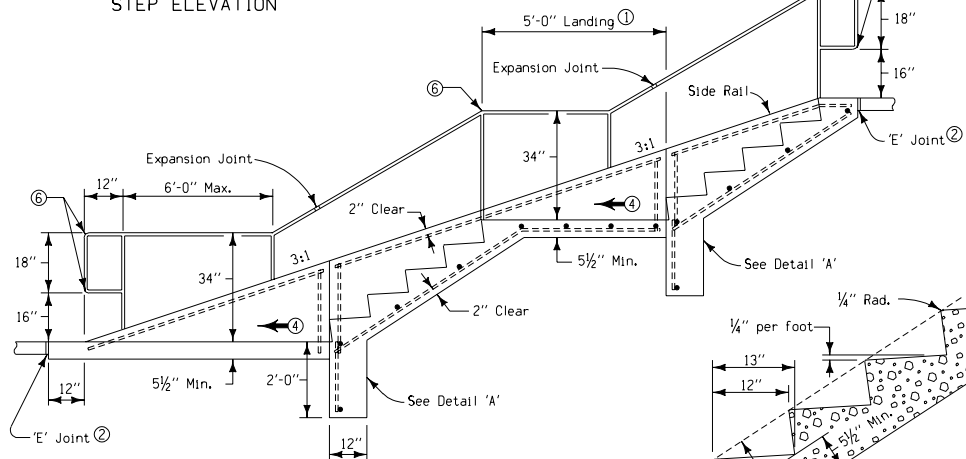
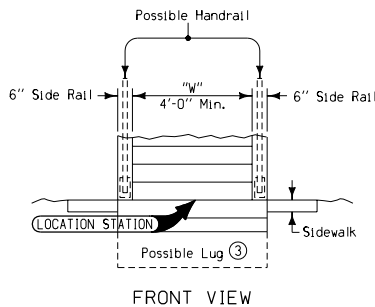


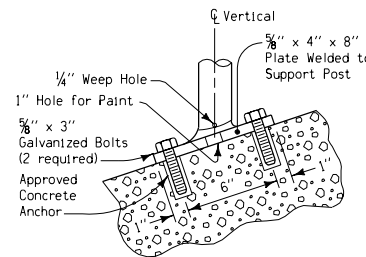
STEP ELEVATION



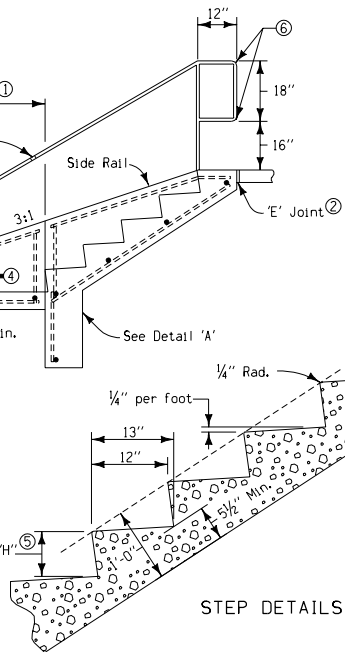
STEPS AND LANDING ELEVATION



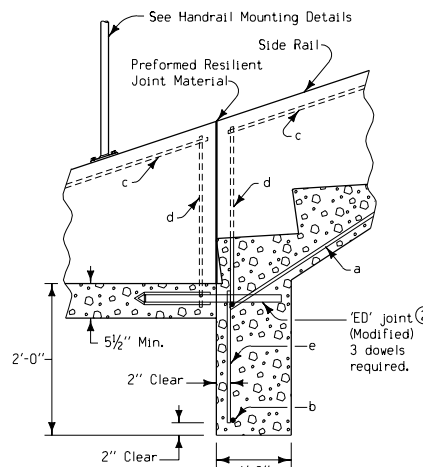
FRONT VIEW



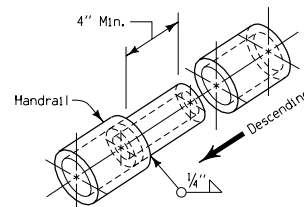
HANDRAIL MOUNTING DETAILS



STEP DETAILS



DETAIL 'A'



HANDRAIL FABRICATION AND EXPANSION JOINT DETAILS

REINFORCING SCHEDULE					
Mark	Size	Length	Spacing	No. Req.	Shape
a	#4	Varies	11"	5 (6)	—
b	#4	"W" + 8"	24" Max.	Varies	—
c	#4	Varies	Shown	4	—
d	#4	Varies	Shown	(7)	—
e	#4	20"	11"	5 (6)	—

(6) One required for each additional 1'-0" of "W" over 4'-0"
 (7) Two for each landing.

SCHEDULE FOR CONCRETE STEPS "W" = 4'-0"										
No. of Steps	1	2	3	4	5	6	7	8	9	10
Concrete (Cu. Yds.) (8)	0.4	0.6	0.9	1.2	1.5	1.8	2.2	2.5	2.9	3.3

One 5'-0" Lug = 0.3 yd.³ One 4' x 5' Landing = 0.5 yd.³
 Landing quantity excludes 13" of step tread in the calculations.
 (8) Quantities shown are computed up to the dashed line shown in 'STEP DETAILS'.

GENERAL NOTES:

Materials and methods of construction shall be in accordance with current Standard and Supplemental Specifications.

Details for construction of concrete steps and handrails shown hereon are typical only and are not intended to depict specific installations. Refer to project plans for requirements of individual locations. Alternate design details may be submitted for approval, including aluminum handrail installations.

All concrete for steps shall be Class 'C' structural concrete. All concrete shall be thoroughly tamped and spaded against forms to leave a smooth surface without honeycomb. Finish of step treads and top of side rails to be steel troweled and then brush finished with brush strokes on treads at right angles to width and on the side rails parallel to the handrail.

All reinforcing used in construction of steps shall be #4 bars placed as shown. Reinforcing is required only when four or more steps (risers) are constructed.

The price bid per cubic yard for "Steps, P.C. Concrete" shall be considered full compensation for the construction of steps including handrail and all appurtenances, excavation, backfill, and reinforcing steel, as well as all other work and materials necessary for construction described hereon.

Special Note: (Steel Handrail)

Details shown are typical. Alternate designs may be submitted for approval. Rail shall be standard 1 1/2" round black pipe with all welded connections ground smooth. Railings shall not rotate within their fittings. Railings shall be painted with one shop coat and two field coats of aluminum paint or approved equivalent. Any exposed ends of railing shall be capped. Maximum length of rail segment between support posts is 6'-0". Supports shall be evenly spaced for the length of railing required. Bolts and hardware used in construction of railing required shall be galvanized. Handrail is required on both sides when three or more steps are constructed.

Special Note: (Extra Concrete)

Landing shall be used where change in direction of steps is required or where desired for lengthy installations. In general, a maximum of 10 steps may be provided without a landing. Where more than 10 steps are required and room is available, a landing may be provided at regular intervals. Landing shall be 5'-0" maximum (including 13" of tread length) unless specified otherwise.

- ① Landing length includes 13" of step tread for overall measurement.
- ② See Standard Road Plan RH-52.
- ③ Lug, as indicated, is required only where 4 or more steps are constructed. One lug shall be required for each connecting series of steps after a landing.
- ④ 1/4" per foot.
- ⑤ "H" is 7" for slope of 3:1. "H" may range from 5 1/2" to 7 1/2" for slopes other than 3:1 so risers are equal height.
- ⑥ Edges shall be free of sharp or abrasive elements. Edges shall have a minimum radius of 1/8 inch.

Iowa Department of Transportation
Project Development Division

STANDARD ROAD PLAN **RB-1**

REVISION: Add radius dimension to Step Elevation Detail. REVISION NO. 8

APPROVED BY: *Jay C. Chubb* 11-05-99 REVISION DATE 02-11-00
 DESIGN METHODS ENGINEER

CONCRETE STEP DETAILS