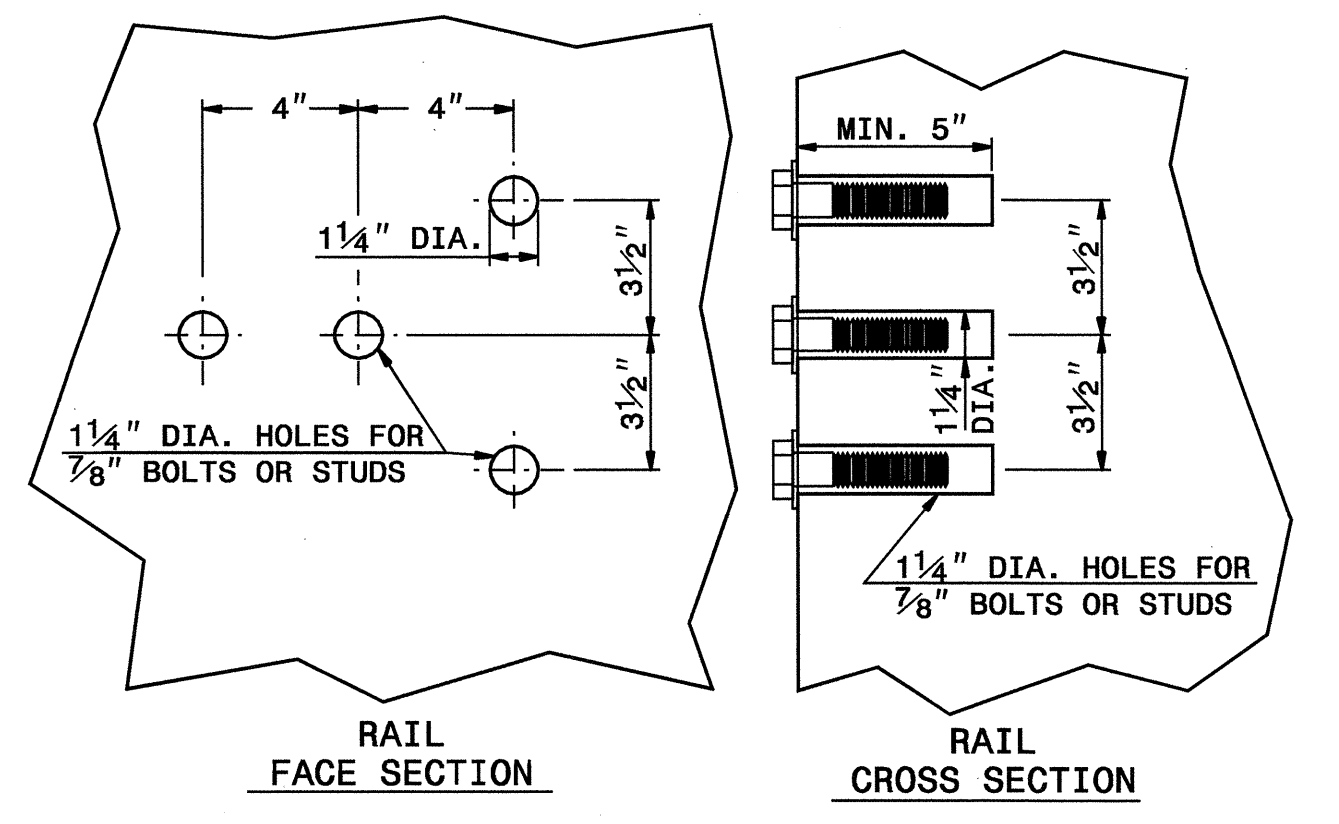
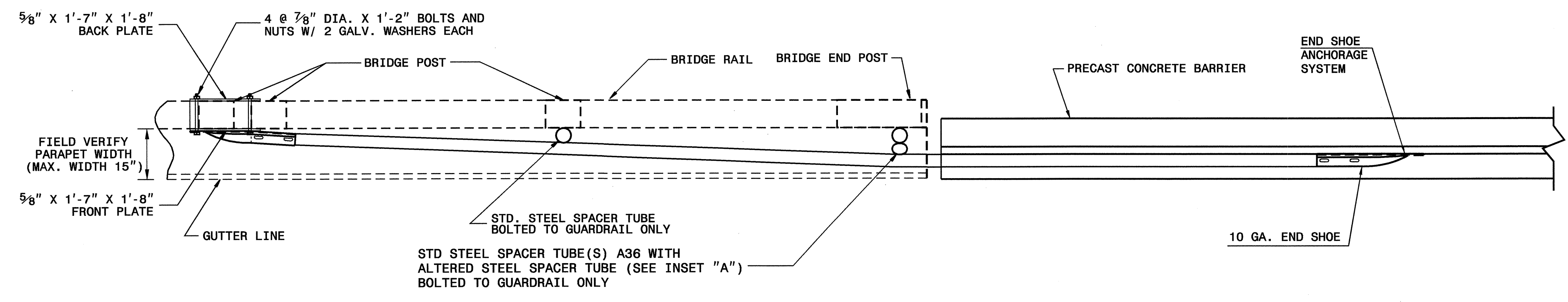


**ELEVATION VIEW**

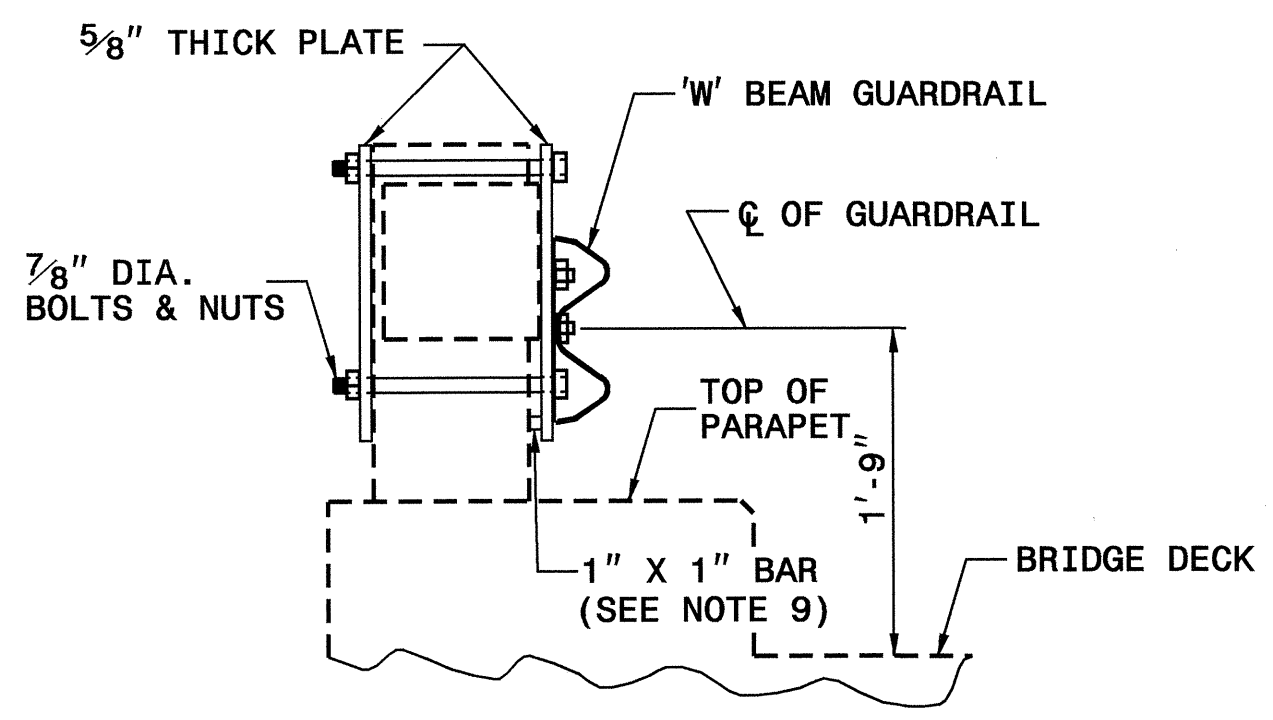


**DETAIL B  
CHEMICAL BONDING**

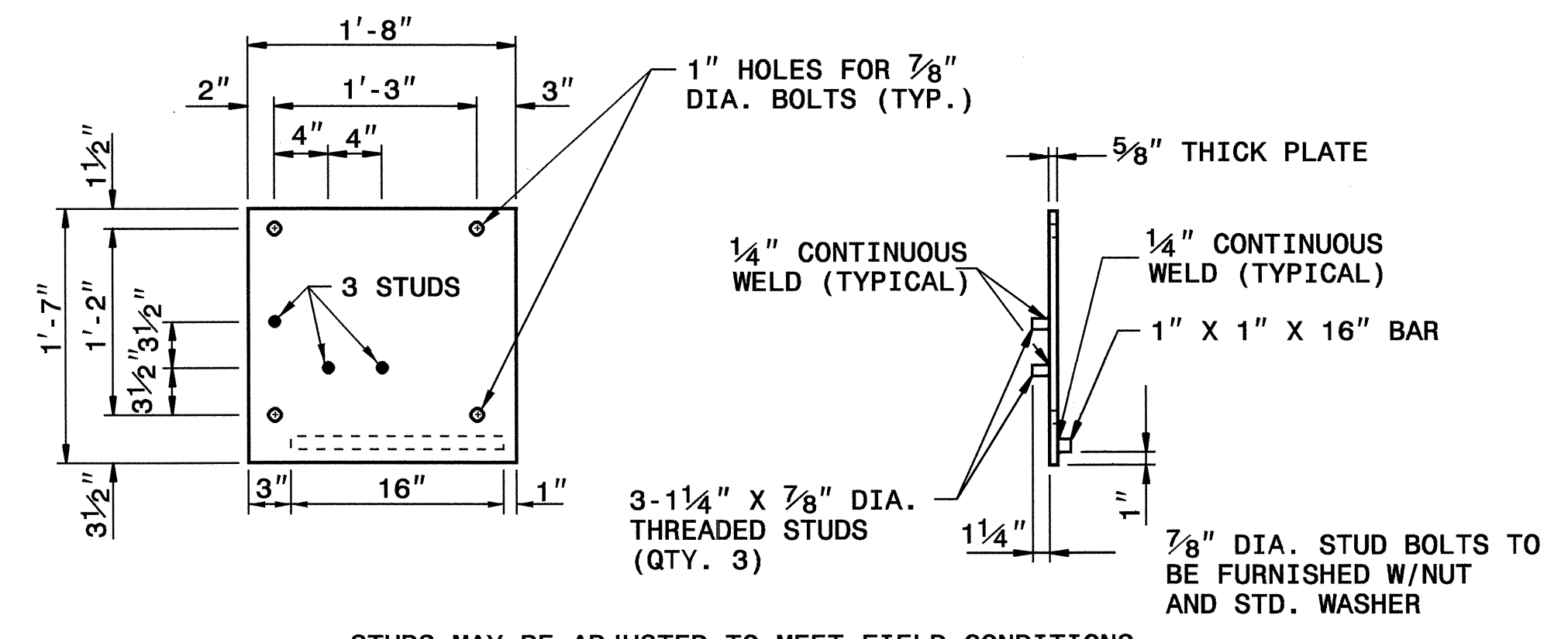
- NOTES FOR CHEMICAL BONDING BOLTS OR STUDS:
1. THE HOLE SHALL BE CLEAN OF ALL DIRT, DUST, RUST, WATER AND OTHER CONTAMINATES.
  2. SUFFICIENT ADHESIVE SHALL BE PLACED INTO EACH HOLE TO DEVELOP 125% THE YIELD STRENGTH OF THE BOLT OR STUD.
  3. TESTING OF THE BOLT OR STUD TO 90% OF THE SPECIFIED STRENGTH SHALL BE PERFORMED AT THE OPTION OF THE ENGINEER.
  4. NO SEPARATE METHOD OF PAYMENT SHALL BE MADE FOR THIS TYPE OF INSTALLATION OR TESTING.
  5. ALL WORK AND MATERIALS USED SHALL MEET THE APPROVAL OF THE ENGINEER.



**PLAN VIEW**



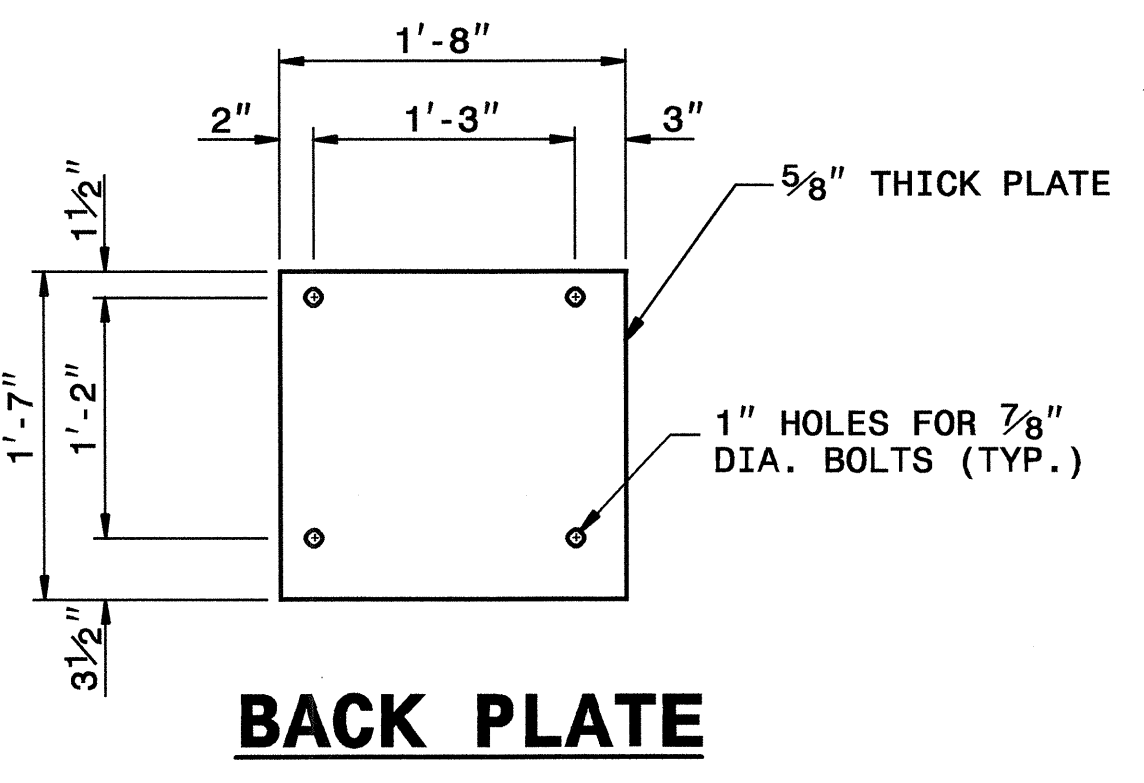
**SECTION VIEW**



**FRONT VIEW**

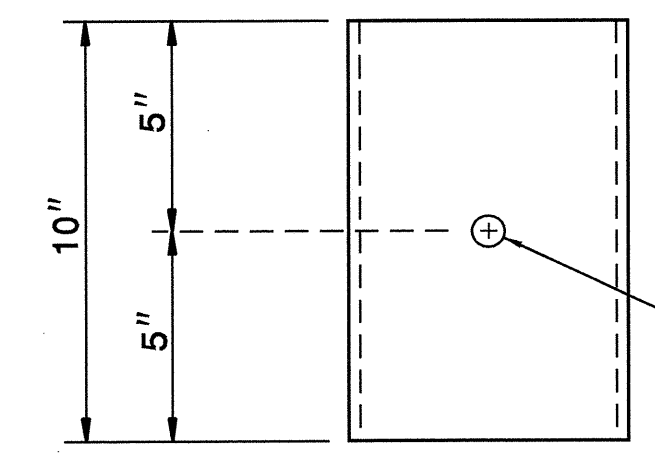
**SIDE VIEW**

**FRONT PLATE**



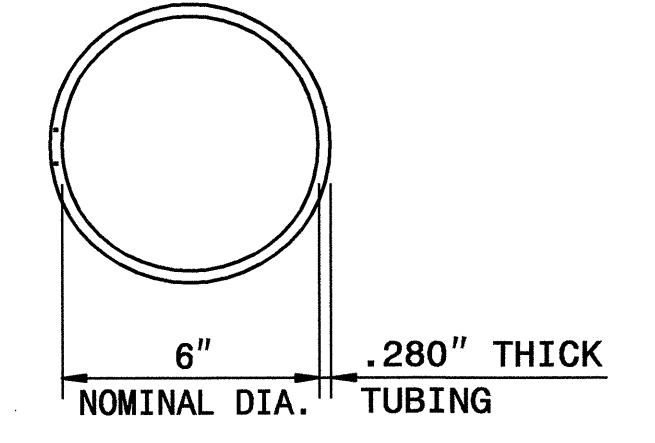
**BACK PLATE**

- STUDS MAY BE ADJUSTED TO MEET FIELD CONDITIONS
- GENERAL NOTES:**
1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
  2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
  3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
  4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
  5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
  6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
  7. KEEP TOE OF PRECAST CONCRETE BARRIER FLUSH WITH FACE OF PARAPET.
  8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
  9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.

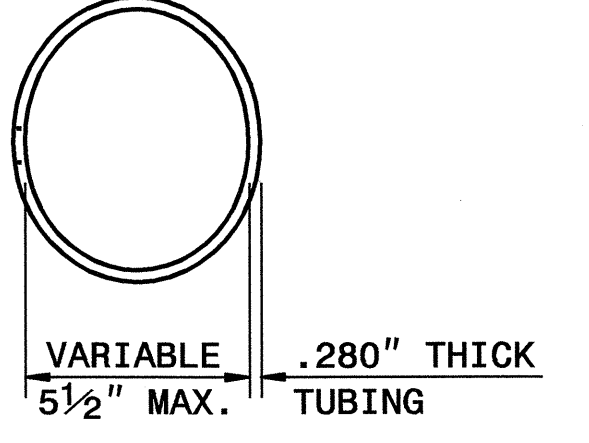


**FRONT VIEW**

**STEEL SPACER TUBE**



**PLAN VIEW**



**PLAN VIEW  
INSET "A"**

**DESIGN SERVICES UNIT  
STANDARDS AND SPECIAL DESIGN**  
Office 919-250-4128 FAX 919-250-4119

**DETAIL OF GUARDRAIL ANCHOR  
UNIT TYPE BP - WBEAM**

ORIGINAL BY: C.O. CUEVAS DATE: 8-99  
 MODIFIED BY: E.J. WARD DATE: 4-03  
 CHECKED BY: [Signature] DATE: 7-03  
 FILE SPEC.: [Path]

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 5/14/99