

**Project:** Lee's Summit Police Joint Operations Facility  
**Date of Issuance:** November 19, 2024  
**Location:** 2 NE Tudor Rd.,  
Lee's Summit, Mo 64086

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This addendum is hereby made a part of the Contract Documents to the same extent as if it were originally included therein. Receipt of this Addendum shall be acknowledged on the Proposal Form.

Any Specification Sections and Drawings attached herein shall hereby be made a part of the Contract Documents.

**The following represents Amendments to the Drawings, dated August 30<sup>th</sup>, 2024, and November 1<sup>st</sup>, 2024 respectively.**

### **GENERAL**

1. VP Buildings is an approved manufacturer for metal buildings.
2. Drainage Memorandum
  - a. Included for information.

### **SPECIFICATIONS**

3. Specification 015723 – Stormwater Pollution Prevention Plan
  - a. Updated per FDP comments.
4. Specification 087100 – Door Hardware
  - a. Removed door 138 from set 11.0
  - b. Added door 138B to set 10.0
  - c. Added door 138A to set 22.0, and Alt 1
  - d. Moved door 153 to hw set 26.0
5. Specification 230923 paragraph 2.1.1 revised to include Automated Logic, Delta, Siemens, Talon, and Trane as acceptable controls manufacturers.

### **GENERAL**

1. Sheet G-111 – Grid Geometry Plan
  - a. Updated dock lift dimensions

### **CIVIL SHEETS**

1. Sheet C0.1 – GENERAL INFORMATION
  - a. Additional general notes added per city requirements.
2. Sheet C1.0 – DEMOLITION PLAN
  - a. Additional tree removal called out.
3. Sheet C2.0 – OVERALL SITE PLAN
  - a. Addition of building architectural grid points
4. Sheet C2.1 – SITE PLAN
  - a. Addition of building architectural grid points
5. Sheet C2.2 – SITE PLAN
  - a. Call of utility adjustments required by vehicle bay addition.

6. Sheet C2.3 – DIMENSION PLAN
  - a. Correction of labeling errors (i.e. mislabeled dimensions, overlapping/unreadable dimension labels)
7. Sheet C2.4 – DIMENSION PLAN
  - a. Correction of labeling errors (i.e. mislabeled dimensions, overlapping/unreadable dimension labels)
8. Sheet C3.0 – OVERALL GRADING PLAN
  - a. Minor grading changes incident of additional design coordination and city comments.
9. Sheet C3.1 - DETAILED GRADING PLAN
  - a. Minor grading changes incident of additional design coordination and city comments.
10. Sheet C3.2 – DETAILED GRADING PLAN
  - a. Minor grading changes incident of additional design coordination and city comments.
11. Sheet C3.3 – ADA GRADING PLAN
  - a. Minor grading changes incident of additional design coordination and city comments.
12. Sheet C3.4 – ADA GRADING PLAN
  - a. Sheet added.
13. Sheet C4.0 – UTILITY PLAN
  - a. Removal of water and sanitary notes that are replaced by plan and profile sheets of utility line as required by city review comment.
14. Sheet C4.1 – SANITARY PLAN AND PROFILE
  - a. Sheet added incident of city review comment.
15. Sheet C4.2 – WATER PLAN AND PROFILE
  - a. Sheet added incident of city review comment.
16. Sheet C5.0 – STORM PLAN AND PROFILE
  - a. Modification to storm sewer design per city review comments.
17. Sheet C5.1 - STROM PLAN AND PROFILE
  - a. Modification to storm sewer design per city review comments.
18. Sheet C5.2 – PROPOSED DRAIANGE MAP
  - a. Sheet added per city review comment.
19. Sheet C5.3 – STORM CALCULATIONS
  - a. Sheet added per city review comment.
20. Sheet C6.0 – EROSION CONTROL PLAN
  - a. Changes to proposed grading.
21. Sheet C6.1 – EROSION CONTROL PLAN
  - a. Changes to proposed grading.
22. Sheet C7.5 – CIVIL DETAILS 6
  - a. Skimmer detail added.

### **LANDSCAPE**

1. Sheet L-101 – LANDSCAPE PLAN
  - a. Added shrub screening around a condenser unit adjacent to the vehicle apparatus building (Alt. 2)
  - b. Revised the shade structure to a 15x16 footprint
  - c. Revised multiple plant quantities in the plant schedule
2. Sheet L-102 – JOF ENLARGEMETN PLAN
  - a. Added shrub screening around a condenser unit adjacent to the vehicle apparatus building (Alt. 2)
  - b. Revised the locations of four (4) trees around the site
3. Sheet L-103 – EAST PARKING ENLARGEMENT PLAN
  - a. Added shrubs to the area north of the new eastern parking stalls
  - b. Revised the shade structure from the Upfit to the Scenic (both by Landscape Forms)



4. Sheet L-104 – IRRIGATION PLAN
  - a. Revised the location of the 1.5-inch irrigation meter and irrigation system point of connection

### **STRUCTURAL**

5. Sheet S-200 Main Level Framing Plan
  - a. Modified framing at loading dock
6. Sheet S-411 – Floor Framing Details
  - a. Modified detail 11

### **ARCHITECTURAL**

2. Sheet A-321 – Wall Sections
  - a. Updated section A10
3. Sheet A-322 – Wall Sections
  - a. Updated section A9
4. Sheet A-502 – Exterior Section Details
  - a. Updated sections A1 and E1
5. Sheet A-503 – Exterior Section details
  - a. Updated section E4
6. Sheet A-601- DOOR SCHEDULE, DETAILS, AND INT. WIN. TYPES
  - a. Added doors 138A, 138B, 139, 140B to schedule.
  - b. Changed hw set on door 153
  - c. Changed door material on 150
7. Sheet AI101- LOWER LEVEL – FINISH PLAN
  - a. Added notes to clarify stair finishes
8. Sheet AI102 – MAIN LEVEL – FINISH PLAN
  - a. Added notes to clarify stair finishes

### **PLUMBING**

1. Sheet P-121 – LOWER LEVEL – WATER AND GAS PLAN
  - a. Added underground medium pressure gas line to outdoor grill with pressure regulator and gas cock.
  - b. Revised keynote P11 to include added load from outdoor grill.
2. Sheet P-601 – PLUMBING SCHEDULES
  - a. Added PR3 for outdoor grill.

### **MECHANICAL**

1. Sheet M-101– LOWER LEVEL - HVAC PLAN
  - a. Added general note 2 and 3.
  - b. Added annotations for duct dimensions.
  - c. Revised RH1 exhaust duct diameter.
2. Sheet M-102– MAIN LEVEL - HVAC PLAN
  - a. Added Keynote 13.
  - b. Revised diffuser locations in room AC – EMERG MGMT 145.
  - c. Added annotations for duct dimensions.
3. Sheet M-103– VEHICLE BUILDING – HVAC PLAN
  - a. Revised location of AHU-V1 and associated ductwork.
  - b. Revised location of UH-V3.

4. Sheet M-111– LOWER LEVEL – PIPING PLAN
  - a. Edited annotations.
  - b. Added shutoff valve.
  - c. Added Keynote 14.
5. Sheet M-112– MAIN LEVEL – PIPING PLAN
  - a. Edited annotation.
  - b. Added Keynote 15.
6. Sheet M-601– MECHANICAL SCHEDULES
  - a. Revised Range Hood Schedule CFM, Width, and Diameter.
  - b. Revised electrical data in Fan Schedule.
  - c. Added Power Fuse Block option to all WSHPs.
7. Sheet M-602– MECHANICAL SCHEDULES
  - a. Edited Split System Schedule Note 5.

### **ELECTRICAL**

1. Sheet ES101 – ELECTRICAL SITE PLAN
  - a. Revised pole-mounted fixture mounting heights due to adjacent residential property.
  - b. Added pole-mounted fixture due to mounting height requirements.
2. Sheet E-100 – LOWER LEVEL – POWER PLAN
  - a. Added power for dock-leveler.
3. Sheet E-101 – MAIN LEVEL – POWER PLAN
  - a. Revised room layout due to architectural changes.
4. Sheet E-401 – ENLARGED ELECTRICAL PLANS
  - a. Revised location of mechanical equipment per mechanical changes.
5. Sheet E-502 – ELECTRICAL DETAILS
  - a. Revised pole-mounted fixture mounting heights due to adjacent residential property.
6. Sheet E-601 – PANELBOARD SCHEDULES
  - a. Added power for dock-leveler.
7. Sheet E-621 – ELECTRICAL SCHEDULES
  - a. Revised light fixture specifications due to adjacent residential property.

### **TECHNOLOGY**

1. Sheet TG001 – TECHNOLOGY LEGEND AND GENERAL NOTES
  - a. Revised Infrastructure schedule providing 3 data cables to Wireless Access Points.
2. Sheet T-100 – LOWER LEVEL – TECHNOLOGY PLAN
  - a. Revised Wireless Access Point Layout.
3. Sheet T-101 – MAIN LEVEL – TECHNOLOGY PLAN
  - a. Added Data Outlet in Chief 121 office.
4. Sheet T-502 – TECHNOLOGY DETAILS
  - a. Removed duplicate infrastructure schedule as it exists on TG001.

### **ATTACHMENTS:**

*Specification: 015723, 087100, 230923(only updated in narrative). Sheets: G-111, C0.1, C1.0, C2.0, C2.1, C2.2, C2.3, C2.4, C3.0, C3.1, C3.2, C3.3, C3.4 C4.0, C4.1, C4.2, C5.0, C5.1, C5.2, C5.3 C6.0, C6.1, C7.5, L-101, L-102, L-103, L-104, S-200, S-411, A-*

321, A-322, A-502, A-503, A-601, AI101, AI102, P-121, P-601, M-101, M-102, M-103, M-111, M-112, M-601, M-602, ES101, E-100, E-101, E-401, E-502, E-601, E-621, TG001, T-100, T-101, T-502

### ADDENDUM NO. 03

# **FINAL STORMWATER REPORT FOR Lee's Summit Joint Operations Campus**

**Project Location:**

**10 NE Tudor Road, Lee's Summit, MO 64086**

**BHC Project # 041470.00.01**

**10/16/2024  
Rev : 11/15/2024**



Michael T. Makris  
Missouri PE 2021035286  
11/15/2024



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# 1.0 Introduction

This Final Stormwater Management Study is prepared for the expansion of the existing Lee's Summit Joint Operations Campus located at 10 NE Tudor Road, Lee's Summit, Missouri. The purpose of this study is to evaluate the existing on-site detention pond and the impacts of the expanded development on the existing detention pond and surrounding area. The project will result in the construction of a new Fire Administration building and associated Parking.

Governing design criteria is based on the APWA 5600 comprehensive control and the capacity of the downstream system to convey discharge during the systems design events.



*Figure 1: Project Location Aerial*

## 1.1 Methodology

The unit hydrograph modeling for this report was conducted using TR-55 methodologies within HydroCAD.

Runoff for this report was determined using a SCS Type II 24-Hour rainfall event.

The design storms used for this report were the 2-year (50%), 10-year (10%), and 100-year (1%) events. Rainfall depths for these events were determined from NOAA Atlas 14. The table below contains these rainfall depths.

*Table 1: Report Design Storms*

Report Design Storms	
Storm Event	Rainfall Depth (in)
2-Year	3.70
10-Year	5.66
100-Year	9.23

The following documents were used as the design criteria for this report:

- Kansas City Metropolitan Chapter of APWA Standards, Specification and Design Criteria, Section 5600 (2011)

### Controlling Design Requirement

APWA 5600 requires that rainfall events are held to the following to the following release rates. 0.5 cfs for the 2-year, 2.0 cfs for the 10-yr, and 3.0 cfs for the 100-yr for any newly developed area. For this site the area considered new development would be the eastern third of the site where the Fire Administration be located. BHC and the City of Lee's Summit have been unable to find the existing drainage study for the project and have not quantified release rates. BHC has reached out to the engineer of record (Bartlett and West), but was unable to obtain that information.

Additionally, BHC reviewed the receiving system to evaluate potential flooding issues downstream of the site. In this case the downstream system is the proposed storm sewer installed as part of the development of the Douglas Station Multifamily site to the north. This site is not yet developed, therefore BHC has relied on the final development plans prepared by the developer and their engineer, dated March 8, 2024. From that review BHC has determined that the developer has considered release rates from our proposed pond that pass through to the Douglas Station Commercial Park Regional Pond. **From conversations between BHC and City Staff (Gene Williams and Grant White), BHC has determined that the assumed Joint Operations Center pond release rates contained within the Douglas Station Multifamily Final Development Plans should be considered the controlling design requirement.**



## 2.0 Existing Conditions

### 2.1 Project Site

The existing project site is currently occupied by the existing Lee's Summit Municipal Court Facility basin on the site grading, the project site has 11.41 acres tributary to the detention pond, and additional 0.78 acres of off-site runoff from the right-of-way of Tudor. Total tributary area is 12.19 acres.

### 2.2 Hydrology

A majority of the project site drains towards the existing detention pond. This drainage area is summarized below in Table II.

*Table II: Existing Drainage Areas*

		AREA		PERVIOUS		IMPERVIOUS		CN-Value	C-VALUE
	Total	631,858 SF	(14.51 ac)	294518.55 SF	(6.76 ac)	337,339 SF	(7.74 ac)	90	0.62
To Pond	Onsite	497,121 SF	(11.41 ac)	237177.93 SF	(5.44 ac)	259,943 SF	(5.97 ac)	89	0.61
	Offsite	33,883 SF	(0.78 ac)	12318.70 SF	(0.28 ac)	21,564 SF	(0.50 ac)	91	0.68
Not to Pond	Onsite	26,149 SF	(0.60 ac)	21777.89 SF	(0.50 ac)	4,371 SF	(0.10 ac)	83	0.40
	Offsite	74,704 SF	(1.71 ac)	23244.02 SF	(0.53 ac)	51,460 SF	(1.18 ac)	92	0.71

The drainage area was analyzed in HydroCAD, using TR-55 methodologies to calculate the peak runoff from the existing site in the 2-, 10-, and 100-year storm events to the existing detention pond. These calculations are found in Appendix A1. Table III below summarizes these quantities.

*Table III: Existing Site Generated Runoff*

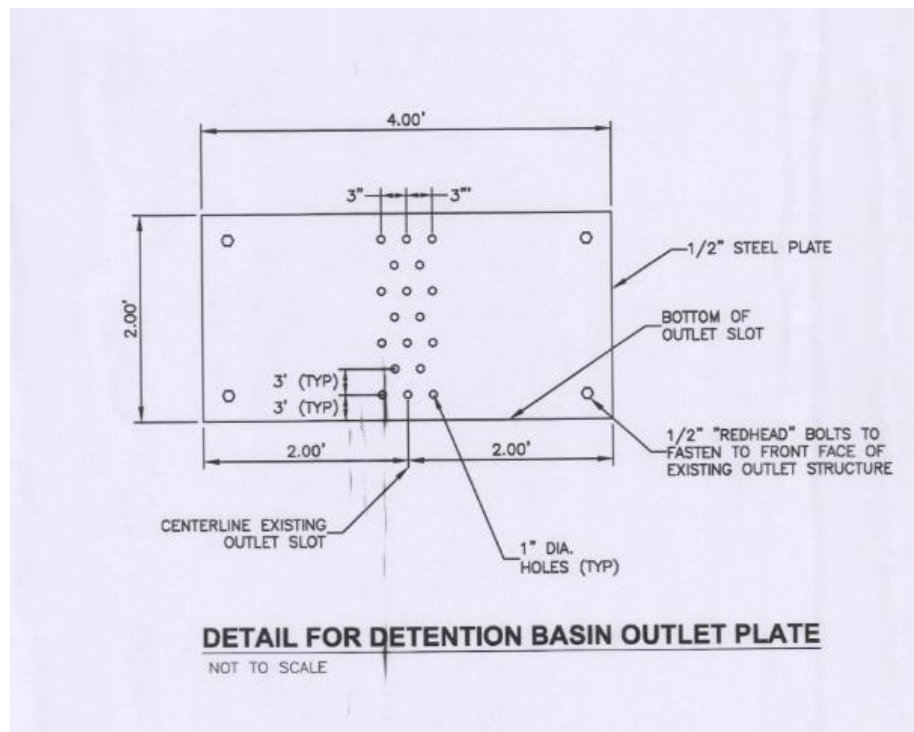
Existing Site Generated Runoff (cfs)		
2-Year	10-Year	100-Year
47.16	78.42	134.50

## 2.3 Existing Detention

The existing detention pond was evaluated in all runoff events. The storm events are attenuated through the pond by two existing 30" CMP culvert pipes. During the 2013 modifications to the site a 2-ft plate with multiple orifices was added to detention pond, an image of this control structure is below. The Stormwater Management Study from 2013 modification has not been found at the time this report was submitted, therefore, BHC evaluated the flow through the pond based on the conditions that presently exist. This results in the following pond peak release rates:

Existing Detention Pond				
Storm Event	Primary Spillway Peak Release (cfs)	Overflow Spillway Peak Release (cfs)	Combined Peak Release (CFS)	Stage Storage Elevation
2-year	29.89	0	29.89	1002.57
10-year	53.31	1.89	55.21	1003.29
100-year	73.08	42.83	115.91	1003.97

Due to the activation of the overflow spillway in the 10-year event, BHC believes that the existing pond is undersized, based on the established Design Methodology Section 1.1 of this report. Therefore, additional volume is needed with the proposed modification to address the current undersized pond.



*Image: 2013 Pond Modifications*

## 3.0 Proposed Condition

### 3.1 Project Site

The project will result in the construction of a Fire Administration building, associated parking and site grading changes. This will result in an increase of the tributary area to the detention pond from 12.19 acres to 12.39 (11.59 acres from project site and 0.8 acres from Tudor right-of-way).

### 3.2 Hydrology

A majority of the project site drains towards the existing detention pond. This drainage area is summarized below in Table IV.

*Table IV: Proposed Drainage Areas*

		AREA		PERVIOUS		IMPERVIOUS		CN-Value	C-VALUE
	Total	632,704 SF	(14.52 ac)	226,996 SF	(5.21 ac)	405,708 SF	(9.31 ac)	92	0.68
To Pond	Onsite	504,869 SF	(11.59 ac)	175,873 SF	(4.04 ac)	328,996 SF	(7.55 ac)	92	0.69
	Offsite	34,740 SF	(0.80 ac)	13,154 SF	(0.30 ac)	21,586 SF	(0.50 ac)	91	0.67
Not to Pond	Onsite	19,248 SF	(0.44 ac)	15,814 SF	(0.36 ac)	3,434 SF	(0.08 ac)	83	0.41
	Offsite	73,848 SF	(1.70 ac)	22,155 SF	(0.51 ac)	51,692 SF	(1.19 ac)	93	0.72

The drainage area was analyzed in HydroCAD, using TR-55 methodologies to calculate the peak runoff from the existing site in the 2-, 10-, and 100-year storm events. These calculations are found in Appendix A1. Table V below summarizes these quantities.

*Table V: Proposed Site Generated Runoff*

Proposed Site Generated Runoff (cfs)		
2-Year	10-Year	100-Year
50.58	82.12	138.64

The proposed development of the site results in an increase in peak runoff rates in all analyzed storm events. To manage runoff to pre-development levels the existing detention pond will need to be expanded.

### 3.3 Controlling Release Rate

#### Downstream Analysis

The City of Lee's Summit provided the Final Development Plans submitted by for the multi-family development located north of the project site. BHC has reviewed the plans and sheet C202 indicates that a release rate from the pond located on the Joint Operations Center property considered a release rate of 36 cfs in the 10-year storm, and 54 CFS in the 100-year storm.

Additionally, the current overflow spillway discharges to the proposed Douglas Station Multi-Family Project. The current spillway location creates a potential of flooding of downstream Multi-Family site. Therefore, this proposed design includes raising the top of the north berm elevation of the detention pond to 1005.50. This allows for the construction of spillway to west towards Commerce Drive and minimizes downstream flooding during an emergency overflow event.

### 3.3 Proposed Detention

Detention will be provided by modification of the existing dry detention pond. Presently, the outlet of the pond includes two 30" CMP outlet pipes, the proposed solutions considers replacing the existing CMP structures an outlet control structure with a weir wall. The weir wall will have a 3" opening for the water quality storm (extended dry detention released over 40 hours). The 10 and 100-yr events will be controlled by 4" wide by 18" tall opening. The depth an area of the pond has been increased to allow for (1) additional detention and (2) a direct connection to the proposed inlet 1-6 located on the development to the north.

Information regarding the downstream system has been provided in Appendix A2.

This controls the release rate to the flows assumed for the project.

Proposed Detention Pond		
Storm Event	Peak Release (cfs)	Stage Storage Elevation
Water Quality	0.37	997.5
*2-year	23.73	999.49
10-year	34.50	1000.85
100-year	55.61	1002.75
Bottom of Spillway	--	1003.75
**Top of Spillway	--	1004.70
Top of Berm	--	1005.50

\*The 2-year event was not defined in the downstream system.

\*\*Spillway sizing is provided in Appendix A3.

### Emergency Overflow Spillway

As previously discussed, the current emergency overflow spillway discharges onto property proposed for multifamily construction. This creates potential for downstream flooding during an event that activates the emergency spillway. To prevent this the proposed design raises the top of berm height to 1005.50 and relocates the spillway to the discharge on Commerce Drive. To provide the flow required for the 100-year event the spillway will need to be constructed of concrete and include a retaining wall to stabilize the berm along the northside of the site. This location and detailing of the spillway are indicated on Sheet C3.3 in the project plans.

The current spillway design provides 0.8-ft of freeboard between the top of spillway flow elevation and the top of berm. Per Gene Williams review comments dated November 1, 2024, if 0.8-ft of freeboard can be provided a waiver from APWA 5600 is not required.

## 4.0 Downstream Analysis

As previously discussed BHC reviewed downstream infrastructure as part of this analysis. The site discharges to a currently undeveloped site that has an active Final Development Plan in review by the City of Lee's Summit. The proposed development includes installation of an enclosed storm sewer system through the property replacing the existing channel. The proposed detention meets the allowed release rates to that system from the on-site pond. However, the site does not have surface flow capacity for the emergency overflow event required by APWA 5600. Therefore, the proposed design relocates the existing overflow spillway to discharge to Commerce Drive. As part of the Stormwater Management Study. Downstream conditions were considered.

Additionally, BHC recommends a direct connection to the Douglas Station Multi-Family system to in lieu of an overland flow.

## 4.0 Water Quality

Per the Lee Summit design and construction manual “volumetric and/or extended detention control of the 90% mean annual event storm event shall be provided for broad protection of the receiving system, including channel erosion protection and flood peak reductions over a range of return periods.”

This is achieved as described above with the use of the restricted 3” orifice to manage runoff from the 1.37 inch event.

## **6.0 Permitting**

### **6.1 United State Army Corps of Engineers (USACE)**

The National Wetland Inventory and USGS Mapping does not identify and jurisdictional waters within the site area. There are no known USACE regulated levees within 500-feet of the site.

### **6.2 Federal Emergency Management Agency (FEMA)**

The site is located within the Zone X, and outside of the 1% and 0.2% annual chance flood hazard, as shown on FEMA FIRM Map 29095C0417G, effective 1/20/2017. The FEMA Firmette for the project site can be found in Appendix A4

### **6.3 Missouri Department of Natural Resources (MoDNR)**

The area to be disturbed by the project site exceeds 1-acre; a Notice of Intent (NOI) is required to be submitted to MoDNR and a Stormwater Pollution Prevention Plan (SWPPP) will be prepared for the project.



## 6.0 Conclusion

Multiple stormwater control criteria were considered for the development of the proposed project. It was also determined that the existing pond is undersized as the overflow spillway is activated in the 10-year event. Therefore, the existing undersize of this pond needs addressed as part of the proposed improvements.

It was determined that limiting release rate criteria is the capacity of the proposed Douglas Station Multifamily storm sewer system. The design rates of the Joint Operations Center to the receiving storm sewer system were considered the controlling design criteria.

The existing overflow spillway discharging to the Douglas Station project is proposed to be relocated to discharge to Commerce Drive.

Additionally, the stormwater design meets the Lee's Summit Design and Construction manual requirements for water quality control through the use of an Extended Dry Detention system.

# **Appendix A – Reference Documents**

A1 – HyrdoCAD Output Summary

A2 – Douglass Station Commercial Park Reference Documents

A3 – Spillway Design

A4 – FEMA Firmette

A5 – Drainage Maps

# **Appendix A – Reference Documents**

A1 – HyrdoCAD Output Summary

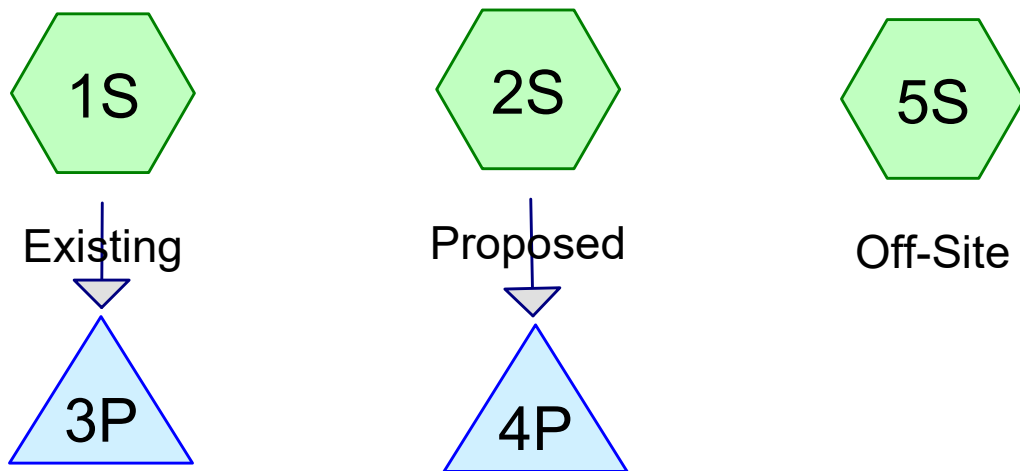
A2 – Douglass Station Commercial Park Reference Documents

A3 – Spillway Design

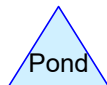
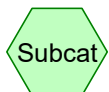
A4 – FEMA Firmette

A5 – Drainage Maps

## Appendix A1



Existing Detention      Proposed Detention



### Routing Diagram for LS Joint Ops

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## LS Joint Ops

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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
12.190	90	(1S)
12.390	92	(2S)
0.500	91	(5S)
<b>25.080</b>	<b>91</b>	<b>TOTAL AREA</b>

## LS Joint Ops

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### Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
25.080	Other	1S, 2S, 5S
<b>25.080</b>		<b>TOTAL AREA</b>

## LS Joint Ops

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### Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	25.080	25.080		1S, 2S, 5S
<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>25.080</b>	<b>25.080</b>	<b>TOTAL AREA</b>	

## LS Joint Ops

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### Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	3P	999.50	999.00	40.0	0.0125	0.025	30.0	0.0	0.0
2	4P	994.90	994.50	40.0	0.0100	0.012	30.0	0.0	0.0



**LS Joint Ops***Type II 24-hr 2-year Rainfall=3.70"*

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Time span=5.00-60.00 hrs, dt=0.05 hrs, 1101 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Existing**

Runoff Area=12.190 ac 0.00% Impervious Runoff Depth>2.64"  
Tc=10.0 min CN=90 Runoff=47.16 cfs 2.677 af

**Subcatchment 2S: Proposed**

Runoff Area=12.390 ac 0.00% Impervious Runoff Depth>2.83"  
Tc=10.0 min CN=92 Runoff=50.58 cfs 2.918 af

**Subcatchment 5S: Off-Site**

Runoff Area=0.500 ac 0.00% Impervious Runoff Depth>2.73"  
Tc=5.0 min CN=91 Runoff=2.33 cfs 0.114 af

**Pond 3P: Existing Detention**

Peak Elev=1,002.57' Storage=33,368 cf Inflow=47.16 cfs 2.677 af  
Primary=29.89 cfs 2.670 af Secondary=0.00 cfs 0.000 af Outflow=29.89 cfs 2.670 af

**Pond 4P: Proposed Detention**

Peak Elev=999.49' Storage=49,259 cf Inflow=50.58 cfs 2.918 af  
Outflow=23.73 cfs 2.918 af

**Total Runoff Area = 25.080 ac Runoff Volume = 5.709 af Average Runoff Depth = 2.73"**  
**100.00% Pervious = 25.080 ac 0.00% Impervious = 0.000 ac**

## LS Joint Ops

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Type II 24-hr 2-year Rainfall=3.70"

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### Summary for Subcatchment 1S: Existing

Runoff = 47.16 cfs @ 12.01 hrs, Volume= 2.677 af, Depth> 2.64"

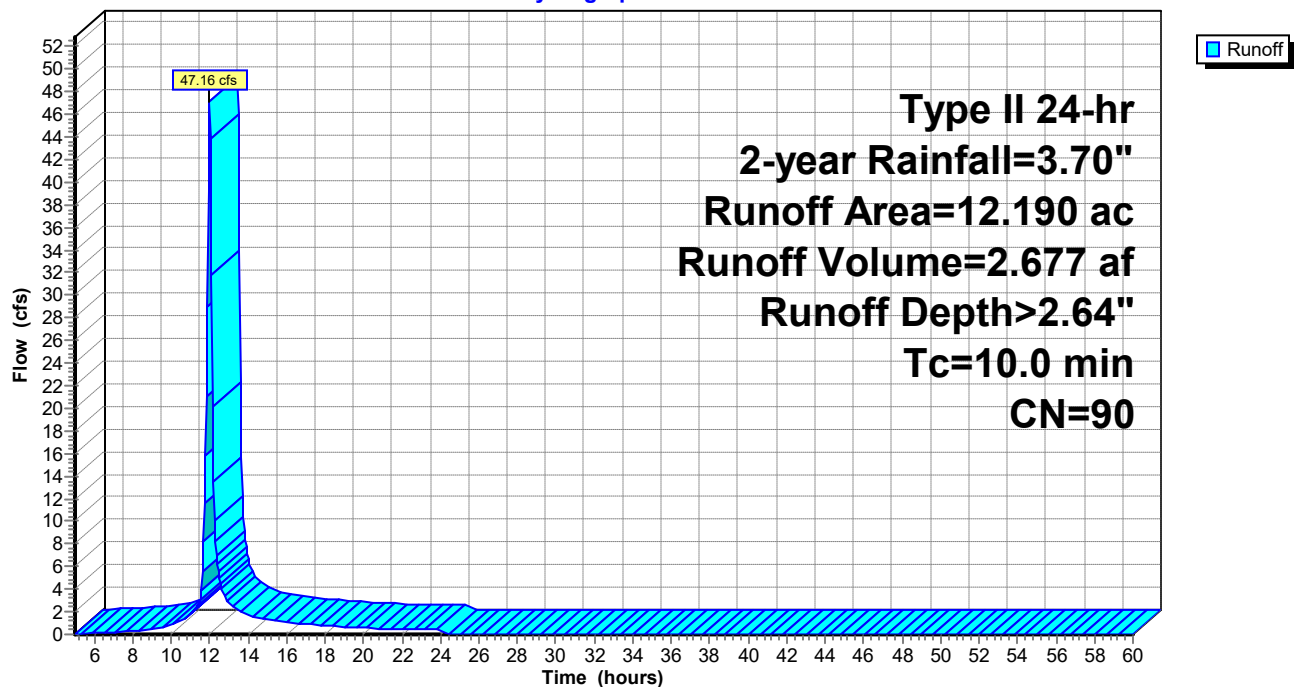
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
Type II 24-hr 2-year Rainfall=3.70"

Area (ac)	CN	Description
* 12.190	90	
12.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1S: Existing

Hydrograph



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### Summary for Subcatchment 2S: Proposed

Runoff = 50.58 cfs @ 12.01 hrs, Volume= 2.918 af, Depth> 2.83"

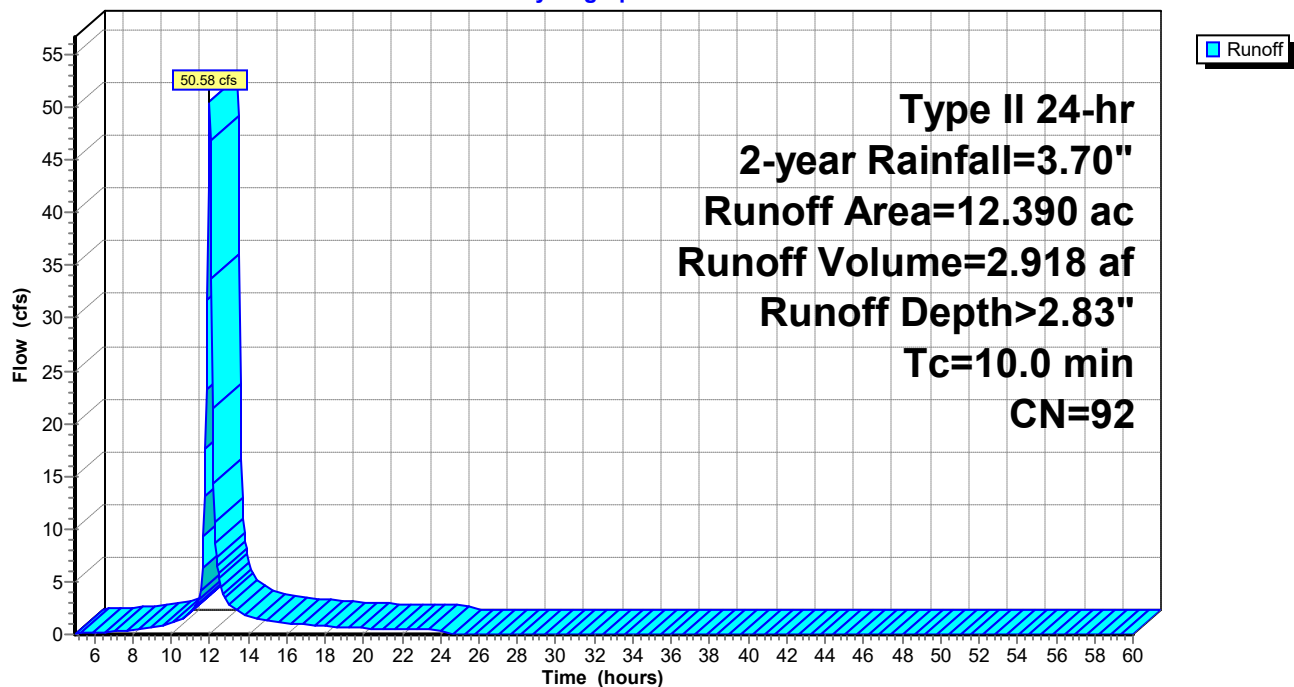
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
Type II 24-hr 2-year Rainfall=3.70"

Area (ac)	CN	Description
* 12.390	92	
12.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2S: Proposed

Hydrograph



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Type II 24-hr 2-year Rainfall=3.70"

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### Summary for Subcatchment 5S: Off-Site

[49] Hint:  $T_c < 2dt$  may require smaller  $dt$

Runoff = 2.33 cfs @ 11.95 hrs, Volume= 0.114 af, Depth> 2.73"

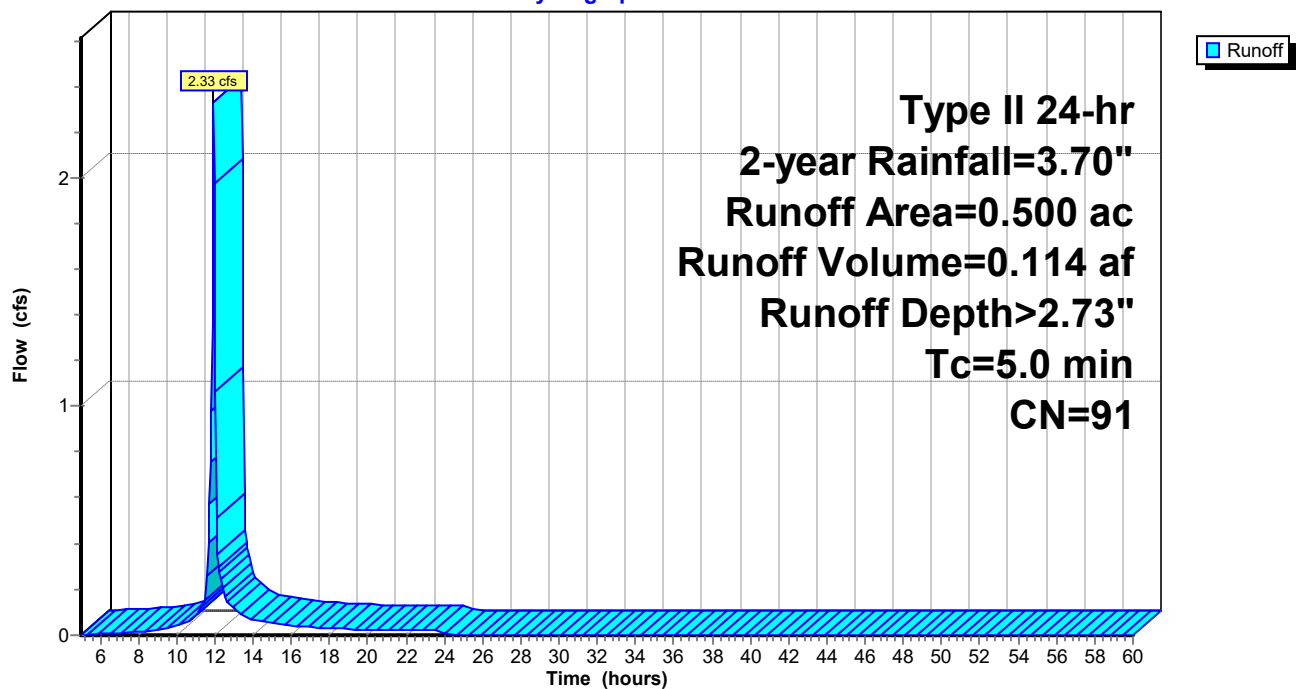
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs,  $dt=0.05$  hrs  
Type II 24-hr 2-year Rainfall=3.70"

Area (ac)	CN	Description
* 0.500	91	
0.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

### Subcatchment 5S: Off-Site

Hydrograph



**LS Joint Ops**

Type II 24-hr 2-year Rainfall=3.70"

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**Summary for Pond 3P: Existing Detention**

Inflow Area = 12.190 ac, 0.00% Impervious, Inflow Depth > 2.64" for 2-year event  
 Inflow = 47.16 cfs @ 12.01 hrs, Volume= 2.677 af  
 Outflow = 29.89 cfs @ 12.11 hrs, Volume= 2.670 af, Atten= 37%, Lag= 6.0 min  
 Primary = 29.89 cfs @ 12.11 hrs, Volume= 2.670 af  
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,002.57' @ 12.11 hrs Surf.Area= 18,484 sf Storage= 33,368 cf

Plug-Flow detention time= 87.9 min calculated for 2.668 af (100% of inflow)  
 Center-of-Mass det. time= 86.7 min ( 888.6 - 802.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	999.00'	88,385 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
999.00	10	0	0
1,000.00	2,580	1,295	1,295
1,001.00	12,035	7,308	8,603
1,002.00	17,125	14,580	23,183
1,003.00	19,500	18,313	41,495
1,004.00	22,140	20,820	62,315
1,005.00	30,000	26,070	88,385

Device	Routing	Invert	Outlet Devices
#1	Primary	999.50'	<b>30.0" Round CMP_Round 30" X 2.00</b> L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 999.50' / 999.00' S= 0.0125 '/' Cc= 0.900 n= 0.025, Flow Area= 4.91 sf
#2	Device 1	999.25'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#3	Device 1	999.50'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#4	Device 1	999.75'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#5	Device 1	1,000.00'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#6	Device 1	1,000.25'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#7	Device 1	1,000.50'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#8	Device 1	1,000.75'	<b>3.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#9	Secondary	1,003.20'	<b>24.0' long x 22.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#10	Device 1	1,001.00'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s) 1.0' Crest Height

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Type II 24-hr 2-year Rainfall=3.70"

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**Primary OutFlow** Max=29.57 cfs @ 12.11 hrs HW=1,002.56' (Free Discharge)

1=CMP\_Round 30" (Passes 29.57 cfs of 52.84 cfs potential flow)

2=Orifice/Grate (Orifice Controls 0.14 cfs @ 8.42 fps)

3=Orifice/Grate (Orifice Controls 0.09 cfs @ 8.37 fps)

4=Orifice/Grate (Orifice Controls 0.13 cfs @ 8.01 fps)

5=Orifice/Grate (Orifice Controls 0.08 cfs @ 7.64 fps)

6=Orifice/Grate (Orifice Controls 0.12 cfs @ 7.25 fps)

7=Orifice/Grate (Orifice Controls 0.07 cfs @ 6.84 fps)

8=Orifice/Grate (Orifice Controls 0.92 cfs @ 6.25 fps)

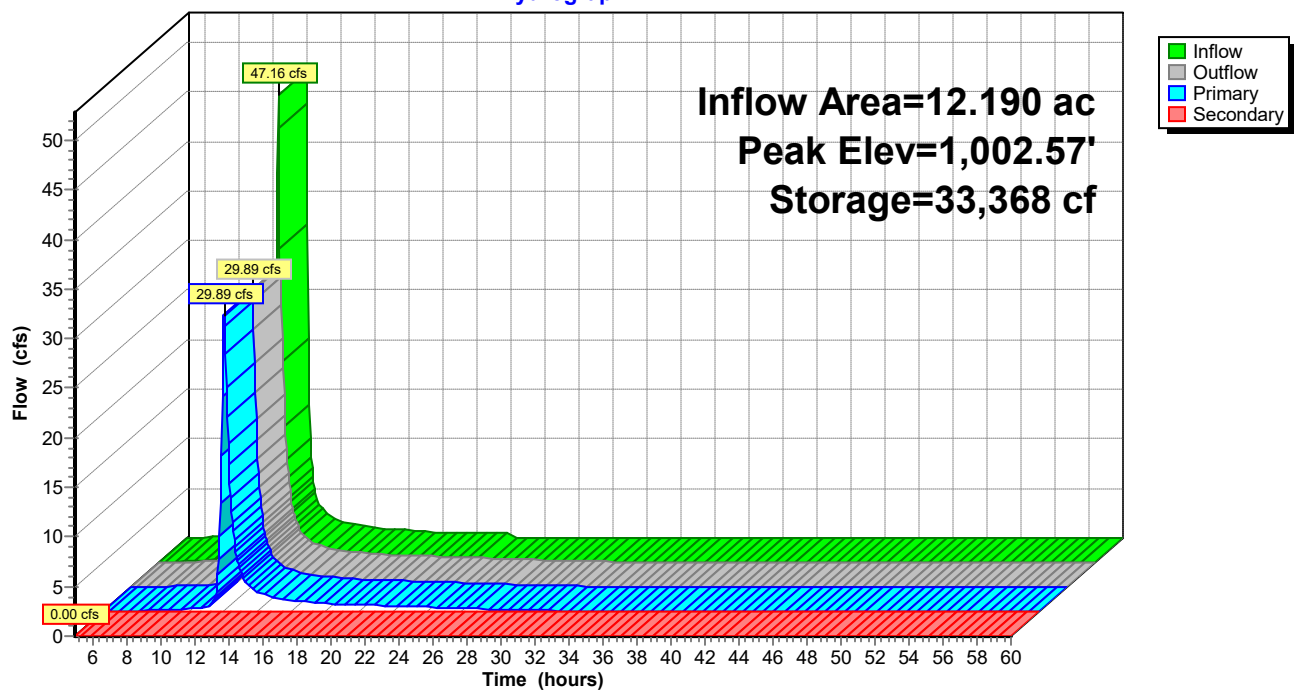
10=Sharp-Crested Rectangular Weir (Weir Controls 28.01 cfs @ 4.87 fps)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=999.00' (Free Discharge)

9=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

### Pond 3P: Existing Detention

Hydrograph



**LS Joint Ops**

Type II 24-hr 2-year Rainfall=3.70"

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**Summary for Pond 4P: Proposed Detention**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 12.390 ac, 0.00% Impervious, Inflow Depth > 2.83" for 2-year event  
 Inflow = 50.58 cfs @ 12.01 hrs, Volume= 2.918 af  
 Outflow = 23.73 cfs @ 12.15 hrs, Volume= 2.918 af, Atten= 53%, Lag= 8.2 min  
 Primary = 23.73 cfs @ 12.15 hrs, Volume= 2.918 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Peak Elev= 999.49' @ 12.15 hrs Surf.Area= 17,706 sf Storage= 49,259 cf

Plug-Flow detention time= 238.1 min calculated for 2.915 af (100% of inflow)  
 Center-of-Mass det. time= 239.1 min ( 1,032.7 - 793.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	995.00'	153,448 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
995.00	50	0	0
996.00	8,213	4,132	4,132
997.00	10,000	9,107	13,238
998.00	14,340	12,170	25,408
999.00	16,580	15,460	40,868
1,000.00	18,880	17,730	58,598
1,001.00	21,240	20,060	78,658
1,002.00	23,640	22,440	101,098
1,003.00	26,110	24,875	125,973
1,004.00	28,840	27,475	153,448

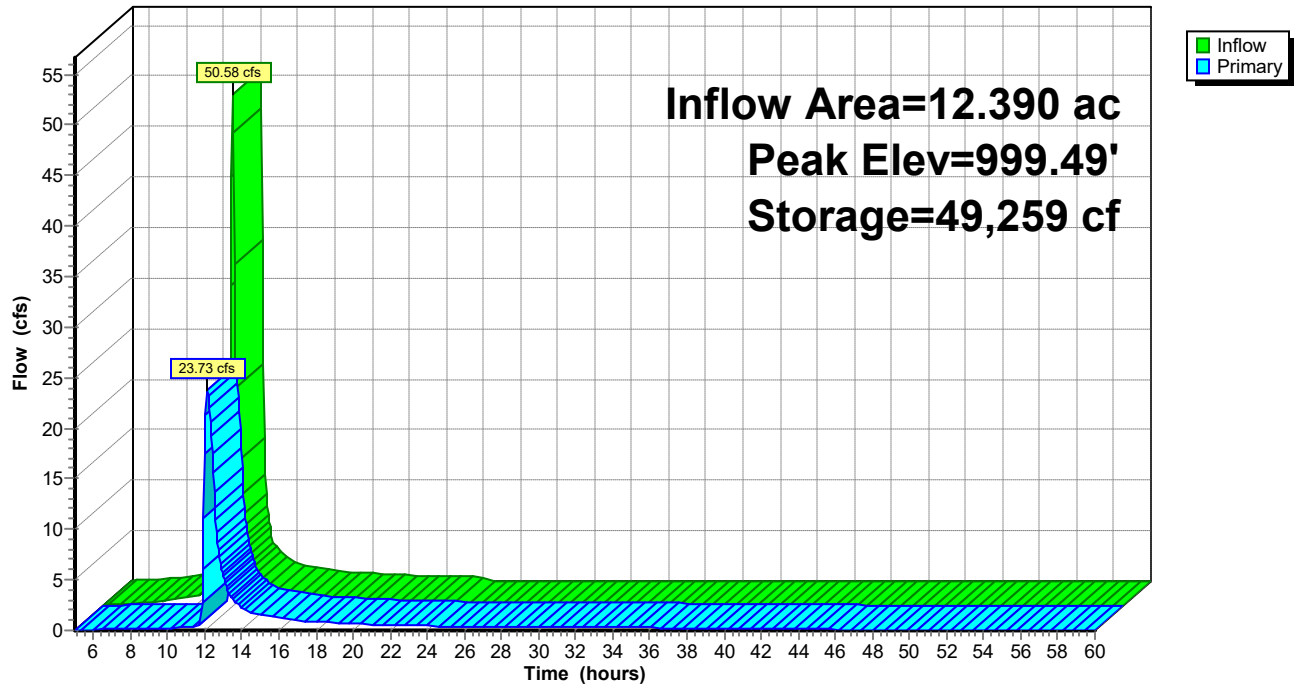
Device	Routing	Invert	Outlet Devices
#1	Primary	994.90'	<b>30.0" Round Culvert</b> L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 994.90' / 994.50' S= 0.0100 ' / Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	995.00'	<b>3.0" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	997.62'	<b>42.0" W x 15.0" H Vert. Orifice/Grate</b> C= 0.600
#4	Primary	1,001.10'	<b>24.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=23.70 cfs @ 12.15 hrs HW=999.49' (Free Discharge)

1=Culvert (Passes 23.70 cfs of 43.17 cfs potential flow)  
 2=Orifice/Grate (Orifice Controls 0.49 cfs @ 10.05 fps)  
 3=Orifice/Grate (Orifice Controls 23.20 cfs @ 5.30 fps)  
 4=Orifice/Grate ( Controls 0.00 cfs)

# Pond 4P: Proposed Detention

Hydrograph





**LS Joint Ops***Type II 24-hr 10-year Rainfall=5.66"*

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Time span=5.00-60.00 hrs, dt=0.05 hrs, 1101 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Existing**Runoff Area=12.190 ac 0.00% Impervious Runoff Depth>4.50"  
Tc=10.0 min CN=90 Runoff=78.42 cfs 4.575 af**Subcatchment 2S: Proposed**Runoff Area=12.390 ac 0.00% Impervious Runoff Depth>4.71"  
Tc=10.0 min CN=92 Runoff=82.12 cfs 4.862 af**Subcatchment 5S: Off-Site**Runoff Area=0.500 ac 0.00% Impervious Runoff Depth>4.61"  
Tc=5.0 min CN=91 Runoff=3.81 cfs 0.192 af**Pond 3P: Existing Detention**Peak Elev=1,003.29' Storage=47,320 cf Inflow=78.42 cfs 4.575 af  
Primary=53.31 cfs 4.559 af Secondary=1.89 cfs 0.009 af Outflow=55.21 cfs 4.568 af**Pond 4P: Proposed Detention**Peak Elev=1,000.85' Storage=75,559 cf Inflow=82.12 cfs 4.862 af  
Outflow=34.50 cfs 4.862 af**Total Runoff Area = 25.080 ac Runoff Volume = 9.629 af Average Runoff Depth = 4.61"**  
**100.00% Pervious = 25.080 ac 0.00% Impervious = 0.000 ac**

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Type II 24-hr 10-year Rainfall=5.66"

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Summary for Subcatchment 1S: Existing

Runoff = 78.42 cfs @ 12.01 hrs, Volume= 4.575 af, Depth> 4.50"

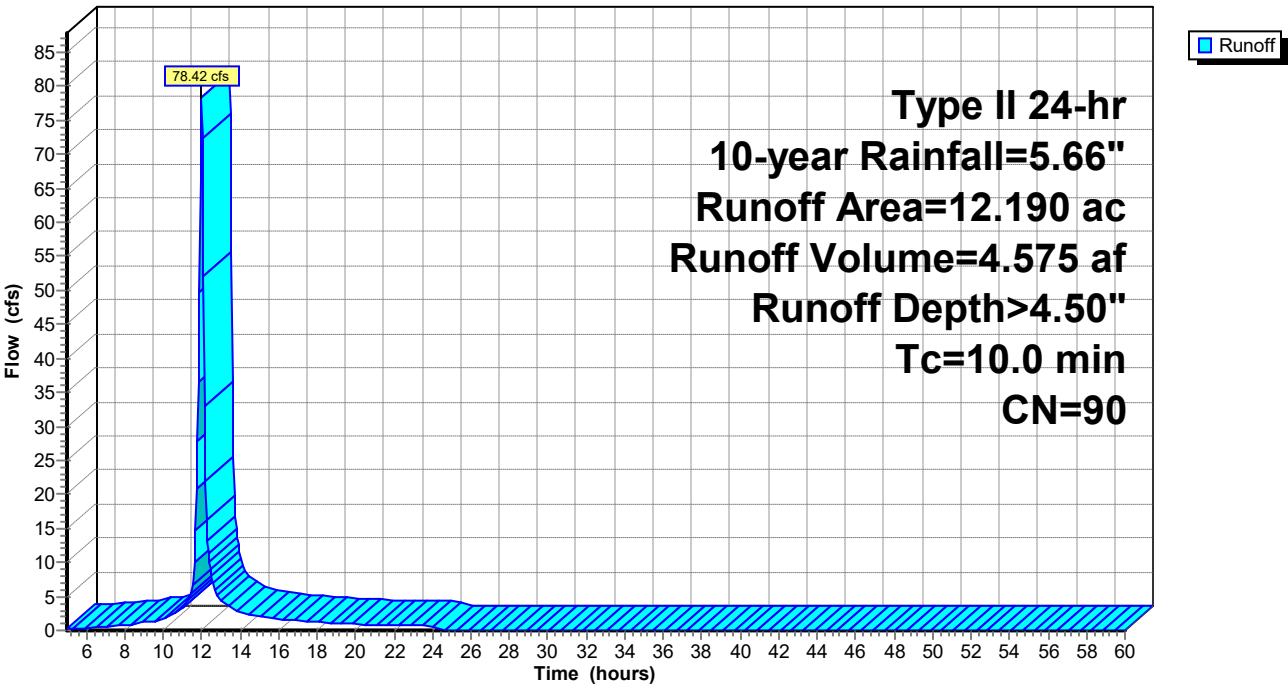
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-year Rainfall=5.66"

Area (ac)	CN	Description
* 12.190	90	
12.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment 1S: Existing

Hydrograph



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Type II 24-hr 10-year Rainfall=5.66"

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### Summary for Subcatchment 2S: Proposed

Runoff = 82.12 cfs @ 12.01 hrs, Volume= 4.862 af, Depth> 4.71"

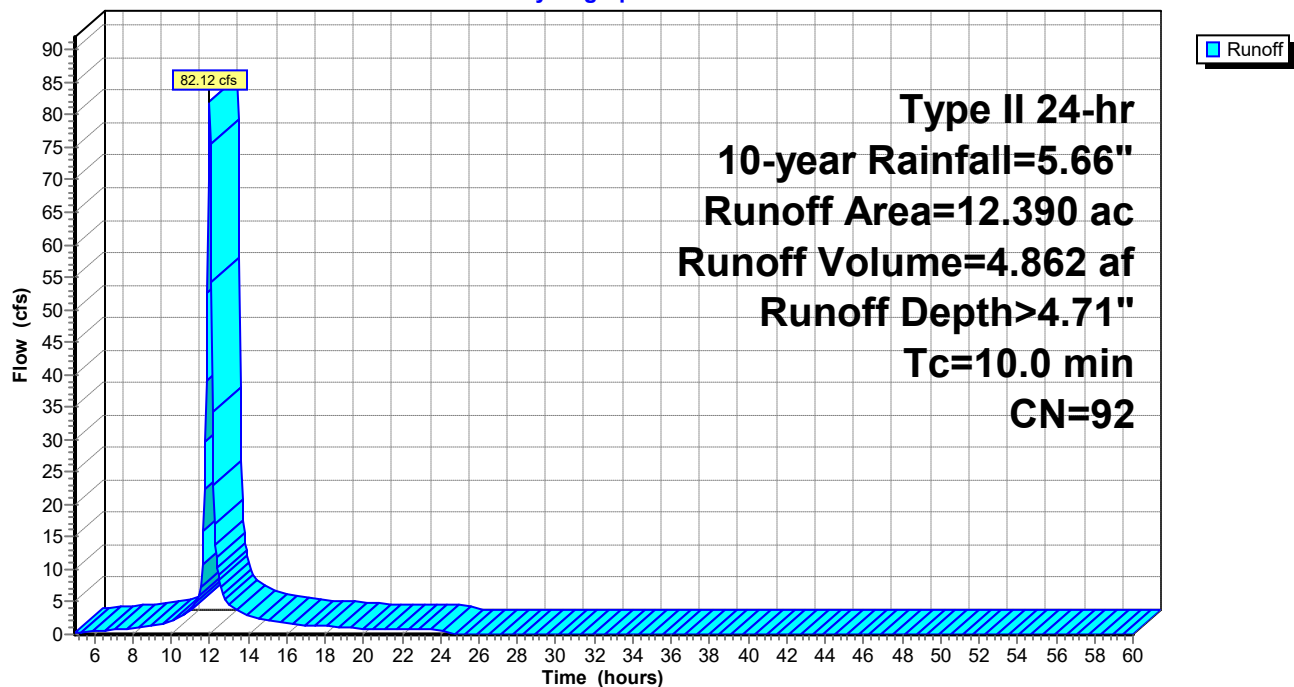
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
Type II 24-hr 10-year Rainfall=5.66"

Area (ac)	CN	Description
* 12.390	92	
12.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2S: Proposed

Hydrograph



## LS Joint Ops

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Type II 24-hr 10-year Rainfall=5.66"

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### Summary for Subcatchment 5S: Off-Site

[49] Hint:  $T_c < 2dt$  may require smaller  $dt$

Runoff = 3.81 cfs @ 11.95 hrs, Volume= 0.192 af, Depth> 4.61"

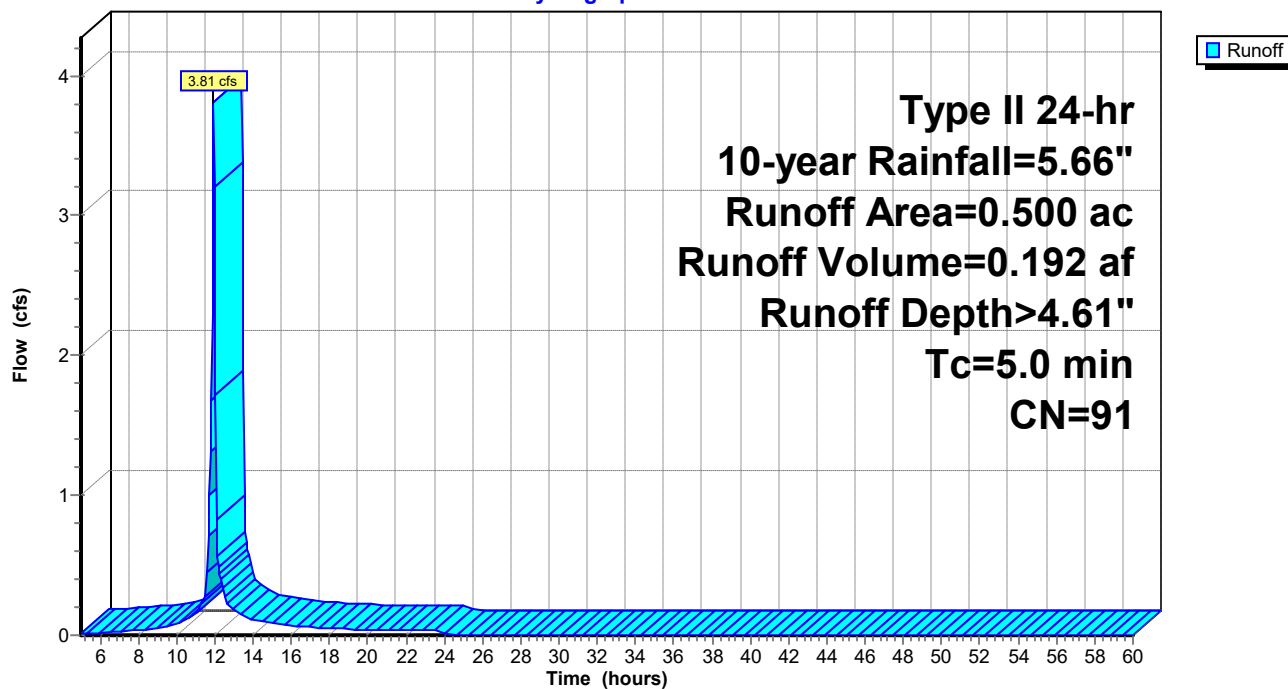
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs,  $dt=0.05$  hrs  
Type II 24-hr 10-year Rainfall=5.66"

Area (ac)	CN	Description
* 0.500	91	
0.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

### Subcatchment 5S: Off-Site

Hydrograph



**LS Joint Ops**

Type II 24-hr 10-year Rainfall=5.66"

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**Summary for Pond 3P: Existing Detention**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 12.190 ac, 0.00% Impervious, Inflow Depth > 4.50" for 10-year event  
 Inflow = 78.42 cfs @ 12.01 hrs, Volume= 4.575 af  
 Outflow = 55.21 cfs @ 12.10 hrs, Volume= 4.568 af, Atten= 30%, Lag= 5.4 min  
 Primary = 53.31 cfs @ 12.10 hrs, Volume= 4.559 af  
 Secondary = 1.89 cfs @ 12.10 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,003.29' @ 12.10 hrs Surf.Area= 20,273 sf Storage= 47,320 cf

Plug-Flow detention time= 66.2 min calculated for 4.567 af (100% of inflow)  
 Center-of-Mass det. time= 64.4 min ( 852.7 - 788.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	999.00'	88,385 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
999.00	10	0	0
1,000.00	2,580	1,295	1,295
1,001.00	12,035	7,308	8,603
1,002.00	17,125	14,580	23,183
1,003.00	19,500	18,313	41,495
1,004.00	22,140	20,820	62,315
1,005.00	30,000	26,070	88,385

Device	Routing	Invert	Outlet Devices
#1	Primary	999.50'	<b>30.0" Round CMP_Round 30" X 2.00</b> L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 999.50' / 999.00' S= 0.0125 '/' Cc= 0.900 n= 0.025, Flow Area= 4.91 sf
#2	Device 1	999.25'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#3	Device 1	999.50'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#4	Device 1	999.75'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#5	Device 1	1,000.00'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#6	Device 1	1,000.25'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#7	Device 1	1,000.50'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#8	Device 1	1,000.75'	<b>3.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#9	Secondary	1,003.20'	<b>24.0' long x 22.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#10	Device 1	1,001.00'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s) 1.0' Crest Height

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**Primary OutFlow** Max=53.25 cfs @ 12.10 hrs HW=1,003.29' (Free Discharge)

1=CMP\_Round 30" (Passes 53.25 cfs of 62.25 cfs potential flow)

2=Orifice/Grate (Orifice Controls 0.15 cfs @ 9.38 fps)

3=Orifice/Grate (Orifice Controls 0.10 cfs @ 9.32 fps)

4=Orifice/Grate (Orifice Controls 0.15 cfs @ 9.01 fps)

5=Orifice/Grate (Orifice Controls 0.09 cfs @ 8.68 fps)

6=Orifice/Grate (Orifice Controls 0.14 cfs @ 8.34 fps)

7=Orifice/Grate (Orifice Controls 0.09 cfs @ 7.98 fps)

8=Orifice/Grate (Orifice Controls 1.10 cfs @ 7.48 fps)

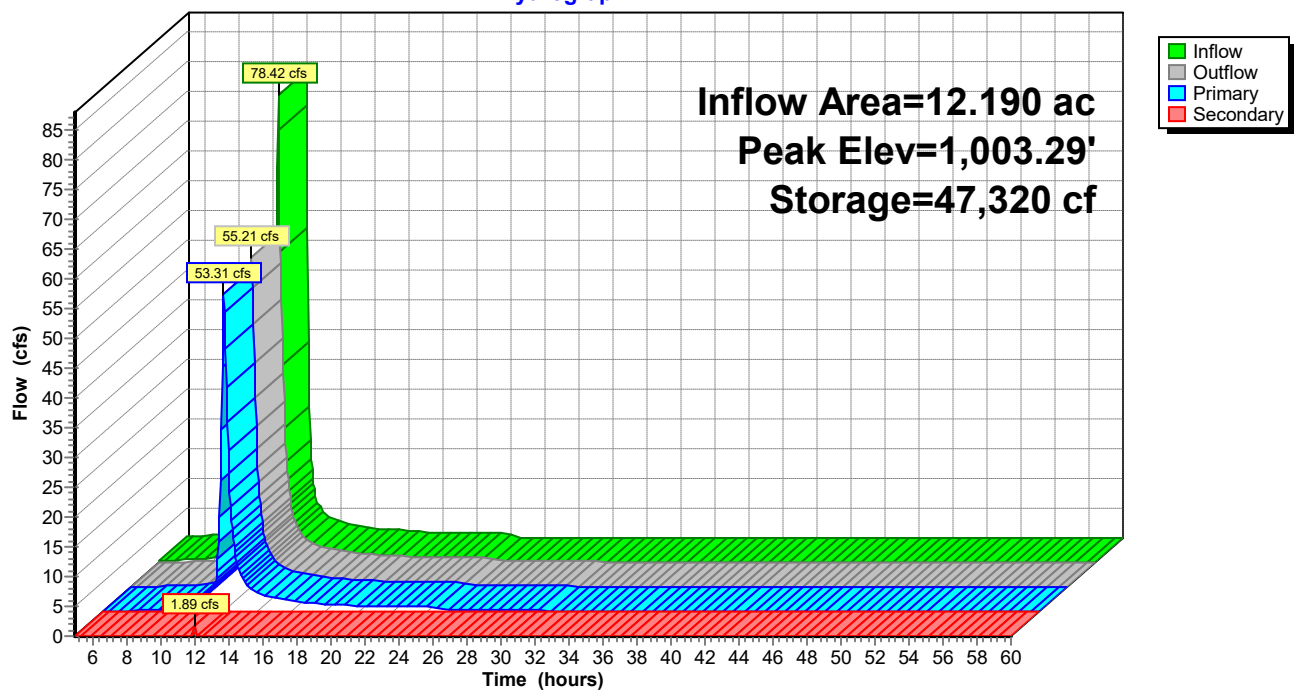
10=Sharp-Crested Rectangular Weir (Weir Controls 51.43 cfs @ 6.34 fps)

**Secondary OutFlow** Max=1.79 cfs @ 12.10 hrs HW=1,003.29' (Free Discharge)

9=Broad-Crested Rectangular Weir (Weir Controls 1.79 cfs @ 0.81 fps)

### Pond 3P: Existing Detention

Hydrograph



**LS Joint Ops**

Type II 24-hr 10-year Rainfall=5.66"

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**Summary for Pond 4P: Proposed Detention**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 12.390 ac, 0.00% Impervious, Inflow Depth > 4.71" for 10-year event  
 Inflow = 82.12 cfs @ 12.01 hrs, Volume= 4.862 af  
 Outflow = 34.50 cfs @ 12.16 hrs, Volume= 4.862 af, Atten= 58%, Lag= 8.9 min  
 Primary = 34.50 cfs @ 12.16 hrs, Volume= 4.862 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,000.85' @ 12.16 hrs Surf.Area= 20,893 sf Storage= 75,559 cf

Plug-Flow detention time= 164.0 min calculated for 4.857 af (100% of inflow)  
 Center-of-Mass det. time= 164.9 min ( 947.0 - 782.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	995.00'	153,448 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
995.00	50	0	0
996.00	8,213	4,132	4,132
997.00	10,000	9,107	13,238
998.00	14,340	12,170	25,408
999.00	16,580	15,460	40,868
1,000.00	18,880	17,730	58,598
1,001.00	21,240	20,060	78,658
1,002.00	23,640	22,440	101,098
1,003.00	26,110	24,875	125,973
1,004.00	28,840	27,475	153,448

Device	Routing	Invert	Outlet Devices
#1	Primary	994.90'	<b>30.0" Round Culvert</b> L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 994.90' / 994.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	995.00'	<b>3.0" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	997.62'	<b>42.0" W x 15.0" H Vert. Orifice/Grate</b> C= 0.600
#4	Primary	1,001.10'	<b>24.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=34.45 cfs @ 12.16 hrs HW=1,000.84' (Free Discharge)

1=Culvert (Passes 34.45 cfs of 51.21 cfs potential flow)  
 2=Orifice/Grate (Orifice Controls 0.57 cfs @ 11.52 fps)  
 3=Orifice/Grate (Orifice Controls 33.88 cfs @ 7.74 fps)  
 4=Orifice/Grate ( Controls 0.00 cfs)

## LS Joint Ops

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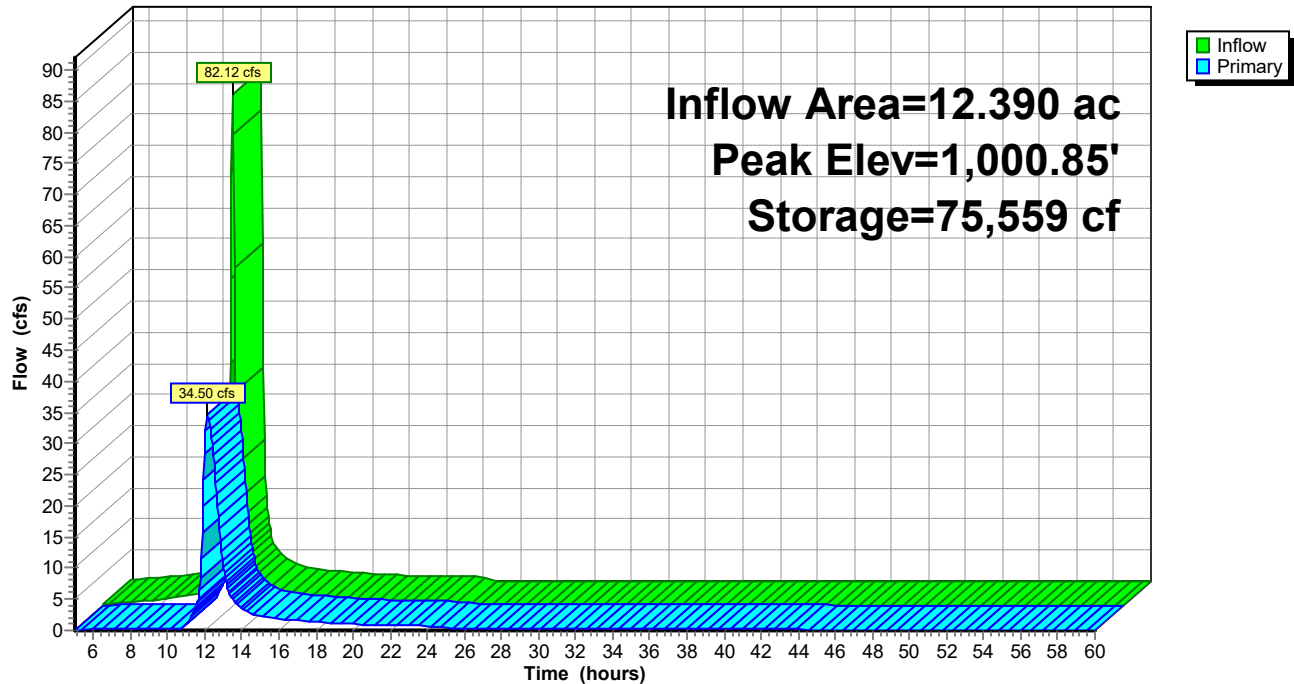
Type II 24-hr 10-year Rainfall=5.66"

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### Pond 4P: Proposed Detention

Hydrograph





**LS Joint Ops***Type II 24-hr 100-year Rainfall=9.23"*

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Time span=5.00-60.00 hrs, dt=0.05 hrs, 1101 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Existing**Runoff Area=12.190 ac 0.00% Impervious Runoff Depth>7.94"  
Tc=10.0 min CN=90 Runoff=134.50 cfs 8.068 af**Subcatchment 2S: Proposed**Runoff Area=12.390 ac 0.00% Impervious Runoff Depth>8.15"  
Tc=10.0 min CN=92 Runoff=138.64 cfs 8.411 af**Subcatchment 5S: Off-Site**Runoff Area=0.500 ac 0.00% Impervious Runoff Depth>8.04"  
Tc=5.0 min CN=91 Runoff=6.47 cfs 0.335 af**Pond 3P: Existing Detention**Peak Elev=1,003.97' Storage=61,626 cf Inflow=134.50 cfs 8.068 af  
Primary=73.08 cfs 7.468 af Secondary=42.83 cfs 0.592 af Outflow=115.91 cfs 8.060 af**Pond 4P: Proposed Detention**Peak Elev=1,002.75' Storage=119,612 cf Inflow=138.64 cfs 8.411 af  
Outflow=55.61 cfs 8.411 af**Total Runoff Area = 25.080 ac Runoff Volume = 16.814 af Average Runoff Depth = 8.04"**  
**100.00% Pervious = 25.080 ac 0.00% Impervious = 0.000 ac**

## LS Joint Ops

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Type II 24-hr 100-year Rainfall=9.23"

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### Summary for Subcatchment 1S: Existing

Runoff = 134.50 cfs @ 12.01 hrs, Volume= 8.068 af, Depth> 7.94"

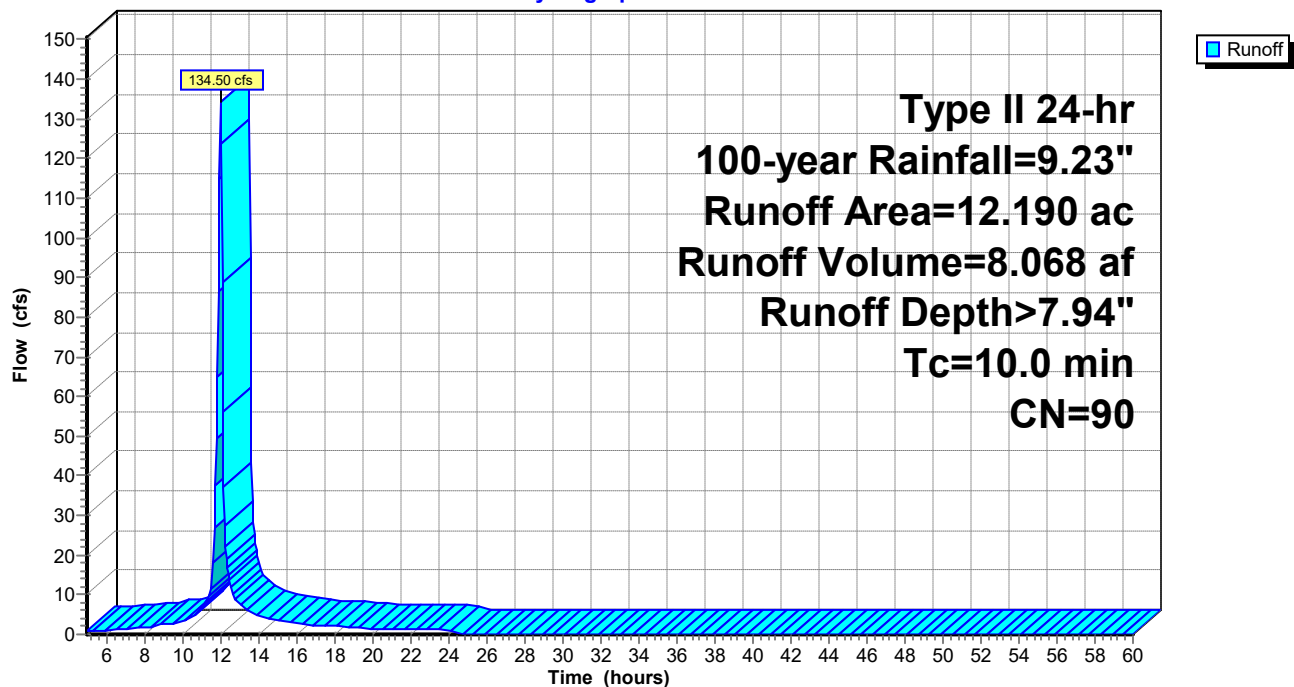
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
Type II 24-hr 100-year Rainfall=9.23"

Area (ac)	CN	Description
* 12.190	90	
12.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1S: Existing

Hydrograph



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### Summary for Subcatchment 2S: Proposed

Runoff = 138.64 cfs @ 12.01 hrs, Volume= 8.411 af, Depth> 8.15"

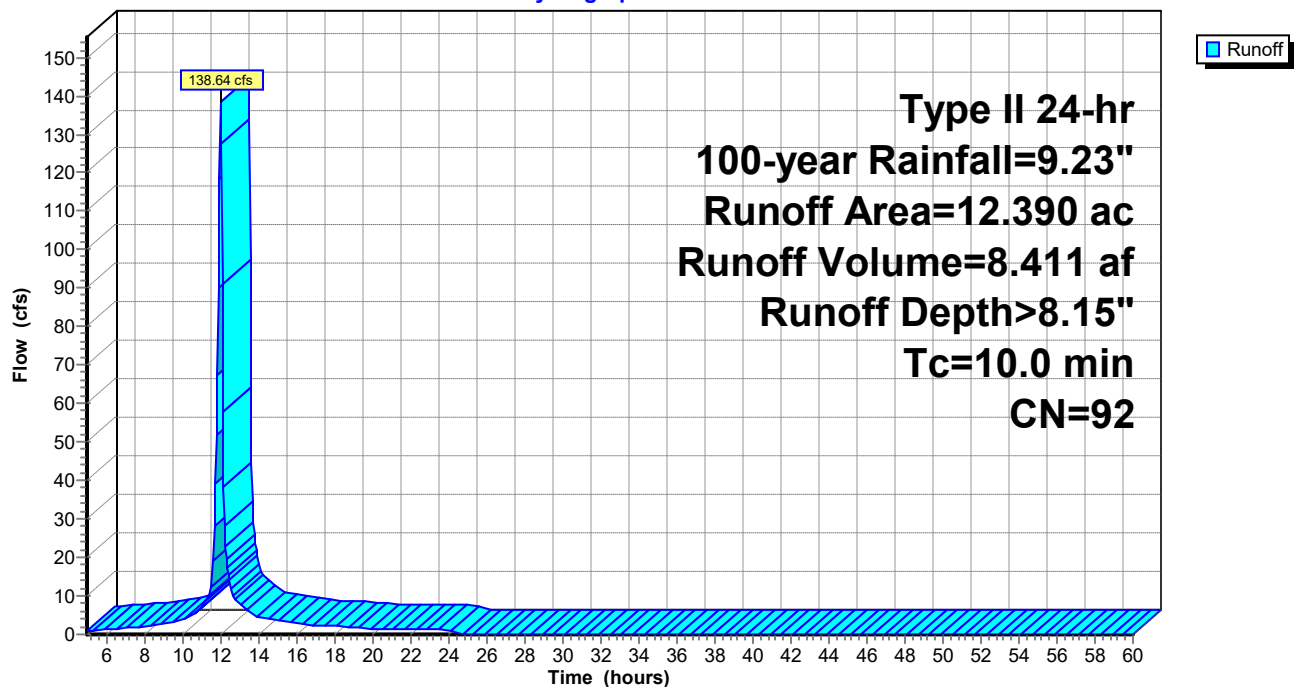
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
Type II 24-hr 100-year Rainfall=9.23"

Area (ac)	CN	Description
* 12.390	92	
12.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2S: Proposed

Hydrograph



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### Summary for Subcatchment 5S: Off-Site

[49] Hint:  $T_c < 2dt$  may require smaller  $dt$

Runoff = 6.47 cfs @ 11.95 hrs, Volume= 0.335 af, Depth> 8.04"

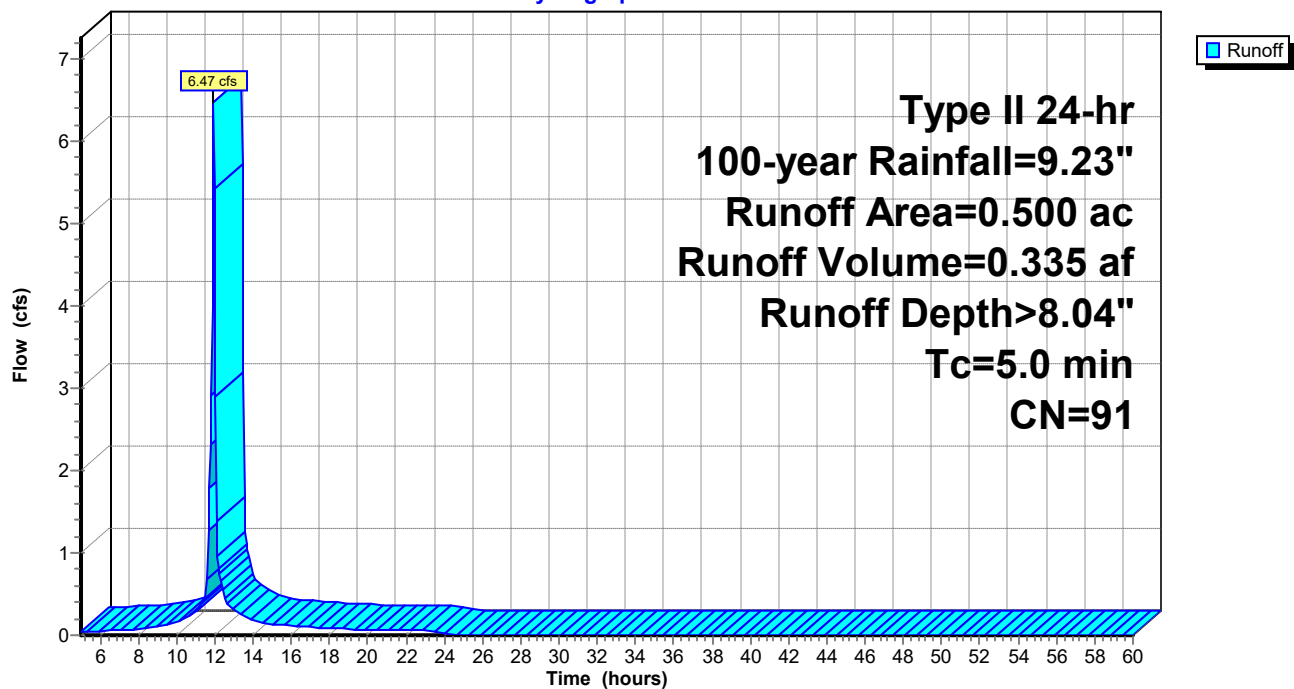
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs,  $dt=0.05$  hrs  
Type II 24-hr 100-year Rainfall=9.23"

Area (ac)	CN	Description
* 0.500	91	
0.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

### Subcatchment 5S: Off-Site

Hydrograph



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**Summary for Pond 3P: Existing Detention**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 12.190 ac, 0.00% Impervious, Inflow Depth > 7.94" for 100-year event  
 Inflow = 134.50 cfs @ 12.01 hrs, Volume= 8.068 af  
 Outflow = 115.91 cfs @ 12.06 hrs, Volume= 8.060 af, Atten= 14%, Lag= 3.4 min  
 Primary = 73.08 cfs @ 12.06 hrs, Volume= 7.468 af  
 Secondary = 42.83 cfs @ 12.06 hrs, Volume= 0.592 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,003.97' @ 12.06 hrs Surf.Area= 22,058 sf Storage= 61,626 cf

Plug-Flow detention time= 46.9 min calculated for 8.059 af (100% of inflow)  
 Center-of-Mass det. time= 45.4 min ( 822.5 - 777.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	999.00'	88,385 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
999.00	10	0	0
1,000.00	2,580	1,295	1,295
1,001.00	12,035	7,308	8,603
1,002.00	17,125	14,580	23,183
1,003.00	19,500	18,313	41,495
1,004.00	22,140	20,820	62,315
1,005.00	30,000	26,070	88,385

Device	Routing	Invert	Outlet Devices
#1	Primary	999.50'	<b>30.0" Round CMP_Round 30" X 2.00</b> L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 999.50' / 999.00' S= 0.0125 '/' Cc= 0.900 n= 0.025, Flow Area= 4.91 sf
#2	Device 1	999.25'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#3	Device 1	999.50'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#4	Device 1	999.75'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#5	Device 1	1,000.00'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#6	Device 1	1,000.25'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#7	Device 1	1,000.50'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#8	Device 1	1,000.75'	<b>3.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#9	Secondary	1,003.20'	<b>24.0' long x 22.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#10	Device 1	1,001.00'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s) 1.0' Crest Height

## LS Joint Ops

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**Primary OutFlow** Max=72.73 cfs @ 12.06 hrs HW=1,003.95' (Free Discharge)

1=CMP\_Round 30" (Barrel Controls 72.73 cfs @ 7.41 fps)

2=Orifice/Grate (Passes < 0.17 cfs potential flow)

3=Orifice/Grate (Passes < 0.11 cfs potential flow)

4=Orifice/Grate (Passes < 0.16 cfs potential flow)

5=Orifice/Grate (Passes < 0.10 cfs potential flow)

6=Orifice/Grate (Passes < 0.15 cfs potential flow)

7=Orifice/Grate (Passes < 0.10 cfs potential flow)

8=Orifice/Grate (Passes < 1.24 cfs potential flow)

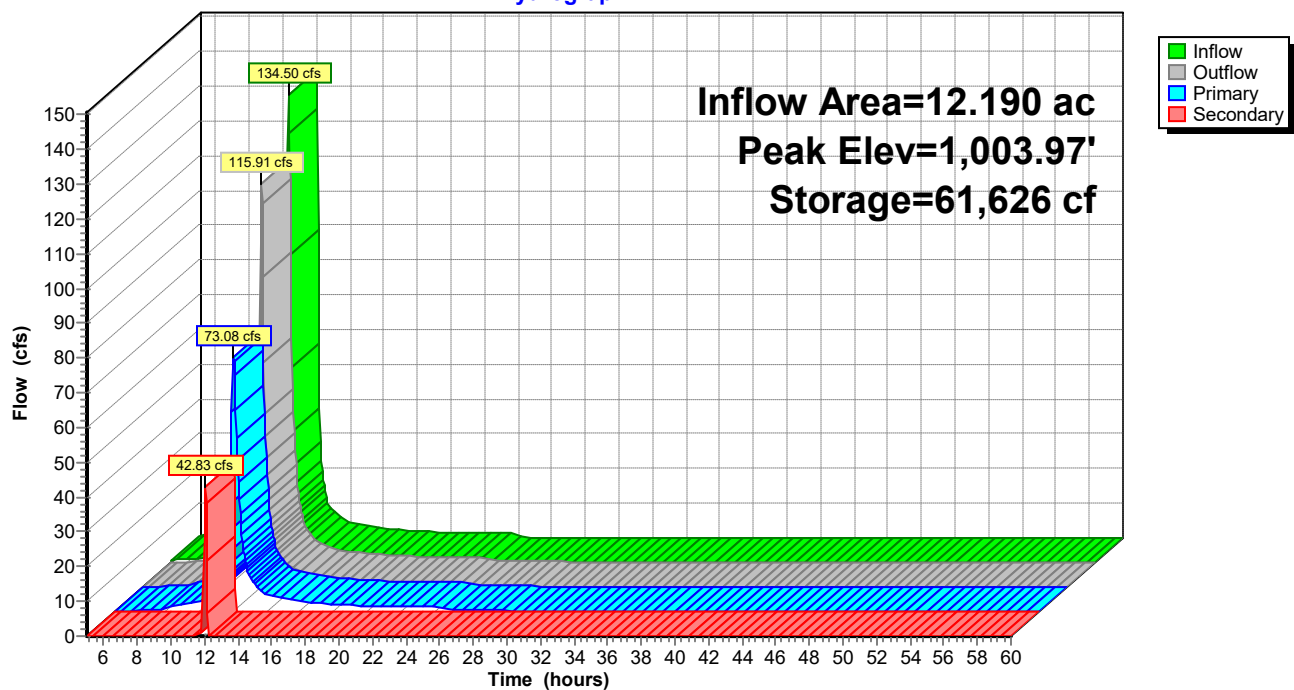
10=Sharp-Crested Rectangular Weir (Passes < 76.70 cfs potential flow)

**Secondary OutFlow** Max=41.07 cfs @ 12.06 hrs HW=1,003.95' (Free Discharge)

9=Broad-Crested Rectangular Weir (Weir Controls 41.07 cfs @ 2.29 fps)

### Pond 3P: Existing Detention

Hydrograph



**LS Joint Ops**

Type II 24-hr 100-year Rainfall=9.23"

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**Summary for Pond 4P: Proposed Detention**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 12.390 ac, 0.00% Impervious, Inflow Depth > 8.15" for 100-year event  
 Inflow = 138.64 cfs @ 12.01 hrs, Volume= 8.411 af  
 Outflow = 55.61 cfs @ 12.16 hrs, Volume= 8.411 af, Atten= 60%, Lag= 9.3 min  
 Primary = 55.61 cfs @ 12.16 hrs, Volume= 8.411 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs

Peak Elev= 1,002.75' @ 12.16 hrs Surf.Area= 25,501 sf Storage= 119,612 cf

Plug-Flow detention time= 113.0 min calculated for 8.402 af (100% of inflow)

Center-of-Mass det. time= 113.9 min ( 886.8 - 773.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	995.00'	153,448 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
995.00	50	0	0
996.00	8,213	4,132	4,132
997.00	10,000	9,107	13,238
998.00	14,340	12,170	25,408
999.00	16,580	15,460	40,868
1,000.00	18,880	17,730	58,598
1,001.00	21,240	20,060	78,658
1,002.00	23,640	22,440	101,098
1,003.00	26,110	24,875	125,973
1,004.00	28,840	27,475	153,448

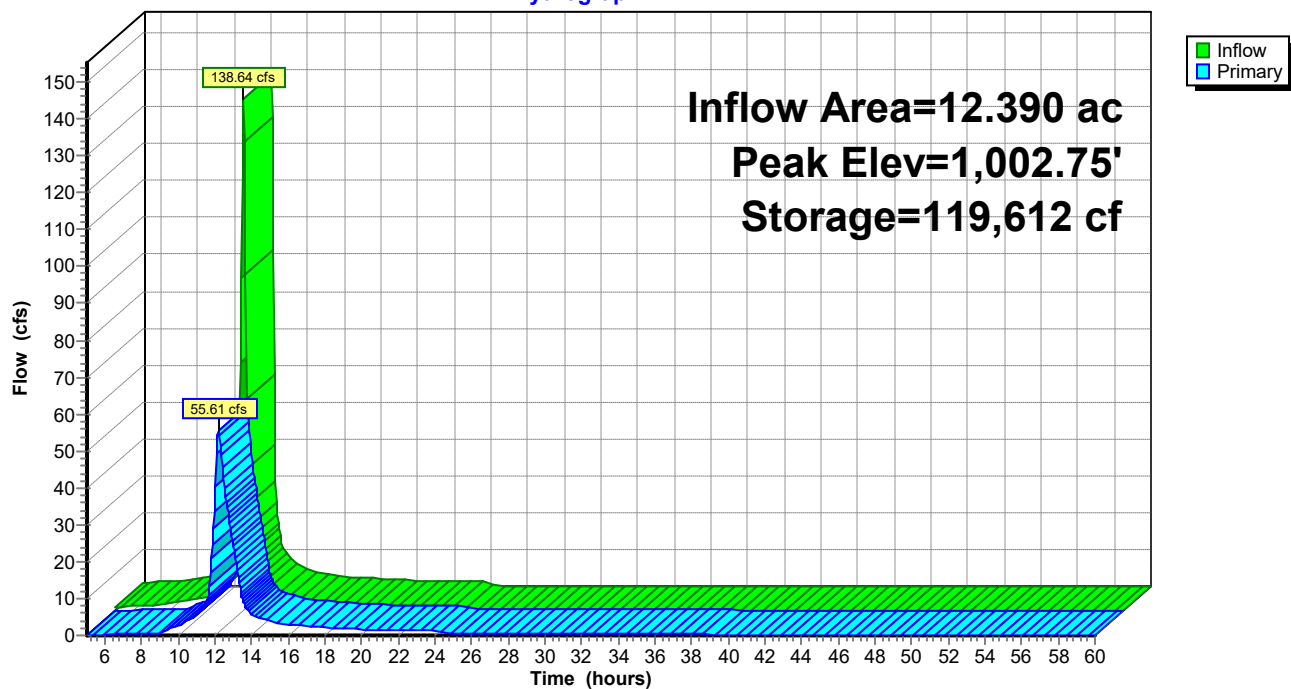
Device	Routing	Invert	Outlet Devices
#1	Primary	994.90'	<b>30.0" Round Culvert</b> L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 994.90' / 994.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	995.00'	<b>3.0" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	997.62'	<b>42.0" W x 15.0" H Vert. Orifice/Grate</b> C= 0.600
#4	Primary	1,001.10'	<b>24.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=55.44 cfs @ 12.16 hrs HW=1,002.74' (Free Discharge)

1=Culvert (Passes 45.26 cfs of 60.66 cfs potential flow)  
 2=Orifice/Grate (Orifice Controls 0.65 cfs @ 13.28 fps)  
 3=Orifice/Grate (Orifice Controls 44.61 cfs @ 10.20 fps)  
 4=Orifice/Grate (Orifice Controls 10.18 cfs @ 5.09 fps)

# Pond 4P: Proposed Detention

Hydrograph





**LS Joint Ops***Type II 24-hr Wqv Rainfall=1.37"*

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Time span=5.00-60.00 hrs, dt=0.05 hrs, 1101 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Existing**

Runoff Area=12.190 ac 0.00% Impervious Runoff Depth=0.58"  
Tc=10.0 min CN=90 Runoff=10.74 cfs 0.592 af

**Subcatchment 2S: Proposed**

Runoff Area=12.390 ac 0.00% Impervious Runoff Depth=0.69"  
Tc=10.0 min CN=92 Runoff=13.00 cfs 0.715 af

**Subcatchment 5S: Off-Site**

Runoff Area=0.500 ac 0.00% Impervious Runoff Depth=0.64"  
Tc=5.0 min CN=91 Runoff=0.57 cfs 0.026 af

**Pond 3P: Existing Detention**

Peak Elev=1,001.18' Storage=10,894 cf Inflow=10.74 cfs 0.592 af  
Primary=1.88 cfs 0.585 af Secondary=0.00 cfs 0.000 af Outflow=1.88 cfs 0.585 af

**Pond 4P: Proposed Detention**

Peak Elev=997.52' Storage=18,980 cf Inflow=13.00 cfs 0.715 af  
Outflow=0.37 cfs 0.715 af

**Total Runoff Area = 25.080 ac Runoff Volume = 1.334 af Average Runoff Depth = 0.64"**  
**100.00% Pervious = 25.080 ac 0.00% Impervious = 0.000 ac**

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Type II 24-hr Wqv Rainfall=1.37"

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### Summary for Subcatchment 1S: Existing

Runoff = 10.74 cfs @ 12.02 hrs, Volume= 0.592 af, Depth= 0.58"

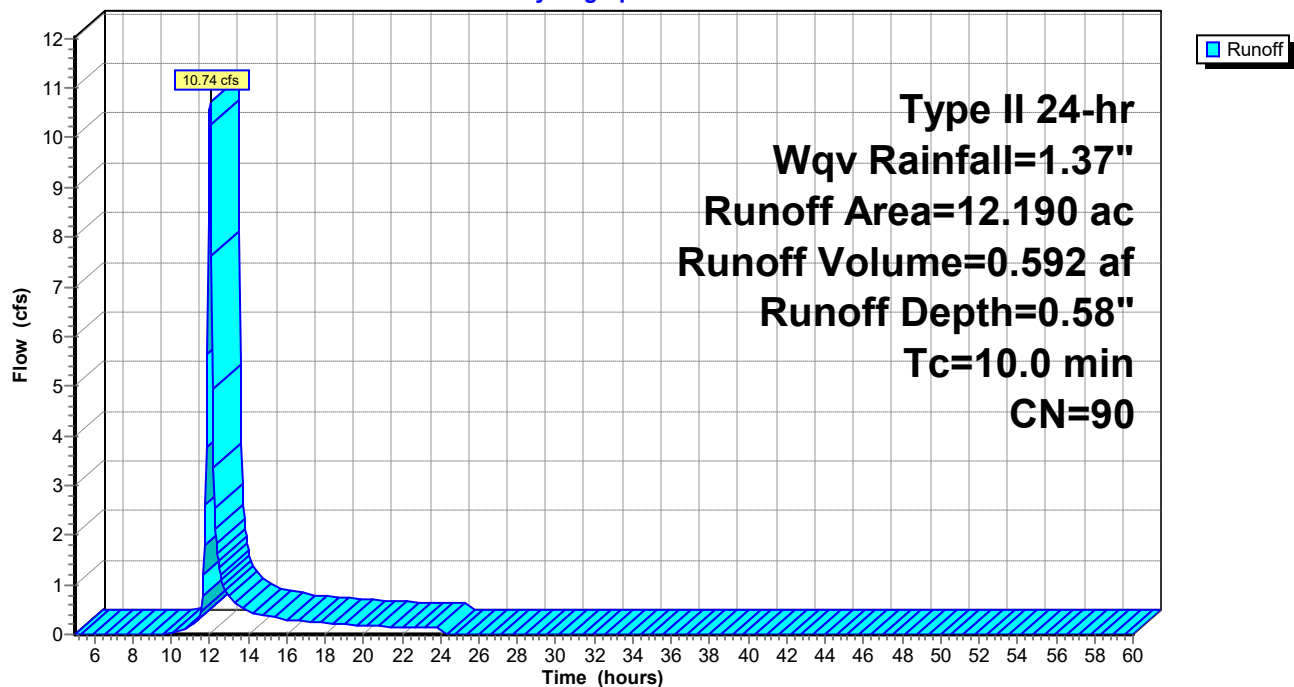
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
Type II 24-hr Wqv Rainfall=1.37"

Area (ac)	CN	Description
* 12.190	90	
12.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 1S: Existing

Hydrograph



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Type II 24-hr Wqv Rainfall=1.37"

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### Summary for Subcatchment 2S: Proposed

Runoff = 13.00 cfs @ 12.02 hrs, Volume= 0.715 af, Depth= 0.69"

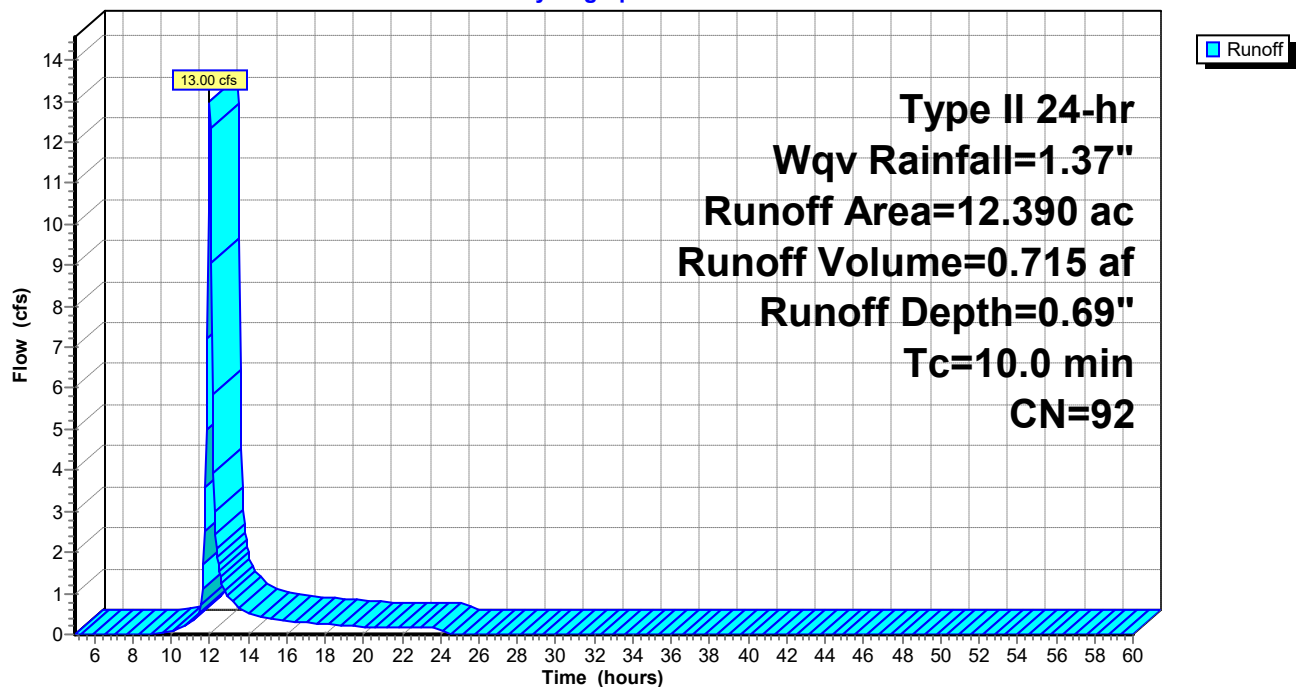
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
Type II 24-hr Wqv Rainfall=1.37"

Area (ac)	CN	Description
* 12.390	92	
12.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

### Subcatchment 2S: Proposed

Hydrograph



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### Summary for Subcatchment 5S: Off-Site

[49] Hint:  $T_c < 2dt$  may require smaller  $dt$

Runoff = 0.57 cfs @ 11.96 hrs, Volume= 0.026 af, Depth= 0.64"

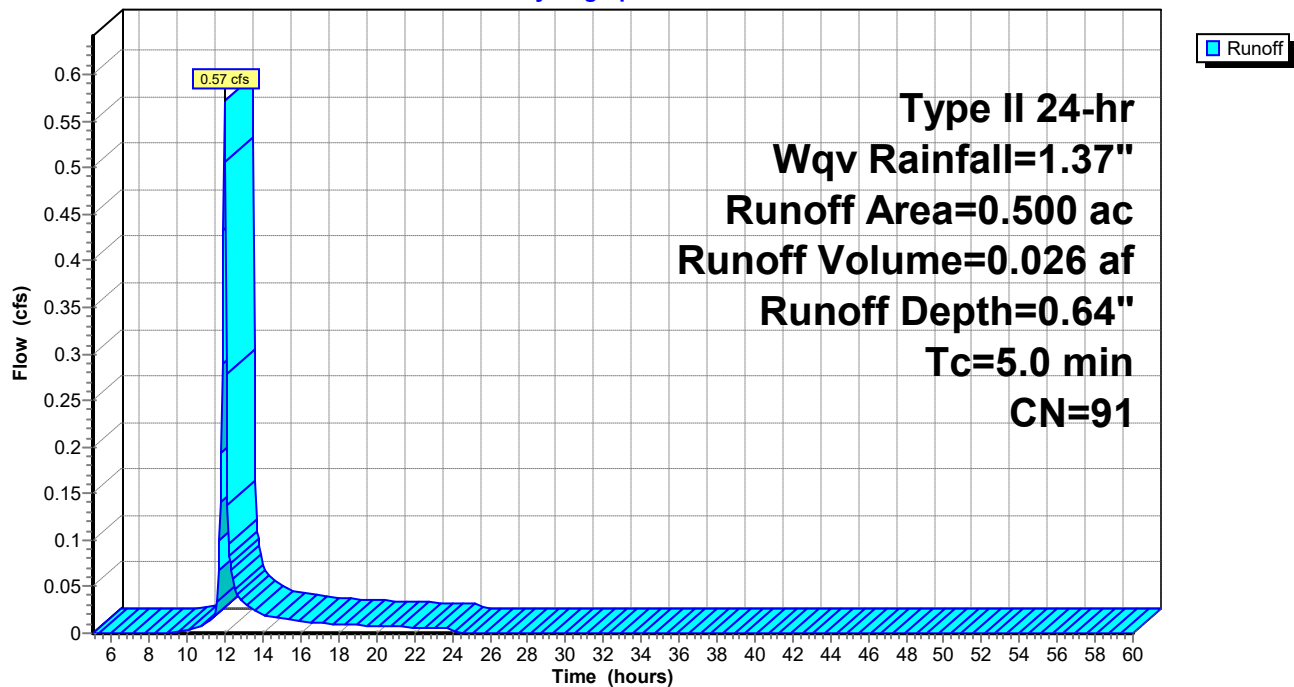
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs,  $dt=0.05$  hrs  
Type II 24-hr Wqv Rainfall=1.37"

Area (ac)	CN	Description
* 0.500	91	
0.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

### Subcatchment 5S: Off-Site

Hydrograph



**LS Joint Ops**

Type II 24-hr Wqv Rainfall=1.37"

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**Summary for Pond 3P: Existing Detention**

Inflow Area = 12.190 ac, 0.00% Impervious, Inflow Depth = 0.58" for Wqv event  
 Inflow = 10.74 cfs @ 12.02 hrs, Volume= 0.592 af  
 Outflow = 1.88 cfs @ 12.34 hrs, Volume= 0.585 af, Atten= 83%, Lag= 19.5 min  
 Primary = 1.88 cfs @ 12.34 hrs, Volume= 0.585 af  
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Peak Elev= 1,001.18' @ 12.34 hrs Surf.Area= 12,968 sf Storage= 10,894 cf

Plug-Flow detention time= 201.2 min calculated for 0.585 af (99% of inflow)  
 Center-of-Mass det. time= 193.0 min ( 1,038.2 - 845.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	999.00'	88,385 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
999.00	10	0	0
1,000.00	2,580	1,295	1,295
1,001.00	12,035	7,308	8,603
1,002.00	17,125	14,580	23,183
1,003.00	19,500	18,313	41,495
1,004.00	22,140	20,820	62,315
1,005.00	30,000	26,070	88,385

Device	Routing	Invert	Outlet Devices
#1	Primary	999.50'	<b>30.0" Round CMP_Round 30" X 2.00</b> L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 999.50' / 999.00' S= 0.0125 '/' Cc= 0.900 n= 0.025, Flow Area= 4.91 sf
#2	Device 1	999.25'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#3	Device 1	999.50'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#4	Device 1	999.75'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#5	Device 1	1,000.00'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#6	Device 1	1,000.25'	<b>1.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#7	Device 1	1,000.50'	<b>1.0" Vert. Orifice/Grate X 2.00</b> C= 0.600
#8	Device 1	1,000.75'	<b>3.0" Vert. Orifice/Grate X 3.00</b> C= 0.600
#9	Secondary	1,003.20'	<b>24.0' long x 22.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#10	Device 1	1,001.00'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s) 1.0' Crest Height

## LS Joint Ops

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**Primary OutFlow** Max=1.87 cfs @ 12.34 hrs HW=1,001.18' (Free Discharge)

1=CMP\_Round 30" (Passes 1.87 cfs of 22.64 cfs potential flow)

2=Orifice/Grate (Orifice Controls 0.10 cfs @ 6.25 fps)

3=Orifice/Grate (Orifice Controls 0.07 cfs @ 6.17 fps)

4=Orifice/Grate (Orifice Controls 0.09 cfs @ 5.68 fps)

5=Orifice/Grate (Orifice Controls 0.06 cfs @ 5.14 fps)

6=Orifice/Grate (Orifice Controls 0.07 cfs @ 4.55 fps)

7=Orifice/Grate (Orifice Controls 0.04 cfs @ 3.86 fps)

8=Orifice/Grate (Orifice Controls 0.39 cfs @ 2.67 fps)

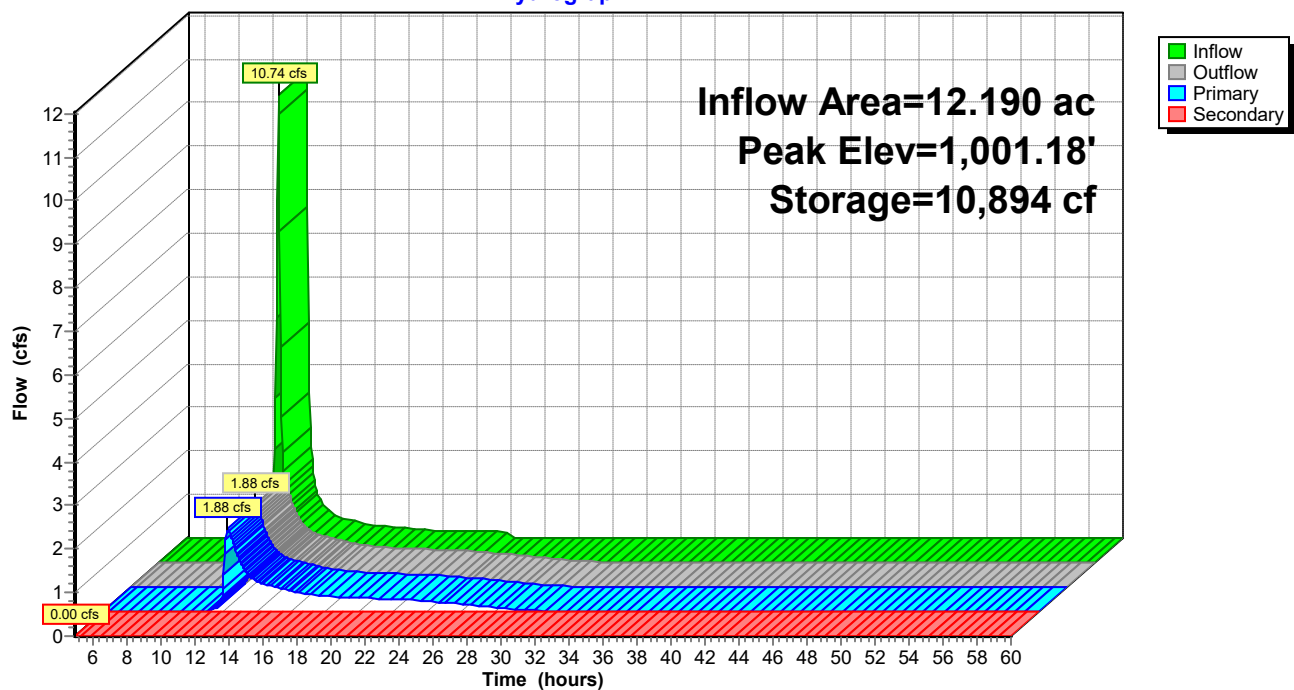
10=Sharp-Crested Rectangular Weir (Weir Controls 1.04 cfs @ 1.43 fps)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=999.00' (Free Discharge)

9=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

### Pond 3P: Existing Detention

Hydrograph



**LS Joint Ops**

Type II 24-hr Wqv Rainfall=1.37"

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**Summary for Pond 4P: Proposed Detention**

Inflow Area = 12.390 ac, 0.00% Impervious, Inflow Depth = 0.69" for Wqv event  
 Inflow = 13.00 cfs @ 12.02 hrs, Volume= 0.715 af  
 Outflow = 0.37 cfs @ 15.56 hrs, Volume= 0.715 af, Atten= 97%, Lag= 212.6 min  
 Primary = 0.37 cfs @ 15.56 hrs, Volume= 0.715 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Peak Elev= 997.52' @ 15.56 hrs Surf.Area= 12,241 sf Storage= 18,980 cf

Plug-Flow detention time= 617.6 min calculated for 0.714 af (100% of inflow)  
 Center-of-Mass det. time= 618.1 min ( 1,451.1 - 833.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	995.00'	153,448 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
995.00	50	0	0
996.00	8,213	4,132	4,132
997.00	10,000	9,107	13,238
998.00	14,340	12,170	25,408
999.00	16,580	15,460	40,868
1,000.00	18,880	17,730	58,598
1,001.00	21,240	20,060	78,658
1,002.00	23,640	22,440	101,098
1,003.00	26,110	24,875	125,973
1,004.00	28,840	27,475	153,448

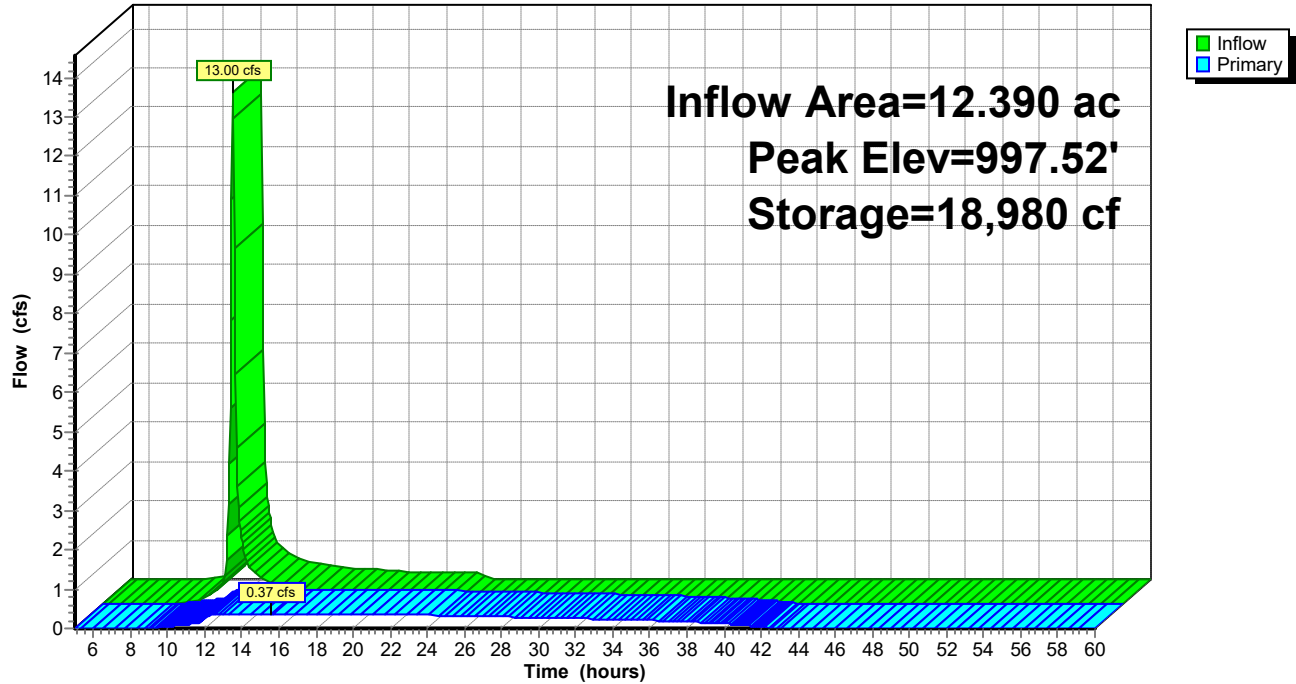
Device	Routing	Invert	Outlet Devices
#1	Primary	994.90'	<b>30.0" Round Culvert</b> L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 994.90' / 994.50' S= 0.0100 ' / Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	995.00'	<b>3.0" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	997.62'	<b>42.0" W x 15.0" H Vert. Orifice/Grate</b> C= 0.600
#4	Primary	1,001.10'	<b>24.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.37 cfs @ 15.56 hrs HW=997.52' (Free Discharge)

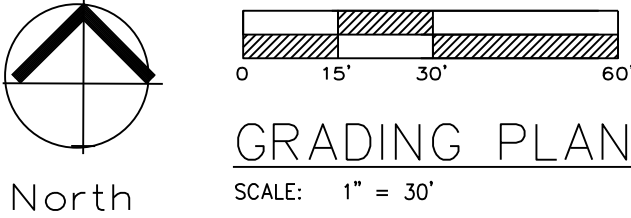
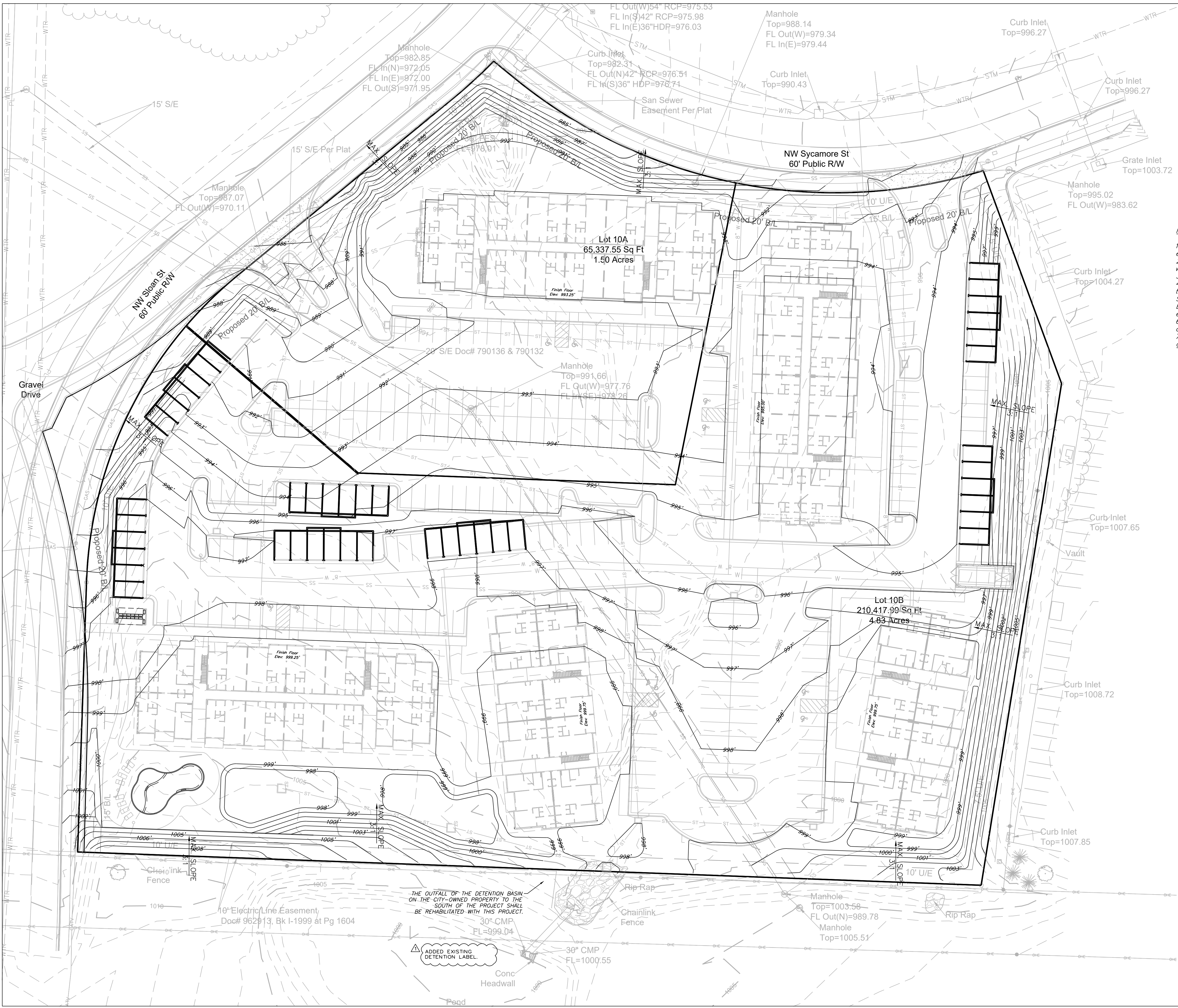
1=Culvert (Passes 0.37 cfs of 25.79 cfs potential flow)  
 2=Orifice/Grate (Orifice Controls 0.37 cfs @ 7.45 fps)  
 3=Orifice/Grate ( Controls 0.00 cfs)  
 4=Orifice/Grate ( Controls 0.00 cfs)

# Pond 4P: Proposed Detention

Hydrograph







- Notes**
1. Contractor is responsible for verifying all existing utility locations prior to excavation
  2. There are no known natural or artificial water storage detention areas, or wetlands in the area designated for construction
  3. No part of the project lies within the 100 year flood plain
  4. All erosion and sediment control measures need to be implemented prior to construction
  5. Additional erosion control may be required by the City Engineer, Design Engineer or Owner at any time problematic areas are noted in the field or existing measures are found to be ineffective
  6. Soil Stabilization of disturbed areas shall be completed within 14 days of construction inactivity
  7. Contractor responsible for all density testing of roadway subgrade and granular base.

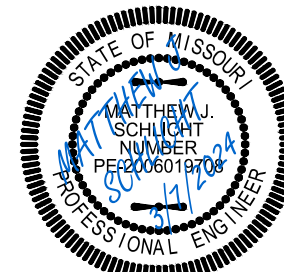


Professional Registration  
Missouri  
Engineering 2005002186-D  
Surveying 2005008319-D  
Kansas  
Engineering E-1695  
Surveying LS-218  
Oklahoma  
Engineering 6254  
Nebraska  
Engineering CA2821

Douglas Station Commercial Park  
Lee's Summit, Jackson County, Missouri

Project: AS STATION  
LSMO  
Issue Date:  
August 11, 2023

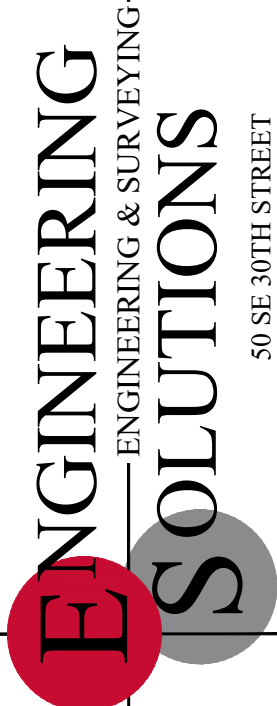
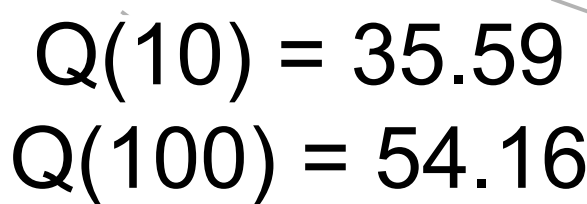
Grading Plan  
Construction Plans for:  
Douglas Station Commercial Park  
Lee's Summit, Jackson County, Missouri



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KS PE 19071  
OK PE 25226  
NE PE E-14335

REVISIONS  
REV. 3/7/2024





Douglas Station Commercial Park  
Lee's Summit, Jackson County, Missouri

Drainage Map  
Construction Plans for:  
Douglas Station Commercial Park  
Lee's Summit, Jackson County, Missouri

REVISIONS

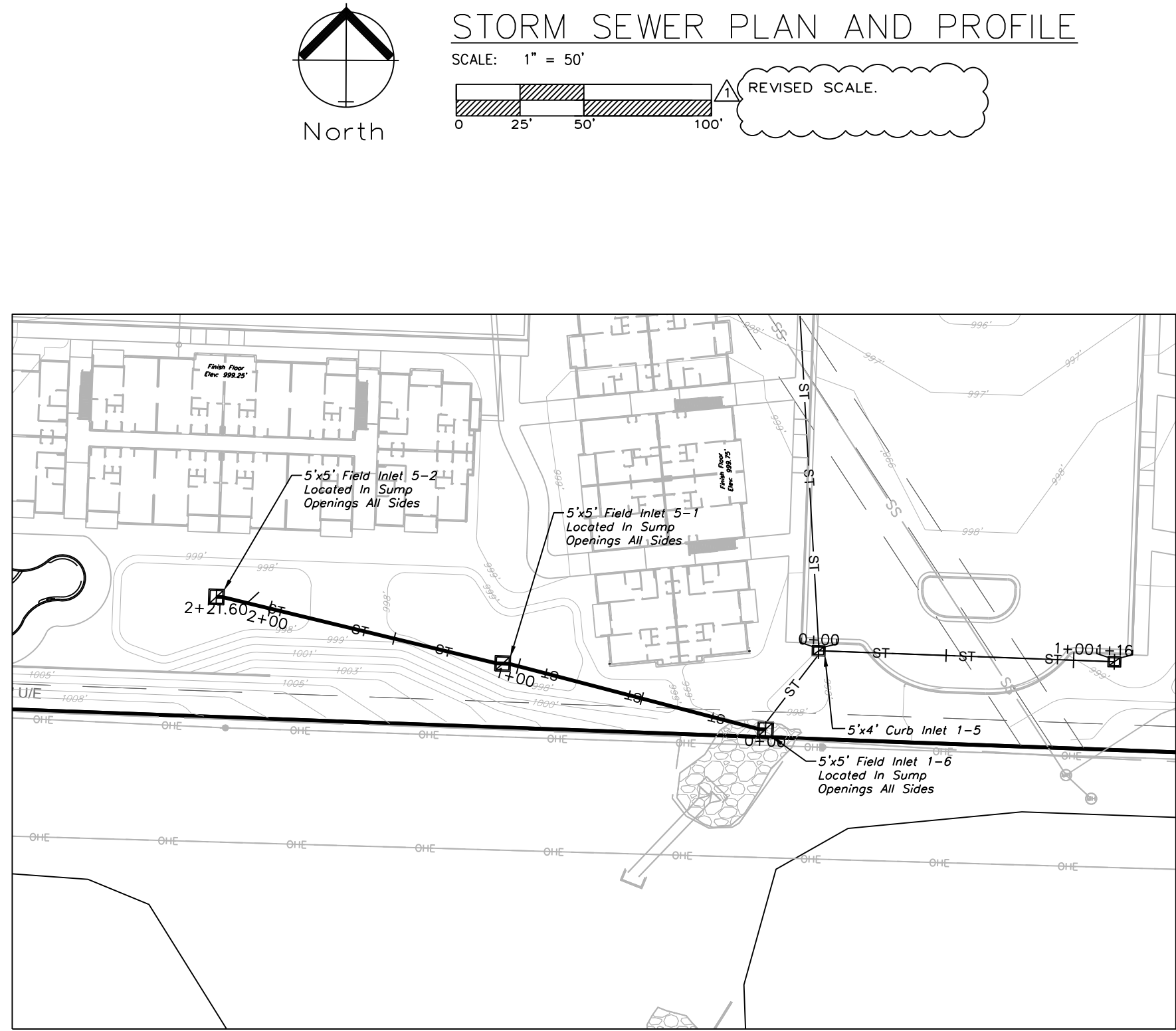
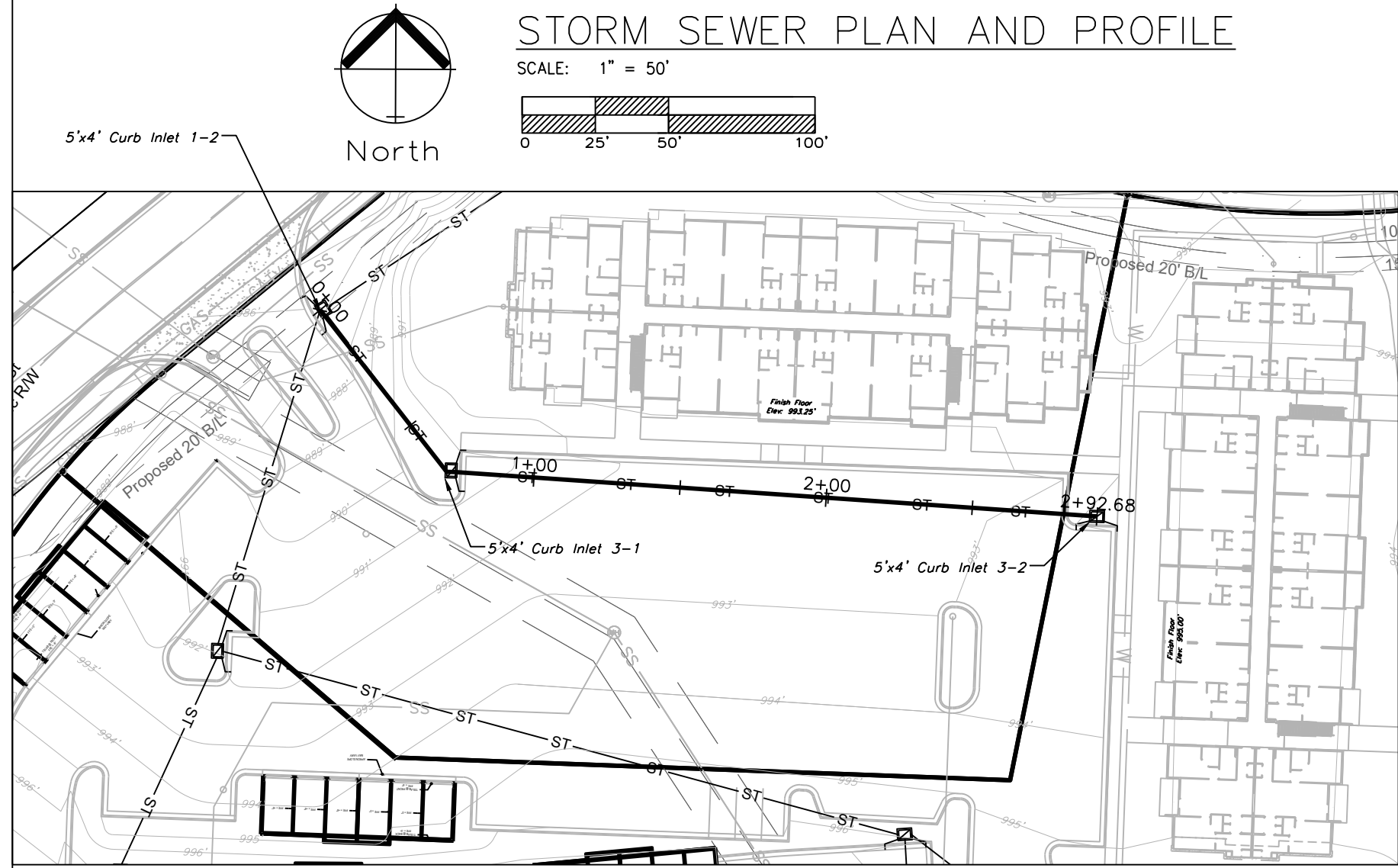
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1	3/7/2024	

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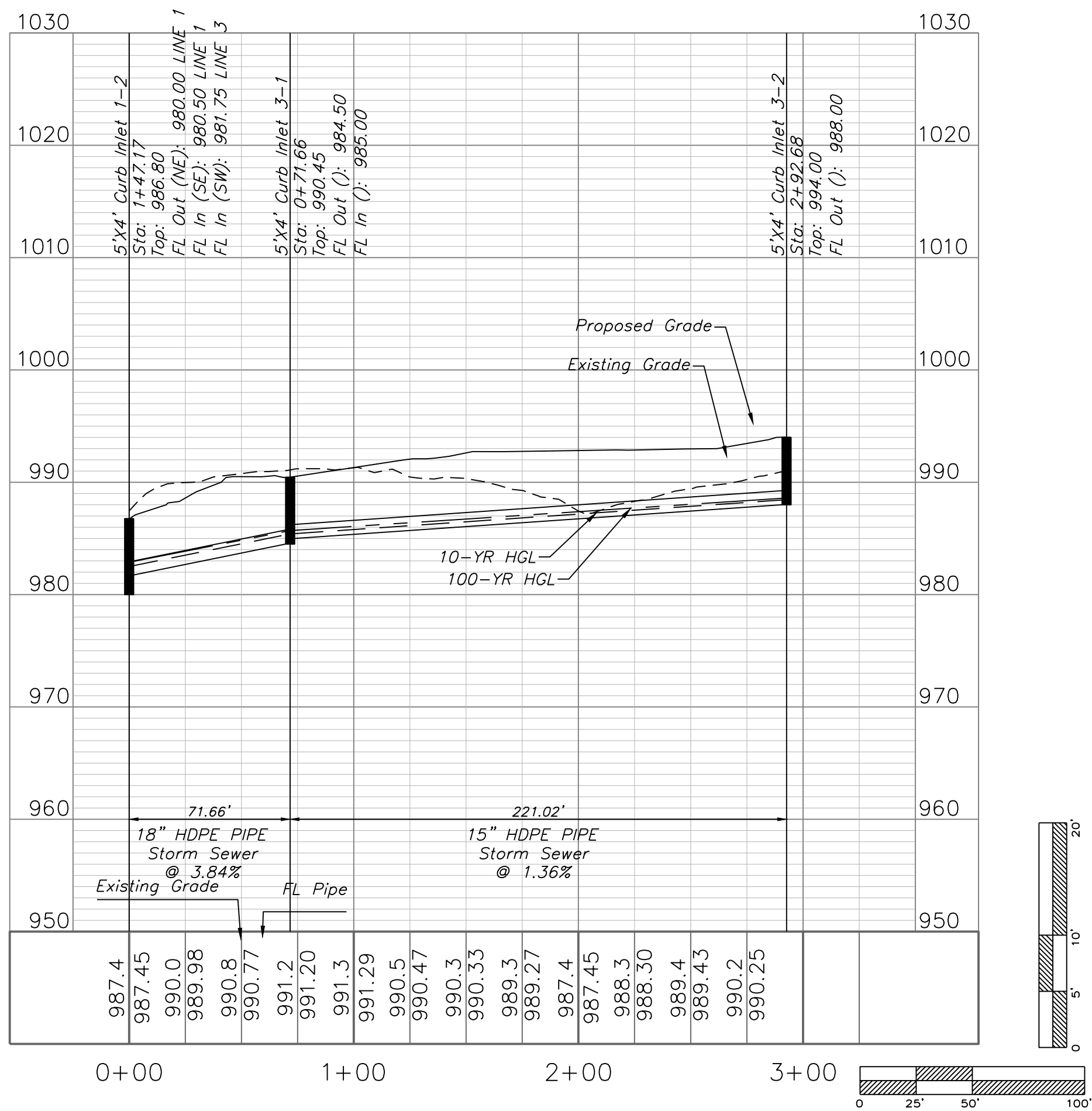




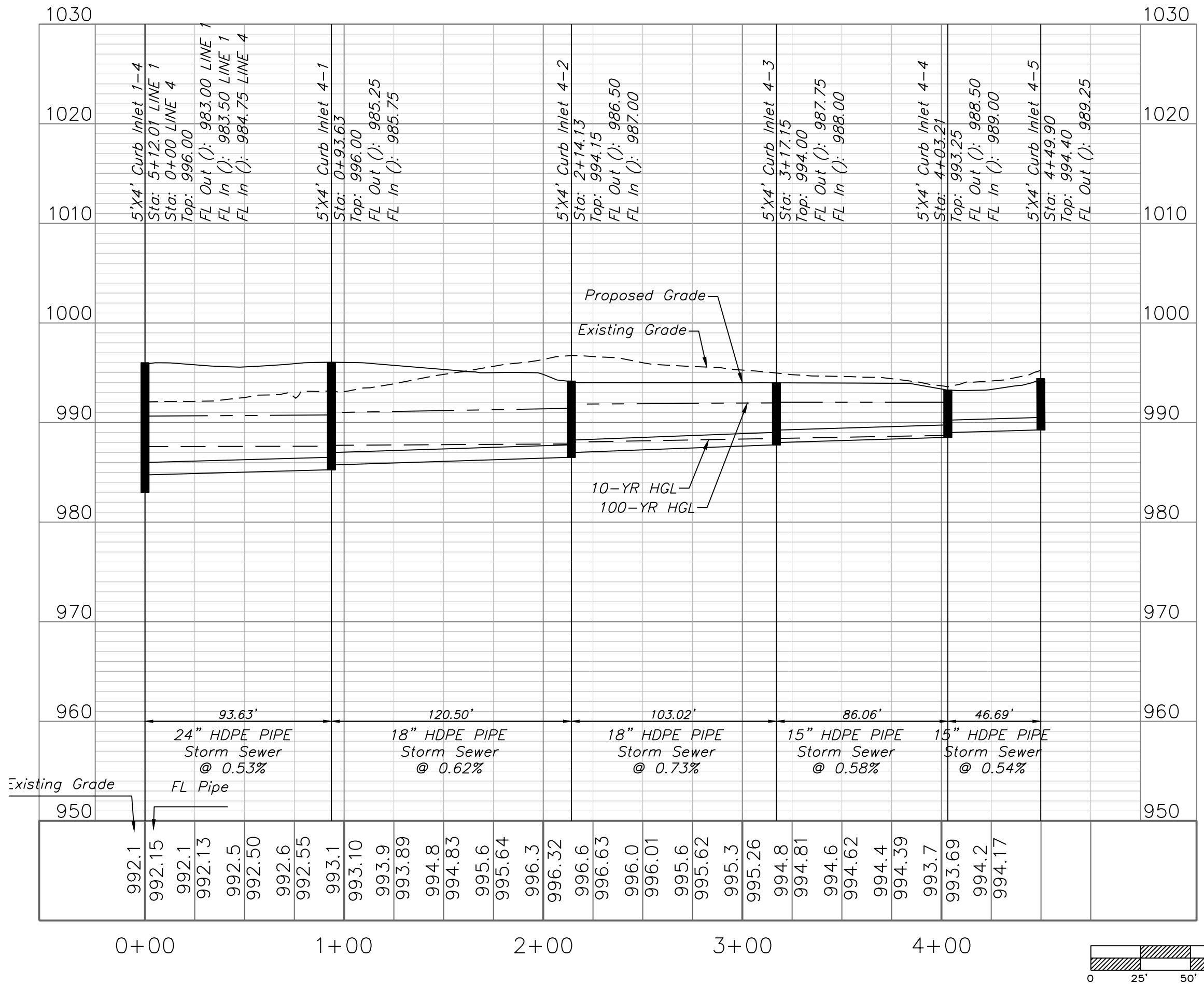




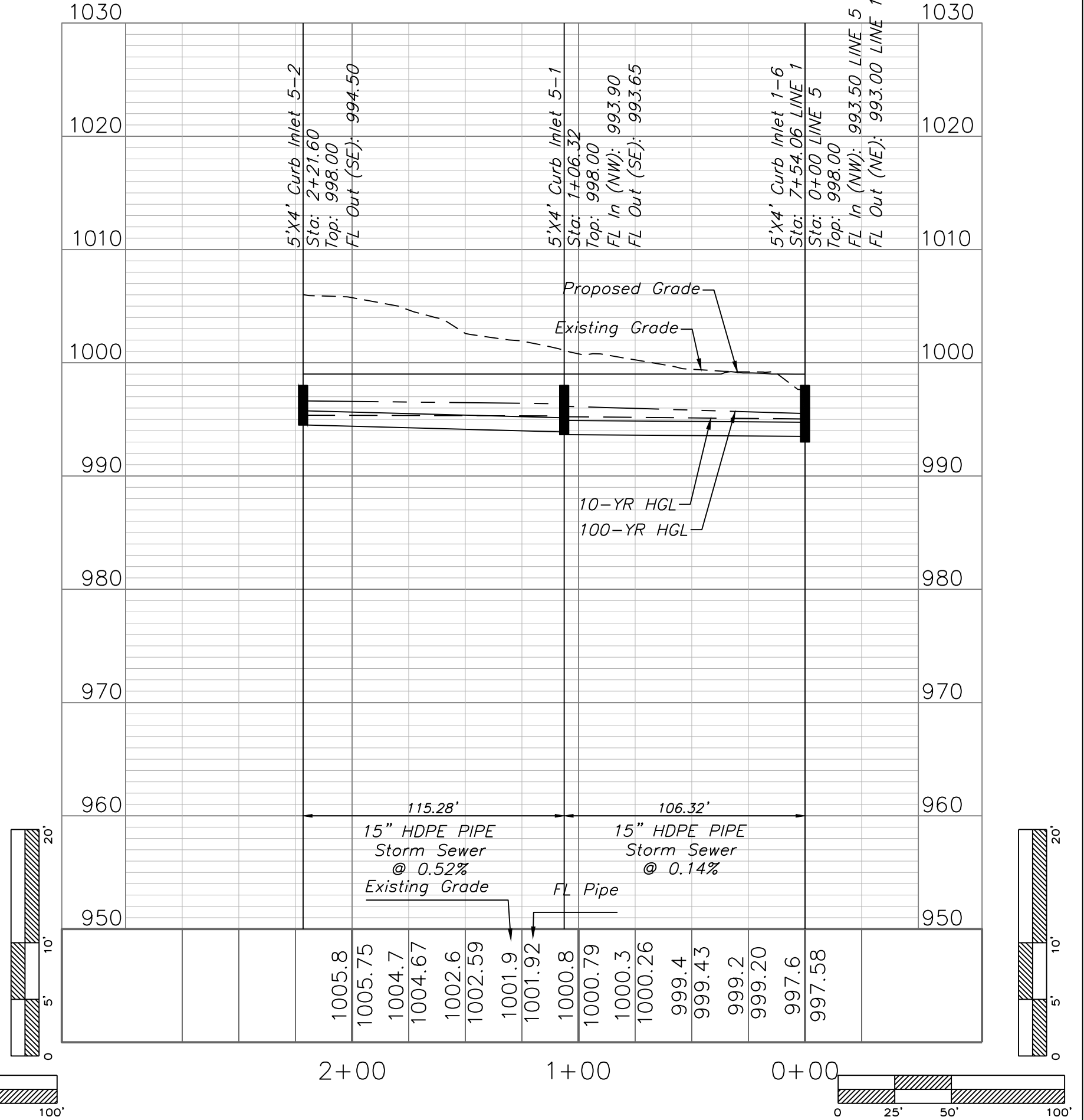
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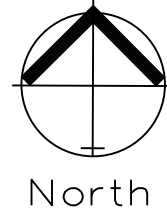
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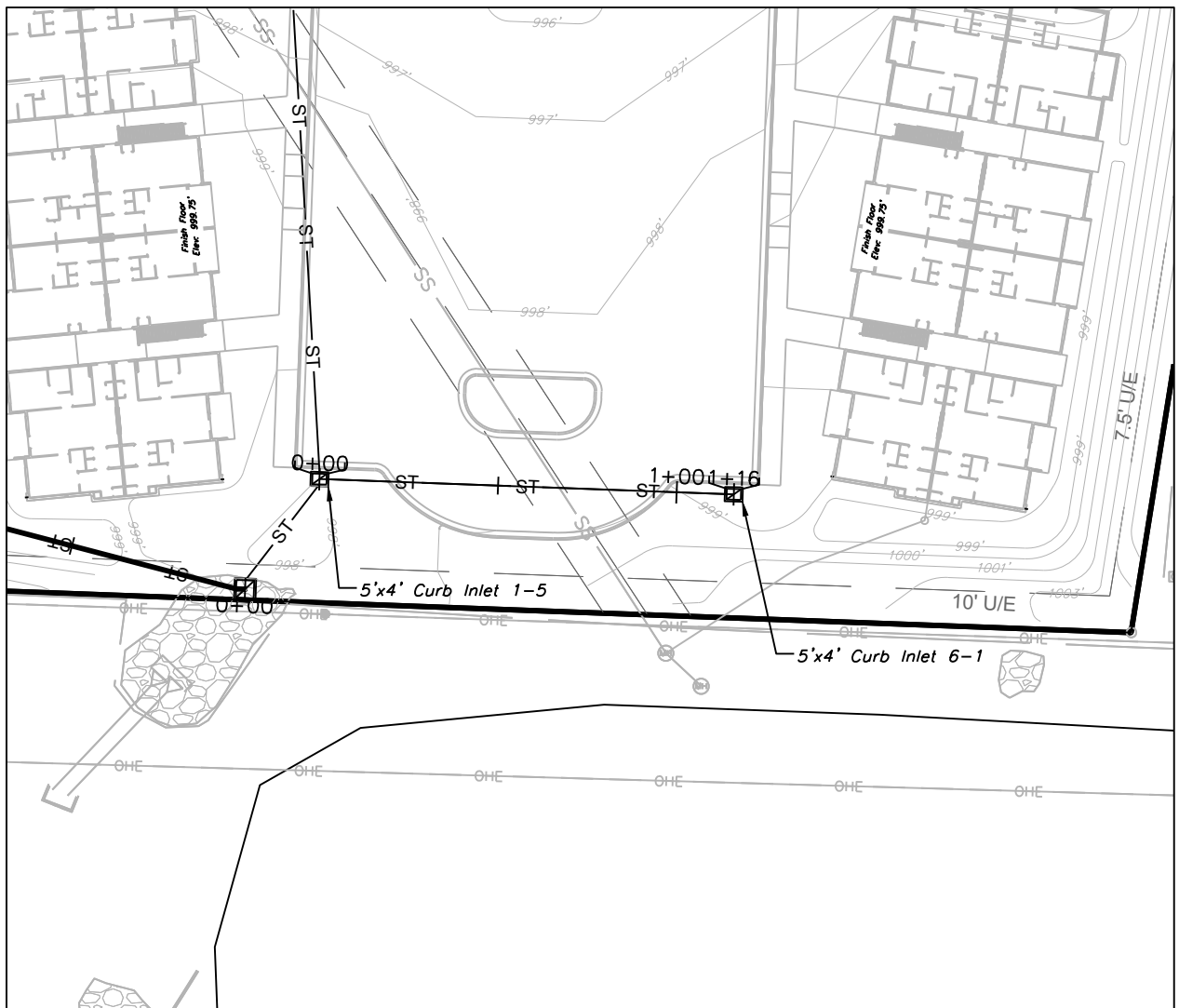
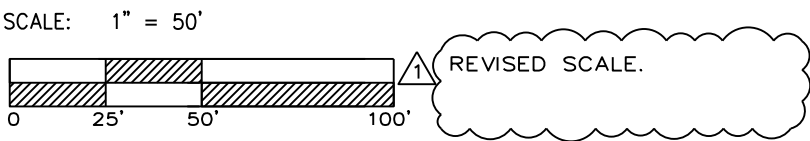
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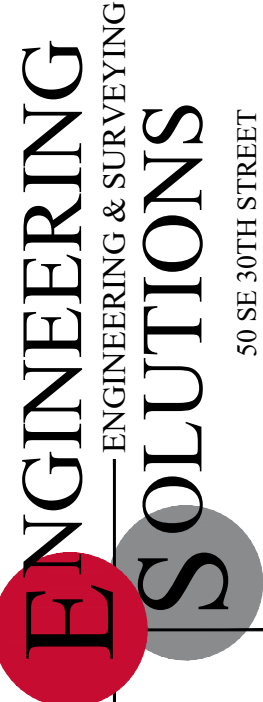
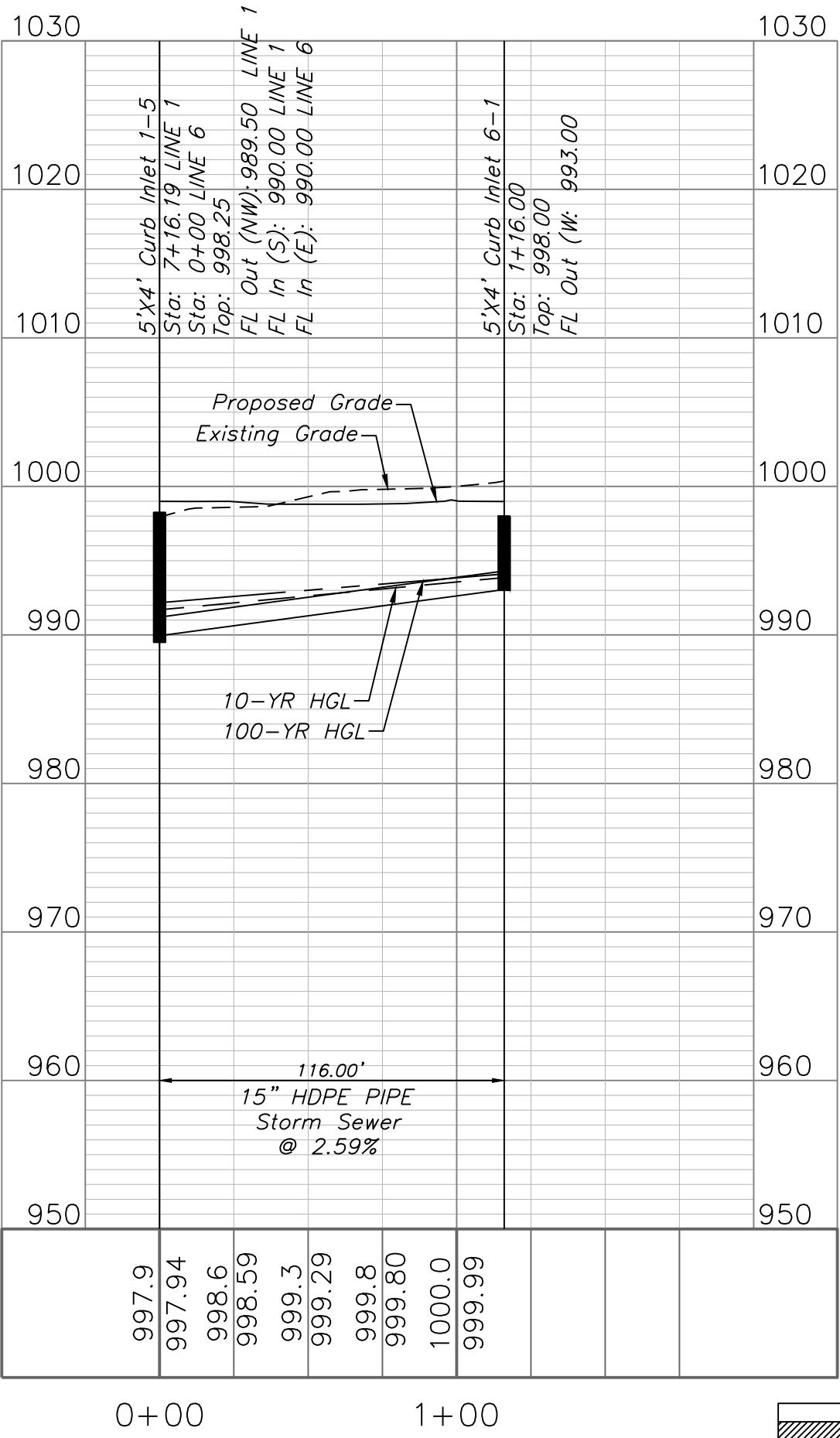




STORM SEWER PLAN AND PROFILE



STORM LINE 6

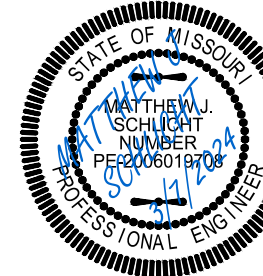


Professional Registration  
Missouri  
Engineering 2005002186-D  
Surveying 2005008319-D  
Kansas  
Engineering E-1685  
Surveying LS-218  
Oklahoma  
Engineering 6254  
Nebraska  
Engineering CA2821

Douglas Station Commercial Park  
Lee's Summit, Jackson County, Missouri

Project: LASM  
Issue Date:  
August 11, 2023

Storm Sewer Plan and Profile  
Construction Plans for:  
Douglas Station Commercial Park  
Lee's Summit, Jackson County, Missouri

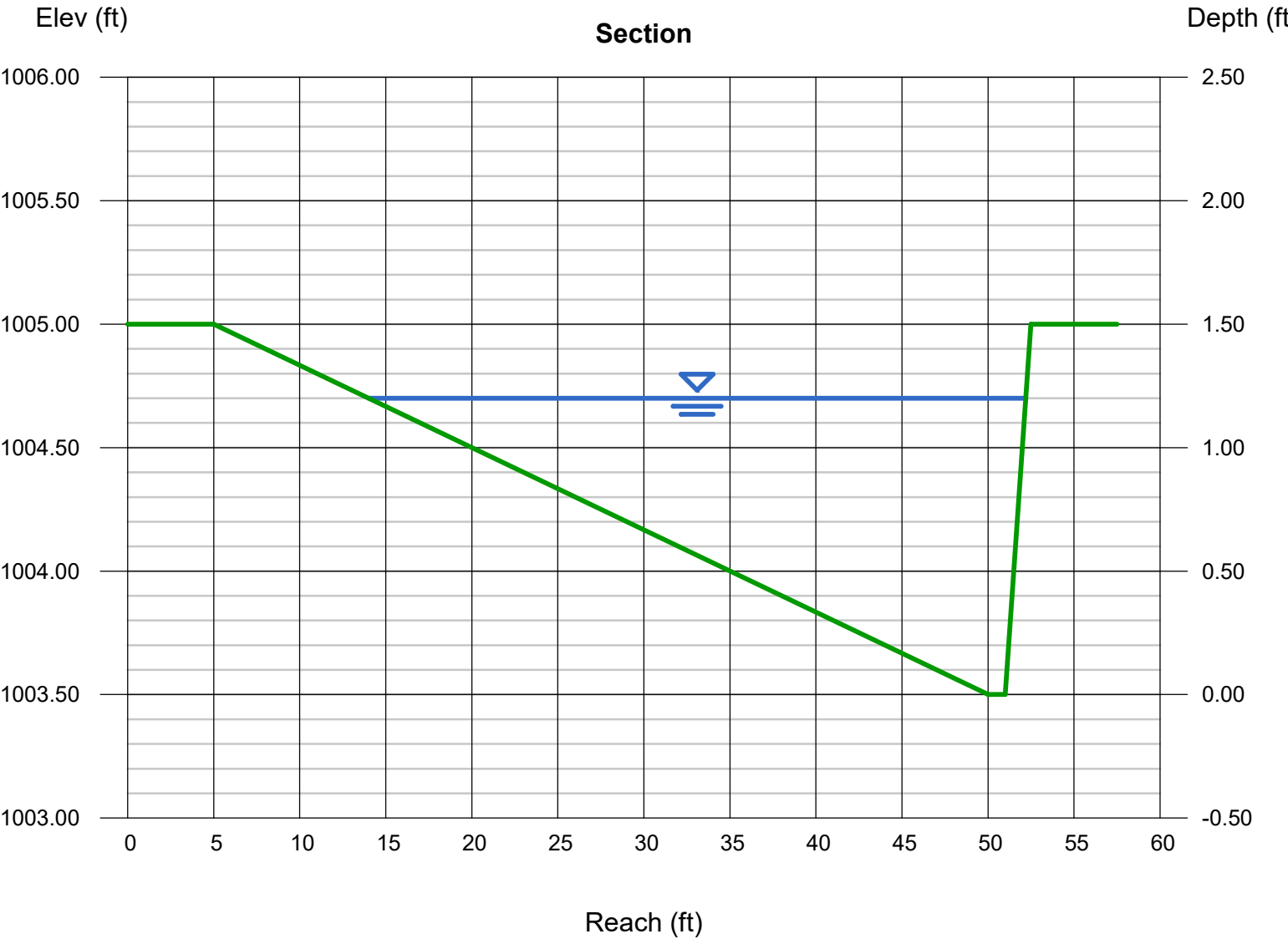


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OK PE 25226  
NE PE E-14335

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Overflow Spillway

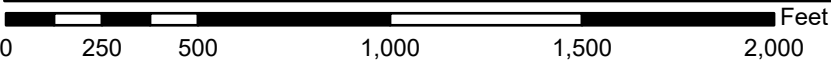
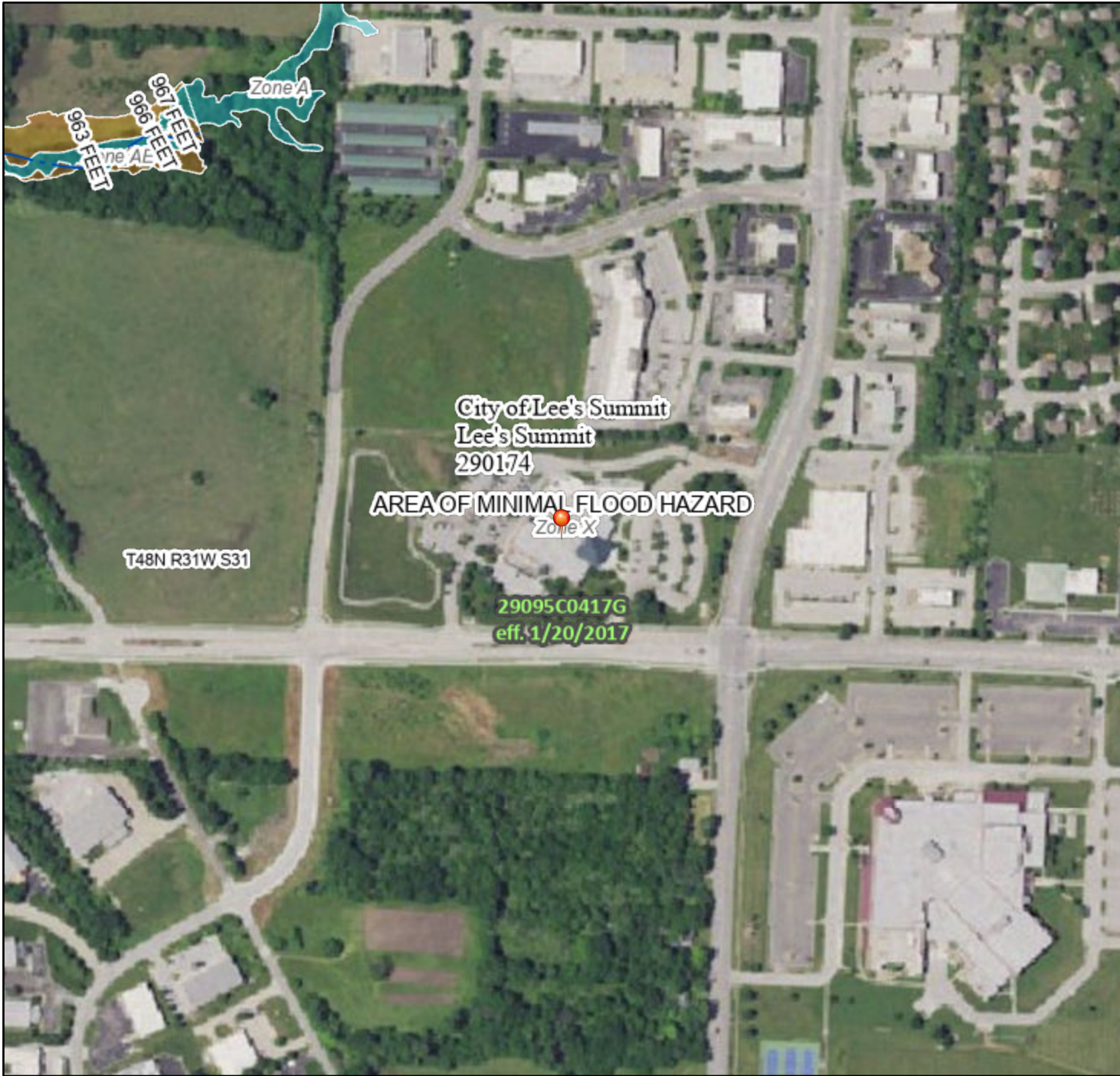
Trapezoidal		Highlighted	
Bottom Width (ft)	= 1.00	Depth (ft)	= 1.20
Side Slopes (z:1)	= 30.00, 1.00	Q (cfs)	= 167.10
Total Depth (ft)	= 1.50	Area (sqft)	= 23.52
Invert Elev (ft)	= 1003.50	Velocity (ft/s)	= 7.10
Slope (%)	= 1.00	Wetted Perim (ft)	= 38.72
N-Value	= 0.015	Crit Depth, Yc (ft)	= 1.46
Calculations		Top Width (ft)	= 38.20
Compute by:	Q vs Depth	EGL (ft)	= 1.98
No. Increments	= 10		



# National Flood Hazard Layer FIRMette



94°23'11"W 38°56'7"N



1:6,000

94°22'33"W 38°55'39"N

Basemap Imagery Source: USGS National Map 2023

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



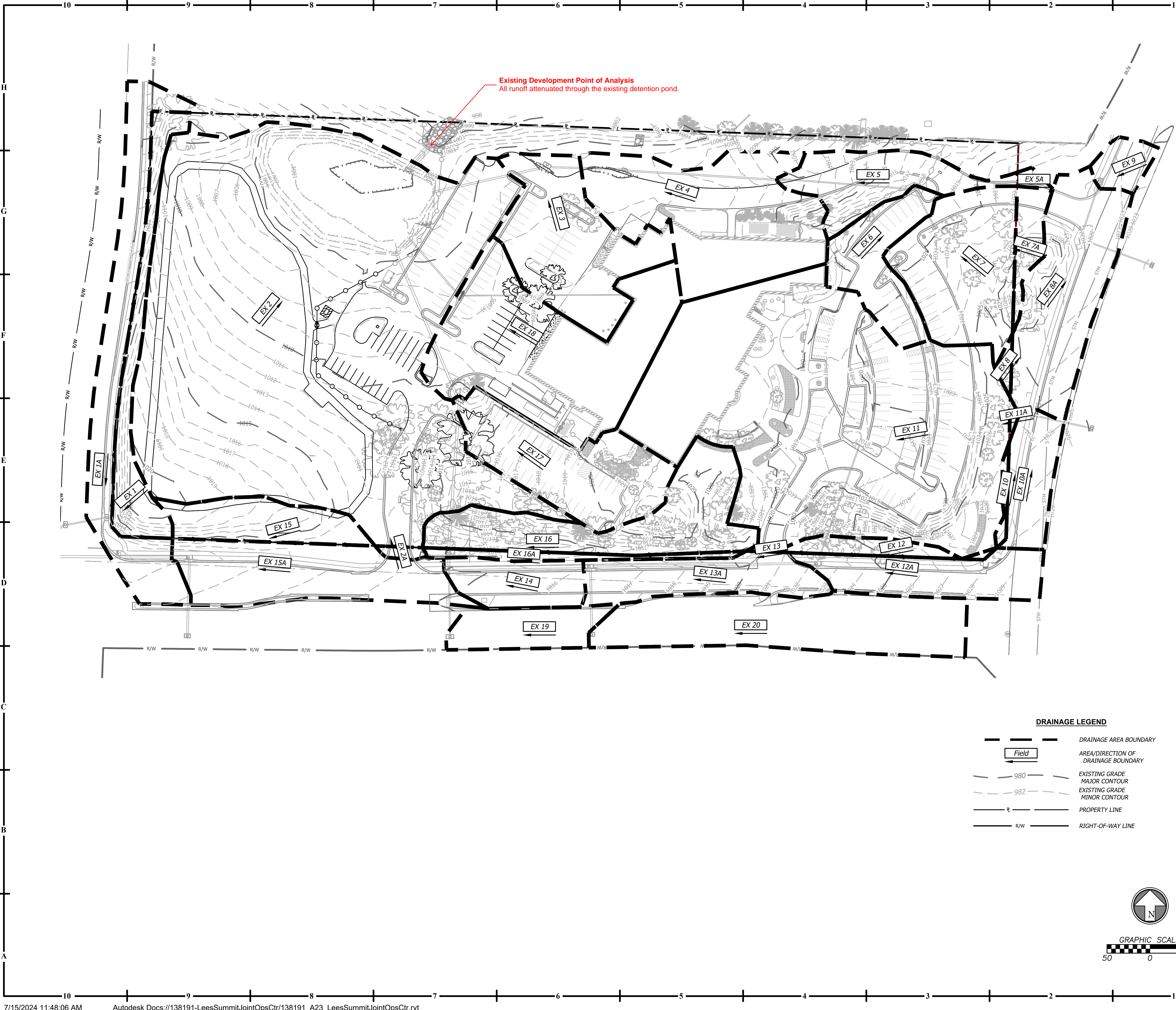
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/27/2024 at 1:29 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

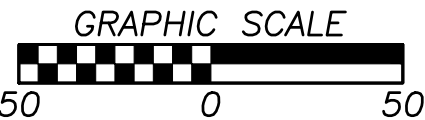
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DRAINAGE LEGEND

- DRAINAGE AREA BOUNDARY
- Field
- AREA/DIRECTION OF DRAINAGE BOUNDARY
- EXISTING GRADE MAJOR CONTOUR
- EXISTING GRADE MINOR CONTOUR
- PROPERTY LINE
- RIGHT-OF-WAY LINE



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SUITE 1400  
KANSAS CITY, MO 64112  
P: 913.307.3700  
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LEE'S SUMMIT JOINT OPERATIONS FACILITY  
2 NE TUDOR RD  
LEE'S SUMMIT, MISSOURI 64086  
PRELIMINARY DEVELOPMENT PLAN

REVISION DATES:  
REV 1: 2024-08-27

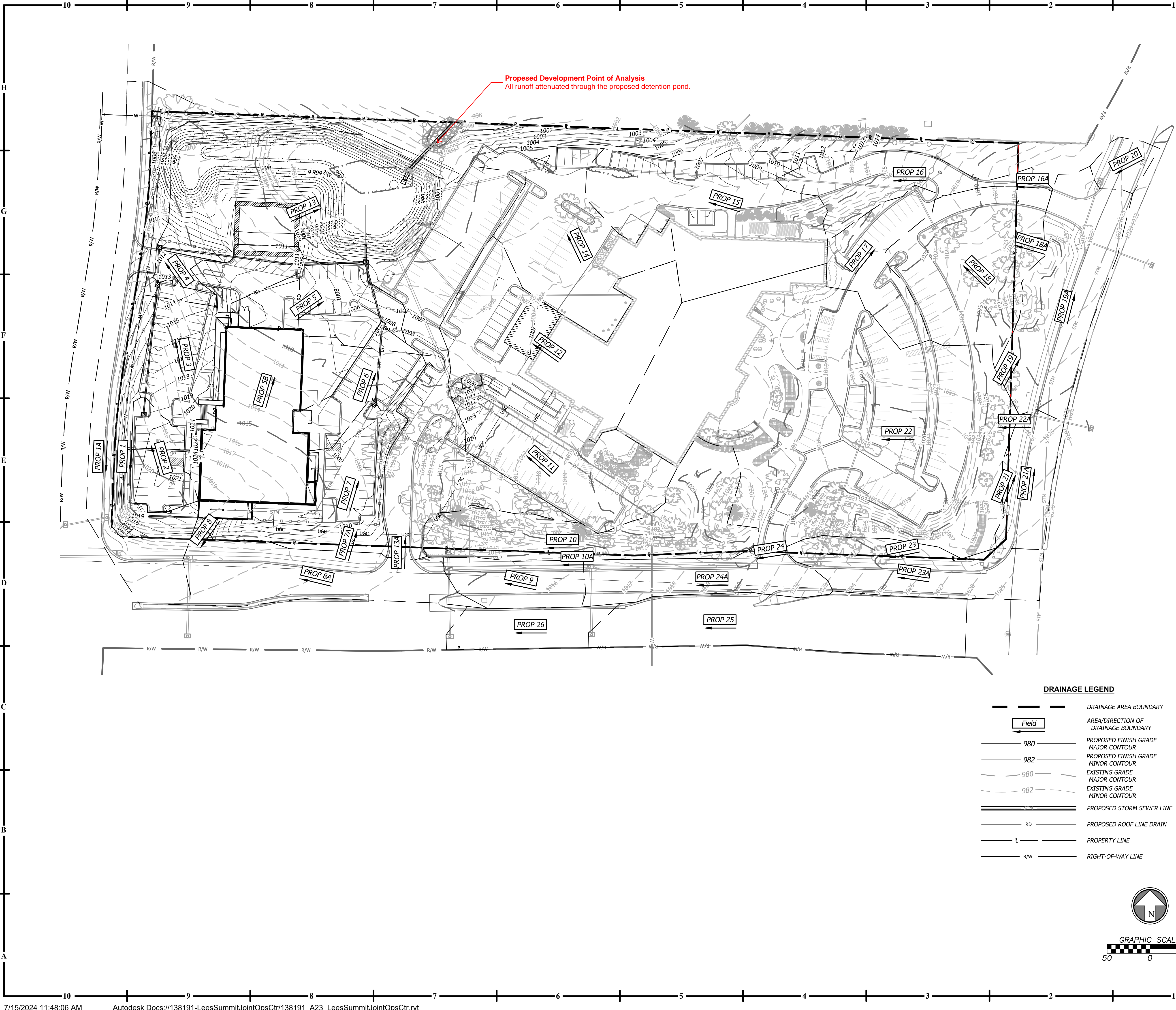
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Not to be used for regulatory  
approval, permit, or  
construction.  
Architect Of Record:  
Hoefer Welker

PROFESSIONAL SEAL

C5.0  
ISSUE DATE: JULY 25, 2024  
HOEFER WELKER #: 138191

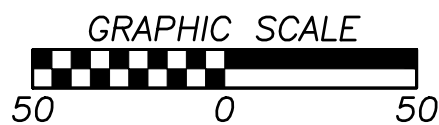
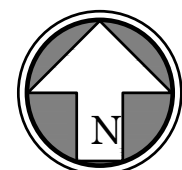
EXISTING DRAINAGE MAP





DRAINAGE LEGEND

	DRAINAGE AREA BOUNDARY
	AREA/DIRECTION OF DRAINAGE BOUNDARY
	PROPOSED FINISH GRADE MAJOR CONTOUR
	PROPOSED FINISH GRADE MINOR CONTOUR
	EXISTING GRADE MAJOR CONTOUR
	EXISTING GRADE MINOR CONTOUR
	PROPOSED STORM SEWER LINE
	PROPOSED ROOF LINE DRAIN
	PROPERTY LINE
	RIGHT-OF-WAY LINE



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PRELIMINARY DEVELOPMENT PLAN

REVISION DATES:  
REV 1: 2024-08-27

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approval, permit, or  
construction.  
Architect Of Record:  
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PROFESSIONAL SEAL

C5.1  
ISSUE DATE: JULY 25, 2024  
HOEFER WELKER #: 138191

PROPOSED DRAINAGE MAP



**Stormwater Pollution Prevention Plan (SWPPP)**

**For Construction Activities At:**

Lee's Summit Joint Operations Facility  
2 NE TUDOR ROAD  
LEE'S SUMMIT, MO 64086

**SWPPP Prepared For:**

TITAN CONSTRUCTION  
PM: LUKE WESTBROOK  
8207 MELROSE DRIVE, SUITE 200  
LENEXA, KANSAS, 66214  
913-782-6700  
LWESTBROOK@TITANBUILT.COM

**SWPPP Prepared By:**

BHC  
MICHAEL MAKRIS  
7101 College Blvd, Suite 400  
Overland Park, KS 66210  
913-663-1900  
MIKE.MAKRIS@IBHC.COM

**SWPPP Preparation Date:**

09/03/2024

**Estimated Project Dates:**

**Project Start Date:** 10/25/2024

**Project Completion Date:** 04/30/2026

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## SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES

### 1.1 Operator(s) / Subcontractor(s)

#### Operator(s):

Titan Construction  
TBD  
8207 Melrose Drive, Suite 200  
Lenexa, KS 66214  
TBD  
TBD

#### Subcontractor(s):

Qualified person(s) appointed by TITAN CONSTRUCTION

#### Emergency 24-Hour Contact:

Qualified person(s) appointed by TITAN CONSTRUCTION

## 1.2 Stormwater Team

### Stormwater Team

Name and/or Position, and Contact	Responsibilities	I Have Completed Training Required by the Kansas GCP	I Have Read the Kansas GCP and Understand the Applicable Requirements
Qualified person(s) appointed by TITAN CONSTRUCTION	TBD by TITAN CONSTRUCTION	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes Date:
Qualified person(s) appointed by TITAN CONSTRUCTION	TBD by TITAN CONSTRUCTION	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes Date:
Qualified person(s) appointed by TITAN CONSTRUCTION	TBD by TITAN CONSTRUCTION	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes Date:

**Stormwater Team Members Who Conduct Inspections Pursuant to CGP**

Name and/or Position and Contact	Training(s) Received	Date Training(s) Completed	If Training is a Non-EPA Training, Confirm that it Satisfies the Minimum Elements of Kansas CGP
Qualified person(s) appointed by TITAN CONSTRUCTION	TBD by TITAN CONSTRUCTION	Date:	<input type="checkbox"/> Principles and practices of erosion and sediment control and pollution prevention practices at construction sites <input type="checkbox"/> Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites <input type="checkbox"/> Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4
Qualified person(s) appointed by TITAN CONSTRUCTION	TBD by TITAN CONSTRUCTION	Date:	<input type="checkbox"/> Principles and practices of erosion and sediment control and pollution prevention practices at construction sites <input type="checkbox"/> Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites <input type="checkbox"/> Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4
Qualified person(s) appointed by TITAN CONSTRUCTION	TBD by TITAN CONSTRUCTION	Date:	<input type="checkbox"/> Principles and practices of erosion and sediment control and pollution prevention practices at construction sites <input type="checkbox"/> Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites <input type="checkbox"/> Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4

## SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

### 2.1 Project/Site Information

#### Project Name and Address

Project/Site Name: Lee's Summit Joint Operations Facility

Street/Location: 2 NE TUDOR ROAD

City: Lee's Summit

State: Missouri

ZIP Code: 64086

County or Similar Government Division: Jackson County

Section, Township, Range: 31,T48N,R31W

#### Project Latitude/Longitude

Latitude: 35Deg 55' 53" N  
(decimal degrees)

Longitude: - 94 Deg 22' 58" W  
(decimal degrees)

Latitude/longitude data source: ☐ Map ☐ GPS ☒ Other (please specify):  
\_\_\_\_\_Google Earth\_\_\_\_\_

Horizontal Reference Datum: ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

#### Additional Site Information

Is your site located on Indian country lands, or on a property of religious or cultural significance to an Indian Tribe? ☐ Yes ☒ No

If yes, provide the name of the Indian Tribe associated with the area of Indian country (including the name of Indian reservation if applicable), or if not in Indian country, provide the name of the Indian Tribe associated with the property:

N/A

### 2.2 Discharge Information

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)? ☒ Yes ☐ No

Are there any waters of the U.S. within 50 feet of your project's earth disturbances? ☐ Yes ☒ No

For each point of discharge, provide a point of discharge ID (a unique 3-digit ID, e.g., 001, 002), the name of the first receiving water that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to, and the following receiving water information, if applicable:

Point of Discharge ID (Add ID to EC Plans, include lat and long)	Name of receiving water or MS4 that receives stormwater discharge ( <a href="#">EPA Watershed Tool</a> )	Is the receiving water impaired (on the CWA 303(d) list)? <a href="#">EPA Watershed Tool</a>	If yes, list the pollutants that are causing the impairment:	Has a TMDL been completed for this receiving waterbody?	If yes, list TMDL Name and ID:	Drainage Area to Point of Discharge	Area to be disturbed in Drainage Area
[001]	Receiving stream north of project site.	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		11.58 AC	5 AC

*[Include additional rows or delete as necessary.]*



## 2.3 Nature of the Construction Activities

### General Description of Project

Provide a general description of the nature of your construction activities, including the age or dates of past renovations for structures that are undergoing demolition:

The project will expand the existing Lee's Summit Civic campus with the addition of a new fire administration building. The construction will disturb approximately 5-acres of site area.

If you are conducting earth-disturbing activities in response to a public emergency, document the cause of the public emergency (e.g., *mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services*), information substantiating its occurrence (e.g., *State disaster declaration or similar State or local declaration*), and a description of the construction necessary to reestablish affected public services:

N/A

Business days and hours for the project: [Project Optation Days and Hours](#)

### Size of Construction Site

Size of Property	11.58 Ac.
Total Area Expected to be Disturbed by Construction Activities	5.0 Ac.
Maximum Area Expected to be Disturbed at Any One Time, Including On-site and Off-site Construction Support Areas	5.0 Ac.

### Type of Construction Site (check all that apply):

- ☐ Single-Family Residential
 ☐ Multi-Family Residential
 ☒ Commercial
 ☐ Industrial  
☐ Institutional
 ☐ Highway or Road
 ☐ Utility
 ☐ Other \_\_\_\_\_

Will you be discharging dewatering water from your site? ☒ Yes ☐ No

If yes, will you be discharging dewatering water from a current or former Federal or State remediation site? ☐ Yes ☒ No

### Pollutant-Generating Activities

List and describe all pollutant-generating activities and indicate for each activity the associated pollutants or pollutant constituents that could be discharged in stormwater from your construction site. Take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed during construction.

<b>Pollutant-Generating Activity</b> (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations)	<b>Pollutants or Pollutant Constituents</b> (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels)
On site grading and construction activities	Sediment
Seeding and/or sodding activities	Pesticides, Fertilizer
Building construction	Plaster, Glue, Adhesives, Paints, Caulks, Concrete
Building demolition	Plaster, Fluorescent Light Ballasts, Sediment, Paints, Glue, Adhesives, Concrete, etc.
Washout areas	Concrete
Parking lot and driveway construction	Asphalt, Concrete, Curing Compounds
Construction staging areas	Cleaning Solvents, Hydraulic Oil/Fluids, Gasoline, Diesel Fuel, Sewer Waste from Portable Toilets

**Construction Support Activities** *(only provide if applicable)*

Describe any construction support activities for the project (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas):

N/A

Contact information for construction support activity:

TITAN CONSTRUCTION  
913-782-6700  
LWESTBROOK@TITANBUILT.COM  
*[Repeat as necessary.]*

**2.4 Sequence and Estimated Dates of Construction Activities**

**Phase I**

Pre-Construction Activities - Prior to Land Disturbance - See Sheet C6.0	
Estimated Start Date of Construction Activities for this Phase	TBD by Titan
Estimated End Date of Construction Activities for this Phase	TBD by Titan
Estimated Date(s) of Application of Stabilization Measures for Areas of the Site Required to be Stabilized	TBD by Titan <i>[Add additional dates as necessary]</i>
Estimated Date(s) when Stormwater Controls will be Removed	TBD by Titan <i>[Add additional dates as necessary]</i>

**Phase II**

Mid-Construction Activities - Mass Grading, Utility Construction - See Sheet C6.1	
Estimated Start Date of Construction Activities for this Phase	TBD by Titan
Estimated End Date of Construction Activities for this Phase	TBD by Titan
Estimated Date(s) of Application of Stabilization Measures for Areas of the Site Required to be Stabilized	TBD by Titan
Estimated Date(s) when Stormwater Controls will be Removed	TBD by Titan

**Phase III**

Post-Construction Activities - Building and Parking Lot Construction, Final Grading, Landscaping - See Sheet C6.2	
Estimated Start Date of Construction Activities for this Phase	TBD by Titan
Estimated End Date of Construction Activities for this Phase	TBD by Titan

Estimated Date(s) of Application of Stabilization Measures for Areas of the Site Required to be Stabilized	TBD by Titan
Estimated Date(s) when Stormwater Controls will be Removed	TBD by Titan

## 2.5 Authorized Non-Stormwater Discharges

### List of Authorized Non-Stormwater Discharges Present at the Site

Authorized Non-Stormwater Discharge	Will or May Occur at Your Site?
Discharges from emergency fire-fighting activities	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Fire hydrant flushings	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Landscape irrigation	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water used to wash vehicles and equipment	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water used to control dust	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Potable water including uncontaminated water line flushings	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
External building washdown (soaps/solvents are not used and external surfaces do not contain hazardous substances)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Pavement wash waters	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Uncontaminated air conditioning or compressor condensate	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Uncontaminated, non-turbid discharges of ground water or spring water	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Foundation or footing drains	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Uncontaminated construction dewatering water	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

*(Note: You are required to identify the likely locations of these authorized non-stormwater discharges on your site map. See Section 2.6, below, of this SWPPP Template.)*

## 2.6 Site Maps



An aerial photo of the project location is shown above for context. Refer to Appendix A for detailed site maps that include the site layout, site grading, and site erosion control plans.

### SECTION 3: DOCUMENTATION OF COMPLIANCE WITH OTHER FEDERAL/STATE REQUIREMENTS

#### 3.1 *Endangered Species Protection*

Is any threatened or endangered species habitat located within the site boundary or in the receiving water body?

No

Describe how this determination was made:

#### 3.2 *Historic Property Screening Process*

Are there any known historical or archeological sites present within the site boundary or any historic structures located within 1000 feet of the project site?

No

Describe how this determination was made:

#### 3.3 *Safe Drinking Water Act Underground Injection Control Requirements*

Do you plan to install any of the following controls? Check all that apply below.

- ☐ Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)
- ☐ Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow
- ☐ Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)
- ☒ N/A

## SECTION 4: EROSION AND SEDIMENT CONTROLS AND DEWATERING PRACTICES

### 4.1 Natural Buffers or Equivalent Sediment Controls

#### Buffer Compliance Alternatives

Are there any receiving waters within 50 feet of your project's earth disturbances? ☐ YES ☒ NO

### 4.2 Perimeter Controls

#### Specific Perimeter Controls

Filter Fabric Silt Fence	
<b>Description:</b> Install filter fabric silt fence along the downslope perimeter of the project site.	
<b>Installation</b>	See Erosion Control Plans and Details in Appendix A.
<b>Maintenance Requirements</b>	Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control. After a storm event, if there is evidence of stormwater circumventing or undercutting the perimeter control, extend controls and/or repair undercut areas to fix the problem.
<b>Design Specifications</b>	See Erosion Control Plans and Details in Appendix A.

### 4.3 Sediment Track-Out

#### General

- Vehicle washing will be provided by the contractor as needed. If necessary, street cleaning will take place as soon as possible after sediment has left the site.

#### Specific Track-Out Controls

Construction Entrance	
<b>Description:</b> Temporary rock construction entrance placed as the entry/exit location for construction vehicles.	
<b>Installation</b>	See Erosion Control Plans and Details in Appendix A.
<b>Maintenance Requirements</b>	Where sediment has been tracked-out from the site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. Hosing or sweeping tracked-out sediment into any constructed or natural site drainage feature, storm drain inlet, or receiving water is not allowed.
<b>Design Specifications</b>	See Erosion Control Plans and Details in Appendix A.

#### 4.4 Stockpiles or Land Clearing Debris Piles Comprised of Sediment or Soil

##### General

- Stockpile areas will be monitored continuously throughout the project by the contractor. Stockpile areas will be bordered a minimum by perimeter silt fence. The contractor will be responsible to prevent soil from being transmitted away from the stockpile area by stormwater. Inspect weekly and within 24hrs after a rainfall event that may cause surface erosion, whichever is sooner. Maintain as necessary.

#### 4.5 Minimize Dust

##### General

- On areas of exposed soil, the contractor will minimize dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged in stormwater from the site.

#### 4.6 Minimize Steep Slope Disturbances

##### General

- Disturbance of any existing steep slopes (40% or greater) is to be minimized by the contractor. Any constructed steep slopes (40% or greater) are to be protected.

##### Specific Steep Slope Controls

Steep Slope Protection	
Description: Install vertical soil stabilizing mats/blankets vertically down steep slopes.	
Installation	See Erosion Control Plans and Details in Appendix A.
Maintenance Requirements	Inspect routinely and after rainfall events. Maintain or replace as necessary.
Design Specifications	See Erosion Control Plans and Details in Appendix A.

#### 4.7 Topsoil

##### General

- The final site design is highly impervious after construction, and therefore, little or no vegetation is intended to remain.

#### 4.8 Soil Compaction

##### General

- In areas of the site where final vegetative stabilization will occur or where infiltration practices will be installed the contractor shall:
  - Restrict vehicle and equipment use in those locations.
  - Before seeding or planting areas of exposed soil that have been compacted, use techniques that rehabilitate and condition the soils as necessary to support vegetative growth.



#### 4.9 Storm Drain Inlets

##### General

- The contractor will install inlet protection measures that remove sediment from discharges prior to entry into any storm drain inlet that carries stormwater from the project site. The contractor will clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.

##### Specific Storm Drain Inlet Controls

Storm Inlet Protection	
<b>Description:</b> Install filter sock around storm inlet to remove sediment from runoff before entry into the existing or proposed storm sewer system.	
<b>Installation</b>	See Erosion Control Plans and Details in Appendix A.
<b>Maintenance Requirements</b>	Clean, or remove and replace, the inlet protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.
<b>Design Specifications</b>	See Erosion Control Plans and Details in Appendix A.

#### 4.10 Constructed Site Drainage Feature

##### General

- The contractor will install erosion control features to control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.

##### Specific Constructed Site Drainage Features

Rock Check Dam	
<b>Description:</b> Install rock check dam within drainage channels to reduce erosion and trap sediments.	
<b>Installation</b>	See Erosion Control Plans and Details in Appendix A.
<b>Maintenance Requirements</b>	The contractor will clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.
<b>Design Specifications</b>	See Erosion Control Plans and Details in Appendix A.

#### 4.12 Dewatering Practices

- No dewatering practices are used on this project site.

#### 4.13 Site Stabilization

##### Total Amount of Land Disturbance Occurring at Any One Time

- ☒ Five Acres or less  
☐ More than Five Acres

<b>Final Seeding, Sod, and Landscaping</b>	
<input checked="" type="checkbox"/> Vegetative <input type="checkbox"/> Non-Vegetative <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
<b>Description:</b> <ul style="list-style-type: none"><li>▪ Install sod and seeding as shown on the Erosion Control Plan in Appendix A.</li><li>▪ Initiate the installation of stabilization measures immediately in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days.</li></ul>	
<b>Installation</b>	7/1/2022
<b>Completion</b>	12/30/2022
<b>Maintenance Requirements</b>	See Appendix A
<b>Design Specifications</b>	See Appendix A

## SECTION 5: POLLUTION PREVENTION CONTROLS

### 5.1 Potential Sources of Pollution

#### Construction Site Pollutants

Material/Chemical	Physical Description	Stormwater Pollutants	Location
Pesticides (insecticides, fungicides, herbicides, rodenticides)	Various colored to colorless liquid, powder, pellets, or grains	Chlorinated hydrocarbons, organophosphates, carbamates, arsenic	Herbicides used for noxious weed control
Fertilizer	Liquid or solid grains	Nitrogen, phosphorous	Newly seeded areas
Plaster	White granules or powder	Calcium sulphate, calcium carbonate, sulfuric acid	Building construction
Cleaning solvents	Colorless, blue, or yellow-green liquid	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates	No equipment cleaning allowed in project limits
Asphalt	Black solid	Oil, petroleum distillates	Streets and roofing
Concrete	White solid/grey liquid	Limestone, sand, pH, chromium	Curb and gutter, building construction
Glue, adhesives	White or yellow liquid	Polymers, epoxies	Building construction
Paints	Various colored liquid	Metal oxides, Stoddard solvent, talc, calcium carbonate, arsenic	Building construction
Curing compounds	Creamy white liquid	Naphtha	Curb and gutter
Wood preservatives	Clear amber or dark brown liquid	Stoddard solvent, petroleum distillates, arsenic, copper, chromium	Timber pads and building construction
Hydraulic oil/fluids	Brown oily petroleum hydrocarbon	Mineral oil	Leaks or broken hoses from equipment
Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE	Secondary containment/staging area
Diesel Fuel	Clear, blue-green to yellow liquid	Petroleum distillate, oil & grease, naphthalene, xylenes	Secondary containment/staging area
Sewer waste from portable toilets	Brown	Nitrogen, phosphorous	Portable toilets/ construction staging area

## **5.2 Spill Prevention and Response**

### **Spill Prevention**

- An effort will be made to store only enough material on site as is required to perform the work.
- All materials stored on site will be arranged in a neat, orderly manner within their appropriately labeled containers, and if possible, sheltered under a roof or within an enclosure.
- Substances stored shall not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, a product will be used up before disposing of the container.
- Manufacturer's recommendations for proper use and disposal will be followed.
- The site manager or delegated personnel will inspect, daily, to ensure the proper use and disposal of onsite materials.
- Hazardous waste will be disposed of properly (as per local and state recommended methods)

### **Spill Containment, Cleanup & Personnel Training**

- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage areas on site. Equipment and materials will include, but not be limited to, brooms, dust pans, maps, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate state or local agency, regardless of the size.
- Should a spill occur, the spill prevention plan will be adjusted by the site manager to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.
- The site manager will be the spill prevention and cleanup coordinator.

## **5.3 Fueling and Maintenance of Equipment or Vehicles**

### **General**

- The contractor will provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuels and oils, from these activities. Adequate supplies will be available at all times to handle spills, leaks, and disposal of used liquids. Drip pans and absorbents will be used under leaky vehicles. Oil and oily wastes will be disposed of or recycled in accordance with federal, state, and local requirements. Spills will be cleaned up immediately using dry clean up measures.

## **5.4 Washing of Equipment and Vehicles**

### **General**

- The contractor will provide designated washing areas to prevent wash water from running off to contaminate surface water or infiltrating to contaminate groundwater.

## **5.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes**

### **5.5.1 Building Materials and Building Products**

#### **General**

- The contractor will provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these products to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

### **5.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials**

#### **General**

- The contractor will, in storage areas, provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these chemicals to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas; and comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label.

### **5.5.3 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals**

#### **General**

- If the total volume on site is 55 gallons or less, the contractor will store chemicals in water-tight containers, if stored outside, use a spill containment pallet or similar device to capture small leaks or spills, and have a spill kit available on site that is in good working condition (i.e., not damaged, expired, or used up) and ensure personnel are available to respond expeditiously in the event of a leak or spill.
- If the total volume on site is more than 55 gallons, the contractor will store chemicals in water-tight containers, store containers a minimum of 50 feet from waters of the U.S., drainage systems, and stormwater inlets, provide either (1) cover (e.g., temporary roofs) to minimize the exposure of these containers to precipitation and to stormwater, or (2) secondary containment (e.g., curbing, spill berms, dikes, spill containment pallets); and have a spill kit available on site that is in good working condition and ensure personnel are available to respond expeditiously in the event of a leak or spill.

### **5.5.4 Construction and Domestic Waste**

#### **General**

- The contractor will provide waste containers of sufficient size and number to contain construction and domestic waste. Waste containers are to be emptied regularly and cleaned up immediately if they overflow.

#### **5.5.5 Sanitary Waste**

##### **General**

- The contractor will position portable toilets so that they are secure and will not be tipped or knocked over, and so that they are located away from waters of the U.S. and stormwater inlets or conveyances.

#### **5.6 Washing of Applicators and Containers used for Stucco, Paint, Concrete, Form Release Oils, Cutting Compounds, or Other Materials**

##### **General**

- The contractor will provide areas to direct wash water into a leak-proof container or leak-proof and lined pit designed so that no overflows can occur due to inadequate sizing or precipitation. Washout and cleanout activities should occur as far away as possible from waters of the U.S. and stormwater inlets.

#### **5.7 Application of Fertilizers**

##### **General**

- The contractor will apply fertilizer at a rate and in amounts consistent with manufacturer's specifications, or document in the SWPPP departures from the manufacturer specifications where appropriate, apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth, avoid applying before heavy rains that could cause excess nutrients to be discharged, never apply to frozen ground, never apply to stormwater conveyance channels, and follow all other federal, state, and local requirements regarding fertilizer application.

## SECTION 6: INSPECTION, MAINTENANCE, AND CORRECTIVE ACTION

### 6.1 *Inspection Personnel and Procedures*

#### Site Inspection Schedule

- ☐ Every 7 calendar days  
☒ Every 14 calendar days and within 24 hours of:

A rainfall total of 0.5 inches or greater being observed based on a single monitoring event; or based on the cumulative total of two consecutive monitoring events when the rainfall total of the first monitoring event is less than 0.5 inches.

### 6.2 *Corrective Action*

#### Personnel Responsible for Corrective Actions

TITAN CONSTRUCTION or qualified person(s) appointed by TITAN CONSTRUCTION

#### Corrective Action Logs

A copy of the corrective action log is found in Appendix E.

### 6.3 *Delegation of Authority*

#### Duly Authorized Representative(s) or Position(s):

TITAN CONSTRUCTION or qualified person(s) appointed by TITAN CONSTRUCTION

## SECTION 7: CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**SWPPP APPENDICES**

***Appendix A – Site Maps and Construction Documents***

***Appendix B – Construction General Permit***

***Appendix C – Example Inspection Report***

***Appendix E – Corrective Action Log***

***Appendix F – SWPPP Amendment Log***

***Appendix G – Subcontractor Certifications/Agreements***

***Appendix H – Grading and Stabilization Activities Log***

***Appendix I – Training Documentation***

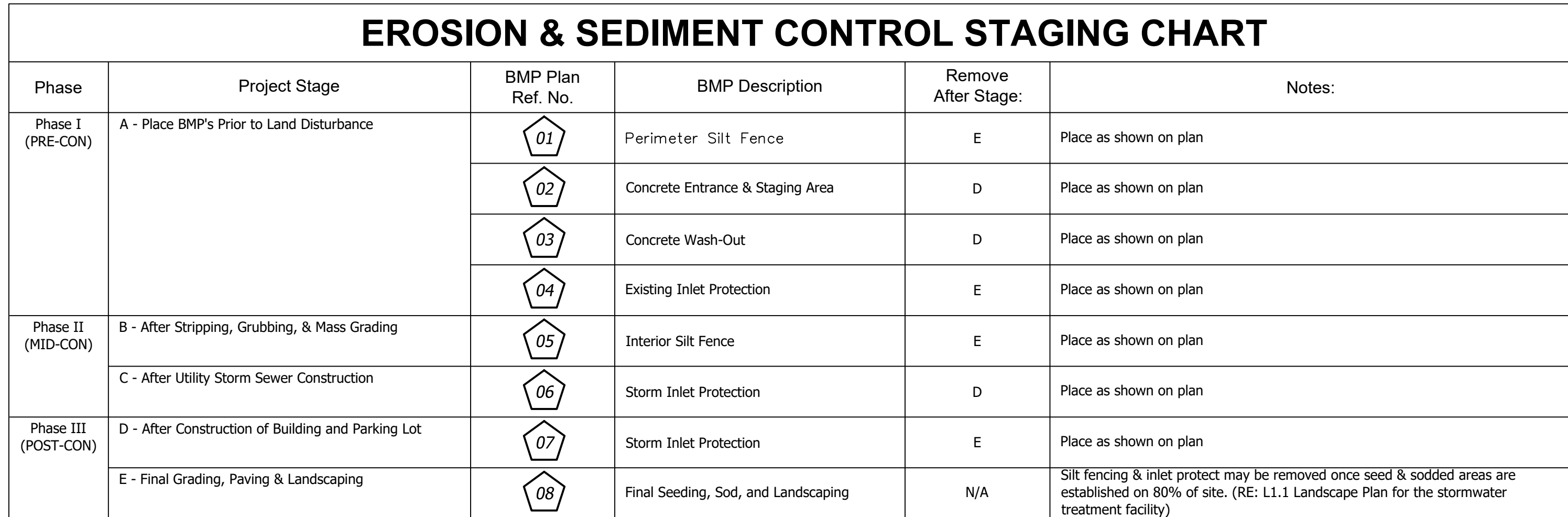
***Appendix J – Delegation of Authority***



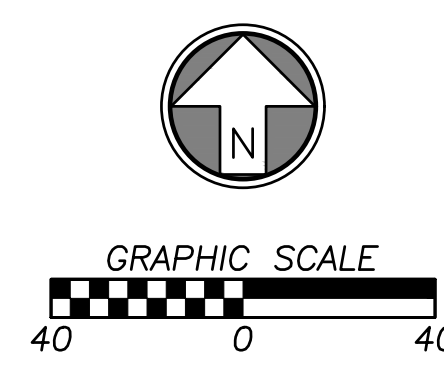
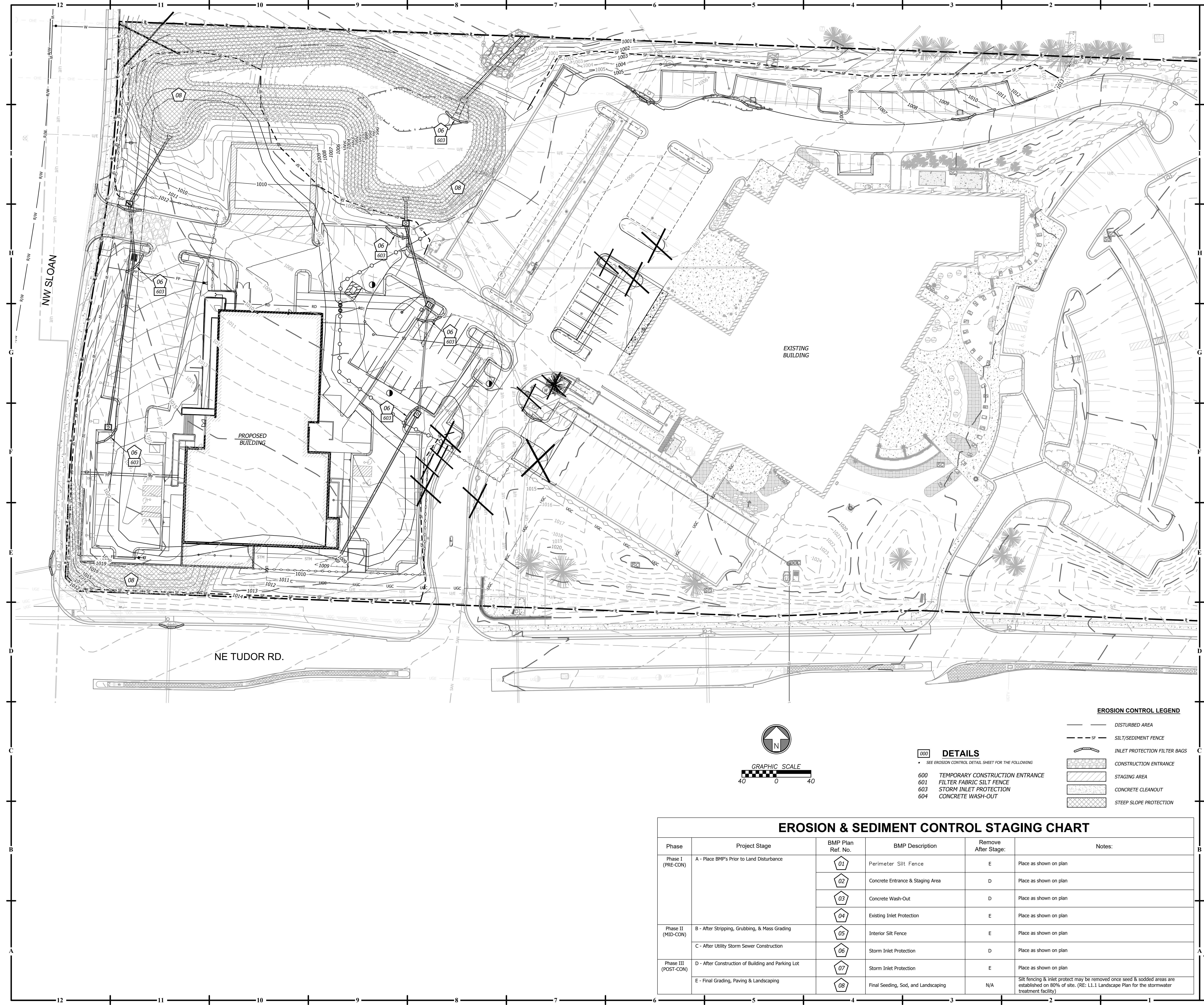
## **Appendix A – Site Maps and Construction Documents**



10 NE TUDOR ROAD  
LEES SUMMIT, MO 64086

[illegible]





- 000 DETAILS**  
SEE EROSION CONTROL DETAIL SHEET FOR THE FOLLOWING
- 600 TEMPORARY CONSTRUCTION ENTRANCE
  - 601 FILTER FABRIC SILT FENCE
  - 603 STORM INLET PROTECTION
  - 604 CONCRETE WASH-OUT

- EROSION CONTROL LEGEND**
- DISTURBED AREA
  - SILT/SEDIMENT FENCE
  - INLET PROTECTION FILTER BAGS
  - CONSTRUCTION ENTRANCE
  - STAGING AREA
  - CONCRETE CLEANOUT
  - STEEP SLOPE PROTECTION

EROSION & SEDIMENT CONTROL STAGING CHART					
Phase	Project Stage	BMP Plan Ref. No.	BMP Description	Remove After Stage:	Notes:
Phase I (PRE-CON)	A - Place BMP's Prior to Land Disturbance	01	Perimeter Silt Fence	E	Place as shown on plan
		02	Concrete Entrance & Staging Area	D	Place as shown on plan
		03	Concrete Wash-Out	D	Place as shown on plan
		04	Existing Inlet Protection	E	Place as shown on plan
Phase II (MID-CON)	B - After Stripping, Grubbing, & Mass Grading	05	Interior Silt Fence	E	Place as shown on plan
	C - After Utility Storm Sewer Construction	06	Storm Inlet Protection	D	Place as shown on plan
Phase III (POST-CON)	D - After Construction of Building and Parking Lot	07	Storm Inlet Protection	E	Place as shown on plan
	E - Final Grading, Paving & Landscaping	08	Final Seeding, Sod, and Landscaping	N/A	Silt fencing & inlet protect may be removed once seed & sodded areas are established on 80% of site. (RE: L1.1 Landscape Plan for the stormwater treatment facility)

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BHC is a subsidiary of Brueggemann & Company, PA

LEE'S SUMMIT JOINT OPERATIONS FACILITY  
10 NE TUDOR ROAD  
LEES SUMMIT, MO 64086  
PACKAGE 1: SITE AND STRUCTURE

REVISION DATES:

01	ADDENDUM 01	2024-10-30

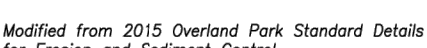
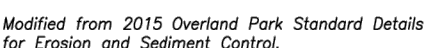
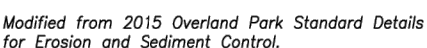
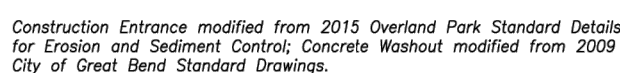
STATE OF MISSOURI  
MICHAEL J. MAKRES  
PE-362105286  
2024-10-30  
PROFESSIONAL ENGINEER

PROFESSIONAL SEAL

C6.1  
ISSUE DATE: AUGUST 30, 2024  
HOEFER WELKER #: 138161

EROSION CONTROL PLAN

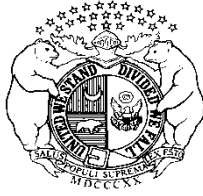






## **Appendix B – Construction General Permit**

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**  
MISSOURI CLEAN WATER COMMISSION



## MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law (Chapter 644 RSMo, hereinafter, the Law) and the Federal Water Pollution Control Act (Public Law 92-500, 92<sup>nd</sup> Congress) as amended,

Permit No.: MO-RAxxxxx

Owner: < name >  
Address: < address >

Continuing Authority: < name, or Same as above >  
Address: < address, or Same as above >

Facility Name: < name >  
Facility Address: < physical address >

Legal Description: 1/4, 1/4, 1/4, Sec. xx, TxxN, RxxW, < county > County  
UTM Coordinates: X = , Y =

Receiving Stream: < receiving stream > < (C, P, L1, L2, L3) >  
First Classified Stream and ID: < 1<sup>st</sup> classified stream > < (C, P, etc.) > < (WBID #number) >  
USGS Basin and Sub-watershed No.: < (USGS HUC12 #) >

is authorized to discharge from the facility described herein, in accordance with the effluent limitations, benchmarks, and monitoring requirements as set forth herein.

### FACILITY DESCRIPTION

#### All Outfalls

Construction or land disturbance activity (e.g., clearing, grubbing, excavating, grading, filling, and other activities that result in the destruction of the root zone and/or land disturbance activity that is reasonably certain to cause pollution to waters of the state).

This permit authorizes only stormwater and certain non-stormwater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas.

February 8, 2022  
Effective Date

February 7, 2027  
Expiration Date

  
Chris Wieberg, Director, Water Protection Program

## **I. APPLICABILITY**

### **A. Permit Coverage and Authorized Discharges**

1. This Missouri State Operating Permit (permit) authorizes the discharge of stormwater and certain non-stormwater discharges from land disturbance sites that disturb one or more acres, or disturb less than one acre when part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project. A permit must be issued before any disturbance of root zone of the existing vegetation or other land disturbance activities may begin.
2. If an individual or developer proposes to improve a lot for development or sale that is less than an acre and part of a common plan of development or sale, a permit is required. If an individual proposes to develop a lot to reside on themselves, the development is not considered part of the larger common plan of development or sale and does not require a permit unless the lot is an acre or more [10 CSR 20-6.200 (1)(B)6.]. See table below.

Permit Requirements for a Common Promotional Plan

	<b>Land Disturbance Permit Required?</b>	
	Less than one acre (< 1 acre)	One acre or more (≥ 1 acre)
Land disturbance by a developer (or a contractor working on their behalf), regardless of type of development (initial, commercial, residential)	Yes, if part of a larger common plan of development or sale with cumulative disturbance of one or more acres including individual residential lots in order to improve the lot for sale	Yes
Land disturbance by an individual to reside on themselves (or a contractor working on their behalf)	No	Yes

This general permit also authorizes the discharge of stormwater and certain non-stormwater discharges from smaller projects where the Missouri Department of Natural Resources (Department) has exercised its discretion to require a permit [10 CSR 20-6.200 (1)(B)].

A Missouri State Operating Permit (MORA, MOR100, or site specific) that specifically identifies the project must be issued before any site vegetation is removed (disturbance of the root zone) or the site disturbed [10 CSR 20-6.200 (1)(A)].

Any persons who operate, use, or maintain a land disturbance activity (owner/operator) which is subject to permitting requirements for stormwater discharges from land disturbance activities, who disturbs land prior to permit issuance from the Department is in violation of both State [10 CSR 20-6.200 (1)(A)] and Federal regulations.

The owner/operator and continuing authority of this permit are responsible for compliance with this permit [10 CSR 20-6.200 (3)(B)].

The primary operator(s) of a land disturbance site is any party associated with the project who either: 1) has operational control over construction plans, including the ability to make modifications to those plans; or 2) has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions. This may be the General Contractor, Project Manager, or similar role.

3. This permit authorizes stormwater discharges from land disturbance support activities (e.g., equipment staging yards, material storage areas, excavated material disposal areas, borrow areas, concrete, or asphalt batch plants) provided appropriate stormwater controls are designed, installed, and maintained and the following conditions are met and addressed in the Stormwater Pollution Prevention Plan (SWPPP):
  - (a) The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
  - (b) The support activity is not a commercial operation or serve multiple unrelated construction sites;
  - (c) The support activity does not continue to operate beyond the completion of the construction activity at the project it supports;
  - (d) Sediment and erosion controls are implemented in accordance with the conditions of this permit; and
  - (e) The support activity is strictly stormwater discharges. Support activities which discharge process water shall apply for separate coverage, such as a concrete batch plant discharging process water shall be covered under a MOG49.

The permittee is responsible for compliance with this permit for any construction support activity.

4. This permit authorizes non-stormwater discharges from the following activities provided that these discharges are treated by appropriate Best Management Practices (BMPs) where applicable and addressed in the permittee's specific SWPPP required by this general permit:
  - (a) Discharges from emergency fire-fighting activities;
  - (b) De-chlorinated fire hydrant flushing;
  - (c) Uncontaminated water line flushing;
  - (d) Uncontaminated condensate from air conditioning or compressor condensate;
  - (e) Landscape watering;
  - (f) Uncontaminated, non-turbid discharges of ground water or spring water;
  - (g) Foundation or footing drains where flows are not contaminated with process materials;
  - (h) Water used to control dust; and
  - (i) Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. Directing pavement wash waters directly into any water of the state, storm inlet, or stormwater conveyance, unless the conveyance is connected to an effective control, is prohibited.
5. Sites that have contaminated soils that will be disturbed by the land disturbance activity, or where such materials are brought to the site to use as fill or borrow, shall notify the Department's Water Protection Program for approval before applying for coverage under this permit. The Department reserves the right to revoke or deny coverage under this general permit; a site-specific permit may be required to cover such activities.

## **B. Permit Restrictions**

1. Any non-stormwater discharges other than those explicitly authorized in Part I APPLICABILITY, Condition A.3 are prohibited under this permit.
2. This permit does not authorize the discharge of process wastewaters, treated or otherwise, including water used to wash machinery, equipment, buildings, or wastewater from washout of concrete.
3. For sites operating within the watershed of any Outstanding National Resource Water (which includes the Ozark National Riverways and the National Wild and Scenic Rivers System), sites that discharge to an Outstanding State Resource Water, or facilities located within the watershed of an impaired water as designated in the 305(b) report, including the 303(d) list, with an impairment for sediment:
  - (a) This permit authorizes stormwater discharge so long as no degradation of water quality occurs due to discharges from the permitted facility per 10 CSR 20-7.031(3)(C) and as long as the facility is 1,000 or more feet away from the Outstanding National or State Resource Water or a water of the state with an impairment for sediment.
  - (b) A site with a discharge found to be causing degradation or contributing to an impairment by discharging a pollutant of concern, during an inspection or through complaint investigations, may be required to become a no discharge facility or obtain a site-specific permit with more stringent monitoring and SWPPP requirements.
  - (c) For sites within 1,000 feet of Outstanding National or State Resource Water or a water of the state with an impairment for sediment, the site shall operate as a no-discharge facility as defined in 10 CSR 20-6.015(1)(B)7, and discharges from dewatering of sedimentation basins is prohibited.
4. This general permit does not authorize the placement of fill materials in flood plains, placement of fill into any floodway, the obstruction of stream flow, or changing the channel of a defined drainage course. This general permit addresses only the quality of the stormwater runoff and the minimization of off-site migration of sediments and other water contaminants.
5. This permit does not allow stream channel or wetland alterations unless approved by Section 404 of the federal Clean Water Act (CWA) permitting authorities. Land disturbance activities may not begin in waters of the United States until any required Section 404 permit and Section 401 certification have been obtained.
6. This operating permit does not affect, remove, or replace any requirement of the National Environmental Policy Act; the Endangered Species Act; the National Historic Preservation Act; the Comprehensive Environmental Response, Compensation and Liability Act; the Resource Conservation and Recovery Act; or any other relevant acts. Determination of applicability to the above mentioned acts is the responsibility of the permittee. Additionally, this permit does not establish terms and conditions for runoff resulting from silvicultural activities listed in Section 402(1)(3)(a) of the Clean Water Act.
7. Compliance with all requirements in this permit does not supersede any requirement for obtaining project approval from an established local authority nor remove liability for compliance with county and other local ordinances.



8. The Department may require any facility or site authorized by a general permit to apply for a site-specific permit [10 CSR 20-6.010(13)(C)]. Cases where a site-specific permit may be required include, but are not limited to, the following:
  - (a) The discharge(s) is a significant contributor of a pollutant(s) which impairs the designated uses or general criteria of the receiving stream;
  - (b) The discharger is not in compliance with the conditions of the general permit;
  - (c) A Total Maximum Daily Load (TMDL) containing requirements applicable to the discharge(s) is approved; or
  - (d) Materials or contaminants exist at the site, or are brought to the site to use as fill or borrow, which may necessitate special controls or permit limits not otherwise considered under this general permit, such as contaminated soils from federal clean-up sites. This general permit may be authorized when additional contaminant controls are proposed by the applicant and the proposal is accepted by the Department in written correspondence.
9. If a facility or site covered under a current general permit desires to apply for a site-specific permit, the facility or site may do so by contacting the Department for application requirements and procedures.
10. Any discharges not expressly authorized in this permit and not clearly disclosed in the permit application cannot become authorized or shielded from liability under CWA section 402(k) or Section 644.051.16, RSMo, by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including any other permit applications, funding applications, the SWPPP, discharge monitoring reporting, or during an inspection. Discharges at the facility not expressly authorized by this permit must be covered by another permit, be exempt from permitting, or be authorized through some other method.
11. In the event that a State of Emergency is declared, either by the State or Federal government, and as a result an emergency-related project requires land disturbance activity that requires a permit, the owner/operator of the project may begin work prior to permit issuance so long as they implement sediment and erosion controls in compliance with the master general permit conditions contained herein. The owner/operator is not exempt from permitting and shall apply for the land disturbance permit as soon as practicable but no later than seven calendar days after starting work. The Department may determine that other emergencies, considered on a case-by-case basis, are applicable. Contact the Department to determine if non-state of emergencies are applicable.

## **II. EXEMPTIONS FROM PERMIT REQUIREMENTS**

1. Facilities that discharge all stormwater runoff directly to a combined sewer system (as defined in 40 CFR 122.26 and 40 CFR 35.2005) connecting to a publicly owned treatment works which has consented to receive such a discharge are exempt from Department stormwater permit requirements.
2. Land disturbance activities that disturb less than one (1) acre of total land area which are not part of a common plan of sale where water quality standards are not exceeded are exempt from Department stormwater permit requirements. Land disturbance activity on an individual residential building lot is not considered as part of the overall subdivision unless the activity is by the developer to improve the lot for sale.
3. Oil and gas related activities as listed in 40 CFR 122.26(a)(2)(ii) where water quality standards are not exceeded are exempt from Department stormwater permit requirements.
4. Linear, strip, or ribbon construction or maintenance operations meeting one (1) of the following criteria are exempt from Department stormwater permit requirements:
  - (a) Grading of existing dirt or gravel roads which does not increase the runoff coefficient and the addition of an impermeable surface over an existing dirt or gravel road;
  - (b) Cleaning or routine maintenance of roadside ditches, sewers, waterlines, pipelines, utility lines, or similar facilities;
  - (c) Trenches two (2) feet in width or less; or
  - (d) Emergency repair or replacement of existing facilities as long as BMPs are employed during the emergency repair.

## **III. REQUIREMENTS**

1. The permittee shall post a public notification sign at the main entrance to the site with the specific MORA permit number. The public notification sign must be visible from the public road that provides access to the site's main entrance. An alternate location is acceptable provided the public can see it and it is noted in the SWPPP. The public notification sign must remain posted at the site until the permit has been terminated. The sign is provided at the end of this permit.

2. The permittee shall be responsible for notifying the land owner and each contractor or entity (including utility crews and city employees or their agents) who will perform work at the site of the existence of the SWPPP and what actions or precautions shall be taken while on-site to minimize the potential for erosion and the potential for damaging any BMP. The permittee is responsible for any damage a subcontractor may do to established BMPs and any subsequent water quality violation resulting from the damage.
3. Ensure the design, installation, and maintenance of effective erosion and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:
  - (a) Control stormwater volume, velocity, and peak flow rates within the site to minimize soil erosion;
  - (b) Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion and scour;
  - (c) Minimize the amount of exposed soil during construction activity;
  - (d) Minimize the disturbance of steep slopes;
  - (e) Minimize sediment discharges from the site. Address factors such as:
    - 1) the amount, frequency, intensity, and duration of precipitation;
    - 2) the nature of resulting stormwater runoff;
    - 3) expected flow from impervious surfaces, slopes, and drainage features; and
    - 4) soil characteristics, including the range of soil particle size expected to be present on the site;
  - (f) Provide and maintain natural buffers around surface waters as detailed in Part V. BMP REQUIREMENTS Condition 7, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration and filtering, unless infeasible;
  - (g) Minimize soil compaction and preserve topsoil where practicable; and
  - (h) Capture or treat a 2-year, 24-hour storm event.
4. A 2-year, 24-hour storm event shall be determined for the project location using the National Oceanic and Atmospheric Administration's National Weather Service Atlas 14 which can be located at [https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html).
  - (a) As an alternative to utilizing NOAA Atlas 14 for site specific data to determine the 2-year, 24-hour storm event the conservative default value can be used based on the map provided by the Department in the Factsheet portion of this permit. The permittee may choose which source to use for the site specific data.
5. BMPs for land disturbance [10 CSR 20-6.200(1)(D)2] are a schedule of activities, practices, or procedures that reduces the amount of soil available for transport or a device that reduces the amount of suspended solids in runoff before discharge to waters of the state. The term BMPs are also used to describe the sediment and erosion controls and other activities used to prevent stormwater pollution. BMPs are divided into two main categories: structural or non-structural; and they are also classified as temporary or permanent.
6. Installation of BMPs necessary to prevent soil erosion and sedimentation at the downgradient project boundary (e.g. buffers, perimeter controls, exit point controls, storm drain inlet protection) must be complete prior to the start of all phases of construction. By the time construction activity in any given portion of the site begins, downgradient BMPs must be installed and operational to control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities. Additional BMPs shall be installed as necessary throughout the life of the project. Following the installation of these initial BMPs, all BMPs needed to control discharges shall be installed and made operational prior to subsequent earth disturbing activities.
7. Temporary BMPs may be added and removed as necessary with updates to the SWPPP as specified in the requirements below.
8. All BMPs shall be maintained and remain in effective operating condition during the entire duration of the project, with repairs made within the timeframes specified elsewhere in this permit, until final stabilization has been achieved.
  - (a) Ensure BMPs are protected from activities that would reduce their effectiveness.
  - (b) Remove any sediment per the BMP manufacturer's instructions or before it has accumulated to one-half of the above-ground height of any BMP that collects sediment (i.e. silt fences, sediment traps, etc.)
  - (c) The project is considered to achieve final stabilization when Part V. BMP REQUIREMENTS, Condition 13 is met.
9. Minimize sediment trackout from the site and sediment transport onto roadways.
  - (a) Restrict vehicle traffic to designated exit points.
  - (b) Use appropriate stabilization techniques or BMPs at all points that exit onto paved roads or areas outside of the site.
  - (c) Use additional controls to remove sediment from vehicle and equipment tires prior to exit from facility where necessary.
  - (d) Any sediment or debris that is tracked out past the exit pad or is deposited on a roadway after a precipitation event shall be removed the shorter of either daily or before a rain event. Remove the track-out sediment by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. Sediment or debris tracked out

- on pavement or other impervious surfaces shall not be disposed of into any stormwater conveyance, storm drain inlet, or water of the state.
- (e) Stormwater inlets susceptible to receiving sediment or other pollutants from the permitted land disturbance site shall have curb inlet protection. This may include inlets off the active area where track out from vehicles and equipment could impact the stormwater runoff to those inlets.
10. Concrete washout facilities shall be used to contain concrete waste from the activities onsite, unless the washout of trucks and equipment is managed properly at an offsite location.  
The washout facility shall be managed to prevent solid and/or liquid waste from entering waters of the state by the following:
- (a) Direct the wash water into leak-proof containers or pits designed so that no overflows can occur due to inadequate sizing or precipitation;
  - (b) Locate washout activities a minimum of 50 feet from waters of the state, stormwater inlets and/or stormwater conveyances;
  - (c) Washout facilities shall be cleaned, or new facilities must be constructed and ready for use, once the washout is 75% full;
  - (d) Designate the washout area(s) and conduct such activities only in these areas.
  - (e) Ensure contractors are aware of the location, such as by marking the area(s) on the map or signage visible to the truck and/or equipment operators.
11. Good housekeeping practices shall be maintained at all times to keep waste from entering waters of the state.
- (a) Provide solid and hazardous waste management practices, including providing trash containers, regular site cleanup for proper disposal of solid waste such as scrap building material, product/material shipping waste, food/beverage containers, spent structural BMPs;
  - (b) Provide containers and methods for proper disposal of waste paints, solvents, and cleaning compounds.
  - (c) Manage sanitary waste. Portable toilets shall be positioned so that they are secure and will not be tipped or knocked over and so that they are located away from waters of the state and stormwater inlets and stormwater conveyances.
  - (d) Ensure the storage of construction materials be kept away from drainage courses, stormwater conveyances, storm drain inlets, and low areas.
12. All fueling facilities present shall at all times adhere to applicable federal and state regulations concerning underground storage, above ground storage, and dispensers.
13. Any hazardous wastes that are generated onsite shall be managed, stored, and transported according to the provisions of the Missouri Hazardous Waste Laws and Regulations.
14. Store all paints, solvents, petroleum products, petroleum waste products, and storage containers (such as drums, cans, or cartons) so they are not exposed to stormwater or provide other prescribed BMPs such as plastic lids and/or portable spill pans to prevent the commingling of stormwater with container contents. Commingled water may not be discharged under this permit. Provide spill prevention, control, and countermeasures to contain the spill. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall prevent the contamination of groundwater.
15. Implement measures intended to prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicles and equipment to thereby prevent the contamination of stormwater from these substances. This may include prevention measures such as, but not limited to, utilizing drip pans under vehicles and equipment stored outdoors, covering fueling areas, using dry clean-up methods, use of absorbents, and cleaning pavement surfaces to remove oil and grease.
16. Spills, Overflows, and Other Unauthorized Discharges.
- (a) Any spill, overflow, or other discharge not specifically authorized in the permit above are unauthorized.
  - (b) Should an unauthorized discharge cause or permit any contaminants to discharge or enter waters of the state, the unauthorized discharge must be reported to the appropriate Regional Office as soon as practicable but no more than 24 hours after the discovery of the discharge. If the spill or overflow needs to be reported after normal business hours or on the weekend, the facility must call the Department's Environmental Emergency Response hotline at (573) 634-2436. Leaving a message on a Department staff member voice-mail does not satisfy this reporting requirement.
  - (c) A record of all spills shall be retained with the SWPPP and made available to the Department upon request.
  - (d) Other spills not reaching waters of the state must be cleaned up as soon as possible to prevent entrainment in stormwater but are not required to be reported to the Department.
17. The full implementation of this operating permit shall constitute compliance with all applicable federal and state statutes and regulations in accordance with RSMo 644.051.16 and the CWA §402(k); however, this permit may be reopened and modified or alternatively revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under Clean Water Act §§ 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) if the effluent standard or limitation so issued or approved contains different conditions or is otherwise more stringent than any effluent limitation in the permit or controls any pollutant not limited

in the permit. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, termination, notice of planned changes, or anticipated non-compliance does not stay any permit condition.

#### **IV. STORMWATER POLLUTION PREVENTION PLAN (SWPPP) MANAGEMENT REQUIREMENTS**

1. The primary requirement of this permit is the development and implementation of a SWPPP which incorporates site specific practices to best minimize the soil exposure, soil erosion, and the discharge of pollutants, including solids.

The purpose of the SWPPP is to ensure the design, implementation, management, and maintenance of BMPs in order to prevent sediment and other pollutants in stormwater discharges associated with the land disturbance activities [40 CFR 122.44 (k)(4)] from entering waters of the state above established general and narrative criteria; compliance with Missouri Water Quality Standards; and compliance with the terms and conditions of this general permit.

- (a) **The SWPPP must be developed and implemented prior to conducting any land disturbance activities and must be specific to the land disturbance activities at the site.**
  - (b) The permittee shall fully implement the provisions of the SWPPP required under this permit as a condition of this general permit throughout the term of the land disturbance project. Failure to develop, implement, and maintain a SWPPP may lead to immediate enforcement action.
  - (c) The SWPPP is a living document and shall be updated any time site conditions warrant adjustments to the project or BMPs.
  - (d) Either an electronic copy or a paper copy of the SWPPP, and any required reports, must be accessible to anyone on-site at all times when land disturbance operations are in process or other operational activities that may affect the maintenance or integrity of the BMP structures and made available as specified under Part VIII. STANDARD PERMIT CONDITIONS, Condition 1 of this permit. The SWPPP shall be readily available upon request and should not be sent to the Department unless specifically requested
2. A SWPPP must be developed, implemented, and maintained at the site or electronically accessible by on-site personnel. Failure to implement and maintain the BMPs chosen, which can be revised and updated, is a permit violation. The chosen BMPs will be the most reasonable and cost effective while also ensuring the highest quality water discharged attainable for the facility. Facilities with established SWPPPs and BMPs shall evaluate BMPs on a regular basis and change the BMPs as needed if there are BMP deficiencies.
3. The SWPPP must:
  - (a) List and describe the location of all outfalls;
  - (b) List any allowable non-stormwater discharges occurring on site and where these discharges occur;
  - (c) Incorporate required practices identified below;
  - (d) Incorporate sediment and erosion control practices specific to site conditions;
  - (e) Discuss whether or not a 404 Permit is required for the project;
  - (f) Discuss whether the discharges are in the watershed of Outstanding National or State Resource Water or in the watershed of a water impaired for sediment.
  - (g) Name the person(s) responsible for inspection, operation, and maintenance of BMPs. The SWPPP shall list the names and describe the role of all owners/primary operators (such as general contractor, project manager) responsible for environmental or sediment and erosion control at the land disturbance site.
4. The SWPPP briefly must describe the nature of the land disturbance activity, including:
  - (a) The function of the project (e.g., low density residential, shopping mall, highway, etc.);
  - (b) The intended sequence and timing of activities that disturb the soils at the site;
  - (c) Estimates of the total area expected to be disturbed by excavation, grading, or other land disturbance support activities including off-site borrow and fill areas;
  - (d) If within the boundaries of a regulated Municipal Separate Storm Sewer System (MS4s), list the name of the regulated MS4.
5. In order to identify the site, the SWPPP shall include site information including size in acres. The SWPPP shall have sufficient information to be of practical use to contractors and site construction workers to guide the installation and maintenance of BMPs.
6. The function of the SWPPP and the BMPs listed therein is to prevent or minimize pollution to waters of the state. A deficiency of a BMP means it was not effective in preventing or minimizing pollution of waters of the state.

The permittee shall select, install, use, operate and maintain appropriate BMPs for the permitted site. The following manuals are acceptable resources for the selection of appropriate BMPs:

*Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites*, (Document number EPA 833-R-06-004) published by the United States Environmental Protection Agency (USEPA) in May 2007. This manual as well as other information, including examples of construction SWPPPs, is available at the USEPA internet site at [https://www.epa.gov/sites/production/files/2015-10/documents/sw\\_swppp\\_guide.pdf](https://www.epa.gov/sites/production/files/2015-10/documents/sw_swppp_guide.pdf); and <https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp>.

The latest version of *Protecting Water Quality: A field guide to erosion, sediment and stormwater best management practices for development sites in Missouri*, published by the Department. This manual is available at: <https://dnr.mo.gov/document-search/protecting-water-quality-field-guide>.

The permittee is not limited to the use of these guidance manuals. Other guidance publications may be used to select appropriate BMPs. However, all BMPs must be described and justified in the SWPPP. Although the use of these manuals or other resources is recommended and may be used for BMP selection, they do not supersede the conditions of this permit. They may be used to inform in the decision making process for BMP selection but they are not themselves part of the permit conditions.

The permittee may retain the SWPPP, inspection reports, and all other associated documents (including a copy of this permit) electronically pursuant to RSMo 432.255. The documents must be made available to all interested persons in either paper or electronic format as required by this permit and the permittee must remit a copy (electronic or otherwise) of the SWPPP and inspection reports to the Department upon request.

7. The SWPPP must contain a legible site map, multiple maps if necessary, identifying:
  - (a) Site boundaries of the property;
  - (b) Locations of all waters of the state (including wetlands) within the site and half a mile downstream of the site's outfalls;
  - (c) Location of all outfalls;
  - (d) Direction(s) of stormwater flow (use arrows) and approximate slopes before and after grading activities;
  - (e) Areas of soil disturbance and areas that will not be disturbed (or a statement that all areas of the site will be disturbed unless otherwise noted);
  - (f) Location of structural and non-structural BMPs, including natural buffer areas, identified in the SWPPP;
  - (g) Locations where stabilization practices are expected to occur;
  - (h) Locations of on-site and off-site material, waste, borrow or equipment storage areas and stockpiles;
  - (i) Designated points where vehicles will exit the site;
  - (j) Location of stormwater inlets and conveyances including ditches, pipes, man-made conduits, and swales; and
  - (k) Areas where final stabilization has been achieved.
8. An individual shall be designated by the permittee as the environmental lead. This environmental lead shall have knowledge in erosion, sediment, and stormwater control principles, knowledge of the permit, and the site's SWPPP. The environmental lead shall ensure all personnel and contractors understand any requirements of this permit may be affected by the work they are doing. The environmental lead or designated inspector(s) knowledgeable in erosion, sediment, and stormwater control principles shall inspect all structures that function to prevent or minimize pollution of waters of the state.
9. Throughout coverage under this permit, the permittee shall amend and update the SWPPP as appropriate during the term of the land disturbance activity. All SWPPP modifications shall be signed and dated. The permittee shall amend the SWPPP to incorporate any significant site condition changes which impact the nature and condition of stormwater discharges. At a minimum, these changes include whenever the:
  - (a) Location, design, operation, or maintenance of BMPs is changed;
  - (b) Design of the construction project is changed that could significantly affect the quality of the stormwater discharges;
  - (c) Permittee's inspections indicate deficiencies in the SWPPP or any BMP;
  - (d) Department notifies the permittee in writing of deficiencies in the SWPPP;
  - (e) SWPPP is determined to be ineffective in minimizing or controlling erosion and sedimentation (e.g., there is visual evidence of excessive site erosion or sediment deposits in streams, lakes, or downstream waterways, sediment or other wastes offsite); and/or
  - (f) Department determines violations of water quality standards may occur or have occurred.
10. Site Inspections: The environmental lead, or a designated inspector, shall conduct regularly scheduled inspections. These inspections shall be conducted by a qualified person, one who is responsible for environmental matters at the site, or a person trained by and directly supervised by the person responsible for environmental matters at the site. Site inspections shall include, at a minimum, the following:
  - (a) For disturbed areas that have not achieved final stabilization, all installed BMPs and other pollution control measures shall be inspected to ensure they are properly installed, appear to be operational, and are working as intended to minimize the

discharge of pollutants.

- (b) For areas on site that have achieved either temporary or final stabilization, while at the same time active construction continues on other areas, ensure that all stabilization measures are properly installed, appear to be operational, and are working as intended to minimize the discharge of pollutants.
  - (c) Inspect all material, waste, borrow, and equipment storage, and maintenance areas that are covered by this permit. Inspect for conditions that could lead to spills, leaks, or other accumulations of pollutants on the site.
  - (d) Inspect all areas where stormwater typically flows within the site, including drainage ways designed to divert, convey, and/or treat stormwater.
  - (e) All stormwater outfalls shall be inspected for evidence of erosion, sediment deposition, or impacts to the receiving stream. If a discharge is occurring during an inspection, the inspector must observe and document the visual quality of the discharge, and take note of the characteristics of the stormwater discharge, including turbidity, color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants.
  - (f) When practicable the receiving stream shall also be inspected for a minimum of 50 feet downstream of the outfall.
  - (g) The perimeter of the site shall be inspected for evidence of BMP failure to ensure concentrated flow does not develop a new outfall.
  - (h) The SWPPP must explain how the environmental lead will be notified when stormwater runoff occurs.
11. Inspection Frequency: All BMPs must be inspected in accordance to one of the schedules listed below. The inspection frequency shall be documented in the SWPPP, and any changes to the frequency of inspections, including switching between the options listed below, must be documented on the inspection form:
- (a) At least once every seven (7) calendar days and within 48 hours after any storm event equal to or greater than a 2-year, 24-hour storm has ceased during a normal work day or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday; or
  - (b) Once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches of precipitation or greater, or the occurrence of runoff from snowmelt. To determine if a storm event of 0.25 inches or greater has occurred on the site, the permittee shall either keep a properly maintained rain gauge on site, or obtain the storm event information from a weather station near the site location.
    - 1) Inspections are only required during the project's normal working hours.
    - 2) An inspection must be conducted within 24 hours of a storm event which has produced 0.25 inches. The inspection shall be conducted within 24 hours of the event end, or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday.
    - 3) If it is elected to inspect every 14 calendar days and there is a storm event at the site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, the permittee shall conduct an inspection within 24 hours of the end of the storm or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday.
  - (c) For any portion of the site that discharges within the watershed of an Outstanding National or State Resource Water or a water impaired for sediment, inspections shall be inspected once every seven (7) calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater, or when the occurrence of runoff flow from frozen or snowmelt is sufficient to cause a discharge.
  - (d) Areas on-site that have achieved stabilization, while at the same time active construction continues on other areas, may reduce inspection frequency to monthly, for those stabilized areas, if the following conditions exist:
    - 1) For areas where disturbed portions have undergone temporary stabilization, inspections shall occur at least once a month while stabilized and when re-disturbed shall follow either frequency outlined in (a),(b), or (c) above.
    - 2) Areas on-site that have achieved final stabilization must be inspected at least once per month until the permit is terminated.
  - (e) If construction activities are suspended due to frozen conditions, the permittee may temporarily reduce site inspections to monthly until thawing conditions begin to occur if all of the following are met:
    - 1) Land disturbances have been suspended; and
    - 2) All disturbed areas of the site have been stabilized in accordance with Part V. BMP REQUIREMENTS, Condition 13.
    - 3) The change shall be noted in the SWPPP.
  - (f) Any basin dewatering shall be inspected daily when discharge is occurring. The discharge shall be observed and dewatering activities shall be ceased immediately if the receiving stream is being impacted. These inspections shall be noted on a log or on the inspection report.
- If weather conditions or other issues prevent correction of BMPs within seven calendar days, the reasons for the delay must be documented (including pictures) and there must be a narrative explaining why the work cannot be accomplished within the seven day time period. The documentation must be filed with the regular inspection reports. The corrections shall be made as soon as weather conditions or other issues allow.
12. Site Inspection Reports: A log of each inspection and/or copy of the inspection report shall be kept readily accessible and must be made available upon request by the Department. Electronic logs are acceptable as long as reports can be provided within 24

hours. If inspection reports are kept off-site, the SWPPP must indicate where they are stored. The inspection report shall be signed by the environmental lead or designated inspector (electronically or otherwise).

- (a) The inspection report is to include the following minimum information:
  - 1) Inspector's name and title.
  - 2) Date and time of inspection.
  - 3) Observations relative to the effectiveness of the BMPs and stabilization measures. The following must be documented:
    - a. Whether BMPs are installed, operational, and working as intended;
    - b. Whether any new or modified stormwater controls are needed;
    - c. Facilities examined for conditions that could lead to spill or leak;
    - d. Outfalls examined for visual signs of erosion or sedimentation at outfalls. Excessive erosion or sedimentation may be due to BMP failure or insufficiency. Response to observations should be addressed in the inspection report.
  - 4) Corrective actions taken or necessary to correct the observed problem.
  - 5) Listing of areas where land disturbance operations have permanently or temporarily stopped.
13. Any structural or maintenance deficiencies for BMPs or stabilization measures shall be documented and corrected as soon as possible but no more than seven (7) calendar days after the inspection.
  - (a) Corrective action documentation shall be stored with the associated site inspection report.
  - (b) Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events.
  - (c) If weather conditions or other issues prevent correction of BMPs within seven calendar days, the reasons for the delay must be documented (this may include pictures) and there must be a narrative explaining why the work cannot be accomplished within the seven day time period. The permittee shall correct the problem as soon as weather conditions or issues allow.
  - (d) Corrective actions may be required by the Department. The permittee must comply with any corrective actions required by the Department as a result of permit violations found during an inspection.

## **V. BMP REQUIREMENTS**

1. The information, practices, and BMP requirements in this section shall be implemented on site and, where noted, provided for in the SWPPP.
2. Existing vegetation and trees shall be preserved where practicable. The permittee is encouraged to preserve topsoil where practicable. Trees designated for preservation should have a protective barrier outside of the dripline, or the area directly located under the outer reaches of the tree's branches.
3. The permittee shall select appropriate BMPs for use at the site and list them in the SWPPP. When selecting effective BMPs, the permittee shall consider stormwater volume and velocity and shall incorporate more than one BMP and sequential treatment devices where the use of a single BMP is ineffective to prevent or minimize sediment or other pollutants from leaving the site. Permittee should consider a schedule for performing erosion control measures when selecting BMPs.
4. The SWPPP shall include a description of both structural and non-structural BMPs that will be used at the site.
  - (a) The SWPPP shall provide the following general information for each BMP which will be used one or more times at the site:
    - 1) Physical description of the BMP;
    - 2) Site conditions that must be met for effective use of the BMP;
    - 3) BMP installation/construction procedures, including typical drawings; and
    - 4) Operation and maintenance procedures and schedules for the BMP.
  - (b) The SWPPP shall provide the following information for each specific instance where a BMP is to be installed:
    - 1) Whether the BMP is temporary or permanent;
    - 2) When the BMP will be installed in relation to each phase of the land disturbance procedures to complete the project; and
    - 3) Site conditions that must be met before removal of the BMP if the BMP is not a permanent BMP.
5. Structural BMP Installation: The permittee shall ensure all BMPs are properly installed and operational at the locations and relative times specified in the SWPPP.
  - (a) Perimeter control BMPs for runoff from disturbed areas shall be installed or existing vegetative areas marked for preservation before general site clearing is started. Note this requirement does not apply to earth disturbances related to initial site clearing and establishing entry, exit, or access of the site, which may require that stormwater controls be installed immediately after the earth disturbance.
  - (b) For phased projects, BMPs shall be properly installed as necessary prior to construction activities.
  - (c) Stormwater discharges which leave the site from disturbed areas shall pass through an appropriate impediment to sediment movement such as a sedimentation basin, sediment traps (including vegetative buffers), or silt fences prior to leaving the land

disturbance site.

- (d) A drainage course change shall be clearly marked on a site map and described in the SWPPP.
  - (e) If vegetative stabilization measures are being implemented, stabilization efforts are considered “installed” when all activities necessary to seed or plant the area are completed. Vegetative stabilization is not considered “operational” until the vegetation is established.
6. Install sediment controls along any perimeter areas of the site that are downgradient from any exposed soil or other disturbed areas. Prevent stormwater from circumventing the edge of the perimeter control. For sites where perimeter controls are infeasible, other practices shall be implemented to minimize discharges to perimeter areas of the site.
7. For surface waters of the state, defined in Section 644.016.1(27) RSMo, located on or adjacent to the site, the permittee must maintain a riparian buffer or structural equivalent in accordance with at least one of the following options. The selection and location must be described in the SWPPP.
- (a) Provide and maintain a 50-foot undisturbed natural buffer; or
  - (b) Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
  - (c) If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
  - (d) The permittee is not required to comply with (a), (b), or (c) above if one or more of the following exceptions apply and documentation is provided in the SWPPP:
    - 1) If there is no discharge of stormwater to waters of the state through the area between the disturbed portions of the site and waters of the state located within 50 feet of the site. This includes situations where the permittee has implemented permanent control measures that will prevent such discharges, such as a berm or other barrier.
    - 2) Where no natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for the current development of the site.
      - a. Where some natural buffer exists but portions of the area within 50 feet of the waters of the state are occupied by preexisting development disturbances the permittee is required to comply with (a), (b), or (c) above.
    - 3) For linear projects where site constraints make it infeasible to implement a buffer or equivalent provided the permittee limit disturbances within 50 feet of any waters of the state and/or the permittee provides supplemental erosion and sediment controls to treat stormwater discharges from earth disturbances within 50 feet of the water of the state. The permittee must also document in the SWPPP the rationale for why it is infeasible for the permittee to implement (a), (b), or (c) and describe any buffer width retained and supplemental BMPs installed.
  - (e) Where the permittee is retaining a buffer of any size, the buffer should be measured perpendicularly from any of the following points, whichever is further landward from the water:
    - 1) The ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or
    - 2) The edge of the stream or river bank, bluff, or cliff, whichever is applicable.
8. Slopes for disturbed areas must be identified in the SWPPP. A site map or maps defining the sloped areas for all phases of the project must be included in the SWPPP. The disturbance of steep slopes shall be minimized.
9. Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil.
- (a) Locate the piles outside of any natural buffers zones, established under the condition above, and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated;
  - (b) Install a sediment barrier along all downgradient perimeter areas;
  - (c) Prevent stormwater flows from causing erosion of stockpiles, for example, by diverting flows around them.
  - (d) For piles that will be unused for 14 or more days, provide cover with appropriate temporary stabilization in accordance with Part V. BMP REQUIREMENTS, Condition 13.
  - (e) Rinsing, sweeping, or otherwise placing any soil, sediment, debris, or stockpiled product which has accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or water of the state is prohibited.
10. The site shall include BMPs for pollution prevention measures and shall be noted in the SWPPP. At minimum such measures must be designed, installed, implemented, and maintained to:
- (a) Minimize the discharge of pollutants from equipment and vehicle rinsing; no detergents, additives, or soaps of any kind shall be used. Rinse waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
  - (b) Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater;
  - (c) Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response



procedures, including, but not limited to, the installation of containment berms and use of drip pans at petroleum product and liquid storage tanks and containers; and

- (d) Prevent discharges from causing or contributing to an exceedance of water quality standards including general criteria.

11. Sedimentation Basins: The SWPPP shall include a sedimentation basin for each drainage area with ten or more acres disturbed at one time.

- (a) The sedimentation basin shall be sized, at a minimum, to treat a local 2-year, 24-hour storm.
- (b) Sediment basins shall not be constructed in any waters of the state or natural buffer zones.
- (c) Discharges from dewatering activities shall be managed by appropriate controls. The SWPPP shall include a description of any anticipated dewatering methods and specific BMPs designed to treat dewatering water.
  - 1) Appropriate controls include, but are not limited to, sediment socks, dewatering tanks, tube settlers, weir tanks, filtration systems (e.g. bag or sand filters), and passive treatment systems that are designed to remove or retain sediment.
  - 2) Erosion controls and velocity dissipation devices (e.g. check dams, riprap, and vegetated buffers) to prevent erosion at inlets, outlets, and discharge points shall be utilized.
  - 3) Water with an oil sheen shall not be discharged and shall be marked in SWPPP.
  - 4) Visible floating solids and foam shall not be discharged.
- (d) Until final stabilization has been achieved, sediment basins and impoundments shall utilize outlet structures or floating skimmers that withdraw water from the surface when discharging.
  - 1) Under frozen conditions, it may be considered infeasible to withdraw water from the surface and an exception can be made for that specific period as long as discharges that may contain sediment and other pollutants are managed by appropriate controls. If determined infeasible due to frozen conditions, documentation must be provided in the SWPPP to support the determination, including the specific conditions or time period when this exception applies.
- (e) Accumulated sediment shall not exceed 25% of total volume or as prescribed in the design, whichever is less. Note in the SWPPP the locations for disposal of the material removed from sediment basins.
- (f) Prevent discharges to the receiving stream causing visual turbidity. For the purposes of this permit, visual turbidity refers to a sediment plume or other cloudiness in the water caused by sediment that can be identified by an observer.
- (g) The SWPPP shall require the basin be maintained until final stabilization of the disturbed area served by the basin.

Where use of a sediment basin is infeasible, the SWPPP shall evaluate and specify other similarly effective BMPs to be employed to control erosion and sediment. These similarly effective BMPs shall be selected from appropriate BMP guidance documents authorized by this permit. The BMPs must provide equivalent water quality protection to achieve compliance with this permit. The SWPPP shall require both temporary and permanent sedimentation basins to have a stabilized spillway to minimize the potential for erosion of the spillway or basin embankment.

12. Soil disturbing activities on site that have ceased either temporarily or permanently shall initiate stabilization immediately in accordance with the options below. For soil disturbing activities that have been temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days:

- (a) The permittee shall construct BMPs to establish interim stabilization; and
- (b) Stabilization must be initiated immediately and completed within 14 calendar days.
- (c) For soil disturbing activities that have been permanently ceased on any portion of the site, final stabilization of disturbed areas must be initiated immediately and completed within 14 calendar days.
  - 1) Extension to the 14-day completion period for temporary and final stabilization may be made due to weather and equipment malfunctions. In these circumstances, the justification for the extension to the 14 day shall be documented in the SWPPP. The discontinuation or continuation of the extension may be determined by review of the Department staff when on site.
- (d) Until stabilization is complete, interim sediment control shall consist of well-established and maintained BMPs that are reasonably certain to protect waters of the state from sediment pollution over an extended period of time. This may require adding more BMPs to an area than is normally used during daily operations. The types of BMPs used must be suited to the area disturbed, taking into account the number of acres exposed and the steepness of the slopes. If the slope of the area is greater than 3:1 (three feet horizontal to one foot vertical) or if the slope is greater than 3% and greater than 150 feet in length, then the permittee shall establish interim stabilization within seven days of ceasing operations on that part of the site. The following activities would constitute the immediate initiation of stabilization:
  - 1) Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable;
  - 2) Applying mulch or other non-vegetative product to the exposed areas;
  - 3) Seeding or planting the exposed areas;
  - 4) Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.
- (e) If vegetative stabilization measures are being implemented, stabilization is considered “installed” when all activities necessary to seed or plant the area are completed. Installed does not mean established.

- (f) If non-vegetative stabilization measures are being implemented, stabilization is considered “installed” when all such measures are implemented or applied.
    - 1) Non-vegetative stabilization shall prevent erosion and shall be chosen for site conditions, such as slope and flow of stormwater.
  - (g) Final stabilization is not considered achieved until vegetation has grown and established to meet the requirements below.
13. Prior to removal of BMPs, ceasing site inspections, and requesting termination of the permit, final stabilization must be achieved. Final stabilization shall be achieved as soon as possible once land disturbance activities have ceased. Document in the SWPPP the type of stabilization and the date final stabilization is achieved.
- (a) The project is considered to have achieved final stabilization when perennial vegetation (excluding volunteer vegetation), pavement, buildings, or structures using permanent materials (i.e. riprap, gravel, etc.) cover all areas that have been disturbed. With respect to areas that have been vegetated, vegetation must be at least 70% coverage of 100% of the vegetated areas on site. Vegetation must be evenly distributed.
  - (b) Disturbed areas on agricultural land are considered to have achieved final stabilization when they are restored to their preconstruction agricultural use. If former agricultural land is changing to non-agricultural use, this is no longer considered agricultural land and shall follow condition (a).
  - (c) If the intended function of a specific area of the site necessitates that it remain disturbed, final stabilization is considered achieved if all of the following are met:
    - 1) Only the minimum area needed remains disturbed (i.e. dirt access roads, motocross tracks, utility pole pads, areas being used for storage of vehicles, equipment, materials). Other areas must meet the criteria above.
    - 2) Permanent structural BMPs (rock checks, berms, grading, etc.) or non-vegetative stabilization measures are implemented and designed to prevent sediment and other pollutants from entering waters of the state.
    - 3) Inspection requirements in Part IV. SWPPP MANAGEMENT REQUIREMENT, Condition 11 are met and documented in the SWPPP.
  - (d) Winter weather and frozen conditions do not excuse any of the above final stabilization requirements. If vegetation is required for stabilization the permittee must maintain BMPs throughout winter weather and frozen conditions until thawing and vegetation meets final stabilization criteria above. Document stabilization attempts during frozen conditions in the SWPPP. Consider future freezing when removing vegetation and plan with temporary stabilization techniques before the ground becomes frozen.

## **VI. PERMIT TERMINATION**

- 1. Until the permittee terminates coverage under this permit, the permittee must comply with all conditions in the permit, including continuation of site inspections and public notification signage posted. To terminate permit coverage, the permittee must submit to the appropriate Regional Office a complete and accurate Request for Termination of Operating Permit which certifies that the site meets the following requirements:
  - (a) For any areas that (1) were disturbed during construction, (2) are not covered over by permanent structures, and (3) over which the permittee had control during the construction activities, the requirements for final vegetative or non-vegetative stabilization in Part V BMP REQUIREMENTS, Condition 13;
  - (b) The permittee has removed and properly disposed of all construction materials, waste, and waste handling devices and has removed all equipment and vehicles that were used during construction, unless intended for long-term use following termination of permit coverage;
  - (c) The permittee has removed all temporary BMPs that were installed and maintained during construction, except those that are intended for long-term use following termination of permit coverage or those that are biodegradable; and
  - (d) The permittee has removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following termination of permit coverage.

The Department may request photographs that clearly document compliance with termination requirements.

- 2. The permit may be terminated if;
  - (a) There has been a transfer of control of all areas of the site for which the current permittee is responsible under this permit to another operator, and that operator has obtained coverage under this permit; or
  - (b) Coverage under an individual or alternative general NPDES permit, with land disturbance conditions, has been obtained.

## **VII. SAMPLING REQUIREMENTS**

The permittee is not required to sample stormwater under this permit. The Department may require sampling and reporting as a result of illegal discharges, compliance issues related to water quality concerns or BMP effectiveness, or evidence of off-site

impacts from activities at the site. If such an action is needed, the Department will specify in writing the sampling requirements, including such information as location and extent. If the permittee refuses to perform sampling when required, the Department may terminate the general permit and require the facility to obtain a site-specific permit with sampling requirements.

## **VIII. STANDARD PERMIT CONDITIONS**

1. Records: The permittee shall retain copies of this general permit, the SWPPP and all amendments for the site named in the State Operating Permit, results of any monitoring and analysis, and all site inspection records required by this general permit.
  - (a) The records shall be accessible during normal business hours and retained for a period of at least three (3) years from the date of termination.
  - (b) The permittee shall provide a copy (electronic or otherwise) of the SWPPP to the Department, USEPA, or any local agency or government representative if they request a copy in the performance of their official duties within 24 hours of the request (or next working day), unless given more time by the representative.
  - (c) The permittee shall provide a copy of the SWPPP to those who are responsible for installation, operation, or maintenance of any BMP. The permittee, their representative, and/or the contractor(s) responsible for installation, operation and maintenance of the BMPs shall have a current copy of the SWPPP with them when on the project site.
2. Land Ownership and Change of Ownership: Federal and Missouri stormwater regulations [10 CSR 20-6.200(1) (B)] require a stormwater permit and erosion control measures for all land disturbances of one or more acres. These regulations also require a permit for land disturbance sites less than one acre if the lot is part of a larger common plan of development or sale.
  - (a) If the permittee sells any portion of the permitted site to a developer for commercial, industrial, or residential use, this land remains a part of the common sale and the new owner must obtain a permit prior to conducting any land disturbance activity. Therefore, the original permittee must amend the SWPPP to show that the property has been sold and, therefore, no longer under the original permit coverage.
  - (b) Property of any size which is part of a larger common plan of development where the property has achieved final stabilization and the original permit terminated will require application of a new land disturbance permit for any future land disturbance activity unless the activity is by an individual residential building lot owner on a site less than one acre.
  - (c) If a portion of a larger common plan of development is sold to an individual for the purpose of building his or her own private residence, a permit is required if the disturbed portion of the land sold is equal to or greater than one acre. No permit is required, however, for less than one acre of land disturbed on the portion sold.
3. Permit Transfer: This permit may not be transferred to a new owner in any fashion except by submitting an Application for Transfer of Operating Permit signed by the seller and buyer of the site along with the appropriate modification fee. In some cases, revocation and reissuance may be necessary. Facilities that undergo transfers of ownership without notice to the Department are considered to be operating without a permit.
4. Termination: This permit may be terminated when the project has achieved final stabilization, defined in Part VI. PERMIT TERMINATION.
  - (a) In order to terminate the permit, the permittee shall notify the Department by submitting the form Request for Termination of Operating Permit Form MO 780-2814. The form should be submitted to the appropriate Regional Office or through an approved electronic system if it should become available.
  - (b) The Cover Page (Certificate Page) of the Master General Permit for Land Disturbance specifies the “effective date” and the “expiration date” of the Master General Permit. The “issued date” along with the “expiration date” will appear on the State Operating Permit issued to the applicant. **This permit does not continue administratively beyond the expiration date.**
5. Duty to Reapply: If the project or development completion date will be after the expiration date of this general permit, then the permittee must reapply to the Department for a new permit. This permit may be applied for and issued electronically in accordance with Section 644.051.10, RSMo.
  - (a) Due to the nature of the electronic permitting system, a period of time may be granted at the discretion of the Department in order to apply for a new permit after the new version is effective. Applicants must maintain appropriate best management practices and inspections during the discretionary period.
6. Duty to Comply: The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
7. Modification, Revocation, and Reopening:
  - (a) If at any time the Department determines that the quality of waters of the state may be better protected by reopening this permit, or revoking this permit and requiring the owner/operator of the permitted site to apply for a site-specific permit, the Department may revoke a general permit and require any person to obtain such an operating permit as authorized by 10

CSR20-6.010(13) and 10 CSR 20-6.200(1)(B).

- (b) If this permit is reopened, modified, or revoked pursuant to this Section, the permittee retains all rights under Chapter 536 and 644 Revised Statutes of Missouri upon the Department's reissuance of the permit as well as all other forms of administrative, judicial, and equitable relief available under law.
- 8. Other Information: Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.
- 9. Duty to Provide Information: The permittee shall furnish to the Department, within 24 hours unless explicitly granted more time in writing, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.
- 10. Inspection and Entry: The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
  - (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of the permit;
  - (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
  - (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
  - (d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.
- 11. Signatory Requirement:
  - (a) All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
  - (b) The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit (including monitoring reports or reports of compliance or non-compliance) shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
  - (c) The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.
- 12. Property Rights: This permit does not convey any property rights of any sort or any exclusive privilege.
- 13. Notice of Right to Appeal: If you were adversely affected by this decision, you may be entitled to pursue an appeal before the administrative hearing commission (AHC) pursuant to Sections 621.250 and 644.051.6 RSMo. To appeal, you must file a petition with the AHC within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

Administrative Hearing Commission  
U.S. Post Office Building, Third Floor  
131 West High Street, P.O. Box 1557  
Jefferson City, MO 65102-1557  
Phone: 573-751-2422  
Fax: 573-751-5018  
Website: <https://ahc.mo.gov>



**MISSOURI**  
DEPARTMENT OF  
NATURAL RESOURCES

STORMWATER DISCHARGES FROM  
THIS LAND DISTURBANCE SITE ARE  
AUTHORIZED BY THE MISSOURI  
STATE OPERATING PERMIT NUMBER:

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ANYONE WITH QUESTIONS OR  
CONCERNS ABOUT STORMWATER  
DISCHARGES FROM THIS SITE,  
PLEASE CONTACT THE MISSOURI  
DEPARTMENT OF NATURAL  
RESOURCES AT

**1-800-361-4827**

# MISSOURI DEPARTMENT OF NATURAL RESOURCES

## FACT SHEET FOR MASTER GENERAL PERMIT

### MO-RAXXXXX

The Federal Water Pollution Control Act [Clean Water Act (CWA)] Section 402 of Public Law 92-500 (as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the CWA). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (permit) are issued by the Missouri Department of Natural Resources (Department) under an approved program operated in accordance with federal and state laws (Federal CWA and Missouri Clean Water Law Section 644 as amended). Permits are issued for a period of five (5) years unless otherwise specified.

Per 40 CFR 124.56, 40 CFR 124.8, and 10 CSR 20-6.020(1)(A)2, a Fact Sheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the permit. A Fact Sheet is not an enforceable part of an MSOP.

#### **DEFINITIONS FOR THE PURPOSES OF THIS PERMIT:**

Common Promotional Plan: A plan undertaken by one (1) or more persons to offer lots for sale or lease; where land is offered for sale by a person or group of persons acting in concert, and the land is contiguous or is known, designated, or advertised as a common unit or by a common name or similar names, the land is presumed, without regard to the number of lots covered by each individual offering, as being offered for sale or lease as part of a common promotional plan.

Dewatering: The act of draining rainwater and/or groundwater from basins, building foundations, vaults, and trenches.

Effective Operating Condition: For the purposes of this permit, a stormwater control is kept in effective operating condition if it has been implemented and maintained in such a manner that it is working as designed to minimize pollutant discharges.

Emergency-Related Project: A project initiated in response to a public emergency (e.g. earthquakes, extreme flooding conditions, tornado, disruptions in essential public services, pandemic) for which the related work requires immediate authorization to avoid imminent endangerment to human health/safety or the environment or to reestablish essential public services.

Exposed Soils: For the purposes of this permit, soils that as a result of earth-disturbing activities are left open to the elements.

Immediately: For the purposes of this permit, immediately should be defined as within 24 hours.

Impervious Surface: For the purpose of this permit, any land surface with a low or no capacity for soil infiltration including, but not limited to, pavement, sidewalks, parking areas and driveways, packed gravel or soil, or rooftops.

Infeasible: Infeasible means not technologically possible or not economically practicable and achievable in light of best industry practices.

Install or Installation: When used in connection with stormwater controls, to connect or set in position stormwater controls to make them operational.

Land Disturbance Site or Site: The land or water area where land disturbance activities will occur and where stormwater controls will be installed and maintained. The land disturbance site includes construction support activities, which may be located at a different part of the property from where the primary land disturbance activity will take place or on a different piece of property altogether. Off-site borrow areas directly and exclusively related to the land disturbance activity are part of the site and must be permitted.

Larger Common Plan of Development or Sale: A continuous area where multiple separate and distinct construction activities are occurring under one plan, including any offsite borrow areas that are directly and exclusively related to the land disturbance activity. Off-site borrow areas utilized for multiple different land disturbance projects are considered their own entity and are not part of the larger common plan of development or sale. See definition of Common Promotional Plan to understand what a 'common plan' is.

Minimize: To reduce and/or eliminate to the extent achievable using stormwater controls that are technologically available and economically practicable and achievable in light of best industry practices.

Non-structural BMP: Institutional, educational, or pollution prevention practices designed to limit the amount of stormwater runoff or pollutants that are generated in the landscape. Examples of non-structural BMPs include picking up trash and debris, sweeping up nearby sidewalks and streets, maintaining equipment, and training site staff on stormwater control practices.

Operational: for the purposes of this permit, stormwater controls are made “operational” when they have been installed and implemented, are functioning as designed, and are properly maintained.

Ordinary High Water Mark: The line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris.

Outfall: For the purposes of this permit, outfalls are locations where stormwater exits the site property, including pipes, ditches, swales, channels, or other conduits that transport stormwater discharges associated with the construction activity.

Peripheral: For the purposes of this permit, peripheral should be defined as the outermost boundary of the area that will be disturbed.

Permanently: For the purposes of this permit, permanently is defined as any activity that has been ceased without any intentions of future disturbance.

Pollution Prevention Controls (or Measures): Stormwater controls designed to reduce or eliminate the addition of pollutants to construction site discharges through analysis of pollutant sources, implementation of proper handling/disposal practices, employee education, and other actions.

Qualified Person (inspections): A person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

Stormwater Control (also referred to as sediment/erosion controls): refers to any temporary or permanent BMP or other method used to prevent or reduce the discharge of pollutants to waters of the state.

Structural BMP: Physical sediment/erosion controls working individually or as a group (treatment train) appropriate to the source, location, and area climate for the pollutant to be controlled. Examples of structural BMPs include silt fences, sedimentation ponds, erosion control blankets, and seeding.

Temporary Stabilization: A condition where exposed soils or disturbed areas are provided temporary vegetation and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.

Treatment Train: A multi-BMP approach to managing the stormwater volume and velocity and often includes erosion prevention and sediment control practices often applied when the use of a single BMP is inadequate in preventing the erosion and transport of sediment. A good option to utilize as a corrective action.

Volunteer Vegetation: A volunteer plant is a plant that grows on its own, rather than being deliberately planted for stabilization purposes. Volunteers often grow from seeds that float in on the wind, are dropped by birds, or are inadvertently mixed into soils. Commonly, volunteer vegetation is referred to as ‘weeds’. This does not meet the requirements for final stabilization.

Waters of the State: Section 644.016.1(27) RSMo. defines waters of the state as, “All waters within the jurisdiction of this state, including all rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two or more persons jointly or as tenants in common.”

#### **EXAMPLES OF TYPES; BUT NOT LIMITED TO’S:**

Building materials and building products typically present at constructions sites: Asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles

Construction and domestic (solid) waste: Packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, Styrofoam, concrete, demolition debris, and other trash or building materials.

Hazardous or toxic waste that may be present at construction sites: Caulks, sealants, fluorescent light ballasts (mercury), solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids.

Pollutant-generating activities: Paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and

disposal; and dewatering activities.

Types of pollutants typically found at constructions sites: Sediment; nutrients; heavy metals; pesticides and herbicides; oil and grease; bacteria and viruses; trash, debris, and solids; treatment polymers; and any other toxic chemicals.

BMPs for Erosion Control: Temporary/permanent seeding, hydroseeding, mulch and hydromulch, erosion control blankets, dust control, sodding, slope protection, and preservation of existing vegetation.

BMPs for Sediment Control: Fabric drop inlet protection, excavated drop inlet protection, block and gravel inlet protection, domed inlet protection, inlet bag or insert, silt fence, temporary diversion, right-of-way/diversion bar, temporary slope drain, subsurface drain, rock outlets, berms, filter socks, transition mats, temporary sediment trap, energy dissipaters, rock check dam, ditch checks, wattles, straw bale barrier, vegetative buffer strip, sediment basin, particle curtains, frog logs, and dispersion fields.

## **EPERMITTING FOR LAND DISTURBANCE**

In order to apply for the states MO-RA land disturbance permit you will need to utilize the Department's online ePermitting system. In order to access this, you will need to register an account with the Missouri Gateway for Environmental Management (MoGEM). The following user guides will assist you with this process.

MoGEM Website: <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem>

ePermitting Website: <https://dnr.mo.gov/data-e-services/water/electronic-permitting-epermitting>

How to Register: <https://dnr.mo.gov/document-search/registering-new-user-account-within-missouri-gateway-environmental-management-mogem-portal>

ePermitting User Guides: (found on ePermitting website)

- How to Add a Facility: <https://dnr.mo.gov/document-search/epermitting-chapter-2-home-facility-search-associate-new-facility>
- How to Apply for a Permit: <https://dnr.mo.gov/document-search/epermitting-chapter-3-create-new-permit>.

## **PART I – BASIC PERMIT INFORMATION**

Facility Type:	Industrial Stormwater; Land Disturbance
Facility SIC Code(s):	1629
Facility Description:	Construction or land disturbance activity (e.g., clearing, grubbing, excavating, grading, filling, and other activities that result in the destruction of the root zone and/or land disturbance activity that is reasonably certain to cause pollution to waters of the state).

This permit establishes a SWPPP requirement for pollutants of concern from all facilities covered under this permit. 10 CSR 20-6.200(7) specifies “general permits shall contain BMP requirements and/or monitoring and reporting requirements to keep the stormwater from becoming contaminated”.

Land disturbance activities include clearing, grubbing, excavating, grading, filling and other activities that result in the destruction of the root zone and/or other activities that are reasonably certain to cause pollution to waters of the state.

A Missouri State Operating Permit for land disturbance permit is required for construction disturbance activities of one or more acres, or for construction activities that disturb less than one acre when they are part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project per 10CSR 20-6.200(1)(D)28.

The primary requirement of a land disturbance permit is the development of a SWPPP which incorporates site-specific BMPs to minimize soil exposure, soil erosion, and the discharge of pollutants. The SWPPP ensures the design, implementation, management and maintenance of BMPs in order to prevent sediment and other pollutants from leaving the site.

When it precipitates, stormwater washes over the loose soil on a construction site and various other materials and products being stored outside. As stormwater flows over the site, it can pick up pollutants like sediment, debris, and chemicals from the loose soil and transport them to nearby storm sewer systems or directly into rivers, lakes, or coastal waters. The Missouri Department of Natural Resources is responsible for ensuring that construction site operators have the proper stormwater controls in place so that construction can proceed in a way that protects your community's clean water and the surrounding environment. One way the department helps protect water quality is by issuing land disturbance permits.

Local conditions are not considered when developing conditions for a general permit. A facility may apply for a site-specific permit if they desire a review of site-specific conditions.



**CHANGES TO THE RENEWAL OF THIS PERMIT INCLUDE:**

While drafting this permit for renewal, the Department hosted three public meetings held on January 27, February 17, and March 9, 2021, which allowed stakeholders to voice concerns about conditions within the permit and submit comments during the period of initial stakeholder involvement. These concerns were taken into consideration when drafting the permit. In addition to these meetings, the Department also held an informal review period for stakeholders to review the draft prior to the 30 day public comment period.

- Updated language throughout the permit to current permit language used by the Department and EPA.
- Added language for emergency related projects.
- Clarified conditions which were ambiguous.
- Reorganized sections/conditions for logical progression.
- Authorized permit transfers and some modifications.
- Sections added for termination procedures, discharges to special streams, and procedures for concrete washout.

**PART II – RECEIVING STREAM INFORMATION**

**APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:**

Per Missouri Effluent Regulations (10 CSR 20-7.015), the waters of the state are divided into seven (7) categories. This permit applies to facilities discharging to the following water body categories:

- ✓ Missouri or Mississippi River [10 CSR 20-7.015(2)]
- ✓ Lakes or Reservoirs [10 CSR 20-7.015(3)]
- ✓ Losing Streams [10 CSR 20-7.015(4)]
- ✓ Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)]
- ✓ Special Streams [10 CSR 20-7.015(6)]
- ✓ Subsurface Waters [10 CSR 20-7.015(7)]
- ✓ All Other Waters [10 CSR 20-7.015(8)]

Missouri Water Quality Standards (10 CSR 20-7.031) defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1<sup>st</sup> classified receiving stream's designated water uses shall be maintained in accordance with 10 CSR 20-7.031(24). A general permit does not take into consideration site-specific conditions.

**MIXING CONSIDERATIONS:**

This permit applies to receiving streams of varying low flow conditions. Therefore, the effluent limitations must be based on the smallest low flow streams considered, which includes waters without designated uses. As such, no mixing is allowed [10 CSR 20-7.031(5)(A)4.B.(I)(a)]. No Zone of Initial Dilution is allowed. [10 CSR 20-7.031(5)(A)4.B.(I)(b)].

**RECEIVING STREAM MONITORING REQUIREMENTS:**

There are no receiving water monitoring requirements recommended at this time.

**PART III – RATIONALE AND DERIVATION OF EFFLUENT LIMITATIONS & PERMIT CONDITIONS**

**305(B) REPORT, 303(d) LIST, & TOTAL MAXIMUM DAILY LOAD (TMDL):**

Section 305(b) of the Federal CWA requires each state identify waters not meeting Water Quality Standards and for which adequate water pollution controls have not been required. Water Quality Standards protect such beneficial uses of water as whole body contact, maintaining fish and other aquatic life, and providing drinking water for people, livestock, and wildlife. The 303(d) report, which includes the 303(d) list, helps state and federal agencies keep track of waters which are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed which shall include the TMDL calculation. For facilities with an existing general permit before a TMDL is written on their receiving stream, the Department will evaluate the permit and may require any facility authorized by this general permit to apply for and obtain a site-specific operating permit.

**ANTI-BACKSLIDING:**

A provision in the Federal Regulations [CWA Section 303(d)(4); CWA Section 402(c); 40 CFR Part 122.44(I)] requires a reissued permit to be as stringent as the previous permit with some exceptions.

- ✓ Not Applicable: All effluent limitations in this permit are at least as protective as those previously established.

#### **ANTIDegradation:**

Antidegradation policies ensure protection of water quality for a particular water body on a pollutant by pollutant basis to ensure Water Quality Standards are maintained to support beneficial uses such as fish and wildlife propagation and recreation on and in the water. This also includes special protection of waters designated as an Outstanding National Resource Water or Outstanding State Resource Water [10 CSR 20-7.031(3)(C)]. Antidegradation policies are adopted to minimize adverse effects on water.

The Department has determined the best avenue forward for implementing the Antidegradation requirements into general stormwater permits is by requiring the appropriate development and maintenance of a SWPPP. The SWPPP must identify all reasonable and effective BMPs, taking into account environmental impacts and costs. This analysis must document why no discharge or no exposure options are not feasible at the facility. This selection and documentation of appropriate control measures will then serve as the analysis of alternatives and fulfill the requirements of the Antidegradation Rule and Implementation Procedure 10 CSR 20-7.031(3) and 10 CSR 20-7.015(9)(A)5.

Any facility seeking coverage under this permit which undergoes expansion or discharges a new pollutant of concern must update their SWPPP and select reasonable and cost effective new BMPs. New facilities seeking coverage under this permit are required to develop a SWPPP including this analysis and documentation of appropriate BMPs. Renewal of coverage for a facility requires a review of the SWPPP to ensure the selected BMPs continue to be appropriate.

- ✓ Applicable; the facility must review and maintain stormwater BMPs as appropriate.

#### **BENCHMARKS:**

When a permitted feature or outfall consists of only stormwater, a benchmark may be implemented at the discretion of the permit writer. Benchmarks require the facility to monitor and, if necessary, replace and update stormwater control measures. Benchmark concentrations are not effluent limitations. A benchmark exceedance, therefore, is not a permit violation; however, failure to take corrective action is a violation of the permit. Benchmark monitoring data is used to determine the overall effectiveness of control measures and to assist the permittee in knowing when additional corrective actions may be necessary to comply with the limitations of the permit.

- ✓ Not applicable; this facility has stormwater-only outfalls and does not contain numeric benchmarks.

#### **BEST MANAGEMENT PRACTICES:**

Minimum site-wide BMPs are established in this permit to ensure all permittees are managing their sites equally to protect waters of the state from certain activities which could cause negative effects in receiving water bodies. If the minimum BMPs are not followed, the facility may violate general criteria [10 CSR 20-7.031(4)]. Statutes are applicable to all permitted facilities in the state; therefore, pollutants cannot be released unless in accordance with RSMo 644.011 and 644.016 (17).

During a short time period, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation and contribution of other pollutants from construction sites can cause physical, chemical, and biological harm to Missouri's waters. Land disturbance activities, such as clearing and grading the land surface, increases the potential for sediment discharges.

The previous version of this permit contained the majority of the BMPs required in this permit and were found to protect water quality. Additional BMPs were added to improve protections with language taken from the EPA's Construction General Permit.

Language was added for track out to clarify and to combine with the roadway conditions in the previous permit. Preventing sediment from entering roadway inlets will protect water quality. Requirements were added for concrete wash out management. This is a common activity on construction sites which had not been address in the previous permit. Containment of the wash out water will protect waters of the state. This language was adopted from the EPAs Construction General Permit.

This renewal requires certain operators be listed in the SWPPP, this was added to ensure all responsible parties are known to the staff on site in the event there is an environmental issue that needs attention.

Inspection conditions were added to clarify what parts of the site to inspect. By inspecting areas prone to pollution, such as material storage, or location where pollutants are like to leave the site, such as the outfall, there is increased protections to water quality by stopping pollutants before leaving the site, or correcting an issue quickly.

Inspection frequencies were reduced for areas where stabilization has been achieved. It was the permit writer's judgement that stabilized areas do not require inspections at the same frequency as active areas of a site as the stabilization is a BMP to reduce sediment loss. Additional inspections are required for sediment basin dewatering activities during times of dewatering. These activities open the possibility for high volumes of sediment to be discharged into the receiving waters. By inspecting the discharge, the waters shall be better protected. Language was added to add the temporary reduction of inspections for areas that have frozen ground.

Condition was added for stockpile management to add clarity for operators on site. Migration of soil or product from mis-managed piles can enter waters of the state and cause water quality violations. Conditions were added to sediment basin dewater to increase the protection of receiving waters by increasing controls to retain sediment and keep it out of the discharged water.

Language was added to include National and State Resource Waters with added protections. Language for this was taken from the template for Missouri General Permits. These requirements also include waters with impairments for sediment, the pollutant of concern under this permit. Extra protections in these special stream requirements were added to clarify the discharges must be stormwater only.

Language was added to include the encouragement of preserving vegetation, trees, and soil. Clearing reduces the natural uptake of water and nutrients by vegetation and excessive grading can smooth the ground surface, increasing amount and velocity of runoff. Vegetation inhibits erosion as the roots hold the topsoil in place, while leaves protect the surface against rain. Once the vegetative cover is gone, erosion is accelerated. The longer the exposed area is subject to erosive forces, the more severe the effect. Clarification was added to define voluntary vegetation and to explain that these shallow rooted short-lived vegetation is not allowed as permanent stabilization.

#### **CHANGES IN DISCHARGES OF TOXIC POLLUTANT:**

This special condition reiterates the federal rules found in 40 CFR 122.44(f) and 122.42(a)(1). In these rules, the facility is required to report changes in amounts of toxic substances discharged. Toxic substances are defined in 40 CFR 122.2 as "...any pollutant listed as toxic under section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing section 405(d) of the CWA." Section 307 of the clean water act then refers to those parameters found in 40 CFR 401.15. The permittee should also consider any other toxic pollutant in the discharge as reportable under this condition.

#### **DOMESTIC WASTEWATER, SLUDGE, AND BIOSOLIDS:**

Domestic wastewater is defined as wastewater (i.e., human sewage) originating primarily from the sanitary conveyances of bathrooms and kitchens. Domestic wastewater excludes stormwater, animal waste, process waste, and other similar waste.

- ✓ Not applicable; this permit does not authorize discharge of domestic waste, sludge, or biosolids. This includes discharges to onsite lagoons. If a facility has an onsite lagoon, they may need to obtain a separate general or site specific permit to cover discharges or land application from this structure.

Sewage sludge is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Biosolids are solid materials resulting from domestic wastewater treatment meeting federal and state criteria for productive use (i.e. fertilizer) and after having pathogens removed.

- ✓ Not applicable; this permit does not authorize discharge or land application of biosolids or sludge. A separate permit must be obtained for these activities, either general or site specific.

#### **EFFLUENT LIMITATION GUIDELINE:**

Effluent Limitation Guidelines, or ELGs, are found at 40 CFR 400-499. These are limitations established by the EPA based on the SIC code and the type of work a facility is conducting. Most ELGs are for process wastewater and some address stormwater. All are technology based limitations which must be met by the applicable facility at all times.

- ✓ The industries covered under this permit have an associated Effluent Limit Guideline (ELG) which is applicable to the stormwater discharges in this permit and is applied under 40 CFR 125.3(a).

#### **ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:**

The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. The final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online.

- ✓ Not applicable; this permit has no limits to report.

#### **GENERAL CRITERIA CONSIDERATIONS:**

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into permits for pollutants determined to cause, have reasonable potential to cause, or to contribute to, an excursion above any water quality standard, including narrative water quality criteria. In order to comply with this regulation, the permit writer has completed a reasonable potential determination on whether discharges have reasonable potential to cause or contribute to an excursion of the general criteria listed in 10 CSR 20-7.031(4). In instances where reasonable potential exists, the permit includes limitations within the permit to address the reasonable potential. In

discharges where reasonable potential does not exist, the permit may include monitoring to later determine the discharge's potential to impact the narrative criteria. Additionally, RSMo 644.076.1, as well as Standard Permit Conditions Part VIII of this permit state it shall be unlawful for any person to cause or allow any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule, or regulation promulgated by the commission.

**LAND APPLICATION:**

Land application, or surficial dispersion of wastewater and/or sludge, is performed by facilities to maintain a basin as no-discharge. Requirements for these types of operations are found in 10 CSR 20-6.015; authority to regulate these activities is from RSMo 644.026.

✓ Not applicable; this permit does not authorize operation of a surficial land application system to disperse wastewater or sludge.

**LAND DISTURBANCE:**

Land disturbance, sometimes called construction activities, are actions which cause disturbance of the root layer or soil; these include clearing, grading, and excavating of the land. 40 CFR 122.26(b)(14) and 10 CSR 20-6.200(3) requires permit coverage for these activities. Coverage is not required for facilities when only providing maintenance of original line and grade, hydraulic capacity, or to continue the original purpose of the facility.

✓ Applicable; this permit provides coverage for land disturbance activities. These activities have SWPPP requirements and may be combined with the standard site SWPPP. Land disturbance BMPs should be designed to control the expected peak discharges. The University of Missouri has design storm events for the 25 year 24 hour storm; these can be found at: [http://ag3.agebb.missouri.edu/design\\_storm/comparison\\_reports/20191117\\_25yr\\_24hr\\_comparison\\_table.htm](http://ag3.agebb.missouri.edu/design_storm/comparison_reports/20191117_25yr_24hr_comparison_table.htm); to calculate peak discharges, the website <https://www.lmnoeng.com/Hydrology/rational.php> has the rational equation to calculate expected discharge volume from the peak storm events.

**NUTRIENT MONITORING:**

Nutrient monitoring is required for facilities characteristically or expected to discharge nutrients (nitrogenous compounds and/or phosphorus) when the design flow is equal to or greater than 0.1 MGD per 10 CSR 20-7.015(9)(D)8.

✓ This is a stormwater only permit; therefore, it is not subject to provisions found in 10 CSR 20-7.015 per 10 CSR 20-7.015(1)(C).

**OIL/WATER SEPARATORS:**

Oil water separator (OWS) tank systems are frequently found at industrial sites where process water and stormwater may contain oils and greases, oily wastewaters, or other immiscible liquids requiring separation. Food industry discharges typically require pretreatment prior to discharge to municipally owned treatment works. Per 10 CSR 26-2.010(2)(B), all oil water separator tanks must be operated according to manufacturer's specifications and authorized in NPDES permits per 10 CSR 26-2.010(2) or may be regulated as a petroleum tank.

✓ Not applicable; this permit does not authorize the operation of OWS. The facility must obtain a separate permit to cover operation of and discharge from these devices.

**OPERATOR CERTIFICATION REQUIREMENTS:**

As per 10 CSR 20-6.010(8) Terms and Conditions of a Permit, permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation.

✓ Not applicable; the facilities covered under this permit are not required to have a certified operator.

**PERMIT SHIELD:**

The permit shield provision of the Clean Water Act (Section 402(k)) and Missouri Clean Water Law (644.051.16 RSMo) provides that when a permit holder is in compliance with its NPDES permit or MSOP, they are effectively in compliance with certain sections of the Clean Water Act and equivalent sections of the Missouri Clean Water Law. In general, the permit shield is a legal defense against certain enforcement actions but is only available when the facility is in compliance with its permit and satisfies other specific conditions, including having completely disclosed all discharges and all facility processes and activities to the Department at time of application. It is the facility's responsibility to ensure that all potential pollutants, waste streams, discharges, and activities, as well as wastewater land application, storage, and treatment areas, are all fully disclosed to the Department at the time of application or during the draft permit review process. Subsequent requests for authorization to discharge additional pollutants or expanded or newly disclosed flows, or for authorization for previously unpermitted and undisclosed activities or discharges, will likely require permit modification or may require the facility be covered under a site specific permit.

**PRETREATMENT PROGRAM:**

This permit does not regulate pretreatment requirements for facilities discharging to an accepting permitted wastewater treatment facility. If applicable, the receiving entity (the publicly owned treatment works - POTW) must ensure compliance with any effluent limitation guidelines for pretreatment listed in 40 CFR Subchapter N per 10 CSR 20-6.100. Pretreatment regulations per RSMo 644.016 are limitations on the introduction of pollutants or water contaminants into publicly owned treatment works or facilities.

- ✓ Not Applicable; the facilities covered under this permit are not required to meet pretreatment requirements under an ELG.

#### **PUBLIC NOTICE OF COVERAGE FOR AN INDIVIDUAL FACILITY:**

Public Notice of reissuance of coverage is not required unless the facility is a specific type of facility as defined in 10 CSR 20-6.200(1). The need for an individual public notification process shall be determined and identified in the permit [10 CSR 20-6.020(1)(C)5.].

- ✓ Not applicable; public notice is not required for coverage under this permit to individual facilities. The MGP is public noticed in lieu of individual permit PN requirements.

#### **REASONABLE POTENTIAL ANALYSIS (RPA):**

Federal regulation 40 CFR Part 122.44(d)(1)(i) requires effluent limitations for all pollutants which are or may be discharged at a level which will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard. In accordance with 40 CFR Part 122.44(d)(iii) if the permit writer determines any given pollutant has the reasonable potential to cause or contribute to an in-stream excursion above the water quality standard, the permit must contain effluent limits for the pollutant.

- ✓ The permit writer reviewed industry materials, available past inspections, and other documents and research to evaluate general and narrative water quality reasonable potential for this permit. Permit writers also use the Department's permit writer's manual, the EPA's permit writer's manual (<https://www.epa.gov/npdes/npdes-permit-writers-manual>), program policies, and best professional judgment. For each parameter in each permit, the permit writer carefully considers all applicable information regarding technology based effluent limitations, effluent limitation guidelines, and water quality standards. Best professional judgment is based on the experience of the permit writer, cohorts in the Department and resources at the EPA, research, and maintaining continuity of permits if necessary. For stormwater permits, the permit writer is required per 10 CSR 6.200(6)(B)2 to consider: A. application and other information supplied by the permittee; B. effluent guidelines; C. best professional judgment of the permit writer; D. water quality; and E. BMPs.

#### **SCHEDULE OF COMPLIANCE (SOC):**

Per § 644.051, RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement or if prohibited by other statute or regulation. An SOC includes an enforceable sequence of interim requirements (e.g. actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR 122.2. For new effluent limitations, the permit may include interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, an SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

- ✓ Not Applicable: This permit does not contain a SOC.

#### **SETBACKS:**

Setbacks, sometimes called separation distances, are common elements of permits and are established to provide a margin of safety in order to protect the receiving water and other features from accidents, spills, unusual events, etc. Specific separation distances are included in 10 CSR 20-8 for minimum design standards of wastewater structures. While wastewater is considered separately from stormwater under this permit, the guides and Chapter 8 distances may remain relevant to requirements under this permit if deemed appropriate by the permittee.

- ✓ Discharge to the watersheds of a Metropolitan No-Discharge Stream (10 CSR 20-7.031 Table F) is authorized by this permit if the discharges are in compliance with 10 CSR 20-7.015(5) and 10 CSR 20-7.031(7). Discharges to these watersheds are authorized for uncontaminated stormwater discharges only.
- ✓ This permit authorizes stormwater discharges which are located in a way to allow water to be released into sinkholes, caves, fissures, or other openings in the ground which could drain into aquifers (except losing streams) per 10 CSR 20-7.015(7). It is the best professional judgment of the permit writer to allow discharges to losing streams as the effluent is stormwater only.
- ✓ This permit authorizes stormwater discharge in the watersheds of Outstanding state Resource Waters (OSRW); Outstanding National Resources Waters (ONRW), which includes the Ozark National Riverways and the National Wild and Scenic Rivers System; and impaired waters as designated in the 305(b) report, including the 303(d), list so long as no degradation of water quality occurs in the OSRW and ONRW due to discharges from the permitted facility per 10 CSR 20-7.015(6)(B) and 10 CSR 20-7.031(3)(C).

Additionally, if the facility is found to be causing degradation or contributing to an impairment by discharging a pollutant of concern during an inspection or through complaint investigations, they will be required to become a no discharge facility or obtain a site specific permit with more stringent monitoring and SWPPP requirements. Missouri's impaired waters can be found at <https://dnr.mo.gov/water/what-were-doing/water-planning/quality-standards-impaired-waters-total-maximum-daily-loads/impaired-waters>. Sites within 1000 feet of a OSRW, ONRW, or water impaired for sediment must operate as a no-discharge facility. These additional protections are borrowed from the USEPA 2021 draft Construction General Permit.

#### **SLUDGE – DOMESTIC BIOSOLIDS:**

Biosolids are solid materials resulting from domestic wastewater treatment meeting federal and state criteria for beneficial use (i.e. fertilizer). Sewage sludge is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works; including, but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works.

✓ This permit does not authorize discharge or land application of biosolids. Sludge/biosolids is not generated by this industry.

#### **SLUDGE – INDUSTRIAL:**

Industrial sludge is solid, semi-solid, or liquid residue generated during the treatment of industrial process wastewater in a treatment works; including, but not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment process; scum and solids filtered from water supplies and backwashed; and a material derived from industrial sludge.

✓ Not applicable; sludge is not generated by this industry.

#### **SPILL REPORTING:**

Any emergency involving a hazardous substance must be reported to the Department's 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest practicable moment after discovery. The Department may require the submittal of a written report detailing measures taken to clean up a spill. These reporting requirements apply when the spill results in chemicals or materials leaving the permitted property or reaching waters of the state. This requirement is in addition to the noncompliance reporting requirement found in Standard Conditions Part I. <https://dnr.mo.gov/waste-recycling/investigations-cleanups/environmental-emergency-response>.

Underground and above ground storage devices for petroleum products, vegetable oils, and animal fats may be subject to control under federal Spill Prevention, Control, and Countermeasure Regulation and are expected to be managed under those provisions, if applicable. Substances regulated by federal law under the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) which are transported, stored, or used for maintenance, cleaning or repair shall be managed according to the provisions of RCRA and CERCLA.

#### **STORMWATER POLLUTION PREVENTION PLAN (SWPPP):**

In accordance with 40 CFR 122.44(k), BMPs must be used to control or abate the discharge of pollutants when: 1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; 3) Numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA. In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites*, (Document number EPA 833-R-06-004) published by the EPA in 2007 [https://www.epa.gov/sites/production/files/2015-10/documents/sw\\_swppp\\_guide.pdf](https://www.epa.gov/sites/production/files/2015-10/documents/sw_swppp_guide.pdf), BMPs are measures or practices used to reduce the amount of pollution entering waters of the state from a permitted facility. BMPs may take the form of a process, activity, or physical structure. Additionally, in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to 1) identify sources of pollution or contamination, and 2) select and carry out actions which prevent or control the pollution of storm water discharges. Additional information can be found in *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-006; September 1992).

A SWPPP must be prepared if the SIC code for the facility is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2). A SWPPP may be required of other facilities where stormwater has been identified as necessitating better management. The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate stream pollution from stormwater runoff. Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged during storm events. The following paragraph outlines the general steps the permittee should take to determine which BMPs will work to achieve the benchmark values or limits in the permit. This section is not intended to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure assisting in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit.

Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). Once the potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed, the facility will employ the control measures determined to be adequate to prevent pollution from entering waters of the state. The facility will conduct inspections of the BMPs to ensure they are working properly and re-evaluate any BMP not achieving compliance with permitting requirements. For example if the BMP being employed is deficient in controlling



stormwater pollution, corrective action should be taken to repair, improve, or replace the failing BMP. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

The EPA has developed factsheets on the pollutants of concern for specific industries along with the BMPs to control and minimize stormwater (<https://www.epa.gov/npdes/stormwater-discharges-industrial-activities>). Along with EPA's factsheets, the International Stormwater BMP database (<https://bmpdatabase.org/>) may provide guidance on BMPs appropriate for specific industries.

For new, altered, or expanded stormwater discharges, the SWPPP shall identify reasonable and effective BMPs while accounting for environmental impacts of varying control methods. The antidegradation analysis must document why no discharge or no exposure options are not feasible. The selection and documentation of appropriate control measures shall serve as an alternative analysis of technology and fulfill the requirements of antidegradation [10 CSR 20-7.031(3)].

Alternative analysis evaluation of the BMPs is a structured evaluation of BMPs which are reasonable and cost effective. The alternative analysis evaluation should include practices designed to be: 1) non-degrading; 2) less degrading; or 3) degrading water quality. The glossary of the *Antidegradation Implementation Procedure* defines these three terms. The chosen BMP will be the most reasonable and effective management strategy while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The alternative analysis evaluation must demonstrate why "no discharge" or "no exposure" is not a feasible alternative at the facility. This structured analysis of BMPs serves as the antidegradation review, fulfilling the requirements of 10 CSR 20-7.031(3) Water Quality Standards and *Antidegradation Implementation Procedure*, Section II.B.

- ✓ Applicable: A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the Department with jurisdiction, incorporate control practices specific to site conditions, and provide for maintenance and adherence to the plan.

#### **UNDERGROUND INJECTION CONTROL (UIC):**

The UIC program for all classes of wells in the State of Missouri is administered by the Missouri Department of Natural Resources and approved by EPA pursuant to section 1422 and 1425 of the Safe Drinking Water Act (SDWA) and 40 CFR 147 Subpart AA. Injection wells are classified based on the liquids which are being injected. Class I wells are hazardous waste wells which are banned by RSMo 577.155; Class II wells are established for oil and natural gas production; Class III wells are used to inject fluids to extract minerals; Class IV wells are also banned by Missouri in RSMo 577.155; Class V wells are shallow injection wells; some examples are heat pump wells and groundwater remediation wells. Domestic wastewater being disposed of sub-surface is also considered a Class V well. In accordance with 40 CFR 144.82, construction, operation, maintenance, conversion, plugging, or closure of injection wells shall not cause movement of fluids containing any contaminant into Underground Sources of Drinking Water (USDW) if the presence of any contaminant may cause a violation of drinking water standards or groundwater standards under 10 CSR 20-7.031 or other health-based standards or may otherwise adversely affect human health. If the Department finds the injection activity may endanger USDWs, the Department may require closure of the injection wells or other actions listed in 40 CFR 144.12(c), (d), or (e). In accordance with 40 CFR 144.26, the permittee shall submit a Class V Well Inventory Form for each active or new underground injection well drilled, or when the status of a well changes, to the Missouri Department of Natural Resources, Geological Survey Program, P.O. Box 250, Rolla, Missouri 65402. Single family residential septic systems and non-residential septic systems used solely for sanitary waste and having the capacity to serve fewer than 20 persons a day are excluded from the UIC requirements (40 CFR 144.81(9)).

- ✓ Not applicable; this permit does not authorize subsurface wastewater systems or other underground injection. These activities must be assessed under an application for a site specific permit. Certain discharges of stormwater into sinkholes may qualify as UIC. It is important the permittee evaluate all stormwater basins, even those holding water; as sinkholes have varying seepage rates. This permit does not allow stormwater discharges into sinkholes. The facility must ensure sinkholes are avoided in the construction process. The State's online mapping resource <https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=87ebef4af15d438ca658ce0b2bbc862e> has a sinkhole layer.

#### **VARIANCE:**

Per the Missouri Clean Water Law Section 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law Section 644.006 to 644.141 or any standard, rule, or regulation promulgated pursuant to Missouri Clean Water Law Section 644.006 to 644.141.

- ✓ Not Applicable: This permit is not drafted under premises of a petition for variance.

#### **WASTELOAD ALLOCATIONS (WLA) FOR LIMITATIONS:**

Per 10 CSR 20-2.010(78), the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant which may be discharged into the stream without endangering its water quality. Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's Technical Support Document For Water Quality-based Toxics Control (TSD) (EPA/505/2-90-001).

- ✓ Not applicable; water quality limitations were not applied in this permit.

#### **WATER QUALITY STANDARDS:**

Per 10 CSR 20-7.031(4), General Criteria shall be applicable to all waters of the state at all times, including mixing zones. Additionally, 40 CFR 122.44(d)(1) directs the Department to include in each NPDES permit conditions to achieve water quality established under Section 303 of the CWA, including state narrative criteria for water quality.

#### **WHOLE EFFLUENT TOXICITY (WET) TEST:**

Per 10 CSR 20-7.031(1)(FF), a toxicity test conducted under specified laboratory conditions on specific indicator organism; and per 40 CFR 122.2, the aggregate toxic effect of an effluent measured directly by a toxicity test. A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with, or through synergistic responses when mixed with receiving water.

- ✓ Not applicable: At this time, permittees are not required to conduct a WET test. This permit is for stormwater only.

### **PART IV – EFFLUENT LIMITATIONS DETERMINATION**

#### **EPA Construction General Permit (CGP)**

The CGP was used to research and support best professional judgment decisions made in establishing technology-based conditions for this general permit which are consistent with national standards. The permit writer determined the standards established by the CGP are achievable and consistent with federal regulations. Additionally, the conditions reflecting the best practicable technology currently available are utilized to implement the ELG.

In this general permit, technology-based effluent conditions are established through the SWPPP and BMP requirements. Effective BMPs should be designed on a site-specific basis. The implementation of inspections provides a tool for each facility to evaluate the effectiveness of BMPs to ensure protection of water quality. Any flow through an outfall is considered a discharge. Future permit action due to permit modification may contain new operating permit terms and conditions which supersede the terms and conditions, including effluent limitations, of this operating permit.

### **PART V–REPORTING REQUIREMENTS**

#### **SAMPLING:**

The permittee is not required to sample stormwater under this permit. The Department may require sampling and reporting as a result of illegal discharges, compliance issues related to water quality concerns or BMP effectiveness, or evidence of off-site impacts from activities at the facility. If such an action is needed, the Department will specify in writing the sampling requirements, including such information as location and extent. If the permittee refuses to perform sampling when required, the Department may terminate the general permit and require the facility to obtain a site-specific permit with sampling requirements.

#### **REPORTING:**

There are no reporting requirements for MO-RAxxxxx land disturbance permits. Land disturbance information is best reviewed on an as requested basis and this permit established documents requirements that allow the Department to request and receive needed documentation prior to, during, or after site inspections.

### **PART VI – RAINFALL VALUES FOR MISSOURI & SURFACE WATER BUFFER ZONES**

Knowledge of the 2-year, 24-hour storm event is used in this permit for two main reasons:

- 1) The design, installation, and maintenance of effective erosion and sediment controls to minimize the discharge of pollutants. These erosion and sediment controls must be designed to capture or treat a 2-year, 24-hour storm event. This includes BMPs and, depending on the acreage of the drainage area, sediment basins.
- 2) If the seven-day inspection frequency is utilized, an inspection must occur within 48 hours after any storm event equal to or greater than a 2-year, 24 hour storm has ceased.

A 2-year, 24-hour storm event may be determined in two different ways. For site-specific 2-year, 24-hour storm event information utilize the National Oceanic and Atmospheric Administration's National Weather Service Atlas 14 (NOAA Atlas 14) which is located at [https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html). This is the most accurate and preferred method for determining the 2-year, 24-hour storm event. In general, this will be the least stringent method. For more information visit; [https://www.weather.gov/media/owp/oh/hdsc/docs/Atlas14\\_Volume8.pdf](https://www.weather.gov/media/owp/oh/hdsc/docs/Atlas14_Volume8.pdf).



As an alternative to NOAA Atlas 14, a default value may be utilized. The map below provided by the Department represent the most conservative, protective values for default values applicable to Missouri. In general, this will be the most stringent method. This map is based on Technical Paper No. 40 (TP-40). TP-40 provides a map of the continental U.S. for the 2-year, 24-hour storm event. See map below for default values.

### Map 1: Default Values for 2-Year, 24-Hour Storm Event for Design of Sediment and Erosion Controls

Legend: Northern Counties (blue): 3.5 inches  
Southern Counties (grey): 4 inches



**Surface Water Buffer Zones:** In order to design controls that match the sediment removal efficiency of a 50-foot buffer, you first need to know what this efficiency is for your site. The sediment removal efficiencies of natural buffers vary according to a number of site-specific factors, including precipitation, soil type, land cover, slope length, width, steepness, and the types of erosion and sediment controls used to reduce the discharge of sediment prior to the buffer. For additional information;  
[https://www.epa.gov/sites/default/files/2017-02/documents/2017\\_cgp\\_final\\_appendix\\_g\\_-\\_buffer\\_reqs\\_508.pdf](https://www.epa.gov/sites/default/files/2017-02/documents/2017_cgp_final_appendix_g_-_buffer_reqs_508.pdf)

## **PART VII – ADMINISTRATIVE REQUIREMENTS**

On the basis of preliminary staff review and applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the permit. The proposed determinations are tentative pending public comment.

### **PUBLIC MEETING:**

The Department hosted three public meetings for this permit. The meetings were held on January 27, February 17, and March 9, 2021.

### **PUBLIC NOTICE:**

The Department shall give public notice when a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest or because of water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and facility must be notified of the denial in writing.

The Department must give public notice of a pending permit or of a new or reissued Missouri State Operating Permit. The public comment period is a length of time not less than thirty (30) days following the date of the public notice, during which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed permit, please refer to the Public Notice page located at the front of this draft permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this permit was held from November 5, 2021 and ends December 6, 2021. Two letters were received during the 30 day Public Notice period. The summarized comments from the letter and the Department's responses

to the comments are below and are in reference to the Public Noticed version of this permit. The comments and responses to the Public Notice of this permit do not warrant the modification of the terms and conditions of this permit.

Letter 1:

**Comment #1:** Numbering on Page 3 - **there are two #2's**

**Response:** Thank you, this was corrected.

**Comment #2:** 2. ... If an individual proposes to develop a lot to reside on (**themselves**),

**Response:** This word has been added to add clarity.

**Comment #3:** Table on Page 3, I. Applicability Section A, #2. The second row, second column is confusing. This second part seems to imply that lots less than 1 acre but not part of a common plan would need a permit if the lot is to be sold. This seems contrary to the one or more acres required for a permit.

**Response:** The second part was reworded in effort to clarify. The "or if" was changed to "including" to clarify both situations are part of the common plan and would require a permit.

**Comment #4:** The first part of this section before the semicolon seems incomplete:

**Response:** The redundant wording was removed to clarify this condition.

**Comment #5:** There is no #3.

**Response:** Thank you, this was corrected.

**Comment #6:** Number 4. Could the impaired water also be on the 303(d) list? Impaired waters are only on the 305(b) list after they have a TMDL written. What about the streams on the 303(d) list that are waiting for a TMDL?

**Response:** The 303(d) list is a less-encompassing component of the all-encompassing 305(b) Report. The permit has been edited to state "designated in the 305(b) Report, including the 303(d) list," to emphasizing the 303(d) list.

**Comment #7:** 10. Change the word States to state

**Response:** This was corrected.

**Comment #8:** There are 2 (b)s under #1. 1(c). Part VII. should be Part VIII STANDARD PERMIT CONDITIONS

6. Replace the period with a colon after BMPs. "The permittee shall select, install, use, operate and maintain appropriate BMPs for the permitted site. The following manuals are acceptable resources for the selection of appropriate BMPs:"

**Response:** These corrections were made.

**Comment #9:** 11(b) 2 and 3. These are missing periods after the word "holiday"

**Response:** These corrections were made.

**Comment #10:** V. BMP Requirements (2) Can you define "dripline"

**Response:** A longer explanation of "dripline" was added to that condition for clarity.

**Comment #11:** 11.(c)(2) Is this missing a word after "from". In the phrase "discharge points from" ? Perhaps just remove the word "from". The phrase would read "inlets, outlets, and discharge points shall be utilized."

**Response:** This correction has been made.

**Comment #12:** Also, the addition of language related to BMPs discussed on page 5 and 6 of the fact sheet are positive additions to the permit and should help guide protection of waters of the state from sediment.

On the top of page 6 of the fact sheet, it appears there is a typo: " Migration of soil or product from mis-managed **plies**"

**Response:** This correction has been made.

Letter 2:

**Comment #1:** Define Outfalls.

**Response:** Outfalls are points with discharges of stormwater from areas associated with the industrial activity for which the facility is permitted; in this case construction. Discerning if certain drains which leave the site would be considered an outfall or not would be specific to each site, in addition to the specific phase of construction. Outfalls on construction sites are often not stationary. An outfall does not need to be a pipe, it can be a ditch, channel, or other conduit that discharges stormwater off the property, and there is no size constraint to outfalls. A definition has been added to the fact sheet to add clarification.

**Comment #2:** **I. Applicability: A. Permit Coverage and Authorized Discharges** – Permit numbering is off.

**Response:** Thank you, this has been corrected.

**Comment #3:** **I. Applicability: B. Permit Restrictions** – Permit numbering is off.

**Response:** Thank you, this has been corrected.

**Comment #4:** 4(c) Discharges from dewatering of sedimentation basins is prohibited. Does this mean direct dumping of dewatering material? Are dewatering controls such as sediment bags, infiltration trenches, or buffer strips allowed?

**Response:** The definition of no-discharge facility found in 10 CSR 20-6.015 includes the condition "To hold or irrigate, or otherwise dispose without discharge to surface or subsurface waters of the state, all process wastes and associated storm water flows except for discharges that are caused by catastrophic and chronic storm events;". Dewatering controls are allowed so long as they are operated so that the dewatered material and water is not discharged to waters of the state.

**Comment #5:** 4(c) references 10 CSR 20-6.15(1)B(7). Should this be 10 CSR 20-6.015(1)B(7)?

**Response:** This has been corrected, thank you.

**Comment #6:** Could the department please clarify what is meant by a "catastrophic event" referenced in this regulation? The permit design standards are for the 2-year, 24-hour storm.

**Response:** Catastrophic storm is defined in 10 CSR 20-6.015(1)B(2) as "A precipitation event of twenty-four (24)-hour

duration or less that exceeds the twenty-five (25)-year, twenty-four (24)-hour storm event.” A chronic storm event is defined in 10 CSR 20-6.015(1)(B)3 as “A precipitation event with a duration of more than twenty-four (24) hours that exceeds the one-in-ten (1 in 10)-year return frequency.”

This information is found on the National Oceanic and Atmospheric Administration’s National Weather Service Atlas 14. A link can be found in the permit part **III. REQUIREMENTS** 4.

**Comment #7: IV. SWPPP Management Requirements** 1. Multilevel numbering is off.

**Response:** This has been corrected, thank you.

**Comment #8: VIII. Standard Permit Conditions 2. Land Ownership and Change of Ownership** 2(c) – Please clarify if an individual needs a land disturbance permit for their personal residence if the portion of land sold is equal to or greater than one acre, as it states in the proposed permit, or only if they will be disturbing one acre or greater.

**Response:** The word ‘disturbed’ has been included in this portion to add clarity.

**DATE OF FACT SHEET:** 10/13/2021

**COMPLETED BY:**

**SARAH WRIGHT, ENVIRONMENTAL SPECIALIST**

**MISSOURI DEPARTMENT OF NATURAL RESOURCES**

**WATER PROTECTION PROGRAM**

**OPERATING PERMITS SECTION - STORMWATER AND CERTIFICATION UNIT**

**(573) 526-1139**

**[Sarah.wright@dnr.mo.gov](mailto:Sarah.wright@dnr.mo.gov), [dnr.generalpermits@dnr.mo.gov](mailto:dnr.generalpermits@dnr.mo.gov)**

## **Appendix C – Example Inspection Report**

- Example Inspection Log -

General Information	
<b>Project Name</b>	<b>City Project No.</b>
<b>Permit Holder/Owner</b>	
<b>Location</b>	
<b>General Contractor</b>	<b>Date of Inspection</b>
<b>Inspector's Name(s)</b>	
<b>Inspector's Contact Information</b>	
Inspection Information	
<b>Describe present phase of construction:</b>	
<b>Type of Inspection:</b> <input type="checkbox"/> Regular <input type="checkbox"/> During storm event <input type="checkbox"/> Post-storm event <input type="checkbox"/> Joint City/Contractor <input type="checkbox"/> Initial	
<b>Weather at time of this inspection?</b> <input type="checkbox"/> Raining <input type="checkbox"/> Snowing <input type="checkbox"/> High Winds <input type="checkbox"/> Sunny/Cloudy <input type="checkbox"/> Snow Cover <input type="checkbox"/> Other:	
<b>Are there any active discharges of sediment from the site at the time of inspection?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>If yes, describe:</b>	
<b>Is there evidence of any non-active discharges of sediment from the site that have occurred since the last inspection?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>If yes, describe:</b>	
<b>Have deficiencies noted on the last inspection been corrected?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>If no, explain:</b>	

**All deficiencies noted on the following pages shall be corrected within 7 days of this inspection.**

Copy of inspection report sent to:

- 1.
- 2.
- 3.

BMP/Activity		Corrective Action Needed and Notes
<b>Site complies with Erosion and Sediment Control Plan.</b> Are BMPs in place as required by the site plan?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Sediment leaving site</b> Are sediment deposits evident at discharge points and/or in receiving waters?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

BMP/Activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
<b>Solid Waste Management</b> Is trash/debris contained and/or removed regularly?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Installation and Maintenance of Washout Area</b> Are washout facilities (e.g. concrete, paint, stucco) available, clearly marked and maintained? Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Proper Storage and Disposal of Materials</b> Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material? Are materials that are potential stormwater contaminants stored inside or under cover? Are sanitary facilities made available, properly located and maintained?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Site Stabilization</b> Are all slopes and disturbed areas not actively being worked properly stabilized? Are temporary stabilization measures still in good condition (straw mulch, blankets, hydromulch)?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

BMP/Activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
<b>Installation and Maintenance of Stabilized Site Access</b> Is the construction access preventing sediment from being tracked off-site? Is rock compacted or filled with dirt? Are alternative measures (street sweeping) being done regularly?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Installation and Maintain of Temporary Sediment Controls</b> Are perimeter controls and sediment barriers adequately installed and in good condition (keyed in, runoff getting under or around)? Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Installation and Maintenance of Inlet Protection</b> Are storm drain inlets protected with approved devices? Do BMPs need maintenance (deteriorating, accumulated sediment)? Is runoff getting around or under BMP?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Installation of Sediment Basin or Trap</b> Is outlet area stabilized? Are sides and overflow stabilized and in good condition? Is capacity at least 80%?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Stockpiles Protected</b> Are all stockpiles located away from streets and drainage areas and properly protected?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Installation and Maintenance of Construction Fencing Along All Critical Areas</b> Are all stream buffers, wetlands and other protected areas designated with fencing to prevent encroachment? (Ex: Orange fencing to keep construction equipment out of stream buffer.)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Stream Crossings</b> Is stream crossing properly installed per plan including rock? Is disturbance minimized and BMPs in place for disturbed area?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

## **Appendix D – USGS Soils Report**



[illegible]



## Appendix G – Subcontractor Certifications/Agreements

### SUBCONTRACTOR CERTIFICATION STORMWATER POLLUTION PREVENTION PLAN

Project Number: \_\_\_\_\_

Project Title: \_\_\_\_\_

Operator(s): \_\_\_\_\_

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

**I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.**

This certification is hereby signed in reference to the above named project:

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Type of construction service to be provided: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

## Appendix H – Grading and Stabilization Activities Log

[illegible]

**Appendix I –Training Documentation**

## **Stormwater Pollution Prevention Training Log**

Project Name: Lee's Summit Joint Operations Facility

Project Location: 2 NE TUDOR ROAD

Instructor's Name(s):

Instructor's Title(s):

Course Location: \_\_\_\_\_ Date: \_\_\_\_\_

Course Length (hours): \_\_\_\_\_

Stormwater Training Topic:

- ☐ **Erosion Control BMPs**      ☐ **Emergency Procedures**
- ☐ **Sediment Control BMPs**      ☐ **Good Housekeeping BMPs**
- ☐ **Non-Stormwater BMPs**

Specific Training Objective: \_\_\_\_\_  
\_\_\_\_\_

Attendee Roster:

<b>No.</b>	<b>Name of Attendee</b>	<b>Company</b>
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

## Appendix J – Delegation of Authority Form

### Delegation of Authority

I, \_\_\_\_\_ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the [MISSOURI WATER POLLUTION CONTROL AND NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM STORMWATER RUNOFF FROM CONSTRUCTION ACTIVITIES GENERAL PERMIT \(Kansas GCP\)](#), at the \_\_\_\_\_ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(name of person or position)  
(company)  
(address)  
(city, State, zip)  
(phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in the Missouri [GCP](#), and that the designee above meets the definition of a "duly authorized representative" as set forth in the [Missouri GCP](#).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**Name:** \_\_\_\_\_

**Company:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

## SECTION 087100 - DOOR HARDWARE

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
  - 1. Swinging doors.
  - 2. Sliding doors.
  - 3. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
  - 1. Mechanical door hardware.
  - 2. Electromechanical door hardware.
  - 3. Automatic operators.
  - 4. Cylinders specified for doors in other sections.
- C. Related Sections:
  - 1. Division 08 Section "Hollow Metal Doors and Frames".
  - 2. Division 08 Section "Flush Wood Doors".
  - 3. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
  - 4. Division 08 Section "Automatic Door Operators".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
  - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
  - 2. FEMA P-361 2015/2021 - Design and Construction Guidance for Community Safe Rooms.
  - 3. ICC 500-2014/2020, ICC/NSSA Standard for the Design and Construction of Storm Shelters.
  - 4. ICC/IBC - International Building Code.
  - 5. NFPA 70 - National Electrical Code.
  - 6. NFPA 80 - Fire Doors and Windows.
  - 7. NFPA 101 - Life Safety Code.
  - 8. NFPA 105 - Installation of Smoke Door Assemblies.
  - 9. UL/ULC and CSA C22.2 - Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.

10. State Building Codes, Local Amendments.

- E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
  2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
  3. Content: Include the following information:
    - a. Type, style, function, size, label, hand, and finish of each door hardware item.
    - b. Manufacturer of each item.
    - c. Fastenings and other pertinent information.
    - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    - e. Explanation of abbreviations, symbols, and codes contained in schedule.
    - f. Mounting locations for door hardware.
    - g. Door and frame sizes and materials.
    - h. Warranty information for each product.
  4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:



1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
    - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    - b. Complete (risers, point-to-point) access control system block wiring diagrams.
    - c. Wiring instructions for each electronic component scheduled herein.
  2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

#### 1.4 CLOSEOUT SUBMITTALS

- A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.
- B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
- C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

- D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
  - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
  - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
  - 1. Function of building, purpose of each area and degree of security required.
  - 2. Plans for existing and future key system expansion.
  - 3. Requirements for key control storage and software.
  - 4. Installation of permanent keys, cylinder cores and software.
  - 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
  - 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
  - 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
  - 3. Review sequence of operation narratives for each unique access controlled opening.
  - 4. Review and finalize construction schedule and verify availability of materials.
  - 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
  - 1. Structural failures including excessive deflection, cracking, or breakage.
  - 2. Faulty operation of the hardware.
  - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 4. Electrical component defects and failures within the systems operation.
- C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 BUTT HINGES

- A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:
  - a. Two Hinges: For doors with heights up to 60 inches.
  - b. Three Hinges: For doors with heights 61 to 90 inches.
  - c. Four Hinges: For doors with heights 91 to 120 inches.
  - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
  - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
  - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
  - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
  - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
4. Hinge Options: Comply with the following:
  - a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
5. Manufacturers:
  - a. McKinney (MK) - TA/T4A Series, 5-knuckle.

### 2.2 CONTINUOUS HINGES

- A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
1. Manufacturers:
    - a. Pemko (PE).

- B. Pin and Barrel Continuous Hinges: ANSI/BHMA A156.26 Grade 1-600 pin and barrel continuous hinges with minimum 14 gauge Type 304 stainless steel hinge leaves, concealed stainless pin, and twin self-lubricated nylon bearings at each knuckle separation. Factory trim hinges to suit door height and prepare for electrical cut-outs.

- 1. Manufacturers:

- a. Markar Products; ASSA ABLOY Architectural Door Accessories (MR).
  - b. Pemko (PE).

## 2.3 POWER TRANSFER DEVICES

- A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets with a 1-year warranty. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

- 1. Manufacturers:

- a. McKinney (MK) - QC (# wires) Option.

- B. Electrified Quick Connect Stainless Steel Continuous Transfer Hinges: Provide electrified transfer stainless steel continuous hinges with electrical transfer access prep accessible without de-mounting door from the frame. Furnish with Molex™ standardized plug connectors with sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

- 1. Manufacturers:

- a. Markar Products; ASSA ABLOY Architectural Door Accessories (MR) - MP-ETAP-EL (# wires) Option.

- C. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

- 1. Manufacturers:

- a. Pemko (PE) - EL-CEPT Series.
  - b. Securitron (SU) - EL-CEPT Series.

- D. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-

door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:
  - a. McKinney (MK) - Electrical Connecting Kit: QC-R001.
  - b. McKinney (MK) - Connector Hand Tool: QC-R003.
2. Manufacturers:
  - a. McKinney (MK) - QC-C Series.

## 2.4 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.
  1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
  2. Furnish dust proof strikes for bottom bolts.
  3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
  4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
  5. Manufacturers:
    - a. Rockwood (RO).
- B. Coordinators: ANSI/BHMA A156.3 door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.
  1. Manufacturers:
    - a. Rockwood (RO).
- C. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
  1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
  2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.

3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls, where applicable, shall be provided with a 10" clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:
  - a. Rockwood (RO).

## 2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Patented Cylinders: ANSI/BHMA A156.5, Grade 1 Certified Products Directory (CPD) listed cylinders employing a utility patented and restricted keyway requiring the use of a patented key. Cylinders are to be protected from unauthorized manufacture and distribution by manufacturer's United States patents.
  1. Patented key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.
  2. Manufacturers:
    - a. Corbin Russwin (RU) - Access 3 AP.
    - b. Sargent (SA) - Degree DG1.
- C. Keying System: Each type of lock and cylinders to be factory keyed.
  1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
  2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
  3. New System: Key locks to a new key system as directed by the Owner.
- D. Key Quantity: Provide the following minimum number of keys:
  1. Change Keys per Cylinder: Two (2)
  2. Master Keys (per Master Key Level/Group): Five (5).
  3. Construction Keys (where required): Ten (10).
- E. Construction Keying: Provide construction master keyed cylinders.
- F. Key Registration List (Bitting List):
  1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.

2. Provide transcript list in writing or electronic file as directed by the Owner.

## 2.6 KEY CONTROL

- A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:
  - a. Lund Equipment (LU).
  - b. MMF Industries (MM).
  - c. Telkee (TK).

## 2.7 MORTISE LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:
  - a. Corbin Russwin Hardware (RU) - ML2000 Series.
  - b. Sargent Manufacturing (SA) - 8200 Series.

## 2.8 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

- B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.



## 2.9 CONVENTIONAL EXIT DEVICES

### A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
  - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
  - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
6. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
7. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
8. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
9. Rail Sizing: Provide exit device rails factory sized for proper door width application.
10. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

### B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Electromechanical exit devices shall have the following functions and features:
  - a. Universal Molex plug-in connectors that have standardized color-coded wiring and are field configurable in fail safe or fail secure and operate from 12vdc to 24vdc regulated.
  - b. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.
  - c. Options to be available for request-to-exit or enter signaling, latchbolt and touchbar monitoring.

- d. Field configurable electrified trim to fail-safe or fail-secure that operates from 12-24VDC.
  - e. Five-year limited warranty for electromechanical features.
2. Manufacturers:
- a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
  - b. Sargent Manufacturing (SA) - 80 Series.
- C. Multi-Point Exit Devices (Storm Shelter Openings): Multi-point exit devices specifically engineered for out-swinging door applications on tornado or hurricane resistant storm shelter openings. Extra heavy duty steel component construction with each of the latching points automatically activated when the device is locked. The multi-point exit device is approved for usage as part of a complete ICC 500 (2014/2020) and FEMA P-361 (2015/2021) door, frame and hardware assembly.
1. Manufacturers:
- a. Corbin Russwin Hardware (RU) - FE5400S Series.
  - b. Sargent Manufacturing (SA) - FM8700 Series.

## 2.10 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
- 1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
  - 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
  - 3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
  - 4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
  - 5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
  - 6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

1. Manufacturers:

- a. Corbin Russwin Hardware (RU) - DC8000 Series.
- b. Norton Rixson (NO) - 9500 Series.
- c. Sargent Manufacturing (SA) - 281 Series.

- C. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard..

1. Manufacturers:

- a. Corbin Russwin Hardware (RU) - DC6000 Series.
- b. Norton Rixson (NO) - 7500 Series.
- c. Sargent Manufacturing (SA) - 351 Series.

- D. Door Closers, Surface Mounted (Cam Action): ANSI/BHMA 156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, high efficiency door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be of the cam and roller design, one piece cast aluminum silicon alloy body with adjustable backcheck and independently controlled valves for closing sweep and latch speed.

1. Manufacturers:

- a. Corbin Russwin (RU) - DC5000 Series.
- b. Norton Rixson (NO) - 2800ST Series.
- c. Sargent Manufacturing (SA) - 422 Series.

## 2.11 ARCHITECTURAL TRIM

### A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), fabricated from the following:

- a. Stainless Steel: 300 grade, 050-inch thick.
- 5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
- 6. Manufacturers:
  - a. Rockwood (RO).

## 2.12 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
  - 1. Manufacturers:
    - a. Rockwood (RO).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
  - 1. Manufacturers:
    - a. Norton Rixson (RF).
    - b. Rockwood (RO).
    - c. Sargent Manufacturing (SA).

## 2.13 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
  - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
  - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
  - 1. Pemko (PE).

## 2.14 ELECTRONIC ACCESSORIES

- A. Push-Button Switches: Industrial grade momentary or alternate contact, back-lighted push buttons with stainless-steel switch enclosures. 12/24 VDC bi-color illumination suitable for either flush or surface mounting.
  - 1. Manufacturers:
    - a. Alarm Controls (AK) - TS Series.
    - b. Securitron (SU) - PB Series.
- B. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.
  - 1. Manufacturers:
    - a. Securitron (SU) - DPS Series.
- C. Intelligent Switching Power Supplies: Provide power supplies with single, dual or multi-voltage configurations at 12 and/or 24VDC. Power Supply shall have battery backup function with an integrated battery charging circuit. The power supply shall have a standard, integrated Fire Alarm Interface (FAI). The power supply shall provide capability for secondary voltage, power distribution, direct lock control and network monitoring through add on modules. The power supply shall be expandable up to 16 individually protected outputs. Output modules shall provide individually protected, continuous outputs and/or individually protected, relay controlled outputs. Network modules shall provide remote monitoring functions such as status reporting, fault reporting and information logging.

1. Manufacturers:

- a. Securitron (SU) - AQL Series.

2.15 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.16 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
  1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
  2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
  3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
  4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
- E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

### 3.4 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
  1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

### 3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to

operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

### 3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

### 3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

### 3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
  - 1. Quantities listed are for each pair of doors, or for each single door.
  - 2. The supplier is responsible for handing and sizing all products.
  - 3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
- B. Manufacturer's Abbreviations:
  - 1. MK - McKinney
  - 2. MR - Markar
  - 3. PE - Pemko
  - 4. SU - Securitron
  - 5. RO - Rockwood
  - 6. SA - SARGENT
  - 7. RF - Rixson
  - 8. NO - Norton
  - 9. LU - Lund Equipment Co



**Hardware Sets****Set: 1.0**

Doors: 039A, 042B, 135, 200B, 200C, 201B, FENCE GATE 1, FENCE GATE 2, FENCE GATE 3, FENCE GATE 4, FENCE GATE 5

Description: OH / STORM SHUTTER / TRASH

1 Padlock	DG1 758	SA 087100
1 Hardware By Others	Hardware By Door Supplier	

Notes: PADLOCK @ FENCE GATES

**Set: 2.0**

Doors: 001, 002

Description: ALD SLIDING


1 Hardware By Others	Hardware By Door Supplier
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Notes: CARD READER REQUIRED AT 001.

**Set: 3.0**

Doors: 018A, 155C, ST-1A

Description: FEMA ICC500 EXTERIOR EXIT DEVICE EO CPS CLOSER

1 Continuous Hinge	HG305 x Door Height	630	MR	087100	
1 Multipoint Exit Device, Exit Only	12 FM8710 EO	US32D	SA	087100	
1 Door Closer	TB 281 CPS	EN	SA	087100	
1 Door Stop	462	US2C	RO	087100	
1 Gasketing	S773D (Head & Jambs)		PE	087100	
1 Rain Guard	346C x Overall Frame width		PE	087100	
1 Sweep	345ANB x Door Width		PE	087100	
1 Threshold	1715A x Opening Width		PE	087100	
1 Position Switch	DPS-M-BK	SU	087100		

Notes: CUTOUT THRESHOLD SO BOTTOM STRIKE CAN BE MOUNTED TO CONCRETE FLOOR AND NOT ON THE THRESHOLD. DOOR WILL HAVE A 5/8" UNDERCUT.

**Set: 4.0**

Doors: 005

Description: FEMA ICC500 EXTERIOR MP EXIT W/ELEC TRIM CPS CLOSER

1 Continuous Hinge	HG305 EL4 x Door Height	630	MR	087100	⚡
1 Fail Secure Exit Device	DG1 12 FM8774-24v ETMB 306 AUX	US32D	SA	087100	⚡
1 Door Closer	TB 281 CPS	EN	SA	087100	
1 Latch Cover Kick Plate	BFLG1050 10" 2" LDW	US32D	RO	087100	
1 Door Stop	462	US2C	RO	087100	
1 Gasketing	S773D (Head & Jambs)		PE	087100	
1 Rain Guard	346C x Overall Frame width		PE	087100	
1 Sweep	345ANB x Door Width		PE	087100	
1 Threshold	1715A x Opening Width		PE	087100	
1 ElectroLynx Harness	QC-C1500P		MK	087100	⚡
1 ElectroLynx Harness	QC-C Length Required		MK	087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID		
1 Position Switch	DPS-M-BK		SU	087100	⚡
1 Motion Sensor	XMS		SU	087100	⚡
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)		SU	087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

CUTOUT THRESHOLD SO BOTTOM STRIKE CAN BE MOUNTED TO CONCRETE FLOOR AND NOT ON THE THRESHOLD. DOOR WILL HAVE A 5/8" UNDERCUT.

**Set: 5.0**

Doors: 018B

Description: FEMA ICC500 EXTERIOR EXIT DEVICE PR CLOSER

1 Continuous Hinge	HG305 x Door Height	630	MR	087100	
1 Multipoint Exit Device	DG1 12 FM8706 ETMB	US32D	SA	087100	
1 Surface Closer	SRI TB 281 P10	EN	SA	087100	
1 Door Stop	462	US2C	RO	087100	
1 Gasketing	S773D (Head & Jambs)		PE	087100	

1 Threshold	1715A x Opening Width	PE	087100	
1 Position Switch	DPS-M-BK	SU	087100	⚡

Notes: CUTOUT THRESHOLD SO BOTTOM STRIKE CAN BE MOUNTED TO CONCRETE FLOOR AND NOT ON THE THRESHOLD. DOOR WILL HAVE A 5/8" UNDERCUT.

**Set: 6.0**

Doors: 043A, 049B

Description: EXTERIOR ALD CARD READER EXIT ELR X PULL X CPS CLOSER

1 Continuous Hinge	CFMSLF-HD1 PT	PE	087100	
1 Electric Power Transfer	EL-CEPT	630	SU	087100 ⚡
1 Rim Exit Device, Storeroom	DG1 55 AD8504 x Pull (see below)	US32D	SA	087100 ⚡
1 Cylinder Rim/Mortise	type as req'd for hardware item, match existing key system			
1 Door Pull, offset	RM3310-24 Mtg-Type 12XHD	US32D	RO	087100
1 Door Closer	CPS7500	689	NO	087100
1 Drop Plate	7788	689	NO	087100
1 Blade Stop	6891	689	NO	087100
1 Set Weatherstrip	by Door Manufacturer			
1 Sweep	3452AV	PE	087100	
1 Threshold	2005AT	PE	087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500	MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)	MK	087100	⚡
1 Position Switch	DPS	SU	087100	⚡
1 Card Reader	provided by owner	HID		
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)	SU	087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

**Set: 7.0**

Doors: 100A

Description: EXTERIOR ALD RIM EXIT MELR X PULL OH STOP AUTO OPERATOR

1 Continuous Hinge	CFMSLF-HD1 PT	PE	087100	
1 Electric Power Transfer	EL-CEPT	630	SU	087100 ⚡

1 Rim Exit Device, Storeroom	DG1 55 56 AD8504 x Pull (see below)	US32D	SA	087100	⚡
1 Door Pull, offset	RM3310-24 Mtg-Type 12XHD	US32D	RO	087100	
1 Conc Overhead Stop	1-336	630	RF	087100	
1 Automatic Opener	6061 D	689	NO	087100	⚡
1 Set Weatherstrip	by Door Manufacturer				
1 Sweep	3452AV		PE	087100	
1 Threshold	254x226AFGT		PE	087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)		MK	087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID		
1 Position Switch	DPS		SU	087100	⚡
1 Wall Switch, wave mullion mount	704		NO	087100	⚡
1 Door Switch, mullion mount	503		NO	087100	⚡
1 Card Reader	provided by owner		HID		
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)		SU	087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. PROGRAM ACTUATOR SWITCHES AS DIRECTED BY SECURITY FOR ACCESS CONTROL TIMES OR BY CARD READER ACTIVATION. ALWAYS FREE EGRESS.

### Set: 8.0

Doors: 042C

Description: EXTERIOR HMD CARD READER LOCK CPS CLOSER

2 Hinge, Full Mortise, Hvy Wt	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK	087100	
1 Hinge, Full Mortise, Hvy Wt	T4A3386 QC12 4-1/2" x 4-1/2"	US32D	MK	087100	⚡
1 Fail Safe Lock	DG1 RX 8270-24V LNMB	US32D	SA	087100	⚡
1 Door Closer	CPS7500	689	NO	087100	
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100	
1 Rain Guard	346C x Overall Frame width		PE	087100	
1 Gasketing	2891AS		PE	087100	
1 Sweep	3452AV		PE	087100	
1 Threshold	254x226AFGT		PE	087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door		MK	087100	⚡

1 Card Reader	width/hardware) Wall Mounted Reader by access control provider	HID	
1 Position Switch	DPS	SU 087100	⚡
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)	SU 087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

### Set: 8.1

Doors: TR-01

Description: EXTERIOR HMD STOREROOM LOCK CPS CLOSER

3 Hinge, Full Mortise, Hvy Wt	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK 087100
1 Storeroom/Closet Lock	3 CPC DG1 8204 LNMB	US32D	SA 087100
1 Surface Closer	SRI TB 281 CPS	EN	SA 087100
3 Silencer	608		RO 087100

Notes: EXTERIOR EXPOSED.

### Set: 8.2 ALT 2

Doors: 200A, 201A

Description: EXTERIOR HMD INSWING CARD READER LOCK CLOSER

2 Hinge, Full Mortise, Hvy Wt	T4A3386 4-1/2" x 4-1/2"	US32D	MK 087100	
1 Hinge, Full Mortise, Hvy Wt	T4A3386 QC12 4-1/2" x 4-1/2"	US32D	MK 087100	⚡
1 Fail Secure Lock	DG1 RX 8271-24V LNMB	US32D	SA 087100	⚡
1 Surface Closer	7500	689	NO 087100	
1 Wall Stop	RM861	US32D	RO 087100	
1 Gasketing	S88D		PE 087100	
1 Door Bottom	209AV		PE 087100	
1 Door Bottom	412CPKL		PE 087100	
1 Threshold	2005AT		PE 087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK 087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)		MK 087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID	

1 Position Switch	DPS	SU 087100	⚡
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)	SU 087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

### Set: 9.0

Doors: 109B

Description: CARD READER LOCK PR CLOSER GASKET

2 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2"	US26D MK 087100	
1 Hinge (heavy weight)	T4A3786 QC12 4-1/2" x 4-1/2"	US26D MK 087100	⚡
1 Fail Safe Lock	DG1 RX 8270-24V LNMB	US32D SA 087100	⚡
1 Cylinder Rim/Mortise	type as req'd for hardware item, match existing key system		
1 Door Closer	PR7500	689 NO 087100	
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D RO 087100	
1 Wall Stop	RM861	US32D RO 087100	
1 Gasketing	S88D	PE 087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500	MK 087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)	MK 087100	⚡
1 Position Switch	DPS	SU 087100	⚡
1 Card Reader	provided by owner	HID	
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)	SU 087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

### Set: 10.0

Doors: 007B, 008B, 011, 015B, 016B, 017A, 017B, 041, 107, 138B, 140A, 146, 148, 151

Description: CARD READER LOCK CLOSER GASKET

2 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D MK 087100	
1 Hinge (heavy weight)	T4A3786 QC12 4-1/2" x 4-1/2"	US26D MK 087100	⚡
1 Fail Safe Lock	DG1 RX 8270-24V LNMB	US32D SA 087100	⚡

1 Surface Closer	7500	689	NO	087100	
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100	
1 Wall Stop	RM861	US32D	RO	087100	
1 Gasketing	S88D		PE	087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)		MK	087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID		
1 Position Switch	DPS		SU	087100	⚡
1 Card Reader	provided by owner		HID		
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)		SU	087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

146 NEEDS FM200 CONFIRM GASKETING WITH DOOR SUPPLIER.

### Set: 11.0

Doors: 101, ~~138~~

Description: ALD CARD READER LOCK CPS CLOSER WIDE STILE REQUIRED\*\*\*

2 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2"	US26D	MK	087100	
1 Hinge (heavy weight)	T4A3786 QC12 4-1/2" x 4-1/2"	US26D	MK	087100	⚡
1 Fail Safe Lock	DG1 RX 8270-24V LNMB	US32D	SA	087100	⚡
1 Door Closer	CPS7500	689	NO	087100	
1 Drop Plate	7788	689	NO	087100	
1 Blade Stop	6891	689	NO	087100	
1 Set Weatherstrip	by Door Manufacturer				
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)		MK	087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID		
1 Position Switch	DPS		SU	087100	⚡
1 Card Reader	provided by owner		HID		
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)		SU	087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

**Set: 12.0**

Doors: 109A

Description: ALD CARD READER LOCK CPS CLOSER WIDE STILE REQUIRED\*\*\* REMOTE RELEASE

1 Continuous Hinge	CFMSLF-HD1 PT		PE	087100	
1 Electric Power Transfer	EL-CEPT	630	SU	087100	⚡
1 Fail Safe Lock	DG1 RX 8270-24V LNMB	US32D	SA	087100	⚡
1 Door Closer	CPS7500	689	NO	087100	
1 Drop Plate	7788	689	NO	087100	
1 Blade Stop	6891	689	NO	087100	
1 Set Weatherstrip	by Door Manufacturer				
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)		MK	087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID		
1 Position Switch	DPS		SU	087100	⚡
1 Card Reader	provided by owner		HID		
1 Pushbutton	PB3ER		SU	087100	⚡
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)		SU	087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS. REMOTE RELEASE FROM RECEPTION.

LEVEL III BULLET RESISTANT DOOR AND GLASS REQUIRED.

**Set: 13.0**

Doors: 105B

Description: ALD CARD READER LOCK CLOSER GASKET WIDE STILE REQUIRED\*\*\*

2 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100	
1 Hinge (heavy weight)	T4A3786 QC12 4-1/2" x 4-1/2"	US26D	MK	087100	⚡



1 Fail Safe Lock	DG1 RX 8270-24V LNMB	US32D	SA	087100	⚡
1 Surface Closer	7500	689	NO	087100	
1 Drop Plate	7788	689	NO	087100	
1 Wall Stop	RM861	US32D	RO	087100	
1 Gasketing	S88D		PE	087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)		MK	087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID		
1 Position Switch	DPS		SU	087100	⚡
1 Card Reader	provided by owner		HID		
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)		SU	087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

#### Set: 14.0

Doors: 152A

Description: CARD READER LOCK CLOSER OH STOP GASKET

2 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100	
1 Hinge (heavy weight)	T4A3786 QC12 4-1/2" x 4-1/2"	US26D	MK	087100	⚡
1 Fail Safe Lock	DG1 RX 8270-24V LNMB	US32D	SA	087100	⚡
1 Conc Overhead Stop	1-336	630	RF	087100	
1 Surface Closer	7500	689	NO	087100	
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100	
1 Gasketing	S88D		PE	087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)		MK	087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID		
1 Position Switch	DPS		SU	087100	⚡
1 Card Reader	provided by owner		HID		
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)		SU	087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

**Set: 15.0**

Doors: 045

Description: PAIR CARD READER LOCK CLOSER OH STOP SELF LATCHING FB

5 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100	
1 Hinge (heavy weight)	T4A3786 QC12 4-1/2" x 4-1/2"	US26D	MK	087100	⚡
1 Flush Bolt	2905/2805 per dr mtrl self latch top only	US26D	RO	087100	
1 Fail Safe Lock	DG1 RX 8270-24V LNMB	US26D	SA	087100	⚡
1 Coordinator	2600	Black	RO	087100	
1 Mounting Bracket	2601 Mounting Brackets	Black	RO	087100	
2 Conc Overhead Stop	1-336	630	RF	087100	
2 Surface Closer	7500	689	NO	087100	
2 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100	
2 Silencer	608		RO	087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)		MK	087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID		
2 Position Switch	DPS		SU	087100	⚡
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)		SU	087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

**Set: 16.0**

Doors: ST-1C

Description: RIM EXIT ELEC TRIM FAIL SAFE CLOSER GASKET

2 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100	
1 Hinge (heavy weight)	T4A3786 QC12 4-1/2" x 4-1/2"	US26D	MK	087100	⚡

1 Fail Safe Exit Device	DG1 12 55 8875-24v ETMB	US32D	SA	087100	⚡
1 Surface Closer	2800ST	689	NO	087100	
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100	
1 Wall Stop	RM861	US32D	RO	087100	
1 Gasketing	S88D		PE	087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)		MK	087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID		
1 Position Switch	DPS		SU	087100	⚡
1 Power Supply	AQD or Centralized Power Source (coordinate w/GC)		SU	087100	⚡

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

**Set: 17.0**

Doors: 007A, 008A, 015A, 016A, 019, 022, 023, 106, 110, 111, 112, 113, 114, 115, 116, 121, 124, 125, 126, 127, 128, 129, 141, 142, 143, 144, 145

Description: OFFICE LOCK NO CLOSER GASKET

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	087100
1 Office/Entry Lock	DG1 8205 LNMB	US26D	SA	087100
1 Wall Stop	RM861	US32D	RO	087100
1 Gasketing	S88D		PE	087100

Notes: ALT 1 ADD CARD READER

OPENING 022, 023, 100, 110, 111, 112, 113, 114, 115, 116, 121, 124, 125, 126, 127, 128, 129, 141, 142, 143, 144, 145

PROIVE HARDWARE SET WITH THE FOLLOWING ITEMS FOR ALTERNATE #1 - 2 T4A3786, 1 T4A3786 QC, DG1 8270 FAIL SAFE / 8271 FAIL SECURE RX LNMB 26D, 2 WIRING HARNESS, DPS, POWER SUPPLY AND CARD READER.

**Set: 17.1**

Doors: 105A

Description: ALD OFFICE LOCK NO CLOSER GASKET

Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	087100
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Office/Entry Lock	DG1 8205 LNMB	US26D	SA	087100
Wall Stop	RM861	US32D	RO	087100
Set Weatherstrip	by Door Manufacturer			

**Set: 18.0**

Doors: 039B, 039C

Description: OFFICE LOCK NO CLOSER

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	087100
1 Office/Entry Lock	DG1 8205 LNMB	US26D	SA	087100
1 Surface Closer	7500 PR/REG per dr swing	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
3 Silencer	608		RO	087100

Notes: ALT 1 ADD CARD READER  
OPENING 039B, 039C

PROIVE HARDWARE SET WITH THE FOLLOWING ITEMS FOR ALTERNATE #1 - 2 T4A3786,  
1 T4A3786 QC, DG1 8270 FAIL SAFE / 8271 FAIL SECURE RX LNMB 26D, 2 WIRING  
HARNESS, DPS, POWER SUPPLY AND CARD READER.

**Set: 19.0**

Doors: 134

Description: STOREROOM LOCK CPS CLOSER

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2"	US26D	MK	087100
1 Storeroom/Closet Lock	DG1 8204 LNMB	US26D	SA	087100
1 Cylinder Rim/Mortise	type as req'd for hardware item, match existing key system			
1 Door Closer	CPS7500	689	NO	087100
1 Gasketing	S88D		PE	087100

Notes: GC TO CONFIRM EXISTING FRAME PREP WILL ACCEPT NEW HARWARE AS  
SPECIFIED. COMPLY WITH ALL UL CRITERIA FOR FIELD MODIFICATIONS.

ALT 1 ADD CARD READER  
OPENING 134

PROIVE HARDWARE SET WITH THE FOLLOWING ITEMS FOR ALTERNATE #1 - 2 T4A3786,  
1 T4A3786 QC, DG1 8270 FAIL SAFE / 8271 FAIL SECURE RX LNMB 26D, 2 WIRING  
HARNESS, DPS, POWER SUPPLY AND CARD READER.

**Set: 20.0**Doors: 020, ~~153~~

Description: STOREROOM LOCK CLOSER

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	087100
1 Storeroom/Closet Lock	DG1 8204 LNMB	US26D	SA	087100
1 Surface Closer	7500	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
3 Silencer	608		RO	087100

Notes: ALT 1 ADD CARD READER  
OPENING 020 AND 153

PROIVE HARDWARE SET WITH THE FOLLOWING ITEMS FOR ALTERNATE #1 - 2 T4A3786,  
1 T4A3786 QC, DG1 8270 FAIL SAFE / 8271 FAIL SECURE RX LNMB 26D, 2 WIRING  
HARNESS, DPS, POWER SUPPLY AND CARD READER.

**Set: 21.0**

Doors: 014

Description: STOREROOM LOCK PR CLOSER STC GASKET WIDE

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 5" x 4-1/2"	US26D	MK	087100
1 Storeroom/Closet Lock	DG1 8204 LNMB	US26D	SA	087100
1 Door Closer	PR7500	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
2 Gasketing	S88D Double Row for Sound		PE	087100
1 Frame Protection Pads	ACP112BL		PE	087100
1 Door Bottom, concealed	434APKL		PE	087100
1 Threshold	154A		PE	087100

**Set: 22.0**

Doors: 040, 138A, 149, 157

Description: STOREROOM LOCK CLOSER STC GASKET

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	087100
1 Storeroom/Closet Lock	DG1 8204 LNMB	US26D	SA	087100
1 Surface Closer	7500	689	NO	087100

1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
2 Gasketing	S88D Double Row for Sound		PE	087100
1 Frame Protection Pads	ACP112BL		PE	087100
1 Door Bottom, concealed	434APKL		PE	087100
1 Threshold	154A		PE	087100

Notes: ALT 1 ADD CARD READER  
OPENING 040, 138A, 149, 157

PROIVE HARDWARE SET WITH THE FOLLOWING ITEMS FOR ALTERNATE #1 - 2 T4A3786,  
1 T4A3786 QC, DG1 8270 FAIL SAFE / 8271 FAIL SECURE RX LNMB 26D, 2 WIRING  
HARNESS, DPS, POWER SUPPLY AND CARD READER.

**Set: 23.0**

Doors: 122

Description: STOREROOM LOCK NO CLOSER

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	087100
1 Storeroom/Closet Lock	DG1 8204 LNMB	US26D	SA	087100
1 Surf Overhead Stop	10-336	630	RF	087100
3 Silencer	608		RO	087100

**Set: 24.0**

Doors: 021

Description: STOREROOM EXIT PR CLOSER STC GASKET

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2"	US26D	MK	087100
1 Rim Exit Device, Storeroom	DG1 8804 ETMB	US32D	SA	087100
1 Door Closer	PR7500	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
2 Gasketing	S88D Double Row for Sound		PE	087100
1 Frame Protection Pads	ACP112BL		PE	087100
1 Door Bottom, concealed	434APKL		PE	087100
1 Threshold	154A		PE	087100

Notes: ALT 1 ADD CARD READER  
OPENING 021

PROIVE HARDWARE SET WITH THE FOLLOWING ITEMS FOR ALTERNATE #1 - 2 T4A3786,

1 T4A3786 QC, DG1 55-8876 ETMB 32D, 2 WIRING HARNESS, DPS, POWER SUPPLY AND CARD READER.

**Set: 25.0**

Doors: 042A

Description: PAIR STOREROOM LOCK OH STOP CPS CLOSER GASKET SWEEP TH

8 Hinge, Full Mortise, Hvy Wt	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK	087100
1 Dust Proof Strike	570	US26D	RO	087100
2 Flush Bolt	555/557 per dr mtrl	US26D	RO	087100
1 Storeroom/Closet Lock	DG1 8204 LNMB	US26D	SA	087100
2 Door Closer	CPS7500	689	NO	087100
2 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
2 Wall Stop	RM861	US32D	RO	087100
1 Astragal Set	by Door Manufacturer			
1 Gasketing	2891AS		PE	087100
2 Sweep	315CN		PE	087100
1 Threshold	171A		PE	087100

Notes: ALT 1 ADD CARD READER  
OPENING 042A

PROIVE HARDWARE SET WITH THE FOLLOWING ITEMS FOR ALTERNATE #1 - 7 T4A3786,  
1 T4A3786 QC, DG1 8270 FAIL SAFE / 8271 FAIL SECURE RX LNMB 26D, 2 WIRING  
HARNESS, DPS, POWER SUPPLY AND CARD READER.

**Set: 26.0**

Doors: 153, 156

Description: PAIR STOREROOM LOCK MFB CLOSER

6 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100
1 Dust Proof Strike	570	US26D	RO	087100
2 Flush Bolt	555/557 per dr mtrl	US26D	RO	087100
1 Storeroom/Closet Lock	DG1 8204 LNMB	US26D	SA	087100
1 Conc Overhead Stop	1-336	630	RF	087100
1 Surface Closer	7500	689	NO	087100
2 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
2 Silencer	608		RO	087100

Notes: ALT 1 ADD CARD READER

## OPENING 156

PROVIDE HARDWARE SET WITH THE FOLLOWING ITEMS FOR ALTERNATE #1 - 5 T4A3786,  
1 T4A3786 QC, DG1 8270 FAIL SAFE / 8271 FAIL SECURE RX LNMB 26D, 2 WIRING  
HARNESS, DPS, POWER SUPPLY AND CARD READER.

**Set: 27.0**

Doors: 048, 140B

Description: CLASSROOM LOCK CLOSER GASKET

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100
1 Classroom Lock	DG1 8237 LNMB	US26D	SA	087100
1 Surface Closer	7500	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
1 Gasketing	S88D		PE	087100

Notes: ALT 1 ADD CARD READER  
OPENING 048

PROVIDE HARDWARE SET WITH THE FOLLOWING ITEMS FOR ALTERNATE #1 - 2 T4A3786,  
1 T4A3786 QC, DG1 8270 FAIL SAFE / 8271 FAIL SECURE RX LNMB 26D, 2 WIRING  
HARNESS, DPS, POWER SUPPLY AND CARD READER.

**Set: 28.0**

Doors: 047

Description: PAIR CLASSROOM LOCK SELF LATCH FB TOP CLOSER GASKET

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100
1 Flush Bolt	2905/2805 per dr mtrl self latch top only	US26D	RO	087100
1 Classroom Lock	DG1 8237 LNMB	US26D	SA	087100
1 Coordinator	2600	Black	RO	087100
1 Mounting Bracket	2601 Mounting Brackets	Black	RO	087100
1 Conc Overhead Stop	1-336	630	RF	087100
1 Surface Closer	7500	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Gasketing	S88D		PE	087100

**Set: 29.0**

Doors: 155A, 155B



Description: CLASSROOM EXIT HO CLOSER GASKET

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2"	US26D	MK	087100
1 Rim Exit Device, Classroom	DG1 8813 ETMB	US32D	SA	087100
1 Door Closer	PR7500	689	NO	087100
1 Surface Closer	PR7500H	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
1 Gasketing	S88D		PE	087100

**Set: 30.0**

Doors: 012, 013, 025, 027, 028, 029, 036, 038, 130, 131, 132, 133, 136, 137

Description: PRIVACY W/INDICATOR NO CLOSER GASKET

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	087100
1 Privacy Lock	V20 8266 LNMB	US26D	SA	087100
1 Wall Stop	RM861	US32D	RO	087100
1 Gasketing	S88D		PE	087100

**Set: 31.0**

Doors: 032, 033, 034, 123

Description: PRIVACY W/INDICATOR NO CLOSER HINGE PIN GASKET

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	087100
1 Privacy Lock	V20 8266 LNMB	US26D	SA	087100
1 Door Stop	76306	US26D	MK	087100
1 Gasketing	S88D		PE	087100

Notes: ALT 1 ADD CARD READER  
OPENING 123

PROIVE HARDWARE SET WITH THE FOLLOWING ITEMS FOR ALTERNATE #1 - 2 T4A3786,  
1 T4A3786 QC, DG1 NAC-82281 FAIL SECURE / NAC-82280 FAIL SAFE W/PHR OPTION X V20  
INDICATOR, 2 WIRING HARNESS, DPS, POWER SUPPLY AND CARD READER.

**Set: 32.0**

Doors: 147

Description: PASSAGE LATCH CLOSER OH STOP

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100
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1 Passage Latch	8215 LNMB	US26D	SA	087100
1 Conc Overhead Stop	1-336	630	RF	087100
1 Surface Closer	7500	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
3 Silencer	608		RO	087100

**Set: 33.0**

Doors: 139

Description: PASSAGE LATCH PR CLOSER GASKET

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100
1 Passage Latch	8215 LNMB	US26D	SA	087100
1 Door Closer	PR7500	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
1 Gasketing	S88D		PE	087100

**Set: 34.0**

Doors: 154B

Description: PASSAGE LATCH NO CLOSER

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100
1 Passage Latch	8215 LNMB	US26D	SA	087100
1 Wall Stop	RM861	US32D	RO	087100
3 Silencer	608		RO	087100

**Set: 35.0**

Doors: 030

Description: PASSAGE LATCH CLOSER OH STOP GASKET

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100
1 Passage Latch	8215 LNMB	US26D	SA	087100
1 Conc Overhead Stop	1-336	630	RF	087100
1 Surface Closer	7500	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
1 Gasketing	S88D		PE	087100

**Set: 36.0**

Doors: 049A

## Description: PASSAGE CLOSER GASKET

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100
1 Passage Latch	8215 LNMB	US26D	SA	087100
1 Surface Closer	7500	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
1 Gasketing	S88D		PE	087100

**Set: 37.0**

Doors: ST-1B

## Description: PASSAGE RIM EXIT CAM CLOSER GASKET

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK	087100
1 Rim Exit Device, Passage	12 8815 ETMB	US32D	SA	087100
1 Surface Closer	2800ST	689	NO	087100
1 Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO	087100
1 Wall Stop	RM861	US32D	RO	087100
1 Gasketing	S88D		PE	087100

**Set: 38.0**

Doors: 043B

## Description: ALD PASSAGE EXIT PR CLOSER

1 Continuous Hinge	CFMSLF-HD1		PE	087100
1 Rim Exit Device, Passage	AD8515 ETMB	US32D	SA	087100
1 Door Closer	PR7500	689	NO	087100
1 Drop Plate	7788	689	NO	087100
1 Blade Stop	6891	689	NO	087100
1 Wall Stop	RM861	US32D	RO	087100
1 Set Weatherstrip	by Door Manufacturer			

**Set: 39.0**

Doors: 100B

## Description: ALD DUMMY EXIT X PULL X AUTO OPERATOR

1 Continuous Hinge	CFMSLF-HD1		PE	087100
1 Push Bar	8893	US32D	SA	087100
1 Door Pull, offset	RM3310-24 Mtg-Type 12XHD	US32D	RO	087100
1 Conc Overhead Stop	1-336	630	RF	087100

1 Automatic Opener	6061 D	689	NO	087100	⚡
1 Set Weatherstrip	by Door Manufacturer				
1 Wall Switch, wave mullion mount	704		NO	087100	⚡

**Set: 40.0**

Doors: MISC

Description: MISC

1 BITTING LIST	KEY RECORDS	SA
1 KEY BLANKS	BOX OF 50	SA
1 Key Cabinet	Sized per specification documents	LU
1 Knox Box	Knox Box (coordinate with local fire station for requirements and location)	

**Set: 41.0**

Doors: 150

Description: ICC500 PAIR EXIT DEVICE W/ELEC TRIM CLOSER MHO

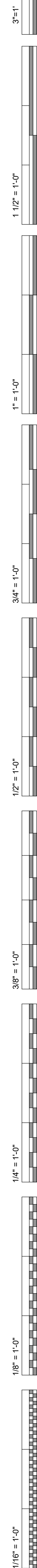
1 Continuous Hinge	HG305 x Door Height	630	MR	087100	
1 Continuous Hinge	HG305 EL4 x Door Height	630	MR	087100	⚡
1 Multipoint Exit Device	DG1 12 FM8706 ETMB	US32D	SA	087100	
1 Fail Secure Exit Device	12 FM8774-24v ETMB	US32D	SA	087100	⚡
2 Surface Closer	TB 281 P10	EN	SA	087100	
2 Latch Cover Kick Plate	BFLG1050 10" 2" LDW	US32D	RO	087100	
2 Electromagnetic Holder	998M	689	RF	087100	⚡
2 Astragal	305CN x Door Height		PE	087100	
1 Gasketing	S773D (Head & Jambs)		PE	087100	
1 Threshold	1715A x Opening Width		PE	087100	
1 ElectroLynx Harness	QC-C1500P/QC-C1500		MK	087100	⚡
1 ElectroLynx Harness	QC-Cxx/CxxP (size to door width/hardware)		MK	087100	⚡
1 Card Reader	Wall Mounted Reader by access control provider		HID		
2 Position Switch	DPS-M-BK		SU	087100	⚡
1 Power Supply	AQD1-1R x hardware requirements		SU	087100	⚡

Notes: CUTOUT THRESHOLD SO BOTTOM STRIKE CAN BE MOUNTED TO CONCRETE FLOOR AND NOT ON THE THRESHOLD.  
ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE EGRESS.

DOORS WILL HAVE A 5/8" UNDERCUT.

END OF SECTION 087100





- ### GENERAL NOTES - GRID GEOMETRY PLANS:
1. RE. SHEET G-011 FOR ADDITIONAL GENERAL NOTES THAT ARE APPLICABLE.
  2. DIMENSIONS FOR EDGE OF SLAB, SLAB OPENINGS, SLAB DEPRESSIONS, AND/OR OTHER FEATURES TO BE SHOWN ON THE STRUCTURAL DRAWINGS.
  3. WP = WORK POINTS
  4. COMMENCEMENT OF THE START BUILDING LAYOUT FROM THE FIRST WORK POINT, THEN THE NEXT, ETC. - TO ESTABLISH THE GRID GEOMETRY FOR THE BUILDING.
  5. WORK POINTS ARE TO BE DETERMINED FROM THE (G-11111 SHEETS) ARCHITECTURAL GRID GEOMETRY PLAN(S) - FOR THE CIVIL AND STRUCTURAL DRAWINGS.
  6. WORK POINTS ON CIVIL DRAWINGS SHOW THEIR LOCATION ON THE DIGIT AND LAITUDE AND/OR CORRECT PLACEMENT OF THE SITUATED ON THE DRAWING.
  7. ANY DISCREPANCIES BETWEEN THE ARCHITECTURAL DRAWINGS AND THE CIVIL OR STRUCTURAL DRAWINGS SHALL BE REPORTED TO THE ARCHITECT IN WRITING FOR HIS OR HER CORRECTION, PRIOR TO PROCEEDING WITH THE WORK.

**HOEFER WELKER**  
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# LEE'S SUMMIT JOINT OPERATIONS FACILITY

## PACKAGE 2: CONSTRUCTION SET

2 NE TUDOR RD  
LEE'S SUMMIT, MISSOURI 64086

REVISION DATES:		
3	ADDENDUM 3	11/18/2024



PROFESSIONAL SEAL

G-111

ISSUE DATE: NOVEMBER 1, 2024  
HOEFER WELKER #: 138191

## GRID GEOMETRY PLAN



LEGEND	
Proposed Line Types and Symbols shown. Existing Line Types and Symbols shall be the same, but screened, unless designated otherwise by the inclusion of a survey by others.	
<ul style="list-style-type: none"> <li>Set Survey Monument</li> <li>Set Survey Monument (in concrete)</li> <li>Found Survey Monument</li> <li>Found Survey Monument in Box</li> <li>Origin Unknown</li> <li>Found Right-of-Way Marker</li> <li>Control Point</li> <li>Benchmark</li> <li>Set Hub</li> </ul>	<ul style="list-style-type: none"> <li>Storm Sewer Line</li> <li>Storm Sewer Manhole</li> <li>Curb Inlet</li> <li>Field Inlet</li> <li>Junction Box</li> <li>Grate Inlet</li> <li>Grate Inlet (Round/Domed)</li> <li>End Section</li> <li>Headwall</li> <li>Down Spout</li> <li>Roof Drain</li> <li>Corrugated Metal Pipe</li> <li>Corrugated Metal Arch Pipe</li> <li>Corrugated Plastic Pipe</li> <li>High Density Polyethylene Pipe</li> <li>Reinforced Concrete Pipe</li> <li>Reinforced Concrete Arch Pipe</li> <li>Reinforced Concrete Box</li> <li>Flared End Section</li> <li>Pipe Continues-Outlet or Source Not Found or Not Surveyed</li> </ul>
<ul style="list-style-type: none"> <li>Overhead Utility Line(s)</li> <li>Underground Electric Line Marker</li> <li>Underground Electric Line</li> <li>Underground KCP&amp;L Line (e.g.)</li> <li>Utility Pole</li> <li>Utility Pole with Transformer</li> <li>Guy Anchor</li> <li>Utility Pole w/Light &amp; arm</li> <li>Street Light Pole w/ arm</li> <li>Street Light Pole (14")</li> <li>Electric Pedestal (above ground)</li> <li>Electric Meter</li> <li>Electric Access Vault (underground)</li> <li>Electric Access Box (mounted)</li> <li>Electric Manhole</li> <li>Electric Pull Box (underground)</li> <li>Transformer (pad mounted)</li> <li>Yard Light</li> <li>Air Conditioner Unit</li> </ul>	<ul style="list-style-type: none"> <li>Wood Fence</li> <li>Chain Link Fence</li> <li>Wire Fence (with or without barb)</li> <li>Barbed Wire Fence</li> <li>Plastic Fence</li> <li>Iron or Metal Fence</li> <li>Gate Post</li> <li>Retaining Wall</li> <li>Single Pole Sign</li> <li>Single Pole Sign</li> <li>Double Pole Sign</li> <li>Railroad Crossing Gate</li> <li>Railroad Switch Machine</li> <li>Railroad Tracks</li> <li>Wheel Stop</li> <li>ADA Parking Stall</li> <li>ADA Detection Warning Pad</li> <li>Bush</li> <li>Deciduous Tree and Size (Scaled for Size)</li> <li>Coniferous Tree and Size (Scaled for Size)</li> <li>Tree Stump</li> <li>Foliage Drip Line/Edge of Timber Hedge</li> </ul>
<ul style="list-style-type: none"> <li>Water Line</li> <li>Water Service Line</li> <li>Underground Water Line Marker</li> <li>Water Valve</li> <li>Fire Hydrant</li> <li>Fire Hydrant Assembly</li> <li>Water Meter</li> <li>Water Manhole</li> <li>Water Vault (underground)</li> <li>Sprinkler Control Box</li> <li>Sprinkler Head</li> <li>Yard Hydrant</li> <li>Backflow Valve (BFV)</li> <li>Backflow Preventer (BFP)</li> <li>Blow-Off Assembly</li> </ul>	<ul style="list-style-type: none"> <li>Center Line</li> <li>Property Line</li> <li>Right-of-Way Line</li> <li>Radius</li> <li>Arc Length</li> <li>Chord Bearing</li> <li>Chord Distance</li> <li>Interior Angle (Delta)</li> <li>I.T.B.</li> <li>Right-of-Way</li> <li>Monumented</li> <li>Measured</li> <li>Deeded</li> <li>Platted</li> <li>Calculated</li> <li>Calculated from Record Dimensions</li> <li>Calculated from Found Monuments</li> <li>Proportioned</li> <li>Book</li> <li>Page</li> <li>Document Number</li> <li>Instrument Number</li> <li>Volume</li> <li>Easement</li> <li>Building Setback Line</li> <li>Utility Easement</li> <li>Drainage Easement</li> <li>Storm Sewer Easement</li> <li>Sanitary Sewer Easement</li> <li>Ingress/Egress Easement</li> <li>Temporary Construction Easement</li> <li>Square Feet</li> <li>Acres</li> <li>Cubic Yard</li> <li>Linear Feet</li> <li>Company</li> <li>Landscaping (Bushes, Trees, Flowers, Border, Mulch, any or all of them)</li> <li>Asphalt</li> <li>Concrete</li> <li>Corner</li> <li>Retaining Wall</li> <li>Station</li> <li>Left</li> <li>Right</li> <li>Point of Intersection</li> <li>Point of Curve</li> <li>Point of Tangent</li> <li>Not To Scale</li> <li>Not To Scale</li> </ul>
<ul style="list-style-type: none"> <li>Gas Line</li> <li>Gas Service Line</li> <li>Underground Gas Line (e.g.)</li> <li>Underground Gas Line Marker</li> <li>Gas Manhole or Access Lid</li> <li>Gas Valve</li> <li>Regulator Unit</li> <li>Gas Meter</li> <li>Casing Vent</li> <li>Underground Pipe Line (High Capacity)</li> <li>Underground Pipe Line Marker</li> </ul>	
<ul style="list-style-type: none"> <li>Underground Telephone Line</li> <li>Underground AT&amp;T Line (e.g.)</li> <li>Underground Telephone Line Marker</li> <li>Telephone Pedestal (above ground)</li> <li>Telephone Access Vault (underground)</li> <li>Telephone Access Box (mounted)</li> <li>Underground Fiber Optic Line</li> <li>Underground Fiber Optic Line Marker</li> <li>Fiber Optic Pedestal</li> <li>Fiber Optic Manhole</li> <li>Fiber Optic Vault (underground)</li> <li>Fiber Optic Pedestal on top of Vault</li> </ul>	
<ul style="list-style-type: none"> <li>Traffic Signal Post w/ Mast Arm</li> <li>Pedestrian Signal Pole</li> <li>Traffic Control Manhole</li> <li>Traffic Control Cabinet</li> <li>Traffic Control Vault (underground)</li> </ul>	
<ul style="list-style-type: none"> <li>Underground Cable TV Line</li> <li>Underground Spectrum Line (e.g.)</li> <li>Underground Cable TV Marker</li> <li>Cable TV Pedestal (above ground)</li> </ul>	
<ul style="list-style-type: none"> <li>Manhole-Unknown Purpose</li> <li>Grease Trap Access Lid</li> <li>Monitoring Well</li> <li>Bore Hole</li> <li>Fill Lid (for Underground Tank)</li> <li>Sanitary Sewer Line</li> <li>Sanitary Sewer Service Line</li> <li>Sanitary Sewer Manhole</li> <li>Clean-out</li> <li>Vitrified Clay Pipe</li> <li>Ductile Iron Pipe</li> <li>Polyvinyl Chloride Pipe</li> <li>Cast Iron Pipe</li> </ul>	
<ul style="list-style-type: none"> <li>Underground Utility Line Marker</li> <li>Metal Guard Rail or Handrail</li> <li>Flag Pole</li> <li>Satellite Dish</li> <li>Mailbox</li> <li>Concrete or Metal Bollard</li> <li>Wood Bollard or Wood Post</li> </ul>	

## LEGAL DESCRIPTION

Lot 1-A, NEW LEE'S POLICE AND COURT FACIMTY, a subdivision in Lee's Summit, Jackson County, Missouri

### TRACT 2:

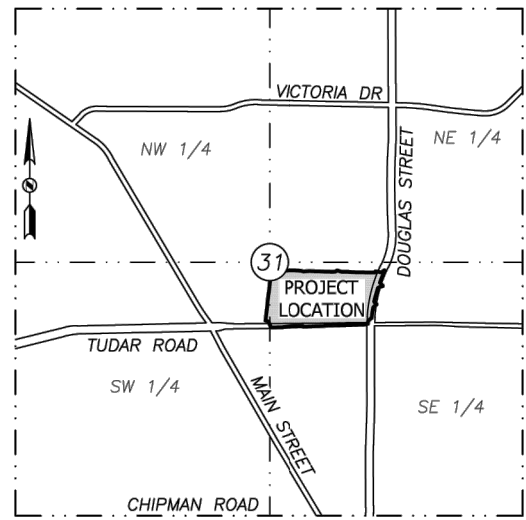
All that part of the Southeast Quarter of Section 31, Township 48, Range 31, described as follows: Beginning at a point 1450 feet west of the northeast corner of the southeast quarter of said Section 31; thence west 75 feet, more or less to the northeast corner of Lot 1, SUMMIT PARK, a subdivision in Lee's Summit, as recorded in Plat Book 6, at Page 38, at the Recorder's Office of said County; thence south along the east line of said Lot 1, 230 feet more or less to the intersection with the westerly right of way line of County Highway 10-E, aka N. Douglas Street; thence northeasterly along said westerly right of way line to the Point of Beginning.

## OIL AND GAS WELLS

According to the "Oil and Gas Permits" database published by the Missouri Department of Natural Resources, as of November 13, 2024, no oil or gas wells (of any status) are listed within subject property site.

## GENERAL NOTES

- All work in public easement and Right-of-Way shall be installed per the requirements and specifications of the City of Lee's Summit, Missouri.
- All existing topographic, survey, and utility information shown was provided to BHC in the form of an Topographic Survey prepared by BHC and dated April 2, 2024. BHC makes no guarantees as to the accuracy of the existing information shown hereon. Contractors shall satisfy themselves as to the existing conditions of the site and have all utilities located prior to commencing construction.
- The Contractor shall be required to obtain all Federal, State, and Local permits required for this project prior to commencing construction.
- Any work adjacent to or crossing existing streets requires proper traffic control devices. Traffic control devices shall be placed in accordance with the Manual of Uniform Traffic Control Devices (MUTCD).
- The contractor shall be required to demolish, remove and dispose of all existing structures, pavements, and features necessary to construct the improvements shown hereon. Any waste materials generated during construction shall be removed from the site by the Contractor and disposed of in accordance with all local, State, and Federal regulations governing such disposal.
- The contractor shall prevent any trash, debris, or liquid wastes from being disposed of in sanitary sewers, storm sewers, or open drainage systems.
- The Contractor shall be solely responsible to protect adjacent property, structures, and other improvements from damage during construction. In the event of damage to adjacent property, structures, or improvements, the contractor shall repair or replace such damage to the Owners's satisfaction at the Contractor's expense.
- Contractors at the site shall be solely responsible for jobsite safety for all aspects of work shown hereon.
- All work and materials used in the construction of the improvements shown hereon shall comply with all referenced standards, specifications, and plan notes.
- All buildings are shown as a reference only. All buildings shall be located and constructed per the Architectural drawings prepared by others.
- Contractor shall be responsible for contacting all utility companies for field locations of underground utilities affected by the contract. All existing utilities indicated on these plans are according to the best information available to the engineer; however, all utilities actually existing may not be shown. Utilities damaged through the negligence of the contractor to obtain the location of same shall be repaired or replaced at the expense of the contractor.
- Coordinate with facility representative as to when construction activities may be performed to work with the operations of the facility.
- Any and all hazards shall be properly identified and barricaded from access during all non-construction periods.
- Unless specified otherwise, all construction shall meet the requirements of the Missouri Department of Transportation (MoDOT) Standard Specifications, except as modified by these plans.
- Third party inspection of the storm sewer is required, after inspection, provide documentation to the City of Lee's Summit, Missouri.
- Private Erosion & Sediment Control inspections are required in accordance with NPDES schedule and requirements. After inspections, provide the City of Lee's Summit, Missouri with reports and documentation.
- A Right-of-Way permit is required from the City of Lee's Summit, Missouri Public Works Department for any work within the public right-of-way.



PROJECT CONTROL TABLE (NAD83 MISSOURI STATE PLANE, WEST ZONE, US SURVEY FOOT)				
POINT NO.	CONTROL POINT/ BENCHMARK DESCRIPTION	NORTHING COORDINATE	EASTING COORDINATE	ELEV.
1	CP1 /B4 WITH CP CAP	1006378.56	2822886.48	1029.44'
2	CP2 /CUT PLUS BACK OF WALK	1006378.62	2821916.33	1011.43'
3	CP3 /CHISEL PLUS ON W. EDGE OF WALK	1006849.13	2821878.06	1010.62'
4	CP4 /B4 WITH CP CAP	1006865.95	2823140.23	1023.26'
5	CP5 /B4 W CP CAP	1006971.51	2822049.11	1009.85'
10	CP0 /B4 WITH CP CAP	1006274.88	2823059.46	1031.60'

### BENCHMARKS (NAVD88 Datum)

BM1 Chiseled square on the North face of a grate inlet, located on the South side of Tudor Road, approximately 425 feet East of the intersection of Tudor Road and Douglas Street.

Elevation: 1015.01

BM2 Chiseled square on the Northwest corner of a pedestrian crossing signal, located on the Southwest corner of the intersection of Tudor Road and Douglas Street.

Elevation: 1031.01

HOEFER WELKER

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**BHC**  
CIVIL ENGINEERING / SURVEYING / UTILITIES

7101 College Blvd., Suite 400  
Overland Park, Kansas 66210  
P: (913) 663-1900  
BHC is a subsidiary of Brueggemann & Company, PA

LEE'S SUMMIT JOINT OPERATIONS FACILITY

10 NE TUDOR ROAD  
LEES SUMMIT, MO 64086

PACKAGE 1: SITE AND STRUCTURE

### REVISION DATES:

01 ADDENDUM 01 2024-08-20  
02 ADDENDUM 02 2024-10-30  
03 ADDENDUM 03 2024-11-18



MICHAEL T. MAKRIS, PE  
MO PE-2021033286

**C0.1**

ISSUE DATE: AUGUST 30, 2024  
HOEFER WELKER #: 138161

GENERAL INFORMATION



LEE'S SUMMIT JOINT OPERATIONS FACILITY

10 NE TUDOR ROAD  
LEES SUMMIT, MO 64086

PACKAGE 1: SITE AND STRUCTURE

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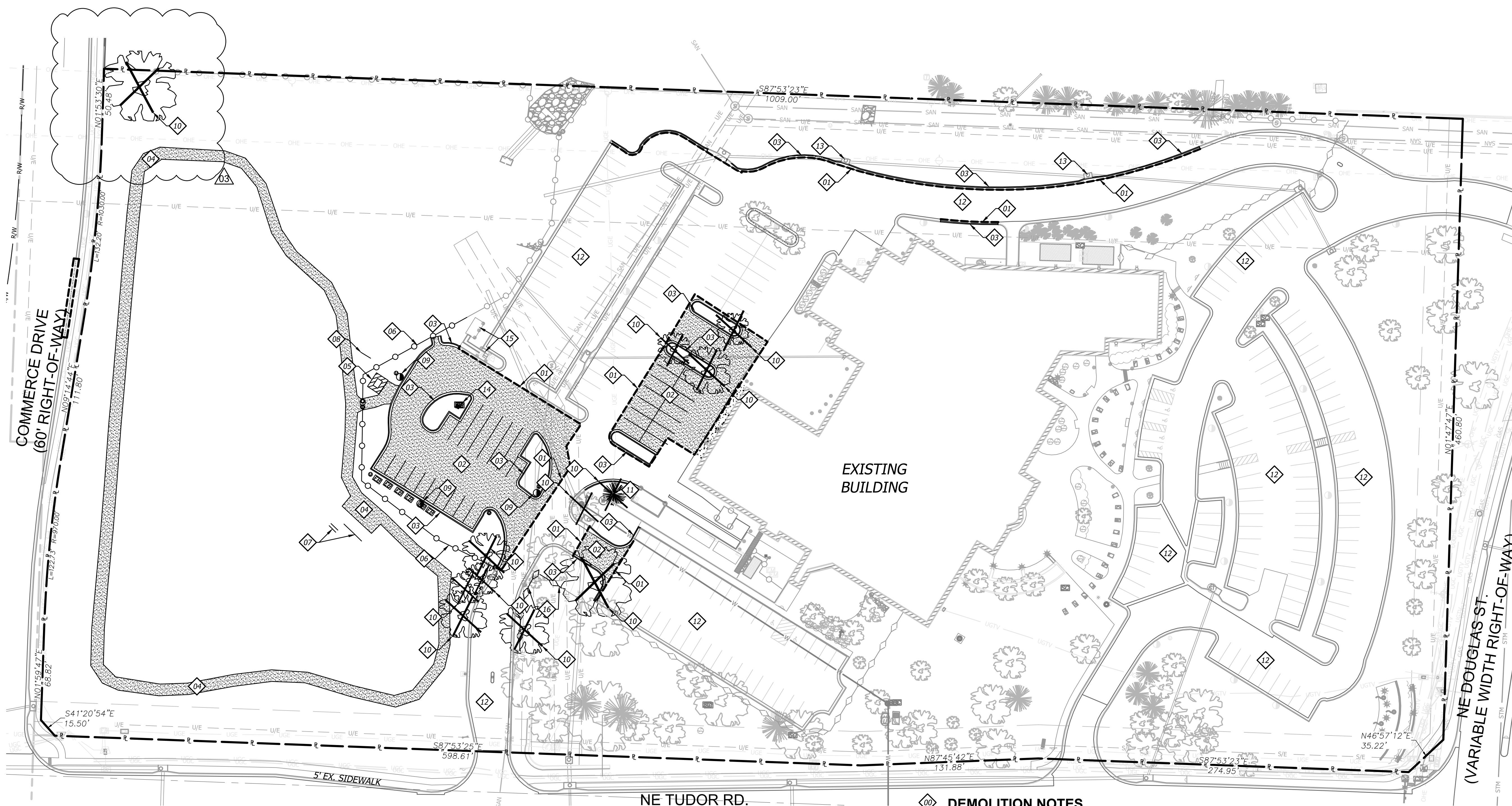


MICHAEL T. MAKRIS, PE  
MO PE-2021033286

**C1.0**

ISSUE DATE: AUGUST 30, 2024  
HOEFER WELKER #: 138161

DEMOLITION PLAN



**DEMOLITION GENERAL NOTES**

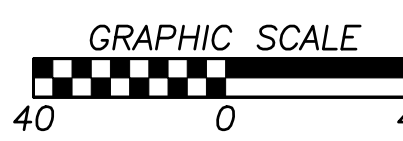
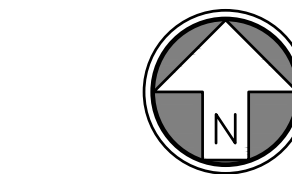
- Contractor shall verify the location, size, material and depth of all utilities prior to any excavation or construction activity.
- All materials shall be removed and disposed of off-site. It is the contractors responsibility to meet all applicable laws and regulations pertaining to the disposal of construction/demolition material.
- The contractor shall ensure that any structures to remain which are damaged during demolition operations shall be repaired to meet current code, at no additional cost to the owner.
- The contractor shall remove any and all existing debris which is encountered from the existing site. This shall include, but shall not be limited to, footings, concrete slabs, conduits, granular subgrade, utility services, and/or unsuitable structural fill material as determined by the owner's engineer. The cost for these removals shall be considered incidental to the project. Said debris shall become property of the contractor and it shall be the responsibility of the contractor to dispose of property off-site.
- It shall be the contractor's responsibility to meet all applicable laws and regulations pertaining to the disposal of construction/demolition material.
- The contractor shall be responsible for obtaining and payment of any permits for demolition that pertain to this project.
- All protection fencing shall be installed prior to demolition/construction activity. The contractor shall provide a 6-foot security fence around the entire job site with locked gated access points, if required by the owner or the City.
- All existing utilities removed during construction shall have their trenches backfilled with structural fill and be compacted to the requirements for structural fill.
- All removals required to properly perform the work (whether shown on the plans or not) shall be performed by the contractor at no additional cost to the owner.

**DEMOLITION NOTES**

- SAW CUT EXISTING PAVEMENT TO FULL DEPTH AND CLEAN EDGE.
- REMOVE & DISPOSE OF EXISTING ASPHALT.
- REMOVE & DISPOSE OF EXISTING CURB AND GUTTER.
- REMOVE & DISPOSE OF ASPHALT TRAIL.
- REMOVE & DISPOSE OF EXISTING SHED.
- REMOVE & DISPOSE OF EXISTING CHAIN LINK FENCE.
- REMOVE & DISPOSE OF EXISTING PULL UP BARS.
- REMOVE & DISPOSE OF EXISTING WOODEN WINDOW.
- REMOVE & DISPOSE OF EXISTING LIGHT POLES.
- REMOVE & DISPOSE OF EXISTING TREES.
- RELOCATE WATER VAULT TO ALLOW FOR PROPOSED TRASH ENCLOSURE.
- MILL EXISTING PARKING LOT 2", OVERLAY ASPHALT AND RESTRIPE TO MATCH EXISTING. CONTRACTOR TO COORDINATE OVERLAY WORK SEQUENCE WITH OWNER TO MINIMIZE DISRUPTION TO FACILITY OPERATIONS.
- STRUCTURE TO MODIFIED TO FROM CURB INLET TO GRATE TOP INLET.
- REMOVE & RELOCATE EXISTING SHUT-OFF FOR FUEL PUMP
- EXISTING FUEL STATION TO REMAIN. TO BE PROTECTED DURING CONSTRUCTION.
- REMOVE & DISPOSE OF EXISTING CHAIN IRON FENCE.

**LEGEND**

- R/W RIGHT - OF - WAY LINE
- P PROPERTY LINE
- OHE EXISTING OVERHEAD UTILITY LINES
- UGB EXISTING UNDERGROUND ELECTRICAL LINE
- GAS EXISTING GAS LINE
- W EXISTING WATER LINE
- SAW CUT LINE
- [Pattern] ASPHALT PAVEMENT TO BE REMOVED
- [Symbol] EXISTING TREE LINE
- [Symbol] EXISTING TREE TO BE REMOVED







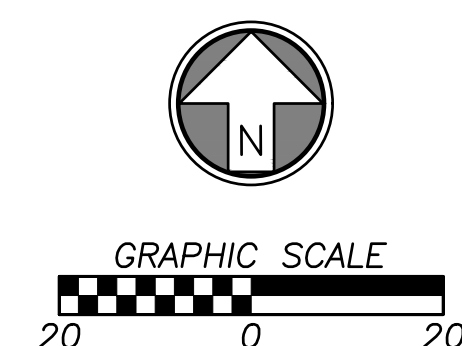
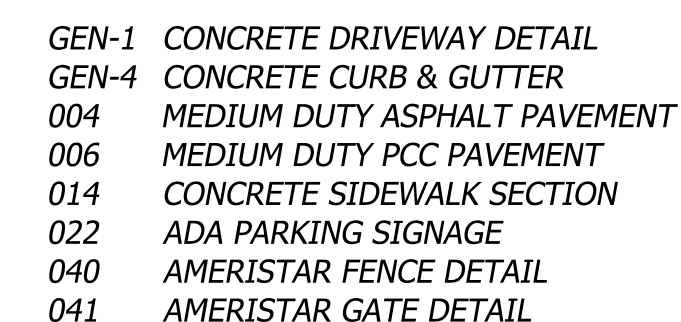


10 NE TUDOR ROAD  
LEES SUMMIT, MO 64086

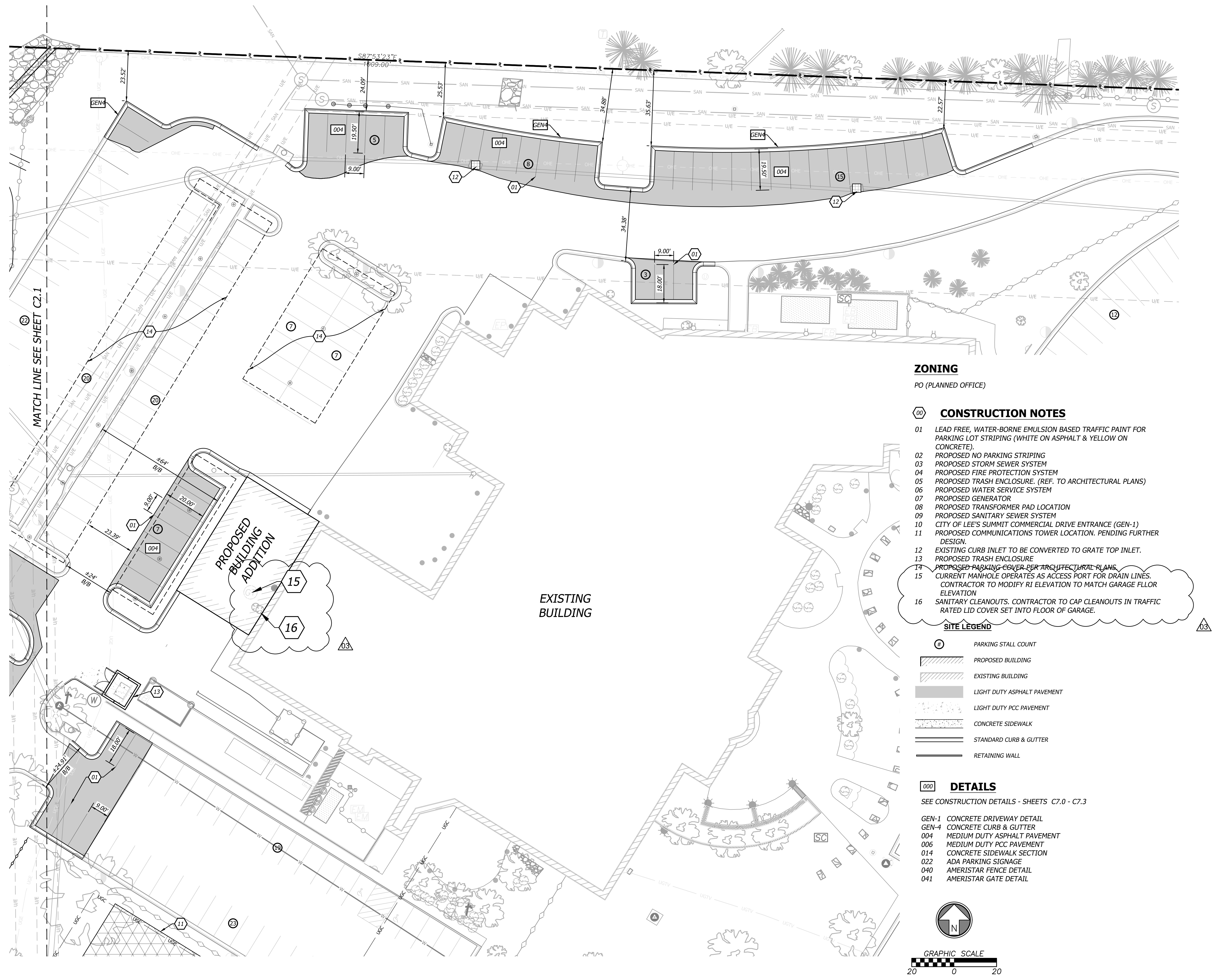
[illegible]

## SITE PLAN

## SITE PLAN







**ZONING**

PO (PLANNED OFFICE)

**CONSTRUCTION NOTES**

- 01 LEAD FREE, WATER-BORNE EMULSION BASED TRAFFIC PAINT FOR PARKING LOT STRIPING (WHITE ON ASPHALT & YELLOW ON CONCRETE).
- 02 PROPOSED NO PARKING STRIPING
- 03 PROPOSED STORM SEWER SYSTEM
- 04 PROPOSED FIRE PROTECTION SYSTEM
- 05 PROPOSED TRASH ENCLOSURE, (REF. TO ARCHITECTURAL PLANS)
- 06 PROPOSED WATER SERVICE SYSTEM
- 07 PROPOSED GENERATOR
- 08 PROPOSED TRANSFORMER PAD LOCATION
- 09 PROPOSED SANITARY SEWER SYSTEM
- 10 CITY OF LEE'S SUMMIT COMMERCIAL DRIVE ENTRANCE (GEN-1)
- 11 PROPOSED COMMUNICATIONS TOWER LOCATION. PENDING FURTHER DESIGN.
- 12 EXISTING CURB INLET TO BE CONVERTED TO GRATE TOP INLET.
- 13 PROPOSED TRASH ENCLOSURE
- 14 PROPOSED PARKING COVER PER ARCHITECTURAL PLANS.
- 15 CURRENT MANHOLE OPERATES AS ACCESS PORT FOR DRAIN LINES. CONTRACTOR TO MODIFY R1 ELEVATION TO MATCH GARAGE FLOOR ELEVATION
- 16 SANITARY CLEANOUTS. CONTRACTOR TO CAP CLEANOUTS IN TRAFFIC RATED LID COVER SET INTO FLOOR OF GARAGE.

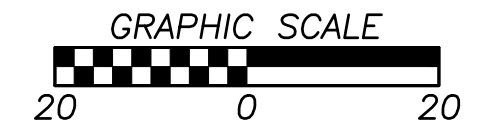
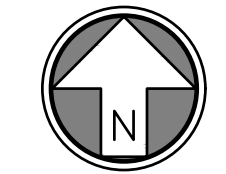
**SITE LEGEND**

- 0 PARKING STALL COUNT
- PROPOSED BUILDING
- EXISTING BUILDING
- LIGHT DUTY ASPHALT PAVEMENT
- LIGHT DUTY PCC PAVEMENT
- CONCRETE SIDEWALK
- STANDARD CURB & GUTTER
- RETAINING WALL

**DETAILS**

SEE CONSTRUCTION DETAILS - SHEETS C7.0 - C7.3

- GEN-1 CONCRETE DRIVEWAY DETAIL
- GEN-4 CONCRETE CURB & GUTTER
- 004 MEDIUM DUTY ASPHALT PAVEMENT
- 006 MEDIUM DUTY PCC PAVEMENT
- 014 CONCRETE SIDEWALK SECTION
- 022 ADA PARKING SIGNAGE
- 040 AMERISTAR FENCE DETAIL
- 041 AMERISTAR GATE DETAIL



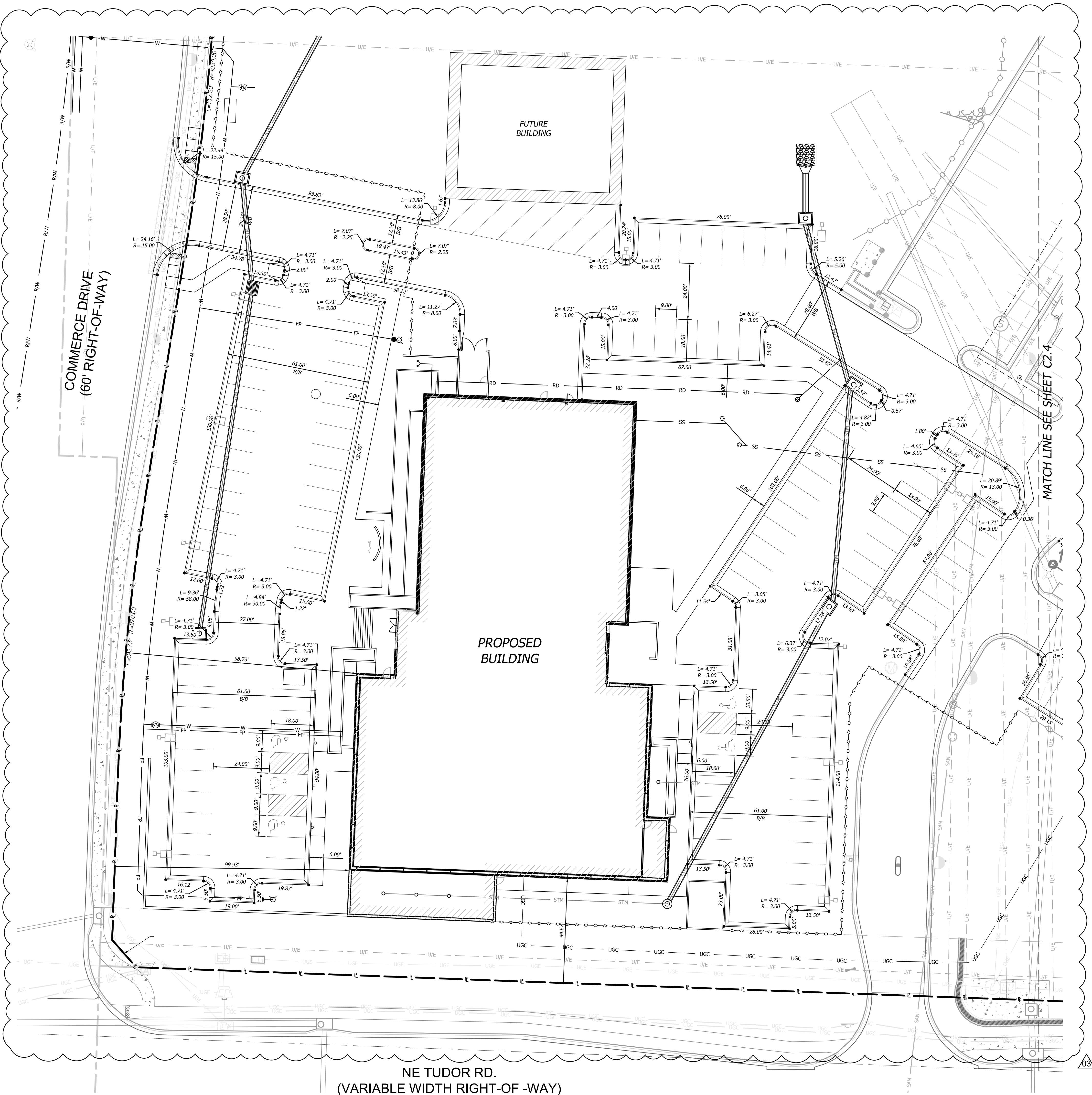
REVISION DATES:

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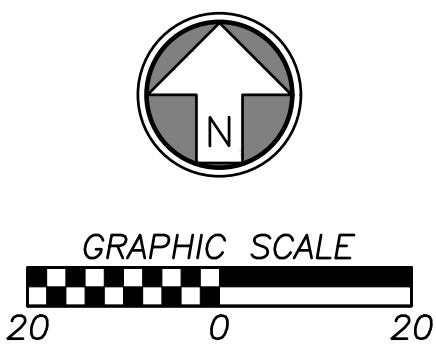
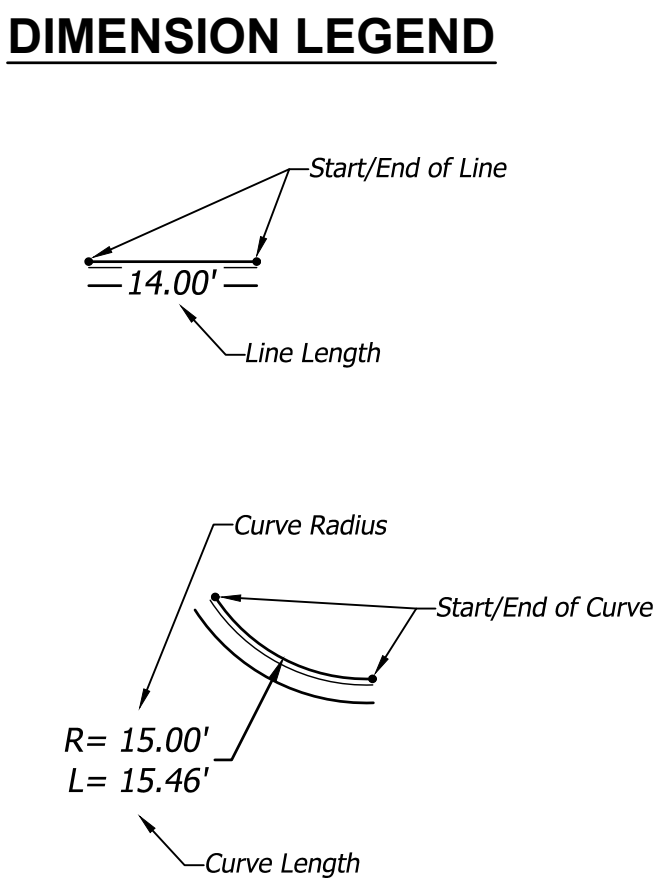


MICHAEL T. MAKRIS, PE  
MO PE-2021035286





- DIMENSION NOTES**
1. All dimensions are to/along back of curb unless otherwise noted.
  2. All dimensions are to bottom of wall unless otherwise noted.



**LEE'S SUMMIT JOINT OPERATIONS FACILITY**  
10 NE TUDOR ROAD  
LEES SUMMIT, MO 64086

**PACKAGE 1: SITE AND STRUCTURE**

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MICHAEL T. MAKRIS, PE  
MO PE-2021033286

**C2.3**  
ISSUE DATE: AUGUST 30, 2024  
HOEFER WELKER #: 138161

**DIMENSION PLAN**



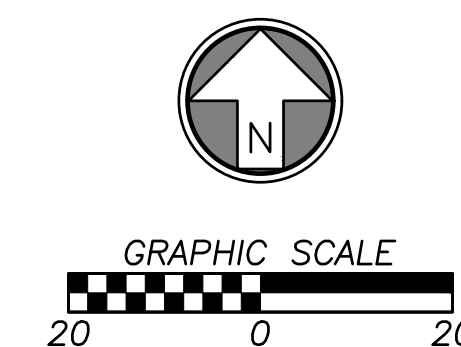
10 NE TUDOR ROAD  
LEES SUMMIT, MO 64086



## C2.4

## DIMENSION PLAN

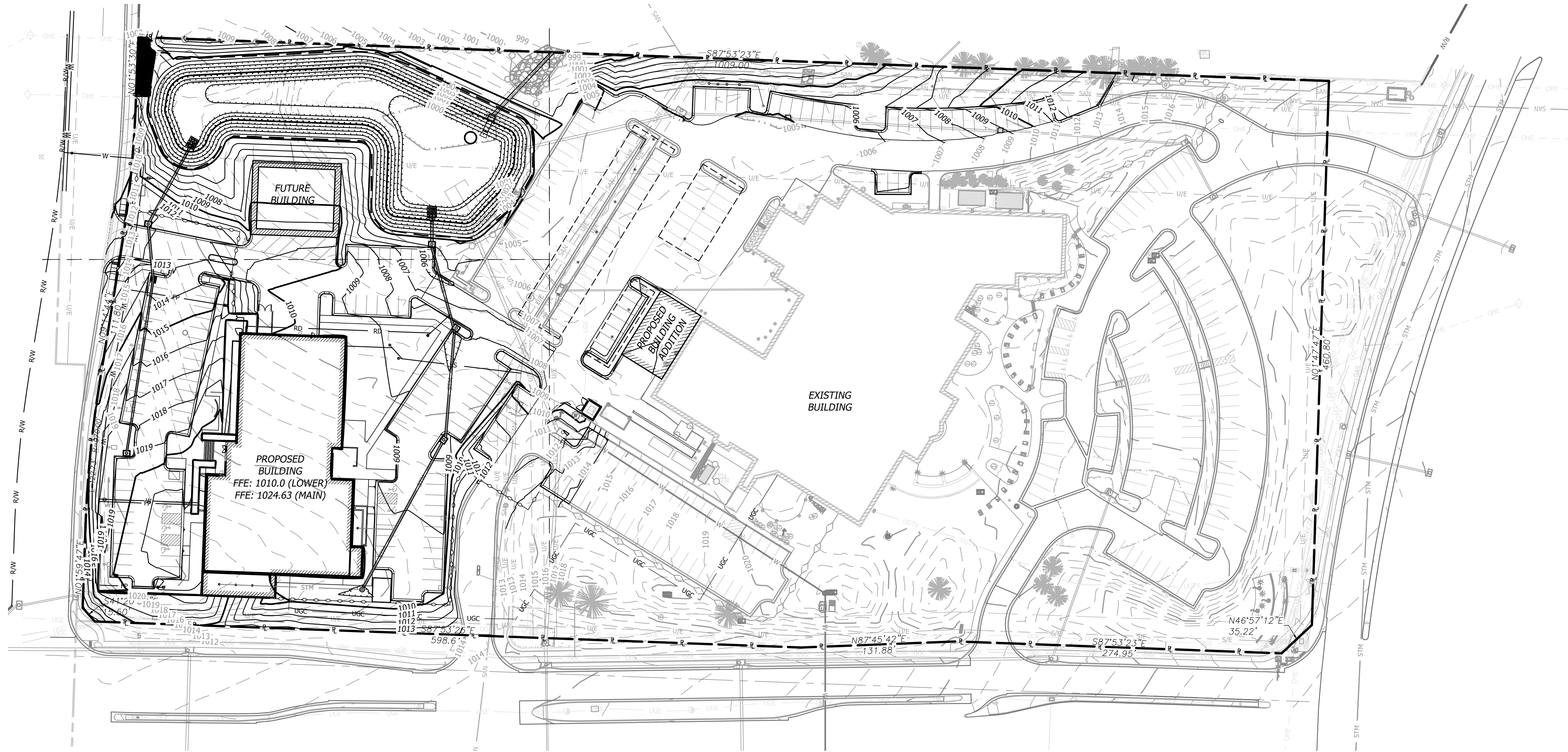
1. All dimensions are to/along back of curb unless otherwise noted.
2. All dimensions are to bottom of wall unless otherwise noted.





### GRADING GENERAL NOTES

- Contractor shall obtain a copy of the Geotechnical Services Report, prepared for the project and satisfy himself as to the existing conditions and recommendations contained in the report.
- As discussed in the Geotechnical Report, over excavation of existing unsuitable soils will be required under building and pavement areas. Contractor shall perform over excavation of unsuitable soils as a part of this work.
- Contractor shall obtain soils suitable as structural fill from off-site sources. All borrow materials must be tested and approved by the Geotechnical Engineer prior to importing the soils to the project site.
- Contractor shall operate under the terms and permits included in the Stormwater Pollution Prevention Plan (SWPPP) prepared for this project and permitted through the State of Missouri. Contractor shall employ a qualified person to conduct regular inspections of the site erosion control measures and document such inspections in the SWPPP document maintained by the Contractor.
- All topsoil, vegetation, root structures, and deleterious materials shall be stripped from the ground surface prior to the placement of embankments. Contractor shall obtain the on-site geotechnical representative's acceptance of the existing ground surface materials and the proposed fill material prior to the placement of fill.
- All proposed contour lines and spot elevations shown are finish ground elevations. Contractor shall account for pavement depths, building pads, topsoil, etc when grading the site.
- All disturbed areas that are not to be paved (green spaces) shall be finish graded with a minimum of six inches of topsoil.
- All excavation and embankments shall comply with the recommendations provided by the geotechnical engineer.
- Prior to placing any concrete or asphalt pavement the contractor shall perform a proof roll of the pavement sub-grade with a fully loaded tandem axle dump truck. The proof roll shall be conducted in the presence of the Engineer and the on-site geotechnical representative. Areas that display rutting or pumping that are unsatisfactory to the engineer shall be re-worked and a follow-up proof roll shall be conducted prior to acceptance of the sub-grade for paving. The contractor may, at its own expense, stabilize the sub-grade using Class C fly ash or quicklime.
- Finished grades shall not be steeper than 3:1.
- All grading work shall be considered unclassified. No additional payments shall be made for rock excavation. Contractor shall satisfy himself as to any rock excavation required to accomplish the improvements shown hereon.
- A 2.0% maximum cross slope shall be maintained on all pedestrian sidewalks and paths.



### BENCHMARKS

(DATUM: NAVD88)

BENCHMARK NUMBER: 1  
ELEVATION= 1015.01

CHISELED SQUARE ON THE NORTH FACE OF A GRATE INLET, LOCATED ON THE SOUTH SIDE OF TUDOR ROAD, APPROXIMATELY 425 FEET EAST OF THE INTERSECTION OF TUDOR ROAD AND SLOAN STREET.

BENCHMARK NUMBER: 2  
ELEVATION= 1031.01

CHISELED SQUARE ON THE NORTHWEST CORNER OF A PEDESTRIAN CROSSING SIGNAL, LOCATED ON THE SOUTHWEST CORNER OF THE INTERSECTION OF TUDOR ROAD AND DOUGLAS STREET.

### FLOOD STATEMENT

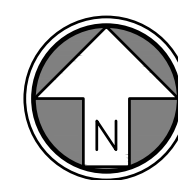
The subject property lies within Flood Zone "X" (unshaded) (Areas determined to be outside the 0.2% annual chance floodplain.), as shown on the Jackson County, Missouri and Incorporated Areas Flood Insurance Rate Map (F.I.R.M.).

Map Number: 29095C0417G  
Panel No: 417 of 625  
Map Revised Date: January 20, 2017

**NOTE:** This statement is provided for informational purposes only and shall in no way constitute a basis for a flood certificate. No field work was performed to establish the boundaries of this zone. The information was derived by scaling the subject property on the above referenced map.

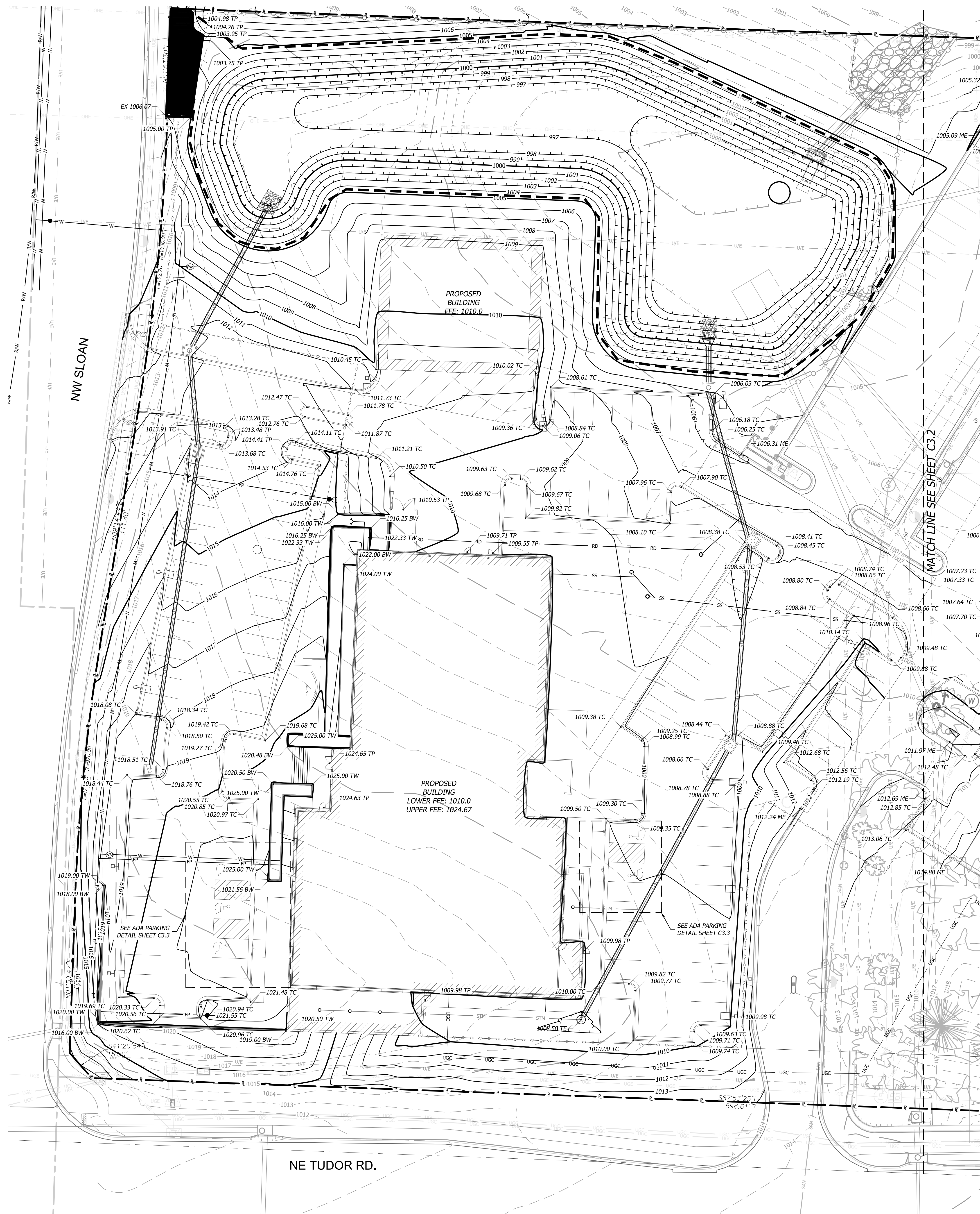
### GRADING LEGEND

- 980 FINISH GRADE MAJOR CONTOURS
- 982 FINISH GRADE MINOR CONTOURS
- 980 EXISTING GRADE MAJOR CONTOURS
- 982 EXISTING GRADE MINOR CONTOURS
- P PROPERTY LINE
- R/W RIGHT-OF-WAY LINE
- STANDARD CURB & GUTTER
- DRY CURB & GUTTER
- ZERO HEIGHT CURB
- TRANSITION CURB
- RETAINING WALL



GRAPHIC SCALE  
50 0 50





DETAILED GRADING LEGEND

0000.00 FG	FINISHED GRADE ELEVATION
0000.00 TC	TOP OF CURB ELEVATION
0000.00 TP	TOP OF PAVEMENT ELEVATION
0000.00 TW	FG @ TOP OF RETAINING WALL
0000.00 BW	FG @ BOTTOM OF RETAINING WALL
0000.00 ME	MATCH EXISTING GRADE
0000.00 TE	TOP ELEVATION OF STRUCTURE
0000.00 XX	HIGH POINT AT SPECIFIC CALLOUT
0000.00 XX	LOW POINT AT SPECIFIC CALLOUT
1.00%	SLOPE INDICATOR

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LEE'S SUMMIT JOINT OPERATIONS FACILITY

10 NE TUDOR ROAD  
LEES SUMMIT, MO 64086

PACKAGE 1: SITE AND STRUCTURE

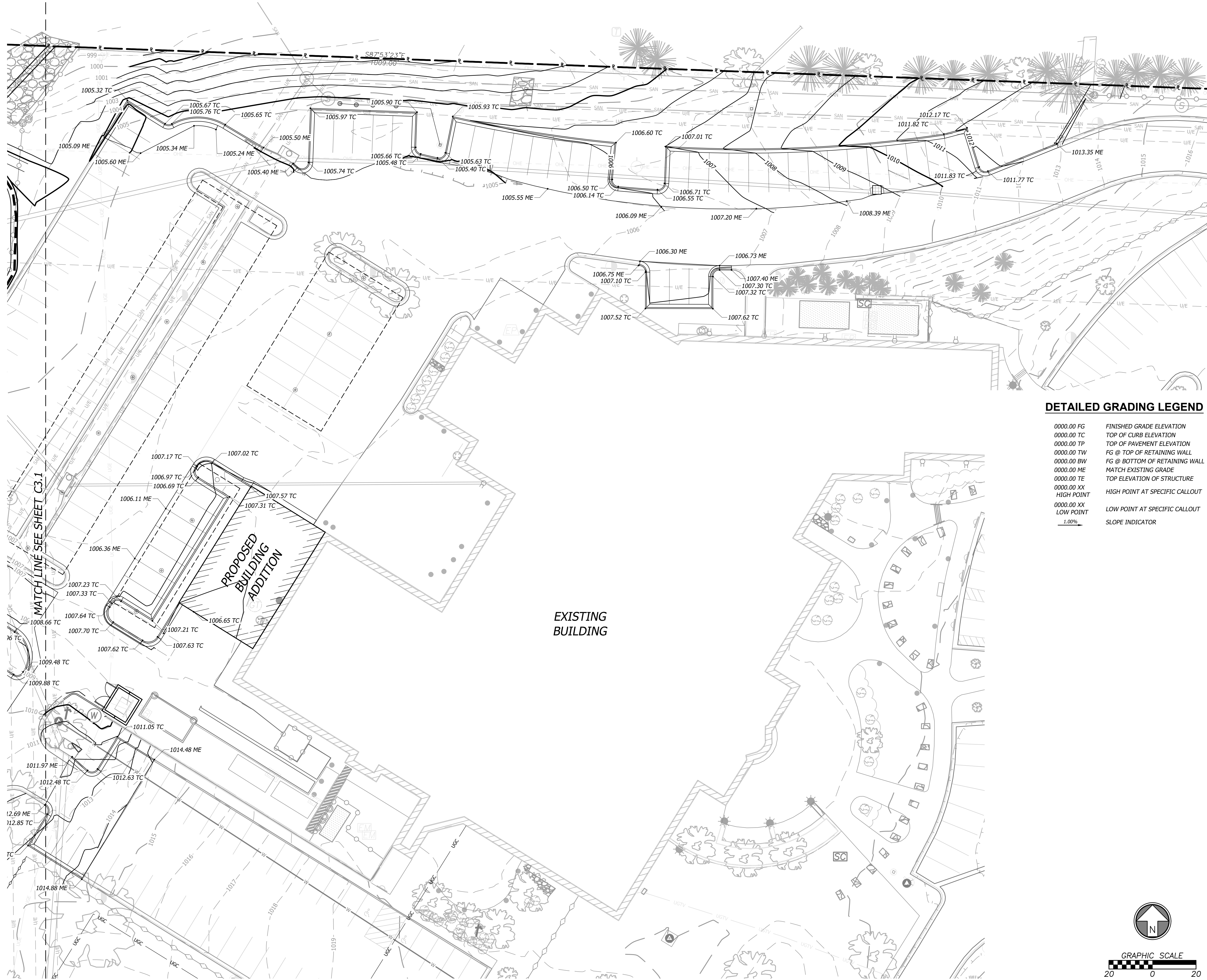
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02	ADDENDUM 02	2024-10-30
03	ADDENDUM 03	2024-11-18



ISSUE DATE: AUGUST 30, 2024  
HOEFER WELKER #: 138161

DETAILED GRADING PLAN





DETAILED GRADING LEGEND

- 0000.00 FG FINISHED GRADE ELEVATION
- 0000.00 TC TOP OF CURB ELEVATION
- 0000.00 TP TOP OF PAVEMENT ELEVATION
- 0000.00 TW FG @ TOP OF RETAINING WALL
- 0000.00 BW FG @ BOTTOM OF RETAINING WALL
- 0000.00 ME MATCH EXISTING GRADE
- 0000.00 TE TOP ELEVATION OF STRUCTURE
- 0000.00 XX HIGH POINT HIGH POINT AT SPECIFIC CALLOUT
- 0000.00 XX LOW POINT LOW POINT AT SPECIFIC CALLOUT
- 1.00% SLOPE INDICATOR

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PACKAGE 1: SITE AND STRUCTURE

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LEES SUMMIT, MO 64086

REVISION DATES:  
01 ADDENDUM 01 2024-08-20  
02 ADDENDUM 02 2024-10-30  
03 ADDENDUM 03 2024-11-18



MICHAEL T. MAKRIS, PE  
MO PE-2021035286  
**C3.2**  
ISSUE DATE: AUGUST 30, 2024  
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DETAILED GRADING PLAN



10 NE TUDOR ROAD  
LEES SUMMIT, MO 64086

## PACKAGE 1: SITE AND STRUCTURE

[illegible]

ISSUE DATE: AUGUST 30, 2024  
HOEFER WELKER #: 138161

 $\triangle 0.3$ 

0000.00 FG	FINISHED GRADE ELEVATION
0000.00 TC	TOP OF CURB ELEVATION
0000.00 TP	TOP OF PAVEMENT ELEVATION
0000.00 TW	FG @ TOP OF RETAINING WALL
0000.00 BW	FG @ BOTTOM OF RETAINING WALL
0000.00 ME	MATCH EXISTING GRADE
0000.00 TE	TOP ELEVATION OF STRUCTURE
0000.00 XX HIGH POINT	HIGH POINT AT SPECIFIC CALLOUT
0000.00 XX LOW POINT	LOW POINT AT SPECIFIC CALLOUT
1.00%	SLOPE INDICATOR





ADA DETAILED GRADING - CROSSWALK

DETAILED GRADING LEGEND

0000.00 FG	FINISHED GRADE ELEVATION
0000.00 TC	TOP OF CURB ELEVATION
0000.00 TP	TOP OF PAVEMENT ELEVATION
0000.00 TIV	FG @ TOP OF RETAINING WALL
0000.00 BW	FG @ BOTTOM OF RETAINING WALL
0000.00 ME	MATCH EXISTING GRADE
0000.00 TE	TOP ELEVATION OF STRUCTURE
0000.00 XX	HIGH POINT AT SPECIFIC CALLOUT
HIGH POINT	HIGH POINT AT SPECIFIC CALLOUT
0000.00 XX	LOW POINT AT SPECIFIC CALLOUT
LOW POINT	LOW POINT AT SPECIFIC CALLOUT
1.00%	SLOPE INDICATOR

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PACKAGE 1: SITE AND STRUCTURE

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03	ADDENDUM 03	2024-11-18



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**C3.4**  
ISSUE DATE: AUGUST 30, 2024  
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ADA DETAILED GRADING



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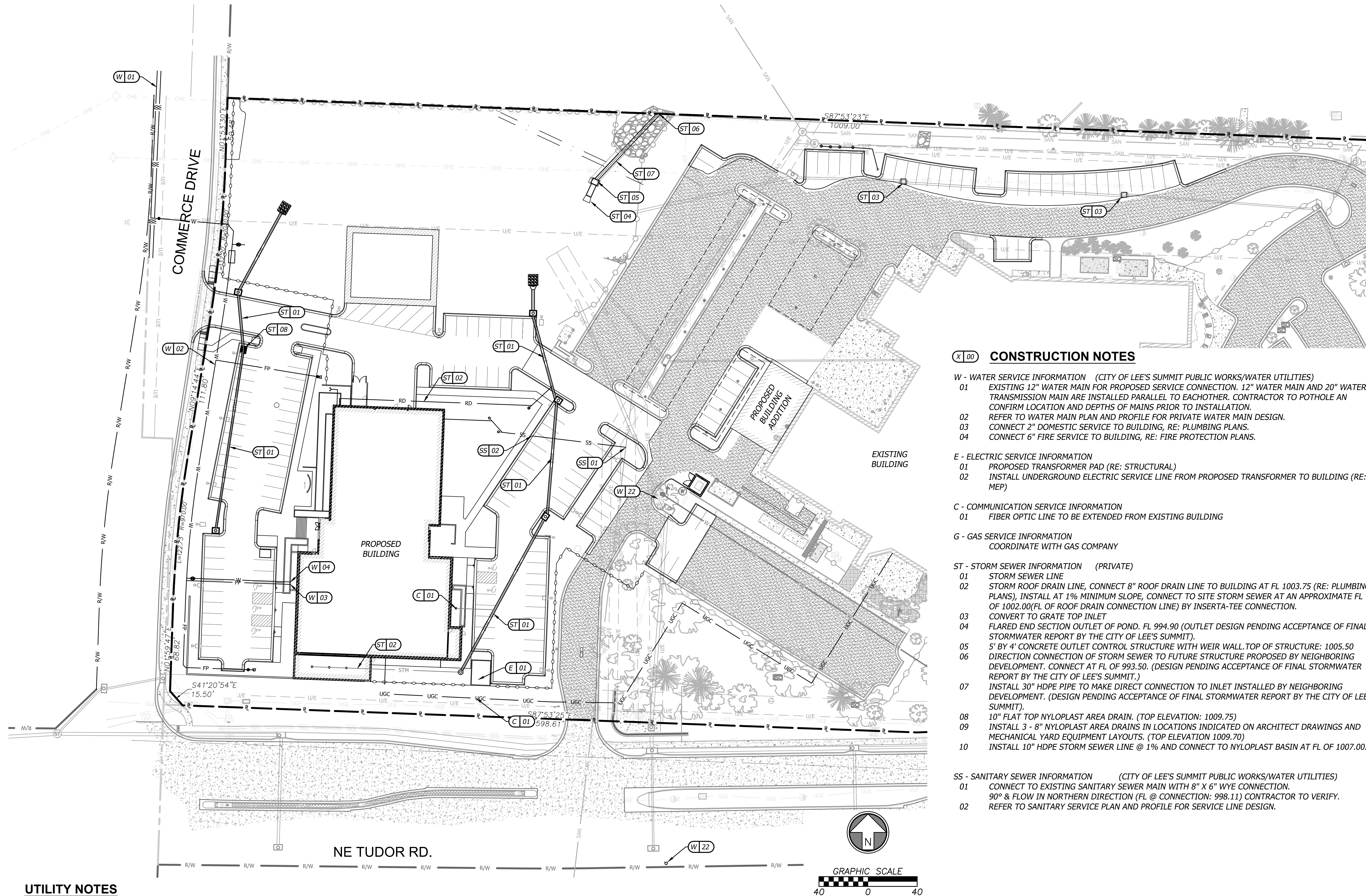


MICHAEL T. MAKRIS, PE  
MO PE-2021033286

**C4.0**

ISSUE DATE: AUGUST 30, 2024  
HOEFER WELKER #: 138161

UTILITY PLAN



UTILITY NOTES

- Contractor shall refer to all specifications, guidelines, and installation drawings from utility contacts for the installation of all service lines.
- The information shown on these plans concerning the type and location of underground utilities is not guaranteed to be accurate or all inclusive. The contractor is responsible for contacting all utility companies for field location of all underground utility lines prior to any excavation and for making his own verification as to type and location of underground utilities as may be necessary to avoid damage thereto.
- Contractor to ensure 18" minimum separation between utilities at crossings. Contractor to call engineer if any conflicts between utilities are found.
- Fire Line Notes:
  - All private fire lines shall be installed in accordance with NFPA 24, and other applicable codes and standards.
  - Contact the Fire Department to schedule inspections prior to private fire lines being backfilled.
  - Contact the Fire Department to witness scheduled hydrostatic tests and flushes of private fire lines.
- Stub all connections to within 5' of the building to provide connection into the building by mechanical/plumbing contractor.

ROOF DRAIN LEGEND

RD	PROPOSED ROOF LINE DRAIN
SS	PROPOSED STORM SEWER LINE
R/W	RIGHT-OF-WAY LINE
R	PROPERTY LINE
W	PROPOSED WATER LINE
SS	PROPOSED SANITARY SEWER LINE
GAS	PROPOSED NATURAL GAS LINE



# LEE'S SUMMIT JOINT OPERATIONS FACILITY

## PACKAGE 1: SITE AND STRUCTURE

10 NE TUDOR ROAD  
LEES SUMMIT, MO 64086

REVISION DATES:

01	ADDENDUM 01	2024-09-20
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MD PE-2021035286

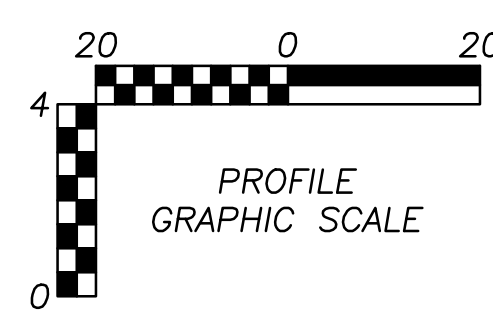
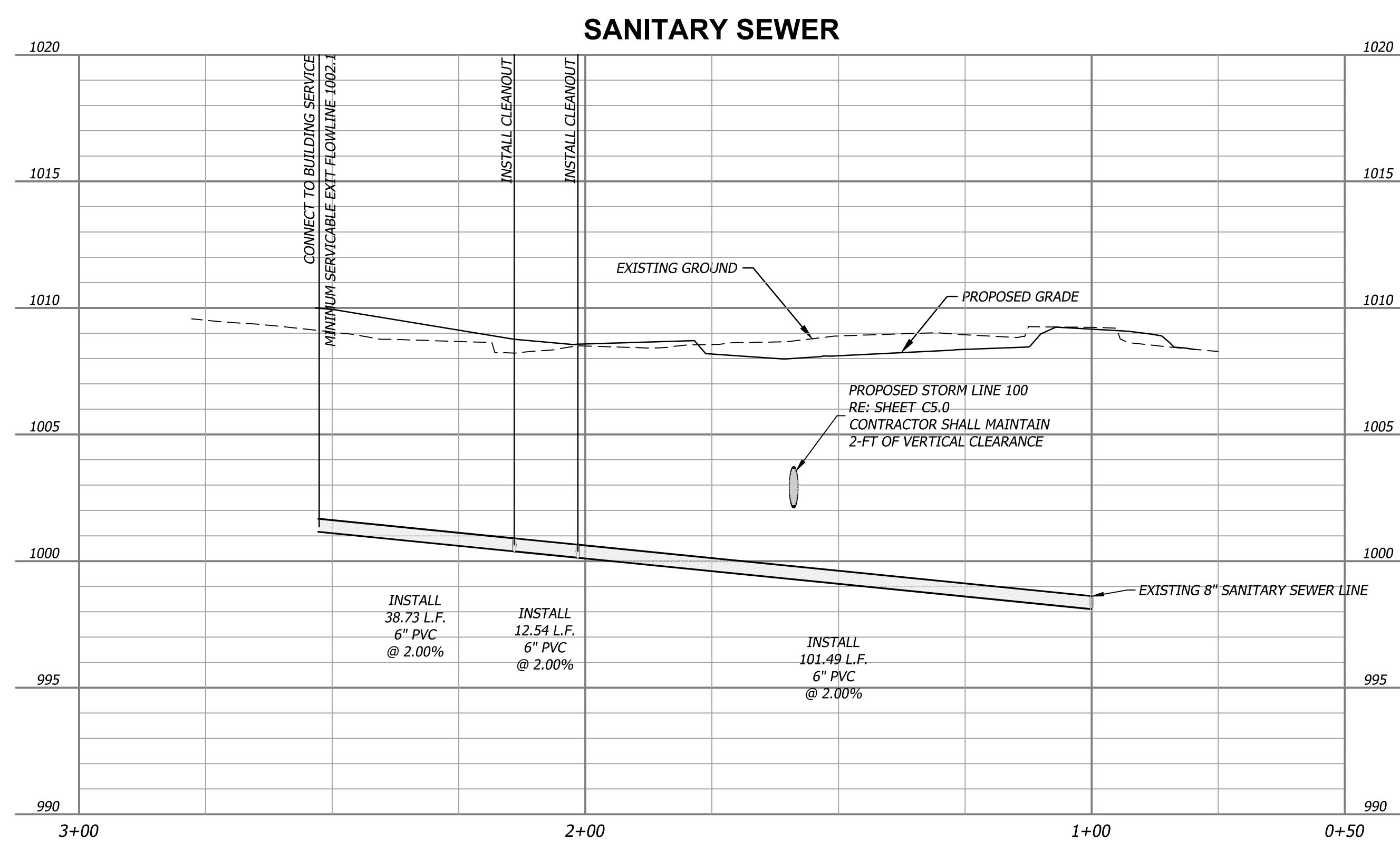
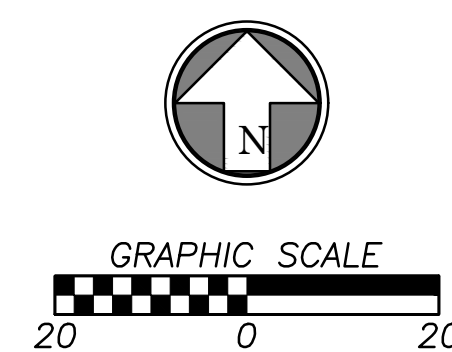
## C4.1

ISSUE DATE: AUGUST 30, 2024  
HOEFER WELKER #: 13816



### STORM NOTE

All Northings, Eastings, and alignment stationing for storm structures are to center of structure unless stated otherwise.

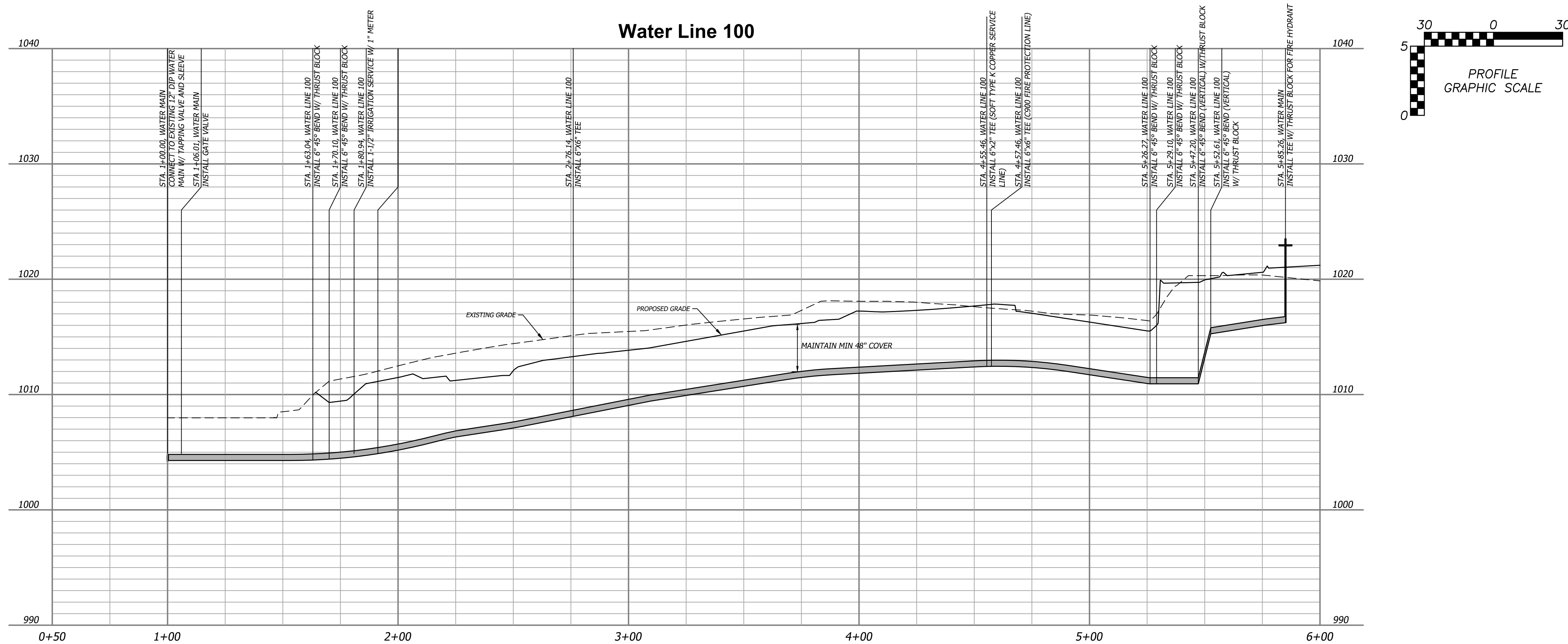
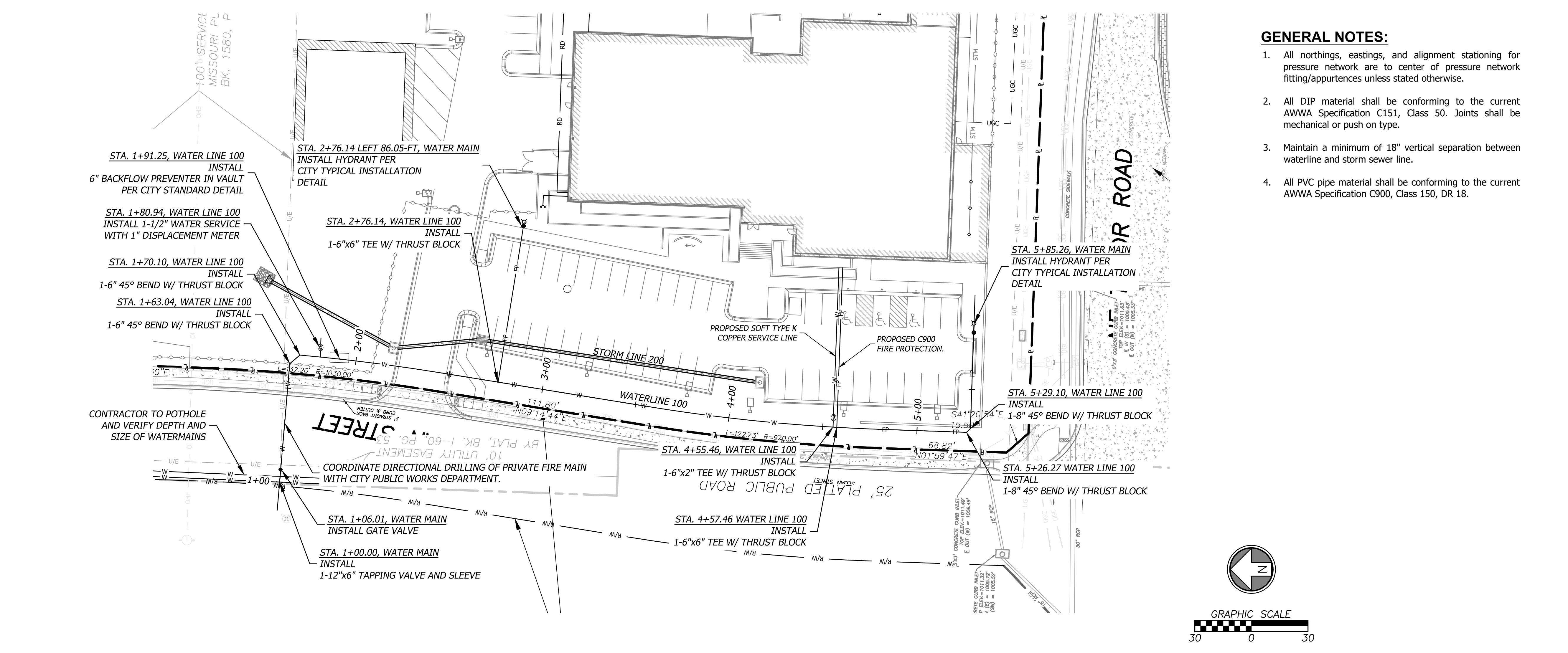


### SANITARY PROFILE NOTE

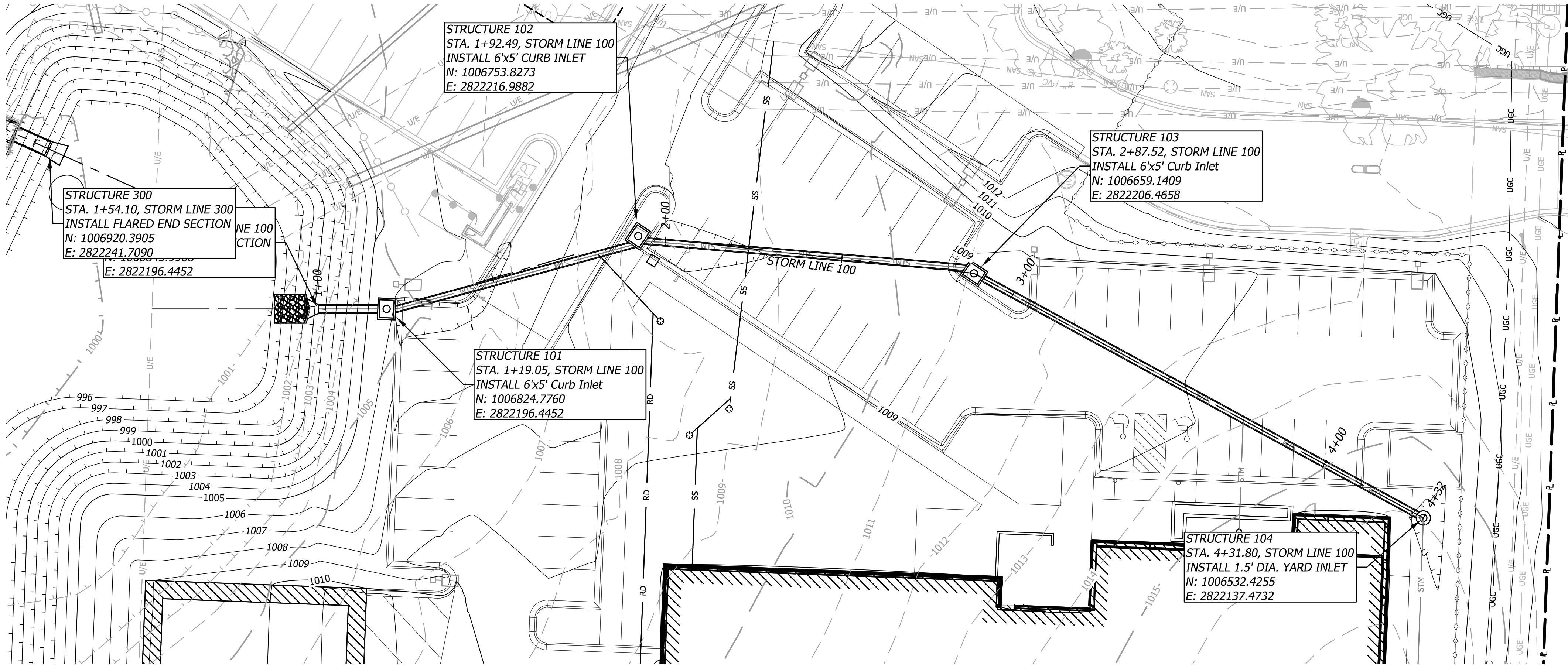
SANITARY PROFILE IS BASED ON MINIMUM SERVICEABLE ELEVATION FOR EXIT OF BUILDING SERVICE. CONTRACTOR SHALL MAINTAIN FIELD REDLINES OF CONSTRUCTED ELEVATIONS.

## SANITARY SEWER PLAN & PROFILE



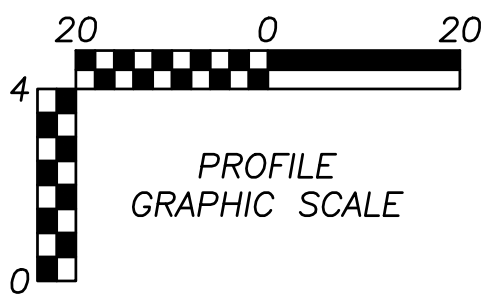
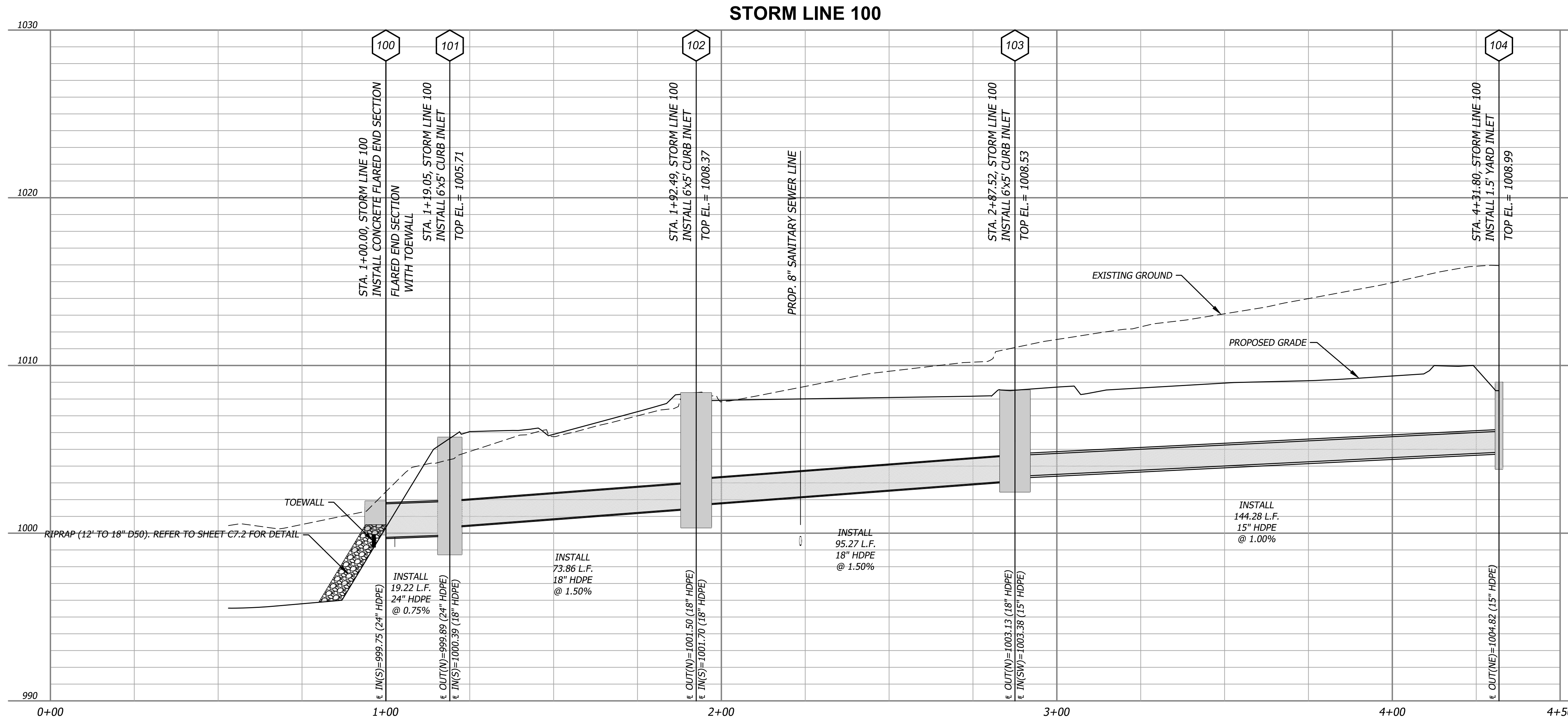
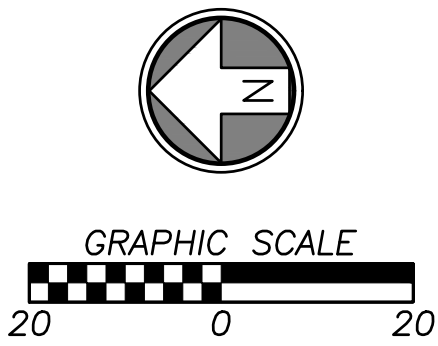






**STORM NOTE**

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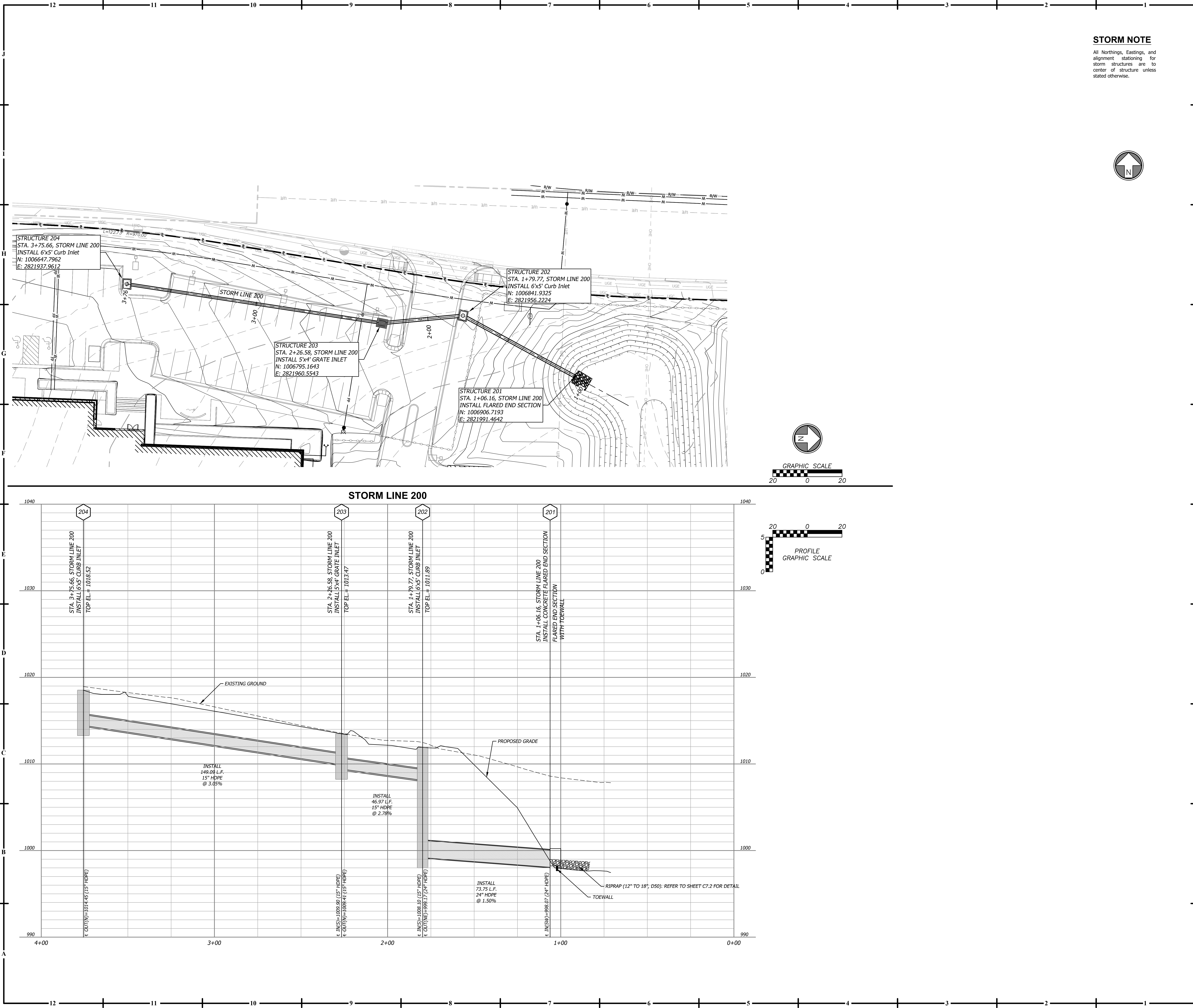
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MICHAEL T. MAKRIS, PE  
MO PE-2021033286  
**C5.0**  
ISSUE DATE: AUGUST 30, 2024  
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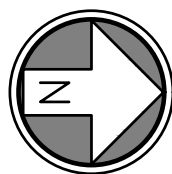
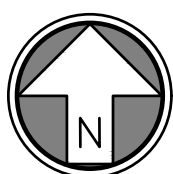
STORM PLAN & PROFILE





STORM NOTE

All Northings, Eastings, and alignment stationing for storm structures are to center of structure unless stated otherwise.



GRAPHIC SCALE  
20 0 20

20 0 20  
5 0  
PROFILE  
GRAPHIC SCALE

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**C5.1**  
ISSUE DATE: AUGUST 30, 2024  
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STORM PLAN & PROFILE



# LEE'S SUMMIT JOINT OPERATIONS FACILITY

# PACKAGE 1: SITE AND STRUCTURE

10 NE TUDOR ROAD  
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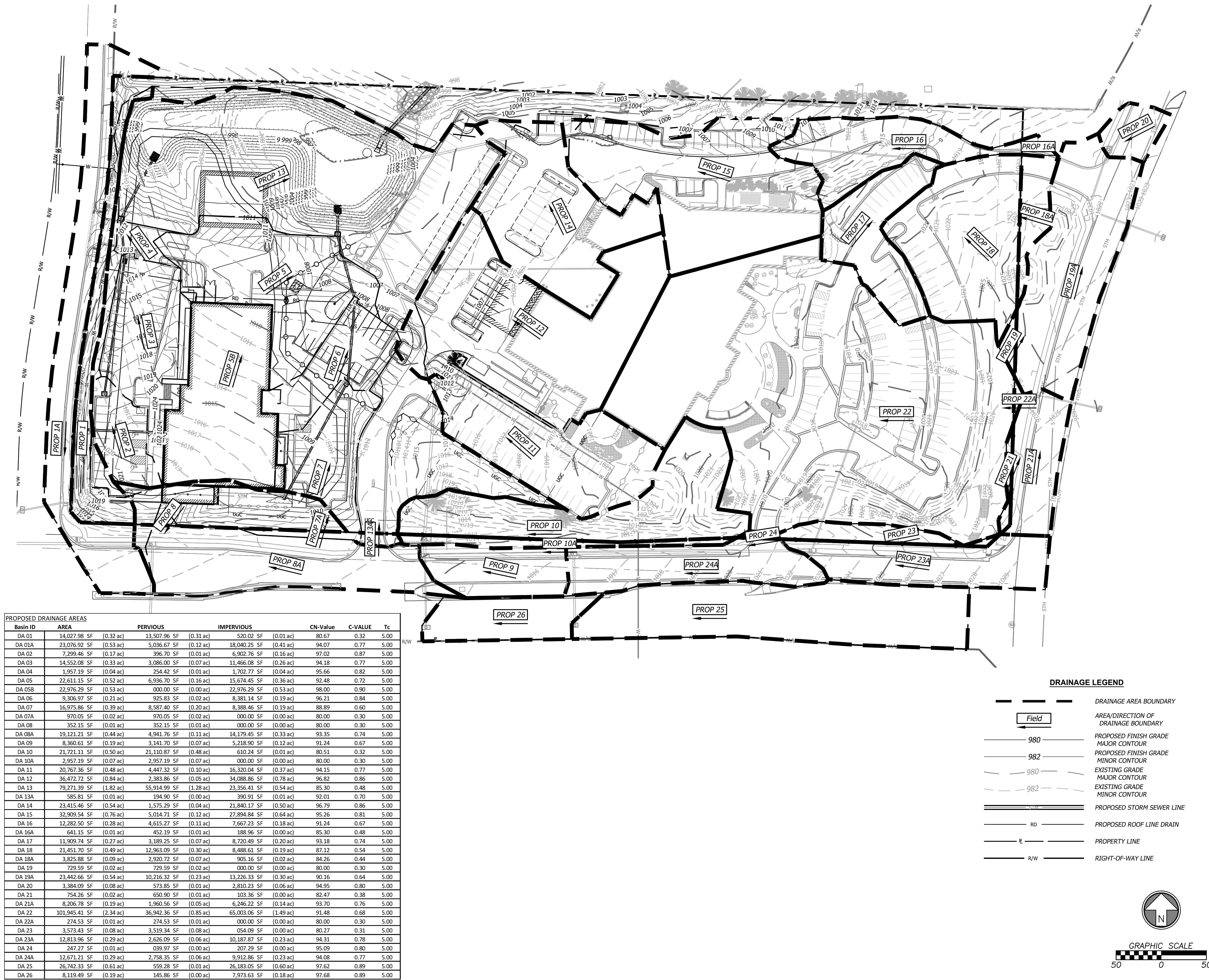
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3	ADDENDUM 03	2024-11-18

MICHAEL T. MAKRIS, PE  
MD PE-2021035286

## C5.2

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# PROPOSED DRAINAGE MAP





# LEE'S SUMMIT JOINT OPERATIONS FACILITY

## PACKAGE 1: SITE AND STRUCTURE

10 NE TUDOR ROAD  
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REVISION DATES:		
01	ADDENDUM 01	2024-09
02	ADDENDUM 02	2024-10
03	ADDENDUM 03	2024-11



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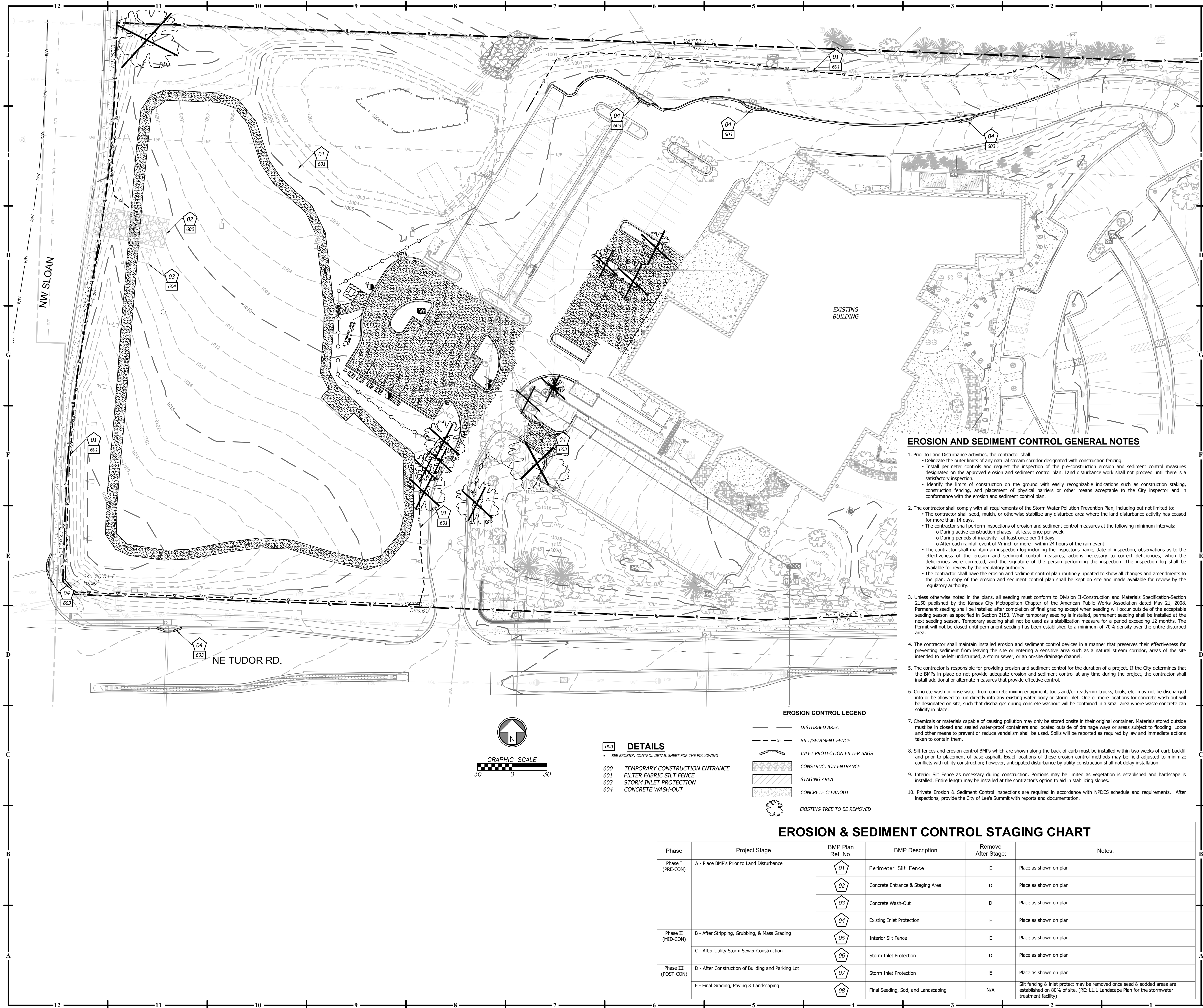
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ISSUE DATE: AUGUST 30, 2013  
HOEFER WELKER #: 138

## STORM CALCULATION

[illegible][illegible]





EROSION AND SEDIMENT CONTROL GENERAL NOTES

- Prior to Land Disturbance activities, the contractor shall:
  - Delineate the outer limits of any natural stream corridor designated with construction fencing.
  - Install perimeter controls and request the pre-construction erosion and sediment control measures designated on the approved erosion and sediment control plan. Land disturbance work shall not proceed until there is a satisfactory inspection.
  - Identify the limits of construction on the ground with easily recognizable indications such as construction staking, construction fencing, and placement of physical barriers or other means acceptable to the City inspector and in conformance with the erosion and sediment control plan.
- The contractor shall comply with all requirements of the Storm Water Pollution Prevention Plan, including but not limited to:
  - The contractor shall seed, mulch, or otherwise stabilize any disturbed area where the land disturbance activity has ceased for more than 14 days.
  - The contractor shall perform inspections of erosion and sediment control measures at the following minimum intervals:
    - During active construction phases - at least once per week
    - During periods of inactivity - at least once per 14 days
    - After each rainfall event of 1/8 inch or more - within 24 hours of the rain event
  - The contractor shall maintain an inspection log including the inspector's name, date of inspection, observations as to the effectiveness of the erosion and sediment control measures, actions necessary to correct deficiencies, when the deficiencies were corrected, and the signature of the person performing the inspection. The inspection log shall be available for review by the regulatory authority.
  - The contractor shall have the erosion and sediment control plan routinely updated to show all changes and amendments to the plan. A copy of the erosion and sediment control plan shall be kept on site and made available for review by the regulatory authority.
- Unless otherwise noted in the plans, all seeding must conform to Division II-Construction and Materials Specification-Section 2150 published by the Kansas City Metropolitan Chapter of the American Public Works Association dated May 21, 2008. Permanent seeding shall be installed after completion of final grading except when seeding will occur outside of the acceptable seeding season as specified in Section 2150. When temporary seeding is installed, permanent seeding shall be installed at the next seeding season. Temporary seeding shall not be used as a stabilization measure for a period exceeding 12 months. The Permit will not be closed until permanent seeding has been established to a minimum of 70% density over the entire disturbed area.
- The contractor shall maintain installed erosion and sediment control devices in a manner that preserves their effectiveness for preventing sediment from leaving the site or entering a sensitive area such as a natural stream corridor, areas of the site intended to be left undisturbed, a storm sewer, or an on-site drainage channel.
- The contractor is responsible for providing erosion and sediment control for the duration of a project. If the City determines that the BMPs in place do not provide adequate erosion and sediment control at any time during the project, the contractor shall install additional or alternate measures that provide effective control.
- Concrete wash or rinse water from concrete mixing equipment, tools and/or ready-mix trucks, tools, etc. may not be discharged into or be allowed to run directly into any existing water body or storm inlet. One or more locations for concrete wash out will be designated on site, such that discharges during concrete washout will be contained in a small area where waste concrete can solidify in place.
- Chemicals or materials capable of causing pollution may only be stored onsite in their original container. Materials stored outside must be in closed and sealed water-proof containers and located outside of drainage ways or areas subject to flooding. Locks and other means to prevent or reduce vandalism shall be used. Spills will be reported as required by law and immediate actions taken to contain them.
- Silt fences and erosion control BMPs which are shown along the back of curbs must be installed within two weeks of curb backfill and prior to placement of base asphalt. Exact locations of these erosion control methods may be field adjusted to minimize conflicts with utility construction; however, anticipated disturbance by utility construction shall not delay installation.
- Interior Silt Fence as necessary during construction. Portions may be limited as vegetation is established and hardscape is installed. Entire length may be installed at the contractor's option to aid in stabilizing slopes.
- Private Erosion & Sediment Control inspections are required in accordance with NPDES schedule and requirements. After inspections, provide the City of Lee's Summit with reports and documentation.

EROSION CONTROL LEGEND

- DISTURBED AREA
- SILT/SEDIMENT FENCE
- INLET PROTECTION FILTER BAGS
- CONSTRUCTION ENTRANCE
- STAGING AREA
- CONCRETE CLEANOUT
- EXISTING TREE TO BE REMOVED

DETAILS

- SEE EROSION CONTROL DETAIL SHEET FOR THE FOLLOWING
- 600 TEMPORARY CONSTRUCTION ENTRANCE
- 601 FILTER FABRIC SILT FENCE
- 603 STORM INLET PROTECTION
- 604 CONCRETE WASH-OUT

EROSION & SEDIMENT CONTROL STAGING CHART

Phase	Project Stage	BMP Plan Ref. No.	BMP Description	Remove After Stage:	Notes:
Phase I (PRE-CON)	A - Place BMP's Prior to Land Disturbance	01	Perimeter Silt Fence	E	Place as shown on plan
		02	Concrete Entrance & Staging Area	D	Place as shown on plan
		03	Concrete Wash-Out	D	Place as shown on plan
		04	Existing Inlet Protection	E	Place as shown on plan
Phase II (MID-CON)	B - After Stripping, Grubbing, & Mass Grading	05	Interior Silt Fence	E	Place as shown on plan
	C - After Utility Storm Sewer Construction	06	Storm Inlet Protection	D	Place as shown on plan
Phase III (POST-CON)	D - After Construction of Building and Parking Lot	07	Storm Inlet Protection	E	Place as shown on plan
	E - Final Grading, Paving & Landscaping	08	Final Seeding, Sod, and Landscaping	N/A	Silt fencing & inlet protect may be removed once seed & sodded areas are established on 80% of site. (RE: L1.1 Landscape Plan for the stormwater treatment facility)

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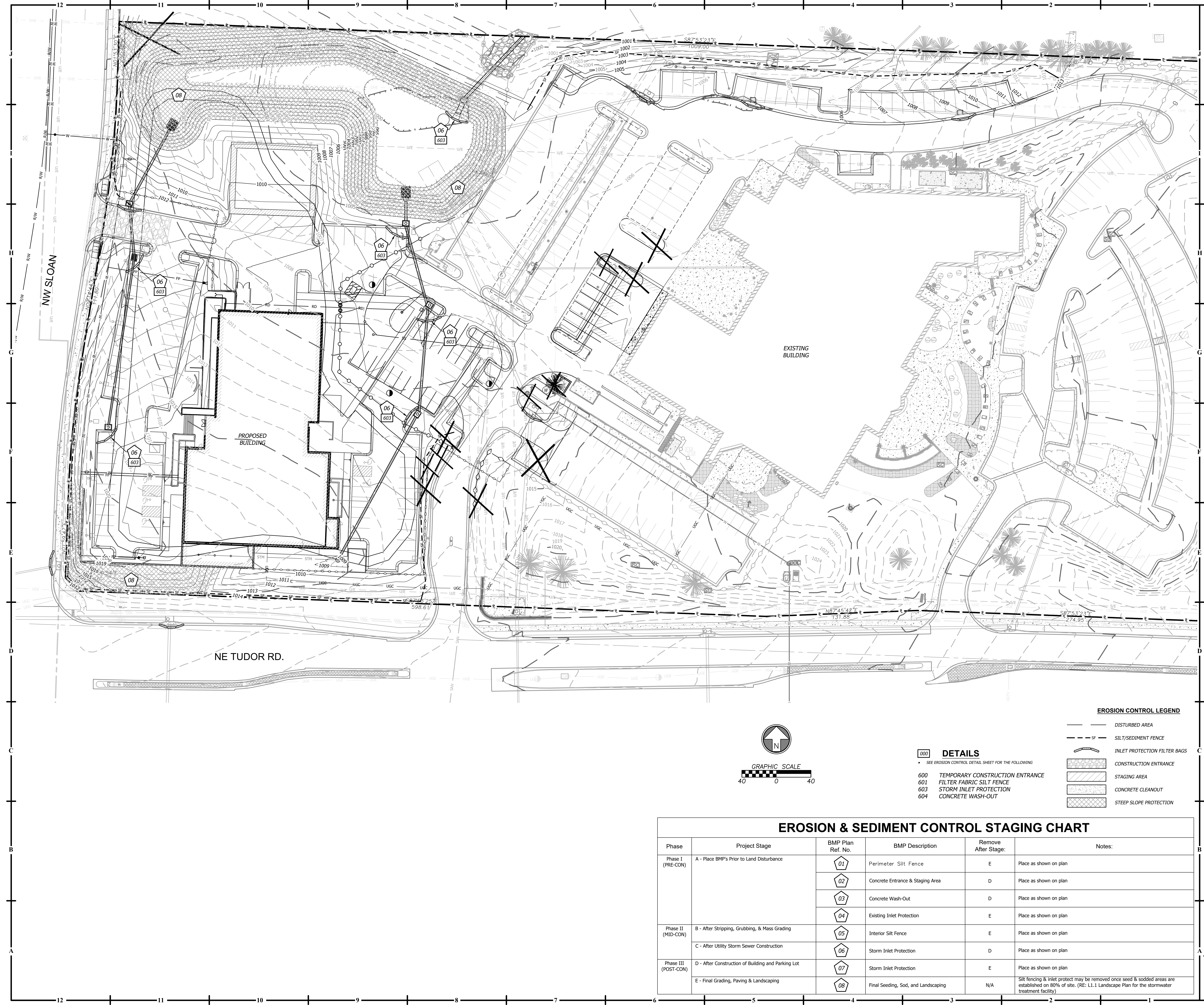
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**C6.0**  
ISSUE DATE: AUGUST 30, 2024  
HOEFER WELKER #: 138161

EROSION CONTROL PLAN





EROSION CONTROL LEGEND

- DISTURBED AREA
- SILT/SEDIMENT FENCE
- INLET PROTECTION FILTER BAGS
- CONSTRUCTION ENTRANCE
- STAGING AREA
- CONCRETE CLEANOUT
- STEEP SLOPE PROTECTION

- 000 DETAILS**  
SEE EROSION CONTROL DETAIL SHEET FOR THE FOLLOWING
- 600 TEMPORARY CONSTRUCTION ENTRANCE
  - 601 FILTER FABRIC SILT FENCE
  - 603 STORM INLET PROTECTION
  - 604 CONCRETE WASH-OUT

EROSION & SEDIMENT CONTROL STAGING CHART

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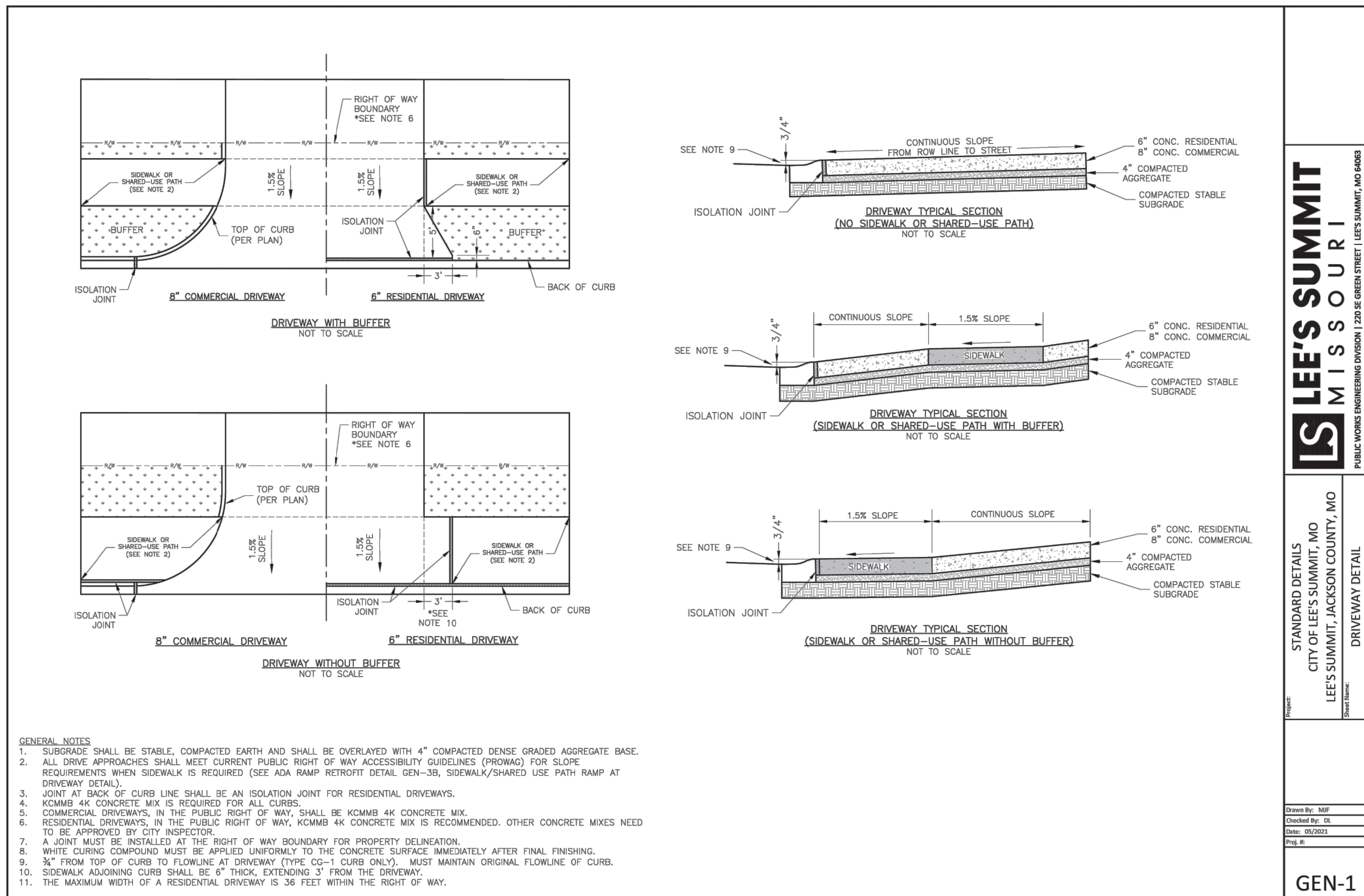
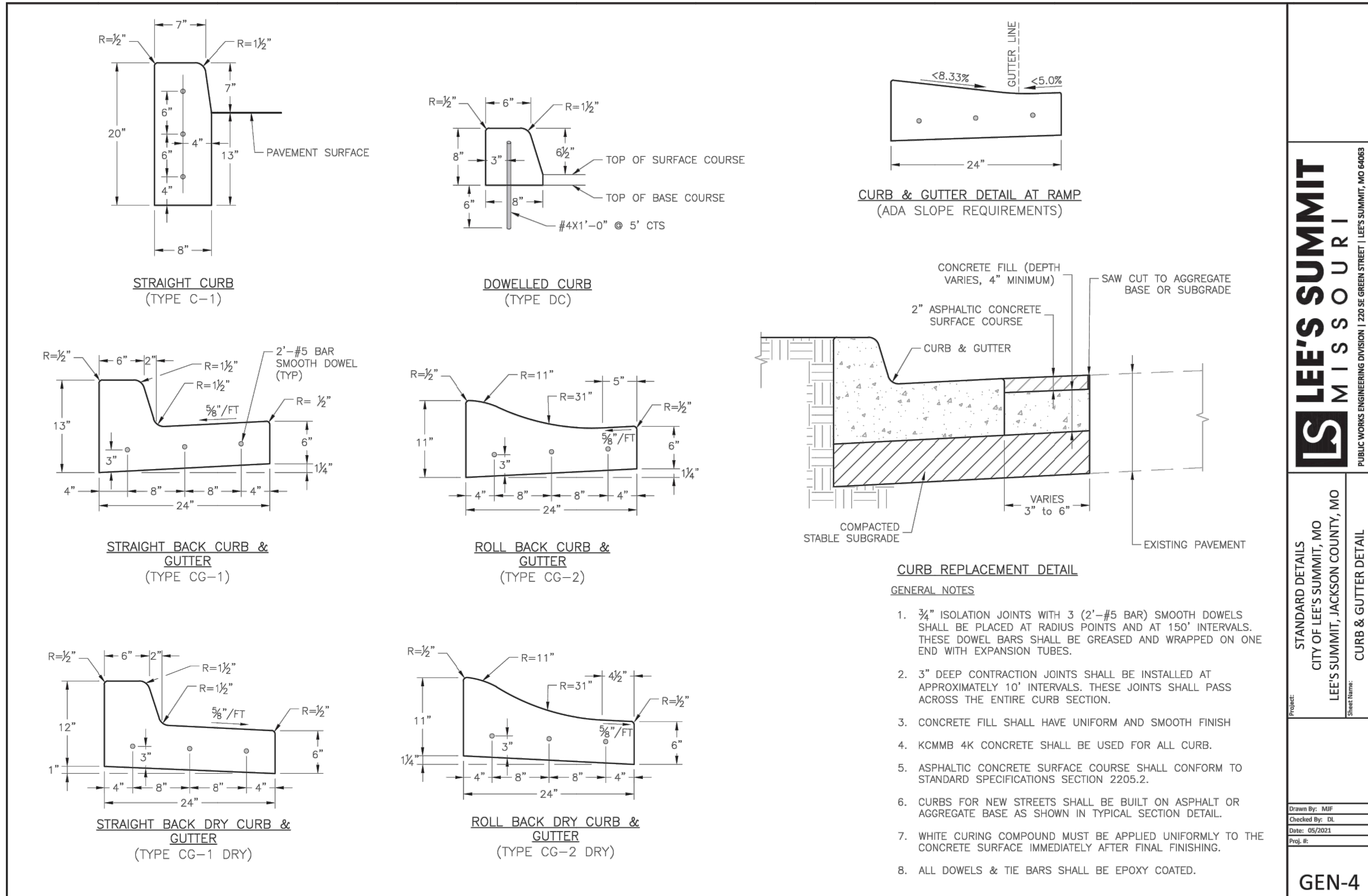
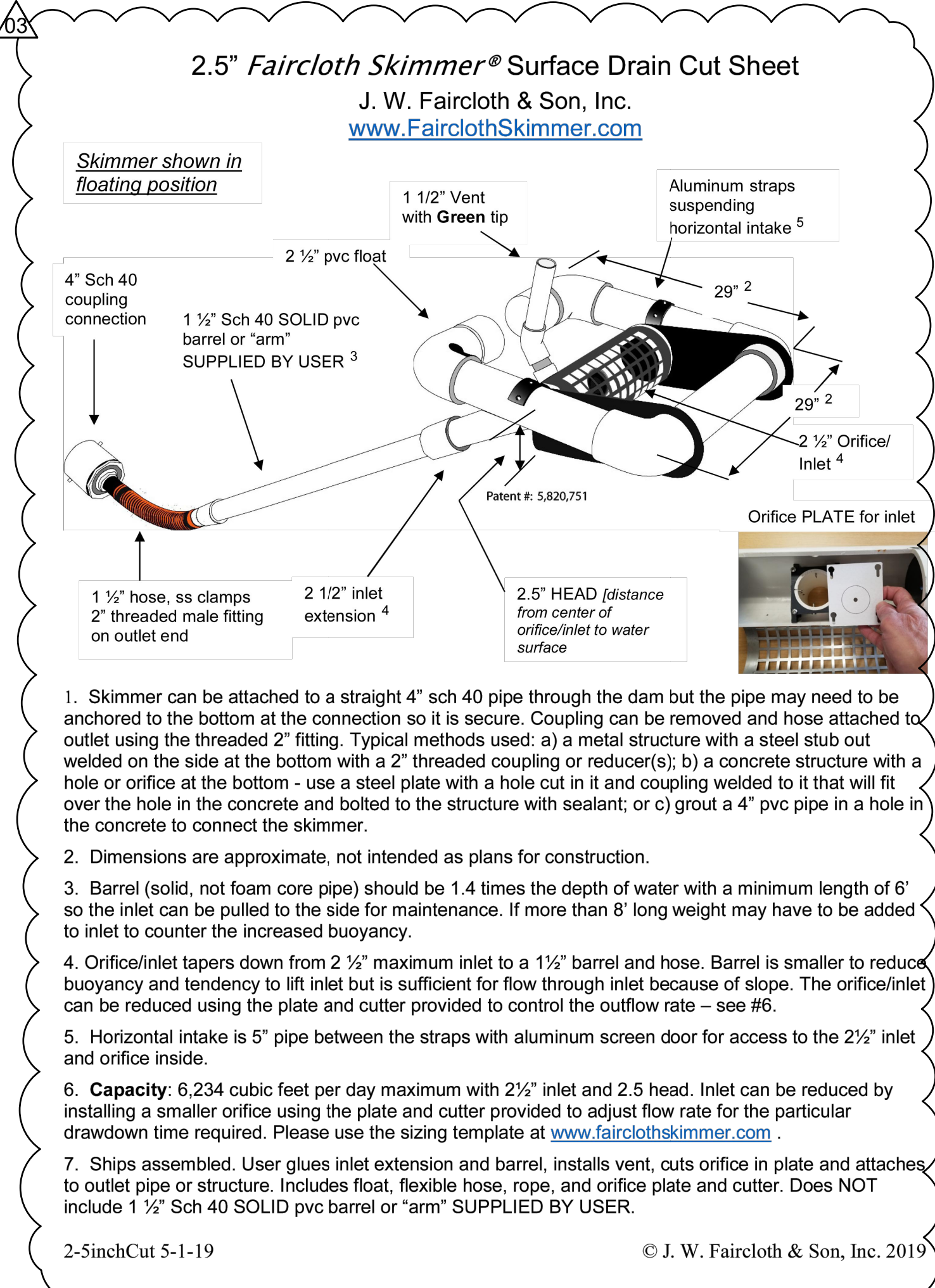
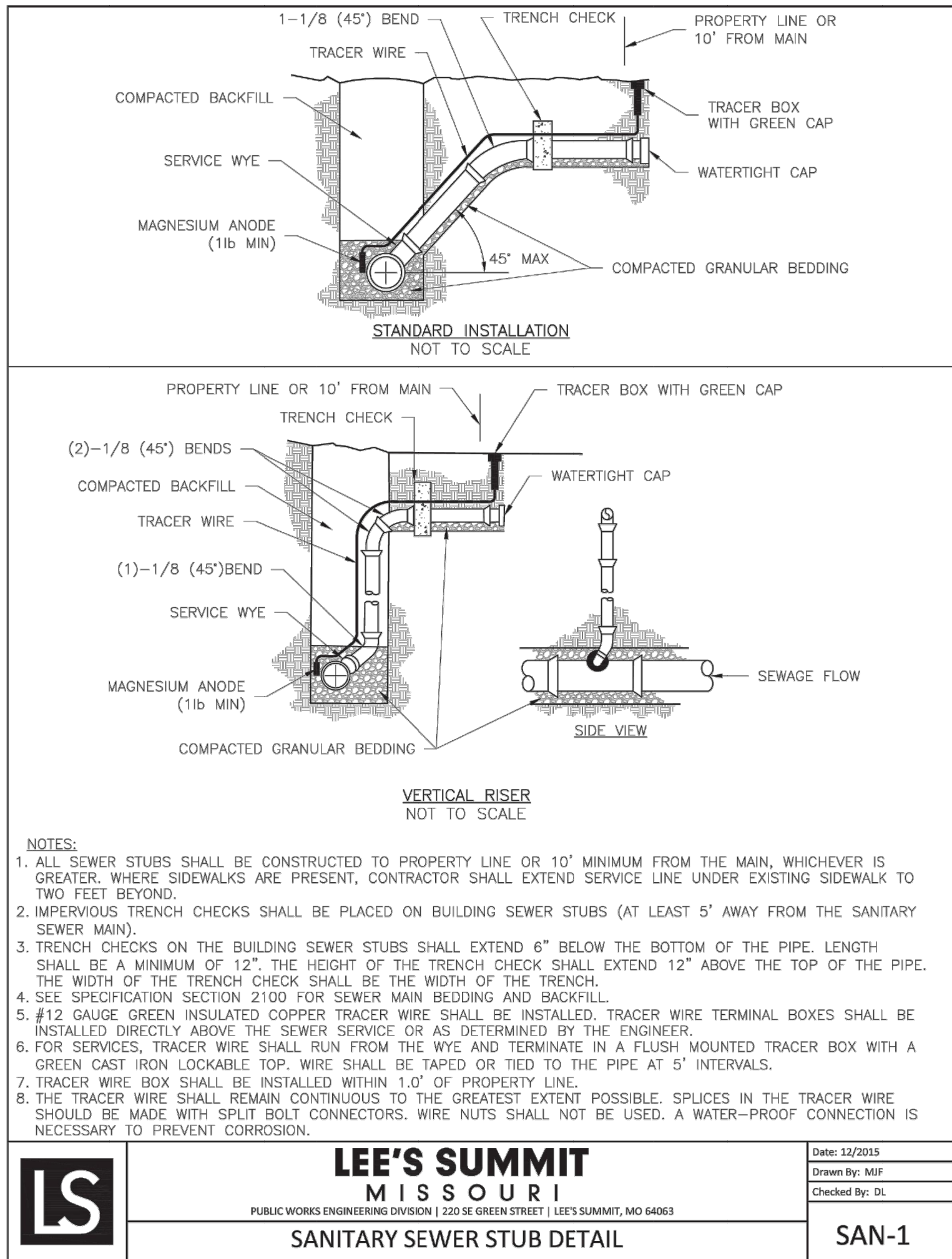
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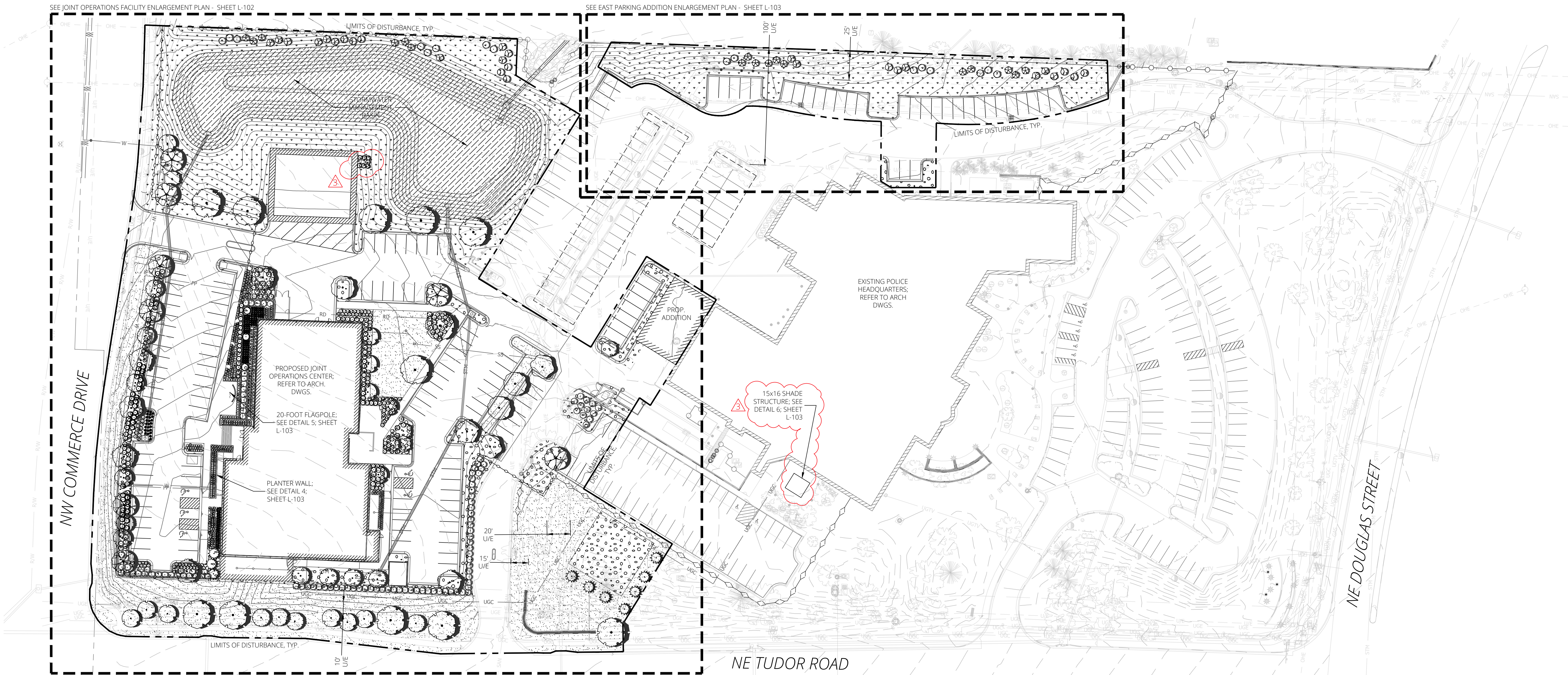
EROSION CONTROL PLAN







9'-1" 2 0 1 2 3 4 5 6 7 8 9 10 11 12  
1 1/2" = 1'-0"  
1" = 1'-0"  
3/4" = 1'-0"  
3/8" = 1'-0"  
3/16" = 1'-0"  
1/8" = 1'-0"  
1/16" = 1'-0"



1 LANDSCAPE PLAN  
SCALE = 1" = 40'

LANDSCAPE NOTES

- CONTRACTOR SHALL LOCATE ALL UTILITIES BEFORE COMMENCING WORK. CONTACT THE MISSOURI ONE CALL SYSTEM AT 1-800-DIG-RITE OR 811 TO FILE A LOCATE REQUEST PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE TO UTILITIES RESULTING FROM LANDSCAPE OPERATIONS. ANY UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY AND MAY NOT DEPICT THE ACTUAL LOCATION OF SERVICES.
- QUANTITIES OF MATERIALS SHOWN ON THE LANDSCAPE PLAN TAKE PRECEDENCE OVER QUANTITIES SHOWN ON THE PLANT SCHEDULE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES ON THE LANDSCAPE PLAN PRIOR TO BIDDING.
- REPORT ANY DISCREPANCIES IN THE LANDSCAPE PLAN TO THE LANDSCAPE ARCHITECT, PRIOR TO PURCHASING MATERIALS OR STARTING CONSTRUCTION.
- ALL DISTURBED AREAS NOT PAVED OR COVERED BY BUILDINGS SHALL BE BROUGHT TO FINISH GRADE AND PLANTED WITH TURF OR OTHER APPROPRIATE GROUND COVERS.
- ALL TREE AND SHRUB PITS SHALL BE AMENDED WITH A PLANTING SOIL MIX CONSISTING OF EXISTING SOIL, TOPSOIL, AND COMPOST TO MAKE A NEW SOIL WHICH MEETS THE PROJECT GOALS FOR THE INDICATED PLANTING AREAS. THESE COMPONENTS WILL BE MIXED ON-SITE IN THE FOLLOWING RATION (BY VOLUME): EXISTING SOIL, 65-70%; TOPSOIL (UNSCREENED), 25-30%; AND COMPOST, 5%. MIX THE TOPSOIL AND COMPOST TOGETHER FIRST AND THEN ADD TO THE EXISTING SOIL. MIX WITH A LOADER BUCKET TO LOOSELY INCORPORATE THE TOPSOIL/COMPOST MIX INTO THE EXISTING SOIL. DO NOT OVER MIX. DO NOT MIX WITH A SOIL BLENDING MACHINE. DO NOT SCREEN THE SOIL. CLUMPS OF TOPSOIL, COMPOST AND EXISTING SOIL WILL BE PERMITTED IN THE OVERALL MIX.
- ALL TREES AND SHRUBS SHALL BE WELL-FORMED AND DEVELOPED IN GOOD CONDITION, HEALTHY AND DISEASE-FREE, AND BE TYPICAL OF THE SPECIES. PLANTS SHALL COMPLY WITH ACCEPTABLE STANDARDS AS SET FORTH IN THE LATEST EDITION OF THE "AMERICAN STANDARD FOR NURSERY STOCK."
- APPLY A 3" LAYER OF DECORATIVE GRAVEL OVER NON-WOVEN GEOTEXTILE FABRIC IN ALL PLANTING BEDS. GRAVEL SHOULD NOT COME IN CONTACT WITH PLANT TRUNKS OR STEMS.
- ALL TURF AREAS SHALL BE SEPARATED FROM BUILDING FOUNDATION WALLS, RETAINING WALLS, AND FENCES BY AN AGGREGATE MOW STRIP 18 INCHES IN WIDTH, 6 INCHES IN DEPTH, AND CONSISTING OF 1-3" DIAMETER DECORATIVE GRAVEL. REFER TO SHEET L-103, DETAIL #3.
- ALL PLANTING BEDS AND AGGREGATE MOW STRIPS MUST BE SEPARATED FROM TURF AREAS WITH STEEL LANDSCAPE EDGING. INSTALL "BORDER KING STEEL LANDSCAPE EDGING" MANUFACTURED BY BORDER CONCEPTS, INC., OR APPROVED EQUAL.
- TURF SOD SHALL BE CERTIFIED TURF GRASS SOD COMPLYING WITH TURFGRASS PRODUCERS INTERNATIONAL'S "GUIDELINE SPECIFICATIONS FOR TURFGRASS SODDING." SOD SHALL BE TURF-TYPE TALL FESCUE HARVESTED FROM A SOD FARM LOCATED WITHIN 100 MILES OF THE PROJECT SITE. SODS SHALL BE WELL ROOTED, 2-YEAR OLD STOCK HARVESTED IN ROLLS AND FERTILIZED 2-3 WEEKS PRIOR TO CUTTING. ALL SOD SHALL BE MACHINE CUT AND VIGOROUSLY GROWING (NOT DORMANT). MAXIMUM TIME FROM STRIPPING TO PLANTING SHALL BE 24 HOURS.
- TURF SEED SHALL COMPLY WITH U.S. DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER THE FEDERAL SEED ACT AND BE EQUAL IN QUALITY TO STANDARDS FOR CERTIFIED SEED. SEED SHALL BE A TURF-TYPE FESCUE BLEND CONSISTING OF 85% TURF-TYPE TALL FESCUE, 10% KENTUCKY BLUEGRASS, AND 5% ANNUAL RyEGRASS. ALL SEEDED AREAS SHALL BE MULCHED WITH STRAW OR HYDROMULCH AT TIME OF INSTALLATION UNTIL SEED HAS ESTABLISHED.
- NATIVE WETLAND SEED MIX SHALL CONSIST OF PRE-MIXED WETLAND TOLERANT PLANT SEED OF A MINIMUM OF TWENTY (20) LOCAL NATIVE SPECIES. PROVIDE "ALL-STAR FACW WETLAND MIX" BY STAR SEED, INC., OR APPROVED EQUAL. CONTACT STAR SEED BY PHONE: (800) 782-7311, FAX: (785) 346-2479, OR THEIR WEBSITE: WWW.GOSTARSEED.COM. BROADCAST SEED MIX BY USING AN AGITATING SPREADER (SUCH AS A VICON SEEDER) MOUNTED TO A TRACTOR OR ATV PER NURSERY DIRECTIONS. SOW EVENLY ACROSS THE SITE IN TWO DIRECTIONS PERPENDICULAR TO ONE ANOTHER AT A RATE NOT LESS THAN 20 POUNDS PURE LIVE SEED (PLS) PER ACRE SEED MIX INSTALLATION SHALL OCCUR EITHER BETWEEN THE DATES OF NOVEMBER 1 AND FEBRUARY 28 OR APRIL 1 AND JUNE 15. COORDINATE INSTALLATION OF SEED MIX WITH THE EROSION CONTROL CONTRACTOR.
- CONTRACTOR SHALL USE AN APPROVED TREE GUYING SYSTEM. TREE GUYING TO BE FLAT WOVEN POLYPROPYLENE MATERIAL, 3/4-INCH-WIDE, WITH A TENSILE STRENGTH OF 900 LBS. HOSE AND WIRE WILL NOT BE ACCEPTED. CONTRACTOR SHALL PROVIDE ONE OF THE FOLLOWING PRODUCTS, OR APPROVED EQUAL: "ARBORTIE GREEN" MANUFACTURED BY DEEP ROOT PARTNERS, LP, OR "LEONARD TREE TIE WEBBING GREEN" MANUFACTURED BY A.M. LEONARD, INC.
- REMOVE ALL RUBBISH, EQUIPMENT, AND MATERIAL AND LEAVE THE AREA IN A NEAT, CLEAN CONDITION EACH DAY. MAINTAIN PAVED AREAS UTILIZED FOR HAULING EQUIPMENT AND MATERIALS BY OTHER TRADES IN A CLEAN AND UNOBSTRUCTED CONDITION AT ALL TIMES. REMOVE SOIL OR DIRT THAT ACCUMULATES DUE TO PLANTING OPERATIONS EACH DAY.
- AT THE COMPLETION OF PLANTING OPERATIONS ALL PLANTS SHALL BE INSPECTED BY THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL REPLACE IMMEDIATELY ANY PLANTS NOT IN HEALTHY AND VIGOROUS CONDITION AT THAT TIME AT NO EXPENSE TO THE OWNER. ANY PLANT NOT IN HEALTHY CONDITION AFTER ONE FULL YEAR FROM THE DATE OF FINAL ACCEPTANCE SHALL BE REPLACED AS PER THE ORIGINAL SPECIFICATIONS, FREE OF CHARGE TO THE OWNER.
- CONTRACTOR SHALL GUARANTEE TREES, SHRUBS, PERENNIALS AND TURF FOR ONE CALENDAR YEAR FOLLOWING PROVISIONAL ACCEPTANCE OF THE OVERALL PROJECT. DURING THE GUARANTEE PERIOD, IF ANY PLANTS THAT DIE DUE TO NATURAL CAUSES OR THAT ARE UNUSUALLY IN POOR CONDITION, SHALL BE REPLACED BY THE CONTRACTOR. PLANTS USED FOR THE REPLACEMENT SHALL BE OF THE SAME VARIETY AND SIZE AS ORIGINALLY SPECIFIED IN THE PLANT SCHEDULE. REPLACEMENTS SHALL BE MADE WITHIN ONE WEEK OF REQUEST PENDING FAVORABLE SEASONAL PLANTING CONDITIONS.

PLANT SCHEDULE

SYMBOL	CODE	QTY	COMMON / BOTANICAL NAME	CONT	CAL	SIZE
DECIDUOUS TREES						
	AC	8	CADDO SUGAR MAPLE / ACER SACCHARUM 'CADDO'	B & B	2.5" CAL	
	GB	7	MAIDENHAIR TREE / GINKGO BILOBA	B & B	2.5" CAL	
	PB	5	BLOODGOOD LONDON PLANE TREE / PLATANUS X ACERIFOLIA 'BLOODGOOD'	B & B	2.5" CAL	
	QB	3	SWAMP WHITE OAK / QUERCUS BICOLOR	B & B	2.5" CAL	
	QS	5	SHUMARD OAK / QUERCUS SHUMARDII	B & B	2.5" CAL	
	TA	4	BOULEVARD AMERICAN LINDEN / TILIA AMERICANA 'BOULEVARD'	B & B	2.5" CAL	
EVERGREEN TREES						
	JP	10	PERFECTA JUNIPER / JUNIPERUS CHINENSIS 'PERFECTA'	B & B	5'-6" TALL	
	JT	3	TAYLOR EASTERN REDCEDAR / JUNIPERUS VIRGINIANA 'TAYLOR'	B & B	5'-6" TALL	
ORNAMENTAL TREES						
	AG	15	AUTUMN BRILLIANCE SERVICEBERRY / AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	B & B	1.5" CAL	
	CC	11	EASTERN REDBUD / CERCIS CANADENSIS	B & B	1.5" CAL	
	MR2	5	ROYAL RAINDROPS CRABAPPLE / MALUS X 'ROYAL RAINDROPS'	B & B	1.5" CAL	
SHRUBS						
	BT	32	SUNJOY TANGELO BARBERRY / BERBERIS THUNBERGII 'SUNJOY TANGELO'	#3		
	BG	103	GREEN GEM BOXWOOD / BUXUS X 'GREEN GEM'	#5		
	CL	16	FIBER OPTICS BUTTONBUSH / CEPHALANTHUS OCCIDENTALIS 'BAILOPTICS'	#5		
	IS	79	SHAMROCK INKBERRY HOLLY / ILEX GLABRA 'SHAMROCK'	#3		
	JS	110	SEA GREEN PFITZER JUNIPER / JUNIPERUS X PFITZERIANA 'SEA GREEN'	#5		
	PO	21	AMBER JUBILEE NINEBARK / PHYSOCARPUS OPULIFOLIUS 'JEFAM'	#5		
	RG	52	GRO-LOW FRAGRANT SUMAC / RHUS AROMATICA 'GRO-LOW'	#3		
	SE	17	BLACK LACE® ELDERBERRY / SAMBUCUS NIGRA 'EVA'	#5		
	SM	126	MAGIC CARPET JAPANESE SPIREA / SPIRAEA JAPONICA 'WALBUMA'	#3		
	TD	40	DENSIFORMIS YEW / TAXUS X MEDIA 'DENSIFORMIS'	#5		
	VA	18	ARROWWOOD VIBURNUM / VIBURNUM DENTATUM	#5		
	VB	9	BLACKHAW VIBURNUM / VIBURNUM PRUNIFOLIUM	#5		

SYMBOL	CODE	QTY	COMMON / BOTANICAL NAME	CONT
GRASSES & PERENNIALS				
	CK	101	KARL FOERSTER FEATHER REED GRASS / CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	#1
	CP2	20	STIFF TICKSEED / COREOPSIS PALMATA	#1
	HR	113	RUBY SPIDER DAYLILY / HEMEROCALLIS X 'RUBY SPIDER'	#1
	PP	94	RUSSIAN SAGE / PEROVSKIA ATRIPLICIFOLIA 'PEEK-A-BLUE'	#1
	SP	77	PRAIRIE MUNCHKIN LITTLE BLUESTEM / SCHIZACHYRIUM SCOPARIUM 'PRAIRIE MUNCHKIN'	#1
	SH	19	WILD STONECROP / SEDUM TERNATUM	#1
	ST	62	PRAIRIE DROPSEED / SPOROBOOLUS HETEROLEPIS	#1
GROUND COVERS				
	DS	22,445 SF	DECORATIVE GRAVEL / 1" - 3" MISSOURI RAINBOW	ROCK
	TE	39,770 SF	TURF SEED / DROUGHT TOLERANT FESCUE BLEND	SEED
	TS	35,017 SF	TURF SOD / DROUGHT TOLERANT FESCUE BLEND	SOD
	WP	26,125 SF	NATIVE WETLAND SEED MIX / STORMWATER BMP PERENNIAL MIX	SEED

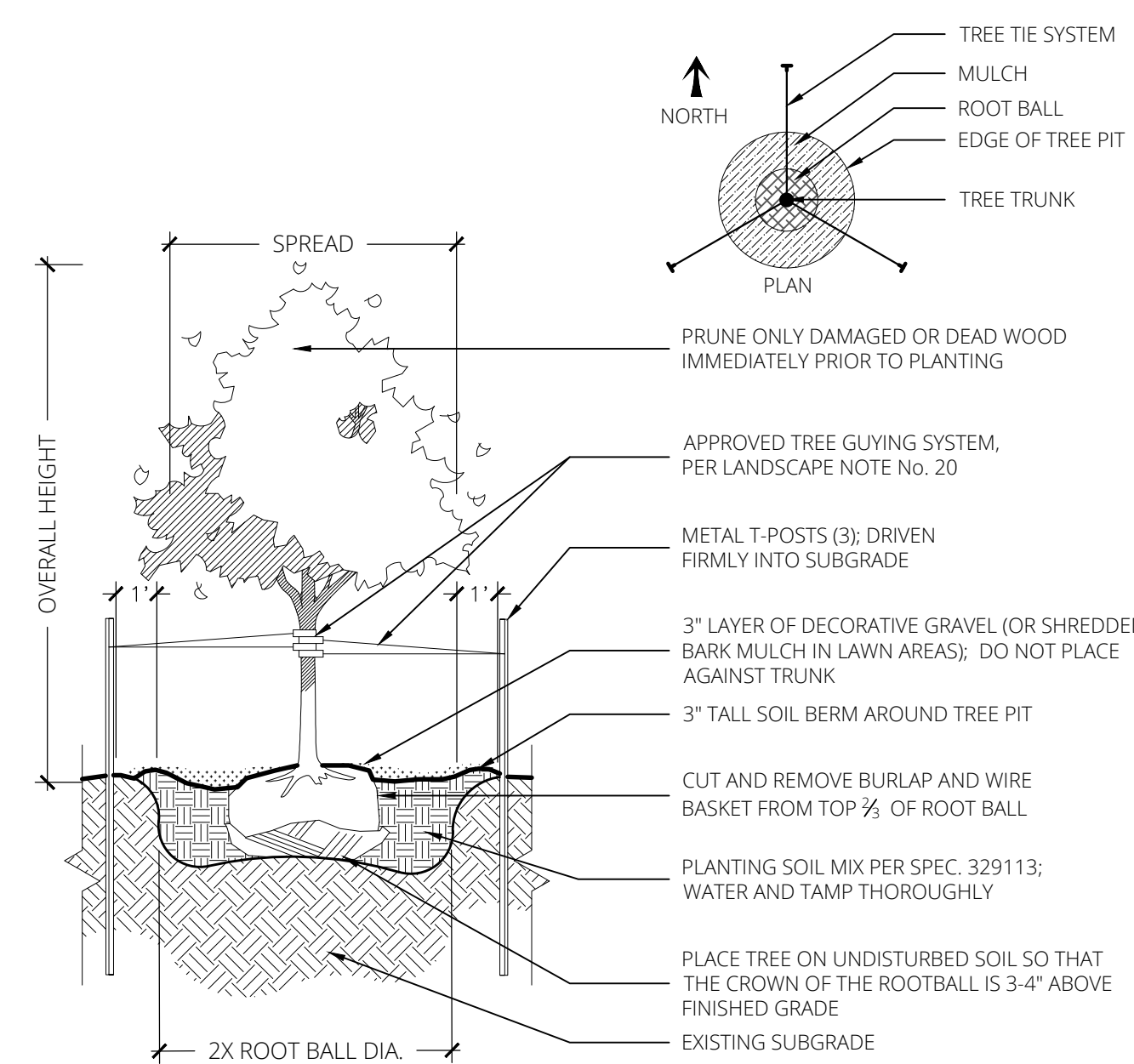
LANDSCAPE CODE SUMMARY

STREET FRONTAGE TREES (8,790.A.1) REQUIRED: 1 TREE PER 30 FEET OF STREET FRONTAGE NE TUDOR ROAD = 438 FEET / 30 = 15 TREES NW COMMERCE CIRCLE = 502 FEET / 30 = 17 TREES PROVIDED: NE TUDOR ROAD = 15 TREES NW COMMERCE CIRCLE = 17 TREES	PARKING LOT SCREENING (8,820.C.1) REQUIRED: HEDGE OF 12 SHRUBS / 40 LINEAR FEET 392 LINEAR FEET / 40 * 12 = 118 SHRUBS PROVIDED: 118 SHRUBS
STREET FRONTAGE SHRUBS (8,790.A.2) REQUIRED: 1 SHRUB PER 20 FEET OF STREET FRONTAGE NE TUDOR ROAD = 314 FEET / 20 = 16 SHRUBS NW COMMERCE CIRCLE = 502 FEET / 20 = 26 SHRUBS PROVIDED: NE TUDOR ROAD = 23 SHRUBS NW COMMERCE CIRCLE = 40 SHRUBS	MINIMUM BUFFER / SCREEN (8,890) REQUIRED: NORTHWEST = MEDIUM IMPACT SCREEN - TYPE B 1 SHADE TREE PER 1,000 SQUARE FEET = 6 SHADE TREES 1 ORNAMENTAL TREE PER 500 SQUARE FEET = 12 ORNAMENTAL TREES 1 EVERGREEN TREE PER 300 SQUARE FEET = 20 EVERGREEN TREES 1 SHRUB PER 200 SQUARE FEET = 30 SHRUBS PROVIDED: 30 SHRUBS
OPEN YARD SHRUBS (8,790.B.1) REQUIRED: 2 SHRUBS PER 5,000 SQUARE FEET OF TOTAL LOT AREA 221,540 SF / 5,000 * 2 = 88 SHRUBS PROVIDED: 382 SHRUBS	REQUIRED: NORTHWEST = MEDIUM IMPACT SCREEN - TYPE B 1 SHADE TREE PER 1,000 SQUARE FEET = 6 SHADE TREES 1 ORNAMENTAL TREE PER 500 SQUARE FEET = 12 ORNAMENTAL TREES 1 EVERGREEN TREE PER 300 SQUARE FEET = 20 EVERGREEN TREES 1 SHRUB PER 200 SQUARE FEET = 30 SHRUBS PROVIDED: 30 SHRUBS
OPEN YARD TREES (8,790.B.3) REQUIRED: 1 TREE PER 5,000 SQUARE FEET OF TOTAL LOT AREA 221,540 SF / 5,000 = 44 TREES PROVIDED: 44 TREES	REQUIRED: NORTHWEST = MEDIUM IMPACT SCREEN - TYPE B 1 SHADE TREE PER 1,000 SQUARE FEET = 6 SHADE TREES 1 ORNAMENTAL TREE PER 500 SQUARE FEET = 12 ORNAMENTAL TREES 1 EVERGREEN TREE PER 300 SQUARE FEET = 20 EVERGREEN TREES 1 SHRUB PER 200 SQUARE FEET = 30 SHRUBS PROVIDED: 30 SHRUBS

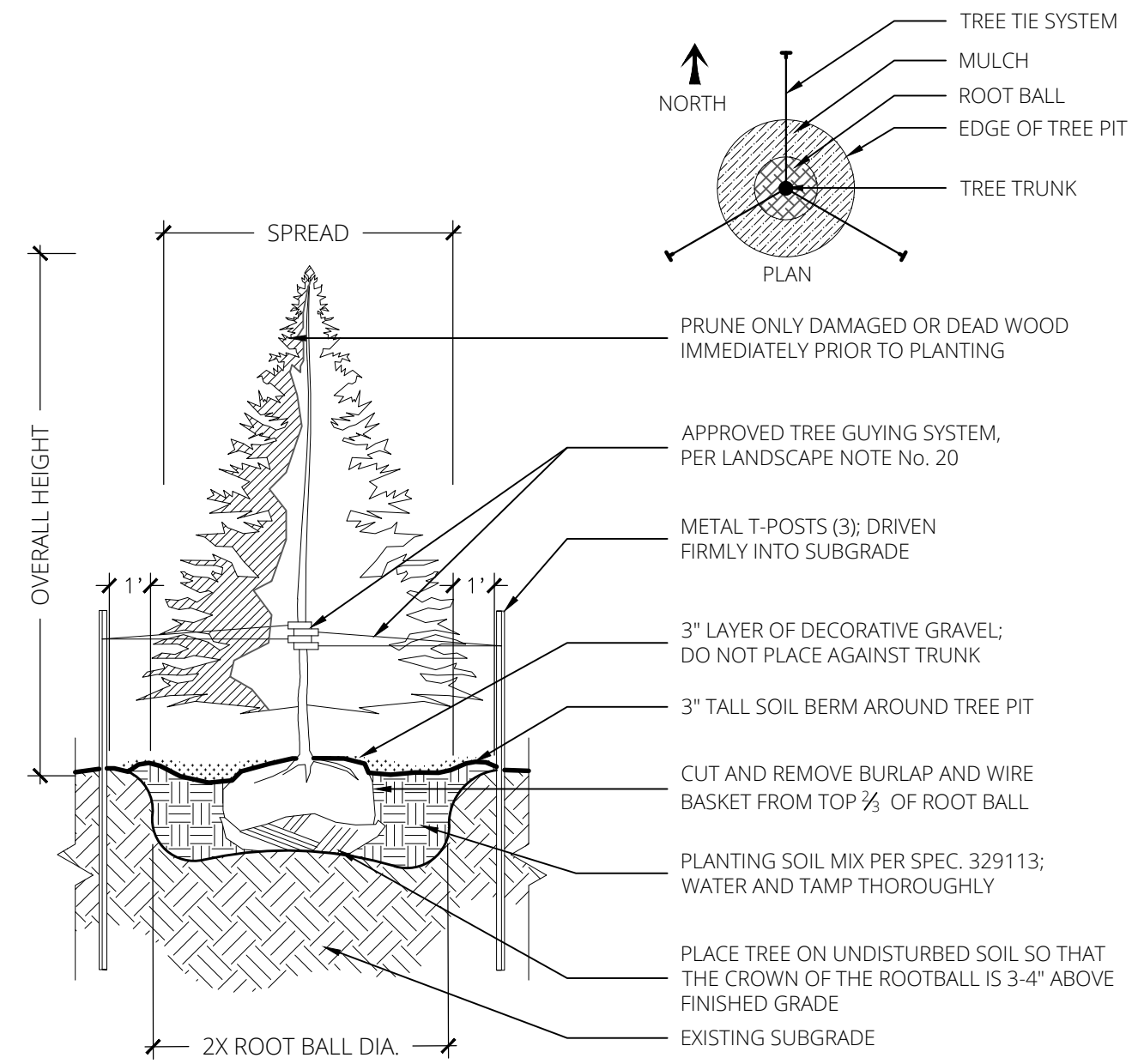




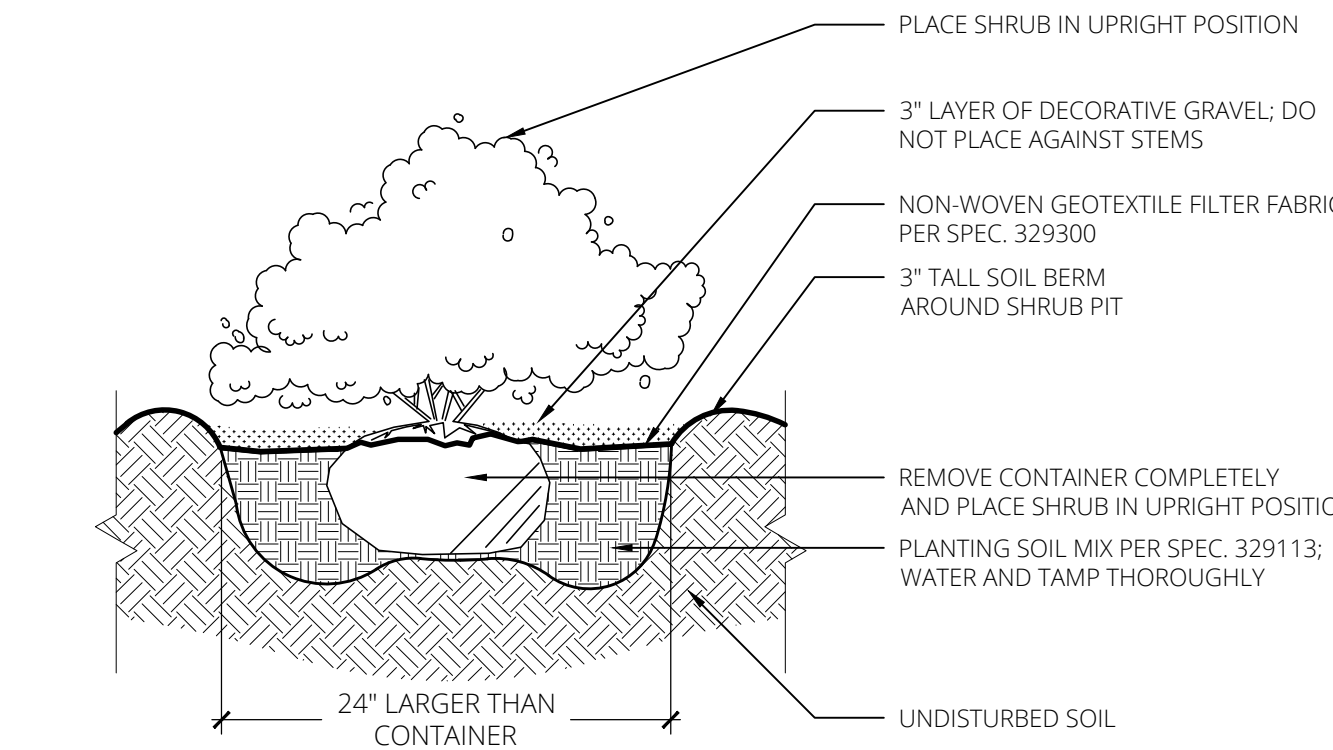
1 | JOINT OPERATIONS FACILITY ENLARGEMENT PLAN  
SCALE = 1" = 20'-0"



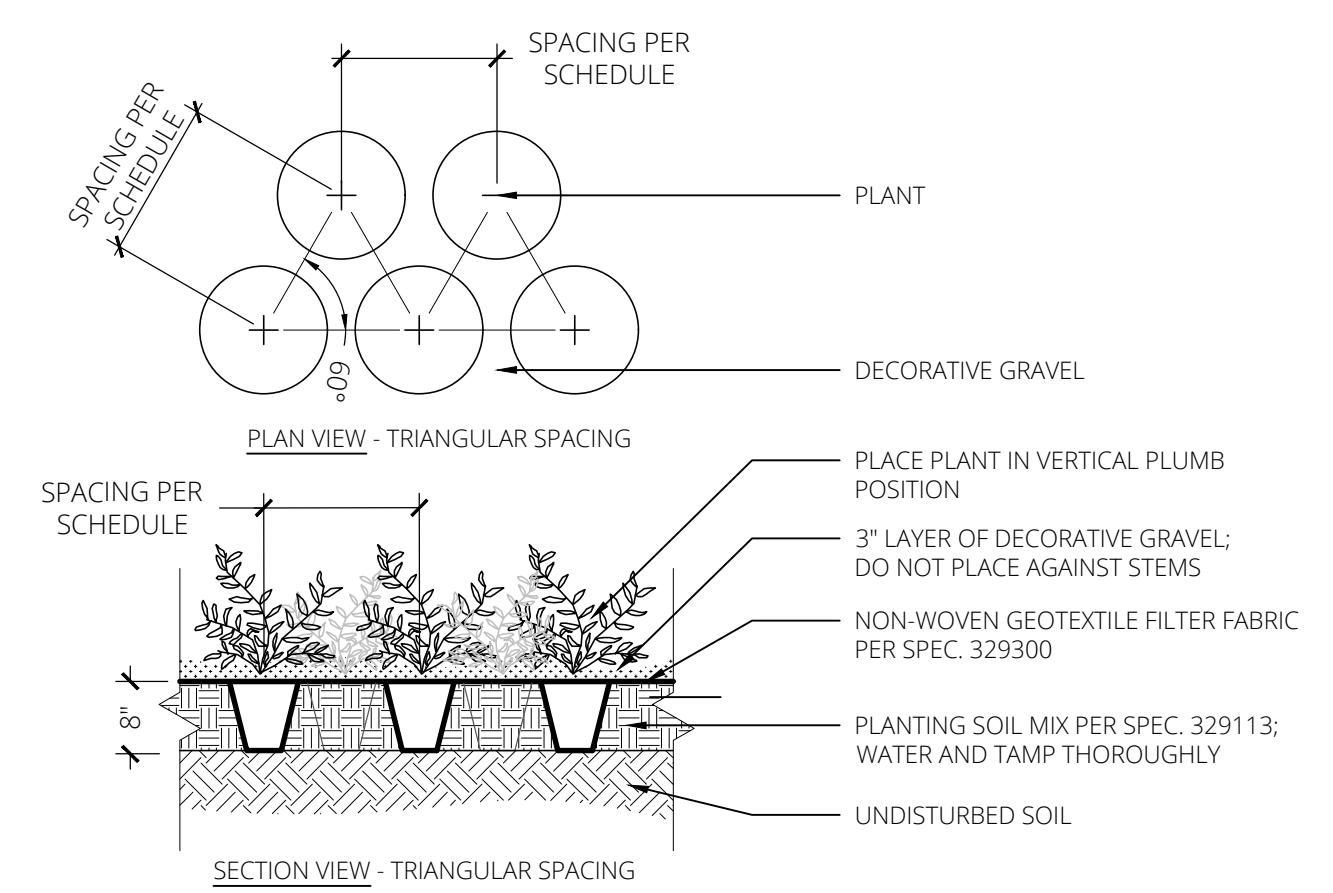
2 | DECIDUOUS TREE PLANTING  
SCALE = 1/4" = 1'-0"



3 | EVERGREEN TREE PLANTING  
SCALE = 1/4" = 1'-0"



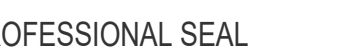
4 | SHRUB PLANTING  
SCALE = 1/2" = 1'-0"



5 | PERENNIAL PLANTING  
SCALE = 1/2" = 1'-0"

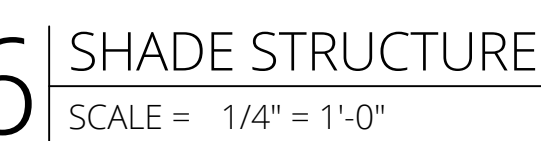
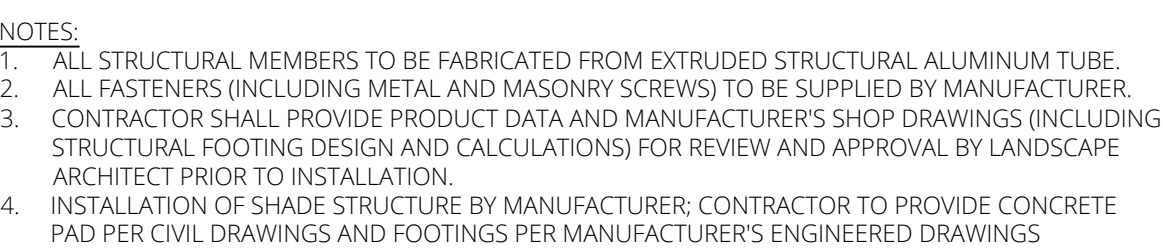
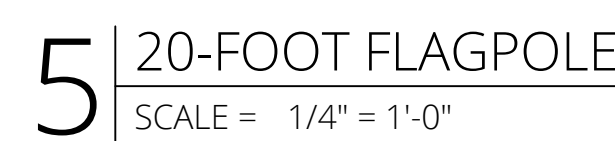
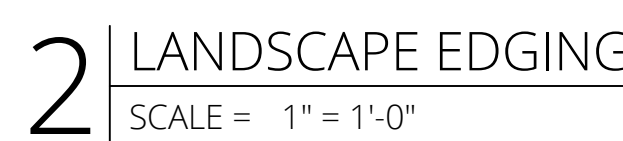


2 NE TUDOR RD  
LEE'S SUMMIT, MISSOURI 64086



ISSUE DATE: OCT. 11, 202  
REFER WELKER #: 138191

# EAST PARKING ENLARGEMENT PLAN



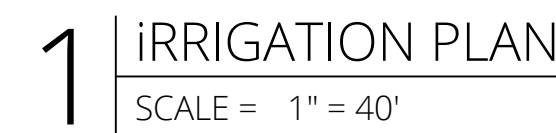


2 NE TUDOR RD  
LEE'S SUMMIT, MISSOURI 64086



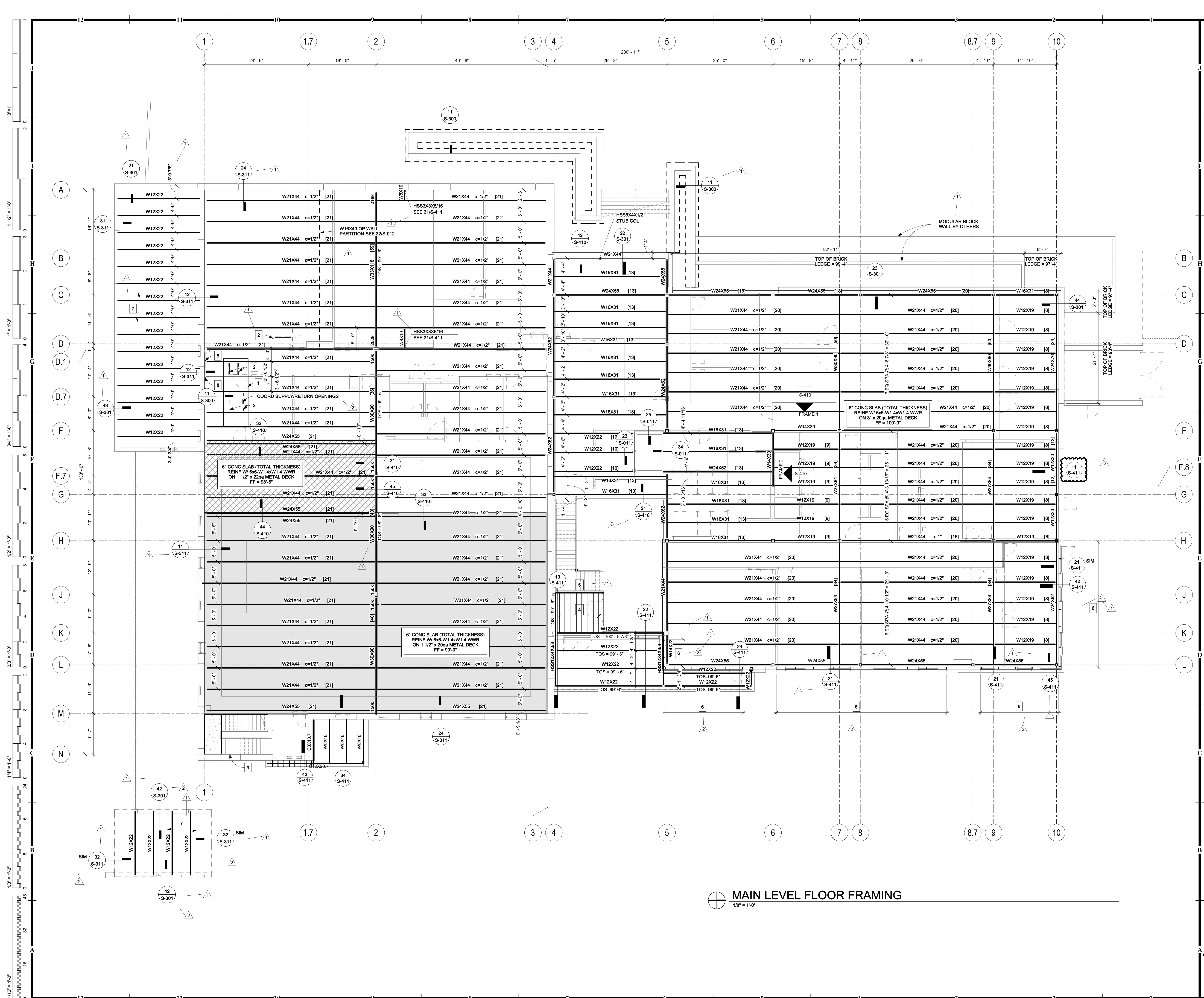
L-104

## IRRIGATION PLAN



1. CONTRACTOR SHALL LOCATE ALL UTILITIES BEFORE COMMENCING WORK. CONTACT THE MISSOURI ONE CALL SYSTEM AT 8-1-1 TO FILE A LOCATE REQUEST PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE TO UTILITIES RESULTING FROM IRRIGATION OPERATIONS. ANY UTILITIES SHOWN ON PLAN ARE FOR REFERENCE ONLY AND MAY OR MAY NOT DEPICT THE ACTUAL LOCATION OF SERVICES.
2. THE IRRIGATION SCOPE INCLUDES DESIGN AND INSTALLATION OF A COMPLETELY NEW SYSTEM INCLUDING, BUT NOT LIMITED TO, A REDUCED PRESSURE BACKFLOW PREVENTER, MASTER VALVE, CONTROL VALVES, MAIN LINE, LATERAL LINES, NEW DRIP TUBING, NEW SLEEVES, AND ALL OTHER NECESSARY MATERIALS REQUIRED TO COMPLETE THE IRRIGATION SYSTEM WITHIN THE LIMITS OF THE PROJECT.
3. THE IRRIGATION MAIN LINE AND SLEEVE LOCATIONS SHOWN ON THIS PLAN ARE CONCEPTUAL. THE IRRIGATION SYSTEM SHALL BE DESIGNED AND BUILT BY A QUALIFIED IRRIGATION CONTRACTOR AND SHALL CONFORM TO THE PERFORMANCE SPECIFICATIONS INCLUDED IN SECTION 328400.
4. THE IRRIGATION CONTRACTOR SHALL FURNISH ALL MATERIALS, TOOLS, EQUIPMENT, AND LABOR TO DESIGN AND INSTALL A COMPLETE AND OPERABLE AUTOMATICALLY CONTROLLED LANDSCAPE IRRIGATION SYSTEM AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS AND AS NECESSARY TO COMPLETE THE CONTRACT.
5. THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION, SEQUENCING, AND SCHEDULING ALL WORK RELATED TO THE IRRIGATION SYSTEM.
6. THE IRRIGATION CONTRACTOR SHALL PROVIDE A WRITTEN WARRANTY COVERING ALL NEW EQUIPMENT AGAINST DEFECTS IN INSTALLATION, WORKMANSHIP, AND EQUIPMENT FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
7. PROVIDE SLEEVES IN NEW SECTIONS OF 4-INCH PVC SCHEDULE 40 PIPE, AS NEEDED, UNDER PAVEMENT AT DEPTHS OF 18-24 INCHES TO FACILITATE INSTALLATION OF IRRIGATION MAIN LINE AND LATERALS. SLEEVES SHALL EXTEND A MINIMUM OF 18 INCHES INTO THE GREEN SPACE BEYOND THE EDGE OF PAVED OR BACK OF CURBS. FLAG-ALL THE SLEEVE OPENINGS UPON INSTALLATION. WHERE SLEEVES CROSS VEHICULAR DRIVE AISLES, INSTALL AT A MINIMUM DEPTH OF 30 INCHES BELOW TOP OF PAVEMENT GRADE AND BACKFILL TRENCHES WITH FLOWABLE CONCRETE FILL.





- FRAMING NOTES:
- ALL ELEVATIONS ARE BASED ON A RELATIVE ELEVATION OF 100'-0" EQUAL TO THE INDICATED DATUM ELEVATION. VERIFY DATUM ELEVATION WITH THE LATEST CIVIL DRAWINGS PRIOR TO CONSTRUCTION.
  - TRUSS GIRDER HEIGHT TO MATCH MONOTRUSSE HEIGHT AS REQ'D.
- KEY NOTES:
- HOUSEKEEPING PAD - TOP OF CONCRETE = 100'-4"
  - FRAME FLOOR OPENING W/ W8X10 EA SIDE AS REQ'D
  - PRECAST STAIR SYSTEM
  - 600S162-43 SPA AT 16" OC
  - BOXED BEAM - (2)600S162-54
  - C6X8.2 VERT & BRICK SUPPORT PLATE SEE 45/S-300
  - METAL GRATING - GW-19-W-2 W/ 1" X 3/16" BARS
  - PROVIDE 16" WIDE EMBED PLATE TO ALLOW FOR BEAM LOCATION ADJUSTMENT

**HOEFER WELKER**  
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Overland Park, KS 66223  
www.jsstructuralengineers.com  
MO COA: 200900634

# LEE'S SUMMIT JOINT OPERATIONS

2 NE TUDOR RD  
LEE'S SUMMIT, MISSOURI 64086

REVISION DATES:

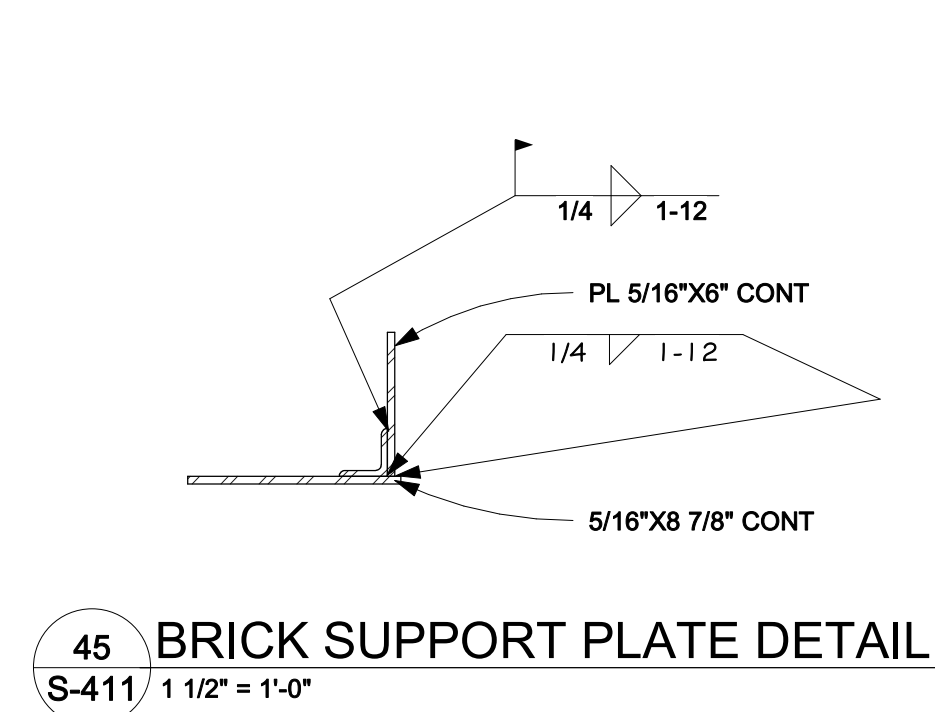
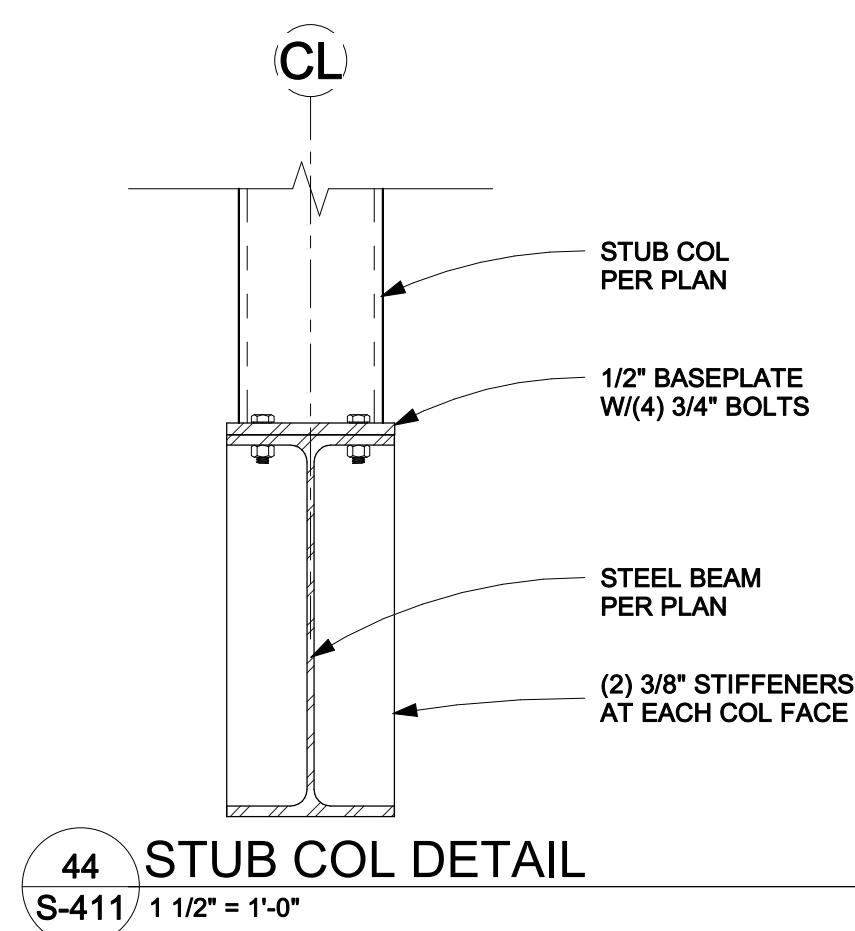
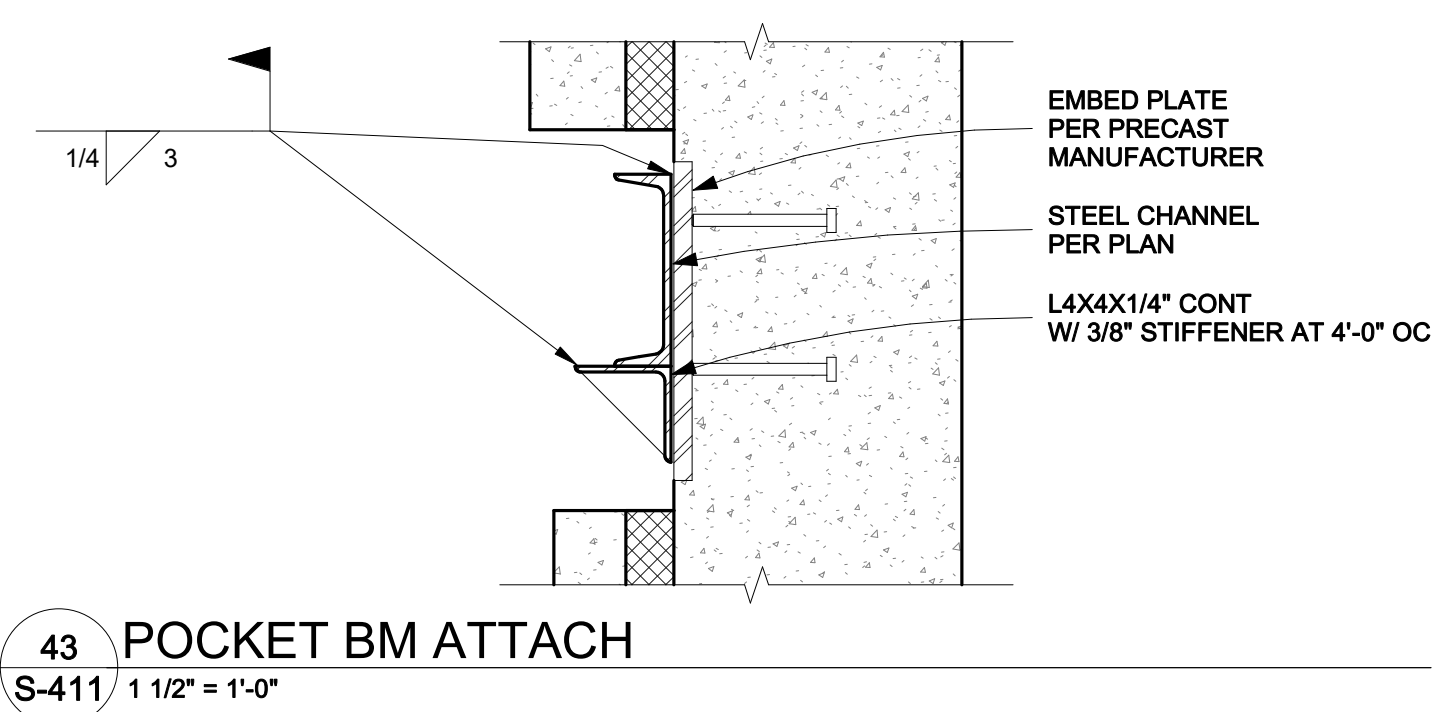
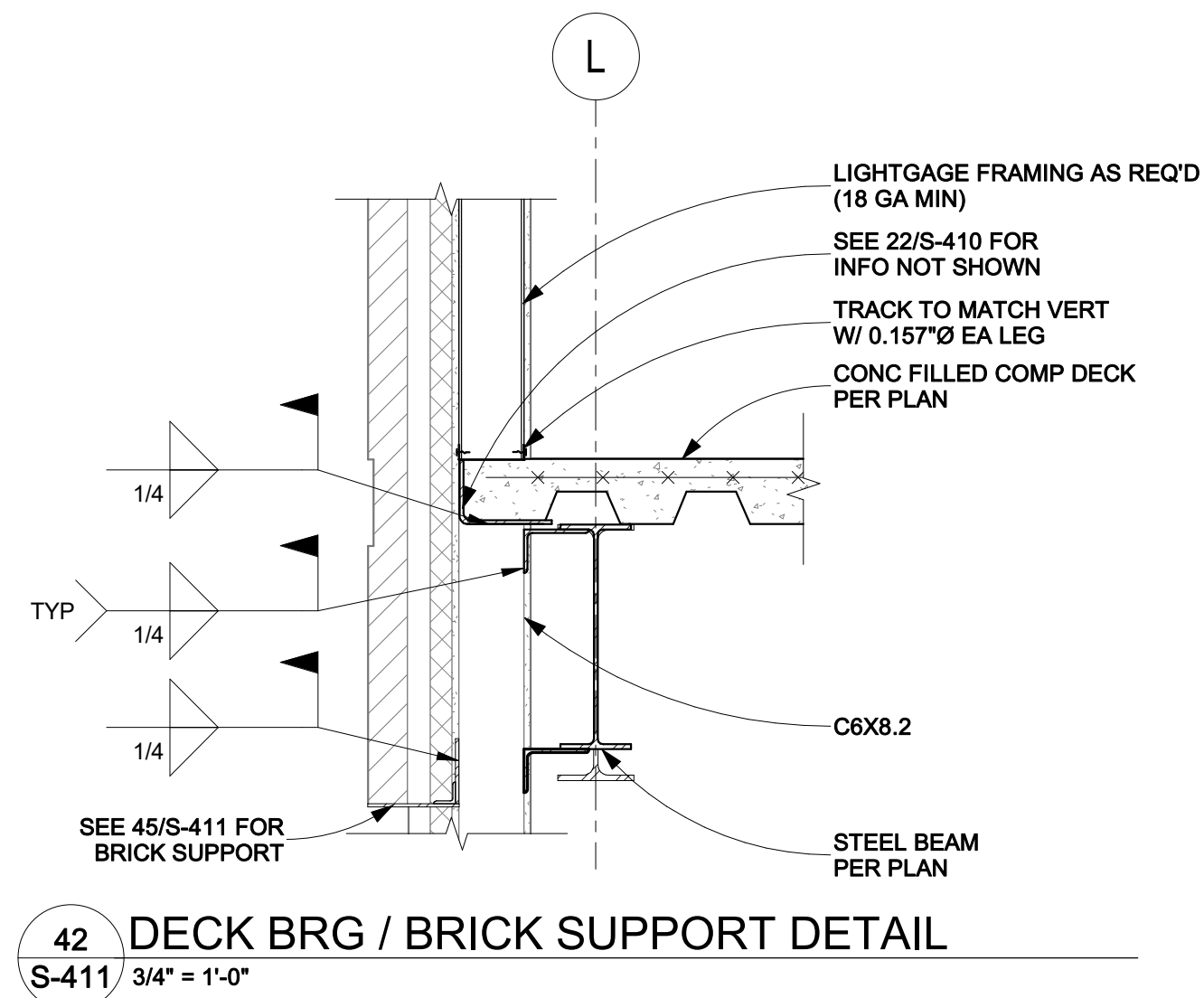
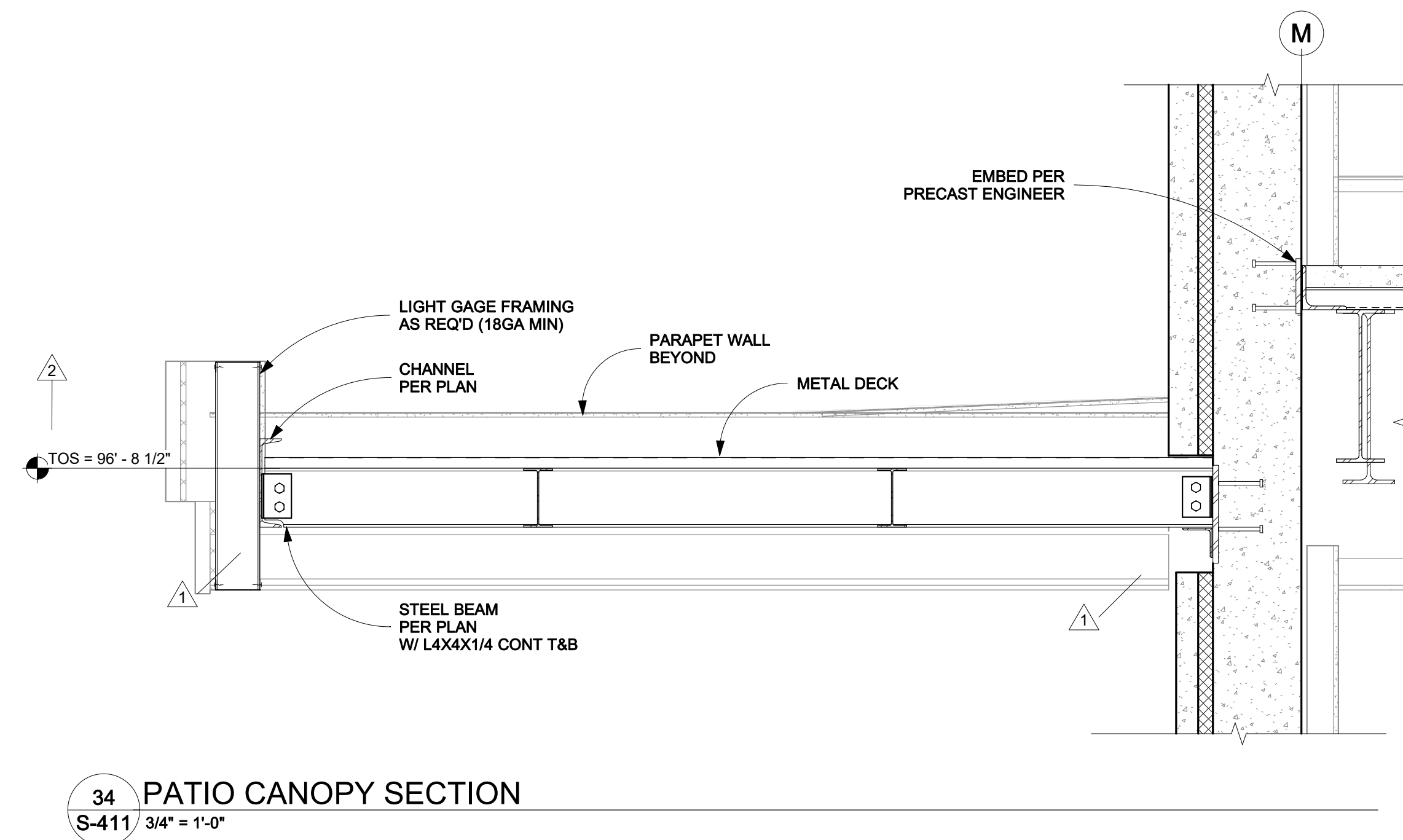
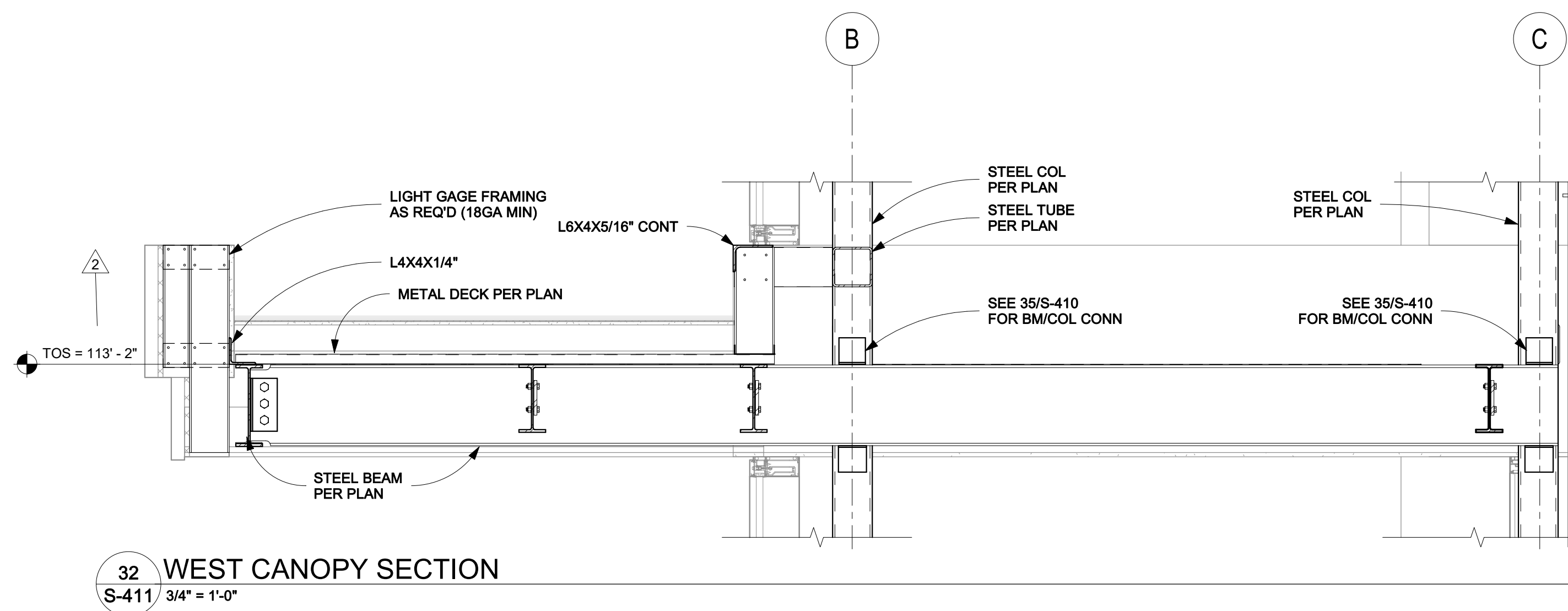
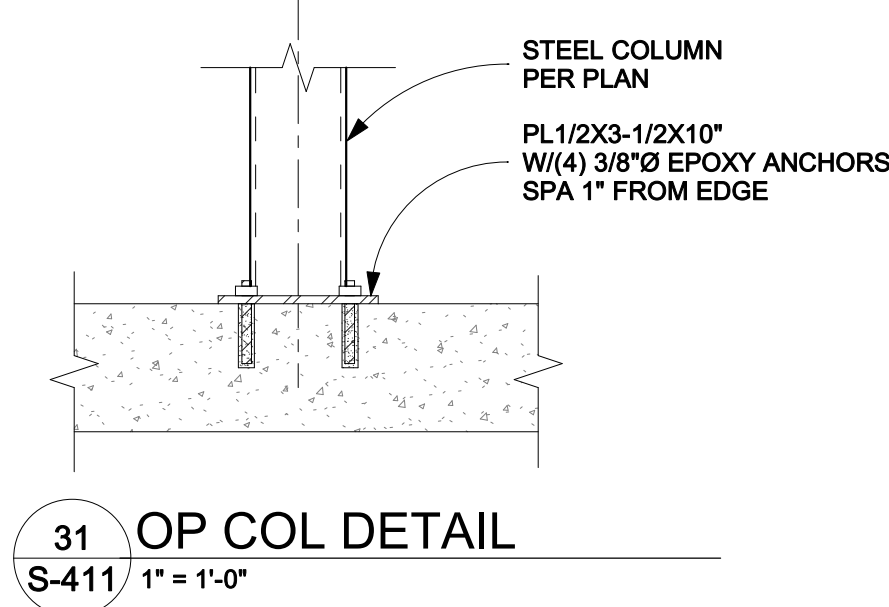
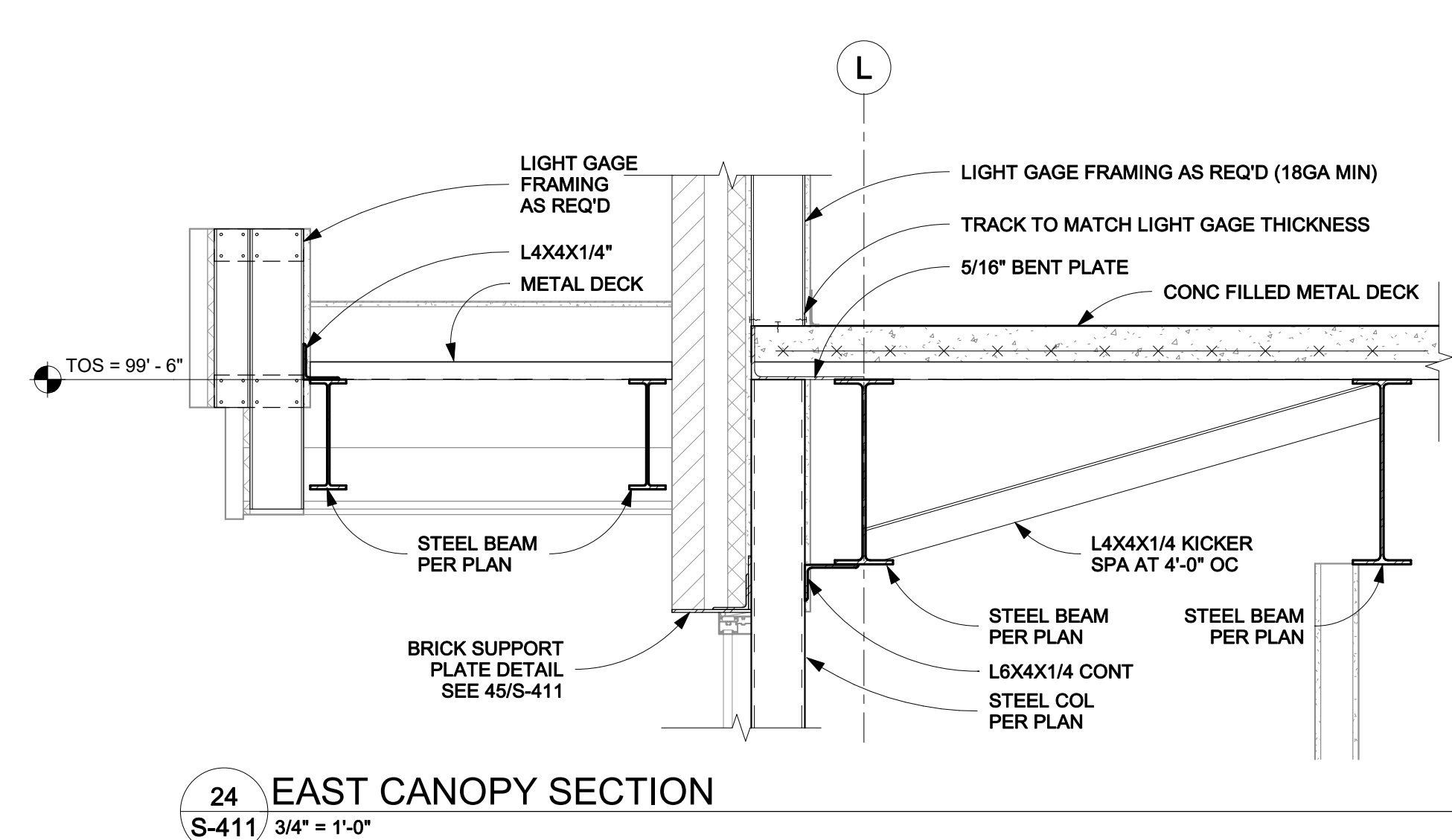
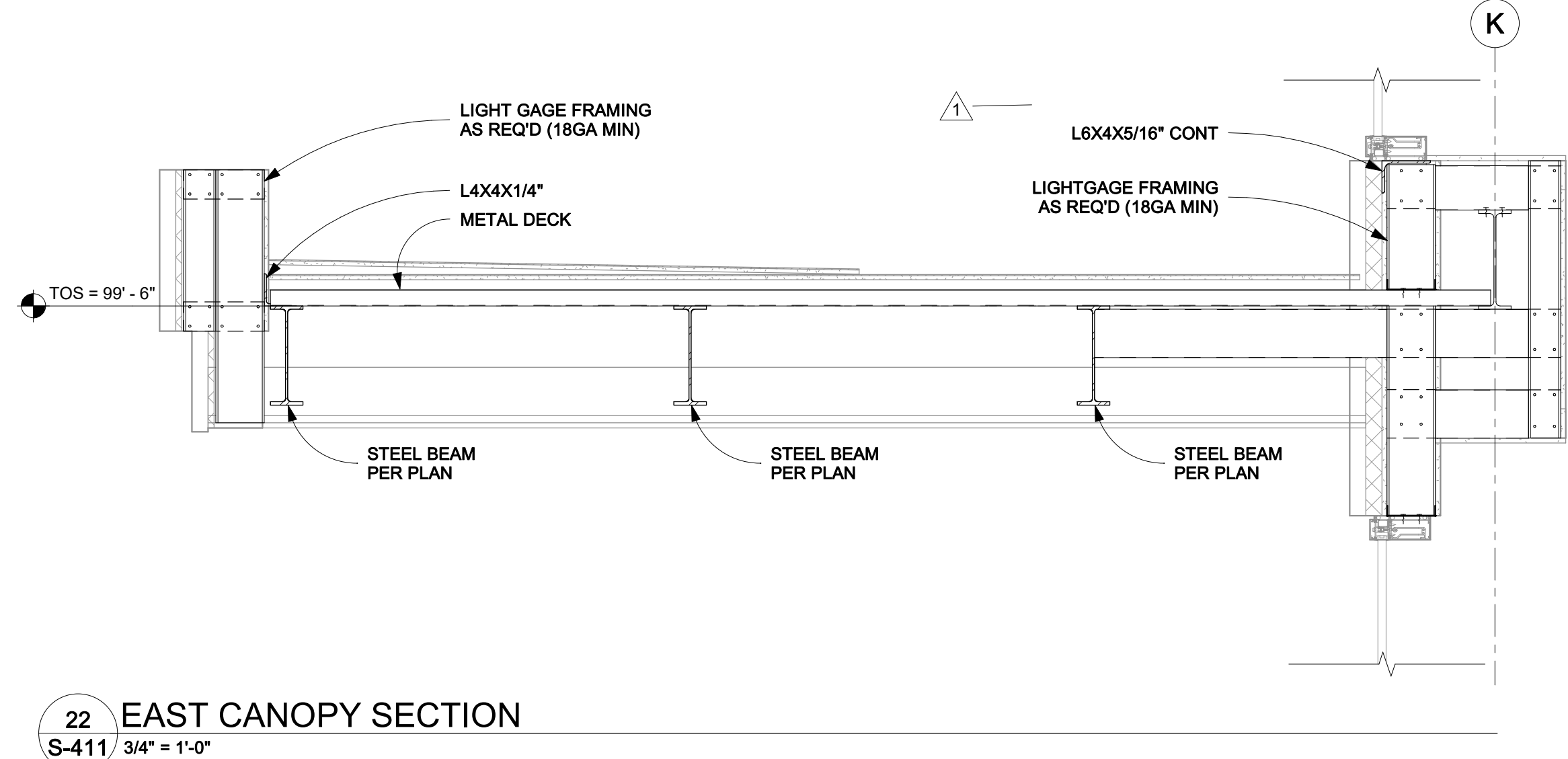
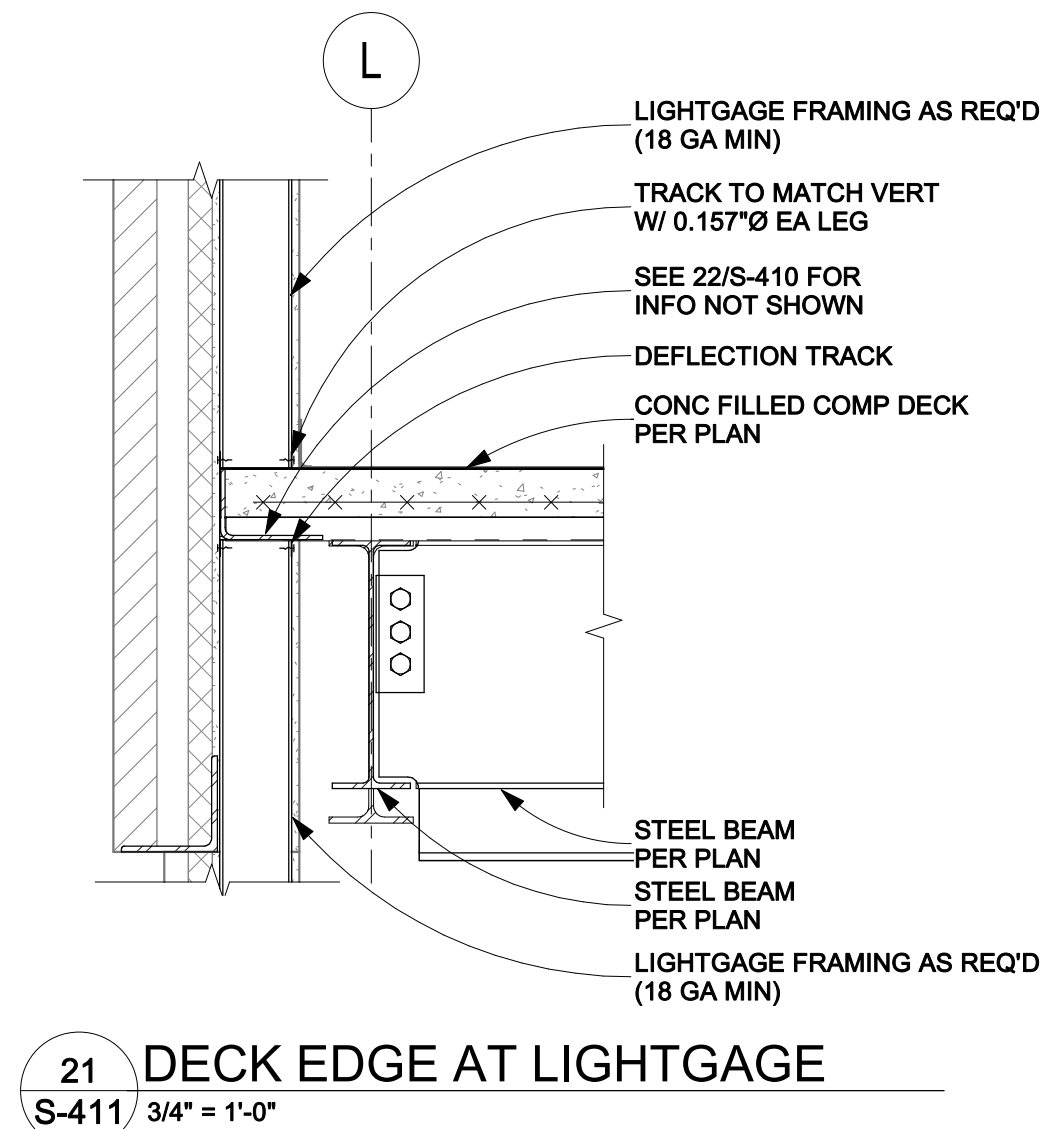
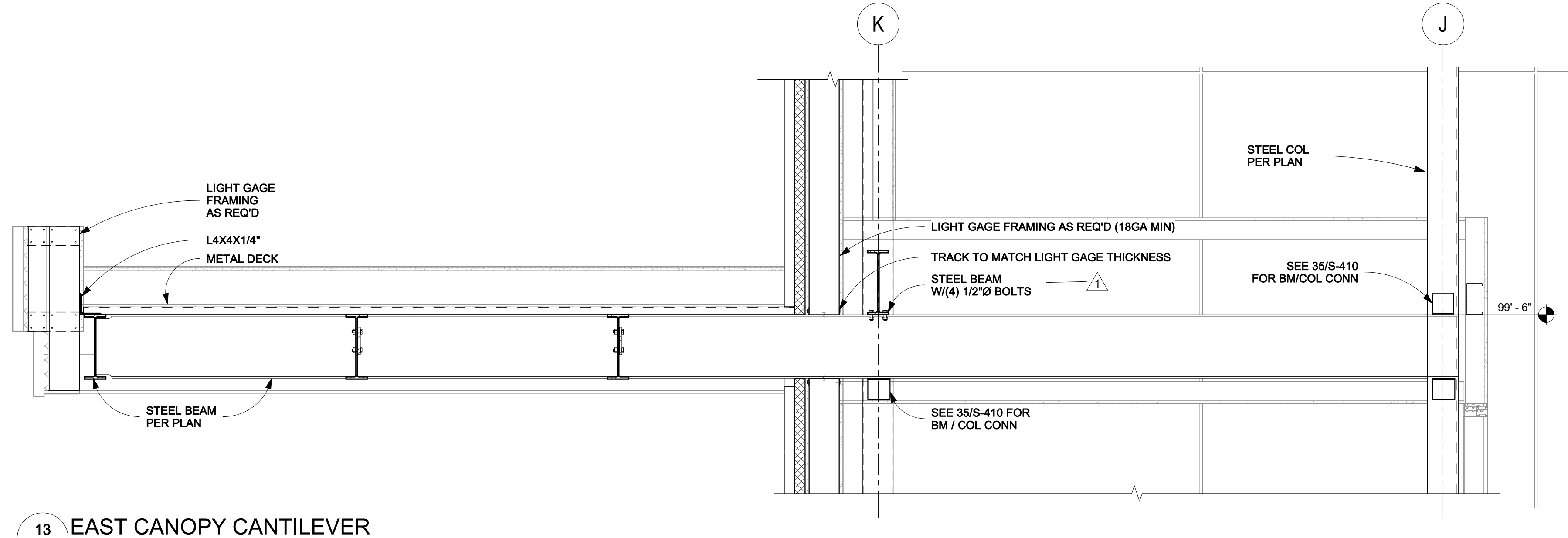
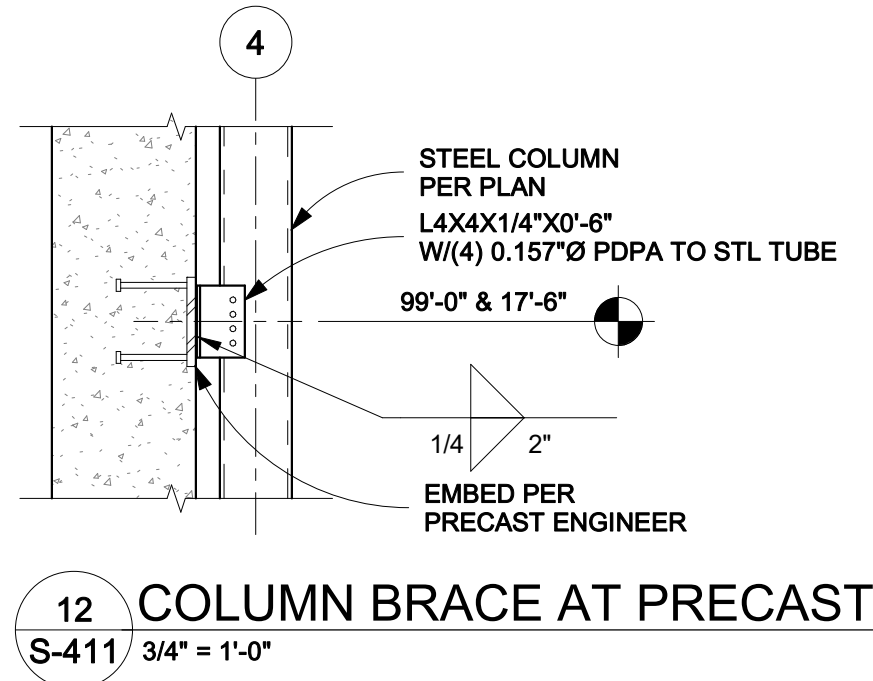
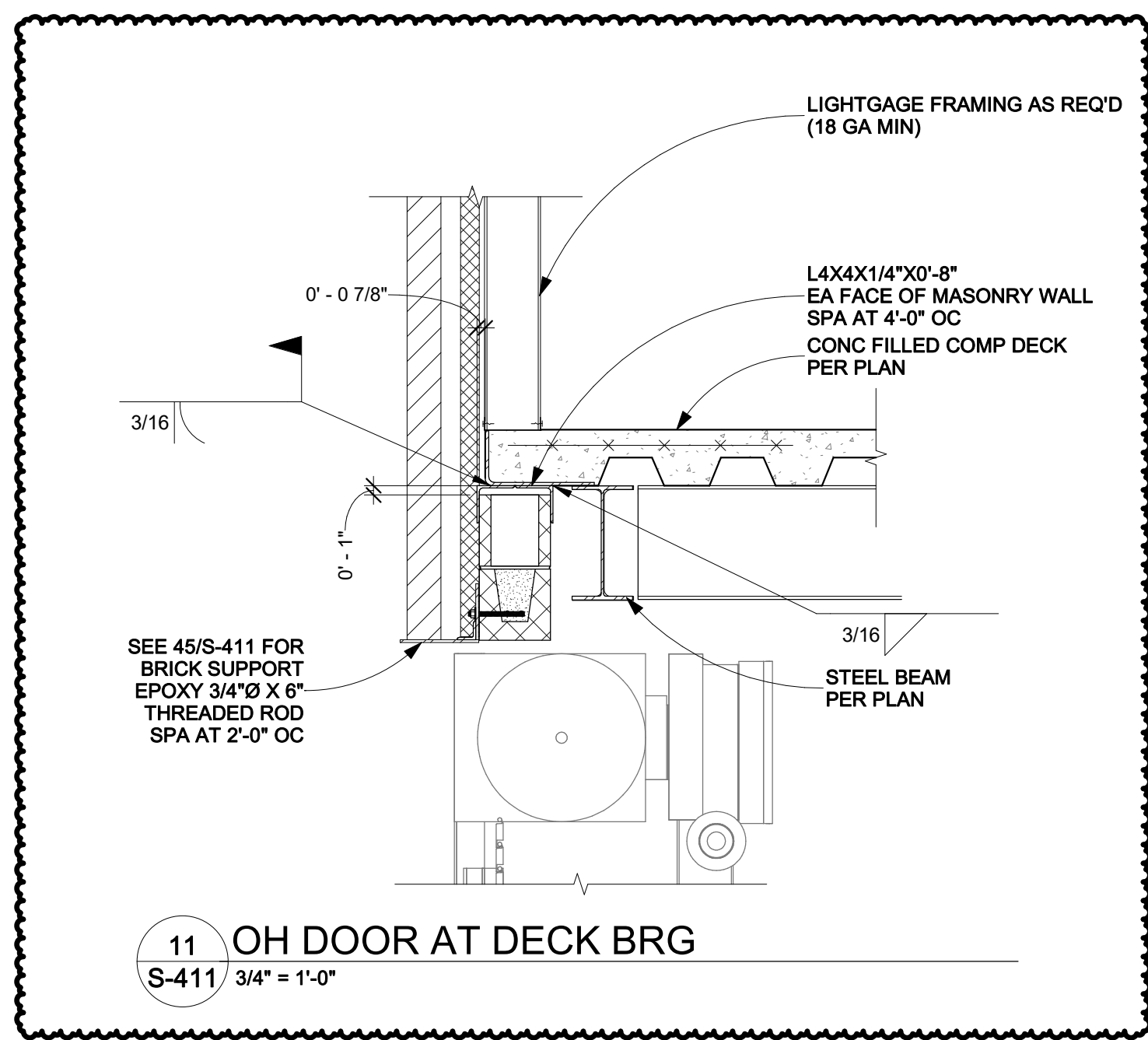
1	ADDENDUM #1	9/19/24
2	ADDENDUM #2	10/30/24
3	ADDENDUM #3	11/16/24

PROFESSIONAL SEAL

## S-200

ISSUE DATE: AUGUST 29, 2024  
HOEFER WELKER #: 138161









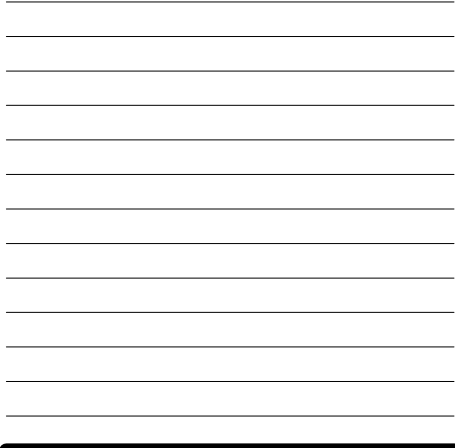


LEE'S SUMMIT JO  
2 NE TUDOR RD  
LEE'S SUMMIT, MISSOURI 64086

## PACKAGE 2: CONSTRUCTION SET

REVISION DATES:

3	ADDENDUM 3	11/18/2024
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PROFESSIONAL SEAL

A-322

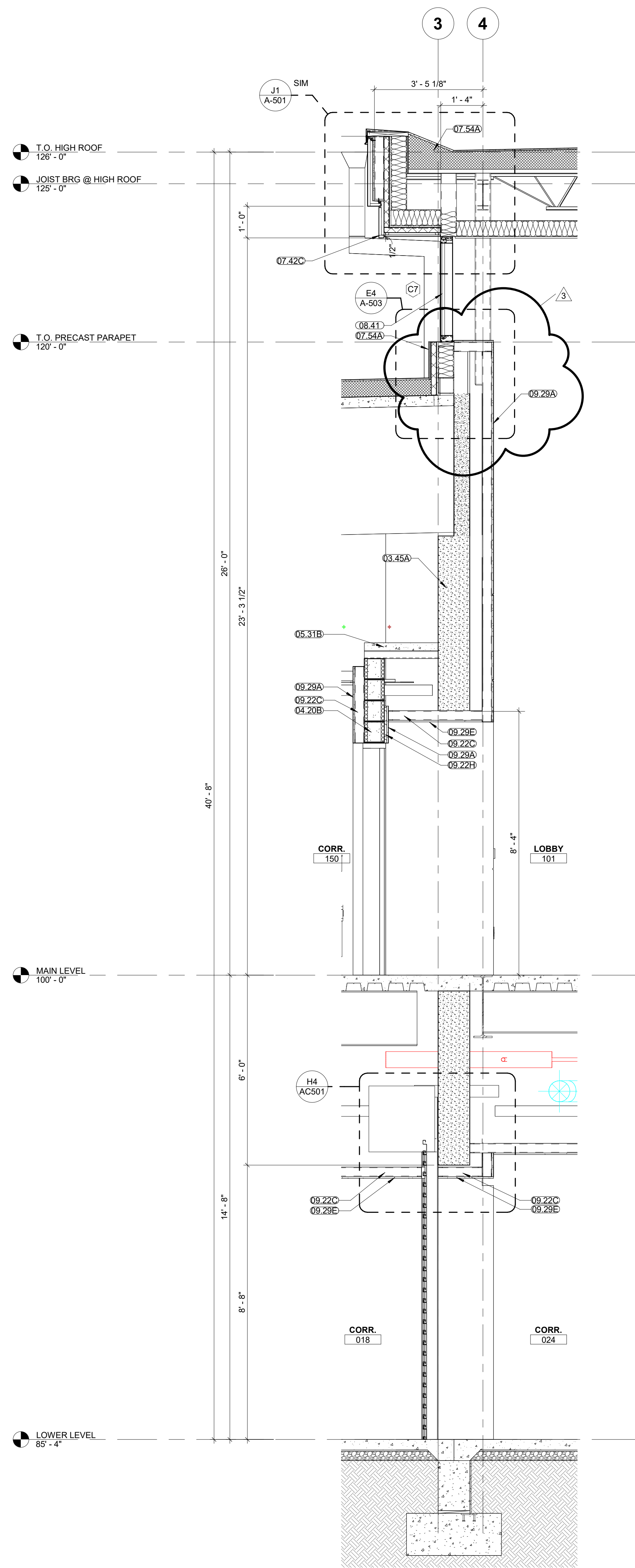
ISSUE DATE: NOVEMBER 1, 2024  
HOEFER WELKER #: 138191

WALL SECTIONS

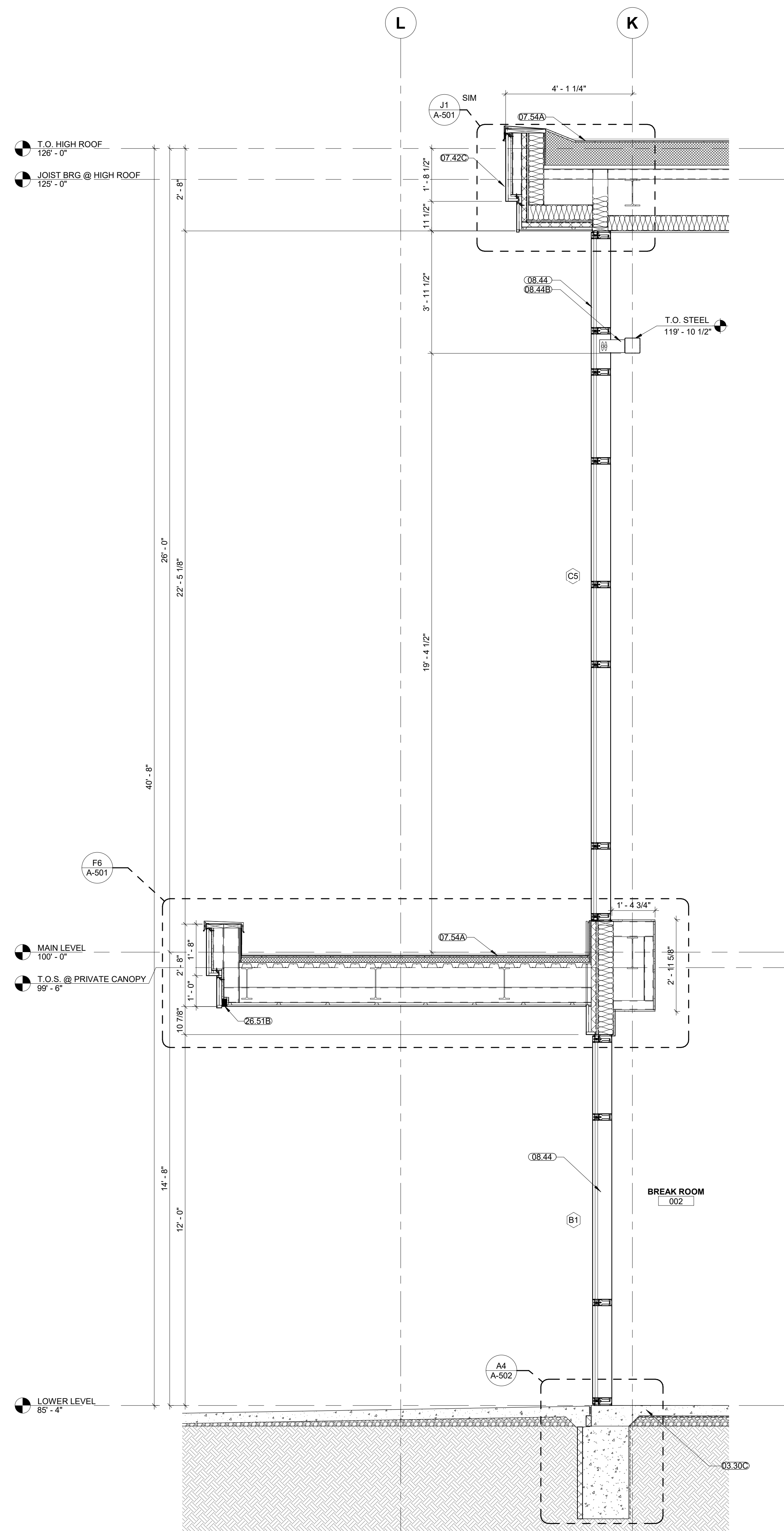
**GENERAL NOTES – EXTERIOR WALL SECTIONS/  
DETAILS:**

1. RE: SHEET G-011 FOR ADDITIONAL GENERAL NOTES THAT ARE APPLICABLE.
2. RE: FLOOR PLANS, ROOF PLAN AND ELEVATIONS FOR SECTION CUT LOCATIONS.
3. WINDOW AND DOOR OPENING DIMENSIONS ARE ROUGH OPENING DIMENSIONS, UNLESS NOTED OTHERWISE.
4. DIMENSIONS SHOWN ON THE WALL SECTIONS ARE TO THE FACE OF EXTERIOR WALL, FACE OF MASONRY (FOM), FACE OF CONCRETE WALLS (FOC), AND COLUMN GRID LINES, UNLESS NOTED OR SHOWN OTHERWISE.
5. PAINT ALL EXPOSED STEEL, INCLUDING STEEL LINTELS, ETC. (TYP.)

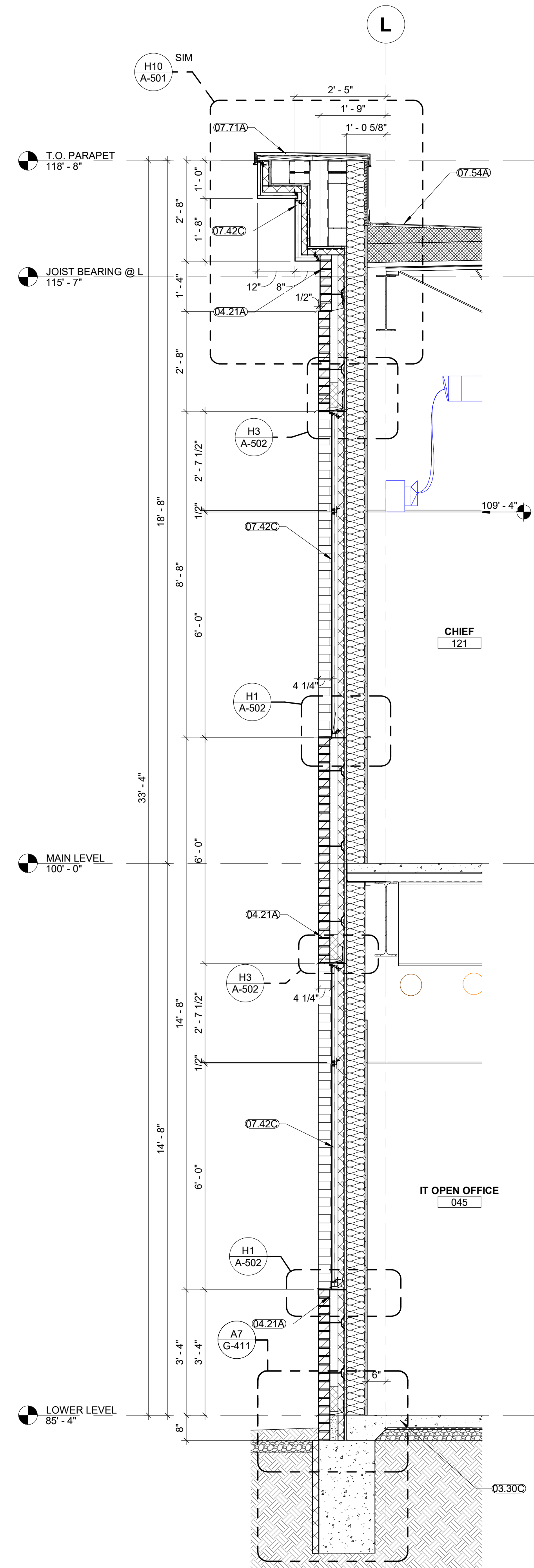
MATERIAL KEYNOTES	
03.30C	CONCRETE SLAB-ON-GRADE
03.45A	PRECAST ARCHITECTURAL CONCRETE
04.20B	CONCRETE MASONRY UNIT (CMU) - 3/8 IN.
04.21A	FACE BRICK
05.31B	COMPOSITE FLOOR DECK
07.42C	METAL-FACED COMPOSITE WALL PANELS
07.54A	TERMOPLASTIC POLYOLEFIN (TPO) ROOFING SYSTEM
07.71A	PERFISHED METAL COPING & CANT CLEAT
08.41	ALUMINUM-FRAMED STOREFRONT SYSTEM
08.44	GLAZED ALUMINUM CURTAIN WALL
08.44B	CURTAIN WALL STUD CONNECTION
09.22C	3/8-IN. METAL STUDS 16-ONCHES O.C.
09.22H	7/8-INCH HT RIGID CHANNEL
09.29A	INTERIOR 5/8-INCH GYP. BD. REF. WALL TYPES
09.29E	INTERIOR 5/8-INCH GYP. BD., EXTENDS TO UNION LINE OF ROOF OR FLOOR ASSEMBLY, REF. WALL SCHEDULE
26.51B	EXTERIOR LIGHT FIXTURE RE. ELECTRICAL



A9 INTERIOR PRECAST  
1/2" = 1'-0"



**A4** STAFF ENTRY @ CURTAIN WALL  
1/2" = 1'-0"



A1 FIRE ADMINISTRATION SECTION  
1/2" = 1'-0"

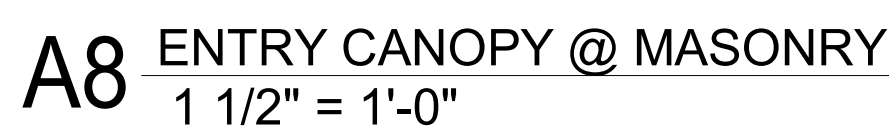
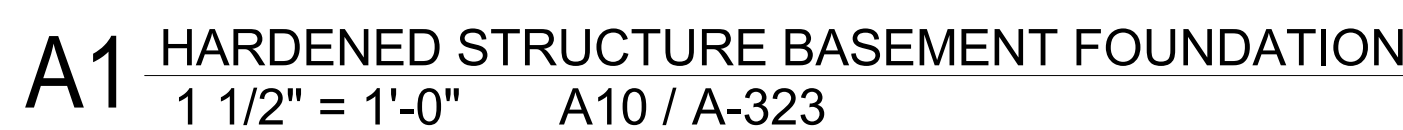
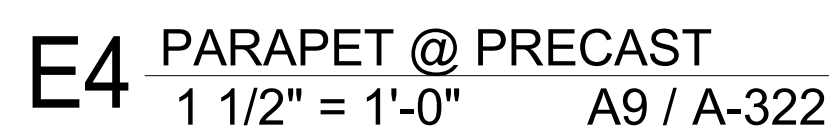
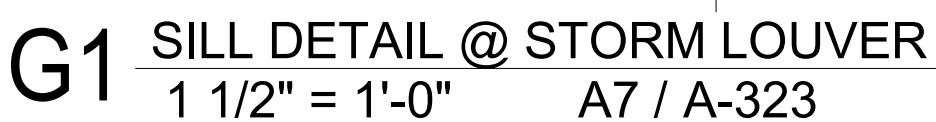
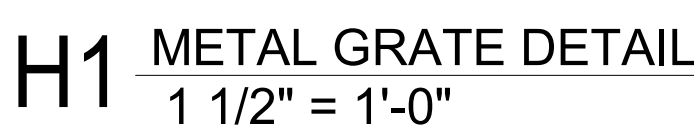




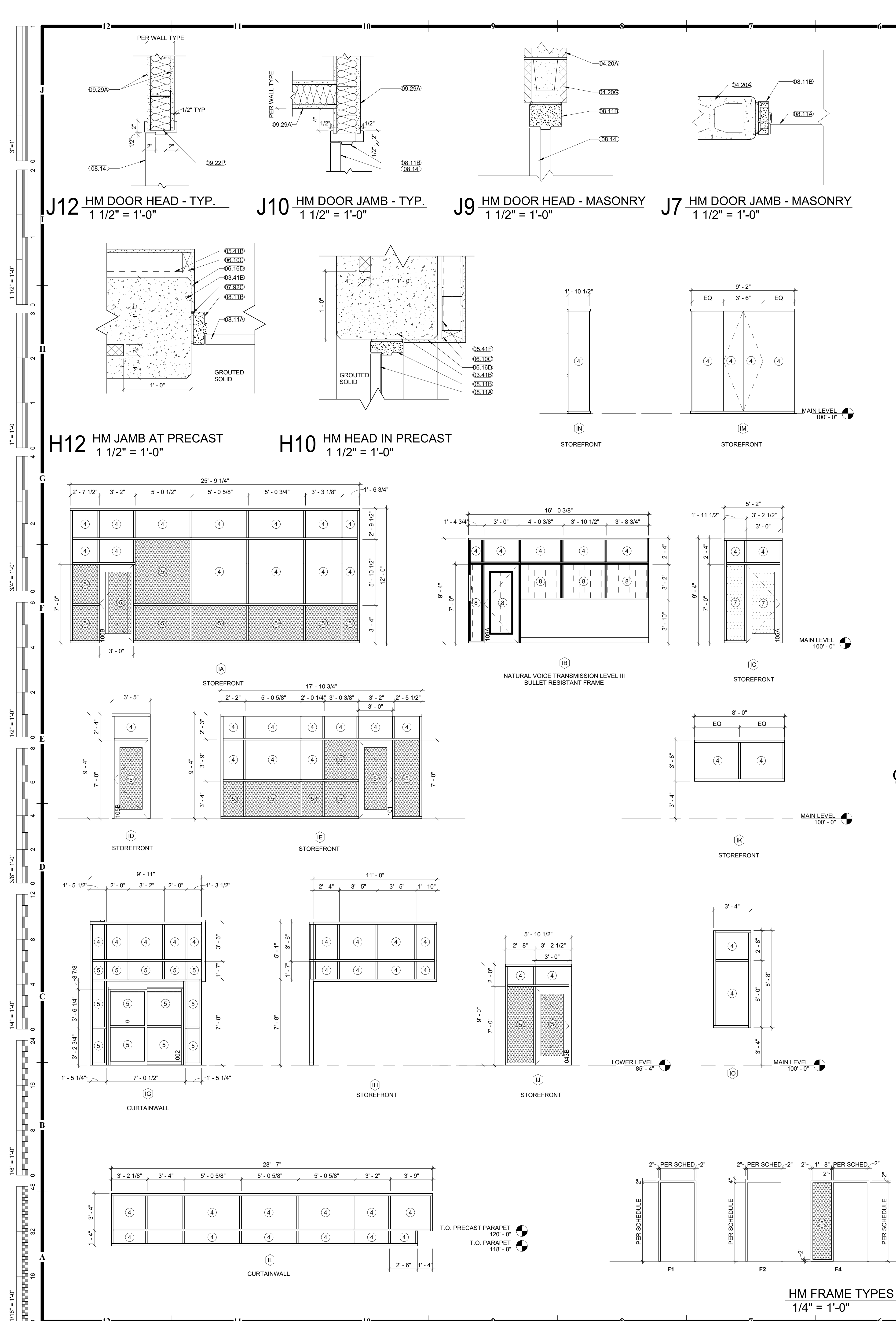


1. RE: SHEET G-011 FOR ADDITIONAL GENERAL NOTES THAT ARE APPLICABLE.
2. RE: FLOOR PLANS, ROOF PLAN AND ELEVATIONS FOR SECTION CUT LOCATIONS.
3. ALL WINDOW AND DOOR OPENING DIMENSIONS ARE ROUGH OPENING DIMENSIONS, UNLESS NOTED OTHERWISE.
4. DIMENSIONS SHOWN ON THE WALL FINISH ARE TO THE FACE OF EXTERIOR WALL, FACE OF MASONRY (FOM), FACE OF CONCRETE WALLS (FOW), AND COLUMN GRID LINES, UNLESS NOTED OR SHOWN OTHERWISE.
5. PAINT ALL EXPOSED STEEL, INCLUDING STEEL LINTELS, ETC. (TYP.)

MATERIAL KEYNOTES	
3.30J	1/2-INCH COMPRESSIBLE JOINT FILLER (HOLD DOWN TOP 1/2-INCH - FILL W/ SPACER)
3.30K	UNDER-SLAB VAPOR RETARDER
3.30L	PRECAST CONCRETE WALL
3.34A	PRECAST ARCHITECTURAL CONCRETE
4.21A	FACE BRICK
4.22A	GROUT SOLID - MASONRY CELLS
4.22F	TIES AND ANCHORS
4.22F	THROUGH-WALL MEMBRANE FLASHING WITH METAL DRIVING
4.22H	WEEP VENTS @ 24-INCH O.C.
4.22H	CAPVY DRAINAGE MATERIAL (MORTAR NET)
5.12B	STEEL BEAM
5.12D	STEEL ANGLE
5.12E	STEEL PLATE
5.12F	STEEL TUBE
5.12G	STEEL BENT PLATE
5.131	STEEL ROOF DOWEL
5.14B	EXTERIOR NON-LOAD-BEARING MTL. C-STUDS - 3 5/8-INCH IR: STRUCT. FOR SPACING
5.14C	EXTERIOR NON-LOAD-BEARING MTL. C-STUDS - 4-INCH IR: STRUCT. FOR SPACING
5.14D	EXTERIOR NON-LOAD-BEARING MTL. C-STUDS - 6-INCH IR: STRUCT. FOR SPACING
5.50D	FLAT EMBED ANGLE/PLATE
5.53A	METAL GRATING
6.10E	WOOD BRACING, AS REQUIRED
6.10F	3/4-INCH FIRE-RETARDANT TREATED WOOD BRACING
6.16C	EXTERIOR GLASS-MAT GYPSUM BOARD SHEATHING W/ TAPED AND SEALED SEAM
6.17A	SELF-ADHERING SHEET WATERPROOFING MEMBRANE
7.13B	MATRIX DRAINAGE SYSTEM
7.13C	FOUNDATION DRAIN SYSTEM
7.21B	EXTRUDED-POLYSTYRENE BOARD INSULATION WITH TAPED AND SEALED SEAMS
7.21F	6-INCH THERMAL BATT INSULATION
7.27B	FLUID-APPLIED MEMBRANE AIR BARRIER
7.27C	CONCRETE W/ REINFORCING W/ PANELS
7.42C	CONCEALED WALL PANEL FASTENERS
7.42E	METAL WOOD LOOK SOFFIT PANEL - VENTED
7.54A	FIBERGLASS POLYESTER (FPO) ROOFING SYSTEM
7.54C	RIGID ROOF INSULATION
7.54E	CONT. METAL TERMINATION BAR
7.54F	ROOFING COVER BOARD
7.62A	PREFINISHED METAL SHEET FLASHING
7.62B	PREFINISHED METAL SILL FLASHING
7.71A	PREFINISHED METAL COPING & CANT
7.71E	PREFINISHED METAL SCUPPER
7.90A	JOINT SEALANT
7.90C	BACKER ROD AND SEALANT
8.41	ALUMINUM-FRAMED STOREFRONT SYSTEM
8.90A	3 5/8-INCH METAL STUDS @ 16-INCHES O.C.
8.92H	7/8-INCH HAT RIDGID CHANNEL
8.92H	INTERIOR 5/8-INCH GYP. BD. REF. WALL TYPE
9.89	ACCESS FLUORAL
1.20B	GRANULAR FILL



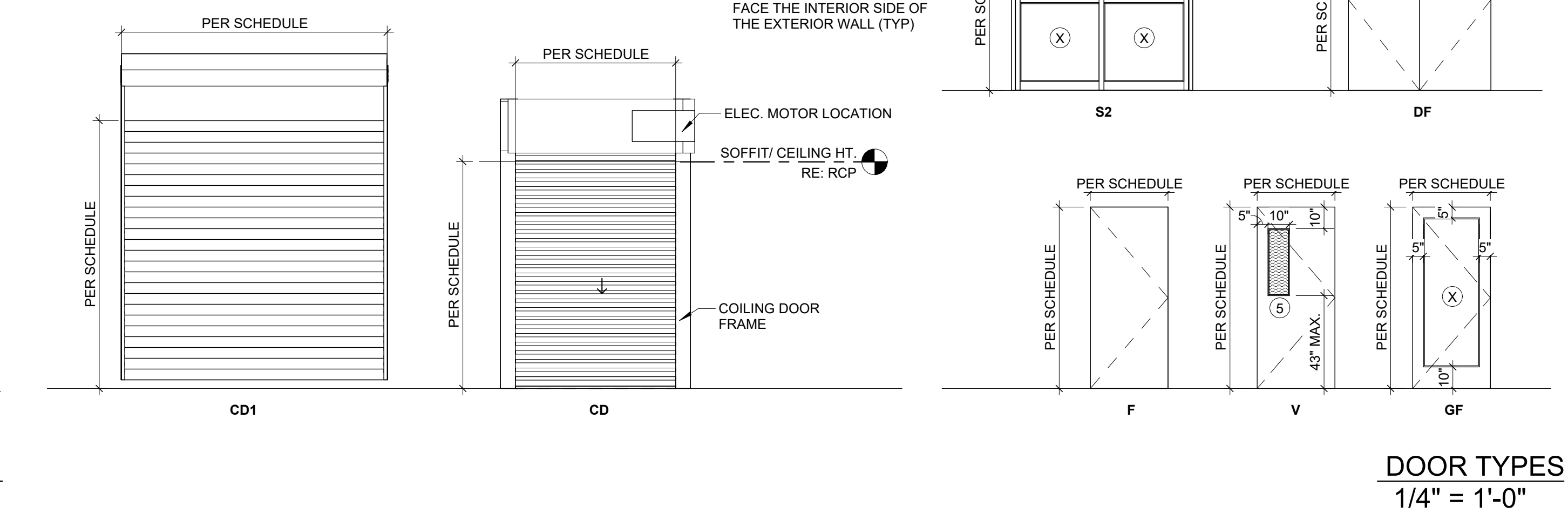




DOOR SCHEDULE												
DOOR #	ROOM: NAME	WIDTH	HEIGHT	DOOR MATERIAL	DOOR TYPE	FRAME MATERIAL	FRAME TYPE	FIRE RATING	AAOS Project HW Set	HEAD	JAMB	REMARKS
001	VEST.	7'-0"	7'-5 3/4"	ALUM	S2	ALUM	B2		2.0		A1/A-522	1
002	VEST.	7'-0"	7'-5 3/4"	ALUM	S2	ALUM	IG		2.0			1
005	FIRE DISPATCH	3'-0"	7'-0"	--	F	--	F1		4.0	A4 / A-503	A6 / A-522	2
007A	QA	3'-0"	7'-0"	WD	F	HM	F4		17.0	J12 / A-601	J10 / A-601	
007B	QA	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
008A	FIRE SUPV	3'-0"	7'-0"	WD	F	HM	F4		17.0	J12 / A-601	J10 / A-601	
008B	FIRE SUPV	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
011	CORR.	3'-0"	7'-0"	WD	F	HM	F4		10.0	J12 / A-601	J10 / A-601	
012	W. RR	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
013	M. RR	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
014	MECH	4'-0"	7'-0"	WD	F	HM	F1		21.0	J12 / A-601	J10 / A-601	
015A	POLICE SUPV	3'-0"	7'-0"	WD	F	HM	F4		17.0	J12 / A-601	J10 / A-601	
015B	POLICE SUPV	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
016A	POLICE CAPT	3'-0"	7'-0"	WD	F	HM	F4		17.0	J12 / A-601	J10 / A-601	
016B	POLICE CAPT	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
017A	DISPATCH TRAINING	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
017B	DISPATCH TRAINING	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
018A	CORR.	3'-0"	7'-0"	--	F	--	F1		3.0	A4 / A-503	A6 / A-522	2
018B	UTILITY YARD	3'-0"	7'-0"	HM	F	HM	F1		5.0	J12 / A-601	J10 / A-601	
019	CONF.	3'-0"	7'-0"	WD	F	HM	F4		17.0	J12 / A-601	J10 / A-601	
020	WATER	3'-0"	7'-0"	HM	F	HM	F1		20.0	J12 / A-601	J10 / A-601	
021	ELEC.	3'-0"	7'-0"	HM	F	HM	F1		24.0	J12 / A-601	J10 / A-601	
022	MEDIA	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
023	COMM STOR.	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
024	CORR.	6'-0"	11'-2"	ST	CD	ST	CD	90 MIN	1.0			2
025	QUIET	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
027	QUIET	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
028	QUIET	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
029	QUIET	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
030	JANITOR	3'-0"	7'-0"	HM	F	HM	F1		35.0	J12 / A-601	J10 / A-601	
032	CHANGING	3'-0"	7'-0"	WD	F	HM	F1		31.0	J12 / A-601	J10 / A-601	
033	CHANGING	3'-0"	7'-0"	WD	F	HM	F1		31.0	J12 / A-601	J10 / A-601	
034	CHANGING	3'-0"	7'-0"	WD	F	HM	F1		31.0	J12 / A-601	J10 / A-601	
036	SHOWER	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
038	ADA SHOWER	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
039A	GENERAL STORAGE	6'-0"	8'-0"	ST	CD1	ST			1.0			4
039B	GENERAL STORAGE	3'-0"	7'-0"	HM	F	HM	F1		18.0	J12 / A-601	J10 / A-601	
039C	GENERAL STORAGE	3'-0"	7'-0"	HM	F	HM	F1		18.0	J12 / A-601	J10 / A-601	
040	ELEC.	3'-0"	7'-0"	HM	F	HM	F1		22.0	J12 / A-601	J10 / A-601	
041	IT	3'-0"	7'-0"	HM	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
042A	LOADING DOCK	3'-0"	8'-0"	HM	DF	HM	F2		25.0	J9 / A-601	J7 / A-601	
042B	LOADING DOCK			ST	CD1	ST			1.0	H1 / A-502	D1 / A-522	
042C	LOADING DOCK	3'-0"	7'-0"	HM	F	HM	F2		8.0			
043A	VEST.	3'-0"	7'-4"	ALUM	GF	ALUM	H		6.0			
043B	VEST.	3'-0"	7'-0"	ALUM	GF	ALUM	U		38.0			
045	IT OPEN OFFICE	3'-0"	7'-0"	WD	DF	HM	F1		15.0	J12 / A-601	J10 / A-601	
047	IT WORK	3'-0"	7'-0"	WD	DF	HM	F1		28.0	J12 / A-601	J10 / A-601	
048	988	3'-0"	7'-0"	WD	F	HM	F1		27.0	J12 / A-601	J10 / A-601	
049A	FITNESS	3'-0"	7'-0"	WD	F	HM	F4		36.0	J12 / A-601	J10 / A-601	
049B	FITNESS	3'-0"	7'-4"	ALUM	GF	ALUM	L1		6.0			
100A	VEST.	3'-0"	7'-4"	ALUM	GF	ALUM	A1		7.0	F6 / A-501		
100B	VEST.	3'-0"	7'-0"	ALUM	GF	ALUM	IA		39.0			
101	LOBBY	3'-0"	7'-0"	ALUM	GF	ALUM	IE		11.0			
105A	CONFERENCE	3'-0"	7'-0"	ALUM	GF	ALUM	IG		17.1			
105B	RECP.	3'-0"	7'-0"	ALUM	GF	ALUM	UD		13.0			
106	STORAGE	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
107	FIRE OPS CTR	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
108A	RECP.	3'-0"	7'-0"	ALUM	GF	ALUM	IB		12.0			3
108B	CORR.	3'-0"	7'-0"	WD	F	HM	F1		9.0	J12 / A-601	J10 / A-601	
110	BC - PREV	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
111	AC - PREV	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
112	MEDICAL DIR.	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
113	AC - EMS	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
114	ADMIN DIV. CONF.	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
115	DC - ADMIN	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
116	OPEN OFFICE	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
116B	AC-SS	3'-0"	7'-0"	WD	F	HM	F1		23.0	J12 / A-601	J10 / A-601	
121	CHIEF	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
122	STOR.	2'-8"	7'-0"	WD	F	HM	F1		23.0	J12 / A-601	J10 / A-601	
123	CHIEF	2'-8"	7'-0"	WD	F	HM	F1		31.0	J12 / A-601	J10 / A-601	
124	PR-FUTURE	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
125	ADMIN MGR	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
126	BC-TRAIN-FUTURE	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
127	AC-TRAIN	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
128	OPP. DIV CONF	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
129	DC - OPP	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
130	RR	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
131	RR	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
132	RR	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
133	RR	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
134	ROOF	3'-0"	7'-0"	ST	F	HM	F1		19.0	J12 / A-601	J10 / A-601	
135	RR	5'-0"	11'-2"	ST	CD	ST	CD	90 MIN	1.0			2
136	RR	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
137	RR	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
138A	BREAK	3'-0"	7'-0"	WD	F	HM	F1		22.0	J12 / A-601	J10 / A-601	
138B	EOC	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
139	EOC	3'-0"	7'-0"	WD	F	HM	F1		33.0	J12 / A-601	J10 / A-601	
140A	CONFERENCE	3'-0"	7'-0"	WD	F	HM	F4		10.0	J12 / A-601	J10 / A-601	
140B	CHECK IN	3'-0"	7'-0"	WD	V	HM	F1		27.0	J12 / A-601	J10 / A-601	
141	STORAGE	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
142	CONFERENCE	3'-0"	7'-0"	WD	V	HM	F1		17.0	J12 / A-601	J10 / A-601	
143	CONFERENCE	3'-0"	7'-0"	WD	V	HM	F1		17.0	J12 / A-601	J10 / A-601	
144	PLANNER	3'-0"	7'-0"	WD	V	HM	F1		17.0	J12 / A-601	J10 / A-601	
145	AC - EMERG MGMT	3'-0"	7'-0"	WD	V	HM	F1		17.0	J12 / A-601	J10 / A-601	
146	SERVERS	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
147	UPS	3'-0"	7'-0"	WD	F	HM	F1		32.0	J12 / A-601	J10 / A-601	
148	BREAK	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
149	JAN.	3'-0"	7'-0"	WD	F	HM	F1		22.0	J12 / A-601	J10 / A-601	
150	CORR.	3'-0"	7'-2"	WD	F	HM	F2	90 MIN	41.0			2
151	DRIVING SIM	3'-0"	7'-0"	WD	F	HM	F1		10.0	J12 / A-601	J10 / A-601	
152A	EMS SIM	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
153	STOR.	3'-0"	7'-0"	WD	F	HM	F1		17.0	J12 / A-601	J10 / A-601	
154B	VIEW.	3'-0"	7'-0"	WD	F	HM	F1		30.0	J12 / A-601	J10 / A-601	
155A	TRAINING	3'-0"	7'-0"	WD	V	HM	F1		29.0	J12 / A-601	J10 / A-601	
155B	TRAINING	3'-0"	7'-0"	WD	V	HM	F1		29.0	J12 / A-601	J10 / A-601	
155C	TRAINING	3'-0"	7'-0"	HM	F	HM	F1		3.0	E4 / A-502	A1/A-521	2
156	STOR.	3'-0"	7'-0"	WD	DF	HM	F1		26.0	J12 / A-601	J10 / A-601	
157	MECH.	3'-0"	7'-0"	HM	F	HM	F1		22.0	J12 / A-601	J10 / A-601	
ST-1A	STAIR	3'-0"	7'-0"	HM	F	HM	F1		3.0	H10 / A-601	A6 / A-522	2
ST-1B	STAIR	3'-0"	7'-0"	HM	F	HM	F1		37.0	J12 / A-601	J10 / A-601	
ST-1C	STAIR	3'-0"	7'-0"	WD	F	HM	F1		16.0	J12 / A-601	J10 / A-601	
TR-01		3'-0"	7'-0"	HM	F	HM	F2		8.1			

DOOR SCHEDULE REMARKS:  
1. REFERENCE EXTERIOR WINDOW AND DOOR TYPES ON SHEET A-251.  
2. ICC 500 COMPLIANT DOOR  
3. LEVEL III BULLET RESISTANT  
4. MANUAL COILING DOOR

PLEASE NOTE: AT ALL EXTERIOR DOORS, INSTALL DOOR TRACKS SO THEY FACE THE INTERIOR SIDE OF THE EXTERIOR WALL (TYP)



- GENERAL NOTES:
- HM REFERS TO HOLLOW METAL
  - AL REFERS TO ALUMINUM
  - WD REFERS TO WOOD
  - ST REFERS TO STEEL
  - GL REFERS TO GLASS
  - OHCD REFERS TO OVERHEAD COILING DOOR
  - ALL EXTERIOR ALUMINUM DOORS & FRAMES ARE TO BE FINISHED TO MATCH ADJACENT ALUMINUM WINDOW FRAME, UNO
  - REFER TO FINISH SCHEDULE FOR FINISH OF INTERIOR DOORS AND FRAMES.

GLASS TYPE LEGEND	
DESIGNATION NUMBER	DESCRIPTION
1	VIRACON VRE 26-38 -1/4" SOLARBLUE HEAT STRENGTHENED VRE 26-38 #2 -1/2" AIR SPACE -1/4" CLEAR HEAT-STRENGTHENED
2	VIRACON VRE 26-38 TEMPERED -1/4" SOLARBLUE TEMPERED VRE 26-38 #2 -1/2" AIR SPACE -1/4" CLEAR TEMPERED
3	VIRACON VRE 26-38 -1/4" SOLARBLUE HEAT STRENGTHENED VRE 26-38 #2 -1/2" AIR SPACE -1/4" SPANDREL V008
4	-1/2" CLEAR GLASS -1/2" CLEAR GLASS TEMPERED 2" TOR-GARD 30 IG GLAZING -1/4" SOLARBLUE HEAT STRENGTHENED VRE 26-38 #2
5	-1/2" CLEAR GLASS TEMPERED FROSTED CLEAR FILM SWF
6	-1/4" UL 752



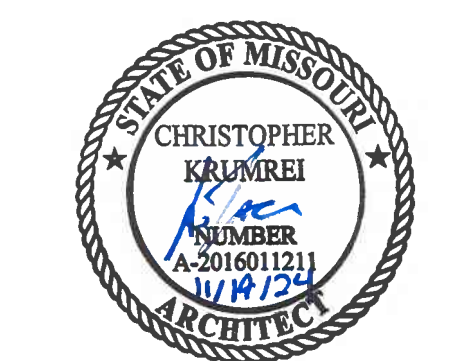
LEE'S SU  
2 NE TUDOR RD

## PACKAGE 2: CONSTRUCTION SET

LEE'S SUMMIT, MISSOURI 64086

REVISION DATES:

3	ADDENDUM 3	11/18/2024
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PROFESSIONAL SEAL






# AI101

ISSUE DATE: NOVEMBER 1, 2024  
HOEFER WELKER #: 138191

1. **GENERAL NOTES - FINISH PLANS:**
2. RE: SHEET G-0111 (FOR ADDITIONAL GENERAL NOTES THAT ARE APPLICABLE)
3. RE: FINISH LEGEND, AND FLOOR FINISH SPECIFIC FINISH INFORMATION AND LOCATIONS.
4. RE: FINISH DETAILS SHEET A601 FOR ADDITIONAL FINISH AND FLOOR TRANSITION CONDITIONS
5. RE: FINISH DETAILS SHEET A601 FOR ADDITIONAL FINISH AND FLOOR TRANSITION PROTECTION DETAILS
6. FLOOR FINISHES SHOWN ARE FOR ACCENT AREAS ONLY - RE: FINISH TAGS FOR ADDITIONAL INFORMATION
7. ALL WATER DRAINAGE SHALL BE CENTERED IN ROOM, UNLESS NOTED OTHERWISE
8. ALL WALL, BASE JOINTS WITH FLOOR TILE JOINTS, UNLESS NOTED OR SHOWN OTHERWISE
9. ALL WALLS AND CLOVES WITHOUT A SPACE IDENTIFICATION NUMBER SHALL HAVE THE SAME FLOOR FINISHES AS ADJACENT AREAS
10. FLOOR FINISH MATERIAL AND/OR PATTERN SHALL BE INSTALLED UNDER TOE KICKS OF ALL WALLS, UNDER WOODWORK, UNDER COUNTERTOPS, AND UNDER EQUIPMENT
11. FLOOR MATERIAL/ COLOR TRANSITIONS TO ADJACENT AREAS SHALL BE NOTED OR SHOWN OTHERWISE
12. RE: A601 WALL FLOOR TRANSITION PROTECTION DETAILS
13. CONTRACTOR SHALL PROVIDE ALL NECESSARY BLOCKING FOR WALL PROTECTION ATTACHMENT. THIS INCLUDES BUT IS NOT LIMITED TO: RE: MANUFACTURER'S GUIDELINES FOR CLARIFICATIONS
14. CONTRACTOR SHALL PROVIDE MANUFACTURER'S STANDARD ACCESSORY MOLDING OR TRIM FOR WALL PROTECTION ATTACHMENT. THIS INCLUDES BUT IS NOT LIMITED TO: RE: MANUFACTURER'S GUIDELINES FOR CLARIFICATIONS
15. IF WALL IS LESS THAN 18" WIDE DO NOT PROVIDE HANDRAILS SHOULD BE PROVIDED IMMEDIATELY UPON OPEN SWING OF A DOOR. HANDRAILS SHOULD STOP APPROXIMATELY 1' FROM A CORNER OR TURN. RE: SHEET G-0201
16. CONTRACTOR SHALL PROVIDE BLOCKING FOR EQUIPMENT, RE: SHEET G-0201 FOR CLARIFICATION
17. CONTRACTOR SHALL PROVIDE BLOCKING FOR ELEVATIONS, CALLED OUT ON ELEVATIONS

**ROOM FINISH TAG KEY LEGEND**

ROOM 000
FLOOR FINISH
WALL BASE
WALL FINISH
CEILING FINISH

WALL FINISH LEGEND	
	CORNER GUARD (PC)
	ACCENT PAINT (WP)
	WALL TILE (WT)
	FABRIC WRAPPED PANELS (SF)
	SPECIALTY WALLS (S-)

NOT ALL WALL FINISHES ARE SHOWN GRAPHICALLY. REFER TO SHEETS A-601 A-602, A-603 AND SERIES A-45100 FOR SPECIFIC LOCATIONS AND MATERIALS

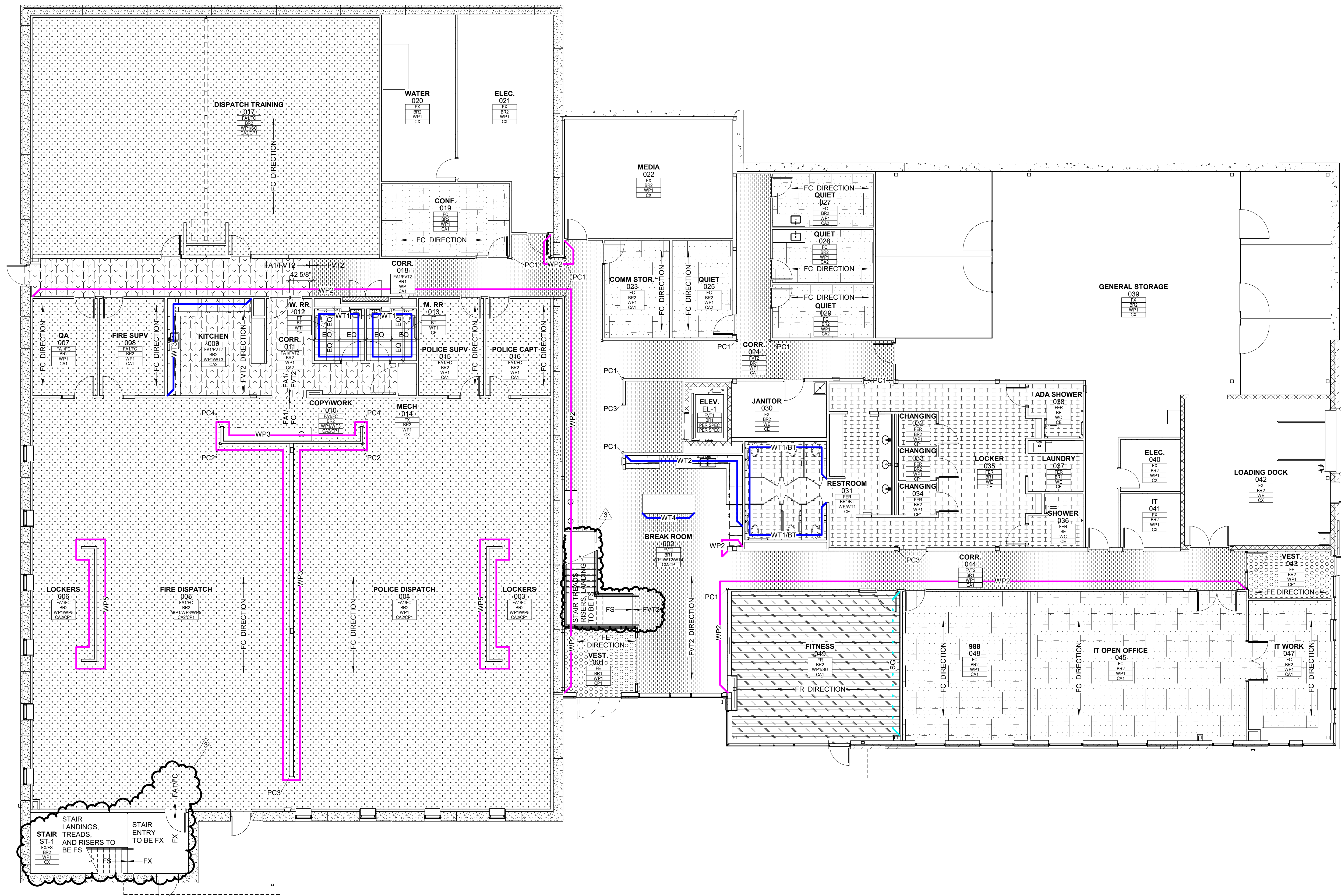
FLOOR FINISH LEGEND	
	FA1/FC
	FA1/FVT2
	FC
	FA2
	FE
	FER
	FR
	FT
	FV1
	FV2
	FZ

RE: FINISH SCHEDULE

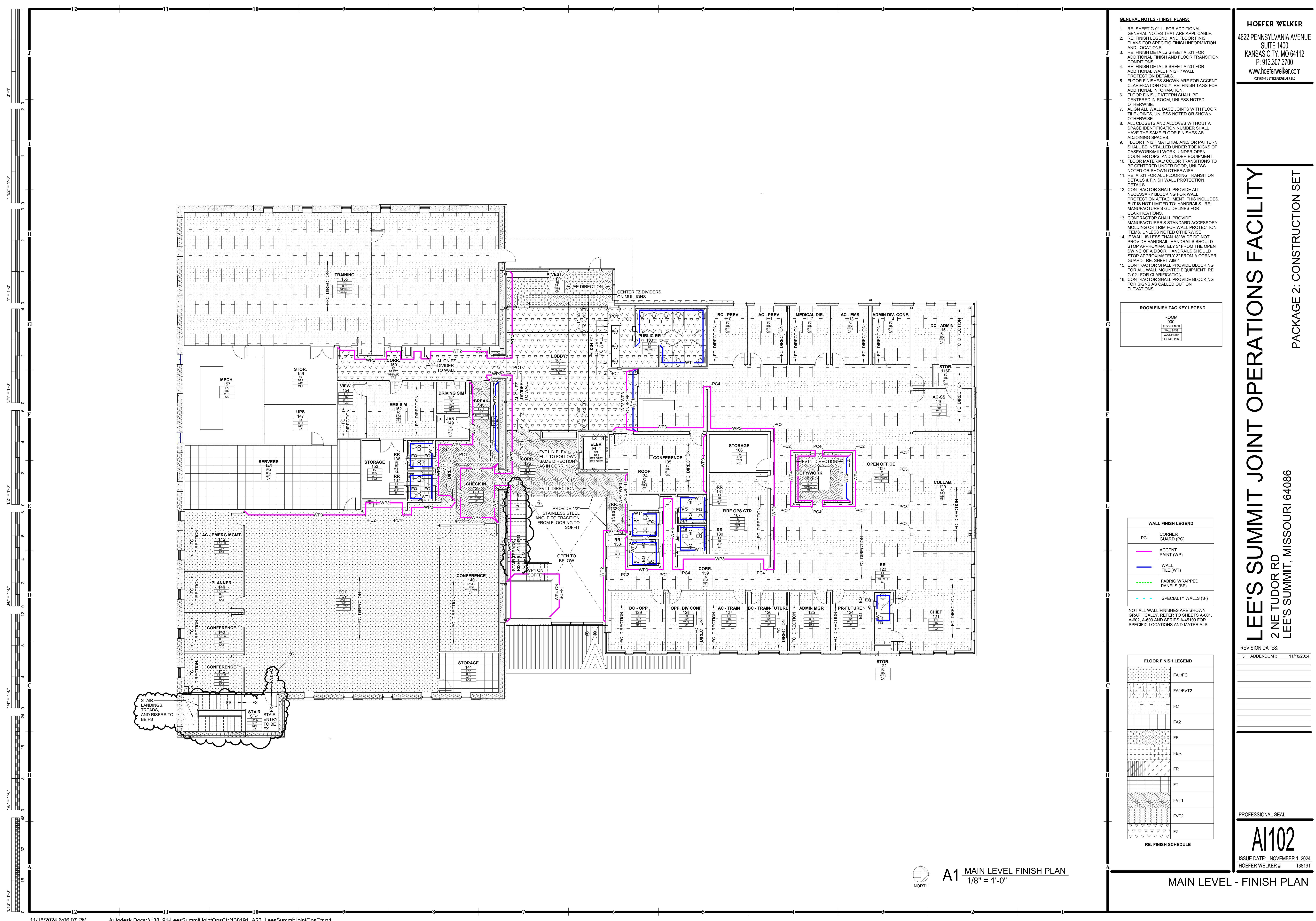


**A1** LOWER LEVEL FINISH PLAN  
1/8" = 1'-0"

## LOWER LEVEL - FINISH PLAN







GENERAL NOTES - FINISH PLANS:

1. RE: SHEET G-011 - FOR ADDITIONAL GENERAL NOTES THAT ARE APPLICABLE.
2. RE: FINISH LEGEND, AND FLOOR FINISH PLANS FOR SPECIFIC FINISH INFORMATION AND LOCATIONS.
3. RE: FINISH DETAILS SHEET A1501 FOR ADDITIONAL FINISH AND FLOOR TRANSITION CONDITIONS.
4. RE: FINISH DETAILS SHEET A1501 FOR ADDITIONAL WALL FINISH / WALL PROTECTION DETAILS.
5. FLOOR FINISHES SHOWN ARE FOR ACCENT CLARIFICATION ONLY. RE: FINISH TAGS FOR ADDITIONAL INFORMATION.
6. FLOOR FINISH PATTERN SHALL BE CENTERED IN ROOM, UNLESS NOTED OTHERWISE.
7. ALIGN ALL WALL BASE JOINTS WITH FLOOR TILE JOINTS, UNLESS NOTED OR SHOWN OTHERWISE.
8. ALL CLOSETS AND ALCOVES WITHOUT A SPACE IDENTIFICATION NUMBER SHALL HAVE THE SAME FLOOR FINISHES AS ADJOINING SPACES.
9. FLOOR FINISH MATERIAL AND/OR PATTERN SHALL BE INSTALLED UNDER TOE KICKS OF CASEWORK/MILLWORK, UNDER OPEN COUNTERTOPS, AND UNDER EQUIPMENT. FLOOR MATERIAL COLOR TRANSITIONS TO BE CENTERED UNDER DOOR, UNLESS NOTED OR SHOWN OTHERWISE.
10. RE: A1501 FOR ALL FLOORING TRANSITION DETAILS & FINISH WALL PROTECTION DETAILS.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY BLOCKING FOR WALL PROTECTION ATTACHMENT. THIS INCLUDES, BUT IS NOT LIMITED TO: HANDRAILS. RE: MANUFACTURE'S GUIDELINES FOR CLARIFICATIONS.
12. CONTRACTOR SHALL PROVIDE MANUFACTURER'S STANDARD ACCESSORY MOLDING OR TRIM FOR WALL PROTECTION ITEMS, UNLESS NOTED OTHERWISE.
13. IF WALL IS LESS THAN 18" WIDE DO NOT PROVIDE HANDRAIL. HANDRAILS SHOULD STOP APPROXIMATELY 3" FROM THE OPEN SWING OF A DOOR. HANDRAILS SHOULD STOP APPROXIMATELY 3" FROM A CORNER GUARD. RE: SHEET A1501.
14. CONTRACTOR SHALL PROVIDE BLOCKING FOR ALL WALL MOUNTED EQUIPMENT. RE: G-021 FOR CLARIFICATION.
15. CONTRACTOR SHALL PROVIDE BLOCKING FOR SIGNS AS CALLED OUT ON ELEVATIONS.

ROOM FINISH TAG KEY LEGEND

ROOM
000
FLOOR FINISH
WALL FINISH
WALL FINISH
CEILING FINISH

WALL FINISH LEGEND

PC	CORNER GUARD (PC)
WP	ACCENT PAINT (WP)
WT	WALL TILE (WT)
WP	FABRIC WRAPPED PANELS (SF)
S-	SPECIALTY WALLS (S-)

NOT ALL WALL FINISHES ARE SHOWN GRAPHICALLY. REFER TO SHEETS A-601, A-602, A-603 AND SERIES A-45100 FOR SPECIFIC LOCATIONS AND MATERIALS

FLOOR FINISH LEGEND

FA1/FC
FA1/FV2
FC
FA2
FE
FER
FR
FT
FV1
FV2
FZ

RE: FINISH SCHEDULE

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3 ADDENDUM 3 11/18/2024

PROFESSIONAL SEAL

A1102

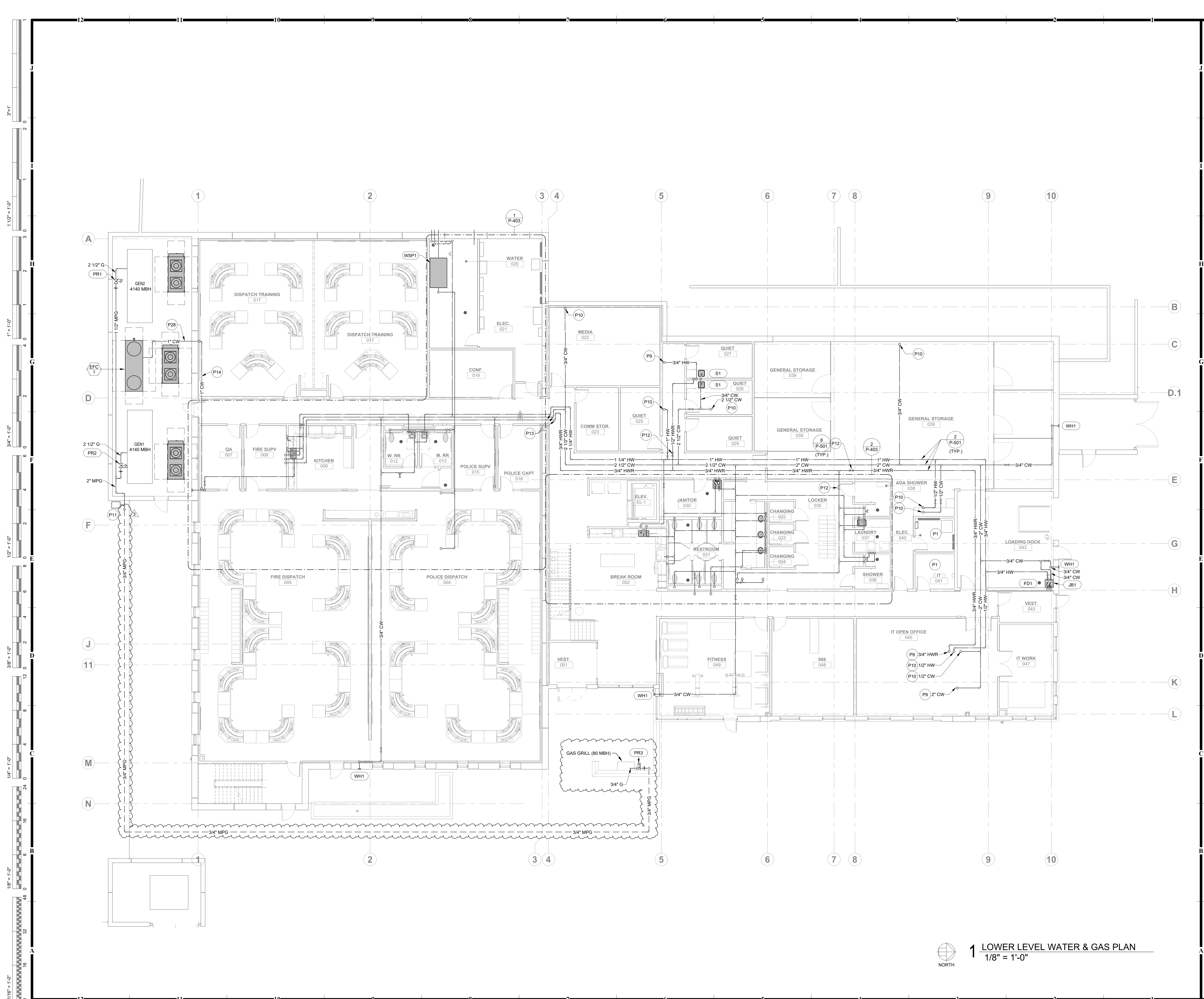
ISSUE DATE: NOVEMBER 1, 2024

HOEFER WELKER #: 138191

MAIN LEVEL - FINISH PLAN

A1 MAIN LEVEL FINISH PLAN  
1/8" = 1'-0"





- GENERAL NOTES:**
- REFER TO SHEET PG001 FOR GENERAL PLUMBING NOTES.
- PLUMBING PLAN NOTES:**
- P1 DO NOT ROUTE PIPING OVER ELECTRICAL ROOM OR EQUIPMENT.
  - P10 FFA
  - P11 NEW GAS METER INSTALLED BY GAS UTILITY. DESIGN BASED ON A DELIVERY PRESSURE OF 2 PSI, A TOTAL CONNECTED LOAD OF 8.360 MBH, AND TOTAL DEVELOPED LENGTH OF 80 FEET FOR THE GENERATORS AND 250 FEET FOR THE OUTDOOR GRILL.
  - P12 THERMOSTATIC BALANCING VALVE SET TO 125F. 500. JOMAR TS-120MFG. PROVIDE PIPED LOOP WITH ELBOW AS CLOSE TO WALL AS POSSIBLE TO PROVIDE A BREAKAWAY POINT DURING A CATASTROPHIC STORM EVENT.
  - P14 SLOPE WATER PIPE TOWARDS FLUID COOLER CONNECTION FOR DRAIN DOWN DURING WINTER MONTHS. ROUTE COLD WATER LINE ALONG FLOOR AND CONNECT TO FLUID COOLER. SUPPORT PER SPECIFICATION 220529.
  - P28

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REVISION DATES:

3	ADDENDUM #3	11/18/2024

**PROFESSIONAL SEAL**

**P-121**

ISSUE DATE: NOVEMBER 1, 2024  
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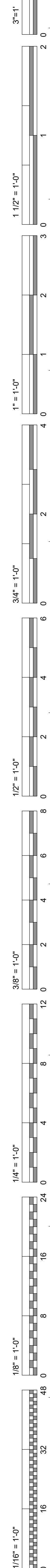
**LOWER LEVEL - WATER AND GAS PLAN**

PACKAGE 2: CONSTRUCTION SET









1. REFER TO SHEET MG001 FOR GENERAL MECHANICAL NOTES.
2. ALL 12X24 RETURN GRILLES ARE TYPE R1 WITH 10X10 NECK UNLESS INDICATED OTHERWISE ON PLANS.
3. ALL 24X24 RETURN GRILLES ARE TYPE R2 WITH 10X10 NECK UNLESS INDICATED OTHERWISE.

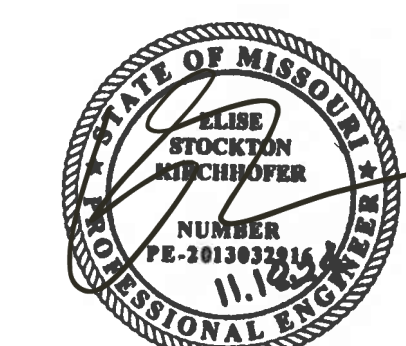
M1	LOWER STRUCTURE IN THIS AREA FOR SERVER ROOM UNDER FLOOR AIR DISTRIBUTION SYSTEM ABOVE.
M9	PROVIDE FIRE DAMPER, ICC 500 RATED STORM LOUVER, AND FLEXIBLE CONNECTION FOR DUCT PENETRATION THROUGH ICC 500 RATED STORM SHELTER WALL.
M12	PROVIDE BLACK WALL CAP WITH BACK DRAFT DAMPER.

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## PACKAGE 2: CONSTRUCTION SET

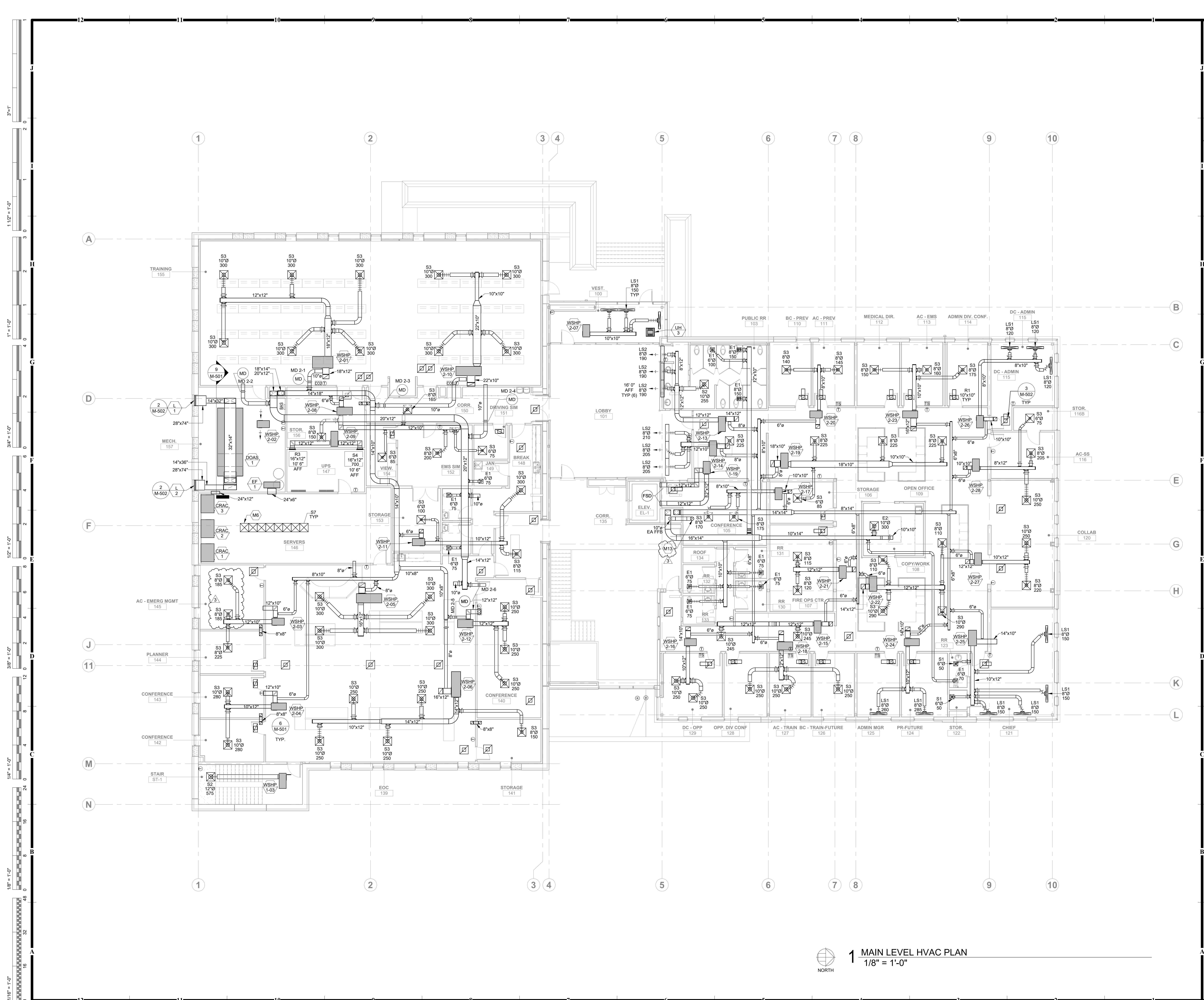
3	ADDENDUM #3	11/18/2024
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M-101

LOWER LEVEL - HVAC PLAN





- GENERAL NOTES:**
1. REFER TO SHEET MG001 FOR GENERAL MECHANICAL NOTES.
  2. ALL 12X24 RETURN AIR REGISTERS ARE TYPE R1 WITH 10X10 NECKS UNLESS NOTED OTHERWISE. ACOUSTICAL BOOTS SHOWN WHERE REQUIRED.
  3. ALL 24X24 RETURN AIR REGISTERS ARE TYPE R2 WITH 10X10 NECKS UNLESS NOTED OTHERWISE. ACOUSTICAL BOOTS SHOWN WHERE REQUIRED.
- MECHANICAL PLAN NOTES:**
- M6 FLOOR MOUNTED DIFFUSER BETWEEN SERVER RACKS.
  - M13 10" EXHAUST DUCT UP TO ROOF. TERMINATE WITH GOOSE NECK DOWN, MINIMUM 30" ABOVE ROOF.

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3	ADDENDUM #3	11/18/2024

PROFESSIONAL SEAL

**M-102**

ISSUE DATE: NOVEMBER 1, 2024  
HOEFER WELKER #: 138191

PACKAGE 2: CONSTRUCTION SET

1 MAIN LEVEL HVAC PLAN  
1/8" = 1'-0"

MAIN LEVEL - HVAC PLAN

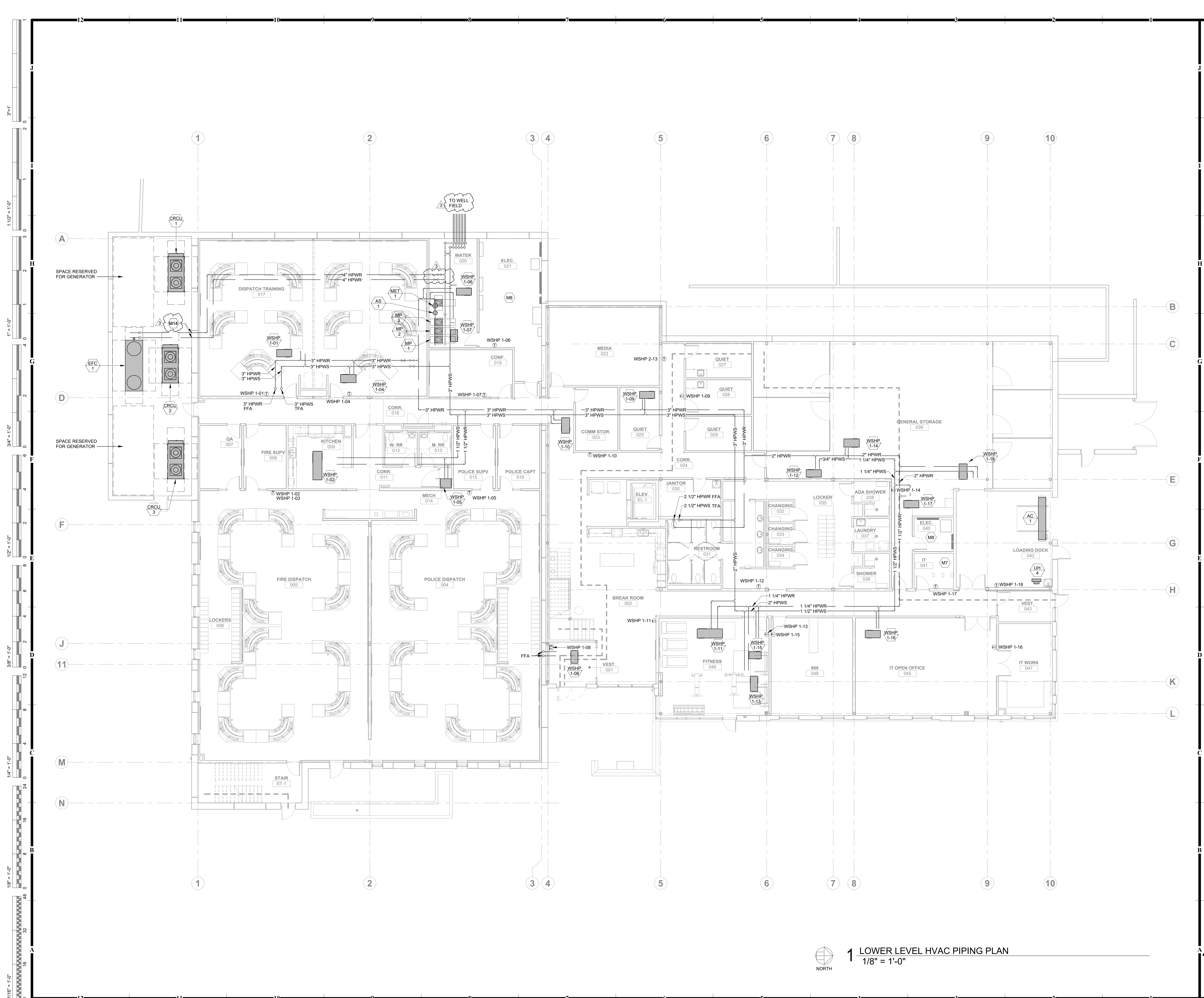


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DEFER WELKER #. 1361





- GENERAL NOTES:**
1. REFER TO SHEET MG001 FOR GENERAL MECHANICAL NOTES.
- MECHANICAL PLAN NOTES:**
- M7 DO NOT ROUTE HYDRONIC PIPING THROUGH IT SERVER ROOM.
  - M8 DO NOT ROUTE HYDRONIC PIPING THROUGH ELECTRICAL ROOM.
  - M14 PROVIDE ICC 500 RATED WALL SHROUD FOR LARGE PIPES EXITING STORM SHELTER.

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REVISION DATES:

NO.	DATE	DESCRIPTION
3	ADDENDUM #3	11/18/2024

PROFESSIONAL SEAL

**M-111**

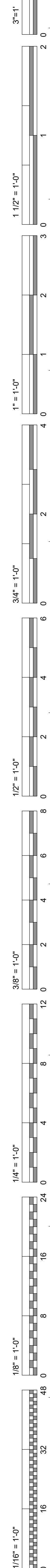
ISSUE DATE: NOVEMBER 1, 2024  
HOEFER WELKER # 138191

1 LOWER LEVEL HVAC PIPING PLAN  
1/8" = 1'-0"

LOWER LEVEL - PIPING PLAN

PACKAGE 2: CONSTRUCTION SET





1. REFER TO SHEET MG001 FOR GENERAL MECHANICAL NOTES.

M7 DO NOT ROUTE HYDRONIC PIPING  
THROUGH IT SERVER ROOM.  
M15 THERMOSTAT SHALL READ  
TEMPERATURE FROM ASSOCIATED  
TEMPERATURE SENSOR IN OFFICE.

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## PACKAGE 2: CONSTRUCTION SET

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3    ADDENDUM #3    11/18/2024



M-112

ISSUE DATE: NOVEMBER 1, 2024  
HOEFER WELKER #: 138191

## MAIN LEVEL - PIPING PLAN

NORTH

# 1 MAIN LEVEL HVAC PIPING PLAN

11/17/2024 11:07:16 PM Autodesk Docs://138191-LeesSummitJointOpsCtr/138191 MEP23 LeesSummitJointOpsCtr.rvt

DEDICATED OUTDOOR AIR SUPPLY UNIT SCHEDULE																																																					
PLAN MARK	MANUFACTURER	MODEL	UNIT TYPE	TYPE	QUANTITY	SUPPLY FAN					EXHAUST FAN					COOLING COIL					HEATING COIL					FILTERS		ELECTRICAL					PHYSICAL PROPERTIES				OPTIONS	NOTES															
						AIRFLOW (CFM)	ESP (IN)	TSP (IN)	MAX HP	BRAKE HP	STARTER TYPE	TYPE	QUANTITY	AIRFLOW (CFM)	ESP (IN)	TSP (IN)	MAX HP	BRAKE HP	STARTER TYPE	TYPE	QUANTITY	DB (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	FLOW RATE (GPM)	EWI (DEG.F)	LWT (DEG.F)	MAX WPD (FT)	MAX VELOCITY (FPM)	AIRFLOW (CFM)	MIN. OUTPUT (BTUH)	EAT (DEG.F)	LAT (DEG.F)	RATE (GPM)	EWI (DEG.F)			LWT (DEG.F)	CONTROL (STAGED/MOD)	MERV	DIRTY SP LOSS (IN)	VOLTAGE	PHASE	FLA	MCA	MOC	LENGTH (FT)	WIDTH (FT)	HEIGHT (FT)	WEIGHT (LBS)		
DOAS1	YORK	JRMW180	WSHP	DIRECT	1	4900	1.0	3.2	5.00	3.71	VFD	DIRECT	0	3900	1.0	2.1	3	2.37	VFD	DIRECT	0	214	139	84.6	68.7	56.0	55.0	72.0	80.0	90.0	11	450	3900	141	37.5	64.0	72.0	50.0	40.0		13	0.8	460	3	102.0	112.0	125	16"	6"	6"	3400	CAB,DSE,SSDP	1-12
NOTES: 1. UNIT HANDING AND DUCT CONNECTION ORIENTATION SHALL BE BASED ON STANDING INSIDE THE UNIT FACING FORWARD WITH AIRFLOW HITTING YOU IN THE BACK OF THE HEAD. 2. MOUNT DOAS ON CONCRETE PAD. SUPPLY AND RETURN CONNECTIONS SHALL EXIT THE UNIT VERTICALLY DOWN THROUGH CONCRETE PAD. CONTRACTOR TO VERIFY SIZE AND LOCATION OF OPENINGS BEFORE POURING SLAB. 3. UNIT SHALL BE DRAW THRU CONFIGURATION. 4. CONTROLS SHALL BE FACTORY INSTALLED. REFER TO CONTROLS DRAWINGS. 5. FURNISH FACTORY MOUNTED VARIABLE FREQUENCY DRIVE PER FAN. VARIABLE FREQUENCY DRIVE TO BE FURNISHED BY DIVISION 23 CONTRACTOR. 6. EFFICIENCIES: EER = 21 & COP = 3.0 7. PROVIDE WITH MODULATING HOT GAS REHEAT FOR DEHUMIDIFICATION CONTROL. 8. PROVIDE SMOKE DETECTOR IN SUPPLY AIR DUCT. 9. COMPRESSORS AND FANS SHALL HAVE VIBRATION ISOLATION FOR NOISE CONTROL. 10. PROVIDE WITH ENERGY RECOVERY WHEEL. SEE ENERGY RECOVERY WHEEL SCHEDULE BELOW. 11. PROVIDE INTERNAL ELECTRIC RESISTANCE HEATER FOR BACK UP HEAT WHEN ERW IS IN FROST CONTROL. SIZE 45 KW. 12. REFRIGERANT - R454B.																																																					

ENERGY RECOVERY WHEEL SCHEDULE																								
PLAN MARK	MANUFACTURER	MODEL	SUPPLY		EXHAUST		FILTERS				SUMMER						WINTER						OPTIONS	NOTES
			AIRFLOW (CFM)	AIRFLOW (CFM)	OA FILTER		RA FILTER	EXHAUST		O/A		SUPPLY		EXHAUST (DEG F)	O/A		SUPPLY (DEG F)	TH (BTU/H)						
					MERV	DIRTY SP LOSS (IN)		MERV	DIRTY SP LOSS (IN)	DB (DEG F)	WB (DEG F)	DB (DEG F)	WB (DEG F)		DB (DEG F)	WB (DEG F)			DB (DEG F)	WB (DEG F)				
DOAS1	YORK	ECW 484	4900	3900						8	0.4	75.0	64.0	96.0	75.3	84.6	69.7	140	70.0	0.0	37.5	276	1.4	
NOTES: 1. TOTAL ENERGY RECOVERY WHEEL SHALL BE INTEGRATED INTO DOAS 1 SHOWN ABOVE. 2. PROVIDE VFD DEFROST CONTROL AND BYPASS DAMPERS. 3. COOLING EFFECTIVENESS: TOTAL=72%, SENSIBLE=74%. 4. HEATING EFFECTIVENESS: TOTAL=77%, SENSIBLE=80%.																								

WATER SOURCE HEAT PUMP SCHEDULE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
SUPPLY FAN			COOLING COIL										HEATING COIL										ELECTRICAL					PHYSICAL PROPERTIES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
PLAN MARK	MANUFACTURER	MODEL	AIRFLOW (CFM)	ESP (IN)	STARTER TYPE	TOTAL (MBH)	SENSIBLE (MBH)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG.F)	WB (DEG.F)	EAT (DEG.F)	WB (DEG.F)	DB (DEG



2 NE TUDOR RD  
LEE'S SUMMIT, MISSOURI 64086

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OPTIONS	
AC	ALUMINUM CONSTRUCTION
AS	AIR/LOO SWITCH
ASD	AIR SCOP DEVICE
BS	BIROSCREEN
BSK	BREAKER SEAL KIT
CAB	COMPRESSOR ACOUSTICAL BLANKET
CA	CANOPY ARCHITECT
CPE	CONDENSATE PUMP - EXTERNAL EQUIVA TO ??
CPK	CONDENSATE PUMP - INTEGRAL
DMK	DOWNFLOW MOUNTING KIT AND CONDENSATE MANAGEMENT KIT
DR	DRAIN PAN
DSE	DISCONNECT BY E/C
DSF	FUSED DISCONNECT - FACTORY MOUNTED
DSN	NON-FUSED DISCONNECT - FACTORY MOUNTED
DSR	DUPLEX SERVICE RECEPTACLE - FACTORY MOUNTED AND POWERED
DSRE	DUPLEX SERVICE RECEPTACLE BY E/C
EEF	EXTERNAL EXHAUST FAN
GBD	GRAVITY BACKFIGHT DAMPER
HG	HAIL GUARD
HK	HOSE KIT
IC	INSULATED CABINET
MDC	MAGNETIC DOOR CONTROLLER
OAH	OUTER AIR HOOD
PC	POWER CONNECTIONS FOR ELECTRIC HEATER
RD	RADIATION DAMPER
RDS	REFRIGERANT DETECTION SYSTEM
RMB	REMOTE MOUNTING BOX
SC	SPEED CONTROLLER
SFS	SELF CONTAINED FIRE SUPPRESSION
SG	STANDARD GRILLE
SMB	SURFACE MOUNTING BOX
SP	SINGLE ENTRY KIT
SS	STAINLESS STEEL
SSDP	STAINLESS STEEL DRAIN PAN
STC	SMART TROOP CONTROLLER
TEV	THERMAL EXHAUST VALVE
UT	UNIT SURFACE TOUCHPAD
WS	WALL SLEEVE
WSH	WEATHERSHIED HOOD

NOTES:

1.	CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE OF PIPING. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
2.	MOUNT ON CONCRETE PAD AND PER MANUFACTURER RECOMMENDATIONS.
3.	UNIT SIZED FOR PURE WATER, 0% GLYCOL. UNIT WILL NOT OPERATE FOR 6 MONTHS OF THE YEAR. SEE CONTROLS DRAWINGS FOR WINTERIZATION DRAINDOWN SEQUENCE
4.	SET AUTOMATIC CONTROL VALVE MINIMUM POSITION TO CALCULATED BLOWDOWN AS REQUIRED BY MANUFACTURER.

NOTES:

1. SUSPEND UNIT FROM STRUCTURE.
2. SIZE EVAPORATOR COIL BASED ON ASSOCIATED CONDENSING UNIT.
3. UNIT SHALL BE BLOW THRU CONFIGURATION.
4. FURNISH 1" FILTER RACK.
5. FURNISH UNIT WITH TERMINAL STRIP AND 7-DAY PROGRAMMABLE THERMOSTAT. SET UNIT TO MAINTAIN TEMPERATURE BETWEEN 60 AND 78 DEGREES.

NOTES:

1.	CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE OF INSULATED REFRIGERANT PIPING. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
2.	MOUNT ON CONCRETE PAD.

NOTES:

1. CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE OF INSULATED REFRIGERANT PIPING. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
2. COOLING COILS BASED ON NET CAPACITIES.
3. MOUNT ON CONCRETE PAD WITH NEOPRENE VIBRATION ISOLATION PAD AND PER MANUFACTUER IOM INSTRUCTIONS.

NOTES:

1.	CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE OF INSULATED REFRIGERANT PIPING. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
2.	PROVIDE FLOOR MOUNTED WATER SENSOR IN UNDER FLOOR AIR PLENUM. CONNECT TO BAS.
3.	PROVIDE MANUFACTURER'S STANDARD FLOOR STAND FOR DOWNFLOW CONFIGURATION.

1. MAX OPERATING PRESSURE SHALL BE 125 PSI. MAX OPERATING TEMPERATURE SHALL BE 120 DEG. F.

2. PROVIDE PACKAGED SYSTEM WITH PUMPS, BASE, VALVES, GAUGES, PRESSURE TRANSDUCERS, SUCTION & DISCHARGE HEADERS, CONTROLS AND DRIVES.

3. PUMPS TO BE PROVIDED WITH PERMANENT MAGNET, THERC MOTORS WITH INTEGRAL VFD, MOTOR AND VFD ASSEMBLY TO MEET ITS EFFICIENCY LEVELS.

4. PUMPS SHOULD BE PROVIDED WITH INLET AND OUTLET PRESSURE AND FLOW MONITORING FOR PREPRESSURIZATION OF FLUID.

5. PROVIDE SINGLE POINT POWER WITH FACTORY-WIRING AND TESTED PUMP CONTROLLER UTILIZING OPTIMAL POWER PUMP SEQUENCING.

6. PUMPS SHALL HAVE CARTRIDGE TYPE SEALS, AND SHALL NOT REQUIRE ALIGNMENT.

7. PUMPS ARE DESIGNED FOR N-1 ARRANGEMENT.

8. PUMPS CONTAINS TWO, REDUNDANT 1.5 HP MOTORS. MOTORS HAVE SEPARATE VFDs AND ELECTRICAL CONNECTIONS.

NOTES:								
1.	EXPANSION TANK SHALL BE SUSPENDED FROM STRUCTURE ABOVE PER DETAIL.							
2.	HYDRONIC SYSTEM IS 100% WATER.							
3.	UNIT SHALL BE ASME RATED, 125 PSIG.							

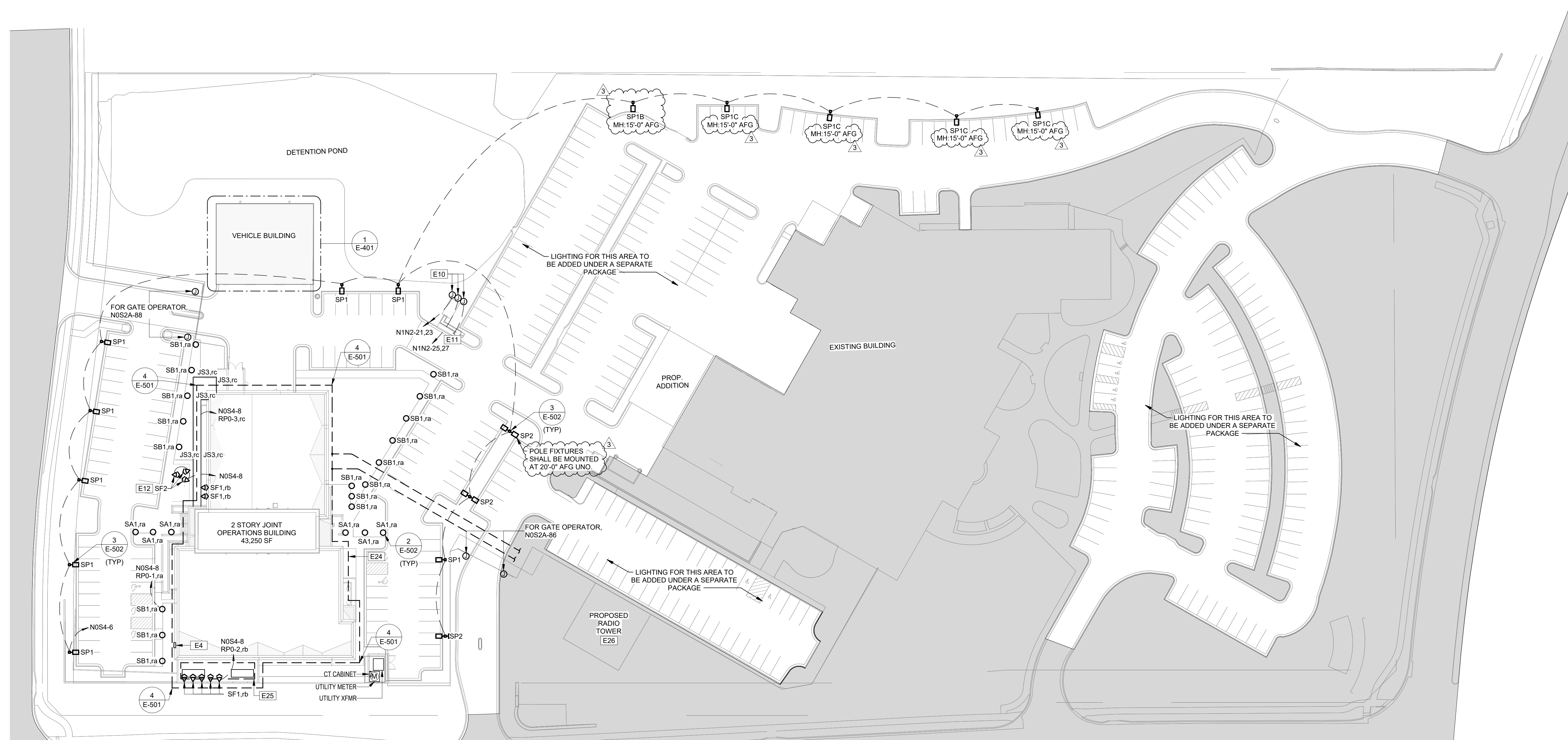
NOTES:

1. AIR SEPARATOR SHALL BE SUSPENDED FROM STRUCTURE ABOVE PER DETAIL.
2. FURNISH WITH INTEGRAL STAINLESS STEEL STRAINER.

NOTES:

1. NECK SIZE SHOWN ON DRAWINGS - BRANCH DUCT SIZE SHALL BE SAME AS NECK SIZE UNLESS OTHERWISE NOTED.
2. 4-WAY THROW PATTERN UNLESS OTHERWISE SHOWN ON DRAWINGS AND LEGEND.
3. DOUBLE DEFLECTION BARS SHALL BE ADJUSTABLE - ADJUST TO DEFLECT AIR DOWN AND EVENLY TO THE SIDE.
4. SINGLET BLADE PARALLEL TO LONG DIMENSION.
5. ALUMINUM CONSTRUCTION.
6. SINGLET SLOT DIFFUSER, 1.5" WIDE; PROVIDE SOB PLENUM.
7. SINGLE SLOT DIFFUSER, 1.5" WIDE; PROVIDE LIGHT SHIELD.
8. TWO SLOT DIFFUSER, 1.5" WIDE; PROVIDE SSB PLENUM.
9. PROVIDE ACOUSTICAL BOOT/BOOTS FOR ALL RETURN REGISTERS WHERE SHOWN ON DRAWINGS. PROVIDE LIGHT SHIELDS FOR ALL REGISTER NOT UTILIZING ACOUSTICAL BOOT/BOOTS.
10. PROVIDE BASKET AND FACE OPERATED DAMPER.
11. PERFORATED FLOOR TILE SHALL INTEGRATE INTO MANUFACTURE'S FLOOR PLENUM SYSTEM. TILE SHALL BE CAPABLE OF WALKING ON.





E4 TEMPORARY GENERATOR QUICK  
CONTROL PANEL. REFER TO ONE-LINE  
E10 AND SPECIFICATIONS FOR  
ADDITIONAL INFORMATION.

E11 PROVIDE POWER AND DATA TO FUEL  
E12 INJECTOR. FUEL INJECTOR SHALL  
BE RIGID. ALL FITTINGS AND JUNCTION  
BOUNDS SHALL BE EXPLOSION PROOF  
E13 AND TESTED PER CODE REQUIREMENTS.  
E14 EXACT LOCATION AND REQUIREMENTS  
WITH OWNER.

E15 PROVIDE 1-1/2" C. FROM SERV. (146)  
TO FUEL PUMP.

E16 PROVIDE DEDICATED LINE FLIGHT  
E17 PHOTOCELL FOR FLIGHT LIGHTING.  
E18 PHOTOCELL SHALL BE LOCATED IN  
INCONSPICUOUS LOCATION.

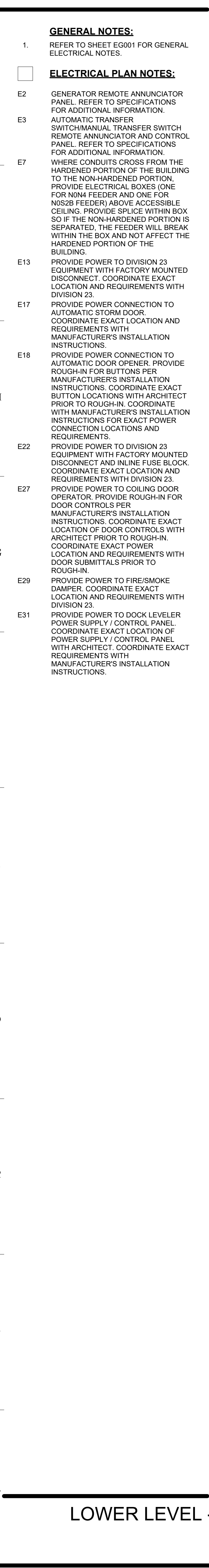
E19 COORDINATE FINAL LOCATION WITH  
E20 OWNER PRIOR TO INSTALLATION.  
E21 BUILDING GROUND RING. REFER TO  
E22 2-E-6/41 AND SPECIFICATIONS FOR  
ADDITIONAL INFORMATION.

E23 EQUIPMENT ENCLOSURE GROUND  
E24 RING. BOND ALL EQUIPMENT IN THE  
ENCLOSURE TO GROUND RING.  
E25 GROUND RING WITH #2 BONDING  
CONDUCTOR. REFER TO 2-E-6/41 AND  
SPECIFICATIONS FOR ADDITIONAL  
INFORMATION.

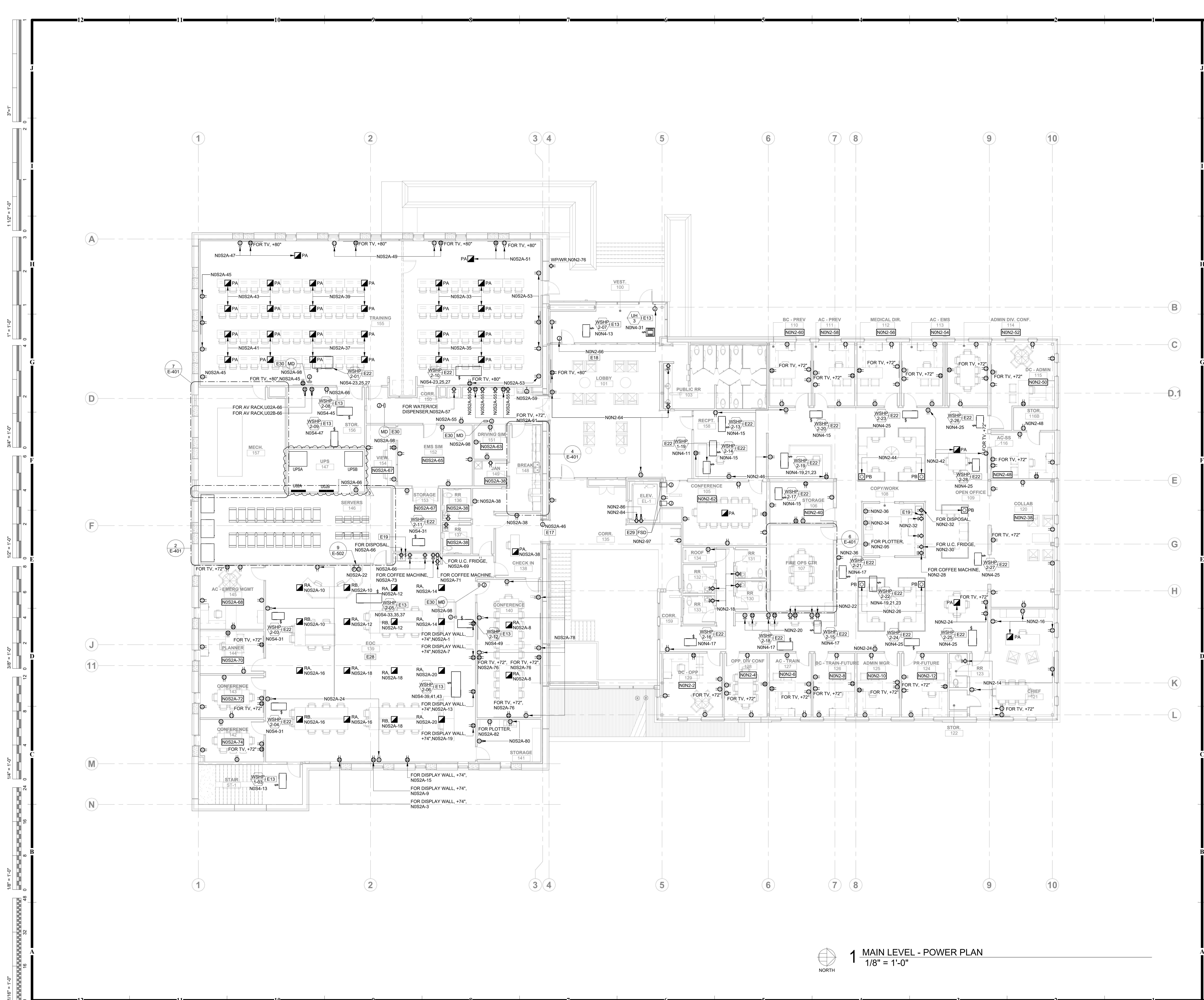
E26 TWO (2) CONNECTIONS ARE REQUIRED  
TO BOND THE RADIO POWER  
E27 SUPPLY TO GROUNDING SYSTEM.  
E28 BUILDING GROUNDING SYSTEM  
E29 SHALL BE 2-1/4" CONDUCTOR UNDER  
ROADWAY FOR GROUNDING  
E30 CONDUCTORS. BONDING  
E31 CONDUCTORS SHALL BE PROVIDED BY  
RADIO TOWER INSTALLER.

## ELECTRICAL SITE PLAN









- GENERAL NOTES:**
- REFER TO SHEET EG001 FOR GENERAL ELECTRICAL NOTES.
- ELECTRICAL PLAN NOTES:**
1. PROVIDE POWER TO DIVISION 23 EQUIPMENT WITH FACTORY MOUNTED DISCONNECT. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH DIVISION 23.
17. PROVIDE POWER CONNECTION TO AUTOMATIC STORM DOOR. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
18. PROVIDE POWER CONNECTION TO AUTOMATIC DOOR OPENER. PROVIDE ROUGH-IN FOR BUTTONS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. COORDINATE EXACT BUTTON LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN. COORDINATE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR EXACT POWER CONNECTION LOCATIONS AND REQUIREMENTS.
19. INSTALL COUNTER TOP AIR SWITCH (FURNISHED BY DIVISION 22) TO CONTROL GARBAGE DISPOSAL.
22. PROVIDE POWER TO DIVISION 23 EQUIPMENT WITH FACTORY MOUNTED DISCONNECT AND INLINE FUSE BLOCK. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH DIVISION 23.
28. PROVIDE MODULAR RAISED FLOOR WIRING SYSTEM TO SERVE RAISED FLOOR FLOORBOXES WITHIN EOC. LEGRAND WALKERFLEX OR APPROVED EQUAL. PROVIDE ENOUGH LENGTH IN CABLES THAT FLOORBOXES CAN BE MOVED 72" IN ANY DIRECTION. EXACT LAYOUT / SPECIFICATION OF MODULAR RAISED FLOOR WIRING COMPONENTS SHALL BE PROVIDED TO ENGINEER BY VENDOR AS A SHOP DRAWING FOR REVIEW.
29. PROVIDE POWER TO FIRE/SMOKE DAMPER. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH DIVISION 23.
30. PROVIDE POWER TO MOTORIZED DAMPER. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH DIVISION 23.

HOEFER WELKER

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LEE'S SUMMIT JOINT OPERATIONS FACILITY

2 NE TUDOR RD  
LEE'S SUMMIT, MISSOURI 64086

REVISION DATES:

3	ADDENDUM #3	11/18/2024
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PROFESSIONAL SEAL

E-101

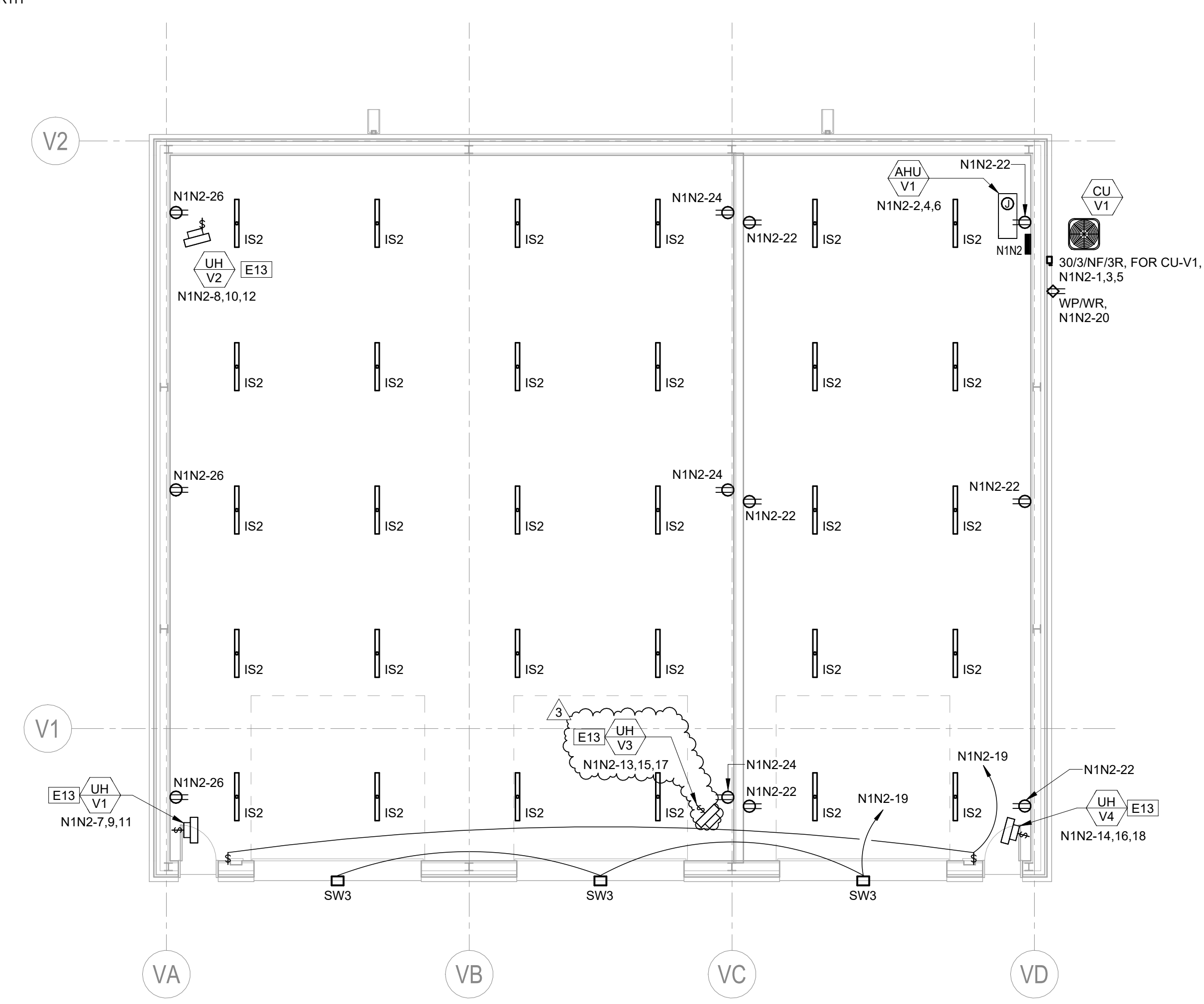
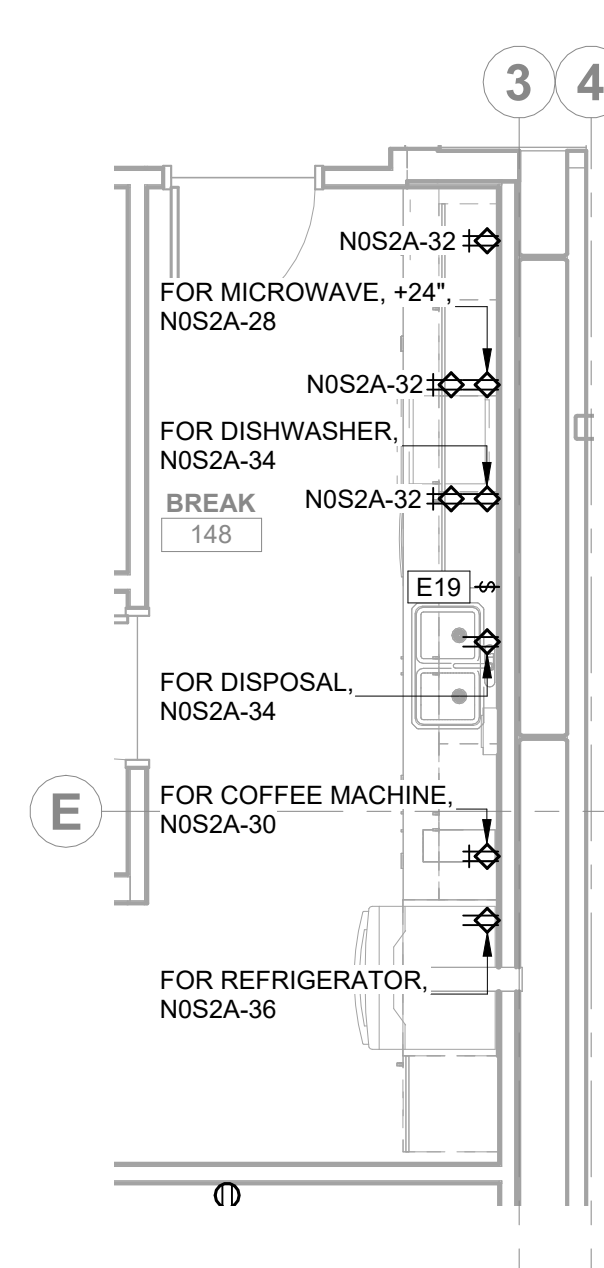
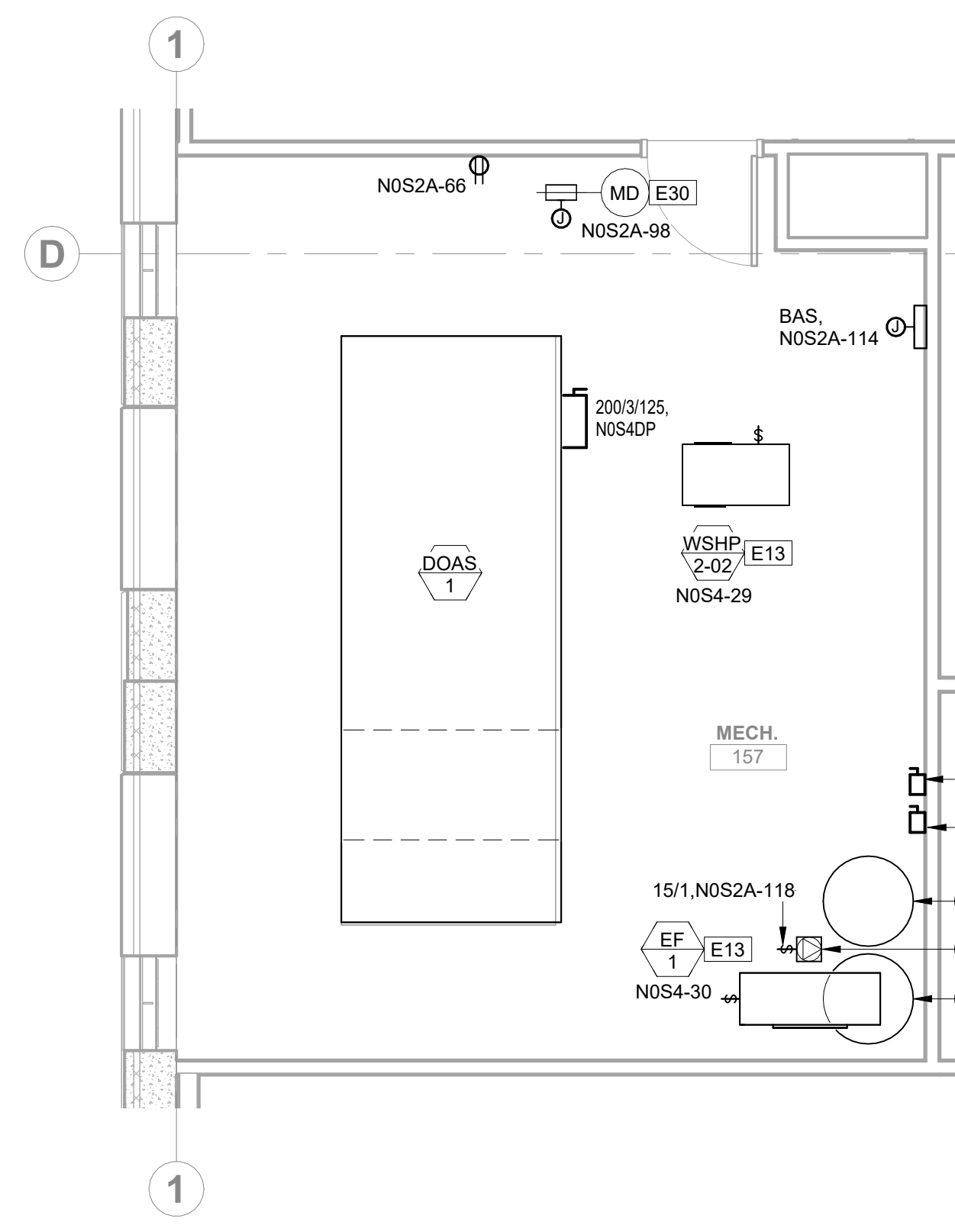
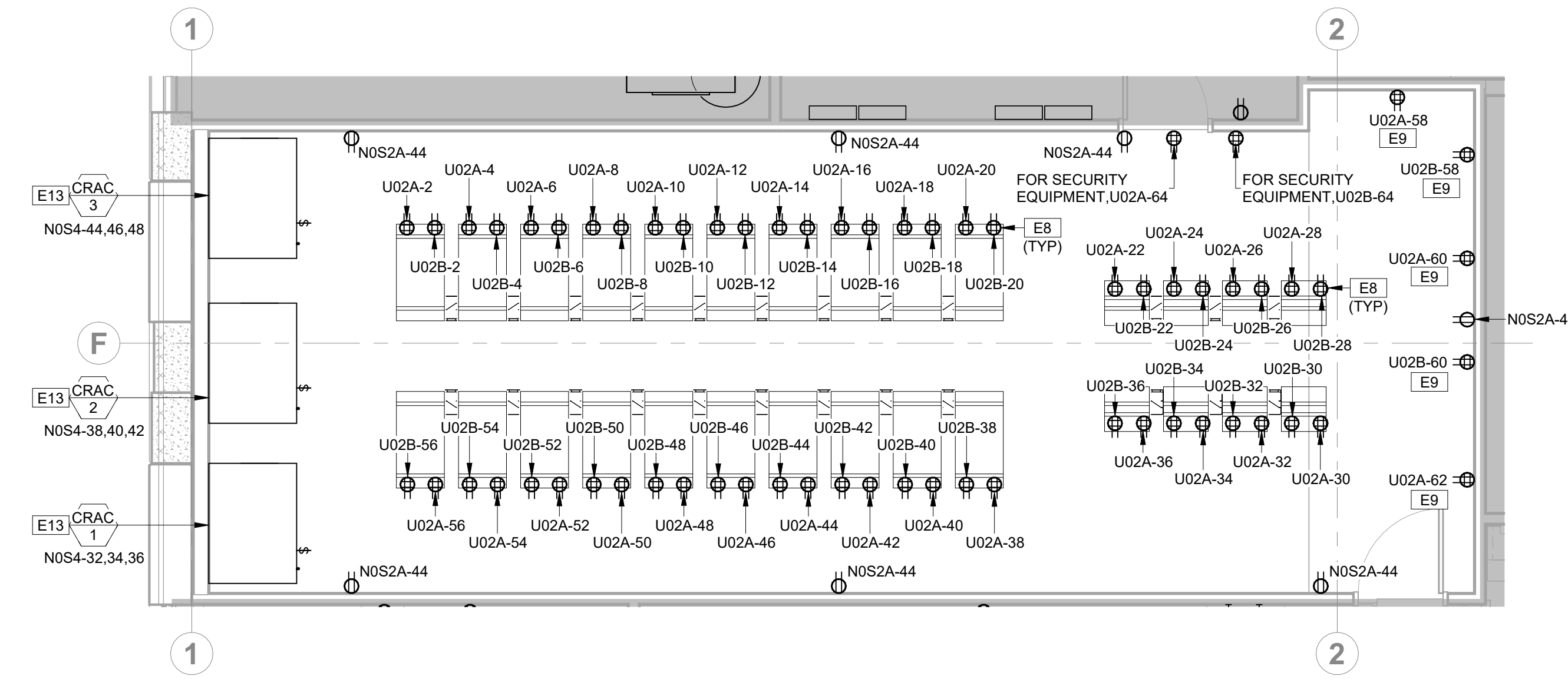
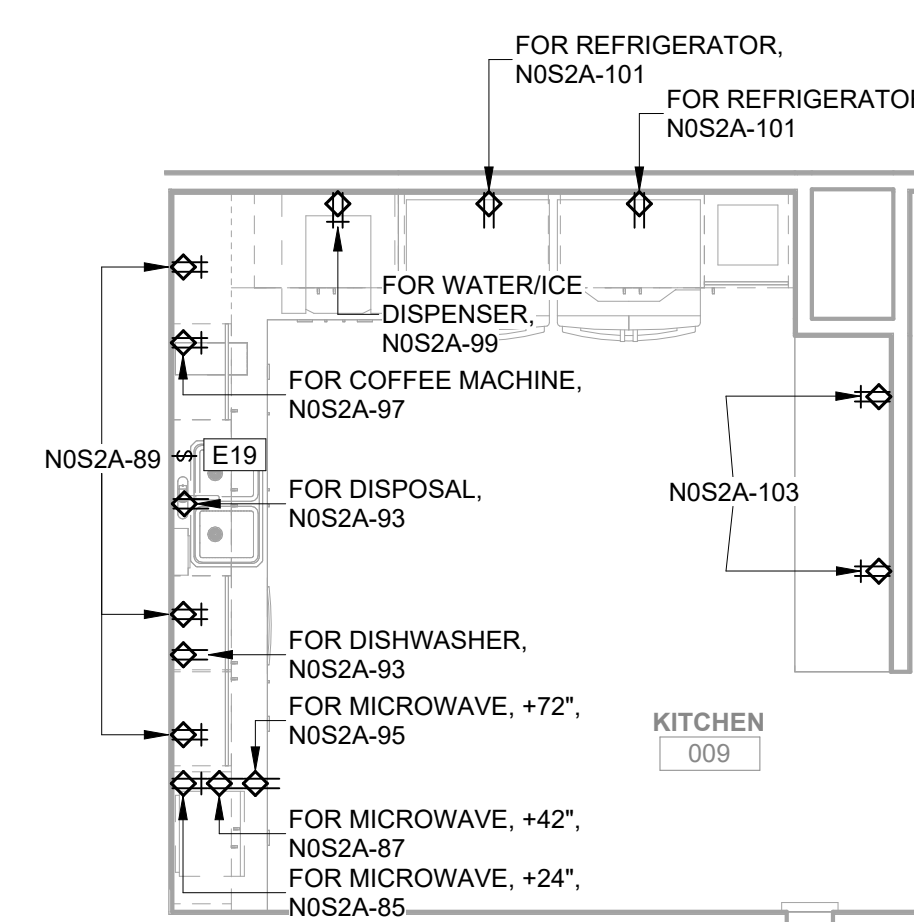
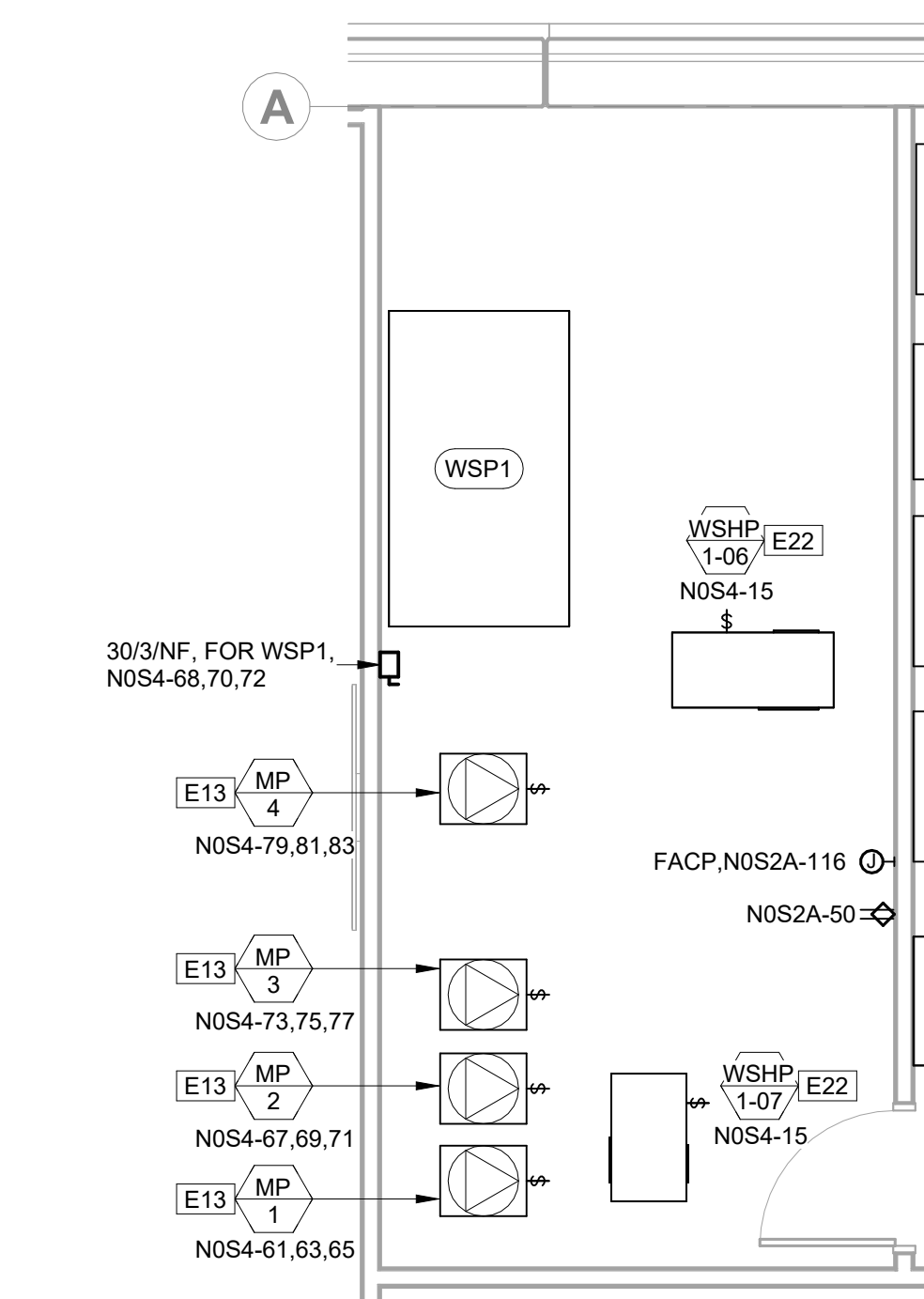
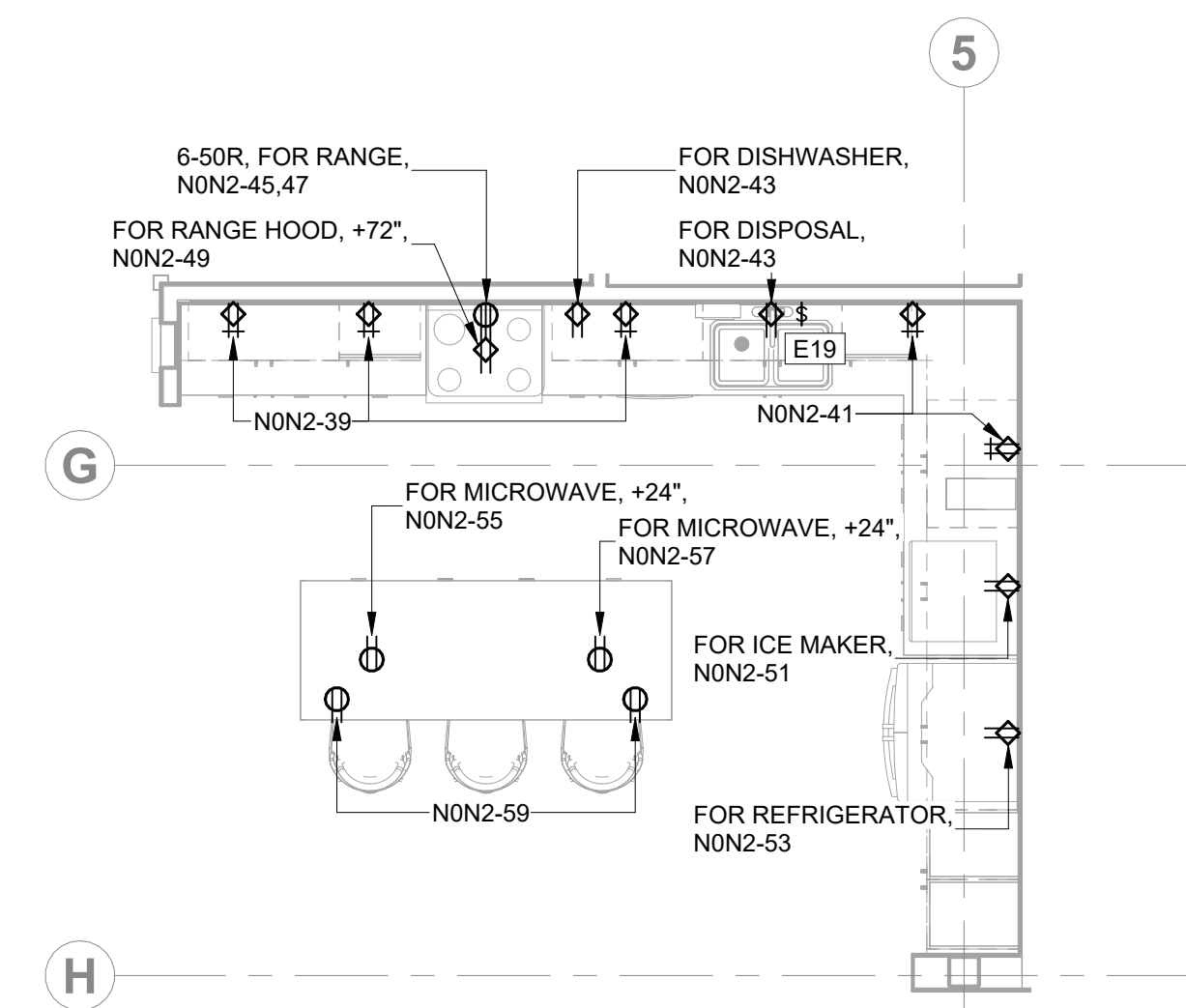
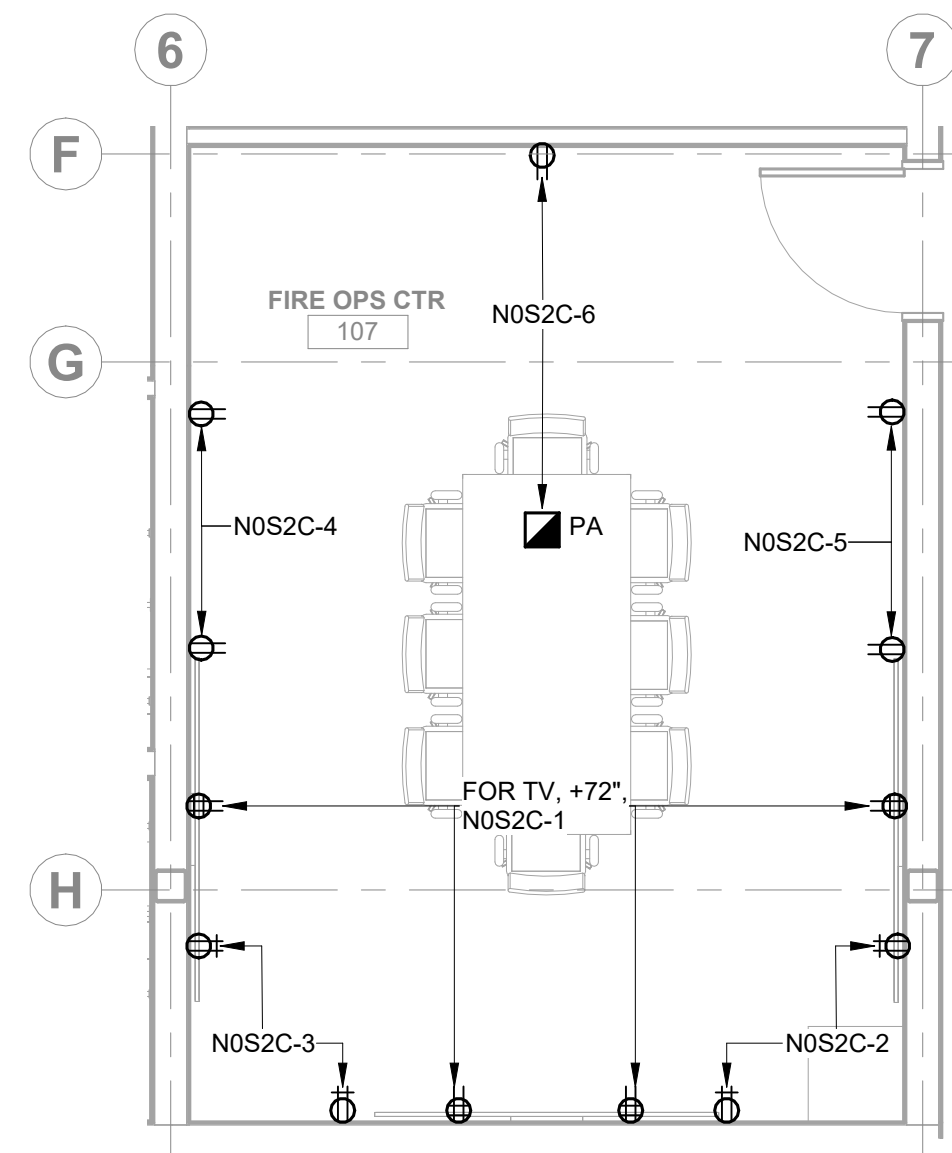
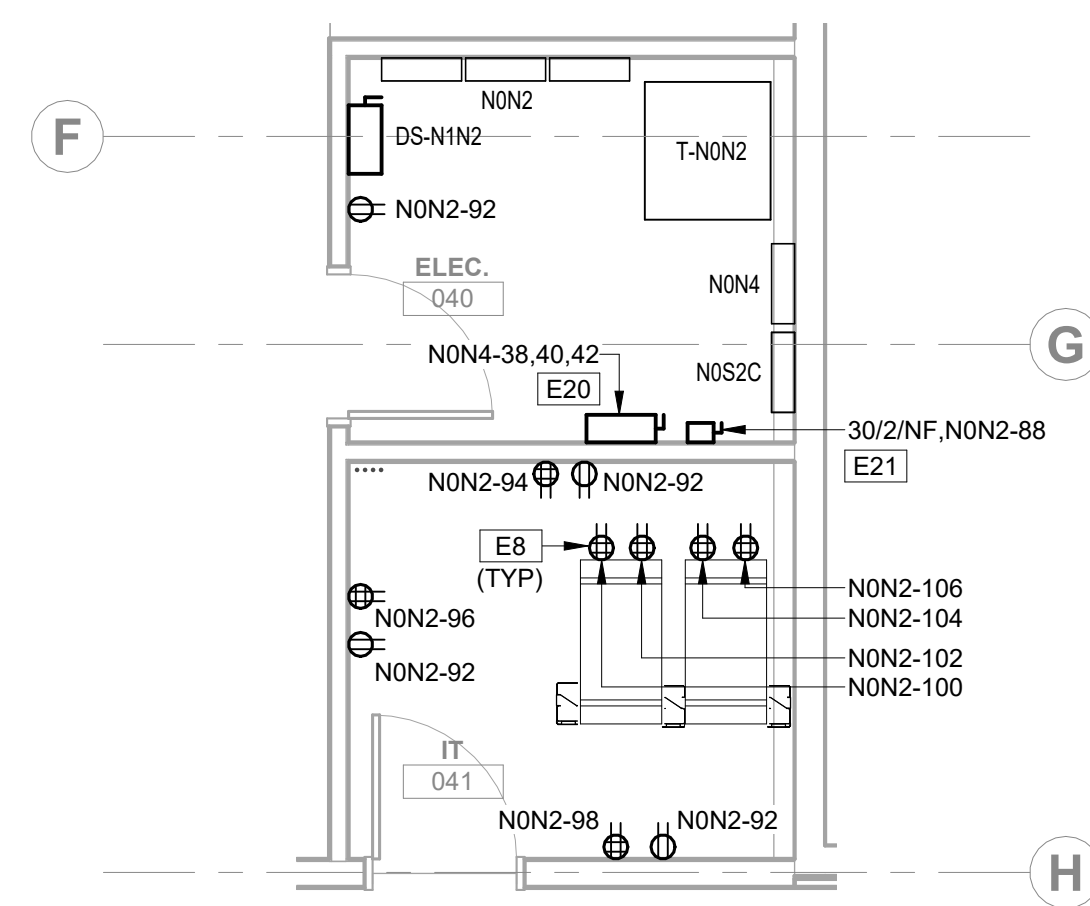
ISSUE DATE: NOVEMBER 1, 2024  
HOEFER WELKER #: 138191

MAIN LEVEL - POWER PLAN



1 MAIN LEVEL - POWER PLAN  
1/8" = 1'-0"





- GENERAL NOTES:**

1. REFER TO SHEET EG001 FOR GENERAL ELECTRICAL NOTES.

**ELECTRICAL PLAN NOTES:**

E8 INSTALL RECEPTACLE ON LADDER RACK ABOVE CABINET/RACK. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH DIVISION 23.

E9 RECEPTACLE FOR WALL MOUNTED IT EQUIPMENT. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH DIVISION 27 PRIOR TO ROUGH-IN.

E13 PROVIDE POWER TO DIVISION 23 EQUIPMENT WITH FACTORY MOUNTED DISCONNECT. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH DIVISION 23.

E19 INSTALL COUNTER TOP AIR SWITCH (FURNISHED BY DIVISION 22) TO COORDINATE WITH GARAGE.

E20 PROVIDE SHUNT TRIP DISCONNECT AND FINAL CONNECTION FOR MAIN ELECTRICAL PANEL. DISCONNECT SHALL HAVE AUXILIARY CONTACT THAT IS NORMALLY CLOSED WHEN POWER IS ON AND NORMALLY OPEN WHEN POWER IS OFF. COORDINATE FIRE ALARM CONNECTION WITH FIRE ALARM CONTRACTOR. BASIS OF DESIGN IS KONE 300 SERIES.

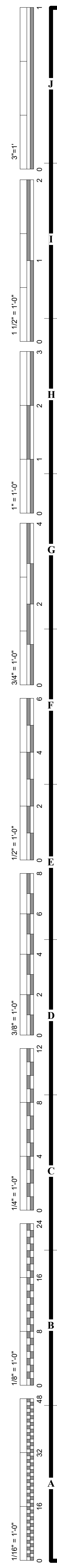
E21 COORDINATE FINAL DISCONNECT RATING AND LOCATION WITH ELEVATOR MANUFACTURER SUBMITTALS.

E22 PROVIDE DISCONNECT AND FINAL CONNECTION FOR ELEVATOR CAB AREA. BASIS OF DESIGN IS KONE 300 SERIES. COORDINATE FINAL DISCONNECT RATING AND LOCATION WITH ELEVATOR MANUFACTURER SUBMITTALS.

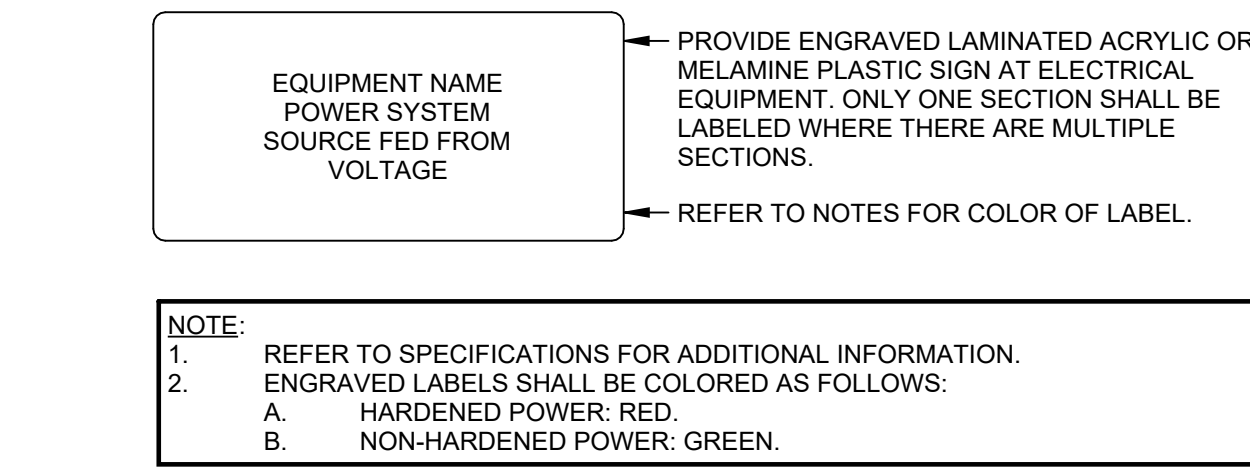
E30 PROVIDE POWER TO DIVISION 23 EQUIPMENT WITH FACTORY MOUNTED DISCONNECT AND IN-LINE FUSE BLOCK. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH DIVISION 23.

E30 PROVIDE POWER TO MOTORIZED DAMPER. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH DIVISION 23.

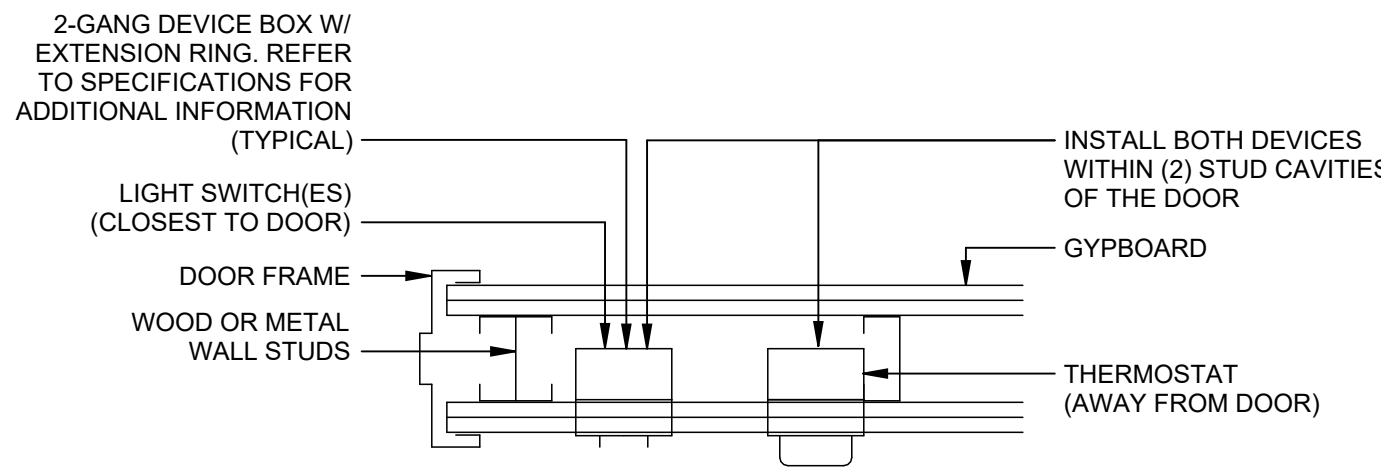




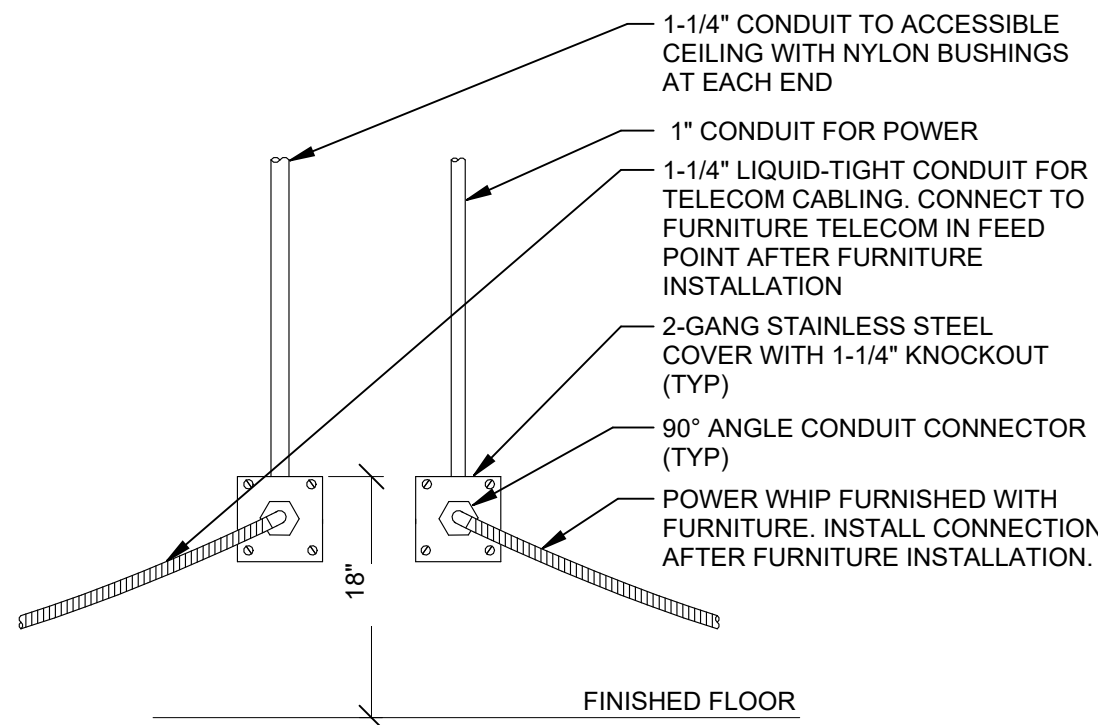
**7 ELECTRICAL EQUIPMENT IDENTIFICATION DETAIL**  
NOT TO SCALE



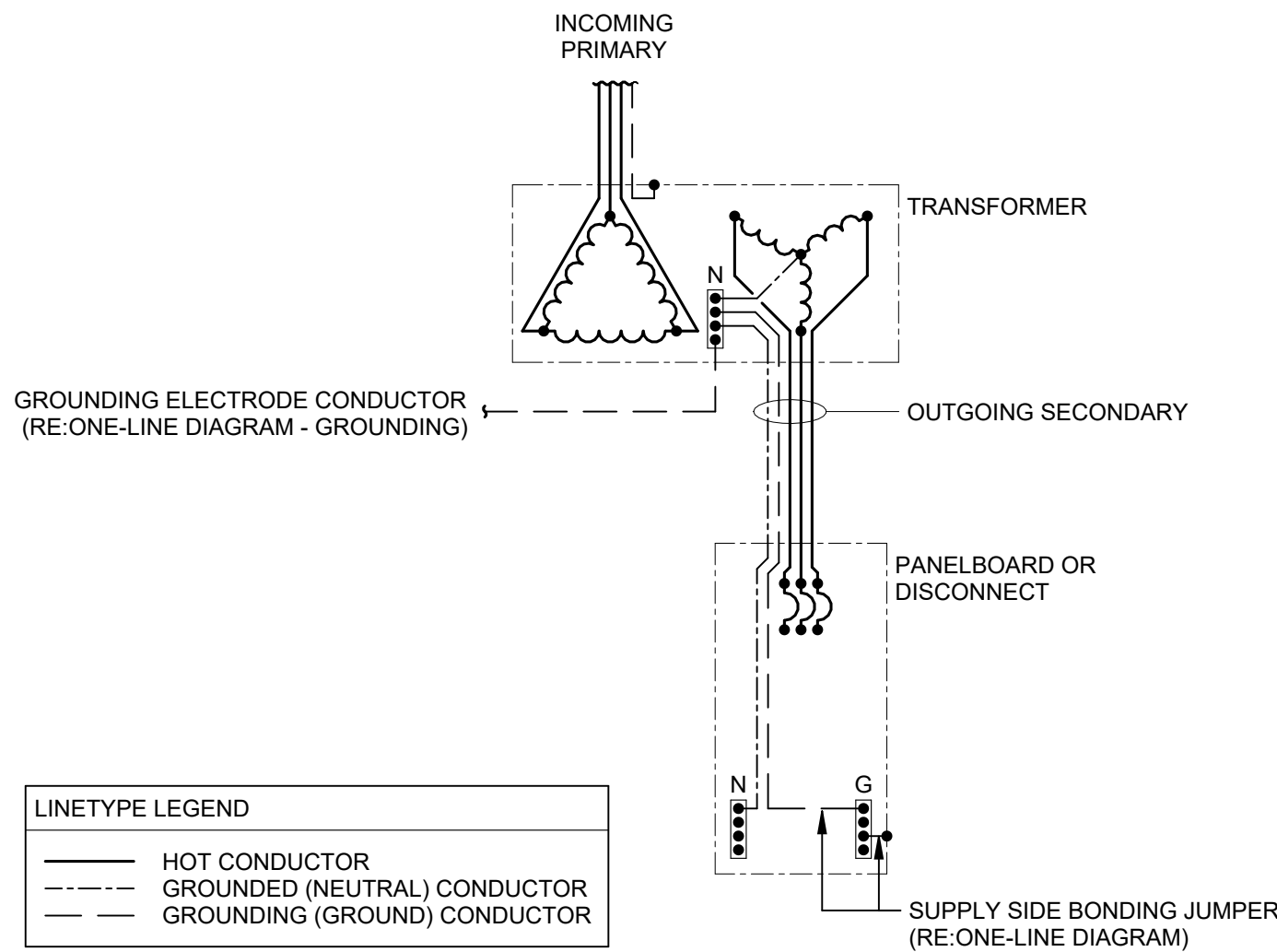
**8 ROOM THERMOSTAT/LIGHT SWITCH DETAIL**  
NOT TO SCALE



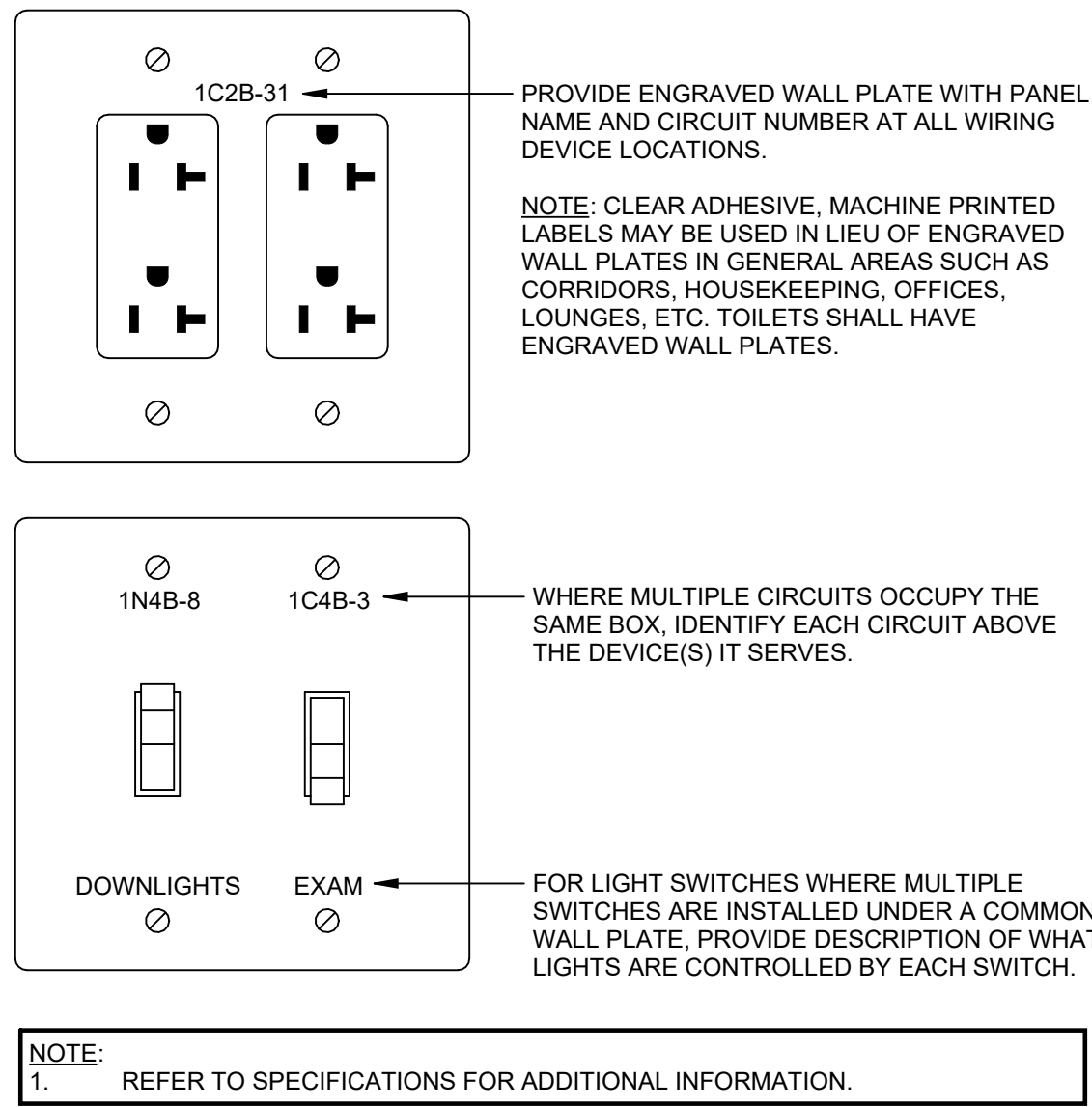
**9 WALL OUTLET DETAIL FOR ELECTRIFIED PARTITION**  
NOT TO SCALE



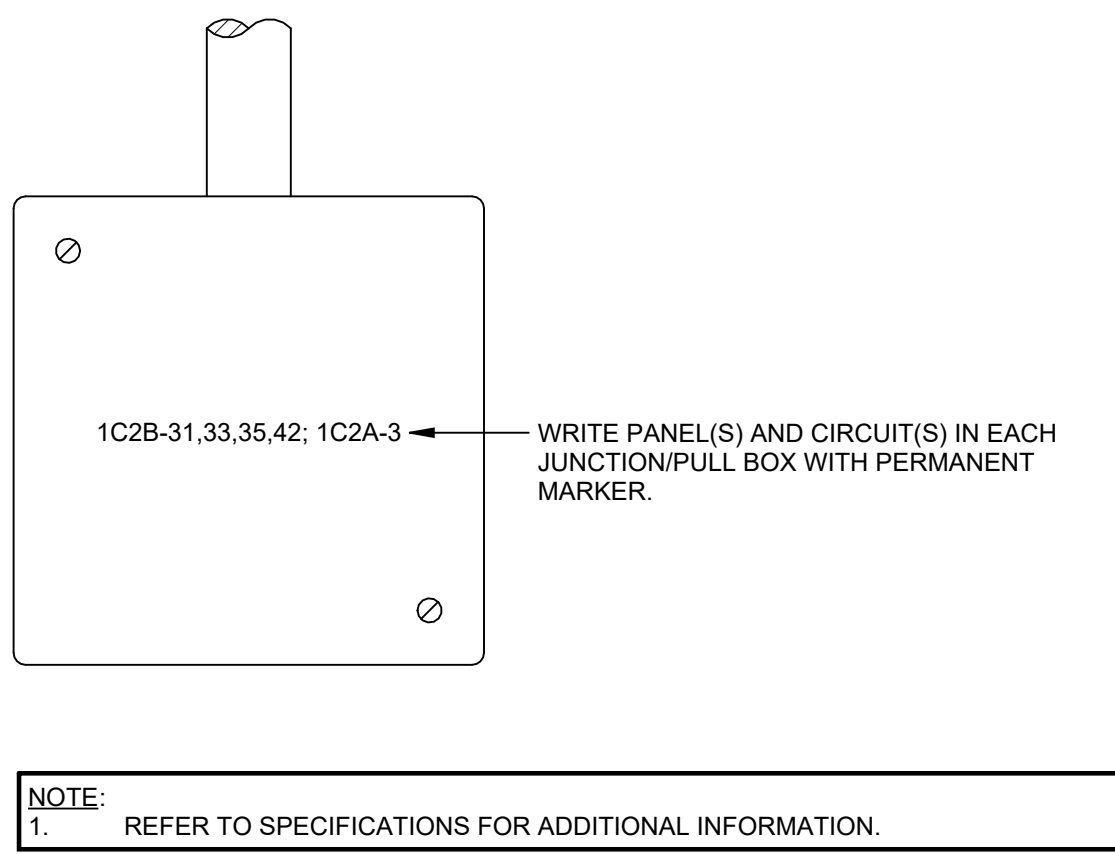
**4 TRANSFORMER GROUNDING DETAIL**  
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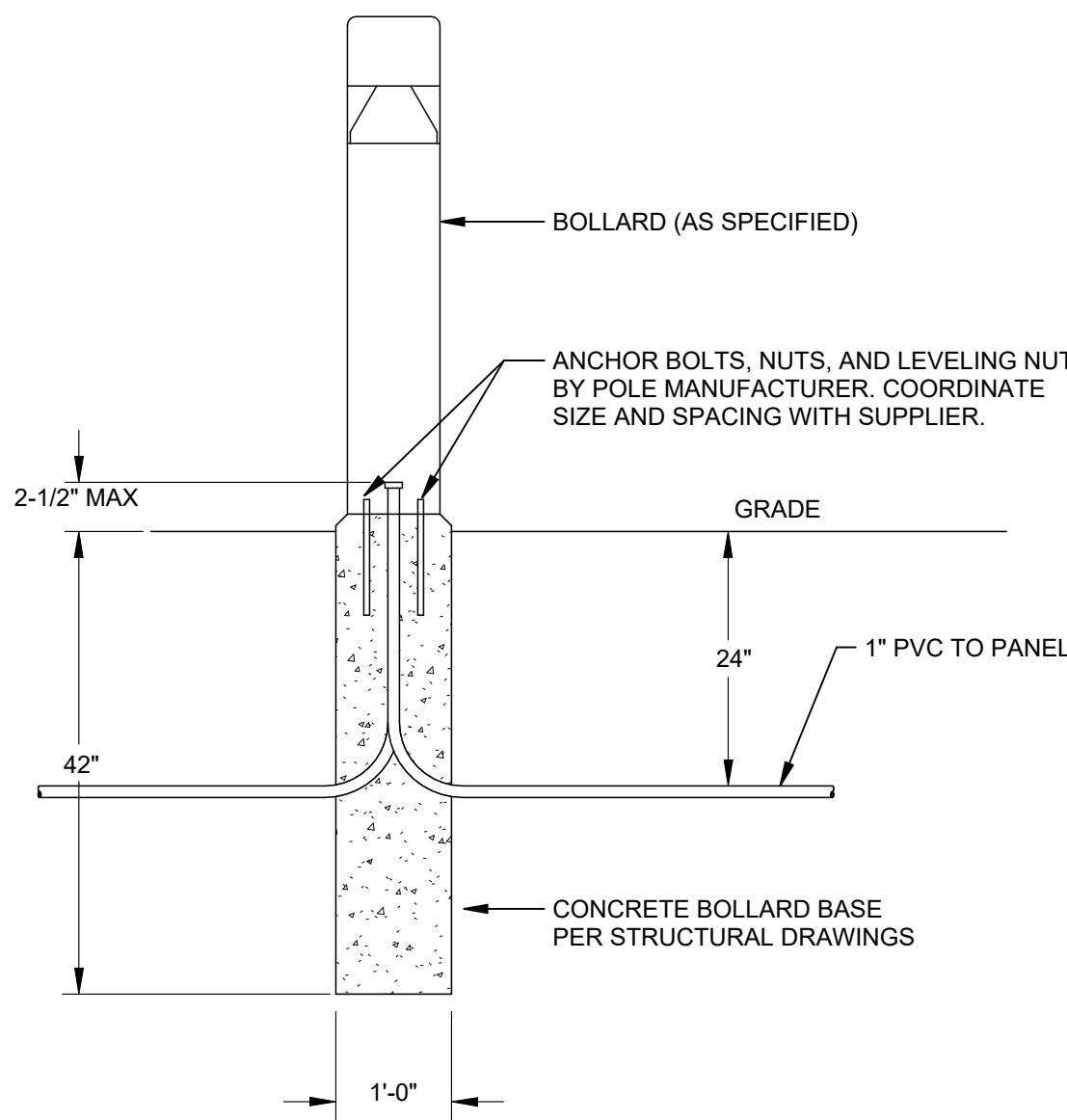
**5 WIRING DEVICE IDENTIFICATION DETAIL**  
NOT TO SCALE



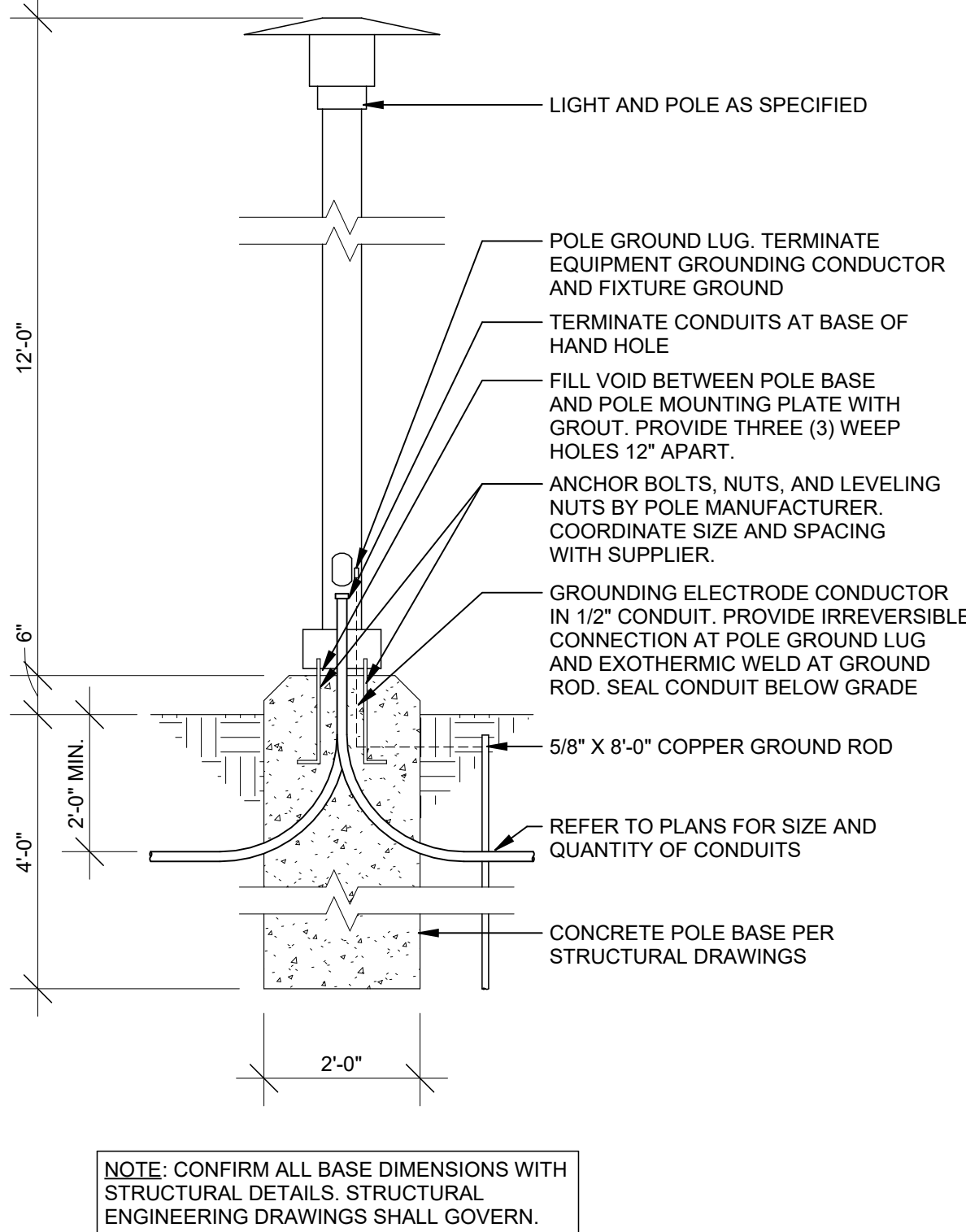
**6 ELECTRICAL RACEWAY IDENTIFICATION DETAIL**  
NOT TO SCALE



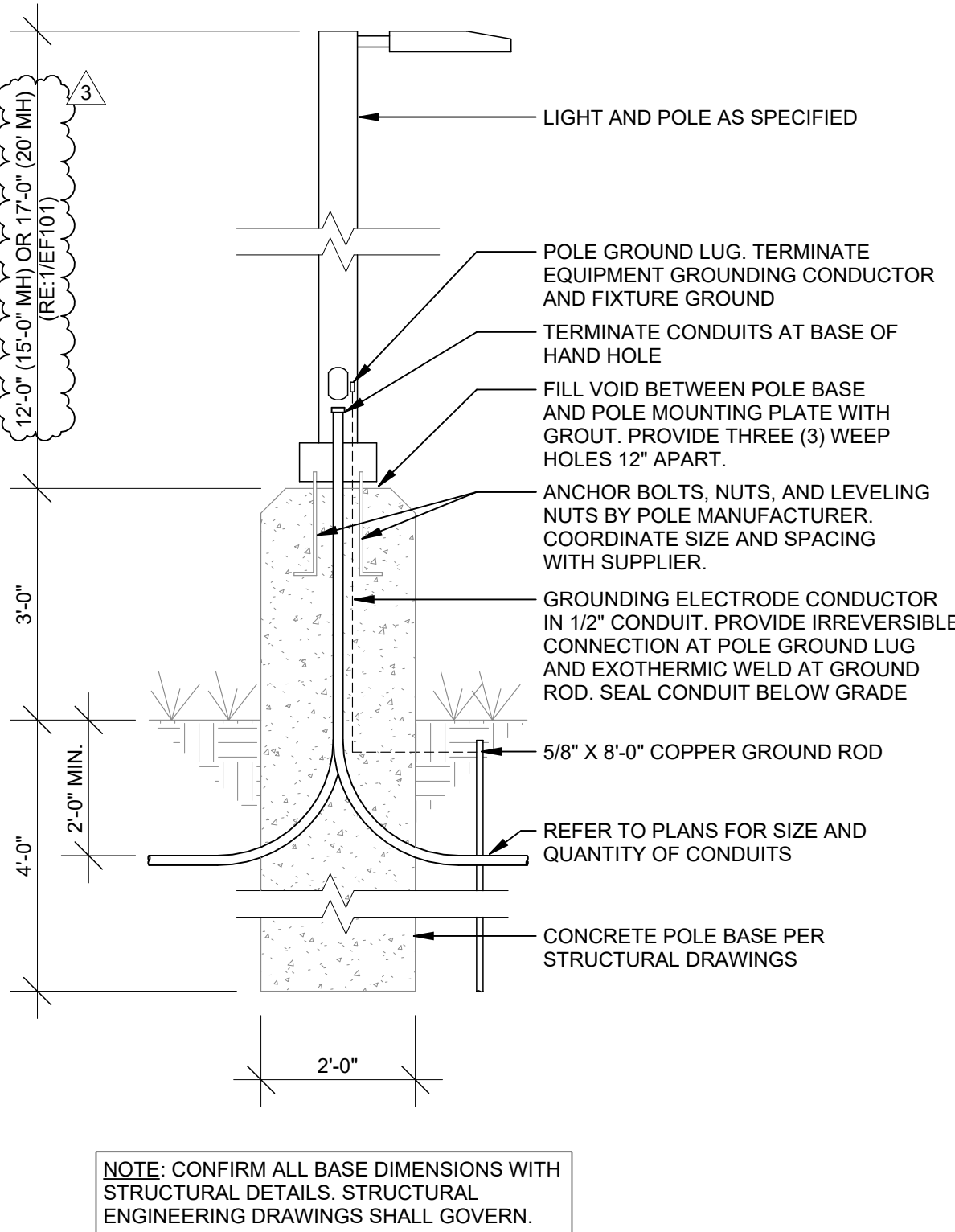
**1 BOLLARD INSTALLATION DETAIL**  
NOT TO SCALE



**2 POLE BASE DETAIL - SHORT BASE**  
NOT TO SCALE



**3 POLE BASE DETAIL - TALL BASE**  
NOT TO SCALE





PANELBOARD: N0S4

BUS AMPS: 600 A  
MAIN SIZE/TYPE: MLO  
VOLT/SPHASE: 480Y/277 V, 3PH, 4W  
SUPPLIED BY: N0S4DP  
AIC RATING: 22,000 AIC  
FAULT CURRENT: 20,071 A  
CUM. VOLT. DROP: 0.94%  
MOUNTING: SURFACE  
LOCATION: ELEC. 021

CKT NO.	DESCRIPTION	NOTES	WIRE SIZE	GND SIZE	BKR AMP	P	A	B	C	P	BKR AMP	GND SIZE	WIRE SIZE	NOTES	DESCRIPTION	CKT NO.	
3	WSHP 1-01				15	3	1383	4655	1383	90	1	40	10	8	INV	2	
5											1	20			LTG-STAIR (ST-1)	4	
7									1383	1250	1	20			LTG-EXTERIOR PARKING	6	
9	WSHP 1-02				15	3	3458	1862	3458	2053	1	20			LTG-EXTERIOR AREA & FLAG	8	
11											1	20			LTG-CORRIDORS	10	
13	WSHP 1-03				15	1	1911	1330			1	20			LTG-LOWER LEVEL DISPATCH	12	
15	WSHP 1-04, 06, 07		10	10	30	1		5872	1616		1	20			LTG-LOWER LEVEL TRAINING	14	
17										3209	2466	1	20		LTG-TRAINING	16	
19	WSHP 1-05				15	3	3209	0			1	20	--	--	LTG-EOC & SUPPORT	18	
21								3209	0		1	20	--	--	SPARE	20	
23										5782	0	1	20	--	SPARE	22	
25	WSHP 2-01, 10		10	10	30	3	5782	0			1	20	--	--	SPARE	24	
27											1	20	--	--	SPARE	26	
29	WSHP 2-02				15	1		5782	0		1	20	--	--	SPARE	28	
31	WSHP 2-03, 04, 11		10	10	30	1	5512	9		1801	1120	1	15		EF-1	30	
33																32	
35	WSHP 2-05				15	3		2573	9		3	50			CRAC-1	34	
37							2573	9								36	
39								2573	9		3	50			CRAC-2	38	
41	WSHP 2-06				15	3			2573	9						40	
43							2573	9								42	
45	WSHP 2-08				15	1		2327	9		3	50			CRAC-3	44	
47	WSHP 2-09				15	1				1911	9					46	
49	WSHP 2-12				15	1	1801	2573	--	2573	--	3	15			48	
51	EQUIPPED SPACE	--	--	--	--	--	--	--	--	--	--	--	--	--	CRCU-1	50	
53	EQUIPPED SPACE	--	--	--	--	--	--	--	--	--	--	--	--	--		52	
55							4703	2573	4703	2573	4703	2573	3	15	CRCU-2	54	
57	EF-1		10	10	25	3	5423	2573	5423	2573	5423	2573	3	15		56	
59																58	
61																60	
63	MP-1		10	10	30	3	5423	2573	5423	2573	5423	2573	3	15	CRCU-3	62	
65																64	
67							5423	2904	5423	2904	5423	2904	3	30	10	10	66
69	MP-2		10	10	30	3	5423	--	5423	--	5423	--	3	--	--	--	68
71																70	
73							5423	--	5423	--	5423	--	3	--	--	--	72
75	MP-3		10	10	30	3		5423	--	5423	--	3	--	--		EQUIPPED SPACE	74
77																76	
79							581	53480	581	55060	581	55490	3	250	350	OL	78
81	MP-4				20	3										T-N052	80
83																	82
TOTAL LOAD:							121733 VA	113199 VA	118711 VA								
TOTAL AMPS:							443 A	409 A	432 A								
LOAD BALANCE:							4.04%	-3.93%	1.47%								

LOAD CLASSIFICATION	CONN. LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANELBOARD GENERAL NOTES:
COOLING	14110 VA	100.00%	14110 VA	A. WIRE AND GROUND SIZE SHALL BE #12 UNLESS OTHERWISE NOTED.
LIGHTING	18983 VA	125.00%	23728 VA	
MOTORS	60379 VA	100.00%	60379 VA	
RECEPTACLES	120140 VA	54.16%	65070 VA	
MISC EQUIP	140031 VA	100.00%	140031 VA	

PANELBOARD TOTALS
TOTAL CONN. LOAD: 353643 VA
TOTAL EST. DEMAND LOAD: 303318 VA
TOTAL CONN. CURRENT: 425 A
TOTAL EST. DEMAND CURRENT: 365 A

PANELBOARD: N0S2A

BUS AMPS: 400 A  
MAIN SIZE/TYPE: 400A MCB  
VOLT/SPHASE: 208Y/120 V, 3PH, 4W  
SUPPLIED BY: T-N0S2  
AIC RATING: 10,000 AIC  
FAULT CURRENT: 4,876 A  
CUM. VOLT. DROP: 1.25%  
MOUNTING: SURFACE  
LOCATION: ELEC. 021

60A, 3P SUBFEED BREAKER

CKT NO.	DESCRIPTION	NOTES	WIRE SIZE	GND SIZE	BKR AMP	P	A	B	C	P	BKR AMP	GND SIZE	WIRE SIZE	NOTES	DESCRIPTION	CKT NO.
1	RCPT-139-EOC DISP. WALL N. A				20	1	460	0			3	30	--	--	SPD	2
3	RCPT-139-EOC DISP. WALL E. A				20	1		460	0		1	20				4
5	SPARE		--	--	20	1				0	0					6
7	RCPT-139-EOC DISP. WALL N. B				20	1	460	720			1	20			RCPT - CONFERENCE 140 FLR	8
9	RCPT-139-EOC DISP. WALL E. B				20	1		460	1080		1	20			RCPT-139-EOC FLR A	10
11	SPARE		--	--	20	1				0	1080	1	20		RCPT-139-EOC FLR B	12
13	RCPT-139-EOC DISP. WALL N. C				20	1	460	720			1	20			RCPT-139-EOC FLR C	14
15	RCPT-139-EOC DISP. WALL E. C				20	1		460	1080		1	20			RCPT-139-EOC FLR D	16
17	SPARE		--	--	20	1				0	1080	1	20		RCPT-139-EOC FLR E	18
19	RCPT-139-EOC DISP. WALL N. D				20	1	460	720			1	20			RCPT-139-EOC FLR F	20
21	SPARE		--	--	20	1				0	500	1	20		RCPT-139-EOC DESK	22
23	RCPT-016-POLICE CAPT.				20	1				1260	720	1	20		RCPT-139-EOC	24
25	RCPT-015-POLICE SUPV				20	1	1260	0				--	--		SPARE	26
27	RCPT-011-CORR.012-013 RR				20	1			1260	1200					RCPT-148-BREAK MICROWAVE	28
29	RCPT-007-QA				20	1				1260	1500	1	20		RCPT-148-BREAK COFFEE	30
31	RCPT-019-CONFERENCE				20	1	1260	540				1	20		RCPT-148-BREAK COUNTER	32
33	RCPT-155-TRAINING FLR BXS 1				20	1			1440	1380		1	20		RCPT-148-BREAK DISHWASHER	34
35	RCPT-155-TRAINING FLR BXS 2				20	1				1440	800	1	20		RCPT-148-BREAK FRIDGE	36
37	RCPT-155-TRAINING FLR BXS 3				20	1	1440	1440				1	20		RCPT-136.137.138.149	38
39	RCPT-155-TRAINING FLR BXS 4				20	1			1440	0	1	20	--	--	SPARE	40
41	RCPT-155-TRAINING FLR BXS 5				20	1				1440	0	1	20	--	SPARE	42
43	RCPT-155-TRAINING FLR BXS 6				20	1	1440	1260				1	20		RCPT-148-SERVER GENERAL	44
45	RCPT-155-SOUTH WALL				20	1			1080	600		1	20		PWR-135/138 STORM DOOR	46
47	RCPT-155-S.W. DISPLAY/PODIUM				20	1				900	1440	1	20		RCPT-017-TRAINING TV's	48
49	RCPT-155-WEST WALL/DISPLAY				20	1	1080	1440				1	20		RCPT-017-DISPATCH TRAINING	50
51	RCPT-155-N.W. DISPLAY/PODIUM				20	1				900	1200	1	20		RCPT-010-COPIER	52
53	RCPT-155 NORTH WALL				20	1				1080	1200	1	20		RCPT-010-SHREDDER	54
55	RCPT-150-CORR. CREDENZA				20	1	900	540				1	20		RCPT-010-COPY/WORK	56
57	RCPT-150-CORR. WATERICE DISP.				20	1				800	1440	1	20		RCPT-005-FIRE DISPATCH N TV's	58
59	RCPT-150-CORR. WATERFILLER	GF			20	1				600	900	1	20		RCPT-004-POLICE DISPATCH S TV's	60
61	RCPT-150-CORR. DISPLAYS				20	1	720	1080				1	20		RCPT-004-POLICE DISPATCH S TV's	62
63	RCPT-151-DRIVING SIM				20	1				540	1440	1	20		RCPT-004.005-DISPATCH GEN	64
65	RCPT-152-EMS SIM 1				20	1				720	1080	1	20		RCPT-147 UPS/166 STOR	66
67	RCPT-154-VIEWING				20	1	900	1260				1	20		RCPT-145 AC - EMERG. MGMT	68
69	RCPT-139-EOC U.C. FRIDGE				20	1				400	1080	1	20		RCPT-144-PLANNER	70
71	RCPT-139-EOC COFFEE 1				20	1				1600	1080	1	20		RCPT-143-CONFERENCE	72
73	RCPT-139-EOC COFFEE 2				20	1	1600	1080				1	20		RCPT-142-CONFERENCE	74
75	SPARE		--	--	20	1				0	1080	1	20		RCPT-140-CONF. DISP.	76
77	SPARE		--	--	20	1				0	1080	1	20		RCPT-140-CONFERENCE	78
79	SPARE		--	--	20	1	0	360				1	20		RCPT-141-STORAGE COPIER	80
81	SPARE		--	--	20	1				0	1200	1	20		RCPT-141-PLOTTER	82
83	SPARE		--	--	20	1				0	0		--	--	SPARE	84
85	RCPT-009-MICROWAVE 3				20	1	1200	600				1	20		PWR-EAST GATE	86
87	RCPT-009-MICROWAVE 2				20	1				1200	600	1	20		PWR-WEST GATE	88
89	RCPT-009-COUNTER RCPTS				20	1				540	600	1	20		PWR - STORM DOOR	90
91	RCPT-005-FIRE DISPATCH S TV's				20	1	1260	0				--	--		SPARE	92
93	RCPT-009-DISHWASHER				20	1				1380	0	1	20	--	SPARE	94
95	RCPT-009-MICROWAVE 1				20	1				1200	0	1	20	--	SPARE	96
97	RCPT-009-COFFEE				20	1	1500	300							PWR - MOTORIZED DAMPERS	98
99	RCPT-009-WATERICE DISPENSER				20	1				180	200	1	20		PWR - FIRE/SMOKE DAMPERS	100
101	RCPT-009-FRIDGE 1				20	1				1600	1200	1	20		GEN 1 - BATTERY CHARGER	102
103	RCPT-009-COUNTER RCPTS 2				20	1	360	1500				1	20		GEN 1 - COOLANT HEATER	104
105	RCPT-009-FIRE SUPV				20	1				1260	500	1	20		GEN 1 - MISC HEATERS	106
107	SPARE		--	--	20	1				0	1200	1	20		GEN 2 - BATTERY CHARGER	108
109	EQUIPPED SPACE		--	--	1		--	1500							GEN 2 - COOLANT HEATER	110
111	EQUIPPED SPACE		--	--	1					500					GEN 2 - MISC HEATERS	112
113	EQUIPPED SPACE		--	--	1						600	1	20		PWR-157-BAS	114
115	EQUIPPED SPACE		--	--	1		--	500			--	600	1	20	PWR-020-FACP	116
117	EQUIPPED SPACE		--	--	1					600	--		1	15	RP1 & AQUASTAT	118
119	EQUIPPED SPACE		--	--	1						--	6000	2	80	EWH1	120
121	EQUIPPED SPACE		--	--	1		--	6000			--					122
123	EQUIPPED SPACE		--	--	1					6000	--				EWH2	124
125	EQUIPPED SPACE		--	--	1											126
TOTAL LOAD:							40280 VA	35660 VA	42280 VA							
TOTAL AMPS:							342 A	297 A	358 A							
LOAD BALANCE:							4.10%	-9.44%	9.18%							







TECHNOLOGY SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED.

STANDARD MOUNTING HEIGHTS	
TELECOM BACKBOARD	100"
LADDER RACK IN TELECOM ROOMS	90"
TELEPHONE WALL OUTLET	48"
TELEPHONE, DATA OUTLET	SAME AS ADJACENT DEVICE, UNO
TELEVISION OUTLETS	REFER TO ARCH DRAWINGS
PBB/SBB	98"
WALL CLOCK	84"
INTERCOM	48"
CARD READER	48"

USE THE DEFAULT MOUNTING HEIGHTS SHOWN ABOVE UNLESS OTHERWISE NOTED IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ARE ABOVE FINISHED FLOOR OR ABOVE FINISHED GRADE TO TOP OF OUTLET BOX. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ABBREVIATIONS	
A AMPERES	LCC LIMITED COMBUSTIBLE
AC ABOVE COUNTER	LEC LOCAL EXCHANGE CARRIER
ACP ACCESS CONTROL PANEL	LED LIGHT-EMITTING DIODE
ADA AMERICANS WITH DISABILITIES ACT	LF LINEAR FEET
AFC ABOVE FINISHED CEILING	MAN METROPOLITAN AREA
AFF ABOVE FINISHED FLOOR	NETWORK
AFG ABOVE FINISHED GRADE	MASTER ANTENNA
AHJ AUTHORITY HAVING JURISDICTION	MATV TELEVISION
ANSI AMERICAN NATIONAL STANDARDS INSTITUTE	MBS MAINTENANCE BYPASS
AP ACCESS POINT	MC MAIN CROSS-CONNECT
AV AUDIO-VIDEO	MDF MAIN DISTRIBUTION FRAME
AWG AMERICAN WIRE GAUGE	MFR MANUFACTURER
BAS BUILDING AUTOMATION SYSTEM	MH MAINTENANCE HOLE
BD BUILDING DISTRIBUTOR	MM MULTIMODE
BOF BUILDING DISTRIBUTION FRAME	MPOE MAIN POINT OF ENTRANCE
BFC BELOW FINISHED CEILING	MPOP MAIN POINT OF PRESENCE
BR BIOMETRIC READER	MTD MOUNTED
C CONDUIT	NIA NOT APPLICABLE
CC CENTRAL CONTROL DOOR CONTROL SYSTEM	NEC NATIONAL ELECTRICAL CODE
CAT CATEGORY	NFPA NATIONAL FIRE PROTECTION ASSOCIATION
CATV COMMUNITY ANTENNA TELEVISION	NIC NOT IN CONTRACT
CCTV CLOSED CIRCUIT TELEVISION	NM NANOMETER
CD CAMPUS DISTRIBUTOR	NRTL NATIONALLY RECOGNIZED TESTING LAB
CMP COMMUNICATIONS PLENUM JACKET	NVR NETWORK VIDEO RECORDER
CMR COMMUNICATIONS RISER JACKET	OC ON CENTER
DAS DISTRIBUTED ANTENNA SYSTEM	OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
dB DECIBELS	OSP OUTSIDE PLANT
DCS DOOR CONTROL SYSTEM	PBB PRIMARY BONDING BUSBAR
DEMO DEMOLITION	PBX PRIVATE BRANCH EXCHANGE
DSP DIGITAL VIDEO RECORDER	POE POWER OVER ETHERNET
DVR DIGITAL VIDEO RECORDER	PON PASSIVE OPTICAL NETWORK
E EXISTING	POTS PLAIN OLD TELEPHONE SERVICE
EC ELECTRICAL CONTRACTOR	PSTN PUBLIC SWITCHED TELEPHONE NETWORK
ECIA ELECTRONIC COMPONENTS INDUSTRY ASSOCIATION	QTY QUANTITY
EMI ELECTROMAGNETIC INTERFERENCE	RCDQ REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
EMS ENERGY MANAGEMENT SYSTEM	RMC RIGID METAL CONDUIT
EMT ELECTRICAL METALLIC TUBING	RMS REMOTE MONITORING
ER EQUIPMENT ROOM	RU RACK UNIT
ETR EXISTING TO REMAIN	SBB SECONDARY BONDING
F FIRE ALARM	SCS STRUCTURED CABLING
FAAP FIRE ALARM ANNUNCIATOR PANEL	SF SQUARE FEET
FACP FIRE ALARM CONTROL PANEL	SM SINGLEMODE
FD FLOOR DISTRIBUTOR	SP SCRAMBLE PAD
FMC FLEXIBLE METAL CONDUIT	TBB TELECOMMUNICATIONS BONDING BACKBONE
FOR FIBER OPTIC RACK	TBD TO BE DETERMINED
FS FIRE STOP SYSTEM	TIA TELECOMMUNICATIONS INDUSTRY ASSOCIATION
FLTR FLOOR	TGB TELECOMMUNICATIONS GROUND BUS BAR
FLUTP FLOOR TWISTED PAIR (SHIELDED)	TMGB TELECOMMUNICATIONS MAIN GROUND BUS BAR
GC GENERAL CONTRACTOR	TR TELECOMMUNICATIONS ROOM
GE GROUNDING EQUALIZER	TR TYPICAL
GT GUARD TOUR CARD READER	UNO UNLESS NOTED OTHERWISE
GYP GYPSUM BOARD	UL UNDERWRITER
HC HORIZONTAL CROSS-CONNECT	UPS LABORATORIES, INC. UNINTERRUPTIBLE POWER SUPPLY
HCM HORIZONTAL CABLE MANAGER	UPSDP UNINTERRUPTIBLE POWER SUPPLY DISRTIBUTION PANEL
HH HAND HOLE	UJUTP UNSHIELDED TWISTED PAIR (VOLTS)
HZ HERTZ	V VERTICAL CABLE MANAGER
ICS INTERCOM CONTROL SYSTEM	VCS VIDEO CONTROL SYSTEM
IMC INTERMEDIATE METAL CONDUIT	VMS VIDEO MANAGEMENT SYSTEM
IP INTERNET PROTOCOL	W WIRE
ISP INTERNET SERVICE PROVIDER	WAO WIDE AREA NETWORK
ISP INSIDE PLANT CABLE	WAP WORK AREA OUTLET
K ELECTRICALLY OPERATED BY KEY	WAP WIRELESS ACCESS POINT
KP KEY PAD	WP WEATHER PROOF
KVM KEYBOARD VIDEO MOUSE SWITCH	WFO WALL PHONE OUTLET
JB JUNCTION BOX	WR WEATHER RESISTANT
JBOX JUNCTION BOX	WT WATERTIGHT
LAN LOCAL AREA NETWORK	XP EXPLOSION-PROOF

ANNOTATION

- 1 TECHNOLOGY PLAN CALLOUT
- 1 EQUIPMENT DESIGNATION
- CONNECTION POINT OF NEW WORK TO EXISTING
- 1 1 DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER. LOWER NUMBER INDICATES SHEET NUMBER
- 1 1 SECTION CUT DESIGNATION

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINE-TYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF THE NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	NEW
FUTURE	

PATHWAYS	
WIRE MESH CABLE TRAY (W=WIDTH, "H=HEIGHT)	
UNDERGROUND CONDUIT ("F=QUANTITY, "D=CONDUIT DIAMETER)	
CONDUIT ("F=QUANTITY, "D=CONDUIT DIAMETER)	
CABLE SUPPORTS OR J-HOOKS	
CONDUIT SLEEVE ("F=QUANTITY, "D=CONDUIT DIAMETER) (PROVIDE 40% FILL FOR CABLING)	
UL FIRESTOP SYSTEM ASSEMBLY ("F=QUANTITY, "D=CONDUIT DIAMETER)	
PULL BOX	
SPLICE	
LADDER RACK (W=WIDTH, "H=HEIGHT)	

ROUGH-IN OUTLETS	
WALL BOX ROUGH-IN	
FLOOR BOX ROUGH-IN	
POKE THROUGH ROUGH-IN	
CEILING ROUGH-IN	
DEVICE TAGGING AND INFORMATION: XX = DEVICE DESIGNATION(S)	
- AR = RESCUE ASSISTANCE	
- AV = AUDIO/VIDEO	
- CAM = SECURITY CAMERA	
- CR = CARD READER	
- D = DATA	
- F = FURNITURE FEED	
- IC = VIDEO INTERCOM	
- KCPAD = KEYPAD	
- MD = MOTION DETECTOR	
- MP = MICROPHONE	
- PB = PANIC BUTTON	
- RE = REQUEST TO EXIT	
- S = SPEAKER	
- TV = TELEVISION	

TELECOM SYMBOLS LEGEND	
XX WALL PHONE OUTLET, "XX" INDICATES NUMBER OF PHONE PORTS.	
P/D WALL PHONE/DATA OUTLET, "P" INDICATES NUMBER OF PHONE PORTS, "D" INDICATES NUMBER OF DATA PORTS.	
XX WALL DATA OUTLET, "XX" INDICATES TYPE/NUMBER OF DATA PORTS.	
XX CEILING DATA OUTLET, "XX" INDICATES TYPE/NUMBER OF DATA PORTS.	
WIRING DEVICE TAGGING AND INFORMATION: XX = DEVICE DESIGNATION(S)	
- #D = DISPATCH FEED, # INDICATES NUMBER OF PORTS	
- #F = FURNITURE FEED, # INDICATES NUMBER OF PORTS	
- DW = DISPLAY WALL AV BACKBOX	
- TV = 2 PORT DATA WITH 1 COAX FOR TELEVISION.	
- WAP = 2 PORT DATA FOR WIRELESS ACCESS POINT	
- WPO = WALL PHONE OUTLET	
# FLOOR DATA OUTLET, "F" INDICATES NUMBER OF DATA PORTS.	
P/D FLOOR PHONE/DATA OUTLET, "P" INDICATES NUMBER OF PHONE PORTS, "D" INDICATES NUMBER OF DATA PORTS.	

EQUIPMENT SYMBOLS LEGEND	
XX WALL PANEL, "XX" INDICATES TYPE. CHECK ABBREVIATIONS LIST FOR TYPE.	
4-POST RACK	
2-POST RACK	

SECURITY SYMBOLS LEGEND	
CAMERA, ARC REPRESENTS VIEWING ANGLE AND DIRECTION	
XX: CAMERA NUMBER	
YY: CAMERA TYPE	
ZZ: CAMERA HEIGHT (IF APPLICABLE)	
XX WALL MOUNT SYMBOL	
XX PEDESTAL MOUNT SYMBOL	
XX CEILING/SURFACE MOUNT SYMBOL	

DEVICE TAGGING AND INFORMATION	
XX = DEVICE DESIGNATION(S)	
- AR = RESCUE ASSISTANCE TWO-WAY COMMUNICATOR	
- CR = PROXIMITY CARD READER	
- # = CARD READER DESIGNATION(S)	
- 1 = MULTIMOUNT CARD READER	
- 2 = SINGLE GANG CARD READER	
- DR = DOOR RELEASE	
- DS = DOOR CONTACT/DOOR POSITION SWITCH	
- ER = EMERGENCY PHONE	
- GB = GLASS BREAK SENSOR	
- IC = VIDEO INTERCOM	
- # = VIDEO INTERCOM DESIGNATION(S)	
- 1 = VIDEO INTERCOM	
- 2 = VIDEO INTERCOM W/ CARD READER	
- IH = INTRUSION ALARM HUB	
- IK = INTRUSION ALARM KEYPAD	
- IS = INTRUSION ALARM SPEAKER	
- MD = MOTION DETECTOR	
- PB = PANIC BUTTON	
- RE = REQUEST TO EXIT	
- TP = TRAFFIC ARM PUSHBUTTON - OPEN/CLOSE	
- VD = VEHICLE DETECTOR	

AUDIO VISUAL DEVICES	
XX WALL AUDIO VISUAL DEVICE	
XX CEILING/SURFACE AUDIO VISUAL DEVICE	
XX FLOOR AUDIO VISUAL DEVICE	
DEVICE TAGGING AND INFORMATION: XX = DEVICE DESIGNATION(S)	
- AV = HDMI WALL PLATE	
- C = AUDIO VISUAL CAMERA	
- D1 = RECESSED DISPLAY BOX (1 DATA, 1 HDMI)	
- M = MICROPHONE	
- RK = AV RACK LOCATION	
- S = SPEAKER	
# = SPEAKER ZONING INFORMATION	
- Z1 = ZONE 1	
- Z2 = ZONE 2	
- Z3 = ZONE 3	
- Z4 = ZONE 4	
- SM = SOUND MASKING SPEAKER	
- TP = TOUCH PANEL	

TELECOM SYMBOLS LEGEND	
XX WALL PHONE OUTLET, "XX" INDICATES NUMBER OF PHONE PORTS.	
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XX WALL DATA OUTLET, "XX" INDICATES TYPE/NUMBER OF DATA PORTS.	
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WIRING DEVICE TAGGING AND INFORMATION: XX = DEVICE DESIGNATION(S)	
- #D = DISPATCH FEED, # INDICATES NUMBER OF PORTS	
- #F = FURNITURE FEED, # INDICATES NUMBER OF PORTS	
- DW = DISPLAY WALL AV BACKBOX	
- TV = 2 PORT DATA WITH 1 COAX FOR TELEVISION.	
- WAP = 2 PORT DATA FOR WIRELESS ACCESS POINT	
- WPO = WALL PHONE OUTLET	
# FLOOR DATA OUTLET, "F" INDICATES NUMBER OF DATA PORTS.	
P/D FLOOR PHONE/DATA OUTLET, "P" INDICATES NUMBER OF PHONE PORTS, "D" INDICATES NUMBER OF DATA PORTS.	

EQUIPMENT SYMBOLS LEGEND	
XX WALL PANEL, "XX" INDICATES TYPE. CHECK ABBREVIATIONS LIST FOR TYPE.	
4-POST RACK	
2-POST RACK	

SECURITY SYMBOLS LEGEND	
CAMERA, ARC REPRESENTS VIEWING ANGLE AND DIRECTION	
XX: CAMERA NUMBER	
YY: CAMERA TYPE	
ZZ: CAMERA HEIGHT (IF APPLICABLE)	
XX WALL MOUNT SYMBOL	
XX PEDESTAL MOUNT SYMBOL	
XX CEILING/SURFACE MOUNT SYMBOL	

DEVICE TAGGING AND INFORMATION	
XX = DEVICE DESIGNATION(S)	
- AR = RESCUE ASSISTANCE TWO-WAY COMMUNICATOR	
- CR = PROXIMITY CARD READER	
- # = CARD READER DESIGNATION(S)	
- 1 = MULTIMOUNT CARD READER	
- 2 = SINGLE GANG CARD READER	
- DR = DOOR RELEASE	
- DS = DOOR CONTACT/DOOR POSITION SWITCH	
- ER = EMERGENCY PHONE	
- GB = GLASS BREAK SENSOR	
- IC = VIDEO INTERCOM	
- # = VIDEO INTERCOM DESIGNATION(S)	
- 1 = VIDEO INTERCOM	
- 2 = VIDEO INTERCOM W/ CARD READER	
- IH = INTRUSION ALARM HUB	
- IK = INTRUSION ALARM KEYPAD	
- IS = INTRUSION ALARM SPEAKER	
- MD = MOTION DETECTOR	
- PB = PANIC BUTTON	
- RE = REQUEST TO EXIT	
- TP = TRAFFIC ARM PUSHBUTTON - OPEN/CLOSE	
- VD = VEHICLE DETECTOR	

AUDIO VISUAL DEVICES	
XX WALL AUDIO VISUAL DEVICE	
XX CEILING/SURFACE AUDIO VISUAL DEVICE	
XX FLOOR AUDIO VISUAL DEVICE	
DEVICE TAGGING AND INFORMATION: XX = DEVICE DESIGNATION(S)	
- AV = HDMI WALL PLATE	
- C = AUDIO VISUAL CAMERA	
- D1 = RECESSED DISPLAY BOX (1 DATA, 1 HDMI)	
- M = MICROPHONE	
- RK = AV RACK LOCATION	
- S = SPEAKER	
# = SPEAKER ZONING INFORMATION	
- Z1 = ZONE 1	
- Z2 = ZONE 2	
- Z3 = ZONE 3	
- Z4 = ZONE 4	
- SM = SOUND MASKING SPEAKER	
- TP = TOUCH PANEL	

TELECOM SYMBOLS LEGEND	
XX WALL PHONE OUTLET, "XX" INDICATES NUMBER OF PHONE PORTS.	
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XX WALL DATA OUTLET, "XX" INDICATES TYPE/NUMBER OF DATA PORTS.	
XX CEILING DATA OUTLET, "XX" INDICATES TYPE/NUMBER OF DATA PORTS.	
WIRING DEVICE TAGGING AND INFORMATION: XX = DEVICE DESIGNATION(S)	
- #D = DISPATCH FEED, # INDICATES NUMBER OF PORTS	
- #F = FURNITURE FEED, # INDICATES NUMBER OF PORTS	
- DW = DISPLAY WALL AV BACKBOX	
- TV = 2 PORT DATA WITH 1 COAX FOR TELEVISION.	
- WAP = 2 PORT DATA FOR WIRELESS ACCESS POINT	
- WPO = WALL PHONE OUTLET	
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P/D FLOOR PHONE/DATA OUTLET, "P" INDICATES NUMBER OF PHONE PORTS, "D" INDICATES NUMBER OF DATA PORTS.	

EQUIPMENT SYMBOLS LEGEND	
XX WALL PANEL, "XX" INDICATES TYPE. CHECK ABBREVIATIONS LIST FOR TYPE.	
4-POST RACK	
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SECURITY SYMBOLS LEGEND	
CAMERA, ARC REPRESENTS VIEWING ANGLE AND DIRECTION	
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- GB = GLASS BREAK SENSOR	
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- # = VIDEO INTERCOM DESIGNATION(S)	
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- MD = MOTION DETECTOR	
- PB = PANIC BUTTON	
- RE = REQUEST TO EXIT	
- TP = TRAFFIC ARM PUSHBUTTON - OPEN/CLOSE	
- VD = VEHICLE DETECTOR	

AUDIO VISUAL DEVICES	
XX WALL AUDIO VISUAL DEVICE	
XX CEILING/SURFACE AUDIO VISUAL DEVICE	
XX FLOOR AUDIO VISUAL DEVICE	
DEVICE TAGGING AND INFORMATION: XX = DEVICE DESIGNATION(S)	
- AV = HDMI WALL PLATE	
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- D1 = RECESSED DISPLAY BOX (1 DATA, 1 HDMI)	
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- S = SPEAKER	
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- Z1 = ZONE 1	
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- Z4 = ZONE 4	
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- TP = TOUCH PANEL	

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EQUIPMENT SYMBOLS LEGEND	
XX WALL PANEL, "XX" INDICATES TYPE. CHECK ABBREVIATIONS LIST FOR TYPE.	
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2-POST RACK	

SECURITY SYMBOLS LEGEND	
CAMERA, ARC REPRESENTS VIEWING ANGLE AND DIRECTION	
XX: CAMERA NUMBER	
YY: CAMERA TYPE	
ZZ: CAMERA HEIGHT (IF APPLICABLE)	
XX WALL MOUNT SYMBOL	
XX PEDESTAL MOUNT SYMBOL	
XX CEILING/SURFACE MOUNT SYMBOL	

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- TP = TRAFFIC ARM PUSHBUTTON - OPEN/CLOSE	
- VD = VEHICLE DETECTOR	

AUDIO VISUAL DEVICES	
XX WALL AUDIO VISUAL DEVICE	
XX CEILING/SURFACE AUDIO VISUAL DEVICE	
XX FLOOR AUDIO VISUAL DEVICE	
DEVICE TAGGING AND INFORMATION: XX = DEVICE DESIGNATION(S)	
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- RK = AV RACK LOCATION	
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# = SPEAKER ZONING INFORMATION	
- Z1 = ZONE 1	
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- Z3 = ZONE 3	
- Z4 = ZONE 4	
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XX WALL DATA OUTLET, "XX" INDICATES TYPE/NUMBER OF DATA PORTS.	
XX CEILING DATA OUTLET, "XX" INDICATES TYPE/NUMBER OF DATA PORTS.	
WIRING DEVICE TAGGING AND INFORMATION: XX = DEVICE DESIGNATION(S)	
- #D = DISPATCH FEED, # INDICATES NUMBER OF PORTS	
- #F = FURNITURE FEED, # INDICATES NUMBER OF PORTS	
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- TV = 2 PORT DATA WITH 1 COAX FOR TELEVISION.	
- WAP = 2 PORT DATA FOR WIRELESS ACCESS POINT	
- WPO = WALL PHONE OUTLET	
# FLOOR DATA OUTLET, "F" INDICATES NUMBER OF DATA PORTS.	
P/D FLOOR PHONE/DATA OUTLET, "P" INDICATES NUMBER OF PHONE PORTS, "D" INDICATES NUMBER OF DATA PORTS.	

EQUIPMENT SYMBOLS LEGEND	
XX WALL PANEL, "XX" INDICATES TYPE. CHECK ABBREVIATIONS LIST FOR TYPE.	
4-POST RACK	
2-POST RACK	

SECURITY SYMBOLS LEGEND	
CAMERA, ARC REPRESENTS VIEWING ANGLE AND DIRECTION	
XX: CAMERA NUMBER	
YY: CAMERA TYPE	
ZZ: CAMERA HEIGHT (IF APPLICABLE)	
XX WALL MOUNT SYMBOL	
XX PEDESTAL MOUNT SYMBOL	
XX CEILING/SURFACE MOUNT SYMBOL	

DEVICE TAGGING AND INFORMATION	
XX = DEVICE DESIGNATION(S)	
- AR = RESCUE ASSISTANCE TWO-WAY COMMUNICATOR	
- CR = PROXIMITY CARD READER	
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- DS = DOOR CONTACT/DOOR POSITION SWITCH	
- ER = EMERGENCY PHONE	
- GB = GLASS BREAK SENSOR	
- IC = VIDEO INTERCOM	
- # = VIDEO INTERCOM DESIGNATION(S)	
- 1 = VIDEO INTERCOM	
- 2 = VIDEO INTERCOM W/ CARD READER	
- IH = INTRUSION ALARM HUB	
- IK = INTRUSION ALARM KEYPAD	
- IS = INTRUSION ALARM SPEAKER	
- MD = MOTION DETECTOR	
- PB = PANIC BUTTON	
- RE = REQUEST TO EXIT	
- TP = TRAFFIC ARM PUSHBUTTON - OPEN/CLOSE	
- VD = VEHICLE DETECTOR	

AUDIO VISUAL DEVICES	
XX WALL AUDIO VISUAL DEVICE	
XX CEILING/SURFACE AUDIO VISUAL DEVICE	
XX FLOOR AUDIO VISUAL DEVICE	
DEVICE TAGGING AND INFORMATION: XX = DEVICE DESIGNATION(S)	
- AV = HDMI WALL PLATE	
- C = AUDIO VISUAL CAMERA	
- D1 = RECESSED DISPLAY BOX (1 DATA, 1 HDMI)	
- M = MICROPHONE	
- RK = AV RACK LOCATION	
- S = SPEAKER	
# = SPEAKER ZONING INFORMATION	
- Z1 = ZONE 1	
- Z2 = ZONE 2	
- Z3 = ZONE 3	
- Z4 = ZONE 4	
- SM = SOUND MASKING SPEAKER	
- TP = TOUCH PANEL	

TELECOM SYMBOLS LEGEND	
XX WALL PHONE OUTLET, "XX" INDICATES NUMBER OF PHONE PORTS.	
P/D WALL PHONE/DATA OUTLET, "P" INDICATES NUMBER OF PHONE PORTS, "D" INDICATES NUMBER OF DATA PORTS.	
XX WALL DATA OUTLET, "XX" INDICATES TYPE/NUMBER OF DATA PORTS.	
XX CEILING DATA OUTLET, "XX" INDICATES TYPE/NUMBER OF DATA PORTS.	
WIRING DEVICE TAGGING	





- GENERAL NOTES:**

1. REFER TO SHEET TG001 FOR GENERAL TECHNOLOGY NOTES.
- TECHNOLOGY PLAN NOTES:**

T2 PROVIDE (8) CAT6 DATA CABLES TOTAL TO DISPATCH LOCATION THROUGH FURNITURE FEED TO (2) PATCH PANELS INSTALLED IN THE CPU CABINET. PROVIDE (1) RED CABLE AND TERMINATION FOR 911, (1) PURPLE CABLE AND TERMINATIONS FOR FIRE CAD, (1) BLUE CABLE FOR PHONE, (1) BLUE CABLE AND TERMINATION FOR PD NETWORK, AND (1) BROWN CABLE AND TERMINATION FOR FIRE NETWORK TO DATA PATCH PANEL IN CPU CABINET. PROVIDE (2) YELLOW CABLES AND TERMINATIONS FOR RADIO CONSOLE, (1) WHITE CABLE AND TERMINATION FOR BACKUP RADIO REMOTE, AND (1) BLACK SPARE CABLE AND TERMINATION TO RADIO PATCH PANEL IN CPU CABINET.

T3 PROVIDE (8) CAT6 DATA CABLES TOTAL TO DISPATCH LOCATION THROUGH FURNITURE FEED TO (2) PATCH PANELS INSTALLED IN THE CPU CABINET. PROVIDE (1) RED CABLE AND TERMINATION FOR 911, (1) ORANGE CABLE AND TERMINATION FOR PD CAD, (1) GREEN CABLE AND TERMINATION FOR PHONE, AND (1) BLUE CABLE AND TERMINATION FOR PD NETWORK, AND (1) GREY CABLE AND TERMINATION FOR MOTOROLA ALARMS TO DATA PATCH PANEL IN CPU CABINET. PROVIDE (2) YELLOW CABLES AND TERMINATIONS FOR RADIO CONSOLE, (1) WHITE CABLE AND TERMINATION FOR BACKUP RADIO REMOTE, AND (1) BLACK SPARE CABLE AND TERMINATION TO RADIO PATCH PANEL IN CPU CABINET.

T4 PROVIDE (8) CAT6 DATA CABLES TOTAL TO DISPATCH LOCATION THROUGH FURNITURE FEED TO (2) PATCH PANELS INSTALLED IN THE CPU CABINET. PROVIDE (1) RED CABLE AND TERMINATION FOR 911, (1) ORANGE CABLE AND TERMINATION FOR PD CAD, (1) GREEN CABLE AND TERMINATION FOR PHONE, (1) BLUE CABLE AND TERMINATION FOR PD NETWORK, (1) GREY CABLE AND TERMINATION FOR MOTOROLA ALARMS, (2) YELLOW CABLES AND TERMINATIONS FOR RADIO CONSOLE, (1) WHITE CABLE AND TERMINATION FOR BACKUP RADIO REMOTE, AND (2) BLACK SPARE CABLE AND TERMINATION.

T5 POLICE SUPERVISOR TO HAVE (10) CAT6 DATA CABLES TOTAL PROVIDED. PROVIDE (1) RED CABLE AND TERMINATION FOR 911, (1) ORANGE CABLE AND TERMINATION FOR PD CAD, (1) GREEN CABLE AND TERMINATION FOR PHONE, (1) BLUE CABLE AND TERMINATION FOR PD NETWORK, (1) GREY CABLE AND TERMINATION FOR MOTOROLA ALARMS, (2) YELLOW CABLES AND TERMINATIONS FOR RADIO CONSOLE, (1) WHITE CABLE AND TERMINATION FOR BACKUP RADIO REMOTE, (1) GREY CABLE AND TERMINATIONS FOR MOTOROLA ALARMS, AND (2) SPARE BLACK CABLE AND TERMINATIONS.

T6 FIRE SUPERVISOR TO HAVE (11) CAT6 DATA CABLES TOTAL PROVIDED. PROVIDE (1) RED CABLE AND TERMINATION FOR 911, (1) CABLE FOR FIRE CAD, (1) GREEN CABLE AND TERMINATION FOR PHONE, (1) CABLE FOR PD NETWORK, (1) BROWN CABLE AND TERMINATION FOR FIRE NETWORK, (2) YELLOW CABLES AND TERMINATIONS FOR RADIO CONSOLE, (1) WHITE CABLE AND TERMINATION FOR BACKUP RADIO REMOTE, (1) GREY CABLE AND TERMINATIONS FOR MOTOROLA ALARMS, AND (2) SPARE BLACK CABLE AND TERMINATIONS.

T7 POLICE CAPTAIN TO HAVE (7) CAT6 DATA CABLES TOTAL PROVIDED. PROVIDE (1) CABLE FOR 911, (1) CABLE FOR PD CAD, (1) CABLE FOR PHONE, (1) CABLE FOR PD NETWORK, (1) CABLE FOR BACKUP RADIO REMOTE, AND (2) SPARE CABLE.

T8 QA TO HAVE (6) CAT6 DATA CABLES TOTAL PROVIDED. PROVIDE (1) GREEN CABLE AND TERMINATION FOR PHONE, (1) BLUE CABLE AND TERMINATION FOR PD NETWORK, (1) BROWN CABLE AND TERMINATION FOR FIRE NETWORK, AND (2) SPARE BLACK CABLES AND TERMINATIONS.

T9 PROVIDE (6) CAT6 DATA CABLES TOTAL TO DISPATCH LOCATION THROUGH FURNITURE FEED TO (2) PATCH PANELS INSTALLED IN THE CPU CABINET. PROVIDE (1) RED CABLE AND TERMINATION FOR 911, (1) PURPLE CABLE AND TERMINATION FOR FIRE CAD, (1) GREEN CABLE AND TERMINATION FOR PHONE, (1) BLUE CABLE AND TERMINATION FOR PD NETWORK, AND (1) BROWN CABLE AND TERMINATION FOR FIRE NETWORK TO DATA PATCH PANEL IN CPU CABINET. PROVIDE (2) YELLOW CABLES AND TERMINATIONS FOR RADIO CONSOLE, (1) WHITE CABLE AND TERMINATION FOR BACKUP RADIO REMOTE, AND (1) SPARE BLACK CABLE AND TERMINATION TO RADIO PATCH PANEL IN CPU CABINET.

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2 NE TUDOR RD  
LEE'S SUMMIT, MISSOURI 64086

REVISION DATES:

3	ADDENDUM #3	11/18/2024
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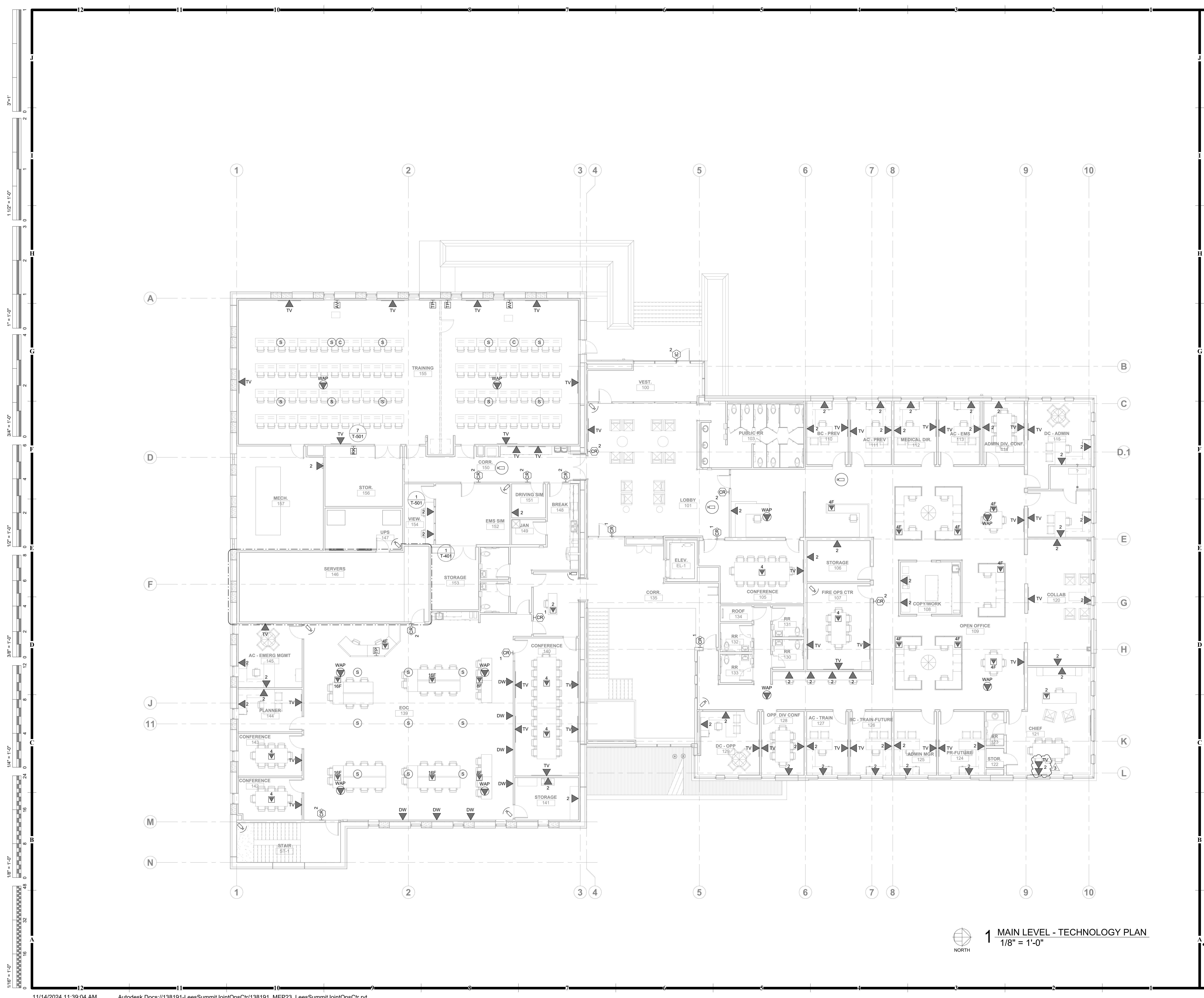
PROFESSIONAL SEAL

**T-100**

ISSUE DATE: NOVEMBER 1, 2024  
HOEFER WELKER #: 138191

**1 LOWER LEVEL - TECHNOLOGY PLAN**  
1/8" = 1'-0"





**GENERAL NOTES:**

- REFER TO SHEET TG001 FOR GENERAL TECHNOLOGY NOTES.
- SOUND MASKING SYSTEM IS PART OF ALTERNATE 5.

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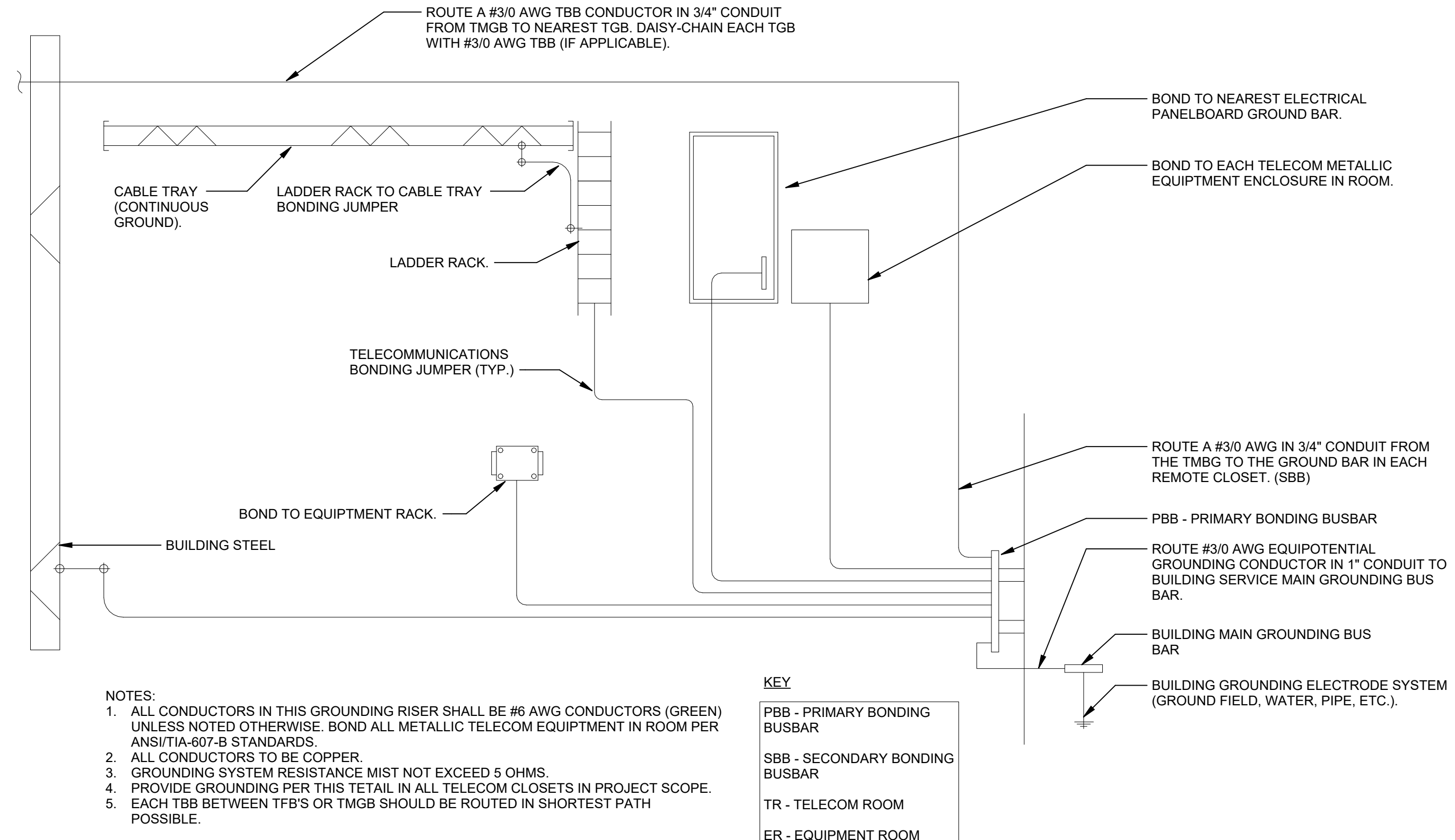
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**T-101**

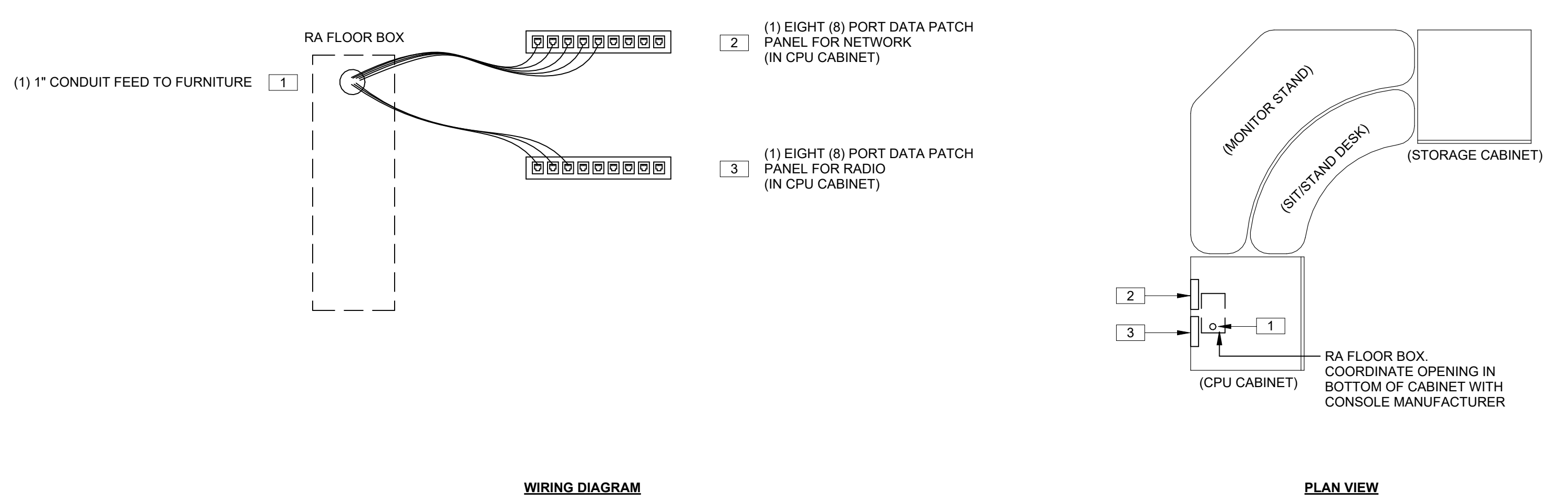
ISSUE DATE: NOVEMBER 1, 2024  
HOEFER WELKER #: 138191

**MAIN LEVEL - TECHNOLOGY PLAN**

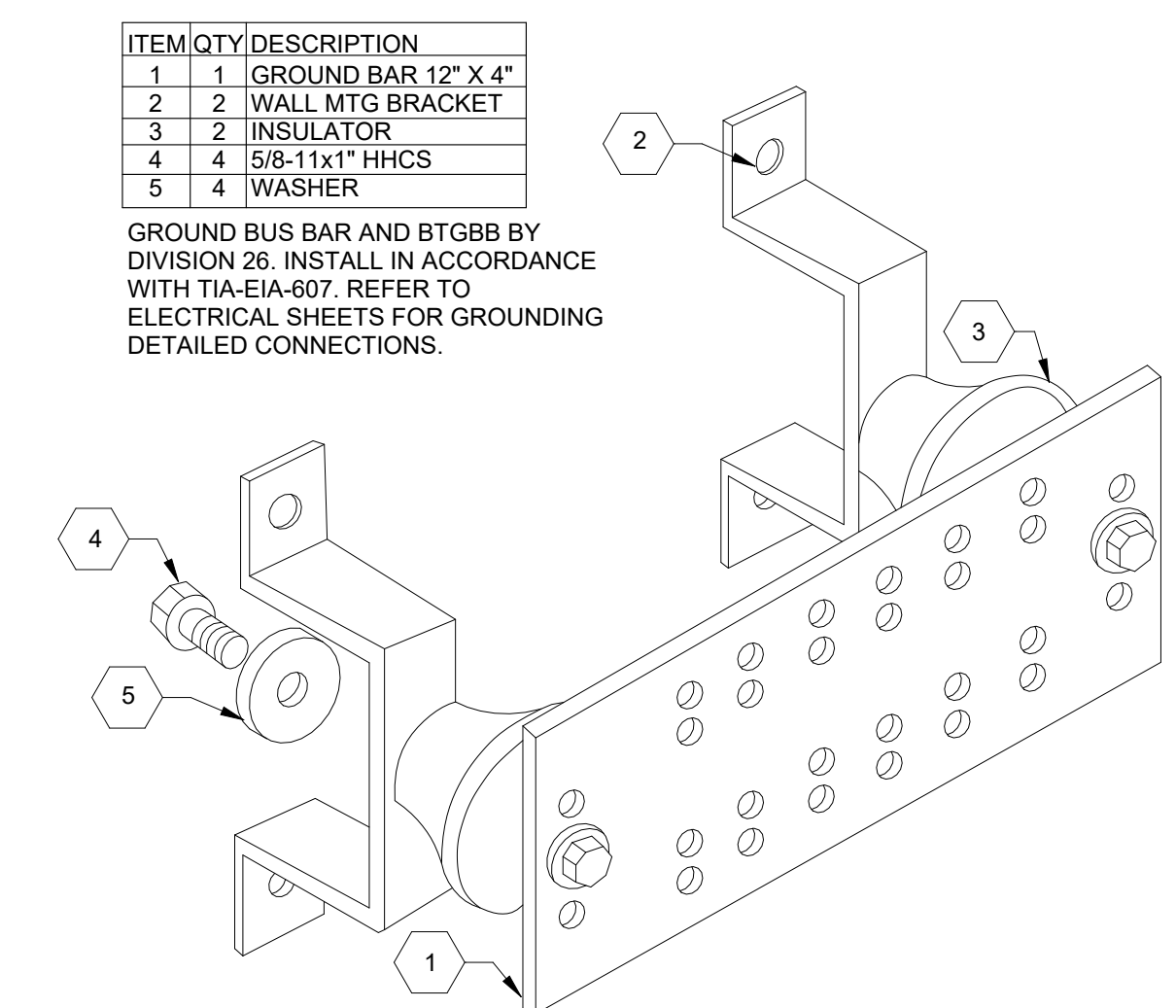




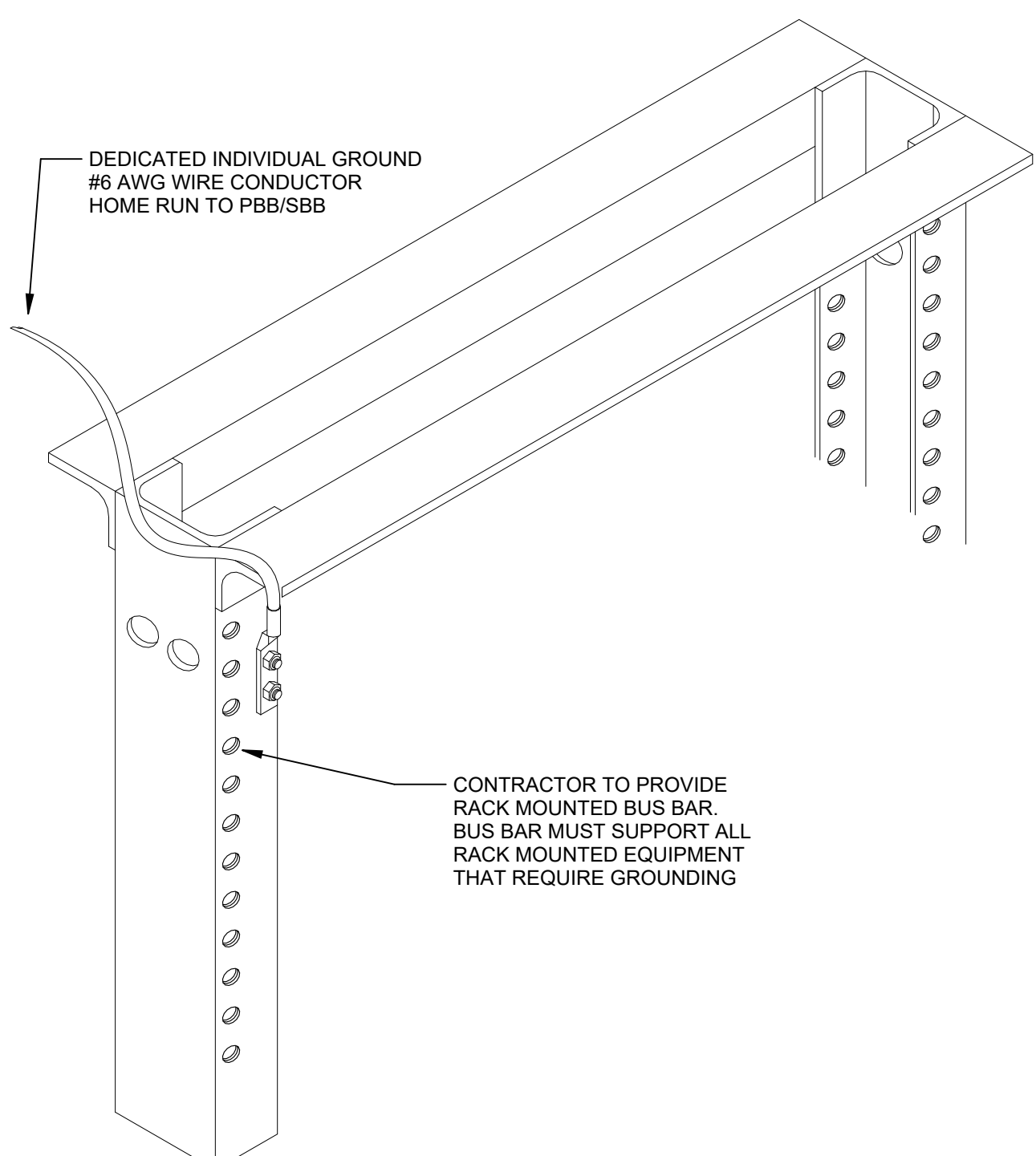
6 TELECOMMUNICATIONS ROOM GROUNDING RISER DIAGRAM  
NOT TO SCALE



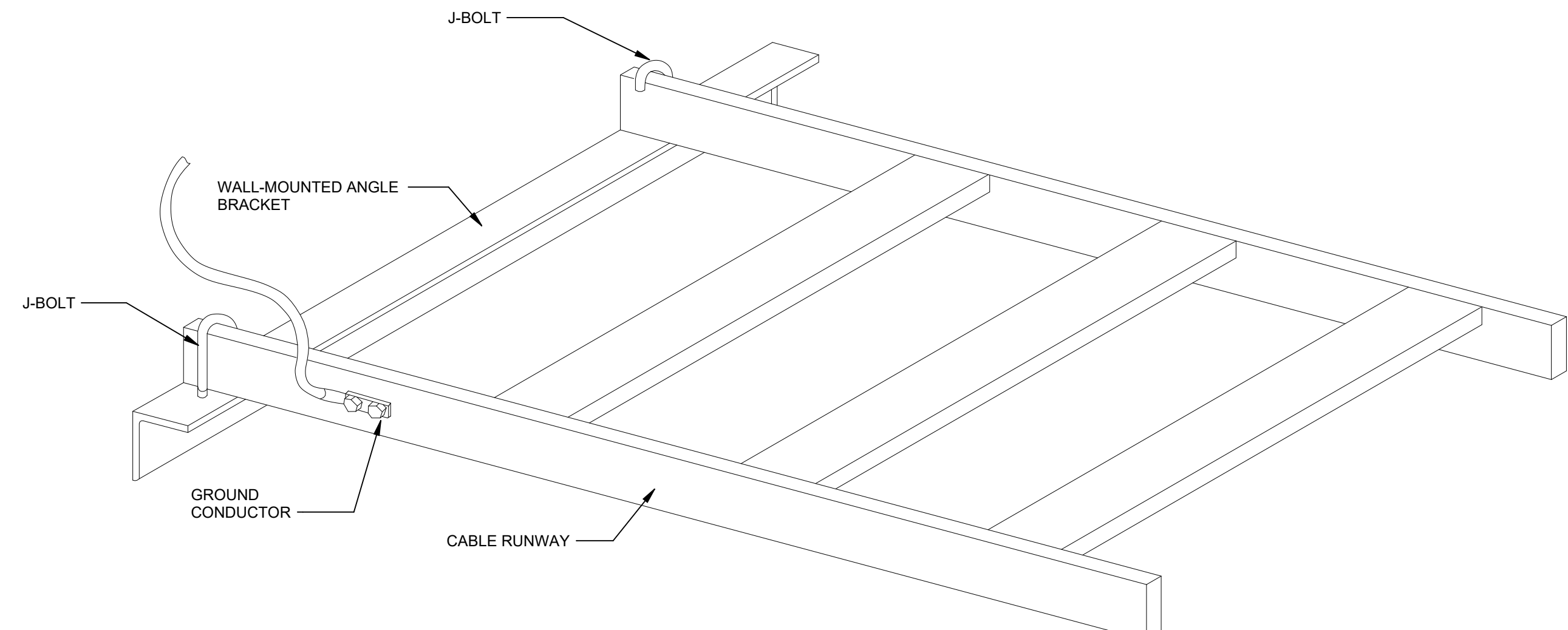
5 DISPATCH CONSOLE TELECOMMUNICATIONS WIRING DIAGRAM  
NOT TO SCALE



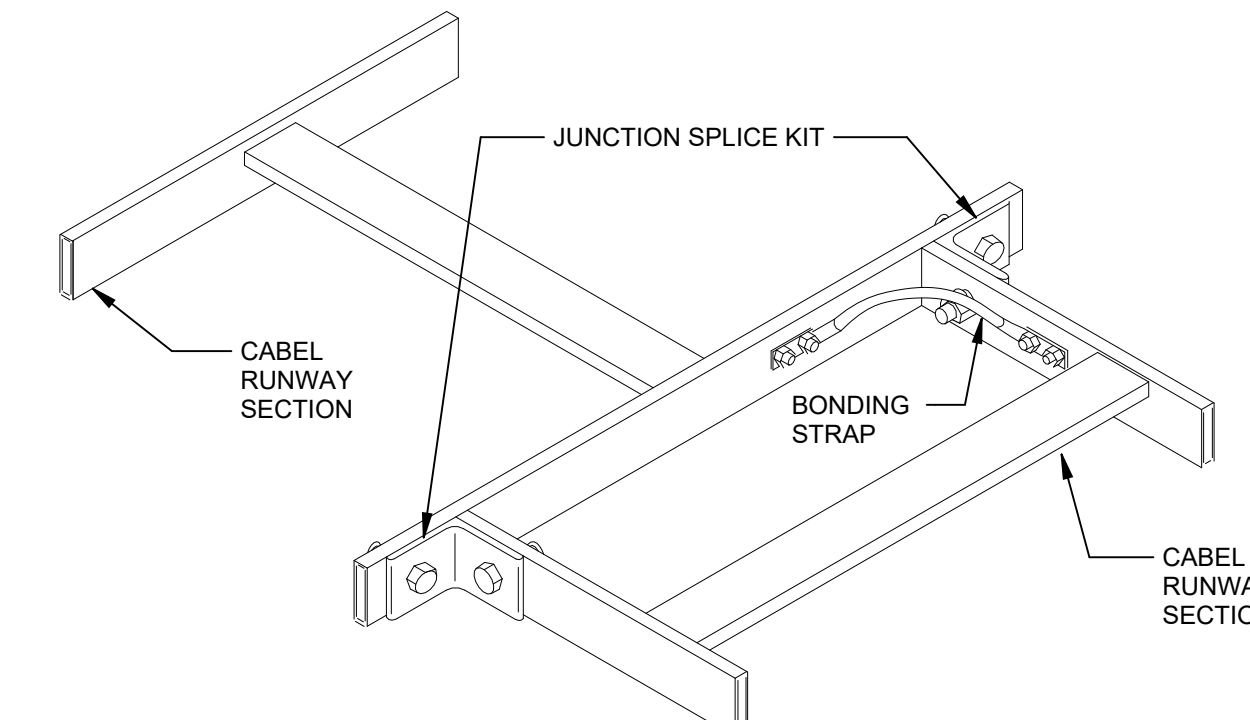
4 TELECOMMUNICATIONS GROUND BUS BAR  
NOT TO SCALE



3 STANDING RACK GROUNDING ASSEMBLY  
NOT TO SCALE



2 LADDER - WALL BRACKET GROUNDING  
NOT TO SCALE



1 JUNCTION SPLICE GROUNDING ASSEMBLY  
NOT TO SCALE