

SHEET 1 OF 3























SHOULDER BERM GUTTER





<u>SECTION VIEWS OF 1'-6",</u> 2'-6" (DEPICTED) AND 2'-9" CURB AND GUTTER SUPERELEVATION RATES

*

ROADWAY STANDARD DRAWING FOR CONCRETE CURB, GUTTER AND CURB & GUTTER

SHEET 2 OF 3 846.01

H CAROLINA TRANSPORTATION N OF HIGHWAYS EIGH, N.C.

DIVISION OF RALEIGH,

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NOTES:

CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

PLACE A GROOVE JOINT 1" DEEP WITH $\frac{1}{8}$ " RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE $\frac{1}{2}$ " EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A $\frac{1}{2}$ " EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.05 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.





ROADWAY STANDARD DRAWING FOR CONCRETE SIDEWALK

848.01

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DESIRABLE DRIVEWAY GRADES



FOR ROADWAY STANDARD DRAWING TURNOUT GRADES DRIVEWAY DRIVEWAY

HIGHWAYS N.C.

DIVISION OF RALEIGH,

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**NO CONSTRUCTION JOINT WILL BE PERMITTED IF FORMS ARE USED TO CAST DRIVEWAY. SLIP FORMING OF CURB AND GUTTER PERMITS THE USE OF CONSTRUCTION JOINT.

SHEET 1 OF 2

DESIRABLE DRIVEWAY GRADES



ROADWAY STANDARD DRAWING FOR DRIVEWAY TURNOUT DRIVEWAY GRADES

HIGHWAYS N.C.

DIVISION OF RALEIGH,

J STATE OF NORTH CAROLINA - OF TRANSPORTA'

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TYPE COMMERICAL ENTRANCES.

TURNOUT STREET

SHEET 1 OF 1 848.04

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NOTES:

0.9" TO

1.4'

DETECTABLE WARNING SURFACE SHALL COVER $2^\prime\text{-}0^{\prime\prime}$ length and full width of the RAMP floor as shown on the details.

DETECTABLE WARNING SURFACE SHALL CONTRAST VISIBLY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



RAMP WIDTH AREA IS VARIABLE

BASE DIAMETER	
TOP DIAMETER OF	
THAN 50% TO NO M	DRE BASE
DIAMETER	JAOL

W	A	W+A+9″	Х	В
5′	0.0′	5.8′	5.8′	5.0'*
6′	0.0′	6.8′	6.8′	6.0'**
7'	0.0′	7.8′	7.3'	6.5'*'
8′	0.0′	8.8′	7.3′	6.5'**
5′	2.0'	7.8′	7.8′	5.0′
5′	2.5'	8.3'	8.1′	4.8′
5′	3.0′	8.8′	8.3′	4.4'
5′	3.5′	9.3′	8.4′	4.1'
5′	4.0′	9.8′	8.6′	3.8′
5′	4.5'	10.3	8.7'	3.4'
5′	5.0'	10.8′	8.9'	3.1'

B = X - (A + 9'')

B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.

- * BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
- ** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.



DETECTABLE WARNING SURFACE

0.65 MIN

20

1.6" 7.4"



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DIVISION OF RALEIGH,

SIDEWALK

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PAY LIMITS OF CURB RAMP

NOTES:

DETECTABLE WARNING SURFACE SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.

DETECTABLE WARNING SURFACE SHALL CONTRAST VISIBLY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



0.9'' T01.4''<math>0.65'' = 0.65'' = 0.65'' = 0.65'' = 0.000

DETECTABLE WARNING SURFACE











DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS

DETAIL SHOWING TYPICAL LOCATION OF CURB PEDESTRIAN CROSSWALKS AND STOP LINES RAMPS,



CR FOR PROPOSED CURB RAMP

ROADWAY PLAN SYMBOL

ALLOWABLE LOCATIONS . _ _ _ _ _ _ _ _ _ _ _ DUAL RAMP RADII.....ANY

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SIDEWALK

4'-0"

(TYP)

SIDEWALK

SHEET 5 OF13 848.06



SEE NOTE 10

SIDEWALK SEE NOTE 12 6' MIN. CROSSWALK STOP LINE SIDEWALK

1PB

SEE NOTE 4

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SHEET 9 OF 13



DETECTABLE WARNING SURFACE



curb ramps TYPE 8

MEDIAN ISLAND



DETECTABLE WARNING SURFACE



		R	AMP WI	DTH AF	EA IS	VARIA	BLE	1
Ŧ		0	0	0	0	0	0	BASE DIAMETER
LENGT	6	0	0	0	0	0	Ø	0.9"R TO 1.40"R
2'-0"	\$	0	0	0	0	0	Ø	THAN 50% TO NO MORE THAN 65% OF THE BASE DIAMETER
		0	0	0	0	0	0	

DETECTABLE WARNING SURFACE SHALL CONTRAST VISIBLY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.

NOTES: DETECTABLE WARNING SURFACE SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.





ROADWAY STANDARD DRAWING FOR CURB RAMP ISLAND RAMP

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1-24 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. NOTES:

- 1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
- 2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.

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- 3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
- 4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
- 5. REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
- 6. TERMINATE PARKING A MINIMUM OF 20' FROM THE BACK OF PEDESTRIAN CROSSWALK.
- 7. CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
- 8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
- 9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
- 10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
- 11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
- 12. CONSTRUCT CLEAR SPACES FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT CLEAR SPACES FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. IF CONSTRAINED ON TWO OR MORE SIDES, THE THE CLEAR SPACE SHALL BE 4' MINIMUM X 5' MINIMUM, WITH 5' PROVIDED IN THE DIRECTION OF THE PEDESTRIAN STREET CROSSING.
- 13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGH THE ISLAND.
- 14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'X5' CLEAR SPACE AT THE TOP OF RAMPS, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
- 15. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP, WHERE THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE, OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
- 16. PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01.
- 17. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
- 18. DETECTABLE WARNING SURFACES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
- 19. DETECTABLE WARNING SURFACES WILL CONTRAST VISIBLY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.

NOTES:

PLACE CONTRACTION JOINTS AT INTERVALS EQUAL TO THE WIDTH OF THE PATH. L=W

CONSTRUCT JOINTS AT A DEPTH OF 1/4 OF THE SLAB THICKNESS. D=T/4

DO NOT USE JOINT SEALANT FOR CONTRACTION JOINT CONSTRUCTION.

A $1\!\!\!/_2{}''$ EXPANSION JOINT WILL BE REQUIRED WHERE THE CONCRETE SIDEPATH JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.05 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.

CONCRETE SIDEPATH



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CONCRETE SIDEPATH

EXPANSION JOINT FOR RIGID STRUCTURE

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ROADWAY STANDARD DRAWING CONCRETE SIDEPATH/SHARED I

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GENERAL NOTES:

IN THE 4" CONC. PAVED DITCHES, PLACE $\frac{1}{2}$ " EXPANSION JOINTS AT 30' INTERVALS AND AT ALL OTHER POINTS WHERE PROPOSED DITCHES ABUT RIGID OBJECTS. PLACED GROOVED JOINTS 1" DEEP AT 10' INTERVALS BETWEEN EXPANSION JOINTS.

CONSTRUCT WIDTH AND SHAPE OF PROPOSED 4" CONCRETE PAVED DITCHES AS SHOWN OR AS DIRECTED BY THE ENGINEER.

FOR DITCH GRADES ABOVE 2% EROSION CONTROL, INSTALL MATTING ON BOTH SIDES OF THE PAVING FOR A MINIMUM WIDTH OF 36" OR AS DIRECTED BY THE ENGINEER.







SHOWING EXPANSION JOINT



PART LONGITUDINAL SECTION OF PAVED DITCH

SHOWING 1'-6" CURTAIN WALL REQUIRED AT EACH END

* WHEN CURTAIN WALL FOR PAVED DITCH IS LOCATED ADJACENT TO A DRAINAGE STRUCTURE AND THE PIPE FROM THE STRUCTURE INTERFERES WITH THE 1'-6" DEPTH, THE DEPTH OF THE CURTAIN WALL MAY BE REDUCED BELOW 1'-6" TO CLEAR THE TOP OF THE PIPE.



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SHEET 1 OF 1

FLEXIBLE OR ISLAND RIGID FOR USE WITH

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NOTE:

REFER TO PLAN SHEET AND/OR TYPICAL SECTIONS FOR PROPER BARRIER ORIENTATION.

*THE 2" DIMENSION FROM FINISH GRADE TO THE BASE IS A MINIMUM DIMENSION. REFER TO PLAN TYPICAL SECTIONS AND PAVEMENT SCHEDULE TO DETERMINE KEY-IN DEPTH.

GENERAL NOTES:

CONSTRUCT CONCRETE BARRIER OF CLASS 'AA' CONCRETE. (SEE STANDARD SPECIFICATIONS SECTION 854).

CONSTRUCT EXPANSION AND CONTRACTION JOINTS AS SHOWN ON SHEET 2.

SEAL EXPANSION JOINTS WITH JOINT FILLER AND JOINT SEALER. (SEE STANDARD SPECIFICATIONS SECTION 1028).

SUBMIT ALTERNATIVE METHODS FOR STEEL FABRICATION PLACEMENT FOR REVIEW.

ARRIER FOR Ω **1** DRAWING CONCRETE ∞ŏ н н н STANDARD н н FACED н YPES ROADWAY DOUBLE

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STEEL PLACEMENT FOR CAST-IN-PLACE OR SLIP-FORM CONCRETE BARRIER

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SUBMIT ALTERNATIVE METHODS FOR STEEL FABRICATION TO THE ENGINEER.

CONSTRUCT EXPANSION AND CONTRACTION JOINTS AS SHOWN ON SHEET 2.

CONSTRUCT CONCRETE BARRIER OF CLASS 'AA' CONCRETE. (SEE STANDARD SPECIFICATIONS SECTION 854).

SEAL ALL EXPANSION JOINTS WITH JOINT FILLER AND JOINT SEALER. (SEE STANDARD SPECIFICATIONS SECTION 1028).

GENERAL NOTES :

SEE INSET "A" ON SHEET 2

31/2

*THE 2" OR 5" DIMENSION FROM FINSIH GRADE TO THE BASE IS A MINIMUM DIMENSION. REFER TO PLAN TYPICAL SECTIONS AND PAVEMENT SCHEDULE TO DETERMINE KEY-IN DEPTH.

NOTE: REFER TO PLAN SHEET AND/OR TYPICAL SECTIONS FOR PROPER BARRIER ORIENTATION.



8″

3¹/₂" TO 4³/₄"

BARRIER STANDARD DRAWING FOR Τ2 CONCRETE AND Ξ FACED ТҮРЕ ROADWAY DOUBLE

SHEET 1 OF 4

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4³⁄₄" TO 7¹⁄₄"

8″

31⁄2″







NOTES:

- EVENLY SPACE HORIZONTAL REBAR 8"±1" UNLESS OTHERWISE NOTED 1.
- 2. USE #5 BAR FOR HORIZONTAL STEEL AND #5 BAR FOR THE VERTICAL CAGE.
- SUBMIT CHANGES IN STEEL PLACEMENT OR SIZE TO THE ENGINEER З.
- USE SPLICE LENGTHS EQUAL TO 20 TIMES THE DIAMETER OF THE BAR 4.
- REFER TO PLAN TYPICAL SECTIONS AND PAVEMENT SCHEDULE TO DETERMINE * DIMENSIONS SHOWN ARE BASED ON A MIN. KEY-IN DEPTH. KEY-IN DEPTH.

STEEL PLACEMENT FOR CAST-IN-PLACE OR SLIP-FORM CONCRETE BARRIER

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PROPOSED STEEL SPACING FOR SINGLE SLOPE

APPLICABLE TO ENDS ONLY



4" CONDUIT PASSAGEWAY IF APPLICABLE

1" MIN. OR EQUIVALENT FOR LATERAL SUPPORT

- 1. USE CLASS "AA" CONCRETE.
- 2. MAINTAIN 2" OF COVER OVER ALL REBAR. CHAMFER TOP AND ENDS OF BARRIER ${
 m y_2}$ INCH.
- 3. USE BAR SPLICE LENGTHS A MINIMUM OF 20 TIMES THE NORMAL DIAMETER OF THE BAR. ANY METHOD DEVISED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER THAT WILL ASSURE THE LONGITUDINAL ROADWAY STEEL WILL BE POSITIONED +/ 1/2 INCH AS DIMENSIONED WILL BE SATISFACTORY.

WELDED WIRE FABRIC MAY BE USED AS AN OPTION TO CONVENTIONAL REINFORCMENT FOR CAST-IN-PLACE BARRIER. WELDED WIRE FABRIC SHALL BE MADE IN ACCORDANCE WITH ASTM A497.

CONDUIT TO BE PROVIDED ONLY WHEN CALLED FOR ELSEWHERE IN THE PLANS.

POSITION OF THE CONDUIT OR CONDUIT PASSAGEWAY MAY BE ADJUSTED TO FACILITATE CONSTRUCTION, SUBJECT TO APPROVAL BY THE ENGINEER.

4. REFER TO ROADWAY STANDARD DRAWING NO. 854.01 FOR EXPANSION AND CONTRACTION JOINT, FILLER AND OTHER SPECIFICATIONS.







BARRIER	DIMENSIONS (IN.)										
(IN.)	А	В	D	Е	F	G	к	М	Ν	0	Ρ
48″	48	26% ₂	15	24	33	42	17½	40	84	31½	5
52″	54	28 ⁹ ⁄16	16 ¹ ⁄2	27	371⁄2	48	191⁄2	46	96	34 ³ ⁄4	6



BARRIER FOR DRAWING CONCRETE STANDARD SLOPE ROADWAY INGLE

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SHEET 1 OF 1 854.07

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DIVISION OF RALEIGH,

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NOTE:

1) THIS DRAWING IS NOT INTENDED TO SHOW TYPICAL BARRIER AND GUARDRAIL INSTALLATION.

IT DETAILS POSSIBLE BARRIER AND STRUCTURE ANCHOR COMBINATIONS FOR THIS TYPE FACILITY.

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2) USE TRAILING END GUARDRAIL IF WARRANTED















NOTES FOR 4 BOLT HOLD DOWN PLATE

USE A $14^{\prime\prime}$ Hold down plate and 4 - $78^{\prime\prime}$ dia. Bolts with nuts and washers for guardrail anchor assembly.

USE HOLD-DOWN PLATE WHICH CONFORMS TO AASHTO M270 GRADE 36. AFTER FABRICATION, HOT DIP GALVANIZE THE HOLD-DOWN PLATE IN ACCORDANCE WITH AASHTO M111.

AFTER INSTALLATION, BURR THE EXPOSED THREAD OF THE BOLT.

FORM OR DRILL THE 11/4" DIA. HOLES WITH A CORE BIT IMPACT TOOLS WILL NOT BE PERMITTED. REPAIR ANY CONCRETE DAMAGED BY THIS WORK TO THE SATISFACTION OF THE ENGINEER.

BARRIER FOR CONCRETE DRAWING FACED ш STANDARD SINGL REINFORCED = 41 ROADWAY PRECAST

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NOTE SPECIAL LAYER OF PAVEMENT

USE 3'-11/2" POST SPACING ON THE 50' OF GUARDRAIL PARALLEL TO LANES AND 6'-3" POST SPACING ON 15:1 TRANSITION SECTIONS. GRADE MEDIAN IN THE VICINITY OF THE SIGN SUPPORT AS ILLUSTRATED IN THE ROADWAY STANDARD DRAWINGS (STARDARD 862.01 SHEET 1 OF 15).





GUARDRAIL

SHEET 2 OF15 862.01

ROADWAY

DETAIL OF GUARDRAIL AT MEDIAN SIGN SUPPORT



- MINOR VARIATION TO THE 25'-0" DIMENSION IS PERMISSIBLE TO ACCOMODATE THE 12'-6" IN NOTES: * GUARDRAIL LENGTHS.
 - ** NO GUARDRAIL IS REQUIRED ON THE TRAILING END WHEN THIS DISTANCE EXCEEDS CLEAR ROADSIDE RECOVERY AREA FOR THE APPROPRIATE DESIGN SPEED.

*** REFER TO THE AASHTO ROADSIDE DESIGN GUIDE FOR APPLICATION OF NON-STANDARD FLARE RATES.

USE FLARE RATE AS THE CONTROL IF THE "N1" DISTANCE IS NOT OBTAINED. ("N1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

FOR POSTED SPEEDS \geq 45mph USE GREU TYPE TL-3 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

THE DESIGN LAYOUT FOR LENGTHS SHOWN ON THIS STANDARD ARE MINIMUM DESIGN LENGTHS.

SEE SHEET 1 OF 15 FOR SECTIONS XX, YY

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

	-L2-			
MEDIAN WIDTH	DIM.			
30'	80.0′			
36′	60.0'			
40' & ABOVE	40.0′			

DETAIL OF GUARDRAIL APPROACHING DUAL LANE BRIDGES

FOR **PLACEMENT** DRAWING STANDARD GUARDRAIL ROADWAY

SHEET 3 OF 15

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* USE FLARE RATE AS THE CONTROL IF THE $"N_1"$ DISTANCE IS NOT OBTAINED. ("N1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

SHEET 4 OF 15

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STANDARD GUARDRAIL PLACEMENT AT BRIDGES WITH 2'-6" CONCRETE CURB AND GUTTER

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SHEET 6 OF 15 862.01



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2



SHEET 7 OF15 862.01










FLEXIBLE PAVED SHOULDER

CONCRETE PAVED SHOULDER

EARTH MATERIAL

NOTES:

WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE.THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL THE HOLE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL AND TAMP HOLES USING THE EXCAVATED MATERIAL.

★ FOR POSTED SPEEDS ≤ 60 MPH



8' GUARDRAIL POST ON 2:1 SLOPE *

FOR **PLACEMENT** DRAWING STANDARD GUARDRAIL ROADWAY

SHEET 11 OF 15 862.01

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DRAWING NOT TO SCALE

-24 STATE OF NORTH CAROLINA DEPT OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. PAY LIMITS PAY LIMITS NOTE: STANDARD GUARDRAIL TERMINAL SECTION, TYPE BURIED IN CUT (BIC) 12'-6" 1. SEE DETAIL SHEET 2 OF 2 FOR OTHER DETAILS. 12'-6" LENGTH OF NEED 25' 2 STEEL POSTS SHOWN. SEE DETAIL B SEE DETAIL 3.TYPICAL POST SPACING IS 6'-3" UNLESS OTHERWISE NOTED. 75' D-2 В 🔫 A 🔫 DITCH BOTTOM FIELD BEND TABL 4 10 12 22 20 18 16 6 SEE 11 13 EDGE OF SHOULDER -24 DEP. POST OFFSETS FROM EDGE OF SHOULDER -C 🔫 A٠ В ◄ D 🔫 POST DISTANCE PLAN 13'-113⁄4 1 4 10'-11' 8'-10¹/4 6 MID-SPAN SPLICE (TYP.) TOP OF CUT 10 69″ 24 22 20 16 12 10 18 14 2 FOR 8 W6 x 9 OR OFFSET BLOCK W6 x 8.5 STEEL POST ACEMENT END UNIT DRAWING SEE NOTE 3 371/2 12 GA. W-BEAM, 9'-41/2" SPAN ELEVATION 371/2 5⁄8" x 5" BOLT -8'-0" MIN. POST LENGTH WHEN RUBRAIL IS REQUIRED WASHER FEE 75 CUT ٦ STANDARD = = = PIPE SLEEVE SPACER 5∕8″ x 2″ GUARDRAIL GUARDRAIL BOLT AND NUT IN FIELD DRILL 34" DIA. HOLE IN POST 12 GA. W-BEAM, 9'-41/2" SPAN BURIED DETAIL B DETAIL A ROADWAY 7/AVX/AVY WOOD BLOCK -WOOD BLOCK -WOOD BLOCK VARIES SHOULDER SHOULDER SHOULDER SHOULDER VARIES 31 RURBRAIL 5 31 TEEPER (TYP.) 4:1_OR 4:1 OR FLATTER 4:1 OR FLATTER FLATTER 4:1 OR FLATTER STEEL POST STEEL POST STEEL POST STEEL POST STEEL POST V DITCH (TYP.) AND BLOCK DETAIL

SECTION A-A

DRAWING NOT TO SCALE

SHEET 14 OF 15

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SHEET 15 OF 15 862.01







* WHEN INSTALLING GUARDRAIL END UNITS THAT ARE 31" MOUNTING HEIGHT TO EXISTING GUARDRAIL, REMOVE THE EXISTING GUARDRAIL TO TRANSITION FROM THE EXISTING HEIGHT TO THE PROPOSED 31" HEIGHT. SEE 862.02, SHEET 5 OF 9 FOR TRANSITION DETAILS.



APPROACH END UNITS

ROADWAY STANDARD DRAWING FOR INSTALLATION GUARDRAIL

SHEET 3 OF 9 862.02

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<u>15'-7¹/2" W-BEAM GUARDRAIL PANEL</u>

NOTE: USE 5-SPACE 15'-7½" W-BEAM GUARDRAIL PANEL AT THE DOWNSTREAM END OF AN END UNIT OR EXISTING GUARDRAIL THAT DOES NOT OFFSET THE W-BEAM PANEL SPLICE TO MIDSPAN ROADWAY STANDARD DRAWING FOR GUARDRAIL INSTALLATION

1-24 STATE OF NORTH CAROLINA DEPT OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

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NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 29", USE AN ADDITIONAL 12'-6" LONG SECTION OF GUARDRAIL, FOR EVERY 1" OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 31" GUARDRAIL.

ROADWAY STANDARD DRAWING FOR GUARDRAIL INSTALLATION

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TYPICAL GUARDRAIL AND GUARDRAIL POST ALTERNATIVES

C - FIELD PUNCHING OF HOLES INTO GUARDRAIL AS DIRECTED BY THE ENGINEER.

A - $\frac{5}{8}$ " DIA. BUTTON HEAD SPLICE BOLT $1\frac{1}{4}$ " LONG (8 REQ. PER SPLICE JOINT). B - $\frac{5}{8}$ " DIA. BUTTON HEAD BOLT $7\frac{1}{2}$ "/9" LONG WITH NUT FOR BOLTING 6"/8" ROUTED OFFSET BLOCK TO STEEL POSTS.

NOTES:



FOR INSTALLATION ROADWAY STANDARD DRAWING GUARDRAIL

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SYSTEM PARTS





ROADWAY STANDARD DRAWING FOR INSTALLATION GUARDRAIL

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ELEVATION

NOTE:

**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 111/2" IF CONCRETE BACKWALL IS NOT PRESENT.

-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB. -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).

-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.

-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



BRIDGE III FOR UNITS ТҮРЕ STANDARD DRAWING NO ANCHOR RAIL UNIT 10 ANCHOR ATTACHMENT **JNE** GUARDRAIL STRUCI ROADWAY FOR

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ELEVATION

NOTE:

**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 111/2" IF CONCRETE BACKWALL IS NOT PRESENT. -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB. -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).

-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.

-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



5 ATTACHMENT TIER FOR UNITS REGIONAL FOR STANDARD DRAWING ANCHOR III YPE SUB **IURE** BRIDGE UNIT ROADWAY ANCHOR STRUC NO RAIL GUARDRAIL SHEET 2 OF 9

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GUARDRAIL ANCHOR UNIT TYPE B-77







-USE ANCHORS GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-153. SIZE HOLES FOR THE CONCRETE ANCHORS IN ACCORDANCE WITH THE ANCHOR MANUFACTURER'S RECOMMENDATIONS. DRILL HOLES WITH A CARBIDE OR DIAMOND TIPPED MASONRY BIT POWERED BY A ROTARY OR ROTARY IMPACT DRILL. NO OTHER IMPACT TOOLS WILL BE PERMITTED. DRILL HOLES VERTICALLY. FURNISH DOCUMENTATION OF HOLE SIZE RECOMMENDED FOR THE SPECIFIED ANCHOR TO THE ENGINEER BEFORE DRILLING HOLES. THOROUGHLY CLEAN HOLES FOR ANCHORS OF ALL CONCRETE CHIPS, DUST, GREASE, OIL, ETC. BEFORE ANCHORS ARE INSTALLED. REPAIR ALL DAMAGE CAUSED BY THIS WORK TO THE SATISFACTION OF THE ENGINEER.

ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

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GUARDRAIL END SHOE SEE STD. 862.02 4′′ 4′′ E GUARDRAIL AND BOLT (+): 372 31/2 " 10,' : (+)31/2 $\mathcal{V}_8^{\prime\prime}$ BOLTS WITH — ROUND WASHERS FOR 31/2" $1\frac{1}{16}$ DIA. HOLES — FOR $\frac{7}{8}$ BOLTS (TYP.) ATTACHING GUARDRAIL (\cdot) END SHOE TO BARRIER. SEE DETAIL B FOR 1⁄4'' HOLD-DOWN PLATE 1/4" HOLD-DOWN PLATE -1¼" DIA. HOLE (TYP.) PART SECTION

4 BOLT HOLD DOWN PLATE

11"

THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE

OF

BARRIER OR RAIL

NOTES FOR 4 BOLT HOLD DOWN PLATE

 $1_{4}^{\prime\prime}$ HOLD DOWN PLATE AND 4 - $7_{8}^{\prime\prime}$ DIA. BOLTS WITH NUTS AND WASHERS. FOR GUARDRAIL ANCHOR ASSEMBLY USE

USE HOLD-DOWN PLATE THAT CONFORMS TO AASHTO M270 GRADE 36. AFTER FABRICATION, HOT-DIP GALVANIZE THE HOLD-DOWN PLATE IN ACCORDANCE WITH AASHTO M111.

AFTER INSTALLATION, BURR THE EXPOSED THREAD OF THE BOLT WITH A SHARP POINTED TOOL. FORM OR DRILL THE 1¼" DIA. HOLES WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. REPAIR ANY CONCRETE DAMAGED BY THIS WORK TO THE SATISFACTION OF THE ENGINEER.

GUARDRAIL ANCHOR UNITS STANDARD DRAWING FOR ЧO B-83 END AND ANCHORING ROADWAY B-77 FOR

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DIMENSIONS FOR LENGTH OF GUARDRAIL APPROACHING DUAL LANE BRIDGES								
MEDIAN WIDTH	-L-*					-L2-		
	70 MPH	60 MPH	50 MPH				DIM.	
46' & ABOVE	300.0'	250.0'	150.0′				40.0′	

NOTES: * BASED ON "X" OF 12'

USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1A).

"N"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

THE DESIGN LAYOUT FOR LENGTHS SHOWN ON THIS STANDARD ARE MINIMUM DESIGN LENGTHS.

SEE STANDARD 862.01 SHEET 1 FOR SECTIONS XX, YY

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

DETAIL OF CABLE GUIDERAIL AT DUAL LANE BRIDGES

LAYOUT FOR STANDARD DRAWING GUIDERAIL GUIDERAIL BRIDGES CABLE ROADWAY LANE DUAL

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46' MEDIAN GUIDERAIL TRANSITIONS WITH SUPERELEVATION AND/OR FALSE SUMPS

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BREAKAWAY ANCHOR ANGLE

FOR ROADWAY STANDARD DRAWING GUIDERAIL ANCHOR DETAILS CABLE

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GENERAL NOTES:

- 1. PROVIDE ALL S3x5.7 ROLLED STEEL SECTIONS IN ACCORDANCE WITH ASTM A-6. USE POSTS, PLATES AND ANCHOR ANGLES CONFORMING TO THE REQUIREMENTS OF SECTION 862 OF THE STANDARD SPECIFICATIONS. WELD IN ACCORDANCE TO AWS D1.1 STRUCTURAL WELDING CODE - STEEL. WHERE THE RAIL IS PARALLEL TO THE EDGE OF THE TRAVEL LANE, REFLECTORIZE EVERY 6th POST (96') (SEE STANDARD 1261.02 FOR DELINEATORS). FOR DOUBLE FACE GUIDERAIL, PLACE DELINEATOR VISIBLE ON EVERY 6th POST TO TRAFFIC IN EITHER DIRECTION. DO NOT REFLECTORIZE POSTS IN THE TYPICAL INTERMEDIATE ANCHORAGE SECTION, TYPICAL APPROACH OR TERMINAL SECTIONS.
- 2. PROVIDE ROUND 3/4" DIAMETER ZINC COATED CABLE WIRE CONSTRUCTED OF THREE STRANDS (7 WIRES PER STRAND) HAVING A MINIMUM TENSILE STRENGTH OF 25000 LBS. IN ACCORDANCE WITH AASHTO M-30 TYPE I CABLE. CLASS 'A' COATING.
- 3. PROVIDE MATERIALS INDICATED AS 'CAST STEEL' WHICH CONFORM TO AASHTO M103.
- 4. PROVIDE INSTALLED HOOK BOLTS WHICH DEVELOP AN ULTIMATE PULL OPEN STRENGTH OF 500 LBS TO 1000 LBS. APPLIED IN A DIRECTION NORMAL TO THE LONGITUDINAL AXIS OF THE POST.
- 5. DESIGN ALL FITTINGS, INCLUDING SPLICES, TO USE THE CABLE WEDGE AND DEVELOP THE FULL STRENGTH OF THE $\frac{3}{4}$ " CABLE. HOT DIP GALVANIZE ALL FITTINGS, EXCEPT THE CABLE WEDGE, ACCORDANCE WITH AASHTO M-30.
- 6. CRIMP ONE WIRE OF THE WIRE ROPE OVER THE BASE OF THE WEDGE TO HOLD IT FIRMLY IN PLACE AT ALL LOCATIONS WHERE THE CABLE IS CONNECTED TO A CABLE SPLICE CONNECTION.
- 7. DESIGNS FOR A COMBINATION OR SINGLE UNIT COMPENSATING DEVICE AND TURNBUCKLE ASSEMBLY MAY BE SUMBITTED FOR APPROVAL. COMPENSATING DEVICES MUST HAVE A SPRING RATE OF 450 LBS. PLUS OR MINUS 50 LBS. PER INCH WITH A MINIMUM TOTAL 'THROW' OF 6".
- 8. APPLY THE FOLLOWING CRITERIA FOR ARRANGEMENT OF SPRING CABLE END ASSEMBLIES (COMPENSATING DEVICES) AND TURNBUCKLE CABLE END ASSEMBLIES:

LENGTH OF CABLE RUNS:

TO 1000' - USE COMPENSATING DEVICE ON ONE END AND TURNBUCKLE ON THE OTHER END OF EACH INDIVIDUAL CABLE.

1000' TO 2000' - USE COMPENSATING DEVICE ON EACH END OF EACH CABLE.

OVER 2000' - START NEW STRETCH BY INTERLACING AT LAST PARALLEL POST (TYPICAL LAYOUT).

PRIOR TO FINAL ACCEPTANCE BY THE STATE, USE THE FOLLOWING VALUES TO TIGHTEN THE TURNBUCKLES BASED ON THE TEMPERATURE AT THE TIME OF ADJUSTMENT.

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PAVEMENT	ିତ୍ CURVATURE	POST SPACING	
8° OR LESS MORE THAN 8° TO 13° (440 FT. RAD.)		ESS 16' AN 8° TO 13° 12' . RAD.)	
	TEMPERATURE (FAHRENHEIT)	SPRING COMPRESSION FROM UNLOADED POSITION IN EACH SPRING	1-24 ST/ NORTH DEPT. OF T DIVISION RALEI
	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	$ \begin{array}{c} 1''\\ 1\frac{1}{4}''\\ 1\frac{1}{2}''\\ 1\frac{3}{4}''\\ 2^{1}{2}''\\ 2\frac{3}{4}''\\ 3^{1}{4}''\\ 3\frac{1}{2}''\\ 3\frac{3}{4}''\\ 4^{1}{4}'' \end{array} $	VDARD DRAWING FOR GUIDERAIL NOTES
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ROADWAY

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ALLOWABLE COMPONENTS FOR FENCE SYSTEMS

FOR 4' AND 5' FENCE SYSTEMS

FOR 6' FENCE SYSTEMS

FABRIC	GALV. STEEL OR ALUMINUM COATED STEEL #11 GAGE			ALUMINUM ALLOY OR ALUMINUM COATED STEEL(#11 GAGE)	
FRAME COMPONENTS	GALVANIZED STEEL #11 GAGE			ALUMINUM ALLOY	
SYSTEM	G1	G2	G3	A1	A2
LINE POST	1.90″ O.D. STEEL PIPE	1.625″X 1.875″ STEEL H	1.625" X 1.875" STEEL R.F.	2.375″ O.D. ALUMINUM PIPE	2.00″ X 2.50″ ALUMINUM PIPE
TERMINAL POST (END, CORNER, BRACES)	2.375″O.D. STEEL PIPE	2.375″ O.D. STEEL PIPE	2.375″O.D. STEEL PIPE	2.875″ O.D. ALUMINUM PIPE	2.875″ O.D. ALUMINUM PIPE
GATE POST UP THRU 6' LEAF	2.875″ O.D. STEEL PIPE	2.875″ O.D. STEEL PIPE	2.875″O.D. STEEL PIPE	2.875″ O.D. ALUMINUM PIPE	2.875″ O.D. ALUMINUM PIPE
GATE POST 7' THRU 12' LEAF	4.000″ O.D. STEEL PIPE	4.000″ O.D. STEEL PIPE	4.000″ O.D. STEEL PIPE	4.000″ O.D. ALUMINUM PIPE	4.000″ O.D. ALUMINUM PIPE
BRACE RAIL	1.660″ O.D. STEEL PIPE	1.660″ O.D. STEEL PIPE	1.250" X 1.625" STEEL R.F. OR 1.660" O.D. STEEL PIPE	1.660″ O.D. ALUMINUM PIPE	1.660″ O.D. ALUMINUM PIPE

FABRIC	GALV. STEEL OR ALUMINUM COATED STEEL #11 GAGE					
FRAME COMPONENTS		GALVANIZED STEEL				
SYSTEM	G1	G2	G3			
LINE POST	2.375″ O.D. STEEL PIPE	1.625″X 1.875″ STEEL H	1.625" X 1.875" STEEL R.F.			
TERMINAL POST (END, CORNER, BRACES)	2.875″O.D. STEEL PIPE	2.875″ O.D. STEEL PIPE	2.875″O.D. STEEL PIPE			
GATE POST UP THRU 6' LEAF	2.875″ O.D. STEEL PIPE	2.875″ O.D. STEEL PIPE	2.875″O.D. STEEL PIPE			
GATE POST 7' THRU 12' LEAF	4.000″ O.D. STEEL PIPE	4.000″ O.D. STEEL PIPE	4.000″O.D. STEEL PIPE			
BRACE RAIL	1.660″ O.D. STEEL PIPE	1.660″ O.D. STEEL PIPE	1.250" X 1.625" STEEL R.F. OR 1.660" O.D. STEEL PIPE			

** "H" IS THE HEIGHT OF FENCE. SEE PAY ITEM DESCRIPTION FOR REQ'D HEIGHT FOR PROJECT.



-1⁵∕8″→ 17/8 34

BRACE RAIL (ROLL FORMED)

LINE POST (ROLL FORMED)

ROLL FORMED LINE POST MAY BE DRIVEN TO A MINIMUM OF 3'-O" IN LIEU OF CONCRETE ANCHOR, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

FOR FENCE DRAWING FENCE HIGH INK STANDARD **`**0 _ AND CHAIN Ω ROADWAY 4

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ERECT LINE BRACES BETWEEN END, CORNER OR GATE POSTS AT INTERVALS NOT EXCEEDING 324 FEET. THIS MAXIMUM INTERVAL MAY BE REDUCED BY THE ENGINEER ON CURVES WHERE THE DEGREE OF CURVATURE IS GREATER THAN 3 DEGREES. PLACE LINE BRACES AT THE END OF EACH ROLL OR PIECE OF WOVEN WIRE.

> 4"x4" HORIZONTAL TOP BRACE 4 PT. BARBED WIRE - 5' _#9 WIRE TWISTED #9 WIRE SPACING 6 TWISTED È GROUND LINE 2 è BRACE POSTS

LINE BRACES (MAXIMUM SPACING 324')

PLACE THE BRACE WIRE AROUND THE POST. DRAW WIRE TAUT BY TWISTING BETWEEN EACH POST. THIS APPLIES TO ALL BRACE WIRES. NOTCH POSTS FOR BRACES. PLACE TWO GALVANIZED 12d OR THREE GALVANIZED 10d ON ALL BRACES AT EACH END.



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POST FOR BLOCKING DRIVEWAYS OR OTHER ENTRANCES

INSTALL IN ADDITION TO FENCE WHERE

SHOWN IN PLANS OR WHERE DIRECTED BY THE ENGINEER

FENCE DRAWING POST WIRE MOOD STANDARD MITH WOVEN ROADWAY

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USE LATCH DEVICE APPROVED BY THE ENGINEER. HINGE ASSEMBLY, AS DETAILED, IS SUGGESTED. SUBSTITUTION MAY BE MADE SUBJECT TO APPROVAL BY THE ENGINEER. USE $13_8''$ DIAMETER GALVANIZED STEEL PIPE GATE FRAME EXCEPT AS SHOWN HERE.

FOR FENCE DRAWING POST WIRE MOOD STANDARD WITH WOVEN ROADWAY

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SUGGESTED. SUBSTITUTION MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.









GATE

GENERAL NOTES:

ELEVATION

OF GATE

POST

FOR 12[']

MIN

6" F0 8 12 GATE

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5″

1'-6"

ALL POSTS AND BRACES MAY BE EITHER ROUND OR SQUARE AT THE OPTION OF THE CONTRACTOR, PROVIDED THE SAME TYPE IS USED THROUGHOUT THE PROJECT.

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STANDARD DRAWING

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WIRE MOOD

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POSTS

WITH

DIMENSIONS SHOWN ARE THE DIAMETER OF ROUND OR EDGE DIMENSIONS OF SQUARE POSTS AND BRACES.

ERECT LINE BRACES BETWEEN END, CORNER OR GATE POSTS. PLACE LINE BRACES AT INTERVALS NOT EXCEEDING 330' AND AT THE END OF THE BARBED WIRE ROLL.

THE 330' INTERVAL MAY BE REDUCED BY THE ENGINEER ON CURVES WHERE THE DEGREE OF CURVATURE IS GREATER THAN 3 DEGREES.

NOTCH BRACE POSTS 1" MINIMUM FOR HORIZONTAL BRACES. PLACE TWO GALVANIZED 12d OR THREE GALVANIZED 10d NAILS AT EACH END OF ALL BRACES.

PLACE THE BRACE WIRE AROUND THE POST. DRAW ALL BRACE WIRE TAUT BY TWISTING BETWEEN EACH POST.

INSTALL THE FENCE FACING THE PROPERTY OWNER EXCEPT THAT ON HORIZONTAL CURVES GREATER THAN THREE DEGREES (3°) INSTALL THE FENCE TO PULL AGAINST ALL POSTS. SEE STD. 866.02 FOR FENCING AT DITCH CROSSINGS, BREAKS IN GRADES AND R/W BREAKS.

USE LATCH DEVICE APPROVED BY THE ENGINEER. HINGE ASSEMBLY AS SHOWN IS SUGGESTED. SUBSTITUTION MAY BE SUBJECT TO APPROVAL BY THE ENGINEER. USE 13/8" DIAMETER GALVANIZED STEEL PIPE FOR GATE FRAME EXCEPT AS SHOWN HERE

ANY COMBINATION OF GATE AND FENCE TYPE MEETING THE APPROVAL OF THE ENGINEER IS ACCEPTABLE AND IS NOT LIMITED TO THE EXAMPLES SHOWN HEREON.

<u>aadd) aacao</u> 5⁄8' BOLT HINGE (2 REQUIRED)

CURVED TO FIT DIAMETER OF FRAME CURVED TO FIT DIAMETER OF BOLT HINGE

> HINGE CLAMP (2 REQUIRED)

HINGE ASSEMBLY





NOTES: VINYL COATED GLARE SCREEN

- 1. USE CHAIN LINK FABRIC 48" WIDE, $\frac{1}{2}$ " MESH, 11 $\frac{1}{2}$ GA. HOT DIPPED GALVANIZED STEEL WIRE VINYL COATED SHERWOOD GREEN.
- 2. USE END (BRACE) POST, LINE POST AND BRACE RAIL GALVANIZED STEEL PIPE VINYL COATED SHERWOOD GREEN.
- 3. USE FITTINGS AND OTHER APPURTENANCES ALUMINUM ALLOY, GALVANIZED PRESSED STEEL, MALLEABLE OR CAST STEEL VINYL COATED SHERWOOD GREEN. PAINTED FITTINGS ARE NOT ACCEPTABLE.
- 4. USE TENSION WIRE GALVANIZED STEEL ASTM A752 GRADE 1335 OR 5140 VINYL COATED SHERWOOD GREEN.
- 5. USE HOG RINGS 9 GA. AND VINYL COATED SHERWOOD GREEN.
- 6. USE TIRE WIRE 9 GA. GALVANIZED STEEL WIRE VINYL COATED SHERWOOD GREEN.



NOTES: GALVANIZED GLARE SCREEN

- 2. USE END (BRACE) POST, LINE POST AND BRACE RAIL GALVANIZED STEEL PIPE.
- 3. USE FITTINGS AND OTHER APPURTENANCES GALVANIZED PRESSED STEEL, MALLEABLE OR CAST STEEL.
- 4. USE TENSION WIRE GALVANIZED STEEL ASTM A752 GRADE 1335 OR 5140.
- 5. USE HOG RINGS 9 GA.
- 6. USE TIRE WIRE 9 GA. GALVANIZED STEEL WIRE.

ROADWAY STANDARD DRAWING FOR GLARE SCREEN CHAIN LINK FABRIC-GUARDRAIL MOUNTED

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EMBED CHAIN LINK FENCE 11" INTO PROPOSED WALL IN A SLEEVE OR BLOCKOUT WITH EPOXY OR CONCRETE GROUT ANCHORING SYSTEM. PRE-MEASURE AND CENTER THE PROPOSED FENCE ON TOP OF WALL FOR POST SPACINGS. IF DRILLING THE HOLES FOR POSTS, USE A ROTARY DRILL TO DRILL HOLES IN THE CONCRETE. NO IMPACT DRILLS WILL BE ALLOWED, TO ELIMINATE ANY POSSIBILITY OF STRUCTURAL DAMAGES TO THE PROPOSED WALL. ROADWAY STANDARD DRAWING FOR CHAIN LINK FENCE ON RETAINING WALL

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LINE BRACES

PLACE THE BRACE WIRE AROUND THE POST. DRAW THE WIRE TAUT BY TWISTING BETWEEN EACH POST. THIS APPLIES TO ALL BRACE WIRES.



DETAIL SHOWING METHOD OF CONSTRUCTING FENCE ON SHARP BREAK IN GRADE

NOTES:

CAPS ARE REQUIRED ON PIPE POST. CAPS ARE NOT REQUIRED ON "H" POST OR ROLL FORMED POST. INSTALL FENCE FABRIC ON THE SIDE FARTHEST FROM THE HIGHWAY EXCEPT THAT ON HORIZONTAL CURVES GREATER THAN THREE DEGREES, INSTALL THE FENCE TO PULL AGAINST LINE POST. CONSIDER ALL CHANGES IN DIRECTION OF FENCE LINE OF 30° OR MORE AS CORNERS.



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FENCE

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SOILS LINK

ROCKY

CHAIN

WITH FOR



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DITCH OR CHANNEL WITH CLASS I OR CLASS II RIP RAP ("W" < 6.0FT)



GENERAL NOTES:

- 1. USE RIP-RAP IN CHANNEL BED WHERE SHOWN ON PLANS
- 2. IF BEDROCK IS ENCOUNTERED WITHIN THE LIMITS OF THE TOEWALL, BEGIN TOEWALL ON THE BEDROCK OR AS DIRECTED BY THE ENGINEER.
- 3. WHERE ONLY ONE SIDE REQUIRES RIP-RAP, LIST STATION AND SIDE OF SAME.
- 4. SEE 876.04 FOR DITCH OR CHANNEL WITH CLASS B RIP-RAP.

A MIN. OF 1FT (TYP)

DITCH OR CHANNEL WITH CLASS I OR CLASS II RIP RAP*



CLASS I		
*″W″	″X″	
6′-10′	12″	
11'-20'	18″	

CLASS II		
*″W″	"X"	
ALL	36″	

*FOR "V" DITCH "W" IS O'

LONGITUDINAL SECTION A-A, B-B OR C-C

DITCHES FOR STANDARD DRAWING AND **CHANNELS** NI ROADWAY RAP RIP

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GENERAL NOTES:

-USE CLASS 'A' RIP RAP.

-CONSTRUCT WIDTH AND SHAPE OF THE DITCHES AS SHOWN OR DIRECTED BY THE ENGINEER.

-USE GEOTEXTILE UNDER CLASS 'A' RIP RAP IF SPECIFIED ON PLANS.

-KEY-IN RIP-RAP

*AS SPECIFIED ON PLANS.



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DITCHES WITH

DRAINAGE

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V.C. ROADWAY DITCH 12′

GENERAL NOTES:

-USE CLASS 'B' RIP RAP.

-CONSTRUCT WIDTH AND SHAPE OF THE DITCHES AS SHOWN OR DIRECTED BY THE ENGINEER.

-USE GEOTEXTILE UNDER CLASS 'B' RIP RAP IF SPECIFIED ON PLANS.

-KEY-IN RIP-RAP

*AS SPECIFIED ON PLANS.

