

# RECORD PLANS

PREPARED BY TJW

## Record Plans

Contractor: DIRT TECH COMPANY, LLC  
 Resident Engineer: GREG WILCOX  
 Construction Began: AUGUST 25, 2017  
 Construction Complete: OCTOBER 23, 2018  
 Record Plans By: TAYLOR WARING & JESSE IVES

I hereby certify that all construction required by this set of drawings has been accomplished as indicated herein.

E-SIGNED by Greg Wilcox on 2019-02-11 18:12:39 UTC Resident Engineer

Date: February 11, 2019

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

# STATE OF VERMONT AGENCY OF TRANSPORTATION

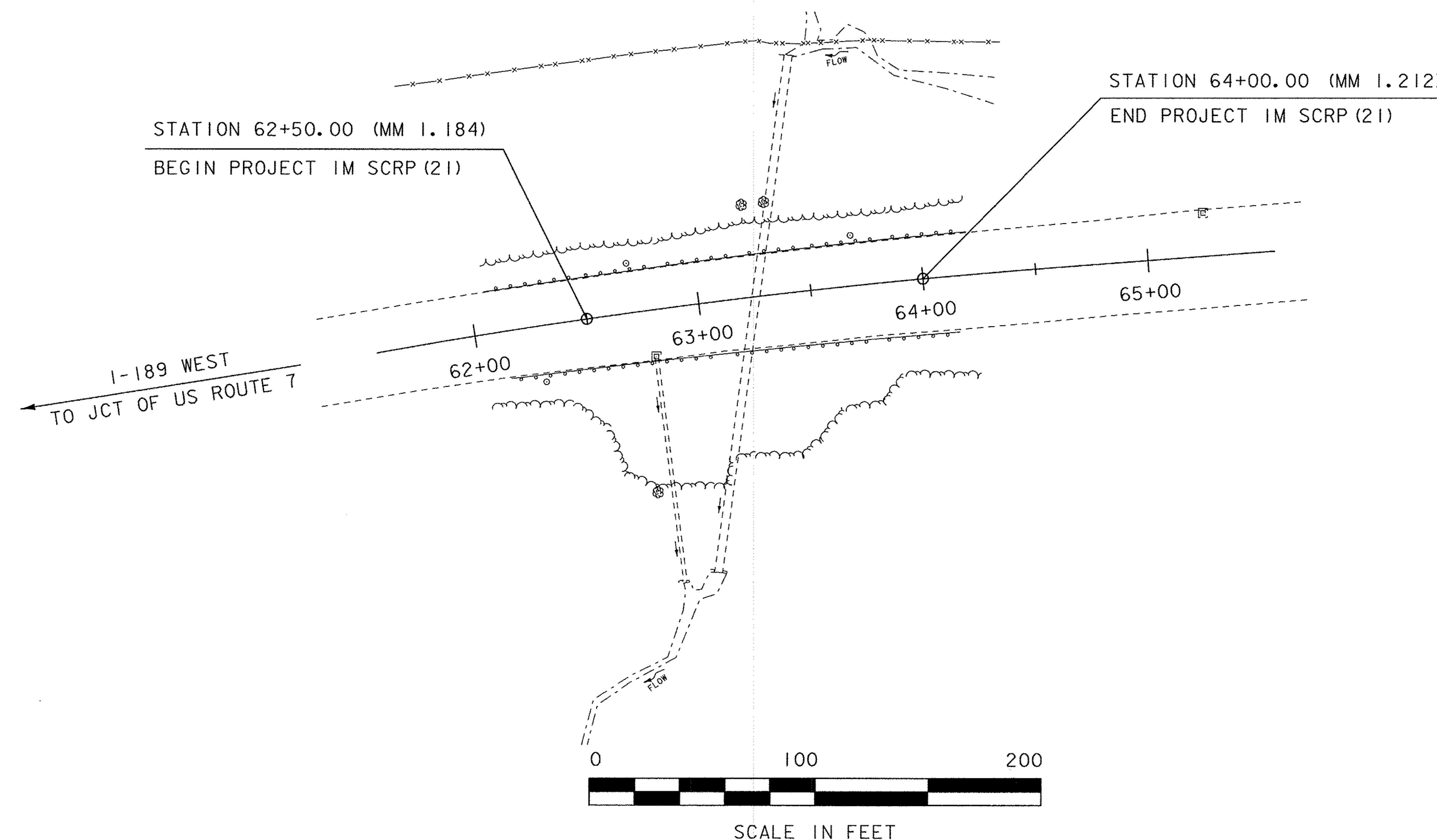
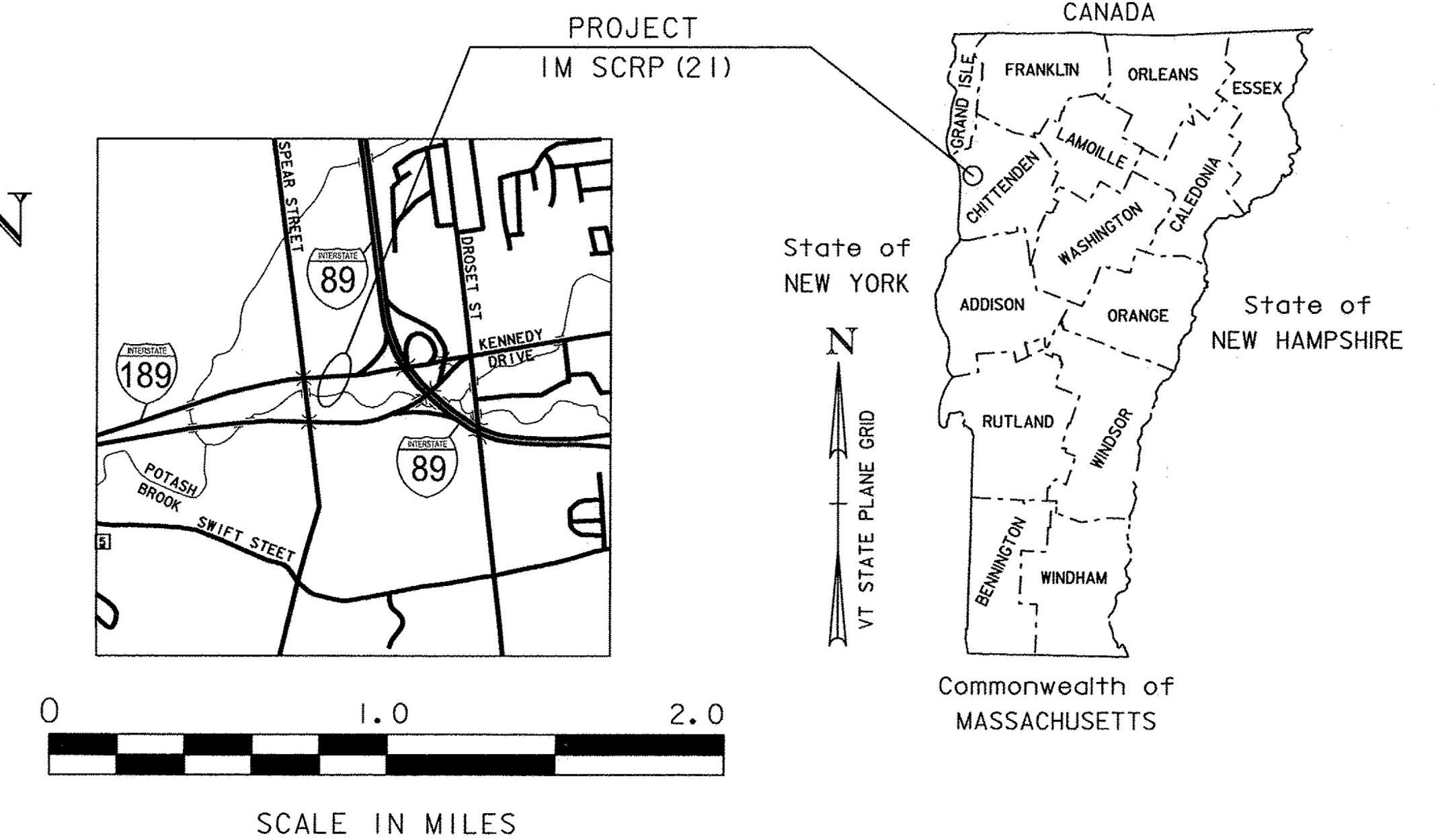


## PROPOSED IMPROVEMENT CITY OF SOUTH BURLINGTON COUNTY OF CHITTENDEN I-189 (PRINCIPAL ARTERIAL - INTERSTATE - NHS)

BEGINNING IN THE CITY OF SOUTH BURLINGTON ON THE WESTBOUND LANES OF INTERSTATE 189 AT MM 1.184 (STA. 62+50) EXTENDING EASTERLY 0.028 MILES (150 FEET) TO MM 1.212 (STA. 64+00).

LENGTH OF PROJECT: 150.00 FT = 0.028 MILES

WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REHABILITATION OF AN EXISTING CULVERT WITH AN ULTRAVIOLET CURED IN-PLACE PIPE LINER, SLOPE STABILIZATION, DRAINAGE IMPROVEMENTS, TRAFFIC CONTROL AND OTHER HIGHWAY RELATED ITEMS.



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 1	
SURVEYED BY :	VAOT
SURVEYED DATE :	03/29/2016
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD 83 (2011)

DIRECTOR OF PROJECT DELIVERY	
APPROVED:	DATE 4/19/2017
PROJECT MANAGER :	KEN UPMAL, P. E.
PROJECT NAME :	SOUTH BURLINGTON
PROJECT NUMBER :	IM SCR (21)
SHEET 1 OF 29 SHEETS	

## INDEX OF SHEETS

1. TITLE SHEET
2. INDEX OF SHEETS
3. CONVENTIONAL SYMBOLOGY LEGEND SHEET
4. TYPICALS SHEET
- 5.-6. DETAILS SHEETS
7. TIE SHEET
8. BORING INFORMATION SHEET
9. BORING LOG SHEET
- 10.-11. QUANTITY SHEETS
12. PLAN SHEET
13. PIPE PROFILE SHEET
14. EPSC NARRATIVE SHEET
15. EPSC DETAILS SHEET
16. EPSC EXISTING CONDITIONS PLAN SHEET
17. EPSC CONSTRUCTION PLAN SHEET
18. EPSC FINAL CONDITIONS PLAN SHEET
- 19.-26. PIPE CROSS SECTION SHEETS
- 27.-28. SLOPE CROSS SECTION SHEETS
- 29.-30. TRAFFIC CONTROL SHEETS

## VAOT DESIGN STANDARDS

C-10	02-11-08
G-1	03-10-17
T-1	04-25-16
T-11	08-06-12
T-12	08-06-12
T-28	08-06-12
T-31	08-06-12

PROJECT NAME: SOUTH BURLINGTON  
PROJECT NUMBER: IM SCRP(21)

FILE NAME: I6d064/Design/frm.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: A. AGRAWAL
DESIGNED BY: C. LEACH	CHECKED BY: C. LEACH
INDEX OF SHEETS	SHEET 2 OF 30

**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
◎	IPNF IRON PIN FOUND
●	IPNS IRON PIN TO BE SET
⊠	CALC EXISTING ROW POINT
○	PROW PROPOSED ROW POINT
[LENGTH]	LENGTH CARRIED ON NEXT SHEET

**COMMON TOPOGRAPHIC POINT SYMBOLS**

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

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

**PROPOSED GEOMETRY CODES**

CODE	DESCRIPTION
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
CC	CENTER OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
POB	POINT OF BEGINNING
POE	POINT OF ENDING
STA	STATION PREFIX
AH	AHEAD STATION SUFFIX
BK	BACK STATION SUFFIX
D	CURVE DEGREE OF (100FT)
R	CURVE 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	
— 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	
— TOWN LINE —	TOWN BOUNDARY LINE
— COUNTY LINE —	COUNTY BOUNDARY LINE
— STATE 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

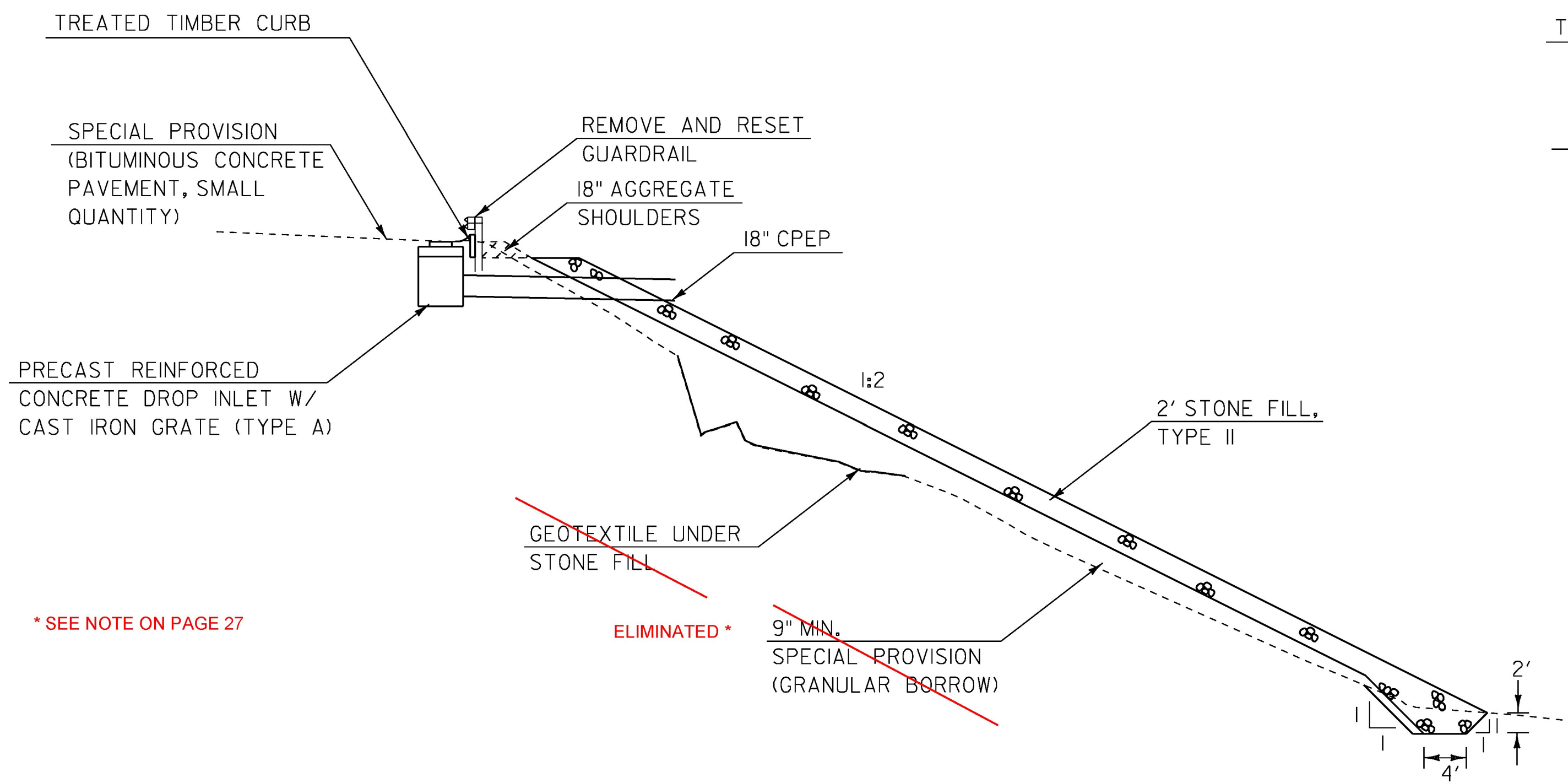
SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLGY

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

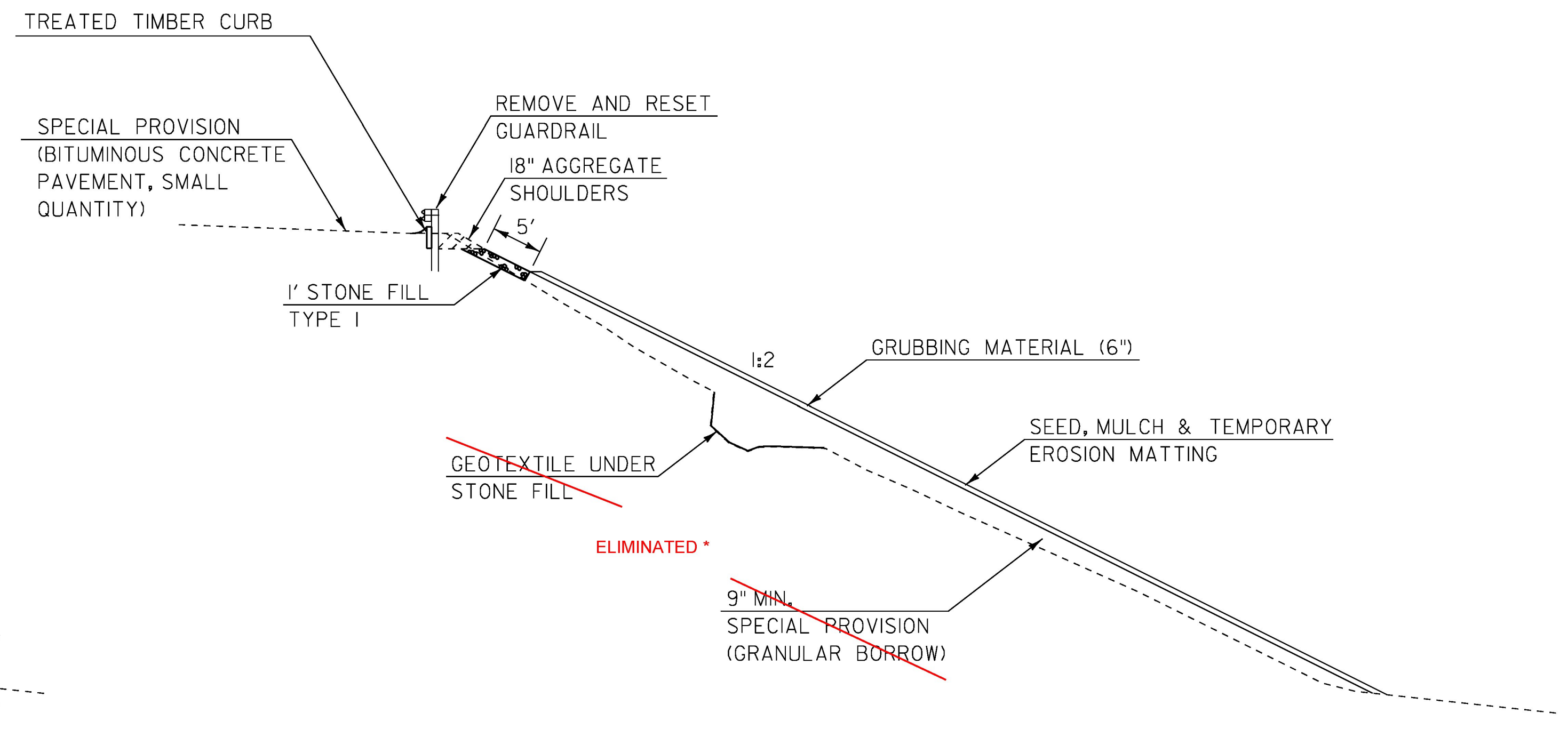
ARCHEOLOGICAL & HISTORIC	
— ARCH —	ARCHEOLOGICAL BOUNDARY
— HISTORIC DIST —	HISTORIC DISTRICT BOUNDARY
— HISTORIC —	HISTORIC AREA
Ⓜ	HISTORIC STRUCTURE

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: SOUTH BURLINGTON  
 PROJECT NUMBER: IM SCR(21)  
 FILE NAME: I6d064/Design/frm.dgn PLOT DATE: 27-APR-2017  
 PROJECT LEADER: K. UPMAL DRAWN BY: VTRANS  
 DESIGNED BY: VTRANS CHECKED BY: C. LEACH  
 CONVENTIONAL SYMBOLGY LEGEND SHEET SHEET 3 OF 30



SLOPE STABILIZATION TYPICAL (STONE SWALE)



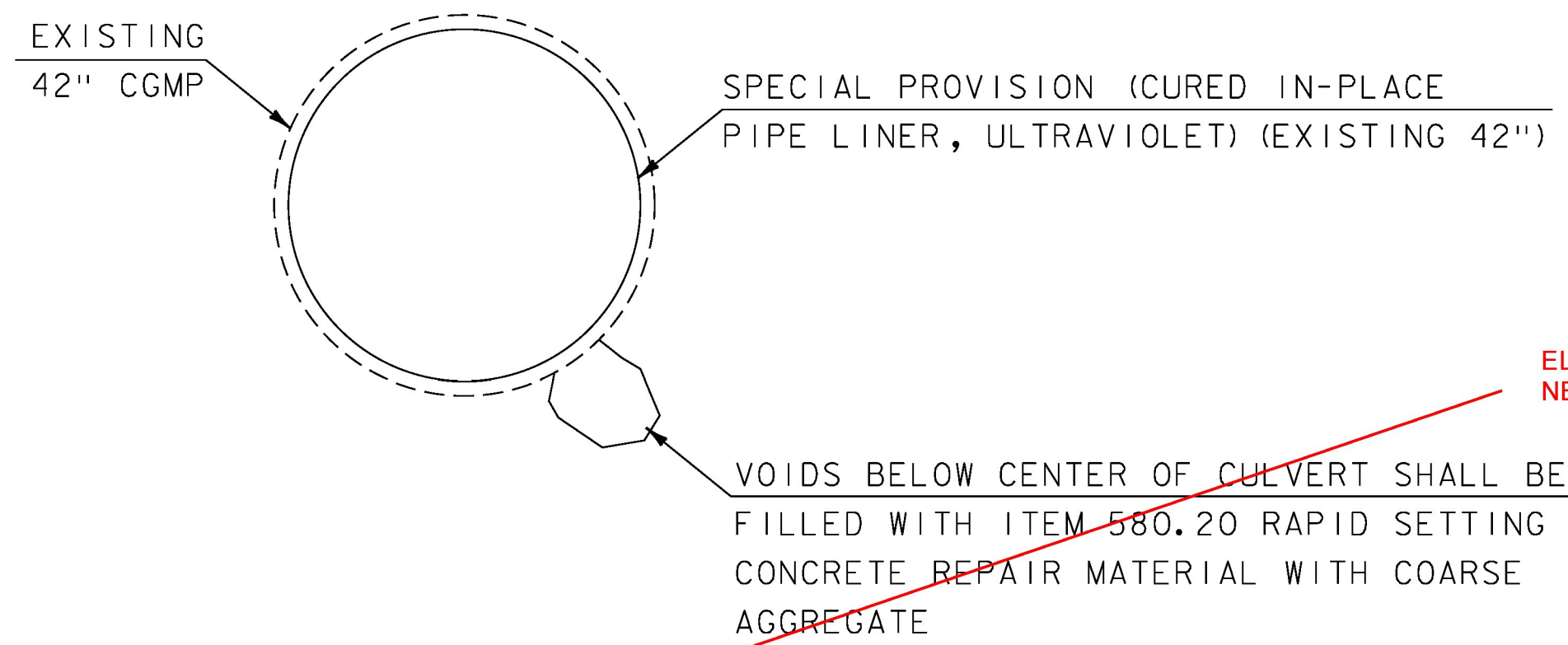
SLOPE STABILIZATION TYPICAL (GRANULAR BORROW)

STABILIZATION NOTES

1. THE GRADATION REQUIREMENTS FOR THE GRANULAR BORROW WILL MEET THOSE STATED IN ITEM 900.608 SPECIAL PROVISION (GRANULAR BORROW).
2. ANY LARGE DEBRIS NEEDS TO BE REMOVED FROM THE SLOPE AND DEPRESSIONS PRIOR TO GEOTEXTILE AND GRANULAR BORROW BEING PLACED. THIS WILL BE PAID UNDER ITEM 201.11 CLEARING AND GRUBBING.
3. LOCATION SHOWN ON PLANS FOR PROPOSED DI LOCATION IS APPROXIMATE. PLACE DI IN LOW POINT TO ENSURE PROPER DRAINAGE, ADJUST STONE SWALE LOCATION ACCORDINGLY.
4. AN ESTIMATED QUANTITY FOR SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY) AND COLD PLANING HAVE BEEN INCLUDED TO REGRADE TO IMMEDIATE AREA OF THE PROPOSED DI IF NEEDED TO ENSURE DRAINAGE. THESE ITEMS WILL BE USED AT THE DISCRETION OF THE ENGINEER.
5. EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.025 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT, AT A RATE OR 0.080 GAL/SY ON COLD PLANED SURFACES, OR AS DIRECTED BY THE ENGINEER. THIS WILL BE PAID FOR UNDER ITEM 900.680 SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY).
6. THE STONE FILL SECTION WILL NEED TO BE SHAPED AS SHOWN ON SHEET 5 TO ENSURE WATER IS DIRECTED DOWN THE STONE AND INTO THE WETLAND.
7. GEOTEXTILE UNDER STONE FILL WILL BE PLACED IN LARGE VOID AREAS THAT ARE PRESENT ON THE SLOPE, NOT THE ENTIRE SLOPE FACE. IT WILL BE USED TO SEPARATE THE PLACED GRANULAR BORROW FROM NATIVE GROUND. LOCATIONS WILL BE DETERMINED BY THE ENGINEER.
8. SOME LOCATIONS HAVE BEEN FILLED IN BY VTRANS DISTRICT PERSONNEL TO ENSURE THE STABILITY OF THE SLOPE. CROSS SECTIONS MAY NOT REFLECT THE EXACT TOPOGRAPHY.
9. REMOVAL OF EXISTING TIMBER CURBING BENEATH GUARDRAIL WILL BE CONSIDERED INCIDENTAL TO ITEM 621.75 REMOVE AND RESET GUARDRAIL.

SHEET NOT TO SCALE

PROJECT NAME: SOUTH BURLINGTON	
PROJECT NUMBER: IM SCR(21)	
FILE NAME: I6d064/Design/typ.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: M. BOOKER
TYPICALS SHEET	SHEET 4 OF 30

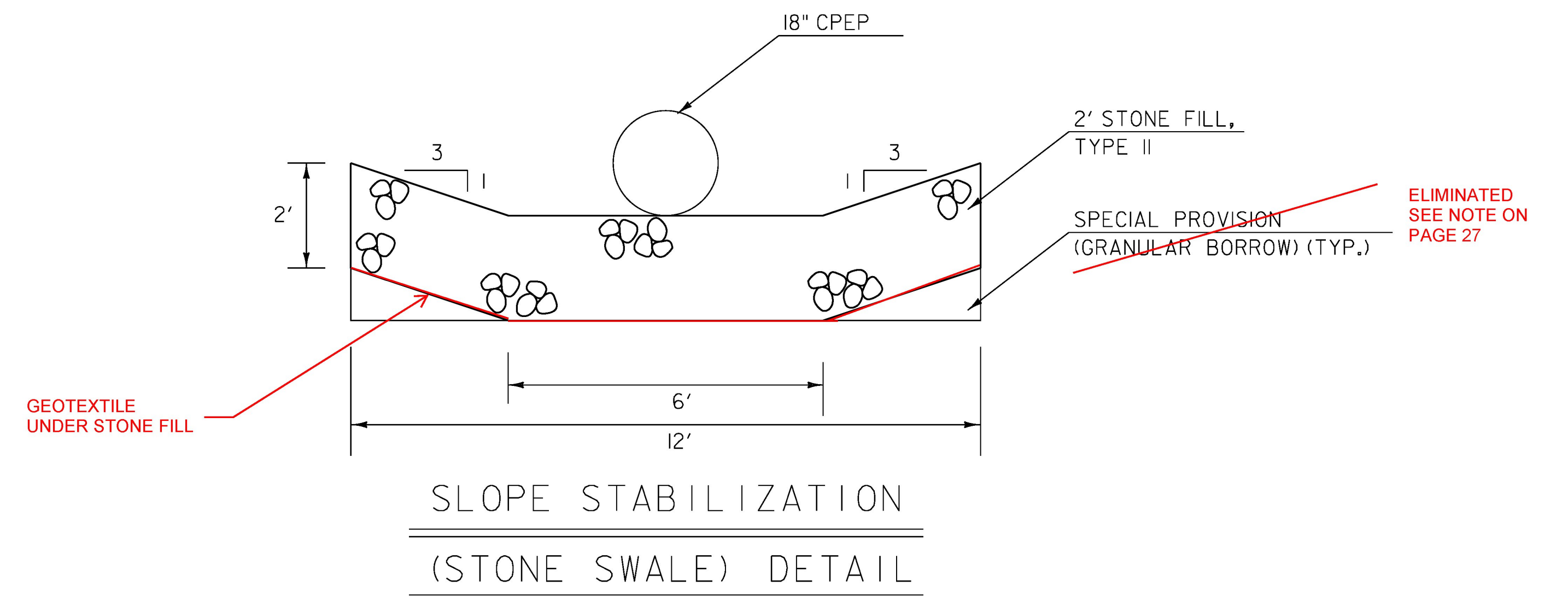


ELIMINATED, NOT NEEDED

MM 1.198  
CULVERT LINING DETAIL

LINING NOTES

1. THE ITEM 900.640 SPECIAL PROVISION (CURED IN-PLACE PIPE LINER, ULTRAVIOLET) (EXISTING 42") IS INTENDED TO PROVIDE FOR THE INSTALLATION OF A RESIN IMPREGNATED FLEXIBLE TUBE, WHICH SHALL BE CONTINUOUS AND TIGHTLY FORMED TO THE ORIGINAL CONDUIT. THE RESIN SHALL BE CURED USING ULTRAVIOLET RAYS.
2. THE CONTRACTOR WILL PREPARE THE EXISTING PIPE IN ACCORDANCE WITH THE CIPP MANUFACTURER'S RECOMMENDATIONS AND 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 THE INSIDE OF THE EXISTING CULVERT PRIOR TO INSTALLING THE CIPP LINER. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO ITEM 900.640 SPECIAL PROVISION (CURED IN-PLACE PIPE LINER, ULTRAVIOLET) (EXISTING 42").
3. ALL WORK ASSOCIATED WITH THE REPAIR OF THE CULVERT SHALL BE DONE IN DRY CONDITIONS WITH NO STANDING OR FLOWING WATER PRESENT INSIDE THE CULVERT.
4. CONTRACTOR WILL NOT BE ALLOWED TO BEING LINER INSTALLATION IF MEASURABLE RAIN IS FORECASTED WITHIN 24 HOURS OF THE PROPOSED INSTALLATION TIME FRAME.
5. THERE ARE CURRENTLY VOIDS EXISTING IN THE BOTTOM HALF OF THE PIPE THAT WILL NEED REPAIR. SEE HARTIGAN REPORT FOR DETAILS.
6. ANY REPAIR MATERIAL PLACED INSIDE THE PIPE TO FILL VOIDS WILL BE GIVEN TIME TO SOLIDIFY BEFORE THE LINER IS BROUGHT THROUGH THE PIPE.
7. PREPARING AND LINING OF THE PIPE WILL BE DONE IN DRY CONDITIONS. THE COST ASSOCIATED WITH THIS WORK SHALL BE PAID FOR UNDER ITEM 900.640 SPECIAL PROVISION (CURED IN-PLACE PIPE LINER, ULTRAVIOLET) (EXISTING 42"). ANY RESTRICTION OF FLOW WILL HAVE NO ADVERSE EFFECT UPSTREAM OF THE INLET.

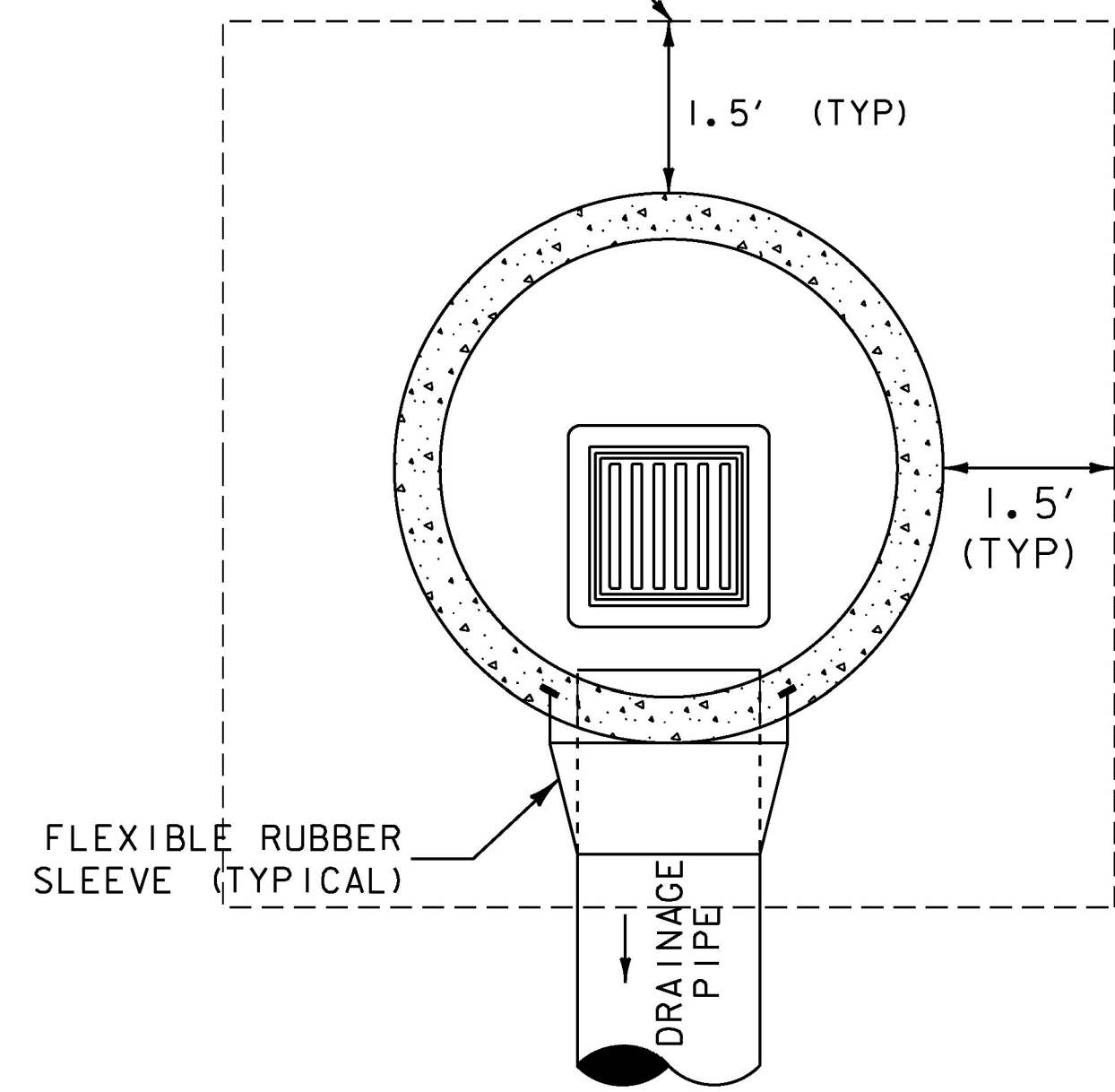


SLOPE STABILIZATION  
(STONE SWALE) DETAIL

SHEET NOT TO SCALE

PROJECT NAME: SOUTH BURLINGTON	
PROJECT NUMBER: IM SCRP(21)	
FILE NAME: I6d064/Design/typ.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: M. BOOKER
DETAILS SHEET 1	SHEET 5 OF 30

LIMITS FOR TRENCH EXCAVATION  
GRANULAR BACKFILL FOR STRUCTURES



SINGLE GRATE DROP INLET  
PLAN VIEW

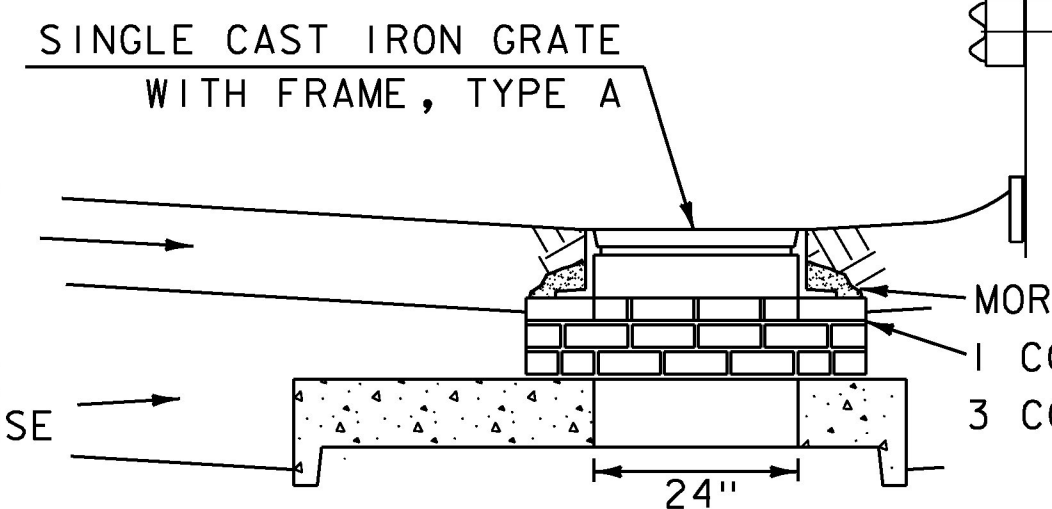
\* PAVEMENT LIFTS  
2-1.5" TYPE I VS OVER  
3-3.0" TYPE I IS

PAVEMENT LIFTS  
1-2" TYPE I VS  
1-2" TYPE I IS

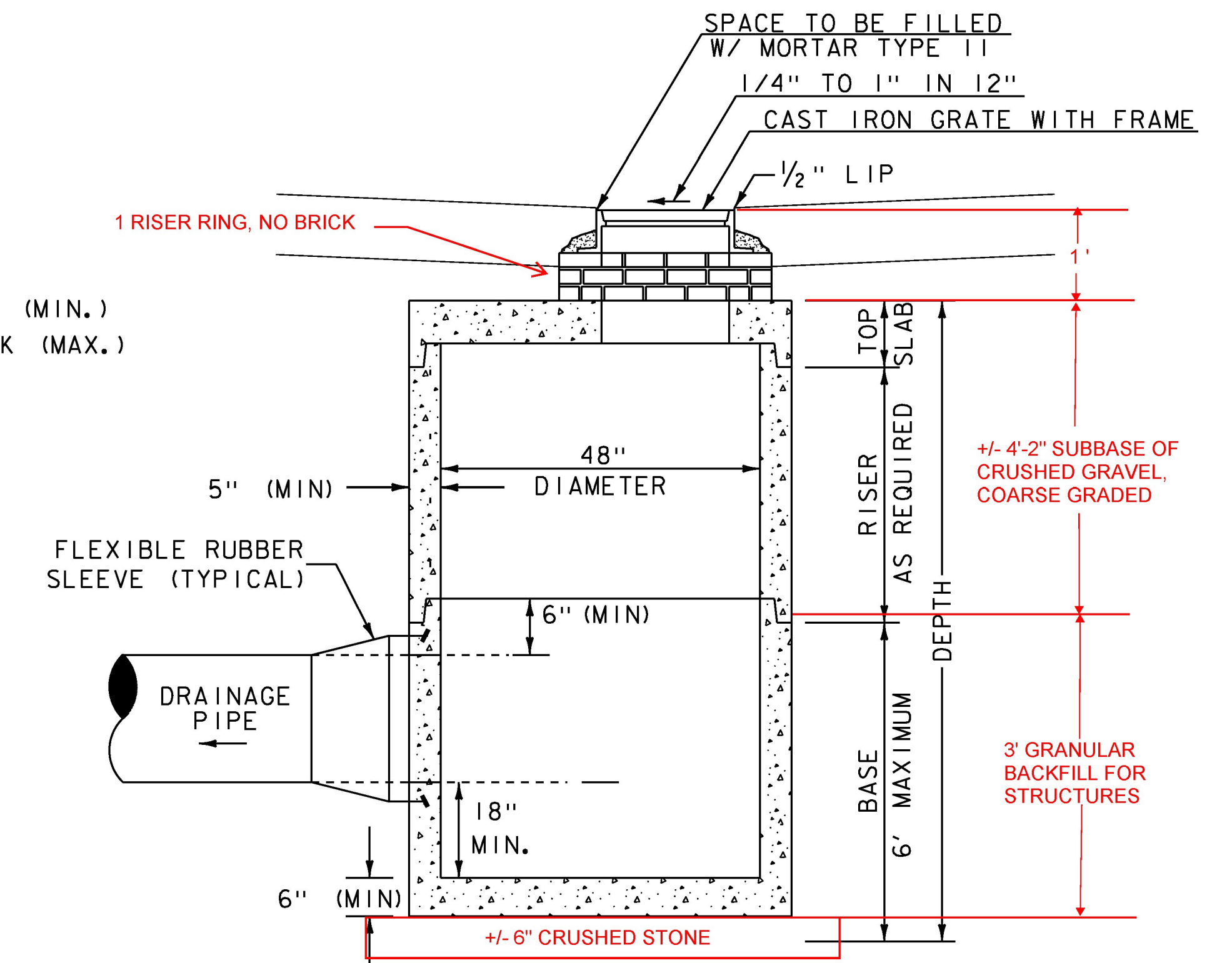
\*APPROXIMATE  $\pm 2\frac{1}{4}$ "  
BITUMINOUS CONCRETE  
PAVEMENT (TYP.)

APPROXIMATE 24" SUBBASE  
OF CRUSHED GRAVEL, COARSE  
GRADED (TYP.)

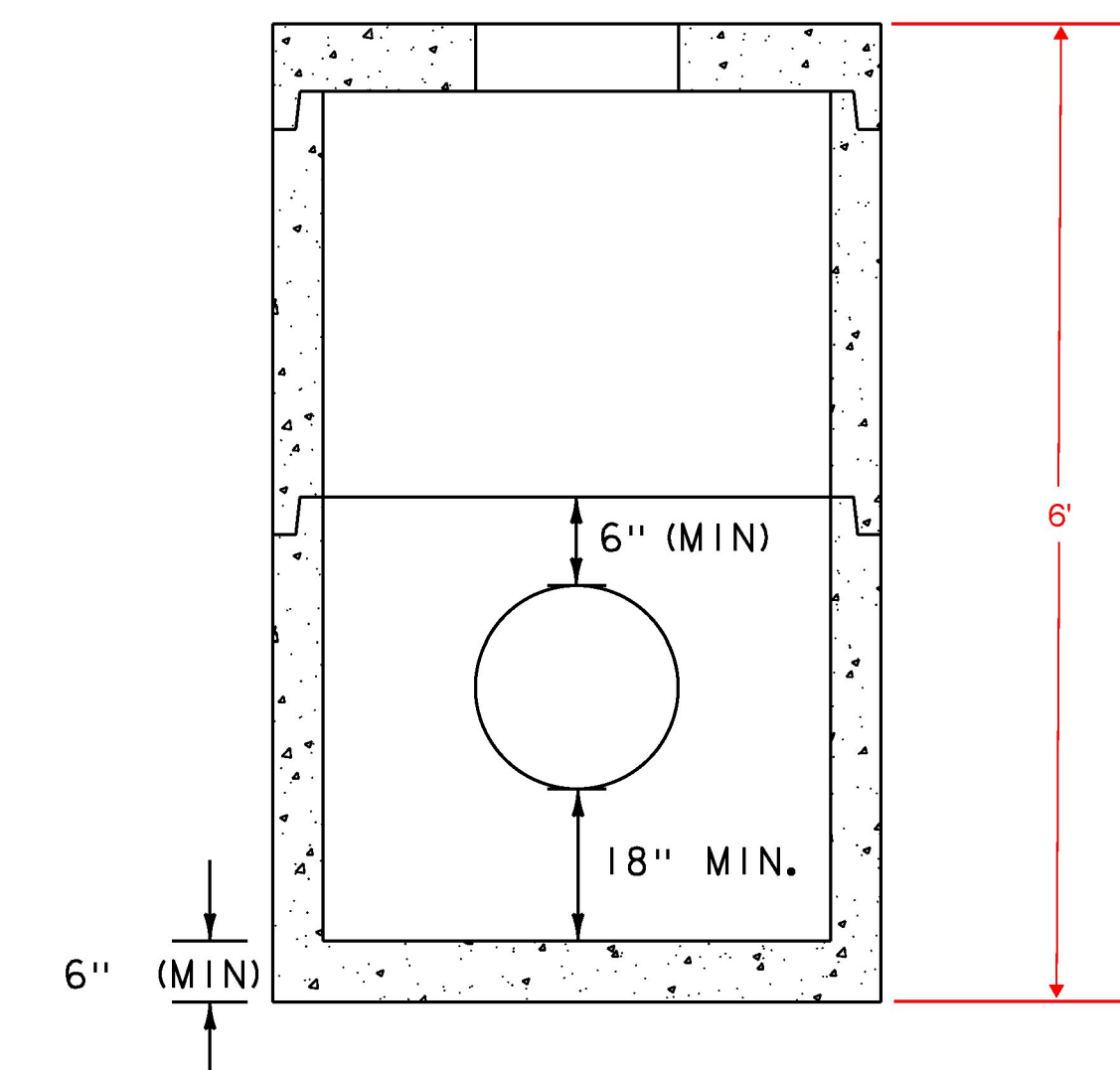
APPROXIMATE SAW CUT AREA FOR  
INSTALLATION OF NEW DI



TYPICAL ELEVATION OF GRATE INSTALLATION



ELEVATION VIEW



SIDE VIEW

TYPICAL PRECAST REINFORCED DROP INLET  
WITH CAST IRON GRATE

PRECAST REINFORCED CONCRETE DROP INLET WITH CAST IRON GRATE:

1. PRECAST CONCRETE SECTIONS SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND ASTM C-478.
2. MINIMUM CONCRETE COMPRESSIVE STRENGTH: 5,000 PSI AT 28-DAYS
3. STEEL REINFORCING SHALL CONFORM TO ASTM A185 OR A82 FOR HS-25 LOADING.
4. FACE OF PIPE SHALL NOT PROJECT MORE THAN TWO INCHES OR LESS THAN ONE INCH FROM INSIDE WALL OF STRUCTURE.
5. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF OUTSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN THREE INCHES TO JOINTS.
6. FITTING FRAME TO FINAL GRADE MAY BE DONE WITH BRICK OR PRECAST CONCRETE GRADE RINGS OF APPROPRIATE THICKNESS (THREE COURSES MAX) WILL BE CONSIDERED INCIDENTAL TO ITEM 604.18 PRECAST REINFORCED CONCRETE DROP INLET WITH CAST IRON GRATE.
7. FLAT SLAB TOPS SHALL BE USED FOR ALL CATCH BASINS UNLESS OTHERWISE PERMITTED BY THE ENGINEER. ALL PIPE INVERTS AND PENETRATION ANGLES SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT AND BE ASSEMBLED USING A BUTYL RUBBER OR EQUAL SEALANT, AS APPROVED BY THE ENGINEER.
9. PROVIDE FLEXIBLE RUBBER SLEEVES CONFORMING TO ASTM C-923, RESILIENT, OF SIZE REQUIRED, FOR EACH PIPE CONNECTING TO STRUCTURE. SLEEVES SHALL EITHER BE SNAP IN-PLACE BOOTS PROVIDED BY THE MANUFACTURER OR CAST INTO PRECAST STRUCTURE BY THE FABRICATOR FOR ALL PIPE PENETRATIONS.
10. PAYMENT FOR INSTALLATION OF THE CATCH BASINS SHALL BE MADE UNDER ITEM 604.18 PRECAST REINFORCED CONCRETE DROP INLET WITH CAST IRON GRATE.
11. PAY LIMITS DEPICTED ABOVE MAY BE REDUCED AT THE REQUEST OF THE ENGINEER TO MINIMIZE IMPACT ON THE TRAVEL LANE OF 1-189.
12. PAVEMENT AND SUBBASE MATERIAL THICKNESS MAY BE ADJUSTED AT THE REQUEST OF THE ENGINEER TO CLOSER MATCH EXISTING CONDITIONS OF THE AREA.

SHEET NOT TO SCALE

PROJECT NAME: CABOT - DANVILLE  
PROJECT NUMBER: FECC F 028-3(26) C/2

FILE NAME: d78d347frm.dgn  
PROJECT LEADER: K. UPMAL  
DESIGNED BY: C. LEACH  
DETAILS SHEET 2

PLOT DATE: 27-APR-2017  
DRAWN BY: C. LEACH  
CHECKED BY: M. BOOKER  
SHEET 6 OF 30

GPS CONTROL POINTS

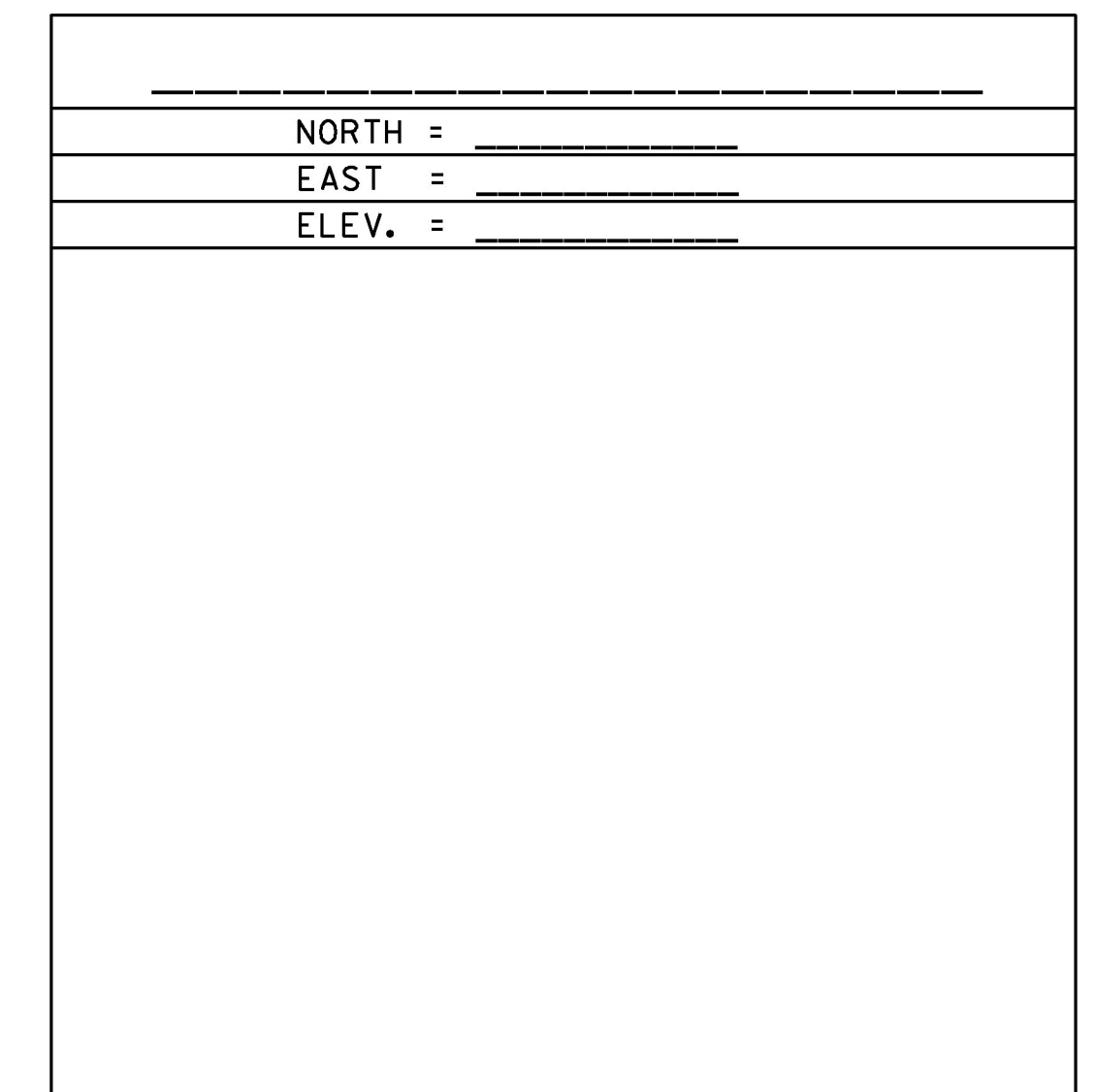
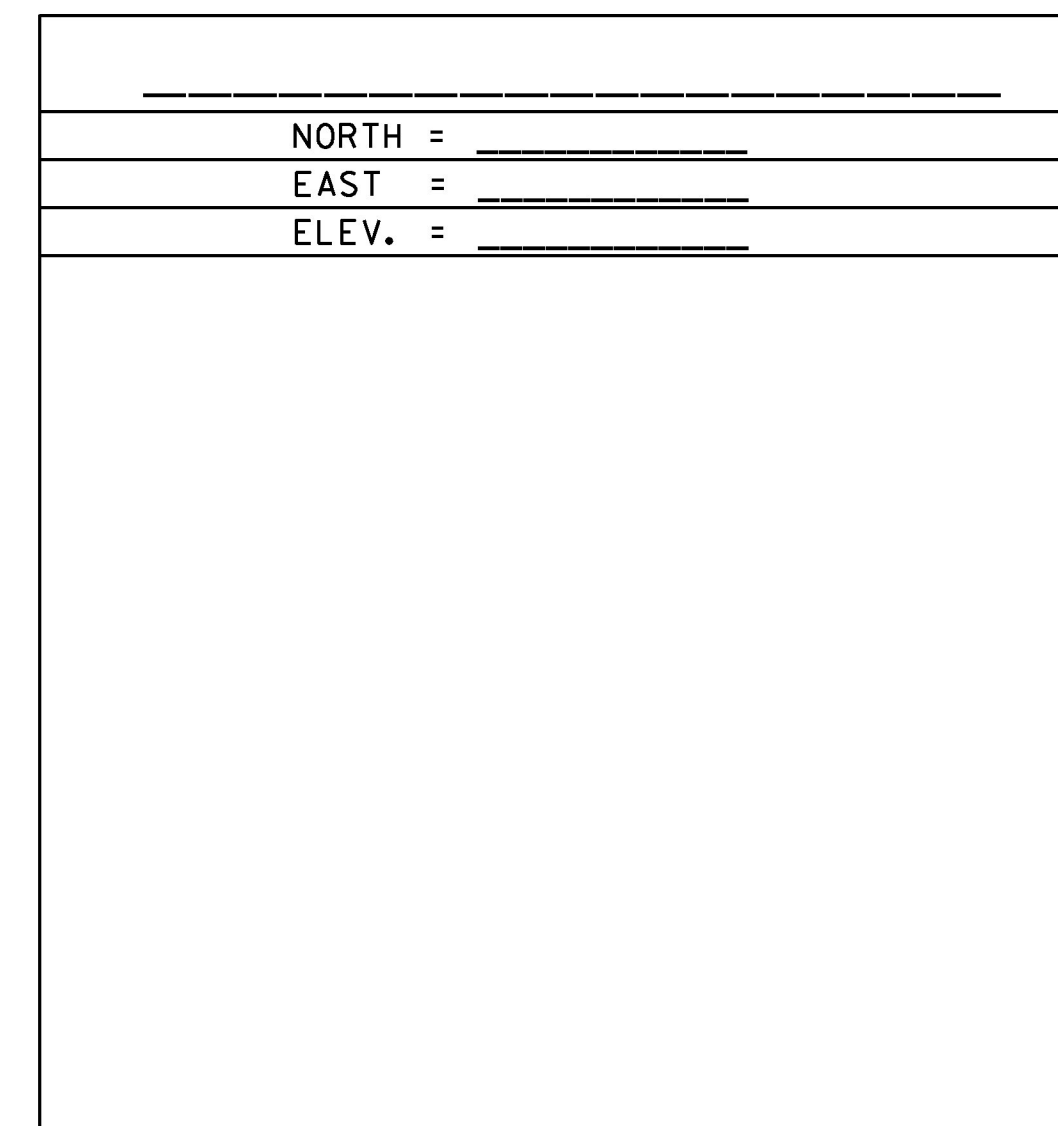
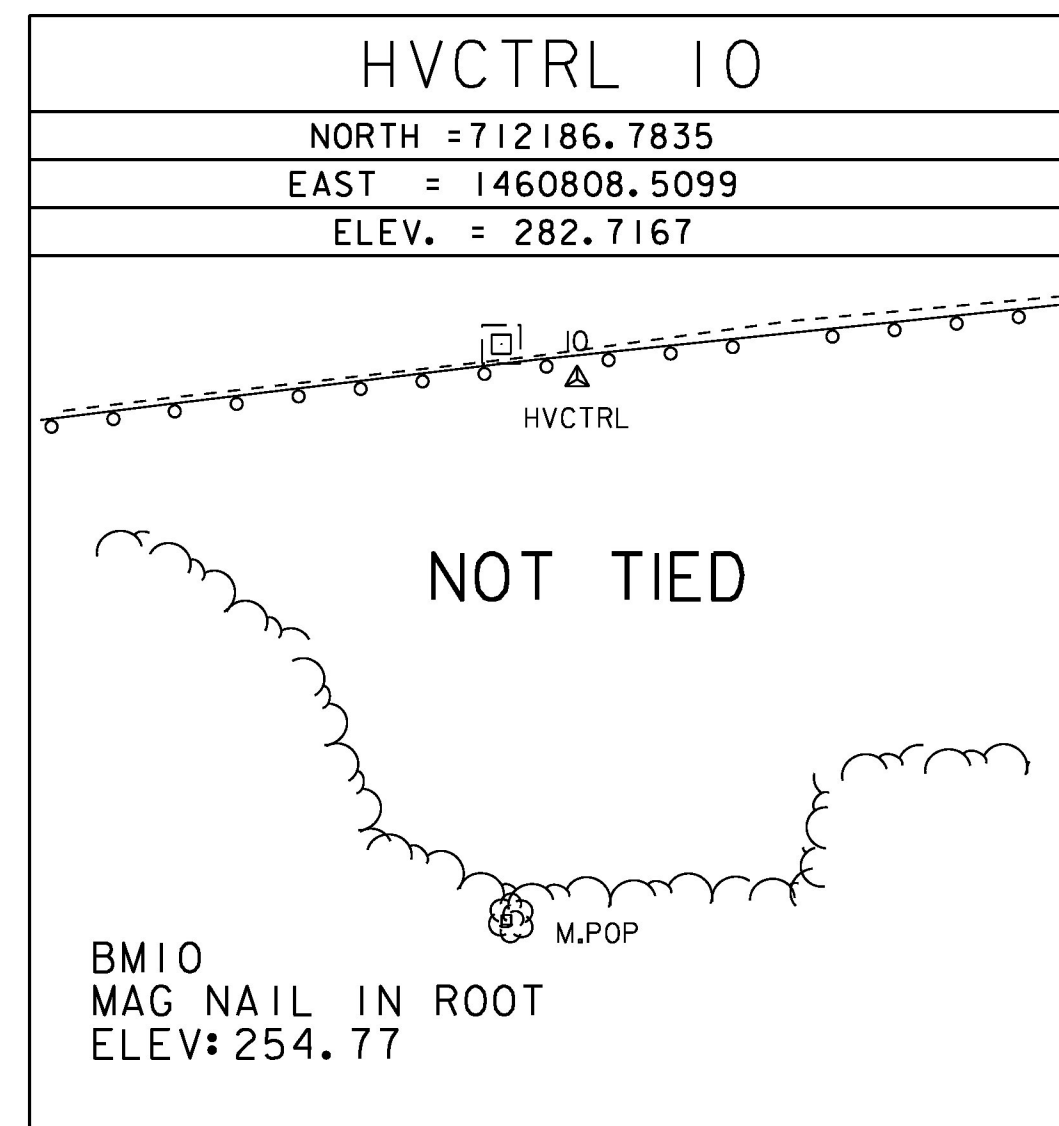
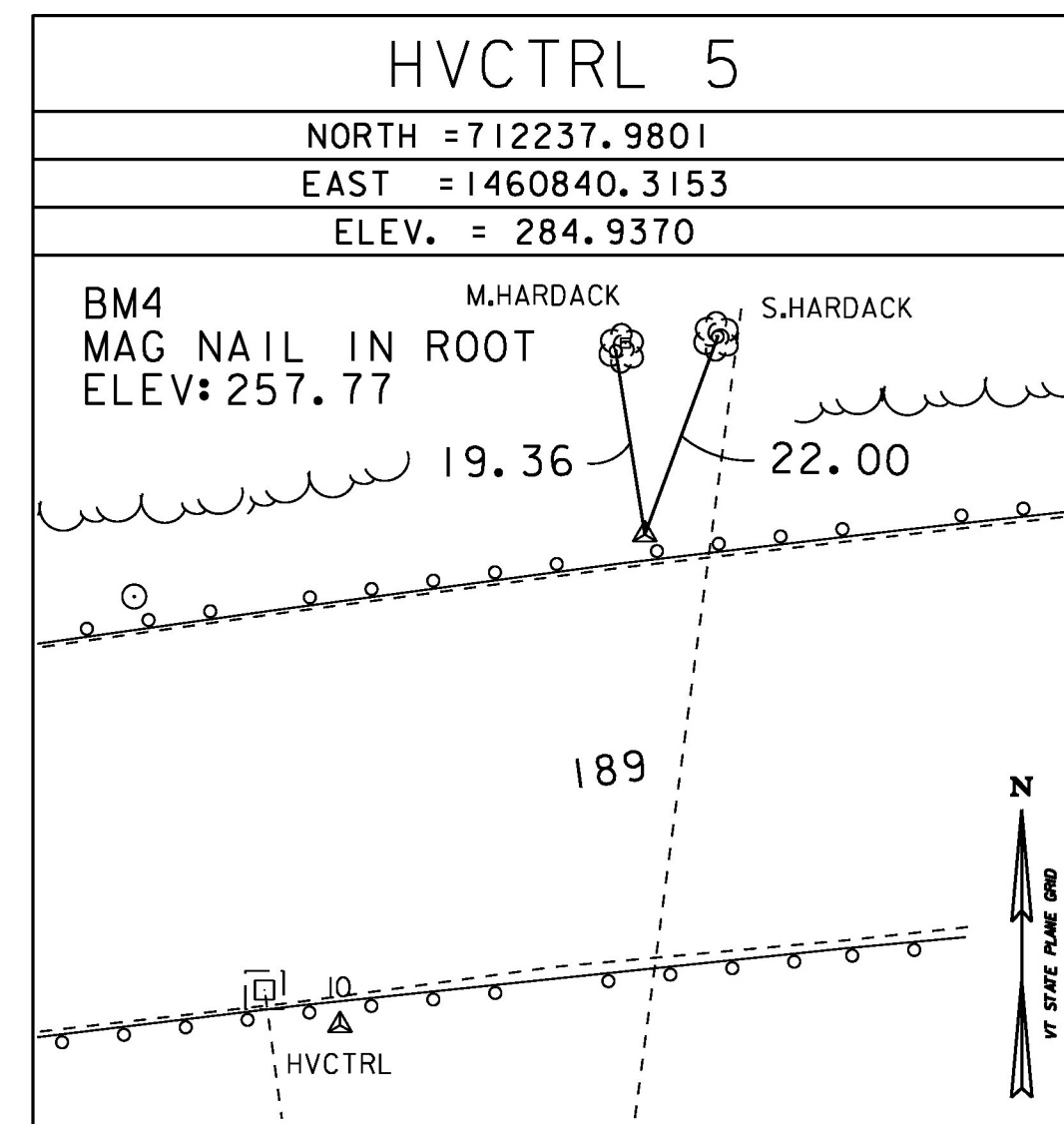
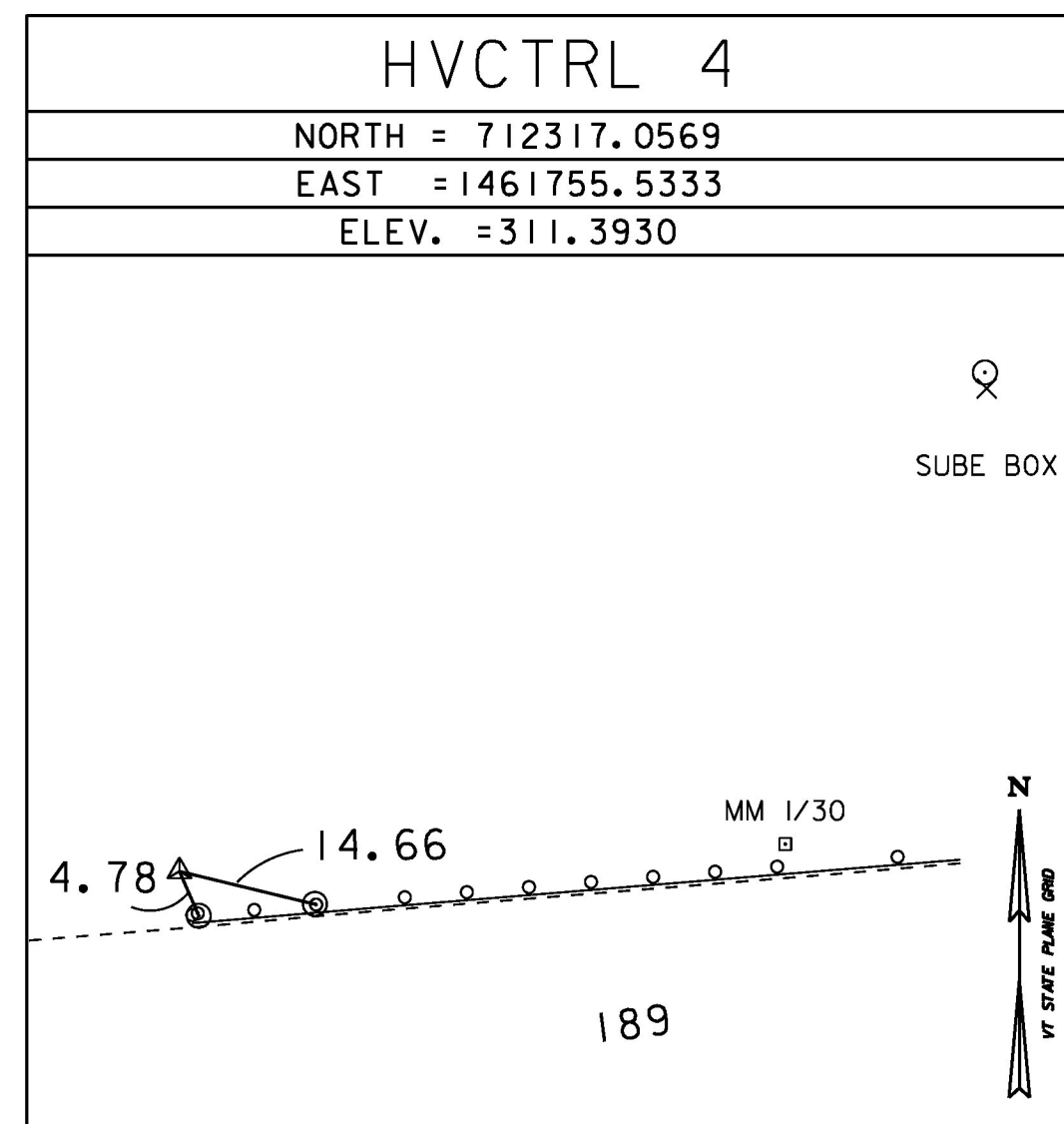
HVCTRL #1  
 EXIT 13 AZ MK  
 NORTH=714647.3765  
 EAST=1461628.7990  
 ELEV=301.8400

SOUTH BURLINGTON, VT.  
 TO REACH FROM THE I-189 BRIDGE OVER I-89 GO N ALONG I-89 NB FOR 0.8 MI TO THE MARK ON THE LEFT IN THE MEDIAN, JUST S OF A U-TURN. THE MARK IS FLUSH WITH GROUND IN THE TOP OF A 30 CM DIA CONCRETE MONUMENT. IT IS 3.6 M E OF AND ABOUT 0.6 M LOWER THAN THE I-89 SB E EDGE OF PAVEMENT, 9.0 M W OF THE I-89 NB W EDGE OF PAVEMENT, 6.2 M S OF THE CL OF THE U-TURN, 5.8 M SW OF A U-TURN SIGN, 20.8 M N OF THE MOST EASTERLY POST FOR A SPEED LIMIT SIGN, AND 0.3 M S OF A FIBERGLASS WITNESS.

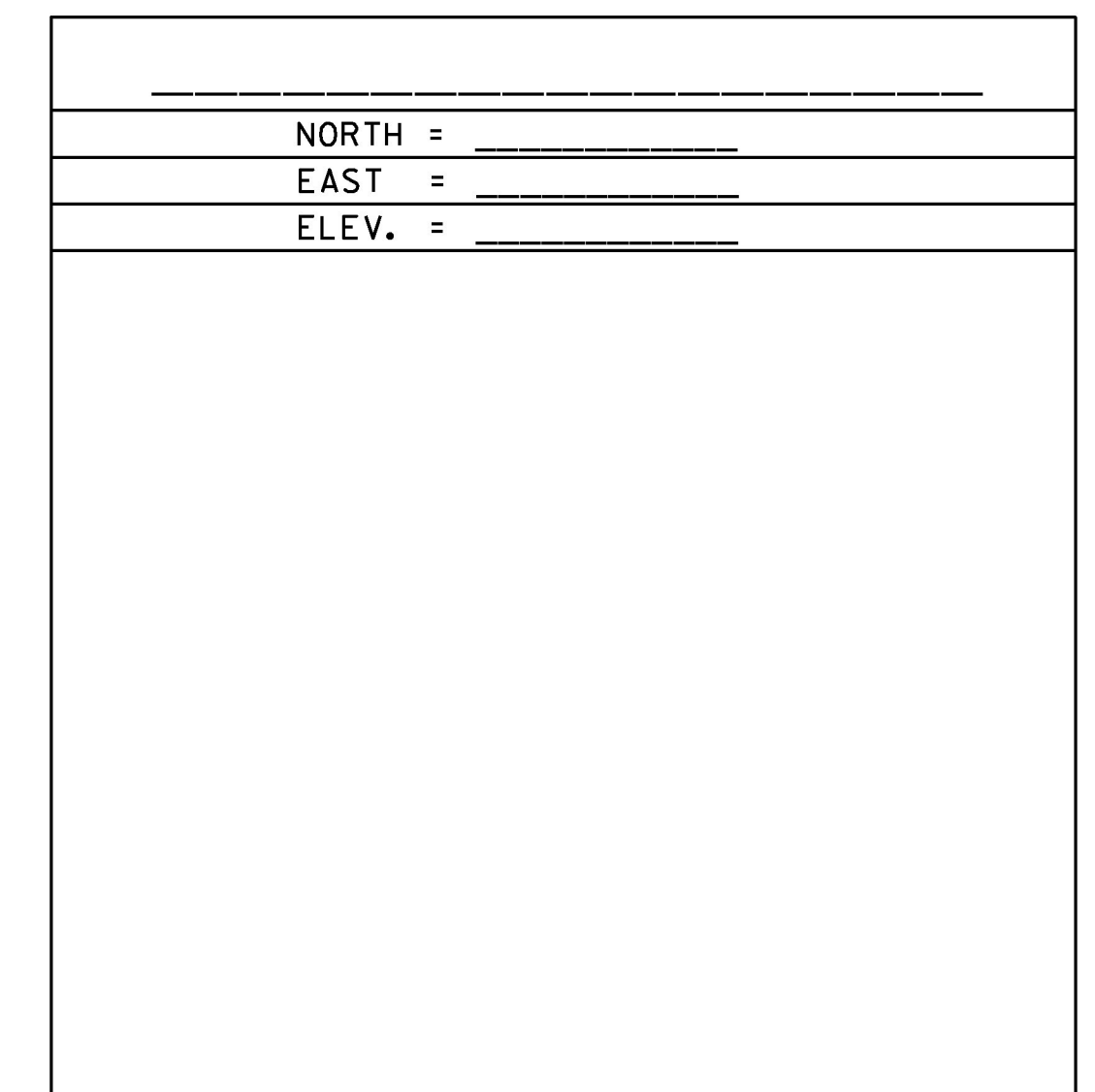
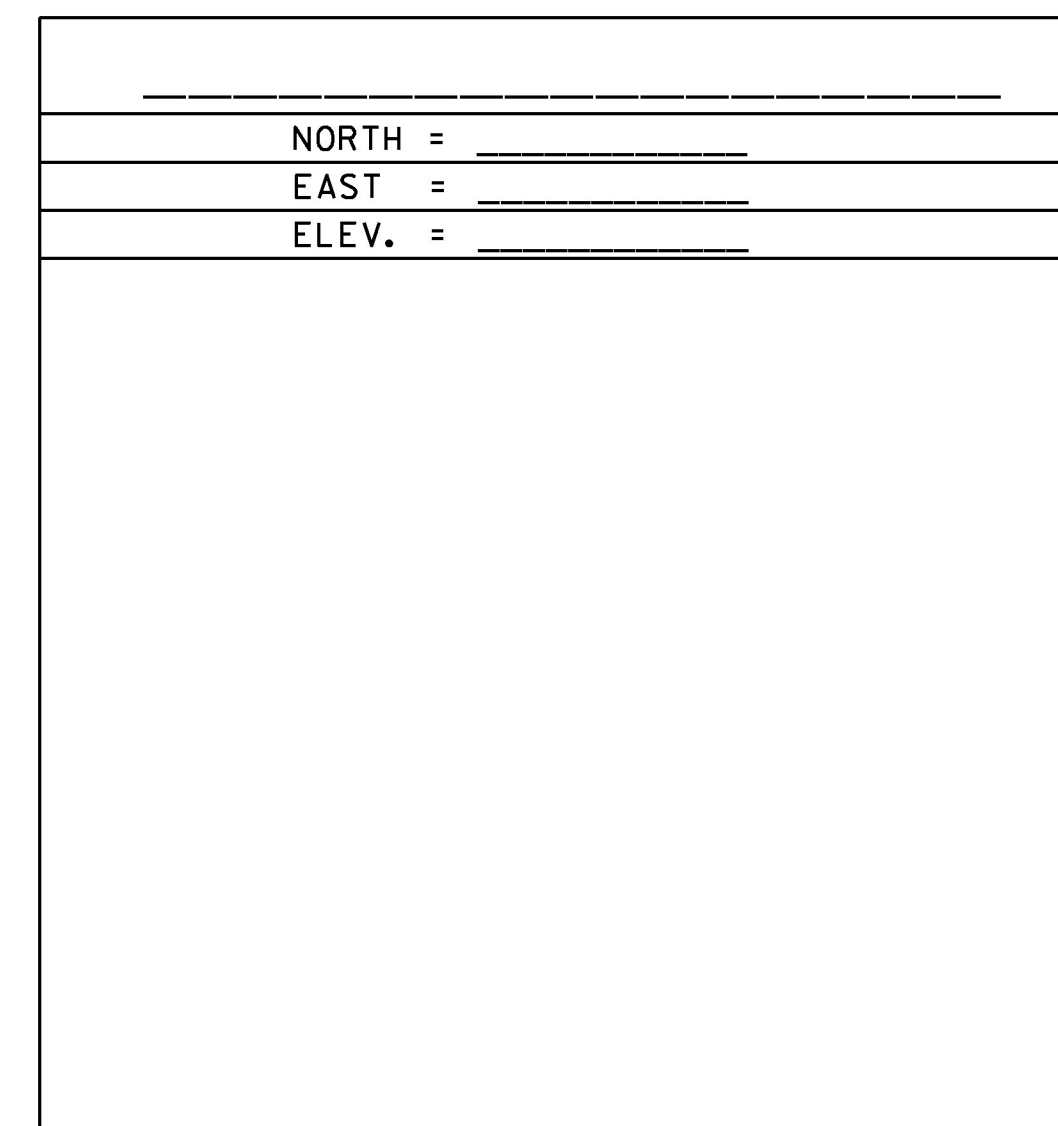
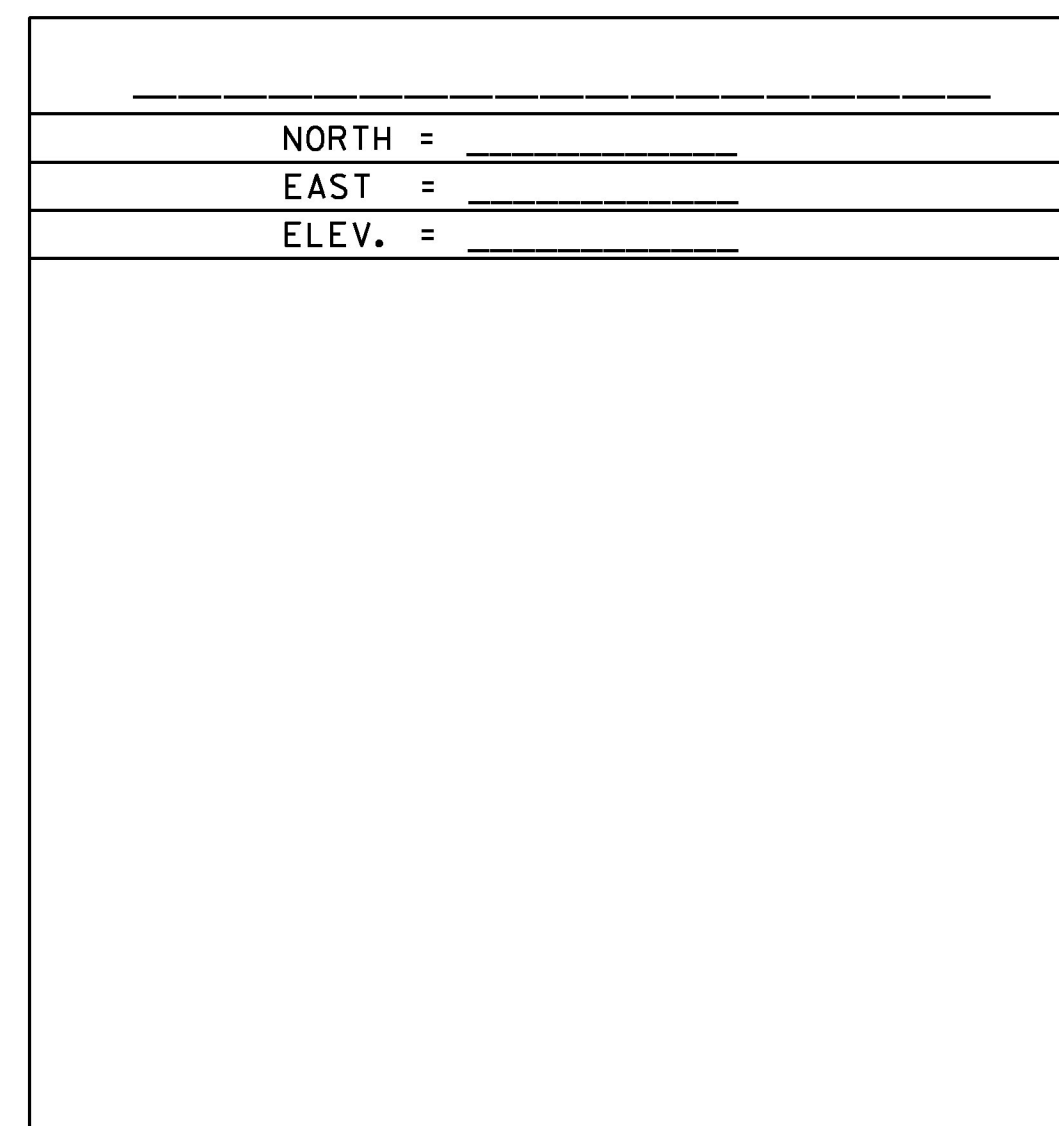
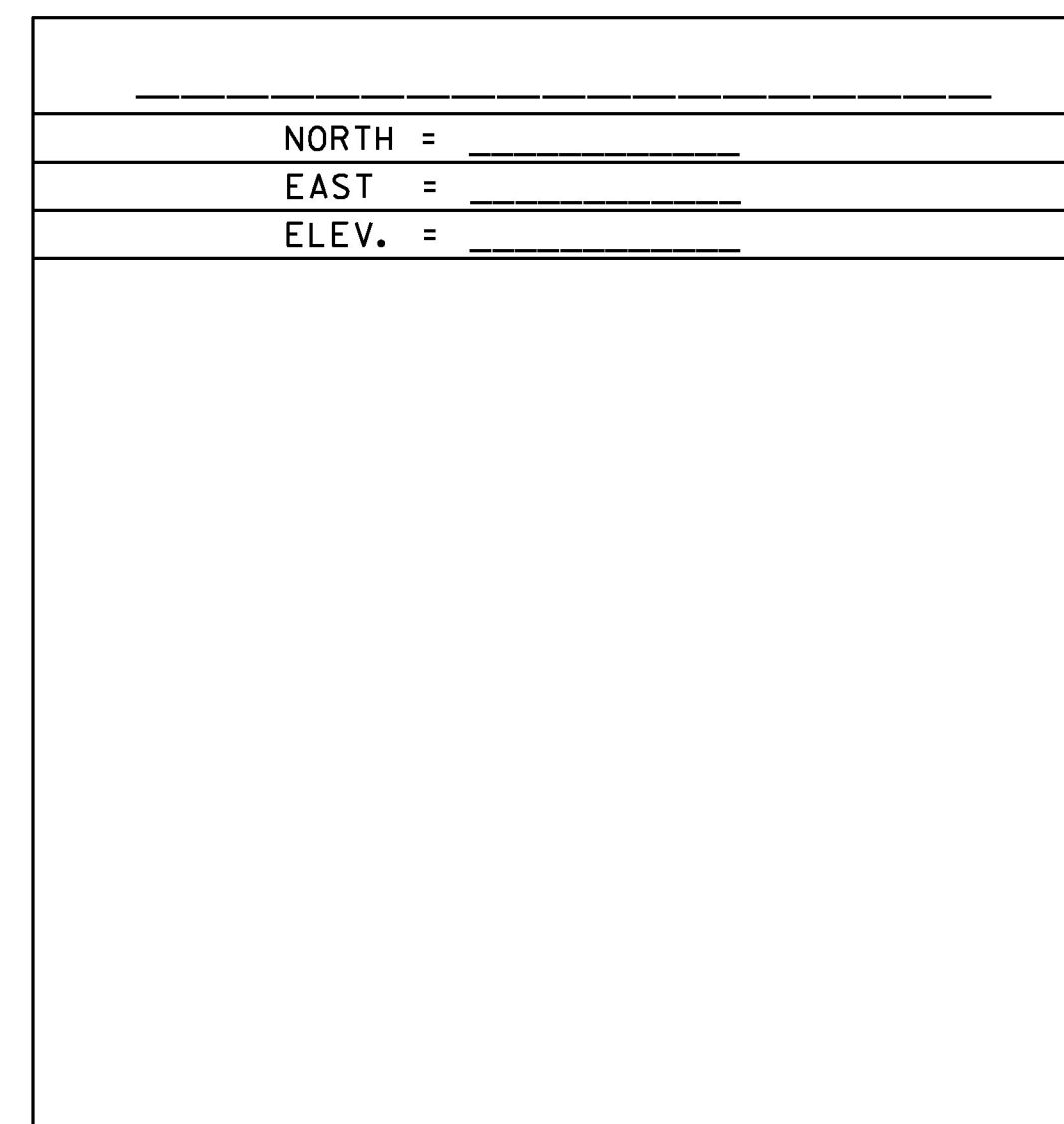
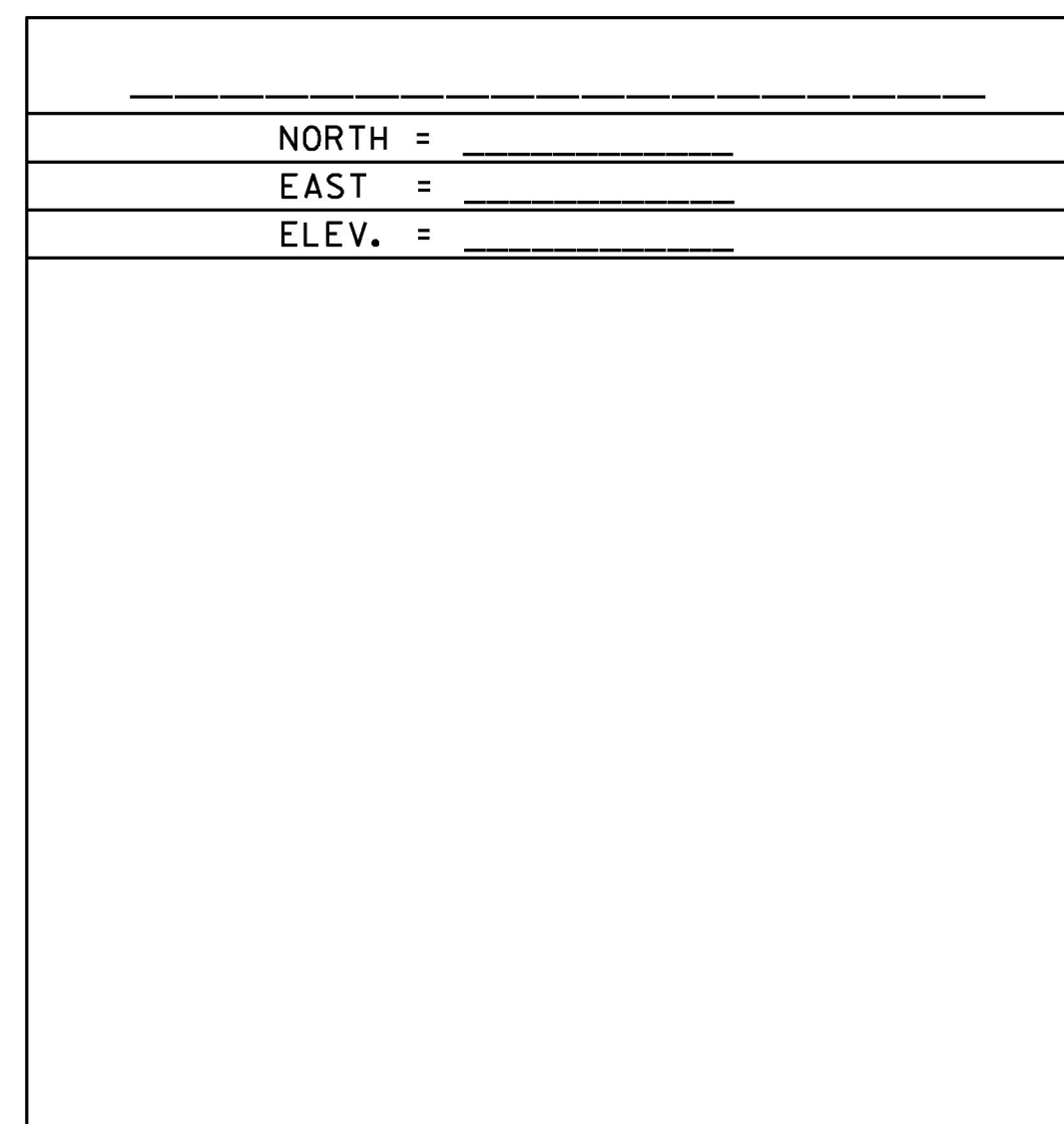
HVCTRL #2  
 EXIT 13  
 NORTH=716909.1305  
 EAST=1461404.7970  
 ELEV=311.1110

SOUTH BURLINGTON, VT.  
 0.4 MI NORTH OF EXIT 13 IN THE MEDIAN.  
 IT IS 6.4 M (21.0 FT) EAST OF AND ABOUT 0.6 M (2.0 FT) LOWER THAN THE I-89 SOUTHBOUND EAST EDGE OF PAVEMENT, 6.4 M (21.0 FT) WEST OF THE I-89 NORTHBOUND WEST EDGE OF PAVEMENT, 13.8 M (45.3 FT) SOUTH OF THE CENTERLINE OF A U-TURN, 5.0 M (16.4 FT) WEST SOUTHWEST OF A U-TURN SIGN, AND 0.3 M (1.0 FT) SOUTH OF A FIBERGLASS WITNESS POST.

TRAVERSE TIES



ALIGNMENT TIES



DATUM  
 VERTICAL NAVD 88  
 HORIZONTAL NAD 83 (2011)  
 ADJUSTMENT COMPASS

PROJECT NAME: SOUTH BURLINGTON  
 PROJECT NUMBER: IM SCR(21)  
 FILE NAME: I6d064/Survey/t1.dgn PLOT DATE: 27-APR-2017  
 PROJECT LEADER: K. UPMAL DRAWN BY: VTRANS  
 DESIGNED BY: VTRANS CHECKED BY: G. HITCHCOCK  
 TIE SHEET SHEET 7 OF 30

**SOIL CLASSIFICATION**

**AASHTO**

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

**ROCK QUALITY DESIGNATION**

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

**SHEAR STRENGTH**

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

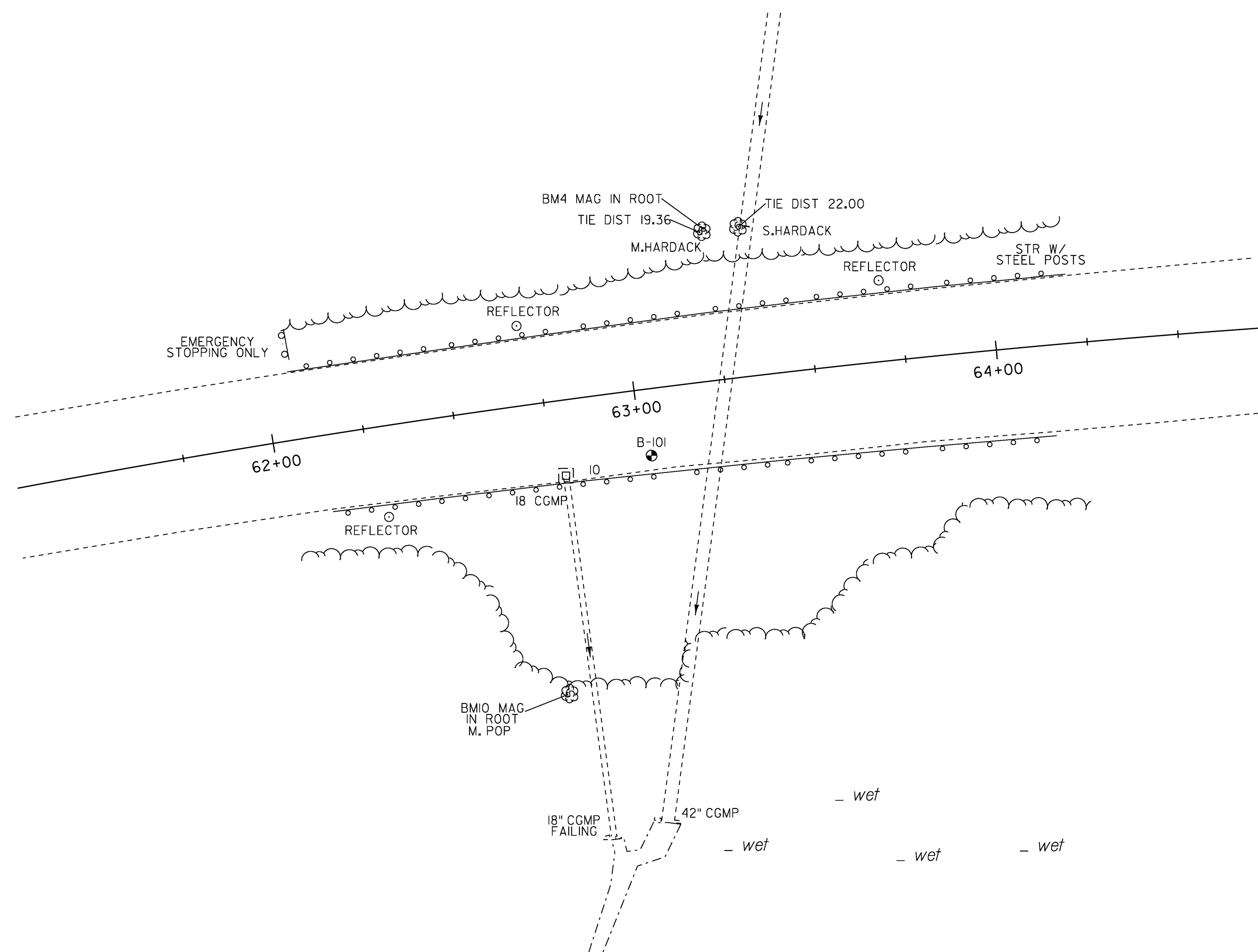
**CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY**

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

**COMMONLY USED SYMBOLS**

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

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



**DEFINITIONS (AASHTO)**

- BEDROCK (LEDGE)** - Rock in its native location of indefinite thickness.
- BOULDER** - A rock fragment with an average dimension > 12 inches.
- COBBLE** - Rock fragments with an average dimension between 3 and 12 inches.
- GRAVEL** - Rounded particles of rock < 3" and > 0.075" (#10 sieve).
- SAND** - Particles of rock < 0.075" (#10 sieve) and > 0.0025" (#200 sieve).
- SILT** - Soil < 0.0025" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.
- CLAY** - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.
- VARVED** - Alternate layers of silt and clay.
- HARDPAN** - Extremely dense soil, cemented layer, not softened when wet.
- MUCK** - Soft organic soil (containing > 10% organic material).
- MOISTURE CONTENT** - Weight of water divided by dry weight of soil.
- FLOWING SAND** - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.
- STRIKE** - Angle from magnetic north to line of intersection of bed with a horizontal plane.
- DIP** - Inclination of bed with a horizontal plane.

- The subsurface explorations shown herein were made between 6/27/16 and 6/30/16 by the Agency.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.

**GENERAL NOTES**

- Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.

- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
- Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

**BORING CHART**

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.
B-101	63+03	18.20' RT	282.2'

PROJECT NAME: SOUTH BURLINGTON  
PROJECT NUMBER: IM SCRP(21)

FILE NAME: I6d064/Design/frm.dgn  
PROJECT LEADER: K. UPMAL  
DESIGNED BY: C. LEACH  
BORING INFORMATION SHEET

PLOT DATE: 27-APR-2017  
DRAWN BY: C. LEACH  
CHECKED BY: M. BOOKER  
SHEET 8 OF 30

VTTrans		STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: <b>B-101</b>					
		South Burlington IM SCRP(21) Slide I-189		Page No.: 1 of 2		Pin No.: 16d064					
		Checked By: MLM		Groundwater Observations							
Boring Crew: Garrow, Judkins, Nieto		Casing	Sampler								
Date Started: 6/27/16 Date Finished: 6/30/16		Type: WB	SS								
VTSPG NAD83: N 712195.97 ft E 1460824.09 ft		I.D.: 4 in	1.5 in	Date	Depth (ft)	Notes					
Station: 63+03 Offset: 18.20		Hammer Wt: N.A.	140 lb.	06/28/16	35.6	W.T. before drilling					
Ground Elevation: 282.2 ft		Hammer Fall: N.A.	30 in.	06/30/16	40.7	W.T. before drilling					
		Hammer/Rod Type: Auto/AWJ									
		Rig: CME 55 TRACK	C <sub>c</sub> = 1.41								
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)			Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Asphalt Pavement, 0.0 ft - 0.98 ft									
		A-1-a, SaGr, gry-brn, Moist, Rec. = 1.3 ft, Lab Note: Pieces of asphalt pavement and a lot of broken rock was within sample.			23-20-20-15 (40)	4.0	66.1	26.0	7.9		
		Field Note: Cleaned out casing									
		A-4, SaSi, gry-brn, Moist, Rec. = 1.1 ft			10-13-18-20 (31)	15.1	1.3	37.6	61.1		
		A-4, SaSi, brn-gry, Moist, Rec. = 1.4 ft			11-13-18-21 (31)	13.9	1.5	40.0	58.5		
		A-4, SaSi, brn, Moist, Rec. = 1.5 ft			10-11-15-16 (26)	13.9	0.5	48.0	51.5		
		A-4, SaSi, brn-gry, Moist, Rec. = 1.7 ft			7-22-15-16 (37)	16.8	0.9	46.1	53.0		
		A-4, SaSi, brn-gry, Moist, Rec. = 1.2 ft			8-12-16-18 (28)	16.6	0.2	44.1	55.7		
		A-4, SiSa, brn-gry, Moist, Rec. = 1.5 ft			8-13-15-16 (28)	17.8	0.5	52.4	47.1		
		A-4, SaSi, brn-gry, Moist, Rec. = 1.6 ft			8-10-18-26 (28)	17.8	0.5	42.2	57.3		
		A-4, SaSi, brn-gry, Moist, Rec. = 1.3 ft			8-13-15-20 (28)	16.5	0.4	47.9	51.7		
		A-4, SaSi, gry-brn, Moist, Rec. = 1.5 ft			8-12-14-18 (26)	13.9	0.8	47.2	52.0		
		A-4, SaSi, brn, Moist, Rec. = 1.3 ft			11-13-17-20 (30)	17.2	0.2	43.6	56.2		
		A-4, SiSa, brn-gry, Moist, Rec. = 1.6 ft			8-11-16-21 (27)	16.5	0.5	57.6	41.9		
		A-4, SiSa, gry-brn, Moist, Rec. = 1.0 ft, Lab Note: Sample tested non-plastic			9-12-15-11 (27)	20.6	0.1	59.5	40.4		
		Field Note: No Recovery			5-2-2-3 (4)						
		Field Note: Rollercone, Cleaned out casing									
		A-7-6, Cl, gry, Wet, Rec. = 2.0 ft			WR-WH-WH-WH (0)	54.8	1.3	1.9	96.8	69	40
		Visual Description: Cl, gry, Moist, Rec. = 2.0 ft, Pushed 3"x30"Shelby Tube									
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.											

VTTrans		STATE OF VERMONT AGENCY OF TRANSPORTATION CONSTRUCTION AND MATERIALS BUREAU CENTRAL LABORATORY		BORING LOG		Boring No.: <b>B-101</b>					
		South Burlington IM SCRP(21) Slide I-189		Page No.: 2 of 2		Pin No.: 16d064					
		Checked By: MLM		Groundwater Observations							
Boring Crew: Garrow, Judkins, Nieto		Casing	Sampler								
Date Started: 6/27/16 Date Finished: 6/30/16		Type: WB	SS								
VTSPG NAD83: N 712195.97 ft E 1460824.09 ft		I.D.: 4 in	1.5 in	Date	Depth (ft)	Notes					
Station: 63+03 Offset: 18.20		Hammer Wt: N.A.	140 lb.	06/28/16	35.6	W.T. before drilling					
Ground Elevation: 282.2 ft		Hammer Fall: N.A.	30 in.	06/30/16	40.7	W.T. before drilling					
		Hammer/Rod Type: Auto/AWJ									
		Rig: CME 55 TRACK	C <sub>c</sub> = 1.41								
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)			Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Field Note: Vane Shear, 788 psf/ Aborted Remold at 656 psf. Possible gravel in clay									
		A-7-6, Cl, gry, Rec. = 2.0 ft			WR-WR-WH-2 (0)	52.0	0.7	1.5	97.8	60	33
		A-7-6, Cl, gry, Moist, Rec. = 2.0 ft			WR-WR-WR-WR (0)	59.1	0.1	0.7	99.2	66	38
		Field Note: Rollercone, Cleaned out casing									
		A-7-6, Cl, gry, Moist, Rec. = 2.0 ft			WR-WR-WR-WR (0)	48.4		0.7	99.3	60	35
		Field Note: Rollercone, Cleaned out casing									
		A-4, Si, gry, Moist, Rec. = 1.7 ft, Lab Note: A small amount of clay was within sample. Sample tested non-plastic.			12-19-32-35 (51)	13.6	11.0	13.6	75.4		
		Field Note: Rollercone, Cleaned out casing									
		A-4, Si, gry, Moist, Rec. = 1.9 ft, Lab Note: A small amount of clay was within sample. Sample tested non-plastic.			12-24-31-R@5" (55)	21.8	0.3	0.8	98.9		
		Hole stopped @ 91.9 ft									
		Remarks: 1.) Vane used was 3x6 inches. 2.) Vane Shear = Initial/Remold 3.) Changed to 3 inch casing at 49 feet. 4.) Hole was grouted with bentonite and portland cement grout.									
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.											

PROJECT NAME:	SOUTH BURLINGTON
PROJECT NUMBER:	IM SCRP(21)
FILE NAME:	I6d064/Design/frm.dgn
PROJECT LEADER:	K. UPMAL
DESIGNED BY:	VTRANS
BORING LOG SHEET	
PLOT DATE:	27-APR-2017
DRAWN BY:	VTRANS
CHECKED BY:	C. LEACH
SHEET	9 OF 30

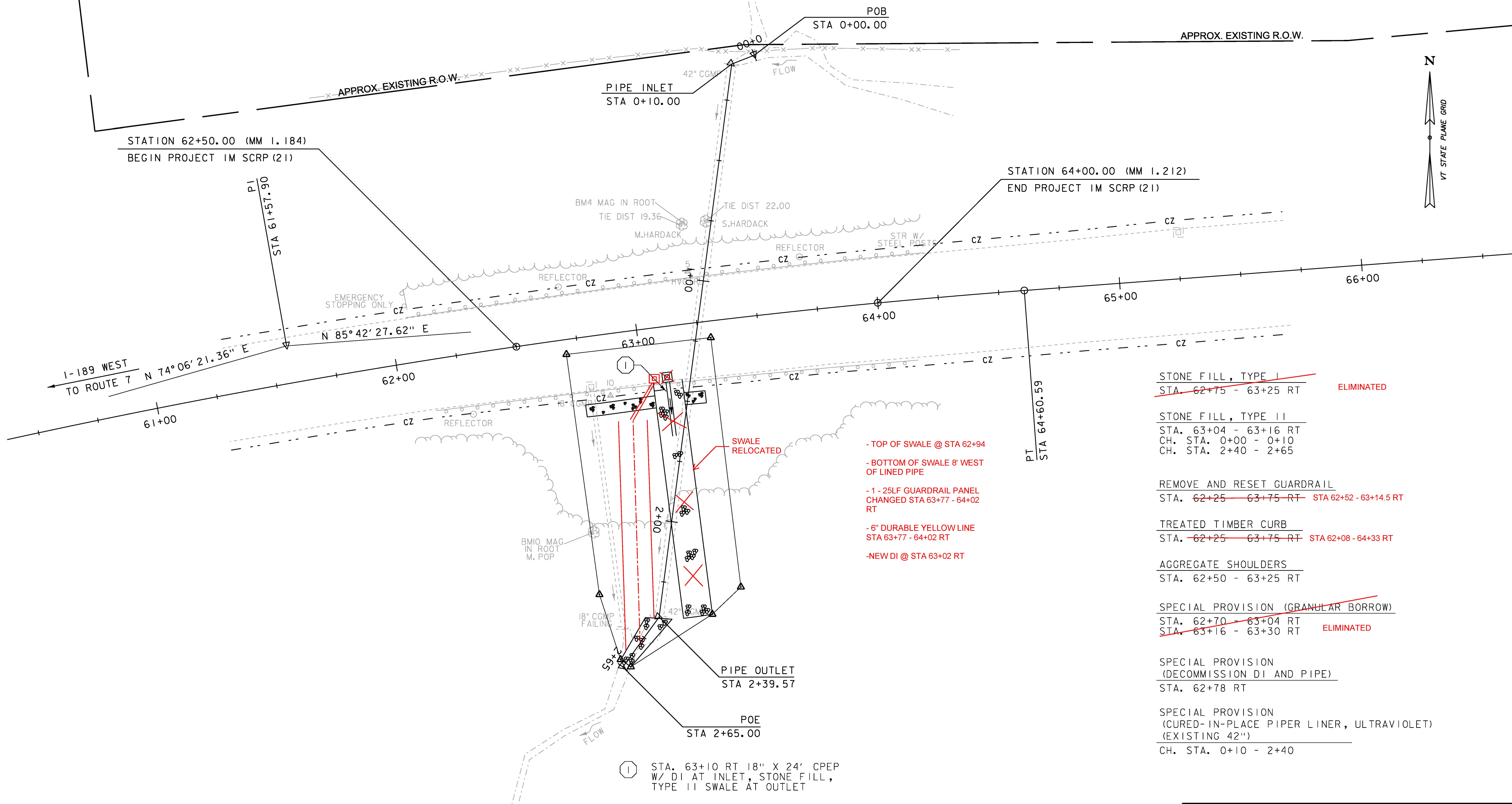
# QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
								ROADWAY	EROSION CONTROL	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
								0.5		0.5		ACRE	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.11	0.3			
								5		5		CY	SOLID ROCK EXCAVATION	203.16	1			
								15		15		CY	CHANNEL EXCAVATION OF EARTH	203.25	-			
								35		35		CY	TRENCH EXCAVATION OF EARTH	204.20	2			
								1		1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	-			
								10		10		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	3			
								110		110		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	10			
								5		5		CY	SUBBASE OF CRUSHED GRAVEL, COARSE GRADED	301.25	2			
								10		10		TON	AGGREGATE SHOULDERS	402.12	4			
								1		1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	-			
								15		15		CF	RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE	580.20	EST			
								20		20		LF	18" CPEP	601.0915	-			
								1		1		EACH	PRECAST REINFORCED CONCRETE DROP INLET WITH CAST IRON GRATE (TYPE A)	604.18	-			
								5		5		HR	POWER BROOM RENTAL, TYPE II	608.31	EST			
								5		5		HR	TRUCK RENTAL	608.37	EST			
								10		10		CY	STONE FILL, TYPE I	613.10	1.6			
								100		100		CY	STONE FILL, TYPE II	613.11	10.7			
								150		150		LF	TREATED TIMBER CURB	616.35	-			
								150		150		LF	REMOVE AND RESET GUARDRAIL	621.75	-			
								125		125		HR	UNIFORMED TRAFFIC OFFICERS	630.10	EST			
								1		1		LS	MOBILIZATION/DEMOBILIZATION	635.11	-			
								1		1		LS	TRAFFIC CONTROL	641.10	-			
								3		3		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	-			
								60		60		LF	DURABLE 6 INCH YELLOW LINE	646.430	10			
								10		10		EACH	LINE STRIPING TARGETS	646.76	4			
								250		250		SY	GEOTEXTILE UNDER STONE FILL	649.31	34			
									2	2		LB	SEED (WET DETENTION BASIN MIX)	651.15	1			
									20	20		LB	SEED	651.15	7.6			
									20	20		LB	FERTILIZER	651.18	2.4			
									0.5	0.5		TON	AGRICULTURAL LIMESTONE	651.20	0.97			
									0.5	0.5		TON	STRAW MULCH	651.29	-			
								550		550		SY	GRUBBING MATERIAL (6")	651.40	38			
									1	1		LS	EPSC PLAN	652.10	-			
									10	10		HR	MONITORING EPSC PLAN	652.20	EST			
									1	1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	-			
									550	550		SY	TEMPORARY EROSION MATTING	653.20	38			
									20	20		CY	VEHICLE TRACKING PAD	653.35	2			
									360	360		LF	BARRIER FENCE	653.50	2			
								450		450		CY	SPECIAL PROVISION (GRANULAR BORROW)	900.608	47			
								235		235		LF	SPECIAL PROVISION (CURED-IN-PLACE PIPE LINER, ULTRAVIOLET)(EXISTING 42")	900.640	-			

PROJECT NAME: SOUTH BURLINGTON  
 PROJECT NUMBER: IM SCR(21)  
 FILE NAME: I6d064/Design/frm.dgn PLOT DATE: 28-APR-2017  
 PROJECT LEADER: K. UPMAL DRAWN BY: M. BOOKER  
 DESIGNED BY: M. BOOKER CHECKED BY: C. LEACH  
 QUANTITY SHEET 1 SHEET 10 OF 30



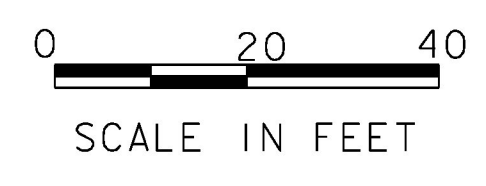
UVM STATE AGRICULTURE COLLEGE



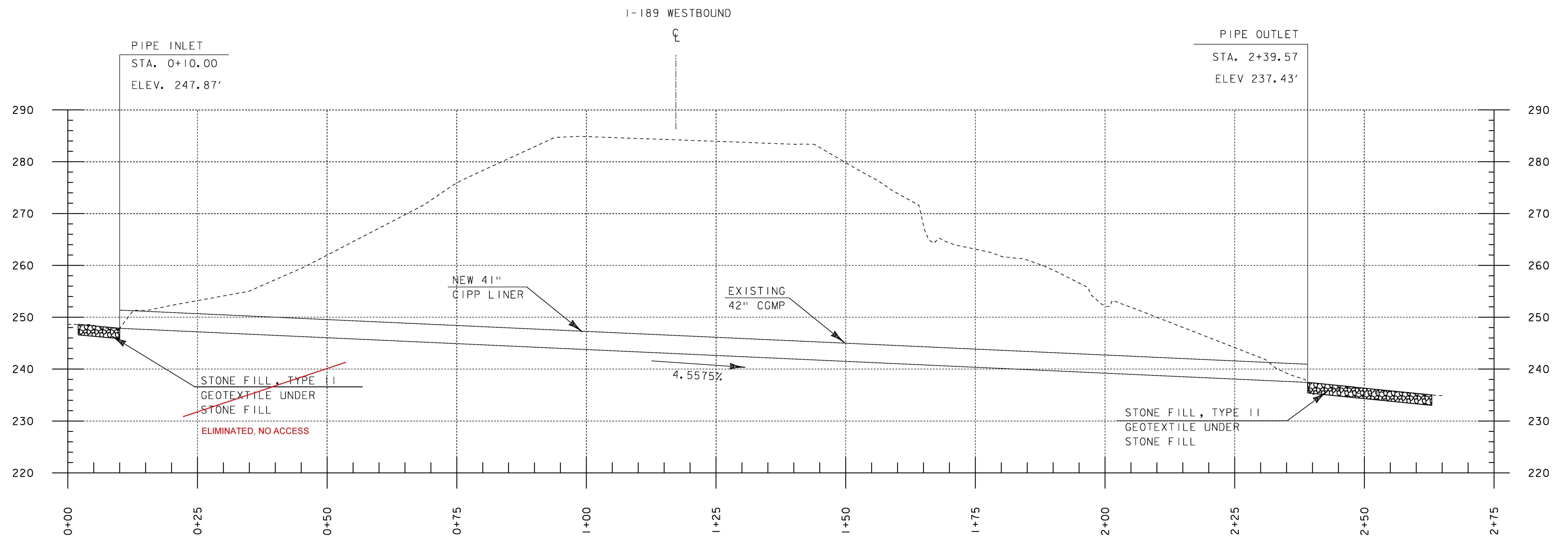
- ~~STONE FILL, TYPE I~~  
STA. ~~62+75 - 63+25 RT~~ ELIMINATED
- STONE FILL, TYPE II  
STA. 63+04 - 63+16 RT  
CH. STA. 0+00 - 0+10  
CH. STA. 2+40 - 2+65
- REMOVE AND RESET GUARDRAIL  
STA. ~~62+25 - 63+75 RT~~ STA 62+52 - 63+14.5 RT
- TREATED TIMBER CURB  
STA. ~~62+25 - 63+75 RT~~ STA 62+08 - 64+33 RT
- AGGREGATE SHOULDERS  
STA. 62+50 - 63+25 RT
- ~~SPECIAL PROVISION (GRANULAR BORROW)~~  
STA. ~~62+70 - 63+04 RT~~  
STA. ~~63+16 - 63+30 RT~~ ELIMINATED
- SPECIAL PROVISION  
(DECOMMISSION DI AND PIPE)  
STA. 62+78 RT
- SPECIAL PROVISION  
(CURED-IN-PLACE PIPER LINER, ULTRAVIOLET)  
(EXISTING 42")  
CH. STA. 0+10 - 2+40

- TOP OF SWALE @ STA 62+94
- BOTTOM OF SWALE 8' WEST OF LINED PIPE
- 1 - 25LF GUARDRAIL PANEL CHANGED STA 63+77 - 64+02 RT
- 6" DURABLE YELLOW LINE STA 63+77 - 64+02 RT
- NEW DI @ STA 63+02 RT

① STA. 63+10 RT 18" X 24' CPEP W/ DI AT INLET, STONE FILL, TYPE II SWALE AT OUTLET



PROJECT NAME: SOUTH BURLINGTON	
PROJECT NUMBER: IM SCR(21)	
FILE NAME: I6d064/Design/nul.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: M. BOOKER
PLAN SHEET	SHEET 12 OF 30



MM 1.198 CROSS PIPE

SCALE IN FEET

PROJECT NAME: SOUTH BURLINGTON  
 PROJECT NUMBER: IM SCRP(21)

FILE NAME: I6D064/Design/nul.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: M. BOOKER
PIPE PROFILE SHEET	SHEET 13 OF 30

## **EPSC PLAN NARRATIVE**

### **1.1 PROJECT DESCRIPTION**

THE SCOPE OF THIS PROJECT IS TO REHABILITATE AN EXISTING 42" X 230' CORRUGATED METAL PIPE USING AN ULTRAVIOLET CURED-IN-PLACE PIPE LINER, STABILIZE THE ADJACENT EMBANKMENT, INLET AND OUTLET STABILIZATION, REMOVING A FAILING DI AND SLOPE PIPE, INSTALLING A NEW DI AND PIPE, CLEARING AND TRAFFIC CONTROL. THIS CULVERT IS LOCATED IN THE TOWN OF SOUTH BURLINGTON, UNDER THE I-189 WESTBOUND LANES AT MM 1.198.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.21 ACRES.

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

### **1.2 SITE INVENTORY**

#### **1.2.1 TOPOGRAPHY**

THE TOPOGRAPHY OF THE AREA IS A RELATIVELY STEEP SLOPE AND CONSISTS OF WELL ESTABLISHED GRASS WITH OCCASIONAL AREAS OF FOREST.

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

THE EXISTING CULVERT CONVEYS A SMALL UNNAMED TRIBUTARY OF THE STORMWATER-IMPAIRED POTASH BROOK. THIS IS THE ONLY KNOWN WATER SOURCE NEAR AND WITHIN THE PROJECT SITE. THIS CULVERT CONVEYS PORTIONS OF ROADSIDE RUNOFF AND PORTIONS OF OFFSITE RUNOFF TO THE SOUTHERLY SIDE OF THE WESTBOUND LANES OF I-189.

#### **1.2.3 VEGETATION**

THE VEGETATION IN THE PROJECT AREA CONSISTS OF WELL ESTABLISHED GRASS AND SMALL TREES. THE IMPACT TO VEGETATION WILL BE LIMITED TO THE AREAS AROUND THE EXISTING CULVERT AND WITHIN THE AREAS OF BOTH CULVERT INVERTS. UPON PROJECT COMPLETION, THE ROADWAY EMBANKMENTS WILL BE STABILIZED WITH STANDARD SEED AND MULCH PRACTICES.

#### **1.2.4 SOILS**

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF CHITTENDEN, VERMONT. SOILS BORDERING THE PROJECT SITE ARE ADAMS AND WINDSOR, LOAMY SANDS, 0% TO 5% SLOPES, "K FACTOR" = 0.17 AND ADAMS AND WINDSOR, LOAMY SANDS, 12% TO 30% SLOPES, "K FACTOR" = 0.17. THE SOIL IS CONSIDERED TO HAVE LOW EROSION POTENTIAL.

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

#### **1.2.5 SENSITIVE RESOURCE AREAS**

CRITICAL HABITATS: NO  
HISTORICAL OR ARCHEOLOGICAL AREAS: NO  
PRIME AGRICULTURAL LAND: NO  
THREATENED AND ENDANGERED SPECIES: NO  
WATER RESOURCE: UNNAMED TRIBUTARY OF THE POTASH BROOK  
WETLANDS: CLASS II - 121 +/- SF TEMPORARY, 212 +/- SF PERMANENT

### **1.3 RISK EVALUATION**

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

### **1.4 EROSION PREVENTION AND SEDIMENT CONTROL**

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

SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

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

#### **1.4.1 MARK SITE BOUNDARIES**

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

BARRIER FENCE (BF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.

#### **1.4.2 LIMIT DISTURBANCE AREA**

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

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

#### **1.4.3 SITE ENTRANCE/EXIT STABILIZATION**

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTORS PROGRESS SCHEDULE.

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

#### **1.4.4 INSTALL SEDIMENT BARRIERS**

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

IT IS NOT ANTICIPATED THAT SEDIMENT BARRIERS WILL BE NECESSARY ON THIS PROJECT AS DESIGNED.

#### **1.4.5 DIVERT UPLAND RUNOFF**

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

IT IS NOT ANTICIPATED THAT DIVERSION MEASURES WILL BE NECESSARY ON THIS PROJECT AS DESIGNED.

#### **1.4.6 SLOW DOWN CHANNELIZED RUNOFF**

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSION POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

IT IS NOT ANTICIPATED THAT CHECK STRUCTURES WILL BE NECESSARY.

#### **1.4.7 CONSTRUCT PERMANENT CONTROLS**

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

THIS PROJECT DOES NOT REQUIRE ANY PERMANENT STORMWATER TREATMENT DEVICES.

#### **1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION**

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE ANR LOW RISK SITE HAND BOOK FOR EPSC.

TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

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

#### **1.4.9 WINTER STABILIZATION**

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

WINTER CONSTRUCTION IS NOT ANTICIPATED FOR THIS PROJECT.

#### **1.4.10 STABILIZE SOIL AT FINAL GRADE**

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

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

#### **1.4.11 DE-WATERING ACTIVITIES**

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

TEMPORARILY RELOCATING THE EXISTING STREAM IS ANTICIPATED. THE SPECIFIC ROUTE FOR RELOCATING THE STREAM, AS WELL AS THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE DEVELOPED AND PROVIDED BY THE CONTRACTOR.

#### **1.4.12 INSPECT YOUR SITE**

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR THE ANR LOW RISK HAND BOOK FOR EPSC.

### **1.5 SEQUENCE AND STAGING**

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

#### **1.5.1 CONSTRUCTION SEQUENCE**

#### **1.5.2 OFF-SITE ACTIVITIES**

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

#### **1.5.3 UPDATES**

PROJECT NAME: SOUTH BURLINGTON

PROJECT NUMBER: IM SCR(21)

FILE NAME: I6d064/Design/frm.dgn

PLOT DATE: 27-APR-2017

PROJECT LEADER: K. UPMAL

DRAWN BY: M. BOOKER

DESIGNED BY: C. LEACH

CHECKED BY: C. LEACH

EPSC NARRATIVE SHEET

SHEET 14 OF 30

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				

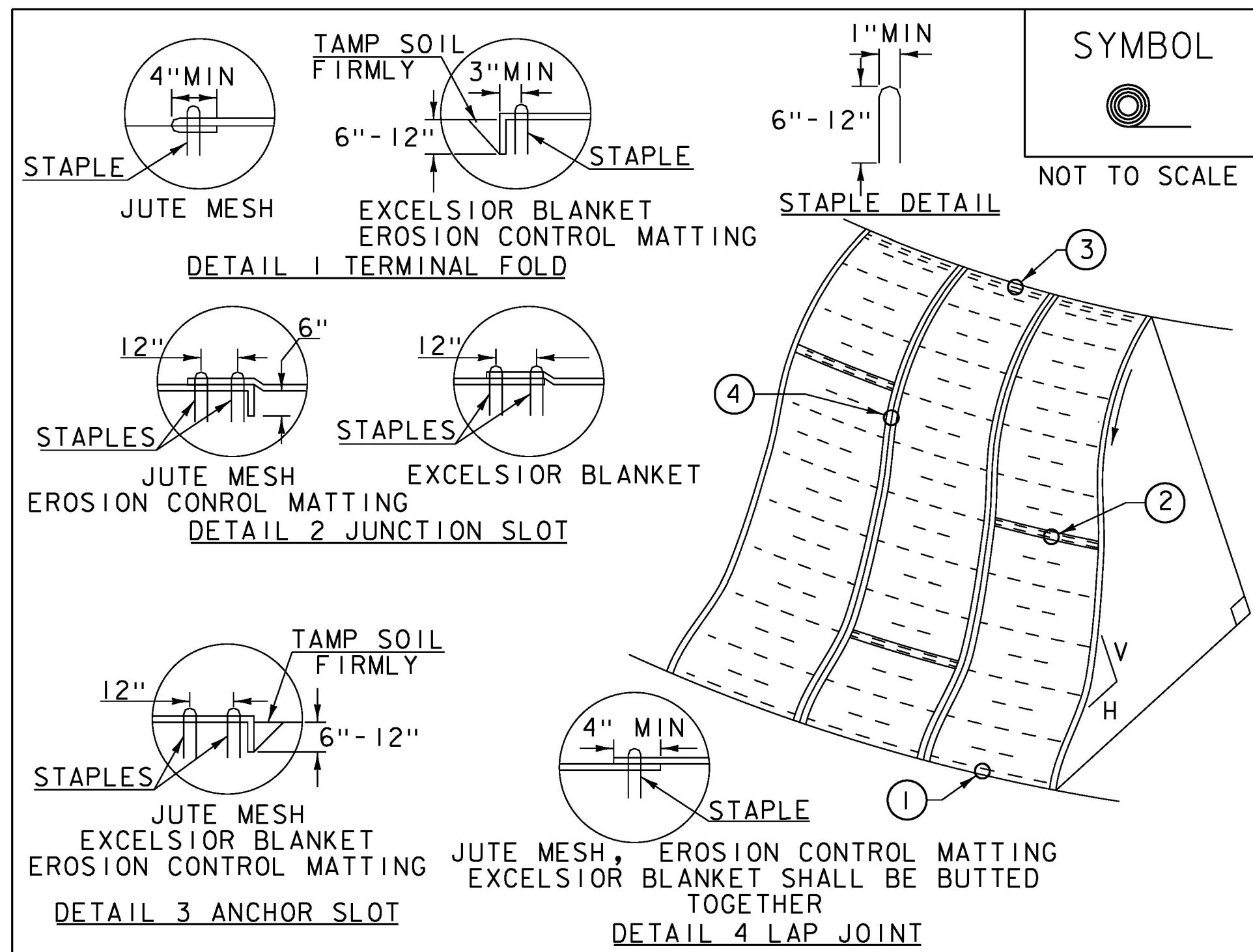
VAOT RURAL AREA MIX						
WEIGHT	LBS/AC		NAME	LATIN NAME	GERM	PURITY
	BROADCAST	HYDROSEED				
37.5%	22.5	45	CREeping RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	22.5	45	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	3	6	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	9	18	WHITE FIELD CLOVER	TRIFOLIUM REPENS	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	<b>TURF ESTABLISHMENT</b>				
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651.5)	<table border="1"> <thead> <tr> <th colspan="2">REVISIONS</th> </tr> </thead> <tbody> <tr> <td>JANUARY 12, 2015</td> <td>WHF</td> </tr> </tbody> </table>	REVISIONS		JANUARY 12, 2015	WHF
REVISIONS					
JANUARY 12, 2015	WHF				



**CONSTRUCTION SPECIFICATIONS**

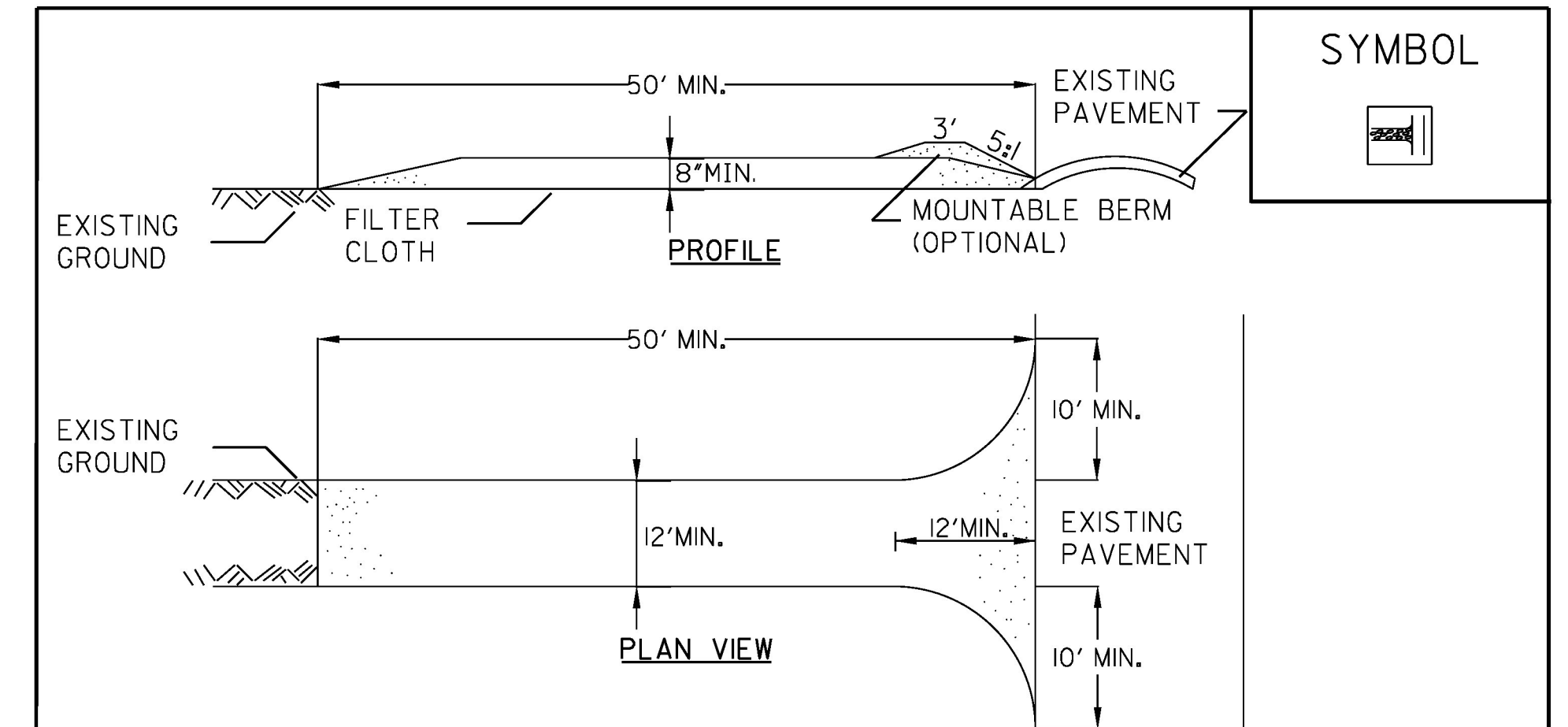
1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4' X 225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4' X 150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

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

**ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE**

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 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF



**CONSTRUCTION SPECIFICATIONS**

1. STONE SIZE - USE 1-4" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH APPLIES).
3. THICKNESS - NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT 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.

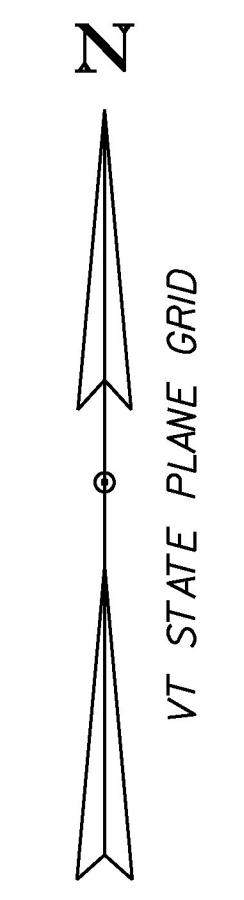
THIS ITEM SHALL BE PAID FOR UNDER ITEM 653.35 VEHICLE TRACKING PAD

REVISIONS	
FEBRUARY 9, 2007	WHF
MARCH 8, 2007	JMF

PROJECT NAME: SOUTH BURLINGTON  
PROJECT NUMBER: IM SCR(21)

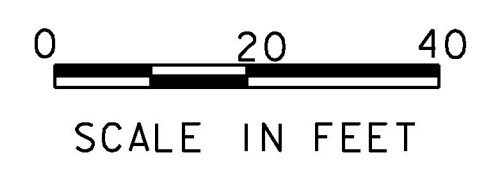
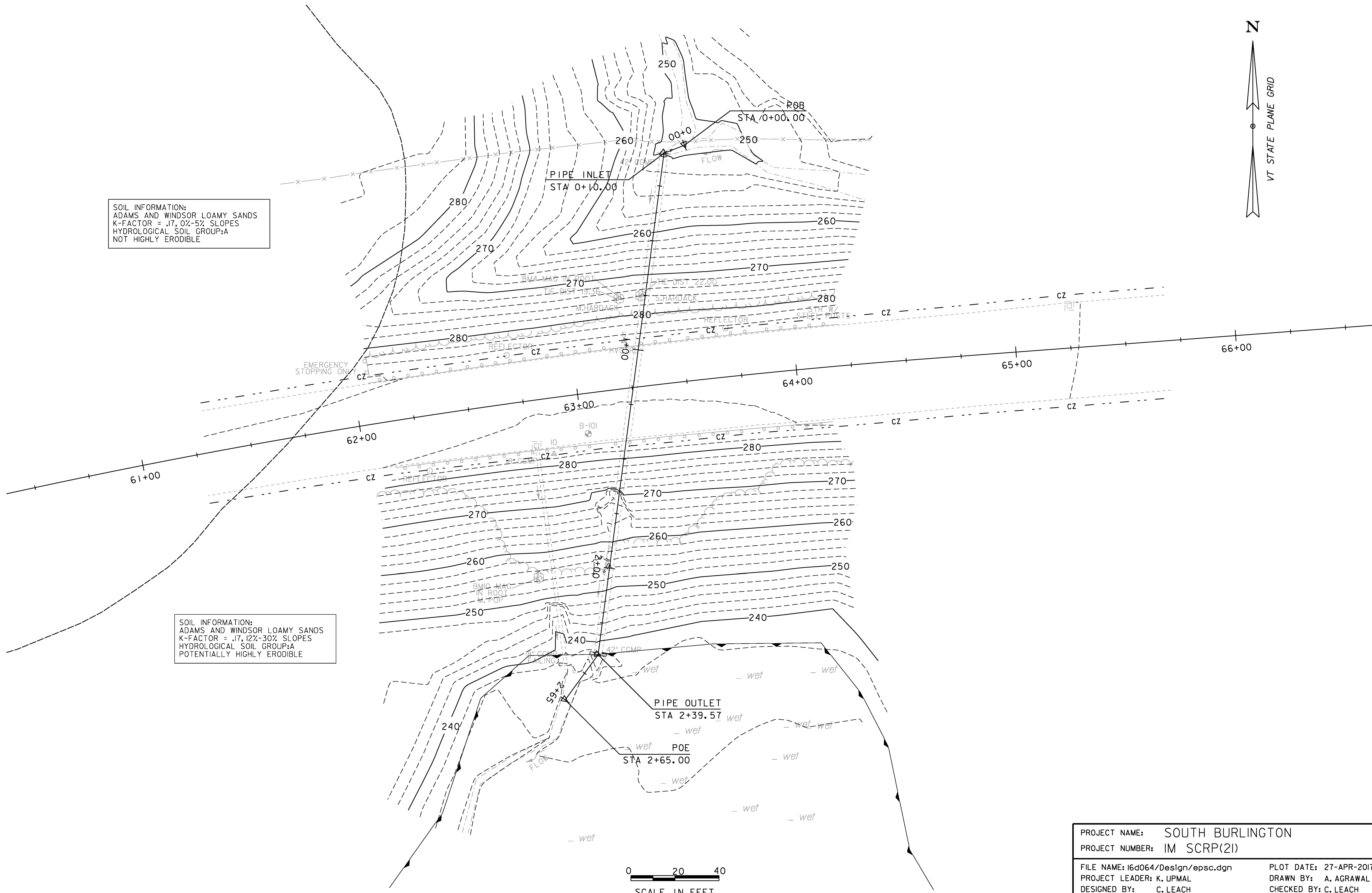
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PROJECT LEADER: K. UPMAL  
DESIGNED BY: VTRANS  
EPSC DETAILS SHEET

PLOT DATE: 27-APR-2017  
DRAWN BY: VTRANS  
CHECKED BY: C. LEACH  
SHEET 15 OF 30

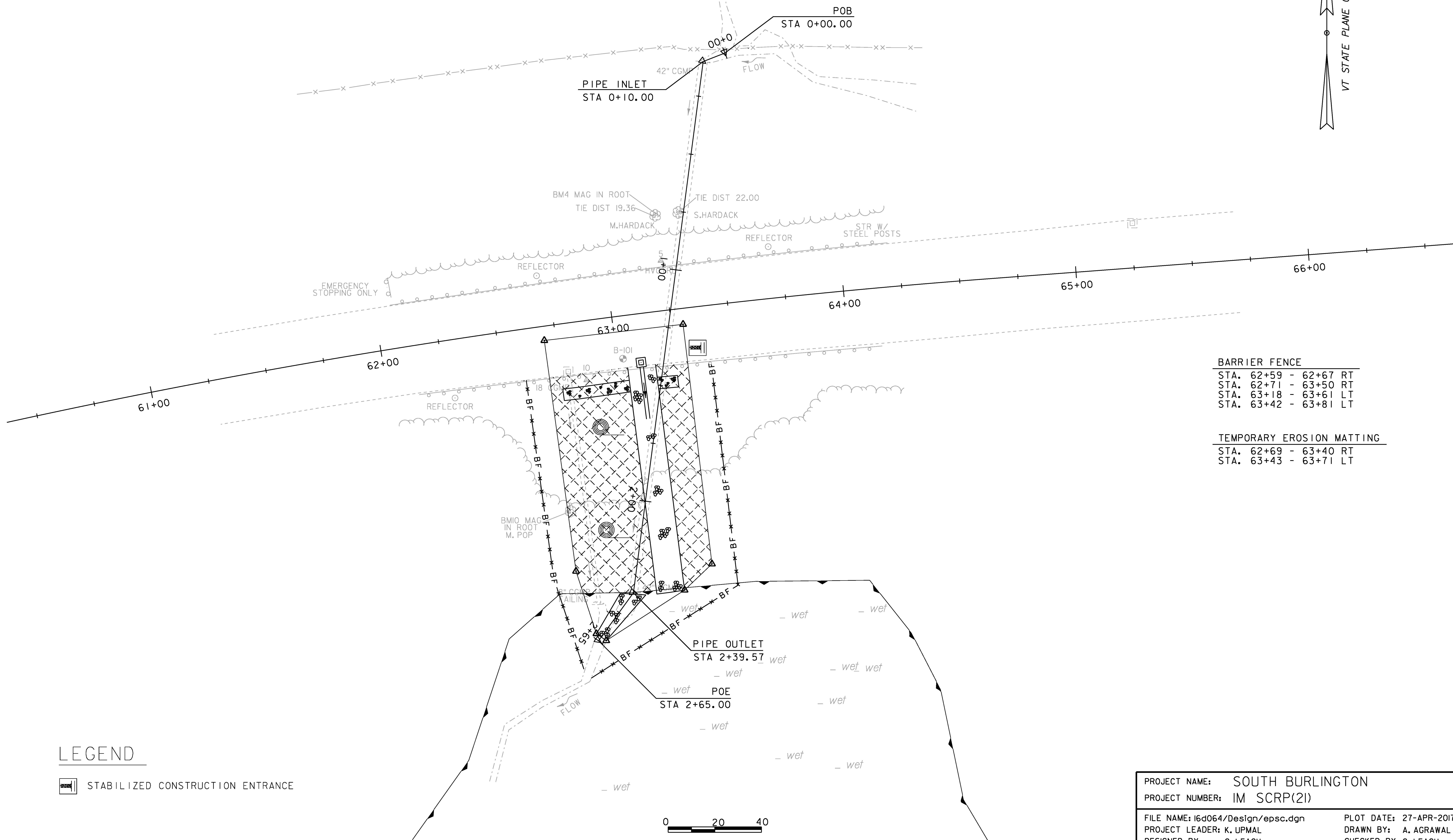
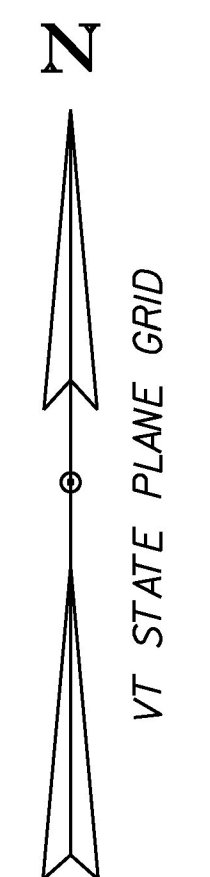


SOIL INFORMATION:  
ADAMS AND WINDSOR LOAMY SANDS  
K-FACTOR = .17, 0%-5% SLOPES  
HYDROLOGICAL SOIL GROUP:A  
NOT HIGHLY ERODIBLE

SOIL INFORMATION:  
ADAMS AND WINDSOR LOAMY SANDS  
K-FACTOR = .17, 12%-30% SLOPES  
HYDROLOGICAL SOIL GROUP:A  
POTENTIALLY HIGHLY ERODIBLE



PROJECT NAME:	SOUTH BURLINGTON
PROJECT NUMBER:	IM SCRP(2I)
FILE NAME:	I6d064/Design/epsc.dgn
PROJECT LEADER:	K. UPMAL
DESIGNED BY:	C. LEACH
EPSC EXISTING CONDITIONS PLAN SHEET	
PLOT DATE:	27-APR-2017
DRAWN BY:	A. AGRAWAL
CHECKED BY:	C. LEACH
SHEET	16 OF 30

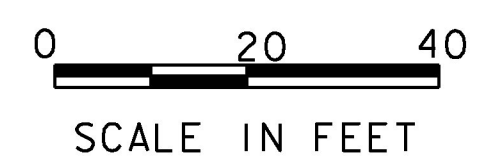


**BARRIER FENCE**  
 STA. 62+59 - 62+67 RT  
 STA. 62+71 - 63+50 RT  
 STA. 63+18 - 63+61 LT  
 STA. 63+42 - 63+81 LT

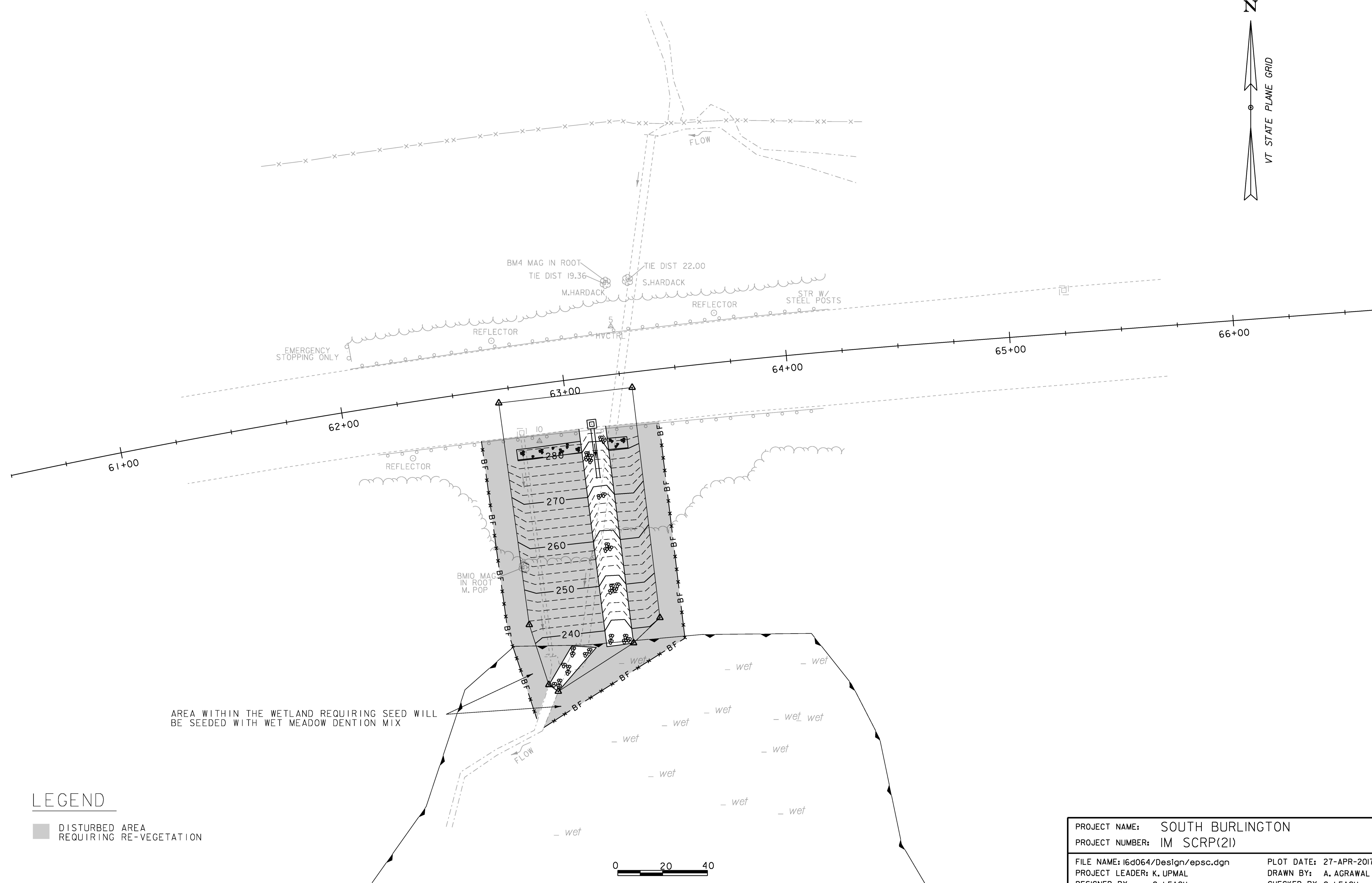
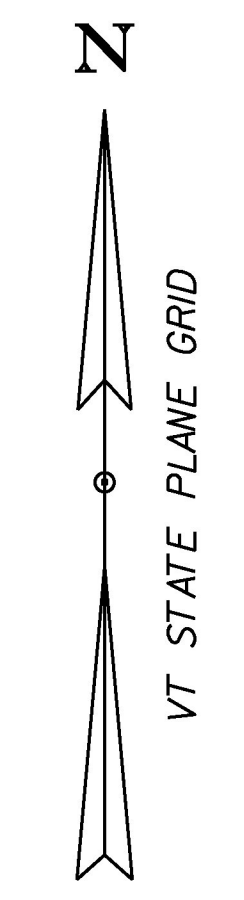
**TEMPORARY EROSION MATTING**  
 STA. 62+69 - 63+40 RT  
 STA. 63+43 - 63+71 LT

**LEGEND**

 STABILIZED CONSTRUCTION ENTRANCE



PROJECT NAME:	SOUTH BURLINGTON	PLOT DATE:	27-APR-2017
PROJECT NUMBER:	IM SCR(21)	DRAWN BY:	A. AGRAWAL
FILE NAME:	I6d064/Design/epsc.dgn	CHECKED BY:	C. LEACH
PROJECT LEADER:	K. UPMAL	SHEET	17 OF 30
DESIGNED BY:	C. LEACH		

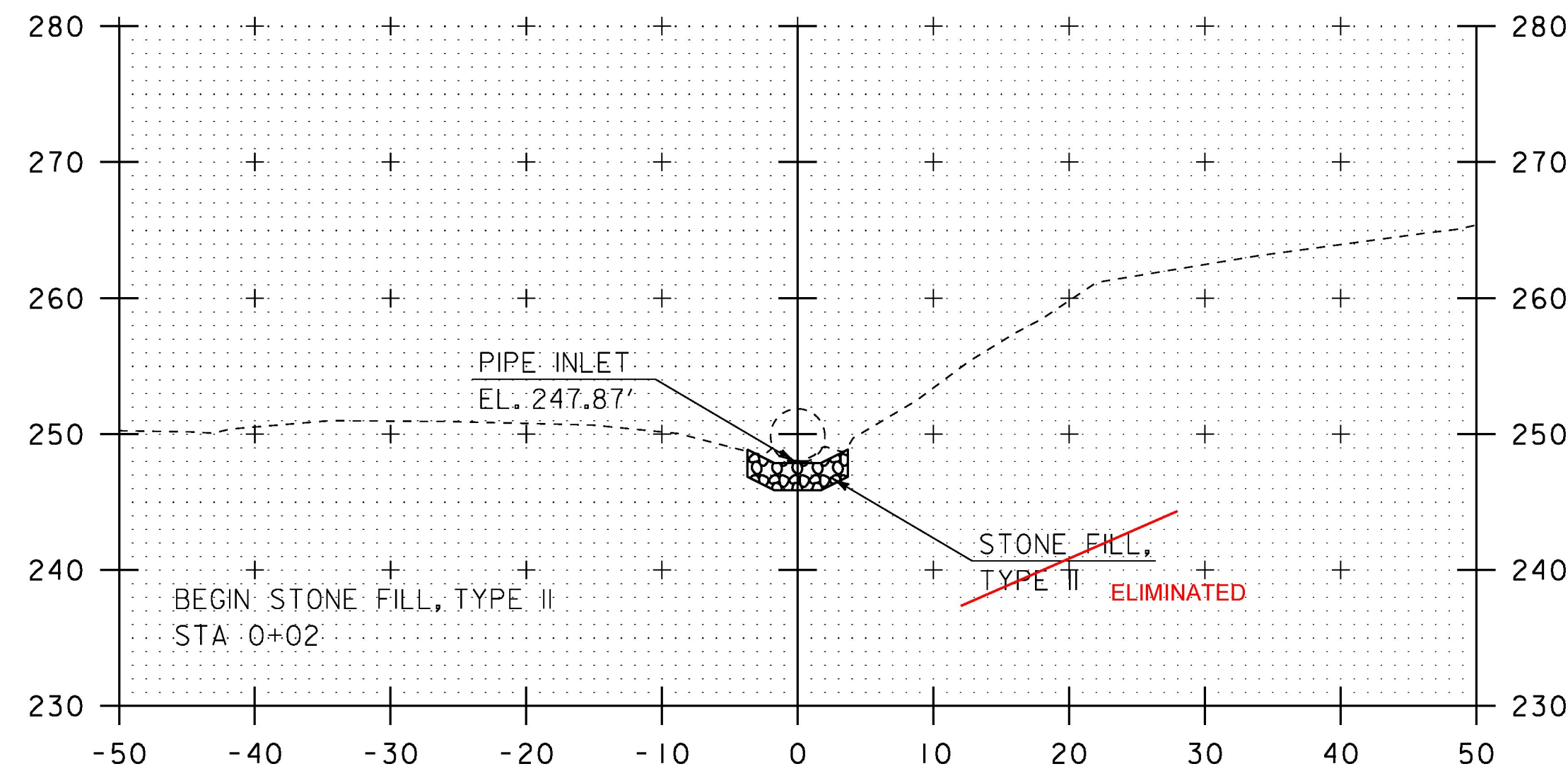


AREA WITHIN THE WETLAND REQUIRING SEED WILL BE SEEDED WITH WET MEADOW DENTION MIX

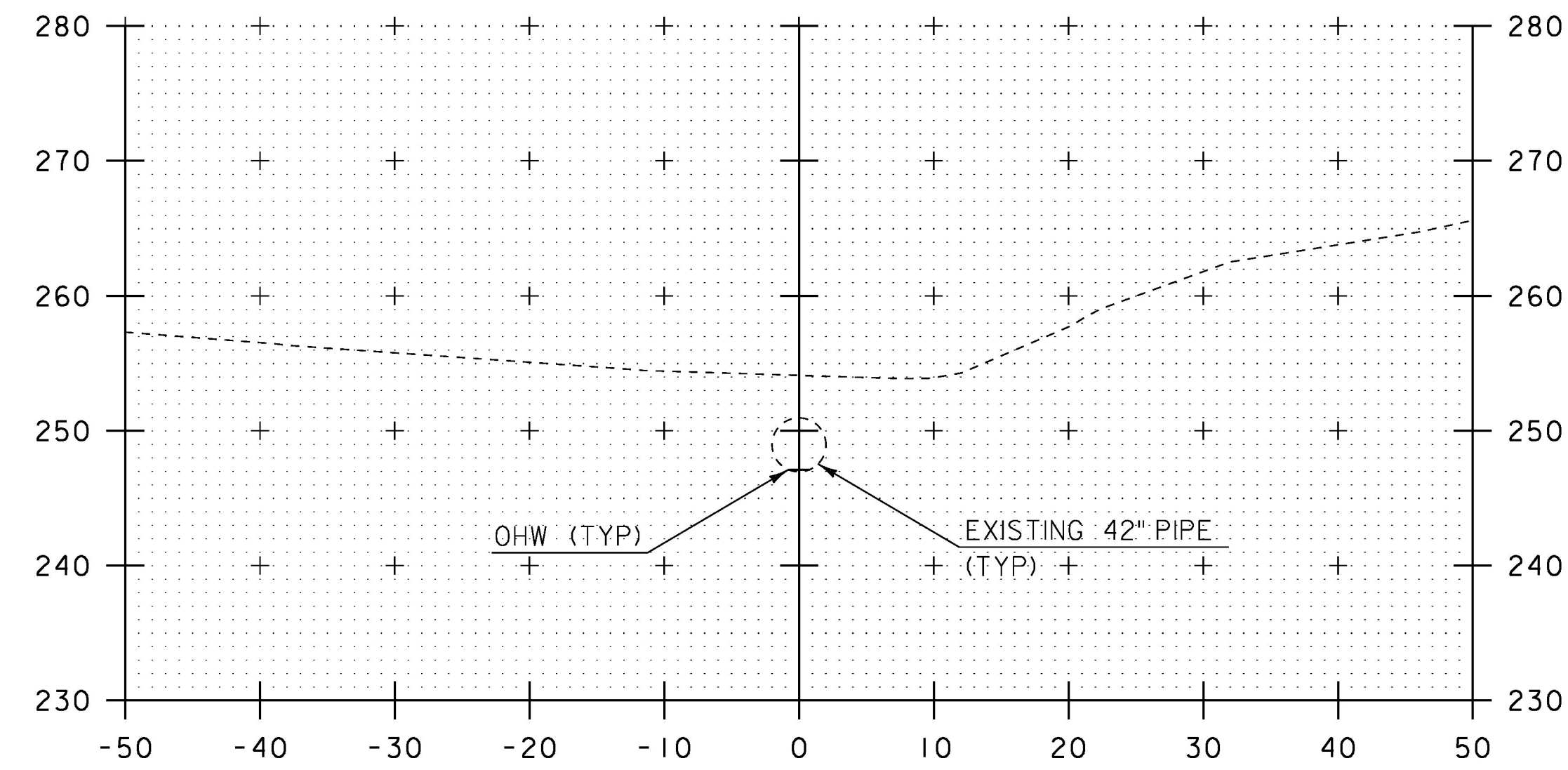
**LEGEND**

■ DISTURBED AREA REQUIRING RE-VEGETATION

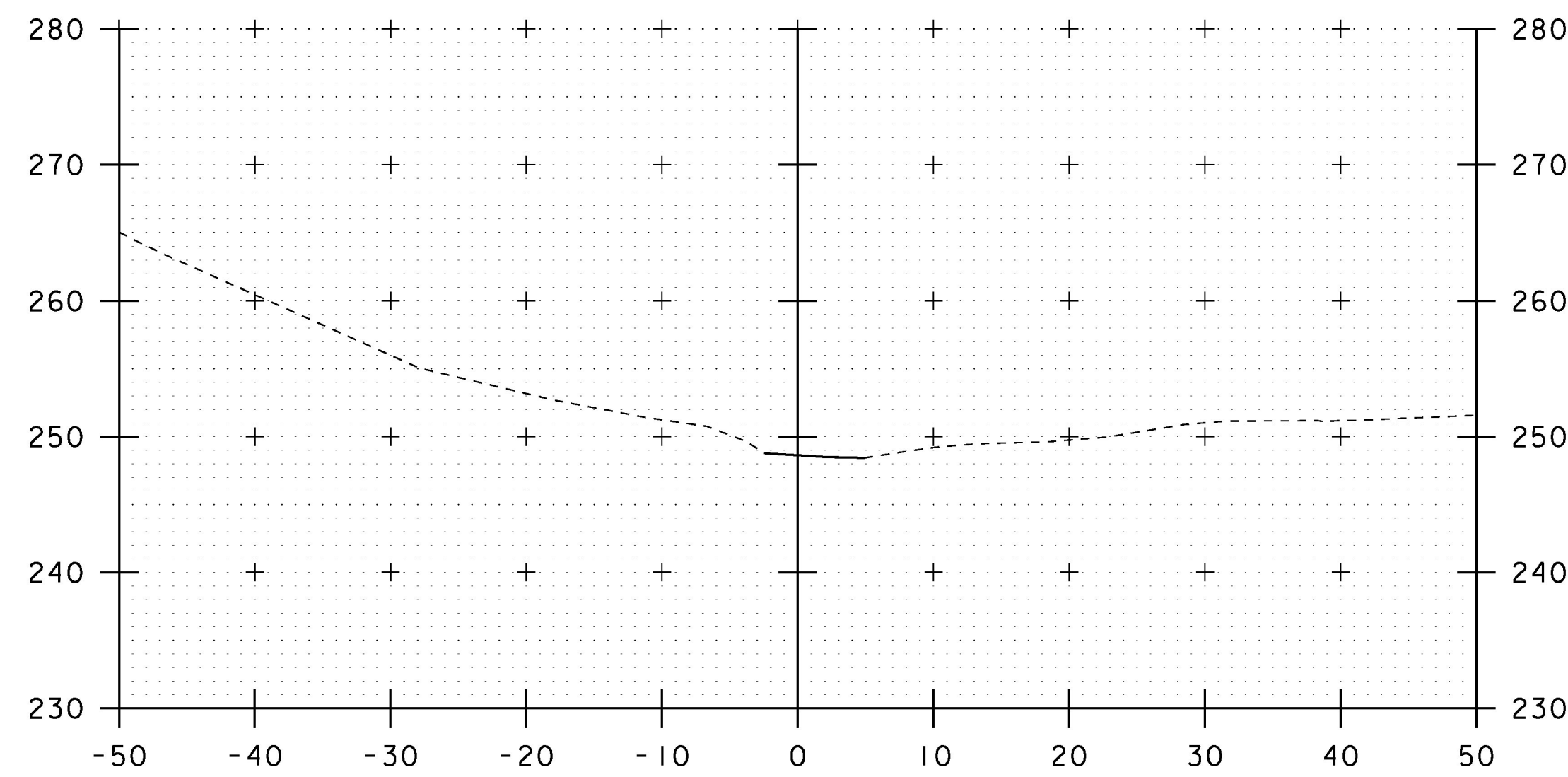
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PROJECT NUMBER: IM SCRP(21)	DRAWN BY: A. AGRAWAL
FILE NAME: I6d064/Design/epsc.dgn	CHECKED BY: C. LEACH
PROJECT LEADER: K. UPMAL	SHEET 18 OF 30
DESIGNED BY: C. LEACH	
EPSC FINAL CONDITIONS PLAN SHEET	



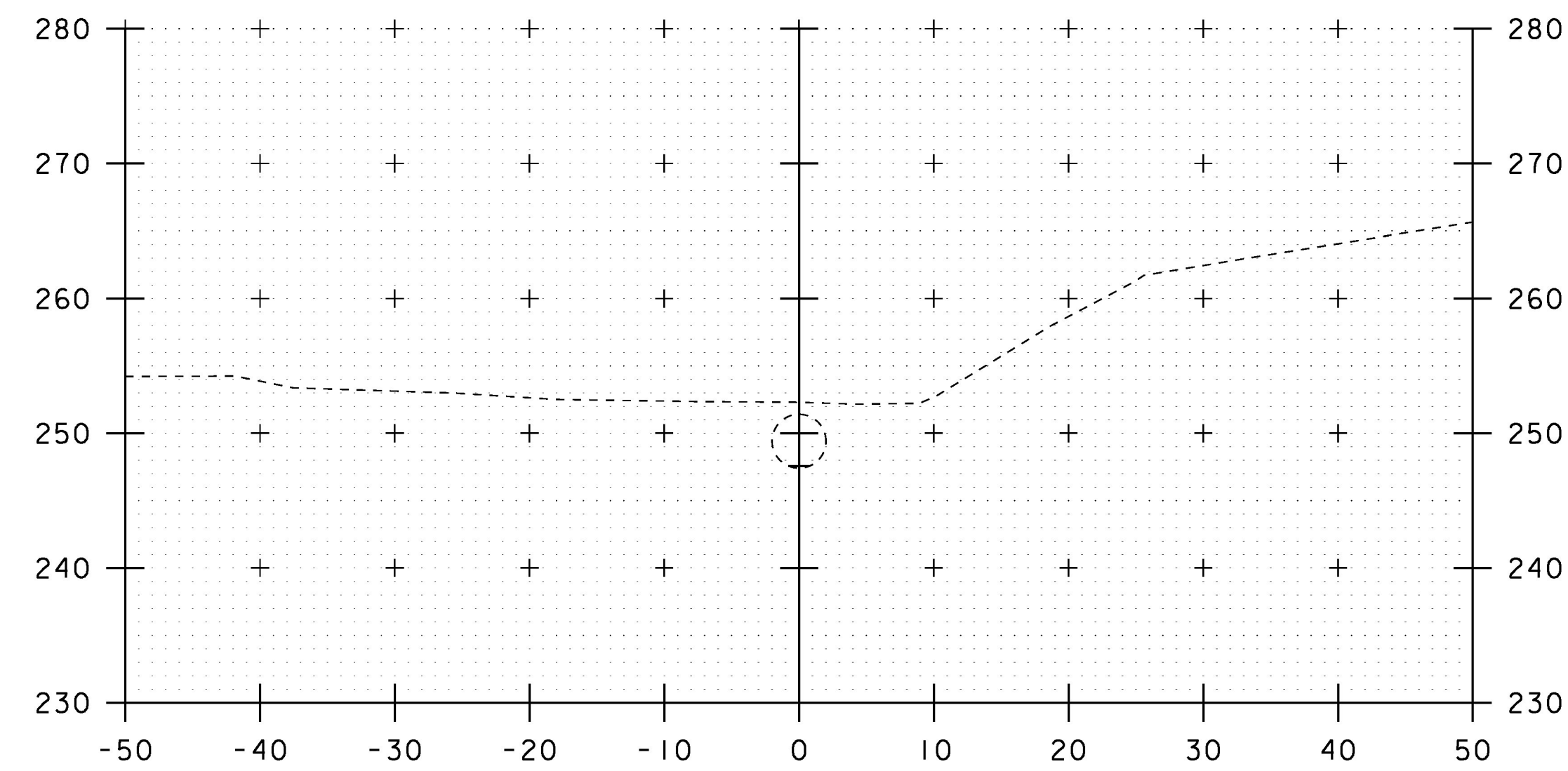
0+10  
PIPE INLET



0+30



0+00

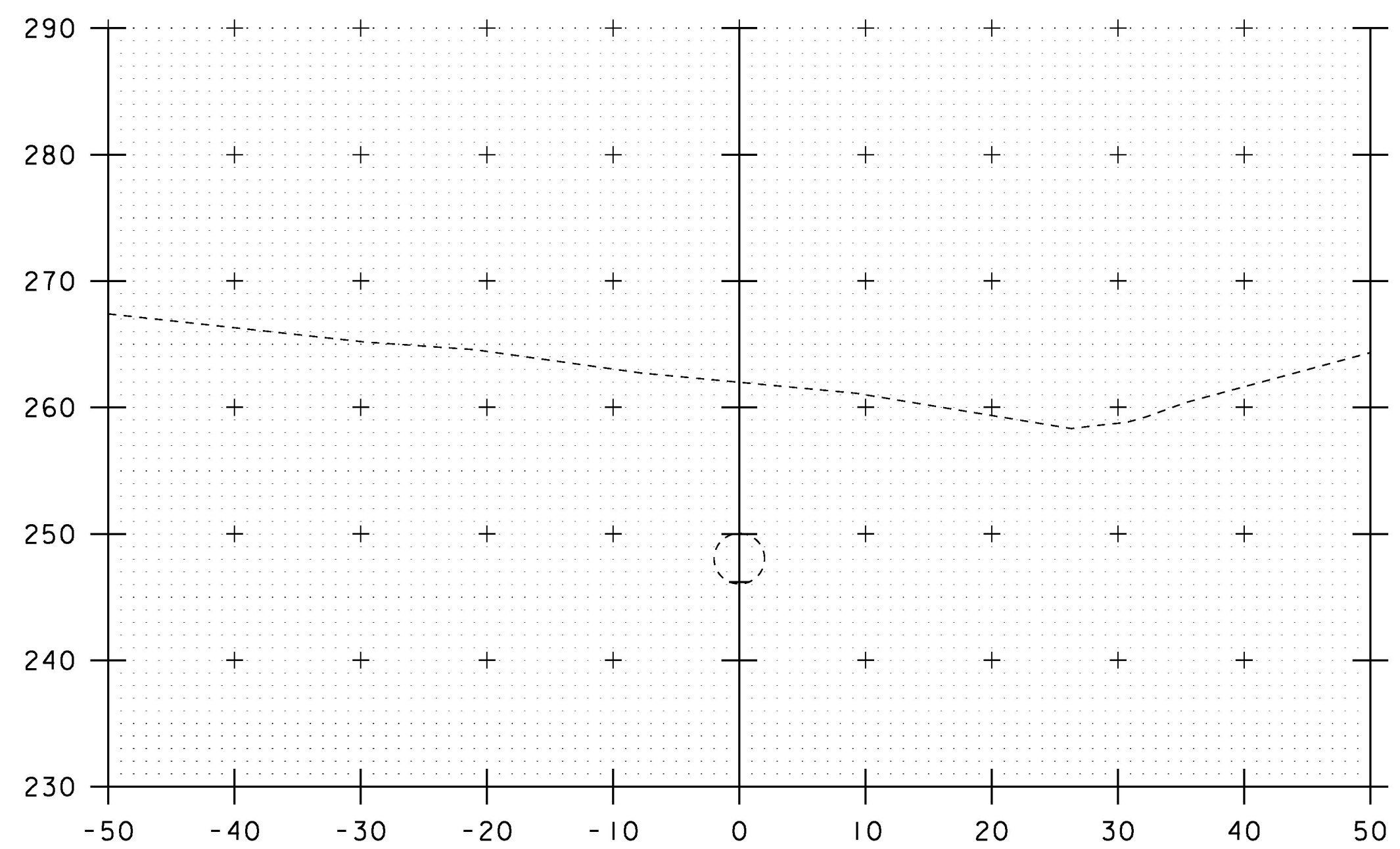


0+20

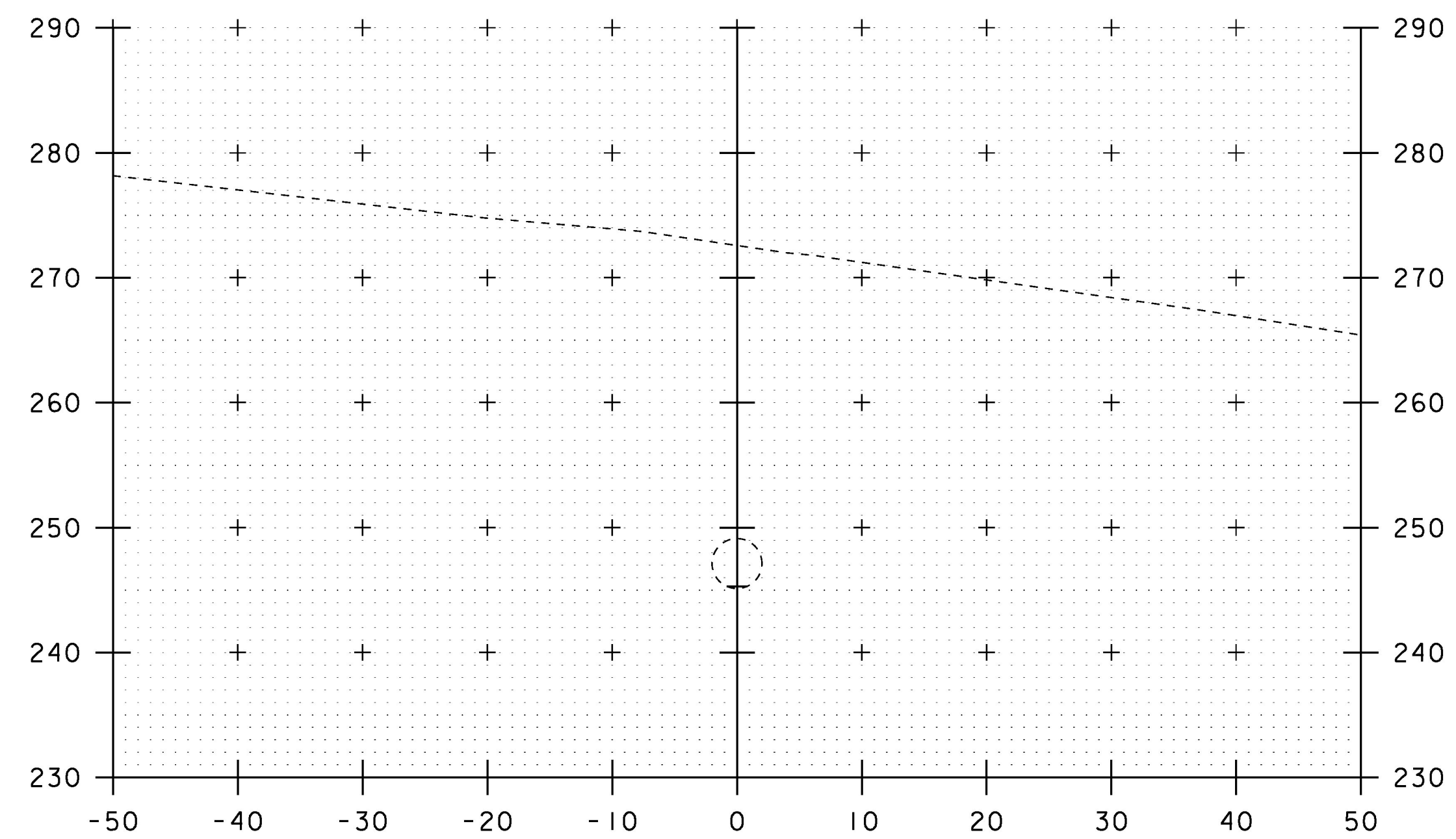
SCALE IN FEET

STA. 0+00 TO STA. 0+30

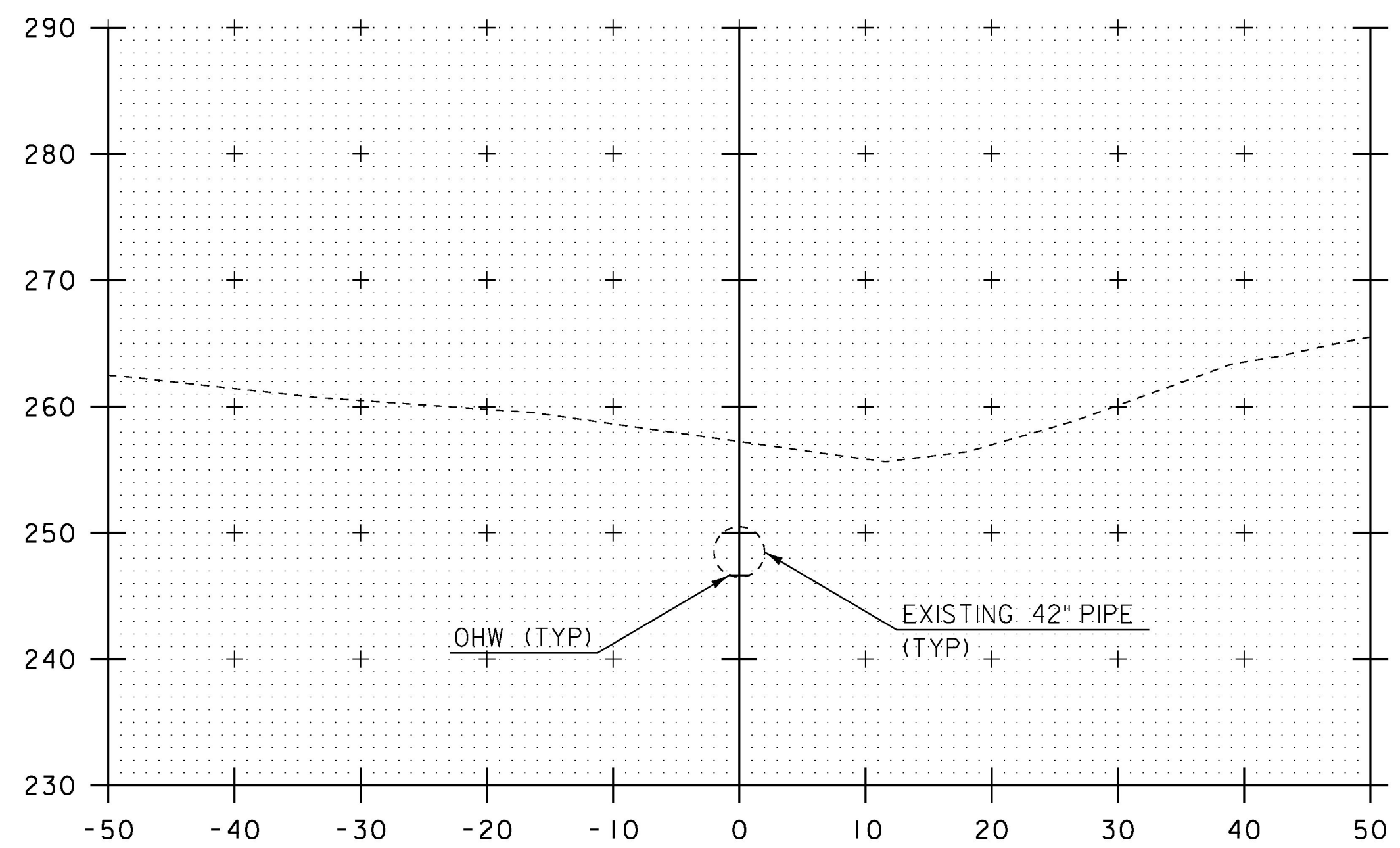
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PROJECT NUMBER:	IM SCRP(21)	DRAWN BY:	C. LEACH
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PROJECT LEADER:	K. UPMAL	SHEET	19 OF 30
DESIGNED BY:	C. LEACH	PIPE CROSS SECTION SHEET I	



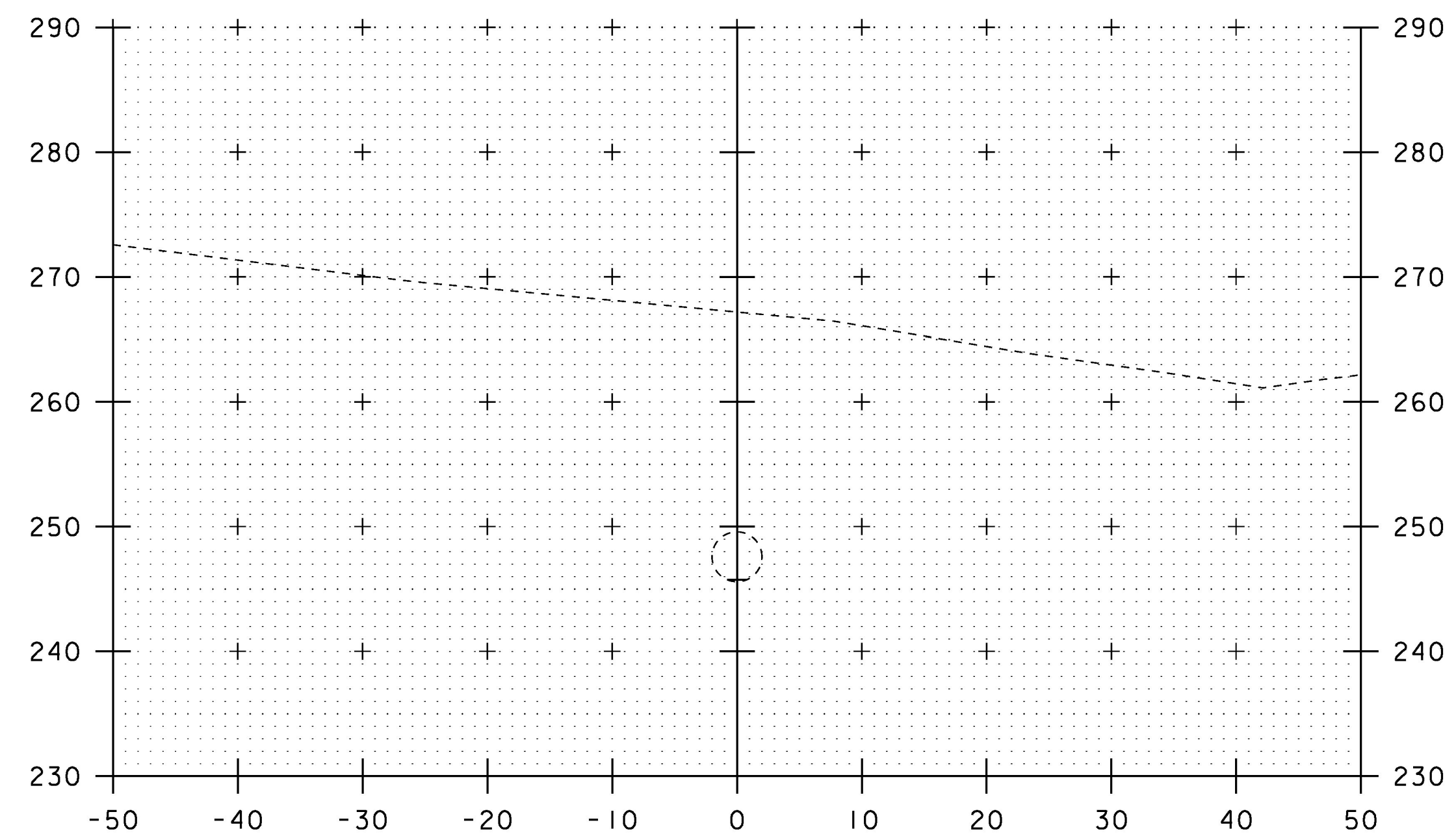
0+50



0+70



0+40



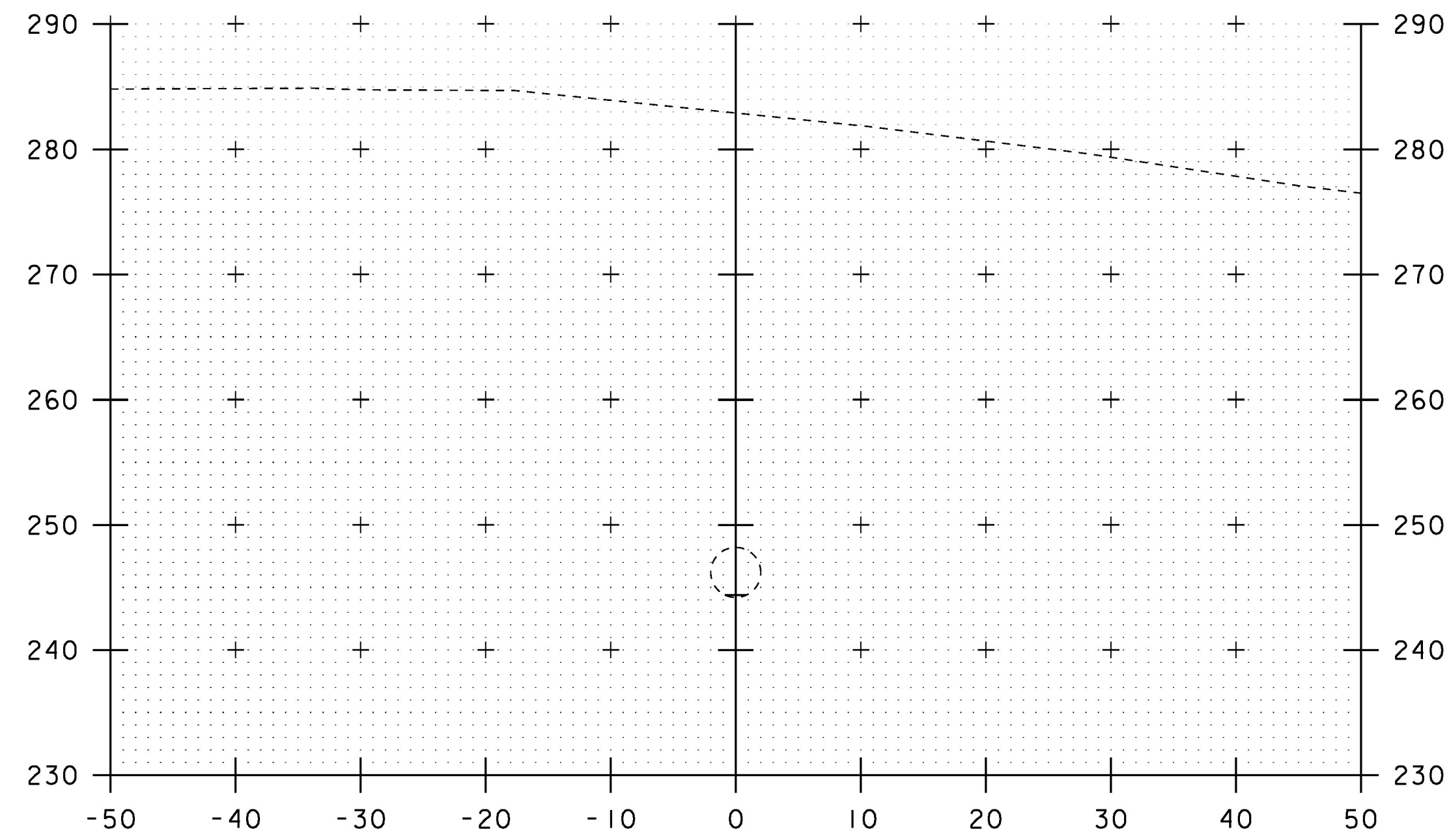
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SCALE IN FEET

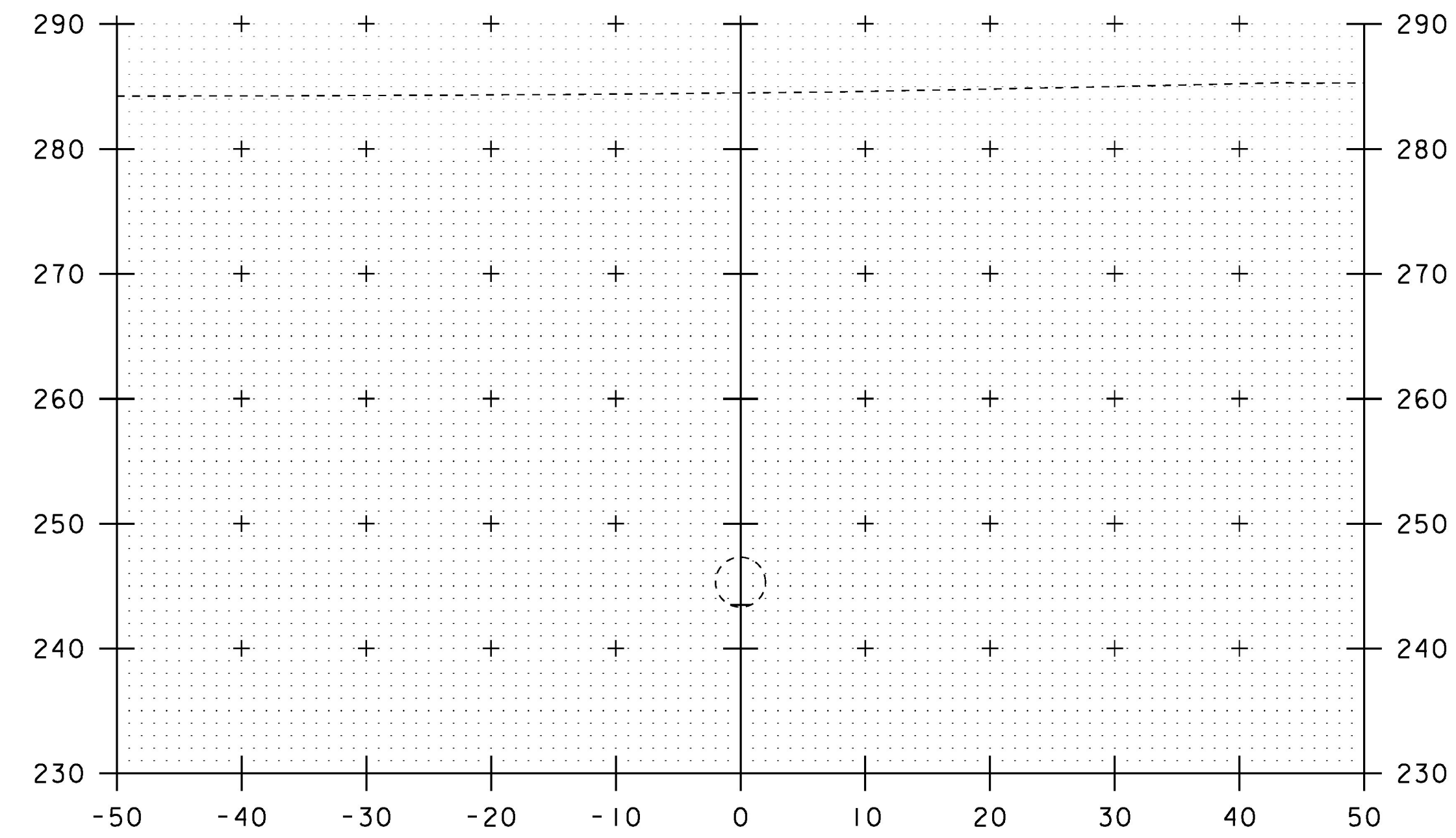
STA. 0+40 TO STA. 0+70

PROJECT NAME: SOUTH BURLINGTON  
 PROJECT NUMBER: IM SCRP(21)

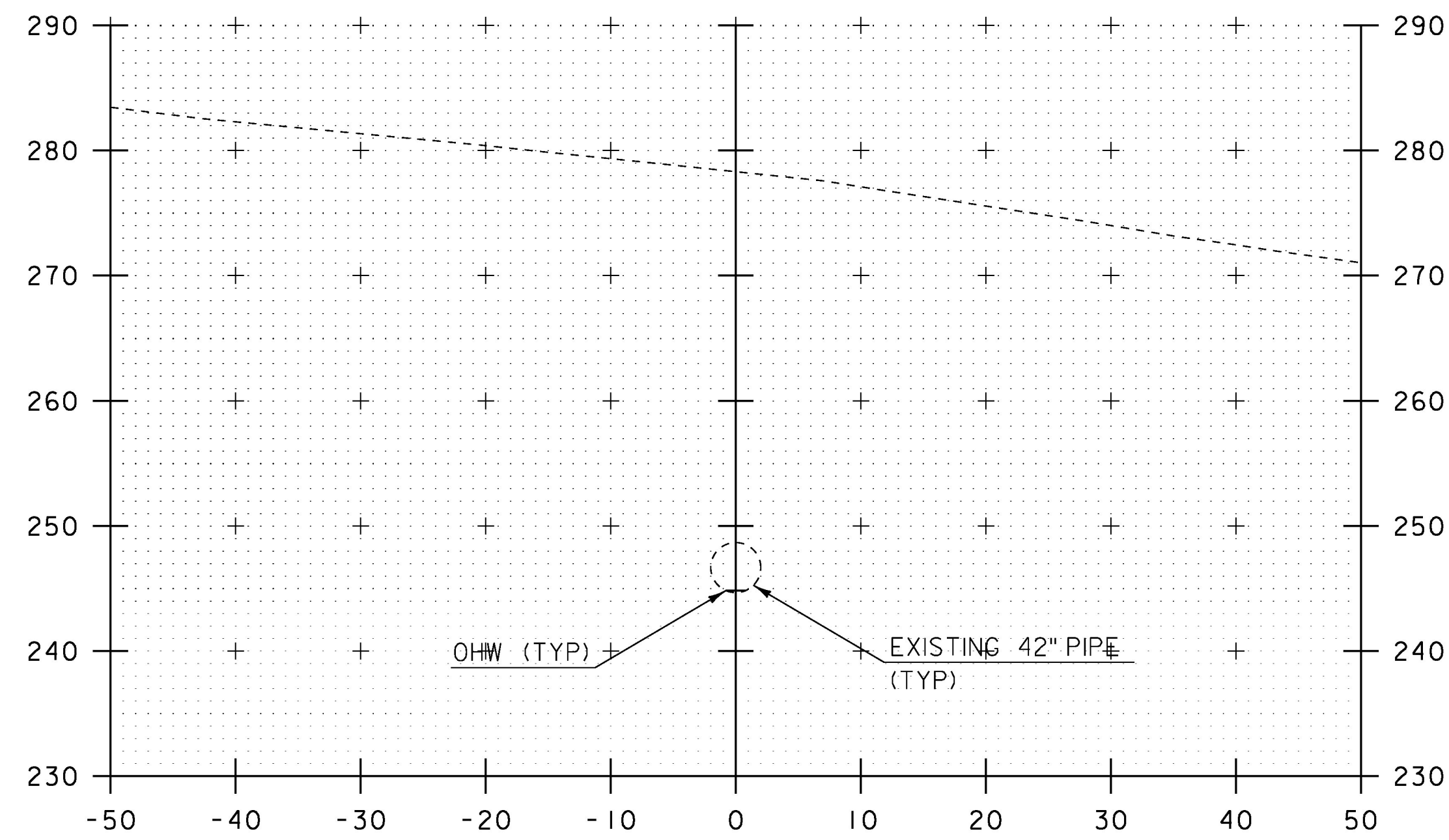
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PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: A. AGRAWAL
PIPE CROSS SECTION SHEET 2	SHEET 20 OF 30



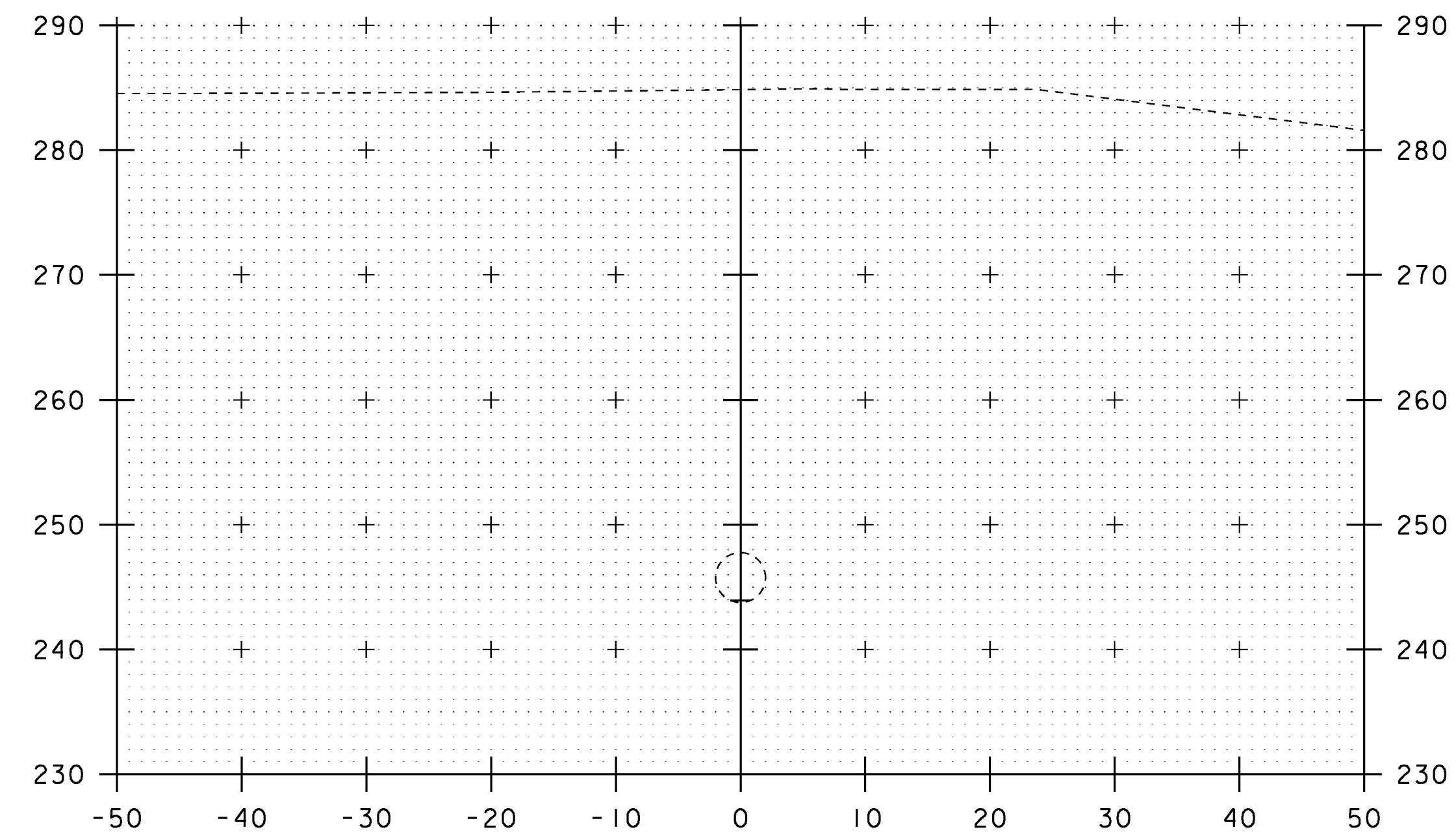
0+90



1+10



0+80

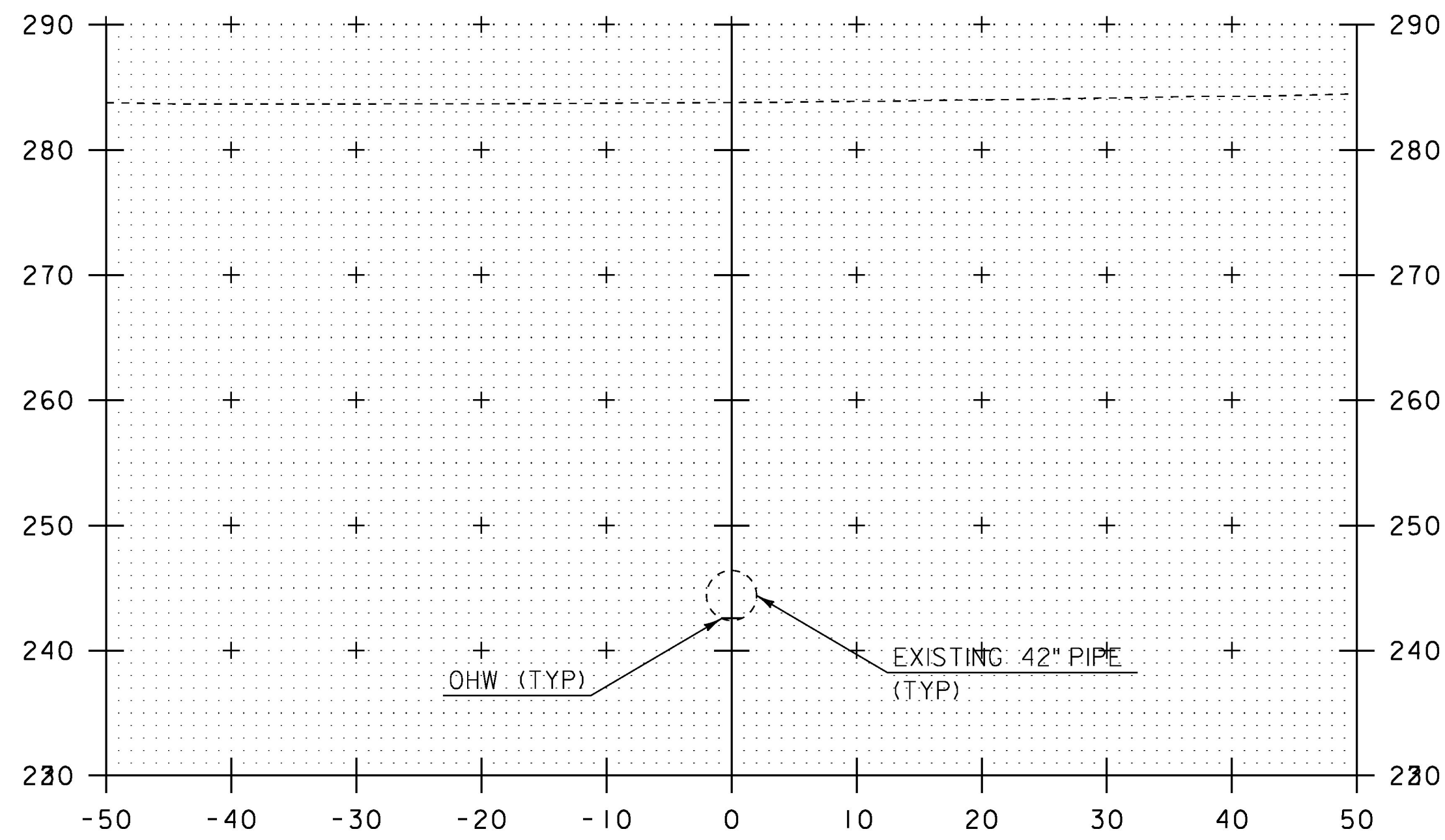


1+00

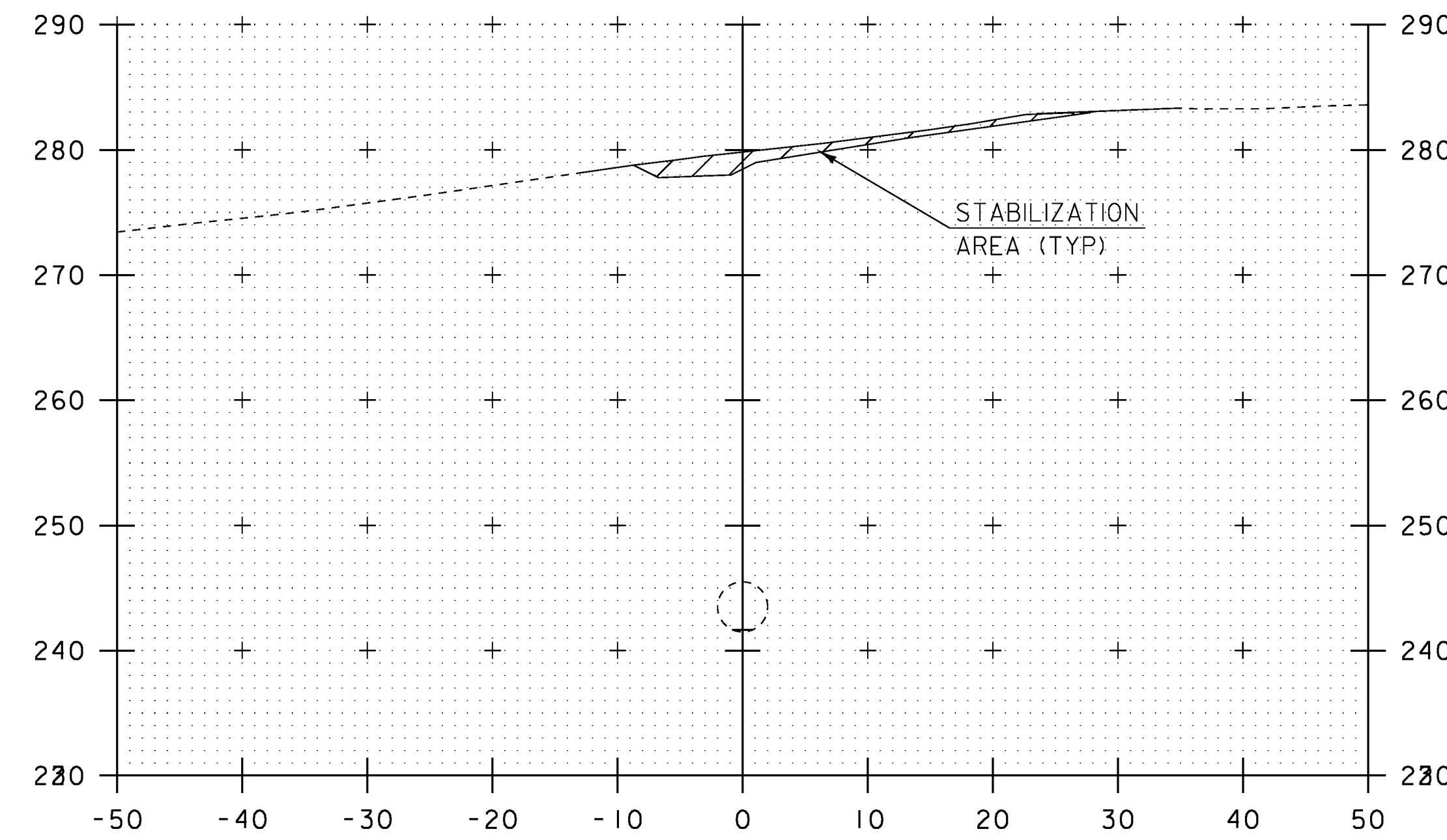
SCALE IN FEET

STA. 0+80 TO STA. 1+10

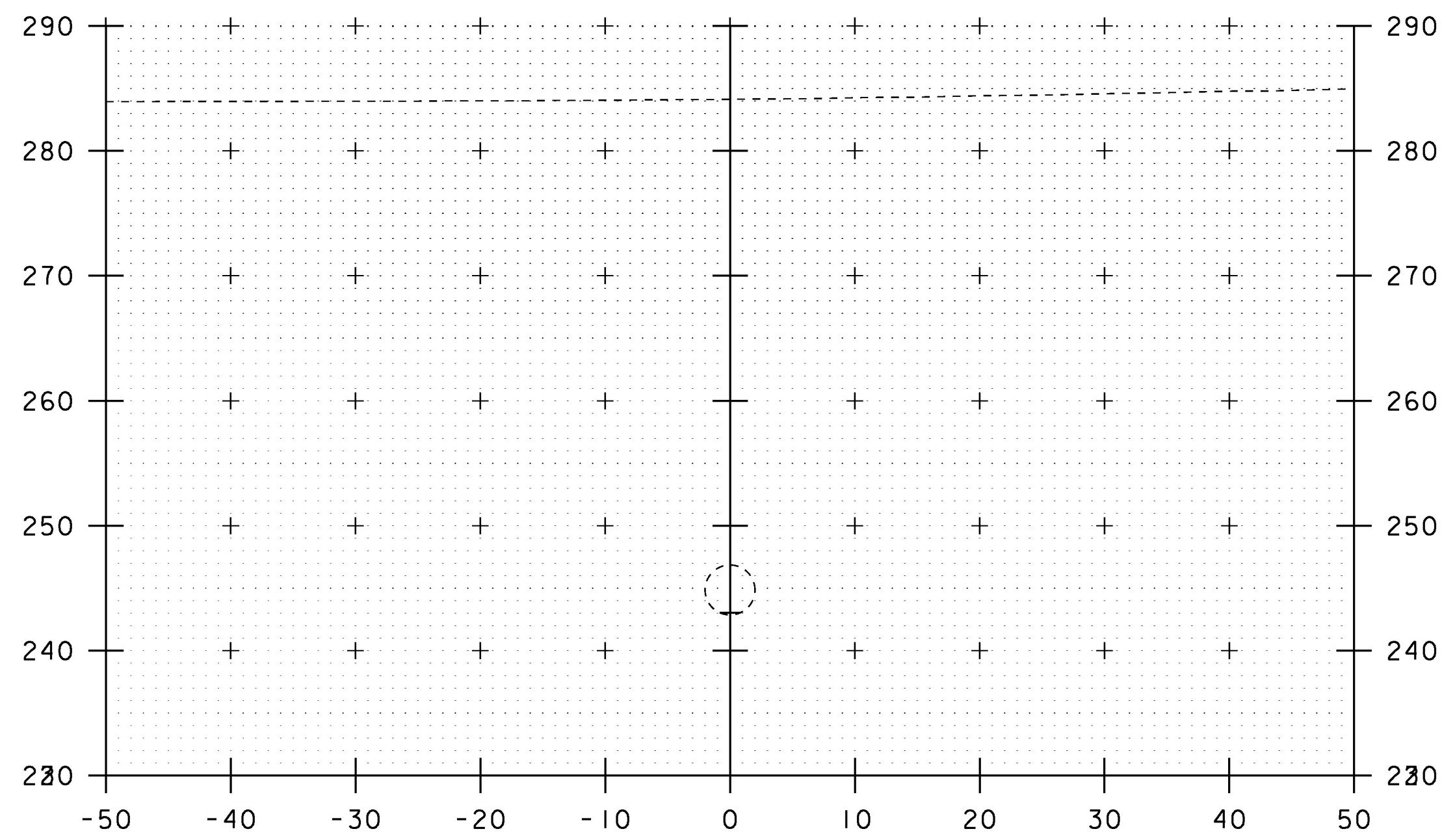
PROJECT NAME: SOUTH BURLINGTON	
PROJECT NUMBER: IM SCRP(21)	
FILE NAME: I6d064/Design/nul.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: A. AGRAWAL
PIPE CROSS SECTION SHEET 3	SHEET 21 OF 30



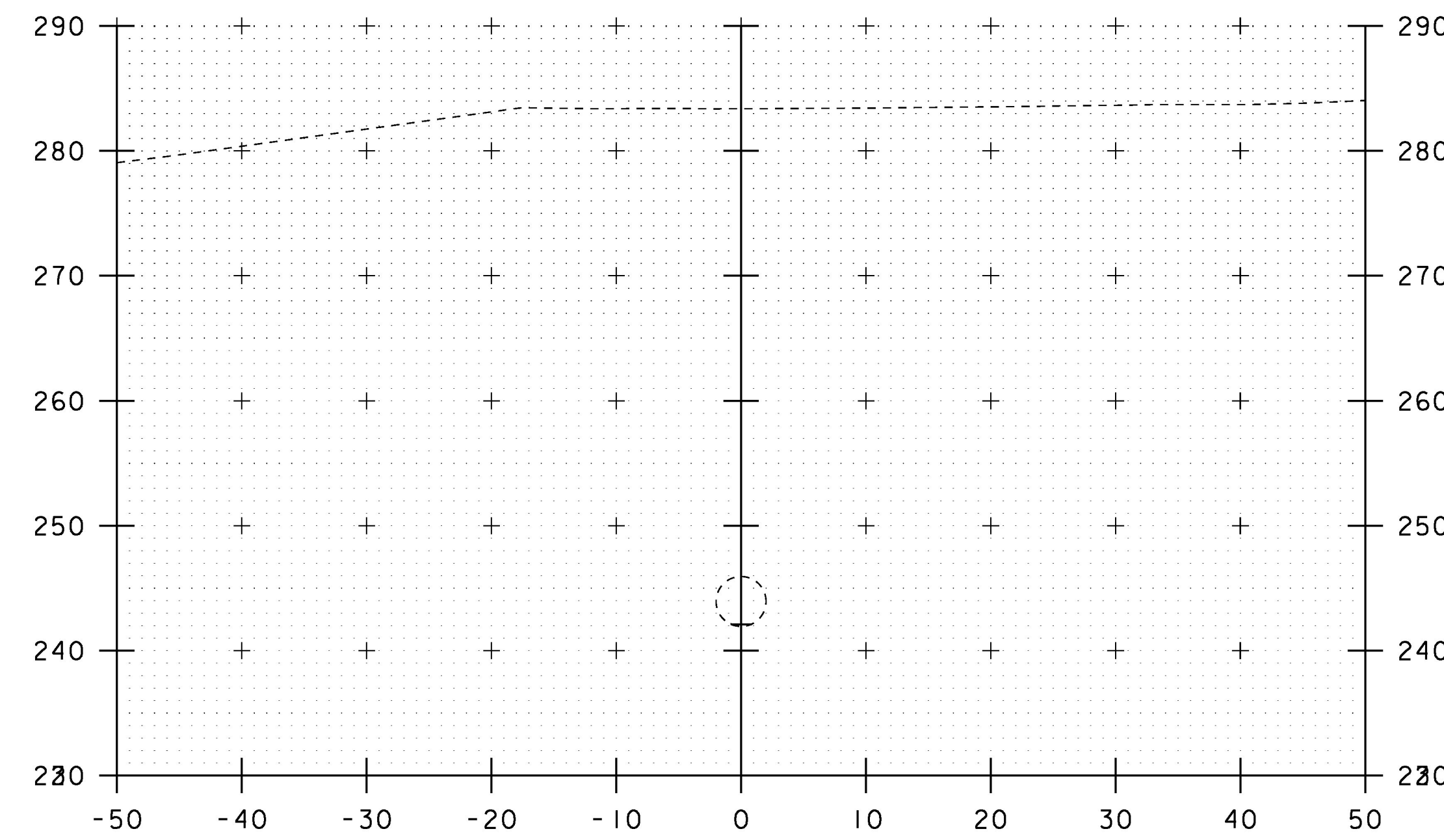
I+30



I+50



I+20

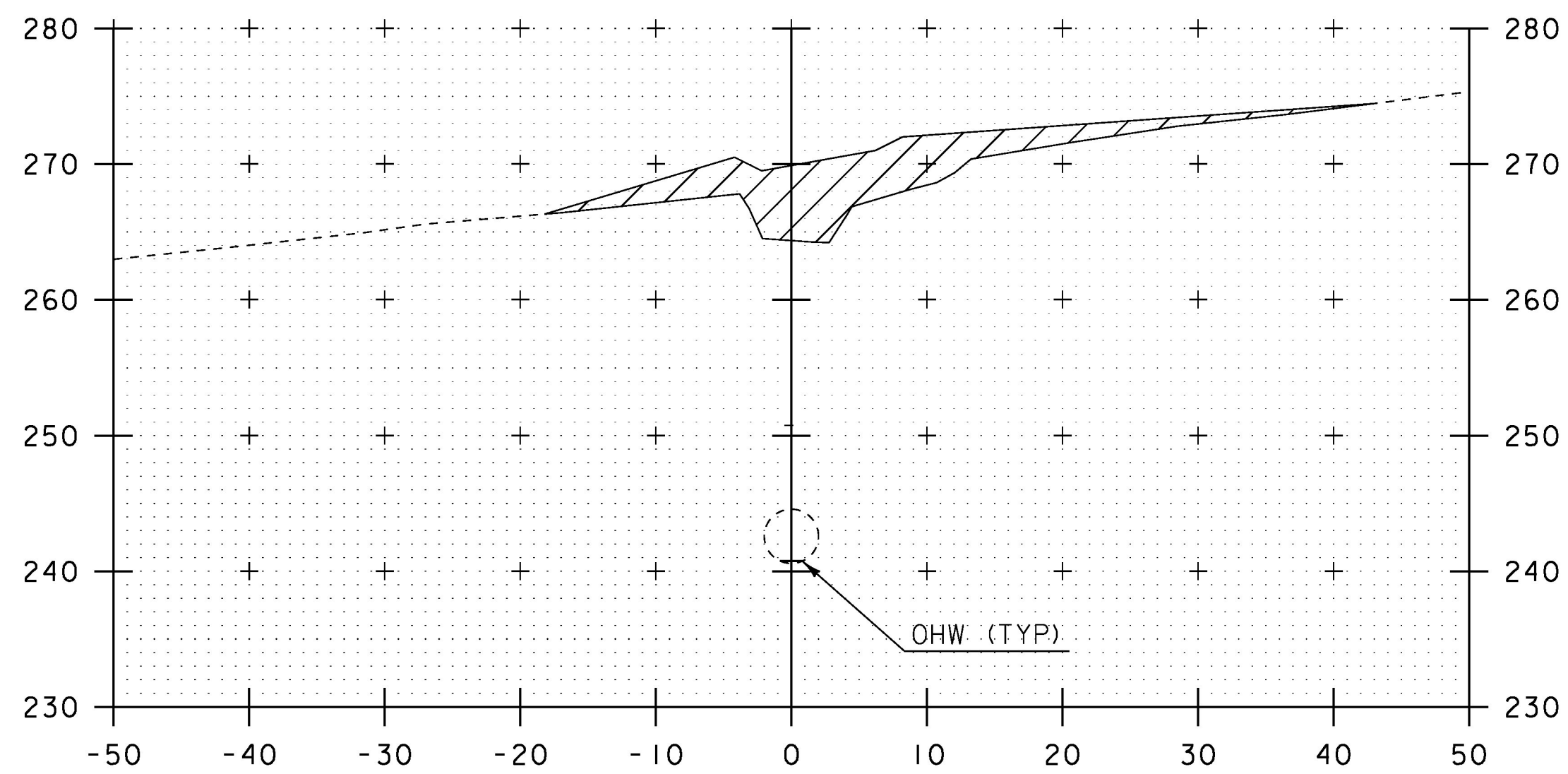


I+40

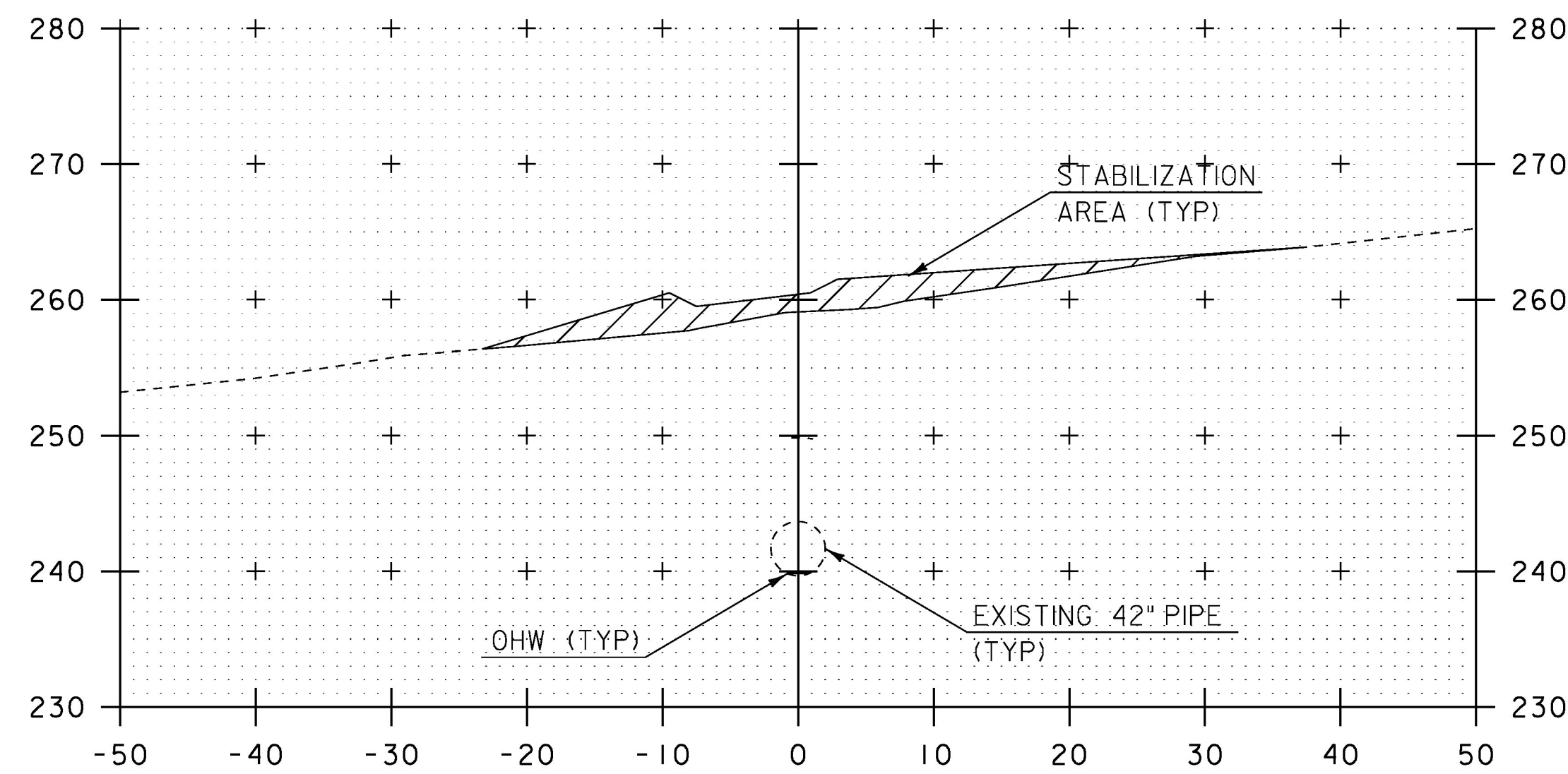
SCALE IN FEET

STA. I+20 TO STA. I+50

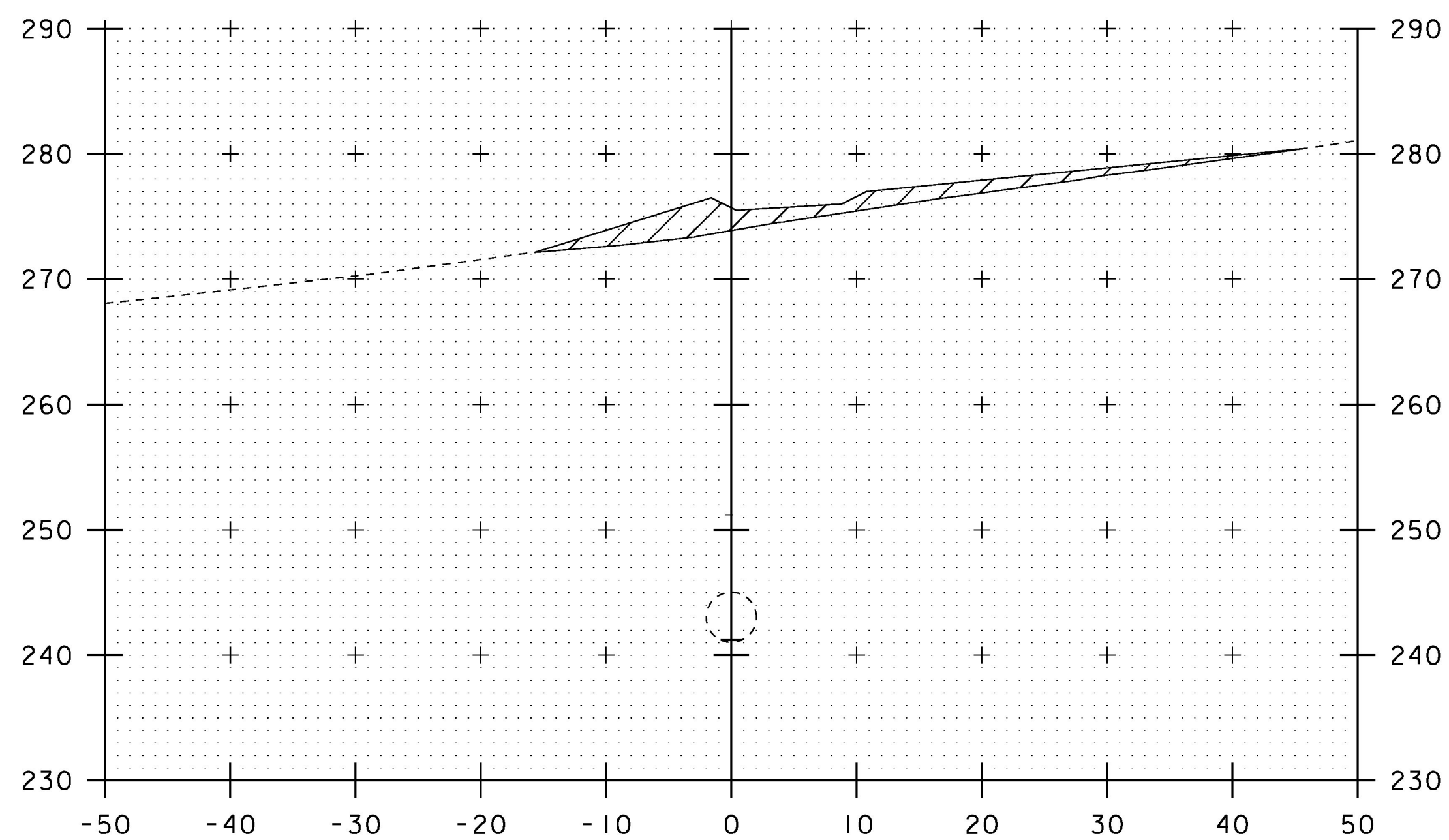
PROJECT NAME:	SOUTH BURLINGTON	PLOT DATE:	27-APR-2017
PROJECT NUMBER:	IM SCRP(2I)	DRAWN BY:	C. LEACH
FILE NAME:	I6d064/Design/nul.dgn	CHECKED BY:	A. AGRAWAL
PROJECT LEADER:	K. UPMAL	SHEET	22 OF 30
DESIGNED BY:	C. LEACH	PIPE CROSS SECTION SHEET	4



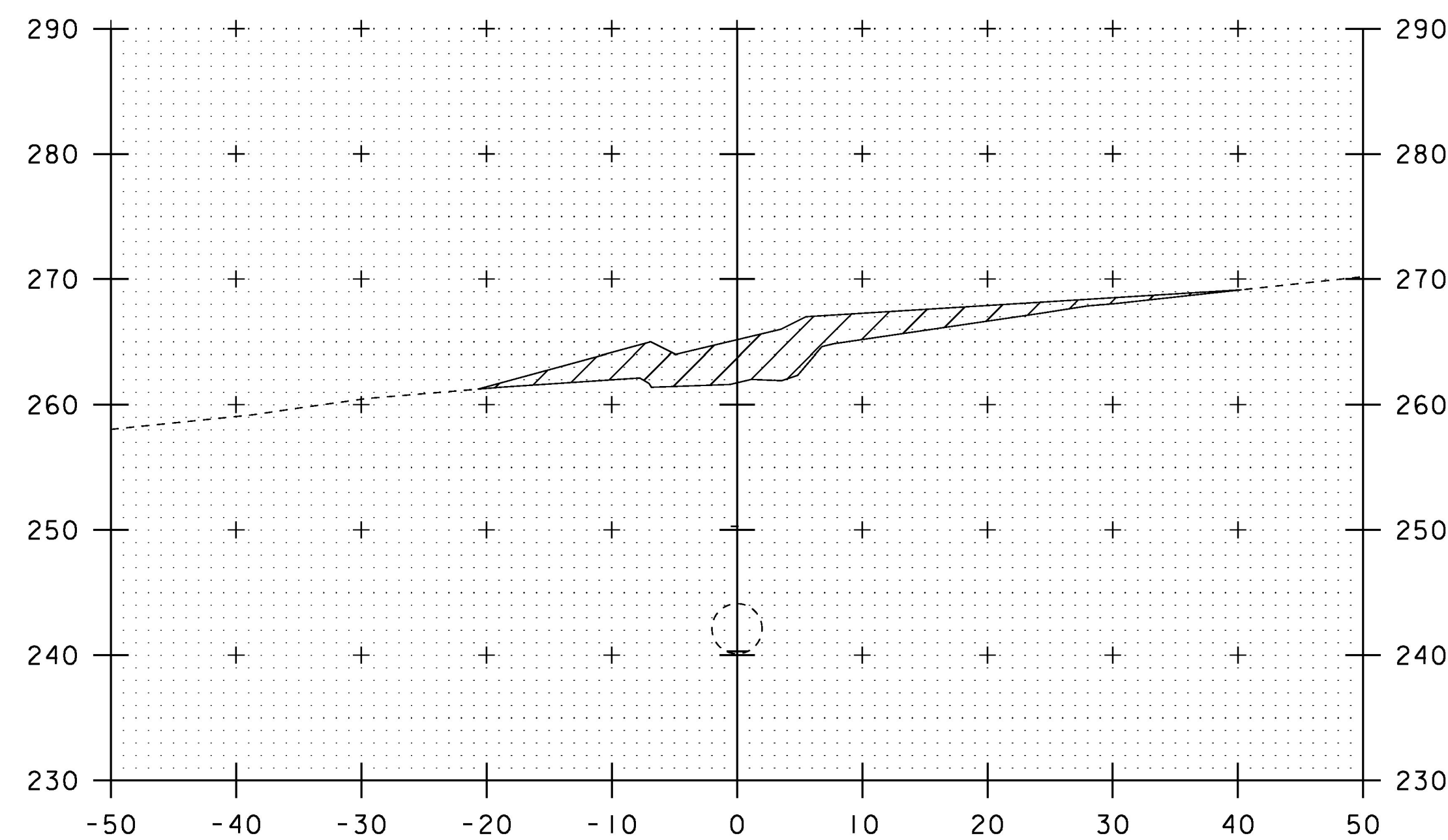
I+70



I+90



I+60

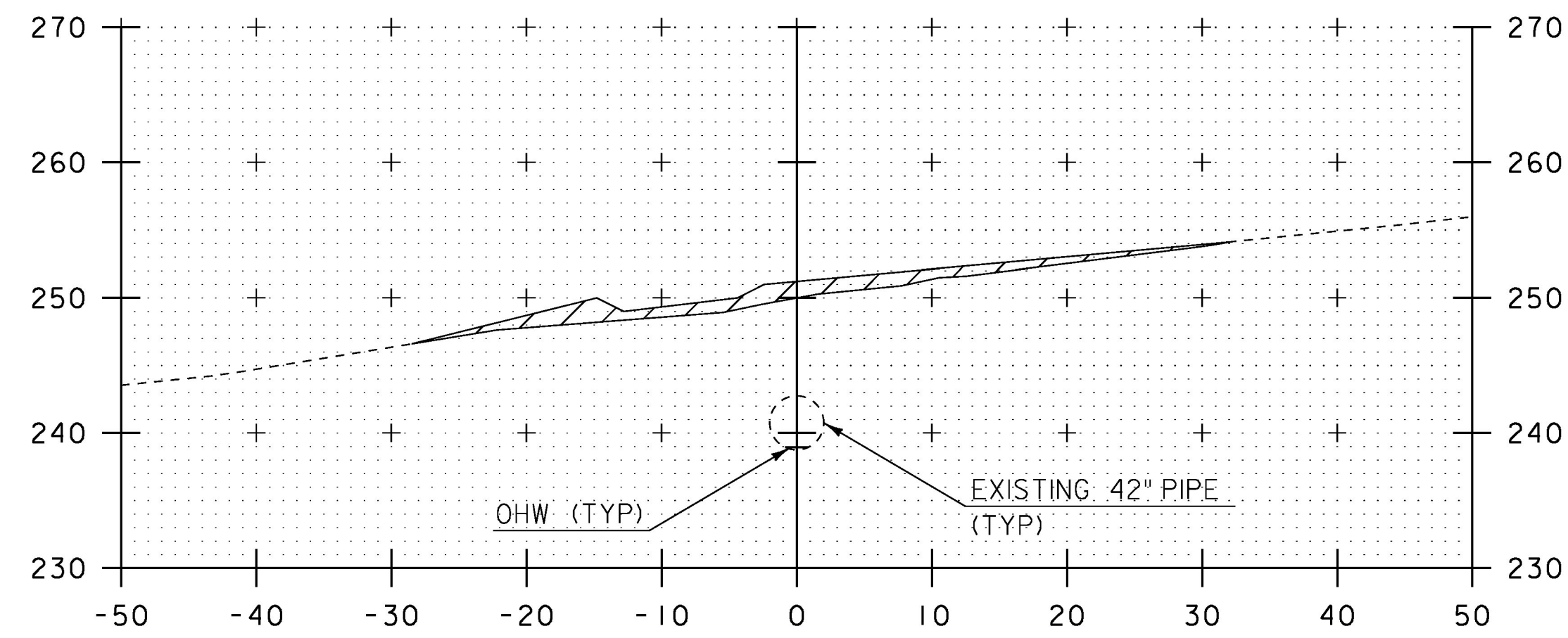


I+80

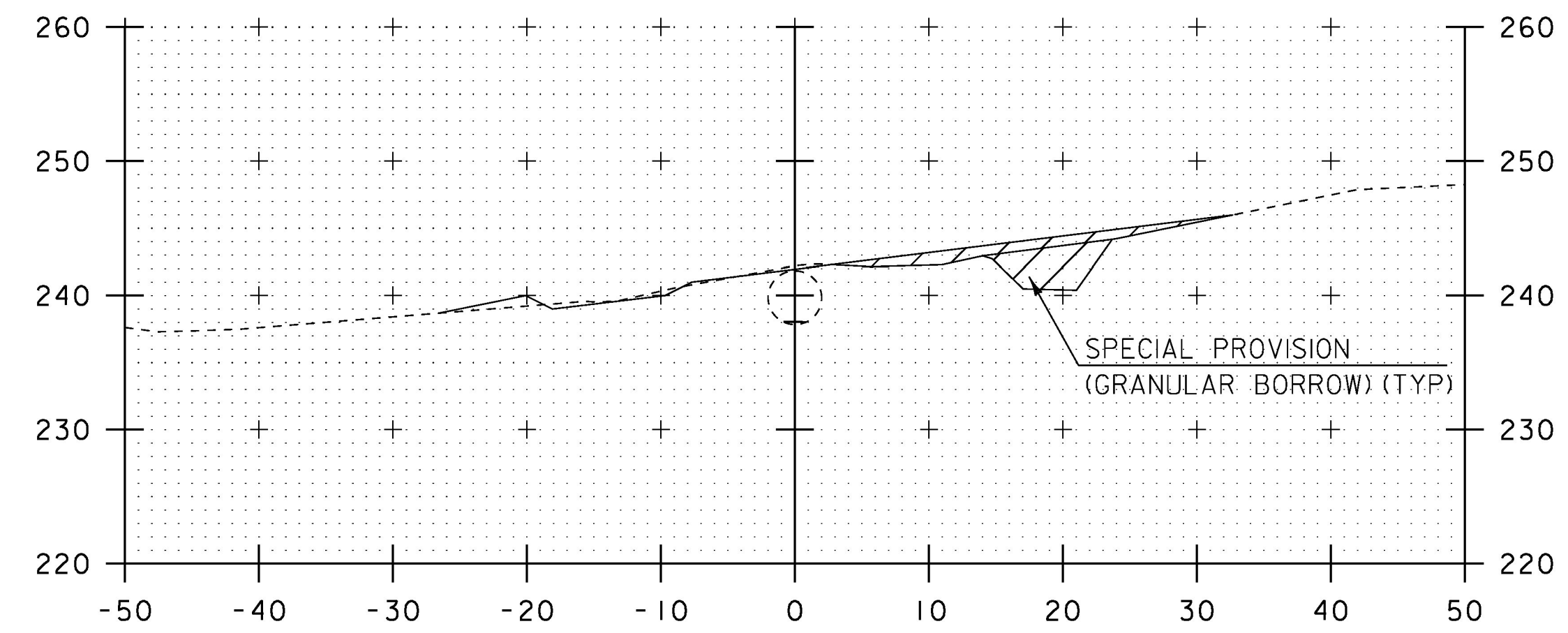
SCALE IN FEET

STA. I+60 TO STA. I+90

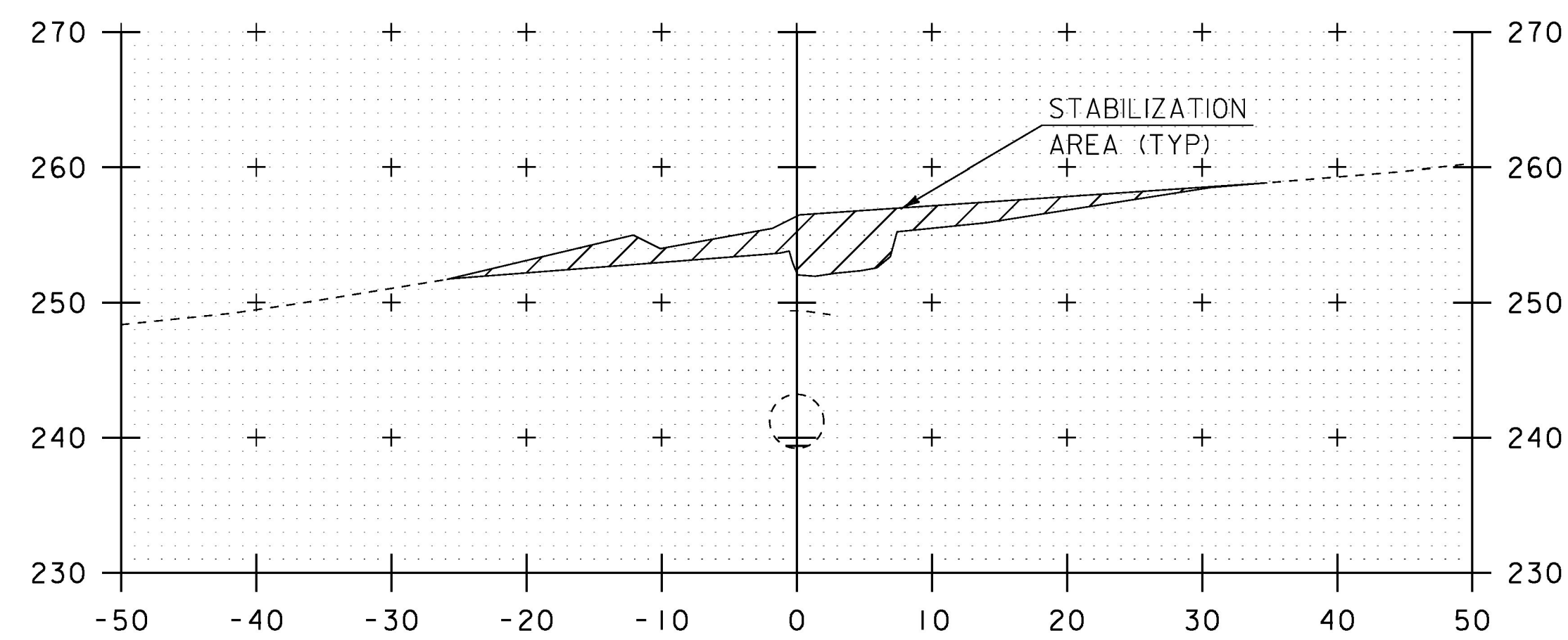
PROJECT NAME: SOUTH BURLINGTON	
PROJECT NUMBER: IM SCRP(2I)	
FILE NAME: I6d064/Design/nul.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: A. AGRAWAL
PIPE CROSS SECTION SHEET 5	SHEET 23 OF 30



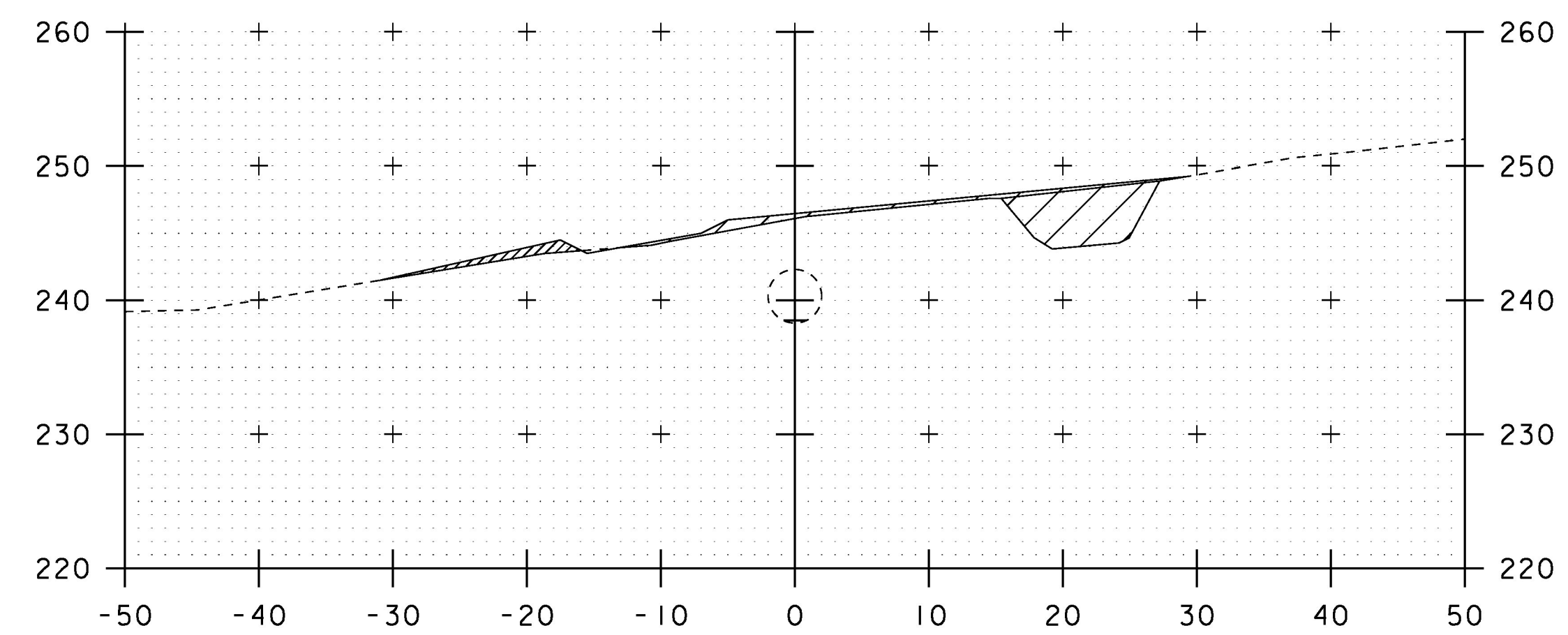
2+10



2+30



2+00

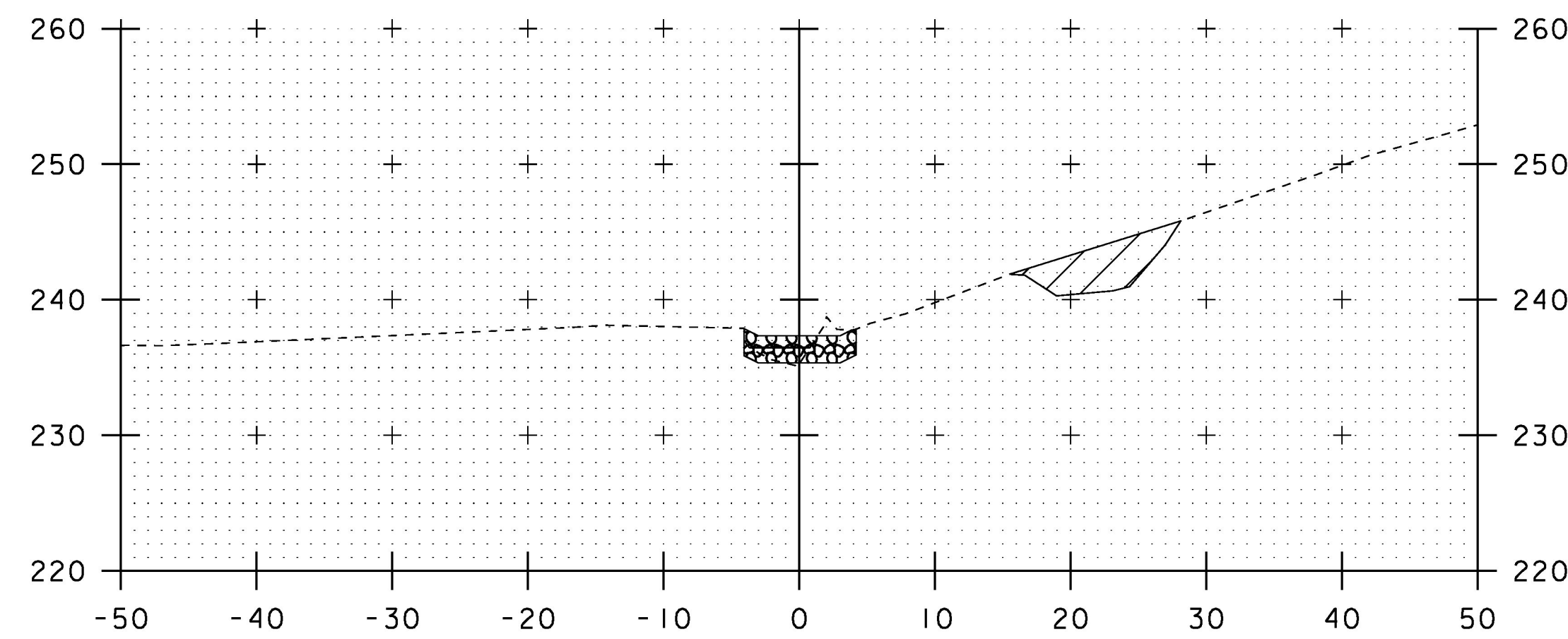


2+20

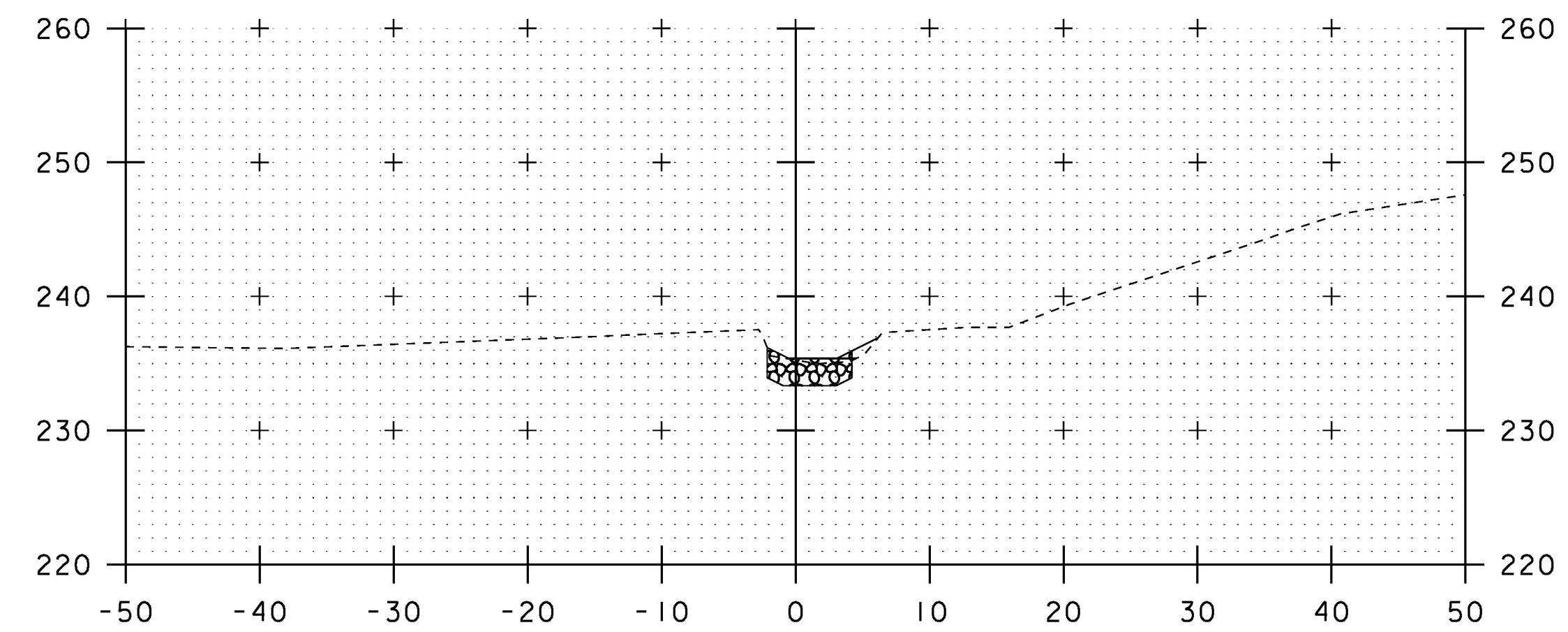
SCALE IN FEET

STA. 2+00 TO STA. 2+30

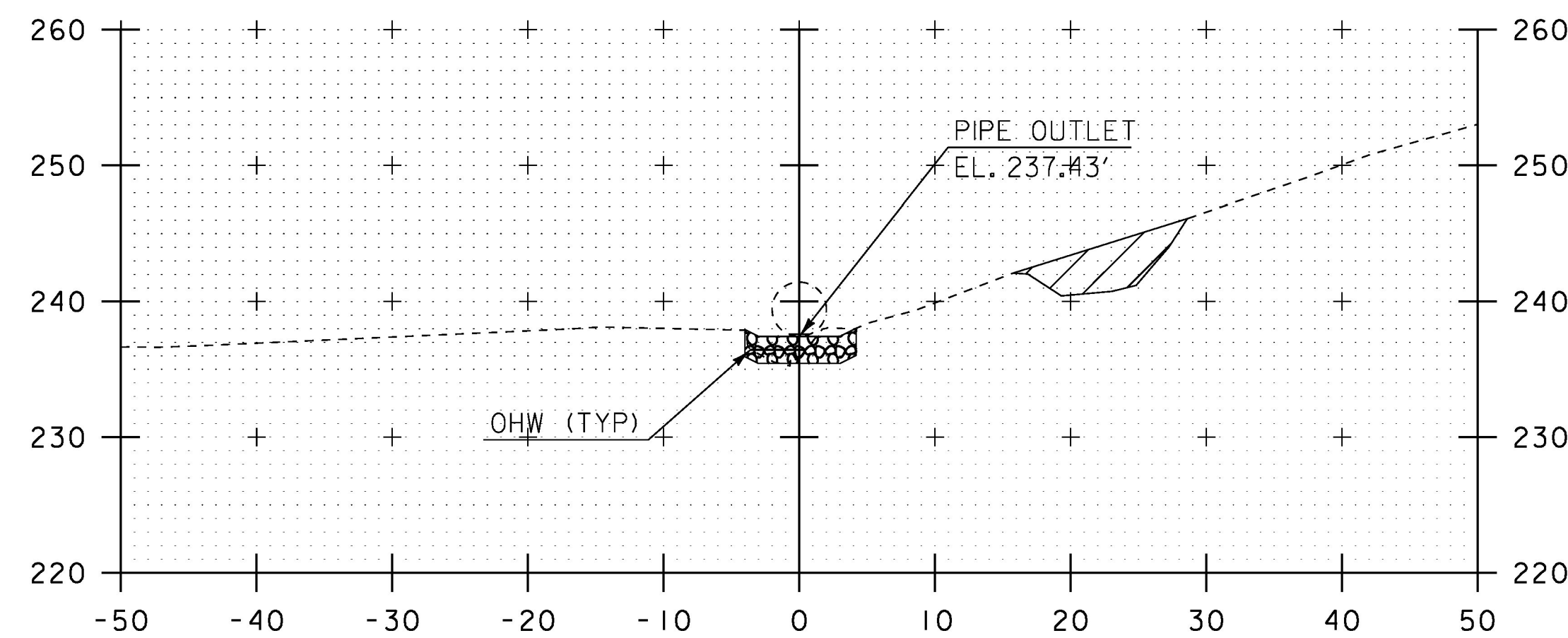
PROJECT NAME: SOUTH BURLINGTON	
PROJECT NUMBER: IM SCRP(2I)	
FILE NAME: I6d064/Design/nul.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: A. AGRAWAL
PIPE CROSS SECTION SHEET 6	SHEET 24 OF 30



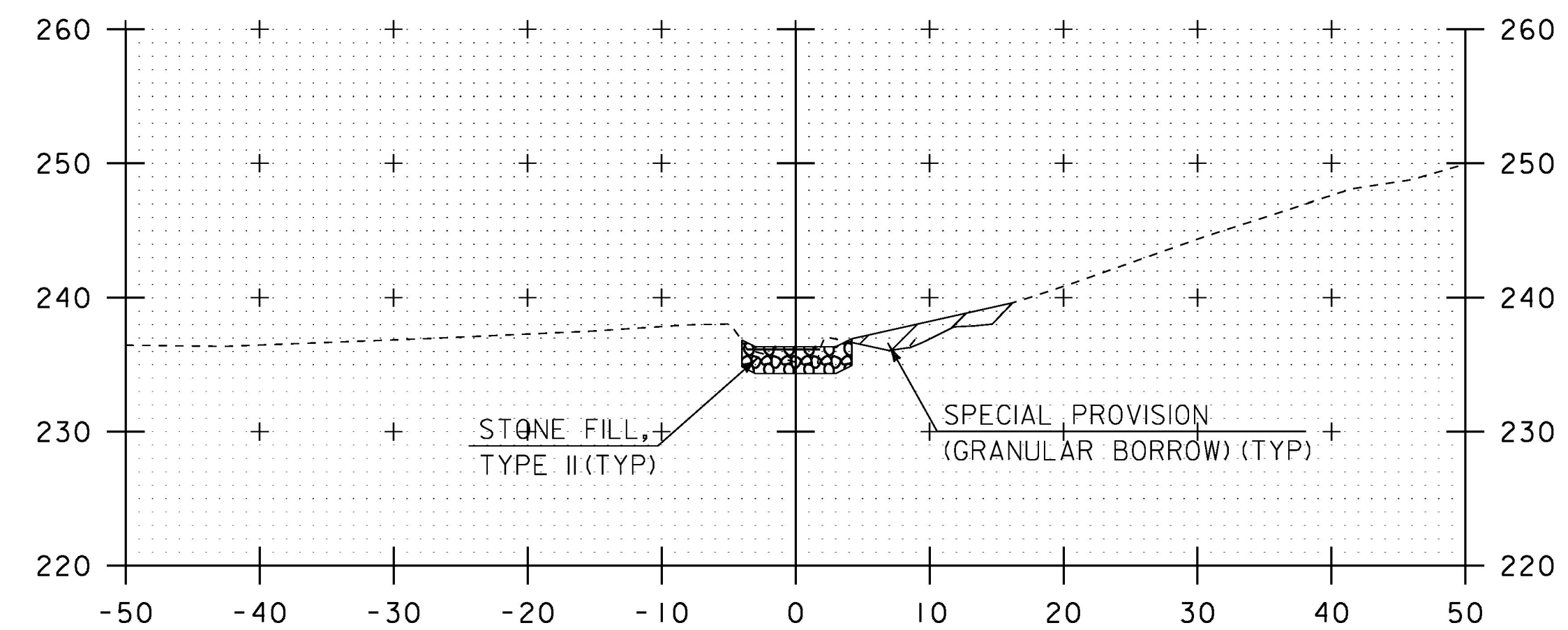
2+40



2+60



2+39.57  
PIPE OUTLET

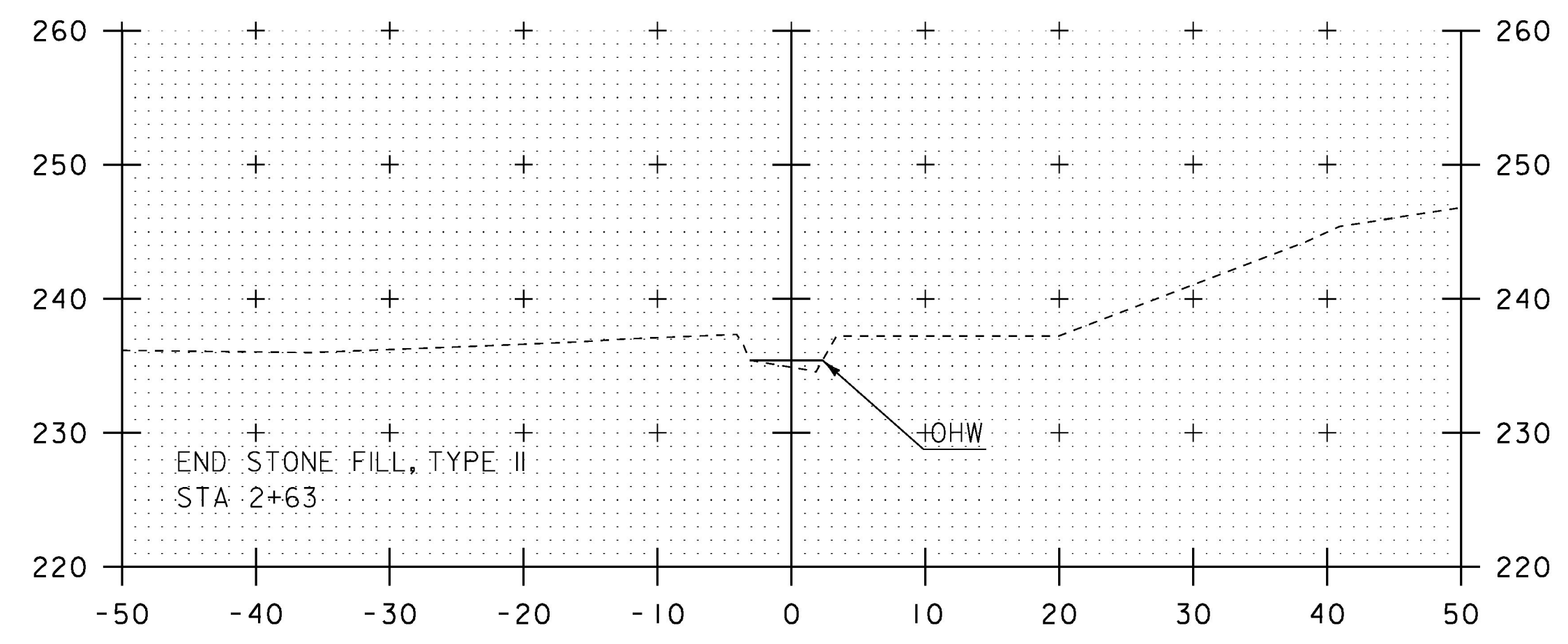


2+50

SCALE IN FEET

STA. 2+40 TO STA. 2+60

PROJECT NAME: SOUTH BURLINGTON	
PROJECT NUMBER: IM SCR(21)	
FILE NAME: I6d064/Design/nul.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: A. AGRAWAL
PIPE CROSS SECTION SHEET 7	SHEET 25 OF 30

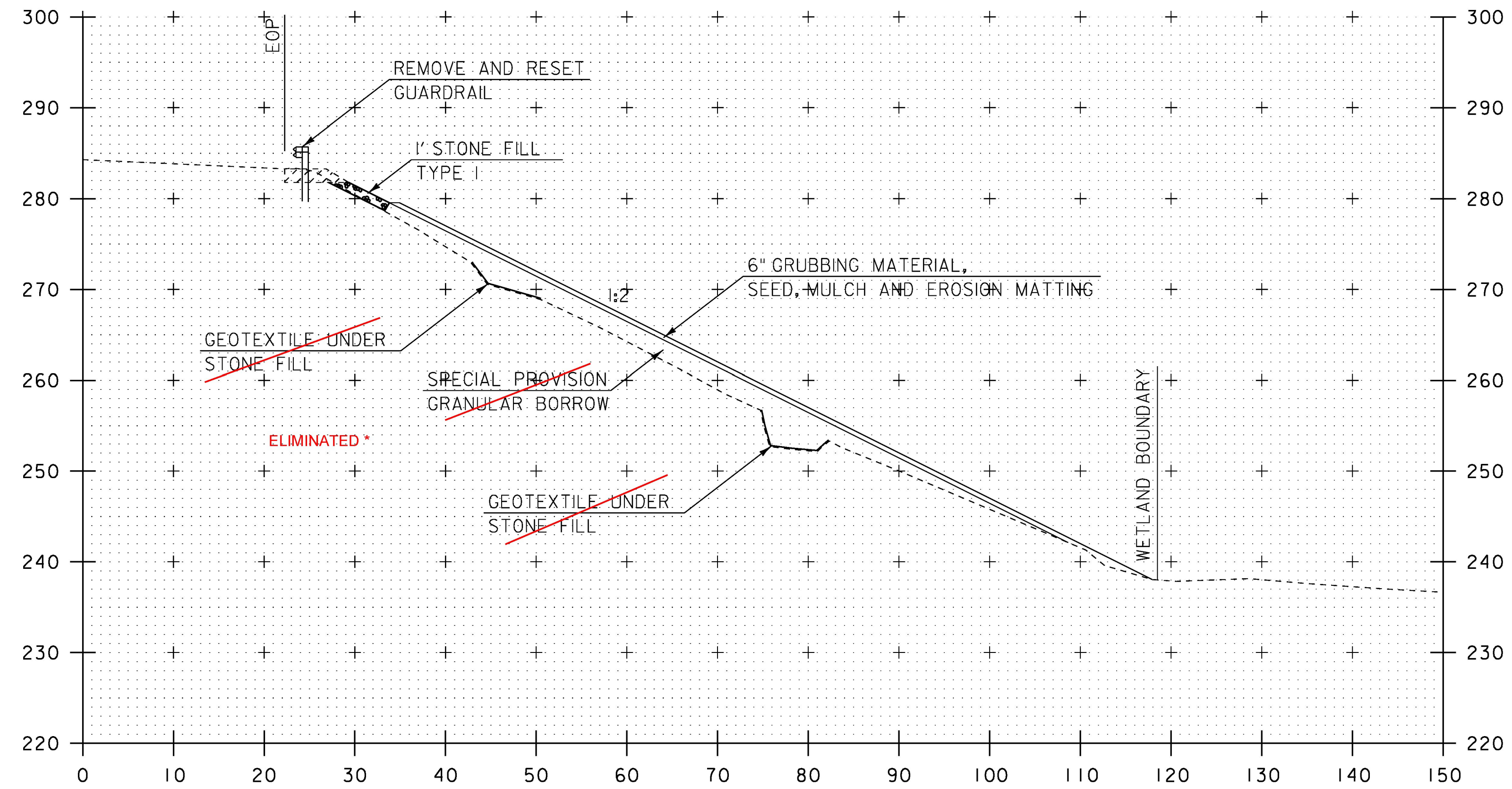


2+65

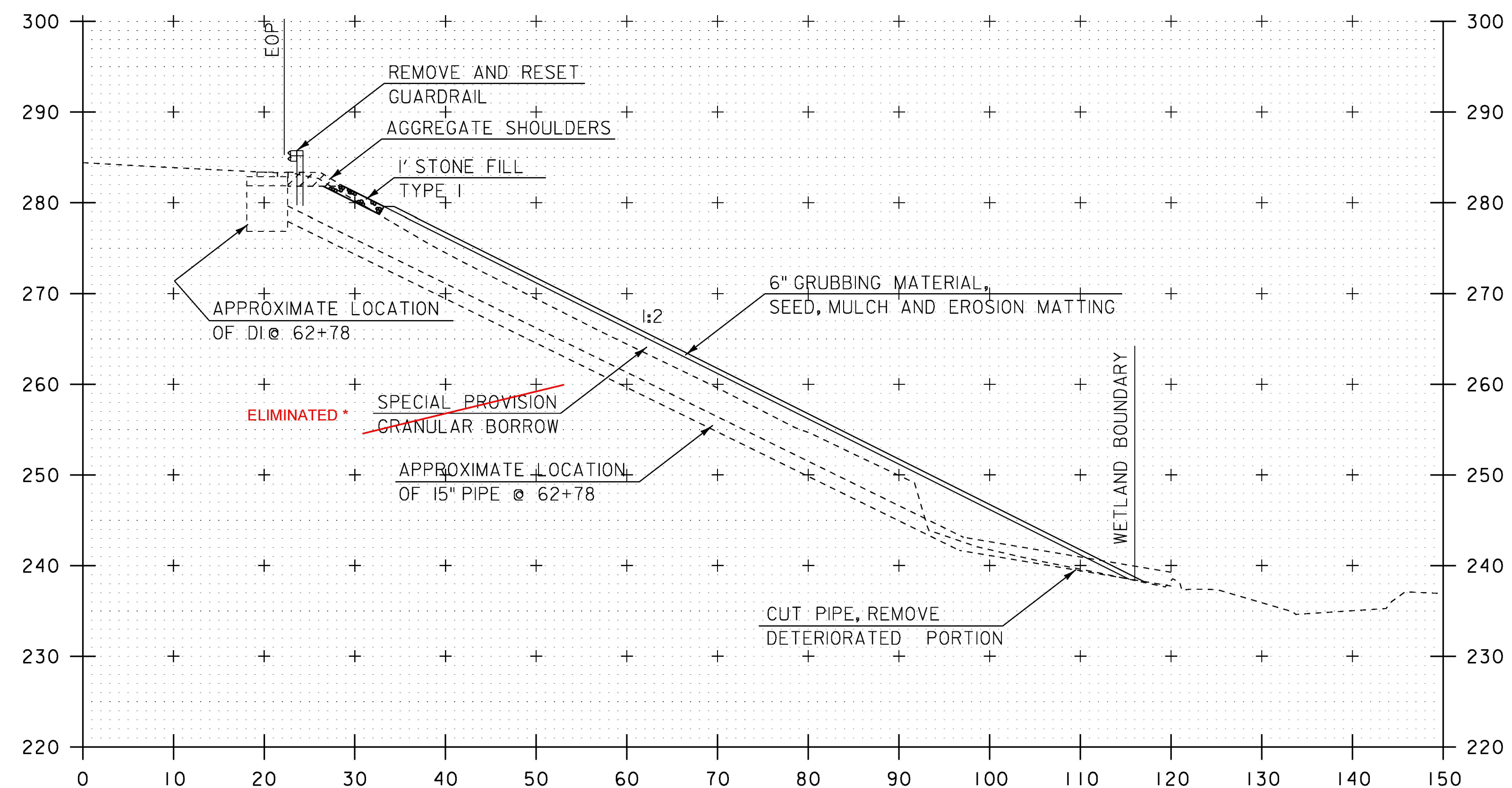
SCALE IN FEET

STA. 2+65 TO STA. 2+65

PROJECT NAME: SOUTH BURLINGTON	
PROJECT NUMBER: IM SCRP(21)	
FILE NAME: I6d064/Design/nul.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: A. AGRAWAL
PIPE CROSS SECTION SHEET 8	SHEET 26 OF 30



63+00

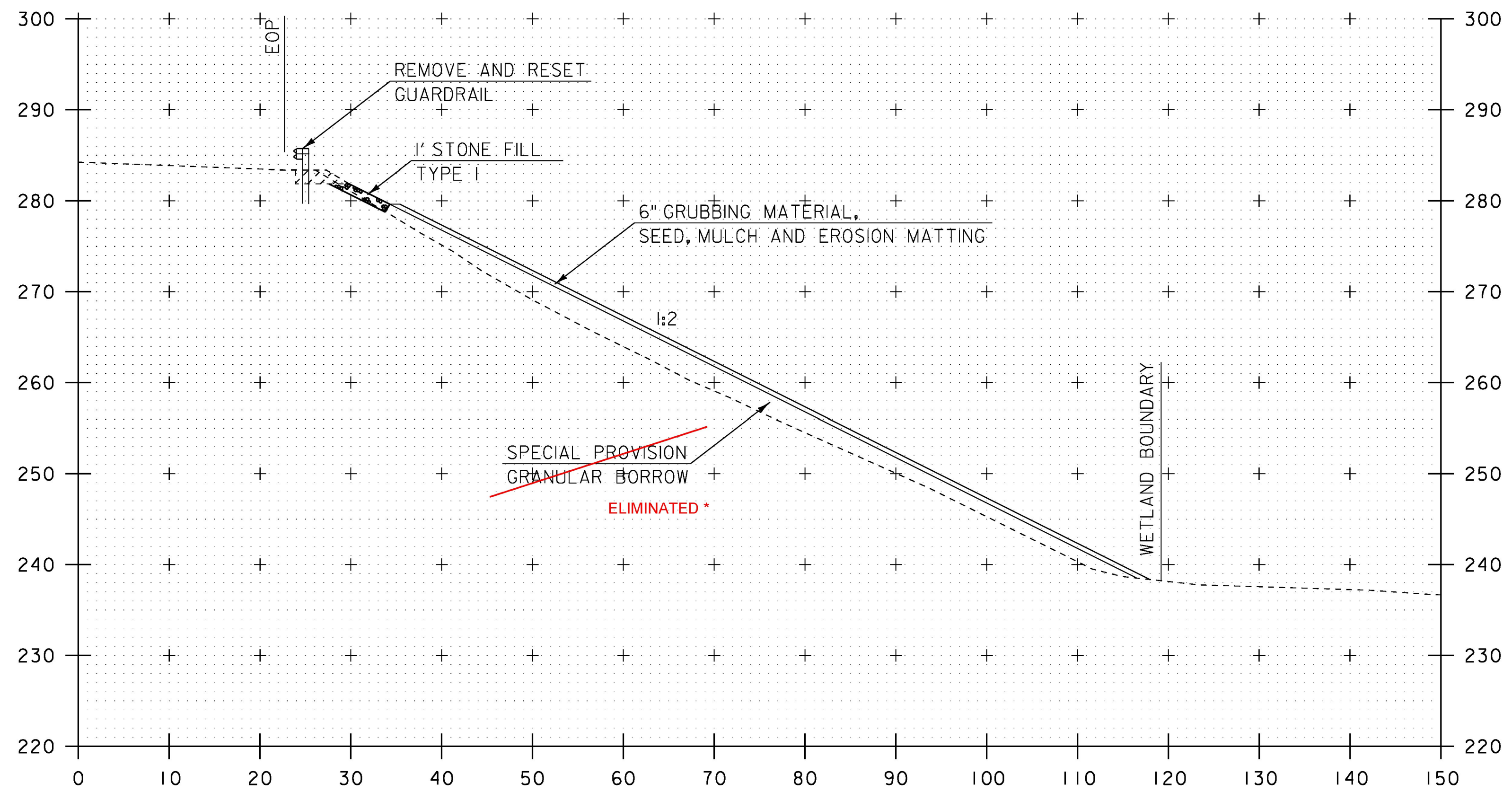


62+75

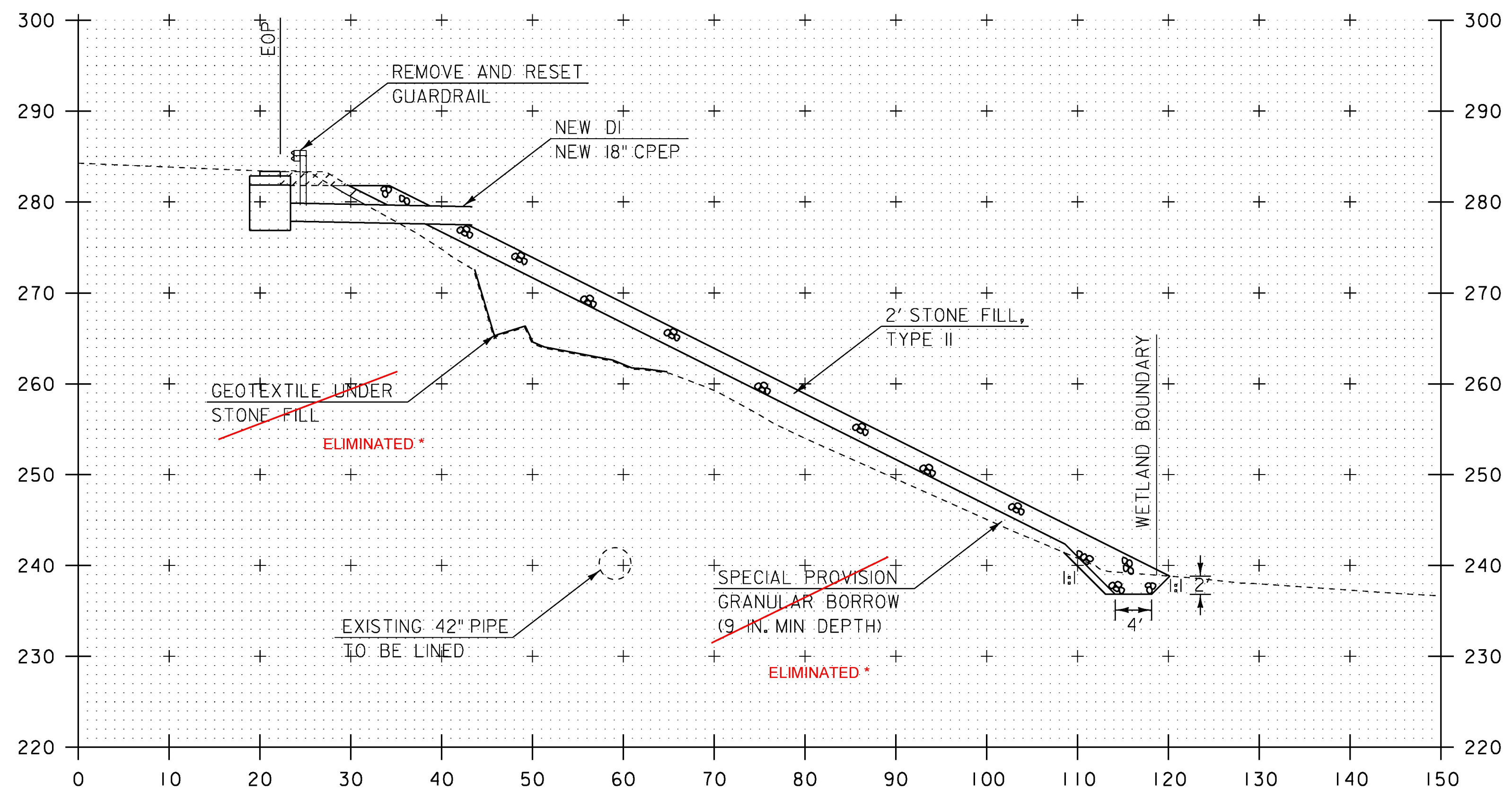
\* REPAIRS BY OPERATIONS ELIMINATED  
EMBANKMENT IRREGULARITIES, THEREFORE  
GRANULAR BORROW ITEM NOT USED

SCALE IN FEET STA. 62+75 TO STA. 63+00

PROJECT NAME:	SOUTH BURLINGTON	PLOT DATE:	27-APR-2017
PROJECT NUMBER:	IM SCR(21)	DRAWN BY:	C. LEACH
FILE NAME:	I6d064/Design/xs.dgn	CHECKED BY:	M. BOOKER
PROJECT LEADER:	K. UPMAL	SHEET	27 OF 30
DESIGNED BY:	C. LEACH		
SLOPE CROSS SECTION SHEET 1			



63+25



63+10

\* SEE NOTE ON PAGE 27

SCALE IN FEET STA. 63+10 TO STA. 63+25

PROJECT NAME:	SOUTH BURLINGTON	PLOT DATE:	27-APR-2017
PROJECT NUMBER:	IM SCRP(21)	DRAWN BY:	C. LEACH
FILE NAME:	I6d064/Design/xs.dgn	CHECKED BY:	M. BOOKER
PROJECT LEADER:	K. UPMAL	SHEET	28 OF 30
DESIGNED BY:	C. LEACH		
SLOPE CROSS SECTION SHEET 2			

TRAFFIC CONTROL NOTES:

THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN TO THE PROJECT MANAGER TO BE APPROVED BEFORE ANY WORK COMMENCES.

DUE TO THE HIGH VOLUMES OF TRAFFIC AND LANE CONFIGURATIONS, THE CONTRACTOR WILL ONLY BE ALLOWED TO HAVE LANE CLOSURES DURING NON- PEAK HOURS (9 AM TO 4PM).

PEAK TRAVEL TIMES FOR THIS AREA ARE RECORDED AS 8-9 AM AND 4-6 PM, MON. - FRI.

THE CONTRACTOR SHALL PROVIDE ACCESS THROUGH THE WORK ZONE FOR EMERGENCY VEHICLES AT ALL TIMES.




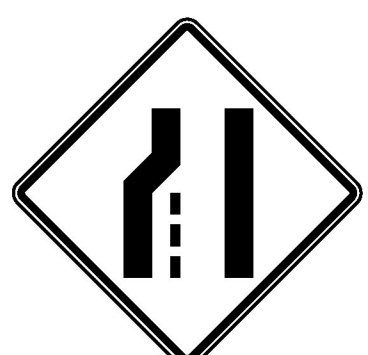
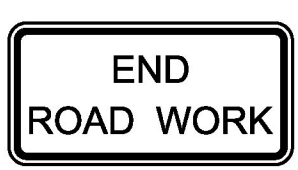
PROJECT APPROACH SIGNAGE SHALL BE IN PLACE BEFORE ANY WORK BEGINS.

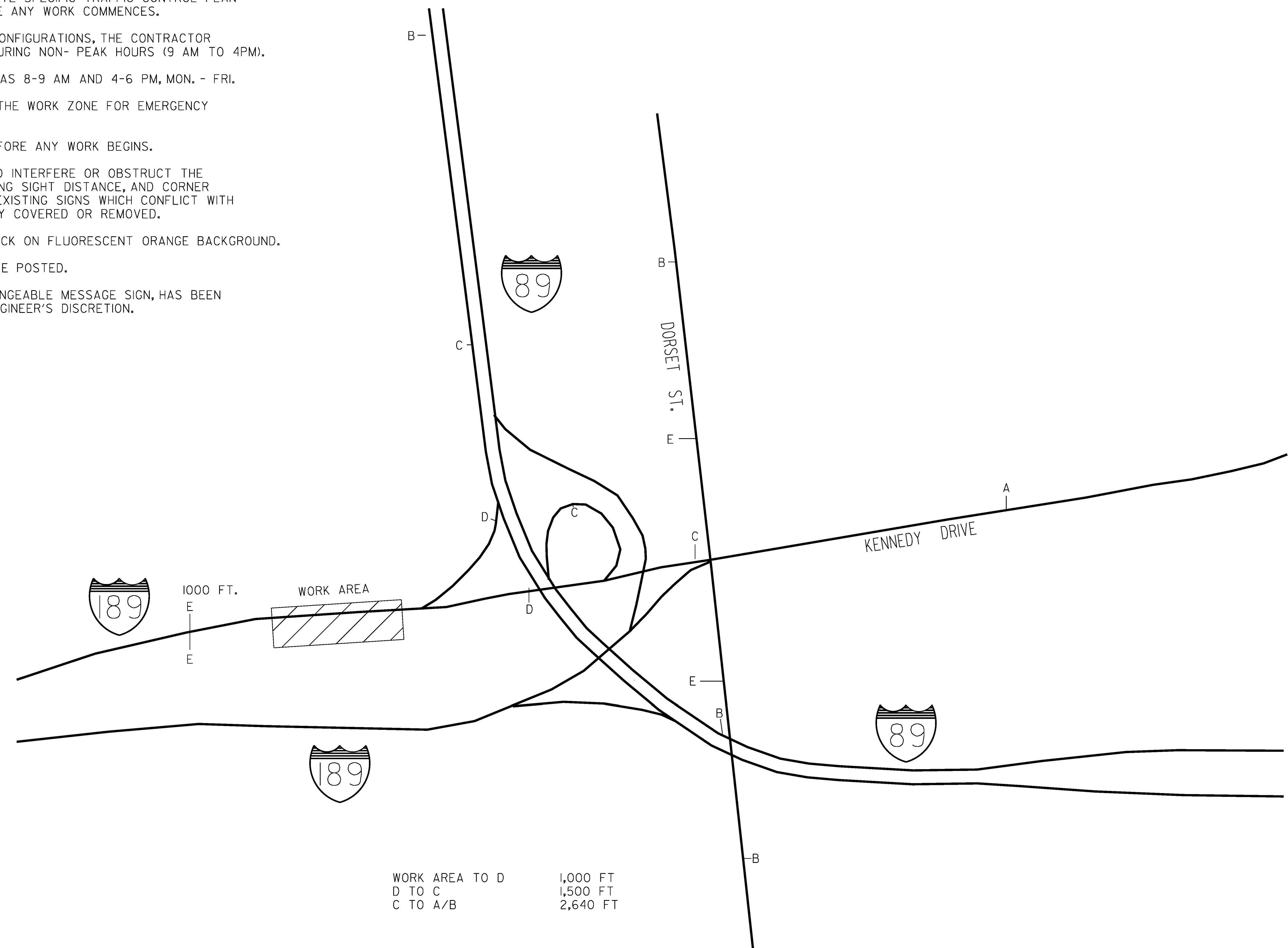
NO CONSTRUCTION SIGNS SHALL BE INSTALLED AS TO INTERFERE OR OBSTRUCT THE VIEW OF EXISTING TRAFFIC CONTROL DEVICES, STOPPING SIGHT DISTANCE, AND CORNER SIGHT DISTANCE FROM DRIVES AND TOWN HIGHWAYS. EXISTING SIGNS WHICH CONFLICT WITH TEMPORARY TRAFFIC CONTROL SHALL BE COMPLETELY COVERED OR REMOVED.

ALL TEMPORARY CONSTRUCTION SIGNS SHALL BE BLACK ON FLUORESCENT ORANGE BACKGROUND.

ALL TEMPORARY CONSTRUCTION SIGNS SHALL BE GATE POSTED.

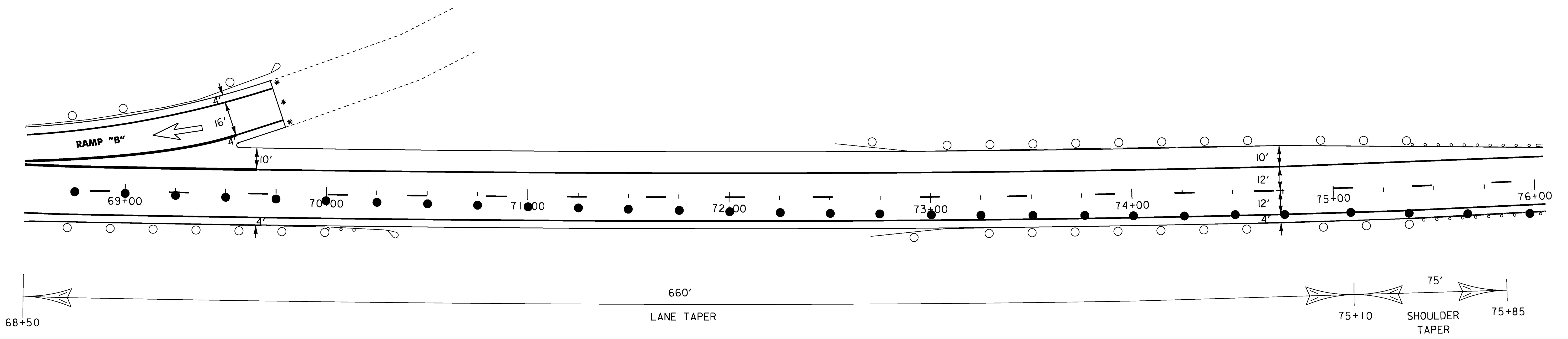
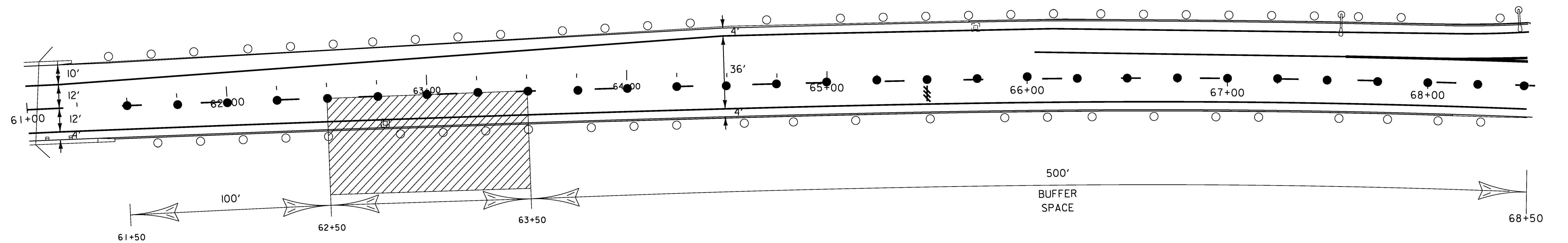
A QUANTITY OF TWO FOR ITEM 641J5, PORTABLE CHANGEABLE MESSAGE SIGN, HAS BEEN INCLUDED IN THE CONTRACT TO BE USED AT THE ENGINEER'S DISCRETION.

	SIGN	SIGN CODE	ESTIMATED QUANTITY	SIZE
A		W20-1	1	48" X 48"
B		VC-869	4	48" X 48"
C		W20-5	2	48" X 48"
D		W4-2	2	48" X 48"
E		G20-2	4	18" X 36"



SHEET NOT TO SCALE

PROJECT NAME:	SOUTH BURLINGTON
PROJECT NUMBER:	IM SCRP(21)
FILE NAME:	I6d064/Design/d16d064cas.dgn
PLOT DATE:	27-APR-2017
PROJECT LEADER:	K. UPMAL
DRAWN BY:	M. BOOKER
DESIGNED BY:	C. LEACH
CHECKED BY:	C. LEACH
TRAFFIC CONTROL SHEET I	SHEET 29 OF 30



LEGEND

- FLOW OF TRAFFIC
- CHANNELING DEVICE
- WORK AREA
- TYPE 3 BARRICADE

SHEET NOT TO SCALE

PROJECT NAME: SOUTH BURLINGTON	
PROJECT NUMBER: IM SCRP(21)	
FILE NAME: dl6d064cas.dgn	PLOT DATE: 27-APR-2017
PROJECT LEADER: K. UPMAL	DRAWN BY: C. LEACH
DESIGNED BY: C. LEACH	CHECKED BY: S. ZWICK
TRAFFIC CONTROL SHEET 2	SHEET 30 OF 30

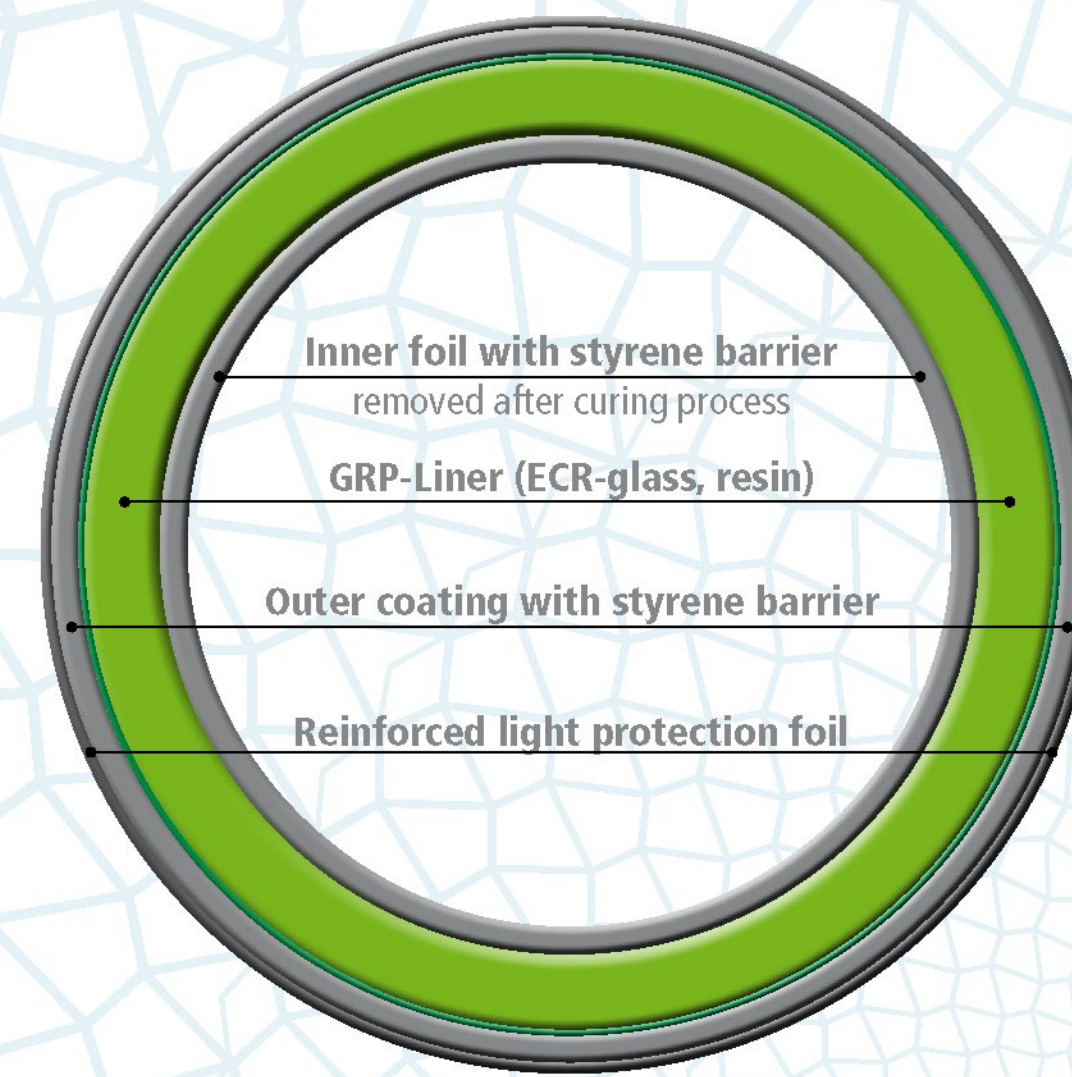
# SAERTEX-LINER® (Premium)

The innovative GRP-Liner with the highest mechanical properties for (nearly) each application.

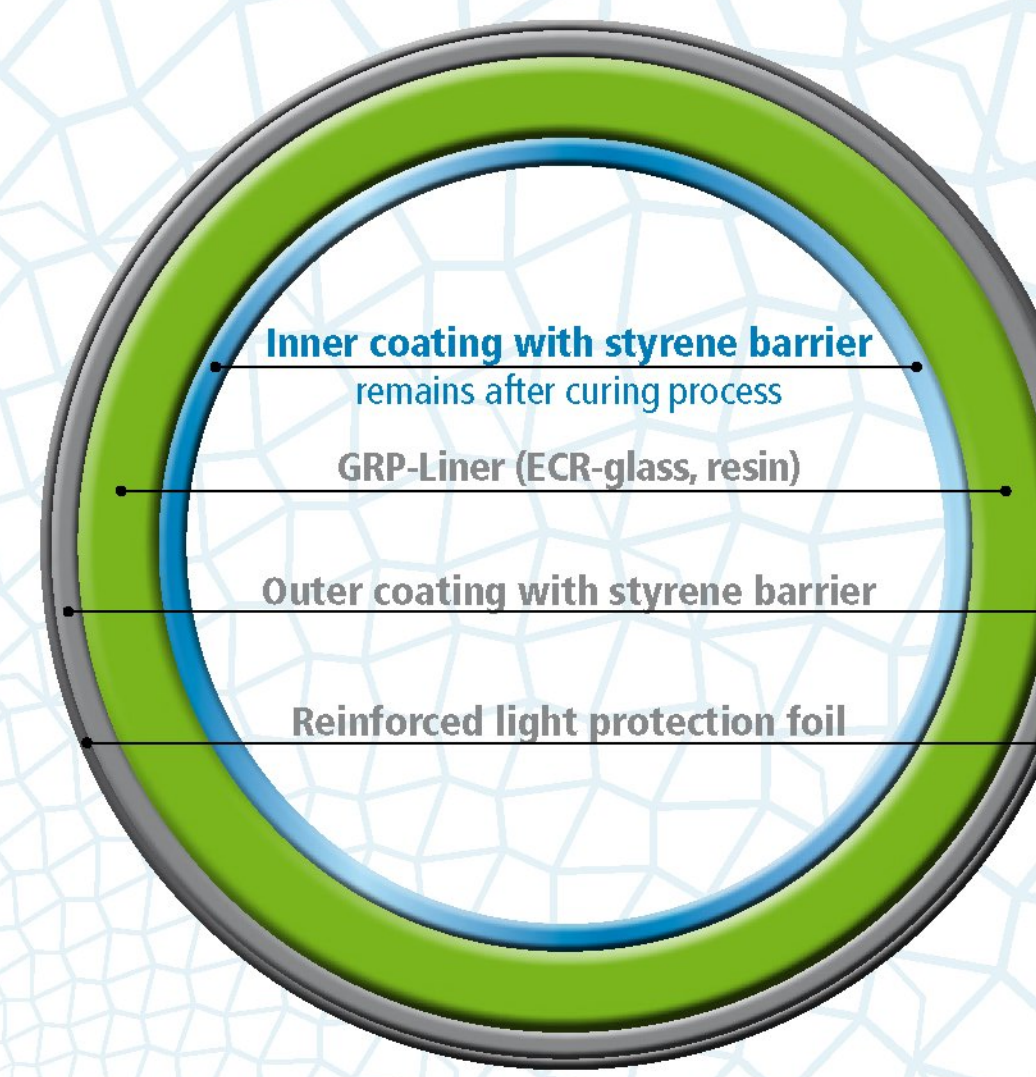


## STRUCTURE

SAERTEX-LINER®



SAERTEX-LINER® Premium



## AT A GLANCE

Product	Application					Inner foil / inner coating with styrene barrier	
	Surface-, combined- and waste water	Gravity	Pressure	Industry	Special projects	Foil	Patented inner coating
SAERTEX-LINER® Type M	Yes	Yes	SAERTEX-LINER® Pressure	Yes	Yes	Yes	
SAERTEX-LINER® Type M Premium	Yes	Yes			Yes		Yes
SAERTEX-LINER® Type S+	Yes	Yes		Yes	Yes	Yes	
SAERTEX-LINER® Type S+ Premium	Yes	Yes			Yes		Yes

Product	Outer coating with styrene barrier	Resin			Curing			Change of dimension
		UP	VE	VE styrene free	UP	VE	VE styrene free	
SAERTEX-LINER® Type M	Yes	Surface-, combined- and waste water	Industry	Special projects	UV / Steam	UV / Steam	UV	Yes
SAERTEX-LINER® Type M Premium	Yes				UV / Steam		UV	
SAERTEX-LINER® Type S+	Yes				UV / Steam	UV / Steam	UV	Yes
SAERTEX-LINER® Type S+ Premium	Yes				UV / Steam		UV	

Mechanical properties	SAERTEX-LINER® Type M		SAERTEX-LINER® Type S+	
Short-term circumferential E-Modulus (ring stiffness)	≥ 7,000 N/mm²	/ 1,015,264 psi	≥ 20,500 N/mm²	/ ≥ 2,973,000 psi
Long-term circumferential E-Modulus (ring stiffness)	3,800 N/mm²	/ 551,143 psi	16,000 N/mm²	/ 2,320,000 psi
Short-term bending E-Modulus (three-point bending)	≥ 7,000 N/mm²	/ ≥ 1,015,264 psi	≥ 16,800 N/mm²	/ ≥ 2,436,000 psi
Short-term bending strength (three-point bending)	≥ 200 N/mm²	/ ≥ 29,008 psi	≥ 270 N/mm²	/ ≥ 39,160 psi
Long-term bending strength (three-point bending)	110 N/mm²	/ 15,954 psi	210 N/mm²	/ 30,450 psi
Reduction factor A after 10,000 h	1.80		1.28	
Dimension range	DN 150 – DN 400	/ 6" – 16"	DN 150 – DN 1,600	/ 6" – 63"
Wall thickness in cured condition	3 mm and 4 mm	/ 0.118" and 0.157"	3 mm – 15 mm	/ 0.118" – 0.591"

# SAERTEX-LINER® (Premium)

The innovative GRP-Liner with the highest mechanical properties for (nearly) each application.

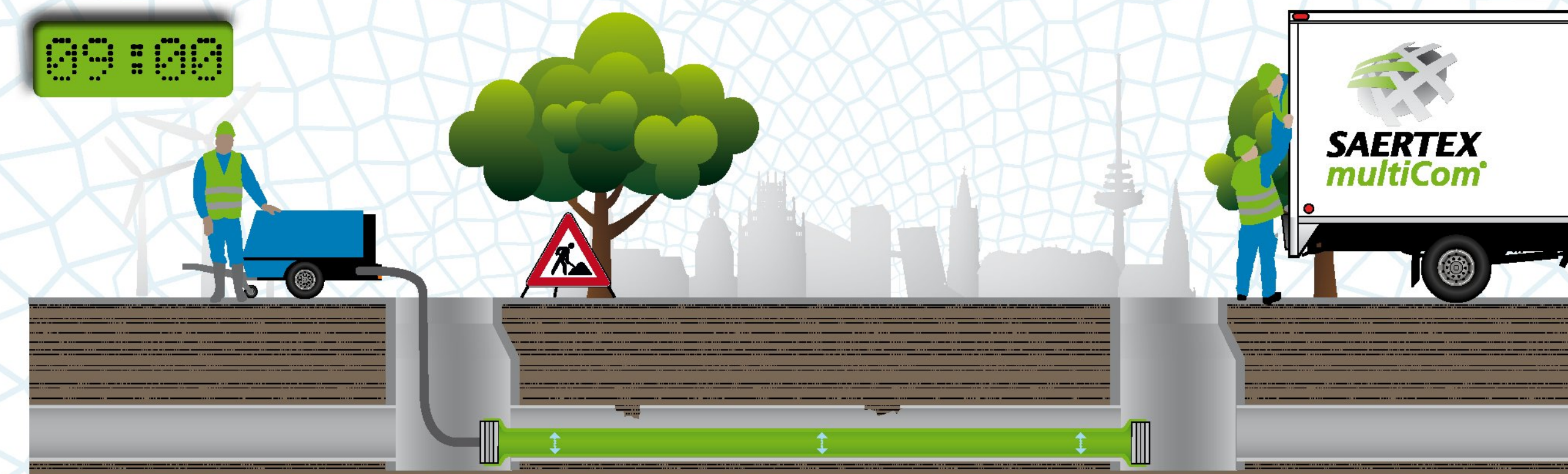


## INSTALLATION PROCESS

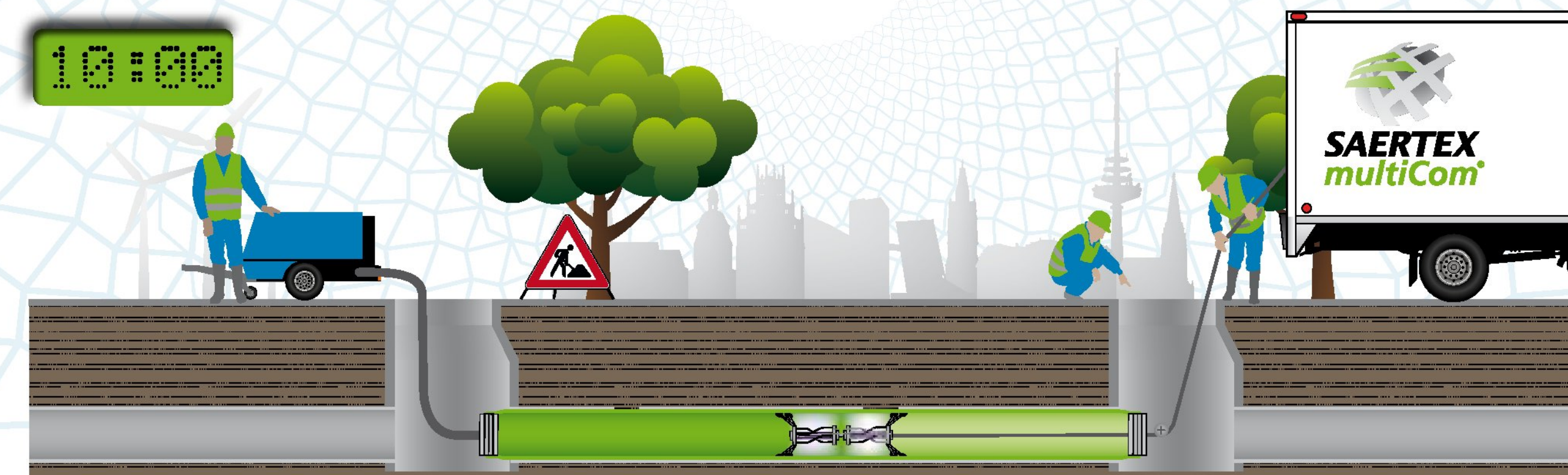
08:00



09:00



10:00



12:00



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SAERTEX multiCom® GmbH | Brochterbecker Damm 52 | 48369 Saerbeck, Germany | Tel. +49 2574 902-400 | Fax +49 2574 902-409 | [multicom@saertex.com](mailto:multicom@saertex.com)  
SAERTEX multiCom® LP | 12200 - A Mt. Holly-Huntersville Rd. | Huntersville, NC 28078 | USA | Phone: +1 704 584-4059 | Fax: +1 704 464 - 5922 | [multicom@saertex.com](mailto:multicom@saertex.com)