

8.4 Reinforcing Steel. Bar reinforcement shall be structural grade steel, rolled from new billet stock, manufactured in accordance with the requirements of the American Society for Testing Materials, serial designation A 15-39 with subsequent amendments.

Bar reinforcement shall be accurately placed as shown on the plans and shall be firmly held in position by wiring at intersections with No. 14 or No. 16 wire and by using concrete or metal chairs, spacers, metal hangers, supporting wires and other approved devices.

The price paid per pound for bar reinforcement shall include full compensation for all labor, material, tools, equipment and doing all the work involved in placing the reinforcement complete in place in accordance with the plans and these specifications.

#### SECTION 9 - GATE INSTALLATION

The gate shall be sixteen (16) inch Armo, Model 104, heavy duty circular gate or equal, with an extension stem, threads and hand wheel.

The extension stem shall be cold rolled steel, nominally seven eighths inches (7/8") in diameter rigidly connected to gate stem on lower end and the upper end shall have sufficient threaded section to permit full opening of the gate. Hand wheel and threaded section shall be of a size recommended by the manufacturer of the gate to provide satisfactory operation.

The gate shall be connected to pipe and concrete inlet box in accordance with manufacturer's recommendations and as shown in plans.

The extension stem to gate shall be laid on the upstream facing of the dam and care shall be taken that pipe is true to line and grade. To anchor the pipe properly it shall be supported on concrete pedestals with eye bolts as shown upon plans.

Payment shall be a lump sum for installation, which shall include full compensation for furnishing all material, labor, equipment, and appurtenances to do the work specified.

#### SECTION 10 - DRAINAGE DITCH AND CONDUITS

The watershed of the reservoir basin shall be drained by a side ditch around the perimeter of the reservoir basin, exclusive of the dam itself, and this ditch shall be excavated in the roadway berm around the dam. Where ditch intersects entering channels an embankment shall be constructed across

the channels to impound surface run-off water and direct it into the ditch. These embankments may be built of material that does not meet the standard required for the dam embankment. On both sides of the dam, that is the right and left abutment, a 24" standard Armo End Section or equal, shall be installed to divert drainage water into suitable pipes. Pipes, both full and semi-circular, will be furnished by the District. Before installation this pipe shall be thoroughly cleaned, and painted with protective coating. It shall be welded together, where extending down the slope of the dam shall be supported and anchored to concrete chairs set in the embankment.

#### SECTION 11 - FENCING INSTALLATION.

To be covered by supplementary contract.

#### SECTION 12 - DRESSING OF INTERIOR OF RESERVOIR BASIN.

The interior slopes of reservoir basin shall be dressed to neat lines on slopes to be determined by the Engineer. All voids or loose places in side slopes shall be compacted and the slopes smoothed to permit the application of asphaltic coating under supplementary contract.

#### SECTION 13 - OUTLET CONDUIT EXTENSION

From the lower end of the encased conduit as described in Section 7.1 above, the outlet conduit shall be 15" centrifugally spun reinforced concrete double rubber gasket pressure pipe, similar to that manufactured by American Pipe and Construction Company or Concrete Conduit Company in accordance with the manufacturers specifications and capable of withstanding a maximum hydrostatic head of 150 feet.

The pipe sections shall be laid in trench to true alignment and grade. Exceptional care shall be taken in placing the pipe and making the field joint. Bumping of the pipe in the trench will not be permitted. The endless rubber ring gaskets shall be properly lubricated with a suitable vegetable compound soap before they are placed in the groove in the spigot of the pipe. The gaskets will be furnished to the Contractor for placement by him in the groove. They shall not be twisted, rolled, cut, crimped or otherwise injured or forced out of position during the closure of the joint. The ends of each pipe section making up the joint shall be thoroughly cleaned and wetted while in a horizontal position and a layer of soft mortar applied before inserting the end of the pipe into the sleeve. The excess mortar shall be squeezed out into the interior of the pipe where it shall be removed by swabbing.

After the pipe has been laid and sufficient backfill has been made to hold it securely in place, the annular space around the joint shall be poured with cement grout in the field. The grout shall be poured in such a manner that all exposed portions of the metal joint sleeves shall be completely protected with cement mortar. The inside joint recess between ends of pipe sections shall be filled by buttering the pipe ends with cement mortar as the pipe is laid. All extruded fins and excess joint mortar shall be removed from the interior of the pipe line.

SECTION 14 - FIELD TEST FOR PRESSURE PIPE. The Contractor may test the pipe line in sections or as a unit when all of the pipe in the line is at least 28 days old. The test shall be made by closing valves when available, or by placing temporary bulkheads in the line and filling the line slowly with water. Care shall be used to see that all air vents are open during the filling. After the line, or section thereof, has been completely filled, it shall be allowed to stand under a slight pressure for a sufficient length of time to allow the concrete to absorb what water it will and to allow the escape of air from any air pockets. During this period, the bulkheads, valves, manholes and connections shall be examined for leaks. If any are found, these shall be stopped or, in the case of valves in the main line or bulkheads, provision shall be made for measuring the leakage during the test. The test shall consist of holding a pressure equal to 100% of the working head on the line for a period of 4 hours. The water necessary to maintain this pressure shall be measured through a meter or by other means satisfactory to the Engineer. The leakage shall be considered the amount of water entering the pipe lines during the test, less the measured leakage through valves or bulkheads. This leakage shall not exceed 100 gallons per inch of diameter per mile per 24 hours. Any noticeable leaks shall be stopped and any defective pipe shall be replaced with new sections.

SECTION 15 - GUARANTEE.

The Contractor shall guarantee the pipe line against leaks and breaks due to defective material or workmanship for a period of one year from the date of completion of contract. Damage or leaks due to acts of God or from sabotage or vandalism are specifically excepted from this guarantee.

Where a pipe manufacturer furnishes pipe to be installed by others, the pipe manufacturer's guaranty shall cover only the materials and workmanship used in the manufacture and delivery of the pipe.

When defective material and workmanship are discovered requiring repairs to be made under this guaranty, all such repair work shall be done by the Contractor at his own expense within 5 days after written notice of any leaks or breaks has been given him by the Owner. Should the Contractor fail to repair such leaks within 5 days thereafter, the Owner may make the necessary repairs and charge the Contractor with the actual cost of all labor and material required. In emergencies demanding immediate attention, the Owner shall have the right to repair the same and charge the Contractor with the actual cost of all labor and material required.