

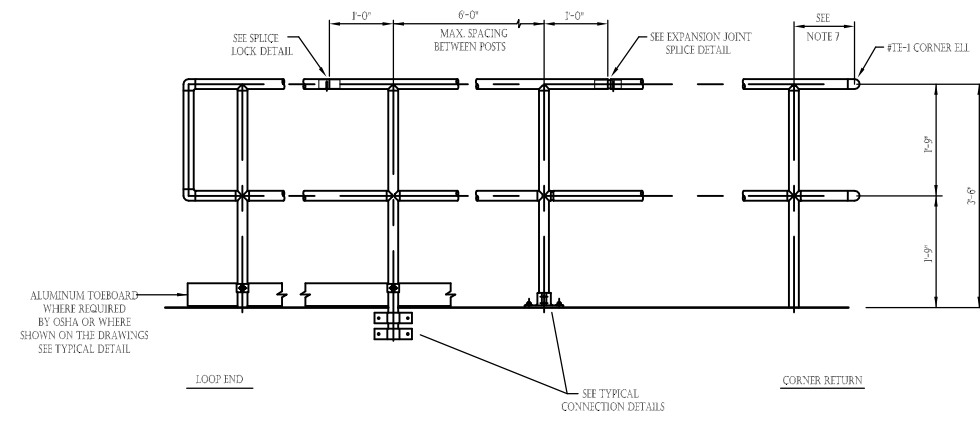
OSHA GUARDRAIL

OSHA SUGGESTED DESIGN SPECIFICATIONS

- Guardrails and Handrails shall be the product of a company normally engaged in the manufacture of pipe railing. Railing shall be shop assembled in lengths not to exceed 24 feet for field erection.
- The handrail shall be made of pipes joined together with component fittings. Samples of all components, bases, toe plate and pipe shall be submitted for approval at the request of the engineer. Components that are pop-riveted or glued at the joints will not be acceptable. All components must be mechanically fastened with stainless steel hardware. Handrail and components shall be TUFFAL, as manufactured by Thompson Fabricating, LLC (Birmingham, Alabama) or an approved equal.
- Railings shall be 1 1/2" Schedule 40 aluminum pipe alloy 6105-T5, ASTM-B-429 or ASTM-B-221. Posts shall be 1 1/2" Schedule 40 aluminum pipe of the same alloy. Post spacing shall be a maximum of 6'-0".
- Guardrails and Handrails shall be designed to withstand a 200 lb concentrated load applied in any direction and at any point on the top rail.
- The manufacturer shall submit calculations for approval at the request of the Engineer. Testing of base castings or base extrusions by an independent lab or manufacturer's lab (if manufacturer's lab meets the requirements of the Aluminum Association) will be an acceptable substitute for calculations. Calculations will be required for approval of all other design aspects.
- Posts shall not interrupt the continuation of the top rail at any point along the railing, including corners and end terminations (OSHA 1910.23). The top surface of the top railing shall be smooth and shall not be interrupted by projected fittings.
- The mid-rail at a corner return shall be able to withstand a 200 lb load without loosening. The manufacturer is to determine this dimension for their system and provide physical laboratory tests to confirm compliance.
- Concrete anchors shall be stainless steel type 303 or 304 wedge anchors and shall be furnished by the handrail manufacturer. The anchor design shall include the appropriate reduction factors for spacing and edge distances in accordance with the manufacturer's published data.
- Toe plate shall conform to OSHA standards. Toe plate shall be a minimum of 4" high and shall be an extrusion that attaches to the posts with clamps that will allow for expansion and contraction between posts. Toe plates shall be set 1/4" above the walking surface. Toe plates shall be provided on handrails as required by OSHA. Toe plates shall be shipped loose in stock lengths for field installation.
- Openings in the railing shall be guarded by a self-closing gate (OSHA 1910.23).
- Finish shall be Aluminum Association M10-C22-A41 (215-R1). The pipe shall be plastic-wrapped. The plastic wrap is to be removed after erection.
- Aluminum surfaces in contact with concrete, grout or dissimilar metals will be protected with mylar isolators or other approved material.

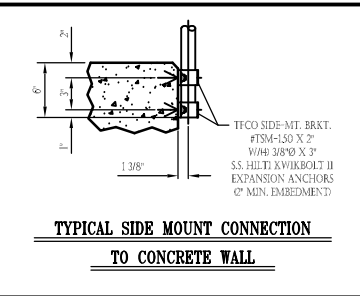
NOTE:

COMPONENT PARTS AVAILABLE FROM THE FOLLOWING OR EQUAL:
THOMPSON FABRICATING CO. INC.
P.O. BOX 170160
BIRMINGHAM, AL 35217
PH.: (205) 841-0441 (0822-FAX)

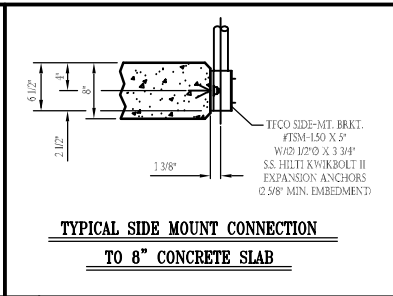


TYPICAL OSHA GUARDRAIL

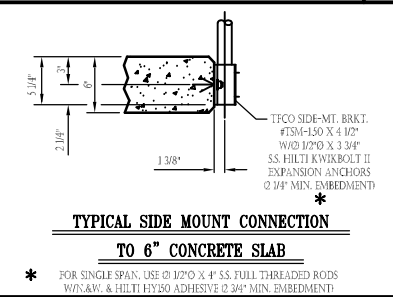
GUARDRAILS SHALL BE TOP MOUNTED OR SIDE MOUNTED AS SHOWN ON PLANS



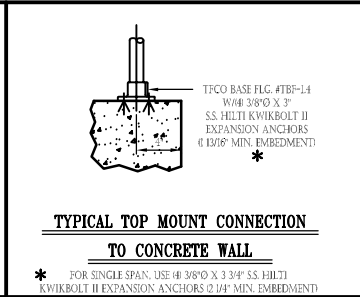
TYPICAL SIDE MOUNT CONNECTION TO CONCRETE WALL



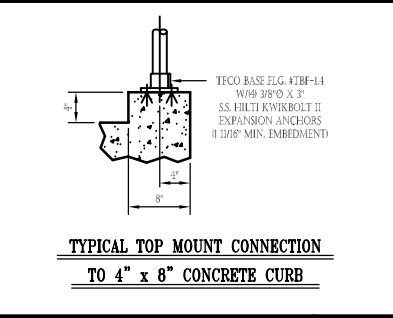
TYPICAL SIDE MOUNT CONNECTION TO 8" CONCRETE SLAB



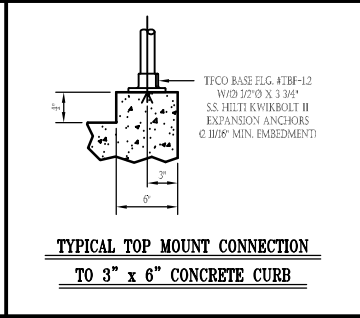
TYPICAL SIDE MOUNT CONNECTION TO 6" CONCRETE SLAB



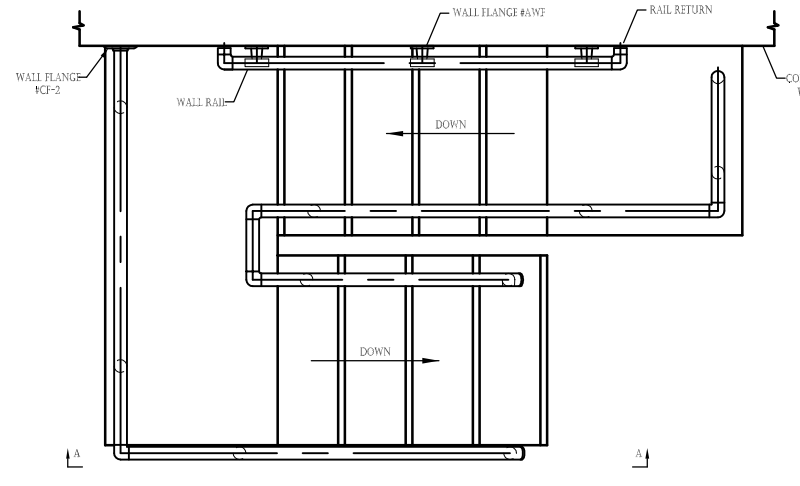
TYPICAL TOP MOUNT CONNECTION TO CONCRETE WALL



TYPICAL TOP MOUNT CONNECTION TO 4" x 8" CONCRETE CURB

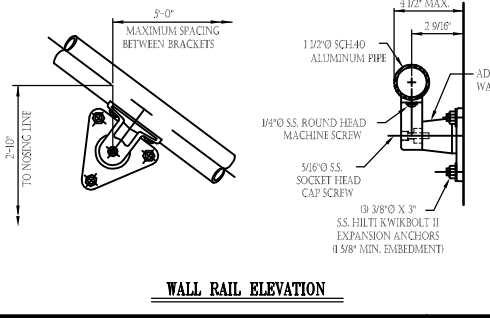


TYPICAL TOP MOUNT CONNECTION TO 3" x 6" CONCRETE CURB

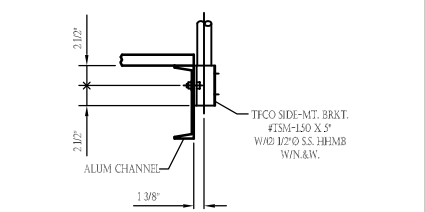


TYPICAL OSHA GUARDRAIL AND HANDRAIL AT STAIRWAYS

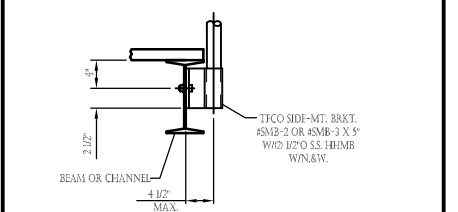
GUARDRAILS SHALL BE TOP MOUNTED OR SIDE MOUNTED AS SHOWN ON PLANS



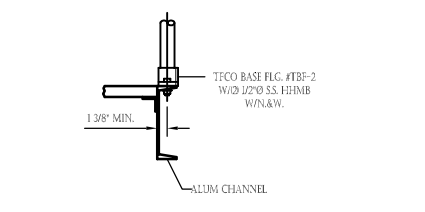
WALL RAIL ELEVATION



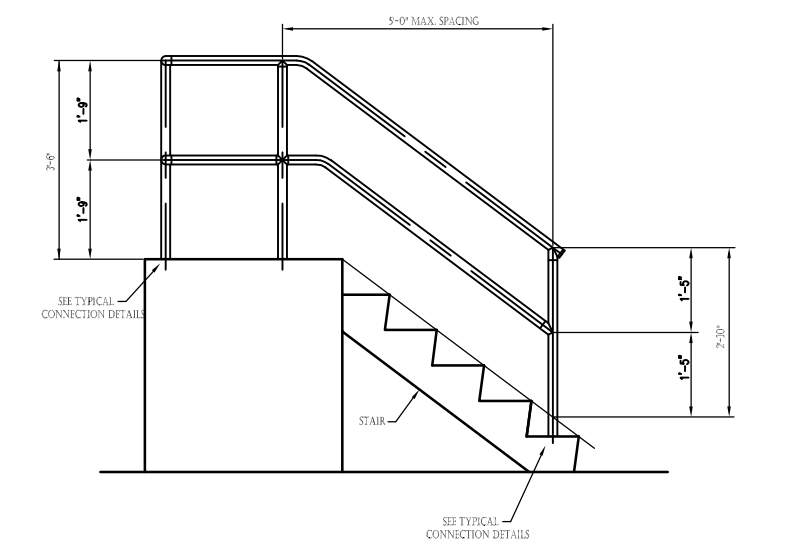
TYPICAL SIDE MOUNT CONNECTION TO CHANNEL



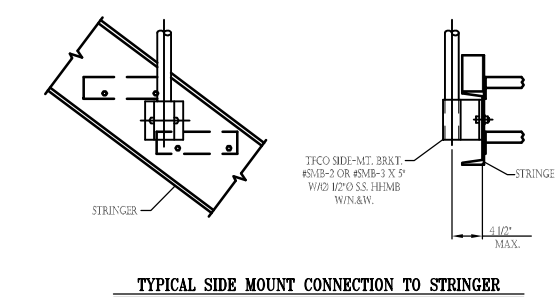
TYPICAL SIDE MOUNT CONNECTION TO BEAM



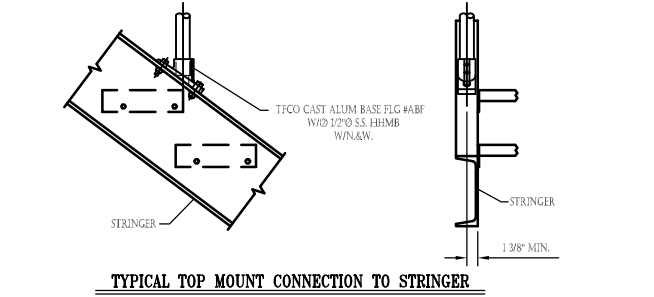
TYPICAL TOP MOUNT CONNECTION TO CHANNEL



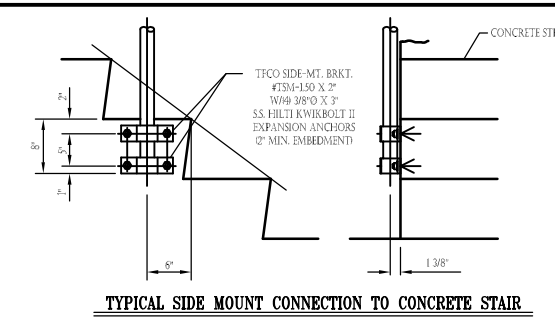
VIEW A-A



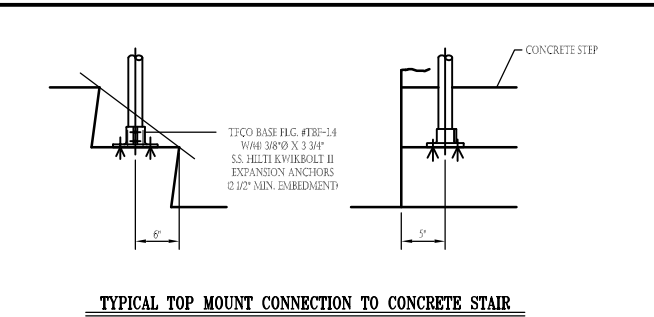
TYPICAL SIDE MOUNT CONNECTION TO STRINGER



TYPICAL TOP MOUNT CONNECTION TO STRINGER



TYPICAL SIDE MOUNT CONNECTION TO CONCRETE STAIR



TYPICAL TOP MOUNT CONNECTION TO CONCRETE STAIR

TYPICAL ALUMINUM HANDRAIL DETAILS & SPECIFICATIONS

DETAIL No.V-23

DATED 11/14/05

TYPICAL DETAILS

CITRUS COUNTY DEPARTMENT OF WATER RESOURCES UTILITIES DIVISION
 1300 S. LECANTO HWY. LECANTO, FLORIDA 34461 (352) 527-7600

NO.	DATE	REVISION	APP'D. BY
0	7/23/04	ORIGINAL ISSUE DATE	

AUTHORIZED BY: _____
 DATE: _____

REGISTERED ENGINEER NO. _____
 STATE OF FLORIDA
 DATE: _____

SCALE: _____
 DATE: _____
 PLAN SET: _____
 FILE NAME: SECXX TWPXX RCDXX
 SHEET DT-13