

CONTACT INFORMATION

OWNER	CONSULTANT
JEFFERSON COUNTY HIGHWAY DEPT.	COCHRAN
REPRESENTATIVE: JASON JONAS, P.E.	REPRESENTATIVE: TARY TODD, P.E.
ADDRESS: 725 MAPLE STREET	ADDRESS: 737 RUDDER ROAD
HILLSBORO, MISSOURI 63050	FENTON, MISSOURI 63026
PHONE: (636) 797-5340	PHONE: (314) 842-4033 EXT. 4118
MoDOT	TELEPHONE
REPRESENTATIVE: JOHN BRENDL	AT&T
ADDRESS: 1590 WOODLAKE DRIVE	REPRESENTATIVE: JIM LASHLEY
CHESTERFIELD, MISSOURI 63017-5712	ADDRESS: 909 CHESTNUT STREET
PHONE: (314) 453-1836	ST LOUIS, MISSOURI 63101
	PHONE: (573) 225-6334
ELECTRIC	MISSOURI ONE CALL
AMEREN U.E.	
REPRESENTATIVE: BILL ROSENER	
ADDRESS: 6450 HIGHWAY MM	
HOUSE SPRINGS, MISSOURI 63051	
PHONE: (636) 671-6108 EXT. 6162	PHONE: 1-800-DIG-RITE

PROJECT INFORMATION

10032 KRAMME ROAD
DITTMER, MISSOURI 63013-2518
LAT: 38.3293 LONG: -90.7331
QUADRANGLE YEAR: CEDAR HILL 1954
TOWNSHIP: 41N
RANGE: 3E
SECTION: 6

START OF PROJECT: STATION 10+00.00
END OF PROJECT: STATION 13+75.00
PROJECT LENGTH: 375 FEET
FUNCTIONAL CLASSIFICATION:
LOCAL RURAL MINOR COLLECTOR
ADT: 5 (2007) 17 (2032)
DESIGN SPEED: 25 MPH



VICINITY MAP
NOT TO SCALE

FINAL PLANS

KRAMME ROAD BRIDGE REPLACEMENT PROJECT BRIDGE NO. 16800151

IN
JEFFERSON COUNTY, MISSOURI
FEDERAL PROJECT NO. STP-5403(652)



725 MAPLE STREET
HILLSBORO, MISSOURI 63050
TELEPHONE (636) 797-5340
FAX (636) 797-5565
EMAIL: pworks@jeffco.org



- CIVIL ENGINEERING
- LAND SURVEYING
- ARCHITECTURE
- SITE DEVELOPMENT
- MASTER PLANNING
- GENERAL CONSULTING

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

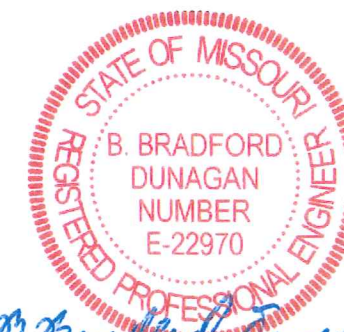
COCHRAN PROJECT NO. SC13-389
NOVEMBER 2015

SHEET INDEX

SHEET NAME	SHEET NO.
TOPOGRAPHIC SURVEY	TS-1
LEGEND, ROADWAY QTY & NOTES	LN-1
TYPICAL ROADWAY SECTION	RX-1
TRAFFIC CONTROL PLAN	TC-1
RIGHT OF WAY PLANS	RW-1
SITE PLAN	S-1
CENTERLINE PROFILE	S-2
EROSION CONTROL DETAILS	EC-1 TO EC-3
CROSS SECTIONS	XS-1 TO XS-3
BRIDGE QUANTITIES	B-1
BRIDGE SITE PLAN AND PROFILE	B-2
TYPICAL BRIDGE SECTION	B-3
BORING LOGS	B-4
END BENT DETAILS	B-5
BENT #1 PLAN & ELEVATION	B-6
BENT #2 PLAN & ELEVATION	B-7
PRESTRESSED CONCRETE VOIDED SLAB BEAMS	B-8
VOIDED SLAB BEAM PLACEMENT	B-9
REINFORCED CONCRETE SLAB	B-10
BRIDGE APPROACH SLABS	B-11
GUARDRAIL LAYOUT	B-12
SL-1 BRIDGE RAILING	B-13
TERMINAL END SECTION	B-14
BILL OF REINFORCING	B-15
CONDUIT PLAN	B-16
FENCE DETAILS	B-17

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

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



B. Bradford Dunagan
11-11-15
DATE

Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

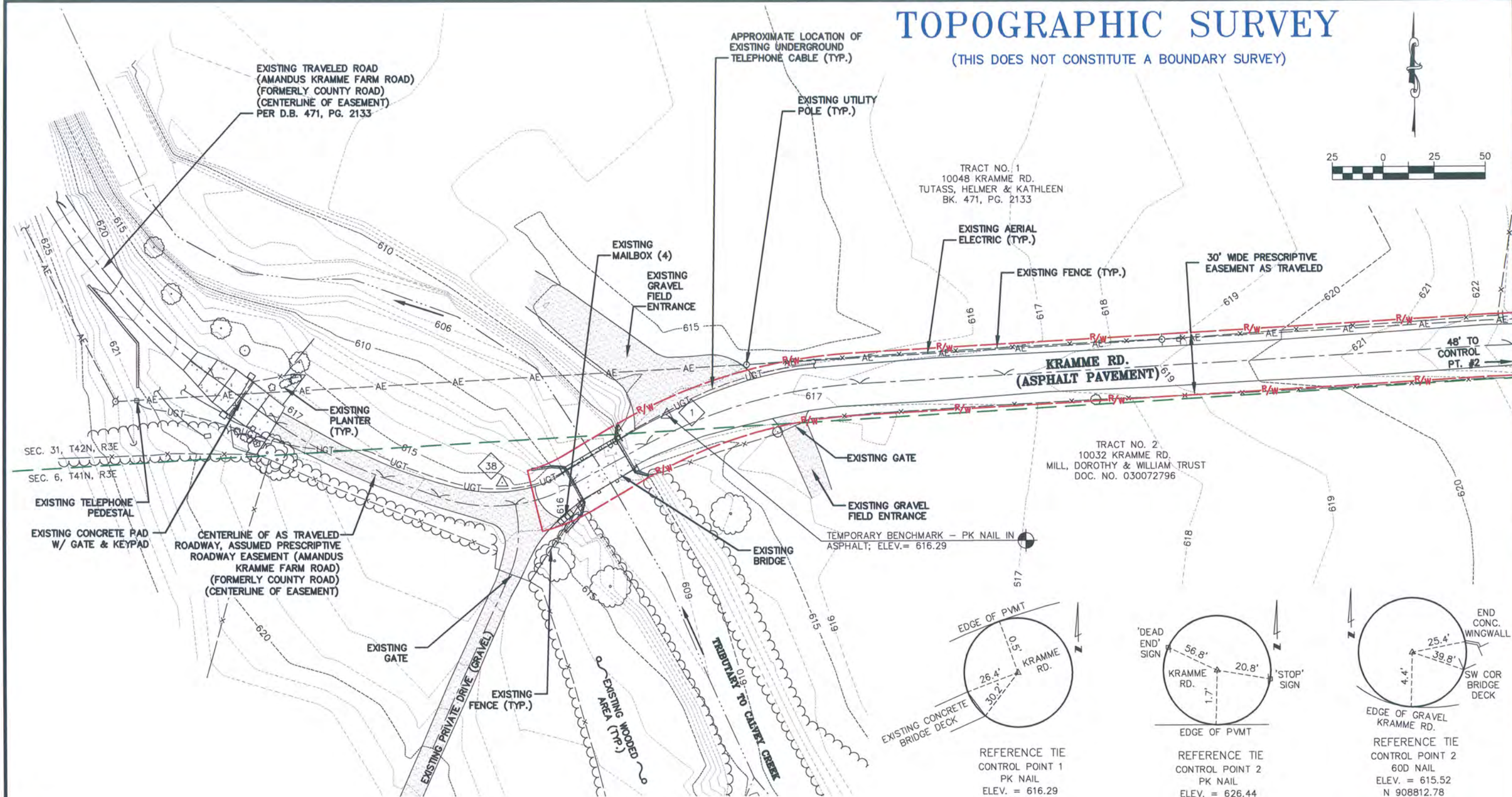
JEFFERSON COUNTY, MISSOURI

ACCEPTED BY:

Jason Jonas
JASON JONAS, P.E.
PUBLIC WORKS DIRECTOR

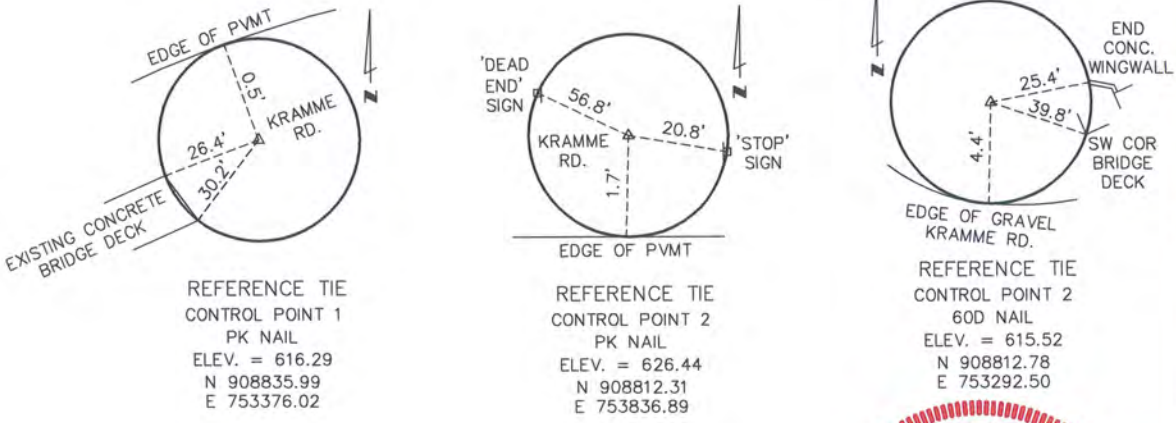
TOPOGRAPHIC SURVEY

(THIS DOES NOT CONSTITUTE A BOUNDARY SURVEY)



- NOTES:
1. 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.
 2. TEMPORARY BENCHMARK IS A PK NAIL IN ASPHALT LOCATED ON THE NORTH SIDE OF KRAMME ROAD APPROXIMATELY 25 FEET EAST OF THE EXISTING BRIDGE OVER CALVEY CREEK, ELEV.= 616.29. SITE BENCHMARK IS MISSOURI GRS MONUMENT #JE-72, ELEV.= 615.48 FT. (NAVD 88).
 3. 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 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.
 4. TOPOGRAPHIC INFORMATION AS SHOWN HEREON PER FIELD WORK PERFORMED BY A.W.E. & M.J.F. OF COCHRAN AND C.R. OF C.D.I. DATED JANUARY 2014.
 5. THIS DRAWING DOES NOT CONSTITUTE A BOUNDARY SURVEY.
 6. THIS PROJECT IS ORIENTED TO GRID NORTH BASED OFF OF THE LOCATION AND AZIMUTH OF MISSOURI GRS MONUMENT JE-72 AND MISSOURI GRS MONUMENT JE-72A (GRID AZIMUTH = 94°50'33").
 7. PARTS OF THIS SITE LIE WITHIN "ZONE X", AREAS DETERMINED TO BE OUTSIDE 0.2% ANNUAL CHANCE FLOODPLAIN; AND ALSO WITHIN SPECIAL FLOOD HAZARD AREA (ZONE A, NO BASE FLOOD ELEVATIONS DETERMINED, 1% ANNUAL CHANCE FLOOD) PER FEMA FLOOD INSURANCE RATE MAP NUMBER 29099C0180E, EFFECTIVE DATE APRIL 5, 2006.

LEGEND		
PROPERTY LINE	---	EXISTING UTILITY POLE
RIGHT-OF-WAY	R/W	EXISTING MAILBOX
CENTERLINE OF ROAD	---	EXISTING SIGN
EXISTING MAJOR CONTOUR	-970-	EXISTING FENCE
EXISTING MINOR CONTOUR	---	EXISTING BUSH
EXISTING CONCRETE PAVEMENT		EXISTING TREE
EXISTING GRAVEL		EXISTING TREELINE
EXISTING ASPHALT PAVEMENT		EXISTING UTILITY (TERMINUS UNKNOWN)
EXISTING AERIAL ELECTRIC	AE	EXISTING GUY WIRE



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

CERTIFICATE OF AUTHORITY NUMBER - 006937

These working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RITE for utility location information.

All OSHA rules & regulations established for the type of construction required by the project shall be followed (i.e., Trenching, Boring, etc.)

**KRAMME RD. BRIDGE REPLACEMENT
OVER TRIBUTARY TO CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO**

TOPOGRAPHIC SURVEY

DWN. BY:	APPR. BY:
DATE:	DATE:
DWN. BY:	APPR. BY:
DATE:	DATE:
SCALE:	1" = 50'
PROJ. NO:	SC13-389
DWG. NO:	TS-1

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

GENERAL NOTES

NOTES:

- DESIGN NOTES:

1. 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. SEE THE REMOVAL OF IMPROVEMENTS SECTION IN THE SPECIFICATIONS.
2. CONTRACTOR SHALL ADJUST TO GRADE ALL UTILITIES NECESSARY TO BRING THE UTILITY TO THE GRADE OF THE NEW CONSTRUCTION. SEE THE UTILITY ADJUSTMENT SECTION OF THE SPECIFICATIONS.
3. CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND ELEVATION OF ALL POTENTIAL UTILITY CONFLICTS PRIOR TO ORDERING STORM SEWER PIPE AND STRUCTURES.
4. CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING PRIVATE SIDEWALKS AS NECESSARY FOR THE CONSTRUCTION OF THE IMPROVEMENTS. PRIVATE SIDEWALKS SHALL BE SAW CUT AT THE RIGHT-OF-WAY OR NEAREST JOINT AS DIRECTED BY THE ENGINEER. SEE THE REMOVAL OF IMPROVEMENTS SECTION IN THE SPECIFICATIONS.
5. EXISTING CULVERT PIPES, WHICH ARE UNDER DRIVEWAYS BEING REPLACED BY THE CONSTRUCTION OF IMPROVEMENTS, SHALL BE REMOVED. SEE THE REMOVAL OF IMPROVEMENTS SECTION IN THE SPECIFICATIONS.
6. OBLITERATE ANY EXISTING STRIPING THAT CONFLICTS WITH THE PROPOSED PAVEMENT MARKING PLAN. THE PROCESS FOR REMOVAL SHALL BE APPROVED BY THE ENGINEER PRIOR TO BEGINNING (INCIDENTAL TO CONSTRUCTION).
7. 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.
8. THE PROJECT WILL BE OPEN FOR INSPECTIONS OF THE WORK BY REPRESENTATIVES OF MODOT AND FHWA. THE CONTRACTOR SHALL GRANT ACCESS TO ALL PORTIONS OF THE WORK.

Bld No.	Item No.	Description	From STA	To STA	Unit	Quantity
		ROADWAY ITEMS				
1	2013000	Clearing and Grubbing	10+00	13+75	AC	0
2	2022010	Removal of Improvements	10+00	13+75	LS	
3	2035000	Unclassified Excavation	10+00	13+75	CY	
4	2035500	Embankment in Place	10+00	13+75	CY	9
5	3040504	Type 5 Aggregate for Base (4" Thick) (For Roadway Only)	10+00	13+75	SY	8
6	3040514	Type 5 Aggregate for Shoulders (4" Thick)	10+00	13+75	SY	2
7	3105003	Gravel (A) or Crushed Stone (B) (4") (For Driveways Only)	10+00	13+75	SY	3
8	4011209	Bituminous Pavement Mix PG64-22 (BP-1)(Surface Course) (2")	10+00	13+75	TON	
9	4013000	Bituminous Pavement Mix PG64-22(BASE 2-3" Lifts)	10+00	13+75	TON	2
10	6061010	Guardrail Type A (curved on 35' radius)	11+07	11+20	LF	12
11	6062301A	Transition Section, 7.5 Ft. Posts	11+00	12+02	EA	
12	6063001	Terminal End Section	10+22	12+27	EA	
13	6071041	Tubular Steel Drive Gate - 16'	11+10	12+82	EA	
14	6072010	Fence - Woven Wire	10+00	11+03	LF	1
15	6072011	Fence - 5 Strand Barbed Wire	10+00	13+75	LF	3
16	6072012	Fence - Wooden	11+03	11+45	LF	
17	6072013	Fence - Water Gap	11+45	12+08	LF	
18	6181000	Mobilization	10+00	13+75	LS	
19	6274000	Contractor Furnished Surveying & Staking	10+00	13+75	LS	
20	7250318A	18 in. Smooth Interior HDPE	12+69	12+81	LF	
21	7261324	24 in. Class III Reinforced Concrete Pipe Culvert	11+00	11+10	LF	
22	8051000A	Seeding - Cool Season Mixtures	10+00	13+75	AC	
23	8061019	Silt Fence	10+00	13+75	LF	4
24	8061005	Ditch Check	10+00	13+75	EA	
25	8061111	Temporary Stream Crossing	10+00	13+75	EA	
		SIGNING/STRIPING/SIGNALS ITEMS				
41	6161005	Construction Signs	10+00	13+75	SF	4
42	6161030	Type II Moveable Barricade with Light	10+00	13+75	EA	

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



DATE _____

Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

LEGEND AND GENERAL NOTES

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY TO CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

COCHRAN

737 RUDDER ROAD
FENTON, MISSOURI 63026

314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

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

CERTIFICATE OF AUTHORITY NUMBER - 006937

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RIITE for utility location information.

Plotted on: Nov 18, 2015 - 10:07am Plotted by: mfitzgerald

Drawing name: J:\SC13-389 Jefferson County - Krammie Rd\LEGEND.dwg Tab: LN-1

TYPICAL ROADWAY SECTIONS

314-842-4033 (tel)
314-842-5957 (fax)
www.cochraneng.com

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

737 RUDDER ROAD
FENTON, MISSOURI 63026

CERTIFICATE OF AUTHORITY NUMBER - 006937

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RITE for utility location information.

All OSHA rules & regulations established for the type of construction required by the project shall be followed (i.e., Trenching, Blasting, etc)

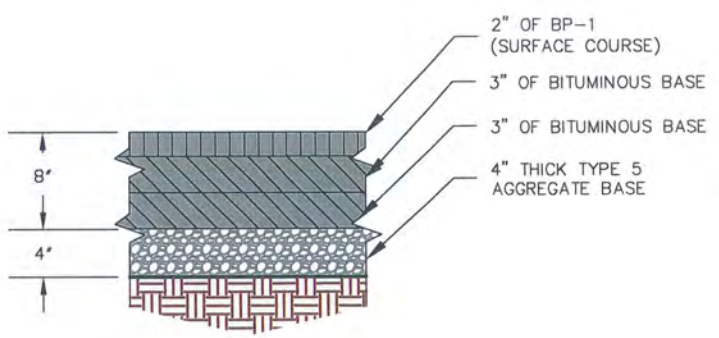
KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

TYPICAL ROADWAY SECTIONS	DATE:	REVISION:	DWN. BY:	APPD. BY:
	DATE:	REVISION:	DWN. BY:	APPD. BY:
	DATE:	REVISION:	DWN. BY:	APPD. BY:
	DATE:	REVISION:	DWN. BY:	APPD. BY:

NO SCALE

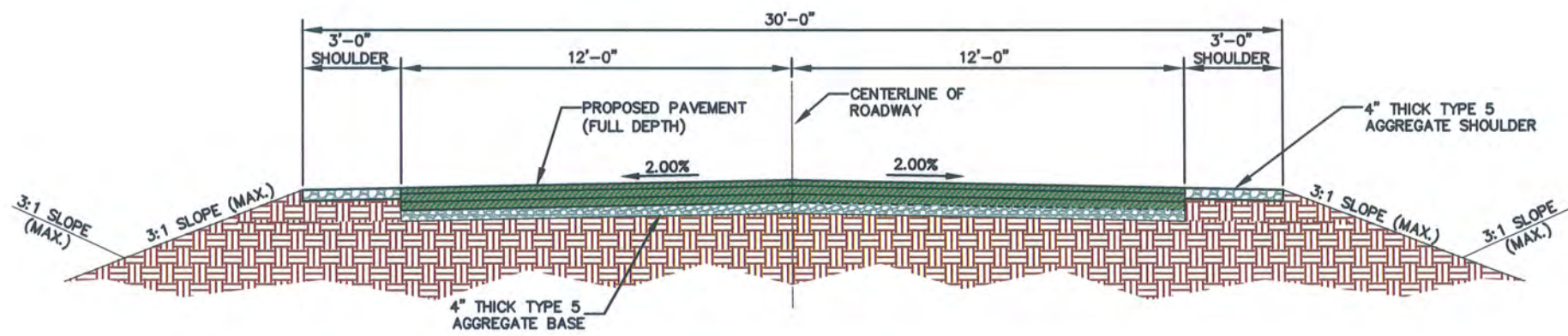
PROJ. NO:
SC13-389

DWG. NO:
RX-1



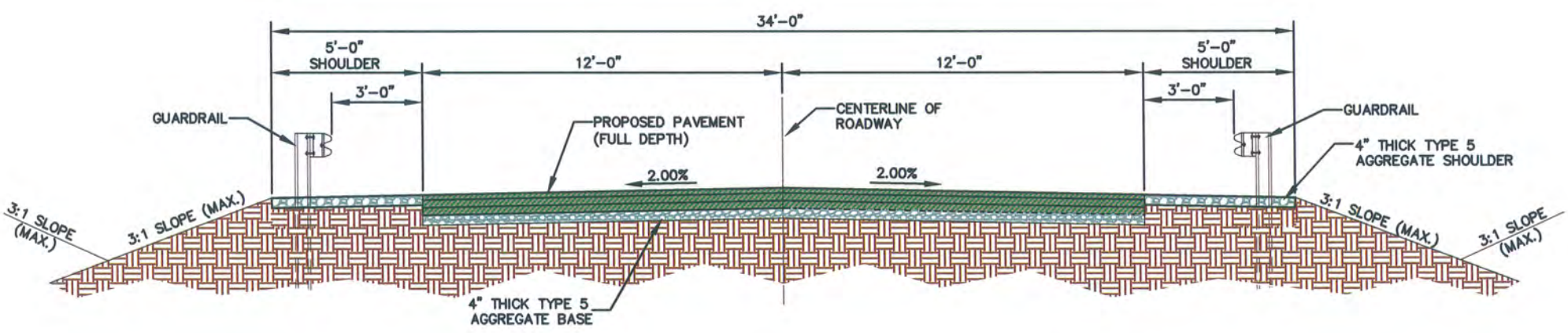
ASPHALT ROAD SECTION

NOTE: THE GRADE OF ASPHALT BINDER SHALL BE PG 64-22



TYPICAL ROADWAY SECTION

NO SCALE



TYPICAL ROADWAY SECTION WITH GUARDRAIL

NO SCALE



DATE: _____

Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

TRAFFIC CONTROL PLAN



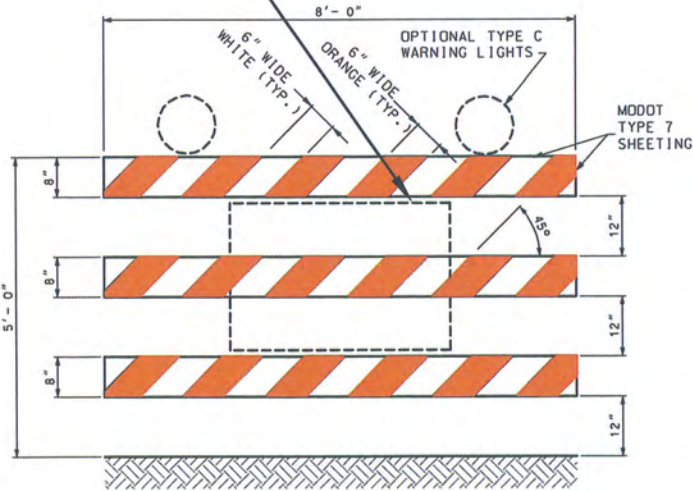
1 R11-3R
(12.5 SQUARE FEET)



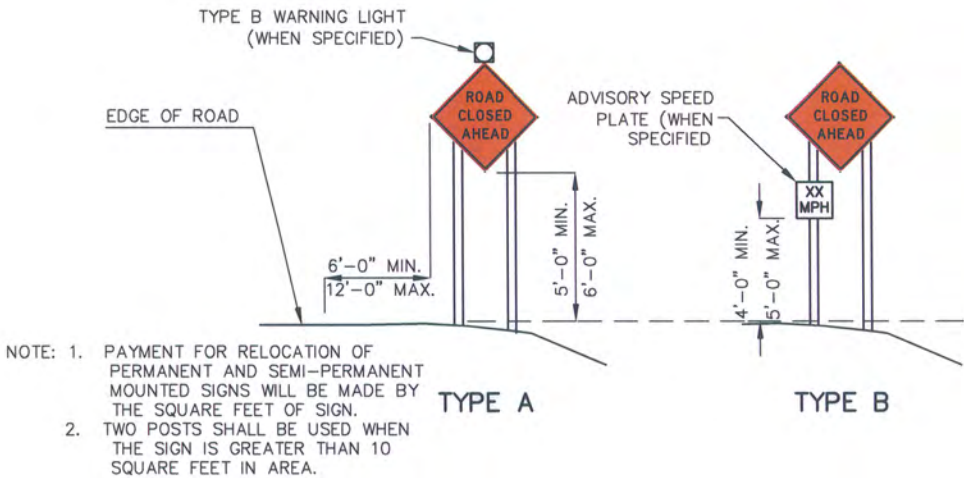
2 W20-3R
(16 SQUARE FEET)



3 R11-2R
(10 SQUARE FEET)



TYPE III MOVABLE BARRICADE



HEIGHT AND LATERAL LOCATIONS
PERMANENT AND SEMI-PERMANENT SIGN MOUNTING

ONE TYPE III MOVABLE BARRICADE WILL BE REQUIRED TO COMPLETELY CLOSE EACH 8' OF PAVEMENT. PAVED SHOULDERS SHALL BE INCLUDED IN THE AREA TO BE CLOSED.

SIGNS SHALL BE LIGHT WEIGHT (ROLL-UP OR PLASTIC) AND OBSCURE NO MORE THAN 50 PERCENT OF THE TOP 2 RAILS OR 33 PERCENT OF ALL THREE RAILS. SEE SIGN MOUNTING REQUIREMENTS IN TABLE A ON SHEET 1.

TYPE C WARNING LIGHTS SHALL BE LIGHT WEIGHT (3.3 LBS. OR LESS) OR HAVE BATTERY PACK MOUNTED NO HIGHER THAN 18-INCH AND SHALL NOT COVER ANY PORTION OF THE BARRICADED FACE.

IF SIGNS OR LIGHTS CANNOT MEET THE ABOVE REQUIREMENTS, THEY SHALL BE MOUNTED ON SEPARATE CRASHWORTHY DEVICES, LOCATED 7 TO 10 FEET BEHIND THE BARRICADE.

WHERE A BARRICADE ARRAY EXTENDS ACROSS A ROADWAY, THE STRIPES SHALL SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN OR PASS.

WHERE BOTH RIGHT AND LEFT VEHICULAR MOVEMENTS ARE PROVIDED, THE STRIPES SHALL SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE ARRAY.

WHERE NO VEHICULAR MOVEMENTS ARE PROVIDED, THE STRIPES SHALL SLOPE DOWNWARD TOWARD THE CENTER OF THE BARRICADE ARRAY.

TYPE III 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 MODOT TYPE 7 ORANGE SHEETING MAY BE APPLIED TO THE ENDS OF EACH RAIL TO HELP DELINEATE THE DEVICE.

TRAFFIC CONTROL SCHEDULE			
PLAN DESIGNATION	SIGN	MOUNTING	COMMENTS
1	R11-3R	TYPE A	INSTALL ABOUT 100 FEET FROM INTERSECTION
2	W20-3R	TYPE A	INSTALL ABOUT 500 FEET FROM PROJECT
3	R11-2R	TYPE III	TWO MOVABLE BARRICADES WITH TWO TYPE C WARNING LIGHTS EACH, AT EACH LOCATION.



TRAFFIC CONTROL LAYOUT

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



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

237 RUDDER ROAD
FENTON, MISSOURI 63026

CERTIFICATE OF AUTHORITY NUMBER - 006937

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RITE for utility location information.

All OSHA rules & regulations established for the type of construction required by the project shall be followed (i.e., Trenching, Blasting, etc)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

TRAFFIC CONTROL DETAILS

DATE:	NOVEMBER 2015
SCALE:	AS NOTED
PROJ. NO.:	SC13-389
DWG. NO.:	TC-1

RIGHT-OF-WAY PLAN

TRACT NO. 1
10048 KRAMME RD.
TUTASS, HELMER & KATHLEEN
BK. 471, PG. 2133
100.90 ACRES
ACREAGE ACQUIRED = 0.23 ACRES (9,817 S.F.)
PRESCRIPTIVE ESMT AREA ACQUIRED = 0.11 ACRES (4,884 S.F.)
REMAINING ACREAGE (NORTH SIDE OF KRAMME RD.) = 100.56 ACRES
REMAINING ACREAGE (SOUTH SIDE OF KRAMME RD.) = 0.00 ACRES (0 S.F.)
T.C.E. = 0.23 ACRES (9,907 S.F.)

RAD=250.00'
ARC=108.79'
CB=N80°48'38"E
CHD=107.93'

STA. 12+66.0
FIELD ENTRANCE
(GRAVEL)

STA. 13+02.5
14.9' LT.

STA. 13+75.0
55.0' LT.

STA. 13+75.0
30.0' LT.

STA. 13+75.0
14.9' LT.

STA. 13+75.0
15.1' RT.

STA. 13+75.0
16.9' RT.

STA. 13+75.0
30.0' RT.

STA. 12+69.9
FIELD ENTRANCE
(GRAVEL)

STA. 11+85.7
14.6' RT.

STA. 11+57.7
15.5' RT.

STA. 11+34.5
15.3' RT.

STA. 11+26.0
57.8' LT.

STA. 11+11.9
83.4' RT.

STA. 11+09.0
43.4' RT.

STA. 11+02.5
76.6' RT.

STA. 11+10.6
34.9' RT.

STA. 11+25.1
RESIDENTIAL ENTRANCE
(ASPHALT)

STA. 10+50.0
30.0' LT.

STA. 10+50.0
72.5' LT.

STA. 10+00.0
30.0' LT.

STA. 11+71.3
70.0' LT.

STA. 11+56.6
14.4' LT.

STA. 11+84.7
15.4' LT.

STA. 11+35.0
14.7' LT.

STA. 10+00.0
30.0' LT.

STA. 10+00.0
30.0' LT.

STA. 10+00.0
30.0' LT.

LEGEND

PROPERTY LINE	---	EXISTING STORM SEWER	==SS==	NEW FENCE	---
EXISTING RIGHT-OF-WAY	R/W	EXISTING UNDERGROUND TELEPHONE	---UGT---	NEW ASPHALT PAVEMENT/AGGREGATE DRIVEWAY	---
CENTERLINE OF ROAD	---	EXISTING SIGN	+	NEW BRIDGE	---
EXISTING MAJOR CONTOUR	---970---	EXISTING FENCE	-X-	TEMPORARY CONSTRUCTION EASEMENT	T.C.E.
EXISTING MINOR CONTOUR	---	EXISTING TREE	+	NEW RIGHT-OF-WAY	R/W
EXISTING GRAVEL	---	EXISTING TREELINE	---	PRESCRIPTIVE EASEMENT AREA	---
EXISTING AERIAL ELECTRIC	---AE---	EXISTING UTILITY (TERMINUS UNKNOWN)	---	CONSTRUCTION LIMITS	---
EXISTING UTILITY POLE	+	NEW STORM SEWER	==SS==		

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 PK NAIL IN ASPHALT LOCATED ON THE NORTH SIDE OF KRAMME ROAD APPROXIMATELY 25 FEET EAST OF THE EXISTING BRIDGE OVER CALVEY CREEK, ELEV.= 616.29. SITE BENCHMARK IS MISSOURI GRS MONUMENT #JE-72, ELEV.= 615.48 FT. (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 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 A.W.E. & M.J.F. OF COCHRAN AND C.R. OF C.D.I. DATED JANUARY 2014.
- THIS DRAWING DOES NOT CONSTITUTE A BOUNDARY SURVEY.
- THIS PROJECT IS ORIENTED TO GRID NORTH BASED OFF OF THE LOCATION AND AZIMUTH OF MISSOURI GRS MONUMENT JE-72 AND MISSOURI GRS MONUMENT JE-72A (GRID AZIMUTH = 94°50'33").
- PARTS OF THIS SITE LIE WITHIN "ZONE X", AREAS DETERMINED TO BE OUTSIDE 0.2% ANNUAL CHANCE FLOODPLAIN; AND ALSO WITHIN SPECIAL FLOOD HAZARD AREA (ZONE A, NO BASE FLOOD ELEVATIONS DETERMINED, 1% ANNUAL CHANCE FLOOD) PER FEMA FLOOD INSURANCE RATE MAP NUMBER 29099C0180E, EFFECTIVE DATE APRIL 5, 2006.



DATE
Timothy J. Van Leer #2007000087
State of Missouri
Professional Land Surveyor
For SC Engineering LLC
DBA Cochran LS 2007004529 D

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

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

737 RUDDER ROAD
FENTON, MISSOURI 63026

CERTIFICATE OF AUTHORITY NUMBER - 006937

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

RIGHT-OF-WAY PLAN

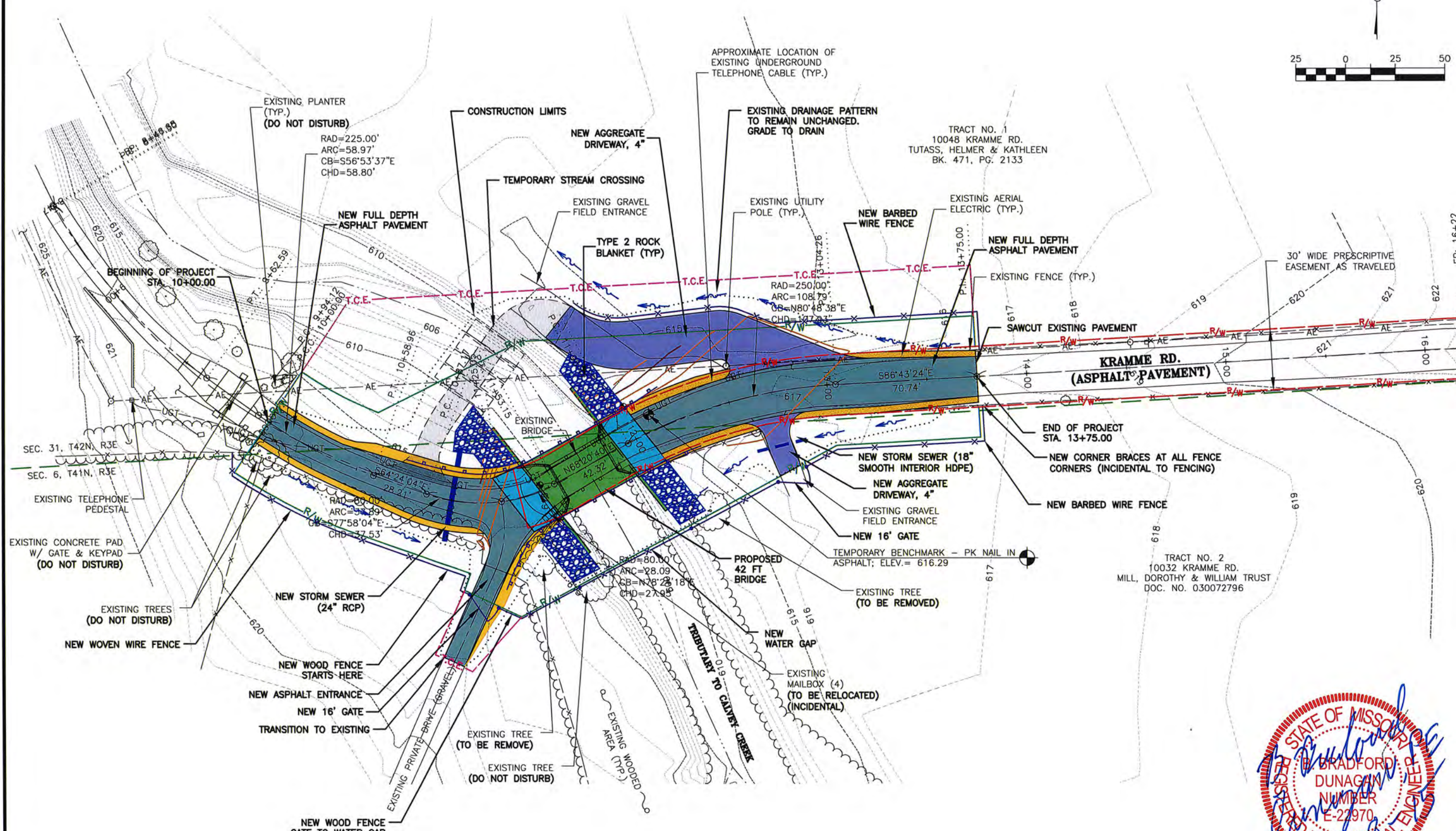
DATE: NOVEMBER 2015

SCALE: 1" = 50'

PROJ. NO.: SC13-389

DWG. NO.: RW-1

SITE PLAN



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

737 RUDDER ROAD
FENTON, MISSOURI 63026
314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

CERTIFICATE OF AUTHORITY NUMBER - 006937

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-460-RITE for location information.

All OSHA rules & regulations established for the type of work shall be strictly followed (i.e. Trenching, Blasting, etc.)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

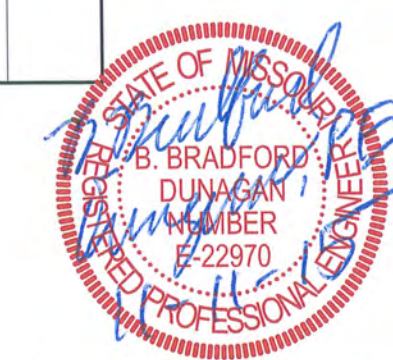
DATE:	REVISION:	DWN. BY:	APPD. BY:
NOVEMBER 2015		E.L.S.	B.B.D.
SCALE:			
1" = 50'			
PROJ. NO:			
SC13-389			
DWG. NO:			
S-1			



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

Drawing name: J:\SC13-389 Jefferson County - Kramme Rd\SITE PLAN - Option No. 2.dwg Tab: S-1 Plotted on: Nov 18, 2015 - 10:15am Plotted by: mltzgerald

Drawing name: J:\SC13-389 Jefferson County - Kramme Rd\CENTERLINE PROFILE.dwg
 Tab: Sheet - (50)
 Plotted on: Nov 10, 2015 - 10:30am
 Plotted by: mllzgerald



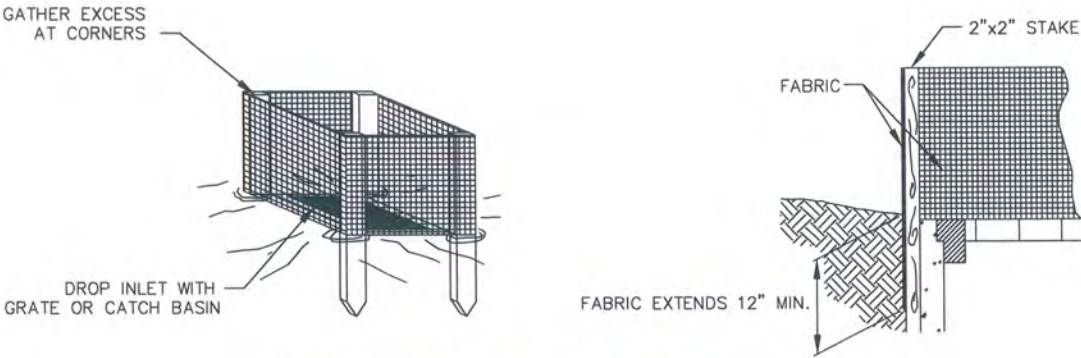
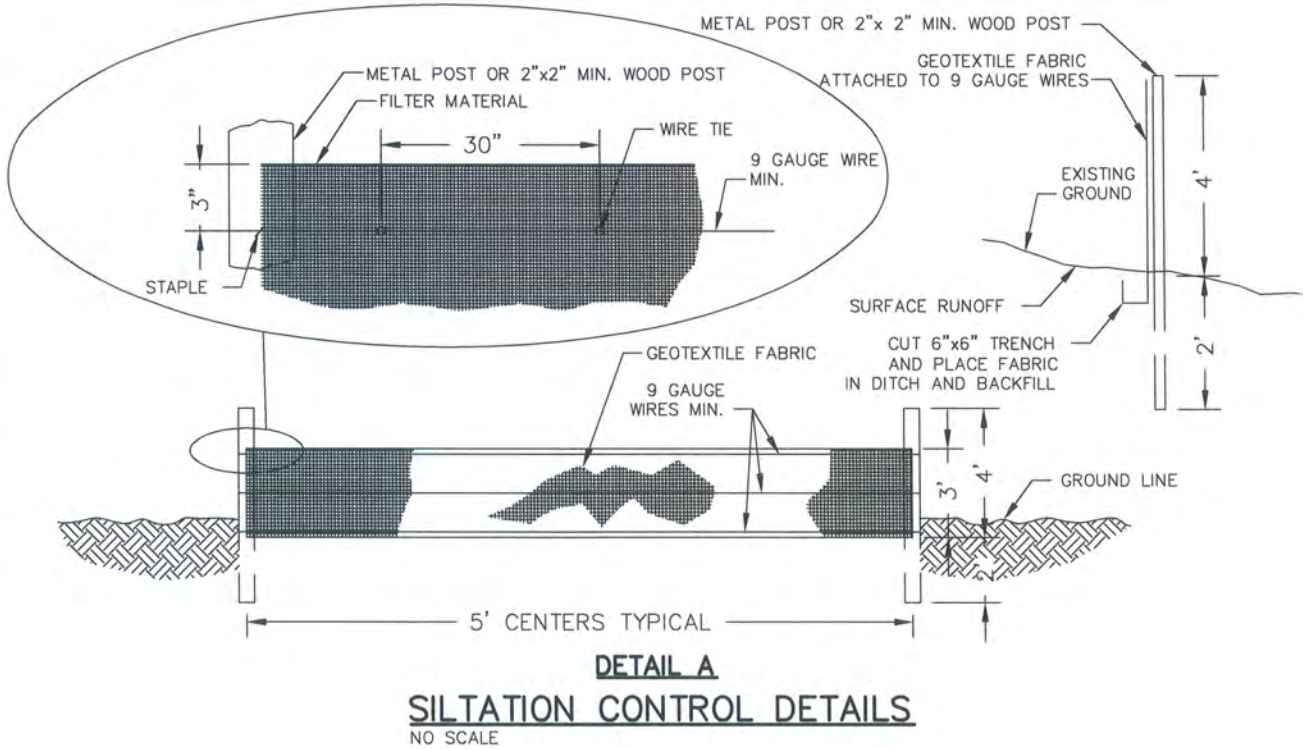
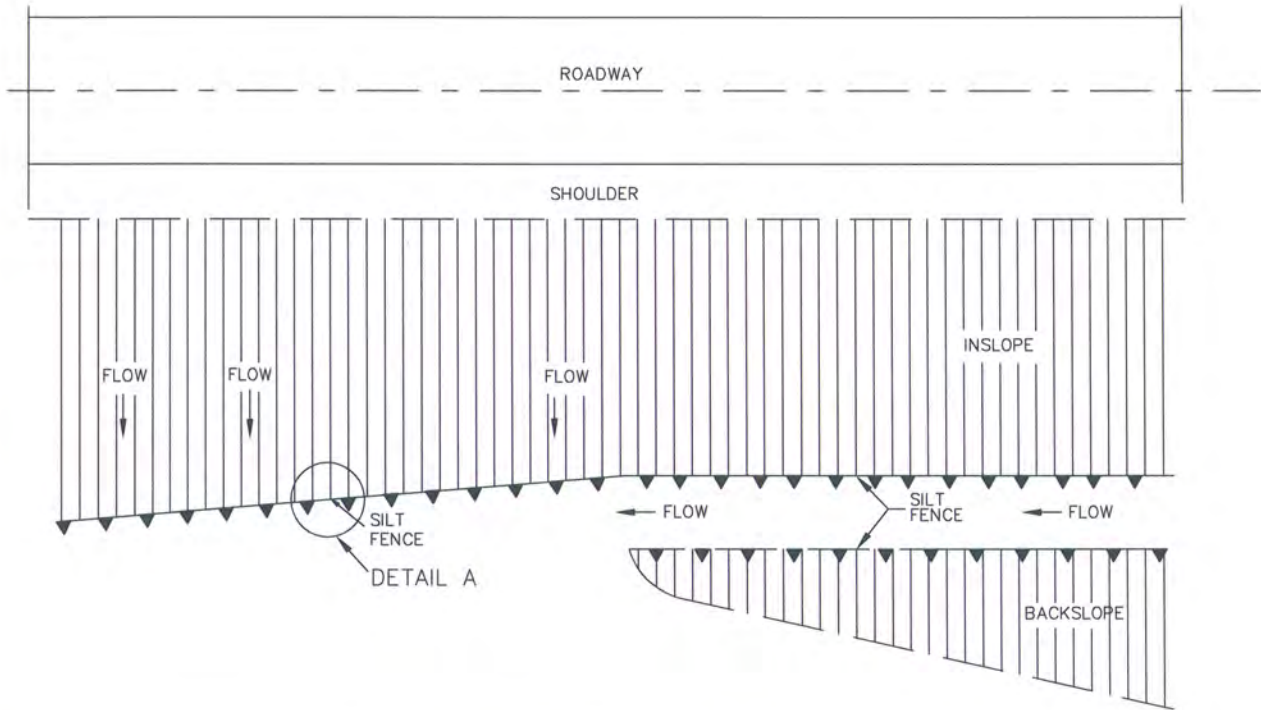
DATE _____

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-ROUTE for utility location information.

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

CENTERLINE PROFILE		DATE:		REVISION:		DWN. BY:		APPD. BY:	
		DWN. BY:	E.L.S.	APPD. BY:	B.B.D.				
		DATE:	NOVEMBER 201						
		SCALE:	AS NOTED						
		PROJ. NO:	SC13-389						
		DWG. NO:	S-2						

EROSION CONTROL



SILT FENCE INLET PROTECTION
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 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.



DATE

Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

314-842-4033 (tel.)
314-842-5951 (fax)
www.cochran.com

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

CERTIFICATE OF AUTHORITY NUMBER - 009937

Three working days prior to the start of construction on this site, the contractor shall call 1-800-DIG-RITE for utility location information.

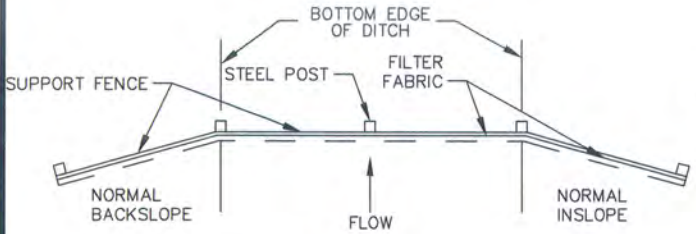
All OSHA rules & regulations established for the type of construction required by these plans shall be strictly followed (i.e., trenching, shoring, etc.)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

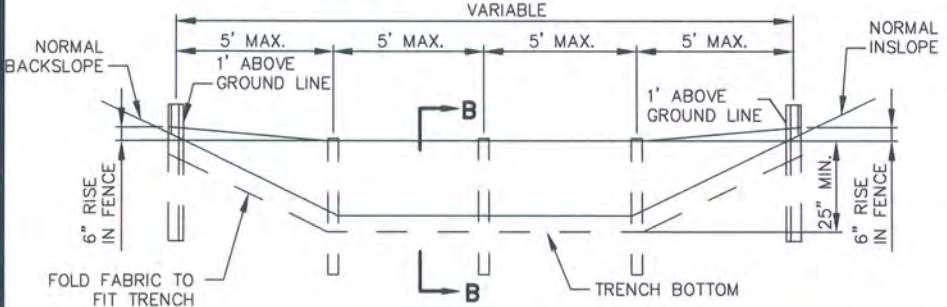
EROSION CONTROL DETAILS	
DWN. BY:	APPD. BY:
DATE:	DATE:
NOVEMBER 2015	NOVEMBER 2015
SCALE:	SCALE:
NO SCALE	NO SCALE
PROJ. NO:	PROJ. NO:
SC13-389	SC13-389
DWG. NO:	DWG. NO:
EC-1	EC-1

Drawing name: J:\SC13-389 Jefferson County - Kramme Rd\EROSION CONTROL.dwg Tab: EC-2 Plotted on: Nov 10, 2015 - 10:30am Plotted by: mltzgerald

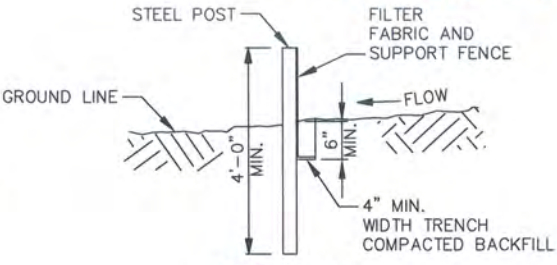
EROSION CONTROL



DETAIL A
PLAN

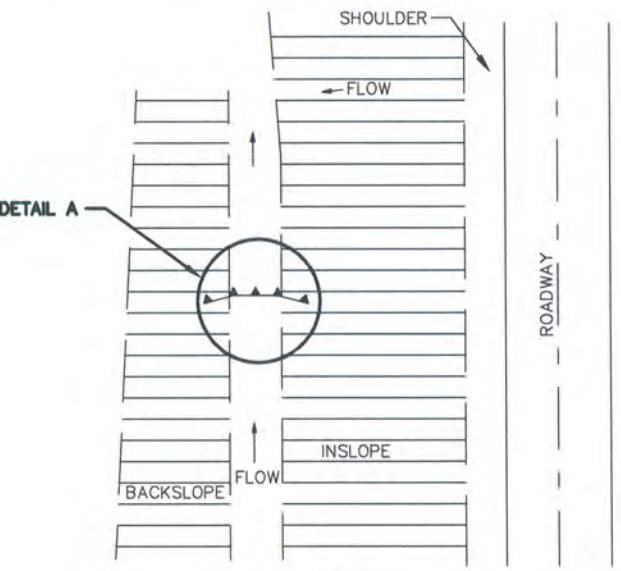


DETAIL A
ELEVATION



DETAIL A
SECTION B-B

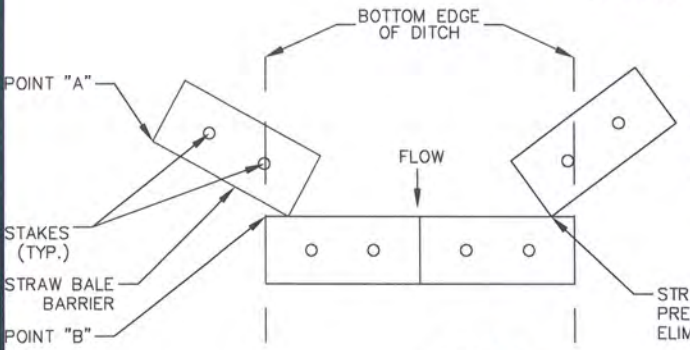
- NOTES:
1. SUPPORT FENCE SHALL BE PROVIDED WITH GEOTEXTILE FABRIC DITCH CHECK. POST SHALL BE STEEL T-POST OR EQUIVALENT.
 - 2.



PLAN

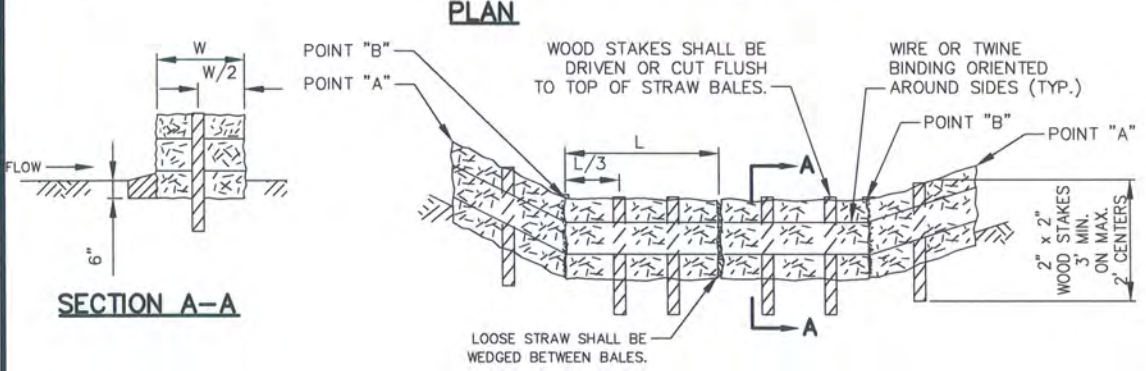
GEOTEXTILE FABRIC DITCH CHECK DETAILS

NO SCALE



NOTE: POINT "A" SHALL BE AT LEAST 12" HIGHER THAN POINT "B" TO ENSURE FLOW THROUGH OR OVER BARRIER, NOT AROUND IT.

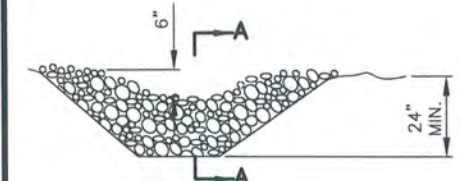
STRAW BALES SHALL BE PRESSED TOGETHER TO ELIMINATE OPEN SPACE.



ELEVATION

STRAW BALE DITCH CHECK DETAILS

NO SCALE



END VIEW

ROCK DITCH CHECK DETAILS

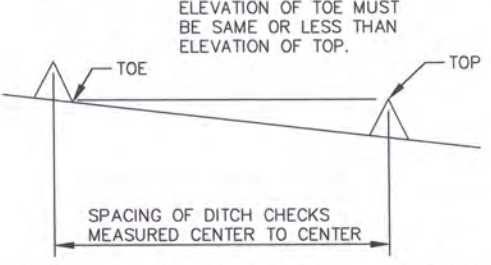
NO SCALE



SECTION A-A

GENERAL NOTES:
THE DITCH CHECK MAY BE REMOVED, AS DIRECTED BY THE ENGINEER, WHEN THE VEGETATION HAS SUFFICIENTLY MATURED TO PROTECT THE DITCH OR SWALE, OR THE CONCRETE DITCH LINER HAS BEEN CONSTRUCTED.

EXAMPLE DITCH CHECK SPACING FOR STANDARD HEIGHTS (FT.)		
DITCH SLOPE %	SPACING FOR 24" HEIGHT	SPACING FOR 18" HEIGHT
0.5	400	300
1.0	200	150
1.5	133	100
2.0	100	75
2.5	80	60
3.0	66	50
3.5	57	43
4.0	50	38
4.5	44	33
5.0	40	30
5.5	38	27
6.0	35	25
6.5	30	23
7.0	28	21
7.5	26	20
8.0	25	19
8.5	23	18
9.0	22	17
9.5	21	16
10.0	20	15



MINIMUM DITCH CHECK SPACING

NO SCALE



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

314-842-4033 (tel.)
314-842-5857 (fax)
www.cochraneng.com

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

737 RUDDER ROAD
FENTON, MISSOURI 63026

CERTIFICATE OF AUTHORITY NUMBER - 006937

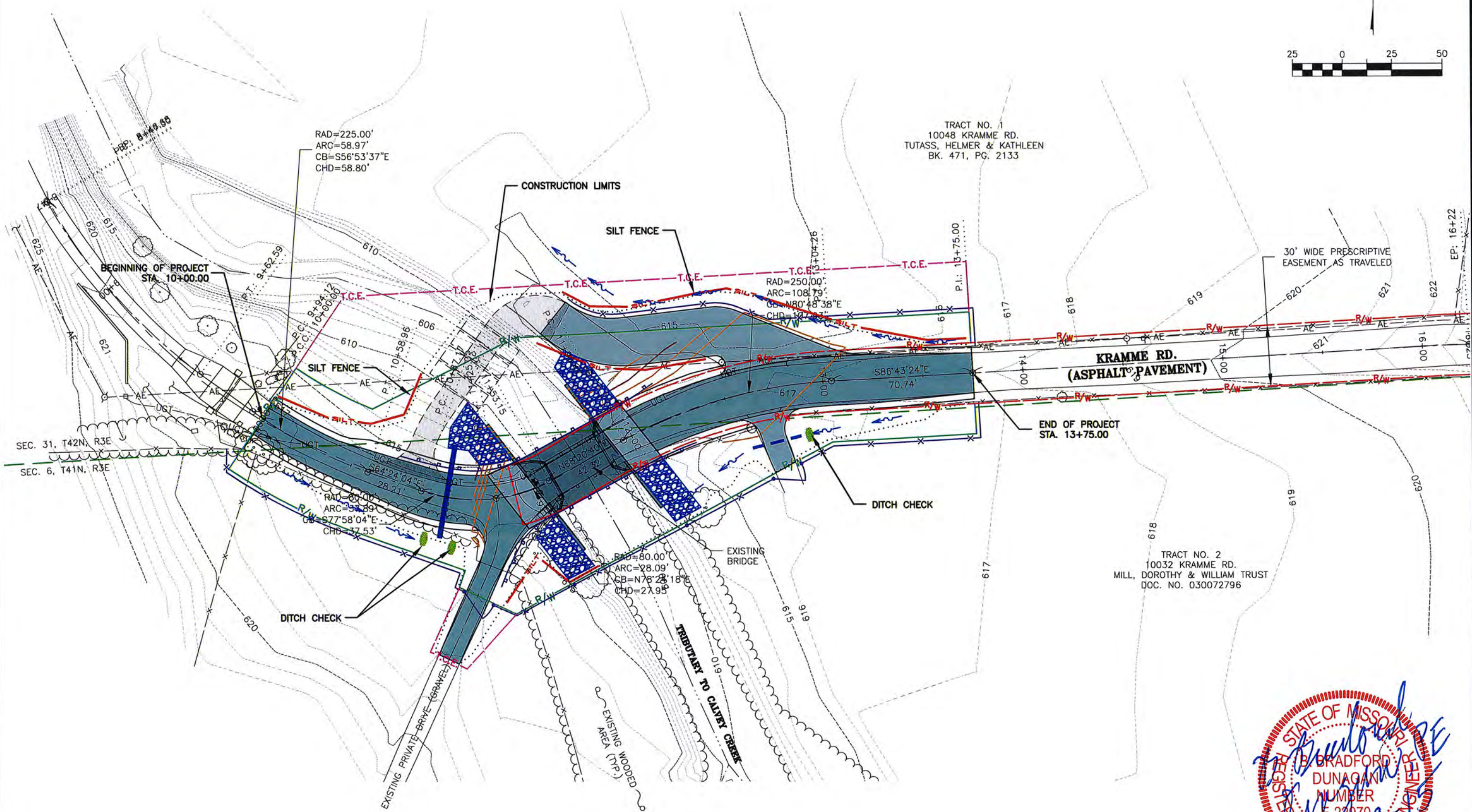
These working drawings are prepared by the engineer or architect and are not to be used for construction without the approval of the engineer or architect. The contractor shall call 1-800-DIG-RITE for utility location information.

All OSHA rules & regulations established for the type of construction required by these plans shall be strictly followed (excavating, trenching, shoring, etc.)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

EROSION CONTROL DETAILS	
DWN. BY:	APPD. BY:
DATE:	DATE:
NOVEMBER 2015	NOVEMBER 2015
SCALE:	SCALE:
NO SCALE	NO SCALE
PROJ. NO:	PROJ. NO:
SC13-389	SC13-389
DWG. NO:	DWG. NO:
EC-2	EC-2

EROSION CONTROL PLAN



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

737 RUDDER ROAD
FENTON, MISSOURI 63026
314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

CERTIFICATE OF AUTHORITY NUMBER - 006837

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RITE for location information.

All OSHA rules & regulations established for the type of excavation shall be strictly followed (i.e. Trenching, Blasting, etc.)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

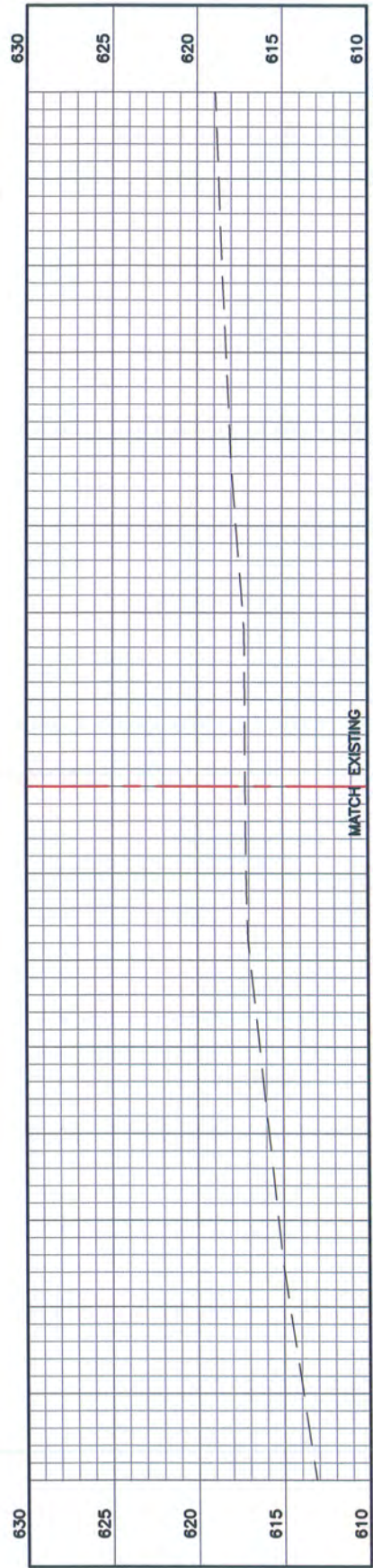
DATE	REVISION	APPD. BY
NOVEMBER 2015		
SCALE:		
PROJ. NO.		
DWG. NO.		

EC-3

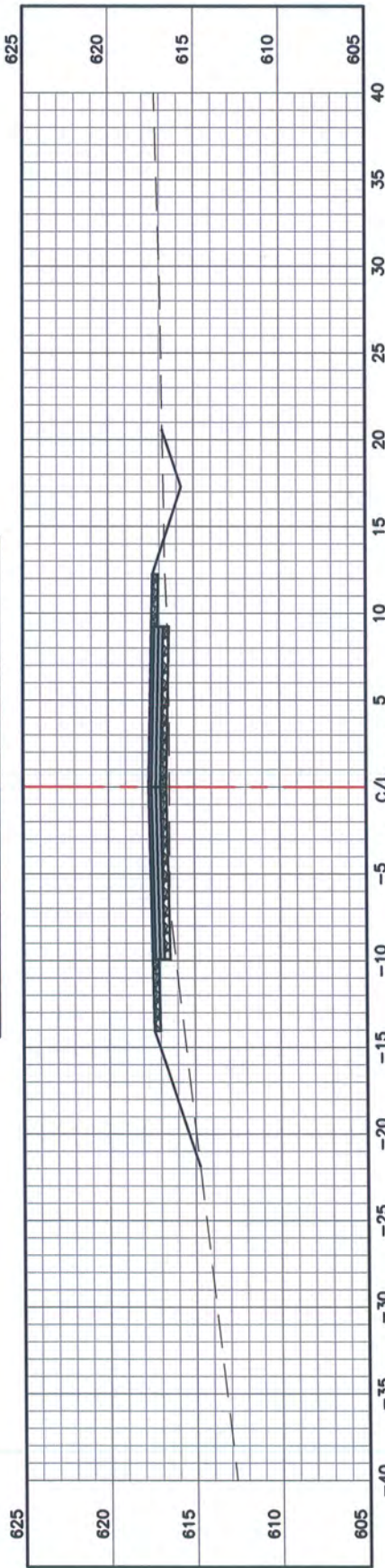


Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

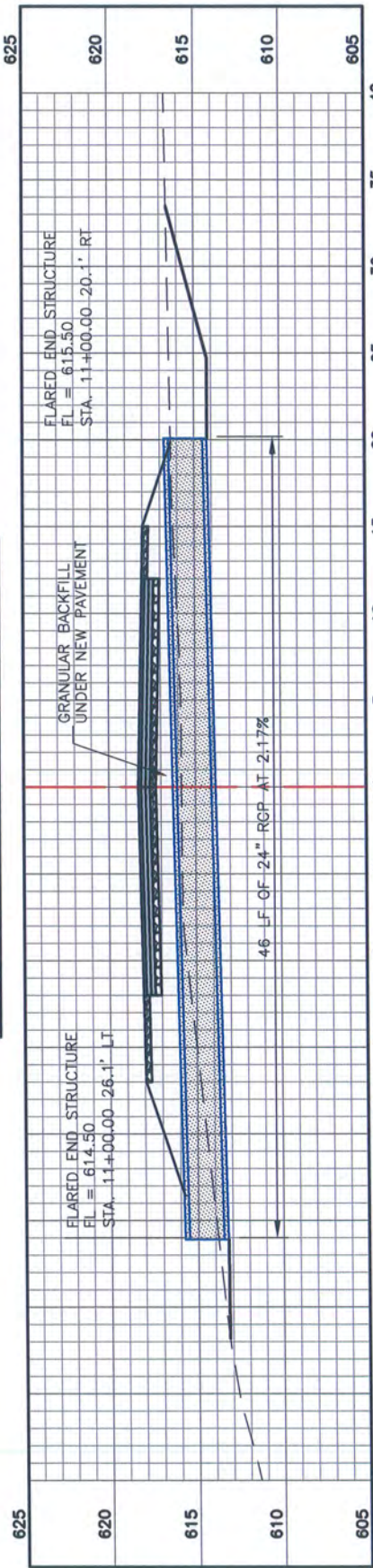
CROSS SECTIONS



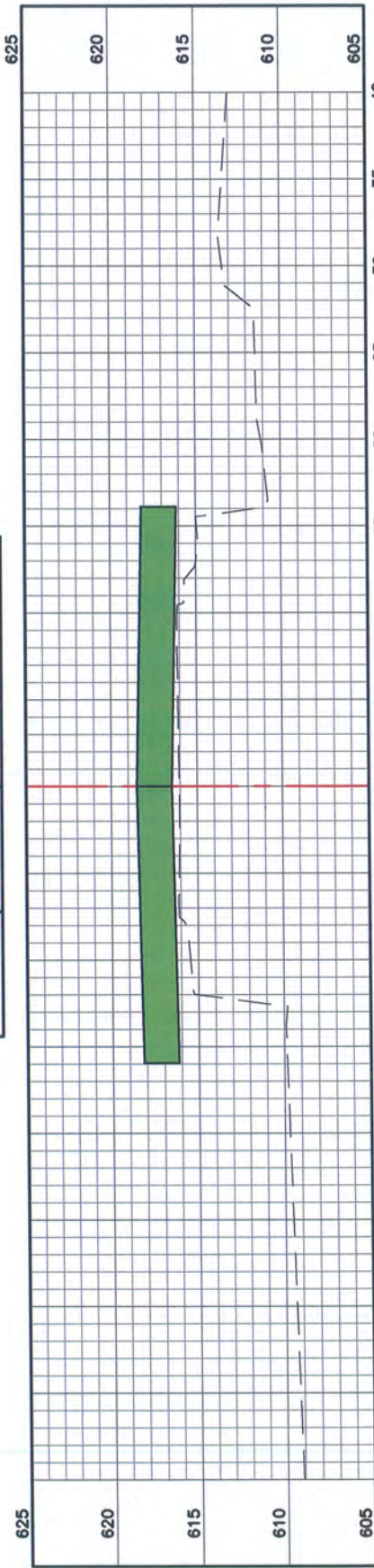
CUT/FILL					
CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME		
0.00 SQ. FT.	0.00 SQ. FT.	0.00 CU. YD.	0.00 CU. YD.		



CUT/FILL					
CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME		
0.00 SQ. FT.	0.00 SQ. FT.	0.00 CU. YD.	0.00 CU. YD.		



CUT/FILL					
CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME		
0.00 SQ. FT.	0.00 SQ. FT.	0.00 CU. YD.	0.00 CU. YD.		



CUT/FILL					
CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME		
0.00 SQ. FT.	0.00 SQ. FT.	0.00 CU. YD.	0.00 CU. YD.		



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

CROSS SECTIONS	DATE:	REVISION:	DWN BY:	APPD BY:
			E.L.S.	B.B.D.
			NOVEMBER 2015	
			SCALE:	AS NOTED
			PROJ. NO.	SC13-389
			DWG. NO.	XS-1

KRAMME RD. BRIDGE REPLACEMENT
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

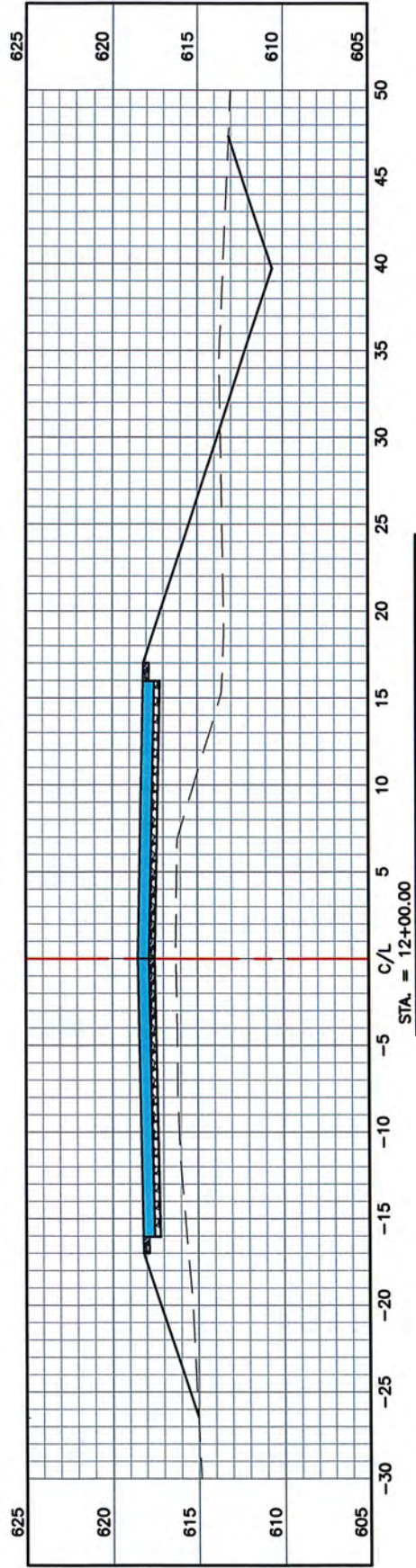
Three working days prior to the start of any excavation on this site, the contractor shall submit a utility location information.
All OSHA rules & regulations for trenching and shoring construction required by these plans shall be strictly followed (i.e. Trenching, Boring, etc)

314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

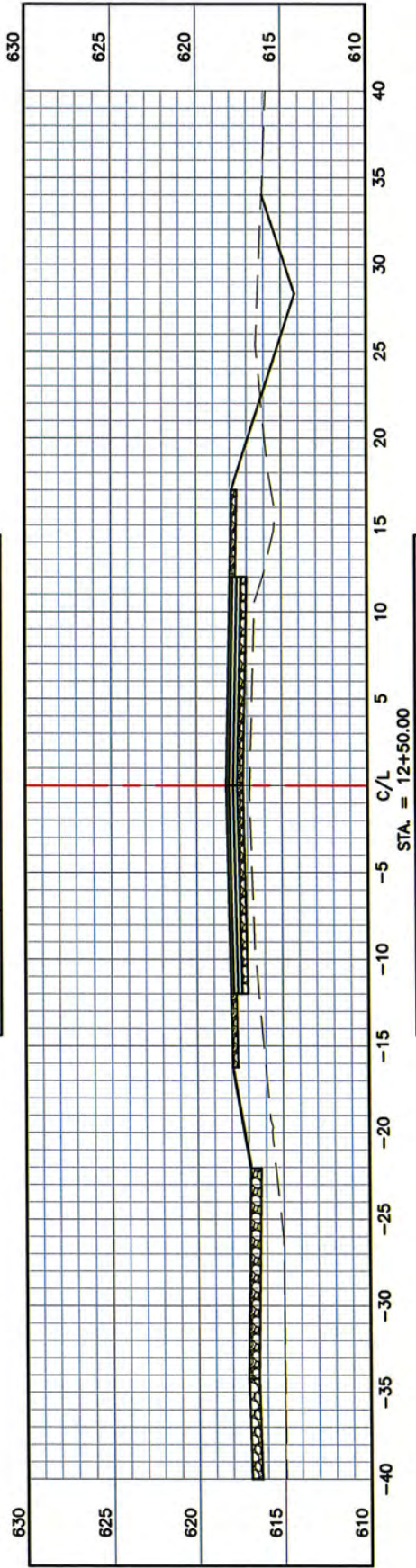
COCHRAN
Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

CERTIFICATE OF AUTHORITY NUMBER - 006937

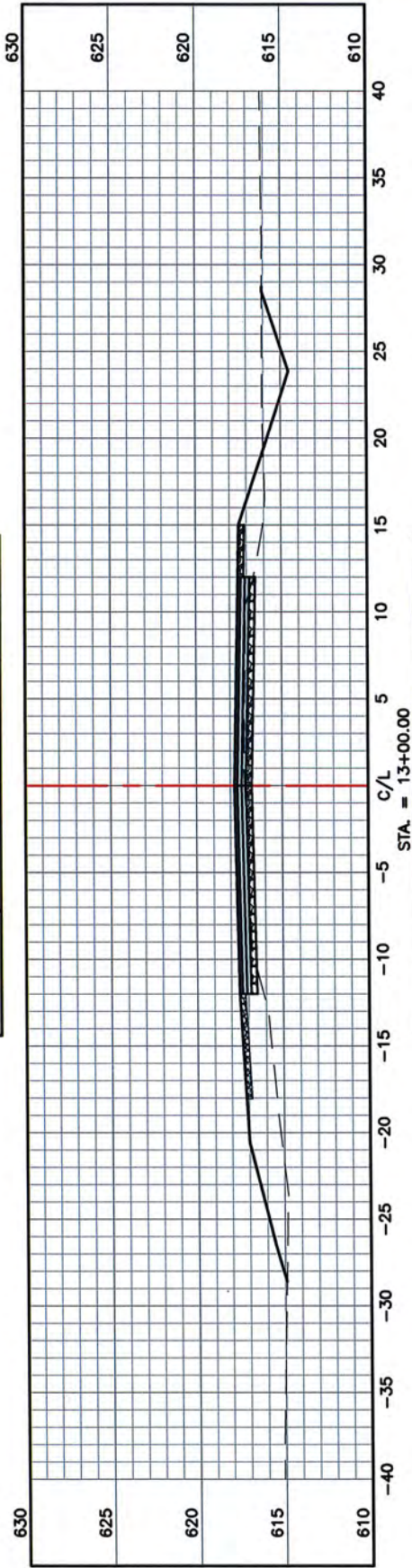
CROSS SECTIONS



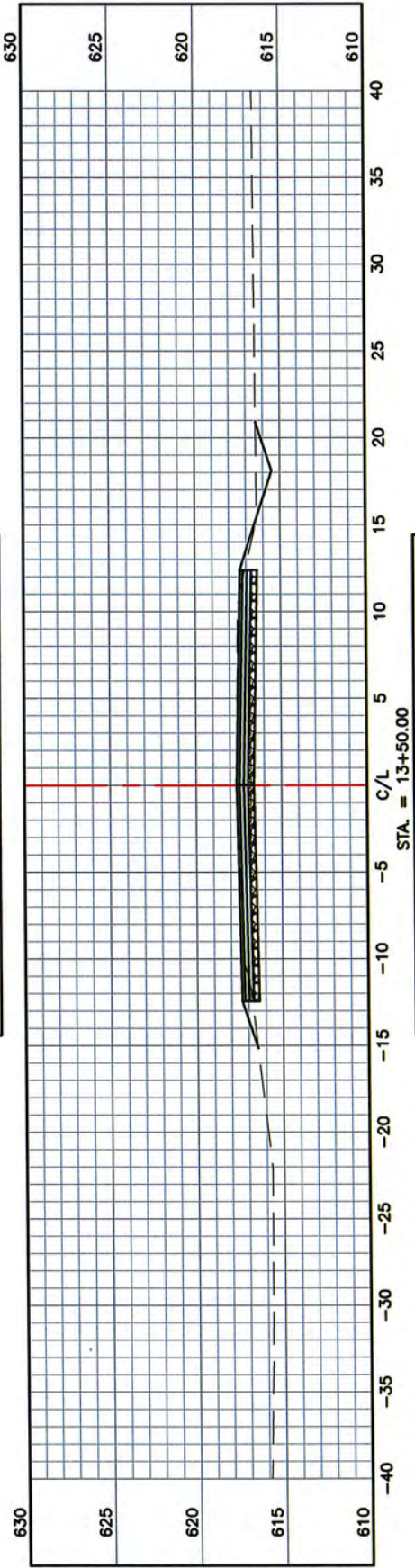
CUT/FILL			
CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME
0.00 SQ. FT.	0.00 SQ. FT.	0.00 CU. YD.	0.00 CU. YD.



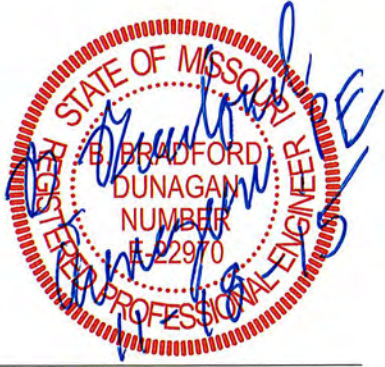
CUT/FILL			
CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME
0.00 SQ. FT.	0.00 SQ. FT.	0.00 CU. YD.	0.00 CU. YD.



CUT/FILL			
CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME
7.08 SQ. FT.	45.34 SQ. FT.	5.93 CU. YD.	43.33 CU. YD.



CUT/FILL			
CUT AREA	FILL AREA	CUT VOLUME	FILL VOLUME
0.00 SQ. FT.	0.00 SQ. FT.	6.55 CU. YD.	41.98 CU. YD.



DATE _____

Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

CROSS SECTIONS

X

PROJ. NO:
SC13-389

SCALE:
AS NOTED

DATE:
NOVEMBER 20

<i>DWN. BY:</i>						<i>APPD. BY:</i>			

**KRAMME RD. BRIDGE REPLACEMENT
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO**

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RITE for utility location information.

All OSHA rules & regulations established for the type of construction required by these plans shall be strictly followed (i.e. Trenching, Blasting, etc)

COCHRAN

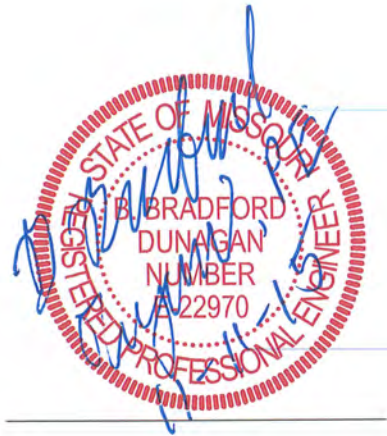
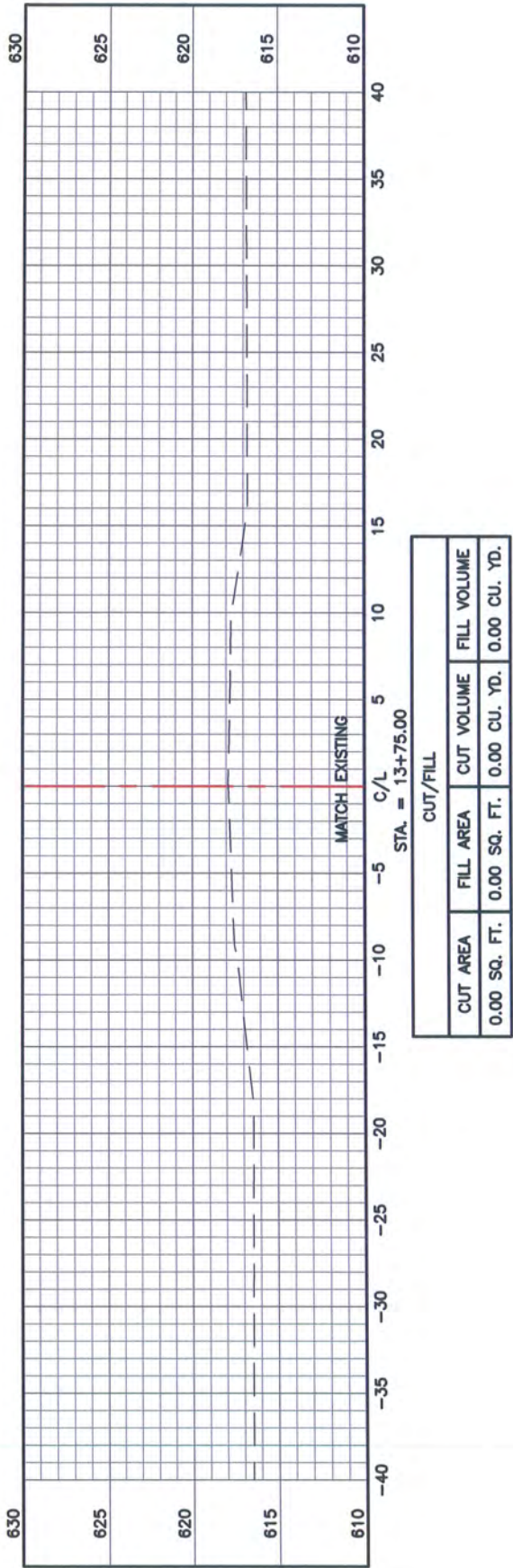
737 RUDDER ROAD
FENTON, MISSOURI 63026

314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

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

CERTIFICATE OF AUTHORITY NUMBER - 006837

CROSS SECTIONS



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

CROSS SECTIONS

DWN. BY:	APPD. BY:
E.L.S.	B.B.D.
DATE: NOVEMBER 2015	
SCALE: AS NOTED	
PROJ. NO: SC13-389	
DWG. NO: XS-3	

KRAMME RD. BRIDGE REPLACEMENT
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

Three working days prior to the start of any excavation on this site, contractor shall submit to the local authority for utility location information.
All OSHA rules & regulations shall be strictly followed (i.e. Trenching, Blasting, etc)

737 RUDDER ROAD
FENTON, MISSOURI 63026

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

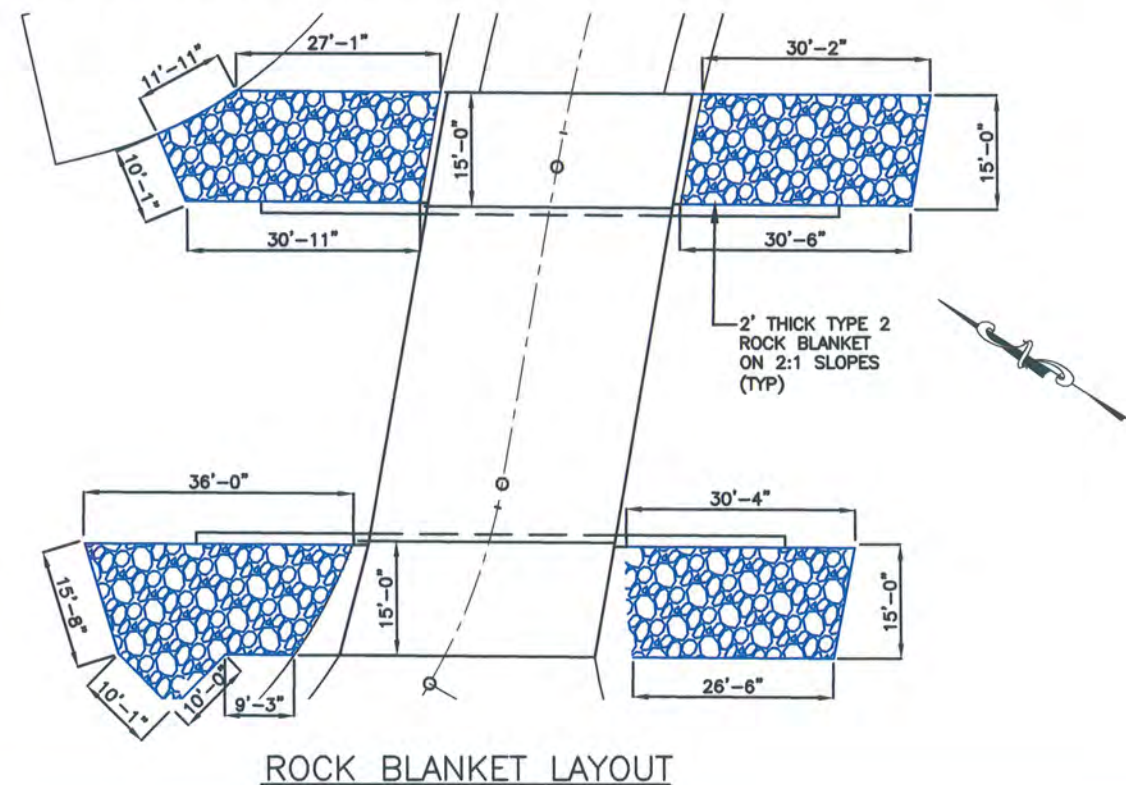
314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

CERTIFICATE OF AUTHORITY NUMBER - 006937

1. ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SECTION 1057.7.4.
2. ALL REINFORCING STEEL SHALL BE EPOXY COATED. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 2 INCHES UNLESS OTHERWISE SHOWN. ALL SUPPORTS FOR REINFORCING STEEL SHALL BE EPOXY COATED, OR PLASTIC COATED.
3. THE SCALE PREVENTION TREATMENT, MEETING THE REQUIREMENTS OF MISSOURI STANDARD SPECIFICATIONS 703.3.18 SHALL BE INCLUDED IN THE UNIT BID PRICE FOR SUPERSTRUCTURE SLAB CONCRETE.
4. BEARINGS SHALL BE 60 DUROMETER NEOPRENE PADS.

CHANNEL SLOPE IN VICINITY OF STRUCTURE = 0.0087 FT./FT.
DESIGN FREQUENCY = 100 YEAR
100 YEAR DESIGN DISCHARGE = 2,814 CFS
MAXIMUM BACKWATER FOR DESIGN FREQUENCY = 0.56
DESIGN HIGH WATER ELEVATION AT THE STRUCTURE = 616.65
LOW ELEVATION OF STRUCTURE = 616.22

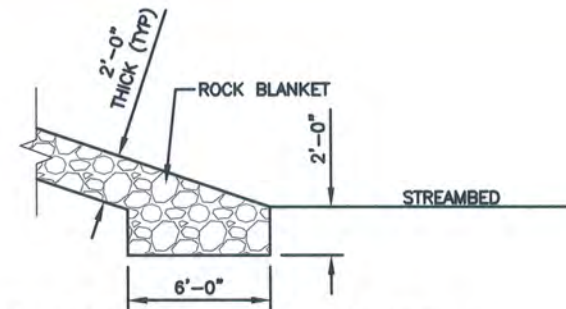
THE BRIDGE SITE IS LOCATED IN ZONE A OF FEMA
MAP "JEFFERSON COUNTY UNINCORPORATED AREA",
MAP NUMBER 29099C0180E DATED APRIL 5, 2006.



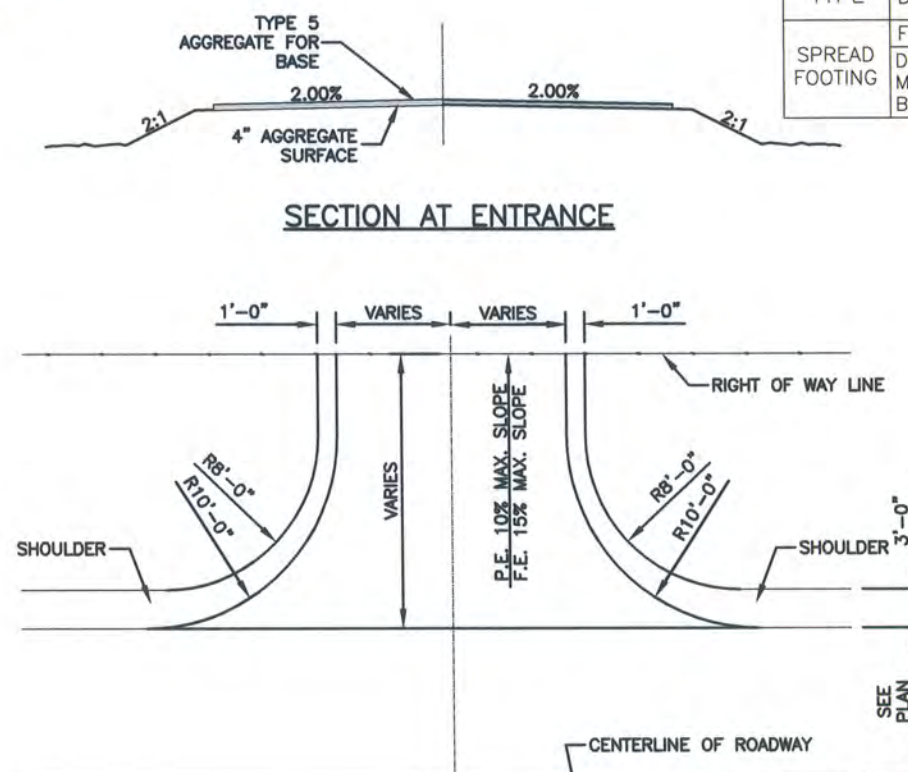
BRIDGE GENERAL NOTES

LIST OF QUANTITIES

Bid No.	Item No.	Description	From STA	To STA	Unit	Quantity
		BRIDGE ITEMS				
26	2061000	Class 1 Excavation	11+29	12+05	CY	315
27	2061003	Class 1 Excavation in Rock	11+29	12+05	CY	26
28	2160500	Removal of Bridges	11+29	12+05	EA	1
29	5031010	Bridge Approach Slab	11+29	12+05	SY	109.2
30	6113020	Furnishing Type 2 Rock Blanket (24" Thick)	11+29	12+05	CY	134
31	6113040	Placing Type 2 Rock Blanket (24" Thick)	11+29	12+05	CY	134
32	7032003	Class B Concrete (Substructure)(Footings)	11+45	11+90	CY	26.0
33	7034003	Class B1 Concrete (Substructure)(Walls)	11+45	11+90	CY	91.1
34	7034209	Class B2 Concrete (Superstructure)(Slab)	11+45	11+90	CY	34.5
35	7056042	18" Prestressed Concrete Voids Slab Beam	11+45	11+90	LF	352
36	7101000	Reinforcing Steel (Epoxy coated) Grade 60	11+29	12+05	LB	17,335
37	7135000	Bridge Guard Rail - SL1 Thrie Beam	11+45	11+90	LF	100
38	7135000	Bridge Guard Rail - SL1 Thrie Beam (curved on 50' radius)	11+29	12+05	LF	25
39	7161000	Plain Neoprene Bearing Pads	11+45	11+90	EA	16
40	9014502	Conduit, 2 In. Rigid on Structure	11+45	11+90	LF	102



TYPICAL SECTION THRU LOWER
END OF ROCK BLANKET



TYPICAL PRIVATE AND FIELD
ENTRANCE PARTIAL DETAIL

PROPOSED STRUCTURE

SINGLE SPAN (43'-8")
18" CONCRETE VOIDED SLAB BEAMS WITH A 6" CONCRETE DECK
BRIDGE WIDTH (CURB TO CURB) = 31'-4"
BRIDGE WIDTH (OUT TO OUT) = 32'-0"
SKEW = 10 DEGREES (RIGHT ADVANCE)
GRADE = 0.00 PERCENT

PROPOSED ROAD

ROADWAY WIDTH = 24'-0"
ROADBED WIDTH = 30'-0"
NUMBER OF LANES = 2
LANE WIDTH = 12'-0"
SHOULDER WIDTH = 3'-0"
NORMAL CROWN = 2.00%

ENTRANCES AND CULVERTS

24" RCP
UFL = 614.50 STA. 11+00 20.1' RT
LFL = 613.50 STA. 11+00 26.1' LT

STA. 11+25 RT
12' WIDE DRIVEWAY
8" ASPHALT PAVEMENT
16' TUBULAR STEEL GATE

STA. 12+66 LT
30' WIDE FIELD ENTRANCE
4" GRANULAR SURFACING

STA. 12+70 RT
12' WIDE FIELD ENTRANCE
4" GRANULAR SURFACING TO R/W
16' TUBULAR STEEL GATE
28' x 18" SMOOTH INTERIOR HDPE
UFL = 614.50
LFL = 614.00

<u>DESIGN BEARING TABLE</u>			
TYPE	DESIGN DATA	BENT #1	BENT #2
SPREAD FOOTING	FOUNDATION MATERIAL	LIMESTONE	LIMESTONE
	DESIGN BEARING		
	MINIMUM NOMINAL BEARING RESISTANCE ksf	10	10

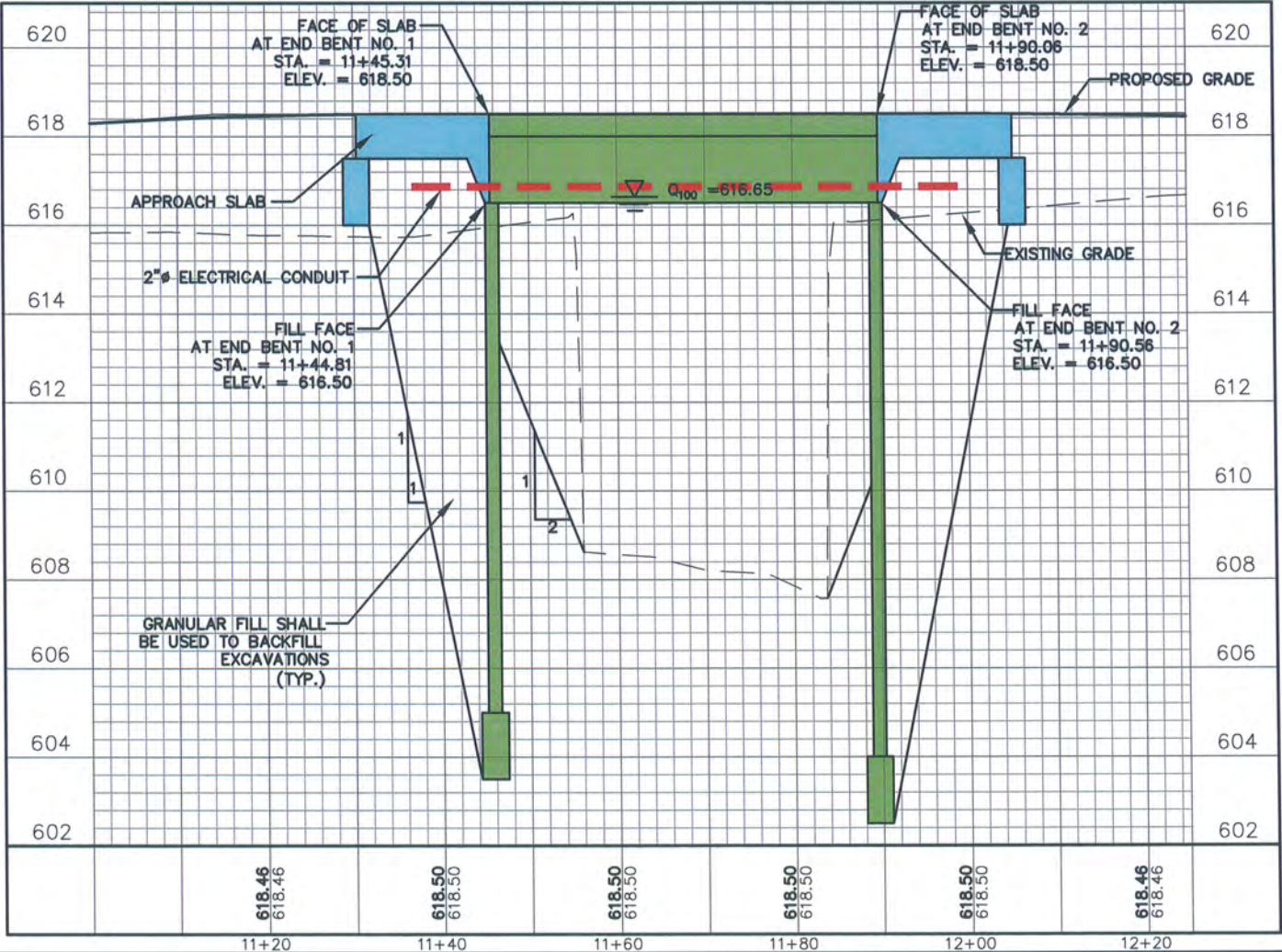
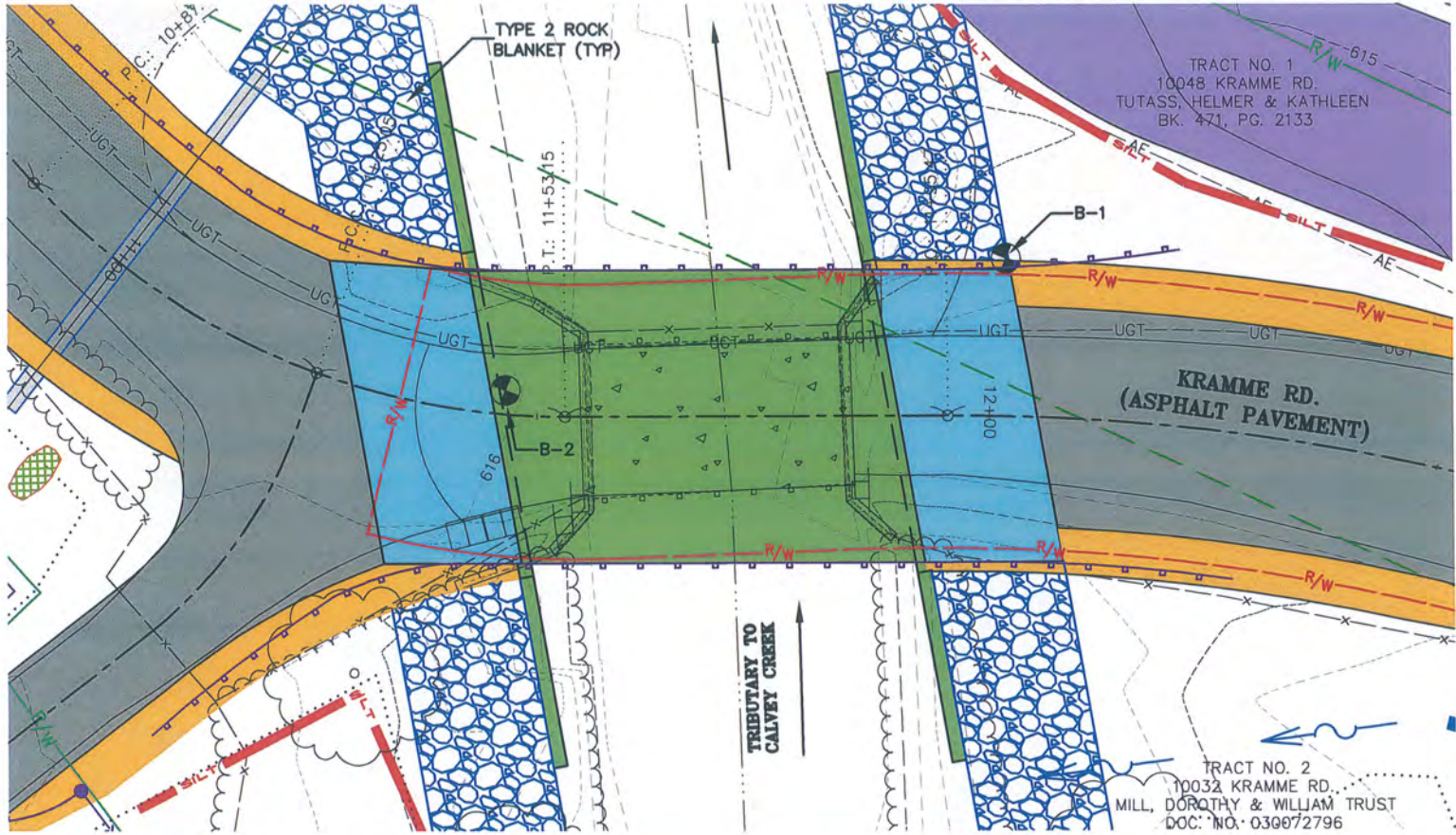


11-11-15
DATE

Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

Drawing name: J:\SC13-389 Jefferson County - Kramme Rd\BRIDGE PLAN AND PROFILE.dwg Tab: B-2 Plotted on: Nov 10, 2015 - 10:31am Plotted by: mltzgerald

BRIDGE PLAN AND ELEVATION



NOTE:
BACKFILLING OF WALLS SHALL NOT BE HIGHER ON ONE
SIDE OF THE WALL THAN ON THE OTHER UNTIL AFTER
BEAMS HAVE BEEN PLACED AND GROUTED.



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

COCHRAN

237 RUDDER ROAD
FENTON, MISSOURI 63026

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

CERTIFICATE OF AUTHORITY NUMBER - 006937

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RTIE for utility location information.

All OSHA rules & regulations established for the type of construction required by these plans shall be strictly followed (i.e. trenching, shoring, etc.)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

BRIDGE PLAN AND ELEVATION	
DWN. BY:	APPD. BY:
DATE:	DATE:
DWN. BY: E.L.S.	APPD. BY: B.B.D.
DATE: NOVEMBER 2015	
SCALE: AS NOTED	
PROJ. NO.: SC13-389	
DWG. NO.: B-2	

Drawing name: J:\SC13-389 Jefferson County - Kromme Rd\TYPICAL SECTION.dwg Tab: PLAN (50 SCALE) (2) Plotted on: Nov 10, 2015 - 11:05am Plotted by: mflzgerld



DATE _____

TYPICAL BRIDGE SECTION		DWN. BY:		APP'D. BY:	
REVISION:		DATE:			
		DWN. BY:		APP'D. BY:	
		E.I.S.		B.B.D.	
DATE:		NOVEMBER 2015			
SCALE:		NO SCALE			
PROJ. NO:		SC13-389			
DWG. NO:		B-3			

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RITE for utility location information.

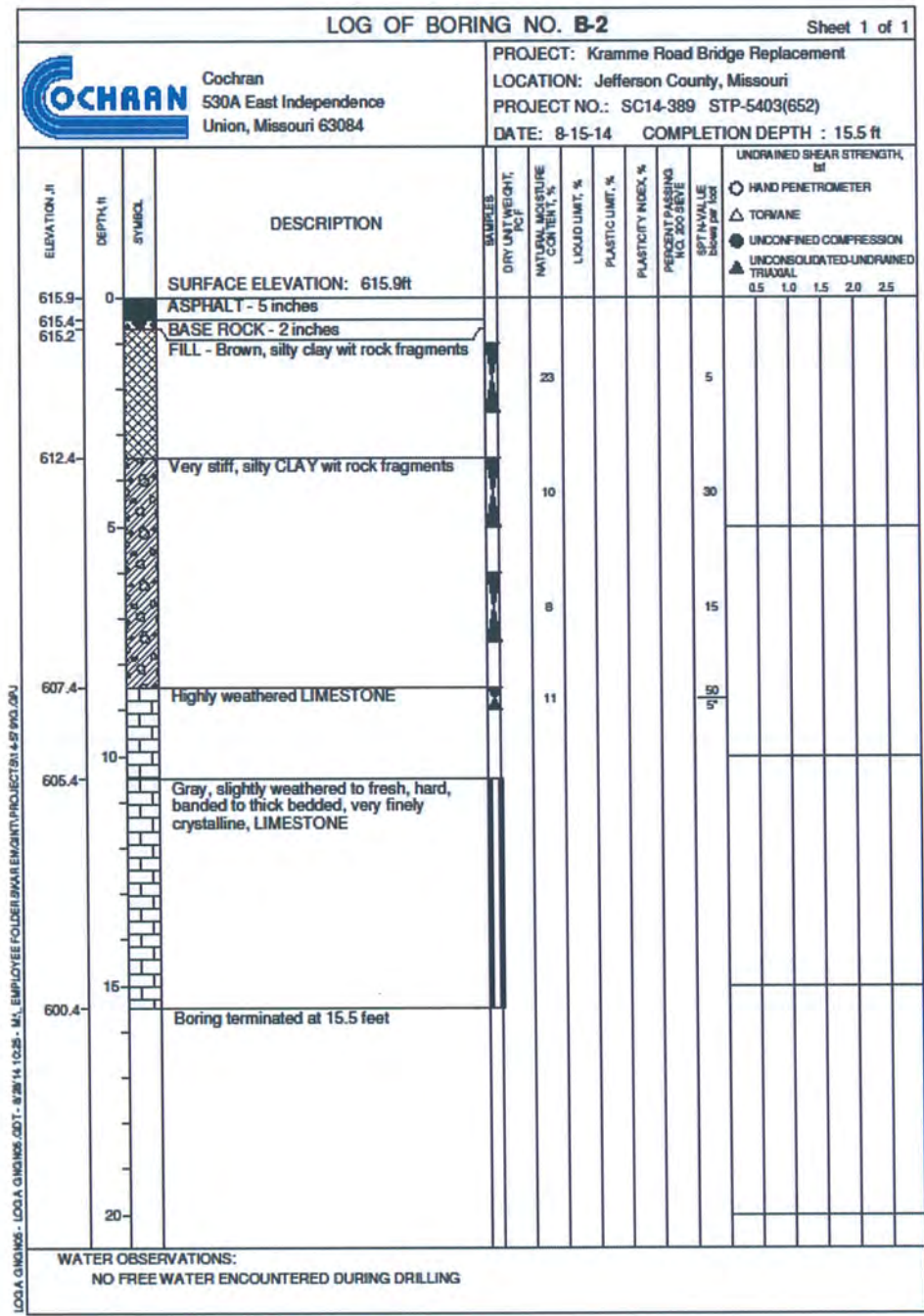
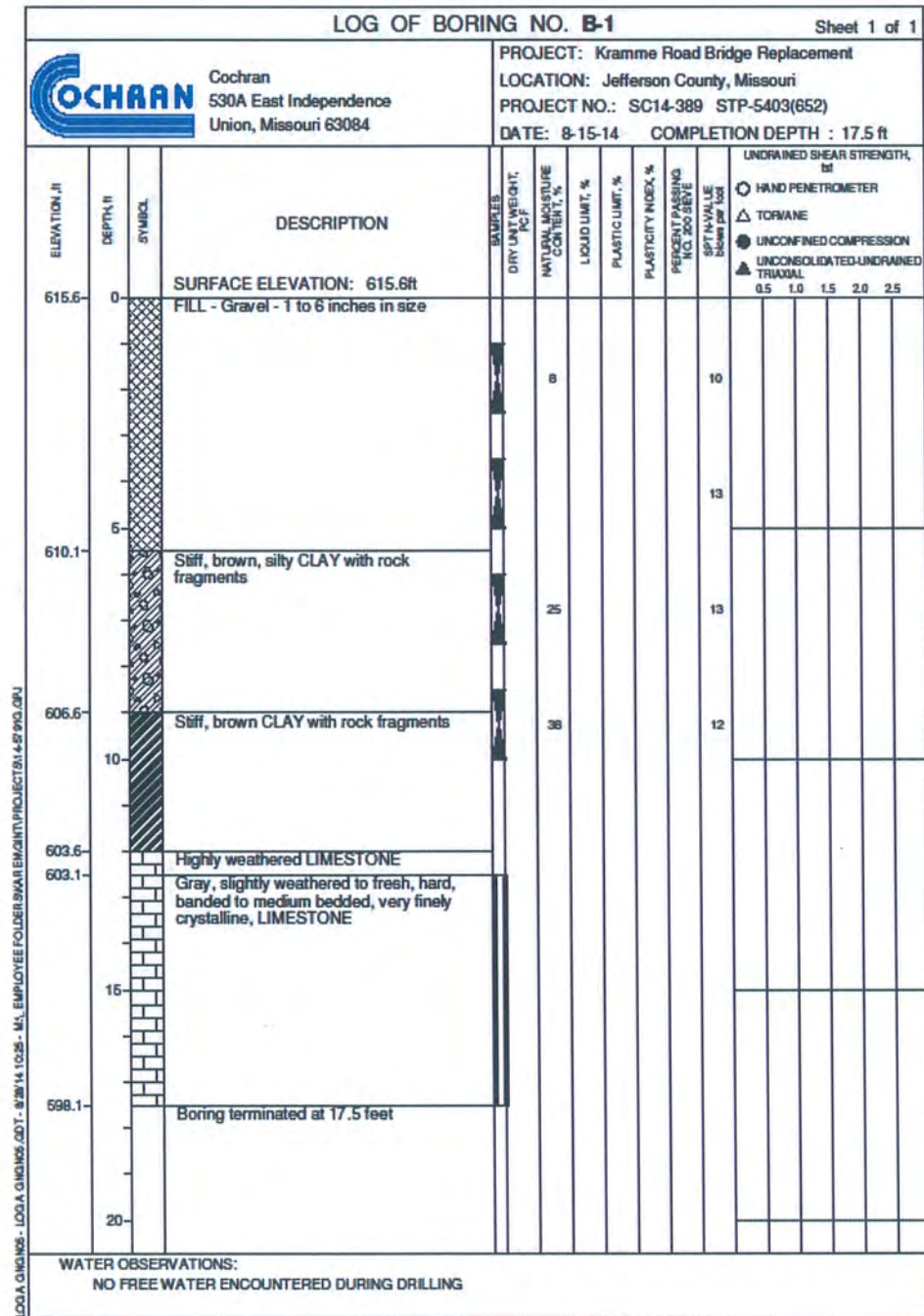
All OSHA rules & regulations established for the type of construction required by these plans shall be strictly followed (i.e. Trenching, Blasting, etc)

737 RUDDER ROAD
FENTON, MISSOURI 63026

314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

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

CERTIFICATE OF AUTHORITY NUMBER - 006937 • General Consulting



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

314-842-4033 (tel.)
314-842-5857 (fax)
www.cochraninc.com

737 RIDGER ROAD
FENTON, MISSOURI 63026

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

CERTIFICATE OF AUTHORITY NUMBER - 006937

These working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RITE for utility location information.

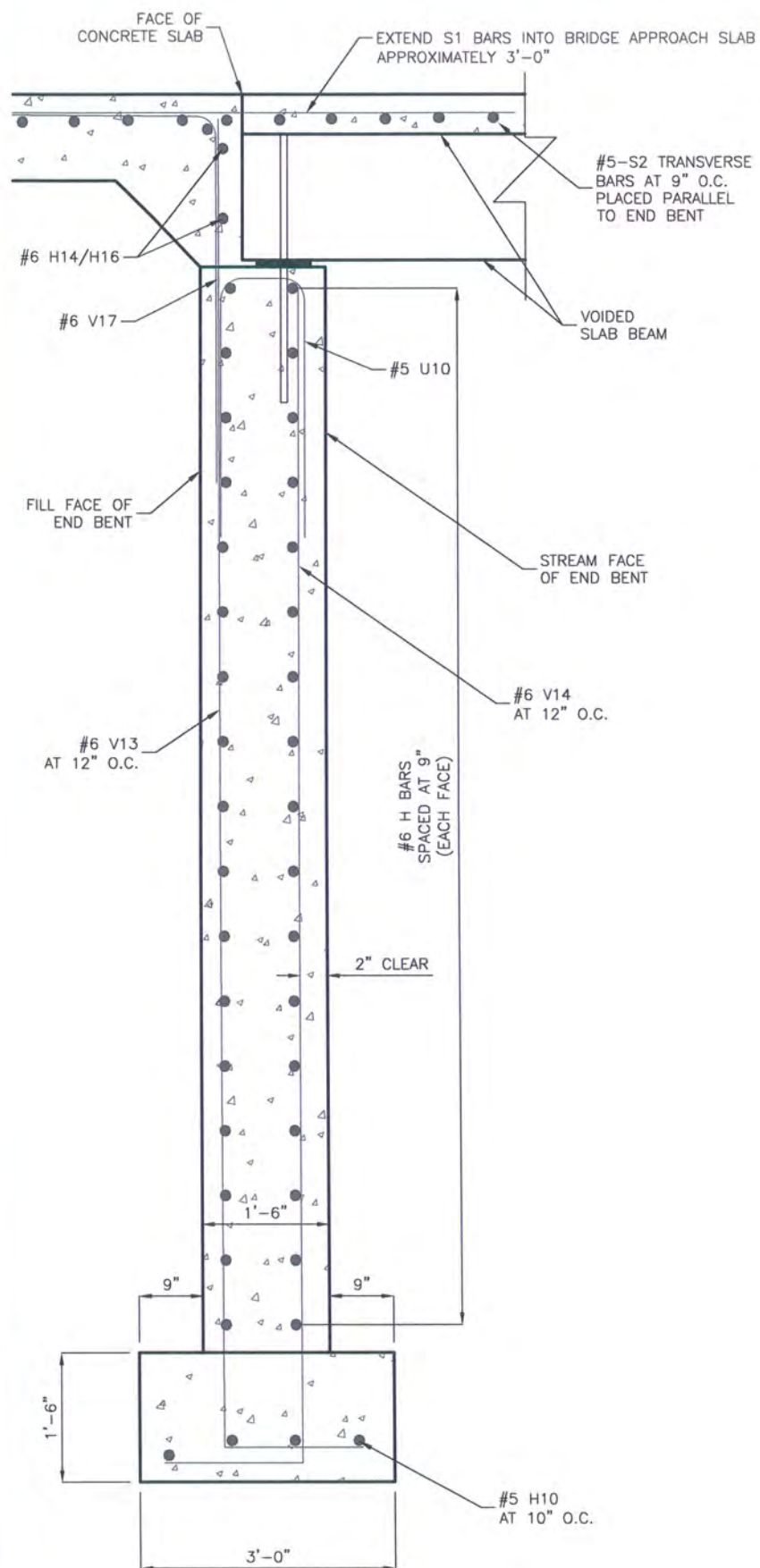
All OSHA rules & regulations established for the type of construction required by this project shall be strictly followed (i.e. Trenching, Blasting, etc.)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

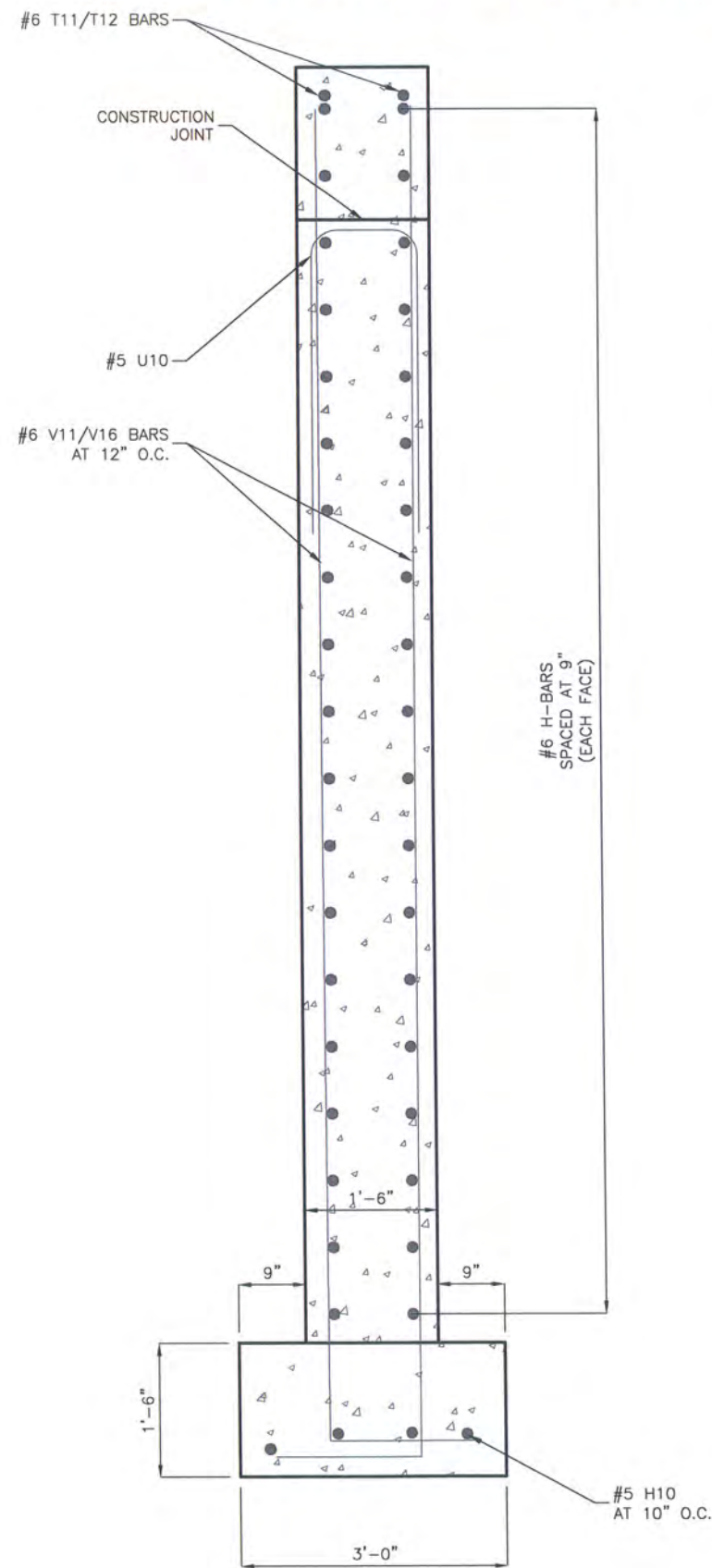
BORING LOGS

DWN. BY:	APPD. BY:
E.L.S.	B.B.D.
DATE:	DATE:
AUGUST 2015	
SCALE:	NO SCALE
PROJ. NO:	SC13-389
DWG. NO:	B-4

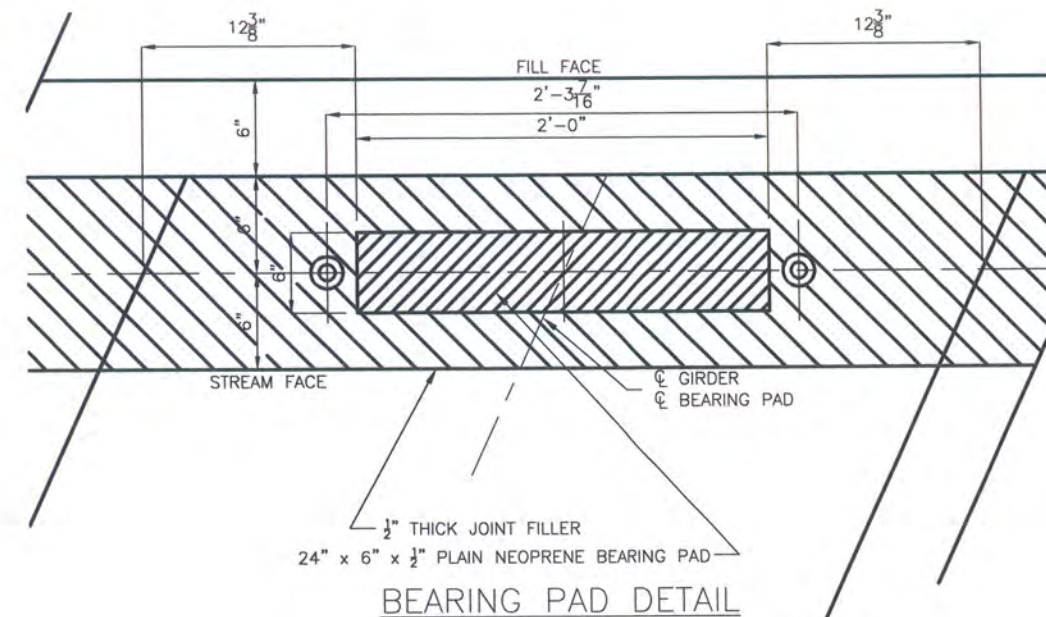
END BENT DETAILS



SECTION THROUGH END BENT



SECTION THROUGH WING



NOTES:
BACKFILL SHALL BE PLACED UNIFORMLY ON BOTH SIDES OF THE WALL PRIOR
TO PLACING PRESTRESSED BEAMS. AFTER BEAMS HAVE BEEN PLACED AND
GROUTED, BACKFILL UNDER APPROACH SLAB MAY BE PLACED.



DATE _____

Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

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

737 RUDDER ROAD
FENTON, MISSOURI 63026

COCHRAN

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

314-842-4033 (tel.)
314-842-5957 (fax)
www.cochran.com

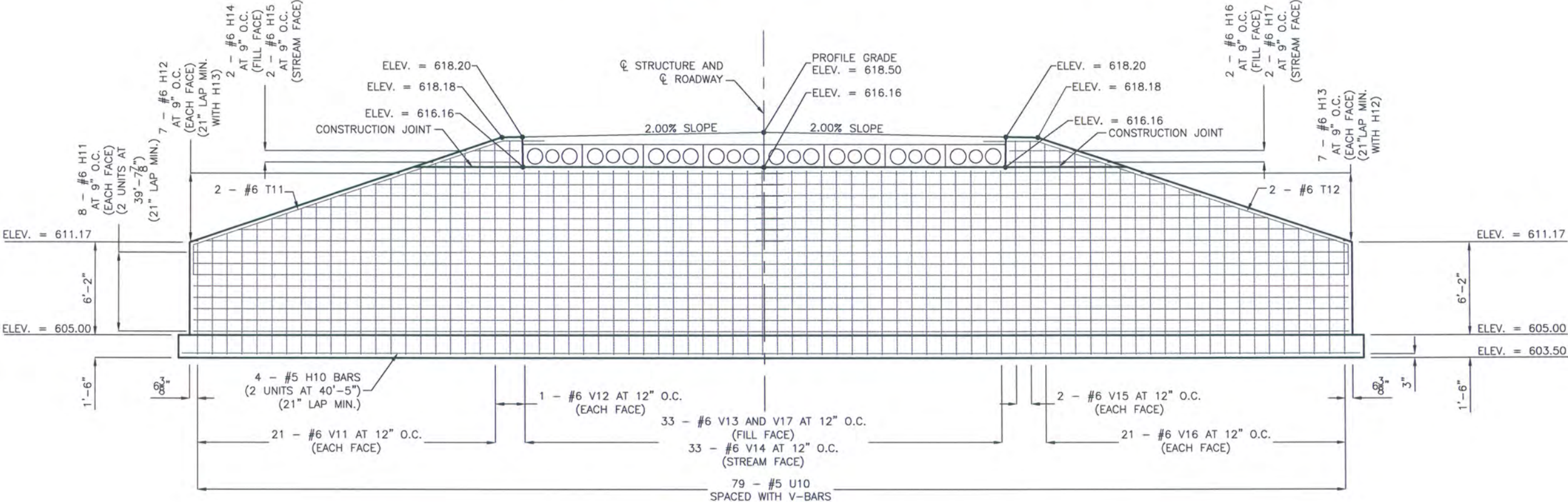
CERTIFICATE OF AUTHORITY NUMBER - 006837

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RITE for utility location information.

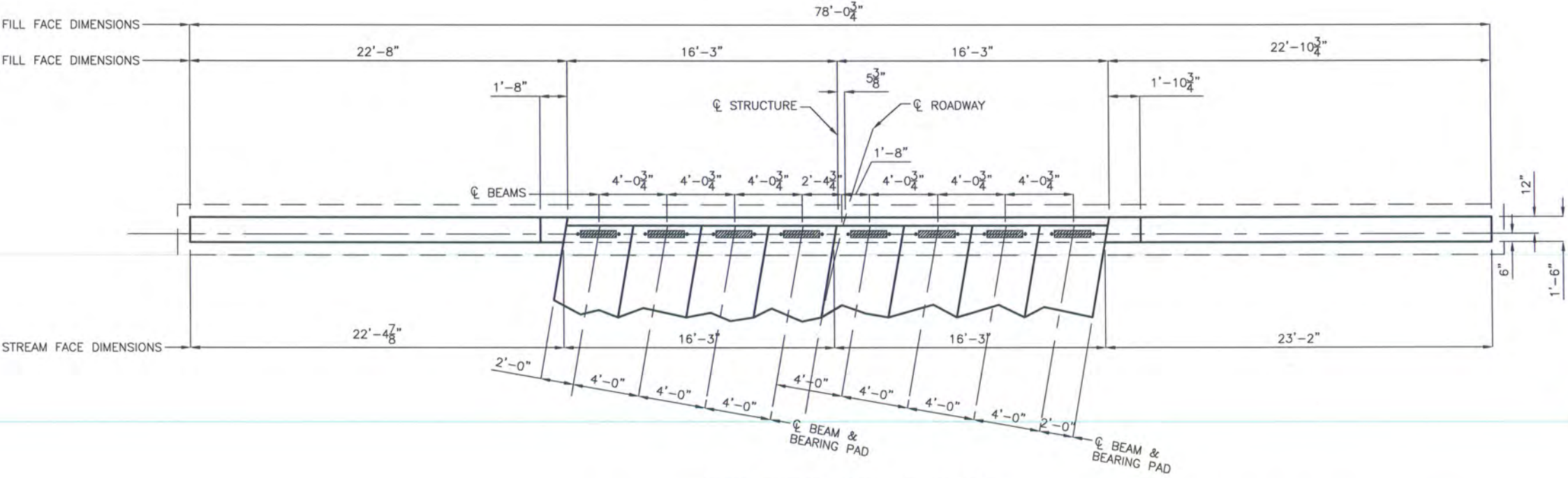
KRAMME RD. BRIDGE 16800151
 OVER TRIBUTARY OF CALVEY CREEK
 FEDERAL PROJECT NO. STP-5403(652)
 JEFFERSON COUNTY, MO

[illegible]

END BENT #1 PLAN & ELEVATION



STREAM FACE ELEVATION



END BENT NO. 1 PLAN

NOTES:
THIS DRAWING IS NOT TO SCALE. PLEASE FOLLOW DIMENSIONS.
SEE "END BENT DETAILS" SHEET FOR ADDITIONAL INFORMATION
SEE "SLAB DETAILS" SHEET FOR ADDITIONAL INFORMATION ON THE SLAB NOTCH.

- NOTES:
- BACKFILL SHALL BE PLACED UNIFORMLY ON BOTH SIDES OF THE WALL PRIOR TO PLACING PRESTRESSED BEAMS. AFTER BEAMS HAVE BEEN PLACED AND GROUTED, BACKFILL UNDER APPROACH SLAB MAY BE PLACED.
 - FOR SIMPLICITY AND BECAUSE EXACT ROCK ELEVATIONS ARE NOT KNOWN, FOOTINGS ARE SHOWN AT THE LOWEST KNOWN ROCK ELEVATION. FOOTINGS SHALL BE KEYED INTO ROCK IN ACCORDANCE WITH SECTION 206.4.3 OF THE SPECIFICATIONS AND ACCORDINGLY, FOOTING KEY NEED NOT BE MORE THAN 18". FOOTING MAY BE STEPPED UP WHEN NECESSARY KEY DEPTH HAS BEEN OBTAINED.
 - FOR THE PURPOSES OF CALCULATING QUANTITIES FOR ROCK EXCAVATION, AN 18" FOOTING KEY DEPTH HAS BEEN USED.
 - VERTICAL REINFORCING SHALL BE SHOP CUT OR FIELD CUT TO FIT THE WALL HEIGHT WHEN THE FOOTING ELEVATIONS ARE KNOWN. IF THE FOOTING ELEVATION IS RAISED, THE PLAN QUANTITY OF REINFORCING STEEL WILL NOT BE CHANGED. HOWEVER, IF THE FOOTING ELEVATION IS LOWERED, ADJUSTMENTS TO THE REQUIRED REINFORCING STEEL WILL BE FIELD MEASURED AND PAID FOR AS REINFORCING STEEL.
 - QUANTITIES FOR WALL CONCRETE WILL BE ADJUSTED BASED ON ACTUAL IN-PLACE DIMENSIONS AND ELEVATIONS.



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

314-842-4033 (tel.)
314-842-5957 (fax)
www.cochraneng.com

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

CERTIFICATE OF AUTHORITY NUMBER - 006937

137 RUDDER ROAD
PEVION, MISSOURI 63026

Three working days prior to the start of any excavation the contractor shall call 1-800-DIG-RTRE for utility location information.

All OSHA rules & regulations established for the type of construction required by these plans shall be strictly followed (i.e. trenching, shoring, etc.)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

DATE:	DATE:	DATE:	DATE:
DWN. BY:	DWN. BY:	DWN. BY:	DWN. BY:
APPD. BY:	APPD. BY:	APPD. BY:	APPD. BY:
SCALE:	SCALE:	SCALE:	SCALE:
PROJ. NO.:	PROJ. NO.:	PROJ. NO.:	PROJ. NO.:
DWG. NO.:	DWG. NO.:	DWG. NO.:	DWG. NO.:

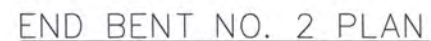
END BENT #1 PLAN & ELEVATION

NO SCALE

SC13-389

B-6

Drawing name: J:\SC13-399 Jefferson County - Kramme Rd\04 BRIDGE DWGS\BRIDGE LAYOUT.dwg Tab: B7 - END BENT 2 Plotted on: Nov 10, 2015 - 10:32am Plotted by: mflitzgerd



- NOTES:
THIS DRAWING IS NOT TO SCALE. PLEASE FOLLOW DIMENSIONS.
SEE "END BENT DETAILS" SHEET FOR ADDITIONAL INFORMATION
SEE "SLAB DETAILS" SHEET FOR ADDITIONAL INFORMATION ON THE SLAB NOTCH.

DATE _____

END BENT #2 PLAN & ELEVATION

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403 (652)
JEFFERSON COUNTY, MO

Three working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RITE

All OSHA rules & regulations established for the type of construction required by these plans shall be strictly followed (i.e. Trenching, Scaffolding, etc.)

314-842-4033 (tel.)
314-842-5957 (fax)
www.cochronea.com

737 RUDDER ROAD
FENTON, MISSOURI 63026

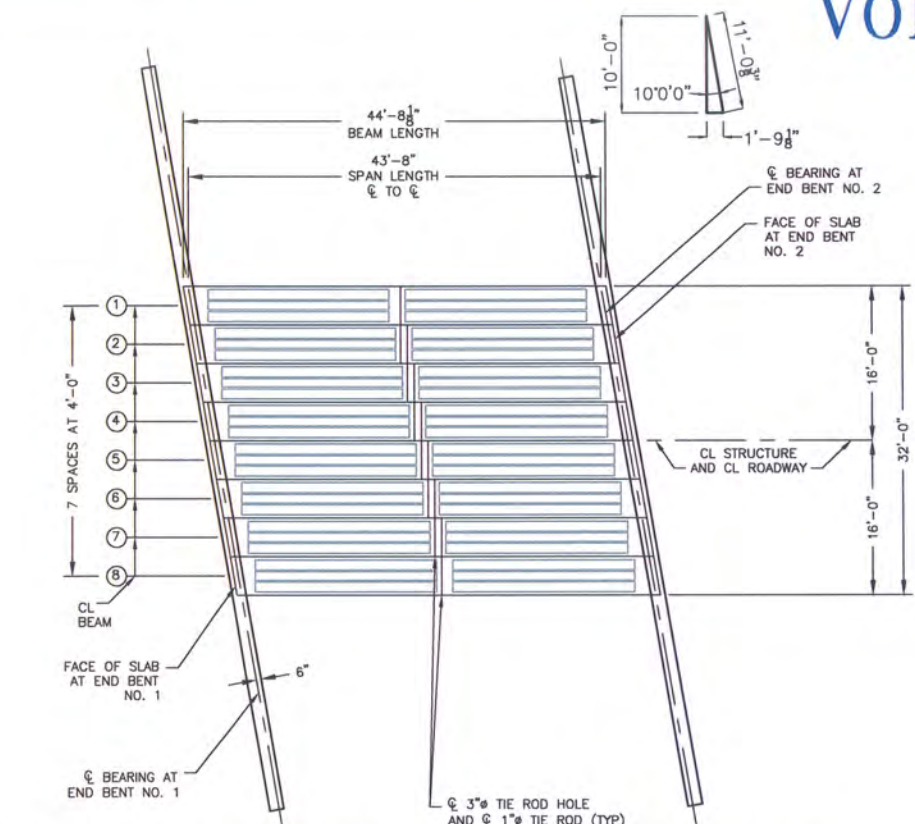
COCHRAN
737 RUDDER ROAD
FENTON, MISSOURI 63026

ACCREDITATION NUMBER - 006017

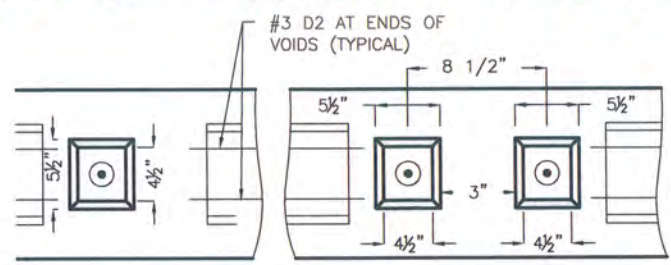
Drawing name: J:\SC13-389 Jefferson County - Kramme Rd\CH BRIDGE DWGS\VOIDED SLAB BEAMS.dwg Tab: VOIDED SLAB BEAM PLACEMENT Plotted on: Oct 14, 2015 - 10:12am Plotted by: ESoggs

VOIDED SLAB BEAM PLACEMENT

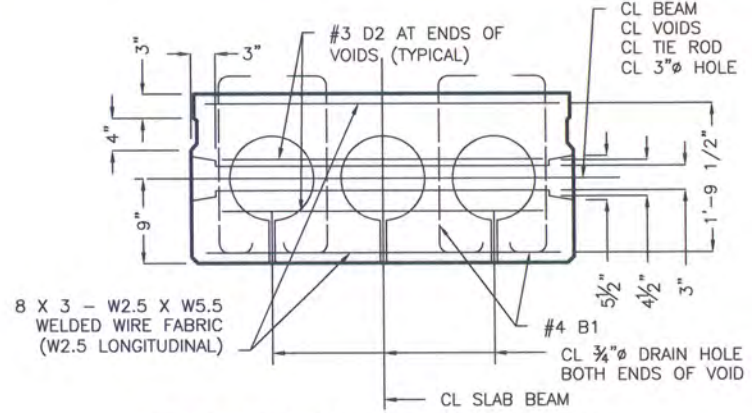
FILL KEYWAY TO TOP WITH NON-SHRINK GROUT



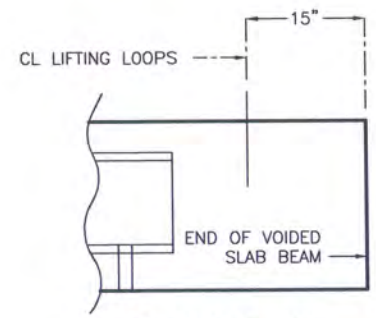
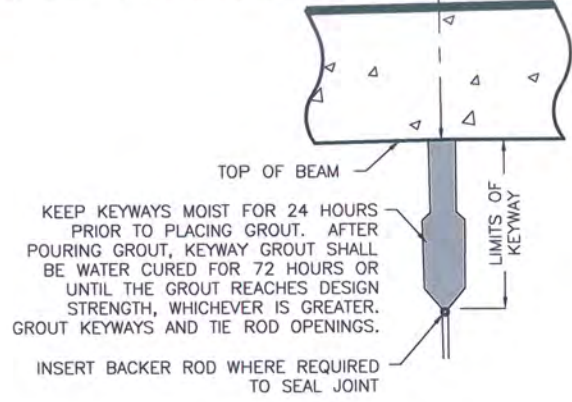
PLAN VIEW OF VOIDED SLAB BEAM PLACEMENT
(LONGITUDINAL DIMENSIONS ARE HORIZONTAL)



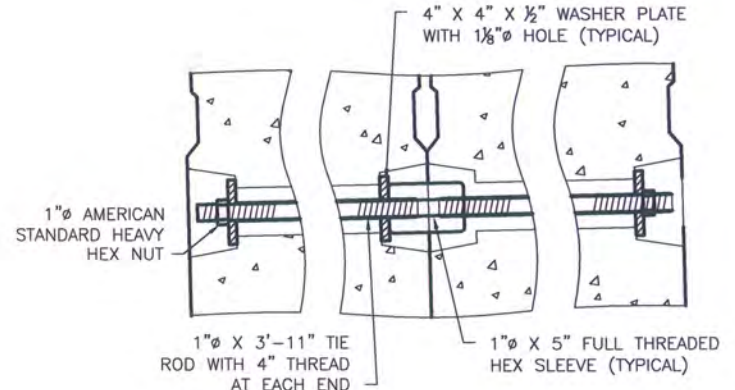
BEAMS NO. 1 AND 8
BEAMS NO. 2 THROUGH 7
BEAM REINFORCING NEAR TIE RODS



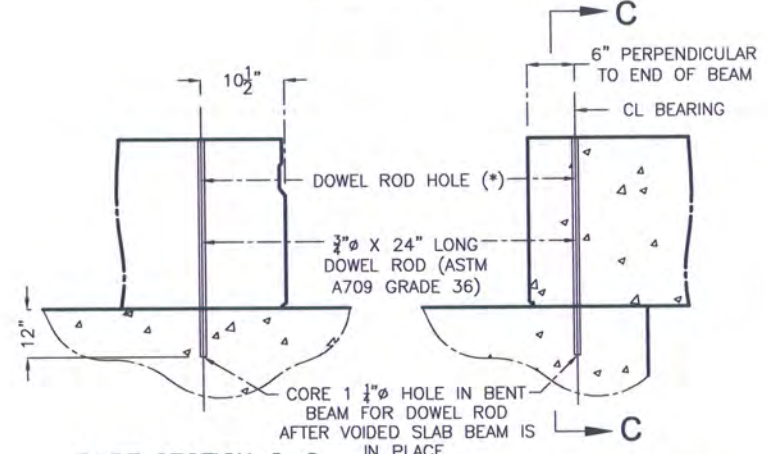
SECTION NEAR TIE RODS



LOCATION OF LIFTING LOOPS



PART SECTION THROUGH 1" TIE ROD



PART SECTION C-C
VOIDED SLAB BEAM ANCHORAGE DETAIL

(*) = 2" IN VOIDED SLAB BEAM. 1 1/2" HOLE IN BENT BEAM. 3" IN NEOPRENE BEARING PAD.

DOWEL RODS TO BE GROUTED IN PLACE AND ALLOWED TO CURE A MINIMUM OF 24 HOURS.

- NOTE:
- REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1036 OF THE MISSOURI STANDARD SPECIFICATIONS.
 - KEYWAY SURFACE SHALL BE CLEANED TO REMOVE ALL FORM OIL OR OTHER BOND BREAKING MATERIAL PRIOR TO SHIPMENT OF THE VOIDED SLAB BEAM. CLEANING SHALL BE DONE BY SANDBLASTING THE KEYWAY AREAS BETWEEN THE TOP OF THE SLAB AND THE BOTTOM EDGE OF THE KEY.
 - ALL STEEL PLATES TO BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
 - ALL TIE RODS, PLATES, SLEEVES, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
 - TIGHTEN ALL TIE RODS (PER VOIDED SLAB BEAM) TO ABOUT ONE-HALF OF THE SPECIFIED TENSION BEFORE PROCEEDING WITH FINAL TENSIONING.
 - TIE ROD NUTS SHALL BE TIGHTENED TO PROVIDE A TENSION ONE-HALF OF THAT SPECIFIED FOR A325 BOLTS IN SECTION 712.7.3 OF THE MISSOURI STANDARD SPECIFICATIONS.
 - WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M221.
 - USE NON-SHRINK GROUT FOR FILLING IN THE KEYWAYS.
 - KEEP VOIDED SLAB BEAMS UPRIGHT AT ALL TIMES. SUPPORT THEM WITHIN 12 INCHES OF THE ENDS ONLY.
 - TIE ROD PLATES SHALL BE ASTM A709 GRADE 36



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

314-842-4033 (tel)
314-842-5957 (fax)
www.cochraneng.com

737 RUDDER ROAD
FENTON, MISSOURI 63026

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

CERTIFICATE OF AUTHORITY NUMBER - 006937

These working days prior to the start of any excavation on this site, contractor shall call 1-800-DIG-RIE for utility location information.

All OSHA rules & regulations established for the type of construction required by these plans shall be strictly followed (i.e. Trenching, Blasting, etc.)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

VOIDED SLAB BEAM PLACEMENT

DATE	REVISION

DWN. BY:	APPD. BY:
E.L.S.	B.B.D.

DATE: AUGUST 2015

SCALE: NO SCALE

PROJ. NO: SC13-389

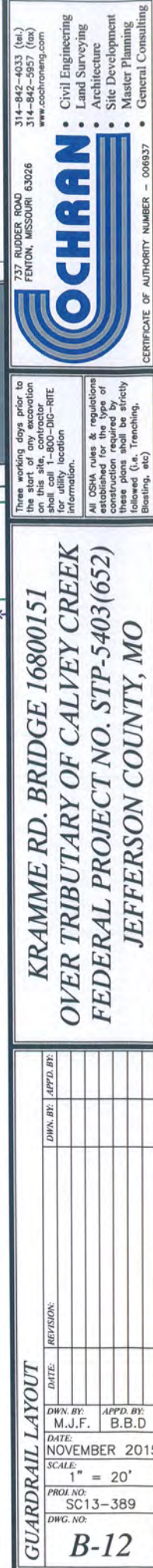
DWG. NO: B-9

Drawing name: J:\SC13-389 Jefferson County - Kramme Rd\04 BRIDGE DWGS\VOIDED SLAB BEAMS.dwg Plotted on: Nov 10, 2015 - 10:32am Plotted by: mflizgerold



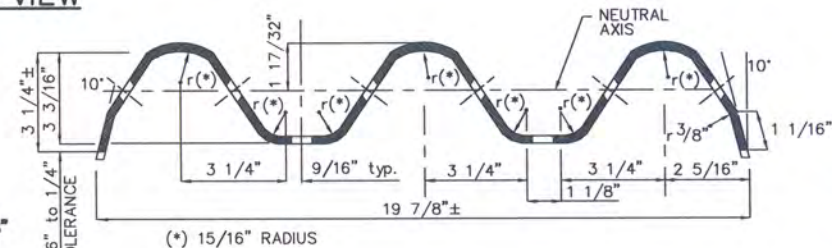
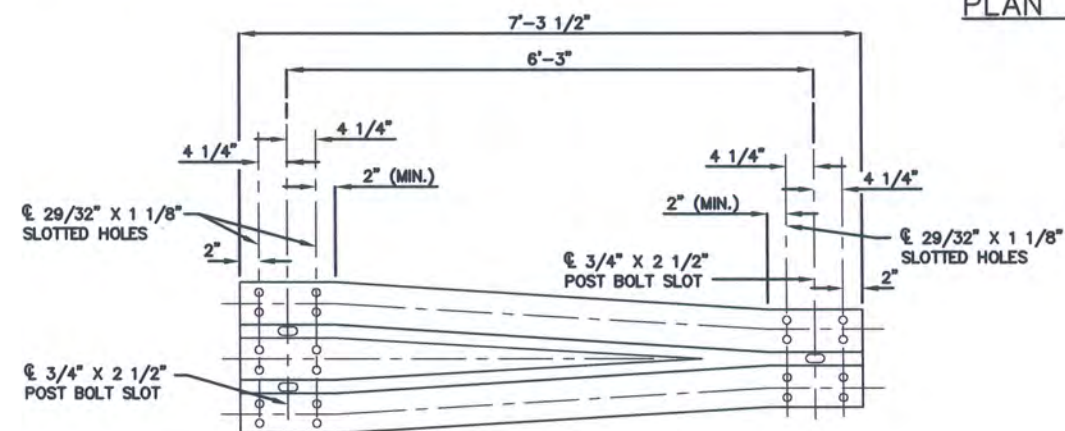
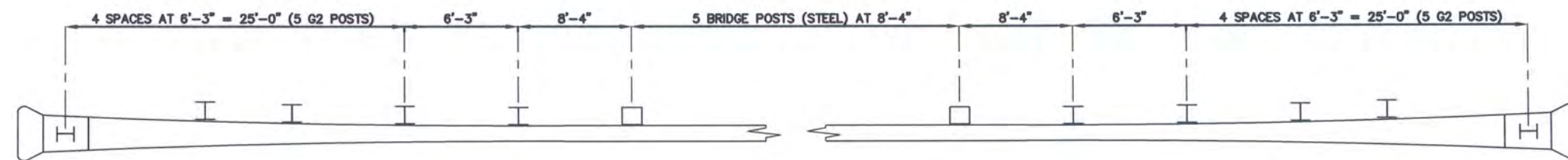
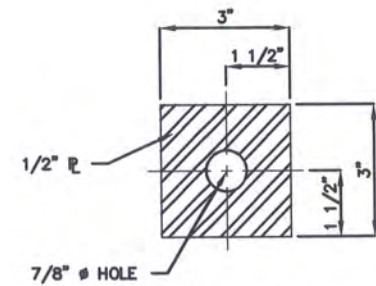
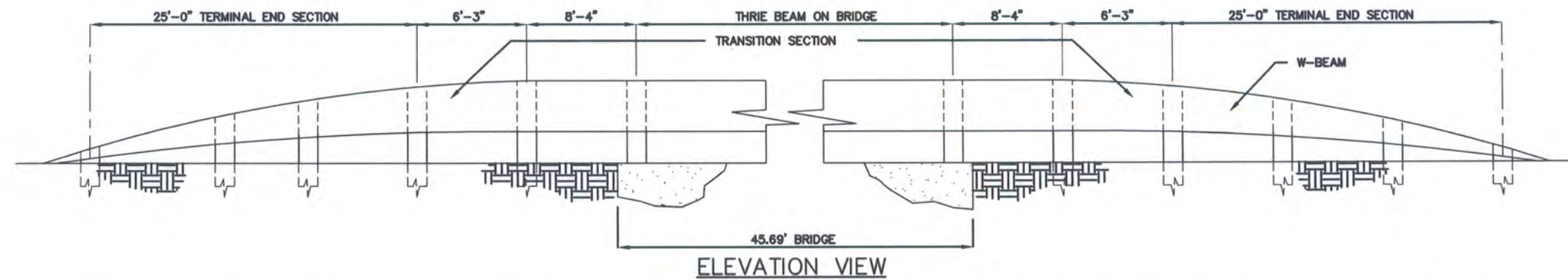
BRIDGE APPROACH SLABS	DATE:		REVISION:		DWN. BY:	APPD. BY:
DWN. BY:		APPD. BY:				
M.J.F.		B.B.D.				
DATE:						
NOVEMBER 2015						
SCALE:						
NO SCALE						
PROJ. NO:						
SC13-389						
DWG. NO:						
B-11						

Drawing name: J:\SC13-389 Jefferson County - Kramme Rd\GUARDRAIL LAYOUT.dwg Tab: GUARDRAIL LAYOUT - B12 Plotted on: Nov 11, 2015 - 9:53am Plotted by: mflitzgerld



KRAMME RD. BRIDGE I6800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

GUARDRAIL LAYOUT	DATE:	REVISION:	DWG. BY:	APPD. BY:
DWG. BY:	M.J.F.	APPD. BY:	B.B.D.	
DATE:	NOVEMBER 2011			
SCALE:	1" = 20'			
PROJ. NO:	SC13-389			
DWG. NO:	B-12			



SECTION THRU THRIE BEAM RAIL

(*) VERIFY BY RAIL TRANSITION SUPPLIER.

NOTES:

THE THRIE BEAM RAIL, END SHOE AND THE TRANSITION SECTION FOR THE BRIDGE ANCHOR SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE 2.

FOR PROTECTIVE COATING AND MATERIAL REQUIREMENTS, SEE SECTION 1040 OF THE MISSOURI STANDARD SPECIFICATIONS.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

WASHERS SHALL BE USED AT ALL POST BOLTS (BETWEEN BOLT HEAD AND BEAM). THEY SHALL BE RECTANGULAR IN SHAPE (3" X 1 3/4" X 3/16" MIN.) AND FLAT, OR WHEN NECESSARY, OF SUCH DESIGN AS TO FIT THE CONTOUR OF THE BEAM. WASHERS SHALL HAVE A 11/16" X 1" SLOTTED HOLE.

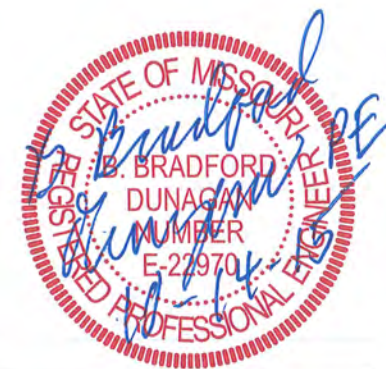
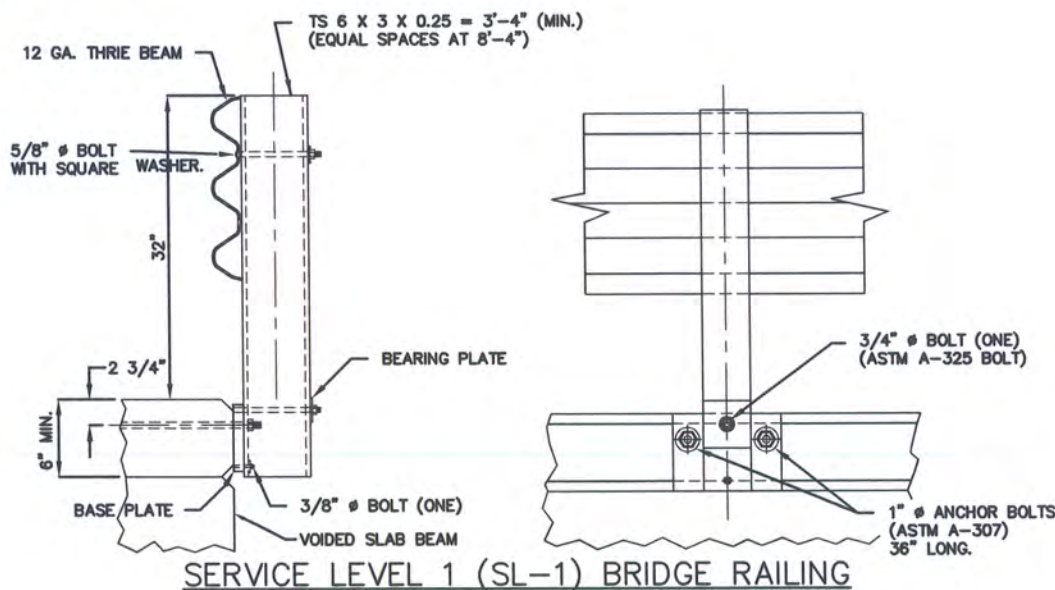
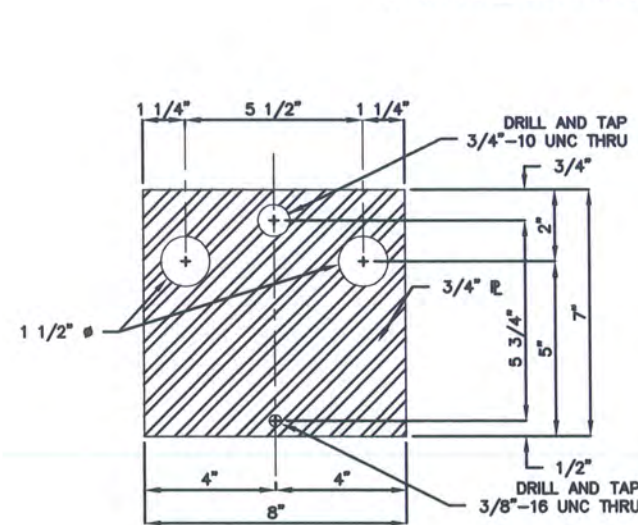
USE 5/8" BUTTON HEAD, OVAL SHOULDER BOLTS WITH HEX NUTS AT ALL SLOTS.
(THICKNESS OF HEX NUTS = 3/8")

ALL LAP SPLICES SHALL BE MADE IN THE DIRECTION OF TRAFFIC.

DECK ANCHORAGE OF THE POST ASSEMBLY SHALL BE PROVIDED BY TWO 1" DIA. ANCHOR BOLTS, 36" LONG OR EQUIVALENT DESIGN ACCORDING TO THE LATEST AASHTO BRIDGE SPECIFICATION.

G2 POSTS SHALL BE W6 X 9.

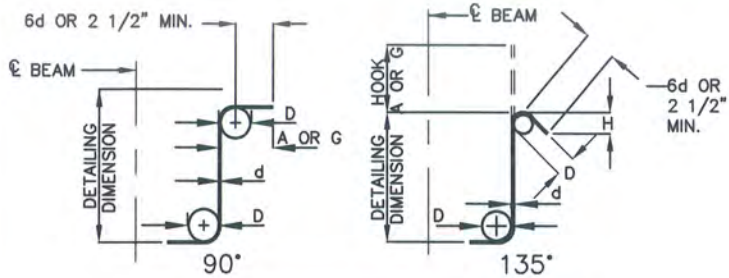
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.



DATE _____

Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

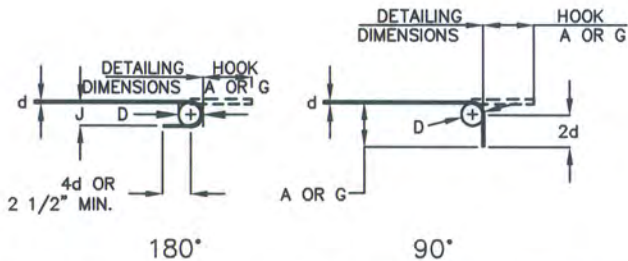
Drawing name: \\SC13-389 Jefferson County - Kramme Rd\Q4 BRIDGE DWGS\BILL OF REINFORCING.dwg Tab: BILL OF REINFORCING - B15 Plotted on: Nov 10, 2015 - 10:33am Plotted by: mltzgerd



STIRRUP HOOK DIMENSIONS

GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	APPROX. H
		HOOK A OR G	HOOK A OR G	
#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)

D=5d FOR #3 THROUGH #11
D=10d FOR #14 AND #18

SIZE OF 90° HOOKS (ALL GRADES)

AND 180° HOOKS (GRADE 60 KSI)
D=6d FOR #3 THROUGH #8
D=8d FOR #9, #10 AND #11
D=10d FOR #14 AND #18

END HOOK DIMENSIONS

BAR SIZE	180° HOOKS				90° HOOKS
	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.

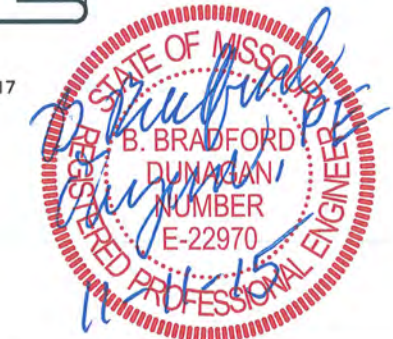
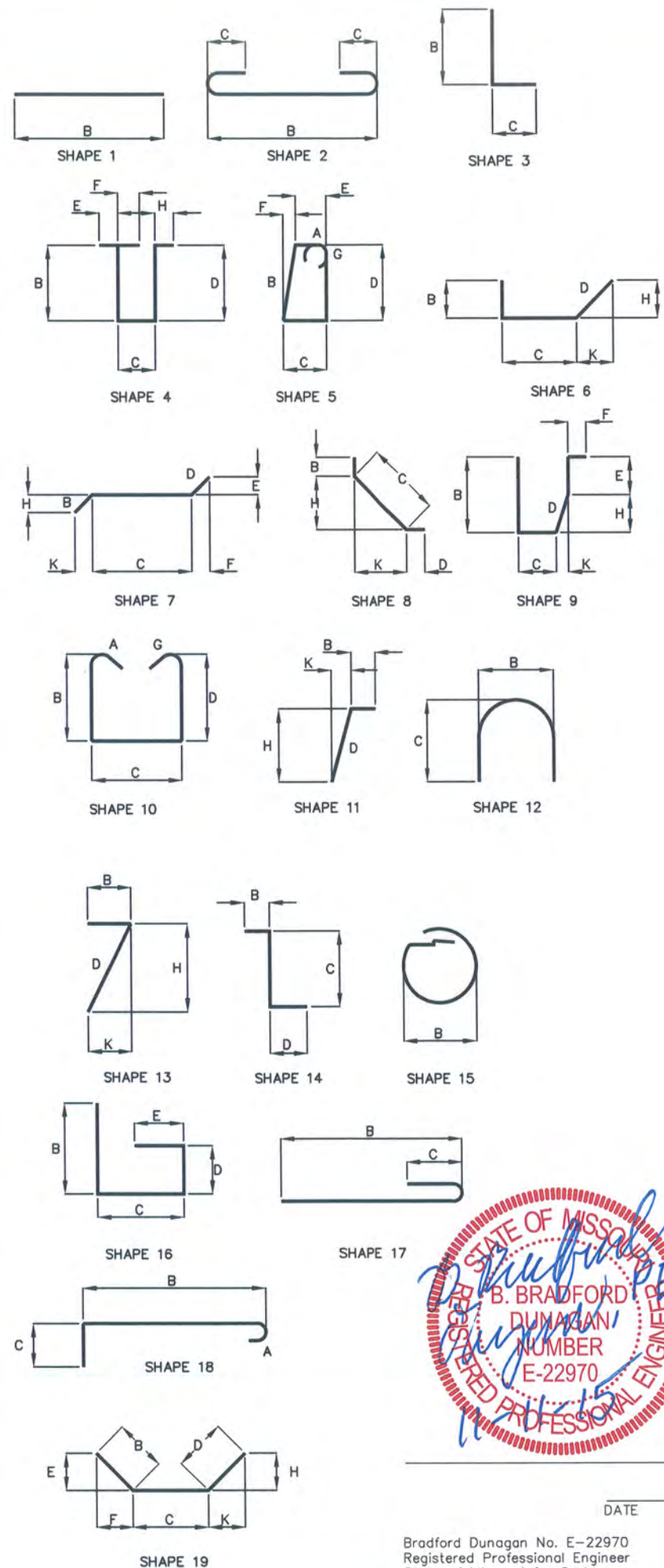
DIMENSIONS SHOWN ARE OUT TO OUT DIMENSIONS. LENGTH SHOWN IS MEASURED ALONG CENTERLINE OF BAR.

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.

BILL OF REINFORCING

BILL OF REINFORCING												
Epoxy Steel 17,335 lbs.												
(E)	NO. REQUIRED	SIZE	MARK	LOCATION	SHAPE	STIRRUP SUBSTRUCTURE VARIES NO EACH	B	C	D	E	F	WEIGHT
END BENT #1												
E 79	5	U10		WALL/WING	4	X	3.00	1.17	3.00			7.17
E 42	6	V11		WING	3	X V 2	13.98	1.67				15.65
		V11		inc. = 0.33'	3	X V 2	7.38	1.67				9.05
E 2	6	V12		WALL	3	X	14.16	1.67				15.83
E 33	6	V13		WALL	3	X	14.16	1.67				15.83
E 33	6	V14		WALL	3	X	12.18	1.67				13.85
E 4	6	V15		WALL	3	X	14.16	1.67				15.83
E 42	6	V16		WING	3	X V 2	13.98	1.67				15.65
		V16		inc. = 0.33'	3	X V 2	7.38	1.67				9.05
E 33	6	V17		WALL/APPROACH	3	X	4.25	3.00				7.25
E 8	5	H10		FOOTING	1	X	40.50					40.50
E 16	6	H11		WALL/WING	1	X	39.66					39.66
E 14	6	H12		WALL/WING	1	V 2	38.89					38.89
		H12		inc. = 2.26'	1	V 2	25.33					25.33
E 14	6	H13		WALL/WING	1	V 2	38.89					38.89
		H13		inc. = 2.26'	1	V 2	25.33					25.33
E 2	6	H14		WING	1	V 1	23.07					23.07
		H14		inc. = 2.26'	1	V 1	20.81					20.81
E 2	6	H15		WING	1	V 1	5.35					5.35
		H15		inc. = 2.26'	1	V 1	3.09					3.09
E 2	6	H16		WING	1	V 1	23.07					23.07
		H16		inc. = 2.26'	1	V 1	20.81					20.81
E 2	6	H17		WING	1	V 1	6.08					6.08
		H17		inc. = 2.26'	1	V 1	3.82					3.82
E 2	6	T11		WING	8	X	2.87	21.91	2.00		20.79	6.92
E 2	6	T12		WING	8	X	2.00	21.91	3.63		6.91	20.79
END BENT #2												
E 79	5	U20		WALL/WING	4	X	3.00	1.17	3.00			7.17
E 21	6	V21		FOOTING/WING	3	X V 2	14.90	1.67				16.57
		V21		inc. = 0.33'	3	X V 2	8.30	1.67				9.97
E 2	6	V22		FOOTING/WALL	3	X	15.17	1.67				16.84
E 33	6	V23		FOOTING/WALL	3	X	15.17	1.67				16.84
E 33	6	V24		FOOTING/WALL	3	X	13.19	1.67				14.86
E 2	6	V25		FOOTING/WALL	3	X	15.17	1.67				16.84
E 42	6	V26		FOOTING/WING	3	X V 2	14.90	1.67				16.57
		V26		inc. = 0.33'	3	X V 2	8.30	1.67				9.97
E 33	6	V27		WALL/APPROACH	3	X	4.25	3.00				7.25
E 8	5	H20		FOOTING	1	X	39.75					39.75
E 20	6	H21		WALL/WING	1	X	38.90					38.90
E 12	6	H22		WALL/WING	1	V 2	36.62					36.62
		H22		inc. = 2.26'	1	V 2	25.32					25.32
E 12	6	H23		WALL/WING	1	V 2	36.62					36.62
		H23		inc. = 2.26'	1	V 2	25.32					25.32
E 2	6	H24		WING	1	V 1	23.06					23.06
		H24		inc. = 2.26'	1	V 1	20.80					20.80
E 2	6	H25		WING	1	V 1	5.05					5.05
		H25		inc. = 2.26'	1	V 1	2.79					2.79
E 2	6	H26		WING	1	V 1	23.06					23.06
		H26		inc. = 2.26'	1	V 1	20.80					20.80
E 2	6	H27		WING	1	V 1	5.38					5.38
		H27		inc. = 2.26'	1	V 1	3.12					3.12
E 2	6	T21		WING	8	X	2.30	21.92	2.00		20.79	6.93
E 2	6	T22		WING	8	X	2.00	21.92	2.65		6.92	20.79
SLAB												
E 52	5	S1		SLAB	1		26.22					26.22
E 60	5	S2		SLAB	1		32.16					32.16



Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

314-842-4033 (w.)
314-842-4937 (m.)
www.cochraneng.com

737 RIDGER ROAD
FENTON, MISSOURI 63026

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

CERTIFICATE OF AUTHORITY NUMBER - 006937

Three working days prior to the construction start date on this site, contractor shall call 1-800-DIG-RIE for utility location information.

All OSHA rules & regulations established for the type of construction required by these plans shall be strictly followed (excavating, trenching, blasting, etc.)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

BILL OF REINFORCING

DWN. BY: M.J.F. APPD. BY: B.B.D.

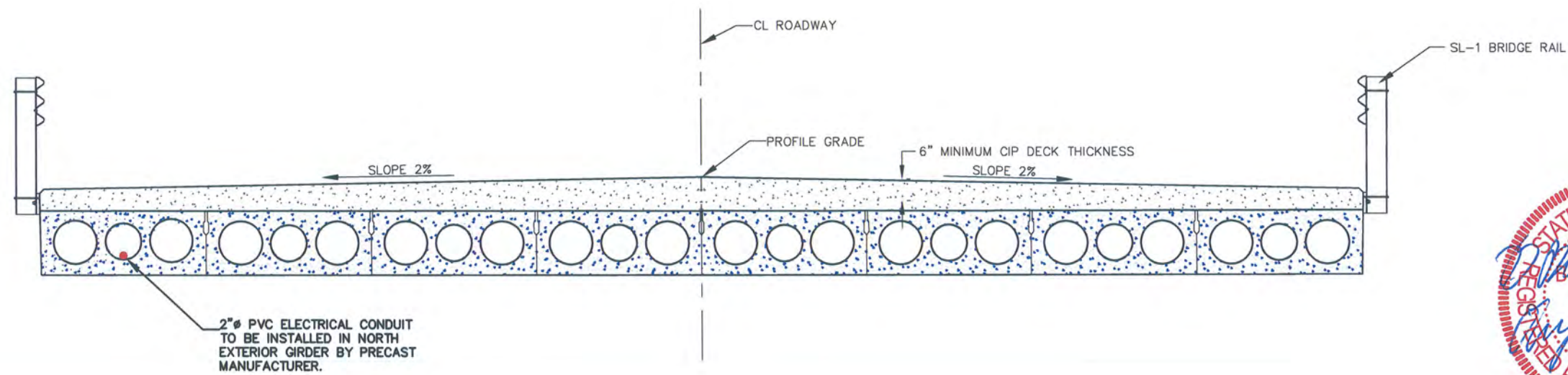
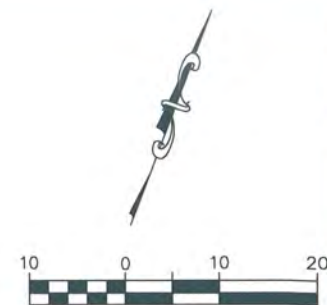
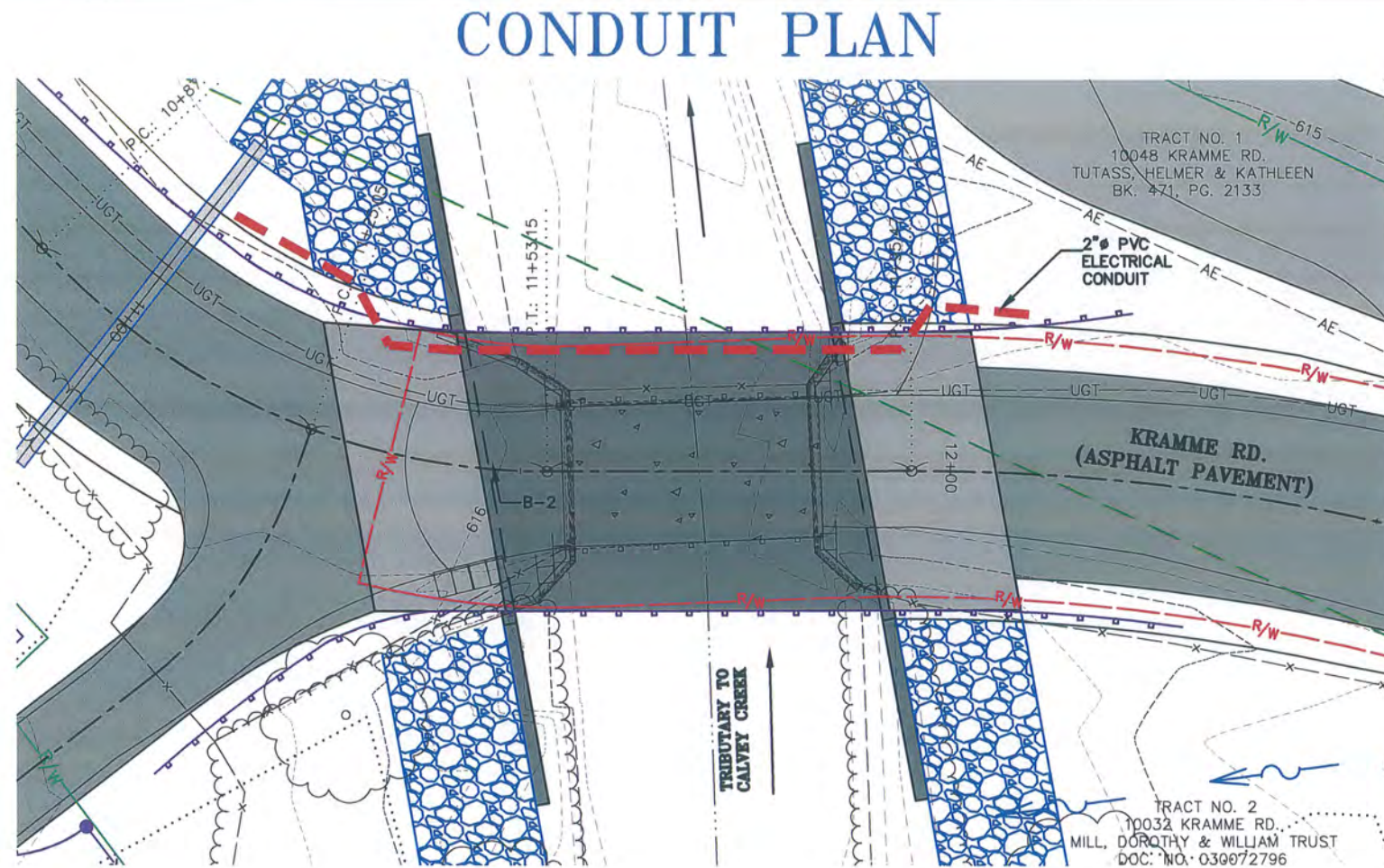
DATE: NOVEMBER 2015

SCALE: NO SCALE

PROJ. NO: SC13-389

DWG. NO: B-15

NOTES:
CONDUIT TO BE RIGID
NON-METALIC SCHEDULE 40
HEAVY WALL PVC.



TYPICAL BRIDGE CROSS SECTION

Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran

314-842-4033 (tel.)
314-842-5937 (fax)
www.cochraneng.com

COCHRAN

Civil Engineering
Land Surveying
Architecture
Site Development
Master Planning
General Consulting

237 BUDDER ROAD
FENTON, MISSOURI 63026

CERTIFICATE OF AUTHORITY NUMBER - 006937

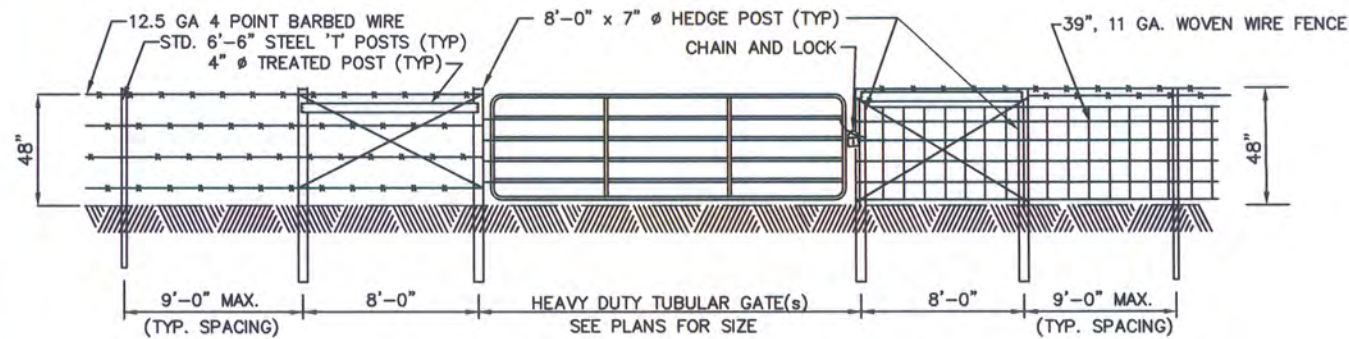
Three working days prior to the start of construction on this site, contractor shall call 1-800-DIG-RITE for utility location information.

All OSHA rules & regulations established for the type of construction required by these plans shall be strictly followed (trenching, blasting, etc.)

KRAMME RD. BRIDGE 16800151
OVER TRIBUTARY OF CALVEY CREEK
FEDERAL PROJECT NO. STP-5403(652)
JEFFERSON COUNTY, MO

BRIDGE PLAN AND ELEVATION		DATE	BY	DATE	BY
DWG. NO.		NOVEMBER 2015	E.L.S.	NOVEMBER 2015	B.B.D.
SCALE:		AS NOTED			
PROJ. NO.		SC13-389			
DWG. NO.		B-16			

Drawing name: J:\SC13-389 Jefferson County - Kramme Rd\04 BRIDGE DWGS\Fence & Water Gap1.DWG Tab: Fence Plotted on: Oct 14, 2015 - 10:13am Plotted by: EStoggs

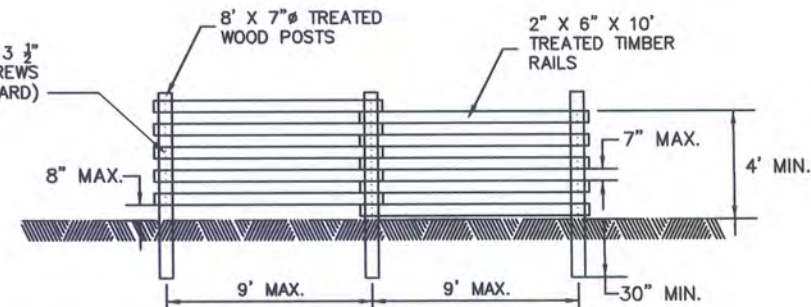


TYPICAL FENCE GATE AND BRACING
(FOR BARBED WIRE & WOVEN WIRE FENCING)

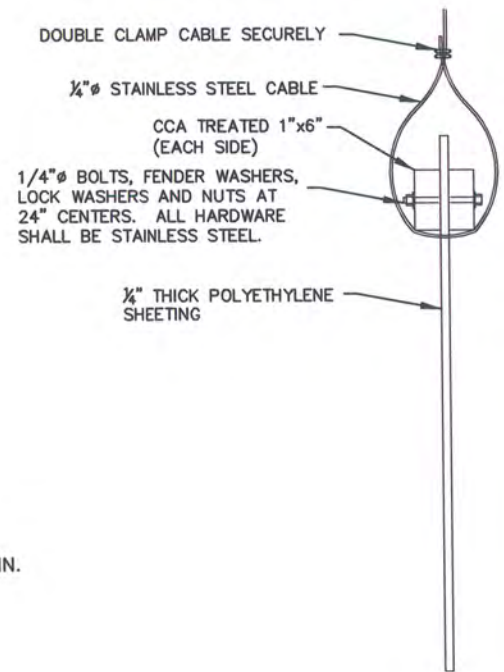
NOTES:

1. GATES SHALL BE 2" STEEL TUBE, 16 GA., 6 BARS 50" TALL.
2. FENCING SHOWN IN THIS DETAIL IS THE MINIMUM REQUIRED BY THE ENGINEER. REPLACEMENT FENCE SHALL BE EQUAL TO OR BETTER THAN THE EXISTING FENCE. WOVEN WIRE AND BARBED WIRE, SHALL BE CLASS 1 GALVANIZED.
3. TIES TO EXISTING FENCE, ANY CHANGE IN DIRECTION AND AT THE TOP OF STREAM BANKS REQUIRE THE TYPICAL CORNER AND BRACING LAYOUT.
4. INSTALL NEW FENCE ALONG THE RIGHT-OF-WAY LINE TO THE LIMITS DESCRIBED ON THE SITE PLAN. CONTINUITY TO EXISTING FENCE SHALL BE MAINTAINED. THE COST OF ANY TEMPORARY FENCING, AS REQUIRED BY THE LANDOWNER, SHALL BE INCIDENTAL TO THE PROJECT.
5. ALL CORNER POSTS, END POSTS AND GATE POSTS SHALL BE EMBEDDED A MINIMUM OF 3'-6" IN THE GROUND AND ENCASED IN CONCRETE. POST HOLES SHALL BE A MINIMUM OF 18 INCHES IN DIAMETER.

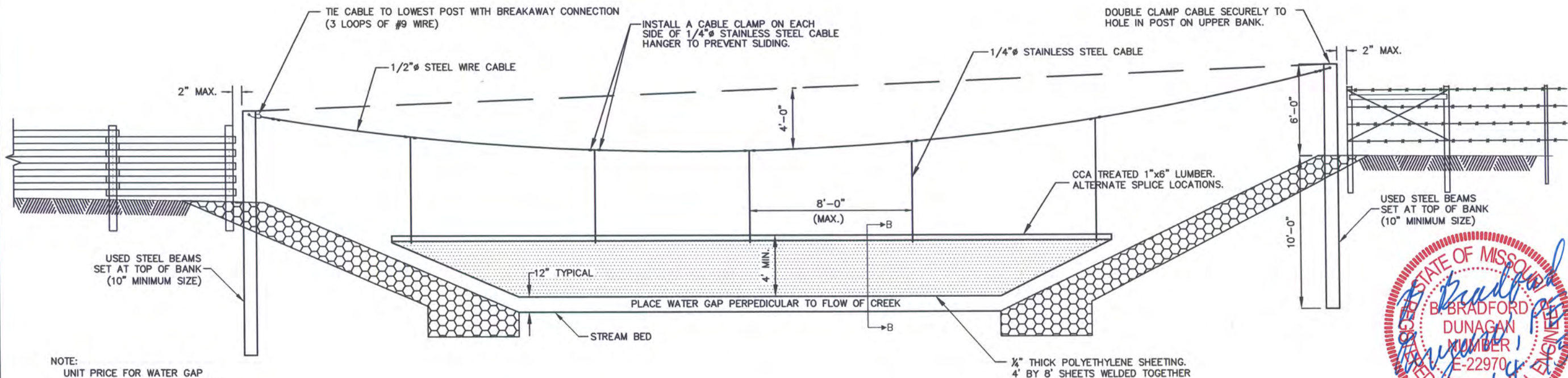
ATTACH WITH 2-#9 X 3 1/2"
GALVANIZED SCREWS
(EACH END OF EACH BOARD)



TYPICAL WOOD FENCE



SECTION B-B



NOTE:
UNIT PRICE FOR WATER GAP SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY WHICH INCLUDES CABLES, STEEL POSTS, CLAMPS, HARDWARE, POLYETHYLENE SHEETING AND PLACEMENT OF END POSTS.

WATER GAP

Bradford Dunagan No. E-22970
Registered Professional Engineer
State of Missouri for Cochran