

# ALLEGAN COUNTY ROAD COMMISSION

## 54TH STREET CULVERT REPLACEMENT PROJECT 690 FEET SOUTH OF 141ST AVENUE FILLMORE TOWNSHIP

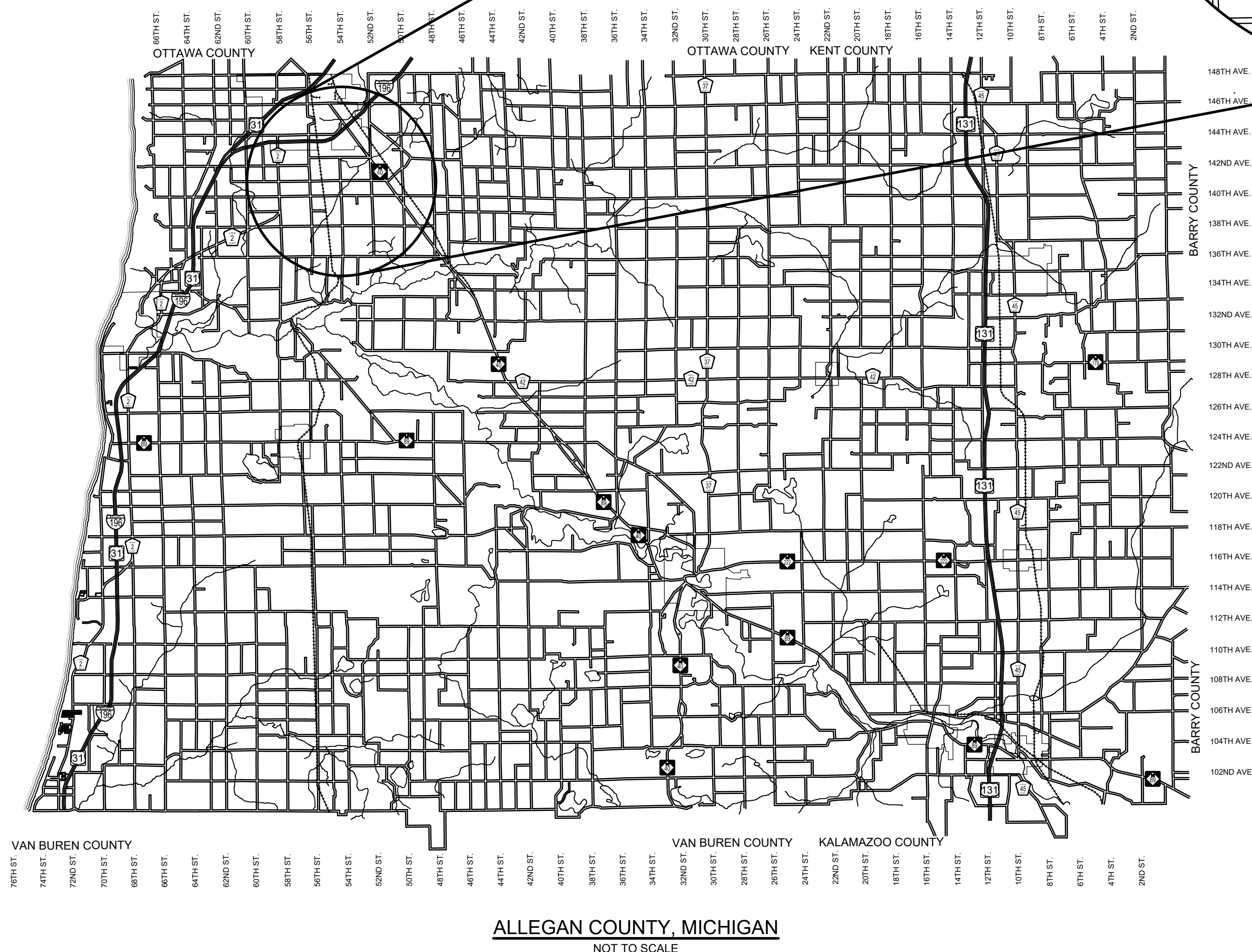
EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED THEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION.

THE PLACING OF PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SHALL BE DONE IN ACCORDANCE WITH THE 2011 MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AS AMENDED.

THE IMPROVEMENTS COVERED BY THESE PLANS ARE IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2011 EDITION, A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS.

THE CONTRACTOR SHALL DIAL MISS DIG @ 811 FOR PROTECTION OF UNDER GROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

- INDEX OF PLANS**
- 1 - COVER SHEET
  - 2 - TYPICAL SECTIONS, DETAILS, & NOTES
  - 3 - PLAN & PROFILE AND SOIL EROSION AND SEDIMENTATION CONTROL PLAN



ALLEGAN COUNTY, MICHIGAN  
NOT TO SCALE

### UTILITY CONTACTS

**ELECTRIC**  
CONSUMERS ENERGY  
4000 CLAY AVE. SW  
GRAND RAPIDS, MI 49548  
616-530-4185  
MS. KYLEE MAYCROFT  
grvimp@cmsenergy.com

**TELEPHONE**  
FRONTIER  
601 N. US 131  
THREE RIVERS, MI 49093  
269-273-0380  
MR. LANCE WEBLEY  
lance.webley@ftr.com

**GAS**  
SEMCO ENERGY  
712 BLACK RIVER DRIVE  
HOLLAND, MI 49424  
616-392-8060 EXT. 5769  
MR. MATTHEW WIERENGA  
matthew.wierenga@semcoenergy.com

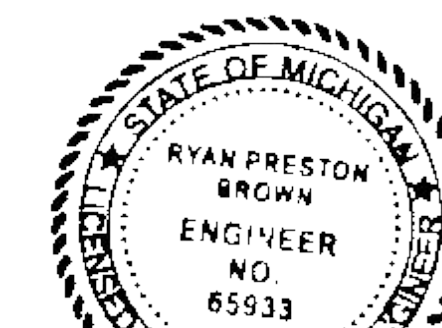
\*MISS DIG\* 811

**Board of County Road Commissioners  
Of Allegan County**  
1308 LINCOLN ROAD  
ALLEGAN, MICHIGAN 49010-9762  
www.alleganroads.org FAX (269) 673-5922  
TELEPHONE (269) 673-2184

REVISIONS						
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY
1				2		
2				3		
3				4		
4				5		
5				6		
6				7		

**CONTRACT FOR ROAD IMPROVEMENTS**  
CULVERT REPLACEMENT INCLUDING GRADE ESTABLISHMENT, SAND SUBBASE, AGGREGATE BASE, HMA PAVING, GRAVEL SHOULDERS, AND RESTORATION ON 54TH STREET APPROXIMATELY 690 FEET SOUTH OF 141ST AVENUE, FILLMORE TOWNSHIP, ALLEGAN COUNTY.

PREPARED UNDER THE SUPERVISION OF:



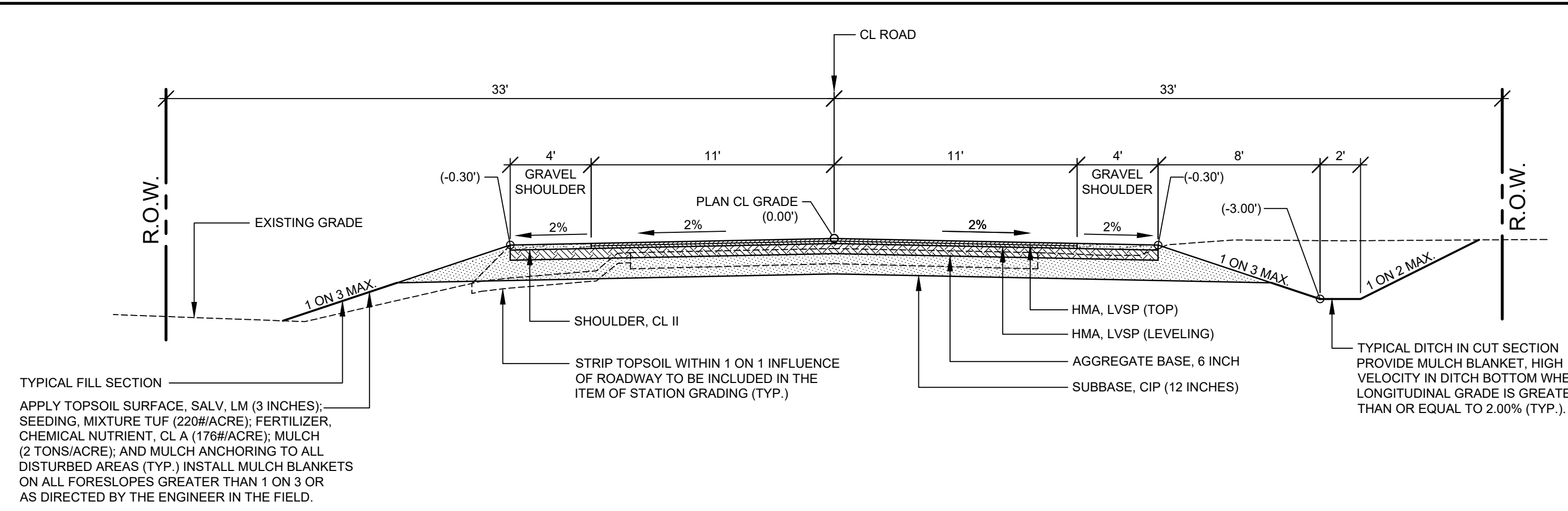
*Ryan P. Brown*

RYAN P. BROWN  
REGISTERED PROFESSIONAL ENGINEER No. 65933

**54TH STREET CULVERT REPLACEMENT**  
FILLMORE TOWNSHIP - 690 FT SOUTH OF 141ST AVENUE  
COVER SHEET

DRAWN BY: RPB  
REVIEWED BY: JSE  
DATE: JUNE, 2020  
SCALE: NONE

LH 4998 1



**TYPICAL SECTION - 54TH STREET**

SCALE: 1" = 5'

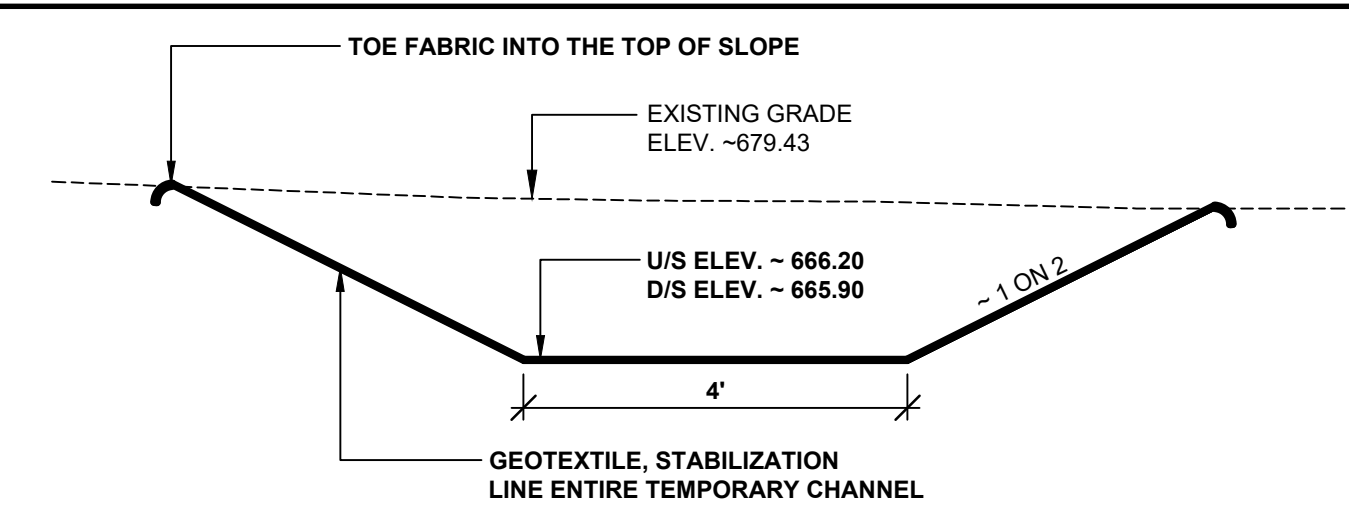
TYPICAL FILL SECTION

APPLY TOPSOIL SURFACE, SALV. LM (3 INCHES); SEEDING, MIXTURE TUF (220#/ACRE); FERTILIZER, CHEMICAL NUTRIENT, CL A (176#/ACRE); MULCH (2 TONS/ACRE); AND MULCH ANCHORING TO ALL DISTURBED AREAS (TYP.) INSTALL MULCH BLANKETS ON ALL FORESLOPES GREATER THAN 1 ON 3 OR AS DIRECTED BY THE ENGINEER IN THE FIELD.

STRIP TOPSOIL WITHIN 1 ON 1 INFLUENCE OF ROADWAY TO BE INCLUDED IN THE ITEM OF STATION GRADING (TYP.)

HMA, LVSP (TOP)  
HMA, LVSP (LEVELING)  
AGGREGATE BASE, 6 INCH  
SUBBASE, CIP (12 INCHES)

TYPICAL DITCH IN CUT SECTION PROVIDE MULCH BLANKET, HIGH VELOCITY IN DITCH BOTTOM WHEN LONGITUDINAL GRADE IS GREATER THAN OR EQUAL TO 2.00% (TYP.).



**TEMPORARY CHANNEL CROSS SECTION**

SCALE 1" = 2'

ITEM	AWI	YIELD	PERFORMANCE GRADE
HMA, LVSP (TOP)	260	165 #/SYD	P.G. 64 - 28
HMA, LVSP (LEVELING)		165 #/SYD	P.G. 64 - 28
HMA BOND COAT (NOT A PAY ITEM)		0.05 TO 0.15 GAL/SYD	SS - 1h

**HMA APPLICATION TABLE**

**PROJECT NOTES**

THE "2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND "STANDARD PLANS" BY THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) ARE HEREBY INCORPORATED INTO THESE CONTRACT DOCUMENTS. COPIES OF THESE STANDARDS ARE AVAILABLE FOR INSPECTION AT THE OFFICE OF THE ENGINEER.

THE CONTRACTOR WILL BE RESPONSIBLE FOR CONTACTING THE ALLEGAN COUNTY ROAD COMMISSION TO NOTIFY THEM THAT WORK IS COMMENCING AT LEAST ONE WEEK PRIOR TO CONSTRUCTION. THE ALLEGAN COUNTY ROAD COMMISSION WILL SET UP THE NECESSARY DETOUR ROUTE. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING THE BARRICADES.

THE CONTRACTOR SHOULD NOTE THAT STATION GRADING WILL INCLUDE THE REMOVAL OF FENCES, CULVERTS, BRUSH, TREES SMALLER THAN 6", CONCRETE FOUNDATIONS, GUARDRAIL, AND MISCELLANEOUS ITEMS AS REQUIRED AND WILL ALSO INCLUDE ALL EARTH EXCAVATION, EMBANKMENT, AND ALL OTHER OPERATIONS NECESSARY TO DEVELOP THE DESIRED CROSS SECTION. ALL TOPSOIL AND OTHER UNSUITABLE MATERIAL LOCATED BENEATH THE PROPOSED PAVEMENT SECTION WILL BE REMOVED TO THE SUBGRADE ELEVATION AS PART OF STATION GRADING. ALL TOPSOIL REMOVED MAY BE STOCKPILED AND REUSED AS TOPSOIL SURFACE, SALV. LM.

ALL FILL FOR THIS PROJECT MUST BE OBTAINED AND FURNISHED BY THE CONTRACTOR. ALL REQUIRED FILL SHALL BE SELECTED EXCAVATED MATERIAL FROM THE SITE APPROVED BY THE ENGINEER, OR MDOT CLASS II GRANULAR MATERIAL FROM BORROW. EXCESS FILL WILL BE REMOVED FROM SITE BY THE CONTRACTOR. NO BORROW OR SOIL REMOVAL ARRANGEMENTS HAVE BEEN PREARRANGED FOR THIS PROJECT AND WILL BE THE TOTAL RESPONSIBILITY OF THE CONTRACTOR.

THE ITEM OF SUBBASE, CIP WILL BE PAID FOR AT PLAN QUANTITY EXCEPT IN THE CASE OF A DESIGN CHANGE OR DEMONSTRATED ERROR.

ALL DISTURBED AREAS NOT TO BE PAVED WILL BE RESTORED WITH TOPSOIL SURFACE, SALV. LM (3 INCHES), MDOT SEED MIXTURE TUF (220#/ACRE), FERTILIZER, CHEMICAL NUTRIENT, CL A (176#/ACRE); AND MULCH AND MULCH ANCHORING (2 TONS/ACRE). TO BE PAID AS RESTORATION (LUMP SUM).

ADEQUATE DUST CONTROL MEASURES WILL BE MAINTAINED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER IN THE FIELD, TO BE INCLUDED IN THE VARIOUS ITEMS OF WORK.

THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING EXISTING DRAINAGE PATTERNS, AND WILL RESOLVE ANY DRAINAGE PROBLEMS ON ADJACENT PROPERTIES WHICH MAY RESULT FROM THE CONTRACTOR'S ACTIVITIES.

DATUM REFERS TO NAVD88 DATUM.

DIMENSIONS TAKE PRECEDENCE OVER SCALE. CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD.

**UTILITY NOTES**

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, THE CONTRACTOR WILL CONTACT "MISS DIG" AT 811, A MINIMUM OF 72 HOURS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS, PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

THE CONTRACTOR WILL LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND WILL CONDUCT HIS OPERATIONS IN A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.

U/S ELEV. 674.20 LOW STEEL  
D/S ELEV. 673.90

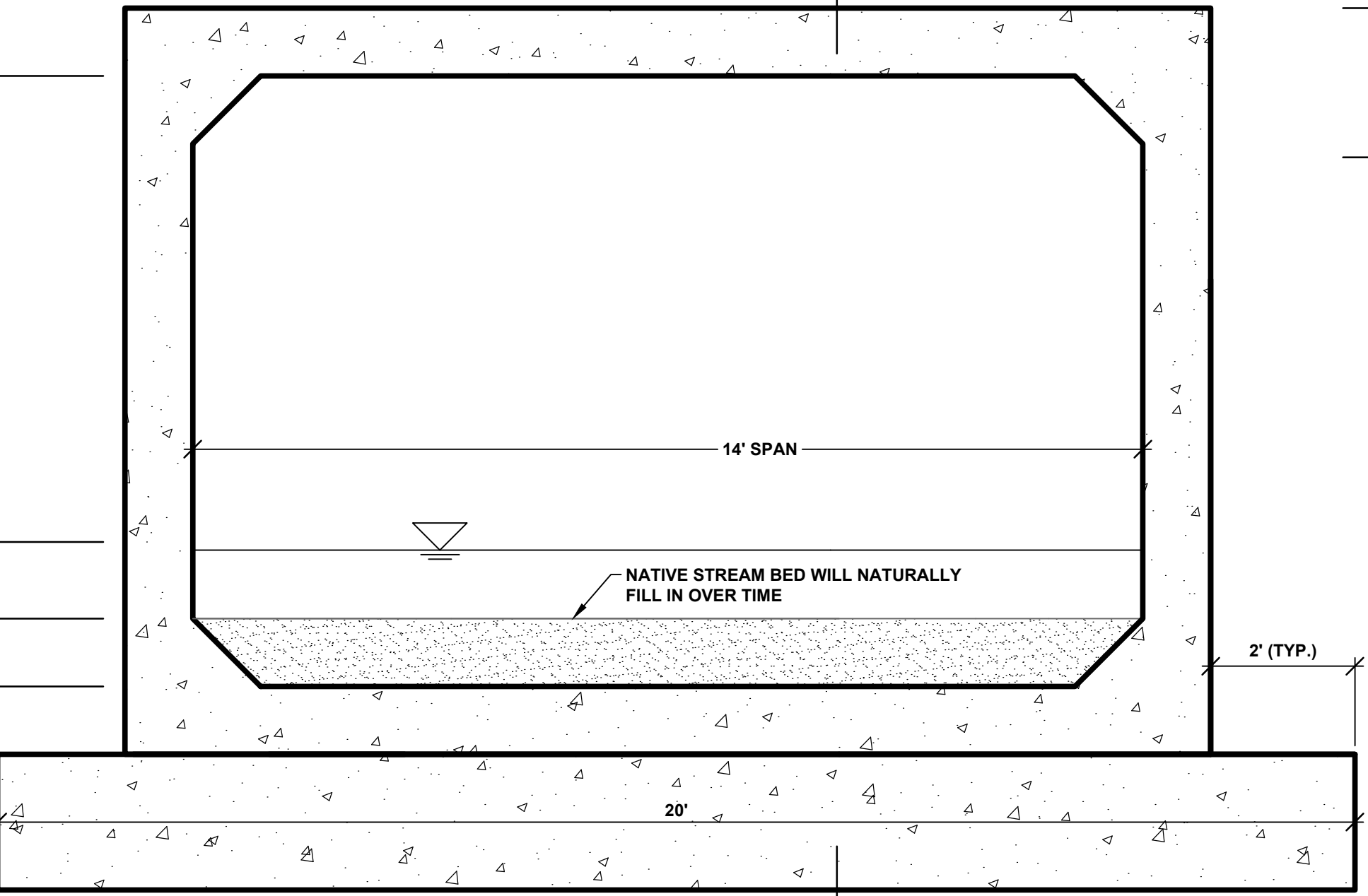
ELEV. - 667.20 WATER ELEVATION  
MARCH 2020

U/S ELEV. 666.20 STREAM INVERT  
D/S ELEV. 665.90

U/S ELEV. 665.20 CULVERT INVERT  
D/S ELEV. 664.90

\* U/S ELEV. 664.20 TOP OF FOOTING  
\* D/S ELEV. 663.90

\* U/S ELEV. 662.20 BOTTOM OF FOOTING  
\* D/S ELEV. 661.90



**TYPICAL INLET AND OUTLET SECTION**

SCALE 1" = 2'

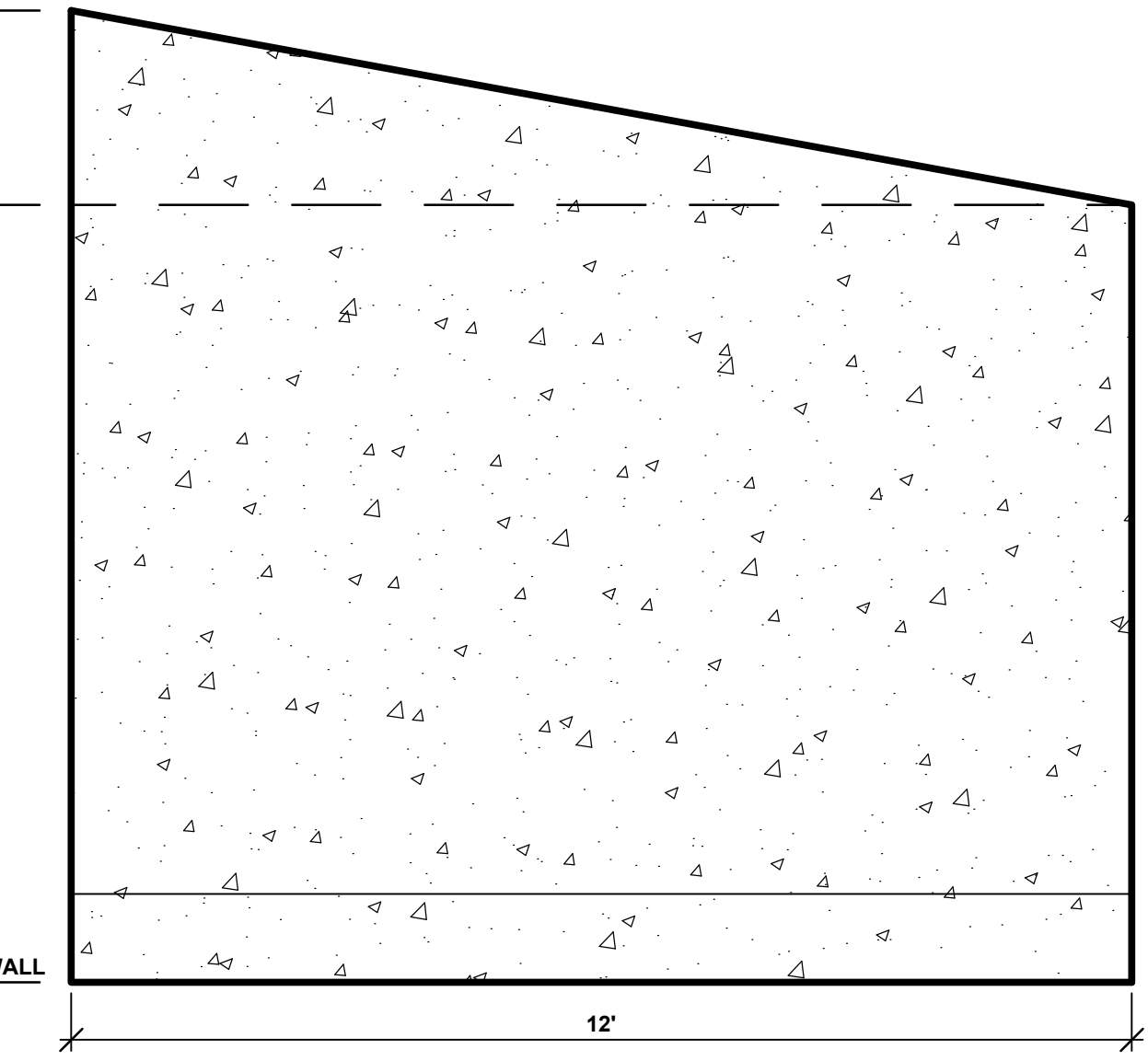
\* NOTE:  
INVERT ELEVATION OF BOX CULVERT GOVERNS. TOP OF FOOTING & BOTTOM OF FOOTING ELEVATIONS MAY VARY BASED UPON THE MANUFACTURER'S CULVERT DESIGN. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING THE FOOTING ACCORDINGLY.

U/S ELEV. 675.20 TOP OF WINGWALL  
D/S ELEV. 674.90

U/S ELEV. 673.00 TOP OF WINGWALL  
D/S ELEV. 673.00

\* U/S ELEV. 664.20 BOTTOM OF WINGWALL  
\* D/S ELEV. 663.90

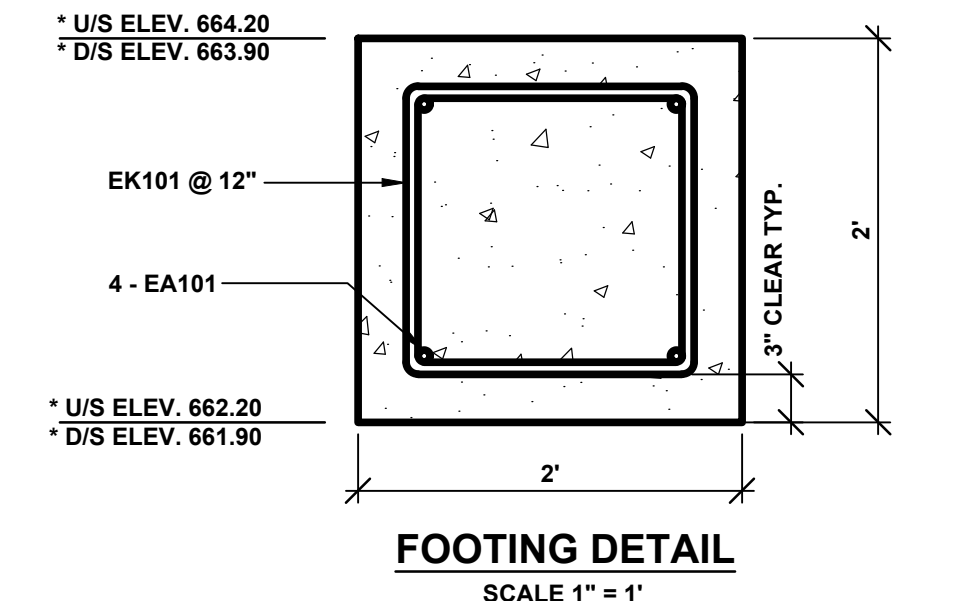
115° ANGLE BETWEEN FACES



**TYPICAL WINGWALL ELEVATION - SW AND NE QUADRANT**

SCALE 1" = 2'

NOTES:  
THE DESIGNING, MANUFACTURING, DELIVERING, AND INSTALLING OF THE WINGWALLS WILL BE INCLUDED IN THE PAY ITEM PRECAST CONCRETE BOX CULVERT, 14' X 9'.  
THE WINGWALLS MAY BE PRECAST OR CAST IN PLACE.  
THE WINGWALLS WILL BE CONNECTED TO THE BOX CULVERT ACCORDING TO MANUFACTURER'S INSTRUCTIONS.



**FOOTING DETAIL**

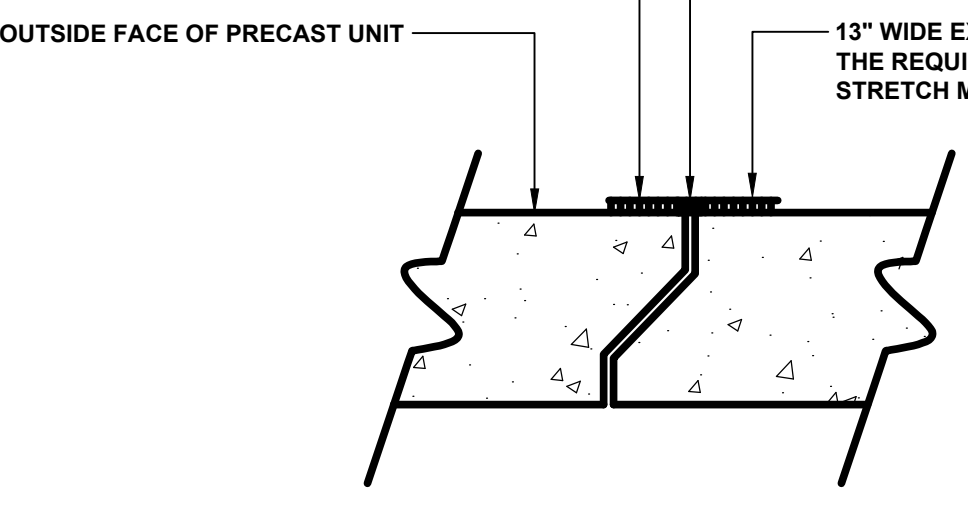
SCALE 1" = 1'

\* U/S ELEV. 664.20  
\* D/S ELEV. 663.90

EK101 @ 12"

\* U/S ELEV. 662.20  
\* D/S ELEV. 661.90

PRIMER COMPATIBLE WITH JOINT WRAP  
7/8" X 1 3/8" BUTYL ROPE CONFORMING TO THE REQUIREMENTS OF ASTM C990  
13" WIDE EXTERNAL TYPE RUBBER GASKET CONFORMING TO THE REQUIREMENTS OF ASTM C917. CONTRACTOR WILL STRETCH MATERIAL 10% MINIMUM.

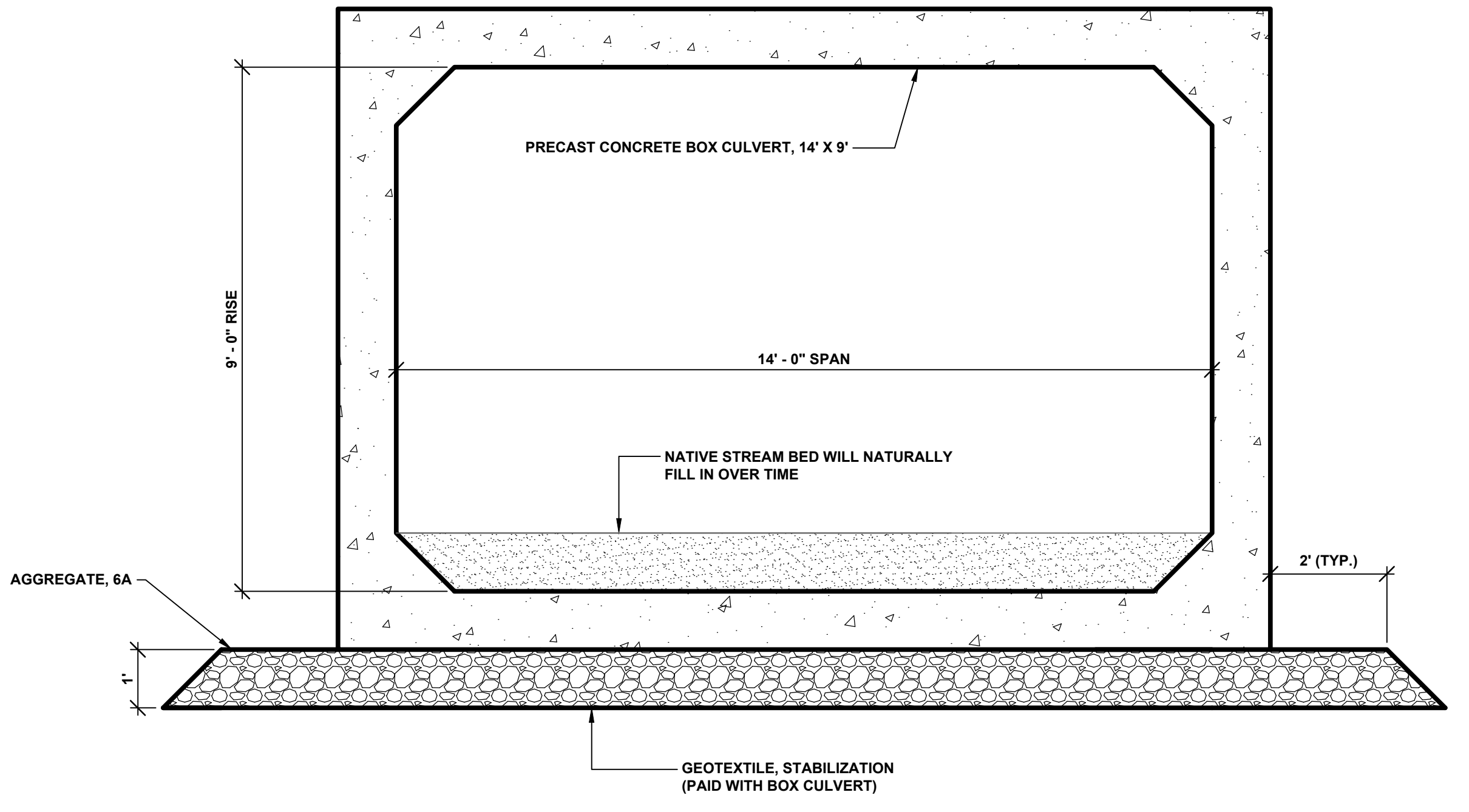
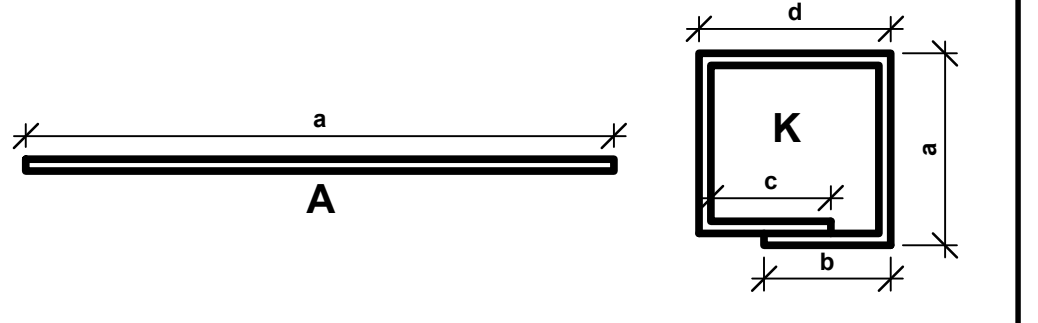


**TYPICAL JOINT SEAL DETAIL**

NOTE:  
THE BOX CULVERT SECTIONS SHALL HAVE TONGUE AND GROOVE ENDS. THE CONTRACTOR SHALL INCLUDE A JOINT DETAIL ON THE SHOP DRAWINGS TO BE APPROVED BY THE ENGINEER. THE EXTERNAL TYPE RUBBER GASKET SHALL BE COVERED WITH A 2" STRIP OF GEOTEXTILE BLANKET CENTERED OVER THE JOINT.

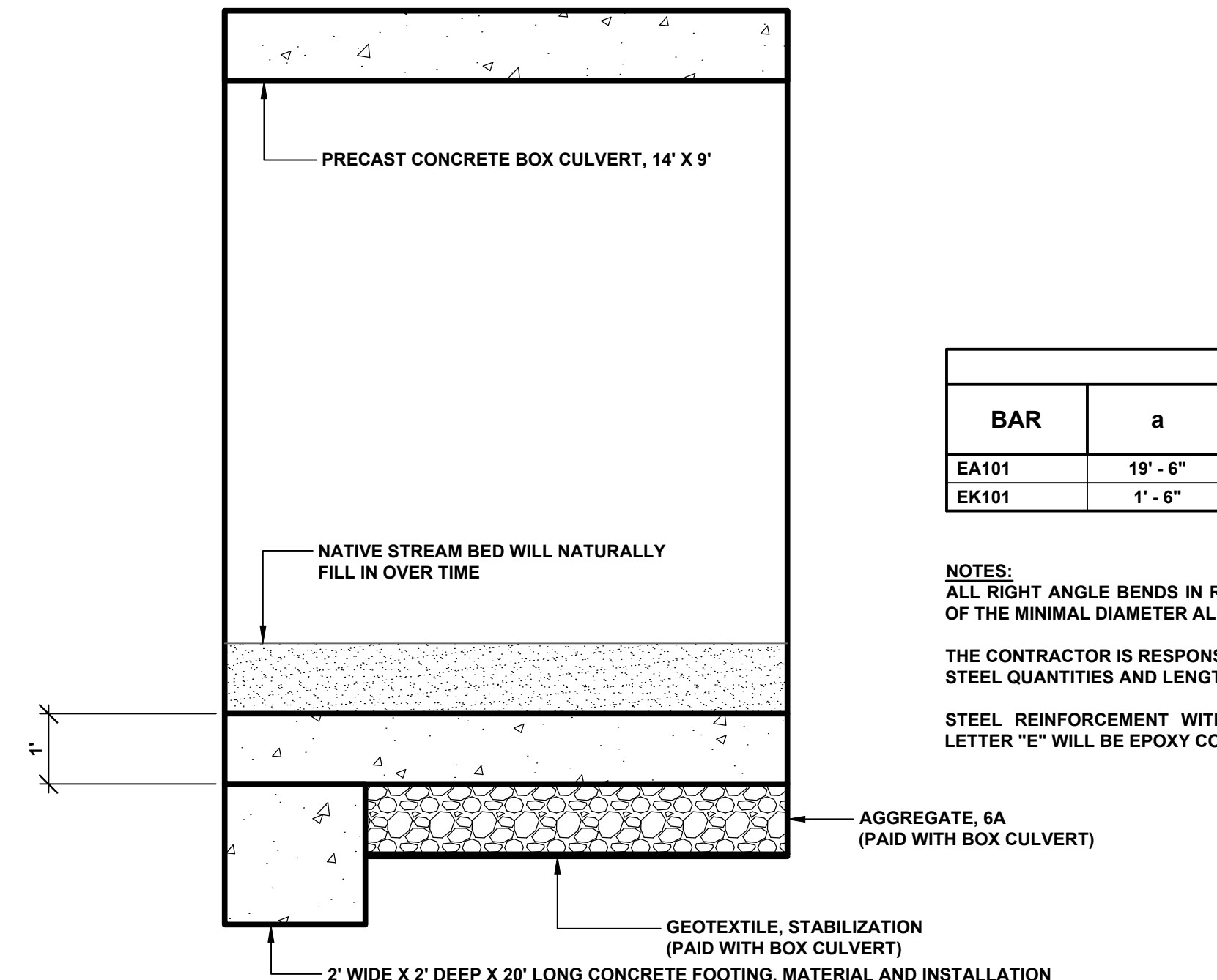
STEEL REINFORCEMENT SCHEDULE								
BAR	a	b	c	d	SIZE	LENGTH	NO. REQUIRED	TOTAL WEIGHT
EA101	19' - 6"				#6	19' - 6"	8	234
EK101	1' - 6"	1' - 0"	1' - 0"	1' - 6"	#6	6' - 6"	42	410

NOTES:  
ALL RIGHT ANGLE BENDS IN REINFORCING STEEL TO BE MADE ABOUT A PIN OF THE MINIMAL DIAMETER ALLOWED BY THE STANDARD SPECIFICATIONS.  
THE CONTRACTOR IS RESPONSIBLE FOR CHECKING THE ABOVE REINFORCING STEEL QUANTITIES AND LENGTHS PRIOR TO ORDERING DELIVERY OF STEEL.  
STEEL REINFORCEMENT WITH BAR DESIGNATIONS BEGINNING WITH THE LETTER "E" WILL BE EPOXY COATED.



**SECTION A - A**

SCALE 1" = 2'

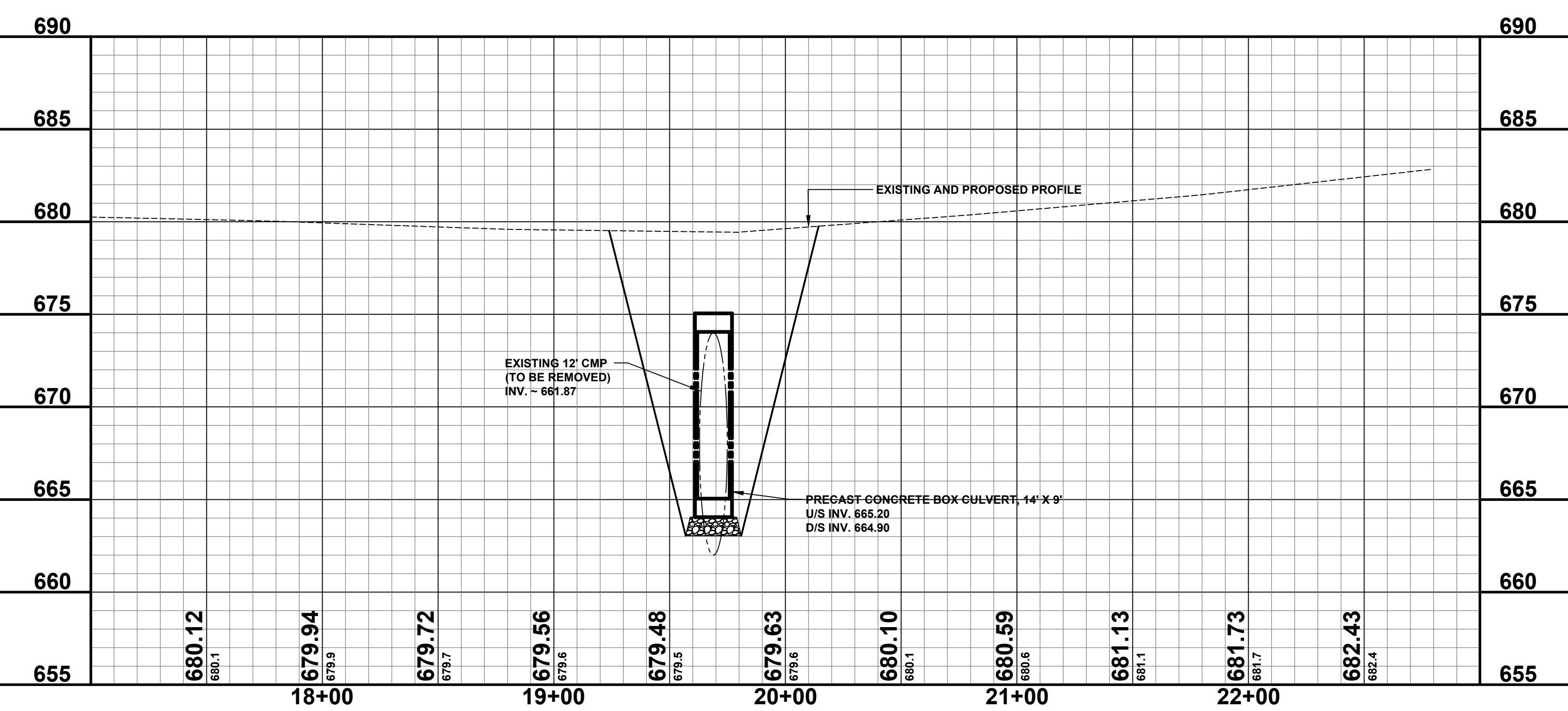
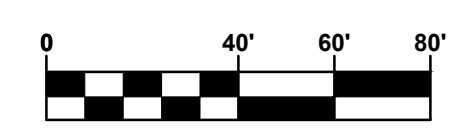
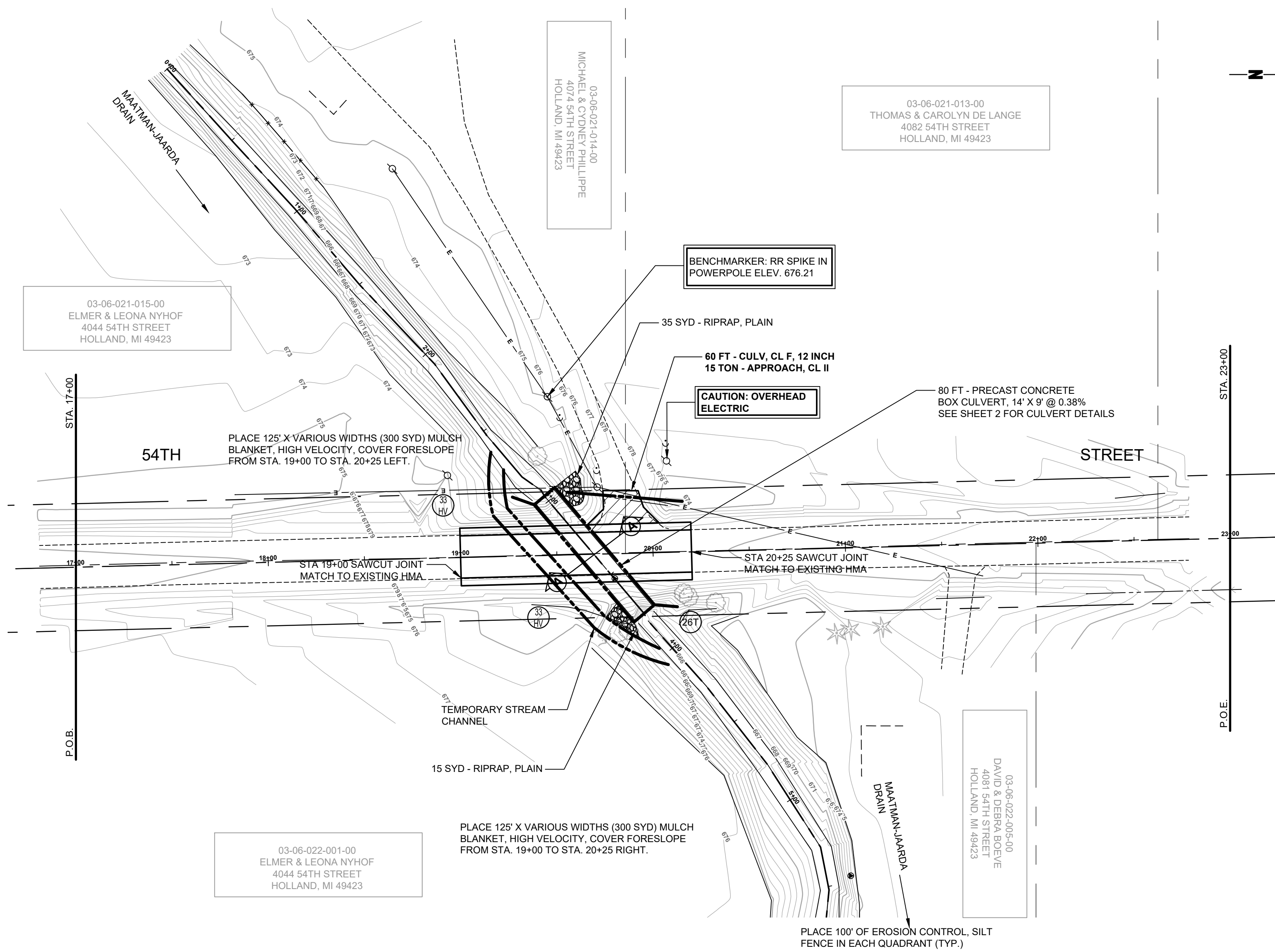


**SECTION B - B**

SCALE 1" = 2'

2' WIDE X 2' DEEP X 20' LONG CONCRETE FOOTING. MATERIAL AND INSTALLATION TO BE INCLUDED IN PRECAST CONCRETE BOX CULVERT, 14' X 9'.  
\* IF WINGWALL IS PRECAST THE FOOTING WILL ONLY NEED TO BE 18' IN LENGTH AND WILL END FLUSH WITH WALL OF BOX CULVERT ON WINGWALL SIDE.

REVISIONS	1	2	3	4	5	6	7



**SOIL EROSION & SEDIMENTATION CONTROL NOTES**

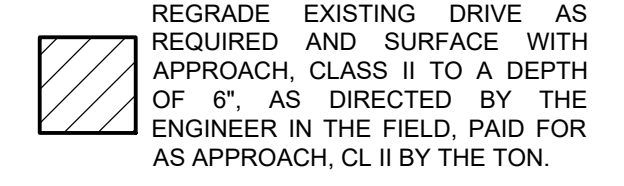
- ALL CONSTRUCTION METHODS SHALL BE DONE IN COMPLIANCE WITH THE MICHIGAN SOIL EROSION AND SEDIMENTATION CONTROL ACT. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING A "SOIL EROSION PERMIT" FROM THE COUNTY AND A "PERMIT BY RULE/NOTICE OF COVERAGE" FROM THE MDEQ PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL REQUIREMENTS OF THE COUNTY "SOIL EROSION PERMIT" AND FOR ALL CERTIFIED STORM WATER INSPECTION SERVICE REQUIRED BY THE "PERMIT BY RULE." EROSION CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS AND SHALL NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY FOR PROVIDING ALL REQUIRED EROSION CONTROL MEASURES.
  - AVOID UNNECESSARY DISTURBING OR REMOVING OF EXISTING VEGETATED TOPSOIL OR EARTH COVER, THESE COVER AREAS ACT AS SEDIMENT FILTERS.
  - ALL TEMPORARY SOIL EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL REMOVAL IS REQUIRED FOR FINAL CLEAN UP AND APPROVAL.
  - GEOTEXTILE SILT FENCE SHALL BE INSTALLED AS REQUIRED WHEN CROSSING CREEKS OR WHEN ADJACENT TO WETLANDS OR SURFACE WATER BODIES TO PREVENT SILTATION AND ELSEWHERE AS DIRECTED BY THE ENGINEER. SEEDING AND/OR SODDING SHALL BE INSTALLED ON CREEK BANKS IMMEDIATELY AFTER CONSTRUCTION TO PREVENT EROSION.
  - MAINTENANCE, CLEANING, AND REMOVAL OF THE VARIOUS SEDIMENT CONTROL MEASURES SHALL BE INCLUDED IN THE VARIOUS EROSION CONTROL ITEMS.
- # NUMBER IN CIRCLE REFERS TO NUMBERED DETAILS ON MDT STANDARD PLAN R-86 SERIES. SOIL EROSION & SEDIMENTATION CONTROL MEASURES. "P" DENOTES PERMANENT MEASURE AND "T" DENOTES TEMPORARY MEASURE. SOIL EROSION CONTROL PLANS DENOTE MINIMUM EROSION MEASURES REQUIRED AS DESCRIBED BELOW.

- 3P ALL DISTURBED AREAS NOT PAVED OR GRAVELED SHALL BE RESTORED UNDER THE PAY ITEM RESTORATION (LUMP SUM). THIS PAY ITEM INCLUDES PLACING MDT SEEDING, MIXTURE TUF APPLIED AT A RATE OF 220 LB/ACRE, FERTILIZER, CHEMICAL NUTRIENT, CL APPLIED AT A RATE OF 176 LB/ACRE; MULCH AT A RATE OF 2 TON/ACRE AND MULCH ANCHORING.
- 3T TEMPORARY SEEDING WILL BE PLACED AT LOCATIONS DETERMINED BY THE ENGINEER IN THE FIELD AND WILL INCLUDE SEEDING MIXTURE, OR APPLIED AT A RATE OF 70 LB/ACRE AND MULCH.
- 4T DUST CONTROL MAY BE REQUIRED ON THE SUBGRADE CONSTRUCTION AND WILL INCLUDE APPLYING FRESH WATER TO BE INCLUDED IN THE ITEM OF EMBANKMENT. DUST CONTROL ON THE AGGREGATE BASE COURSE WILL BE ACCOMPLISHED BY APPLYING FRESH WATER (INCLUDED IN THE ITEM OF AGGREGATE BASE, 6 INCH) AS DIRECTED BY THE PROJECT ENGINEER.
- 7P INSTALL RIPRAP, PLAIN AS DIRECTED BY THE ENGINEER IN THE FIELD. THE RIPRAP, PLAIN PAY ITEM WILL INCLUDE A GEOTEXTILE UNDERLAYMENT.
- 26T SILT FENCE WILL BE INSTALLED AT CREEK CROSSINGS, ADJACENT TO ALL WETLANDS AND SURFACE WATERS, AND OTHER LOCATIONS AS DIRECTED BY THE ENGINEER. EACH SILT FENCE WILL BE INSTALLED GENERALLY ALONG THE SAME CONTOUR ELEVATION.
- 33 HIGH VELOCITY MULCH BLANKETS WILL BE USED ON STEEP BANKS. PROVIDE MULCH BLANKET, HIGH VELOCITY CENTERED ON ALL DITCH BOTTOMS WITH A LONGITUDINAL GRADE OF 2.00% OR GREATER AND AT OTHER LOCATIONS AS DIRECTED BY THE ENGINEER IN THE FIELD.

**STAGING NOTES**

- INSTALL TEMPORARY EROSION CONTROL MEASURES.
- CONSTRUCT THE TEMPORARY CHANNEL WITH A 6A STONE PILE AT EACH END AS A PLUG. AFTER LINING THE CHANNEL WITH GEOTEXTILE, OPEN THE DOWNSTREAM PLUG, ALLOW THE WATER TO EQUALIZE, AND THEN REMOVE THE UPSTREAM PLUG.
- REMOVE THE EXISTING CMP CULVERT.
- INSTALL THE 14' X 9' PRECAST CONCRETE BOX CULVERT.
- OPEN THE CHANNEL FROM THE DOWN STREAM END AND ALLOW THE WATER TO EQUALIZE. OPEN THE UPSTREAM SIDE OF THE NEW CHANNEL AND PLUG THE TEMPORARY CHANNEL.
- BACKFILL THE TEMPORARY CHANNEL AND PRECAST CONCRETE BOX.
- INSTALL PERMANENT SOIL EROSION CONTROL MEASURES.

**LEGEND**



**Board of County Road Commissioners  
Of Allegan County**  
1308 LINCOLN ROAD  
ALLEGAN, MICHIGAN 49010-9762  
www.alleganroads.org FAX (269) 673-5922  
TELEPHONE (269) 673-2184

REVISIONS	
1	
2	
3	
4	
5	
6	
7	

**54TH STREET CULVERT REPLACEMENT**  
FILLMORE TOWNSHIP - 690' SOUTH OF 141ST AVENUE  
TYPICAL SECTIONS, DETAILS, & NOTES

DRAWN BY: RPB  
REVIEWED BY: JSE  
DATE: JUNE, 2020  
SCALE: AS NOTED