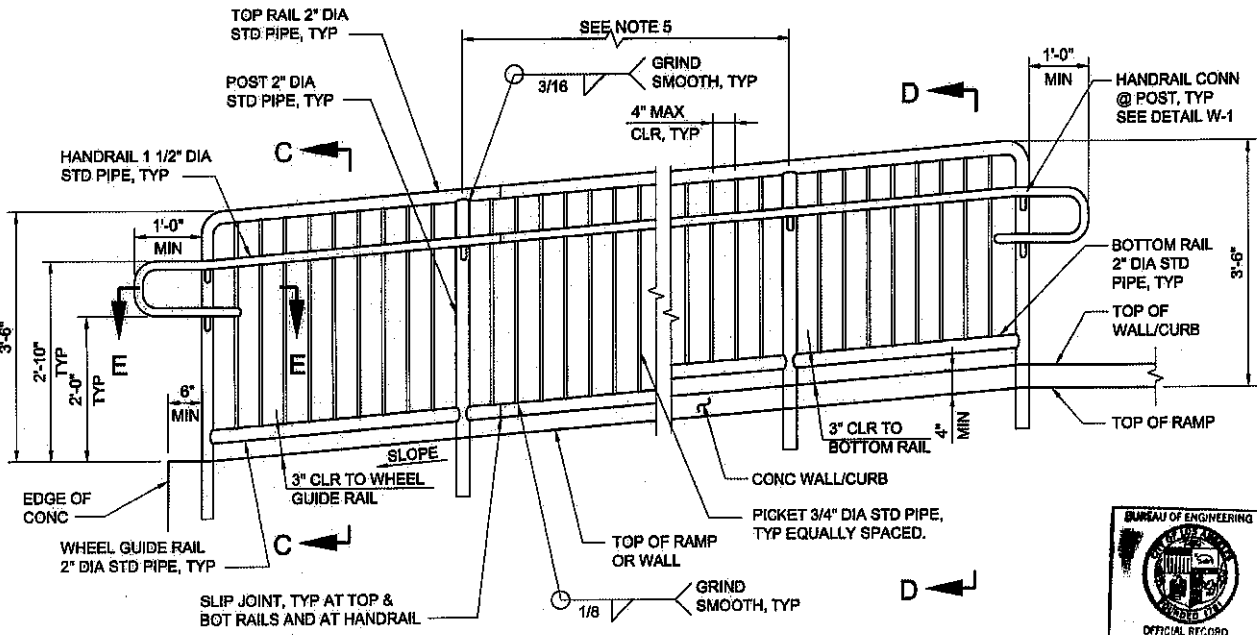


WITH WHEEL GUIDE RAIL                      WITH CONCRETE WALL/CURB

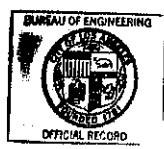
**TYPE A1 - HANDRAIL ON RAMPS LESS THAN 2'-6" ABOVE THE ADJACENT GRADE**



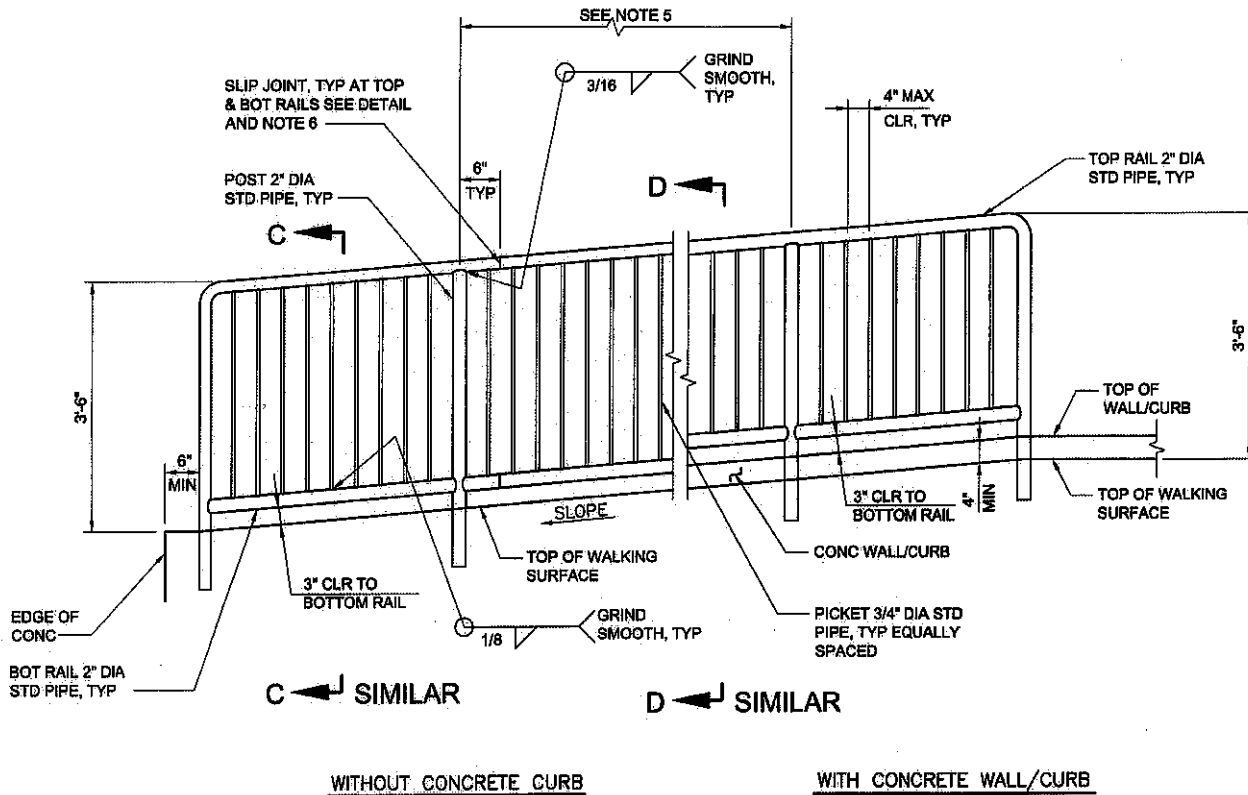
WITH WHEEL GUIDE RAIL                      WITH CONCRETE WALL/CURB

**TYPE A2 - GUARDRAIL AND HANDRAIL ON RAMPS 2'-6" OR MORE ABOVE THE ADJACENT GRADE**

**HANDRAIL AND GUARDRAIL ON RAMPS**  
(WALKING SURFACE SLOPE > 5%)



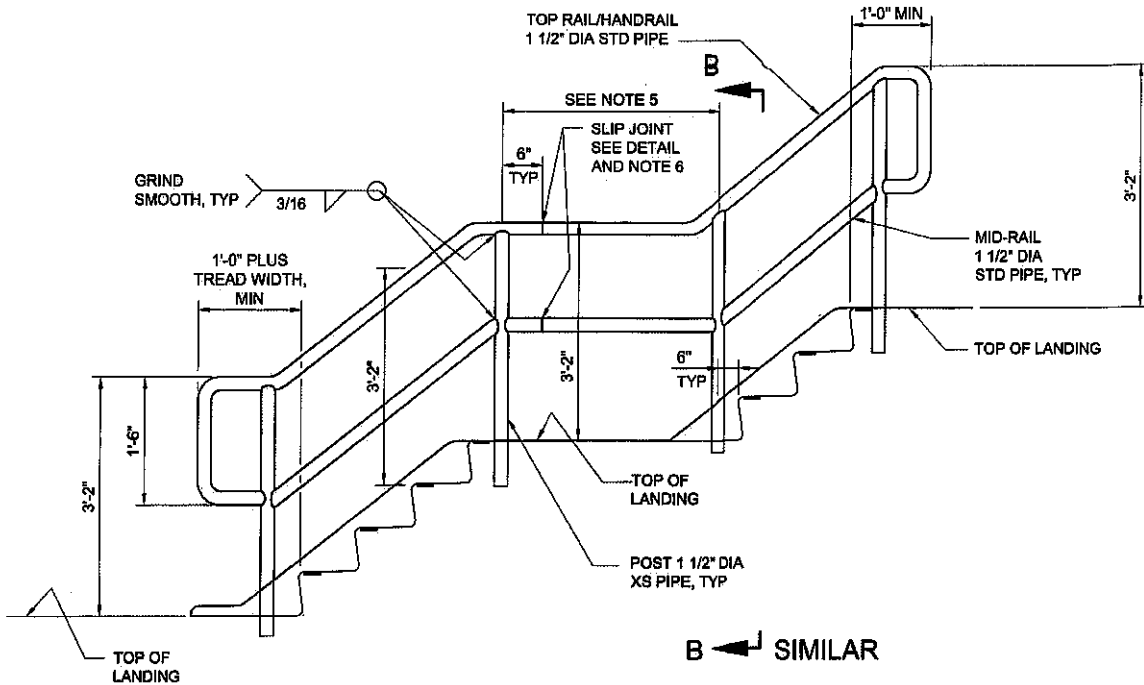
BUREAU OF ENGINEERING			DEPARTMENT OF PUBLIC WORKS			CITY OF LOS ANGELES					
<b>PEDESTRIAN PIPE GUARDRAILS &amp; HANDRAILS</b>						<b>STANDARD PLAN S-463-2</b>					
SUBMITTED <u>Jan 19</u> 2010 <i>John Park</i> <small>DESIGNER</small> <i>Harish Patel</i> <small>DEPUTY CITY ENGINEER</small>						REVISIONS		SUPERSEDES	REFERENCES		
APPROVED <u>1-20</u> 2010 <i>Gary Lee Moore</i> <small>CITY ENGINEER</small>						NO.		DATE			
DESIGNED BY						DESCRIPTION		ENGR. OF DESIGN		CITY ENGR.	
DRAWN BY											
CHECKED BY											
E.S.K.			M.C.		T.L.		B-4058      S-463-1				
						VAULT INDEX <b>B-4633</b>					
						SHEET 1 OF 4 SHEETS					



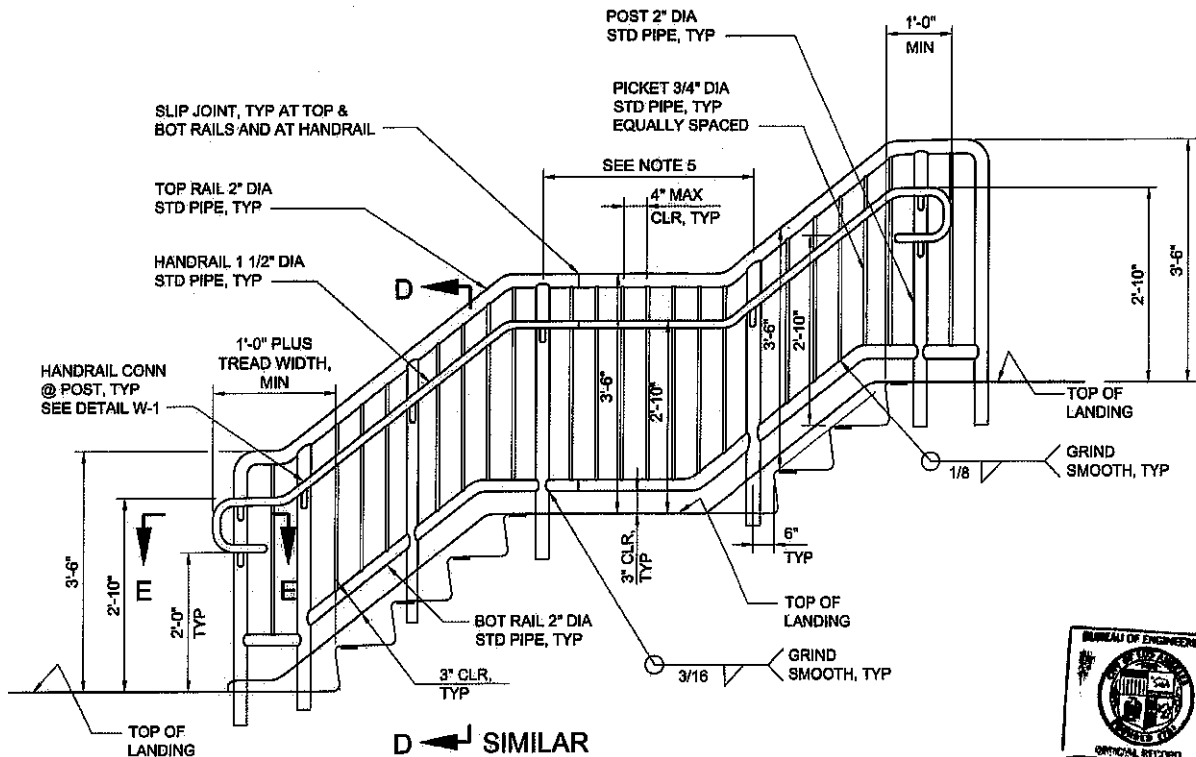
TYPE B1 - GUARDRAIL ALONG WALKWAYS 2'-6" OR MORE ABOVE THE ADJACENT GRADE



GUARDRAIL ON OPEN SIDE OF WALKWAYS  
(WALKING SURFACE SLOPE < 5%)



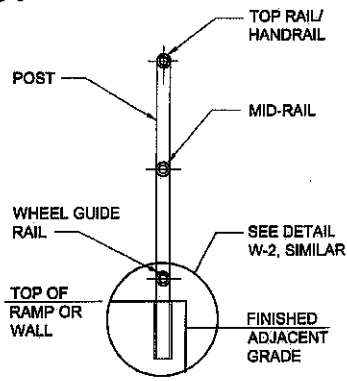
**TYPE C1 - HANDRAIL ON STAIRWAYS LESS THAN 2'-6" ABOVE THE ADJACENT GRADE**



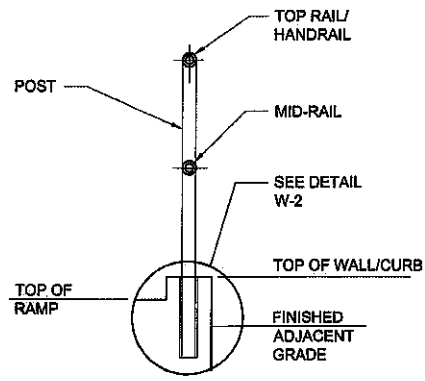
**TYPE C2 - GUARDRAIL AND HANDRAIL ON STAIRWAYS 2'-6" OR MORE ABOVE THE ADJACENT GRADE**

**HANDRAIL AND GUARDRAIL ON STAIRWAYS**

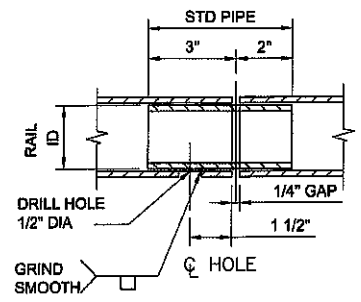




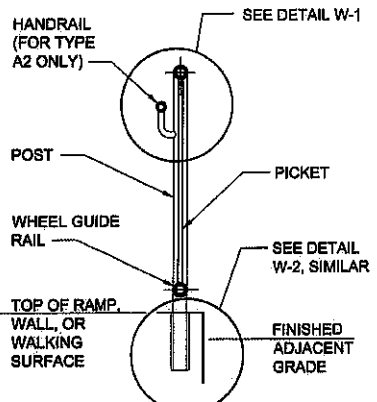
**SECTION A-A**  
NOT TO SCALE



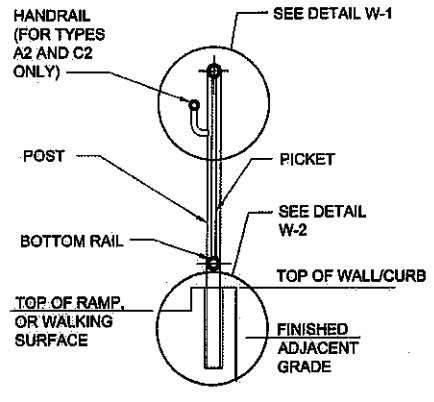
**SECTION B-B**  
NOT TO SCALE



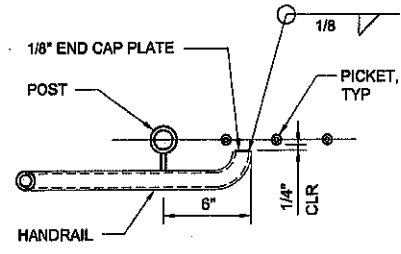
**SLIP JOINT DETAIL**  
NOT TO SCALE



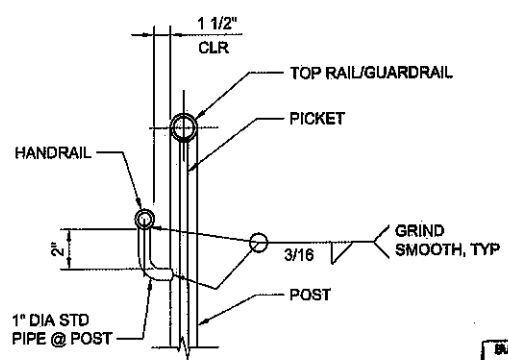
**SECTION C-C**  
NOT TO SCALE



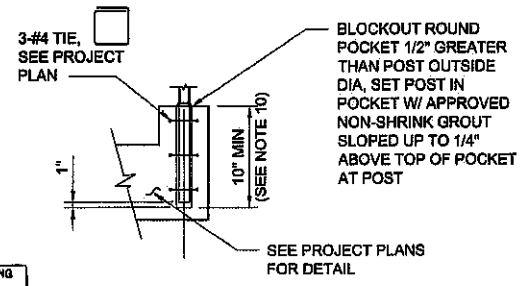
**SECTION D-D**  
NOT TO SCALE



**SECTION E-E**  
NOT TO SCALE



**DETAIL W-1**  
NOT TO SCALE



**DETAIL W-2**  
NOT TO SCALE



**NOTES:**

1. STRUCTURAL PIPES SHALL CONFORM TO ASTM A53, GRADE B (Fy=35 KSI) AND STRUCTURAL STEEL PLATE SHALL CONFORM TO ASTM A36.
2. STEEL SHALL BE FABRICATED AND ERECTED IN CONFORMANCE WITH THE LATEST AISC SPECIFICATIONS AND CODE OF STANDARD PRACTICE BY A LICENSED FABRICATOR APPROVED BY THE CITY OF LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY.
3. WELDING SHALL BE DONE BY WELDERS CERTIFIED BY THE CITY OF LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY, USING APPROVED E70XX ELECTRODES ONLY, UNO. WELDING SHALL CONFORM TO APPLICABLE AWS WELDING CODES, LATEST EDITION. ALL SHOP WELDS SHALL BE DONE IN A SHOP APPROVED BY THE CITY OF LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY. CONTINUOUS INSPECTION SHALL BE PROVIDED ON WELDS AS SPECIFIED IN THE LOS ANGELES BUILDING CODE, UNO. INSPECTION SHALL BE DONE BY A LOS ANGELES CITY LICENSED DEPUTY INSPECTOR AT THE CONTRACTOR'S EXPENSE.
4. ALL STEEL STRUCTURAL COMPONENTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
5. MAXIMUM SPACING OF POSTS SHALL BE 5 FEET ON STRAIGHT ALIGNMENTS AND 4 FEET ON CURVED ALIGNMENTS LESS THAN 30 FEET RADIUS. SPACING SHALL BE UNIFORM BETWEEN CHANGES IN ALIGNMENT.
6. PROVIDE SLIP JOINTS AT STAIRWAY AND RAMP EXPANSION JOINTS OR AT EVERY 24 FEET ON CENTER MAXIMUM.
7. ALL RAILS AND ANY ADJACENT SURFACES TO IT SHALL BE FREE OF ANY SHARP OR ABRASIVE ELEMENTS. EDGES SHALL HAVE A MINIMUM RADIUS OF 1/8 IN.
8. ALL FIELD WELDS AS REQUIRED SHALL BE GRIND SMOOTH. GALVANIZED COATING SHALL BE REPAIRED AFTER FIELD WELDING.
9. 90 DEGREE BEND RADIUS TO THE CENTER OF PIPE SHALL BE WITHIN TWO (2) TO THREE (3) TIMES OF NOMINAL DIAMETER OF THE PIPE.
10. SEE PROJECT PLANS FOR ADDITIONAL DETAILS AND REQUIREMENTS FOR POST ANCHORAGE.