

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PHYSICAL ROAD NUMBER (PR#) & MILEPOST (MP) DATA ARE FROM MICHIGAN GEOGRAPHIC FRAMEWORK VERSION #12

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

THE DESIGN OF THIS STRUCTURE IS BASED ON 1.2 TIMES THE CURRENT AASHTO LRFD BRIDGE DESIGN SPECIFICATION HL-93 LOADING WITH THE EXCEPTION THAT THE DESIGN TANDEM PORTION OF THE HL-93 LOAD DEFINITION SHALL BE REPLACED BY A SINGLE 60 KIP AXLE LOAD BEFORE APPLICATION OF THIS 1.2 FACTOR. THE RESULTING LOAD IS DESIGNATED HL-93 MOD. LIVE LOAD PLUS DYNAMIC LOAD ALLOWANCE DEFLECTION DOES NOT EXCEED 1/800.

ALL EXPOSED CONCRETE CORNERS SHOWN SQUARE ON THE PLANS SHALL BE BEVELED WITH 1/2" TRIANGULAR MOLDINGS EXCEPT AS OTHERWISE NOTED.

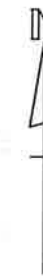
UNLESS OTHERWISE SHOWN ON THE PLANS PROVIDE MINIMUM CONCRETE CLEAR COVER FOR REINFORCEMENT ACCORDING TO THE FOLLOWING:
 CONCRETE CAST AGAINST EARTH: 3 IN.

TUSCOLA COUNTY ROAD COMMISSION

SECTION 20 & 29 T14N, R8E

AKRON TOWNSHIP

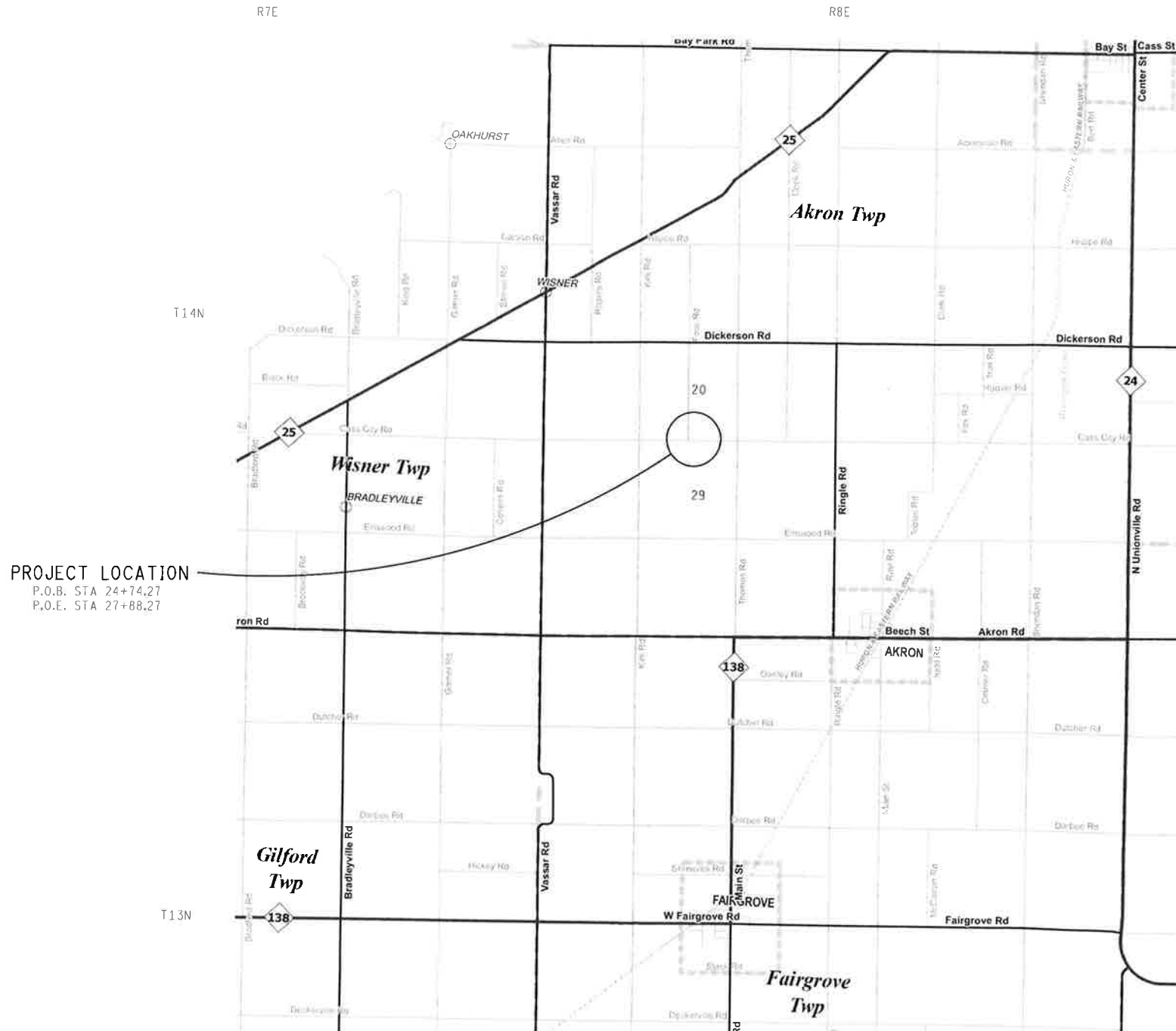
TUSCOLA COUNTY



TUSCOLA COUNTY

COUNTY KEY

| ROAD | YEAR | TRAFFIC DATA | | | SPEED DATA | |
|-----------|------|--------------|-----|------|------------|--------|
| | | ADT | DHV | COMM | DESIGN | POSTED |
| CASS CITY | 2016 | 0 | | 0 | 55 | 55 |
| | 2036 | 130 | | 5% | 55 | ** |



THESE PLANS WERE PREPARED FOR THE
 TUSCOLA COUNTY ROAD COMMISSION
 BY



Casey Collings 1-28-16
 CASEY COLLINGS, P.E. - PROJECT ENGINEER DATE
 GREAT LAKES ENGINEERING GROUP
 521 SEYMOUR STREET
 LANSING, MI 48933
 517-363-4400

APPROVALS

RECOMMENDED FOR APPROVAL BY:

 MICHELE ZAMERUCHA, P.E. - HIGHWAY ENGINEER DATE

MILES:
 CONTRACT FOR:
 THE WORK COVERED BY THESE PLANS INCLUDES REMOVAL OF EXISTING STRUCTURE, SOIL EROSION AND SEDIMENTATION CONTROL, PROPOSED HMA SURFACE, CONSTRUCTION OF PROPOSED CULVERT, SCOUR COUNTERMEASURES, AND PLACING RIPRAP TO THE LIMITS SHOWN.

| FINAL ROW PLAN REVISIONS (SUBMITTAL DATE: 1) | | | | | | | |
|--|------|------|-------------|-----|------|------|-------------|
| NO. | DATE | AUTH | DESCRIPTION | NO. | DATE | AUTH | DESCRIPTION |
| | | | | | | | |



NO SCALE

DRAWN BY: JLS
 CHECKED BY: CJC
 FILE: 326 ti.dgn
 DATE: 08/19/15
 DESIGN UNIT: GLEG
 TSC:
 REVISIONS: 01/27/16
 CS:
 JN: 490-2362
 1015-2-326

| | | | |
|-----------------------------------|--|---------|-------|
| TITLE SHEET | | DRAWING | SHEET |
| CASS CITY ROAD OVER LATIMER DRAIN | | | 1 |
| TUSCOLA COUNTY ROAD COMMISSION | | | |

PUBLIC UTILITIES

The existing utilities listed below and shown on these plans represent the best information available as obtained on our surveys. This information does not relieve the contractor of the responsibility to be satisfied as to its accuracy and the location of existing utilities.

| <u>Name of Owner</u> | <u>Type of Utility</u> |
|---|------------------------|
| Thumb Electric Co-Op Attention: Brandon LeGuault 2437 E Dayton Road Caro, Michigan 48723 Phone: (800) 327-0166 Email: tec@tecmi.coop | Electric |
| AT&T Attention: Mike Szymkowiak 309 S. Washington Ave. Room 525A Saginaw, MI 48607 Phone: (989) 776-4058 Email: ms5837@att.com | Phone |

NOTES APPLYING TO STANDARD PLANS

Where the following items are called for on plans, they are to be constructed according to the standard plan given below opposite each item unless otherwise indicated.

| Title | Plan No. |
|--|-------------|
| ROAD | |
| MONUMENT BOXES | R-11-E |
| GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS FOR UNDERDRAINS, AND SEWER BULKHEADS | R-80-E |
| SOIL EROSION & SEDIMENTATION CONTROL MEASURES | R-96-E |
| SEEDING AND TREE PLANTING | R-100-H |
| BRIDGE | |
| MOLDING, BEVEL, LIGHT STANDARD ANCHOR BOLT ASSEMBLY AND NAME PLATE DETAILS | B-103-E |
| SIGNING | |
| STANDARD SIGN INSTALLATIONS | SIGN-100-F |
| STEEL POSTS | SIGN-200-D |
| WORK ZONE DEVICES | |
| GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS | WZD-100-A * |
| TEMPORARY TRAFFIC CONTROL DEVICES | WZD-125-E * |

* Denotes Special Detail

PROJECT NOTES

Place three Type III Barricades and one R11-1 (Road Closed) Sign at the first intersection each way of the project.

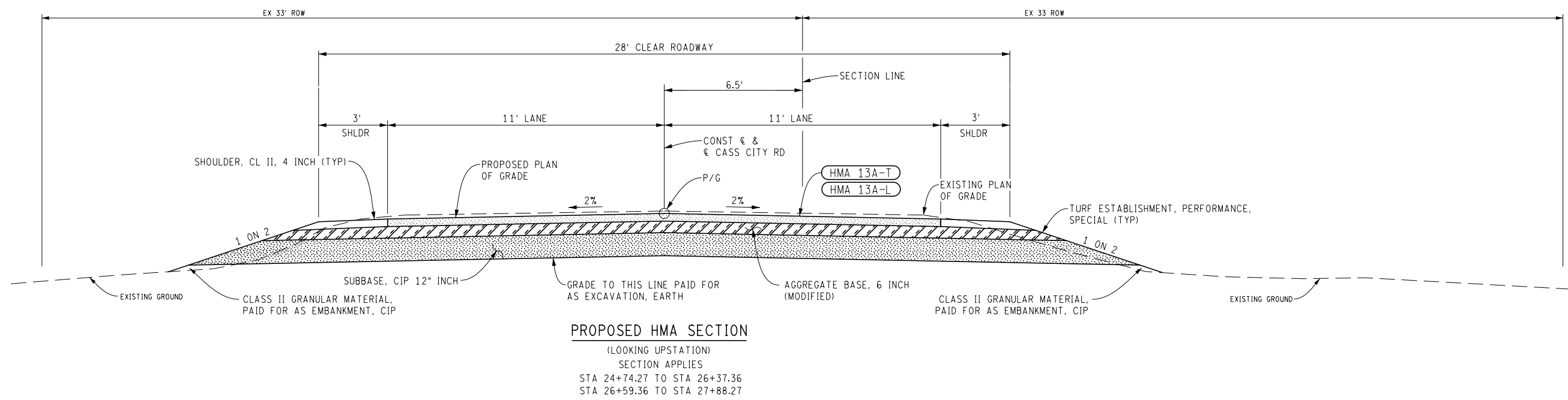
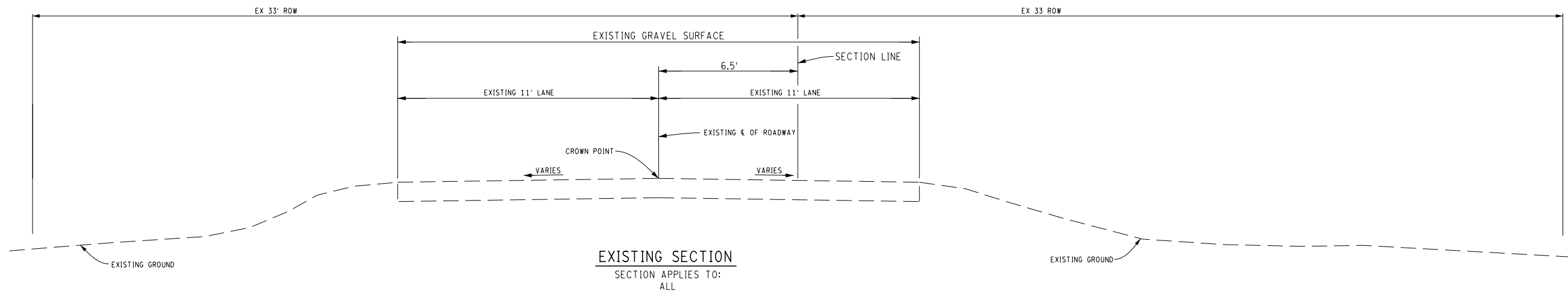
PROJECT QUANTITIES

The following Items of Work shall be as they apply throughout the project.

| Quantity | Units | Description |
|----------|-------|--|
| 1 | LSUM | Mobilization, Max. ____ |
| 1 | Ea | Culv, Rem, 24 inch to 48 inch |
| 1 | LSUM | Structures, Rem |
| 50 | Cyd | Embankment, CIP |
| 150 | Cyd | Excavation, Channel |
| 685 | Cyd | Excavation, Earth |
| 550 | Cyd | Backfill, Structure, CIP |
| 630 | Cyd | Excavation, Fdn |
| 600 | Ft | Erosion Control, Silt Fence |
| 415 | Cyd | Subbase, CIP |
| 1350 | Syd | Aggregate Base, 6 inch, Modified |
| 151 | Syd | Shoulder, CI II, 4 inch |
| 35 | Ft | Culv, CI F, 24 inch |
| 88 | Ft | Underdrain, Fdn, 4 inch |
| 20 | Ft | Underdrain Outlet, 4 inch |
| 2 | Ea | Underdrain, Outlet Ending, 4 inch |
| 72 | Cyd | Culv Bedding, Box Culv |
| 40 | Ft | Culv, Precast Conc Box, 20 foot by 10 foot |
| 180 | Ton | HMA, 13A |
| 10,328 | Lb | Reinforcement, Steel, Epoxy Coated |
| 91 | Cyd | Substructure Conc |
| 836 | Sft | Membrane, Preformed Waterproofing |
| 30 | Ft | Post, Steel, 3 lb |
| 2 | Ea | Sign, Type III, Erect, Salv |
| 5 | Ea | Sign, Type III, Rem |
| 9 | Sft | Sign, Type IIIA |
| 9 | Ea | Barricade, Type III, High Intensity, Double Sided, Lighted, Furn |
| 9 | Ea | Barricade, Type III, High Intensity, Double Sided, Lighted, Oper |
| 1 | LSUM | Minor Traf Devices |
| 30 | Sft | Sign, Type B, Temp, Prismatic, Furn |
| 30 | Sft | Sign, Type B, Temp, Prismatic, Oper |
| 60 | Syd | Riprap, Heavy, Modified |
| 1 | LSUM | Turf Establishment, Performance, Special |
| 1 | Ea | Monument Box |
| 1 | Ea | Monument Preservation |

SHEET INDEX

| Section 2 - Bridge Plans | |
|---------------------------|-----|
| Title Sheet | 1 |
| Project Information Sheet | 2 |
| Typical Sections | 3 |
| General Plan of Site | 4 |
| Soil Borings | 5 |
| General Plan of Structure | 6-7 |
| Footing Details | 8-9 |



HMA APPLICATION ESTIMATE

| IDENT NO. | ITEM | RATE LBS PER SYD | PERFORMANCE GRADE | REMARKS |
|-----------|-------------|------------------|-------------------|--------------------|
| HMA-T | HMA, 13A | 220 | 58-28 | TOP COURSE AWI=220 |
| HMA-L | HMA, 13A | 220 | 58-28 | LEVELING COURSE |
| | * BOND COAT | 0.05-0.15 GAL | | |

*FOR INFORMATION ONLY

| FINAL ROW PLAN REVISIONS | | (SUBMITTAL DATE:) | |
|--------------------------|------|--------------------|-------------|
| NO. | DATE | AUTH | DESCRIPTION |
| | | | |



NO SCALE

DRAWN BY: JLS
 CHECKED BY: CJC
 FILE: 326 typ.dgn

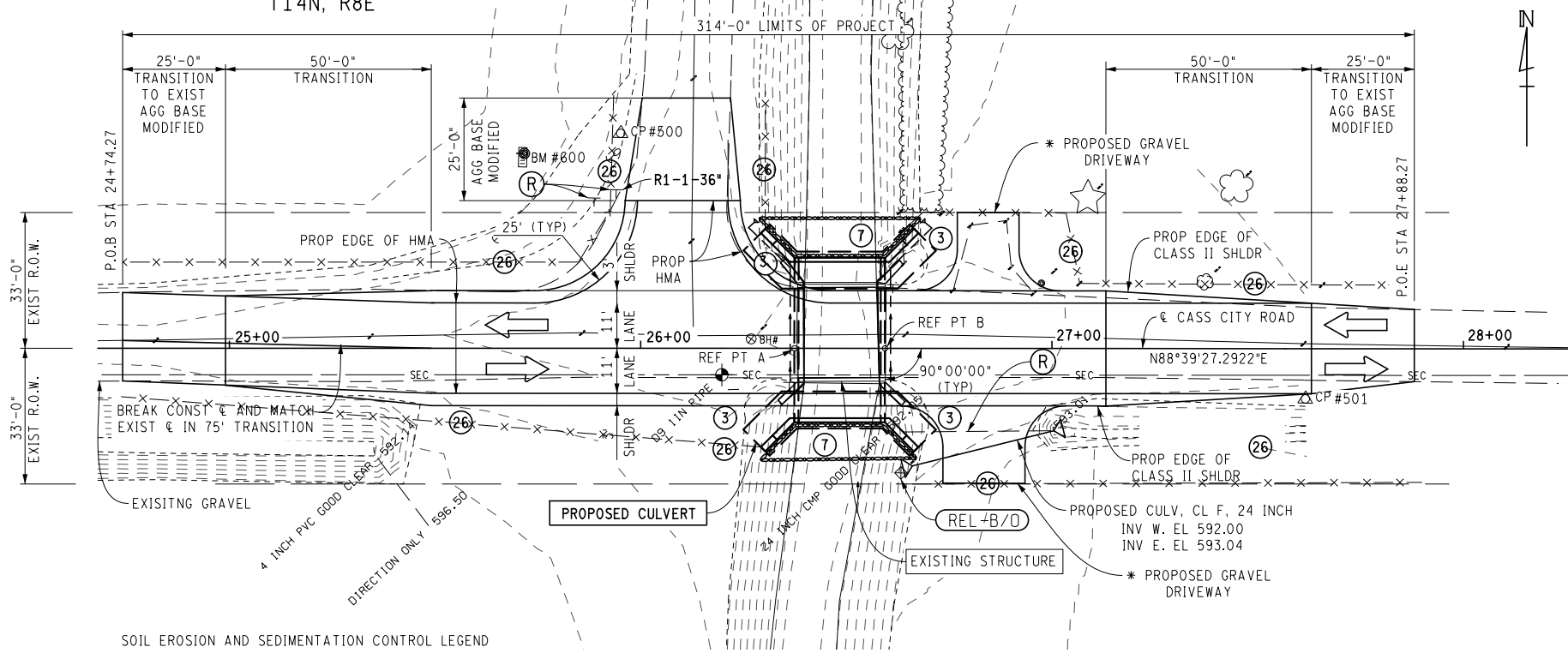
DATE: 08/19/15
 DESIGN UNIT: GLEG
 TSC:

REVISIONS: 01/19/16
 CS:
 JN: 490-2362
 1015-2-326

TYPICAL SECTIONS
 CASS CITY ROAD OVER LATIMER DRAIN
 TUSCOLA COUNTY ROAD COMMISSION

DRAWING SHEET
 SECT 2
 3

SECTION 29
T14N, R8E



SOIL EROSION AND SEDIMENTATION CONTROL LEGEND

- ③ - PERMANENT SEEDING
- ⑦ - SILT FENCE
- ②⑥ - SILT FENCE

| EXISTING STRUCTURE | GOVERNMENT CORNERS |
|--|--|
| THE EXISTING STRUCTURE IS 22'-0" SINGLE SPAN STEEL BEAM WITH CONCRETE DECK. | C-9 CAP IN MON BOX N 764438.14 E 13335876.28 STA 0+00.00 OFF 6.4887 |
| BENCH MARKS | D-9 1" PIPE N 764501.64 E 13338495.25 STA 26+19.75 OFF 6.4934 |
| B.M.#600 ELEV. 597.23 RR SPIKE IN SOUTH SIDE OF A POWER POLE IN THE NORTHWEST QUADRANT OF CASS CITY ROAD AND FOSS ROAD | E-9 1/2" PIN N 764563.16 E 13341120.21 STA 52+45.43 OFF 6.4887 |
| N = 764553.38 E = 13338445.53 | |
| CONTROL POINTS | ALIGNMENT |
| C.P.#500 ELEV. 598.16 SET 5/8" x 36" IRON ROD WITH SSI TRAVERSE CAP IN THE N.W. QUAD OF CASS CITY RD AND FOSS RD. | THE ALIGNMENT IS A 6.5' OFFSET NORTH OF THE SECTION LINE FROM CORNERS C-9 TO D-9 AND D-9 TO E-9. |
| N = 764559.76 E = 13338469.23 | Point 172 N 764.444.6307 E 13,335,876.1160 Sta 0+00.00 |
| C.P.#501 ELEV. 597.89 SET 5/8" x 36" IRON ROD WITH SSI TRAVERSE CAP ON THE SOUTH SIDE OF CASS CITY RD APPROX 100' EAST OF THE CASS CITY BRIDGE OVER THE LATIMER DRAIN | Course from 172 to 173 N 88°36'39.47" E Dist 2,619.7534 |
| N = 764499.24 E = 13338637.18 | Point 173 N 764,508.1359 E 13,338,495.0995 Sta 26+19.75 |
| | Course from 173 to 174 N 88°39'27.29" E Dist 2,625.6842 |
| | Point 174 N 764,569.6490 E 13,341,120.0631 Sta 52+45.44 |

| MISCELLANEOUS QUANTITIES | |
|--------------------------|----------------------------------|
| 50 Cyd | Embankment, CIP |
| 415 Cyd | Subbase, CIP |
| 1350 Syd | Aggregate Base, 6 inch, Modified |
| 151 Syd | Shoulder, CI II, 4 inch |
| 180 Ton | HMA, 13A |
| 1 Ea | Monument Preservation |
| 1 Ea | Monument Box, Adj |
| 685 Cyd | Excavation, Earth |
| 600 Ft | Erosion Control, Silt Fence |
| 30 Ft | Post, Steel, 3 lb |
| 2 Ea | Sign, Type III, Erect, Salv |
| 5 Ea | Sign, Type III, Rem |
| 9 Sft | Sign, Type IIIA |
| 1 Ea | Culv, Rem, 24 inch to 48 inch |
| 35 Ft | Culv, CI F, 24 inch |

NOTES:

THE WORK COVERED BY THESE PLANS INCLUDES SOIL EROSION AND SEDIMENTATION CONTROLS, REMOVAL OF EXISTING STRUCTURE, CHANNEL EXCAVATION, EARTH EXCAVATION, CONSTRUCTION OF PROPOSED CULVERT AND PLACING GRANULAR MATERIAL, SLOPE PROTECTION, SCOUR COUNTERMEASURES, AND PLACING RIPRAP TO THE LIMITS SHOWN.

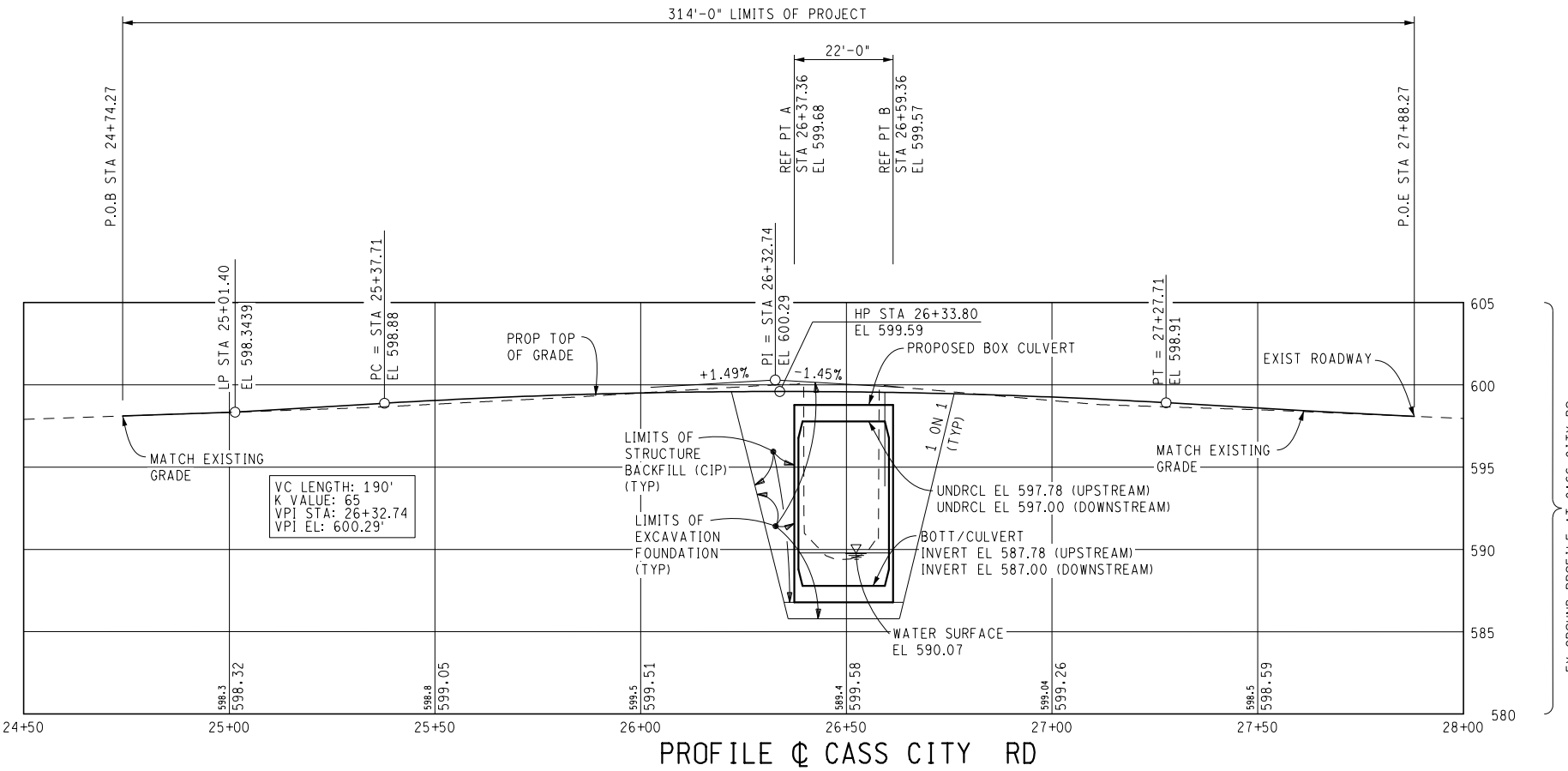
THE CONTRACTOR SHALL LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND SHALL CONDUCT THESE OPERATIONS IN SUCH A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.

PAY QUANTITY FOR FOUNDATION EXCAVATION, STRUCTURE BACKFILL, EARTH EXCAVATION, EMBANKMENT AND SUBBASE CIP SHALL BE BASED ON PLAN QUANTITY EXCEPT IN THE CASE OF A DESIGN CHANGE OR DEMONSTRATED ERROR.

WATER LEVEL IS SUBJECT TO CHANGE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.

MEASURES SHALL BE TAKEN TO PREVENT DEBRIS FROM FALLING FROM THE STRUCTURE. IF DEBRIS FALLS INTO THE WATERWAY, IT SHALL BE REMOVED WITHIN 24 HOURS. SINCE DISTURBANCE OF THE WATERWAY BOTTOM MAY BE AS HARMFUL AS THE DEBRIS ITSELF, THE PREVENTIVE MEASURES MUST BE EFFECTIVE.

IMMEDIATELY AFTER THE CONSTRUCTION OF THE CULVERT IS COMPLETED, SLOPE PROTECTION AND SEEDING OR SODDING SHALL BE PLACED ON THE ADJACENT EMBANKMENT SLOPES.

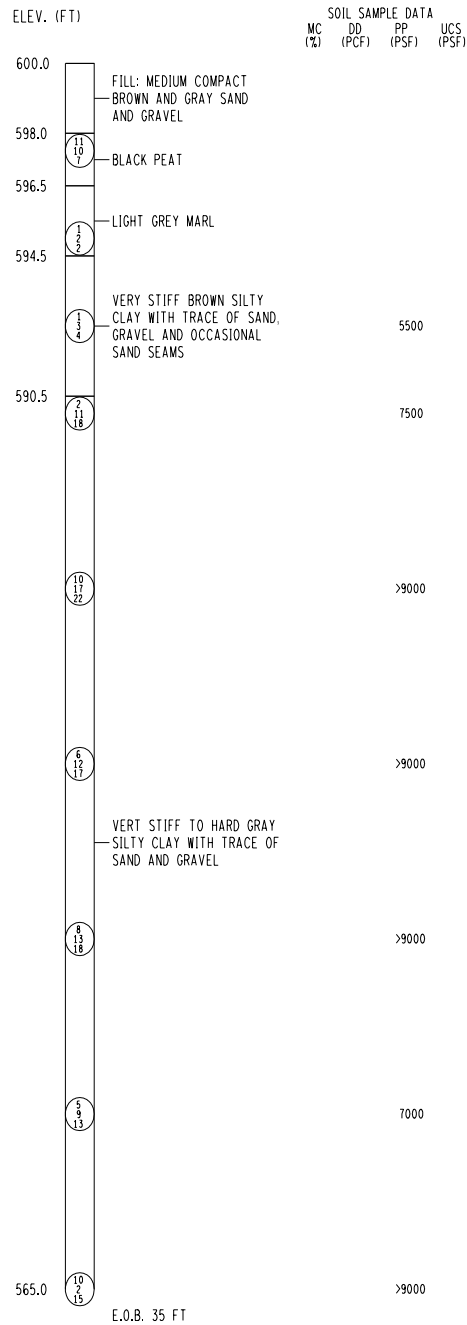


| FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:) | | | | | | DRAWN BY: JLS | | DATE: 08/19/15 | | REVISIONS: 01/28/16 | | CS: | | GENERAL PLAN OF SITE | |
|---|------|------|-------------|-----|------|---------------|-------------|-------------------|--------------|---------------------|------------|-----------------------------------|--|----------------------|-------|
| NO. | DATE | AUTH | DESCRIPTION | NO. | DATE | AUTH | DESCRIPTION | DESIGN UNIT: GLEG | JN: 490-2362 | TSC: | 1015-2-326 | CASS CITY ROAD OVER LATIMER DRAIN | | DRAWING | SHEET |
| | | | | | | | | FILE: 326 sl.dgn | | | | TUSCOLA COUNTY ROAD COMMISSION | | | 4 |



SOIL BORING NO. TB-1

PROJECT: CASS CITY ROAD OVER LATIMER DRAIN
 LOCATION: TUSCOLA COUNTY, MICHIGAN
 APPROXIMATE ROAD STATION: 26+27
 BORING OFFSET: 2.5 FT N OF CASS CITY ROAD CENTER LINE
 DATE STARTED: 04-10-2015, DATE COMPLETED: 04-10-2015
 INSPECTOR: D. YIP
 APPROXIMATE GROUND SURFACE ELEVATION: 600 FT

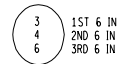


GROUNDWATER LEVELS:
 AT TIME OF DRILLING: 9.5 FT
 AT END OF DRILLING: DRY
 24 HOURS AFTER DRILLING: NOT OBTAINED

BACKFILL PROCEDURE: BOREHOLE BACKFILLED WITH EXCAVATED MATERIALS.

| FINAL ROW PLAN REVISIONS | | (SUBMITTAL DATE:) | |
|--------------------------|------|--------------------|-------------|
| NO. | DATE | AUTH | DESCRIPTION |
| | | | |

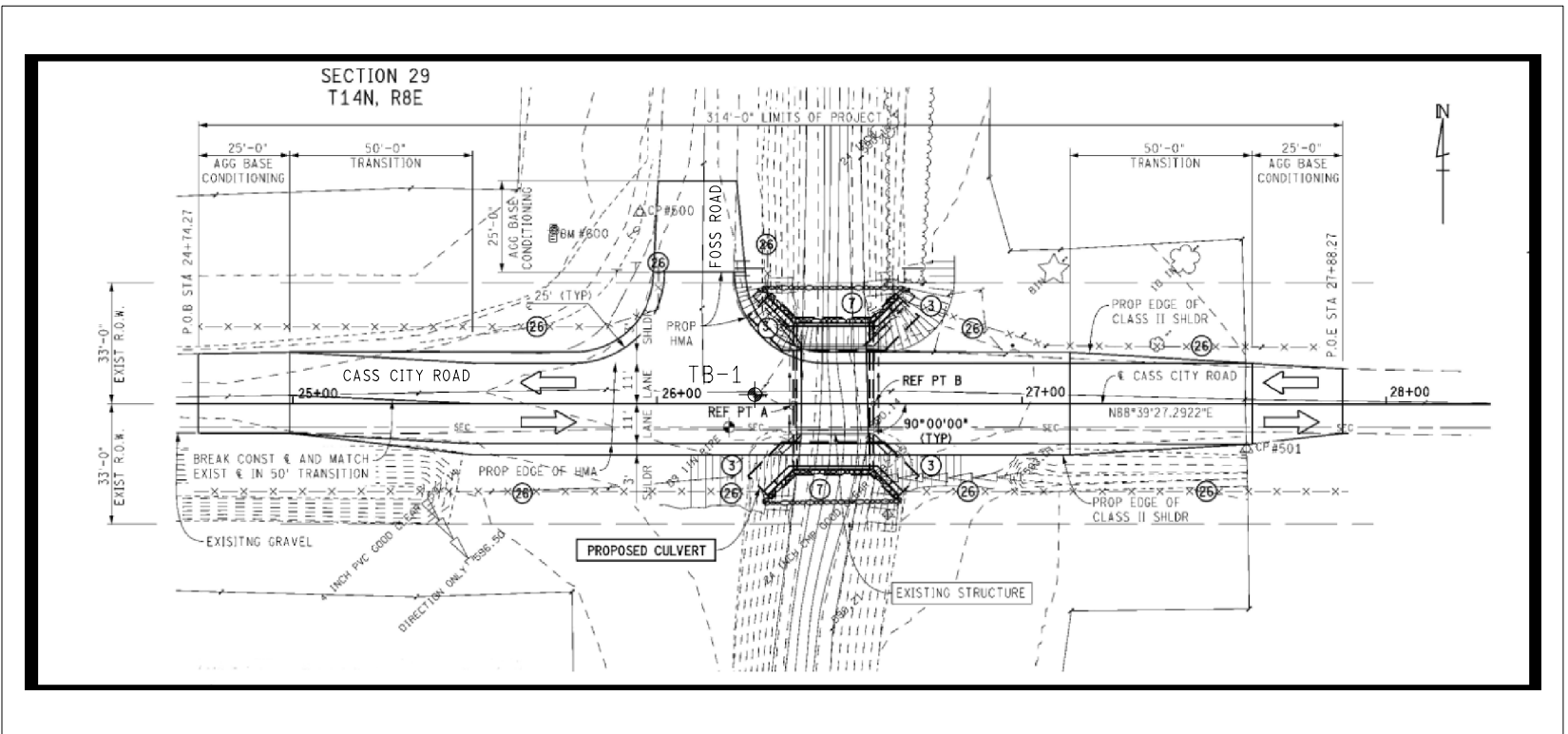
NOTES:



NUMBERS IN CIRCLES DENOTE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" O.D. (1.5" I.D.) SPLIT SPOON SAMPLER 3 SUCCESSIVE 6" INCREMENTS USING A 140 LB HAMMER FALLING 30".
 CONSISTENCY WAS DETERMINED BY INSPECTION OF SAMPLES AND SUBSTANTIATED BY SOILS RESISTANCE TO DRILLING TOOLS.
 THE SOIL BORING LOGS REPRESENT POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

LEGEND

- MC (%) - PERCENT MOISTURE CONTENT
- DD (PCF) - DRY DENSITY, POUNDS PER CUBIC FOOT (PCF)
- PP (PSF) - POCKET PENETROMETER VALUE, POUNDS PER SQUARE FOOT (PSF)
- UCS (PSF) - UNCONFINED COMPRESSIVE STRENGTH, POUNDS PER SQUARE FOOT (PSF)
- E.O.B. - END OF BORING



BORING LOCATION PLAN
 SCALE: 1 IN = 50 FT

LEGEND

TB-1 SOIL BORING PERFORMED BY BRAX DRILLING ON APRIL 10, 2015 UNDER THE OBSERVATION OF GEOTRAN CONSULTANTS, LLC.

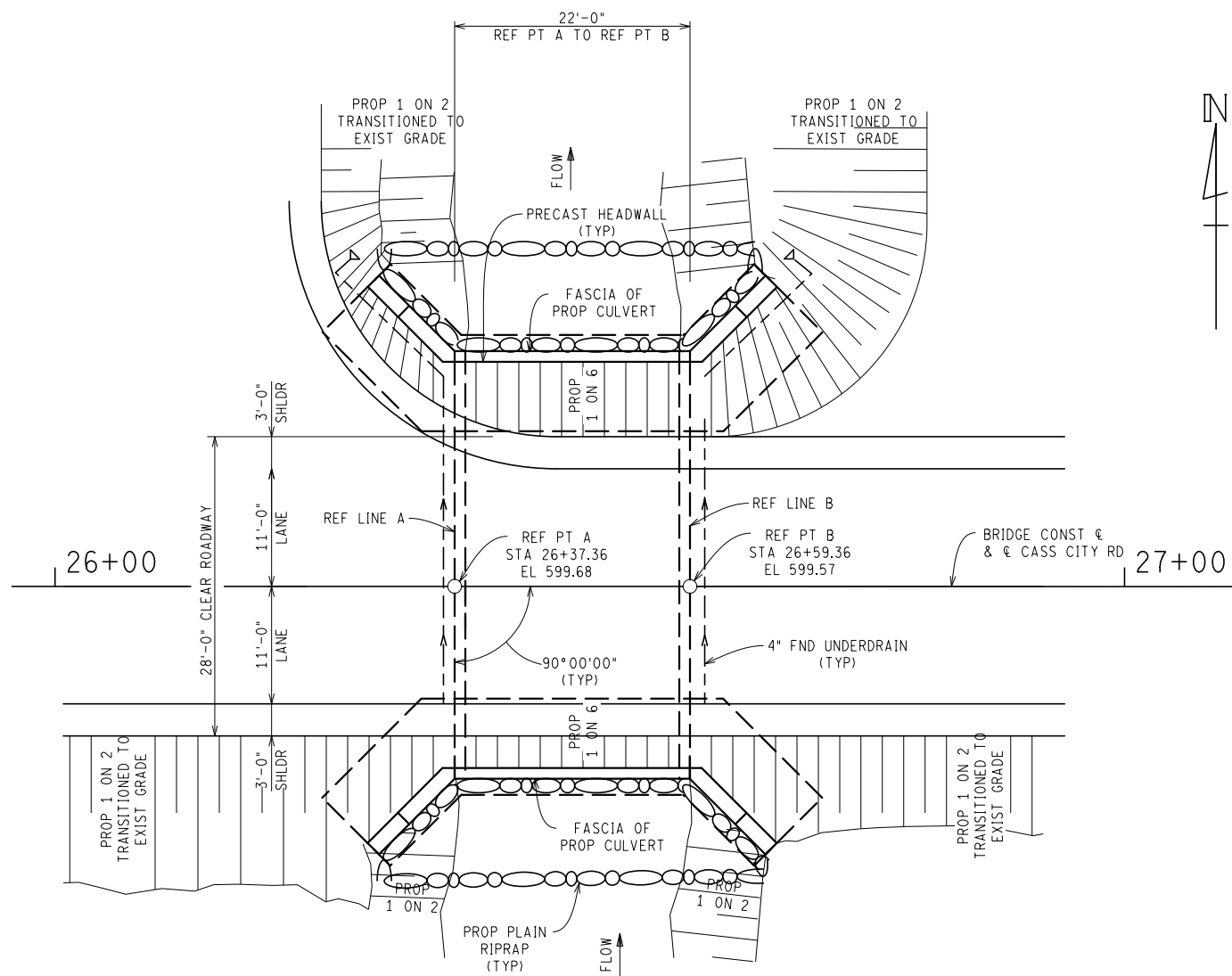
GeoTran
 Consultants, LLC
 GEOTECHNICAL ENGINEERING & CONSULTING SERVICES
 10315 E. GRAND RIVER, SUITE 201 BRIGHTON, MICHIGAN 48116
 PHONE: 810-229-6805 FAX: 810-229-6561
 WWW.GEOTRANCONSULTANTS.COM

| | | |
|----------------------------------|----------------------|----------------------|
| GEOTRAN PROJECT NO: 15-020016-10 | DATE: 08-31-2015 | GEOTRAN FIGURE NO: 2 |
| DRAWN BY: D. YIP | REVIEWED BY: T. SHAH | |

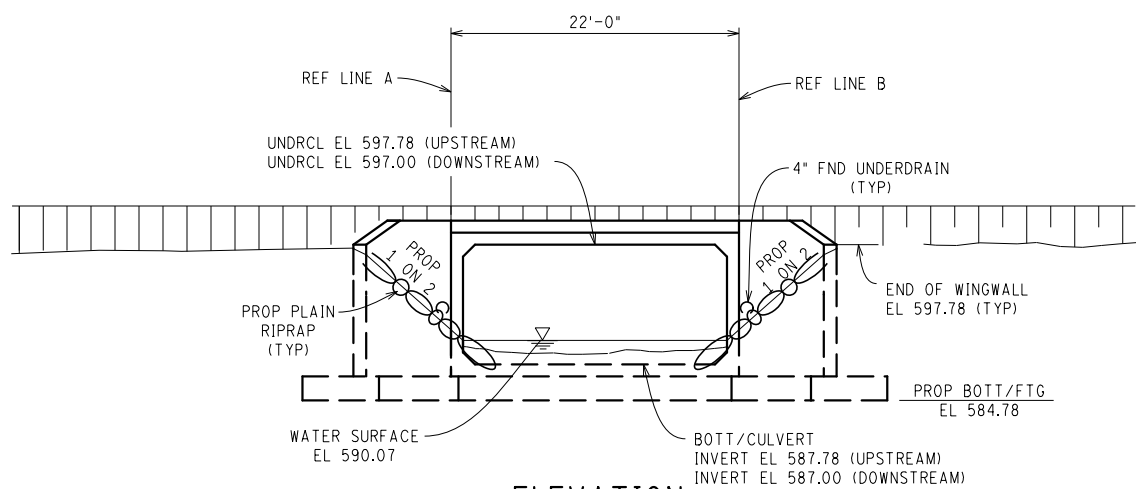
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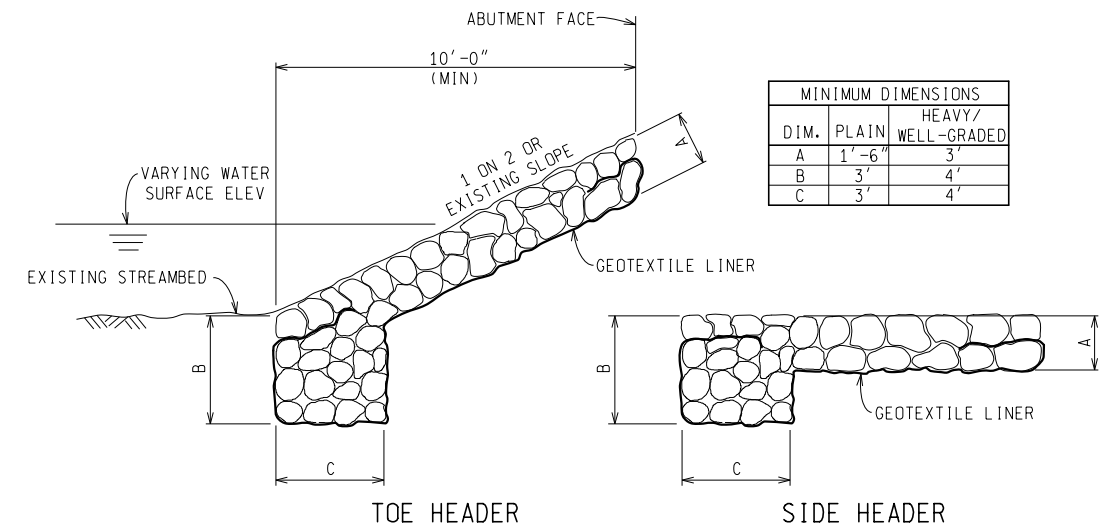
SOIL BORING DATA
 CASS CITY ROAD OVER LATIMER DRAIN
 TUSCOLA COUNTY ROAD COMMISSION
 DRAWING SHEET 5



PLAN



ELEVATION



| MINIMUM DIMENSIONS | | |
|--------------------|-------|-----------------------|
| DIM. | PLAIN | HEAVY/ WELL-GRADED |
| A | 1'-6" | 3' |
| B | 3' | 4' |
| C | 3' | 4' |

RIPRAP HEADER DETAILS

TOP OF RIPRAP MUST BE AT OR BELOW EXISTING STREAMBED/ SLOPE ELEVATION.

AN APPROPRIATE METHOD OF WATER DIVERSION FOR PLACING RIPRAP SHALL BE PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. IF WATER IS SHALLOW (LESS THAN TWO FEET), TEMPORARY CONCRETE BARRIERS OR SANDBAGS MAY BE USED TO DIVERT FLOW.

THE RIPRAP SCHEME SHOWN IS A MINIMUM REQUIREMENT FOR SCOUR.

MISCELLANEOUS QUANTITIES

| | |
|---------------|-----------------------------------|
| 1 LS | Structures, Rem |
| 550 Cyd | Backfill, Structure, CIP |
| 630 Cyd | Excavation, Fdn |
| 60 Syd | Riprap, Heavy, Modified |
| 88 Ft | Underdrain, Fdn, 4 inch |
| 20 Ft | Underdrain Outlet, 4 inch |
| 2 Ea | Underdrain, Outlet Ending, 4 inch |
| 150 Cyd | Excavation, Channel |
| 72 Cyd | Culv Bedding, Box Culv |
| 40 Ft | Culv, Precast, Conc Box, |
| 20 ft x 10 ft | Membrane, Preformed Waterproofing |
| 836 Sft | |

NOTES:

A COFFERDAM HAS NOT BEEN PROVIDED FOR THIS STRUCTURE. OTHER MEANS OF WATER CONTROL MAY BE USED, AS APPROVED BY THE ENGINEER, PROVIDED THEY DO NOT DISTURB THE STREAM BED. WATER CONTROL, WHETHER IT BE BY COFFERDAM OR OTHER APPROVED MEANS, WILL BE INCLUDED IN THE BID ITEM "EXCAVATION, FDN".

THE DESIGN OF THIS STRUCTURE IS BASED ON 1.2 TIMES THE CURRENT AASHTO LRFD BRIDGE DESIGN SPECIFICATION HL-93 LOADING WITH THE EXCEPTION THAT THE DESIGN TANDEM PORTION OF THE HL-93 LOAD DEFINITION SHALL BE REPLACED BY A SINGLE 60 KIP AXLE LOAD BEFORE APPLICATION OF THIS 1.2 FACTOR. THE RESULTING LOAD IS DESIGNATED HL-93 MOD. LIVE LOAD PLUS DYNAMIC LOAD ALLOWANCE DEFLECTION DOES NOT EXCEED 1/800.

THE DRAINAGE AREA CONTRIBUTORY TO THIS CROSSING IS 0.5 SQUARE MILES.

THE WATER SURFACE AND/OR ENERGY GRADE ELEVATIONS SHOWN ON THE ABOVE HYDRAULIC TABLE ARE TO BE USED FOR COMPARISON PURPOSES ONLY AND ARE NOT TO BE USED FOR ESTABLISHING A REGULATORY FLOOD PLAIN.

THE CONTRACTOR WILL BE ALLOWED TO UTILIZE PRECAST WINGWALLS. IF PRECAST WINGWALLS ARE UTILIZED, THEY WILL BE PAID FOR AS PLAN QUANTITY FOR CONCRETE AND REINFORCEMENT STEEL ITEMS.

GEOTEXTILE LINER SHALL BE PLACED ON ALL SLOPES PRIOR TO PLACING RIPRAP. PAYMENT FOR GEOTEXTILE LINER SHALL BE INCLUDED IN THE PAYMENT FOR RIPRAP.

FOR DETAILS OF SLOPE PROTECTION, SEE STANDARD PLAN B-102-SERIES.

| FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:) | | | | | | | |
|---|------|------|-------------|-----|------|------|-------------|
| NO. | DATE | AUTH | DESCRIPTION | NO. | DATE | AUTH | DESCRIPTION |
| | | | | | | | |



NO SCALE

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CHECKED BY: CJC
FILE: 326 cv.dgn

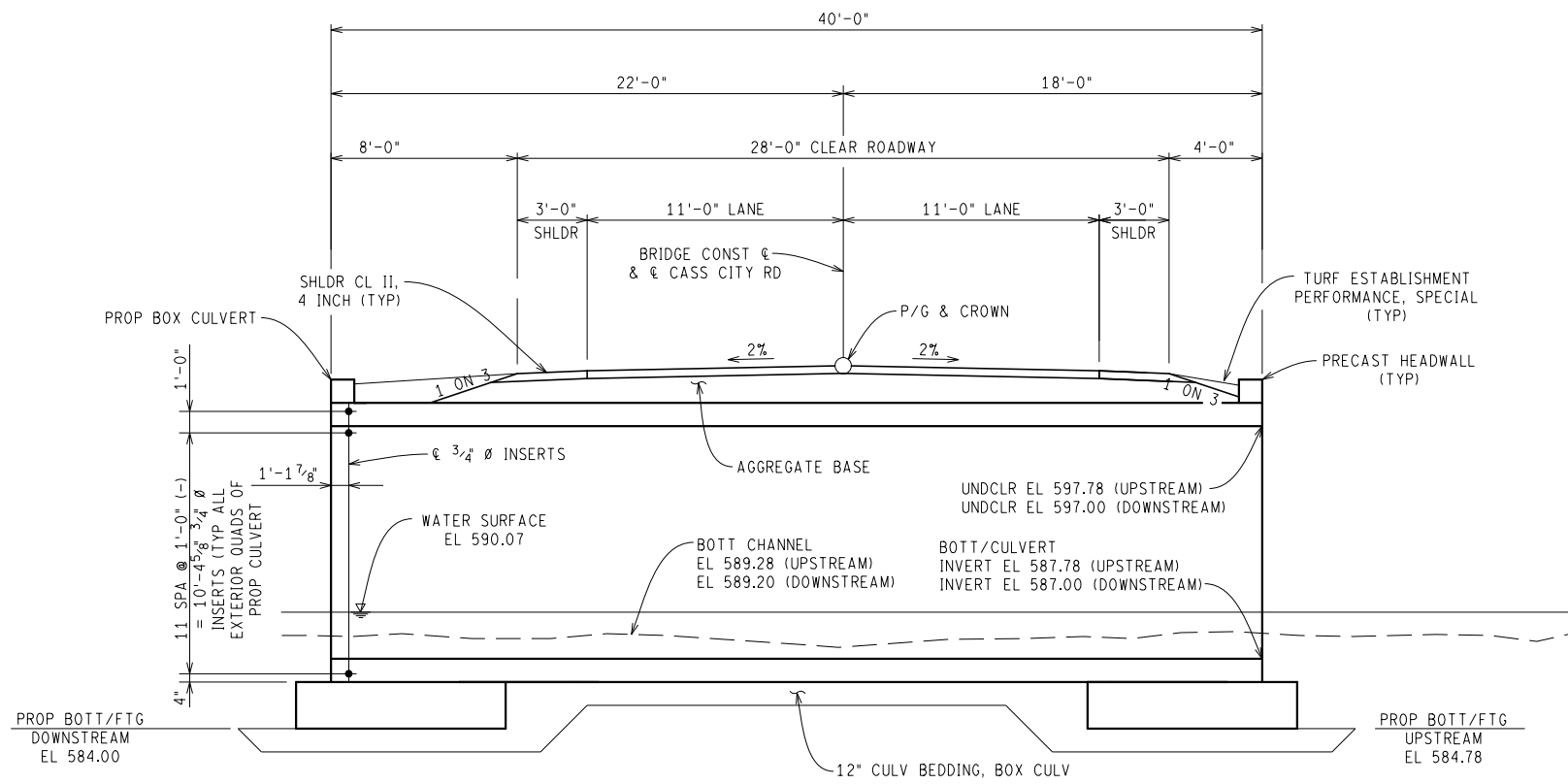
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DESIGN UNIT: GLEG
TSC:

REVISIONS: 01/28/16

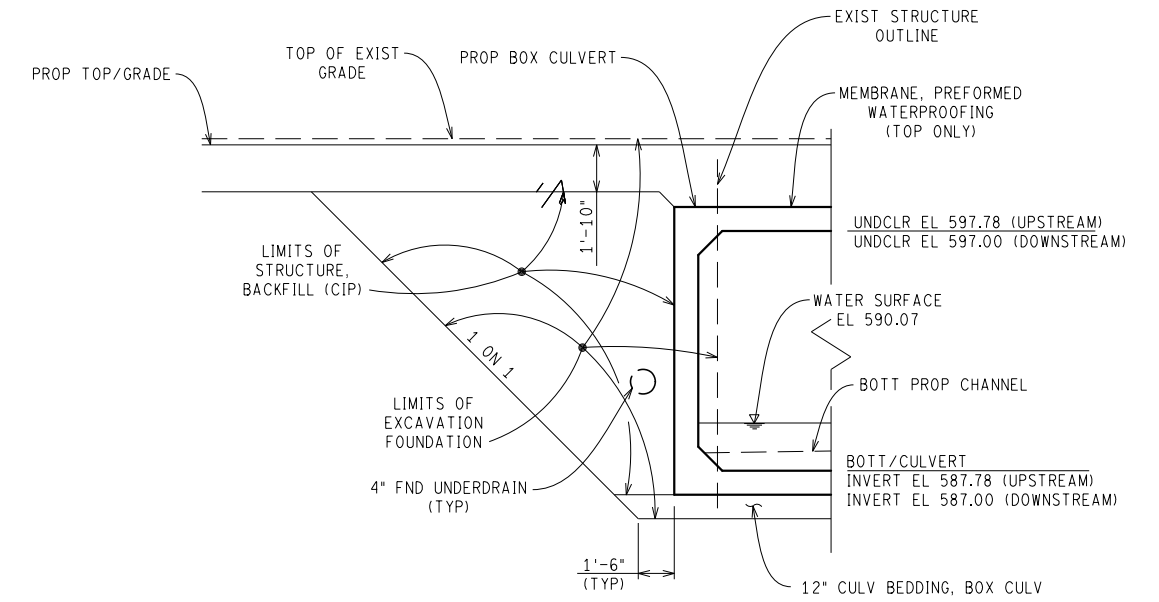
CS:
JN: 490-2362
1015-2-326

CULVERT DETAILS
CASS CITY ROAD OVER LATIMER DRAIN
TUSCOLA COUNTY ROAD COMMISSION

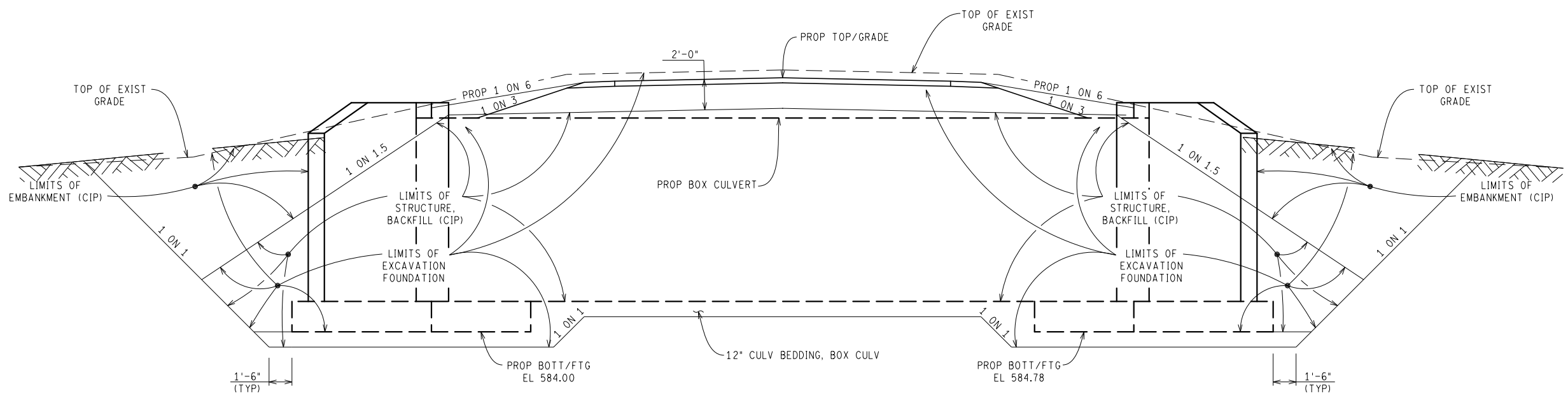
DRAWING SHEET
SECT 2
6



TYPICAL SECTION
(LOOKING UP STATION)



TYPICAL CROSS SECTION



TYPICAL APPROACH SECTION
(LOOKING UP STATION)

| FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:) | | | | | | | |
|---|------|------|-------------|-----|------|------|-------------|
| NO. | DATE | AUTH | DESCRIPTION | NO. | DATE | AUTH | DESCRIPTION |
| | | | | | | | |



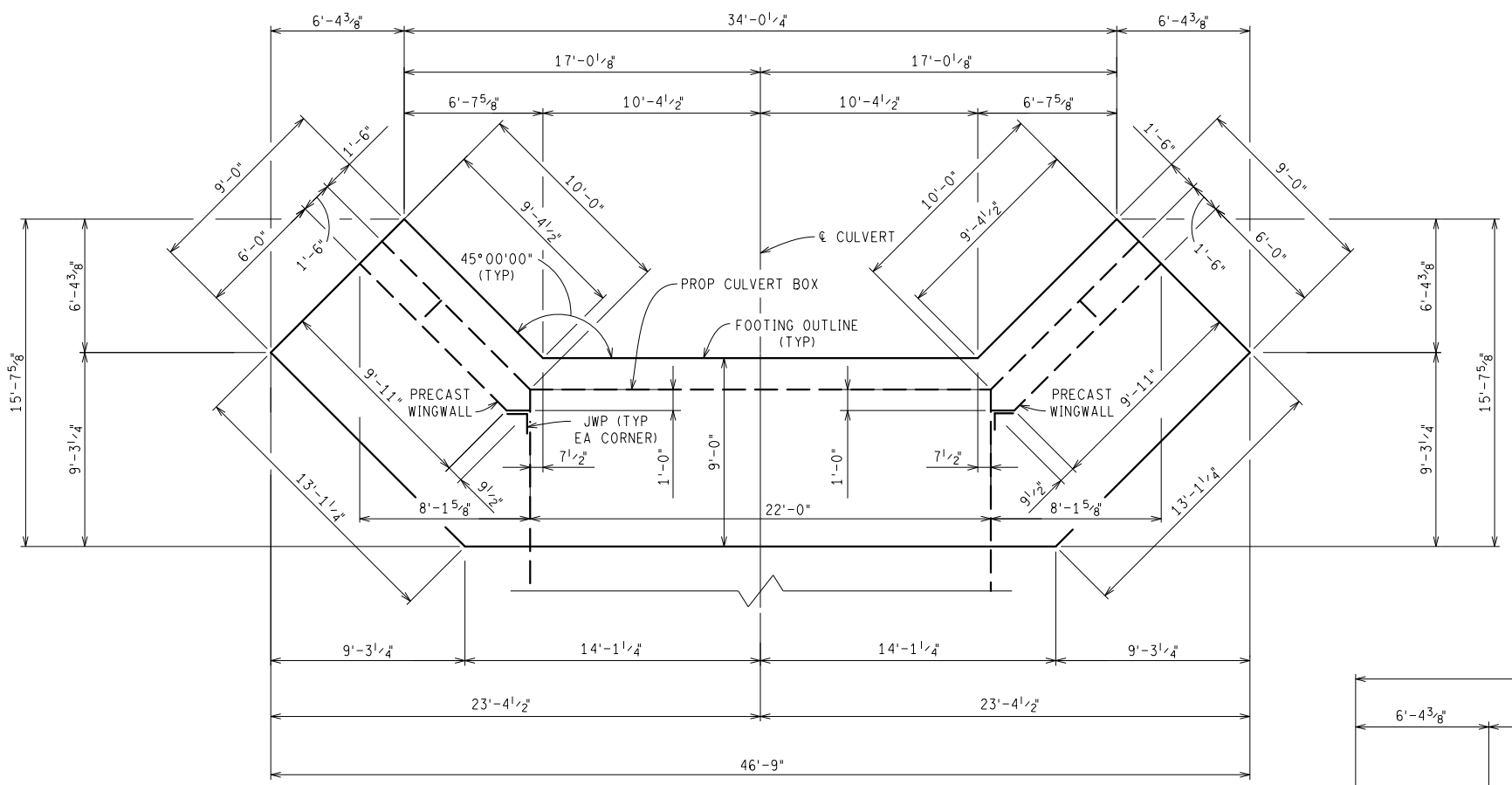
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DESIGN UNIT: GLEG
TSC:

REVISIONS: 01/19/16
CS:
JN: 490-2362
1015-2-326

| CULVERT DETAILS | | DRAWING | SHEET |
|-----------------------------------|--|---------|--------|
| CASS CITY ROAD OVER LATIMER DRAIN | | | SECT 2 |
| TUSCOLA COUNTY ROAD COMMISSION | | | 7 |

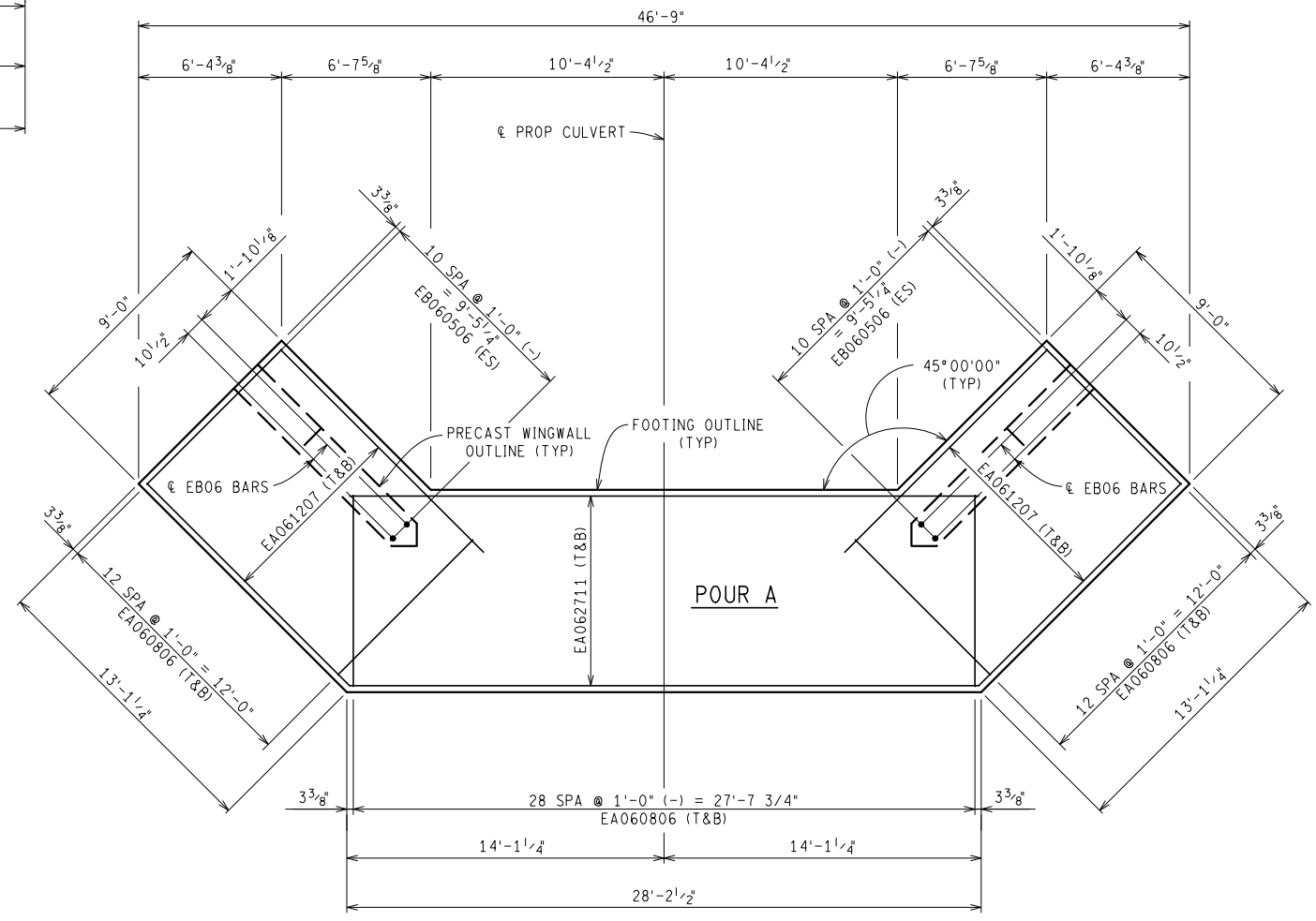


PLAN OF FOOTING
(NORTH FOOTING SHOWN, SOUTH FOOTING
SIMILAR BY 180° ROTATION)

| MISCELLANEOUS QUANTITIES | |
|--------------------------|------------------------------------|
| 91 Cyd | Substructure Conc |
| 10,328 LB | Reinforcement, Steel, Epoxy Coated |

**SUBSTRUCTURE
CONCRETE
QUANTITIES**

| POUR | NORTH FTG | SOUTH FTG |
|------|-----------|-----------|
| A | 31.5 | 31.5 |
| B | 7.0 | |
| C | 7.0 | |
| D | | 7.0 |
| E | | 7.0 |



PLAN OF FOOTING - REINFORCEMENT

(NORTH FOOTING SHOWN, SOUTH FOOTING
SIMILAR BY 180° ROTATION)

| FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:) | | | | | | | |
|---|------|------|-------------|-----|------|------|-------------|
| NO. | DATE | AUTH | DESCRIPTION | NO. | DATE | AUTH | DESCRIPTION |
| | | | | | | | |

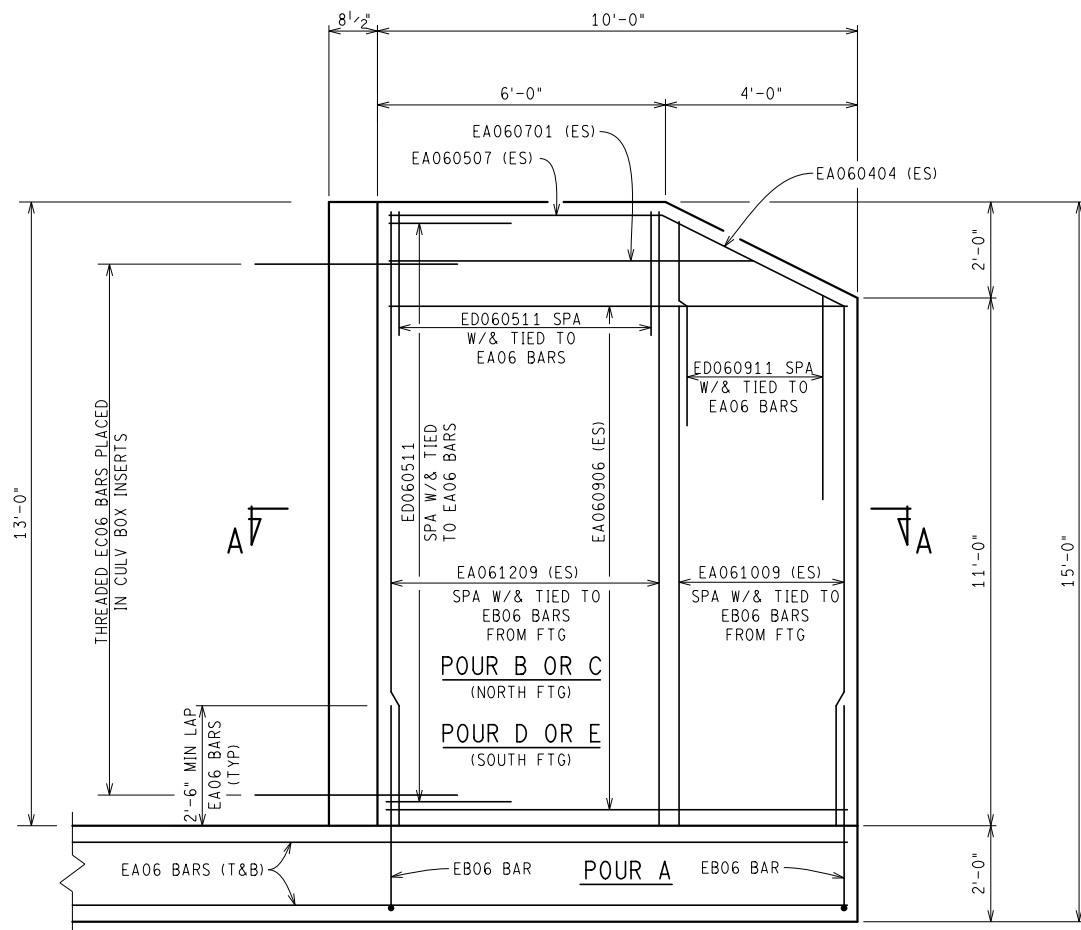


NO SCALE

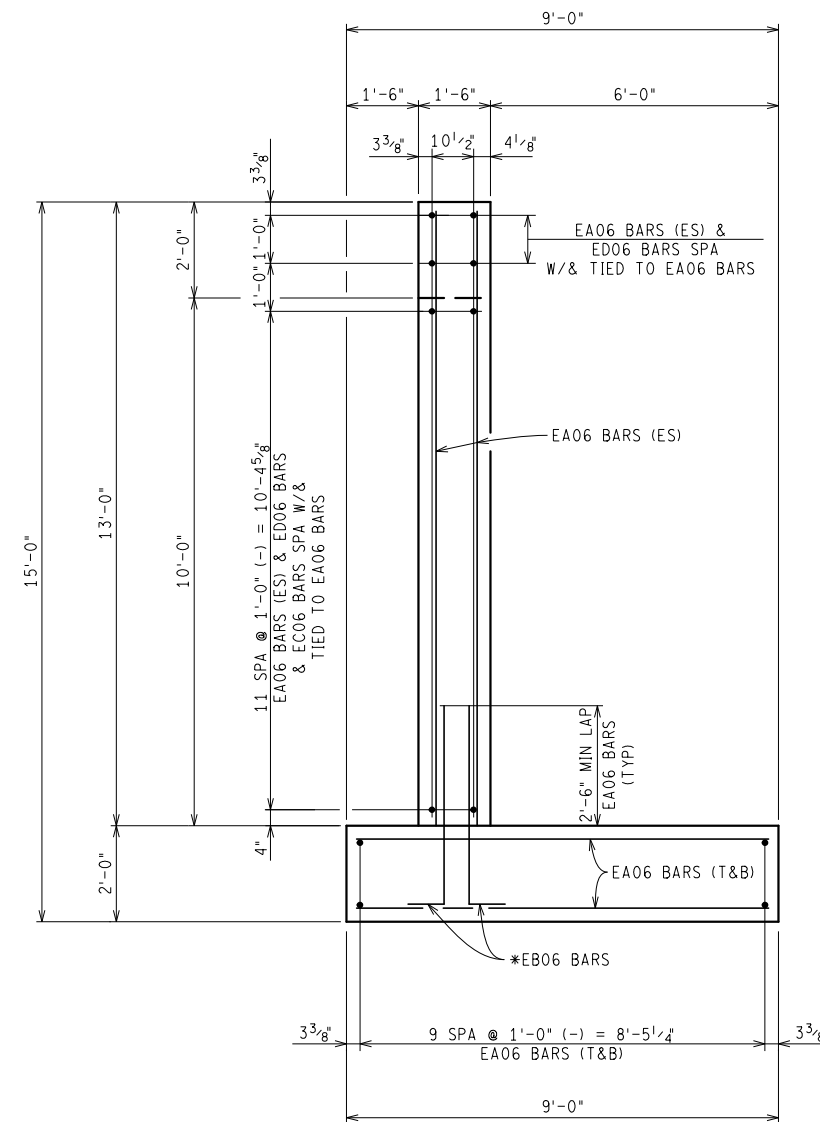
| | | | |
|-------------------|-------------------|---------------------|-----|
| DRAWN BY: JLS | DATE: 08/19/15 | REVISIONS: 01/28/16 | CS: |
| CHECKED BY: CJC | DESIGN UNIT: GLEG | JN: 490-2362 | |
| FILE: 326 ftg.dgn | TSC: | 1015-2-326 | |

| |
|-----------------------------------|
| FOOTING DETAILS |
| CASS CITY ROAD OVER LATIMER DRAIN |
| TUSCOLA COUNTY ROAD COMMISSION |

| | |
|---------|-------|
| DRAWING | SHEET |
| | 8 |

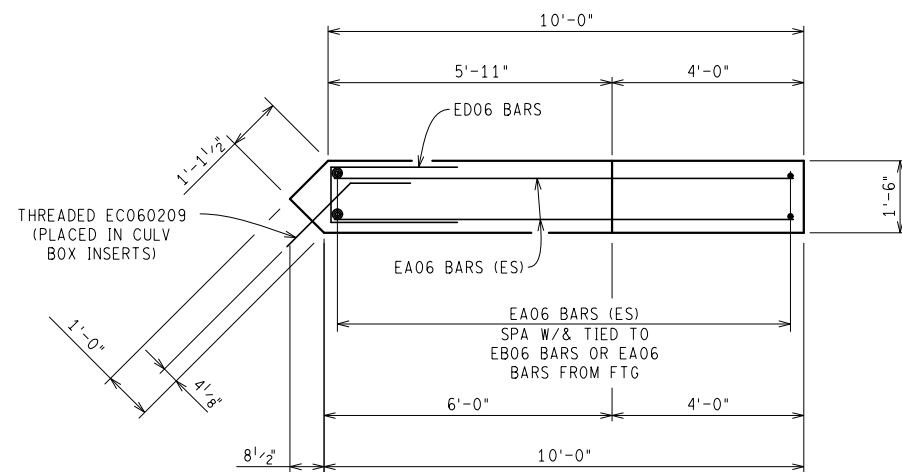


WINGWALL ELEVATION



TYPICAL WINGWALL SECTION

* TO BE ELIMATED IF PRECAST WINGWALL ARE USED.

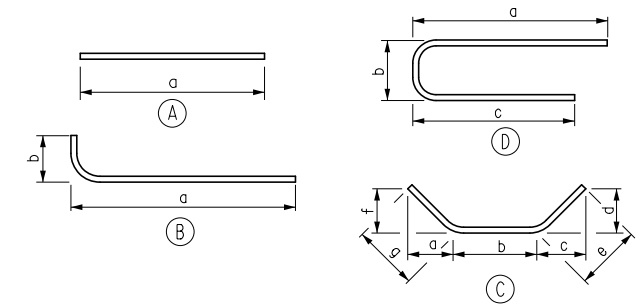


SECTION A-A

CULVERT FOOTING REINFORCEMENT

| FOOTING REINF | BAR | DIMENSIONS | | | | | NO. REQ'D | TOTAL WT. |
|----------------|-----------|------------|-------|----------------------------------|----------------------------------|--------|---------------|------------|
| | | a | b | c | d | e | | |
| | EA061207 | 12'-7" | | | | | 80 | 1512 |
| | EA062711 | 27'-11" | | | | | 40 | 1678 |
| | EA060806 | 8'-6" | | | | | 104 | 1328 |
| WINGWALL REINF | EB060506 | 1'-0" | 4'-6" | | | | 88 | 727 |
| | EA061009 | 10'-9" | | | | | 32 | 517 |
| | EA061209 | 12'-9" | | | | | 56 | 1073 |
| | ED060511 | 2'-6" | 11" | 2'-6" | | | 84 | 747 |
| | ED060911 | 4'-6" | 11" | 4'-6" | | | 16 | 715 |
| | EA060906 | 9'-6" | | | | | 112 | 1599 |
| | *EC060209 | 0" | 1'-3" | 11 ⁵ / ₈ " | 11 ⁵ / ₈ " | 1'-6"* | 56 | 232 |
| | EA060501 | 5'-1" | | | | | 8 | 62 |
| | EA060701 | 7'-0" | | | | | 8 | 85 |
| EA060404 | 4'-0" | | | | | 8 | 53 | |
| TOTAL | | | | | | | 10,328 | LBS |

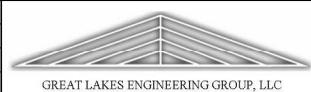
* DENOTES THREADED END
THREADED END SHALL MATCH THE THREAD OF CULVERT INSERTS (SEE SHT # 7)



NOTES:

- FS DENOTES FAR SIDE.
- NS DENOTES NEAR SIDE.
- ES DENOTES EACH SIDE.
- T&B DENOTES TOP & BOTTOM.
- T&B DENOTES TOP & BOTTOM.
- JOINT WATERPROOFING IS INCLUDED IN THE BID ITEM "CULV, PRECAST CONC BOX, 20 FT X 10 FT, MODIFIED".

| FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:) | | | | | | | |
|---|------|------|-------------|-----|------|------|-------------|
| NO. | DATE | AUTH | DESCRIPTION | NO. | DATE | AUTH | DESCRIPTION |
| | | | | | | | |



NO SCALE

| | | | | | | |
|-------------------|-------------------|---------------------|------------|-----------------------------------|---------|--------|
| DRAWN BY: JLS | DATE: 08/19/15 | REVISIONS: 01/28/16 | CS: | FOOTING DETAILS | DRAWING | SHEET |
| CHECKED BY: CJC | DESIGN UNIT: GLEG | JN: 490-2362 | 1015-2-326 | CASS CITY ROAD OVER LATIMER DRAIN | | SECT 2 |
| FILE: 326_ftg.dgn | TSC: | | | TUSCOLA COUNTY ROAD COMMISSION | | 9 |