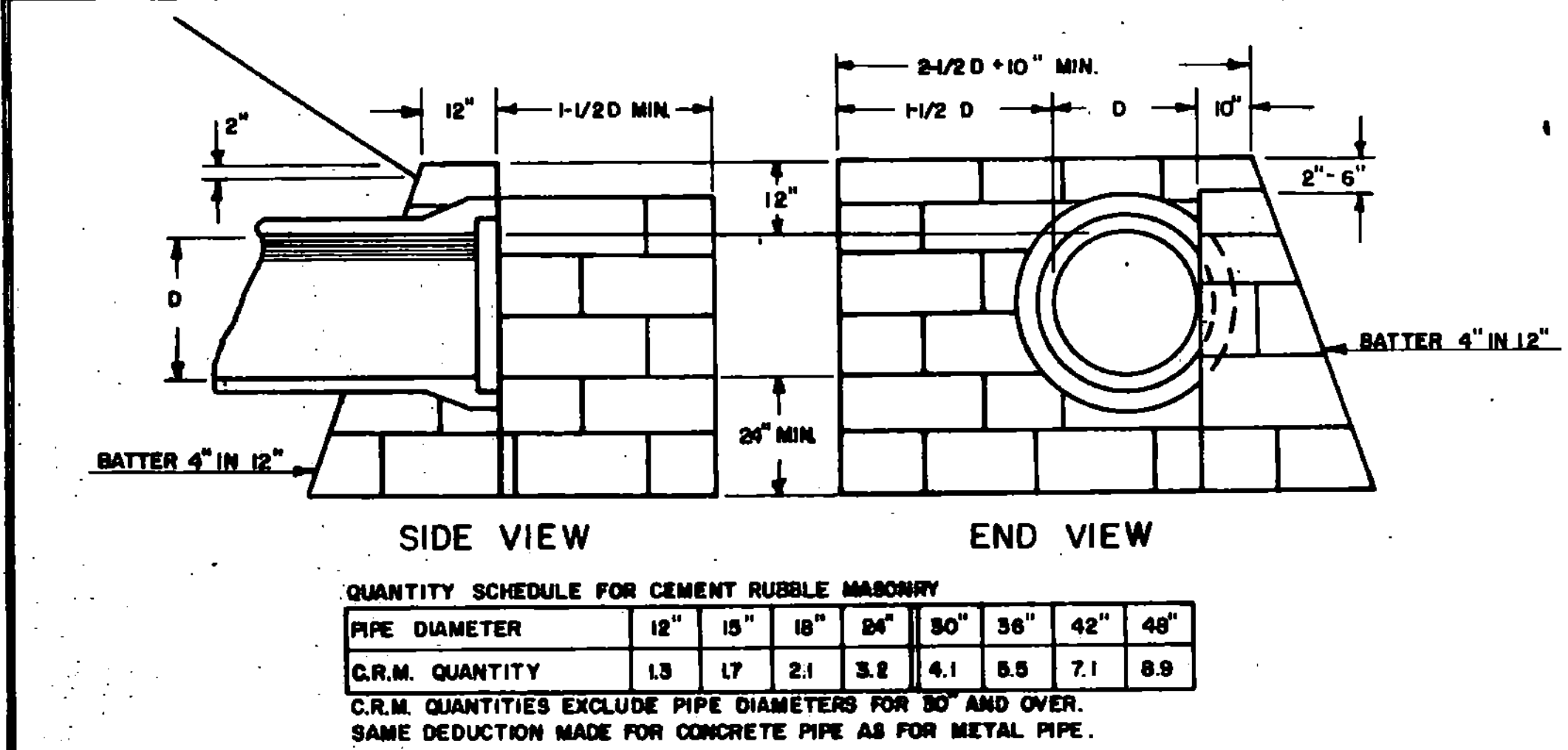
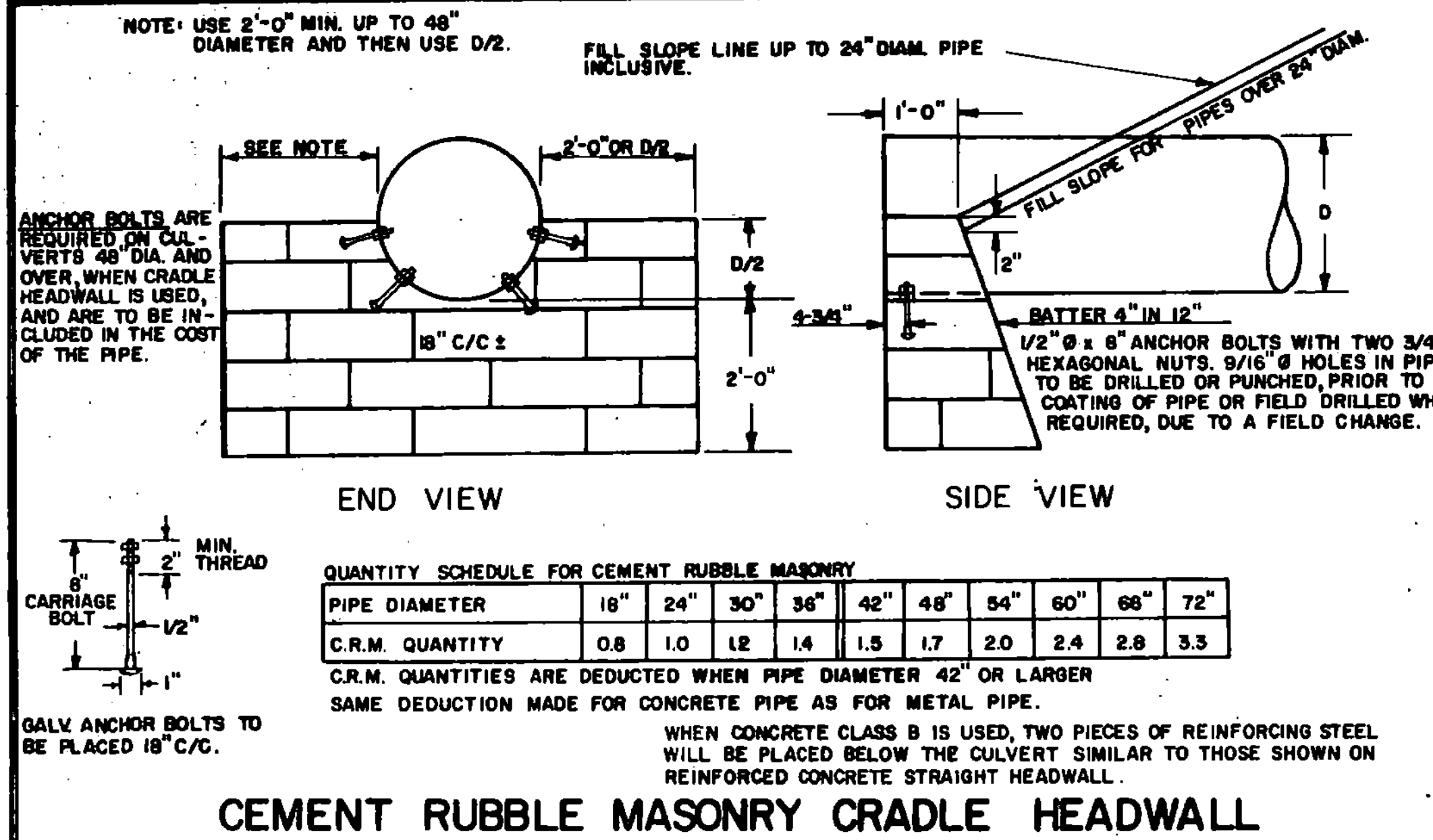


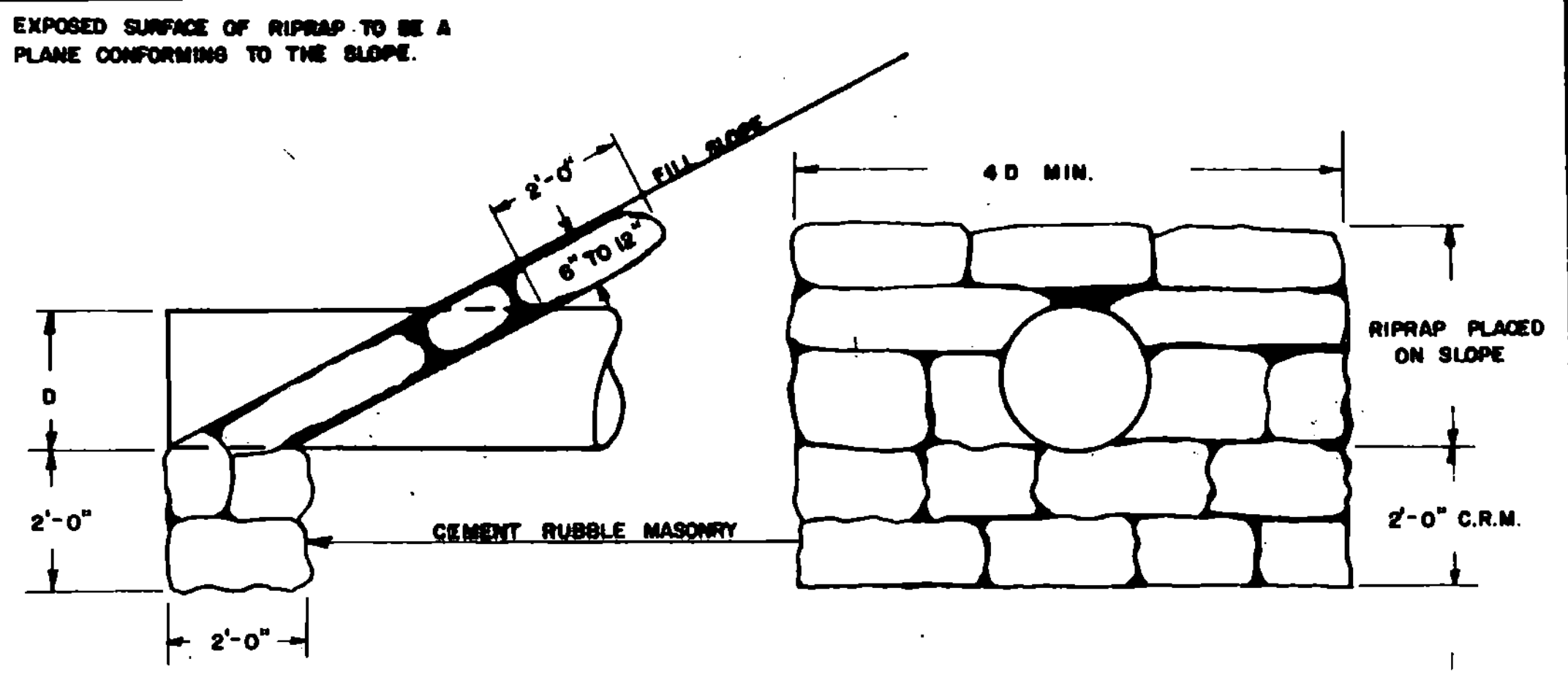
CEMENT RUBBLE MASONRY STRAIGHT HEADWALL



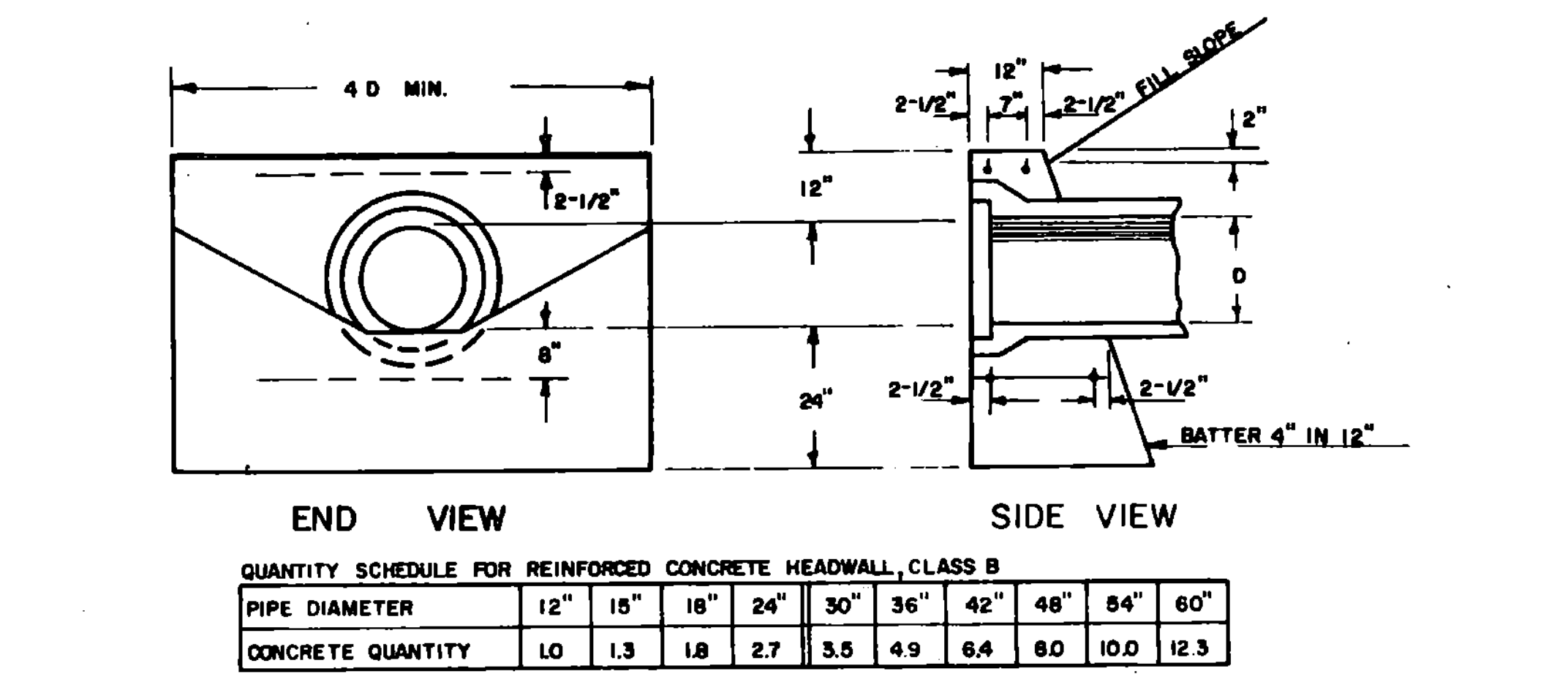
CEMENT RUBBLE MASONRY "L" TYPE HEADWALL



CEMENT RUBBLE MASONRY CRADLE HEADWALL



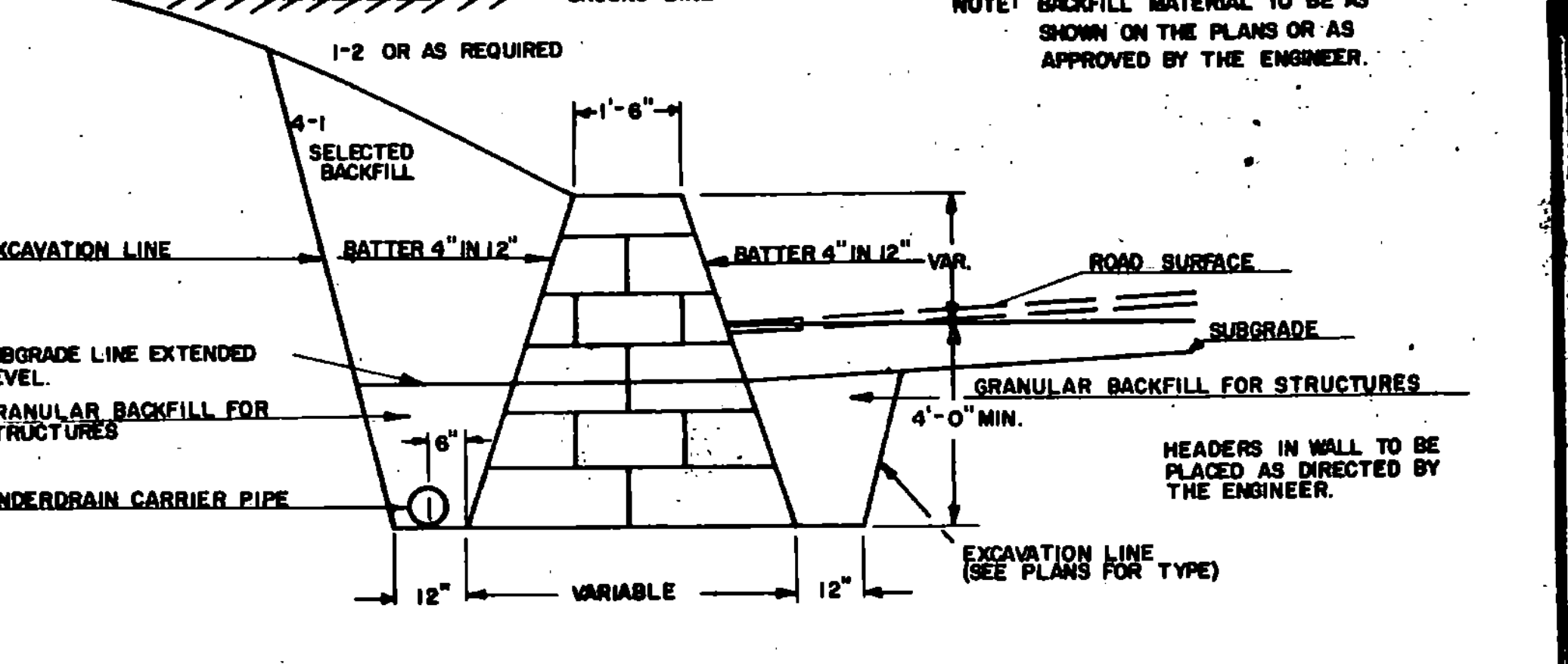
RIPRAP LIGHT TYPE SLOPE HEADWALL WITH CEMENT RUBBLE MASONRY FOOTING



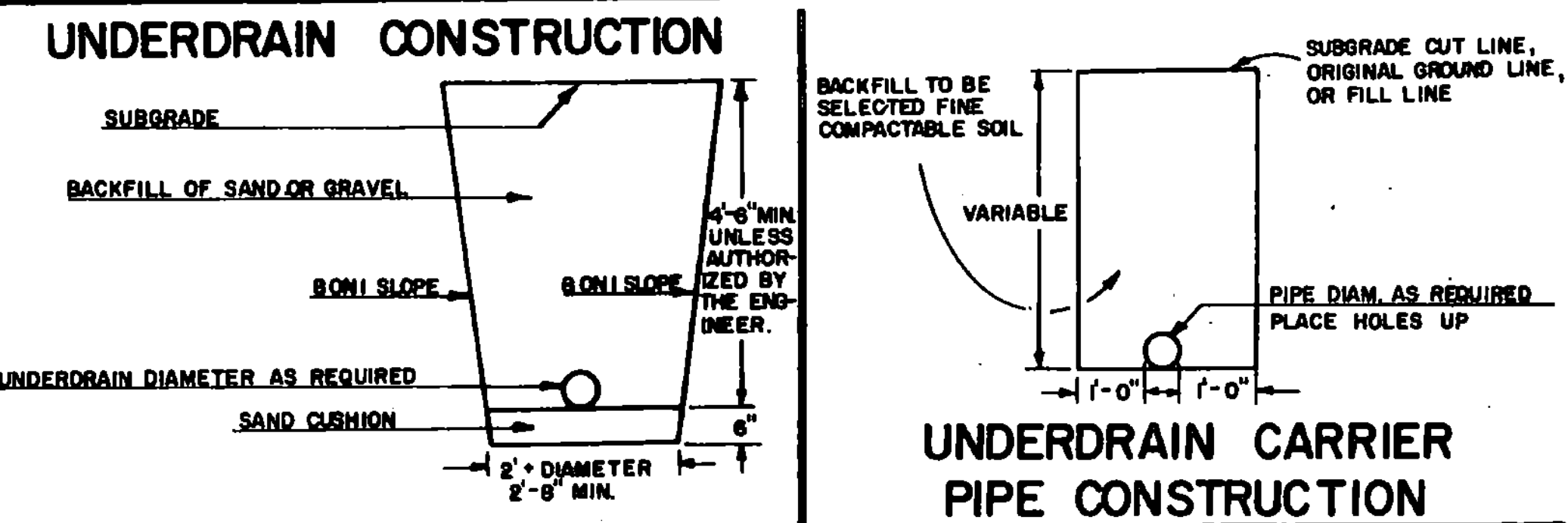
REINFORCED CONCRETE STRAIGHT HEADWALL

GENERAL NOTES - HEADWALLS:

1. THE HEIGHT OF HEADWALLS ON DRIVEWAY PIPES IS TO BE REDUCED TO 6" ABOVE THE TOP OF PIPE.
2. BELL AND SPIGOT PIPE IS TO BE LAID WITH THE BELL UPSTREAM.
3. HEADWALL QUANTITIES, FOR THE SAME TYPE HEADWALLS ON PIPES OF EQUAL DIAMETER, ARE THE SAME FOR BOTH CONCRETE AND METAL PIPE. LENGTH OF HEADWALLS ARE BASED ON INSIDE DIAMETER OF PIPES.
4. THE NECESSITY OF CONSTRUCTING A FLOOR AT THE ENTRANCE TO AN L TYPE HEADWALL SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER AND ANY INSTALLATION THEREOF SHALL BE AT HIS DIRECTION.



CEMENT RUBBLE MASONRY RETAINING WALL



GENERAL NOTES - UNDERDRAIN:

1. GRADE FOR UNDERDRAIN PIPE SHALL BE PARALLEL WITH THE GRADE OF THE ROAD UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. A FLUSHING BASIN IS TO BE INSTALLED AT INLET WHEN LESS THAN 3% GRADE IS USED OR AS ORDERED BY THE ENGINEER.
3. THE UNDERDRAIN SHALL BE TAKEN TO A PROPER OUTLET AND PROTECTED WITH A HEADWALL OF CEMENT RUBBLE MASONRY IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER.
4. ELBOWS, T, AND OTHER JUNCTION UNITS NECESSARY FOR PROPER INSTALLATION OF UNDERDRAIN, AS DIRECTED BY THE ENGINEER, ARE TO BE INCLUDED IN THE UNIT BID PRICE FOR UNDERDRAIN OR CARRIER PIPE.

UNDERDRAIN TO BE LAID MIDWAY BETWEEN SUBGRADE LINE AND POINT OF SHOULDER OR AS DIRECTED BY THE ENGINEER.

REVISIONS AND CORRECTIONS

MAR. 8, 1972: CHANGED ANCHOR BOLTS FROM 10" "L" TO 8" CARRIAGE BOLTS

DEC. 16, 1976: NOTE ADDED ON REINFORCING STEEL FOR CRADLE HEADWALLS

OCT. 30, 1988: REVISED TO CONFORM TO 1986 SPECIFICATIONS.

APPROVED: DATE: Dec. 6, 1971

*R.N. Arnold*  
CHIEF ENGINEER

*E.H. Stinchey*  
ASST. CHIEF ENGINEER

*L.M. Lane*  
HIGHWAY ENGINEER

CEMENT RUBBLE MASONRY HEADWALLS & RETAINING WALL  
RIPRAP LIGHT TYPE SLOPE HEADWALL  
REINFORCED CONCRETE HEADWALL  
UNDERDRAIN & CARRIER PIPE CONSTRUCTION DETAILS



STANDARD

D-2