



**TYPICAL HIGHWAY CROSSING-BORING METHOD**  
NOT TO SCALE

HIGHWAY CROSSING NOTES

1. WATER LINES CROSSING UNDER PAVED ROADS AND PAVED CROSSROADS WITHIN THE DESIGNATED CITY STREETS, STATE AND U.S. HIGHWAY RIGHT-OF-WAY SHALL BE ENCASED AND PLACED BY BORING, JACKING, OR TUNNELING. BORING, JACKING, OR TUNNELING SHALL EXTEND FROM TOE OF SHOULDER SLOPE TO TOE OF SHOULDER SLOPE. ON LINES CROSSING THE ENTIRE WIDTH OF RIGHT-OF-WAY, THE LENGTH OF CASING SHALL BE DETERMINED BY THE STATE HIGHWAY DIVISION ENGINEER OR THE ENGINEER. ALL WORK SHALL BE COMPLETED AS SHOWN ON THIS DRAWING.
2. ALL WATER LINES SHALL HAVE A MINIMUM COVER OF 36" EXCEPT WHERE DEEPER COVER IS INDICATED ON THE DRAWINGS. ALL TRENCH EXCAVATION WITHIN RIGHT-OF-WAY BUT NOT UNDER PAVEMENT SHALL BE BACKFILLED BY TAMPING IN 6" LAYERS. ALL SURPLUS MATERIAL SHALL BE REMOVED FROM THE RIGHT-OF-WAY AND THE EXCAVATION FINISHED FLUSH WITH SURROUNDING GROUND.
3. CASING PIPE SHALL BE EITHER SPIRAL WELDED STEEL PIPE OR STEEL LINER PLATE APPLICABLE AND SUITABLE TO METHOD OF INSTALLATION EMPLOYED PER TABLE "A" ALL CASING PIPE SHALL BE COATED INSIDE AND OUT PER SPECIFICATIONS.
4. ALL INSTALLATION SHALL BE DONE IN A MANNER WHICH WILL NOT OBSTRUCT STORM WATER PIPES, CULVERTS OR SURFACE WATER DRAINAGE FACILITIES OF THE HIGHWAY, STREET, OR CONNECTION.
5. WHERE SODDING IS DISTURBED BY EXCAVATION OR BACKFILLING OPERATIONS SUCH AREAS SHALL BE REPLACED BY SEEDING AND MULCHING ON ALL SIDE SLOPES OF 5% OR LESS. ALL DRAINAGE AND SWALES AND ALL SLOPES OVER 5% SHALL BE REGRASSED WITH BLOCK SODDING. NO SEPERATE PAYMENT SHALL BE MADE FOR SEEDING AND MULCHING OR SODDING. SAID COST SHALL BE INCLUDED IN THE BID PRICES FOR INSTALLATION OF PIPE.
6. THE INSTALLATION OF SAID FACILITY SHALL BE DONE UNDER THE SUPERVISION AND CONTROL OF THE STATE HIGHWAY DIVISION ENGINEER OR CITY ENGINEER.
7. THE CONTRACTOR SHALL MAKE NECESSARY ARRANGMENTS FOR HIGHWAY TRAFFIC CONTROL DURING THE WORK AND SHALL PROVIDE NECESSARY BARRICADES, WARNING SIGNS, SIGNALS, LIGHTS, AND NECESSARY FLAGMEN FOR THE TRAVELING PUBLIC.

FOR HIGHWAY AND RAILROAD CROSSING THE FOLLOWING SHALL APPLY

1. CROSSING INSTALLED BY JACK AND BORE METHODS:
  - A. DUCTILE IRON PIPE WITH "GRIP RING" TYPE GASKETS INSTALLED IN SLIP JOINT BELLS SHALL BE USED AS THE CARRIER PIPE.
  - B. CASING INSIDE DIAMETER SHALL BE SIZED TO BE TWO INCHES MORE OR LESS GREATER THAN THE OUTSIDE DIAMETER OF THE BELLS OF THE DUCTILE IRON PIPE TO BE SUPPLIED FOR THE PRESCRIBED CROSSING.
  - C. PIPE IN CASING SHALL BE RESTRAINED WITHIN THE CASING BY INSTALLING A MECHANICAL JOINT SET SCREW GLAND ON THE DUCTILE IRON PIPE ON EACH END OF THE CASING AND ATTACHING TO A MINIMUM OF (2) TWO 3/4" DIAMETER ALL THREAD RODS WELDED TO THE CASING. THE LENGTH OF EACH WELD SHALL BE TWO FEET.
2. CROSSING INSTALLED BY THE TUNNEL METHOD (LARGE DIAMETER PIE).
  - A. LINER PLATE GAGES SHALL BE SOECIFIED.
  - B. VOID SPACES BEHIND LINER PLATES SHALL BE ELIMINATED BY PRESSURE GROUTING DAILY.
  - C. WHEN ALL LINER PLATES ARE INSTALLED CLASS B CONCRETE INVERT SHALL BE PROVIDED TO SUPPORT THE CARRIER PIPE WHEN AT PLANS GRADE.
  - D. EACH PRICE OF CARRIER PIPE SHALL BE INSTALLED INDIVIDUALLY AND SHIMMED TO GRADE. A BRICK AND MORTAR BULKHEAD SHALL BE INSTALLED AROUND THE PIPE BELL AND THE SPACE BETWEEN THE LINER PLATE AND CARRIER PIPE SHALL BE ELIMINATED BY PRESSURE GROUTING WITH SAND/CEMENT GROUT. ALLOW GROUT TO "SET" BEFORE PROCEEDING TO STEP E.
  - E. REPEAT STEP D UNTIL ALL PIECES OF THE CARRIER PIPE HAVE BEEN INSTALLED.
3. CROSSING INSTALLED BY THE TUNNEL METHOD (SMALL DIAMETER PIE).
  - A. LINER PLATE GAGES SHALL BE AS SPECIFIED.
  - B. VOID SPACES BEHIND LINER PLATES SHALL BE ELIMINATED BY PRESSURE GROUTING DAILY.
  - C. WHEN ALL LINER PLATES ARE INSTALLED, THE CARRIER PIPESPECIFIED SHALL BE SHIMMED TO GRADE AND CHAIN AND TURNBUCKLES USED TO RESTRAIN EACH JOINT OF PIPE.
  - D. SAND / CEMENT GROUT SHALL BE PUMPED INTO THE CASING TO A DEPTH OF TWO INCHES ABOVE THE TOP OF EACH PIPE BELL. THE DEPTH OF GROUT SHALL BE UNIFORM THROUGHOUT THE CASING.
  - E. A CONCRETE BLOCK OR BRICK BULKHEAD, ONE FOOT THICK SHALL CONSTRUCTED AT BOTH ENDS OF THE TUNNEL.