

NOTES

DESIGN CRITERIA:

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7th EDITION, 2014.

THE ALUMINUM ASSOCIATION, ALUMINUM DESIGN MANUAL 2015 (FOR SUPPLEMENTAL ALUMINUM DESIGN INFORMATION ONLY).

DESIGN LOADS:

DEAD LOAD: SELF-WEIGHT = 200 LBS/FT, WHICH INCLUDES 9" TALL CURB AND CONCRETE POSTS.

LIVE LOADS :

POST AND BASE PLATE = 450 LBS/FT TRANSVERSE POINT LOAD AT TOP RAIL CONNECTION.

TOP, INTERMEDIATE AND BOTTOM RAILS =

50 LB./FT. UNIFORM LOAD APPLIED SIMULTANEOUSLY VERTICALLY AND TRANSVERSELY AND 200 LB. CONCENTRATED POINT LOAD APPLIED AT ANY POINT AND IN ANY DIRECTION TO PRODUCE MAXIMUM STRESS AND DEFLECTION.

PICKETS = CONCENTRATED 200 LB. LOAD APPLIED TRANSVERSELY OVER AN AREA OF 1.0 SF.

ALUMINUM RAILS AND POSTS:

STRUCTURAL EXTRUSIONS, TUBE, PIPE AND BAR SHALL BE IN ACCORDANCE WITH TABLE 1 AND ASTM B221 OR ASTM B429.

POSTS SHALL BE FABRICATED AND INSTALLED PLUMB, ± 1" TOLERANCE WHEN MEASURED AT 3'-9" ABOVE THE CURB. AT ALL LOCATIONS, THE MAXIMUM ON CENTER SPACING BETWEEN ALUMINUM POSTS SHALL BE 5'-0" (MEASURED HORIZONTAL). PICKETS SHALL BE FABRICATED PARALLEL TO THE POSTS AND SHALL BE SPACED 6 1/2" ON CENTER.

THE RAILING SHALL BE FABRICATED AND INSTALLED PLUMB LONGITUDINALLY AND VERTICAL TRANSVERSELY. THE TOP, INTERMEDIATE AND BOTTOM RAIL SHALL RUN PARALLEL TO THE TOP OF THE CURB THROUGHOUT THE LENGTH OF BRIDGE. THE TOP OF THE TOP RAIL SHALL BE AT A CONSTANT DISTANCE OF 3'-9" FROM TOP OF CURB.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAIN VISIBLE AFTER RAIL PLACEMENT.

CONCRETE POSTS:

CONCRETE SHALL BE CLASS AA IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. CONCRETE POSTS SHALL BE INSTALLED PLUMB. THE MAXIMUM SPACING BETWEEN AN ALUMINUM POST AND A CONCRETE POST SHALL BE 5'-0" (MEASURED HORIZONTAL).

BASE PLATES, STIFFENER, FILLER PLATES, RAIL AND SLEEVE CAPS:

BASE PLATES, STIFFENER PLATES, FILLER PLATES, SLEEVE CAP PLATES AND ALL RAIL CAP PLATES SHALL BE IN ACCORDANCE WITH ASTM B209, ALLOY 6061-T6.

SHIM PLATES:

SHIM PLATES SHALL BE ALUMINUM IN ACCORDANCE WITH ASTM B209, ALLOY 6061 OR 6063. SHIM PLATES SHALL BE USED FOR FOUNDATION HEIGHT ADJUSTMENTS GREATER THAN 1/4" AND LOCALIZED IRREGULARITIES GREATER THAN 3/4". FIELD TRIM SHIM PLATES WHEN NECESSARY TO MATCH THE CONTOURS OF THE FOUNDATION.

BEVELED SHIM PLATES MAY BE USED IN LIEU OF TRIMMED FLAT SHIM PLATES SHOWN. STACKED SHIM PLATES MUST BE BONDED TOGETHER WITH ADHESIVE BONDING MATERIAL AND LIMITED TO A MAXIMUM TOTAL THICKNESS OF 1/2", UNLESS LONGER ANCHOR BOLTS ARE PROVIDED FOR THE EXPOSED THREAD LENGTH.

ANCHOR BOLTS:

ANCHOR BOLTS SHALL BE IN ACCORDANCE WITH ASTM F1554 GRADE 36 AND GALVANIZED. HEADLESS ANCHOR BOLTS FOR ADHESIVE ANCHORS SHALL BE THREADED FULL LENGTH AND GALVANIZED. "U" BARS SHALL BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID CONFLICTS WITH DRILLED HOLE INSTALLATION FOR POST-INSTALLED ANCHORAGE. EXPANSION ANCHORS ARE NOT PERMITTED. ALL ANCHOR BOLTS SHALL HAVE SINGLE SELF-LOCKING HEX NUTS. TACK WELDING OF THE NUT TO THE ANCHOR BOLT MAY BE USED IN LIEU OF SELF-LOCKING NUTS. ALL NUTS SHALL BE IN ACCORDANCE WITH ASTM A563 OR ASTM A194. FLAT WASHERS SHALL BE IN ACCORDANCE WITH ASTM F436 AND PLATE WASHERS (FOR LONG SLOTTED HOLES ONLY), SHALL BE IN ACCORDANCE WITH ASTM A36 OR ASTM A709 GRADE 36. AFTER THE NUTS HAVE BEEN SNUG TIGHTENED, THE ANCHOR BOLT THREADS SHALL BE DISTORTED TO PREVENT REMOVAL OF THE NUTS. DISTORTED THREADS AND TACK WELDS SHALL BE COATED WITH AN APPROVED GALVANIZING REPAIR MATERIAL IN ACCORDANCE WITH SECTION 1076-7 OF THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL INSTALL ANCHOR BOLTS PERPENDICULAR TO BASE PLATE WITH FLAT WASHERS.

CONCRETE CURB:

CONCRETE SHALL BE CLASS AA IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. CONSTRUCT CONCRETE CURB PLUMB WITH THE TOP SURFACE FINISHED LEVEL TRANSVERSELY. SEE POST SPACING SHEETS AND CURB EXPANSION JOINT DETAIL ON SHEET 6 OF 13. 3/4" V-GROOVES SHALL BE INSTALLED IN BOTH FACES AND TOP OF CONCRETE CURB AT A MAXIMUM SPACING OF 30'-0".

JOINTS:

ALL WELDED JOINTS ARE TO BE GROUND SMOOTH.

WELDING:

ALL WELDING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE (ALUMINUM) ANSI/AWS D1.2 (CURRENT EDITION). FILLER METAL SHALL BE EITHER ER5183, ER5356 OR ER5556. NONDESTRUCTIVE TESTING OF WELDS IS NOT REQUIRED. FILLER METAL FOR PLUG WELDS AND BEND SPLICES MAY BE ER4043.

ANODIZING:

ALUMINUM FOR POSTS, BASES, RAILS, EXPANSION BARS, CLAMP BARS, RIVETS, CAPS, SHIMS, ATTACHMENT BRACKETS AND HOLD-DOWN PLATES (ETC.) SHALL BE ANODIZED. THE COLOR SHALL BE DETERMINED BY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE A SAMPLE TO THE ENGINEER FOR COORDINATION WITH THE TOWN OF SURF CITY.

AFTER A COLOR HAS BEEN SELECTED FOR THE RAILING, THE CONTRACTOR SHALL SUBMIT A SAMPLE OF COMPATIBLE EXTERIOR ACRYLIC HOUSE PAINT TO THE ENGINEER. THIS PAINT SHALL MATCH THE ANODIZED RAIL COLOR AS CLOSELY AS POSSIBLE. AFTER ERECTION OF THE ANODIZED RAILING, ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS, CAP SCREWS, BOLTS AND BUILT-UP ANGLES SHALL BE COATED WITH TWO COATS OF THIS ACRYLIC PAINT.

ANY DAMAGE TO THE ANODIZED SURFACE OF THE RAIL OR COMPONENTS DURING THE CONSTRUCTION SHALL BE REPAIRED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AT THE DIRECTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.

WORKING DRAWINGS:

DETAILS ADDRESSING PROJECT SPECIFIC GEOMETRY (LINE & GRADE) SHOWING POST AND EXPANSION JOINT LOCATIONS, ANCHOR BOLT INSTALLATION DETAILS, MUST BE SUBMITTED BY THE CONTRACTOR FOR THE ENGINEER'S REVIEW AND APPROVAL PRIOR TO FABRICATION OF THE RAILING. WORKING DRAWINGS SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

FOR ADDITIONAL REQUIREMENTS REFER TO SECTIONS 460 AND 1074-5 OF THE STANDARD SPECIFICATIONS.

THE COST OF THE PEDESTRIAN RAILING SYSTEM, INCLUDING CURB AND POSTS WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF PEDESTRIAN RAILING.

PAY LENGTH = $\frac{3813.16 \text{ LIN.FT. } \textcircled{1}}{\textcircled{1}}$
 INCLUDES PEDESTRIAN RAILING MOUNTED ON END BENT BACKWALL AND RETAINING WALLS.

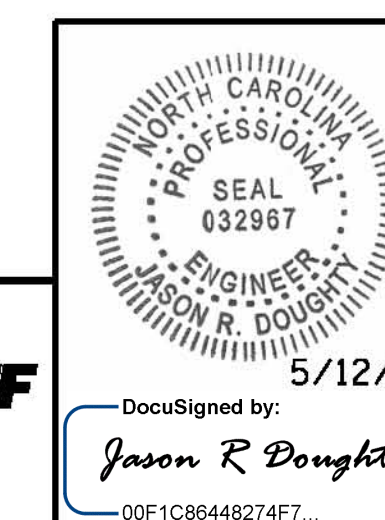
PROJECT NO. B-4929
PENDER COUNTY
 STATION: 38+13.81 -L2-

SHEET 1 OF 13

MEMBER	ALLOY (1)	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS
POSTS	6061-T6	RT 2x2x.250	2.00" x 2.00"	0.250"
TOP RAIL	6061-T6	2 1/2" NPS (SCH. 10)	2.875"	0.120"
TOP RAIL JOINT SLEEVES	6063-T5	2.50 OD x 0.125 WALL	2.500"	0.125"
INTERMEDIATE AND BOTTOM RAIL	6061-T6	RT 2x2x.250	2.00" x 2.00"	0.250"
INT. AND BOTTOM RAIL POST CONNECTION SLEEVE	6063-T5	1.50 OD x 0.125 WALL	1.500"	0.125"
PICKETS	6061-T6	3/4" Ø ROUND BAR	0.750"	N/A

(1) ALLOY 6061-T6 OR 6063-T52 AND T6 MAY BE SUBSTITUTED FOR ALLOY 6063-T5.

PARSONS BRINCKERHOFF
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
 LICENSE NO. F-0165



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PEDESTRIAN RAILING
 NOTES

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.

S-119
 TOTAL SHEETS 278

DESIGNED BY: JRD / EMD DATE: OCT 2015
 DRAWN BY: K. WHITE DATE: OCT 2015
 CHECKED BY: J. SHERMAN DATE: JAN 2016
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: MAY 2016

5/10/2016 400.235_B4929_SMU_PED01.dgn