

NDEP BUREAU OF SAFE DRINKING WATER
VERTICAL CROSSING CONFLICTS SUMMARY
Revised 4/10/07

- "Water" includes water mains and laterals.
- "Sewer" includes sanitary sewer main and laterals, storm drains and reclaimed wastewater mains and laterals.
- Use of a "Sleeve" is an acceptable alternative to centering the water and sewer at the point of crossing. "Sleeve" means encasing the water or sewer with a 20' length of AWWA C900 Class 100 or greater water quality pipe, centered at the point of water/sewer crossing. To avoid being grouted in place, the water main inside the sleeve must have a diameter equal to or greater than 2/3 the diameter of the sleeve.
- "Restrain" means using mechanical couplings to restrict joint movement or separation of pipe joints within 10' each side of the point of crossing.
- "Special Construction" identifies acceptable mitigation or protection that addresses physically constrained environments where requirements of NAC 445A.6715 through 445A.67175 inclusive cannot be met.
- Areas of "Special Construction" are to be identified on the Plans in plan view using cross-hatching and in profile view using cross-hatching and by referencing a Standard Detail.
- Vertical separation in all cases shall not be less than 6".
- "Concrete Encasement" of the water as mitigation or protection is discouraged.
- At the discretion of NDEP, public water system improvement projects with excessive use of "special construction" may be required to sewer with C900 water quality pipe, green striped, manhole to manhole.
- **EVERY EFFORT IS TO BE MADE TO KEEP WATER MAIN OR WATER LATERAL 18" ABOVE SEWER MAIN AND WATER MAIN 12" ABOVE SEWER LATERAL. OTHERWISE, THE FOLLOWING SPECIAL CONSTRUCTION METHODS APPLY:**

SEWER MAIN ABOVE WATER MAIN, OR SEWER MAIN BELOW WATER MAIN BY LESS THAN 18":

- SLEEVE OR CENTER SEWER MAIN and SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN

SEWER MAIN ABOVE EXISTING WATER MAIN, OR SEWER MAIN BELOW EXISTING WATER MAIN BY LESS THAN 18":

- USE AWWA C900 WATER QUALITY PIPE, GREEN STRIPED, FOR SEWER MAIN MANHOLE TO MANHOLE AND CENTER SEWER MAIN AT CROSSING and RESTRAIN ANY EXPOSED WATER MAIN JOINTS

EXISTING SEWER MAIN ABOVE WATER MAIN, OR EXISTING SEWER MAIN BELOW WATER MAIN BY LESS THAN 18":

- POLYETHYLENE WRAP AND CONCRETE ENCASE SEWER MAIN JOINTS WITHIN 10' EACH SIDE OF THE POINT OF CROSSING and SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN

EXISTING SEWER FORCE MAIN ABOVE WATER MAIN, OR EXISTING SEWER FORCE MAIN BELOW WATER MAIN BY LESS THAN 18":

- POLYETHYLENE WRAP AND CONCRETE ENCASE SEWER FORCE MAIN JOINTS WITHIN 10' EACH SIDE OF THE POINT OF CROSSING (UNLESS WELDED HDPE THEN NOT NECESSARY) and SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN

LESS THAN 24" DIAMETER RCP STORM DRAIN ABOVE WATER MAIN, OR LESS THAN 24" DIAMETER RCP STORM DRAIN BELOW WATER MAIN BY LESS THAN 18":

- POLYETHYLENE WRAP AND CONCRETE ENCASE RCP STORM DRAIN JOINTS WITHIN 10' EACH SIDE OF THE POINT OF CROSSING and SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN
- USE EXTERNAL JOINT SEALANTS FOR RCP STORM DRAIN DIAMETERS FROM 16"-21" and SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN

GREATER THAN OR EQUAL TO 24" DIAMETER RCP/RCB STORM DRAIN ABOVE WATER MAIN, OR GREATER THAN OR EQUAL TO 24" DIAMETER RCP/RCB STORM DRAIN BELOW WATER MAIN BY LESS THAN 18":

- POLYETHYLENE WRAP AND CONCRETE ENCASE RCP/RCB STORM DRAIN JOINTS WITHIN 10' EACH SIDE OF THE POINT OF CROSSING and SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN
- USE INTERNAL JOINT SEALANTS OR JOINT GASKETS ON RCP/RCB STORM DRAIN and SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN
- USE EXTERNAL JOINT SEALANTS FOR RCP/RCB STORM DRAIN DIAMETERS FROM 24"-168" and SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN

PVC STORM DRAIN ABOVE WATER MAIN, OR PVC STORM DRAIN BELOW WATER MAIN BY LESS THAN 18":

- SLEEVE OR CENTER PVC STORM DRAIN and SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN

SEWER LATERAL ABOVE WATER MAIN, OR SEWER LATERAL BELOW WATER MAIN BY LESS THAN 12":

- SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN and SLEEVE OR CENTER SEWER LATERAL

SEWER LATERAL ABOVE EXISTING WATER MAIN, OR SEWER LATERAL BELOW EXISTING WATER MAIN BY LESS THAN 12":

- SLEEVE OR CENTER SEWER LATERAL AT CROSSING and RESTRAIN ANY EXPOSED WATER MAIN JOINTS

SEWER MAIN ABOVE WATER LATERAL, OR SEWER MAIN BELOW WATER LATERAL BY LESS THAN 18":

- USE PE TUBING CONFORMING TO AWWA STANDARD C901-02 AND ASTM D2737 FOR WATER LATERAL and SLEEVE OR CENTER SEWER MAIN

RECLAIMED WASTEWATER MAIN ABOVE WATER LATERAL, OR RECLAIMED WASTEWATER MAIN BELOW WATER LATERAL BY LESS THAN 12":

- USE PE TUBING CONFORMING TO AWWA STANDARD C901-02 AND ASTM D2737 FOR WATER LATERAL and SLEEVE OR CENTER RECLAIMED WASTEWATER MAIN

RECLAIMED WASTEWATER MAIN ABOVE WATER LATERAL, OR RECLAIMED WASTEWATER MAIN BELOW WATER LATERAL BY LESS THAN 12":

- USE PE TUBING CONFORMING TO AWWA STANDARD C901-02 AND ASTM D2737 FOR RECLAIMED WASTEWATER LATERAL and SLEEVE WATER MAIN OR CENTER & RESTRAIN WATER MAIN