



01 GROUNDING LAYOUT  
SCALE: 1"=10'-0"

02 GROUNDING ELEVATION  
SCALE: 1"=10'-0"

**GENERAL**  
 A BRIDGE GROUNDING SYSTEM SHALL BE INSTALLED TO LIMIT STEP AND TOUCH POTENTIALS FOR THE SAFETY OF PEDESTRIANS AND TO LIMIT GROUND POTENTIAL RISE DUE TO LIGHTNING BY PROVIDING A LOW RESISTANCE PATH TO REMOTE EARTH. THE BRIDGE IS DESIGNED FOR PEDESTRIAN USE AS WELL AS VEHICULAR USE. THE TOP OF THE DECORATIVE ARCH IS 56 FT. ABOVE THE PROPOSED WATER SURFACE. THE BRIDGE GROUNDING DIAGRAM REPRESENTS REQUIREMENTS OF THE GROUNDING SYSTEM AS IT RELATES TO THE VITRUVIAN BRIDGE STRUCTURES. THE LIGHTNING PROTECTION RISK IS MODERATE.

**SYSTEM DESCRIPTION**  
 THE BRIDGE CONSTRUCTION IS PRE-CAST BEAMS RESTING ON THE CONCRETE ABUTMENT SUPPORTED BY PIERS. THE ARCH IS THE PRIMARY STEEL STRUCTURE. THE BASE OF EACH ARCH SHALL BE GROUNDED AT THE ABUTMENTS. THE CREEK BED IS ROCK. A 1 FT. X 2 FT. BY #2 GA. COPPER GROUND PLATE MAY BE PROVIDED IN PLACE OF A GROUND ROD.

**QUALITY ASSURANCE**  
 THE DESIGN DETAILS AND INSTALLATION SHALL MEET NFPA 780 STANDARD FOR THE INSTALLATION OF LIGHTNING PROTECTION SYSTEMS 2008 EDITION, UL 96A STANDARD FOR SAFETY INSTALLATION REQUIREMENTS FOR LIGHTNING PROTECTION SYSTEMS, AND THE LIGHTNING PROTECTION INSTITUTE STANDARD OF PRACTICE, LPI-175.

THE GROUNDING SYSTEM SHALL BE DETAILED AND INSTALLED BY A BONDED AND CERTIFIED LIGHTNING PROTECTION COMPANY.

**SYSTEM REQUIREMENTS**  
 PROVIDE FLAT PLATE CONNECTOR TO BRIDGE ARCH.  
 PROVIDE 1 INCH PVC SLEEVE WHERE REQUIRED.  
 SEAL PVC SLEEVE WITH POLYURETHANE CAULK ALL AROUND CONDUCTORS AT EACH END OF SLEEVE.  
 PROVIDE COPPER CLAD STEEL 3/4 INCH DIAMETER AND 10 FT. LONG GROUND RODS.  
 GROUND CONNECTIONS TO HANDRAILS SHALL BE MADE AT EACH NON-CONTINUOUS SECTION.  
 LIGHTNING PROTECTION INSTALLER SHALL TEST AND DOCUMENT THE GROUND RESISTANCE IN ACCORDANCE WITH STANDARDS.  
 MECHANICALLY BOND GROUNDING SYSTEM CONDUCTOR TO REBAR IN THE WING WALL, ABUTMENT, BRIDGE DECK AND VEHICLE GUARDRAIL.

- LEGEND NOTES**
- GROUND LOOP OF #4/0 COPPER GROUNDING CONDUCTOR CAST WITHIN THE BRIDGE DECK. PROVIDE MECHANICAL CONNECTION TO THE GROUND LOOP CONDUCTOR TO REBAR IN BRIDGE DECK.
  - PROVIDE MECHANICAL CONNECTION TO GROUND LOOP
  - GROUNDING CONNECTION TO HANDRAIL. PROVIDE STAINLESS STEEL MECHANICAL CONNECTION TO THE HANDRAIL. EMBED CONCRETE ANCHOR. REFERENCE SHEET S2-13, DETAIL OF RAIL POST EMBED PLATE AT BRIDGE SEJ SECTION. REFERENCE SHEET L2-01 FOR THE APPROXIMATELY 20 HANDRAIL SECTIONS ON EACH SIDE OF THE BRIDGE.
  - PROVIDE #6 STRANDED BARE CONDUCTOR TO STREET LIGHT. ROUTE UP IN POLE BASE HOLE AND CONNECT GROUNDING CONDUCTOR TO LUG IN STREETLIGHT POLE.
  - ROUTE LOOP CONDUCTOR DOWN IN BRIDGE WING WALL TO BELOW PROPOSED FINISH GRADE. CONNECT ARCH GROUNDING CONDUCTOR TO THE LOOP CONDUCTOR IN THE BRIDGE WING WALL.
  - PROVIDE A SINGLE #4/0 CONDUCTOR IN 1 INCH PVC SLEEVE BELOW GRADE AND BEYOND STAIRS CONSTRUCTION TO THE LOCATION OF GROUND RODS.
  - PROVIDE GROUND ROD TRIPOD WITH RODS INSTALLED A MINIMUM OF 10 FT. APART.
  - MECHANICALLY CONNECT FLAT PLATE CONNECTOR TO TOP OF BRIDGE ARCH ABOVE THE ARCH SLIDER PLATE. REFERENCE SHEET S1-19, ARCH / EMBED ANCHOR CONNECTION. SECURE GROUND CONDUCTOR TO ARCH. ROUTE THROUGH ABUTMENT AND CONNECT TO GROUNDING LOOP DOWN CONDUCTOR REFERENCED IN NOTE 5
  - PROVIDE GROUND LOOP CONDUCTOR SLACK AT EXPANSION JOINT.
  - GROUNDING CONDUCTOR TO EACH END OF THE VEHICLE GUARDRAIL. PROVIDE STAINLESS STEEL MECHANICAL CONNECTION TO THE VEHICLE GUARDRAIL EMBED CONCRETE ANCHOR. REFERENCE SHEET S4-17 SECTION THROUGH RAIL ON BRIDGE SLAB.



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY DIANNE M. POPKEN, P.E. #41979 ON 04-29-2010. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT. THE RECORD COPY OF THIS DRAWING IS ON FILE AT THE OFFICES OF HALFF ASSOCIATES, 1201 NORTH BOWSER ROAD, RICHARDSON, TEXAS, 75081. TPE FIRM #F-312.

|   |          |  |            |
|---|----------|--|------------|
| RESPONSE TO RFI #4 (NEW SHEET)          |          | DMP  | 10/06/10   |
| NO.                                     | REVISION | BY   | DATE       |
| TOWN OF ADDISON<br>DALLAS COUNTY, TEXAS |          |  |            |
| VITRUVIAN PARK BRIDGES<br>BELLA LANE    |          |  |            |
| <b>BRIDGE GROUNDING</b>                 |          |  |            |
|   |          | 1201 NORTH BOWSER ROAD, RICHARDSON, TEXAS 75081-2275<br>TEL. (214) 346-8200 FAX (214) 739-0095 |            |
| PROJECT                                 | DESIGN   | DRAWN  | DATE       |
| 27379                                   | DMP      | AHH  | APRIL 2010 |
| FILE                                    | SHEET    |  |            |
| -                                       | E2-04    |  |            |