

## P-RWW / G / V HANDRAIL

WITH OPTIONAL S.S. END CAPS

### PLEASE READ

PLEASE READ THESE INSTRUCTIONS THOROUGHLY PRIOR TO BEGINNING THE P-RWW / G / V HANDRAIL INSTALLATION!

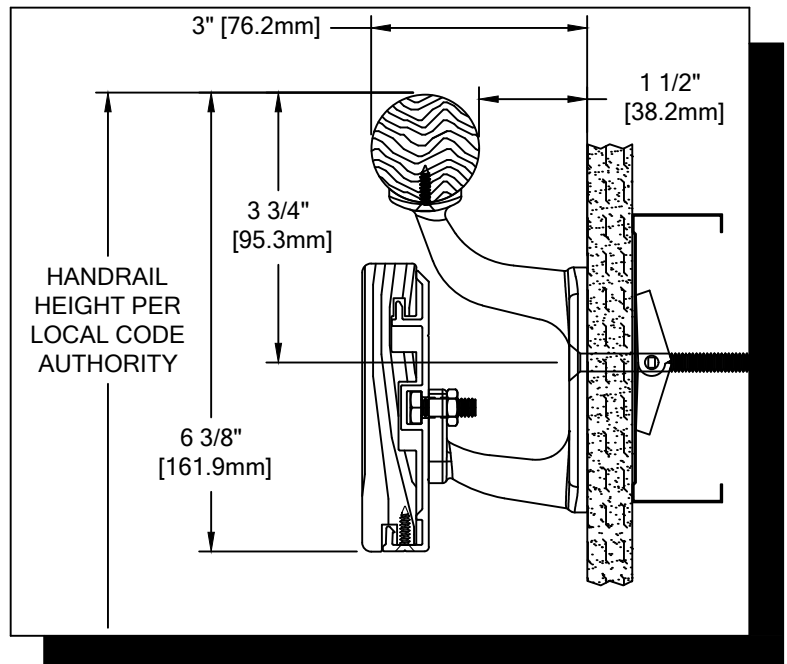
THIS INSTRUCTION SHEET IS INTENDED TO PROVIDE A SPECIFIC GUIDE TO FOLLOW FOR THE INSTALLATION OF THIS P-RWW / G / V HANDRAIL. CONTAINED WITHIN IS THE TECHNICAL INFORMATION AND INSTALLATION TECHNIQUES REQUIRED TO COMPLETE AN EFFICIENT, NEAT AND LONG-LASTING INSTALLATION.

INSPECT ALL MATERIALS FOR DAMAGE OR MISSING PARTS. IF YOU DISCOVER DAMAGED OR MISSING MATERIALS, IN THE USA PLEASE NOTIFY THE FACTORY AT (800) 233-8493, AND IN CANADA (888) 895-8955 FOR CUSTOMER SERVICE.

P-RWW / G / V HANDRAIL MUST BE INSTALLED IN ACCORDANCE WITH THESE INSTRUCTIONS! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY VOID ANY PRODUCT WARRANTIES AND RESULT IN AN UNSUCCESSFUL INSTALLATION. FOR SPECIFIC QUESTIONS REGARDING THE INSTALLATION OF THIS P-RWW / G / V HANDRAIL PLEASE CALL THE FACTORY IN THE USA AT (800) 233-8493 OR EMAIL [IWPTECHSUPPORT@C-SGROUP.COM](mailto:IWPTECHSUPPORT@C-SGROUP.COM). IN CANADA CALL (888) 895-8955.

### IMPORTANT NOTES

1. DUE TO WOOD BEING A NATURAL PRODUCT, COMPONENTS MAY GROW AND SHRINK AT DIFFERENT RATES. BECAUSE OF THIS, CS HAS DESIGNED THIS HANDRAIL TO UTILIZE A BEVEL AS SHOWN IN THESE INSTRUCTIONS (SEE FIGURE 1). THIS BEVEL MUST BE APPLIED AT ALL WOOD JOINTS.
2. DUE TO THE NATURE OF WOOD, COMPONENT COLORS MAY VARY. SORT WOOD COMPONENTS AND MATCH PARTS BY COLOR.
3. ALL LINEAL MATERIAL TO BE SUPPLIED IN STOCK LENGTHS. WOOD IN 7'-0" TO 12'-0" VARIABLE, AND ALUMINUM IN LENGTHS UP TO 20'-0". THIS MATERIAL IS TO BE FIELD CUT USING QUALITY EQUIPMENT TO INSURE THAT ALL CUTS ARE SQUARE. WHEN CUTTING MATERIAL SECTIONS, CS RECOMMENDS USING AN 80-100 TOOTH CARBIDE TIPPED SAW BLADE OR EQUIVALENT, TO MINIMIZE CHIPPING AND MAINTAIN JOINT ALIGNMENT.
4. ALL DIMENSIONS ARE TYPICAL.
5. FOR DRYWALL/PLASTER WALL CONSTRUCTION, IT IS RECOMMENDED FOR FASTENERS TO BE ENGAGED INTO METAL/WOOD STUDS TO MAINTAIN MAXIMUM PULLOUT STRENGTH. IF DURING INSTALLATION YOU ENCOUNTER SPECIAL WALL CONDITIONS THAT DO NOT ALLOW FOR DIRECT ATTACHMENT TO THE STUDS, PLEASE CONSULT THE LOCAL AUTHORITY HAVING JURISDICTION.
6. INSTALL OUTSIDE CORNERS FIRST.
7. INSTALL LONGEST RUN OF HANDRAIL FIRST.
8. ALUMINUM RETAINER SPLICE SHOULD NOT EXCEED 3" [76.2mm] DISTANCE FROM A BRACKET.
9. THE DISTANCE BETWEEN A WOOD SPLICE JOINT AND AN ALUMINUM RETAINER SPLICE JOINT SHOULD NOT BE LESS THAN 12" [304.8mm].
10. MATERIAL MUST REACH 65°F MIN. TO 75°F MAX. 24 HOURS PRIOR TO INSTALLATION. THIS IS ESSENTIAL TO MINIMIZE EXPANSION AND CONTRACTION OF MATERIAL.
11. MAY REQUIRE USE OF FIRE PUTTY WHEN INSTALLED ON FIRE WALL WITH TOGGLE BOLTS. REFERENCE INSTRUCTIONS 24FIREPUTTY FOR FIRE PUTTY INSTALLATION.
12. THIS HANDRAIL REQUIRES A MINIMUM OF 2 MOUNTING BRACKETS PER UNIT. THE MINIMUM END CAP-TO-END CAP HANDRAIL LENGTH IS 14 3/8" [365.1mm].
13. FOR MORE INFORMATION ON P-RWW HANDRAIL SEE OUR WEBSITE AT [www.c-sgroup.com](http://www.c-sgroup.com).



### SECTIONAL VIEW

\*P-RWW SHOWN SEE PAGE 6  
FOR P-RWWV AND P-RWWG

# P-RWW / G / V HANDRAIL

## COMPONENTS & WALL FASTENERS



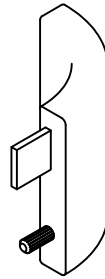
WOOD HANDRAIL  
(24W354xxx)



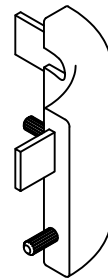
WOOD CRASH RAIL  
(24W244xxx-PLAIN) FOR P-RWW  
(24W251xxx-GROOVED) FOR  
P-RWWG & P-RWWV



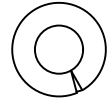
ALUMINUM CRASH  
RAIL RETAINER  
(24A222000)



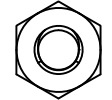
WOOD CRASH RAIL END CAP  
(24W246xxx-RH PLAIN, SHOWN)  
(24W253xxx-RH GROOVED)  
(24W245xxx-LH PLAIN)  
(24W252xxx-LH GROOVED)



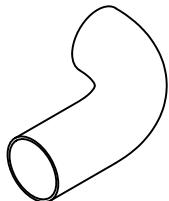
WOOD CRASH RAIL  
OUTSIDE CORNER  
(24W248xxx-PLAIN)  
(24W255xxx-GROOVED)



FASTENER #1  
1/4" LOCK WASHER  
(90H006003)



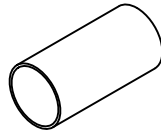
FASTENER #2  
1/4-20 HEX NUT  
(90H010001)



STAINLESS STEEL END CAP  
(24S193000)



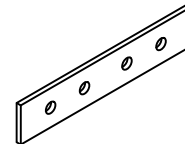
STAINLESS STEEL  
OUTSIDE CORNER  
(24S120000)



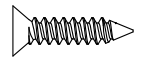
OPTIONAL STAINLESS  
STEEL SPLICE  
(24S122000)



STAINLESS STEEL  
MOUNTING BRACKET  
(24S157000)



RETAINER SPLICE BAR  
(24I976000)



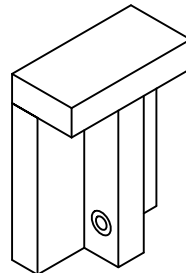
FASTENER #3  
#6 X 5/8" S/S PHILLIPS  
FLAT HEAD SMS  
(90H231004)



WOOD DOWEL PIN  
(24W507037)



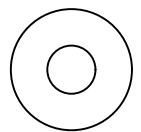
END CAP DRILL JIG  
CENTER ARM FOR  
WOOD SPLICE  
(90H165010)



DOWEL PIN  
DRILLING JIG  
(90H153010)



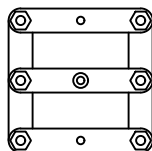
OPTIONAL FEATURE INSERT  
(24V011xxx)



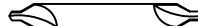
FASTENER #4  
1/4" FLAT WASHER  
(90H007003)



END CAP SPLINE  
(90F194000)



END CAP DRILL JIG  
(90F010004)



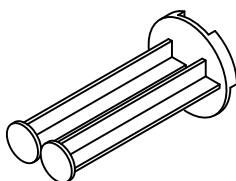
#4 X 1/2" HSS  
COUNTERSINK DRILL  
(90H035010)



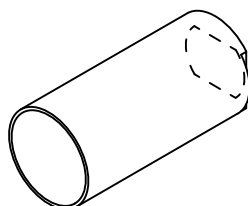
FASTENER #7  
#14 X 2 1/2"  
HEX WASHER HEAD  
SHEET METAL SCREW  
(90H437002)



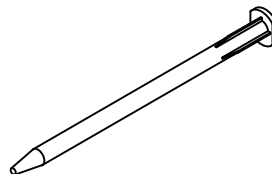
FASTENER #5  
1/4-20 X 3/4" HEX HEAD  
MACHINE SCREW  
(90H008002)



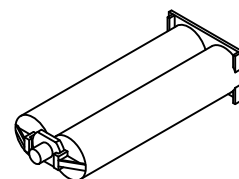
CAULKING CUT  
CONVERSION KIT  
PLUNGER  
(90M023005)



CAULKING CUT  
CONVERSION KIT  
SLEEVE  
(90M023005)



MIXING NOZZLE  
(90M022006)



EPOXY  
(90M089003)

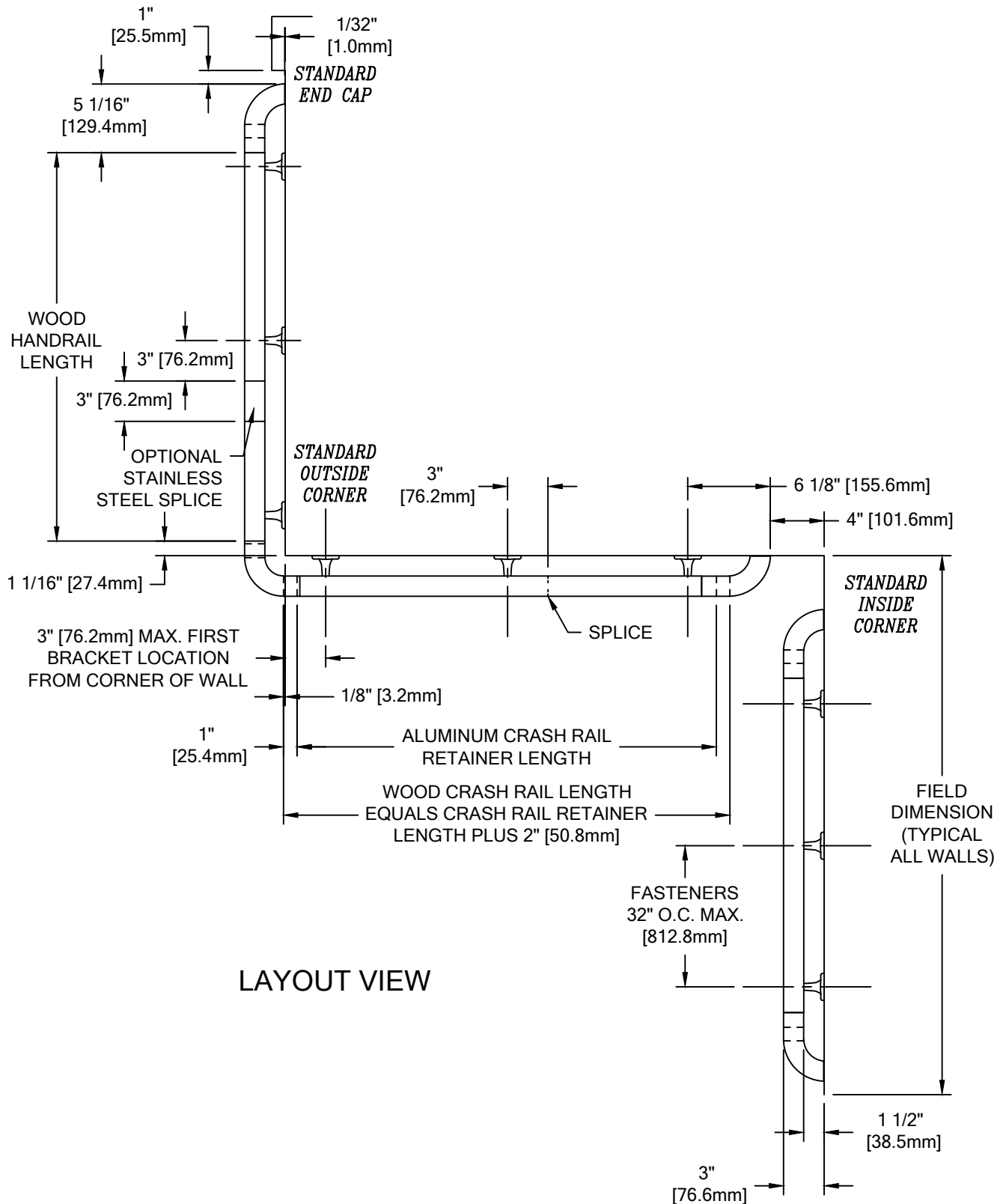


FASTENER #6  
SERRATED LOCK WASHER  
(90H043008)

WALL CONDITION	SPECIFIED FASTENER	DRILL DIAMETERS		CS PART NUMBER
		WALL	RETAINER	
STEEL STUD/GYPSUM WALL	1/4-20 X 3" S/S FLAT HEAD BOLT WITH TOGGLE	3/4"	N/A	90H184002
CONCRETE/CONCRETE BLOCK	1/4" X 1 3/4" S/S FLAT HEAD MASONRY ANCHOR	3/16"	N/A	90H390000
WOOD STUD/GYPSUM WALL	#14 X 3" S/S PHILLIPS FLAT HEAD WOOD SCREW	7/32"	N/A	90H538004
20 GA. STEEL STUD/GYPSUM WALL (OSHDP)	1/4-20 X 3" S/S FLAT HEAD BOLT 1/4" TOGGLE WING 3M MOLDABLE FIRE PUTTY	1/2"	N/A	90H063002 90H062004 90M012000
16 GA. MIN STEEL STUD AND 16 GA. MIN STEEL STRAPPING / GYPSUM WALL CONSTRUCTION REQUIRED (TEK SCREWS)	#14 X 3" PHILLIPS FLAT HEAD SELF DRILLING S/S TEK SCREW	N/A	N/A	90H230003

P-RWW / G / V HANDRAIL

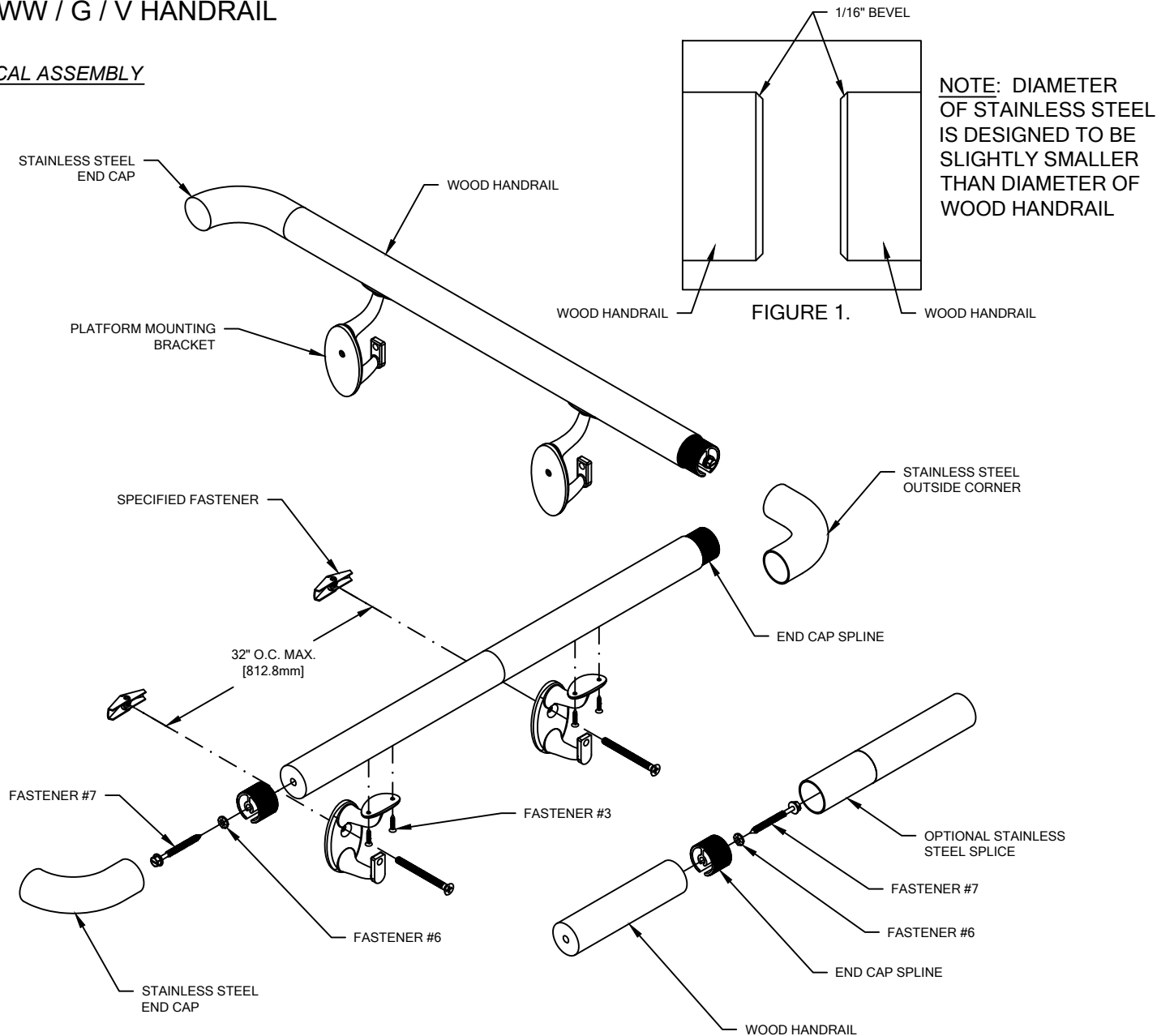
LAYOUT VIEW



LAYOUT VIEW

## P-RWW / G / V HANDRAIL

### TYPICAL ASSEMBLY



1. USING "LOCAL CODE" REQUIREMENTS, ESTABLISH HANDRAIL HEIGHT ABOVE FINISH FLOOR. DEDUCT 3 3/4" [95.3mm] AND SNAP A CHALK LINE AT THAT HEIGHT. THIS MARKS THE LOCATION OF THE HOLE FOR THE MOUNTING BRACKET FASTENERS.
2. DRILL CLEARANCE HOLES IN WALL SURFACE FOR MOUNTING HARDWARE. REFERENCE CHART ON PAGE 2 FOR CORRECT DRILL DIAMETERS.

**NOTE:** SEE LAYOUT VIEW TO AID IN MOUNTING BRACKET LOCATION.

3. INSTALL MOUNTING BRACKETS USING APPROPRIATE FASTENERS. USE A LEVEL TO ENSURE THAT THE BRACKETS ARE LEVEL.
4. CUT THE WOOD HANDRAIL TO LENGTH USING THE REQUIRED DEDUCTIONS (REFERENCE LAYOUT VIEW). BEVEL THE HANDRAIL EDGES SLIGHTLY WITH 150 GRIT SANDPAPER. TOUCH UP SANDED EDGES WITH STAIN MARKER. (SEE FIGURE 1 ABOVE).

**NOTE:** IT IS RECOMMENDED THAT WOOD HANDRAIL BE CUT WITH AN 80-100 TOOTH CARBIDE TIPPED SAW BLADE OR EQUIVALENT.

5. TO ENSURE PROPER ALIGNMENT OF HANDRAIL TO END CAP, USE THE END CAP DRILL JIG TO DRILL A PILOT HOLE FOR END CAP ATTACHMENT IN EACH END OF THE HANDRAIL. (SEE FIGURE 2)
  - LOCATE END CAP DRILL JIG OVER END OF WOOD HANDRAIL. POSITION END OF HANDRAIL TIGHT AGAINST BOTTOM OF DRILL JIG'S CENTER BAR.
  - CLOSE THE DRILL JIG TIGHT AGAINST THE OUTSIDE EDGE OF THE HANDRAIL.
  - DRILL A 5/32" PILOT HOLE (1 1/8" DEEP) IN END OF HANDRAIL.

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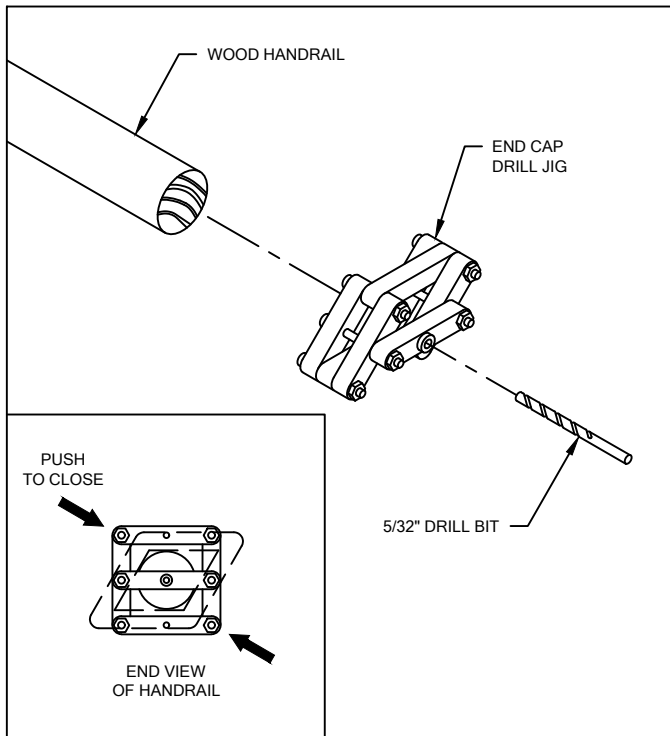


FIGURE 2.  
END CAP/CORNER DRILL  
JIG AND OPTIONAL SPLICE

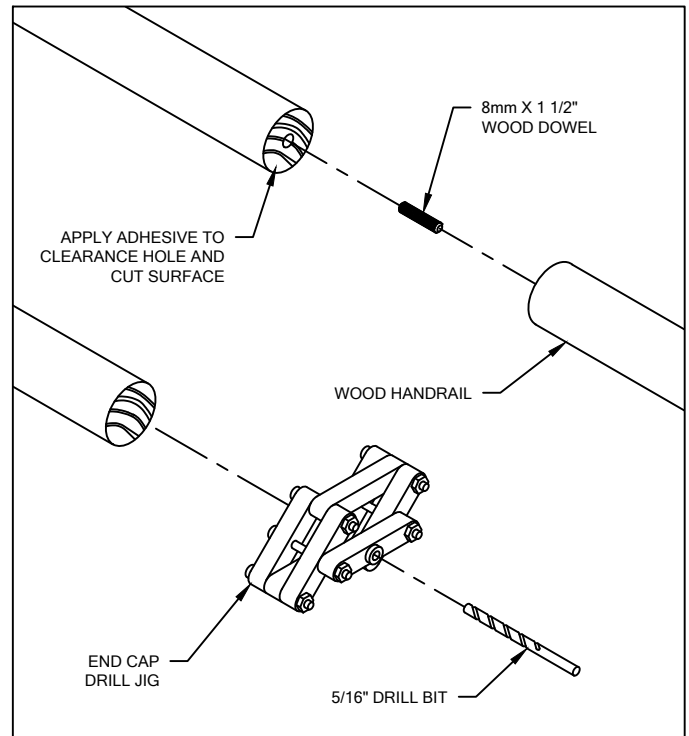


FIGURE 3.  
WOOD DOWEL SPLICE  
ASSEMBLY

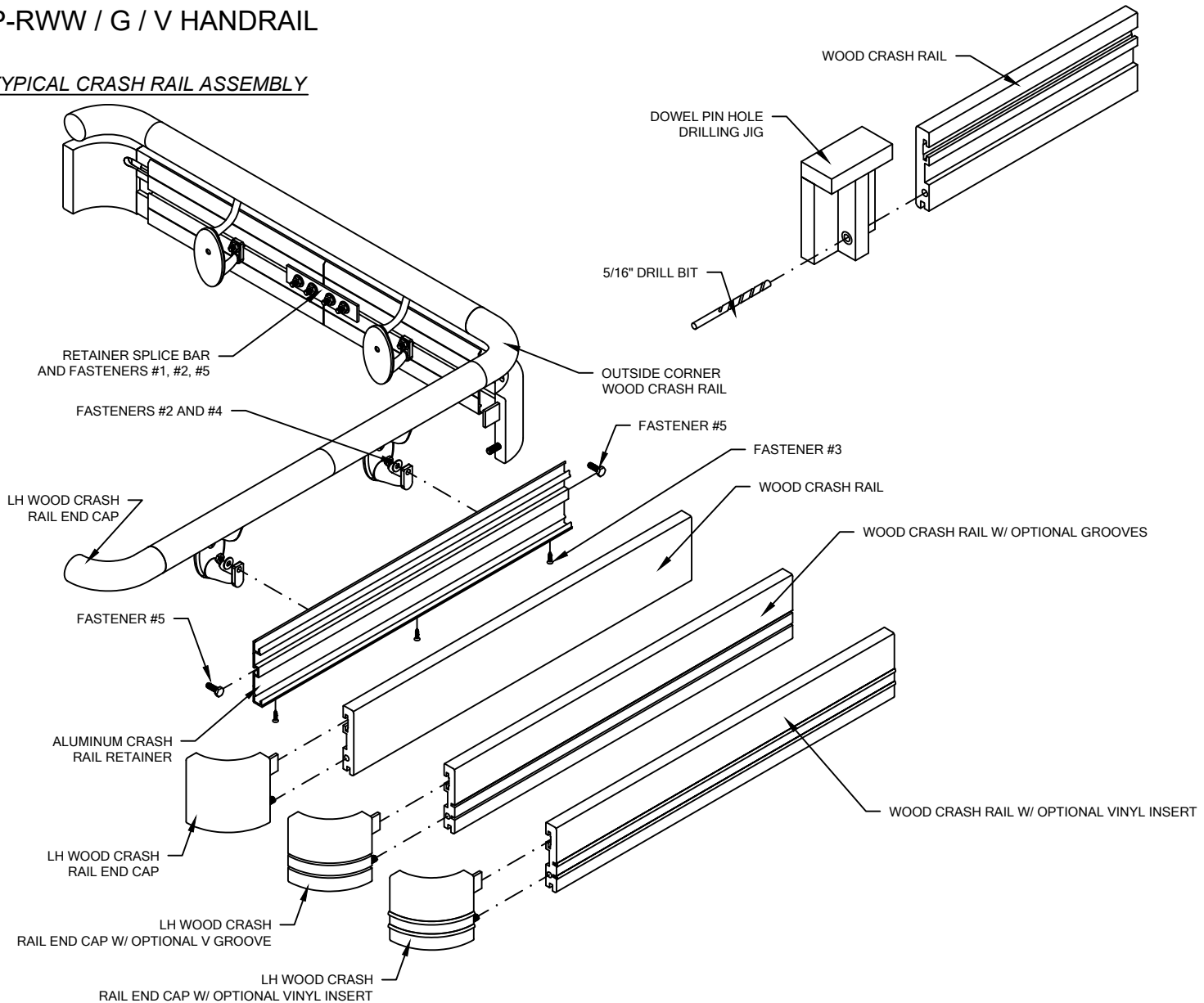
6. ATTACH STAINLESS STEEL END CAPS AND OUTSIDE CORNERS (A FLAT SURFACE IS REQUIRED):
  - TO PROTECT FINISHED SURFACES FROM ADHESIVE DURING ASSEMBLY APPLY MASKING TAPE TO END OF HANDRAIL'S FINISHED WOOD SURFACE AND EXTERIOR SURFACE OF END CAP (OR OUTSIDE CORNER).
  - CLEAN OUTER SURFACE OF ALUMINUM SPLINE WITH ISOPROPYL (RUBBING) ALCOHOL. ATTACH SPLINE TO THE END OF THE HANDRAIL USING THE #14 X 2 1/2" HEX WASHER HEAD SHEET METAL SCREW AND SERRATED LOCK WASHER. DRY FIT HANDRAIL TO END CAP (OR OUTSIDE CORNER) AND CHECK FOR A SEAMLESS TRANSITION BETWEEN WOOD AND METAL COMPONENTS.
  - ONCE TESTED, FILL THE PILOT HOLE WITH ADHESIVE (REFERENCE CAULKING GUN CONVERSION KIT FIGURES 4 & 5) AND PERMANENTLY ATTACH ALUMINUM SPLINE. CAUTION: SERRATED LOCK WASHER MUST BE SECURELY TIGHTENED AND EMBEDDED INTO ALUMINUM SPLINE TO PREVENT ATTACHED END CAP FROM ROTATING.
  - USING 100 GRIT SANDPAPER, SAND THE INTERIOR SURFACE OF THE END CAP. CLEAN THE INTERIOR SURFACE OF THE END CAP WITH ISOPROPYL (RUBBING) ALCOHOL.
  - THE ADHESIVE ONLY ALLOWS FOR 8 TO 12 MINUTES OF WORKING TIME. INSTALL END CAP (OR OUTSIDE CORNER) OVER ALUMINUM SPLINE. FOR PROPER SEAM, STAINLESS STEEL END CAP (OR OUTSIDE CORNER) MUST BE TIGHTLY FITTED TO THE HANDRAIL. PARTS CAN BE HANDLED IN 1 1/2 HOURS AND WILL BE FULLY CURED AFTER 24 HOURS.
  - OPTIONAL STAINLESS STEEL SPLICE WILL BE INSTALLED IN THE SAME MANNER.
7. DRILL 1/16" PILOT HOLES INTO THE WOOD HANDRAIL FOR MOUNTING BRACKET ATTACHMENT. MOUNTING BRACKETS ARE TO BE LOCATED 3" [76.2mm] FROM EACH END OF THE RAIL AND 32" [812.8mm] ON CENTER ALONG LENGTH, AS REQUIRED.
8. FASTEN THE WOOD HANDRAIL TO THE WALL BRACKET IN SUCCESSION BY INSERTING TWO #6 X 5/8" PHILLIPS FLAT HEAD SHEET METAL SCREWS THROUGH THE UNDERSIDE OF THE BRACKET INTO THE WOOD HANDRAIL. CAUTION: OVER-TORQUING MAY CAUSE THE FASTENERS TO STRIP.

### HANDRAIL SPLICE ASSEMBLY WITH DOWEL

1. TO ENSURE PROPER ALIGNMENT OF HANDRAIL SPLICE, USE THE END CAP DRILL JIG TO DRILL A CLEARANCE HOLE FOR SPLICE ASSEMBLY IN EACH END OF THE HANDRAIL. (SEE FIGURE 3)
  - LOCATE SPLICE DRILL JIG OVER END OF WOOD HANDRAIL. POSITION END OF HANDRAIL TIGHT AGAINST BOTTOM OF DRILL JIG'S CENTER BAR.
  - CLOSE THE DRILL JIG TIGHT AGAINST THE OUTSIDE EDGE OF THE HANDRAIL.
  - DRILL A 5/16" CLEARANCE HOLE (7/8") DEEP IN END OF EACH HANDRAIL.
2. ASSEMBLE HANDRAIL SPLICE WITH WOOD DOWEL. (SEE FIGURE 3)
  - BEVEL THE HANDRAIL EDGES SLIGHTLY WITH 150 GRIT SANDPAPER. TOUCH UP SANDED EDGES WITH STAIN MARKER. (SEE FIGURE 1)
  - LOCATE HANDRAIL ON FLAT WORKING SURFACE AND INSERT 8mm WOOD DOWEL IN THE END OF EACH HANDRAIL THAT WILL CREATE A SPLICE. BEFORE APPLYING WOOD GLUE, DRY FIT COMPONENTS TOGETHER TO DOUBLE CHECK FIT. APPLY WOOD GLUE INTO THE HOLE AND CUT SURFACE OF THE HANDRAIL PRIOR TO HANDRAIL INSERTION. TITEBOND WOOD GLUE IS RECOMMENDED FOR THIS APPLICATION. WIPE OFF ANY EXCESS GLUE.

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## TYPICAL CRASH RAIL ASSEMBLY



9. CUT THE CONTINUOUS ALUMINUM CRASH RAIL RETAINER TO LENGTH USING THE REQUIRED DEDUCTIONS (REFERENCE LAYOUT VIEW).

**NOTE:** IT IS RECOMMENDED THAT ALUMINUM CRASH RAIL RETAINER AND WOOD CRASH RAIL BE CUT WITH AN 80-100 TOOTH CARBIDE TIPPED SAW BLADE OR EQUIVALENT.

10. MARK FASTENER LOCATIONS ALONG V-GROOVE ON BOTTOM OF RETAINER. FASTENERS START 1" [25.4mm] FROM THE ENDS OF THE RETAINER AND ARE 24" [609.6mm] ON CENTER. USE THE SUPPLIED COUNTERSINKING DRILL FOR HOLES ALONG V-GROOVE WHERE WOOD CRASH RAIL FASTENS TO RETAINER. THIS WILL ALLOW SCREW HEADS TO BE FLUSH WITH RETAINER WHEN ASSEMBLED.
11. CUT THE WOOD CRASH RAIL TO LENGTH USING THE REQUIRED DEDUCTIONS (REFERENCE LAYOUT VIEW). ALL ENDS ARE TO BE CUT SQUARE. BEVEL THE CUT EDGES ON CRASH RAIL END SLIGHTLY WITH 150 GRIT SANDPAPER TO MATCH BEVEL ON WOOD END CAPS (SEE FIGURE 1). TOUCH-UP SANDED EDGES WITH STAIN MARKER.
12. ATTACH CRASH RAIL END CAPS AND OUTSIDE CORNERS:
  - SLIDE 1/4-20 X 3/4" HEX HEAD BOLTS IN RECEIVER SLOT OF THE CRASH RAIL RETAINER FOR ALL WALL BRACKETS.
  - AN END CAP ALIGNMENT HOLE MUST BE DRILLED AT EACH END USING THE SUPPLIED JIG (SEE ILLUSTRATION ABOVE). DO NOT DRILL THIS HOLE WITHOUT THE JIG. USE DRILL JIG TO PRE-DRILL CLEARANCE HOLES 7/8" DEEP INTO HANDRAIL USING A 5/16" DRILL BIT.
  - CONTINUALLY CLEAN OUT WOOD CHIPS AS THE PILOT HOLE IS BEING DRILLED.
  - APPLY WOOD GLUE INTO THE HOLES AND CUT SURFACE OF CRASH RAIL (TITEBOND IS RECOMMENDED).
  - ATTACH WOOD END CAPS TO CRASH RAIL BY SLIDING THE END CAP TAB AND DOWEL INTO MATING CRASH RAIL CLEARANCE HOLES. WIPE OFF ANY EXCESS GLUE.
  - CHECK SEAM FOR TIGHT FIT BETWEEN CRASH RAIL AND END CAP.
13. ATTACH WOOD CRASH RAIL ONTO ALUMINUM CRASH RAIL RETAINER. USING THE PREVIOUSLY DRILLED COUNTERSUNK HOLE IN THE RETAINER AS A GUIDE, DRILL 3/32" DIAMETER PILOT HOLE 3/8" DEEP IN THE BOTTOM WOOD CRASH RAIL TO ACCEPT THE #6 X 5/8" SCREWS.
14. ATTACH THE ASSEMBLED CRASH RAIL TO THE WALL BRACKETS BY ALIGNING THE HEX HEAD BOLTS WITH THE MOUNTING BRACKETS AND INSERTING THE HEX HEAD BOLT INTO THE MOUNTING BRACKET HOLE. PLACE A 1/4" FLAT WASHER AND 1/4-20 HEX NUT ONTO THE HEX HEAD BOLT AND TIGHTEN AS REQUIRED.

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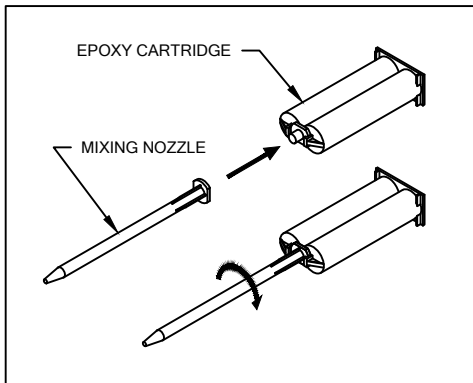


FIGURE 4.

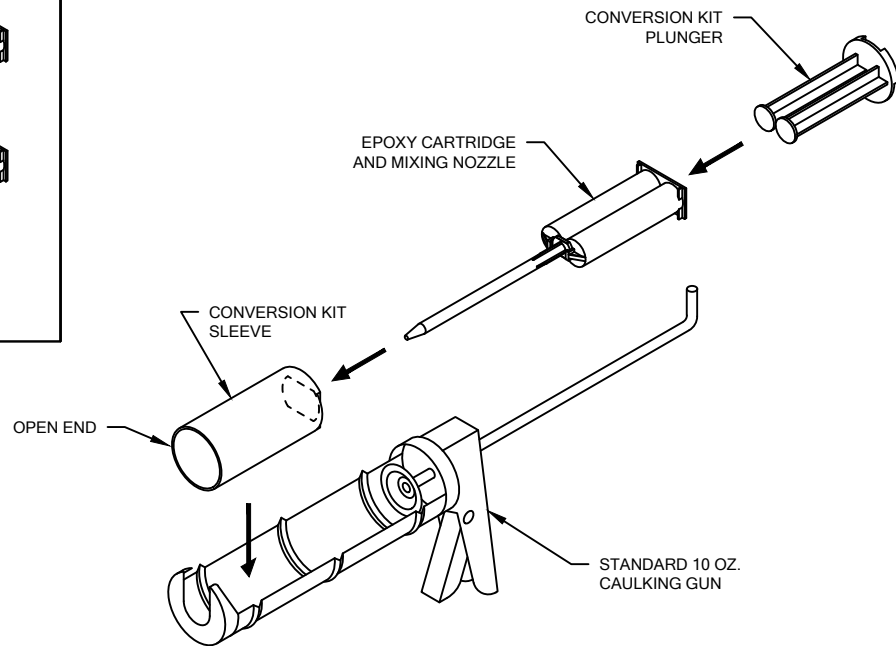


FIGURE 5.

**CAULKING GUN CONVERSION KIT**

EPOXY CARTRIDGE AND MIXING NOZZLE. REFER TO FIGURE 4.

1. REMOVE CAP AND GASKET FROM THE END OF EPOXY CARTRIDGE BY TWISTING 90°.
2. INSTALL MIXING NOZZLE ON THE FRONT OF EPOXY CARTRIDGE AND LOCK IN PLACE BY TWISTING 90°.

CAULKING GUN CONVERSION KIT. REFER TO FIGURE 5.

1. INSERT EPOXY CARTRIDGE AND MIXING NOZZLE INTO OVAL OPENING OF SLEEVE. NOTE THE LOCATION OF OPEN END.
2. PLACE PLUNGER IN THE BACK END OF CARTRIDGE.
3. PLACE THE CONVERSION KIT, WITH MIXER NOZZLE AND EPOXY CARTRIDGE, IN A STANDARD 10 OZ CAULKING GUN AS SHOWN IN FIGURE 5. PLUNGER WILL ATTACH TO CIRCULAR PUSH PLATE ON CAULKING GUN.