055200 HANDRAILS AND RAILINGS

1. General

   a. Pipe hand railing size shall be 1 1/4” IPS (1.66 O.D.).

   b. Railing system shall be fabricated to match details and shall meet OSHA standards. Provide additional intermediate rails where indicated on the drawings. Unless otherwise noted on the drawings, the top of the top rail shall be 34" above walking surface and the centerline of the second rail shall be installed 8" below the centerline of the top rail. Top railing for stairs shall not be more than 34" nor less than 30" above tread. Provide minimum 3" clearance on single pipe stairway handrails supported on brackets from a wall.

   c. Post spacing for walks and ramps shall be adequate to meet loading requirements, but shall not exceed 6'-0" o.c. maximum, or as shown on drawings. Post spacing for stairs shall be adequate to meet loading requirements, but shall not exceed 8'-0" o.c. maximum.

   d. All connections shall be continuously fillet welded and ground smooth.

   e. Posts shall not interrupt the continuation of the top rail at any point along the railing, including corners and end terminations. The top surface of the top railing shall be smooth and shall not be interrupted by projecting fittings.

   f. Provide for expansion and contraction in railings. Expansion joints must align with those in the structure to which the handrail is attached. Post spacing shall be located 1'-0" maximum to the right or left of expansion and contraction joints.

   g. Railings and connections shall be capable of withstanding a concentrated load of at least 200 pounds applied in any direction at any point on the rail.

   h. Handrail post shall be base flange mounted unless otherwise noted on the drawings. Stringer connections shall be as detailed on drawings.

   i. Design mounting flange and anchoring system to meet the loading requirements with a minimum safety factor of 4.

   j. Permanent setting in concrete shall have posts set in openings cast in concrete and set in non-shrink, expanding grout. Any damage to concrete stairs or walks shall be repaired by Contractor at no expense to the University.

   k. General Contractor to verify dimensions on site prior to fabrication.

2. Interior Handrails and Railings:

   a. Material: Aluminum or other no maintenance material. Avoid painted rails.

   b. Finish: Satin.

3. Exterior Handrails and Railings:

   a. Material: Type 304 stainless steel

   b. Finish:

      1) Stainless Steel: Bright, directional polish; No. 4 finish.

   c. All fasteners shall be stainless steel. Fasteners shall be concealed as much as design will allow.

4. Workmanship:

   a. Details and connections shall be carefully made and fitted, with special care exercised to produce a thoroughly neat appearance; make pieces in accordance with detail shop drawings; members shall be true to length so assembling may be done without fillers, except where required by details; allow no projecting edges or corners where different members are assembled; do mitering and blocking precisely.

5. Installation:

   a. Erect handrails and railings to correct lines and levels, plumb and true, in correct relation to adjoining work. Secure parts in rigid, durable manner. Provide concealed connections wherever possible.

   b. Provide anchors and inserts in sufficient number for proper fastening of stainless steel items. Embed anchors in concrete so as to accurately align metalwork at proper level.

   c. Pipe hand railing size shall be 1 1/4” IPS (1.66 O.D.).

   d. Railing system shall be fabricated to match details and shall meet the most stringent requirements of the applicable building code requirements and the ADA standards. Provide additional intermediate rails where indicated on the drawings.

   e. Post spacing for walks and ramps shall be adequate to meet loading requirements, but shall not exceed 6'-0" o.c. maximum, or as shown on drawings. Post spacing for stairs shall be adequate to meet loading requirements, but shall not exceed 8'-0" o.c. maximum.

   f. All connections shall be continuously fillet welded and ground smooth.

g. Posts shall not interrupt the continuation of the top rail at any point along the railing, including corners and end terminations. The top surface of the top railing shall be smooth and shall not be interrupted by projecting fittings.

h. Provide for expansion and contraction in railings. Expansion joints must align with those in the structure to which the handrail is attached. Post spacing shall be located 1'-0" maximum to the right or left of expansion and contraction joints.

i. Railings and connections shall be capable of withstanding a concentrated load of at least 200 pounds applied in any direction at any point on the rail.

j. Handrail post shall be base flange mounted unless otherwise noted on the drawings. Stringer connections shall be as detailed on drawings.

k. Design mounting flange and anchoring system to meet the loading requirements with a minimum safety factor of 4.

l. Permanent setting in concrete shall have posts set in openings cast in concrete and set in non-shrink, expanding grout. Any damage to concrete stairs or walks shall be repaired by Contractor at no expense to the University.

m. General Contractor to verify dimensions on site prior to fabrication.