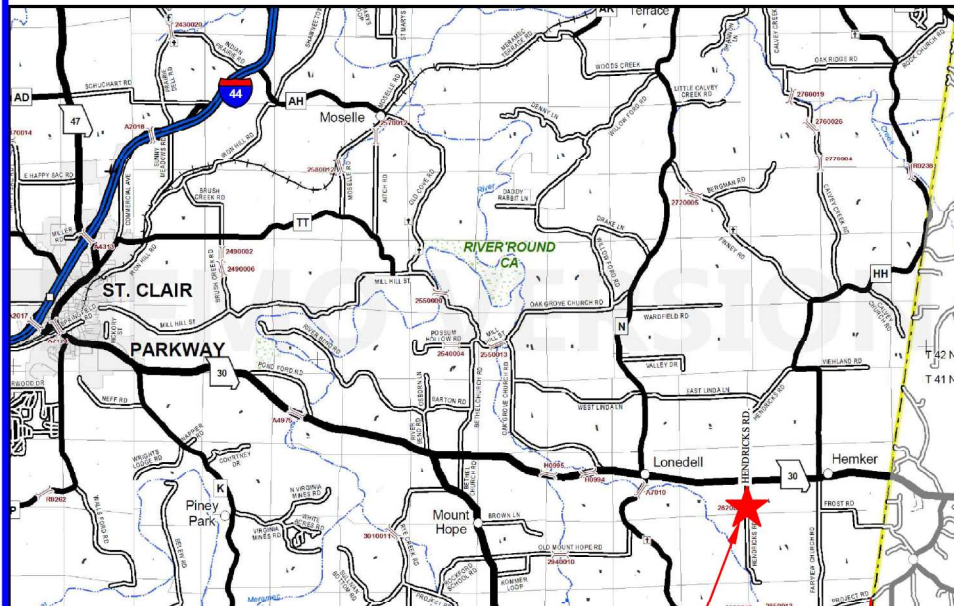


| | |
|--|-------------------------------------|
| OWNER | MoDOT |
| FRANKLIN COUNTY | |
| REPRESENTATIVE: JIM GRUTSCH | REPRESENTATIVE: JOHN BRENDEL |
| ADDRESS: 400 E LOCUST | ADDRESS: 1590 WOODLAKE DRIVE |
| UNION, MISSOURI 63084 | CHESTERFIELD, MISSOURI 63017-5712 |
| PHONE: (636) 583-6361 | PHONE: (314) 453-1831 |
| ELECTRIC | TELEPHONE |
| AMEREN | AT&T |
| REPRESENTATIVE: DON KNOTTS | REPRESENTATIVE: TODD YENZER |
| ADDRESS: 500 E. INDEPENDENCE DRIVE | ADDRESS: 507 E. MAIN STREET |
| UNION, MISSOURI 63084 | UNION, MISSOURI 63084 |
| PHONE: (636) 583-7172 | PHONE: (314) 439-4140 |
| COCHRAN | |
| REPRESENTATIVE: B. BRADFORD DUNAGAN, P.E. | REPRESENTATIVE: _____ |
| ADDRESS: 737 RUDDER ROAD | ADDRESS: _____ |
| FENTON, MISSOURI 63026 | _____ |
| PHONE: (314) 842-4033 | PHONE: _____ |
| REPRESENTATIVE: _____ | REPRESENTATIVE: _____ |
| ADDRESS: _____ | ADDRESS: _____ |
| PHONE: _____ | PHONE: _____ |

LENGTH OF PROJECT

QUADRANGLE YEAR: LONEDELL/1969
TOWNSHIP: 41N RANGE: 2E SECTION: 9 AND 10
ADDRESS: 2200 S. HENDRICKS ROAD, LONEDELL, MO 63060
LATITUDE: 38.3002 LONGITUDE: -90.7999

START OF PROJECT: STA. 13+14.31
END OF PROJECT: STA. 16+00.00
PROJECT LENGTH: 285.69 FEET



PROJECT LOCATION

FRANKLIN COUNTY, MO
PROJECT NUMBER STP-5490(616)
HENDRICKS ROAD BRIDGE

BRIDGE NO. 26200061
over LITTLE MERAMEC RIVER TRIBUTARY



400 E. LOCUST
UNION, MO 63084
TELEPHONE (636) 583-6361



- Civil Engineering
- Land Surveying
- Architecture
- Site Development
- Master Planning
- General Consulting

737 RUDDER RD.
FENTON, MISSOURI 63026
TELEPHONE (314) 842-4033
FAX (314) 842-5957
www.cochraneng.com

COCHRAN PROJECT NO. SC20-1165
JUNE 2022

| <i>SHEET NAME</i> | <i>SHEET NO.</i> |
|---|------------------------------|
| <i>QUANTITIES</i> | <i>Q-1</i> |
| <i>TOPOGRAPHIC SURVEY</i> | <i>TS-1</i> |
| <i>LEGEND AND GENERAL NOTES</i> | <i>LG-1</i> |
| <i>TYPICAL SECTIONS</i> | <i>TXS-1 TO TXS-2</i> |
| <i>SITE PLAN</i> | <i>S-1</i> |
| <i>ROADWAY PROFILES</i> | <i>RD-1 TO RD-2</i> |
| <i>TEMPORARY BYPASS DETAIL</i> | <i>D-1</i> |
| <i>RIGHT OF WAY PLAN</i> | <i>RW-1</i> |
| <i>TRAFFIC CONTROL PLAN</i> | <i>TC-1</i> |
| <i>EROSION CONTROL</i> | <i>EC-1 TO EC-2</i> |
| <i>BRIDGE NOTES</i> | <i>B-1</i> |
| <i>TYPICAL BRIDGE SECTION</i> | <i>B-2 TO B-3</i> |
| <i>BRIDGE PLAN AND ELEVATION</i> | <i>B-4</i> |
| <i>END BENT SECTION DETAILS</i> | <i>B-5</i> |
| <i>END BENT 1 PLAN AND ELEVATION</i> | <i>B-6</i> |
| <i>END BENT 2 PLAN AND ELEVATION</i> | <i>B-7</i> |
| <i>END BENT PLAN IN DIAPHRAGM</i> | <i>B-8 TO B-9</i> |
| <i>SLAB REINFORCEMENT</i> | <i>B-10 TO B-11</i> |
| <i>BILL OF REINFORCING STEEL</i> | <i>B-12</i> |
| <i>BRIDGE APPROACH SLAB</i> | <i>B-13</i> |
| <i>SL-1 BRIDGE RAILING</i> | <i>B-14</i> |
| <i>STEEL CONNECTION DETAILS</i> | <i>B-15 TO B-17</i> |
| <i>CONCRETE SLAB BEAM DETAILS</i> | <i>B-18</i> |
| <i>CONCRETE SLAB BEAM PLACEMENT</i> | <i>B-19</i> |
| <i>CROSS SECTIONS</i> | <i>XS-1 TO XS-2</i> |

FUNCTIONAL CLASSIFICATION: LOCAL ROAD
CURRENT POSTED SPEED: 30 MPH
DESIGN SPEED: 30 MPH
CURRENT AADT: 190 (2019)
DESIGN AADT: 240 (2039)

ALL OSHA RULES & REGULATIONS ESTABLISHED FOR THE TYPE OF CONSTRUCTION REQUIRED BY THESE PLANS SHALL BE STRICTLY FOLLOWED (IE. TRENCHING, BLASTING, ETC.)

TWO WORKING DAYS PRIOR TO THE START OF ANY
EXCAVATION ON THIS SITE, CONTRACTOR SHALL CALL
1-800-DIG-RITE FOR UTILITY LOCATION INFORMATION.

WHERE THE TERM "STANDARD SPECIFICATIONS" IS USED, SUCH REFERENCE SHALL MEAN THE 2022 EDITION OF THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EXCEPT AS OTHERWISE PROVIDED IN THE PROJECT MANUAL. IN CASE OF CONFLICT IN THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE REQUIREMENTS STATED IN THE PROJECT MANUAL, THE REQUIREMENTS IN THE PROJECT MANUAL SHALL PREVAIL.



6/14/2022

B. BRADFORD DUNAGAN
NO. E-22970
STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
FOR SC ENGINEERING LLC,
DBA COCHRAN

THIS SHEET HAS BEEN SIGNED,
SEALED AND DATED ELECTRONICALLY

THE PROFESSIONAL'S SEAL AFFIXED TO THIS SHEET APPLIES ONLY TO ITEMS
ON THIS SHEET. ALL DRAWINGS OR OTHER DOCUMENTS NOT EXHIBITING
THIS SEAL SHALL NOT BE CONSIDERED PREPARED BY THIS PROFESSIONAL.

ENGINEERING CERTIFICATE OF AUTHORITY NUMBER - 2007006937
LAND SURVEYING CERTIFICATE OF AUTHORITY NUMBER - 2007004529

FRANKLIN COUNTY

ACCEPTED BY:

JIM GRUTSCH
HIGHWAY ADMINISTRATOR

QUANTITIES

| Bid No. | Spec. No. | Description | From STA | To STA | Unit | Quantity |
|--|-----------|--|----------|----------|------|----------|
| ROADWAY ITEMS | | | | | | |
| 1 | 2013000 | Clearing and Grubbing | 13+14.31 | 16+00.00 | AC | 0.3 |
| 2 | 2022010 | Removal of Improvements | 13+14.32 | 16+00.00 | LS | 1 |
| 3 | 2035000 | Unclassified Excavation | 13+14.32 | 16+00.00 | CY | 140 |
| 4 | 2035500 | Embankment in Place | 13+14.32 | 16+00.00 | CY | 140 |
| 5 | 3040504 | Type 5 Aggregate For Base (4")(Roadway) | 13+14.32 | 16+00.00 | SY | 550 |
| 6 | 3105002 | Gravel (A) or Crushed Stone (B) (3") (Temporary Stream Crossing) | 13+14.31 | 16+00.00 | TON | 40 |
| 7 | 3109910 | 3" Minus Base Course (6") (Temporary Stream Crossing) | 13+14.32 | 16+00.00 | TON | 70 |
| 8 | 4011209 | Bituminous Pavement Mix PG64-22 (BP-1)(2" Surface Course) | 13+14.32 | 16+00.00 | TON | 65 |
| 9 | 4013000 | Bituminous Pavement Mix PG64-22 (Base)(Two 3 Inch Lifts) | 13+14.32 | 15+51.89 | TON | 200 |
| 10 | 6061010 | Type A Guardrail | 13+14.32 | 15+51.89 | LF | 75 |
| 11 | 6062301A | Transition Section, 7.5 Ft. Posts | 13+14.32 | 15+51.89 | EA | 4 |
| 12 | 6063015 | Type A Crashworthy End Terminal | 13+14.32 | 16+00.00 | EA | 4 |
| 13 | 6072004 | 4-Strand Barbed Wire | 13+14.32 | 16+00.00 | LF | 25 |
| 14 | 6181000 | Mobilization | 13+14.32 | 16+00.00 | LS | 1 |
| 15 | 8061019 | Silt Fence | 13+14.32 | 16+00.00 | LF | 170 |
| 16 | 8061021 | Type I Ditch Check | 13+14.32 | 16+00.00 | EA | 4 |
| 17 | 8069902 | 24" Dia. Pipe Culverts (20' long Encased in Concrete) (Temporary Stream Crossing) | 13+14.31 | 16+00.00 | EA | 6 |
| 18 | 8069907 | Concrete Surfacing over Culvert Pipes and side slopes (8" Thick) (includes cost of Rock Fill)(Temporary Stream Crossing) | 13+14.32 | 16+00.00 | CY | 50 |
| SIGNING/STRIPING/SIGNAL ITEMS | | | | | | |
| 19 | 6161005 | Construction Signs | 13+14.32 | 16+00.00 | SF | 72.5 |
| 20 | 6161024 | Channelizer (Trim Line) with Light (alongside Temporary Stream Crossing) | 13+14.32 | 16+00.00 | EA | 40 |
| 21 | 6161031 | Type III Moveable Barricade with Lights | 13+14.32 | 16+00.00 | EA | 6 |
| 22 | 6206201 | Type A Epoxy Pavement Marking, 4 in | 13+14.32 | 16+00.00 | LF | 1,150 |
| LANDSCAPING/STREETSCAPING ITMES | | | | | | |
| 23 | 8051000A | Seeding - Cool Season Mixtures | 13+14.32 | 16+00.00 | AC | 0.6 |
| BRIDGE ITEMS | | | | | | |
| 24 | 2061000 | Class 1 Excavation | 14+38.55 | 15+17.55 | CY | 280 |
| 25 | 2061000 | Class 1 Excavation in Rock | 14+38.55 | 15+17.55 | CY | 30 |
| 26 | 2160500 | Removal of Bridges | 14+38.55 | 15+17.55 | EA | 1 |
| 27 | 5031010 | Bridge Approach Slabs | 14+38.55 | 15+17.55 | SY | 85.4 |
| 28 | 6113021 | Furnishing Type 2 Rock Blanket | 14+38.55 | 15+17.55 | TON | 161 |
| 29 | 6113041 | Placing Type 2 Rock Blanket | 14+38.55 | 15+17.55 | TON | 161 |
| 30 | 6240103A | Permanent Erosion Control Geotextile - Class 1 | 14+38.55 | 15+17.55 | SY | 150 |
| 31 | 7032003 | Class B Concrete (Substructure) | 14+38.55 | 15+17.55 | CY | 30.0 |
| 32 | 7034003 | Class B1 Concrete (Substructure) | 14+38.55 | 15+17.55 | CY | 47.5 |
| 33 | 7101000 | Reinforcing Steel (Epoxy Coated) | 14+38.55 | 15+17.55 | LB | 11,270 |
| 34 | 7135000 | Bridge Rail (SL-1 Thire Beam) | 14+38.55 | 15+17.55 | LF | 100 |
| STEEL BEAM OPTION: 4 - W21X101# STEEL BEAMS | | | | | | |
| 35 | 7034212 | Slab on Steel | 14+38.55 | 15+17.55 | SY | 126.1 |
| 36 | 7121113 | Fab. Str. Low Al. Steel (I-Beam) A709, Grade 50W | 14+38.55 | 15+17.55 | LB | 21,800 |
| PS CONCRETE BEAM OPTION: 4 - 21" PRESTRESSED CONC. BEAMS | | | | | | |
| 37 | 7034222 | Slab on Concrete Beam | 14+38.55 | 15+17.55 | SY | 126.1 |
| 38 | 7056043A | 21 In., Prestr. Concrete Voided Slab Beam | 14+38.55 | 15+17.55 | LF | 184 |
| 39 | 7161002 | Neoprene Bearing Pads | 14+38.55 | 15+17.55 | EA | 8 |

314-842-4033 (cell)
314-842-5957 (fax)
www.cochranch.com

737 RUDDER ROAD
FENTON, MISSOURI 63026

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting
ENGINEERING CERTIFICATE OF AUTHORITY NUMBER - 2007006937
LAND SURVEYING CERTIFICATE OF AUTHORITY NUMBER - 2007004529

STATE OF MISSOURI
BRADFORD DUNAGAN
NO. E-22970
STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
FOR SO ENGINEERING LLC,
DBA COCHRAN

6/14/2022

THIS SHEET HAS BEEN SIGNED,
SEALED AND DATED ELECTRONICALLY

THE PROFESSIONAL'S SEAL AFFIXED TO
THIS SHEET APPLIES ONLY TO ITEMS
ON THIS SHEET. ALL DRAWINGS OR
OTHER DOCUMENTS NOT EXHIBITING
THIS SEAL SHALL NOT BE CONSIDERED
PREPARED BY THIS PROFESSIONAL.

HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

QUANTITIES

| | | | |
|------------------------|-------|----------|------------|
| DATE: | DATE: | DWN. BY: | APP'D. BY: |
| | | A.J.M. | B.B.D. |
| DATE: JUNE 2022 | | | |
| SCALE: NOT TO SCALE | | | |
| PROJ. NO: SC20-1165 | | | |
| DWG. NO: Q-1 | | | |

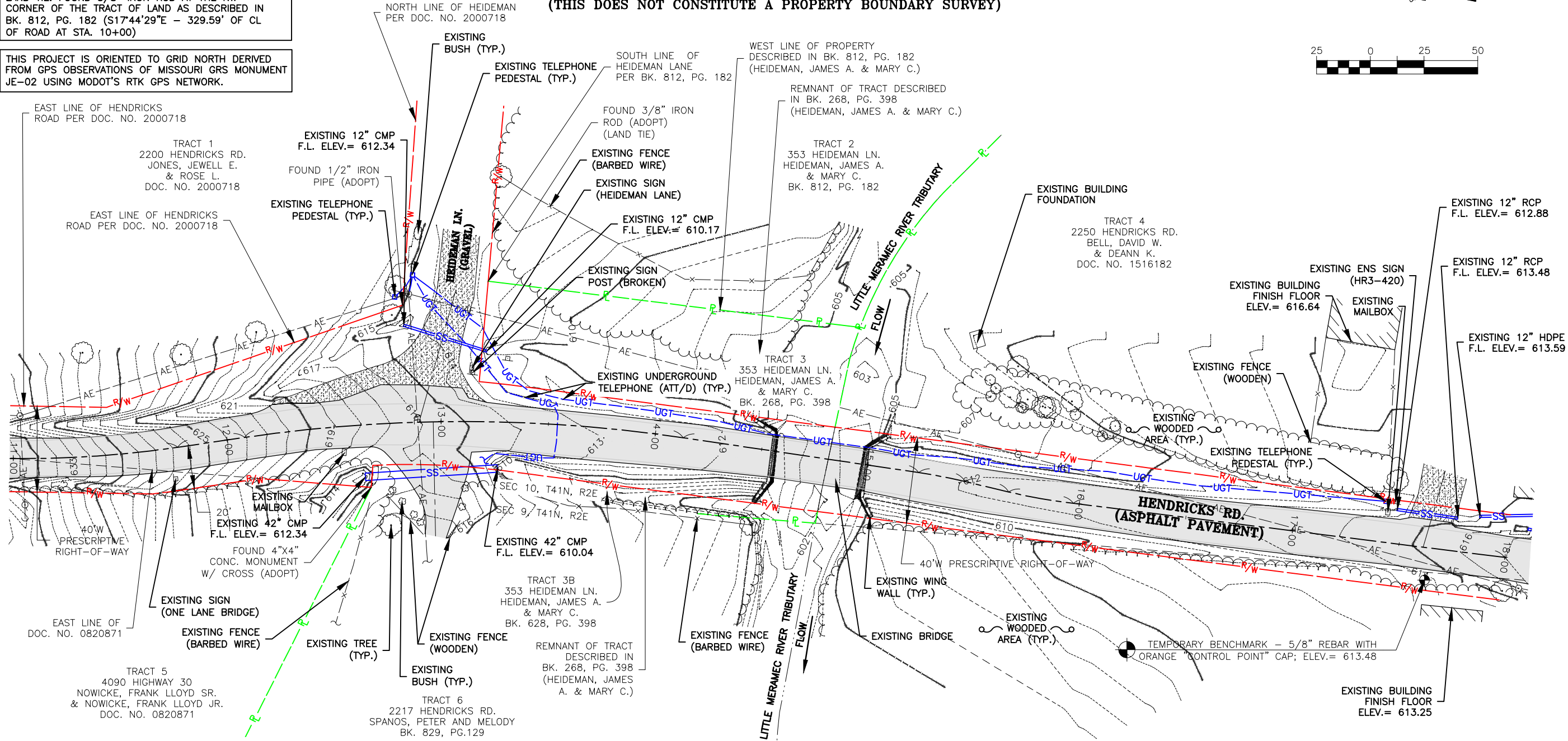
THIS SITE LIES WITHIN SEC 9 & 10, T41N, R2E

LAND TIE: FOUND 3/8" IRON ROD AT THE NW CORNER OF THE TRACT OF LAND AS DESCRIBED IN BK. 812, PG. 182 (S17°44'29"E - 329.59' OF CL OF ROAD AT STA. 10+00)

THIS PROJECT IS ORIENTED TO GRID NORTH DERIVED FROM GPS OBSERVATIONS OF MISSOURI GRS MONUMENT JE-02 USING MODOT'S RTK GPS NETWORK.

TOPOGRAPHIC SURVEY

(THIS DOES NOT CONSTITUTE A PROPERTY BOUNDARY SURVEY)



NOTES:

- UNDERGROUND STRUCTURES, FACILITIES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS. THEREFORE, THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN.
- TEMPORARY BENCHMARK IS A 5/8" REBAR WITH ORANGE "CONTROL POINT" CAP ON THE WEST SIDE OF HENDRICKS ROAD AT APPROXIMATELY STA. 17+60 AS SHOWN ON SHEET TS-1, ELEV.= 613.48. SITE BENCHMARK IS GRS MONUMENT JE-02, ELEV.= 728.02 (NAVD 88).
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND ELEVATION OF ALL POTENTIAL UTILITY CONFLICTS PRIOR TO ORDERING MATERIALS FOR CONSTRUCTION. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. LOCATION, RELOCATION AND CONNECTION OF THE UTILITIES SHALL BE COORDINATED WITH THE UTILITY COMPANIES.
- TOPOGRAPHIC INFORMATION AS SHOWN HEREON PER FIELD WORK PERFORMED BY Z.B.H. AND J.W.B. OF COCHRAN, DATED NOVEMBER 2020.
- THIS PROJECT IS ORIENTED TO GRID NORTH DERIVED FROM GPS OBSERVATIONS OF MISSOURI GRS MONUMENT JE-02 USING MODOT'S RTK GPS NETWORK.
- THIS SITE LIES WITHIN "ZONE X", AREAS OF MINIMAL FLOOD HAZARD; ALSO WITHIN "ZONE A" (AREAS OF 1% ANNUAL CHANCE FLOOD, NO BASE FLOOD ELEVATIONS); ALSO WITHIN "ZONE X" (AREAS OF 0.2% ANNUAL CHANCE OF FLOOD) PER FEMA FLOOD INSURANCE RATE MAP NUMBER 29071C0495E, EFFECTIVE DATED JUNE 5, 2020.
- THIS TOPOGRAPHIC SURVEY DOES NOT CONSTITUTE A PROPERTY BOUNDARY SURVEY.

LEGEND

| | | | |
|----------------------------|--|-------------------------------------|--|
| PROPERTY LINE | | EXISTING UTILITY POLE | |
| RIGHT-OF-WAY | | EXISTING MAILBOX | |
| CENTERLINE OF ROAD | | EXISTING FENCE | |
| EXISTING STRIPING | | EXISTING SIGN | |
| EXISTING MAJOR CONTOUR | | EXISTING STORM SEWER | |
| EXISTING MINOR CONTOUR | | EXISTING UNDERGROUND TELEPHONE | |
| EXISTING BUILDING | | EXISTING BUSH | |
| EXISTING CONCRETE PAVEMENT | | EXISTING TELEPHONE PEDESTAL | |
| EXISTING GRAVEL | | EXISTING TREE | |
| EXISTING ASPHALT PAVEMENT | | EXISTING UTILITY (TERMINUS UNKNOWN) | |
| EXISTING AERIAL ELECTRIC | | EXISTING GUY WIRE | |

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737 RUDDER ROAD
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COCHRAN

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ENGINEERING CERTIFICATE OF AUTHORITY NUMBER - 200700637
LAND SURVEYING CERTIFICATE OF AUTHORITY NUMBER - 2007004529

STATE OF MISSOURI

TIMOTHY J. VAN LEER

NUMBER PLS-200700007

PROFESSIONAL LAND SURVEYOR
FOR SC ENGINEERING LLC,
DBA COCHRAN

THIS SHEET HAS BEEN SIGNED,
SEALED AND DATED ELECTRONICALLY

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HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

TOPOGRAPHIC SURVEY

DATE: 11/20/2020

DWN. BY: Z.B.H. APPD. BY: T.J.V.

DATE: JUNE 2022

SCALE: 1" = 50'

PROJ. NO: SC20-1165













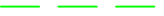
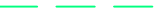































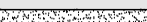
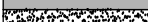
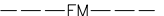










































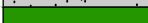































DWG. NO: TS-1

Drawing name: J:\SC20-1165 Hendricks Rd. Bridge, Franklin County\AUTOCAD DRAWINGS\LEGEND.dwg Tab: LG-1 Plotted on: Jul 11, 2022 - 9:23am Plotted by: BDunagan

LEGEND AND GENERAL NOTES

LEGEND, GENERAL NOTES AND ABBREVIATIONS SHALL APPLY TO ALL SHEETS UNLESS OTHERWISE NOTED ON INDIVIDUAL SHEET

LEGEND

| EXISTING | | NEW | | EXISTING | | NEW | |
|---|-----------------------------|---|------|---|---------------------------------|---|---------------------------------|
|  | 500 |  | 500 |  | TREE |  | TREE |
|  | INTERMEDIATE CONTOUR |  | 498 |  | TREELINE |  | TREELINE |
|  | R/W |  | R/W |  | LIGHT |  | LIGHT |
|  | LOT LINE |  | |  | COBRAHEAD LIGHT |  | COBRAHEAD LIGHT |
|  | PERMANENT EASEMENT |  | PE |  | LOAD CENTER |  | LOAD CENTER |
|  | AERIAL ELECTRIC |  | AE |  | HAND HOLE |  | HAND HOLE |
|  | UTILITY POLE |  | |  | MAILBOX |  | MAILBOX |
|  | GUY WIRE |  | |  | SIGN |  | SIGN |
|  | UNDERGROUND ELECTRIC |  | UGE |  | CORING LOCATION | | CORING LOCATION |
|  | UNDERGROUND CABLE TV |  | CATV |  | CONCRETE PAVEMENT |  | CONCRETE PAVEMENT |
|  | UNDERGROUND TELEPHONE |  | UGT |  | ASPHALT PAVEMENT |  | ASPHALT PAVEMENT |
|  | UNDERGROUND FIBER OPTIC |  | FO |  | GRAVEL SURFACE |  | GRAVEL SURFACE |
|  | SANITARY SEWER LINE |  | SAN |  | ROCK BLANKET/DITCH LINER |  | ROCK BLANKET/DITCH LINER |
|  | SANITARY FORCEMAIN |  | FM |  | CONCRETE APPROACH |  | CONCRETE APPROACH |
|  | SANITARY SEWER MANHOLE |  | |  | CONCRETE SIDEWALK |  | CONCRETE SIDEWALK |
|  | STORM SEWER LINE |  | |  | CURB RAMP |  | CURB RAMP |
|  | STORM SEWER MANHOLE |  | |  | ASPHALT DRIVEWAY |  | ASPHALT DRIVEWAY |
|  | CURB/AREA INLET |  | |  | AGGREGATE DRIVEWAY |  | AGGREGATE DRIVEWAY |
|  | GRATED INLET |  | |  | PAVEMENT MILLING |  | PAVEMENT MILLING |
|  | GRATED INLET W/ SIDE INTAKE |  | |  | APPROACH SLAB |  | APPROACH SLAB |
|  | FLARED END SECTION |  | |  | BRIDGE |  | BRIDGE |
|  | SWALE |  | |  | RETAINING WALL |  | RETAINING WALL |
|  | GAS LINE |  | G |  | CONCRETE VERTICAL CURB |  | CONCRETE VERTICAL CURB |
|  | GAS VALVE |  | |  | CONCRETE CURB AND GUTTER |  | CONCRETE CURB AND GUTTER |
|  | GAS METER |  | |  | CONSTRUCTION LIMITS |  | CONSTRUCTION LIMITS |
|  | WATER LINE |  | W |  | SILT FENCE |  | SILT FENCE |
|  | FIRE HYDRANT |  | |  | INLET CHECK |  | INLET CHECK |
|  | WATER VALVE |  | |  | DITCH CHECK |  | DITCH CHECK |
|  | WATER METER |  | |  | PROJECT BASELINE |  | PROJECT BASELINE |
|  | GUARDRAIL |  | |  | TEMPORARY CONSTRUCTION EASEMENT |  | TEMPORARY CONSTRUCTION EASEMENT |
|  | FENCE |  | | | |  | T.C.E. |

ABBREVIATIONS

| | | |
|-------------------------------------|---------------------------------------|------------------|
| AI - AREA INLET | MIN - MINIMUM | Ø - DIAMETER |
| ARC - ARC LENGTH | NO - NUMBER | ℄ - CENTERLINE |
| ATG - ADJUST TO GRADE | O/S - OFFSET | (1) - KEYED NOTE |
| BF - BOTTOM OF FOOTING | OC - ON CENTER | |
| BOP - BEGINNING OF PAVEMENT | PC - POINT OF CURVATURE | |
| BW - BOTTOM OF WALL | PCC - POINT OF COMPOUND CURVATURE | |
| CB - CHORD BEARING | PE - PERMANENT EASEMENT | |
| CHD - CHORD LENGTH | PI - POINT OF INTERSECTION | |
| CI - CURB INLET | PRC - POINT OF REVERSE CURVATURE | |
| CMP - CORRUGATED METAL PIPE | PT - POINT OF TANGENCY | |
| DCI - DOUBLE CURB INLET | R/W - RIGHT-OF-WAY | |
| DGI - DOUBLE GRATED INLET | RAD - RADIUS | |
| ELEV - ELEVATION | RCP - RE-INFORCED CONCRETE PIPE | |
| EOP - END OF PAVEMENT | RT - RIGHT | |
| FES - FLARED END SECTION | SSD - STOPPING SIGHT DISTANCE | |
| FL - FLOW LINE | STA - STATION | |
| GI - GRATED INLET | TBR - TO BE REMOVED | |
| GIS - GRATED INLET WITH SIDE INTAKE | TBR&R - TO BE REMOVED AND REPLACED | |
| HDPE - HIGH-DENSITY POLYETHYLENE | TCE - TEMPORARY CONSTRUCTION EASEMENT | |
| JB - JUNCTION BOX | TW - TOP OF WALL | |
| LF - LINEAR FEET | TYP - TYPICAL | |
| LT - LEFT | VPC - VERTICAL POINT OF CURVATURE | |
| MAX - MAXIMUM | VPI - VERTICAL POINT OF INTERSECTION | |
| MH - MANHOLE | VPT - VERTICAL POINT OF TANGENCY | |

GENERAL NOTES

TOPOGRAPHIC SURVEY NOTES:

NOTES:

- UNDERGROUND STRUCTURES, FACILITIES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS. THEREFORE, THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN.
- TEMPORARY BENCHMARK IS A 5/8" REBAR WITH ORANGE "CONTROL POINT" CAP ON THE WEST SIDE OF HENDRICKS ROAD AT APPROXIMATELY STA. 17+60 AS SHOWN ON SHEET TS-1, ELEV.= 613.48. SITE BENCHMARK IS GRS MONUMENT JE-02, ELEV.= 728.02 (NAVD 88).
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND ELEVATION OF ALL POTENTIAL UTILITY CONFLICTS PRIOR TO ORDERING MATERIALS FOR CONSTRUCTION. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. LOCATION, RELOCATION AND CONNECTION OF THE UTILITIES SHALL BE COORDINATED WITH THE UTILITY COMPANIES.
- TOPOGRAPHIC INFORMATION AS SHOWN HEREON PER FIELD WORK PERFORMED BY Z.B.H. AND J.W.B. OF COCHRAN, DATED NOVEMBER 2020.
- THIS PROJECT IS ORIENTED TO GRID NORTH DERIVED FROM GPS OBSERVATIONS OF MISSOURI GRS MONUMENT JE-02 USING MODOT'S RTK GPS NETWORK.
- THIS SITE LIES WITHIN "ZONE X", AREAS OF MINIMAL FLOOD HAZARD; ALSO WITHIN "ZONE A" (AREAS OF 1% ANNUAL CHANCE FLOOD, NO BASE FLOOD ELEVATIONS); ALSO WITHIN "ZONE X" (AREAS OF 0.2% ANNUAL CHANCE OF FLOOD) PER FEMA FLOOD INSURANCE RATE MAP NUMBER 29071C0495E, EFFECTIVE DATED JUNE 5, 2020.
- THIS TOPOGRAPHIC SURVEY DOES NOT CONSTITUTE A PROPERTY BOUNDARY SURVEY.

DESIGN NOTES:

- CONTRACTOR SHALL RELOCATE ALL EXISTING SIGNS, PLANTERS, MAILBOXES, AND PRIVATE LIGHTS AS NECESSARY FOR THE CONSTRUCTION OF THE IMPROVEMENTS. NEW LOCATIONS SHALL BE AS DIRECTED BY THE ENGINEER.
- CONTRACTOR SHALL ADJUST TO GRADE ALL UTILITIES NECESSARY TO BRING THE UTILITY TO THE GRADE OF THE NEW CONSTRUCTION.
- CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND ELEVATION OF ALL POTENTIAL UTILITY CONFLICTS PRIOR TO ORDERING STORM SEWER PIPE AND STRUCTURES.
- EXISTING CULVERT PIPES, WHICH ARE UNDER DRIVEWAYS BEING REPLACED BY THE CONSTRUCTION OF IMPROVEMENTS, SHALL BE REMOVED.
- ALL AREAS OF CLEARING, GRUBBING AND STRIPPING NOT SHOWN IN PLANS, CONTRACTOR SHALL CONDUCT CLEARING, GRUBBING AND STRIPPING AS NECESSARY UNLESS OTHERWISE NOTED IN PLANS.

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ENGINEERING CERTIFICATE OF AUTHORITY NUMBER - 2007006937
LAND SURVEYING CERTIFICATE OF AUTHORITY NUMBER - 2007004529

STATE OF MISSOURI
JUN 14 2022
PROFESSIONAL ENGINEER

6/14/2022

B. BRADFORD DUNAGAN
NO. E-22970
STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
FOR SC ENGINEERING LLC,
DBA COCHRAN

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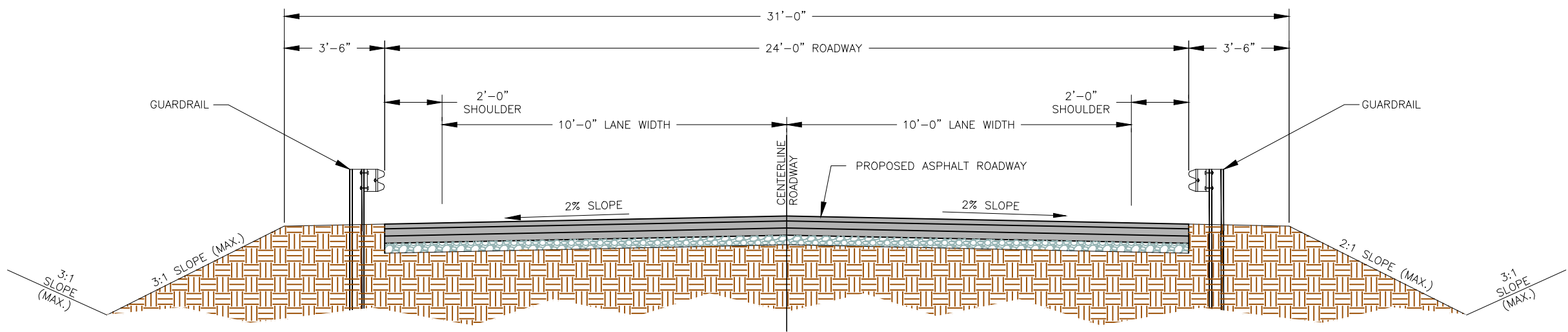
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HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

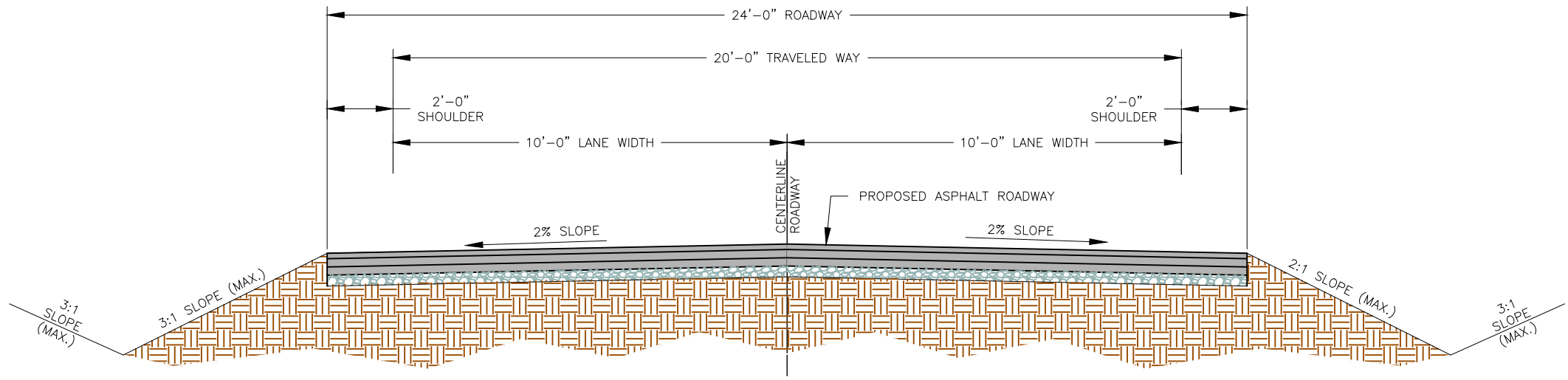
LEGEND AND GENERAL NOTES

| | | | | | |
|-----------|--------------|------------|--------|--|--|
| DATE: | | | | | |
| DWN. BY: | A.J.M. | APP'D. BY: | B.B.D. | | |
| DATE: | | | | | |
| SCALE: | JUNE 2022 | | | | |
| PROJ. NO: | NOT TO SCALE | | | | |
| DWG. NO: | SC20-1165 | | | | |
| | LG-1 | | | | |

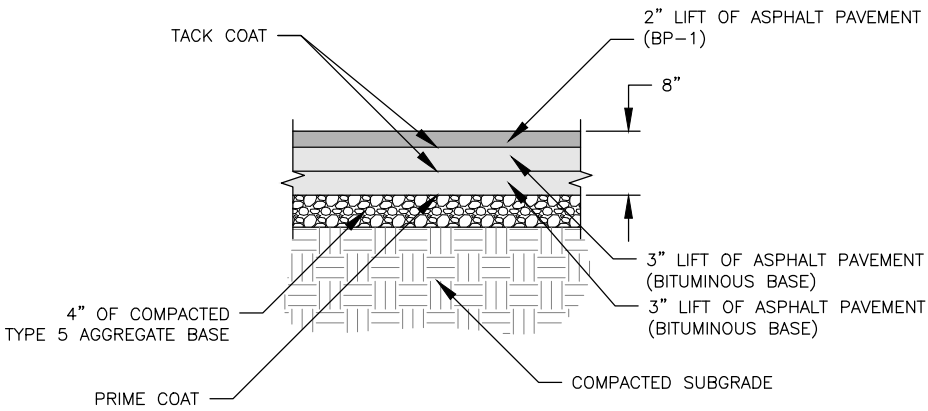
TYPICAL ROADWAY SECTIONS



TYPICAL ROADWAY CROSS SECTION WITH GUARDRAIL



TYPICAL ROADWAY CROSS SECTION



PROPOSED PAVEMENT SECTION
NO SCALE

NOTE: THIS DRAWING IS NOT TO SCALE. PLEASE FOLLOW DIMENSIONS.

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6/14/2022

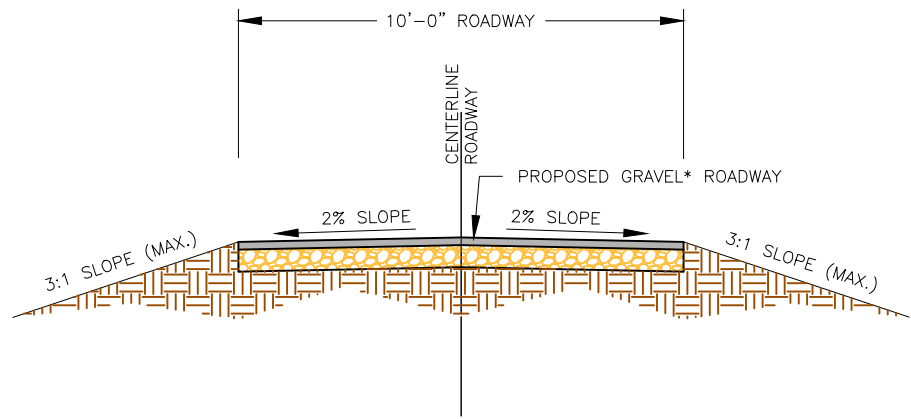
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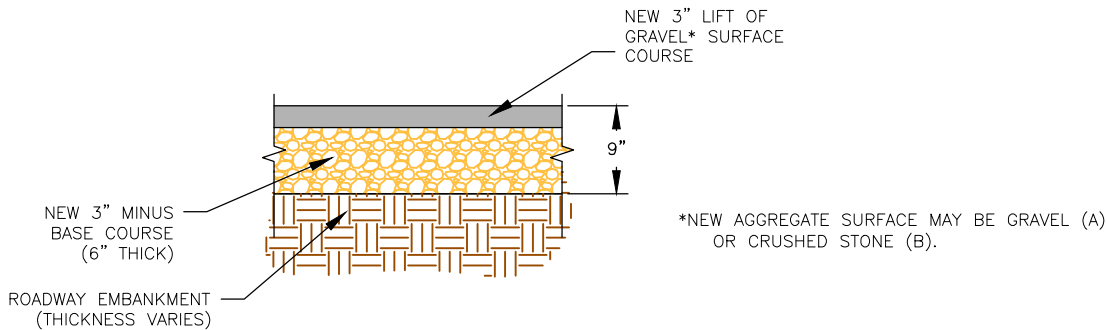
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LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

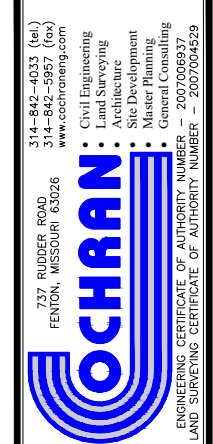
| TYPICAL ROADWAY SECTION | | | |
|-------------------------|--------------|--------------|--------------|
| DATE: | DATE: | DATE: | DATE: |
| DWN. BY: | DWN. BY: | DWN. BY: | DWN. BY: |
| A.J.M. | A.J.M. | A.J.M. | A.J.M. |
| APP'D. BY: | APP'D. BY: | APP'D. BY: | APP'D. BY: |
| B.B.D. | B.B.D. | B.B.D. | B.B.D. |
| SCALE: | SCALE: | SCALE: | SCALE: |
| NOT TO SCALE | NOT TO SCALE | NOT TO SCALE | NOT TO SCALE |
| PROJ. NO: | PROJ. NO: | PROJ. NO: | PROJ. NO: |
| SC20-1165 | SC20-1165 | SC20-1165 | SC20-1165 |
| DWG. NO: | DWG. NO: | DWG. NO: | DWG. NO: |
| TXS-1 | TXS-1 | TXS-1 | TXS-1 |

TYPICAL ROADWAY SECTIONS



TYPICAL TEMPORARY BYPASS CROSS SECTION



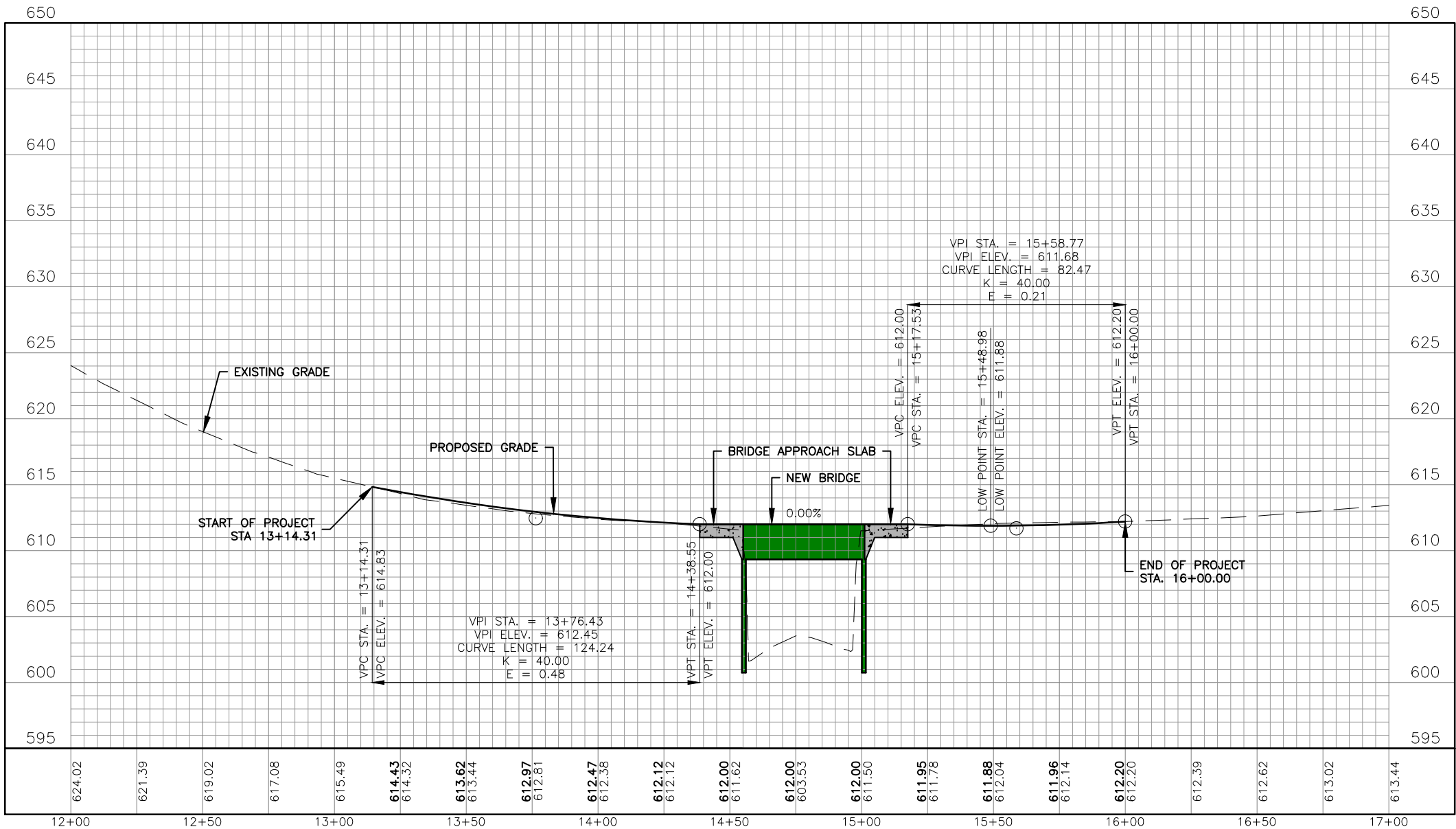


**HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI**

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|---|-----------|-----------|-----------|----------|--|--|--|--|--|
| <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; font-size: 1.2em;">SITE PLAN</div> | REVISION: | | | | | | | | |
| | DATE: | | | | | | | | |
| | DWN. BY: | A. J. M. | APPD. BY: | B. B. D. | | | | | |
| | DATE: | JUNE 2022 | | | | | | | |
| | SCALE: | 1" = 50' | | | | | | | |
| | PROJ. NO: | SC20-1165 | | | | | | | |
| | DWG. NO: | | | | | | | | |
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Drawing name: J:\SC20-1165 Hendricks Rd. Bridge, Franklin County\AUTOCAD DRAWINGS\ROADWAY PROFILE.dwg Tab: RD-1 Plotted on: Jul 11, 2022 - 9:24am Plotted by: BDunagan

ROADWAY PROFILE



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LAND SURVEYING CERTIFICATE OF AUTHORITY NUMBER - 2007004529

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STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
FOR SC ENGINEERING LLC,
DBA COCHRAN

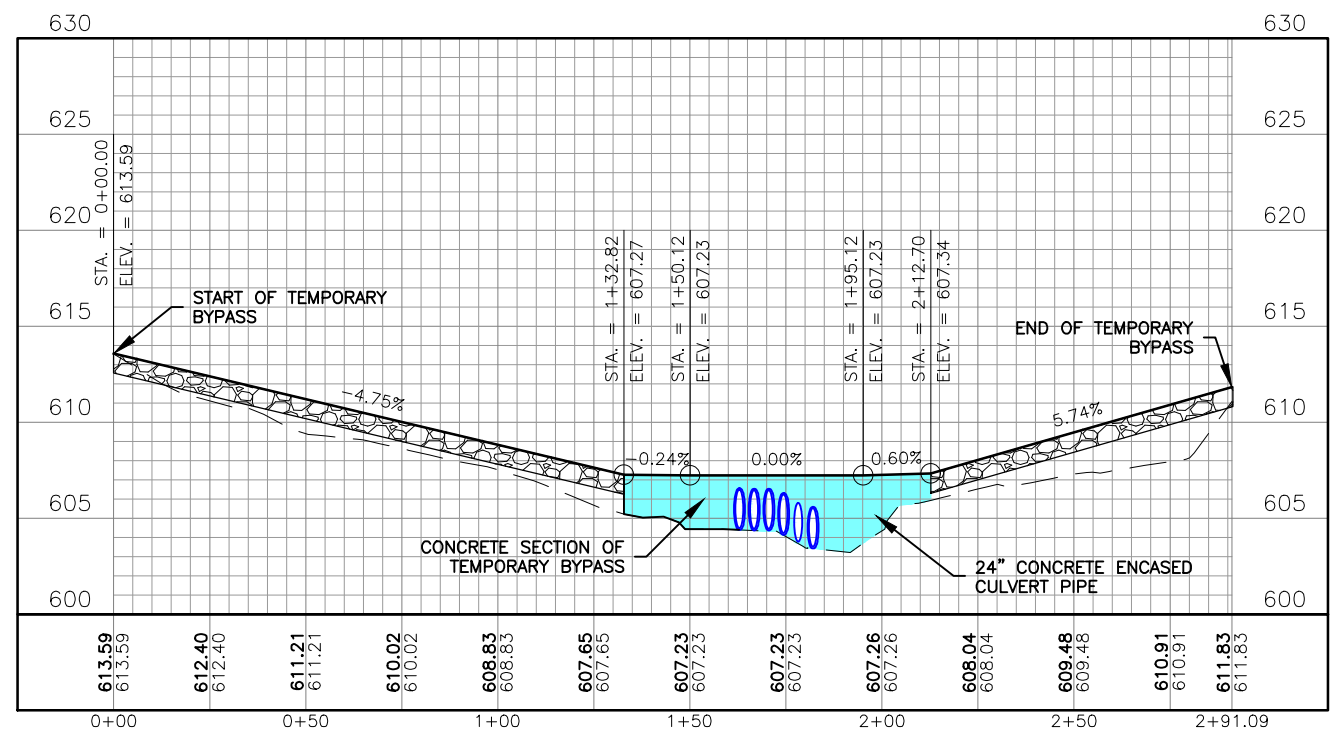
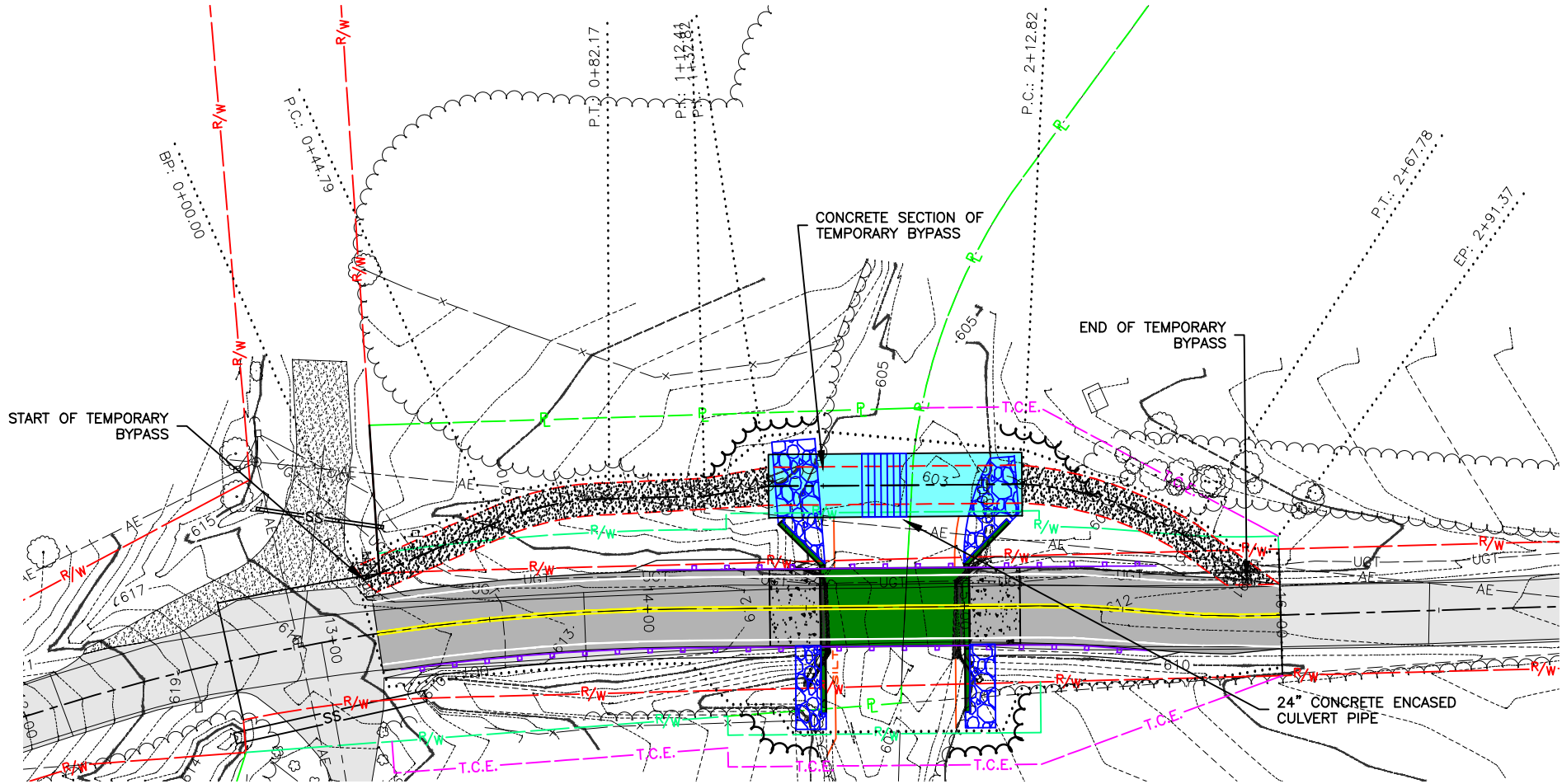
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LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

| | | |
|-----------------|-----------|------------|
| ROADWAY PROFILE | DATE: | RETAIN: |
| | DWN. BY: | APP'D. BY: |
| | A.J.M. | B.B.D. |
| | DATE: | JUNE 2021 |
| | SCALE: | 1" = 50' |
| PROJ. NO: | SC20-1165 | |
| DWG. NO: | RD-1 | |

TEMPORARY BYPASS PLAN AND PROFILE



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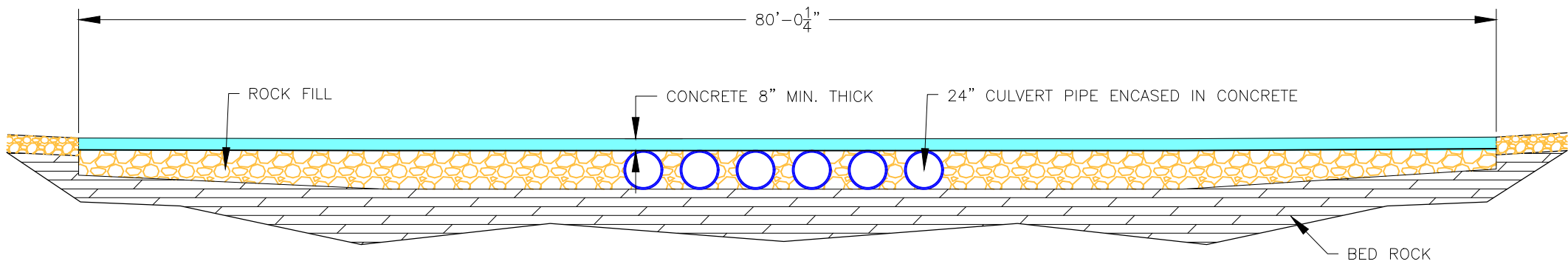
HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

TEMPORARY BYPASS PLAN AND PROFILE

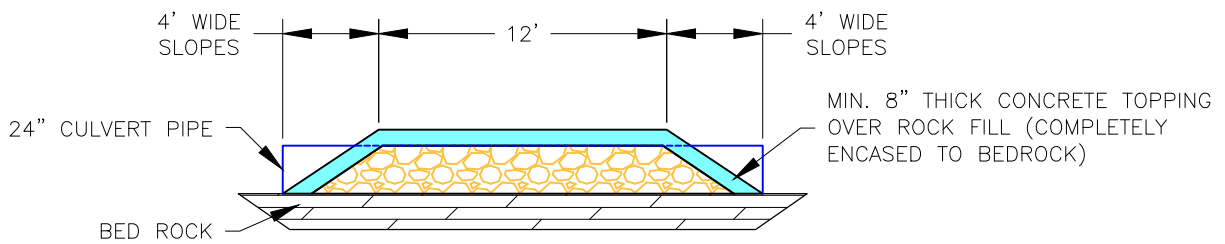
| DATE | REVISION |
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DWN. BY: A.J.M. APPD. BY: B.B.D.
DATE: JUNE 2022
SCALE: 1" = 50'
PROJ. NO: SC20-1165
DWG. NO: RD-2

TEMPORARY BYPASS DETAIL



LONGITUDINAL SECTION



TRANSVERSE SECTION

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LAND SURVEYING CERTIFICATE OF AUTHORITY NUMBER - 2007004529

STATE OF MISSOURI
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STATE OF MISSOURI
FOR SC ENGINEERING LLC,
DBA COCHRAN

6/14/2022

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HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

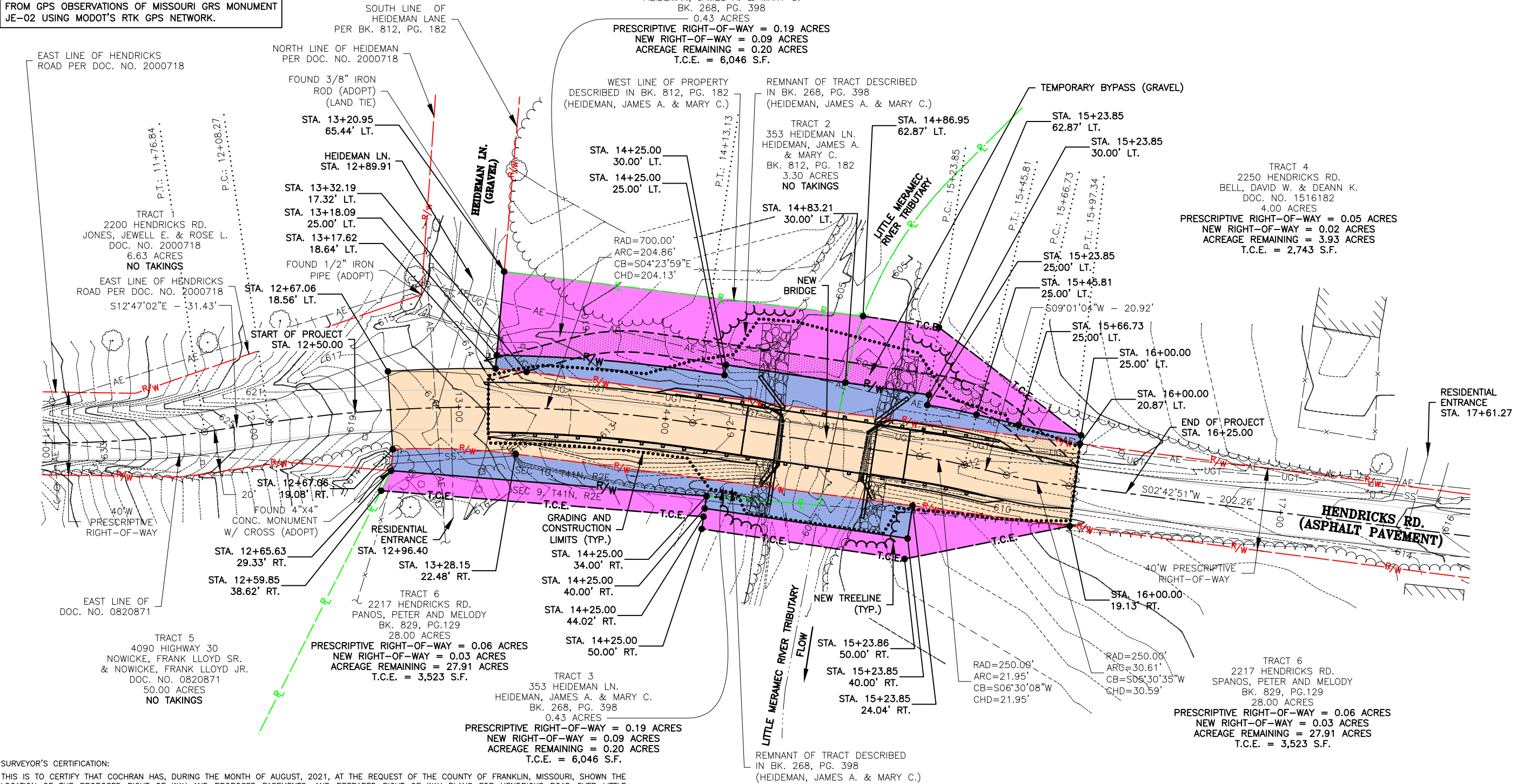
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|-------------------------|------------|
| TEMPORARY BYPASS DETAIL | |
| DATE: | REVISION: |
| DWN. BY: | APP'D. BY: |
| A.J.M. | B.B.D. |
| DATE: | JUNE 2022 |
| SCALE: | 1" = 10' |
| PROJ. NO: | SC20-1165 |
| DWG. NO: | D-1 |

THIS SITE LIES WITHIN SEC 9 & 10, T41N, R2E

LAND TIE: FOUND 3/8" IRON ROD AT THE NW CORNER OF THE TRACT OF LAND AS DESCRIBED IN BK. 812, PG. 182 (S17°44'29"E - 329.59' OF CL OF ROAD AT STA. 10+00)

THIS PROJECT IS ORIENTED TO GRID NORTH DERIVED FROM GPS OBSERVATIONS OF MISSOURI GRS MONUMENT JE-02 USING MODOT'S RTK GPS NETWORK.

RIGHT-OF-WAY PLAN



SURVEYOR'S CERTIFICATION:

THIS IS TO CERTIFY THAT COCHRAN HAS, DURING THE MONTH OF AUGUST, 2021, AT THE REQUEST OF THE COUNTY OF FRANKLIN, MISSOURI, SHOWN THE LOCATION OF THE PROPOSED RIGHT-OF-WAY AND PROPOSED EASEMENTS, AND PREPARED RIGHT-OF-WAY PLANS FOR HENDRICKS ROAD OVER LITTLE MERAMEC RIVER TRIBUTARY, FEDERAL PROJECT NUMBER STP-5490(616), SITUATED IN SECTIONS 9 AND 10, TOWNSHIP 41 NORTH, RANGE 2 EAST, IN THE COUNTY OF FRANKLIN, MISSOURI, AND THE RESULTS ARE AS SHOWN HEREON. THESE RIGHT-OF-WAY PLANS HAVE BEEN PREPARED IN RELIANCE ON SURVEYS AND PLANS PREVIOUSLY PROVIDED TO COCHRAN. THE UNDERSIGNED PROFESSIONAL LAND SURVEYOR MAY NOT HAVE INDIVIDUALLY SUPERVISED OR VERIFIED ALL ASPECTS OF SAID PRIOR SURVEY(S). THE PRIOR SURVEY(S) MAY CONTAIN MORE INFORMATION THAN THESE PLANS REFLECT. THESE PLANS DO NOT CONSTITUTE A RECENT SURVEY FULLY MEETING THE MISSOURI STANDARDS FOR PROPERTY BOUNDARY SURVEYS, BUT ARE BASED ON PRIOR SURVEYS THAT WERE CERTIFIED AS MEETING THOSE STANDARDS.

IN RELIANCE ON THE AFOREMENTIONED PRIOR SURVEY(S), THE UNDERSIGNED PROFESSIONAL LAND SURVEYOR HAS MADE AN OFFICE REVIEW AND CALCULATIONS TO VERIFY THAT THE BEARINGS AND DISTANCES SHOWN HEREON OF THE PROPOSED TEMPORARY CONSTRUCTION EASEMENTS AND THE PROPOSED RIGHT-OF-WAY ACQUISITION PARCELS ONLY HAVE BEEN VERIFIED BY CALCULATION TO MATHEMATICALLY CLOSE BETTER THAN 1 IN 20000.

MONUMENTS SHOWN HEREON ARE AS CALLED FOR ON SAID PRIOR SURVEY(S), AND SHOULD BE FIELD VERIFIED PRIOR TO CONSTRUCTION. NO MONUMENTS HAVE BEEN SET MARKING THE CONTROLLING CORNERS OF THE ULTIMATE PROPOSED RIGHT-OF-WAY AS OF THE DATE OF THIS CERTIFICATION. MONUMENTS WILL NOT BE SET AT THE CONTROLLING CORNERS OF THE FINAL RIGHT-OF-WAY CORRIDOR UPON COMPLETION OF CONSTRUCTION OF THIS PROJECT.

PURSUANT TO SECTION 327.411 RSMO, THE UNDERSIGNED PROFESSIONAL LAND SURVEYOR HEREBY DISCLAIMS ANY RESPONSIBILITY FOR ENGINEERING DESIGN ASPECTS SHOWN ON ANY PART OF THESE PLANS, AND FURTHER DISCLAIMS RESPONSIBILITY FOR ANY INFORMATION SHOWN ON INDIVIDUAL PLAN SHEETS OR PROJECT DOCUMENTS OF ANY KIND THAT ARE NOT SPECIFICALLY SIGNED AND SEALED BY THE UNDERSIGNED PROFESSIONAL LAND SURVEYOR. THE UNDERSIGNED PROFESSIONAL LAND SURVEYOR'S SIGNATURE AND SEAL ON THIS SHEET ARE VOID UNLESS ALL REFERENCED PLAN SHEETS REMAIN ATTACHED, AND SHALL BE MADE VOID BY ANY FUTURE PLAN CHANGE THAT DELETES OR OBSCURES SURVEY RELATED DATA ON THIS OR ANY REFERENCED PLAN SHEET, UNLESS THE UNDERSIGNED PROFESSIONAL LAND SURVEYOR HAS SPECIFICALLY SIGNED AND SEALED SAID CHANGE AS A REVISION.

| LEGEND | | | |
|------------------------|--|---------------------------------|--|
| PROPERTY LINE | | EXISTING FENCE | |
| EXISTING RIGHT-OF-WAY | | EXISTING ASPHALT PAVEMENT | |
| CENTERLINE OF ROAD | | NEW GRANULAR BACKFILL | |
| EXISTING MAJOR CONTOUR | | NEW ROCK BLANKET | |
| EXISTING MINOR CONTOUR | | GRADING AND CONSTRUCTION LIMITS | |
| EXISTING SIGN | | NEW ASPHALT PAVEMENT | |
| EXISTING TREELINE | | | |
| | | NEW TREE LINE | |
| | | NEW GUARDRAIL | |
| | | TEMPORARY CONSTRUCTION EASEMENT | |
| | | NEW RIGHT-OF-WAY | |
| | | PREScriptive RIGHT-OF-WAY | |

HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

RIGHT-OF-WAY PLAN

| DATE | DATE | DATE | DATE |
|------------|-----------|-----------|----------|
| DWN. BY: | J.W.B. | APPD. BY: | T.J.V. |
| DATE: | 12-28-21 | SCALE: | 1" = 50' |
| PROJ. NO.: | SC20-1165 | DWG. NO.: | RW-1 |



TYPE 111 MOVABLE BARRICADES SHALL BE ENTIRELY FREE STANDING AND PORTABLE. MARKING SHALL ONLY BE APPLIED TO THE FRONT OF EACH RAIL OR MAY BE APPLIED TO BOTH THE FRONT AND THE BACK OF EACH RAIL PROVIDED THE MARKING ON THE BACK DOES NOT CONFLICT WITH INTENDED OPPOSING TRAFFIC MOVEMENT. WHERE MARKING IS NOT PROVIDED ON THE BACKSIDE, STRIPS OF 3" WIDE MOUNT TYPE 7 ORANGE SHEETING MAY BE APPLIED TO THE ENDS OF EACH RAIL TO HELP DELINEATE THE DEVICE.



NOTE: ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

TRAFFIC CONTROL PLAN

DATE: _____

SCALE: _____

PROJ. NO: _____

DWG. NO: _____

REVISION: _____

DWN. BY: _____

DATE: _____

APPD. BY: _____

SCALE: NOT TO SCALE

PROJ. NO: SC20-1165

HENDRICKS ROAD BRIDGE OVER LITTLE MERAMEC RIVER TRIBUTARY FEDERAL PROJECT NO. STP-5490(616) FRANKLIN COUNTY, MISSOURI

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LAND SURVEYING CERTIFICATE OF AUTHORITY NUMBER = 20070064529

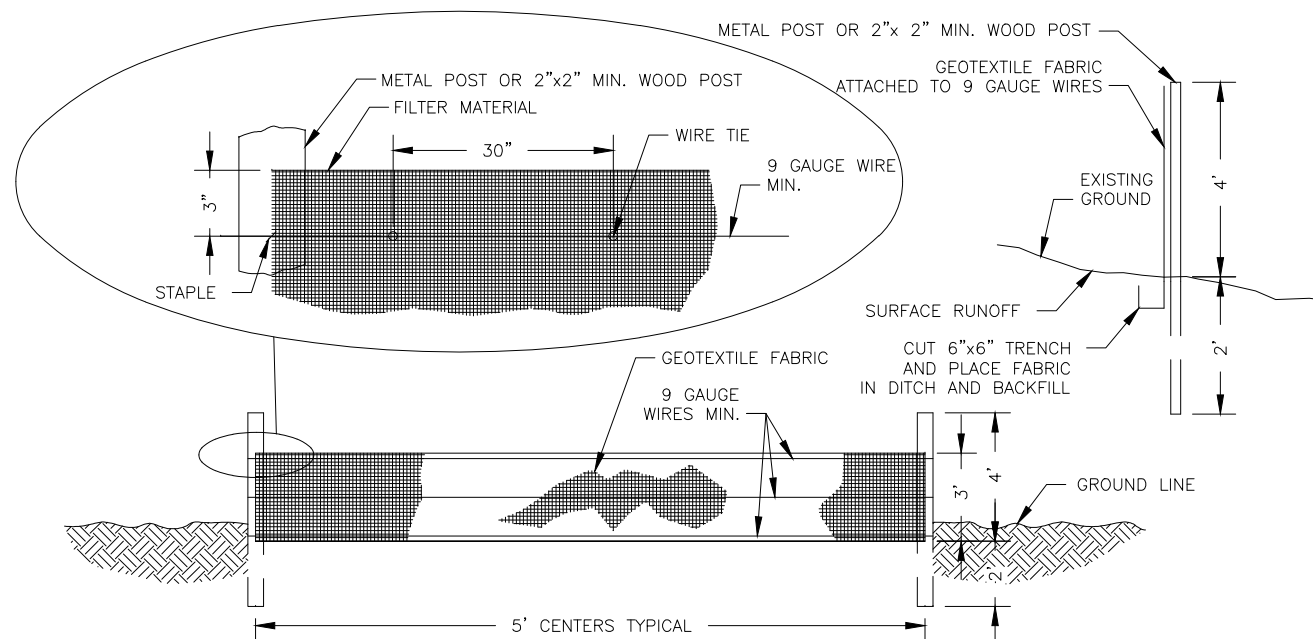
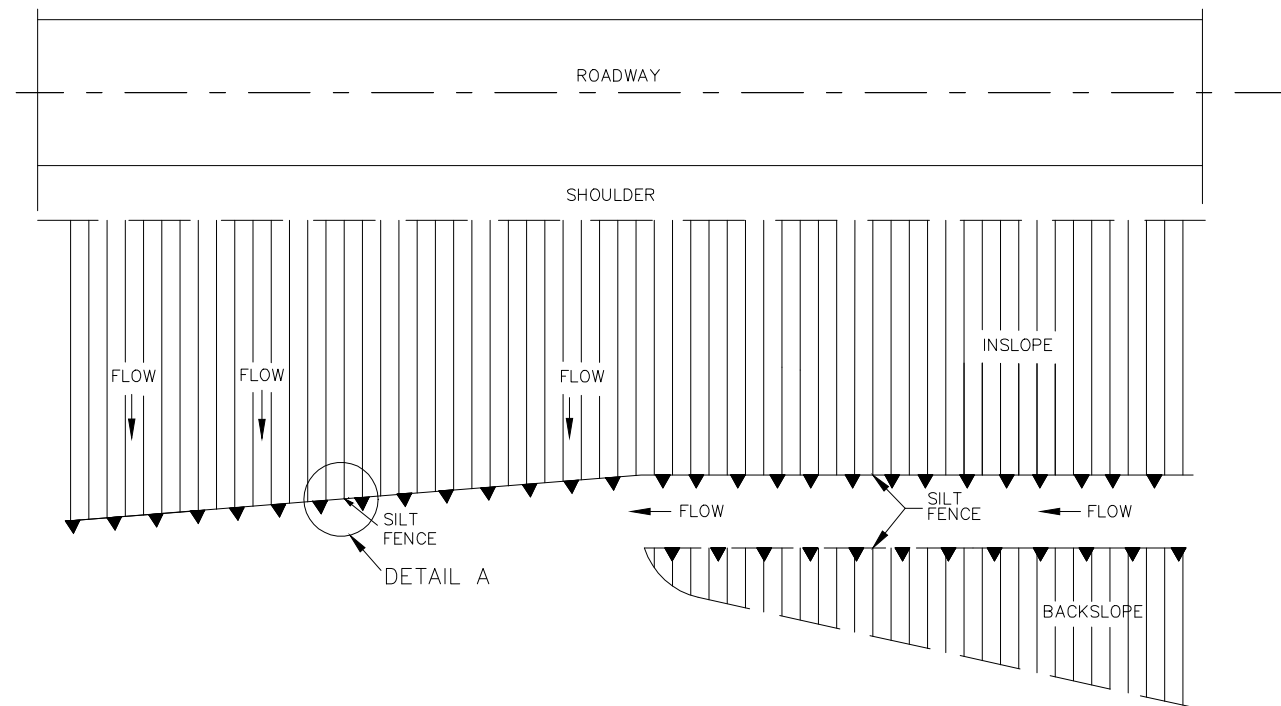
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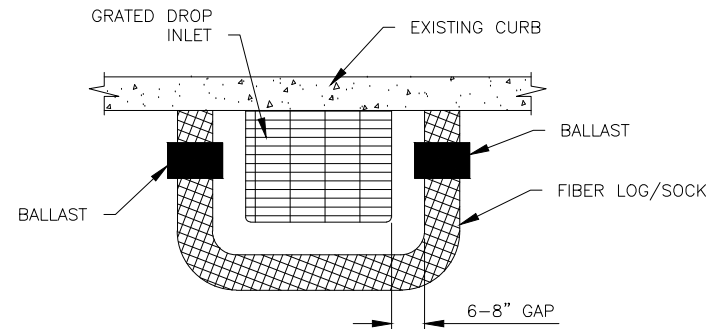
TC-1

EROSION CONTROL

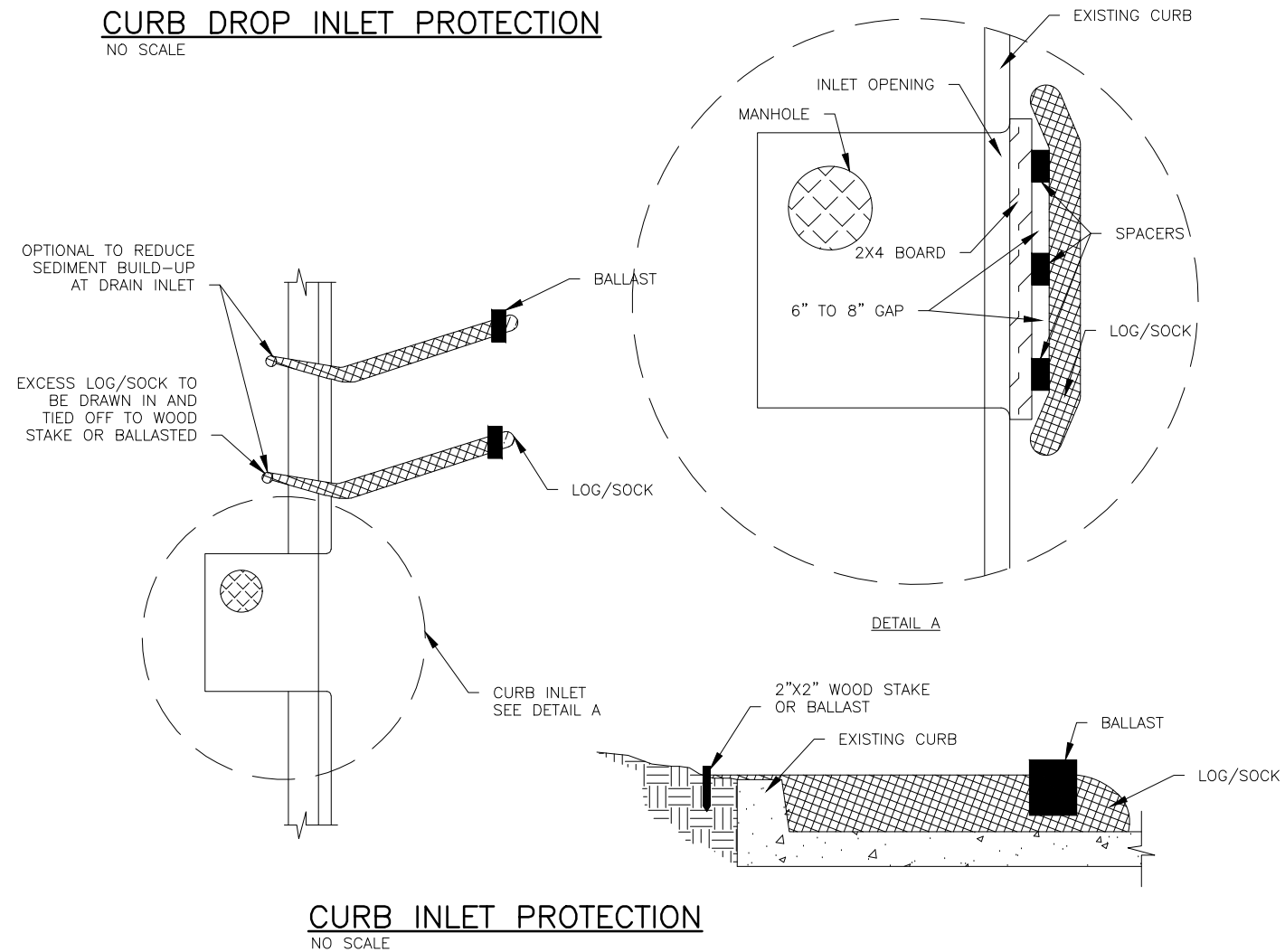


DETAIL A
SILTATION CONTROL DETAILS
NO SCALE

- GENERAL NOTES:
1. SILTATION CONTROL DEVICES TO REMAIN IN PLACE UNTIL ADEQUATE VEGETATIVE GROWTH ENSURES NO FURTHER EROSION OF THE SOIL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING THE SILT FENCE.
 2. SILT FENCES SHALL BE INSPECTED PERIODICALLY FOR DAMAGE AND FOR THE AMOUNT OF SEDIMENTATION WHICH HAS ACCUMULATED. REMOVAL OF SEDIMENT WILL BE REQUIRED WHEN IT REACHES 1/2 OF THE HEIGHT OF THE SILT FENCE.
 3. ATTACHMENT OF THE GEOTEXTILE FABRIC TO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
 4. SILTATION CONTROL SHALL BE INSTALLED AS NEEDED OR AS DIRECTED BY THE ENGINEER TO ENSURE THAT NO SILT LEAVES THE CONSTRUCTION AREA.
 5. USE SILT FENCE FOR ALL SLOPES OVER 3 FEET IN HEIGHT.
 6. FOR FABRIC SILT FENCE:
MINIMUM LONGITUDINAL SPLICE OVERLAP SHALL BE 2' WITH A POST AT EACH END.
SECURE FABRIC TO POSTS.
 7. SILT FENCE SHALL NOT BE USED ACROSS DRAINAGE DITCHES AND DRAINS. DITCH CHECK SHALL BE USED AS SHOWN ON SHEET EC-2 OR AS DIRECTED BY ENGINEER.
 8. CONTRACTOR SHALL USE INLET CHECK EROSION CONTROL DEVICES TO PREVENT ANY SILT OR DEBRIS FROM ENTERING ANY NEW OR EXISTING CURB INLETS DURING CONSTRUCTION.

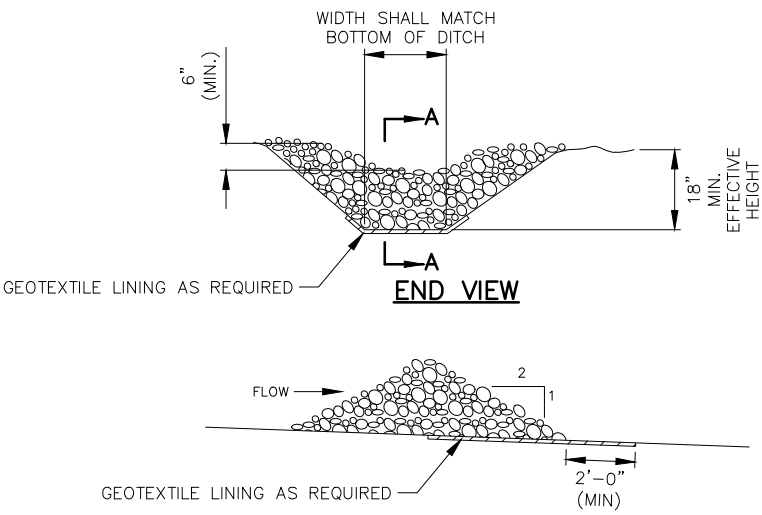


CURB DROP INLET PROTECTION
NO SCALE

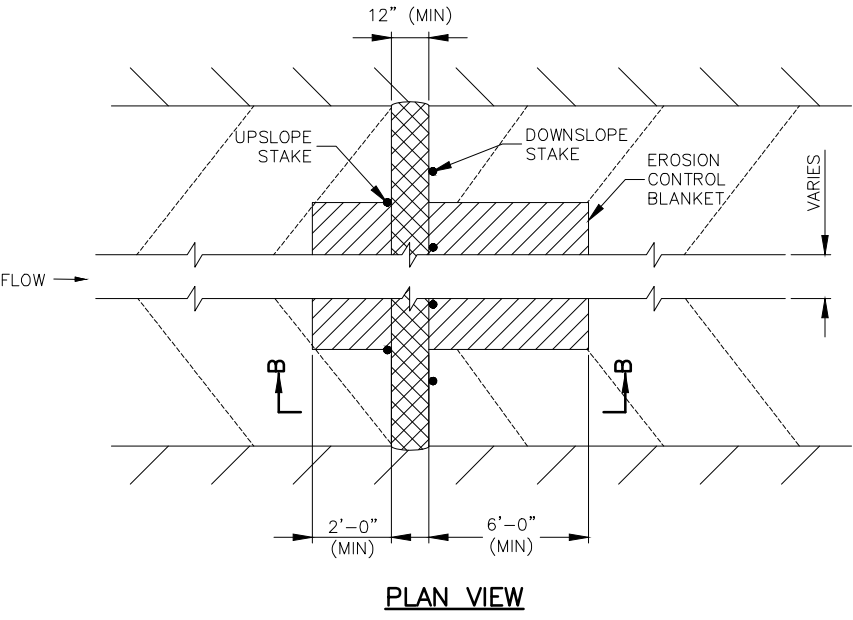


CURB INLET PROTECTION
NO SCALE

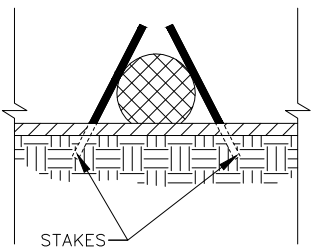
EROSION CONTROL



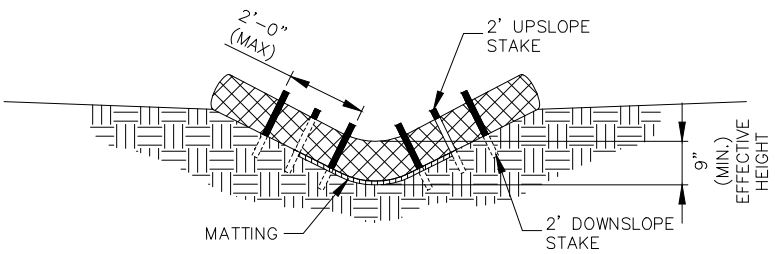
ROCK DITCH CHECK
NO SCALE



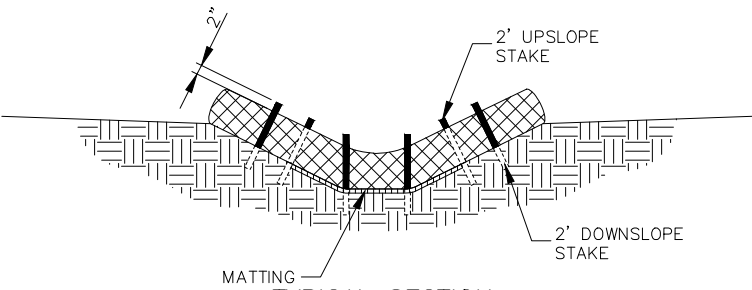
PLAN VIEW



SECTION B-B



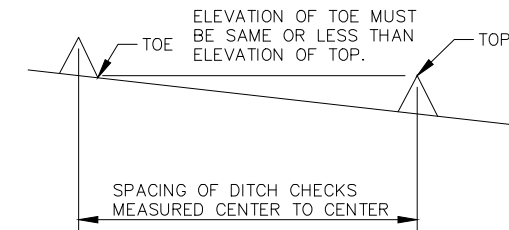
TYPICAL SECTION
VEE DITCH



TYPICAL SECTION
TRAPEZOIDAL DITCH

ALTERNATE DITCH CHECK
NO SCALE

| EXAMPLE DITCH CHECK SPACING FOR STANDARD HEIGHTS (FT.) | | |
|---|--------------------------|---------------------------|
| DITCH @ SLOPE % | SPACING FOR 9" HEIGHT | SPACING FOR 18" HEIGHT |
| 0.5 | 150 | 300 |
| 1.0 | 75 | 150 |
| 1.5 | 50 | 100 |
| 2.0 | 37 | 75 |
| 2.5 | 30 | 60 |
| 3.0 | 25 | 50 |
| 3.5 | 21 | 43 |
| 4.0 | 19 | 38 |
| 4.5 | 16 | 33 |
| 5.0 | 15 | 30 |
| 5.5 | 13 | 27 |
| 6.0 | 12 | 25 |
| 6.5 | 11 | 23 |
| 7.0 | 10 | 21 |
| 7.5 | 10 | 20 |
| 8.0 | 9 | 19 |
| 8.5 | 9 | 18 |
| 9.0 | 8 | 17 |
| 9.5 | 8 | 16 |
| 10.0 | 7 | 15 |



MINIMUM DITCH CHECK SPACING
NO SCALE

- GENERAL NOTES:
- OTHER PROPRIETARY DITCH CHECKS MAY BE SUBSTITUTED IN ACCORDANCE WITH SEC 806 OF THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION OR AS DIRECTED BY THE ENGINEER.
 - INSTALLATION OF PROPRIETARY DITCH CHECKS SHALL BE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
 - THE DITCH CHECK MAY BE REMOVED, AS DIRECTED BY THE ENGINEER, WHEN THE VEGETATION HAS SUFFICIENTLY MATURED TO PROTECT THE DITCH OR SWALE. ALL EROSION CONTROL MEASURES SHALL BE REMOVED PRIOR TO FINAL COMPLETION.
 - USE MINIMUM 12 IN. DIAMETER LOG/SOCK.
 - USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
 - INSTALL LOG/SOCK TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND LOG/SOCK AND SCOUR DITCH SLOPES OR AS DIRECTED BY ENGINEER.
 - INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE LOG/SOCK TO BOTTOM OF DITCH.
 - EROSION CONTROL BLANKET SHALL BE ANCHORED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

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STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
FOR SC ENGINEERING LLC,
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HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

EROSION CONTROL

| | | | |
|---------------------|------------|----------|------------|
| DATE: | DATE: | DATE: | DATE: |
| DWN. BY: | APP'D. BY: | DWN. BY: | APP'D. BY: |
| A.J.M. | B.B.D. | A.J.M. | B.B.D. |
| DATE: JUNE 2022 | | | |
| SCALE: NOT TO SCALE | | | |
| PROJ. NO: SC20-1165 | | | |
| DWG. NO: EC-2 | | | |

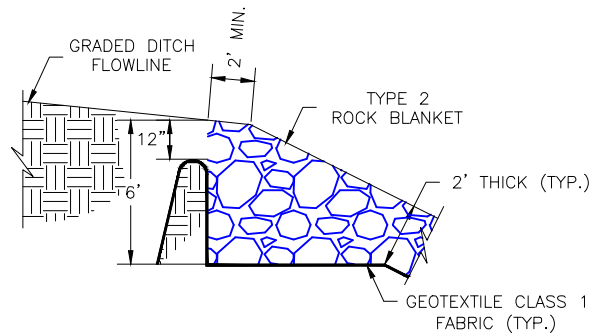
BRIDGE NOTES

| HYDRAULIC DATA | |
|--|-------------------|
| DRAINAGE AREA | 3.09 SQUARE MILES |
| BASIN SLOPE | 58.23 ft/mi |
| CHANNEL SLOPE IN THE VICINITY OF THE STRUCTURE | 0.0085 ft/ft |
| DESIGN FREQUENCY | 100 YEAR |
| DESIGN DISCHARGE | 3103 CFS |
| DESIGN HIGH WATER ELEVATION AT THE STRUCTURE | 611.62 FEET |
| MAXIMUM BACKWATER FOR DESIGN FREQUENCY | 3.75 FEET |
| LOW ELEVATION OF STRUCTURE | 609.30 FEET |
| 100-YEAR DISCHARGE | 3103 CFS |
| APPROACH ROADWAY OVERTOPPING FREQUENCY | 100 YEAR |

NOTE:

A PORTION OF THIS PROJECT AREA LIES WITHIN ZONE "A" OF THE FLOOD HAZARD AREA SUBJECT TO THE 1% ANNUAL CHANCE FLOOD AS SHOWN ON THE FEMA MAP FOR FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS, MAP NUMBER 29071C0495D.

| ESTIMATED QUANTITIES FOR SLAB ON STEEL OR CONCRETE BEAM | |
|--|--------|
| ITEM | TOTAL |
| CLASS B2 CONCRETE (SUPERSTRUCTURE), CY | 36 |
| REINFORCING STEEL, LBS | 11,283 |



TYPICAL SECTION AT INTERSECTION OF GRADED DITCH
AND TYPE 2 ROCK BLANKET

PROPOSED STRUCTURE

SINGLE SPAN (45'-0")
PRESTRESSED CONCRETE BOX GIRDERS
CURB-TO-CURB WIDTH = 24'-0"
OUT-TO-OUT WIDTH = 24'-8"
SKEW = 0.00°
GRADE = 0.00%

PROPOSED ROADWAY

TRAVELED WAY WIDTH = 20'-0"
ROADBED WIDTH = 24'-0"
SHOULDER WIDTH = 2'-0"
NORMAL CROWN = 2.00%

GENERAL NOTES:

DESIGN SPECIFICATIONS:
2020 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HIGHWAY BRIDGES,
9TH EDITION.
2002 AASHTO LFD (17TH ED.) STANDARD SPECIFICATIONS (SEISMIC DETAILS)
SEISMIC PERFORMANCE CATEGORY 'A'

CONSTRUCTION SPECIFICATIONS:
MATERIALS AND CONSTRUCTION PROCEDURES SHALL CONFORM TO THE
MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION 2022 AND
CURRENT SUPPLEMENTAL SPECIFICATIONS AND REVISIONS, UNLESS MODIFIED
BY THE PROJECT SPECIFICATIONS.

DESIGN LOADING:
HL-93 LOADING
FUTURE WEARING SURFACE 35 LBS./SQUARE FOOT
EARTH 120 LBS./CUBIC FOOT
EQUIVALENT FLUID PRESSURE= 60 LBS./CUBIC FT.

SUPERSTRUCTURE:
SIMPLY SUPPORTED AND NON-COMPOSITE FOR DEAD LOAD 1.
SIMPLY SUPPORTED AND COMPOSITE FOR DEAD LOAD 2 AND LIVE LOAD.

| | |
|--|-----------------------|
| DESIGN UNIT STRESSES: | |
| CLASS B-1 CONCRETE (SUBSTRUCTURE) | $f'_c = 4,000$ p.s.i. |
| CLASS B-2 CONCRETE (SUPERSTRUCTURE) | $f'_c = 4,000$ p.s.i. |
| REINFORCING STEEL (GRADE 60) | $f_y = 60,000$ p.s.i. |
| STRUCTURAL CARBON STEEL (ASTM A709 GRADE 36) | $f_y = 36,000$ p.s.i. |
| STEEL PILE (ASTM A709 GRADE 36) | $f_y = 36,000$ p.s.i. |

ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SECTION 1057.7.4.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE SHOWN.

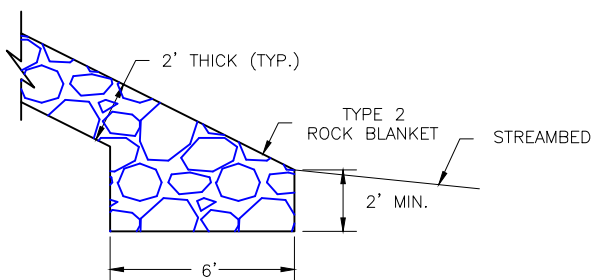
ALL BAR CHAIR SUPPORTS AND WIRE USED FOR TIEING THE REINFORCING STEEL SHALL BE EPOXY COATED OR PLASTIC COATED.

BEARINGS SHALL BE 60 DUROMETER NEOPRENE PADS.

QUANTITIES ARE BASED ON SAW-CUT IN ROCK AT NEAT LINES OF FOOTING. CONTRACTOR MAY BREAK ROCK WITHOUT SAW CUT, BUT OVERBREAK QUANTITIES AND CONCRETE TO FILL OVERBREAK SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

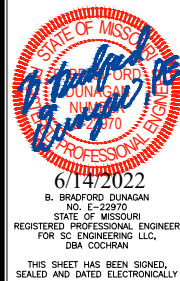
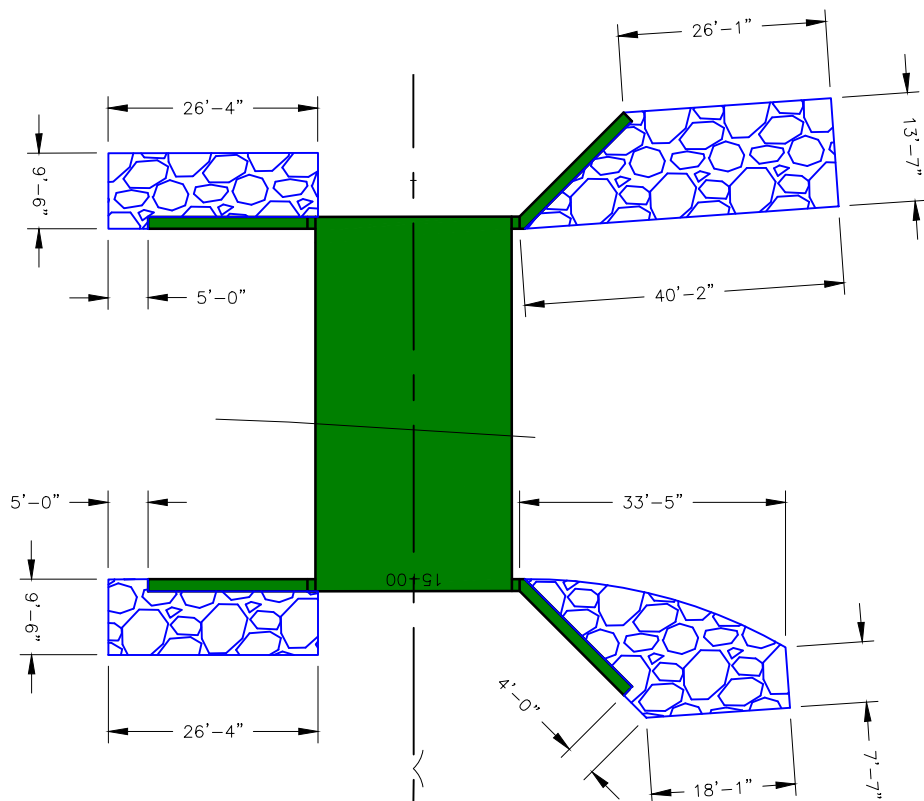
IF 1" CLEAN ROCK IS USED FOR BACKFILL, THE WALLS MAY BE BACKFILLED BEFORE THE SLAB IS POURED.

THE PROJECT SHALL BE OPEN FOR INSPECTIONS OF THE WORK BY REPRESENTATIVES OF MODOT AND FHWA. THE CONTRACTOR SHALL GRANT ACCESS TO ALL PORTIONS OF THE WORK.



TYPICAL SECTION THROUGH LOWER END
OF TYPE 2 ROCK BLANKET

NOTE: THIS DRAWING IS NOT TO SCALE. PLEASE FOLLOW DIMENSIONS.

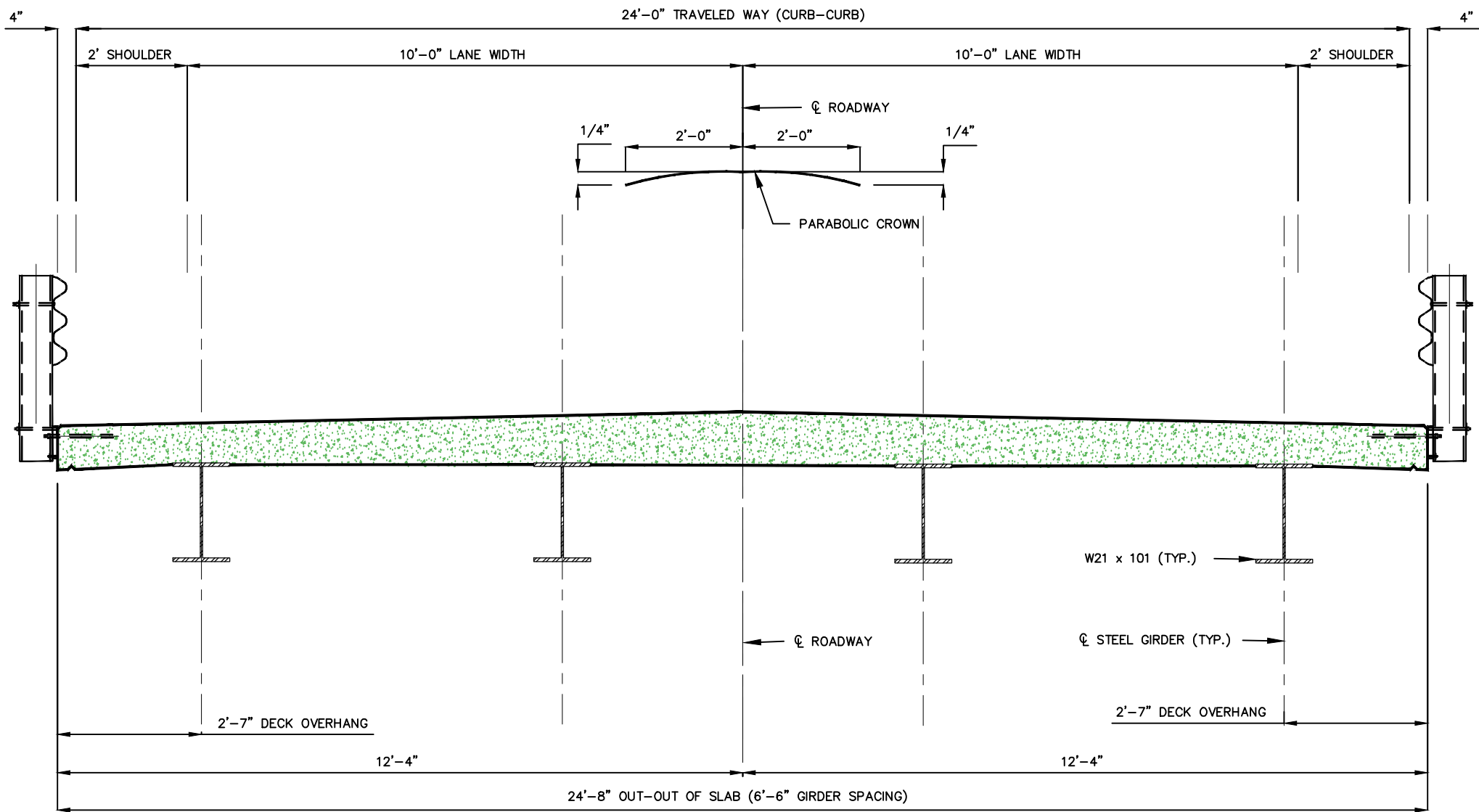


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LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI**

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| BRIDGE NOTES | DATE: | | | | | | | | |
| | REVISION: | | | | | | | | |
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| | | JUNE 2022 | | | | B.B.D. | | | |
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| | PROJ. NO: | SC20-1165 | | | | | | | |
| | DWG. NO: | B-1 | | | | | | | |
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| | | | | | | | | | |

TYPICAL BRIDGE SECTION
SUPERSTRUCTURE STEEL GIRDER OPTION



TYPICAL BRIDGE CROSS SECTION

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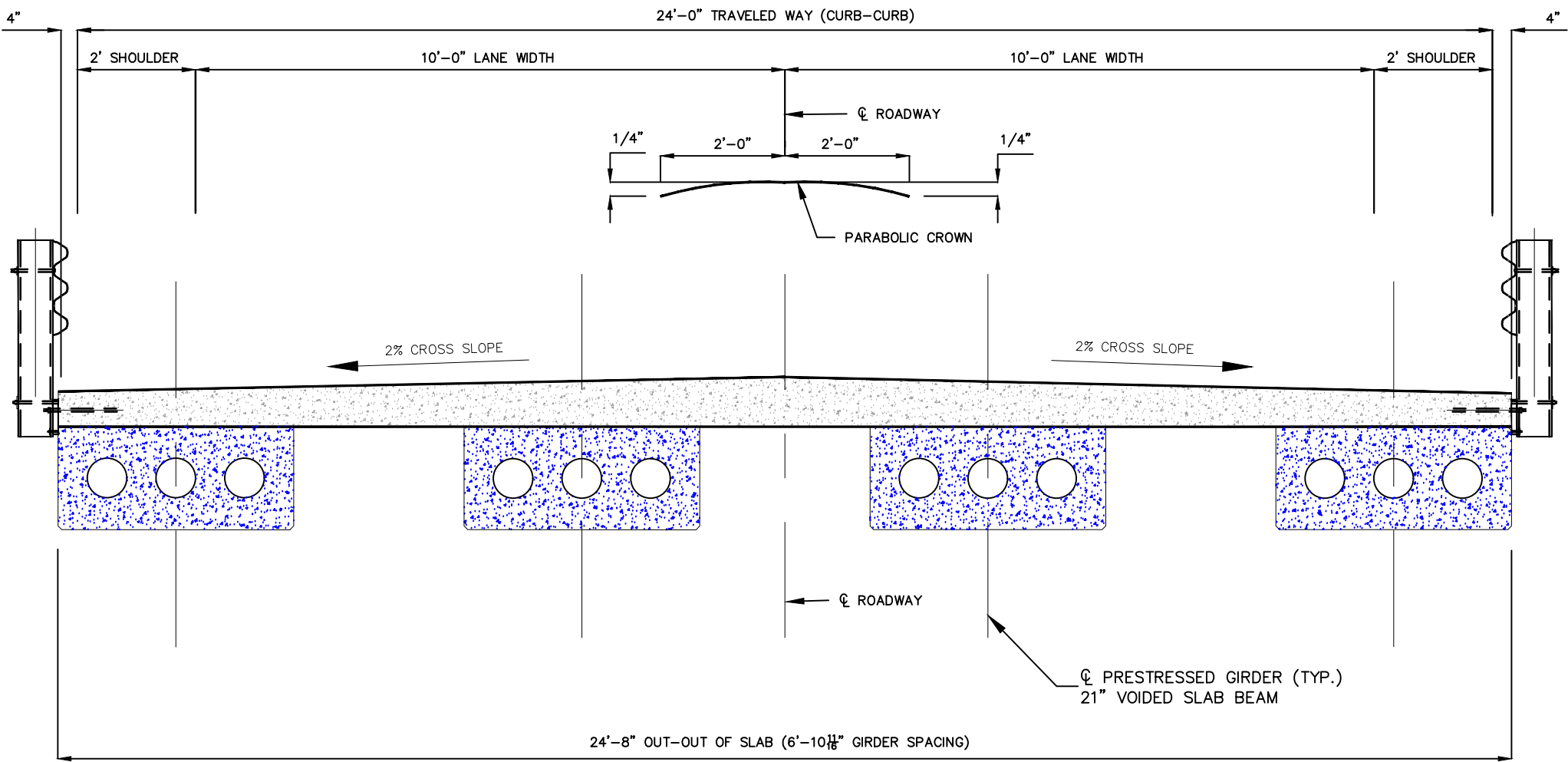
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| DATE: | JUNE 2022 |
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| DWG. NO: | B-2 |

TYPICAL BRIDGE SECTION
SUPERSTRUCTURE CONCRETE PRESTRESSED GIRDER OPTION



TYPICAL BRIDGE CROSS SECTION

Drawing name: J:\SC20-1165 Hendricks Rd. Bridge, Franklin County\AUTOCAD DRAWINGS\TYPICAL BRIDGE SECTION.dwg Tab: B-3 Plotted on: Jul 11, 2022 - 9:24am Plotted by: BDunagan

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| PROJ. NO: | | |
| SC20-1165 | | |
| DWG. NO: | | |
| B-3 | | |

BRIDGE PLAN AND ELEVATION

TRACT 2
353 HEIDEMAN LN.
HEIDEMAN, JAMES A.
& MARY C.
BK. 812, PG. 182

TRACT 3
353 HEIDEMAN LN.
HEIDEMAN, JAMES A.
& MARY C.
BK. 268, PG. 398

TRACT 4
2250 HENDRICKS RD.
BELL, DAVID W.
& DEANN K.
DOC. NO. 1516482

TRACT 3B
353 HEIDEMAN LN.
HEIDEMAN, JAMES A.
& MARY C.
BK. 628, PG. 398

TRACT 6
T.C.E.2217 HENDRICKS RD.
PANOS, PETER AND MELODY
BK. 829, PG.129

END BENT 1 FILL FACE
STA. = 14+54.55

TOP OF SLAB AT
CENTERLINE OF ROADWAY
ELEV. = 612.00

END BENT 2 FILL FACE
STA. = 15+01.55

BOTTOM OF EXTERIOR BEAMS
ELEV. = 609.23

ESTIMATED TOP OF ROCK
ELEV. = 602.25

BOTTOM OF FOOTING
ELEV. = 600.75

DOWNSTREAM BRIDGE ELEVATION

NOTE: ALL BACKFILL BEHIND END BENTS TO BE INCIDENTAL
TO CONSTRUCTION FOR CLASS 1 EXCAVATION.



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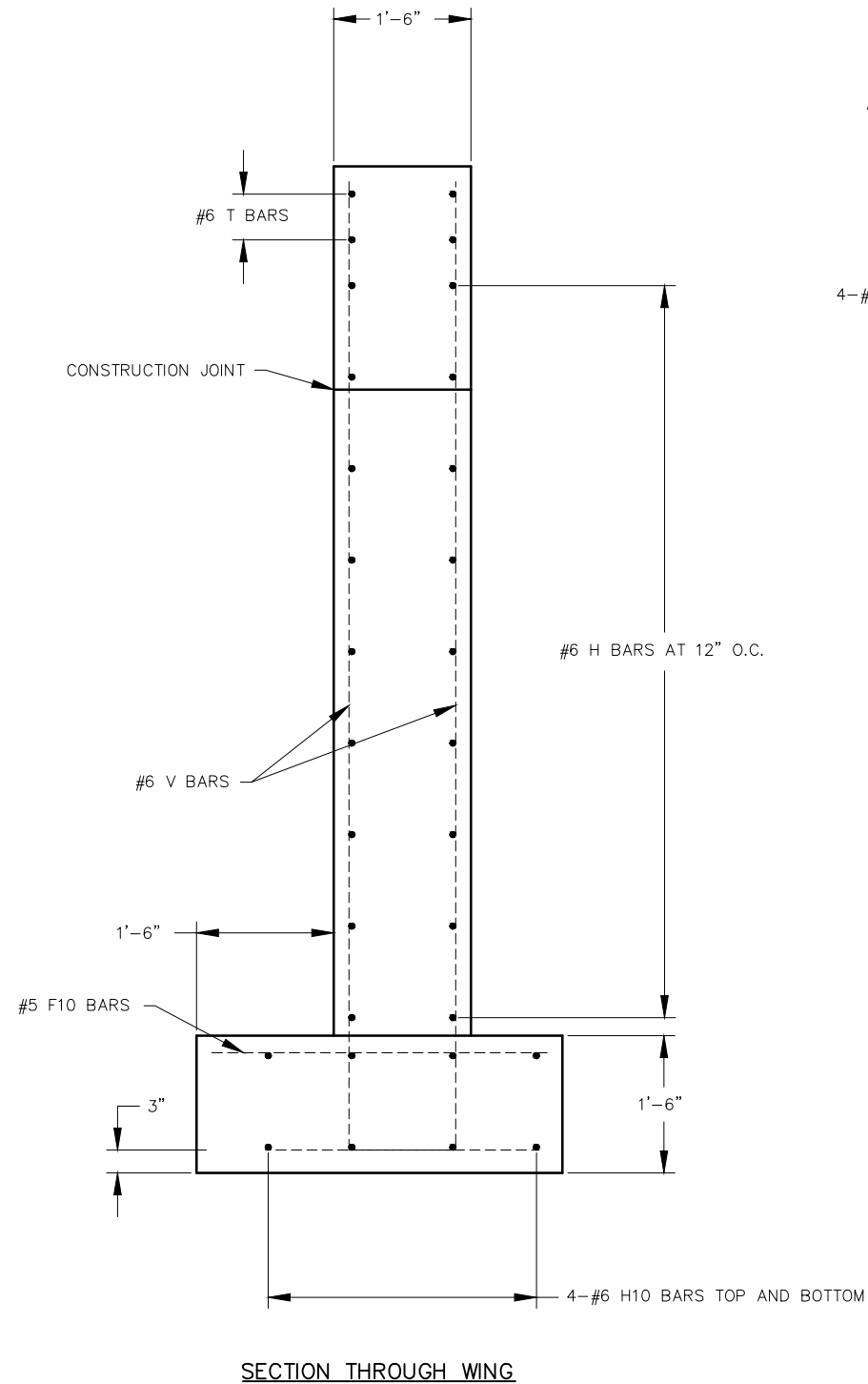
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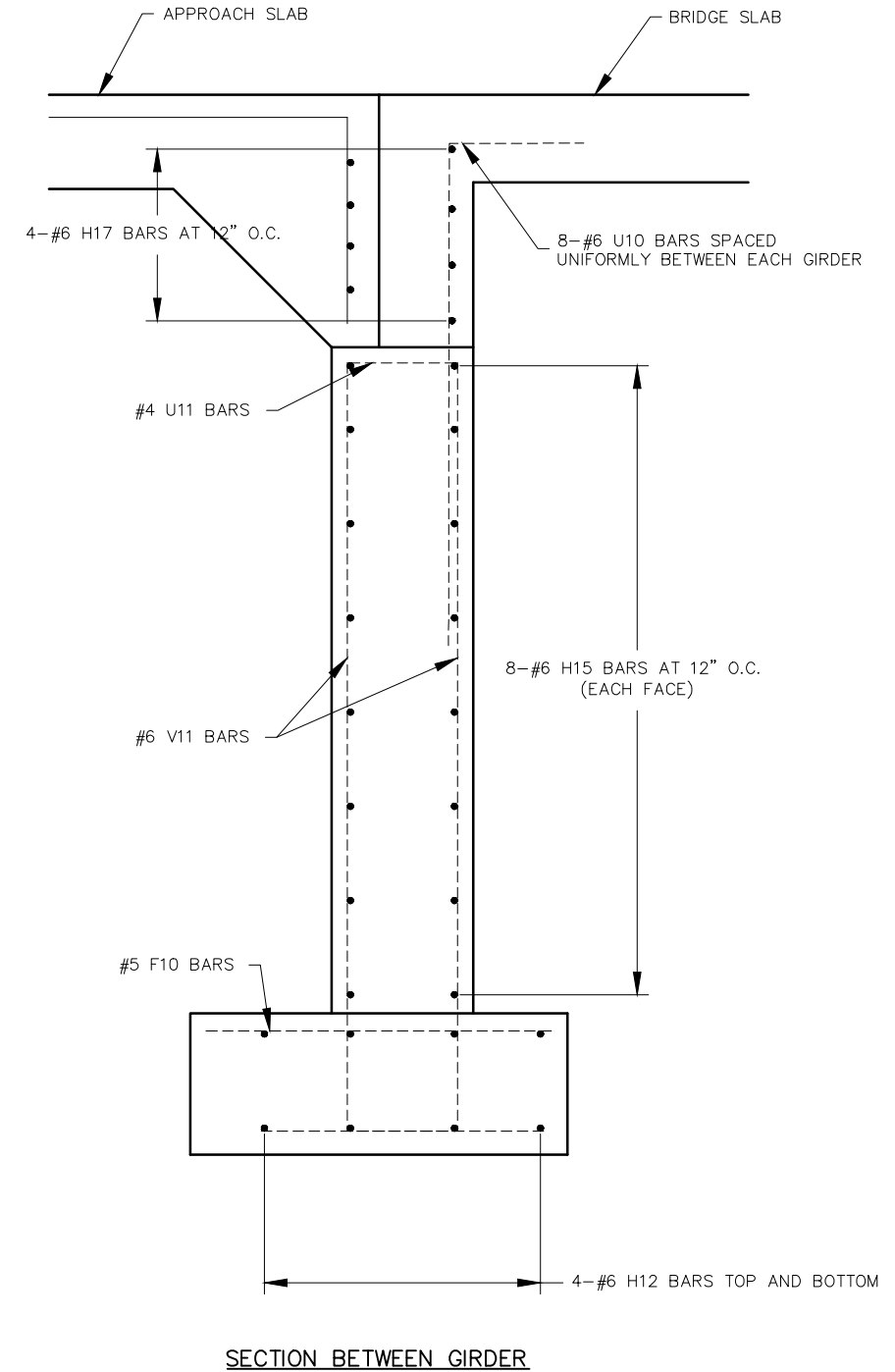
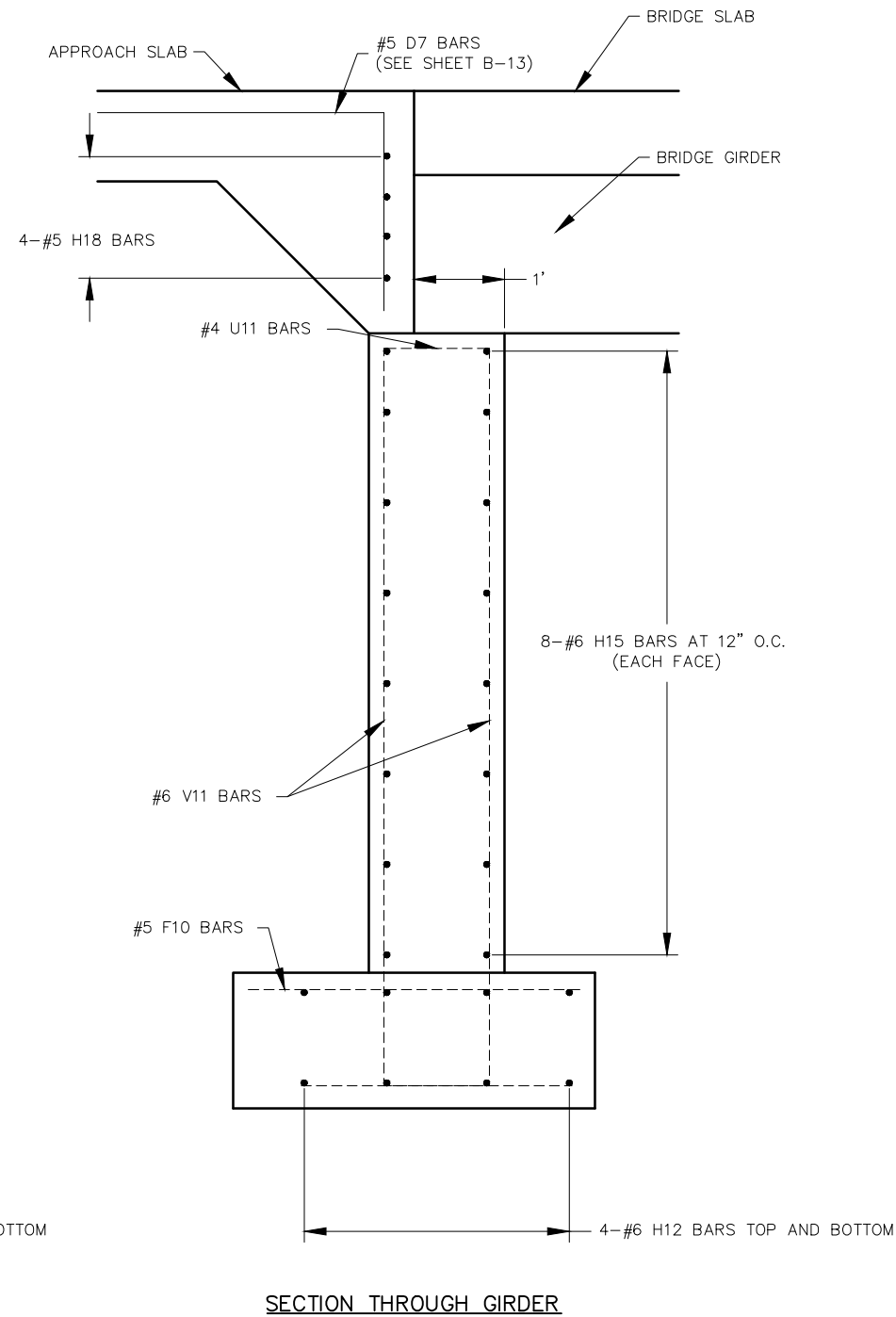
| BRIDGE PLAN AND ELEVATION | |
|---------------------------|----------------------|
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| DATE: | |
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| DWG. NO: | |
| | B-4 |

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END BENT SECTION DETAILS

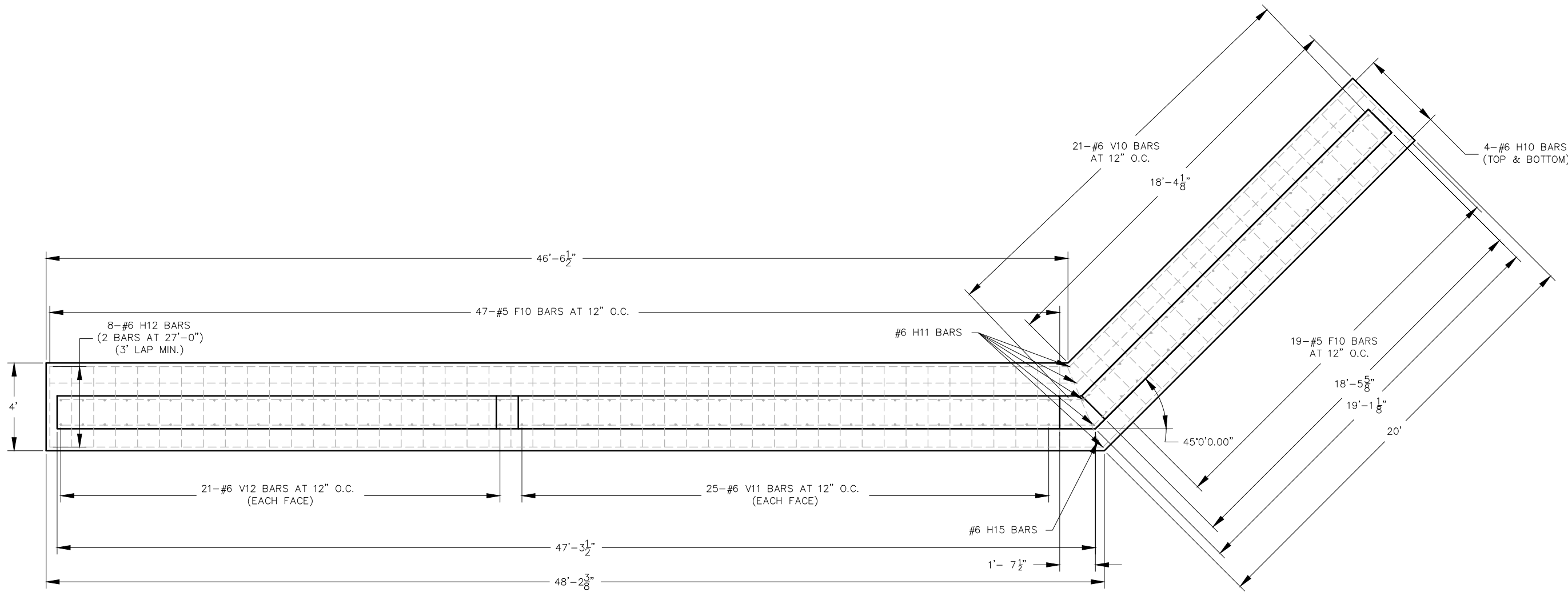
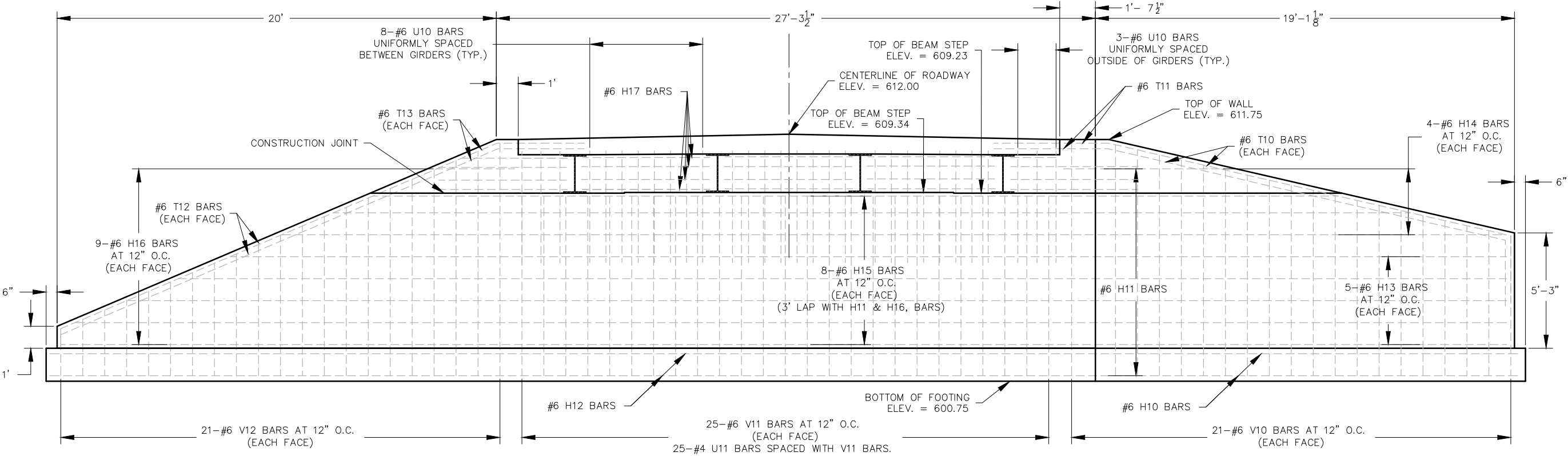


NOTE: ALL CONCRETE AND REINFORCING STEEL IN THE SLAB AND DIAPHRAGM WILL BE PAID FOR IN THE UNIT BID PRICE FOR "SLAB ON STEEL" OR "SLAB ON CONCRETE BEAM"



NOTE: H17 BAR LENGTH WILL NEED TO BE MODIFIED FOR THE CONCRETE GIRDER OPTION.

END BENT 1 PLAN AND ELEVATION



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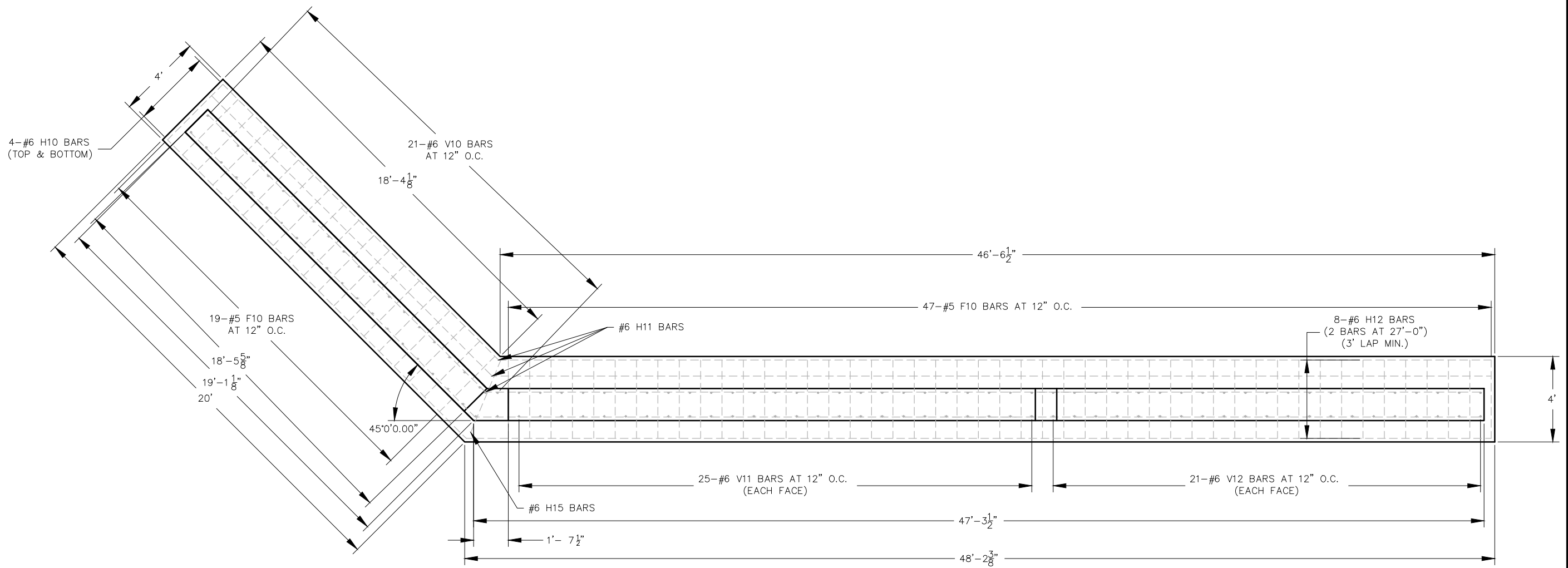
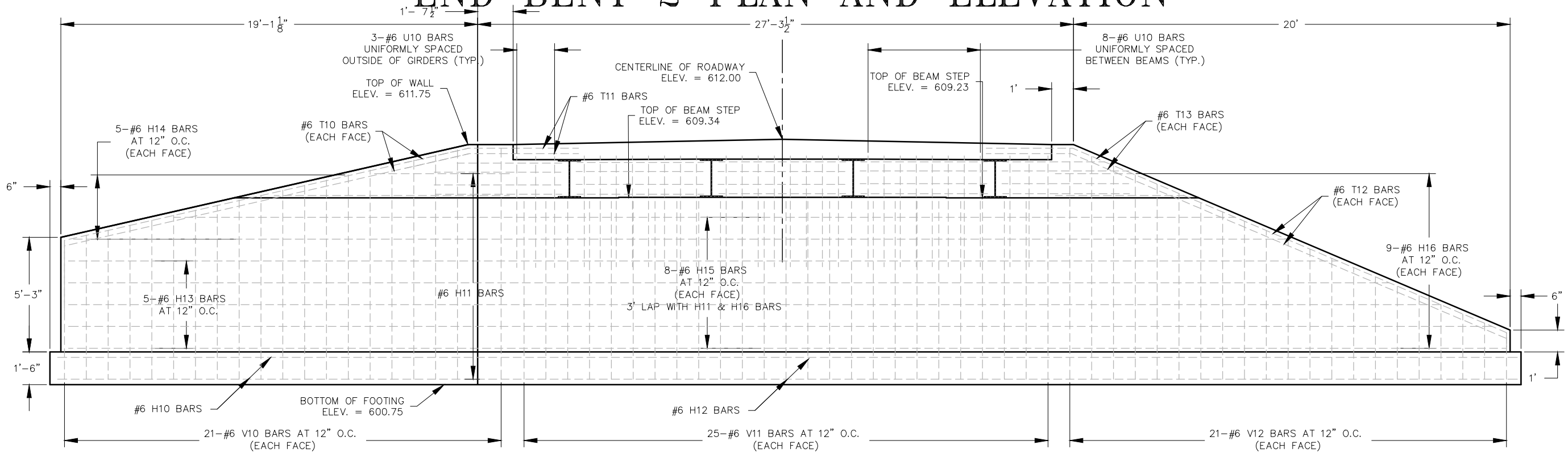
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| B-6 | | | |

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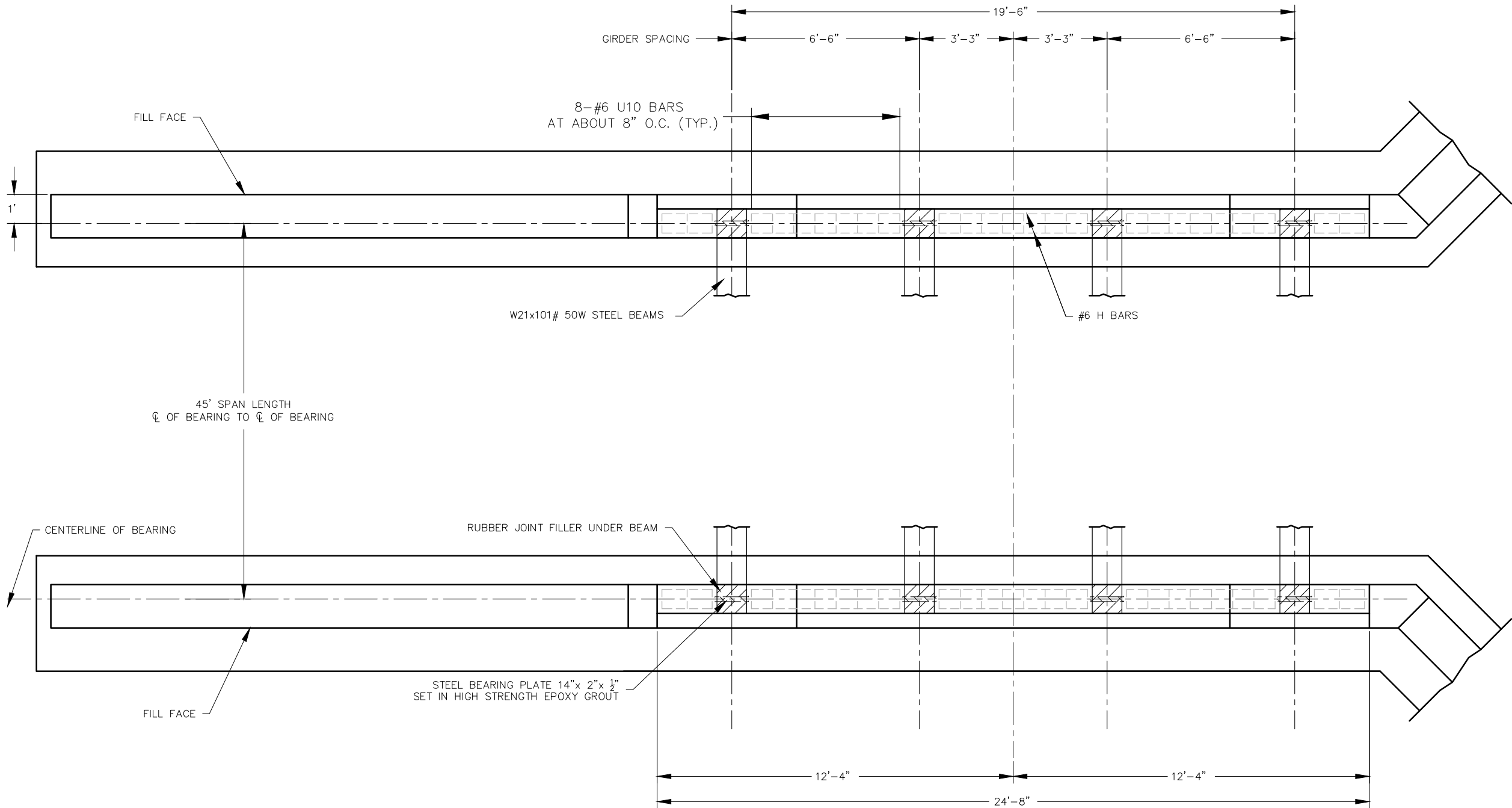
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END BENT PLAN IN DIAPHRAGM (STEEL GIRDERS)



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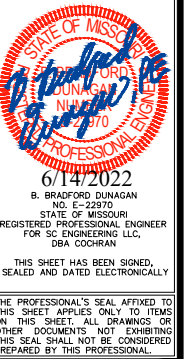
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| | | |
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| DATE: JUNE 2022 | | |
| SCALE: NOT TO SCALE | | |
| PROJ. NO: SC20-1165 | | |
| DWG. NO: B-9 | | |

17-#6 S11 BARS AT 18" O.C.
(BOTTOM REINFORCEMENT)
(2 BARS AT 26'-3")
(3' LAP MIN.)

17-#6 S12 BARS AT 18" O.C.
(TOP REINFORCEMENT)
(2 BARS AT 29'-6")
(3' LAP MIN.)
(EXTEND 3' INTO APPROACH SLAB)

17-#6 S12 BARS AT 18" O.C.
(TOP REINFORCEMENT)
(2 BARS AT 29'-6")
(3' LAP MIN.)

92-#6 S10 BARS AT 6" O.C.
(TOP AND BOTTOM REINFORCEMENT)

2" MIN. CLEARANCE

6/14/2022

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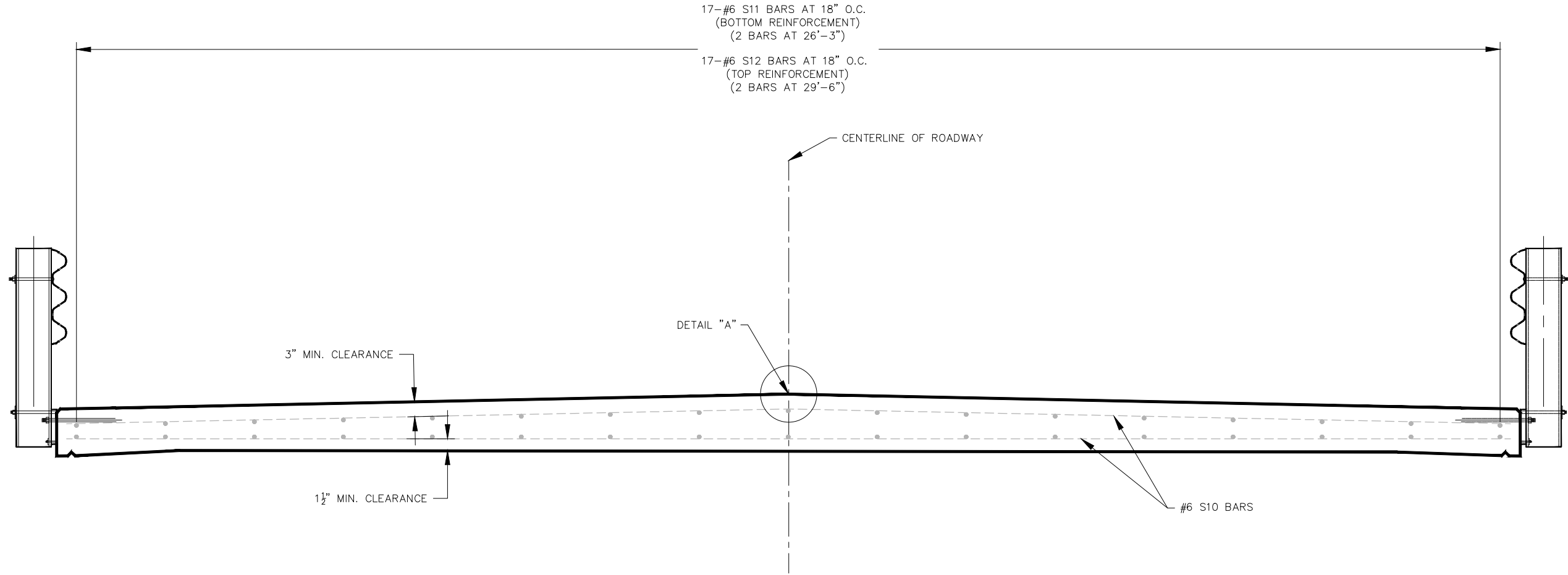
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*HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI*

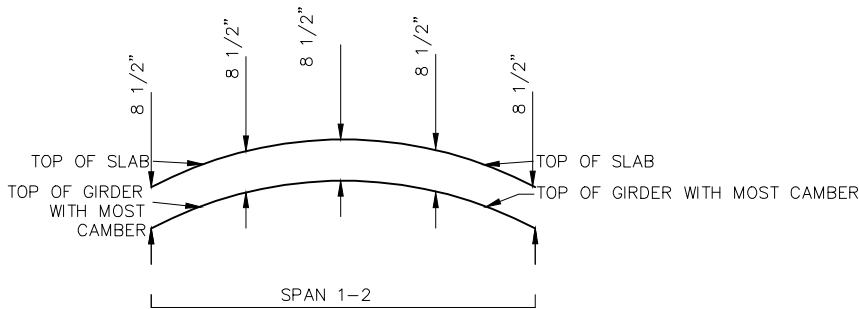
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|--------------------|------------|--------------|------|--|--|--|--|--|--|
| SLAB REINFORCEMENT | REGION: | | | | | | | | |
| | DATE: | | | | | | | | |
| | DWN. BY: | A. J. M. | | | | | | | |
| | APP'D. BY: | B. B. D. | | | | | | | |
| | DATE: | JUNE | 2022 | | | | | | |
| | SCALE: | NOT TO SCALE | | | | | | | |
| | PROJ. NO: | SC20-1165 | | | | | | | |
| | DWG. NO: | | | | | | | | |
| | B-10 | | | | | | | | |

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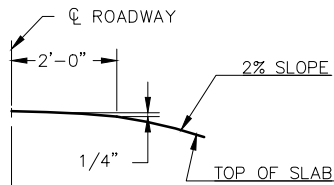
SLAB REINFORCEMENT



SECTION NEAR MIDSPAN



SLAB HAUNCH DIAGRAM



DETAIL "A"

- NOTES:
1. THE SLAB SHALL BE POURED WITH A MINIMUM SLAB THICKNESS OF $8\frac{1}{2}$ " ABOVE THE GIRDERS WITH THE MOST CAMBER. IF GIRDER CAMBER IS DIFFERENT FROM THAT SHOWN IN THE CAMBER DIAGRAM, IT SHALL BE NECESSARY TO ADJUST THE SLAB HAUNCHES, OR TO INCREASE THE SLAB THICKNESS. NO PAYMENT WILL BE MADE FOR ADDITIONAL LABOR OR MATERIALS REQUIRED FOR VARIATION IN HAUNCHING, SLAB THICKNESS OR GRADE ADJUSTMENT.
 2. THE CONTRACTOR SHALL FURNISH AN APPROVED RETARDER TO RETARD THE SET OF CONCRETE TO 2.5 HOURS. THE RATE OF POUR MAY BE REDUCED TO NOT LESS THAN 25 CUBIC YARDS PER HOUR.
 3. MACHINE FINISHING OF THE RIDING SURFACE WILL BE REQUIRED.
 4. THE DIAPHRAGMS OF THE END BENTS SHALL BE POURED A MINIMUM OF 30 MINUTES AND A MAXIMUM OF 2 HOURS BEFORE THE SLAB IS POURED ACROSS THE DIAPHRAGM.
 5. ALL SUPPORTS, BAR CHAIRS, AND WIRE USED FOR TIEING THE REINFORCING STEEL SHALL BE EPOXY COATED OR PLASTIC COATED.
 6. THE CONCRETE SLAB SHALL BE CURED AND SEALED, MEETING THE REQUIREMENTS OF MISSOURI STANDARD SPECIFICATIONS 703.3.6 AND 703.3.8 RESPECTIVELY. THE SEALER SHALL ALSO BE APPLIED TO THE OUTSIDE EDGE OF THE SLAB AND THE BOTTOM OF THE SLAB OVERHANG. THIS WORK SHALL BE INCLUDED IN THE UNIT BID PRICE FOR "SLAB ON CONCRETE BEAM".OR "SLAB ON STEEL"
 7. SLAB CONCRETE SHALL BE CLASS B2.
 8. USE SAME REINFORCEMENT FOR BOTH OPTIONS.

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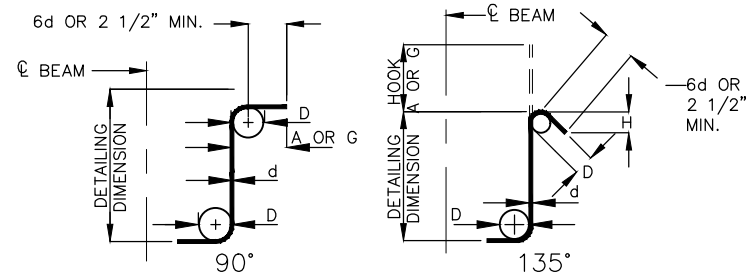
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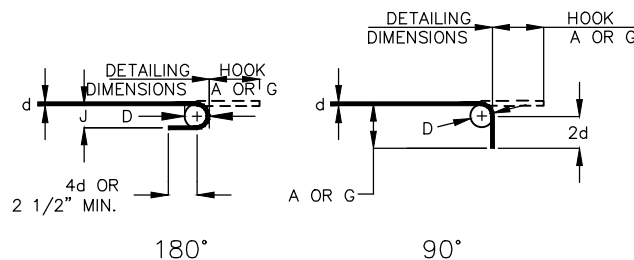
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|---------------------|----------|------------|----------|------------|----------|
| SLAB REINFORCEMENT | DATE: | DATE: | DATE: | DATE: | DATE: |
| | DATE: | DATE: | DATE: | DATE: | DATE: |
| | DWN. BY: | APP'D. BY: | DWN. BY: | APP'D. BY: | DWN. BY: |
| | A.J.M. | B.B.D. | A.J.M. | B.B.D. | A.J.M. |
| DATE: JUNE 2022 | | | | | |
| SCALE: NOT TO SCALE | | | | | |
| PROJ. NO: SC20-1165 | | | | | |
| DWG. NO: B-11 | | | | | |

BILL OF REINFORCING STEEL



| STIRRUP HOOK DIMENSIONS | | | | |
|-------------------------|------------|----------------|----------------|--------------|
| GRADES 40-50-60 KSI | | | | |
| BAR SIZE | D (IN.) | 90° HOOK | 135° HOOK | |
| | | HOOK A OR G | HOOK A OR G | APPROX. H |
| #3 | 1 1/2" | 4" | 4" | 2 1/2" |
| #4 | 2" | 4 1/2" | 4 1/2" | 3" |
| #5 | 2 1/2" | 6" | 5 1/2" | 3 3/4" |
| #6 | 4 1/2" | 8" | 7" | 4 1/2" |

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



| | |
|-----------------------------------|---|
| SIZE OF 180° HOOKS (GRADE 40 KSI) | SIZE OF 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI) |
| D=5d FOR #3 THROUGH #11 | D=6d FOR #3 THROUGH #8 |
| D=10d FOR #14 AND #18 | D=8d FOR #9, #10 AND #11 |
| | D=10d FOR #14 AND #18 |

| END HOOK DIMENSIONS | | | | | | |
|---------------------|----------|---------|----------|---------|------------|-----------|
| 180° HOOKS | | | | | | 90° HOOKS |
| BAR SIZE | GRADE 40 | | GRADE 60 | | ALL GRADES | |
| | A OR G | J | A OR G | J | A OR G | |
| #3 | 5" | 2 3/4" | 5" | 3" | | 6" |
| #4 | 6" | 3 1/2" | 6" | 4" | | 8" |
| #5 | 7" | 4 1/2" | 7" | 5" | | 10" |
| #6 | 8" | 5 1/4" | 8" | 6" | | 12" |
| #7 | 9" | 6 1/4" | 10" | 7" | | 14" |
| #8 | 10" | 7" | 11" | 8" | | 16" |
| #9 | 12" | 8" | 15" | 11 1/4" | | 19" |
| #10 | 13" | 9" | 17" | 12 3/4" | | 22" |
| #11 | 14" | 10" | 19" | 14 1/4" | | 2'-0" |
| #14 | 2'-2" | 20 1/2" | 2'-2" | 20 1/2" | | 2'-7" |
| #18 | 2'-11" | 2'-3" | 2'-11" | 2'-3" | | 3'-5" |

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREES TO BE
BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE
PROCEDURES AS SHOWN ON THIS SHEET.

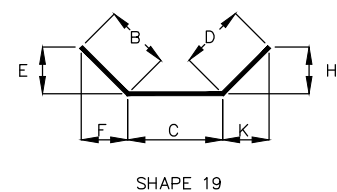
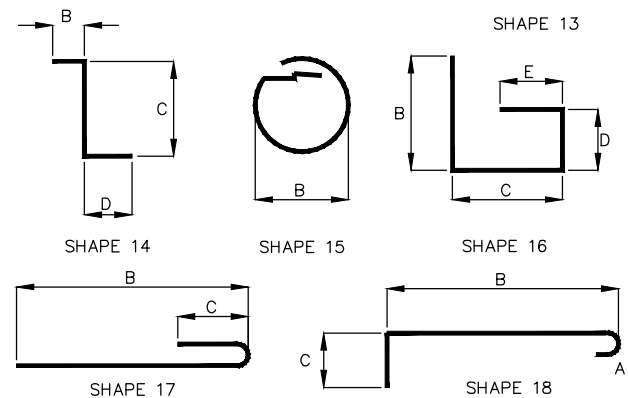
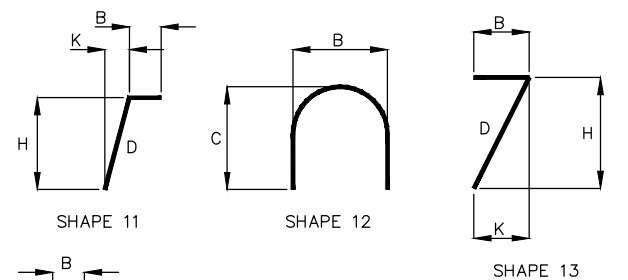
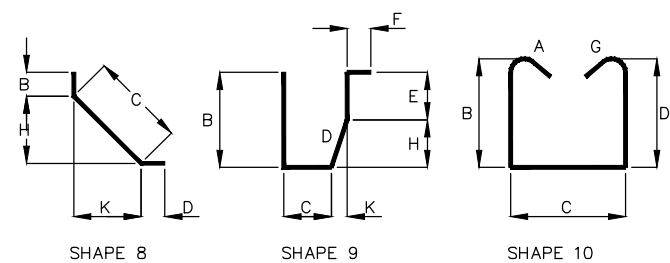
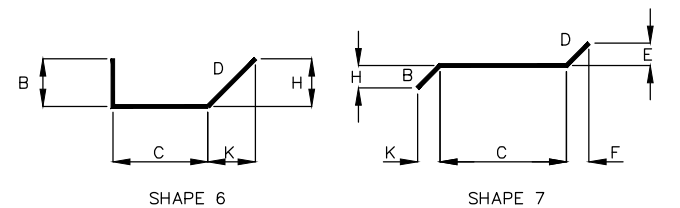
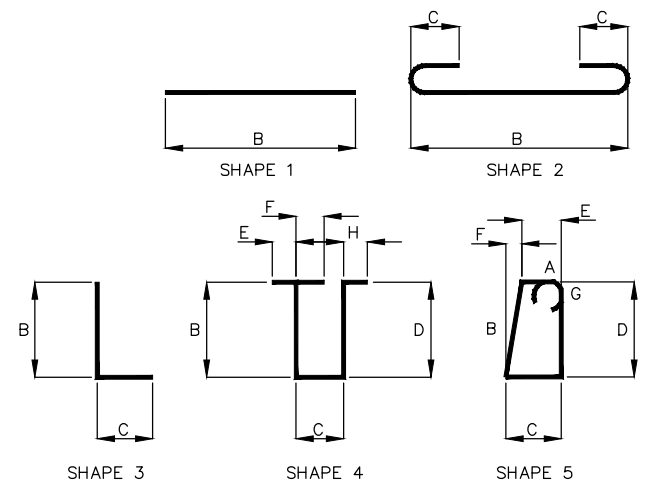
E = EPOXY COATED REINFORCEMENT
S = STIRRUP
X = BAR IS LOCATED IN THE SUBSTRUCTURE
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN
DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE

NO. EACH = NUMBER OF BARS OF EACH LENGTH.
DIMENSIONS SHOWN ARE OUT TO OUT DIMENSIONS. LENGTH SHOWN IS
MEASURED ALONG CENTERLINE OF BAR.

LENGTHS AND QUANTITIES OF BARS SHOWN IN TABLE ARE FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL VERIFY ALL QUANTITIES AND DIMENSIONS PRIOR TO FABRICATING STEEL.

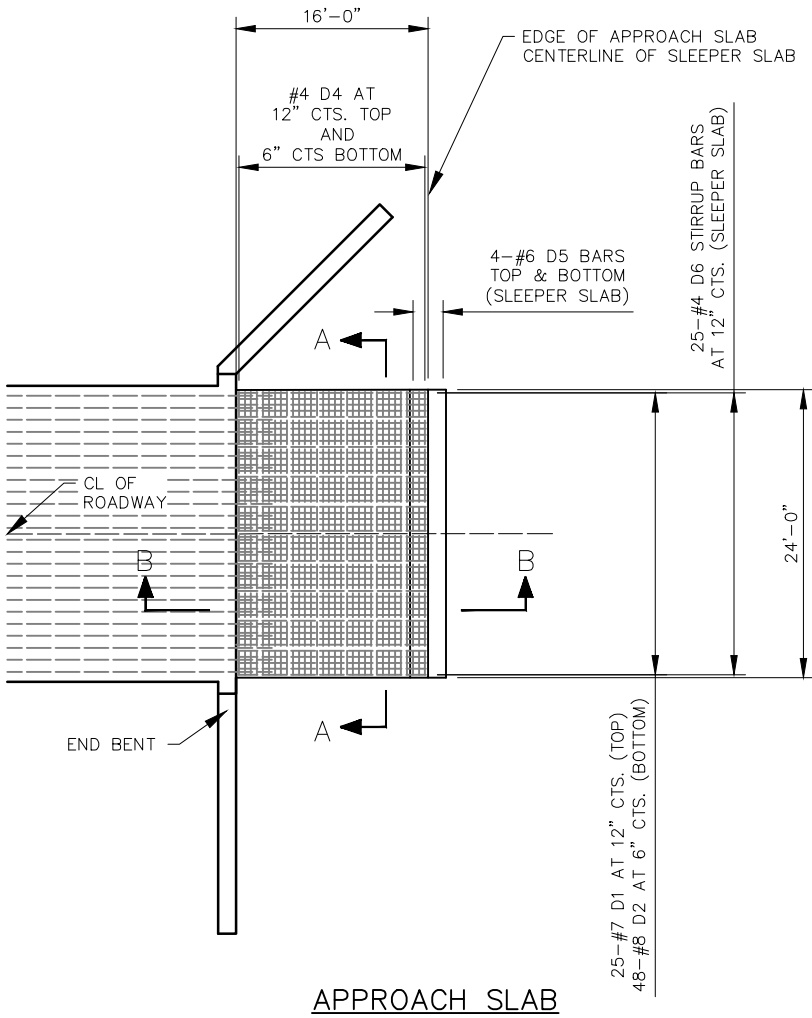
FOR SHAPES 2 AND 17, USE STANDARD HOOK IF NO "C" DIMENSION IS GIVEN.

BARS IN THE ABOVE UNITS ARE TO BE BILLED AND TAGGED SEPARATELY.
REINFORCING STEEL (GRADE 60) $f_y = 60,000$ PSI
ALL REINFORCEMENT SHALL BE EPOXY COATED

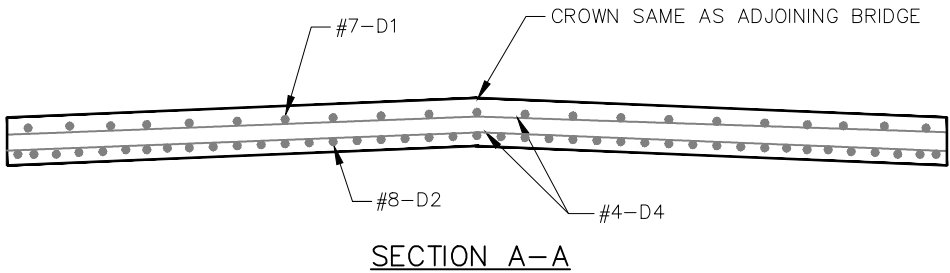
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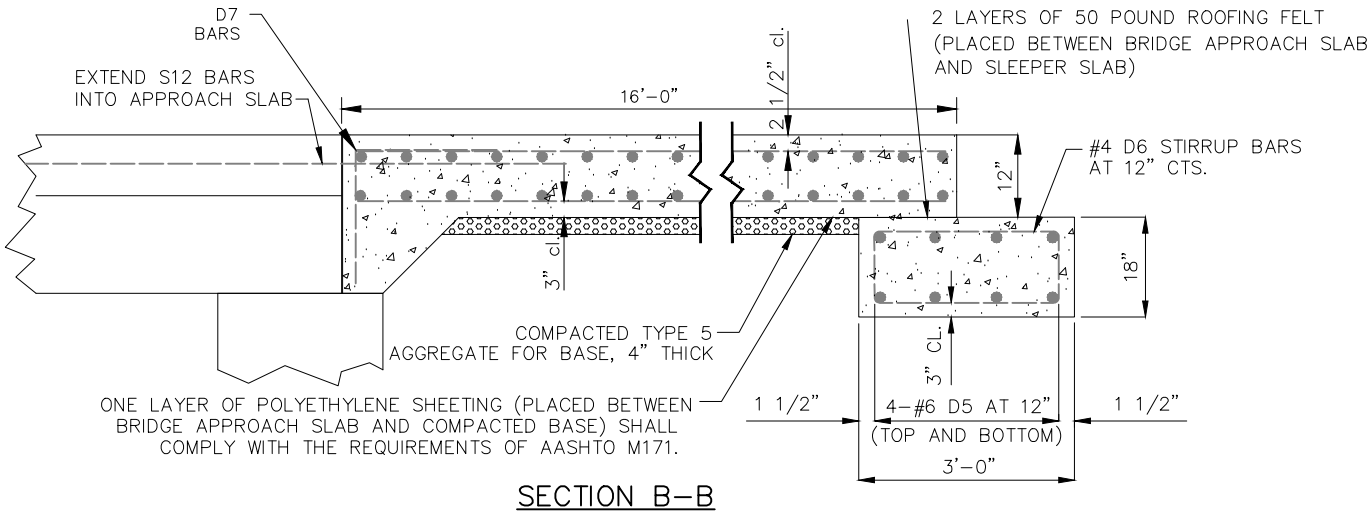
BRIDGE APPROACH SLAB



APPROACH SLAB



SECTION A-A



SECTION B-B

NOTES:

THE APPROACH SHALL BE POURED IN A CONTINUOUS UNIT USING STATIONARY SIDE FORMS.

ALL REINFORCING STEEL SHALL BE GRADE 60, EPOXY COATED.

APPROACH SLAB QUANTITIES ARE FOR REFERENCE ONLY. COST OF D BARS, CLASS B1 CONCRETE, SLEEPER SLAB, POLYETHYLENE SHEETING, MUD-JACK HOLES, AND COMPACTED TYPE 5 AGGREGATE FOR BASE, SHALL BE INCLUDED IN THE UNIT BID PRICE FOR "BRIDGE APPROACH SLAB", PER SQUARE YARD.

SEAL THE JOINT BETWEEN APPROACH SLAB AND THE BRIDGE WITH "SILICONE JOINT SEALANT FOR SAW CUT AND FORMED JOINTS" IN ACCORDANCE WITH SEC. 717.

| BILL OF REINFORCING STEEL | | | | | | | BENDING DIAGRAM |
|---------------------------|-----|-------------|--------|-----|---------------|--------------|-----------------|
| EPOXY | NO. | SIZE & MARK | VARIES | NO. | ACTUAL LENGTH | TOTAL WEIGHT | |
| E | 50 | #7 D1 | | | 23'-7" | | |
| E | 96 | #8 D2 | | | 15'-9" | | |
| E | 96 | #4 D4 | | | 23'-7" | | |
| E | 16 | #6 D5 | | | 23'-7" | | |
| | | | | | | | |
| E | 50 | #6 D6 | | | 7'-9" | | |
| E | 50 | #5 D7 | | | 5'-0" | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

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BRIDGE APPROACH SLABS

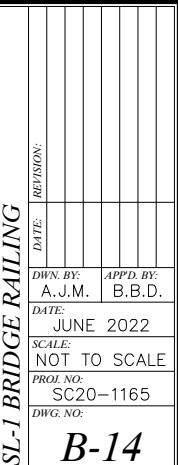
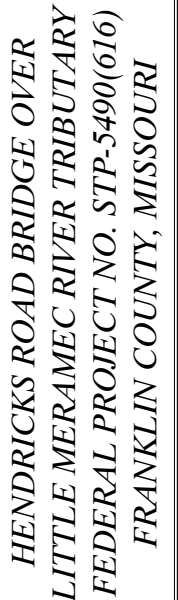
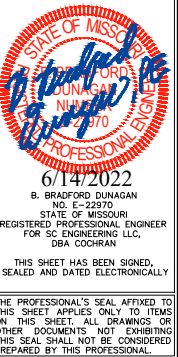
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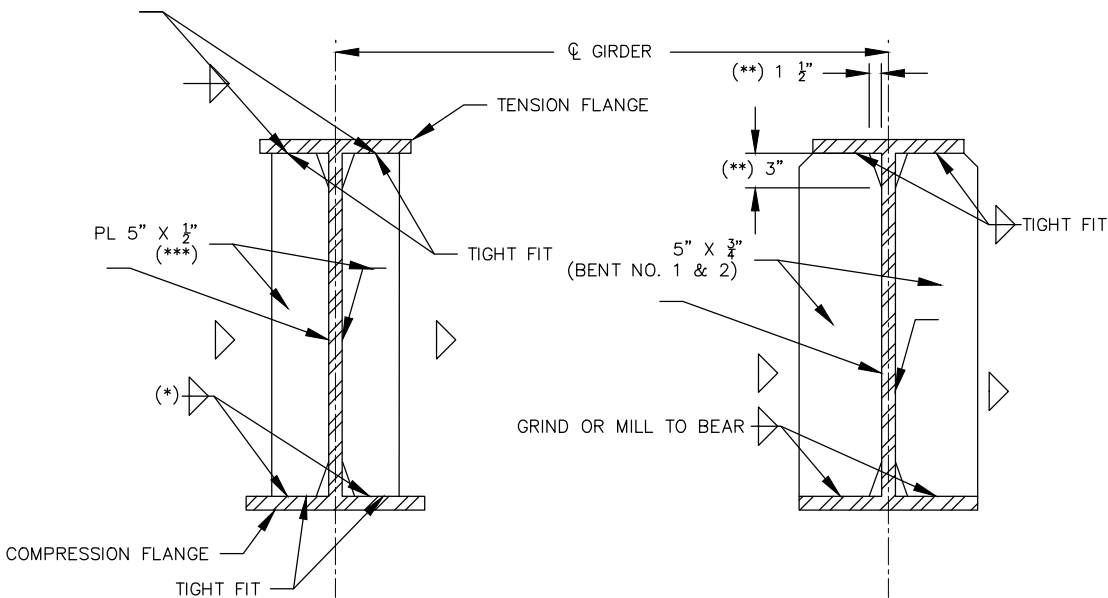
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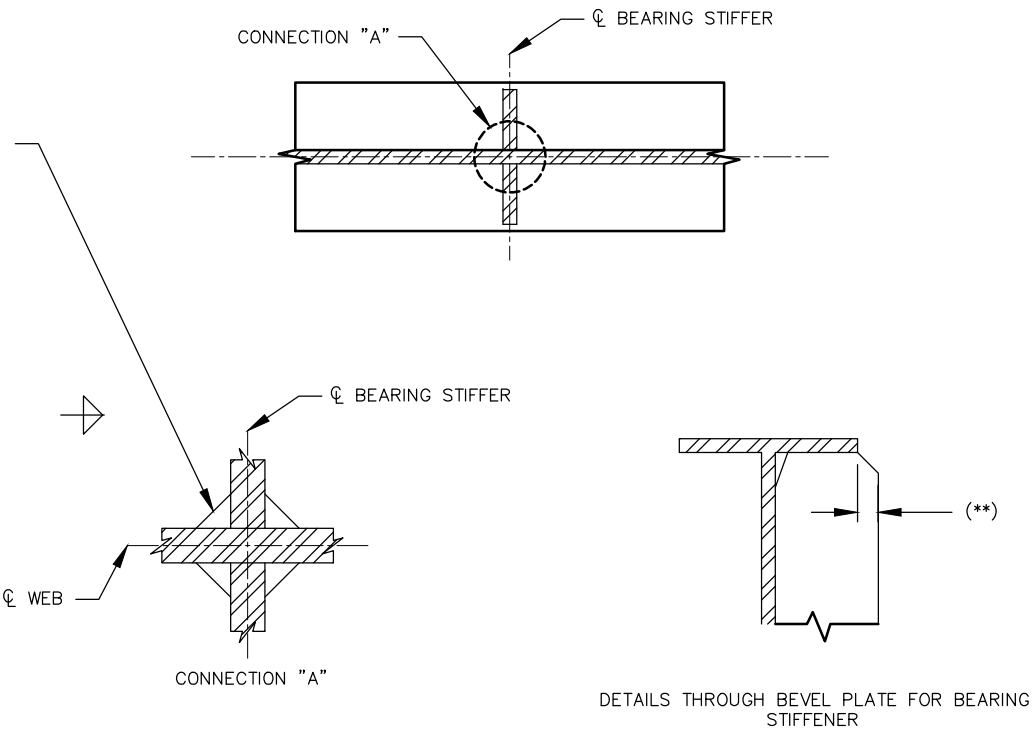
STEEL CONNECTION DETAILS



INTERMEDIATE DIAPHRAGM CONNECTION PLATE

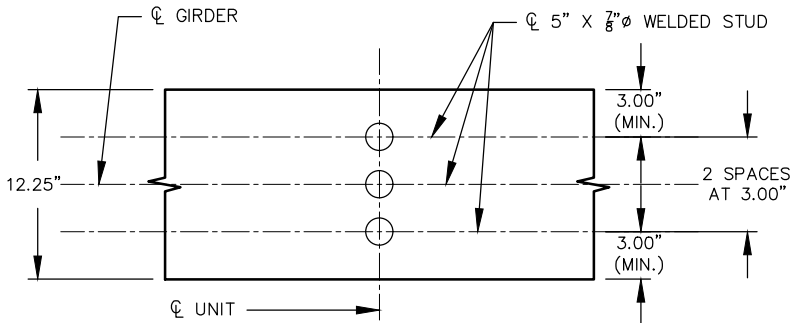
END & INTERMEDIATE BEARING STIFFENER

NOTE: (*) : WELD TO TENSION FLANGE AS LOCATED ON ELEVATION OF GIRDER.
(**) : 1 1/2" X 3" TYPICAL FOR INTERMEDIATE DIAPHRAGM CONNECTION PLATE AND BEARING STIFFENER.
(***) : EXTERIOR GIRDERS REQUIRE ONLY ONE 5" X 1/2" ON THE INTERIOR SIDE OF GIRDER.

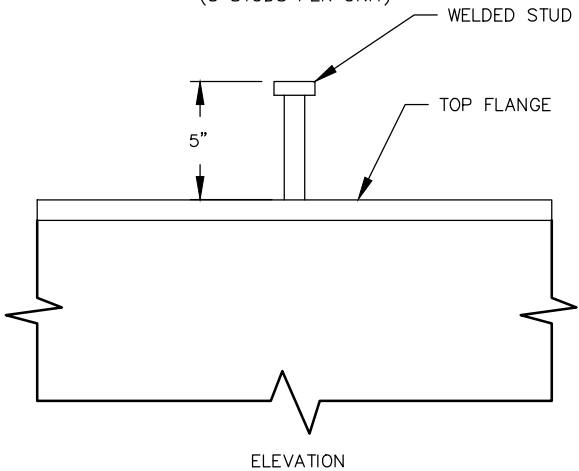


WELDING DETAILS

NOTE: (**): WHEN DIMENSIONS EXCEEDS 1/2", BEVEL STIFFENER PLATE AT 1:1.



PLAN OF STUD CONNECTION
(3 STUDS PER UNIT)



DETAILS OF SHEAR CONNECTORS

NOTE: WEIGHT OF 757 LBS. OF SHEAR CONNECTORS IS INCLUDED IN THE WEIGHT OF FABRICATED STRUCTURAL CARBON STEEL.
SHEAR CONNECTORS SHALL BE A-709 GRADE 50 STEEL.

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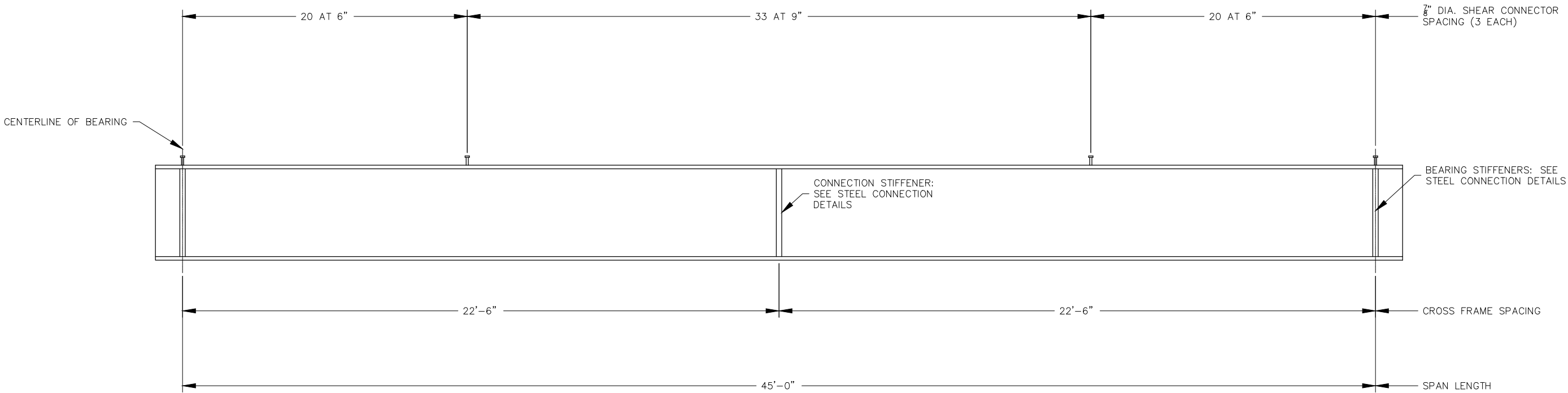
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| STEEL CONNECTION DETAILS | | | |
|--------------------------|--------------|--------------|--------------|
| DATE: | DATE: | DATE: | DATE: |
| DWN. BY: | APP'D. BY: | DWN. BY: | APP'D. BY: |
| A.J.M. | B.B.D. | A.J.M. | B.B.D. |
| DATE: | DATE: | DATE: | DATE: |
| JUNE 2022 | JUNE 2022 | JUNE 2022 | JUNE 2022 |
| SCALE: | SCALE: | SCALE: | SCALE: |
| NOT TO SCALE | NOT TO SCALE | NOT TO SCALE | NOT TO SCALE |
| PROJ. NO: | PROJ. NO: | PROJ. NO: | PROJ. NO: |
| SC20-1165 | SC20-1165 | SC20-1165 | SC20-1165 |
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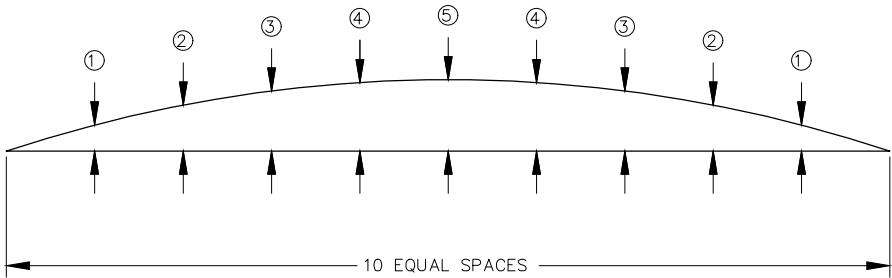
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STEEL BEAM DETAILS



BEAM ELEVATION

| STEEL D.L. CAMBER - IN. | | | | | TOTAL STEEL D.L. CAMBER - IN. | | | | |
|-------------------------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|
| ① | ② | ③ | ④ | ⑤ | ① | ② | ③ | ④ | ⑤ |
| 0.032" | 0.061" | 0.083" | 0.097" | 0.102" | 0.273" | 0.516" | 0.707" | 0.827" | 0.869" |



CAMBER DIAGRAM

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STEEL BEAM DETAILS

DATE:
RETAIN:

DWN. BY:
A.J.M.

APP'D. BY:
B.B.D.

DATE:
JUNE 2022

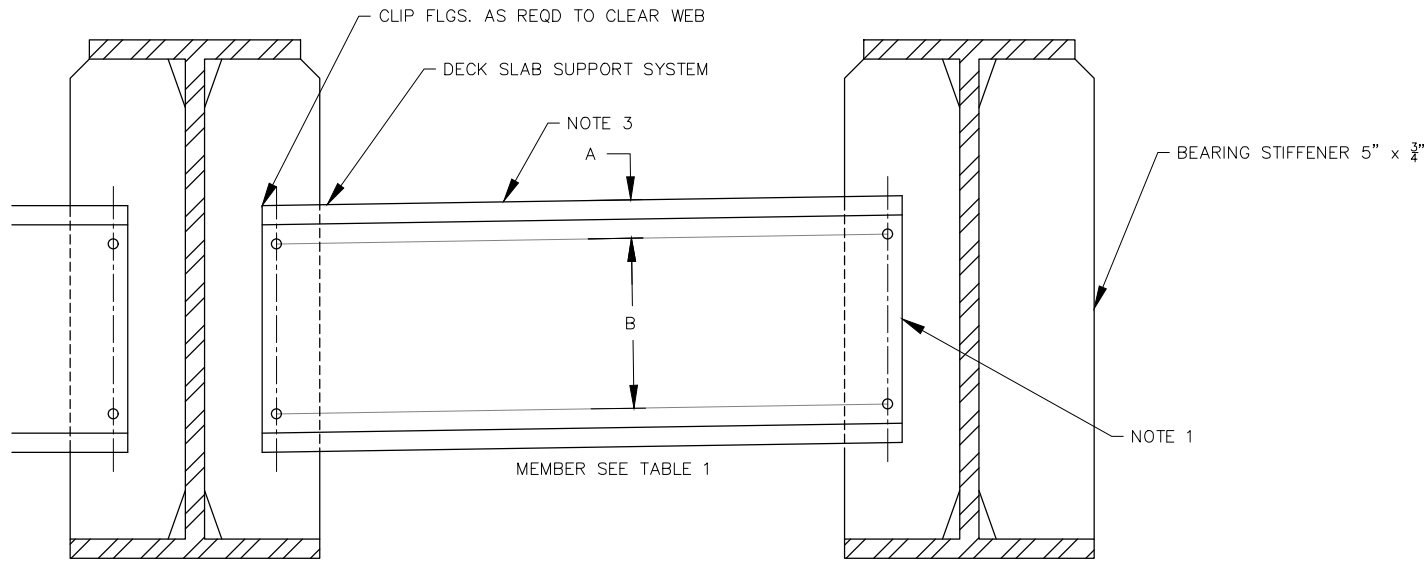
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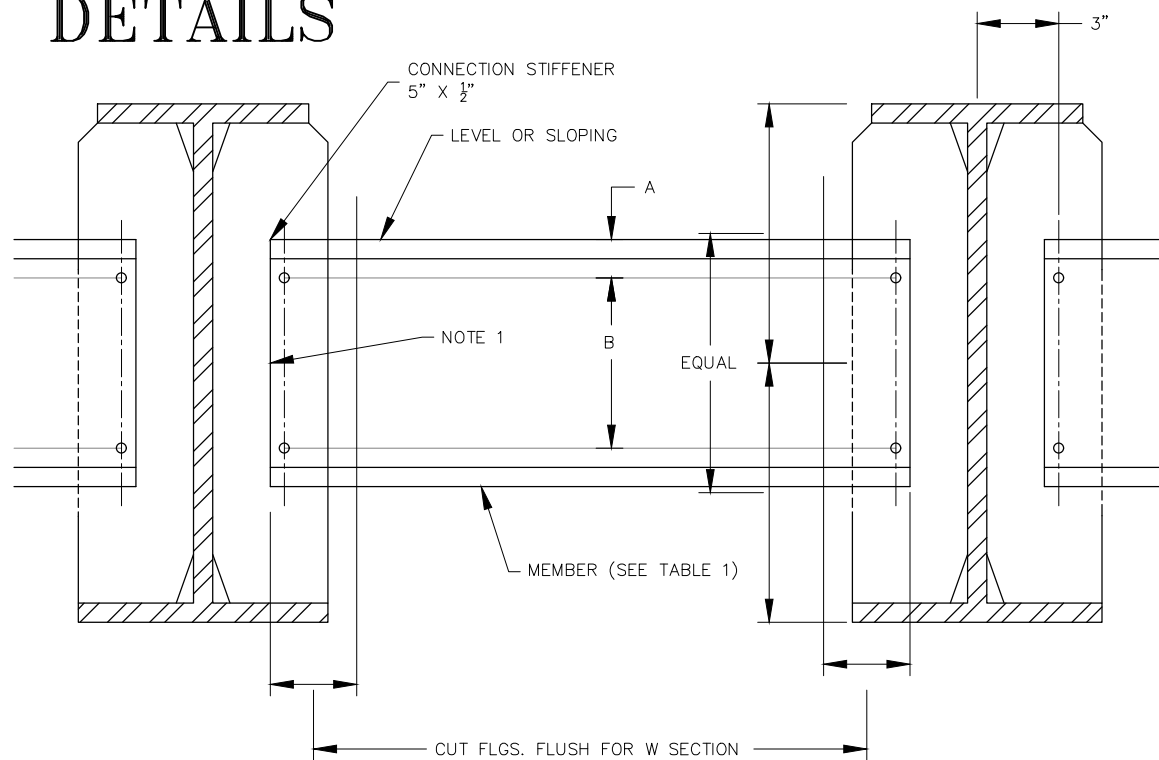
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B-16

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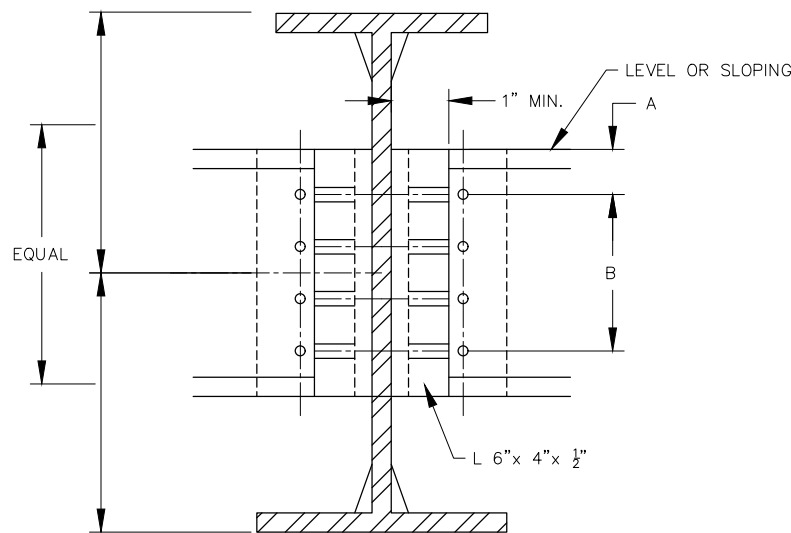
STEEL DIAPHRAGM DETAILS



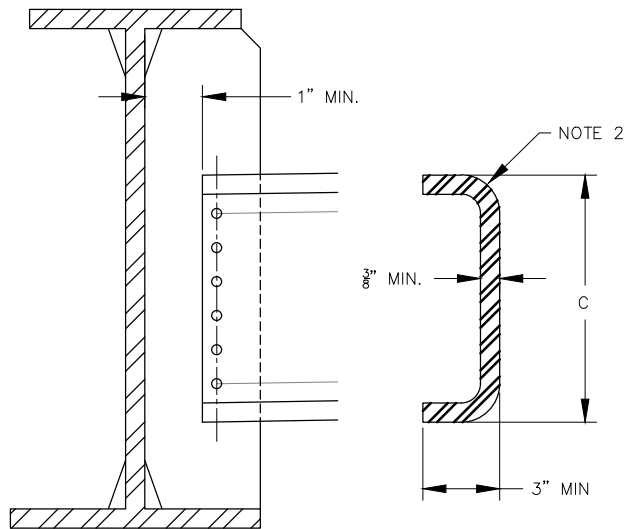
END DIAPHRAGM



INTERMEDIATE DIAPHRAGM



INTERMEDIATE DIAPHRAGM ALTERNATE DETAIL



OPTIONAL BENT PLATE DIAPHRAGM

NOTES:

1. SLOPE DIAPHRAGM AND KEEP HOLES VERTICAL IN STIFFENER AT CONSTANT DIMENSIONS (TO KEEP ALL STIFFENERS THE SAME) AND CUT ENDS OF DIAPHRAGM SQUARE.
2. MINIMUM RADIUS AS PER AASHTO/NSBA FABRICATION S2.1 TABLE 4.3.2-1. PER SECTION 4.3.2, IF THE BEND IS PARALLEL TO DIRECTION OF ROLLING, MULTIPLY THE MINIMUM RADII BY 1.5.
3. ALL HOLES TO BE $\frac{15}{16}$ " DIA. FOR $\frac{7}{8}$ " DIA. HS BOLTS, ASTM A325 TYPE 3 W/ F436-3 WASHERS (RCT).
4. THREADS EXCLUDED FROM SHEAR PLANE.
5. BOTTOM FLANGES SHALL BE BRACED ACROSS ENTIRE WIDTH OF BRIDGE (OUTSIDE GIRDER - OUTSIDE GIRDER) AT EACH OVERHANG BRACKET DURING CONSTRUCTION

| TABLE 1 | | | | |
|---------------------------------|----------------|------------|---------|-----|
| DEPTH OF STRINGER OR GIRDER WEB | DIAPHRAGM SIZE | DIMENSIONS | | |
| | | A | B | C |
| < 30" | C15x33.9 | 3" | 3 AT 3" | 15" |

STEEL DIAPHRAGM DETAILS

DATE: / /

DWN. BY:

A.J.M.

DATE:

JUNE 2022

SCALE:

NOT TO SCALE

PROJ. NO:

SC20-1165

DWG. NO:

B-17

HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

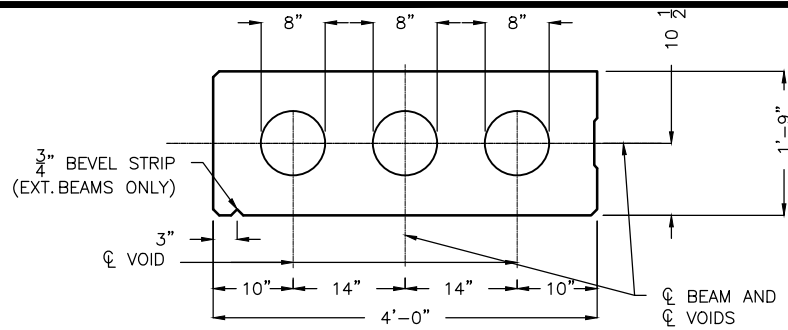


6/14/2022
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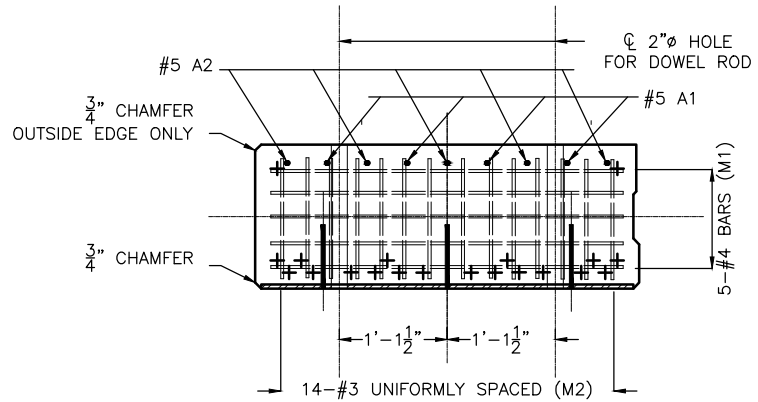
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ENGINEERING CERTIFICATE OF AUTHORITY NUMBER - 2007006937
LAND SURVEYING CERTIFICATE OF AUTHORITY NUMBER - 2007004929

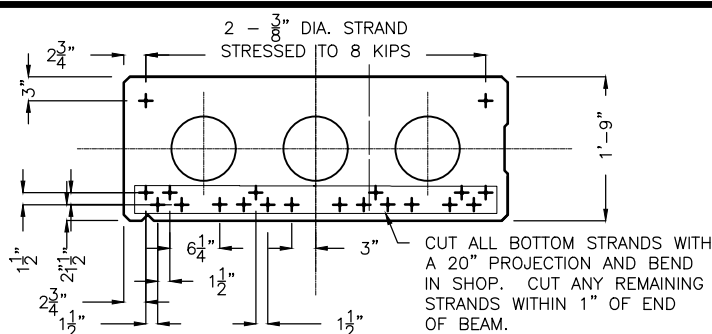
Drawing name: i:\sec20-1165 hendricks rd. bridge, franklin county\AUTOCAD DRAWINGS\PRESTRESSED VOIDED SLAB BEAM MASTER.dwg Tab: B-18 Plotted on: Aug 25, 2022 - 2:19pm Plotted by: amuelier



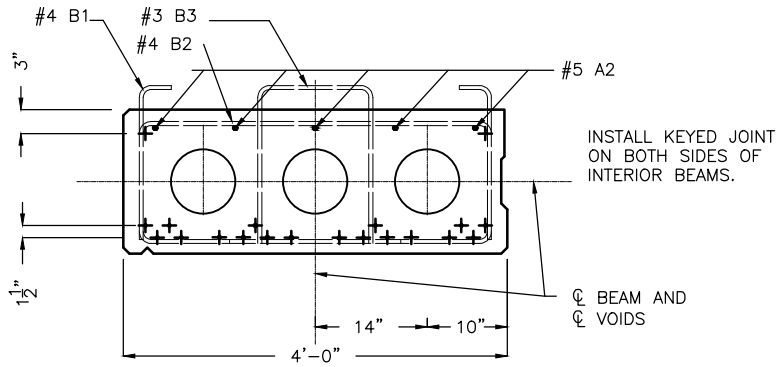
VOIDED SLAB BEAM DIMENSIONS



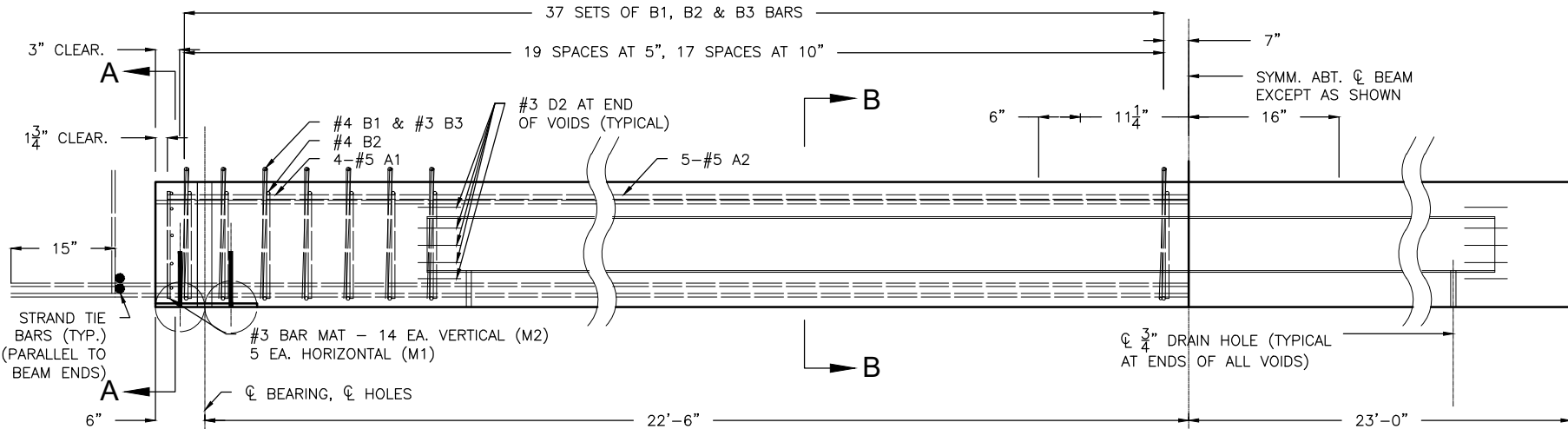
SECTION A-A



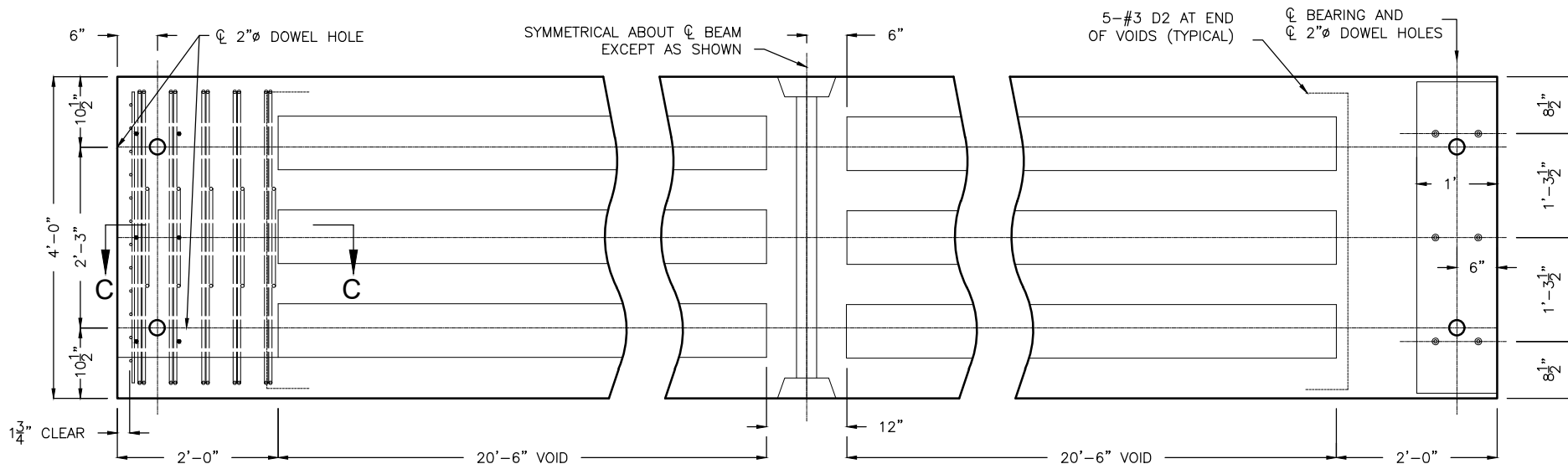
STRAND ARRANGEMENT



SECTION B-B

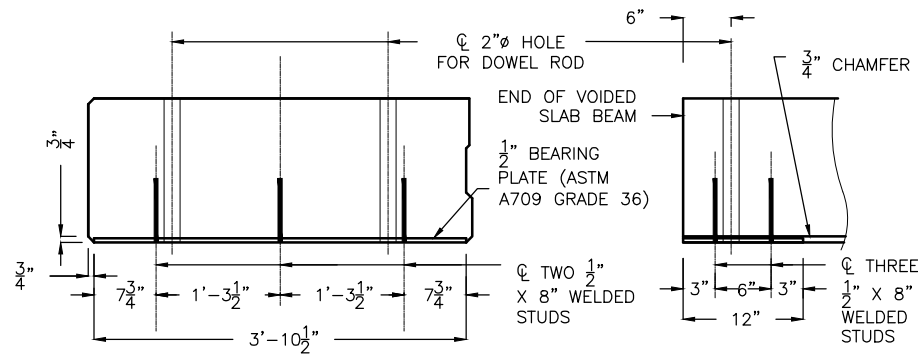


ELEVATION OF BEAM



NOTE: THIS DRAWING IS NOT TO SCALE. PLEASE FOLLOW DIMENSIONS.

PART PLAN OF BEAM



BEARING PLATE END VIEW

SECTION C-C

NOTES FOR DESIGN CRITERIA:

- 1.) CONCRETE FOR PRESTRESSED VOIDED SLAB BEAMS SHALL BE CLASS A-1 WITH $f'c = 8,000$ psi AND $f'ci = 6,000$ psi.
- 2.) USE 18 0.6" DIA. STRANDS WITH AN INITIAL PRESTRESS FORCE OF 791 KIPS.
- 3.) (+) INDICATES PRESTRESSING STRAND.
- 4.) PRESTRESSING TENDONS SHALL BE UNCOATED, SEVEN-WIRE, LOW-RELAXATION STRANDS, 0.6 INCH DIAMETER CONFORMING TO AASHTO M203, GRADE 270. PRETENSIONED MEMBERS SHALL BE IN ACCORDANCE WITH SECTION 1029.

NOTES FOR BEARING PLATE DETAILS:

- 1.) GALVANIZE THE 1/2" BEARING PLATE (ASTM A709 GRADE 36) IN ACCORDANCE WITH ASTM A123.
- 2.) COST OF FURNISHING, GALVANIZING, AND INSTALLING THE 1/2" BEARING PLATE (ASTM 709 GRADE 36) AND WELDED STUDS IN THE PRESTRESSED BEAM SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE VOIDED SLAB BEAM.

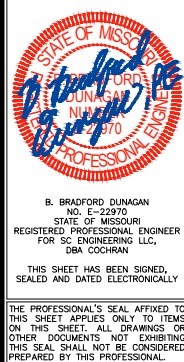
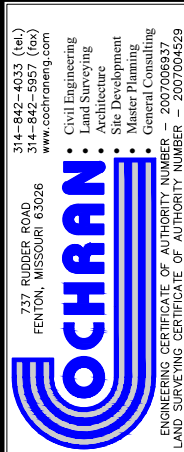
NOTES FOR BEAM FABRICATION:

- 1.) 3/4" DRAIN HOLES SHALL BE PROVIDED AT EACH END OF EACH VOID, AND SHALL BE KEPT OPEN AT ALL TIMES.
- 2.) TUBES FOR PRODUCING VOIDS SHALL HAVE AN OUTSIDE DIAMETER OF 8" AND SHALL BE ANCHORED AT NOT MORE THAN 4'-0" CENTERS. FIBER TUBES SHALL HAVE A WALL THICKNESS OF NOT LESS THAN 0.225"
- 3.) REINFORCEMENT SHALL BE IN ACCORDANCE WITH SECTION 1036.
- 4.) THE VOIDED SLAB BEAM SHALL BE FINISHED IN ACCORDANCE WITH SEC 1029.6.14.
- 5.) THE TOP SURFACE OF ALL BEAMS SHALL RECEIVE A SCORED FINISH WITH A DEPTH OF SCORING OF 1/4" PERPENDICULAR TO THE PRESTRESSING STRANDS.
- 6.) VOIDED SLAB BEAMS SHALL BE KEPT UPRIGHT AT ALL TIMES. SUPPORT SHALL BE WITHIN 12 INCHES OF THE ENDS ONLY.

NOTES FOR BILL OF REINFORCING STEEL:

- 1.) ALL DIMENSIONS IN BENDING DIAGRAM ARE OUT TO OUT.
- 2.) HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES. STIRRUP AND TIE DIMENSIONS.
- 3.) ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE OF BAR TO THE NEAREST INCH.
- 4.) MINIMUM CLEARANCE TO REINFORCING SHALL BE 1", EXCEPT AS NOTED.
- 5.) ALL REINFORCEMENT SHALL BE GRADE 60.
- 6.) ALL REINFORCING STEEL SHALL BE EPOXY COATED.

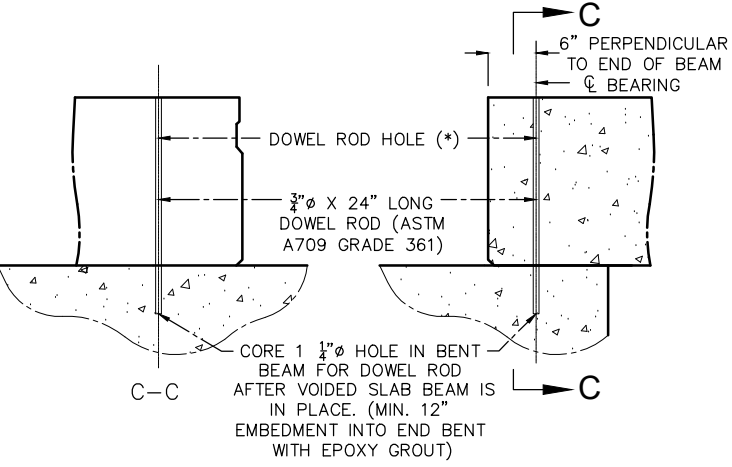
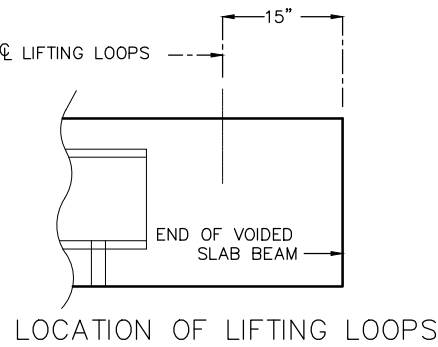
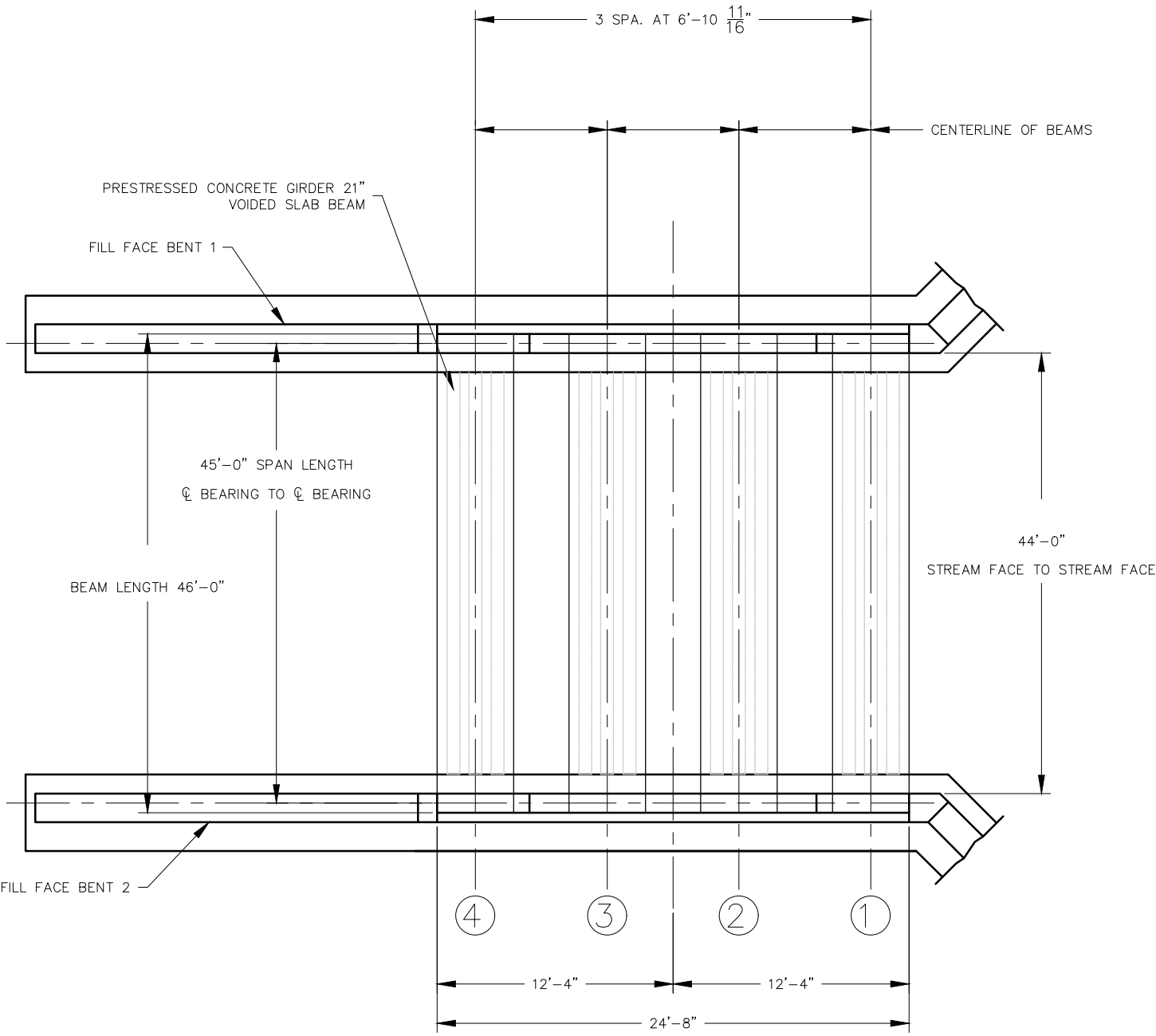
| BILL OF REINFORCING STEEL - EACH BEAM | | | | | BENDING DIAGRAM | |
|---------------------------------------|-------------|---------------|-------|--|-----------------|---------|
| NO. | SIZE & MARK | ACTUAL LENGTH | SHAPE | | | |
| 8 | 5 A1 | 8'-0" | 1 | | (M2)(D2) | 12" |
| 10 | 5 A2 | 38'-0" | 1 | | (B2) | 14" |
| 74 | 4 B1 | 8'-2" | 4 | | (B3) | 5" |
| 74 | 4 B2 | 6'-5" | 6 | | (M2) | 16" |
| 146 | 3 B3 | 2'-6" | 6 | | (D2) | 3'-6" |
| 10 | 3 D2 | 5'-6" | 6 | | (B2) | 4'-0" |
| 10 | 4 M1 | 4'-0" | 1 | | (B1) | 19 3/4" |
| 28 | 3 M2 | 3'-4" | 6 | | (B1) | 5" |



HENDRICKS ROAD BRIDGE OVER
LITTLE MERAMEC RIVER TRIBUTARY
FEDERAL PROJECT NO. STP-5490(616)
FRANKLIN COUNTY, MISSOURI

| CONCRETE SLAB BEAM DETAILS | | DATE: | REVISION: |
|----------------------------|-----------|--------------|-----------|
| DWN. BY: | APPD. BY: | | |
| A.J.M. | B.B.D. | | |
| DATE: | | NOV. 2021 | |
| SCALE: | | NOT TO SCALE | |
| PROJ. NO: | | SC20-1165 | |
| DWG. NO: | | B-18 | |

CONCRETE SLAB BEAM PLACEMENT



VOIDED SLAB BEAM ANCHORAGE DETAIL

314-842-4033 (cell)
314-842-4035 (office)
www.cochraneng.com

COCHRAN

737 RUDDER ROAD
FENTON, MISSOURI 63026

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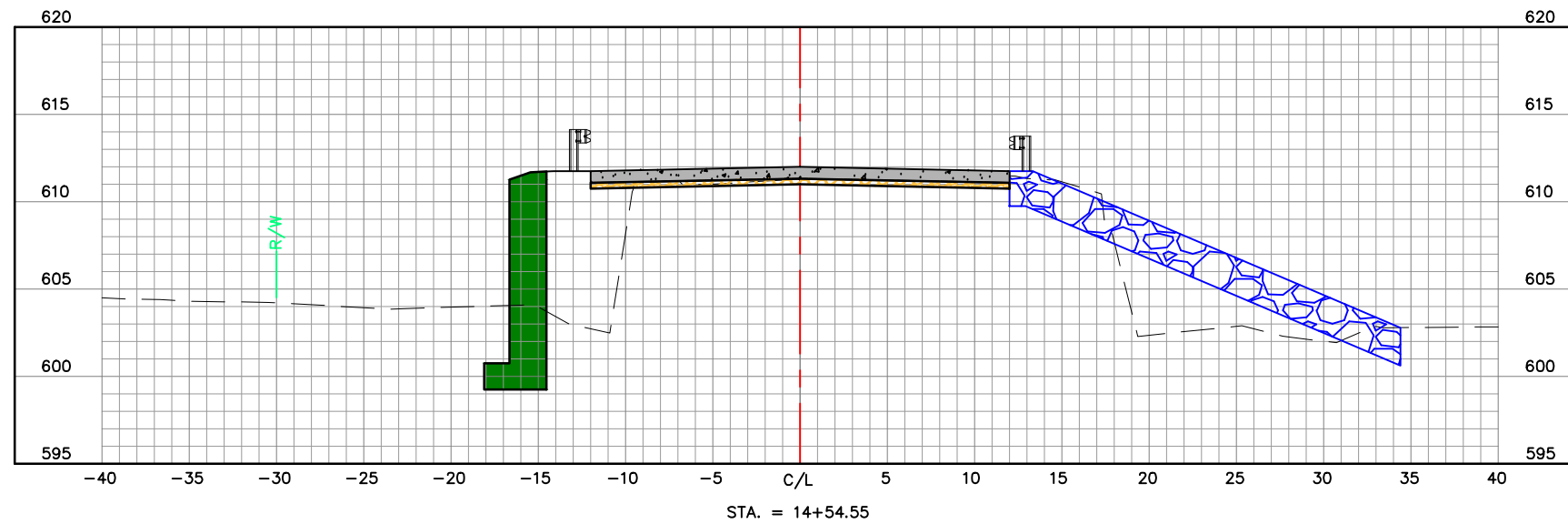
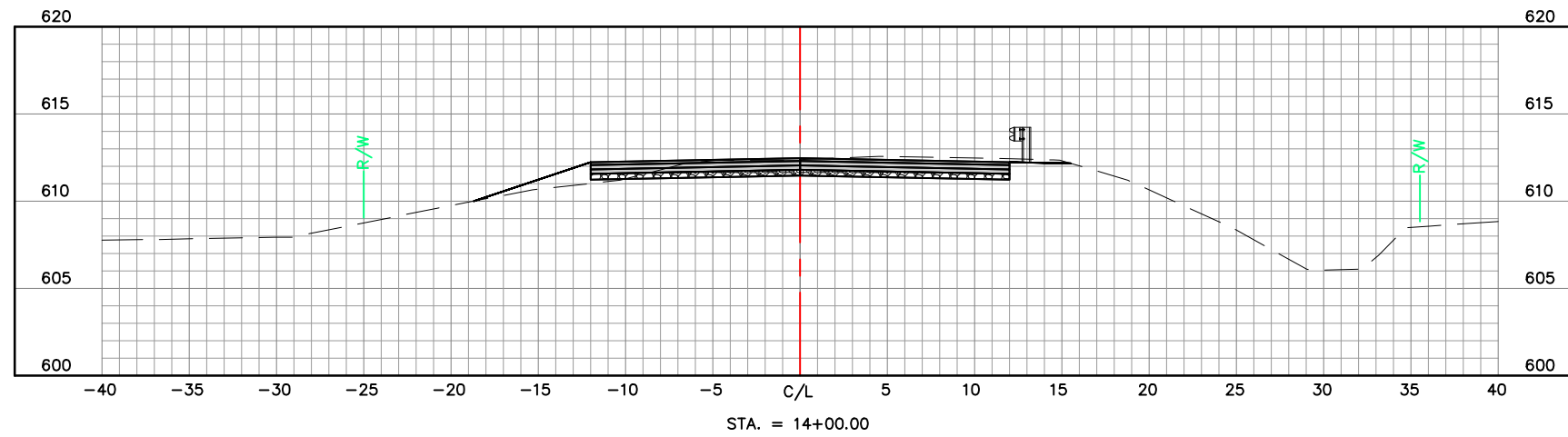
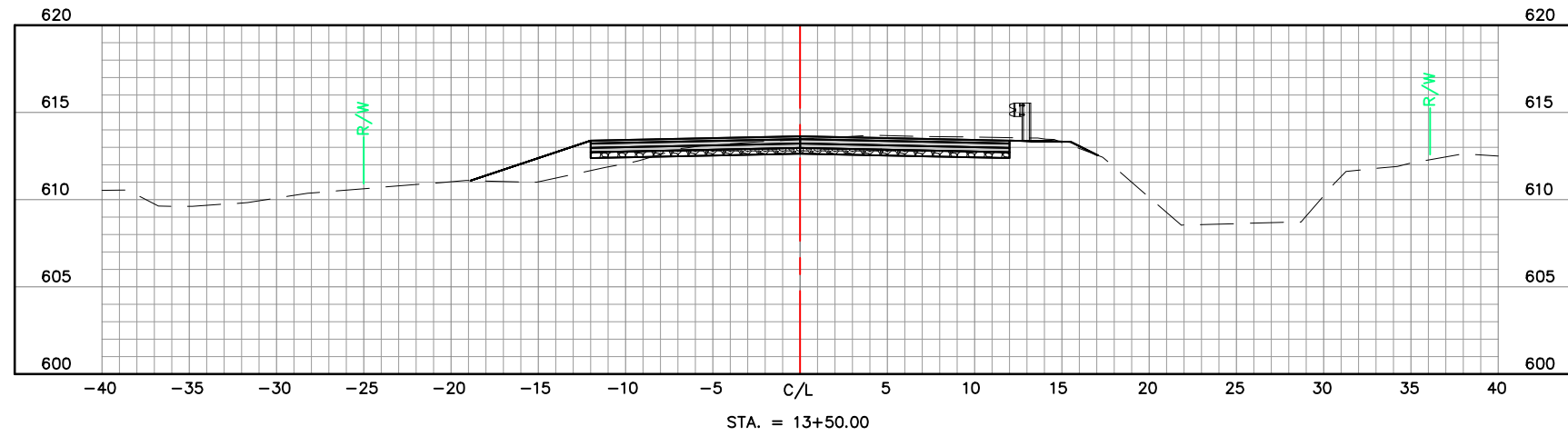
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FRANKLIN COUNTY, MISSOURI

| CONCRETE SLAB BEAM PLACEMENT | | | |
|------------------------------|----------|---------|----------|
| DATE | REVISION | DWN. BY | APPD. BY |
| | | A.J.M. | B.B.D. |
| DATE: JUNE 2021 | | | |
| SCALE: NOT TO SCALE | | | |
| PROJ. NO: SC20-1165 | | | |
| DWG. NO: B-19 | | | |

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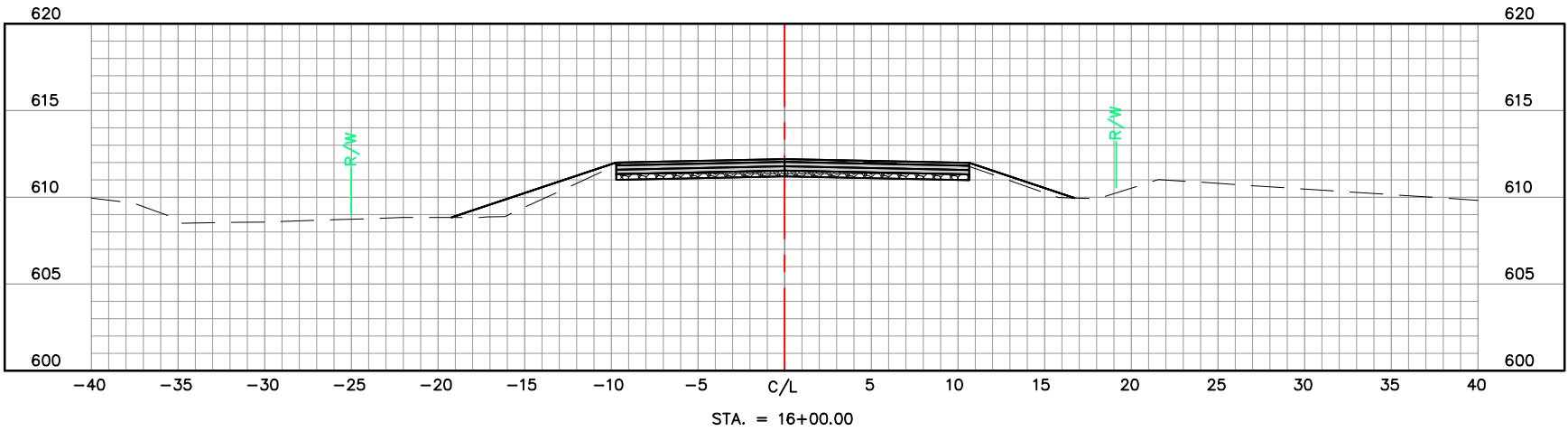
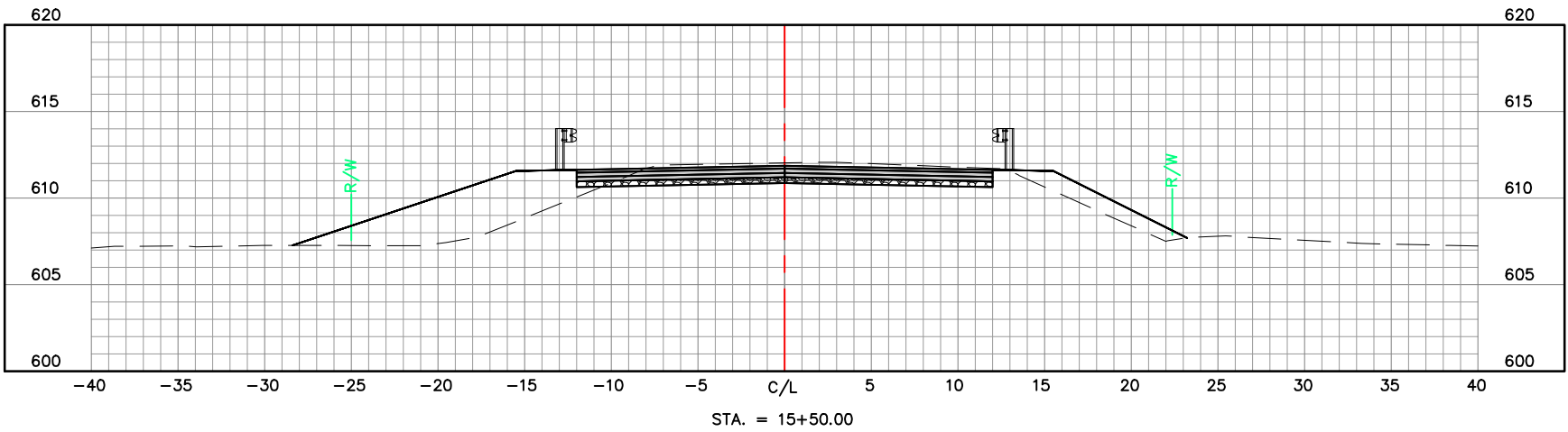
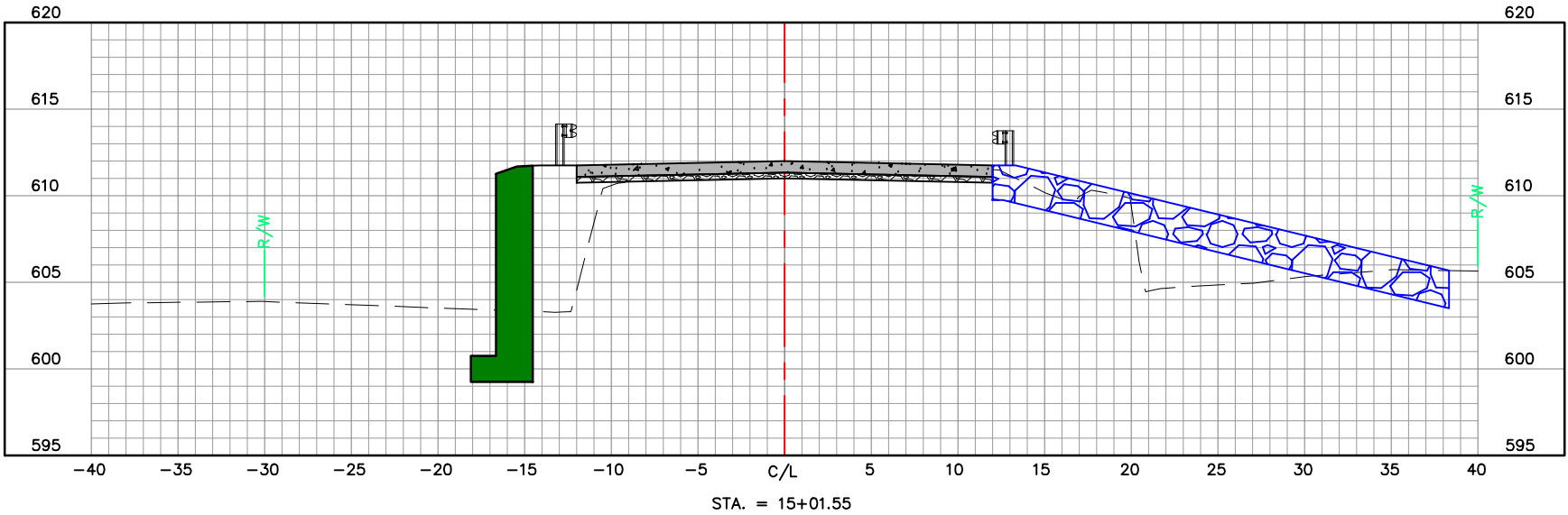
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| CROSS SECTION | | | | | | | | | | |
| | REVISION: | | | | | | | | | |
| | DATE: | | | | | | | | | |
| | DWN. BY: | A. J. M. | | | | APP'D. BY: | | | | |
| | | B. B. D. | | | | | | | | |
| | DATE: | JUNE | | | | 2021 | | | | |
| | SCALE: | 1" = 10' | | | | | | | | |
| | PROJ. NO: | SC20-1165 | | | | | | | | |
| | DWG. NO: | | | | | | | | | |
| | | XS-1 | | | | | | | | |

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Drawing name: J:\SC20-1165 Hendricks Rd. Bridge, Franklin County\AUTOCAD DRAWINGS\CROSS SECTIONS.dwg Tab: XS-2 Plotted on: Jul 11, 2022 - 9:26am Plotted by: BDunagan

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| A.J.M. | B.B.D. | | | | |
| DATE: | | | | | |
| JUNE 2021 | | | | | |
| SCALE: | | | | | |
| 1" = 10' | | | | | |
| PROJ. NO: | | | | | |
| SC20-1165 | | | | | |
| DWG. NO: | | | | | |
| XS-2 | | | | | |