

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	A1

SHEET	DESCRIPTION
A1	TITLE SHEET
A2-A3	CONVENTIONAL PLAN SYMBOLS & ABBREVIATIONS
A4	SITE MAP
A5	SURVEY CONTROL
A6-A7	TYPICAL SECTIONS
A8-A9	APPROACH ROAD TYPICAL SECTIONS
B1-B2	SUMMARY OF QUANTITIES
B3-B5	TABULATION OF QUANTITIES
C1-C5	PLAN SHEETS
K1	PAVEMENT TRANSITION DETAIL
T1-T2	CULVERT DETAILS
T3-T7	PERMANENT SIGNING DETAILS
T8	PERMANENT STRIPING DETAIL
T9	TEMPORARY TRAFFIC CONTROL PLAN
T10-T13	TEMPORARY TRAFFIC CONTROL DETAILS

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

PLANS FOR PROPOSED

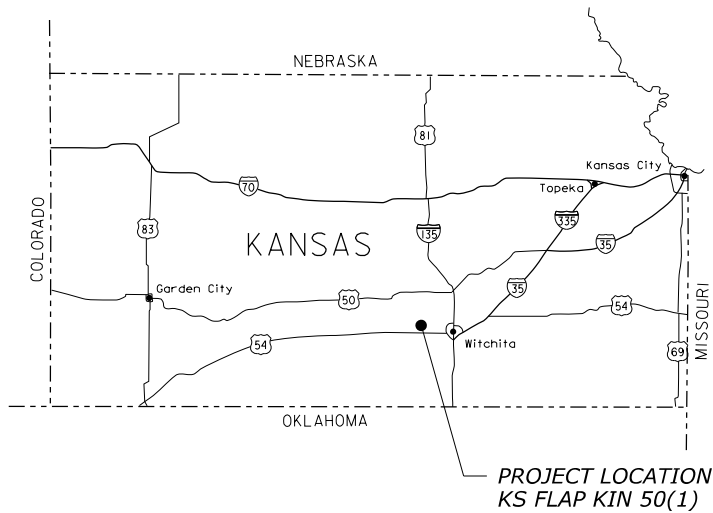
KS FLAP KIN 50(1)

CHENEY RESERVOIR ACCESS

CHENEY STATE PARK AND CHENEY RESERVOIR

KINGMAN COUNTY

PROJECT LENGTH 2.07 MILES



KEY MAP OF KANSAS

TYPE OF CONSTRUCTION:
Road reconstruction, full depth reclamation, asphalt paving
signing, pavement markings, and drainage improvements.

DESIGN DESIGNATIONS:
ADT (2021) ----- 650
ADT (2043) ----- 1066
DHV ----- 65
D ----- 0.55
T ----- 10%
V ----- 50 MPH
e(max) ----- match existing

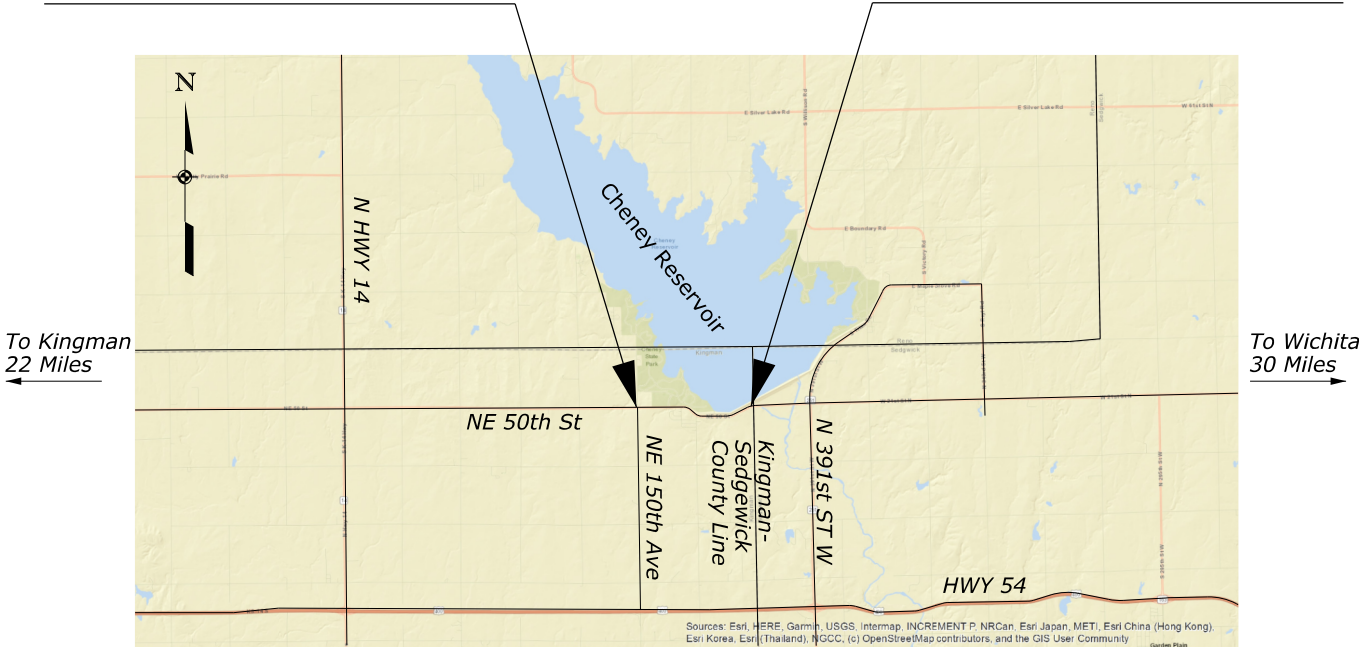
U.S. CUSTOMARY DIMENSIONS:
Slopes are expressed as RISE:RUN

SPECIFICATIONS:
"STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS
AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-14"



11+55
Begin Project
KS FLAP KIN 50(1)
Cheney Reservoir Access

121+00
End Project
KS FLAP KIN 50(1)
Cheney Reservoir Access



NO SCALE

PLANS PREPARED BY



HDR Engineering, Inc.
1670 Broadway
Suite 3400
Denver, CO 80202-4824

FOR

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION
DENVER, COLORADO



APPROVED:

CHIEF OF ENGINEERING
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

PER APPROVAL LETTER SIGNED 8/15/22

CONSULTING COUNTY ENGINEER
KINGMAN COUNTY



Know what's below.
Call before you dig.
www.call811.com

PROJECT MANAGER
Mascarenas

ABBREVIATIONS

ζ	centerline
Δ	curve delta
\emptyset	diameter
A abut.	abutment
ADT	average daily traffic
aggr.	aggregate
AH	ahead
alt.	alternate
appr.	approach
asph.	asphalt
B b.f.	both faces
beg.	beginning, begin
BK	back
BM	bench mark
BP	balance point
br.	bridge
brg.	bearing
C CBC	concrete box culvert
c-c	center to center
clr.	clear
CMP	corrugated metal pipe
Co.	county
col.	column
conc.	concrete
constr.	construction
constr. jt.	construction joint
cont.	continuous
corr.	corrugated
cr.	creek
CS	point of curve to spiral
ctrs.	centers
CTSM	contingent sum
culv.	culvert
D decr.	decrement
DHV	design hour volume
DI	drop inlet
dia. or D	diameter
diag.	diagonal
diaph.	daphragm
dist.	distance
Dist.	district
DLC	donation land claim
dwg(s).	drawing(s)
E E	east
e	superelevation rate
El. 94.066	elevation with number
elev.	elevation
emb.	embankment
enrg(s).	Engineer(s)
EOP	edge of pavement
EQ or eq.	equation
ER	edge of road
et al	and others
et ux	and wife
EW	edge of water
exc.	excavation
exp. jt.	expansion joint
ext.	exterior
F f.f.	fill face
Fed.	federal
FES	flared end section
fin.	finish
ftg.	footing
G ga.	gage (gauge)
galv.	galvanized
gdr.	girder
H hdwl.	headwall
HES	homestead entry survey
hex.	hexagon
horiz.	horizontal
HW	high water
hwy.	highway
I ID	inside diameter
incl.	inclusive, including
incr.	increment
int.	interior
J jt.	joint

L	L	length of curve
	lam.	lamination
	lat.	latitude
	long.	longitudinal
	LPSM	lump sum
	Lt. or LT	left
	LW	low water
M	mag.	magnetic
	maint.	maintenance
	matl.	material
	max.	maximum
	min.	minimum
	mon.	monument
	mtn(s).	mountain(s)
N	N	north
	NC	normal crown
	neg.	negative
	no. or #	number
O	o.c.	on centers
	o.f.	other face
	OD	outside diameter
P	PC	point of curve
	PCC	point of compound curve
	perf.	perforate
	PI	point of intersection
	pl.	plate
	POC	point on curve
	POS	point on spiral
	POT	point on tangent
	proj.	project
	psi	pounds per square inch
	PT	point of tangent
	pvmnt.	pavement
Q	quant., Qty	quantities
R	R	radius
	R.	range
	R/W	right-of-way
	rd.	road
	rdwy.	roadway
	reconst.	reconstruction
	reinf.	reinforcement
	reqd.	required
	res.	reservoir
	Res.	Reservation
	ret. wall	retaining wall
	RH	reference hub
	Rt. or RT	right
	rte.	route
S	S	south
	SADT	seasonal average daily traffic
	SC	point of spiral to curve
	sec.	section
	shldr.	shoulder
	spa.	spacing, Spaces or Spaced
	spec.	specification
	st.	street
	ST	point of spiral to tangent
	sta.	station
	std.	standard
	stiff.	stiffener
	str.	straight
	struc.	structural
	sym.	symmetrical
T	T	tangent length
	T.	township
	tan.	tangent
	TBM	temporary bench mark
	TCE	temporary construction easement
	transv.	transverse
	TS	point of tangent to spiral
	typ.	typical
V	V	design speed
	vert.	vertical
	vph	vehicles per hour
	VPI	vertical point of intersection
W	W	west

DRAINAGE SYMBOLS

Ditch (Existing, Proposed)

Flow Arrow

Drainage or Small Creek

Lake, Pond or Reservoir

Large Creek

Wetland

River

Spring

Bridge (Existing, Proposed)

Box Culvert (Existing, Proposed)

Pipe Culvert (Existing, Proposed)

With End Sections (Existing, Proposed)

With Headwalls (Existing, Proposed)

With Drop Inlet (Existing, Proposed)

Underdrain (Existing, Proposed)

Riprap Apron (Proposed)

EROSION & SEDIMENT CONTROL SYMBOLS

Bonded Fiber Matrix Mulching

Check Dam

Diversion Berm

Rolled Erosion Control Product

Riprap

Fiber Roll (Ditch and/or Cut Slope)

Silt Fence

Temporary Inlet Protection

Fiber Roll (Slope Protection)

FENCE & CATTLEGUARD SYMBOLS

Fence (Existing, Proposed)

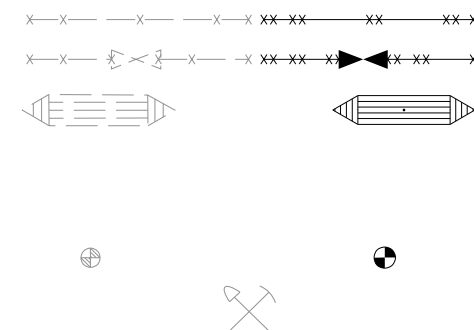
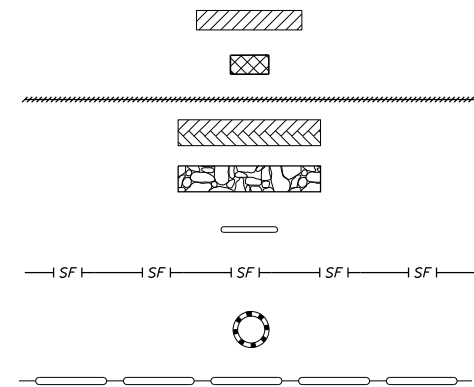
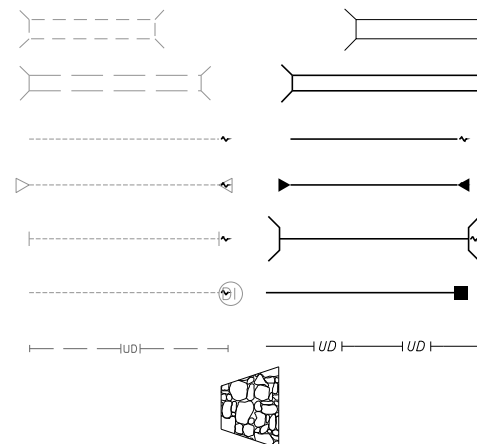
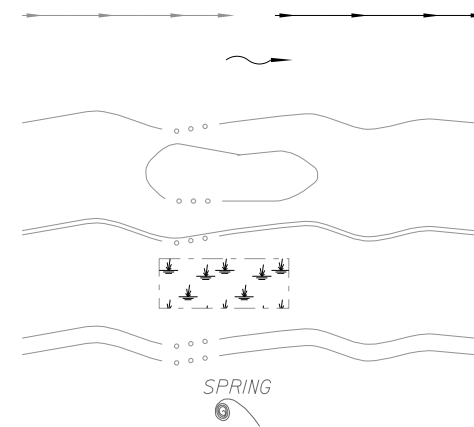
Fence w/ Gate (Existing, Proposed)

Cattleguard (Existing, Proposed)

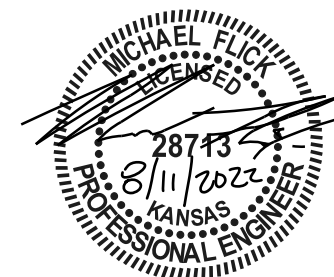
GEOLOGIC SYMBOLS

Boring Location (Existing, Proposed)

Material Source



STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	A2




U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION


CONVENTIONAL PLAN SYMBOLS AND ABBREVIATIONS

Sheet 1 of 2


9:04:01 AM c:\pwworking\centra01\2444631\SYM(050)KIN.dgn 8/2/2022


LANDSCAPING & VEGETATION SYMBOLS


Tree

Treeline


MAPPING SYMBOLS


Building (Existing, Proposed)

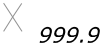
Coordinate Grid Tick


North Arrow


Railroad

Single Track

Double Track


Spot Elevation


Trail


Survey Control Point


RIGHT-OF-WAY SYMBOLS


Boundaries

National


State


County


City


Township or Range Line


Section


1/4 Section


1/16 Section

Bureau of Indian Affairs


Bureau of Land Management

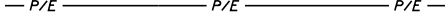
National Forest

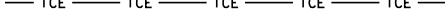
National Park


National Wildlife Refuge

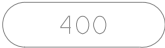
Easements


Permanent (Existing)


Permanent (Proposed)


Temporary (Proposed)

Monument (As described)

Parcel Number

Property Line

Right-of-Way Line (Existing)

Right-of-Way Line (Proposed)

Section Corner (Found, Projected)




1/4 Section Corner (Found, Projected)





1/16 Section Corner (Found)




GUARDRAIL, BARRIER & WALL SYMBOLS

Guardrail (Existing, Proposed)

Guardwall (Existing, Proposed)

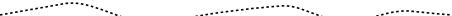
Median & Side Barrier (Existing, Proposed)


Retaining Wall (Existing, Proposed)

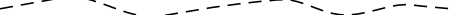
ROADWAY SYMBOLS

Clearing/Construction Limits


Slope Stake Limits


Top of Cut


Transition

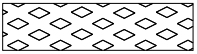
Toe of Fill

Edge of Roadway

Existing

Proposed

Roadway Centerline (With Station ticks)

Roadway Obliteration

SIGN SYMBOLS

Signs

Commercial (Existing, Proposed)

Delineator (Existing, Proposed)

Portable (Proposed)


Post Mounted (Existing, Proposed)


UTILITY SYMBOLS


Irrigation Ditch


Underground (Existing, Proposed)


Surface (Existing, Proposed)

Support Pole (Existing, Proposed)


Support Pole Anchor (Existing, Proposed)


Street Light (Existing, Proposed)


Telephone Booth (Existing, Proposed)


Telephone Pedestal (Existing, Proposed)


Underground Utility (Existing, Proposed)


CATV


Fiber Optic


Gas

Oil


Power


Sanitary Sewer


Telephone


Water

Overhead Utility Line (Existing, Proposed)

CATV

Fiber Optic

Power

Telephone

PROJECT SPECIFIC SYMBOLS

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	A3



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

CONVENTIONAL PLAN
SYMBOLS AND ABBREVIATIONS
Sheet 2 of 2

8/2/2022 9:04:03 AM c:\pwworking\central\01\42444631\STE(050)\KIN.dgn

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	A4



PROJECT : KS FLAP KIN 50(1)
DATE OF FIELD WORK :06/21/21 - 06/27/21
DATE OF FINAL ADJUSTMENT :06/29/21

PROJECT UNITS : US SURVEY FEET
COORDINATE SYSTEM : NAD83 (2011) STATE PLANE KANSAS SOUTH (1502)
EPOCH DATE : 2010.00
VERTICAL DATUM : NAVD88
MODELED : GEOID 18

GPB FILE DATED:07/01/21

Note: For all SURVEY AND STAKING REQUIREMENTS, refer to the FP14.

POINT NUMBER	STATE PLANE COORDINATES			GEO COORDINATES			MAPPING ANGLE	COMBINED FACTOR	JOB071.GPK STATION	JOB071.GPK OFFSET	DESCRIPTION
	NORTH	EAST	ELEVATION	LATITUDE	LONGITUDE	ELLIPSOID HEIGHT					
3001	1696207.12	1503654.54	1469.92	37°43'08.57536"	-97°50'18.74022"	1376.95	0°24'23.35108"	0.99987604	28+38.24	37.0284	70:CFLHD 2.5 IN AC
3002	1696168.21	1505051.99	1456.04	37°43'08.09233"	-97°50'01.35100"	1363.04	0°24'34.03724"	0.99987672	42+34.97	22.4995	70:CFLHD 2.5 IN AC
3003	1696221.86	1506449.88	1456.04	37°43'08.52366"	-97°49'43.94817"	1363.01	0°24'44.73177"	0.99987671	56+23.46	48.4864	70:CFLHD 2.5 IN AC
3004	1695370.97	1507563.00	1449.47	37°43'00.03181"	-97°49'30.17102"	1356.40	0°24'53.19821"	0.99987717	70+11.89	43.6563	70:CFLHD 2.5 IN AC
3005	1695318.12	1508961.56	1426.28	37°42'59.40888"	-97°49'12.76989"	1333.19	0°25'03.89170"	0.99987829	84+02.65	46.3899	70:CFLHD 2.5 IN AC
3006	1695833.92	1511334.43	1405.92	37°43'04.33623"	-97°48'43.19090"	1312.78	0°25'22.06882"	0.99987918	108+85.00	51.0288	70:CFLHD 2.5 IN AC
3007	1695468.96	1510297.30	1409.78	37°43'00.80356"	-97°48'56.13213"	1316.67	0°25'14.11607"	0.99987906	97+48.77	97.7073	70;US Dept of the Interior 3IN BRASS CAP STAMPED 1190 DS

Project Averages: 0.99987760

NOTE: TO PRECISELY CHECK DISTANCES BETWEEN POINTS AS MEASURED ON THE GROUND:
INVERSE THE STATE PLANE COORDINATES AND DIVIDE THE COMPUTED DISTANCE
BY A MEAN COMBINED FACTOR OF THE TWO POINTS

TO COMPUTE GEODETIC AZIMUTHS USE THE FOLLOWING FORMULA:
GEODETIC AZIMUTH = GRID AZIMUTH + MAPPING ANGLE



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

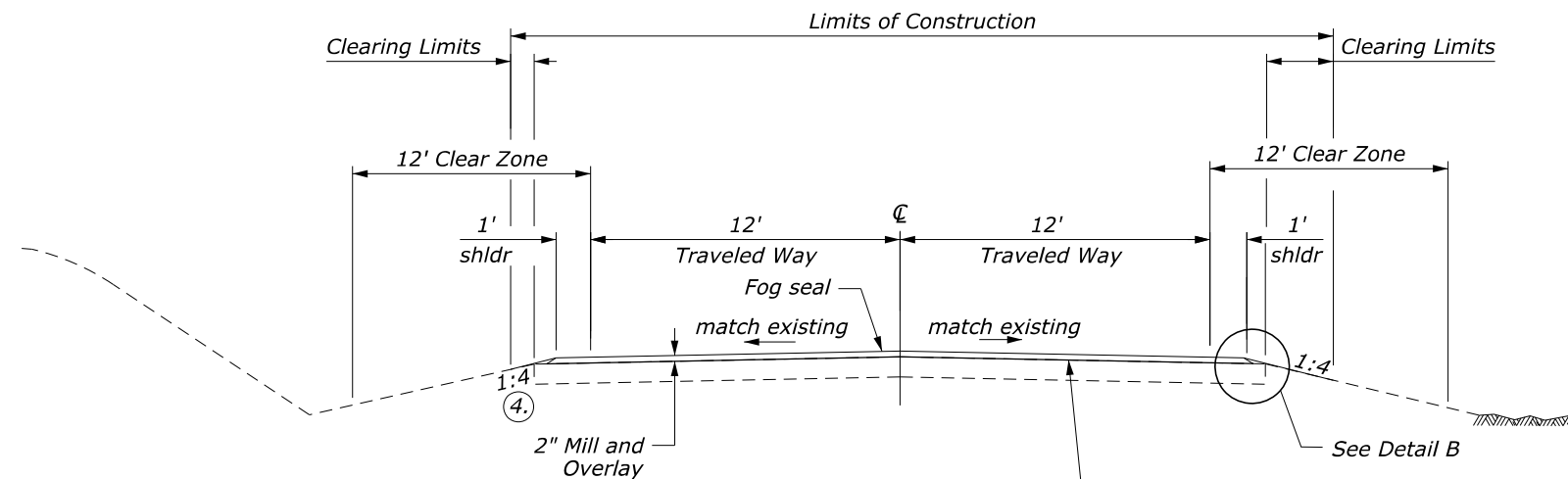
SURVEY CONTROL

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	A6

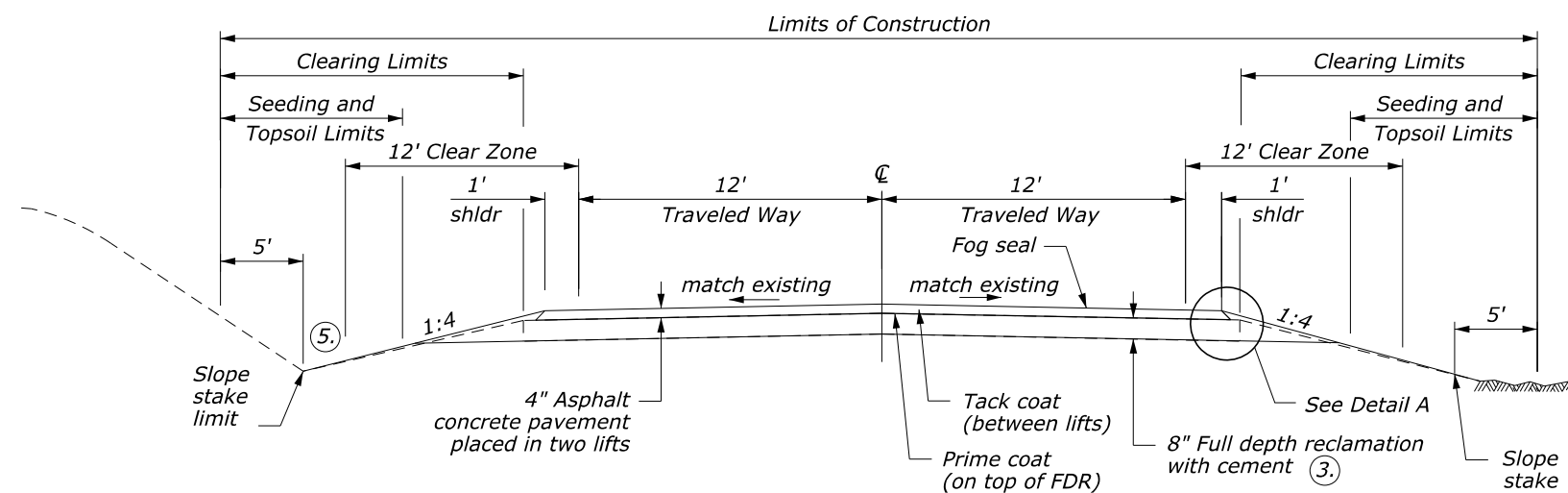
LENGTH OF PROJECT

<i>Station to Station</i>	<i>Roadway (ft)</i>
<i>11+55 to 121+00</i>	<i>10,945</i>
<i>TOTALS (ft)</i>	<i>10,945</i>
<i>TOTAL (mi)</i>	<i>2.07</i>

RS 607
EXISTING TYPICAL SECTION
11+55 to 37+41
42+76 to 121+00



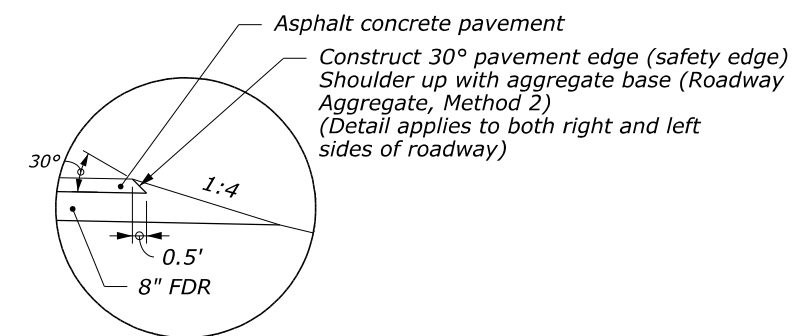
RS 607
TYPICAL SECTION
11+55 to 12+68



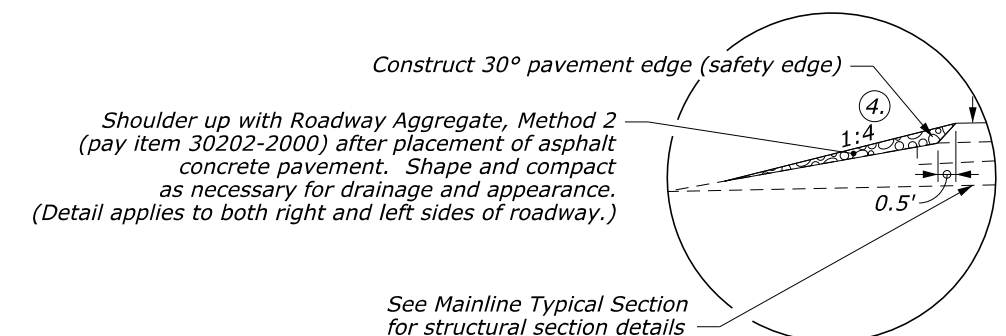
RS 607
TYPICAL SECTION
12+68 to 37+41
42+76 to 121+00

NOTE:

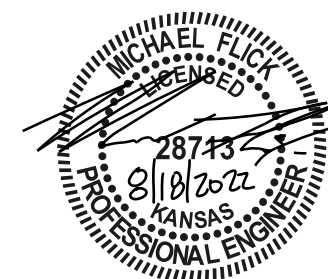
1. *Existing superelevated and widened sections are not shown.*
2. *Dimensions shown are approximate and may be varied by the CO.*
3. *Reclaim to the depth specified in the typical section or to the bottom of existing pavement, if greater. See the Pavement Report for more information on existing pavement conditions.*
4. *Construct a 1:4 or flatter foreslope.*
5. *The gradient and width of roadway ditches and the excavation and embankment slope ratios may be adjusted by the CO to assure adequate drainage and stability.*
6. *During clearing and grubbing, windrow existing topsoil material outside of existing roadway edge. Incidental to placing conserved topsoil, not paid separately. After completion of final asphalt surfacing, grade the windrowed topsoil material onto the final roadway fill slopes during final grading. Paid as placing conserved topsoil.*
7. *Transition to match existing pavement at project limits according to special detail 401-A.*



DETAIL A



DETAIL B



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

TYPICAL SECTIONS

Sheet 1 of 2

NO SCALE

1:45:58 PM c:\pwworking\central01\d2444631\TYP(050)KIN_01.dgn

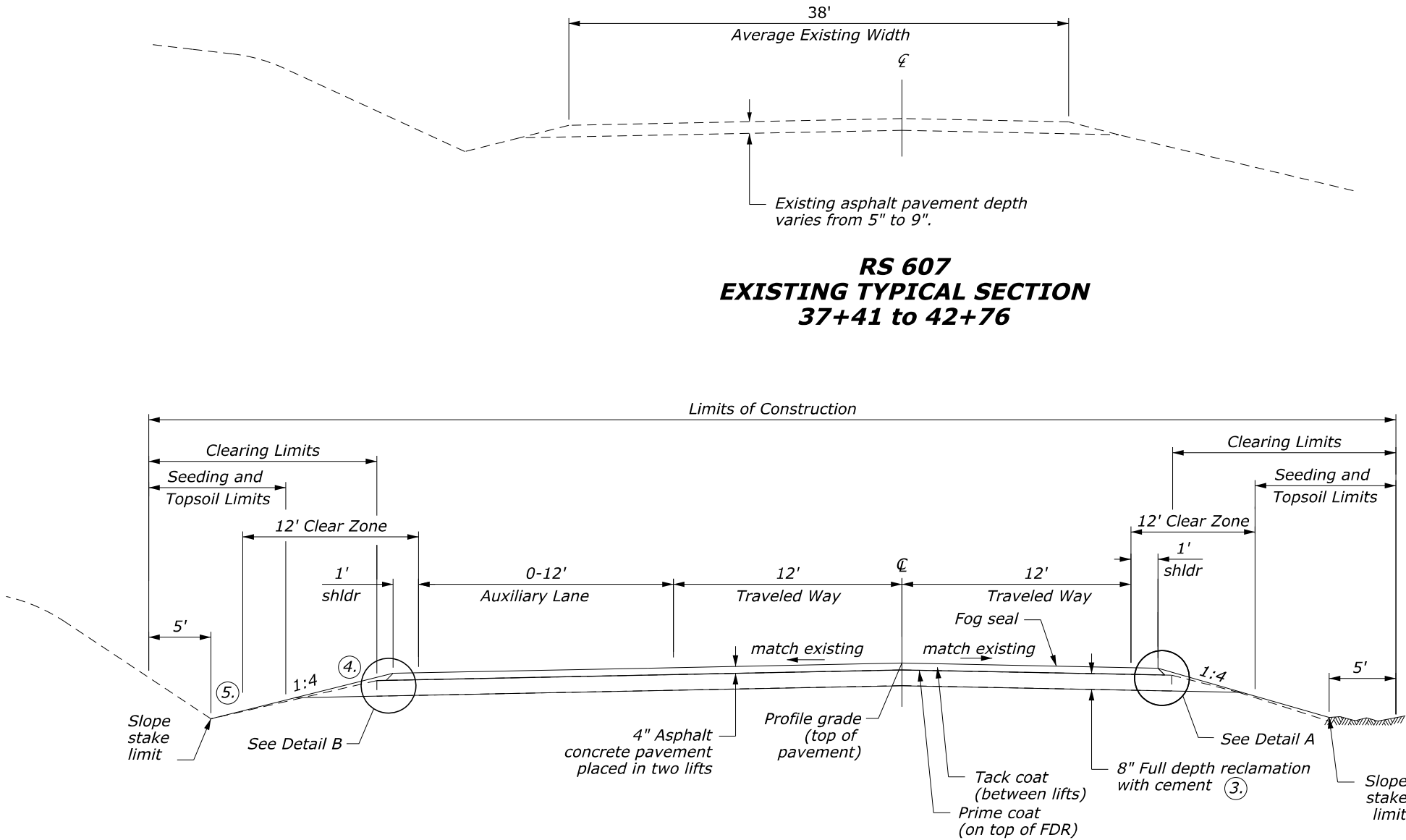
8/18/2022

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	A7

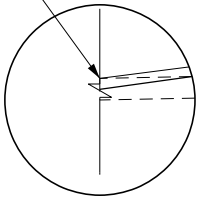
NOTE:

- Existing superelevated and widened sections are not shown.
- Dimensions shown are approximate and may be varied by the CO.
- Reclaim to the depth specified in the typical section, or to the bottom of existing pavement, if greater. See the Pavement Report for more information on existing pavement conditions.
- Construct a 1:4 or flatter foreslope.
- The gradient and width of roadway ditches and the excavation and embankment slope ratios may be adjusted by the CO to assure adequate drainage and stability.
- During clearing and grubbing, windrow existing topsoil material outside of existing roadway edge. Incidental to placing conserved topsoil, not paid separately. After completion of final asphalt surfacing, grade the windrowed topsoil material onto the final roadway fill slopes during final grading. Paid as placing conserved topsoil.

RS 607
EXISTING TYPICAL SECTION
37+41 to 42+76

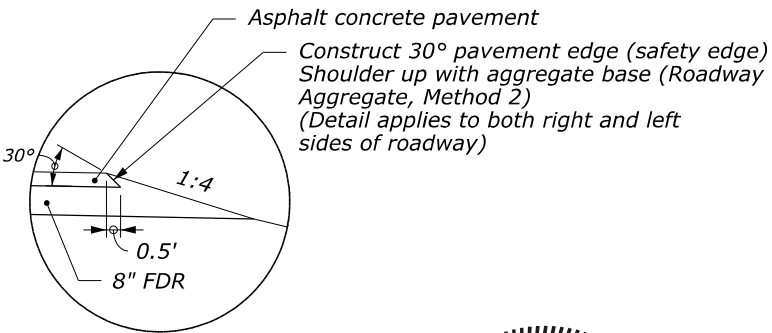


Match existing pavement
at Cheney Reservoir West
Shore Entrance Road

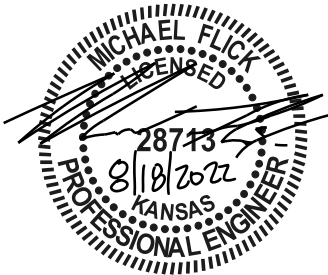


DETAIL B
39+92 to 40+82

RS 607
TYPICAL SECTION
37+41 to 42+76



DETAIL A



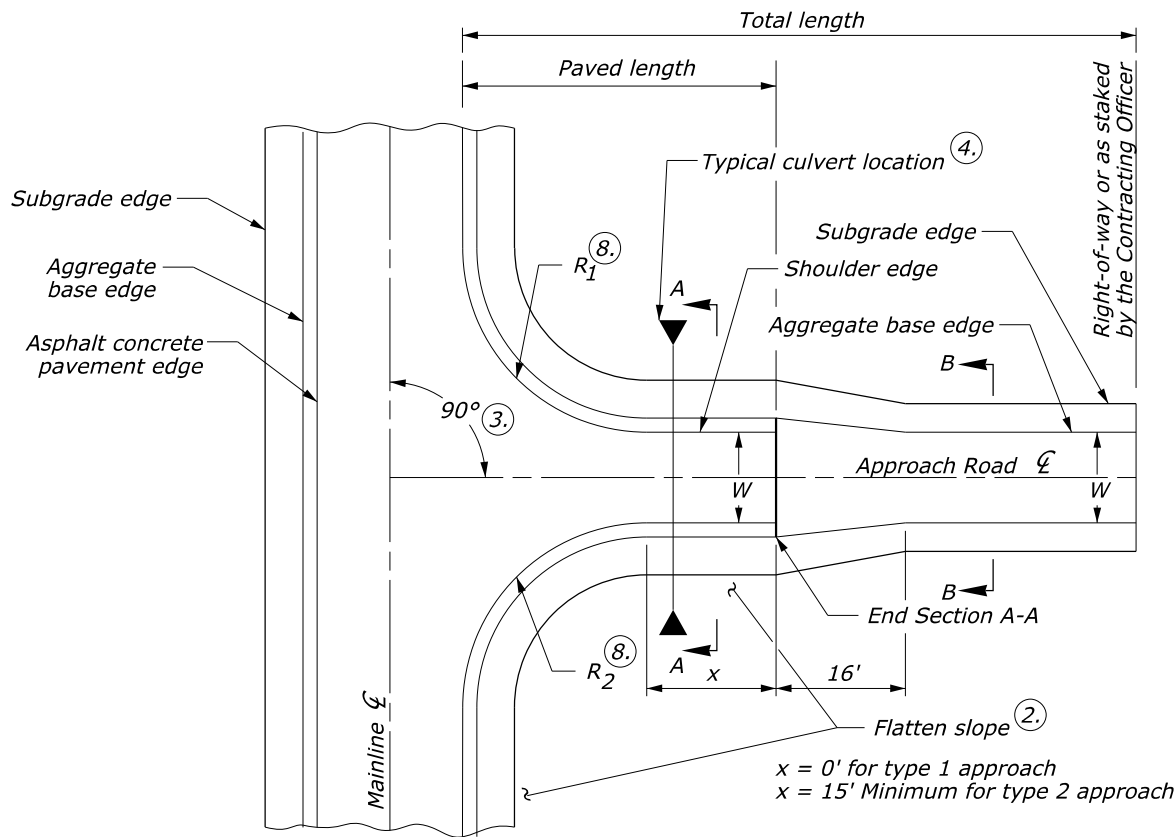
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

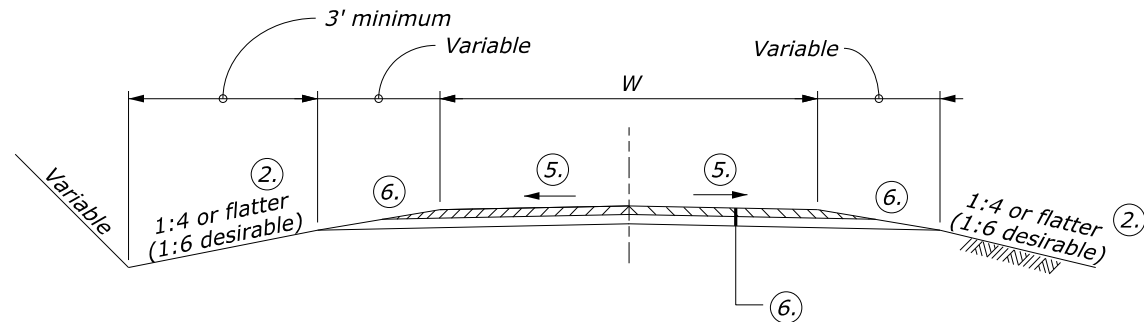
TYPICAL SECTIONS

Sheet 2 of 2

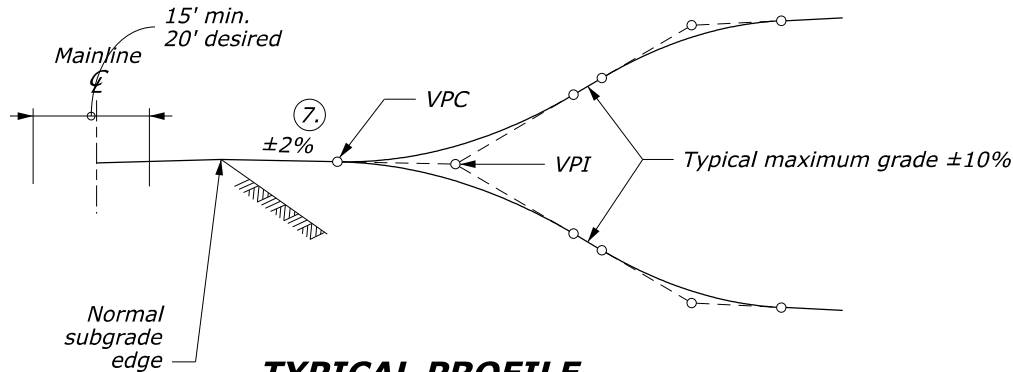
\$USER\$
9:04:11 AM c:\pwworking\centra01\42444631\TYP(050)KIN_03.dgn 8/2/2022



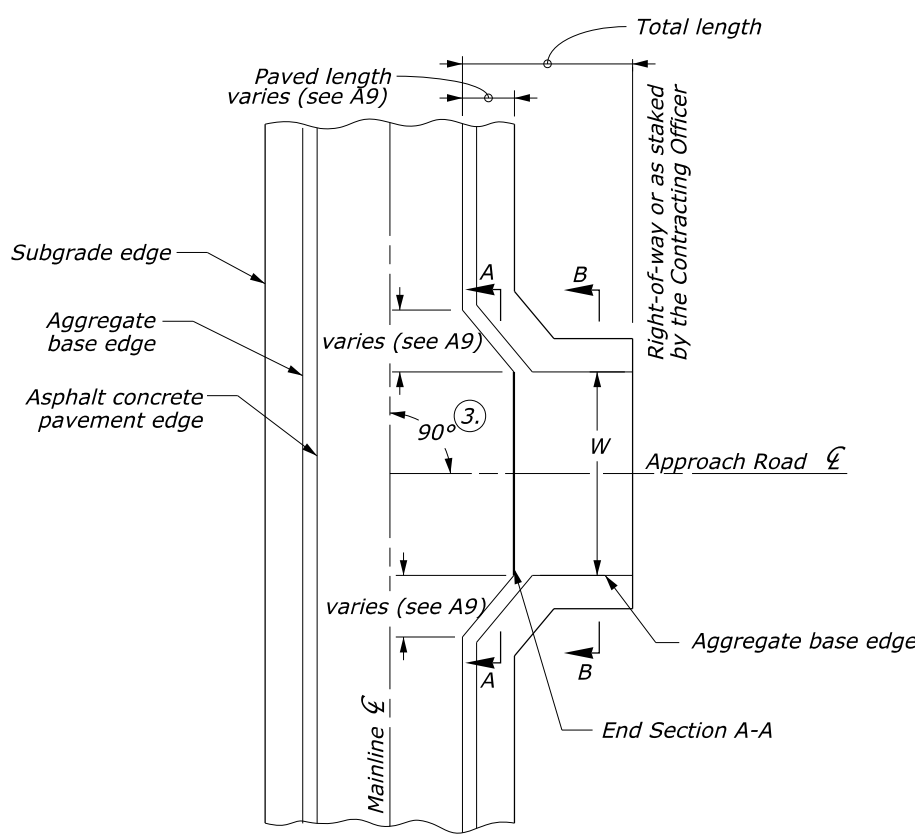
**APPROACH ROAD
TYPES 1 & 2
TYPICAL PLAN**



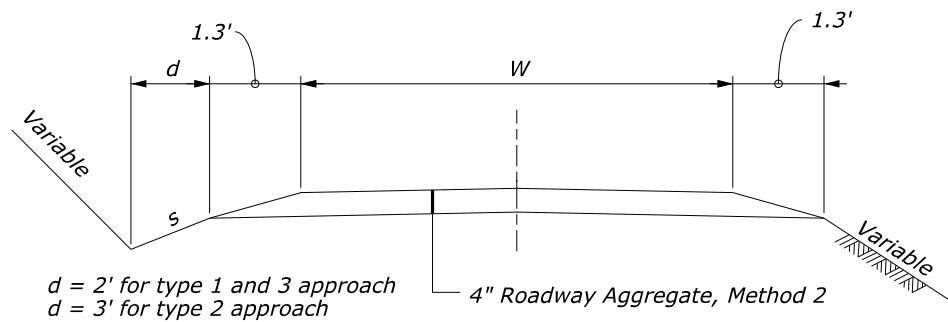
SECTION A-A



TYPICAL PROFILE

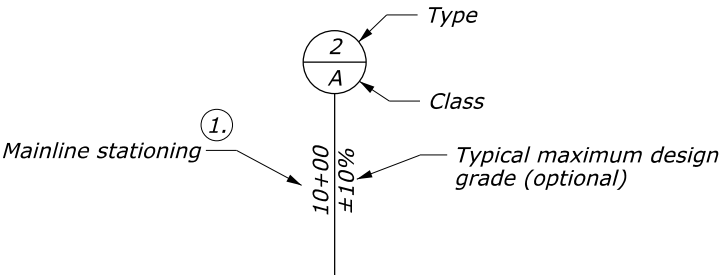


**APPROACH ROAD
TYPE 3
TYPICAL PLAN**



d = 2' for type 1 and 3 approach
d = 3' for type 2 approach
s = 1:3 for type 1 and 3 approach
s = 1:4 for type 2 approach

SECTION B-B



TYPICAL SYMBOL

- NOTE:**
1. Stations shown are approximate locations. Actual locations to be field verified.
 2. Construct cut and fill slopes for approach roads to match with mainline roadway construction.
 3. Under special conditions, the approach road angle shown may be varied $\pm 20^\circ$.
 4. Place culverts at the end of the approach road radius to provide a flatter foreslope and increased mainline recovery area. When a culvert must be placed within the clear zone of the mainline roadway, use safety end sections (see Standard Drawing 602-9).
 5. Apply the normal crown to approach roads with widths greater than 15 feet.
 6. Refer to mainline typical sections for structural section thicknesses and foreslopes.
 7. Construct approach roads with landing areas having grades within $\pm 2\%$. In snowy regions restrict this to a 0% to -2% grade. Under special conditions, use 6% maximum.
 8. Vary radii to fit unusual field conditions. Do not reduce existing radii or widths. R_1 is on the left side of the approach road centerline.

TYPE	CLASS	MIN. WIDTH W (ft)	MIN. RADIUS R (ft)	SAMPLE APPLICATION
1	A	12	15	Field Access
1	B	14	25	Minimum 1-Way Use
1	C	16	25	Farm Equipment
1	D	16	40	Logging Truck Use
2	A	18	25	Minimum 2-Way Use
2	B	20	25	ADT < 25
2	C	22	40	25 ≤ ADT < 100
2	D	24	40	100 ≤ ADT < 199
2	E	28	50	ADT ≥ 200
3	A	*	N/A	Paved apron

* Match existing



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

**TTYPICAL SECTIONS
APPROACH ROADS**

Sheet 1 of 2

NO SCALE

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	A9

NOTE:

- ①. Stations shown are approximate locations.
Actual locations to be field verified.

APPROACH ROAD SUMMARY							
STATION①.	TYPE & CLASS	PAVED LENGTH (ft)	TOTAL LENGTH (ft)	W (ft)	R ₁ (ft)	R ₂ (ft)	REMARKS
12+12 Rt.	3A	5	5	93.27	N/A	N/A	NE 150th Avenue South Tie-in (paved)
12+15 Lt.	2A	10	10	44.58	25	45	NE 150th Avenue North Tie-in (unpaved)
13+11 Lt.	1A	5	5	22.13	15	15	Gravel Field Access
21+45 Lt.	1A	10	10	16.51	15	15	Gravel Field Access
25+52 Rt.	3A	10	10	43.33	N/A	N/A	Commercial Property
31+57 Rt.	3A	10	10	34.55	N/A	N/A	Paved Apron
35+26 Rt.	3A	5	5	17.24	N/A	N/A	Paved Apron
37+10 Rt.	1A	5	5	12.00	15	15	Gravel Field Access
40+09 Rt.	3A	10	10	348.91	N/A	N/A	Bait Shop Paved Apron
40+38 Lt.	2A	12	12	90.38	25	25	Cheney Reservoir West Shore Entrance Road (paved)
46+48 Rt.	2A	21	21	32.94	40	30	NE Tumbleweed Lane Tie-in (paved)
49+15 Lt.	3A	5	5	12.00	N/A	N/A	Paved Apron
50+35 Rt.	1A	5	5	12.00	15	15	Gravel Field Access
51+69 Rt.	2A	16	16	37.00	37	35	NE Sunset Lane Tie-in (paved)
53+99 Rt.	1A	5	5	12.30	15	15	Gravel Field Access
55+24 Rt.	3A	5	5	19.54	N/A	N/A	Paved Apron
57+48 Rt.	3A	5	5	19.10	N/A	N/A	Paved Apron
59+32 Rt.	3A	10	10	28.37	N/A	N/A	Paved Apron
62+31 Rt.	3A	5	5	14.51	N/A	N/A	Paved Apron
64+83 Rt.	2A	18	18	26.65	30	32.5	NE Trailridge Road Tie-in (paved)
67+03 Lt.	2A	8	8	18.04	25	25	Cheney State Park Employee Access Rd. (paved)
67+74 Rt.	2A	33	33	46.62	105	62	NE 160th Ave Tie-in (paved)



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

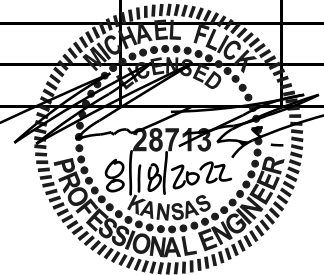
TYPICAL SECTIONS
APPROACH ROADS

c:\pwworking\central01\q2444633\ISOQ_KS FLAP KIN 50(1)_EEBACS_.xslm]Sheet 18-Aug-2022 2:09 PM

SUMMARY OF QUANTITIES - Schedule A

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) Cheney Reservoir Access	B1

A M E N D	Line Item No.	Pay Item Number	Pay Item Description	Unit	Sheet and Description								Estimated Quantities	Remarks and/or Determination of Estimated Quantity
					B3	B3	B3	B3	B4	B5	B5			
					Survey Summary	Clearing and Grubbing Summary	Drainage Summary	Seeding Summary	Surfacing Summary	Permanent Signing Summary	Permanent Pavement Markings Summary	Allowances	Bid Schedule	
	A0010	15101-0000	MOBILIZATION	LPSM									ALL	
	A0020	15210-3000	CENTERLINE, VERIFICATION AND STAKING	MILE	2.070								2.070	
	A0030	15301-0000	CONTRACTOR QUALITY CONTROL	LPSM									ALL	
	A0040	15401-0000	CONTRACTOR TESTING	LPSM									ALL	
	A0050	15501-0000	CONSTRUCTION SCHEDULE	LPSM									ALL	
	A0060	15701-0000	SOIL EROSION CONTROL	LPSM									ALL	
	A0070	15720-0000	STORM WATER POLLUTION PREVENTION PLAN	LPSM									ALL	
	A0080	15802-0000	WATERING FOR DUST CONTROL	LPSM									ALL	
	A0090	20101-0000	CLEARING AND GRUBBING	ACRE		4.18						0.32	4.50	
	A0100	20301-2000	REMOVAL OF PIPE END SECTION	EACH			1						1	
	A0110	20301-2400	REMOVAL OF SIGN	EACH						16			16	
	A0120	30202-2000	ROADWAY AGGREGATE, METHOD 2	TON					783			67	850	
	A0130	30301-3000	SHOULDER AND DITCH RECONDITIONING	MILE					2.07				2.07	
	A0140	30501-0800	FULL DEPTH RECLAMATION WITH CEMENT, 8-INCH DEPTH	MILE					2.05			0.15	2.20	
	A0150	30510-0000	CEMENTITIOUS MATERIAL	TON					400			50	450	
	A0160	40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON					7,408			392	7,800	
	A0170	40601-0000	FOG SEAL	TON					13.8			1.2	15.0	
	A0180	40605-0000	BLOTTER	TON					46				50	
	A0190	41101-1000	PRIME COAT, METHOD 1	TON					45.2			2.8	48.0	
	A0200	41201-0000	TACK COAT	TON					14.3			0.7	15.0	
	A0210	41301-0600	ASPHALT PAVEMENT MILLING, 2-INCH DEPTH	SQYD					390			10	400	
	A0220	60201-0800	24-INCH PIPE CULVERT	LNFT			3						3	
	A0230	60210-0800	END SECTION FOR 24-INCH PIPE CULVERT	EACH			1						1	
	A0240	60704-0000	CLEANING CULVERT IN PLACE	EACH			18						18	
	A0250	62201-0200	DUMP TRUCK, 8 CUBIC YARD MINIMUM CAPACITY	HOURL									20	
	A0260	62201-0550	BACKHOE LOADER, 6 CUBIC FOOT MINIMUM RATED CAPACITY BUCKET, 24-INCH WIDTH	HOURL									20	
	A0270	62201-0950	WHEEL LOADER, 3 CUBIC YARD MINIMUM RATED CAPACITY	HOURL									20	
	A0280	62201-1450	BULLDOZER, 350HP MINIMUM FLYWHEEL POWER	HOURL									20	
	A0290	62201-2850	MOTOR GRADER, 12 FOOT MINIMUM BLADE	HOURL									20	
	A0300	62201-3350	HYDRAULIC EXCAVATOR, 1 CUBIC YARD MINIMUM CAPACITY	HOURL									20	
	A0310	62301-0000	GENERAL LABOR	HOURL									200	
	A0320	62302-1000	SPECIAL LABOR, HIRED TECHNICAL SERVICES (BIOLOGIST)	HOURL									20	
	A0330	62302-1100	SPECIAL LABOR, HIRED SURVEY SERVICES	HOURL									20	
	A0340	62405-0300	PLACING CONSERVED TOPSOIL, 4-INCH DEPTH	SQYD				11,576				1,424	13,000	
	A0350	62510-2000	SEEDING, HYDRAULIC METHOD	ACRE				2.39				0.11	2.50	



MileStone: 100% Submittal
Date Completed: 06/20/22
Report Date: 06/20/22

SUMMARY OF QUANTITIES - Schedule A

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) Cheney Reservoir Access	B2

A M E N D	Line Item No.	Pay Item Number	Pay Item Description	Unit	Sheet and Description								Estimated Quantities	Remarks and/or Determination of Estimated Quantity
					B3	B3	B3	B3	B4	B5	B5			
					Survey Summary	Clearing and Grubbing Summary	Drainage Summary	Seeding Summary	Surfacing Summary	Permanent Signing Summary	Permanent Pavement Markings Summary	Allowances	Bid Schedule	
	A0360	62515-2000	MULCHING, HYDRAULIC METHOD	ACRE				2.39				0.11	2.50	
	A0370	63301-0000	SIGN SYSTEM	EACH						16			16	
	A0380	63309-0100	DELINEATOR, TYPE 1	EACH						68			68	
	A0390	63316-1000	REMOVE AND RESET SIGN	EACH						3			3	
	A0400	63402-0700	PAVEMENT MARKINGS, TYPE D, SOLID	MILE							7.9	0.6	8.5	
	A0410	63501-0000	TEMPORARY TRAFFIC CONTROL	LPSM									ALL	



8/2/2022 9:04:14 AM c:\pwworking\centra\01\02444632\TAB(050)\KIN_03.dgn

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	B3

SURVEY AND STAKING SUMMARY						
Item Number				15210-3000		
Station to Station			Side	CENTERLINE, VERIFICATION AND STAKING		Remarks
				MILE		
RS 607 (NE 50th Street)						
11+55	to	121+00	LT/RT	2.07		
TOTAL				2.07		

CLEARING AND GRUBBING SUMMARY						
Item Number				20101-0000		
Station to Station			Side	CLEARING AND GRUBBING	Remarks	
				ACRE		
RS 607 (NE 50th Street)						
11+55	to	32+00	LT/RT	0.79		
32+00	to	60+00	LT/RT	1.06		
60+00	to	88+00	LT/RT	1.06		
88+00	to	116+00	LT/RT	1.06		
116+00	to	121+00	LT/RT	0.21		
TOTAL				4.18		

DRAINAGE SUMMARY							
Item Number			20301-2000	60201-0800	60210-0800	60704-0000	
Station	Side	Skew (deg)	REMOVAL OF PIPE END SECTION	24-INCH PIPE CULVERT	END SECTION FOR 24- INCH PIPE CULVERT	CLEANING CULVERT IN PLACE	Remarks
			EACH	LNFT	EACH	EACH	
RS 607 (NE 50th Street)							
14+16	LT/RT	89°57'11"				1	
25+51	RT	NA				1	
34+55	RT	NA				1	
35+29	RT	NA				1	
37+11	RT	NA				1	
40+36	LT	NA				1	
42+58	RT	NA				1	
45+59	LT/RT	88°16'54"				1	
50+35	RT	NA				1	
51+68	RT	NA				1	
52+55	LT/RT	90°07'36"				1	
54+01	RT	NA				1	
55+23	RT	NA				1	
57+45	RT	NA				1	
62+29	RT	NA				1	
64+81	RT	NA				1	
67+02	LT	NA				1	
97+00	LT/RT	88°18'11"	1	3	1	1	
TOTALS			1	3	1	18	

SEEDING SUMMARY											
Item Number				62405-0300		62510-2000		62515-2000			
Station to Station			Side	PLACING CONSERVED TOPSOIL, 4-INCH DEPTH		SEEDING, HYDRAULIC METHOD		MULCHING, HYDRAULIC METHOD		Remarks	
				SQYD		ACRE		ACRE			
RS 607 (NE 50th Street)											
11+55	to	32+00	LT/RT	2090		0.43		0.43			
32+00	to	60+00	LT/RT	2720		0.56		0.56			
60+00	to	88+00	LT/RT	3150		0.65		0.65			
88+00	to	116+00	LT/RT	3051		0.63		0.63			
116+00	to	121+00	LT/RT	565		0.12		0.12			
TOTAL				11576		2.39		2.39			



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

**SURVEY, CLEARING AND
GRUBBING, DRAINAGE, AND
SEEDING SUMMARIES**

c:\pwworking\centra01\24446321TAB(050)KIN_04.dgn 9:04:16 AM 8/2/2022

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	B4

SURFACING SUMMARY														
Item Number				30202-2000	30301-3000	30501-0800	30510-0000	40301-0100	40601-0000	40605-0000	41101-1000	41201-0000	41301-0600	Remarks
Station to Station			Side	ROADWAY AGGREGATE, METHOD 2	SHOULDER AND DITCH RECONDITIONING	FULL DEPTH RECLAMATION WITH CEMENT, 8- INCH DEPTH	CEMENTITIOUS MATERIAL	ASPHALT CONCRETE PAVEMENT, TYPE 1	FOG SEAL	BLOTTER	PRIME COAT, METHOD 1	TACK COAT	ASPHALT PAVEMENT MILLING, 2-INCH DEPTH	
				TON	MILE	MILE	TON	TON	TON	TON	TON	TON	TON	
RS 607 (NE 50th Street)														
11+55	to	12+68	LT/RT	8	0.02			43	0.1			0.6	390	2" mill and overlay (intersection)
12+68	to	32+00	LT/RT	134	0.37	0.37	69.8	1227	2.4	8	7.9	2.4		
11+73	to	12+66	LT					14						Paved approach road apron
12+88	to	13+32	LT	5										Gravel approach road apron
21+24	to	21+59	LT	8										Gravel approach road apron
25+08	to	25+85	RT					14						Paved approach road apron
31+22	to	31+92	RT					12						Paved approach road apron
32+00	to	60+00	LT/RT	195	0.53	0.53	101.2	1779	3.5	12	11.5	3.5		
35+14	to	35+43	RT					2						Paved approach road apron
36+94	to	37+28	RT	3										Gravel approach road apron
37+42	to	42+76	RT					101						Paved approach road apron
37+48	to	39+71	LT				2.2	39	0.1		0.3	0.1		Taper for Widening
39+71	to	41+09	LT					33						Cheney Reservoir West Shore Entrance Apron
39+71	to	42+30	LT				4.0	69	0.1		0.4	0.1		Full Widening at Cheney Reservoir West Shore Entrance
42+30	to	44+51	LT				1.9	33	0.1		0.2	0.1		Taper for Widening
45+96	to	46+93	RT					26						Paved approach road apron
49+04	to	49+26	RT					2						Paved approach road apron
50+18	to	50+53	RT	3										Gravel approach road apron
51+20	to	52+17	RT					22						Paved approach road apron
53+82	to	54+17	RT	3										Gravel approach road apron
55+10	to	55+36	RT					3						Paved approach road apron
57+33	to	57+62	RT					3						Paved approach road apron
59+08	to	59+56	RT					8						Paved approach road apron
60+00	to	88+00	LT/RT	195	0.53	0.53	101.2	1779	3.5	12	11.5	3.5		
62+20	to	62+46	RT					3						Paved approach road apron
64+46	to	65+24	RT					19						Paved approach road apron
66+75	to	67+31	LT					5						Paved approach road apron
66+81	to	68+39	RT					76						Paved approach road apron
88+00	to	116+00	LT/RT	195	0.53	0.53	101.2	1779	3.5	12	11.5	3.5		
116+00	to	121+00	LT/RT	35	0.09	0.09	18.1	318	0.6	2	2.0	0.6		
TOTAL				783	2.07	2.05	400	7408	13.8	46	45.2	14.3	390	

NOTE:

- Unit weight for Aggregate, 139 LBS/CUFT
- Unit weight for Asphalt Concrete Pavement, 145 LBS/CUFT, item includes asphalt binder PG 64-22.
- Rate of application for Fog Seal estimated at 0.1 GAL/SQYD diluted. (233 GAL/TON)
- Apply Tack Coat on pulverized base course material before paving.
- Rate of application for Tack Coat estimated at 0.1 GAL/SQYD. (233 GAL/TON)
- Rate of application for Cementitious Material is estimated at 3% by weight of aggregate.
- Rate of application for Prime Coat estimated at 0.33 GAL/SQYD. (233 GAL/TON)
- Rate of application for Blotter estimated at 14.75 LBS/SQYD. (0.007375 TON/SQYD)



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

SURFACING SUMMARY

9:04:19 AM c:\pwworking\central\01\42444632\TAB(050)\KIN_05.dgn 8/2/2022

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	B5

PERMANENT SIGN SUMMARY									
Item Number				20301-2400	63301-0000	63309-0100	63316-1000	Remarks	
Station	Side	MUTCD Reference	Description	Sign Panel	REMOVAL OF SIGN	SIGN SYSTEM	DELINEATOR, TYPE 1		REMOVE AND RESET SIGN
				in x in	EACH	EACH	EACH		EACH
RS 607 (NE 50th Street)									
11+92	LT	R1-1	Stop	30 x 30	1	1	68		
12+52	RT	R1-1	Stop	30 x 30	1	1			
14+27	RT	R2-1	Speed Limit	24 x 30	1	1			45 MPH
14+32	LT	Special 1	Mt. Vernon Sign	42 x 9				1	
18+83	LT	W2-1	Cross Road	30 x 30	1	1			
37+85	LT	R2-1	Speed Limit	24 x 30	1	1			45 MPH
48+25	LT	Special 2	Cheney State Park with Right Arrow	48 x 12				1	
48+59	RT	W1-2R	Curve Right	30 x 30	1	1			
54+85	RT	R2-1	Speed Limit	24 x 30	1	1			45 MPH
62+45	RT	W1-2L	Curve Left	30 x 30	1	1			
63+97	LT	R2-1	Speed Limit	24 x 30	1	1			45 MPH
65+88	LT	W1-2L	Curve Left	30 x 30	1	1			
69+33	RT	R2-1	Speed Limit	24 x 30	1	1			45 MPH
79+20	LT	W1-2R	Curve Right	30 x 30	1	1			
91+60	RT	W1-2L	Curve Left	30 x 30	1	1			
107+15	LT	W1-2R	Curve Right	30 x 30	1	1			
114+28	LT	R2-1	Speed Limit	24 x 30	1	1			45 MPH
119+40	LT	W3-5a	XX MPH Speed Zone Ahead	36 x 36	1	1			45 MPH
120+77	LT	Special 3	No Commercial Traffic Ahead	24 x 30				1	
			Welcome to Kingman County	24 x 30					
TOTALS					16	16	68	3	

PERMANENT PAVEMENT MARKINGS SUMMARY										
Station to Station				Side	Item Number				63402-0700	Remarks
					LEFT		RIGHT		PAVEMENT MARKINGS, TYPE D, SOLID	
					Edge Solid White 4 inches	Centerline Double Yellow 4 inches	Edge Solid White 4 inches	Centerline Double Yellow 4 inches		
					LNFT	LNFT	LNFT	LNFT	MILE	
RS 607 (NE 50th Street)										
12+65	to	39+71	LT	2706.00				0.51		
12+65	to	45+96	RT			3331.00		0.63		
12+65	to	39+71	LT/RT		2706.00		2706.00	1.03		
41+07	to	42+30	LT	123.00				0.02		
41+07	to	45+96	LT/RT		489.00		489.00	0.19		
44+51	to	66+76	LT	2225.00				0.42		
46+93	to	51+20	RT			427.00		0.08		
46+93	to	51+20	LT/RT		427.00		427.00	0.16		
52+17	to	64+45	RT			1228.00		0.23		
52+17	to	64+45	LT/RT		1228.00		1228.00	0.47		
65+20	to	66+80	RT			160.00		0.03		
65+20	to	66+80	LT/RT		160.00		160.00	0.06		
66+76	to	67+30	RT			54.00		0.01		
66+76	to	67+30	LT/RT		54.00		54.00	0.02		
67+30	to	121+00	LT	5370.00				1.02		
68+50	to	121+00	RT		5250.00		5250.00	1.99		
68+50	to	121+00	LT/RT			5250.00		0.99		
TOTAL									7.9	



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

PERMANENT SIGNING AND
PERMANENT PAVEMENT
MARKINGS SUMMARIES

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	C1

11+55
Begin Project
KS FLAP KIN 50(1)
Cheney Reservoir Access
N: 1696171.35
E: 1501998.57



11+91
R1-1
(Protect in Place)

11+53
Utility Pedestal
(Protect in Place)

11+63
Water Marker
(Protect in Place)

NE 150th Avenue

2
A

3
A

12+30
D3-1 (Protect in Place)

12+45
Cheney State Park Sign (Protect in Place)

12+65
Begin 4" solid white edge stripe LT/RT
Begin 4" solid double yellow stripe CL

14+18
End Pavement Transition
(see special 401-A)

14+32
Remove and Reset
Mount Vernon Sign

Proposed Edge of Traveled Way
Proposed EOP

RS 607

Existing EOP
Limits of Construction

SPEED
LIMIT
45

14+27
Remove and Replace R2-1

Existing Culvert (Protect in Place)



12+52
Remove and Replace R1-1

12+52
Store Sign
(Protect in Place)



18+81
Remove and
Replace W2-1

Proposed EOP

1
A

Proposed Edge of Traveled Way

RS 607

Existing Overhead Power
(Protect in Place)

Existing Underground Water
(Protect in Place)

Existing Underground Fiber Optic
(Protect in Place)

3
A

Mailbox
(Protect in Place)

Existing 18" CMP (Protect in Place)

Existing EOP

Existing 12" CMP
(Protect in Place)

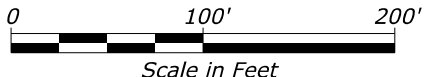
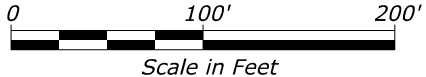
25+00

±10%
25+52

3
A

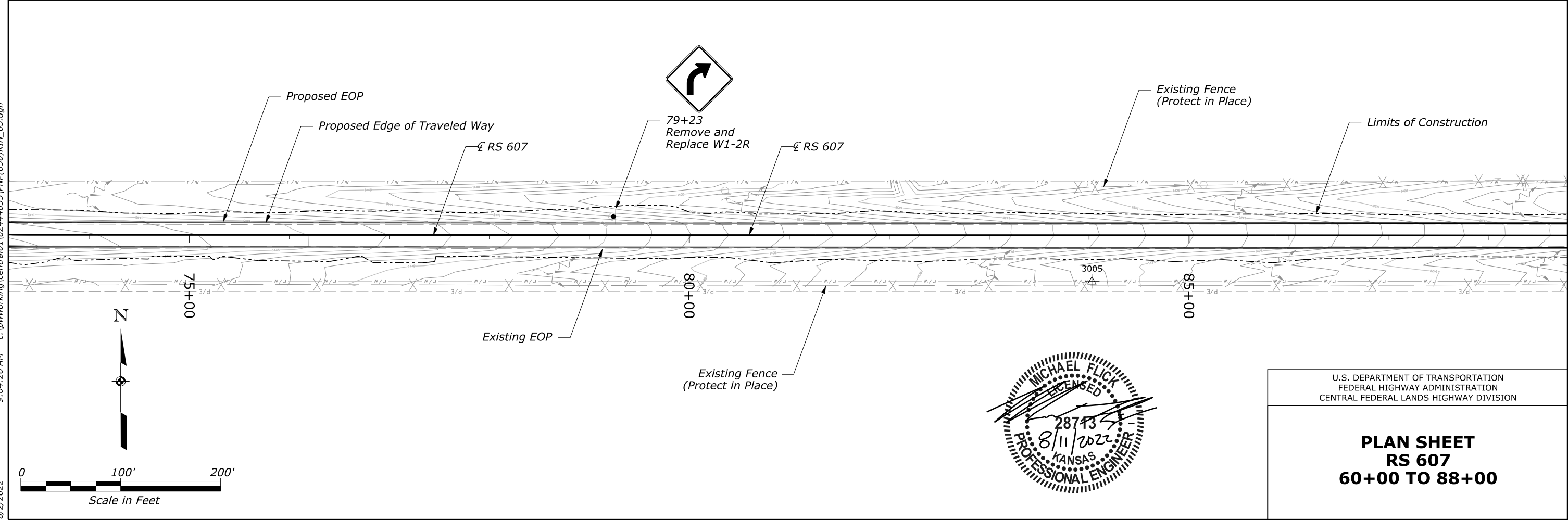
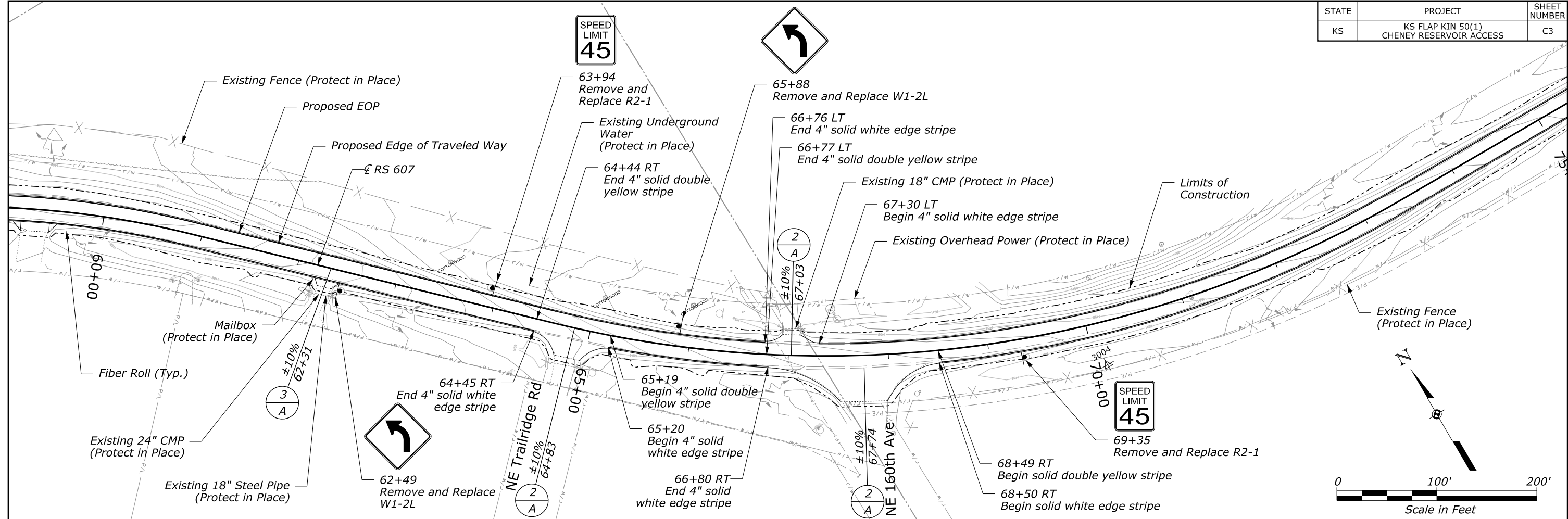
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

PLAN SHEET
RS 607
10+00 TO 32+00



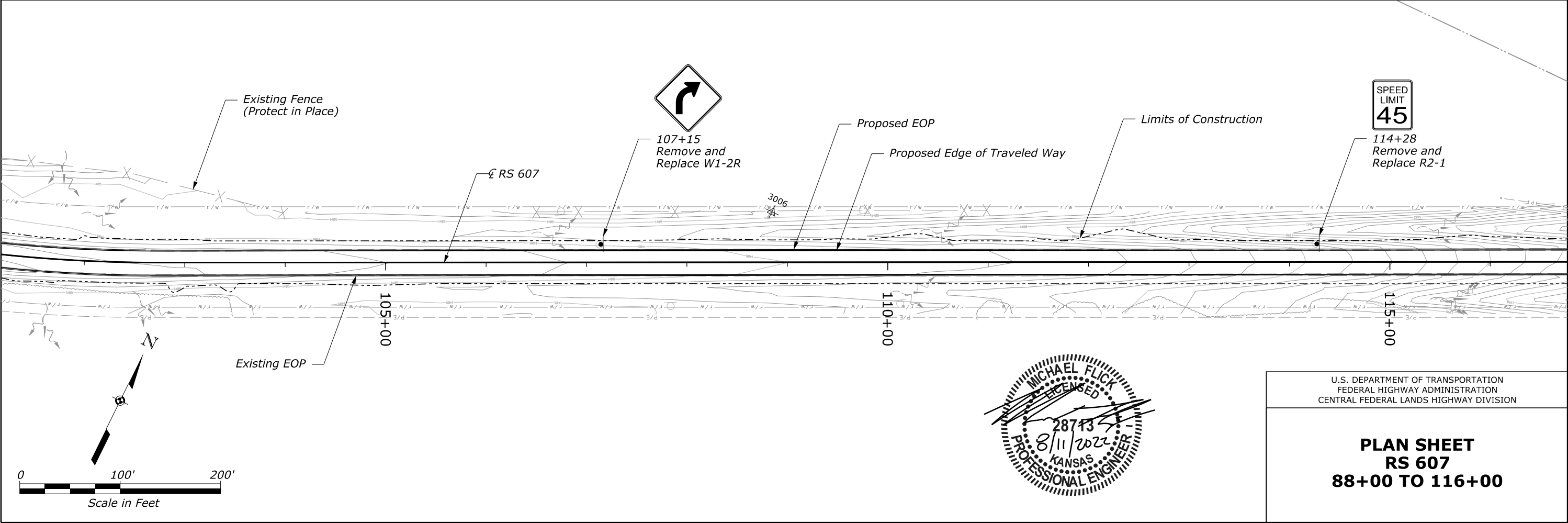
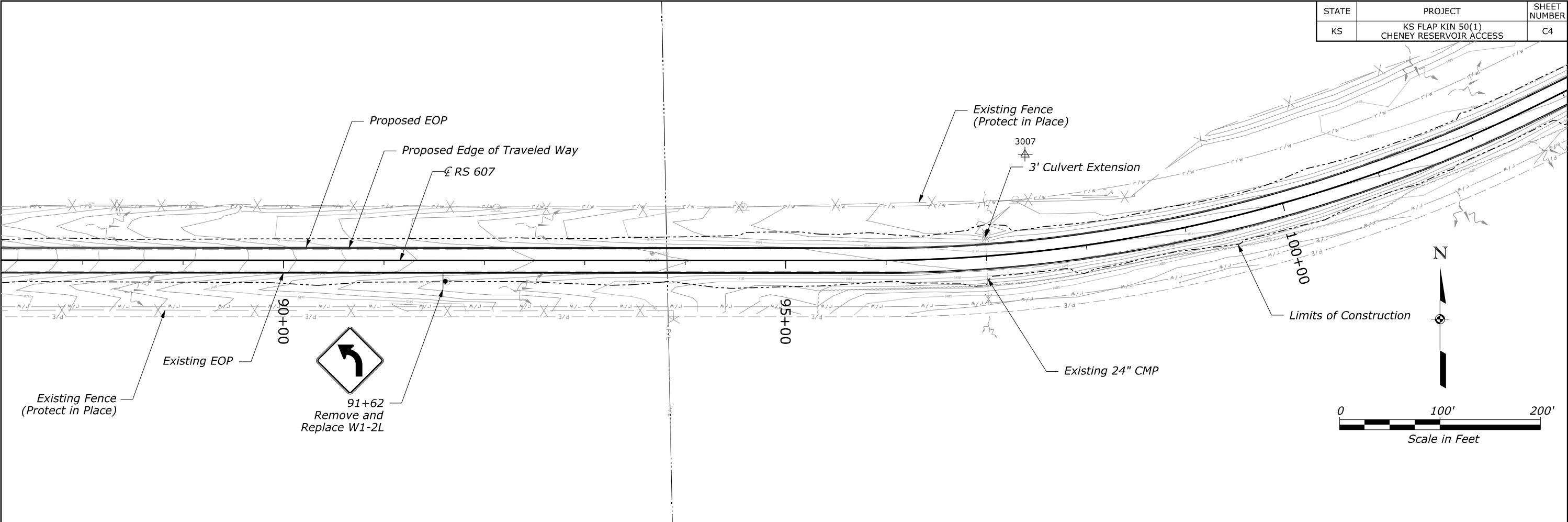
c:\pwworking\central01\42444635\PNP\050\KIN_01.dgn 9:04:23 AM 8/2/2022

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	C3



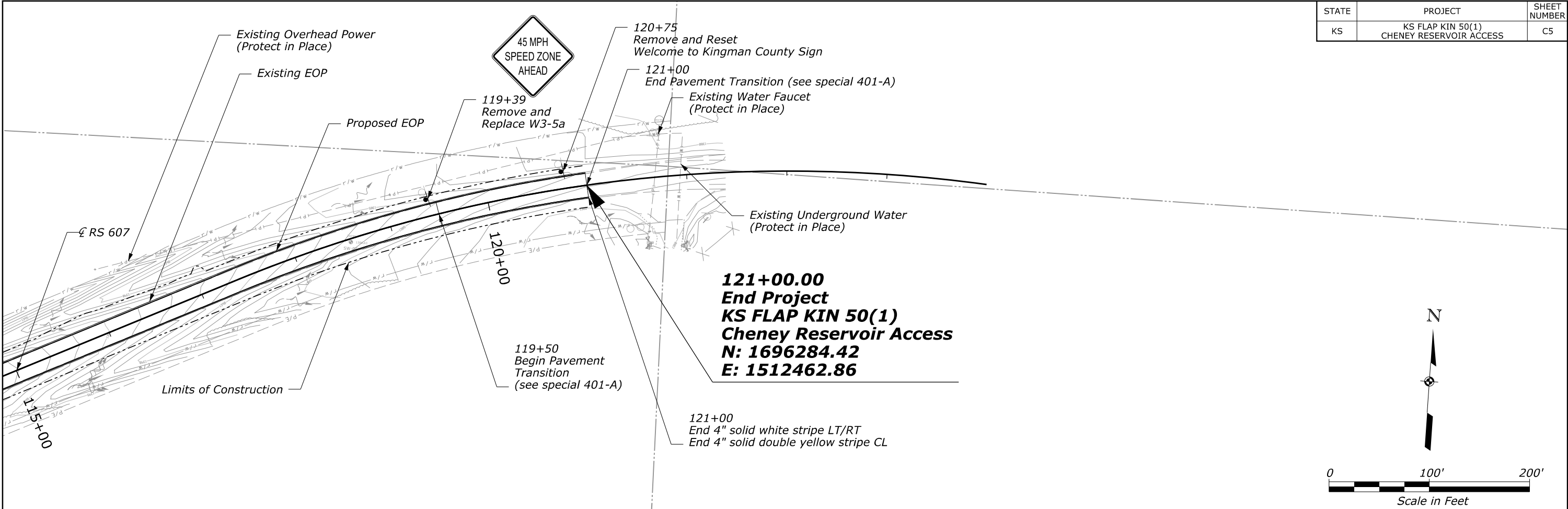
c:\pwworking\central01\24444635\PNP\050\KIN_03.dgn 9:04:26 AM 8/2/2022

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	C4



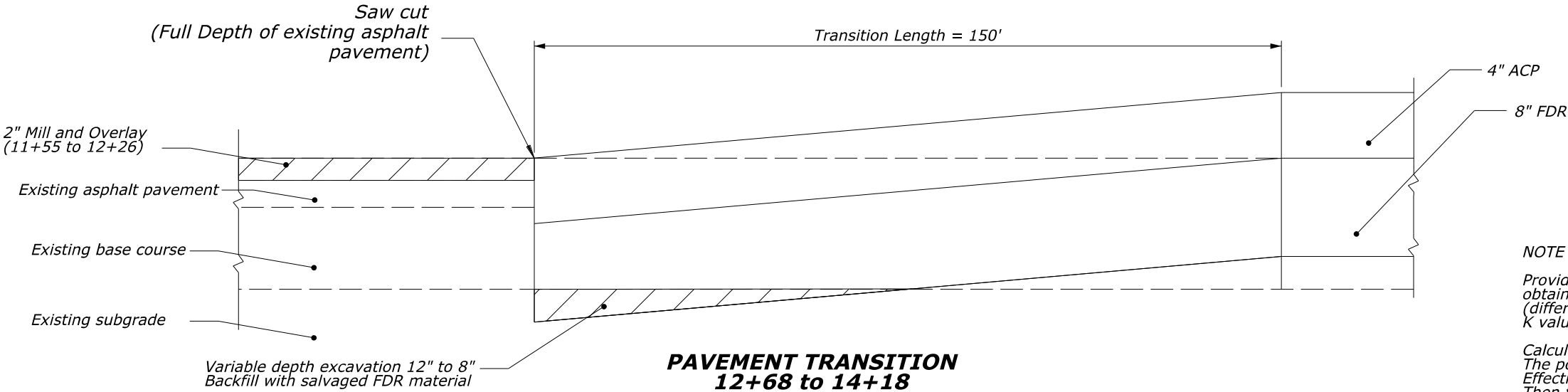
9:04:28 AM c:\pwworking\central\01\42444635\PNP\050\KIN_04.dgn 8/2/2022

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	C5



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

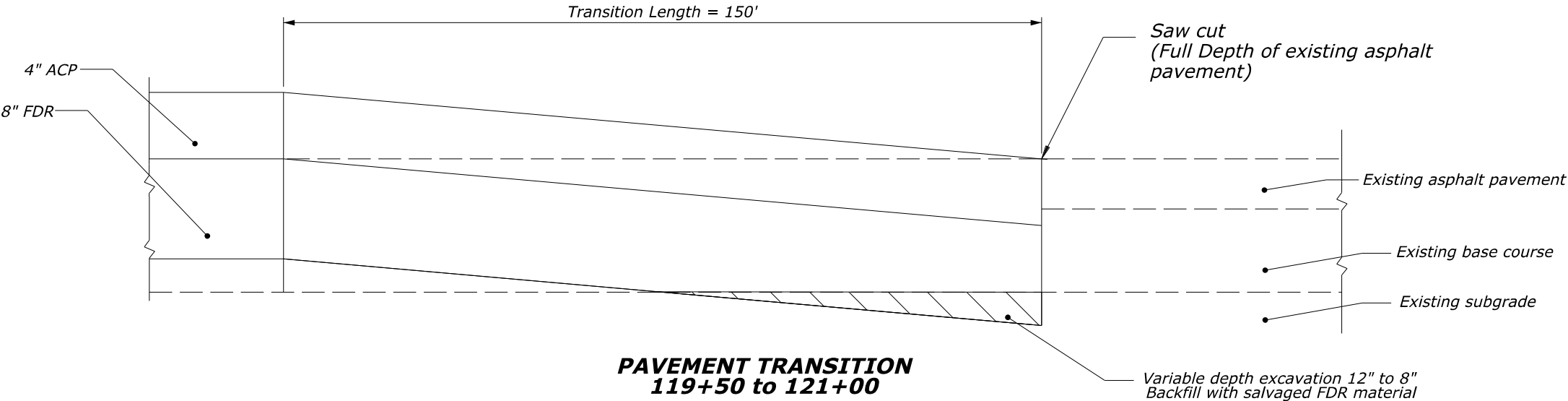
PLAN SHEET
RS 607
116+00 TO 121+00



NOTE :
Provide a transition length in feet that is not less than the value obtained by multiplying the effective overlay thickness in inches (difference between the existing and overlaid elevations) by the K value from the Table for the posted speed of the roadway.

Calculation:
The posted speed is 45 MPH
Effective overlay thickness = 4 inches
Then the minimum transition length = 4 inches x 37.5 ft./in. = 150 feet.

Refer to typical sections for roadway section dimensions.



K VALUE TABLE (ft/in)										
POSTED SPEED (MPH) *	30	35	40	45	50	55	60	65	70	75
K	30	32.5	35	37.5	40	42.5	45	47.5	50	52.5

* Use a K Value of 30 for speeds less than 30 MPH.



NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY SPECIAL	
PAVEMENT TRANSITIONS	
	SPECIAL
	401-A

c:\pwworking\centra01\42444644\Std602-1.dgn 9:04:33 AM 8/2/2022

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	T1

METAL ROUND PIPE CULVERT																												
FILL HEIGHT AND METAL THICKNESS TABLE FOR HELICAL LOCKSEAM AND WELDED SEAM PIPE CULVERT																												
STEEL																ALUMINUM												
PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	2 ² / ₃ " x 1 ¹ / ₂ " CORRUGATIONS					3" x 1" CORRUGATIONS					5" x 1" CORRUGATIONS					PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	2 ² / ₃ " x 1 ¹ / ₂ " CORRUGATIONS					3" x 1" CORRUGATIONS				
		METAL THICKNESS (INCH/GAGE)																	METAL THICKNESS (INCH/GAGE)									
		0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.064/16	0.079/14	0.109/12	0.138/10	0.168/8			0.060/16	0.075/14	0.105/12	0.135/10	0.164/8	0.060/16	0.075/14	0.105/12	0.135/10	0.164/8
		MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)																	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)									
12	12	100	100	100	100	100										12	12	100	100	100	100	100						
15	12	100	100	100	100	100										15	12	100	100	100	100	100						
18	12	100	100	100	100	100										18	12	100	100	100	100	100						
21	12	100	100	100	100	100										21	12	88	100	100	100	100						
24	12	100	100	100	100	100										24	12	77	97	100	100	100						
30	12	85	100	100	100	100										30	12	62	77	100	100	100	71	89	100	100	100	
36	12	71	89	100	100	100	81	100	100	100	100					36	12	52	64	90	100	100	59	74	100	100	100	
42	12	61	76	100	100	100	70	87	100	100	100					42	12	44	55	77	99	100	51	64	89	100	100	
48	12	53	66	93	100	100	61	76	100	100	100	54	68	95	100	48	12			67	87	100	44	56	78	100	100	
54	12		59	83	100	100	54	68	95	100	100	48	60	85	100	54	18			54	71	88	39	50	69	93	100	
60	12			74	97	100	49	61	86	100	100	43	54	76	98	60	18				57	72	35	45	62	83	98	
66	12				87	100	44	55	78	100	100	39	49	69	89	66	18					58	32	40	56	76	89	
72	12				80	97	40	51	71	92	100	36	45	63	82	72	18					45	30	37	55	70	82	
78	12					87	37	47	66	85	100	33	42	58	75	78	24							34	48	64	75	
84	12					75	35	43	61	78	96	31	39	54	70	84	24								44	59	70	
90	12						32	40	57	73	90	29	36	51	65	90	24								41	62	65	
96	12							38	53	69	84		34	48	61	96	24								38	51	61	
102	18							36	50	65	79		32	45	57	102	24									46	55	
108	18								47	61	75			42	54	108	24									42	50	
114	18								45	58	71			40	52	114	24										45	
120	18								43	55	67			38	49	120	24										40	
126	18									52	64				47	126	24											
132	18									50	61				44	132	24											
138	18									48	58				42	138	24											
144	18									56					50	144	24											

NOTE:

- When directed, camber pipe culverts upward from a chord through the inlet and outlet inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe culvert gradient.
- Fill heights exceeding 100 feet require special analysis by the CO.
- The fill heights in the table are for helical lockseam and welded seam pipe only. Fill heights for culvert pipe with annular corrugations are more restrictive than those of helical lockseam and welded seam pipe. Obtain approval before furnishing annular corrugation pipe.
- Measure minimum cover from the top of the pipe culvert to the subgrade for flexible pavements, and to the top of the pavement for rigid pavements. Measure maximum fill height from the top of the pipe to the top of the pavement for both flexible and rigid pavement.

METAL PIPE ARCH CULVERT																												
FILL HEIGHT AND METAL THICKNESS TABLE FOR HELICAL LOCKSEAM AND WELDED SEAM PIPE CULVERT																												
STEEL													ALUMINUM															
PIPE ARCH SIZE SPAN x RISE INCHES	EQUI- VALENT DIAMETER INCHES	MINIMUM CORNER RADIUS INCHES	MINIMUM COVER INCHES	2½" x ½" CORRUGATIONS				3" x 1" CORRUGATIONS				5" x 1" CORRUGATIONS				PIPE ARCH SIZE SPAN x RISE INCHES	EQUI- VALENT DIAMETER INCHES	MINIMUM CORNER RADIUS INCHES	MINIMUM COVER INCHES	2½" x ½" CORRUGATIONS				3" x 1" CORRUGATIONS				
				METAL THICKNESS (INCH/GAGE)																METAL THICKNESS (INCH/GAGE)								
				0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.079/14	0.109/12	0.138/10	0.168/8	0.079/14	0.109/12	0.138/10					0.168/8	0.060/16	0.075/14	0.105/12	0.135/10	0.060/16	0.075/14	0.105/12	0.135/10
				MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)																MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)								
17 x 13	15	3	12	13											17 x 13	15	3	12	13									
21 x 15	18	3	12	12											21 x 15	18	3	12	12									
24 x 18	21	3	12	13											24 x 18	21	3	12	13									
28 x 20	24	3	12	13											28 x 20	24	3	12		13								
35 x 24	30	3	12	12											35 x 24	30	3	12		12								
42 x 29	36	3.5	12	12											42 x 29	36	3.5	15			12							
49 x 33	42	4	12		12										49 x 33	42	4	15			12							
57 x 38	48	5	12			12									57 x 38	48	5	15				12						
60 x 46	54	8	15						21				21		60 x 46	54	8	15					21					
64 x 43	54	6	12			12									64 x 43	54	6	18			12							
66 x 51	60	9	15						21				21		66 x 51	60	9	18					21					
71 x 47	60	7	12				12								71 x 47	60	7	18										
73 x 55	66	12	18						20				20		73 x 55	66	12	18					20					
77 x 52	66	8	12				12								77 x 52	66	8	21										
81 x 59	72	14	18					17				17			81 x 59	72	14	21						17				
83 x 57	72	9	12				12								83 x 57	72	9	24						17				
87 x 63	78	14	18					17				17			87 x 63	78	14	21						17				
95 x 67	84	16	18					17				17			95 x 67	84	16	24						17				
103 x 71	90	16	18						17			17			103 x 71	90	16	24						17				
112 x 75	96	18	21						16				16		112 x 75	96	18	21										
117 x 79	102	18	21						16				16		117 x 79	102	18	21										
128 x 83	108	18	24						16				16		128 x 83	108	18	24										
137 x 87	114	18	24						16				16		137 x 87	114	18	24										
142 x 91	120	18	24							16			16		142 x 91	120	18	24										

U.S.
FE
P

U.S.

MET

PROF

28743

8/11/2022

KANSAS

NEER

MICHAEL FLICK

ENGINEER

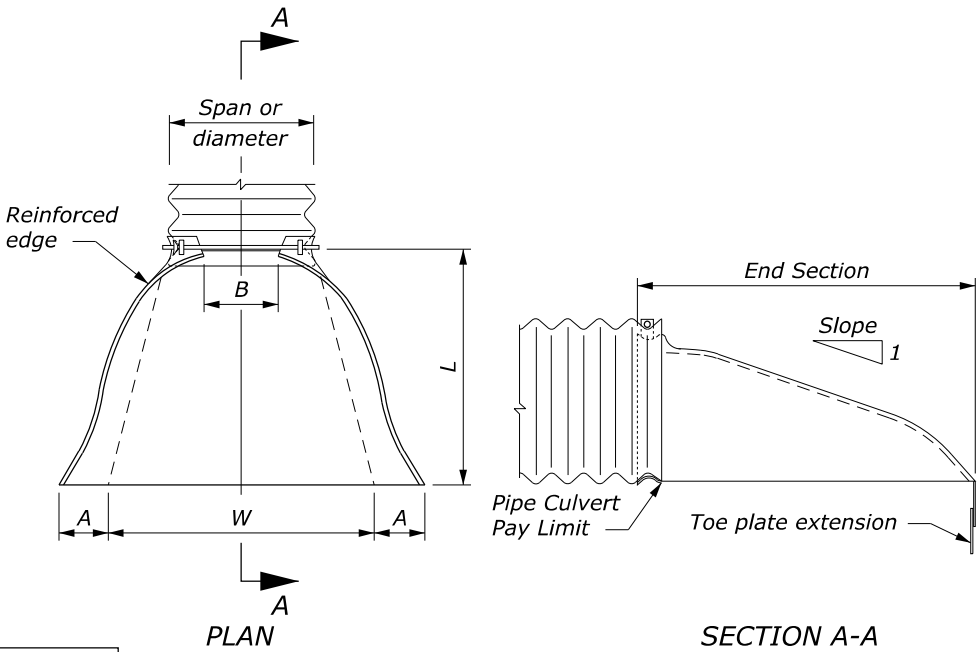


NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY OFFICE	
U.S. CUSTOMARY STANDARD	
METAL PIPE CULVERT	
STANDARD APPROVED FOR USE 12/1993 REVISED: 4/1994 6/2005	STANDARD 602-1

END SECTIONS FOR ROUND PIPE CULVERT

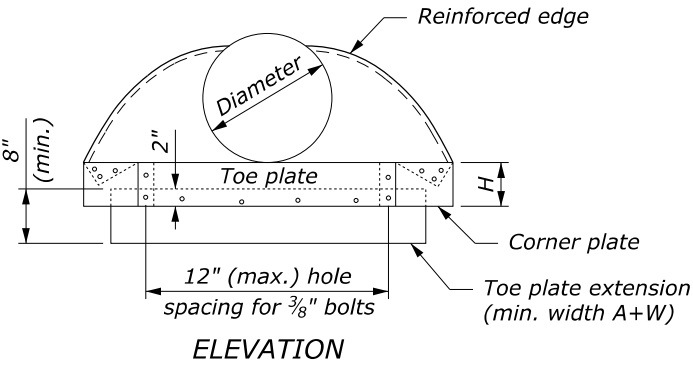
PIPE SIZE DIAMETER INCHES	METAL THICKNESS				DIMENSIONS INCHES					SLOPE Approx.
	STEEL		ALUMINUM		A (min)	B (max)	H (min)	L (±2")	W (max)	
	INCHES	GAGE	INCHES	GAGE						
12	0.064	16	0.060	16	5	7	6	21	44	2¼
15	0.064	16	0.060	16	6	8	6	26	52	2¼
18	0.064	16	0.060	16	7	10	6	31	58	2⅛
21	0.064	16	0.060	16	8	12	6	36	66	2⅛
24	0.064	16	0.060	16	9	13	6	41	72	2⅛
30	0.079	14	0.075	14	11	16	8	51	88	2⅛
36	0.079	14	0.075	14	13	19	9	60	105	2
42	0.109	12	0.105	12	15	25	10	69	122	2⅛
48	0.109	12	0.105	12	17	29	12	78	131	2
54	0.109	12	0.105	12	17	33	12	84	143	2
60	0.109	12	0.105	12	17	36	12	87	157	1⅞
66	0.109	12	0.105	12	17	39	12	87	162	1⅞
72	0.109	12	0.105	12	17	44	12	87	169	1½
78	0.109	12	0.105	12	17	48	12	87	178	1⅝
84	0.109	12	0.105	12	17	52	12	87	184	1½
90	0.109	12	0.105	12	17	58	12	87	188	1¼
96	0.109	12	0.105	12	17	58	12	87	197	1⅛



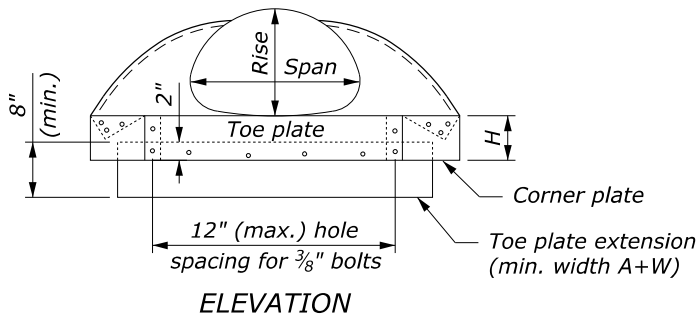
ROUND OR PIPE ARCH CULVERT

END SECTIONS FOR PIPE ARCH CULVERT

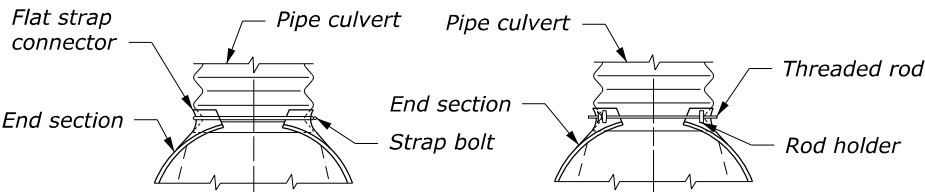
PIPE SIZE SPAN × RISE INCHES	EQUI- VALENT DIAM. (INCHES)	METAL THICKNESS				DIMENSIONS INCHES					SLOPE Approx.
		STEEL		ALUMINUM		A (min)	B (max)	H (min)	L (±2")	W (max)	
		INCHES	GAGE	INCHES	GAGE						
17 × 13	15	0.064	16	0.060	16	7	9	6	19	30	2½
21 × 15	18	0.064	16	0.060	16	7	10	6	23	36	2½
24 × 18	21	0.064	16	0.060	16	8	12	6	28	42	2½
28 × 20	24	0.064	16	0.060	16	9	14	6	32	48	2½
35 × 24	30	0.079	14	0.075	14	10	16	8	39	60	2½
42 × 29	36	0.079	14	0.075	14	12	18	9	46	75	2½
49 × 33	42	0.109	12	0.105	12	13	21	12	53	85	2½
57 × 38	48	0.109	12	0.105	12	18	26	12	63	90	2½
60 × 46	54	0.109	12	0.105	12	18	34	12	70	102	2
64 × 43	54	0.109	12	0.105	12	18	30	12	70	102	2
66 × 51	60	0.109	12	0.105	12	18	33	12	77	116	1½
71 × 47	60	0.109	12	0.105	12	18	33	12	77	114	1½
73 × 55	66	0.109	12	0.105	12	18	36	12	77	126	1½
77 × 52	66	0.109	12	0.105	12	18	36	12	77	126	1½
81 × 59	72	0.109	12	0.105	12	18	39	12	77	138	1½
83 × 57	72	0.109	12	0.105	12	18	39	12	77	138	1½
87 × 63	78	0.109	12	0.105	12	20	38	12	77	148	1½
95 × 67	84	0.109	12	0.105	12	20	34	12	87	162	1½
103 × 71	90	0.109	12	0.105	12	20	38	12	87	174	1½
112 × 75	96	0.109	12	0.105	12	20	40	12	87	174	1½



ROUND PIPE CULVERT

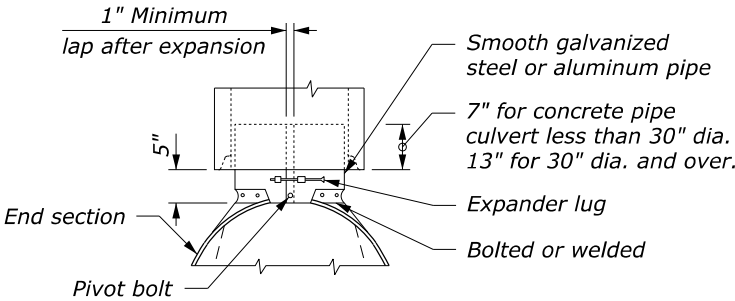


PIPE ARCH CULVERT

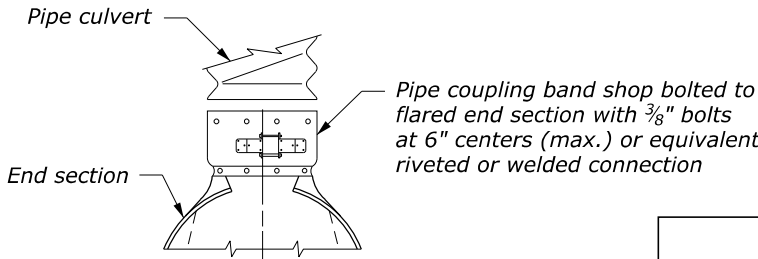


For 12" thru 24" round pipe and 17" × 13" thru 28" × 20" pipe arch For 30" thru 60" round pipe and 35" × 24" thru 66" × 51" pipe arch

DESIGN A
CONNECTION TO ANNULAR
CORRUGATED METAL PIPE



DESIGN B
CONNECTION TO CONCRETE
PIPE INLET END



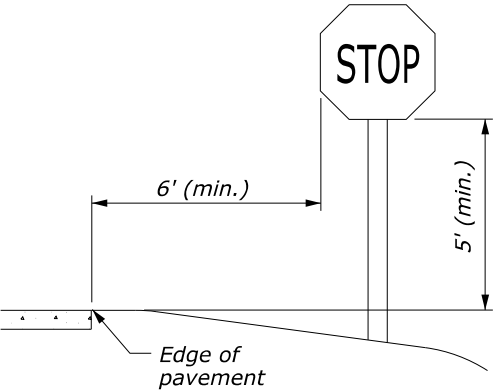
For all sizes of round pipe and pipe arch
DESIGN C
CONNECTION TO METAL PIPE
OR OUTLET END OF CONCRETE PIPE

NO SCALE

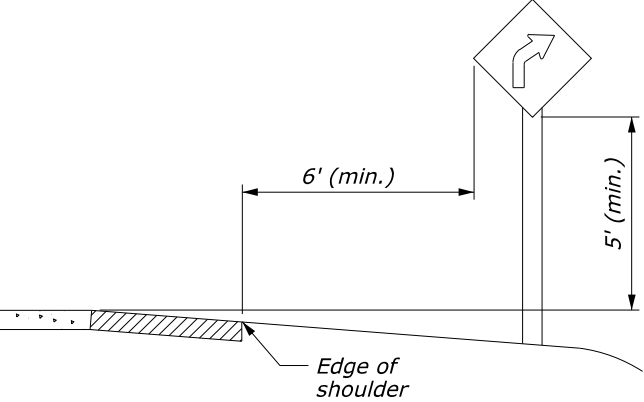
NOTE:

- Variations in design and dimensions are permitted to allow for manufacturer's standards.
- Fabricate the diameter of the end section of Design B to match the inside diameter of the concrete pipe culvert.
- Design C may be used in lieu of design A for all metal pipe culvert sizes. Coupling bands may be any acceptable type for the pipe culvert specified.
- Fabricate multiple piece bodies with lap seams tightly joined by 3/8" rivets or bolts. Fabricate end section center panels for 60" and larger diameter pipe and equivalent pipe arch from 0.138 inch steel or 0.135 inch aluminum.
- On end section center panels for 66" and larger equivalent pipe arch provide 2½" × 2½" × ¼" angle reinforcement bolted or riveted under the center panel seam.
- Supplement the reinforced edges of end sections for 60" and larger diameter pipe and 66" and larger equivalent pipe arch with 2½" × 2½" × ¼" stiffener angles attached with bolts or rivets.
- Fabricate connector section, corner plate and toe plate extensions from the same metal thickness as the panel body. Use toe plate extension where shown on the plans.
- Warp embankment slopes to match the slope of the flared end sections.

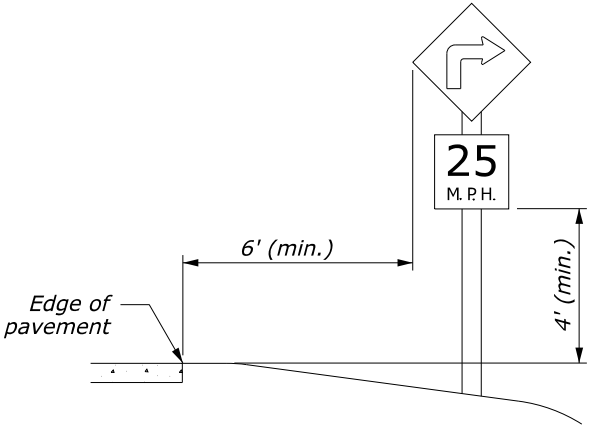




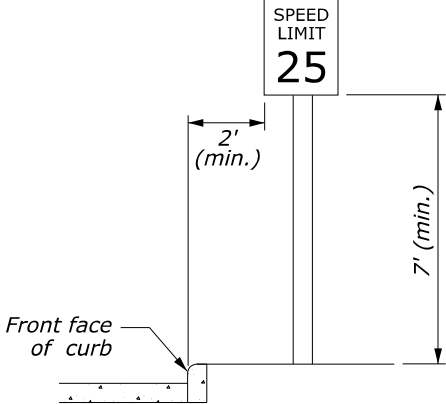
WITHOUT SHOULDER



WITH SHOULDER

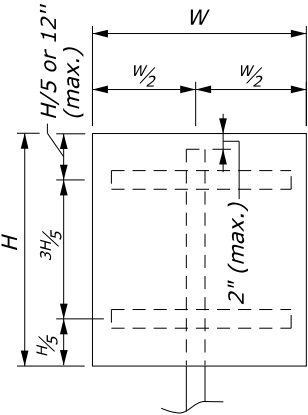


WITH ADVISORY SPEED PLAQUE

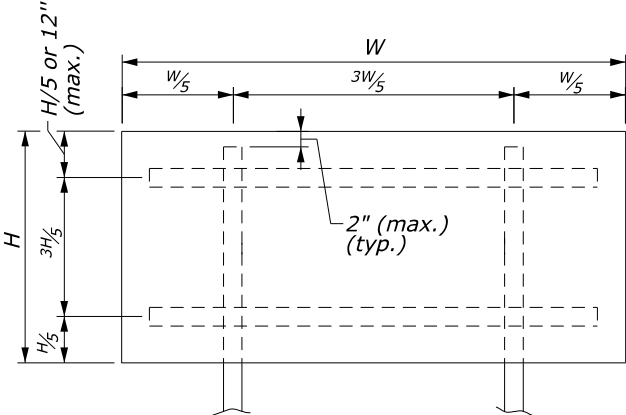


ROADSIDE SIGN IN BUSINESS
OR RESIDENTIAL DISTRICT

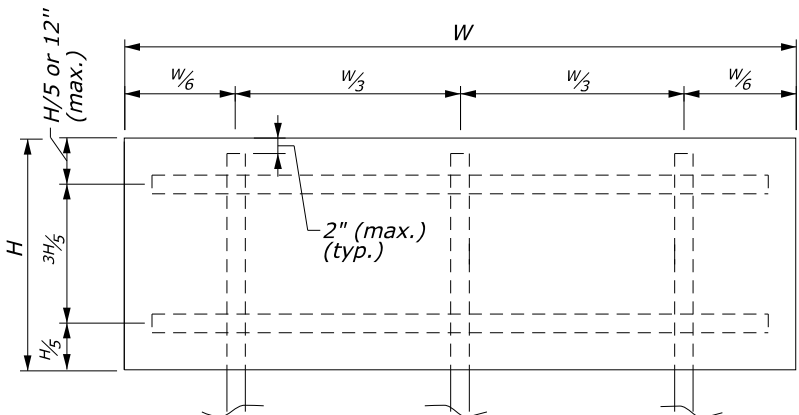
ROADSIDE SIGN IN RURAL DISTRICT



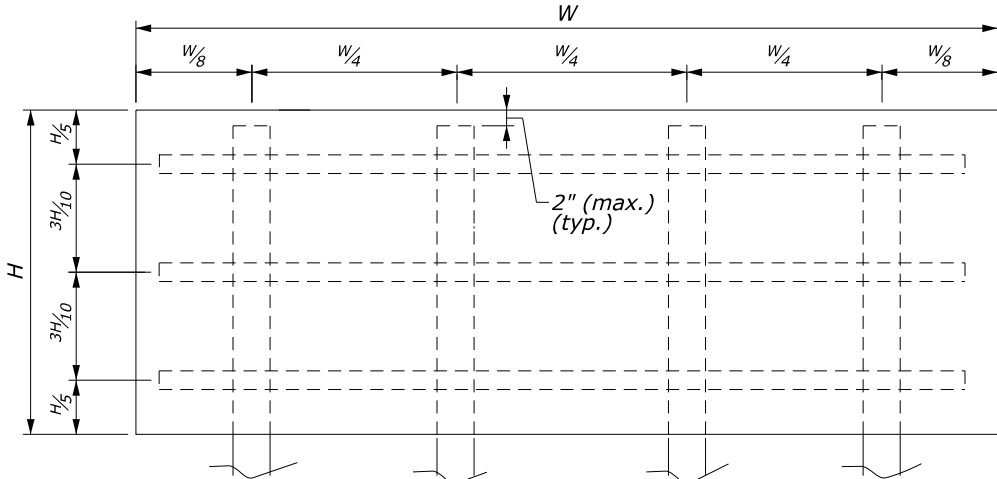
SINGLE POST



DOUBLE POST



TRIPLE POST



QUADRUPLE POST

POST SIZE TABLE					
POST TYPE	POST SIZE	MAXIMUM SIGN AREA (SQFT)			
		SINGLE POST	DOUBLE POST	TRIPLE POST	QUADRUPLE POST
Wood	4" x 4"	10	20		
	4" x 6"	15	35	45	60
	6" x 6"	20	50	75	100
U-Channel Steel	3 lb/ft	10*	24	30	
Square Tubular Steel	2" 12 ga.	10*	16		
	2" 12 ga.	10*	24**		
Corrosion Resistant Steel	2" x 2" 10 ga. Class B	10*	24		

* See Note 2
** See Note 3

NOTES:

1. Locate and set sign height according to the "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD), latest edition.
2. For U-channel, square tubular, and corrosion resistant steel posts for which the sign panel area is 10 square feet or less but W is over 4 feet, use double posts.
3. For square tabular steel double posts for which the sign panel area is equal to 24 square feet, use slip base according to manufacturer's recommendations.
4. Refer to Special 633-A Sheet 2 of 4 for breakaway support details for corrosion resistant steel posts.
5. Refer to Special 633-A Sheet 3 of 4 for breakaway support details for wood, U-channel steel and square tubular steel posts.
6. Refer to Special 633-A Sheet 4 of 4 for bracing details for wood, U-channel steel and square tubular steel posts.
7. Refer to Section 2A.21 of the MUTCD, latest edition, for additional information.




NO SCALE

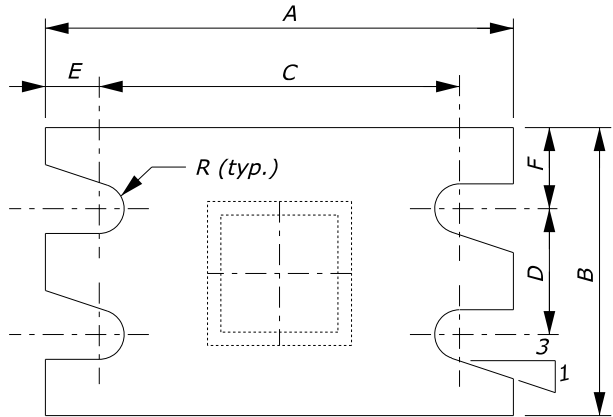
9:04:39 AM c:\pwworking\centra01\2444644\sp633-A_02.dgn 8/2/2022

FOOTING DATA TABLE		
POST SIZE	CONCRETE FOOTING	
	DIA.	MINIMUM DEPTH
2" X 2"	12"	3'

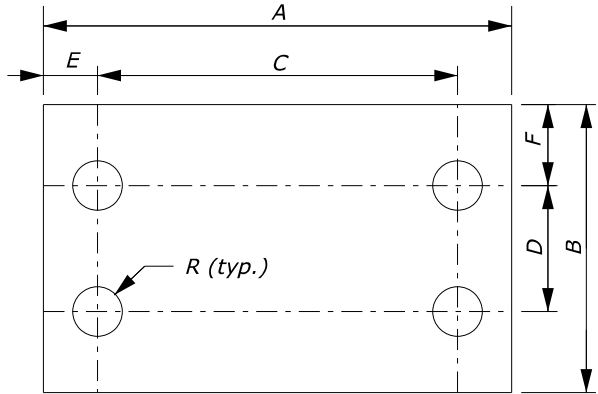
BASE CONNECTION DATA TABLE													
POST SIZE	BOLT SPECIFICATIONS			BOND BREAKING PLATE DATA									
	Dia.	Length	Torque in-lbs	(A)	(B)	(C)	(D)	(E)	(F)	(R)	t ₁	t ₂	w
2" X 2"	5/8"	2 1/2"	450	6 1/2"	4"	5"	1 3/4"	3/4"	1 1/8"	1 1/16"	5/8"	3/16"	3/16"

LEGEND:
High Strength HS
Weld triangle 

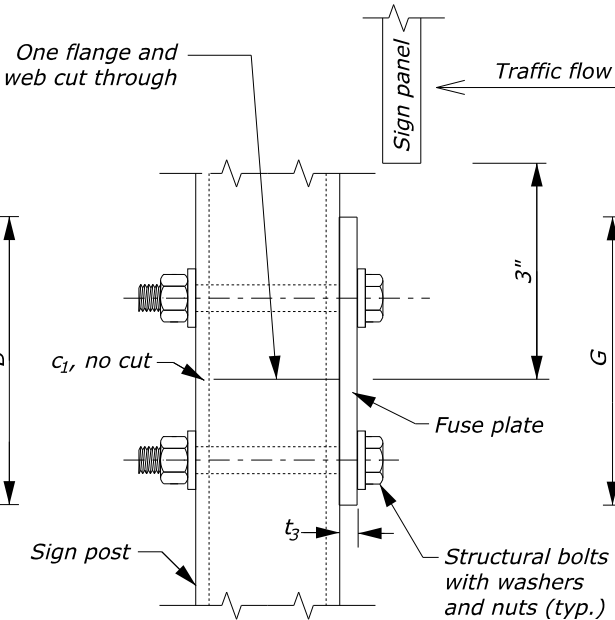
FUSE PLATE DATA TABLE											
POST SIZE	(G)	(H)	(J)	(K)	(L)	(M)	(N)	d ₁	t ₃	c ₁	Bolt dia.
2" X 2"	4"	2 1/4"	1 1/8"	2"	7/8"	9/16"	5/8"	7/16"	1/4"	1/4"	3/8"



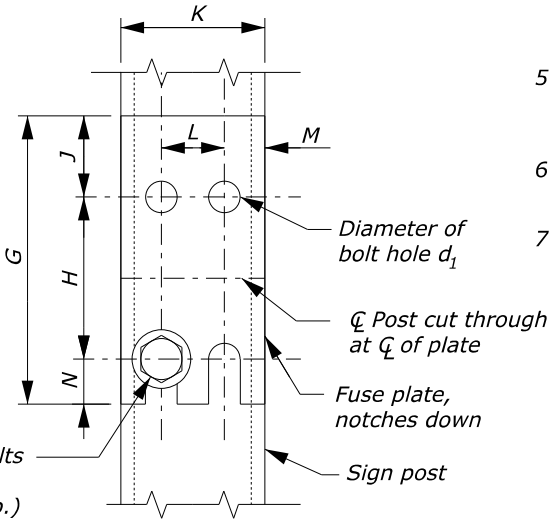
SECTION A-A
BREAKAWAY PLATE



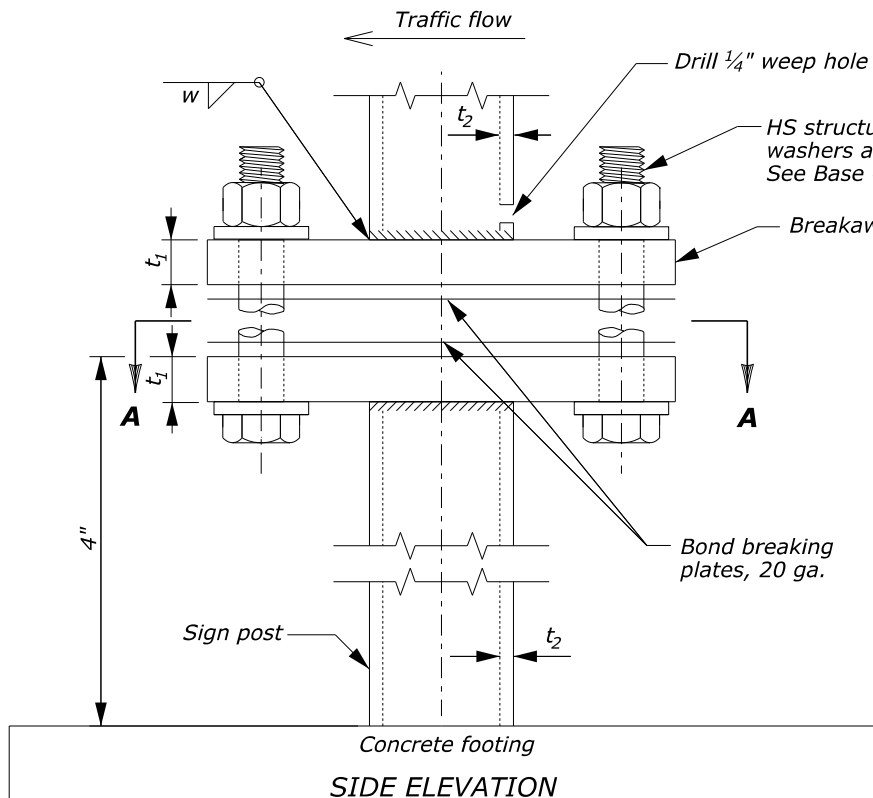
BOND BREAKING PLATE



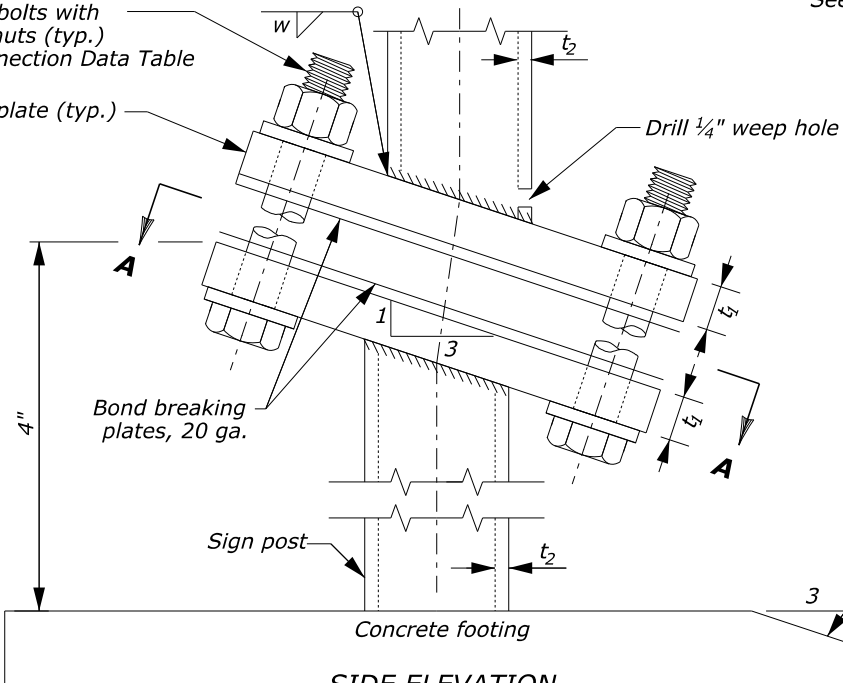
SIDE ELEVATION



FRONT ELEVATION

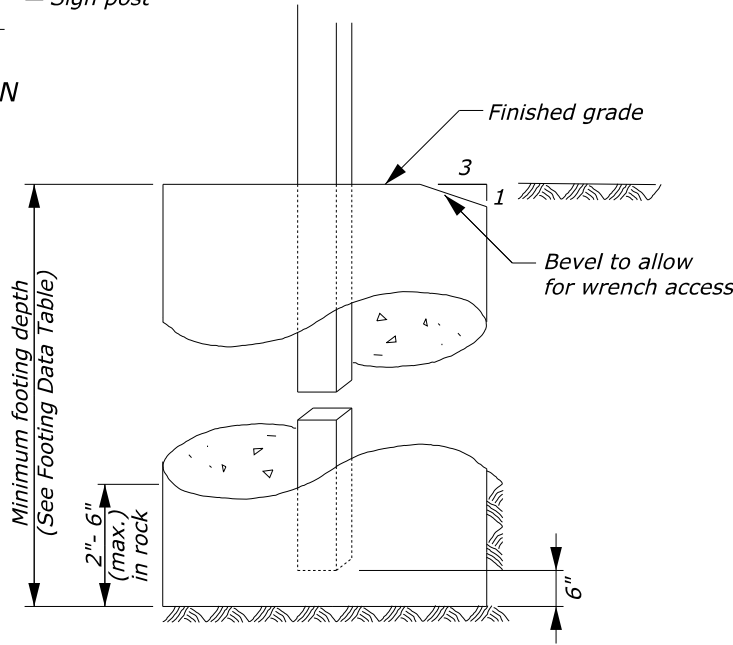


MULTIPLE POST BREAKAWAY
See Notes 4 and 5



SINGLE POST BREAKAWAY
See Notes 4 and 5

FUSE PLATE
See Note 6



CONCRETE FOOTING

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY SPECIAL BREAKAWAY SIGN SUPPORT CORROSION RESISTANT STEEL	
Sheet 2 of 4	
	SPECIAL 633-A

NOTES:

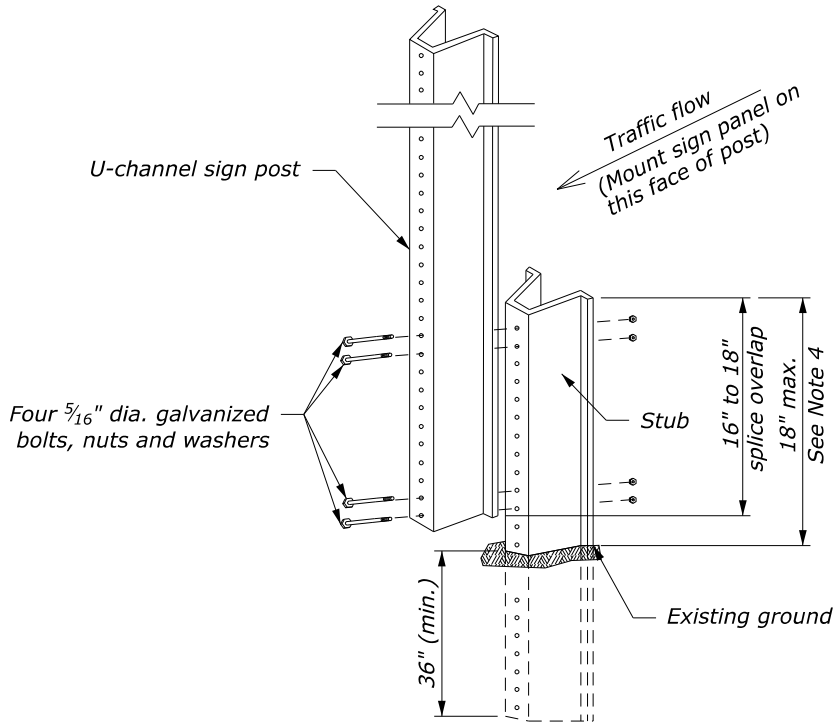
- Breakaway sign support is not required for signs placed behind protective barriers.
- Install breakaway assembly in the direction of major traffic.
- Use 10 gage Class B corrosion resistant square steel posts. Paint brown any corrosion resistant steel posts that do not naturally change color to brown.
- Use galvanized steel in breakaway plates, bond breaking plates, and fastening structural bolts with nuts and washers. Paint brown to match the appearance of the corrosion resistant steel posts.
- Use the Multiple Post Breakaway detail on single posts where exposed to opposing lanes of traffic.
- Use fuse plates on multiple post installations only.
- Refer to Special 633-A Sheet 1 of 4 for sign mounting details.

NO SCALE

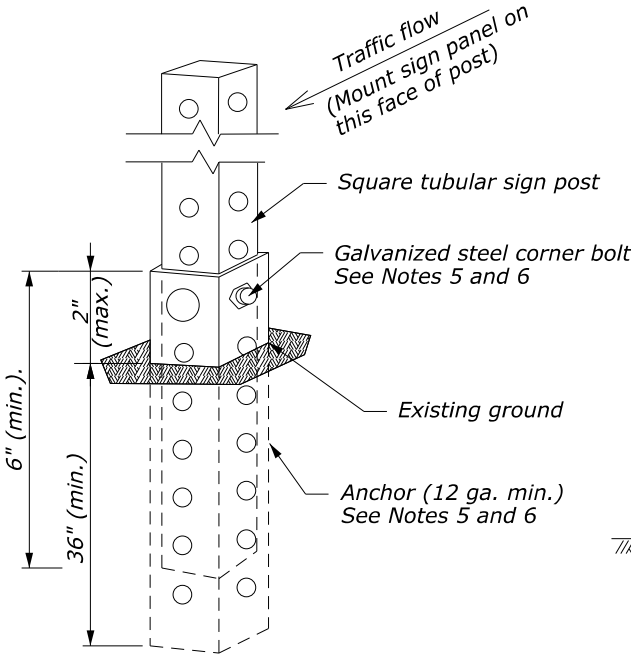
8/2/2022 9:04:40 AM c:\pwworking\central\01\24444644\sp633-A_03.dgn

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	T5

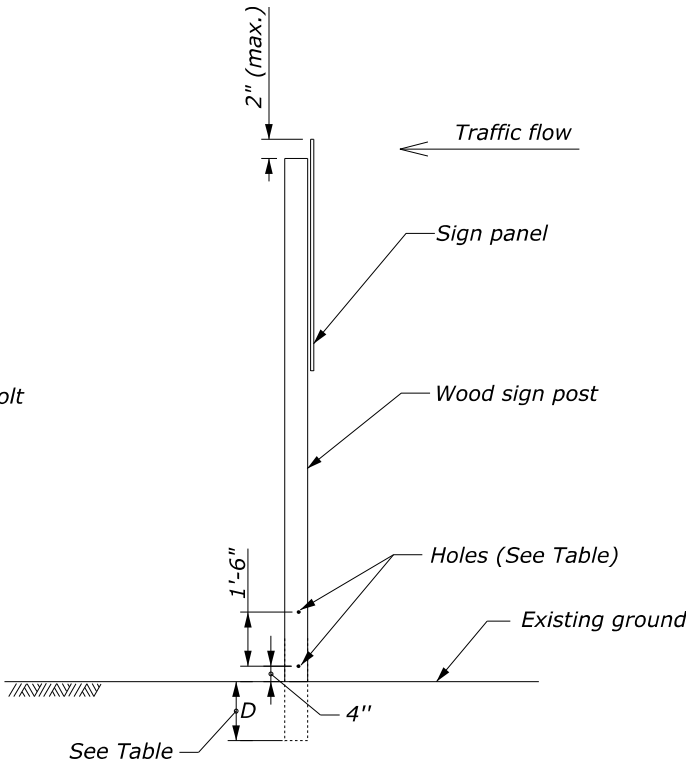
WOOD POST DATA TABLE		
POST SIZE	HOLE DIAMETER	(D) (MIN.)
4" x 4"	Not Required	3'
4" x 6"	1.5"	4'
6" x 6"	2"	4'



U-CHANNEL STEEL POST



SQUARE TUBULAR STEEL POST



WOOD POST

BREAKAWAY SIGN SUPPORT

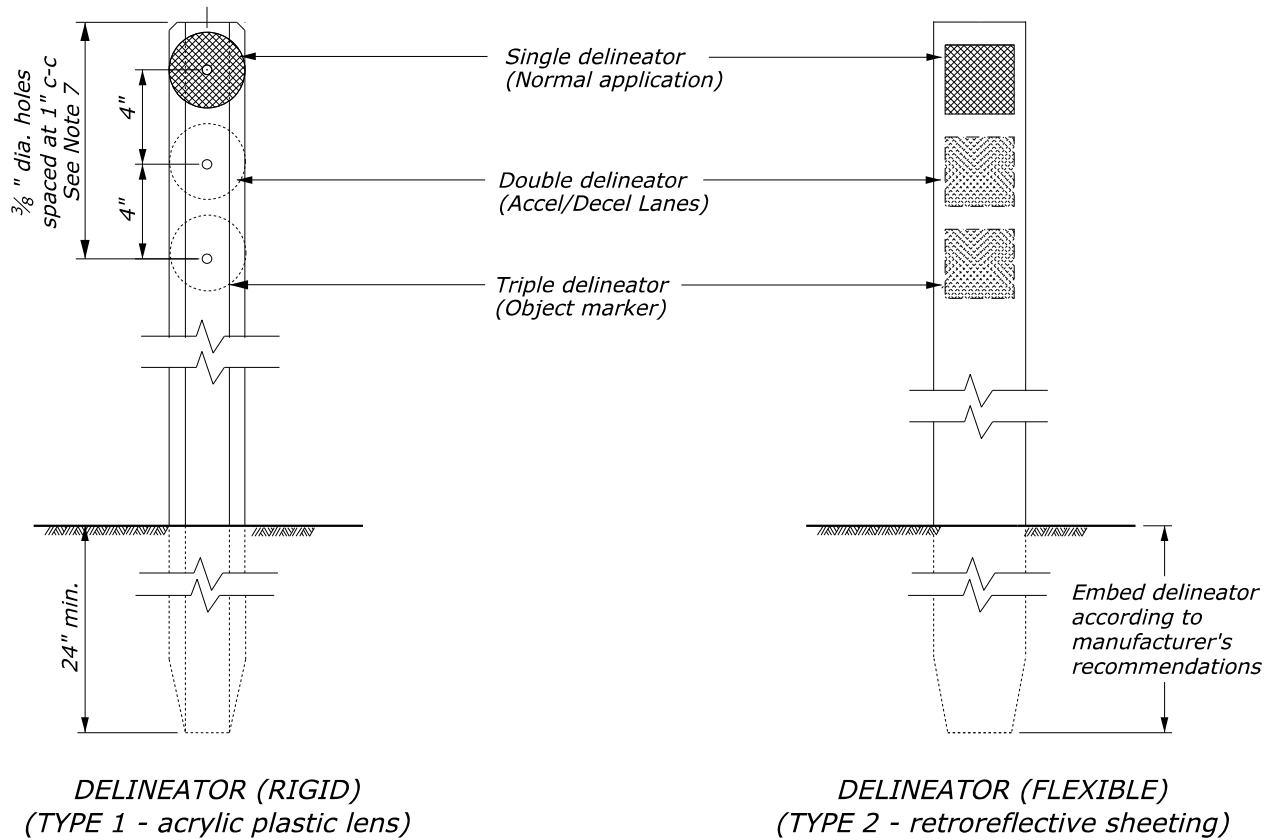
- NOTES:**
- Breakaway sign support is not required for signs placed behind protective barriers.
 - Signs requiring 6-inch by 6-inch wood posts are considered to be non-breakaway if multiple posts are required and posts cannot be spaced a minimum of 7 feet apart.
 - Place non-breakaway signs outside the clear zone or shield with approved barrier. Do not place holes in posts of non-breakaway signs.
 - Position splice overlap on U-channel steel posts entirely between the ground line and 18 inches above the ground line. Do not place more than one splice per post.
 - Attach the square tubular steel post to the anchor with a corner bolt according to manufacturer's recommendations. Size the anchor according to manufacturer's recommendations to accept the post size specified.
 - Maintain the post assembly in a plumb position.
 - For sign punching details, see the blank standards in the "Standard Highway Signs and Markings" as specified in the latest edition of the MUTCD.
 - Refer to Special 633-A Sheet 1 of 4 for sign mounting details.
 - Refer to Special 633-A Sheet 4 of 4 for sign bracing details.
 - Refer to Section 2A.21 of the MUTCD, latest edition, for additional information.



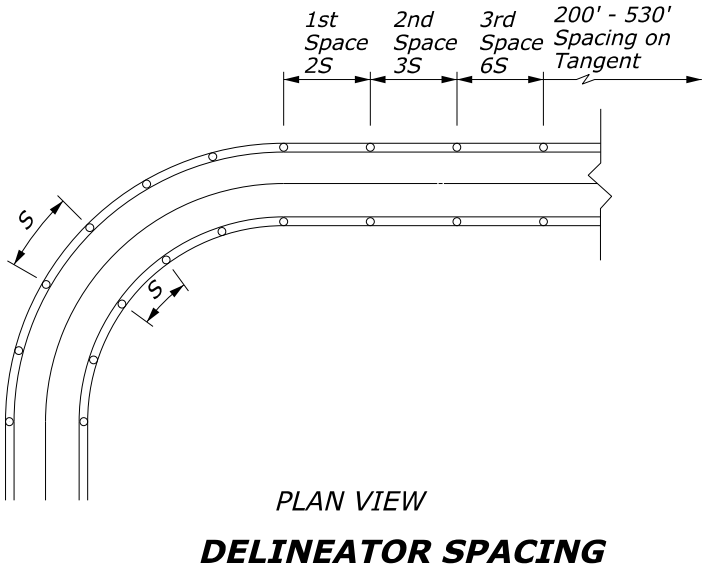
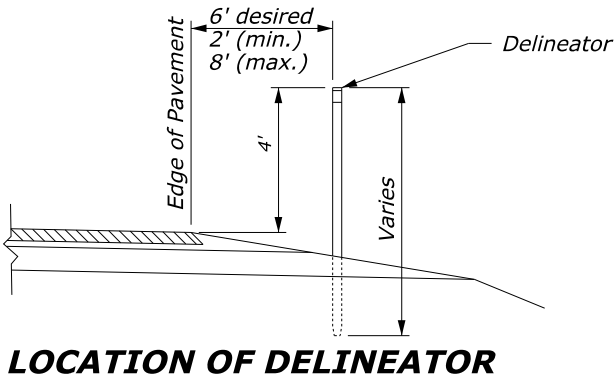
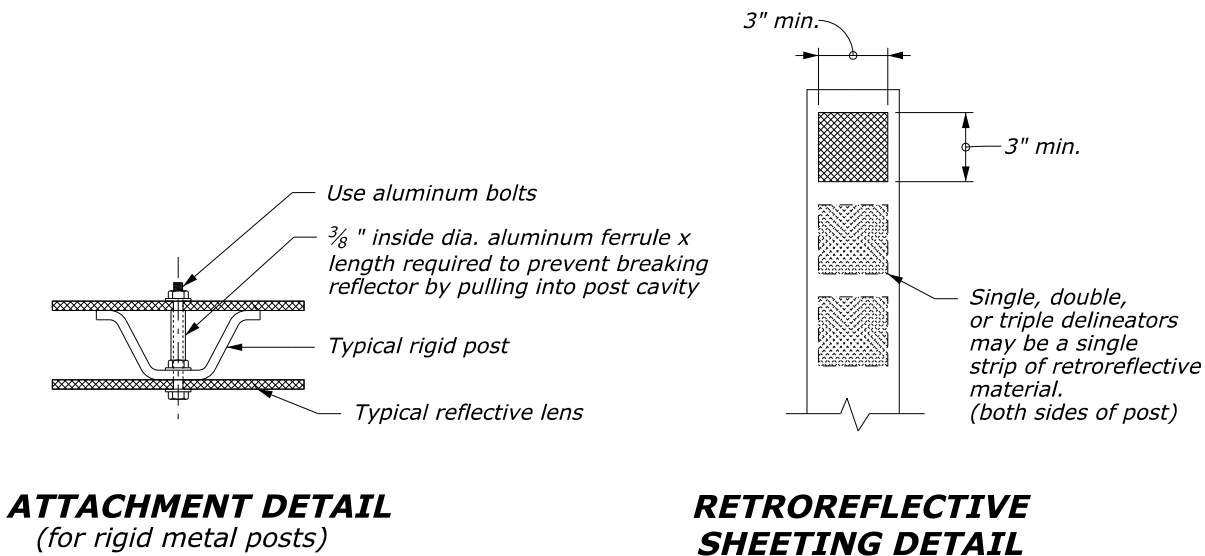
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY SPECIAL BREAKAWAY SIGN SUPPORT WOOD AND STEEL POSTS	
Sheet 3 of 4	
	SPECIAL 633-A

STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	T7



POST DETAILS



DELINEATOR SPACING ON CURVES				
RADIUS OF CURVE (R)	SPACING ON CURVE (S)	SPACING ON TANGENTS AT CURVE ENDS		
		1st Space (2 S)	2nd Space (3 S)	3rd Space (6 S)
(feet)	(feet)	(feet)	(feet)	(feet)
50	20	40	60	120
115	25	50	75	150
180	35	70	105	210
250	40	80	120	240
300	50	100	150	300
400	55	110	165	300
500	65	130	195	300
600	70	140	210	300
700	75	150	225	300
800	80	160	240	300
900	85	170	255	300
1,000	90	180	270	300

DELINEATOR SPACING NOTES

- Spacing for specific radii may be interpolated from the table.
- Values shown for S in the table are computed from the formula $S = 3\sqrt{R-50}$, where S = delineator spacing and R = horizontal curve radius. Values are rounded to the nearest 5 feet.

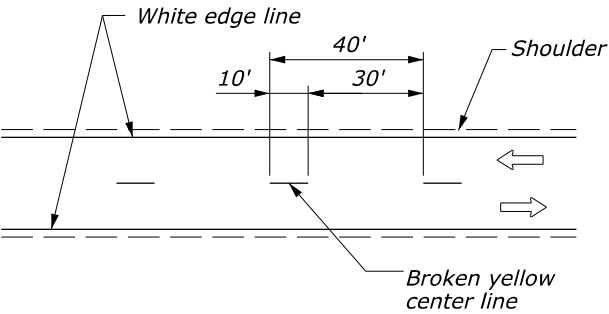
NOTE:

- Match the color of the reflective element with the edge line.
- Use yellow reflective elements for triple delineators installed to mark obstructions.
- Install double delineators on 100-foot spacing for acceleration and deceleration lanes or to mark changes in width.
- Install reflective elements according to the manufacturer's recommendations.
- Alternate delineator types may be used with approval of the CO. Provide delineators conforming to the MUTCD and install according to the manufacturer's recommendations.
- Place delineators at a constant distance from the edge of the pavement. Where guardrail intrudes into the space between the edge of pavement and the delineator offset, locate the delineator immediately behind the guardrail.
- A minimum of 12 holes spaced on 1" centers are required for all rigid posts. See Subsection 718.04.
- Furnish anti-theft hardware for mounting retroreflectors as required.
- See Subsection 718.05 for rigid post requirements.

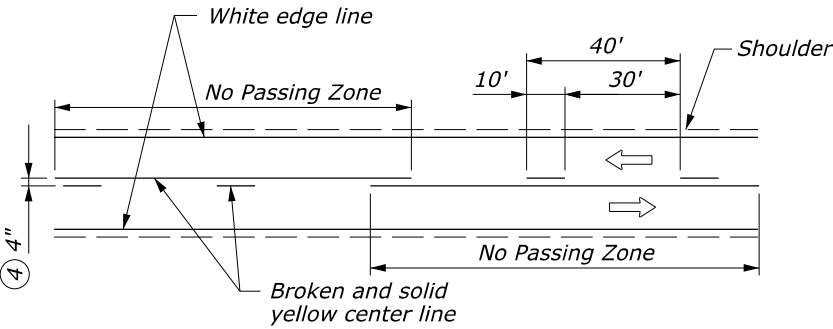


NO SCALE

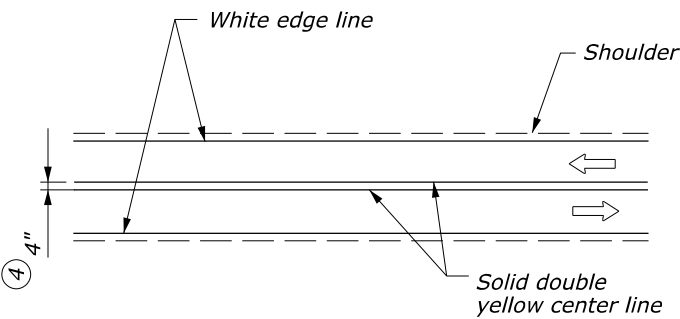
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
DELINEATORS	
DETAIL APPROVED FOR USE 03/2011 REVISED: 08/2014	DETAIL C633-51



DETAIL A
Passing zone both directions
Two-way traffic

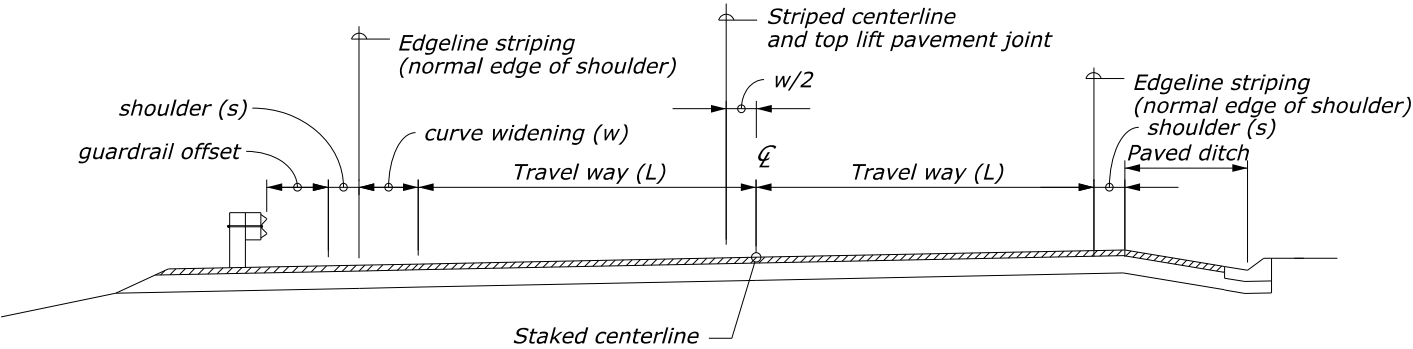


DETAIL B
No passing zone single lane direction
Two-way traffic

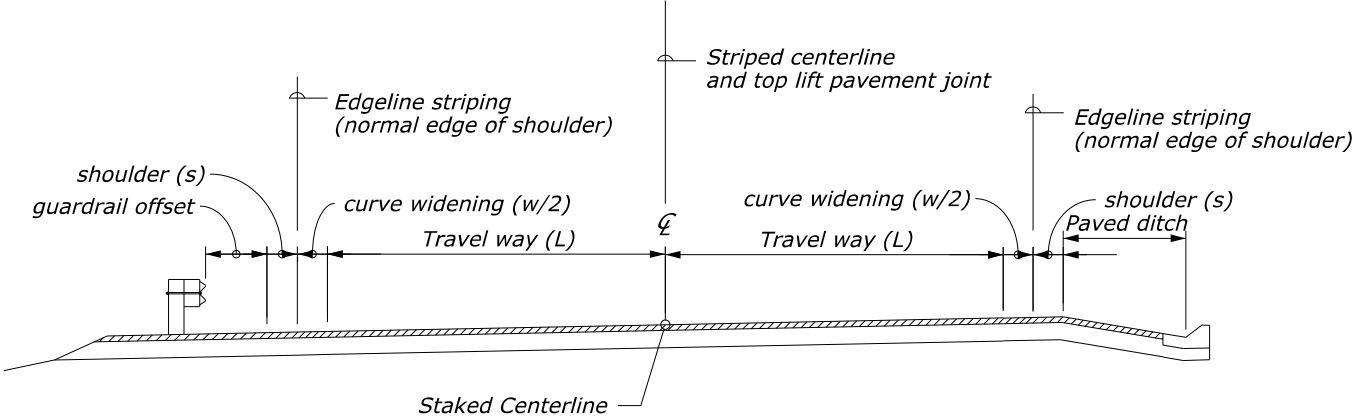


DETAIL C
No passing zone both directions
Two-way traffic

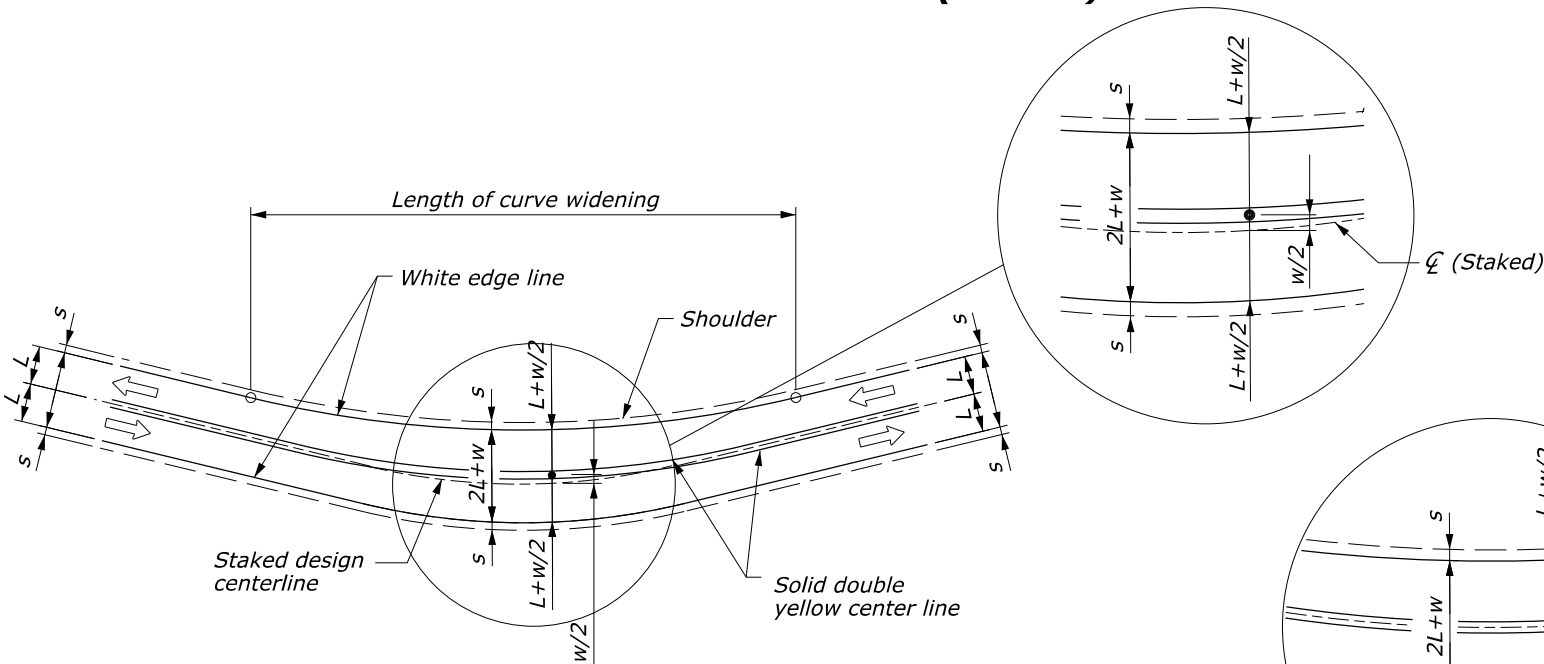
- NOTE:**
- See Summary for tables showing station ranges and quantities for pavement markings.
 - Paint centerline striping on curves with curve widening to achieve equal lane widths within the traveled way. Shoulder widths remain constant throughout the curve widening.
 - Centerline offset striping is only applicable to curve widening on simple curves.
 - 4" or as required by the state.
 - Paint the edgeline striping outside the travel way and curve widening, 2" (max.) from the normal edge of shoulder.



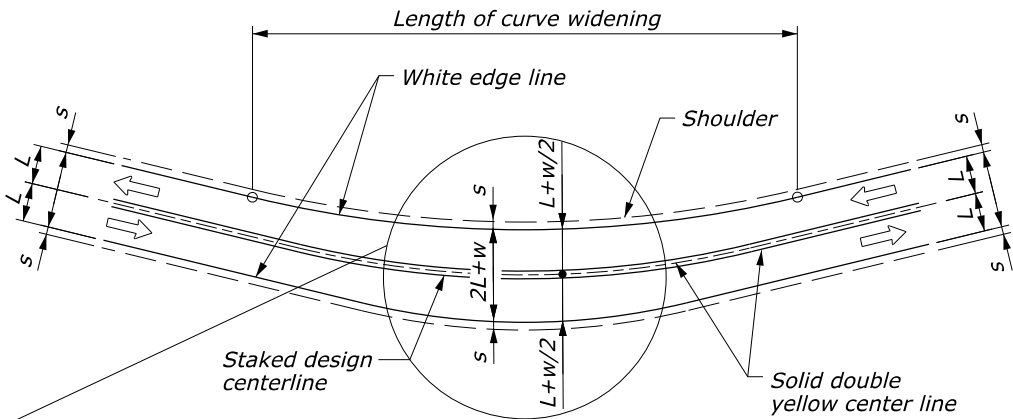
CURVE WIDENING ON SIMPLE CURVES (INSIDE)



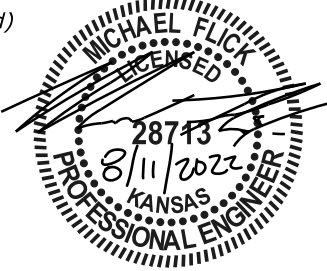
CURVE WIDENING ON SPIRAL CURVES



CURVE STRIPING DETAIL ON SIMPLE CURVES
To be used on curves where curve widening
is applied. See note 2



**STRIPING DETAIL
ON SPIRAL CURVES**
To be used on curves where curve widening
is applied. See note 2



NO SCALE

8/2/2022 9:04:46 AM c:\pwworking\central01\42444644\TTC(050)KIN_01.dgn



STATE	PROJECT	SHEET NUMBER
KS	KS FLAP KIN 50(1) CHENEY RESERVOIR ACCESS	T9


- NOTE:**
1. Maintain one-way traffic during construction.
 2. Refer to SCR 156 Public traffic for additional information.
 3. Refer to Standard 635-6 for single-lane closure layout.
 4. CO to close only portion of roadway where work will be performed. Construction zone may move each day.

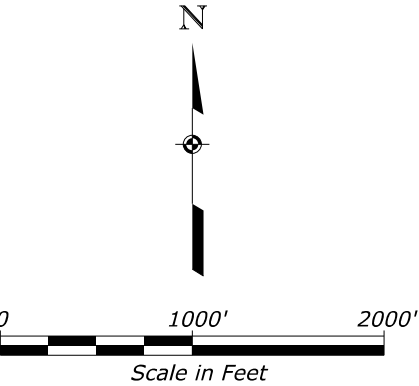
Legend:

② ROAD WORK
NEXT 2 MILES
G20-1

③ END
ROAD WORK
G20-2

④ ONE LANE
ROAD
AHEAD
W20-4

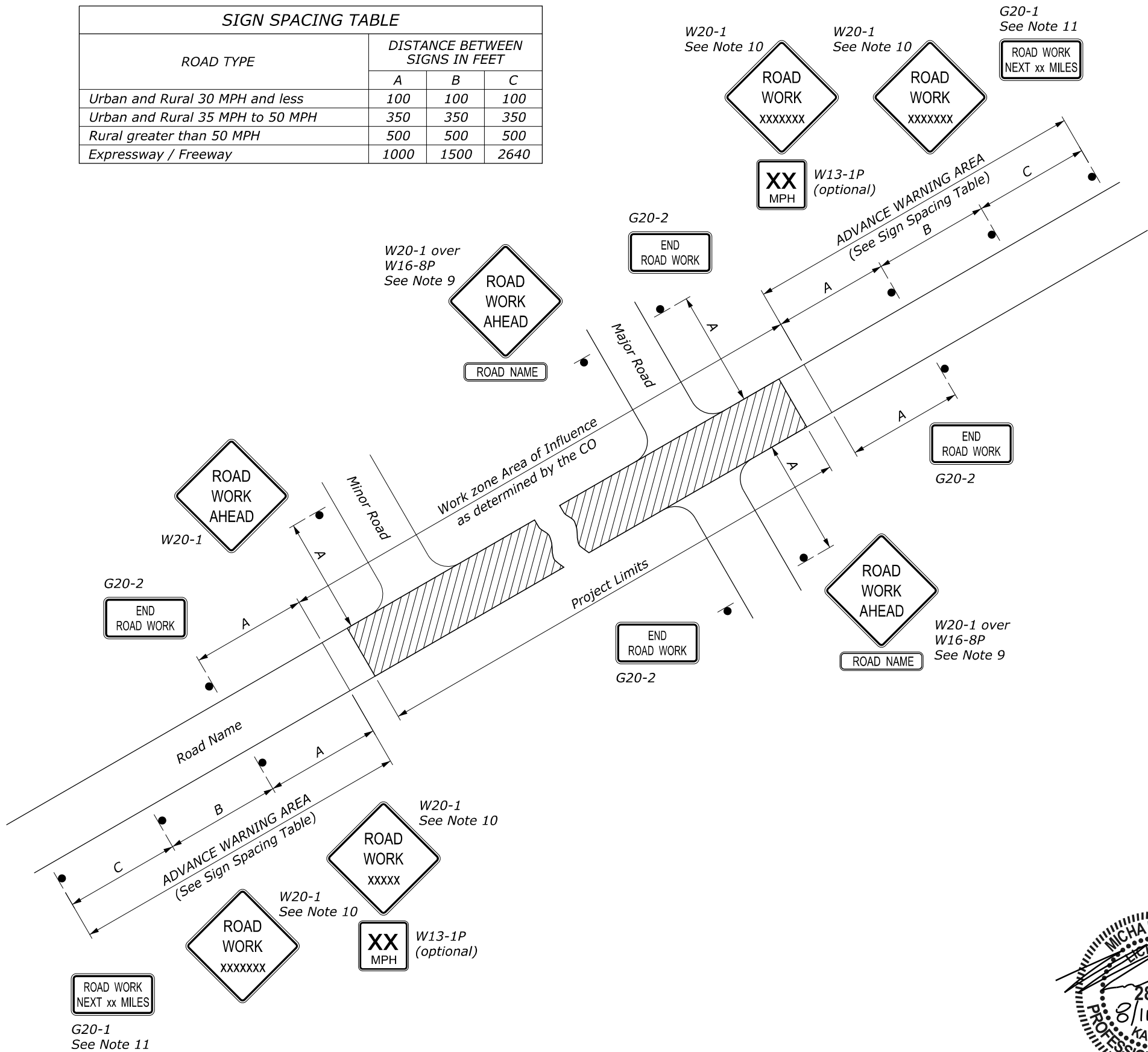
⑤ 
W20-7



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

**TEMPORARY TRAFFIC
CONTROL PLAN**

SIGN SPACING TABLE			
ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET		
	A	B	C
Urban and Rural 30 MPH and less	100	100	100
Urban and Rural 35 MPH to 50 MPH	350	350	350
Rural greater than 50 MPH	500	500	500
Expressway / Freeway	1000	1500	2640



NOTE:

1. Erect all project advance warning signs before starting construction work.
2. Not all details shown on the temporary traffic control sheets may be applicable to this project. The Contractor may add or delete information and details in this traffic control plan as necessary to accommodate actual operations.
3. Where advance warning signs, placed as shown, interfere with permanent signs, locate the warning signs as determined by the CO for best results. Vary messages as required.
4. Additional or different message signs may be required to fit the actual construction conditions.
5. Install advisory speed plates under the W20 series warning signs as needed to indicate a maximum recommended speed through the construction area.
6. Ensure all sign supports exposed to impact by traffic meet the requirements of NCHRP-350 or MASH for crashworthiness.
7. Maintain two-way traffic during all non-work hours except as approved by the CO.
8. Do not store traffic control devices along the roadway when not in use. Cover post-mounted signs when not applicable.
9. If W20-1 is placed on a roadway other than that on which the actual construction work occurs, include a supplementary plaque indicating the name of the road on which the construction does occur (applies to major roads only).
10. The message on the W20-1 signs may be "ROAD WORK AHEAD" or may specify the distance to the work area in feet or in miles. Install an additional W20-1 sign when approach speeds exceed 50 MPH. When used place the two W20-1 signs "B" feet apart according to the Sign Spacing Table.
11. For work zones that are 2 miles or more in length, install G20-1 signs at each end of the project. Show the distance on the G20-1 sign to the nearest whole mile.
12. If signing on a roadway under a jurisdiction other than the client agency, verify that an encroachment permit has been obtained.
13. State standards may be used as an alternative if approved by the CO.
14. Refer to the Section 635 of the Special Contract Requirements for allowable retroreflective sheeting types.



NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY OFFICE	
U.S. CUSTOMARY STANDARD	
TEMPORARY TRAFFIC CONTROL ADVANCE SIGNING	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED: DRAFT: 6/2014	635-1

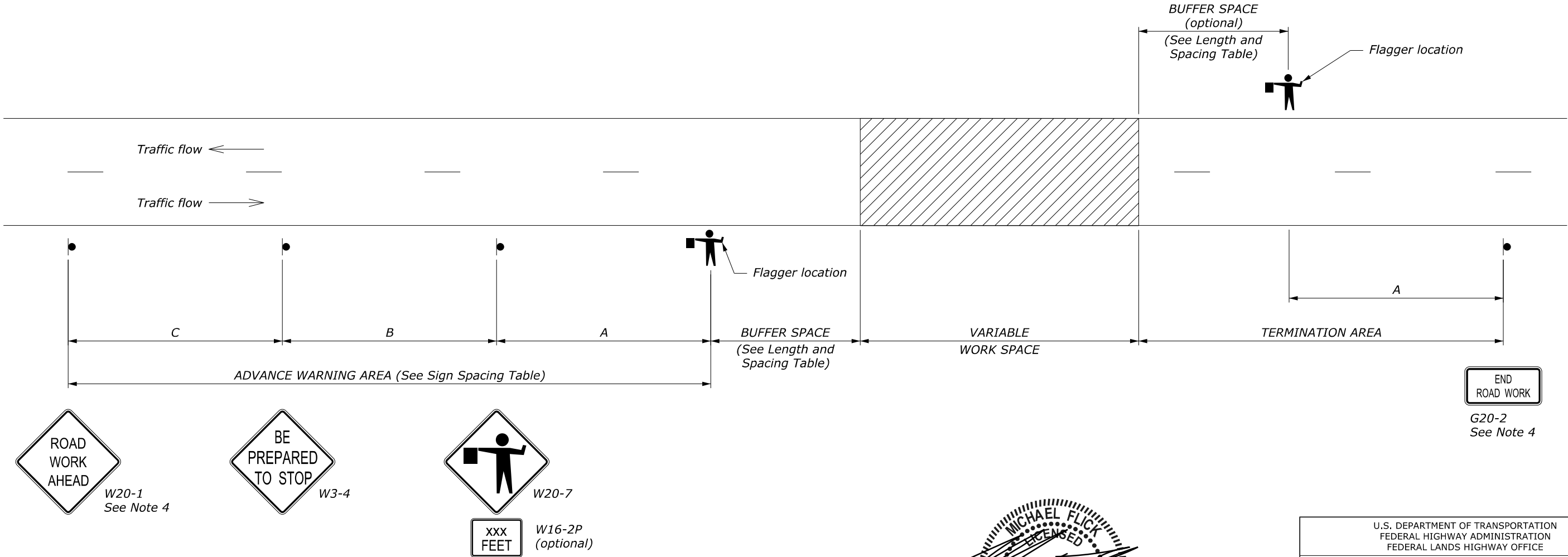
LENGTH AND SPACING TABLE	
APPROACH SPEED*	BUFFER SPACE LENGTH
MPH	FEET
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730

* Approach speed based on the regulatory posted speed, not the advisory speed.

SIGN SPACING TABLE			
ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET		
	A	B	C
Urban and Rural 30 MPH and less	100	100	100
Urban and Rural 35 MPH to 50 MPH	350	350	350
Rural greater than 50 MPH	500	500	500
Expressway / Freeway	1000	1500	2640

NOTE:

- Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.
- Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO.
- For pilot car operation, mount the "PILOT CAR FOLLOW ME" (G20-4) sign at a conspicuous location on the rear of vehicle. Prominently display the name of the Contractor on the pilot car.
- If closure is completely within the project limits, eliminate the "ROAD WORK AHEAD" (W20-1) and "END ROAD WORK" (G20-2) signs.
- For night time flagging operation, provide floodlighting at flagger stations.
- Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.



NO SCALE

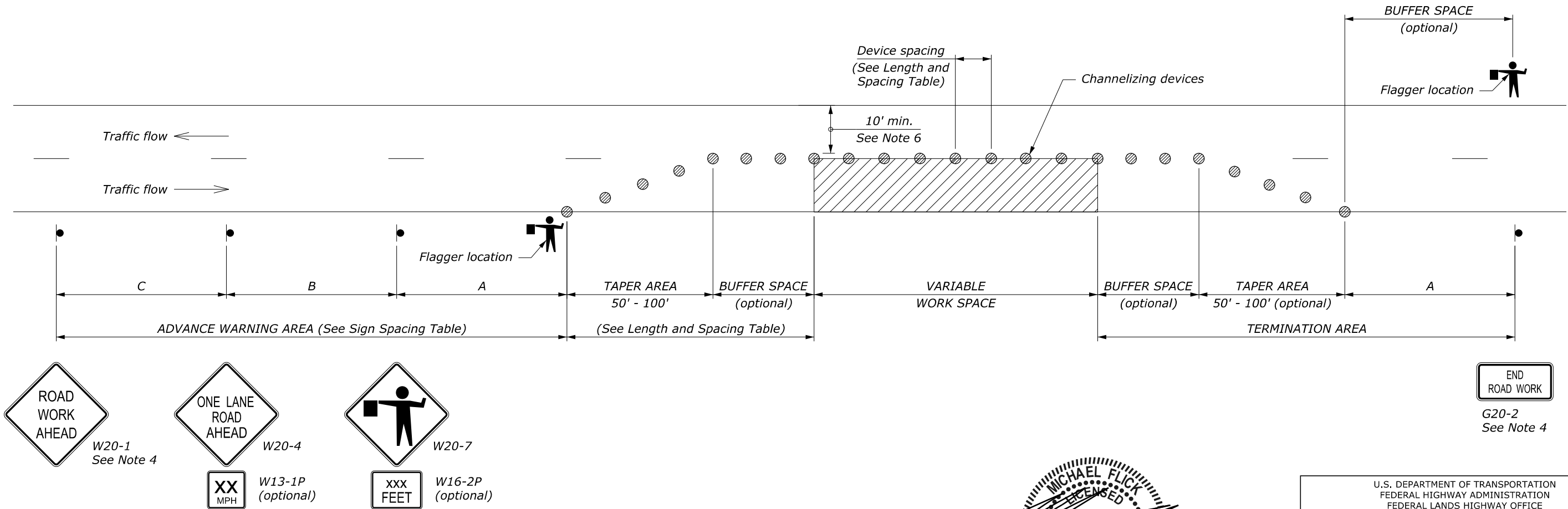
LENGTH AND SPACING TABLE				
APPROACH SPEED*	BUFFER SPACE LENGTH	CHANNELIZING DEVICE		
		TAPER AREA	BUFFER SPACE	WORK SPACE
MPH	FEET	SPACING IN FEET		
20	115	20	40	40
25	155	20	50	50
30	200	20	60	60
35	250	20	70	70
40	305	20	80	80
45	360	20	90	90
50	425	20	100	100
55	495	20	110	110
60	570	20	120	120
65	645	20	130	130
70	730	20	140	140

* Approach speed based on the regulatory posted speed, not the advisory speed.

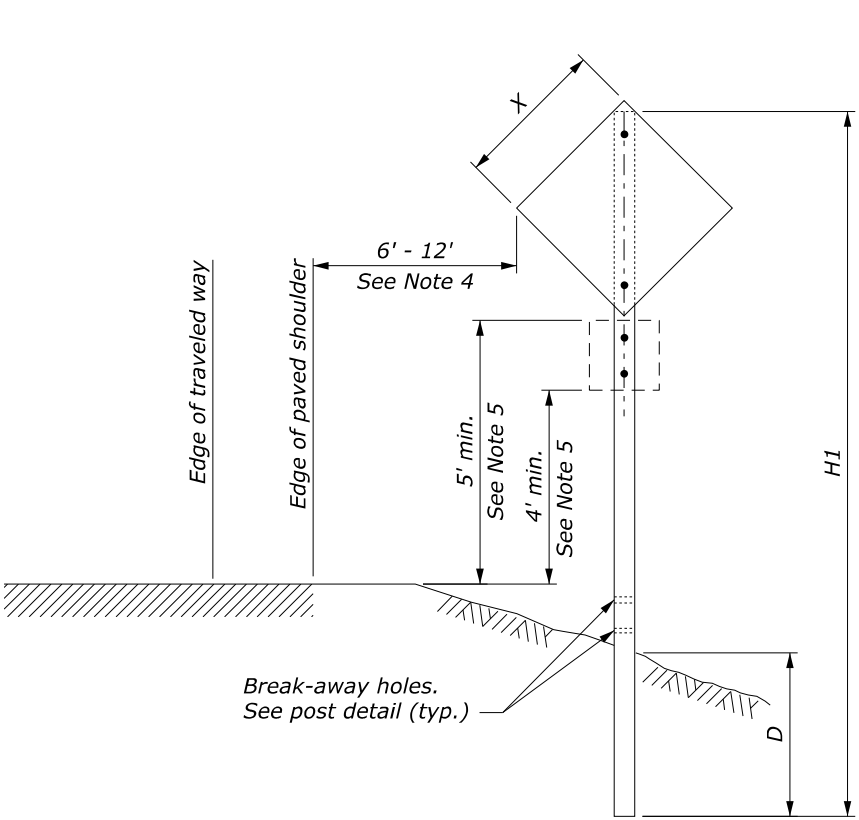
SIGN SPACING TABLE			
ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET		
	A	B	C
Urban and Rural 30 MPH and less	100	100	100
Urban and Rural 35 MPH to 50 MPH	350	350	350
Rural greater than 50 MPH	500	500	500
Expressway / Freeway	1000	1500	2640

NOTE:

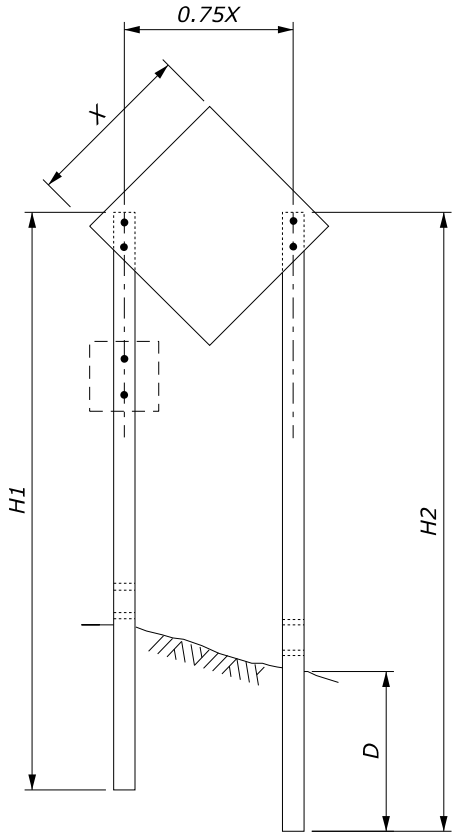
- Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.
- Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO.
- For pilot car operation, mount the PILOT CAR FOLLOW ME (G20-4) sign at a conspicuous location on the rear of vehicle. Prominently display the name of the contractor on the pilot car.
- If closure is completely within the project limits, eliminate the "ROAD WORK AHEAD" (W20-1) and "END ROAD WORK" (G20-2) signs.
- For night time flagging operation, provide floodlighting at flagger stations.
- For project specific minimum width, refer to the Special Contract Requirements, Section 156.
- Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.



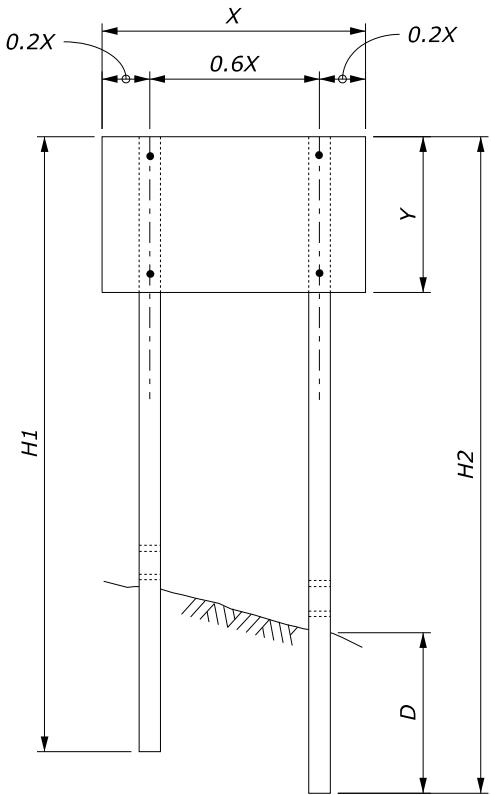
NO SCALE



SINGLE POST SIGN



TWO POST SIGN

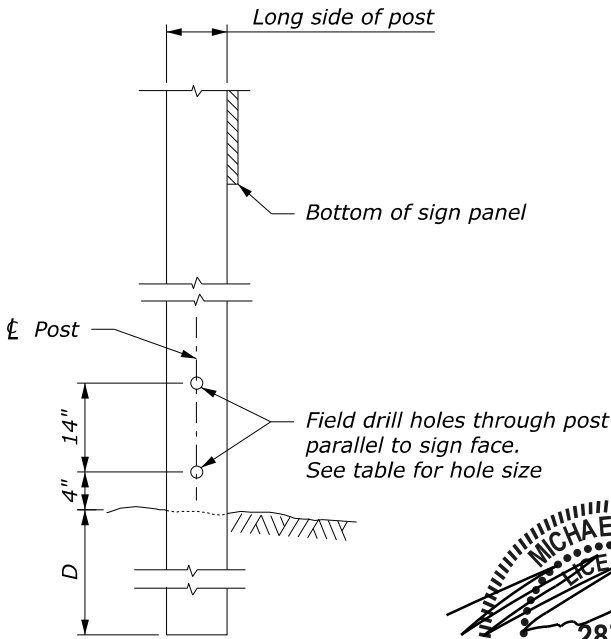


NOTE:

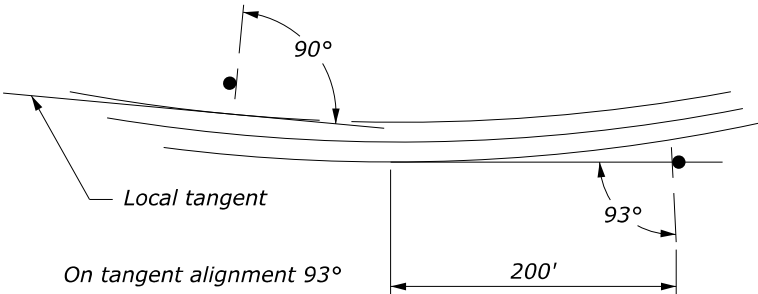
1. Attach sign panels with a minimum of 2 - 1/4" dia. bolts per post.
2. H1 and H2 = Overall post length. Select post lengths to fit field conditions.
3. D = Post embedment depth for average soil conditions.
4. In areas where lateral distance is limited, a minimum lateral offset of 2' may be used. In areas with curbs, a minimum lateral distance of 1' behind the face of the curb may be used.
5. In pedestrian locations, or in areas with obstructed views, use 7' minimum mounting height for main sign and 6' minimum mounting height for secondary sign.
6. Use 7' minimum spacing between posts for sign posts 6" x 6" or larger.
7. State standards may be used as an alternative if approved by the CO.

WOOD POST SELECTION TABLE

WIDTH "X"	AREA (SQFT)	NUMBER OF POSTS	POST SIZE (INCH)	D (INCH)	HOLE SIZE (INCH)
Diamond ≤ 36"	< 10	1	4 x 4	36	0
Other Shapes ≤ 48"		1	4 x 6	48	1.5
Diamond ≤ 48"	10 - 20	1	6 x 6	48	2
Diamond ≤ 48"	10 - 20	2	4 x 4	36	0
Other Shapes ≤ 12'		2	4 x 6	48	1.5
> 13'	50 - 65	2	6 x 6	48	2
12' - 16'	50 - 65	3	4 x 6	48	1.5
> 17'	65 - 95	4	4 x 6	48	1.5
> 30'	65 - 95	3	6 x 6	48	2



POST DETAIL



SIGN INSTALLATION ANGLE



NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY OFFICE	
U.S. CUSTOMARY STANDARD TEMPORARY TRAFFIC CONTROL SIGN INSTALLATION WOOD POSTS	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED: DRAFT: 10/2017	635-14