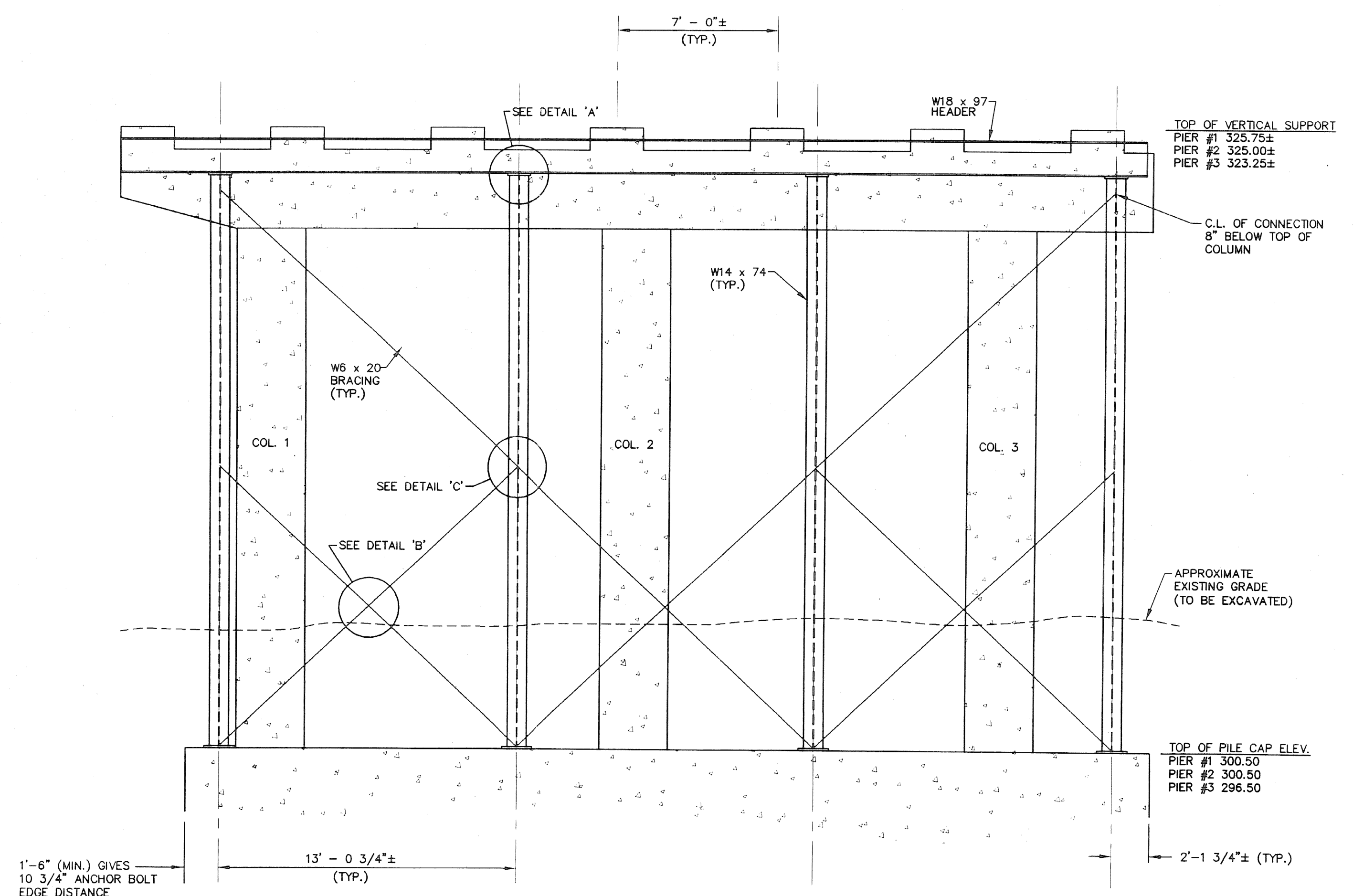
	DISTANCE FOR FULL ANCHOR CAPACITY (Critical Distance) ¹	DISTANCE FOR REDUCED ANCHOR CAPACITY	REDUCTION FACTOR ²
Edge Distance - Tension Loads	12D	4D	.70
Spacing Between Anchors	24D	8D	.50
Edge Distance - Shear Loads	12D	4D	.26

¹ The listed values are the minimum distances required to obtain the load values in Table Nos. 1, 2 & 3.

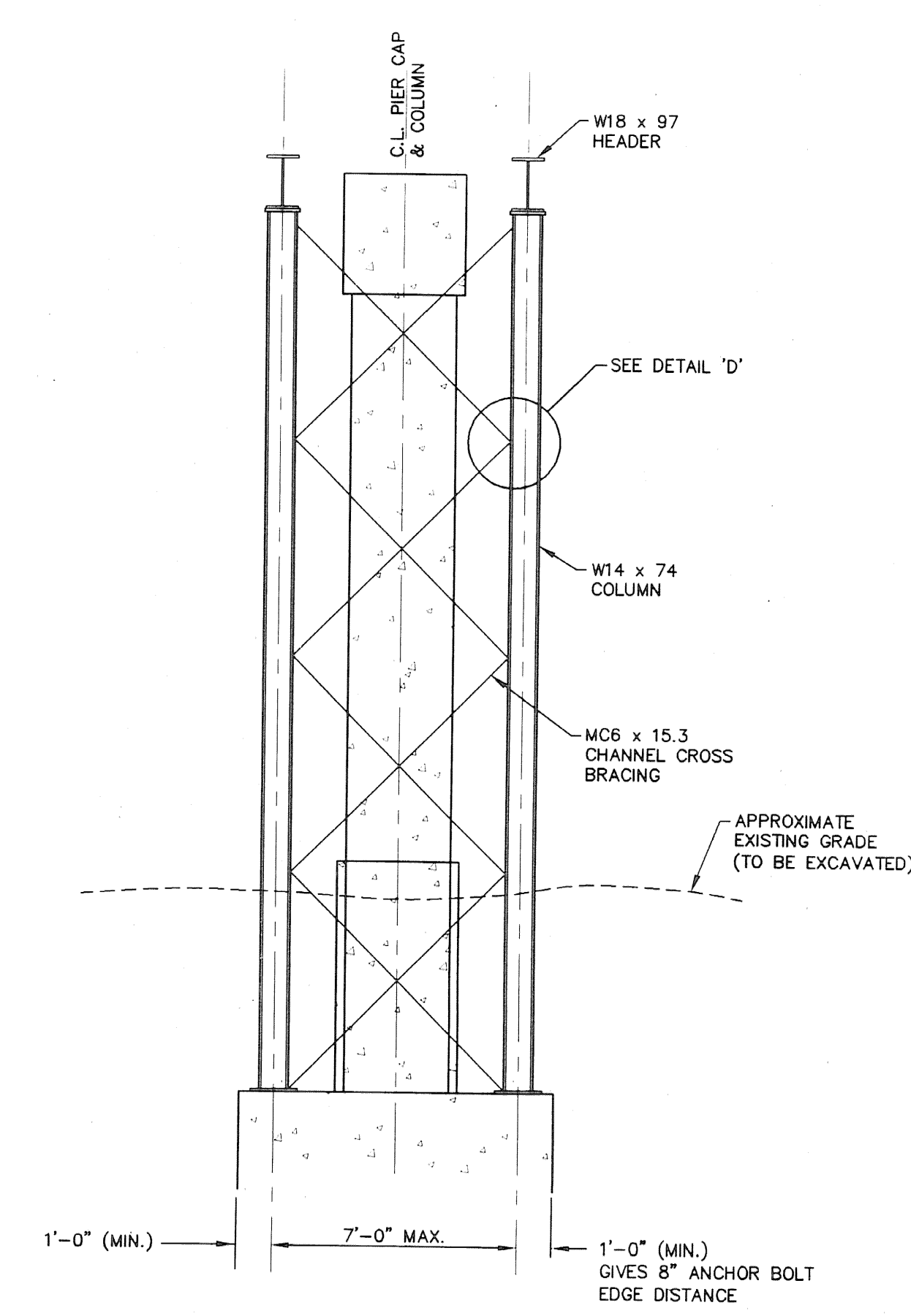
² Load values in the tables are multiplied by the reduction factor when anchors are installed at the reduced distances. Use linear interpolation for spacing and edge distances between listed values.

Example
(2500 psi concrete 7/8" diameter hole)

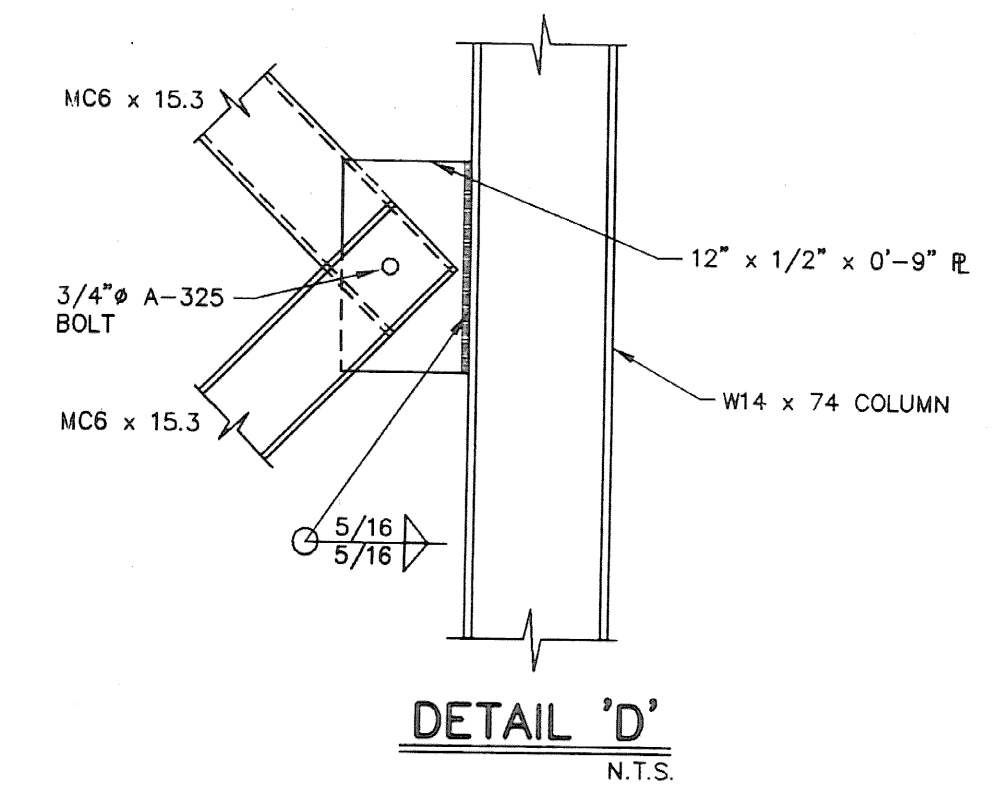
Anchor Diameter	Embedment Depth	Edge Distance	Ultimate Load
5/8"	5-5/8"	12D (7-1/2")	23,340 lbs (from Table #1)
5/8"	5-5/8"	4D (2-1/2")	16,340 lbs (23,340 _{from Table 1} X .70 _{Reduction factor from Table 5}) (Value from Table 1 X Reduction factor from Table 5)



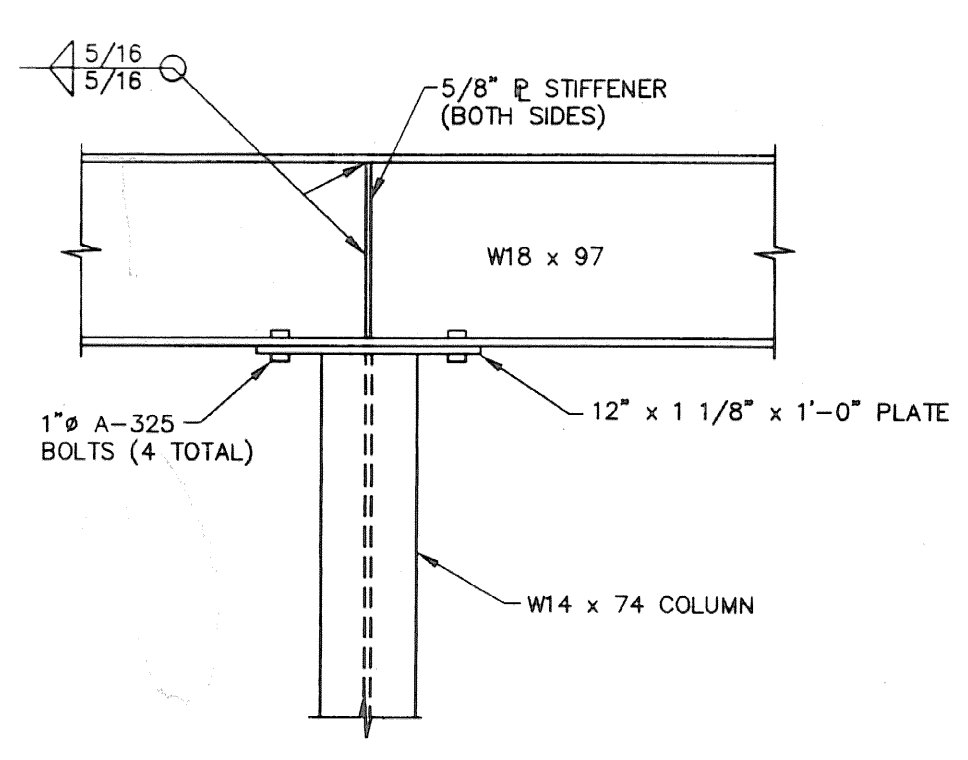
TYPICAL FRAME LAYOUT FOR SUPPORT
 1/4" = 1'-0"



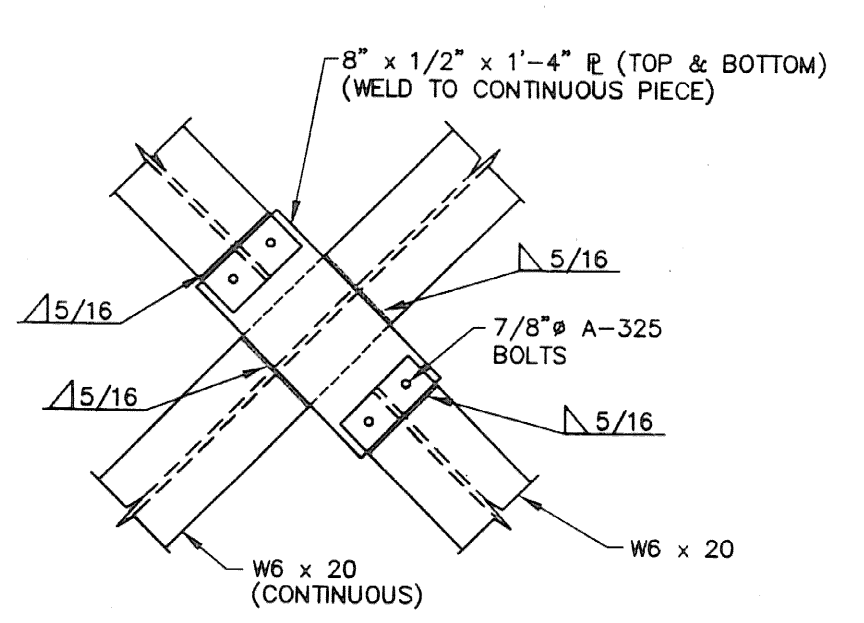
BRACING SCHEME E-W DIRECTION
 1/4" = 1'-0"



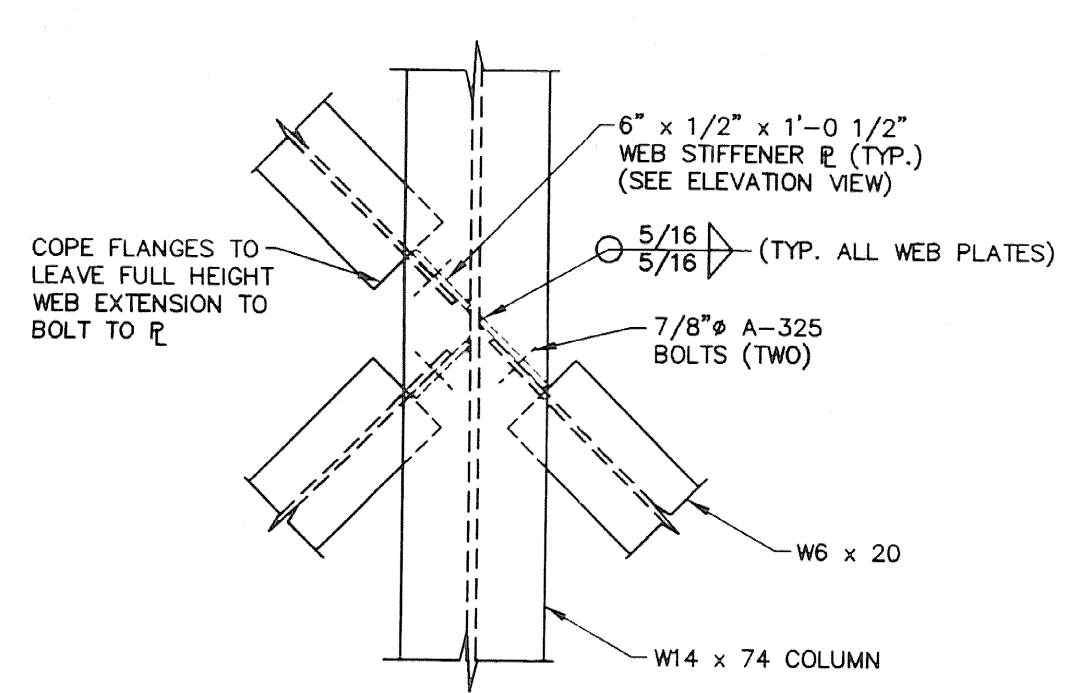
DETAIL 'D'
 N.T.S.



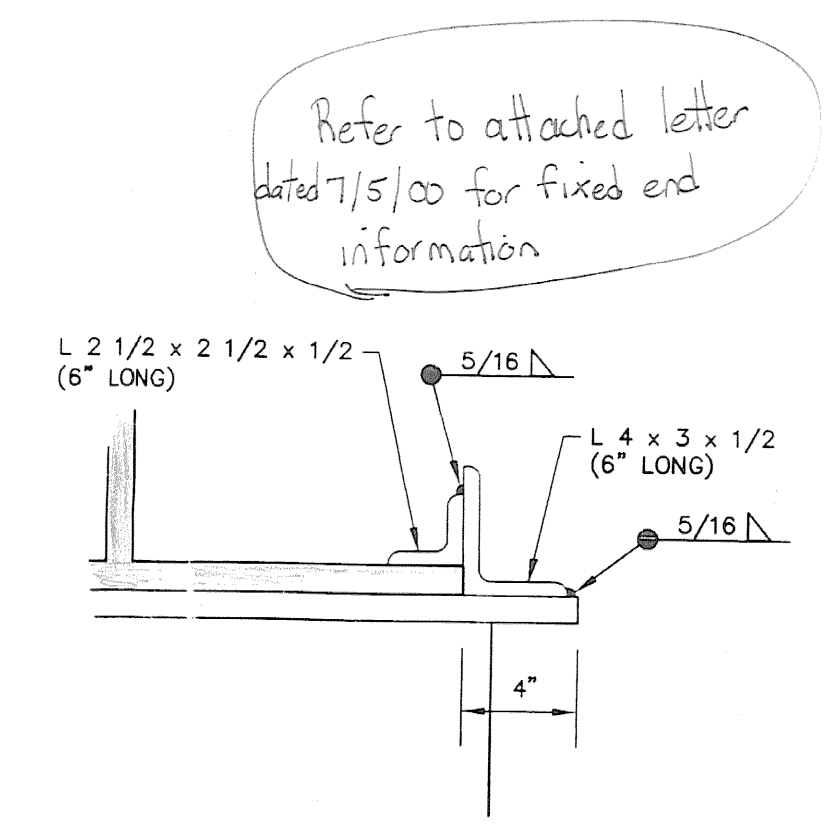
DETAIL 'A'
 N.T.S.



DETAIL 'B'
 N.T.S.

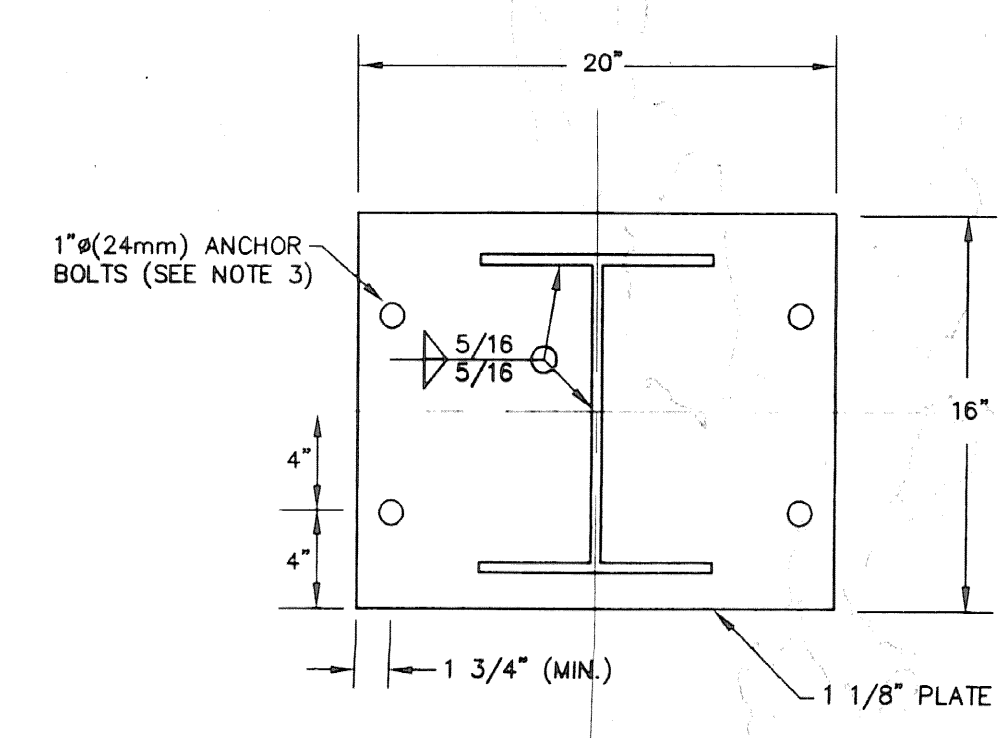


DETAIL 'C'
 N.T.S.

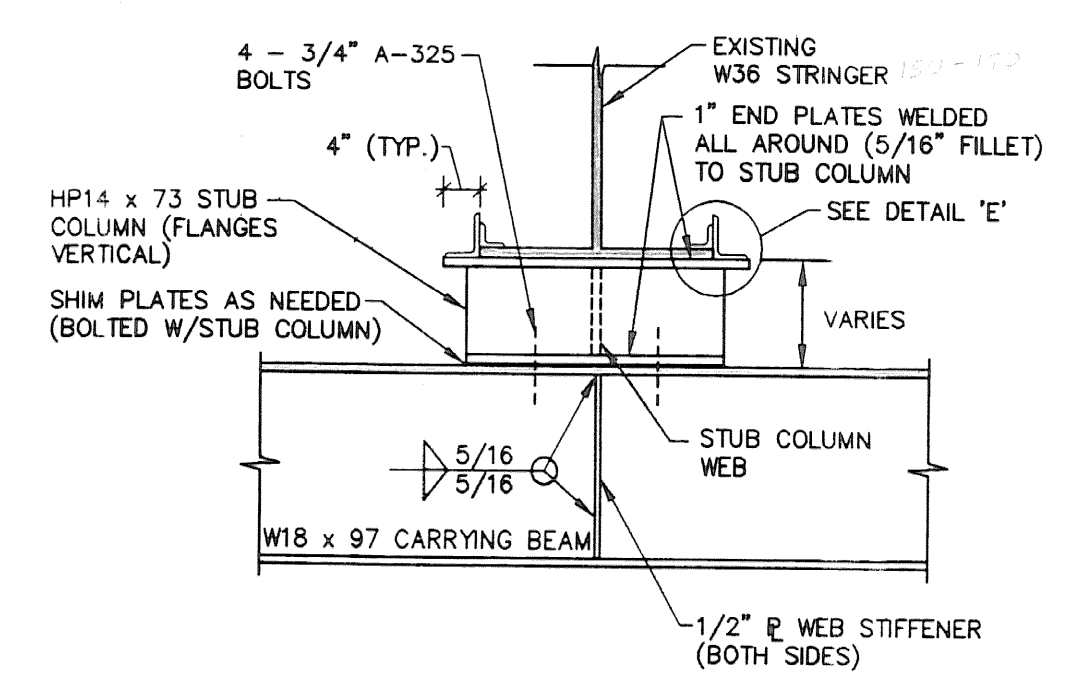


DETAIL 'E'
 N.T.S.

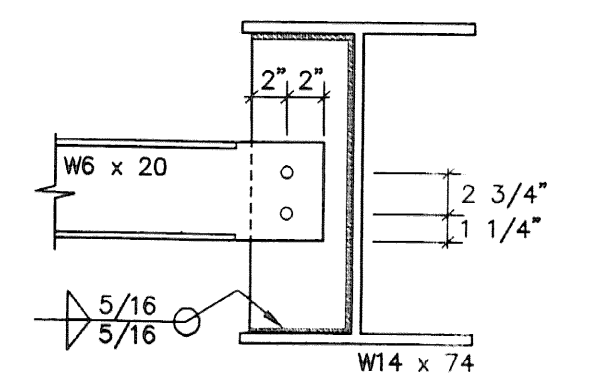
SUBMITTAL REVIEW	
<input type="checkbox"/> REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE CONSTRUCTION CONTRACT DOCUMENTS AS SET FORTH IN DIVISION _____ OF THE PLANS, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS IN THE CONSTRUCTION CONTRACT DOCUMENTS.	<input type="checkbox"/> REJECT
<input type="checkbox"/> REVISE AND RESUBMIT	<input checked="" type="checkbox"/> FURNISH AS CORRECTED
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR OF COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR GENERAL CONFORMANCE WITH THE CONSTRUCTION CONTRACT DOCUMENTS AS SET FORTH IN DIVISION _____ OF THE PLANS, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS IN THE CONSTRUCTION CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ALL QUANTITIES AND DIMENSIONS, SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATING WORK WITH THAT OF OTHER TRADES, AND PERFORMING WORK IN A SAFE AND SATISFACTORY MANNER.	
VHB Vermont Hanger Brustin, Inc. Engineers, Planners, and Scientists 86 Spaulding Plaza, Keen Rd. Bedford, NH 03110 603-644-0888	Job Number: 50929 Reviewed By: ASR Date: 7-5-00



BASE PLATE DETAIL
 N.T.S.



DETAIL @ GIRDER (STRINGER) SUPPORT
 N.T.S.



ELEVATION VIEW @ DETAIL 'C'
 N.T.S.

NOTES:

- ALL STEEL SECTIONS TO BE A-36 GRADE.
- ALL MEASUREMENTS TO BE FIELD VERIFIED.
- COLUMN BASEPLATES FOR TEMPORARY SUPPORTS TO BE ATTACHED TO EXISTING PILE CAP WITH 1" DIA. A193-B7 THREADED ROD (4 @ EACH COLUMN) INSTALLED TO A MINIMUM EMBEDMENT OF 9 INCHES USING PRO-POXY 300 FAST ADHESIVE. MINIMUM RECOMMENDED EDGE DISTANCE BY SUPPLIER IS 4 DIAMETERS AND FULL CAPACITY ACHIEVED AT 12 DIAMETERS. PRO-RATED FOR 8 DIAMETERS, AS SHOWN ON THE PLANS, THE ALLOWABLE PULL-OUT CAPACITY IS 6100 LBS. PER ROD AND ALLOWABLE SHEAR CAPACITY IS 8620 LBS. PER ROD. THESE ALLOWABLE LOADS MEET VERTICAL AND HORIZONTAL LOAD REQUIREMENTS.
- EXISTING STRINGERS TO BE SECURED TO SUPPORTING BEAM OR STUB COLUMN BY HOLD-DOWN ANGLES OVER BOTTOM FLANGE OF STRINGER.
- JACKING MAY BE ACCOMPLISHED BY TEMPORARILY REPLACING END MC18 x 42.7 DIAPHRAGM BEAM WITH A W18 x 97 JACKING BEAM BOLTED TO DIAPHRAGM PLATES WELDED TO STRINGERS.
- ONE UPPER BRACE (SEE TYPICAL FRAME LAYOUT DETAIL) MAY BE TEMPORARILY REMOVED TO PERMIT ACCESS TO WORK SPACE AT PIER VERTICAL COLUMNS.
- NO MORE THAN TWO OF FOUR LINES OF E-W BRACING (SEE BRACING SCHEME E-W DIRECTION) MAY BE TEMPORARILY REMOVED FOR ACCESS TO WORK SPACE.
- ALL WELDS ARE 5/16" FILLET WELDS USING E70XX ELECTRODES.

3A. Refer to attached anchor bolt requirements for further information.

SECTIONS and DETAILS

DATE 6/7/2000	DRAWING NUMBER S1
SCALE AS SHOWN	
PROJ. NO. 00195	



Yanasse Hangen Brustlin, Inc. TRANSMITTAL

Transportation
Land Development
Environmental Services

Kilton Road
Six Redford Farm, Suite 607
Bedford, NH 03110-6532
603 644 0888
FAX 603 644 2385

To: Robert Suckert, PE, Resident Engineer
Vermont Agency of Transportation
209 South Pinnacle Ridge Road
Waterbury, VT 05676

Date: 6-19-00	VHB Project No.: 50929
Re: South Burlington IM DECK 36 Bridge No. 68 and STP BIKE (28) S	

The Following details as outlined below, Item No. 531.10 Description Bearing Device Assembly for the above project transmitted with your letter dated 6-5-00 have been reviewed and are being returned herewith:

We are sending you: Attached 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
as noted below	6/5/00	3342	Item 531.10 Cosmec Preformed Fabric Pad Bearings
as noted below	6/5/00	3343	Item 531.10 Cosmec Rocker Bearings
as noted below			Item 531.10 Welding and Bonding Procedures

These are transmitted as checked below:

Reviewed as required by the construction contract documents and approved, but only for conformance to the design concept of the work, and subject to further limitations and requirements contained in the construction contract documents. Rejected Revise and Resubmit Furnish as Corrected

REMARKS: There shall be no fabrication done until all drawings and welding procedures are approved or approved as noted. You must provide written notice to the Vermont Agency of Transportation (VTrans) Structures Section office as to the date fabrication represented by these drawings will begin. That notice must be received at least seven days prior to that date, as per Specifications 506.03. Any material fabricated prior to the notification date is subject to rejection without further cause.

Copy to: VTrans Resident Engineer, Robert E. Suckert, P.E. w/prints **
Contractor, J.A. McDonald, Inc. w/prints **
Subcontractor, Cosmec - letter only By: Athanasia S. Robinson, VHB Inc.
VTrans Construction Section - letter only
VTrans Consultant Project Manager, Sherward Farnsworth, PE w/prints **
VTrans Materials & Research Section (C&IA Unit) - letter only
VTrans Structures Section - Shop Inspector - Jeff Clark w/prints **
VHB Project Manager, Steve Johnson, PE, VHB Project File
** Attachments: One set of prints (and welding and/or bonding procedures).

V.T. A.O.T.
IM DECK (36)

COSMEC, INC.
70 SOUTH STREET
WALPOLE, MA 02081
PH# 508-668-6600
FAX# 508-660-1022

EMS-QC-110
V.A.O.T.
RECEIVED
CK'D BY _____ CK'D BY JWC
JUN 13 2000
RESUBMIT _____ APPROVED
BY _____ DATE 6-14-00

ENGINEERING AND MANUFACTURING STANDARD
PTFE FACING AND STEEL
OR PREFORMED FABRIC SUBSTRATE
SURFACE PREPARATION AND ADHESIVE PROCEDURE

RECEIVED

JUN 19 2000

VHB, Inc.

The PTFE facing shall be prepared for bonding to a substrate material by chemically etching the face to be bonded using the sodium ammonia process.

The mating surface of the substrate shall be prepared for bonding using a three-step process as follows:

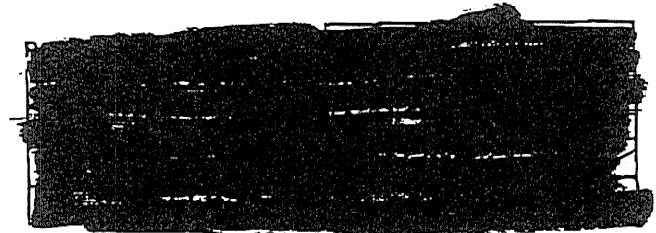
1. preliminary degrease using methyl ethyl ketone.
2. mechanically roughen to approx. 125 RMS and thoroughly brush and clean for final degreasing.
3. final degrease using methyl ethyl ketone

The PTFE and substrate mating surfaces shall be clean and dry with final degreasing performed within 30 minutes of bonding. Adhesive shall consist of a two-part epoxy adhesive system conforming to Military Specification MMM-A-134

The adhesive shall be applied to the full area of the contact surface in an even manner so as to establish a glue line not less than .002 inch nor more than .010 inch thick. Surfaces being bonded are to be assembled immediately with open assembly time not to exceed 20 minutes.

The PTFE material shall be greater in width and length than the substrate material by at least 1/2 inch when bonded. The PTFE shall be applied with contact starting at one edge and with contact progressing across entire bonded surface to eliminate air entrapment. The PTFE is to be in full contact with the steel or preformed fabric substrate. Curing of the bond shall be done under pressure of approx. 2-100 psi for 10-12 hours at approx. 70°F or other schedules as established by the manufacturer of the adhesive.

The PTFE shall be carefully trimmed to the same size as the substrate after bond curing and all bonds shall be visually inspected for bond retention.



VT. A.O.T.
PROJECT # 1M DECK 36
ITEM # 531.10

5/13/99

To: Naji @ Coemec, Inc., Walpole, MA
From: Darren Spurgeon @ Elkhart Industries, High Point, NC
Re: Neoprene/Fabric Bearing Pads

RECEIVED
JUN 08 2000
VHB, Inc.

Dear Naji,

In regards to the process of making our bearing pads, I hope this information will be of service.

Elkhart Industries' "Yellow" Preformed fabric pads are constructed of alternating layers of AASHTO-spec Neoprene and heavy weight cotton duck fabric. They are built up from pre-forms of both materials. The pads are inserted into a steam press once the correct number of layers are added. Once inserted into our steam press, using a combination of 2,100 PSI and varying combinations of steam and time, these pads are cured into the final product. We are able to maintain exacting tolerances on the thickness by using different sizes and thicknesses of metal forms to stop the press from squeezing the material too tightly together. Once the material air-cools, the pieces are trimmed to the desired size and shipped.

Elkhart Industries' bearing pads meet both AASHTO 18.10.2, and 18.4.10.1, Div. II and Mil-C-882-R specifications, and certificates of conformance and test results are provided with each shipment if needed.

The total number of fabric ply will vary with the thickness of the finished pads. The number of ply will determine the final stiffness and hardness of the product. The relative stiffness of the finished pad is exponentially proportional to the number of plies. Thus a hypothetical 1/2" thick pad with 35 plies cannot be converted to a 1" thick pad with 70 plies. This would make the pad much too stiff. In other words, the thicker the pad, the fewer number of plies per inch.



VT. A.O.T.
PROJECT # 1M DELK 36
ITEM # 531.10

In regards to your specific request, the 1-1/2" thick pads requested will contain 96 plies of cotton duck.

I hope this helps you and provides the necessary information. Unfortunately, the temperature and time needed to cure the sheets is proprietary information, and I am not free to disclose this information. If you require any further information on this subject, please contact me at (800)922-5678. I look forward to your call.

Best regards,

Darren Spurgeon
Darren Spurgeon
Sales Coordinator

cc: Jim Gregory

V.A.O.T.
RECEIVED
CK'D BY _____ CK'D BY *JWC*
JUN 13 2000
APPROVED
DATE 6-14-00

Welding Procedure Specification

WPS No. GTAW 01-REV 6 Date 11/11/98 By Peter Croby Type Manual Machine
 Authorized By William Burhoe Date 11/11/98 Revision 6 Semi-Auto Auto
 Welding Process(es) GTAW Prequalified
 Supporting PQR(s) 98-101WB-F

JOINT
 Type Lap Joint
 Backing Yes No Single Weld Double Weld
 Backing Material N/A
 Root Opening N/A Root Face Dimension N/A
 Groove Angle N/A Radius (R-U) N/A
 Back Gouge Yes No
 Method N/A

Joint Detail

BASE METALS
 Material Spec. ASTM A240 to ASTM A338
 Type or Grade 304 to 30W
 Thickness: Groove (in) _____
 Fillet (in) 1/32
 Diameter (Pipe, in) _____

POSITION
 Position of Groove _____ Fillet Flat
 Vertical Progression: Up Down

ELECTRICAL CHARACTERISTICS
 Transfer Mode (GMAW):
 Short-Circuiting Globular Spray
 Current: AC DCEP DCEN Pulsed
 Other _____
 Tungsten Electrode (GTAW):
 Size 3/32 Type EWTh2

FILLER METALS
 AWS Specification A5.8 Harris-Welco
 AWS Classification ER309L
Harris-Welco

TECHNIQUE
 Stringer or Weave Bead Stringer
 Multi-pass or Single Pass (per side) Single
 Number of Electrodes 1
 Electrode Spacing: Longitudinal N/A
 Lateral N/A
 Angle N/A
 Contact Tube to Work Distance 3/8
 Peening NOT ALLOWED
 Interpass Cleaning N/A
 POSTWELD HEAT TREATMENT PWHT Required
 Temp. N/A Time N/A

SHIELDING
 Gas Argon
 Composition 100%
 Electrode-Flux (Class) 45 CFH
 Gas Cup Size 3/8" (B)

PREHEAT
 Preheat Temp., Min. 80 F
 Thickness Up to 3/4" Temperature 80
 Over 3/4" to 1-1/2" 150
 Over 1-1/2" to 2-1/2" 225
 Over 2-1/2" _____
 Interpass Temp., Min. N/A Max. N/A

WELDING PROCEDURE

Welding Process	Shielding Gas	Electrode	Current	Position	Temp. Range	
1	GTAW	ER309L	DCEN	180	23	8 11/16

RECEIVED
 V.A.O.T.
 OK'D BY JWC
 JUN 3 2000
 APPROVED
 APR 23 2002
 6-14-00

APPROVED
 For PA TOLANIK
 GLENN A. MYRICK
 5607081
 CWI
 HOFFENSTETT
 89.06033
 CWI



Vanasse Hangen Brustlin, Inc. TRANSMITTAL

Transportation
Land Development
Environmental Services

Kilton Road
Six Becket Farm, Suite 607
Bedford, NH 03110-4532
603.644.9888
FAX: 603.644.2385

Date: March 27, 2001	VHB Project No.: 50929
Re: South Burlington IM DECK 36 Bridge No. 68 and STP BIKE (28) S	

To: Robert Suckert, PE, Resident Engineer
Vermont Agency of Transportation
209 South Pinnacle Ridge Road
Waterbury, VT 05676

The Following details as outlined below, Item No. 506.60 Description Structural Steel for the above project transmitted with your letter dated 1/25/01 have been reviewed and are being returned herewith:

We are sending you: Attached Under Separate cover via Regular Mail the following items:

Shop drawings Prints Plans Diskettes Specifications Copy of Letter Change Order

Copies	Date	No.	Description
as noted below	1/25/01		Revised Shop Drawings for New Diaphragms

These are transmitted as checked below:

Reviewed as required by the construction contract documents and approved, but only for conformance to the design concept of the work, and subject to further limitations and requirements contained in the construction contract documents. Rejected Revise and Resubmit Furnish as Corrected

REMARKS: Shop drawing review completed after field confirmation of the final diaphragm location from Bob Suckert on March 19, 2001

Copy to: Contractor, J.A. McDonald, Inc. - w/attach.
Subcontractor - Casco Bsv- Letter Only
VTrans Resident Engineer, Robert E. Suckert, -w/ attach.
VTrans Consultant Project Manager, Sherward Farnsworth, PE - letter w/attach.
VTrans-Shop Inspector-Jeff Clark - Letter only
VTrans - Materials & Research- Letter only
VTrans- Construction Section- Letter only

Athanasia S. Robinson
Athanasia S. Robinson

J. A. McDONALD, INC.
P.O. Box 132
LYNDON CENTER, VERMONT 05850

(802) 626-5201

LETTER OF TRANSMITTAL

DATE	NOV 23 2001
PROJECT	STATE TOWN
RE:	SOUTH BURNINGHAM TOWN OF BONDAGE
	NO. 10 # STP PUMP (10) S

TO: VANASSE HANGEN CONSULTING, INC.
500 WOODBURY AVENUE
FARMINGTON, NH 05452

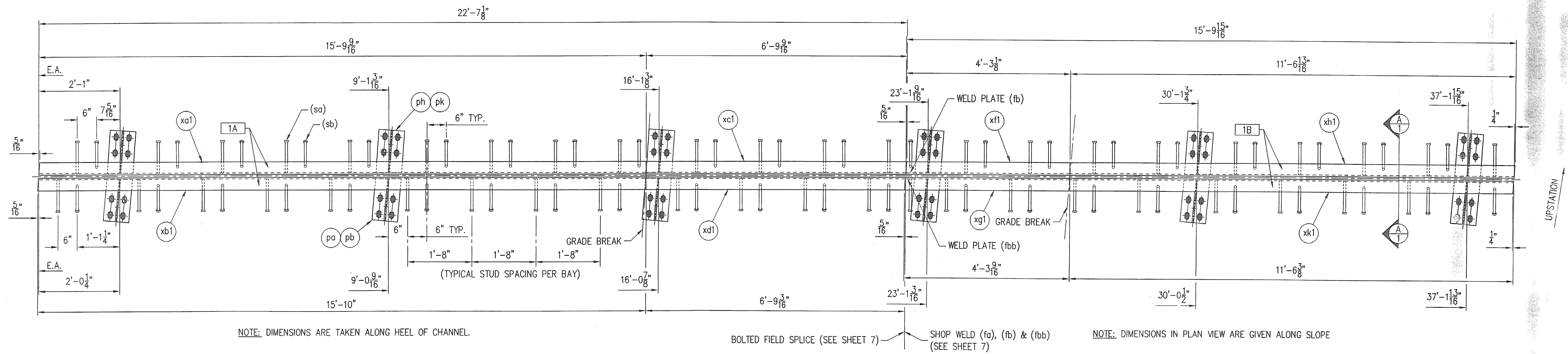
WE ARE SENDING YOU Attached Under separate cover via _____ the following items:
 Shop drawings Prints Plans Samples Specifications
 Copy of letter Change order _____

COPIES	DATE	NO.	DESCRIPTION	REMARKS
2ea	11/23/01		New Drawings	JAN 2 2002
				VHS, INC.

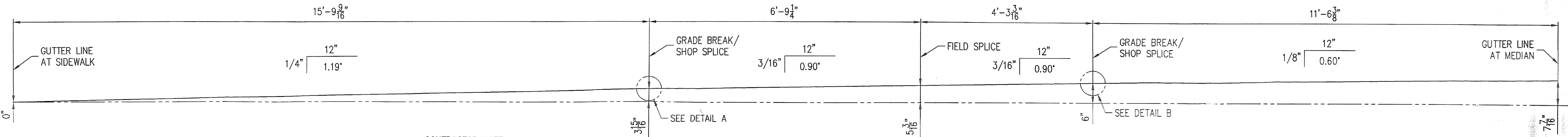
THESE ARE TRANSMITTED as checked below:
 For approval Approved as submitted Resubmit _____ copies for approval
 For your use Approved as noted Submit _____ copies for distribution
 As requested Returned for corrections Return _____ corrected prints
 For review and comment _____
 FOR BIDS DUE _____ 19 _____ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO _____
SIGNED: *Miss. Brachman*
If enclosures are not as noted, kindly notify us at once.



PLAN VIEW - EXPANSION JOINT
(PIER 1 - WESTBOUND)



ELEVATION VIEW
(ELEVATIONS TAKEN ALONG C OF JOINT)

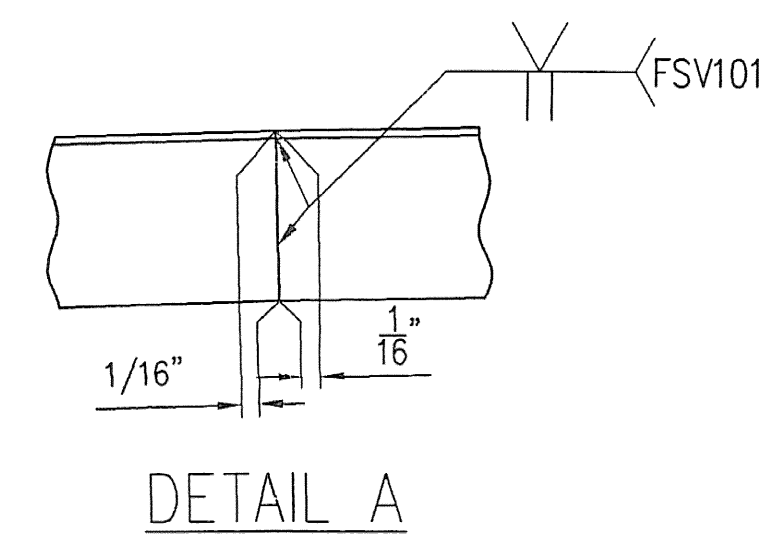
CONTRACTOR NOTE:
ALL SURFACES OF STEEL DECK JOINTS WHICH ARE TO HAVE CONCRETE PLACED AGAINST THEM, SHALL BE COATED WITH EPOXY BONDING COMPOUND. EPOXY BONDING COMPOUND TO BE PROVIDED BY THE CONTRACTOR.

APPROVER NOTE:
STOOL LENGTHS HAVE BEEN REVISED PER CONTRACTORS FIELD MEASUREMENTS TAKEN JANUARY 19, 2001.

TEMPERATURE	45°	60°	75°	90°
DIM 'A'	1 1/4	1	7/8	3/4

SEE SHEET 7 FOR GENERAL NOTES

LINE NO.	NO. REQ'D.	DESCRIPTION	LENGTH	MK	REMARKS	WGHT.
1	1	EXPANSION JOINT ASS'Y		1A	HDG	
2	1	MC18x42.7	15'-9 9/16"	xa1	REMOVE FLANGE	11-8
3	1	MC18x42.7	15'-10"	xb1	REMOVE FLANGE	11-8
4	1	MC18x42.7	6'-9 9/16"	xc1	REMOVE FLANGE	11-8
5	1	MC18x42.7	6'-9 3/16"	xd1	REMOVE FLANGE	11-8
6	3	PL 1/2 x 6	1'-3"	pa	SHAPE CUT / COPE TO FIT MC 8x42.7	19-16
7	3	PL 1/2 x 8	1'-3 5/16"	pb	SHAPE CUT	19-16
8	3	PL 1/2 x 6	1'-0"	ph	SHAPE CUT / COPE TO FIT MC 8x42.7	19-16
9	3	PL 1/2 x 8	1'-0 1/4"	pk	SHAPE CUT	19-16
10	27	WS 3/4 x 10		sa	26	29-19
11	26	WS 3/4 x 10		sb	25 / BEND	29-19
12						
13						
14						
15	1	EXPANSION JOINT ASS'Y		1B	HDG	
16	1	MC18x42.7	4'-3 3/8"	xf1	REMOVE FLANGE	11-8
17	1	MC18x42.7	4'-3 9/16"	xg1	REMOVE FLANGE	11-8
18	1	MC18x42.7	11'-6 13/16"	xh1	REMOVE FLANGE	11-8
19	1	MC18x42.7	11'-6 3/8"	xk1	REMOVE FLANGE	11-8
20	3	PL 1/2 x 6	1'-3"	pa	SHAPE CUT / COPE TO FIT MC 8x42.7	19-16
21	3	PL 1/2 x 8	1'-3 5/16"	pb	SHAPE CUT	19-16
22	3	PL 1/2 x 6	1'-0"	ph	SHAPE CUT / COPE TO FIT MC 8x42.7	19-16
23	3	PL 1/2 x 8	1'-0 1/4"	pk	SHAPE CUT	19-16
24	19	WS 3/4 x 10		sa	18	29-19
25	19	WS 3/4 x 10		sb	18 / BEND	29-19
26	2	FB 1/4 x 2	0'-2"	fa		16-29
27	1	FB 1/4 x 4	1'-0"	fb		16-36
28	1	FB 1/4 x 4	1'-0"	fbb		16-36
29						
30						
31						
32						
33						

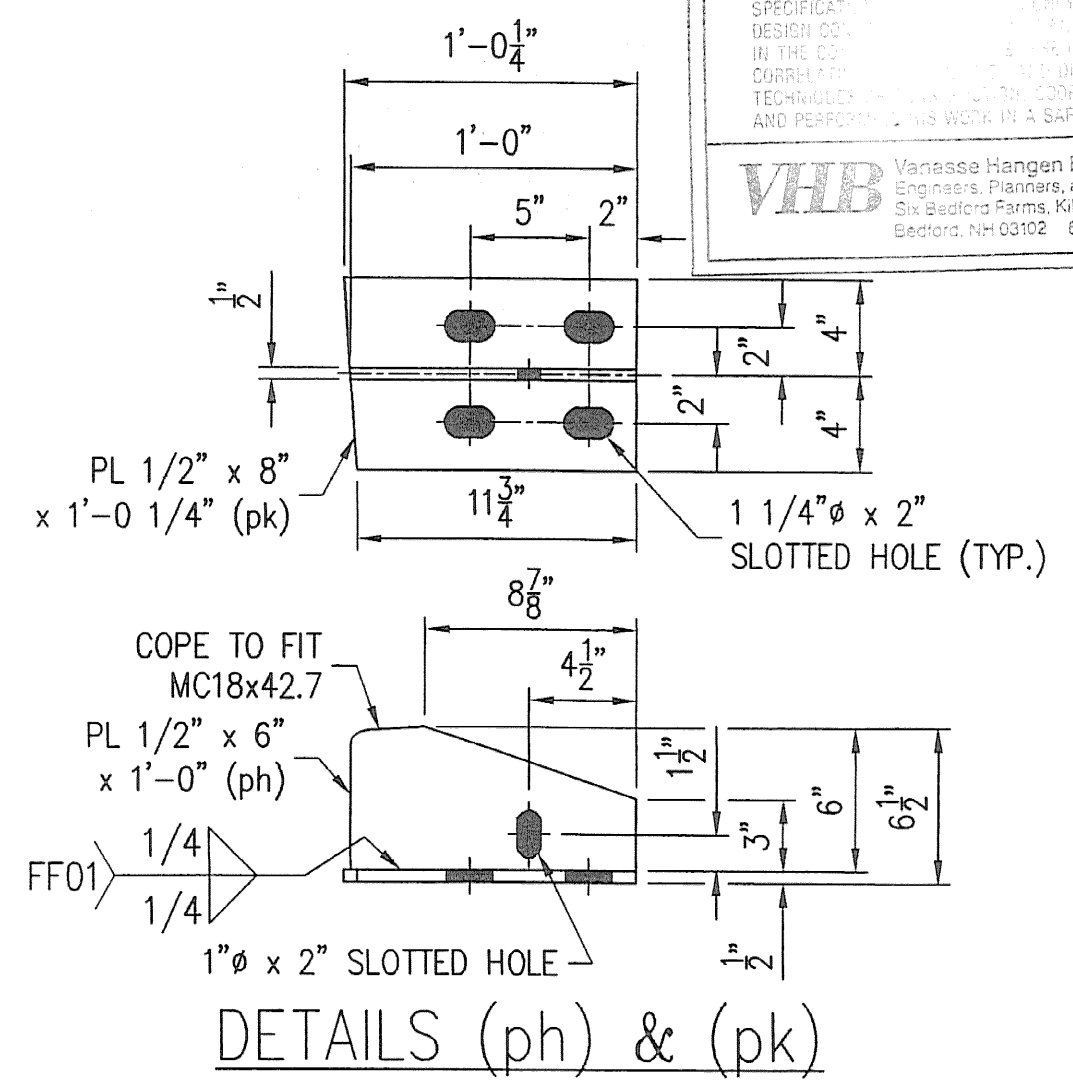
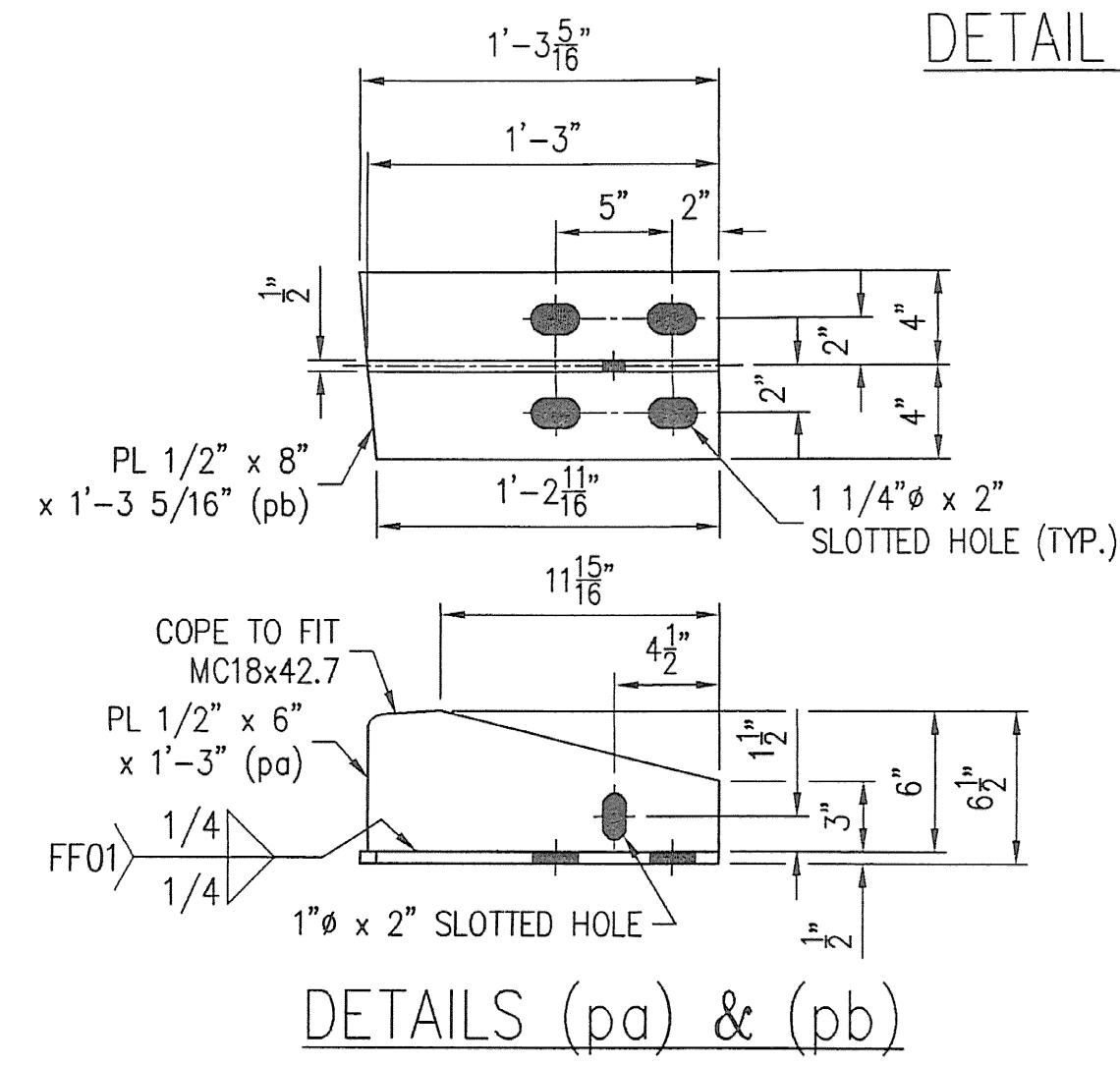
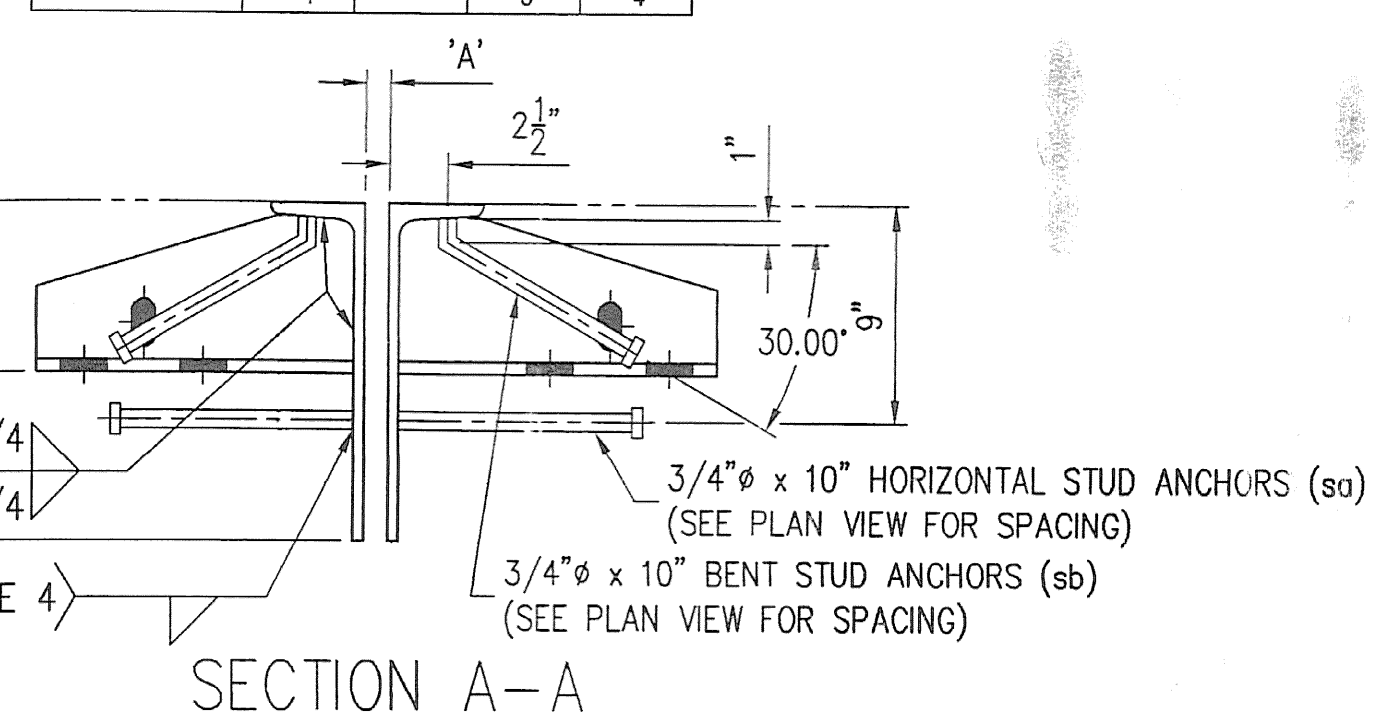


SHOP DRAWING REVIEW

REVISIONS OR COMMENTS MADE ON THE SHOP DRAWING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS AND APPROVALS FOR ALL WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS AND APPROVALS FOR ALL WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS AND APPROVALS FOR ALL WORK.

VHB
Vernice Hangan Brustin, Inc.
Engineering, Planning and Surveying
24 Quodons Farm, Killon Rd.
Bedford, NH 03112 603-844-0568

Job Number: 50929
Reviewed by: ASK
Date: 8/26/01



REV.	DESCRIPTION	DATE	INT.
1	GENERAL REVISION PER APPROVAL.	1/22/01	SLB

ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY LEWIS ENGINEERING COMPANY PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

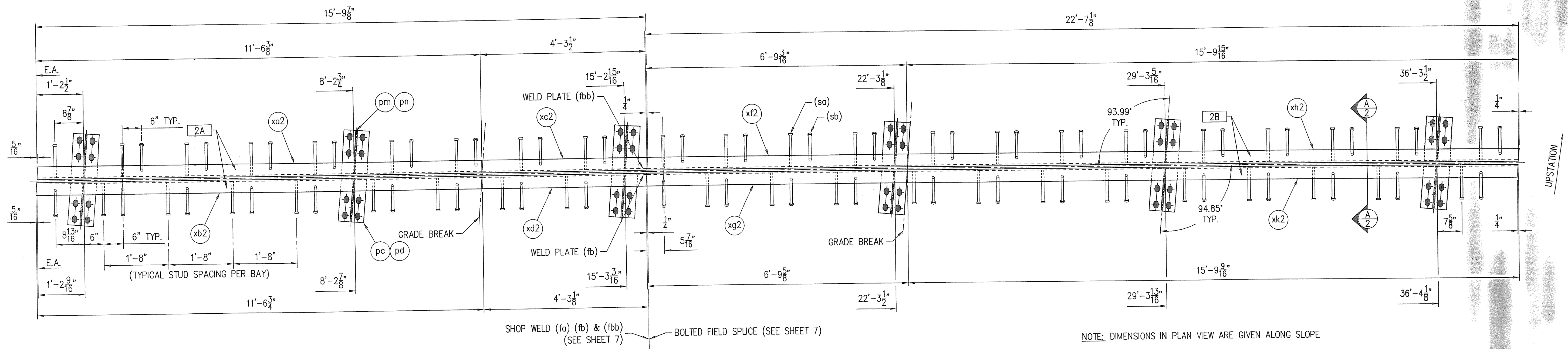
LEWIS ENGINEERING COMPANY
4201 NOREX DRIVE - CHASKA, MINNESOTA 55318 - (612) 368-3000

PROJECT - BRIDGE NO. 68 SOUTH BURLINGTON U.S. 2 OVER I-93
STATE PROJECT - IM DECK (36)
FEDERAL PROJECT -
CUSTOMER - J A McDONALD
LOCATION - CHITTENDEN COUNTY, VERMONT
DESCRIPTION - EXPANSION JOINT DETAILS WESTBOUND AT PIER 1

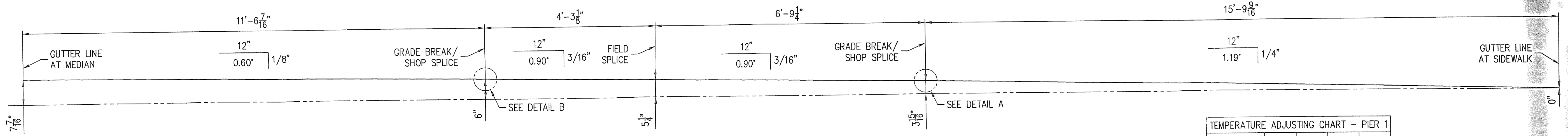
W.P. chkd JJK
Drawn By SLB
Chkd. By AJC
Date: 11/21/01

PRELIM 11/28/00
SHOP
APPROVAL 11/28/00
DIST.
CUST.
FOR DATE
PRINTS ISSUED

SHEET NO. 1 OF 8
Job No. : 978.1049.1



PLAN VIEW — EXPANSION JOINT
(PIER 1 — EASTBOUND)



TEMPERATURE ADJUSTING CHART — PIER 1

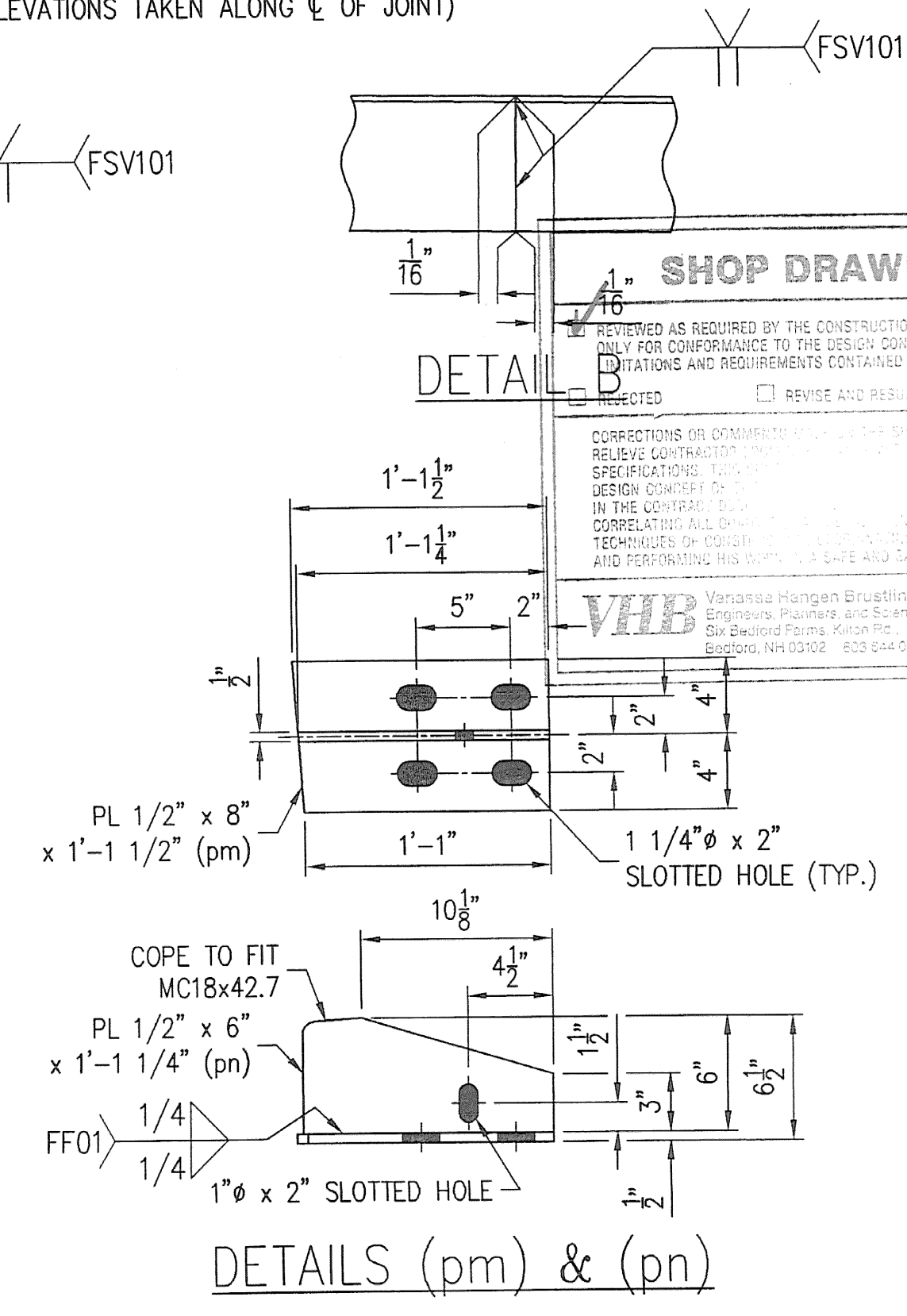
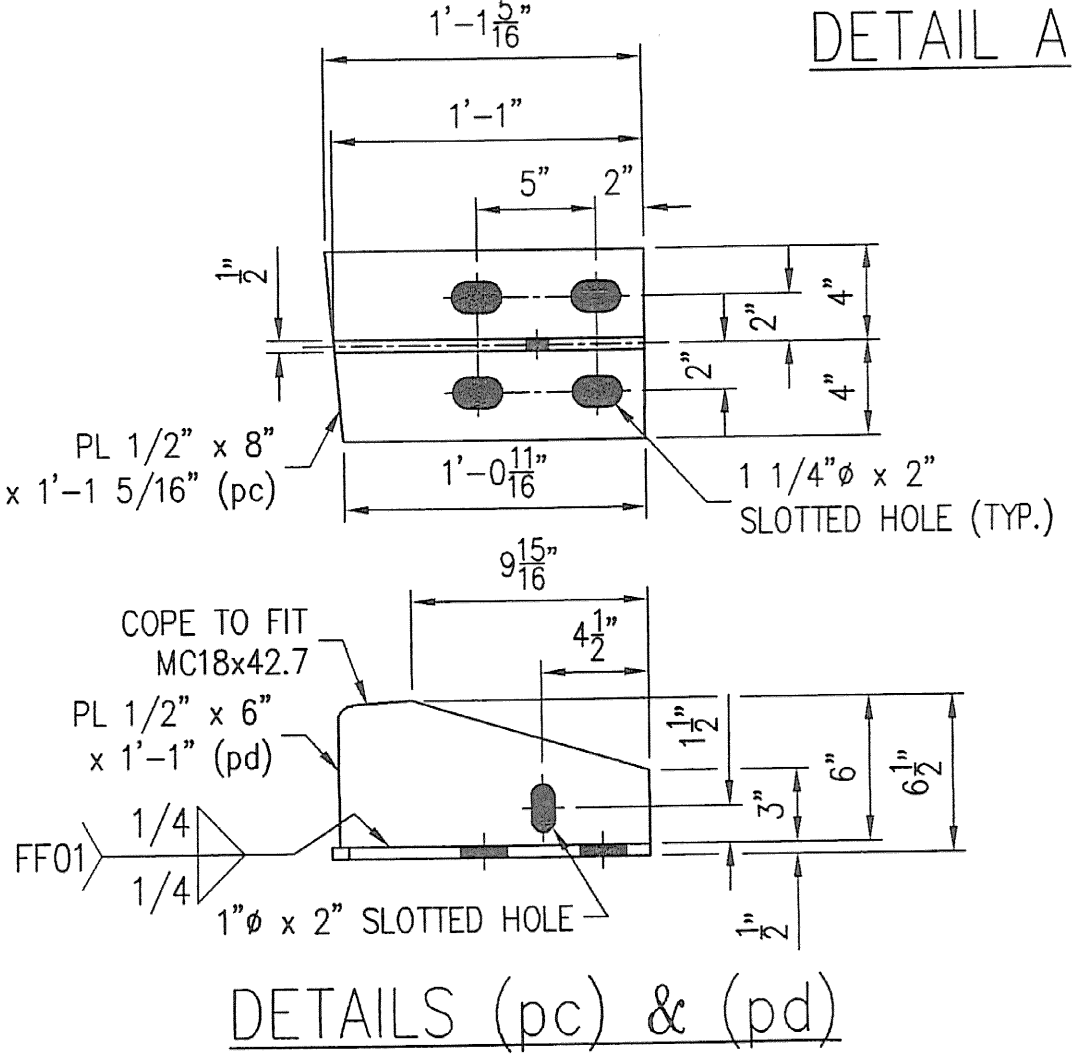
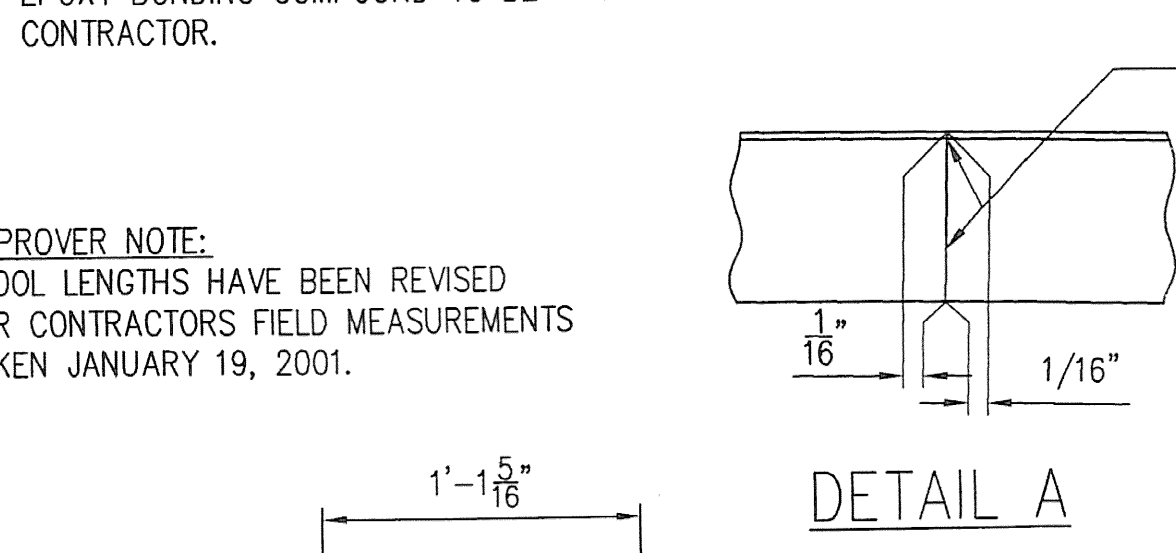
TEMPERATURE	45°	60°	75°	90°
DIM 'A'	1 1/4	1	7/8	3/4

SEE SHEET 7 FOR GENERAL NOTES

CONTRACTOR NOTE:
ALL SURFACES OF STEEL DECK JOINTS WHICH ARE TO HAVE CONCRETE PLACED AGAINST THEM, SHALL BE COATED WITH EPOXY BONDING COMPOUND. EPOXY BONDING COMPOUND TO BE PROVIDED BY THE CONTRACTOR.

APPROVER NOTE:
STOOL LENGTHS HAVE BEEN REVISED PER CONTRACTORS FIELD MEASUREMENTS TAKEN JANUARY 19, 2001.

LINE NO.	NO. REQ'D.	DESCRIPTION	LENGTH	MK	REMARKS	WGHT.
1	1	EXPANSION JOINT ASS'Y		2A	HDG	
2	1	MC18x42.7	11'-6 3/8"	xc2	REMOVE FLANGE	11-8
3	1	MC18x42.7	11'-6 3/8"	xb2	REMOVE FLANGE	11-8
4	1	MC18x42.7	4'-3 1/2"	xc2	REMOVE FLANGE	11-8
5	1	MC18x42.7	4'-3 1/2"	xd2	REMOVE FLANGE	11-8
6	3	PL 1/2 x 8	1'-1 1/8"	pc	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
7	3	PL 1/2 x 6	1'-1	pd	SHAPE CUT	19-16
8	3	PL 1/2 x 8	1'-1 1/2"	pm	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
9	3	PL 1/2 x 6	1'-1 1/4"	pn	SHAPE CUT	19-16
10	18	WS 3/4 x 10		sa	17 / BEND	29-19
11	18	WS 3/4 x 10		sb	17 / BEND	29-19
12	2	FB 1/4 x 2	0'-2	fo		16-29
13	1	FB 1/4 x 4	1'-0	fb		16-36
14	1	FB 1/4 x 4	1'-0	fbb		16-36
15						
16						
17	1	EXPANSION JOINT ASS'Y		2B	HDG	
18	1	MC18x42.7	6'-9 3/8"	xf2	REMOVE FLANGE	11-8
19	1	MC18x42.7	6'-9 3/8"	xg2	REMOVE FLANGE	11-8
20	1	MC18x42.7	15'-9 15/16"	xh2	REMOVE FLANGE	11-8
21	1	MC18x42.7	15'-9 15/16"	xk2	REMOVE FLANGE	11-8
22	3	PL 1/2 x 8	1'-1 1/8"	pc	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
23	3	PL 1/2 x 6	1'-1	pd	SHAPE CUT	19-16
24	3	PL 1/2 x 8	1'-1 1/2"	pm	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
25	3	PL 1/2 x 6	1'-1 1/4"	pn	SHAPE CUT	19-16
26	26	WS 3/4 x 10		sa	25	29-19
27	27	WS 3/4 x 10		sb	26 / BEND	29-19
28						
29						
30						
31						
32						
33						

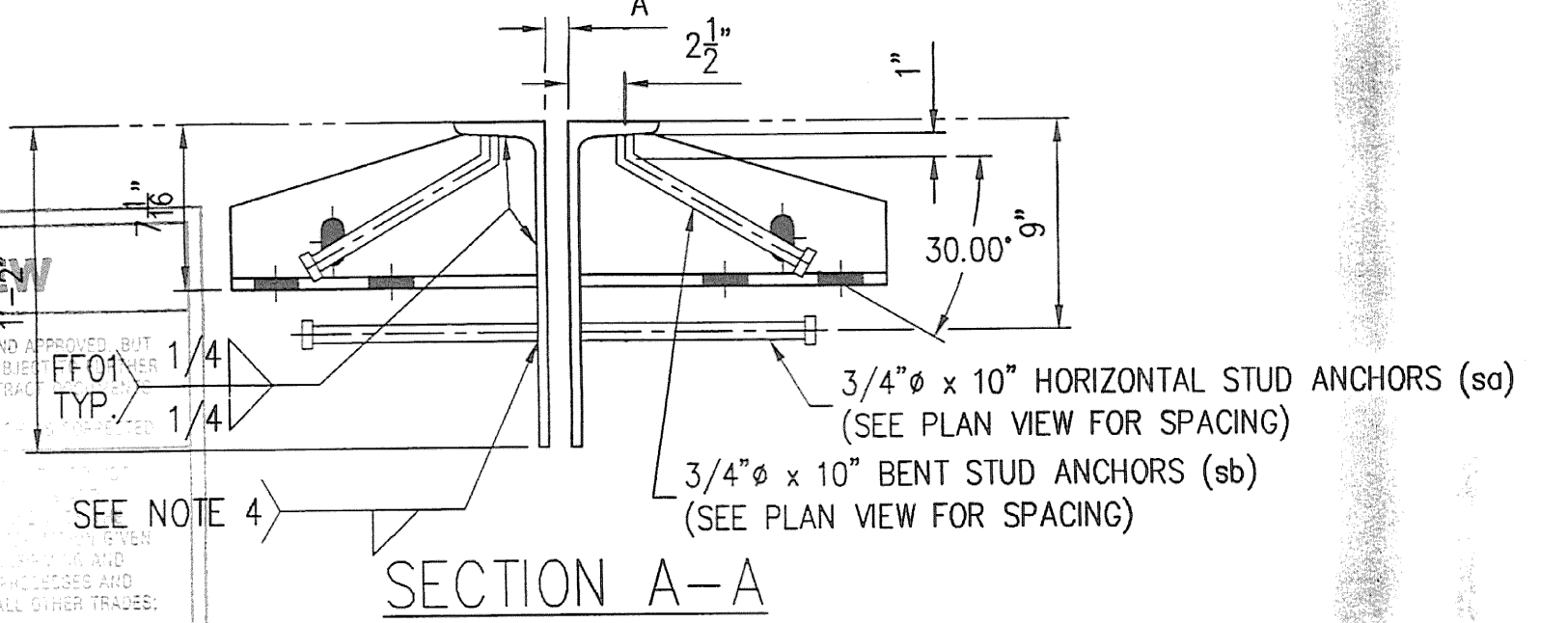


SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED FOR THE CONTRACTOR'S USE ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK AND SUBJECT TO THE CONDITIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT.

Yonasson Hangan Brattain, Inc.
Engineers, Planners, and Scientists
One Federal Plaza, 6th Floor
Boston, MA 02108 617-554-0888

Job Number: 50929
Reviewed By: ASR
Date: 2/21/01



GENERAL REVISION PER APPROVAL. 1/22/01

REV.	DESCRIPTION	DATE	BY
1	GENERAL REVISION PER APPROVAL.	1/22/01	SLJ

ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY LEWIS ENGINEERING COMPANY PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

LEWIS ENGINEERING COMPANY
4201 NOREX DRIVE — CHASKA, MINNESOTA 55318 — (612) 368-3000

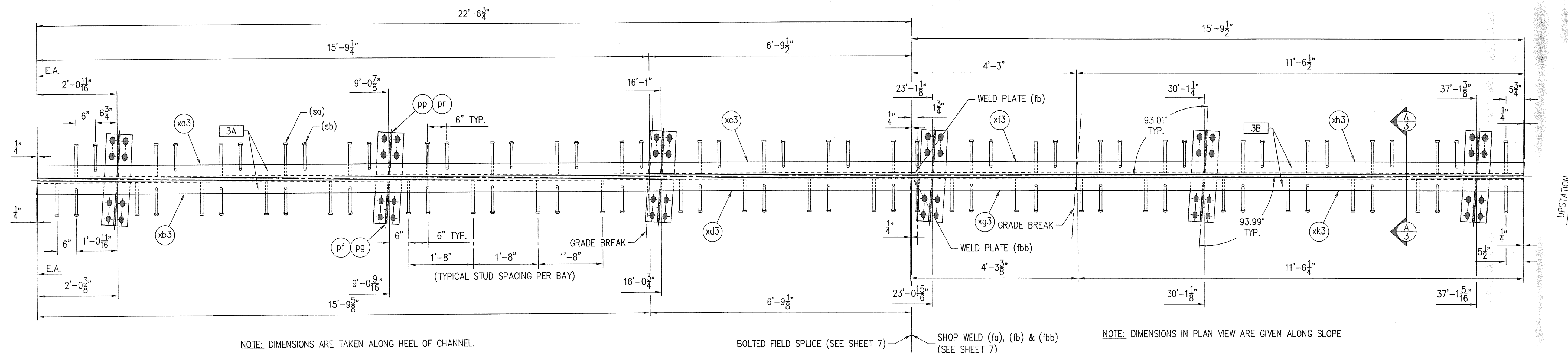
PROJECT — BRIDGE NO. 68 SOUTH BURLINGTON U.S. 2 OVER I-89
STATE PROJECT — IM DECK (36)
FEDERAL PROJECT —

CUSTOMER — J A McDONALD
LOCATION — CHITTENDEN COUNTY, VERMONT
DESCRIPTION — EXPANSION JOINT DETAILS EASTBOUND AT PIER 1

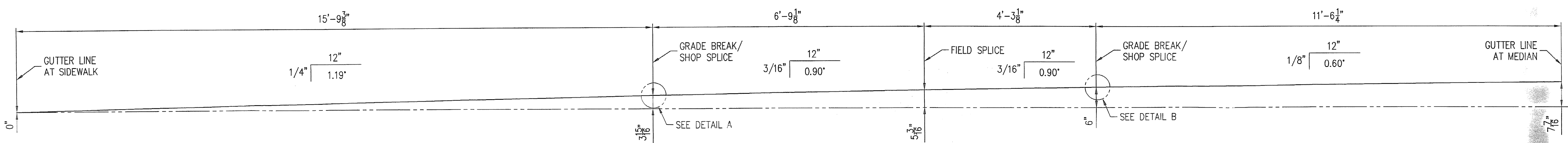
W.P. chkd by SLJ
Drawn By SLJ
Chkd. By AUC
Date: 11/21/00

PRELIM 11/28/00
SHOP
APPROVAL 11/28/00
DIST.
CUST.
FOR DATE
PRINTS ISSUED

SHEET NO. 2 OF 8 Job. No. : 978.1049.1



PLAN VIEW - EXPANSION JOINT
(PIER 2 - WESTBOUND)



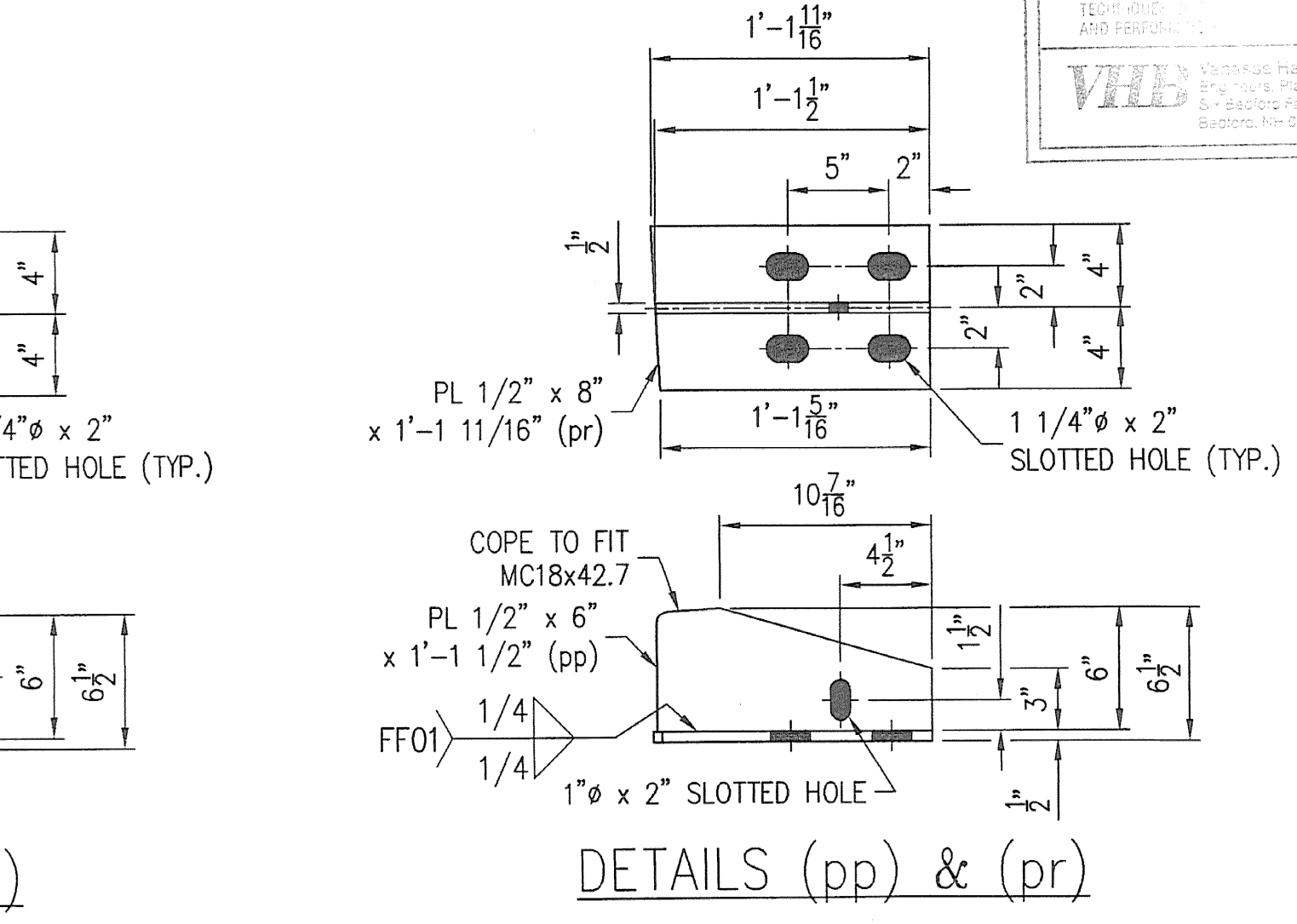
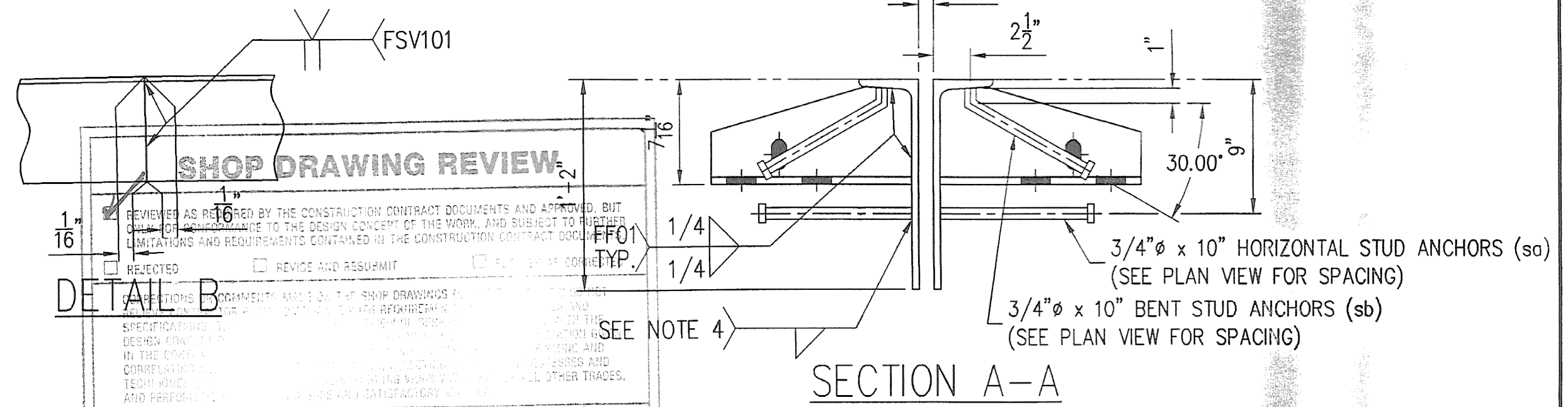
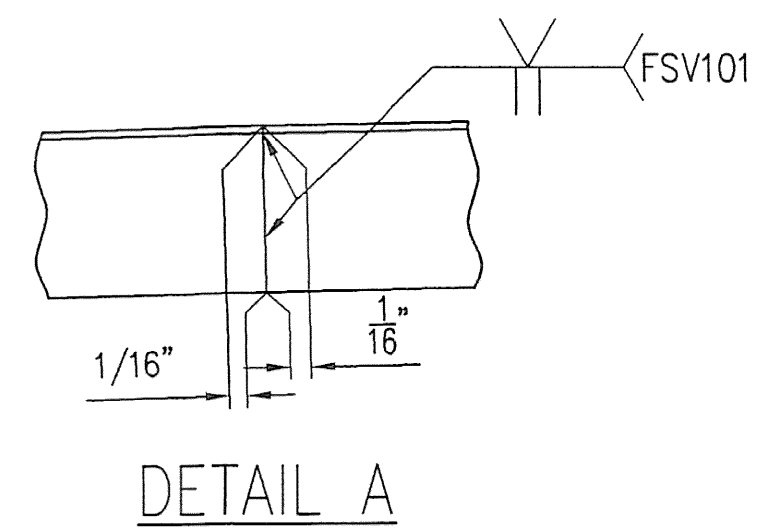
ELEVATION VIEW
(ELEVATIONS TAKEN ALONG C/L OF JOINT)

CONTRACTOR NOTE:
ALL SURFACES OF STEEL DECK JOINTS WHICH ARE TO HAVE CONCRETE PLACED AGAINST THEM, SHALL BE COATED WITH EPOXY BONDING COMPOUND. EPOXY BONDING COMPOUND TO BE PROVIDED BY THE CONTRACTOR.

APPROVER NOTE:
STOOL LENGTHS HAVE BEEN REVISED PER CONTRACTOR'S FIELD MEASUREMENTS TAKEN JANUARY 19, 2001.

SEE SHEET 7 FOR GENERAL NOTES

TEMPERATURE	45'	60'	75'	90'
DIM 'A'	1	7/8	7/8	3/4



LINE NO.	NO. REQ'D.	DESCRIPTION	LENGTH	MK	REMARKS	WGHT.
1	1	EXPANSION JOINT ASS'Y		3A	HDG	
2	1	MC18x42.7	15'-9 1/4"	xc3	REMOVE FLANGE	11-8
3	1	MC18x42.7	15'-9 3/8"	xb3	REMOVE FLANGE	11-8
4	1	MC18x42.7	6'-9 1/2"	xc3	REMOVE FLANGE	11-8
5	1	MC18x42.7	6'-9 3/8"	xd3	REMOVE FLANGE	11-8
6	3	PL 1/2 x 6	1'-0 1/2"	pf	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
7	3	PL 1/2 x 8	1'-0 3/4"	pg	SHAPE CUT	19-16
8	3	PL 1/2 x 6	1'-1 1/2"	pp	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
9	3	PL 1/2 x 8	1'-1 1/8"	pr	SHAPE CUT	19-16
10	27	WS 3/4 x 10		sa	26	29-19
11	26	WS 3/4 x 10		sb	25 / BEND	29-19
12						
13						
14						
15						
16						
17	1	EXPANSION JOINT ASS'Y		3B	HDG	
18	1	MC18x42.7	4'-3"	xf3	REMOVE FLANGE	11-8
19	1	MC18x42.7	4'-3 3/8"	xg3	REMOVE FLANGE	11-8
20	1	MC18x42.7	11'-6 1/2"	xh3	REMOVE FLANGE	11-8
21	1	MC18x42.7	11'-6 1/4"	xk3	REMOVE FLANGE	11-8
22	3	PL 1/2 x 6	1'-0 1/2"	pf	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
23	3	PL 1/2 x 8	1'-0 3/4"	pg	SHAPE CUT	19-16
24	3	PL 1/2 x 6	1'-1 1/2"	pp	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
25	3	PL 1/2 x 8	1'-1 1/8"	pr	SHAPE CUT	19-16
26	19	WS 3/4 x 10		sa	18	29-19
27	19	WS 3/4 x 10		sb	18 / BEND	29-19
28	2	FB 1/4 x 2	0'-2"	fa		16-29
29	1	FB 1/4 x 4	1'-0"	fb		16-36
30	1	FB 1/4 x 4	1'-0"	fbb		16-36
31						
32						
33						

SHOP DRAWING REVIEW

REVIEWED AS SHOWN BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED BUT NOT GUARANTEED TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

REMOVED AND REQUIRMENT: []

SELECTED: []

DESIGNER: []

IN THE CONTRACT DOCUMENTS, THE SHOP DRAWINGS SHALL BE CONSIDERED AS PART OF THE CONTRACT DOCUMENTS AND SHALL BE SUBJECT TO THE SAME TERMS, CONDITIONS, AND OTHER TRADES.

Yankuang Engineering, Inc.
2000 Main Street, Suite 200
Boston, MA 02102 617-814-9988

Job Number: 50829
Reviewed By: ASB
Date: 2/20/01

REV.	DESCRIPTION	DATE	BY
1	GENERAL REVISION PER APPROVAL.	1/22/01	SLB

ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY LEWIS ENGINEERING COMPANY PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

LEWIS ENGINEERING COMPANY

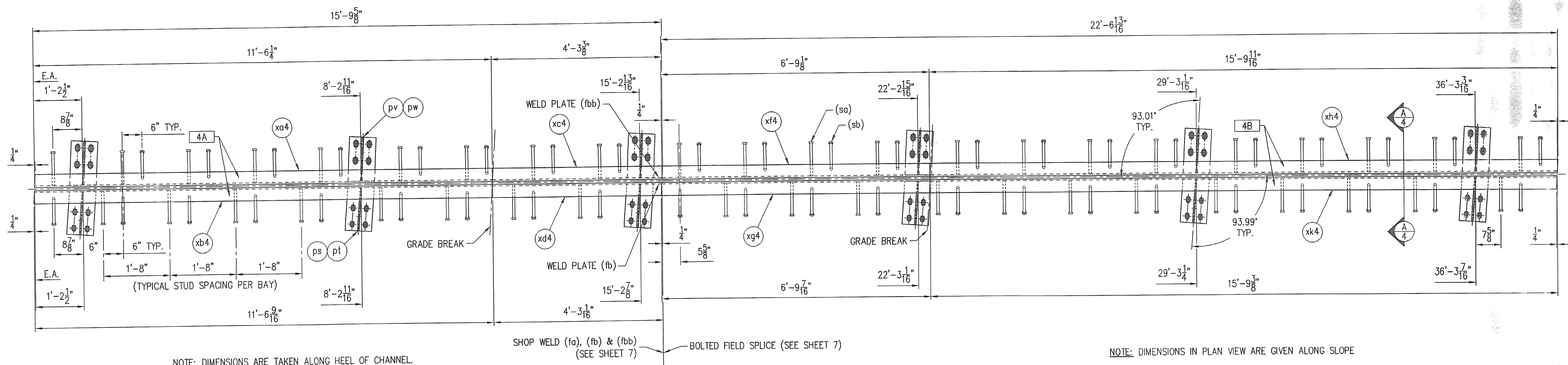
4201 NOREX DRIVE - CHASKA, MINNESOTA 55318 - (612) 368-3000

PROJECT	BRIDGE NO. 68 SOUTH BURLINGTON U.S. 2 OVER I-89
STATE PROJECT	IM DECK (36)
FEDERAL PROJECT	
CUSTOMER	J A McDONALD
LOCATION	CHITTENDEN COUNTY, VERMONT
DESCRIPTION	EXPANSION JOINT DETAILS WESTBOUND AT PIER 2

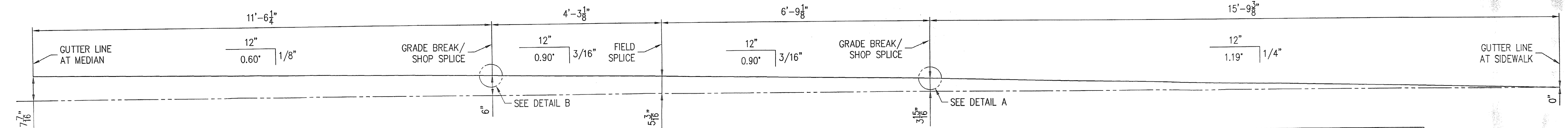
W.P. chkd	JKK
Drawn By	SLB
Chk'd. By	AJC
Date:	11/21/00

PRELIM	11/28/00
SHOP	
APPROVAL	11/28/00
DIST.	
CUST.	
FOR PRINTS ISSUED	

SHEET NO. 3 OF 8 Job. No. : 978.1049.1



PLAN VIEW - EXPANSION JOINT
(PIER 2 - EASTBOUND)



TEMPERATURE ADJUSTING CHART - PIER 2

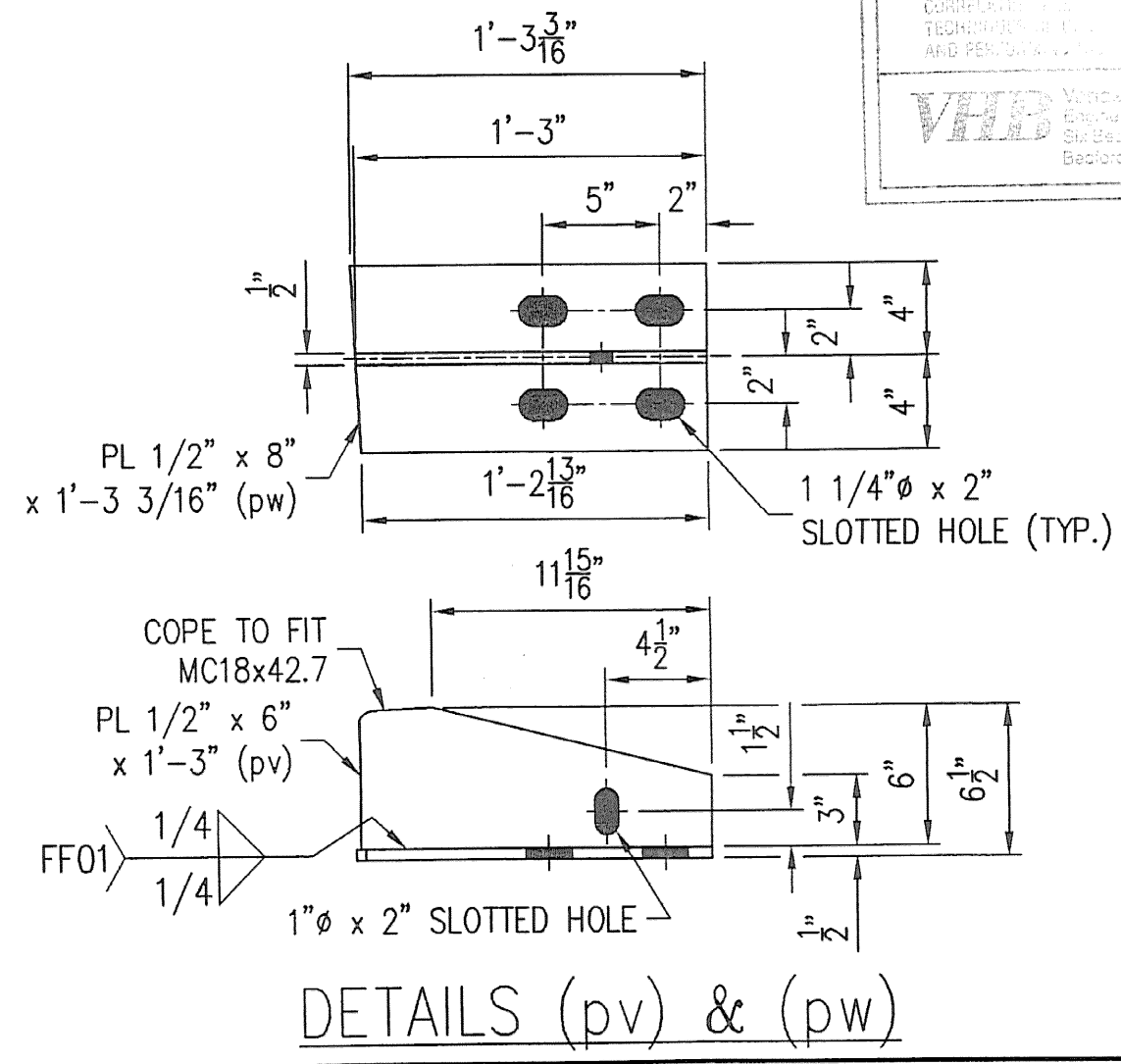
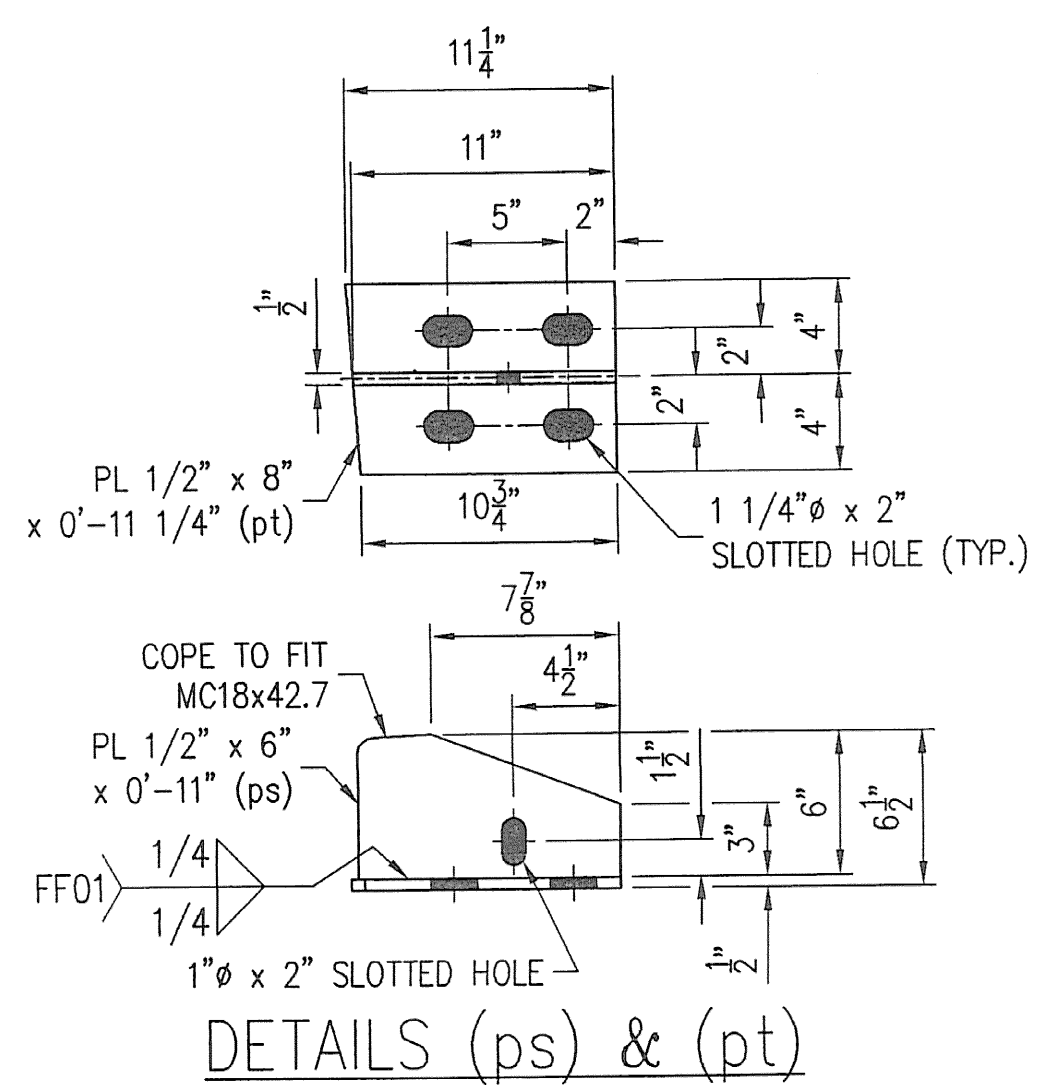
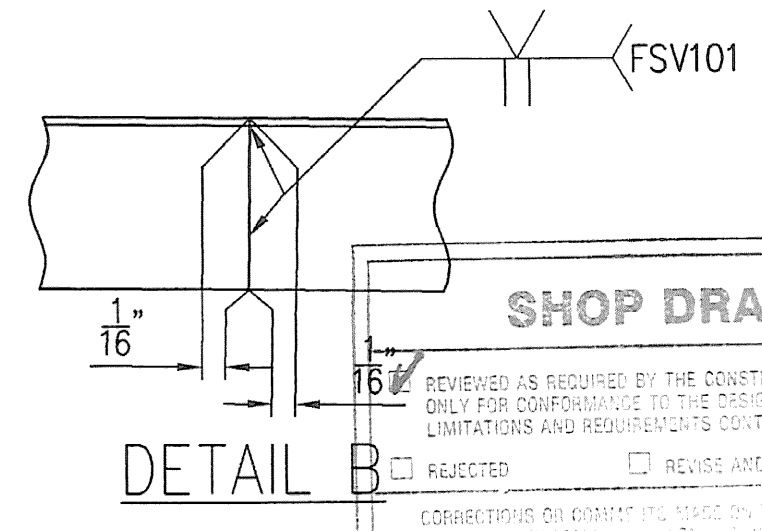
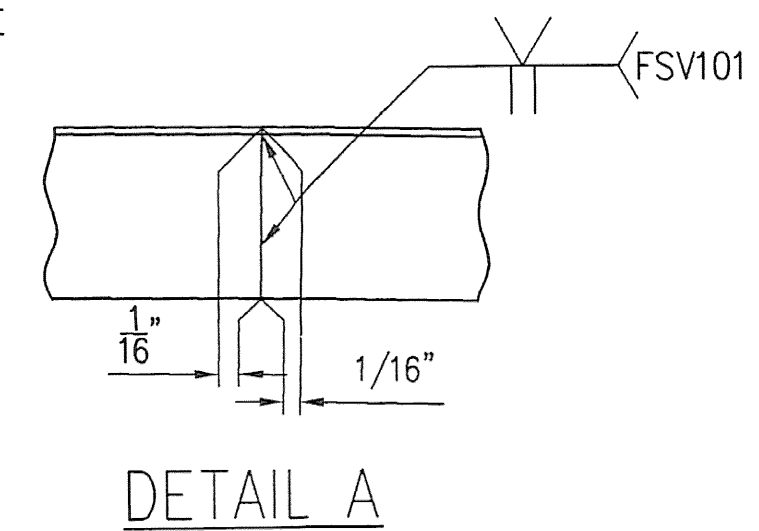
TEMPERATURE	45°	60°	75°	90°
DIM 'A'	1	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{3}{4}$

SEE SHEET 7 FOR GENERAL NOTES

LINE NO.	NO. REQ'D.	DESCRIPTION	LENGTH	MK	REMARKS	WGHT.
1	1	EXPANSION JOINT ASS'Y		4A	HDG	
2	1	MC18x42.7	11'-6 1/4"	xa4	REMOVE FLANGE	11-8
3	1	MC18x42.7	11'-6 9/16"	xb4	REMOVE FLANGE	11-8
4	1	MC18x42.7	4'-3 3/8"	xc4	REMOVE FLANGE	11-8
5	1	MC18x42.7	4'-3 1/16"	xd4	REMOVE FLANGE	11-8
6	3	PL 1/2 x 6	0'-11"	ps	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
7	3	PL 1/2 x 8	0'-11 1/4"	pt	SHAPE CUT	19-16
8	3	PL 1/2 x 6	1'-3"	pv	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
9	3	PL 1/2 x 8	1'-3 3/16"	pw	SHAPE CUT	19-16
10	18	WS 3/4 x 10		so	17	29-19
11	18	WS 3/4 x 10		sb	17 / BEND	29-19
12	2	FB 1/4 x 2	0'-2"	fa		16-29
13	1	FB 1/4 x 4	1'-0"	fb		16-36
14	1	FB 1/4 x 4	1'-0"	fb		16-36
15						
16						
17						
18						
19	1	EXPANSION JOINT ASS'Y		4B	HDG	
20	1	MC18x42.7	6'-9 9/16"	xf4	REMOVE FLANGE	11-8
21	1	MC18x42.7	6'-9 1/16"	xg4	REMOVE FLANGE	11-8
22	1	MC18x42.7	15'-9 1/16"	xh4	REMOVE FLANGE	11-8
23	1	MC18x42.7	15'-9 3/8"	xk4	REMOVE FLANGE	11-8
24	3	PL 1/2 x 6	0'-11"	ps	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
25	3	PL 1/2 x 8	0'-11 1/4"	pt	SHAPE CUT	19-16
26	3	PL 1/2 x 6	1'-3"	pv	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
27	3	PL 1/2 x 8	1'-3 3/16"	pw	SHAPE CUT	19-16
28	26	WS 3/4 x 10		sa	25	29-19
29	27	WS 3/4 x 10		sb	26 / BEND	29-19
30						
31						
32						
33						

CONTRACTOR NOTE:
ALL SURFACES OF STEEL DECK JOINTS WHICH ARE TO HAVE CONCRETE PLACED AGAINST THEM, SHALL BE COATED WITH EPOXY BONDING COMPOUND. EPOXY BONDING COMPOUND TO BE PROVIDED BY THE CONTRACTOR.

APPROVER NOTE:
STOOL LENGTHS HAVE BEEN REVISED PER CONTRACTOR'S FIELD MEASUREMENTS TAKEN JANUARY 19, 2001.

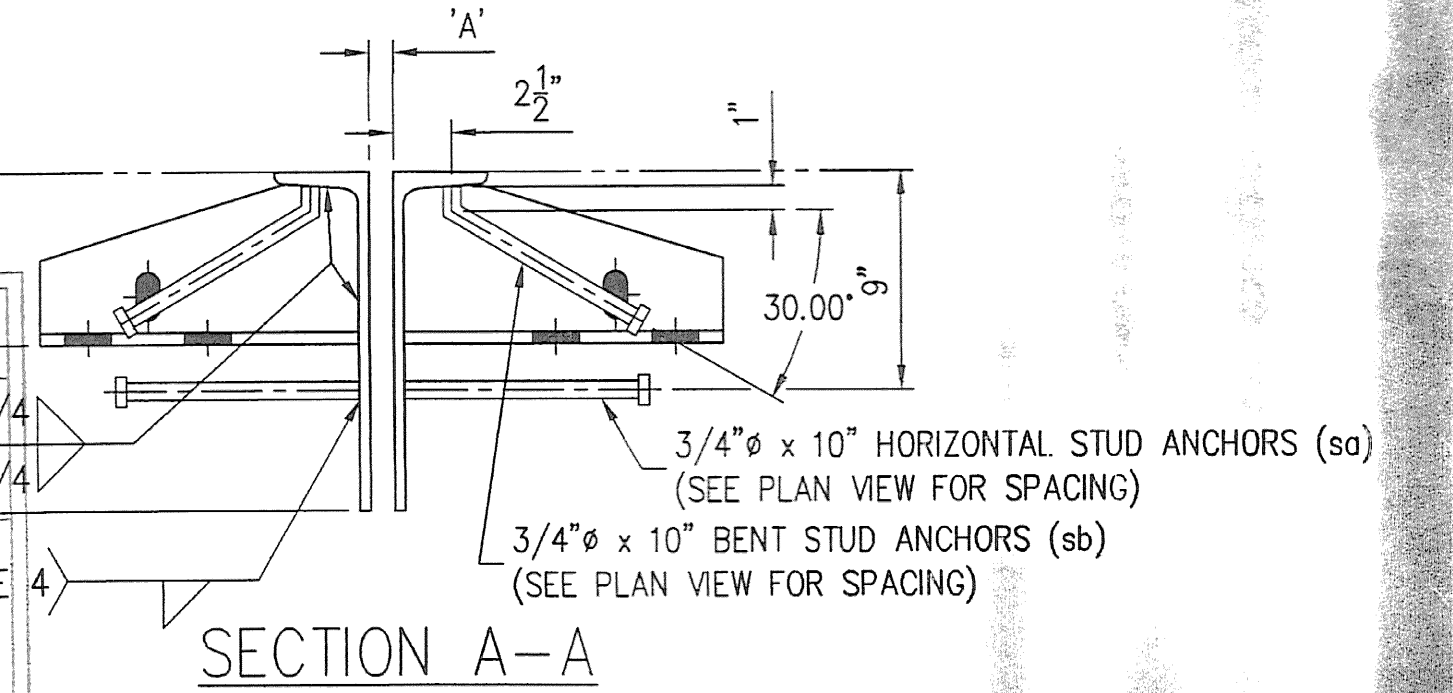


SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK AND SUBMITTALS. LIMITATIONS AND RESERVATIONS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS APPLY TO THIS REVIEW.

REJECTED REVISE AND RESUBMIT

DATE: 2/21/01



GENERAL REVISION PER APPROVAL.

REV.	DESCRIPTION	DATE
1	GENERAL REVISION PER APPROVAL.	1/22/01

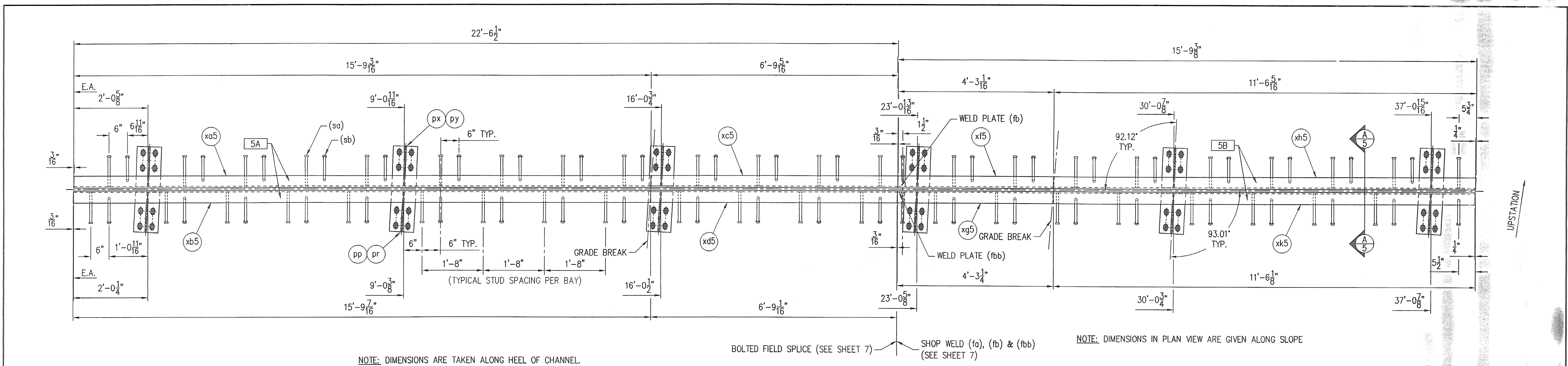
ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY LEWIS ENGINEERING COMPANY PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

LEWIS ENGINEERING COMPANY
4201 NOREX DRIVE - CHASKA, MINNESOTA 55318 - (612) 368-3000

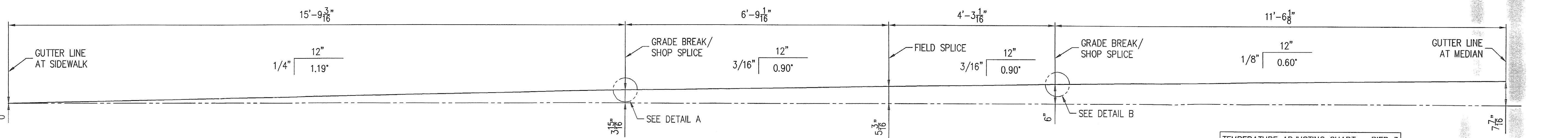
PROJECT - BRIDGE NO. 68 SOUTH BURLINGTON U.S. 2 OVER I-89
STATE PROJECT - IM DECK (36)
FEDERAL PROJECT -
CUSTOMER - J A McDONALD
LOCATION - CHITTENDEN COUNTY, VERMONT
DESCRIPTION - EXPANSION JOINT DETAILS EASTBOUND AT PIER 2

W.P. chkd By
Drawn By
Chk'd. By
Date: 11/21/00

SHEET NO. 4 OF 8 Job. No.: 978.1049.1



PLAN VIEW - EXPANSION JOINT
(PIER 3 - WESTBOUND)



ELEVATION VIEW
(ELEVATIONS TAKEN ALONG C OF JOINT)

TEMPERATURE ADJUSTING CHART - PIER 3

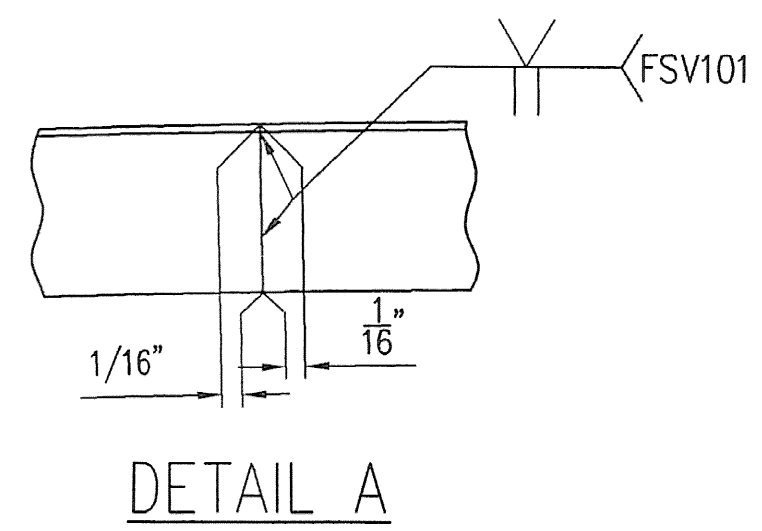
TEMPERATURE	45°	60°	75°	90°
DIM 'A'	1	7/8	7/8	3/4

SEE SHEET 7 FOR GENERAL NOTES

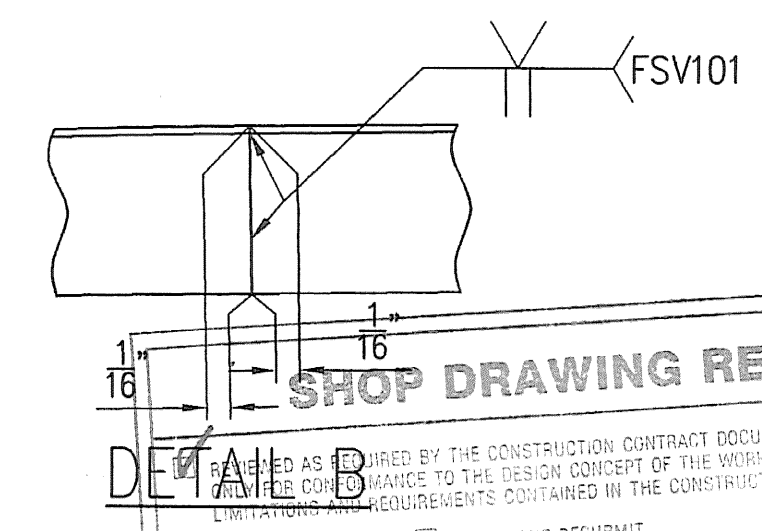
LINE NO.	NO. REQ'D.	DESCRIPTION	LENGTH	MK	REMARKS	WGHT.
1		EXPANSION JOINT ASS'Y		5A	HDC	
2	1	MC18x42.7	15'-9 3/16"	xa5	REMOVE FLANGE	11-8
3	1	MC18x42.7	15'-9 3/16"	xb5	REMOVE FLANGE	11-8
4	1	MC18x42.7	6'-9 5/16"	xc5	REMOVE FLANGE	11-8
5	1	MC18x42.7	6'-9 5/16"	xd5	REMOVE FLANGE	11-8
6	3	PL 1/2 x 6	1'-1 1/2"	pp	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
7	3	PL 1/2 x 8	1'-1 1/2"	pr	SHAPE CUT	19-16
8	3	PL 1/2 x 6	1'-1 1/2"	px	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
9	3	PL 1/2 x 8	1'-1 1/2"	py	SHAPE CUT	19-16
10	27	WS 3/4 x 10		sa	26	29-19
11	26	WS 3/4 x 10		sb	25 / BEND	29-19
12						
13						
14						
15						
16						
17	1	EXPANSION JOINT ASS'Y		5B	HDC	
18	1	MC18x42.7	4'-3 1/16"	xf5	REMOVE FLANGE	11-8
19	1	MC18x42.7	4'-3 1/16"	xg5	REMOVE FLANGE	11-8
20	1	MC18x42.7	11'-6 3/16"	xh5	REMOVE FLANGE	11-8
21	1	MC18x42.7	11'-6 3/16"	xk5	REMOVE FLANGE	11-8
22	3	PL 1/2 x 6	1'-1 1/2"	pp	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
23	3	PL 1/2 x 8	1'-1 1/2"	pr	SHAPE CUT	19-16
24	3	PL 1/2 x 6	1'-1 1/2"	px	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
25	3	PL 1/2 x 8	1'-1 1/2"	py	SHAPE CUT	19-16
26	19	WS 3/4 x 10		sa	18	29-19
27	19	WS 3/4 x 10		sb	18 / BEND	29-19
28	2	FB 1/4 x 2	0'-2"	fa		16-29
29	1	FB 1/4 x 4	1'-0"	fb		16-36
30	1	FB 1/4 x 4	1'-0"	fbb		16-36
31						
32						
33						

CONTRACTOR NOTE:
ALL SURFACES OF STEEL DECK JOINTS WHICH ARE TO HAVE CONCRETE PLACED AGAINST THEM, SHALL BE COATED WITH EPOXY BONDING COMPOUND. EPOXY BONDING COMPOUND TO BE PROVIDED BY THE CONTRACTOR.

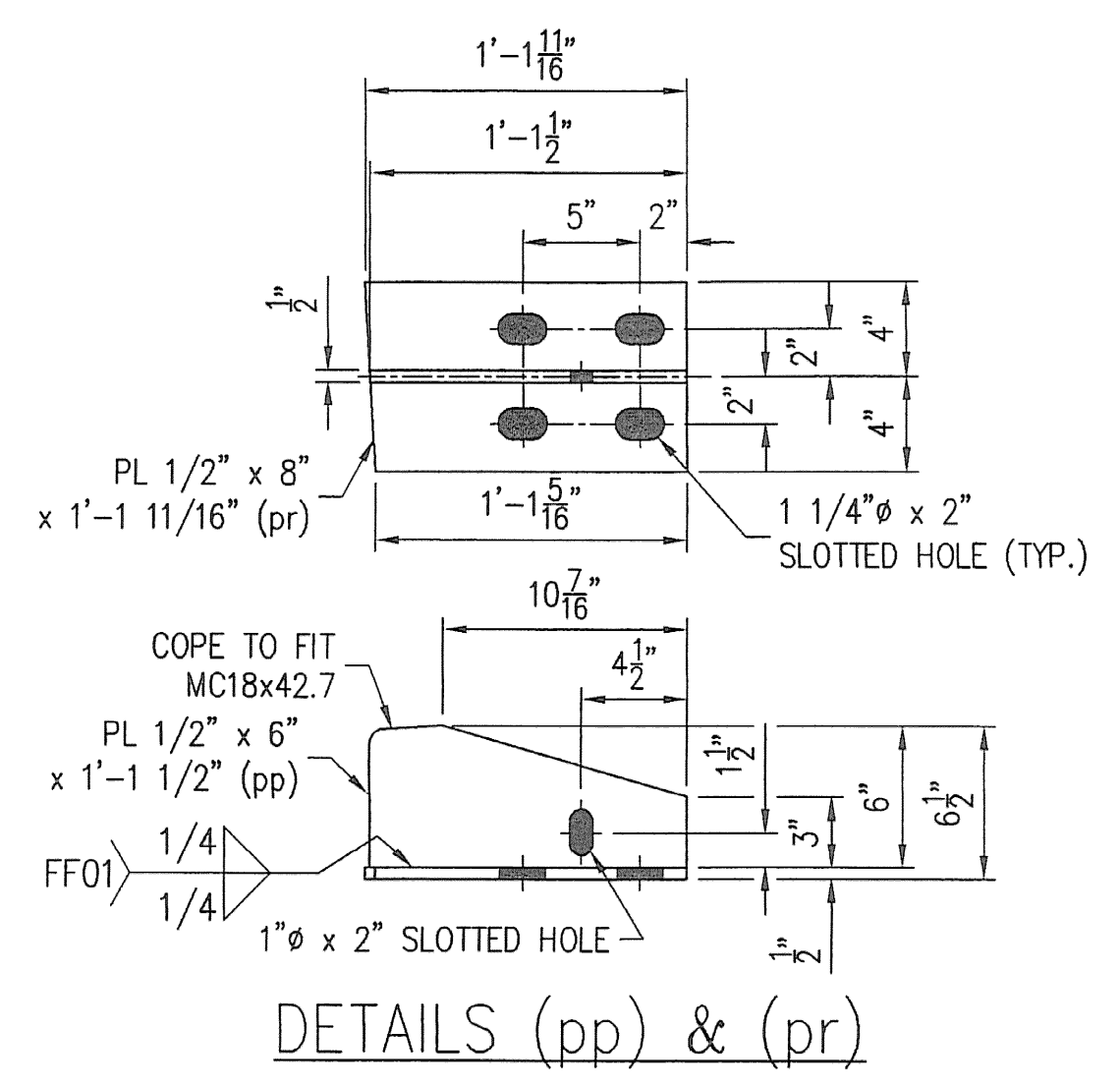
APPROVER NOTE:
STOOL LENGTHS HAVE BEEN REVISED PER CONTRACTOR'S FIELD MEASUREMENTS TAKEN JANUARY 19, 2001.



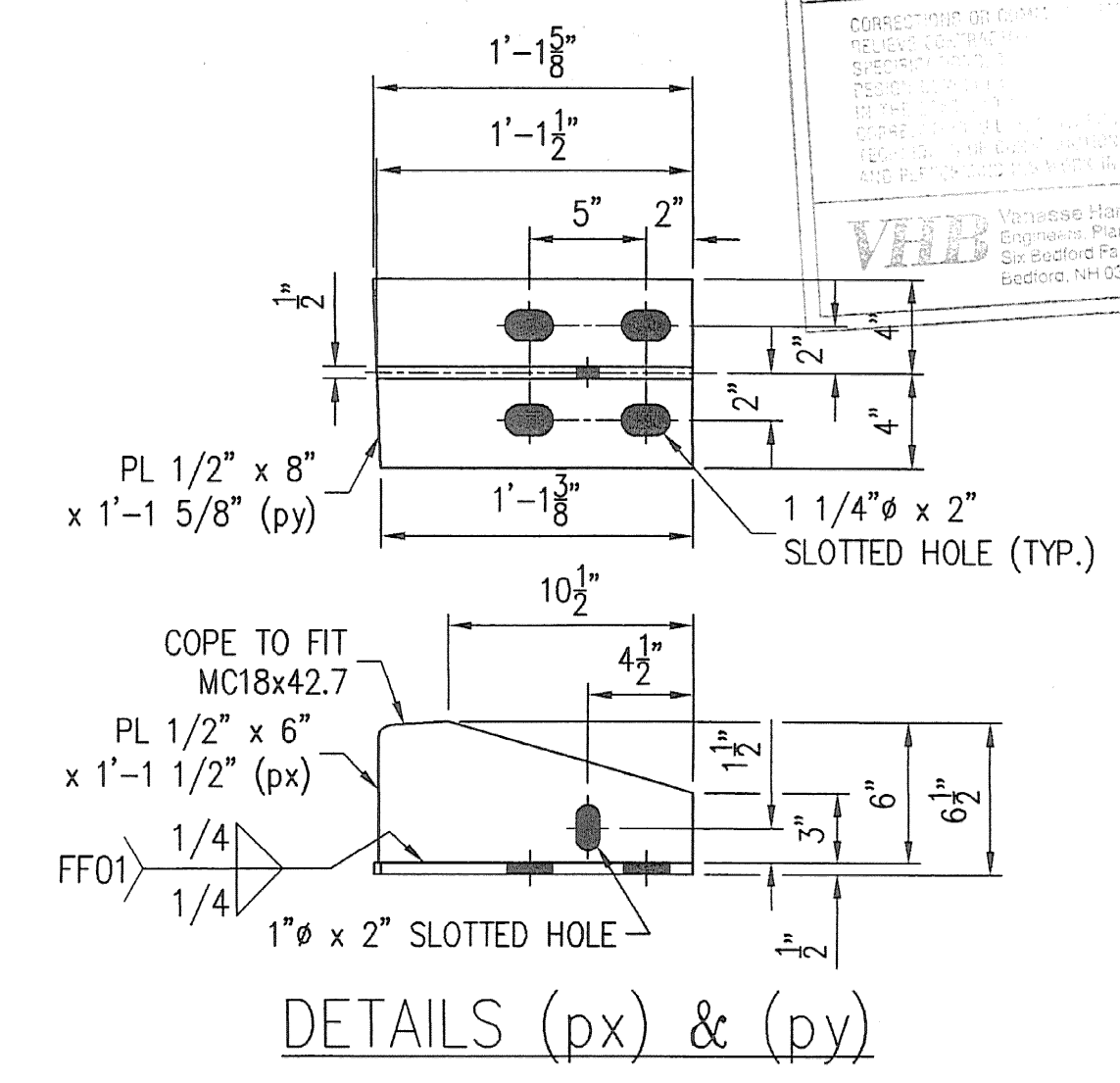
DETAIL A



DETAIL B



DETAILS (pp) & (pr)

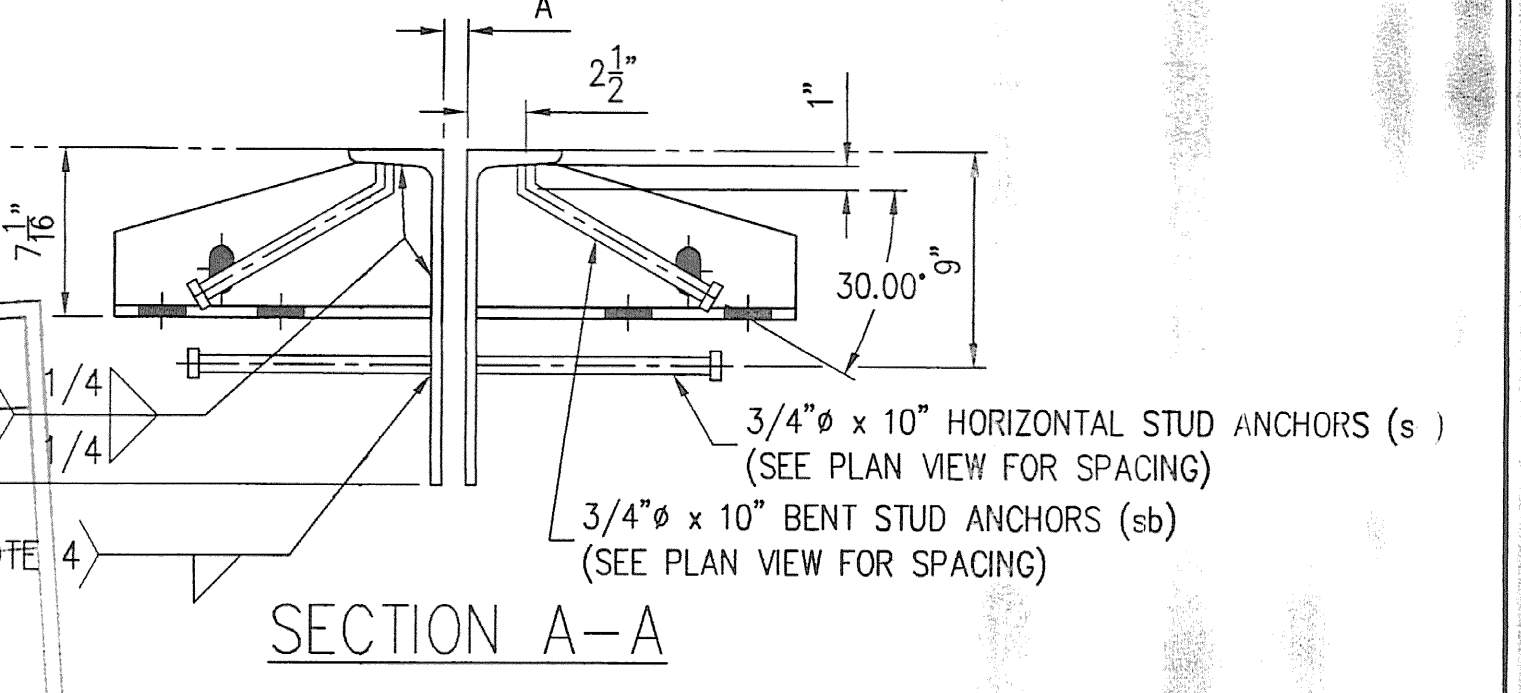


DETAILS (px) & (py)

SHOP DRAWING REVIEW

REJECTED REVISE AND RESUBMIT APPROVED

DATE: 2/20/01



SECTION A-A

GENERAL REVISION PER APPROVAL

REV.	DESCRIPTION	DATE	INT.
1	GENERAL REVISION PER APPROVAL	1/22/01	SLB

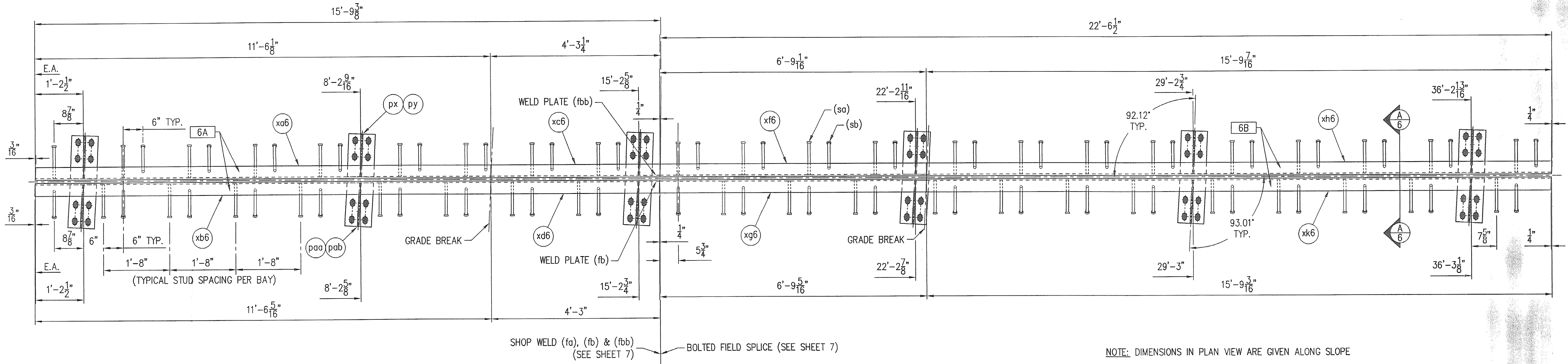
LEWIS ENGINEERING COMPANY
4201 NOREX DRIVE - CHASKA, MINNESOTA 55318 - (612) 368-3000

PROJECT - BRIDGE NO. 68 SOUTH BURLINGTON U.S. 2 OVER I-89
STATE PROJECT - IM DECK (36)
FEDERAL PROJECT -
CUSTOMER - J A McDONALD
LOCATION - CHITTENDEN COUNTY, VERMONT
DESCRIPTION - EXPANSION JOINT DETAILS WESTBOUND AT PIER 3

W.P. chkd JDM
Drawn By S
Chkd. By A
Date: 11/21/01

PRELIM 11/28/00
SHOP
APPROVAL 11/28/00
DIST.
CUST.
FOR DATE
PRINTS ISSUED

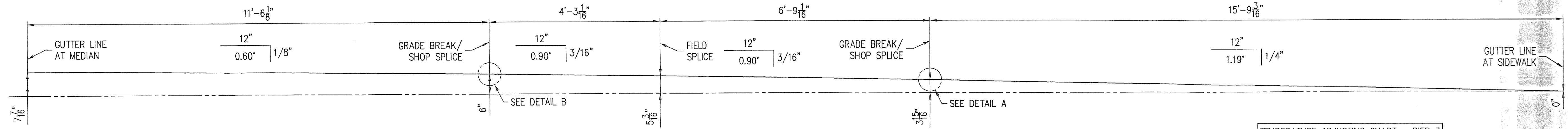
SHEET NO. 5 OF 8
Job. No. : 978.104.1



NOTE: DIMENSIONS ARE TAKEN ALONG HEEL OF CHANNEL.

NOTE: DIMENSIONS IN PLAN VIEW ARE GIVEN ALONG SLOPE

PLAN VIEW - EXPANSION JOINT
(PIER 3 - EASTBOUND)



ELEVATION VIEW
(ELEVATIONS TAKEN ALONG CL OF JOINT)

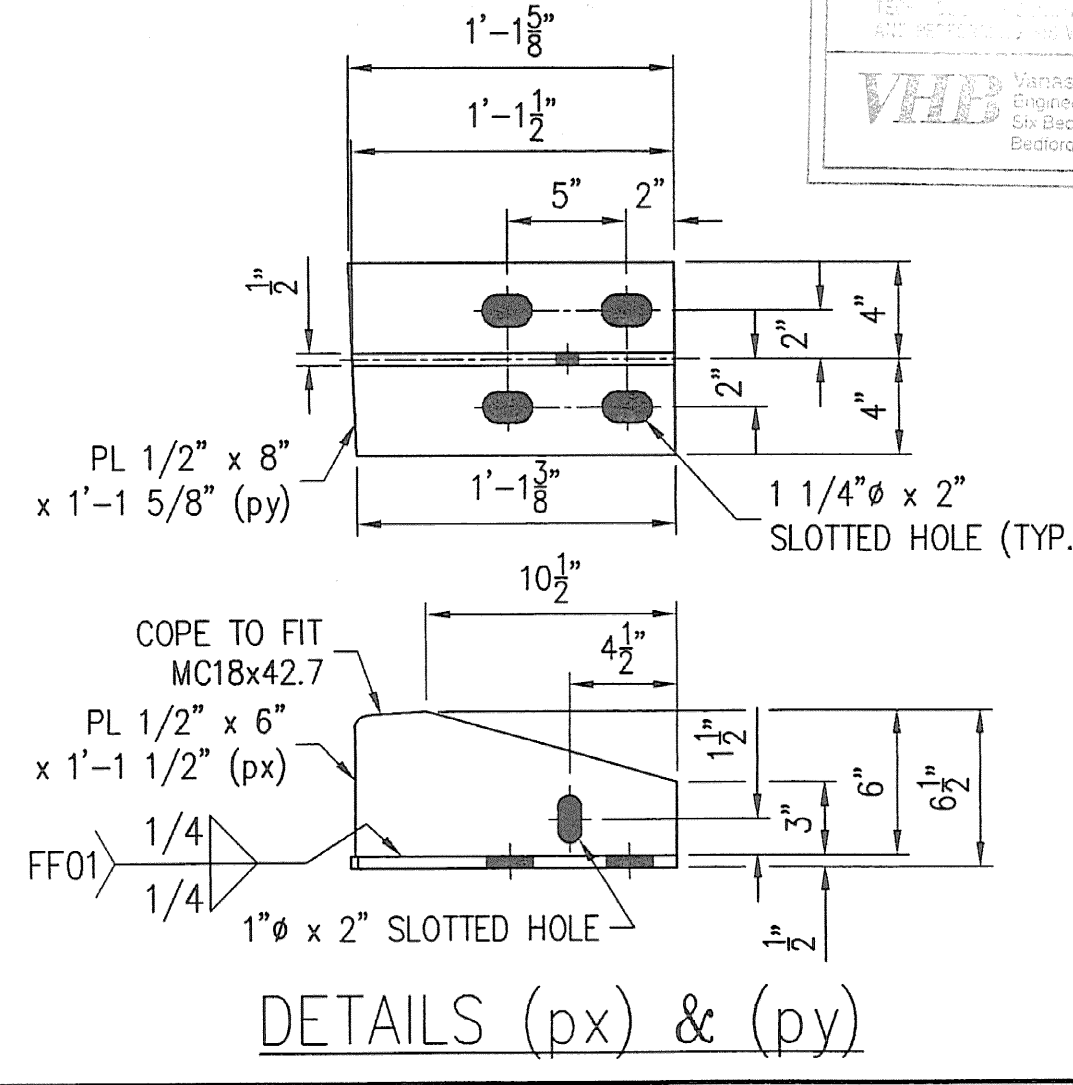
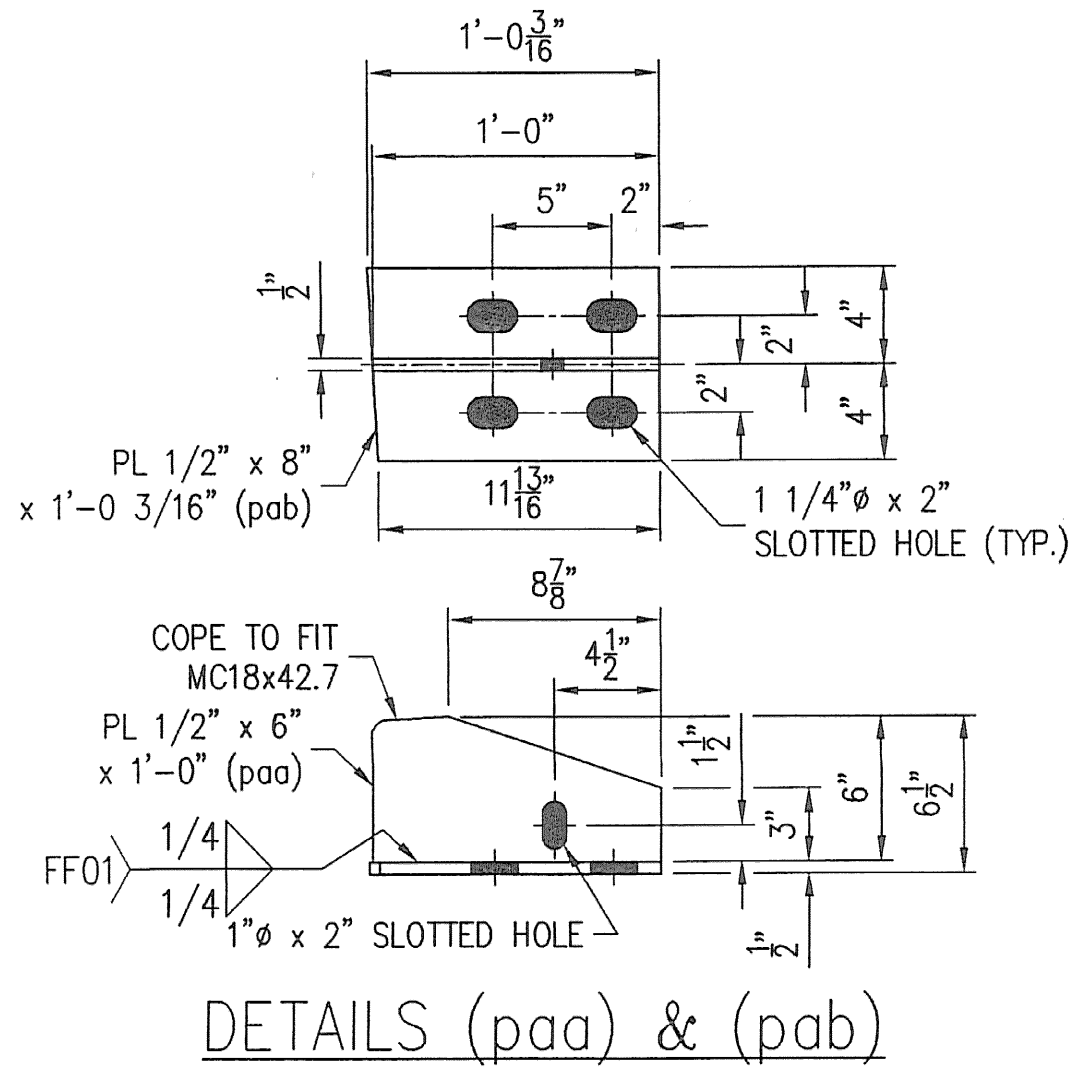
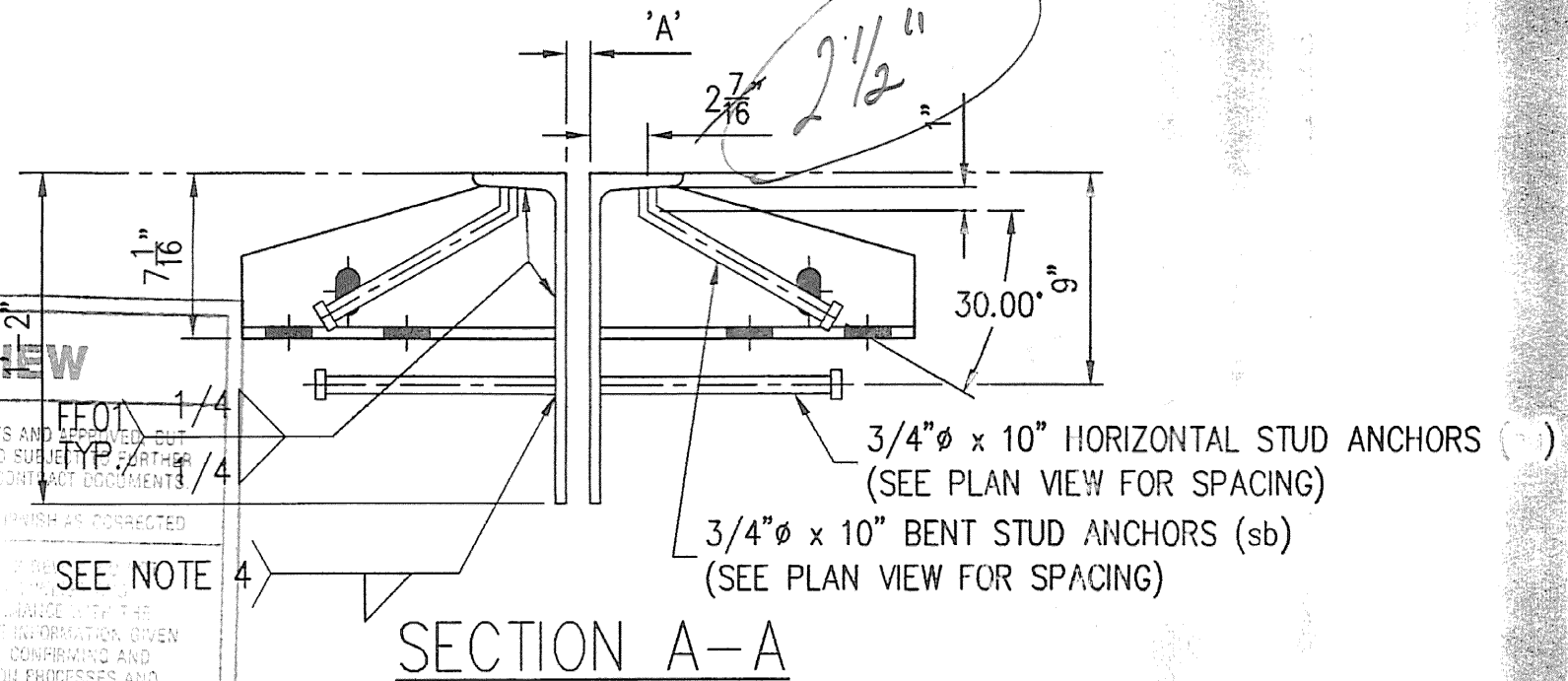
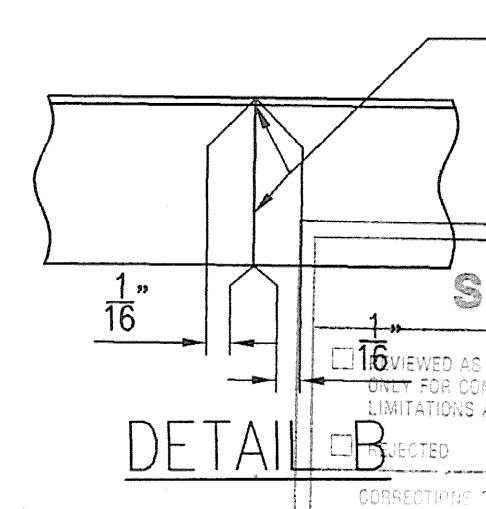
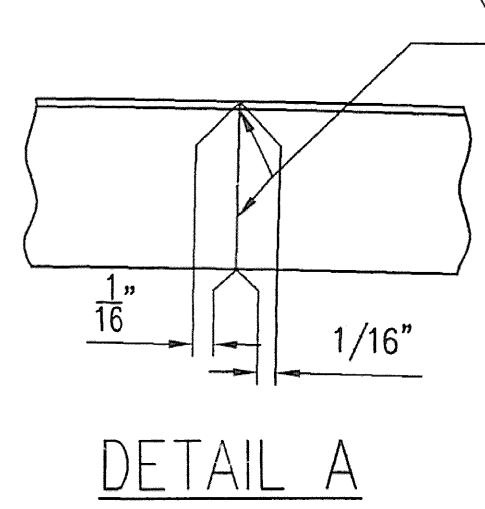
CONTRACTOR NOTE:
ALL SURFACES OF STEEL DECK JOINTS WHICH ARE TO HAVE CONCRETE PLACED AGAINST THEM, SHALL BE COATED WITH EPOXY BONDING COMPOUND. EPOXY BONDING COMPOUND TO BE PROVIDED BY THE CONTRACTOR.

APPROVER NOTE:
STOOL LENGTHS HAVE BEEN REVISED PER CONTRACTORS FIELD MEASUREMENTS TAKEN JANUARY 19, 2001.

TEMPERATURE ADJUSTING CHART - PIER 3				
TEMPERATURE	45°	60°	75°	90°
DIM 'A'	1	7/8	7/8	3/4

SEE SHEET 7 FOR GENERAL NOTES

LINE NO.	NO. REQ'D.	DESCRIPTION	LENGTH	MK	REMARKS	WGHT.
1	1	EXPANSION JOINT ASS'Y		6A	HDG	
2	1	MC18x42.7	11'-6 1/8"	xc6	REMOVE FLANGE	11-8
3	1	MC18x42.7	11'-6 5/16"	xb6	REMOVE FLANGE	11-8
4	1	MC18x42.7	4'-3 1/4"	xc6	REMOVE FLANGE	11-8
5	1	MC18x42.7	4'-3"	xd6	REMOVE FLANGE	11-8
6	3	PL 1/2 x 6	1'-1 1/2"	px	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
7	3	PL 1/2 x 8	1'-1 3/8"	py	SHAPE CUT	19-16
8	3	PL 1/2 x 6	1'-0"	paa	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
9	3	PL 1/2 x 8	1'-0 1/16"	pab	SHAPE CUT	19-16
10	18	WS 3/4 x 10		sa	17	29-19
11	18	WS 3/4 x 10		sb	17 / BEND	29-19
12	2	FB 1/4 x 2	0'-2"	fa		16-29
13	1	FB 1/4 x 4	1'-0"	fb		16-36
14	1	FB 1/4 x 4	1'-0"	fbb		16-36
15						
16						
17						
18						
19	1	EXPANSION JOINT ASS'Y		6B	HDG	
20	1	MC18x42.7	6'-9 1/16"	xf6	REMOVE FLANGE	11-8
21	1	MC18x42.7	6'-9 3/16"	xg6	REMOVE FLANGE	11-8
22	1	MC18x42.7	15'-9 7/16"	xh6	REMOVE FLANGE	11-8
23	1	MC18x42.7	15'-9 3/16"	xk6	REMOVE FLANGE	11-8
24	3	PL 1/2 x 6	1'-1 1/2"	px	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
25	3	PL 1/2 x 8	1'-1 3/8"	py	SHAPE CUT	19-16
26	3	PL 1/2 x 6	1'-0"	paa	SHAPE CUT / COPE TO FIT MC18x42.7	19-16
27	3	PL 1/2 x 8	1'-0 1/16"	pab	SHAPE CUT	19-16
28	26	WS 3/4 x 10		sa	25	29-19
29	27	WS 3/4 x 10		sb	26 / BEND	29-19
30						
31						
32						
33						



SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND PER THE REQUIREMENTS OF THE DESIGN SPECIFICATIONS FOR BRIDGE CONSTRUCTION AND THE REQUIREMENTS CONTAINED IN THE SUBSEQUENT REVISIONS.

DATE: 1/22/01

BY: [Signature]

REV.	DESCRIPTION	DATE	BY
1	GENERAL REVISION PER APPROVAL.	1/22/01	SLB

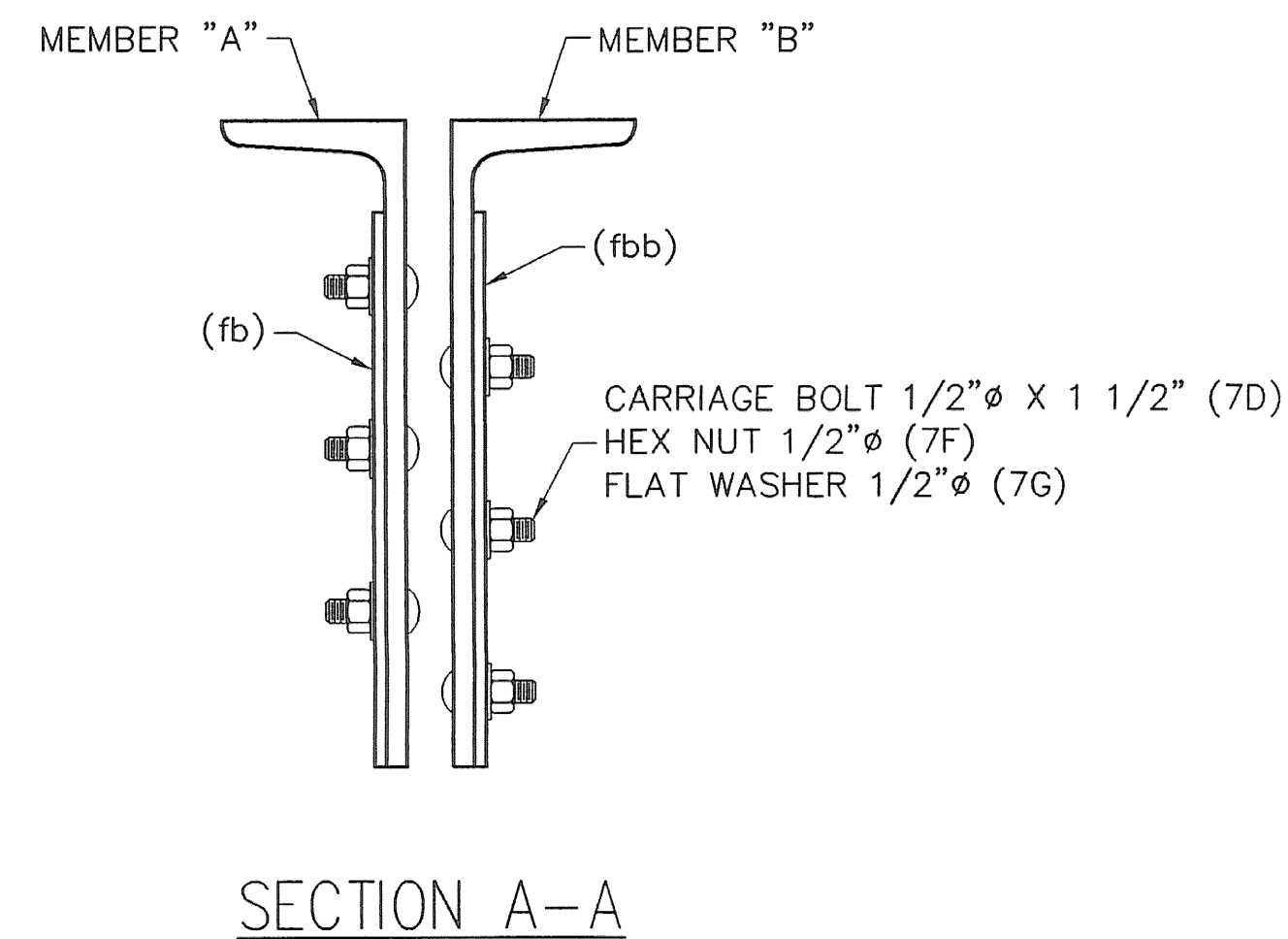
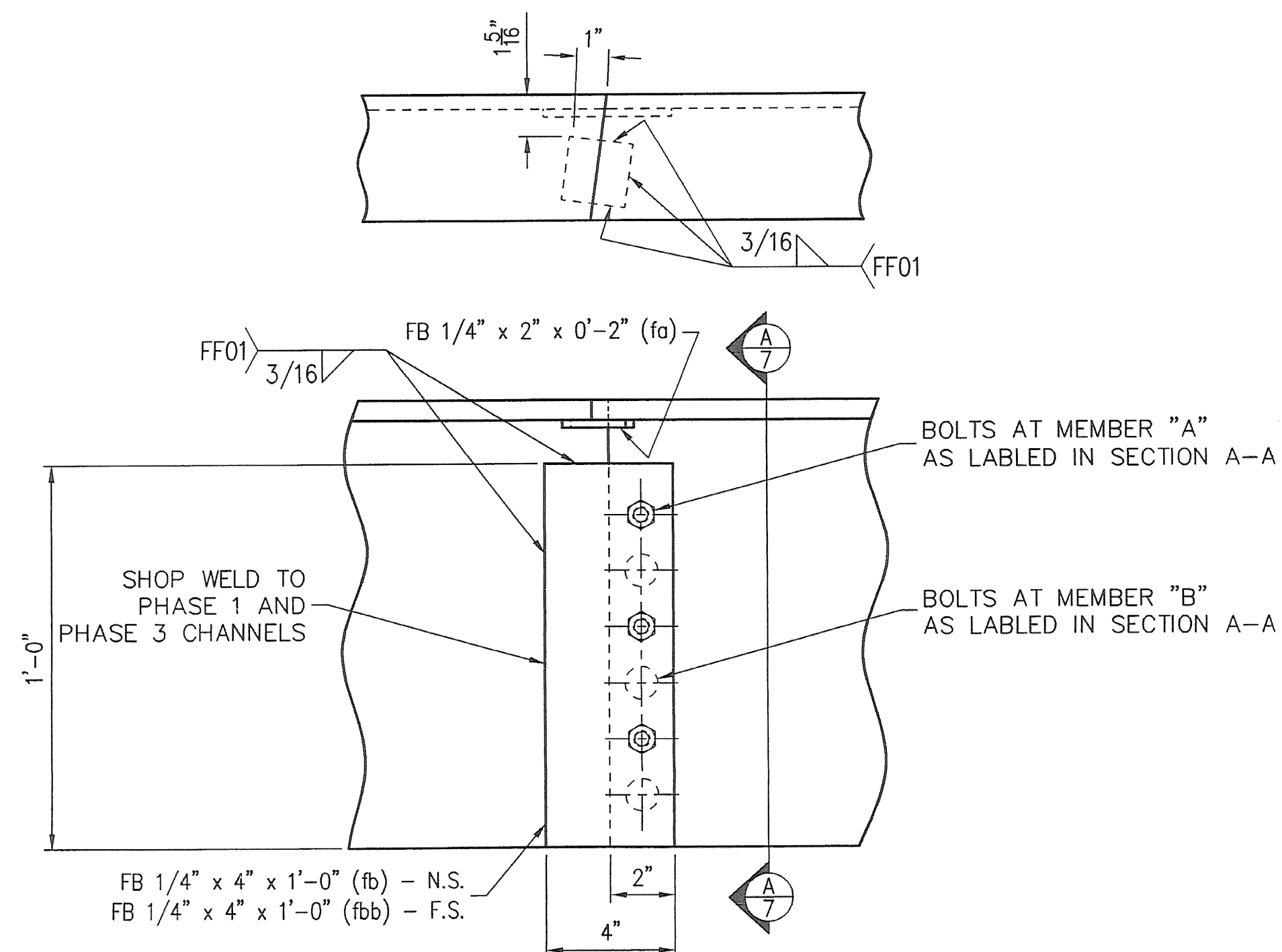
ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY LEWIS ENGINEERING COMPANY PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

LEWIS ENGINEERING COMPANY
4201 NOREX DRIVE - CHASKA, MINNESOTA 55318 - (612) 388-3000

PROJECT - BRIDGE NO. 68 SOUTH BURLINGTON U.S. 2 OVER I-8
STATE PROJECT - IM DECK (36)
FEDERAL PROJECT -
CUSTOMER - J A McDONALD
LOCATION - CHITTENDEN COUNTY, VERMONT
DESCRIPTION - EXPANSION JOINT DETAILS EASTBOUND AT PIER 3

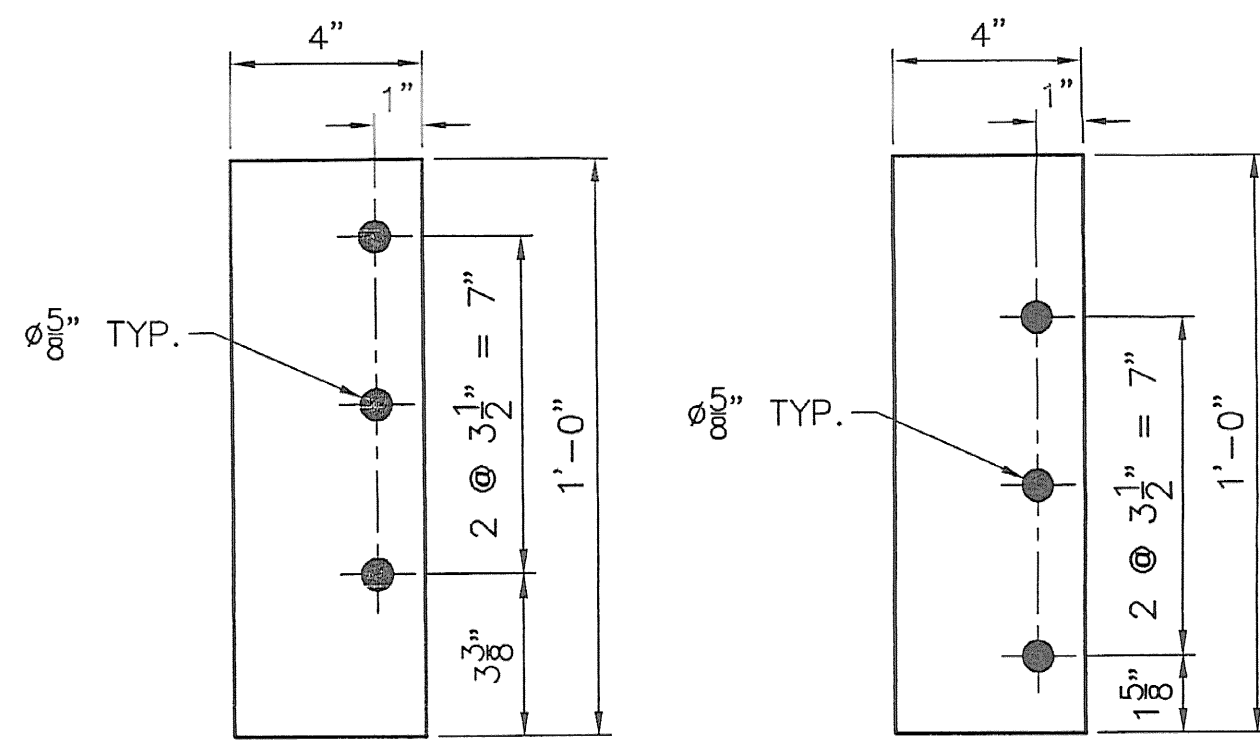
W.P. chkd JJK
Drawn By SLB
Chkd. By AJC
Date: 11/21/00

SHEET NO. 6 OF 8 Job. No. : 978.104.1



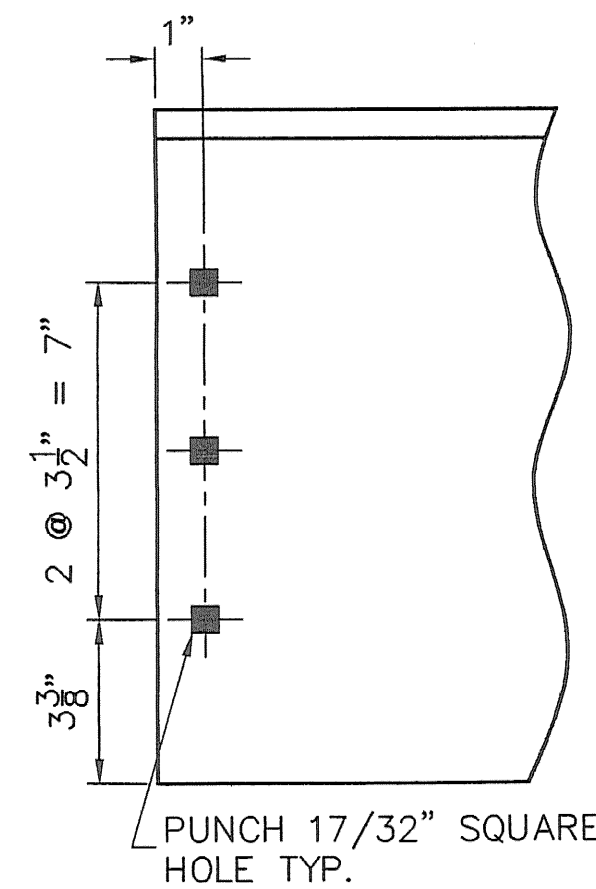
BOLTED FIELD SPLICE DETAIL

SHOP WELD (fo) & (fb) TO
6A, 5B, 4A, 3B, 2A & 1B



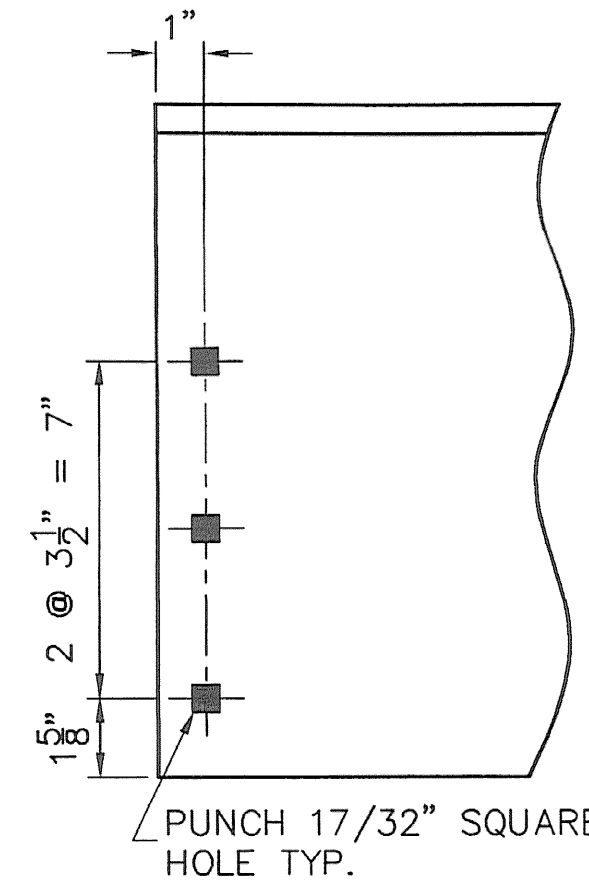
DETAIL (fb)

DETAIL (fbb)



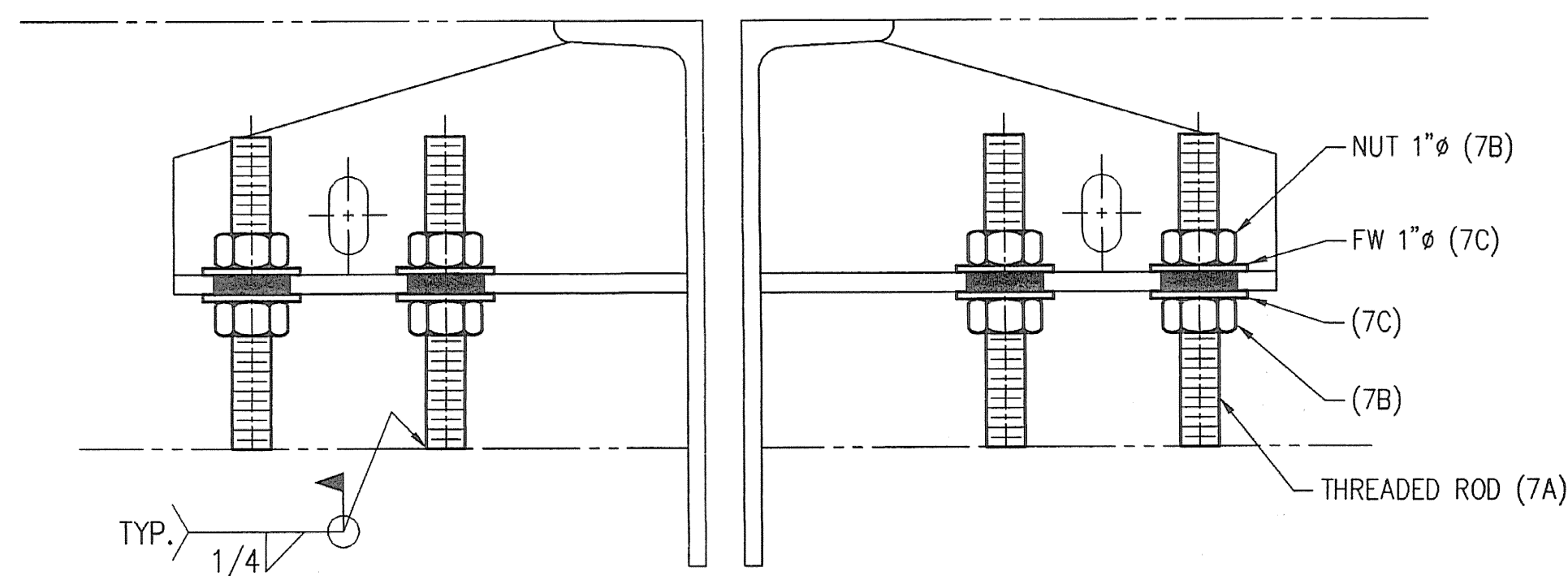
END PREP FOR BOLTED FIELD SPLICE DETAIL

PREP THE ENDS OF (xc1), (xc2), (xc3), (xc4), (xc5) & (xc6)



END PREP FOR BOLTED FIELD SPLICE DETAIL

PREP THE ENDS OF (xd1), (xd2), (xd3), (xd4), (xd5) & (xd6)



TYPICAL SECTION OF JOINT @ GIRDER

GENERAL NOTES:

- 1) ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO "STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION" DATED 1990, ITS LATEST REVISIONS AND THE SPECIAL PROVISIONS.
- 2) STEEL SHALL CONFORM TO AASHTO M270 GRADE 36, U.N.O. STEEL SHALL BE GALVANIZED PER SECTION 506.15(c) OF THE GENERAL SPECIAL PROVISIONS AND ASTM A123.
- 3) WELDING SHALL MEET THE REQUIREMENTS OF THE ANSI/AASHTO/AWS D 1.5 BRIDGE WELDING CODE AS MODIFIED BY STANDARD SPECIFICATIONS.
- 4) ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169 (ASTM-A108 GRADES 1010 TO 1020) STEEL. ALL STUD ANCHORS TO BE ELECTRIC ARC END-WELDED WITH COMPLETE FUSION. STUDS AND STUD WELDING SHALL CONFORM TO SECTION 7 OF THE ANSI/AASHTO/AWS D1.5-95 BRIDGE WELDING CODE. REPAIR WELD STUDS USING FF-STUD-REP-01 OR SM-STUD-REP-01.
- 5) ALL HARDWARE TO BE GALVANIZED PER ASTM A153.
- 6) PRIOR TO GALVANIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC., SHALL BE GROUND TO A 1/16" RADIUS PER SECTION 506.14(c).
- 7) ANY GALVANIZED COATING DAMAGED DURING FIELD WELDING OR FROM OTHER CAUSES MUST BE REPAIRED IN ACCORDANCE WITH ASTM-A780.
- 8) DS BROWN IS TO SUPPLY ONLY THE PARTS SHOWN ON THESE DRAWINGS. ALL OTHER MATERIALS TO BE PROVIDED BY OTHERS.
- 9) JOINTS SHALL BE SHOP ASSEMBLED AND Banded PRIOR TO SHIPPING. JOINTS SHALL BE SHIPPED IN PAIRS.
- 10) SHOP INSPECTION BY VAOT.

LINE NO. REQD.	DESCRIPTION	LENGTH	MK	REMARKS	WGHT.
1	288 THREADED ROD		7A	HDG	
2	288 RB 1 CONT THRD	0'-8"	7A		1.27
3					
4	FIELD BOLTS :				
5	588 HN 1 HVY A563DH HDG		7B	576	25=66
6	588 FW 1 F436 HDG		7C	576	27=15
7	37 MB 1/2 x 1 1/2 CARRIAGE		7D	36	
8	37 HN 1/2 HVY A563DH HDG		7F	36	25=3
9	37 FW 1/2 F436 HDG		7G	36	27=3
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					

SHOP DRAWING REVIEW

Reviewed as required by the construction contract documents and approved, but only for conformance to the requirements of the work and not for design or other limitations and modifications specified in the contract documents.

REASON: REVISIONS AND COMMENTS

DATE: 2/20/01

Job Number: 50929

Reviewed By: ASR

Date: 2/20/01

REV.	DESCRIPTION	DATE	BY
1	GENERAL REVISION PER APPROVAL.	1/22/01	SLB

ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY LEWIS ENGINEERING COMPANY PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

PRELIM	11/28/00
SHOP	
APPROVAL	11/28/00
DIST.	
CUST.	
FOR	DATE
PRINTS	ISSUED

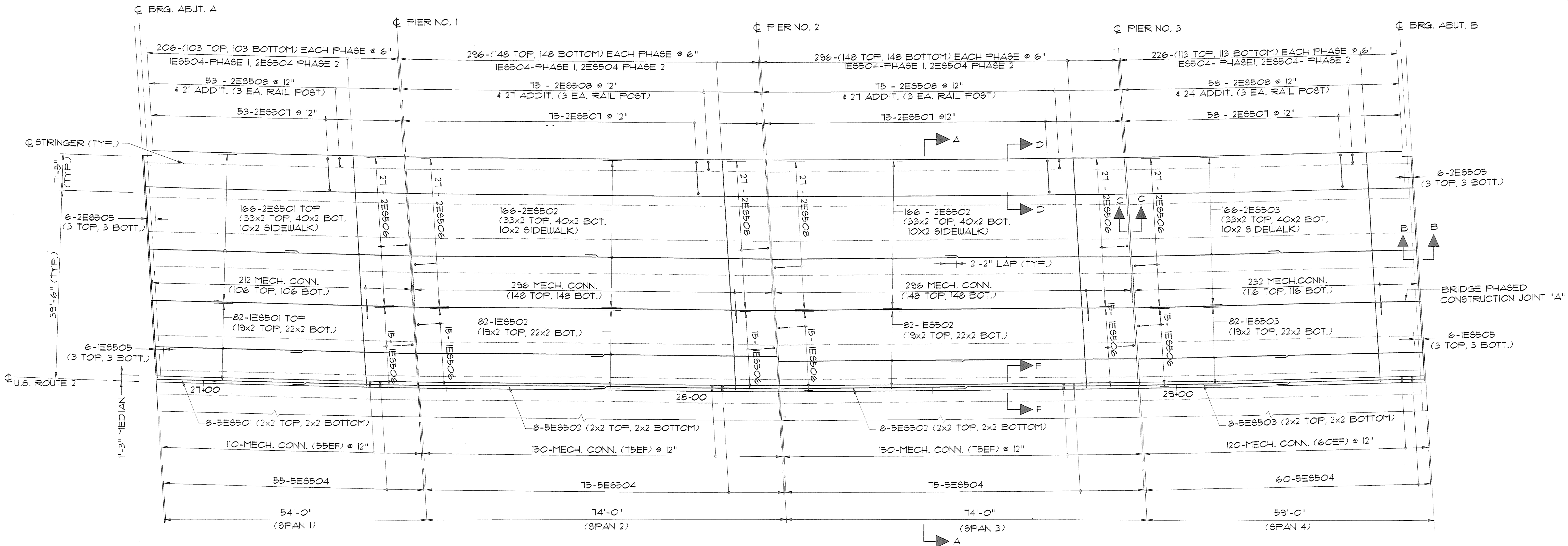
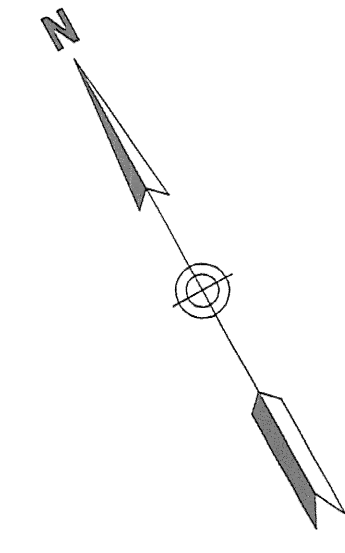
LEWIS ENGINEERING COMPANY
4201 NOREX DRIVE - CHASKA, MINNESOTA 55318 - (612) 368-3000

PROJECT - BRIDGE NO. 68 SOUTH BURLINGTON U.S. 2 OVER I-8
STATE PROJECT - IM DECK (36)
FEDERAL PROJECT -

CUSTOMER - J A McDONALD
LOCATION - CHITTENDEN COUNTY, VERMONT
DESCRIPTION - EXPANSION JOINT DETAILS

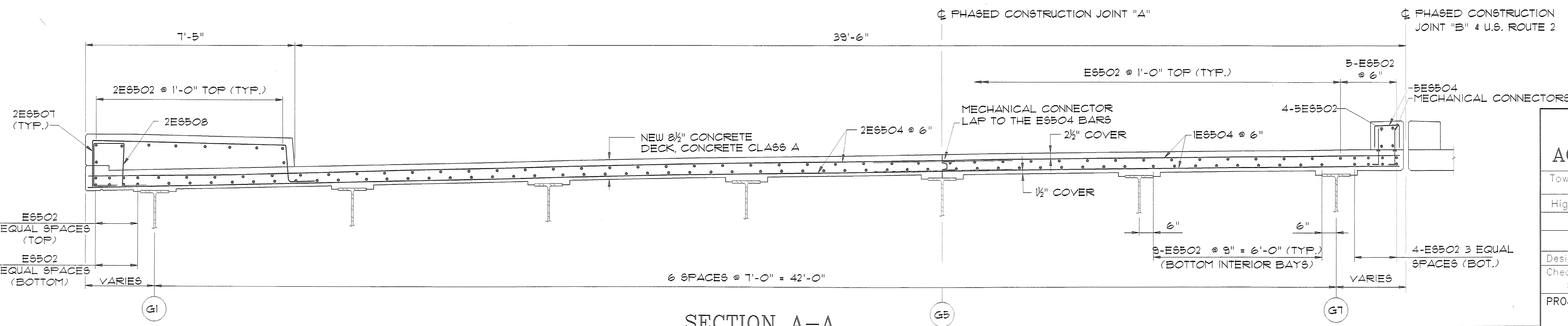
W.P. chk'd JUK
Drawn By S
Chk'd By Ad
Date: 11/21/00

SHEET NO. 7 OF 8 Job. No. : 978.104.1



PARTIAL PLAN

SCALE: 1"=10'-0"
(PHASE 1 & 2 SHOWN, PHASE 3 & 4 SIMILAR)



SECTION A-A

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

SHEETS 11A, 11B AND 11C SHOW DECK REPLACEMENT REINFORCING. REFER TO OTHER CONTRACT SHEETS FOR ADDITIONAL INFORMATION. CONFLICTS BETWEEN THESE DRAWINGS AND OTHER CONTRACT DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE RESIDENT ENGINEER.

**STATE OF VERMONT
AGENCY OF TRANSPORTATION**

Town Of SOUTH BURLINGTON Bridge No. 68
Highway No. U.S. 2 Log Sta. Surv. Sta.

U.S. 2 OVER I-89

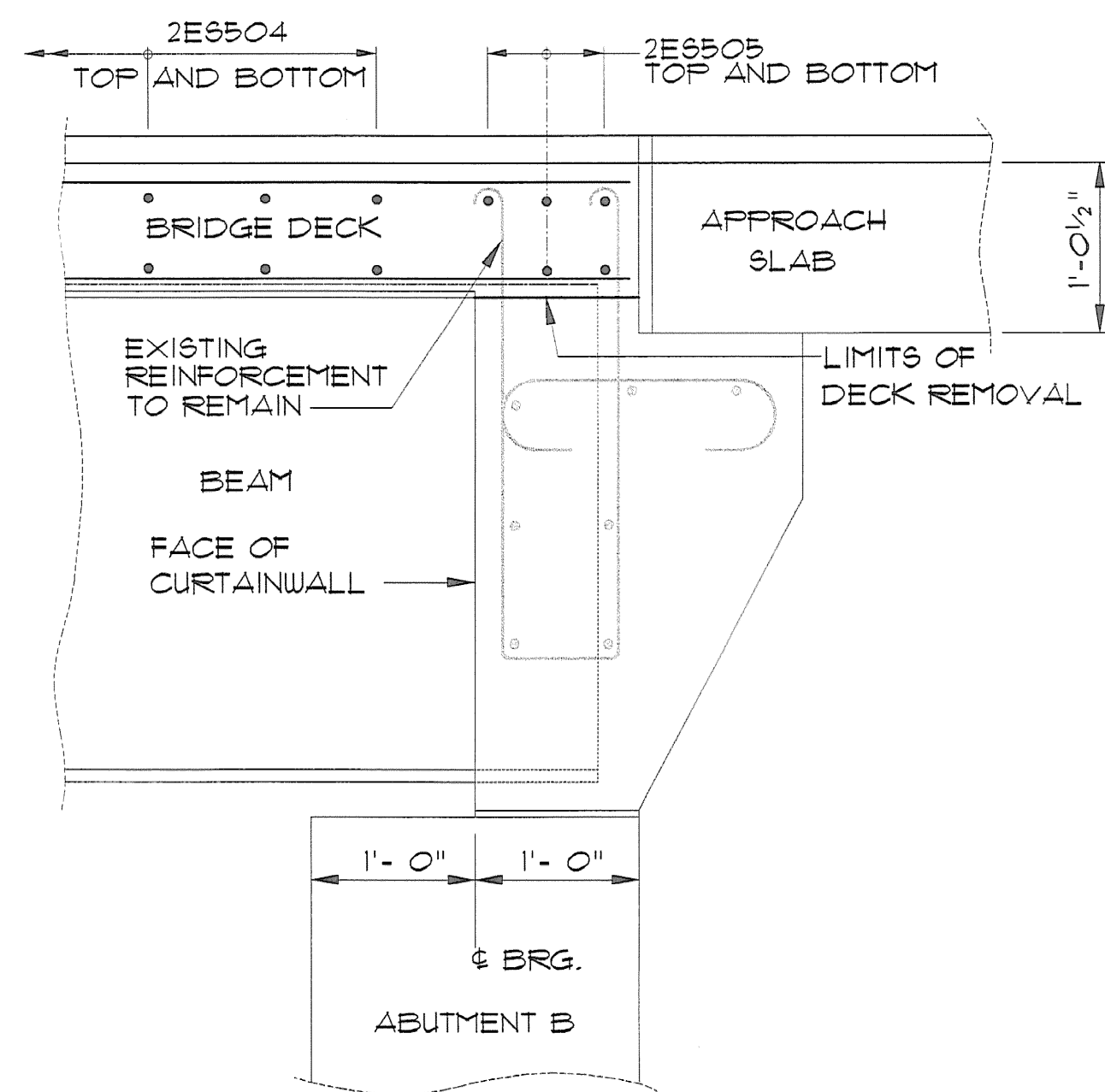
DECK REINFORCEMENT PLAN

Designed By A. ROBINSON Drawn By M. LANDREY
Checked By S. JOHNSON Date 5/9/01 Bridge Design Supervisor Date 5/9/01

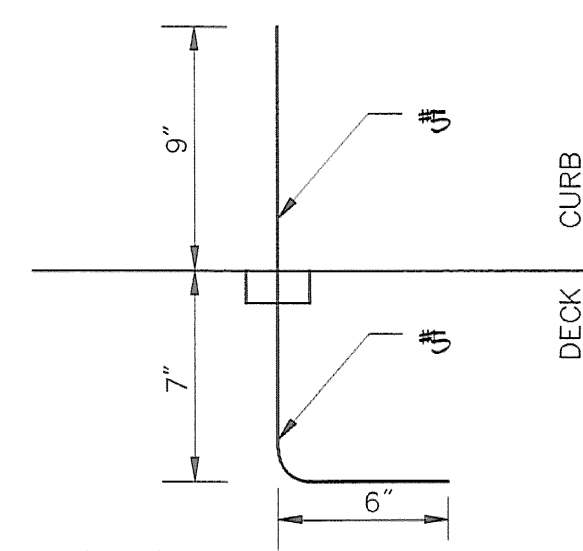
PROJECT SOUTH BURLINGTON PROJECT NO. IM DECK (36)

VHB Cod Drawing No. 50929FRM Date 5/9/01
Bridge Sheet No. Sheet 11A of 75

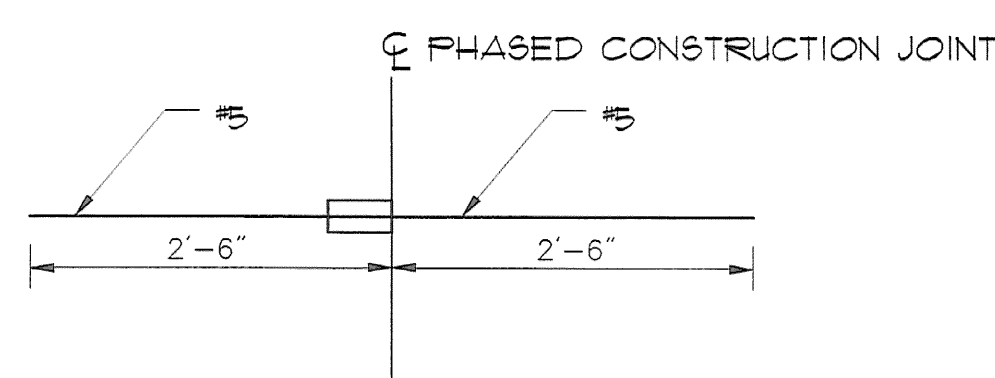
VANASSE HANGEN BRUSTLIN, INC.



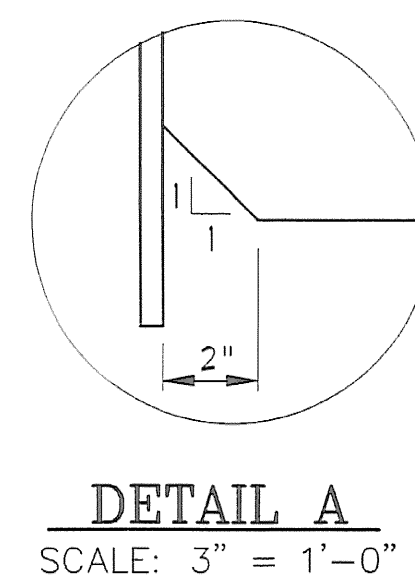
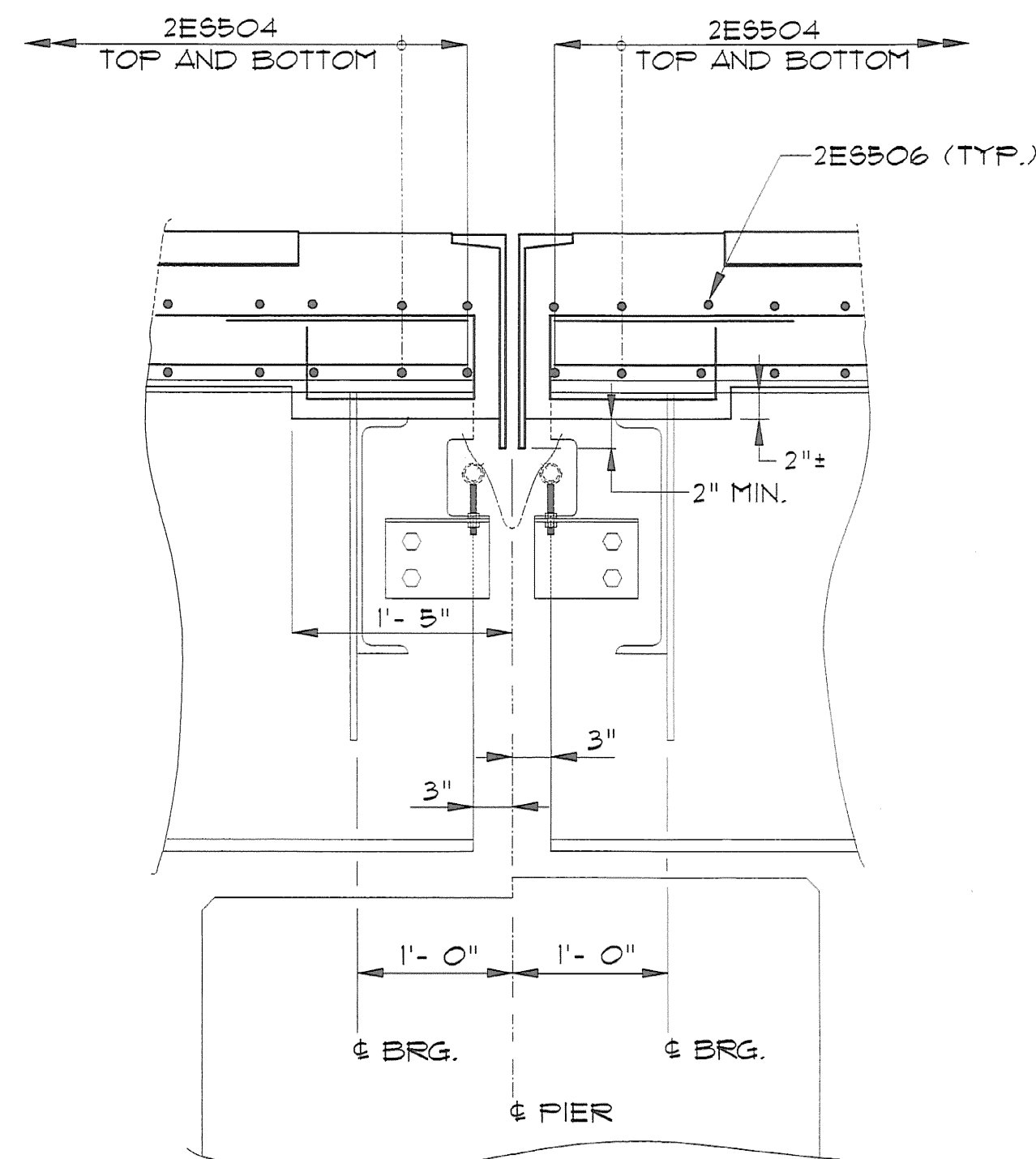
SECTION B-B
SCALE: 1" = 1'-0"



MECHANICAL CONNECTOR AT MEDIAN
N.T.S.

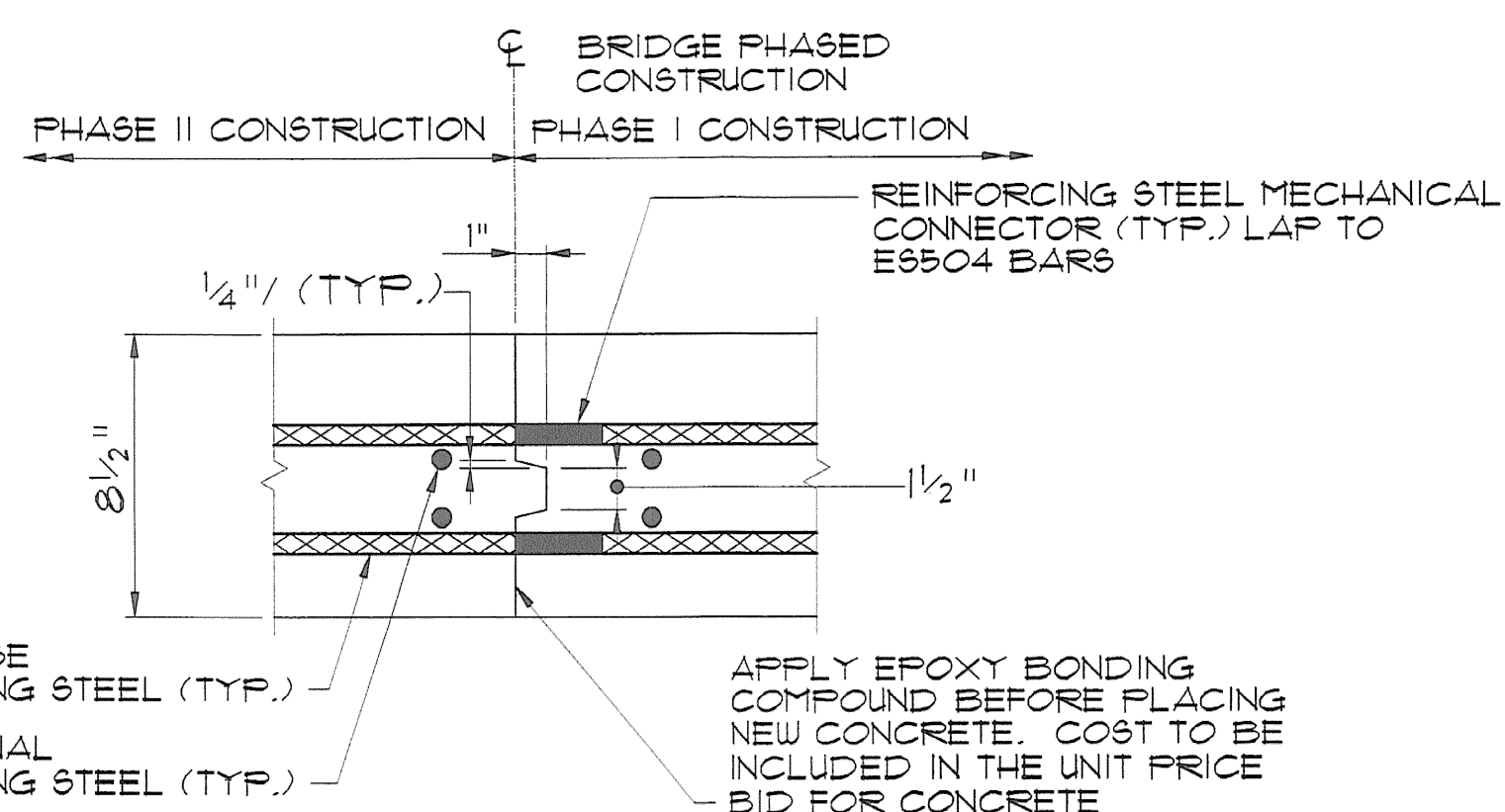


MECHANICAL CONNECTOR AT PHASED CONSTRUCTION JOINT
N.T.S.

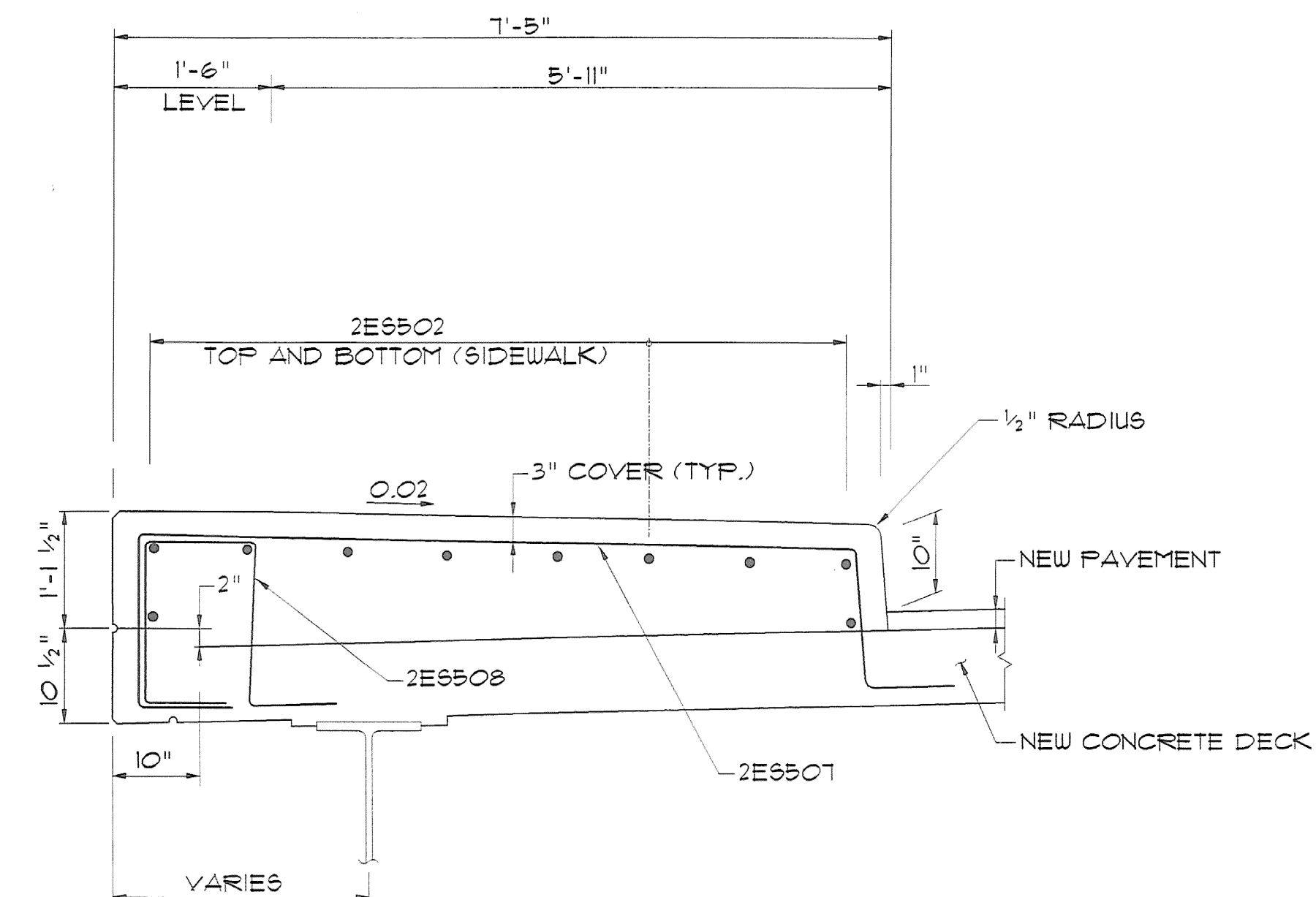


DETAIL A
SCALE: 3" = 1'-0"

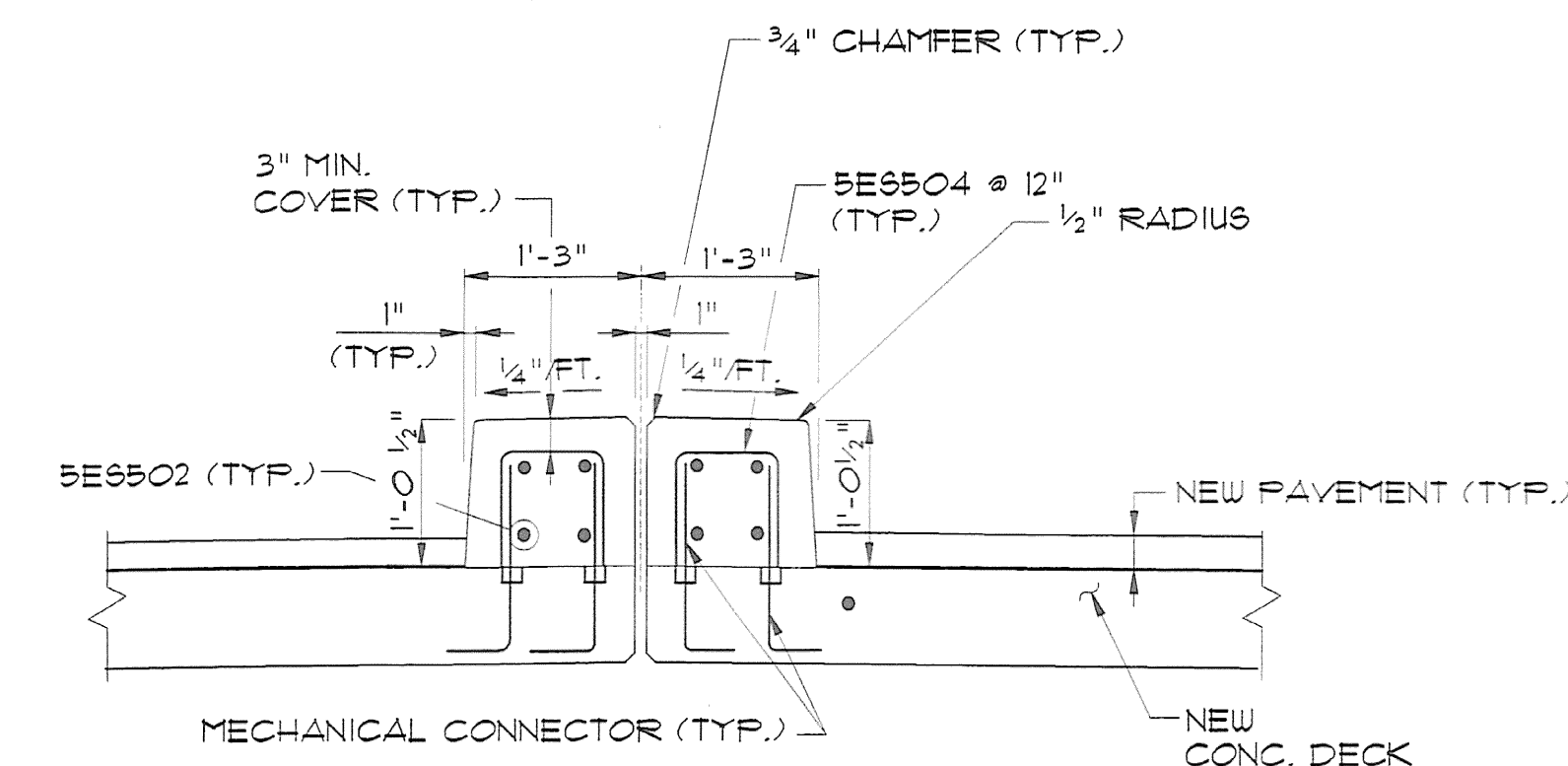
SECTION C-C
SCALE: 1" = 1'-0"



SECTION E-E
PHASED DECK CONSTRUCTION JOINT DETAIL
N.T.S.



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



SECTION F-F
SCALE: 3/4" = 1'-0"

SHEETS 11A, 11B AND 11C SHOW DECK REPLACEMENT REINFORCING. REFER TO OTHER CONTRACT SHEETS FOR ADDITIONAL INFORMATION. CONFLICTS BETWEEN THESE DRAWINGS AND OTHER CONTRACT DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE RESIDENT ENGINEER.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of SOUTH BURLINGTON Bridge No. 68
Highway No. U.S. 2 Log Sta. Surv. Sta.

U.S. 2 OVER I-89

REINFORCEMENT DETAILS

Designed By A. ROBINSON Drawn By M. LANDREY
Checked By S. JOHNSON Date 5/9/01 Bridge Design Supervisor S. JOHNSON Date 5/9/01

PROJECT SOUTH BURLINGTON PROJECT NO. IM DECK (36)

VHB Cad Drawing No. 50929DET2 Date 5/9/01
Bridge Sheet No. Sheet 11B of 75

VANASSE HANGEN BRUSTLIN, INC.



Yanasse Hangen Brustlin, Inc. TRANSMITTAL

Transportation
Land Development
Environmental Services
Kilhon Road
Six Bedford Farms, Suite 607
Bedford, NH 03110-6532
603.644.0888
FAX: 603.644.2385

Date: 1-19-01	VHB Project No.: 50929
Re: South Burlington IM DECK 36 Bridge No. 68 and STP BIKE (28) S	

To: Robert Suckert, PE, Resident Engineer
Vermont Agency of Transportation
209 South Pinnacle Ridge Road
Waterbury, VT 05676

The following details as outlined below, Item No. 525.34, Description Bridge Railing NETC 4 Rail for the above project transmitted with your letter dated October 26 2000 have been reviewed and are being returned herewith:

We are sending you: Attached 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
as noted below	10/6/00		Bridge Rail Shop Drawings

These are transmitted as checked below:

Reviewed as required by the construction contract documents and approved, but only for conformance to the design concept of the work, and subject to further limitations and requirements contained in the construction contract documents. Rejected Revise and Resubmit Furnish as Corrected

REMARKS: There shall be no fabrication done until all drawings and welding procedures are approved or approved as noted. You must provide written notice to the Vermont Agency of Transportation (VTrans) Structures Section office as to the date fabrication represented by these drawings will begin. That notice must be received at least seven days prior to that date, as per Specifications 506.03. Any material fabricated prior to the notification date is subject to rejection without further cause.

Copy to: VTrans Resident Engineer, Robert E. Suckert, P.E. w/prints
 Contractor, J.A. McDonald, Inc w/prints
 Subcontractor: F.R. Lafayette w/prints
 VTrans Consultant Project Manager, Sherward Farnsworth, PE w/prints
 VTrans Structures Section - Shop Inspector - Jeff Clark - w/prints
 VTrans Construction Section - letter only
 VTrans Materials & Research Section (C&IA Unit) - letter only
 VHB Project Manager, Steve Johnson, PE, VHB Project File

Athanasia S. Robinson, VHB
Athanasia S. Robinson

**F. R. Lafayette,
Inc.**

F. R. LAFAYETTE, INC.
12 KILLOGG RD
ESSEX JCT.
VERMONT 05402

Phone: 802-878-5341
Fax: 802-878-2041

Thursday, January 11, 2001

RECEIVED

Vanasse Hangen Brustlin, Inc.
Attn: Athanasia Robinson
Six Bedford Farms, Kilton Road
Bedford, NH 03110

JAN 1 8 2001
VHB, Inc.

Re: So. Burlington IM DECK(36)

Athanasia,

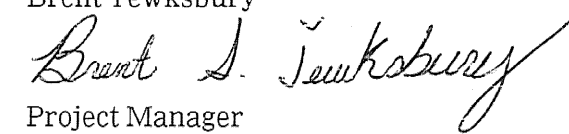
This letter is in response to the letter dated October 30, 2000, in which you asked for field verification of rail layout.

Robert Suckert, resident engineer on above mentioned project, and myself field verified the items listed below on January 10, 2001.

- The proposed bridge rail layout and approach rail layout has been field verified as shown on sheet 26 of the contract plans.
- The post locations on the wingwalls meet the minimum requirements as shown on Detail A, Sheet 26.

If you have any questions please feel free to contact me at the above noted number. Thank you.

Brent Tewksbury



Project Manager

Transportation
Land Development
Environmental
Services



Vanasse Hangen Brustlin, Inc.

Kilton Road
Six Bedford Farms, Suite 607
Bedford, New Hampshire 03110-6532
603 644-0888
FAX 603 644-2385

**FAX
Transmittal**

Deliver To: **Robert Suckert,
Resident Engineer** From: Athanasia Robinson

Company: Vermont Agency of Transportation VHB Project No.: 50929
IM DECK (36)
So. Burlington VT Br. 68
US 2 over I-89

Telephone No.: 1-(802)-658-6870 FAX No.: 1-(802) 658-6874
Original of Telecopy: Will not be sent Date and Time: October 30, 2000

Total Number of Pages (Including Transmittal Form): 2

Bob,
I received a letter from the rail subcontractor at Lafayette Co.(attached) in response to VHB's previous request for field verification of the rail layout.

In order to clarify the information needed to complete our review, I have outlined them below.
Please forward a copy of this fax transmittal to the contractor for his response.

The contractor should respond by fax/letter that the following has been performed so we can finalize our review of the rail shop drawings.

- The proposed bridge rail layout and approach rail layout has been field verified as shown on sheet 26 of the contract plans.
- The configuration of the offset block has been determined from contractor's field measurements. (OK - noted on plans)
- The post locations on the wingwalls meet the minimum requirements as shown on Detail A-Sheet 26 of 75.

Once we have received this information, we will complete our review.

Athanasia Robinson
Athanasia Robinson
Structural Engineer
VHB, Inc.

Cc: Sherward Farnsworth, PE., VTrans (Fax. No. 1-802-828-3566)
Steve Johnson, PE., VHB, Proj. Folder, Proj. File

**F. R. LAFAYETTE,
INC.**

F. R. LAFAYETTE, INC.
52 KELLOOG RD
ESSEX JCT.
VERMONT 05452

Phone: 802 878-2041
Fax: 802 878-2041

RECEIVED

OCT 30 2000

VHB, Inc.

October 26, 2000

Vanasse Hangen Brustlin, Inc
Attn: Steve Johnson
Six Bedford Farms, Kilton Road
Bedford, NH 03110

Re: So Burlington IM DECK(36)

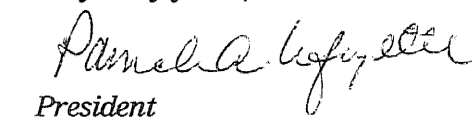
Gentlemen:

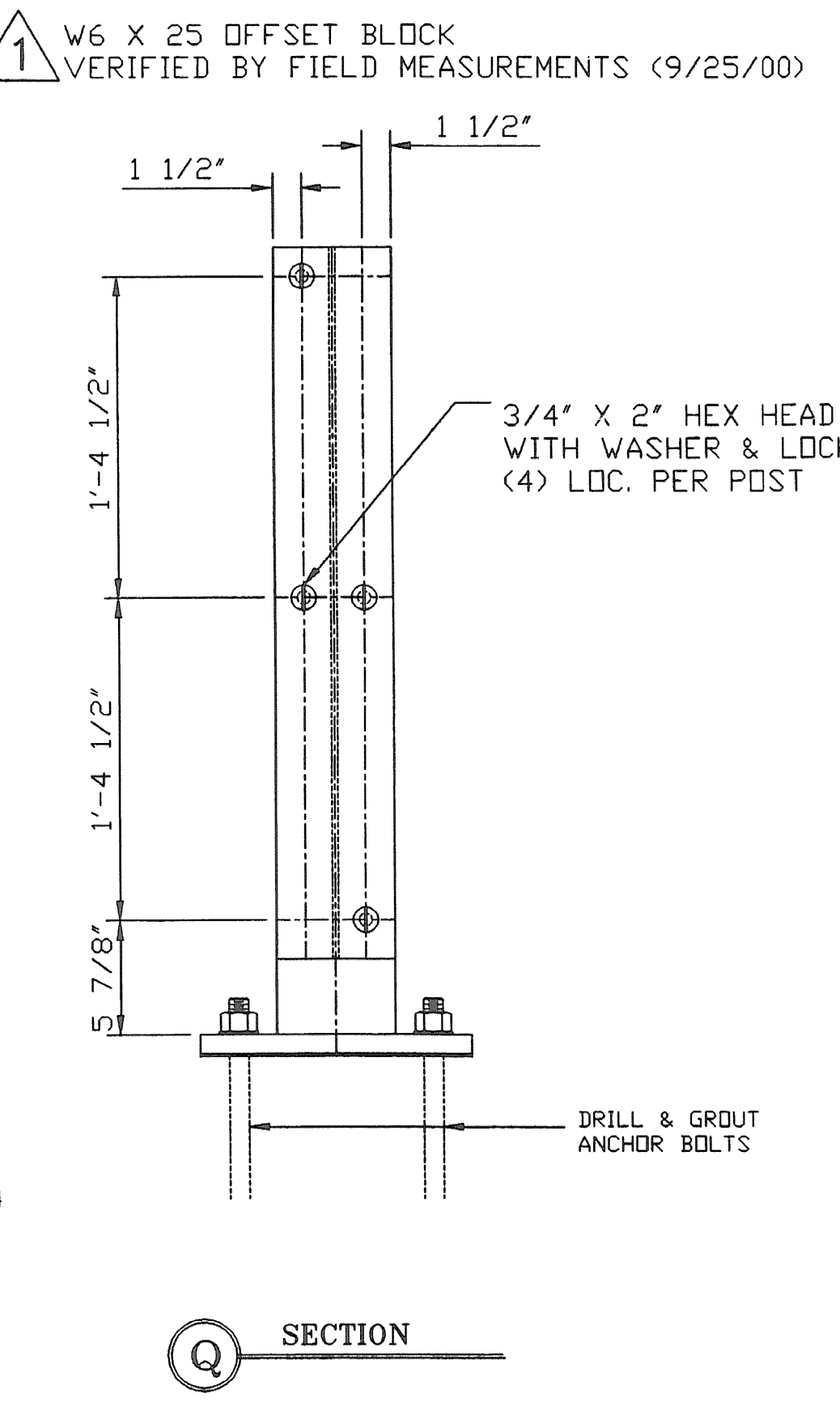
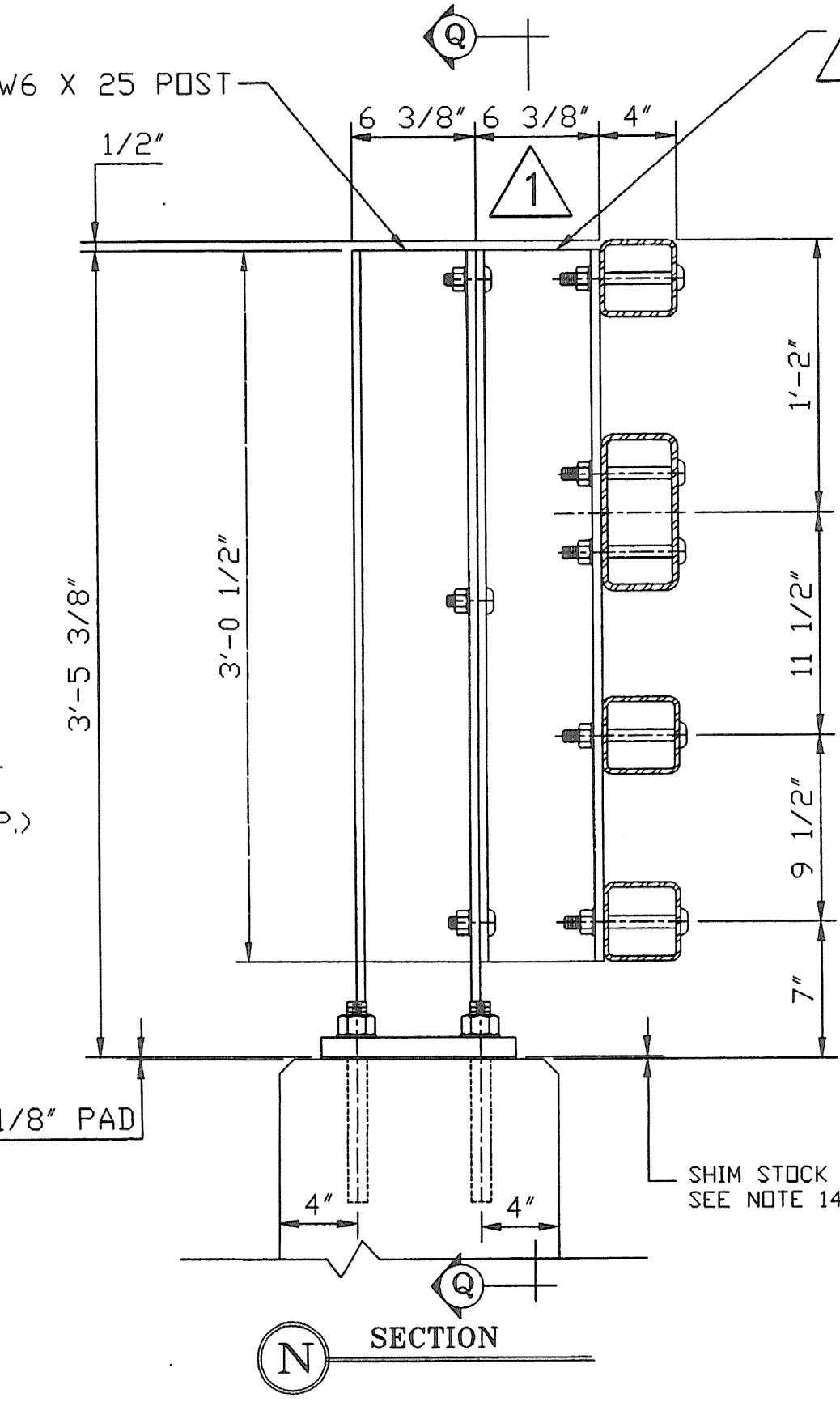
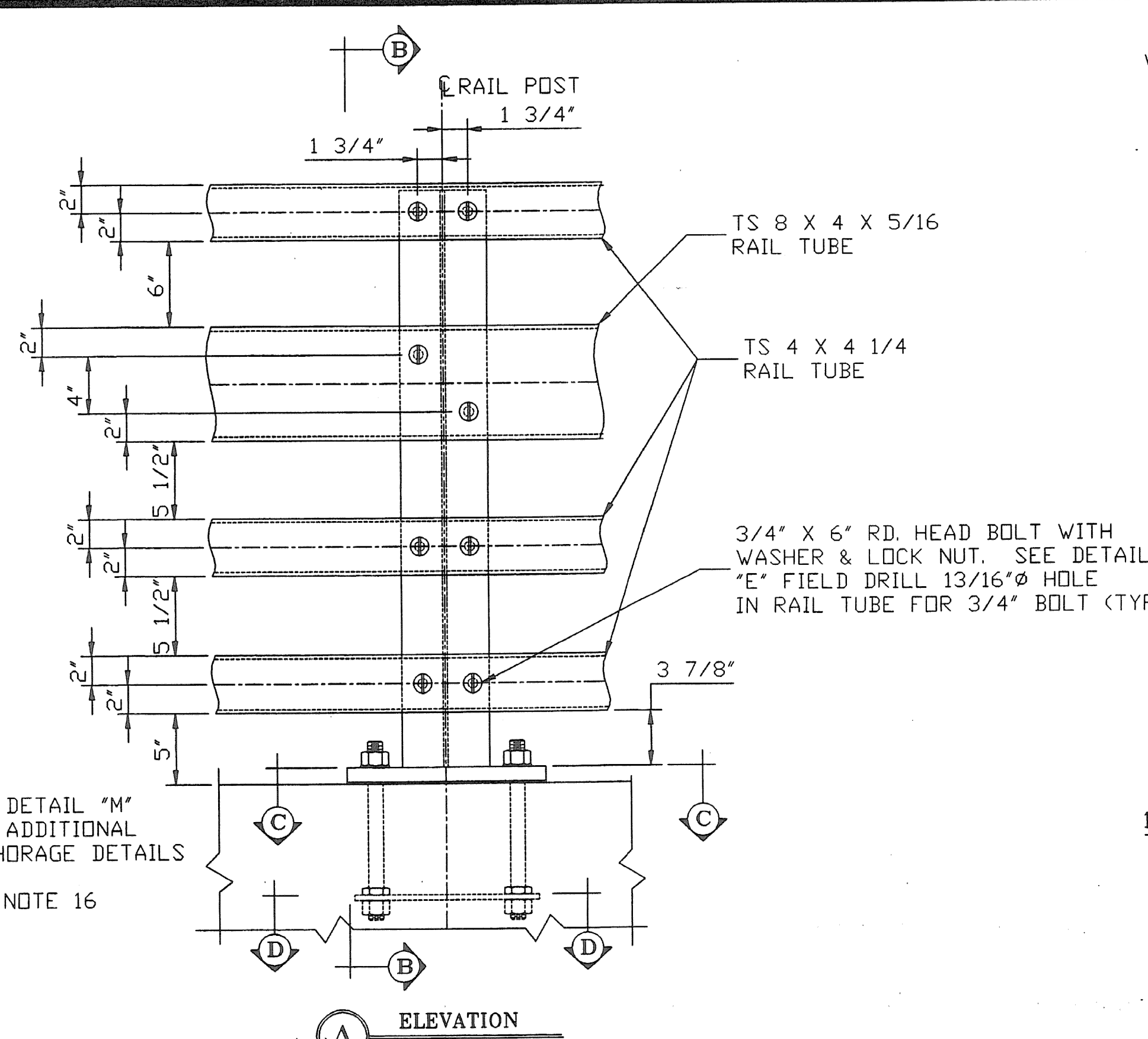
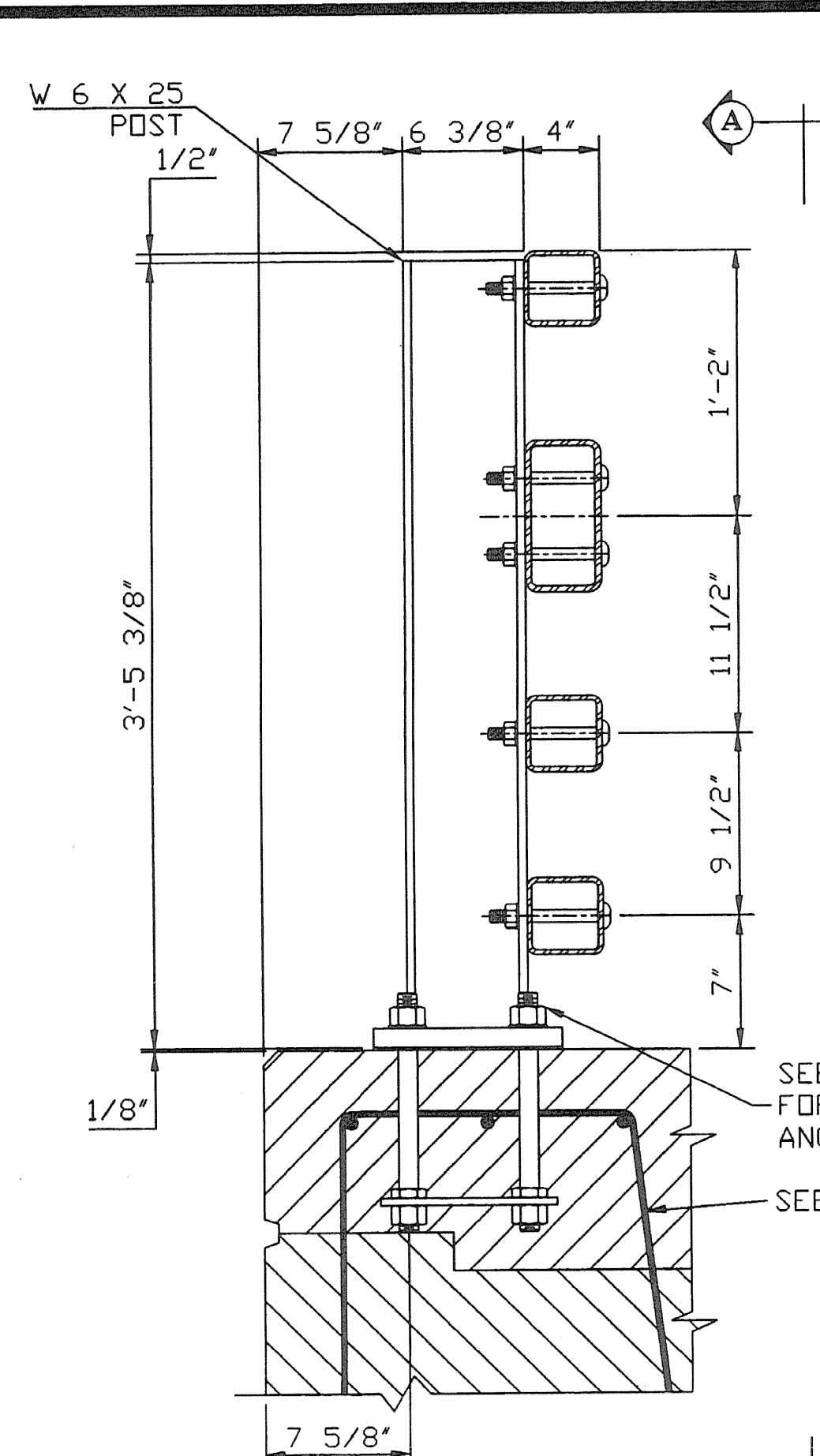
Please be advised that we field verified dimensions that were in question on the original shop drawings

If you have any questions please feel free to contact me at the above noted number.

Thank you.

Very truly yours,


President



BILL OF MATERIAL			
Mk.	Qty.	Description	Total wgt.
66		RAIL POST W 6 X 25 WITH BASE PLATE	
8		SPEC. END POST W 6 X 25 W/BASE PLATE & OFFSET BLOCK	
66		ANCHORAGE ASSEMBLY WITH PLATE, (4) ANCH STUDS & HARDWARE	
8		DRILL & GROUT ANCHOR W/(4) STUDS & HARDWARE	
2		RAIL TUBE (TS 8 X 4 X 5/16) X 16'-7 1/2" OAL	
6		RAIL TUBE (TS 8 X 4 X 5/16) X 23'-11" OAL	
12		RAIL TUBE (TS 8 X 4 X 5/16) X 23'-11" OAL (EXP. END)	
4		RAIL TUBE (TS 8 X 4 X 5/16) X 21'-0" OAL	
6		RAIL TUBE (TS 4 X 4 X 1/4) X 16'-7 1/2" OAL	
18		RAIL TUBE (TS 4 X 4 X 1/4) X 23'-11" OAL	
36		RAIL TUBE (TS 4 X 4 X 1/4) X 23'-11" OAL (EXP. END)	
12		RAIL TUBE (TS 4 X 4 X 1/4) X 21'-0" OAL	
16		8" RAIL SPLICE TUBE (FIXED)	
48		4" RAIL SPLICE TUBE (FIXED)	
6		8" RAIL SPLICE TUBE (EXPANSION JOINT)	
18		4" RAIL SPLICE TUBE (EXPANSION JOINT)	
74		1/8" THICK BEARING PAD	
592		3/4 X 6" RD. HEAD BOLT WITH WASHER & LOCKNUT	
352		5/8 X 2" HEX HEAD BOLT WITH HARDENED WASHER	
96		3/4 SCH 40 SPACER PIPE 1/2" LONG	
32		3/4 X 2" HEX HEAD BOLT WITH WASHER & LOCKNUT	

- GENERAL ERECTION NOTES**
- All work and materials shall conform to the provisions of Section 525 - Railings of the Vermont Standard Specifications for Construction.
 - Tubing & posts shall meet the requirements of Section 732 - Railing materials of the Standard Specifications for Construction.
 - All exposed cut or sheared edges shall be ground to a 1/16" radius & be free of burrs.
 - Rail posts shall be set normal to grade.
 - Sections of rail bar shall be attached to a minimum of two (2) posts and preferably to at least four (4) posts.
 - Rail bar expansion joints shall be provided in any rail bay spanning a superstructure expansion joint. Expansion joint width shall be "x" at 45° F and will be adjusted in the field by the engineer.
 - All parts shall be galvanized after fabrication in accordance with AASHTO M111, except that hardware shall meet the requirements of AASHTO M232.
 - Rail posts anchoring nuts shall be tightened to a snug-tight fit and given an additional 1/8 turn.
 - Rail bars shall be attached using 3/4" full diameter body head bolts AASHTO M164 (Type-I) inserted through the face of the bar. Holes in post shall be 1/16" larger than the bolt size.
 - Holes in rails for attachment to posts will be field-drilled. Holes shall be coated with an approved zinc-rich paint prior to erection.
 - Radiused rails (if required) will be shop-curved. No field-bending of rail tubes.
 - The drop-weight tear test in section 732 shall not apply to the structure tubing on this standard.
 - New bridge rail posts on existing wingwalls shall include offset blocks to accommodate the proposed face of rail. The configuration of the offset block(s) shall be determined from field measurements. New rail posts shall be positioned on existing wingwalls so that the rail post anchor bolts are at least 4 inches away from the front face and back face of the existing wingwall masonry as shown on this sheet.
 - New bridge rail post on existing wingwalls require a single shim plate between the 1/8" bearing pad and the rail post base plate. The shim plate thickness shall be determined from field measurements based on the increase in finished grade of the sidewalk and the existing elevation of the wingwall. Anchor bolt lengths for posts on wingwalls shall be adjusted to compensate for shim plate thickness.

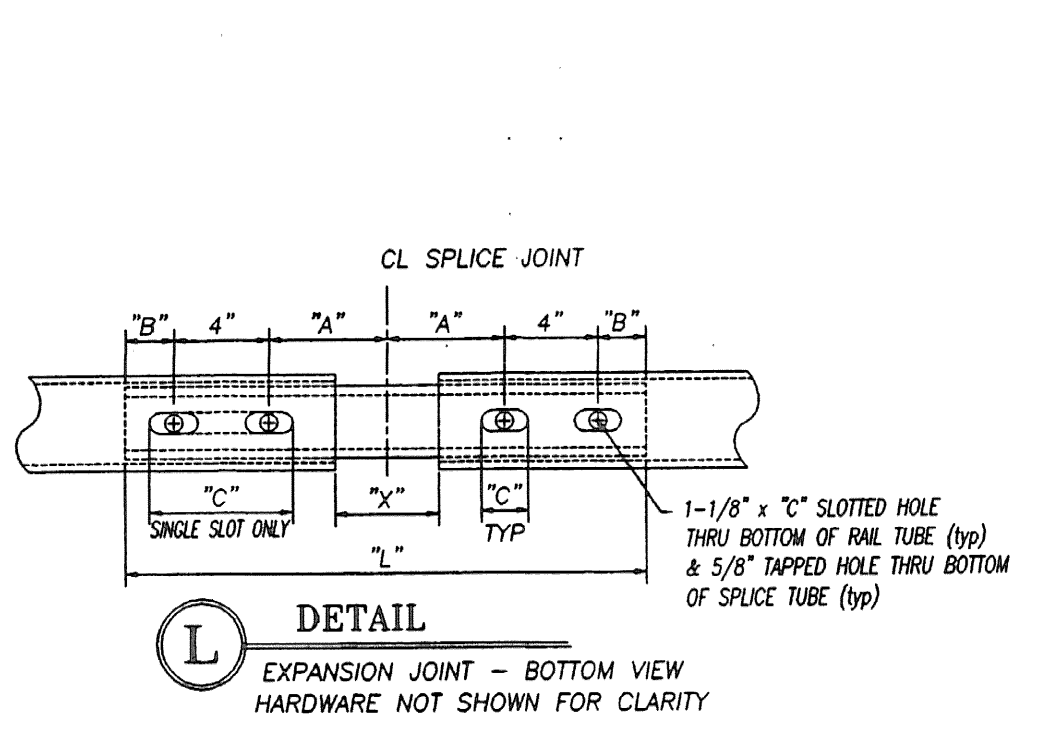
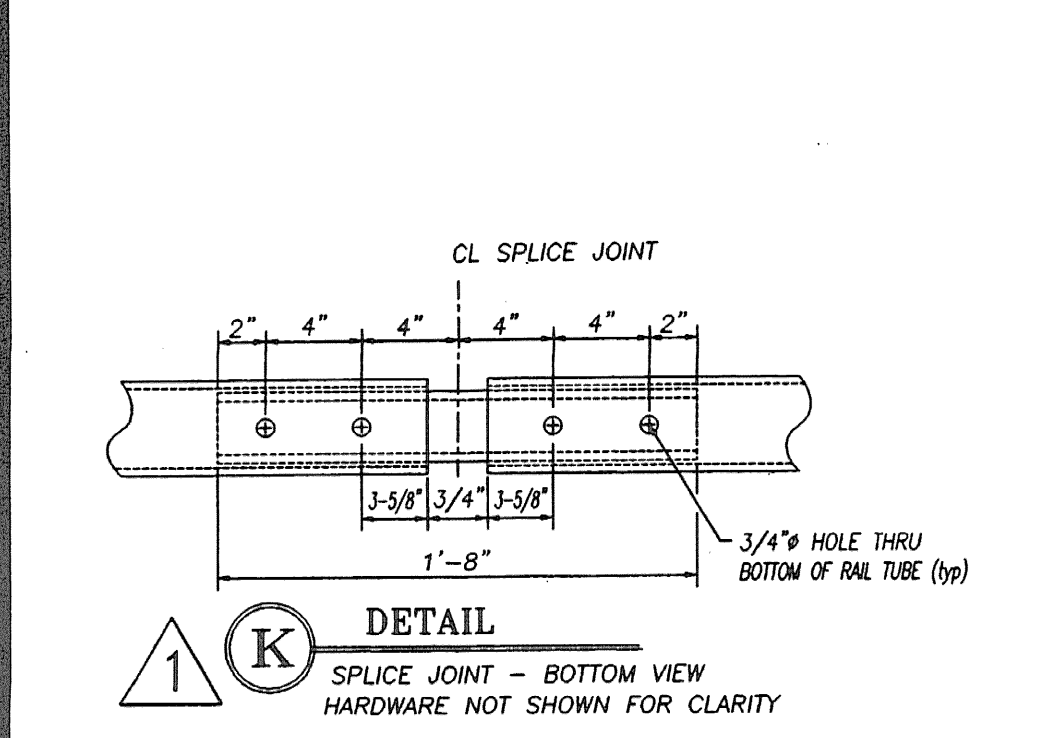
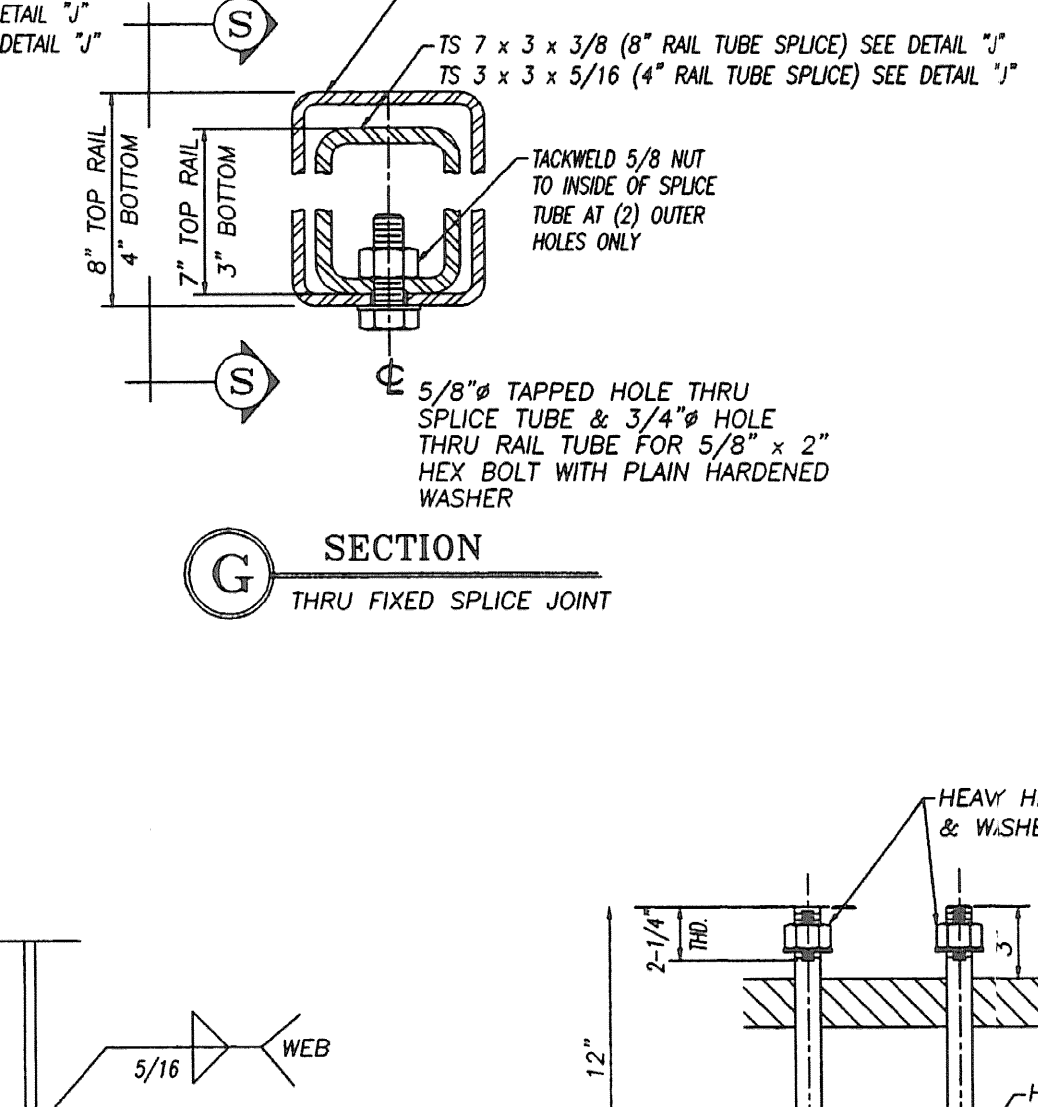
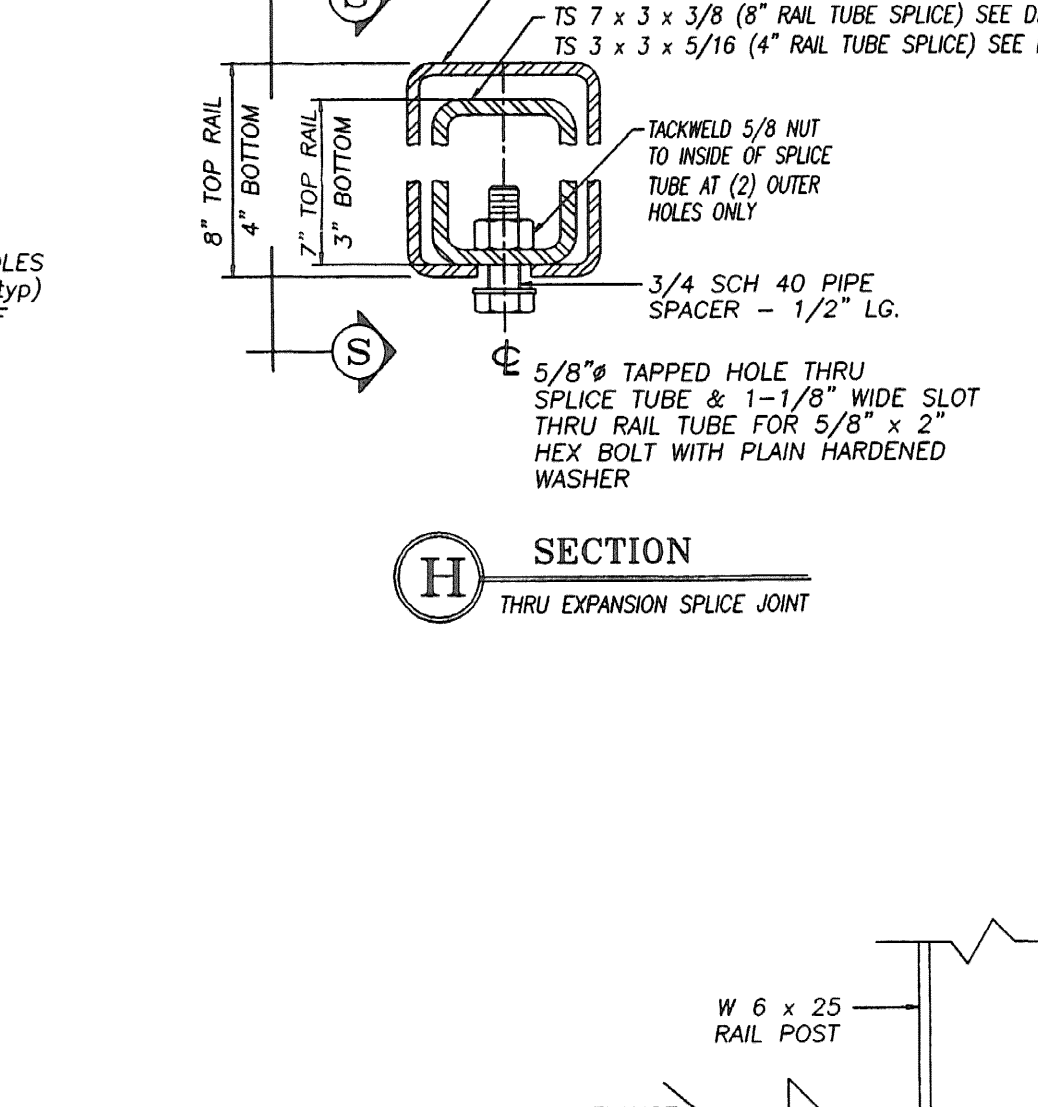
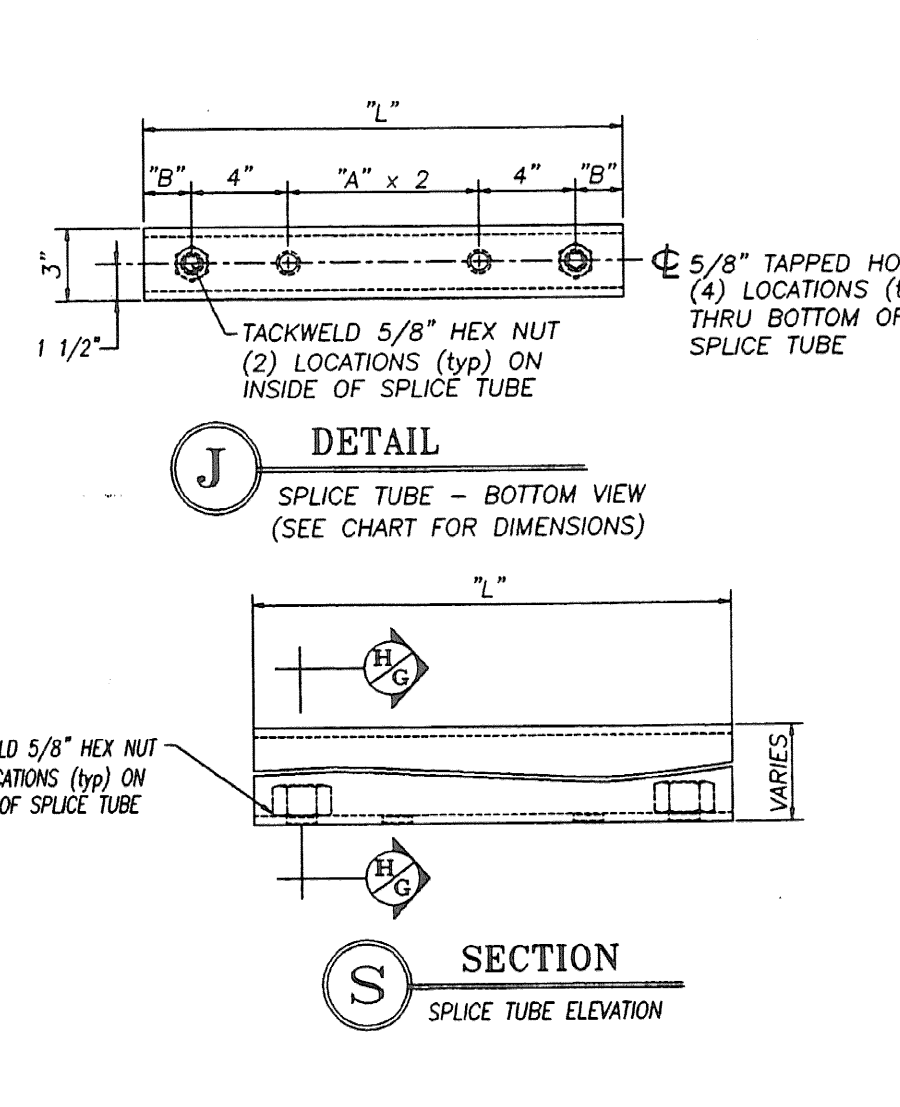
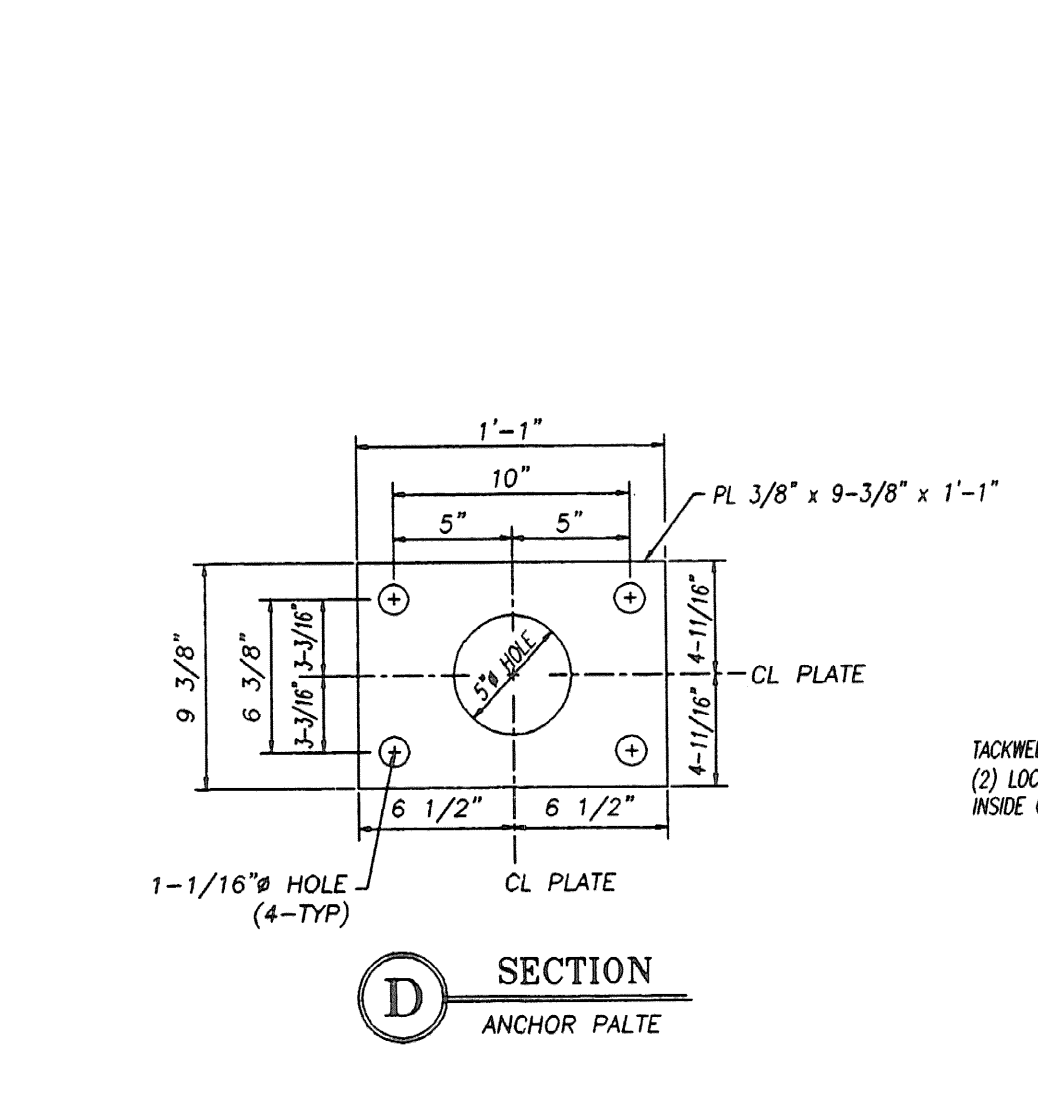
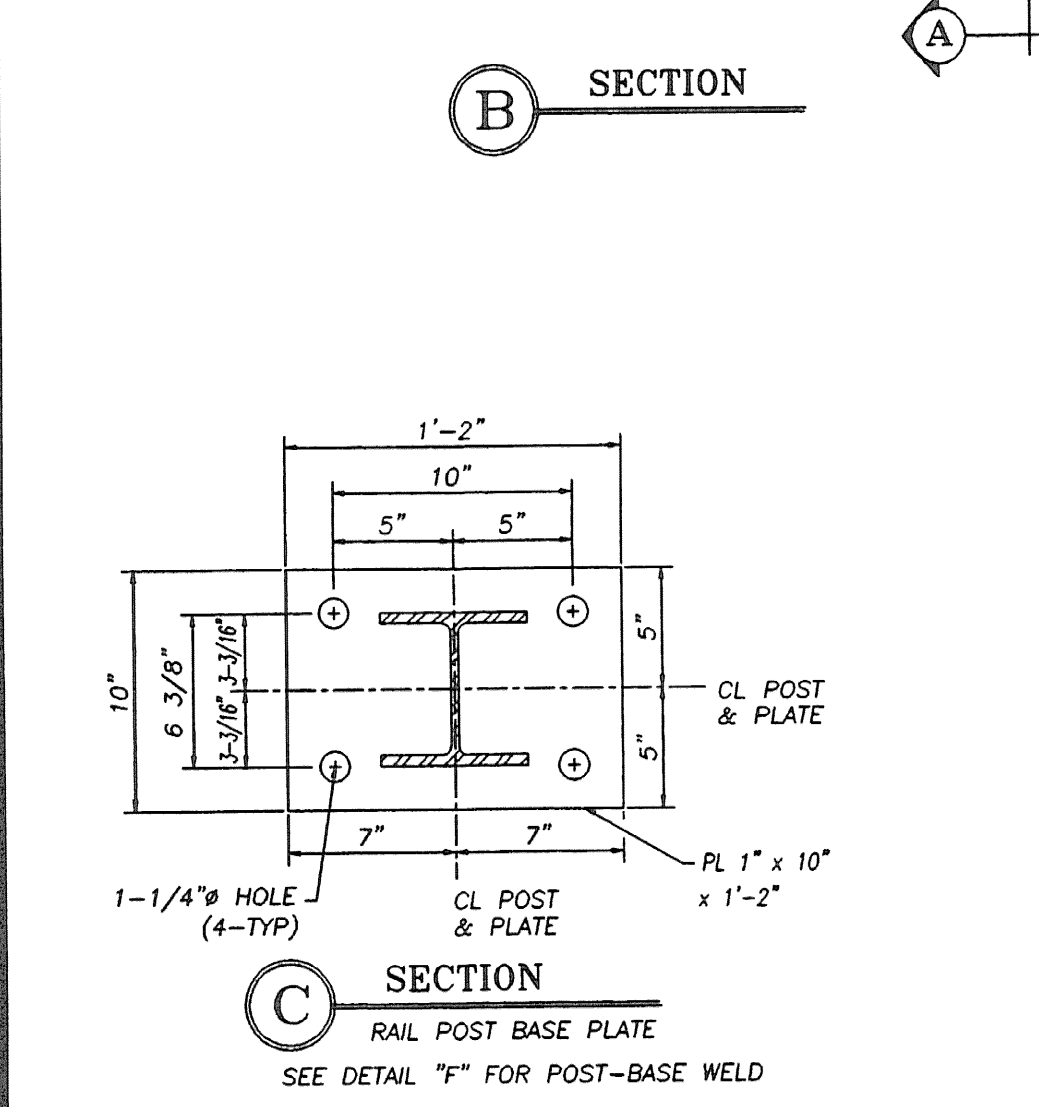
MATERIALS

Rail bars.....	ASTM A500 GR B or ASTM A501
Rail posts.....	ASTM A709 GR 50
All other shapes & plates.....	ASTM A709 GR 36
Anchor studs.....	ASTM A443
All other bolts [unless noted].....	AASHTO M164, TYPE I

Nuts for ASTM A307 bolts & AASHTO M164 bolts shall comply with AASHTO M291. Nuts for anchor studs shall comply with ASTM A563.

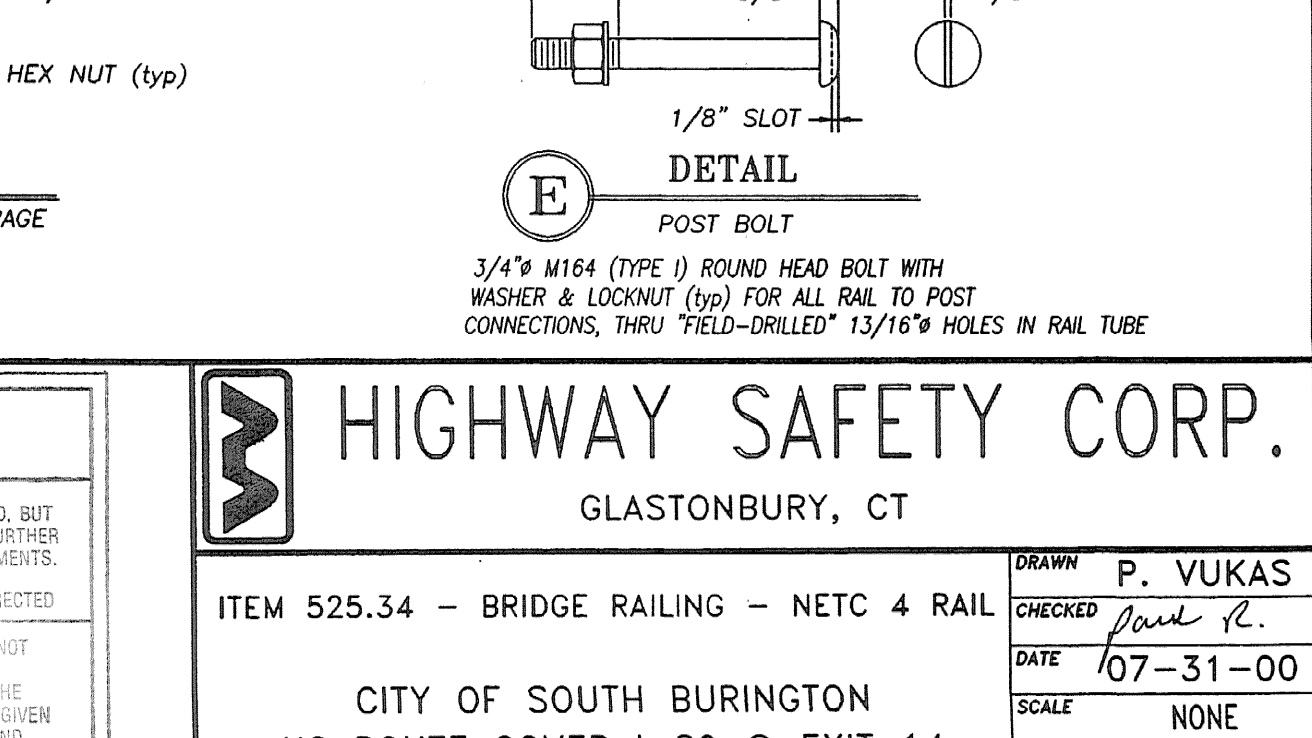
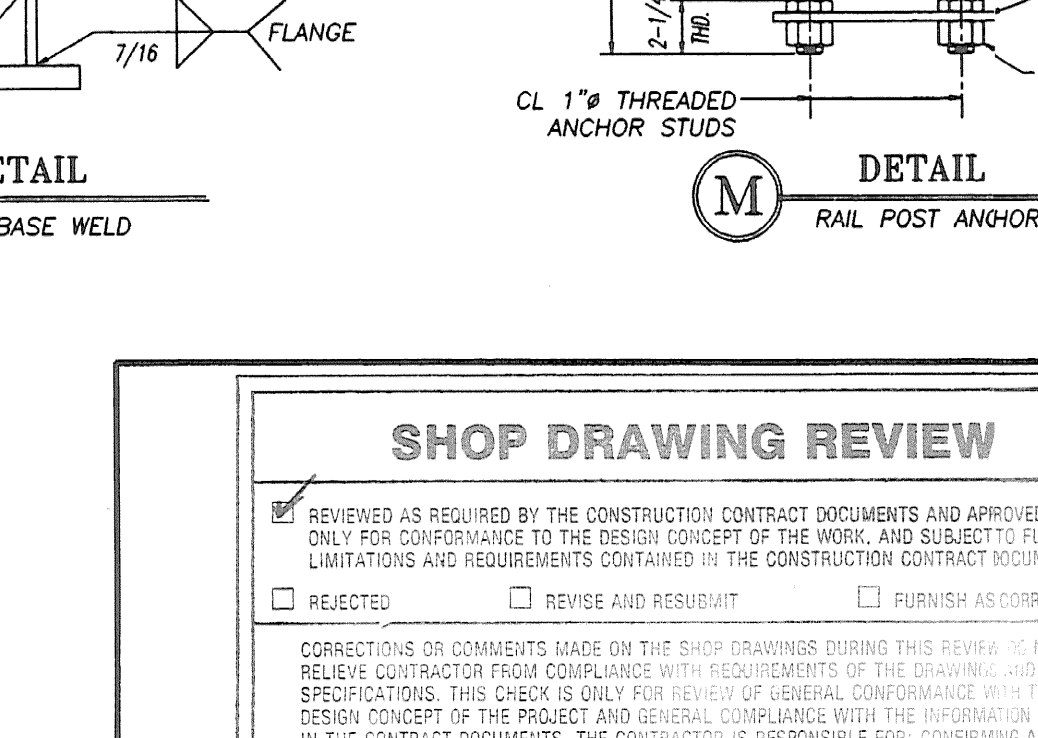
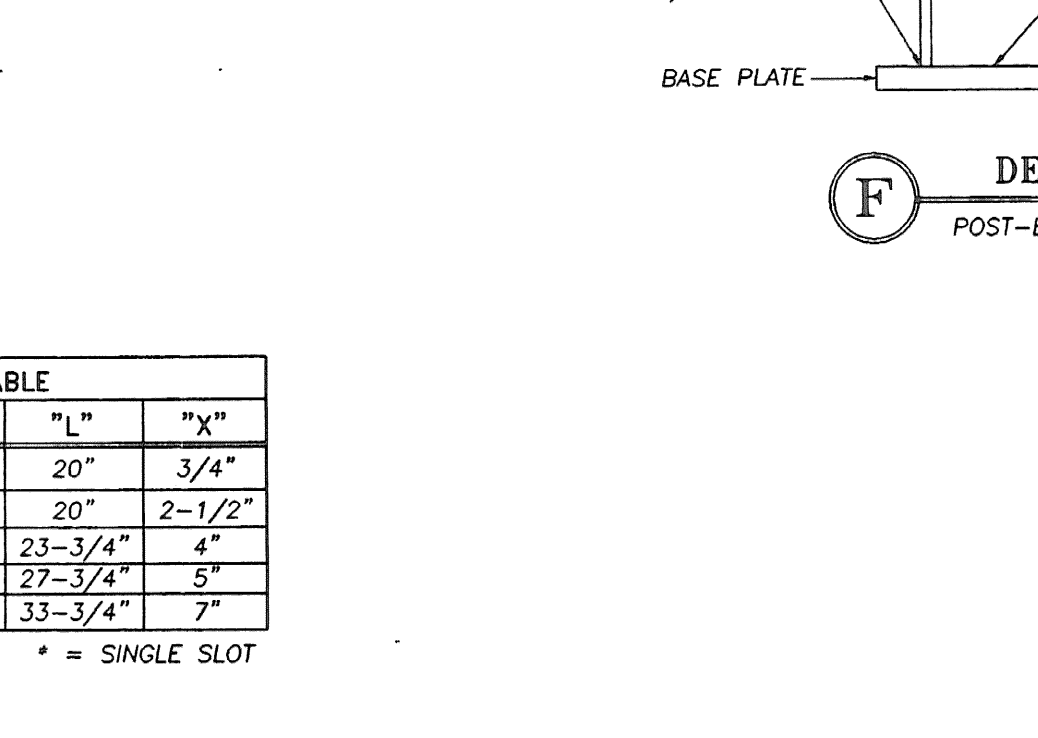
Washers shall comply with ASTM F436

1/8" pad shall comply with standard specification subsection 731.01 or 731.02 of Vermont Standard Specifications.



SPICE & EXPANSION JOINT TABLE					
"T"	"A"	"B"	"C"	"L"	"X"
SPICE	4"	2"	--	20"	3/4"
≤ 4"	4"	2"	2-1/2"	20"	2-1/2"
> 4" ≤ 6-1/2"	5-1/2"	2-3/8"	3-1/2"	23-3/4"	4"
> 6-1/2" ≤ 9"	6-1/2"	3-3/8"	9"	27-3/4"	5"
> 9" ≤ 13"	8-1/2"	4-3/8"	11"	33-3/4"	7"

"T" = TOTAL REQUIRED MOVEMENT
"X" = SINGLE SLOT



SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

REJECTED REVISE AND RESUBMIT FURNISH AS CORRECTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATING HIS WORK WITH THAT OF ALL OTHER TRADES, AND PERFORMING HIS WORK IN A SAFE AND SATISFACTORY MANNER.

VHB Vanessa Hengen Bruntlin, Inc.
Engineers, Planners, and Surveyors
Six Bedford Farms, Kilton Rd.,
Bedford, NH 03110 603.844.0888

Job Number: 509339
Reviewed By: A.S.R.
Date: 1-19-00

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.34 - BRIDGE RAILING - NETC 4 RAIL

CITY OF SOUTH BURLINGTON
US ROUTE 20VER I-89 @ EXIT 14
IM DECK(36) BRIDGE #68

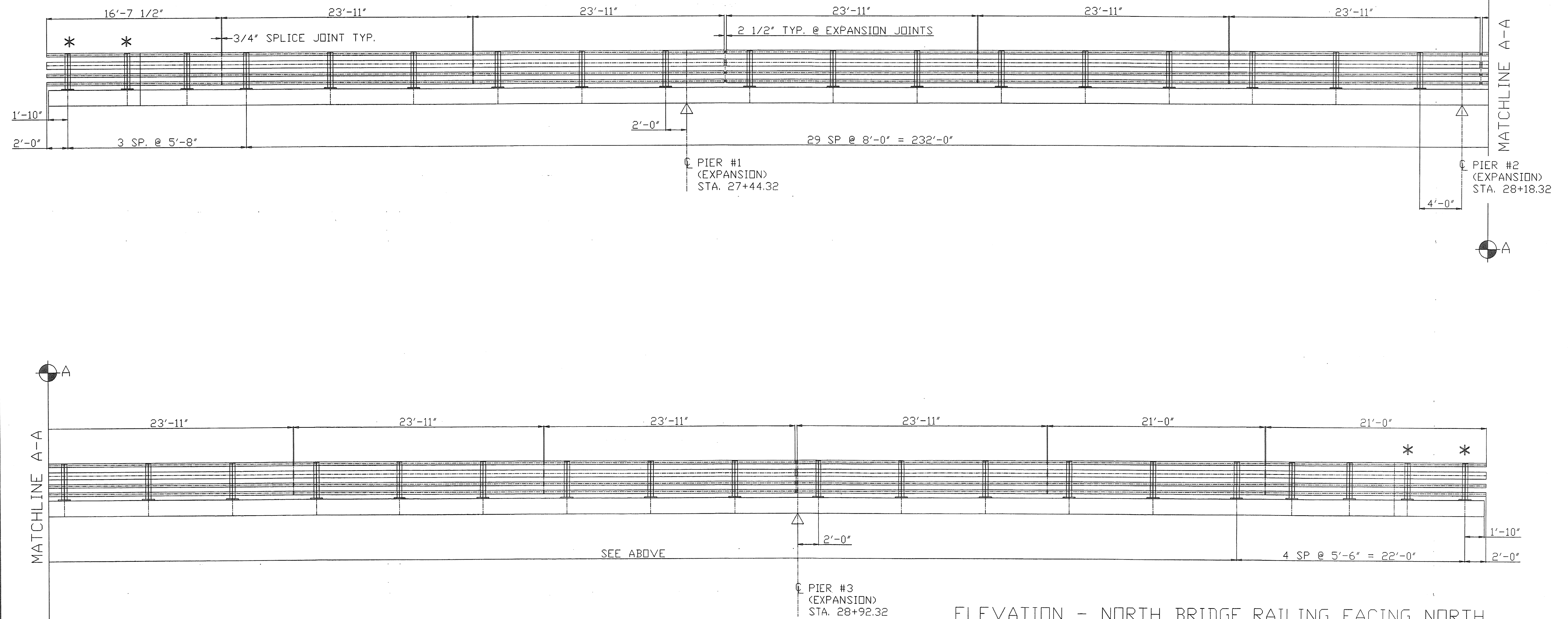
GENERAL CONTRACTOR
SUB CONTRACTOR F.R. LAFAYETTE, INC.

DRAWN P. VUKAS
CHECKED Paul R.
DATE 07-31-00
SCALE NONE
HSC REFERENCE NO. 1213
SIZE D REVISION 1
SHEET NO. 2 of 2

REVISIONS		
No.	Remarks	Date
0	Initial submittal	01/17/00
1	MISC CORRECTIONS, FIELD VERIFICATION	01/16/00

BILL OF MATERIAL			
Mk.	Qty.	Description	Total wgt.

①* - DENOTES SPECIAL WING WALL POST SEE SECTION "N" PAGE 2/2
 VERIFIED BY FIELD MEASUREMENTS 9/25/00



ELEVATION - NORTH BRIDGE RAILING FACING NORTH
 SOUTH BRIDGE RAILING SIMILAR
 TOTAL PAY LIMIT ITEM 525.34(BRIDGE RAILING - 4 RAIL) = 550 LF

THE BRIDGE RAIL LAYOUT SHOWN IS BASED ON INFORMATION FROM EXISTING PLANS.
 THE CONTRACTOR SHALL VERIFY THE PROPOSED BRIDGE RAIL LAYOUT PRIOR TO THE
 FABRICATION OF BRIDGE RAIL.

REVISIONS		
No.	Remarks	Date
0	Initial submittal	8/7/00
1	misc corrections, field verification	10/6/00

SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

REJECTED REVISE AND RESUBMIT FURNISH AS SHOWN

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWING SHALL BE MADE IN THE MARGINS OF THIS DRAWING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY APPROVALS FROM THE DESIGNER AND THE ENGINEER OF RECORD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY APPROVALS FROM THE DESIGNER AND THE ENGINEER OF RECORD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY APPROVALS FROM THE DESIGNER AND THE ENGINEER OF RECORD.

VHB Versarose Hagan Group, Inc.
 Engineers, Planners and Architects
 500 Main Street, 10th Floor
 Boston, MA 02110-1000

Job Number: 50929
 Reviewed By: ASB
 Date: 1-19-01

HIGHWAY SAFETY CORP.
 GLASTONBURY, CT

ITEM 525.34 - BRIDGE RAILING - NETC 4 RAIL

CITY OF SOUTH BURINGTON
 US ROUTE 20VER I-89 @ EXIT 14
 IM DECK(36) BRIDGE #68

GENERAL CONTRACTOR
 SUB CONTRACTOR: F.R. LAFAYETTE, INC.

DRAWN: P. VUKAS
 CHECKED: *[Signature]*
 DATE: 07-23-00
 SCALE: NONE
 HSC REFERENCE NO.: 1213
 SIZE: D REVISION: 1
 SHEET NO.: 1 of 2



Vanasse Hangen Brustlin, Inc. TRANSMITTAL

Transportation
Land Development
Environmental Services

Kilton Road
Six Bedford Farms, Suite 507
Bedford, NH 03110-4532
603 644 1855
FAX 603 644 2385

Date: 1-19-01	VHB Project No.: 50929
Re: South Burlington IM DECK 36 Bridge No. 68 and STP BIKE (28) S	

To: Robert Suckert, PE, Resident Engineer
Vermont Agency of Transportation
209 South Pinnacle Ridge Road
Waterbury, VT 05676

The Following details as outlined below, Item No. 621.73, Description Guardrail Approach Section NETC 4 Rail for the above project transmitted with your letter dated September 8, 2000 have been reviewed and are being returned herewith:

We are sending you: Attached 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
as noted below	9/8/00		Bridge Approach Rail Shop Drawings

These are transmitted as checked below:

Reviewed as required by the construction contract documents and approved, but only for conformance to the design concept of the work, and subject to further limitations and requirements contained in the construction contract documents. Rejected Revise and Resubmit Furnish as Corrected

REMARKS: There shall be no fabrication done until all drawings and welding procedures are approved or approved as noted. You must provide written notice to the Vermont Agency of Transportation (VTrans) Structures Section office as to the date fabrication represented by these drawings will begin. That notice must be received at least seven days prior to that date, as per Specifications 506.03. Any material fabricated prior to the notification date is subject to rejection without further cause.

Copy to: VTrans Resident Engineer, Robert E. Suckert, P.E. w/prints
Contractor, J.A. McDonald, Inc w/prints
Subcontractor: F.R. Lafayette w/prints By:
VTrans Consultant Project Manager, Sherward Farnsworth, PE w/prints
VTrans Structures Section - Shop Inspector - Jeff Clark - w/prints
VTrans Construction Section - letter only
VTrans Materials & Research Section (C&IA Unit) - letter only
VHB Project Manager, Steve Johnson, PE, VHB Project File

Ashanasia S. Robinson, VHB
Ashanasia Robinson

**F. R. LAFAYETTE,
INC.**

F. R. LAFAYETTE, INC.
21 KILLOGG RD.
ESSEX, VT.
VERMONT 05452

Phone: 802 878-5341
Fax: 802 878-2041

September 8, 2000

Vanasse Hangen Brustlin, Inc
Attn: Steve Johnson
Six Bedford Farms, Kilton Road
Bedford, NH 03110

Re: So Burlington IM DECK(36)

Gentlemen:

The enclosed shop drawings are being submitted for approval. Please return approved shop drawings to F. R. Lafayette, Inc. as soon as possible.

If you have any questions please feel free to contact me at the above noted number.

Thank you.

Very truly yours,

Rene A. Lafayette

President

RECEIVED

SEP 11 2000

VHB, Inc.

