Sioux City WWTP Improvements

A Long Range Vision for the Future

Safety and Odors

Operational Reliability

Growth

WWTP Reconstruction and Design Advisory Committee

May 22, 2025

Hazen

BLACK & VEATCH

McCLURE™

Agenda

- ✓ Recap of Last Meeting
- ✓ City WWTP Update
- ✓ Emergency Repairs Project Update
- ✓ Digester Project Update
- ✓ CMAR Update
- ✓ WWTP Design Update
- ✓ Overview of Upcoming Meetings
- ✓ Open Discussion

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Meeting 17 Recap / Follow-Up

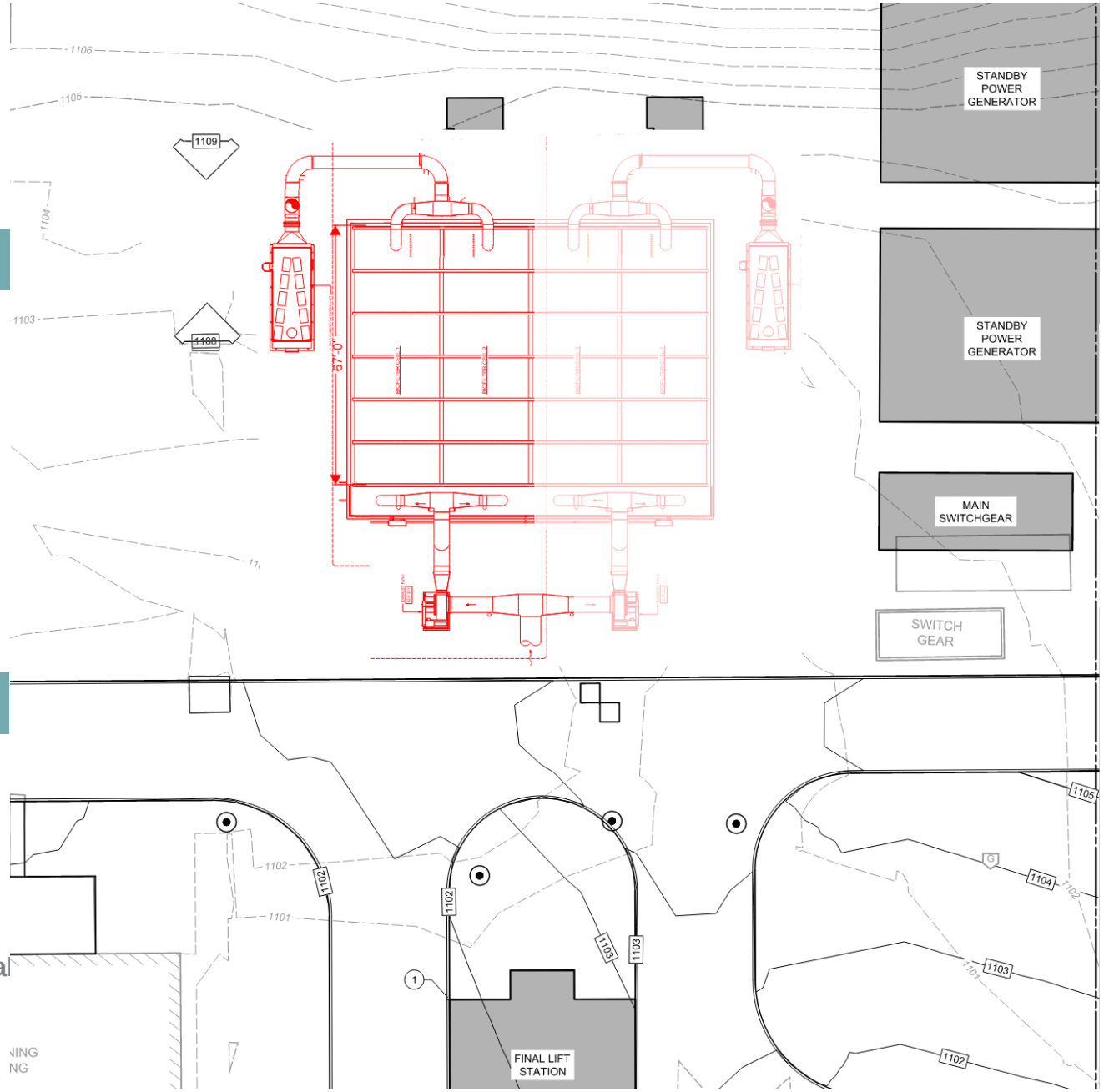
Primary Clarifier Cover Approach

Low-rise Aluminum Optidome by CST

- 16 ft tall at dome center
- 1 dormer entry with door
- 72,000 cfm to central odor control system
  - **11,000 cfm less foul air flow than taller dome**
  - **Reduces biofilter length by 10 ft (footprint 100’ x 67’)**

Launder Covers

- Supported by launder wall
- 3” above water surface
- 35,000 cfm to central odor control system
  - **Significant odor control sizing implications, reducing size of central system by 50%**



Influent Channel and Junction Box

Odor Dispersion Model Results – Influent Channel and Junction Box Only

Options for odor control

1 – No treatment ← Alternative tentatively selected

2 – Treat with existing packaged biofilter
(if not used for primary effluent channels)

3 – Treat at North Odor Control Unit

Model Results - Percent of Time at Each Odor Level

Odor Level	No Changes Upstream (354,000 D/T at source)	SuperOx System at Floyd LS (assume reduction to 50,000 D/T at source)
10 – 50 D/T	**11%** ~960 hr/yr	**0.2%** ~20 hr/yr
50 – 100 D/T	**1%** ~110 hr/yr	**0%**
Exceeds 100 D/T	**0.03%** ~3 hr/yr	**0%**

Primary Effluent Channels

- Modeling results indicate odors offsite may be above the 10 D/T threshold without treatment
- Odor management approaches:
  - **Option 1 – no covers or treatment ← Alternative tentatively selected**
  - **Option 2 – cover channels and treat foul air**

Receptor	% of Hours in 5-Year Simulation Exceeding 10 D/T	
	Base Case (All Sources, No New Odor Control)	**Primary Effluent Channels Only**
Prairie Park	**63%** ~5,510 hr/yr	**0.7%** ~60 hr/yr

City WWTP Update

Emergency Repairs Project Update

North Primary Clarifier Structural Repairs

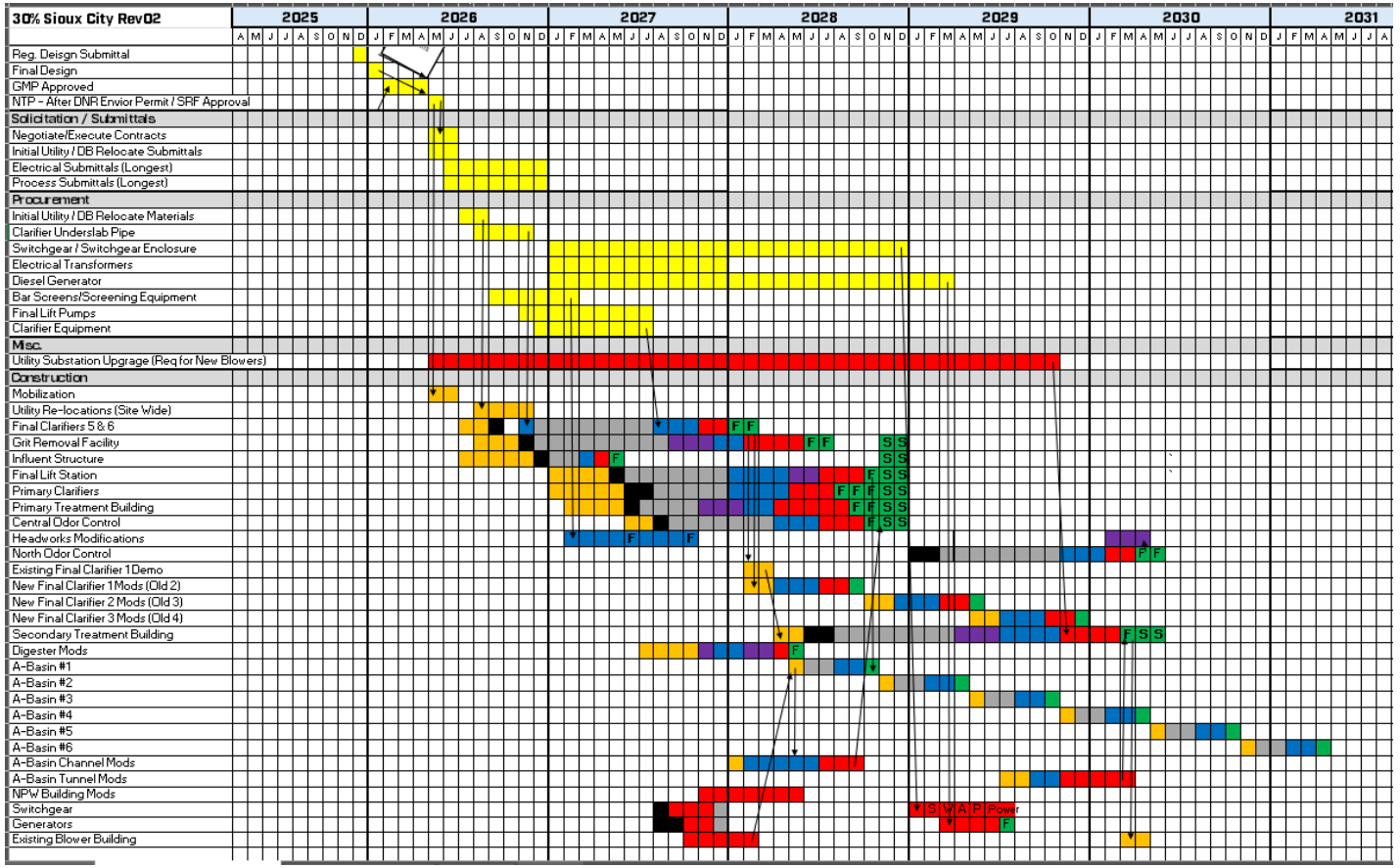
- Structural repairs completed on NPC tank 4
  - **Completed by March 31**
  - **Minor repairs and touch up needed, in coordination with Contractor**
- City staff installing new clarifier equipment on NPC tank 4
  - **Removing existing equipment**
  - **Planned to begin in Early June**
- Structural repair contractor starting work on NPC tank 2
  - **Scheduled completion in early June**
  - **Walkthrough anticipated week of June 2**
- Planned work
  - **Repair on aeration basin expansion joints**
  - **Repairs to bypass channel**
  - **Structural repair to NPC 3 repairs**
- Scope modifications for cost savings
  - **~$700,000 below original project budget and contractor bid**

Digester Project Update

CMAR Updates

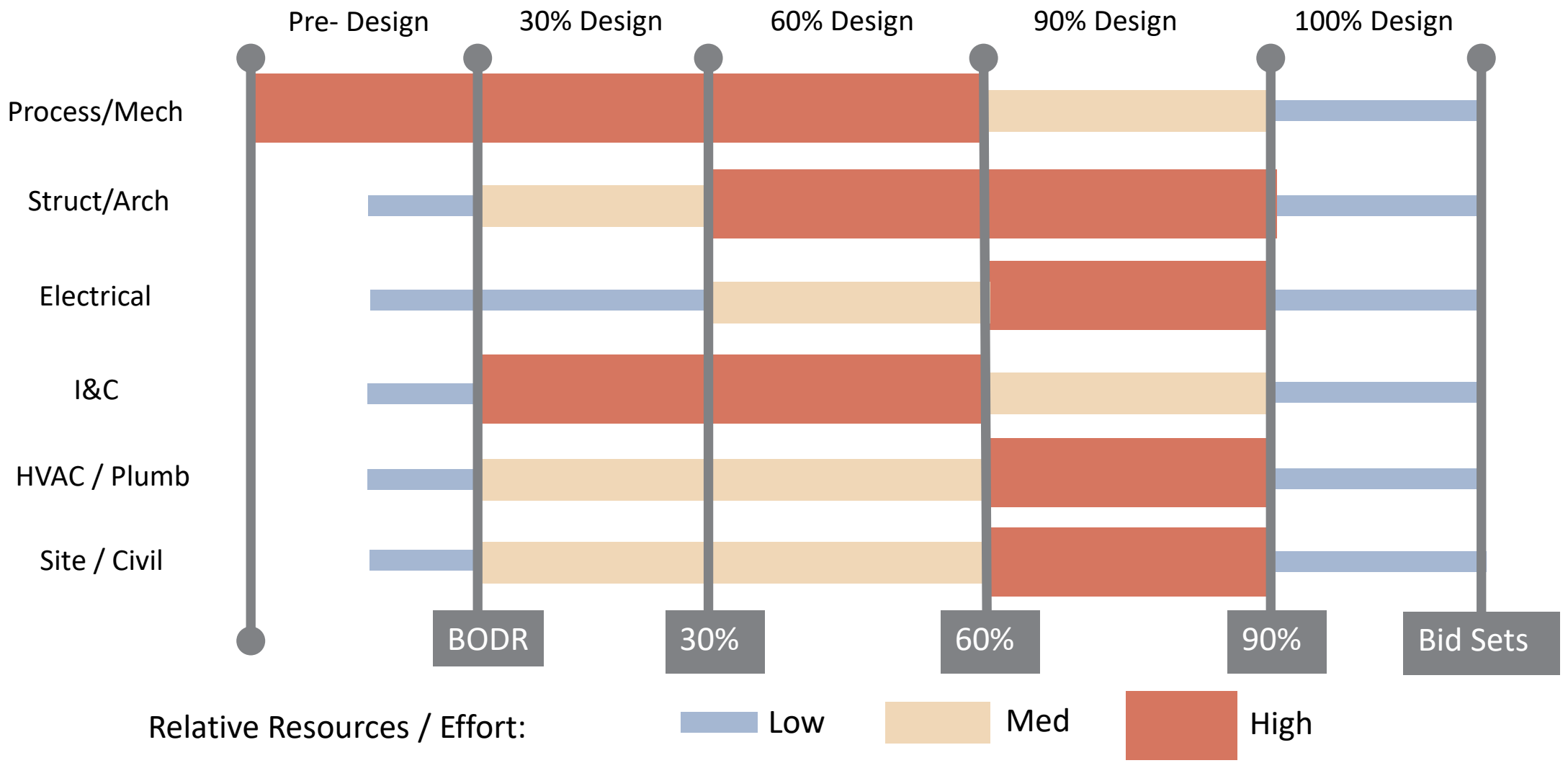
On-going CMAR items

- Weekly task force meetings
  - **Review design assumptions**
  - **Development and generation of value engineering idea discussion and review**
- Priorities and on-going work
  - **Completed site potholing for subsurface utility locating**
  - **30% cost model development**
  - **Construction schedule development and review**
  - **Geotech design review / input**
  - **Design procurement evaluation and assistance**
    - *Aeration blower preselection ongoing*
    - *Screw pump RFP planned*



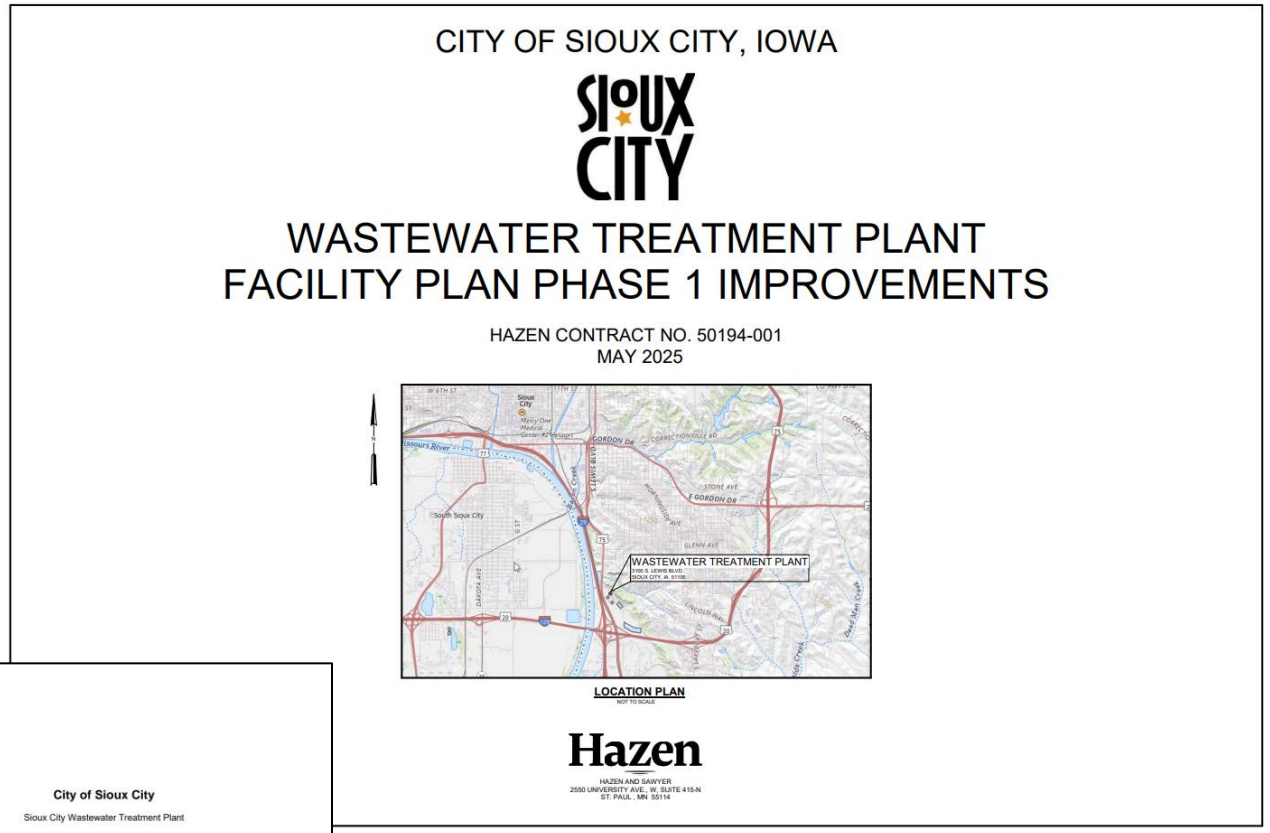
WWTP Design Update

Design Progression – What Does a 60% Milestone Mean?



60% Design Deliverable Overview

- **60% deliverable to be submitted next week**
- Drawings
  - **All disciplines included**
- Specifications
  - **More complete project specifications**
    - *Front end documents to be developed in coordination with Kiewit construction contract*
    - *Inclusion of site-civil and concrete and building materials and other project wide construction specifications*
    - *Continued development of equipment package specifications*
    - *Electrical, instrumentation, HVAC, plumbing specifications included*


CITY OF SIOUX CITY, IOWA

SIOUX CITY

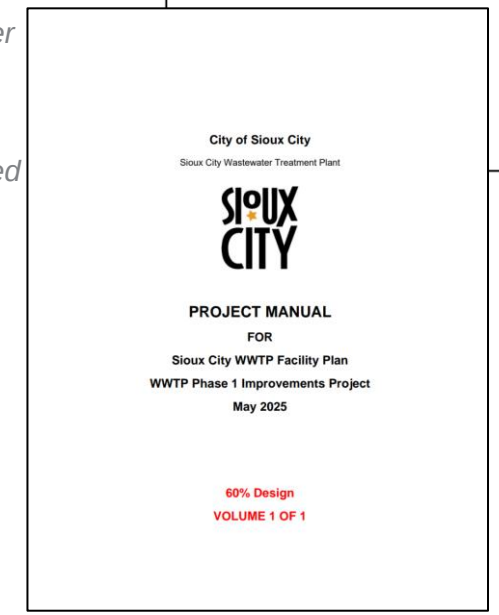
WASTEWATER TREATMENT PLANT
FACILITY PLAN PHASE 1 IMPROVEMENTS

HAZEN CONTRACT NO. 50194-001
MAY 2025

LOCATION PLAN

Hazen

HAZEN AND SAWYER
2550 UNIVERSITY AVE., W, SUITE 415-N
ST. PAUL, MN 55114


City of Sioux City

Sioux City Wastewater Treatment Plant

SIOUX CITY

PROJECT MANUAL

FOR

Sioux City WWTP Facility Plan

WWTP Phase 1 Improvements Project

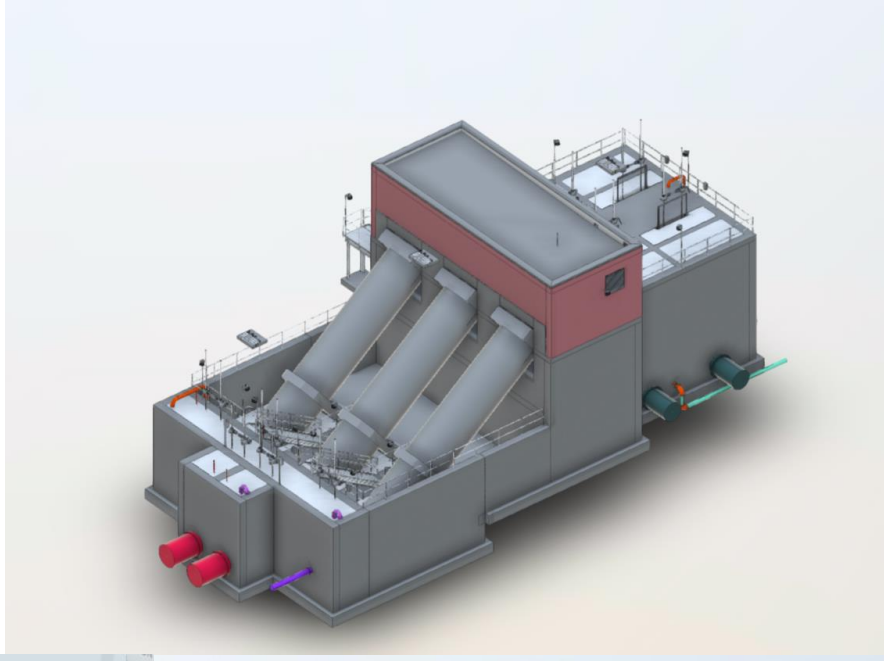
May 2025

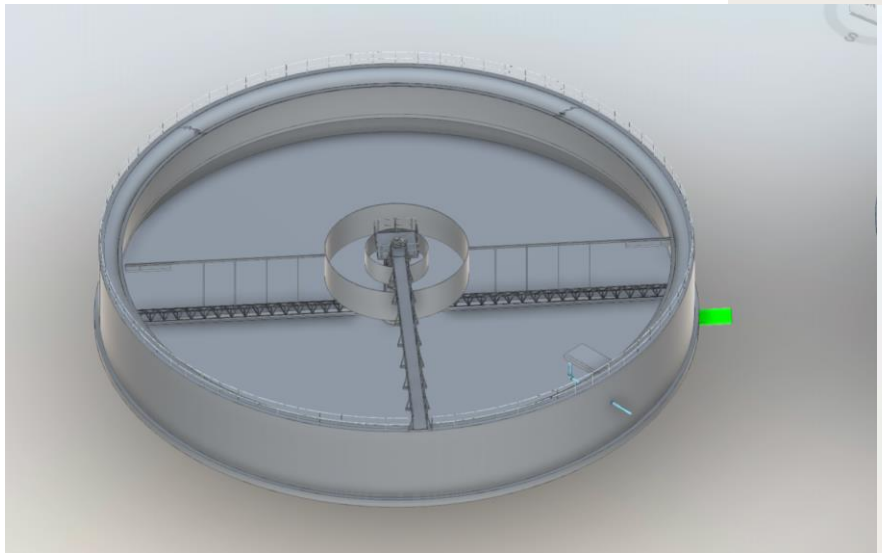
60% Design

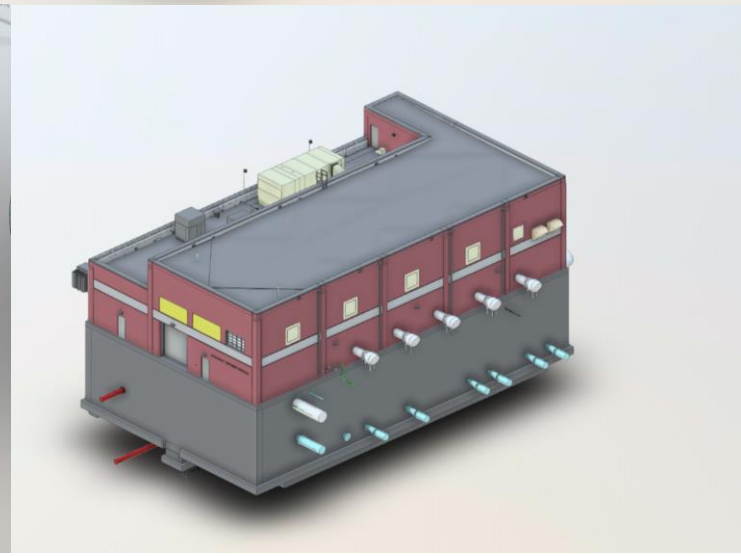
VOLUME 1 OF 1

Planned Reviews

- 3D BIM walkthroughs with WWTP staff
- Planned reviews
  - **Operations review workshop**
  - **Maintenance access workshop**
  - **SCADA integration workshop**
- On-going constructability reviews with Kiewit

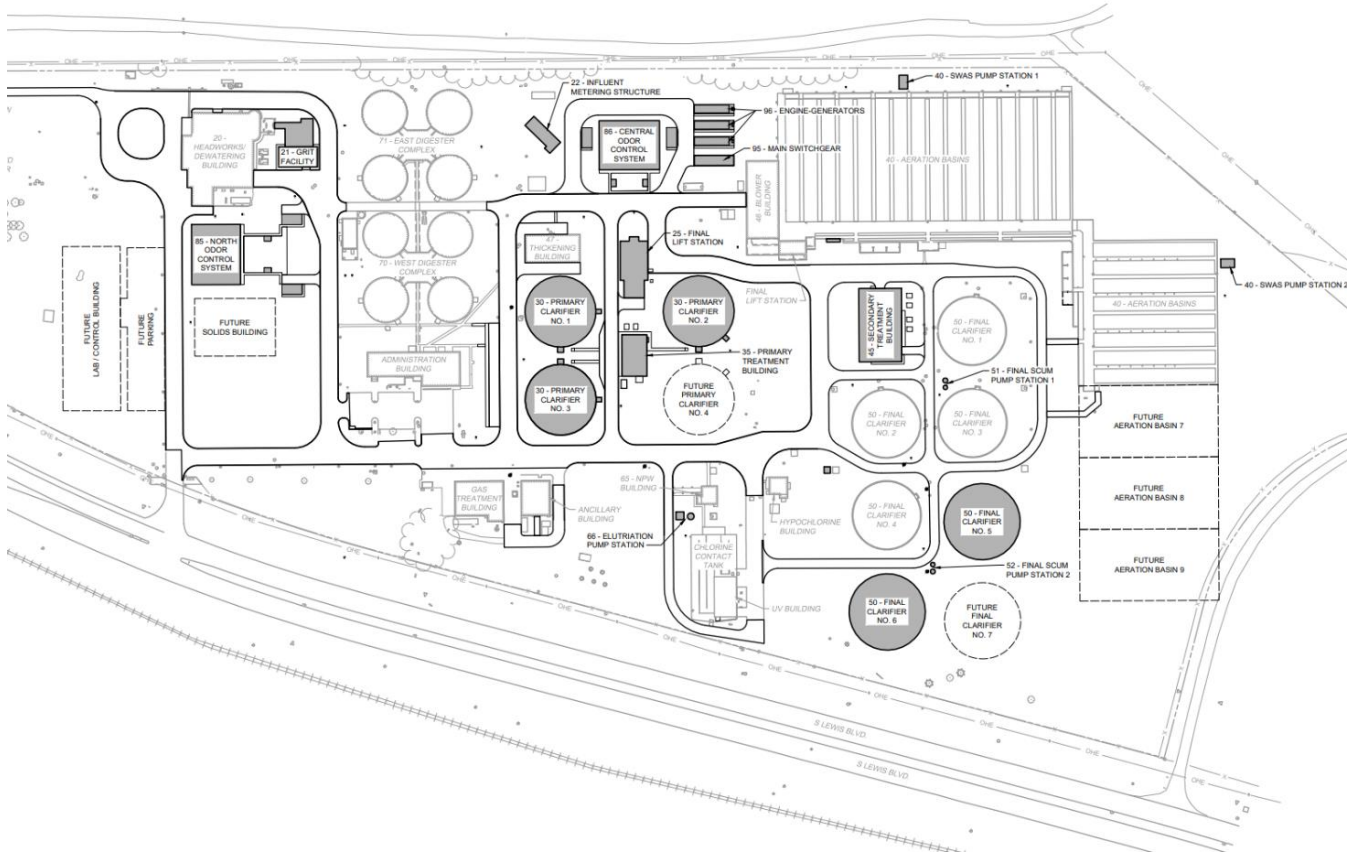






Major Design Updates

- On-going items
  - **Aeration blower pre-selection**
  - **Final lift pumps alternatives evaluation and procurement strategy assessment**
  - **Evaluation of potential re-use on existing structures**
    - *Headworks*
    - *North primary clarifiers*
- Updates from 30%
  - **Odor control updates (covered at April DAC meeting)**
  - **SWAS and final scum pump station refinement**
  - **Standby generator approach and sizing**
  - **Digester SD4 scope development**
  - **Influent flow meter design**
- Upcoming activities
  - **IDNR 60% submittal and review**
    - *Variance applications planned*
  - **Coordination with MidAmerican for site power upgrades**



Upcoming Meetings

TBD	TBD	TBD	TBD
Meeting 19 June 26, 2025	**Meeting 20** July 24, 2025	**Meeting 21** August 28, 2025	**Meeting 22** September 25, 2025

Open Discussion

Extra Slides