



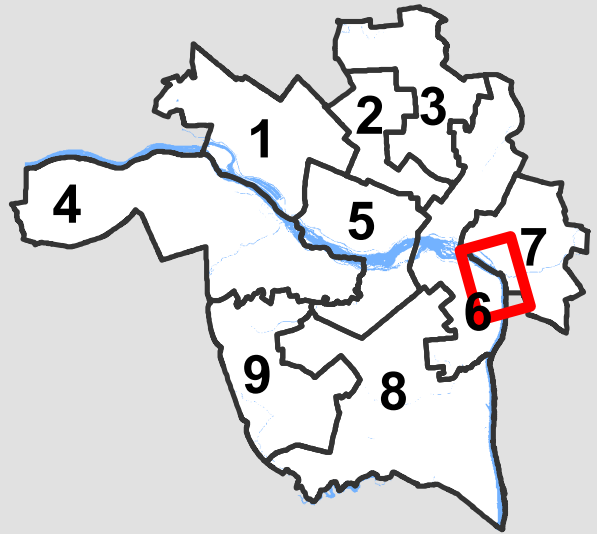
City of Richmond Department of Planning & Development Review

Location, Character, and Extent

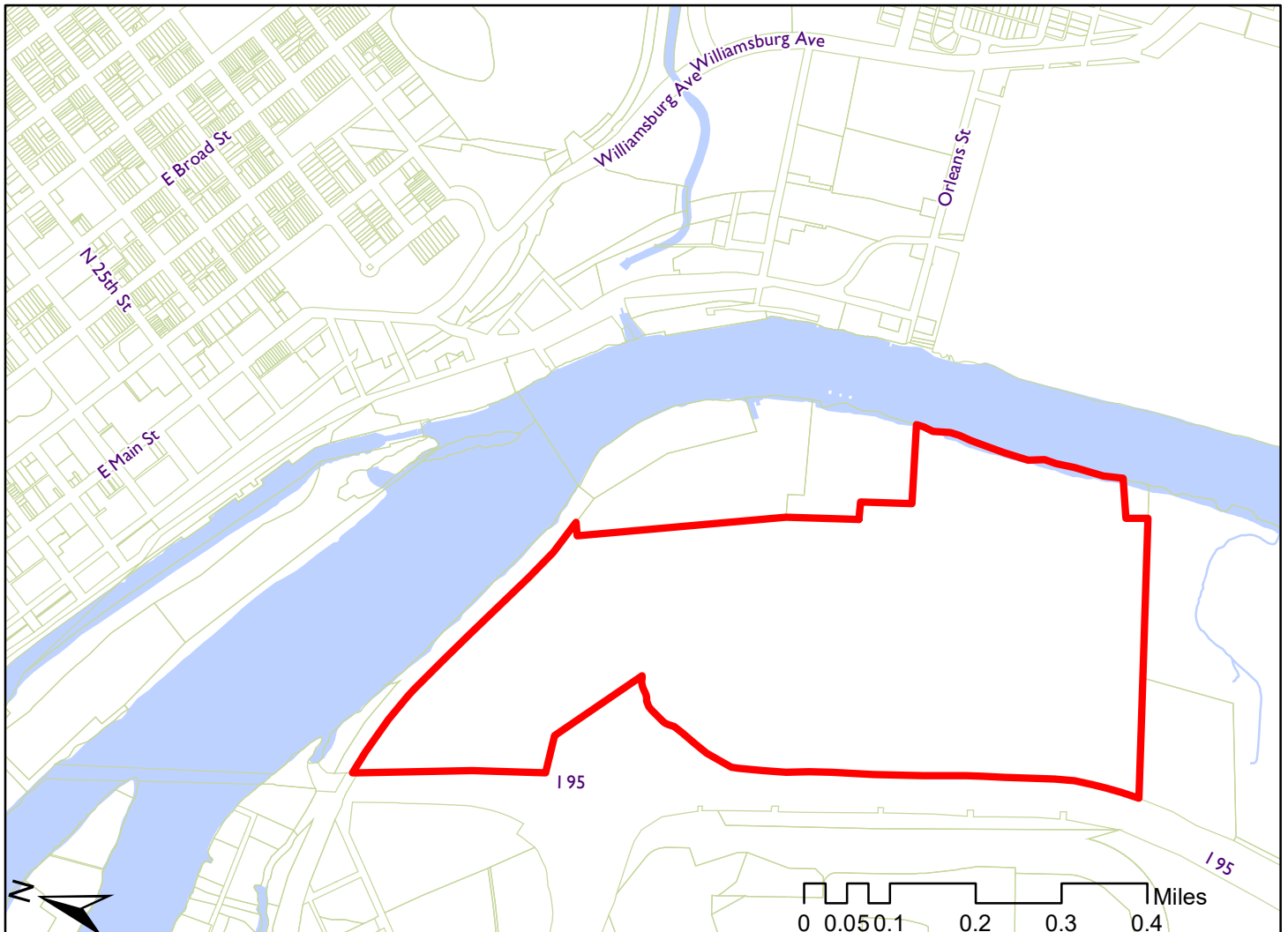
LOCATION: 1400 Brander Street

COUNCIL DISTRICT: 6

PROPOSAL: Review of sludge thickening and dewatering facility improvements .



*For questions, please contact Josh Son
at 646-3741 or joshua.son@richmondgov.com*





Application for Urban Design Committee Review

Department of Planning and Development Review
Planning & Preservation Division
900 E. Broad Street, Room 510
Richmond, Virginia 23219 | (804) 646-6335
www.richmondgov.com/CommitteeUrbanDesign



Application Type (select one)

Location, Character, & Extent
Section 17.05
Other:

Encroachment
Design Overlay District

Review Type (select one)

Conceptual
Final

Project Information

Submission Date: _____

Project Name: _____

Project Address: _____

Brief Project Description (this is not a replacement for the required detailed narrative):

Applicant Information (a City representative must be the applicant, with an exception for encroachments)

Name: _____ Email: _____

City Agency: _____ Phone: _____

Main Contact (if different from Applicant): _____

Company: _____ Phone: _____

Email: _____

Submittal Deadlines

All applications and support materials must be filed no later than 21 days prior to the scheduled meeting of the Urban Design Committee (UDC). Please see the schedule on page 3 as actual deadlines are adjusted due to City holidays. **Late or incomplete submissions will be deferred to the next meeting.**

Filing

Applications can be mailed or delivered to the attention of "Urban Design Committee" at the address listed at the top of this page. **It is important that the applicant discuss the proposal with appropriate City agencies, Zoning Administration staff, and area civic associations and residents prior to filing the application with the UDC.**

Submittal Deadlines

The UDC is a ten member committee created by City Council in 1968 whose purpose is to advise the City Planning Commission (CPC) on the design of projects on City property or right-of-way. The UDC provides advice of an aesthetic nature in connection with the performance of the duties of the Commission under Sections 17.05, 17.06, and 17.07 of the City Charter. The UDC also advises the Department of Public Works in regards to private encroachments in the public right-of-way.



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Submission Requirements

- An electronic copy (PDF preferred) of all application materials, which can be emailed, or delivered by FTP or USB.
- Three (3) copies of the application cover sheet and all support materials (see below).
- Plan sheets should be 11" x 17", folded to 8 1/2" x 11". If it is not possible to scale plans to these dimensions, please provide one set of larger, scaled plans.
- All applications must include the attached cover sheet and the following support materials, as applicable to the project, based on Review Type:

Conceptual Review:

- A detailed project narrative which includes the following: purpose of the project, project background, project budget and funding sources, description of construction program and estimated construction start date (description should also provide information on the surrounding area to provide context).
- A site plan for the project indicating site characteristics which include: building footprints, parking areas, pedestrian routes, recreation areas, open areas, and areas of future expansion.
- A set of floor plans and elevations, as detailed as possible.
- A landscaping plan which shows the general location and character of plant materials and notes any existing tree to be removed.

Final Review:

- A detailed project narrative which includes the following: purpose of the project, project background, project budget and funding sources, description of construction program, and estimated construction start date (description should also provide information on the surrounding area to provide context).
- A site plan for the project indicating site characteristics which include: building footprints, parking areas, pedestrian routes, recreation areas, open areas, and areas of future expansion.
- A set of floor plans and elevations, as detailed as possible.
- A landscaping plan that includes a complete plant schedule, the precise location of all plant materials, and a landscape maintenance analysis. The plant schedule must show number, size and type of each planting proposed. If existing trees are to be removed, their size, type, and location must be noted on the landscape plan.
- The location of all lighting units should be noted on a site plan, including wall-mounted, site, and parking lot lighting. Other site details such as benches, trash containers, and special paving materials should also be located. Include specification sheets for each item.
- Samples of all proposed exterior building materials, including but not limited to brick, mortar, shingles, siding, glass, paint, and stain colors. When an actual sample cannot be provided, a product information sheet that shows the item or a photo of an existing item may be substituted.

Review and Processing

- Once an application is received, it is reviewed by Staff, who compiles a report that is sent to the UDC.
- A copy of the report and the meeting agenda will be sent to the applicant prior to the meeting.
- At the UDC meeting, the applicant or a representative should be present or the application may be deferred to the next regularly scheduled meeting. It is also strongly suggested that a representative of the City Agency which will have final responsibility for the item be present at the meeting (if the applicant and the representative are not the same).
- Once the UDC recommends action on the application, it is automatically placed on the agenda for the next City Planning Commission (CPC) meeting. Exceptions to this are encroachment applications, recommendations for which are forwarded to the Department of Public Works.
- At the CPC meeting, the applicant or a representative should be present, or the application may be deferred to the next regularly scheduled meeting.



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Regular meetings are scheduled on the Thursday after the first Monday of each month at **10:00 a.m. in the 5th floor conference room of City Hall, 900 E. Broad Street**. Special meetings are scheduled as needed.

Meeting Schedule 2019

Submission Deadline
November 15, 2018
December 13, 2018
January 17, 2019
February 14, 2019
March 14, 2019
April 11, 2019
May 16, 2019
June 13, 2019
July 11, 2019**
August 15, 2019
September 12, 2019
October 17, 2019
November 14, 2019

UDC Meeting	CPC meeting to follow UDC
December 6, 2018	December 17, 2018
January 10, 2019	January 22, 2019 ¹
February 7, 2019	February 19, 2019 ²
March 7, 2019	March 18, 2019
April 4, 2019	April 15, 2019
May 9, 2019	May 20, 2019
June 6, 2019	June 17, 2019
July 3, 2019**	July 15, 2019
August 8, 2019	August 19, 2019 ³
September 5, 2019	September 16, 2019
October 10, 2019	October 21, 2019
November 7, 2019	November 18, 2019
December 5, 2019	December 16, 2019

¹ Monday, January 21, 2019 is a City of Richmond Holiday.

² Monday, February 18, 2019 is a City of Richmond Holiday.

³ This August CPC Meeting may be canceled. If so, the meeting would be Tuesday, September 3, 2019.

** Moved forward to account for Independence Day

The Richmond Urban Design Committee is a ten member advisory committee created by City Council in 1968. Its purpose is to advise the City Planning Commission on the design of City projects. The Urban Design Committee reviews projects for appropriateness in “location, character, and extent” and for consistency with the City’s Master Plan and forwards recommendations to the City Planning Commission. The Urban Design Committee also advises the Department of Public Works in regards to private encroachments in the public right-of-way.

For more information, please contact the Planning and Preservation Division staff at (804) 646-6335 or the Secretary to the Urban Design Committee at (804) 646-3741 or at joshua.son@richmondgov.com.

City of Richmond, Virginia
Department Of Public Utilities
Wastewater Treatment Plant
Project Description for Division 48 Project
Sludge Thickening and Dewatering Facility Improvements

October 14, 2019

The City of Richmond currently operates a sludge thickening facility and a sludge dewatering facility at its wastewater treatment plant (WWTP) that were installed in the late 1980's. Thickening centrifuges are fed by waste activated sludge (WAS) pumps (0.5% solids) and produce a cake of approximately 6% solids without the use of polymer. Dewatering centrifuges are fed digested sludge from sludge storage tanks (2-4% solids) and produce a cake of approximately 25% solids with the use of polymer. Greeley and Hansen designed both the Thickening and Dewatering facilities. The facilities have been in continuous operation for over 30 years.

The thickening and dewatering centrifuges are near the end of their service life and down time for maintenance has become excessive and costly. The City selected Greeley and Hansen to develop a basis of design report (BODR) for upgrades to both facilities. Greeley and Hansen developed a report with an evaluation of current and future flow conditions, a characterization of existing equipment condition, a detailed review of multiple centrifuge manufacturers, and a recommendation for facility upgrades. Pilot testing was not conducted for budgetary reasons, but sludge samples for both facilities were provided to each centrifuge manufacturer that was considered to determine compatibility with the proposed equipment. Ultimately, four centrifuge manufacturers were shortlisted based upon their performance characteristics, energy consumption, operational features, maintenance facility locations, existing installations, and cost.

The scope of the current project includes the following upgrades in the Thickening facility: Replacement of four thickening centrifuges, new centrifuge control panels elevated on a platform above the 100-yr flood plain, replacement of four progressing cavity sludge pumps, new electrical building and transformers above 100-yr flood elevation adjacent to the existing facility, new outdoor HVAC platform above 100-yr flood elevation adjoining the existing facility. The thickening centrifuges would be replaced with the current facility in operation and would not require a temporary thickening facility.

The scope of the current project includes the following upgrades in the Dewatering Facility: Replacement of five dewatering centrifuges, new centrifuge control panels and centrifuges on platform above the 100-yr flood plain, new dewatering polymer system, new dewatered cake conveyor system composed of screw and belt conveyors, new loading building, new Integrated Power Assembly unit above the 100-yr flood plain elevation. Other supporting systems that need to be upgraded are centrate drains, noise reduction system in the centrifuge room, I&C Systems, and HVAC system. A temporary dewatering system is included to allow the rehabilitation of the dewatering building to be conducted without coordinating a difficult phased construction approach.

The estimated construction cost for the thickening building, new thickening electrical building, and dewatering building is \$27.5 million. Program funding for this project is from the City Utility Funding. The Program Schedule for the project is as follows:

Program Schedule – Division 48, Sludge Thickening and Dewatering Facility Improvements	
Design Completion	January 2020
Bid and Award	July 2020
Construction Complete	October 2023



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Department of Public Utilities Wastewater Treatment Plant Division 48 Project: Sludge Thickening and Dewatering Facility Improvements

Urban Design Committee
November 2019 Meeting

Rosemary Green, City of Richmond
Ed Alleyne, City of Richmond
George Guhse, Greeley and Hansen
Ben Custalow, Greeley and Hansen



Agenda

- **Wastewater Treatment Plant**
- **Sludge Thickening Facility**
- **New Thickening Electrical Building**
- **Sludge Dewatering Facility**
- **Program Funding and Cost**
- **Schedule**



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Wastewater Treatment Plant

Existing Plant Overview



RICHMOND-PETERSBURG TURNPIKE ROUTE I-95



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Sludge Thickening Facility

Sludge Thickening Facility



RICHMOND-PETERSBURG TURNPIKE ROUTE I-95



Sludge Thickening Facility



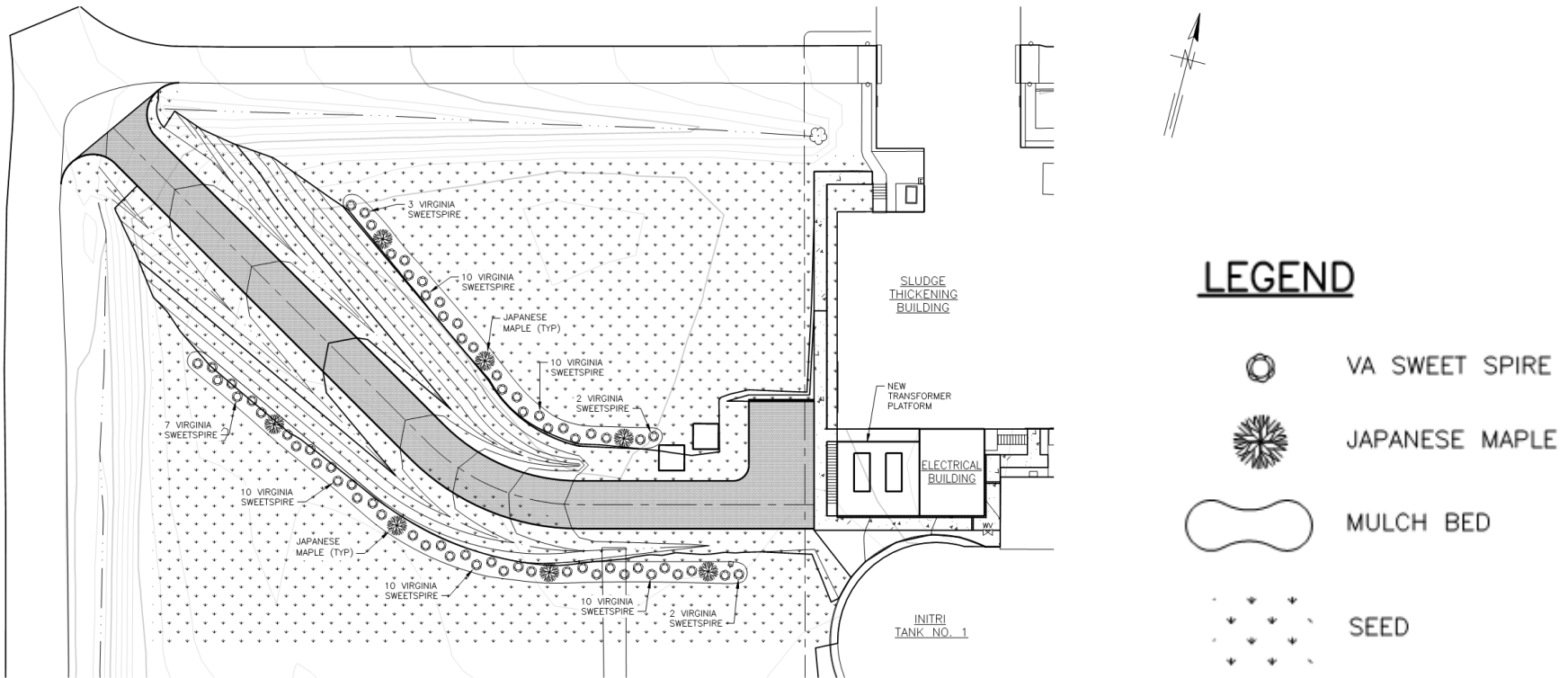
SLUDGE
THICKENING
FACILITY
(WEST ELEVATION)

Scope of Work at the Thickening Facility



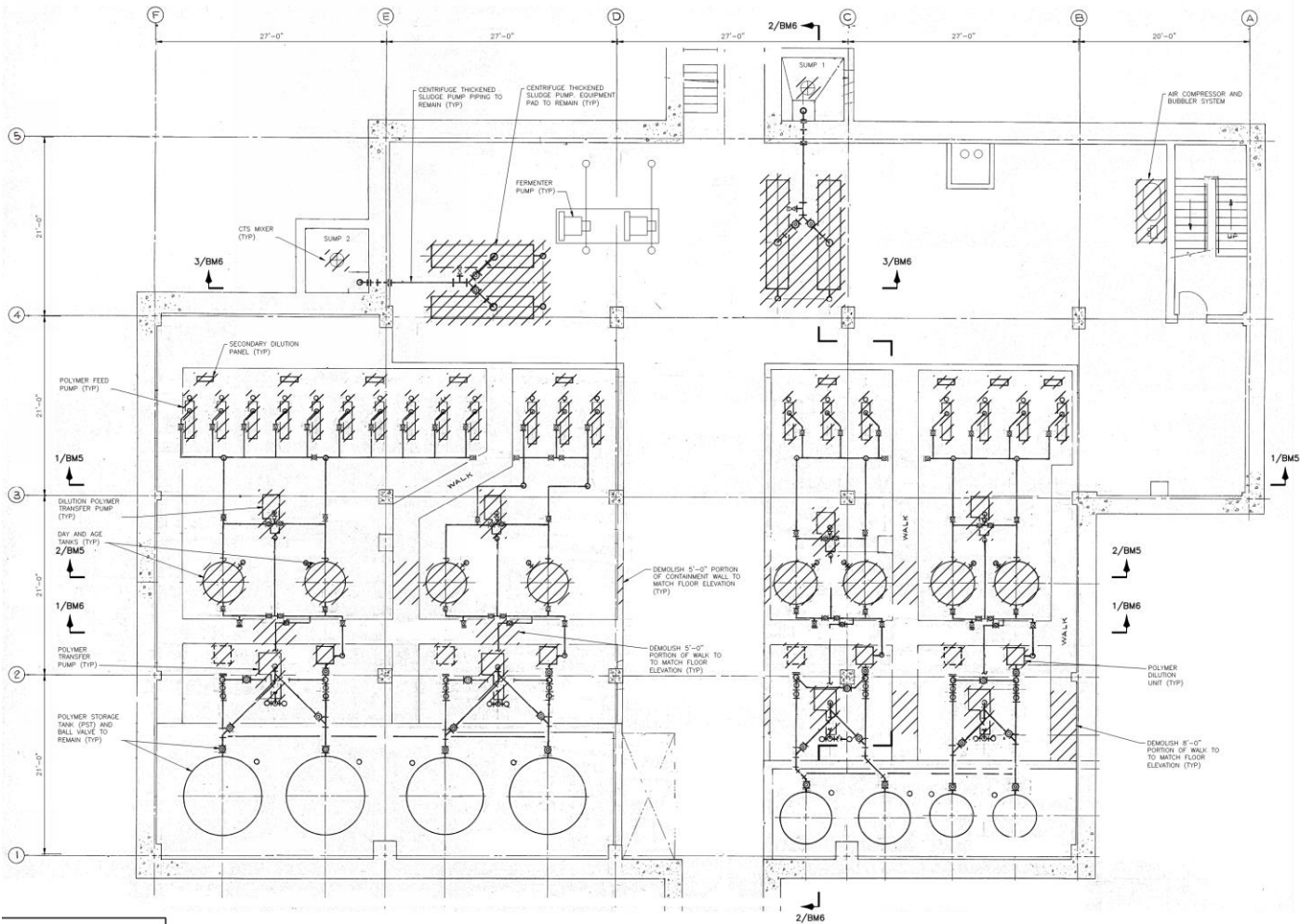
- Replacement of four thickening centrifuges
- New centrifuge control panels elevated on a platform above the 100-yr flood plain
- Replacement of four progressing cavity sludge pumps
- New electrical building and transformers above 100-yr flood elevation adjacent to the existing facility,
- New outdoor HVAC platform above 100-yr flood elevation adjoining the existing facility

Sludge Thickening Building Landscape Plan



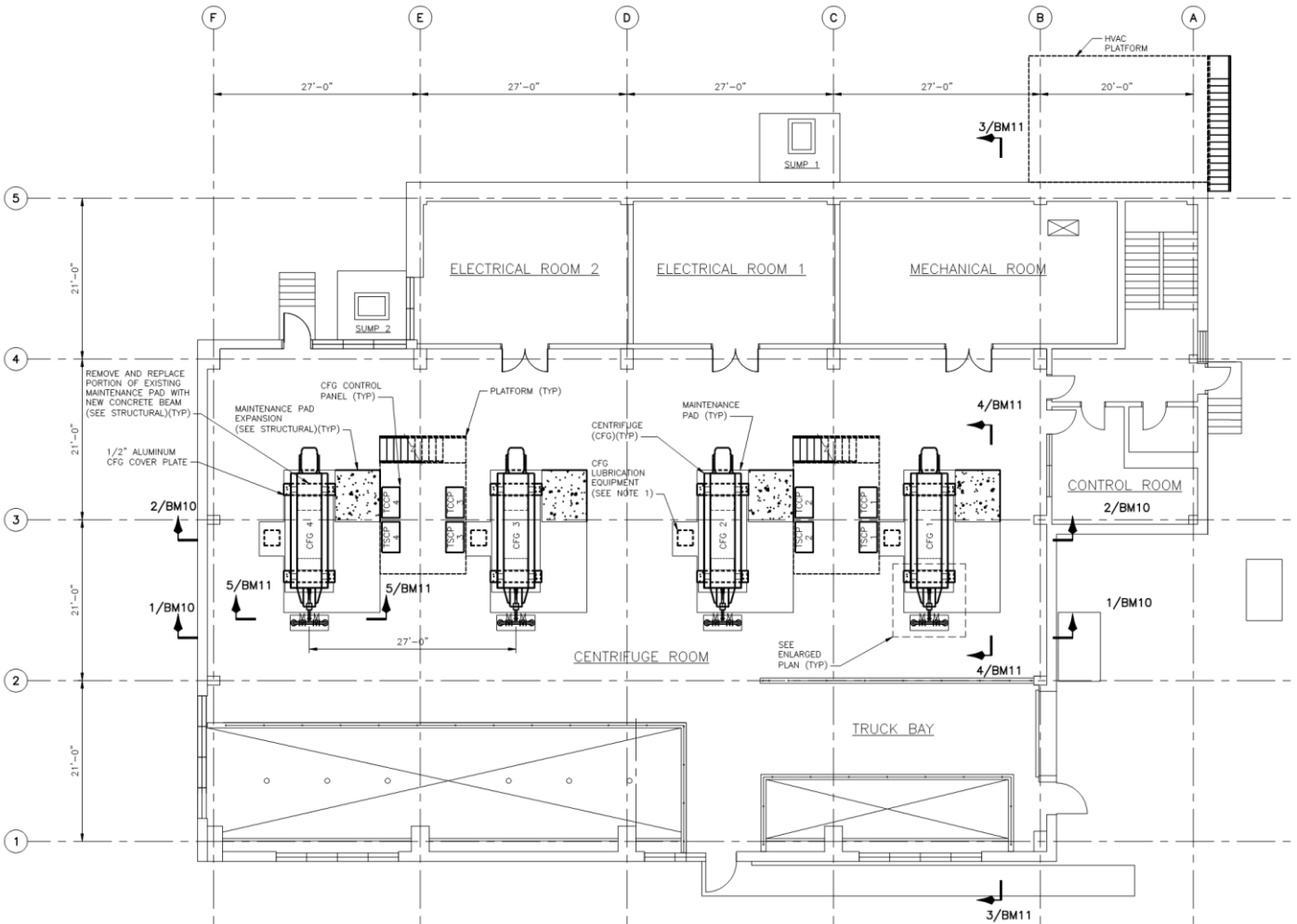
LANDSCAPE PLAN
SCALE: 1" = 20'-0"

Existing Polymer System – Demolition Floor Elevation 2'-1 1/2"

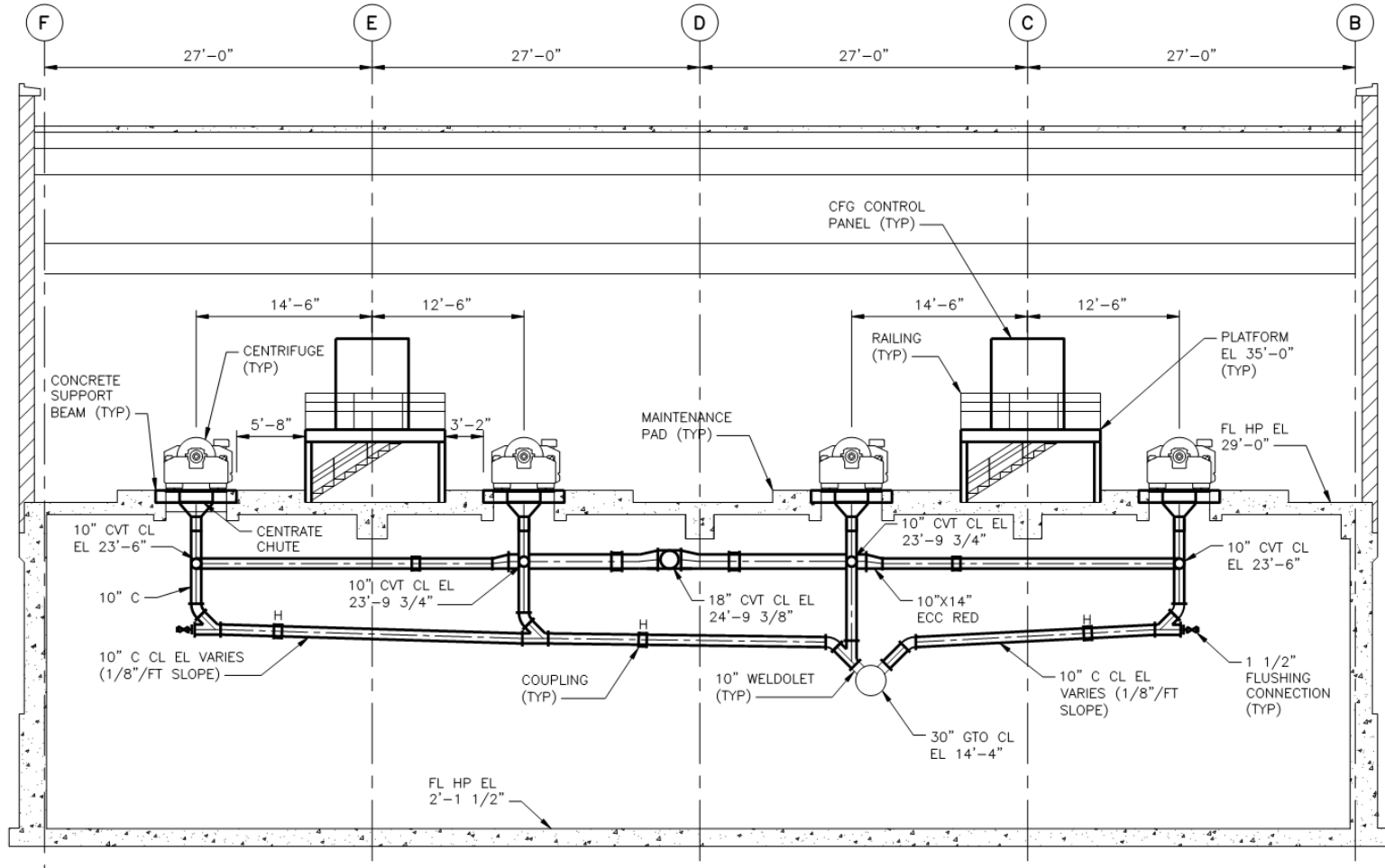




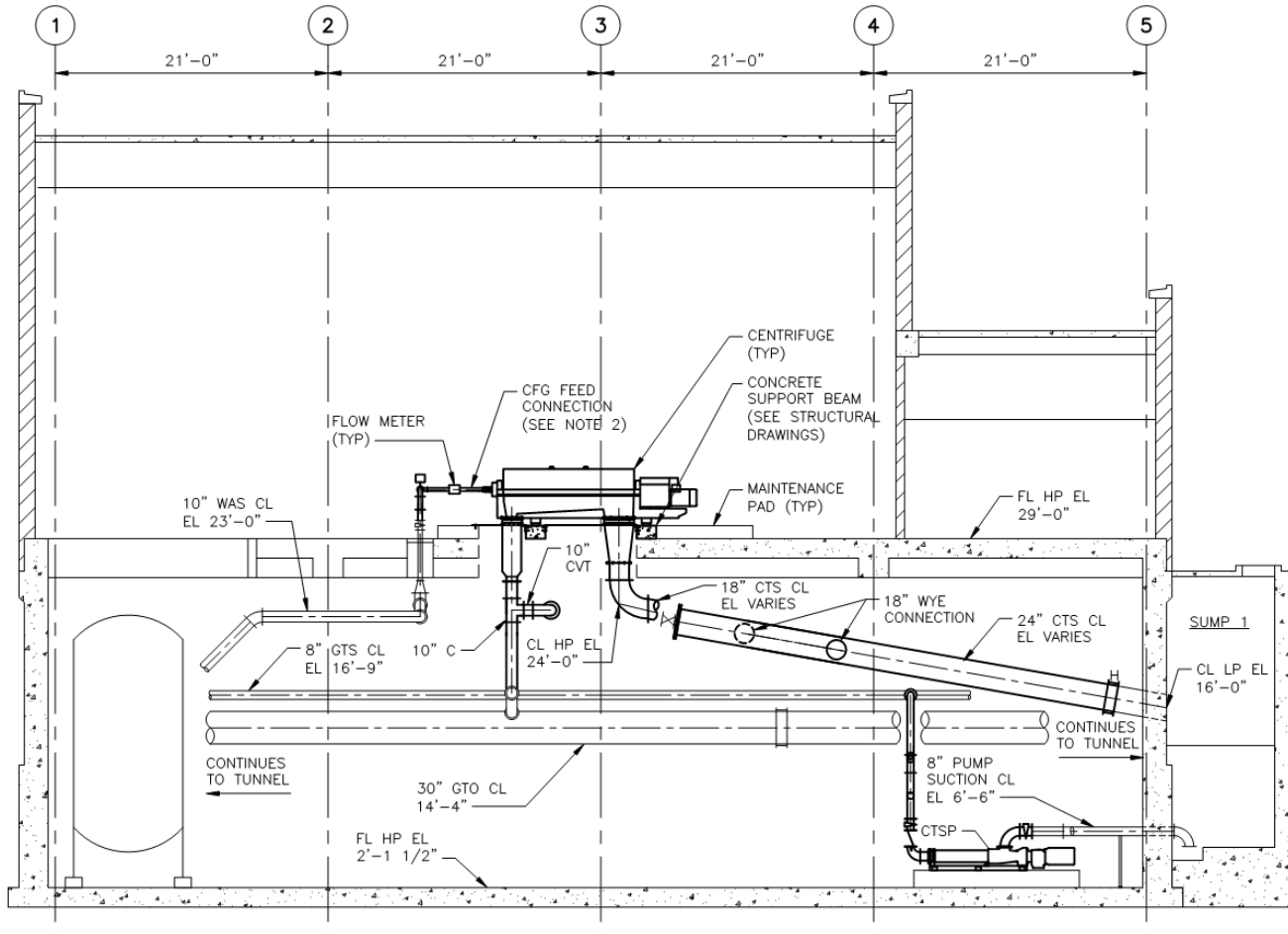
Floor Plan at Elevation 29'-0"



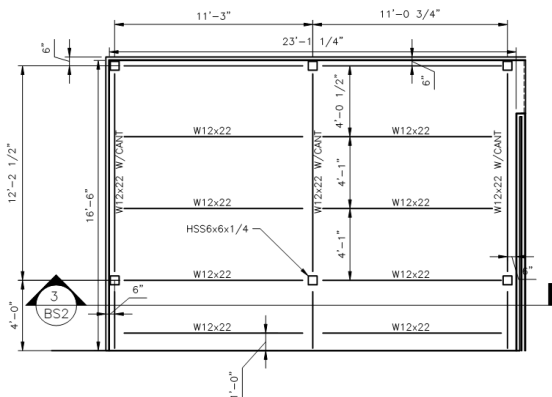
Sludge Thickening Facility Section



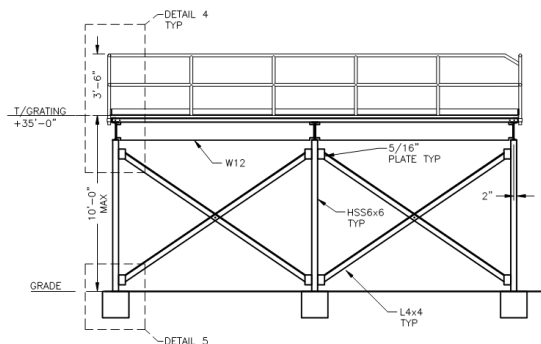
Sludge Thickening Facility Section



New HVAC Platform Plan and Sections

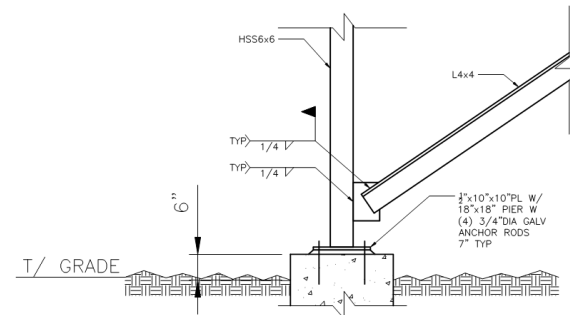


HVAC PLATFORM PLAN
SCALE: 1/4" = 1'-0"

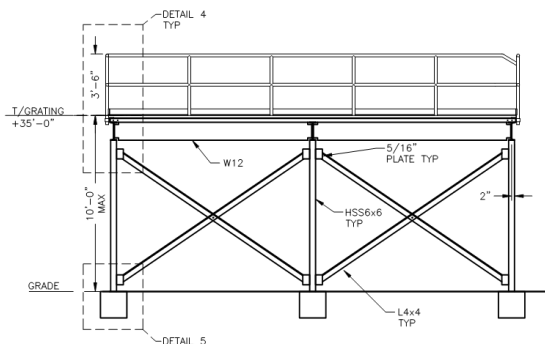


3 SECTION
SCALE: 1/4" = 1'-0"
NOTES:

- BRACING AT ALL COLUMNS.

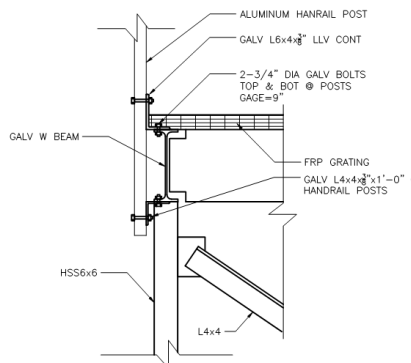


5 DETAIL
SCALE: 1" = 1'-0"



3 SECTION
SCALE: 1/4" = 1'-0"
NOTES:

- BRACING AT ALL COLUMNS.



4 DETAIL
SCALE: 1" = 1'-0"
NOTES:

- PROVIDE ELECTROLYTIC PROTECTION BETWEEN ALUMINUM AND DISSIMILAR METALS PER PAINTING PSEC.

Centrifuge Room



Centrifuges to be Replaced



Architectural Improvements

- Replace storefront windows with soundproof glass at control room
- Replace exterior windows
- Replace interior doors





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New Thickening Electrical Building

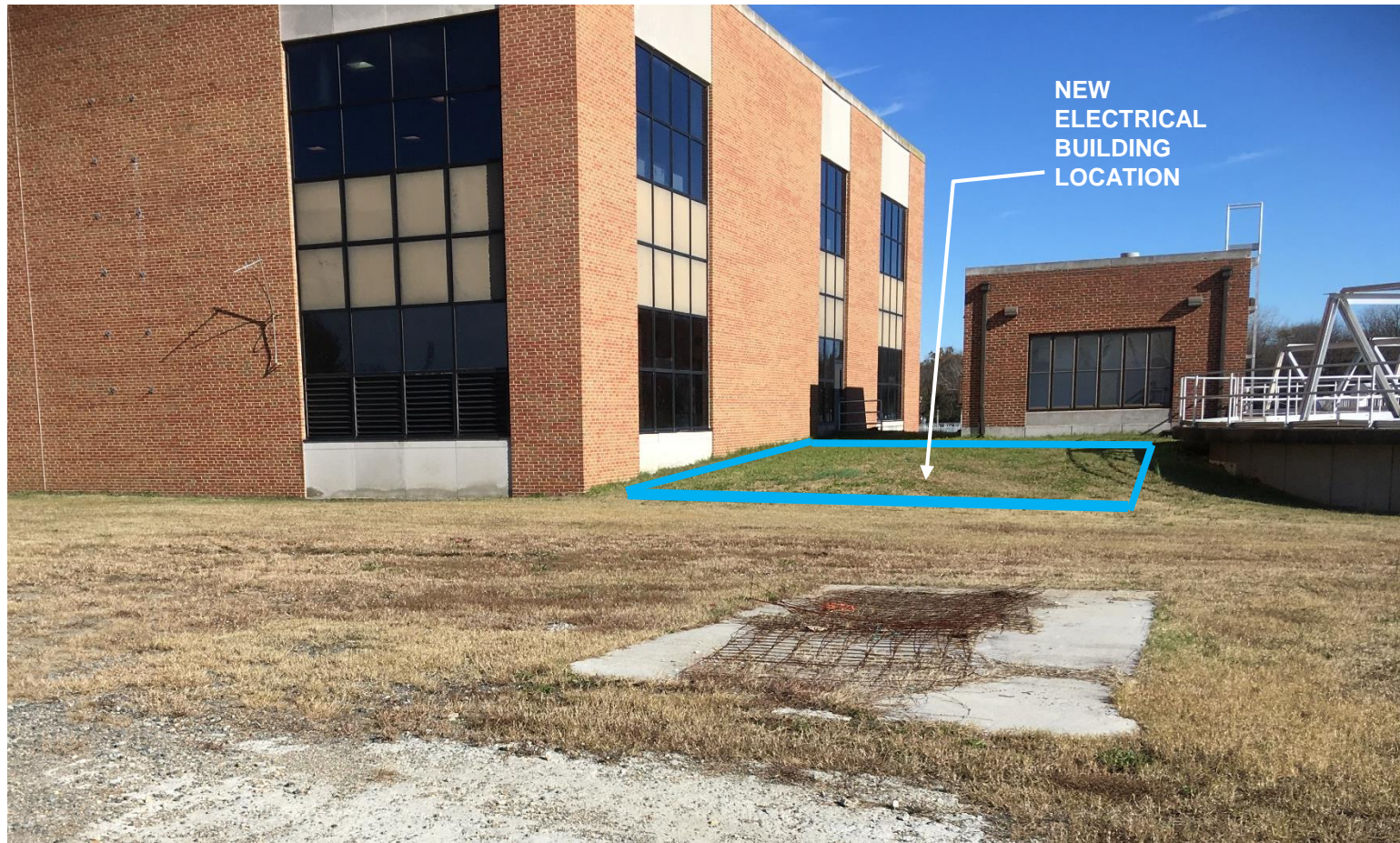


Electrical Improvements

- **Replace Transformer T-14 (T-13 being replaced through another project)**
- **Replace 480 Volt Switchgear**
- **Replace Motor Control Center 8A**
- **Replace Low Voltage Transformers**
- **Replace Panelboards**
 - **120 Volt System**
- **Replace interior lights with LED Lighting System (separate switches for Control Room)**

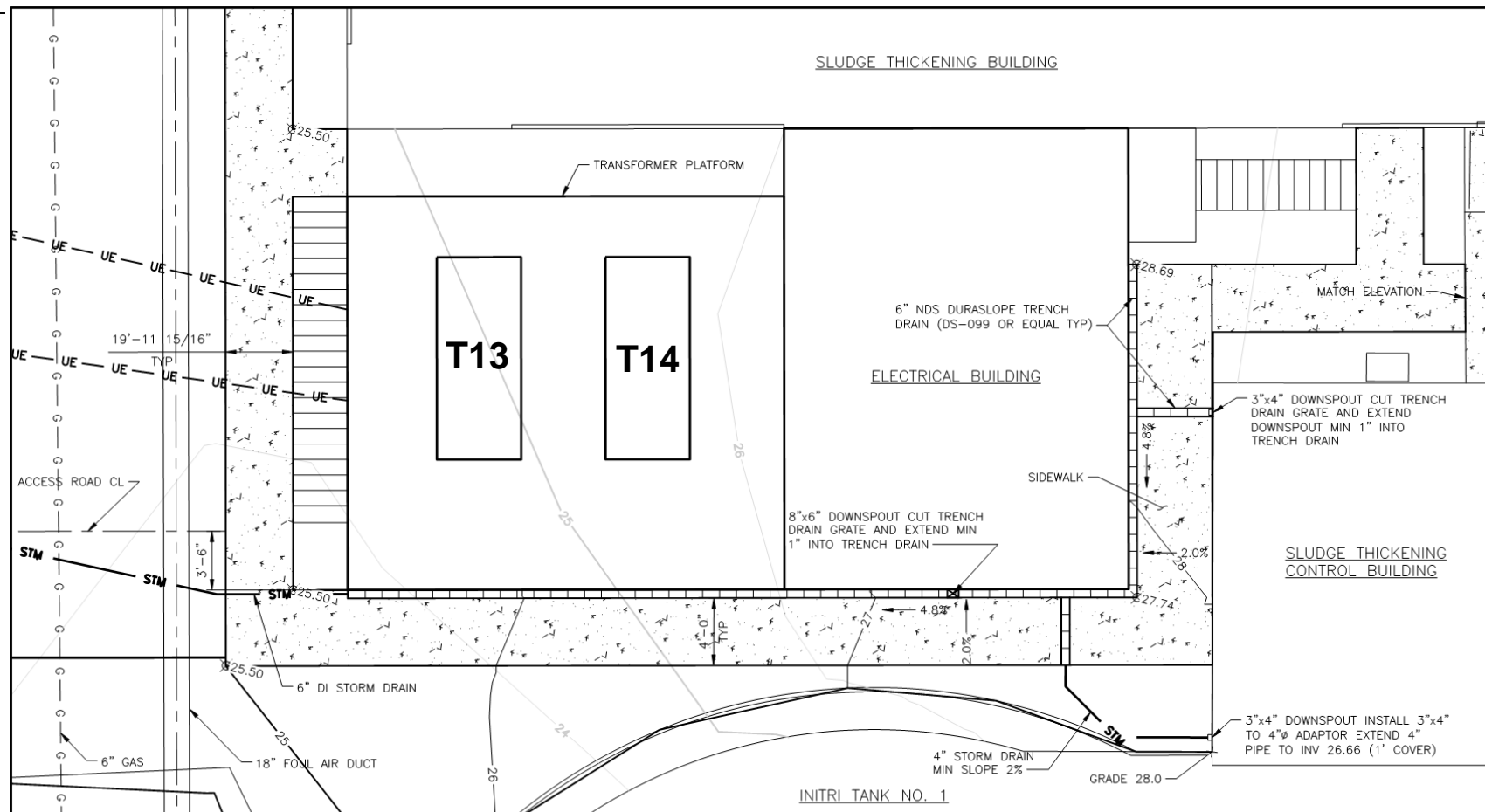


Location of New Electrical Building



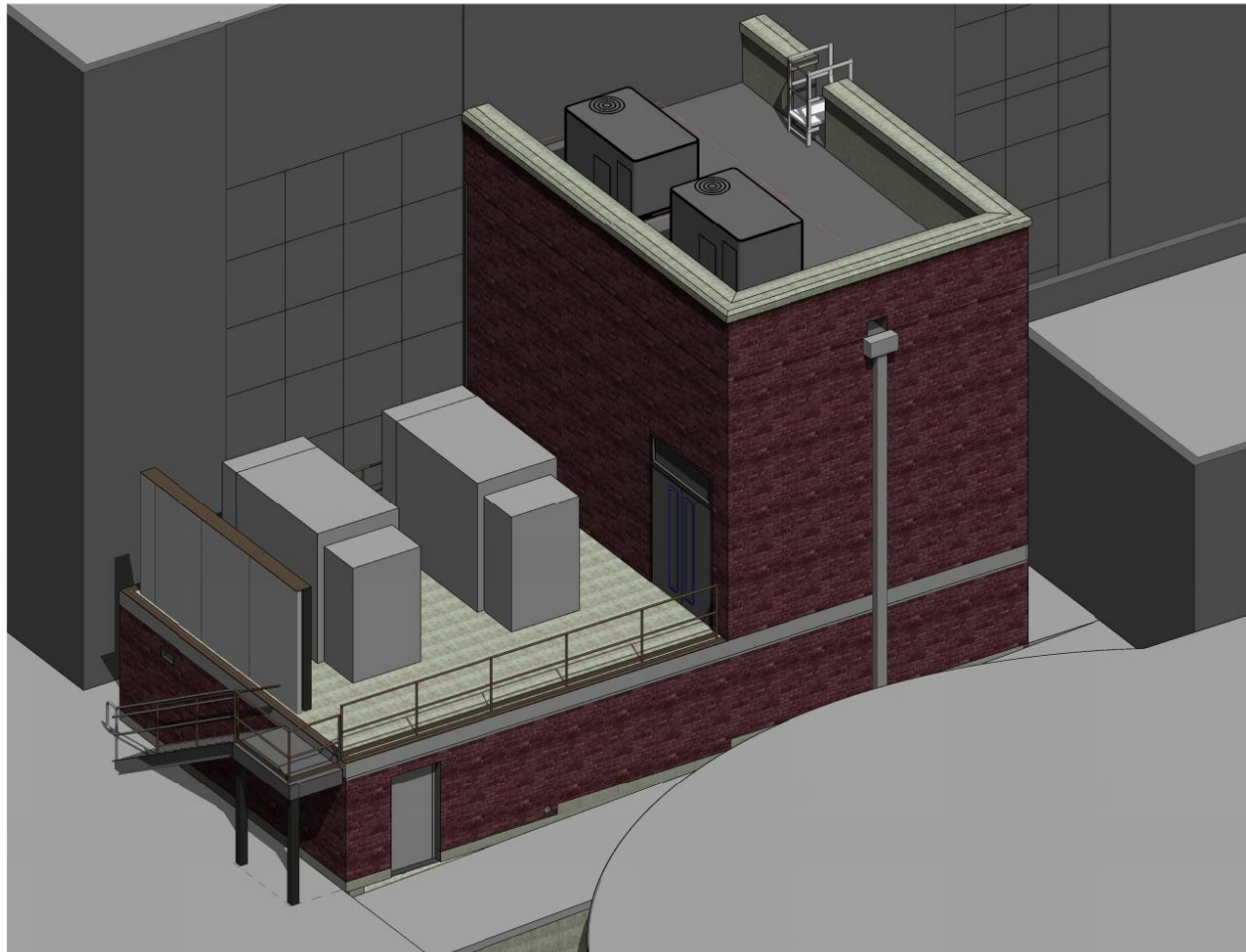
NEW
ELECTRICAL
BUILDING
LOCATION

New Electrical Building Site Plan



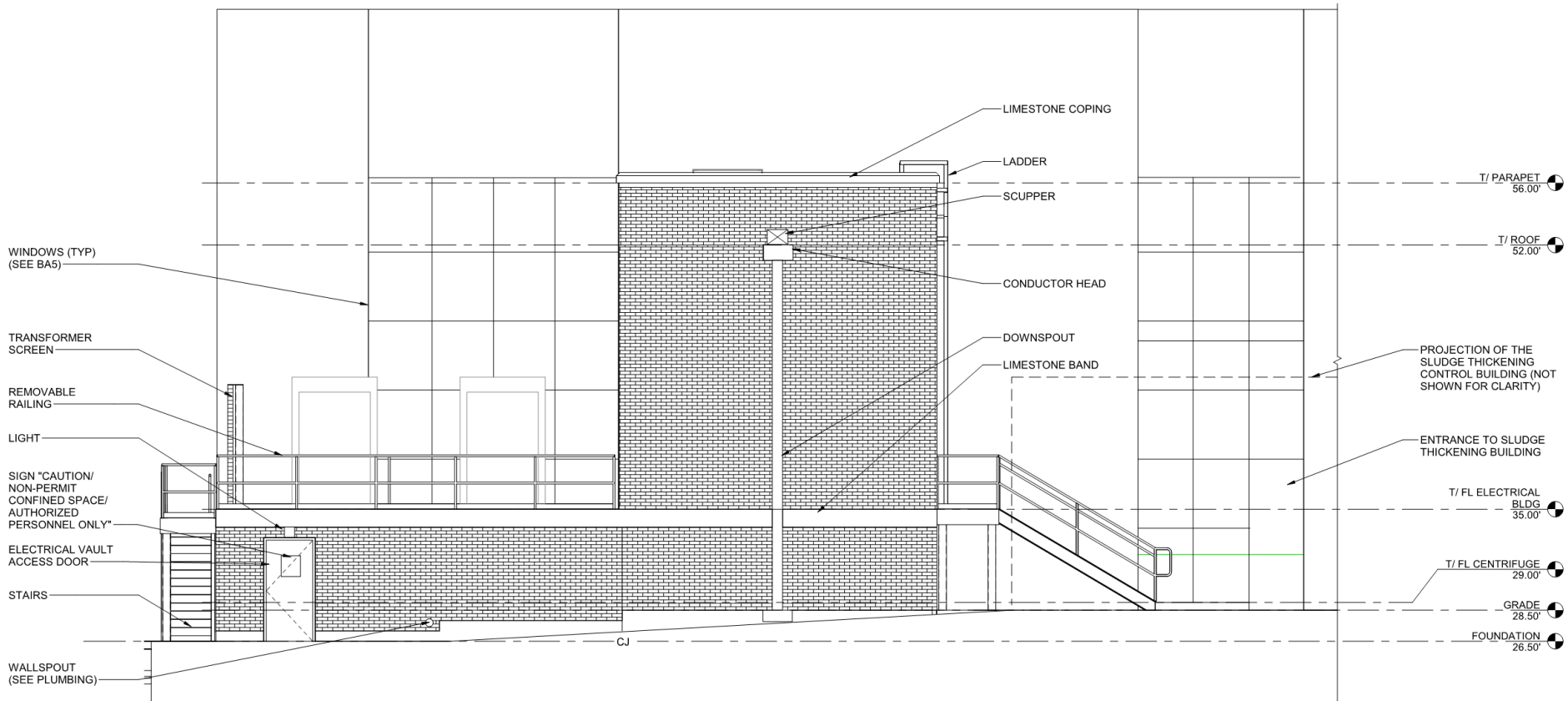
ELECTRICAL BUILDING ENLARGED PLAN
SCALE: 1" = 5'

Axonometric View of Electrical Building from Southwest





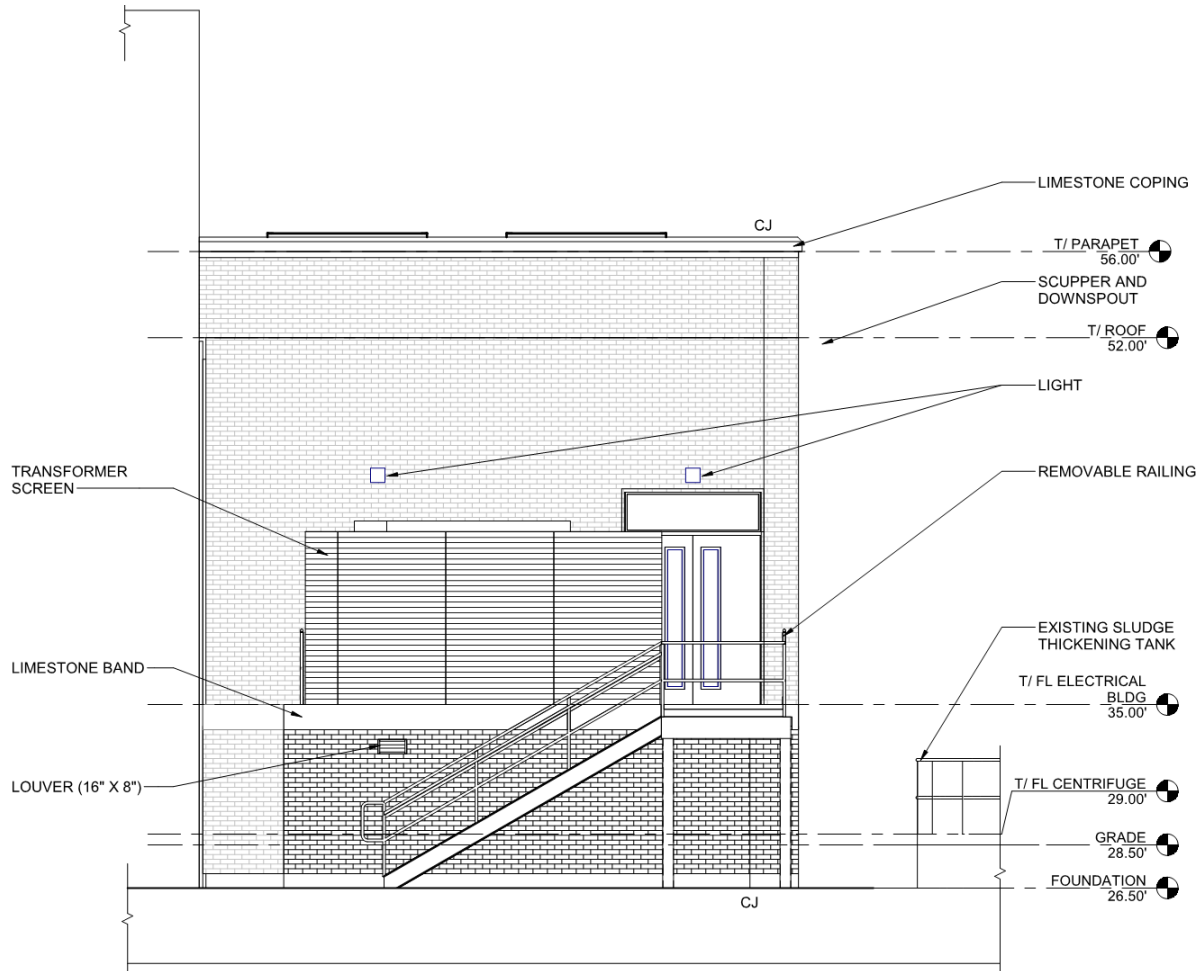
South Elevation



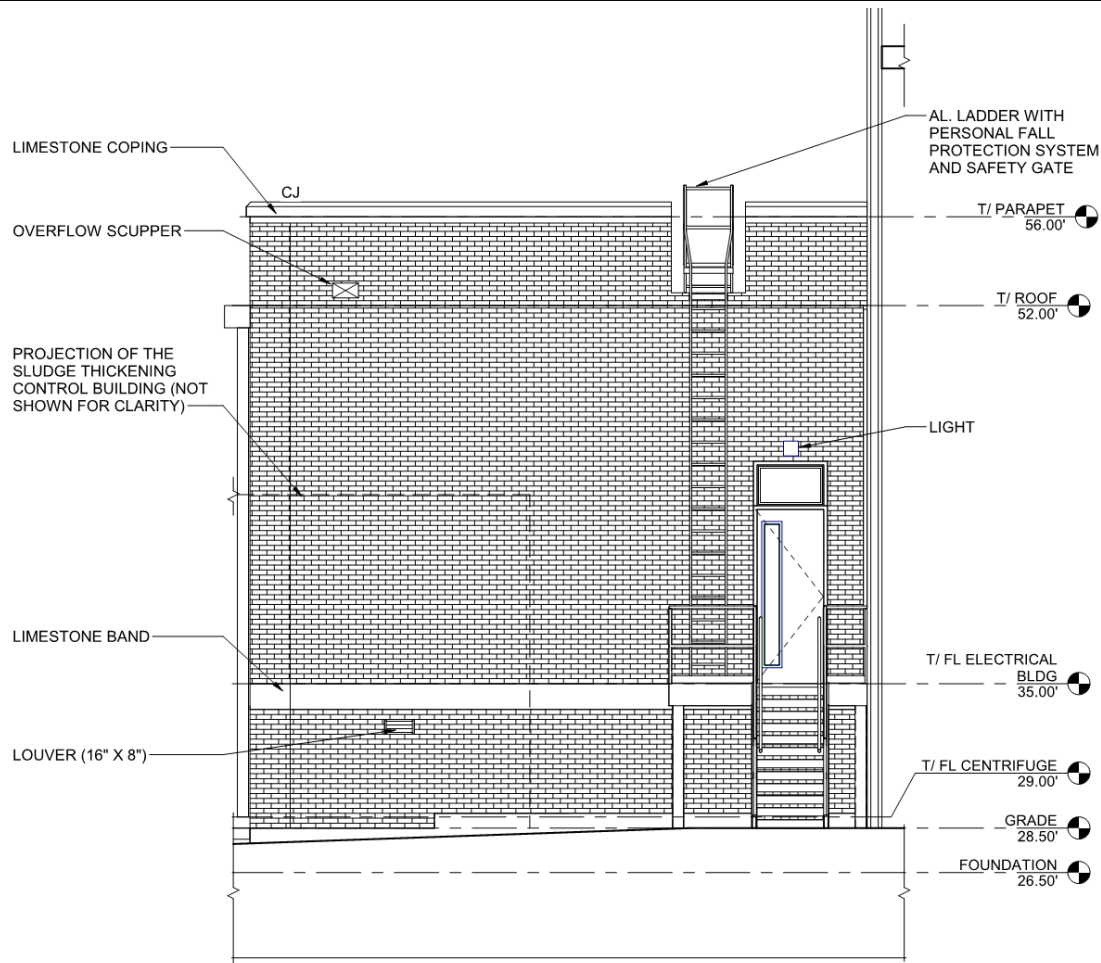
1 SOUTH ELEVATION
 BAG SCALE: 1/4" = 1'-0"



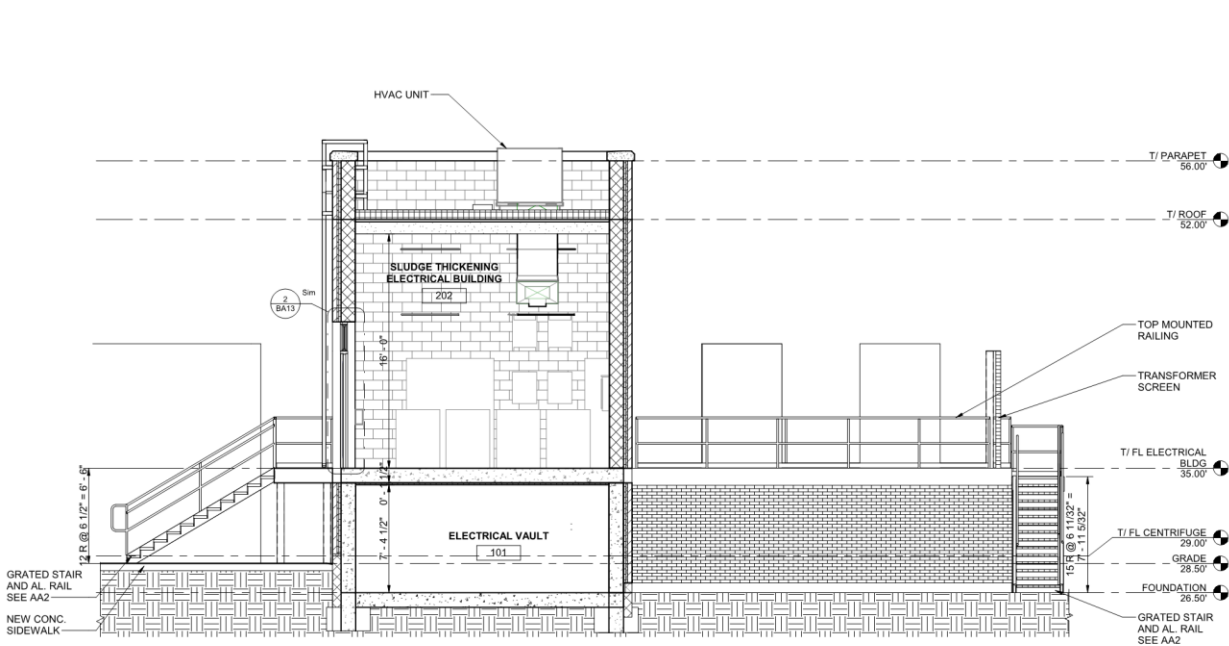
West Elevation



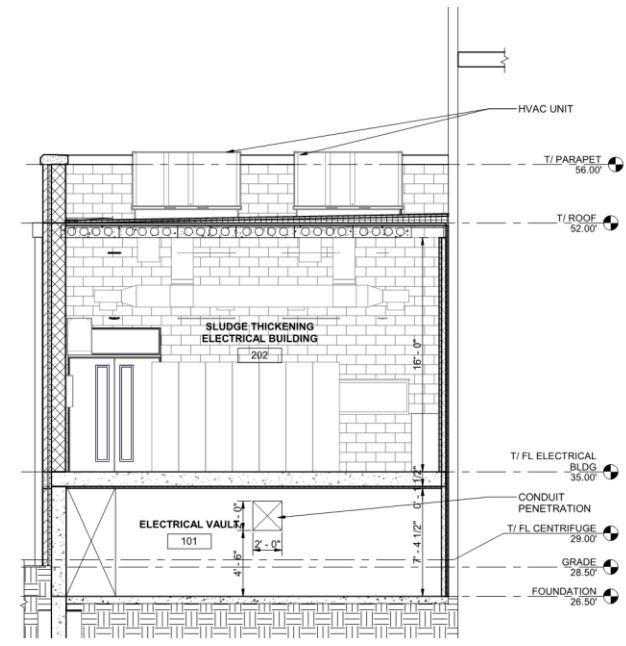
East Elevation



Electrical Building Sections



1 SECTION
SCALE: 1/4" = 1'-0"



2 SECTION 2
SCALE: 1/4" = 1'-0"



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Sludge Dewatering Facility

Sludge Dewatering Facility



RICHMOND-PETERSBURG TURNPIKE ROUTE I-95



Sludge Dewatering Facility



Scope of Work at the Dewatering Facility



- Replacement of five dewatering centrifuges
- New centrifuge control panels and centrifuges on platform above the 100-yr flood plain
- New dewatering polymer system
- New dewatered cake conveyor system composed of screw and belt conveyors
- New loading building
- New Integrated Power Assembly unit above the 100-yr flood plain elevation

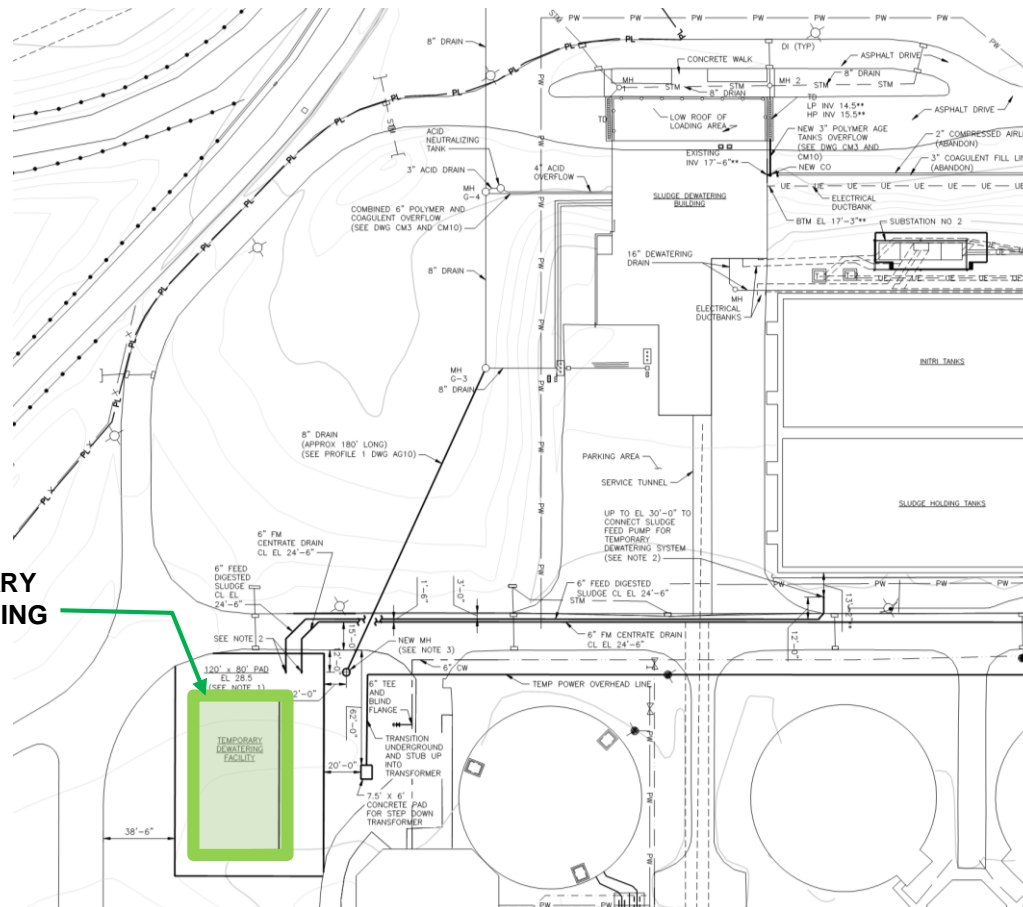
Temporary Dewatering Facility (1.5 years during construction)



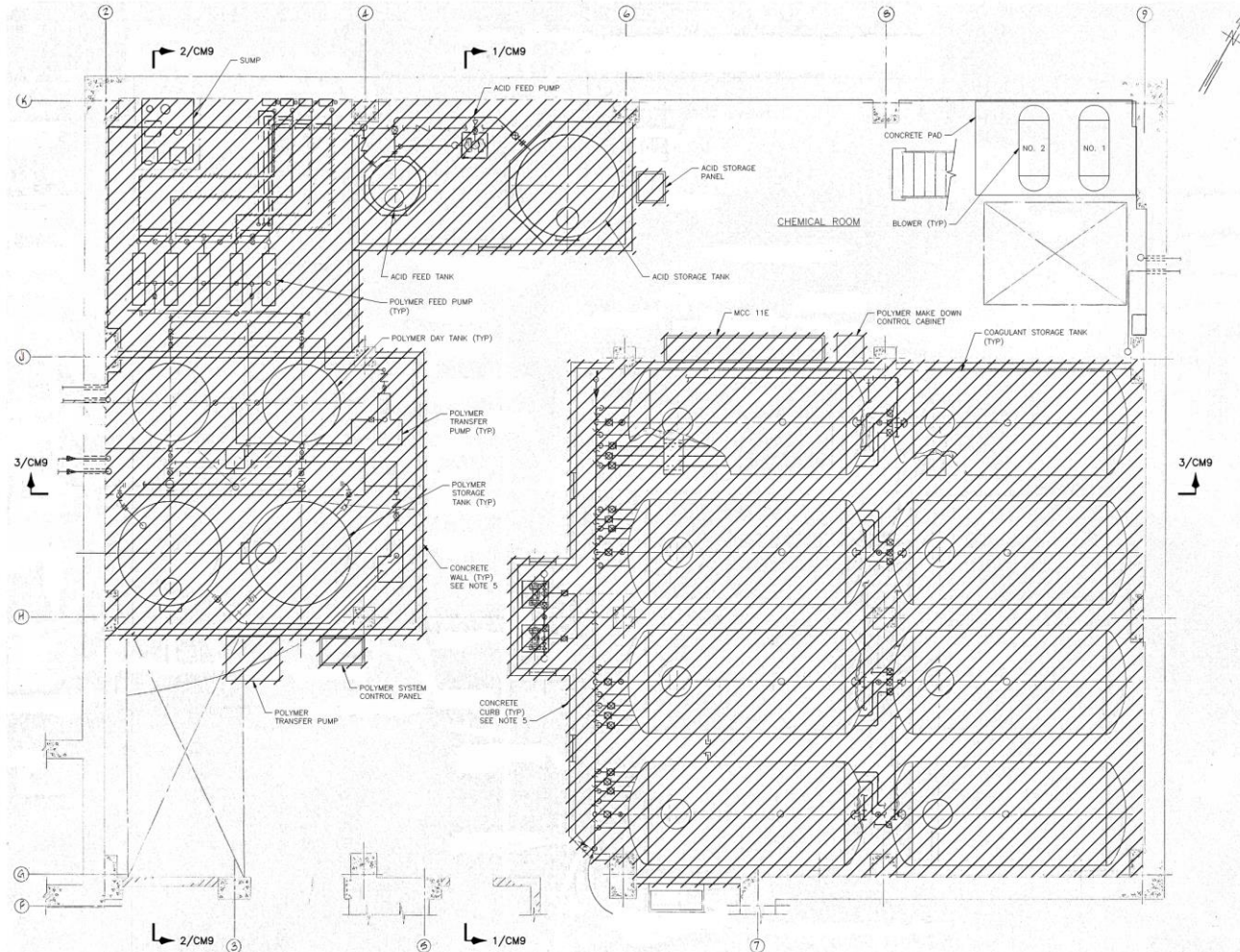
System Requirements

- **Minimum space: 120' x 100' metal building**
- **Power : 480 volt, 3 phase, 550 amp service**
- **Water: 400 gpm at 60 psi**
- **Expected filtrate discharge: 1,000 gpm to sewer**

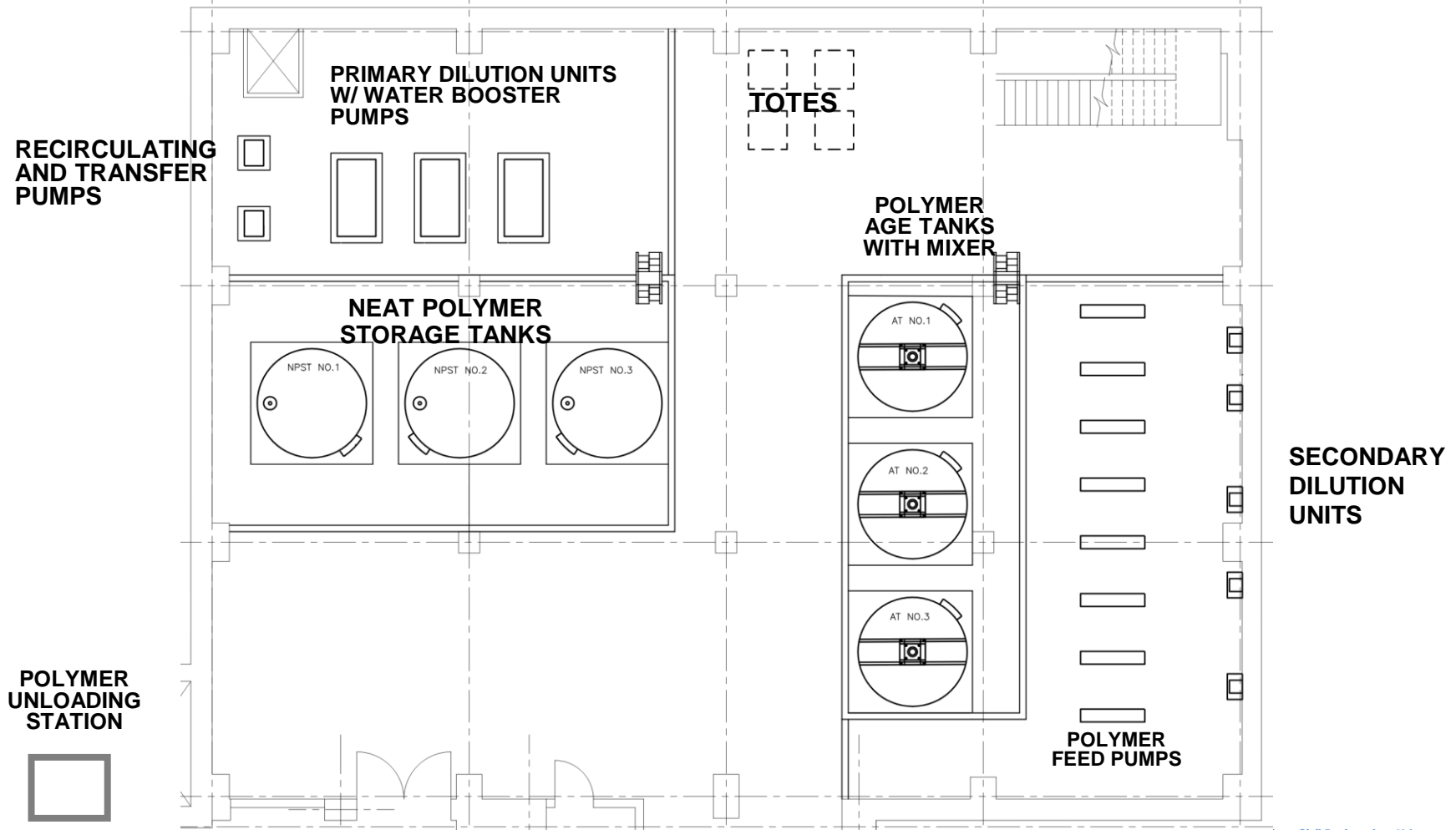
TEMPORARY DEWATERING FACILITY



Polymer System - Demolition Plan at Elevation 16'-6"



New Dewatering Polymer System Layout (Building Basement)



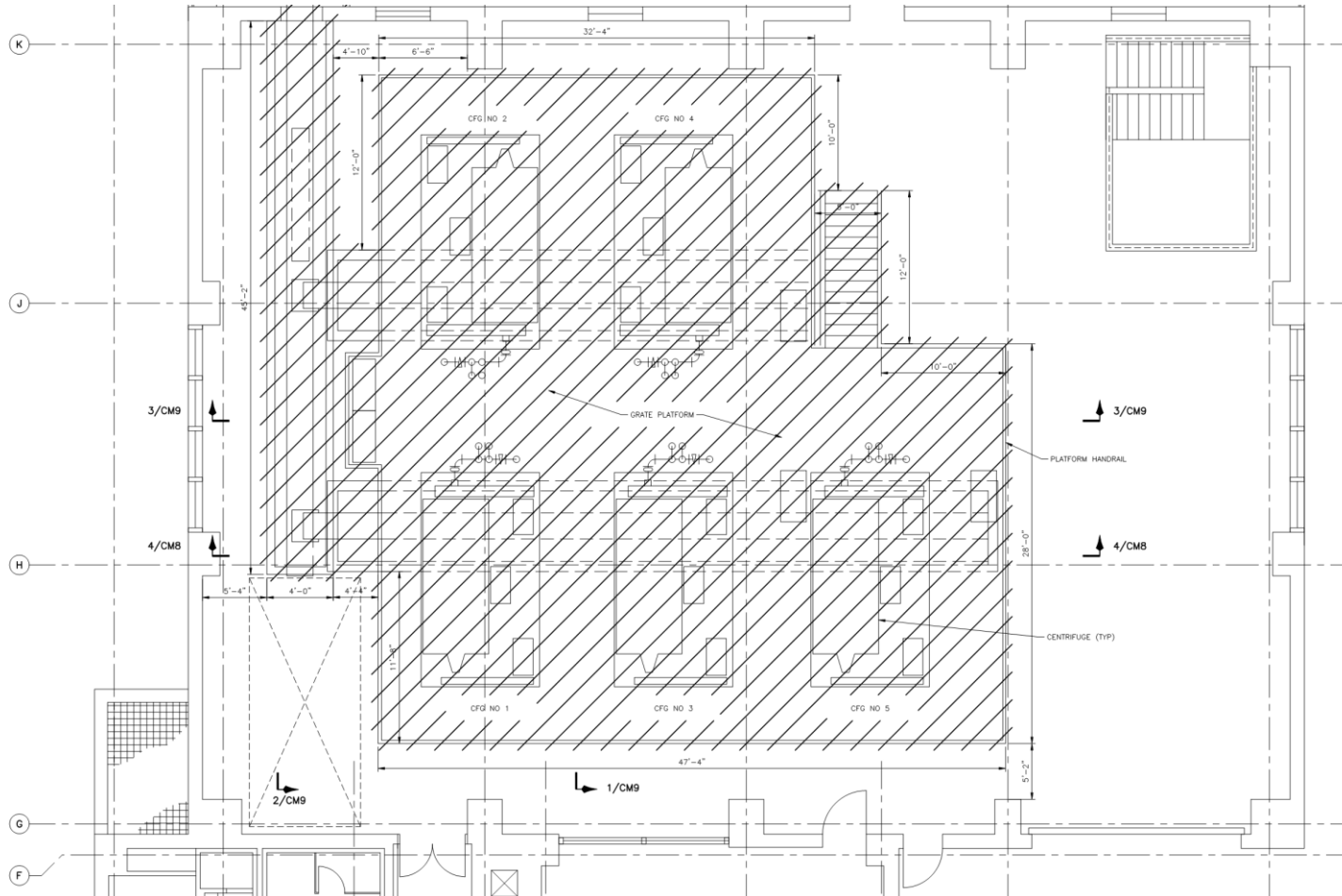
PLAN AT EL. 16'-6"



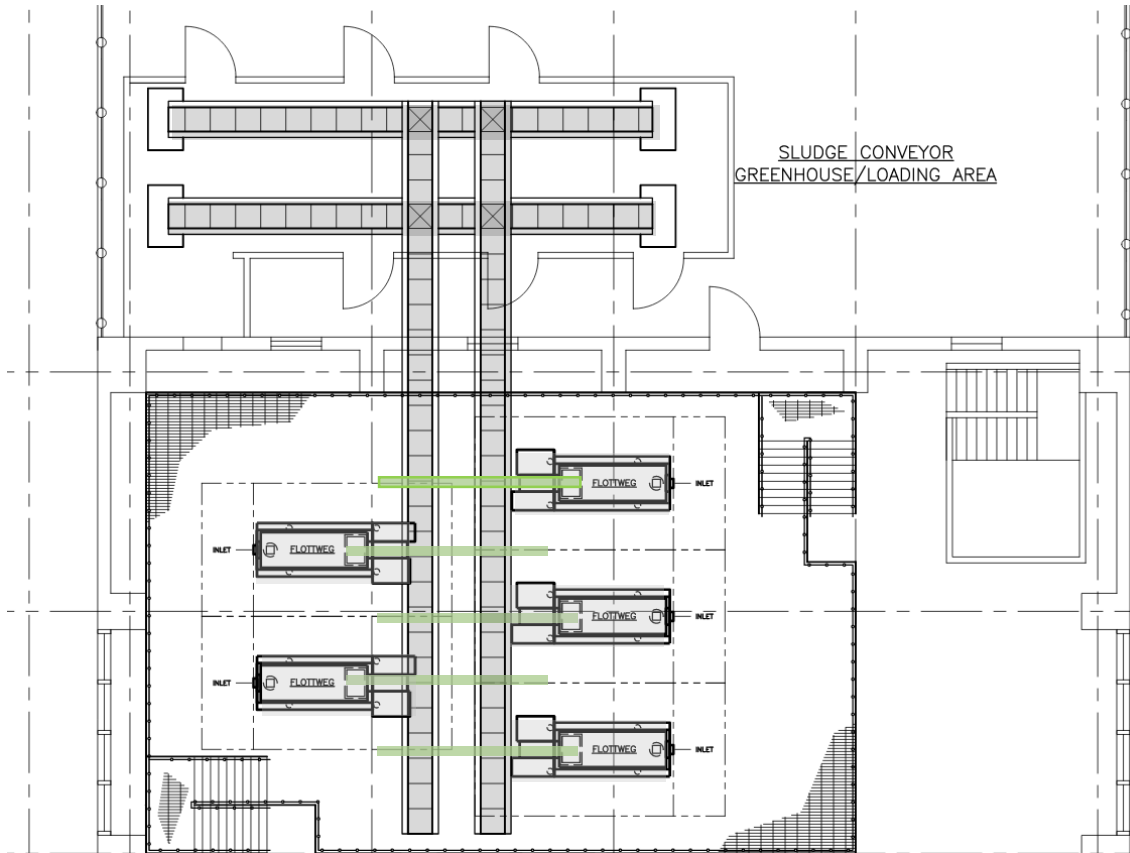
 **Civil-Engineers, Ltd.**
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Consulting Engineers

Centrifuge Room – Demolition Plan at Elevation 42'-7 1/2"

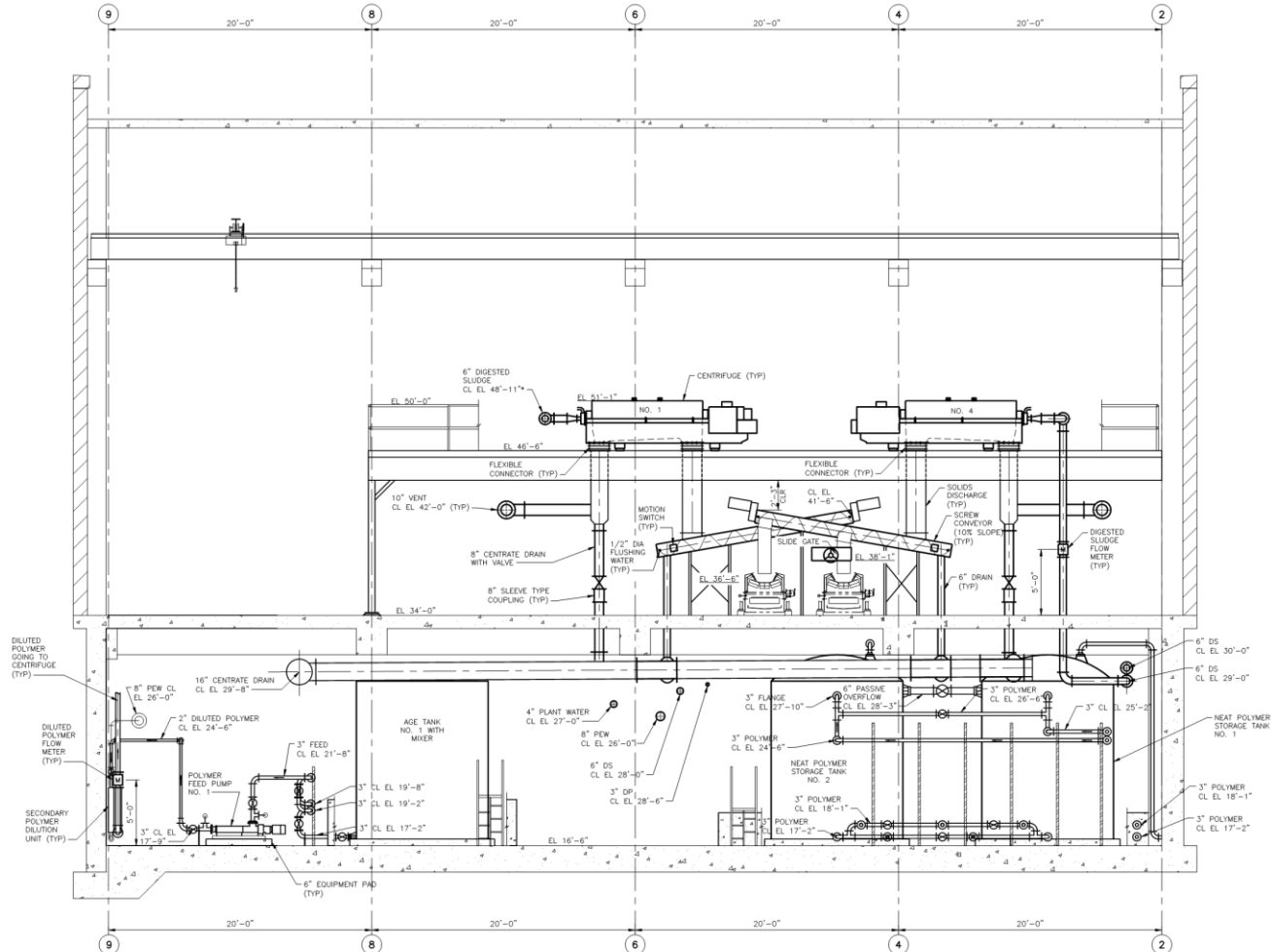


New Centrifuge and Conveyor Layout

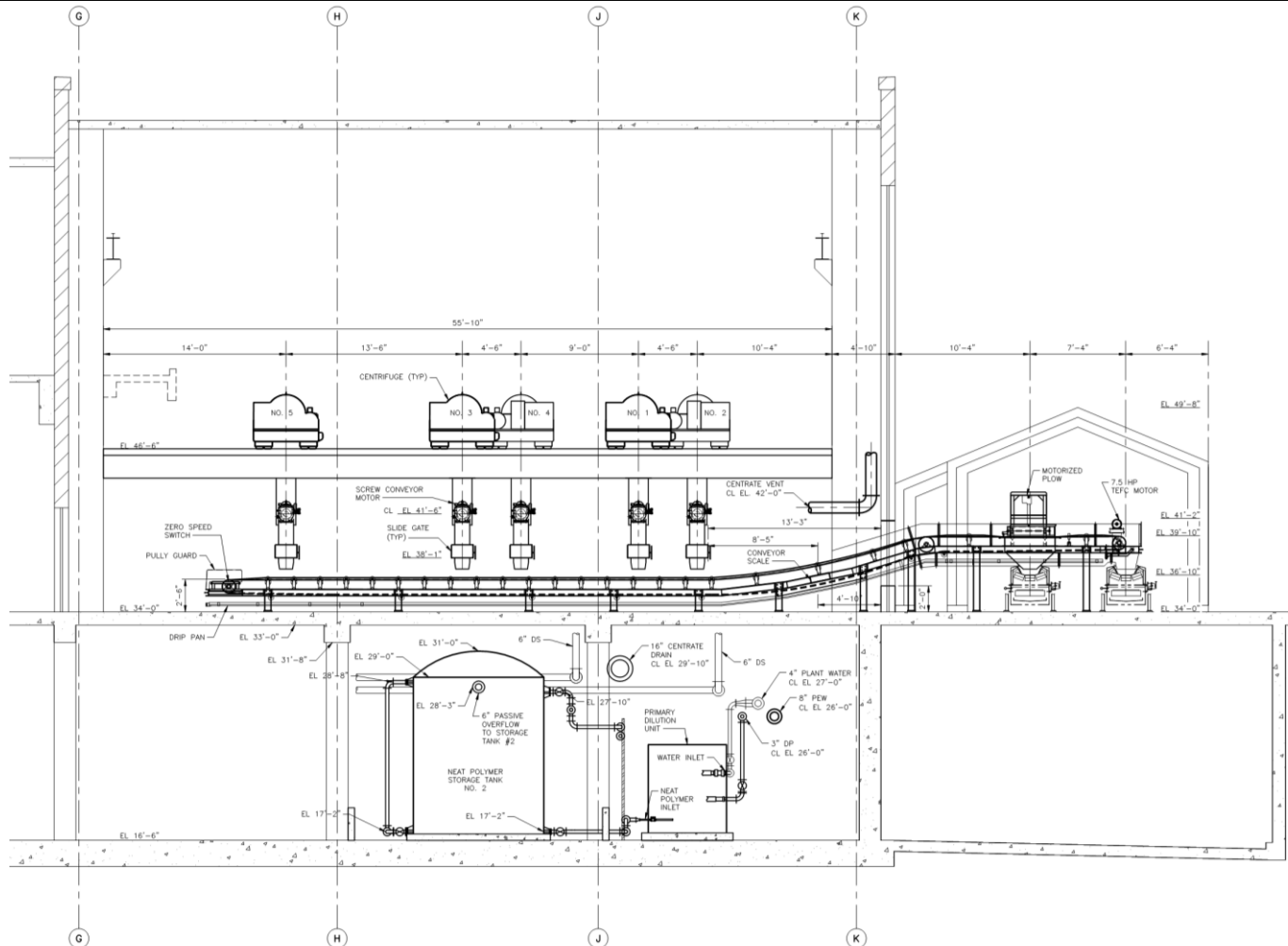


- Drain slop during startup through valve in Screw Conveyor
- Cake is contained as it exits the centrifuge
- 1 Screw Conveyor serves each Centrifuge. If a screw fails then the only one centrifuge will be out of service.
- Redundancy for Belt Conveyors

Sludge Dewatering Facility Section



Sludge Dewatering Facility Section



Dewatering Facility North Elevation



Dewatering Facility South Elevation



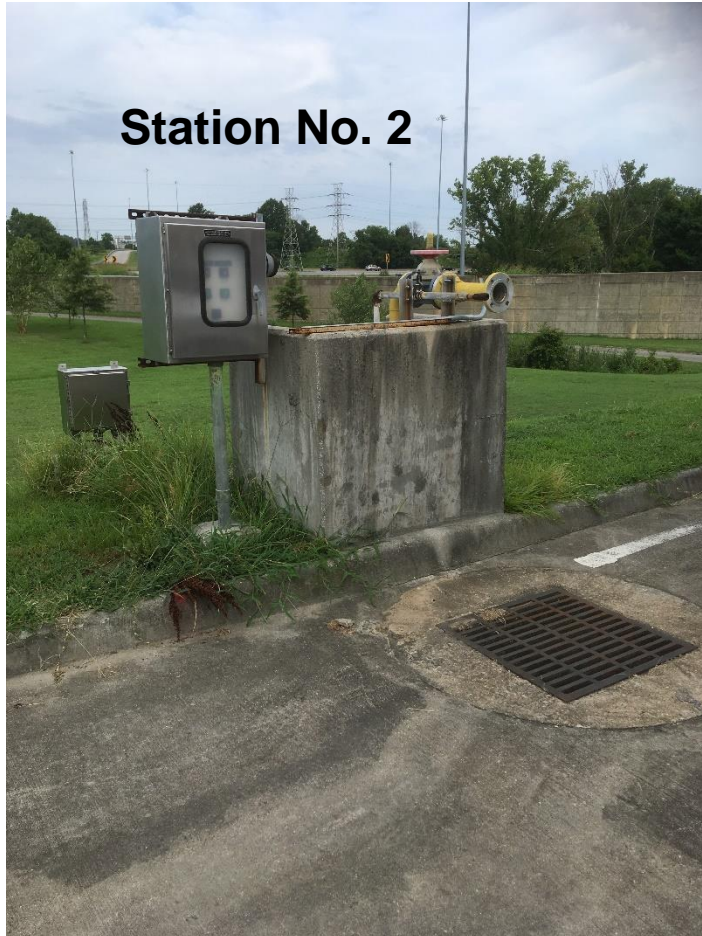
Dewatering Facility West Elevation



Centrifuges to be Replaced



Polymer Unloading Station



- Polymer Unloading Station No. 1 will be demolished to parking lot floor
- Polymer Unloading Station No. 2 will be remodeled for 3 polymer tanks
- New Polymer Unloading Panel



Existing Electrical Elements to be Demolished Outside of Dewatering Facility

**Unit Substation with Transformers
T11 and T12 (FL EL. 34'-0")**



**Transformers T2 and T21
(FL EL. 36'-0")**



New Electrical Elements Conceptual



- **Integrated Power Assembly which replaces existing Unit Substation and Distribution Switch Board**
- **Replace transformers T2 and T21**



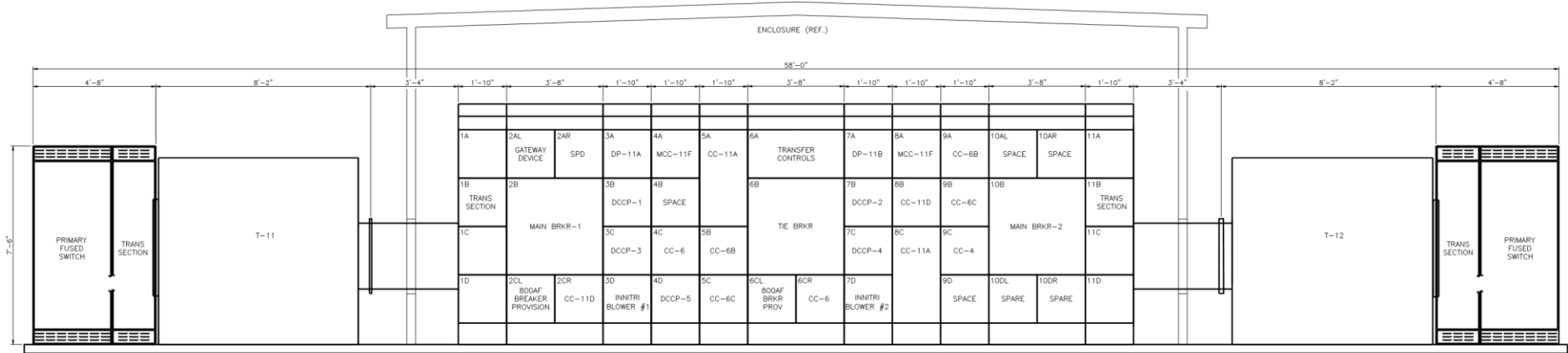
Integrated Power Assembly

Prefabricated unit to be placed on a higher/larger concrete slab outside dewatering building

The Eaton logo, consisting of the word "EATON" in a bold, blue, sans-serif font.



Integrated Power Assembly



480V OUTDOOR SWITCHGEAR NO.2 ELEVATION

SCALE: NOT TO SCALE

Existing Loading Building to be Replaced



New Loading Building Conceptual





Architectural Improvements

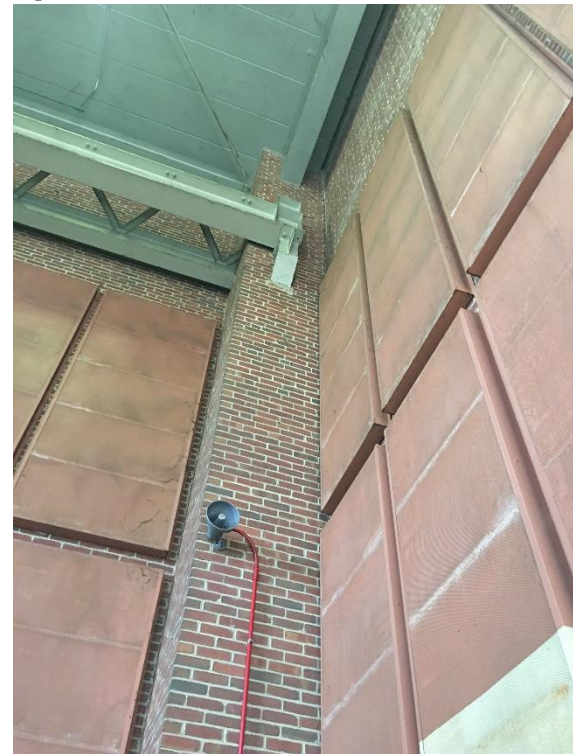
- Replace Interior Window and Door at centrifuge room with soundproof glass
- Replace exterior windows
- Replace interior doors



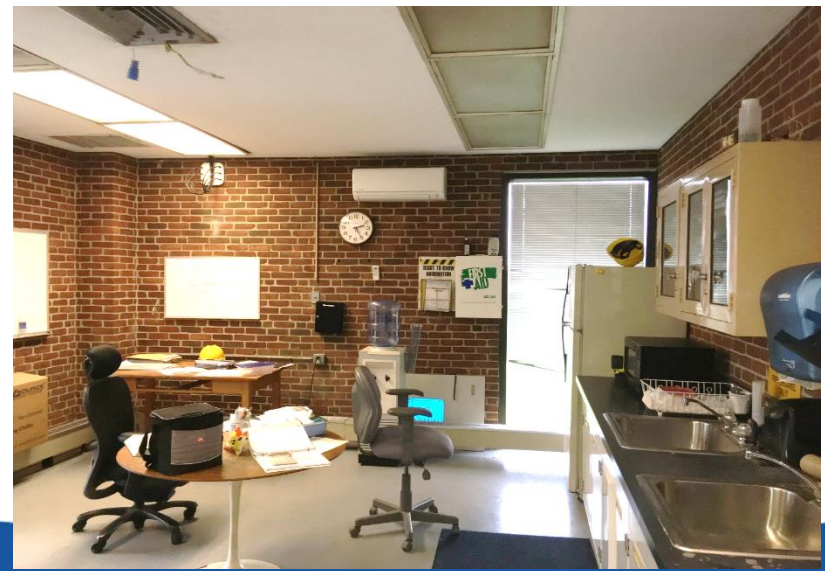
Sound Attenuation Panels



- Sound attenuation panels at end of life expectancy and will be replaced

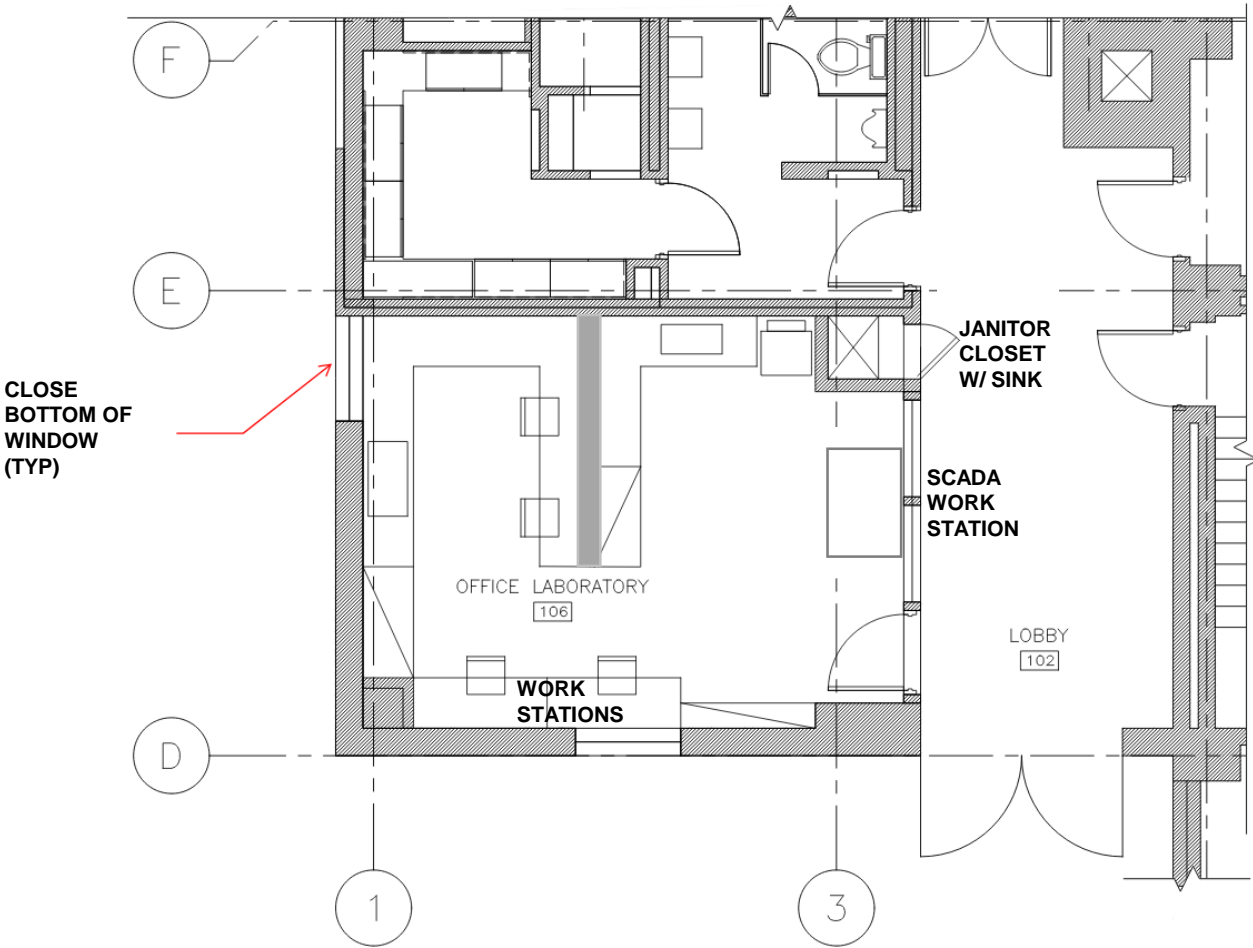


Current Conditions Operator Control Room





Proposed Layout for Operator Control Room and Bathroom



- **Laboratory area**
 - Sink
 - Sample refrigerator
 - Lab counter top
 - Upper/Lower cabinet
 - Lab equipment
- **Employee area**
 - Eating counter
 - Upper/lower cabinets
 - Sink
 - Refrigerator
 - Microwave



Replace Elevator





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Program Funding and Cost



Program Funding

- **City Utility Funding**
- **Estimated Construction Cost**
 - **Thickening Building - \$10 million**
 - **Dewatering Building - \$17.5 million**
 - **Total Estimated Construction Cost - \$27.5 million**



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Program Schedule



Program Schedule

- **Sludge Thickening and Dewatering Facility Improvements**
 - **Currently Under Design**
 - **Design Complete by 1/20**
 - **Bid and Award by 7/20**
 - **Construction Complete by 10/23**



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Department of Public Utilities Wastewater Treatment Plant Division 48 Project: Sludge Thickening and Dewatering Facility Improvements

Questions?

Urban Design Committee
November 2019 Meeting