Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\1 COVER SHEET.DWG

LEGEND

- BENCHMARK OR T.B.M.
- SIGN
- CONTROL POINT
- POWER POLE
- GUY WIRE
- TELEPHONE PEDESTAL
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- GAS METER
- MAILBOX
- TREE
- FIBER ROLL DITCH CHECK
- EXISTING FENCE
- ELECTRIC
- TELEPHONE
- GAS
- WATERLINE
- UNDERGROUND TELEPHONE
- UNDERGROUND ELECTRIC
- DITCH LINE
- SLOPE LINE
- RIGHT OF WAY
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- TEE POST R/W MARKER
- ANCHOR POST IN FENCE
- ROCK BLANKET

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TIN CUP TRAIL - PHASE 2

JOPLIN, MISSOURI



PROJECT LOCATION MAP
N.T.S.

UTILITIES		
WATER:	SEWER:	GAS:
MISSOURI AMERICAN WATER CO.	CITY OF JOPLIN	SPIRE
MATT BARNHART	DAN JOHNSON	KEN STEGALL
2650 E. 32ND ST.	602 SOUTH MAIN	520 E. 5TH ST.
JOPLIN MO 64801	JOPLIN MO 64801	JOPLIN MO 64801
417-626-4815	417-624-0820	314-341-0973

811 Know what's below. Call before you dig.

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-200014997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-200149997
REGISTERED PROFESSIONAL ENGINEER
TIN CUP Phase 2

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680 - 7200

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COVER SHEET
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 1

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\2 QUANTITIES.DWG

GENERAL NOTES:

MINOR ADJUSTMENTS TO TRAIL ALIGNMENT MAY BE EXPECTED. STAKED ALIGNMENT SHALL BE APPROVED BY THE OWNER PRIOR TO CONSTRUCTION.

ALL AREAS OF THE TRAIL ACCESS ROUTE MUST BE COMPLIANT WITH THE "AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG)". EXCEPTIONS MUST BE APPROVED BY THE ENGINEER, ALL OTHER AREAS OF (NON-COMPLIANCE SHALL BE REMOVED AND CORRECTED AT THE CONTRACTOR'S EXPENSE.)

FINISHED TRAIL SHALL BE STABLE, SLIP RESISTANT AND SURFACE SHALL NOT POND WATER.

CROSS SLOPES SHALL BE A MINIMUM OF 1.0% TO FACILITATE DRAINAGE AND A MAXIMUM OF 2.0% TO BE USABLE FOR DISABLED INDIVIDUALS.

TRAIL RUNNING GRADE SHALL NOT EXCEED 5% UNLESS INDICATED OTHERWISE.

A MINIMUM 80" VERTICAL CLEARANCE ABOVE TRAIL MUST BE MAINTAINED.

LOCATIONS OF EXISTING UTILITIES AS SHOWN ON PLANS ARE APPROXIMATE, LOCATED WITH INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL CONTACT ALL UTILITIES PRIOR TO EXCAVATION, AND SHALL BE RESPONSIBLE FOR THE EXACT LOCATION AND PRESERVATION OF ALL BURIED UTILITY LINES. UTILITY LOCATING SERVICE, SUCH AS (MISSOURI DIG-RITE), SHALL BE CONTACTED BY THE CONTRACTOR 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.

BM (BENCHMARK) ELEVATIONS & LOCATIONS SHALL BE AS SHOWN ON PLAN SHEETS.

CP-* (CONTROL POINT) – SEE PLAN SHEETS FOR ELEVATIONS, LOCATIONS & DESCRIPTION.

NORTHING & EASTING INFORMATION CAN BE MADE AVAILABLE UPON CONTRACTORS REQUEST.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LINE AND GRADE STAKING REQUIRED TO COMPLETE THE PROJECT.

ALL CONSTRUCTION & EXCAVATION ACTIVITIES SHALL BE CONFINED TO EASEMENTS, RIGHT-OF-WAY AND/OR WORK AREA LIMITS AS SHOWN ON DRAWING.

THE CONTRACTOR SHALL PROVIDE, PLACE AND MAINTAIN ALL BARRIERS (CONES, BARRELS, ETC.) AND SAFETY PERSONNEL (FLAGMEN) AS NECESSARY FOR A SAFE WORKING ENVIRONMENT.

CONTRACTOR SHALL REMOVE, PRESERVE, AND REPLACE ALL SIGNS, MAILBOXES, FENCES AND THE LIKE WITHIN THE LIMITS OF THE PROPOSED IMPROVEMENTS.

ALL SURFACES (CONCRETE, ASPHALT, GRAVEL OR DIRT) AND THEIR APPURTENANCES (CURBS, CULVERTS, ETC.) DISTURBED DURING CONSTRUCTION SHALL BE REPLACED WITH LIKE MATERIALS PER PLANS & SPECIFICATIONS.

DURING ALL CONSTRUCTION ACTIVITIES, CARE SHALL BE TAKEN TO PREVENT DAMAGE TO ADJACENT STRUCTURES, BURIED PIPING & UTILITIES. REPAIR OF ALL STRUCTURES, PIPING &/OR UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE AT THE CONTRACTORS EXPENSE & TO THEIR ORIGINAL CONDITION.

CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL CONSTRUCTION WITH ALL UTILITIES AND APPROPRIATE GOVERNING BOARDS.

CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITY WITH ALL UTILITY CO.'S, AND THE CITY OF JOPLIN.

BENCH:

BENCHES SHALL BE BENCH MODEL #58 AS MANUFACTURED BY DUMOR OR AN APPROVED EQUAL. COST FOR BENCH SHALL INCLUDE CONCRETE PAD AS SPECIFIED IN THE PLANS. SEE SPECIAL PROVISIONS.

* UNLESS OTHERWISE SPECIFIED, THE PROFILE OF THE TRAIL SHALL GENERALLY FOLLOW THE EXISTING GROUND ELEVATION WHILE TAKING ADVANTAGE OF TOPOGRAPHIC FEATURES AND TERRAIN TO PRODUCE A SMOOTH TRAIL PROFILE. SLIGHT ADJUSTMENTS IN THE PROFILE GRADE ARE EXPECTED TO REMOVE MINOR IRREGULARITIES AND PROMOTE DRAINAGE.

ESTIMATED QUANTITIES

ITEM NUMBER	TRAIL ITEMS	UNIT TYPE	TOTAL
202-20.10	REMOVAL OF IMPROVEMENTS	LUMP SUM	1
203-50.00	UNCLASSIFIED EXCAVATION	CU. YDS.	1373
203-55.00	EMBANKMENT IN PLACE	CU. YDS.	1242
207-20.00	LINEAR GRADING CLASS II	STA.	46.3
304-01.23	TYPE I AGGREGATE FOR BASE 4" THICK	SQ. YDS.	5784
304-01.63	TYPE I AGGREGATE FOR BASE 6" THICK	SQ. YDS.	737
310-10.02	GRAVEL	TONS	48
401-99.05A	2" ASPHALT BP-2 (TRAIL)	SQ. YDS.	638
401-99.05B	4" BITUMINOUS BASE (TRAIL)	SQ. YDS.	638
401-99.06A	2" ASPHALT BP-2 (ENTRANCE)	SQ. YDS.	586
401-99.06B	4" BITUMINOUS BASE (ENTRANCE)	SQ. YDS.	586
502-11.08	CONCRETE PAVEMENT (8" NON-REINFORCED)	SQ. YDS.	151
503-10.11A	BRIDGE APPROACH SLAB (MINOR ROAD)	SQ. YDS.	82
604-40.11	CONCRETE COLLAR FOR PIPE EXTENSION	LUMP SUM	1
607-99.01	PERMANENT FENCE (5-STRAND BARBED WIRE)	LIN. FT.	190
607-99.02	TYPE 1 ANCHOR POST	EA.	3
608-10.10	CONCRETE ADA RAMP	SQ. YDS.	29
608-10.12	TRUNCATED DOMES	SQ. FT.	80
608-60.06A	CONCRETE TRAIL WITH HEADWALL @ STREAM MAINTENANCE LOCATIONS	SQ. YDS.	578
608-99.05	CONCRETE TRAIL (6" THICK)	SQ. YDS.	5019
611-30.10	FURNISH TYPE I ROCK BLANKET, GROUTED TRAIL EDGE	CU. YDS.	347
611-30.20	FURNISH TYPE II ROCK BLANKET	CU. YDS.	97
611-30.30	PLACING TYPE I ROCK BLANKET, GROUTED TRAIL EDGE	CU. YDS.	347
611-30.40	PLACING TYPE II ROCK BLANKET	CU. YDS.	97
611-70.00A	6" GABION STONE	CU. YDS.	31
616-10.05	CONSTRUCTION SIGNS	SQ. FT.	64
616-10.25	TRIM LINE (CHANNELIZER)	EA.	25
616-99.02	PERMANENT SIGNAGE (INCLUDING SIGN, POST, PLAQUE AND COMPLETE INSTALLATION)	EA.	4
618-10.00	MOBILIZATION	LUMP SUM	1
620-00.36	PREFORMED THERMOPLASTIC PAVEMENT MARKING, 30 in. WHITE MIDBLOCK	EA.	9
620-61.51A	PAVEMENT MARKING ON CULVERT	LUMP SUM	1
620-61.51B	4 IN. YELLOW ACRYLIC COPOLYMER FAST DRY PAVEMENT MARKING PAINT	LIN. FT.	4570
624-01.03A	PERMANENT EROSION CONTROL GEOTEXTILE	SQ. YDS.	145
703-99.01	TRIPLE 8' SPAN X 4' TALL REINFORCED CONCRETE BOX CULVERT	LUMP SUM	1
720-99.03	CONCRETE BASE, TOE PROTECTION AND CONCRETE FOUNDATION CURB	LIN. FT.	200
720-99.04	RETAINING WALL	SQ. FT.	688
726-10.19	19" X 30" HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE	LIN. FT.	128
731-99.02	RAISE MANHOLE TO GRADE	EA.	1
732-06.24	24" CLASS III REINFORCED CONCRETE PIPE	LIN. FT.	49
732-06.24A	24" CONCRETE FLARED END SECTION	EA.	1
732-06.30	30" CLASS III REINFORCED CONCRETE PIPE	LIN. FT.	46
732-06.30A	30" CONCRETE FLARED END SECTION	EA.	1
732-10.99	19" X 30" HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE TAPERED END SECTION	EA.	4
805-99.01	SEEDING AND MULCHING	AC.	1.33
806-99.28	MAINTAIN SWPPP, INCLUDING REPORTING REQUIREMENTS	LUMP SUM	1
808-99.03	BENCH	EA.	1

NOTE:

THE CITY OF JOPLIN RETAINS THE RIGHT TO ADJUST QUANTITIES INCLUDING THE PARTIAL ADDITION, DELETION OR ADJUSTMENT OF SURFACING MATERIALS TO BRING THE PROJECT TO WITHIN BUDGETARY LIMITATIONS.

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680 - 7200

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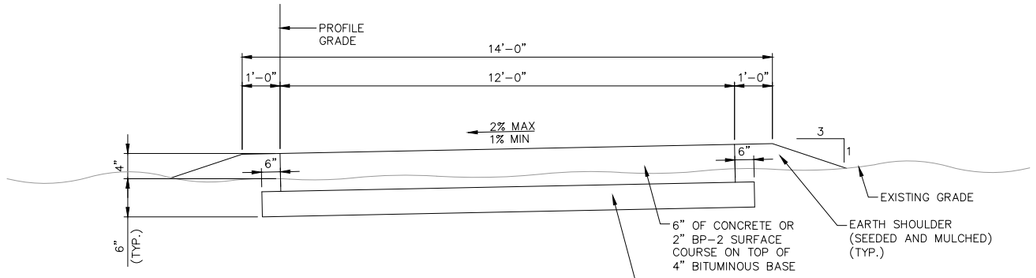
QUANTITIES
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 2

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-200001495

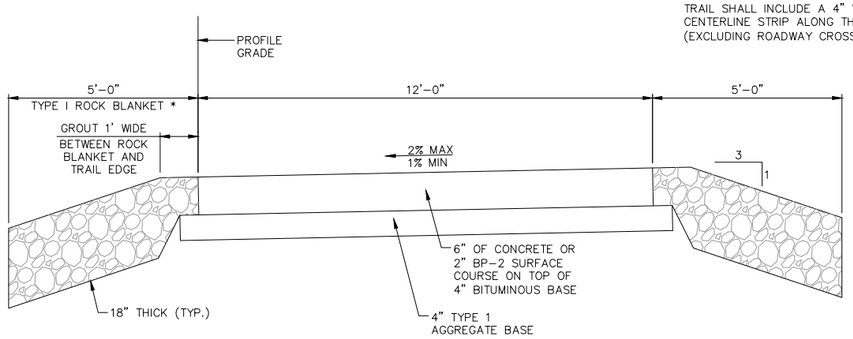
STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-200149997
REGISTERED PROFESSIONAL ENGINEER
5/14/24
Tin Cup Phase 2

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\3 TYPICAL SECTIONS.DWG



TYPICAL SECTION TRAIL
NTS

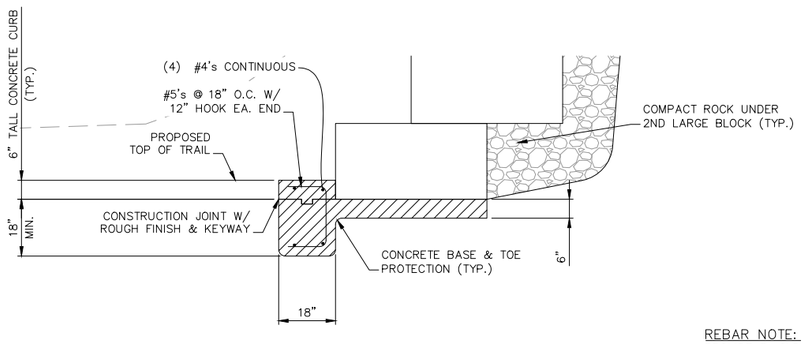
TRAIL NOTE:
TRAIL SHALL INCLUDE A 4" WIDE SOLID YELLOW PAINTED CENTERLINE STRIP ALONG THE LENGTH OF THE PROJECT (EXCLUDING ROADWAY CROSSINGS).



* MANIPULATE ROCK BLANKET FLAT SIDE UP

STA. 23+76 – STA. 30+00

TYPICAL SECTION TRAIL WITH EDGE PROTECTION
NTS

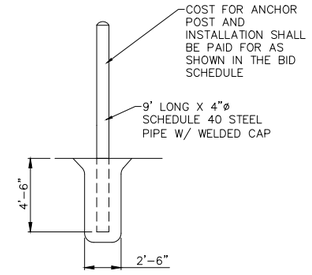


RETAINING WALL DETAIL
NTS

REBAR NOTE:
PROVIDE 3" CLR. FOR CONCRETE CAST AGAINST EARTH AND 2" CLR FOR FORMED CONCRETE & TOP COVER.

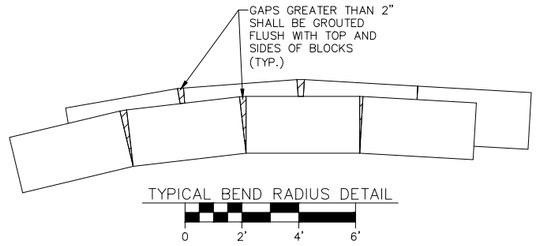
CONCRETE BASE NOTE:
CAST CONCRETE BASE ON UNDISTURBED EARTH UNLESS SOIL IS DEEMED UNSUITABLE BY ENGINEER ON SITE. CONTRACTOR HAS OPTION USING EARTH TO FORM THE FRONT EDGE OR TO FORM STRAIGHT.

GENERAL RETAINING WALL NOTE:
REFER TO SHEET 4 FOR RETAINING WALL ELEVATION PROFILE DETAIL.
CRUSHED STONE AND GEOTEXTILE FABRIC SHALL BE INCIDENTAL TO THE 720-99.04 RETAINING WALL BID ITEM.

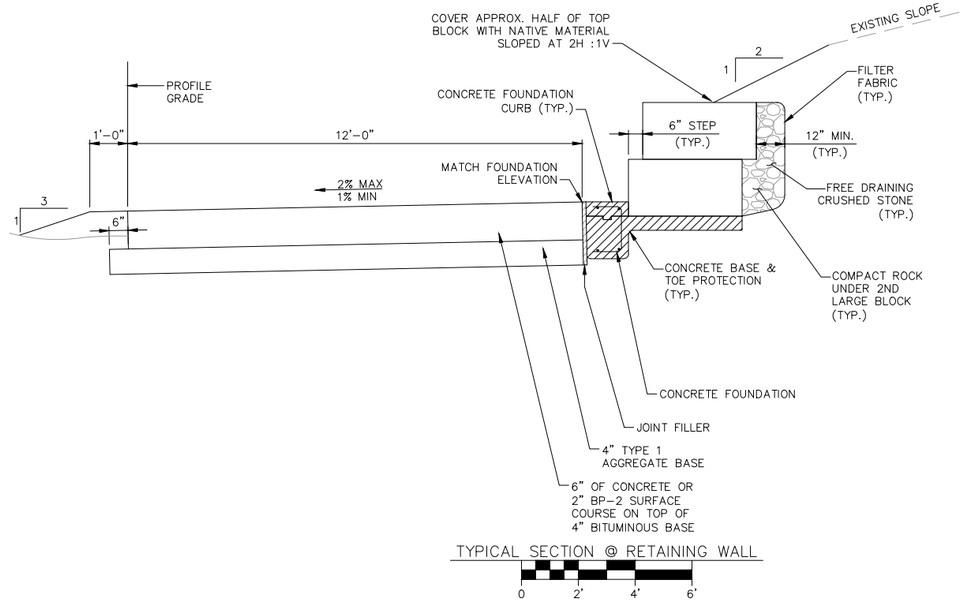


TYPE 1 ANCHOR POST DETAIL
NTS

BLOCK SIZE:
LARGE BLOCKS ARE SHOWN A NOMINAL 4' LONG BY 4' WIDE BY 2' TALL. ACTUAL DIMENSION MAY VARY. HOLD STEP DIMENSIONS AND VERTICAL FACES AS SHOWN ON DETAILS AND PLANS.



TYPICAL BEND RADIUS DETAIL



TYPICAL SECTION @ RETAINING WALL

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680 - 7200

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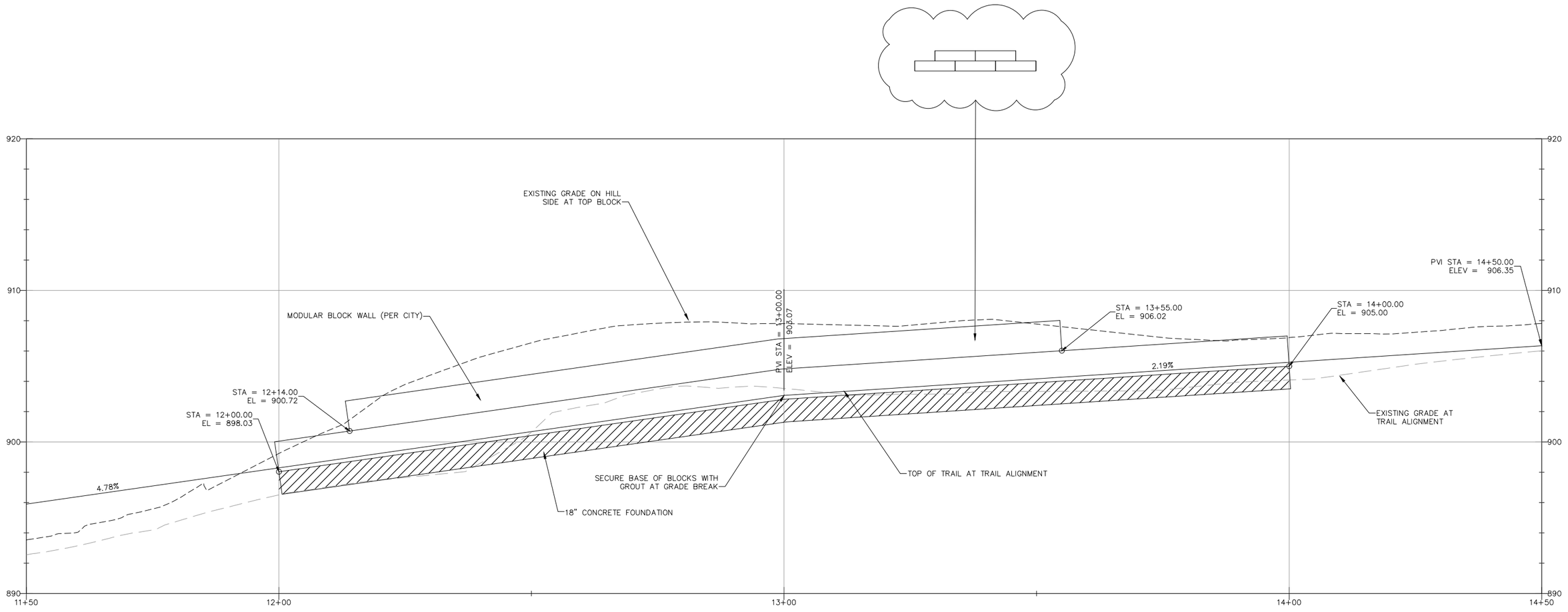
TYPICAL SECTIONS
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 3

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-2000149397

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-2000149397
REGISTERED PROFESSIONAL ENGINEER

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RETAINING WALL PROFILE
SCALE
VERT. = 1:3
HORIZ. = 1:10

NOTE:
1. REFER TO SHEET 3 FOR RETAINING WALL TYPICAL SECTIONS.
2. BLOCK RETAINING WALL TO MATCH GRADE OF PROPOSED TRAIL.

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-200014997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-200014997
REGISTERED PROFESSIONAL ENGINEER
5/14/24
Tin Cup Phase 2

ALLGEIER, MARTIN and ASSOCIATES, INC.
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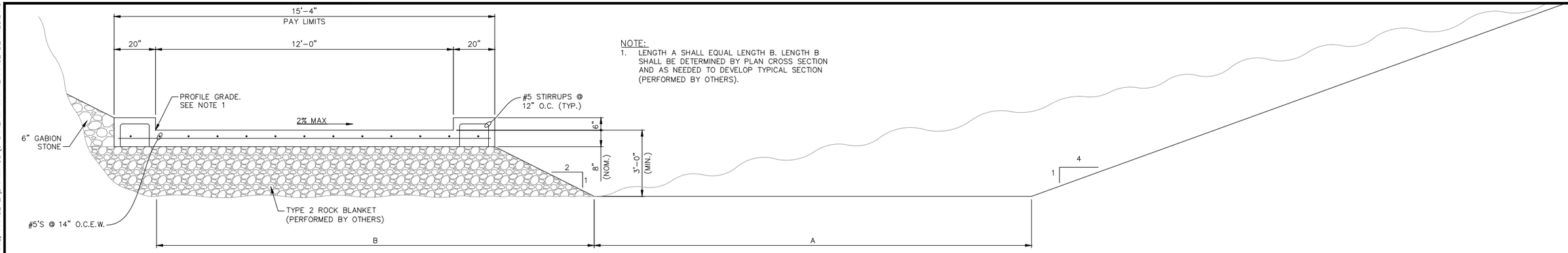
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RETAINING WALL DETAIL
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO.
4

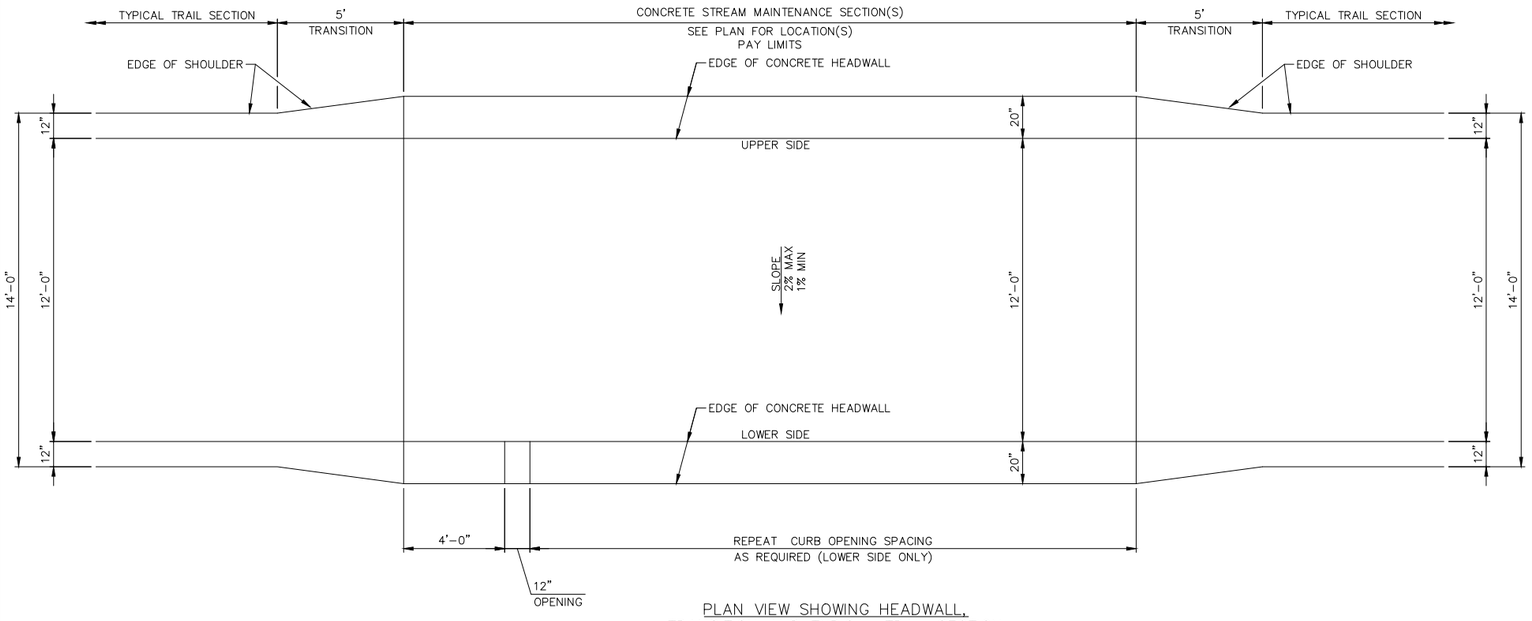
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NOTE:
1. LENGTH A SHALL EQUAL LENGTH B. LENGTH B SHALL BE DETERMINED BY PLAN CROSS SECTION AND AS NEEDED TO DEVELOP TYPICAL SECTION (PERFORMED BY OTHERS).

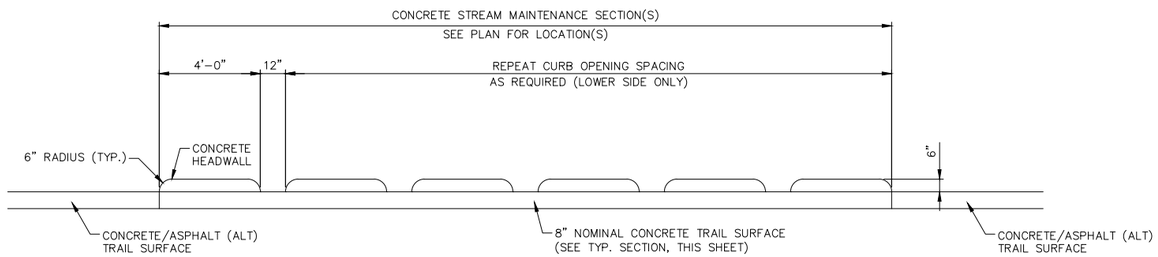
TYPICAL SECTION THRU CONCRETE TRAIL @ STREAM MAINTENANCE AREAS

STATIONS 36+50–37+80
39+77–41+86



PLAN VIEW SHOWING HEADWALL, TRANSITION AND TYPICAL TRAIL SECTION ALONG STREAM MAINTENANCE SECTION

NTS



PROFILE VIEW SHOWING HEADWALL, TRANSITION AND TYPICAL TRAIL SECTION ALONG STREAM MAINTENANCE SECTION

NTS

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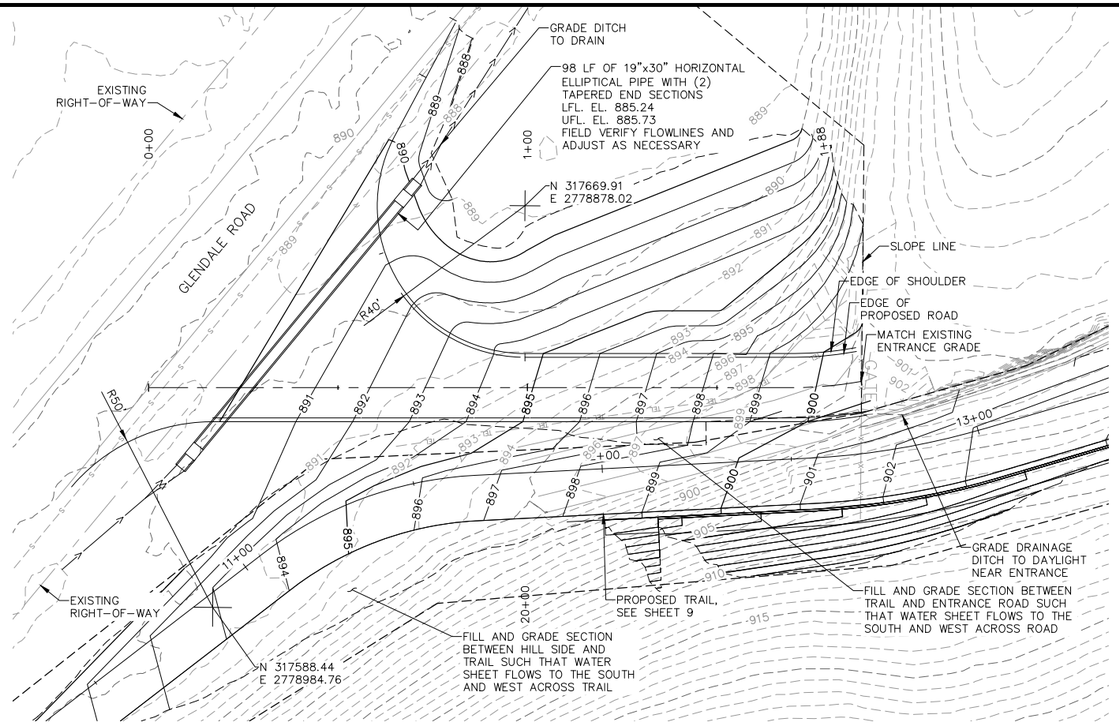
STREAM MAINTENANCE DETAILS
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 5

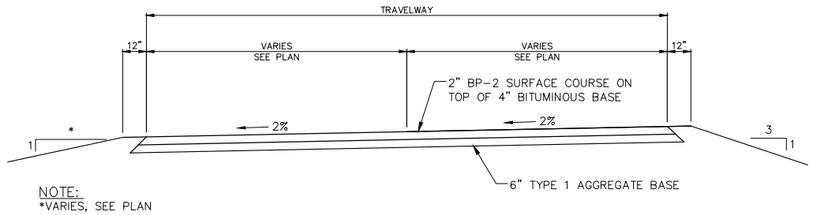
CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-2000149997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-2000149997
REGISTERED PROFESSIONAL ENGINEER
5/21/24
TIN CUP Phase 2

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\6 ENTRANCE PLAN & PROFILE.DWG

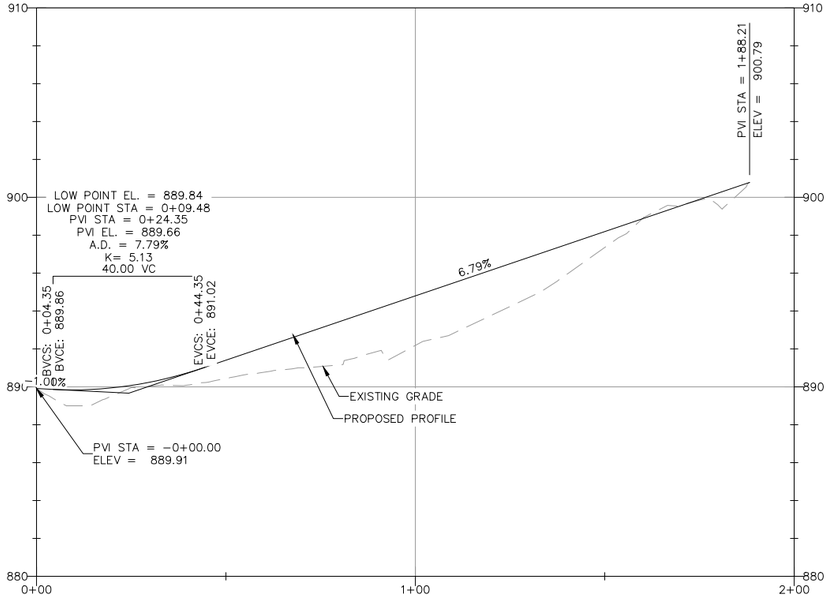


PLAN



NOTE:
*VARIES, SEE PLAN

ROADWAY SECTION
N.T.S.



ENTRANCE ROAD PROFILE
SCALE
VERT. = 1:2
HORIZ. = 1:10

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ENTRANCE PLAN & PROFILE
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 6

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-2000149397

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-2000149397
REGISTERED PROFESSIONAL ENGINEER

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\7 SHEET NOT USED.DWG

SHEET NOT USED

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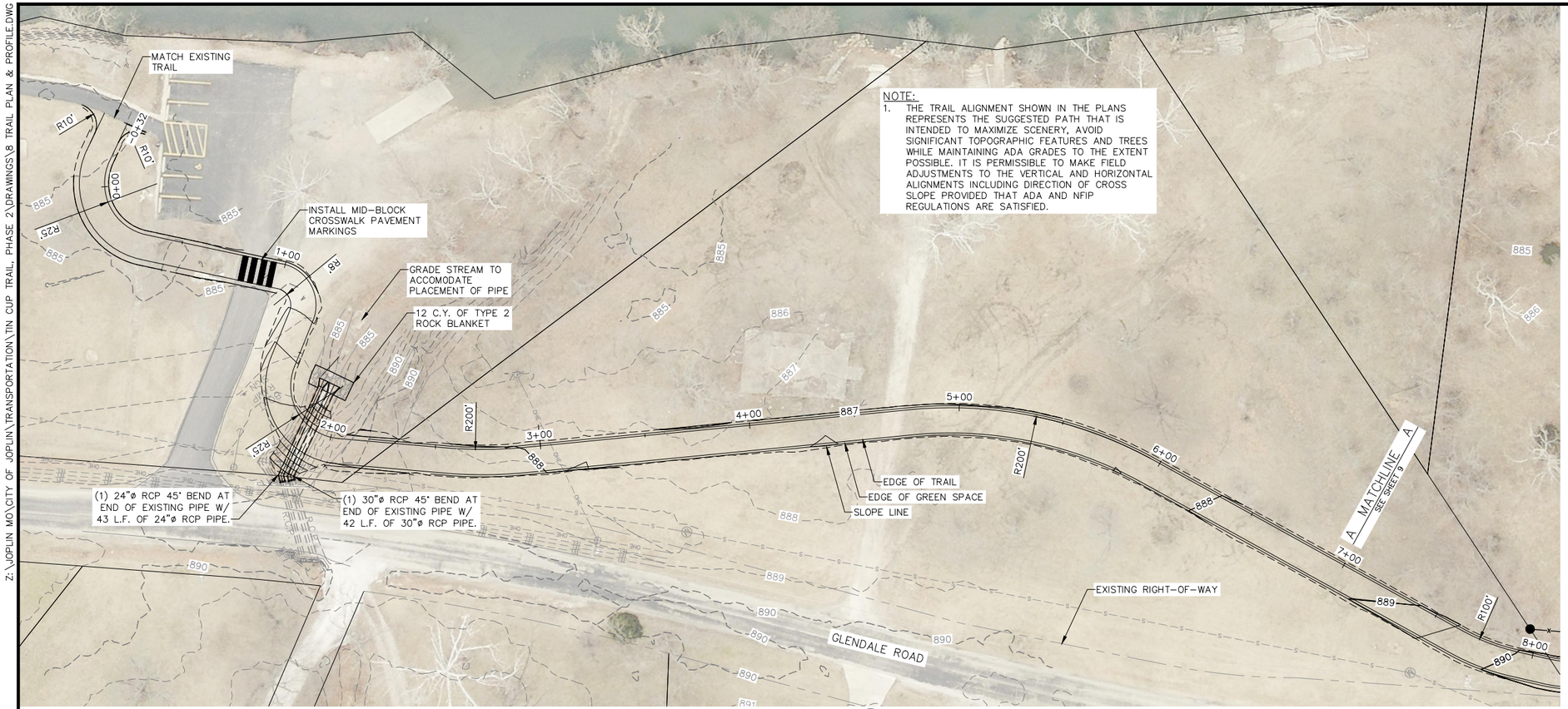
SHEET NOT USED
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO.
7

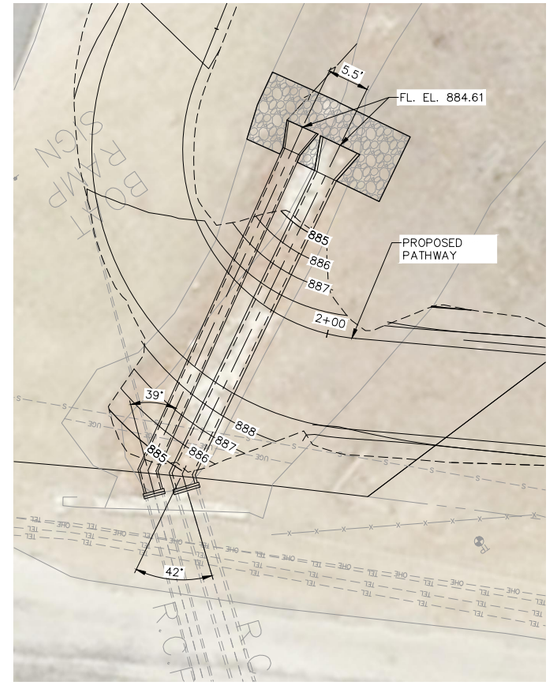
CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20000149397

STATE OF MISSOURI
MICHAEL
ATKINSON
NUMBER
E-20000149397
REGISTERED PROFESSIONAL ENGINEER

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\8 TRAIL PLAN & PROFILE.DWG

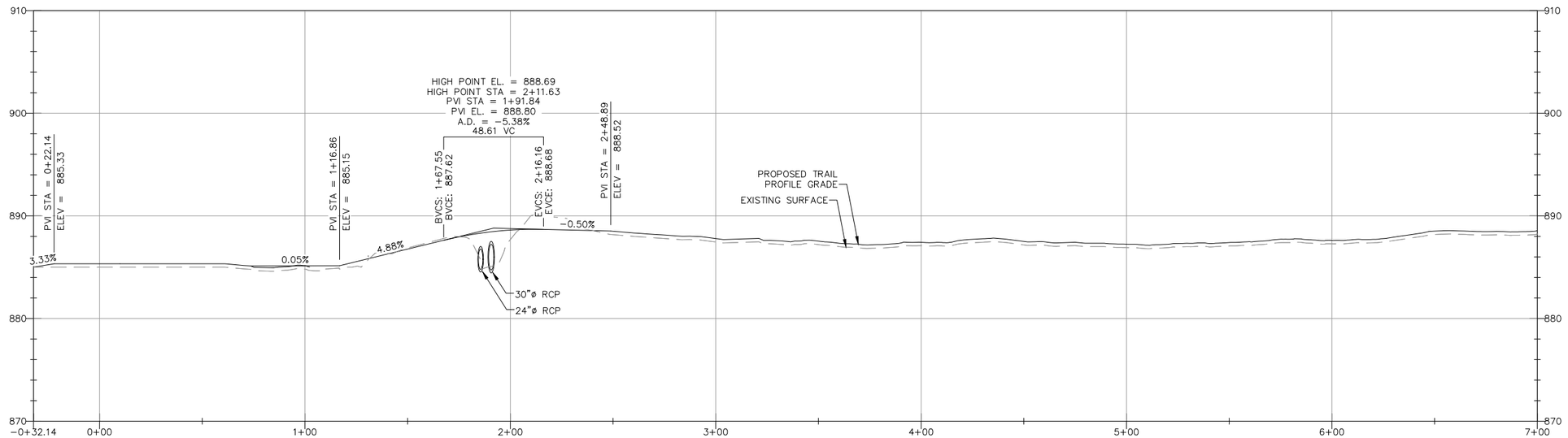


NOTE:
1. THE TRAIL ALIGNMENT SHOWN IN THE PLANS REPRESENTS THE SUGGESTED PATH THAT IS INTENDED TO MAXIMIZE SCENERY, AVOID SIGNIFICANT TOPOGRAPHIC FEATURES AND TREES WHILE MAINTAINING ADA GRADES TO THE EXTENT POSSIBLE. IT IS PERMISSIBLE TO MAKE FIELD ADJUSTMENTS TO THE VERTICAL AND HORIZONTAL ALIGNMENTS INCLUDING DIRECTION OF CROSS SLOPE PROVIDED THAT ADA AND NFIP REGULATIONS ARE SATISFIED.

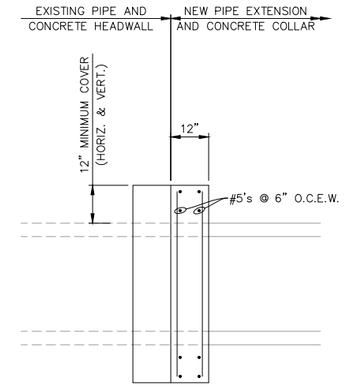


ENLARGED PLAN
10' 0 5' 10'

PLAN
30' 0 15' 30'



TRAIL OFFSET PROFILE
SCALE
VERT. = 1:2
HORIZ. = 1:10



CONCRETE COLLAR FOR 24" AND 30" PIPE EXTENSION NEAR STATION 1+90
NTS

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20001493?

STATE OF MISSOURI
MICHAEL R. ATKINSON
NUMBER E-20001493?
REGISTERED PROFESSIONAL ENGINEER

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680 - 7200

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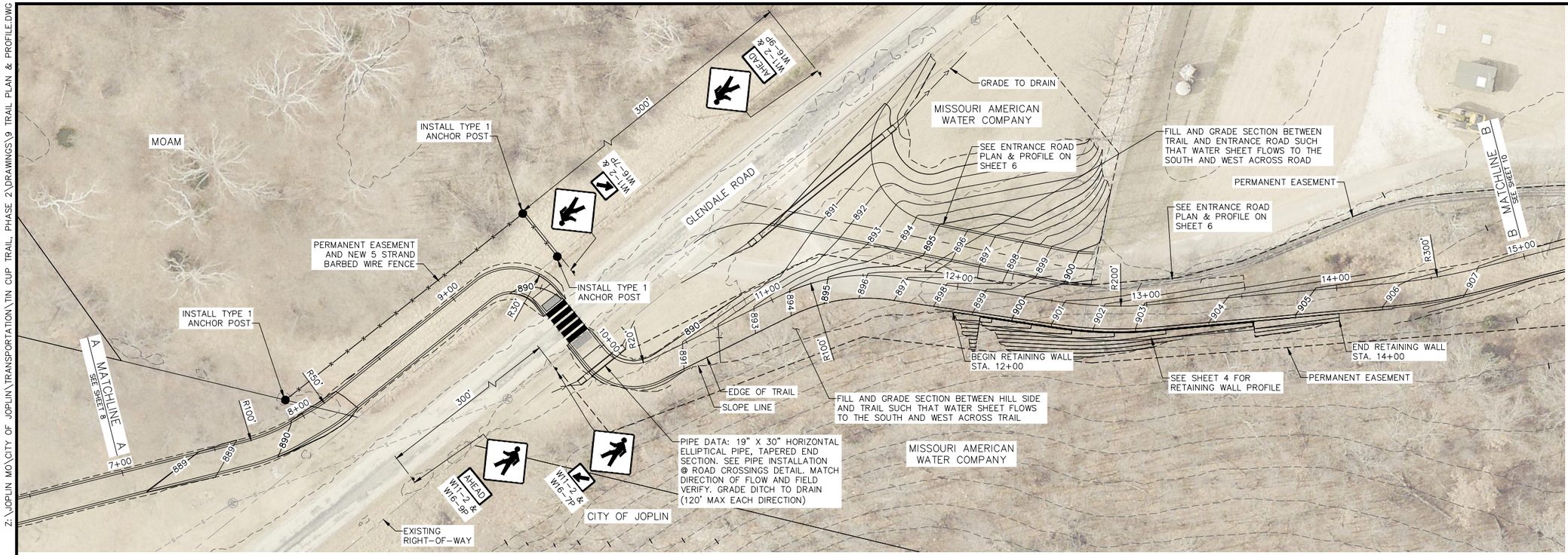
DATE	REVISION

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CKD. BY:	SC
APPD. BY:	MRA
DATE :	05-14-2024

TRAIL PLAN & PROFILE
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

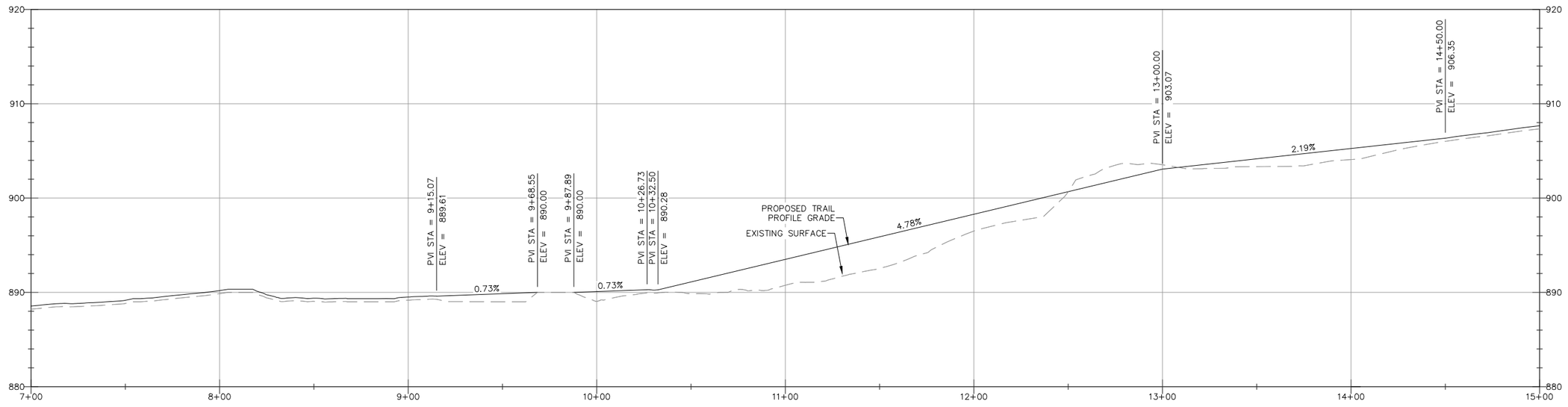
DWG. NO. 8

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\9 TRAIL PLAN & PROFILE.DWG



PLAN
30' 0 15' 30'

SIGNAGE NOTE:
1. ALL SIGNS INSTALLED ON PROJECT SHALL MEET OR EXCEED REQUIREMENTS SET FORTH IN THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).



TRAIL OFFSET PROFILE
SCALE
VERT. = 1:2
HORIZ. = 1:10

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DATE :	05-14-2024

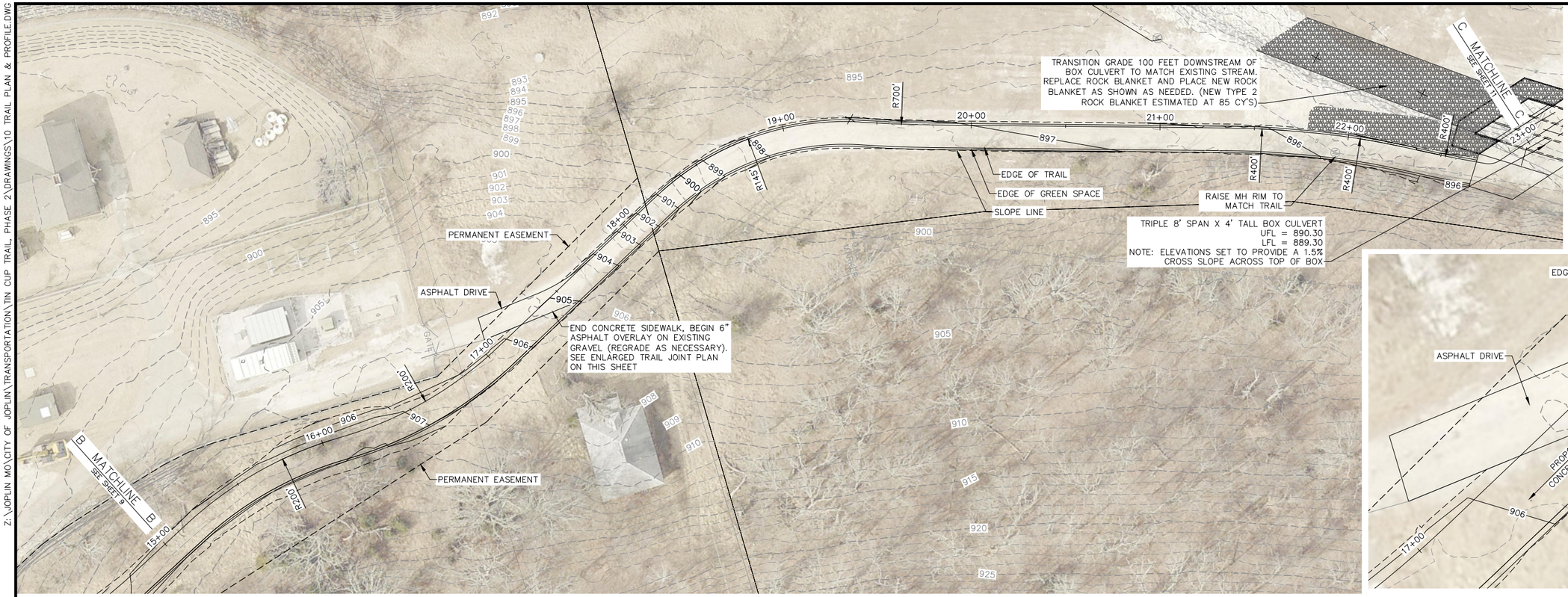
TRAIL PLAN & PROFILE
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

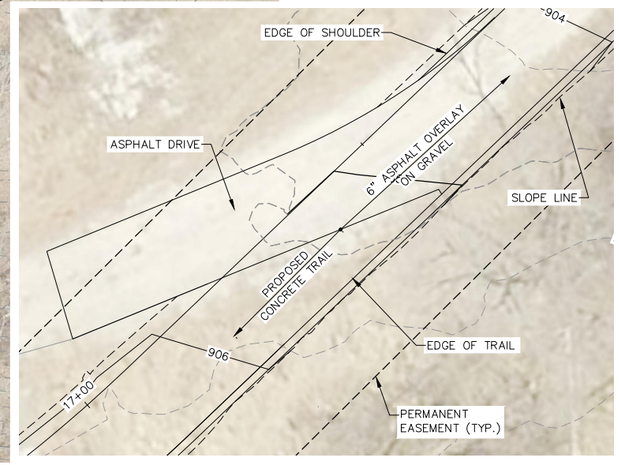
DWG. NO. 9

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-2000149397

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-2000149397
REGISTERED PROFESSIONAL ENGINEER

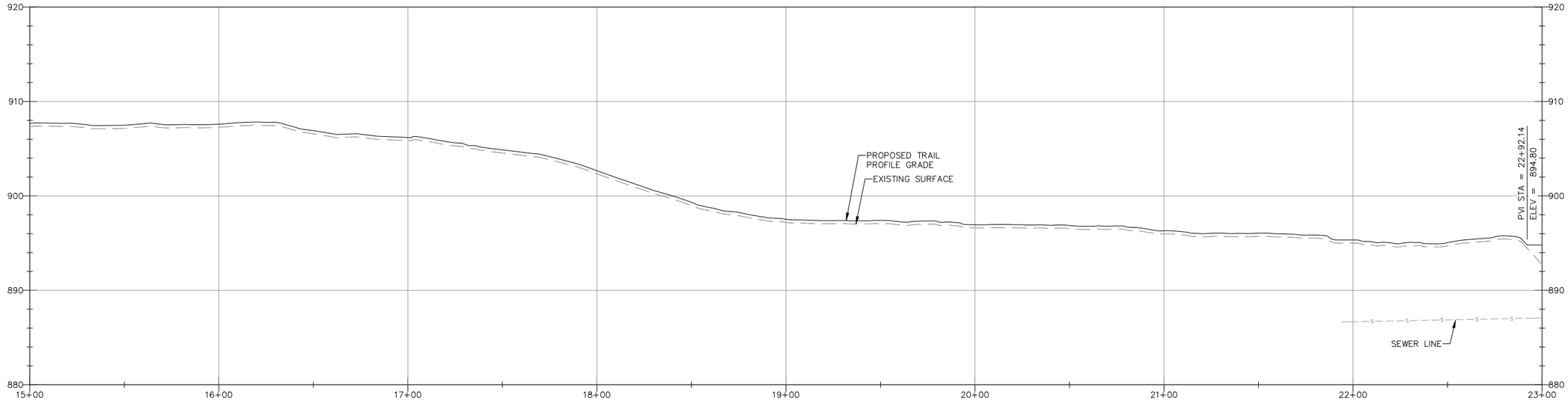
Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\10 TRAIL PLAN & PROFILE.DWG





PLAN
30' 0 15' 30'

ENLARGED TRAIL JOINT PLAN
10' 0 5' 10'



TRAIL OFFSET PROFILE
SCALE
VERT. = 1:2
HORIZ. = 1:10

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MISSOURI NO. 000427

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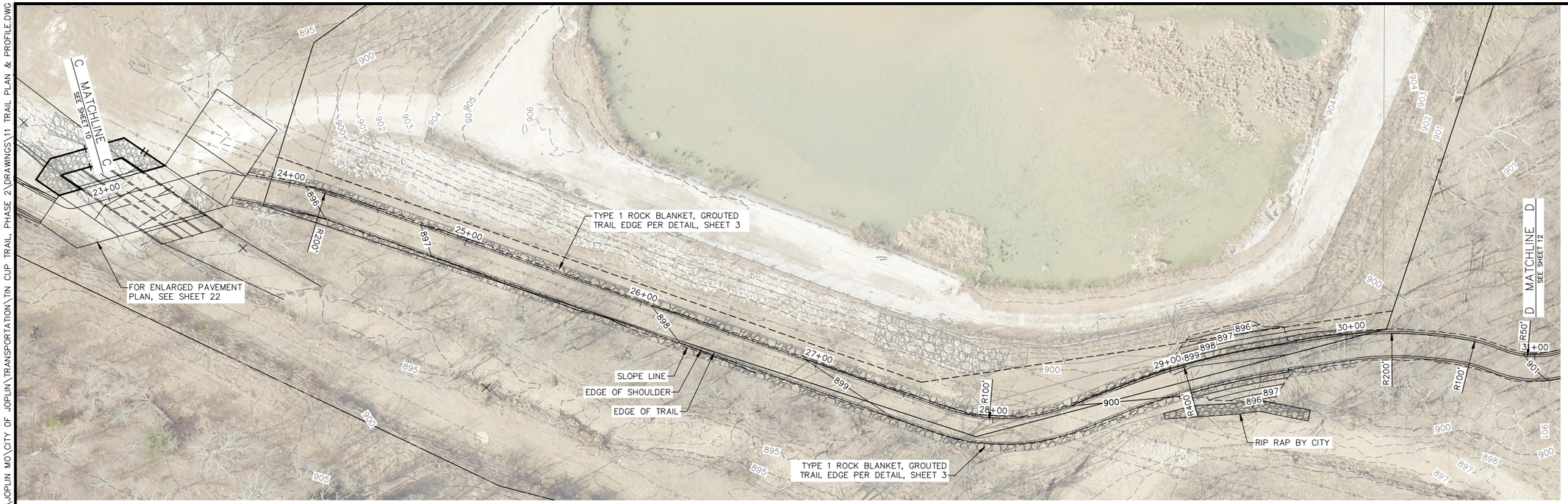
TRAIL PLAN & PROFILE
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO.
10

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-200014997

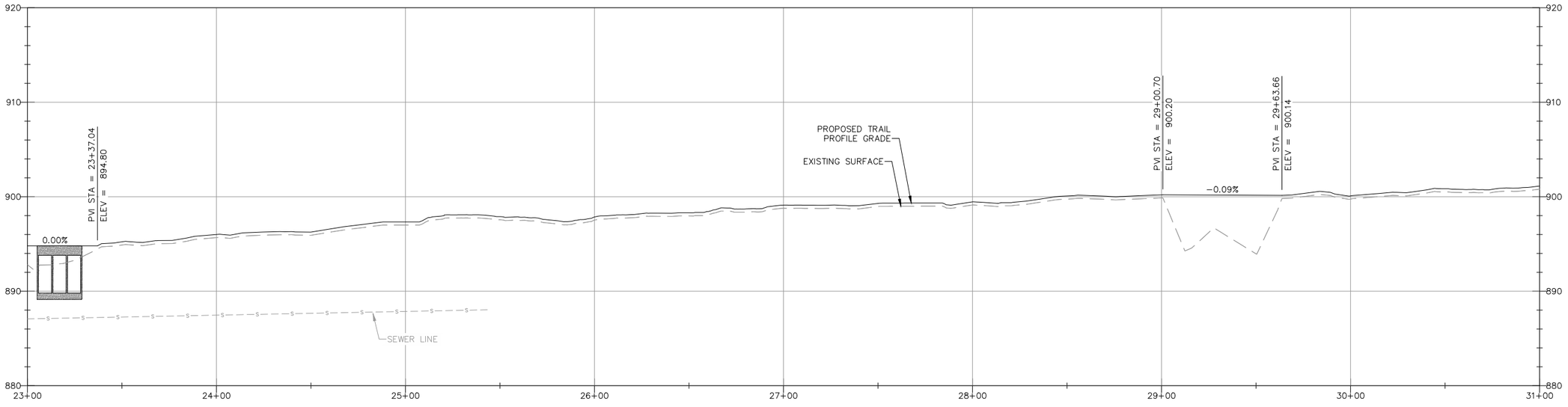
STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-200014997
REGISTERED PROFESSIONAL ENGINEER
5/14/24
TIN CUP Phase 2

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INSTALL TRIPLE 4' TALL X 8' SPAN REINFORCED CONCRETE BOX CULVERT STA. 23+10.97
FL. EL. 889.80

PLAN
30' 0 15' 30'



TRAIL OFFSET PROFILE
SCALE
VERT. = 1:2
HORIZ. = 1:10

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20001493?

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-20001493?
REGISTERED PROFESSIONAL ENGINEER

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
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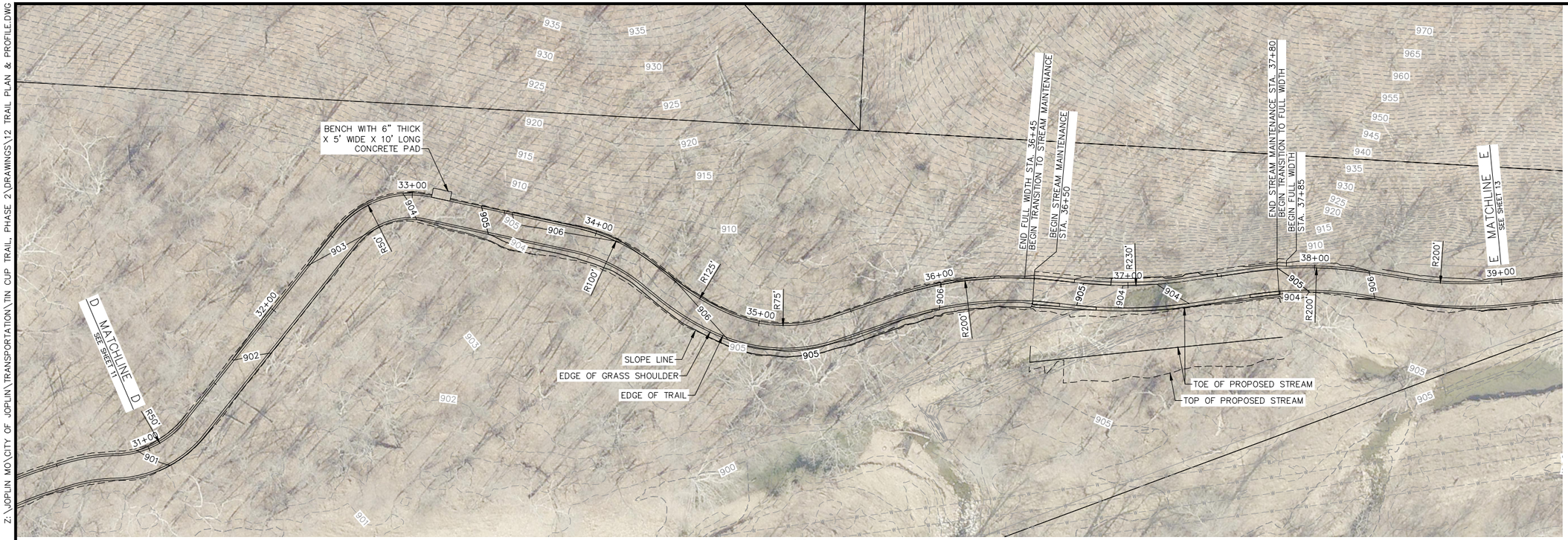
DATE	REVISION

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CKD. BY:	SC
APPD. BY:	MRA
DATE :	05-14-2024

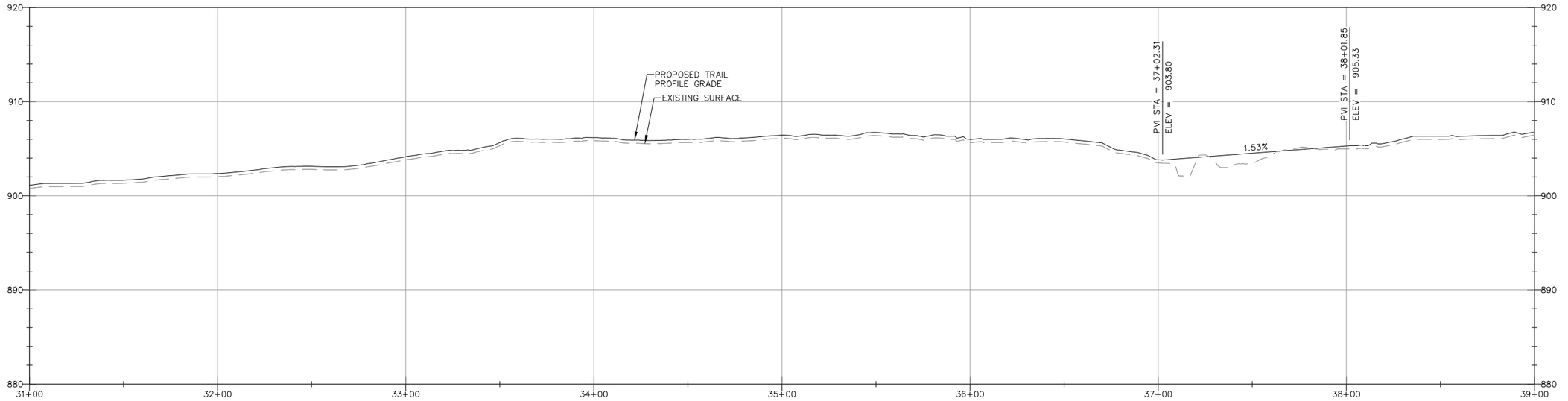
TRAIL PLAN & PROFILE
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 11

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\12 TRAIL PLAN & PROFILE.DWG



PLAN
30' 0 15' 30'



TRAIL OFFSET PROFILE
SCALE
VERT. = 1:2
HORIZ. = 1:10

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APPD. BY:	MRA
DATE :	05-14-2024

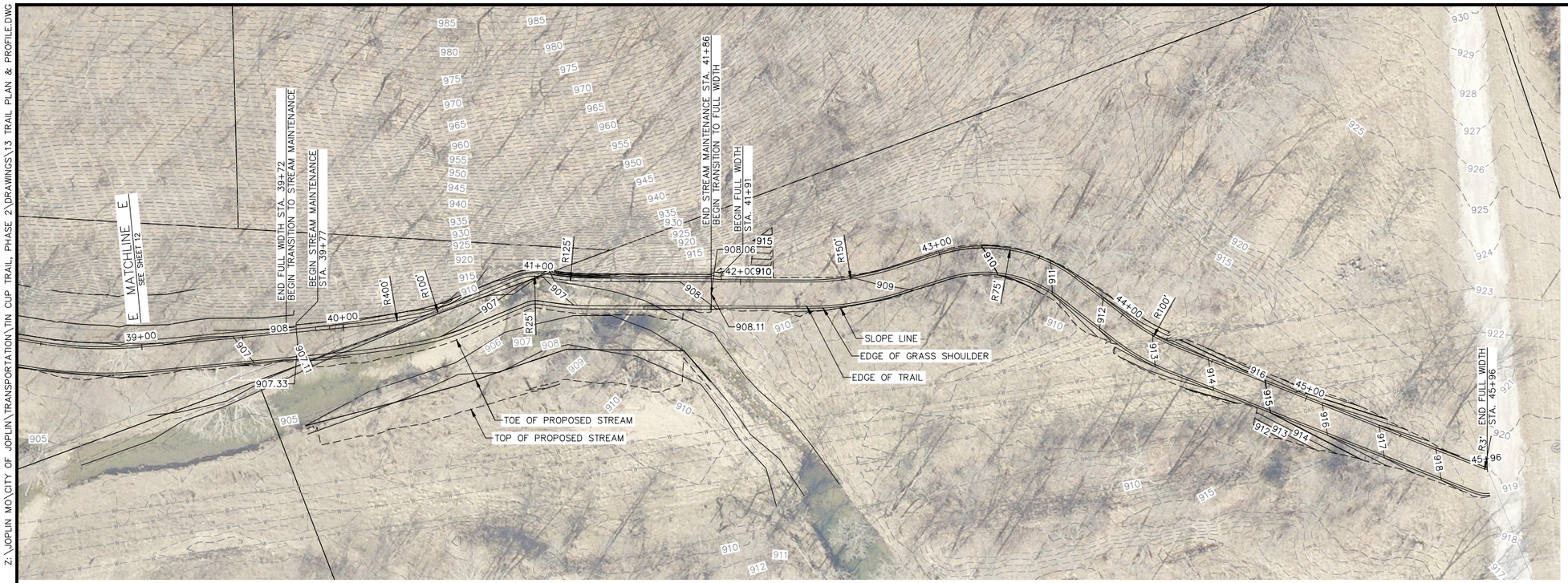
TRAIL PLAN & PROFILE
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO.
12

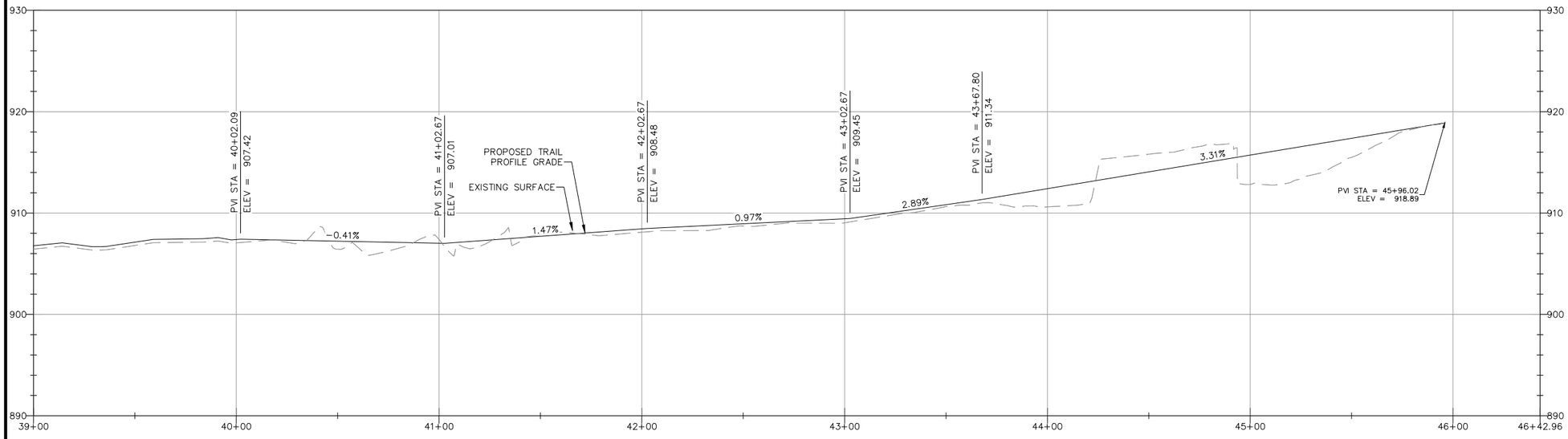
CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20001493?

STATE OF MISSOURI
MICHAEL
ATKINSON
NUMBER
E-20001493?
REGISTERED PROFESSIONAL ENGINEER

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\13 TRAIL PLAN & PROFILE.DWG



PLAN
30' 0 15' 30'



TRAIL OFFSET PROFILE
SCALE
VERT. = 1:2
HORIZ. = 1:10

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CONSULTING ENGINEERS and SURVEYORS
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TRAIL PLAN & PROFILE
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO.
13

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20000149397

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-20000149397
REGISTERED PROFESSIONAL ENGINEER

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\14 SHEET NOT USED.DWG

SHEET NOT USED

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MISSOURI NO. 000427

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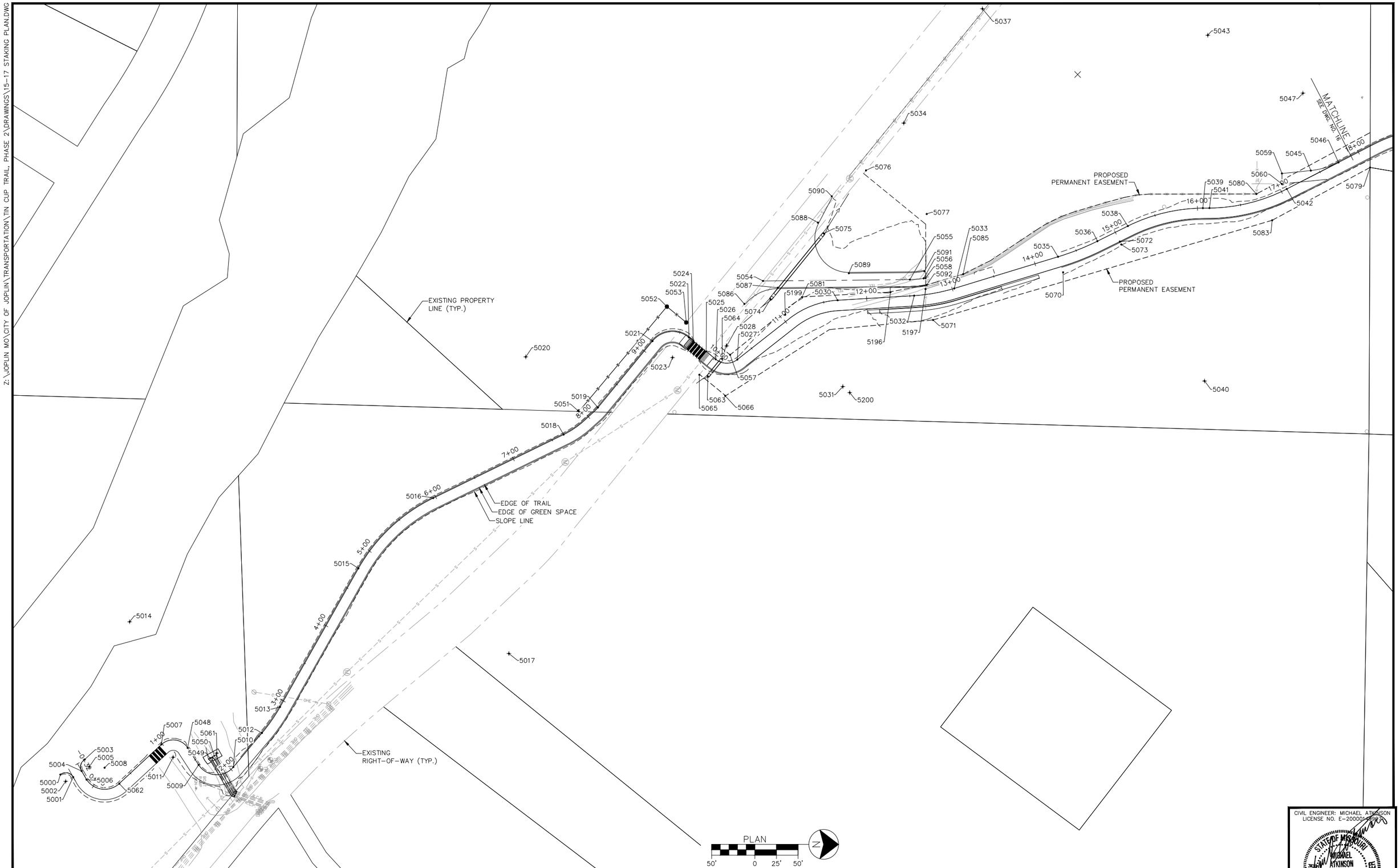
SHEET NOT USED
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO.
14

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20000149397

STATE OF MISSOURI
MICHAEL
ATKINSON
NUMBER
E-20000149397
REGISTERED PROFESSIONAL ENGINEER

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APPD. BY:	MRA
DATE :	05-14-2024

STAKING PLAN
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 15

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-200014997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-200014997
REGISTERED PROFESSIONAL ENGINEER
Tin Cup Phase 2

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MATCHLINE SEE DWG. NO. 15

EXISTING PROPERTY LINE (TYP.)

EDGE OF TRAIL
EDGE OF GREEN SPACE
SLOPE LINE

MATCHLINE SEE DWG. NO. 17

PLAN
50' 0 25' 50'

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680 - 7200

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DATE	REVISION

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CKD. BY:	SC
APPD. BY:	MRA
DATE:	05-14-2024

STAKING PLAN
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 16

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-2000149997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-2000149997
5/14/24
REGISTERED PROFESSIONAL ENGINEER
TIN CUP Phase 2

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\15-17 STAKING PLAN.DWG

MATCHLINE
SEE DWG. NO. 16

34+00
35+00
36+00
37+00
38+00
39+00
40+00
41+00
42+00
43+00
44+00
45+00
45+96

5147
5149
5150
5151
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5194

EDGE OF TRAIL
EDGE OF GREEN SPACE
SLOPE LINE

EXISTING PROPERTY
LINE (TYP.)

START

GAS
GAS MARKER
SYD

OAK POINT SUB. P.O.B.

PLAN
N
50' 0 25' 50'

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680 - 7200

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MISSOURI NO. 000427

DATE	REVISION

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CKD. BY:	SC
APPD. BY:	MRA
DATE :	05-14-2024

STAKING PLAN
TIN CUP TRAIL - PHASE 2

JOPLIN, MISSOURI

DWG. NO.
17

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-2000149997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-2000149997
REGISTERED PROFESSIONAL ENGINEER

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STAKING TABLE			
NUMBER	NORTHING	EASTING	DESC
# 5000	316757.86	2779498.00	ME
# 5001	316772.71	2779500.97	RP
# 5002	316764.00	2779505.89	CEN
# 5003	316786.10	2779480.47	ME
# 5004	316782.53	2779493.97	RP
# 5005	316791.24	2779489.05	CEN
# 5006	316788.18	2779503.84	RP
# 5007	316874.73	2779463.31	RP
# 5008	316809.06	2779490.09	CEN
# 5009	316917.90	2779486.81	RP
# 5010	316958.01	2779489.29	RP
# 5011	316888.33	2779477.98	CEN
# 5012	316991.12	2779449.90	RP
# 5013	317012.09	2779419.71	RP
# 5014	316838.03	2779321.21	CEN
# 5015	317102.80	2779259.44	RP
# 5016	317189.31	2779178.12	RP
# 5017	317276.85	2779357.95	CEN
# 5018	317340.18	2779104.68	RP
# 5019	317379.91	2779073.38	RP
# 5020	317296.41	2779014.76	CEN
# 5021	317443.02	2778996.46	RP
# 5022	317485.18	2778992.25	RP
# 5023	317466.22	2779015.49	CEN
# 5024	317490.27	2778996.40	ME
# 5025	317505.25	2779008.62	ME
# 5026	317516.26	2779017.61	RP
# 5027	317541.26	2779017.84	RP
# 5028	317528.91	2779002.11	CEN
# 5030	317657.27	2778949.30	RP
# 5031	317663.31	2779049.12	CEN
# 5032	317745.90	2778943.94	RP
# 5033	317792.18	2778935.61	RP
# 5034	317733.83	2778744.31	CEN
# 5035	317912.35	2778898.96	RP
# 5036	317957.94	2778880.86	RP
# 5037	317824.84	2778612.00	CEN
# 5038	317993.13	2778863.44	RP
# 5039	318079.96	2778842.68	RP
# 5040	318081.87	2779042.67	CEN
# 5041	318087.58	2778842.61	RP
# 5042	318177.06	2778820.51	RP
# 5043	318085.66	2778642.62	CEN
# 5044	318282.26	2778766.54	RP
# 5045	318204.85	2778799.20	RP
# 5046	318236.88	2778789.72	RP
# 5047	318195.74	2778709.66	CEN
# 5048	316905.11	2779467.09	RP
# 5049	316931.16	2779479.00	FES
# 5050	316935.96	2779476.31	FES
# 5051	317357.91	2779077.93	FEN
# 5052	317459.73	2778956.60	FEN
# 5053	317482.09	2778974.93	FEN
# 5054	317570.99	2778926.92	ME
# 5055	317740.92	2778925.39	RP
# 5056	317756.87	2778923.96	RP

STAKING TABLE			
NUMBER	NORTHING	EASTING	DESC
# 5057	317532.85	2779012.39	CEN
# 5058	317759.08	2778923.58	ME
# 5059	318171.49	2778802.59	ME
# 5060	318171.49	2778814.65	ME
# 5061	316938.88	2779473.21	CEN
# 5062	316826.06	2779508.43	RP
# 5063	317507.07	2779037.42	PE
# 5064	317523.67	2779017.08	PE
# 5065	317497.24	2779035.46	RW
# 5066	317527.21	2779059.91	RW
# 5070	317918.22	2778916.93	GT
# 5071	317767.71	2778972.04	RW
# 5072	317983.91	2778881.39	RT
# 5073	317985.53	2778884.68	GT
# 5074	317579.62	2778948.03	PE
# 5075	317641.33	2778871.98	PE
# 5076	317690.15	2778799.06	RW
# 5077	317760.32	2778849.49	RW
# 5079	318273.42	2778795.65	RW
# 5080	318141.90	2778826.30	RW
# 5081	317616.17	2778945.42	RW
# 5083	318160.13	2778856.75	RW
# 5084	318273.58	2778755.28	RW
# 5085	317802.53	2778919.07	RW
# 5086	317549.37	2778953.56	ME
# 5087	317587.99	2778934.77	RP
# 5088	317634.49	2778859.44	RP
# 5089	317670.28	2778918.02	RP
# 5090	317650.48	2778828.97	ME
# 5091	317757.73	2778915.70	ME
# 5092	317760.43	2778931.47	ME
# 5093	318395.00	2778760.29	RP
# 5094	318346.03	2778896.77	CEN
# 5095	318409.29	2778764.30	RP
# 5096	318432.54	2778772.92	RP
# 5097	318637.44	2778103.58	CEN
# 5098	318583.13	2778819.02	RP
# 5099	318611.26	2778828.79	RP
# 5100	318466.05	2779201.50	CEN
# 5101	318620.02	2778832.20	RP
# 5102	318668.37	2778854.86	RP
# 5103	318474.82	2779204.92	CEN
# 5104	318680.52	2778861.58	RP
# 5105	318694.81	2778869.11	RP
# 5106	318874.08	2778511.53	CEN
# 5107	318706.58	2778875.01	RP
# 5108	318713.93	2778875.65	RP
# 5109	318711.07	2778866.07	CEN
# 5110	318694.77	2778884.06	EOC
# 5111	318714.87	2778897.29	EOC
# 5112	318737.38	2778890.56	EOC
# 5113	318704.67	2778869.03	EOC
# 5114	318721.38	2778853.29	FL
# 5115	318776.53	2778889.59	FL
# 5116	318782.68	2778855.10	RP
# 5117	318791.89	2778854.57	RP

STAKING TABLE			
NUMBER	NORTHING	EASTING	DESC
# 5118	318788.41	2778874.26	CEN
# 5119	318761.37	2778852.08	EOC
# 5120	318772.36	2778835.37	EOC
# 5121	318805.08	2778856.90	EOC
# 5122	318794.08	2778873.61	EOC
# 5123	318788.86	2778810.31	EOG
# 5124	318821.57	2778831.84	EOG
# 5125	318828.11	2778860.98	RP
# 5126	318855.99	2778868.02	RP
# 5127	318793.24	2779057.92	CEN
# 5128	319183.11	2778976.12	RP
# 5129	319252.99	2778973.47	RP
# 5130	319214.49	2778881.17	CEN
# 5131	319274.09	2778964.66	RP
# 5132	319361.24	2778939.46	RP
# 5133	319428.08	2779333.84	CEN
# 5134	319396.06	2778933.56	RP
# 5135	319448.09	2778931.61	RP
# 5136	319429.48	2779130.74	CEN
# 5137	319456.26	2778932.38	RP
# 5138	319482.04	2778938.30	RP
# 5139	319446.96	2779031.94	CEN
# 5140	319483.50	2778938.84	RP
# 5141	319525.50	2778935.63	RP
# 5142	319501.04	2778892.02	CEN
# 5143	319638.16	2778872.44	RP
# 5144	319690.73	2778874.71	RP
# 5145	319662.62	2778916.05	CEN
# 5146	319756.51	2778919.43	RP
# 5147	319787.86	2778953.88	RP
# 5148	319700.27	2779002.13	CEN
# 5149	319793.89	2778964.83	RP
# 5150	319814.86	2778992.77	RP
# 5151	319903.38	2778904.51	CEN
# 5152	319814.89	2778992.80	RP
# 5153	319863.26	2779014.70	RP
# 5154	319868.00	2778939.85	CEN
# 5155	319898.11	2779016.91	RP
# 5156	319980.77	2779040.68	RP
# 5157	319885.46	2779216.51	CEN
# 5158	319992.64	2779047.11	RP
# 5159	320046.81	2779068.13	RP
# 5160	320102.24	2778844.91	CEN
# 5161	320080.92	2779076.60	RP
# 5162	320136.79	2779099.91	RP
# 5163	320032.72	2779270.70	CEN
# 5164	320155.45	2779111.28	RP
# 5165	320201.97	2779132.03	RP
# 5166	320259.52	2778940.49	CEN
# 5167	320296.30	2779160.37	RP
# 5168	320330.50	2779169.03	RP
# 5169	320411.40	2778777.29	CEN
# 5170	320331.98	2779169.33	RP
# 5171	320353.06	2779171.39	RP
# 5172	320352.21	2779071.40	CEN
# 5173	320385.12	2779171.12	RP

STAKING TABLE			
NUMBER	NORTHING	EASTING	DESC
# 5174	320398.31	2779174.75	RP
# 5175	320385.33	2779196.12	CEN
# 5176	320401.54	2779176.71	RP
# 5177	320418.78	2779185.43	RP
# 5178	320466.40	2779069.86	CEN
# 5179	320516.21	2779225.57	RP
# 5180	320560.56	2779236.34	RP
# 5181	320573.35	2779086.88	CEN
# 5182	320583.03	2779238.26	RP
# 5183	320641.64	2779275.57	RP
# 5184	320576.64	2779312.99	CEN
# 5185	320657.59	2779303.28	RP
# 5186	320675.11	2779325.63	RP
# 5187	320744.26	2779253.39	CEN
# 5188	320791.99	2779437.51	RP
# 5189	320793.22	2779438.22	RP
# 5190	320794.07	2779435.34	CEN
# 5191	320793.52	2779438.31	ME
# 5192	318702.18	2778872.81	EOC
# 5193	319952.86	2779076.55	SB
# 5194	320082.67	2779115.00	SB
# 5196	317718.45	2778940.02	RIM
# 5197	317759.04	2778936.35	FL
# 5199	317596.58	2778966.09	PE
# 5200	317671.26	2779056.13	CEN

LEGEND	
ME	MATCH EXISTING
RP	RADIUS POINT
CEN	CENTER
FES	FLARED END SECTION
FEN	FENCE
PE	PIPE END
RW	RIGHT-OF-WAY
FL	FLOWLINE
GT	GUTTER
EOC	EDGE OF CONCRETE
EOG	EDGE OF GRAVEL
SB	STREAMBANK
RIM	RIM ELEVATION

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
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APPD. BY: MRA
DATE: 05-14-2024

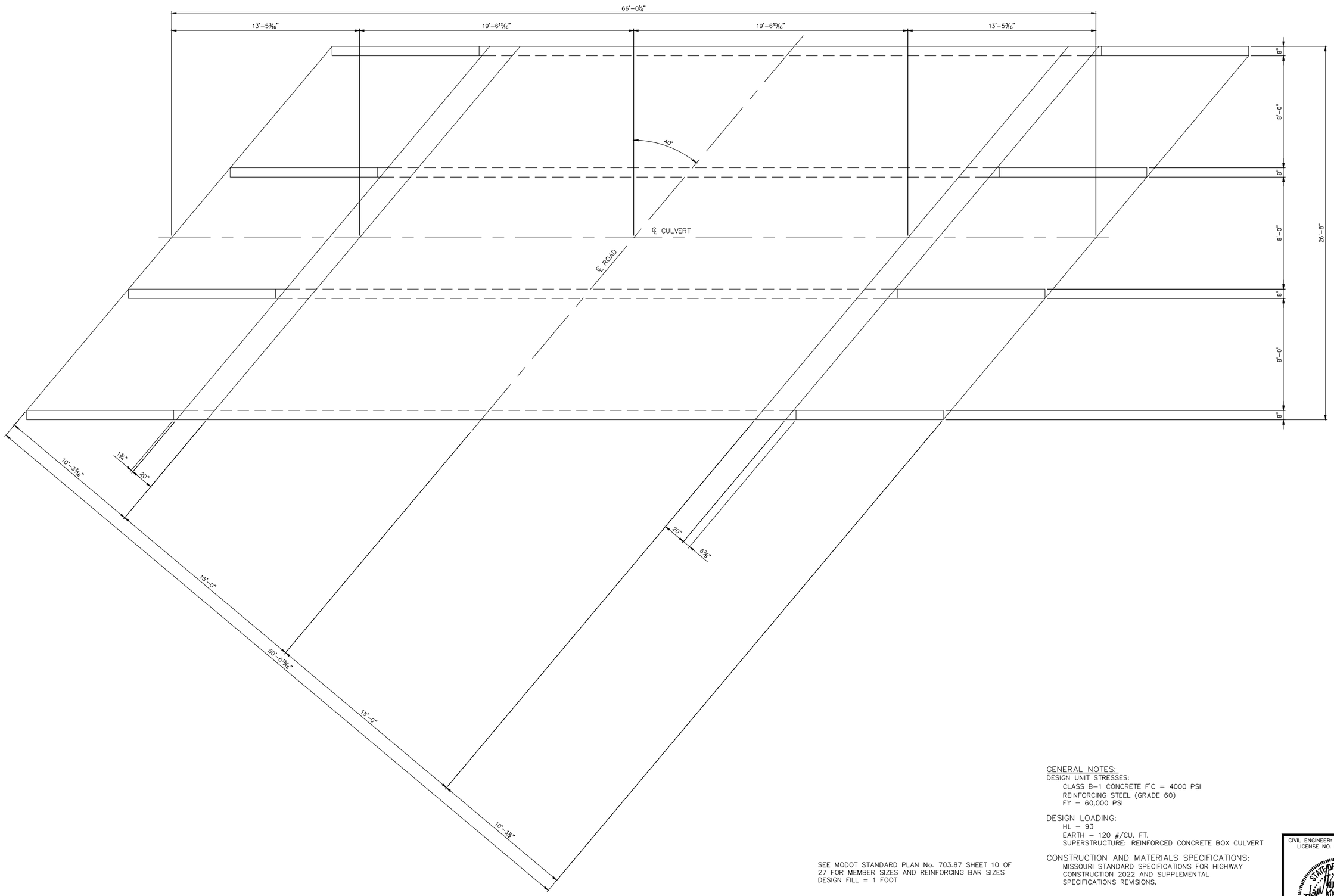
STAKING TABLE
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 18

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20000149997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-20000149997
REGISTERED PROFESSIONAL ENGINEER

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\19 BRIDGE LAYOUT.DWG



GENERAL NOTES:

DESIGN UNIT STRESSES:
- CLASS B-1 CONCRETE F'C = 4000 PSI
- REINFORCING STEEL (GRADE 60)
- FY = 60,000 PSI

DESIGN LOADING:
- HL – 93
- EARTH – 120 #/CU. FT.
- SUPERSTRUCTURE: REINFORCED CONCRETE BOX CULVERT

CONSTRUCTION AND MATERIALS SPECIFICATIONS:
- MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION 2022 AND SUPPLEMENTAL SPECIFICATIONS REVISIONS.

SEE MODOT STANDARD PLAN No. 703.87 SHEET 10 OF 27 FOR MEMBER SIZES AND REINFORCING BAR SIZES
DESIGN FILL = 1 FOOT

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-2000149997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-2000149997
REGISTERED PROFESSIONAL ENGINEER
5/14/24
TIN CUP Phase 2

ALLGEIER, MARTIN and ASSOCIATES, INC.
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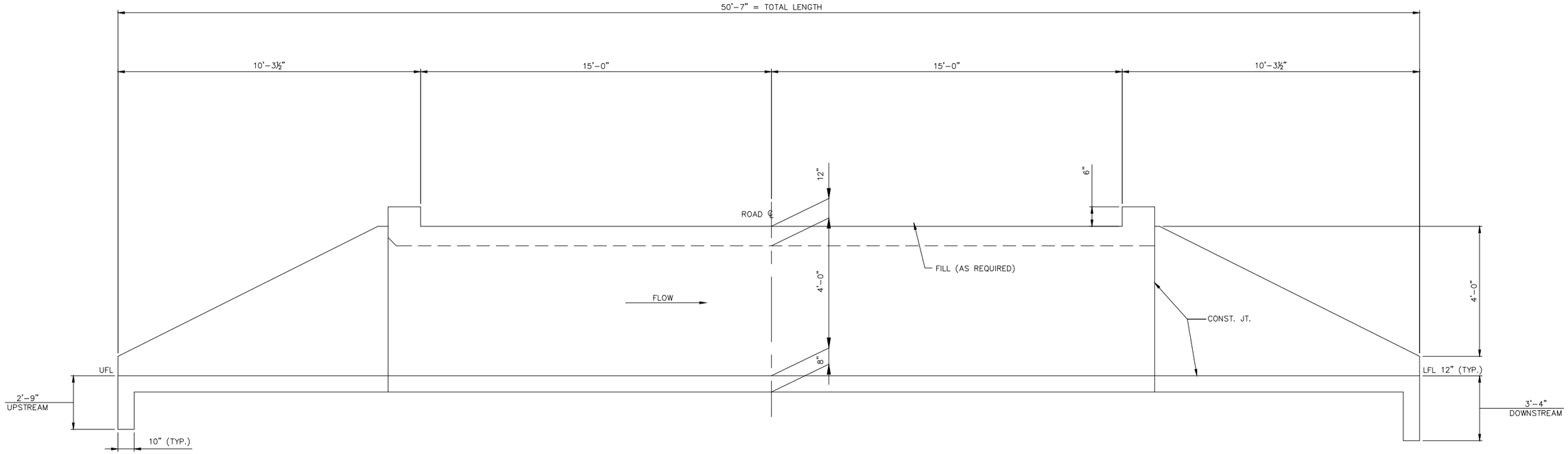
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DATE :	05-14-2024

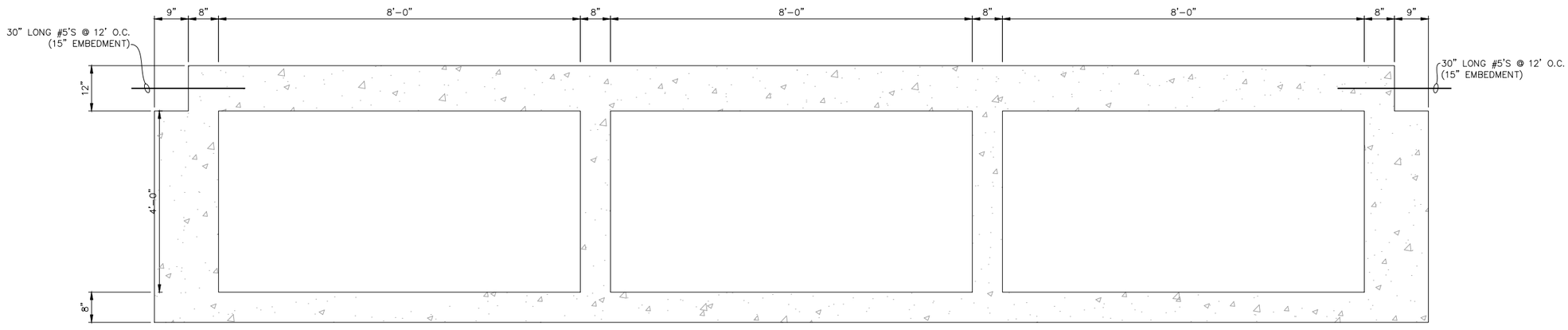
BRIDGE LAYOUT
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO.
19

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL PHASE 2\DRAWINGS\20 BRIDGE SECTION.DWG



BRIDGE SECTION
N.T.S.



SECTION THRU BOX
N.T.S.

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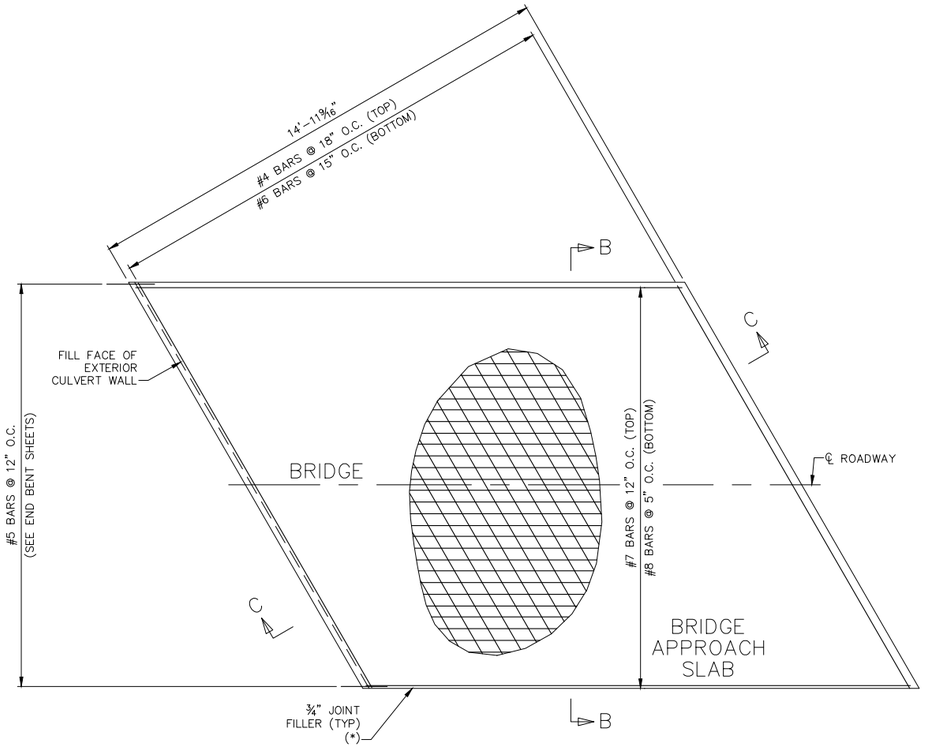
BRIDGE SECTION
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO.
20

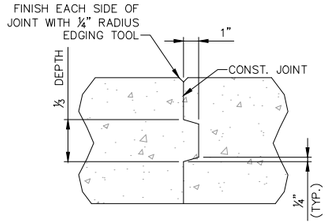
CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20000149397

STATE OF MISSOURI
MICHAEL
ATKINSON
NUMBER
E-20000149397
REGISTERED PROFESSIONAL ENGINEER

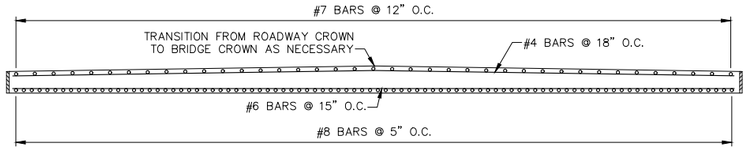
Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\21 BRIDGE APPROACH SLAB.DWG



PART PLAN SHOWING REINFORCEMENT

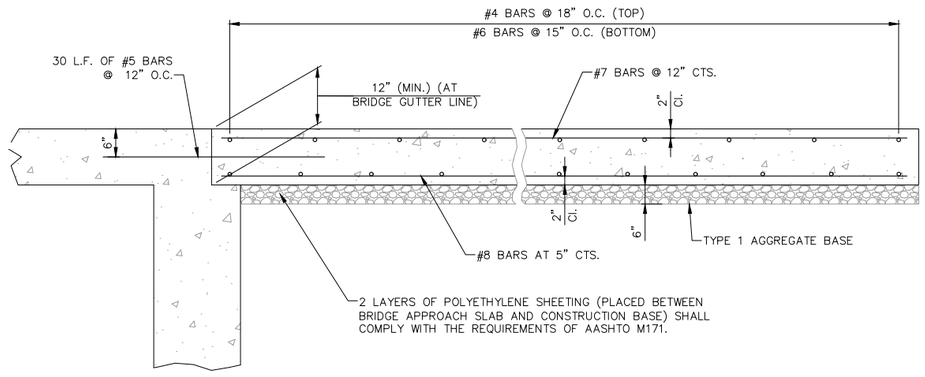


CONST. JOINT DETAIL
(IF REQUIRED)



SECTION B–B

NOTE: WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY CROWN THE BOTTOM OF THE APPROACH SLAB TO MATCH THE CROWN OF THE ROADWAY SURFACE.



SECTION C–C

GENERAL NOTES:

ALL CONCRETE FOR THE BRIDGE APPROACH SLAB SHALL BE IN ACCORDANCE WITH SECTION 503 (F'C = 4,000 PSI) OF THE MISSOURI STANDARD SPECIFICATIONS.

ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF SECTION 1057.6 OF THE MISSOURI STANDARD SPECIFICATIONS, EXCEPT AS NOTED.

THE REINFORCING STEEL IN THE BRIDGE APPROACH SLAB SHALL BE EPOXY COATED GRADE 60 WITH FY = 60,000 PSI.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1½", UNLESS OTHERWISE SHOWN.

THE REINFORCING STEEL IN THE BRIDGE APPROACH SLAB SHALL BE CONTINUOUS. THE TRANSVERSE REINFORCING STEEL MAY BE MADE CONTINUOUS BY LAP SPLICING THE #4 & #6 BARS 18" AND 26" RESPECTIVELY.

MECHANICAL BAR SPLICES WILL BE PERMITTED AND SHALL DEVELOP AT LEAST 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCING BARS BEING SPLICED. THE CONTRACTOR SHALL FURNISH THE ENGINEER THE MANUFACTURE'S CERTIFICATION THAT THIS REQUIREMENT IS MET AND IS REQUIRED TO FOLLOW THE MANUFACTURER'S RECOMMENDATION FOR INSTALLATION.

MECHANICAL BAR SPLICES SHALL BE EPOXY COATED IN ACCORDANCE WITH SECTION 710 OF THE MISSOURI STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL POUR AND SATISFACTORILY FINISH THE BRIDGE SLAB BEFORE POURING THE BRIDGE APPROACH SLABS.

PAYMENT FOR FURNISHING ALL MATERIALS, LABOR AND EXCAVATION NECESSARY TO CONSTRUCT THE APPROACH SLAB. TYPE 5 AGGREGATE BASE, JOINT FILLER AND ALL OTHER APPURTENANCES AND INCIDENTAL WORK AS SHOWN ON THIS SHEET, COMPLETE IN PLACE, SHALL BE CONSIDERED AS COMPLETELY COVERED UNDER THE CONTRACT UNIT PRICE FOR BRIDGE APPROACH SLAB (BRIDGE), PER SQUARE YARD. WHEN A LAP SPLICE IS REQUIRED FOR THE USE OF A MECHANICAL BAR SPLICE, THE MINIMUM LAP LENGTH SHALL BE 40" FOR TRANSVERSE APPROACH SLAB BAR SPLICES.

AT THE CONTRACTOR'S OPTION, GRADE 40 REINFORCEMENT MAY BE SUBSTITUTED FOR THE GRADE 60 #5 DOWEL BARS CONNECTING THE BRIDGE APPROACH SLAB TO THE BRIDGE ABUTMENT. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS SUBSTITUTION.

WHEN GRADE 40 REINFORCEMENT IS SUBSTITUTED FOR THE GRADE 60 #5 DOWEL BARS CONNECTING THE BRIDGE APPROACH SLAB TO THE BRIDGE ABUTMENT, THE REINFORCEMENT MAY BE BENT UP TO 90 DEGREES WITH A 2" MINIMUM RADIUS NEAR THE ABUTMENT TO ALLOW COMPACTION OF THE BACKFILL MATERIAL NEAR THE ABUTMENT. DAMAGE TO EPOXY COATING SHALL BE REPAIRED ACCORDING TO SECTION 710.3.3 OF THE MISSOURI STANDARD SPECIFICATIONS.

* SEAL JOINT BETWEEN VERTICAL FACE OF APPROACH SLAB AND WING WITH "SILICONE JOINT SEALANT FOR SAW CUT AND FORMED JOINTS" IN ACCORDANCE WITH SECTION 717 OF THE MISSOURI STANDARD SPECIFICATIONS.

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

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
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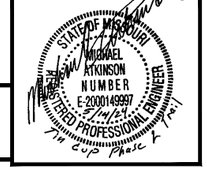
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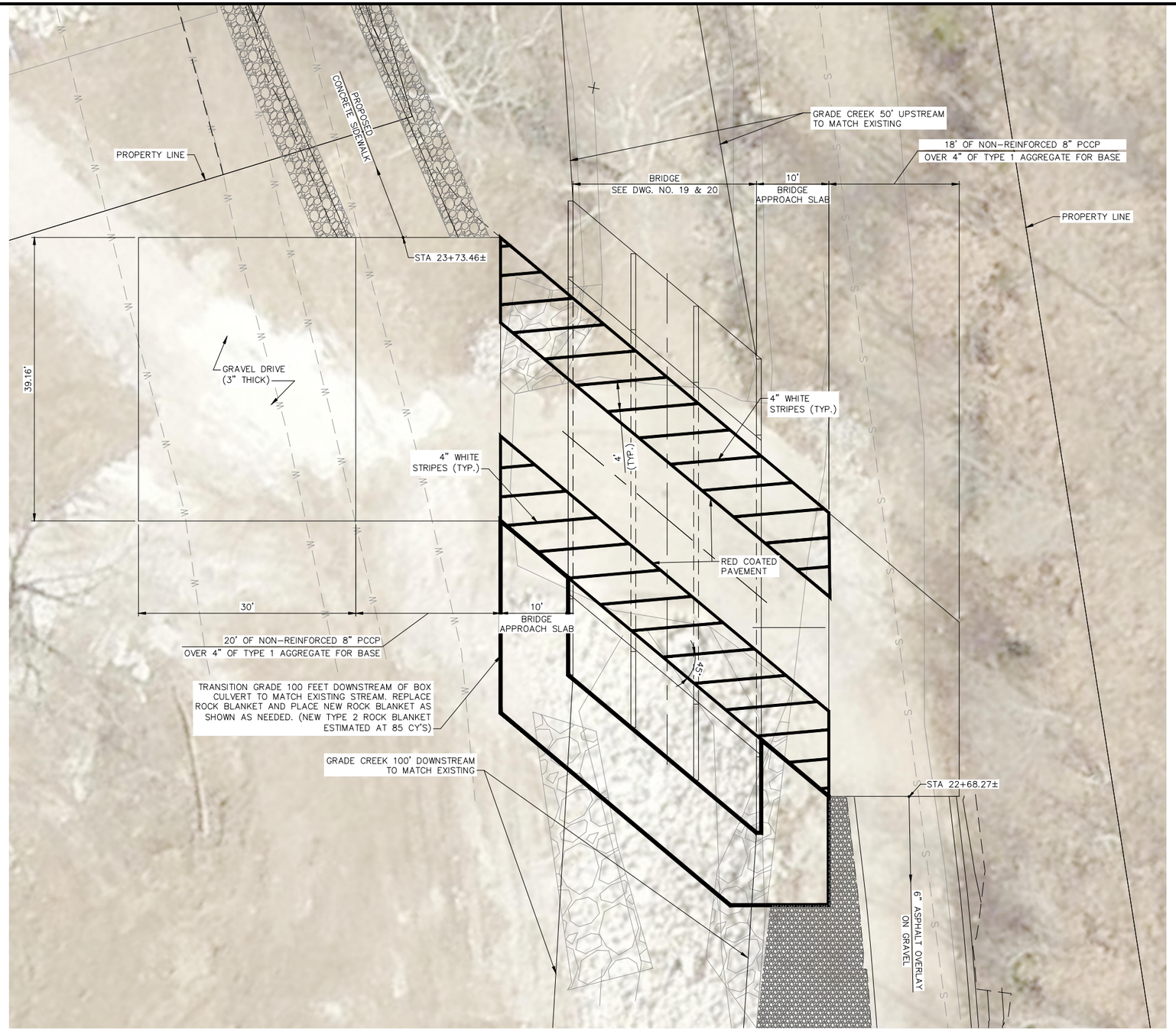
BRIDGE APPROACH SLAB
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 21

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20000149397



Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\22 ENLARGED BRIDGE PAVEMENT PLAN.DWG



ENLARGED BRIDGE PAVEMENT PLAN

8 0 4 8

N

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-2000149997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-2000149997
REGISTERED PROFESSIONAL ENGINEER

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
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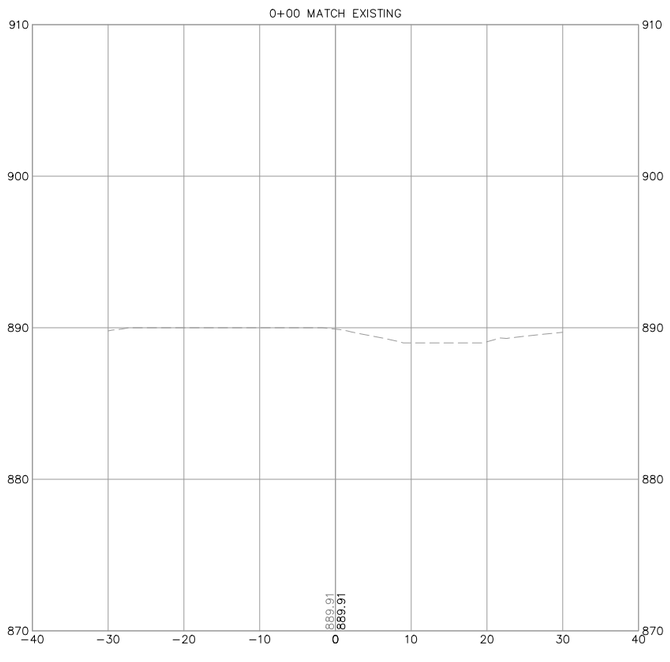
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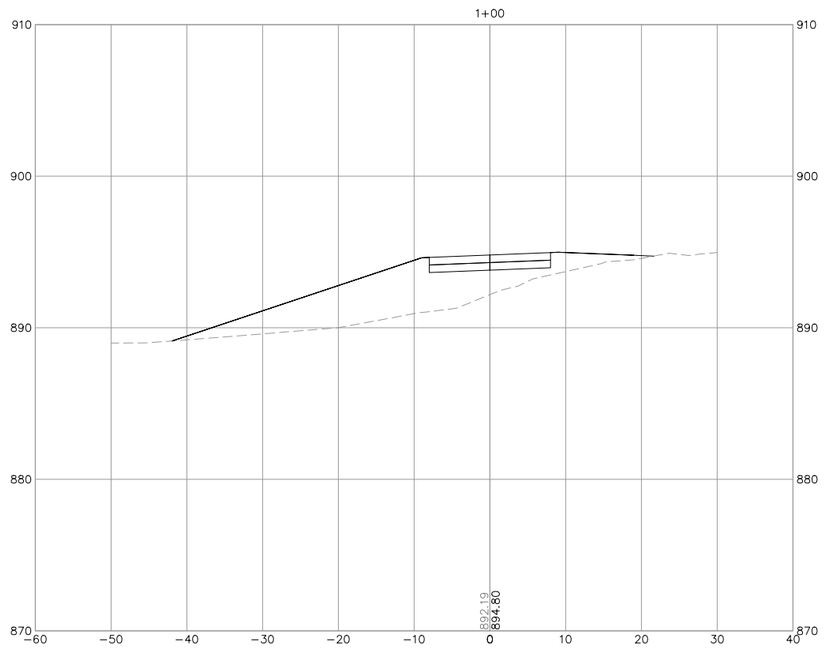
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ENLARGED BRIDGE PAVEMENT PLAN
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

DWG. NO. 22

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\23-24 ENTRANCE CROSS SECTIONS.DWG


0+00 MATCH EXISTING
910
900
890
880
870
−40
−30
−20
−10
0
10
20
30
40
889.91
889.91


1+00
910
900
890
880
870
−60
−50
−40
−30
−20
−10
0
10
20
30
40
892.19
894.80

SCALE
VERT. = 1:5
HORIZ. = 1:10

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-200014997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-200014997
REGISTERED PROFESSIONAL ENGINEER
5/14/24

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680 - 7200

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CERTIFICATE OF AUTHORITY
MISSOURI NO. 000427

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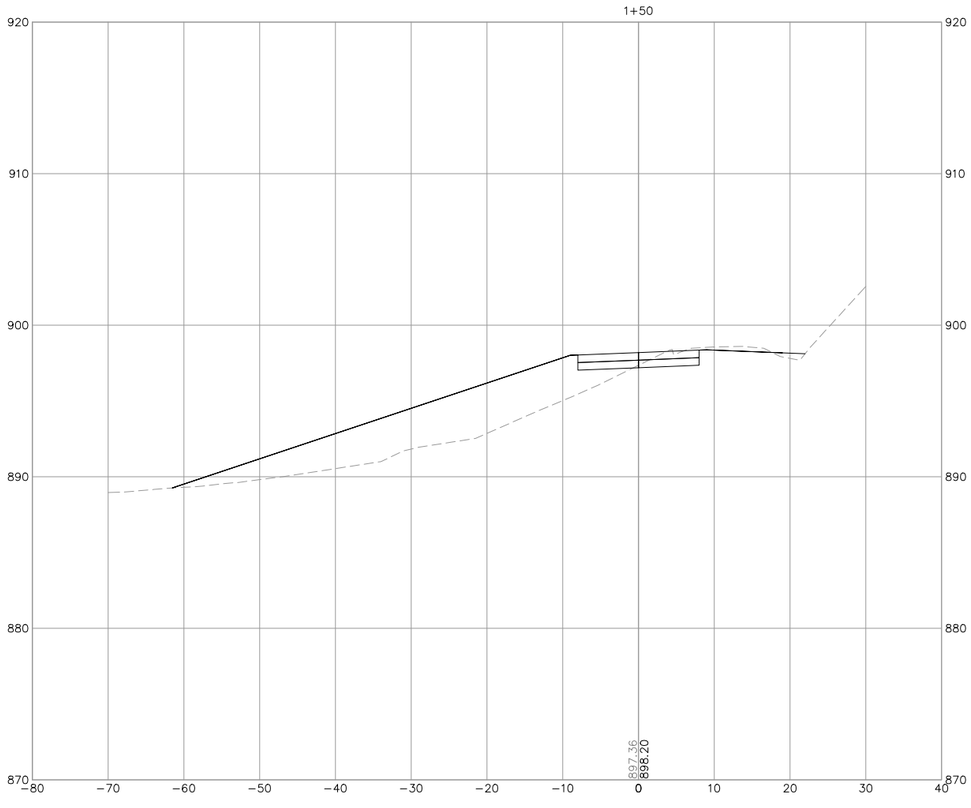
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DATE :	05-14-2024

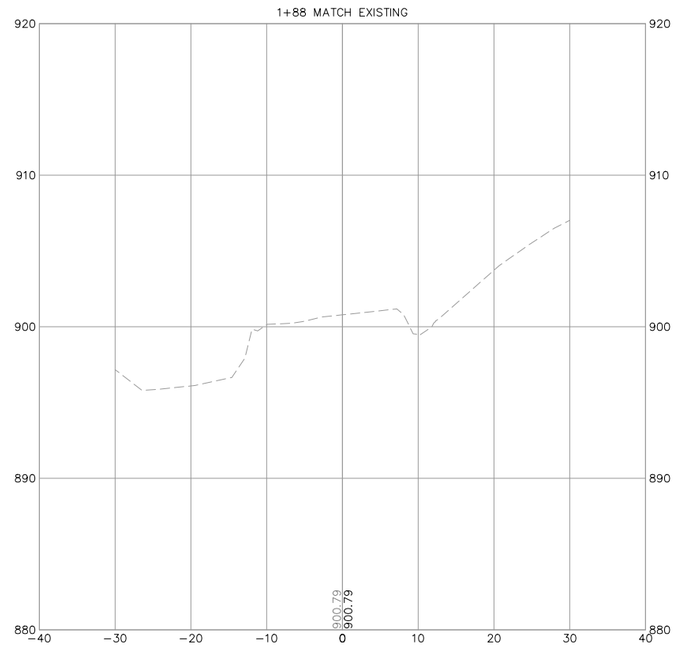
ENTRANCE CROSS SECTIONS
TIN CUP TRAIL - PHASE 2

JOPLIN, MISSOURI

DWG. NO.
23

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\23-24 ENTRANCE CROSS SECTIONS.DWG





SCALE
VERT. = 1:5
HORIZ. = 1:10

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-200014997

STATE OF MISSOURI
MICHAEL ATKINSON
NUMBER E-200014997
REGISTERED PROFESSIONAL ENGINEER
5/14/24

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680 - 7200

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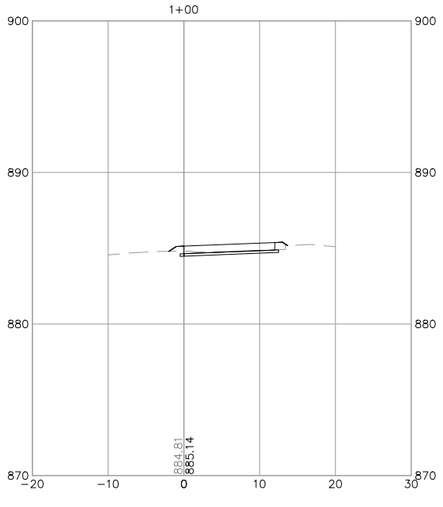
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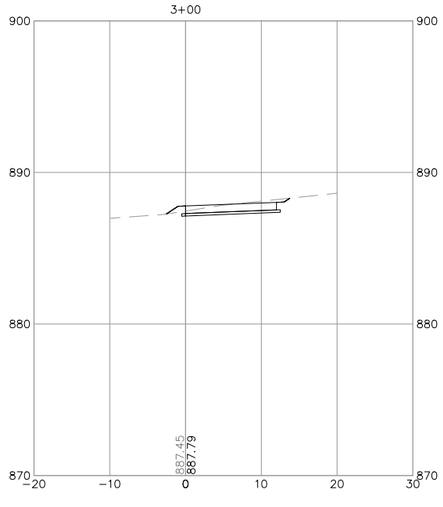
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DATE :	05-14-2024

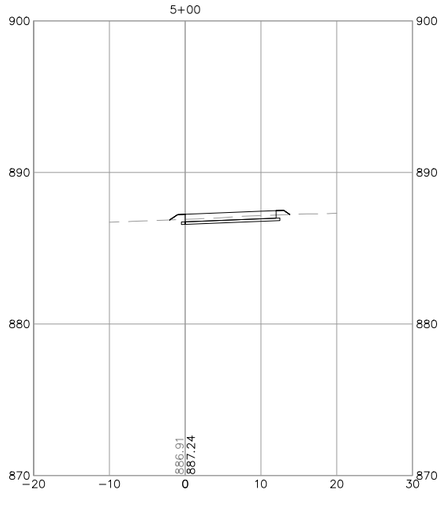
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TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

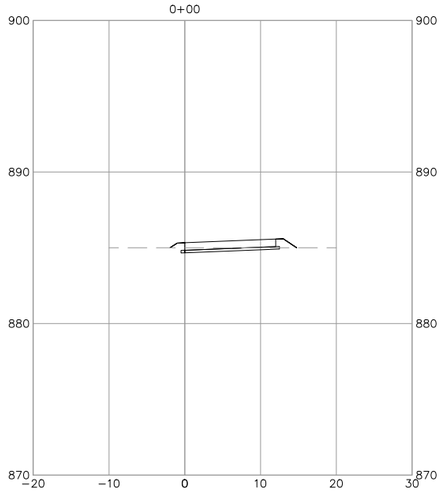
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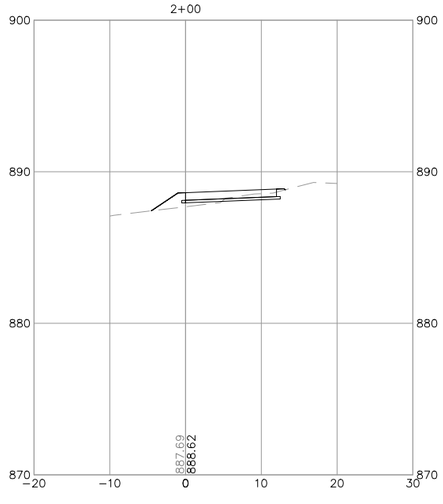
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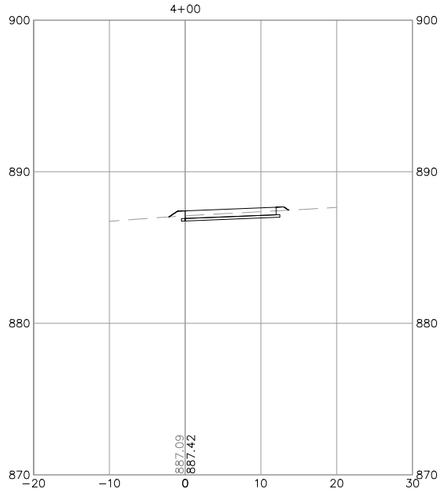












SCALE
VERT. = 1:5
HORIZ. = 1:10

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20000149397

STATE OF MISSOURI
MICHAEL R ATKINSON
NUMBER E-20000149397
REGISTERED PROFESSIONAL ENGINEER

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680 - 7200

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CERTIFICATE OF AUTHORITY
MISSOURI NO. 000427

DATE	REVISION

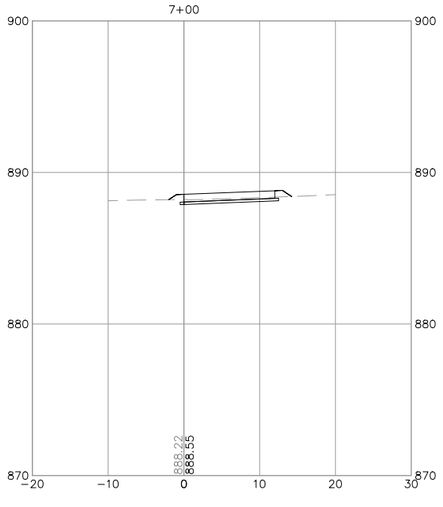
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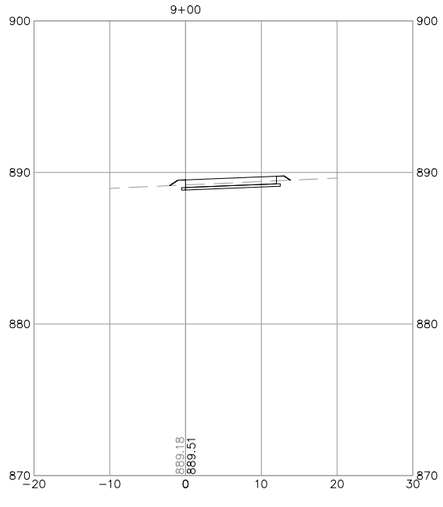
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TIN CUP TRAIL - PHASE 2

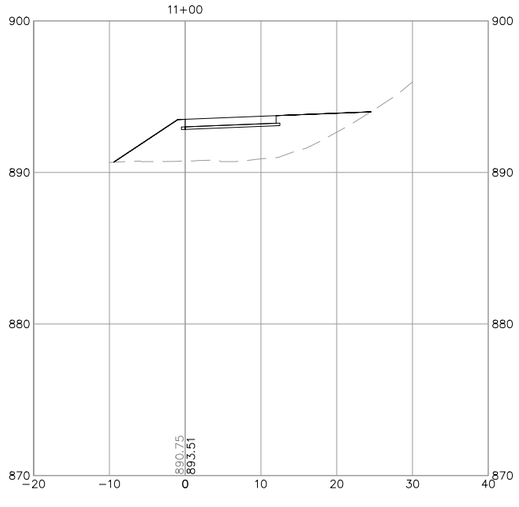
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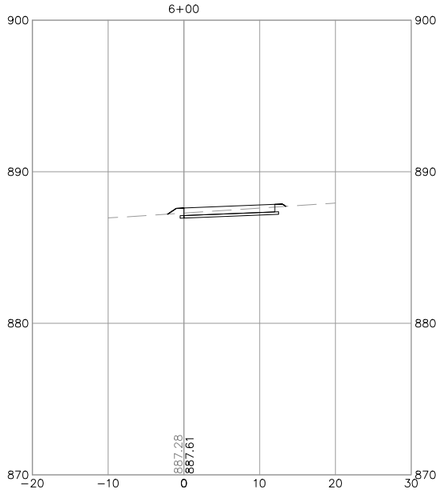
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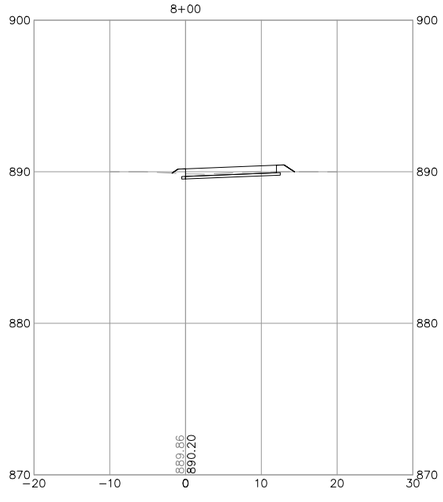
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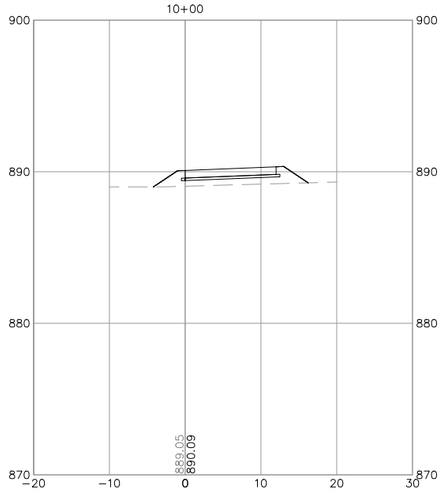












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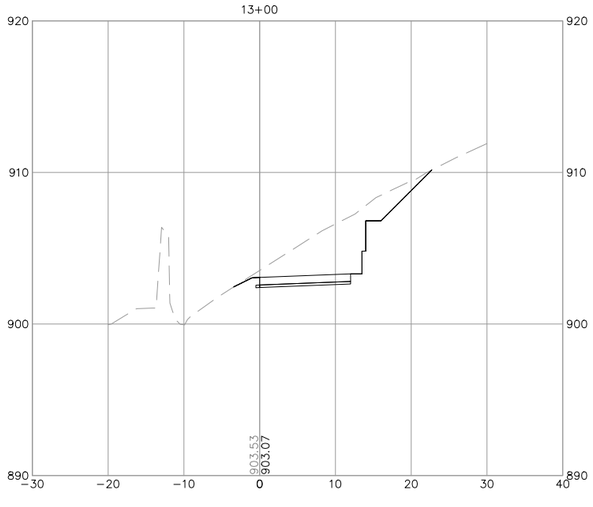
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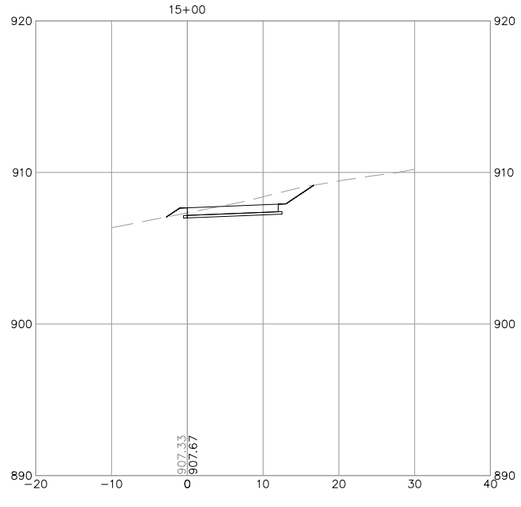
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CKD. BY:	SC
APPD. BY:	MRA
DATE :	05-14-2024

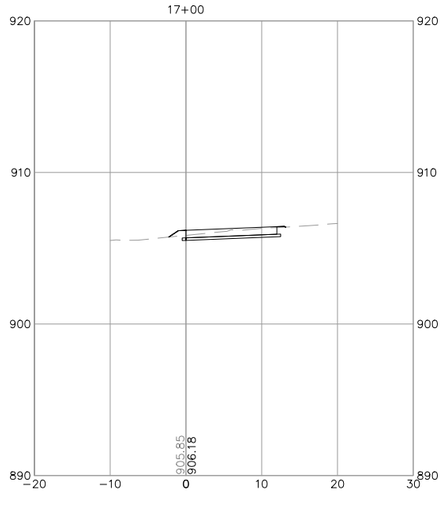
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TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

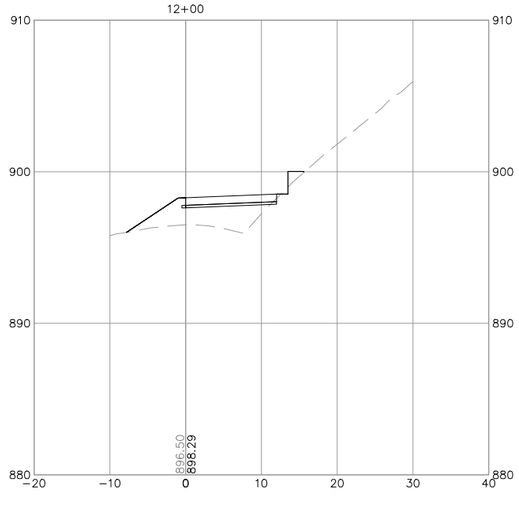
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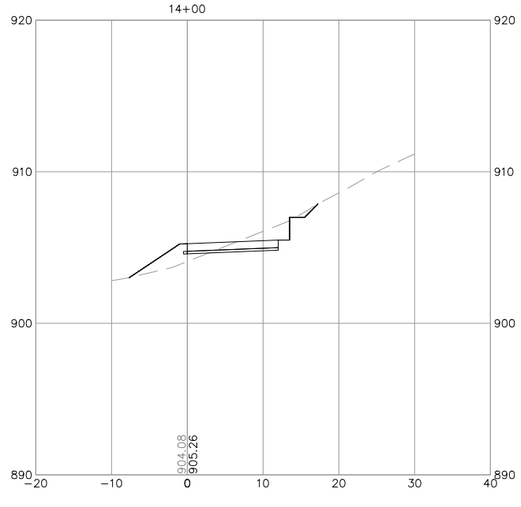
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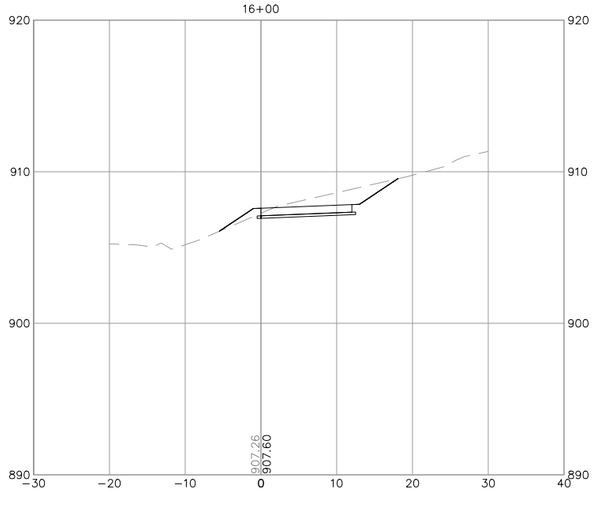












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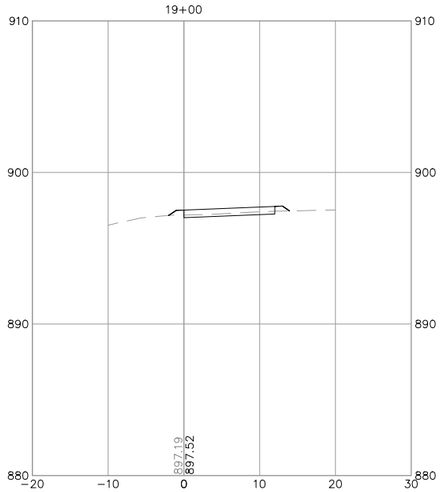
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DATE :	05-14-2024

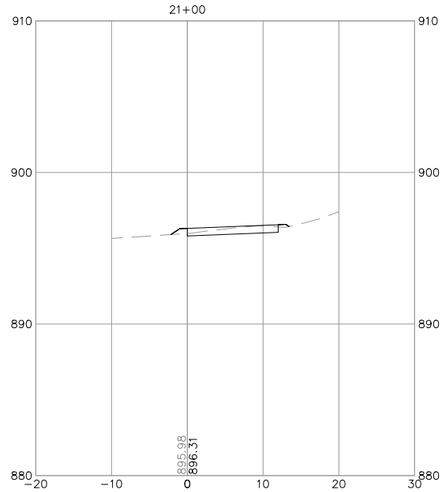
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TIN CUP TRAIL - PHASE 2

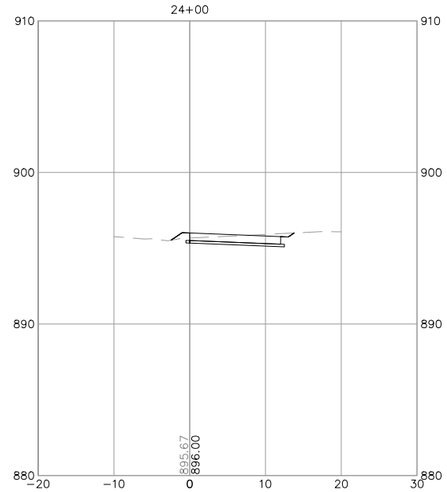
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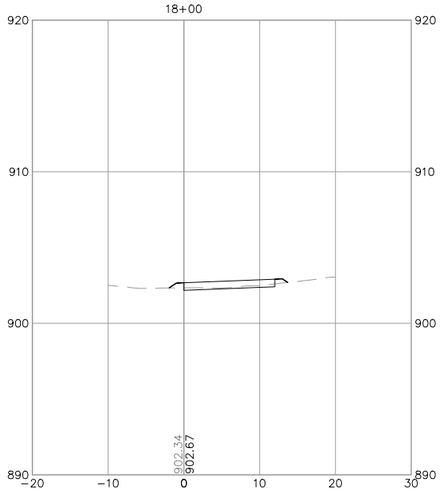
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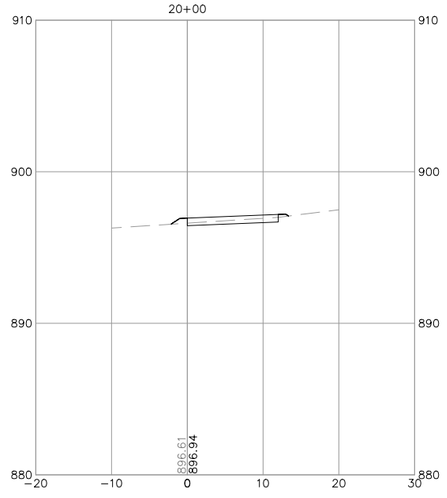
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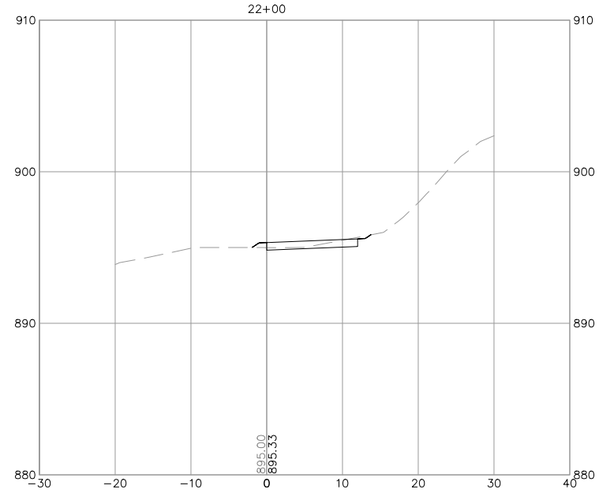












SCALE
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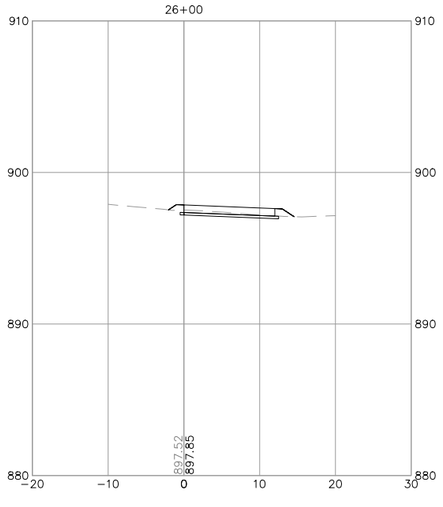
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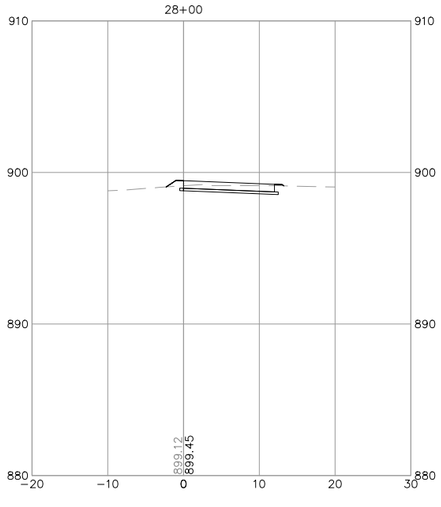
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TIN CUP TRAIL - PHASE 2

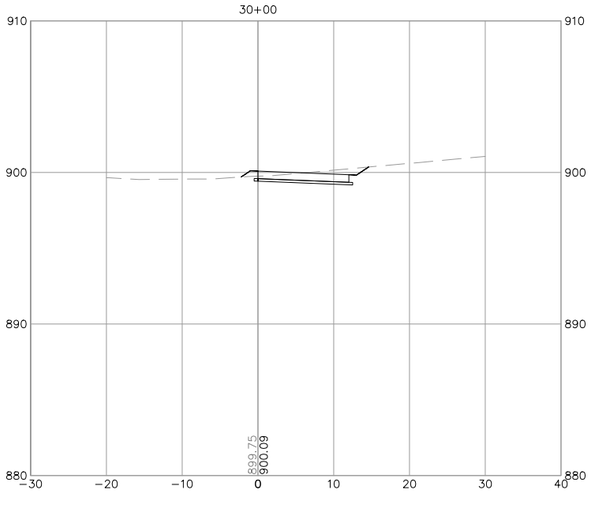
JOPLIN, MISSOURI

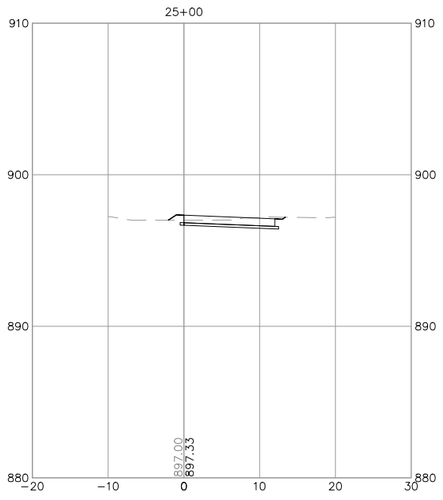
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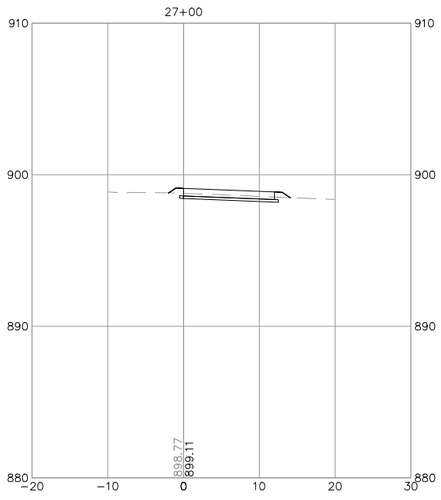
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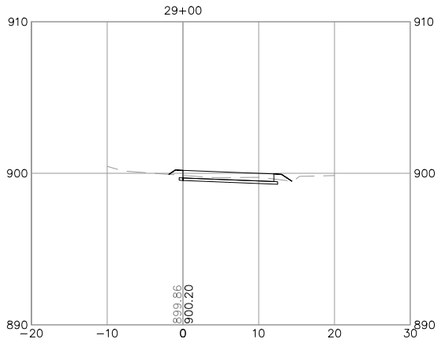












SCALE
VERT. = 1:5
HORIZ. = 1:10

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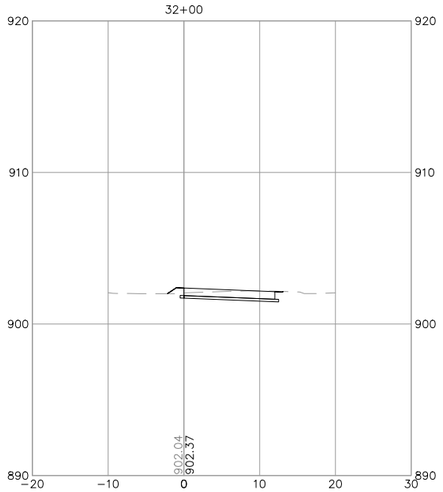
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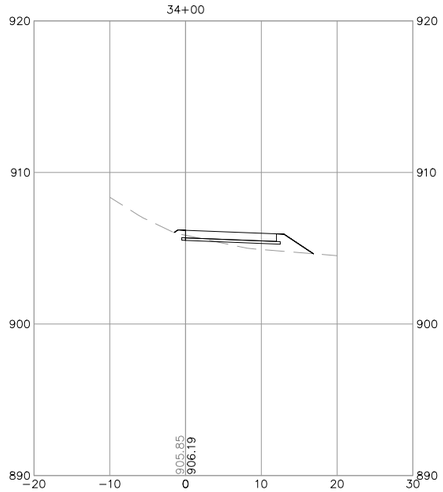
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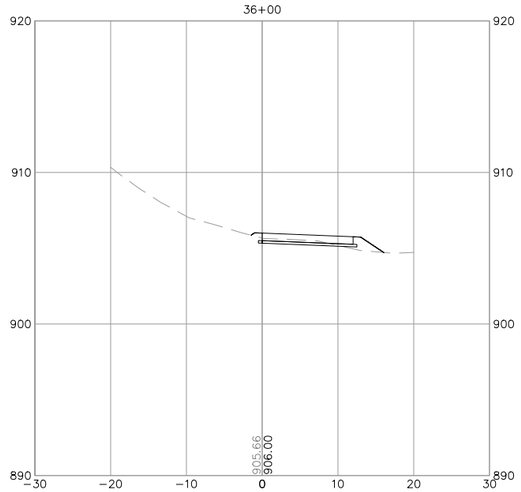
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TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

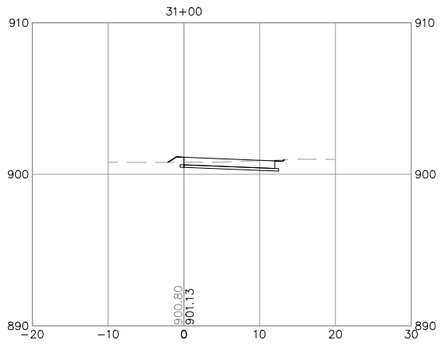
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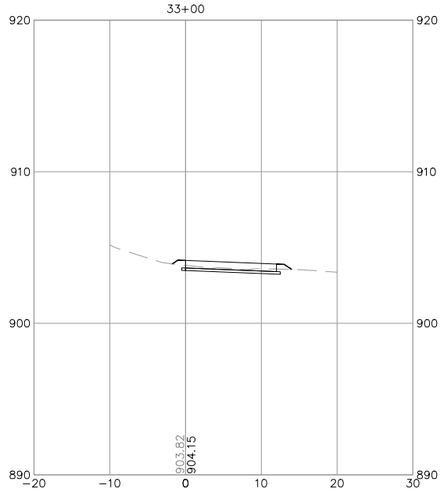
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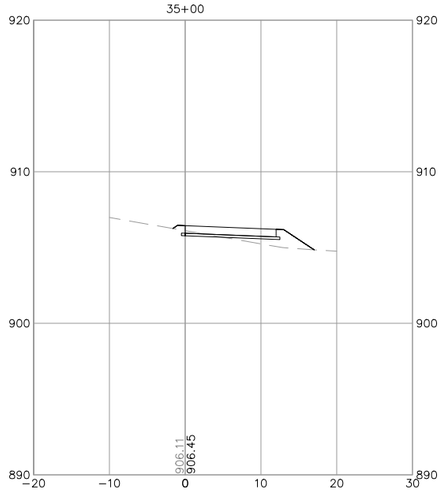












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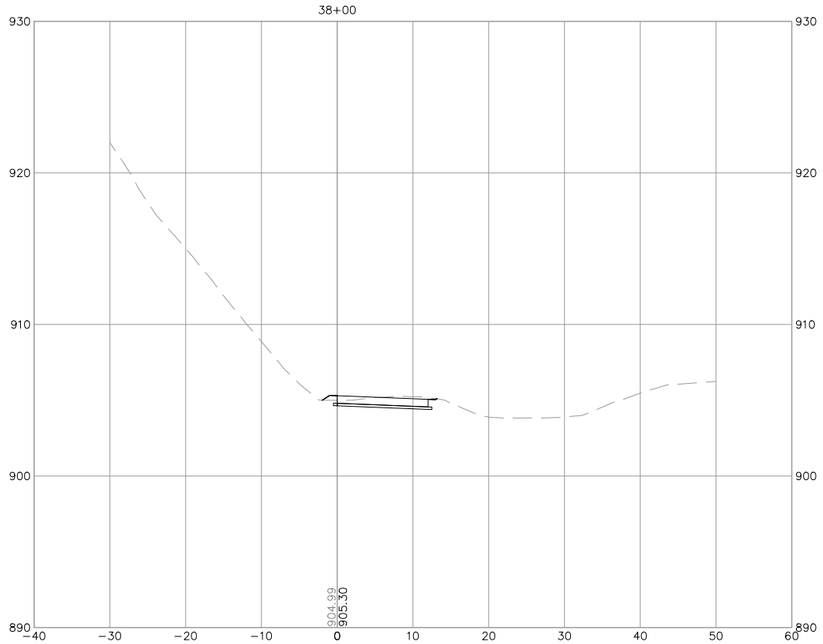
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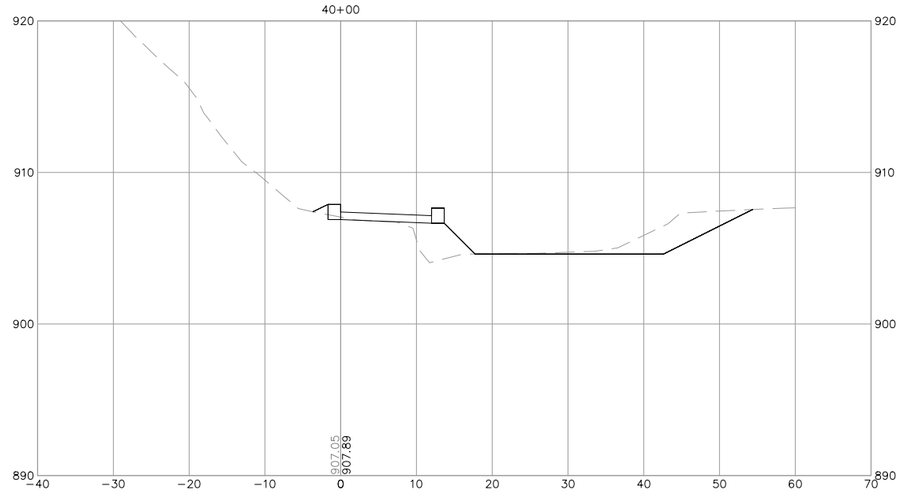
SIDEWALK CROSS SECTIONS
TIN CUP TRAIL - PHASE 2

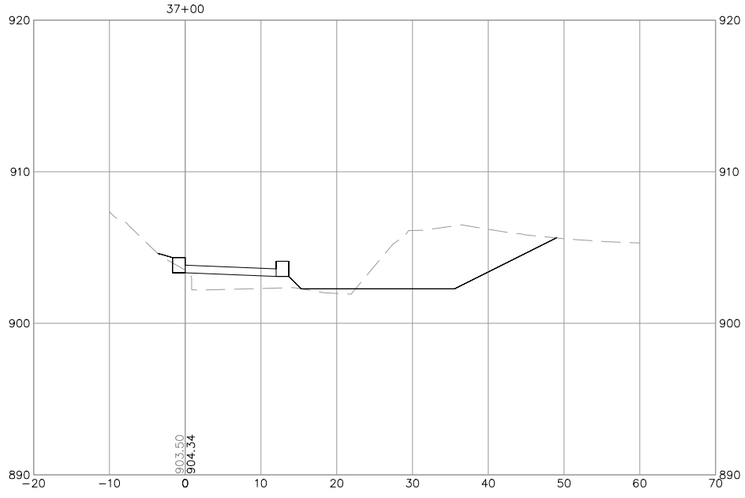
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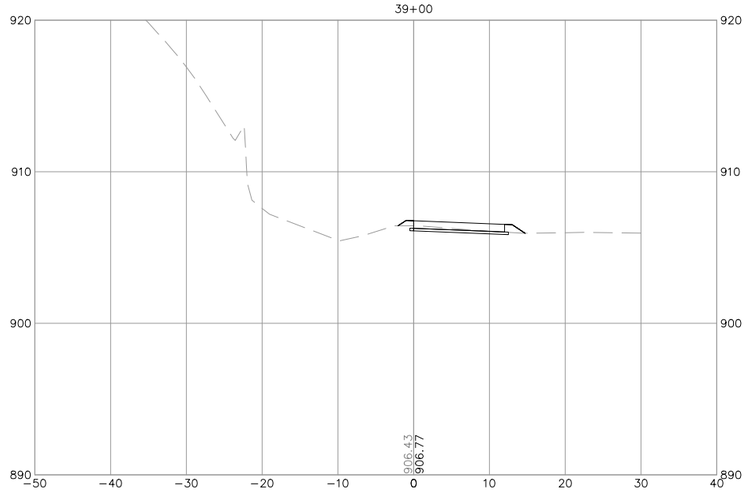
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SCALE
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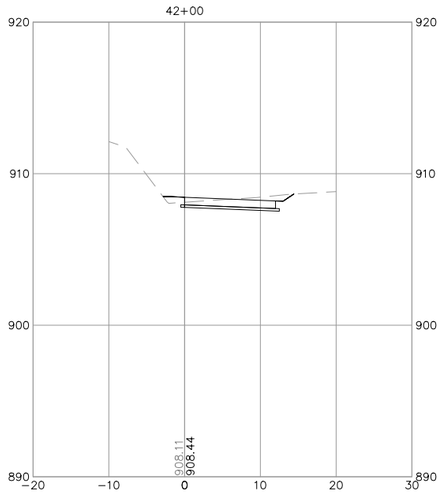
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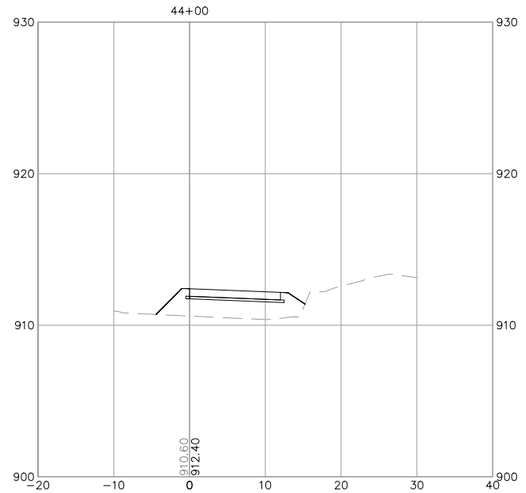
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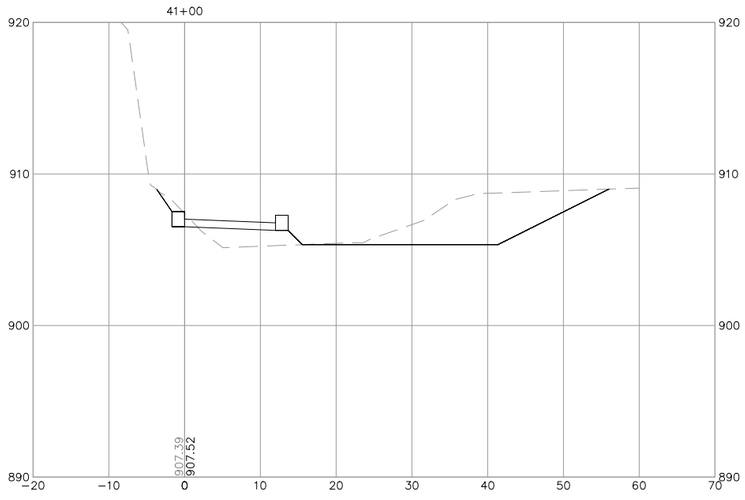
SIDEWALK CROSS SECTIONS
TIN CUP TRAIL - PHASE 2
JOPLIN, MISSOURI

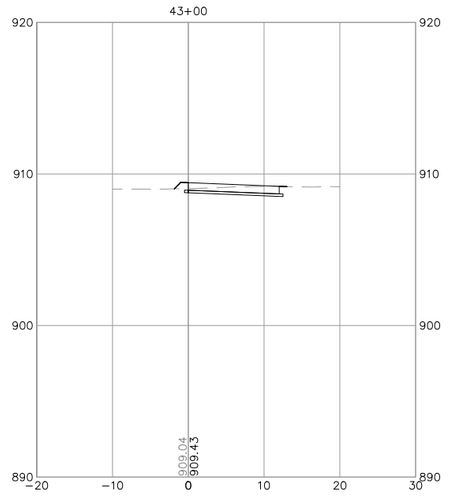
DWG. NO.
31

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\25-32 SIDEWALK CROSS SECTIONS.DWG









SCALE
VERT. = 1:5
HORIZ. = 1:10

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-20000149397

STATE OF MISSOURI
MICHAEL R ATKINSON
NUMBER E-20000149397
REGISTERED PROFESSIONAL ENGINEER

ALLGEIER, MARTIN and ASSOCIATES, INC.
CONSULTING ENGINEERS and SURVEYORS
7231 EAST 24th STREET JOPLIN, MISSOURI 64804 (417) 680 - 7200

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MISSOURI NO. 000427

DATE	REVISION

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CKD. BY:	SC
APPD. BY:	MRA
DATE :	05-14-2024

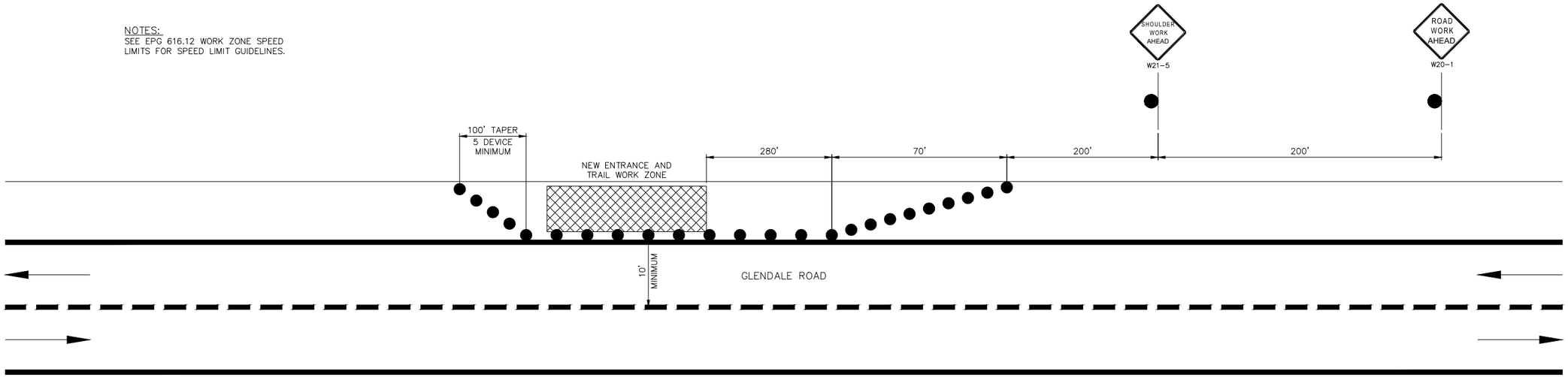
SIDEWALK CROSS SECTIONS
TIN CUP TRAIL - PHASE 2

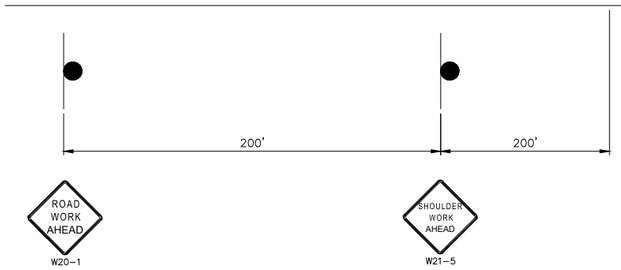
JOPLIN, MISSOURI

DWG. NO.
32

Z:\JOPLIN MO\CITY OF JOPLIN\TRANSPORTATION\TIN CUP TRAIL, PHASE 2\DRAWINGS\33 TRAFFIC CONTROL.DWG

NOTES:
SEE EPG 616.12 WORK ZONE SPEED LIMITS FOR SPEED LIMIT GUIDELINES.





TRAFFIC CONTROL DETAIL
NTS

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TRAFFIC CONTROL
TIN CUP TRAIL - PHASE 2

JOPLIN, MISSOURI

DWG. NO.
33

CIVIL ENGINEER: MICHAEL ATKINSON
LICENSE NO. E-2000014997

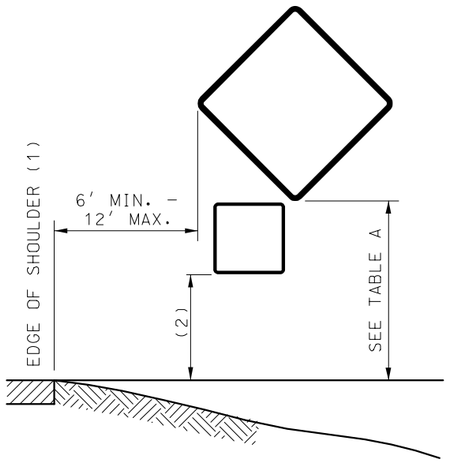
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MICHAEL ATKINSON
NUMBER E-2000149997
REGISTERED PROFESSIONAL ENGINEER
5/14/24
Tin Cup Phase 2

STANDARD PLANS

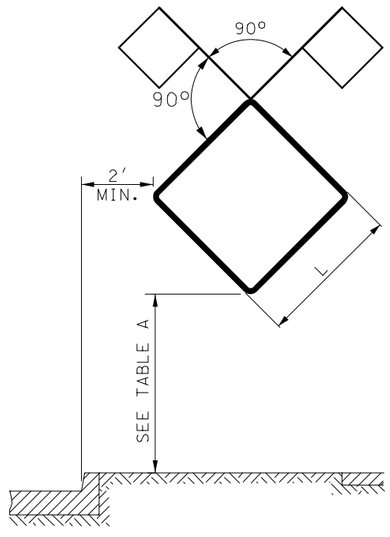
TABLE A
WORK ZONE SIGN MOUNTING REQUIREMENTS

TYPE	SIGN SUPPORT	SIGN SUBSTRATE	MINIMUM MOUNTING HEIGHT(3)	USAGE LIMITATIONS	COMMENTS
POST	PERFORATED SQUARE STEEL TUBE U-CHANNEL WOOD	RIGID	5′ RURAL UNDIVIDED HIGHWAYS 7′ RURAL DIVIDED HIGHWAYS 7′ URBAN HIGHWAYS	NONE	POSTS SHALL BE FREE OF ANY BRACING AND EXTEND NO FURTHER ABOVE THE SIGN EXCEPT AS NEEDED FOR WARNING LIGHT ATTACHMENT. FOR DETAILS OF POST INSTALLATION DETAILS SEE SHEET NO. 2 OF 9. GALVANIZATION OF POSTS WILL NOT BE REQUIRED.
TYPE 1 PORTABLE	SKID FOLD-UP STAND	RIGID	5′ RURAL UNDIVIDED HIGHWAYS 7′ RURAL DIVIDED HIGHWAYS 7′ URBAN HIGHWAYS	PERMITTED ONLY WHERE POST MOUNTING IS NOT FEASIBLE.	SYSTEMS SHALL COMPLY WITH CRASH TEST REQUIREMENTS OF NCHRP 350 TEST LEVEL 3 AND MAY BE PLACED ADJACENT TO OR WITHIN THE ROADWAY PROVIDED A MINIMUM LATERAL CLEARANCE OF 3 FEET, MEASURED HORIZONTALLY FROM THE EDGE OF THE SIGN TO THE EDGE OF DESIGNATED TRAVELED WAY, IS MAINTAINED.
TYPE 2 PORTABLE	EASEL FOLD-UP STAND SELF-DRIVING POST TYPE III MOVABLE BARRICADE SKID	FLEXIBLE RIGID	12″(4)	PERMITTED ONLY FOR INSTALLATION UP TO 3 DAYS(5). WHERE SIGNS ARE OBSCURED BY OTHER OBJECTS (I.E., TRAFFIC CONTROL DEVICES, PARKED VEHICLES, BARRIER, VEGETATION, ETC.) OR INSTALLED ON MULTI-LANE UNDIVIDED FACILITIES OR MULTI-LANE DIVIDED FACILITIES WITH 3 OR MORE LANES IN ONE DIRECTION, MOUNTING HEIGHTS SHALL BE AS SPECIFIED FOR POST-MOUNTED SIGNS.	SYSTEMS SHALL COMPLY WITH CRASH TEST REQUIREMENTS OF NCHRP 350 TEST LEVEL 3 AND MAY BE PLACE ADJACENT TO OR WITHIN ROADWAY PROVIDED A MINIMUM LATERAL CLEARANCE OF 3 FEET, MEASURED HORIZONTALLY FROM THE EDGE OF THE SIGN TO THE EDGE OF THE DESIGNATED TRAVELED WAY, IS MAINTAINED.
BARRIER	CONCRETE TRAFFIC BARRIER GUARDRAIL	FLEXIBLE RIGID	5′ RURAL UNDIVIDED HIGHWAYS 7′ RURAL DIVIDED HIGHWAYS 7′ URBAN HIGHWAYS	PERMITTED ONLY WHERE LONGITUDINAL BARRIER IS PRESENT.	SYSTEMS SHALL PROVIDE POSITIVE CONNECTION TO THE BARRIER AND MINIMIZE POTENTIAL FOR VEHICLE SNAGGING.
VEHICLE	PAVEMENT MARKING EQUIPMENT PILOT CAR PROTECTIVE VEHICLE	FLEXIBLE RIGID	48″ (6)	PERMITTED ONLY IN PILOT CAR OR MOVING OPERATIONS.	

(3) MEASURED FROM THE BOTTOM OF THE SIGN TO THE NEAR EDGE OF THE PAVEMENT.
(4) MOUNTING HEIGHTS FOR REGULATORY AND GUIDE SIGNS SHALL BE AS SPECIFIED FOR POST-MOUNTED SIGNS.
(5) SIGNS MOUNTED ON TYPE III BARRICADES, GORE EXIT SIGN, AND SIGNS FOR CROSWALK/SIDEWALKCLOSURES MAY BE LEFT IN PLACE FOR MORE THAN 3 DAYS.
(6) DEVIATIONS AS APPROVED BY THE ENGINEER.



(1) EDGE OF TRAVELED WAY WHERE THERE IS NO PAVED OR STABILIZED SHOULDER.
(2) ONE-FOOT LESS THAN MOUNTING HEIGHT NOTED IN TABLE A.



HEIGHT AND LATERAL LOCATIONS FOR POST AND PORTABLE SIGN MOUNTING

GENERAL NOTES:

LONGITUDINAL SPACING OF SIGNS SHOWN IN THE PLANS ARE PREFERRED MINIMUMS, BUT MAY BE ADJUSTED TO MEET EXISTING FIELD CONDITIONS WITH APPROVAL FROM THE ENGINEER.

SIGNS SHALL NOT BE MOUNTED IN OR ON CHANNELIZERS.

ALL POSTS AND SIGNS SHALL BE INSTALLED AND MAINTAINED IN A PLUMB POSITION.

CONSTRUCTION SIGNS SHALL NOT BE LOCATED ON SIDEWALKS, BICYCLE LANES, OR AREAS DESIGNATED FOR PEDESTRIAN OR BICYCLE TRAFFIC.

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STATE OF MISSOURI
TRAVIS D. KOESTNER
NUMBER PE-30042
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

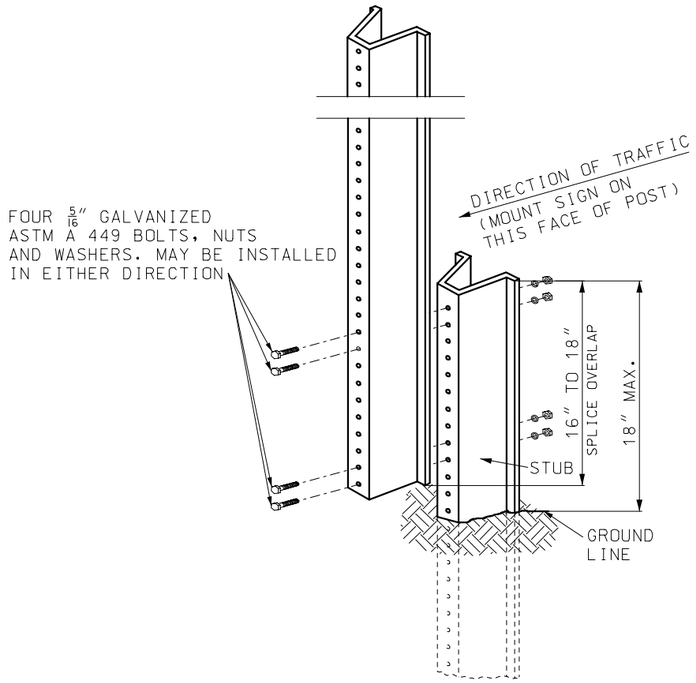
TEMPORARY TRAFFIC CONTROL DEVICES
SIGN MOUNTING REQUIREMENTS

DATE EFFECTIVE: 10/01/2021
DATE PREPARED: 7/13/2021

616.10AY

SHEET NO. 1 OF 9

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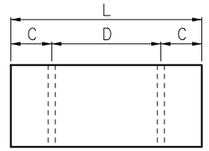
U-CHANNEL POST DETAIL

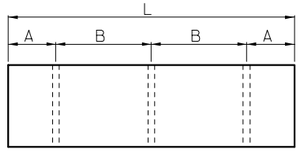
USE OF SPLICE IS OPTIONAL.

SPLICE OVERLAP SHALL BE POSITION ENTIRELY BETWEEN GROUND LINE AND 18" ABOVE GROUND LINE.

✳ IF A PLAQUE IS USED, NEITHER THE SIGN NOR PLAQUE SHALL BE POSITIONED WITHIN THE SPLICE OVERLAP AREA.

ONLY ONE SPLICE WILL BE ALLOWED PER POST.





A = 1/6(L) C = 1/5(L)
B = 1/3(L) D = 3/5(L)

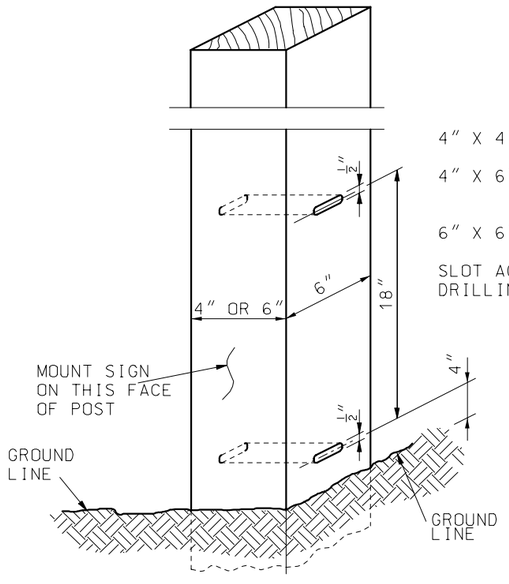
POST SPACING

POST TYPE

SIGN AREA (SQ.FT.)	U-CHANNEL	WOOD	PERFORATED SQUARE STEEL TUBING
≤ 10	1 - 3.0 LB./FT.✳	1 - 4" X 4"✳	1 - 2" 12 GA.✳
> 10 ≤ 16	2 - 3.0 LB./FT.	2 - 4" X 4" 1 - 4" X 6"✳	2 - 2" 12 GA. 1 - 2½" 12 GA.
> 16 ≤ 24	2 - 3.0 LB./FT.	2 - 4" X 6"	3 - 2" 12 GA.✳✳
> 24 ≤ 32	3 - 3.0 LB./FT.	2 - 4" X 6"	N/A
> 30 ≤ 50	N/A	2 - 6" X 6"	N/A

✳ SIGNS GREATER THAN 4 FEET IN WIDTH, EXCEPT DIAMOND SHAPE SIGNS, REQUIRE TWO POSTS.

✳✳ REQUIRES SLIP BASE PER MANUFACTURER'S RECOMMENDATION.



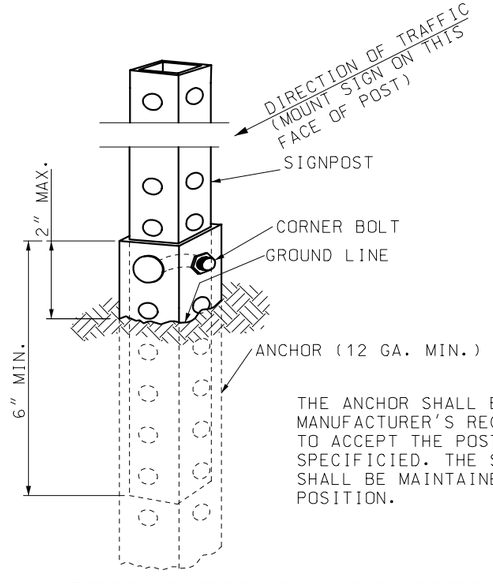
4" X 4" WOOD POST - NO SLOTS OR HOLES REQUIRED

4" X 6" WOOD POST - 1½" X ½" SLOT ON 6" SIDE OR 1½" DIA. HOLE ON 6" SIDE

6" X 6" WOOD POST - 2" X ½" SLOT OR 2" DIA. HOLE

SLOT ACROSS NEUTRAL AXIS FORMED BY SUCCESSIVE DRILLING WITH ½" BIT.

WOOD POST DETAIL



THE ANCHOR SHALL BE SIZED AS PER MANUFACTURER'S RECOMMENDATIONS TO ACCEPT THE POST SIZE SPECIFICIED. THE SIGN ASSEMBLY SHALL BE MAINTAINED IN A PLUMB POSITION.

PERFORATED SQUARE STEEL TUBE POST DETAIL

THE SIGN POST MAY BE ATTACHED TO THE ANCHOR WITH A CORNER BOLT OR STRAIGHT BOLT PER MANUFACTURER'S SPECIFICATION.

GENERAL NOTES:

ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 3 FEET.

SIGN INSTALLATION DETAILS SHOWN SHALL APPLY TO ALL POSTS IN A MULTI-POST INSTALLATION.

AT THE ENGINEERS DISCRETION A FLUORESCENT PAINT SHALL BE APPLIED HEAVILY TO BOTH SIDES OF U-CHANNEL POST STUB FOR A LENGTH OF AT LEAST 6 INCHES BELOW THE TOP OF THE STUB.

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STATE OF MISSOURI
TRAVIS D. KOESTNER
NUMBER PE-30042
PROFESSIONAL ENGINEER
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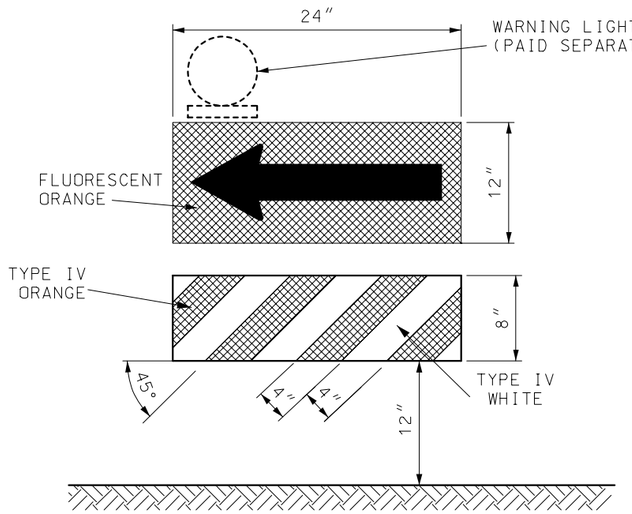
TEMPORARY TRAFFIC CONTROL DEVICES POST INSTALLATION DETAILS

DATE EFFECTIVE: 10/01/2021
DATE PREPARED: 7/13/2021

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SHEET NO. 2 OF 9

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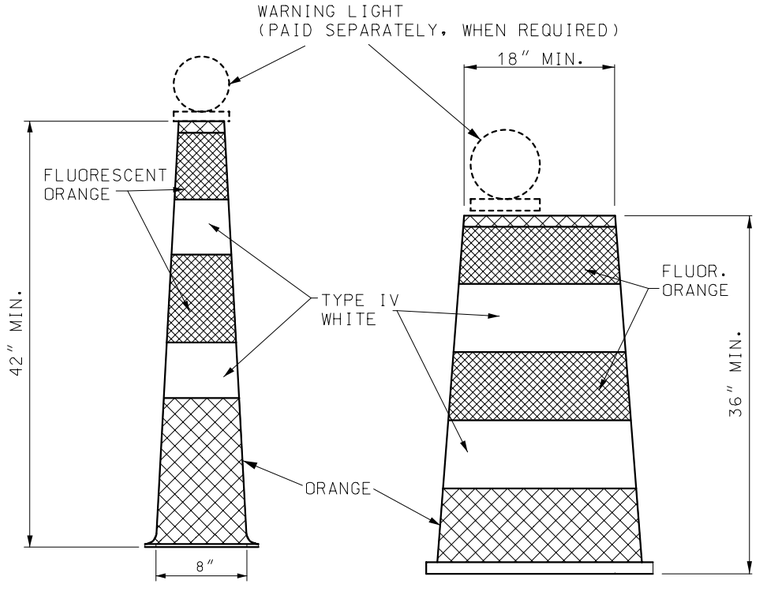


DIRECTION INDICATOR BARRICADE

VERTICAL DIMENSIONS DO NOT INCLUDE PROJECTIONS DESIGNED FOR EASE OF HANDLING.

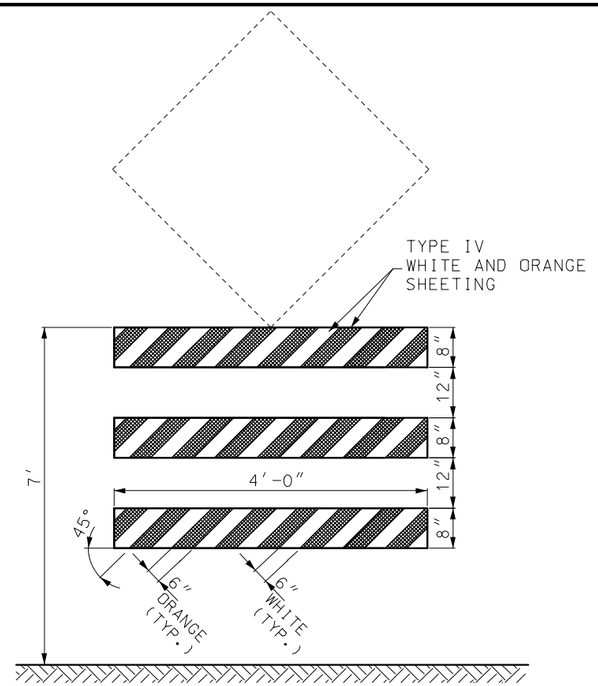
DIRECTION INDICATOR BARRICADES SHALL NOT BE USED IN SHIFTING TAPERS UNLESS SHOWN ON THE PLANS.

THE PANELS SHALL BE SECURELY ATTACHED TO A SUPPORT THAT IS PORTABLE, CAPABLE OF REMAINING UPRIGHT AND ENTIRELY FREE STANDING.



CHANNELIZERS

WHITE, ORANGE, AND FLUORESCENT ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.3.



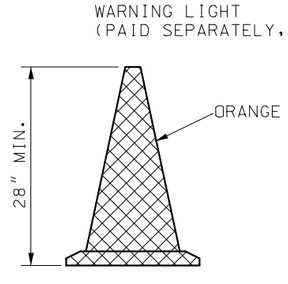
ADVANCE WARNING RAIL SYSTEM

MAXIMUM WEIGHT OF SIGN SHALL NOT EXCEED 25 LBS.

THE SIGN AND RAIL SYSTEM MAY BE MOUNTED AS TWO SEPARATE CRASHWORTHY DEVICES. THE RAIL SYSTEM SHALL BE LOCATED DIRECTLY IN FRONT OF THE SIGN WITH 7 TO 10 FEET SEPARATING THE TWO DEVICES.

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.

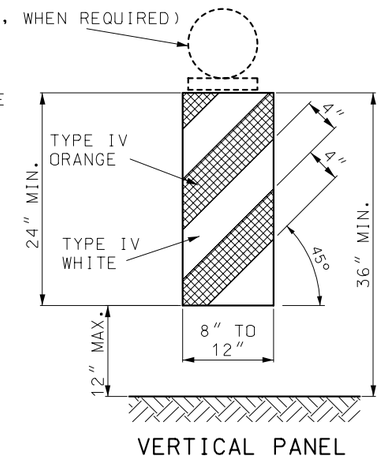
WHITE AND ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.4.



CONE

CONES SHALL MAINTAIN THEIR SHAPE UPON EXPOSURE TO NORMAL WORK CONDITIONS.

CONES SHALL BE USED DURING DAYLIGHT HOURS ONLY.



VERTICAL PANEL

VERTICAL PANELS SHALL BE SECURELY ATTACHED TO A SUPPORT THAT IS PORTABLE, CAPABLE OF REMAINING UPRIGHT AND ENTIRELY FREE STANDING.

STRIPES ON TRIM-LINE CHANNELIZERS SHALL BE 6″ TO 8″.
STRIPES ON DRUM-LIKE CHANNELIZERS SHALL BE 4″ TO 6″.

GENERAL NOTES:

WHITE, ORANGE, AND FLUORESCENT ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.

BALLAST FOR TRAFFIC CONTROL DEVICES SHALL CONFORM TO MANUFACTURERS' RECOMMENDATION FOR FIELD CONDITIONS WHEN APPLICABLE.

IF USED, THE WARNING LIGHT UNIT AND BATTERY COMPARTMENT SHALL BE FURNISHED BY THE DEVICE MANUFACTURER OR OTHERWISE MEET THE MANUFACTURER'S RECOMMENDATIONS FOR DESIGN AND WILL BE REQUIRED ON ALL DEVICES IN THE SERIES.

WARNING LIGHTS SHALL BE IN ACCORDANCE WITH SEC 1063.5.

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE DRUM-LIKE CHANNELIZERS IN LIEU OF TRIM-LINE CHANNELIZERS TO PROVIDE LONGITUDINAL CHANNELIZATION WITHIN THE ACTIVITY AREA WHERE NO RAMPS, INTERSECTIONS OR LIMITED LATERAL CLEARANCE EXISTS.

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE DIRECTION INDICATOR BARRICADES IN LIEU OF TRIM-LINE CHANNELIZERS IN MERGING TAPERS.

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE VERTICAL PANELS IN LIEU OF TRIM-LINE CHANNELIZERS TO PROVIDE LONGITUDINAL CHANNELIZATION WITHIN THE ACTIVITY AREA.

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE CONES IN LIEU OF TRIM-LINE CHANNELIZERS DURING DAYTIME OPERATIONS ON MINOR ROUTES.

PANEL AND RAIL MARKINGS FOR TRAFFIC DELINEATION SHALL SLOPE DOWNWARD TOWARD THE INTENDED DIRECTION OF TRAVEL. ILLUSTRATIONS SHOWN ARE FOR INSTANCES WHERE TRAFFIC MOVES TO THE LEFT, REVERSE CONFIGURATIONS SHALL BE USED FOR TRAFFIC MOVEMENTS TO THE RIGHT. MARKINGS SHALL ONLY BE APPLIED TO THE FRONT OF EACH RAIL OR PANEL, OR MAY BE APPLIED TO BOTH THE FRONT AND BACK PROVIDING THE MARKING ON THE BACK DOES NOT CONFLICT WITH INTENDED OPPOSING TRAFFIC MOVEMENT.

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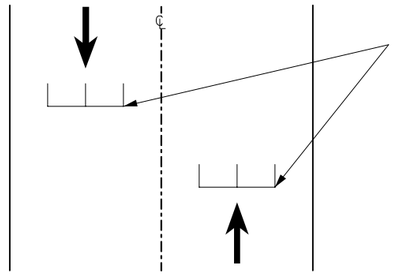
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STATE OF MISSOURI
TRAVIS D. KOESTNER
NUMBER PE-30042
PROFESSIONAL ENGINEER
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TEMPORARY TRAFFIC CONTROL DEVICES
CHANNELIZERS AND DIRECTION INDICATOR BARRICADE

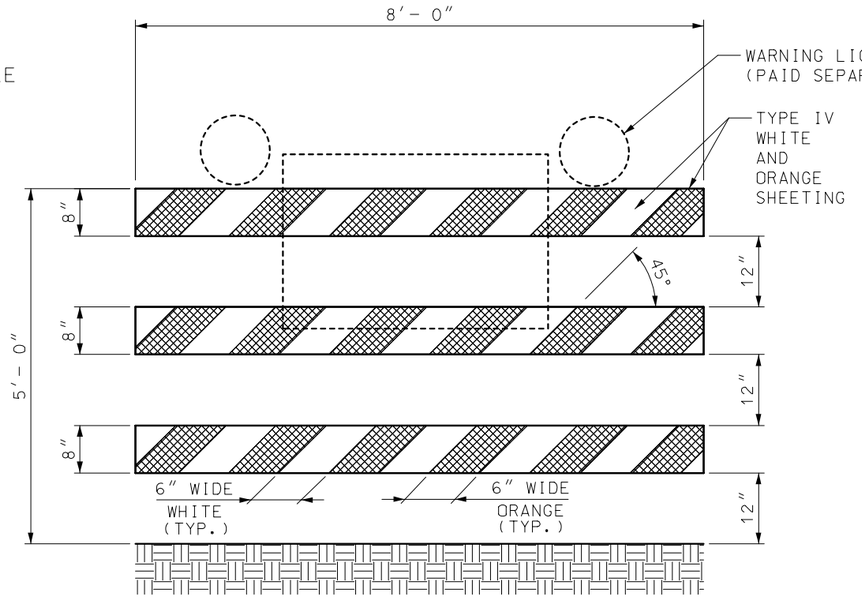
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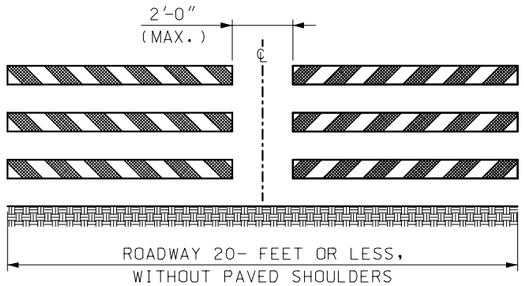


RETROREFLECTIVE MARKING ON TYPE 3 BARRICADES SHALL BE ON BOTH SIDES OF EACH RAIL AND DIRECT TRAFFIC MOVEMENT APPROPRIATELY TO ALLOW VEHICLES TO PASS THROUGH

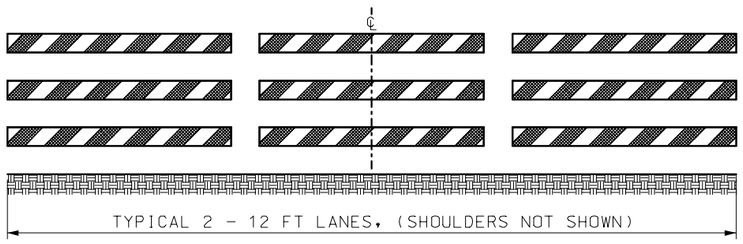
SOFT CLOSURE
PLAN VIEW



EXAMPLE 1

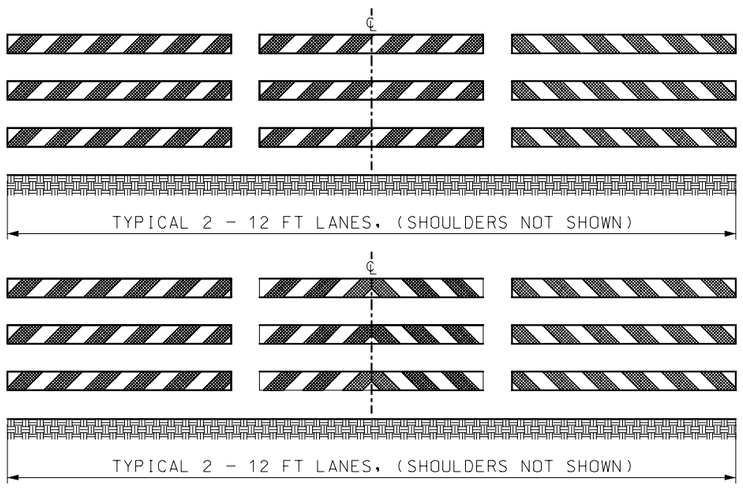


EXAMPLE 2

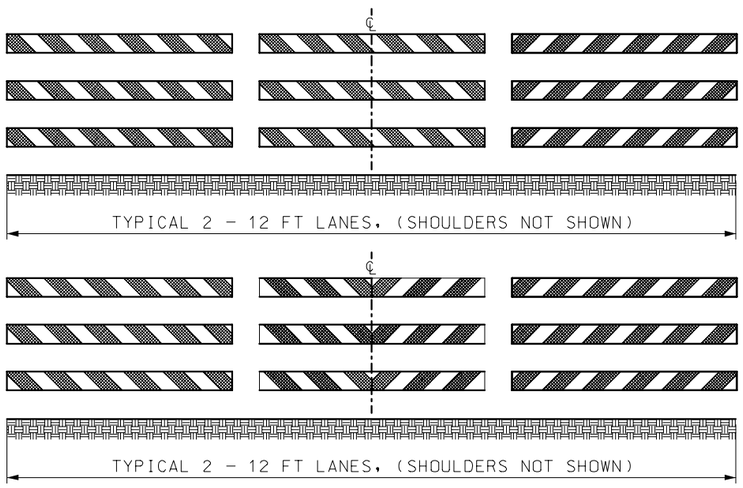


EXAMPLE SHOWS STRIPES SLOPING TO DIRECT
VEHICULAR MOVEMENT TOWARD THE LEFT

EXAMPLE 3



EXAMPLE 4



EXAMPLE 5

EXAMPLE 1 – ONE TYPE 3 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 SHOULD NOT OBSCURE MORE THAN 50 PERCENT OF THE TOP 2 RAILS OR 33 PERCENT OF ALL THREE RAILS.

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 BARRICADE FACE.

IF WARNING LIGHTS ARE USED,THE LIGHTS SHOULD BE INSTALLED ON THE BARRICADES IN THE DIRECTION OF TRAFFIC.

IF SIGNS OR LIGHTS CANNOT MEET THE ABOVE REQUIREMENTS, THEY SHALL BE MOUNTED ON SEPARATE CRASHWORTHY DEVICES AT HEIGHTS SPECIFIED FOR POST MOUNTED SIGNS, LOCATED IN TABLE A ON SHEET 1. THE BARRICADE SHALL BE LOCATED IN FRONT OF THE SIGNS OR LIGHTS WITH 7 TO 10 FEET SEPARATING THE DEVICES.

TYPE 3 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.

WHITE AND ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 104.2.7.4.

EXAMPLE 2 – FOR PAVED ROADWAYS WITH A WIDTH OF 20-FEET OR LESS AND WITHOUT PAVED SHOULDERS, TWO BARRICADES ARE ACCEPTABLE.

EXAMPLE 3 – WHERE BARRICADES EXTEND ENTIRELY ACROSS A ROADWAY, STRIPES SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH ROAD USERS MUST TURN.

EXAMPLE 4 – WHERE BOTH RIGHT AND LEFT TURNS ARE PROVIDED, STRIPES SLOPE DOWNWARD IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE OR BARRICADES.

EXAMPLE 5 – WHERE NO TURNS ARE INTENDED, STRIPES POSITIONED TO SLOPE DOWNARD TOWARD THE CENTER OF THE BARRICADE OR BARRICADES.

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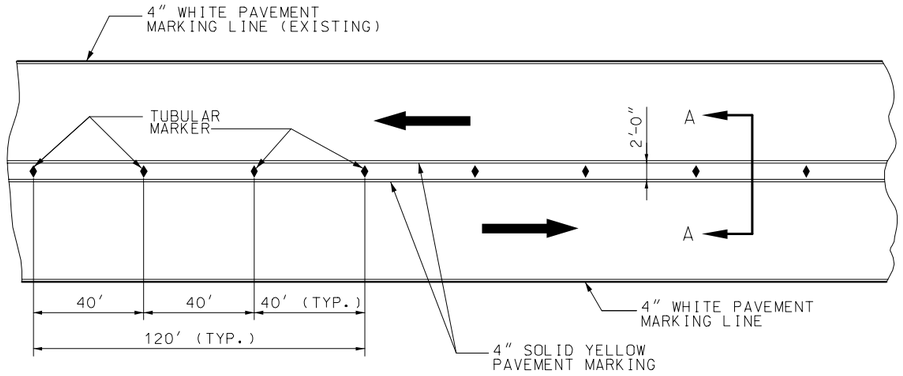
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TEMPORARY TRAFFIC CONTROL DEVICES

TYPE 3 MOVABLE BARRICADE

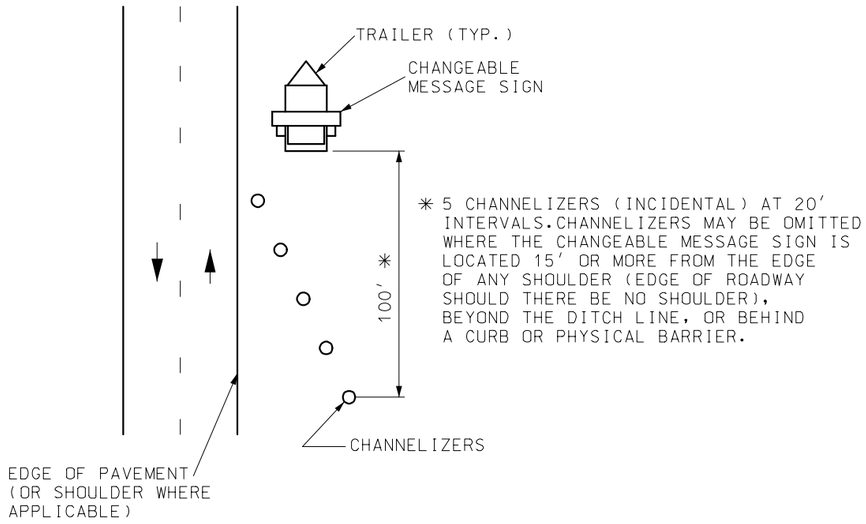
DATE EFFECTIVE: 10/01/2021
DATE PREPARED: 7/13/2021

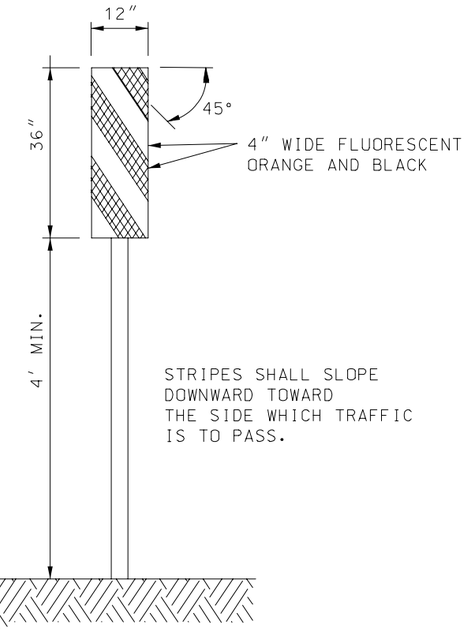
616.10AY



TWO LANE / TWO WAY TRAFFIC DELINEATION PLAN FOR DIVIDED HIGHWAY

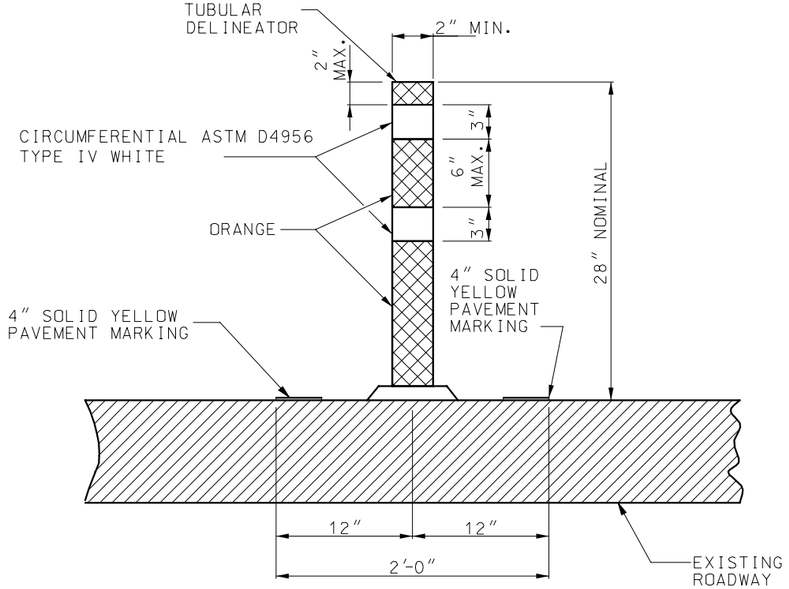
IF RAISED PAVEMENT MARKERS ARE PRESENT, THE LENSES SHALL BE REMOVED OR COVERED TO THE SATISFACTION OF THE ENGINEER.





TYPE 3 OBJECT MARKERS

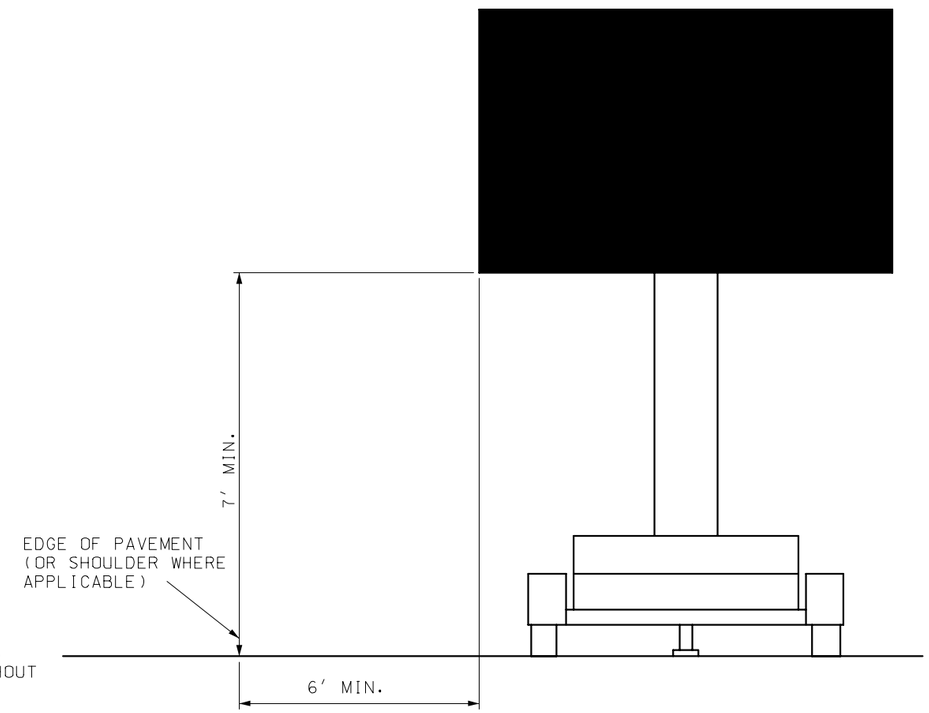
FLUORESCENT ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.



SECTION A-A
TUBULAR DELINEATOR DETAIL

AN ADHESIVE, IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, SHALL BE USED TO APPLY THE TUBULAR DELINEATOR TO THE ROADWAY SURFACE. THE ADHESIVE SHALL PERMIT EASY REMOVAL OF THE TUBULAR DELINEATOR WITHOUT DAMAGE TO THE ROADWAY SURFACE.

REFLECTIVE SHEETING APPLIED TO TUBULAR DELINEATORS SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.5.



CHANGEABLE MESSAGE SIGN

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
TRAVIS D. KOESTNER
NUMBER PE-30042
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.

TEMPORARY TRAFFIC CONTROL DEVICES

DATE EFFECTIVE: 10/01/2021
DATE PREPARED: 7/13/2021

616.10AY

SHEET NO. 5 OF 9

WARNING SIGNS

SIGN	SIZE (IN.)	AREA (SQ. FT.)	SHEETING	COLOR SYM. LEG. BRD.	COLOR BACK GROUND	DESIGNATION	DESCRIPTION
W01-1L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TURN (SYMBOL LEFT ARROW)
W01-1R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TURN (SYMBOL RIGHT ARROW)
W01-2L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	CURVE (SYMBOL LEFT ARROW)
W01-2R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	CURVE (SYMBOL RIGHT ARROW)
W01-3L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE TURN (SYMBOL LEFT ARROW)
W01-3R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE TURN (SYMBOL RIGHT ARROW)
W01-4L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE CURVE (SYMBOL LEFT ARROW)
W01-4R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE CURVE (SYMBOL RIGHT ARROW)
W01-4bL	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT ARROWS) (2)
W01-4bR	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT ARROWS) (2)
W01-4cL	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT ARROWS) (2)
W01-4cR	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT ARROWS) (2)
W01-6	60X30	12.50	ASTM 9 OR 11	BK	FL. OR	SHF	HORIZONTAL ARROW (SYMBOL)
W01-6a	72X36	18.00	ASTM 9 OR 11	BK	FL. OR	SHF	HORIZONTAL ARROW (SYMBOL ON PERMANENT BARRICADE) (1)
W01-7	60X30	12.50	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
W01-7a	72X36	18.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE HEAD HORIZONTAL ARROW (SYMBOL ON PERMANENT BARRICADE)(1)
W01-8	18X24	3.00	ASTM 9 OR 11	BK	FL. OR	SHF	CHEVRON (SYMBOL)
W01-8a	30X36	7.50	ASTM 9 OR 11	BK	FL. OR	SHF	CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
W03-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	STOP AHEAD (SYMBOL)
W03-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	YIELD AHEAD (SYMBOL)
W03-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SIGNAL AHEAD (SYMBOL)
W03-4	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	BE PREPARED TO STOP
W03-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SPEED LIMIT AHEAD
W04-1L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (SYMBOL FROM LEFT)
W04-1R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (SYMBOL FROM RIGHT)
W04-1a(L)	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (ARROW SYMBOL) (3)
W04-1a(R)	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (ARROW SYMBOL) (3)
W05-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD/BRIDGE/RAMP NARROWS (4)
W05-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ONE LANE BRIDGE
W05-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	NARROW LANES (3)
W06-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DIVIDED HIGHWAY (SYMBOL)
W06-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DIVIDED HIGHWAY END (SYMBOL)
W06-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TWO WAY TRAFFIC (SYMBOL)
W07-3a	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	NEXT XX MILES (PLAQUE)
W08-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	BUMP
W08-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DIP
W08-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	PAVEMENT ENDS
W08-4	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SOFT SHOULDER
W08-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SLIPPERY WHEN WET (SYMBOL)
W08-6	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRUCK CROSSING WITH FLAGS
W08-6c	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRUCK ENTRANCE (3)
W08-7a	36X36	9.00	ASTM 9 OR 11	BK	FL. OR	SHF	FRESH OIL/LOOSE GRAVEL (3)
W08-9	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW SHOULDER
W08-11	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	UNEVEN LANES
W08-12	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	NO CENTER LINE
W08-15	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	GROOVED PAVEMENT
W08-15p	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	MOTORCYCLE (PLAQUE)
W08-17(L)	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER DROP-OFF (SYMBOL LEFT)
W08-17(R)	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER DROP OFF (SYMBOL RIGHT) (4)
W08-17p	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER DROP-OFF (PLAQUE)
W10-1	42 RND.	9.62	ASTM 9 OR 11	BK	FL. YL	SHF	RAILROAD CROSSING
W012-1	24X24	4.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE DOWN ARROW (SYMBOL)
W012-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW CLEARANCE (SYMBOL)
W012-2x	24X18	3.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW CLEARANCE (PLAQUE) (3)
W012-2a	84X24	14.00	ASTM 9 OR 11	BK	FL. OR	SHF	OVERHEAD LOW CLEARANCE (FEET AND INCHES) (3)
W012-4	120X60	50.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW CLEARANCE XX FT XX IN XX MILES AHEAD (3)
W012-5	120X60	50.00	ASTM 9 OR 11	BK	FL. OR	SHF	WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD (3)
W013-1	30X30	6.25	ASTM 9 OR 11	BK	FL. OR	SHF	ADVISORY SPEED (PLAQUE)
W016-2	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	XXX FEET (PLAQUE)
W016-3	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	X MILE (PLAQUE)
W020-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD/BRIDGE/RAMP WORK AHEAD (4)
W020-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR AHEAD
W020-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD CLOSED AHEAD
W020-4	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ONE LANE ROAD AHEAD
W020-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT/CENTER/LEFT LANE CLOSED AHEAD (4)

(1) SIGN DEPICTION, ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

(2) REFER TO THE LATEST EDITION OF MUTCD PART VI BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA FOR SIGN DEPICTION. ARROW, BORDERS AND SPACING SHALL CONFORM TO THE GUIDELINES SET FORTH IN THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

(3) ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

(4) USE OF A SUPPLEMENTAL PLATE FOR LINE 1 IS ACCEPTABLE.

(5) PLAQUE AND APPLICABLE REGULATORY SIGN MAY BE MANUFACTURED AS ONE SIGN.

(6) SHF REFER TO STD. 903.02 SHEET 1 OF 8

GENERAL NOTES:

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA, UNLESS SPECIFIED OTHERWISE.

SIGN DIMENSIONS SHOWN ARE MINIMUM. NO ADDITIONAL PAYMENT WILL BE MADE IF CONTRACTORS USE LARGER SIGNS.

NO ADDITIONAL PAYMENT WILL BE MADE FOR PLATES.

ALL PLAQUES SHALL HAVE A BORDER. PLATES SHALL NOT HAVE A BORDER.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
TRAVIS D. KOESTNER
NUMBER PE-30042
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

TEMPORARY TRAFFIC CONTROL DEVICES
WARNING SIGNS

DATE EFFECTIVE: 10/01/2021
DATE PREPARED: 7/13/2021

616.10AY

SIGN	SIZE (IN.)	AREA (SQ. FT.)	SHEETING	COLOR SYM. LEG. BRD.	COLOR BACK GROUND	DESIGNATION	DESCRIPTION
			WARNING SIGNS				
W020-5a	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD (4)
W020-6a	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT/CENTER/LEFT LANE CLOSED (3)(4)
W020-7	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	FLAGGER (SYMBOL) WITH FLAGS
W021-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER WORK/SHOULDER WORK AHEAD (3)
W021-5a	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT SHOULDER CLOSED
W021-5b	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT SHOULDER CLOSED AHEAD
W022-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	BLASTING ZONE AHEAD
W022-2	42X36	10.50	ASTM 9 OR 11	BK	FL. OR	SHF	TURN OFF 2-WAY RADIO AND PHONE
W022-3	42X36	10.50	ASTM 9 OR 11	BK	FL. OR	SHF	END BLASTING ZONE
G022-1	15X21	2.19	ASTM 9 OR 11	BK	FL. OR	SHF	WET PAINT (ARROW PIVOTS) (3)
			GUIDE SIGNS				
E05-1	36X48	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	GORE EXIT (3)
E05-2	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	EXIT OPEN (3)
E05-2a	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	EXIT CLOSED
G020-1	60X24	10.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD WORK NEXT XX MILES
G020-2	48X24	8.00	ASTM 9 OR 11	BK	FL. OR	SHF	END ROAD WORK
G020-4	36X18	4.50	ASTM 9 OR 11	BK	FL. OR	SHF	PILOT CAR FOLLOW ME - REAR VEHICLE MOUNT SIGN
G020-4a	42X30	8.75	ASTM 9 OR 11	BK	FL. OR	SHF	PILOT CAR IN USE WAIT & FOLLOW - STATE ROUTE SIGN
G020-4a	18X12	1.50	ASTM 9 OR 11	BK	FL. OR	SHF	PILOT CAR IN USE WAIT & FOLLOW - NON-STATE ROUTE SIGN
G020-5aP	36X24	6.00	ASTM 9 OR 11	BK	FL. OR	SHF	WORK ZONE (PLAQUE) (3) (5)
M04-8a	24X18	3.00	ASTM 9 OR 11	BK	FL. OR	SHF	END DETOUR
M04-9L	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR (LEFT ARROW)
M04-9R	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR (RIGHT ARROW)
M04-9P	48X12	4.00	ASTM 9 OR 11	BK	FL. OR	SHF	STREET NAME (PLAQUE)
M04-10L	48X18	6.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR (ARROW LEFT)
M04-10R	48X18	6.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR (ARROW RIGHT)
			REGULATORY SIGNS				
R1-1	48X48	13.25	ASTM 4	WH	RD	SH	STOP
R1-2	48 TRI.	6.93	ASTM 4	RD	WH	SH	YIELD
R1-2a	36X36	9.00	ASTM 4	BK	WH	SH	TO ONCOMING TRAFFIC (PLAQUE)
R1-3p	30X12	2.50	ASTM 4	WH	RD	SH	ALL WAY (PLAQUE)
R2-1	36X48	12.00	ASTM 4	BK	WH	SH	SPEED LIMIT XX
R3-1	48X48	16.00	ASTM 4	BK/RD	WH	SH	NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00	ASTM 4	BK/RD	WH	SH	NO LEFT TURN (SYMBOL)
R3-3	36X36	9.00	ASTM 4	BK	WH	SH	NO TURNS
R3-4	48X48	16.00	ASTM 4	BK/RD	WH	SH	NO U-TURN (SYMBOL)
R3-7L	30X30	6.25	ASTM 4	BK	WH	SH	LEFT LANE MUST TURN LEFT
R3-7R	30X30	6.25	ASTM 4	BK	WH	SH	RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00	ASTM 4	BK	WH	SH	DO NOT PASS
R4-2	36X48	12.00	ASTM 4	BK	WH	SH	PASS WITH CARE
R4-7a	36X48	12.00	ASTM 4	BK	WH	SH	KEEP RIGHT (HORIZONTAL ARROW)
R4-8a	36X48	12.00	ASTM 4	BK	WH	SH	KEEP LEFT (HORIZONTAL ARROW)
R5-1	30X30	6.25	ASTM 4	RD	WH	SH	DO NOT ENTER
R5-1a	36X24	6.00	ASTM 4	WH	RD	SH	WRONG WAY
R6-1L	54X18	6.75	ASTM 4	BK	WH	SH	ONE WAY ARROW (LEFT)
R6-1R	54X18	6.75	ASTM 4	BK	WH	SH	ONE WAY ARROW (RIGHT)
R6-2L	24X30	5.00	ASTM 4	BK	WH	SH	ONE WAY (LEFT)
R6-2R	24X30	5.00	ASTM 4	BK	WH	SH	ONE WAY (RIGHT)
R9-9	24X12	2.00	ASTM 4	BK	WH	SH	SIDEWALK CLOSED
R9-11L	24X18	3.00	ASTM 4	BK	WH	SH	SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE
R9-11R	24X18	3.00	ASTM 4	BK	WH	SH	SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE
R10-6	24X36	6.00	ASTM 4	BK	WH	SH	STOP HERE ON RED (45° ARROW)
R11-2	48X30	10.00	ASTM 4	BK	WH	SH	ROAD CLOSED
R11-3a	60X30	12.50	ASTM 4	BK	WH	SH	ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50	ASTM 4	BK	WH	SH	ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00	ASTM 4	BK	WH/FL. OR	SH	FINE SIGN (3)
CONST-3X	56X12	4.67	ASTM 4	BK	WH	SH	SPEEDING/PASSING (PLATE) (3)
			MISCELLANEOUS SIGNS				
CONST-5	48X36	12.00	ASTM 4	WH	BL	SH	POINT OF PRESENCE
CONST-5	96X48	32.00	ASTM 4	WH	BL	SH	POINT OF PRESENCE
CONST-7	72X36	18.00	ASTM 4	WH/BK	BL/FL.OR	SH	RATE OUR WORK ZONE
CONST-7	48X24	8.00	ASTM 4	WH/BK	BL/FL.OR	SH	RATE OUR WORK ZONE
CONST-8	48X36	12.00	ASTM 9 OR 11	BK	FL.OR	SHF	WORK ZONE NO PHONE ZONE

(1) SIGN DEPICTION, ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

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(6) SH REFER TO STD. 903.02 SHEET 1 OF 8

(7) SHF REFER TO STD. 903.02 SHEET 1 OF 8

GENERAL NOTES:

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STATE OF MISSOURI
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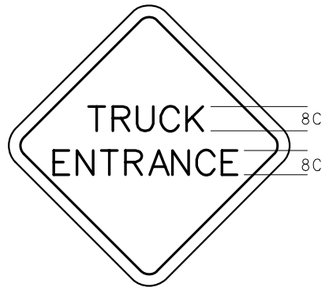
WARNING, GUIDE AND REGULATORY SIGNS

DATE EFFECTIVE: 01/01/2022
DATE PREPARED: 10/21/2021

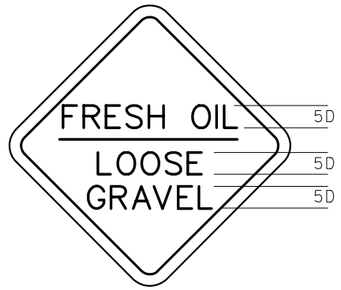
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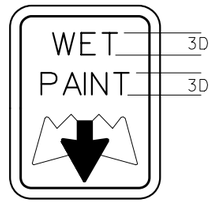
W05-5 (3)



W08-6c (3)



W08-7a (3)



G022-1 (3)

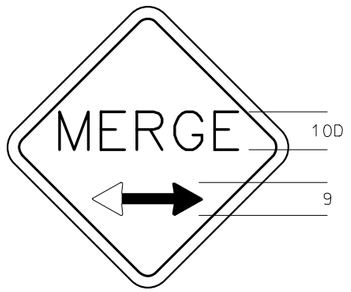
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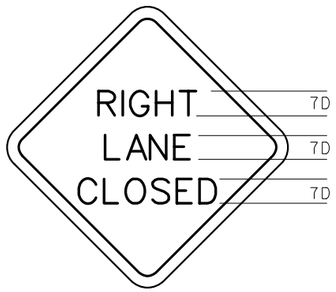
(3) ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

(4) USE OF A SUPPLEMENTAL PLATE FOR LINE 1 IS ACCEPTABLE.

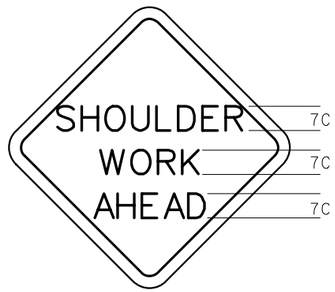
(5) PLAQUE AND APPLICABLE REGULATORY SIGN MAY BE MANUFACTURED AS ONE SIGN.



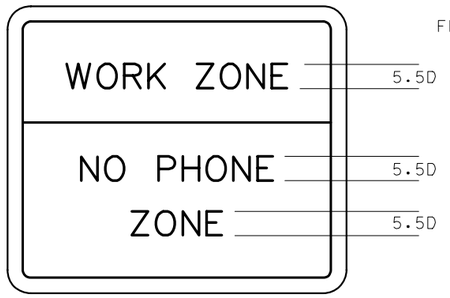
W04-1a



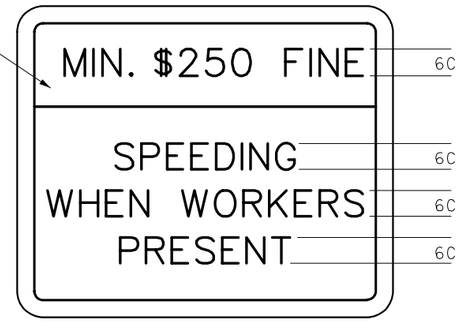
W020-6a (3)(4)



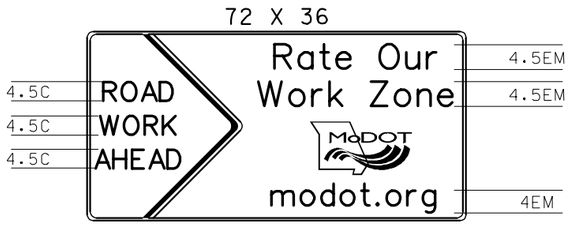
W021-5 (3)

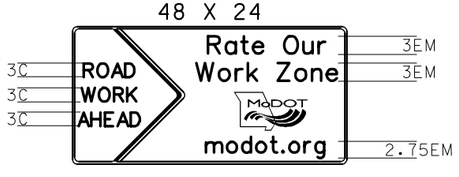


CONST-8 (3)



CONST-3A (3)

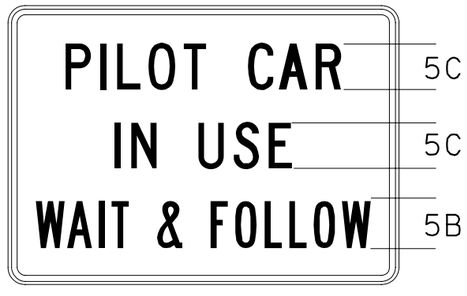




CONST-7



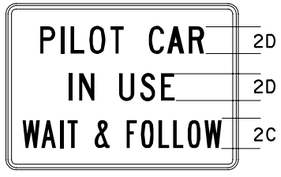
CONST-3X (3)



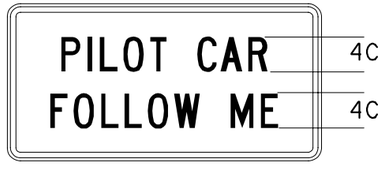
G020-4a (3)
42X30



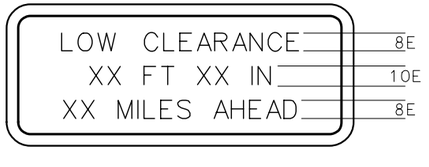
W012-5 (3)



G020-4a (3)(4)
18X12



G020-4 (3)
36X18



W012-4 (3)

GENERAL NOTES:

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA UNLESS SPECIFIED OTHERWISE.

SIGN DIMENSIONS SHOWN ARE MINIMUM. NO ADDITIONAL PAYMENT WILL BE MADE IF CONTRACTORS USE LARGER SIGNS.

NO ADDITIONAL PAYMENT WILL BE MADE FOR PLATES.

ALL PLAQUES SHALL HAVE A BORDER. PLATES SHALL NOT HAVE A BORDER.

LETTER DIMENSIONS SHALL BE AS SHOWN.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
TRAVIS D. KOESTNER
NUMBER PE-30042
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

TEMPORARY TRAFFIC CONTROL DEVICES

DATE EFFECTIVE: 10/01/2021
DATE PREPARED: 7/13/2021

616.10AY

SHEET NO. 8 OF 9

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

AREA OF STEEL REQUIRED FOR J5 BARS IN WINGS (SQ. IN./FT.)
WALL HEIGHT VS. WALL THICKNESS

① Backfill Slope = 2:1

Wall Thickness TX (in.)	Wall Height (ft.)															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
8	0.168	0.168	0.197	0.291	0.414	0.429	0.578	0.766	1.003							
9	0.168	0.168	0.168	0.244	0.346	0.456	0.477	0.626	0.809	1.034	1.312					
10	0.168	0.168	0.168	0.211	0.298	0.407	0.487	0.532	0.683	0.864	1.084	1.349				
11	0.168	0.168	0.168	0.185	0.261	0.357	0.475	0.520	0.592	0.746	0.929	1.147	1.405			
12		0.168	0.168	0.168	0.233	0.318	0.422	0.548	0.554	0.658	0.816	1.002	1.220	1.475		
13		0.168	0.168	0.168	0.210	0.287	0.380	0.493	0.588	0.589	0.729	0.892	1.081	1.301		
14			0.168	0.168	0.192	0.261	0.346	0.448	0.569	0.623	0.659	0.805	0.973	1.167	1.390	
15				0.168	0.176	0.240	0.317	0.411	0.521	0.652	0.658	0.734	0.886	1.059	1.258	
16					0.168	0.222	0.293	0.379	0.481	0.601	0.693	0.693	0.813	0.971	1.151	
17					0.168	0.206	0.273	0.352	0.447	0.557	0.686	0.729	0.752	0.897	1.061	1.247
18							0.255	0.329	0.417	0.520	0.639	0.764	0.764	0.834	0.985	1.156
19								0.309	0.391	0.487	0.599	0.727	0.800	0.800	0.920	1.078
20								0.291	0.368	0.459	0.563	0.684	0.821	0.836	0.863	1.011
21									0.348	0.433	0.532	0.645	0.774	0.871	0.871	0.952
22										0.411	0.504	0.611	0.733	0.870	0.907	0.970
23											0.479	0.580	0.696	0.826	0.943	0.943
24											0.456	0.552	0.662	0.786	0.925	0.979
25												0.527	0.632	0.750	0.882	1.015
26													0.604	0.717	0.843	0.984
27														0.686	0.807	0.942

AREA OF STEEL REQUIRED FOR J5 BARS IN WINGS (SQ. IN./FT.)
WALL HEIGHT VS. WALL THICKNESS

① Backfill Slope = 3:1

Wall Thickness TX (in.)	Wall Height (ft.)															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
8	0.168	0.168	0.168	0.187	0.264	0.362	0.425	0.475	0.612							
9	0.168	0.168	0.168	0.168	0.222	0.303	0.403	0.456	0.504	0.637	0.795					
10	0.168	0.168	0.168	0.168	0.191	0.261	0.346	0.450	0.487	0.541	0.671	0.824	1.005	1.217		
11	0.168	0.168	0.168	0.168	0.168	0.229	0.304	0.394	0.501	0.520	0.583	0.713	0.864	1.039		
12		0.168	0.168	0.168	0.168	0.204	0.271	0.351	0.445	0.554	0.554	0.629	0.760	0.910		
13		0.168	0.168	0.168	0.168	0.185	0.244	0.316	0.401	0.501	0.588	0.588	0.679	0.812	0.963	
14			0.168	0.168	0.168	0.168	0.223	0.288	0.365	0.455	0.560	0.623	0.623	0.733	0.868	
15				0.168	0.168	0.168	0.204	0.264	0.335	0.417	0.513	0.623	0.658	0.669	0.791	
16					0.168	0.168	0.189	0.244	0.309	0.385	0.474	0.575	0.690	0.693	0.727	
17					0.168	0.168	0.176	0.227	0.287	0.358	0.440	0.533	0.640	0.729	0.729	0.788
18							0.168	0.212	0.269	0.334	0.411	0.498	0.597	0.709	0.764	0.764
19								0.199	0.252	0.314	0.385	0.467	0.559	0.664	0.782	0.800
20								0.188	0.237	0.295	0.362	0.439	0.526	0.625	0.735	0.836
21									0.224	0.279	0.342	0.415	0.497	0.590	0.694	0.810
22										0.265	0.325	0.393	0.471	0.558	0.657	0.766
23											0.308	0.373	0.447	0.530	0.624	0.727
24											0.294	0.356	0.426	0.505	0.594	0.692
25												0.340	0.407	0.482	0.566	0.661
26													0.389	0.461	0.542	0.632
27														0.442	0.519	0.605

NOTE:

THE WALL HEIGHT IS EQUAL TO THE BARREL HEIGHT (HT) PLUS THE TOP SLAB THICKNESS (TS). WHEN WALL HEIGHT IS IN BETWEEN OR OUTSIDE TABULATED WALL HEIGHTS, THE AREA OF STEEL REQUIRED SHOULD BE INTERPOLATED BETWEEN OR EXTRAPOLATED FROM ADJACENT AREAS OF STEEL USING THE ACTUAL WALL HEIGHT.

IF AREA OF STEEL IN THE WALL OF THE CULVERT (J4 BARS) IS GREATER THAN THAT INDICATED IN THE TABLE, USE THE SAME SIZE AND SPACING FOR THE J5 BARS IN THE WINGS. HOWEVER, IF THE AREA OF STEEL PROVIDED BY MATCHING SIZE AND SPACING OF THE J4 BARS IS INSUFFICIENT, INCREASE THE SIZE OF THE J5 BARS (#8 MAX.) AND/OR DECREASE THE SPACING OF THE J5 BARS (6" MIN.). USE SMALLEST BAR SIZE POSSIBLE BASED ON MINIMUM SPACING.

MINIMUM STEEL TO BE USED IN THE WINGS FOR J5 BARS IS #4 BARS AT 14" CENTERS (AREA OF STEEL = 0.1683 SQ. IN./FT.)

① SEE STANDARD PLAN 703.37C, SHEET 2 OF 2 FOR BACKFILL SLOPE TO BE USED BASED ON SKEW.

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STATE OF MISSOURI
DENNIS W. HECKMAN
NUMBER PE-27141
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

CONCRETE BOX CULVERT

EXTERIOR WING REINFORCEMENT

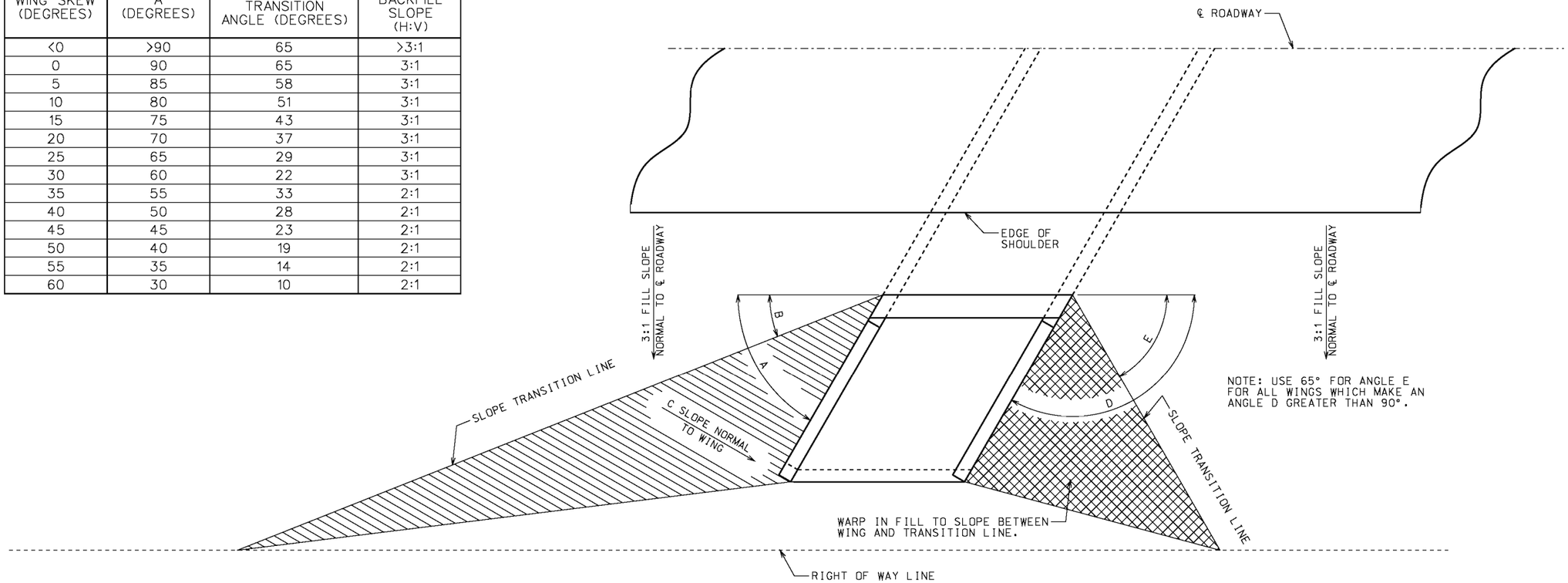
DATE EFFECTIVE: 04/01/2011
DATE PREPARED: 4/18/2011

703.37C

SHEET NO. 1 OF 2

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

WING BACKFILL TABLE			
WING SKEW (DEGREES)	A (DEGREES)	B TRANSITION ANGLE (DEGREES)	C BACKFILL SLOPE (H:V)
<0	>90	65	>3:1
0	90	65	3:1
5	85	58	3:1
10	80	51	3:1
15	75	43	3:1
20	70	37	3:1
25	65	29	3:1
30	60	22	3:1
35	55	33	2:1
40	50	28	2:1
45	45	23	2:1
50	40	19	2:1
55	35	14	2:1
60	30	10	2:1



PLAN OF WINGS AND SLOPE TRANSITION LINES

NOTE: BACKFILL TRANSITION ANGLE AND BACKFILL SLOPE SHALL APPLY TO ALL BOX CULVERTS REGARDLESS OF TYPE – SINGLE, DOUBLE, OR TRIPLE.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MoDOT

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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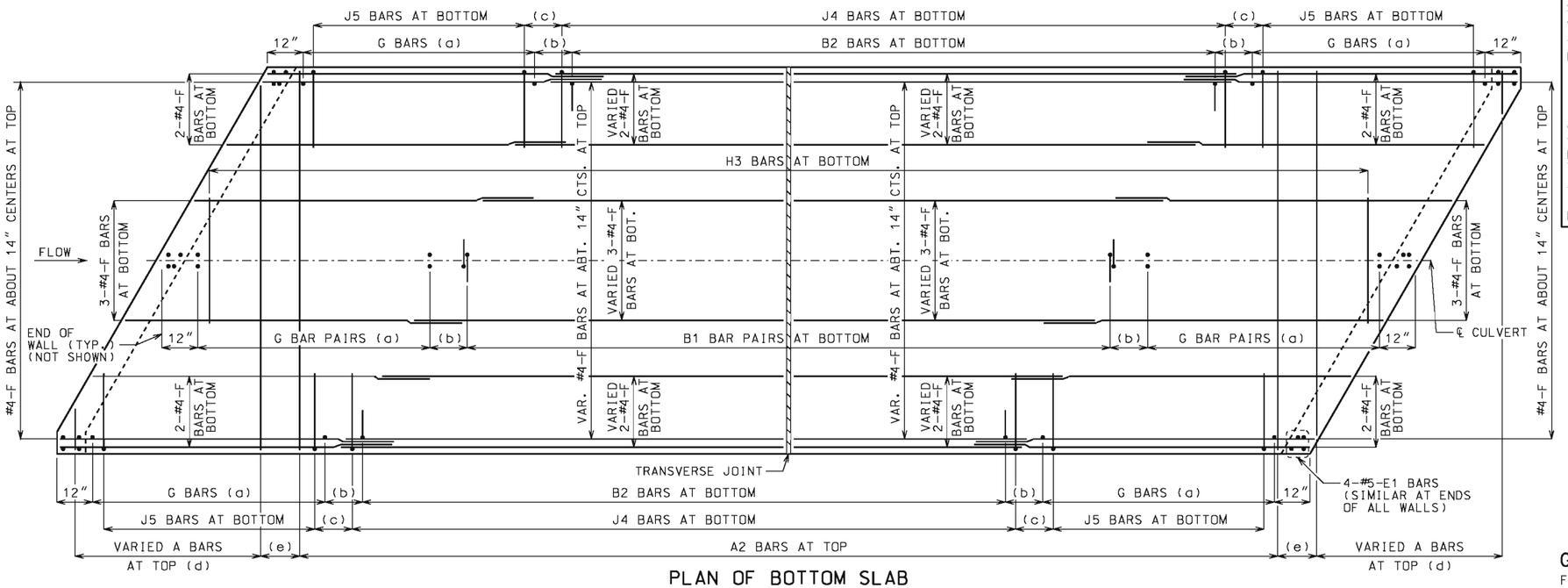
CONCRETE BOX CULVERT

EXTERIOR WING BACKFILL SLOPE TRANSITION

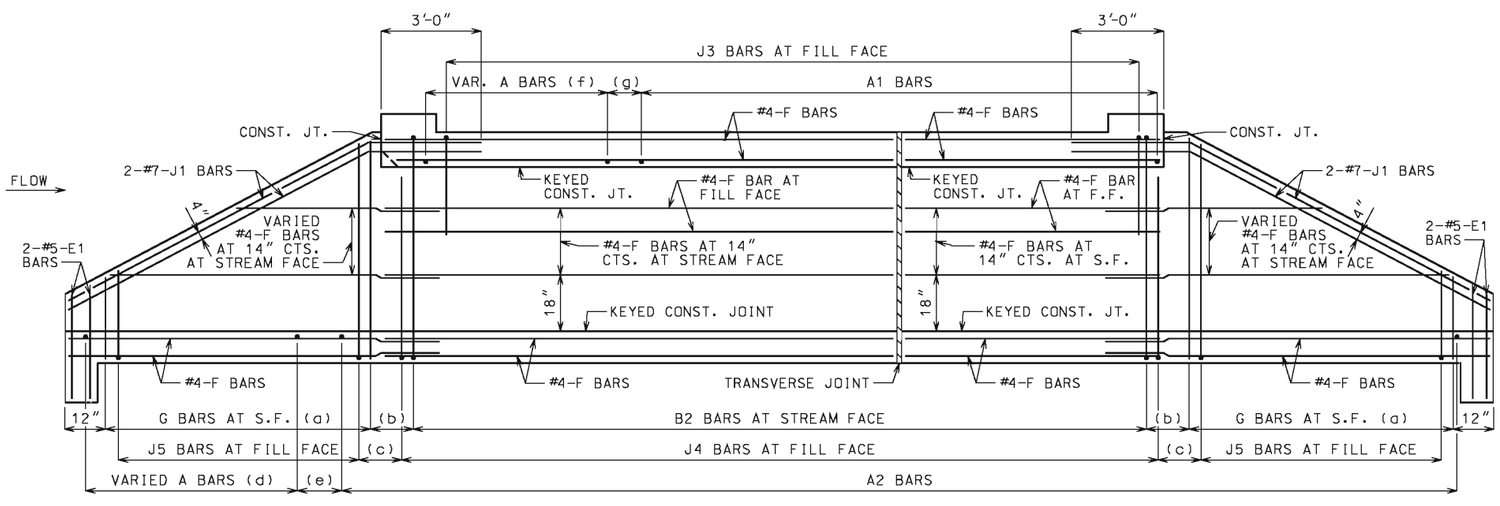
DATE EFFECTIVE: 04/01/2011
DATE PREPARED: 4/18/2011

703.37C

SHEET NO. 2 OF 2



PLAN OF BOTTOM SLAB



ELEVATION OF EXTERIOR WALL
J1 BARS MAY BE BENT IN FIELD OR SHOP.

LAYING OUT TRANVERSE JOINTS
UNLESS SHOWN ON BRIDGE PLANS

USE A TRANSVERSE JOINT WHEN BARREL LENGTH IS OVER 80 FEET. USE ADDITIONAL JOINTS TO LIMIT CUT SECTION LENGTH AND END SECTION BARREL LENGTH MEASURED ALONG CENTERLINE OF CULVERT TO 50 FEET.

MINIMUM END SECTION LENGTH SHALL BE 3 FEET MEASURED ALONG THE SHORTEST WALL FROM THE INSIDE FACE OF HEADWALL TO THE TRANSVERSE JOINT.

TO AVOID LOCATING TRANSVERSE JOINTS UNDER A TRAVELED WAY WITH DESIGN FILLS 2 FEET OR LESS THE FOLLOWING SHALL APPLY:

BARREL LENGTH UP TO 90 FEET WITHOUT A TRANSVERSE JOINT

CUT SECTION LENGTHS UP TO 60 FEET

WHEN BARREL AND CUT SECTION LENGTH RESTRICTIONS REQUIRE TRANSVERSE JOINTS TO BE LOCATED UNDER A TRAVELED WAY WITH DESIGN FILLS 2 FEET OR LESS. THE JOINTS SHALL BE LOCATED TO MINIMIZE THE LENGTH OF JOINT UNDER THE TRAVELED WAY.

TRAVELED WAY IS THE ROADWAY WIDTH MINUS SHOULDER WIDTHS.

FOR CUT SECTION DETAILS, SEE 703.46.

GENERAL NOTES:

FOR SECTIONS THRU BARREL, WINGS AND HEADWALLS, SEE SHEET 3 OF 3. FOR BAR SIZES, SPACING AND DIMENSIONS OF ALL REINFORCEMENT EXCEPT J5 BARS, SEE 703.47. FOR J5 BARS, SEE 703.37.

CONSTRUCTION JOINT KEY NOT SHOWN FOR CLARITY IN PLAN AND ELEVATION, SEE SHEET 3 OF 3 FOR DETAILS.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1½".

LAP LONGITUDINAL BARS A MINIMUM OF 23" AT SPLICES.

BEVELED HEADWALL SHALL BE LOCATED AT UPSTREAM END.

(a) SAME SIZE AND SPACING AS ADJACENT B BARS

(b) VARIES, 12" MAXIMUM

(c) J4 BAR SPACING

(d) SAME SIZE AND SPACING AS A2 BARS

(e) A2 BAR SPACING

(f) SAME SIZE AND SPACING AS A1 BARS

(g) A1 BAR SPACING

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NUMBER PE-27141
PROFESSIONAL ENGINEER
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CONCRETE DOUBLE BOX CULVERT

SKEW: RIGHT ADVANCE
WINGS: STRAIGHT

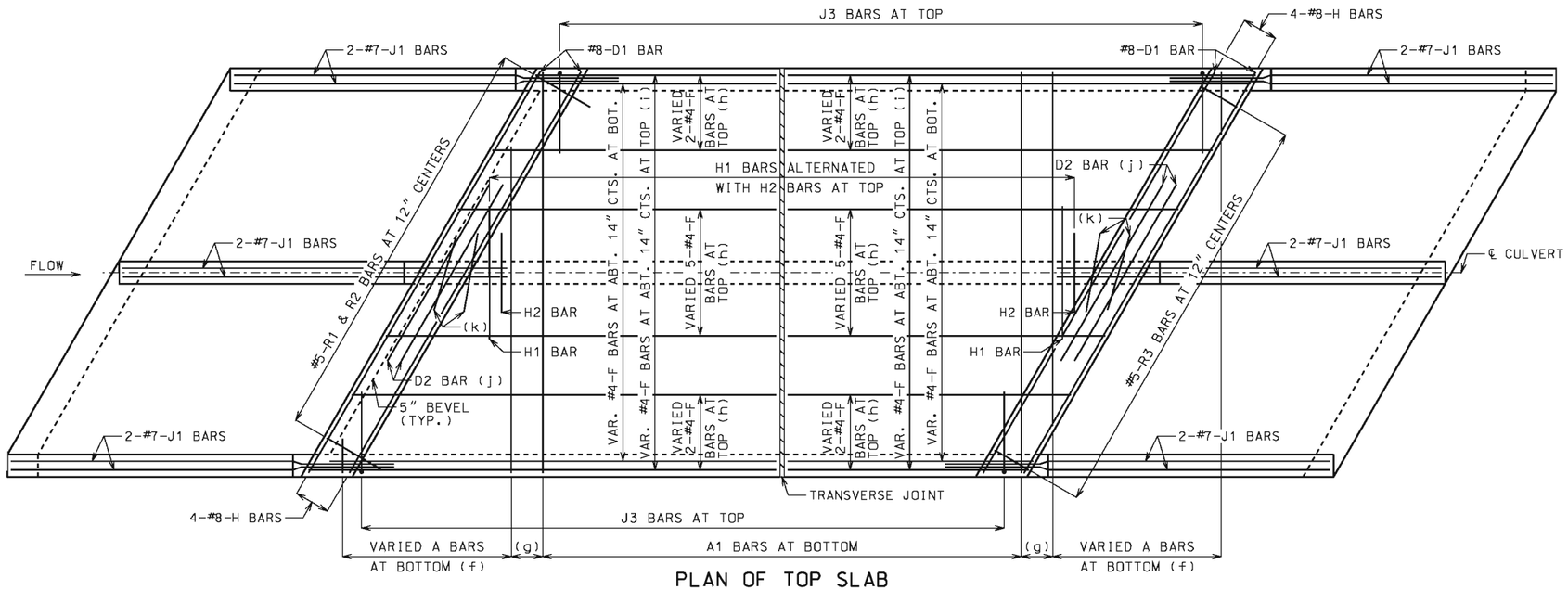
REINFORCEMENT

DATE EFFECTIVE: 10/01/2011
DATE PREPARED: 5/13/2015

703.44H

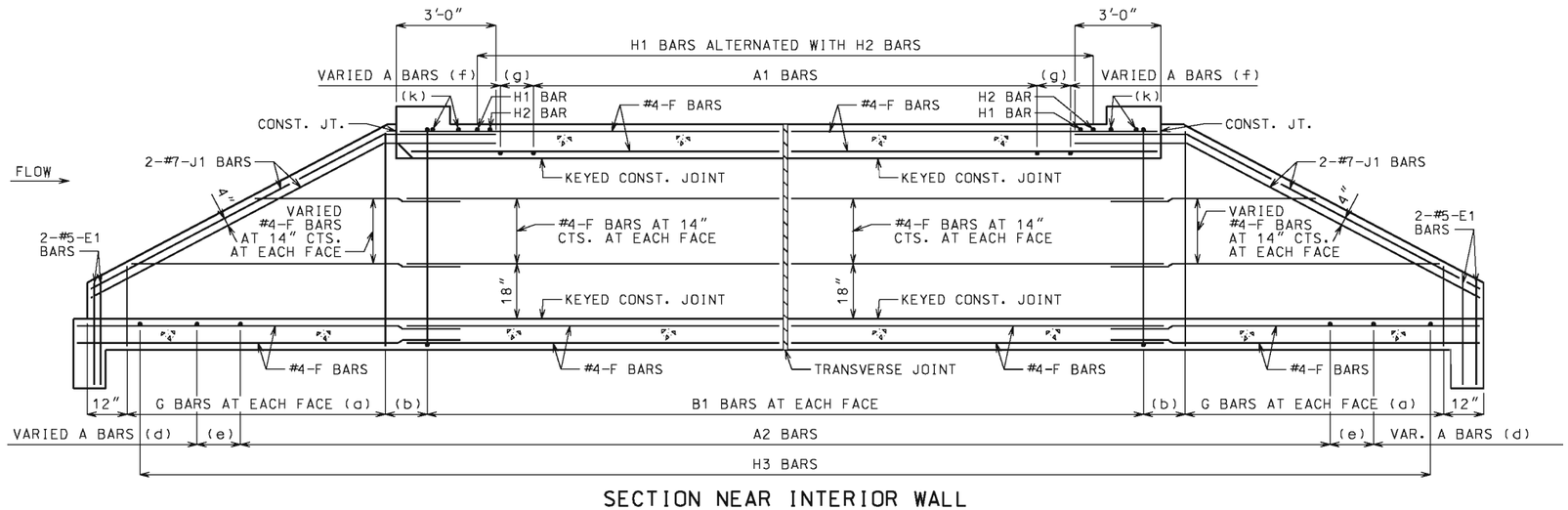
SHEET NO. 1 OF 3

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



PLAN OF TOP SLAB

B BARS IN WALLS ARE NOT SHOWN FOR CLARITY.
FOR PLACEMENT, SEE SHEET 1 OF 3.



SECTION NEAR INTERIOR WALL

J1 BARS MAY BE BENT IN FIELD OR SHOP.

GENERAL NOTES:

FOR SECTIONS THRU BARREL, WINGS AND HEADWALLS, SEE SHEET 3 OF 3. FOR BAR SIZES, SPACING AND DIMENSIONS OF ALL REINFORCEMENT EXCEPT J5 BARS, SEE 703.47. FOR J5 BARS, SEE 703.37.

CONSTRUCTION JOINT KEY NOT SHOWN FOR CLARITY IN PLAN AND SECTION, SEE SHEET 3 OF 3 FOR DETAILS.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1½".

LAP LONGITUDINAL BARS A MINIMUM OF 23" AT SPLICES.

BEVELED HEADWALL SHALL BE LOCATED AT UPSTREAM END.

(a) SAME SIZE AND SPACING AS ADJACENT B BARS

(b) VARIES, 12" MAXIMUM

(c) NOT SPECIFIED ON THIS SHEET

(d) SAME SIZE AND SPACING AS A2 BARS

(e) A2 BAR SPACING

(f) SAME SIZE AND SPACING AS A1 BARS

(g) A1 BAR SPACING

(h) FOR DESIGN FILLS OVER 2'-0"

(i) FOR DESIGN FILLS 2'-0" OR LESS

(j) NOT REQUIRED FOR CLEAR SPANS ≤ 10'-0"
#8 FOR CLEAR SPAN > 10'-0"
#9 FOR CLEAR SPAN > 13'-0"

IF REQUIRED, THE MINIMUM LENGTH EACH SIDE OF ℄ WALL SHALL BE THE GREATER OF 48 BAR DIAMETERS OR ¼ CLEAR SPAN. THE CLEAR SPAN IS PARALLEL TO LONG DIRECTION OF HEADWALL.

(k) H2 BARS AS REQUIRED, QUANTITY OF BARS VARIES WITH SKEW.

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NUMBER PE-27141
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

CONCRETE DOUBLE BOX CULVERT

SKEW: RIGHT ADVANCE
WINGS: STRAIGHT

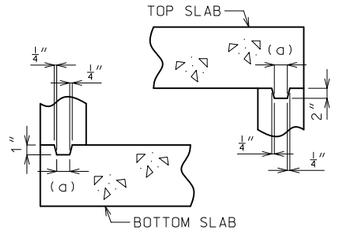
REINFORCEMENT

DATE EFFECTIVE: 10/01/2011
DATE PREPARED: 5/13/2015

703.44H

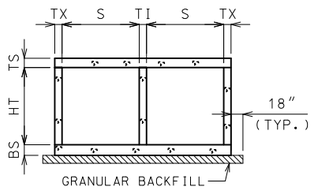
SHEET NO. 2 OF 3

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

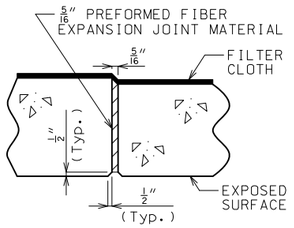


KEYED CONSTRUCTION JOINT

(a) APPROXIMATELY ONE-THIRD OF WALL THICKNESS



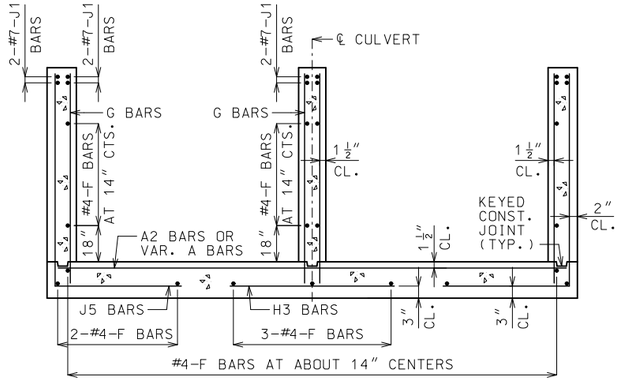
GRANULAR BACKFILL LIMITS AND MEMBER DIMENSIONS



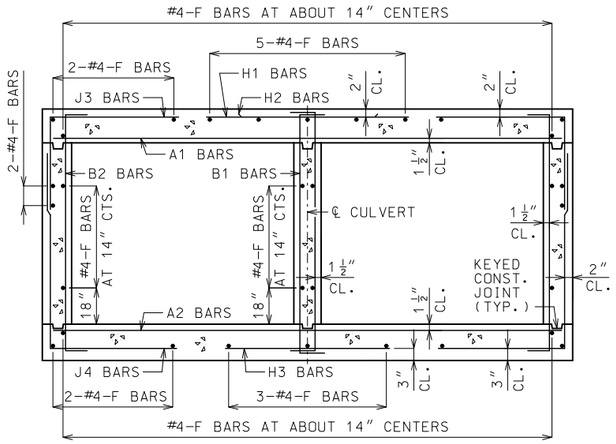
TRANSVERSE JOINT THRU BARREL

PREFORMED FIBER EXPANSION JOINT MATERIAL IN ACCORDANCE WITH SEC 1057 SHALL BE SECURELY STITCHED TO ONE FACE OF THE CONCRETE WITH 10 GAGE COPPER WIRE OR 12 GAGE SOFT DRAWN GALVANIZED STEEL WIRE.

FILTER CLOTH 3 FEET IN WIDTH AND DOUBLE THICKNESS SHALL BE CENTERED ON TRANSVERSE JOINTS IN TOP SLAB AND SIDEWALLS WITH EDGES SEALED WITH MASTIC OR TWO SIDED TAPE. FILTER CLOTH SHALL BE A SEPARATION GEOTEXTILE IN ACCORDANCE WITH SEC 1011. COST OF FURNISHING AND INSTALLING FILTER CLOTH WILL BE CONSIDERED COMPLETELY COVERED BY THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

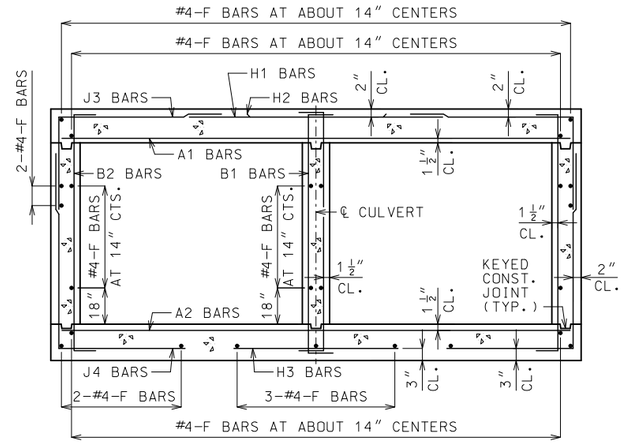


UPSTREAM AND DOWNSTREAM WINGS REINFORCEMENT



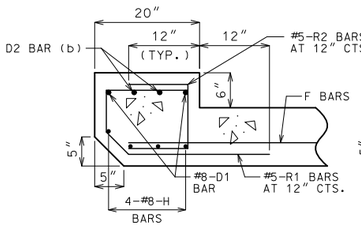
BARREL REINFORCEMENT

FOR DESIGN FILLS OVER 2'-0"



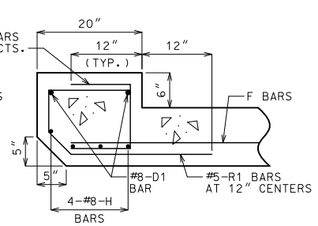
BARREL REINFORCEMENT

FOR DESIGN FILLS 2'-0" OR LESS



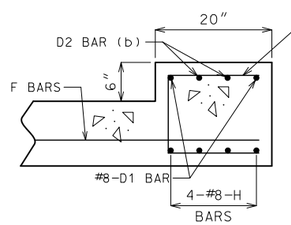
UPSTREAM HEADWALL REINFORCEMENT

NEAR INTERIOR WALL



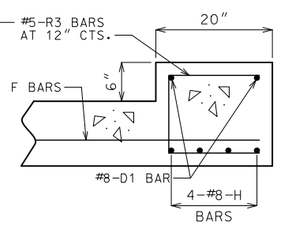
UPSTREAM HEADWALL REINFORCEMENT

NEAR MIDSPAN



DOWNSTREAM HEADWALL REINFORCEMENT

NEAR INTERIOR WALL



DOWNSTREAM HEADWALL REINFORCEMENT

NEAR MIDSPAN

(b) #8 FOR CLEAR SPAN > 10'-0"
#9 FOR CLEAR SPAN > 13'-0"
NOT REQUIRED FOR CLEAR SPANS ≤ 10'-0"

IF D2 BARS ARE REQUIRED, THE MINIMUM LENGTH EACH SIDE OF ℄ WALL SHALL BE THE GREATER OF 48 BAR DIAMETERS OR 1/4 CLEAR SPAN. THE CLEAR SPAN IS PARALLEL TO LONG DIRECTION OF HEADWALL.

GENERAL NOTES:

FOR MEMBER THICKNESS AND FOR BAR SIZES, SPACING AND DIMENSIONS OF ALL REINFORCEMENT EXCEPT J5 BARS, SEE 703.47. FOR J5 BARS, SEE 703.37.

BARREL AND WINGS SECTIONS ARE SYMMETRICAL ABOUT AND NORMAL TO ℄ CULVERT. HEADWALL SECTIONS ARE NORMAL TO LONG DIRECTION OF HEADWALL.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2".

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
DENNIS W. HECKMAN
NUMBER PE-27141
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

CONCRETE DOUBLE BOX CULVERT

SKEW: RIGHT ADVANCE
WINGS: STRAIGHT

SECTIONS

DATE EFFECTIVE: 01/01/2021
DATE PREPARED: 10/14/2020

703.44H

SHEET NO. 3 OF 3

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

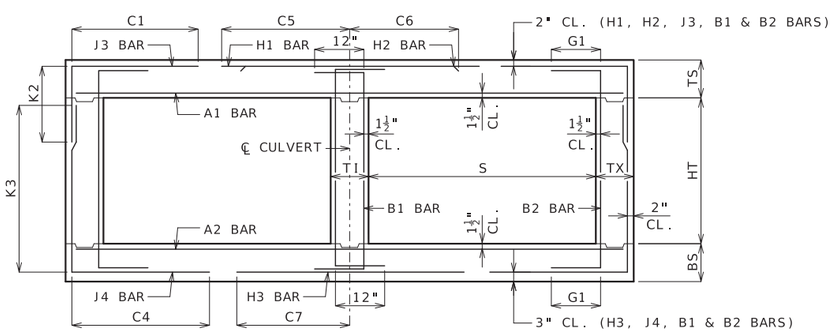
SPAN (S) = 8 FT HEIGHT (HT) = 4 FT OR 5 FT OR 6 FT

DESIGN FILL	MEMBER THICKNESS				TOP SLAB BARS												BOTTOM SLAB BARS											WALL BARS				
					A1 BARS		J3 BARS						H1 BARS			H2 BARS			A2 BARS		J4 BARS					H3 BARS			B1 BARS		B2 BARS		
										K2												K3									
	TS	BS	TX	TI	SIZE	SPA.	SIZE	SPA.	C1	HT=4'	HT=5'	HT=6'	SIZE	SPA.	C5	SIZE	SPA.	C6	SIZE	SPA.	SIZE	SPA.	C4	HT=4'	HT=5'	HT=6'	SIZE	SPA.	C7	SIZE	SPA.	SIZE	SPA.	G1
1 FT	12	9	8	8	5	7	4	8.5	41.8	28.0	28.0	28.0	4	12	81.5	4	12	26.5	4	7	4	8	43.0	53	65	77	5	6.5	41.0	5	12	5	12	12
2 FT	13	9	8	8	5	7.5	4	7.5	41.8	29.0	29.0	29.0	4	13	81.5	4	13	26.5	4	6.5	4	7	39.1	53	65	77	5	6	40.5	5	12	5	12	12
2'- 4'	13	9	8	8	5	7.5	5	6.5	41.8	29.0	29.0	29.0	5	15	81.5	5	15	26.5	4	6	4	6	39.1	53	65	77	6	6.5	42.5	5	9.5	5	12	12
4 FT	8	8	8	8	4	6	5	6.5	36.4	24.0	24.0	24.0	5	15	51.0	5	15	26.5	4	6	4	6	35.3	52	64	76	6	6.5	42.5	5	9.5	5	12	12
6 FT	8	9	8	8	4	6	5	6.5	34.3	24.0	24.0	24.0	5	15	42.5	5	15	26.0	4	6	4	7.5	33.1	53	65	77	6	7	42.0	5	12	5	12	12
8 FT	8	9	8	8	4	6	5	6	33.1	24.0	24.0	24.0	5	13	40.5	5	13	25.5	5	8.5	4	7	31.6	53	65	77	6	6.5	41.5	5	12	5	12	0
10 FT	9	10	8	8	5	8.5	4	6	31.9	25.0	25.0	25.0	5	14	39.5	5	14	25.5	5	8	4	8	30.4	54	66	78	6	7	41.5	5	12	5	12	0
12 FT	10	11	8	8	5	8	4	6	30.6	26.0	26.0	26.0	5	14	39.0	5	14	25.0	5	8	4	8	29.3	55	67	79	6	7	41.5	5	12	5	12	0
14 FT	11	12	8	8	5	8	4	6	29.8	27.0	27.0	27.0	5	14	38.5	5	14	25.0	5	7.5	4	7.5	28.6	56	68	80	6	7	41.5	5	12	5	12	0
16 FT	11	13	8	8	5	7.5	5	8.5	29.6	27.0	27.0	27.0	5	12	38.5	5	12	25.0	5	7.5	4	8	28.0	57	69	81	6	7	41.5	5	12	5	12	0
18 FT	12	13	8	8	5	7.5	4	6	27.5	28.0	28.0	28.0	5	13	37.5	5	13	25.0	5	7	4	7.5	26.8	57	69	81	6	7	41.0	5	12	5	12	0
20 FT	12	14	8	8	5	7	5	8.5	27.8	28.0	28.0	28.0	5	12	37.5	5	12	25.0	5	7	4	7.5	26.4	58	70	82	6	7	41.5	5	12	5	12	0
22 FT	13	15	8	8	5	6.5	6	8.5	27.4	29.0	29.0	29.0	5	12	37.5	5	12	25.0	5	7	4	7	26.4	59	71	83	6	7	41.5	5	12	5	12	0
24 FT	14	16	8	8	5	6.5	5	8.5	27.3	30.0	30.0	30.0	5	12	37.5	5	12	24.5	5	7	4	6.5	26.5	60	72	84	6	7	41.5	5	12	5	12	0
26 FT	15	16	8	8	5	6.5	5	8	31.9	31.0	31.0	31.0	6	16	46.5	6	16	33.0	5	6.5	4	6.5	26.6	60	72	84	6	7	41.0	5	12	5	12	0
28 FT	16	17	8	8	5	6	5	7	31.8	32.0	32.0	32.0	6	15	46.0	6	15	32.0	5	6.5	4	6	26.8	61	73	85	6	6.5	41.0	5	12	5	12	0
30 FT	16	18	8	8	5	6	5	7	32.0	32.0	32.0	36.0	6	15	46.0	6	15	33.0	5	6.5	5	6.5	26.6	62	74	86	6	6.5	41.0	5	12	5	12	0
32 FT	17	19	8	8	5	6	5	6.5	31.9	37.0	37.0	37.0	6	14	45.5	6	14	32.0	5	6.5	5	6.5	26.8	63	75	87	6	6.5	41.0	5	12	5	12	0
34 FT	18	19	8	8	6	8.5	5	6.5	31.8	38.0	38.0	38.0	6	13	45.5	6	13	31.0	5	6	5	6.5	26.9	63	75	87	6	6	41.0	5	12	5	11	0
36 FT	18	20	8	8	6	8	5	6.5	31.9	38.0	38.0	38.0	6	13	45.5	6	13	32.0	5	6	5	6	26.9	64	76	88	6	6	41.0	5	12	5	10	0
38 FT	19	21	8	8	6	8	5	6	32.0	39.0	39.0	39.0	6	13	45.0	6	13	31.0	5	6	6	7.5	30.1	65	77	89	6	6	41.0	5	12	5	9.5	0
40 FT	20	22	8	8	6	7.5	6	7.5	36.0	44.0	44.0	44.0	6	13	44.5	6	13	30.5	5	6	6	7	30.4	66	78	90	6	6	41.0	5	12	5	9.5	0
42 FT	20	22	8	8	6	7.5	6	7.5	36.0	44.0	44.0	44.0	6	12	44.5	6	12	30.5	6	8.5	6	7	30.3	66	78	90	6	6	41.0	5	12	5	9.5	0
44 FT	21	23	8	8	6	7.5	6	7	36.0	45.0	45.0	45.0	6	12	43.5	6	12	30.0	6	8.5	6	6.5	30.5	67	79	91	6	6	41.0	5	12	5	9.5	0
46 FT	21	23	8	8	6	7	6	7	36.0	45.0	45.0	45.0	6	12	43.5	6	12	30.0	6	8	6	6.5	30.5	67	79	91	7	7.5	44.0	5	12	5	9.5	0
48 FT	22	24	8	8	6	7	6	6.5	36.1	46.0	46.0	46.0	6	12	43.0	6	12	30.0	6	8	6	6	30.8	68	80	92	7	7.5	44.0	5	12	5	9	0
50 FT	22	24	8	8	6	6.5	6	6.5	36.1	46.0	46.0	46.0	6	12	43.0	6	12	30.0	6	7.5	6	6	30.8	68	80	92	7	7.5	44.0	5	12	5	8.5	0

SPAN (S) = 8 FT HEIGHT (HT) = 7 FT OR 8 FT OR 9 FT

DESIGN FILL	MEMBER THICKNESS				TOP SLAB BARS												BOTTOM SLAB BARS											WALL BARS				
					A1 BARS		J3 BARS						H1 BARS			H2 BARS			A2 BARS		J4 BARS					H3 BARS			B1 BARS		B2 BARS		
										K2												K3									
	TS	BS	TX	TI	SIZE	SPA.	SIZE	SPA.	C1	HT=7'	HT=8'	HT=9'	SIZE	SPA.	C5	SIZE	SPA.	C6	SIZE	SPA.	SIZE	SPA.	C4	HT=7'	HT=8'	HT=9'	SIZE	SPA.	C7	SIZE	SPA.	SIZE	SPA.	G1
1 FT	12	9	8	8	5	7	4	6.5	41.8	28.0	28.0	28.0	4	12	81.5	4	12	27.5	4	6	5	6.5	61.6	89	101	113	5	6	41.0	5	12	5	12	12
2 FT	13	10	8	8	5	7	4	6.5	41.8	29.0	29.0	29.0	4	13	81.5	4	13	27.0	4	6.5	4	6	58.3	90	102	114	5	6.5	40.5	5	12	5	12	12
2'- 4'	13	10	8	8	5	7	6	7.5	43.8	29.0	29.0	29.0	5	15	83.5	5	15	27.0	4	6	5	6	58.3	90	102	114	5	6	40.5	5	11	5	12	12
4 FT	8	9	8	8	4	6	6	7.5	43.8	24.0	24.0	28.0	5	15	83.5	5	15	27.0	4	6	5	6	52.3	89	101	113	5	6	40.0	5	11	5	12	12
6 FT	8	10	8	8	4	6	6	7.5	51.4	24.0	24.0	28.0	5	15	43.0	5	15	26.0	4	6.5	5	6	49.0	90	102	114	5	6.5	39.5	5	12	5	12	12
8 FT	8	11	8	8	4	6	6	7.5	46.6	24.0	24.0	28.0	5	13	40.5	5	13	25.5	4	6.5	5	6.5	46.3	91	103	115	5	6	39.0	5	12	5	12	0
10 FT	9	11	8	8	5	8.5	6	7	45.3	25.0	25.0	29.0	5	14	39.5	5	14	25.5	5	8.5	5	6	43.6	91	103	115	5	6	38.5	5	12	5	11	0
12 FT	10	12	8	8	5	8	6	7	44.4	26.0	30.0	30.0	5	14	39.0	5	14	25.0	5	8.5	5	6	42.5	92	104	116	5	6	38.5	5	12	5	10	0
14 FT	11	12	8	8	5	8	6	7	43.5	27.0	31.0	35.0	5	14	38.5	5	14	25.0	5	7.5	6	7	44.4	92	104	116	6	7	41.5	5	12	5	9.5	0
16 FT	11	13	8	8	5	7.5	6	6.5	42.9	27.0	31.0	35.0	5	12	38.0	5	12	25.0	5	7.5	6	7	44.0	93	105	117	6	7.5	41.5	5	12	5	9.5	0
18 FT	12	13	8	8	5	7.5	5	6	37.1	28.0	32.0	32.0	5	13	37.5	5	13	25.0	5	7	6	7.5	41.1	93	105	117	6	7	41.0	5	12	5	9.5	0
20 FT	12	14	8	8	5	7	6	7	39.9	32.0	32.0	36.0	5	12	37.5	5	12	25.0	5	7	6	7.5	41.1	94	106	118	6	7	41.0	5	12	5	9.5	0
22 FT	13	15	8	8	5	6.5	6	7	39.9	33.0	33.0	37.0	5	12	37.0	5	12	25.0	5	7	6	7.5	41.3	95	107	119	6	7	41.0	5	12	5	9.5	0
24 FT	14	16	8	8	5	6.5	6	7	40.0	34.0	34.0	38.0	5	12	37.0	5	12	24.0	5	7	6	7	41.4	96	108	120	6	7	41.0	5	12	5	9	0
26 FT	15	16	9	8	5	6.5	5	6	42.4	35.0	35.0	35.0	6	16	45.5	6	16	32.0	5	6.5	5	6	38.5	96	108	120	6	7	41.0	5	12	5	8.5	0
28 FT	15	17	10	8	5	6	5	6.5	42.9	31.0	35.0	35.0	6	16	45.5	6	16	33.0	5	6.5	5	7.5	38.8	97	109	121	6	6.5	41.5	5	12	5	8	0
30 FT	16	18	11	8	5	6	5	6.5	43.6	32.0	36.0	36.0	6	15	44.5	6	15	31.5	5	6.5	5	7	39.1	98	110	122	6	6.5	41.5	5	12	5	8.5	0
32 FT	17	19	11	8	5	6	5	6.5	43.6	33.0	37.0	37.0	6	14	44.0	6	14	31.0	5	6.5	5	7	39.4	99	111	123	6	6	41.5	5	12	5	7.5	0
34 FT	17	20	11	8	6	8	5	6	43.8	37.0	37.0	37.0	6	14	44.0	6	14	31.5	5	6.5	5	7	39.5	100	112	124	6	6	41.5	5	12	5	7.5	0
36 FT	18	20	12	8	6	8	5	6.5	44.3	38.0	38.0	38.0	6	13	43.5	6	13	30.5	5	6	5	6.5	39.6	100	112	124	6	6	41.5	5	12	5	7.5	0
38 FT	18	21	12	8	6	7.5	5	6	44.4	38.0	38.0	38.0	6	13	43.5	6	13	31.0	5	6	5	6.5	39.9	101	113	125	6	6	41.5	5	12	5	7	0
40 FT	19	22	12	8	6	7.5	6	8.5	48.4	39.0	39.0	39.0	6	13	42.5	6	13	30.0	5	6	5	6.5	40.1	102	114	126	6	6	41.5	5	12	5	7	0
42 FT	19	22	13	8	6	7	5	6	45.0	39.0	39.0	39.0	6	13	42.5	6	13	30.5	6	8	5	6.5	40.3	102	114	126	7	7.5	44.5	5	12	5	7	0
44 FT	20	23	13	8	6	7	6	8.5	49.1	40.0	40.0	40.0	6	13	42.0	6	13	30.0	6	8	5	6	40.5	103	115	127	7	7.5	44.5	5	12	5	7	0
46 FT	20	24	13	8	6	6.5	6	8	49.3	40.0	40.0	40.0	6	12	42.0	6	12	30.0	6	8	5	6	40.6	104	116	128	7	7.5	44.5	5	12	5	6.5	0
48 FT	21	24	13	8	6	7	6	7.5	49.1	41.0	41.0	41.0	6	13	41.5	6	13	29.5	6	8	5	6	40.8	104	116	128	7	7.5	44.5	5	12	5	6.5	0
50 FT	21	25	14	8	6	6.5	6	8	49.9	41.0	41.0	41.0	6	13	41.5	6	13	29.5	6	8	5	6.5	41.1	105	117	129	7	7.5	44.5	5	12	5	6.5	0

BAR DIMENSIONS DIAGRAM
SYMMETRICAL ABOUT ℄ CULVERT.



IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

GENERAL NOTES:

IF DESIGN FILL IS BETWEEN TABULATED DESIGN FILLS, USE THE NEXT GREATER TABULATED DESIGN FILL, EXCEPT FOR DESIGN FILLS BETWEEN 2 FEET AND 4 FEET. FOR DESIGN FILLS BETWEEN 2 FEET AND 4 FEET USE THE MEMBER THICKNESS, AREA OF REINFORCEMENT AND BAR DIMENSIONS FROM THE 2'- 4' TABULATED DESIGN FILL.

SPECIAL DESIGNS ARE REQUIRED WHEN THE DESIGN FILL IS LESS THAN 1 FOOT OR GREATER THAN 50 FEET.

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

DESIGN FILLS ARE MEASURED FROM THE TOP OF TOP SLAB TO THE TOP OF EARTH FILL OR ROADWAY.

CULVERTS MEET STRENGTH AND SERVICEABILITY REQUIREMENTS FOR THE DESIGN VEHICULAR LIVE LOAD HL-93 MINUS THE LANE LOAD.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
BRYAN A. HARTNAGEL
NUMBER PE-2002024473
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

CONCRETE DOUBLE BOX CULVERT

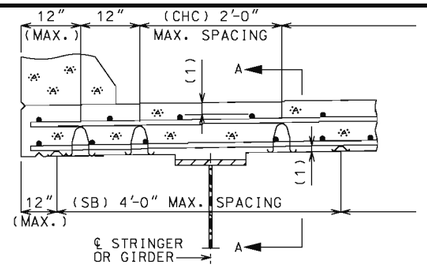
MEMBER THICKNESS
BAR SIZE, SPACING & DIMENSIONS

SPAN (S): 8 FEET
HEIGHT (HT): 4 THRU 9 FEET

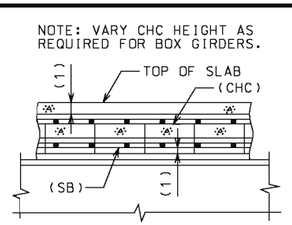
DATE EFFECTIVE: 7/1/2023
DATE PREPARED: 3/22/2023

703.47A

SHEET NO.
10 OF 27



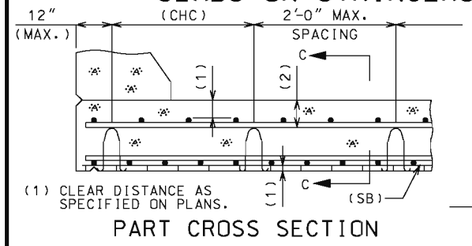
PART CROSS SECTION



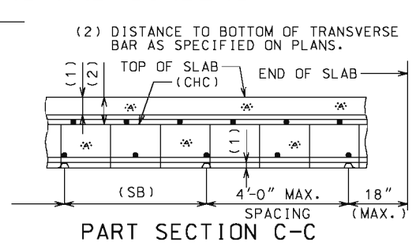
PART SECTION A-A

W BEAM SPANS
PLATE GIRDER SPANS
PRESTRESSED GIRDER SPANS
DECK GIRDER SPANS
BOX GIRDER SPANS (TOP SLAB ONLY)

SLABS ON STRINGERS AND GIRDERS

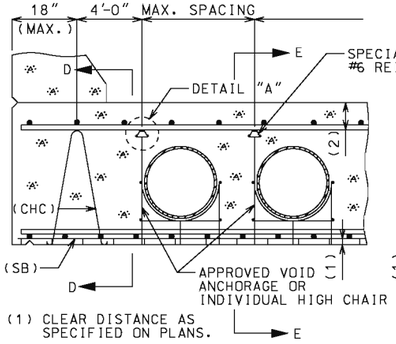


PART CROSS SECTION

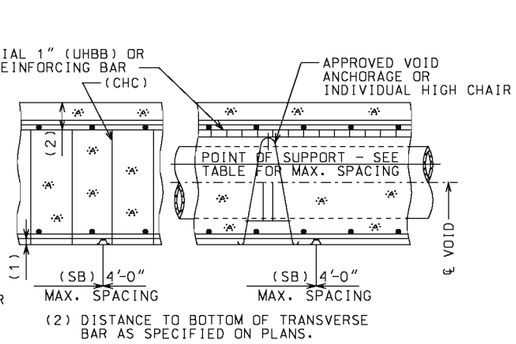


PART SECTION C-C

SLAB SPANS - NO VOIDS (SOLID)
TRUSSES - NO LONGITUDINAL STRINGERS



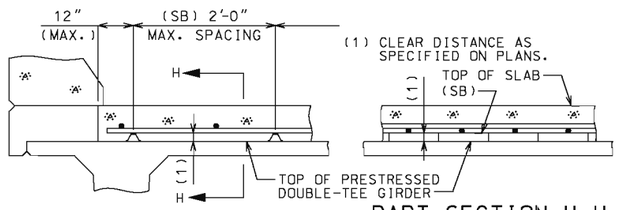
PART CROSS SECTION



PART SECTION D-D

PART SECTION E-E

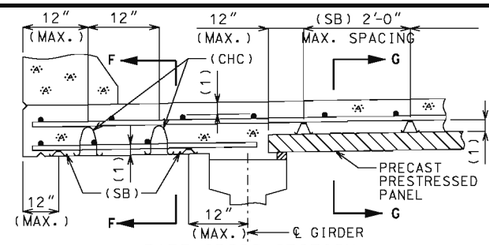
SLAB SPANS - WITH VOIDS



PART CROSS SECTION

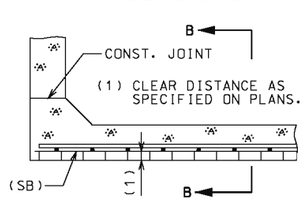
PART SECTION H-H

SLABS ON P/S DOUBLE-TEE GIRDER

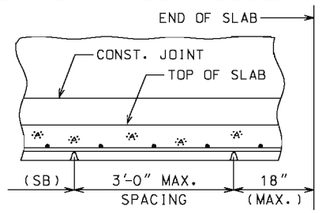


PART CROSS SECTION

SLABS ON PRECAST PRESTRESSED PANELS

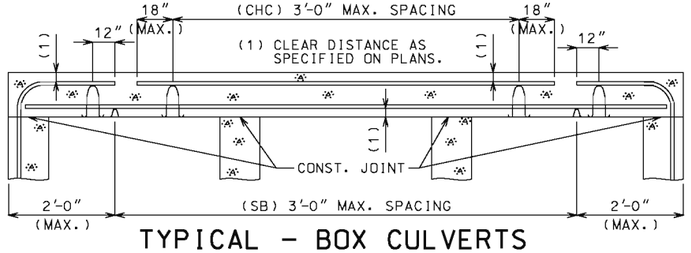


PART CROSS SECTION

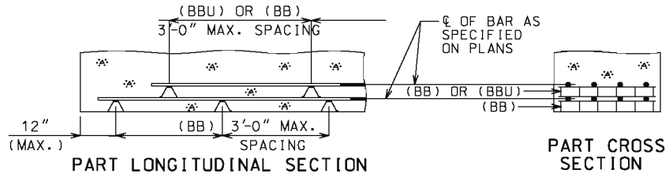


PART SECTION B-B

BOX GIRDER - BOTTOM SLAB



TYPICAL - BOX CULVERTS

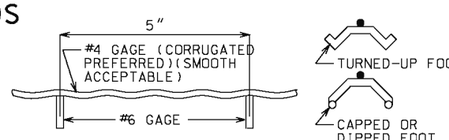


PART LONGITUDINAL SECTION

PART CROSS SECTION

DECK GIRDERS
SUBSTRUCTURE BEAMS
VOIDED SLAB DROP PANELS
BOX GIRDER CROSS BEAMS
} RECOMMENDED METHOD

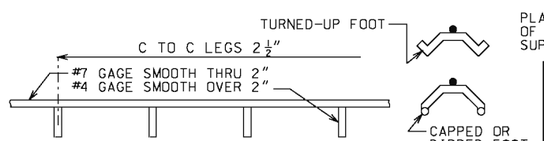
TYPICAL - BEAMS & GIRDERS



ELEVATION

SECTION

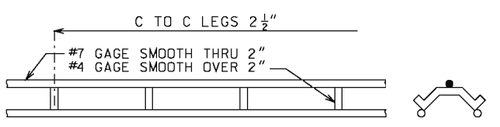
SLAB BOLSTER - SB



ELEVATION

SECTION

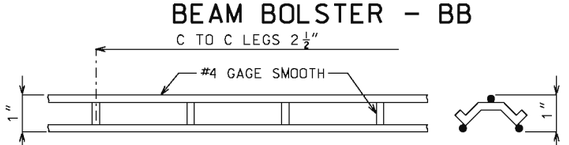
BEAM BOLSTER - BB



ELEVATION

SECTION

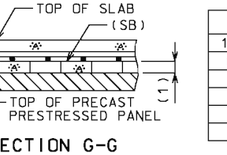
BEAM BOLSTER UPPER - BBU



ELEVATION

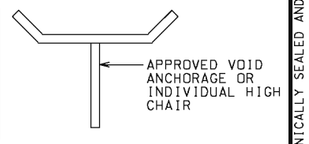
SECTION

SPECIAL 1" UPPER HEAVY BEAM BOLSTER (SPECIAL 1" UHBB)

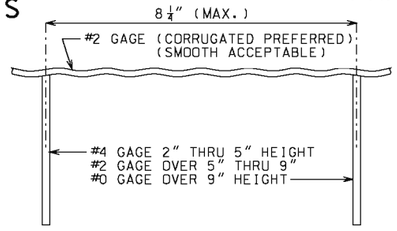


PART SECTION F-F

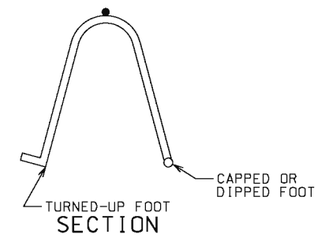
PART SECTION G-G



PART DETAIL "A"



ELEVATION



SECTION

CONTINUOUS HIGH CHAIR - CHC

ALL CONTACT POINTS ON WIRE BAR SUPPORTS SHALL BE SECURELY WELDED.

A TURNED-UP, CAPPED OR DIPPED FOOT SHALL BE ON ALL BAR SUPPORTS BEARING ON FORMS. WHERE BAR SUPPORTS ARE USED ON EARTH OR AGGREGATE SUBGRADES, SUITABLE PLATES, CONTINUOUS BARS OR PRECAST CONCRETE BAR SUPPORTS SHALL BE PROVIDED TO PREVENT DISPLACEMENT OF THE SUPPORT FOOT.

ALL DIMENSIONS TO REINFORCING STEEL ARE TO ℄ BAR EXCEPT WHERE CLEAR DISTANCE FROM FACE OF CONCRETE IS INDICATED. HEIGHT OF BAR SUPPORTS TO BE THAT REQUIRED TO SUPPORT BARS IN EXACT POSITIONS SHOWN ON PLANS.

SPIRAL REINFORCING SHALL BE SUPPORTED BY USE OF APPROVED SPIRAL SPACERS AT NOT MORE THAN 3'-0" CENTERS. PAYMENT FOR SPACERS AND ALL OTHER BAR SUPPORTS WILL BE CONSIDERED COMPLETELY COVERED BY THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

WHEN BARS OF DIFFERENT SIZES ARE USED IN THE SAME MEMBERS, THE SELECTION OF BAR SUPPORTS SHALL BE BASED ON THE LARGER SIZE.

SUPPORTS FOR THE UPPER LAYERS NEED NOT BE DIRECTLY OVER THE SUPPORTS BELOW.

ALL BAR SUPPORTS SHALL BE IN ACCORDANCE WITH C.R.S.I. MANUAL OF STANDARD PRACTICE, EXCEPT AS SHOWN.

WIRE BAR AND REINFORCING BAR SUPPORTS USED WITH EPOXY COATED REINFORCING STEEL SHALL BE COATED ENTIRELY WITH AN EPOXY OR PLASTIC MATERIAL.

ALL UNCOATED WIRE BAR SUPPORTS SHALL HAVE CAPPED OR DIPPED FEET FOR THOSE APPLICATIONS WHERE MINIMIZING RUST SPOTS AND SURFACE BLEMISHES ARE EXPECTED TO BECOME VISIBLE. COLOR SHALL MATCH CONCRETE.

INDIVIDUAL HIGH CHAIRS AND SPACING WILL BE PERMITTED AS APPROVED BY THE ENGINEER. INDIVIDUAL HIGH CHAIRS SHALL NOT BE PERMITTED FOR USE ON SOLID SLAB AND VOIDED SLAB BRIDGES, EXCEPT AS SHOWN.

PLASTIC BAR SUPPORTS SHALL MEET OR EXCEED THE LOAD CARRYING CAPACITY OF AND BE PLACED AT THE SAME SPACING FOR STEEL WIRE BAR SUPPORTS AS SHOWN.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

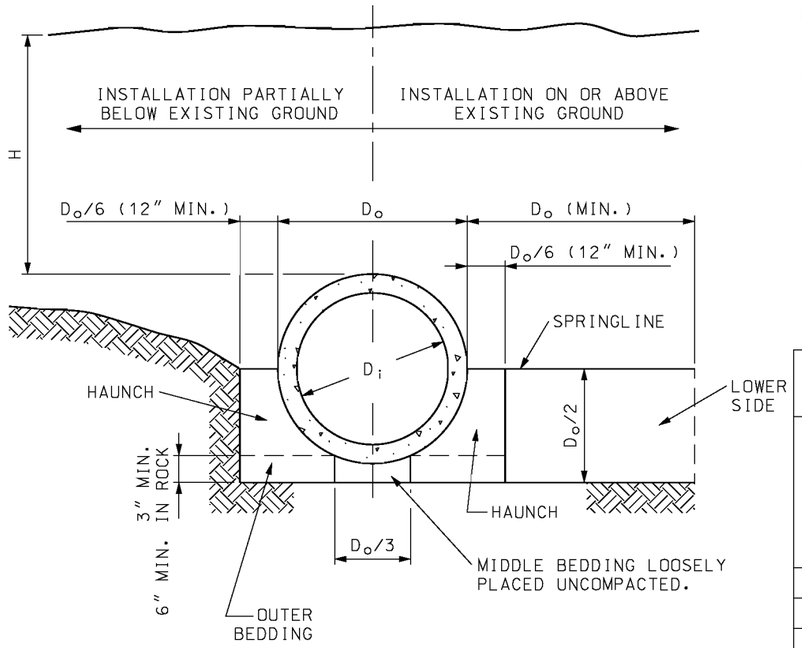
STATE OF MISSOURI
DENNIS W. HECKMAN
NUMBER PE-27141
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

BAR SUPPORTS FOR CONCRETE REINFORCEMENT

DATE EFFECTIVE: 07/01/2004
DATE PREPARED: 9/3/2009

706.35H

SHEET NO. 1 OF 1



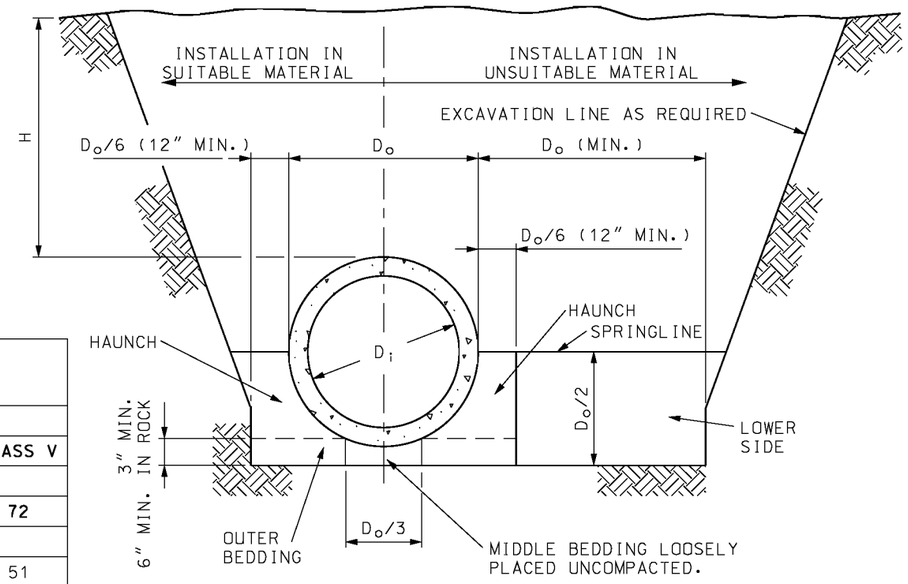
EMBANKMENT INSTALLATIONS

CONSTRUCTION SEQUENCE
1. PLACE BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE SPRINGLINE.
5. COMPLETE BACKFILL ACCORDING TO SPECIFICATIONS.

MAXIMUM DIAMETER AND MAXIMUM FILL HEIGHT

INSTALLATION TYPE	CLASS OF PIPE				
	CLASS I	CLASS II	CLASS III	CLASS IV	CLASS V
	MAXIMUM DIAMETER (INCHES)				
	108	108	108	84	72
	MAXIMUM FILL HEIGHT IN (FEET)				
TYPE 1	12	15	21	33	51
TYPE 2	9	12	17	26	39
TYPE 3	7	9	13	20	30
TYPE 4	4	6	9	13	20

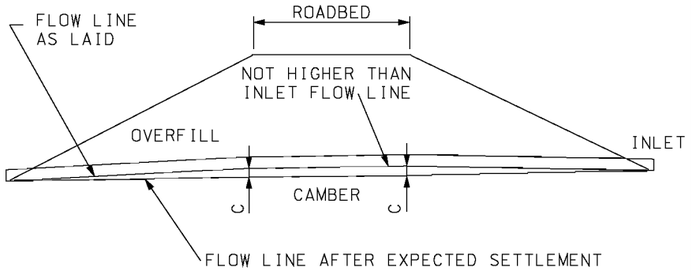
IF FILL HEIGHT EXCEEDS 51 FEET AND PIPE DIAMETER IS 36 INCHES OR LESS A SPECIAL PIPE DESIGN AND INSTALLATION PROCEDURE SHALL BE REQUIRED. IF FILL HEIGHT EXCEEDS 51 FEET AND PIPE DIAMETER IS GREATER THAN 36 INCHES A SPECIAL DESIGN PIPE IS NOT ALLOWED.



TRENCH INSTALLATION

- LEGEND -

D_i = NORMAL INSIDE DIAMETER OF PIPE.
D_o = OUTSIDE DIAMETER OF PIPE.
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
= UNDISTURBED SOIL



NOTE:
ON YIELDING SOIL, PIPE CULVERTS SHALL BE PLACED ON A CAMBERED FLOW LINE. THE AMOUNT OF CAMBER WILL VARY WITH SOIL CONDITION AND SHALL BE SPECIFIED ON THE DESIGN PLANS.

TYPICAL CAMBERED FLOW LINE

BEDDING AND COMPACTION REQUIREMENTS

INSTALLATION TYPE	BEDDING THICKNESS	COMPACTION REQUIREMENTS (MIN. STANDARD PROCTOR %)					
		HAUNCH AND OUTER BEDDING			LOWER SIDE BEDDING		
		CATEGORY 1 SOIL (A)	CATEGORY 2 SOIL (B)	CATEGORY 3 SOIL (C)	CATEGORY 1 SOIL (A)	CATEGORY 2 SOIL (B)	CATEGORY 3 SOIL (C)
1	D_o/24 MINIMUM, NOT LESS THAN 3". IF ROCK FOUNDATION, USE D_o/12 MIMIMUM, NOT LESS THAN 6".	95	N/A	N/A	90	95	100
2	D_o/24 MINIMUM, NOT LESS THAN 3". IF ROCK FOUNDATION, USE D_o/12 MIMIMUM, NOT LESS THAN 6".	90	95	N/A	85	90	95
3	D_o/24 MINIMUM, NOT LESS THAN 3". IF ROCK FOUNDATION, USE D_o/12 MIMIMUM, NOT LESS THAN 6".	85	90	95	85	90	95
4	D_o/24 MINIMUM, NOT LESS THAN 3". IF ROCK FOUNDATION, USE D_o/12 MIMIMUM, NOT LESS THAN 6".	NO COMPACTION REQUIRED	NO COMPACTION REQUIRED	85	NO COMPACTION REQUIRED	NO COMPACTION REQUIRED	85

(A) GRAVELLY SAND
(B) SANDY-SILT
(C) SILTY CLAY

GENERAL NOTES:

MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE BETWEEN PIPES OF $\frac{1}{2}$ D_o OR 12", WHICHEVER IS GREATER, BUT NOT TO EXCEED 36".

CLASS I AND CLASS II REINFORCED CONCRETE PIPE SHALL ONLY BE USED FOR SEWERS IN TRENCHES OUTSIDE ROADBED AND STREET LIMITS.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
ERIC E. SCHROETER
NUMBER PE-28411
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

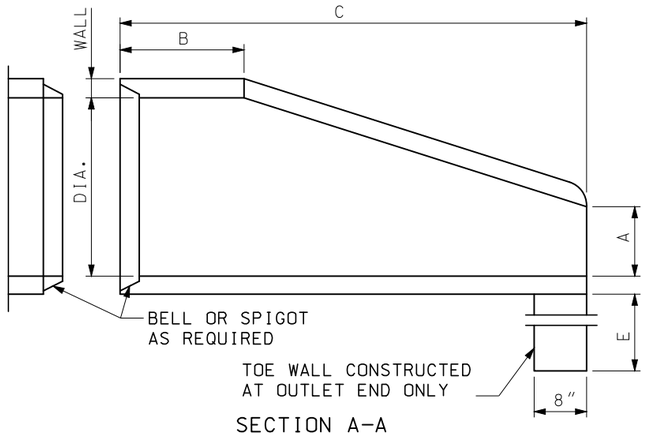
RIGID CULVERT INSTALLATION METHODS
REINFORCED CONCRETE PIPE CULVERTS

DATE EFFECTIVE: 04/01/2015
DATE PREPARED: 2/20/2015

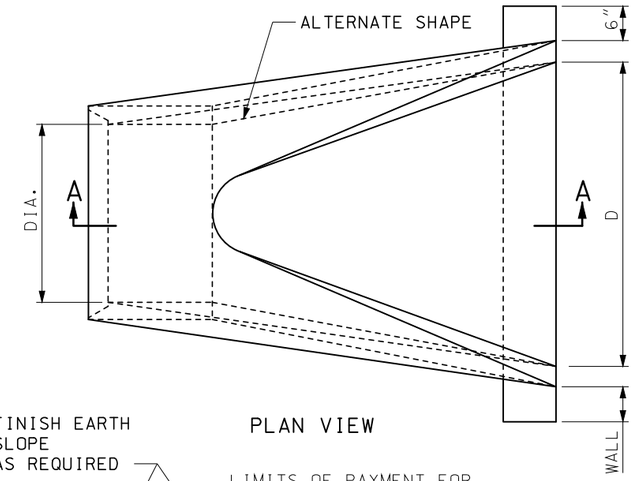
726.30J

SHEET NO. 1 OF 2

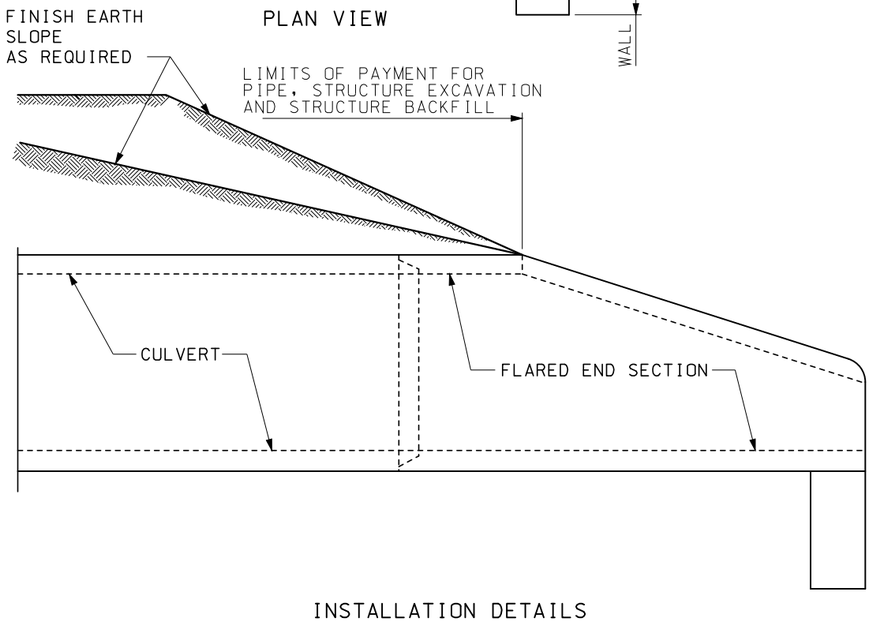
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



SECTION A-A



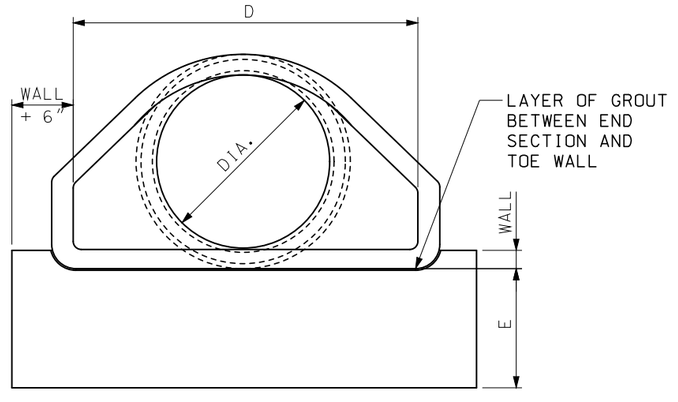
PLAN VIEW



INSTALLATION DETAILS

DIMENSIONS						
DIA.	WALL	A	B MIN.	C MIN.	D	E
12″	2″	4″	4′-0″	6′	2′-0″	18″
15″	2¼″	6″	3′-10″	6′	2′-6″	18″
18″	2½″	9″	3′-10″	6′	3′-0″	18″
21″	2¾″	9″	3′-2″	6′	3′-6″	18″
24″	3″	9½″	2′-6″	6′	4′-0″	24″
27″	3¼″	10½″	2′-1″	6′	4′-6″	24″
30″	3½″	1′-0″	1′-7″	6′	5′-0″	24″
33″	3¾″	1′-2″	1′-7″	6′	5′-6″	24″
36″	4″	1′-3″	2′-10″	8′	6′-0″	24″
42″	4½″	1′-9″	2′-11″	8′	6′-6″	24″
48″	5″	2′-0″	2′-2″	8′	7′-0″	24″
54″	5½″	2′-3″	2′-11″	8′	7′-6″	36″
60″	6″	2′-6″	3′-3″	8′	8′-0″	36″
66″	6½″	2′-0″	1′-9″	8′	8′-6″	36″
72″	7″	2′-0″	2′-9″	10′	9′-0″	36″
78″	7½″	2′-3″	2′-3″	10′	9′-6″	36″
84″	8″	2′-6″	2′-0″	10′	10′-0″	36″

REINFORCEMENT					
ADJOINING PIPE DIA.	BARREL SECTION REINFORCEMENT			FLARE SECTION REINFORCEMENT (ONE LAYER ONLY IN CENTER OF WALL)	
	CIRCULAR		ELLIPTICAL		
	INNER CAGE SQ. IN./ LIN. FT.	OUTER CAGE SQ. IN./ LIN. FT.	SQ. IN./ LIN. FT.	AREA OF LONGITUDINAL SQ. IN./ LIN. FT.	AREA OF TRANSVERSE SQ. IN./ LIN. FT.
12″	0.07			0.048	0.048
15″	0.07			0.054	0.054
18″	0.07		0.07	0.060	0.060
21″	0.07		0.07	0.066	0.066
24″	0.07		0.07	0.072	0.072
27″	0.13		0.11	0.078	0.078
30″	0.14		0.12	0.084	0.084
33″	0.15		0.13	0.090	0.090
36″	0.12	0.09	0.13	0.096	0.096
42″	0.15	0.12	0.17	0.108	0.108
48″	0.18	0.14	0.20	0.120	0.120
54″	0.22	0.16	0.24	0.132	0.132
60″	0.25	0.19	0.28	0.144	0.144
66″	0.31	0.23	0.34	0.156	0.156
72″	0.35	0.21	0.39	0.170	0.170
78″	0.40	0.24	0.44	0.185	0.185
84″	0.46	0.28	0.51	0.205	0.205



END VIEW

GENERAL NOTES:

SLIGHT VARIATIONS IN BOTH SHAPE AND DIMENSIONS FROM THOSE SHOWN MAY BE ACCEPTED IF APPROVED BY THE ENGINEER.

NOT MORE THAN THREE LIFT HOLES MAY BE DRILLED OR CAST IN THE END SECTION FOR HANDLING AND LAYING.

LIFT LUGS OR BARS WILL BE PERMITTED IN PRECAST TOE WALLS.

TOE WALLS MAY BE CAST-IN-PLACE OR PRECAST.

STEEL FIBERS MAY BE USED IN LIEU OF REBAR OR COLD DRAWN STEEL WIRE AS PER SECTION 1032.3.4.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
ERIC E. SCHROETER
NUMBER PE-2841
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

FLARED END SECTION

PRECAST CONCRETE

DATE EFFECTIVE: 04/01/2016
DATE PREPARED: 2/11/2016

732.00S

SHEET NO. 1 OF 3

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

STRUCTURAL SIGN DATA

DESIGNATION	COLOR SCHEME		SHEETING	
	LEGEND	BACKGROUND	LEGEND	BACKGROUND
STRUCTURAL (ST)	BLACK	WHITE	OPAQUE BLACK FILM	ASTM TYPE 4
	WHITE	RED	ASTM TYPE 9 OR 11	ASTM TYPE 4
	WHITE	GREEN	ASTM TYPE 9 OR 11	ASTM TYPE 4
	WHITE	BLUE	ASTM TYPE 9 OR 11	ASTM TYPE 4
	WHITE	BROWN	ASTM TYPE 9 OR 11	ASTM TYPE 4
STRUCTURAL FLUORESCENT (STF)	BLACK	FL YELLOW	OPAQUE BLACK FILM	ASTM TYPE 9 OR 11
	BLACK	FL YELLOW GREEN	OPAQUE BLACK FILM	ASTM TYPE 9 OR 11
	BLACK	FL ORANGE	OPAQUE BLACK FILM	ASTM TYPE 9 OR 11

NOTE: WHITE LEGEND IS DIRECT APPLIED UNLESS SPECIFIED OTHERWISE.

FLAT SHEET SIGN DATA

DESIGNATION	COLOR SCHEME		SHEETING
	LEGEND	BACKGROUND	
FLAT SHEET (SH)	BLACK ✻✻	WHITE	ASTM TYPE 4 WHITE
	WHITE	BLACK ✻✻	ASTM TYPE 4 WHITE
	RED	WHITE	ASTM TYPE 4 WHITE
	WHITE	RED	ASTM TYPE 4 WHITE
	WHITE	GREEN	ASTM TYPE 4 WHITE
	GREEN	WHITE	ASTM TYPE 4 WHITE
	WHITE	BLUE	ASTM TYPE 4 WHITE
	WHITE	BROWN	ASTM TYPE 4 WHITE
FLAT SHEET FLUORESCENT (SHF)	BLACK ✻✻	FL YELLOW	ASTM TYPE 9 OR 11 FL YELLOW
	BLACK ✻✻	FL YELLOW GREEN	ASTM TYPE 9 OR 11 FL YELLOW GREEN
	BLACK ✻✻	FL ORANGE	ASTM TYPE 9 OR 11 FL ORANGE

✻✻ OPAQUE INK OR FILM

NOTE: LEGEND AND BACKGROUND COLORS ARE ACHIEVED THROUGH TRANSLUCENT INKS AND FILMS.

FLAT SHEET THICKNESS	
SIGN SIZE	THICKNESS
9 SF OR LESS	0.080 IN.
OVER 9 SF TO 16 SF	0.100 IN.
16 SF OR LARGER	0.125 IN.

GENERAL NOTES:

GROUND MOUNTED SIGNS GREATER THAN 5 FEET WIDE OR SIGNS GREATER THAN 30 SQUARE FEET SHALL BE STRUCTURAL.

ALL NON STANDARD SIGNS NOT FOUND IN THE MUTCD SHS MANUAL SHALL BE DETAILED BY THE TRAFFIC AND HIGHWAY SAFETY DIVISION OFFICE.

REFER TO STANDARD SPECIFICATION SEC 1042 FOR SHEETING, SUBSTRATE AND FABRICATION DETAILS.

FOR MOUNTING DETAILS, SEE STANDARD PLANS 903.02.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
NICOLE A. KOLB HOOD
NUMBER PE-2001018754
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

HIGHWAY SIGNING

GENERAL SIGN DATA

DATE EFFECTIVE: 10/01/2019
DATE PREPARED: 7/18/2019

903.02AP

SHEET NO. 1 OF 8

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MODOT ID LABEL DETAILS

PLACED ON THE SIGN FACE



(1) USED ON SIGNS 9 SF AND LARGER



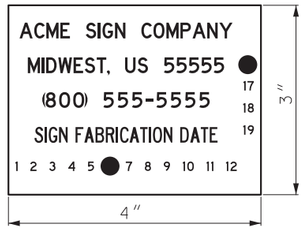
(1) USED ON SIGNS LESS THAN 9 SF

VENDOR ID LABEL DETAILS

PLACED ON THE BACK OF THE SIGN

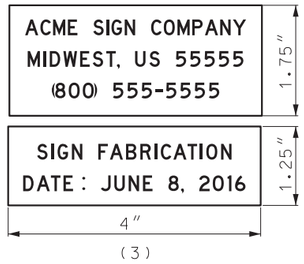


OPTIONAL



(2)

OPTIONAL



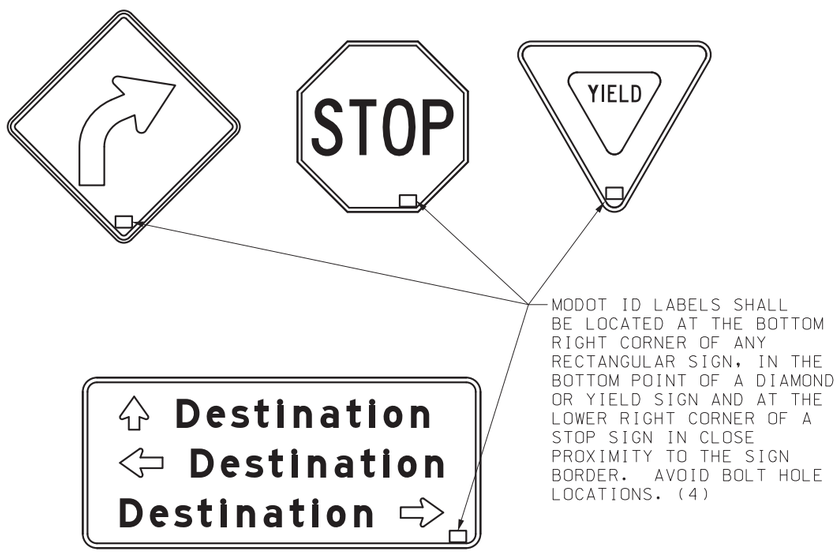
(3)

(1) MODOT ID LABEL DETAILS AVAILABLE FROM TRAFFIC AND HIGHWAY SAFETY DIVISION.

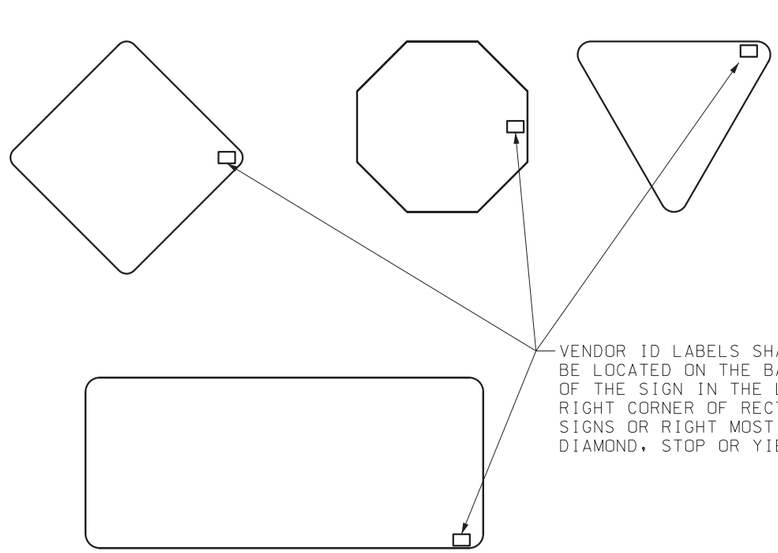
(2) TO FACILITATE MASS PRODUCTION OF LABELS, THE FABRICATION DATE MAY BE INDICATED BY DISPLAYING NUMBERS FOR MONTHS ALONG THE BOTTOM OF THE LABEL AND NUMBERS FOR YEARS ALONG THE RIGHT SIDE OF THE LABEL. THE FABRICATION DATE WOULD BE INDICATED BY HOLE PUNCHING THE APPROPRIATE NUMBERS (OR SOME EQUIVALENT PERMANENT METHOD TO BLOCK OUT OF THE NUMBERS) FOR THE MONTH AND YEAR BEFORE THE LABEL IS APPLIED TO THE SIGN.

(3) INDIVIDUAL DECALS MAY BE USED TO DISPLAY THE VENDOR INFORMATION AND THE FABRICATION DATE. DECALS SHALL BE INSTALLED IN CLOSE VERTICAL PROXIMITY.

(4) THE MODOT ID LABEL MAY BE PLACED ON THE BACK OF THE SIGN ABOVE THE VENDOR ID LABEL IF THERE IS INSUFFICIENT SPACE AVAILABLE TO DISPLAY THE ID LABEL ON THE SIGN FACE WITHOUT INTERFERING WITH THE SIGN LEGEND OR BOARDER.



MODOT ID LABELS SHALL BE LOCATED AT THE BOTTOM RIGHT CORNER OF ANY RECTANGULAR SIGN, IN THE BOTTOM POINT OF A DIAMOND OR YIELD SIGN AND AT THE LOWER RIGHT CORNER OF A STOP SIGN IN CLOSE PROXIMITY TO THE SIGN BORDER. AVOID BOLT HOLE LOCATIONS. (4)



VENDOR ID LABELS SHALL BE LOCATED ON THE BACK OF THE SIGN IN THE LOWER RIGHT CORNER OF RECTANGULAR SIGNS OR RIGHT MOST EDGE OF DIAMOND, STOP OR YIELD SIGNS.

GENERAL NOTES:

ALL DECALS SHALL BE SILK SCREEN PRINTED WITH MATCHED COMPONENT INK AND SHEETING MATERIALS TO PROVIDE A LABEL THAT HAS AN EQUAL LIFE EXPECTANCY AS THE SIGN FACE.

MODOT ID LABELS SHALL BE PRINTED ON CLEAR ELECTROCUT FILM BACKGROUND WITH BLACK INK OR IT MAY BE INCORPORATED INTO THE SILK SCREEN DETAIL AND PRINTED ALONG WITH THE SIGN FACE. IF THE LABEL IS APPLIED IN THIS MANNER THE LEGEND OF THE LABEL SHALL MATCH THE COLOR OF THE SIGN LEGEND IT IS BEING APPLIED TO. THE LABEL SHALL NOT HAVE ANY BACKGROUND COLOR OR BORDER.

VENDOR ID LABEL SHALL CONTAIN THE COMPANY CONTACT INFORMATION (INCLUDING FULL NAME, CITY, STATE, PHONE NUMBER) AND THE SIGN FABRICATION DATE.

VENDOR ID LABEL SHALL BE PRINTED ON A WHITE BACKGROUND WITH BLACK INK AND THE LEGEND SHALL BE A MINIMUM OF 1/4".

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

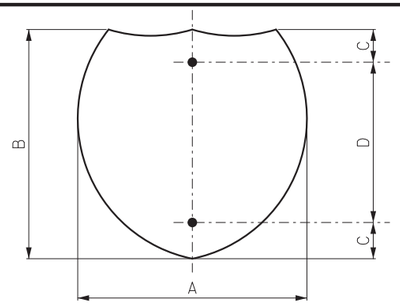
STATE OF MISSOURI
NICOLE A. KOLB HOOD
NUMBER PE-2001018754
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

HIGHWAY SIGNING

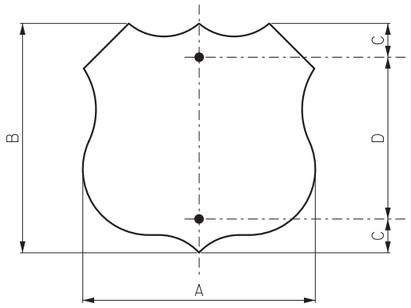
GENERAL SIGN DATA

DATE EFFECTIVE: 10/01/2019
DATE PREPARED: 7/18/2019

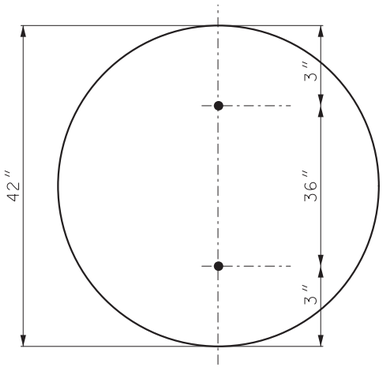
903.02AP

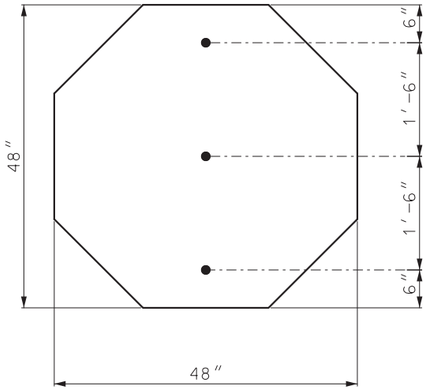


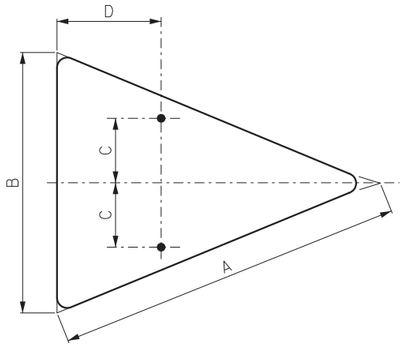
DIMENSIONS (IN.)			
A	B	C	D
24	24	3	18
30	24	3	18
36	36	6	24
45	36	6	24



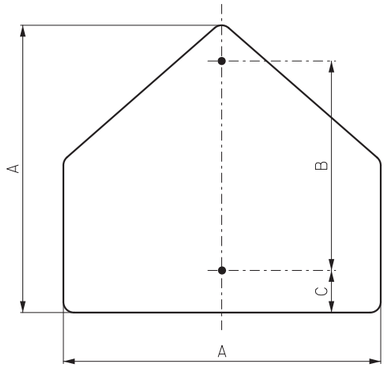
DIMENSIONS (IN.)			
A	B	C	D
24	24	3	18
30	24	3	18
36	36	6	24
45	36	6	24



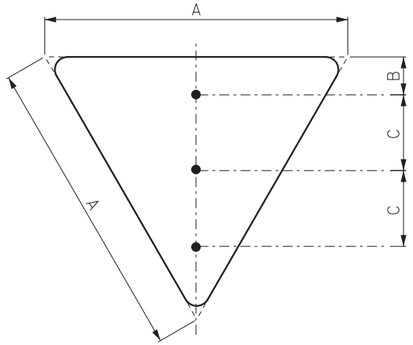




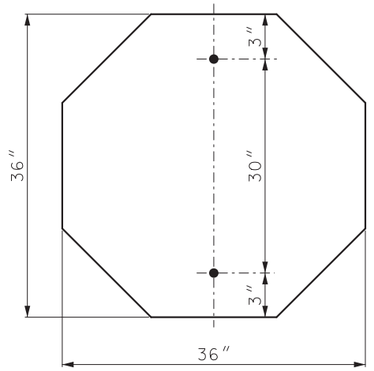
DIMENSIONS (IN.)				
A	B	C	D	RADIUS
40	30	7.5	12	1.875
48	36	9	15	2.25

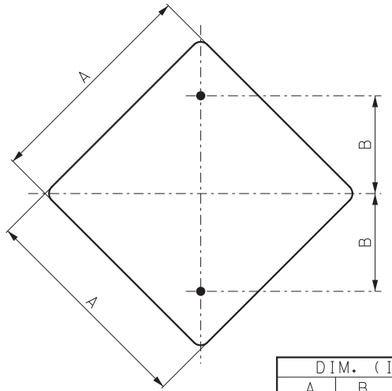


DIMENSIONS (IN.)			
A	B	C	RADIUS
36	24	3	2.25

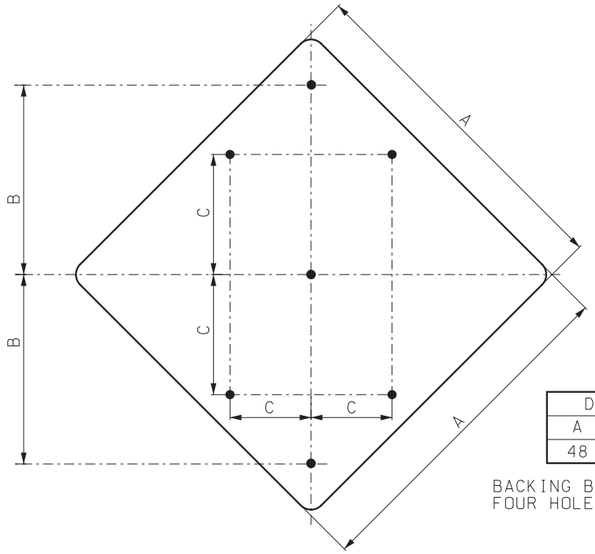


DIMENSIONS (IN.)			
A	B	C	RADIUS
48	6	12	3
60	8	15	4





DIM. (IN.)		
A	B	RADIUS
18	9	1.5
24	12	1.5
30	15	1.875
36	18	2.25



DIMENSIONS (IN.)			
A	B	C	RADIUS
48	24	15	3

BACKING BARS ONLY REQUIRED FOR FOUR HOLE PUNCH INSTALLATION.

GENERAL NOTES:

SIGNS WITH FOUR OR MORE HOLES REQUIRE BACKING BARS OR MULTIPLE POSTS.

HOLES IN SIGNS SHALL BE $\frac{3}{8}$″ AND PUNCHED AS SHOWN ON THIS DRAWING.

FLAT SHEET FOR SIGNS SHALL BE THE FOLLOWING THICKNESS:

9 SQUARE FEET OR LESS – .080 IN.,

OVER 9 SQUARE FEET BUT LESS THAN 16 SQUARE FEET – .100 IN.,

16 SQUARE FEET OR LARGER – .125 IN.

FOR MOUNTING DETAILS, SEE OTHER DRAWINGS.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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STATE OF MISSOURI
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NUMBER PE-2001018754
PROFESSIONAL ENGINEER
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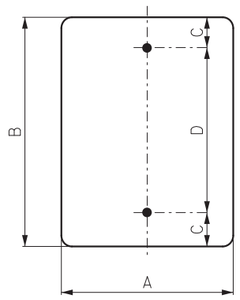
HIGHWAY SIGNING

HOLE PUNCHING

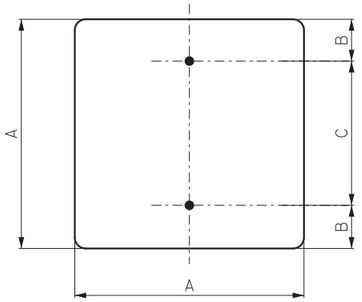
DATE EFFECTIVE: 10/01/2019
DATE PREPARED: 7/18/2019

903.02AP

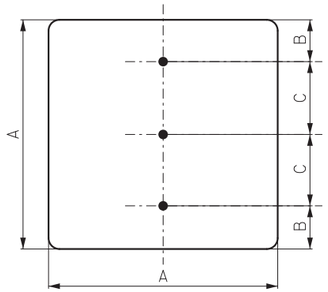
SHEET NO. 6 OF 8



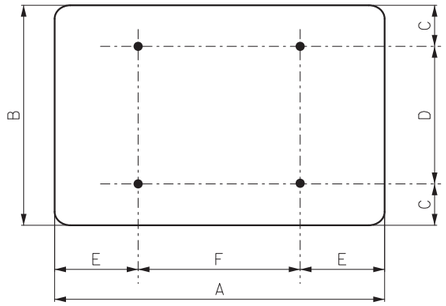
DIMENSIONS (IN.)				
A	B	C	D	RADIUS
4	16	0.75	14.5	SQ
6	12	1.5	9	1
9	12	3.5	5	1.5
9	15	3.75	7.5	1.5
12	18	3	12	1.5
12	24	3	18	1.5
12	36	3	30	1.5
12	48	3	42	1.5
15	21	3	15	1.5
18	24	3	18	1.5
24	30	3	24	1.5
24	36	3	30	1.5
30	36	3	30	1.875
30	42	3	36	1.875
30	48	6	36	1.875



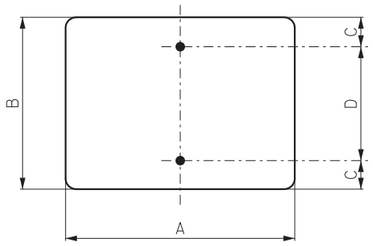
DIMENSIONS (IN.)			
A	B	C	RADIUS
12	1.5	9	1.5
18	3	12	1.5
24	3	18	1.5
30	3	24	1.875
36	6	24	2.25



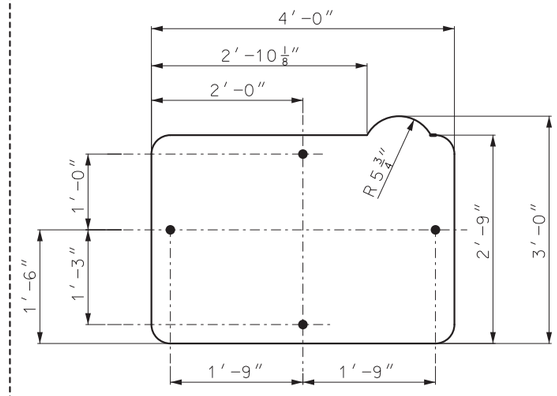
DIMENSIONS (IN.)		
A	B	RADIUS
48	6	3

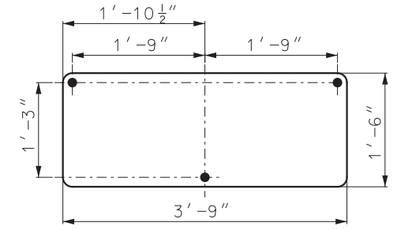


DIMENSIONS (IN.)						
A	B	C	D	E	F	RADIUS
48	12	1.5	9	9	30	1.5
48	18	1.5	15	9	30	1.5
48	24	3	18	9	30	1.5
48	30	3	24	9	30	1.875
48	36	6	24	9	30	2.25
54	18	1.5	15	9	36	1.5
60	12	1.5	9	12	36	1.5
60	18	1.5	15	12	36	1.5
60	24	3	18	12	36	1.5
60	30	3	24	12	36	1.875
60	36	6	24	12	36	2.25
60	48	6	36	12	36	3
72	36	6	24	12	48	2.25
72	48	6	36	12	48	3

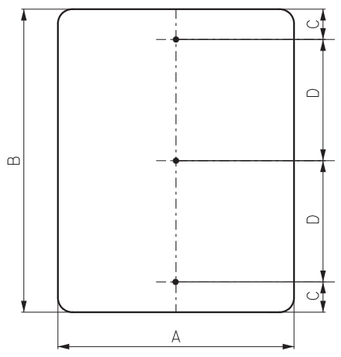


DIMENSIONS (IN.)				
A	B	C	D	RADIUS
4	5	1.5	2	1.5
12	9	1.5	6	1.5
18	9	1.5	6	1.5
18	12	1.5	9	1.5
21	15	1.5	12	1.5
24	8	1.5	5	1.5
24	12	1.5	9	1.5
24	18	3	12	1.5
30	8	1.5	5	1.5
30	12	1.5	9	1.5
30	18	3	12	1.5
30	24	3	18	1.5
36	8	1.5	5	1.5
36	12	1.5	9	1.5
36	18	3	12	1.5
36	24	3	18	1.5
36	30	3	24	1.875
42	8	1.5	5	1.5
42	18	3	12	1.5
42	24	3	18	1.5
42	30	3	24	1.875
42	36	3	30	2.25
48	8	1.5	5	1.5

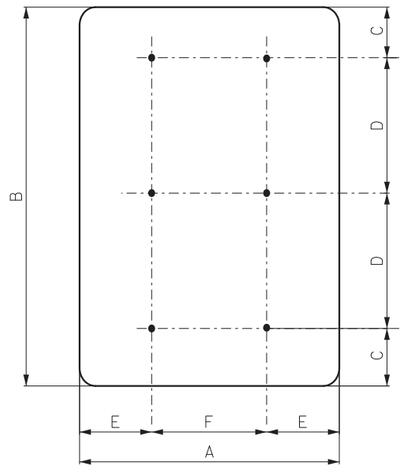




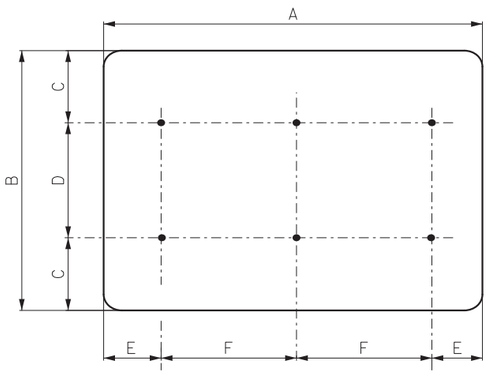
ADOPT A HIGHWAY PRIMARY SIGN AND NAME PANEL



DIMENSIONS (IN.)				
A	B	C	D	RADIUS
4	72	6	30	SQ
12	72	6	30	1.5
18	60	6	24	1.5
24	48	6	18	1.5
36	48	6	18	2.25
36	60	6	24	2.25
36	72	6	30	2.25

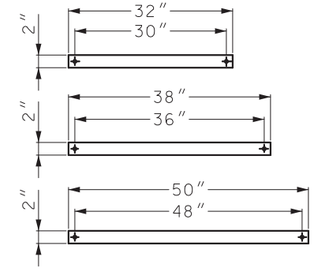


DIMENSIONS (IN.)						
A	B	C	D	E	F	RADIUS
48	60	6	24	9	30	3
48	72	6	30	9	30	3
48	84	6	36	9	30	3
48	96	6	42	9	30	3



DIMENSIONS (IN.)						
A	B	C	D	E	F	RADIUS
84	24	3	18	12	30	3
96	48	6	36	16	32	3

DIMENSIONS (IN.) FOR SIGNS REQUIRING NO HOLE PUNCHING		
A	B	RADIUS
66	18	1.5
72	18	1.5
78	18	1.5
84	18	1.5
90	18	1.5
96	18	1.5
36	78	2.25



BACKING BARS FOR SINGLE POST SIGNS

GENERAL NOTES:

REFER TO GENERAL NOTES ON SHEET 6 OF 8.

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NUMBER PE-2001018754
PROFESSIONAL ENGINEER
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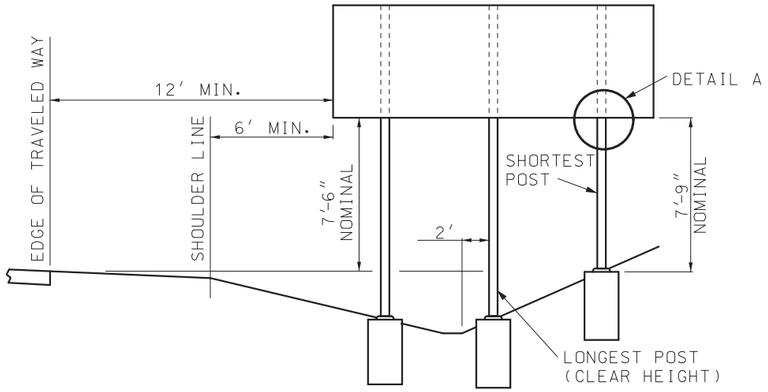
HIGHWAY SIGNING

HOLE PUNCHING

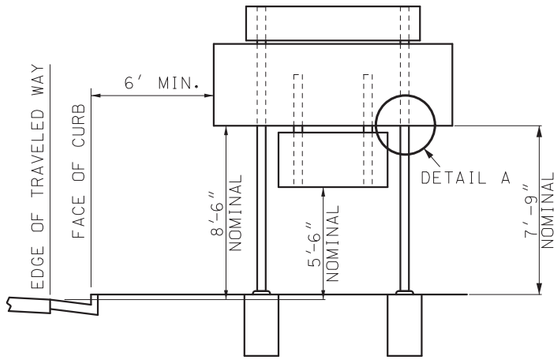
DATE EFFECTIVE: 10/01/2019
DATE PREPARED: 7/18/2019

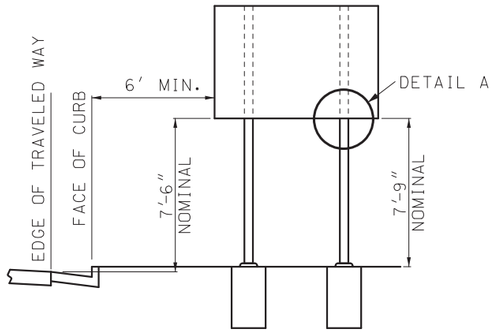
903.02AP

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

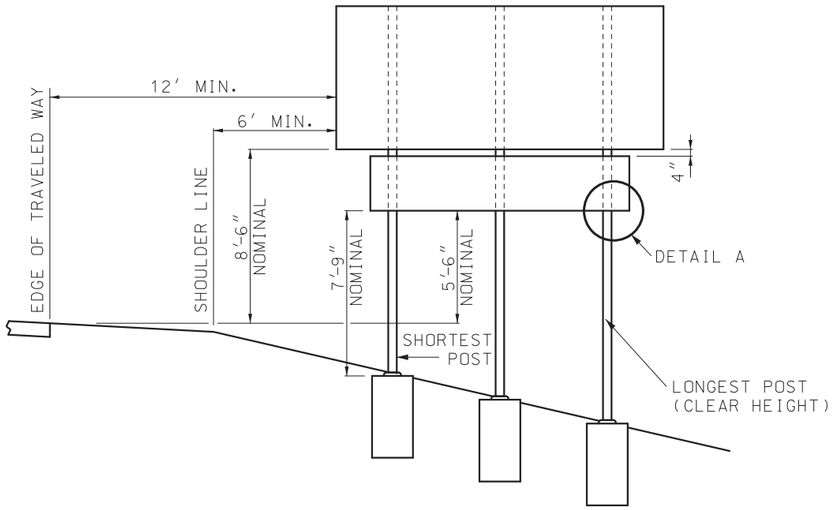


DITCH SECTION

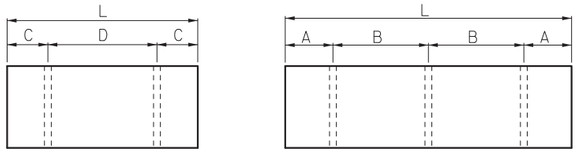




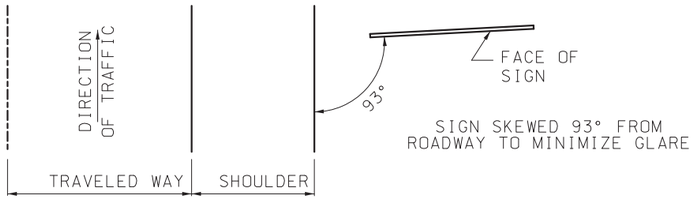
BARRIER CURB SECTIONS



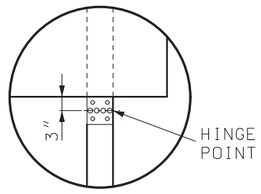
FILL SECTION



POST SPACING



SIGN ORIENTATION



DETAIL A

NOTE: SEE SHEET 2 FOR FUSE PLATE DETAILS.

FOR POST DESIGNS NUMBERS 3, 4, 5 AND 6 HAVING WEIGHTS GREATER THAN 18LBS./FT., POSTS SHALL BE SPACED AT LEAST 7′ APART.

FOR POST DESIGNS NUMBERS 1 AND 2, POSTS MAY BE SPACED LESS THAN 7′ APART.

DO NOT USE THREE NUMBER 1 OR 2 POSTS FOR L LESS THAN 11′.

FOR L GREATER THAN 11′ AND LESS THAN 17′, 3 POSTS MAY BE USED DEPENDING ON SOIL CONDITIONS.

FOR L OF 6′ TO 17′ TYPICALLY USE 2 POSTS.

FOR L GREATER THAN 17′ TYPICALLY USE 3 POSTS.

GENERAL NOTES:

FOR GENERAL NOTES, SEE SHEET 1 OF 16.

VERTICAL CLEARANCE FROM THE ROADWAY SHALL BE MET AND INCREASED ONLY TO MEET THE 7′9″ MINIMUM VERTICAL CLEARANCE FROM THE GROUND.

POST SIZE IS DETERMINED USING SIGN HEIGHT, SIGN WIDTH AND CLEAR HEIGHT. THE CLEAR HEIGHT IS EQUAL TO THE LENGTH OF THE LONGEST POST MEASURED FROM THE GROUND TO THE BOTTOM OF THE SIGN.

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NUMBER PE-2001018754
PROFESSIONAL ENGINEER
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POST INSTALLATION DETAILS

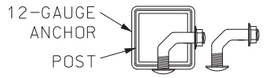
TYPICAL SECTION, MOUNTING HEIGHT AND POST SPACING WIDE FLANGE (WF) POSTS

DATE EFFECTIVE: 4/1/2023
DATE PREPARED: 1/6/2023

903.03BR

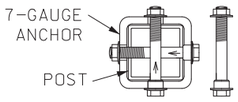
SHEET NO. 3 OF 16

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



$\frac{5}{16}$" CORNER BOLT AND NUT
MINIMUM 1 CORNER BOLT REQUIRED

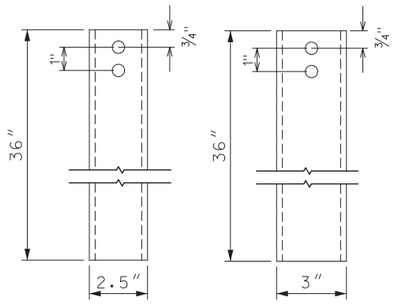
12-GAUGE ANCHOR



$\frac{3}{8}$" x 3.5" SHOULDER BOLT AND NUT
2 SHOULDER BOLTS REQUIRED,
INSTALLED PERPENDICULAR TO EACH OTHER

7-GAUGE ANCHOR

ANCHOR BOLT DETAIL



FOR 2" POST FOR 2.5" POST

BOLT HOLE DIAMETER – $\frac{17}{32}$"
2 PER SIDE ON ALL 4 SIDES

7-GAUGE ANCHOR FABRICATION DETAIL

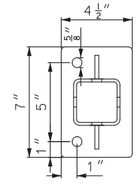
ANCHOR TUBE SHALL BE 7-GAUGE

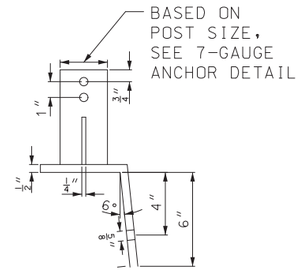
1/2" X 4 1/2"GALVANIZED MECHANICAL FASTENERS SHALL BE USED TO ATTACH ANCHOR TO BARRIER WALL

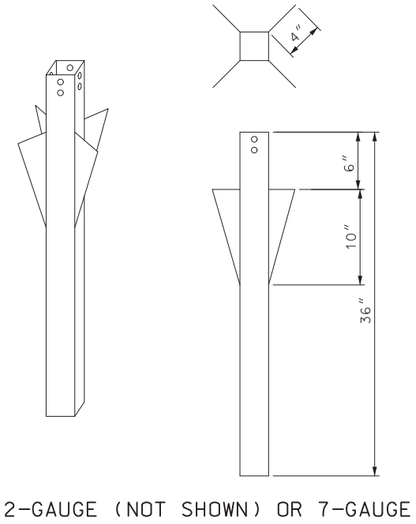
SHOULDER BOLTS SHALL BE USED TO ATTACH PSST POST TO ANCHOR (SEE ANCHOR BOLT DETAIL)

ANCHOR SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION PER SECTION 1080

FURNISHING AND INSTALLATION OF BARRIER WALL POST ANCHOR FOR PSST SHALL BE PAID PER EACH AS CONCRETE POST ANCHOR

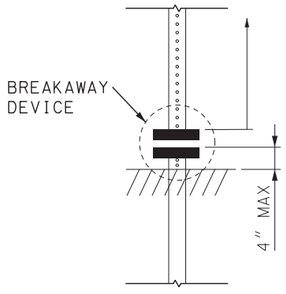






12-GAUGE (NOT SHOWN) OR 7-GAUGE

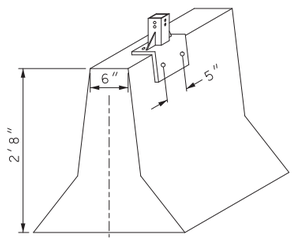
OMNIDIRECTIONAL/STABILIZED DRIVEN ANCHOR DETAIL

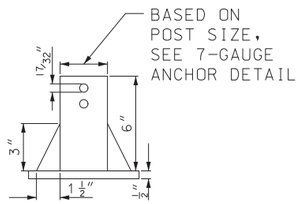


2.5" + 2.25" POST COMPRISED OF 2.5" PSST WITH 6-FT INSERT OF 2.25" PSST THAT RUNS UP FROM THE BREAKAWAY DEVICE

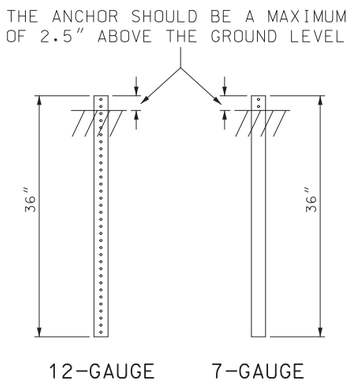
THE BREAKAWAY DEVICE PORTION FIXED TO THE GROUND ANCHOR SHALL BE NO HIGHER THAN 4" ABOVE THE FINISHED GRADE

BREAKAWAY AND 2.5" + 2.25" POST DETAIL

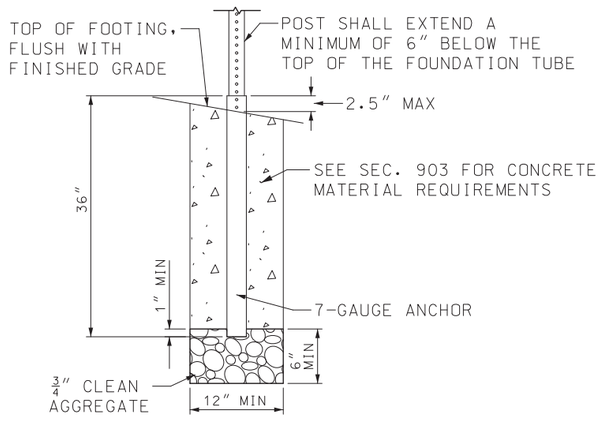




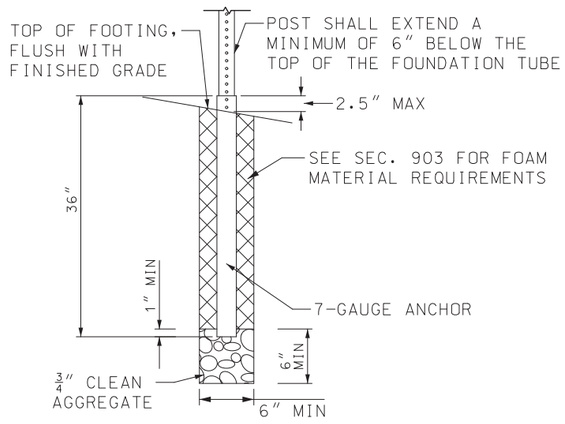
BARRIER WALL MOUNTING DETAIL



DRIVEN ANCHOR INSTALLATION DETAIL



CONCRETE FOOTING DETAIL



POLYURETHANE FOAM FOOTING DETAIL

NOTES:

FOR GENERAL NOTES, SEE SHEET 1 OF 16.

FOR MOUNTING HEIGHT AND OFFSET DETAILS, SEE SHEET 10 OF 16.

ALL BREAKAWAY DEVICES USED ON AN INSTALLATION SHALL BE CERTIFIED NCHRP 350 COMPLIANT.

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NUMBER PE-2001018754
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POST INSTALLATION DETAILS

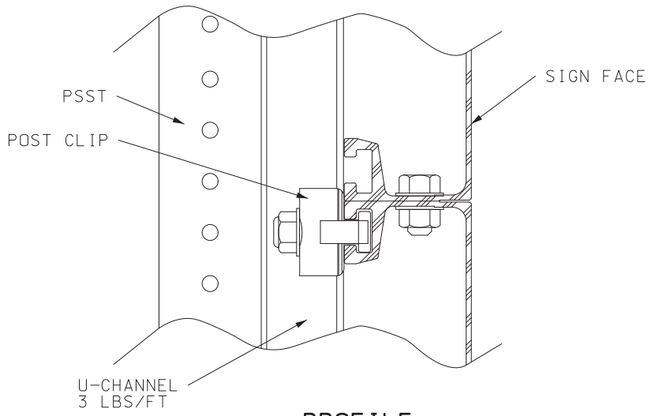
PERFORATED SQUARE STEEL TUBE (PSST)

DATE EFFECTIVE: 4/1/2023
DATE PREPARED: 1/6/2023

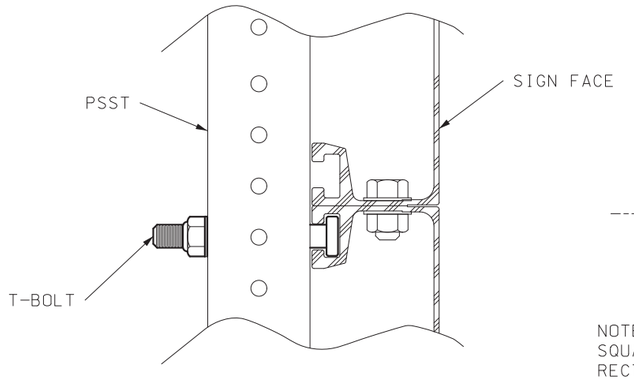
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SHEET NO. 7 OF 16

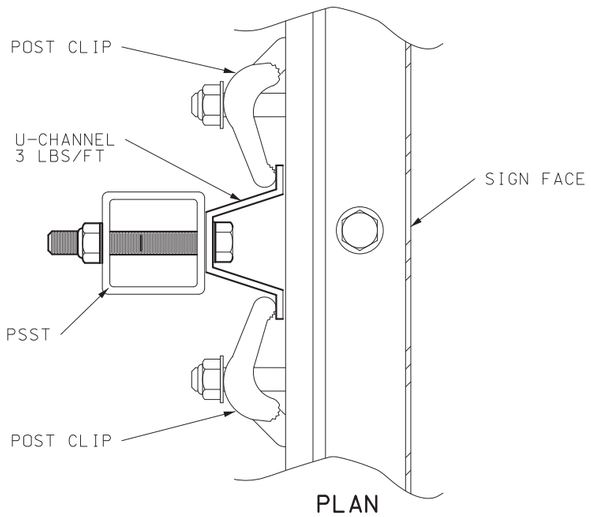
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PROFILE

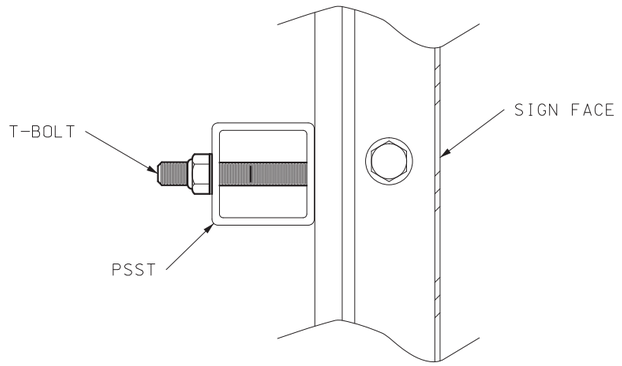


PROFILE



PLAN

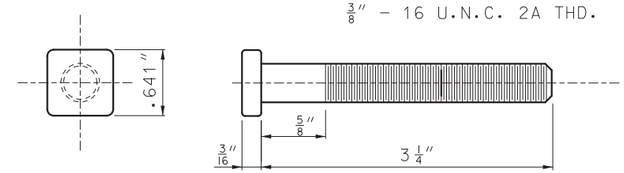
POST CLIP METHOD



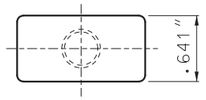
PLAN

T-BOLT METHOD

EXTRUDED PANEL MOUNTING DETAIL



NOTE:
SQUARE BOLT HEAD SHOWN MAY BE REPLACED WITH RECTANGULAR BOLT HEAD WITH THE NARROW DIMENSION EQUAL TO .641".



T-BOLT DETAIL

BOLT - $1\frac{3}{4} \times \frac{3}{8}$ ALUMINUM
BOLT - $3\frac{1}{4} \times \frac{3}{8}$ ALUMINUM
HEX LOCKNUT - $\frac{3}{8}$" ALUMINUM
WASHER - ALUMINUM

NOTES:
- ALUMINUM BOLTS SHALL BE ASTM B 211, 2024-T4 OR 6061-T6
- ALUMINUM FLAT WASHERS SHALL BE ASTM B 209, ALCLAD 2024-T4 OR 2024-T4
- ALUMINUM LOCK NUTS (NYLON INSERT) SHALL BE ASTM B 211 OR 2017-T4

NUMBER OF BOLTS TO ATTACH STEEL CHANNEL TO PSST POST	
SIGN HEIGHT	NO. OF BOLTS PER PSST POST USED
1'	2
2'	3
3'	4
4'	5
5'	6
6'	7
7'	8

NOTES:

FOR THE GENERAL NOTES, SEE SHEET 1 OF 16.

FOR MOUNTING HEIGHT AND OFFSET DETAILS, SEE SHEET 10 OF 16.

FOR POST CLIP DETAILS, SEE STANDARD PLANS 903.02 SHEET 4 OF 7.

ALTERNATE PSST MOUNTING HARDWARE USE SHALL BE ON APPROVED LIST.

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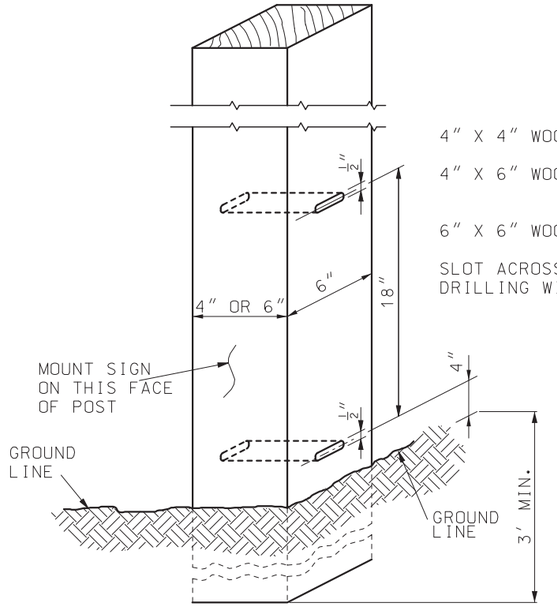
SIGN MOUNTING DETAILS
PERFORATED SQUARE STEEL TUBE (PSST)

DATE EFFECTIVE: 4/1/2023
DATE PREPARED: 1/6/2023

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SHEET NO. 8 OF 16

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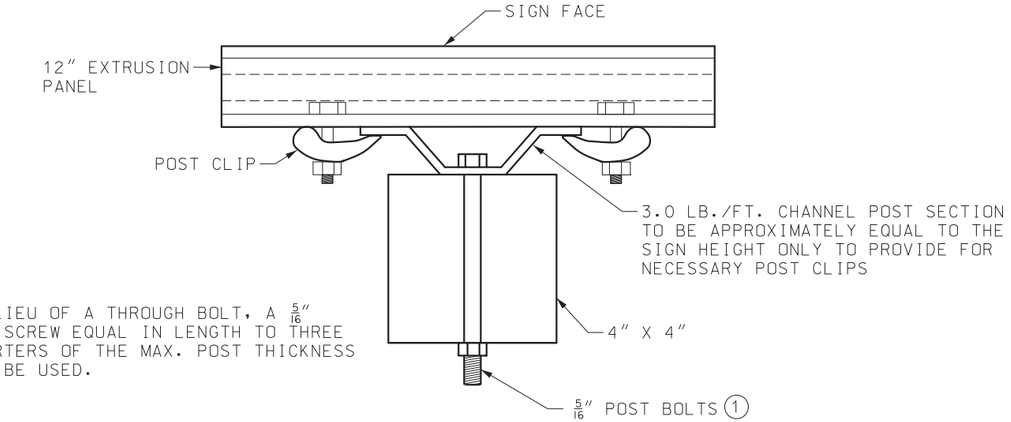
4″ X 4″ WOOD POST – NO SLOTS OR HOLES REQUIRED

4″ X 6″ WOOD POST – 1½″ X ½″ SLOT ON 6″ SIDE OR 1½″ DIA. HOLE ON 6″ SIDE

6″ X 6″ WOOD POST – 2″ X ½″ SLOT OR 2″ DIA. HOLE

SLOT ACROSS NEUTRAL AXIS FORMED BY SUCCESSIVE DRILLING WITH ½″ BIT.

WOOD POST DETAIL

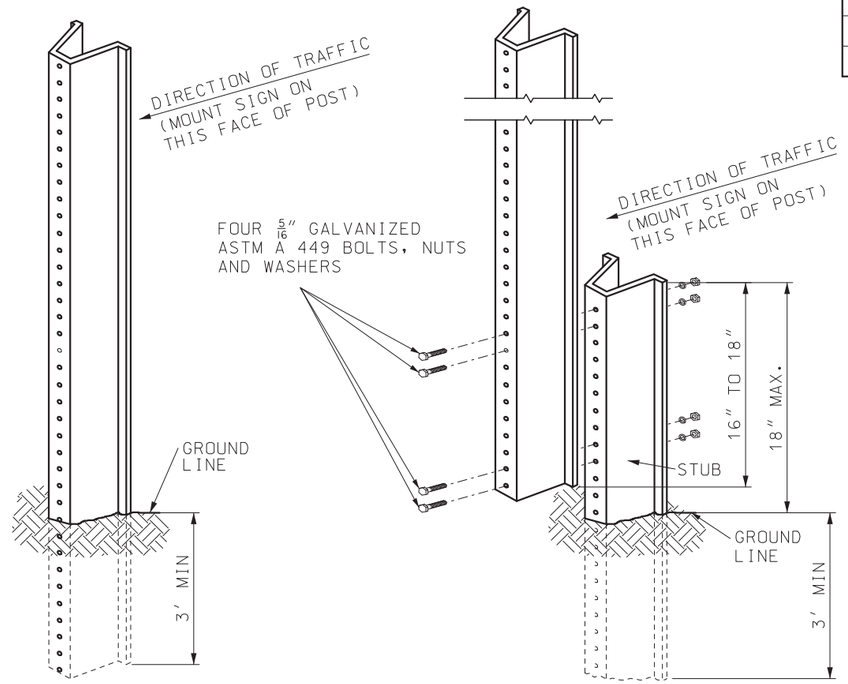


(1) IN LIEU OF A THROUGH BOLT, A 5/16″ LAG SCREW EQUAL IN LENGTH TO THREE QUARTERS OF THE MAX. POST THICKNESS MAY BE USED.

PLAN VIEW

MOUNTING DETAILS FOR EXTRUDED PANELS ON WOOD POST

NUMBER OF BOLTS TO ATTACH STEEL CHANNEL TO WOOD POST	
SIGN HEIGHT	NO. OF BOLTS PER WOOD POST USED
1′	2
2′	3
3′	4
4′	5
5′	6
6′	7
7′	8



U-CHANNEL POST-STUB DETAIL

U-CHANNEL POST DETAIL OPTIONAL INSTALLATION

	POST TYPE	
SIGN AREA (SQ.FT.)	U-CHANNEL	WOOD
≤ 10	1 – 3.0 LB./FT.✳	1 – 4″ X 4″✳
> 10 ≤ 16	2 – 3.0 LB./FT.	2 – 4″ X 4″ 1 – 4″ X 6″✳
> 16 ≤ 24	2 – 3.0 LB./FT.	2 – 4″ X 6″
> 24 ≤ 30	3 – 3.0 LB./FT.	2 – 4″ X 6″
> 30 ≤ 50	N/A	2 – 6″ X 6″

✳ SIGNS GREATER THAN 4 FEET IN WIDTH REQUIRE TWO POSTS, EXCEPT DIAMOND SHAPED WARNING SIGNS, YIELD SIGNS, AND ONE WAY SIGNS.

POST SIZE REQUIREMENTS

NOTES:

FOR GENERAL NOTES, SEE SHEET 1 OF 16.

ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 3 FEET INTO THE GROUND.

U-CHANNEL POST-STUB OVERLAP SHALL BE POSITIONED ENTIRELY BETWEEN GROUND LINE AND 18″ ABOVE GROUND LINE.

FOR POST SIZING SEE ENGINEERING POLICY GUIDE.

FOR POST CLIP DETAILS, SEE STANDARD PLANS 903.02 SHEET 4 OF 7.

FOR MOUNTING HEIGHT AND OFFSET DETAILS, SEE SHEET 10 OF 16.

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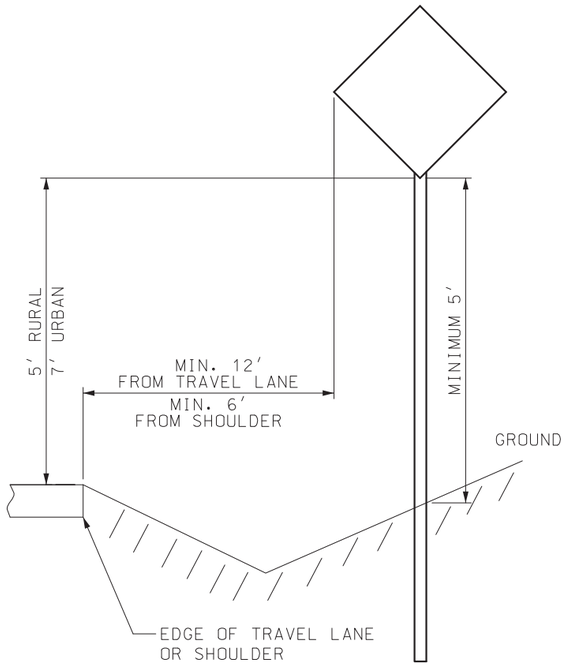
SIGN MOUNTING DETAILS
WOOD AND U-CHANNEL POST

DATE EFFECTIVE: 4/1/2023
DATE PREPARED: 1/6/2023

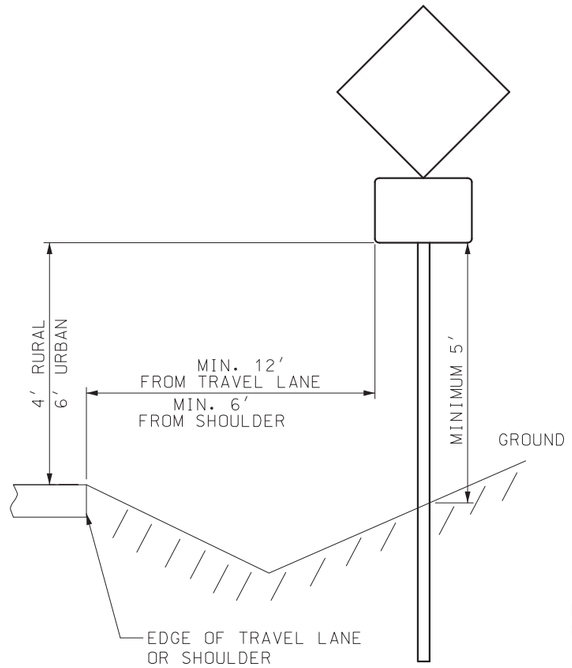
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SHEET NO. 9 OF 16

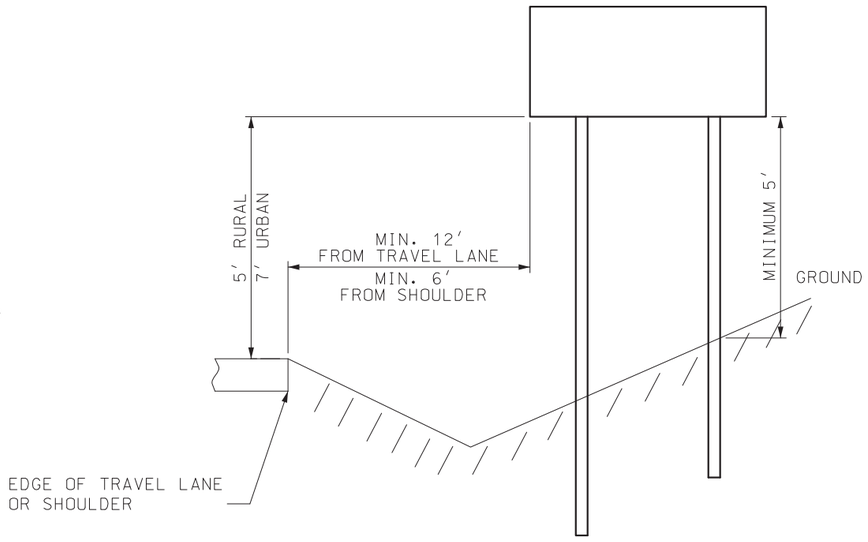
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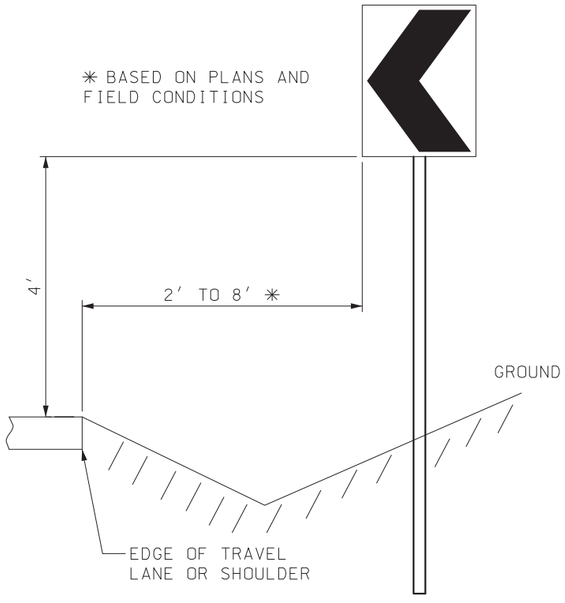
ONE POST – SINGLE SIGN



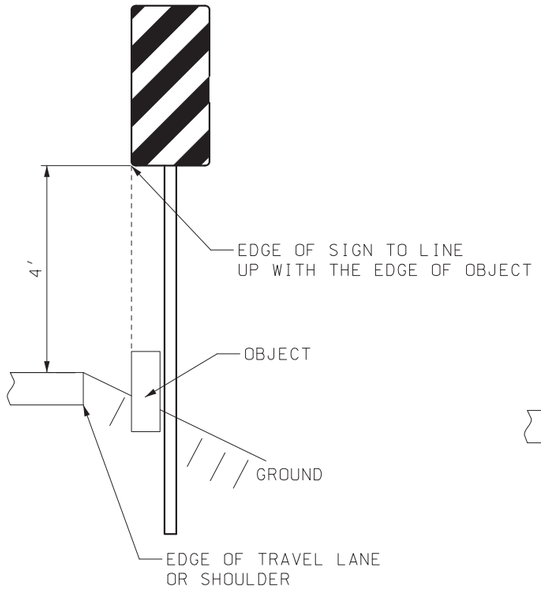
ONE POST – SINGLE SIGN WITH SUPPLEMENTAL PLAGUE



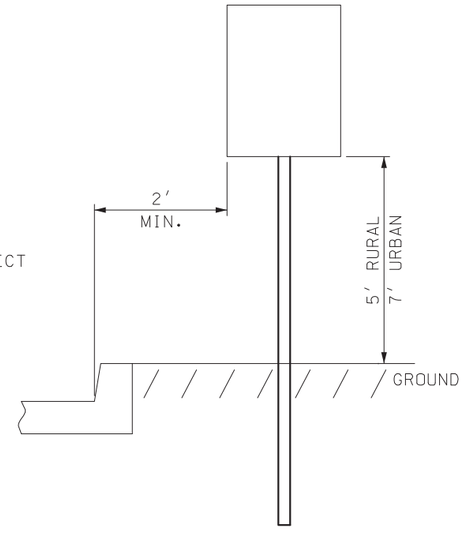
TWO POST



CHEVRON SIGN



TYPE III OBJECT MARKER



ADJACENT TO CURB

MOUNTING HEIGHT DETAILS

GENERAL NOTES:

SIGN MOUNTING BOLTS SHALL BE INSTALLED WITH A NYLON WASHER AGAINST THE SIGN FACE WITH A STEEL WASHER BETWEEN THE NYLON WASHER AND BOLT HEAD.

A LOCKNUT SHALL BE USED TO FASTEN THE SIGN TO THE POST.

VERTICAL CLEARANCE FROM THE ROADWAY SHALL BE MET AND INCREASED ONLY TO MEET THE 5′ MINIMUM VERTICAL CLEARANCE FROM THE GROUND.

HORIZONTAL OFFSET MAY BE ADJUSTED BASED ON FIELD CONDITIONS.

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SIGN MOUNTING DETAILS
MOUNTING HEIGHT & OFFSET PIPE POSTS, PSST, WOOD & U-CHANNEL POSTS

DATE EFFECTIVE: 4/1/2023
DATE PREPARED: 1/6/2023

903.03BR

SHEET NO. 10 OF 16

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.