| N 1 | Concrete/ Type S Mortar |
| N 2 | Cement/ Calcium Aluminate |
| N 3 | Cement/ Calcium Aluminate Lining System/ Sanitary Sewer |
| N 4 | Concrete/ High Early Concrete Mix |
| N 5 | Non-Shrink Grout |
N 1 – CONCRETE/ TYPE S MORTAR:

SPECIFICATION:
Type S Mortar shall meet or exceed the performance specification of:

- ASTM C1329, ASTM C270
- All walls shall be cleaned and free from orange material and harmful amount of dissolved acids, alkalies, and salts.
- Resistance to freeze – thaw deterioration.

TECHNICAL DATA:
- Compressive Strengthen
- 7 Days – 1300 psi
- 28 Days – 2100 psi

MANUFACTURER:
- QUIKRETE
- CEMEX
- OPEN

RESTRICTIONS:
# N 2 – CEMENT/ CALCIUM ALUMINATE:

**SPECIFICATION:**
Calcium aluminate cement shall meet or exceed the performance specifications of:

- Made with 100% fused calcium aluminate aggregate and calcium aluminate cement.

Compressive strength per ASTM C109 shall meet the following minimums:

- 1 hour – 400psi
- 24 hours – 2000psi
- 28 days – 9000 psi
- Shall have a minimum bond of 2000psi per ASTM C882.
- Shall have no shrinkage @ 95% R.H. per ASTM C596.

**APPLICATION:**

- For use where harsh hydrogen sulfide conditions exist in sanitary sewers.
- For construction or reconstruction of the bench and invert in concrete, masonry, or inert (such as fiberglass) lined manholes, wet wells and lift stations.

**MANUFACTURER:**

- STRONG SEAL– BENCH MIX
- OPEN

**RESTRICTIONS:**

- Only permitted for the rehabilitation or reconstruction of manhole benches.
**SPECIFICATION:**

Calcium aluminate cement lining system shall meet or exceed the performance specifications of:

- Lining material shall provide a corrosion resistant liner to prevent any deterioration of concrete surfaces from hydrogen sulfide and other corrosive gases/ acids produced by wastewater and to prevent infiltration.
- Shall be 100% calcium aluminate cement with 100% calcium aluminate aggregate.
- Manufacture shall warrant material and workmanship for a minimum period of ten (10) years.
- Shall be designed to withstand long-term exposure to a bacterially corrosive hydrogen sulfide environment that may be expected to produce a pH of 1 on normal Portland Cement concrete or typical brick and mortar surfaces.
- Mortar furnished under this specification shall be a pre-packaged mortar, including all cement, aggregate, and any required admixtures of fibers.
- It is the intent of this specification that the contractor only be required to add the proper amount of potable water so as to produce a mortar suitable for pneumatic application.
- Typical package weights shall not be less than 50 pounds.
- To ensure total unit responsibility, all materials and installation shall be furnished by, and coordinated with, one supplier/ manufacture.
- The chemical composition of the cement portion as well as the aggregates of the mortar mix shall be as follows:

<table>
<thead>
<tr>
<th>Chemical analysis main constituents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;3&lt;/sub&gt;</td>
</tr>
<tr>
<td>39% - 44%</td>
</tr>
</tbody>
</table>

**MANUFACTURER:**

- KERNEOS ALUMINATE TECHNOLOGIES
- SEWPERCOAT “PG”
- OPEN

**RESTRICTIONS:**

- Use of this product is restricted to coating rehabilitation of existing manhole structures.
N 4 – CONCRETE/ HIGH EARLY CONCRETE MIX:

SPECIFICATION:
High early concrete mix shall meet or exceed the performance specifications of:

- Shall be used above or below grade, interior or exterior.
- High early concrete mix furnished under this specification shall be a pre-packaged product, including all cement and any required admixtures.
- It is the intent of this specification that the contractor only be required to add the proper amount of clean potable water so as to produce a concrete mix suitable for application.
- Coverage: A 60-lb. bag yields approximately 0.45 cu ft.
- An 80-lb. bag yields approximately 0.6 cu ft.
- Packaging: 60-lb. & 80-lb. bags.
- Shelf life: One year from date of manufacture.

TECHNICAL DATA:
- Shall have a minimum compressive strength, ASTM C-387, 1 day- 1500psi, 3 day- 2500psi, 7 day- 3500, 28 day- 5000.
- Slump range- 2”-3”.

MANUFACTURER:
- QUIKRETE- QUIKRETE 5000 HIGH EARLY STRENGTH CONCRETE MIX #1007
- A.W. COOK CEMENT
- OPEN

RESTRICTIONS:
Use of this product is restricted to small nonstructural concrete repairs where truck mix is not practical and should be limited to:

- Sidewalk panel replacement.
- Curb and gutter section replacement.
- Valve box pads.
N 5 – NON-SHRINK GROUT:

SPECIFICATION:
Non-shrink grout shall meet or exceed the performance specifications of:

- ASTM C928 R
- ASTM C1107
- Non-shrink, high strength, high flow material
- Shall be used above or below grade, interior or exterior.
- It is the intent of this specification that the contractor only be required to add the proper amount of clean potable water so as to produce a mix suitable for application.
- When hardened, does not shrink so it’s final volume is greater than or equal to the original installed volume.
- Can be utilized in a fluid, flowable or plastic consistency. Respective compressive strengths will vary based on consistency.
- In accordance with ASTM C1107, grout shall be maintained at 70 degrees F to achieve specified performance.

Technical Data

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Plastic</th>
<th>Flowable</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 Hours</td>
<td>5,000 psi</td>
<td>4,500 psi</td>
</tr>
<tr>
<td>7 Days</td>
<td>6,000 psi</td>
<td>5,500 psi</td>
</tr>
<tr>
<td>28 Days</td>
<td>8,000 psi</td>
<td>7,500 psi</td>
</tr>
</tbody>
</table>

MANUFACTURER:
- QUIKRETE
- SIKA
- OPEN

RESTRICTIONS:
This product can be used for load transfers, structural repairs and reinforcing steel, to include:

- Anchor Bolts
- Reinforcing Steel
- Manhole Repairs
- Load Transfers
- Bearing Plates