



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

ROADWAY DESIGN DIVISION
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CLAY BRIGHT
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INSTRUCTIONAL BULLETIN NO. 20-09

Regarding Various Revised and New Standard Drawings.

Effective October 9, 2020 letting (July 29, 2020 Turn-in), the following Standard Drawings have been revised and are new. The following standard drawings have been revised and the new the new standard drawings have been added to the Roadway Design Guidelines, Chapter 10, Index of Standard Drawings and are available online.

New Standard Drawings:

10-100.01 STANDARD ABBREVIATIONS AND LEGENDS

DRAWING NUMBER	REVISION DATE	DESCRIPTION
RD-A-2		STANDARD ABBREVIATIONS M THROUGH Z
RD-L-1A		STANDARD LEGEND

10-106.06 GUARDRAIL (SPECIAL CASES)

S-CPW-1		CURVED PARAPET WALL ≤40 M.P.H.
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10-107.01 PAVEMENT MARKINGS

T-M-4A		STANDARD UNSIGNALIZED MID-BLOCK CROSSING
T-M-4B		STANDARD SIGNALIZED MID-BLOCK CROSSING
T-M-18		FLEXIBLE DELINEATOR DETAILS

Revised Standard Drawings:**10-100.01 STANDARD ABBREVIATIONS AND LEGENDS**

DRAWING NUMBER	REVISION DATE	DESCRIPTION
RD-A-1	02-20-20	STANDARD ABBREVIATIONS A THROUGH L
RD-L-1	02-20-20	STANDARD LEGEND
RD-L-2	02-20-20	STANDARD LEGEND FOR UTILITY INSTALLATIONS
RD-L-3	02-20-20	STANDARD LEGEND FOR SIGNALIZATION AND LIGHTING
RD-L-4	02-20-20	STANDARD LEGEND FOR SIGNALIZATION AND LIGHTING
RD-L-5	02-20-20	STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL
RD-L-6	02-20-20	STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL
RD-L-7	02-20-20	STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL
RD-L-8	02-20-20	STANDARD LEGEND FOR NATURAL STREAM DESIGN

10-106.05 GUARDRAIL CONNECTIONS

S-GRC-4	02-28-20	GUARDRAIL CONNECTION TO BRIDGE RAILING CONCRETE PARAPET
S-GRC-5	02-28-20	GUARDRAIL CONNECTION TO BRIDGE ENDS (TRAILING ENDS)
S-GRC-6	02-28-20	GUARDRAIL CONNECTION TO BRIDGE ENDS FOR LOW SPEED ROADWAYS

10-107.02 WORK ZONES

T-WZ-PBR2	02-20-20	DETAILS FOR WORK ZONE CHANNELIZATION DEVICES
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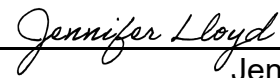
These standard drawings are located on the web site and in Chapter 10 of the Design Guidelines and can be found in the following links.

Standard Drawings:

<https://www.tn.gov/content/tn/tdot/roadway-design/standard-drawings-library/standard-roadway-drawings.html>

Chapter 10 - Index of Standard Drawings is available online at this location:

https://www.tn.gov/content/dam/tn/tdot/roadway-design/documents/design_guidelines/DG-C10.pdf



Jennifer Lloyd, PE
Civil Engineering Director
Roadway Design Division

KJL:ARH:RBB:LLP
April 8, 2020

STANDARD ABBREVIATION

M

MATL. MATERIAL
MASH MANUAL for ASSESSING SAFETY HARDWARE
MAX. MAXIMUM
MB. MAILBOX
MCPL MUNICIPAL
MED. MEDIAN
M.G. THOUSAND GALLONS
M.H. MANHOLE
MI. MILE
MIN. MINIMUM
MIN. AGG. MINERAL AGGREGATE
MM MILE MARKER
MOBH MOBILE HOME
MOD. MODIFY or MODIFIED
MON. MONUMENT
MPH MILE PER HOUR
MUTCD MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

N

N NORTH or NORTH COORDINATE
N.A.D. NORTH AMERICAN DATUM
N.A.V.D. NORTH AMERICAN VERTICAL DATUM
NBL NORTHBOUND LANE
NCHRP NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM
NEPA NATIONAL ENVIRONMENTAL POLICY ACT
N.G.S. NATIONAL GEODETIC SURVEY
N.I.C. NOT IN CONTRACT
NO. NUMBER
NW NORMAL WATER

O

O.D. OUTSIDE DIAMETER
O.H. OVERHEAD
O.H.W. ORDINARY HIGH WATER
O.P. OVERPASS
OUT. OUTLET

P

P POWER UTILITY
PB PEDESTRIAN PUSHBUTTON
P.C. POINT OF CURVATURE
P.C.F. POUNDS PER CUBIC FOOT
P.C.O. PILE CUT OFF
PED. PEDESTRIAN or PEDESTAL
P.I. POINT OF INTERSECTION
PKWY. PARKWAY
PL. PLACE
P.O.C. POINT OF CURVE
P.O.S.T. POINT ON SUBTANGENT
P.O.T. POINT ON TANGENT
P.P. POWER POLE
PP POLYPROPYLENE PIPE
PRES. PRESENT
PROJ. PROJECT
PROP. PROPOSED
PROWAG PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES
P.S.F. POUND PER SQUARE FOOT
P.S.I. POUND PER SQUARE INCH
P.S.Y. POUND PER SQUARE YARD
P.T. POINT OF TANGENCY
PVC POLYVINYL CHLORIDE
PVMT PAVEMENT
PVT. PRIVATE
PWR. POWER

Q

Q DESIGN DISCHARGE (CUBIC FEET PER SECOND)
QPL QUALIFIED PRODUCTS LIST
QUAN. QUANTITY

R

R RADIUS OF CIRCULAR CURVE WITH NO SPIRALS
R_c RADIUS OF CIRCULAR CURVE WITH SPIRALS
RCP REINFORCED CONCRETE PIPE
RCPA REINFORCED CONCRETE PIPE ARCH
RDSYL REMOVABLE DOUBLE SOLID YELLOW LINE
RD. ROAD
RDY. ROADWAY
REF. REFUSAL
REINF. REINFORCED
RELOC. RELOCATION
REM. REMAINDER
REQD. REQUIRED
RES. RESIDENCE
REV. REVISED
R.L. REFUSAL LINE
R.O.W. RIGHT-OF-WAY
R.R. RAILROAD
RSSWL REMOVABLE SINGLE SOLID WHITE LINE
RT. RIGHT
RTE. ROUTE
RY. RAILWAY

S

S SOUTH
SA SANITARY SEWER
SBL SOUTHBOUND LANE
SBST SINGLE BITUMINOUS SURFACE TREATMENT
S.C. SPIRAL TO CURVE
SCH. SCHOOL
S.D. SIDE DRAIN
S.E. SUPERELEVATION
SEC. SECTION
S.F. SQUARE FOOT
SHLD. SHOULDER
SHR. SHRINKAGE
SHT. SHEET
SL. SLOPE
S.L. STATE LINE
S.M. SEWER METER
S.P. SUPPORT POLE
SPA. SPACE
SPEC. SPECIAL
SPECS. SPECIFICATIONS
SPR.D. SPRING DRAIN
SQ. SQUARE
S.R. SOLID ROCK
S.R. or ST. RT. STATE ROUTE
SRTRO STEEL REINFORCED THERMOPLASTIC RIBBED PIPE
ST. STREET or STATE
S.T. SPIRAL TO TANGENT or SHORT TANGENT OF SPIRAL
STA. STATION
STAB. STABILIZED
STD. STANDARD
STL. STEEL
STM. STORM
STN. STONE
ST.P. STRAIN POLE
STR. STRENGTH or STRAIGHT
STRUC. STRUCTURE
SURV. SURVEY

S.V. SEWER VALVE
SWL SWELL
S.W. SIDEWALK
S.Y. SQUARE YARD
SBWL SINGLE BROKEN WHITE LINE
SBYL SINGLE BROKEN YELLOW LINE
SSWL SINGLE SOLID WHITE LINE
SSYL SINGLE SOLID YELLOW LINE

T

T TANGENT LENGTH OF CURVE
T or TEL. TELEPHONE UTILITY
T_c TANGENT LENGTH FROM S.C. OR C.S. TO INTERSECTION OF TANGENTS
TD TRENCH DEPTH
TDOT TENNESSEE DEPARTMENT OF TRANSPORTATION
TEMP. TEMPORARY
TGRN TENNESSEE GEODETIC REFERENCE NETWORK
THK. THICKNESS
TNPK. TURNPIKE
T.P. TURNING POINT
TR. TRACK
TRAV TRAVERSE POINT
T_s SUBTANGENT LENGTH ON CURVE WITH SPIRAL
TTC TEMPORARY TRAFFIC CONTROL
TTI TEXAS (A&M) TRANSPORTATION INSTITUTE
T.V.A. TENNESSEE VALLEY AUTHORITY
TYP. TYPICAL

U

UG UNDERGROUND
U.L. URBAN LIMITS
UNCL.EX. UNCLASSIFIED EXCAVATION
U.P. UNDERPASS
U.S. UNITED STATES
U.S.C.E. UNITED STATES CORPS OF ENGINEERS

V

V DESIGN SPEED
VAR. VARIABLE
V.C. VERTICAL CURVE
V.C.P. VITRIFIED CLAY PIPE
VERT. VERTICAL
VO VERTICAL OVAL
VOCPC VERTICAL OVAL CONCRETE PIPE CULVERT
V.P.C. VERTICAL POINT OF CURVATURE
V.P.I. VERTICAL POINT OF INTERSECTION
V.P.O.C. VERTICAL POINT ON CURVE
V.P.T. VERTICAL POINT OF TANGENCY

W

W WEST
W/ WITH
WBL WESTBOUND LANE
WD.P. WOOD POLE
WGT. WEIGHT
W.L. WATER LEVEL
W.M. WATER METER
W.V. WATER VALVE
W.W. WING WALL

X, Y & Z

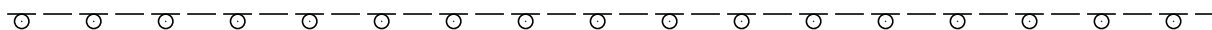
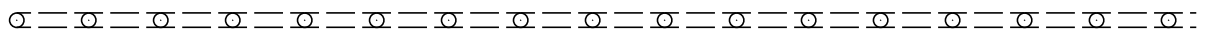
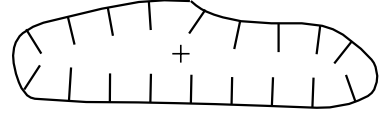

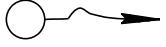
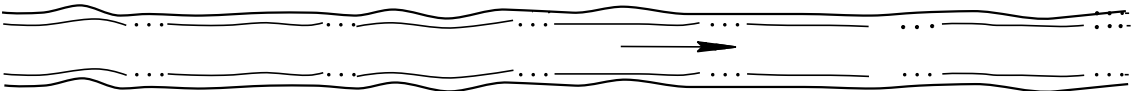
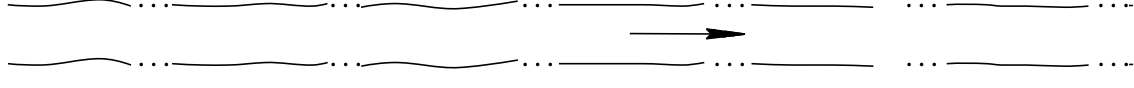
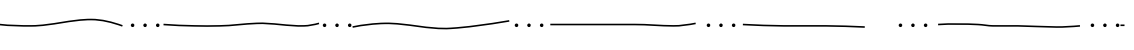
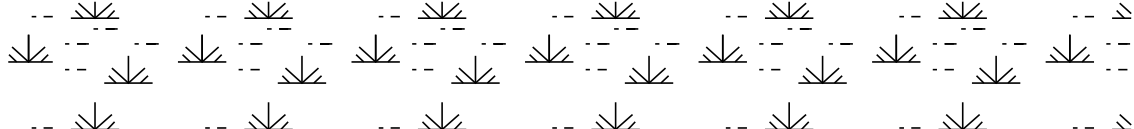
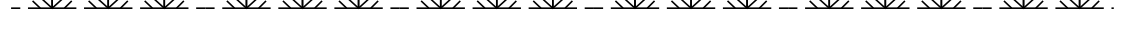
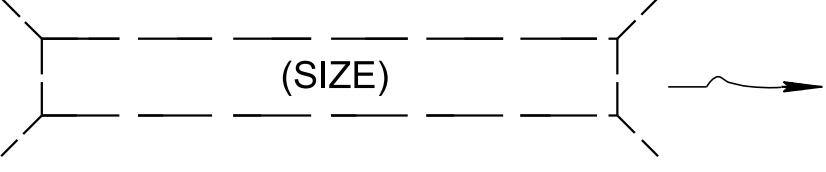
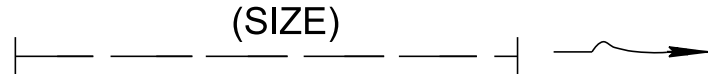


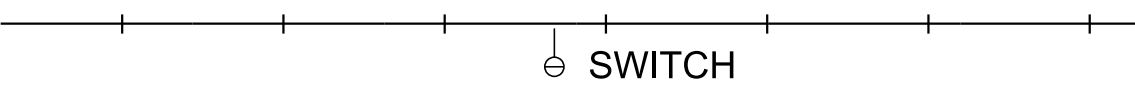
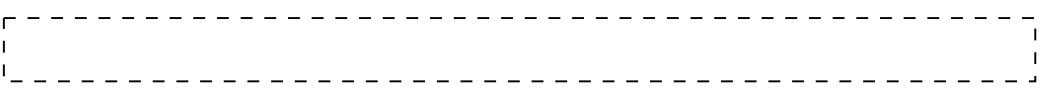
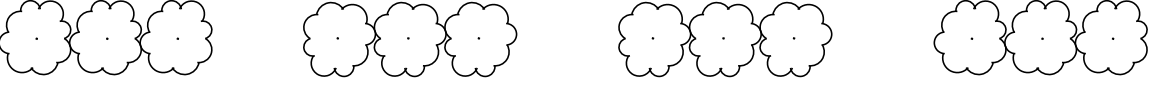


X_c SPIRAL COORDINATE
X-ING CROSSING
X-RD. CROSS-ROAD
X-SEC. CROSS-SECTION
Y_c SPIRAL COORDINATE


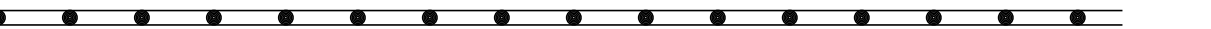
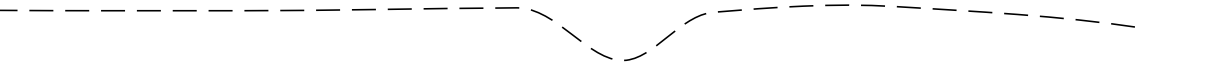
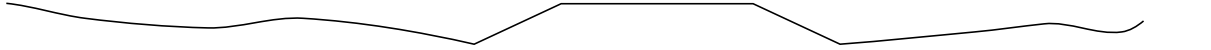



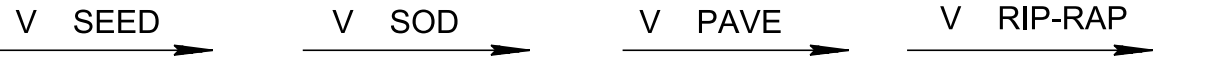

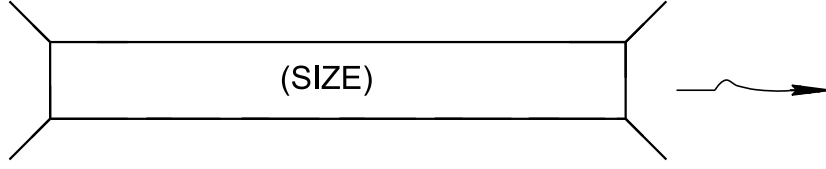
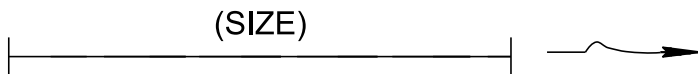


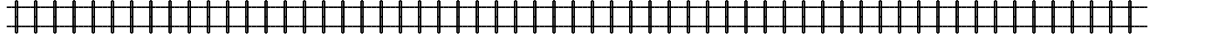
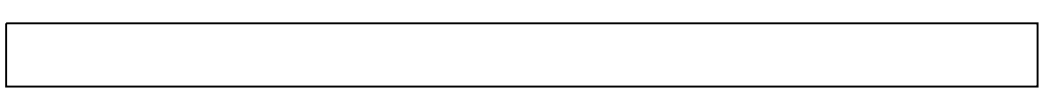

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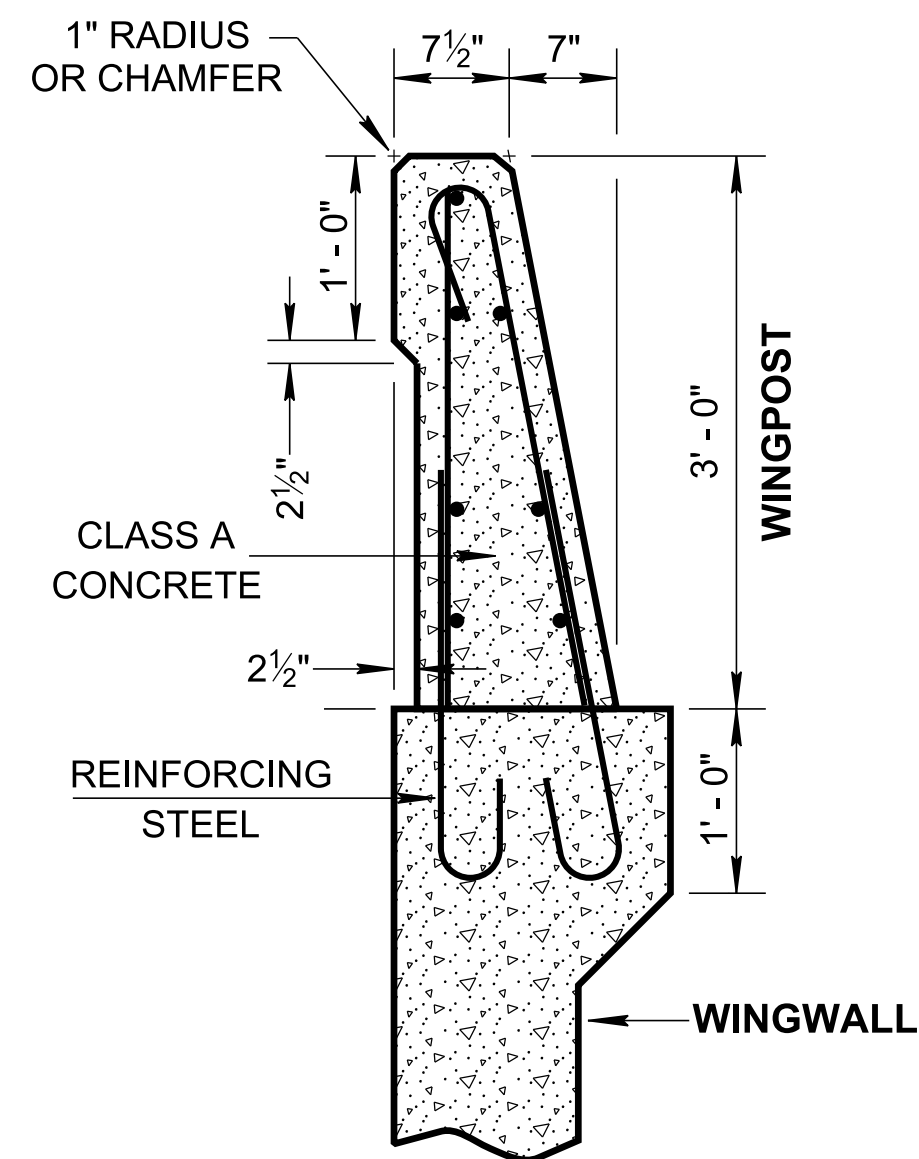
STANDARD LEGEND

EXISTING

PROPOSED

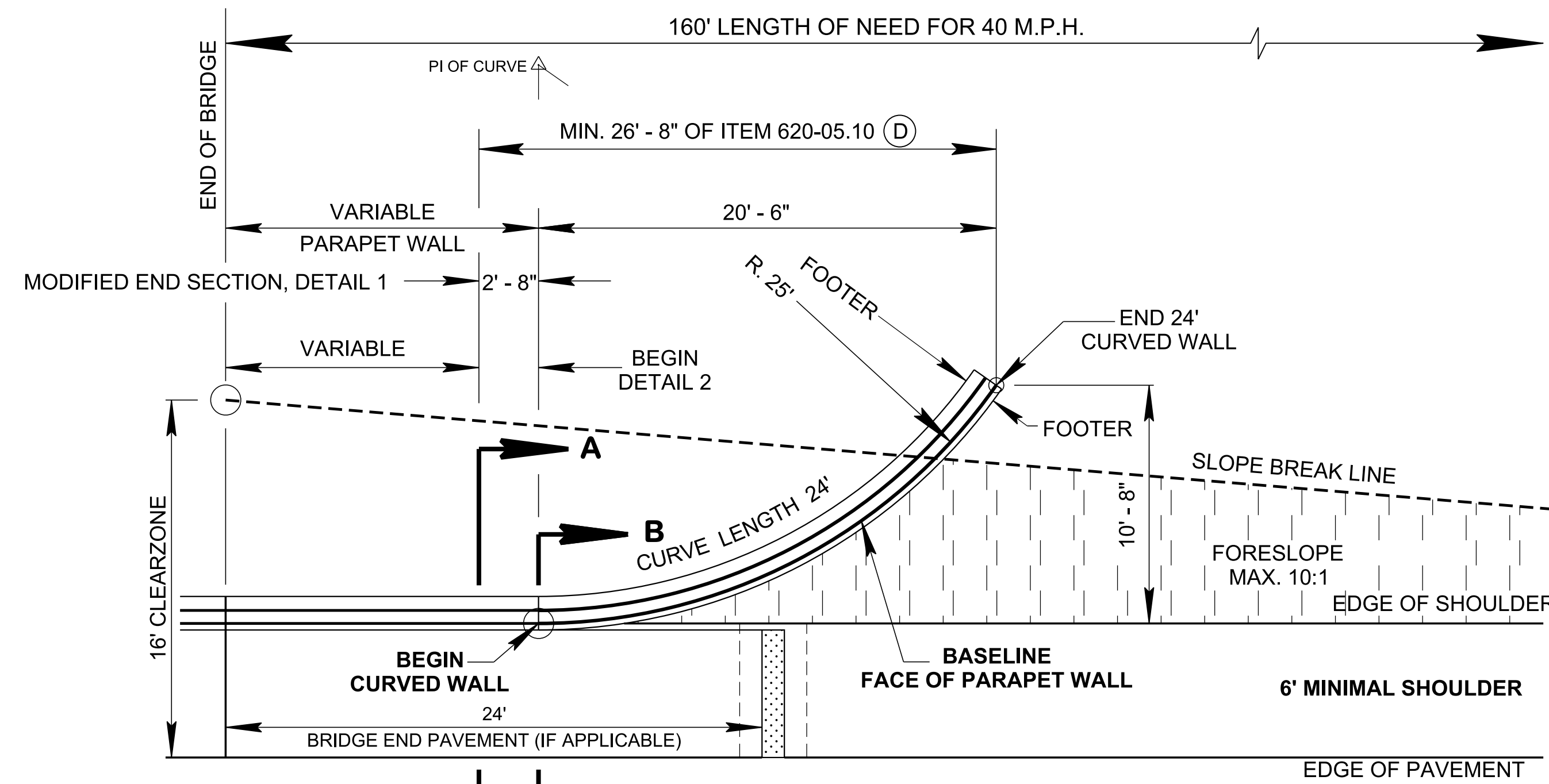
	SINGLE GUARDRAIL
	MEDIAN DIVIDER GUARDRAIL
	SINKHOLE (SHOW ELEVATION, LOCATION OF LOW POINT AND IF OPEN OR CLOSED)
	SEPTIC TANK (SHOW SIZE - DIRECTION OF ARROW INDICATES LOCATION OF OVERFLOW FIELD)
	SPRING
	LARGE STREAM WITH DIRECTIONAL ARROW
	SMALL STREAM WITH DIRECTIONAL ARROW
	INTERMITTENT STREAM
	SWAMP, MARSH OR WETLAND
	WETLAND BOUNDARY
	BRIDGE, BOX OR SLAB BRIDGES AND CULVERTS (DESCRIBE)
	CROSS DRAIN OR SIDE DRAIN CULVERTS (SHOW SIZE, LENGTH, MATERIAL, INLET AND OUTLET ELEVATIONS, AND TYPE OF ENDWALLS)
	CATCH BASIN (SHOW TYPE, IF KNOWN)
	MANHOLE
	RAILROAD
	WALL (RETAINING, BRICK, STONE)
	TREE
	TREE LINE
	ROCK, EMBANKMENTS, REVETMENTS

	SINGLE GUARDRAIL
	MEDIAN DIVIDER GUARDRAIL
	TOE OF FILL SLOPE
	TOP OF CUT SLOPE
	CONCRETE
	REINFORCED CONCRETE PAVEMENT
	CHANNEL CHANGE OR LARGE SPECIAL DITCH (DESCRIBE)
	"V" OR ROUND DITCH & LINING TREATMENT
	TRAPEZOIDAL DITCH & LINING TREATMENT
(INDICATES CHANGE, V TO TRAPEZOIDAL DITCH)	
	BRIDGE BOX OR SLAB BRIDGES AND CULVERTS (DESCRIBE)
	CROSS DRAIN OR SIDE DRAIN CULVERTS (SHOW SIZE, LENGTH, MATERIAL, INLET AND OUTLET ELEVATIONS, AND TYPE OF ENDWALLS)
	CATCH BASIN (SHOW TYPE)
	MANHOLE
	RAILROAD
	WALL (RETAINING, BRICK, STONE)
	TREE

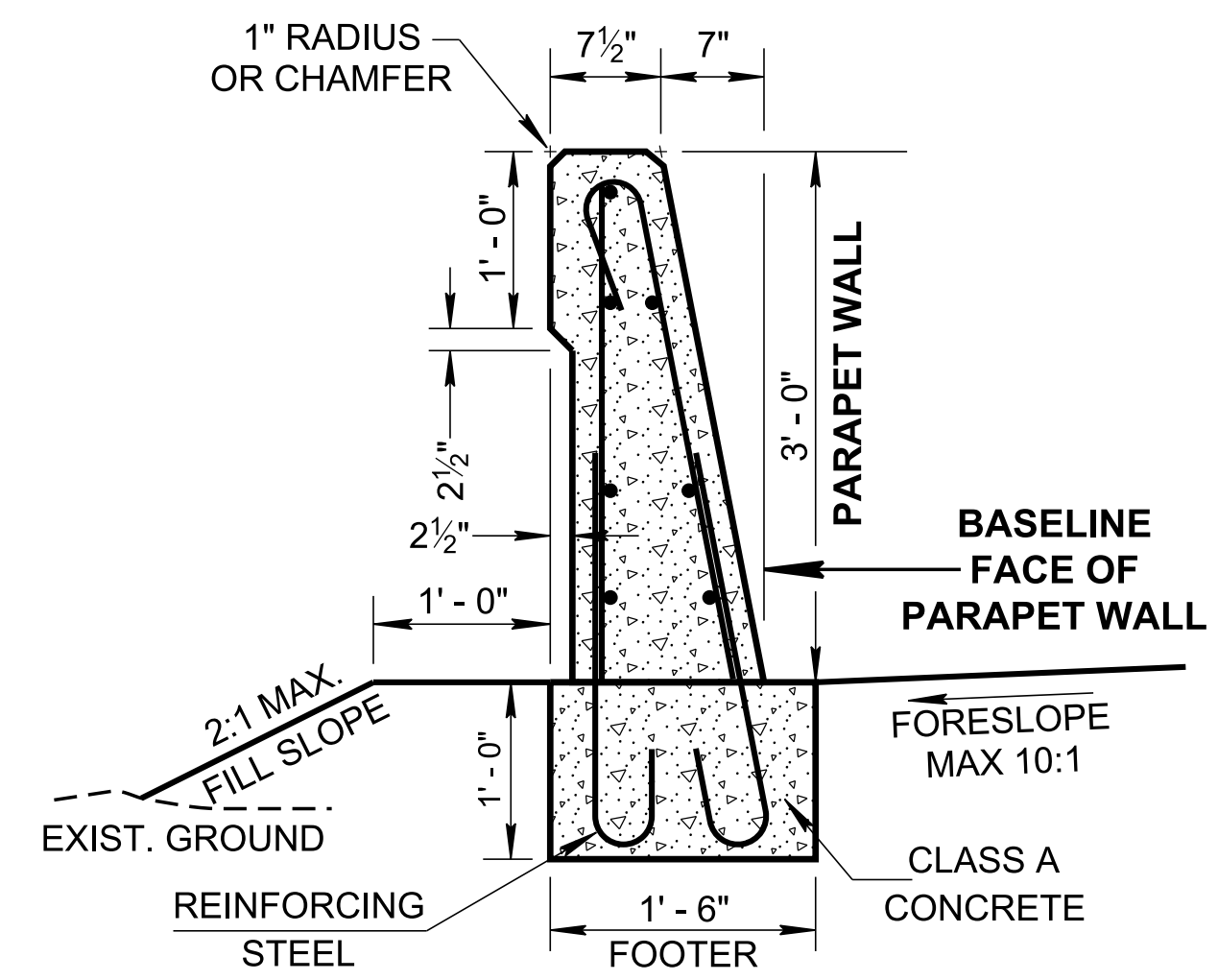


**SECTION VIEW A-A
DETAIL 1**

THIS WALL SECTION REPLACES THE LAST 2' - 8" OF THE WINGPOST AND WILL REQUIRE REINFORCING STEEL AS SHOWN ON STANDARD STRUCTURE DRAWING NO. STD-1-1SS.

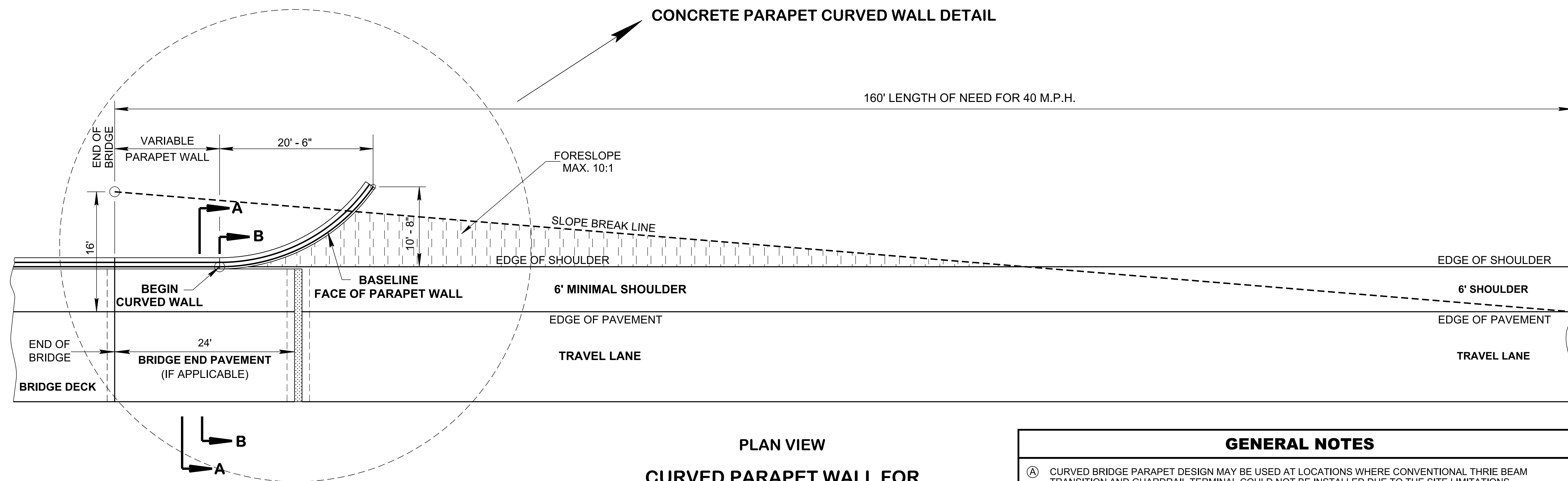


CONCRETE PARAPET CURVED WALL DETAIL



**CURVED PARAPET WALL
SECTION VIEW B-B
DETAIL 2**

THE PARAPET WALL WILL REQUIRE REINFORCING STEEL AS SHOWN ON STANDARD STRUCTURE DRAWING NO. STD-1-1SS. ALL COST OF THE FOOTER SHALL BE INCLUDED IN THE COST OF THE CURVED PARAPET WALL, ITEM NO. 620-05.10.



**PLAN VIEW
CURVED PARAPET WALL FOR
≤ 40 M.P.H., 16' CLEAR ZONE**

GENERAL NOTES

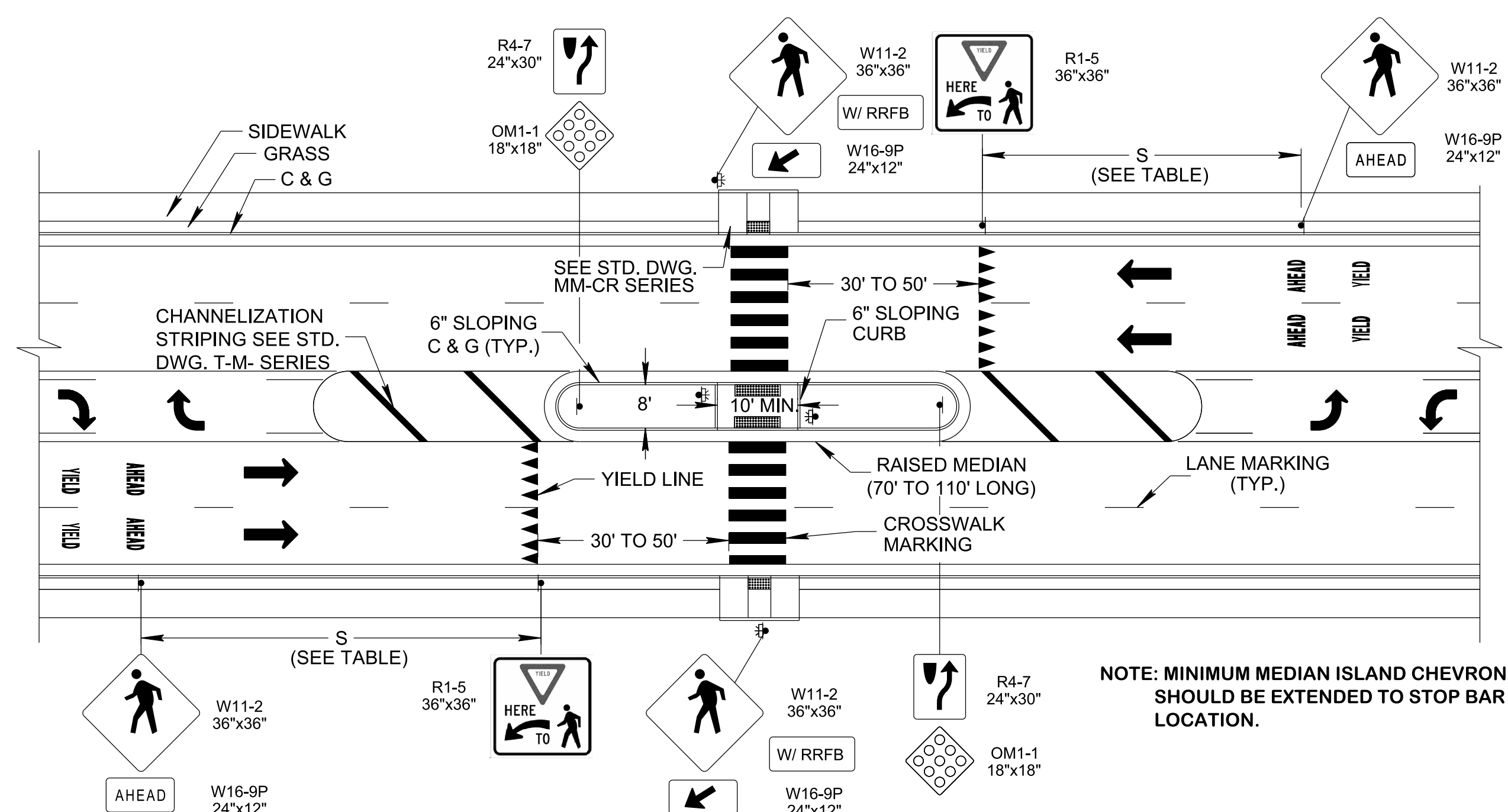
- (A) CURVED BRIDGE PARAPET DESIGN MAY BE USED AT LOCATIONS WHERE CONVENTIONAL THREE BEAM TRANSITION AND GUARDRAIL TERMINAL COULD NOT BE INSTALLED DUE TO THE SITE LIMITATIONS. INSTALLATION IS LIMITED TO LOCATIONS WHERE THE POSTED SPEED IS 40 MPH OR LESS.
- (B) THE CURVED PARAPET WALL REDUCES INSTALLATION FOOTPRINT HOWEVER, DESIGNERS SHOULD REFER TO S-PL-SERIES TO FURTHER EVALUATE IF THE CURVED PARAPET WALL APPLICATION IS A REASONABLE SOLUTION FOR THE PROJECT SITE CONDITIONS.
- (C) CURVED PARAPET WALL DESIGN MAY BE PREFERRED IN URBAN ZONES AT LOCATIONS WHERE STANDARD GUARDRAIL BEAM IS NOT DESIRABLE DUE TO AESTHETICS. TEXTURE MAY BE APPLIED.
- (D) PAYMENT FOR THE CURVED PARAPET WALL SHALL INCLUDE ALL MATERIALS AS SHOWN ON THIS DRAWING OR AS REQUIRED PER STANDARD STRUCTURE DRAWING NO. STD-1-1SS AND LABOR NECESSARY FOR CONSTRUCTION. PAYMENT SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:
620-05.10, CONCRETE PARAPET CURVED WALL (≤ 40 M.P.H.), L.F.

STATE OF TENNESSEE
STANDARD
DRAWING
DEPARTMENT OF TRANSPORTATION

CURVED
PARAPET WALL
≤ 40 M.P.H.

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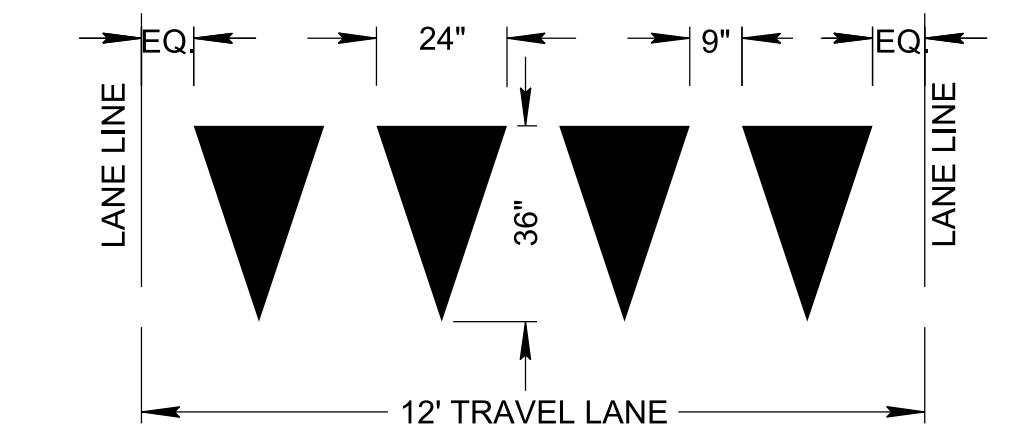


**5 LANES WITH RECTANGULAR RAPID FLASHING BEACON
MID-BLOCK CROSSING**

POSTED SPEED	WARNING SIGNS MINIMUM ADVANCE PLACEMENT DISTANCE - S
20 MPH	100 FT
25 MPH	100 FT
30 MPH	100 FT
35 MPH	100 FT
40 MPH	125 FT

NOTE: WHERE THE SPEED LIMIT EXCEEDS 40 MPH, MARKED CROSSWALKS ALONE SHOULD NOT BE USED AT UNSIGNALIZED (NO SIGNAL) LOCATIONS.

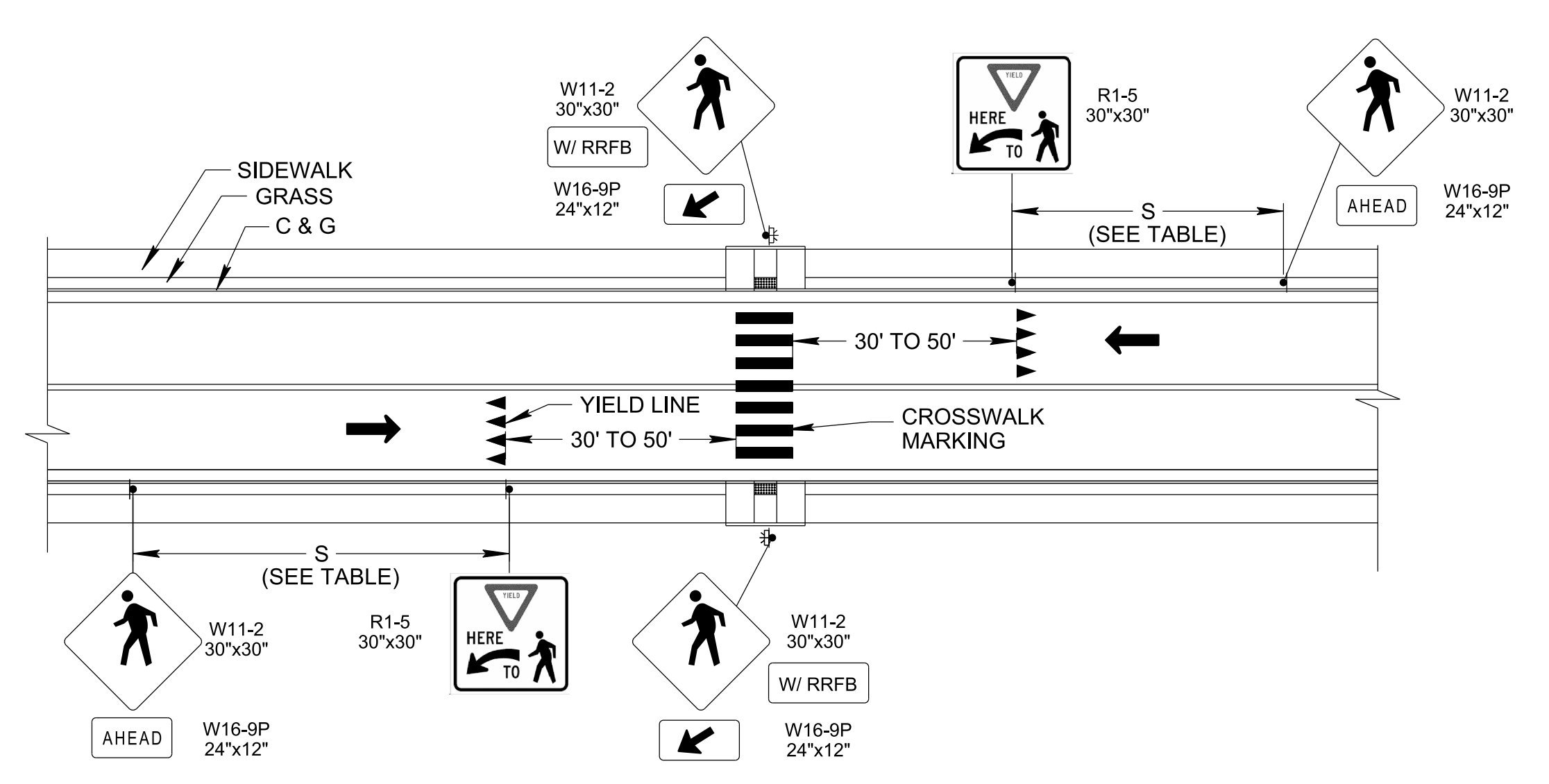
LEGEND	
	GROUND MOUNT SIGN
	COUNTDOWN PEDESTRIAN SIGNAL HEAD WITH PUSH BUTTON AND SIGN
	DETECTABLE WARNING SURFACE



RECOMMENDED YIELD LINE LAYOUTS

NOTES: YIELD LINES MAY BE SMALLER THAN SUGGESTED WHEN INSTALLED ON MUCH NARROWER, SLOW SPEED FACILITIES SUCH AS SHARED -USE PATHS.

AREA OF EACH TRIANGLE A BASE OF 24 INCHES AND A HEIGHT OF 36 INCHES IS = 3 SF.

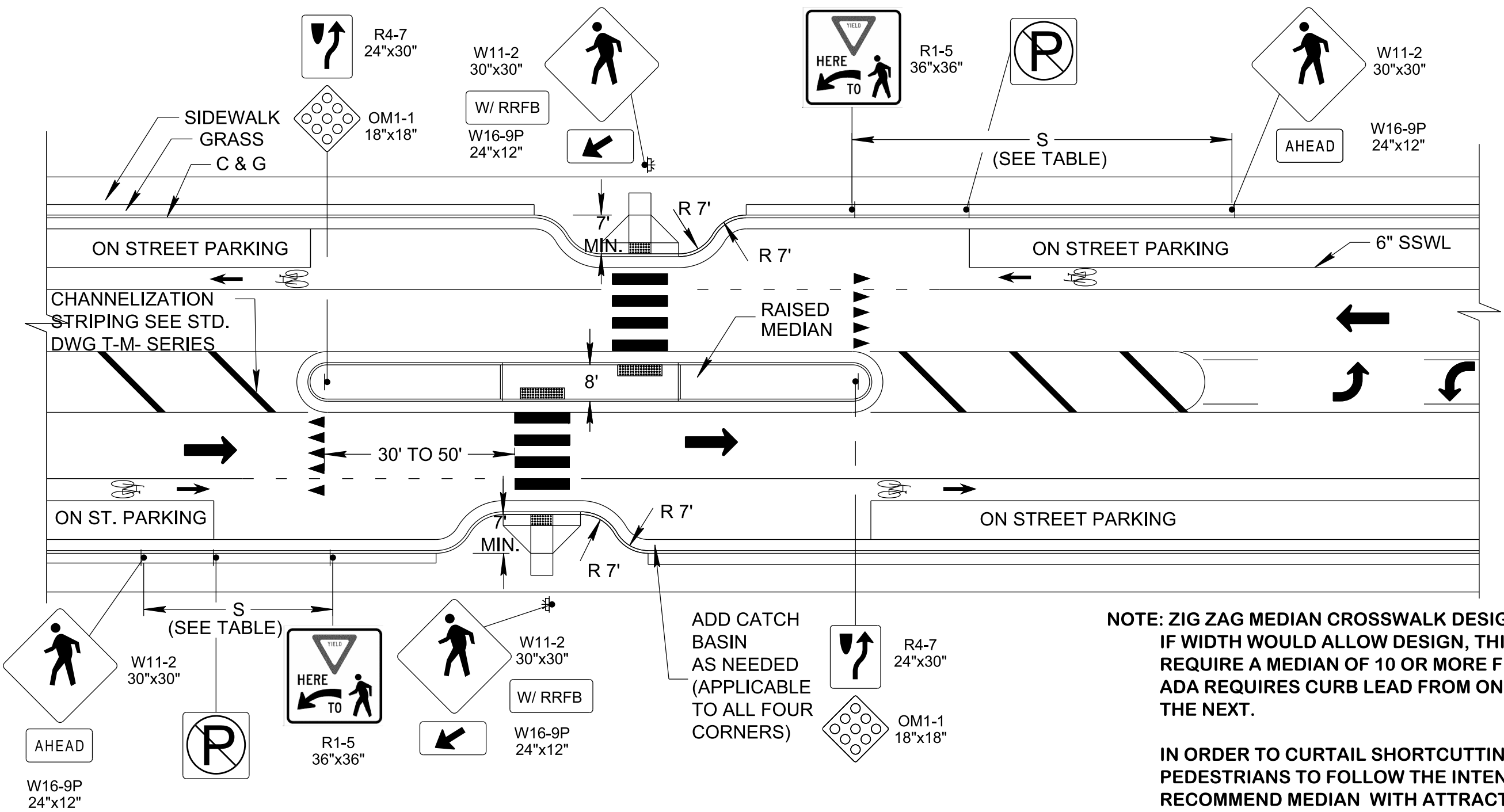


**2 LANES WITH RECTANGULAR RAPID FLASHING BEACON
MID-BLOCK CROSSING**

GENERAL NOTES

- (A) DETAILS SHOWN ON THIS STANDARD DRAWING APPLY TO THE CONSTRUCTION OR RECONSTRUCTION OF MID-BLOCK CROSSINGS AND MODIFICATION OF STREETS, CURBS, OR SIDEWALKS ASSOCIATED WITH IT. SEE TDOT-RDG FOR ADDITIONAL INFORMATION FOR SITE SELECTION, NEW CONSTRUCTION OR RECONSTRUCTION DURING PEDESTRIAN SAFETY INITIATIVE, SPOT SAFETY IMPROVEMENTS AT LOCATIONS MAX 45 MPH. OTHER LOCATIONS WILL NEED SITE SPECIFIC ANALYSIS.
- (B) NEW CONSTRUCTION A TRAFFIC ENGINEERING STUDY WILL HAVE TO BE CONDUCTED TO DETERMINE IF A MID-BLOCK CROSSING IS WARRANTED. MID-BLOCK CROSSINGS SHALL BE INSTALLED DURING RECONSTRUCTION PROJECTS AND REPAVING PROJECTS AT LOCATIONS WHERE EXISTING PEDESTRIAN SAFETY CONCERNED.
- (C) PEDESTRIAN IN CROSSWALK SIGNS (W11A-2) SHALL BE INSTALLED AT EACH END OF THE CROSSWALK LOCATION. THE SIGNS SHALL BE PLACED IN ADVANCE OF THE CROSSWALK ADJACENT TO THE TRAVEL LANE AND FACING THE DRIVER. REFER TO THE MUTCD ADDITIONAL FOR WARNING SIGNS, TYPE AND LOCATION.
- (D) FOR CURB RAMPS, THE DETECTABLE WARNING SURFACE, PAVEMENT MARKINGS, AND CROSSWALK MARKING DETAILS, SEE STD. DWG. SERIES MM-CR AND MM-PM RESPECTIVELY. FOR MARKING STANDARDS AND CONCRETE CURB AND GUTTER SEE STD. DWG T-M- SERIES AND RP-VC SERIES RESPECTIVELY.
- (E) FOR PEDESTRIAN SIGNAL PUSH BUTTONS, HAWK, RRFB AND PHB, SEE TDOT TRAFFIC DESIGN MANUAL.
- (F) YIELD LINES SHOULD BE PLACED AT A SUFFICIENT DISTANCE (30' TO 50') FROM THE CROSSWALK TO ENSURE VISIBILITY IS PROVIDED FOR BOTH MOTORISTS AND PEDESTRIANS. YIELD LINES SHALL CONSIST OF A ROW OF SOLID WHITE ISOSCELES TRIANGLES POINTING TOWARD APPROACHING VEHICLES EXTENDING ACROSS APPROACH LANES TO INDICATE THE POINT AT WHICH THE YIELD IS INTENDED OR REQUIRED TO BE MADE. YIELD LINES CONSIST OF WHITE TRIANGLES WHICH FACE TRAFFIC. WHEN A BIKE LANE IS PRESENT, ADD ONE ADDITIONAL TRIANGLE IN THE CENTER OF BIKE LANE.
- (G) IF YIELD LINES ARE USED AT A CROSSWALK THAT CROSSES AT AN UNCONTROLLED MULTI-LANE APPROACH, YIELD HERE FOR PEDESTRIANS (R1-5 SERIES) SIGNS SHALL BE USED.
- (H) A DEVICE THAT MAY BE USED TO ASSIST PEDESTRIANS CROSSING IN A MARKED CROSSWALK AT AN UNSIGNALIZED INTERSECTION IS A RECTANGULAR RAPID FLASHING BEACON (RRFB). RRFB'S ARE PARTICULARLY EFFECTIVE AT MULTILANE CROSSINGS WITH SPEED LIMITS LESS THAN 40 MPH. CONSIDER THE PEDESTRIAN HYBRID BEACON (PHB) INSTEAD OF RRFBS FOR ROADWAYS SPEED LIMITS ARE EQUAL TO OR GREATER THAN 40 MPH.
- (I) A MEDIAN SHOULD BE AT LEAST 8.0 FEET WIDE TO ALLOW THE PEDESTRIAN TO WAIT COMFORTABLY IN THE CENTER. IF THE DESIRED 8 FEET CANNOT BE ACHIEVED, USE A MINIMUM WIDTH OF 6 FEET. THE PEDESTRIAN CROSSWALK MEDIAN ISLAND ARE ADA-APPROVED RAMPS (1:12 GRADE) SHOULD BE USED. IT IS BEST TO PROVIDE A SLIGHT GRADE 2 PERCENT TO PERMIT WATER AND SILT TO DRAIN FROM THE AREA. DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH RAMPS. INSTALL CATCH BASINS ON UPSTREAM SIDE OF RAMP FOR ROADS WITH GRADES LESS THAN 2%.
- (J) PARKING AND OTHER SIGHT OBSTRUCTIONS SHOULD BE PROHIBITED FOR AT LEAST 100 FEET IN ADVANCE OF AND AT LEAST 20 FEET BEYOND THE MARKED CROSSWALK, OR SITE ACCOMMODATIONS SHOULD BE MADE THROUGH CURB EXTENSIONS OR OTHER TECHNIQUES TO PROVIDE ADEQUATE SIGHT DISTANCE. THE INSTALLATION SHOULD INCLUDE SUITABLE STANDARD SIGNS AND PAVEMENT MARKINGS.
- (K) STREETLIGHTS SHOULD BE INSTALL AT THE CROSSWALK ON BOTH SIDES ROAD TO IMPROVE PEDESTRIAN COMFORT, SECURITY, AND SAFETY DURING DARK AND BAD WEATHER CONDITIONS. FLUORESCENT YELLOW- GREEN SIGNS PROVIDE SUPERIOR VISIBILITY AND ARE EASILY NOTICEABLE IN DAYLIGHT AND DARK CONDITIONS. USE FLUORESCENT YELLOW- GREEN SIGNS FOR PEDESTRIAN AND BICYCLE WARNING AND KEEP PEDESTRIANS AND DRIVERS SAFE.
- (L) MIDBLOCK CROSSWALKS SHOULD BE LOCATED AT LEAST 100 FEET FROM THE NEAREST SIDE STREET OR DRIVEWAY SO THAT DRIVERS TURNING ONTO THE MAJOR STREET HAVE A CHANCE TO NOTICE PEDESTRIANS AND PROPERLY YIELD TO PEDESTRIANS WHO ARE CROSSING THE STREET.
- (M) PAYMENT

702-01,	CONCRETE CURB,	PER C.Y.
702-03,	CONCRETE COMBINED CURB AND GUTTER,	PER C.Y.
716-02.03	PLASTIC PAVEMENT MARKING (CROSS-WALK),	PER LF
716-02.04,	PLASTIC PAVEMENT MARKING (CHANNELIZATION STRIPING),	PER S.Y.
716-02.05,	PLASTIC PAVEMENT MARKING (STOP LINE),	PER LF.
716-04.12,	PLASTIC PAVEMENT MARKING (YIELD LINE),	PER SF.
713-15.40,	SIGN INSTALLATION (DESCRIPTION),	PER LS
730-26.07,	FLASHING WARNING BEACON (DESCRIPTION),	PER EACH



**2 LANES WITH RECTANGULAR RAPID FLASHING BEACON
ALT. MID-BLOCK CROSSING**

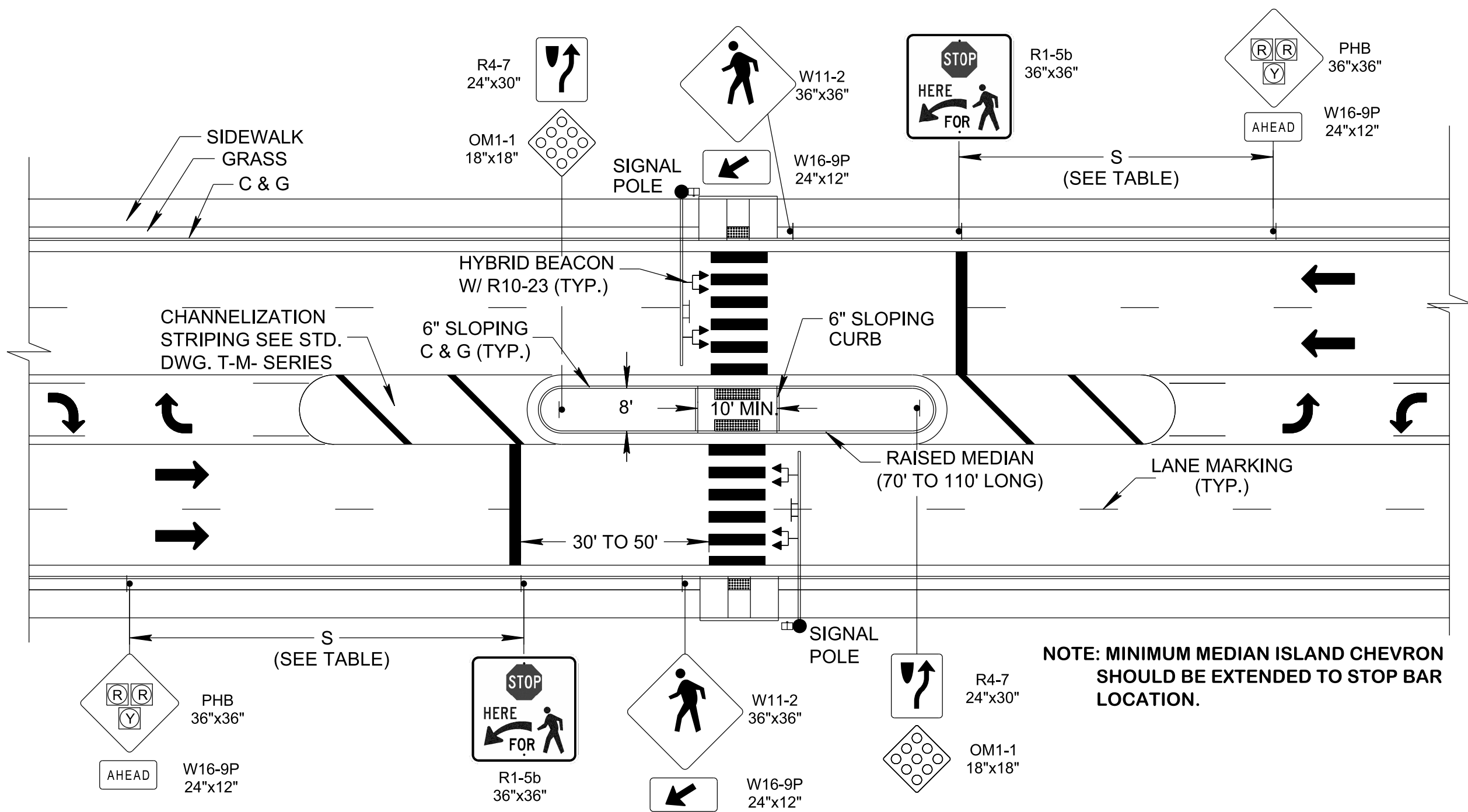
NOTE: ZIG ZAG MEDIAN CROSSWALK DESIGN ONLY ALLOWED IF WIDTH WOULD ALLOW DESIGN, THIS MAY REQUIRE A MEDIAN OF 10 OR MORE FEET WIDE. ADA REQUIRES CURB LEAD FROM ONE RAMP TO THE NEXT.

IN ORDER TO CURTAIL SHORTCUTTING AND FORCE PEDESTRIANS TO FOLLOW THE INTENDED PATH, RECOMMEND MEDIAN WITH ATTRACTIVE FENCING TO CORRAL PEDESTRIANS IN THE CORRECT DIRECTION.

ADD CATCH BASIN AS NEEDED (APPLICABLE TO ALL FOUR CORNERS)

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

STANDARD UNSIGNALIZED MID-BLOCK CROSSING



5 LANES WITH PEDESTRIAN HYBRID BEACON MID-BLOCK CROSSING

MINIMUM ADVANCE PLACEMENT OF PEDESTRIAN WARNING SIGNS

POSTED SPEED	WARNING SIGNS MINIMUM ADVANCE PLACEMENT DISTANCE - S
20 MPH	100 FT
25 MPH	100 FT
30 MPH	100 FT
35 MPH	100 FT
40 MPH	125 FT
45 MPH	175 FT

THE APPROPRIATE TAPER LENGTH (L)

$$L = \frac{WS^2}{60} \quad \text{40 MPH OR LESS}$$

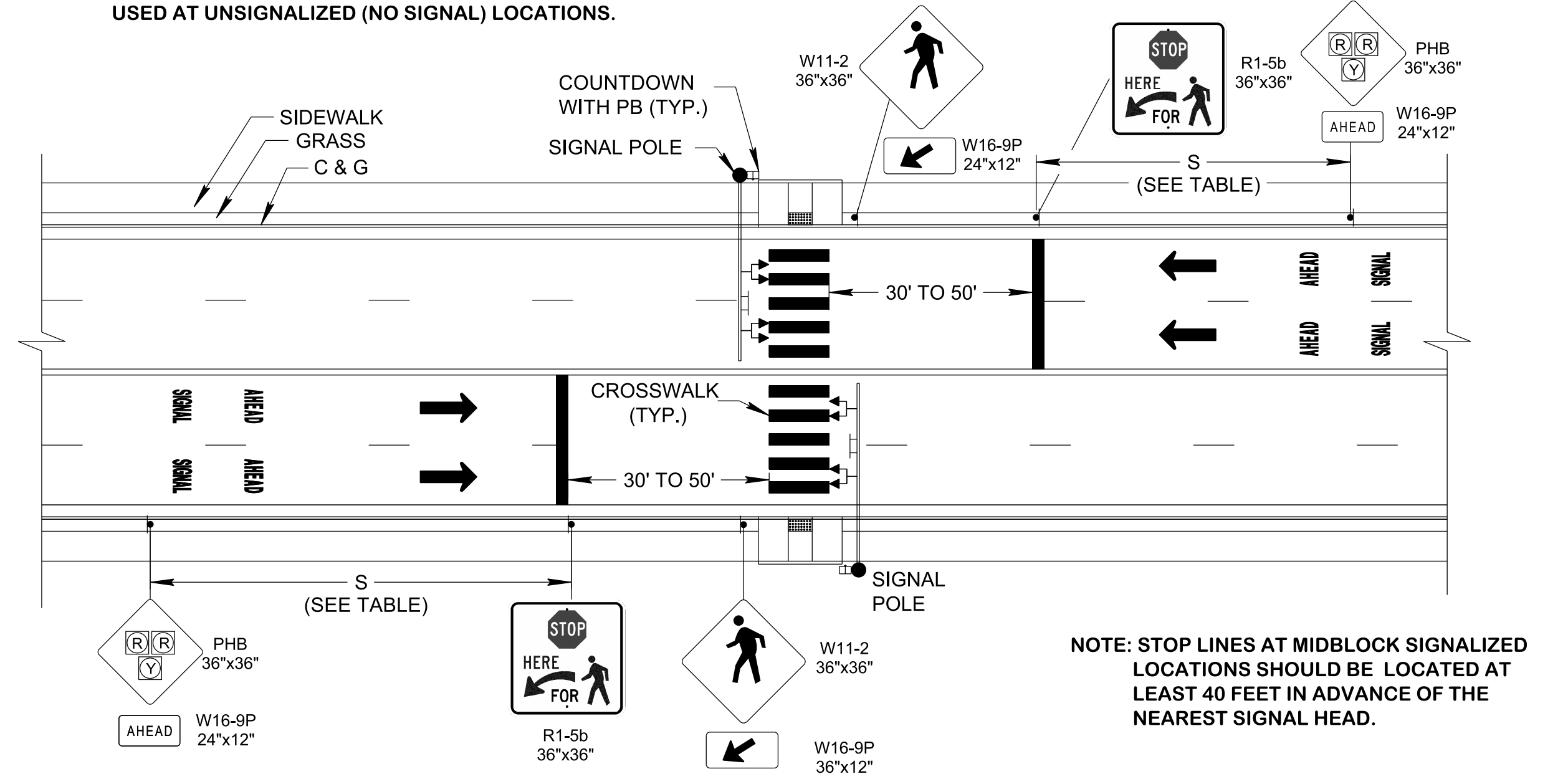
$$L = WS \quad \text{45 MPH OR MORE}$$

WHERE:
 L = TAPER LENGTH IN FEET
 W = WIDTH OF OFFSET IN FEET
 S = POSTED SPEED

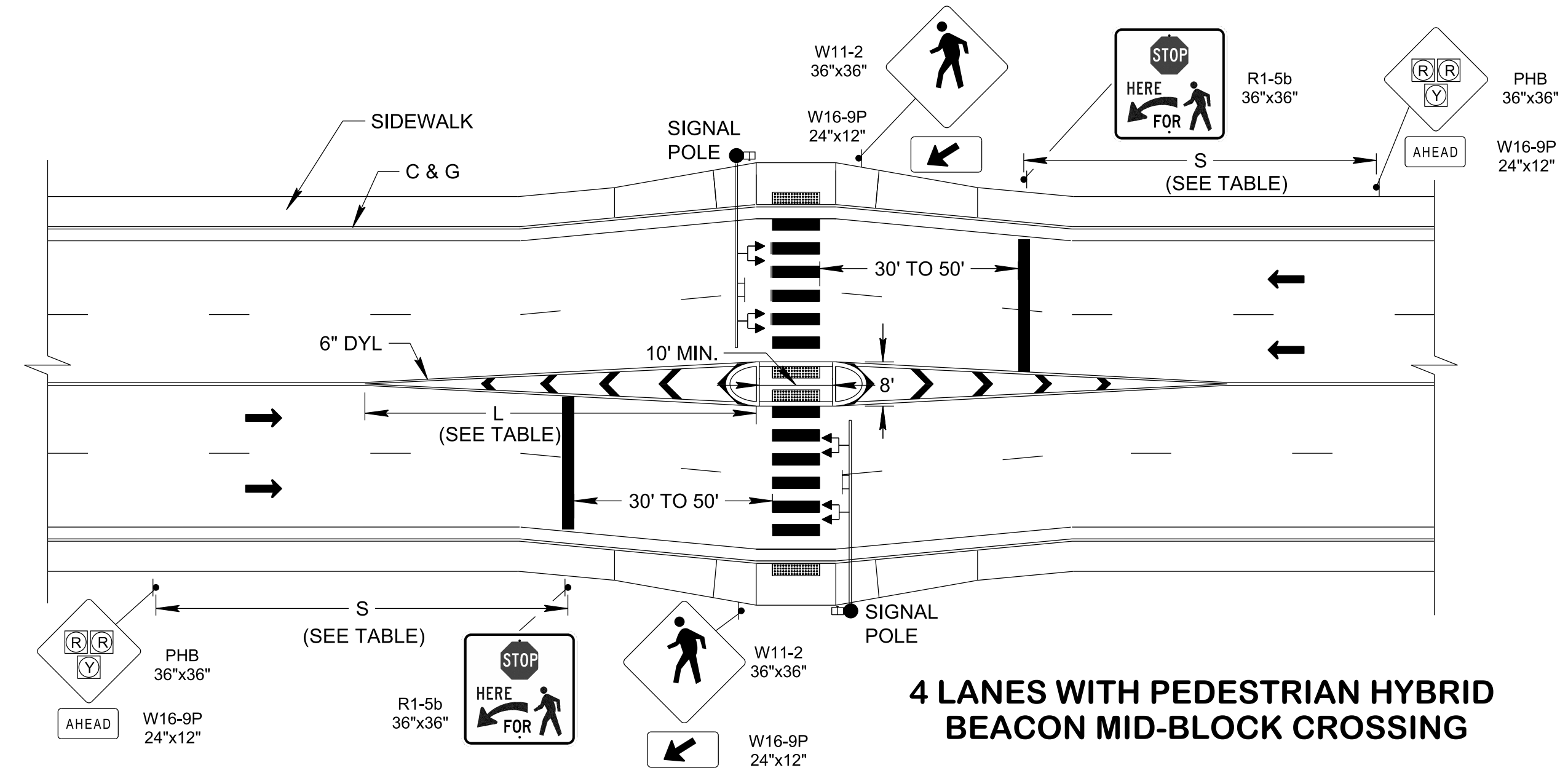
LEGEND

- PEDESTRIAN HYBRID BEACON
- GROUND MOUNT SIGN
- MAST ARM SIGNAL POLE
- COUNTDOWN PEDESTRIAN SIGNAL HEAD WITH PUSH BUTTON AND SIGN
- DETECTABLE WARNING SURFACE

NOTE: WHERE THE SPEED LIMIT EXCEEDS 40 MPH, MARKED CROSSWALKS ALONE SHOULD NOT BE USED AT UNSIGNALIZED (NO SIGNAL) LOCATIONS.



4 LANES WITH PEDESTRIAN HYBRID BEACON MID-BLOCK CROSSING

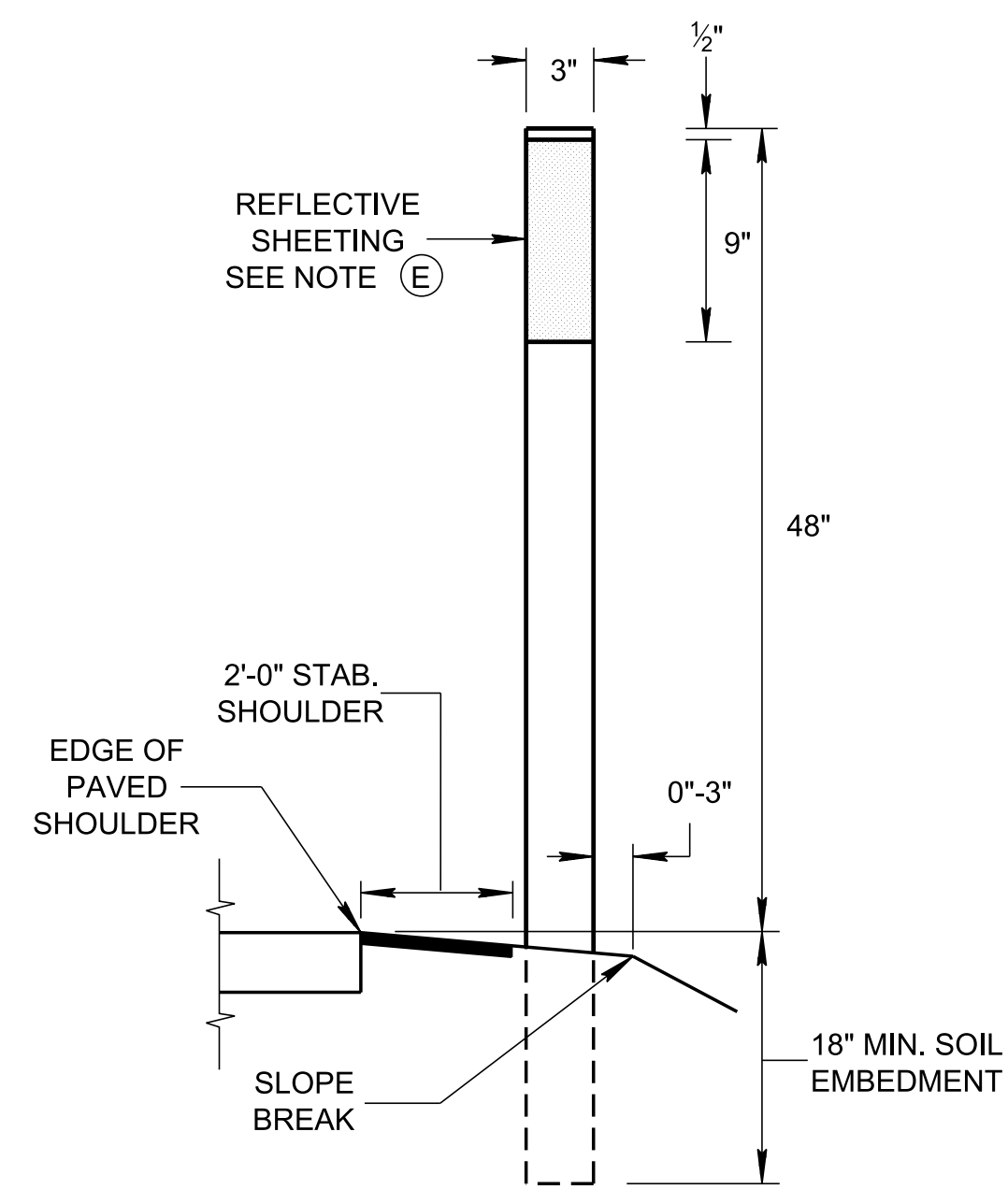


4 LANES WITH PEDESTRIAN HYBRID BEACON MID-BLOCK CROSSING

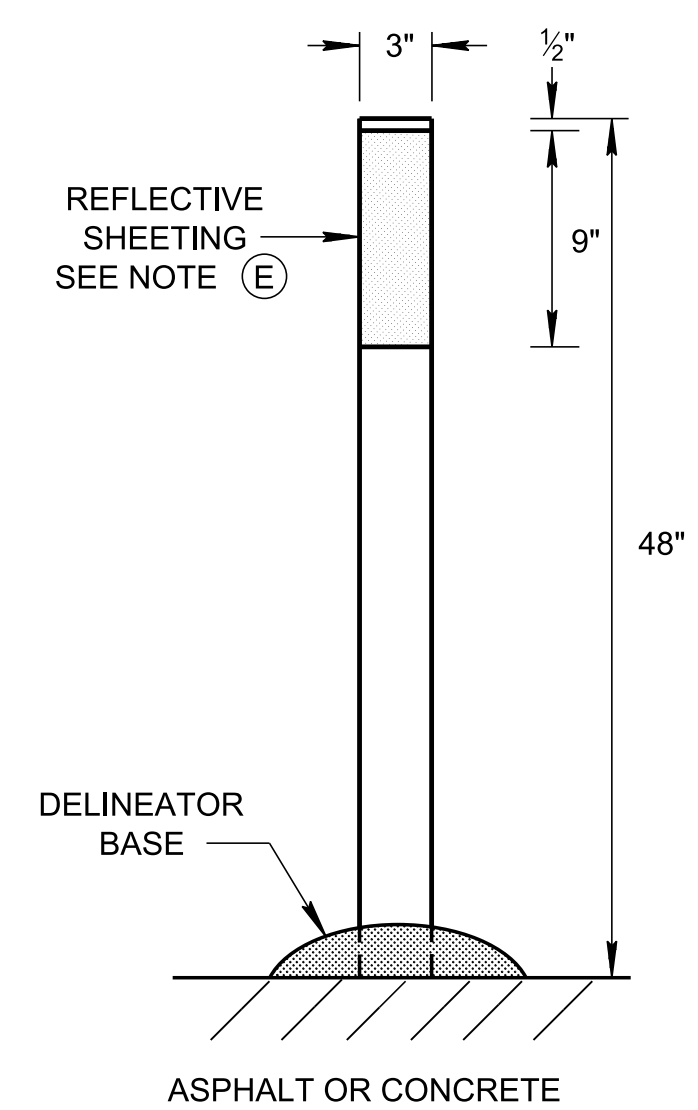
GENERAL NOTES

- (A) DETAILS SHOWN ON THIS STANDARD DRAWING APPLY TO THE CONSTRUCTION OR RECONSTRUCTION OF MID-BLOCK CROSSINGS AND MODIFICATION OF STREETS, CURBS, OR SIDEWALKS ASSOCIATED WITH IT. SEE TDOT-RDG FOR ADDITIONAL INFORMATION FOR SITE SELECTION, NEW CONSTRUCTION OR RECONSTRUCTION DURING PEDESTRIAN SAFETY INITIATIVE, SPOT SAFETY IMPROVEMENTS AT LOCATIONS MAX 45 MPH. OTHER LOCATIONS WILL NEED SITE SPECIFIC ANALYSIS.
- (B) NEW CONSTRUCTION A TRAFFIC ENGINEERING STUDY WILL HAVE TO BE CONDUCTED TO DETERMINE IF A MID-BLOCK CROSSING IS WARRANTED. MID-BLOCK CROSSINGS SHALL BE INSTALLED DURING RECONSTRUCTION PROJECTS AND REPAVING PROJECTS AT LOCATIONS WHERE EXISTING PEDESTRIAN SAFETY CONCERNED.
- (C) PEDESTRIAN IN CROSSWALK SIGNS (W11A-2) SHALL BE INSTALLED AT EACH END OF THE CROSSWALK LOCATION. THE SIGNS SHALL BE PLACED IN ADVANCE OF THE CROSSWALK ADJACENT TO THE TRAVEL LANE AND FACING THE DRIVER. REFER TO THE MUTCD FOR ADDITIONAL WARNING SIGNS, TYPE AND LOCATION.
- (C) FOR CURB RAMPS, THE DETECTABLE WARNING SURFACE, PAVEMENT MARKINGS, AND CROSSWALK MARKING DETAILS, SEE STD. DWG. SERIES MM-CR AND MM-PM RESPECTIVELY. FOR MARKING STANDARDS AND CONCRETE CURB AND GUTTER SEE STD. DWG T-M- SERIES AND RP-VC SERIES RESPECTIVELY.
- (D) FOR PEDESTRIAN SIGNAL PUSH BUTTONS, HAWK, RRFB AND PHB, SEE TDOT TRAFFIC DESIGN MANUAL. IF THE PEDESTRIAN CLEARANCE TIME IS SUFFICIENT ONLY TO CROSS FROM THE CURB OR SHOULDER TO A MEDIAN OF SUFFICIENT WIDTH FOR PEDESTRIANS TO WAIT AND THE SIGNALS ARE PEDESTRIAN ACTUATED, AN ADDITIONAL PEDESTRIAN DETECTOR SHALL BE PROVIDED IN THE MEDIAN.
- (E) STOP LINES SHOULD BE PLACED AT A SUFFICIENT DISTANCE (30' TO 50') FROM THE CROSSWALK TO ENSURE VISIBILITY IS PROVIDED FOR BOTH MOTORISTS AND PEDESTRIANS. STOP LINES AT MID-BLOCK SIGNALIZED LOCATIONS SHOULD BE PLACED AT LEAST 40 FEET IN ADVANCE OF THE NEAREST SIGNAL INDICATION.
- (F) STOP LINES SHALL CONSIST OF SOLID WHITE LINES EXTENDING ACROSS APPROACH LINES TO INDICATE THE POINT AT WHICH THE STOP IS INTENDED OR REQUIRED TO BE MADE. IF STOP LINES ARE USED AT A CROSSWALK THAT CROSSES AT AN UNCONTROLLED MULTI-LANE APPROACH, STOP HERE FOR PEDESTRIANS (R1-5 SERIES) SIGNS SHALL BE USED.
- (I) THE PLACEMENT OF MID-BLOCK SIGNALS. THE PRIMARY SIGNALIZED TREATMENT THAT SHOULD BE CONSIDERED AT MID-BLOCK OR NON- INTERSECTION CROSSINGS IS THE HIGH INTENSITY ACTIVATED CROSSWALK (HAWK) PEDESTRIAN HYBRID BEACON (PHB). A HAWK PEDESTRIAN HYBRID BEACON SHOULD BE EXAMINED WHERE THE PPH EXCEEDS 20 AND MOTOR VEHICULAR SPEEDS EXCEED 35 MPH.
- (J) ADDITIONAL DEVICE THAT MAY BE USED TO ASSIST PEDESTRIANS CROSSING IN A MARKED CROSSWALK AT AN UNSIGNALIZED INTERSECTION IS A RECTANGULAR RAPID FLASHING BEACON (RRFB). RRFBS ARE PARTICULARLY EFFECTIVE AT MULTILANE CROSSINGS WITH SPEED LIMITS LESS THAN 40 MPH. CONSIDER THE PHB INSTEAD OF RRFBS FOR ROADWAYS SPEED LIMITS ARE EQUAL TO OR GREATER THAN 40 MPH.
- (K) A MEDIAN SHOULD BE AT LEAST 8.0 FEET WIDE TO ALLOW THE PEDESTRIAN TO WAIT COMFORTABLY IN THE CENTER, IF THE DESIRED 8 FEET CANNOT BE ACHIEVED, USE A MINIMUM WIDTH OF 6 FEET. THE PEDESTRIAN CROSSWALK MEDIAN ISLAND ARE ADA-APPROVED RAMPS (1:12 GRADE) SHOULD BE USED. IT IS BEST TO PROVIDE A SLIGHT GRADE 2 PERCENT TO PERMIT WATER AND SILT TO DRAIN FROM THE AREA. DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH RAMPS. INSTALL CATCH BASINS ON UPSTREAM SIDE OF RAMP FOR ROADS WITH GRADES LESS THAN 2%.
- (L) WHEN A PEDESTRIAN HYBRID BEACON IS USED, A CROSSWALK STOP ON RED (R10-23) SIGN SHALL BE MOUNTED ADJACENT TO A PEDESTRIAN HYBRID BEACON FACE ON EACH MAJOR STREET APPROACH. THE PEDESTRIAN HYBRID BEACON SHOULD BE INSTALLED AT LEAST 100 FEET FROM SIDE STREETS OR DRIVEWAYS THAT ARE CONTROLLED BY STOP OR YIELD SIGNS.
- (M) PARKING AND OTHER SIGHT OBSTRUCTIONS SHOULD BE PROHIBITED FOR AT LEAST 100 FEET IN ADVANCE OF AND AT LEAST 20 FEET BEYOND THE MARKED CROSSWALK. OR SITE ACCOMMODATIONS SHOULD BE MADE THROUGH CURB EXTENSIONS OR OTHER TECHNIQUES TO PROVIDE ADEQUATE SIGHT DISTANCE. THE INSTALLATION SHOULD INCLUDE SUITABLE STANDARD SIGNS AND PAVEMENT MARKINGS.
- (N) STREETLIGHTS SHOULD BE INSTALL AT THE CROSSWALK ON BOTH SIDES ROAD TO IMPROVE PEDESTRIAN COMFORT, SECURITY, AND SAFETY DURING DARK AND BAD WEATHER CONDITIONS. FLUORESCENT YELLOW-GREEN SIGNS PROVIDE SUPERIOR VISIBILITY AND ARE EASILY NOTICEABLE IN DAYLIGHT AND DARK CONDITIONS. USE FLUORESCENT YELLOW-GREEN SIGNS FOR PEDESTRIAN AND BICYCLE WARNING AND KEEP PEDESTRIANS AND DRIVERS SAFE.
- (O) MIDBLOCK CROSSWALKS SHOULD BE LOCATED AT LEAST 100 FEET FROM THE NEAREST SIDE STREET OR DRIVEWAY SO THAT DRIVERS TURNING ONTO THE MAJOR STREET HAVE A CHANCE TO NOTICE PEDESTRIANS AND PROPERLY YIELD TO PEDESTRIANS WHO ARE CROSSING THE STREET.
- (P) PAYMENT 702-01, 702-03, 716-02.03, 716-02.04, 716-02.05, 713-15.40, 730-26.01, CONCRETE CURB/PER, CONCRETE COMBINED CURB AND GUTTER/PER, PLASTIC PAVEMENT MARKING (CROSSWALK), PLASTIC PAVEMENT MARKING (CHANNELIZATION STRIPING), PAVEMENT MARKING (STOP LINE), SIGN INSTALLATION (DESCRIPTION), PEDESTRIAN SIGNAL DISPLAY, PER C.Y., PER C.Y., PER LF, PER S.Y., PER LF, PER LS, PER EACH

STATE OF TENNESSEE
 STANDARD DRAWING
 DEPARTMENT OF TRANSPORTATION
STANDARD SIGNALIZED MID-BLOCK CROSSING



GROUND MOUNTED FLEXIBLE DELINEATOR



SURFACE MOUNTED FLEXIBLE DELINEATOR

SEE NOTE ①

GENERAL NOTES

- (A) THE REFLECTIVE SHEETING SHALL MEET THE REQUIREMENTS OF AASHTO M268, TYPE III OR HIGHER RETROREFLECTION PERFORMANCE LEVEL.
- (B) THE REFLECTIVE SHEETING STRIP ON THE DELINEATORS SHALL BE MIN. 9 INCHES IN LENGTH AND SUFFICIENT WIDTH TO PROVIDE A MIN. 3 INCHES WIDE PROFILE FACING APPROACHING TRAFFIC. THE VARIATIONS IN REFLECTIVE SHEETING DIMENSION SHOULD NOT EXCEED ± 10%.
- (C) THE CONTRACTOR SHALL SELECT MATERIAL FROM THE DEPARTMENT'S QPL.
- (D) THE COLOR OF THE DELINEATOR POST SHALL BE WHITE UNLESS OTHERWISE NOTED ON THE PLANS.
- (E) THE COLOR OF THE REFLECTIVE SHEETING SHALL CONFORM TO THE COLOR OF EDGE LINES STIPULATED IN SUBSECTION 3B-6 (PAGE 3B-8 AND 3B-11) OF THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- (F) PAYMENT FOR GROUND MOUNTED FLEXIBLE DELINEATORS WILL BE MADE AS FOLLOWS ITEM NO'S.:

713-02.14, FLEXIBLE DELINEATOR (WHITE),	PER EACH.
713-02.15, FLEXIBLE DELINEATOR (YELLOW),	PER EACH.
713-02.16, FLEXIBLE TYPE II, OBJECT MARKER,	PER EACH.
713-02.33, FLEXIBLE DELINEATOR (RED),	PER EACH.
- (G) PAYMENT FOR SURFACE MOUNTED FLEXIBLE DELINEATORS WILL BE MADE AS FOLLOWS ITEM NO.:

713-02.30, FLEXIBLE TUBULAR DELINEATOR,	PER EACH.
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- (H) SPACING FOR SURFACE MOUNTED FLEXIBLE DELINEATOR POSTS SHALL BE 20' OR LESS.
- (I) SURFACE MOUNTED FLEXIBLE DELINEATORS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.
- (J) ONLY PRODUCTS LISTED ON THE DEPARTMENT'S QPL SHALL BE USED.

STANDARD ABBREVIATION

A

AASHTO AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
 ABUT. ABUTMENT
 AC. ACRE
 AC ASPHALT CEMENT
 ACCEL..... ACCELERATION
 ACS ASPHALTIC CONCRETE SURFACE
 ADA AMERICAN with DISABILITIES ACT
 ADL..... AVERAGE DAILY LOADING
 ADT AVERAGE DAILY TRAFFIC
 AFAD AUTOMATED FLAGGER ASSISTANCE DEVICE
 AGG..... AGGREGATE
 AH..... AHEAD
 ALUM..... ALUMINUM
 APPR..... APPROACH
 APPROX..... APPROXIMATE
 ASPH. ASPHALT
 ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS
 AVE. AVENUE
 AVG. AVERAGE

B

B BRICK
 BAR. BARRIER
 BAL. BALANCE
 BCCMP BITUMINOUS COATED CORRUGATED METAL PIPE
 BEG. BEGINNING
 B.G. BELOW GRADE
 BK. BACK
 BIT. BITUMINOUS
 BL. BLOCK
 BLDG. BUILDING
 BLVD. BOULEVARD
 B.M. BENCH MARK
 BN. BARN
 BOR. BORROW
 BOTT. BOTTOM
 BR. BRIDGE
 BTWN. BETWEEN
 BUS. BUSINESS

C

C CABLE UTILITY
 CATV CABLE TV
 C.A. CONTROLLED ACCESS
 CALC. CALCULATED
 C.B. CATCH BASIN
 C.C. CENTER TO CENTER
 CFS CUBIC FEET PER SECOND
 C&G CURB AND GUTTER
 CH. CHANNEL
 CH. CH. CHANNEL CHANGE
 CHNLK..... CHAIN-LINK
 C.I.P. CAST IRON PIPE
 C.I.S. CONSTRUCTION IDENTIFICATION SIGN
 CK. CREEK
 CL. CLASS
 CL CENTER LINE
 CM CORRUGATED METAL
 CMP CORRUGATED METAL PIPE
 CMPA CORRUGATED METAL PIPE ARCH
 CO. COUNTY or COMPANY
 COM. COMMON
 CONC. CONCRETE
 CONN. CONNECTION

CONST. CONSTRUCTION
 CONT. CONTINUOUS
 CP CONTROL POINT
 CR. CRUSHED
 C.R.S.I. CONCRETE REINFORCING STEEL INSTITUTE
 C.S. CURVE TO SPIRAL
 CT. CORT
 CULV. CULVERT
 C.Y. CUBIC YARD

D

D DEGREE OF CURVATURE ON CURVE WITHOUT SPIRALS
 D.A. DRAINAGE AREA
 DBST DOUBLE BITUMINOUS SURFACE TREATMENT
 DBYL DOUBLE BROKEN YELLOW LINE
 DECEL DECELERATION
 Ds DEGREE OF CURVATURE ON A CURVE WITH SPIRALS
 DHV DESIGN HOURLY VOLUME
 D.I. DROP INLET
 DIA. DIAMETER
 DIV. DIVERSION
 DR. DRIVE
 DRG. DRAINAGE
 DSYL DOUBLE SOLID YELLOW LINE
 DSWL DOUBLE SOLID WHITE LINE
 DUC. DUCTILE IRON
 DWG. DRAWING
 DWL DOTTED WHITE LINE
 DYL..... DOTTED YELLOW LINE

E

E EAST or EAST COORDINATE
 E EXTERNAL DISTANCE ON CURVE WITH NO SPIRALS
 EBL EASTBOUND LANE
 ECM EXISTING CONCRETE MONUMENT
 ECP EXISTING CORNER POST
 E.I.P. EXISTING IRON PIN
 EL. or ELEV. ELEVATION
 ELONG. ELONGATED
 EBM. EMBANKMENT
 ENGR. ENGINEER
 ENT. ENTRANCE
 E.P. EDGE OF PAVEMENT
 EQ. EQUATION
 Es EXTERNAL DISTANCE ON A CURVE WITH SPIRALS
 E.S. EDGE OF SHOULDER
 ESMT. EASEMENT
 E.W. END WALL
 EX. EXISTING
 EXC. EXCAVATION
 EXCL EXCLUDING
 EXT. EXTENSION

F

F FRAME
 F.A. FEDERAL AID
 FAP FEDERAL AID PRIMARY
 FAS FEDERAL AID SECONDARY
 FED. FEDERAL
 F.G. FINISHED GRADE
 F.H.W.A. FEDERAL HIGHWAY ADMINISTRATION
 FIN. FINISHED
 FL.EL. FLOOR ELEVATION
 F.L. FLOW LINE
 FLG. FLANGE
 FMS FORCE MAIN SEWER
 FOC FIBER OPTIC CABLE

F.P. FIRE PLUG
 FR.RD. FRONTAGE ROAD
 FT. FOOT OR FEET
 F/F FOOT PER FOOT
 FUT. FUTURE

G

G GAS (PUMP or UTILITY)
 GA. GAUGE
 GAL. GALLON
 GALV. GALVANIZED
 GAR. GARAGE
 G.M. GAS METER
 GNSS GLOBAL NAVIGATION SATELLITE SYSTEM
 GPH GALLONS PER HOUR
 GPM GALLONS PER MINUTE
 GPS GLOBAL POSITIONING SYSTEM
 GR. GRADE or GRADED or GRAVEL
 G.R. GUARD RAIL
 GRAN. GRANULAR
 GREEN BOOK A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS
 GT. GRATE
 G.V. GAS VALVE
 GW GUY WIRE

H

H.C.M. HIGHWAY CAPACITY MANUAL
 HD. HEAD
 HDPE HIGH DENSITY POLYETHYLENE
 HO HORIZONTAL OVAL
 HOCPC HORIZONTAL OVAL CONCRETE PIPE CULVERT
 HORIZ. HORIZONTAL
 HSE. HOUSE
 HT. HEIGHT
 H.W. HIGH WATER
 HWY HIGHWAY
 H.S. HIGH STRENGTH

I

I INTERSTATE
 I.D. INSIDE DIAMETER
 IN. INLET
 INCL. INCLUDE
 INV. INVERT
 I.P. IRON PIN
 ITS INTELLIGENT TRANSPORTATION SYSTEM

J

JCT. JUNCTION
 JT. JOINT

L

L LENGTH OF CIRCULAR CURVE WITH NO SPIRALS
 LN LANE
 Lc LENGTH OF CIRCULAR CURVE BETWEEN SPIRALS
 LB. POUND
 LB/FT POUND PER FOOT
 L.C. LONG CHORD, DISTANCE BETWEEN P.C. AND P.T.
 L.F. LINEAR FEET
 LGTH. LENGTH
 LIN. LINEAR
 LOC. LOCATION
 L.P. LIGHT POLE
 Ls LENGTH OF SPIRAL
 L.S. LUMP SUM
 L.T. LONG TANGENT OF SPIRAL
 LT. LEFT

REV. 7-1-72: CHANGED DEPARTMENT NAME.

REV. 1-1-76: CHANGED DWG. NO. FROM A-A-1 (SHEET 2) TO RD-A-1.

REV. 11-9-76: REORGANIZED SHEET AND ADDED THE FOLLOWING: AASHTO BIT., H.S., P.C.O., PKWY., P.S.F., PVC, S.R. OR ST. RT., ST. P., T.P., UG, AND WD. P.

REV. 9-18-79: ADDED PAVEMENT MARKING ABBREVIATIONS AS FOLLOWS: DSYL, DWL, HWL, HYL, SDWL, SDYL, SSWL, AND SSYL.

REV. 2-22-88: CHANGED PAVEMENT MARKING ABBREVIATIONS SDWL AND SDYL TO SBWL SBYL. ADDED DBYL AND DYL.

REV 3-20-91: REDREW SHEET AND ADDED THE FOLLOWING: ADL, ASP., BAR., BOR., CATV, CFS, DECEL, E.P., E.S., EX., F/F, FL. EL., FLG, H.C.M., JCT., LB/FT, MPH, MUTCD, N.A.D., N.G.S., O.H.W., PB, REF., TDOT, TGRN, VAR., V.P.C., V.P.I., V.P.O.C., V.P.T., AND WGT.

REV. 6-20-91: ADDED THE FOLLOWING: ECM, ECP, GW, AND W.M.

REV. 10-26-92: ADDED THE FOLLOWING: MOD.

REV. 10-26-93: ADDED THE FOLLOWING: FOC.

REV. 9-5-94: ADDED THE FOLLOWING: ALUM, GPH, GPM, AND TD.

REV. 7-29-98: ADDED THE FOLLOWING: CMPA, HO, HOCPC, RCPA, VO, AND VOCP.

REV. 12-18-99: ADDED THE FOLLOWING: RDSYL AND RSSWL.

REV. 02-20-20: DIVIDED ABBREVIATIONS IN TWO SHEETS. FIRST STANDARD DRAWING NO. RD-A-1, A THROUGH L AND DRAWING NO. RD-A-2, M THROUGH Z IS A NEW DRAWING. ADDED SEVERAL NEW ABBREVIATIONS AND REDREW SHEET.

APPROVED BY FHWA
 (ALL OTHERS APPROVED BY TDOT)

STATE OF TENNESSEE
 DEPARTMENT OF
 TRANSPORTATION

STANDARD
 ABBREVIATIONS
 A THROUGH L

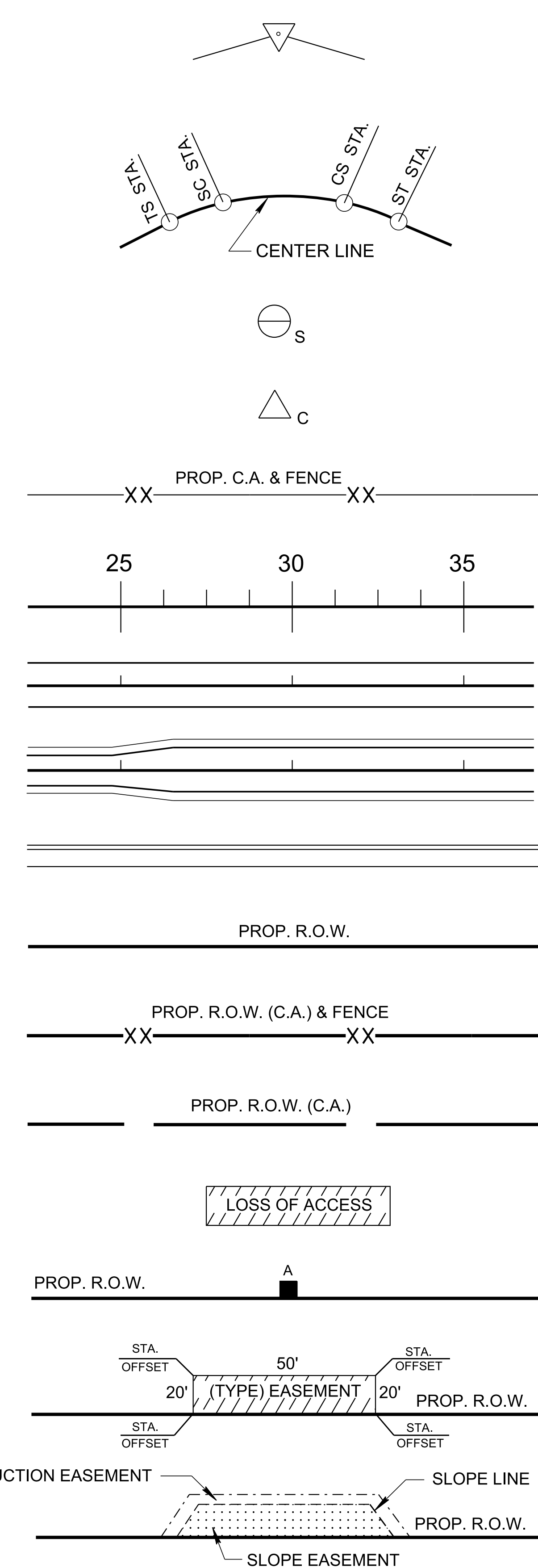
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 P:\StandDraw\DESIGN STANDARDS\Standards Drawings\Standard Roadway Drawings - CURRENT\In Progress\10-100.00 Roadway Design Standards IP\100.01 Standard Abbreviations and Legends IP\IRD

STANDARD LEGEND

EXISTING

PROPOSED

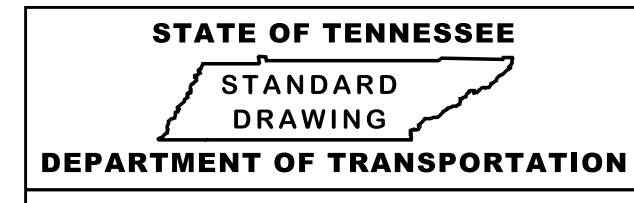
	SURVEY CONTROL POINT
	HORIZONTAL CONTROL POINT
	HORIZONTAL CONTROL POINTS ARIAL
	PROPERTY CORNER LOCATED (EXISTING IRON PIN)
	CONTROL OF ACCESS WITH FENCE
	PRIVATE FENCE (LABEL TYPE)
	BASE LINE OR CENTERLINE
	ROADS (SHOW WIDTH AND NAME OR ROUTE)
	ROADS (SHOW WIDTH SHOULDER)
	CURB AND GUTTER
	PROPERTY LINE
	PROPERTY LINE WITH FENCE
	SAME PROPERTY OWNER
	EASEMENTS (UTILITY, DRAINAGE, ETC.)
	R.O.W. MARKER (SHOW TYPE A, B, OR C)
	STATE BOUNDARY LINE
	COUNTY BOUNDARY LINE
	CITY, VILLAGE OR BOROUGH BOUNDARY LINE (SHOW DOTS ON CITY SIDE)



PI=POINT OF INTERSECT OF TANGENT
POINTS OF ON HORIZONTAL ALIGNMENT PC = POINT OF CURVE SC = SPIRAL TO CURVE PT = POINT OF TANGENT CS = CURVE TO SPIRAL TS = TANGENT TO SPIRAL ST = SPIRAL TO TANGENT
SPIRAL ANGLE
DELTA ANGLE OF CIRCULAR CURVE (EXCLUDING SPIRAL ANGLE)
CONTROL OF ACCESS WITH FENCE
BASE LINE OR CENTERLINE
ROADWAY WITH CENTERLINE AND EDGE OF PAVEMENT
ROADWAY WITH CENTERLINE AND EDGE OF PAVEMENT AND SHOULDER LINE
CURB AND GUTTER
RIGHT-OF-WAY
RIGHT-OF-WAY, CONTROL OF ACCESS AND FENCE
RIGHT-OF-WAY, CONTROL OF ACCESS WITHOUT FENCE
LOSS OF ACCESS
PROPOSED R.O.W. & R.O.W. MARKER (SHOW TYPE A, B, OR C)
DRAINAGE EASEMENT AND/OR UTILITY EASEMENT (DESIGNATE) PERMANENT
TEMPORARY CONSTRUCTION & SLOPE EASEMENT

- REV. 7-1-72: CHANGED DEPARTMENT NAME.
- REV. 1-1-76: CHANGED DRAWING NUMBER FROM A-A-1 (SHEET 1) TO RD-L-1. ADDED SYMBOLS DITCH LINING.
- REV. 3-15-76: CHANGED THE WORD "RECTANGULAR" TO "TRAPEZOIDAL" REGARDING DITCH LINING.
- REV. 1-19-91: REDREW SHEET AND ADDED SYMBOLS FOR EXISTING AND PROPOSED OVERHEAD POWER AND CABLE TV LINES. ADDED RIP-RAP TO DITCH LINING TREATMENT.
- REV. 10-26-93: CHANGED SYMBOLS FOR EXISTING AND PROPOSED OVERHEAD UTILITY POLES AND ADDED SYMBOL FOR UNDERGROUND FIBER OPTIC CABLE.
- REV. 10-26-94: REDREW SHEET AND ADDED SYMBOL FOR SEPTIC TANK. MOVED WETLAND BOUNDARY SYMBOL FROM OLD DRAWING NO. RD-L-2. MOVED SYMBOLS REFLECTING ALL UTILITY INSTALLATIONS TO NEW DRAWING NO. RD-L-2.
- REV. 02-20-20: SPLIT SHEET IN TO TWO SHEETS MOVED 1/2 CONTENTS TO NEW DRAWING RD-L-1A. REDREW SHEET.

APPROVED BY FHWA
 (ALL OTHERS APPROVED BY TDOT)



STANDARD LEGEND

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STANDARD LEGEND

REV. 10-26-94: NEW DRAWING REFLECTING ALL UTILITY RELATED SYMBOLS MOVED FROM DRAWING NO. RD-L-1.
 REV. 2-28-01: CHANGED SYMBOLS FOR OVERHEAD UTILITY LINES AND ADDED SYMBOLS FOR SEWER METERS & VALVES.
 REV. 9-5-01: CORRECTED DESCRIPTIONS FOR PROPOSED OVERHEAD UTILITY LINES.
 REV. 02-20-20: REDREW SHEET.

EXISTING

	GAS LINE (SHOW SIZE)	
	GAS VALVE IN LINE	
	MANHOLE (TYPE P, T, SA, OR ST) IN LINE	
	SANITARY SEWER (SHOW SIZE)	
	STORM SEWER (SHOW SIZE)	
	UNDERGROUND FIBER OPTIC CABLE	
	UNDERGROUND POWER LINE	
	UNDERGROUND POWER AND TELEPHONE LINE	
	UNDERGROUND TELEPHONE LINE	
	WATER LINE (SHOW SIZE)	
	WATER VALVE IN LINE	
	FIRE HYDRANT	
	GAS VALVE	
	LIGHT POLE	
	LIGHT POLE WITH POWER	LET SLASH INDICATE DIRECTION OF OVER HEAD LINE
	TELEPHONE POLE	
	POWER POLE	
	POWER AND TELEPHONE POLE	
	POWER, TELEPHONE AND CABLE TV POLE	
	TRANSMISSION TOWER (SHOW NUMBER, OWNER AND SIZE AT BASE)	
	SEWER METER	
	SEWER VALVE	
	WATER METER	
	WATER VALVE	
	OVERHEAD POWER LINE	UTILITY SHEETS ONLY
	OVERHEAD TELEPHONE LINE	
	OVERHEAD POWER AND TELEPHONE LINE	
	OVERHEAD POWER AND CABLE TV	

PROPOSED

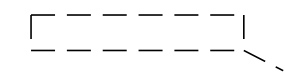
	GAS LINE (SHOW SIZE)	1/2" OR MORE LENGTH OF DASH
	GAS VALVE IN LINE	
	MANHOLE (TYPE P, T, SA, OR ST) IN LINE	
	SANITARY SEWER (SHOW SIZE)	
	STORM SEWER (SHOW SIZE)	
	UNDERGROUND FIBER OPTIC CABLE	
	UNDERGROUND POWER LINE	
	UNDERGROUND POWER AND TELEPHONE LINE	
	UNDERGROUND TELEPHONE LINE	
	WATER LINE (SHOW SIZE)	
	WATER VALVE IN LINE	
	FIRE HYDRANT	
	GAS VALVE	
	LIGHT POLE	LET SLASH INDICATE DIRECTION OF OVER HEAD LINE
	LIGHT POLE WITH POWER	
	TELEPHONE POLE	
	POWER POLE	
	POWER AND TELEPHONE POLE	
	POWER, TELEPHONE AND CABLE TV POLE	
	TRANSMISSION TOWER (SHOW NUMBER, OWNER AND SIZE AT BASE)	
	SEWER METER	
	SEWER VALVE	
	WATER METER	
	WATER VALVE	
	OVERHEAD POWER LINE	UTILITY SHEETS ONLY
	OVERHEAD TELEPHONE LINE	
	OVERHEAD POWER AND TELEPHONE LINE	
	OVERHEAD POWER AND CABLE TV LINE	

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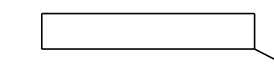
STANDARD LEGEND

EXISTING

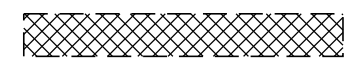
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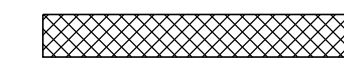
LOOP DETECTOR WITH LEAD-IN



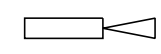
LOOP DETECTOR WITH LEAD-IN



RADAR/VIDEO DETECTION AREA



RADAR/VIDEO DETECTION AREA



VIDEO DETECTION CAMERA



VIDEO DETECTION CAMERA



EMERGENCY VEHICLE DETECTOR



EMERGENCY VEHICLE DETECTOR



POLE MOUNTED CONTROLLER



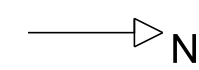
POLE MOUNTED CONTROLLER



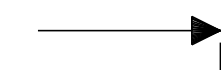
PAD MOUNTED CONTROLLER



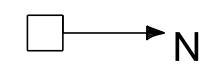
PAD MOUNTED CONTROLLER



PEDESTRIAN SIGNAL HEAD WITH NUMBER



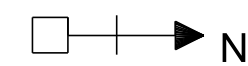
PEDESTRIAN SIGNAL HEAD WITH NUMBER



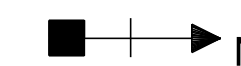
SIGNAL HEAD WITH NUMBER



SIGNAL HEAD WITH NUMBER WITHOUT BACKPLATE



SIGNAL HEAD WITH NUMBER AND BACKPLATE



SIGNAL HEAD WITH NUMBER AND BACKPLATE



PULL BOX



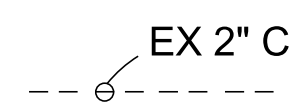
PULL BOX



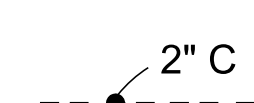
FIBER OPTIC PULL BOX



FIBER OPTIC PULL BOX



2" CONDUIT



2" CONDUIT



STRAIN POLE FOR SIGNAL SUPPORT



STRAIN POLE FOR SIGNAL SUPPORT



WOOD POLE FOR SIGNAL SUPPORT



WOOD POLE FOR SIGNAL SUPPORT

- REV. 9-18-79: ADDED SIGNAL HEAD WITH NUMBER AND BACKPLATE, PEDESTRIAN PUSHBUTTON WITH NUMBER AND PAVEMENT ARROW TO EXISTING AND PROPOSED LEGEND.
- REV. 1-11-82: ADDED EROSION CONTROL LEGEND.
- REV. 8-21-89: ADDED WETLAND BOUNDARY.
- REV. 1-19-91: REDREW SHEET AND ADDED SYMBOL FOR BOTH BELOW AND ABOVE GROUND SEDIMENT TRAPS.

REV. 10-26-94: CHANGED DRAWING NO. FROM RD-L-2 TO RD-L-3. ADDED LIGHTING SYMBOLS. MOVED WETLAND BOUNDARY SYMBOL TO DRAWING NO. RD-L-1. MOVED EROSION CONTROL SYMBOLS TO DRAWING NO. RD-L-4.

REV. 2-28-01: DELETED SYMBOL FOR EXISTING JACKED AND BORED CONDUIT WITH PULL BOXES.

REV. 4-15-04: CHANGED LEGEND FOR LOOP DETECTOR WITH LEAD-IN. ADDED SYMBOLS FOR VIDEO DETECTION AREA, VIDEO DETECTION CAMERA, EMERGENCY VEHICLE DETECTOR, AND FIBER OPTIC PULL BOX. MOVED SYMBOLS BEGINNING WITH SYMBOL FOR GUYING DEVICE ANGLE ANCHOR TO NEW DRAWING NO. RD-L-4.

REV. 3-16-17: ADDED SYMBOL FOR EXISTING RADAR/VIDEO DETECTION AREA. ADDED "RADAR" BEFORE "VIDEO DETECTION AREA". ADDED "WITHOUT BACKPLATE" AFTER "SIGNAL HEAD WITH NUMBER".

REV. 02-20-20: REDREW SHEET.

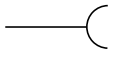

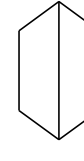


APPROVED BY FHWA
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STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

STANDARD LEGEND FOR SIGNALIZATION AND LIGHTING


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STANDARD LEGEND

	EXISTING		PROPOSED
	GUYING DEVICE ANGLE ANCHOR		GUYING DEVICE ANGLE ANCHOR
	GUYING DEVICE VERTICAL ANCHOR		GUYING DEVICE VERTICAL ANCHOR
	PEDESTRIAN PUSHBUTTON		PEDESTRIAN PUSHBUTTON
	PEDESTRIAN POLE OR PUSHBUTTON POLE FOR SINGLE PUSHBUTTON		PEDESTRIAN POLE OR PUSHBUTTON POLE FOR SINGLE PUSHBUTTON
	PEDESTRIAN POLE OR PUSHBUTTON POLE FOR DUAL PUSHBUTTON		PEDESTRIAN POLE OR PUSHBUTTON POLE FOR DUAL PUSHBUTTON
	HIGH MAST POLE WITH LUMINAIRES ON FULL RING		HIGH MAST POLE WITH LUMINAIRES ON FULL RING
	HIGH MAST POLE WITH LUMINAIRES ON HALF RING		HIGH MAST POLE WITH LUMINAIRES ON HALF RING
	SINGLE OFFSET TYPE LUMINAIRE AND POLE		SINGLE OFFSET TYPE LUMINAIRE AND POLE
	DUAL OFFSET TYPE LUMINAIRE AND POLE		DUAL OFFSET TYPE LUMINAIRE AND POLE
			WALL MOUNTED UNDERPASS LIGHT
	LIGHTING CONTROL CENTER		LIGHTING CONTROL CENTER
	RAILROAD - HIGHWAY CROSSING FLASHING SIGNAL		RAILROAD - HIGHWAY CROSSING FLASHING SIGNAL
	RAILROAD - HIGHWAY CROSSING FLASHING SIGNAL WITH AUTOMATIC GATE		RAILROAD - HIGHWAY CROSSING FLASHING SIGNAL WITH AUTOMATIC GATE
			JACKED OR BORED CONDUIT WITH PULL BOXES

REV. 04-15-04: MOVED SYMBOLS BEGINNING WITH SYMBOL FOR GUYING DEVICE ANGLE ANCHOR FROM DRAWING NO. RD-L-3. ADDED SYMBOLS FOR PEDESTRIAN POLE FOR SINGLE AND DUAL PUSHBUTTON, DUAL ARM OFFSET TYPE LUMINAIRE AND POLE AND WALL MOUNTED UNDERPASS LIGHT.
 REV. 03-16-17: ADDED "OR PUSHBUTTON POLE" AFTER "PEDESTRIAN POLE" ON FOUR INSTANCES.
 REV. 07-16-18: REMOVED THE WORD ARM FROM SINGLE AND DUAL TYPE LUMINAIRE AND POLE. REDREW SHEET.
 REV. 02-20-20: REDREW SHEET.

STATE OF TENNESSEE



STANDARD DRAWING

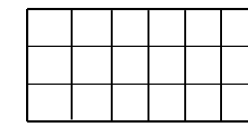
DEPARTMENT OF TRANSPORTATION

STANDARD LEGEND FOR SIGNALIZATION AND LIGHTING

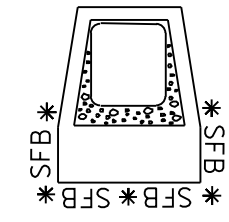
04-15-2004 RD-L-4

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STANDARD LEGEND



DEWATERING STRUCTURE



SEDIMENT FILTER BAG

* SF * SF * SF *

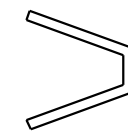
SILT FENCE

* SFB * SFB * SFB *

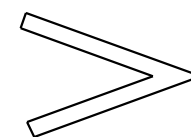
SILT FENCE WITH WIRE BACKING

* ESF * ESF * ESF *

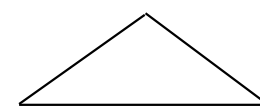
ENHANCED SILT FENCE



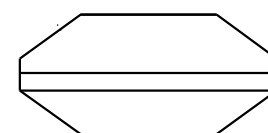
ENHANCED SILT FENCE CHECK (TRAPEZOIDAL DITCH)



ENHANCED SILT FENCE CHECK (V-DITCH)



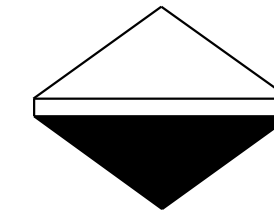
ROCK CHECK DAM (V-DITCH)



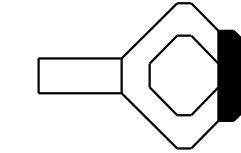
ROCK CHECK DAM (TRAPEZOIDAL DITCH)



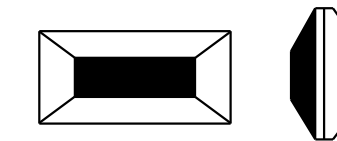
ENHANCED ROCK CHECK DAM (TRAPEZOIDAL DITCH)



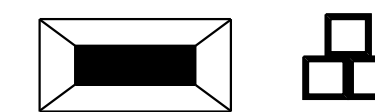
ENHANCED ROCK CHECK DAM (V-DITCH)



ENHANCED ROCK CHECK DAM (CHANNEL)



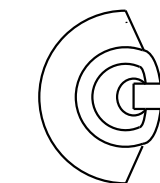
SEDIMENT TRAP WITH ENHANCED ROCK CHECK DAM



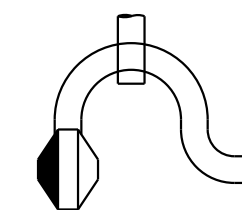
SEDIMENT TRAP WITH GABION CHECK DAM

** SOCK ** SOCK ** SOCK **

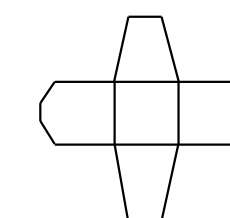
FILTER SOCK



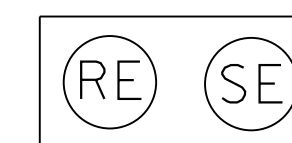
CULVERT PROTECTION (TYPE 1)



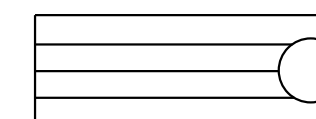
CULVERT PROTECTION (TYPE 2)



ROCK SEDIMENT DAM



ROCK AND EARTH SEDIMENT EMBANKMENT



SEDIMENT BASIN

REV. 10-26-94: MOVED EROSION AND SEDIMENT CONTROL LEGENDS FROM OLD STANDARD DRAWING NO. RD-L-2 AND THE ESC-STR SERIES OF DETAIL SHEETS.
 REV. 5-27-95: ADDED NEW SYMBOLS.
 REV. 5-27-96: MODIFIED SYMBOL FOR TEMPORARY CATCH BASIN.
 REV. 7-29-97: CHANGED LEGEND FOR TEMPORARY SLOPE DRAIN PIPE.
 REV. 5-27-01: CHANGED REFERENCE IN LEGEND FROM DUMPED ROCK TO RIP-RAP.
 REV. 12-18-02: REMOVED SYMBOLS FOR TYPE IA, IB, IC, AND ID EROSION DITCH CHECKS. ADDED SYMBOL FOR TYPE I EROSION DITCH CHECK, TEMPORARY SILT FENCE (WITH BACKING), AND TEMPORARY ENHANCED SILT FENCE.
 REV. 1-22-03: ADDED SYMBOL FOR TYPE EC IA FILTER BARRIER DITCH CHECK.
 REV. 10-26-03: DELETED LEGEND FOR TYPE EC V FILTER BARRIER.
 REV. 3-15-04: MOVED PART OF LEGEND BEGINNING WITH TEMPORARY ROCK AND SEDIMENT DAM TO NEW SHEET RD-L-5. CHANGED LEGEND FOR TEMPORARY CATCH BASIN SILT FENCE SILT TRAP. ADD TEMPORARY CATCH BASIN FILTER ASSEMBLY (TYPE 1 THROUGH 9).
 REV. 4-15-04: CHANGED DRAWING NUMBER FROM RD-L-4 TO RD-L-5.
 REV. 5-1-08: REFORMATTED DRAWING IN CONJUNCTION WITH RD-L-6.
 REV. 02-20-20: REDREW SHEET.

STATE OF TENNESSEE
 STANDARD DRAWING
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STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL

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STANDARD LEGEND

	RIP-RAP		TEMPORARY SLOPE DRAIN
	FLOATING TURBIDITY CURTAIN		PERMANENT SLOPE DRAIN PIPE (SHOW SIZE)
	LEVEL SPREADER (DUAL DIRECTION)		TEMPORARY DIVERSION CHANNEL (DESCRIBE - SIZE AND TYPE OF LINING)
	LEVEL SPREADER (SINGLE DIRECTION)		TEMPORARY DIVERSION CULVERT (DESCRIBE NUMBER AND SIZE OF PIPES)
	SAND BAG		SUSPENDED PIPE DIVERSION
	PERMANENT RIPRAP ENERGY DISSIPATOR		EROSION CONTROL BLANKET
	TEMPORARY CULVERT CROSSING (DESCRIBE NUMBER AND SIZE OF PIPES)		COMPOST FILTER BERM
	TEMPORARY CONSTRUCTION EXIT		MULCH FILTER BERM
	TEMPORARY CONSTRUCTION FORD		TURF REINFORCEMENT MAT
	TEMPORARY BERM		SEDIMENT TUBE
	INSTREAM DIVERSION		HIGH VISIBILITY FENCE

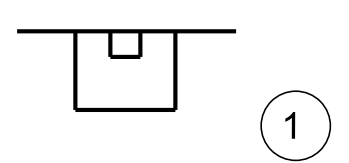
REV. 10-26-94: MOVED EROSION AND SEDIMENT CONTROL LEGENDS FROM OLD STANDARD DRAWING NO. RD-L-2 AND THE ESC-STR SERIES OF DETAIL SHEETS.
 REV. 5-27-95: ADDED NEW SYMBOLS.
 REV. 5-27-96: MODIFIED SYMBOL FOR TEMPORARY CATCH BASIN.
 REV. 7-29-97: CHANGED LEGEND FOR TEMPORARY SLOPE DRAIN PIPE.
 REV. 5-27-01: CHANGED REFERENCE IN LEGEND FROM DUMPED ROCK TO RIP-RAP.
 REV. 12-18-02: REMOVED SYMBOLS FOR TYPE IA, IB, IC, AND ID EROSION DITCH CHECKS. ADDED SYMBOL FOR TYPE I EROSION DITCH CHECK, TEMPORARY SILT FENCE (WITH BACKING), AND TEMPORARY ENHANCED SILT FENCE.
 REV. 1-22-03: ADDED SYMBOL FOR TYPE EC IA FILTER BARRIER DITCH CHECK.
 REV. 10-26-03: DELETED LEGEND FOR TYPE EC V FILTER BARRIER.
 REV. 3-15-04: MOVED PART OF LEGEND BEGINNING WITH TEMPORARY ROCK AND SEDIMENT DAM TO NEW SHEET RD-L-5. CHANGED LEGEND FOR TEMPORARY CATCH BASIN SILT FENCE SILT TRAP. ADD TEMPORARY CATCH BASIN FILTER ASSEMBLY (TYPE 1 THROUGH 9).
 REV. 4-15-04: CHANGED DRAWING NUMBER FROM RD-L-4 TO RD-L-5.
 REV. 5-1-08: REFORMATTED DRAWING IN CONJUNCTION WITH RD-L-5.
 REV. 3-30-10: ADDED SYMBOL FOR INSTREAM DIVERSION.
 REV. 02-20-20: REDREW SHEET. MOVED CATCH BASIN PROTECTION TO DRAWING RD-L-7.

STATE OF TENNESSEE
 STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL

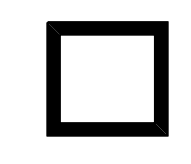
10-26-1994
RD-L-6

STANDARD LEGEND



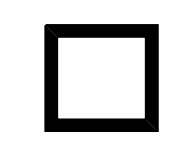
1

CURB INLET PROTECTION (TYPE 1, 2, ETC)



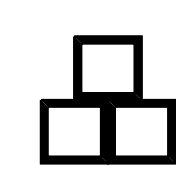
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CATCH BASIN PROTECTION (TYPE A, B, ETC)



1

CATCH BASIN FILTER ASSEMBLY (TYPE 1, 2, ETC)



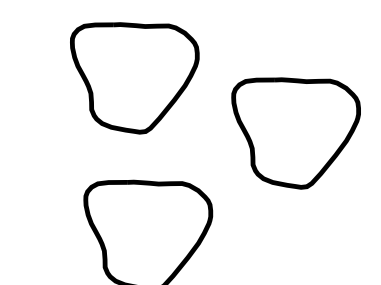
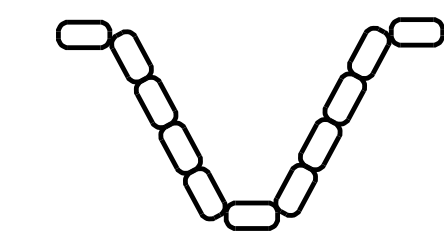
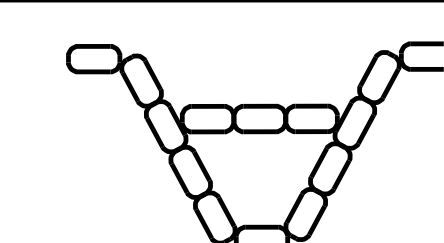
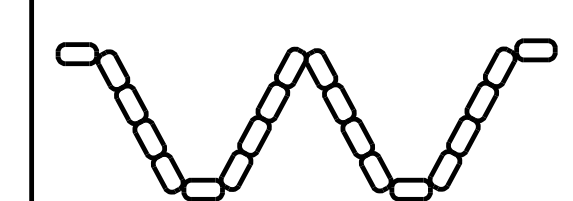
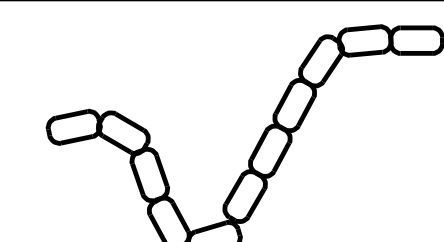
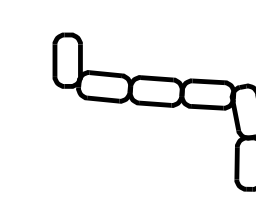
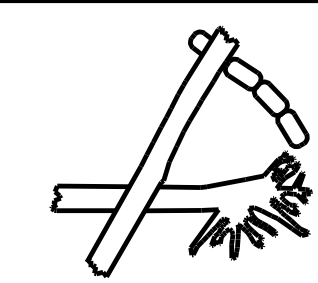
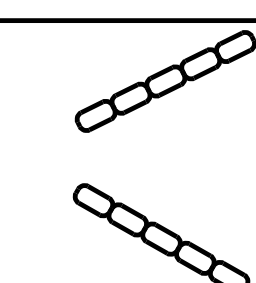
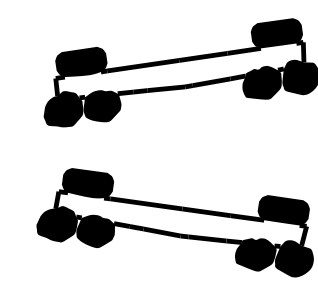
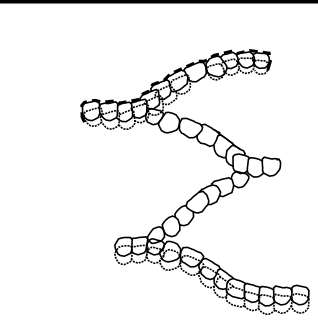
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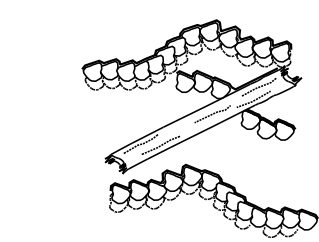
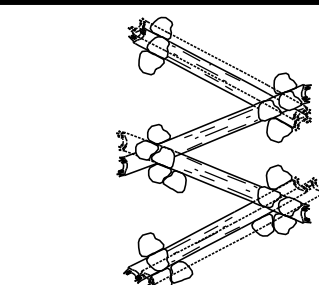
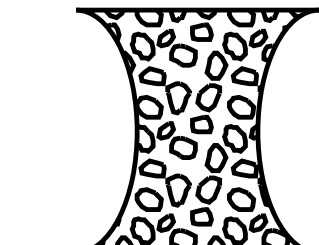
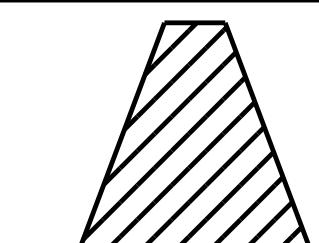
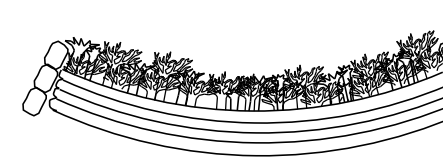
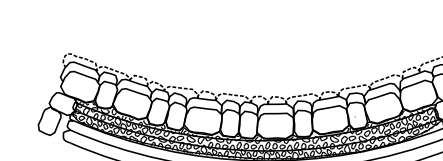
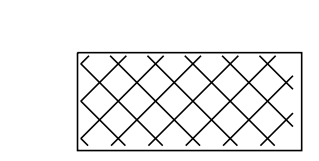
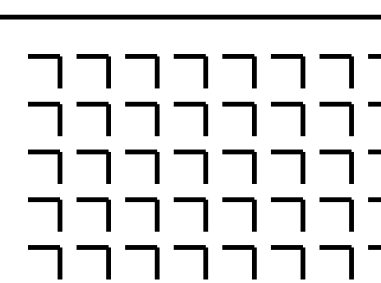
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STANDARD LEGEND

REV. 9-15-17: DELETED VARIOUS ITEMS, MODIFIED VARIOUS ITEMS. ADDED STD. DWG. NAMES. REDESIGNED VARIOUS ITEMS ADDED LEGENDS FOR BOULDER TOE AND COIR FIBER EROSION CONTROL BLANKETS.

REV. 02-20-20: REDREW SHEET.

SYMBOL	ITEM	STD. DWG.
TOE ○○○○○○ TOE	LONGITUDINAL STONE TOE	D-NSD-13
	BOULDER CLUSTERS	D-NSD-21
	BOULDER CROSS VANE	D-NSD-22
	BOULDER CROSS VANE WITH STEP	D-NSD-23
	BOULDER W-WEIR	D-NSD-24
	BOULDER VANE	D-NSD-25
	J-HOOK	D-NSD-25
	LOG VANES, ROOT WADS AND BOULDER J-HOOK	D-NSD-26
	BOULDER STEP POOLS	D-NSD-27
	LOG STEP POOLS	D-NSD-27
	BOULDER RIFFLE	D-NSD-28

SYMBOL	ITEM	STD. DWG.
	BOULDER AND LOG RIFFLE	D-NSD-28
	LOG RIFFLE	D-NSD-28A
	CONSTRUCTED ALLUVIAL RIFFLE	D-NSD-29
	CLAY CHANNEL PLUG	D-NSD-31
	WOOD TOE WITH GEO-LIFTS	D-NSD-32
	BOULDER TOE WITH GEO-LIFTS	D-NSD-32A
	COIR FIBER EROSION CONTROL BLANKET	D-NSD-33
** ROLL **	COIR FIBER ROLLS	D-NSD-33
VV LS VV	LIVE SILTATION	D-NSD-34
VV LF VV	LIVE FASCINE	D-NSD-35
	BRUSH MATTRESS PATTERNING	D-NSD-36

NOT TO SCALE

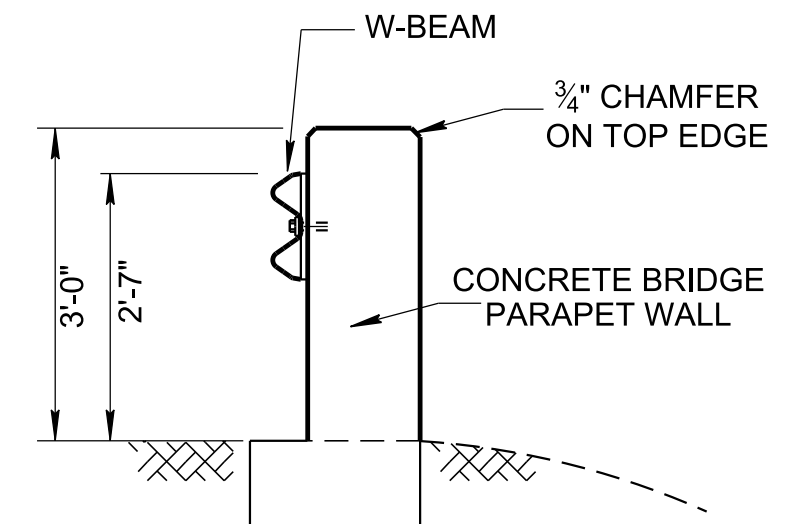
STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

STANDARD LEGEND FOR NATURAL STREAM DESIGN

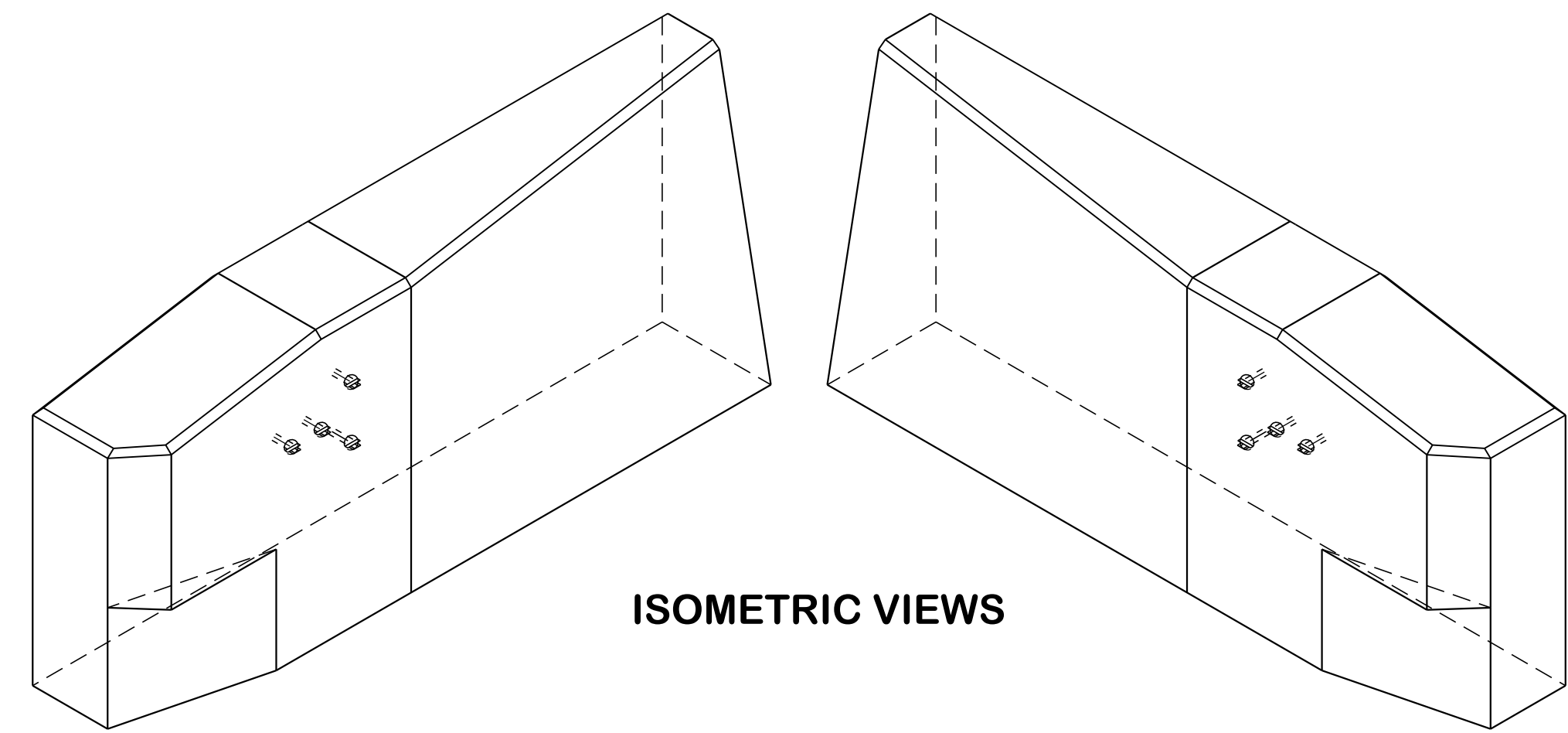
09-01-2011 RD-L-8

LEGEND

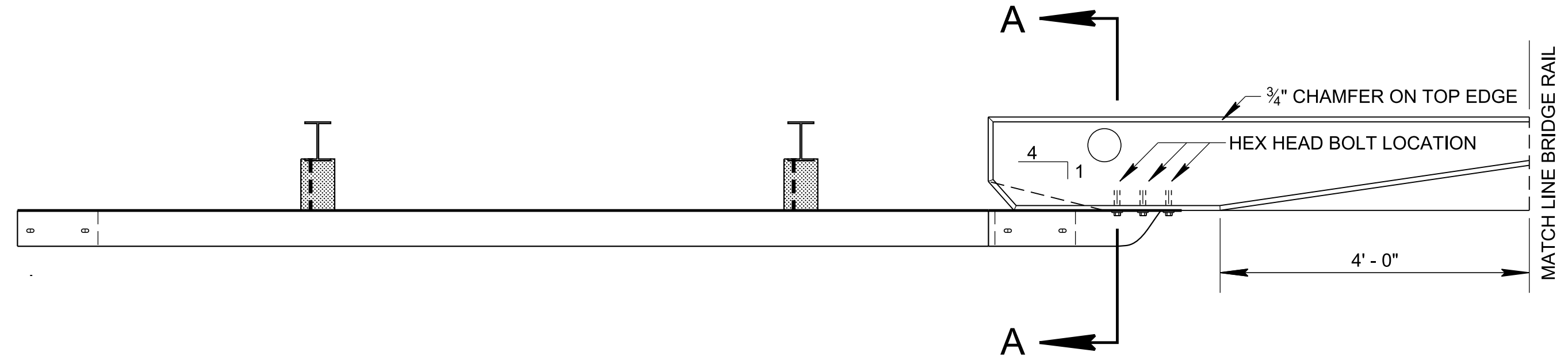
- ① 1 1/8" POST OFFSET TO BOLT HOLE (TYPICAL)
- ② FOR THE TRAILING END OPPOSITE SIDE OF THE ROADWAY THE DISTANCE IS 3' - 8 7/8" DUE TO POST BEING REVERSED AND BOLT HOLE OFFSET OF 2 1/4".



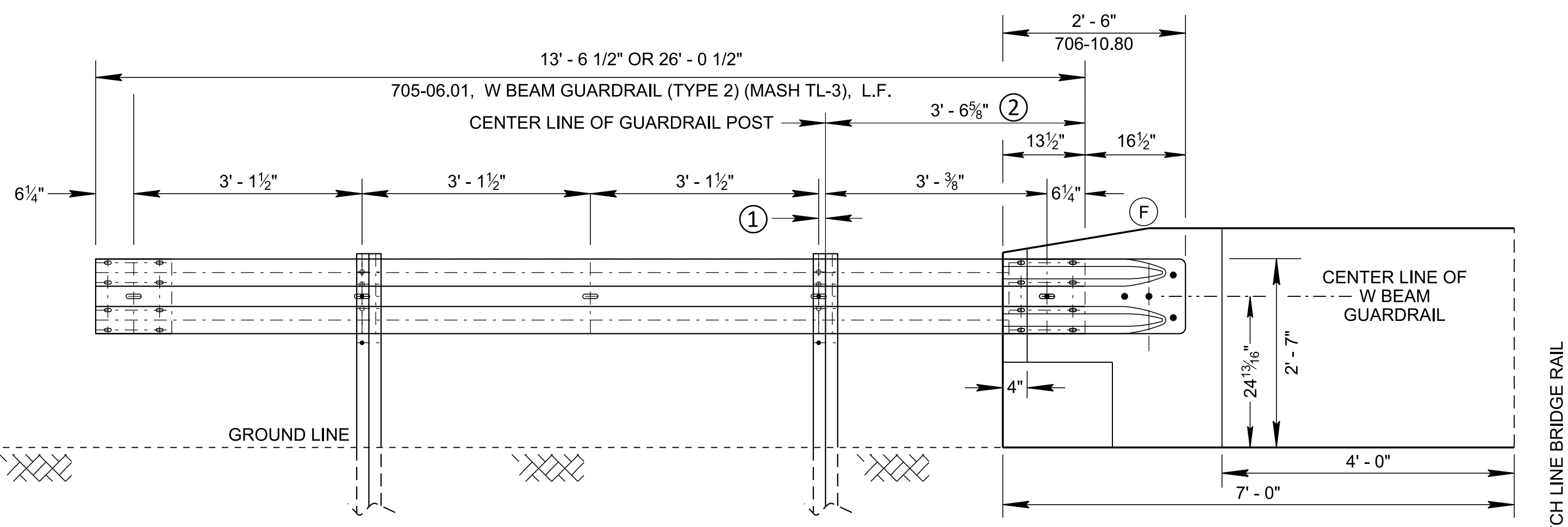
SECTION A-A



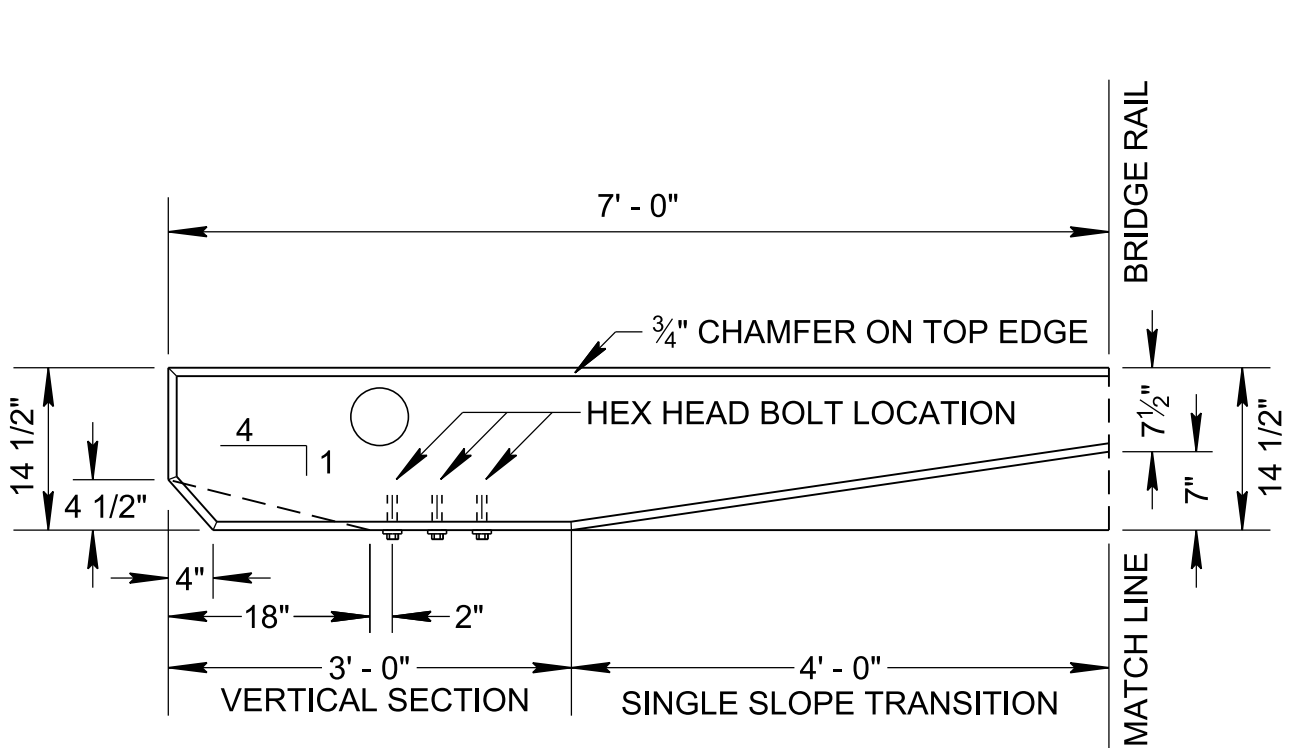
ISOMETRIC VIEWS



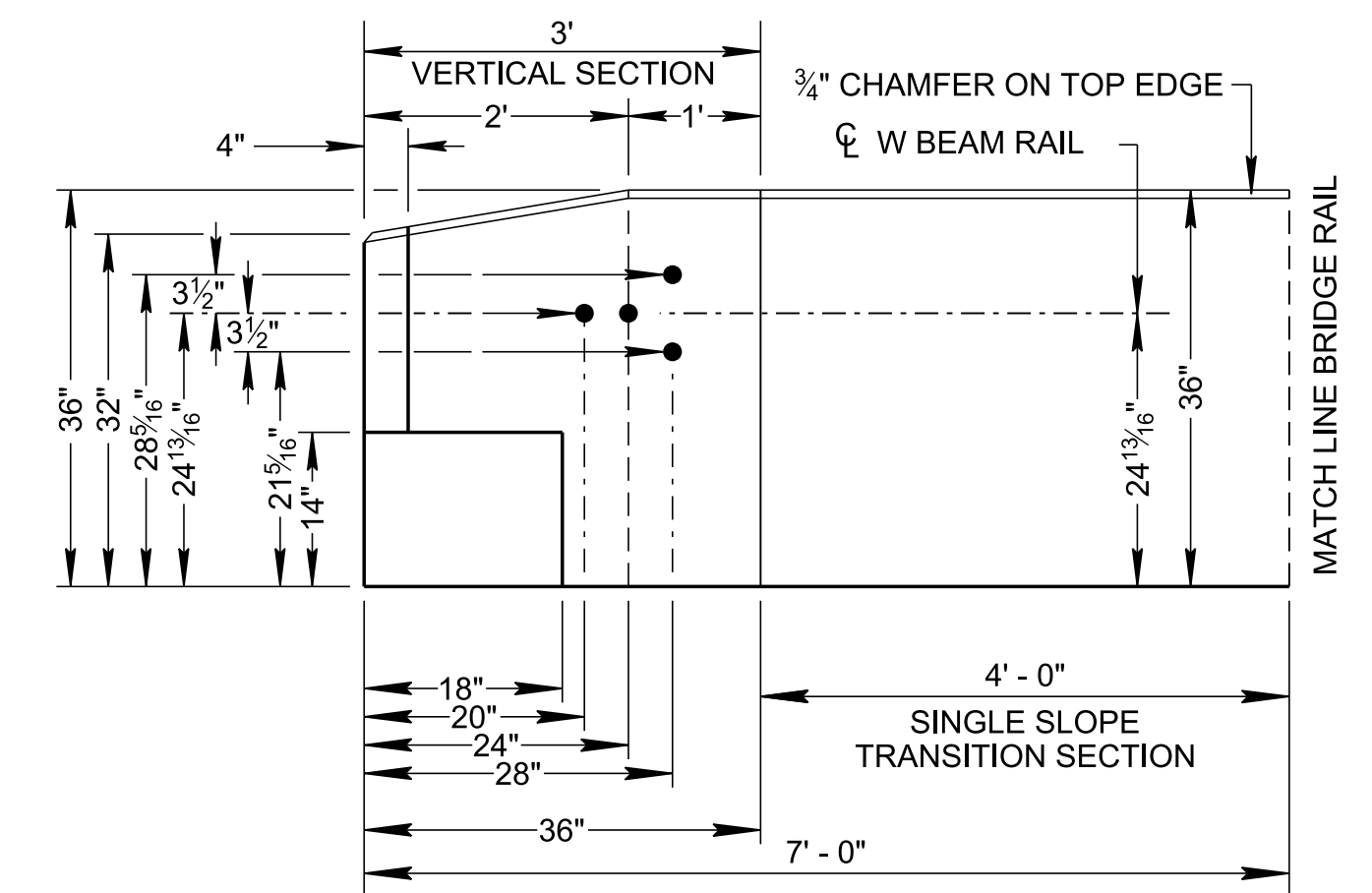
PLAN VIEW



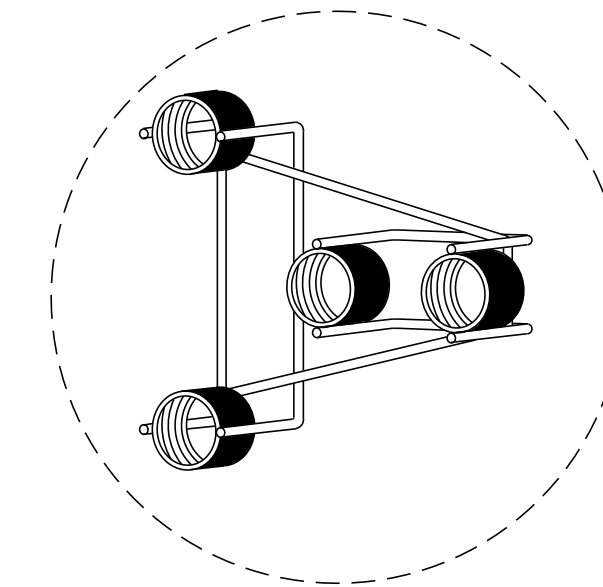
ELEVATION VIEW



PLAN VIEW



ELEVATION VIEW



INSERT ASSEMBLY

CAST IN PLACE THREADED STEEL INSERT WITH 7/8" x 2" HEX HEAD GALVANIZED BOLTS (A307) HOT DIP ZINC COATING ASTM A153

GENERAL NOTES

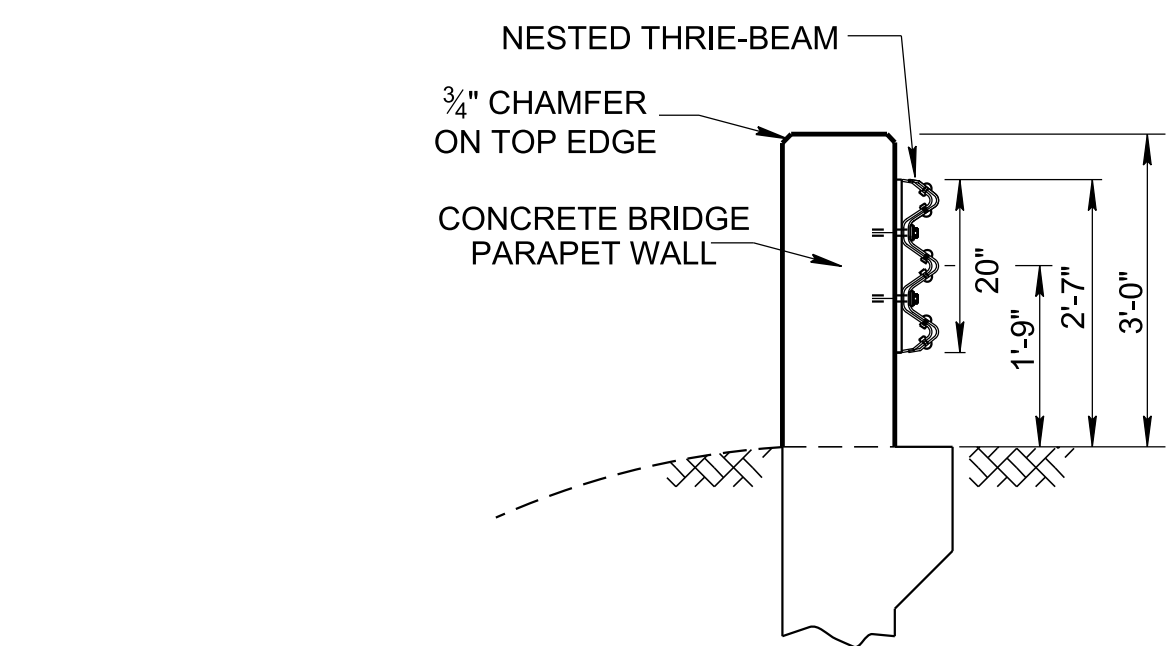
- (A) THIS DRAWING IS TO BE USED FOR CONNECTING GUARDRAIL TO BRIDGE RAIL TRAILING END IF NEEDED ON A DIVIDED HIGHWAY AND THE END TERMINAL IS DETERMINED TO BE OUTSIDE OF THE CLEAR ZONE.
- (B) IF GUARDRAIL IS TO BE CONNECTED USING THIS DRAWING IT WILL REQUIRE W BEAM GUARDRAIL (TYPE 2) (MASH TL-3), AT 13'-6 1/2" OR 26'-0 1/2", ITEM NO. 705-06.01, PER L.F. AND ONE MICHIGAN END SHOE, ITEM NO. 706-10.80, PER EACH.
- (C) CONNECTION TO BRIDGE RAIL SHOWN; FOR CONNECTION TO CONCRETE BARRIER WALLS, SEE S-SMB-6.
- (D) SEE STANDARD DRAWINGS STD-1 SERIES FOR BRIDGE RAILING DETAILS, S-GR31-1 SERIES FOR ALL OTHER GUARDRAIL DETAILS AND MATERIAL PROPERTIES NOT SHOWN AND S-PL-3 FOR MINIMUM LENGTH AND DELINEATOR REQUIREMENTS.
- (E) ALL COST FOR THE CONNECTION REQUIREMENTS LISTED HERE BUT NOT LIMITED TO THESE ITEMS SHALL BE INCLUDED IN OTHER GUARDRAIL ITEMS. BUTTON HEAD "SPLICE" BOLTS FOR CONNECTING THE W BEAM GUARDRAIL (TYPE 2) WITH THE MICHIGAN END SHOE. THIS WILL REQUIRE 8 (ASTM 307) 5/8" DIA. X 2" WITH 5/8" DOUBLE RECESSED NUTS. TO CONNECT THE W BEAM GUARDRAIL (TYPE 2) AND THE MICHIGAN END SHOE TO THE BRIDGE RAIL WILL REQUIRE 4 HEX HEAD BOLT AT 7/8" Ø x 2", WASHERS AND NUTS.
- (F) TRANSITION TO 36" MAY BE ELIMINATED WHEN 32" PARAPET WALL DESIGN IS USED.

APPROVED BY FHWA (ALL OTHERS APPROVED BY TDOT)

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

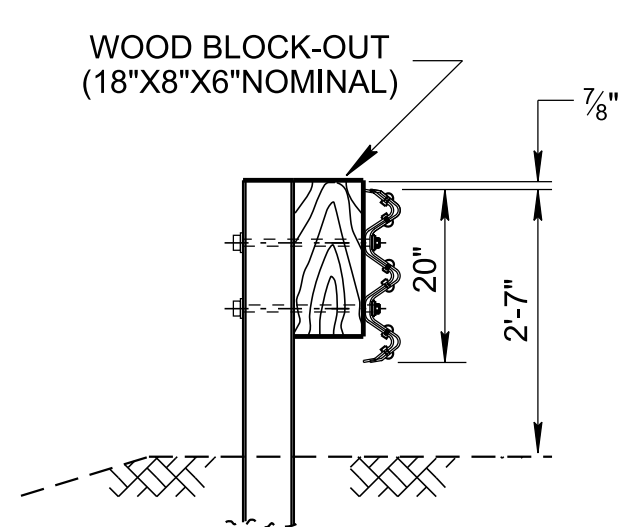
GUARDRAIL CONNECTION TO BRIDGE ENDS (TRAILING ENDS)

CONCRETE BRIDGE PARAPET WALL DETAILS

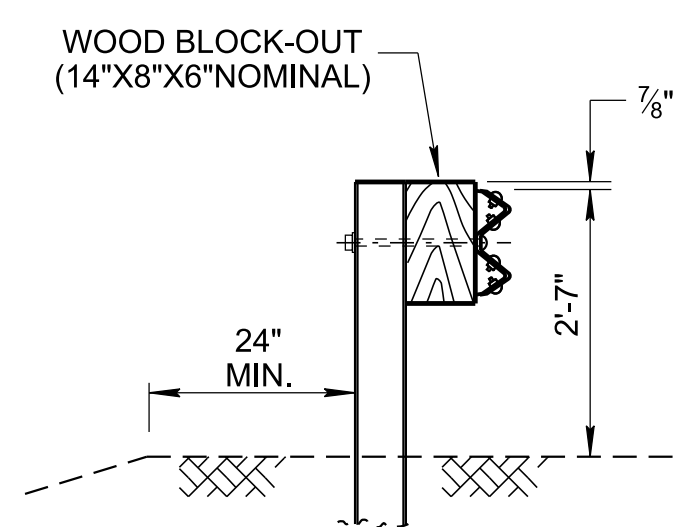


SECTION A-A

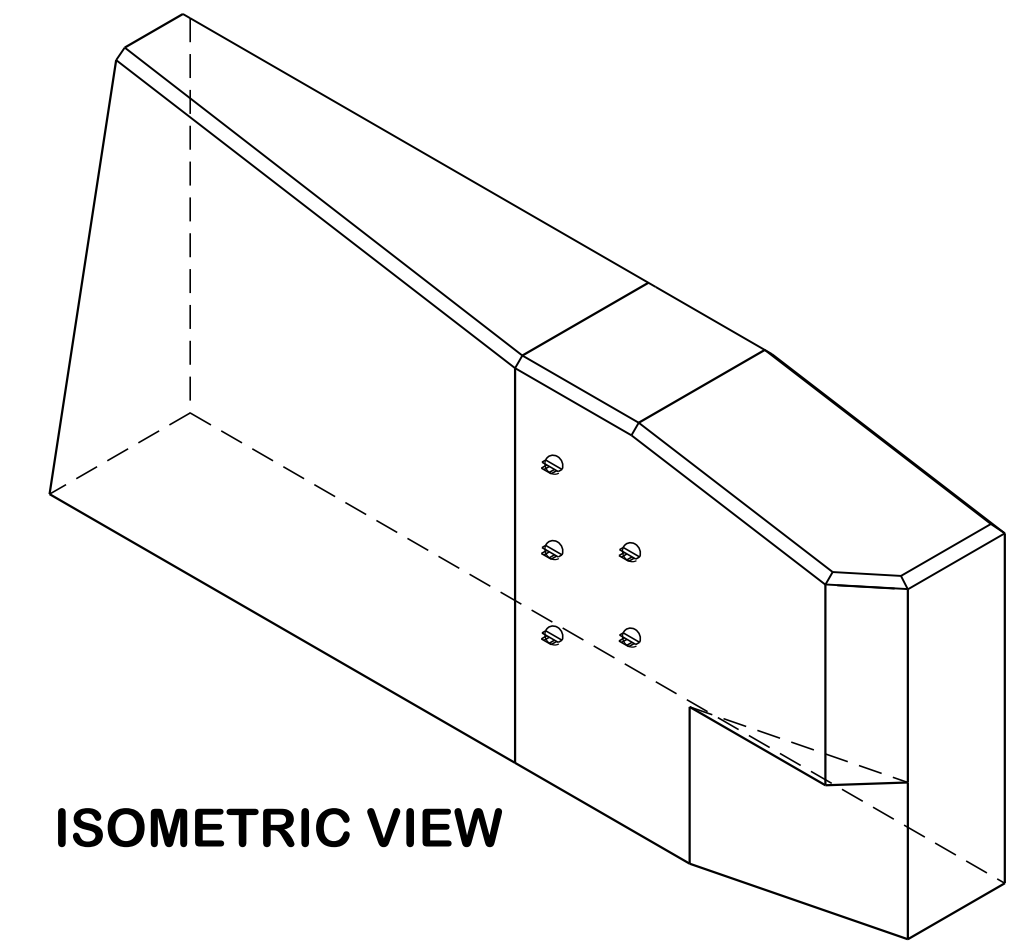
- LEGEND**
- ① 1 1/8" POST OFFSET TO BOLT HOLE (TYPICAL)
 - ② FOR THE APPROACHING OPPOSITE SIDE OF THE ROADWAY THE DISTANCE IS 4' - 11 1/8" DUE TO POST BEING REVERSED AND BOLT HOLE OFFSET IS 2 1/4".



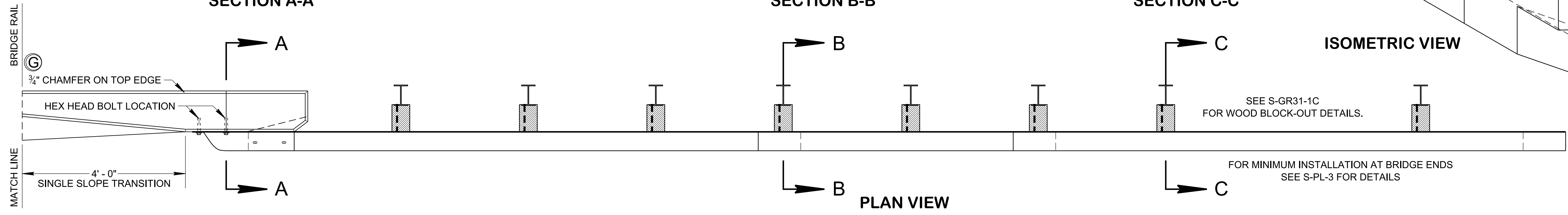
SECTION B-B



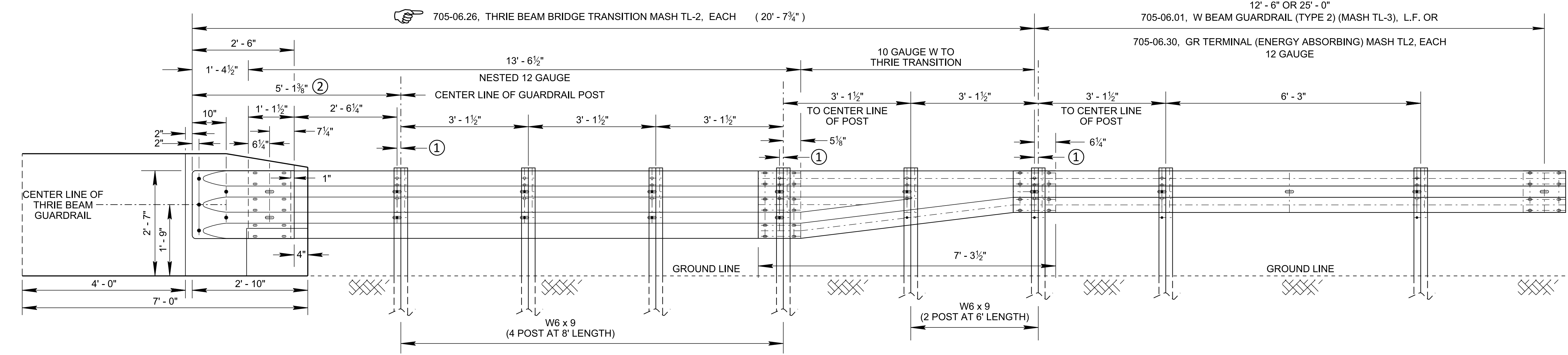
SECTION C-C



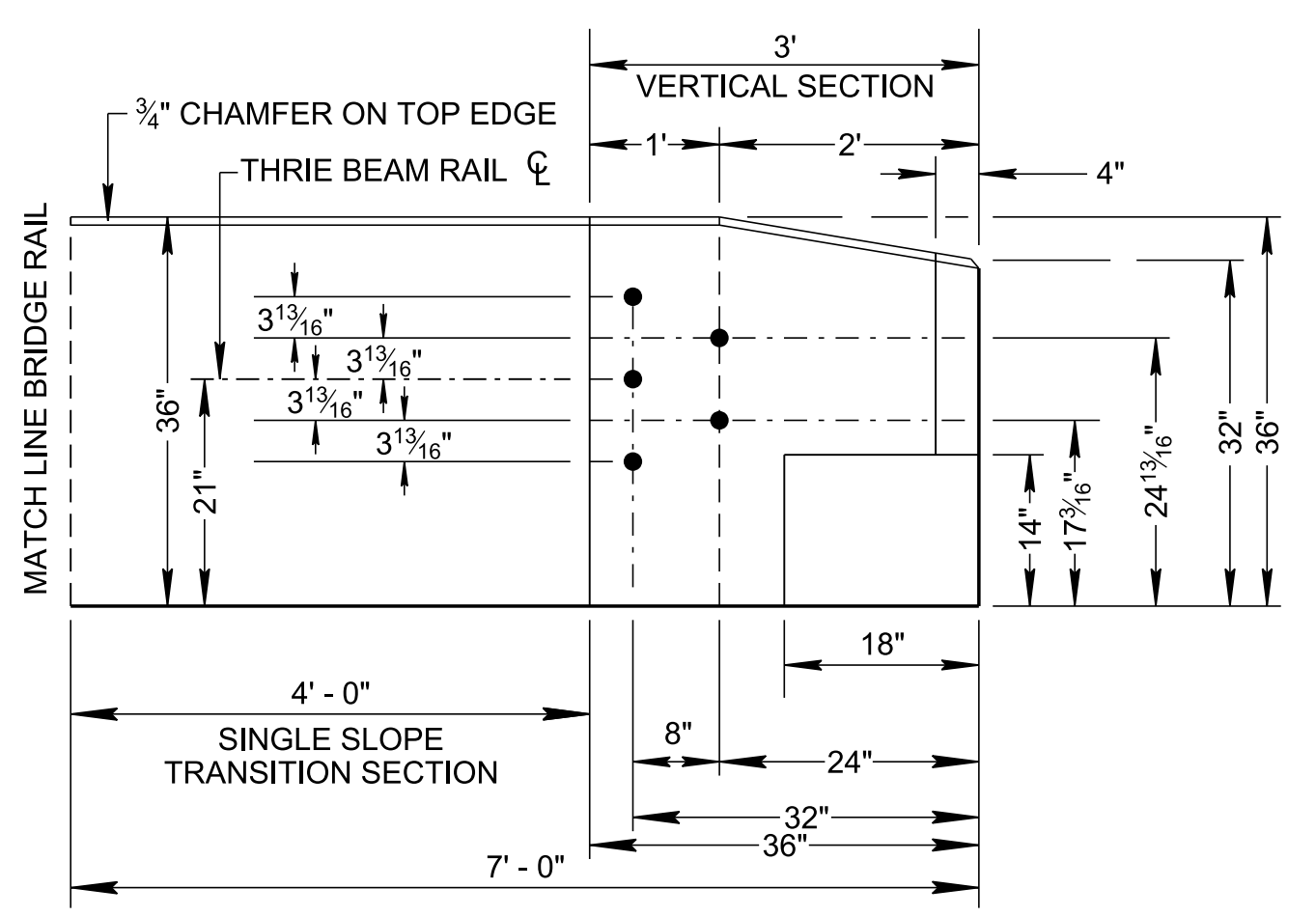
ISOMETRIC VIEW



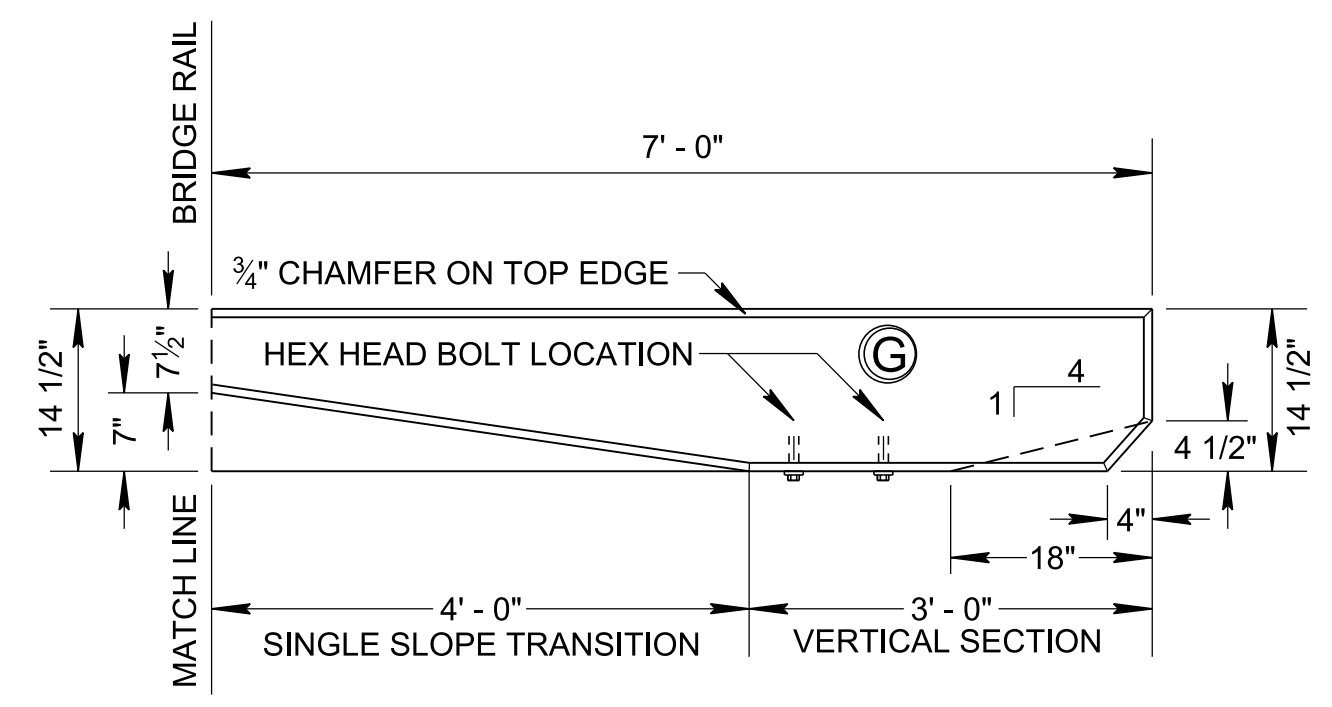
PLAN VIEW



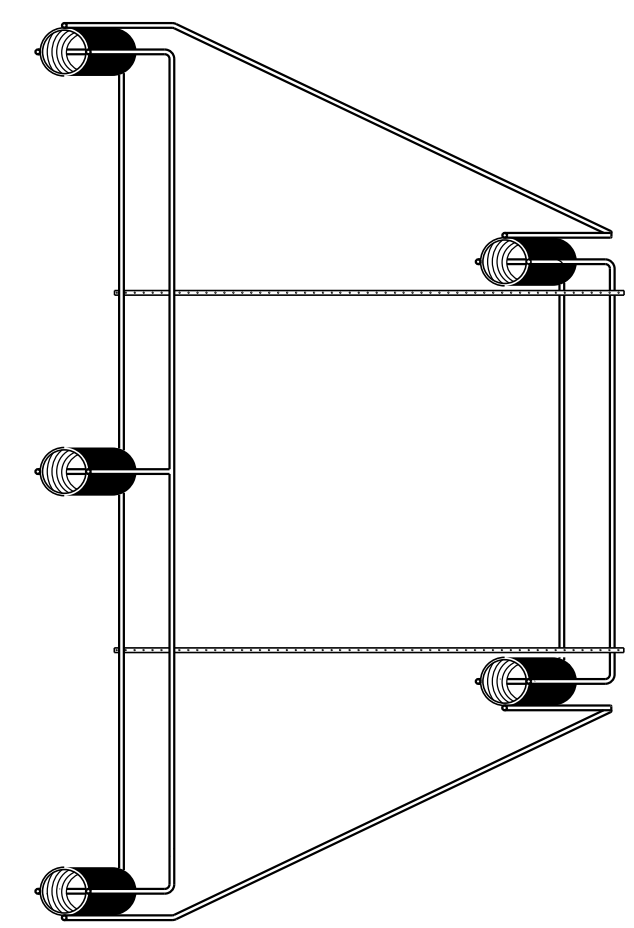
ELEVATION VIEW



WALL ELEVATION VIEW



PLAN VIEW



INSERT ASSEMBLY

CAST IN PLACE THREADED STEEL INSERT WITH 7/8" x 2" HEX HEAD GALVANIZED BOLTS (A307) HOT DIP ZINC COATING ASTM A153

- GENERAL NOTES**
- (A) THIS DRAWING IS TO BE USED AT ALL GUARDRAIL LEADING AND TRAILING TRANSITIONS TO BRIDGE RAIL WITH DESIGN SPEED OF ≤ 45 M.P.H. (IF WARRANTED TO BE WITHIN THE CLEAR ZONE).
 - (B) CONNECTION TO BRIDGE RAIL SHOWN; FOR CONNECTION TO CONCRETE MEDIAN BARRIER WALLS, SEE S-SSMB-6.
 - (C) SEE STANDARD DRAWINGS STD-1 SERIES FOR BRIDGE RAILING DETAILS, S-GR31-1 SERIES FOR ALL OTHER GUARDRAIL DETAILS AND MATERIAL PROPERTIES NOT SHOWN AND S-PL-3 FOR MINIMUM LENGTH AND DELINEATOR REQUIREMENTS.
 - (D) ALL COMPONENTS AS SHOWN ON THIS DRAWING OR ANY COMPONENTS NEEDED TO INSTALL THIS GUARDRAIL SHALL BE INCLUDED UNDER PAY ITEM 705-06.30, THRIE BEAM BRIDGE TRANSITION MASH TL-2, PER EACH.
 - (E) BUTTON HEAD "POST" BOLTS (ASTM A307) SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT (ASTM A563) AND WASHER AND NOT MORE THAN 1" BEYOND IT. BUTTON HEAD "SPLICE" BOLTS (ASTM 307) 5/8" DIA. X 2" (AT TRIPLE RAIL SPLICES) WITH 5/8" DOUBLE RECESSED NUTS.
 - (F) GALVANIZED WASHERS USED WITH THE 5/8" DIA. POST BOLTS SHALL BE TYPE A 1-3/4" O. D. WASHERS. THE (12) PLATE WASHERS (FWR03) REQUIRED AT THE TERMINAL CONNECTOR SPLICE.
 - (G) TO CONNECT THE THRIE BEAM GUARDRAIL AND THE TERMINAL CONNECTION TO THE BRIDGE RAIL WILL REQUIRE 5 HEX HEAD BOLTS AT 7/8" Ø X 2", WASHERS AND NUTS.
 - (H) SAFETY PERFORMANCE OF THIS DEVICE HAS BEEN EVALUATED PER TRB 2672(39) 41-51 DEVELOPMENT OF A STANDARDIZED BUTTRESS FOR APPROACH GUARDRAIL TRANSITIONS AND TTI REPORT 9-1002-8, FOR MASH TL-2.

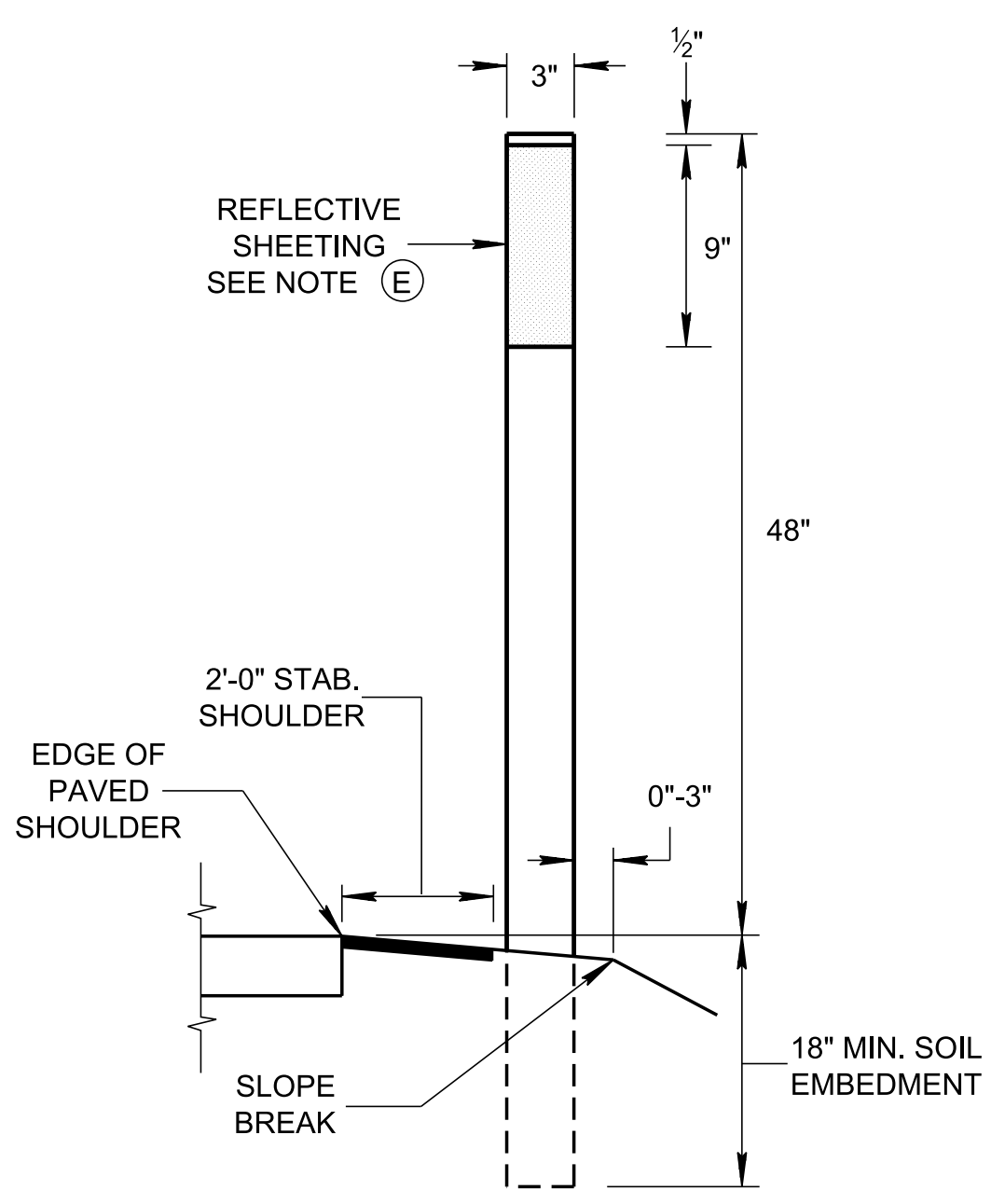
APPROVED BY FHWA (ALL OTHERS APPROVED BY TDOT)

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION

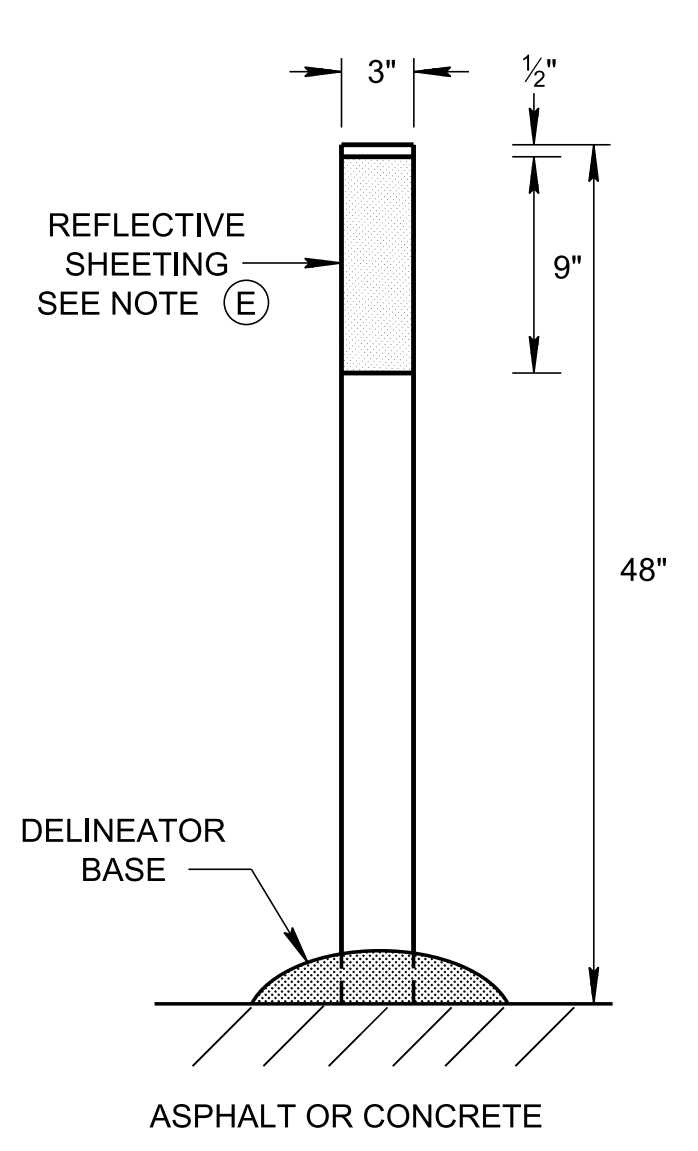
GUARDRAIL CONNECTION TO BRIDGE ENDS FOR LOW SPEED ROADWAYS

2/19/2020 8:50:19 AM P:\StandDraw\DESIGN STANDARDS\Standards Drawings\Standard Roadway Drawings - CURRENT\In Progress\10-106.00 Safety Design and Guardrails IP\106.05 Guardrail Connections IP\SIGRRC6-20200202

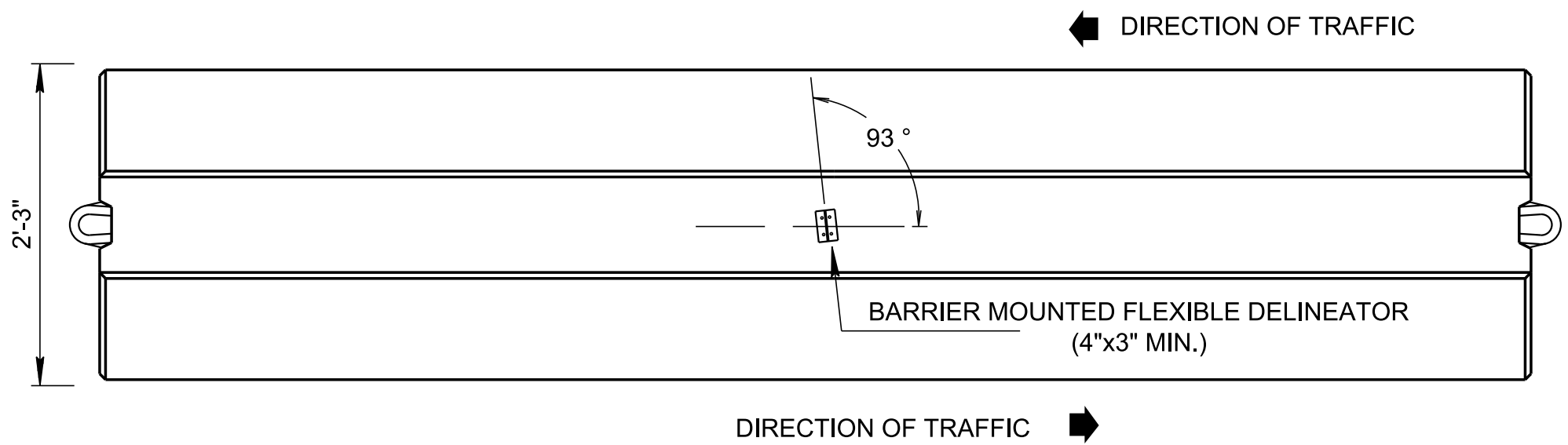
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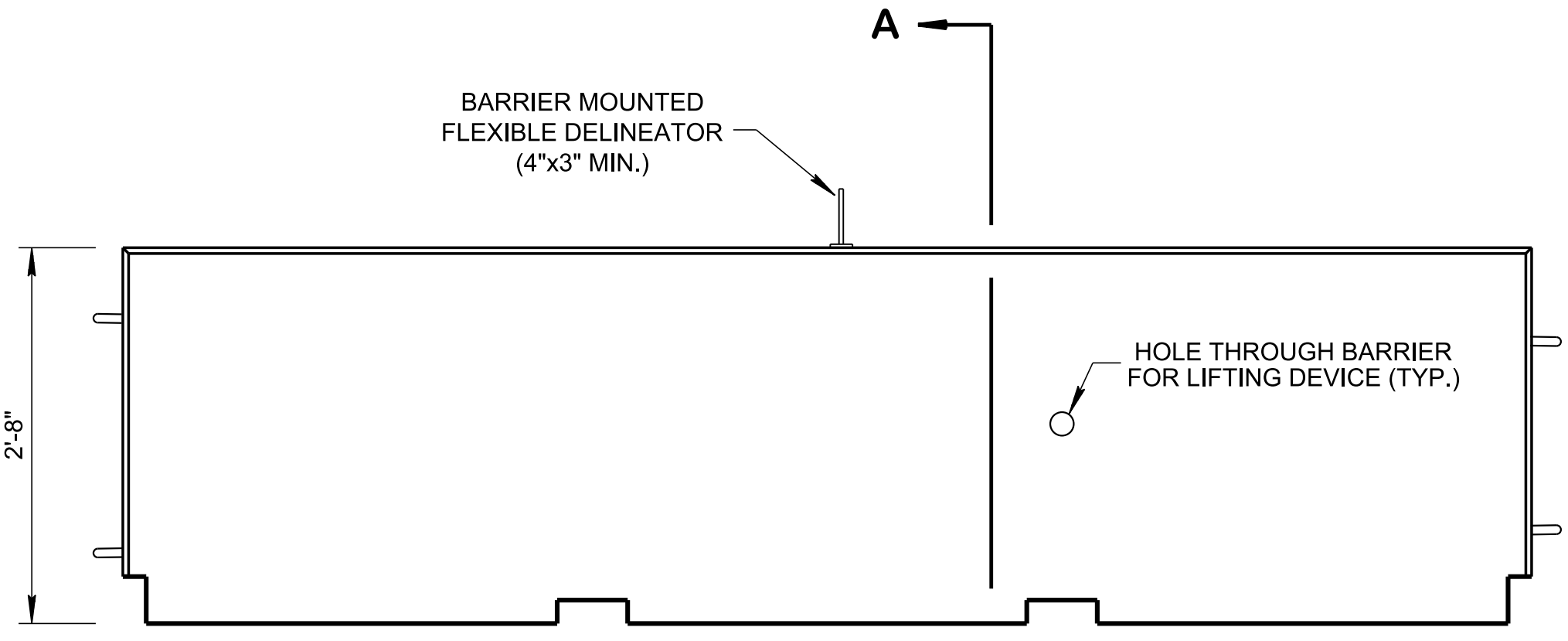
GROUND MOUNTED FLEXIBLE DELINEATOR
SEE CATEGORY I WORK ZONE DEVICES



SURFACE MOUNTED FLEXIBLE DELINEATOR
SEE CATEGORY I WORK ZONE DEVICES
SEE NOTE ①



PLAN VIEW

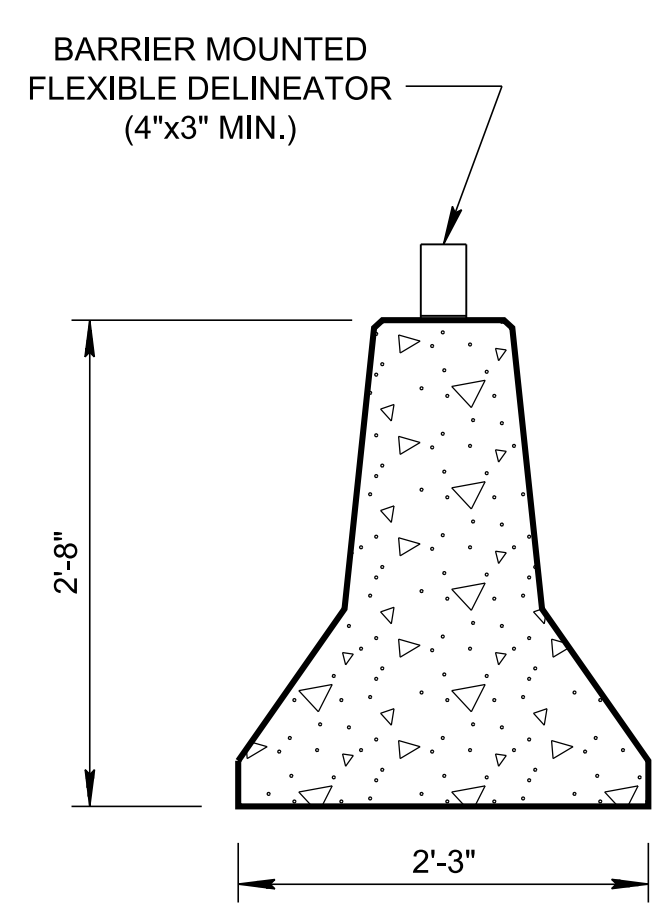


ELEVATION VIEW

DELINEATOR MOUNTED ON INTERCONNECTED TEMPORARY PORTABLE CONCRETE BARRIER RAIL

(SEE T-WZ-PBR1 FOR DETAILS REGARDING INTERCONNECTED PORTABLE BARRIER RAIL)

SEE CATEGORY III WORK ZONE DEVICES



SECTION A-A

GENERAL NOTES

FLEXIBLE DELINEATORS

- (A) THE REFLECTIVE SHEETING SHALL MEET THE REQUIREMENTS OF AASHTO M268, TYPE III OR HIGHER RETROREFLECTION PERFORMANCE LEVEL.
- (B) THE REFLECTIVE SHEETING STRIP ON THE DELINEATORS SHALL BE MIN. 9 INCHES IN LENGTH AND SUFFICIENT WIDTH TO PROVIDE A MIN. 3 INCHES WIDE PROFILE FACING APPROACHING TRAFFIC. THE VARIATIONS IN REFLECTIVE SHEETING DIMENSION SHOULD NOT EXCEED ± 10%.
- (C) THE CONTRACTOR SHALL SELECT MATERIAL FROM THE DEPARTMENT'S QPL.
- (D) THE COLOR OF THE DELINEATOR POST SHALL BE WHITE UNLESS OTHERWISE NOTED ON THE PLANS.
- (E) THE COLOR OF THE REFLECTIVE SHEETING SHALL CONFORM TO THE COLOR OF EDGE LINES STIPULATED IN SUBSECTION 3B-6 (PAGE 3B-8 AND 3B-11) OF THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- (F) PAYMENT FOR GROUND MOUNTED FLEXIBLE DELINEATORS WILL BE MADE AS FOLLOWS ITEM NO'S.:

713-02.14, FLEXIBLE DELINEATOR (WHITE),	EACH.
713-02.15, FLEXIBLE DELINEATOR (YELLOW),	EACH.
713-02.16, FLEXIBLE TYPE II, OBJECT MARKER,	EACH.
713-02.33, FLEXIBLE DELINEATOR (RED),	EACH.
- (G) PAYMENT FOR SURFACE MOUNTED FLEXIBLE DELINEATORS WILL BE MADE AS FOLLOWS ITEM NO.:

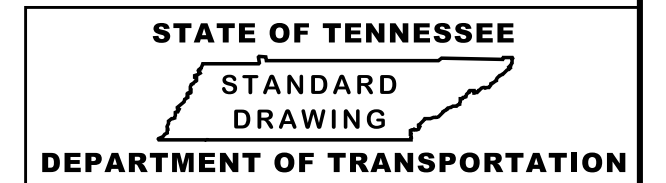
713-02.30, FLEXIBLE TUBULAR DELINEATOR,	EACH.
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- (H) SPACING FOR SURFACE MOUNTED FLEXIBLE DELINEATOR POSTS SHALL BE 20' OR LESS.
- (I) SURFACE MOUNTED FLEXIBLE DELINEATORS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.
- (J) ONLY PRODUCTS LISTED ON THE DEPARTMENT'S QPL SHALL BE USED.

BARRIER MOUNTED FLEXIBLE DELINEATOR

- (K) SPACING FOR DELINEATORS NOT IN A TAPER SHOULD BE A DISTANCE IN FEET APPROXIMATELY EQUAL TO TWO TIMES THE POSTED SPEED LIMIT IN MILES PER HOUR. THE MAXIMUM SPACING IN FEET BETWEEN DELINEATORS IN A TAPER SHOULD BE APPROXIMATELY EQUAL TO THE POSTED SPEED IN MILES PER HOUR, BUT WILL NOT EXCEED ONE HALF THE SPACING OF THE DELINEATORS NOT IN A TAPER.
- (L) IF USED FOR TRAFFIC IN TWO DIRECTIONS, TWO SIDED DELINEATORS SHALL BE USED.
- (M) THE BARRIER MOUNTED FLEXIBLE DELINEATORS FACE, SUPPORT, INSTALLATION AND HARDWARE ARE TO BE PAID FOR UNDER THE PRICE BID FOR ITEM NO.:

712-04.50, BARRIER RAIL DELINEATOR,	EACH
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- (N) BARRIER MOUNTED FLEXIBLE DELINEATORS SHALL BE 3" WIDTH MINIMUM X 4" HEIGHT MINIMUM.
- (O) ONLY PRODUCTS LISTED ON THE DEPARTMENT'S QPL SHALL BE USED.
- (P) BARRIER MOUNTED FLEXIBLE DELINEATORS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.

(Replaced Std Dwg T-PBR-2)



DETAILS FOR WORK ZONE CHANNELIZATION DEVICES