

**Jefferson County School District No. R-1  
Support Services Division**

**TECHNICAL GUIDELINES**

**DIVISION 33 – Utilities**

**April 20, 2007**

**DIVISION 33 – UTILITIES**

**33 05 13 Manholes and Structures – April 20, 2007**

- Work in this section is open to any product or material meeting the requirement of this Technical Guideline.
- Manhole:
  1. Precast stacking concrete concentric oblong cones with vertical profile at ladder.
  2. 36 inch minimum height per section
  3. With cast-in aluminum ladder rungs @ 16 inches o.c.

END SECTION 33 05 13

**33 05 16 Utility Structures – April 20, 2007**

- Work in this section is open to any product or material meeting the requirements of this Technical Guideline.
- Hydrants: No requirements
- Meters: No requirements
- Utility boxes: No requirements
- Utility valves: Per utility
- Utility Vaults and terminations are required to serve future temporary classrooms at Elementary, Middle, and Senior High School sites, unless directed otherwise by District personnel.
  1. Power Vault
  2. Low Voltage Vaults for Data, Communications, and Detection/Alarm Systems
  3. Gas
  4. Water Termination
  5. Sewer Termination
- Consult the current Jefferson County School District, R-1 Data Diagram for types, sizes, and routing of utility connections to and from vaults and terminations.
- Coordinate with Divisions 20-32 of these Technical Guidelines
- Utility Vault Construction
  1. Vault: Precast concrete
    - a. 3 foot cube
    - b. With appropriately sized and located knockouts for utility sleeves
      - (1) Mouseholes acceptable
        - (a) Minimum size 6” x 6” x 4”
      - (2) Wall knockouts acceptable
        - (a) Minimum size 18” x 3” x 4”
    - c. Include standard galvanized steel hatch with hinged water rated cover
      - (1) Non skid surface on lid
      - (2) Traffic rated, as required
  2. Cast-in-place concrete slab per Division 03 of these Technical Guidelines.
  3. Brass plate utility identification.
- Power Vault
  1. Vault: Precast concrete
    - a. 3 foot cube

**Jefferson County School District, R-1 TECHNICAL GUIDELINES 2007**  
**Division 33 – Utilities**

- b. With appropriately sized and located knockouts for utility sleeves
        - (1) Mouseholes acceptable
          - (a) Minimum size 6" x 6" x 4"
        - (2) Wall knockouts acceptable
          - (a) Minimum size 18" x 3" x 4"
      - c. Include standard galvanized steel hatch with hinged water rated cover
        - (1) Non skid surface on lid
        - (2) Traffic rated, as required
  - 2. Location:
    - a. At designated temporary classroom area.
    - b. 15 feet minimum separation from Gas/Sewer/Water pads.
  - 3. Connections:
    - a. 2 inch, 480 V conduit to Main Distribution Center.
    - b. And/or 2 inch 120/208V conduit with pull string
  - 4. Connection depth: 24 inches below grade.
  - 5. Utility splice cabinet acceptable where required, based upon utility company direction
- Low Voltage Vault
  - 1. Vault: Precast concrete
    - a. 3 foot cube
    - b. With appropriately sized and located knockouts for utility sleeves
      - (1) Mouseholes acceptable
        - (a) Minimum size 6" x 6" x 4"
      - (2) Wall knockouts acceptable
        - (a) Minimum size 18" x 3" x 4"
    - c. Include standard galvanized steel hatch with hinged water rated cover
      - (1) Non skid surface on lid
      - (2) Traffic rated, as required
  - 2. Location:
    - a. At designated temporary classroom area.
    - b. Within 5 feet of Power Vault.
    - c. 15 feet minimum separation from Gas/Sewer/Water pads
  - 3. Connections for Fire Alarm, Intercom, Security, Data, CATV, Telephone:
    - a. Conduits to communication room per Data, Communications, and Alarm Diagram.
    - b. Conduits to Fire Alarm Control Panel per Data, Communications, and Alarm Diagram.
    - c. Connection depth: 24 inches.
- Domestic Water
  - 1. Terminal:
    - a. Line size shut-off valve complete with curb stop
    - b. Set curb stop sleeve in 24 inches x 24 inches x 6 inch concrete pad on grade at a point 5'-0"± upstream of termination.
  - 2. Location
    - a. Near designated temporary classroom area.
    - b. 15'-0" minimum separation to Power or Low Voltage Vault.
  - 3. Utility Extension
    - a. 1 inch cold water line to originate inside the main building.
    - b. Shutoff isolation valve is required at the connection to main.

**Jefferson County School District, R-1 TECHNICAL GUIDELINES 2007**  
**Division 33 – Utilities**

- c. Install safety marker tape above water line.
- 4. Identification: Brass plate labeled 'water'.
- Natural Gas
  - 1. Terminal: Capped, buried 2 inch valved line utility extension directly under 24 inches x 24 inches x 6 inches concrete pad on grade with cast lettering designating "NAT GAS."
  - 2. Location
    - a. Locate pad 5'-0" ± upstream of termination.
    - b. Near designated temporary classroom area.
    - c. 15'-0" minimum separation to Power or Low Voltage Vault
  - 3. Utility Extension
    - a. Install safety marker tape above line
    - b. Cast Iron pipe is required under vehicle areas and concrete pavement.
    - c. Cleanouts are required at 100'-0" maximum interval.
- Sewer Termination
  - 1. Terminal: 4 inch sewer for future connection. Terminate with a grade clearout in a 24 inches x 24 inches x 6 inches concrete pad.
  - 2. Install safety marker tape above line.

END SECTION 33 05 16

**33 08 00 Commissioning of Utilities – April 20, 2007**

- No requirements

END SECTION 33 08 00

**33 09 00 Instrumentation and Control for Utilities – April 20, 2007**

- Work in this section is open to any product or material.

END SECTION 33 09 00

**33 10 00 Water Utilities – April 20, 2007**

- Coordinate design capacity calculations with water purveyor to establish tap fee.
- In the absence of other information, standards of the following organizations apply:
  - 1. Colorado Department of Health Cross Connection Manual
- Submittals
  - 1. Product Data: Required
  - 2. Shop Drawing: Preferred
  - 3. Test Reports, Certificates: Written evidence of backflow prevention test
  - 4. Closeout: Submittals listed above, updated to record status.
- Building water service:
  - 1. Backflow preventer required
- Fire Hydrants
  - 1. Open to any product or material.

**Jefferson County School District, R-1 TECHNICAL GUIDELINES 2007**  
**Division 33 – Utilities**

2. 6 inch water main extension
3. Continuous loop system design

END SECTION 33 10 00

**33 20 00 Wells – April 20, 2007**

- Work in this section is open to any product or material.

END SECTION 33 20 00

**33 30 00 Sanitary Sewerage Utilities – April 20, 2007**

- Work in this section is open to any product or material
- Restrictions:
  1. Avoid lift stations, if possible.
- Sanitary Sewerage Pipe:
  1. 6-inch minimum pipe size
  2. Recommended minimum slope: ¼ inch per lineal foot.
  3. Minimum Slope: 1/8 inch per lineal foot is permitted only with Jefferson County School District, R-1 authorization.

END SECTION 33 30 00

**33 40 00 Storm Drainage Utilities – April 20, 2007**

- Work in this section is open to any product or material.
- Positive surface drainage away from the building is required on all sides, 10' - 0" minimum perimeter
- Submittals
  1. Regulatory compliance documents
  2. O & M data required
  3. Closeout: Submittals listed above, updated to record status
- Restrictions
  1. Discharge across pedestrian and vehicle pavement is prohibited
  2. Sheet flow is permitted across pavement.
  3. Swales:
    - a. Grass swales and drainage channels are not recommended.
    - b. Inadequate flow typically creates areas of standing water which create a health hazard
  4. Exposed corrugated culvert is prohibited
  5. "Dead-end" systems (i.e. French Drain) are prohibited.
- Protect inlet and outflow with tamper resistant screen to prevent passage of objects larger than eight inches in diameter.
- Provide safety protection planting, fence, or structures at headwalls

END SECTION 33 40 00

**33 70 00 Electrical Utilities – April 20, 2007**

- Work in this section is restricted to specific products of specific manufacturers that have been previously approved by Jefferson County School District, R-1 Facilities Services Department.
- Submittals
  1. Product Data:
    - a. Per Utility Company
  2. Shop Drawing:
    - a. Per Utility Company
  3. Design Data, Test Reports, Certificates, Manufacturer Instruction, Manufacturer Field Reports:
    - a. Per Utility Company
  4. Closeout: Submittals listed above, updated to record status
- Meter:
  1. Furnished by the public power utility
  2. High Schools and Middle Schools will also have pulse meters so that the district can monitor and control electrical demand provided by utility via contractor.
  3. Meter Base:
    - a. Furnished by Division 26 contractor, in accordance with the public utility's standards.
  4. Metering Transformer Compartment:
    - a. Integral component of switchboard.
  5. Splice Cabinet
- Execution Summary
  1. Make arrangements with the utility company to obtain permanent electric service to the project
  2. Install underground service entrance conduits and wire from utility company's pad mounted transformer to building service entrance equipment.
  3. The installation must comply with the utility company's requirements for cold sequencing i.e., disconnect before metering issues.
  4. Meter via current transformer(s) supplied by utility company and located in main distribution center (MDC).
  5. Typical system voltages for Jefferson County School District, R-1 facilities:
    - a. 480Y/277 volts, 3 phase, 4 wire, 60 hz.
    - b. 208Y/120 volts, 3 phase, 4 wire, 60 hz.

END SECTION 33 70 00

**33 80 00 Communications Utilities – April 20, 2007**

- Work in this section is open to any product or material.

END SECTION 33 80 00