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SD-501.00	CONCRETE DETAILS AND NOTES	02/09/2012
SD-502.00	CONCRETE DETAILS AND NOTES	10/10/2012

# STATE OF VERMONT AGENCY OF TRANSPORTATION



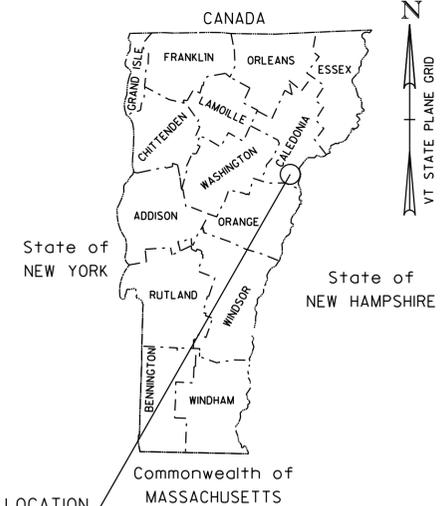
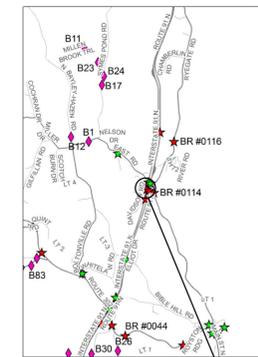
## PROPOSED IMPROVEMENT CULVERT PROJECT TOWN OF RYEGATE COUNTY OF CALEDONIA

ROUTE NO: I-91(RURAL FREEWAY) RYEGATE IM CULV (28) BRIDGE NO: 68-4S

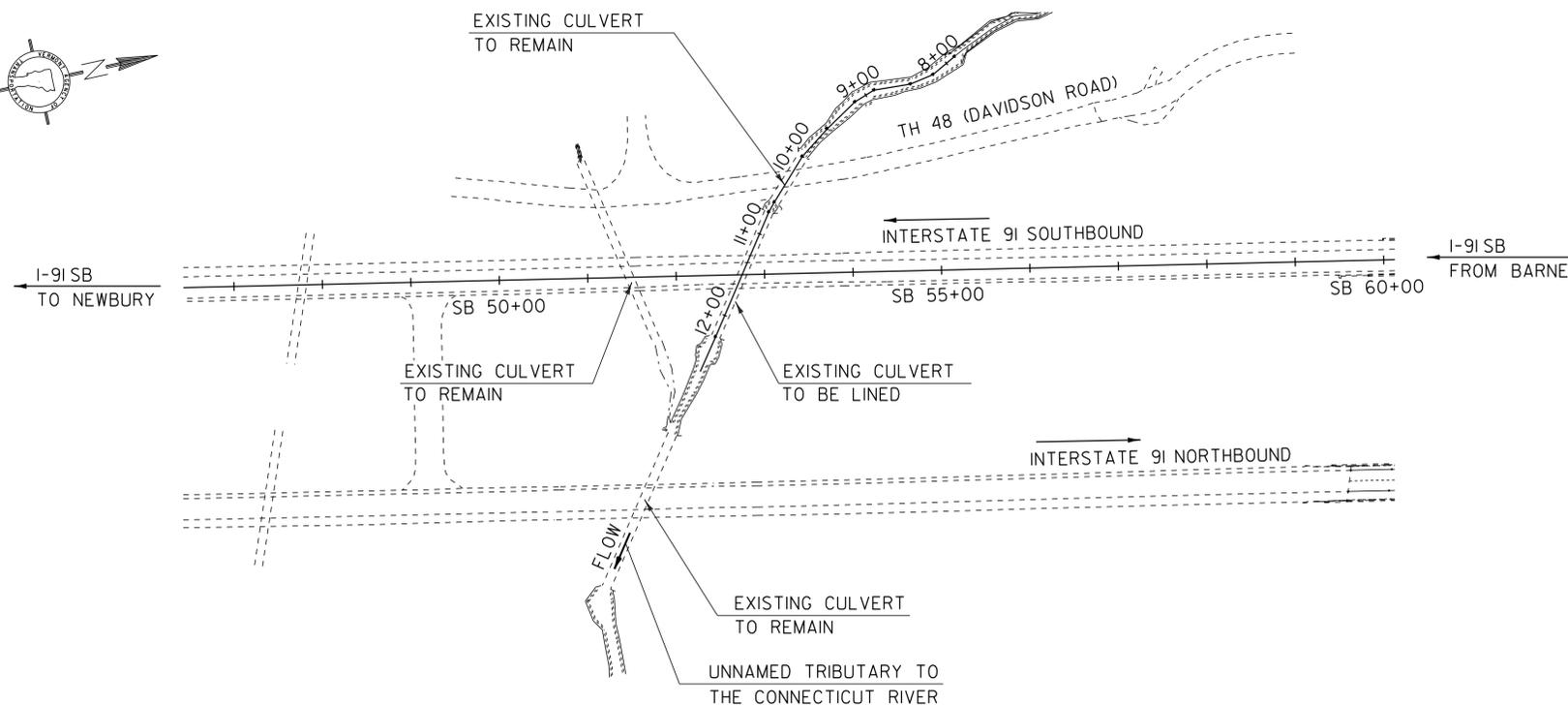
PROJECT LOCATION: LOCATED IN THE COUNTY OF CALEDONIA, TOWN OF RYEGATE, OVER UNNAMED TRIBUTARY TO THE CONNECTICUT RIVER, AT APPX. MILE 113.0 SOUTHBOUND, BETWEEN I-91 EXITS 17 & 18.

PROJECT DESCRIPTION: LINING OF CULVERT 68-4S, HEADWALL REPLACEMENT, AND ASSOCIATED AQUATIC ORGANISM PASSAGE WORK

LENGTH OF STRUCTURE: 150'-0"



PROJECT LOCATION  
RYEGATE  
IM CULV (28)



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

QUALITY ASSURANCE PROGRAM : LEVEL I	
SURVEYED BY : VTRANS	
SURVEYED DATE : 08/2013	
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (07)

SCALE 1" = 100'-0"  
100 0 100

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATOR
APPROVED _____ DATE _____
DIRECTOR OF PROJECT DELIVERY
APPROVED _____ DATE _____
PROJECT MANAGER : WENDY PELLETIER, P.E.
PROJECT NAME : RYEGATE
PROJECT NUMBER : IM CULV (28)
SHEET 1 OF 20 SHEETS

**GENERAL**

- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 2012, AND ITS LATEST REVISIONS.
- ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
- IT IS EXPECTED THAT THE CULVERT LINING, HEADWALL CONSTRUCTION, AND AQUATIC ORGANISM PASSAGE (AOP) WILL BE THE MAJORITY OF THE WORK. DURING THE COURSE OF CONSTRUCTION IF THE CONTRACTOR SEES AN AREA OF CONCERN, SUCH AS VOIDS AROUND THE EXISTING CULVERT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. THE ENGINEER SHALL MAKE A DETERMINATION AS TO THE NEED FOR FURTHER EXPLORATION.
- THE CONTRACTOR MUST CONTACT DIG SAFE AT 1-888-344-7233 AT LEAST THREE DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

**TRAFFIC CONTROL**

- ALL TRAFFIC CONTROL MEASURES FOR THIS PROJECT SHALL BE INSTALLED IN ACCORDANCE WITH TYPICAL APPLICATIONS TA-5, TA-33, AND TA-34 OF THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE REFERENCED VTRANS STANDARD DRAWINGS. CONFLICTS BETWEEN THE MUTCD AND THE VTRANS STANDARD DRAWINGS SHOULD DEFER TO THE MUTCD.
- THE CONTRACTOR SHALL SUBMIT A SPECIFIC TRAFFIC CONTROL PLAN TO THE HIGHWAY SAFETY AND DESIGN ENGINEER FOR APPROVAL PER SUBSECTIONS 104.04 AND 105.03. THIS WORK SHALL BE DONE IN COMPLIANCE WITH ITEM 900.645, SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).
- ENERGY ABSORPTION ATTENUATORS, IF USED, SHALL MEET THE REQUIREMENTS OF SECTION 621. PAYMENT FOR INSTALLING AND REMOVING ANY ENERGY ABSORPTION ATTENUATORS SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).
- SIGNS, BARRICADES, AND TRAFFIC CONTROL DEVICES SHALL BE CLEANED WEEKLY AND THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 900.645, SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).
- TEMPORARY SIGNS LOCATED BEHIND GUARDRAIL SHALL BE INSTALLED SUCH THAT THE BOTTOM OF THE SIGN IS ABOVE THE HEIGHT OF THE GUARDRAIL. ALL CONSTRUCTION RELATED SIGNS SHALL BE PLACED SUCH THAT THEY DO NOT OBSTRUCT VISIBILITY OF EXISTING SIGNS.
- THE CONTRACTOR SHALL COORDINATE ANY PROPOSED TRAFFIC CONTROL MEASURES WITH ANY ABUTTING CONSTRUCTION PROJECTS.

**EROSION CONTROL**

- THE CONTRACTOR SHALL PERFORM EROSION CONTROL AS STATED IN SECTION 105 OF THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011.
- THE CONTRACTOR SHALL ESTABLISH TURF ON ANY AREAS DISTURBED AS A RESULT OF WORK ON THIS PROJECT.
- ON THIS PROJECT THE ACCESS ROAD WILL BE DISTURBING WETLANDS, THIS WETLAND AREA SHALL BE RESTORED.
- A TEMPORARY PIPE WILL BE NEEDED TO ALLOW FLOW FROM THE WETLAND UNDER THE ACCESS ROAD. THIS PIPE HAS NOT BEEN DESIGNED, BUT IS SHOWN AS A 24" CAAP FOR ESTIMATION PURPOSES.
- SILT FENCE SHALL BE INSTALLED ALONG THE TOE OF SLOPES BELOW AREAS OF CONSTRUCTION ACCESS. NO WORK SHALL BE PERFORMED BELOW THOSE LIMITS, EXCEPT WITHIN THE LIMITS OF NEW STONE FILL.
- AN ADDITIONAL 10 CY OF STONE FILL, TYPE III, IS PROVIDED FOR ENERGY DISSIPATION.

**REINFORCING STEEL**

- MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:  
ALONG BACK FACES OF WALLS AGAINST EARTH: 2"  
ELSEWHERE UNLESS OTHERWISE INDICATED: 3"
- REINFORCEMENT STEEL PLACEMENT TOLERANCES SHALL BE:  
SPACING = +/- 1-INCH  
CLEARANCE = +/- 1/4-INCH

**CONCRETE**

- CONCRETE CLASSIFICATION AND SPECIFICATION SHALL BE AS FOLLOWS:  
INLET HEADWALL AND FOOTINGS: ITEM 501.34, CONCRETE, HIGH PERFORMANCE CLASS B  
OUTLET FACING, CHANNEL BASE, GROUT, AND MORTAR: ITEM 541.25, CONCRETE, CLASS B.  
FILLING VOIDS BELOW CULVERT CENTERLINE: ITEM 541.31, CONCRETE, CLASS D  
FILLING VOIDS ABOVE CULVERT CENTERLINE: ITEM 541.45, CONTROLLED DENSITY (FLOWABLE) FILL
- ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1 INCH BY 1 INCH, UNLESS OTHERWISE NOTED.
- JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- ANY KEY IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT UNLESS OTHERWISE INDICATED. ANY UPWARD KEY SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.
- THE REBAR IN THE CHANNEL CONCRETE BASE SHALL BE CONNECTED TO THE OUTLET FACING. THE METHOD OF CONNECTION SHALL BE DETERMINED BY THE CONTRACTOR, AND APPROVED BY THE ENGINEER.
- WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES. THIS SHALL BE DONE IN COMPLIANCE WITH ITEM 514.10, WATER REPELLENT, SILANE. APPLICATION RATE OF WATER REPELLENT, SILANE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

**PIPE REHABILITATION**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY ACCESS TO ALL CULVERT REHABILITATION SITES. ALL RESULTING DISTURBED EARTH SHALL BE STABILIZED AND RESTORED UPON COMPLETION OF CONSTRUCTION. THIS SHALL BE DONE IN COMPLIANCE WITH ITEM 900.645, SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).
- CONTRACTOR IS RESPONSIBLE FOR PIPE DESIGN WITH SUBMITTAL AND ACCEPTANCE PRIOR TO INSTALLATION. THE CONTRACTOR SHALL VERIFY THAT THE RECOMMENDED SIZE LINER WILL FIT IN THE EXISTING PIPE BEFORE ORDERING THE LINER PIPE. SHOULD THE CONTRACTOR DISCOVER THAT THE RECOMMENDED SIZE LINER WILL NOT FIT IN THE EXISTING PIPE, THEN THE CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER. ANY CHANGES TO THE PROPOSED SIZE OF THE LINER WILL BE PAID FOR AS EXTRA WORK.
- STABILIZATION AND RESTORATION ASSOCIATED WITH THE TEMPORARY ACCESS SHALL BE THIS SHALL BE DONE IN COMPLIANCE WITH ITEM 900.645, SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).
- AT THE LOCATION SPECIFIED IN THESE PLANS, THE EXISTING CULVERT SHALL REMAIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARATION OF THE EXISTING PIPE TO THE SATISFACTION OF THE ENGINEER. IT IS ANTICIPATED THAT IT WILL BE NECESSARY FOR THE CONTRACTOR TO REMOVE SEDIMENT, LARGE STONES, AND/OR DEBRIS FROM INSIDE THE EXISTING CULVERT, AND TO FILL AND REPAIR LARGE HOLES IN THE EXISTING CULVERT, PRIOR TO INSTALLING THE NEW LINER.
- THE CONTRACTOR SHALL FILL ANY VOIDS BELOW THE CENTER OF THE CULVERT FROM WITHIN THE CULVERT BEFORE INSTALLING THE LINER. THIS WORK SHALL BE DONE IN COMPLIANCE WITH ITEM 541.31, CONCRETE, CLASS D. (AN ESTIMATED AMOUNT OF 10 CY OF CONCRETE, CLASS D HAS BEEN INCLUDED FOR FILLING VOIDS.)
- THE CONTRACTOR SHALL FILL ANY VOIDS ABOVE THE CENTER OF THE CULVERT FROM WITHIN THE CULVERT BEFORE INSTALLING THE LINER. THIS WORK THIS SHALL BE DONE IN COMPLIANCE WITH ITEM 541.45, CONTROLLED DENSITY (FLOWABLE) FILL. (AN ESTIMATED AMOUNT OF 10 CY OF CONTROLLED DENSITY (FLOWABLE) FILL HAS BEEN INCLUDED FOR FILLING VOIDS.)
- THE EXISTING HEADWALL AT THE INLET, AND EXISTING PIPE AS SHOWN ON THE HEADWALL DETAILS, SHALL BE REMOVED UNDER ITEM 529.20, PARTIAL REMOVAL OF STRUCTURE, SEE HEADWALL DETAILS SHEETS.
- A NEW FULLY BEVELED HEADWALL SHALL BE CONSTRUCTED AT THE INLET OF THE CULVERT. THE OUTLET OF THE CULVERT WILL HAVE A 1'-0" FACING APPLIED. SEE HEADWALL DETAILS SHEETS. THE NEW CONCRETE SHALL BE CONSTRUCTED IN THE DRY. CONTROL OF WATER SHALL BE DONE IN COMPLIANCE WITH ITEM 900.645, SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM).
- THE LINER SHALL BE POLYMER COATED, CORRUGATED STEEL PIPE (PCCSP) DESIGNED FOR HL-93 LIVE LOADS, OVERBURDEN, AND OTHER LOADS PER AASHTO CODE REQUIREMENTS. THE DIAMETER SHALL BE AS SHOWN ON THE PROJECT DRAWINGS, AND SUITABLE TO SUPPORT THE FISH BAFFLES. FINAL DESIGN OF THE LINER PIPE SHALL BE BY THE SUPPLIER. CONTRACTOR SHALL SUBMIT TO THE ENGINEER, SEALED DRAWINGS AND CALCULATIONS FROM A VERMONT PE FOR REVIEW PRIOR TO ORDERING.
- THE CONTRACTOR SHALL DEVELOP A SYSTEM OF SKIDS AND BLOCKING TO HOLD THE LINER IN PROPER POSITION DURING THE GROUTING OPERATION. THE CONTRACTOR SHALL ENDEAVOR TO MINIMIZE THE RISE OF THE CULVERT INVERT. THE CONTRACTOR SHALL SUBMIT PLANS SHOWING THE GROUT PORTS, VENTS, GROUT LIFTS, ETC. A PREVIOUS SET IS INCLUDED AS AN EXAMPLE.
- THERE WILL NEED TO BE A CLEAR AREA EQUAL TO THE PIPE SEGMENT LENGTH PLUS FIVE FEET IN FRONT OF THE INSTALLATION POINT TO PERMIT PROPER PIPE INSERTION.

**ITEMS TO BE PAID FOR UNDER LUMP SUM PROJECT**

ESTIMATED QUANTITY	UNIT	ITEM	ITEM NUMBER
220	CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27
250	CY	STRUCTURE EXCAVATION	204.25
200	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30
75	CY	AGGREGATE SURFACE COURSE	401.10
45	CY	CONCRETE, HPC B	501.34
8,900	LB	REINFORCING STEEL, LEVEL I	507.11
220	LF	DRILLING AND GROUTING DOWELS	507.16
10	GAL	WATER REPELLANT, SILANE	514.10
1	EACH	PARTIAL REMOVAL OF STRUCTURE	529.20
60	CY	CONCRETE, CLASS B	541.25
10	CY	CONCRETE, CLASS D	541.31
10	CY	CONTROLLED DENSITY (FLOWABLE) FILL	541.45
18	LF	24" CAAP .060	601.0225
10	CY	STONE FILL, TYPE I	613.10
30	CY	STONE FILL, TYPE III	613.12
170	CY	STONE FILL, TYPE IV	613.13
20	LF	WOVEN WIRE FENCE WITH STEEL POSTS	620.25
1	LS	TESTING EQUIPMENT, CONCRETE	631.16
1	LS	TESTING EQUIPMENT, PROTECTIVE COATINGS	631.18
3000	DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26
430	SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.11
170	SY	GEOTEXTILE UNDER STONE FILL	649.31
100	SY	GEOTEXTILE FOR SILT FENCE	649.51
10	LB	SEED	651.15
60	LB	FERTILIZER	651.18
1	TON	AGRICULTURAL LIMESTONE	651.20
1	TON	HAY MULCH	651.25
10	CY	TOPSOIL	651.35
70	SY	GRUBBING MATERIAL	651.40
35	CY	VEHICLE TRACKING PAD	653.35
1000	LF	PROJECT DEMARCATION FENCE	653.55
155	LF	SPECIAL PROVISION (CORRUGATED PIPE LINER, PCCSP) (108") (EXISTING 120" PIPE)	900.640
1	LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM)	900.645

**ITEMS TO BE PAID FOR UNDER SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE)**

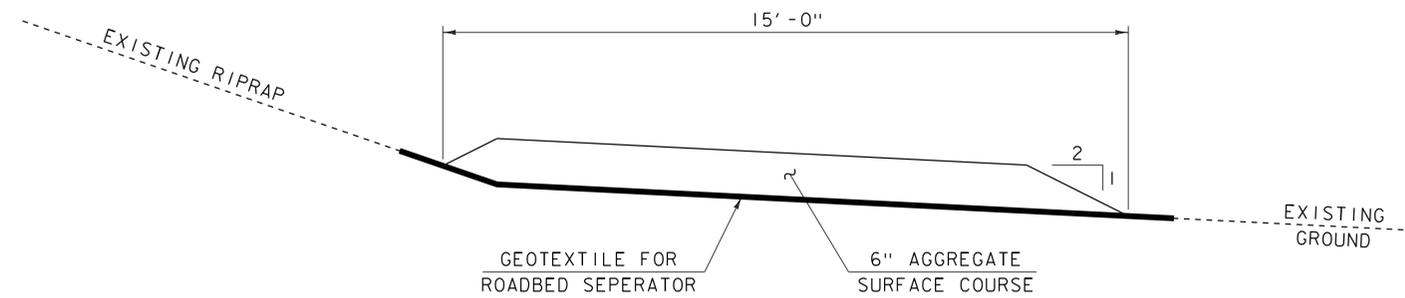
ESTIMATED QUANTITY	UNIT	ITEM	ITEM NUMBER
500	HR	UNIFORMED TRAFFIC OFFICERS	630.10
150	HR	FLAGGERS	630.15
2	EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15
2	EACH	PORTABLE ARROW BOARD	641.16
500	SF	TRAFFIC SIGNS, TYPE A	675.20

**TRAFFIC DATA I-91 SOUTHBOUND**

YEAR	ADT	DHV	%D	%T	ADTT
2015	2700	360	100	17.4	780
2035	3000	410	100	20.5	1000

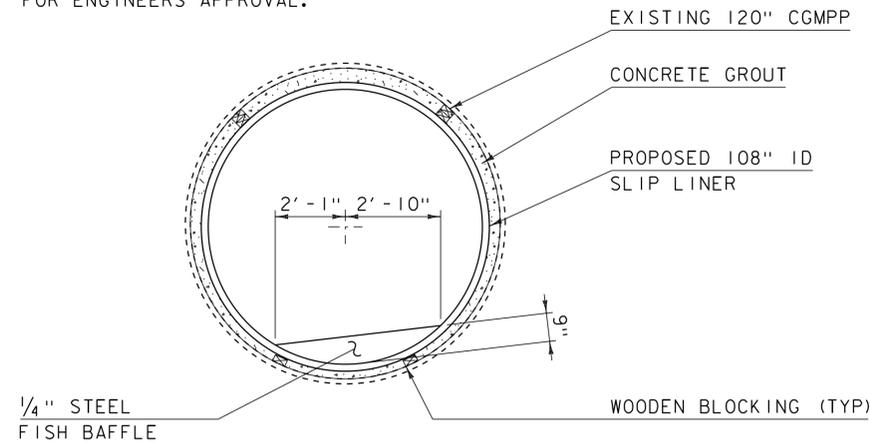
PROJECT NAME: RYEGATE  
PROJECT NUMBER: IM CULV(28)

FILE NAME: Ila262/slla262for.ms.dgn PLOT DATE: 12-APR-2016  
PROJECT LEADER: W.PELLETIER DRAWN BY: D.D.BEARD  
DESIGNED BY: W.PELLETIER CHECKED BY: W.PELLETIER  
PROJECT NOTES SHEET 2 OF 20

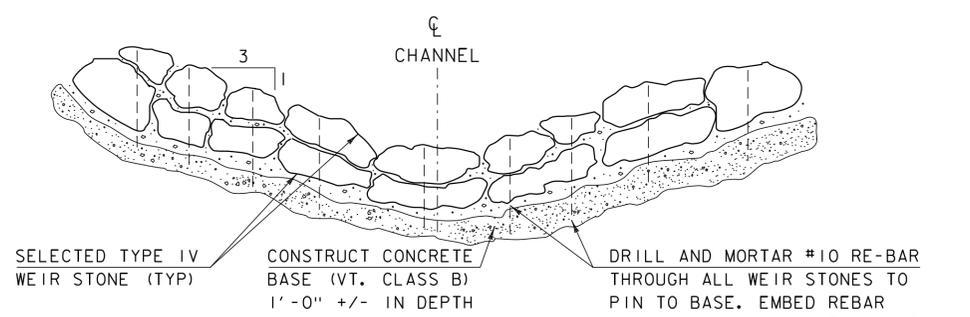


**TEMPORARY ACCESS ROAD TYPICAL SECTION**  
NOT TO SCALE

THE FISH BAFFLES IN THE LINER HAVE BEEN CALCULATED AS 9" TALL CORNER BAFFLES, ROTATED 6° FROM HORIZONTAL (ALL SAME SIDE), WITH A 7'-3" SPACING. THE FINAL BAFFLE DESIGN WILL BE SUBMITTED BY THE MANUFACTURER FOR ENGINEERS APPROVAL.



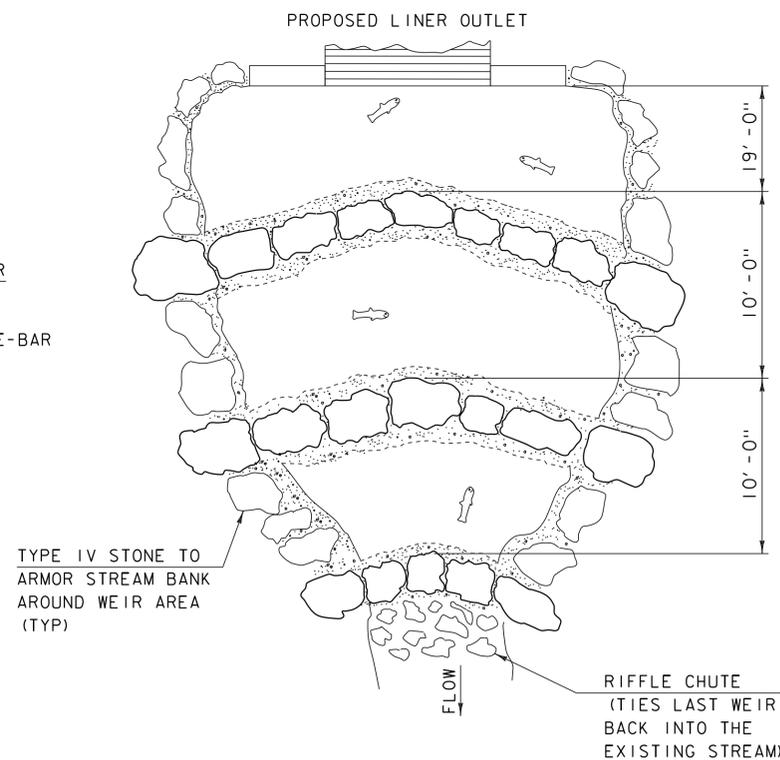
**CULVERT TYPICAL SECTION**  
NOT TO SCALE



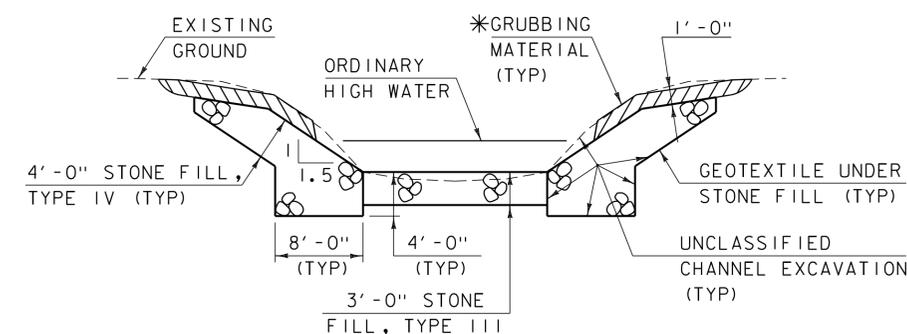
**BACK-WATERING WEIR SECTION VIEW DETAIL**  
NOT TO SCALE

**NOTES:**

- (1) THERE WILL BE NO MORE THAN A 9" +/- DIFFERENCE IN ELEVATION BETWEEN THE BACK WATERING WEIRS AT THE OUTLET.
- (2) THE CENTER OF THE BACK WATERING WEIRS WILL BE LOWER IN ELEVATION THAN AT THE STREAM BANK.
- (3) WEIRS WILL BE RECESSED 6' INTO THE STREAM BANK TO PREVENT WATER BYPASSING AROUND THE BACKSIDE OF THE WEIRS.
- (4) ITEM 541.25 CONCRETE, CLASS B, WILL BE ROUGHLY FORMED AND VIBRATED INTO ALL VOIDS BETWEEN THE WEIR STONE SYSTEM.
- (5) WEIRS WILL POINT UPSTREAM AT THE CENTER OF THE WEIR SYSTEM (SEE DETAIL).
- (6) THE STREAM BANK WILL BE ARMORED WITH TYPE IV STONE AROUND THE PERIMETER OF THE WEIR AREA.



**BACK-WATERING WEIR PLAN VIEW DETAIL**  
NOT TO SCALE



**TYPICAL CHANNEL SECTION**  
(NOT TO SCALE)

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

**MATERIAL TOLERANCES**  
(IF USED ON PROJECT)

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

PROJECT NAME: RYEGATE  
PROJECT NUMBER: IM CULV(28)

FILE NAME: Ila262/slla262+ypical.dgn  
PROJECT LEADER: W.PELLETIER  
DESIGNED BY: W.PELLETIER  
TYPICAL SECTIONS

PLOT DATE: 12-APR-2016  
DRAWN BY: D.D.BEARD  
CHECKED BY: W.PELLETIER  
SHEET 3 OF 20

GPS/NGS CONTROL POINTS

VTRANS NOTE, AUGUST 2013  
 GEODETIC CONTROL WAS ESTABLISHED FROM A STATIC GPS SURVEY ON TEMPORARY MARKS. NO DESCRIPTIONS ARE AVAILABLE.  
 HORIZONTAL VALUES WERE DERIVED FROM A NETWORK ADJUSTMENT TIED TO THE FOLLOWING CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS): VCAP MONTPELIER, VTOX BRADFORD, VTD7 ST. JOHNSBURY  
 ELEVATIONS WERE COMPUTED FROM A NETWORK ADJUSTMENT USING GEOID 09 AND LOCAL TIES TO THE FOLLOWING BENCHMARKS: VERMONT HIGHWAY DEPARTMENT BENCH MARK MPH 5 1966

A 57

PID PG1263  
 NORTH = 618991.200  
 EAST = 1753307.622  
 ELEV. = 562.332

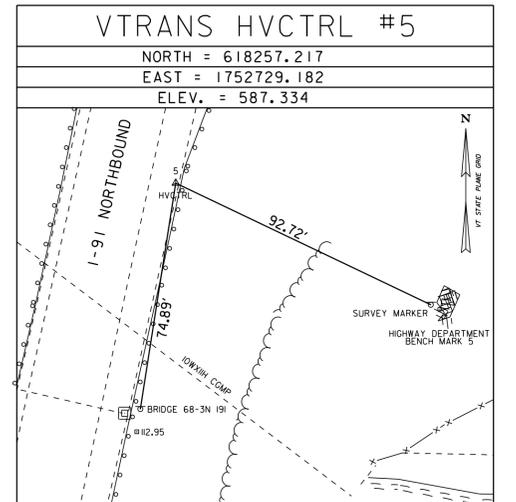
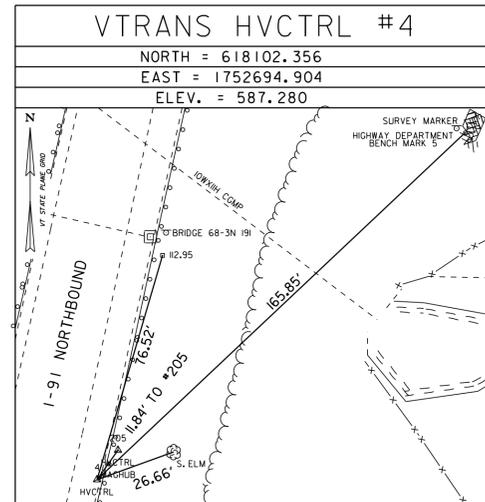
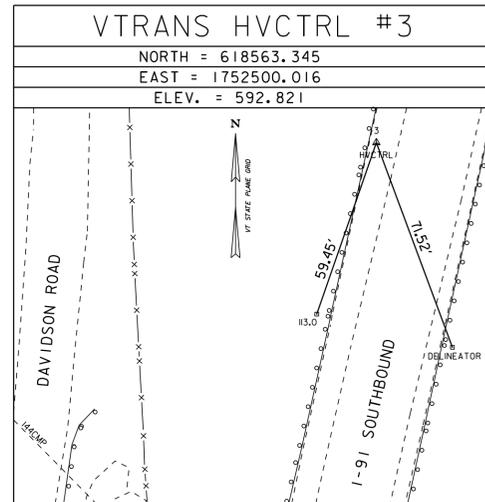
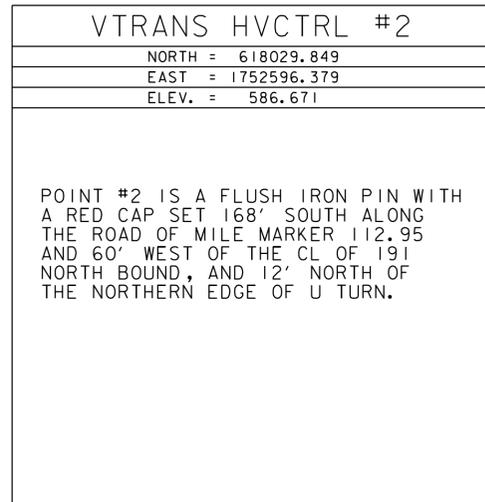
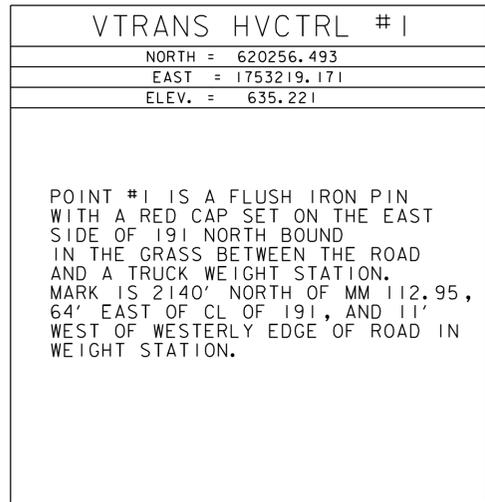
DESCRIBED BY NATIONAL GEODETIC SURVEY 1978. 0.6 MI SOUTH FROM EAST RYEGATE. 0.6 MILE SOUTH ALONG STATE HIGHWAY 5 FROM THE JUNCTION OF MILL ROAD AND HIGHWAY 5 IN EAST RYEGATE TO THE MARK ON THE RIGHT SET IN FRONT OF POWER POLE NUMBER 6K-8Y2, 104 FEET NORTHEAST OF A PAVED ROAD LEADING NORTHWEST AND UNDER US HIGHWAY 91, 40 FEET SOUTHWEST OF THE CENTER OF A BOX CULVERT RUNNING UNDER THE HIGHWAY, 39.5 FEET NORTHWEST OF THE CENTER LINE OF THE HIGHWAY, 2 FEET SOUTHEAST OF THE POWER POLE.

GMI 5 VTDH

PID PG0252  
 NORTH = 620922.647  
 EAST = 1753413.500  
 ELEV. = 630.930

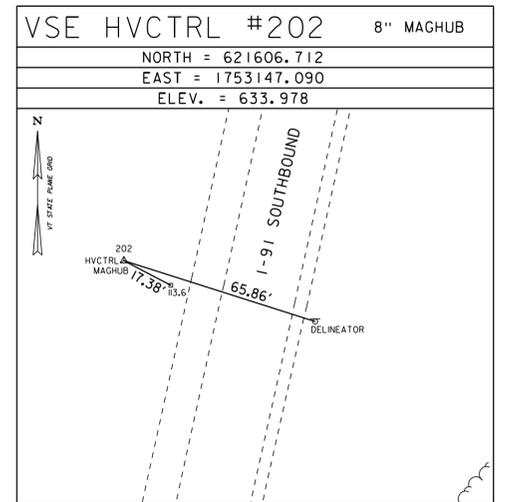
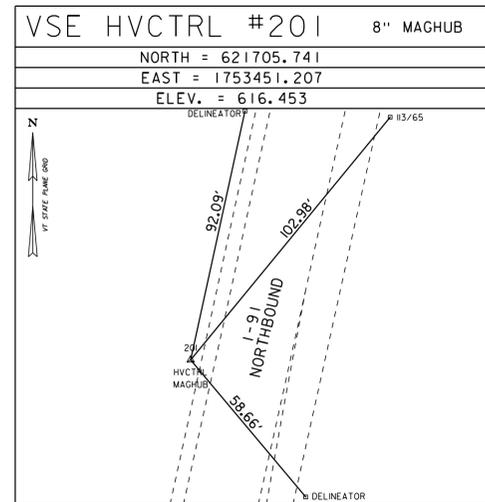
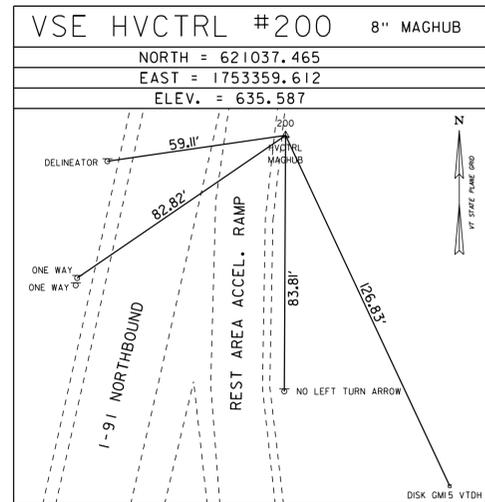
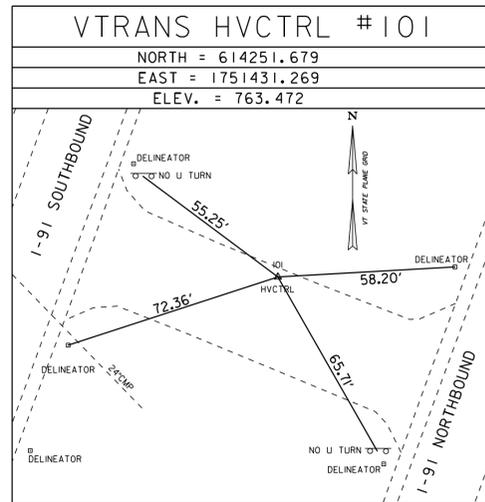
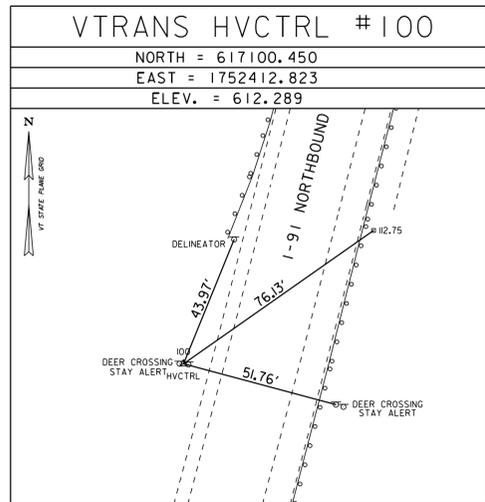
DESCRIBED BY VT DEPT OF HIGHWAYS 1976. 0.6 MI WSW FROM EAST RYEGATE. TO REACH FROM THE INTERSECTION OF U.S. RT. 302 AND RT. 191 WEST OF WELLS RIVER GO NORTH TO THE NEWBURG-RYEGATE TOWN LINE, THENCE 2.64 MILES FURTHER NORTH TO SITE OF BENCHMARK, 113 FT. EAST OF THE CENTERLINE, 1.5 FT. SOUTHWEST OF MPH 6, 73.4 FT. NORTHWEST OF THE EAST END OF A 24-INCH CONCRETE PIPE, 9.9 FT. EAST OF A 8-INCH PINE, 162 FT. WEST OF ROW FENCE. 2 FEET ABOVE GROUND, 0.4 MILES NORTH OF BENCH MARK GM1-4 1976.

TRAVERSE TIES



\* VTRANS MAIN TRAVERSE COMPLETED BY R. GILMAN, P. WINTERS & C. CYR \* VSE SURVEY COMPLETED: OCTOBER 17, 2013, M. YEFCHAK-PC, T. YEFCHAK

TRAVERSE TIES



DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83(07)
ADJUSTMENT	COMPASS

PROJECT NAME: RYEGATE	
PROJECT NUMBER: IM CULV (28)	
FILE NAME: \$FILES\$	PLOT DATE: 12-APR-2016
PROJECT LEADER: W. PELLETIER	DRAWN BY: M. DAMES
DESIGNED BY: J. ALBERT	CHECKED BY: D. GOZALKOWSKI
TIE SHEET	SHEET 4 OF 20

**GENERAL INFORMATION**

**SYMBOLGY LEGEND NOTE**

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

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

POINT CODE	DESCRIPTION
CH	CHANNEL EASEMENT
CONST	CONSTRUCTION EASEMENT
CUL	CULVERT EASEMENT
D&C	DISCONNECT & CONNECT
DIT	DITCH EASEMENT
DR	DRAINAGE EASEMENT
DRIVE	DRIVEWAY EASEMENT
EC	EROSION CONTROL
HWY	HIGHWAY EASEMENT
I&M	INSTALL & MAINTAIN EASEMENT
LAND	LANDSCAPE EASEMENT
R&RES	REMOVE & RESET
R&REP	REMOVE & REPLACE
SR	SLOPE RIGHT
UE	UTILITY EASEMENT
(P)	PERMANENT EASEMENT
(T)	TEMPORARY EASEMENT
■	BNDNS BOUND SET
□	BNDNS BOUND TO BE SET
●	IPNS IRON PIN SET
⊙	IPNS IRON PIN TO BE SET
⊠	CALC EXISTING ROW POINT
○	PROW PROPOSED ROW POINT
[LENGTH]	LENGTH CARRIED ON NEXT SHEET

**COMMON TOPOGRAPHIC POINT SYMBOLS**

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

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

**PROPOSED GEOMETRY CODES**

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

**UTILITY SYMBOLGY**

**UNDERGROUND UTILITIES**

— UGU —	UTILITY (GENERIC-UNKNOWN)
— UT —	TELEPHONE
— UE —	ELECTRIC
— UC —	CABLE (TV)
— UEC —	ELECTRIC+CABLE
— UET —	ELECTRIC+TELEPHONE
— UCT —	CABLE+TELEPHONE
— UECT —	ELECTRIC+CABLE+TELEP.
— G —	GAS LINE
— W —	WATER LINE
— S —	SANITARY SEWER (SEPTIC)

**ABOVE GROUND UTILITIES (AERIAL)**

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

**PROJECT CONSTRUCTION SYMBOLGY**

**PROJECT DESIGN & LAYOUT SYMBOLGY**

— CZ —	CLEAR ZONE
—	PLAN LAYOUT MATCHLINE

**PROJECT CONSTRUCTION FEATURES**

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

**CONVENTIONAL BOUNDARY SYMBOLGY**

**BOUNDARY LINES**

—	TOWN BOUNDARY LINE
—	COUNTY BOUNDARY LINE
—	STATE BOUNDARY LINE
—	PROPOSED STATE R.O.W. (LIMITED ACCESS)
—	PROPOSED STATE R.O.W.
—	STATE ROW (LIMITED ACCESS)
—	STATE ROW
—	TOWN ROW
—	PERMANENT EASEMENT LINE (P)
—	TEMPORARY EASEMENT LINE (T)
—	SURVEY LINE
P	PROPERTY LINE (P/L)
SR	SLOPE RIGHTS
6f	6F PROPERTY BOUNDARY
4f	4F PROPERTY BOUNDARY
HAZ	HAZARDOUS WASTE

**EPSC LAYOUT PLAN SYMBOLGY**

**EPSC MEASURES**

—	FILTER CURTAIN
—	SILT FENCE
—	SILT FENCE WOVEN WIRE
—	CHECK DAM
—	DISTURBED AREAS REQUIRING RE-VEGETATION
—	EROSION MATTING

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLGY

**ENVIRONMENTAL RESOURCES**

—	WETLAND BOUNDARY
—	RIPARIAN BUFFER ZONE
—	WETLAND BUFFER ZONE
—	SOIL TYPE BOUNDARY
— T&E —	THREATENED & ENDANGERED SPECIES
— HAZ —	HAZARDOUS WASTE AREA
— AG —	AGRICULTURAL LAND
— HABITAT —	FISH & WILDLIFE HABITAT
— FLOOD PLAIN —	FLOOD PLAIN
— OHW —	ORDINARY HIGH WATER (OHW)
—	STORM WATER
—	USDA FOREST SERVICE LANDS
—	WILDLIFE HABITAT SUIT/CONN

**ARCHEOLOGICAL & HISTORIC**

— ARCH —	ARCHEOLOGICAL BOUNDARY
— HISTORIC DIST —	HISTORIC DISTRICT BOUNDARY
— HISTORIC —	HISTORIC AREA
Ⓜ	HISTORIC STRUCTURE

**CONVENTIONAL TOPOGRAPHIC SYMBOLGY**

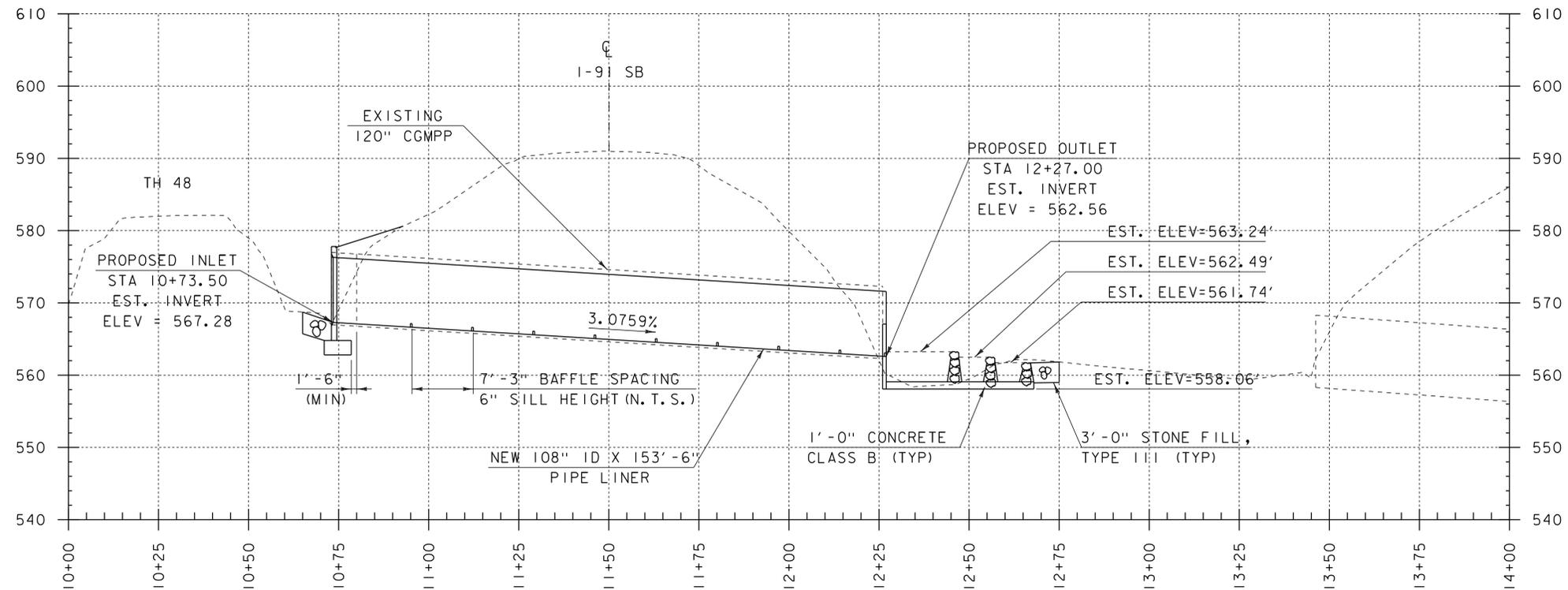
**EXISTING FEATURES**

—	ROAD EDGE PAVEMENT
—	ROAD EDGE GRAVEL
—	DRIVEWAY EDGE
—	DITCH
—	FOUNDATION
—	FENCE (EXISTING)
—	FENCE WOOD POST
—	FENCE STEEL POST
—	GARDEN
—	ROAD GUARDRAIL
—	RAILROAD TRACKS
—	CULVERT (EXISTING)
—	STONE WALL
—	WALL
—	WOOD LINE
—	BRUSH LINE
—	HEDGE
—	BODY OF WATER EDGE
—	LEDGE EXPOSED

PROJECT NAME: RYEGATE  
PROJECT NUMBER: IM CULV(28)

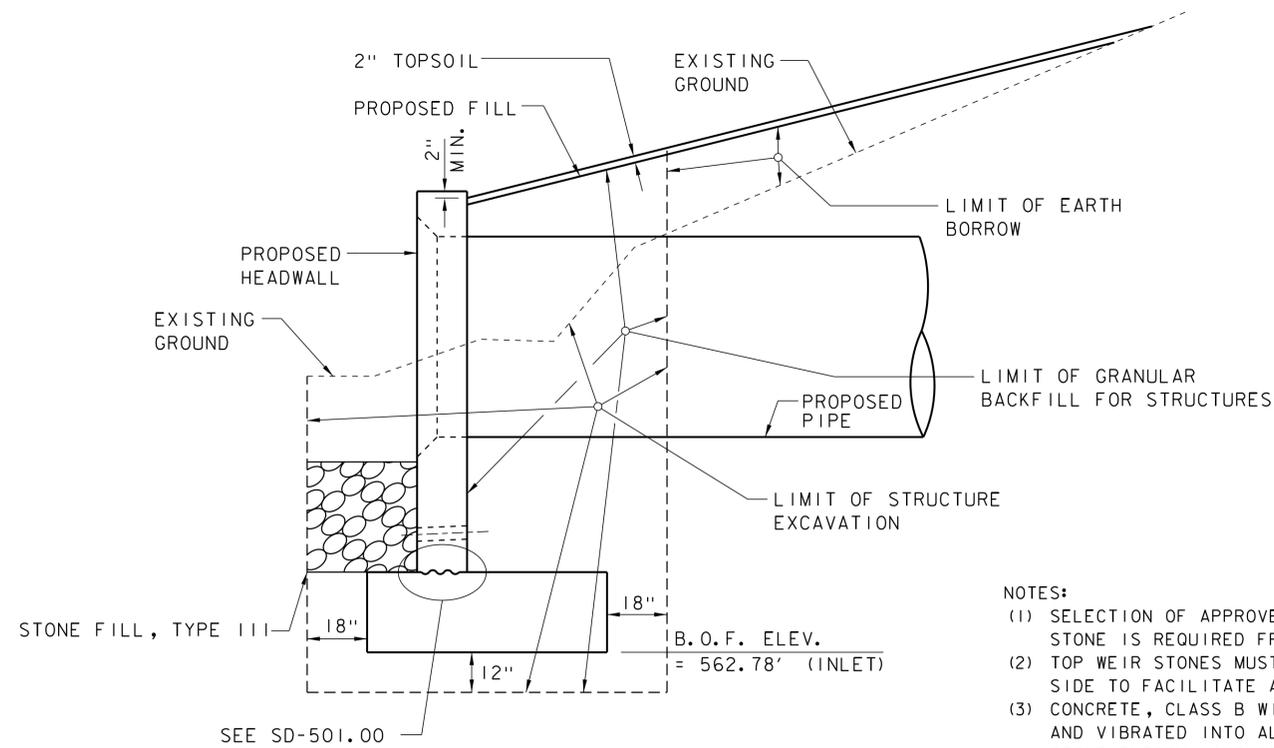
FILE NAME: Ila262/slla262form.dgn PLOT DATE: 12-APR-2016  
PROJECT LEADER: W.PELLETIER DRAWN BY: M.LONGSTREET  
DESIGNED BY: ----- CHECKED BY: -----  
SYMBOLGY LEGEND SHEET 5 OF 20



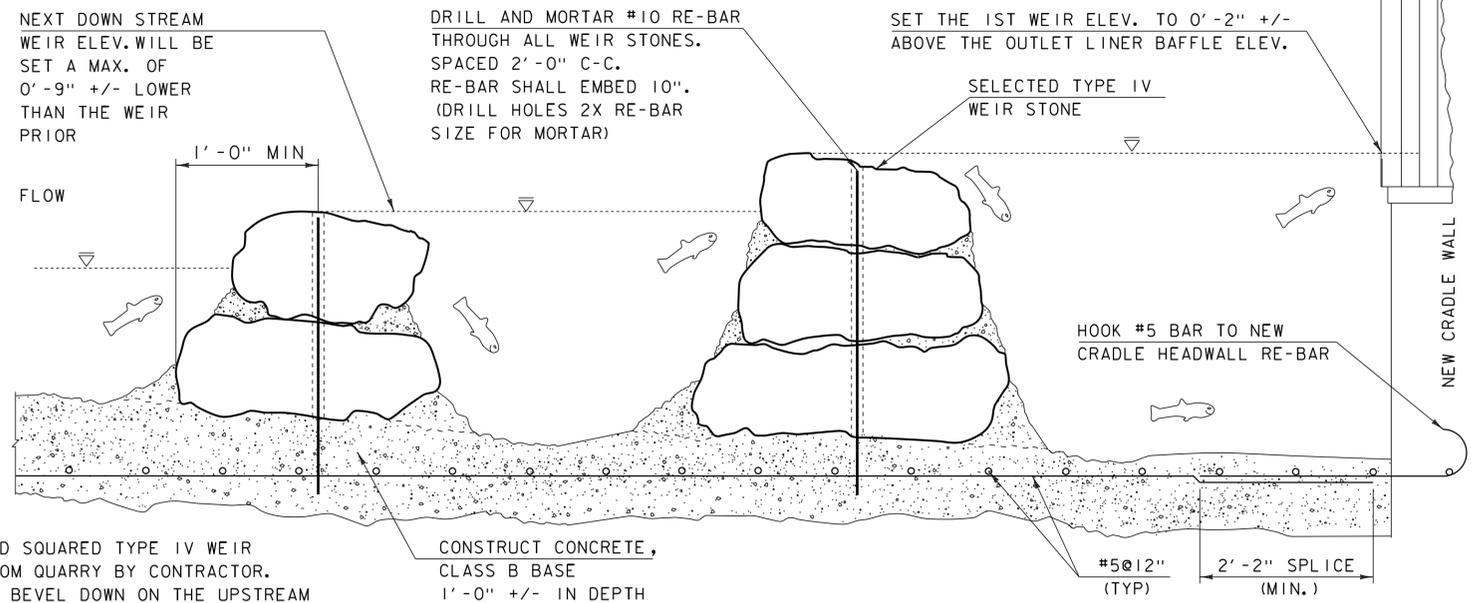


**INTERSTATE 91 CULVERT 68-4S PROFILE**

SCALE: HORIZONTAL 1"=20'-0"  
VERTICAL 1"=10'-0"



**INLET EARTHWORK SECTION**



**BACK-WATERING WEIR SIDE VIEW DETAIL**

NOT TO SCALE

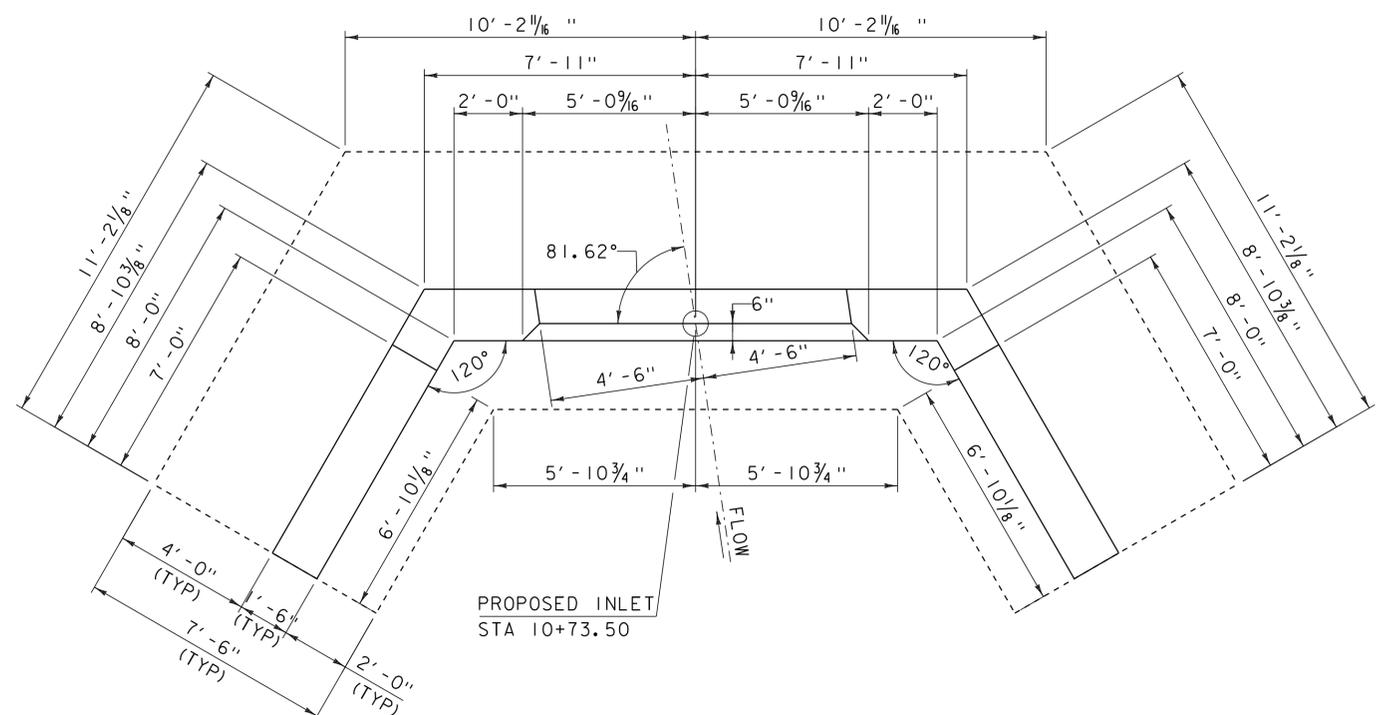
**NOTES:**

- (1) SELECTION OF APPROVED SQUARED TYPE IV WEIR STONE IS REQUIRED FROM QUARRY BY CONTRACTOR.
- (2) TOP WEIR STONES MUST BEVEL DOWN ON THE UPSTREAM SIDE TO FACILITATE AOP (SEE DETAIL).
- (3) CONCRETE, CLASS B WILL BE ROUGHLY FORMED AND VIBRATED INTO ALL VOIDS BETWEEN THE WEIR STONE SYSTEM, AND WEIR BASE.
- (4) DISTANCE BETWEEN WEIRS, NUMBER OF WEIRS, AND WEIR HEIGHT, IS SITE SPECIFIC AND IS DEPENDENT UPON THE AMOUNT OF PERCH DROP BEING BACK-WATERED AND THE LENGTH AND DEPTH OF THE SITE'S PLUNGE POOL BEING RETROFITTED.
- (5) TYPE I STONE FILL WILL BE RANDOMLY PLACE ALONG THE BOTTOM OF EACH WEIR BAY TO FACILITATE ROUGHNESS.

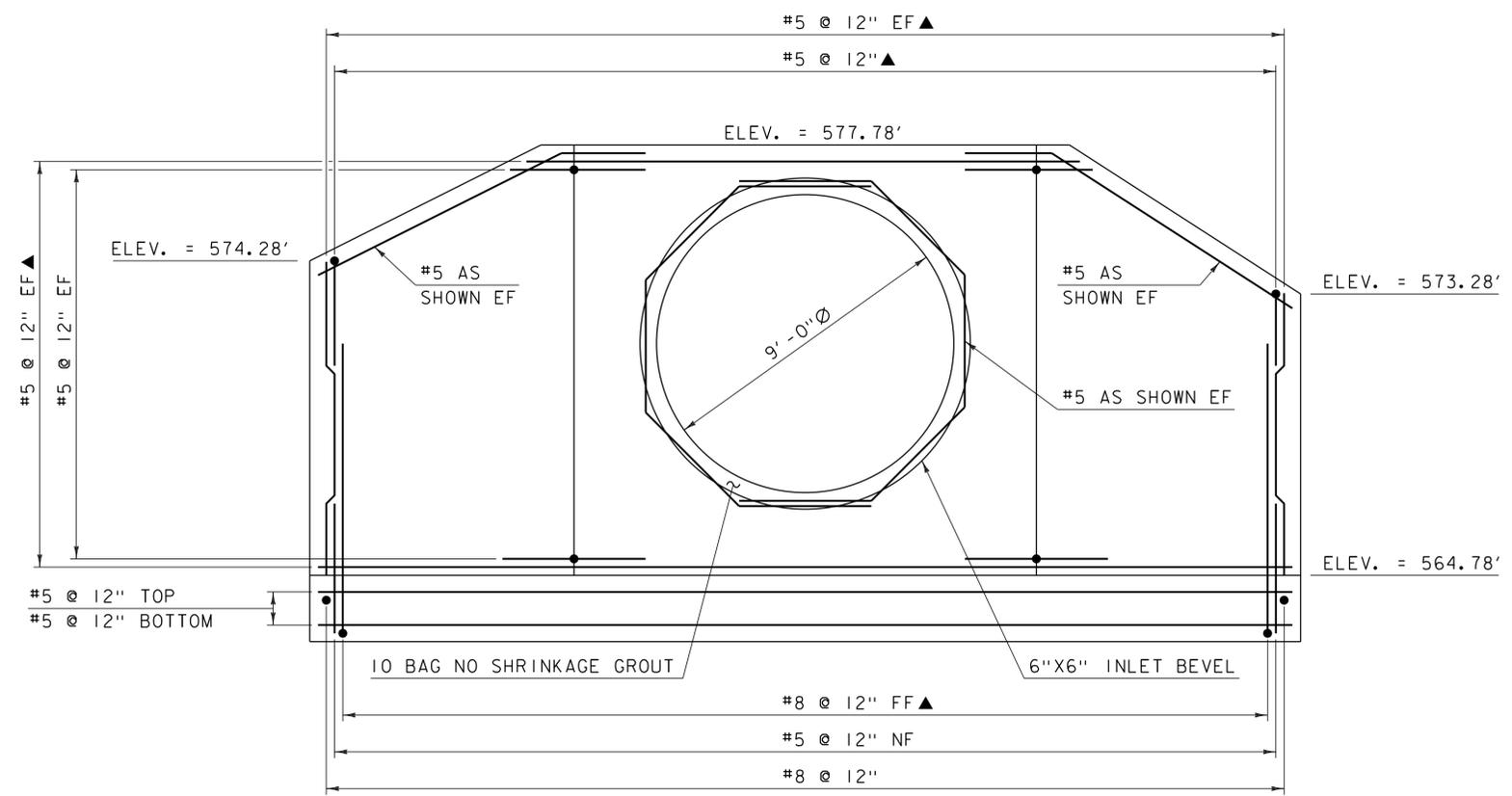
PROJECT NAME: RYEGATE  
PROJECT NUMBER: IM CULV(28)

FILE NAME: Ila262/slla262profile.dgn  
PROJECT LEADER: W.PELLETIER  
DESIGNED BY: W.PELLETIER  
PROFILE SHEET

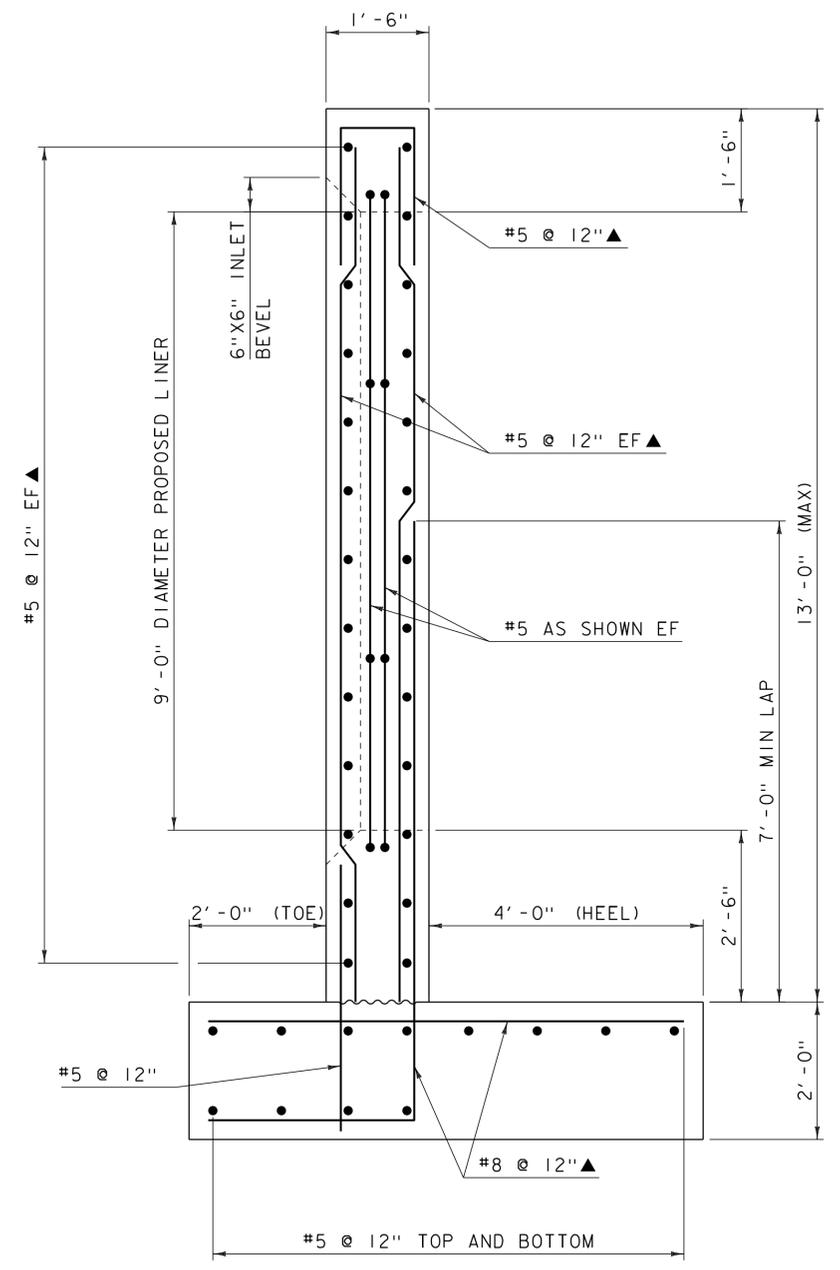
PLOT DATE: 12-APR-2016  
DRAWN BY: D.D.BEARD  
CHECKED BY: W.PELLETIER  
SHEET 7 OF 20



**TOP VIEW**  
SCALE 3/8" = 1'-0"



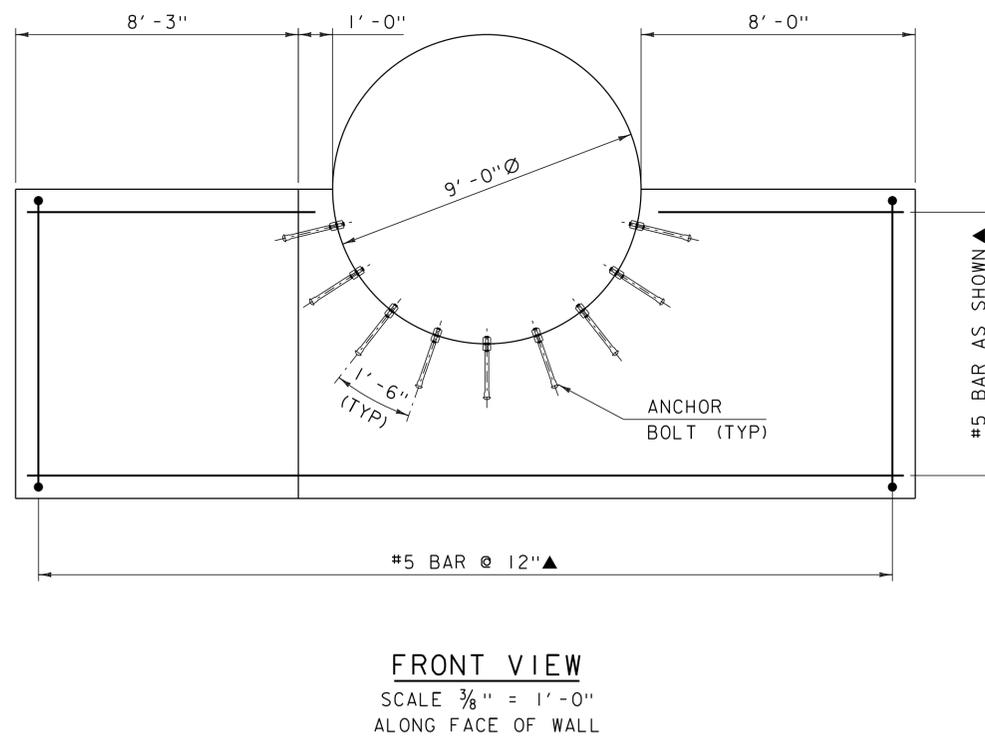
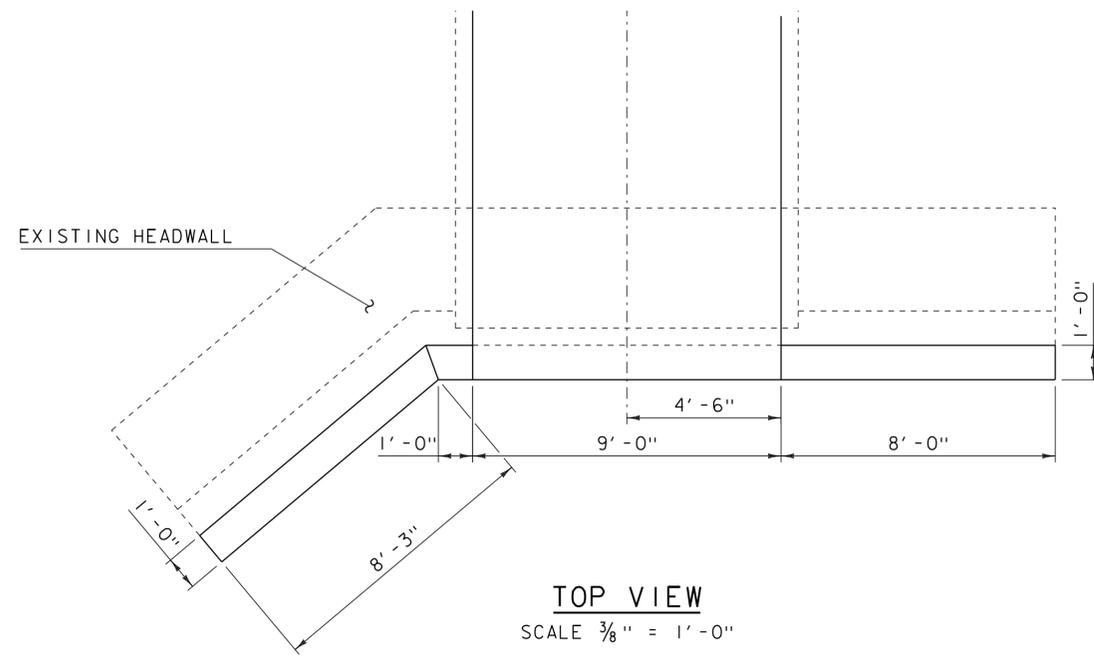
**FRONT VIEW**  
SCALE 3/8" = 1'-0"  
ALONG FACE OF WALL



**TYPICAL SECTION**  
SCALE 3/4" = 1'-0"

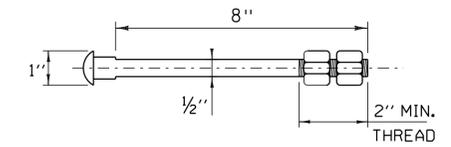
**NOTE:**  
NF = NEAR FACE  
FF = FAR FACE  
EF = EACH FACE  
▲ = CUT TO FIT IN FIELD  
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.  
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: RYEGATE	PLOT DATE: 12-APR-2016
PROJECT NUMBER: IM CULV(28)	DRAWN BY: D.D.BEARD
FILE NAME: Ila262/slla262structure.dgn	CHECKED BY: W.PELLETIER
PROJECT LEADER: W.PELLETIER	SHEET 8 OF 20
DESIGNED BY: W.PELLETIER	
INLET HEADWALL DETAILS	

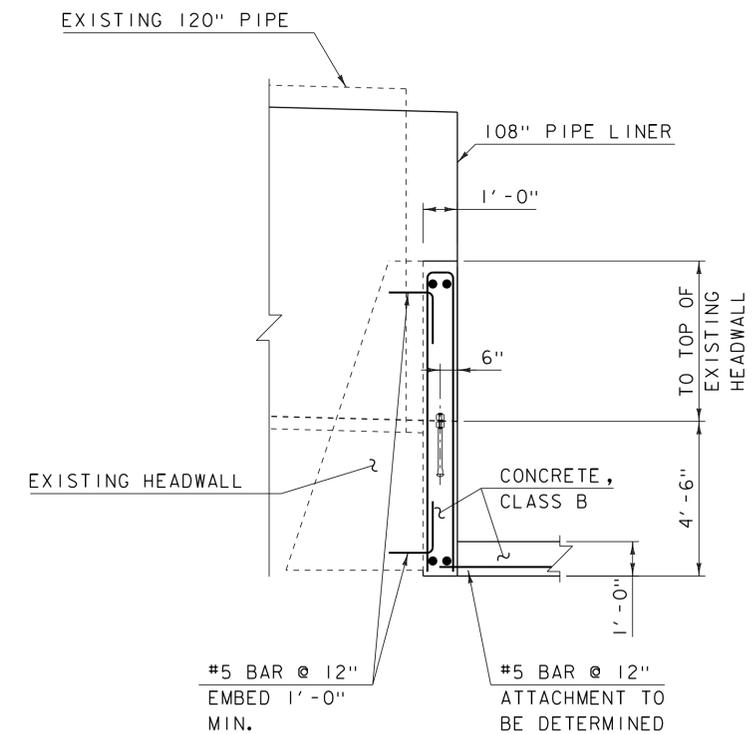


**ANCHOR BOLT NOTES**

1. ANCHOR BOLTS ARE REQUIRED ON NON-CONCRETE CULVERTS AND ARE TO BE INCLUDED IN THE COST OF THE PIPE.
2. ANCHOR BOLTS SHALL BE  $\frac{1}{2}''$  DIA. x 8" WITH TWO  $\frac{3}{4}''$  HEXAGONAL NUTS, MATERIALS SHALL MEET THE REQUIREMENTS OF ASTM A307.  $\frac{3}{16}''$  HOLES IN PIPE TO BE DRILLED OR PUNCHED PRIOR TO COATING OF PIPE, OR FIELD DRILLED AND COATED WHEN REQUIRED DUE TO A FIELD CHANGE.



GALVANIZED ANCHOR BOLT

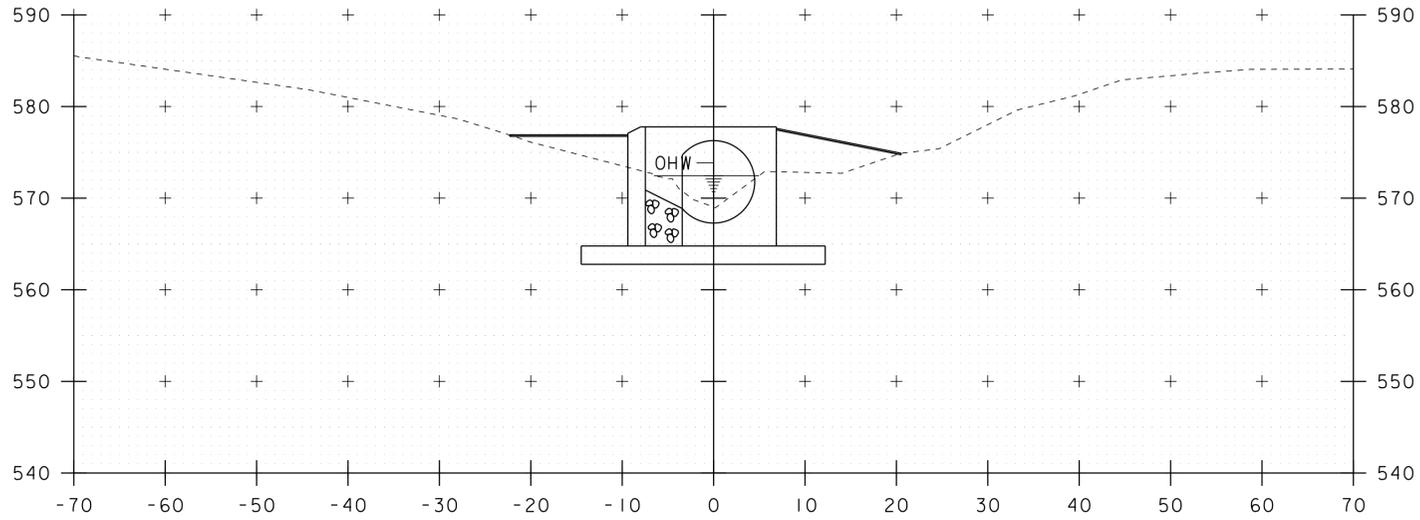


**NOTE:**

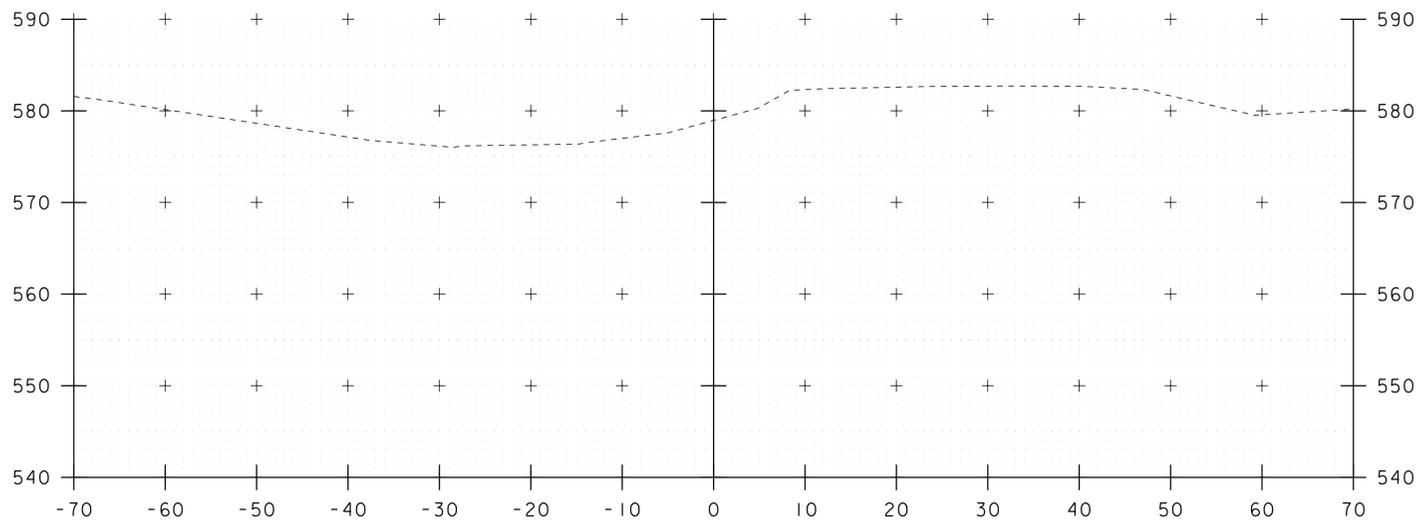
- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- ▲ = CUT TO FIT IN FIELD
- 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: RYEGATE	
PROJECT NUMBER: IM CULV(28)	
FILE NAME: Ila262/slla262structure.dgn	PLOT DATE: 12-APR-2016
PROJECT LEADER: W.PELLETIER	DRAWN BY: D.D.BEARD
DESIGNED BY: W.PELLETIER	CHECKED BY: W.PELLETIER
OUTLET HEADWALL DETAILS	SHEET 9 OF 20

STA 10+74.00  
 END UNCLASSIFIED CHANNEL EXCAVATION  
 END GEOTEXTILE UNDER STONE FILL  
 END STONE FILL, TYPE III  
 END GRUBBING MATERIAL

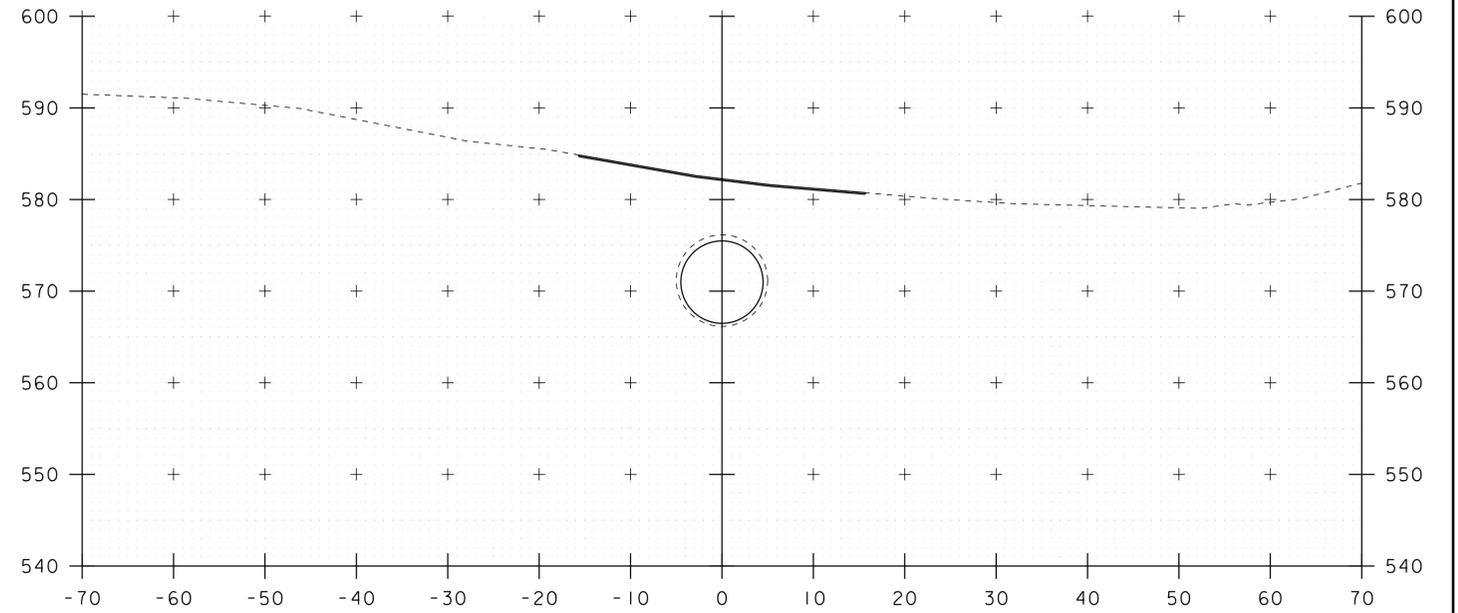


10+73.50

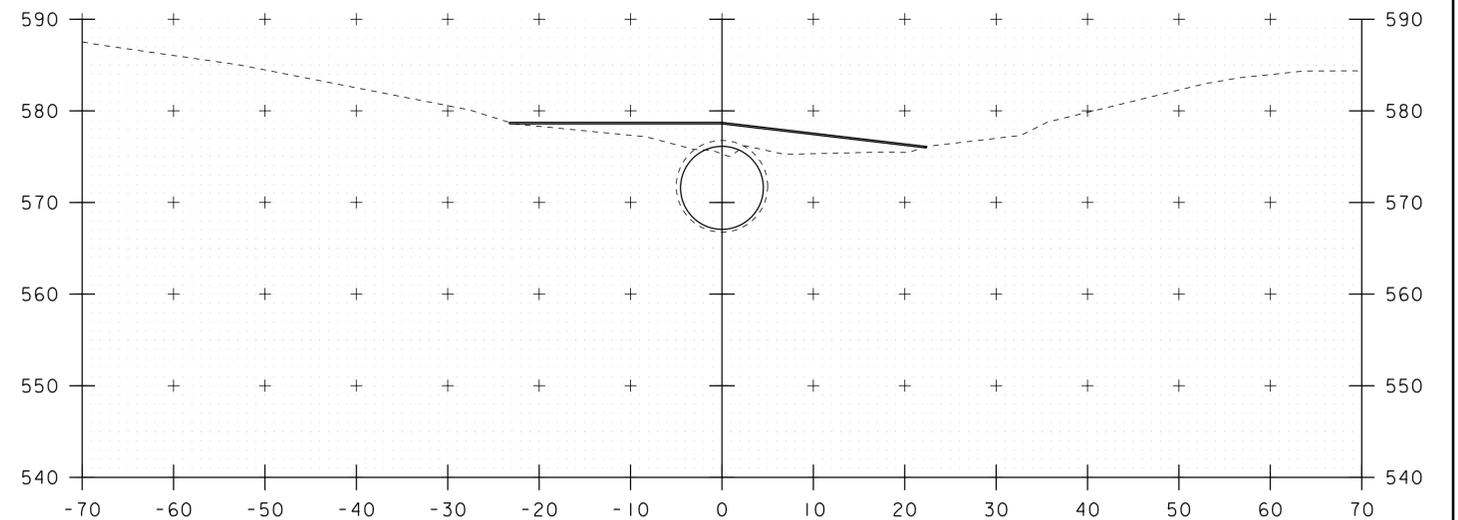


STA 10+65.00  
 BEGIN UNCLASSIFIED CHANNEL EXCAVATION  
 BEGIN GEOTEXTILE UNDER STONE FILL  
 BEGIN STONE FILL, TYPE III  
 BEGIN GRUBBING MATERIAL

10+50



11+00



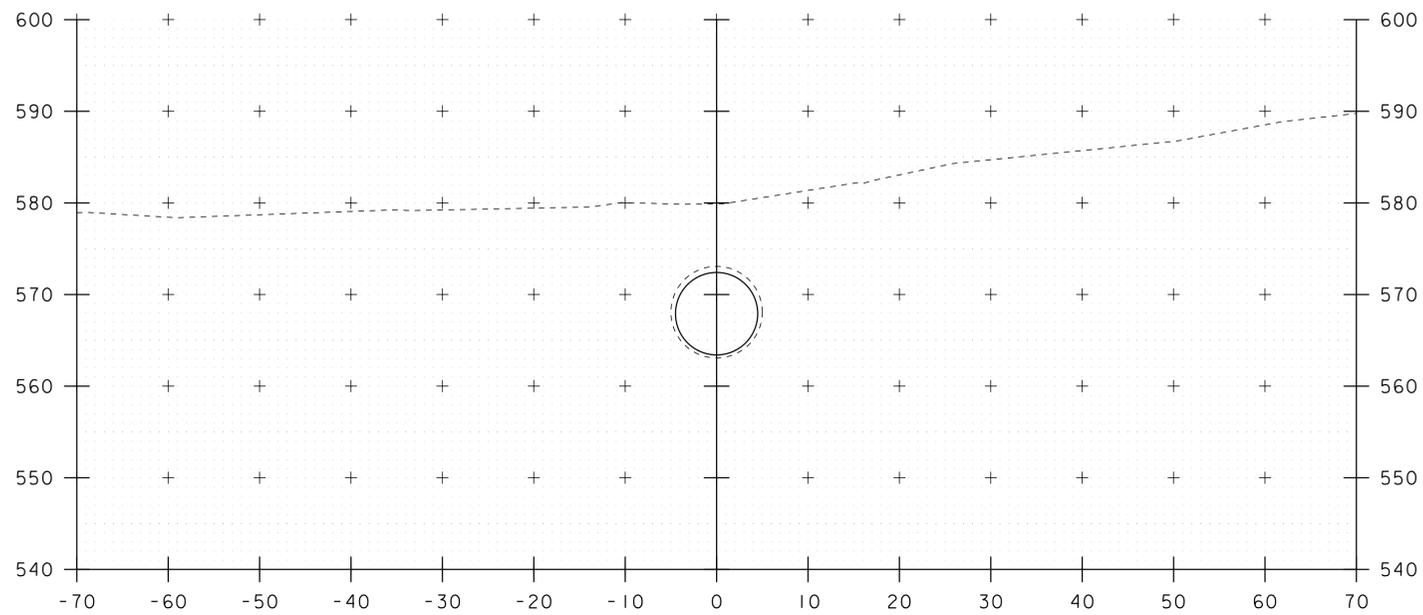
10+81

STA. 10+50 TO STA. 11+00

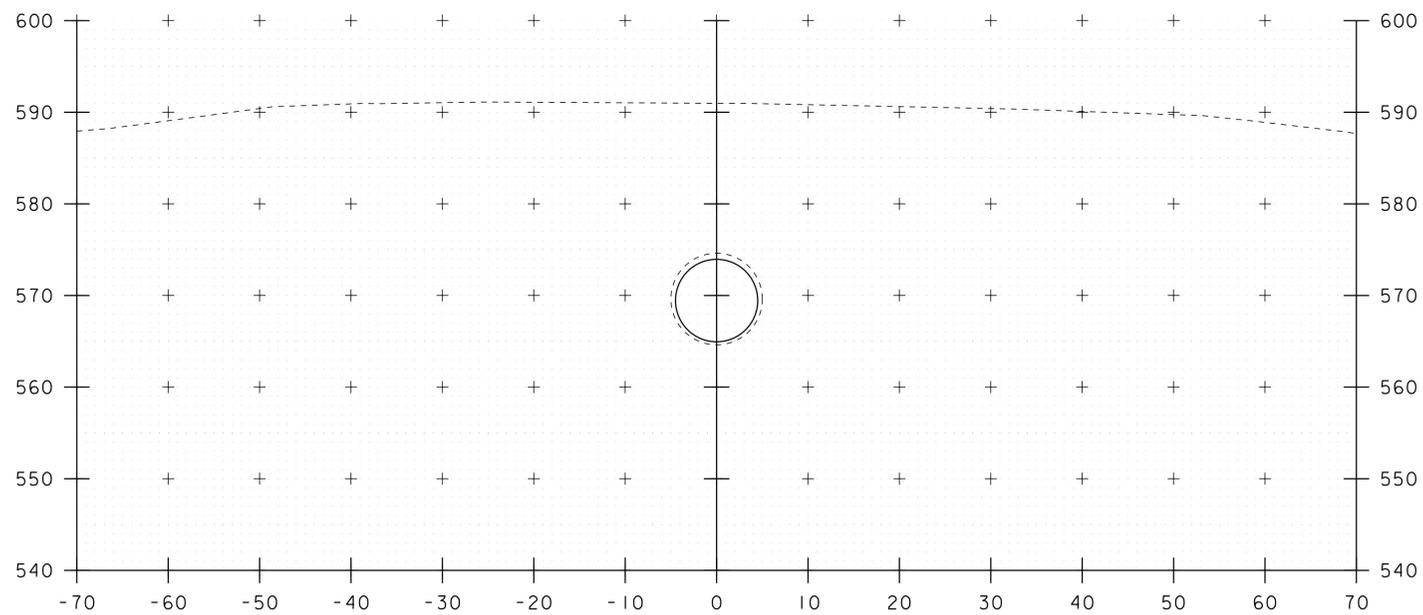
PROJECT NAME: RYEGATE  
 PROJECT NUMBER: IM CULV(28)

FILE NAME: Ila262/slla262xs.dgn  
 PROJECT LEADER: W.PELLETIER  
 DESIGNED BY: W.PELLETIER  
 CHANNEL CROSS SECTIONS I

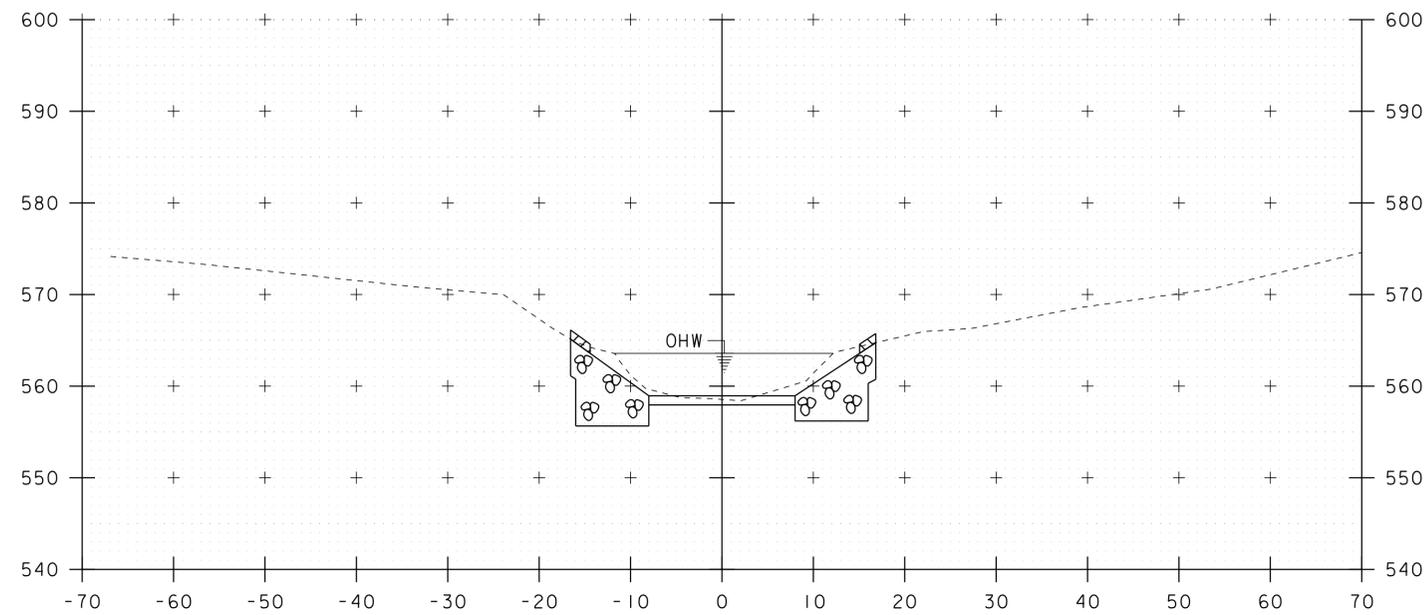
PLOT DATE: 12-APR-2016  
 DRAWN BY: D.D.BEARD  
 CHECKED BY: W.PELLETIER  
 SHEET 10 OF 20



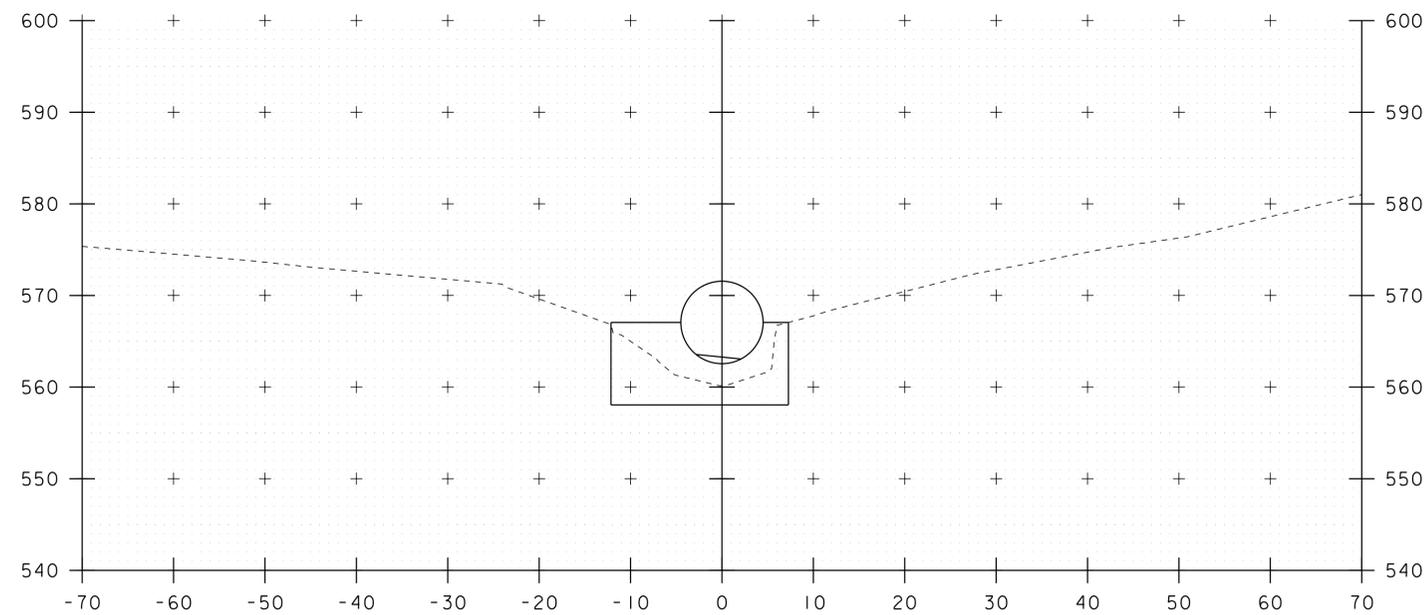
12+00



11+50



12+40

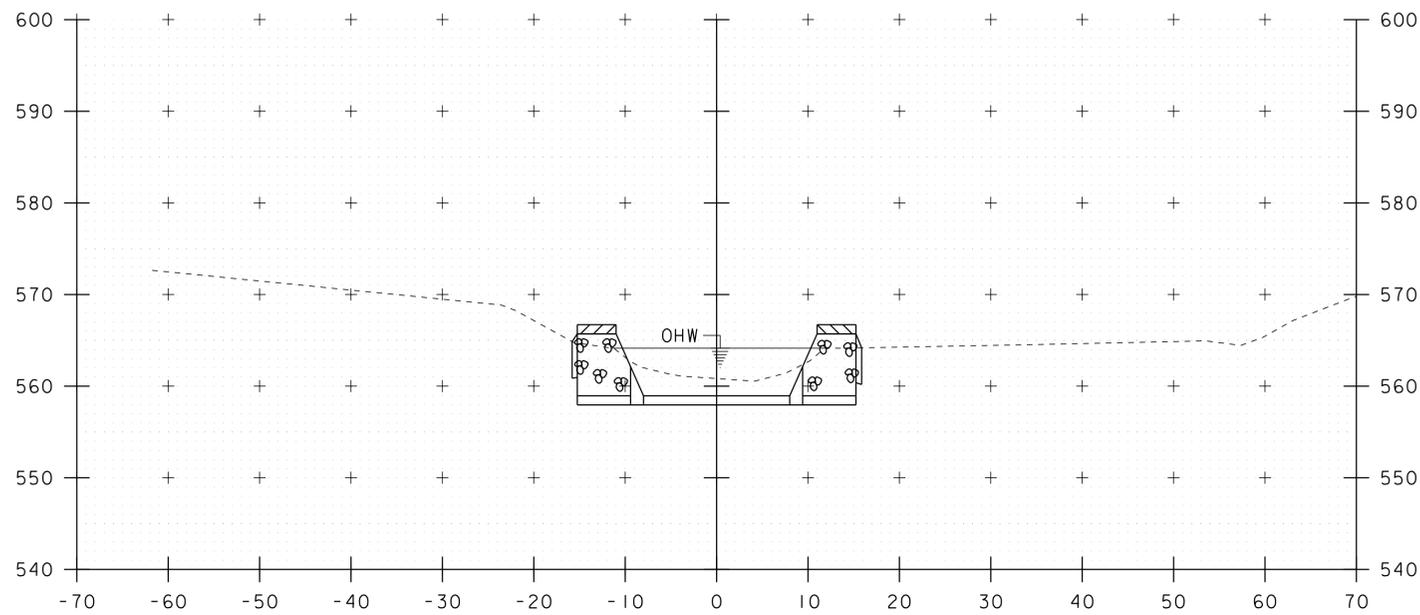


12+27

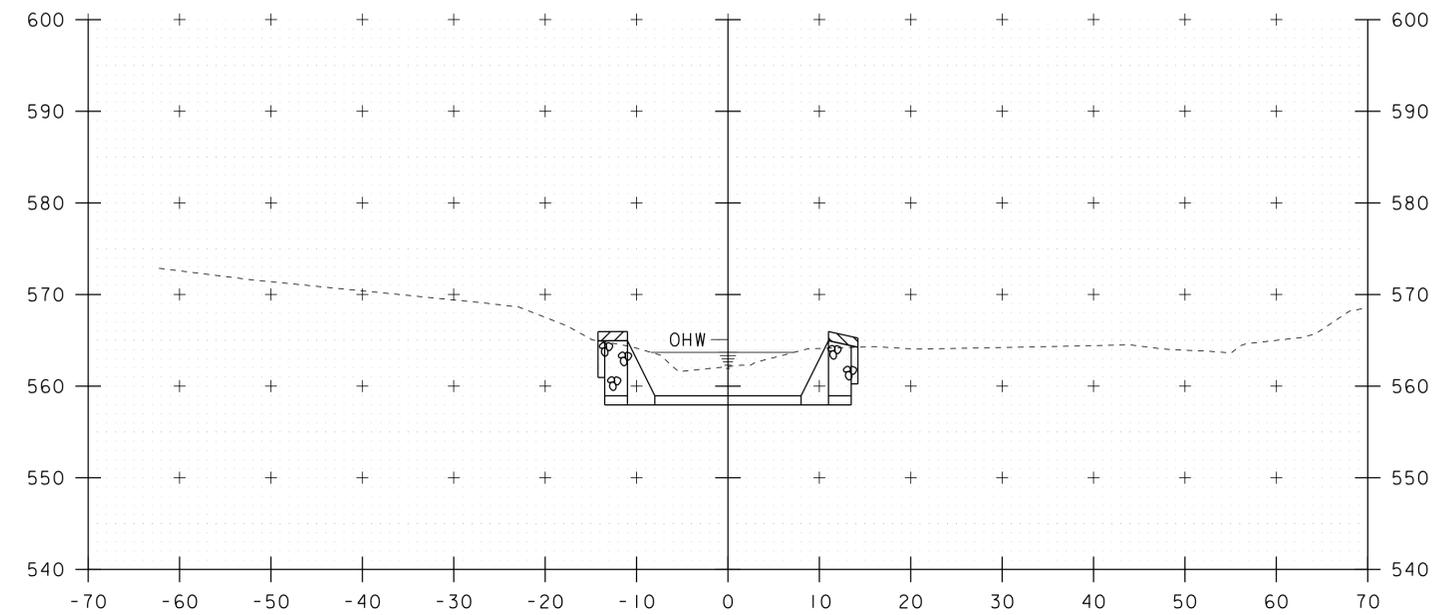
STA 12+27.00  
 BEGIN UNCLASSIFIED CHANNEL EXCAVATION  
 BEGIN GEOTEXTILE UNDER STONE FILL  
 BEGIN STONE FILL, TYPE IV  
 BEGIN GRUBBING MATERIAL

STA. 11+00 TO STA. 12+40

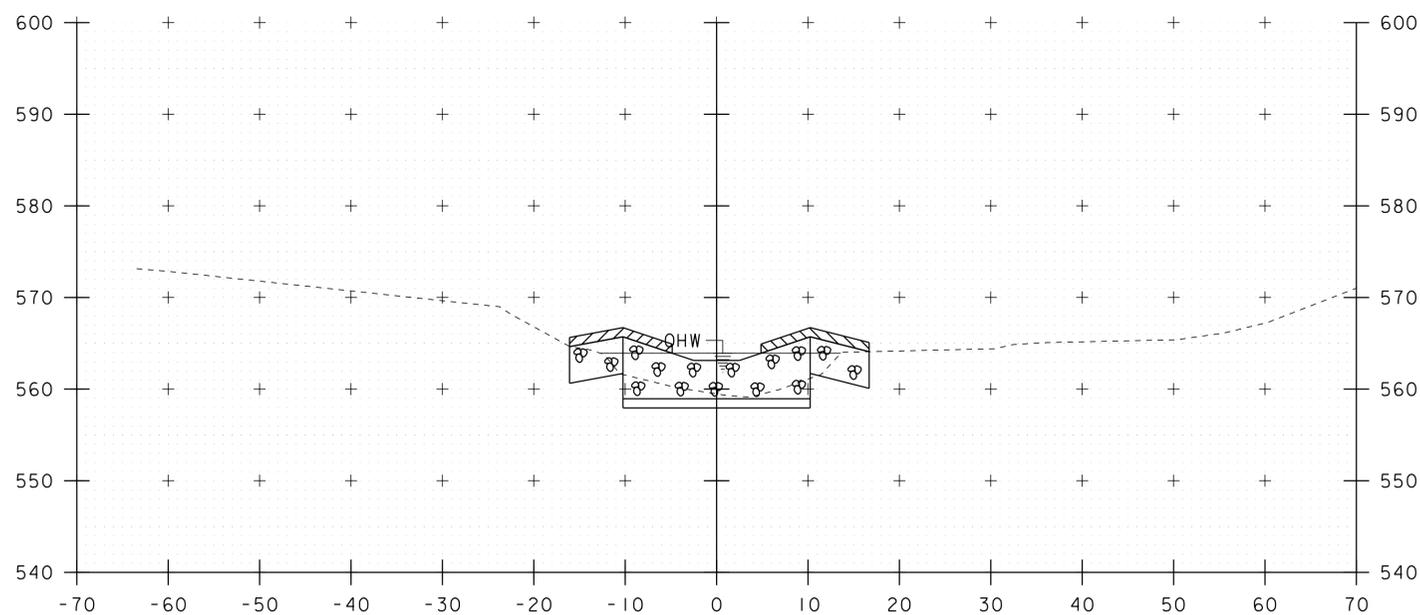
PROJECT NAME: RYEGATE	PLOT DATE: 12-APR-2016
PROJECT NUMBER: IM CULV(28)	DRAWN BY: D.D.BEARD
FILE NAME: Ila262/slla262xs.dgn	CHECKED BY: W.PELLETIER
PROJECT LEADER: W.PELLETIER	SHEET 11 OF 20
DESIGNED BY: W.PELLETIER	
CHANNEL CROSS SECTIONS 2	



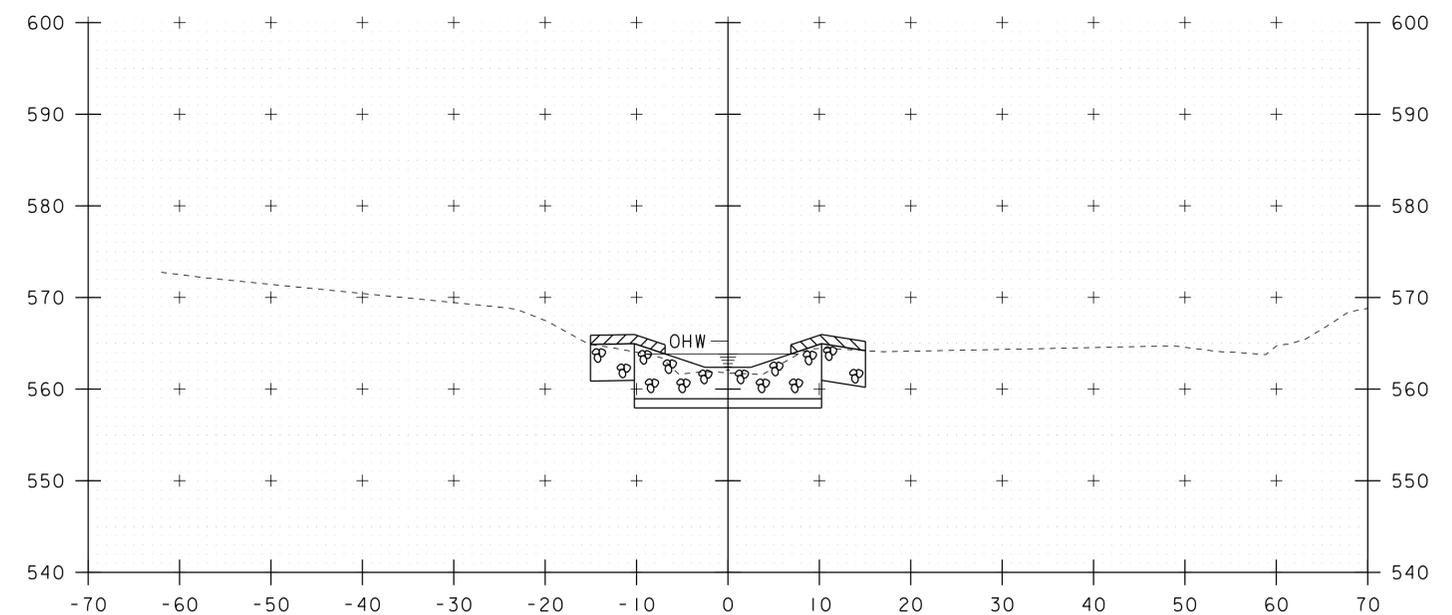
12+55



12+65



12+50

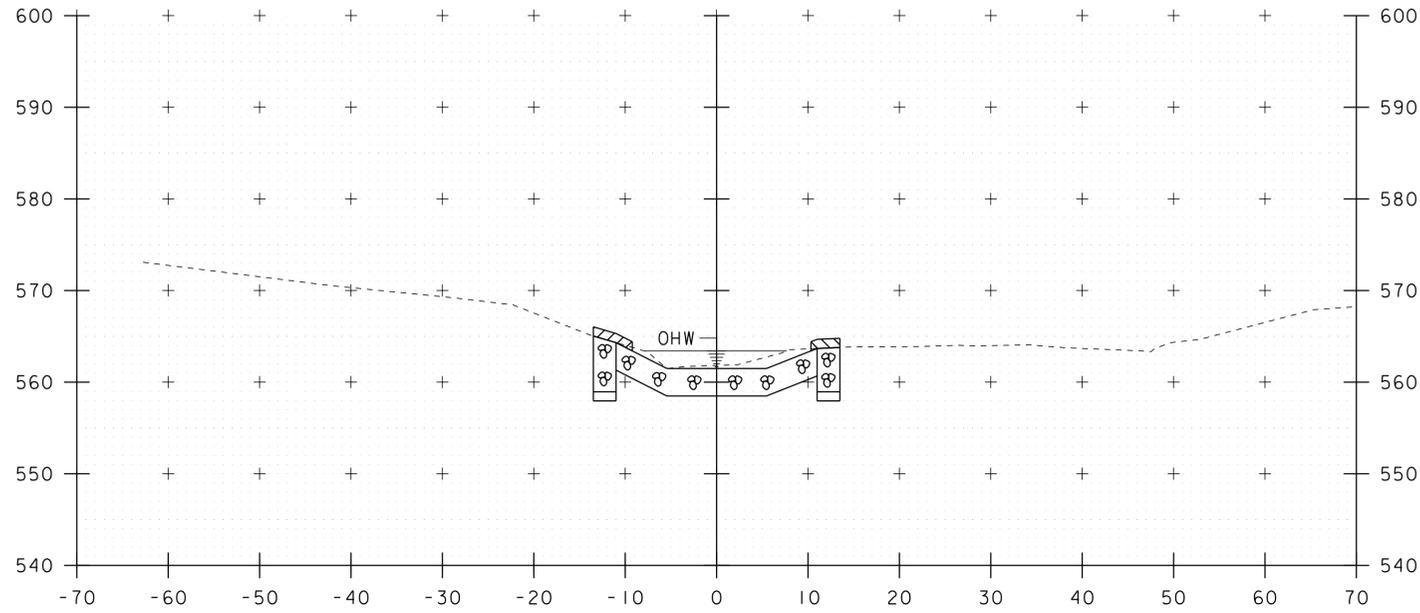


12+60

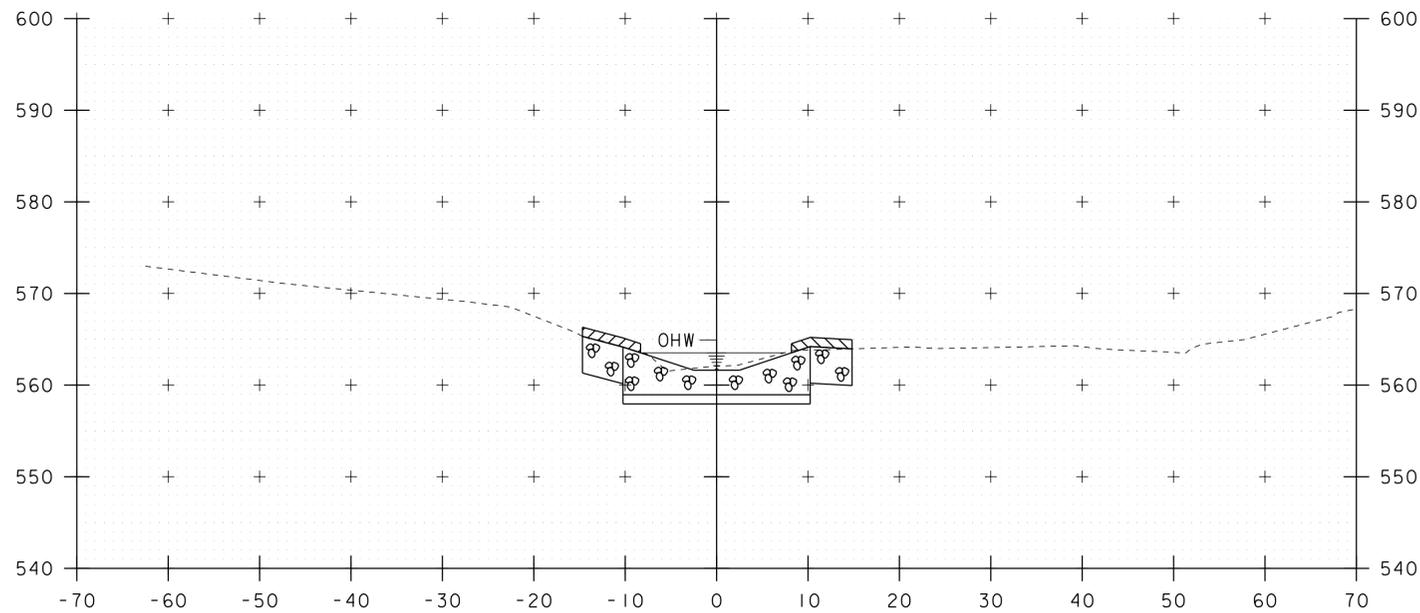
STA. 12+50 TO STA. 12+65

PROJECT NAME: RYEGATE	
PROJECT NUMBER: IM CULV(28)	
FILE NAME: Ila262/sIla262xs.dgn	PLOT DATE: 12-APR-2016
PROJECT LEADER: W.PELLETIER	DRAWN BY: D.D.BEARD
DESIGNED BY: W.PELLETIER	CHECKED BY: W.PELLETIER
CHANNEL CROSS SECTIONS 3	SHEET 12 OF 20

STA 12+75.00  
 END UNCLASSIFIED CHANNEL EXCAVATION  
 END GEOTEXTILE UNDER STONE FILL  
 END STONE FILL, TYPE IV  
 END STONE FILL, TYPE III  
 END GRUBBING MATERIAL

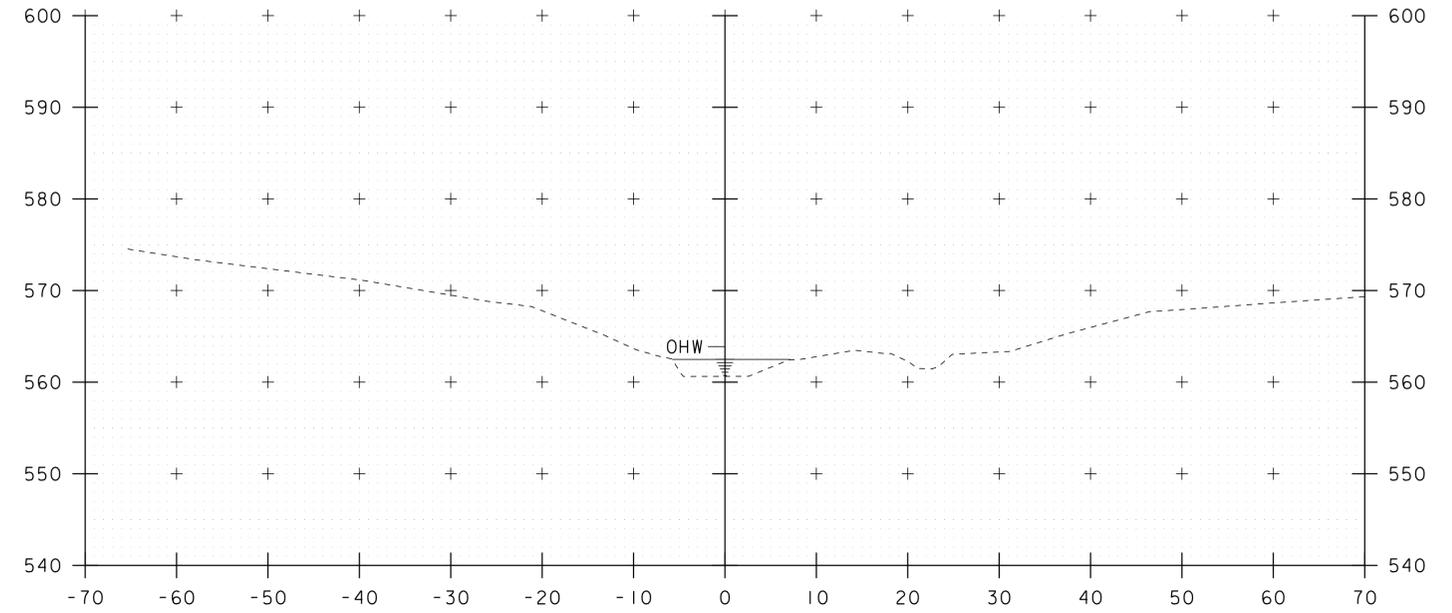


12+75

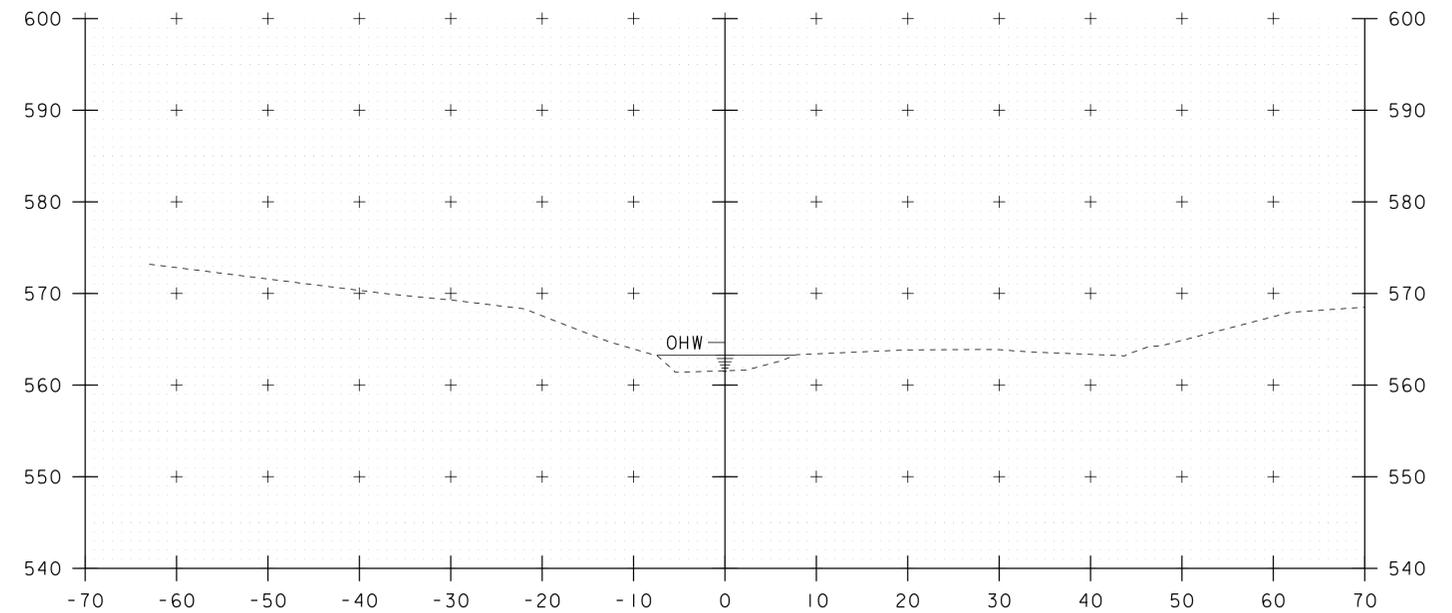


STA 12+72.00  
 BEGIN STONE FILL, TYPE III

12+70



13+00



12+80

STA. 12+70 TO STA. 13+00

PROJECT NAME: RYEGATE  
 PROJECT NUMBER: IM CULV(28)

FILE NAME: Ila262/slla262xs.dgn  
 PROJECT LEADER: W.PELLETIER  
 DESIGNED BY: W.PELLETIER  
 CHANNEL CROSS SECTIONS 4

PLOT DATE: 12-APR-2016  
 DRAWN BY: D.D.BEARD  
 CHECKED BY: W.PELLETIER  
 SHEET 13 OF 20

VAOT LOW GROW/FINE FESCUE MIX						
WEIGHT	LBS/AC		NAME	LATIN NAME	GERM	PURITY
	BROADCAST	HYDROSEED				
38%	57	95	CREeping RED FESCUE	FESTUCA RUBRA VAR. RUBRA	90%	98%
29%	43.5	72.5	HARD FESCUE	FESTUCA LONGIFOLIA	85%	95%
15%	22.5	37.5	CHEWINGS FESCUE	FESTUCA RUBRA VAR. COMMUTATA	87%	95%
15%	22.5	37.5	ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	90%	95%
3%	4.5	7.5	INERTS			
100%	150	250				

VAOT RURAL AREA MIX						
WEIGHT	LBS/AC		NAME	LATIN NAME	GERM	PURITY
	BROADCAST	HYDROSEED				
37.5%	22.5	45	CREeping RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	22.5	45	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	3	6	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	9	18	WHITE FIELD CLOVER	TRIFOLIUM REPENS	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	LOLIUM MULTIFLORUM	85%	95%
100%	60	120				

GENERAL AMENDMENT GUIDANCE		
FERTILIZER	LIME	
10/20/10	AG LIME	PELLITIZED
500 LBS/AC	2 TONS/AC	1 TONS/AC

**CONSTRUCTION GUIDANCE**

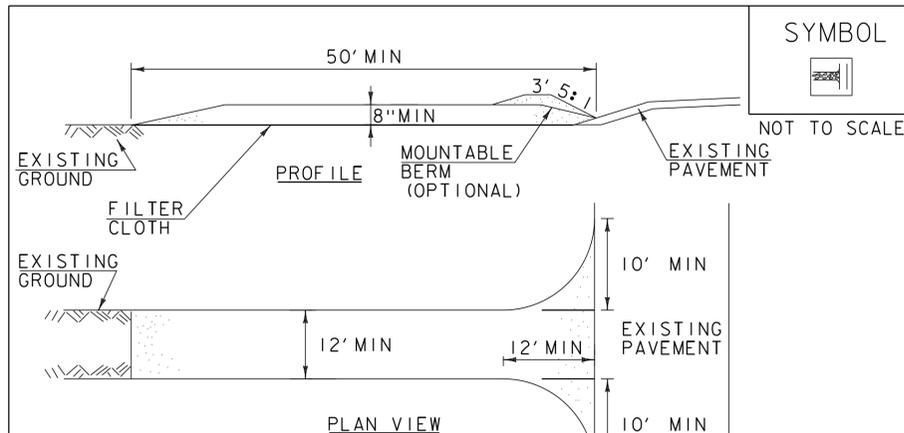
1. SEED MIX: THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER ON WHICH SEED MIX TO USE.
2. SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER.
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED PROPOSED FOR USE WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED.
7. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

**TURF ESTABLISHMENT**

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651.15)

REVISIONS	
JANUARY 12, 2015	WHF



**CONSTRUCTION SPECIFICATIONS**

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

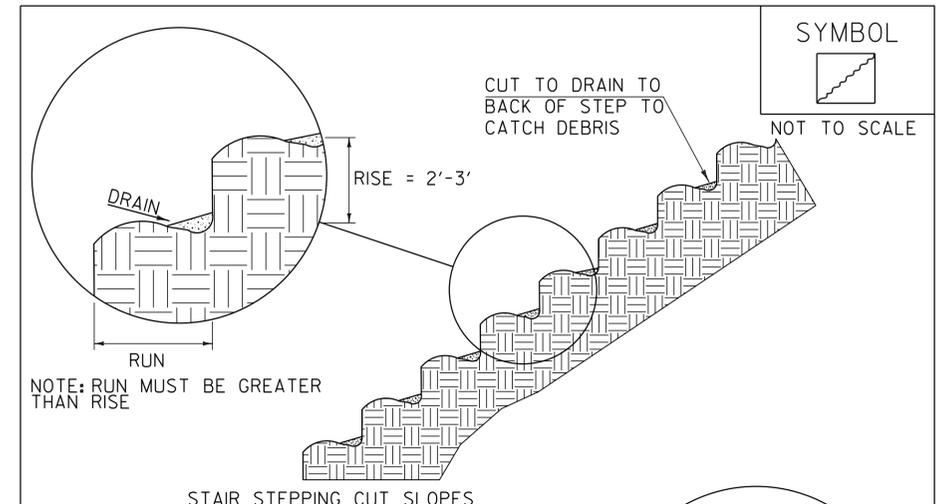
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**STABILIZED CONSTRUCTION ENTRANCE**

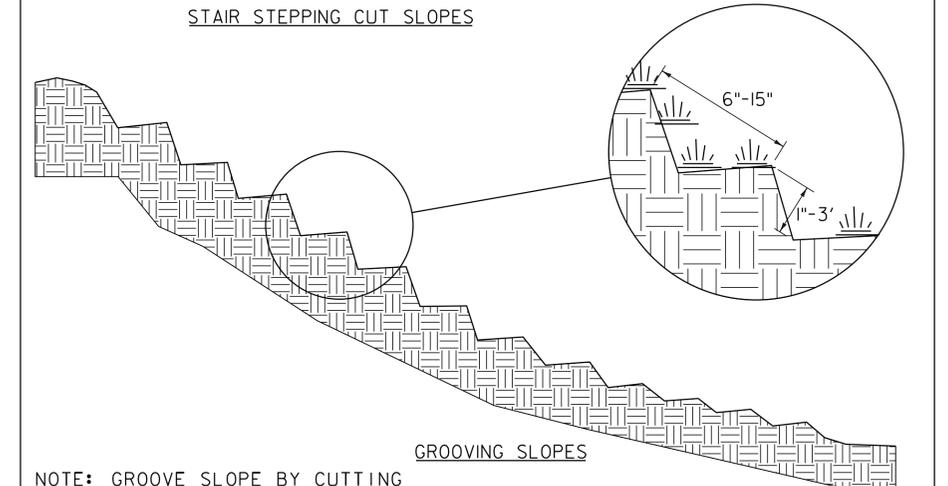
NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

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

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF



**STAIR STEPPING CUT SLOPES**



**GROOVING SLOPES**

NOTE: GROOVE SLOPE BY CUTTING FURROWS ALONG THE CONTOUR. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND RETAIN LIME, FERTILIZER AND SEED.

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

**SURFACE ROUGHENING**

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

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

PROJECT NAME: RYEGATE  
PROJECT NUMBER: IM CULV(28)

FILE NAME: Ila262/slla262ero.dgn  
PROJECT LEADER: W.PELLITIER  
DESIGNED BY: W.PELLITIER  
EROSION CONTROL DETAILS

PLOT DATE: 12-APR-2016  
DRAWN BY: D.D.BEARD  
CHECKED BY: W.PELLITIER  
SHEET 14 OF 20

**STONE FILL, TYPE II**

S.B. Sta. 526+50 RT  
 S.B. Sta. 527+30 RT  
 S.B. Sta. 528+50 RT  
 S.B. Sta. 529+20 RT  
 S.B. Sta. 530+00 RT  
 S.B. Sta. 531+00 RT  
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 S.B. Sta. 596+00 RT  
 S.B. Sta. 597+00 RT  
 S.B. Sta. 598+00 RT  
 S.B. Sta. 599+00 RT  
 S.B. Sta. 600+00 RT

**\* TREATED TIMBER CURB**

N.B. Sta. 523+25 - 527+00, LT  
 N.B. Sta. 528+50 - 532+00, LT  
 S.B. Sta. 532+00 - 534+00, RT  
 S.B. Sta. 534+00 - 539+00, RT  
 S.B. Sta. 539+00 - 541+00, RT  
 S.B. Sta. 541+00 - 543+00, RT  
 S.B. Sta. 543+00 - 545+00, RT  
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 S.B. Sta. 593+00 - 595+00, RT  
 S.B. Sta. 595+00 - 597+00, RT  
 S.B. Sta. 597+00 - 599+00, RT  
 S.B. Sta. 599+00 - 601+00, RT

**STONE FILL TYPE IV**

S.B. Sta. 536+75 RT  
 N.B. Sta. 535+80 RT  
 S.B. Sta. 526+50 RT  
 N.B. Sta. 527+15 RT  
 S.B. Sta. 532+00 RT  
 N.B. Sta. 531+75 RT

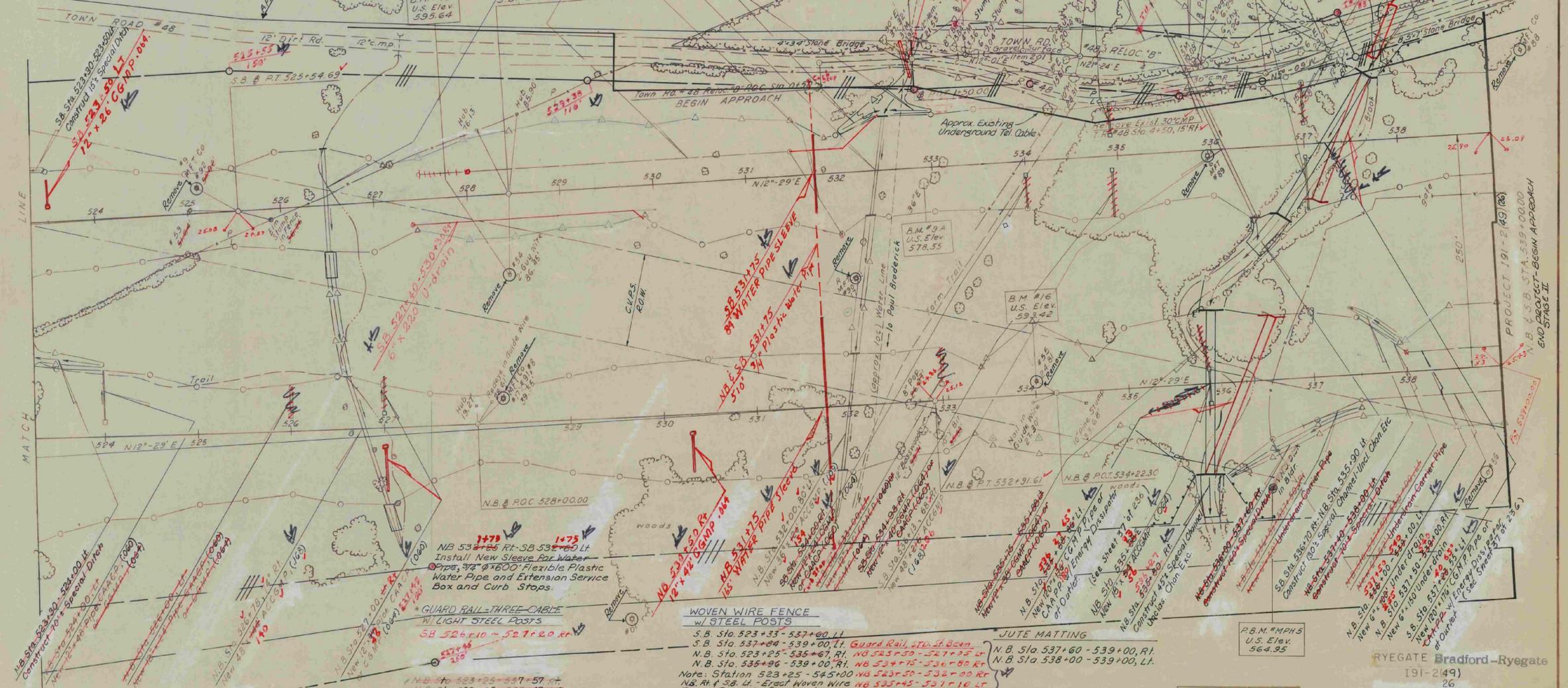
**STONE FILL TYPE I**

S.B. Sta. 526+50 RT - NB Sta. 526+65 LT  
 NB Sta. 527+00 - 527+15 RT  
 S.B. Sta. 532+00 RT - NB Sta. 532+10 LT  
 NB Sta. 531+75 - 531+90 RT

**T.R. #48 RELOC. "B" CURVE DATA**  
 Δ 3°-23'-20" RT  
 D 7°-58'-22"  
 R 750.00'  
 T 61.59'  
 L 122.90'  
 E 8.24'  
 Bank 2 1/2'  
 P.I. N 618,058.928  
 P.T. E 611,758.102

**T.R. #48 RELOC. "B" CURVE DATA**  
 Δ 26°-32'-55" LT  
 D 19°-05'-55"  
 R 300.00'  
 T 70.78'  
 L 139.01'  
 E 8.24'  
 Bank 2 1/2'  
 P.I. N 618,301.866  
 P.T. E 611,853.335

**Construct Drive**  
 T.R. #48 Sta. 1+50 Lt.  
 Sta. 5+00 Lt.



In Charge of A.N.P.  
 Made by A.E.  
 Checked by S.E.Y.  
 Traced E.De L.  
 Checked by B.W.E.

**GUARD RAIL, STD. STEEL BEAM w/ STEEL POSTS**  
 Type II (6' Spacing)  
 SB 523+25 - 539+97 RT

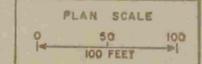
**WOVEN WIRE FENCE w/ STEEL POSTS**  
 S.B. Sta. 523+33 - 537+00 LT  
 S.B. Sta. 537+04 - 539+00 LT  
 N.B. Sta. 523+25 - 535+67 RT  
 N.B. Sta. 535+96 - 539+00 RT  
 Note: Station 523+25 - 545+00 w/ 523+50 - 532+00 RT  
 NB. Rt. 48 Lt. - Erect Woven Wire w/ 535+45 - 537+10 LT  
 Fence Prior to Construction.

**SAND BORROW**  
 NB Sta. 533+25 - 534+75  
 S.B. Sta. 527+25 - 531+75  
 NB Sta. 537+75 - 539+00

**JUTE MATTING**  
 N.B. Sta. 537+60 - 539+00 RT  
 N.B. Sta. 538+00 - 539+00 LT

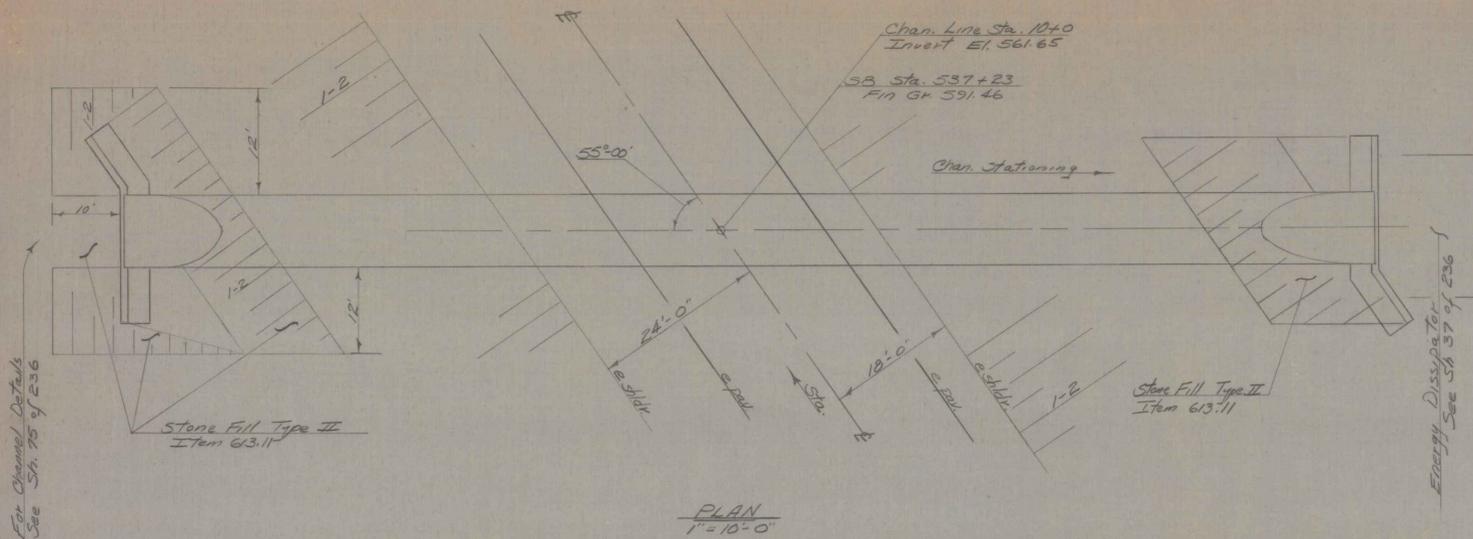
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2  
 Stage Construction

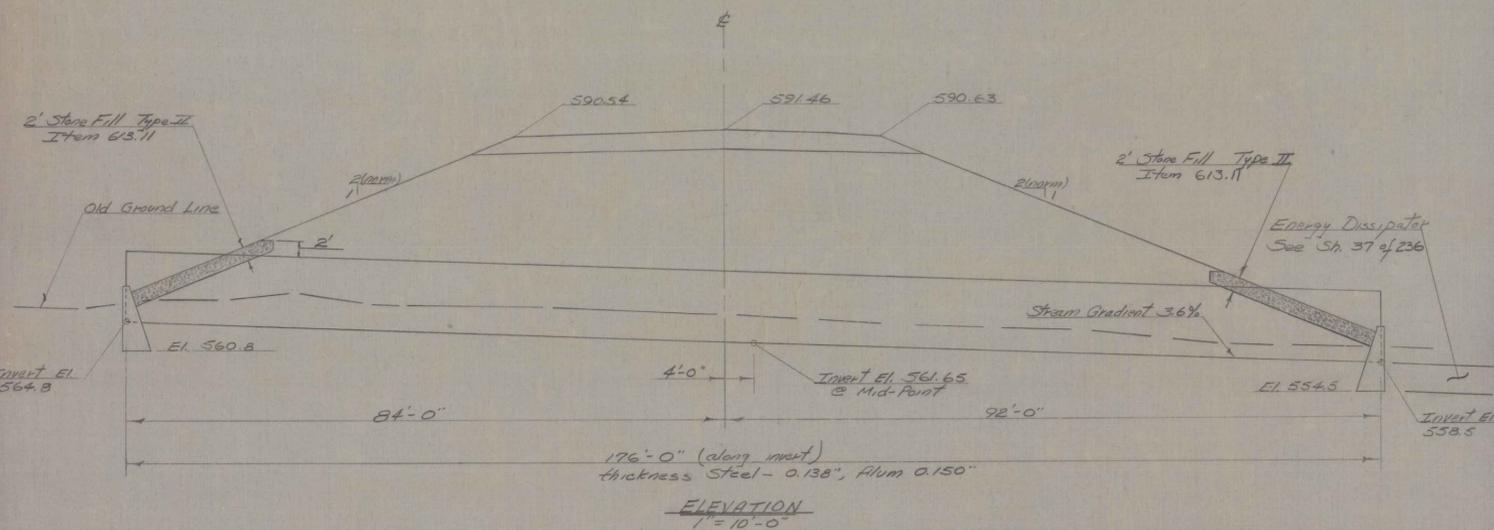


**RYEGATE Bradford-Ryegate**  
 191-2(49)  
 26  
 PLAN STA. 523+25 TO 539+00 N.B.  
 TOWN RD. #48 RELOC. "B"

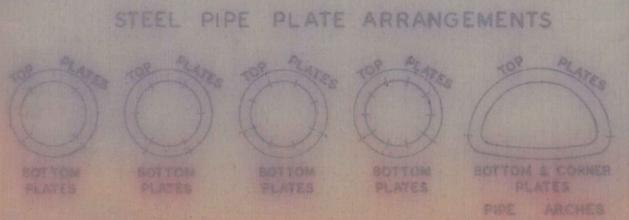
Sheet 36 of 236  
 192 430  
 DATE 5/7/68  
 GOODKIND & O'DEA  
 CONSULTING ENGINEERS



PLAN  
1" = 10'-0"



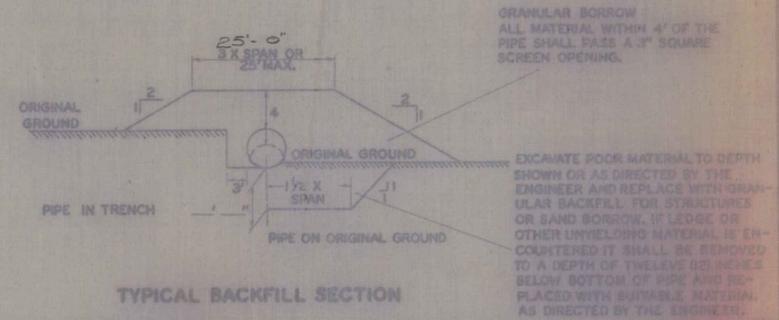
ELEVATION  
1" = 10'-0"



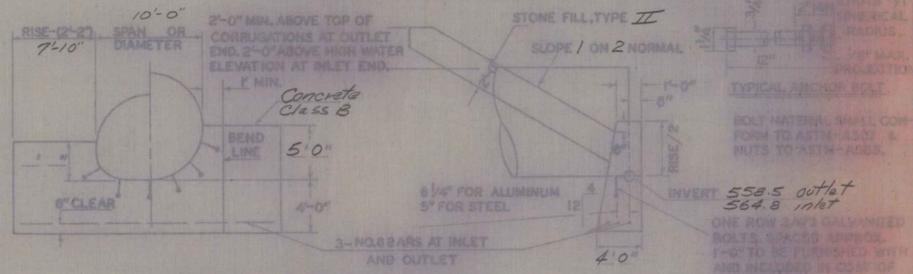
DETAILS OF STRUCTURAL PLATE PIPE CULVERTS

PIPE DATA:	STEEL	ALUMINUM	HYDRAULIC DATA
CORRUGATIONS	6" x 2"	9" x 2 1/2"	
DIAMETER OF PIPE	120"	120"	DRAINAGE AREA 2.8 SQ. MI.
PIPE ARCH			DESIGN FREQUENCY 50
PLATE THICKNESS	0.138"	0.150"	DESIGN FLOW & HEAD, DEPTH 120 CFS @ 110 FT
BOLT SIZE	3/4" φ	7/8" φ	CHECK DISCHARGE & HEAD, DEPTH 128 FT
WT. LIN. FT.	268.00	105.1	SAFETY DEPTH AT DESIGN FLOW 5.8 FT
TOTAL WEIGHT	47,168 lbs.	10,498 lbs.	OUTLET VELOCITY AT DESIGN FLOW 15.3 FT/SEC
			WATERWAY AREA 185 SQ. FT.

- NOTES
- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JAN. 1972 AND THE A.S.H.C. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DATED 1960 AND ITS LATEST REVISIONS. DESIGN IS FOR HS-20 LIVE LOADING.
  - UNLESS OTHERWISE INDICATED FOUR (4) BOLTS PER LINEAR FOOT FOR STEEL PLATES AND FIVE AND ONE THIRD (5 1/3) BOLTS FOR ALUMINUM PLATES ARE REQUIRED ALONG THE LONGITUDINAL SEAMS, ALL CONNECTIONS FOR STRUCTURAL PLATE SECTIONS SHALL BE MADE WITH GALVANIZED ASTM A-325 BOLTS (AASHTO M184).
  - WHEN NORMAL CONSTRUCTION OR REGULAR ROADWAY TRAFFIC IS MAINTAINED OVER THE PIPE THE CONTRACTOR SHALL MAINTAIN A MINIMUM COVER OF 4 FEET OF COMPACTED MATERIAL.
  - ALUMINUM PIPE THAT IS TO BE IN CONTACT WITH CONCRETE SHALL HAVE CONTACT SURFACES THOROUGHLY COATED WITH ZINC CHROMATE, OR BITUMINOUS, OR ASPHALTIC PAINT.
  - PIPES SHALL BE FACTORY ELONGATED 5% (PIPE ARCHES SHALL NOT BE ELONGATED).



TYPICAL BACKFILL SECTION



CRADLE HEADWALL DETAILS

REINFORCING STEEL SCHEDULE

NO.	PIECES	SIZE	LENGTH	MARK	TYPE		
	6	6	26-8	2H601	19		
				B	C	H	K
				8-1	18-7	2-0	7-10

ESTIMATED QUANTITIES

NO.	ITEM	UNIT	TOTAL	FINAL
203.27	Unclassified Channel Exc.	C.Y.	689	582
203.38	Granular Borrow	C.Y.	2569	4266
204.25	Structure Excavation	C.Y.	433	271.8
501.25	Concrete Class B	C.Y.	38	43.1
507.15	Reinforcing Steel	lbs	241	240
613.11	Stone Fill Type II	C.Y.	280	43.7
613.13	Stone Fill Type II	C.Y.	370	328.3
203.31	Sand Borrow	C.Y.	0	84.7
511.10	120" x 176" CMPP (thickness 0.138 Top & Bot.) Total	L.S.	1	1
	605.151 6" Carrier Pipe	L.F.	0	280
511.25	120" x 176" CAAPP (thickness 0.150 Top & Bot.) Total	L.S.	1	0



STATE OF VERMONT DEPARTMENT OF HIGHWAYS

TOWN OF RYEGATE  
 HIGHWAY NO. I-91  
 BRIDGE NO. 40  
 SB 537+23  
 120" X 176" CMPP w/ ENERGY DISSIPATOR @ OUTLET  
 Designed by J. BURNETT  
 Checked by J. BURNETT  
 R.P. GENDRON  
 2 JUN 72  
 RYEGATE  
 I-91-2(49)  
 Sheet 75 of 236

# 108"Ø 5" X 1" RELINE

## VTRANS NEWBURY SLIPLINE

### NEWBURY, VT

THE UNDERSIGNED HEREBY APPROVES THE ATTACHED (4) PAGES.

\_\_\_\_\_      \_\_\_\_\_  
CUSTOMER      DATE

INDEX:	
1	COVER SHEET
2	PIPE LAYOUT
3-4	DETAILS

**NOTES:**

- 1) FIELD CAULKING OF PIPE JOINTS MAY BE REQUIRED TO PROVIDE ADEQUATE GROUT SEAL.
- 2) FLOTATION CONTROL IS CRITICAL AND THE RESPONSIBILITY OF THE INSTALLER. THE INFORMATION IS SUBMITTED AS A GUIDELINE ONLY. CONTECH IS NOT RESPONSIBLE FOR THE USE AND INTERPRETATION OF THIS INFORMATION.
- 3) PIPE MUST BE CONTINUOUSLY MONITORED DURING GROUT OPERATION TO OBSERVE/CONTROL ANY PIPE OR PIPE WALL MOVEMENT.
- 4) BLOCKING LAYOUT AND DESIGN BY CONTRACTOR.
- 5) THE RELINE PIPE IS MADE FROM 108"Ø, 12GA, POLYMER COATED 5" X 1" HEL-COR PIPE.
- 6) COUPLINGS WILL BE 5-C INTERNAL EXPANDING BAND.
- 7) TO ACHIEVE A GROUT UNIT WEIGHT OF LESS THAN 110 PCF, A FOAMING AGENT OR OTHER MODIFICATION OF THE MIX DESIGN WILL BE REQUIRED. THE MIX PROVIDED IS FOR REFERENCE PURPOSES ONLY.

SPECIFICATION FOR CORRUGATED STEEL PIPE-POLYMER COATED STEEL:

**SCOPE:**  
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE POLYMER COATED CORRUGATED STEEL PIPE (CSP) DETAILED IN THE PROJECT PLANS.

**MATERIAL:**  
THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M 246 OR ASTM A 742.

**PIPE:**  
THE CSP SHALL BE MANUFACTURED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M-245 OR ASTM A 762. THE PIPE SIZES, GAUGES AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

**HANDLING & ASSEMBLY:**  
SHALL BE IN ACCORDANCE WITH NCSPA'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) RECOMMENDATIONS.

**INSTALLATION:**  
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR ASTM A 798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS, THE CONTRACTOR MUST BRING THEM TO THE ATTENTION OF THE PROJECT ENGINEER.

IT IS ALWAYS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

**CONSTRUCTION LOADS:**  
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA'S GUIDELINES.

SUGGESTED GROUT MIX DESIGN AND PLACEMENT REQUIREMENTS:

**DESCRIPTION:**  
THIS WORK SHALL CONSIST OF THE IN-PLACE GROUTING OF CORRUGATED METAL PIPE INSERTS WITHIN EXISTING CULVERT PIPES AS SHOWN ON THE PLANS.

THE REQUIREMENTS OF THE WORK ARE SUCH THAT THE ENTIRE PORTION OF THE CELLS WHICH SURROUND THE CULVERT PIPE INSERTS SHALL BE COMPLETELY FILLED WITH GROUT FOR THE FULL LENGTHS OF THE CULVERT PIPE INSERTS.

**MATERIALS:**  
MATERIALS USED FOR GROUT MANUFACTURE SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING SPECIFICATIONS:

- MATERIAL**  
 PORTLAND CEMENT, TYPE 2  
 FLYASH  
 GROUT SAND  
 WATER

GROUT MIX DESIGN:

THIS SHALL BE PROPORTIONED BY WEIGHT IN ACCORDANCE WITH THE FOLLOWING ONE (1) CUBIC YARD MIX:  
 THE GROUT SHALL BE A NON-SHRINK GROUT  
 CEMENT      479 LBS.  
 FLYASH      774 LBS.  
 GROUT SAND      1,949 LBS.

SLUMPS SHALL BE BETWEEN 6.5" AND 8.0".

THE CONTRACTOR MAY PROPOSE AN ALTERNATE TO THE MIX DESIGN SPECIFIED ABOVE FOR APPROVAL.

GROUTING EQUIPMENT SHALL BE CAPABLE OF PLACING GROUT AT ALL LOCATIONS REQUIRED BY THE PLANS. ALL EQUIPMENT SHALL BE APPROVED BY THE ENGINEER AT LEAST FIVE (5) WORKING DAYS PRIOR TO ITS INTENDED USE. A WORKING DEMONSTRATION OF THE PUMPING EQUIPMENT'S CAPABILITY WILL BE REQUIRED AS PART OF THE APPROVAL PROCEDURE.

ALL GROUTING SHALL BE BATCHED FROM AN APPROVED AUTOMATED BATCH PLANT.

MINIMUM REQUIRED COMPRESSIVE STRENGTH TO BE 2000 PSI AT 28 DAYS.

**CONSTRUCTION DETAILS:**  
THE CONTRACTOR MAY PLACE THE GROUT IN ACCORDANCE WITH THE SCHEME SHOWN ON THE PLANS OR MAY SUBMIT AN ALTERNATE SCHEME TO THE ENGINEER FOR APPROVAL.

GROUT SHALL BE TRANSFERRED FROM THE POINT OF MIXING TO THE POINTS OF DEPOSITION ONLY BY APPROVED EQUIPMENT. THE GROUT SHALL BE PUMPED IN SUCH A MANNER THAT:

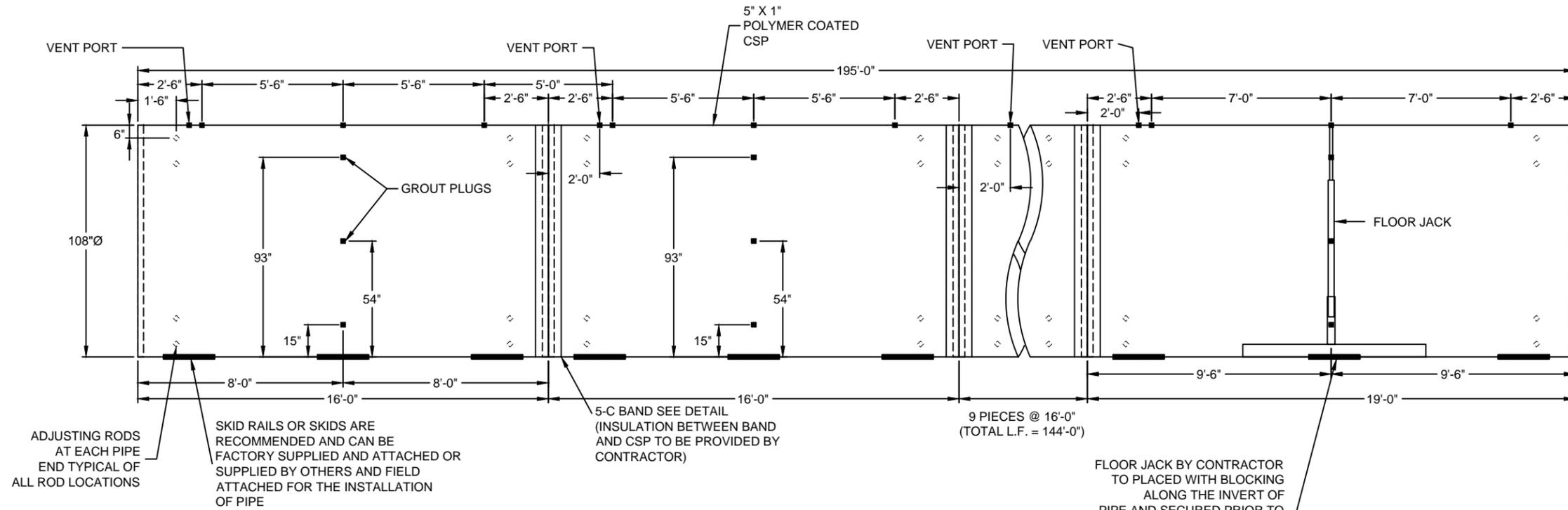
1. THE GROUT DOES NOT DILUTE OR SEPARATE
2. THE PIPE INSERT DOES NOT MOVE
3. THE ABUTTING ENDS OF THE PIPE ARE NOT DEFORMED
4. ALL VOIDS BETWEEN THE LINER PIPE AND EXISTING CULVERT ARE COMPLETELY FILLED
5. THE GROUT DIFFERENTIAL LEVEL BETWEEN SIDES OF THE PIPE DOES NOT EXCEED 8"
6. THE GROUT PRESSURE CAN BE VARIED TO EFFECTIVELY MOVE THE GROUT AGAINST A HEAD PRESSURE OF NO MORE THAN 5 LBS. PER SQUARE INCH.

IF IT BECOMES NECESSARY TO CHANGE THE RATE OF PUMPING, THE PRESSURE WILL BE INCREASED AT A RATE NOT TO EXCEED ONE PSI PER MINUTE UP TO THE EQUIPMENT RATE.

AGITATION SHALL BE CONTINUOUS AND SHALL BE CONTINUED DURING SHUT-DOWNS. IF A SHUT-DOWN EQUALS OR EXCEEDS FIFTEEN (15) MINUTES, THE GROUT SHALL BE RECIRCULATED THROUGH THE PUMP AND DELIVERY LINES. IF REQUIRED BY THE ENGINEER, THE DELIVERY LINES SHALL BE FLUSHED CLEAN OF GROUT WITH CLEAN WATER. IF, IN THE OPINION OF THE ENGINEER, THE GROUT HAS BEGUN TO SET IN THE AGITATOR, PUMP, OR LINES, IT SHALL NOT BE PLACED REGARDLESS OF THE REASON.

CONTRACTOR SHOULD "SOUND" STRUCTURE TO BE ABLE TO OBSERVE GROUT PLACEMENT AND MOVEMENT.

**\*\*\*\*PROJECT ENGINEER TO DETERMINE IF AN EXTERIOR COATING WITH A CHROMATE FREE PRIMER IS REQUIRED FOR PIPE INSTALLATION FOR THIS PROJECT\*\*\*\***



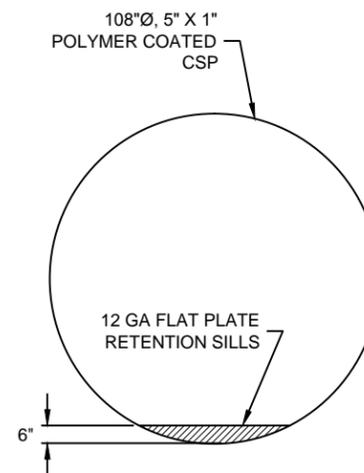
**108"Ø 5" X 1" CSP RELINE**

SCALE: 1"=5'-0"

FLOOR JACK BY CONTRACTOR TO PLACED WITH BLOCKING ALONG THE INVERT OF PIPE AND SECURED PRIOR TO GROUTING. OTHER HOLD DOWN METHODS MAY ALSO BE ACCEPTABLE, INCLUDING SAND BAG WEIGHTS, FILLING THE LINER PIPE WITH WATER, ETC.

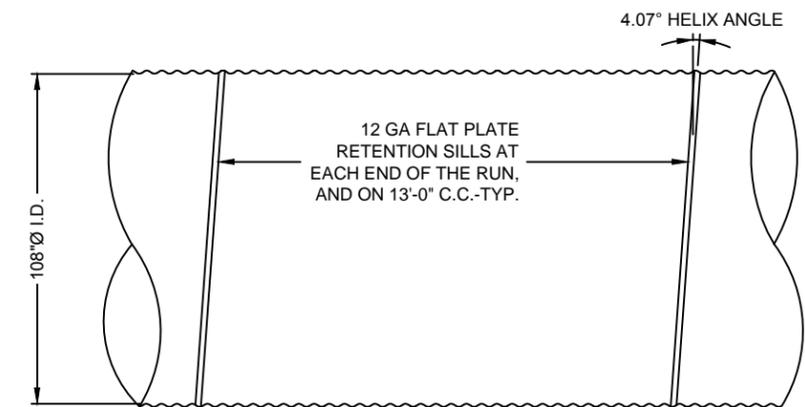
**RELINE PIPE - 001 B.O.M.**

QTY.	FITTING	DIAMETER	LENGTH REQ'D	MATERIAL	FINISH/CORRUGATION	PRODUCT
11	PIPE	108"	16'-0" (TOTAL L.F. 176'-0")	12GA	REROLLED ENDS	5" X 1" POLYMER COATED
1	PIPE	108"	19'-0"	12GA	REROLLED ENDS	5" X 1" POLYMER COATED
108	GROUT PORT	2"	N/A	PLANT SUPPLIED	N/A	GROUT PORT
11	5-C INTERNAL EXPANDING BAND	108"	N/A	PLANT SUPPLIED	POLYMER COATED 5-C	BAND
192	3/4"Ø ADJUSTING RODS					
16	12GA, POLY-COATED, 6" TALL RETENTION SILLS					



**RETENTION SILLS (END VIEW)**

SCALE: 1" = 5'-0"



**RETENTION SILLS (PLAN VIEW)**

SCALE: 1" = 5'-0"

MARK	DATE	REVISION DESCRIPTION	BY

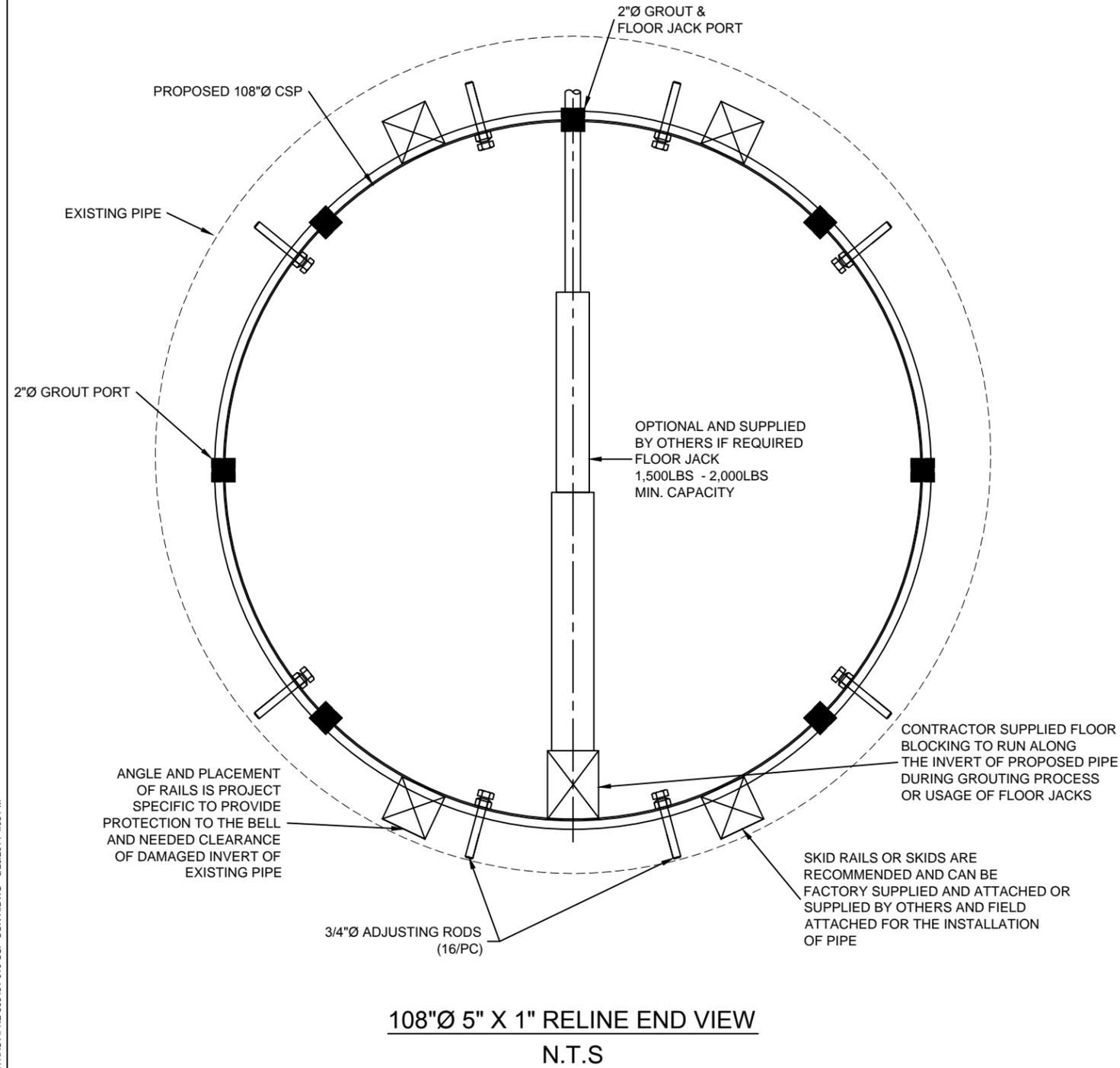
**CONTRACT**  
DRAWING

**HEL-COR PIPE - 509491-010**  
**VTRANS NEWBURY SLIPLINE**  
**NEWBURY, VT**  
**SITE DESIGNATION: RELINE**

PROJECT No.: 509491	SEQ. No.: 010	DATE: 9/29/2014
DESIGNED:	DRAWN: SCC	
CHECKED: MJO	APPROVED:	
SHEET NO.:	2 OF 4	

I:\MELIN\PROJECT\ACTIVE\509491\DRAWINGS\CONTRACT\PIPE\509491-010-CSP-COIN-A.DWG 9/29/2014 4:08 PM

I:\MELIN\PROJECTS\509491\DRAWINGS\CONTRACT\PRE-509491-010-CSP-CON-A.DWG 9/29/2014 4:08 PM



**108"Ø 5" X 1" RELINE END VIEW**  
N.T.S

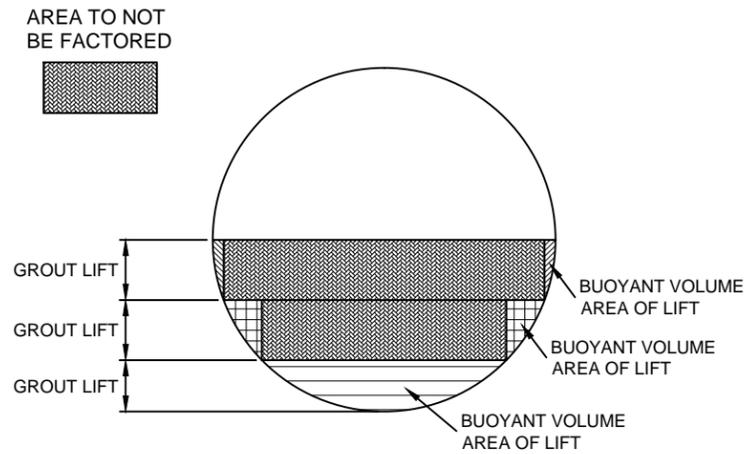


ILLUSTRATION OF LIFT AREAS AND THEIR RESPECTIVE AREAS OF INFLUENCE. THE LIFT HEIGHTS & NUMBER WILL VARY WITH PROJECT REQUIREMENTS INCLUDING GROUT DENSITY & HOLD DOWN METHODS.

- 1.) ASSUMED GROUT WT. PROJECT SPECIFIC
- 2.) GROUT PRESSURE = INJECTION PRESSURE + HEAD PRESSURE (MUST NOT EXCEED 5 PSI ON THE PIPE)
- 3.) FLOOR JACKS TO PASS THROUGH 12 O'CLOCK GROUT PORTS TO EXISTING STRUCTURE.
- 4.) THIS INFORMATION IS PROVIDED AS A GUIDELINE ONLY AND IS BASED ON MANY ASSUMPTIONS. USE OF THIS INFORMATION IS AT THE SOLE DISCRETION OF THE USER AND DOES NOT OBLIGATE CONTECH IN ANY WAY.

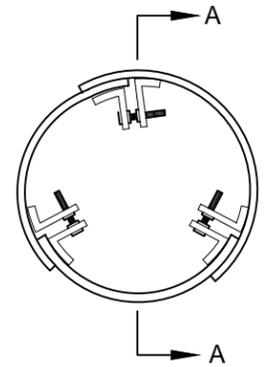
**SLIPLINE & BRACING EXPLANATION**  
N.T.S.

MARK	DATE	REVISION DESCRIPTION	BY

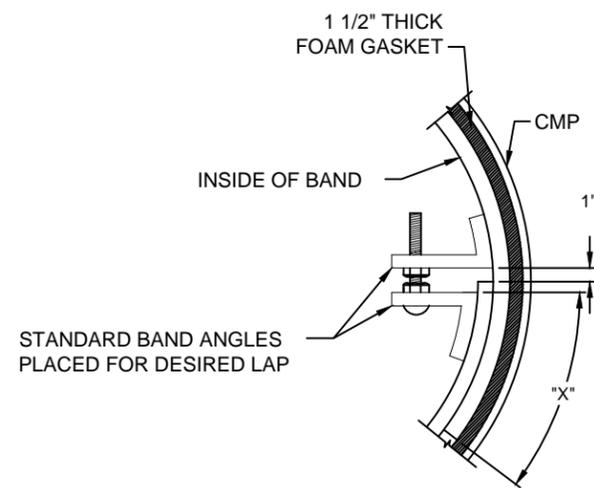
**CONTRACT**  
DRAWING

**HEL-COR PIPE - 509491-010**  
**VTRANS NEWBURY SLIPLINE**  
**NEWBURY, VT**  
**SITE DESIGNATION: RELINE**

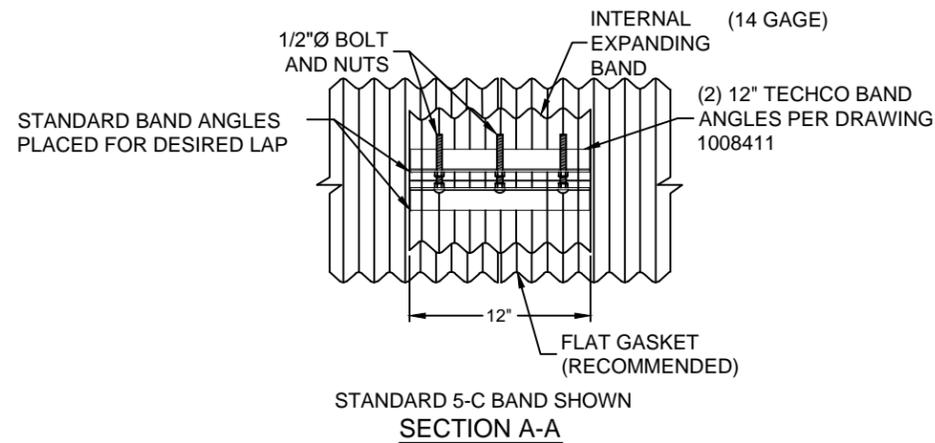
PROJECT No.: 509491	SEQ. No.: 010	DATE: 9/29/2014
DESIGNED:	DRAWN: SCC	
CHECKED: MJO	APPROVED:	
SHEET NO.: 3 OF 4		



**THREE-PIECE BAND**  
PIPE DIAMETERS  
102"-120"  
NOT TO SCALE



**DETAIL AT BAND ANGLES**



**STANDARD 5-C BAND SHOWN SECTION A-A**

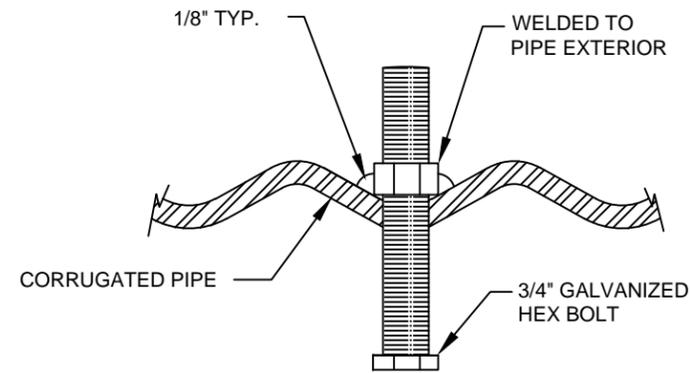
**NOTES:**

- 1.) MOST STANDARD BANDS CAN BE MODIFIED FOR USE AS AN INTERNAL EXPANDING BAND. SINCE ALL BANDS MAKE A ROUGH FIT, A FLAT GASKET IS RECOMMENDED. EXPANDING BANDS ARE FABRICATED FROM STANDARD STOCK BLANKS AND BAND ANGLES. CORRUGATION SPACING IS THE SAME AS STANDARD BANDS.
- 2.) DISTANCE "X" FOR THE REQUIRED LAP MUST BE PROVIDED IF A SPECIAL DISTANCE IS NEEDED TO MEET PROJECT REQUIREMENTS.
- 3.) ALL FABRICATION IS BASED ON STANDARD MANUFACTURING TOLERANCES.
- 4.) THE DETAILS PRESENTED ARE NOT TO SCALE AND CONCEPTUAL ONLY.

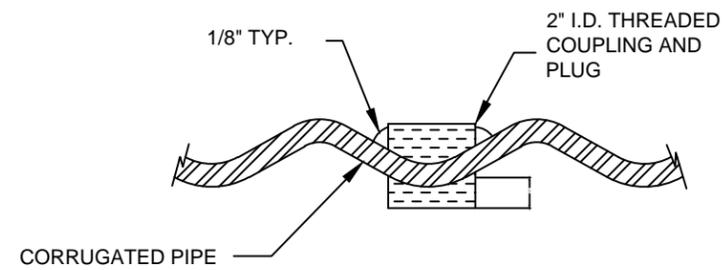
**INSTALLATION PROCEDURE**

- 1.) CLEAN INSIDE OF CMP WHERE BAND WILL BE PLACED.
- 2.) PLACE THE RECOMMENDED GASKET AROUND THE EXTERIOR OF THE BAND.
- 3.) POSITION THE BAND INSIDE OF THE PIPE STRUCTURE.
- 4.) TURN THE NUT FURTHEST FROM THE BOLT HEAD TO COMPRESS THE BAND TO THE CMP.

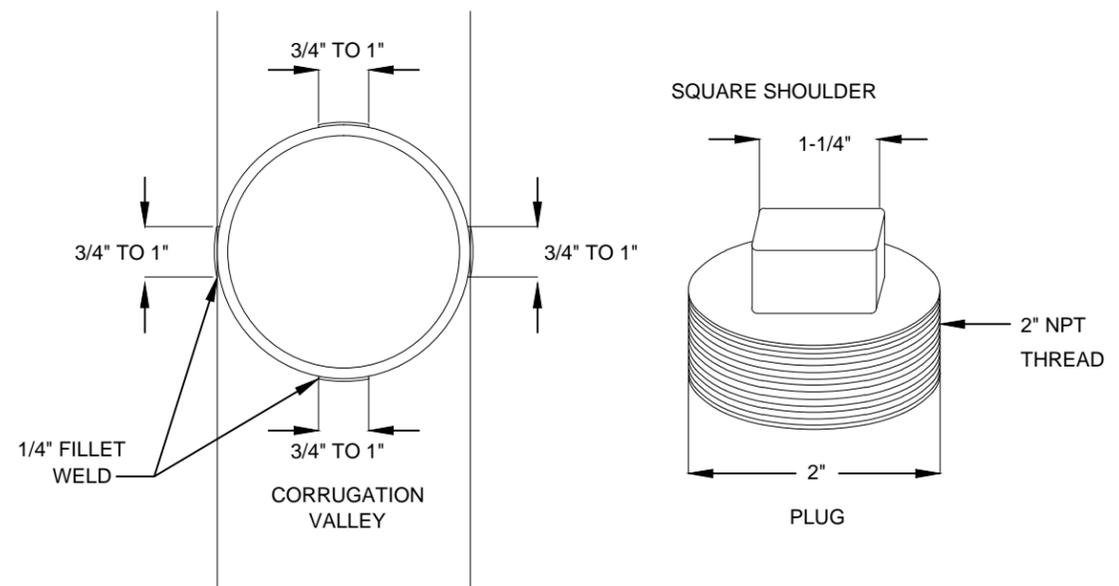
**5-C INTERNAL EXPANDING BAND DETAIL**  
N.T.S.



**ALIGNMENT ROD DETAIL (18" LONG)**  
(TEMPORARY - DURING CONSTRUCTION ONLY)  
N.T.S.



**GROUT COUPLING AND PLUG DETAIL**  
N.T.S.



**2"Ø GROUT PORT DETAIL**  
N.T.S.

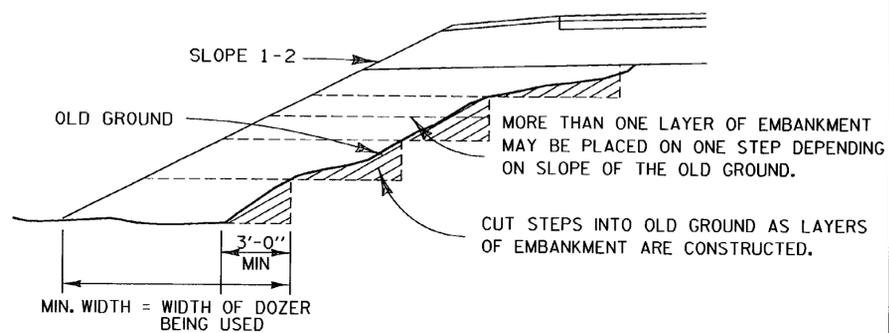
MARK	DATE	REVISION DESCRIPTION	BY

**CONTRACT**  
DRAWING

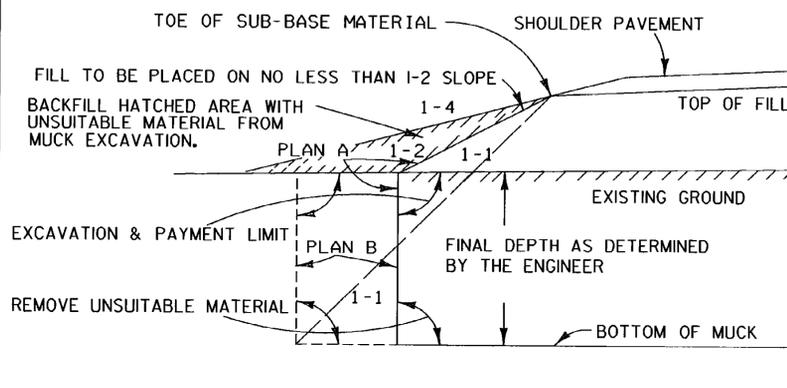
**HEL-COR PIPE - 509491-010**  
**VTRANS NEWBURY SLIPLINE**  
**NEWBURY, VT**  
**SITE DESIGNATION: RELINE**

PROJECT No.: 509491	SEQ. No.: 010	DATE: 9/29/2014
DESIGNED:	DRAWN: SCC	
CHECKED: MJO	APPROVED:	
SHEET NO.: 4 OF 4		

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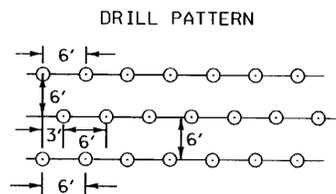
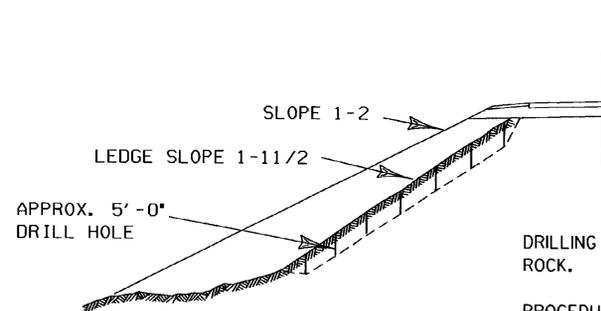


METHOD FOR CONSTRUCTING AN EMBANKMENT ON EARTH SLOPE



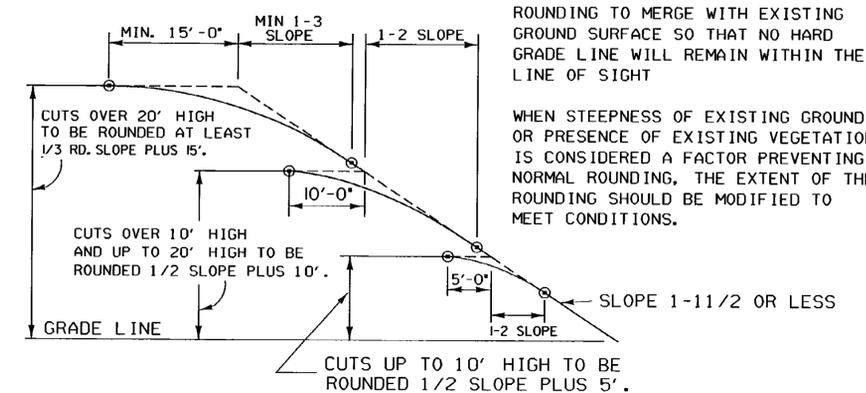
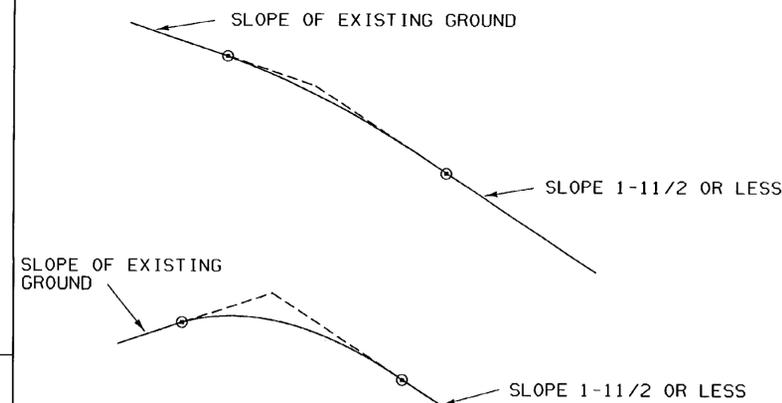
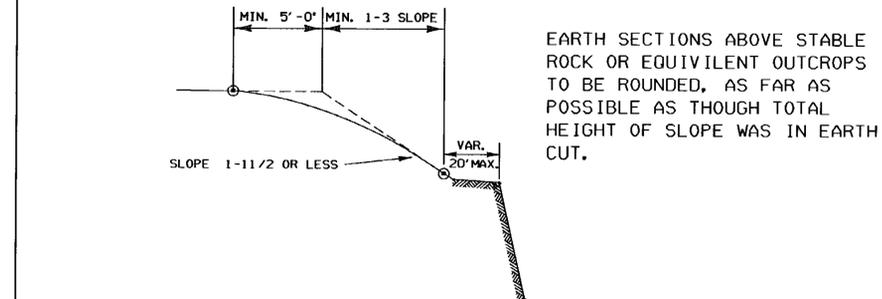
GENERAL NOTES:  
 THE MUCK OR UNSUITABLE MATERIAL SHALL BE EXCAVATED TO THE NEAT LINES SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER.  
 EXCAVATION AND PAYMENT LIMIT WILL BE DETERMINED FROM EITHER PLAN "A" OR PLAN "B", WHICHEVER PRODUCES THE GREATER WIDTH IN A GIVEN MUCK AREA.  
 BACKFILL MATERIAL MUST MEET THE REQUIREMENTS SET FORTH UNDER MUCK EXCAVATION, SECTION 203

TYPICAL NEAT PAY LINES FOR MUCK EXCAVATION



ALL HOLES TO BE APPROXIMATELY 5'-0" DEEP. HOLES TO BE IN ROWS, SPACED AND STAGGERED AS SHOWN IN DRILL PATTERN, OR AS DIRECTED BY THE ENGINEER, SEE SECTION 205

A METHOD FOR PREPARING LEDGE SLOPE BEFORE CONSTRUCTING AN EMBANKMENT



TYPICAL SLOPE ROUNING

REVISIONS AND CORRECTIONS

DEC. 6, 1971 - ORIGINAL APPROVAL DATE  
 JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

APPROVED

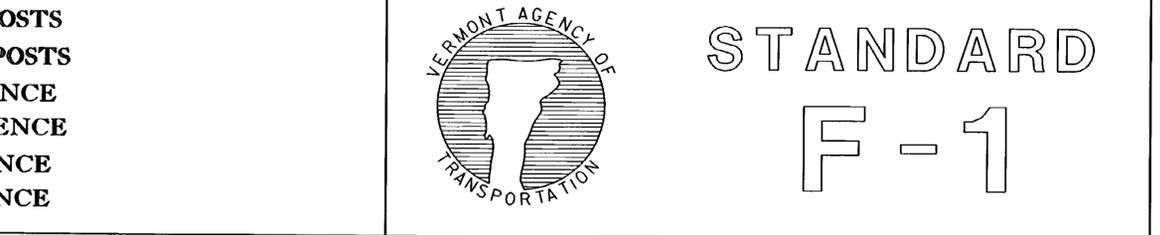
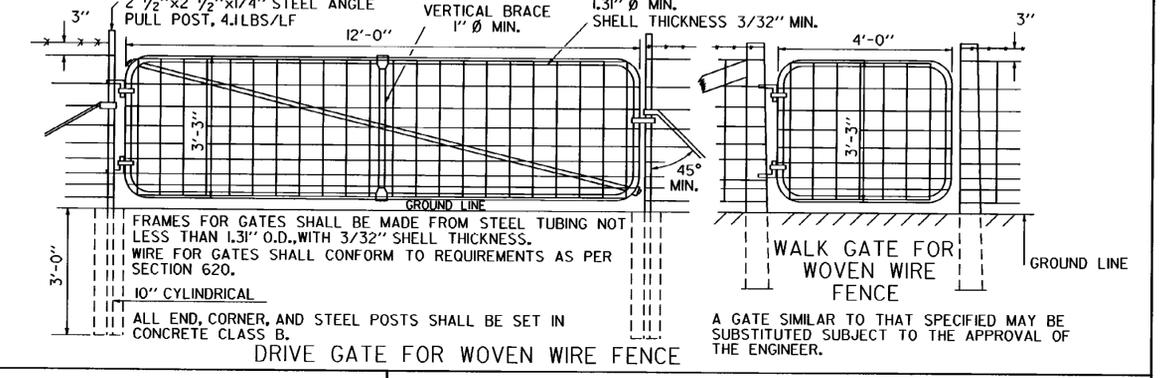
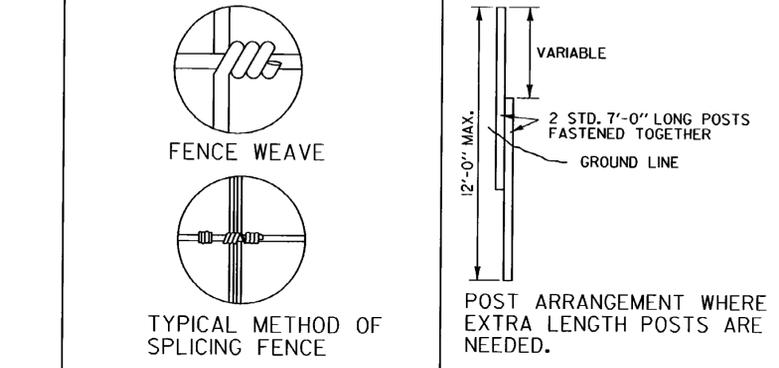
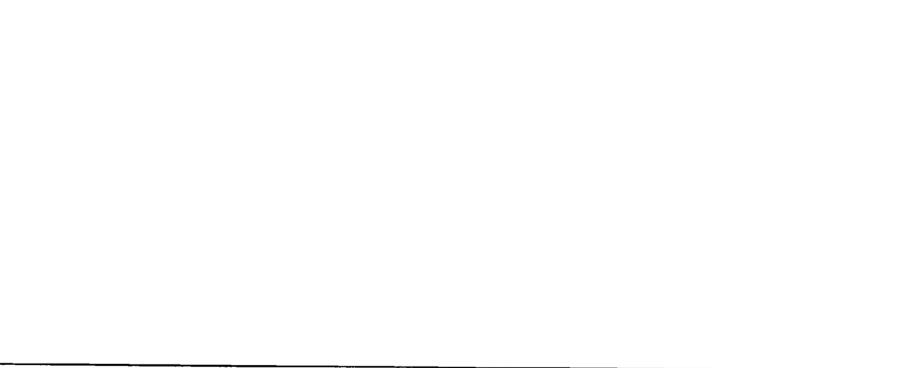
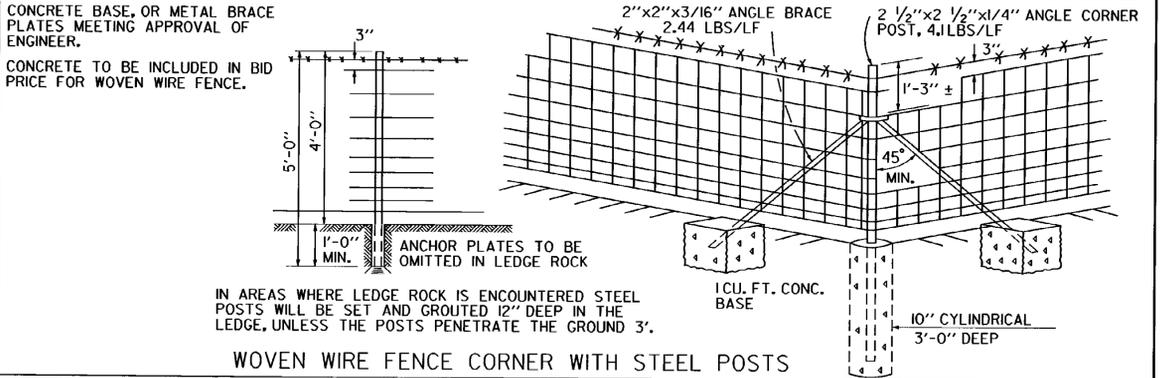
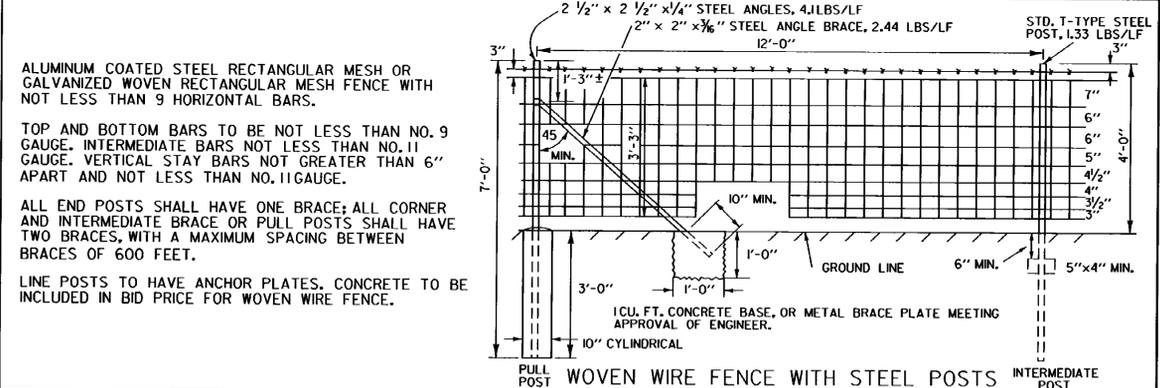
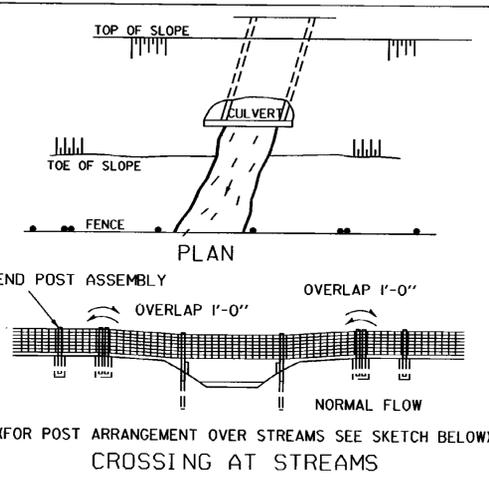
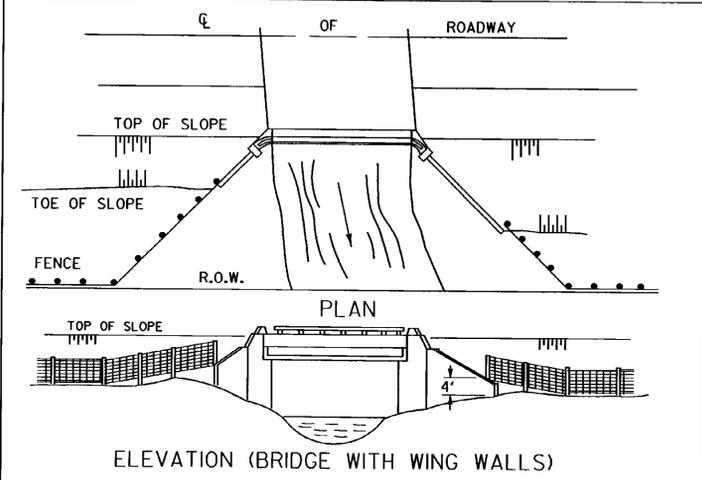
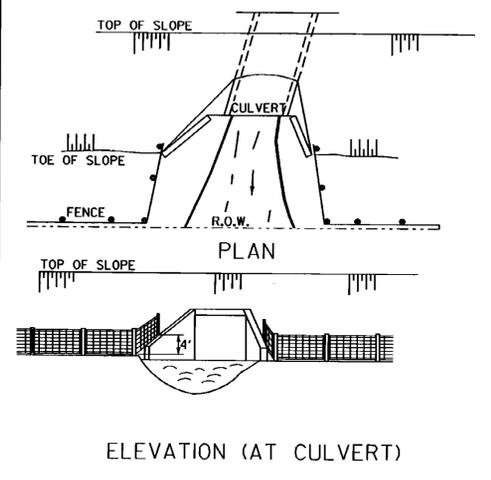
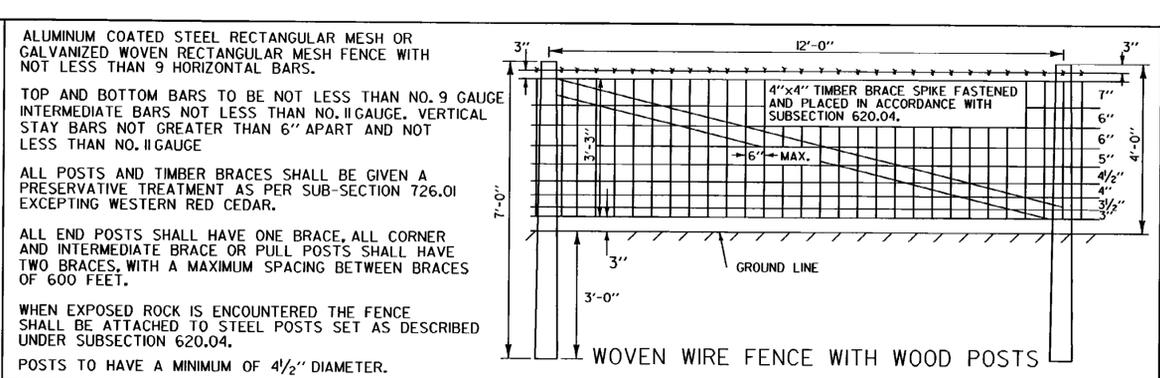
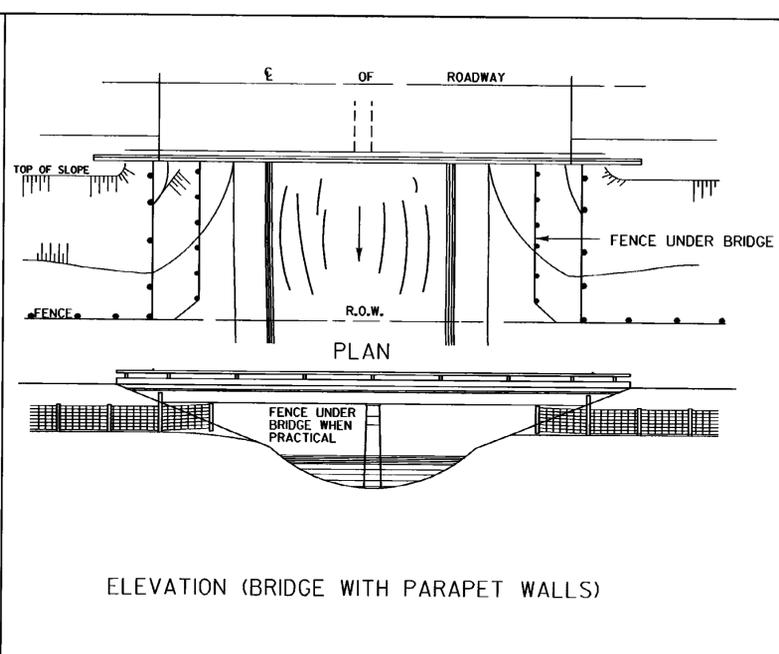
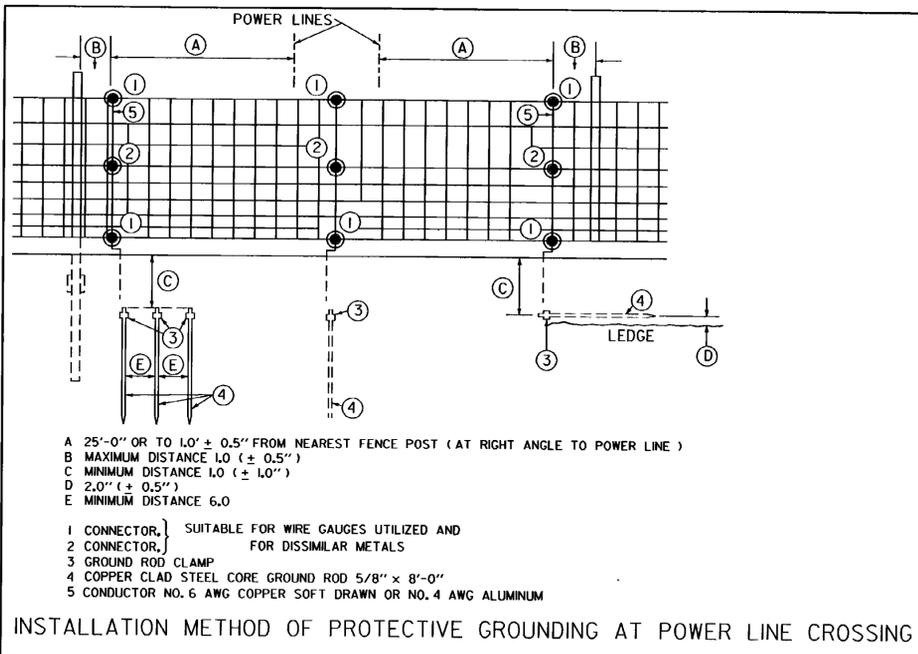
APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

*Stephen D. McArthur, P.E.*  
 DIRECTOR OF ENGINEERING  
*Robert M. Murphy, P.E.*  
 DESIGN ENGINEER

EMBANKMENT ON EARTH SLOPE  
 EMBANKMENT ON ROCK SLOPE  
 MUCK EXCAVATION  
 TYPICAL SLOPE ROUNING



STANDARD  
 B-5



REVISIONS AND CORRECTIONS  
 DEC. 8, 1971- ORIGINAL APPROVAL DATE  
 JULY 21, 1976- GATE SUBSTITUTION NOTE ADDED  
 DEC. 10, 1976- DIMENSIONS FOR STEEL POSTS AND BRACES ADDED  
 JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.

APPROVED

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

*Stephen D. MacArthur, P.E.*  
 DIRECTOR OF ENGINEERING

*John M. Mungley, P.E.*  
 DESIGN ENGINEER

WOVEN WIRE FENCE WITH WOOD POSTS  
 WOVEN WIRE FENCE WITH STEEL POSTS  
 WOOD BRACE FOR WOVEN WIRE FENCE  
 STEEL BRACE FOR WOVEN WIRE FENCE  
 DRIVE GATE FOR WOVEN WIRE FENCE  
 WALK GATE FOR WOVEN WIRE FENCE



STANDARD  
 F-1

1. TRAFFIC CONTROL DEVICES NOT DETAILED IN THE VERMONT AGENCY OF TRANSPORTATION (VAOT) "STANDARD DRAWINGS" OR THE PROJECT PLANS SHALL BE IN ACCORDANCE WITH THE "MANUAL ON TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS AND MARKINGS" BOOK (SHSM) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
2. CONSTRUCTION SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY OR UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER.
3. CONSTRUCTION SIGN COVERS SHALL CONSIST OF A PANEL, PAINTED FLAT BLACK, THE SAME SIZE AS THE SIGN IT COVERS. THE PANEL SHALL BE OF WOOD, PLYWOOD, HARDBOARD OR ANY MATERIAL SATISFACTORY TO THE ENGINEER. NO MATERIAL WILL BE APPROVED THAT WILL DETERIORATE BY EXPOSURE TO THE WEATHER DURING THE PROJECT. MOUNTING OF THE PANEL SHALL BE DONE IN SUCH A WAY AS NOT TO DAMAGE THE SIGN FACE MATERIAL.
4. SIGNS SHALL BE MAINTAINED IN A CLEAN AND LEGIBLE CONDITION SATISFACTORY TO THE ENGINEER. THEY SHALL BE KEPT PLUMB AND LEVEL, AND ALWAYS PRESENT A NEAT APPEARANCE. DAMAGED, DEFACED OR DIRTY SIGNS SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE ENGINEER.
5. NO CROSS-BRACING OR BACK-BRACING TO KEEP POSTS PLUMB WILL BE ALLOWED. CONCRETE FOUNDATIONS, COLLARS OR SOIL BEARING PLATES ARE NOT PERMITTED. CONSTRUCTION SIGNS SHALL BE PLACED ON TWO POSTS.
6. CONSTRUCTION SIGNS INSTALLED ON POSTS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST FIVE FEET ABOVE THE EDGE OF PAVEMENT AND THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST SIX FEET OUTSIDE THE SHOULDER POINT, FOUR FEET OUTSIDE GUARDRAIL, OR TWO FEET OUTSIDE CURBING OR SIDEWALK. THE INSTALLATION OF SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. IN URBAN AREAS, THE BOTTOM OF THE SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE SIDEWALK OR EDGE OF PAVEMENT, WHICHEVER IS HIGHER.
7. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND A MINIMUM OF ONE FOOT ABOVE THE TRAVELED WAY. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL.
8. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
9. ROLL UP CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE VI AND TYPE VII UNLESS OTHERWISE NOTED.
10. SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE VIII OR IX REQUIREMENTS UNLESS OTHERWISE NOTED.
11. WHERE CONSTRUCTION SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL MEET "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 OR THE AASHTO "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH). THE APPROPRIATE RESOURCE SHALL BE DETERMINED AS DESCRIBED IN THE MASH PUBLICATION. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POSTS. WHEN ANCHORS ARE INSTALLED, STUBS SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
12. ROADWAY AND SHOULDER WIDTHS DEPICTED ON THE STANDARD DRAWINGS MAY VARY.
13. THESE STANDARD DRAWINGS ARE INTENDED TO SERVE AS VTRANS STANDARD OPERATING PROCEDURE. IT IS NOTED THAT COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL WORK ZONE MAY BE MODIFIED DUE TO FIELD CONDITIONS, AT THE DISCRETION OF THE ENGINEER.

OTHER STDS. REQUIRED: **NONE**

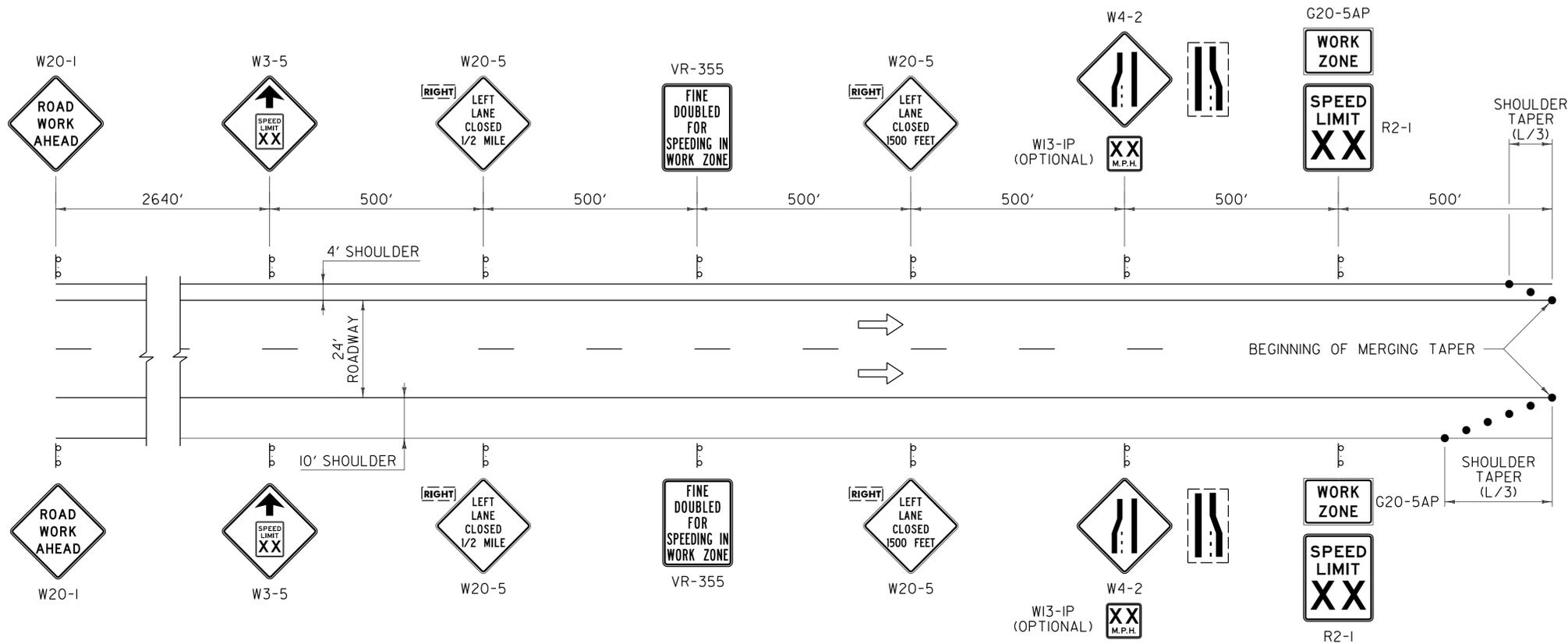
REVISIONS AND CORRECTIONS  
AUG. 6, 2012 - ORIGINAL APPROVAL DATE

APPROVED  
*W.A.P.*  
HIGHWAY SAFETY & DESIGN ENGINEER  
*Rubén J. Huante*  
DIRECTOR OF PROGRAM DEVELOPMENT  
*Mark D. Richter*  
FEDERAL HIGHWAY ADMINISTRATION

## TRAFFIC CONTROL GENERAL NOTES



# STANDARD T-1



**GENERAL NOTES:**

- IF APPLICABLE, THE CONTRACTOR SHALL HAVE SIGNS FOR CLOSURE OF RIGHT AND LEFT LANES ON PROJECT BEFORE WORK COMMENCES.
- THE "SPEED LIMIT XX" (R2-1) AND "SPEED REDUCTION WARNING" (W3-5) SIGNS SHALL ONLY BE USED IF A TEMPORARY SPEED LIMIT CERTIFICATE HAS BEEN APPROVED. THE "SPEED LIMIT XX" (R2-1) AND OTHER RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN WORK IS NOT IN PROGRESS AND ROADWAY IS NOT RESTRICTED.
- "FINE DOUBLED FOR SPEEDING IN WORK ZONE" (VR-355) SHALL ONLY BE USED IF TEMPORARY SPEED LIMIT CERTIFICATE HAS BEEN APPROVED.
- EXISTING SPEED LIMIT SIGNS SHALL BE COVERED WHEN TEMPORARY SPEED LIMIT SIGNS ARE POSTED.
- FOR SHORT TERM PROJECTS (THREE CONSECUTIVE DAYS OR LESS) WITH NO OFFICIAL TEMPORARY SPEED LIMIT, THE "SPEED LIMIT XX" (R2-1) AND "SPEED REDUCTION WARNING" (W3-5) SIGNS MAY BE SUBSTITUTED WITH ADVISORY SPEED PLAQUES (W13-IP) MOUNTED AS SUPPLEMENTAL SIGNS BELOW THE "LANE ENDS" (W4-2) SIGNS.
- FOR AN ANTICIPATED LONG TERM CLOSURE (GREATER THAN THREE CONSECUTIVE DAYS) WITH A NON-MOVING OPERATION, ALL SIGNS SHALL BE POST MOUNTED.
- FOR A LONG TERM CLOSURE WITH A MOVING OPERATION, THE "ROAD WORK AHEAD" (W20-1) SIGN SHALL BE POST MOUNTED. THE REMAINING SIGNS MAY BE PORTABLE AND SHALL MOVE AS THE WORK AREA CHANGES.
- FOR A SHORT TERM PROJECT (THREE CONSECUTIVE DAYS OR LESS), SIGNS MAY BE POST MOUNTED OR PORTABLE.
- THE "SPEED LIMIT XX" (R2-1) SOLID SUBSTRATE SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING AASHTO M 268 (ASTM D 4956) TYPE III.

**OTHER STDS. REQUIRED: T-1, T-12, T-31**

**LEGEND**

- FLOW OF TRAFFIC
- RETROREFLECTIVE PLASTIC DRUM

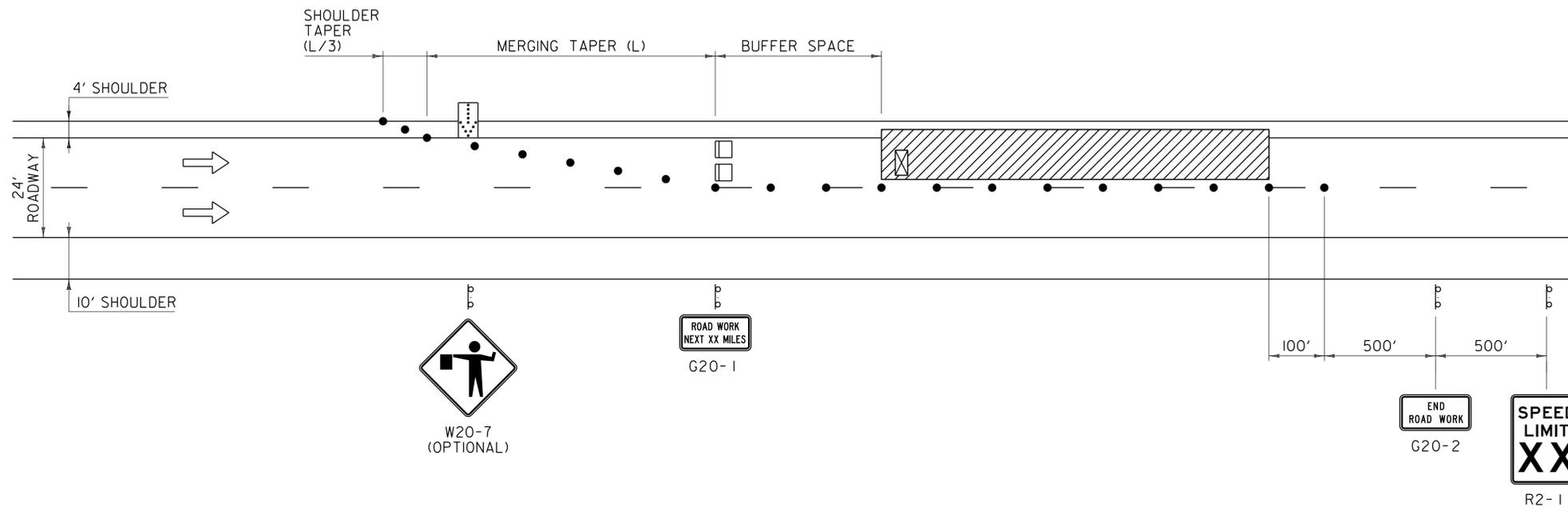
REVISIONS AND CORRECTIONS  
AUG. 6, 2012 - ORIGINAL APPROVAL DATE

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*W.A.P.*  
HIGHWAY SAFETY & DESIGN ENGINEER  
*Rubén Huante*  
DIRECTOR OF PROGRAM DEVELOPMENT  
*Mark D. Richter*  
FEDERAL HIGHWAY ADMINISTRATION

CONSTRUCTION APPROACH  
SIGNING DIVIDED HIGHWAY  
ONE LANE CLOSED



STANDARD  
T-11



**GENERAL NOTES:**

- FOR LONG TERM CLOSURES, DASHED LANE LINE REMOVAL SHALL BEGIN 750 FEET IN ADVANCE OF THE BEGINNING OF THE SHOULDER TAPER AND TEMPORARY PAVEMENT MARKINGS SHALL BE PLACED ALONG THE CHANNELIZING DEVICES.
- CHANNELIZING DEVICES OTHER THAN RETROREFLECTIVE PLASTIC DRUMS SHALL BE ALLOWED ALONG THE BUFFER SPACE AND WORK AREA. THE TYPE OF DEVICE SHALL BE CONSISTENT THROUGHOUT THE BUFFER SPACE AND WORK AREA AND SHALL REMAIN STABLE WHILE UNATTENDED.
- THE NUMBER OF CHANNELIZING DEVICES, TYPE III BARRICADE AND OTHER TRAFFIC CONTROL DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR, CURVE, ETC.). WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
- PLACE LAST CHANNELIZING DEVICE 100 FEET BEYOND THE ANTICIPATED WORK ZONE TERMINAL POINT EACH DAY.
- THE ARROW PANEL SHALL BE PLACED ON THE SHOULDER OF THE ROADWAY, AS CLOSE AS PRACTICAL TO THE BEGINNING OF THE MERGING TAPER.
- THE "ROAD WORK NEXT XX MILES" SIGN (G20-1) SHALL BE INSTALLED IN ADVANCE OF TEMPORARY TRAFFIC CONTROL ZONES THAT ARE MORE THAN TWO MILES IN LENGTH, OR AS DIRECTED BY THE ENGINEER. DISTANCES SHALL BE STATED TO THE NEAREST WHOLE MILE.
- WHEN FLAGGER IS PRESENT THE "FLAGGER" (W20-7) SIGN SHALL BE USED; TO BE REMOVED IF FLAGGING STOPS FOR 15 MINUTES OR MORE.
- "SPEED LIMIT XX" (R2-1) SIGN TO BE USED IF A TEMPORARY SPEED ZONE IS IN PLACE.
- TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATION:  
 $L = WS$  FOR POSTED SPEEDS OF 45 MPH OR GREATER.  
 $L = WS/60$  FOR POSTED SPEEDS OF 40 MPH OR LESS.  
 $L$  = MINIMUM LENGTH OF TAPER  
 $W$  = WIDTH OF OFFSET IN FEET (TYPICAL)  
 $S$  = POSTED SPEED IN MPH
- TAPER LENGTHS FOR SHOULDER WIDTHS OTHER THAN 10 FEET NEED TO BE CALCULATED.

**LEGEND**

- FLOW OF TRAFFIC
- RETROREFLECTIVE PLASTIC DRUM
- FLASHING ARROW PANEL
- TYPE III BARRICADE
- WORK AREA
- TRUCK/TRAILER MOUNTED ATTENUATOR (OPTIONAL)

POSTED SPEED (MPH)	TAPER LENGTHS (FT)		TANGENT W=12 FT (L/2)	BARRIER FLARE RATE (MINIMUM)	MINIMUM BUFFER SPACE LENGTH (FT)	MAXIMUM CHANNELIZING DEVICE SPACING (FT)	
	SHOULDER W=10 FT (L/3)	MERGING 12 FT LANE (L)				TAPER (S)	TANGENT (2S)
≤ 40	90	320	160	1:9	305	40	80
45	150	540	270	1:9	360	45	90
50	170	600	300	1:11	425	50	100
55	185	660	330	1:13	495	55	110
60	200	720	360	1:13	570	60	120
65	215	780	390	1:13	645	65	130

**OTHER STDS. REQUIRED: T-1, T-11**

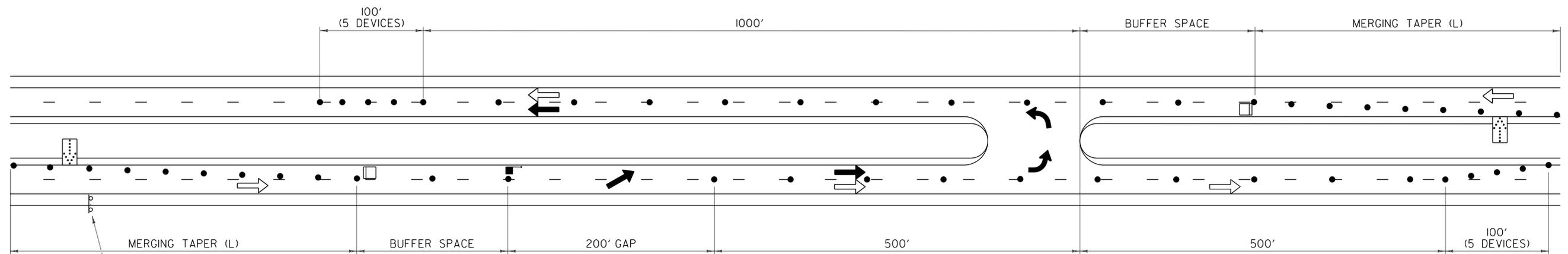
REVISIONS AND CORRECTIONS  
AUG. 6, 2012 - ORIGINAL APPROVAL DATE

APPROVED  
  
 HIGHWAY SAFETY & DESIGN ENGINEER  
  
 DIRECTOR OF PROGRAM DEVELOPMENT  
  
 Mark B. Richter  
 FEDERAL HIGHWAY ADMINISTRATION

**TRAFFIC CONTROL  
DIVIDED HIGHWAY  
ONE LANE CLOSED**



**STANDARD  
T-12**



**LEGEND**

-  THROUGH TRAFFIC
-  CONSTRUCTION VEHICLES
-  CHANNELIZING DEVICE
-  FLASHING ARROW PANEL
-  TYPE III BARRICADE
-  FLAGGER

**GENERAL NOTES:**

1. WHEN SIGNING FOR THIS OPERATION INTERFERES WITH WORK ON THE MAINLINE, THE ENGINEER SHALL ESTABLISH THE APPROPRIATE SIGN REQUIREMENTS.
2. CONSTRUCTION VEHICLES USED FOR HAULING MATERIAL AT THE WORK SITE AND TRAVELING ON PUBLIC HIGHWAYS SHALL HAVE A "CONSTRUCTION VEHICLE DO NOT FOLLOW" SIGN (VC-007) MOUNTED ON THE REAR OF THE VEHICLE.
3. FLAGGER MAY BE USED AT ENGINEER'S DISCRETION TO SLOW TRAFFIC AND AID CONSTRUCTION VEHICLES ENTERING THE U-TURN AREA. FLAGGER SHALL ONLY USE "SLOW" PADDLE AND SHALL NOT DISPLAY "STOP" AT ANY TIME. WHEN FLAGGER IS PRESENT, THE "FLAGGER" SYMBOL (W20-7) SIGN SHALL BE USED; TO BE REMOVED IF FLAGGING STOPS FOR 15 MINUTES OR MORE.

**OTHER STDS. REQUIRED: T-1, T-11, T-12, T-30**

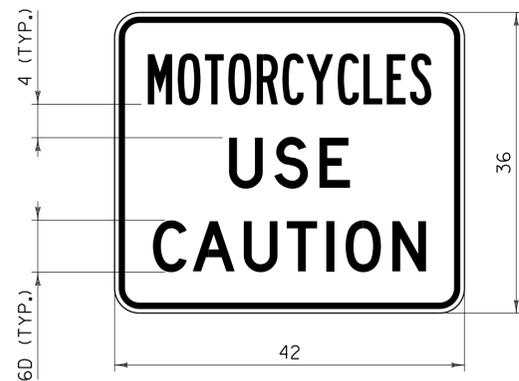
REVISIONS AND CORRECTIONS  
AUG. 6, 2012 - ORIGINAL APPROVAL DATE

APPROVED  
*[Signature]*  
HIGHWAY SAFETY & DESIGN ENGINEER  
*[Signature]*  
DIRECTOR OF PROGRAM DEVELOPMENT  
*[Signature]*  
Mark D. Richter  
FEDERAL HIGHWAY ADMINISTRATION

TRAFFIC CONTROL  
FOR U-TURN USE  
ON DIVIDED HIGHWAY



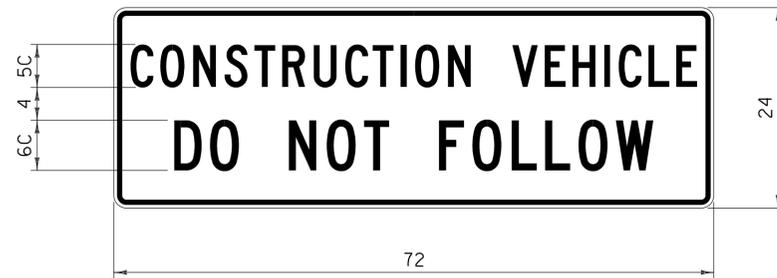
STANDARD  
T-16



**VC-004P**

**NOTES:**

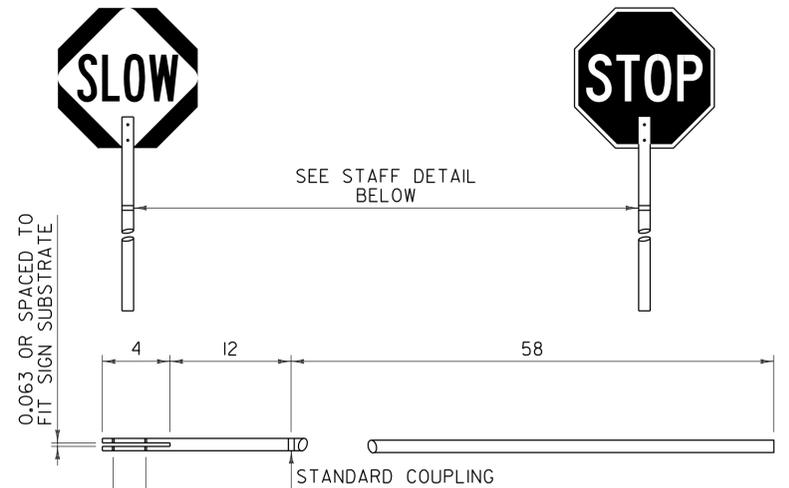
1. CORNERS SHALL BE ROUNDED TO A THREE INCH RADIUS.
2. THE BORDER SHALL BE 3/4 INCH WIDE WITH A 1/2 INCH INDENT FROM THE EDGE OF THE SIGN.
3. "MOTORCYCLES" SHALL HAVE A SPECIFIED WIDTH OF 34 INCHES.
4. "USE" SHALL HAVE A SPECIFIED WIDTH OF 14 1/2 INCHES.
5. "CAUTION" SHALL HAVE A SPECIFIED WIDTH OF 32 3/4 INCHES.
6. SIGN SHALL ONLY BE INSTALLED AS A SUPPLEMENTAL TO A PARENT WARNING SIGN AND SHALL NOT BE INSTALLED BY ITSELF.



**VC-007**

**NOTES:**

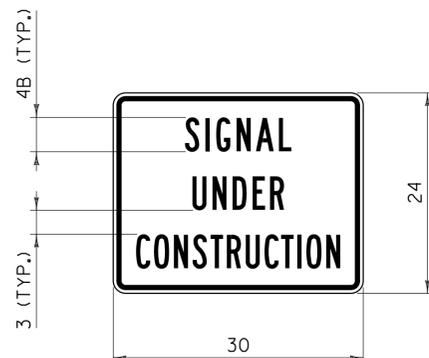
1. CORNERS SHALL BE ROUNDED TO A 1 1/2 INCH RADIUS.
2. THE BORDER SHALL BE 5/8 INCH WIDE WITH A 3/8 INCH INDENT FROM THE EDGE OF THE SIGN.
3. "CONSTRUCTION VEHICLE" SHALL HAVE A SPECIFIED WIDTH OF 68 INCHES.
4. "DO NOT FOLLOW" SHALL HAVE A SPECIFIED WIDTH OF 57 1/2 INCHES.
5. SIGN SHALL BE MOUNTED IN A CONSPICUOUS LOCATION ON THE REAR OF THE CONSTRUCTION VEHICLE.
6. THE SIGN SHALL BE MOUNTED AS NOT TO INTERFERE WITH THE VISIBILITY OF DIRECTIONAL SIGNALS OR TAIL LIGHTS AS REQUIRED BY LAW.
7. SIGN SHALL BE COVERED OR REMOVED WHEN NOT IN USE.



**STOP-SLOW PADDLE & STAFF DETAIL**

**NOTES:**

1. REFER TO THE "STANDARD HIGHWAY SIGNS AND MARKINGS" BOOK (SHSM) "TEMPORARY TRAFFIC CONTROL - WARNING SIGNS" FOR THE STOP-SLOW PADDLE DESIGN.
2. COLORS FOR THE SLOW SIDE OF THE PADDLE SHALL BE BLACK LEGEND AND BORDER ON A FLUORESCENT ORANGE DIAMOND WITH RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING AASHTO M 268 [ASTM D 4956] TYPE VII, VIII OR IX REQUIREMENTS.
3. COLORS FOR THE STOP SIDE OF THE PADDLE SHALL BE WHITE RETROREFLECTIVE LEGEND AND BORDER ON A RED RETROREFLECTIVE OCTAGON. BOTH COLORS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING AASHTO M 268 [ASTM D 4956] TYPE III.
4. SIGN SUBSTRATE MATERIALS SHALL BE ALUMINUM, ACRYLONITRILE BUTADIENE STYRENE (ABS) PLASTIC OR EQUIVALENT.
5. THE STAFF MAY BE RIGID ABS PLASTIC OR WOOD WITH A ONE TO 1 1/2 INCH DIAMETER.
6. SIGNS SHALL BE MAINTAINED IN A CLEAN AND LEGIBLE CONDITION SATISFACTORY TO THE ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO APPROACHING TRAFFIC AT ALL TIMES. THEY SHALL BE KEPT PLUMB AND LEVEL, AND ALWAYS PRESENT A NEAT APPEARANCE. DAMAGED, DEFACTED OR DIRTY SIGNS SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE ENGINEER.



**VC-820**

**NOTES:**

1. CORNERS SHALL BE ROUNDED TO A 1 1/2 INCH RADIUS.
2. THE BORDER SHALL BE 5/8 INCH WIDE WITH A 3/8 INCH INDENT FROM THE EDGE OF THE SIGN.
3. "SIGNAL" SHALL HAVE A SPECIFIED WIDTH OF 12 3/4 INCHES.
4. "UNDER" SHALL HAVE A SPECIFIED WIDTH OF 11 INCHES.
5. "CONSTRUCTION" SHALL HAVE A SPECIFIED WIDTH OF 24 1/2 INCHES.
6. SIGN SHALL ONLY BE INSTALLED AS A SUPPLEMENTAL TO A PARENT WARNING SIGN AND SHALL NOT BE INSTALLED BY ITSELF.

**GENERAL NOTES:**

1. ALL LEGEND SHALL BE CENTERED VERTICALLY AND HORIZONTALLY UNLESS OTHERWISE NOTED.
2. COLORS FOR SIGNS SHALL BE BLACK LEGEND AND BORDER ON FLUORESCENT ORANGE BACKGROUND UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS IN INCHES.

**OTHER STDS. REQUIRED: T-1**

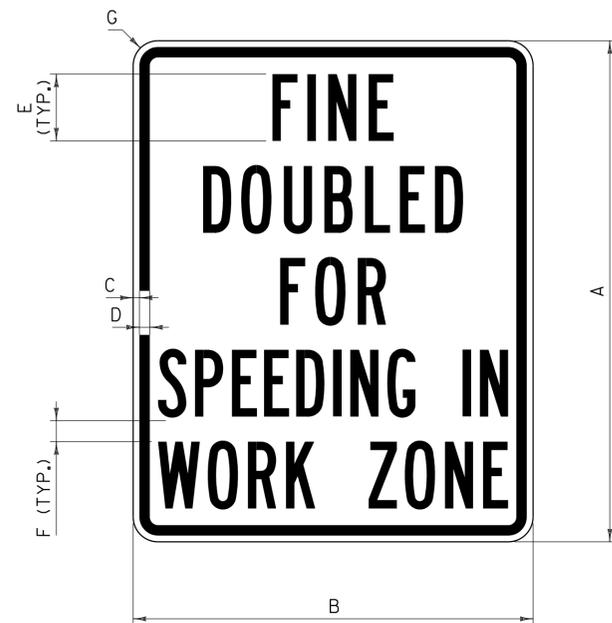
REVISIONS AND CORRECTIONS  
AUG. 6, 2012 - ORIGINAL APPROVAL DATE

APPROVED  
*[Signature]*  
HIGHWAY SAFETY & DESIGN ENGINEER  
*[Signature]*  
DIRECTOR OF PROGRAM DEVELOPMENT  
*[Signature]*  
MARK D. RICHTER  
FEDERAL HIGHWAY ADMINISTRATION

CONSTRUCTION SIGN  
DETAILS



STANDARD  
T-30

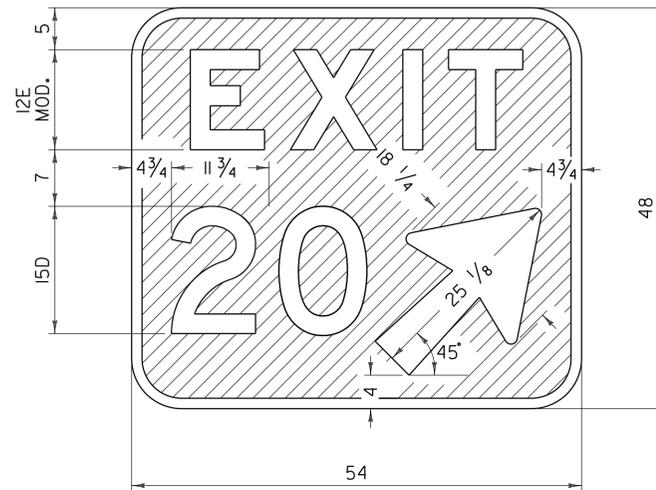


**VR-355**

SIGN	DIMENSIONS						
	A	B	C	D	E	F	G
STANDARD	36	30	1/2	3/4	4C	2 1/4	1 7/8
EXPRESSWAY/ FREEWAY	60	48	3/4	1 1/4	8B	3	3

**NOTES:**

1. "SPEEDING IN" AND "WORK ZONE" SHALL EACH HAVE A SPECIFIED WIDTH OF 26 INCHES FOR STANDARD AND 42 INCHES FOR EXPRESSWAY/FREEWAY.
2. THE SIGN SHALL HAVE BLACK LEGEND AND BORDER ON A WHITE BACKGROUND WITH RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE III.
3. LEGEND SHALL BE CENTERED HORIZONTALLY AND VERTICALLY.



**VC5-1A**

**NOTES:**

1. THE SIGN SHALL BE WHITE RETROREFLECTIVE LEGEND ON A GREEN RETROREFLECTIVE BACKGROUND. BOTH SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE III.
2. CORNERS SHALL BE ROUNDED TO A SIX INCH RADIUS.
3. THE SIGN SHALL HAVE A 1/4 INCH WIDE BORDER ALONG THE EDGE OF THE SIGN.
4. EXIT NUMBER SHALL BE AS PER PLANS, OPTICALLY SPACED.
5. "EXIT" SHALL BE CENTERED HORIZONTALLY.

**GENERAL NOTES:**

1. ALL DIMENSIONS IN INCHES.

**OTHER STDS. REQUIRED: T-1**

REVISIONS AND CORRECTIONS  
AUG. 6, 2012 - ORIGINAL APPROVAL DATE

APPROVED  
*[Signature]*  
HIGHWAY SAFETY & DESIGN ENGINEER  
*[Signature]*  
DIRECTOR OF PROGRAM DEVELOPMENT  
*[Signature]*  
MARK D. RICHTER  
FEDERAL HIGHWAY ADMINISTRATION

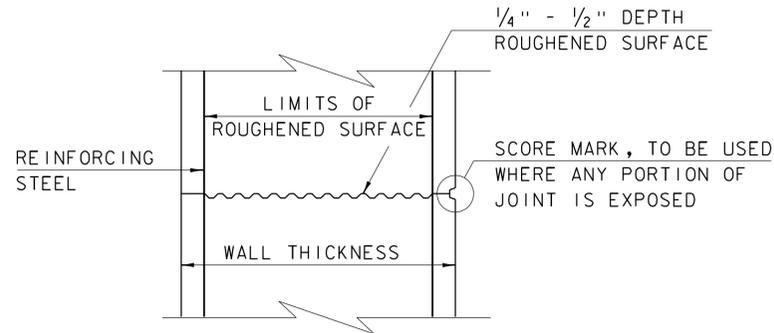
CONSTRUCTION SIGN  
DETAILS



STANDARD  
T-31

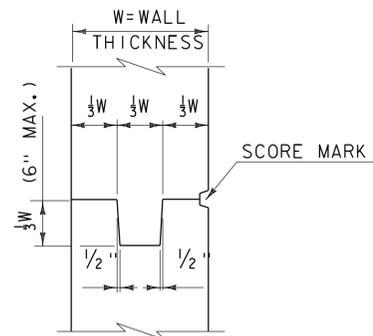
**CONCRETE GENERAL NOTES**

1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"
2. REINFORCING STEEL SIZE AND SPACING SHOWN IN THE PLANS IS BASED ON 60 KSI STEEL, UNLESS NOTED OTHERWISE. WITH THE ENGINEER'S PERMISSION, BAR SIZE AND SPACING MAY BE MODIFIED ACCORDING TO THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND STRUCTURES DESIGN MANUAL WHEN USING HIGHER STRENGTH STEEL.

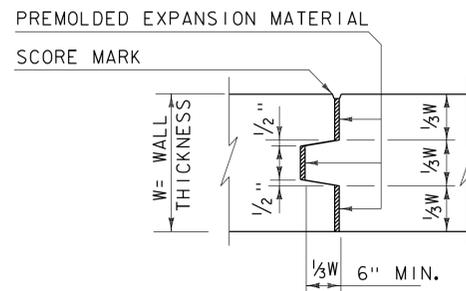
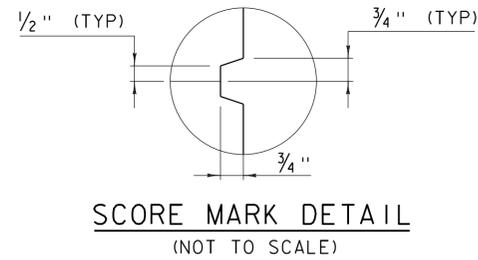


**TYPICAL HORIZONTAL CONSTRUCTION JOINT**  
(NOT TO SCALE)

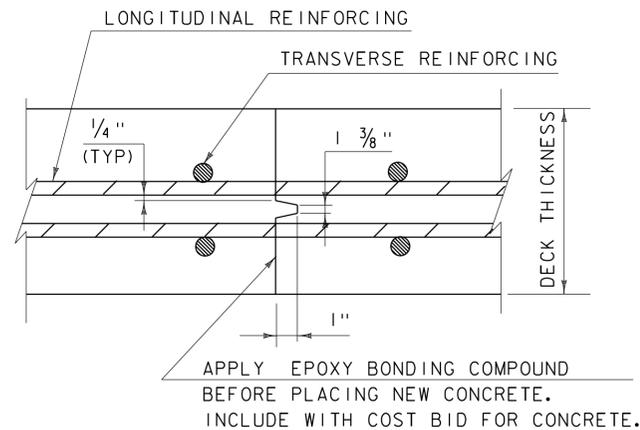
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



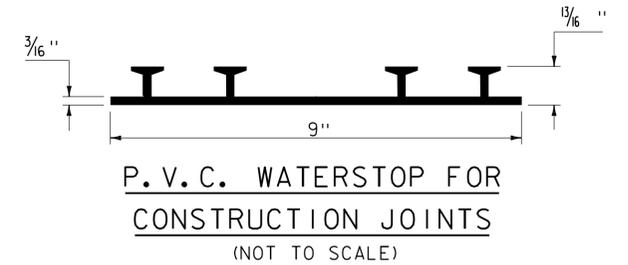
**TYPICAL CONCRETE CONSTRUCTION JOINT**  
(NOT TO SCALE)



**TYPICAL CONCRETE EXPANSION JOINT**  
(NOT TO SCALE)

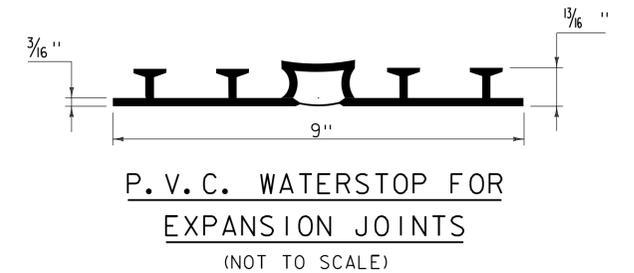


**TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS**  
(NOT TO SCALE)



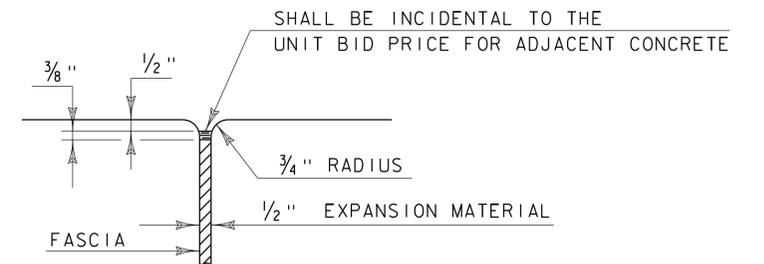
PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

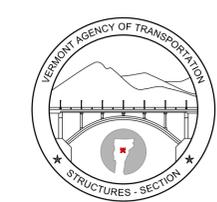
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



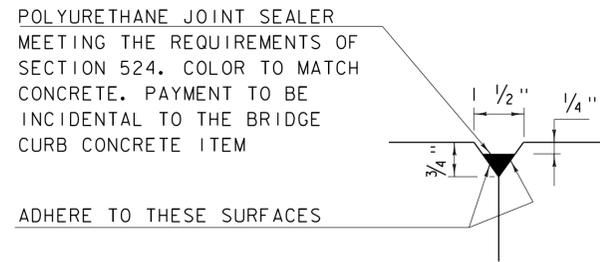
**JOINT BETWEEN FASCIA AND WINGWALL**  
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
FEBRUARY 9, 2012	REBAR SUBSTITUTION ALLOWANCE ADDED TO CONCRETE GENERAL NOTES.

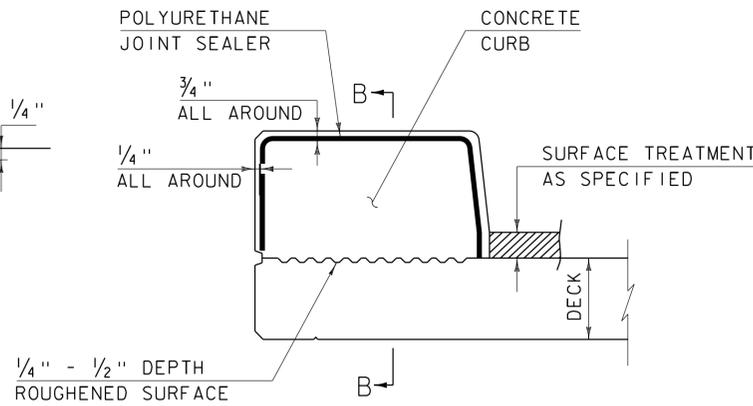
**CONCRETE  
DETAILS AND NOTES**



**STRUCTURES  
DETAIL  
SD-501.00**

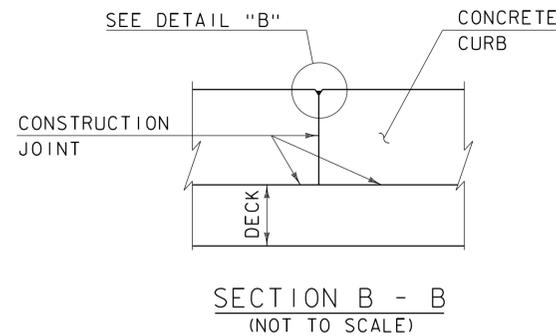


DETAIL "B"  
(NOT TO SCALE)

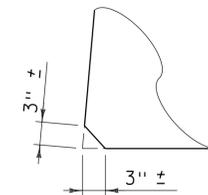


CONCRETE CURB JOINT SECTION  
(NOT TO SCALE)

1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



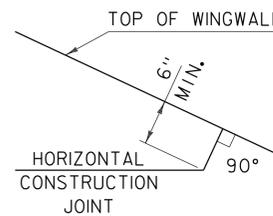
SECTION B - B  
(NOT TO SCALE)



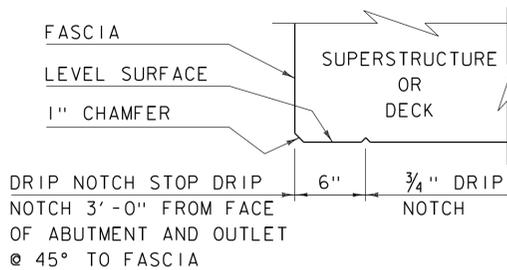
ACUTE ANGLE  
CLIP DETAIL  
(NOT TO SCALE)

CONCRETE CURB JOINT NOTES

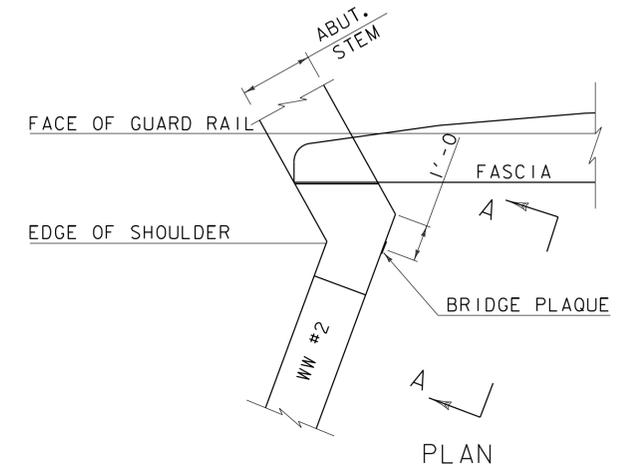
1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.
3. ON MULTI-SPAN CONTINUOUS SUPERSTRUCTURES, REGARDLESS OF WHETHER APPROVED SHRINKAGE REDUCING ADMIXTURE IS USED, CURB JOINTS SHALL BE LOCATED OVER THE CENTERLINE OF PIERS AND 7'-0" EACH SIDE OF THE CENTERLINE OF EACH PIER.
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.
5. LONGITUDINAL REINFORCING SHALL BE CONTINUOUS THROUGH CURB CONSTRUCTION JOINTS. CURB STIRRUP BARS SHALL BE TURNED AS NECESSARY TO MAINTAIN COVER IN THE FLARED CURB ENDS.
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



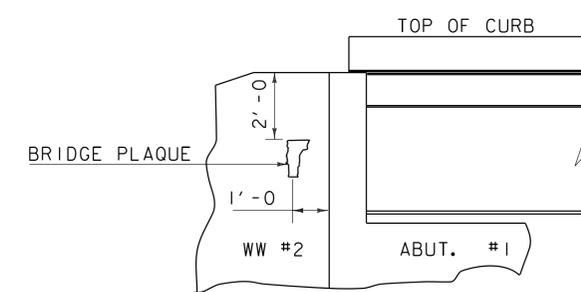
HORIZONTAL WINGWALL  
CONSTRUCTION JOINT  
(NOT TO SCALE)



DRIP NOTCH DETAIL  
(NOT TO SCALE)



PLAN



VIEW "A - A"

BRIDGE PLAQUE  
(NOT TO SCALE)

THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

REVISIONS

MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED AND ADDED TWO DETAILS
OCTOBER 10, 2012	MODIFIED HORZ. JOINT WINGWALL ADD 6" MIN. DIMENSION

CONCRETE  
DETAILS AND NOTES



STRUCTURES  
DETAIL  
SD-502.00