# GENERAL REQUIREMENTS

(rev. 3/10/08)

## DEFINITIONS

Owner: The legal entity that is responsible for the work being performed around the San Bernardino Valley Municipal Water District (SBVMWD) Pipeline.

Contractor: The contractor, licensed in the State of California, that is working for the Owner.

SBVMWD Easement: The recorded, legal document which describes the width and the conditions under which the Pipeline is allowed to exist at any particular location.

Area of influence: The area adjacent to the easement in which loads imparted at ground surface will impact the Pipeline. This area is defined using the angle of repose for the soil and the depth of the Pipeline at any particular location.

Project area: The combined area of the SBVMWD Easement and the area of influence.

Pipeline: Water pipeline owned by the San Bernardino Valley Municipal Water District.

Pipe Zone: The full width of trench or 5 feet on either side of the Pipeline, whichever is greater, from the bottom of the Pipeline to a horizontal level 12 inches above the top of the Pipeline.

Trench Zone: The portion of the trench from the top of the pipe zone to the bottom of the street in paved areas or to the existing ground surface in unpaved areas.

Cover: The depth of soil measured from the top of the Pipeline to the top of ground surface.

**GENERAL NOTES (to be included on the construction documents for the project)**

1. Owner or Contractor shall call SBVMWD at (909)387-9246 for inspection 5 working days prior to working within the Project Area.

2. Owner or contractor shall provide Soils/Geotechnical inspector to be present for earthwork performed within the SBVMWD easement. Inspector shall certify quality of fill material and compaction to SBVMWD.

3. Contractor shall notify SBVMWD immediately at (909) 387-9246 if any portion of the Pipeline is exposed during construction.

4. No grading operations may take place within the Project Area during times when the Pipeline is not under normal operating pressures and full of water. In the event the SBVMWD must drain the Pipeline or operate the Pipeline at lower then normal pressures, SBVMWD will attempt to coordinate the outage with the contractor 14 calendar days prior to said outage, if possible.

5. No additional fill is permitted within the Project Area unless approved, in writing, by SBVMWD.

6. All backfill and fill material to be used in the SBVMWD easement shall be free of construction debris, organic matter and other deleterious materials.

7. All backfill within the pipe zone shall be free from clay balls and shall have a sand equivalent greater than 30 per ASTM D2419 with the following gradation:

| Sieve Size | Percent Passing by Weight |
|---|---|
| ¾-inch | 100 |
| ½-inch | 95-100 |
| 3/8-inch | 50-100 |
| No. 4 | 20-65 |
| No. 8 | 10-40 |
| No. 40 | 0-20 |
| No. 100 | 0-5 |

8. All backfill within the trench zone shall be native granular material free from roots, debris and organic matter with less than 50 percent passing the No. 200 sieve and with no more than 60 percent gravel (i.e. not less than 40 percent passing the No. 4 sieve) and rock particles with a maximum dimension no greater than 6 inches.

9. All backfill within the pipe zone shall be placed and compacted as follows:

   a) Loose lifts not to exceed 8 inches.

b) Each lift to be compacted to 95 percent maximum dry density as determined by ASTMD 1557.
c) Proposed method for compaction of fill below spring line of pipeline is subject to review and approval by SBVMWD.
d) Relative compaction in pipe trenches shall be as follows per ASTM D75:
    i) Pipe Zone – 90 percent relative compaction.
    ii) Trench Zone - 90 percent relative compaction.

10. No permanent structures to be constructed within the SBVMWD easement.

11. All proposed landscaping, site walls, fences and other miscellaneous site improvements within the SBVMWD easement shall be reviewed and approved by SBVMWD prior to the start of construction. SBVMWD assumes no responsibility for preservation, maintenance or any future replacement of owner's improvements within the SBVMWD easement.

12. District to have an inspector present whenever contractor is doing any work in the Project Area.

13. The District reserves the right to modify, or add to, any portion of these general requirements, as necessary, to protect District facilities. Any modification(s) or addition(s) will be provided, in writing, by the District.

## CONSTRUCTION EQUIPMENT LOADING RESTRICTIONS

### CONDITION 1: COVER DEPTH MAINTAINED AT GREATER THAN OR EQUAL TO 8[1] FEET DURING CONSTRUCTION:

1. No equipment shall be driven over the SBVMWD easement which exceeds AASHTO HS-20 truck loads.

2. Should equipment larger than that listed in item 1 above need to be driven over the SBVMWD easement, then you must comply with the provisions of *Condition 2* below.

3. Minimum soil cover over the top of the Pipeline shall in no event be reduced to less than 8-feet within the SBVMWD easement.

4. A detailed explanation of the construction method within the Project Area.

5. District to have an inspector present whenever contractor is doing any work in the Project Area.

[1] Steel Pipe – A Guide for Design and Installation, AWWA Manual M11, Fourth Edition, page 61.

**<u>CONDITION 2:</u> COVER DEPTH REDUCED TO LESS THAN 8 FEET DURING CONSTRUCTION AND/OR EQUIPMENT LOADS GREATER THAN THOSE ALLOWED IN CONDITION 1.**

<u>Ref:</u> *Steel Pipe – A Guide for Design and Installation*, AWWA M11, latest edition.

1. Contractor shall submit an *Excavation and Backfill Plan* (Plan), in a format acceptable to SBVMWD, for review and approval by SBVMWD. Said Plan shall include the following:
   a. A geotechnical report which provides all applicable data for the soil in the Project Area including the angle of repose. Said report must be stamped and signed by a registered Geotechnical Engineer in the State of California.
   b. A complete list of equipment that will be used in the project area during construction. This list to include the following information (English units):
      i. Make, model, capacity and configuration.
      ii. Operating weight
      iii. Track length on ground
      iv. Track gage
      v. Track width
      vi. Track area
      vii. Track pressure on ground.
      viii. Tire length on ground.
      ix. Tire size
      x. Tire width
      xi. Tire area on ground.
      xii. Tire pressure on ground.
   c. A detailed explanation of the construction method within the Project Area.
   d. If excavation can proceed without impacting the Pipeline, provide plan view and profile view sketches showing the exact location of equipment during construction.
   e. If loads will be transferred to the Pipeline during construction, provide calculations based upon the Boussinesq Equation for review by SBVMWD. Said calculations must be stamped and signed by a registered Civil Engineer in the State of California and clearly provide:
      i. Depth of cover during various stages of construction.
      ii. Equipment Load(s)
      iii. Calculated Pipeline stress
      iv. Pipeline allowable deflection
      v. Calculated Pipeline deflection based upon loading
      vi. If actual Pipeline deflection exceeds allowable Pipeline deflection, provide design of a mitigation measure(s) that will reduce the loading on the Pipeline so that the allowable Pipeline deflection is not exceeded. Provide SBVMWD with engineering calculations for review and approval. Said calculations must be stamped and

signed by a registered Civil Engineer in the State of California and clearly provide the following, in addition to those items listed above:

1. Sketch of mitigation measure(s).

f. If required, the last 1 foot of cover over the Pipeline must be removed by hand.

2. Submit plan for permanent separation between the Pipeline and the proposed facility.
3. District to have an inspector present whenever contractor is doing any work in the Project Area.