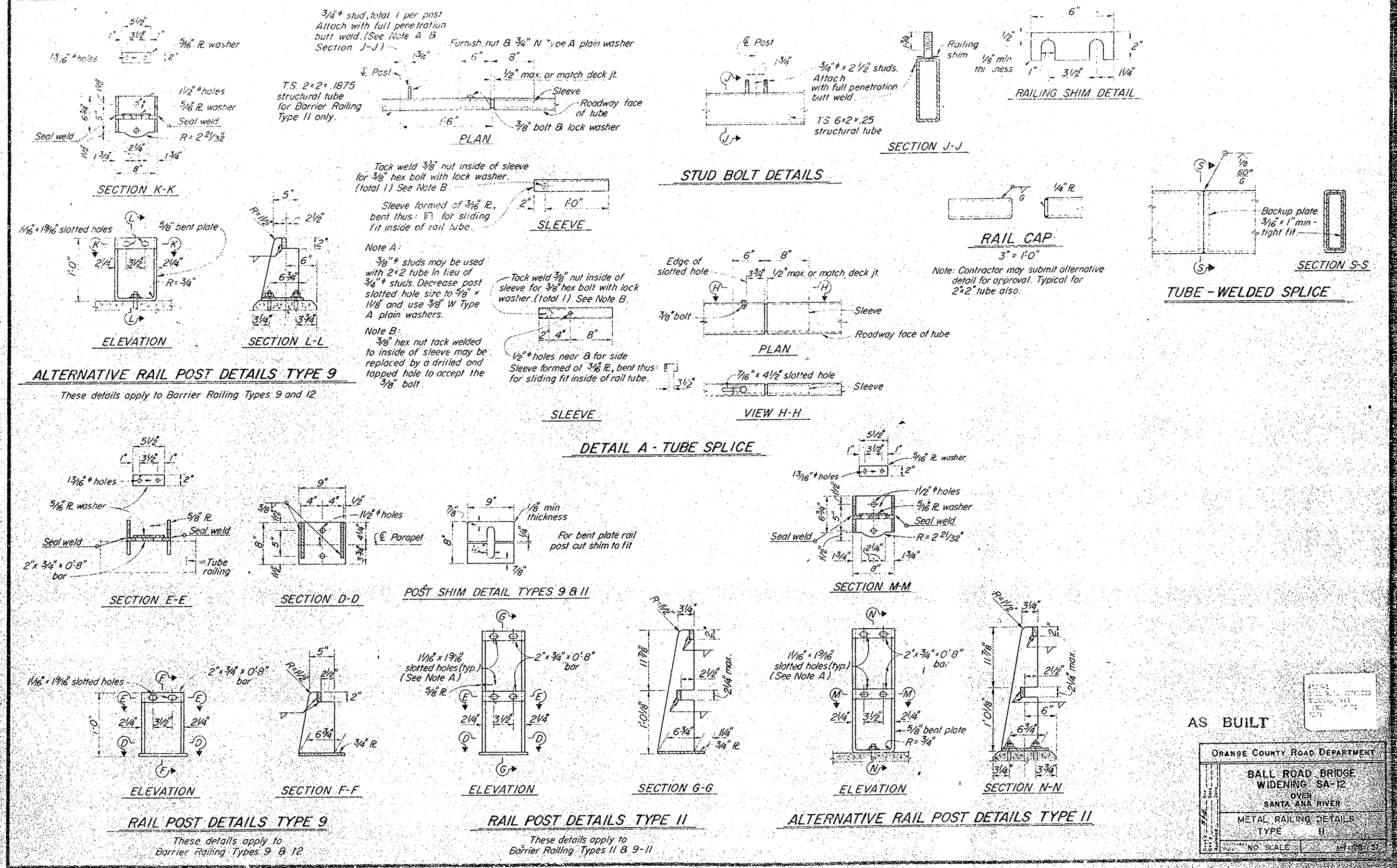
5 1/2"
1" 3 1/2" 1"
5/16" R. washer
13/16" ϕ holes
2"
1 1/2" ϕ holes
5/16" R. washer
Seal weld
R = 2 21/32"
2 1/4"
1 3/4"
8"
SECTION K-K
3/4" ϕ stud, total 1 per post
Attach with full penetration
butt weld. (See Note A &
Section J-J)
Furnish nut & 3/4" N Type A plain washer
℄ Post
1 3/4"
5"
6"
1/2" max. or match deck jt.
T.S. 2 x 2 x .1875
structural tube
for Barrier Railing
Type 11 only.
Sleeve
Roadway face
of tube
1'-6"
3/8" bolt & lock washer
PLAN
℄ Post
1 3/4"
3/4" ϕ x 2 1/2" studs.
Attach
with full penetration
butt weld.
TS 6 x 2 x .25
structural tube
SECTION J-J
STUD BOLT DETAILS
Railing
shim
6"
1/2"
2"
1/8" min
thickness
1"
3 1/2"
1 1/4"
RAILING SHIM DETAIL
Tack weld 3/8" nut inside of sleeve
for 3/8" hex bolt with lock washer.
(total 1) See Note B
Sleeve formed of 3/16" R.,
bent thus: for sliding
fit inside of rail tube.
2"
1'-0"
SLEEVE
1 1/16" x 1 9/16" slotted holes
5/8" bent plate
1'-0"
2 1/4"
3 1/2"
2 1/4"
R = 3/4"
ELEVATION
5"
R = 1 1/2"
2 1/2"
2"
6"
6 3/4"
3 1/4"
3 3/4"
SECTION L-L
ALTERNATIVE RAIL POST DETAILS TYPE 9
These details apply to Barrier Railing Types 9 and 12
Note A:
3/8" ϕ studs may be used
with 2 x 2 tube in lieu of
3/4" ϕ studs. Decrease post
slotted hole size to 3/8" x
1 1/8" and use 3/8" W Type
A plain washers.
Note B:
3/8" hex nut tack welded
to inside of sleeve may be
replaced by a drilled and
tapped hole to accept the
3/8" bolt.
Tack weld 3/8" nut inside of
sleeve for 3/8" hex bolt with lock
washer. (total 1). See Note B.
2
4"
8"
1/2" ϕ holes near & far side
Sleeve formed of 3/16" R., bent thus:
for sliding fit inside of rail tube.
3 1/2"
SLEEVE
Edge of
slotted hole
6"
8"
3 3/4"
1/2" max. or match deck jt.
H
H
3/8" bolt
Sleeve
Roadway face of tube
PLAN
7/16" x 4 1/2" slotted hole
Sleeve
VIEW H-H
DETAIL A - TUBE SPLICE
6"
1/2"
2"
1/8"
60°
G
Backup plate
3/16" x 1" min -
tight fit
SECTION S-S
TUBE - WELDED SPLICE
1/4" R.
G
RAIL CAP
3" = 1'-0"
Note: Contractor may submit alternative
detail for approval. Typical for
2" x 2" tube also.
5 1/2"
1" 3 1/2" 1"
13/16" ϕ holes
2"
5/16" R. washer
5/8" R.
Seal weld
Seal weld
2" x 3/4" x 0'-8"
bar
Tube
railing
SECTION E-E
9"
4" 4"
1/2"
1 1/2" ϕ holes
℄ Parapet
8"
5"
3/4"
4 1/4"
SECTION D-D
7/8"
9"
1/8" min
thickness
8"
1/4"
7/8"
For bent plate rail
post cut shim to fit
POST SHIM DETAIL TYPES 9 & 11
5 1/2"
1" 3 1/2" 1"
5/16" R. washer
13/16" ϕ holes
2"
1 1/2" ϕ holes
5/16" R. washer
Seal weld
Seal weld
R = 2 21/32"
2 1/4"
1 3/4"
8"
SECTION M-M
1 1/16" x 1 9/16" slotted holes
2" x 3/4" x 0'-8"
bar
1'-0"
2 1/4"
3 1/2"
2 1/4"
ELEVATION
5"
R = 1 1/2"
2 1/2"
2"
6 3/4"
3/4" R.
SECTION F-F
1 1/16" x 1 9/16"
slotted holes (typ.)
(See Note A)
5/8" R.
2" x 3/4" x 0'-8"
bar
2 1/4"
3 1/2"
2 1/4"
ELEVATION
R = 1 1/2"
3 1/4"
2"
11 7/8"
2 1/2"
2 1/4" max.
1'-01/8"
6 3/4"
1 1/4"
3/4" R.
SECTION G-G
1 1/16" x 1 9/16"
slotted holes (typ.)
(See Note A)
2" x 3/4" x 0'-8"
bar
2 1/4"
3 1/2"
2 1/4"
5/8" bent plate
R = 3/4"
ELEVATION
R = 1 1/2"
3 1/4"
2"
11 7/8"
2 1/2"
2 1/4" max.
1'-01/8"
6"
6 3/4"
3 1/4"
3 3/4"
SECTION N-N
RAIL POST DETAILS TYPE 9
These details apply to
Barrier Railing Types 9 & 12
RAIL POST DETAILS TYPE 11
These details apply to
Barrier Railing Types 11 & 9-11
ALTERNATIVE RAIL POST DETAILS TYPE 11
AS BUILT
ORANGE COUNTY ROAD DEPARTMENT
BALL ROAD BRIDGE
WIDENING SA-12
OVER
SANTA ANA RIVER
METAL RAILING DETAILS
TYPE 11
NO SCALE

DR. # 2 (12241)