

331100 – UTILITY SERVICES

PART 1 – GENERAL

A. Summary - Section includes:

1. Water distribution/fire lines, fire hydrants, meter pits, and accessories 5' outside of building.
2. Sanitary sewage lines, manholes, cleanouts, and accessories 5' outside of building.

B. Referenced Standards:

1. For PVC pipe, conformance with C-900.
2. For DIP pipe, conformance with C-151.
3. Rules, regulations, standards and specifications of the applicable local municipality or water and sanitation district:
 - a. East Cherry Creek Valley Water and Sanitation District
 - b. Holly Hills Water and Sanitation
 - c. City of Aurora (Water and Sewer)
 - d. Arapahoe County Water/Wastewater Authority
 - e. Chaparral Metropolitan District
 - f. Cherry Creek Valley Water and Sanitation District
 - g. Cherry Creek Village Water District
 - h. City of Englewood (Sewer)
 - i. Denver Water
 - j. Gold Smith Gulch (Sewer)
 - k. Havana Water and Sanitation (Sewer)
 - l. Willows Water District (Water)

C. Submittals Required:

1. Product data.
2. Contractor shall transmit copies of inspection reports from Water and Sanitation District or Municipality to Owner and Architect.

D. Restrictions/Critical Criteria:

1. Coordinate design of water systems (domestic and irrigation) with the School District to reduce, where possible, the cost of tap fees.
2. Avoid sanitary sewage lift stations to the extent possible.

PART 2 – PRODUCTS

- A. All materials/systems shall conform to the referenced specifications.

334100 – STORM DRAINAGE

PART 1 – GENERAL

A. Summary - Section includes:

1. Storm drainage
2. Ponds/outlet structures

B. Referenced Standards/Minimum Criteria:

1. Rules, regulations, standards and specifications of the applicable Storm Sewer District, Municipality or Arapahoe County.
2. Design shall follow the CCSD Stormwater Management Plan.

C. Submittals Required:

1. Drainage studies by the Civil Engineer for the local jurisdiction.
2. Product data by Contractor.

D. Restrictions/Critical Criteria:

1. Storm water shall not discharge over pedestrian walks, pipe underground where possible.
2. Design grades around buildings to achieve positive drainage away from building (prefer minimum of 2% slope around building.)
3. Protect inlet and outlet structures with tamper resistant screen to prevent passage of objects larger than 6 inches.
4. All day lighted pipes shall have concrete headwalls.
5. Permanent pond water will not be allowed.
6. Fencing around detention basins is not necessary except as required around outlet structures.
7. Storage and reuse of storm water for irrigation systems is not allowed by the State of Colorado except by special permit.

PART 2 – PRODUCTS

- A. All materials/systems shall conform to the references standards.
- B. All storm inlet grates shall be stamped with universal fish symbol indicating no dumping/water enters natural drainage way.

334600 – SUBDRAINAGE SYSTEMS

PART 1 – GENERAL

A. Summary - Section includes:

1. Gravel and drainage pipe around foundation and underslab drainage pipe.

2. Protective filler fabric.
3. Foundation drainage mat.
4. Cleanouts.

B. Referenced Standards/Minimum Criteria:

1. Unperforated PVC pipe: ASTM C2779.
2. Perforated PVC pipe: ASTM D2729.

C. Submittals Required:

1. Product data.

D. Restrictions/Critical Criteria:

1. Include subdrain system when recommended by Geotechnical Engineer.
2. Geotechnical Engineer, employed by School District, will observe layout, excavation and installation of subdrain system.
3. Include grade cleanouts at each major change of direction of pipe. In planting areas pour 12" x 12" concrete pad around cleanout.
4. Slope of drain and location of pipe to foundation per recommendation of Geotechnical Engineer. Use perforated pipe adjacent to foundations and unperforated elsewhere. All perforated pipe to be enclosed with ¾" washed gravel and gravel to be isolated from adjacent soil with one layer of Mirafi filter fabric.
5. Changes in direction of drain shall be made with 1/8 bends and Y fittings shall be used at all intersections.

PART 2 – PRODUCTS

- A. Unperforated Pipe: Rigid polyvinyl chloride sewer pipe and solvent welded fittings.
- B. Perforated Pipe: Perforated rigid polyvinyl chloride leaching system piping and solvent welded fittings. Provide solid end caps at terminations.
- C. Cleanout pipe and fittings shall be of cast-iron soil pipe. Each cleanout shall have a brass ferrule and cast-brass screw jointed plug with socket for wrench.
- D. Bedding around drain pipe: Washed ¾" to No. 4 aggregate with less than 3% passing the No. 200 sieve.
- E. Foundation drainage mat:
 1. Mirafi Miradrain 6000.
 2. American Wick Drain, Amerdrain 200