SECTION 03 30 01

CONCRETE BLOCKING OR ANCHORAGE

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section covers the manufacture of materials and installation of concrete blocking or anchorage for thrust resistance. Concrete blocking shall be placed at bends, tees, crosses, fire hydrants, plugs, etc. in the supply line. Blocking shall also be installed for blow-offs as shown on the plans or as directed by the Engineer.

1.2 MEASUREMENT AND PAYMENT

A. Restrained joints, fittings, and concrete blocking shall not be a separate bid item. Cost for work herein specified, including the furnishing of all materials, equipment, labor, and incidentals necessary to complete the work, shall be included in the unit price for water or sanitary sewer lines in place.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Cement shall conform to the current ASTM C150 standard and be Type I.

B. Aggregates shall conform to the current ASTM C33 standard.

C. Concrete strength shall be at least 2,000 psi at twenty-eight (28) days, unless otherwise shown on the plans. Concrete for blocking shall be of a quality and placed in accordance with SECTION 03 30 00 – CONCRETE. The concrete for blocking shall be class 2,000 psi concrete (class "C").

D. 3,000 psi sack-crete may be used but must be hydrated prior to placement.

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

A. THRUST RESTRAINT

1. Hydrants

The bowl of each hydrant shall be well braced against a sufficient area of unexcavated earth at the end of the trench with concrete blocking, or it shall be tied to the pipe with restrained joints as shown or directed by the City.

Tie rods, clamps, or other components of dissimilar metal shall be protected against corrosion by encasement of the entire assembly with 8-mil thick, loose polyethylene film in accordance with AWWA C105.

Thrust restraint design pressure should be equal to 200 psi.

2. Fittings

The contractor shall install concrete blocking and retaining glands to all tees, Y-branches, bends deflecting eleven and one-fourth degrees (11 ¼°) or more, and plugs which are subject to internal pressure in excess of 10 psi. to preclude separation of joints.

If stainless steel is not used, the contractor shall protect from corrosion all steel clamps, rods, and other metal accessories used in reaction anchorages, or joint harnesses subject to submergence, or in direct contact with earth and not encased in concrete with epoxy coating or wrapped with 8 mil. Polyethylene film. All bolts and nuts shall be 316 Stainless Steel.

3. Restraint Materials

Vertical and horizontal reaction blocking shall be made of concrete having a compressive strength of not less than 2,000 psi after twenty-eight (28) days.

Blocking shall be placed between solid ground and the fitting to be anchored; the area of bearing in the pipe and on the ground in each instance shall be that shown on the plans or directed by the City. The blocking shall, unless otherwise shown or directed, be so located as to contain the resultant thrust force, and so that the pipe and fitting joints will be accessible for repair.

Mechanical joints utilizing set-screw retainer glands (DIP only, use Megalug or pre-approved equal for PVC), or metal harness of tie rods or clamps shall be used in addition to concrete blocking. Components of dissimilar metal shall be protected against corrosion by encasement of the entire assembly with 8-mil thick, loose polyethylene film in accordance with AWWA C105.

B. PLACING CONCRETE BLOCKING

Extend 2,000 psi concrete blocking from the fitting to solid, undisturbed earth and install so that all joints are accessible for repair. The bearing area shall be as shown on the plans. If no details regarding blocking are shown on the plans, provide enough concrete bearing against the ditch to limit soil loading to 200 psf from the thrust produced at an internal pressure in the pipe of 200 psi.

Concrete shall not be placed unless all pipes, valves, fittings, forms, and reinforcement have been inspected.

Handle all concrete in such a manner to avoid segregation, separation, or loss of ingredient, or the displacement of piping, etc.

Place concrete in continuous horizontal layers not exceeding 24". Place each layer quickly enough so that the previously placed concrete is still plastic when the next layer is placed. Provide any construction joints that are necessary.

Before beginning the placement of concrete, inspect all forms, pipes, fittings, valves, etc. for alignment and rigidity. Tighten all supports and make corrections to alignment as required. Inspect all reinforcement, if any, for placement and rigidity.

Do not begin placing concrete until all forms and reinforcement have been inspected by the Engineer.

Clean all loose dirt, mud, water, and debris from the trench and forms. All surface encrusted with hardened concrete form previous placement operations shall be clean.

Clean all pipe, fittings, valves, etc. projecting from previously placed concrete before placing new concrete.

Accurately and securely place all embedded items.

END OF SECTION