

Construction Sequencing Plan Minimizes Service Disruptions

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“If you don't know where
you are going, you'll end
up someplace else.”

— Yogi Berra

“Water service interruption forces Sperry schools to close”

Sperry schools are closed Monday because of lack of water in the area, officials said.

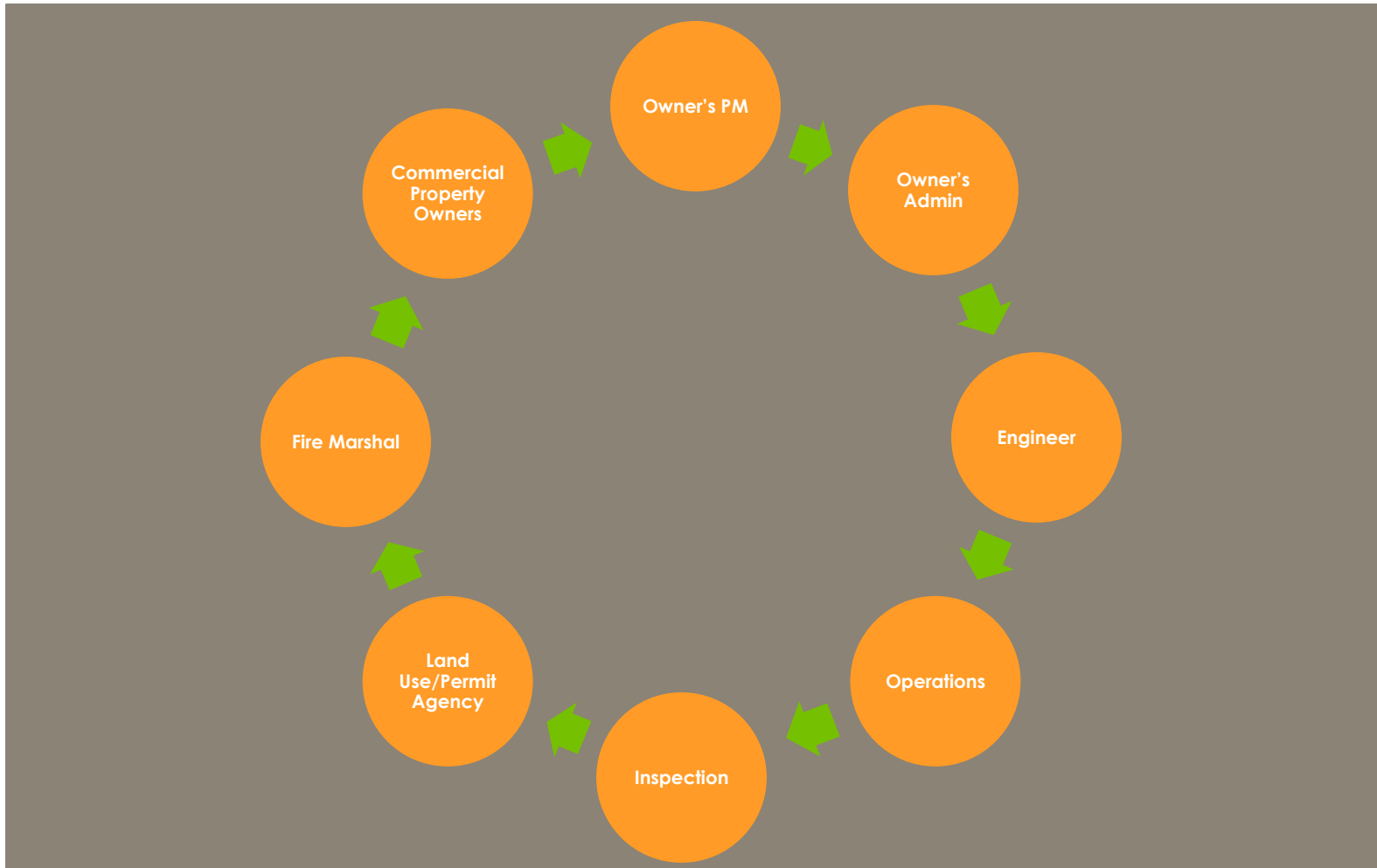
The school district announced Monday morning that classes will not be held "due to a disruption in the water supply to the district," according to the school district website.

April 2015

Sequencing Related Risks

- No Risk – nonexistent
- Monetary Risk – change orders, property damage
- Schedule Risk – completion delay
- Political Risk – customers, bosses, other staff
- Potential Health Risk – loss of water service to customers, cross connection
- Injury/Life Safety – exploding tank, pressure test

Who should be in the loop?



Kickoff/ Design



- Brain dump
- Risk assessment
- Level of sequencing detail in construction documents

Construction



- Preconstruction Meeting
- Who is involved and when?
- Address specific services/locations
- Interim conditions?

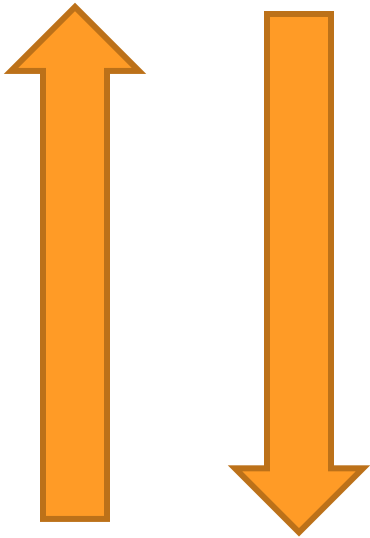
Startup



- Verify assumptions
- Include key parties
- Specific precautions/risks/notifications

Methods to Convey Plan

Risk Upfront Cost



1. None – Leave up to Contractor
2. Preconstruction Meeting
3. Plans/Specifications Narrative
4. Targeted Meeting
5. Diagram(s)/Exhibits in contract documents

Level of Risk?

Communication Red Flags

- Key personnel changes
- Not everyone at the table
- Not in writing
- Not read or misread
- Field changes – define protocol
- Last line of defense?

Example Narrative

Construction Sequence for Connections at M&O Facility (Sheet F-2)

Connection to the existing 12" DI (Supply to 2.0 MG tank)

The existing 12" CI water main between valve numbers 561-T65, 561-T31, 561-T74, and 561-T75 will be shut off to make the connection, and permanently de-activated.

A section of the existing 12" CI to be de-activated must be removed in order to connect to the existing 12" DI water main to the tank.

The 2.0 MG tank can temporarily remain in service through the existing 12" DI by-pass from the 3.0 MG tank. (See detail No. 3, sheet F-4 for system activation)

High tanks 1 and 2 need to be filled to capacity prior to starting the connection.

Connection to the existing 16" DI (Pump Discharge)

The existing 12" CI and 16" DI water mains will be shut off between valve numbers 561-T74, 561-T78, 561-T79, and 562-201 for the connection.

The connection will temporarily interrupt the pump discharge supply to both tanks and service will be dependent upon water storage until the connection is completed. The connection will permanently de-activate the existing 12" CI pump discharge to the 3.0 MG tank and provide pump discharge to supply the 2.0 MG tank through the new 16" DI.

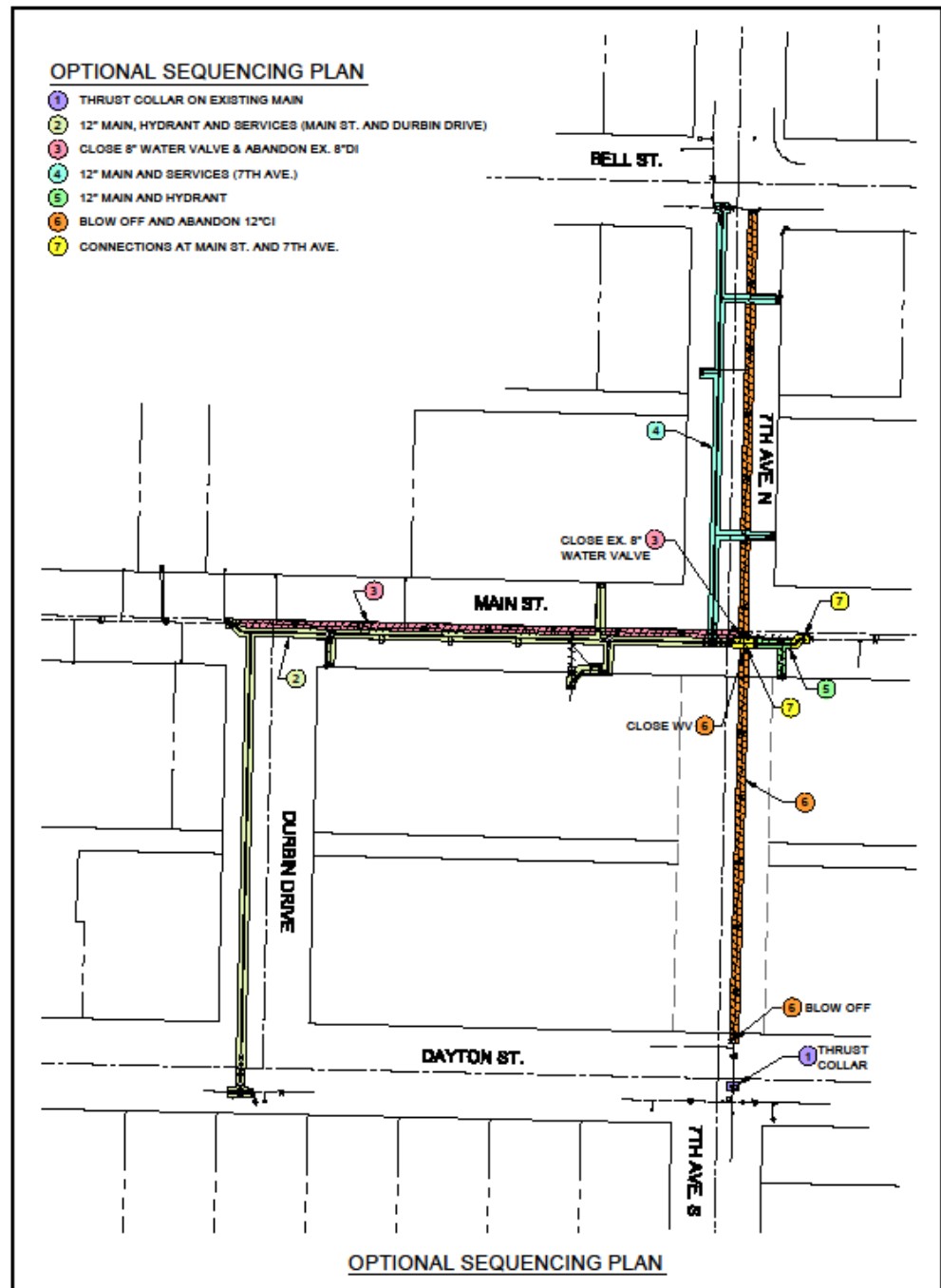
The 3.0 MG tank will remain in service through the existing 12" DI by-pass from the 2.0 MG tank.

Connection to the existing 12" DI (Supply to 3.0 MG tank)

Existing valve number 561-T78 and the valve on the new 12" DI tee to the 3.0 MG tank should already be closed from connection #2.

This connection will complete the booster discharge supply to both tanks through the new 16" DI water main. (See detail No. 3 and No. 5, sheet F-5 for system activation).....

Example Graphic



Example Projects

- Water Main Replacement/Shutdowns
- Pressure Zone Change
- Reservoir Out of Service

Water Main Replacement

Risks to customers

- Super-chlorinated water to customers
- Inappropriate flushing water disposal
- Loss of fire protection/hydrants
- Damage/break old pipe in service – road/house damage
- Delay in water service return
- Connect to wrong pressure zone, etc.
- What else?

Water Main Replacement

Mitigate Potential Risks with Communication and Construction Sequencing Plans

- Notification to customers
- Review construction sequence/plan with all parties
- Temporary Service Plan
- Contingency plan/equipment
- Fire protection coordination
- Shutoff area confirmed/notices – who's responsible?

Temporary Water Service Example



Pressure Zone Change - Questions

- What do you need to be prepared for?
- What could happen to whom if not sequenced properly?
- What should be included in plans/specs?
- Good candidate for sequencing plan exhibit to ensure successful project

Pressure Zone Change – Potential Problems

- Over-pressurize system
- Water heater explosions/leaks
- Connect zones together
- Customers out of service longer than planned
- Loss of fire protection/Hydrants
- Air in system
- Any special needs customers?

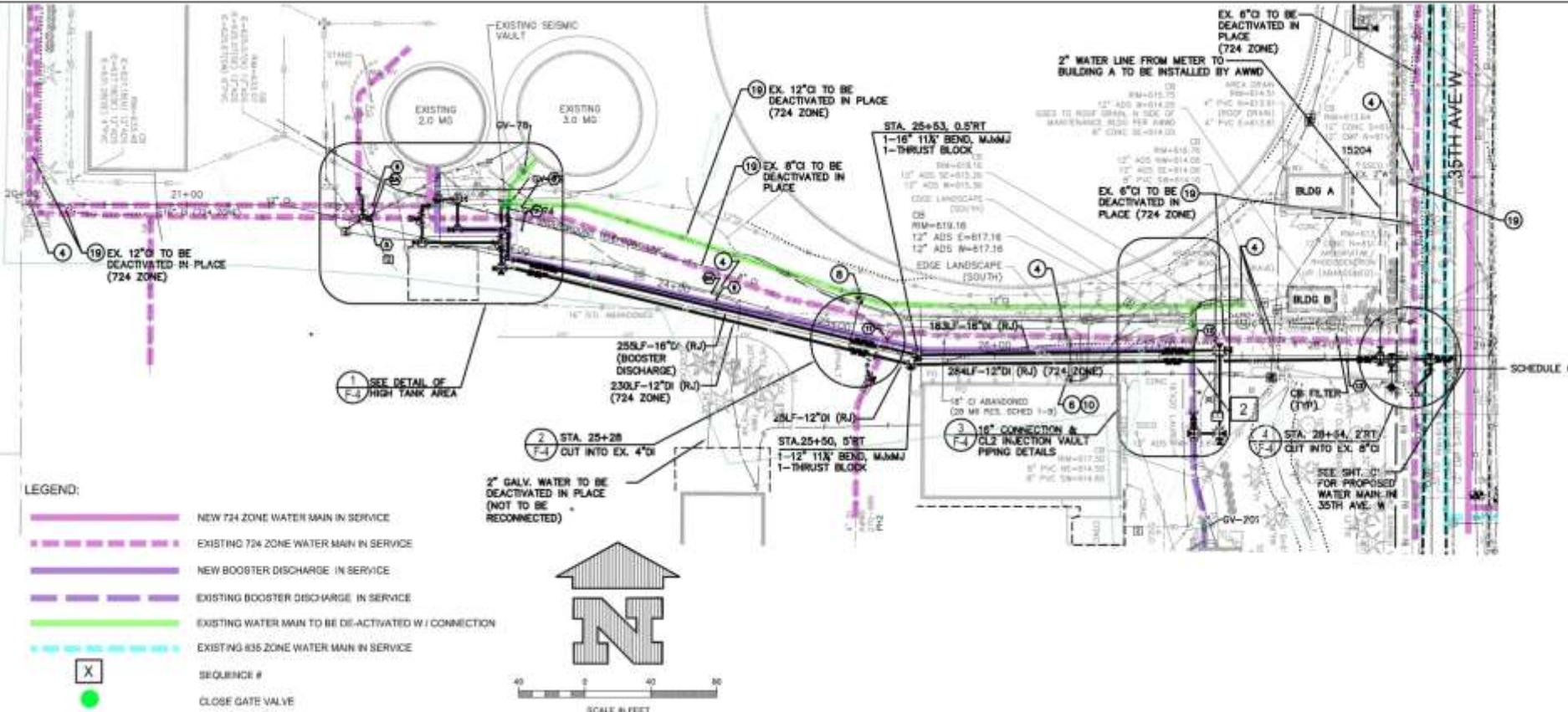


Pressure Zone Change - Avoid/Mitigate Problems

- Understand current system/M&O
- Verify understanding – sometimes not complete or up-to-date
- Address responsibilities/sequence of events in design plans
- Communicate to all
- Increase/decrease gradually if possible
- New individual PRVs required
- Who coordinates effort - define

Reservoir Connections

- Water shutoff acceptable?
- What valving required before/during/after?
- Sequencing of connections defined
- Redundancy
- Customers low pressure/out of service
- Unplanned issue contingency



Questions??

Without a detailed construction sequencing plan that is communicated in writing to key parties, you may hear:

“Well, I assumed that

- You would handle that
- I had flexibility in how I do my connections
- We didn't need temporary service, etc. etc.

= \$\$\$\$\$ & headaches. Avoid, where possible.