THE COUNTY OF GALVESTON

RUFUS G. CROWDER, CPPO, CPPB
PURCHASING AGENT

GWEN MCLAREN, CPPB
ASST. PURCHASING AGENT

COUNTY COURTHOUSE
722 Moody (21st Street)
Fifth (5th) Floor
GALVESTON, TEXAS 77550

September 15, 2020

PROJECT NAME: **Galveston County Road & Bridge Facility Rebuild Project**

SOLICITATION NO: **ITB #B201044**

RE: **ADDENDUM #1**

To All Prospective Bidders:

The following information is being provided to aid in preparation of your bid submittal(s):

CORRECTION:
The address on the first page of the Special Provisions section under the Purpose paragraph should read as follows:

Galveston County Road & Bridge Department
5115-TX 3
Dickinson, TX 77539

OPENING DATE:
RFP #B201044, Galveston County Road & Bridge Facility Rebuild Project scheduled to be opened on Thursday, October 15, 2020 at 2:15 P.M ***has been re-scheduled***.

The new deadline for submitting a bid is as follows:

Date: Thursday, October 22, 2020
Time: 2:00 P.M.

As a reminder, all questions regarding this bid must be submitted in writing to:

Rufus G. Crowder, CPPO CPPB
Galveston County Purchasing Agent
722 Moody, Fifth (5th) Floor
Galveston, Texas 77550
E-mail: purchasing.bids@co.galveston.tx.us

If you have any further questions regarding this bid, please address them to Rufus Crowder, CPPO CPPB, Purchasing Agent, via e-mail at purchasing.bids@co.galveston.tx.us, or contact the Purchasing Department at (409) 770-5371.

Please excuse us for any inconvenience that this may have caused.

Sincerely,

Rufus G. Crowder, CPPO CPPB
Purchasing Agent
Galveston County

THE COUNTY OF GALVESTON

RUFUS G. CROWDER, CPPO, CPPB
PURCHASING AGENT

GWEN MCLAREN, CPPB
ASST. PURCHASING AGENT

COUNTY COURTHOUSE
722 Moody (21st Street)
Fifth (5th) Floor
GALVESTON, TEXAS 77550

September 30, 2020

PROJECT NAME: **Galveston County Road & Bridge Facility Rebuild Project**

SOLICITATION NO: **ITB #B201044**

RE: **ADDENDUM #2**

To All Prospective Bidders:

The following information is being provided to aid in preparation of your bid submittal(s):

REVISED TIMELINE:
The timeline for RFP #B201044, Galveston County Road & Bridge Facility Rebuild Project has been revised. The revised schedule is listed below:

Site Visits:
Thursday, October 8, 2020; 12:30 P.M. – 4:30 P.M.
Friday, October 9, 2020; 12:30 P.M. – 4:30 P.M.

Question Deadline: **Monday, October 12, 2020 by 5:00 P.M.**

Proposal Opening/Due date: **Thursday, October 22, 2020 at 2:00 P.M.**

As a reminder, all questions regarding this bid must be submitted in writing to:

Rufus G. Crowder, CPPO CPPB
Galveston County Purchasing Agent
722 Moody, Fifth (5th) Floor
Galveston, Texas 77550
E-mail: purchasing.bids@co.galveston.tx.us

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Please excuse us for any inconvenience that this may have caused.

Sincerely,

Rufus G. Crowder, CPPO CPPB
Purchasing Agent
Galveston County

Addendum

Distribution	☐ Owner ☐ Consultant(s) ☒ Bidders ☐ Other ..		
From	Wendy Heger, AIA Page Southerland Page, Inc. 1100 Louisiana Street Suite One Houston, TX 77002	**Owner**	Galveston County 722 Moody Avenue 6th Floor Galveston, TX 77550
Project	Galveston County Road & Bridge Deptartment Facilities 5115 TX-3 Dickinson, TX 77573	**Architect's Project No.**	418198
Date of Issue	7-October-2020	**Addendum No.**	003
Contract For	General Construction	**For Bids Due**	22-October-2020

Seals

Description

This Addendum includes the following changes to the Work:

1. Civil drawings have been revised to show the three phases of the project.
2. G-100 – Revised drawing index.
3. G-110 – Revised exterior finish schedule
4. C4.0-PH1 – Revised expansion joint layout.
5. C5.0-PH1 – Revised junction box locations.
6. C5.0-PH1 – Revised storm drain inlet location.
7. C6.0-PH1 – Revised junction box elevation.
8. C7.0-PH1 – Revised junction box and storm drain inlets.
9. C7.1-PH1 – Revised sanitary sewer manholes.
10. C10.0-PH1 – Added “ParkUSA Type-A Grate Inlet” detail No. CB4880-1
11. C13.0-PH1 – Revised inlet protection barrier.
12. C13.0-PH1 – Added inlet protection barrier callout.
13. C5.0-PH2 – Revised phase of junction boxes and inlets.
14. C7.1-PH2 – Revised phase of sanitary sewer manholes.
15. A-201O – Revised brick masonry finish tags; Added Masonry Legend.
16. A-110M – Revised dimensions at Restroom M5.
17. A-111M – Revised dimensions at Restroom M5 interior elevation.

Revised Documents

This Addendum includes specification sections or drawing sheets that have been added or revised as of the date noted above. Please replace any documents from the original issue set with those below marked “R” and ADD sheets marked “A” to your bidding documents.

Drawings

Sheet No.	Revision Date	Status	Sheet Title
G-100	10/07/2020	R	GENERAL - PROJECT DATA
G-110	10/07/2020	R	GENERAL – SCHEDULES
C1.0-PH1	10/07/2020	A	COVER SHEET

C2.0-PH1	10/07/2020	A	TOPOGRAPHIC SURVEY
C3.0-PH1	10/07/2020	A	DEMOLITION PLAN
C4.0-PH1	10/07/2020	A	PAVING PLAN
C5.0-PH1	10/07/2020	A	LAYOUT PLAN
C6.0-PH1	10/07/2020	A	GRADING PLAN
C7.0-PH1	10/07/2020	A	UTILITY PLAN
C7.1-PH1	10/07/2020	A	UTILITY PLAN
C8.0-PH1	10/07/2020	A	GENERAL NOTES
C9.0-PH1	10/07/2020	A	PAVEMENT DETAILS
C10.0-PH1	10/07/2020	A	STORM DRAIN DETAILS
C11.0-PH1	10/07/2020	A	WATER DETAILS
C12.0-PH1	10/07/2020	A	SANITARY SEWER DETAILS
C13.0-PH1	10/07/2020	A	SWPPP PLAN
C14.0-PH1	10/07/2020	A	SWPPP DETAILS
C15.0-PH1	10/07/2020	A	DETENTION POND CROSS SECTIONS
C16.0-PH1	10/07/2020	A	STORM DRAIN PLAN AND PROFILE
C17.0-{H1	10/07/2020	A	WATER LINE PLAN AND PROFILE
C1.0-PH2	10/07/2020	A	COVER SHEET
C2.0-PH2	10/07/2020	A	TOPOGRAPHIC SURVEY
C3.0-PH2	10/07/2020	A	DEMOLITION PLAN
C4.0-PH2	10/07/2020	A	PAVING PLAN
C5.0-PH2	10/07/2020	A	LAYOUT PLAN
C6.0-PH2	10/07/2020	A	GRADING PLAN
C7.0-PH2	10/07/2020	A	UTILITY PLAN
C7.1-PH2	10/07/2020	A	UTILITY PLAN
C8.0-PH2	10/07/2020	A	GENERAL NOTES
C9.0-PH2	10/07/2020	A	PAVEMENT DETAILS
C10.0-PH2	10/07/2020	A	STORM DRAIN DETAILS
C11.0-PH2	10/07/2020	A	WATER DETAILS
C12.0-PH2	10/07/2020	A	SANITARY SEWER DETAILS
C13.0-PH2	10/07/2020	A	SWPPP PLAN
C14.0-PH2	10/07/2020	A	SWPPP DETAILS
C1.0-PH3	10/07/2020	A	COVER SHEET
C2.0-PH3	10/07/2020	A	TOPOGRAPHIC SURVEY

C3.0-PH3	10/07/2020	A	DEMOLITION PLAN
C4.0-PH3	10/07/2020	A	PAVING PLAN
C5.0-PH3	10/07/2020	A	LAYOUT PLAN
C6.0-PH3	10/07/2020	A	GRADING PLAN
C7.0-PH3	10/07/2020	A	GENERAL NOTES
C8.0-PH3	10/07/2020	A	PAVEMENT DETAILS
C9.0-PH3	10/07/2020	A	SWPPP PLAN
C10.0-PH3	10/07/2020	A	SWPPP DETAILS
A-201O	10/07/2020	R	ARCHITECTURAL – EXTERIOR ELEVATIONS
A-110M	10/07/2020	R	ARCHITECTURAL - ENLARGED PLANS
A-111M	10/07/2020	R	ARCHITECTURAL - INTERIOR ELEVATIONS

Technical Specifications – (Project Manual)

Section No.	Revision Date	Status	Specification Title
n/a			

Additional Documents

Responses to Bidders Questions

Bid Form

This Addendum is hereby incorporated into the Contract Documents for the Project referenced above, modifying and superseding any previously issued Contract Documents. Bidders must acknowledge receipt of **Addendum 003** in the bid form.

THE COUNTY OF GALVESTON

RUFUS G. CROWDER, CPPO, CPPB
PURCHASING AGENT

GWEN MCLAREN, CPPB
ASST. PURCHASING AGENT

COUNTY COURTHOUSE
722 Moody (21st Street)
Fifth (5th) Floor
GALVESTON, TEXAS 77550

October 7, 2020

PROJECT NAME: **Galveston County Road & Bridge Facility Rebuild Project**

SOLICITATION NO: **B201044**

RE: **ADDENDUM #3**

To All Prospective Bidders:

The following information is being provided to aid in preparation of your bid submittal(s):

Question #1: ***I have not seen anything in the documents that the documents that discusses HUB and I wanted to know if HUB will be a requirement on this project?***

Response: **There is no HUB participation requirement on this project.**

Question #2: ***I'm having trouble locating the bid proposal form to list our proposing bid amount. I've searched the specs and all I see the proposal form located within the specs beginning on page 96. Could you please direct me where we are to list the proposed amount?***

Response: **The Bid Form is included within this addendum.**

Question #3: ***I have some questions about the Insulated Translucent Sandwich Panel Assemblies – Section 084500.***

1) ***Is Texas Department of Insurance – Windstorm compliance required for this project?***
2) ***The thermal performance has conflicting information. 1.2.H. A U-factor of 0.53 will not result in 0.28 SHGC.***
   a) ***With Crystal over Crystal face sheets, thermally broken system, U-factor of 0.51 will result in SHGC of 0.50. Other FPR combinations will yield different result.***
   b) ***U-factor with 0.27 U-factor will result in 0.23 SHGC.***
      1. ***Please advise which thermal performance is required from above values. I have attached the thermal performance chart with available information.***

Response: **1. Windstorm compliance is required.**
2. U-factor of 0.51 and SHGC of 0.50 will be acceptable for this installation.

Question #4: ***Is the Maintenance Shop building conditioned?***

Response: **The vehicle bay areas are not conditioned. Th interior spaces at plan-West are conditioned (Restroom, Break Room, Fleet Shop Admin, Fleet Shop Manager, Shop Foreman, IT/Storage, Open Area)**

Question #5: ***Is the Maintenance Shop building sprinklered?***

Response: **Yes, the Maintenance Shop building is sprinklered.**

Question #6: ***What Interior Finish Class is required at Maintenance Shop building (A, B, or C)?***

Response: **The Interior Finish Class is Class C in the admin side and Class B in the vehicle bays.**

Question #7: ***The specification indicates a missile impact rating which requires the .052" thick exterior face sheet when installed below 30'-0" from grade. Will the currently specified .070" exterior face sheet be updated to the .052" thick exterior face sheet to meet IBC code requirements?***

Response: **The 0.52" face sheet is a minimum thickness for this assembly. The 0.70" face sheet will exceed the specifications and is to remain.**

Question #8: ***Kalwall does not warranty an anodized finish. They do offer a superior KCRF coating, which can meet the warranty specifications. Are you open to a KCRF coating?***

Response: **KCRF coating is acceptable. Contractor shall provide sample of #79 Aluminum and #80 Gray.**

Question #9: ***On the drawing the translucent panels appear to have a trapezoidal shape. By changing them to a rectangular shape, you can incur cost savings. Are you open to changing the shape? Are you open to reducing the quantity of battens by maximizing panel lengths?***

Response: **The overall geometry of the panel assembly must remain. Changing them to rectangular shape is not acceptable. If the cost of the assembly can be reduced by reducing the number of battens, this will be acceptable.**

As a reminder, all questions regarding this bid must be submitted in writing to:

Rufus G. Crowder, CPPO CPPB
Galveston County Purchasing Agent
722 Moody, Fifth (5th) Floor
Galveston, Texas 77550
E-mail: purchasing.bids@co.galveston.tx.us

If you have any further questions regarding this bid, please address them to Rufus Crowder, CPPO CPPB, Purchasing Agent, via e-mail at purchasing.bids@co.galveston.tx.us, or contact the Purchasing Department at (409) 770-5371.

Please excuse us for any inconvenience that this may have caused.

Sincerely,

Rufus G. Crowder, CPPO CPPB
Purchasing Agent
Galveston County

RFP #B201044
Open 10/22/2020
Time: 2:00pm CT

Bid Form
Galveston County Road & Bridge Facility Rebuild Project

1. **Instructions**
   a. The Bidder shall furnish necessary resources and services required to complete the project, in accordance with the scope of work and project specifications and drawings hereby incorporated and made a part of this RFP and the contract documents, for the prices listed below.
   b. Having examined Proposal and Contract Documents, and having reviewed site conditions, the undersigned proposes to furnish all labor, equipment and materials and perform all work for the completion of the above-named project for the sum indicated below.

2. **Base Bid**

   The Undersigned agrees to complete the work for the lump sum amount of:

   _____Dollars (words)

   $_____ (numbers)

   The above represents a Total Proposed Price reflecting all project costs to successfully complete the project.

3. **Contract Duration**

   The Undersigned proposes to commence work upon Notice to Proceed and be substantially complete within _____ calendar days.

4. **Owner/Client References** who can attest to the Bidder's capability to carry out the requirements set for the in this RFP:
   a. Reference #1
      i. Name and Title:_____
      ii. Organization:_____
      iii. Phone:_____
      iv. Email:_____
   b. Reference #2
      i. Name and Title:_____
      ii. Organization:_____
      iii. Phone:_____
      iv. Email:_____

c. Reference #3
   i. Name and Title:_____
   ii. Organization:_____
   iii. Phone:_____
   iv. Email:_____

5. **Subcontractor/Supplier References** who can attest to the Bidder's capability to carry out the requirements set for the in this RFP:
   a. Reference #1
      i. Name and Title:_____
      ii. Organization:_____
      iii. Phone:_____
      iv. Email:_____
   b. Reference #2
      i. Name and Title:_____
      ii. Organization:_____
      iii. Phone:_____
      iv. Email:_____
   c. Reference #3
      i. Name and Title:_____
      ii. Organization:_____
      iii. Phone:_____
      iv. Email:_____

6. **Relevant Experience:** Completed projects with similarities to this project**.**
   a. Project #1:
      i. Project Name:_____
      ii. Location:_____
      iii. Year completed:_____
      iv. Similarity to this project:_____
      _____
      _____

b. Reference #2:
   i. Project Name:_____
   ii. Location:_____
   iii. Year completed:_____
   iv. Similarity to this project:_____
   _____
   _____

c. Reference #3:
   i. Project Name:_____
   ii. Location:_____
   iii. Year completed:_____
   iv. Similarity to this project:_____
   _____
   _____

7. Bid Signature

By signing here, the firm attests that it has fully read the instructions, conditions and general provisions and understands them.

The information in this RFP is to be utilized solely for preparing the proposal response to this RFP and does not constitute a commitment by Galveston County to procure any product or service in any volume.

Name:_____

Title:_____

Company:_____

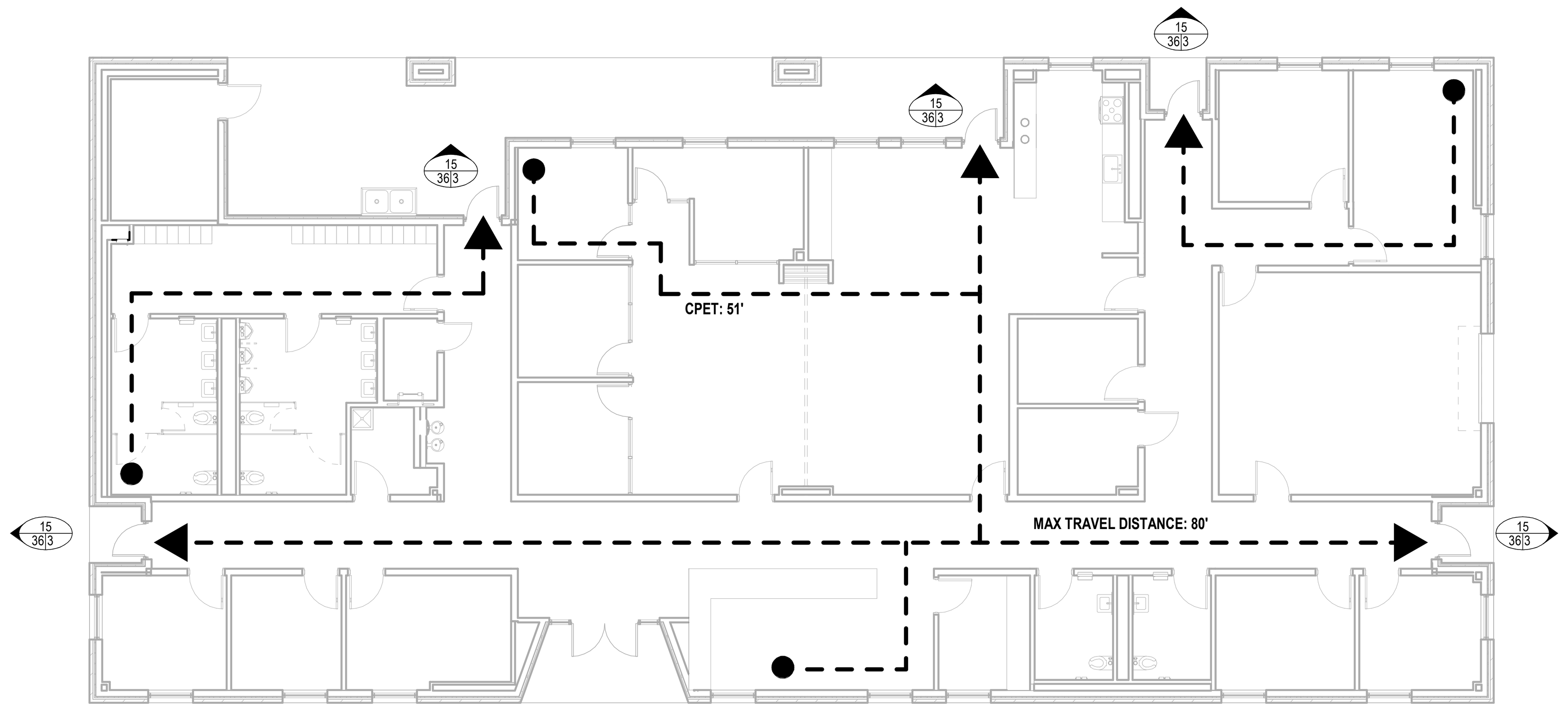
Company Address:_____

Company FEIN (TAX ID):_____

Phone Number:_____

Signature:_____

Date:_____



1 LIFE-SAFETY PLAN - OFFICE
SCALE: 3/32" = 1'-0"

LIFE-SAFETY ANALYSIS - OFFICE BUILDING

NET FLOOR AREA: 6,430 SF

GROSS FLOOR AREA: 7,230 SF

OCCUPANT LOAD (IBC 2015 TABLE 1004.1.2):

7,230 SF / 100 PERSONS PER SF = 73 OCCUPANTS

DOOR WIDTH REQUIRED: 73 X .2 = 15"

DOOR WIDTH PROVIDED: 36" + 36" + 36" + 36" + 72" = 216"

MAX TRAVEL DISTANCE ALLOWED (IBC 2015 TABLE 1017.2): 200'

MAX TRAVEL DISTANCE PROVIDED: 80'

PLUMBING ANALYSIS - OFFICE BUILDING

OCCUPANCY LOAD: 73 PERSONS ~ 37 MALES & 37 FEMALES

WATER CLOSETS REQUIRED (TABLE 2902.1): 2 FOR MALES, 2 FOR FEMALES

WATER CLOSETS PROVIDED: 5 FOR MALES, 2 FOR FEMALES, 2 UNISEX

LAVATORIES REQUIRED (TABLE 2902.1): 2 FOR MALES, 2 FOR FEMALES

LAVATORIES PROVIDED: 3 FOR MALES, 3 FOR FEMALES, 2 UNISEX

DRINKING FOUNTAINS REQUIRED (TABLE 2902.1): 1 TOTAL

DRINKING FOUNTAINS PROVIDED: 2 FOUNTAINS + 1 ICE/WATER DISPENSERS

CONSTRUCTION ANALYSIS - OFFICE BUILDING

OCCUPANCY CLASSIFICATION: GROUP B (IBC 2015 304.1)

CONSTRUCTION TYPE: IIB (IBC 2015 TABLE 601)

NOT SPRINKLED

0 HR FIRE RATING REQUIRED FOR ALL BUILDING ELEMENTS (IBC 2015 TABLE 601)

FIRE SEPARATION DISTANCE FROM NEAREST BUILDING: 61'

0HR FIRE RATING FOR EXTERIOR WALLS (IBC 2015 TABLE 602)

ALLOWABLE BUILDING HEIGHT (IBC 2015 TABLE 504.3): 55'

PROPOSED BUILDING HEIGHT: 21' - 3"

ALLOWABLE STORIES ABOVE GRADE (IBC 2015 TABLE 504.4): 3

PROPOSED STORIES ABOVE GRADE: 1

ALLOWABLE AREA FACTOR (IBC 2015 TABLE 506.2): 23,000

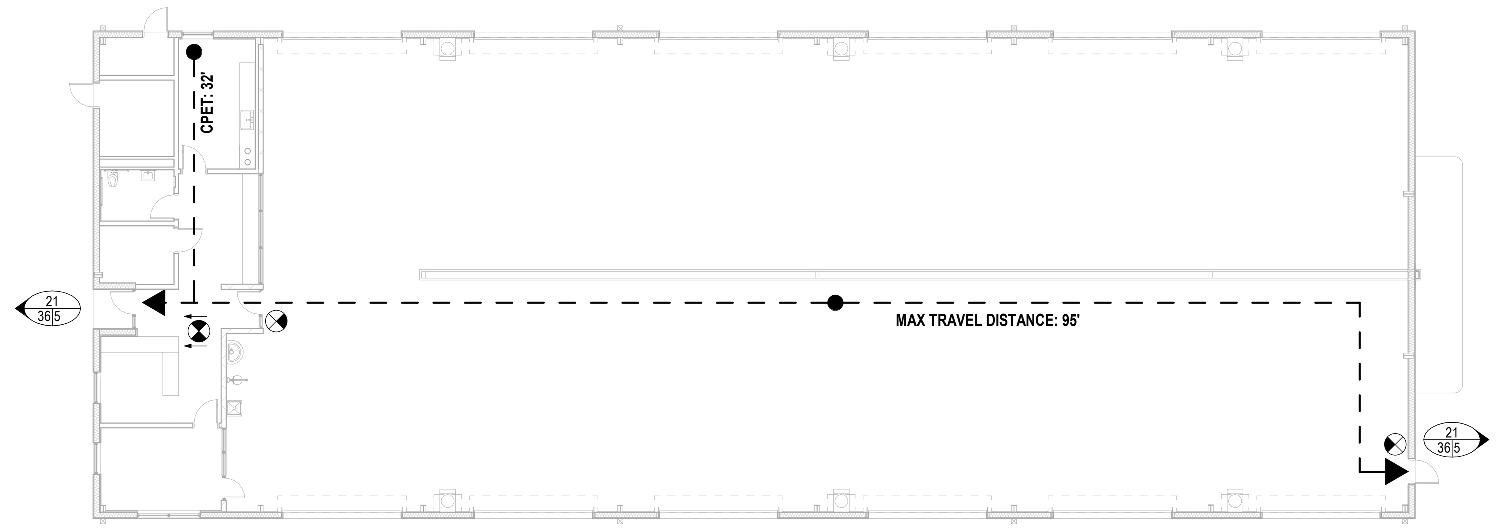
ALLOWABLE AREA FOR SINGLE-OCCUPANCY, ONE-STORY BUILDINGS (IBC 2015 506.2.1):
Aa = At + (NS x If)

INCREASE DUE TO FRONTAGE [If] (IBC 2015 506.3): 1

46,000 SF = 23,000 + (23,000 x 1)

PROPOSED BUILDING AREA: 7,230 SF

ALLOWABLE AREA OF UNPROTECTED OPENINGS (IBC 2015 TABLE 705.8): NO LIMIT



2 LIFE-SAFETY PLAN - MAINTENANCE SHOP
SCALE: 1/16" = 1'-0"

LIFE-SAFETY ANALYSIS - MAINTENANCE SHOP

GROSS FLOOR AREA: 10,400 SF

ADMIN OFFICE AREA: 1,230 SF - OCCUPANCY CLASSIFICATION: B

ADMIN OFFICE OCCUPANT LOAD (IBC 2015 TABLE 1004.1.2):

1,230 SF / 100 SF PER PERSON = 13 OCCUPANTS

VEHICLE MAINTENANCE SHOP AREA: 9,170 SF - OCCUPANCY CLASSIFICATION: S-1

VEHICLE MAINTENANCE SHOP OCCUPANT LOAD (IBC 2015 TABLE 1004.1.2):

9,170 SF / 200 SF PER PERSON = 46 OCCUPANTS

TOTAL BUILDING OCCUPANTS: 46 OCCUPANTS + 13 OCCUPANTS = 59 OCCUPANTS

DOOR WIDTH REQUIRED: 59 X .2 = 12"

DOOR WIDTH PROVIDED: 36" + 36" = 72"

MAX TRAVEL DISTANCE ALLOWED (IBC 2015 TABLE 1017.2): 200'

MAX TRAVEL DISTANCE PROVIDED: 88'

PLUMBING ANALYSIS - MAINTENANCE SHOP

OCCUPANCY LOAD: 59 PERSONS

WATER CLOSETS REQUIRED (TABLE 2902.1): 1 UNISEX

WATER CLOSETS PROVIDED: 1 UNISEX

LAVATORIES REQUIRED (TABLE 2902.1): 1 UNISEX

LAVATORIES PROVIDED: 1 UNISEX

SERVICE SINKS REQUIRED: 1

SERVICE SINKS PROVIDED: 1

DRINKING FOUNTAINS REQUIRED (TABLE 2902.1): 1

DRINKING FOUNTAINS PROVIDED: 1 ICE/WATER DISPENSER

CONSTRUCTION ANALYSIS - MAINTENANCE SHOP

OCCUPANCY CLASSIFICATION: GROUP S-1 (IBC 2015 311.2)

CONSTRUCTION TYPE: IIB (IBC 2015 TABLE 601)

SPRINKLED

0 HR FIRE RATING REQUIRED FOR ALL BUILDING ELEMENTS (IBC 2015 TABLE 601)

FIRE SEPARATION DISTANCE FROM NEAREST BUILDING: 30'

0HR FIRE RATING FOR EXTERIOR WALLS (IBC 2015 TABLE 602)

ALLOWABLE BUILDING HEIGHT (IBC 2015 TABLE 504.3): 75'

PROPOSED BUILDING HEIGHT: 38' - 3"

ALLOWABLE STORIES ABOVE GRADE (IBC 2015 TABLE 504.4): 3

PROPOSED STORIES ABOVE GRADE: 1

ALLOWABLE AREA FACTOR (IBC 2015 TABLE 506.2): 70,000

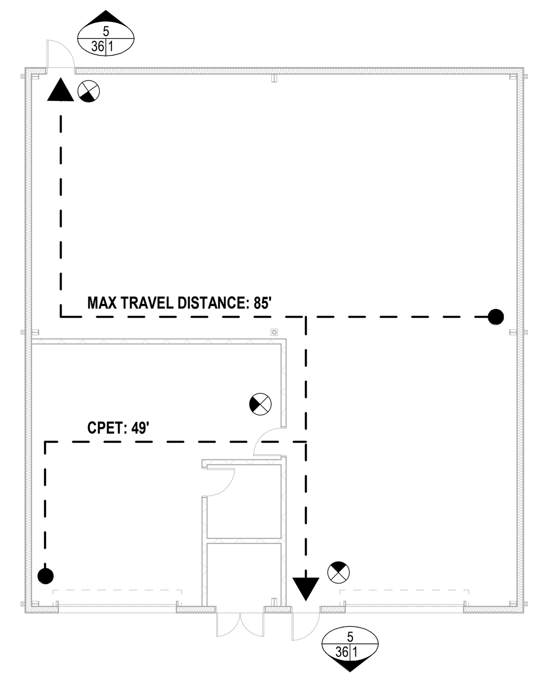
ALLOWABLE AREA FOR SINGLE-OCCUPANCY, ONE-STORY BUILDINGS (IBC 2015 506.2.1):
Aa = At + (NS x If)

INCREASE DUE TO FRONTAGE [If] (IBC 2015 506.3): 1

140,000 SF = 70,000 + (70,000 x 1)

PROPOSED BUILDING AREA: 10,400 SF

ALLOWABLE AREA OF UNPROTECTED OPENINGS (IBC 2015 TABLE 705.8): NO LIMIT



3 LIFE-SAFETY PLAN - WAREHOUSE
SCALE: 1/16" = 1'-0"

LIFE-SAFETY ANALYSIS - WAREHOUSE

GROSS FLOOR AREA: 4,380 SF

OCCUPANT LOAD (IBC 2015 TABLE 1004.1.2):

4,380 SF / 500 PERSONS PER SF = 9 OCCUPANTS

DOOR WIDTH REQUIRED: 9 X .2 = 2"

DOOR WIDTH PROVIDED: 36" + 36" = 72"

MAX TRAVEL DISTANCE ALLOWED (IBC 2015 TABLE 1017.2): 150'

MAX TRAVEL DISTANCE PROVIDED: 88'

PLUMBING ANALYSIS - WAREHOUSE

THE WAREHOUSE IS AN UNOCCUPIED BUILDING,
NO RESTROOMS ARE PROVIDED.

CONSTRUCTION ANALYSIS - WAREHOUSE

OCCUPANCY CLASSIFICATION: GROUP H-3 (IBC 2015 307.5)

CONSTRUCTION TYPE: IIB (IBC 2015 TABLE 601)

SPRINKLED

0 HR FIRE RATING REQUIRED FOR ALL BUILDING ELEMENTS (IBC 2015 TABLE 601)

FIRE SEPARATION DISTANCE FROM NEAREST BUILDING: 30'

0HR FIRE RATING FOR EXTERIOR WALLS (IBC 2015 TABLE 602)

ALLOWABLE BUILDING HEIGHT (IBC 2015 TABLE 504.3): 55'

PROPOSED BUILDING HEIGHT: 23' - 6"

ALLOWABLE STORIES ABOVE GRADE (IBC 2015 TABLE 504.4): 2

PROPOSED STORIES ABOVE GRADE: 1

ALLOWABLE AREA FACTOR (IBC 2015 TABLE 506.2): 14,000

ALLOWABLE AREA FOR SINGLE-OCCUPANCY, ONE-STORY BUILDINGS (IBC 2015 506.2.1):
Aa = At + (NS x If)

INCREASE DUE TO FRONTAGE [If] (IBC 2015 506.3): 1

28,000 SF = 14,000 + (14,000 x 1)

PROPOSED BUILDING AREA: 4,380 SF

LIFE-SAFETY LEGEND

- DIRECTION OF TRAVEL
- NUMBER OF OCCUPANTS
- EXIT WIDTH REQUIRED (IN INCHES)
- EXIT WIDTH PROVIDED (IN INCHES)
- PATH OF TRAVEL
- START POINT OF TRAVEL
- EXIT SIGN
- FEC — FIRE EXTINGUISHER CABINET
- CPET — COMMON PATH OF EGRESS TRAVEL

PROJECT DESCRIPTION

PROJECT NAME: GALVESTON COUNTY ROAD & BRIDGE DEPARTMENT HEADQUARTERS
PROJECT ADDRESS: 5115 TX-3, DICKINSON, TX 77539
OWNER: GALVESTON COUNTY

PROJECT DESCRIPTION:

PHASE 1 - SELECTIVE DEMOLITION OF STRUCTURES AND LANDSCAPING AT EXISTING CAMPUS FOR GALVESTON COUNTY ROAD & BRIDGE DEPARTMENT.

PHASE 2 - CONSTRUCTION OF NEW OFFICE BUILDING, NEW AUTOMOTIVE MAINTENANCE SHOP, NEW STORAGE WAREHOUSE, NEW COVERED WASHRACK AND NEW FUELAIR DISPENSORY BUILDINGS. SITE IMPROVEMENTS CONSIST OF SITE REGRADING, INSTALLATION OF NEW STORM DRAINAGE INFRASTRUCTURE, REPAVING AND RECURBING, NEW SITE LIGHTING, NEW SECURITY FENCING AND GATES, NEW LANDSCAPING AND A NEW SCREENED ENCLOSURE HOUSING A DUMPSTER, TRANSFORMER AND GENERATOR.

AUTHORITY HAVING JURISDICTION:

CITY OF DICKINSON, TX

APPLICABLE BUILDING CODES:

2015 INTERNATIONAL BUILDING CODE
2015 INTERNATIONAL PLUMBING CODE
2015 INTERNATIONAL MECHANICAL CODE
2015 INTERNATIONAL FIRE CODE
2014 NATIONAL ELECTRIC CODE
2015 INTERNATIONAL ENERGY CONSERVATION CODE
2015 INTERNATIONAL FUEL GAS CODE
2012 TEXAS ACCESSIBILITY STANDARDS
CITY OF DICKINSON CODE OF ORDINANCES

ARCHITECTURAL - INDEX OF DRAWINGS

SHEET NO	SHEET TITLE	ISSUE DATE ORIGINAL ISSUE	ISSUE DATE LAST REVISION
TELECOM - MAINTENANCE SHOP			
T-101M	TELECOM - REFLECTED CEILING PLAN & EQUIPMENT PLAN - MAINTENANCE SHOP	26 JUNE 2020	
T-401M	TELECOM - ENLARGED IT ROOM - MAINTENANCE SHOP	26 JUNE 2020	
AUDIOVISUAL - TYPICAL			
TA-001	AUDIOVISUAL - INDEX	26 JUNE 2020	
TA-501	AUDIOVISUAL - DETAILS	26 JUNE 2020	
TA-502	AUDIOVISUAL - DETAILS	26 JUNE 2020	
TA-503	AUDIOVISUAL - DETAILS	26 JUNE 2020	
TA-701	AUDIOVISUAL - SCHEMATICS	26 JUNE 2020	
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CIVIL			
C-1.0	CIVIL - COVER SHEET	03 JULY 2020	REMOVED
C-2.0	CIVIL - SURVEY	03 JULY 2020	REMOVED
C-3.0	CIVIL - DEMOLITION PLAN	03 JULY 2020	REMOVED
C-4.0	CIVIL - PAVING PLAN	03 JULY 2020	REMOVED
C-5.0	CIVIL - LAYOUT PLAN	03 JULY 2020	REMOVED
C-6.0	CIVIL - GRADING PLAN	03 JULY 2020	REMOVED
C-7.0	CIVIL - UTILITY PLAN	03 JULY 2020	REMOVED
C-7.1	CIVIL - UTILITY PLAN	03 JULY 2020	REMOVED
C-8.0	CIVIL - GENERAL NOTES	03 JULY 2020	REMOVED
C-9.0	CIVIL - PAVEMENT DETAILS	03 JULY 2020	REMOVED
C-10.0	CIVIL - STORM DRAIN DETAILS	03 JULY 2020	REMOVED
C-11.0	CIVIL - WATER DETAILS	03 JULY 2020	REMOVED
C-12.0	CIVIL - SANITARY SEWER DETAILS	03 JULY 2020	REMOVED
C-13.0	CIVIL - SWPPP PLAN	03 JULY 2020	REMOVED
C-14.0	CIVIL - SWPPP DETAILS	03 JULY 2020	REMOVED
C-15.0	CIVIL - DRAINAGE PLAN	03 JULY 2020	REMOVED
C-16.0	CIVIL - DRAINAGE CALCULATIONS 2 YEARS (PROPOSED)	03 JULY 2020	REMOVED
C-17.0	CIVIL - DRAINAGE CALCULATIONS 100 YEARS (PROPOSED)	03 JULY 2020	REMOVED
C-18.0	CIVIL - DETENTION CALCULATIONS	03 JULY 2020	REMOVED
C-19.0	CIVIL - DETENTION POND CROSS SECTION	03 JULY 2020	REMOVED
C-20.0	CIVIL - MITIGATION PLAN	03 JULY 2020	REMOVED
C-21.0	CIVIL - MITIGATION PLAN - CUT AND FILL CALCULATIONS	03 JULY 2020	REMOVED
C-22.0	MITIGATION PLAN - CUT AND FILL PROFILES	03 JULY 2020	REMOVED
C-22.1	CIVIL - MITIGATION PLAN - CUT AND FILL PROFLIES	03 JULY 2020	REMOVED
C-23.0	CIVIL - IMPERVIOUS AREAS (EXISTING & PROPOSED)	03 JULY 2020	REMOVED
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C3.0-PH1	CIVIL - DEMOLITION PLAN	07 OCT 2020	
C4.0-PH1	CIVIL - PAVING PLAN	07 OCT 2020	
C5.0-PH1	CIVIL - LAYOUT PLAN	07 OCT 2020	
C6.0-PH1	CIVIL - GRADING PLAN	07 OCT 2020	
C7.0-PH1	CIVIL - UTILITY PLAN	07 OCT 2020	
C7.1-PH1	CIVIL - UTILITY PLAN	07 OCT 2020	
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C4.0-PH2	CIVIL - PAVING PLAN	07 OCT 2020	
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C7.0-PH2	CIVIL - UTILITY PLAN	07 OCT 2020	
C7.1-PH2	CIVIL - UTILITY PLAN	07 OCT 2020	
C8.0-PH2	CIVIL - GENERAL NOTES	07 OCT 2020	
C9.0-PH2	CIVIL - PAVEMENT DETAILS	07 OCT 2020	
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C11.0-PH2	CIVIL - WATER DETAILS	07 OCT 2020	
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C3.0-PH3	CIVIL - DEMOLITION PLAN	07 OCT 2020	
C4.0-PH3	CIVIL - PAVING PLAN	07 OCT 2020	
C5.0-PH3	CIVIL - LAYOUT PLAN	07 OCT 2020	
C6.0-PH3	CIVIL - GRADING PLAN	07 OCT 2020	
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Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	Addendum No. 03	07 OCT 2020
1	Revision 1	Date 1

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.
REGISTERED ARCHITECT WENDY TEAS HEGER 16677 STATE OF TEXAS
10/07/2020

GENERAL - PROJECT DATA

DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

G-100
SHEET NUMBER

FILE PATH / USER NAME: C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-SITE_vgandhiV3V3P.rvt
DATE STAMP: 10/7/2020 6:17:44 PM

DOOR SCHEDULE - OFFICE

Door Number	Door Type	Door Overall Width	Door Height	Door Thickness	Door Material	Door Finish	Frame Material	Frame Jamb	Frame Head	Fire Rating	Hardware Set	Comments
O1	BBX	6' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW714AM	
O3	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	501	
O4	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	341	
O5	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	341	
O6	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	201	
O7	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
O8	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
O9A	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	501	
O9B	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	501	
O9C	CX	8' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
O10	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
O11	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
O12	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
O13	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	401	
O14	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	201	
O15	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	201C	
O16A	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	701	
O16B	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
O17	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	507	
O18	B	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	103A	
O19	B	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	103A	
O20	B	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	103A	
O21	B	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	103A	
O23	AX	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	CW715	INSULATED
O24	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
O25	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	801	
O26	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	801L	
O27	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	801L	
O28	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
O29	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	201	
O30	A	2' - 6"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	201C	
O31	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
O32	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
O33	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	403	

DOOR SCHEDULE - MAINTENANCE SHOP

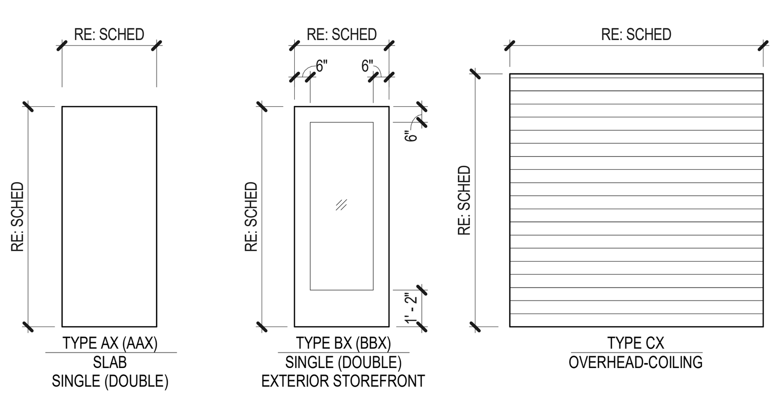
M1A	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
M1B	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	705AG	
M3A	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
M3B	BX	2' - 8"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	501ACG	
M4	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	201C	
M5	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	341	
M6	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	401	
M7	AX	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	W715	INSULATED
M8	AX	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	W205	INSULATED
MB1	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB2	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB3	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB4	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB5	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB6	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB7	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB8	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB9	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB10	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB11	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB12A	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB12B	AX	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	CW715Q	INSULATED

DOOR SCHEDULE - WAREHOUSE

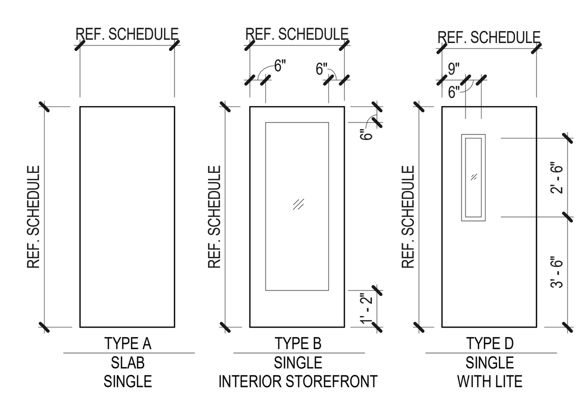
W1	AAX	6' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	W214	INSULATED
W2	A	3' - 6"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	8/A-501	11/A-501	NR	201W	
W3A	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
W3B	A	3' - 6"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	8/A-501	11/A-501	NR	201GW	
W4A	AX	3' - 6"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	CW205W	INSULATED
W4B	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
W6	AX	3' - 6"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	W205WQ	INSULATED

DOOR SCHEDULE - WASHRACK

R4	AX	4' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	8/A-501	11/A-501	NR	CW205Q	

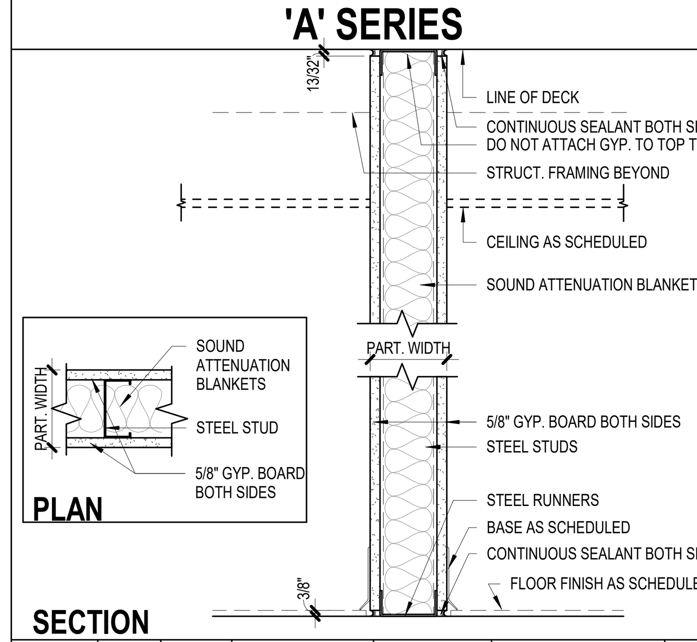


1 EXTERIOR DOOR TYPES
SCALE: 1/4" = 1'-0"



2 INTERIOR DOOR TYPES
SCALE: 1/4" = 1'-0"

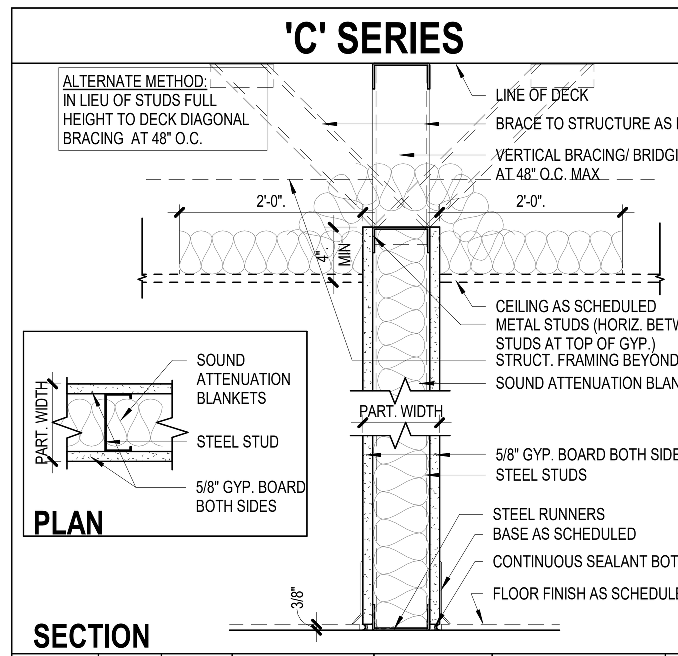
'A' SERIES



TYPE	STUD	PART. WIDTH	MAX. HEIGHT 25 GA.	MAX. HEIGHT 20 GA.		DESIGN STC MIN STC	DESIGN STC INSUL	EST STC W/O INSUL
A3	3 5/8"	4 7/8"	14' - 4"	15' - 8"		40	3 1/2"	40
A6	6"	7 1/4"	19' - 9"	23' - 2"		40	3 1/2"	40
A6	8"	9 1/4"	23' - 9"	27' - 2"		40	3 1/2"	40

LIMITING HEIGHTS BASED ON ASTM; L/240; 5 PSF

'C' SERIES



TYPE	STUD	PART. WIDTH	MAX. HEIGHT 25 GA.	MAX. HEIGHT 20 GA.		DESIGN STC MIN STC	DESIGN STC INSUL	EST STC W/O INSUL
C3	3 5/8"	4 7/8"	12' - 4"	14' - 11"		40	3 1/2"	40
C6	6"	7 1/4"	15' - 9"*	21' - 7"		40	3 1/2"	40

LIMITING HEIGHTS BASED ON SSMA/SFIA; L/240; 5 PSF
*ADD WEB STIFFENERS

Galveston Road and Bridge Fueling Overview

Two aboveground storage tanks (AST) will store diesel and gasoline products. Gasoline and diesel will be transferred to a fuel island where two dispensers will be installed in order to dispense gasoline and diesel from each dispenser. Piping, for aboveground applications, will include schedule 40 black iron-pipe and galvanized pipe. The vent pipe will be 3" galvanized. The piping for the Fill and vapor recovery will be 3" black iron. The fuel transfer piping will be 2" black iron piping. Both the diesel and gasoline piping will run from their respective submersible pump into the top of one transition sump which will be located within/under the tank pad (not on the drive). At the transition sump the steel pipe will terminate into a 2" EZ flex connector that will then be connected to the electrofusion piping system for the underground application. Electrofusion piping will be 2" in diameter. Both the diesel and gasoline fuel lines will exit the transition sump and terminate in the underground dispenser sumps (UDC) at the fuel island. Dispenser sumps will be piped with EZ flex connectors and 1-1/2" double poppet shear valves.

Tanks will be 10,000 gallon each. Insulated Fireguard, double-wall (DW) and manufactured by Modern Welding of Texas or equal.

The diesel tank will have; 4-4" CPLG x 5" LG. Fittings for Vent, ATG Probe, Submersible pump and Expansion relief valve; 1-6" SCH. 40 Pipe (T.O.E.)- for Fill; 2-8" Flanged Fittings-Primary Tank Emergency Vent and Outer Tank Emergency Vent (Modern will supply the Morrison vents -part number 2440F) ,1-2" CPLG X 5" LG; 1-20" Manway-for access; 1-2" SCH. 40 pipe-for Interstitial monitor, 2-Saddles-welded to tank; 1-18" wide ladder for observation only-welded to clips.

The gasoline tank will have; 5-4" CPLG x 5" LG. Fittings for Vapor Recovery, Vent, ATG Probe, Submersible pump and Expansion relief valve; 1-6" SCH. 40 Pipe (T.O.E.)- for Fill; 2-8" Flanged Fittings-for Primary Tank Emergency Vent and Outer Tank Emergency Vent (Modern will supply the Morrison vents -part number 2440F) ,1- 2" CPLG X 5" LG; 1-20" Manway-for access; 1-2" SCH. 40 pipe-for Interstitial monitor, 2-Saddles-welded to tank; 1-18" wide ladder for observation only-welded to clips.

Tank Hardware will be manufactured by Morrison Bros. Co. or equal.

Diesel Tank Hardware required will be supplied by Morrison:

QTY			
			Remote fill, diesel:
1	715--TT3-3MBB-0	3" - 10 Gal.	Top connection w/3" AL male QD adaptor, BR ball valve, hand pump
1	715---S400 AS		Four-leg Stand for 715 10 Gallon Remote Fill Box, Powder Coated Steel
			Overfill prevention, diesel:
1	285---2800 AS	3" w/100 Mesh	Line Strainer, Bottom Clean-out
1	9095AA3300AVEVR	3"	Pressure Fill Overfill Prevention Valve, Aluminum Body with 3"
			Female Threaded x 6" Female Threaded Connections, CARB EVR
1	9095ATM0100 AM	2" & 3"	Manual Test Mechanism 9095A, B & AA (Does Not Include Valve Top)
1	419---03081TEVR	3" x 7'-9"	Aluminum Drop Tube - CARB EVR Approved, (1 per carton)
1	539AS-0300 AD	3"	Diffuser, Slip-on
			Venting - Emergency & Normal, diesel:
2	244OF-0100 AV	8" 8oz/sq.in.	Emergency Vent - Flanged, w/O-Ring, UL & ULC Listed
1	354---0300 AV	3"	Updraft Vent
			Dispensing, diesel:
1	535BDI0300 AV	2"	Gate Valve w/Expansion Relief, Ductile Iron, Locking
1	346DI-0500 AV	2"	External Emergency Valve, Ductile Iron
1	285---2600 AS	2" w/100 Mesh	Line Strainer, Bottom Clean-out
1	7102080200 1V	2"	Solenoid Valve (FKM) w/208 Volt AC Coil
1	076DI-0200 AV	.5"	Expansion Relief Valve (50 PSI Setting)
1	691---0800 1V	2"	Full Port, Forged Brass, Ball Valve

Gasoline Tank Top Hardware Supplied by Morrison:

QTY			
			Remote fill, gasoline:
1	715--TT3-3MBB-0	3" - 10 Gal.	Top connection w/3" AL male QD adaptor, BR ball valve, hand pump
1	715---S400 AS		Four-leg Stand for 715 10 Gallon Remote Fill Box, Powder Coated Steel
			Vapor Recovery, gasoline:
1	715---VR30 AK	3"	Vapor Recovery Kit, Includes Cap, Adaptor & 2 clamps
1	323---0100 AA	4" x 3"	Vapor Recovery Adaptor (4" Vapor, 3" Riser Thread)
1	323C--0100ACEVR	4"	Vapor Recovery Cap, CARB EVR Approved
			Overfill prevention, gasoline:
1	285---2800 AS	3" w/100 Mesh	Line Strainer, Bottom Clean-out
1	9095AA3300AVEVR	3"	Pressure Fill Overfill Prevention Valve, Aluminum Body with 3"
			Female Threaded x 6" Female Threaded Connections, CARB EVR
1	9095ATM0100 AM	2" & 3"	Manual Test Mechanism 9095A, B & AA (Does Not Include Valve Top)
1	419---03081TEVR	3" x 7'-9"	Aluminum Drop Tube - CARB EVR Approved, (1 per carton)
1	539AS-0300 AD	3"	Diffuser, Slip-on
			Venting - Emergency & Normal, gasoline:
2	244OF-0100 AV	8" 8oz/sq.in.	Emergency Vent - Flanged, w/O-Ring, UL & ULC Listed
1	748A--3300 AV	3" 6oz/sq.in	Pressure Vacuum Vent, Brass Internals
			Dispensing, gasoline:
1	535BDI0300 AV	2"	Gate Valve w/Expansion Relief, Ductile Iron, Locking
1	346DI-0500 AV	2"	External Emergency Valve, Ductile Iron
1	285---2600 AS	2" w/100 Mesh	Line Strainer, Bottom Clean-out
1	7102080200 1V	2"	Solenoid Valve (FKM) w/208 Volt AC Coil
1	076DI-0200 AV	.5"	Expansion Relief Valve (50 PSI Setting)
1	691---0800 1V	2"	Full Port, Forged Brass, Ball Valve

Fuel Transfer equipment will be manufactured by Franklin Fueling Systems or equal.

2	402903924		STPKMVS2-VL2-24 (2hp variable speed submersible pump)
2	5874202800		MAG VFC Variable Frequency Controller
2	5800300100		STP-DHI- 120V UNIT Dispenser Hook Isolation
1	403168901		STP-MLD+G, SGL, GAS (mechanical leak detector)
1	403170901		STP-MLD+D, SGL, DIESEL (mechanical leak detector)

Electronic Monitoring of Inventory and leak detection will be manufactured by Morrison Bros. Co or equal.

QTY			Electronic Tank Monitoring with Liquid Level, Interstitial, Transition and Dispenser Sump Sensors
1	1218C-0200 AC		System Console monitors up to 2 tanks
2	1218S-2510 AS	25'	Tank Level Sensor, Drop Tube (4" tank opening is required)
2	419---0300 1T	4" x 10'	Aluminum Drop Tube (1 per carton)
1	1218C-6600 AM		External Input/output Expansion Module
1	1218S-2544 CC	100'	100' spool Belden 7933A cable
5	924LS-0150 AS	15'	Liquid sensor with 15' lead wire
2	305XP-2200 AC	2"	Tank Monitor Cap w/Port Hole & Cable Connector 3/8"
2	1218C-0163 2C		Wireless Client

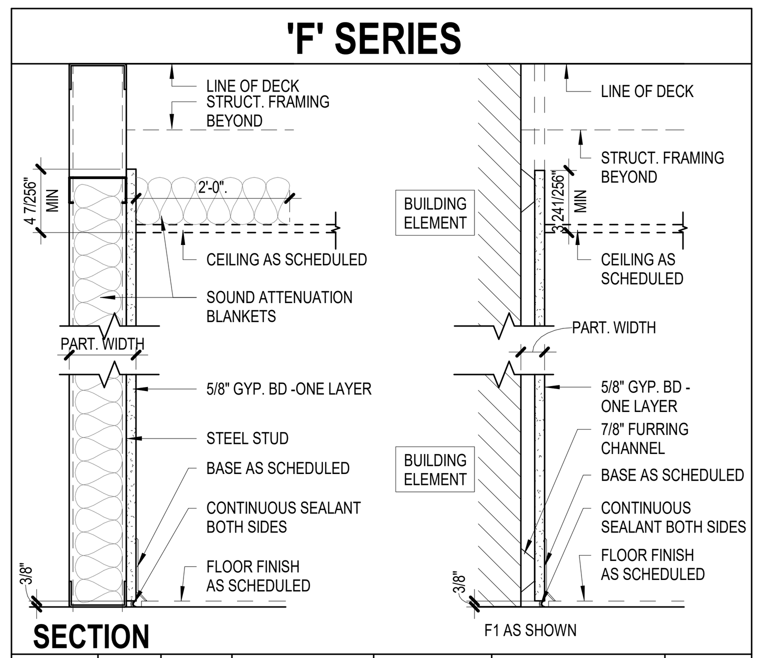
Underground Piping system will include parts and accessories manufactured by Bravo and Franklin Fueling Systems or equal.

QTY			BRAVO
2	B1210-S0		Single wall fiberglass UDC for Wayne Select dispenser (quantity depends on number of dispensers-this qty is based on two dispensers).
4	BK-1015		Boss-Mount bracket for B1000 and stabilizer bar
1	B601-S-220		Single wall FRP vent / transition sump with 2, 2" AST fittings
1	EO-EBS		Electrical off set on the vent / sump box
1	RS-501		Small Rack for 2" pipelines
	-		
	-		Franklin Fueling System piping parts and service station hardware parts for
	-		installation in dispenser sumps (UDC) and transition sump. Quantity of piping and parts depends on how contractor lays out site install and how many dispensers will be on site.
	001-075-063-033PSE		Pipe, UPP, Double Wall, 33-foot sick
	03-063-EIF-U		Elbow, 90°, electrofusion, 2"
	04-063-EIF-U		Elbow 45°, electrofusion, 2"
	08.063-EIF-U		Tee, electrofusion,2"
	02-063-L-U		Welding Socket, 2", Long
	49-075-063TP1-U		Reducer, Electrofusion, 2" DW/2"Primary, w/Test Port
	FEB-075-M		Entry Seal, Fiberglass, 2" DW/2" Primary
	E3-502-201		E32 Equivalent
	Fiberglas-Kit		Polyester Resin Kit, 3, RS,1PUT
	G3-075-063-U		Elbow, 90°, electrofusion, Gemini 2"
	G4-075-063-U		Elbow 45°, electrofusion, Gemini 2"
	GB-075-063-U		Tee, electrofusion, Gemini 2"
	02-75SC-U		Socket, Welding-UPP, 2" SC
	90-063 QL-U		Quick release termination fitting for 2" UPP pipe
	662501902		1-1/2" double poppet shear valve, female
	FF15X18HMXEZ		1-1/2" flexible connector, EZ FIT flange X Hex Male
	EZ Clamp		EZ Fit Clamp
	407493002		2" EZ FIT gasket (one per connection)

Dispensers will be manufactured by Dover Fuel Systems or equal. Hanging Hardware will be manufactured by Husky or equal.

	-		Dispenser will be manufactured by Dover Fuel Systems
	3/G7203D/29GHJKUY/		Each Dispenser includes: Twin, Two Product, Remote Dispenser, Island Oriented, Enhanced Capacity, E25 Compatibility, Internal Filter, Pulse Output Interface Board, Explosion Proof J-Box, Hose Hanger, iMeter2, Select Gen2, electromechanical Totalizer per Hose, Proportional Solenoid Valve and WM002290 Remote Control (1per 5 dispensers). Standard one-year warranty. Unit of Measure: Gallons; Ad Panels: Regular Unleaded / Diesel; Finish: Painted Silver w/ Standard Blue Doors.
	-		
	-		Hanging Hardware for dispensers will be manufactured by Husky
	Husky 010673		9" whip-hose, 3/4" X 9-foot hose, breakaway, swivel, nozzle (two hoses per dispenser)

'F' SERIES



TYPE	STUD	PART. WIDTH	MAX. HEIGHT 25 GA.	MAX. HEIGHT 20 GA.	DESIGN NO.	DESIGN STC MIN STC	DESIGN STC INSUL	EST STC W/O INSUL
F1	7/8"	1 1/2"	6'- 11"	8' - 2"	N/A	-	-	-
F2	2 1/2"	3 1/8"	9' - 7"	11' - 3"	N/A	-	2 1/2"	-
F3	3 5/8"	4 1/4"	12' - 4"	14' - 11"	N/A	-	3 1/2"	-
F6	6"	6 5/8"	15' - 9"*	21' - 7"	N/A	-	3 1/2"	-

LIMITING HEIGHTS BASED ON SSMA / SFIA; L/240; 5 PSF
* ADD WEB STIFFENERS

EQUIPMENT SCHEDULE - BREAKROOMS

ITEM	DESCRIPTION	MANUFACTURER	MODEL	NOTES
EQB1	REFRIGERATOR / FREEZER	GENERAL ELECTRIC	GNE29GYNFS	
EQB2	COUNTERTOP MICROWAVE	GENERAL ELECTRIC	PRB9159SJSS	
EQB3	UNDERCOUNTER DISHWASHER	GENERAL ELECTRIC	GDP645SYNFS	
EQB4	COFFE MACHINE	BY VENDOR	BY VENDOR	NIC
EQB5	ELECTRIC RANGE	GENERAL ELECTRIC	PB930SLSS	
EQB6	VENT HOOD	GENERAL ELECTRIC	JV936DSS	RE: MECH
EQB7	UNDERCOUNTER ICE MACHINE	HOSHIZAKI	C-101BAH-ADDS	RE: PLUMBING
EQB8	OUTDOOR ICE MACHINE	HOSHIZAKI	KM-301BWJ	RE: PLUMBING

EQUIPMENT SCHEDULE - RESTROOMS

ITEM	DESCRIPTION	MANUFACTURER	MODEL	NOTES
EQC1	RECESSED MULTI-ROLL TOILET TISSUE DISPENSER	BOBRICK	B-6977	
EQC2	GRAB BAR 36"	BOBRICK	B-6806.99x36	PEENED FINISH
EQC3	GRAB BAR 42"	BOBRICK	B-6806.99x42	PEENED FINISH
EQC4	SURFACE-MOUNTED TOILET TISSUE DISPENSER WITH SHELF	BOBRICK	B-2840	
EQC5	MIRROR	BOBRICK	B-290 2436	
EQC6	SURFACE-MOUNTED HANDS-FREE SOAP DISPENSOR	BOBRICK	B-2012	
EQC7	RECESSED PAPER TOWEL DISPENSER AND WASTE BIN	BOBRICK	B-3942	

EQUIPMENT SCHEDULE - MAINTENANCE SHOP

ITEM	DESCRIPTION	MANUFACTURER	MODEL	NOTES
EQM1	2-POST LIST - 12,000#	CHALLENGER LIFTS	CL12	
EQM2	4-POST LIFT - 15,000#	CHALLENGER LIFTS	4015XFX	
EQM3	MOBILE COLUMN LIFT - 14,000#	CHALLENGER LIFTS	CLHM-140	
EQM4	HOSE-REEL STAND	BALCRANK	2230-029	
EQM5	275 GAL NEW FLUID TANK WITH PUMP	CONTAINMENT SOLUTION INC		
EQM6	500 GAL USED FLUID TANK WITH PUMP	CONTAINMENT SOLUTION INC		
EQM7	7.5 HP 150 GAL DUPLEX AIR COMPRESSOR	CHAMPION	HR7DF-12	
EQM8	NEW OIL PUMP	BALCRANK	1130-020	PAIRS WITH EQM5
EQM9	USED OIL PUMP	BALCRANK	1121-024	PAIRS WITH EQM4
EQM10	HOSE REEL AIR/WATER	BALCRANK	2120-020	
EQM11	HOSE REEL OIL	BALCRANK	2120-013	
EQM12	ELECTRICAL CORD REEL	SAFLITE	4050-3600	

EQUIPMENT SCHEDULE - FUELAIR

ITEM	DESCRIPTION	MANUFACTURER	MODEL	NOTES
EQF1	10,000 GALLON INSULATED FIREGUARD DOUBLEWALL STORAGE TANK	MODERN	SEE ADJACENT NARRATIVE	GASOLINE
EQF2	10,000 GALLON INSULATED FIREGUARD DOUBLEWALL STORAGE TANK	MODERN	SEE ADJACENT NARRATIVE	DIESEL
EQF3	FUEL DISPENSER	DOVER FUEL SYSTEMS	SEE ADJACENT NARRATIVE	
EQF4	FUEL CONTROLLER	MULTIFORCE	FF814	

EQUIPMENT SCHEDULE - WASHRACK

ITEM	DESCRIPTION	MANUFACTURER	MODEL	NOTES
EQR1	PRESSURE WASHER	ALKLEAN	ALKHEO30050E4G	SEE SPECIFICATIONS
EQR2	SIMPLEX AIR COMPRESSOR	CHAMPION	VR5-8	SEE SPECIFICATIONS
EQR3	TRENCH DRAIN ASSEMBLY	ALKLEAN	SEE SPECIFICATIONS	
EQR4	DETERGENT TANK	ALKLEAN	SEE SPECIFICATIONS	
EQR5	WASHRACK ASSEMBLY	ALKLEAN	SEE SPECIFICATIONS	

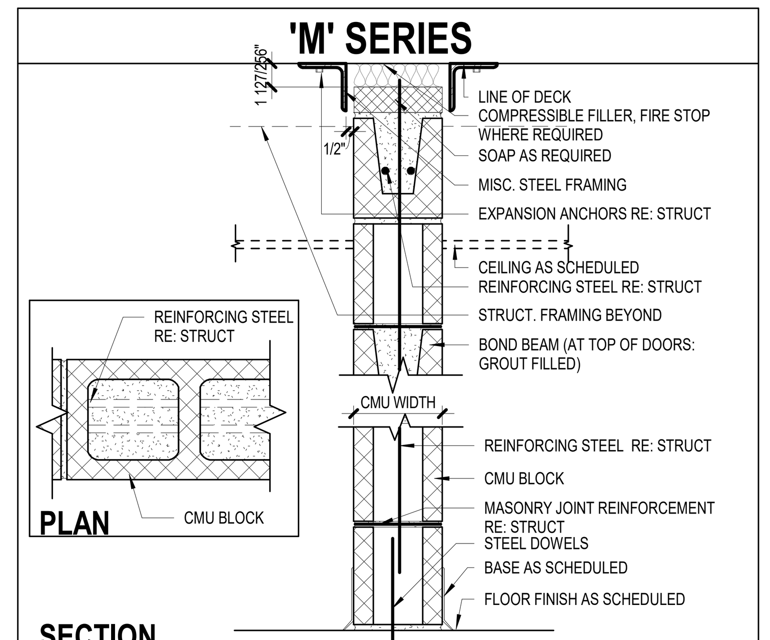
FINISH SCHEDULE

ITEM	MATERIAL	MANUFACTURER	STYLE	COLOR	SIZE
ACP-1	CEILING PANEL	ARMSTRONG	FINE FISSURE WITH HIGH NRC TEGULAR EDGE	WHITE	24" x 24"
ACT-1	CEILING GRID	ARMSTRONG	PRELUDE 15/16" EXPOSED TEE SYSTEM	WHITE	24" x 24"
B-1	WALL BASE	ROPPE	SIMPLICITY	WHITE	4"
B-2	WALL BASE	ROPPE	SIMPLICITY	WHITE - FIELD PAINTED PT-2	4"
B-3	WALL BASE	ROPPE	SIMPLICITY	WHITE - FIELD PAINTED PT-3	4"
CPT-1	CARPET TILE	J+J FLOORING	FAST TRACK 7578	3215 CHASE	18" x 36"
PCT-1	PORCELAIN TILE	DALTILE	SEASON WOOD	SW02 WINTER SPRUCE	6" x 48"
PCT-2	PORCELAIN TILE	DALTILE	DIGNITARY	DR10	12" x 24"
PCT-3	PORCELAIN TILE	DALTILE	LINEAR 0190	ARCTIC WHITE	4" x 8"
PCT-4	PORCELAIN TILE	DALTILE	LINEAR 0190	DESERT GREY	4" x 8"
PL-1	PLASTIC LAMINATE	FORMICA	912-AN - INFINITI FINISH	STORM	N/A
PL-2	PLASTIC LAMINATE	FORMICA	927-58 - MATTE FINISH	FOLKSONE	N/A
PT-1	PAINT	SHERWIN WILLIAMS	SW7636	ORIGAMI WHITE	N/A
PT-2	PAINT	SHERWIN WILLIAMS	SW6804	DIGNITY BLUE	N/A
PT-3	PAINT	SHERWIN WILLIAMS	SW7075	WEB GRAY	N/A
SC-1	SEALED CONCRETE	EUCLID	SUPER AQUA CORE VOX	CLEAR	N/A
SC-2	SEALED CONCRETE	EUCLID	EVERCLEAR	CLEAR	N/A
SC-3	SEALED CONCRETE	STONEHARD SOLUTIONS	STONECLAD GS WITH STONEKOTE GS4	GREY	N/A
SS-1	SOLID SURFACE	CAESARSTONE	SOLID SURFACE	5110 ALPINE MIST	3cm
SS-2	SOLID SURFACE	CAESARSTONE	SOLID SURFACE	4004 RAW CONCRETE	3cm
VCT-1	STATIC DISSAPATIVE TILE	ARMSTRONG	PREMIUM EXCELON CROWN TEXTURE	5C240 PEAT	12" x 12"
VCT-2	VINYL COMPOSITION TILE	ARMSTRONG	EXCELON SDT 51959	COAL	12" x 12"

FINISH SCHEDULE

ITEM	MATERIAL	MANUFACTURER	STYLE	COLOR	SIZE
BR-1	STANDARD MODULAR BRICK	ENDICOT	SMOOTH MODULAR	MEDIUM IRONSPOT 46	3-5/8" x 2 1/4" x 7 5/8"
BR-2	STANDARD MODULAR BRICK	ENDICOT	VELOUR MODULAR	DARK IRONSPOT	3-5/8" x 2 1/4" x 7 5/8"
BR-3	STANDARD MODULAR BRICK	CLOUD CERAMICS	VELOUR MODULAR	CLOUD GREY	3-5/8" x 2 1/4" x 7 5/8"
MS-1	FLAT-FACE CMU	UPCHURCH KIMBROUGH	CMU WITH INTEGRAL COLOR	130 COAL	8" x 8" x 16"
MS-2	SPLIT-FACE CMU	UPCHURCH KIMBROUGH	CMU WITH INTEGRAL COLOR	130 COAL	8" x 8" x 16"
MS-3	CAST-STONE COPING	N/A	CAST-STONE WITH INTEGRAL COLOR	MATCH MS-1	N/A
MT-1	PEMB WALL PANEL	RIGID GLOBAL BUILDINGS	REVERSED "M" WALL PANEL - VERTICAL ORIENTATION	SPECTRALITE 3000 - STONE GRAY	36" OC
MT-2	PEMB SHEETMETAL FLASHING & TRIM	RIGID GLOBAL BUILDINGS	PEMB SHEET METAL, FLASHING AND TRIM	SPECTRALITE 3000 - SLATE GRAY	N/A
MT-3	PEMB ROOFING	RIGID GLOBAL BUILDINGS	PBM ROOF PANEL	SPECTRALITE 3000 - SANDSTONE	36" OC
MT-4	SHEET METAL FLASHING & TRIM	BERRIDGE	N/A	PREWEATHERED GALVALUME	N/A
MT-5	STOREFRONT FINISH	KAWNEER	CLEAR ANODIZED	CLEAR ANODIZED	N/A
MT-6	PREFINISHED METAL PANEL	BERRIDGE	"M" PANEL	PREWEATHERED GALVALUME	36" OC
PT-5	PAINT	SHERWIN WILLIAMS	SW 7068	GRIZZLE GRAY	N/A
WD-1	WOOD COMPOSITE LAP PANELING	NEWTECHWOOD	ULTRASHIELD WITH NATURALE	SMOKE WHITE	US09 PROFILE

'M' SERIES



TYPE	CMU WIDTH	HEIGHT	2 OR 3 HOUR DESIGN NO.	MIN. STC GROUT	MIN. STC HOLLOW
1M8	7 5/8" (8" NOMINAL)	RE: STRUCT	UL-U904 (3- HR)	50	45

PARTITION GENERAL NOTES

1. ALL NEW INTERIOR PARTITIONS SHOWN ON THE FLOOR PLANS ARE TYPE 'A3', UNLESS NOTED OTHERWISE.
2. PARTITION TYPE REFERENCES ARE INDICATED ON THE FLOOR PLANS.
3. PARTITION TYPES DO NOT DETERMINE EXTERIOR WALL CONSTRUCTION. REFER TO WALL SECTIONS FOR EXTERIOR WALL CONSTRUCTION.
4. ALL PARTITIONS THAT EXTEND FROM FLOOR TO THE UNDERSIDE OF DECK ABOVE SHALL HAVE THEIR PERIMETER AND ALL PENETRATIONS SEALED SMOKETIGHT WITH ACOUSTICAL SEALANT, AS APPLICABLE.
5. WHERE CERAMIC TILE, PORCELAIN PAVERS, QUARRY TILE, TERRAZZO OR CEMENT ARE INDICATED TO BE APPLIED TO PARTITIONS AS A BASE OR WALL FINISH SURFACE, REPLACE THE GWB WITH 5/8" TILE BACKER BOARD THAT HAS BEEN TESTED AND CERTIFIED TO BE EQUIVALENT IN FIRE RATING TO THE GWB WHICH THEY REPLACE. THE SCHEDULED FIRE RATING OF ANY PARTITION SHALL NOT BE VIOLATED BY THE APPLICATION OF ANY FINISHES. ALSO USE L/360 DEFLECTION CRITERIA AND 20 GAUGE MINIMUM FRAMING AT THESE LOCATIONS.
6. FLOOR TO FLOOR DIMENSIONS MAY VARY. REFER TO BUILDING SECTIONS, WALL SECTIONS, AND OTHER CONTRACT DRAWINGS FOR DETERMINING FLOOR TO FLOOR DIMENSIONS.
7. CEILING HEIGHTS MAY VARY ON EITHER OR BOTH SIDES OF THE PARTITION. REFER TO FLOOR PLANS, REFLECTED CEILING PLANS AND CEILING DETAILS FOR CEILING HEIGHTS.
8. METAL STUDS SHALL BE SPACED AT 16" O.C. MAXIMUM, UNLESS NOTED OTHERWISE. LIGHT GAUGE METAL FRAMING STUDS SPACED AT 16" O.C. MAXIMUM SHALL BE USED WHERE SPECIFIED OR DETAILED. RESILIENT CHANNELS AND FURRING CHANNELS SPACED 24" O.C. VERTICALLY MAX. 4" MAX FROM TOP AND BOTTOM ENDS.
9. ALL STEEL STUDS ARE CONTINUOUS FROM FLOOR TRACK TO BOTTOM OF DECK ABOVE, UNLESS NOTED OTHERWISE. ALLOW FOR DEFLECTION WITH TOP TRACK ASSEMBLY.
10. COLD FORMED METAL FRAMING SHALL BE USED IN LIEU OF STEEL STUDS WHERE REQUIRED TO MAINTAIN STUD WIDTH INDICATED ON THE DRAWINGS.
11. ALL GYPSUM BOARD IS TO BE 5/8" THICK UNLESS NOTED OTHERWISE.
12. PARTITION TYPE REFERENCES DO NOT INCLUDE THE APPLIED FINISHES INDICATED BY THE ROOM FINISH REFERENCE AND ROOM FINISH SCHEDULE.
13. REFER TO PARTITION DETAILS, DOOR INFORMATION, AND DOOR DETAILS FOR FRAMING AND ANCHORAGE AT DOORS.
14. INSTALL DOUBLE 20 GA. STUDS AT ALL OPENINGS, HEADS, SILLS, JAMBS UNLESS NOTED OTHERWISE AT MINIMUM.
15. REFER TO SYMBOLS ON PLAN FOR FLOOR PLAN INDICATION OF CHANGES IN PARTITION TYPE.
16. ALL JOINTS IN GYPSUM BOARD SURFACES TO BE TAPED AND FLOATED, INCLUDING RATED PARTITIONS, UNRATED PARTITIONS, EXPOSED SURFACES, CONCEALED SURFACES, AND SURFACES ABOVE THE CEILINGS.
17. ALL SOUND ATTENUATION BLANKETS SHALL BE CONTINUOUS FOR THE FULL HEIGHT OF PARTITION AND FULL WIDTH OF THE PARTITION, UNLESS OTHERWISE NOTED.
18. PARTITION TYPES AND DETAILS SHOWN HEREIN ARE TYPICAL. WHERE PARTITION TYPES OR DETAILS VARY ONLY SLIGHTLY FROM THE TYPICAL, THE ABBREVIATION "SIM" SHALL BE USED ADJACENT TO THE PARTITION TYPE REFERENCE OR DETAIL REFERENCE. PARTITIONS OR DETAILS NOT SIMILAR SHALL BE CONSTRUCTED IN A LOGICAL MANNER USING THE PRINCIPLES EVIDENT IN THE TYPICAL PARTITION TYPES AND DETAILS, AND IN ACCORDANCE WITH SPECIFICATION SECTIONS.
19. STC RATING SHOWN IN PARTITION TABLES ARE TAKEN FROM MANUF. PRODUCT LITERATURE. ADDITIONAL STC INFORMATION IS AVAILABLE THROUGH ADDITIONAL RESOURCES.
20. PARTITIONS SHALL HAVE MECH. AND ELEC. DEVICES SEALED WITH PUTTY PACKS FOR WALLS THAT EXCEED STC 45.

PARTITION REFERENCES

1. SSMA - STEEL STUD MANUFACTURERS ASSOCIATION, "PRODUCT TECHNICAL INFORMATION," COPYRIGHT 2010.
2. SFIA - STEEL FRAMING INDUSTRY ASSOCIATION, "TECHNICAL GUIDE FOR COLD-FORMED STEEL FRAMING," COPYRIGHT 2011.
3. ASTM - ASTM INTERNATION DESIGNATION C754-08, "STANDARD SPECIFICATION FOR INSTALLATION OF STEEL FRAMING MEMBERS TO RECEIVE SCREW-ATTACHED GYPSUM PANEL PRODUCTS."
4. GA - GYPSUM ASSOCIATION, "FIRE RESISTIVE DESIGN MANUAL," 19TH EDITION GA-600-2009.
5. UL - UNDERWRITER'S LABORATORIES, "BUILDING MATERIALS, FIRE PROTECTION, ROOFING MATERIALS AND SYSTEMS AND FIRE RESISTANCE DIRECTORIES (4 VOLUMES)," 2011 EDITION.
6. WHI-WARNOCK HERSEY MARK DIRECTORY
7. ICBO- ICBO EVALUATION SERVICES, INC. EVALUATION REPORT No. 3579
8. SAFB- MANUFACTURER THERMAFIBER PRODUCT: SOUND ATTENUATION FIRE BLANKET.

GENERAL NOTES

1. RE: SPEC SECTION 08 71 00 (DOOR HARDWARE) FOR DOOR HARDWARE SETS.

2. FOR MAINTENANCE SHOP EQUIPMENT CONTACT THE FOLLOWING REP FOR PRICING:

JON THORNTON
VSA MANUFACTURER'S REPRESENTATIVE
JTHORNTON@VSAREPS.COM
281.744.6223

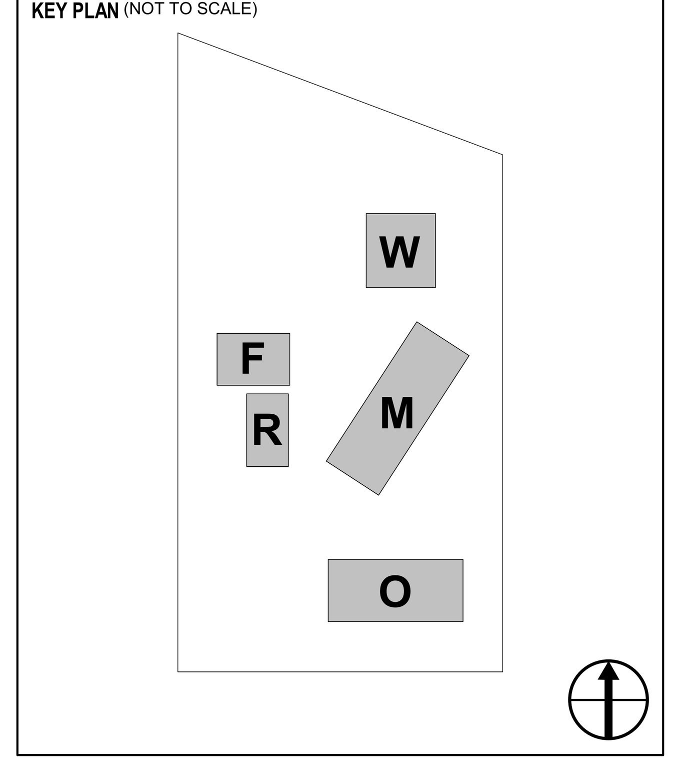
3. FOR WASHRACK EQUIPMENT CONTACT THE FOLLOWING REP FOR PRICING:

PETE BULLMORE
ALKLEAN INDUSTRIES, INC
PETE@ALKLEAN.COM
713.818.2728

4. FOR FUELAIR EQUIPMENT CONTACT THE FOLLOWING REP FOR PRICING:

DON DEANGELO
ERLING SALES & SERVICE
DDANGELO@ERLINGSALES.COM
214-505-2900

KEY PLAN (NOT TO SCALE)



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713 337 8881

Structural Engineering
Dally & Associates
9800 Richmond Avenue
Suite 460
Houston, TX 77042
713 337 8881

MEP Engineering
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713 871 8484

Low Voltage & Security
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390 Glenborough Dr.
Suite 290
Houston, TX 77067
832 249 9379

Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities
5115 TX-3
Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	Addendum No. 03	07 OCT 2020

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.
REGISTERED ARCHITECT WENDY TEAS HEGER 16677 STATE OF TEXAS
10/07/2020

GENERAL - SCHEDULES

DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

G-110
SHEET NUMBER

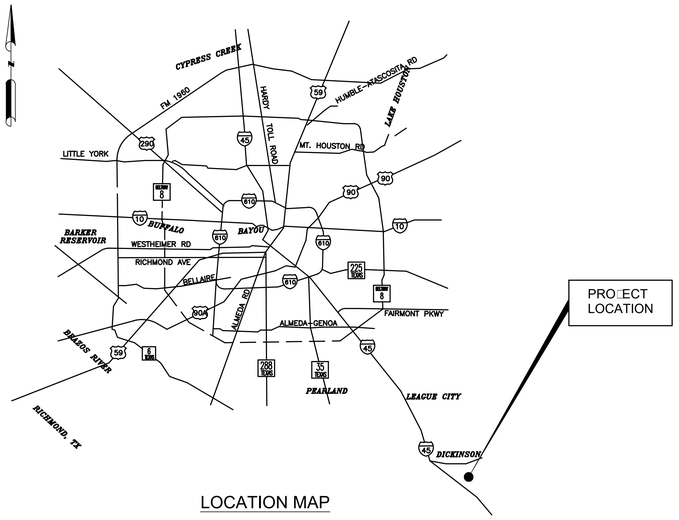
FILE PATH
USER NAME: C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-SITE_vgandhiV3V3P.rvt
DATE STAMP: 10/7/2020 6:17:19 PM

GALVESTON COUNTY
ROAD & BRIDGE DEPARTMENT FACILITIES-PHASE 1

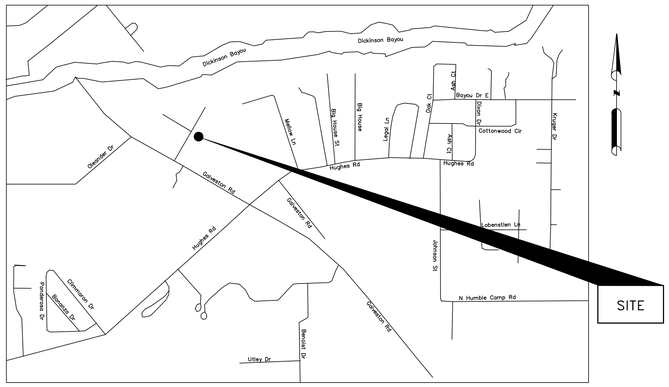
5115 TX- 3
DICKINSON, TX 77539

ISSUE FOR PERMIT

△3 ADDENDUM NO.3 10-07-2020



LOCATION MAP



VICINITY MAP
N.T.S.
KEY MAP: 190-A

CIVIL ENGINEER:

DALLY ASSOCIATES, INC.
TBPE FIRM REGISTRATION 3426

9800 RICHMOND AVENUE, SUITE 460
HOUSTON, TX 77042
(713) 337 8881
www.dallyassociates.com

Project Manager: Jose Diego Monroy, CFM
Project Engineer: Fred Dally, P.E.

OCTOBER 07, 2020

CIVIL SHEET INDEX

SHEET	SHEET NAME	
△3 C1.0-PH1	COVER SHEET	
C2.0-PH1	TOPOGRAPHIC SURVEY	
C3.0-PH1	DEMOLITION PLAN	
C4.0-PH1	PAVING PLAN	△3
C5.0-PH1	LAYOUT PLAN	
C6.0-PH1	GRADING PLAN	
C7.0-PH1	UTILITY PLAN	
C7.1-PH1	UTILITY PLAN	
C8.0-PH1	GENERAL NOTES	
C9.0-PH1	PAVEMENT DETAILS	
C10.0-PH1	STORM DRAIN DETAILS	△3
C11.0-PH1	WATER DETAILS	
C12.0-PH1	SANITARY SEWER DETAILS	
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C15.0-PH1	DETENTION POND CROSS SECTION	△3
C16.0-PH1	STORM DRAIN PLAN & PROFILE	
C17.0-PH1	WATER LINE PLAN & PROFILE	

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(New Statewide Number Outside Houston)
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DEPARTMENT FACILITIES PH1
5115 TX-3
DICKINSON, TX 77539

COVER SHEET

TBPE FIRM REGISTRATION #3426

DRAWING SCALE

DESIGNED BY: JDM
CHECKED BY: JDM
DATE: 10/07/20

STATE OF TEXAS
FRED DALLY
90904
LICENSED PROFESSIONAL ENGINEER
10/07/2020

△3 C1.0-PH1

NO.	DATE	ADDENDUM NO. 3 Revisions	FD. App.
3	10/07/2020		

GENERAL NOTES:

1. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Galveston County, Texas, Map No. 485470095 C dated May 2, 1983 This properties lies within Zone "C" of the flood insurance rate map and does not lies within a special flood hazard area.

   This flood statement does not imply that the property or structures thereon will be free from flooding or flood damage. On rare occasions floods can and will occur and flood heights may be increased by man–made or natural causes. The location of the flood zone was determined by scaling from said FEMA map. The actual location, as determined by elevation contours, may differ. Intertek Surveying & Services assumes no liability as to the accuracy of the location of the flood zone limits. This flood statement shall not create liability on the part of KM Surveying, LLC.

2. This survey has been prepared for the sole purpose of the transaction described in the above mentioned Commitment for Title Insurance and the parties listed thereon. This survey is not to be used for any subsequent transactions.

3. This survey does not determine the location of wetlands, fault lines, toxic waste, cemeteries, landfills, dumps or any other environmental issues.

4. Intertek Surveying & Services has not been provided with construction plans showing the location of underground utilities. Underground utilities may exist which are not shown hereon.

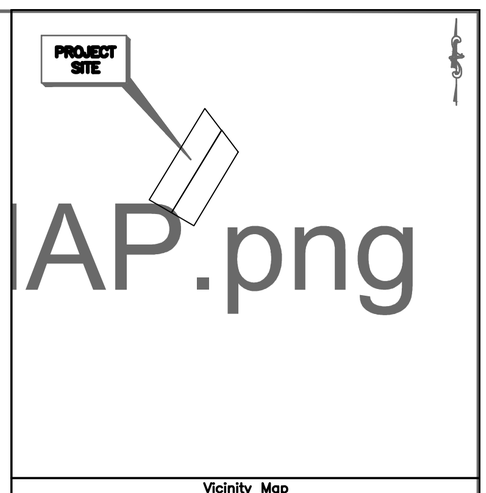
5. Readily visible improvements/utilities were located with this survey, no subsurface probing, excavation or exploration was performed Intertek Surveying & Services.

6. This exhibit has been prepared without benefits of current title report. There may be easements, setbacks, and other matters of record not shown hereon, the surveyor has not abstract the property.

7. Reference is made to a Survey of a 3.193–acre (139,093 sq. ft.) Tract situated in the Alexander Farmer League, A–11 and The W.K Wilson Survey, A–208 Galveston County, Texas. dated 12/12/2018. Prepared by Weisser Engineering Co. Job. No. GD404 and in the field book 3510.

LEGEND:
- BOLLARD
- BENCHMARK
- INLET
- SMALL INLET
- GAS MARKER
- GAS METER
- GAS VALVE
- GUY/ANCHOR
- STORM MANHOLE
- SIGN
- POWER POLE
- WATER MH
- WATER METER
- DECIDUOUS TREE

0 20 40 80



Vicinity Map
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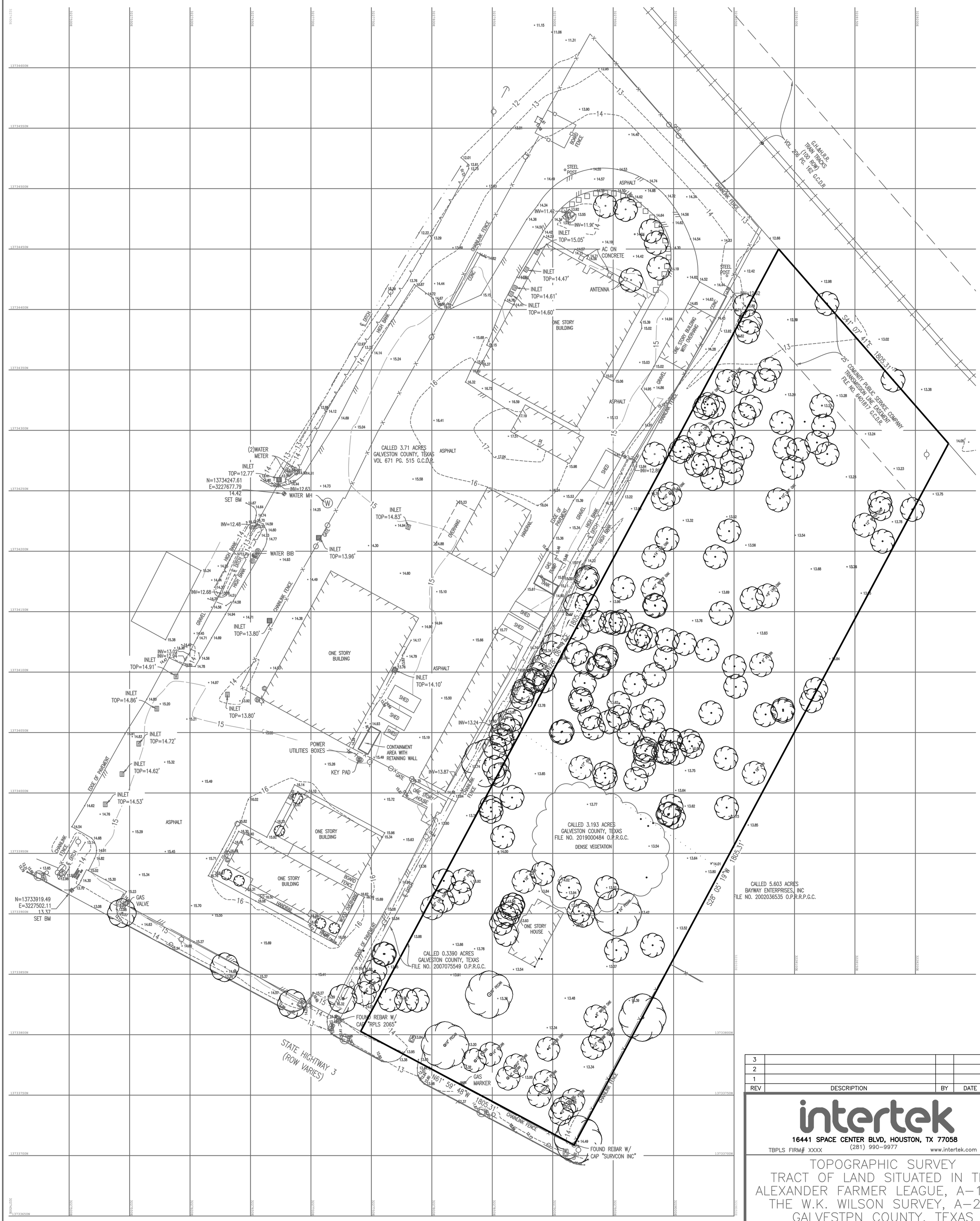


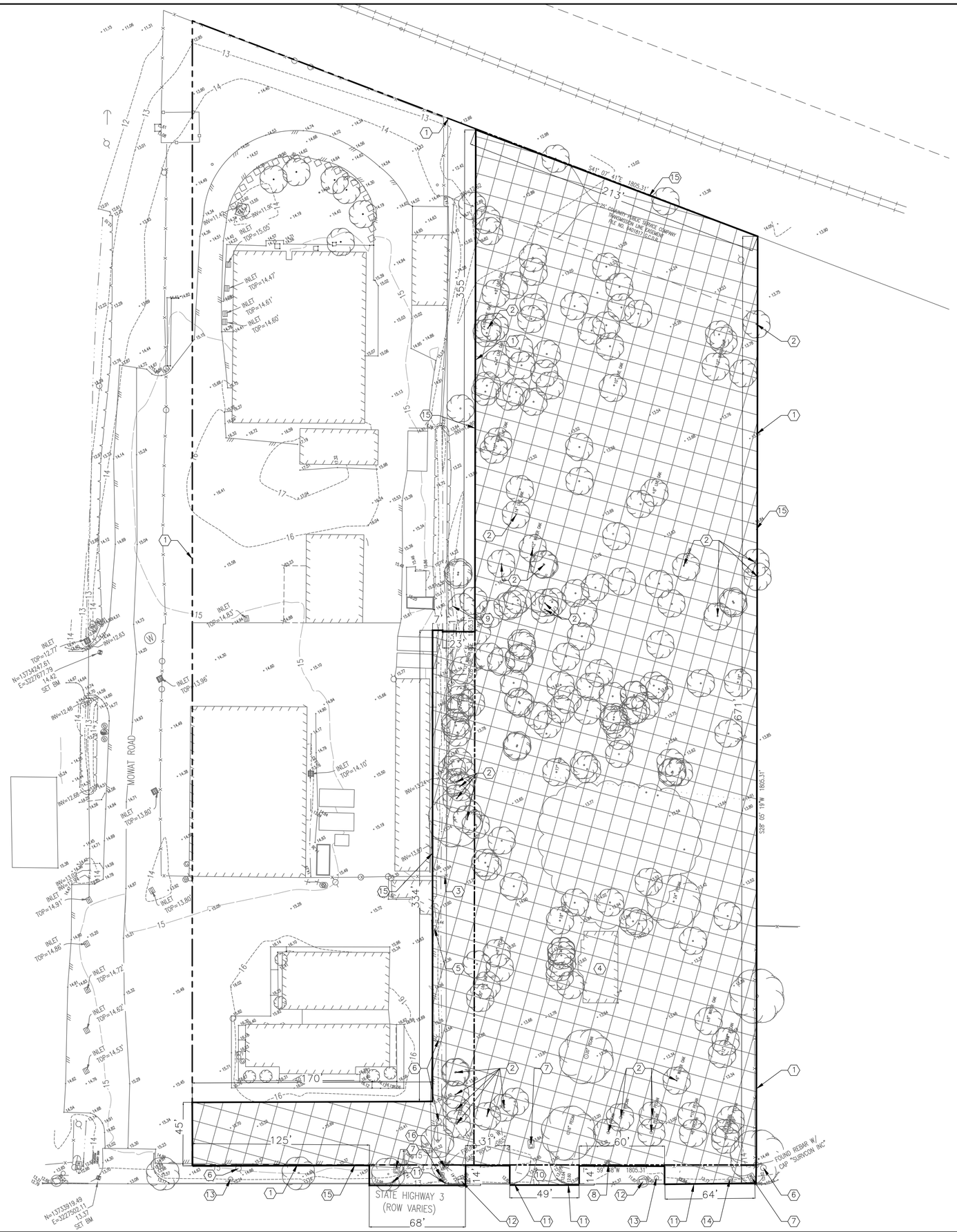
REV	DESCRIPTION	BY	DATE
3			
2			
1			

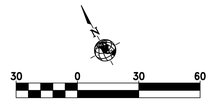
intertek
16441 SPACE CENTER BLVD, HOUSTON, TX 77058
TBPLS FIRM# XXXX (281) 990–9977 www.intertek.com

TOPOGRAPHIC SURVEY
TRACT OF LAND SITUATED IN THE ALEXANDER FARMER LEAGUE, A–11 & THE W.K. WILSON SURVEY, A–205 GALVESTPN COUNTY, TEXAS

DATE: November 8, 2019	SURVEYED: MR DRAWN: MR	JOB NO.: 19113 SCALE: 1"= 40'
DWG.: psi – iss – 19113 topo 07172019 trees (1).dwg	CHECKED: KW	SHEET NO.: 1 OF 1

3 C2.0-PH1





DEMOLITION NOTES TO CONTRACTOR

1. ALL ITEMS DESIGNATED TO BE REMOVE SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
2. THE CONTRACTOR AND OWNER SHALL COORDINATE WITH CENTERPOINT FOR TERMINATION OF POWER AND GAS SERVICES TO THE SITE OR NEW SERVICES. THIS WORK WILL BE PROVIDED BY CENTERPOINT AND SHALL BE SCHEDULE AS ONE OF THE FIRST ITEMS OF BUSINESS.
3. THE CONTRACTOR SHALL BE PROVIDE AN APPROVED TRAFFIC CONTROL PLAN TO PERFORM ANY WORK PROPER SIGNAGE.
4. WHEN EXISTING SIDEWALK IS CLOSED FOR CONSTRUCTION, CONTRACTOR SHALL BARRICADE THAT AREA AND PROVIDE SAFE ALTERNATE PATH FOR PEDESTRIAN WITH PROPER SIGNAGE.
5. ALL TRAFFIC SIGNAGE WITHIN THE ROW SHALL BE PROTECTED INPLACE AT ALL TIMES. ANY DAMAGE TO THEN SHALL BE REPAIRED IMMEDIATELY. DURING THE CONSTRUCTION, SAFE OPERATION OF PEDESTRIAN OR VEHICULAR TRAFFIC, CONTRACTOR SHALL PROVIDE A CERTIFIED FLAGGER OR PEACE OFFICER UNTIL THAT SIGN IS RESTORED TO EXISTING CONDITION.
6. CONTRACTOR SHALL REPAIR ANY ITEMS DAMAGE DURING CONSTRUCTION TO ITS EXISTING CONDITION.
7. PRIOR TO ANY DEMOLITION WORK, THE CONTRACTOR SHALL LOCATED AS WELL CAPPED. ALL UTILITIES THAT ARE SHOWN SHALL BE LOCATED AS WELL AND CAPPED. ALL UTILITIES NOT SHOW SHALL BE LOCATED AS WELL CAPPED. UTILITIES THAT ARE SHOWN ON PLANS ARE APPROXIMATE LOCATION ONLY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE ON SITE DURING ALL CONSTRUCTION ACTIVITIES.
9. THE CONTRACTOR SHALL ENTER & EXIT THE SITE THROUGH EXISTING DRIVEWAY.
10. CAUTION. THERE ARE OVERHEAD POWERLINES WITH IN THE WORK AREA. CONTRACTOR SHALL FOLLOW CITY, STATE AND FEDERAL GUIDELINES WHEN WORKING AROUND EXISTING POWER LINES.
11. THE DEMOLITION AND REMAIN OF THE TREES WILL BE UNDER THE INDICATIONS OF THE PLANS OF LANDSCAPE. PLEASE CONFIRM WITH THE CITY.

DEMOLITION KEY NOTES

1. PROPERTY LINE.
2. EXISTING TREE TO REMAIN. PROTECT IN–PLACE.
3. EXISTING CHAINLINK FENCE TO BE REMOVED.
4. EXISTING BUILDING TO BE REMOVED.
5. EXISTING POWER POLE TO BE REMOVED.
6. EXISTING POWER POLE TO REMAIN. PROTECT IN–PLACE.
7. EXISTING WATER METER TO REMAIN OR TO BE REMOVED. PROTECT IN–PLACE. IN ACCORDING WITH OWNER/CITY FOR FURTHER INSTRUCTION.
8. EXISTING GAS MARKER TO REMAIN. PROTECT IN–PLACE.
9. EXISTING DITCH TO BE REMOVED.
10. EXISTING DRIVEWAY TO BE REMOVED.
11. EXISTING CURB TO BE REMOVED.
12. EXISTING INLET BB TO REMAIN. PROTECT IN–PLACE.
13. EXISTING TRAFFIC SIGN TO REMAIN. PROTECT IN–PLACE.
14. EXISTING TRAFFIC SIGN TO BE RELOCATED.
15. LIMITS OF DEMOLITION.
16. EXISTING POWER POLE TO BE RELOCATED.

DEMOLITION HATCH LEGEND

LIMITS OF DEMOLITION.

ONE– CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223–4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
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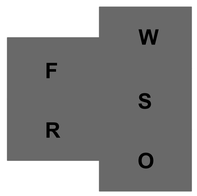
KEY PLAN (NOT TO SCALE)



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Low Voltage & Security
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713 463 8200

Galveston County Road & Bridge Department Facilities PH1

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Dickinson, TX

REVISION HISTORY

3	ADDENDUM NO. 3	10-07-2020

REVISION DESCRIPTION DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

DEMOLITION PLAN

DRAWN BY JDM	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

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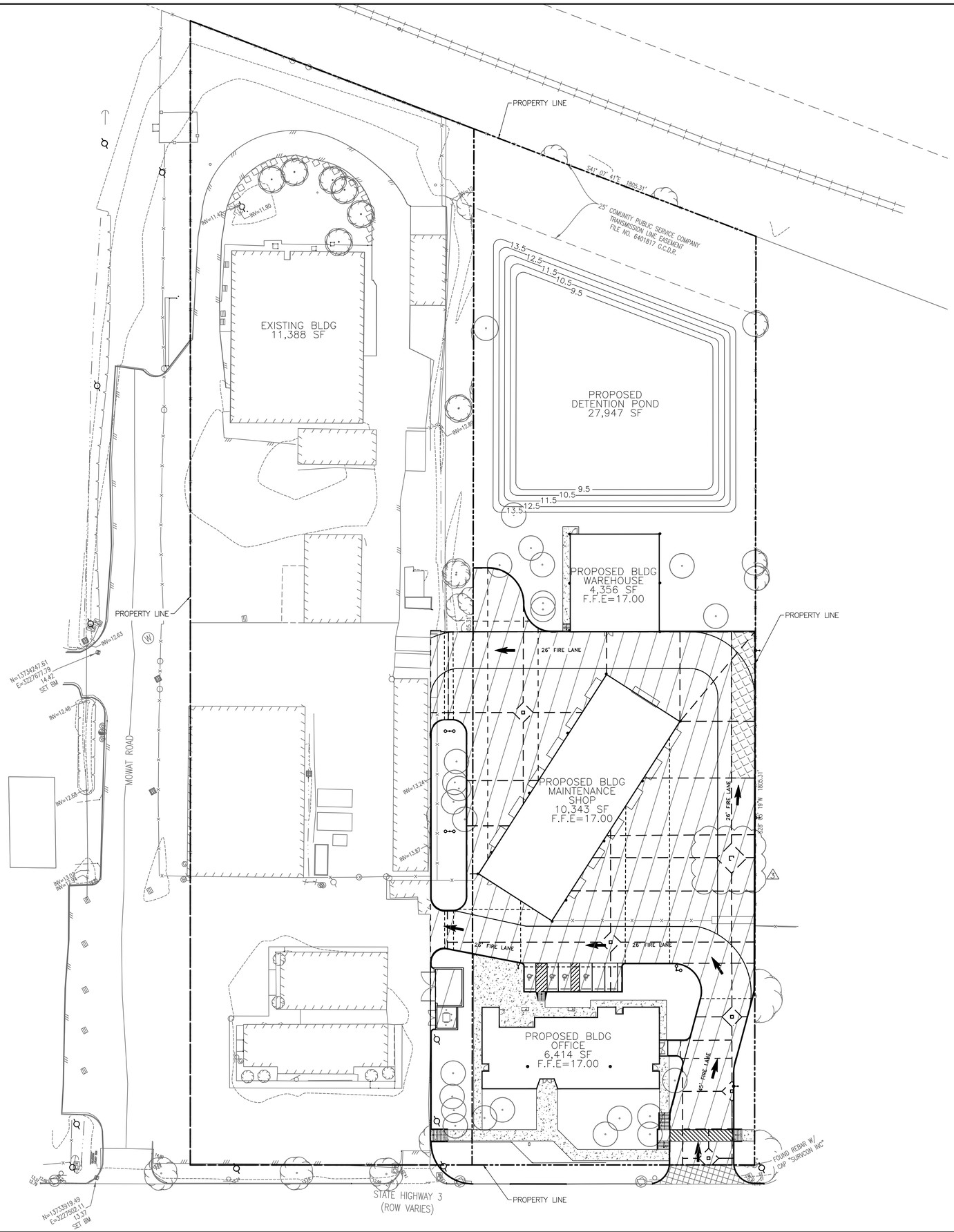


SCALE: 1"=30'

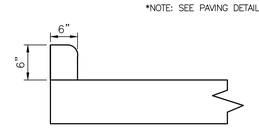
HATCH LEGEND:

- 6" THICK CONCRETE PAVING APPROX: 46,728 SQFT RE: C-9.0 PAVEMENT DETAILS
- 4.5" THICK CONCRETE FOR SIDEWALK APPROX: 5,762 SQFT RE: C-9.0 PAVEMENT DETAILS
- 6" THICK CONCRETE FOR DRIVEWAY APPROX: 707 SQFT RE: C-9.0 PAVEMENT DETAILS
- 6" TALL CURB REF. SECTION
- PROPOSED BUILDING LAYOUT
- 7" THICK CONCRETE PAVING APPROX: 1,699 SQFT RE: C-9.0 PAVEMENT DETAILS
- EXISTING PAVEMENT APPROX: 64,995 SQFT

LEGEND:

- PROPOSED SAWCUTTING JOINT
- PROPOSED EXPANSION JOINT

*NOTE: SEE PAVING DETAILS FOR JOINT SECTIONS



6" CONCRETE CURB APPROX: 1,516 LF

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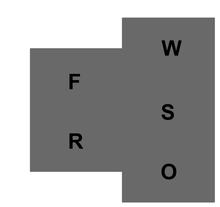
KEY PLAN (NOT TO SCALE)



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PAVING PLAN

DRAWN BY	CHECKED BY
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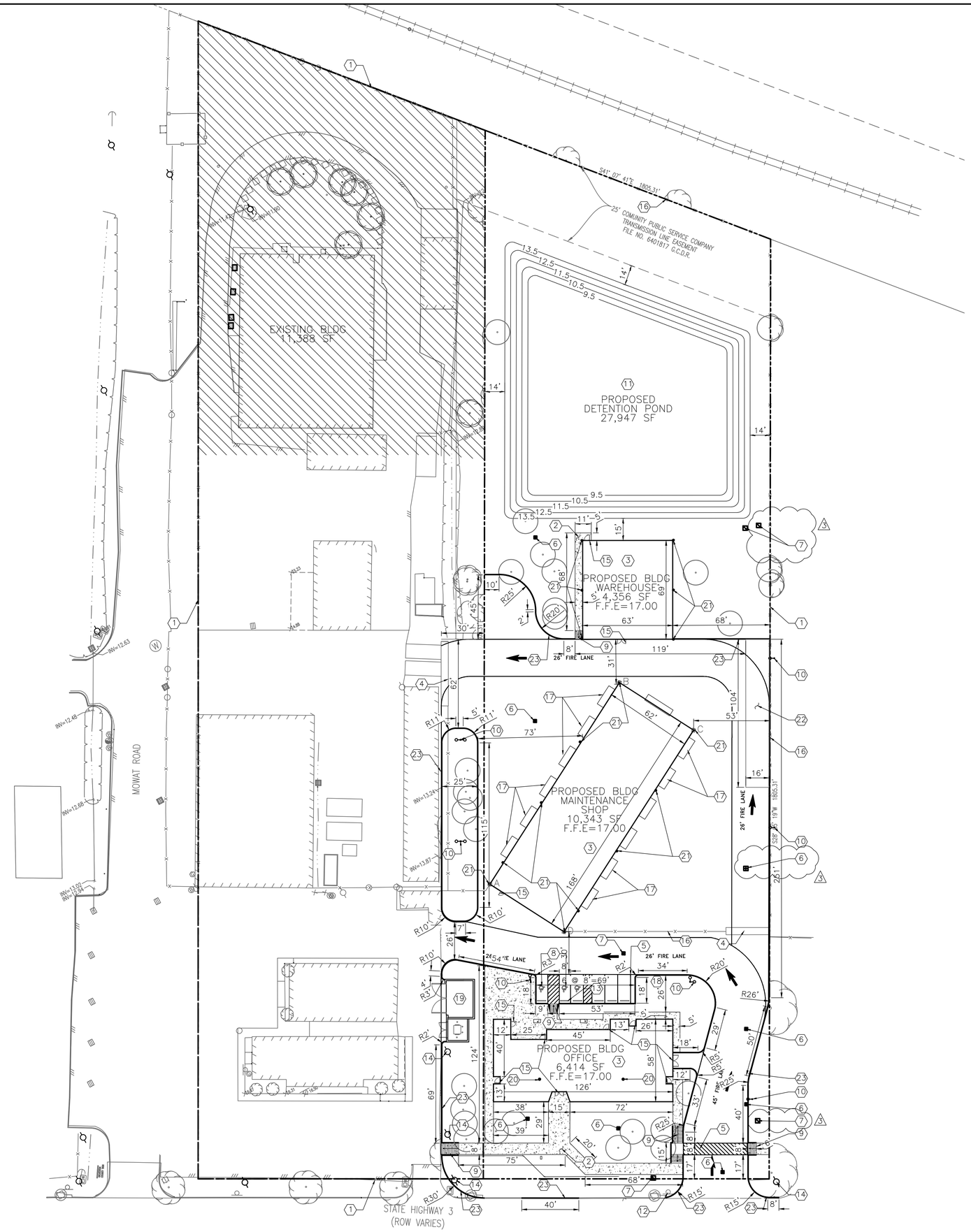

SCALE: 1"=30'

SITE LAYOUT NOTES

1. THE HORIZONTAL AND VERTICAL LOCATION OF EXISTING SUBSURFACE UTILITIES HAVE BEEN DETERMINED FROM DATA PROVIDED BY OTHERS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING UTILITIES WITHIN THE AREA OF CONSTRUCTION THAT ARE TO REMAIN IN SERVICE. CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL DIMENSIONS ARE FROM FACE OF CURB UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS ARE TO FACE OF BUILDING. REFER TO ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS.
4. REFER TO ARCHITECTURAL PLANS FOR ALL STAIRS, HANDICAPPED RAMP AND RETAINING WALL DETAILS.
5. REFER TO LANDSCAPE ARCHITECT PLANS FOR DETAILS AND DIMENSIONS OF LANDSCAPE AND HARDSCAPE AREAS.

LAYOUT KEY NOTES

1. PROPERTY LINE.
2. PROPOSED 5" THICK CONCRETE SIDEWALK PER PAVEMENT DETAILS.
3. PROPOSED BUILDING PER STRUCTURAL AND ARCHITECTURAL DRAWINGS.
4. PROPOSED GATE BY OTHERS.
5. PROPOSED 4" YELLOW STRIPING PER PAVEMENT DETAILS TYP.
6. PROPOSED STORM DRAIN INLET TYPE "A" PER STORM DRAIN DETAILS.
7. PROPOSED JUCTION BOX PER STORM DRAIN DETAILS.
8. PROPOSED ADA SYMBOL PER PAVEMENT DETAILS.
9. PROPOSED ADA RAMP PER PAVEMENT DETAILS.
10. PROPOSED LIGHT POLE; REFER TO MEP DRAWINGS FOR LAYOUT AND SPECIFICATIONS.
11. PROPOSED DETENTION POND. REFER TO DETENTION POND CROSS SECTIONS.
12. EXISTING TRAFFIC SIGN TO REMAIN. PROTECT IN-PLACE.
13. PROPOSED WHEEL STOP.
14. EXISTING POWER POLE TO REMAIN. PROTECT IN-PLACE.
15. PROPOSED DOOR PER PROPOSED BUILDING.
16. PROPOSED CHAIN - LINK FENCE
17. PROPOSED ACCESS RAMP
18. PROPOSED GENERATOR ENCLOSURE
19. PROPOSED DUMPSTER ENCLOSURE
20. PROPOSED 8" SQUARE DOWNSPOUT. REFER TO MEP DRAWINGS.
21. PROPOSED 8" SQUARE PREFINISHED METAL DOWNSPOUT. REFER TO ARQUITECTURAL DRAWINGS.
22. PROPOSED 7" THICK CONCRETE PAVING PER PAVEMENT DETAILS.
23. PROPOSED 6" CONCRETE CURB PER PAVEMENT DETAILS.

HATCH LEGEND

- CONSTRUCT 5" CONCRETE SIDEWALK ON PRIVATE AND PUBLIC PROPERTY OVER COMPACTED SUB-GRADE PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS
- PROPOSED BUILDING LAYOUT. CONTRACTOR SHALL REFER TO STRUCTURAL/ARCHITECTURAL PLANS TO BUILDING DIMENSIONS AND SPECIFICATIONS
- AREA NOT IN SCOPE
- CONSTRUCT 7" CONCRETE PAVEMENT ON PRIVATE AND PUBLIC PROPERTY OVER COMPACTED SUB-GRADE PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS

BUILDING CONTROL POINT		
Point	Northing	Easting
A	13733982.67	3227842.01
B	13734064.71	3227988.32
C	13734010.92	3228018.47
D	13733928.85	3227872.18

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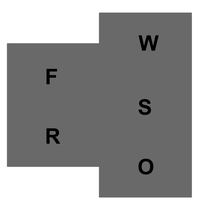

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STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

LAYOUT PLAN

DRAWN BY: JDM	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 07 OCT 2020

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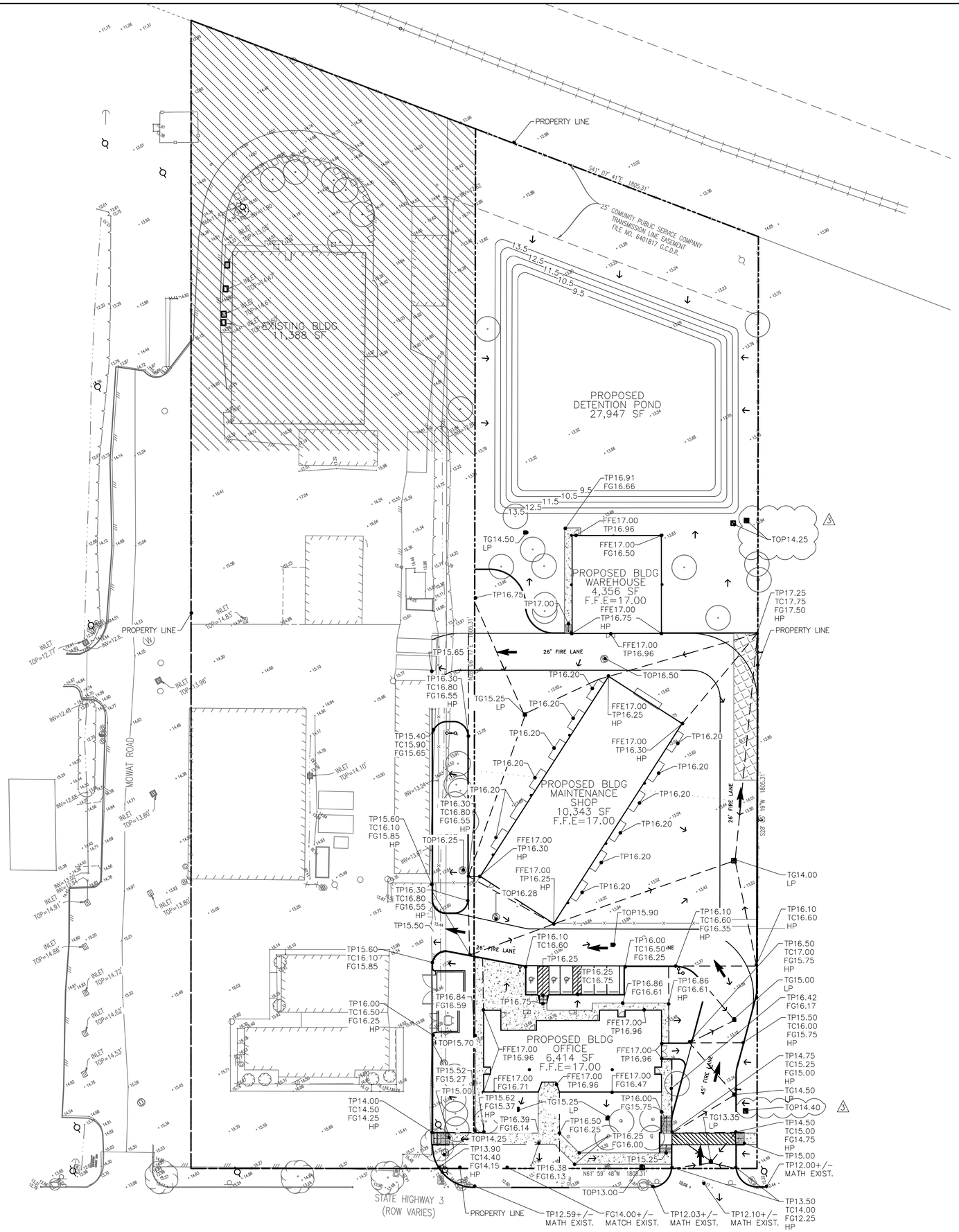

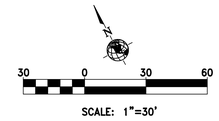

GRADING PLAN NOTES

1. REFER TO GEOTECHNICAL REPORT FOR ALL COMPACTION AND MOISTURE CONTENT REQUIREMENTS.
2. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL MANHOLES, CLEANOUTS, VALVE BOXES, FIRE HYDRANTS, ECT. WITHIN THE AREA OF CONSTRUCTION THAT ARE TO REMAIN. THEY MUST BE ADJUSTED TO PROPER LINE AND GRADE BY THE CONTRACTOR PRIOR TO AND AFTER THE PLACING OF PAVING AND GRADING. AT NO ADDITIONAL COST TO THE OWNER.
3.
4. ALL INLETS AND MANHOLES SHALL MEET THE REQUIREMENTS OF THE LOCAL GOVERNING AGENCY.
5. SIDEWALKS SHALL HAVE A SLOPE NO GRATER THAN 5% AND A CROSS SLOPE NOT GRATER THAN 2%, UNLESS OTHERWISE.

ABBREVIATIONS

TW TOP OF WALL

TP TOP OF PAVEMENT ELEVATION

TC TOP OF CURB ELEVATION

TG TOP OF GRATE ELEVATION (STORM DRAIN INLET)

FG FINISHED GRADE ELEVATION

FFE FINISHED FLOOR ELEVATION

BFE BASE FLOOD ELEVATION

FL FLOWLINE ELEVATION

HATCH LEGEND

CONSTRUCT 5" CONCRETE SIDEWALK OVER COMPACTED SUB-GRADE PER GEOTECHNICAL. ENGINEER'S RECOMMENDATIONS

PROPOSED BUILDING LAYOUT.

AREA NOT IN SCOPE

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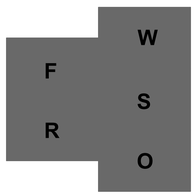
KEY PLAN (NOT TO SCALE)



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GRADING PLAN

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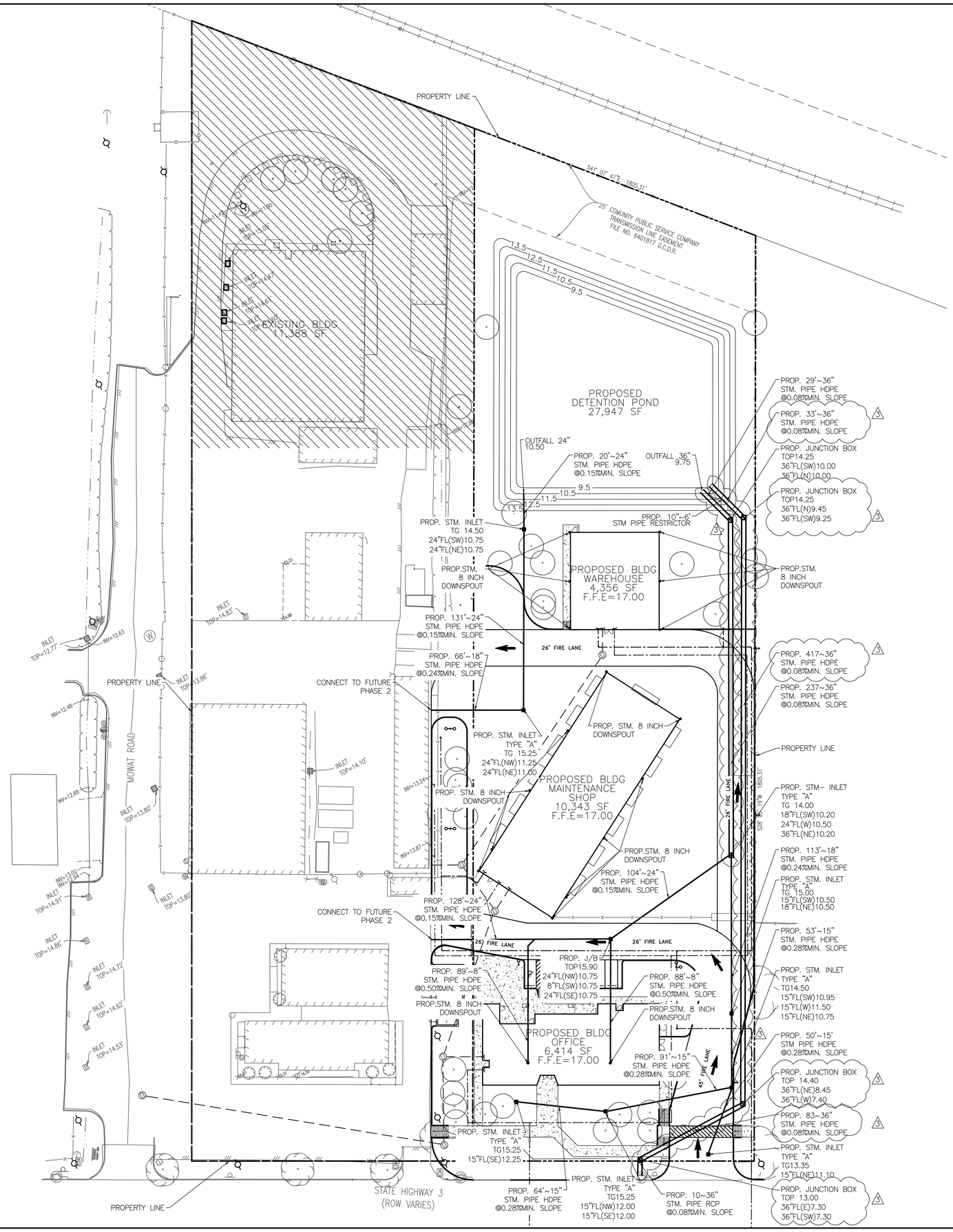
STORM SEWER PLAN



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SCALE: 1"=30'

UTILITY PLAN NOTES

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HATCH LEGEND

CONSTRUCT 5" CONCRETE SIDEWALK OVER COMPACTED SUB-GRADE PER GEOTECHNICAL. ENGINEER'S RECOMMENDATIONS

PROPOSED BUILDING LAYOUT.

AREA NOT IN SCOPE

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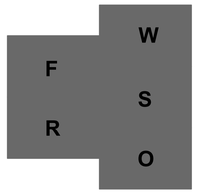

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UTILITY PLAN

DRAWN BY	CHECKED BY
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PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
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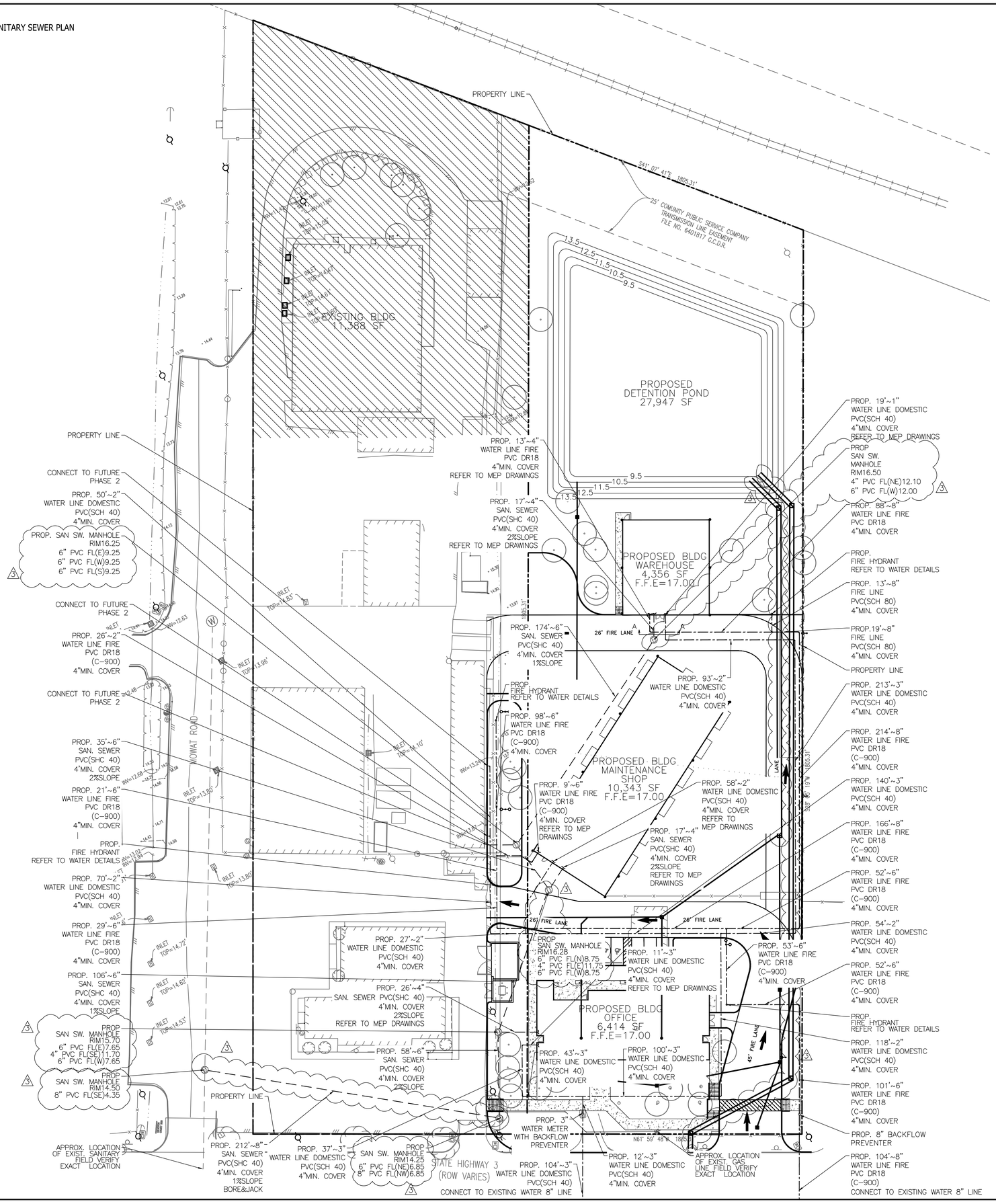
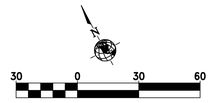
SANITARY SEWER PLAN





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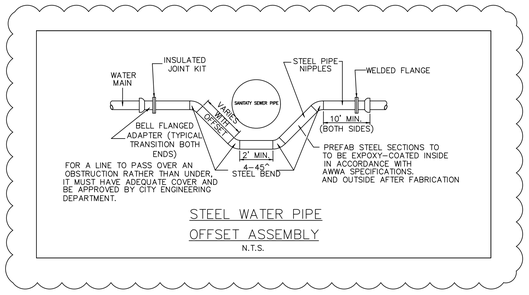

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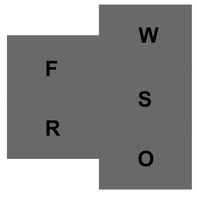

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UTILITY PLAN

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A. GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REQUIRED SECURITY TO PROTECT HIS OWN PROPERTY, EQUIPMENT AND WORK IN PROGRESS.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING OF STREETS CAUSED BY ASSOCIATED CONSTRUCTION AT CLOSE OF EACH WORK DAY.
4. PAVED SURFACES SHALL BE PROTECTED FROM DAMAGE BY TRACKED EQUIPMENT.
5. CONTRACTOR WILL PAY ALL COST TO REPLACE IRON RODS OR OTHER LAND BOUNDARY MARKERS DISTURBED DURING CONSTRUCTION. A REGISTERED LAND SURVEYOR WILL BE USED TO RESET DISTURBED BOUNDARY MARKERS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AN UPDATE REDLINED "RECORD" SET OF CONSTRUCTION DRAWINGS ON SITE FOR INSPECTION BY THE ENGINEER.
7. CONTRACTOR SHALL PROVIDE ORANGE FENCING OR BARRICADES TO PROTECT PEDESTRIANS FROM ENTERING WORK AREAS.
8. CONTRACTOR MUST PROVIDE FENCING AROUND OPEN EXCAVATIONS AREA AT ALL TIMES.
9. REFER TO THE SWPPP GENERAL NOTES FOR PROPER MEASURES AND CONTROLS.

B. PAVEMENT

1. EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGE OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO ORIGINAL CONDITION OR BETTER, IN ACCORDANCE WITH THE GOVERNMENT AGENCY HAVING JURISDICTION.
2. THE SUBGRADE SHALL BE BROUGHT TO THE LINES AND GRADES AS SHOWN ON THE DRAWINGS.
3. WHENEVER UNSUITABLE MATERIAL IS ENCOUNTERED AND CANNOT BE HANDLED BY THE EXCAVATION OR EMBANKMENT REQUIREMENTS, THEN THE UNSUITABLE MATERIAL SHALL BE EXCAVATED TO A DEPTH DEEMED SUFFICIENT BY THE ENGINEER AND THE EXCAVATED MATERIAL SHALL BE DISPOSED OF OFF THE JOB SITE. THE EXCAVATED AREA SHALL BE FILLED WITH SELECT FILL PER STANDARDS OF THE GOVERNMENT AGENCY HAVING JURISDICTION.
4. SURPLUS EXCAVATED EARTHEN MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED AND DISPOSED OF OFF-SITE. INCLUDE COST OF REMOVAL AND DISPOSAL IN OTHER ITEMS OF WHICH THIS WORK IS A COMPONENT PART. NO SEPARATE PAY. THE MATERIAL MUST BE DISPOSED OF IN A SAFE AND LEGAL MANNER.
5. EXISTING WATER VALVES AND MANHOLES SHALL BE ADJUSTED, AS NECESSARY TO MATCH TOP OF PROPOSED PAVEMENT ELEVATION.

C. SANITARY SEWER, STORM SEWER & DRAINAGE

1. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
2. ANY CURB DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER OR OWNING AUTHORITY.
3. CONTRACTOR'S ACTIVITIES SHALL HAVE NO EFFECT TO FLOWS TO AND FROM OFF SITE AREAS EXISTING SHEET DRAINAGE SHALL NOT BE IMPEDED BY PROPOSED CONSTRUCTION.
4. WHERE MANHOLES ARE LOCATED WITHIN PAVED AREAS, CONTRACTOR SHALL SET RIM ELEVATIONS TO MATCH FINISHED GRADE ELEVATIONS. OUTSIDE OF PAVED AREAS, SET MANHOLE RIMS 3 INCHES (MINIMUM) TO 6 INCHES (MAXIMUM) ABOVE FINISHED GRADE. ADD SLOPE FILL AROUND MANHOLES, SLOPED AWAY AND DOWN FROM MANHOLE RING.
5. NO DUMPING OF EXCAVATION MATERIALS WILL BE ALLOWED ON PAVED AREAS. CONTRACTOR MUST DETERMINE A LOCATION TO TEMPORARILY STOCKPILE STORM SEWER EXCAVATION TO BE USED AS BACK FILL, AS APPROVED.
6. THE CONTRACTOR SHALL USE HDPE PLASTIC PIPE OR RCP PIPE AS SHOWN ON PLANS.

D. STANDARD NOTES FOR CONSTRUCTION DRAWINGS:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING BACKSLOPE DRAINAGE SYSTEMS.
2. ALL DISTURBED AREAS WITHIN THE SUBDIVISION, EXCEPT THE CHANNEL BOTTOM, SHALL BE FERTILIZED SEEDED.
3. ALL BACKFILL SHALL BE STRICTLY ACCORDING TO DETAILS, SPECIFICATION OR GEOTECHNICAL RECOMMENDATIONS, AS APPROVED BY ENGINEER.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING CHANNEL FLOWLINE TO DESIGN ELEVATIONS AS SHOWN ON PLANS AND DOWNSTREAM AS NECESSARY TO ENSURE NO WATER IN STORM SEWER DURING "DRY" CONDITIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORING CHANNEL TO ORIGINAL CONDITION.

E. UTILITIES

1. CENTERPOINT ENERGY

WARNING: OVERHEAD ELECTRICAL FACILITIES

A. OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE HAVE ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATED THEM PRIOR TO BEGINING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE, FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANCE FOR LINES TO BE TURNED OF OR REMOVED, CALL CENTERPOINT ENERGY, AT (713) 207-7777.

CAUTION: UNDERGROUND GAS FACILITIES

A. LOCATIONS OF CENTERPOINT ENERGY MAIN LINES, (TO INCLUDE GAS TRANSMISSION, AND/OR INDUSTRIAL GAS SUPPLY CORP. WHERE APPLICABLE), ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567 OR 1-800-669-8344 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

B. WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713)-967-8037 FROM 7:00 AM TO 4:30 PM FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.

C. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.

D. WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.

E. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

F. OTHER:

1. LOCATION OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON PLANS IS NOT GUARANTEED TO BE COMPLETE OR DEFINITE. THE APPROXIMATE LOCATIONS OF KNOWN EXISTING UTILITIES ARE SHOWN. CONTRACTOR SHALL DETERMINE THE EXACT SIZE AND HORIZONTAL AND VERTICAL LOCATIONS IN THE FIELD. THE CONTRACTOR SHALL NOTIFY ALL OF THE PROPER GOVERNING AUTHORITIES, (STATE, COUNTY OR CITY) AT LEAST 48 HOURS PRIOR TO COMMENCING WORK.
2. ANY PERMANENT RELOCATION OF AN EXISTING UTILITY NOT SHOWN ON THE DRAWINGS SHALL BE APPROVED BY THE ENGINEER PRIOR TO RELOCATION AND SHALL CONFORM TO THE APPLICABLE STANDARDS OF GOVERNING AUTHORITIES.
3. CONTRACTOR SHALL PROTECT EXISTING UNDERGROUND FACILITIES DURING INSTALLATION OF PROPOSED WORK.
4. IN THE EVENT THAT ANY CONTAMINATED MATERIALS OF SUSPECT CONTAMINATED MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL CEASE OPERATIONS IN THAT AREA AND IMMEDIATELY NOTIFY THE ENGINEER.
5. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
6. ALL PAVEMENT SHALL CONFORM WITH THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
7. ALL STORM SEWERS SHALL BE CONSTRUCTED OF REINFORCED CONCRETE PIPE (RCP) ASTM C-76, CLASS III, EXCEPT FOR ALUMINIZED STEEL PIPE FOR OUTFALLS. (SEE DETAILS FOR BEDDING).
8. STEEL METAL PIPE SHALL BE ALUMINIZED STEEL AASHTO M274 TYPE 2 MIN. 0.052 THICKNESS.
9. ALL GRAVITY SANITARY SEWERS SHALL BE CONSTRUCTED OF PVC PIPE (ASTM D-3034, SDR 26), UNLESS OTHERWISE NOTED ON THE DRAWINGS.
10. ALL FORCE MAIN SANITARY SEWERS SHALL BE CONSTRUCTED OF PVC PIPE (ASTM D-3034, SDR 26), UNLESS OTHERWISE NOTED ON THE DRAWINGS.
11. ALL SANITARY SEWERS AND WATER MAINS SHALL HAVE SIX (6) INCHES OF SAND BACKFILL BOTH UNDER AND OVER PIPE WITH DETECTOR TAPE (METALLIC) INSTALLED 1.5' BELOW FINISH GRADE.
12. BACKFILL WITH CEMENT STABILIZED SAND WHEN SANITARY SEWER CROSSES OVER STORM SEWER (SPACE BETWEEN STORM AND SANITARY SEWERS).
13. ALL SEWERS UNDER OR WITHIN ONE (1) FOOT OF PROPOSED OR FUTURE PAVEMENT SHALL BE BACKFILLED WITH 1 ½ SACK CEMENT STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE.
14. COST OF SPECIAL BACKFILL AND BEDDING IS INCIDENTAL TO THE UNIT PRICE BID PER LINEAR FOOT, NO EXTRA PAY.
15. WATER MAINS SHALL BE C-900 PVC PIPE BEARING THE NSF-PWSEAL AND FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT WITH NON-CORRODING HARDWARE INCLUDING MEGA-LUG RESTRAINTS CONFORMING TO AWWA CL-110 OR C-153.
16. FIRE HYDRANTS SHALL BE "MUELLER IMPROVED" OR APPROVED EQUAL.
17. MINIMUM OF SIX (6) INCHES OF CLEARANCE SHALL BE MAINTAINED BETWEEN WATER MAIN CROSSING OF OTHER UTILITIES.
18. ALL PROPOSED PIPE STUB-OUTS FROM STORM MANHOLES OR INLETS ARE TO BE PLUGGED WITH EIGHT (8) INCH BRICK WALLS UNLESS OTHERWISE NOTED.
19. THE CONTRACTOR SHALL NOTIFY THE CITY OR GOVERNMENTAL AGENCY HAVING JURISDICTION, 48 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION.
20. GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE OBSERVED.
21. ALL SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TCEQ "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS".
22. CONTRACTOR SHALL OBTAIN ALL CONSTRUCTION PERMITS REQUIRED TO THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
23. SANITARY MANHOLES WITHIN THE FLOOD PLAIN SHALL BE WATERPROOFED AND VENTED WITH RISER ABOVE FLOOD PLAIN OR RIMS SET ABOVE THE 100 YEAR FLOOD ELEVATION.
24. WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL AND A STANDARD LENGTH OF THE WASTEWATER PIPE IS LESS THAN 18 FEET IN LENGTH, THE POTABLE WATER PIPE SEGMENT SHALL BE CENTERED OVER THE WASTEWATER LINE. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM WITH ONE OF THE FOLLOWING OPTIONS.

(I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.

(II) ALL SECTIONS OF WASTEWATER MAIN OR LATERAL WITHIN NINE FEET HORIZONTALLY OF THE WATERLINE SHALL BE ENCASED IN AN 18-FOOT (OR LONGER) SECTION OF PIPE. FLEXIBLE ENCASING PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE ENCASING PIPE SHALL BE CENTERED ON THE WATERLINE AND SHALL BE AT LEAST TWO NOMINAL PIPE DIAMETERS LARGER THAN THE WASTEWATER MAIN OR LATERAL. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT (OR LESS) INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. EACH END OF THE CASING SHALL BE SEALED WITH WATERTIGHT NON-SHRINK CEMENT GROUT OR A MANUFACTURED WATERTIGHT SEAL. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF SIX INCHES BETWEEN THE ENCASEMENT PIPE AND THE WATERLINE SHALL BE PROVIDED. THE WASTEWATER LINE SHALL BE LOCATED BELOW THE WATERLINE.

(III) WHEN A NEW WATERLINE CROSSES UNDER A WASTEWATER MAIN OR LATERAL, THE WATERLINE SHALL BE ENCASED AS DESCRIBED FOR WASTEWATER MAINS OR LATERALS IN SUBCLASS (II) OF THIS CLAUSE OR CONSTRUCTED OF DUCTILE IRON OR STEEL PIPE WITH MECHANICAL OR WELDED JOINTS AS APPROPRIATE. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF ONE FOOT BETWEEN THE WATERLINE AND THE WASTEWATER MAIN OR LATERAL SHALL BE PROVIDED. BOTH THE WATERLINE AND WASTEWATER MAIN OR LATERAL MUST PASS A PRESSURE AND LEAKAGE TEST AS SPECIFIED IN AWWA C600 STANDARDS.

25. COST OF TRENCH SAFETY SYSTEMS AS REQUIRED BY OSHA FOR DEPTHS OVER FIVE (5) FEET IS INCIDENTAL TO THE PROJECT.
26. WATER LINES ARE TO BE CONSTRUCTED TYPICALLY 4 FEET DEEP TO THE TOP OF THE LINE FROM THE FINISHED CURB ELEVATION OR NATURAL GROUND. LINES MAY BE SAGGED OR RAISED WITHIN THE RANGE OF 3-6 FEET TO AVOID UTILITY CONFLICTS WATER LINE DEFLECTIONS SHALL NOT EXCEED THE PIPE MANUFACTURES RECOMMENDATIONS.
27. ALL SLEEVES TO BE FOUR (4) INCH SCHEDULE 40 PVC SLEEVES TO BE EIGHTEEN (18) INCHES BELOW THE BOTTOM OF THE PAVEMENT BASE MATERIAL. STUB OUT THREE (3) FEET BEYOND CURB AND MARK SLEEVES LOCATIONS ON CURB.
28. THERE SHALL BE A MINIMUM HORIZONTAL DISTANCE OF FOUR (4) FEET CLEARANCE BETWEEN ALL WATER LINES AND SANITARY SEWER LINES THAT ARE SDR 26, AND A NINE (9) FOOT CLEARANCE BETWEEN ALL WATER LINES AND SANITARY SEWER LINES THAT ARE SDR 35. (SEE DETAIL)
29. ALL JOINTS OF DUCTILE IRON PIPE BELOW GROUND WILL BE M.J. WITH PIPE RESTRAINTS.
30. ALL SIGNAGE AND/OR TRAFFIC CONTROL DEVICES SHALL BE APPROVED BY HARRIS COUNTY PRIOR TO CONSTRUCTION.

NOTE:
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES IN THE ROAD R.O.W. PRIOR TO CONSTRUCTION. (TEXAS ONE CALL 1-800-545-6005)

NOTE:
CONTRACTOR SHALL ADJUST ALL WATER VALVES AND STORM SEWER MANHOLES TO MATCH FINAL GRADES. SEE ALL GRADING PLANS SHEETS.

NOTE:
CONTRACTOR SHALL VERIFY ALL WATER, SANITARY SEWER AND STORM SEWER LINES PRIOR TO WORKING IN ANY AREA. SEE TOPO MAP AND REFERENCE DRAWINGS.

NOTE:
THIS DEVELOPMENT HAS BEEN DESIGNED TO NOT IMPEDE, IMPOUND, OR BLOCK THE NATURAL FLOW OF DRAINAGE FROM OR ACROSS ADJACENT AND CONTIGUOUS PROPERTIES.

NOTE:
ALL FUTURE SITE AND BUILDINGS PROJECTS WILL REQUIRE CIVIL/SITE DRAWING APPROVAL AND CHANGES TO THE PLATS MAY BE REQUIRED AS A PART OF THE REVIEW PROCESS.

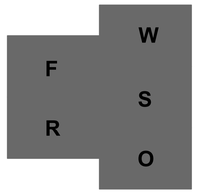
ALL PIPE PLACEMENT AND JOINTING WILL BE CONSTRUCTED STRICTLY IN ACCORDANCE WITH THE MANUFACTURES' REQUIREMENTS AND SPECIFICATIONS.

STORM SEWER PIPE — HDPE N-12, PVC SDR35 OR RCP CLASS III (RUBBER GASKET)— EXCEPT IF NOTED OTHERWISE
POTABLE WATER —— 3" AND SMALLER - SCH 80 PVC
4" AND LARGER - C-900, DR 18- 150 PSI
SANITARY SEWER - GRAVITY , PVC SDR 26
CULVERT PIPE - RCP CLASS IV T&G

THE OWNER WILL SET UP THE NECESSARY WATER ACCOUNTS AND PURCHASE THE WATER METERS AND METER BOXES.
THE CONTRACTOR WILL PICK UP THE METERS AND BOXES AT THE CITY AND DELIVER THEM TO THE JOBSITE.
THE CONTRACTOR WILL MAKE THE NECESSARY TAPS AND INSTALL THE METERS AS REQUIRED BY HARRIS COUNTY.

ONE- CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223-4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1-800-545-6005

KEY PLAN (NOT TO SCALE)



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Houston, TX 77067
832 249 9379

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Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County
Road & Bridge Department Facilities PH1
5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

1	ADDENDUM NO. 3	10-07-2020

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

GENERAL NOTES

DRAWN BY JDM	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

1

C8.0-PH1
SHEET NUMBER

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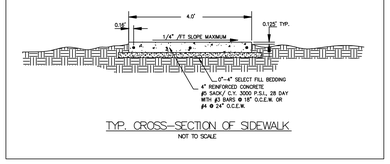
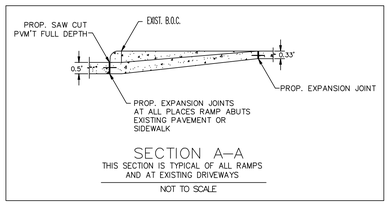


TYP. CROSS-SECTION OF SIDEWALK

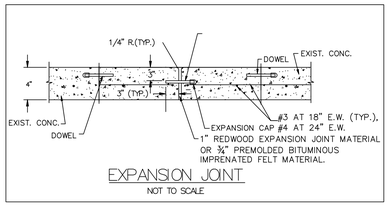
NOT TO SCALE



SECTION A–A

THIS SECTION IS TYPICAL OF ALL RAMPS AND AT EXISTING DRIVEWAYS

NOT TO SCALE



EXPANSION JOINT

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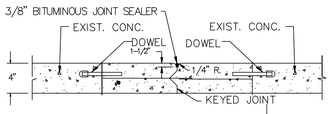
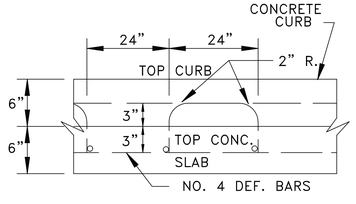


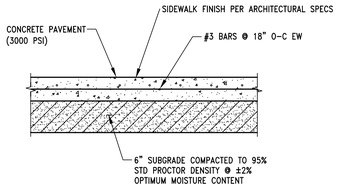
CONSTRUCTION JOINT

NOT TO SCALE



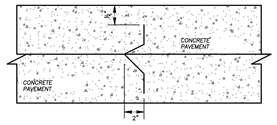
TYP. CONCRETE CURB REINFORCING

SCALE: N.T.S.



5" CONCRETE SITE PAVING/SIDEWALK

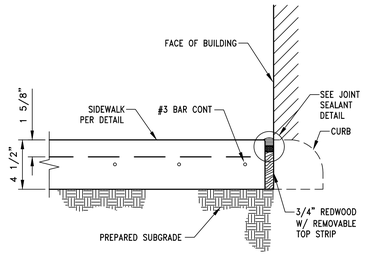
SCALE: N.T.S.



THE LOCATION OF DEFORMED STRIPS MAY BE VARIED, WITH THE APPROVAL OF THE DEPARTMENT OF PUBLIC WORKS, TO SUIT THE PROPOSED CONSTRUCTION METHODS OF THE CONTRACTOR. MAXIMUM LONGITUDINAL SPACING FOR DEFORMED STRIPS IS 14'-0". DEFORMED METAL STRIPS SHALL BE PLACED VERTICALLY ALONG A STRAIGHT ALIGNMENT.

DEFORMED METAL STRIP

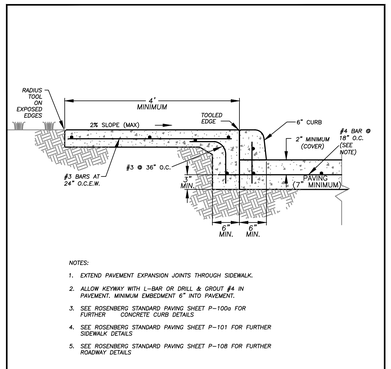
N.T.S



SIDEWALK DETAIL

AT BUILDING OR CURB

SCALE: N.T.S.

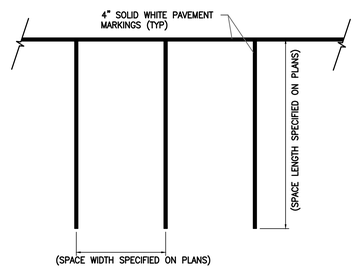


NOTES:

1. *EXTEND PAVEMENT EXPANSION JOINTS THROUGH SIDEWALK.*
2. *ALLOW KEYWAY WITH L-BAR OR DRILL & GROUT #4 IN PAVEMENT. MINIMUM EMBEDMENT 6" INTO PAVEMENT.*
3. *SEE ROSENBERG STANDARD PAVING SHEET P-100a FOR FURTHER CONCRETE CURB DETAILS*
4. *SEE ROSENBERG STANDARD PAVING SHEET P-101 FOR FURTHER SIDEWALK DETAILS*
5. *SEE ROSENBERG STANDARD PAVING SHEET P-108 FOR FURTHER ROADWAY DETAILS*

SIDEWALK CONNECTION TO CURB

N.T.S



TYPICAL PARKING SPACE DIMENSIONING

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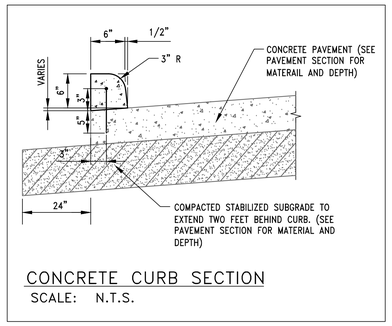

CONCRETE CURB SECTION

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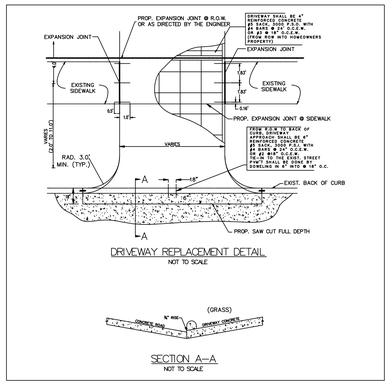
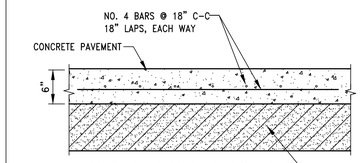


DRIVEWAY REPLACEMENT DETAIL

NOT TO SCALE

SECTION A–A

NOT TO SCALE

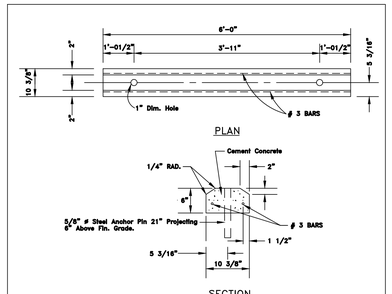


PROPOSED 6" STABILIZED SUBGRADE SHALL BE A MINIMUM OF 8% LIME BY WEIGHT. FOR COMPACTION, REFER TO GEOTECHNICAL REPORT.

CONCRETE SHALL BE 3,500 PSI

6" CONCRETE PAVEMENT

SCALE: N.T.S.



SECTION

PRECAST CONC.

WHEEL STOP DETAIL

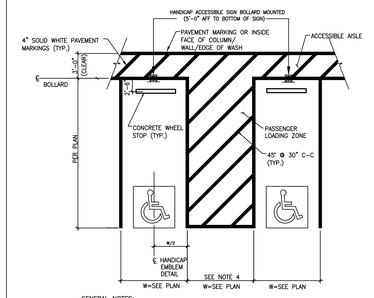
SCALE: N.T.S.

CEMENT STABILIZED SAND 2-SK/C.Y.	
RESIDENTIAL	4" MINIMUM
COMMERCIAL	6" MINIMUM
INDUSTRIAL	8" MINIMUM
REINFORCED CONCRETE PAVEMENT 3,500 PSI Min.	
RESIDENTIAL	4" MINIMUM
COMMERCIAL	6" MINIMUM
INDUSTRIAL	8" MINIMUM

DRIVEWAY PAVEMENT CONSTRUCTION TABLE

STANDARD DRIVEWAY CONSTRUCTION TABLE & NOTES

N.T.S

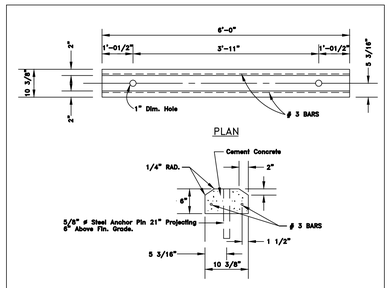


GENERAL NOTES:

1. ALL SLOPES FOR ACCESSIBLE SPACES AND ACCESSIBLE AISLES SHALL NOT EXCEED 2%.
2. COLUMNS SHALL NOT ENCROACH INTO SPACES, AISLE, OR PASSENGER LOADING ZONE.
3. IF OVERHEAD SIGNS ARE PROVIDED, BOLLARD MOUNTED SIGNS WILL NOT BE REQUIRED.
4. USE 5'-0" FOR CAR AND 9'-0" FOR VAN

90° ACCESSIBLE SPACES – SIGN LOCATION

SCALE: N.T.S.



SECTION

PRECAST CONC.

WHEEL STOP DETAIL

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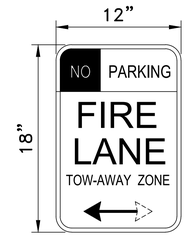


FIRE LANE SIGN

N.T.S.

AT THE BEGINNING AND END OF THE FIRE LANE, THE SIGN SHALL HAVE A SINGLE HEADED ARROW POINTING IN THE DIRECTION THE REGULATION IS IN EFFECT. THE INTERMEDIATE SIGN SHALL HAVE DOUBLE HEADED ARROWS POINTING IN BOTH DIRECTIONS.

THE MAXIMUM SPACING OF THE SIGNS SHALL BE 75' CONTINGENT UPON TRAFFIC ENGINEER'S REVIEW APPROVAL.

THE SIGNS SHALL BE SET AT AN ANGLE OF NOT LESS THAN 30° NOR MORE THAN 45° WITH THE CURB OR LINE OF TRAFFIC FLOW.

THE CLEARANCE TO THE BOTTOM OF THE SIGN SHALL BE 7 FEET. THERE SHALL BE NO OTHER SIGNS ATTACHED TO THE SIGN OR THE SIGN POLE.

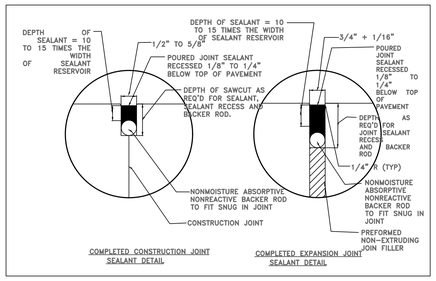
THE SIGN PLATE SHALL BE A MINIMUM OF 12"X18" WITH A THICKNESS OF 0.80".

NOTE:

FIRE LANES: SIGNS SHALL BE POSTED ON ONE OR BOTH SIDES OF THE FIRE APPARATUS ROAD. WHERE A SIGN CAN NOT BE ERECTED, THE FIRE LANES SHALL BE MARKED USING THE APPROVED METHOD OF 6-INCH RED STRIPE WITH 4-INCH WHITE LETTERS STATING "FIRE LANE NO PARKING" AND SHALL CONTINUE ALONG THE RED STRIPE EVERY 15 FEET INTERVALS.

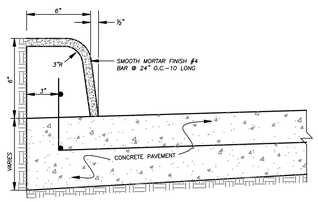
FIRE LANE DETAILS AND NOTES

SCALE: N.T.S.



COMPLETED CONSTRUCTION JOINT SEALANT DETAIL

COMPLETED EXPANSION JOINT SEALANT DETAIL

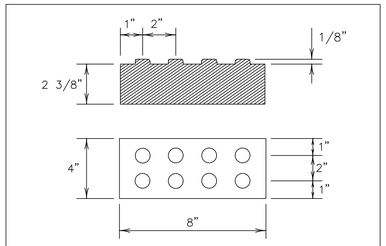


NOTES:

1. *MORTAR FINISH NOT REQUIRED WHEN CURB IS POURED BY A MACHINE, BUT CURB WILL HAVE THE SAME OUTSIDE DIMENSIONS.*
2. *WHEN CONCRETE CURB IS TO BE PLACED ON EXISTING CONCRETE BASE, USE #4 DEFORMED BARS, 15" LONG, 24" O.C., DOWELLED, AND SET IN QUICK SETTING CEMENT MORTAR*
3. *REDWOOD EXPANSION JOINTS SHALL BE INSTALLED IN CURB AT ALL PAVEMENT EXPANSION JOINTS.*

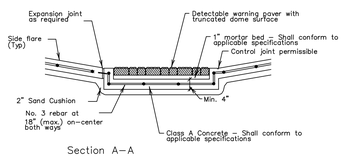
6" CONC. CURB DETAIL

N.T.S



DETECTABLE WARNING PAVER

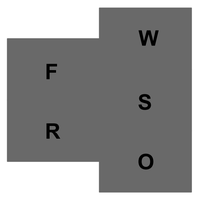
SCALE: N.T.S.



Section A–A

ONE– CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223–4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1–800–545–6005

KEY PLAN (NOT TO SCALE)



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Structural Engineering
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MEP Engineering
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Low Voltage & Security
4b Technology Group, LLC
390 Glenborough Dr.
Suite 290
Houston, TX 77067
832 249 9379

Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County
Road & Bridge Department Facilities PH1

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

PAVEMENT DETAILS

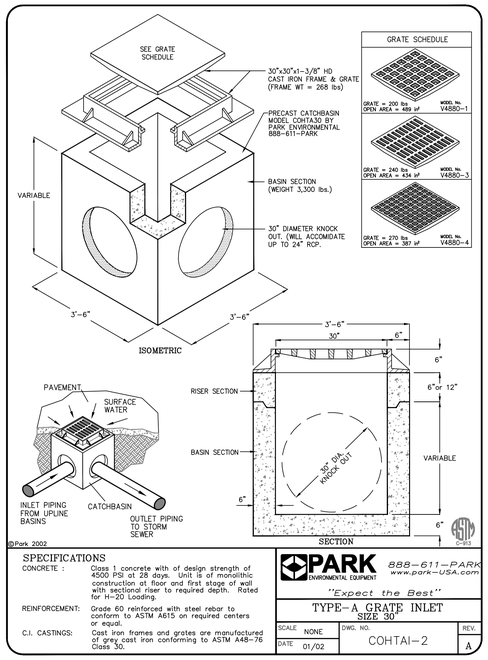
DRAWN BY: JDM	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 07 OCT 2020

3

C9.0-PH1

SHEET NUMBER

FILE PATH: File Path
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM



SPECIFICATIONS

CONCRETE : Class 1 concrete with of design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth. Rated for H-20 Loading.

REINFORCEMENT: Grade 60 reinforced with steel rebar to conform to ASTM A615 on required centers or equal.

C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

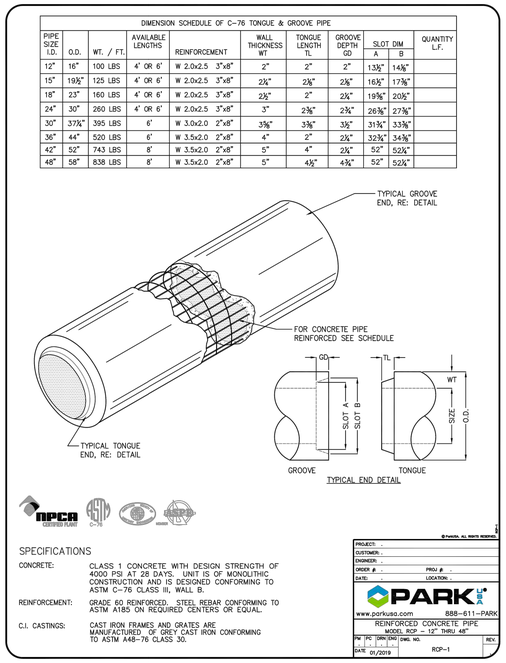
PARK ENVIRONMENTAL EQUIPMENT 888-611-PARK www.park-USA.com

"Expect the Best"

TYPE-A GRATE INLET SIZE 30"

SCALE	DWG. NO.	REV.
NONE	COHTAI-2	A
DATE 01/02		

DIMENSION SCHEDULE OF C-76 TONGUE & GROOVE PIPE										
PIPE SIZE I.D.	O.D.	WT. / FT.	AVAILABLE LENGTHS	REINFORCEMENT	WALL THICKNESS WT	TONGUE LENGTH TL	GROOVE DEPTH GD	SLOT DIM A	SLOT DIM B	QUANTITY L.F.
12"	16"	100 LBS	4' OR 6'	W 2.0x2.5 3"x8"	2"	2"	2"	1 3/8"	1 4/8"	
15"	19 1/2"	125 LBS	4' OR 6'	W 2.0x2.5 3"x8"	2 1/4"	2 1/8"	2 1/8"	1 6/8"	1 7/8"	
18"	23"	160 LBS	4' OR 6'	W 2.0x2.5 3"x8"	2 1/2"	2"	2 1/4"	1 9/8"	2 0/8"	
24"	30"	260 LBS	4' OR 6'	W 2.0x2.5 3"x8"	3"	2 3/8"	2 3/4"	2 6/8"	2 7/8"	
30"	37 3/8"	395 LBS	6'	W 3.0x2.0 2"x8"	3 5/8"	3 3/8"	3 1/2"	3 1/4"	3 3/8"	
36"	44"	520 LBS	6'	W 3.5x2.0 2"x8"	4"	2"	2 1/2"	3 2/3"	3 4/8"	
42"	52"	743 LBS	8'	W 3.5x2.0 2"x8"	5"	4"	2 1/2"	5 2"	5 2 1/4"	
48"	58"	838 LBS	8'	W 3.5x2.0 2"x8"	5"	4 1/2"	4 1/2"	5 2"	5 2 1/4"	



SPECIFICATIONS

CONCRETE: CLASS 1 CONCRETE WITH DESIGN STRENGTH OF 4000 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AND IS DESIGNED CONFORMING TO ASTM C-76 CLASS III, WALL B.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A185 ON REQUIRED CENTERS OR EQUAL.

C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

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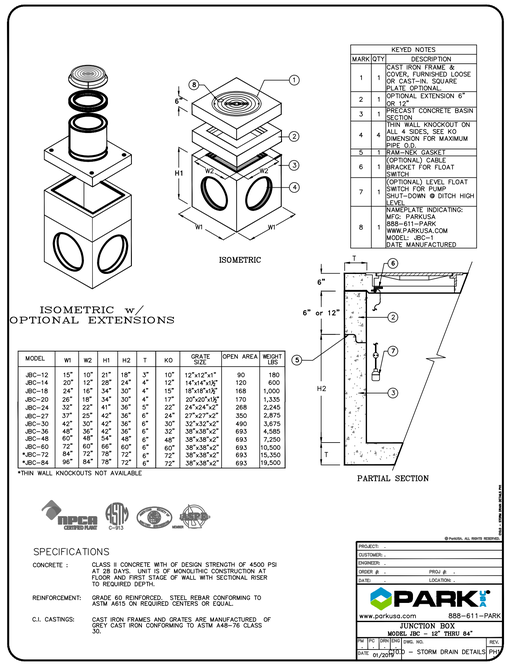
PROJECT: ; CUSTOMER: ; ENGINEER: ; ORDER #: ; PROJ #: ; DATE: ; LOCATION: ;

PARK ENVIRONMENTAL EQUIPMENT, INC. www.parkusa.com 888-611-PARK

REINFORCED CONCRETE PIPE MODEL RCP - 12" THRU 48"

PM	PC	DRN	CHK	DWG. NO.	REV.
DATE 01/2019				RCP-1	



KEYED NOTES		
MARK	QTY	DESCRIPTION
1	1	CAST IRON FRAME & COVER, FURNISHED LOOSE OR CAST-IN. SQUARE PLATE OPTIONAL
2	1	OPTIONAL EXTENSION 6" OR 12"
3	1	PRECAST CONCRETE BASIN SECTION
4	4	THIN WALL KNOCKOUT ON ALL 4 SIDES, SEE KO DIMENSION FOR MAXIMUM PIPE O.D.
5	1	RAM-NEK GASKET
6	1	(OPTIONAL) CABLE BRACKET FOR FLOAT SWITCH
7	1	(OPTIONAL) LEVEL FLOAT SWITCH FOR PUMP SHUT-DOWN @ DITCH HIGH LEVEL
8	1	NAMEPLATE INDICATING: MFG: PARKUSA 888-611-PARK WWW.PARKUSA.COM MODEL: JBC-1 DATE MANUFACTURED

MODEL	W1	W2	H1	H2	T	KO	GRATE SIZE	OPEN AREA	WEIGHT LBS
JBC-12	15"	10"	21"	18"	3"	10"	12"x12"x1"	90	180
JBC-14	20"	12"	28"	24"	4"	12"	14"x14"x1⅜"	120	600
JBC-18	24"	16"	34"	30"	4"	15"	18"x18"x1⅜"	168	1,000
JBC-20	26"	18"	34"	30"	4"	17"	20"x20"x1⅜"	170	1,335
JBC-24	33"	22"	41"	36"	5"	22"	24"x24"x2"	268	2,245
JBC-27	37"	25"	42"	36"	6"	24"	27"x27"x2"	350	2,875
JBC-30	42"	30"	42"	36"	6"	30"	32"x32"x2"	490	3,675
JBC-36	48"	36"	42"	36"	6"	32"	38"x38"x2"	693	4,585
JBC-48	60"	48"	54"	48"	6"	48"	38"x38"x2"	693	7,250
JBC-60	72"	60"	66"	60"	6"	60"	38"x38"x2"	693	10,500
*JBC-72	84"	72"	78"	72"	6"	72"	38"x38"x2"	693	15,350
*JBC-84	96"	84"	78"	72"	6"	72"	38"x38"x2"	693	19,500

*THIN WALL KNOCKOUTS NOT AVAILABLE

SPECIFICATIONS

CONCRETE : CLASS II CONCRETE WITH OF DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

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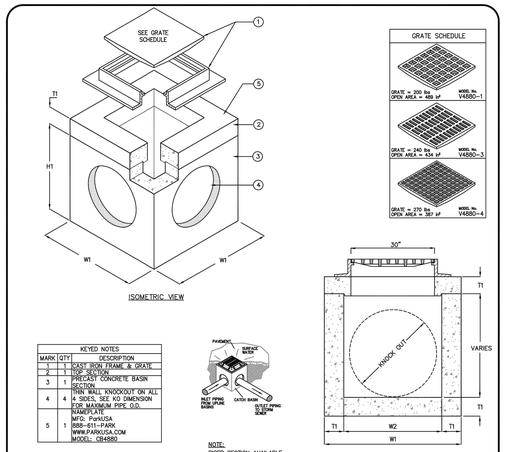
PROJECT: ; CUSTOMER: ; ENGINEER: ; ORDER #: ; PROJ #: ; DATE: ; LOCATION: ;

PARK ENVIRONMENTAL EQUIPMENT, INC. www.parkusa.com 888-611-PARK

JUNCTION BOX MODEL JBC - 12" THRU 84"

PM	PC	DRN	CHK	DWG. NO.	REV.
DATE 01/2019				STD - STORM DRAIN DETAILS	PH1



KEYED NOTES		
MARK	QTY	DESCRIPTION
1	1	CAST IRON FRAME & GRATE
2	1	TOP SECTION
3	1	PRECAST CONCRETE BASIN SECTION
4	4	THIN WALL KNOCKOUT ON ALL 4 SIDES, SEE KO DIMENSION FOR MAXIMUM PIPE O.D.
5	1	NAMEPLATE MFG: ParkUSA 888-611-PARK WWW.PARKUSA.COM MODEL: CB4880

NOTE:
RISER SECTION AVAILABLE IN 6" TO 12" DEPTHS.

MODEL	W1	W2	H1	H2	T1	T2	KO	GRATE SIZE	OPEN AREA	WEIGHT LBS
CB-30	42"	30"	42"	36"	6"	6"	30"	32"x32"x2"	490	3,675
CB-36	48"	36"	42"	36"	6"	6"	32"	38"x38"x2"	693	4,585
CB-48	60"	48"	54"	48"	6"	6"	48"	38"x38"x2"	693	7,250
CB-60	72"	60"	66"	60"	6"	6"	60"	38"x38"x2"	693	10,500
CB-72	84"	72"	78"	72"	6"	6"	72"	38"x38"x2"	693	15,350
CB-84	96"	84"	78"	72"	6"	6"	72"	38"x38"x2"	693	19,500

SPECIFICATIONS

CONCRETE : CLASS I/II CONCRETE WITH OF DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH. RATED FOR H-20 LOADING.

REINFORCEMENT: GRADE 60 REINFORCED WITH STEEL REBAR TO CONFORM TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

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PROJECT: ; CUSTOMER: ; ENGINEER: ; ORDER #: ; PROJ #: ; DATE: ; LOCATION: ;

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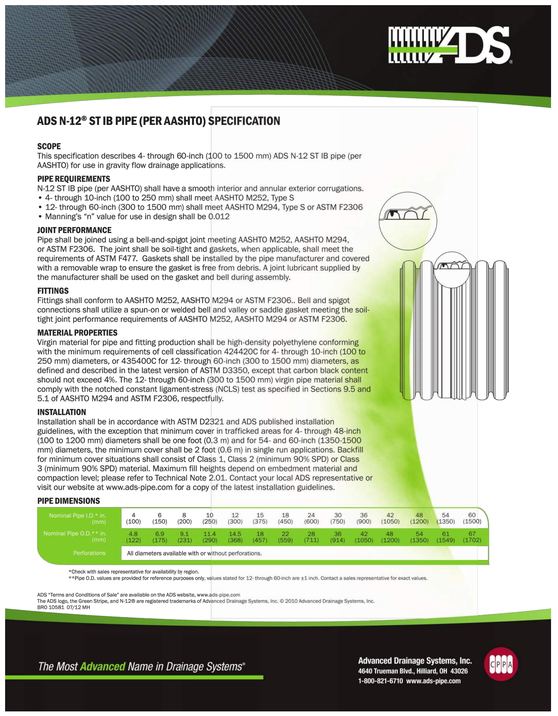
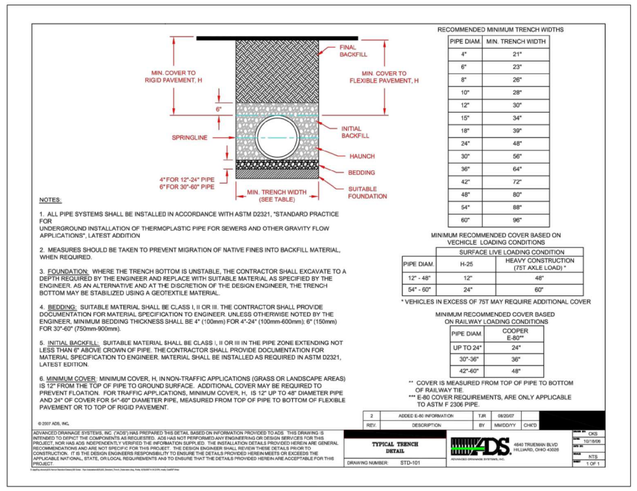
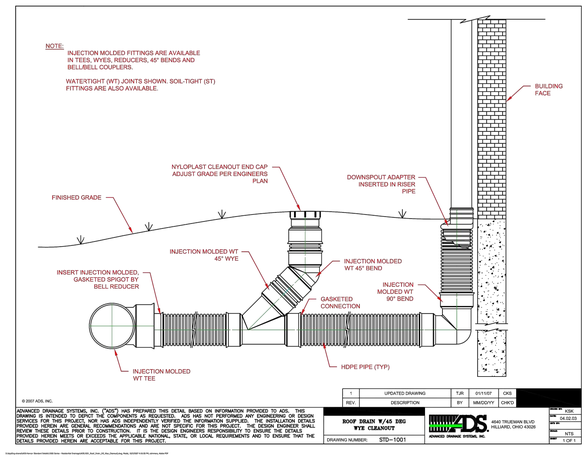
TYPE-A GRATE INLET MODEL CB4880 30" THRU 84"

PM	PC	DRN	CHK	DWG. NO.	REV.
DATE 01/2019				CB4880-1	







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CALL BEFORE YOU DIG!!!
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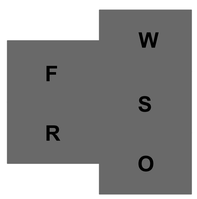
(New Statewide Number Outside Houston)
1-800-545-6005

KEY PLAN (NOT TO SCALE)



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Suite 441
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713 463 8200

Galveston County Road & Bridge Department Facilities PH1

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REV.	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

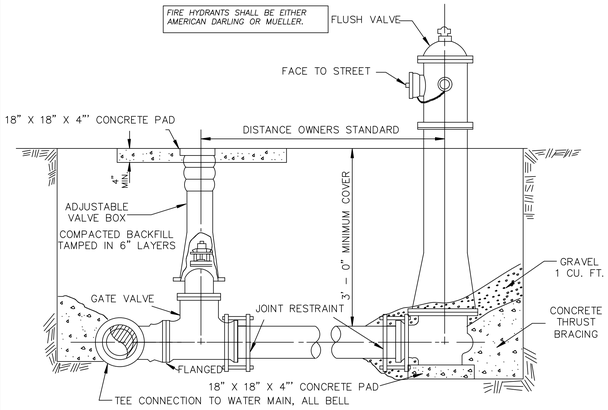
STORM DRAIN DETAILS

DRAWN BY JDM	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

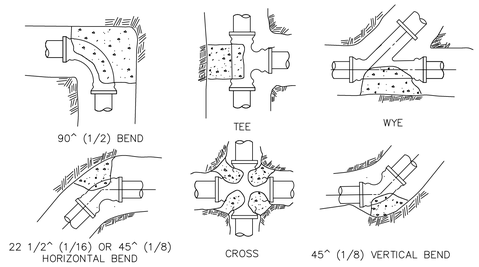
3

C10.0-PH1
SHEET NUMBER

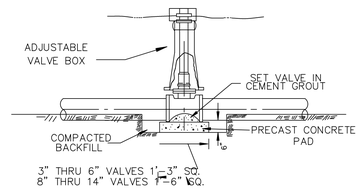
FILE PATH: File Path
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM



TYPICAL GATE VALVE AND FLUSH VALVE DETAILS



TYPICAL THRUST BLOCKS

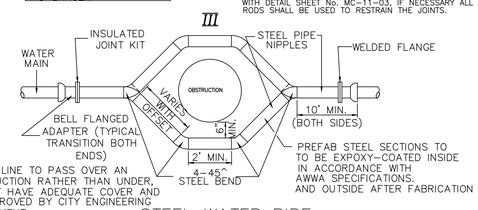


BLOCKING FOR VALVES

14' AND SMALLER

MIN. PIPE WALL THICKNESS	
4"	0.250"
6"	0.280"
8"	0.322"
12" AND LARGER	0.375"

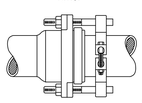
NOTES:
1. ALL MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH ENGINEERING DEPARTMENT SPECIFICATIONS
2. INSULATED JOINT TO BE MADE UP USING INSULATING GASKETS, PLASTIC BOLT SLEEVES AND WASHERS OF INSULATING GASKET MATERIAL BACKED WITH ZINC–PLATED WASHERS, OR OTHER METHODS APPROVED SPECIFICALLY BY THE ENGINEERING DEPARTMENT.
3. NO FIELD FABRICATION OF STEEL WATER PIPE OFFSETS ALLOWED.
4. OFFSET SECTIONS SHALL BE THRUST–BLOCKED IN ACCORDANCE WITH DETAIL SHEET No. MC–11–03, IF NECESSARY ALL THREAD RODS SHALL BE USED TO RESTRAIN THE JOINTS.



FOR A LINE TO PASS OVER AN OBSTRUCTION RATHER THAN UNDER, IT MUST HAVE ADEQUATE COVER AND BE APPROVED BY CITY ENGINEERING DEPARTMENT.

STEEL WATER PIPE OFFSET ASSEMBLY

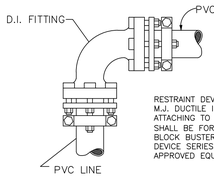
RESTRAINT FOR PVC PIPE BELL JOINTS
N.T.S.



RESTRAINT DEVICE FOR PVC PIPE BELL JOINTS SHALL BE FORD UNI–FLANGE BLOCK BUSTER SERIES 1350 OR APPROVED EQUAL.

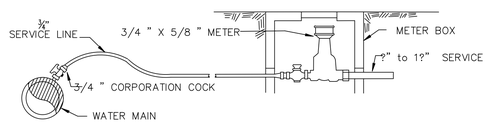
NOTE:
ALL BOLTS TO BE BURIED SHALL BE TYPE 304 STAINLESS STEEL.

JOINT RESTRAINT DEVICE DETAILS FOR CAST IRON & DUCTLE IRON MECHANICAL JOINT FITTINGS AND PVC PIPE.
N.T.S.

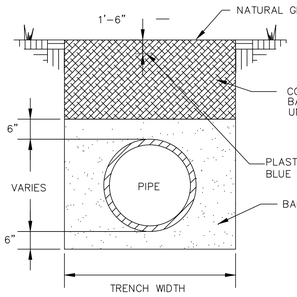


RESTRAINT DEVICE FOR M.J. DUCTILE IRON FITTINGS ATTACHING TO PVC LINES SHALL BE FORD UNI–FLANGE BLOCK BUSTER RESTRAINT DEVICE SERIES 1300 OR APPROVED EQUAL.

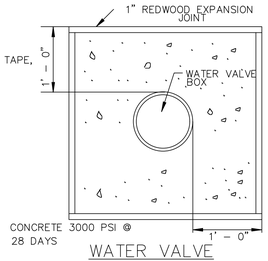
USE RESTRAINED JOINTS WHERE INDICATED ON PLANS



TYPICAL DETAILS WATER AND SANITARY SEWER (SDR 26/SDR 35)

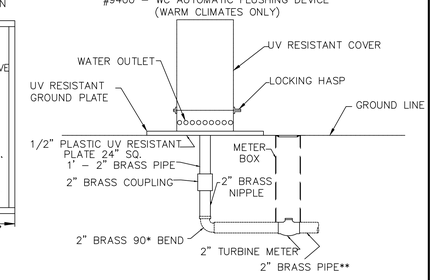


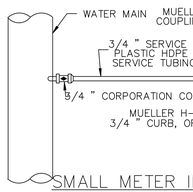
BACKFILL DETAIL NOT UNDER PAVEMENT



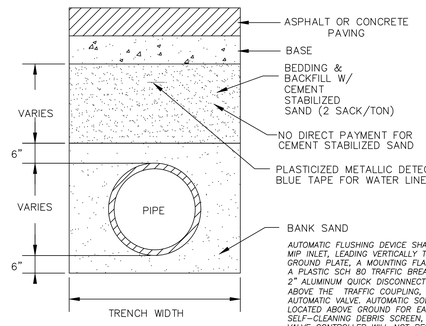
WATER VALVE BLOCKOUT

METER SHALL BE PURCHASED FROM THE CITY OF MONT BELVIEU
#9400 – WC AUTOMATIC FLUSHING DEVICE
(WARM CLIMATES ONLY)





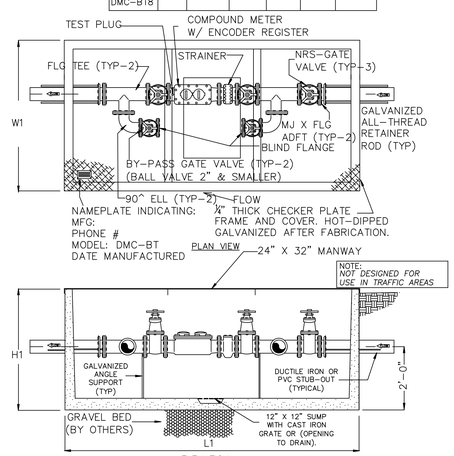
SMALL METER INSTALLATION (UP TO 1?")



AUTOMATIC FLUSHING DEVICE SHALL HAVE A 2" BRASS MIP INLET, LEADING VERTICALLY THROUGH A UV RESISTANT GROUND PLATE, A MOUNTING FLANGE, AND ATTACHING TO A PLASTIC SCH 80 TRAFFIC BREAK–AWAY COUPLING. A 2" ALUMINUM QUICK DISCONNECT DEVICE SHALL BE LOCATED ABOVE THE TRAFFIC COUPLING, LEADING INTO THE 2" AUTOMATIC VALVE. AUTOMATIC SOLENOID VALVE SHALL BE LOCATED ABOVE GROUND FOR EASY ACCESS, HAVE INTERNAL, SELF–CLEANING DEBRIS SCREEN, AND HAVE A 220 PSI RATING. VALVE CONTROLLER WILL NOT REQUIRE A SECOND HAND–HELD DEVICE FOR PROGRAMMING, MUST HAVE A MINIMUM OF 9 POSSIBLE FLUSHING CYLES PER DAY. SHALL BE SUBMERSIBLE TO 12 FEET. OPERATE WITH A 9 VOLT BATTERY, HAVE RESIN–SEALED ELECTRICAL COMPONENTS, AND SHALL BE LOCATED ABOVE WATER FLOW. SOLENOID SHALL HAVE NO LOOSE PARTS WHEN REMOVED FROM VALVE. VALVE, SOLENOID, AND CONTROLLER SHALL HAVE RUBBER CAPS FOR ADDED PROTECTION. EACH UNIT SHALL HAVE A DOUBLE–VALVE, ALL BRASS SAMPLING POINT. WATER SHALL EXIT UNIT HORIZONTALLY THROUGH HOLES LOCATED NEAR GROUNDLINE. ALL ABOVE–GROUND COMPONENTS SHALL BE CONTAINED WITHIN A UV–RESISTANT LOCKING DOMED COVER, AS MANUFACTURED BY KUPFERLE FOUNDRY COMPANY, ST. LOUIS, MO , 1–800–231–3990, OR APPROVED EQUAL.

BACKFILL DETAIL WATERLINE UNDER PAVEMENT

DIMENSIONS						
MODEL	SIZE	BY PASS	L1	W1	H1	WEIGHT LBS.
DMC–BT2	2"	1"	6'0"	3'–6"	4'–0"	12,000
DMC–BT3	3"	1–1/2"	8'–8"	5'–0"	4'–0"	15,000
DMC–BT4	4"	2"	8'–8"	5'–0"	4'–0"	15,000
DMC–BT4	6"	3"	11'–0"	6'–0"	4'–0"	18,000
DMC–BT6	8"	4"	13'–0"	7'–0"	4'–3"	25,000
DMC–BT8						



Specifications

CONCRETE: *Class 1 concrete with design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and forst stage of wall with sectional riser to require depth. Gross empty weight of as indicated.*

REINFORCEMENT: *Grade 60 reinforced. Steel rebar conforming to ASTM A615 on required centers or equal.*

STEEL COVER: *¼" steel skid–resistant floor plate welded to 3" angle frame with (2) 3"x2–3/8" I beam supports.*

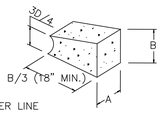
Engineering Data

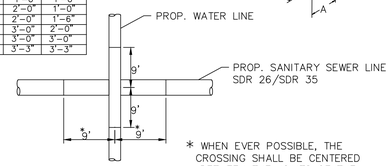
The meter assembly shall be factory assembled in vault & hydrostatically tested prior to delivery. Field excavation & preparation shall be complete prior to delivery. As manufactured by Park Equipment, Houston Tx. 713–937–7602

LARGE METER INSTALLATION (2" & UP)

MINIMUM DIMENSIONS FOR THRUST BLOCKS							
FITTING SIZE	TEES & PLUGS		90 BEND		45 BENDS & WYES		
	H	W	H	W	H	W	
4"	1'–7"	1'–2"	1'–9"	1'–6"	1'–8"	0'–10"	
6"	2'–0"	1'–11"	2'–5"	2'–2"	1'–10"	1'–7"	
8"	2'–8"	2'–6"	3'–2"	3'–0"	2'–5"	2'–1"	
10"	3'–4"	3'–3"	4'–0"	3'–10"	3'–0"	2'–9"	
12"	4'–0"	3'–10"	4'–8"	4'–8"	3'–8"	3'–3"	
14"	5'–5"	5'–10"	6'–6"	4'–11"	4'–9"	4'–5"	
20"	5'–0"	5'–0"	6'–0"	6'–0"	5'–0"	4'–0"	
24"	6'–0"	6'–0"	7'–0"	7'–0"	5'–0"	5'–0"	
30"	7'–6"	7'–6"	8'–0"	8'–0"	6'–3"	6'–3"	

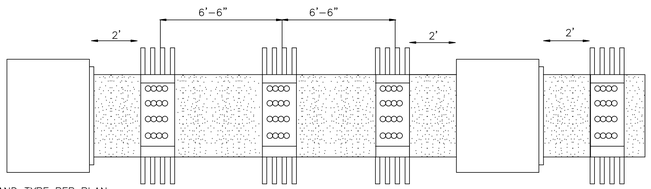
FITTING SIZE	REDUCERS & 22 ? BENDS		11 ? BENDS	
	H	W	H	W
4"	1'–7"	0'–6"	0'–6"	0'–6"
6"	1'–9"	0'–10"	1'–0"	0'–6"
8"	1'–9"	1'–6"	1'–0"	1'–0"
10"	2'–2"	1'–11"	1'–6"	1'–0"
12"	2'–7"	2'–3"	2'–0"	1'–0"
14"	3'–5"	2'–5"	2'–0"	1'–6"
20"	3'–6"	3'–0"	3'–0"	2'–0"
24"	4'–6"	3'–0"	3'–0"	3'–0"
30"	4'–9"	4'–6"	3'–3"	3'–3"





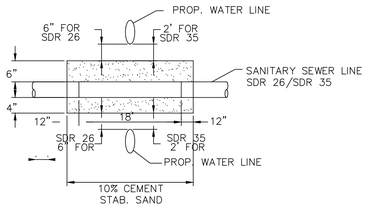
* WHEN EVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTE WATER LINE.

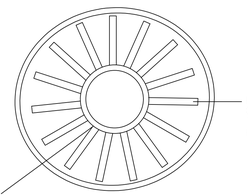
ENCASEMENT SPACER DETAILS



SIZE AND TYPE PER PLAN

SPACING DETAILS

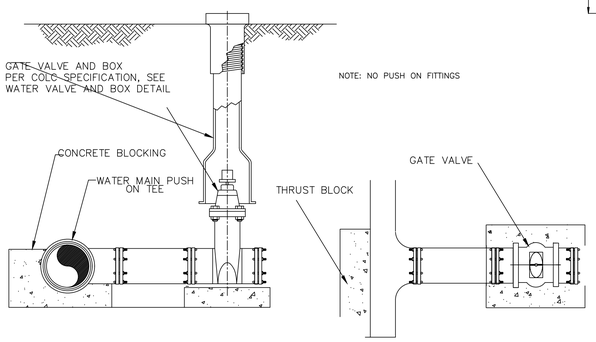




HIGH DENSITY POLYETHYLENE CASING SPACERS RACI TYPE F/G O.C. OR APPROVED EQUAL BY CONTRACTOR.

CARRIER PIPE AND SIZE PER PLAN FURNISHED AND INSTALLED BY CONTRACTOR

RACI CASING SPACERS					
DR 18 C900 PVC PIPE			SDR 35 PVC SEWER PIPE		
PIPE SIZE	STEEL CASING DIA.	RACI SPACERS	PIPE SIZE	STEEL CASING DIA.	RACI SPACER
4"	10"	2F OR 2N	6"	10"	2F, 1G OR 1M ,1N OR 1E, 2H OR 2P, 1Q
6"	12"	2F, 1G OR 2M OR 1E,1H OR 2P	8"	12"	3F, 1G OR 1M, 2N OR 2E, 1H OR 1P, 2Q
8"	14"	3F, 1G OR 2M, 1N OR 2E, 1H OR 2P, 1Q	10"	16"	4F OR 3M OR 3E OR 3P
10"	16"	4F OR 3M OR 3E OR 3P	12"	18"	5F OR 2M, 2N OR 3E, 1H OR 2P, 2Q
12"	20"	5F OR 3M, 1N OR 3E, 1H OR 3P, 1Q	15"	22"	6F OR 3M, 2N OR 4E, OR 3P, 2Q
14"	22"	6F OR 4M OR 4E OR 4P	18"	24"	7F OR 5M, OR 5E OR 5P
16"	24"	7F OR 5M, OR 4E, 1H OR 5P			

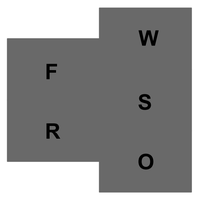


BLOCKING FOR GATE VALVES

16" AND LARGER

ONE– CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223–4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1–800–545–6005

KEY PLAN (NOT TO SCALE)



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8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities PH1

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY		
1	ADDENDUM NO. 3	10-07-2020

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

WATER DETAILS

DRAWN BY: JDM	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 07 OCT 2020

1

C11.0-PH1

SHEET NUMBER

FILE PATH:
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM

NOTES:

1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITION. SEE SPECIFICATIONS FOR REQUIREMENTS IN OTHER CONDITIONS.

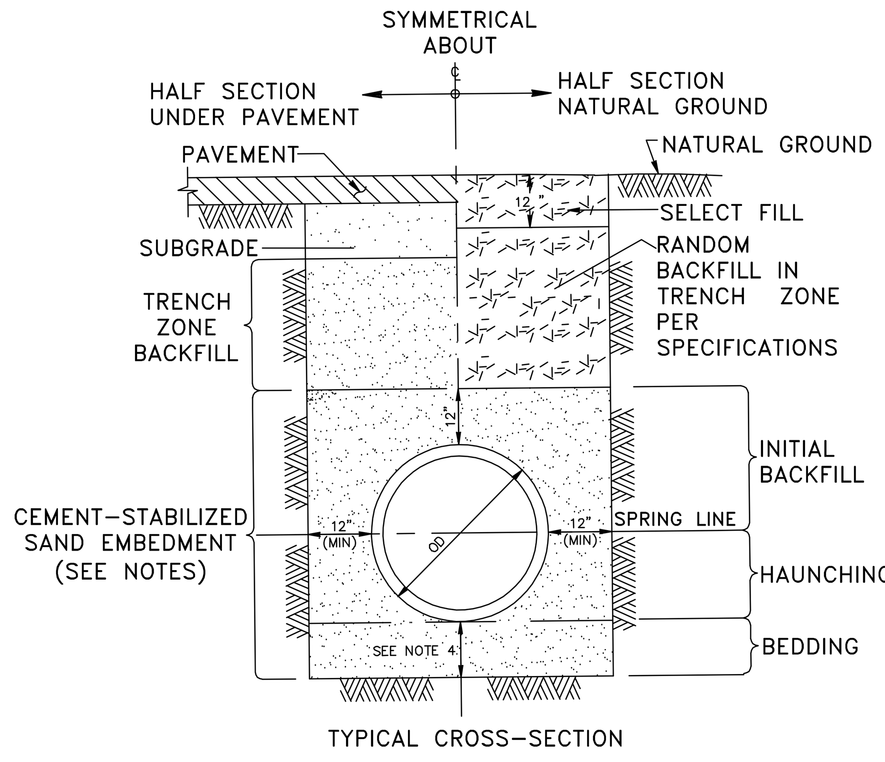
2. MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

NOMINAL PIPE SIZE	"A"
18" TO 30"	24"
OVER 30"	36"

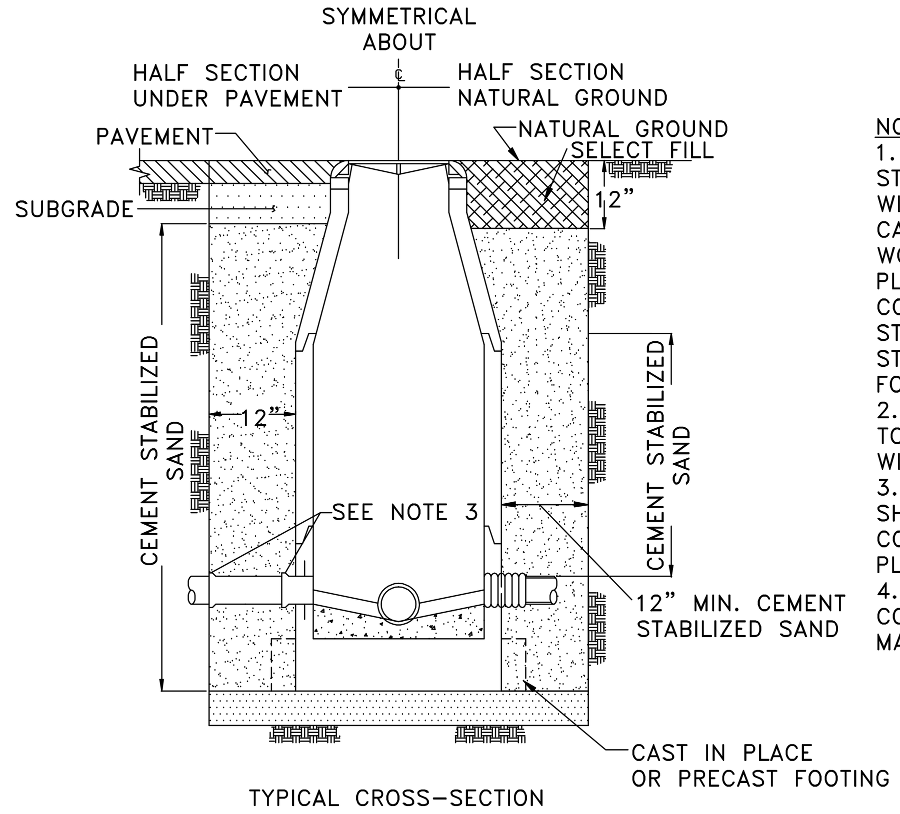
3. MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.

4. MIN. BEDDING DEPTH SHALL BBE 12 INCHES.

5. ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED



SANITARY SEWER BEDDING & BACKFILL



NOTES:
1. GROUTING OF MANHOLE STRUCTURE ANNULAR SPACE WILL BE PERMITTED IN CASES WHERE INSUFFICENT WORK SPACE EXISTS FOR PLACEMENT AND COMPACTATION OF CEMENT STABILIZED SAND. PER CLP STANDARD SPECIFICATION FOR TUNNEL GROUT.
2. THIS DETAIL ALSOAPPLIES TO BACKFILL OF SHAFTS WITHOUT STRUCTURES.
3. ARRANGE PIPE JOINTS AS SHOWN WHEN USING RIGID CONNECTION TO CAST IN PLACE MANHOLE BASE.
4. NEED COAL–TAR EPOXY COATING ON INSIDE OF MANHOLE OR EQUAL.

SANITARY SEWER MANHOLE

SANITARY SEWER

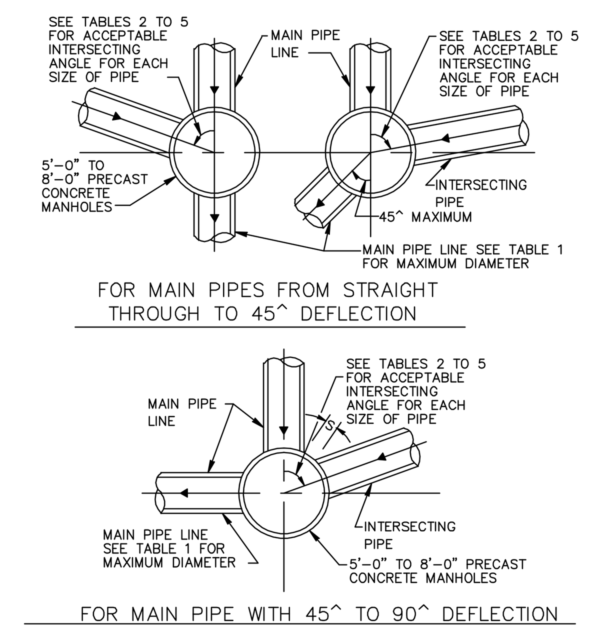


TABLE 1
MAXIMUM MAIN PIPE DIAMETER (I D) IN INCHES

MANHOLE DIAMETER (FT)	STRAIGHT THROUGH TO 45^ DEFLECTION	WITH 90^ DEFLECTION	TABLE TO BE USED
5	36	27	2
6	42	33	3
7	48	36	4
8	60	42	5

NOTES TO SPECIFIER:

1."_" INDICATES THAT A SPECIAL DESIGN OR THE NEXT LARGER MANHOLE SIZE SHALL BE USED.

2.TABLES 2 TO 5 ARE BASED ON A MIN SEPARATION DISTANCE "S" OF 15.5" OR INTERSECTION PIPE OD/2, WHICHEVER IS GREATER, BETWEEN MAIN AND INTERSECTING PIPES ALONG THE MANHOLE INSIDE WALL ARC.

3. PIPE WALL THICKNESS USED IN TABLES 2 TO 5 ARE BASED ON RCP. THE DESIGN ENGINEER MAY CALCULATE TO SEE IF THINNER WALL PIPES CAN MEET THE SEPARATION CRITERIA FOR ANGLES SMALLER THAN THE TABLES ALLOW.

4. LIMITATIONS TO BASE HEIGHT ARE BASER ON RESISTING BUOYANT UPLIFT FORCES BASED ON WATER AT GROUND SURFACE AND A SAFETY FACTOR OF 1.20.

5. A SPECIAL DESIGN IS REQUIRED IF MANHOLE ID IS GREATER THAN 8 FT.

5'–0" TO 8'–0" DIAMETER PRECAST CONCRETE MANHOLE NOTES
N.T.S

NOTES ON USE OF STANDARD DETAIL SAN–015

TABLE 3
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 6'–0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES											
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"
8	40	42	45	49	51	54	57	61	63	67	70	78
10		44	47	50	53	56	59	62	65	69	72	79
12			50	54	56	60	62	66	68	72	75	83
15				57	59	62	65	69	71	75	78	85
18					62	65	68	71	74	78	81	88
21						68	71	74	77	81	84	–
24							74	77	80	84	87	–
27								83	85	89	–	–
30			*						–	–	–	–
33										–	–	–
36											–	–
42												–

TABLE 4
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 7'–0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES												
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"
8	35	36	39	42	44	47	49	52	54	57	59	65	71
10		38	40	43	45	48	50	53	55	59	61	67	73
12			43	46	48	51	53	56	58	61	64	70	76
15				48	50	53	55	58	61	64	66	72	78
18					58	56	58	61	63	66	69	74	81
21						58	60	63	66	69	71	77	83
24							63	66	68	71	74	79	86
27								70	72	76	78	84	90
30			*						78	81	83	89	–
33										86	88	–	–
36											–	–	–
42												–	–
48													–

TABLE 5
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 8'–0" DIA MANHOLE

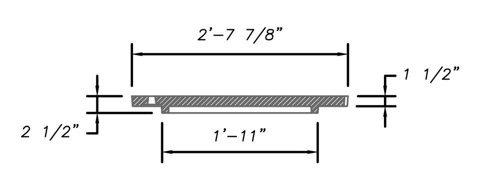
INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES														
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"	54"	60"
8	30	32	34	36	38	41	43	45	47	50	52	56	61	67	74
10		33	35	38	40	42	44	46	48	51	53	58	63	68	77
12			38	40	42	44	46	49	51	53	55	60	65	71	79
15				42	44	47	48	51	53	56	58	62	67	73	81
18					46	49	51	53	55	58	66	64	70	75	83
21						51	53	55	57	60	62	67	72	77	85
24							55	57	59	62	64	69	74	79	89
27								61	63	66	68	73	78	83	–
30									67	70	72	77	82	87	–
33				*						74	76	81	86	–	–
36											81	86	–	–	–
42												–	–	–	–
48													–	–	–
54														–	–
60															–

TABLE 2
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 5'–0" DIA MANHOLE

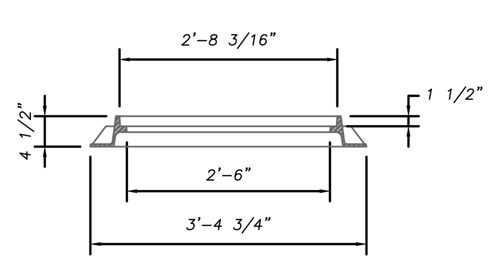
INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES										
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"
8	49	50	54	58	61	66	69	73	77	82	86
10		53	57	61	64	68	71	76	79	84	88
12			61	65	68	72	75	80	83	88	–
15				68	71	75	79	83	87	–	–
18					75	79	82	87	90	–	–
21						83	86	90	–	–	–
24							90	–	–	–	–
27			*					–	–	–	–
30									–	–	–
33										–	–
36											–

*NOT APPLICABLE
(INTERSECTING PIPE GREATER THAN MAIN PIPE)

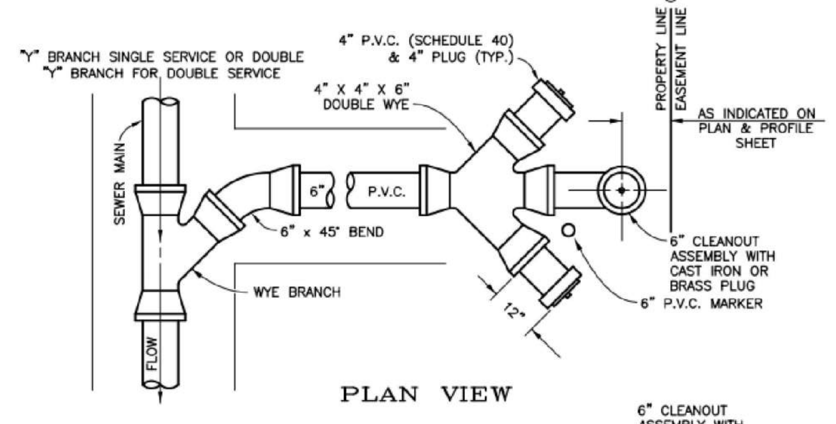
PLAN VIEW
FRAME AND COVER
SCALE: 1" = 1'–0"

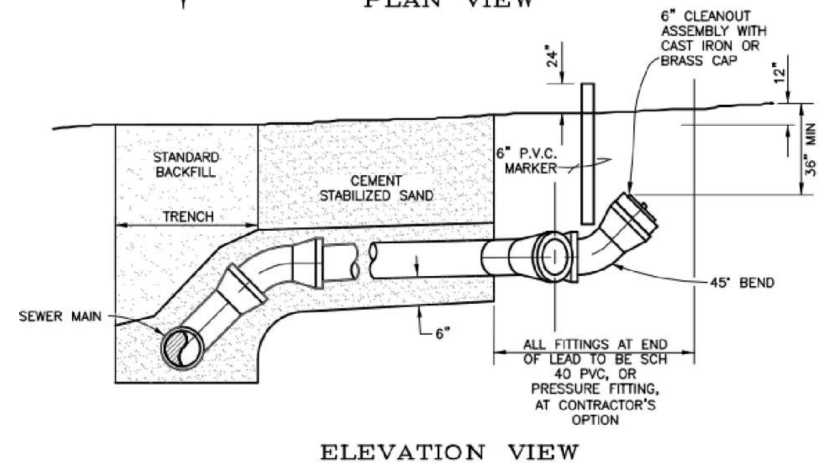


COVER SECTION A–A
SCALE: 1" = 1'–0"



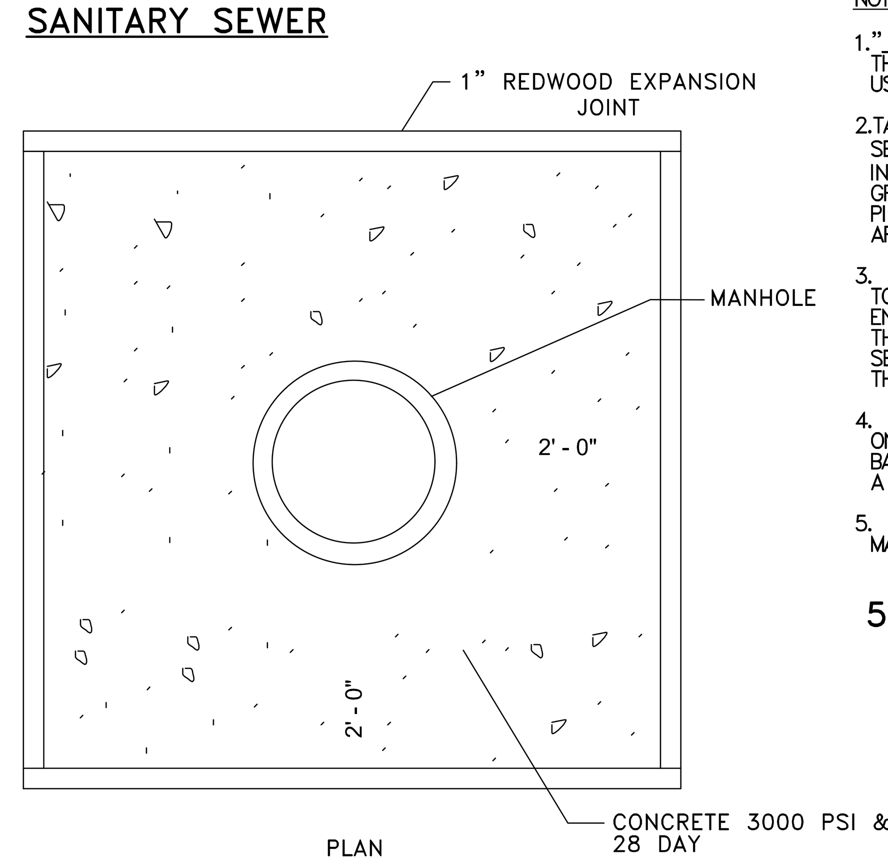
FRAME SECTION A–A
SCALE: 1" = 1'–0"



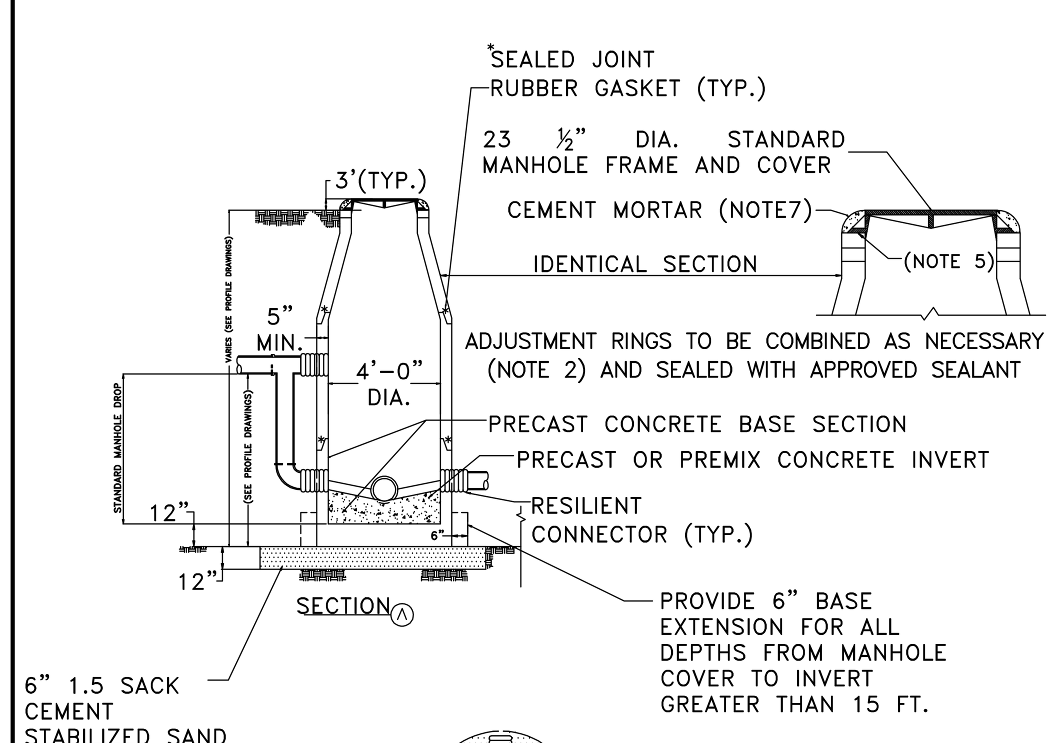


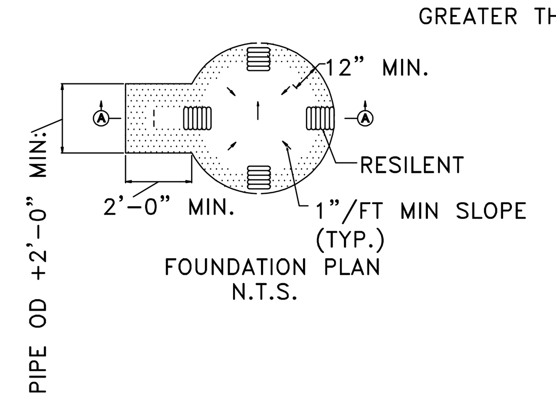
NOTE: ALL FITTINGS ON MAIN LINE AND UP TO THE END OF LEAD ARE TO BE PRESSURE FITTINGS.

SANITARY SEWER SERVICE CONNECTION



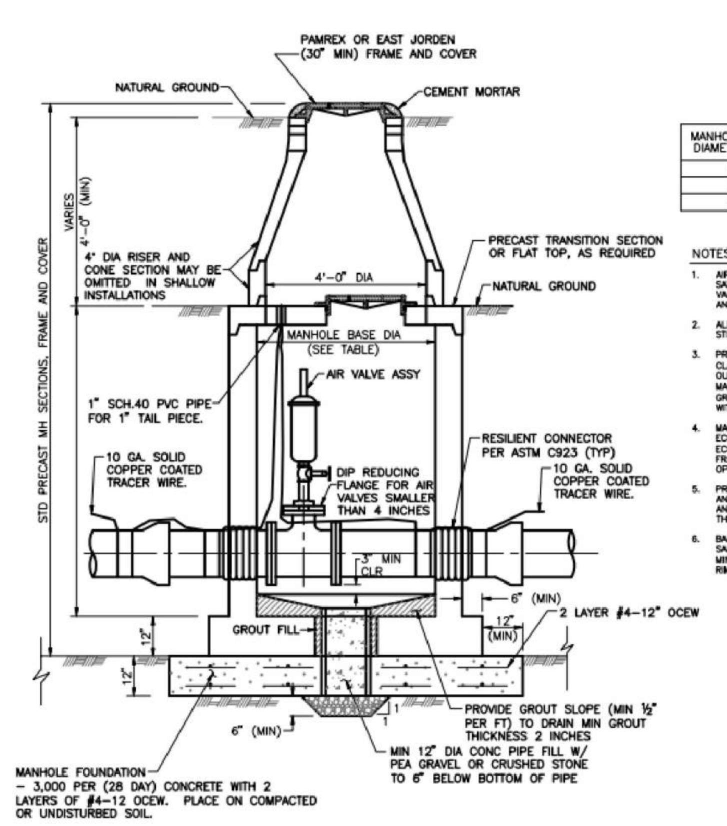
STANDARD MANHOLE BLOCKOUT FOR CONCRETE PAVEMENT





NOTES:
1. DEPTH MANHOLE DETERMINES SECTIONS REQUIRED.
2. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12". THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'–6".
3. MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12'0" SHALL BE 12" THICK.
4. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
5. SEAT MANHOLE FRAME IN SEALANT PER CITY OF LA PORTE STANDARD SPECIFICATION.
6. ECCENTRIC PRECAST CONCRETE MANHOLE MAY BE USE.
7. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
8. MIN. REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE #5@ 8 EW.
9. PROVIDED BACKFILL TO MATCH ADJACENT PIPE TRENCH BACKFILL PER CITY OF LA PORTE STANDARD SPECIFICATION.
10. TEE INCLUDED IN PRICE OF DROP.
11. HORSE–SHOE SHAPED OPENINGS OR BREAKOUT OPENINGS SHALL NOT BE ACCEPTED.

4'–0" DIA PRECAST CONCRETE MANHOLE

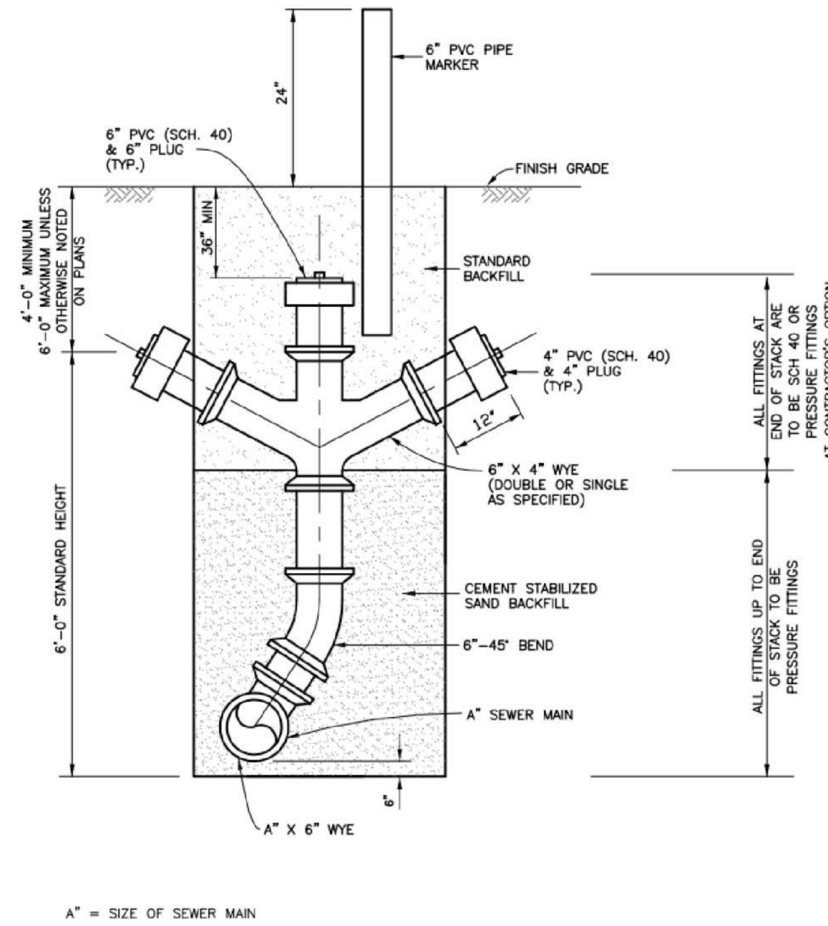


TABLE

MANHOLE BASE DIAMETER (FT)	MAX FORCE MAIN DIAMETER
5	8
6	16
8	36

NOTES:
1. AIR RELEASE VALVE MAY BE 2" APCO 401 SAW OR PRE–APPROVED EQUAL OR AIR AND VACUUM RELEASE VALVE AS NOTED ON PLAN AND PROFILE SHEET.
2. ALL PIPING AND FITTINGS SHALL BE STAINLESS STEEL.
3. PROVIDE LINED DUCTILE IRON PIPE, THICK. CLASS 53, FOR FORCE MAIN WITHIN 12" OF OUTSIDE FACE OF MANHOLE. JOINTS WITHIN MANHOLE MAY BE FLANGED (AS SHOWN) OR GROOVED (PER ASTM 606) WITHIN MANHOLE, WITH 316 STAINLESS STEEL BOLTS.
4. MANHOLE TOP MAY BE CONCENTRIC CONE, ECCENTRIC CONE, OR FLAT TOP WITH ECCENTRIC OPENING. PROVIDE 30" MINIMUM FRAME & COVER. ORIENT ECCENTRIC OPENING OPPOSITE SIDE FROM AIR VALVE.
5. PROVIDE VENTED MANHOLE FOR AIR AND VACUUM VALVE INSTALLATIONS AND AT LOCATIONS INDICATED ON THE DRAWINGS.
6. BACKFILL MANHOLE WITH CEMENT STABILIZED SAND TO 12 INCHES ABOVE FORCE MAIN OR MINIMUM OF FOUR (4') FEET FROM TOP OF RIM, WHICHEVER IS HIGHER.

SANITARY SEWER AIR RELEASE OR AIR/ VACCUM RELEASE VALVE MANHOLE



A" = SIZE OF SEWER MAIN

SANITARY SEWER STACK

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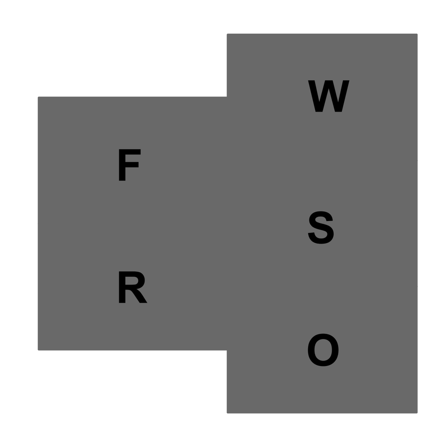
(New Statewide Number Outside Houston)
1–800–545–6005

KEY PLAN (NOT TO SCALE)



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Suite 441
Houston, TX 77024
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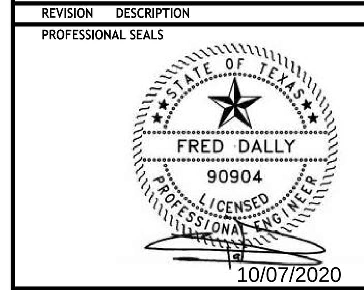
Galveston County
Road & Bridge Department Facilities PH1
5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

PROFESSIONAL SEALS



SANITARY SEWER DETAILS

DRAWN BY	CHECKED BY
JDM	JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

3

C12.0-PH1
SHEET NUMBER

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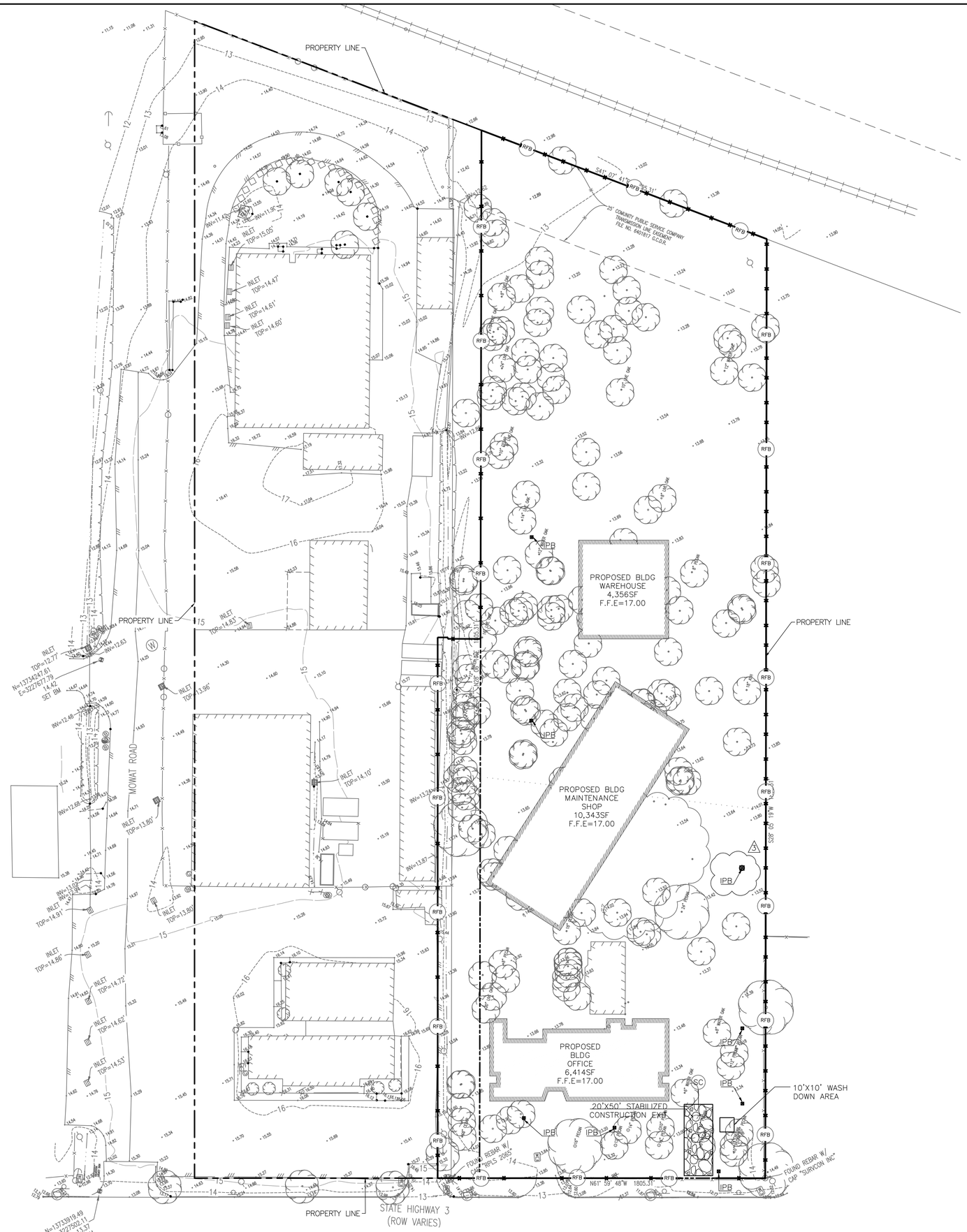
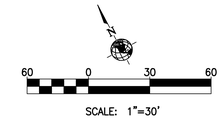
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM





SWPPP LEGEND

- REINFORCED FILTER FABRIC BARRIER AT LEAST 2' BEHIND BACK OF CURB/PAVEMENT
- STABILIZED CONSTRUCTION EXIT.
- INLET PROTECTION BARRIER (IPB).
- WASH DOWN AREA.

SWPPP CONSTRUCTION NOTES

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATION SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPPP) PLANS TO KEEP SILT AND /OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.

2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATED MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.

3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FROM THE EXCAVATED AREA.

4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

- DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
- AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
- STRUCTURAL CONTROL MEASURES.
- LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND/ OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING.
SLOPES 4:1 OR STEPPER SHALL BE REPLACED BY CLOCK SODDING.

CONCRETE TRUCK/EQUIPMENT WASH OUT

1. CONTRACTOR(S) SHALL NOT WASH OUT CONCRETE TRUCKS OR EQUIPMENT INTO STREET DEAD ENDS, RIGHT-OF-WAYS, GUTTERS, STORM SEWER INLETS, WATERWAYS, CREEKS OR ANY LOCATION WHERE THE MATERIALS COULD REACH THE STORM SEWER (MS4) SYSTEM. ROCKED CUL-DE-SACS ARE NOT APPROVED WASH OUT AREAS. ALL DEPOSITED MATERIALS SHALL BE REMOVED AND PROPERLY DISPOSED OF AT THE COMPLETION OF WORK.

2. WASH OUT CONCRETE TRUCKS AND/OR EQUIPMENT ONLY IN A DESIGNATED, CONFINED WASHOUT AREA WHERE THE WATER WILL FLOW INTO A TEMPORARY PIT IN A DIRT AREA OR ONTO STOCKPILES OF AGGREGATE BASE OR SAND. THIS AREA MUST BE AN IDENTIFIED LOCATION.

3. COLLECT AND RETURN SWEEPINGS FROM EXPOSED AGGREGATE CONCRETE TO A STOCKPILE OR DISPOSE OF THE WASTE IN A TRASH CONTAINER.

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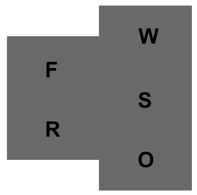
KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

SWPP PLAN

DRAWN BY	CHECKED BY
JDM	JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

3

C13.0-PH1

SHEET NUMBER

FILE PATH:
USER NAME: File Path
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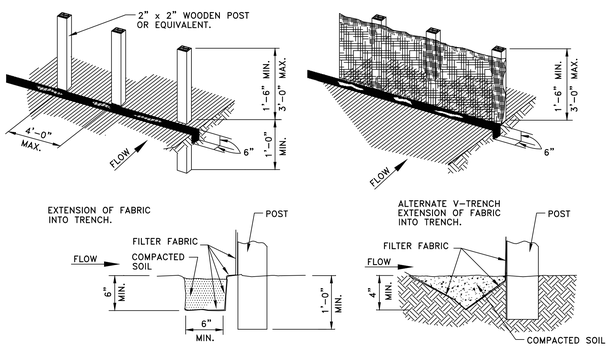
1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE A 6" x 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.

2. ATTACH FILTER FABRIC TO POSTS AND INSTALL IT INTO THE TRENCH. BACKFILL THE TRENCH AND COMPACT THE EXCAVATED SOIL.

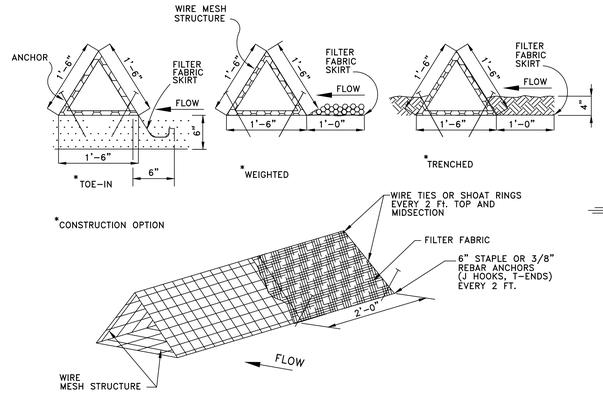


GENERAL NOTES:

1. SET POSTS AT 4-FEET MAXIMUM SPACING. IF FACTORY PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAXIMUM.
2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT THE POST, FOLD TOGETHER, AND ATTACH TO THE POSTS.
3. REMOVE SEDIMENT DEPOSITS WHEN SILT DEPTH REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE.

FILTER FABRIC FENCE

FF
SYMBOL

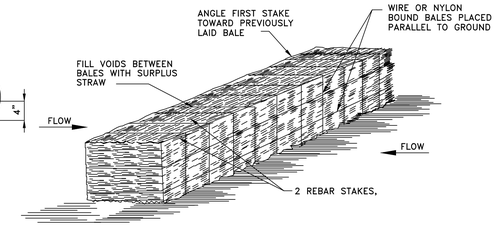


GENERAL NOTES:

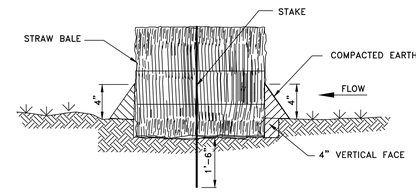
1. PLACE BARRIER IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BARRIER.
2. USING ONE CONTINUOUS SECTION OF FILTER FABRIC, WRAP FABRIC AROUND WIRE MESH AND EXTEND FABRIC TO FORM SKIRT ON THE UPSTREAM SIDE.
3. WEIGHT SKIRT WITH A CONTINUOUS LAYER OF 3-INCH TO 5-INCH OPEN GRADED ROCK, OR TOE IN SKIRT WITH SIX INCHES WITH MECHANICALLY COMPACTED MATERIAL.
4. SECURELY ANCHOR BARRIER AND SKIRT IN PLACE USING 6-INCH WIRE STAPLES ON 2-FOOT CENTERS ON BOTH EDGES, OR STAKE USING 18-INCH BY 3/8 INCH REBARS (T-ENDS, J-HOOKS).
5. FILTER FABRIC SHALL BE LAPPED OVER ENDS 6 INCHES TO COVER SEGMENT JOINTS. FASTEN JOINTS WITH GALVANIZED SHOAT RINGS OR EQUIVALENT.
6. THE BARRIER STRUCTURE SHALL BE WELDED WIRE MESH, 18 INCHES ON EACH SIDE.

TRIANGULAR FILTER FABRIC FENCE

TFF
SYMBOL



STRAW BALE FENCE



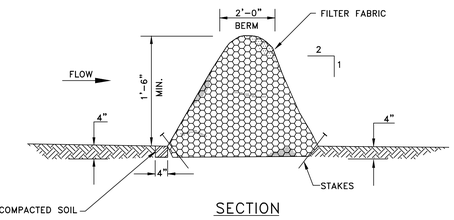
SECTION

GENERAL NOTES:

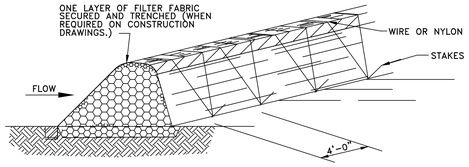
1. LIMIT USE TO ONSITE SWALES FOR PURPOSES OF LOW FLOW VELOCITY DISSIPATION FOR EROSION CONTROL. USE STRAW BALE FENCES TO TREAT OVERLAND FLOW ONLY. DO NOT USE STRAW BALE FENCES TO TREAT FLOW IN CHANNELS.
2. PLACE BALES IN A ROW WITH ENDS TIGHTLY ABUTTING ADJACENT BALES. FILL THE VOIDS BETWEEN BALES WITH SURPLUS STRAW. PLACE BALES WITH BINDING PARALLEL TO GROUND SURFACE.
3. IMBED EACH BALE AT LEAST 4 INCHES IN THE SOIL.
4. SECURELY ANCHOR BALES IN PLACE BY REBAR STAKES. DRIVE STAKES THROUGH THE BALES AND AT LEAST 18 INCHES INTO THE GROUND. ANGLE THE STAKE IN EACH BALE TOWARD THE PREVIOUS BALE TO FORCE THE BALES TOGETHER.
5. BIND BALES WITH WIRE OR NYLON ROPE TIED ACROSS THE STRAW BALES.
6. REPLACE WITH NEW STRAW BALE FENCE EVERY TWO MONTHS.
7. WATTLES STAKED INTO THE GROUND ARE A PREFERRED SUBSTITUTE FOR STRAW BALE FENCES.

STRAW BALE FENCE

SBF
SYMBOL



SECTION



GENERAL NOTES:

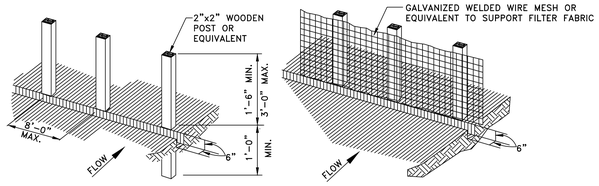
1. LIMIT USE TO ONSITE SWALES FOR PURPOSES OF LOW FLOW VELOCITY DISSIPATION FOR EROSION CONTROL. USE BRUSH BERMS TO TREAT OVERLAND FLOW ONLY. DO NOT USE BRUSH BERMS TO TREAT FLOW IN CHANNELS.
2. PLACE WOODY BRUSH AND BRANCHES HAVING A DIAMETER OF LESS THAN 2 INCHES WITH A 6-INCH OVERLAP. AVOID INCORPORATION OF ANNUAL WEEDS AND SOIL INTO BRUSH BERM.
3. MINIMUM HEIGHT OF THE BRUSH BERM IS 18 INCHES, MEASURED FROM THE TOP OF THE EXISTING GROUND AT THE UPSLOPE TOE TO THE TOP OF THE BERM.
4. HAND PLACE BRUSH BERMS ALONG CONTOUR LINES. MACHINE PLACEMENT OF BRUSH BERMS IS NOT PERMITTED.
5. IMBED BRUSH BERM AT LEAST 4 INCHES INTO THE SOIL.
6. ANCHOR BRUSH BERMS USING WIRE OR NYLON ROPE ACROSS THE BERM WITH A MINIMUM TENSION OF 50 POUNDS.
7. SECURELY TIE ROPE TO 18-INCH REBAR STAKES DRIVEN INTO THE GROUND ON 4-FOOT CENTERS ON BOTH SIDES OF THE BERM.
8. PERFORM MAINTENANCE AS NEEDED.

BRUSH BERM

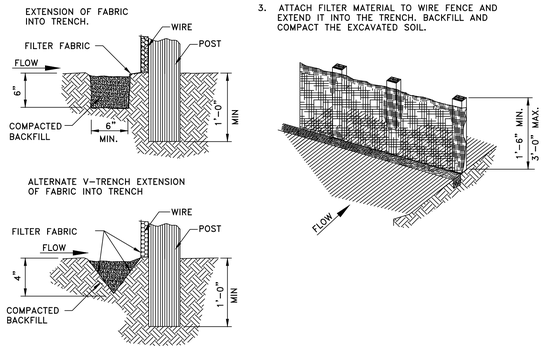
BB
SYMBOL

1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE 6" x 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.

2. SECURE MESH FENCING TO POSTS



3. ATTACH FILTER MATERIAL TO WIRE FENCE AND EXTEND IT INTO THE TRENCH. BACKFILL AND COMPACT THE EXCAVATED SOIL.

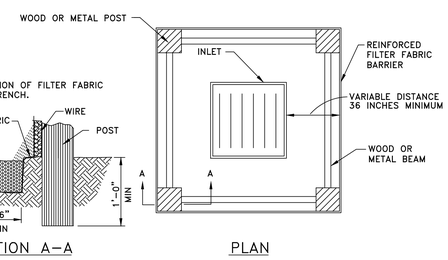


GENERAL NOTES:

1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.

REINFORCED FILTER FABRIC BARRIER

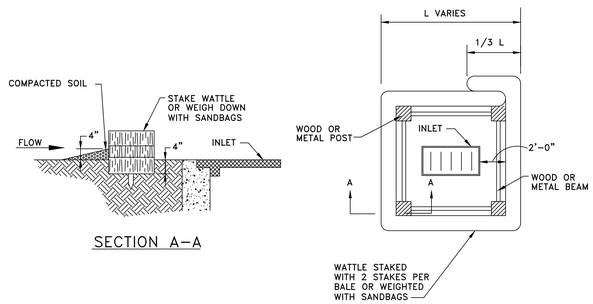
RFB
SYMBOL



SECTION A–A

PLAN

SEE REINFORCED FILTER FABRIC BARRIER DETAIL FOR REINFORCED FILTER FABRIC BARRIER REQUIREMENTS



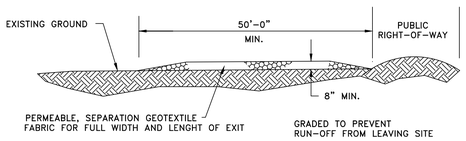
SECTION A–A

PLAN

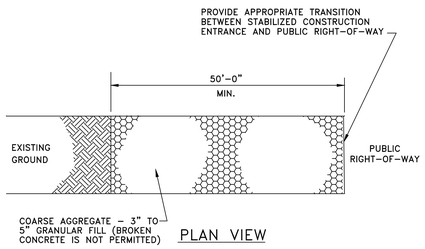
NOTE:
TYPICALLY STRAW BALES ARE NOT RECOMMENDED FOR INLET PROTECTION BARRIERS.

INLET PROTECTION BARRIERS FOR STAGE I INLETS

IPB
SYMBOL



PROFILE



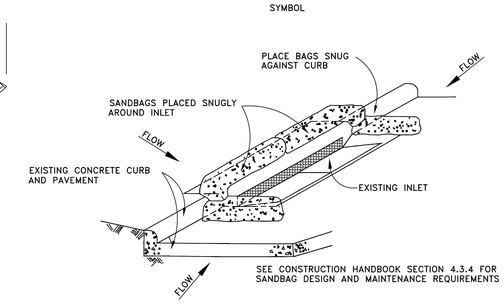
PLAN VIEW

GENERAL NOTES:

1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
7. ALTERNATIVE METHODS OF CONSTRUCTION INCLUDE
   –CEMENT STABILIZED SOIL: COMPACTED CEMENT STABILIZED SOIL, LIMESTONE AGGREGATE, OR OTHER FILL MATERIAL IN AN APPLICATION OF THICKNESS OF 8 INCHES.
   –WOOD MATS: OAK OR OTHER HARDWOOD TIMBERS PLACED EDGE TO EDGE AND ACROSS SUPPORT WOODEN BEAMS WHICH ARE PLACED ON TOP OF EXISTING SOIL IN AN APPLICATION THICKNESS OF 6 INCHES.
   –STEEL MATS: PERFORATED MATS PLACED ACROSS PERPENDICULAR SUPPORT MEMBERS.

STABILIZED CONSTRUCTION ACCESS

SC
SYMBOL



GENERAL NOTES:

1. BAGS OR WATTLES CAN BE USED FOR THIS APPLICATION.
2. PROVIDE WOVEN OR UNWOVEN GEOTEXTILE FILTER FABRIC FOR BAGS.
3. PROVIDE COARSE SAND AND AGGREGATE MIX FOR FILL MATERIAL FOR BAGS. USE ONLY PARTICLES CONSISTING OF CLEAN, HARD, DURABLE MATERIALS FREE FROM ADHERENT COATINGS, SALT, ALKALI, DIRT, CLAY, LOAM, SHALE, SOFT OR FLAKY MATERIALS, OR ORGANIC AND INJURIOUS MATTER.
4. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.

INLET PROTECTION BARRIERS FOR STAGE II INLETS

IPB
SYMBOL

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(New Statewide Number Outside Houston)
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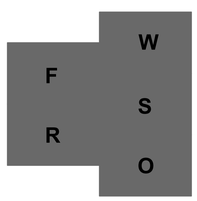
KEY PLAN (NOT TO SCALE)



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Dickinson, TX

REVISION HISTORY

3	ADDENDUM NO. 3	10-07-2020

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

SWPPP DETAILS

DRAWN BY: JDM	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 07 OCT 2020

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SHEET NUMBER

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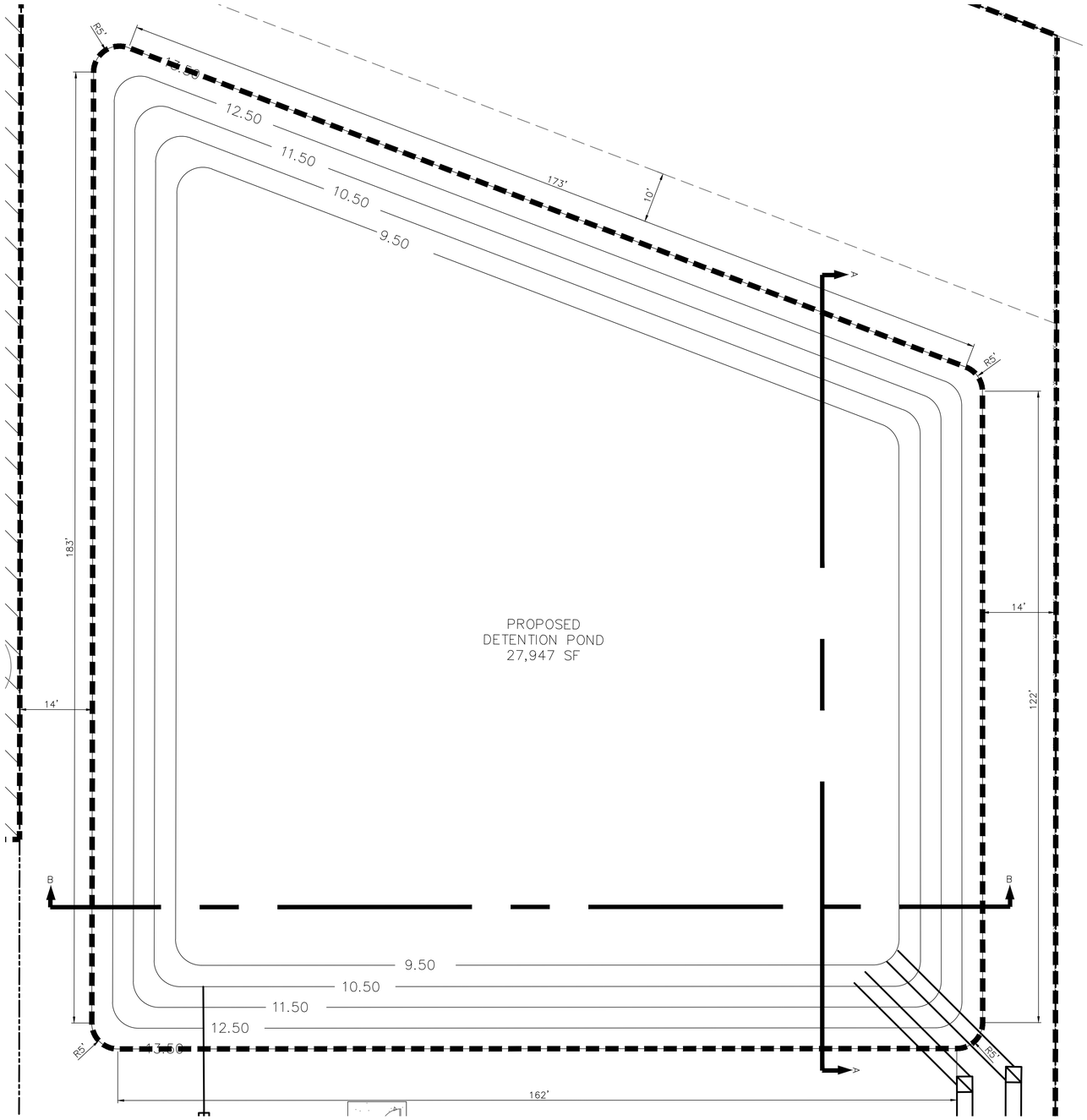
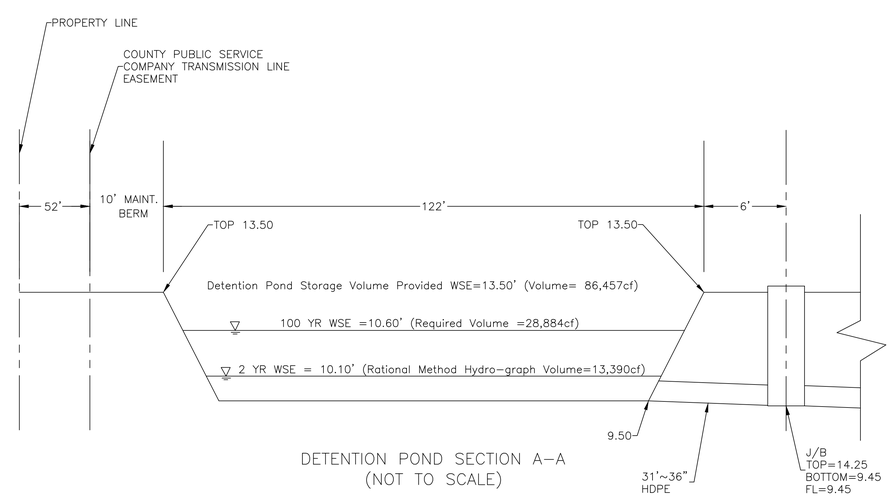
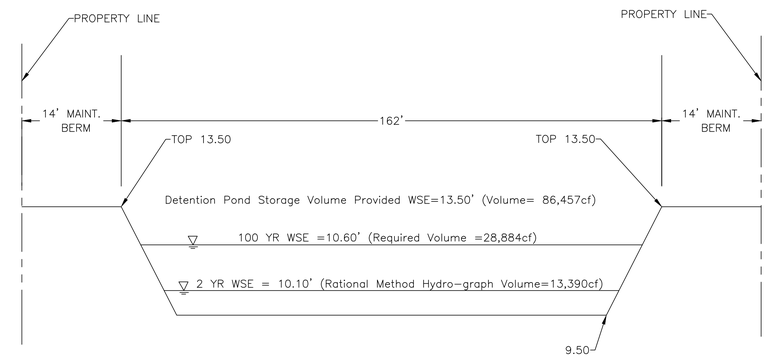
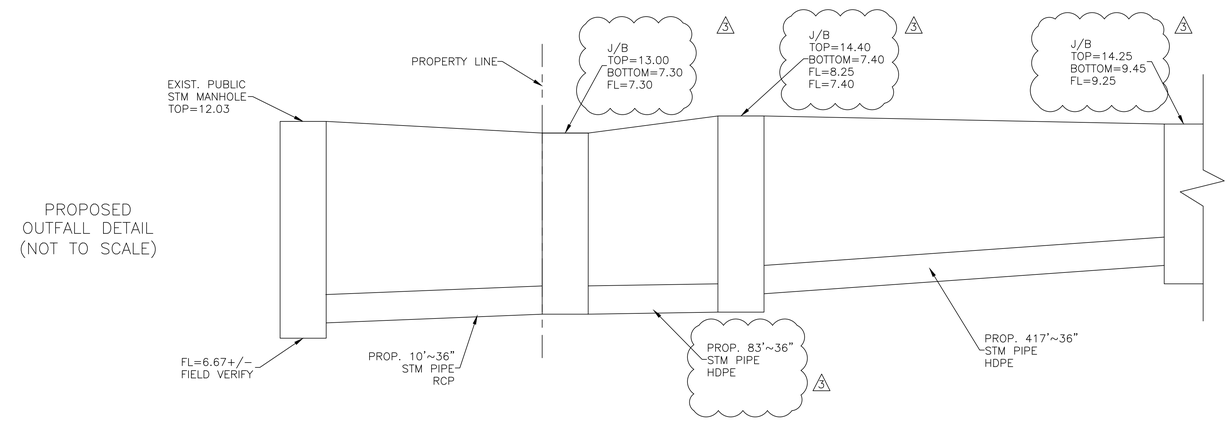




DETENTION POND SECTION A–A
(NOT TO SCALE)



DETENTION POND SECTION B–B
(NOT TO SCALE)



PROPOSED
OUTFALL DETAIL
(NOT TO SCALE)

ONE– CALL NOTIFICATION SYSTM
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(713) 223–4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
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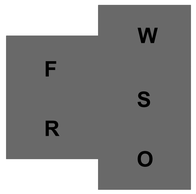
KEY PLAN (NOT TO SCALE)



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Landscape Architecture
Knudson, LP
8588 Katy Freeway
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713 463 8200

Galveston County
Road & Bridge Department Facilities PH1

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

3	ADDENDUM NO. 3	10-07-2020

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

DETENTION POND
CROSS SECTION

DRAWN BY JDM	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_RBB
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

3

C15.0-PH1

SHEET NUMBER

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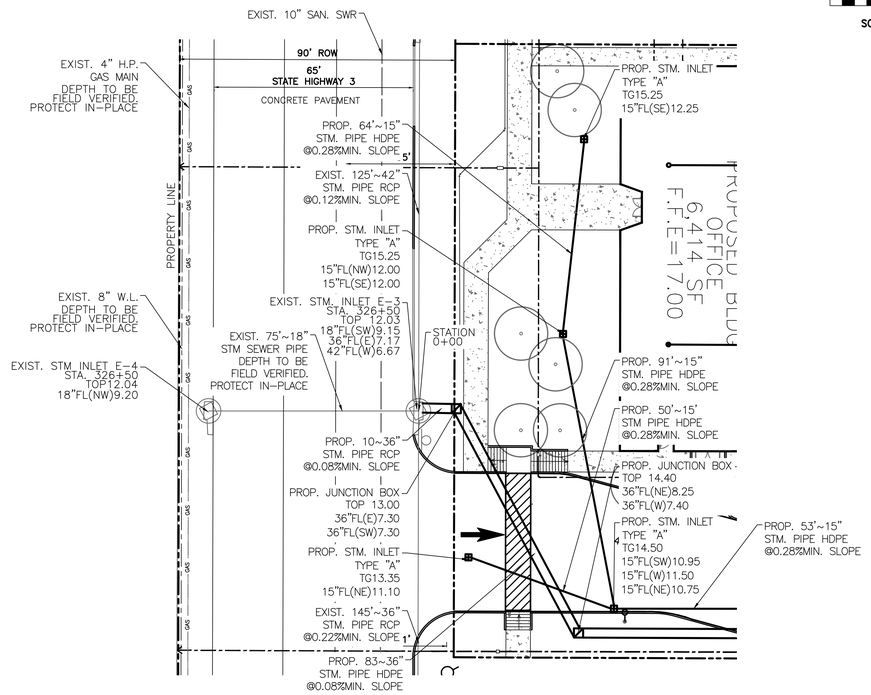
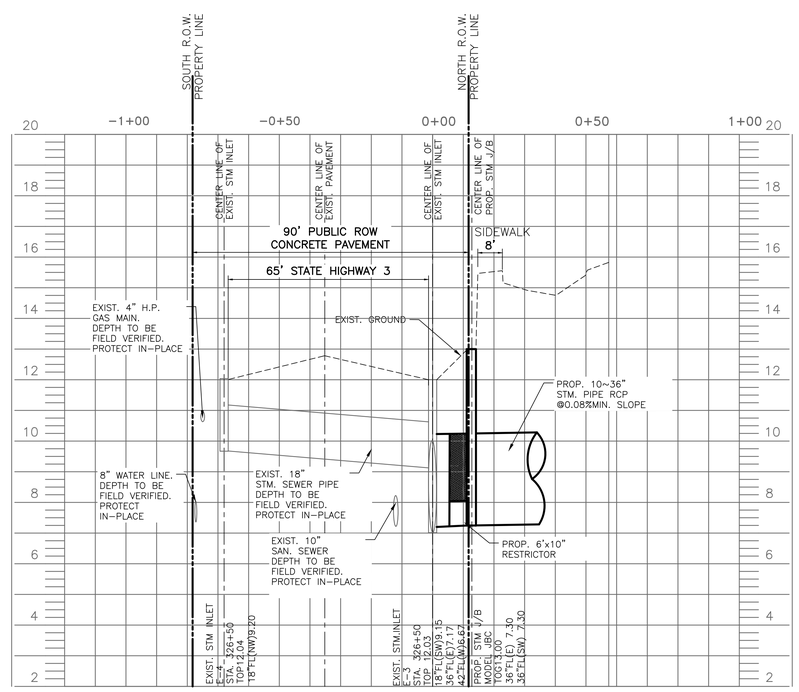
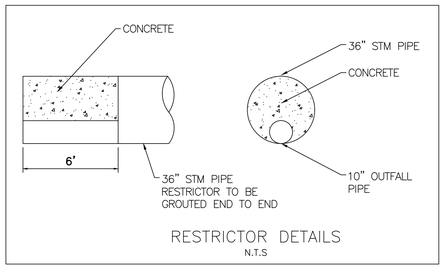
DATE STAMP: 6/26/2008 2:02:08 PM



PROPOSED 36" STORM SEWER PLAN VIEW
GALVESTON COUNTY ROAD & BRIDGE DEPARTAMENT FACILITIES, HIGHWAY 3



PROPOSED 36" STORM SEWER PROFILE VIEW
GALVESTON COUNTY ROAD & BRIDGE DEPARMENT FACILITIES, HIGHWAY 3



RESTRICTOR DETAILS
N.T.S

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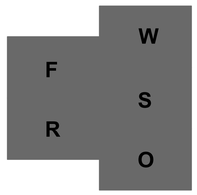
KEY PLAN (NOT TO SCALE)



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PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED PROFESSIONAL ENGINEER
10/07/2020

STORM DRAIN PLAN & PROFILE

DRAWN BY JDM	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

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C16.0-PH1
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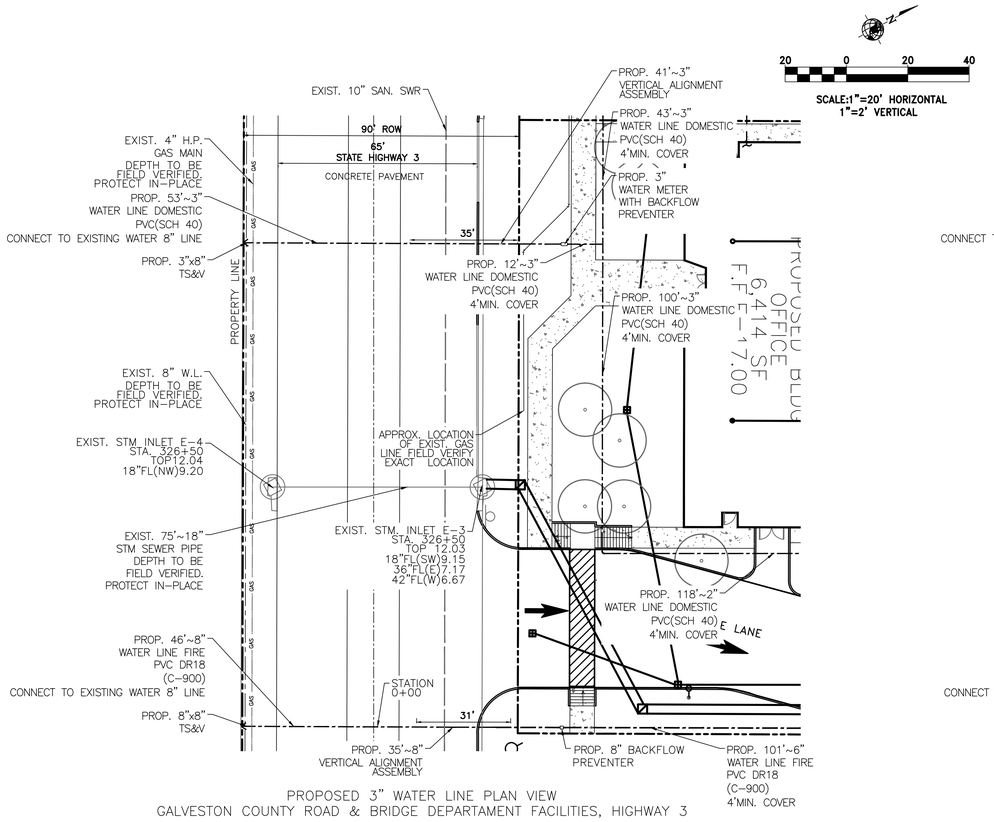
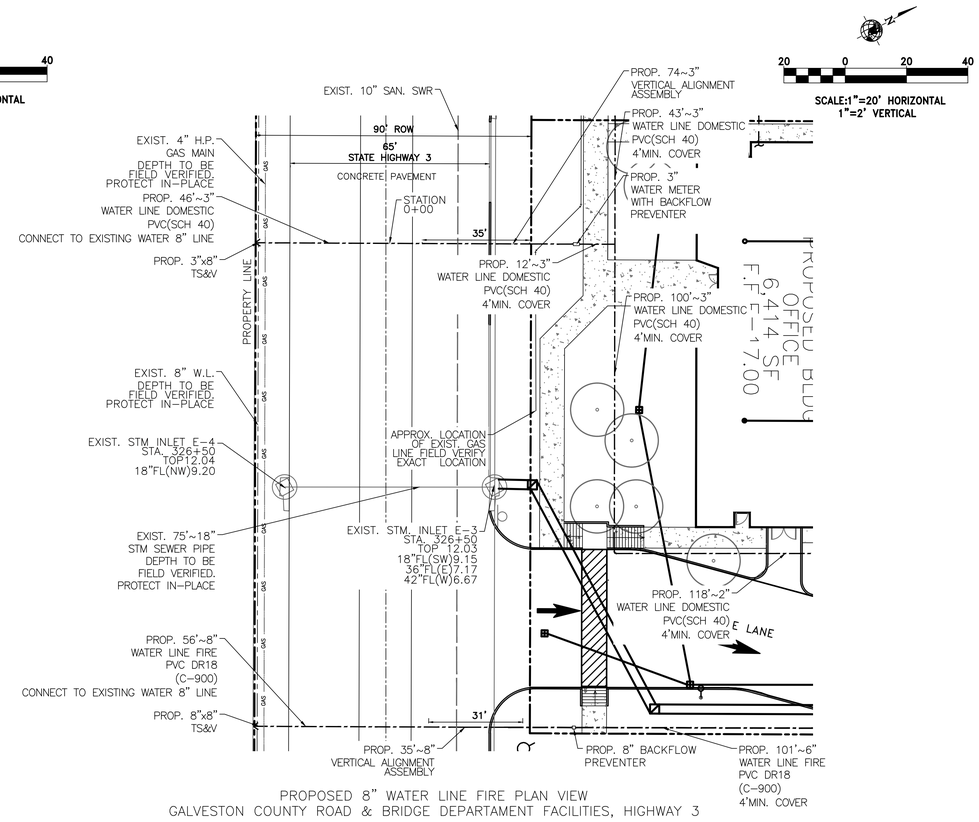
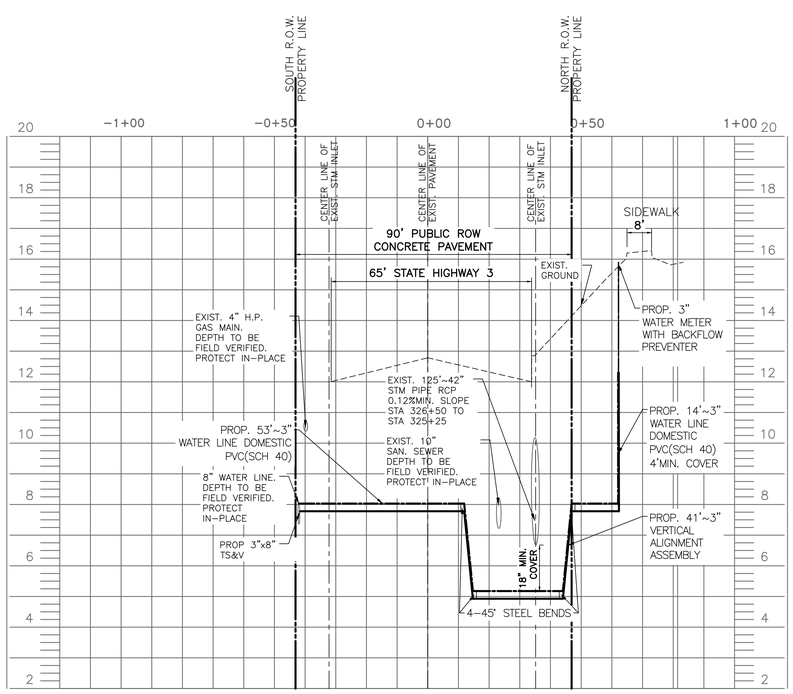


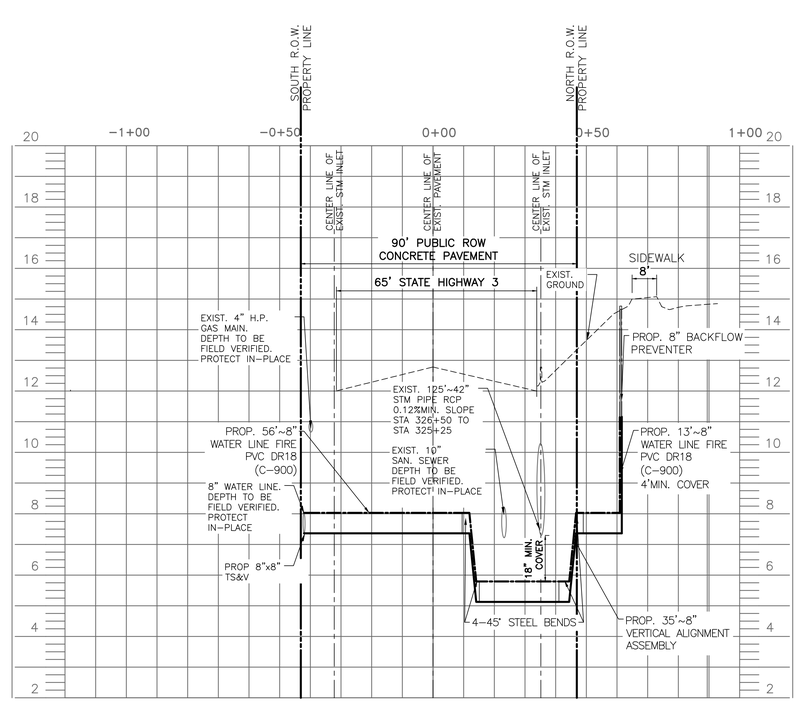
PROPOSED 3" WATER LINE PLAN VIEW
GALVESTON COUNTY ROAD & BRIDGE DEPARTAMENT FACILITIES, HIGHWAY 3



PROPOSED 8" WATER LINE FIRE PLAN VIEW
GALVESTON COUNTY ROAD & BRIDGE DEPARTAMENT FACILITIES, HIGHWAY 3

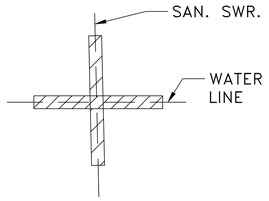


3" WATER LINE PROPOSED PROFILE VIEW
GALVESTON COUNTY ROAD & BRIDGE DEPARTAMENT FACILITIES, HIGHWAY 3



8" WATER LINE FIRE PROPOSED PROFILE VIEW
GALVESTON COUNTY ROAD & BRIDGE DEPARTAMENT FACILITIES, HIGHWAY 3

SAN SWR AND WL CROSSING:



WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOIN SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.

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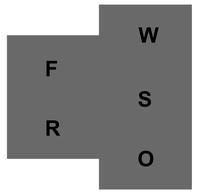
KEY PLAN (NOT TO SCALE)



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Galveston County Road & Bridge Department Facilities PH1

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

3	ADDENDUM NO. 3	10-07-2020

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

WATER LINE PLAN & PROFILE

DRAWN BY JDM	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

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C17.0-PH1
SHEET NUMBER

FILE PATH: File Path
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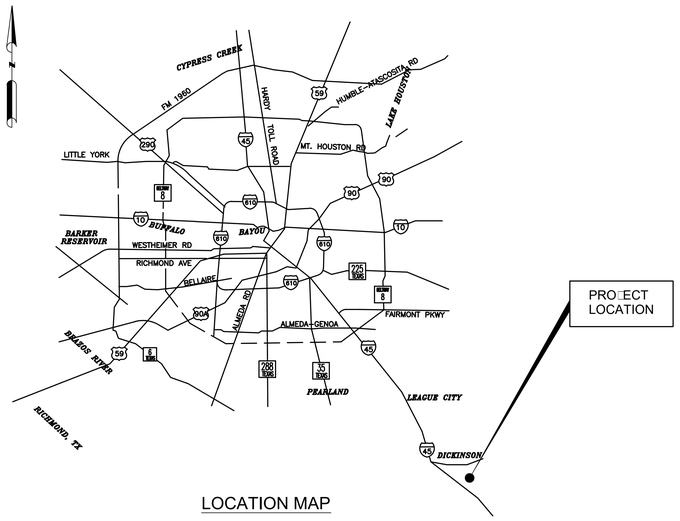
DATE STAMP: 6/26/2008 2:02:08 PM

GALVESTON COUNTY
ROAD & BRIDGE DEPARTMENT FACILITIES - PHASE 2

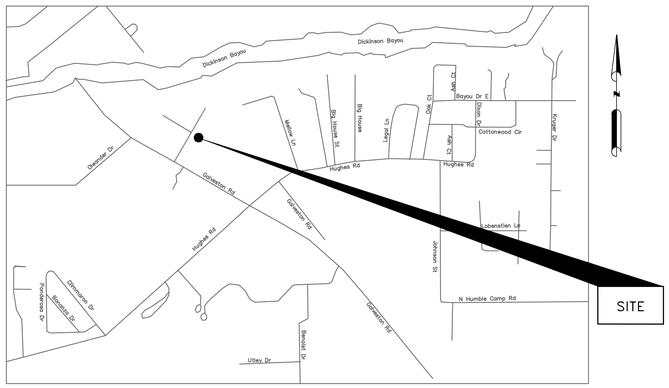
5115 TEXAS HIGHWAY 3
DICKINSON, TX

ISSUE FOR PERMIT

△3 ADDENDUM NO.3 10-07-2020



LOCATION MAP



VICINITY MAP
N.T.S.
KEY MAP: 190-A

CIVIL ENGINEER:

DALLY ASSOCIATES, INC.
TBPE FIRM REGISTRATION 3426

9800 RICHMOND AVENUE, SUITE 460
HOUSTON, TX 77042
(713) 337 8881
www.dallyassociates.com

Project Manager: Jose Diego Monroy, CFM
Project Engineer: Fred Dally, P.E.

OCTOBER 07, 2020

CIVIL SHEET INDEX

SHEET	SHEET NAME
C1.0-PH2	COVER SHEET
C2.0-PH2	TOPOGRAPHIC SURVEY
C3.0-PH2	DEMOLITION PLAN
C4.0-PH2	PAVING PLAN △3
C5.0-PH2	LAYOUT PLAN
C6.0-PH2	GRADING PLAN
C7.0-PH2	UTILITY PLAN
C7.1-PH2	UTILITY PLAN
C8.0-PH2	GENERAL NOTES
C9.0-PH2	PAVEMENT DETAILS
C10.0-PH2	STORM DRAIN DETAILS △3
C11.0-PH2	WATER DETAILS
C12.0-PH2	SANITARY SEWER DETAILS
C13.0-PH2	STORM WATER POLLUTION PREVENTION PLAN △3
C14.0-PH2	SWPPP DETAILS

△3

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NO.	DATE	Revisions	App.
3	10/07/20	ADDENDUM NO. 3	FD

GALVESTON COUNTY
ROAD & BRIDGE
DEPARTMENT FACILITIES PH2
5115 TX-3
DICKINSON, TX 77539

COVER SHEET

TBPE FIRM REGISTRATION #3426

DRAWING SCALE

DESIGNED BY: JDM
CHECKED BY: JDM

DATE:10/07/2020

C1.0-PH2

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

GENERAL NOTES:

1. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Galveston County, Texas, Map No. 485470095 C dated May 2, 1983 This properties lies within Zone "C" of the flood insurance rate map and does not lies within a special flood hazard area.

   This flood statement does not imply that the property or structures thereon will be free from flooding or flood damage. On rare occasions floods can and will occur and flood heights may be increased by man–made or natural causes. The location of the flood zone was determined by scaling from said FEMA map. The actual location, as determined by elevation contours, may differ. Intertek Surveying & Services assumes no liability as to the accuracy of the location of the flood zone limits. This flood statement shall not create liability on the part of KM Surveying, LLC.

2. This survey has been prepared for the sole purpose of the transaction described in the above mentioned Commitment for Title Insurance and the parties listed thereon. This survey is not to be used for any subsequent transactions.

3. This survey does not determine the location of wetlands, fault lines, toxic waste, cemeteries, landfills, dumps or any other environmental issues.

4. Intertek Surveying & Services has not been provided with construction plans showing the location of underground utilities. Underground utilities may exist which are not shown hereon.

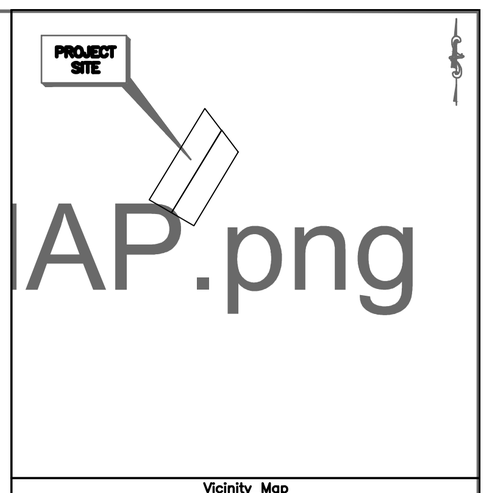
5. Readily visible improvements/utilities were located with this survey, no subsurface probing, excavation or exploration was performed Intertek Surveying & Services.

6. This exhibit has been prepared without benefits of current title report. There may be easements, setbacks, and other matters of record not shown hereon, the surveyor has not abstract the property.

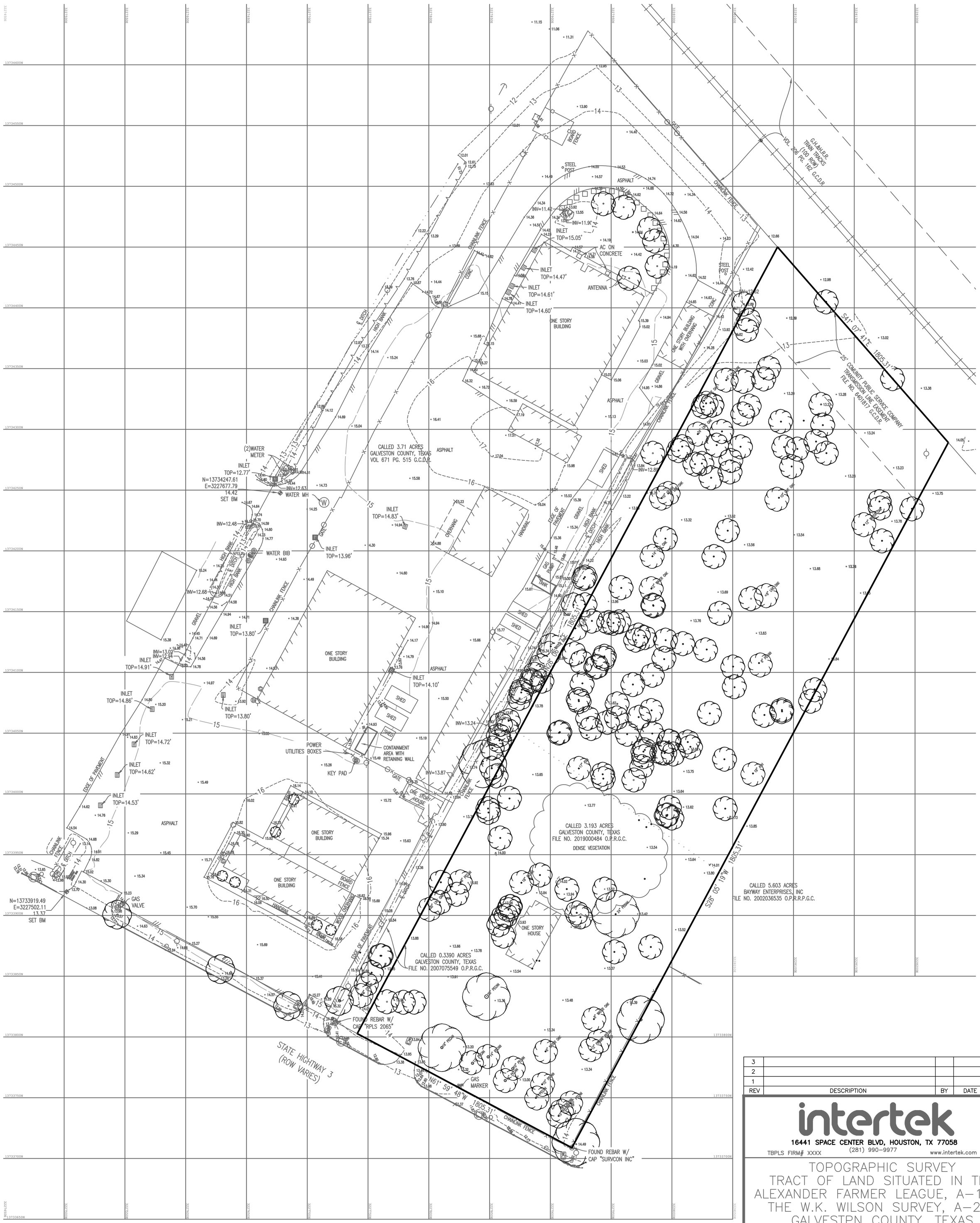
7. Reference is made to a Survey of a 3.193–acre (139,093 sq. ft.) Tract situated in the Alexander Farmer League, A–11 and The W.K Wilson Survey, A–208 Galveston County, Texas. dated 12/12/2018. Prepared by Weisser Engineering Co. Job. No. GD404 and in the field book 3510.

LEGEND:
- BOLLARD
- BENCHMARK
- INLET
- SMALL INLET
- GAS MARKER
- GAS METER
- GAS VALVE
- GUY/ANCHOR
- STORM MANHOLE
- SIGN
- POWER POLE
- WATER MH
- WATER METER
- DECIDUOUS TREE

0 20 40 80



Vicinity Map
N.T.S.



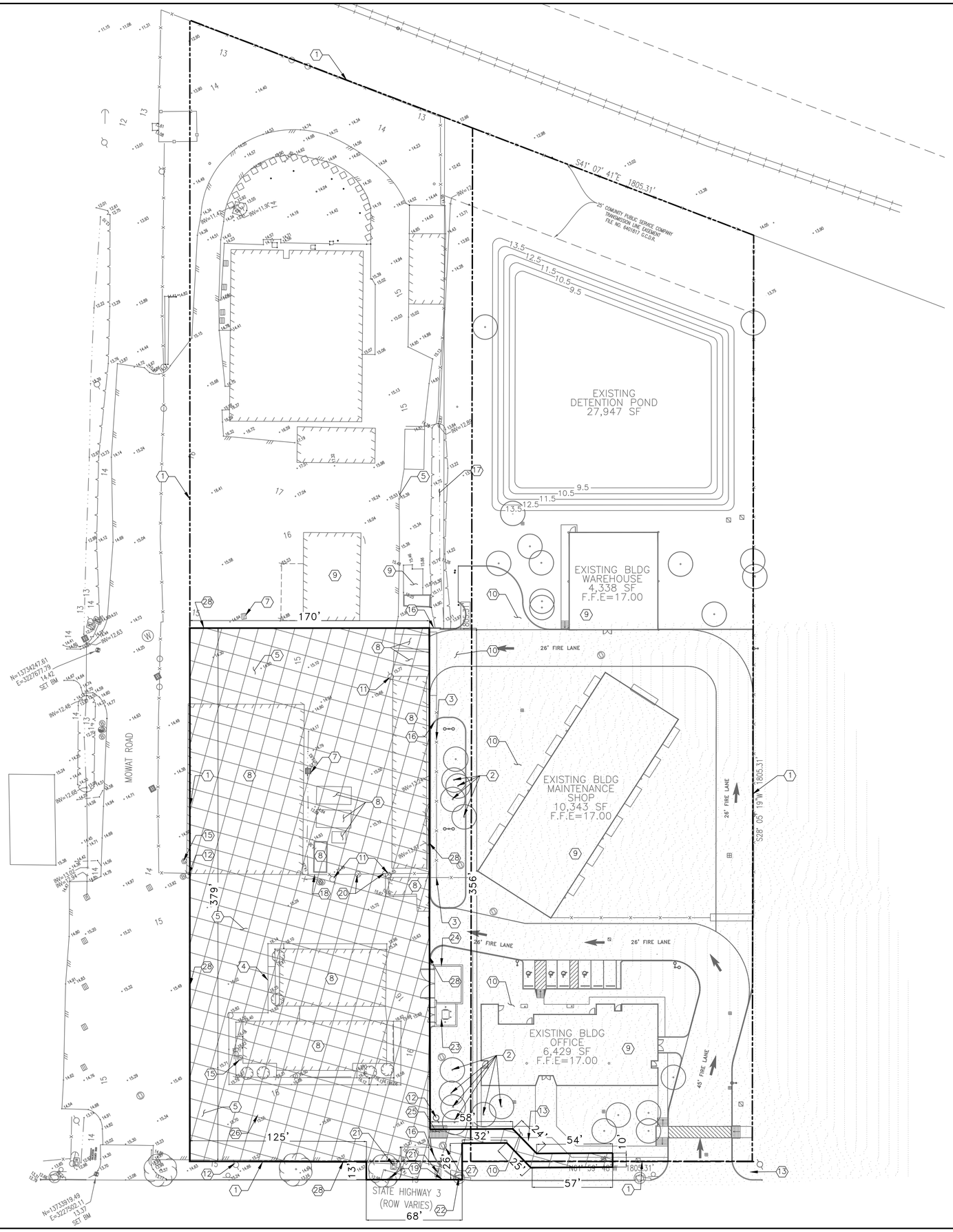
REV	DESCRIPTION	BY	DATE
3			
2			
1			

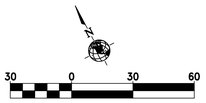
intertek
16441 SPACE CENTER BLVD, HOUSTON, TX 77058
TBPLS FIRM# XXXX (281) 990–9977 www.intertek.com

TOPOGRAPHIC SURVEY
TRACT OF LAND SITUATED IN THE ALEXANDER FARMER LEAGUE, A–11 & THE W.K. WILSON SURVEY, A–205 GALVESTPN COUNTY, TEXAS

DATE: November 8, 2019	SURVEYED: MR DRAWN: MR	JOB NO.: 19113 SCALE: 1"= 40'
DWG.: psi – iss – 19113 topo 07172019 trees (1).dwg	CHECKED: KW	SHEET NO.: 1 OF 1

3 C2.0-PH2





DEMOLITION NOTES TO CONTRACTOR

1. ALL ITEMS DESIGNATED TO BE REMOVE SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
2. THE CONTRACTOR AND OWNER SHALL COORDINATE WITH CENTERPOINT FOR TERMINATION OF POWER AND GAS SERVICES TO THE SITE OR NEW SERVICES. THIS WORK WILL BE PROVIDED BY CENTERPOINT AND SHALL BE SCHEDULE AS ONE OF THE FIRST ITEMS OF BUSINESS.
3. THE CONTRACTOR SHALL BE PROVIDE AN APPROVED TRAFFIC CONTROL PLAN TO PERFORM ANY WORK PROPER SIGNAGE.
4. WHEN EXISTING SIDEWALK IS CLOSED FOR CONSTRUCTION, CONTRACTOR SHALL BARRICADE THAT AREA AND PROVIDE SAFE ALTERNATE PATH FOR PEDESTRIAN WITH PROPER SIGNAGE.
5. ALL TRAFFIC SIGNAGE WITHIN THE ROW SHALL BE PROTECTED INPLACE AT ALL TIMES. ANY DAMAGE TO THEN SHALL BE REPAIRED IMMEDIATELY. DURING THE CONSTRUCTION, SAFE OPERATION OF PEDESTRIAN OR VEHICULAR TRAFFIC, CONTRACTOR SHALL PROVIDE A CERTIFIED FLAGGER OR PEACE OFFICER UNTIL THAT SIGN IS RESTORED TO EXISTING CONDITION.
6. CONTRACTOR SHALL REPAIR ANY ITEMS DAMAGE DURING CONSTRUCTION TO ITS EXISTING CONDITION.
7. PRIOR TO ANY DEMOLITION WORK, THE CONTRACTOR SHALL LOCATED AS WELL CAPPED. ALL UTILITIES THAT ARE SHOWN SHALL BE LOCATED AS WELL AND CAPPED. ALL UTILITIES NOT SHOW SHALL BE LOCATED AS WELL CAPPED. UTILITIES THAT ARE SHOWN ON PLANS ARE APPROXIMATE LOCATION ONLY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE ON SITE DURING ALL CONSTRUCTION ACTIVITIES.
9. THE CONTRACTOR SHALL ENTER & EXIT THE SITE THROUGH EXISTING DRIVEWAY.
10. CAUTION. THERE ARE OVERHEAD POWERLINES WITH IN THE WORK AREA. CONTRACTOR SHALL FOLLOW CITY, STATE AND FEDERAL GUIDELINES WHEN WORKING AROUND EXISTING POWER LINES.
11. THE DEMOLITION AND REMAIN OF THE TREES WILL BE UNDER THE INDICATIONS OF THE PLANS OF LANDSCAPE. PLEASE CONFIRM WITH THE CITY.

DEMOLITION KEY NOTES

1. PROPERTY LINE.
2. EXISTING TREE TO REMAIN. PROTECT IN–PLACE.
3. EXISTING CHAINLINK FENCE TO REMAIIN. PROTECT IN–PLACE
4. EXISTING CONCRETE PAVEMENT TO BE REMOVED.
5. EXISTING ASPHALT PAVEMENT TO BE REMOVED.
6. EXISTING SANITAY SEWER MANHOLE TO REMAIN. PROTECT IN–PLACE.
7. EXISTING STORM DRAIN INLET TO REMAIN. PROTECT IN–PLACE.
8. EXISTING BUILDING TO BE REMOVED.
9. EXISTING BUILDING TO REMAIN.
10. EXISTING CONCRETE PAVEMENT TO REMAIN. PROTECT IN–PLACE.
11. EXISTING POWER POLE TO BE REMOVED.
12. EXISTING POWER POLE TO REMAIN. PROTECT IN–PLACE.
13. EXISTING WATER METER TO REMAIN OR TO BE REMOVED. PROTECT IN–PLACE. IN ACCORDING WITH OWNER/CITY FOR FURTHER INSTRUCTION.
14. EXISTING GAS MARKER TO REMAIN. PROTECT IN–PLACE.
15. EXISTING GAS METER TO REMAIN. PROTECT IN–PLACE
16. EXISTING CURB TO REMAIN. PROTECT IN–PLACE.
17. EXISTING DITCH TO BE REMOVED.
18. EXISTING CHAINLINK FENCE TO BE REMOVED.
19. EXISTING CURB TO BE REMOVED.
20. EXISTING GATE TO B REMOVED
21. EXISTING WATER METER TO BE RELOCATED.
22. EXISTING INLET BB TO REMAIN. PROTECT IN–PLACE.
23. EXISTING DUMPSTER TO REMAIN. PROTECT IN–PLACE.
24. EXISTING GENERATOR TO REMAIN. PROTECT IN–PLACE.
25. EXISTING ADA RAMP TO REMAIN. PROTECT IN–PLACE.
26. EXISTING SANITARY SEWER LINE TO REMAIN. PROTECT IN–PLACE
27. EXISTING MANHOLE SANITARY SEWER TO REMAIN. PROTECT IN–PLACE.
28. LIMITS OF DEMOLITION.

DEMOLITION HATCH LEGEND

LIMITS OF DEMOLITION.

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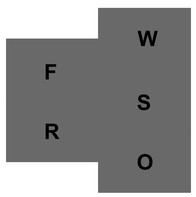

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10/07/2020

DEMOLITION PLAN

DRAWN BY: JDM	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_RBB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 07 OCT 2020

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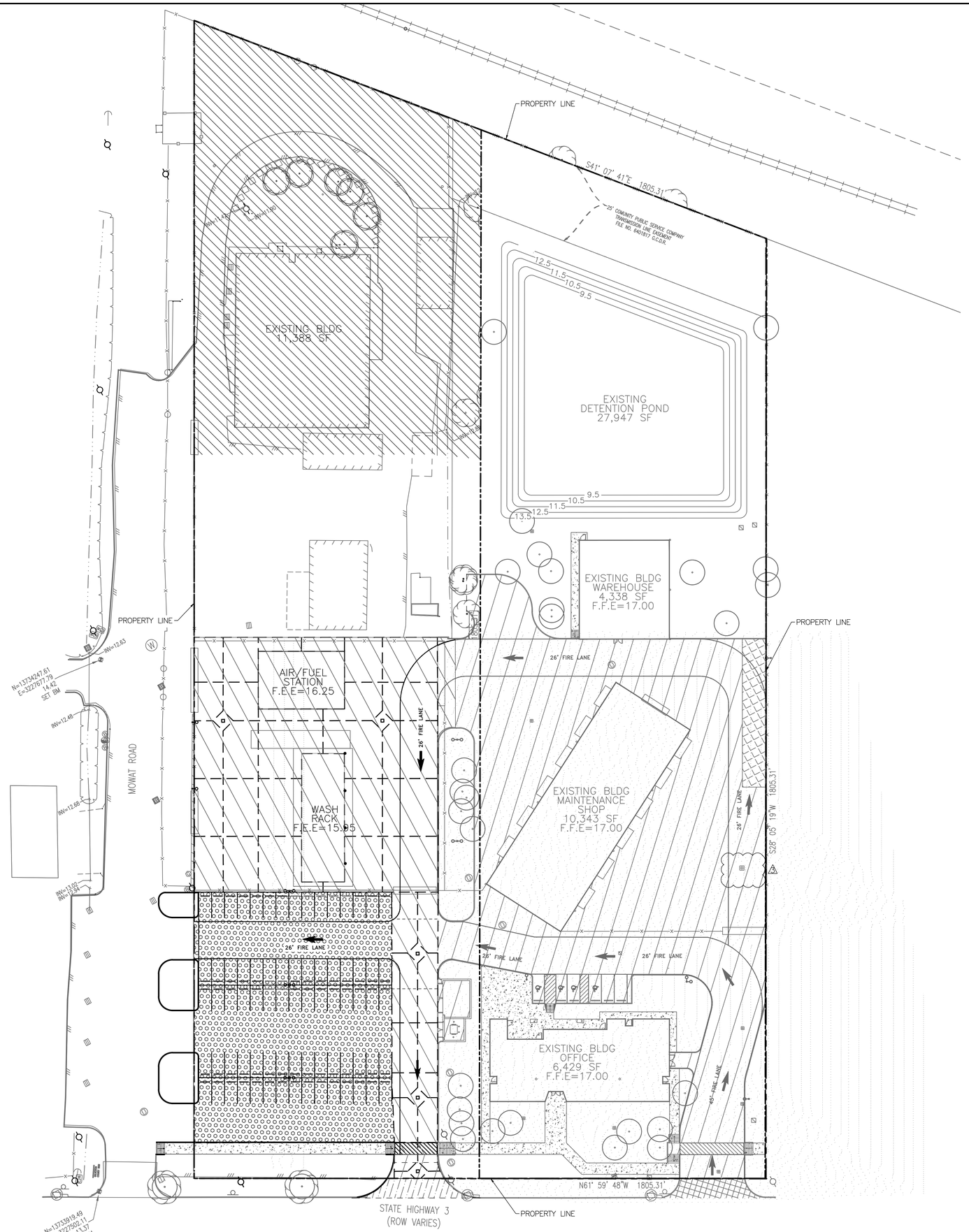
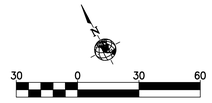




SCALE: 1"=30'

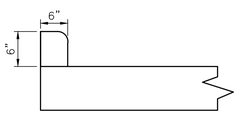
HATCH LEGEND:

- PROPOSED 6" THICK CONCRETE PAVING APPROX: 30,938 SQFT RE: C-9.0 PAVEMENT DETAILS
- PROPOSED 4.5" THICK CONCRETE FOR SIDEWALK APPROX: 1,335 SQFT RE: C-9.0 PAVEMENT DETAILS
- PROPOSED 6" THICK CONCRETE FOR DRIVEWAY APPROX: 737 SQFT RE: C-9.0 PAVEMENT DETAILS
- 6" TALL CURB REF. SECTION
- PROPOSED 6" THICK CONCRETE FOR DRIVEWAY APPROX: 737 SQFT RE: C-9.0 PAVEMENT DETAILS
- PROPOSED TRUE-GRID PRO PLUS APPROX: 23,841 SQFT
- EXISTING ASPHALT PAVEMENT APPROX: 18,621 SQFT
- EXISTING PAVEMENT APPROX: 46,728 SQFT
- EXISTING 4.5" THICK CONCRETE FOR SIDEWALK APPROX: 5,788 SQFT RE: C-9.0 PAVEMENT DETAILS
- EXSTING 6" THICK CONCRETE FOR DRIVEWAY APPROX: 707 SQFT RE: C-9.0 PAVEMENT DETAILS
- 7" THICK CONCRETE PAVING APPROX: 1,699 SQFT RE: C-9.0 PAVEMENT DETAILS

LEGEND:

- PROPOSED SAWCUTTING JOINT
- PROPOSED EXPANSION JOINT

*NOTE: SEE PAVING DETAILS FOR JOINT SECTIONS



6" CONCRETE CURB APPROX: 535 LF

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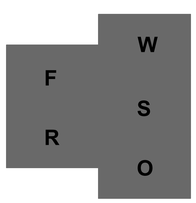

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REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

PAVING PLAN

DRAWN BY: JDM	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_RBB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 07 OCT 2020

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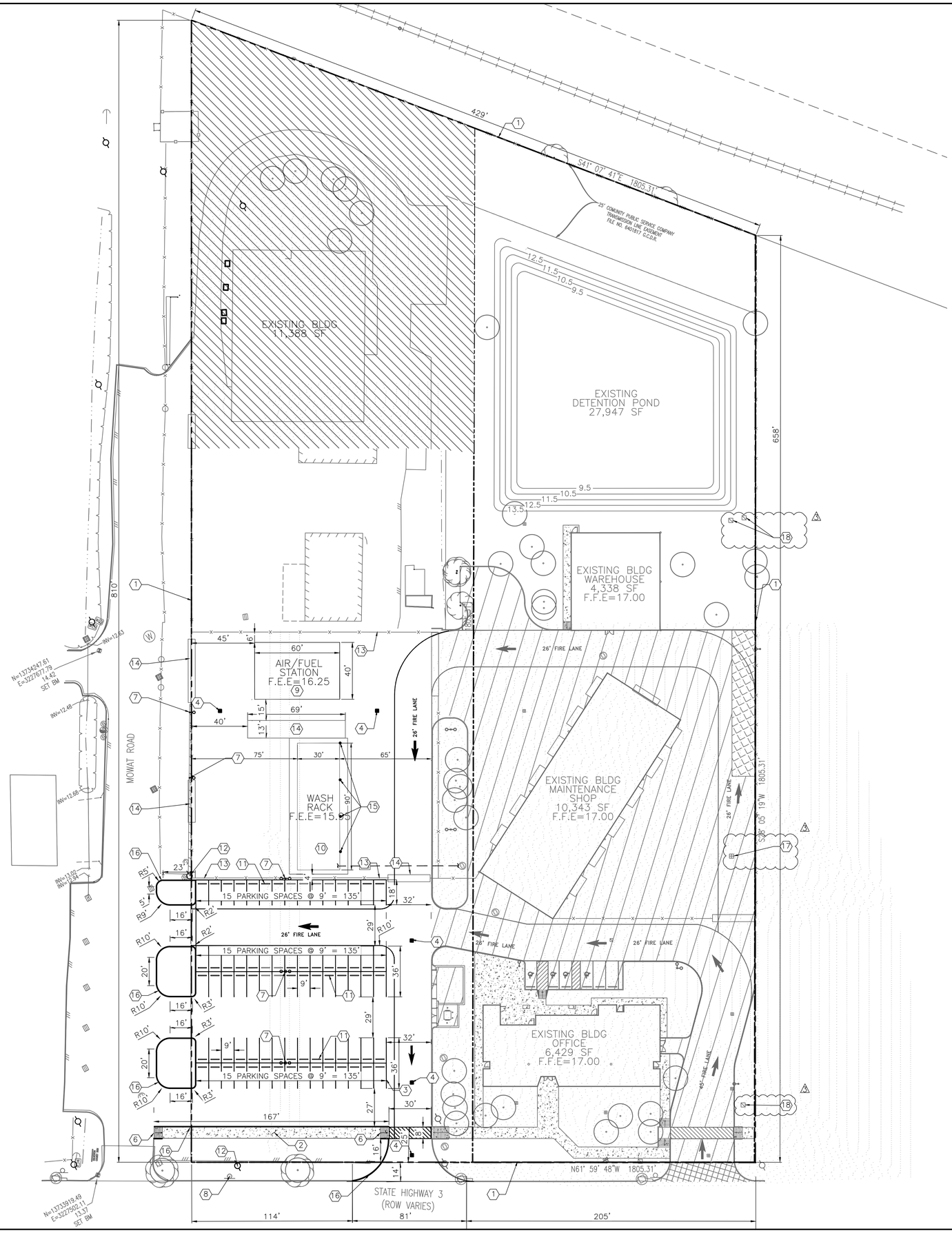

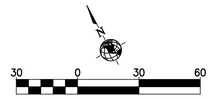

SITE LAYOUT NOTES

1. THE HORIZONTAL AND VERTICAL LOCATION OF EXISTING SUBSURFACE UTILITIES HAVE BEEN DETERMINED FROM DATA PROVIDED BY OTHERS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING UTILITIES WITHIN THE AREA OF CONSTRUCTION THAT ARE TO REMAIN IN SERVICE. CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL DIMENSIONS ARE FROM FACE OF CURB UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS ARE TO FACE OF BUILDING. REFER TO ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS.
4. REFER TO ARCHITECTURAL PLANS FOR ALL STAIRS, HANDICAPPED RAMP AND RETAINING WALL DETAILS.
5. REFER TO LANDSCAPE ARCHITECT PLANS FOR DETAILS AND DIMENSIONS OF LANDSCAPE AND HARDSCAPE AREAS.

LAYOUT KEY NOTES

1. PROPERTY LINE.
2. PROPOSED 5" THICK CONCRETE SIDEWALK PER PAVEMENT DETAILS.
3. PROPOSED 4" YELLOW STRIPING PER PAVEMENT DETAILS TYP.
4. PROPOSED STORM DRAIN INLET TYPE "A" PER STORM DRAIN DETAILS.
5. PROPOSED JUCTION BOX PER STORM DRAIN DETAILS.
6. PROPOSED ADA RAMP PER PAVEMENT DETAILS.
7. PROPOSED LIGHT POLE; REFER TO MEP DRAWINGS FOR LAYOUT AND SPECIFICATIONS.
8. EXISTING TRAFFIC SIGN TO REMAIN. PROTECT IN-PLACE.
9. PROPOSED AIR/FUEL STATION.
10. PROPOSED WASH RACK.
11. PROPOSED WHEEL STOP.
12. EXISTING POWER POLE TO REMAIN. PROTECT IN-PLACE.
13. PROPOSED CHAIN - LINK FENCE
14. PROPOSED GATE BY OTHERS.
15. PROPOSED 8" SQUARE PREFINISHED METAL DOWNSPOUT. REFER TO ARQUITECTURAL DRAWINGS.
16. PROPOSED 6" CONCRETE CURB PER PAVEMENT DETAILS.
17. EXISTING STORM DRAIN INLET TYPE "A" PER STORM DRAIN DETAILS.
18. EXISTING JUCTION BOX PER STORM DRAIN DETAILS.

HATCH LEGEND

- CONSTRUCT 5" CONCRETE SIDEWALK ON PRIVATE AND PUBLIC PROPERTY OVER COMPACTED SUB-GRADE PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS
- PROPOSED BUILDING LAYOUT
- AREA NOT IN SCOPE

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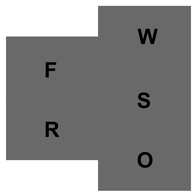

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FRED DALLY
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LICENSED
PROFESSIONAL ENGINEER
10/07/2020

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DRAWN BY: JDM	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 07 OCT 2020

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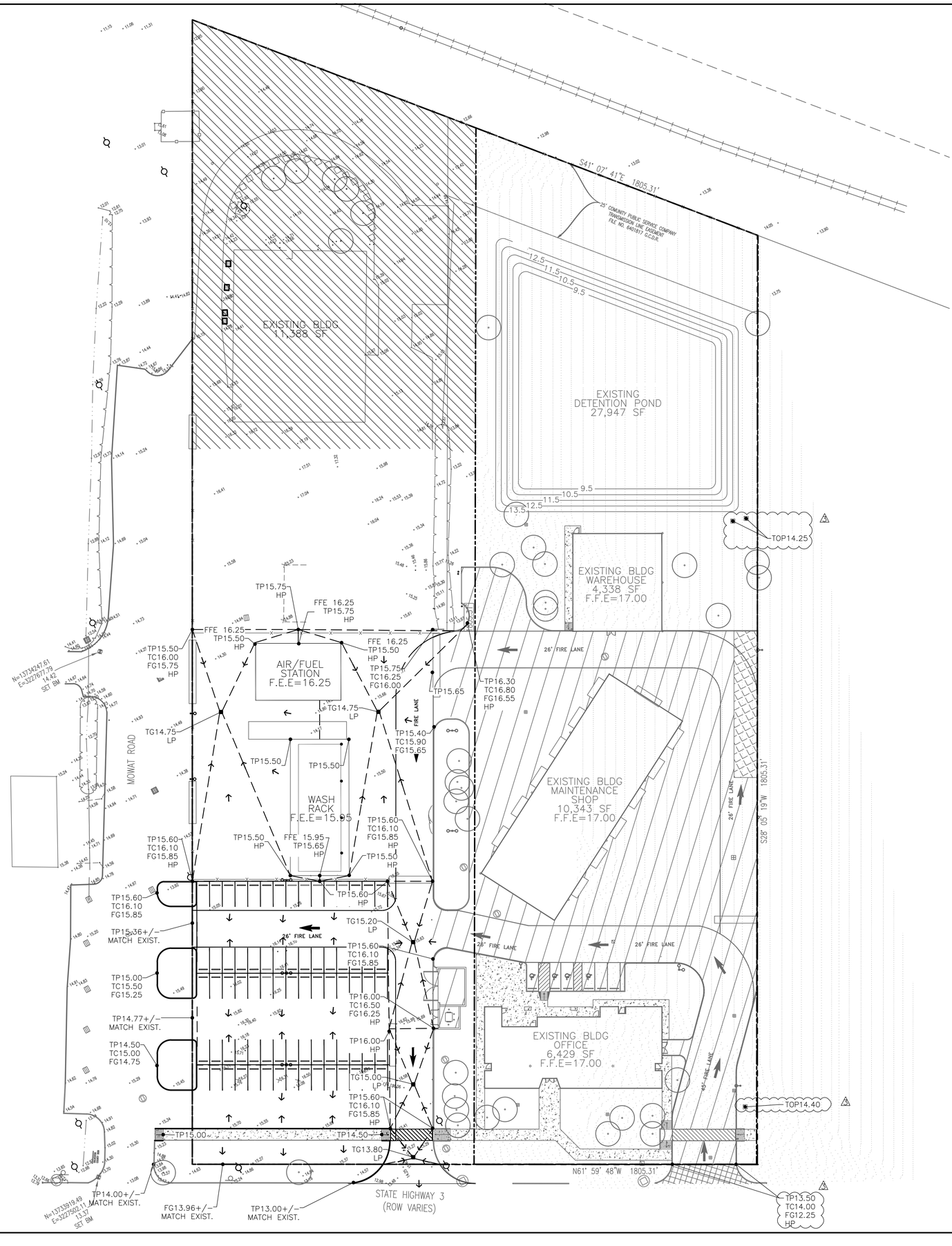

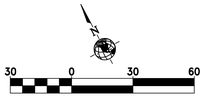

GRADING PLAN NOTES

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3.
4. ALL INLETS AND MANHOLES SHALL MEET THE REQUIREMENTS OF THE LOCAL GOVERNING AGENCY.
5. SIDEWALKS SHALL HAVE A SLOPE NO GRATER THAN 5% AND A CROSS SLOPE NOT GRATER THAN 2%, UNLESS OTHERWISE.

ABBREVIATIONS

TW TOP OF WALL

TP TOP OF PAVEMENT ELEVATION

TC TOP OF CURB ELEVATION

TG TOP OF GRATE ELEVATION (STORM DRAIN INLET)

FG FINISHED GRADE ELEVATION

FFE FINISHED FLOOR ELEVATION

BFE BASE FLOOD ELEVATION

FL FLOWLINE ELEVATION

HATCH LEGEND

CONSTRUCT 5" CONCRETE SIDEWALK OVER COMPACTED SUB-GRADE PER GEOTECHNICAL. ENGINEER'S RECOMMENDATIONS

PROPOSED BUILDING LAYOUT.

AREA NOT IN SCOPE

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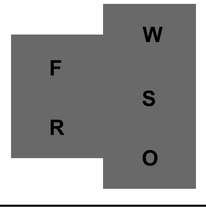

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PROFESSIONAL ENGINEER
10/07/2020

GRADING PLAN

DRAWN BY	CHECKED BY
JDM	JDM
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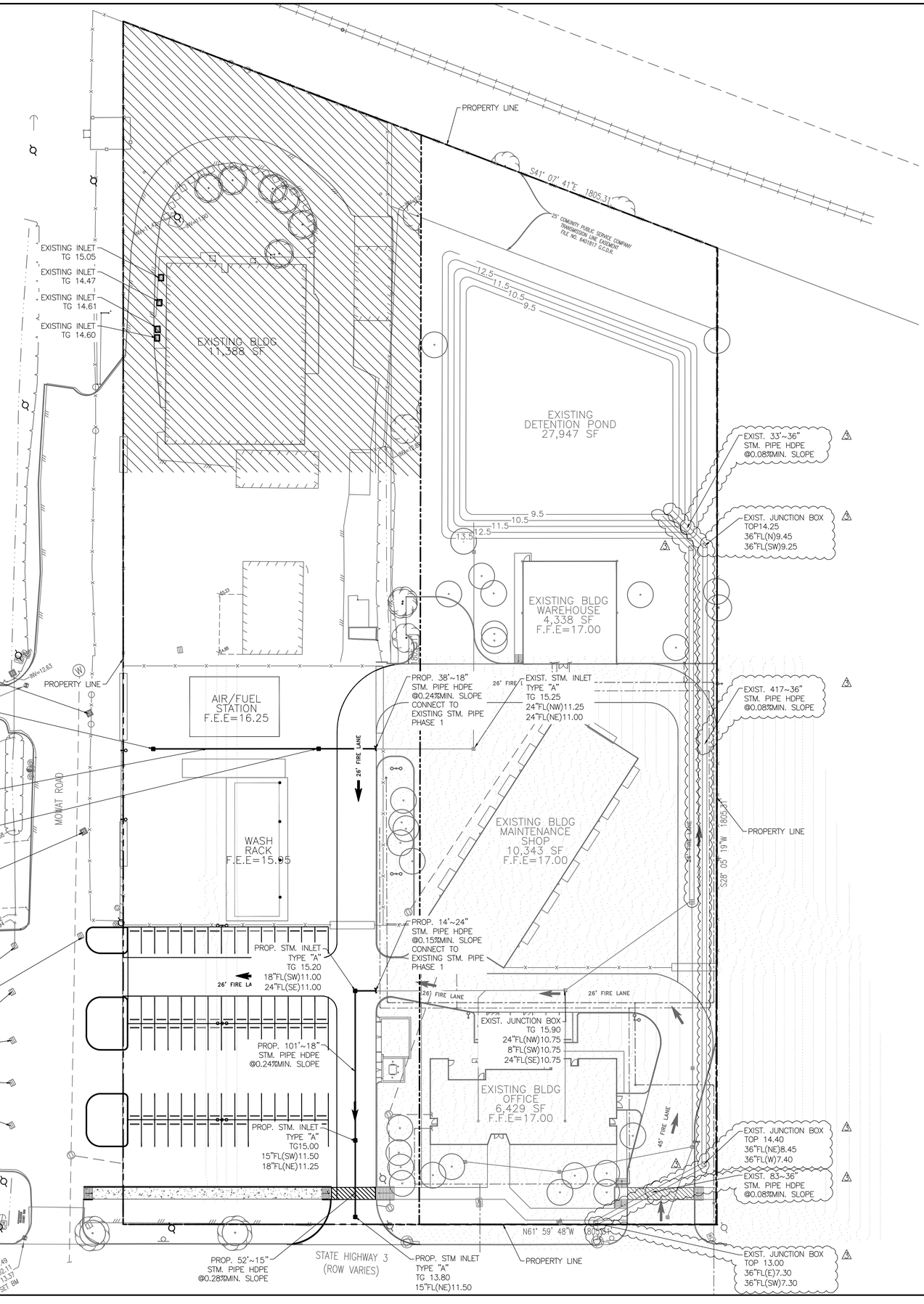

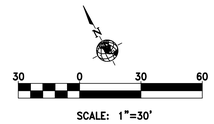

UTILITY PLAN NOTES

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HATCH LEGEND

CONSTRUCT 5" CONCRETE SIDEWALK OVER COMPACTED SUB-GRADE PER GEOTECHNICAL. ENGINEER'S RECOMMENDATIONS

PROPOSED BUILDING LAYOUT.

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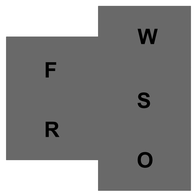

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UTILITY PLAN

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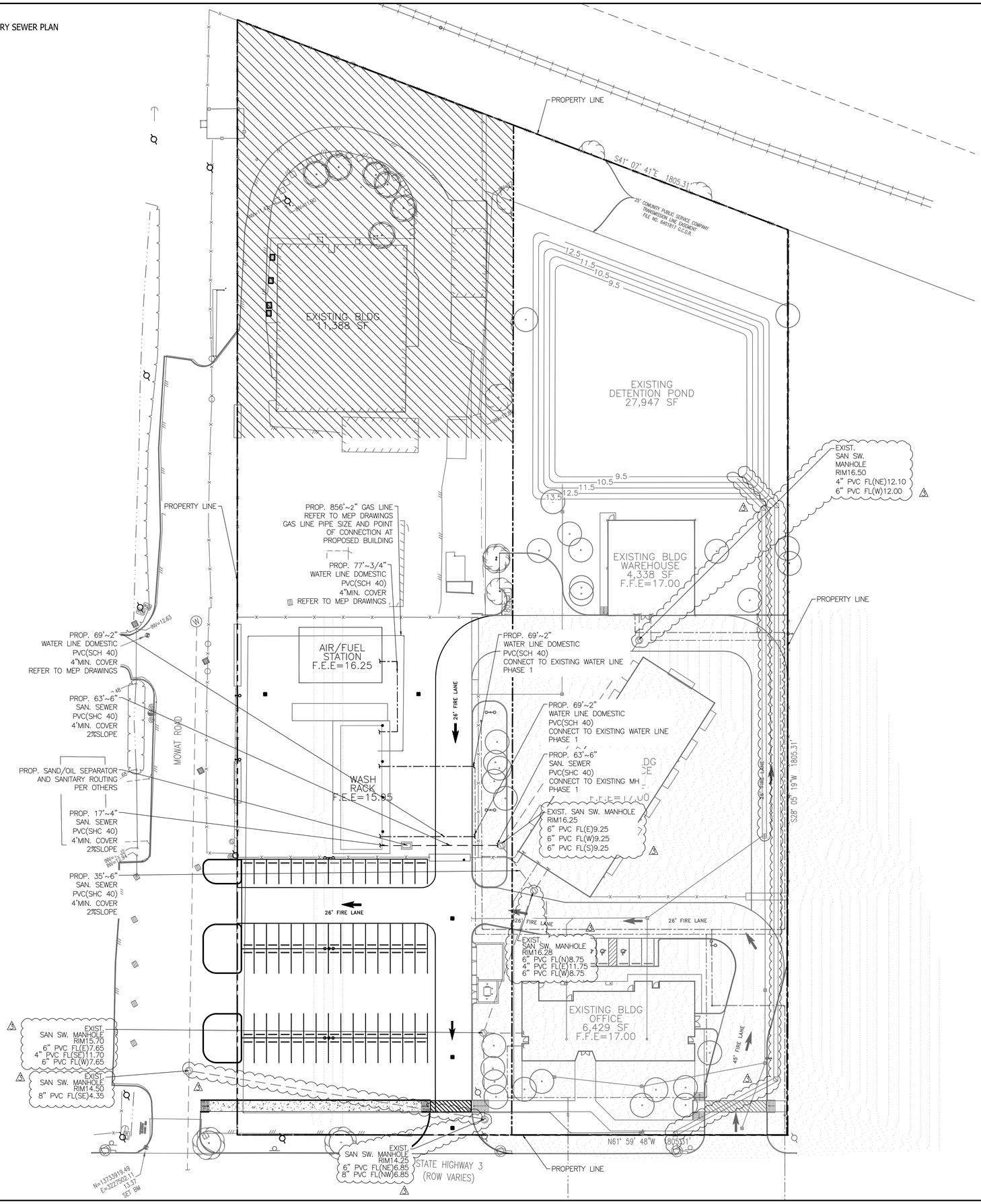

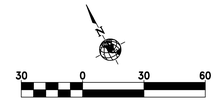

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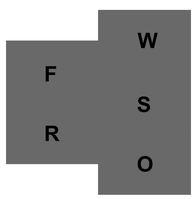

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A. GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REQUIRED SECURITY TO PROTECT HIS OWN PROPERTY, EQUIPMENT AND WORK IN PROGRESS.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING OF STREETS CAUSED BY ASSOCIATED CONSTRUCTION AT CLOSE OF EACH WORK DAY.
4. PAVED SURFACES SHALL BE PROTECTED FROM DAMAGE BY TRACKED EQUIPMENT.
5. CONTRACTOR WILL PAY ALL COST TO REPLACE IRON RODS OR OTHER LAND BOUNDARY MARKERS DISTURBED DURING CONSTRUCTION. A REGISTERED LAND SURVEYOR WILL BE USED TO RESET DISTURBED BOUNDARY MARKERS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AN UPDATE REDLINED "RECORD" SET OF CONSTRUCTION DRAWINGS ON SITE FOR INSPECTION BY THE ENGINEER.
7. CONTRACTOR SHALL PROVIDE ORANGE FENCING OR BARRICADES TO PROTECT PEDESTRIANS FROM ENTERING WORK AREAS.
8. CONTRACTOR MUST PROVIDE FENCING AROUND OPEN EXCAVATIONS AREA AT ALL TIMES.
9. REFER TO THE SWPPP GENERAL NOTES FOR PROPER MEASURES AND CONTROLS.

B. PAVEMENT

1. EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGE OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO ORIGINAL CONDITION OR BETTER, IN ACCORDANCE WITH THE GOVERNMENT AGENCY HAVING JURISDICTION.
2. THE SUBGRADE SHALL BE BROUGHT TO THE LINES AND GRADES AS SHOWN ON THE DRAWINGS.
3. WHENEVER UNSUITABLE MATERIAL IS ENCOUNTERED AND CANNOT BE HANDLED BY THE EXCAVATION OR EMBANKMENT REQUIREMENTS, THEN THE UNSUITABLE MATERIAL SHALL BE EXCAVATED TO A DEPTH DEEMED SUFFICIENT BY THE ENGINEER AND THE EXCAVATED MATERIAL SHALL BE DISPOSED OF OFF THE JOB SITE. THE EXCAVATED AREA SHALL BE FILLED WITH SELECT FILL PER STANDARDS OF THE GOVERNMENT AGENCY HAVING JURISDICTION.
4. SURPLUS EXCAVATED EARTHEN MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED AND DISPOSED OF OFF-SITE. INCLUDE COST OF REMOVAL AND DISPOSAL IN OTHER ITEMS OF WHICH THIS WORK IS A COMPONENT PART. NO SEPARATE PAY. THE MATERIAL MUST BE DISPOSED OF IN A SAFE AND LEGAL MANNER.
5. EXISTING WATER VALVES AND MANHOLES SHALL BE ADJUSTED, AS NECESSARY TO MATCH TOP OF PROPOSED PAVEMENT ELEVATION.

C. SANITARY SEWER, STORM SEWER & DRAINAGE

1. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
2. ANY CURB DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER OR OWNING AUTHORITY.
3. CONTRACTOR'S ACTIVITIES SHALL HAVE NO EFFECT TO FLOWS TO AND FROM OFF SITE AREAS EXISTING SHEET DRAINAGE SHALL NOT BE IMPEDED BY PROPOSED CONSTRUCTION.
4. WHERE MANHOLES ARE LOCATED WITHIN PAVED AREAS, CONTRACTOR SHALL SET RIM ELEVATIONS TO MATCH FINISHED GRADE ELEVATIONS. OUTSIDE OF PAVED AREAS, SET MANHOLE RIMS 3 INCHES (MINIMUM) TO 6 INCHES (MAXIMUM) ABOVE FINISHED GRADE. ADD SLOPE FILL AROUND MANHOLES, SLOPED AWAY AND DOWN FROM MANHOLE RING.
5. NO DUMPING OF EXCAVATION MATERIALS WILL BE ALLOWED ON PAVED AREAS. CONTRACTOR MUST DETERMINE A LOCATION TO TEMPORARILY STOCKPILE STORM SEWER EXCAVATION TO BE USED AS BACK FILL, AS APPROVED.
6. THE CONTRACTOR SHALL USE HDPE PLASTIC PIPE OR RCP PIPE AS SHOWN ON PLANS.

D. STANDARD NOTES FOR CONSTRUCTION DRAWINGS:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING BACKSLOPE DRAINAGE SYSTEMS.
2. ALL DISTURBED AREAS WITHIN THE SUBDIVISION, EXCEPT THE CHANNEL BOTTOM, SHALL BE FERTILIZED SEEDED.
3. ALL BACKFILL SHALL BE STRICTLY ACCORDING TO DETAILS, SPECIFICATION OR GEOTECHNICAL RECOMMENDATIONS, AS APPROVED BY ENGINEER.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING CHANNEL FLOWLINE TO DESIGN ELEVATIONS AS SHOWN ON PLANS AND DOWNSTREAM AS NECESSARY TO ENSURE NO WATER IN STORM SEWER DURING "DRY" CONDITIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORING CHANNEL TO ORIGINAL CONDITION.

E. UTILITIES

1. CENTERPOINT ENERGY

WARNING: OVERHEAD ELECTRICAL FACILITIES

A. OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE HAVE ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATED THEM PRIOR TO BEGINING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE, FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANCE FOR LINES TO BE TURNED OF OR REMOVED, CALL CENTERPOINT ENERGY, AT (713) 207-7777.

CAUTION: UNDERGROUND GAS FACILITIES

A. LOCATIONS OF CENTERPOINT ENERGY MAIN LINES, (TO INCLUDE GAS TRANSMISSION, AND/OR INDUSTRIAL GAS SUPPLY CORP. WHERE APPLICABLE), ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567 OR 1-800-669-8344 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.
B. WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713)-967-8037 FROM 7:00 AM TO 4:30 PM FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
C. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
D. WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
E. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

F. OTHER:

1. LOCATION OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON PLANS IS NOT GUARANTEED TO BE COMPLETE OR DEFINITE. THE APPROXIMATE LOCATIONS OF KNOWN EXISTING UTILITIES ARE SHOWN. CONTRACTOR SHALL DETERMINE THE EXACT SIZE AND HORIZONTAL AND VERTICAL LOCATIONS IN THE FIELD. THE CONTRACTOR SHALL NOTIFY ALL OF THE PROPER GOVERNING AUTHORITIES, (STATE, COUNTY OR CITY) AT LEAST 48 HOURS PRIOR TO COMMENCING WORK.
2. ANY PERMANENT RELOCATION OF AN EXISTING UTILITY NOT SHOWN ON THE DRAWINGS SHALL BE APPROVED BY THE ENGINEER PRIOR TO RELOCATION AND SHALL CONFORM TO THE APPLICABLE STANDARDS OF GOVERNING AUTHORITIES.
3. CONTRACTOR SHALL PROTECT EXISTING UNDERGROUND FACILITIES DURING INSTALLATION OF PROPOSED WORK.
4. IN THE EVENT THAT ANY CONTAMINATED MATERIALS OF SUSPECT CONTAMINATED MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL CEASE OPERATIONS IN THAT AREA AND IMMEDIATELY NOTIFY THE ENGINEER.
5. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
6. ALL PAVEMENT SHALL CONFORM WITH THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
7. ALL STORM SEWERS SHALL BE CONSTRUCTED OF REINFORCED CONCRETE PIPE (RCP) ASTM C-76, CLASS III, EXCEPT FOR ALUMINIZED STEEL PIPE FOR OUTFALLS. (SEE DETAILS FOR BEDDING).
8. STEEL METAL PIPE SHALL BE ALUMINIZED STEEL AASHTO M274 TYPE 2 MIN. 0.052 THICKNESS.
9. ALL GRAVITY SANITARY SEWERS SHALL BE CONSTRUCTED OF PVC PIPE (ASTM D-3034, SDR 26), UNLESS OTHERWISE NOTED ON THE DRAWINGS.
10. ALL FORCE MAIN SANITARY SEWERS SHALL BE CONSTRUCTED OF PVC PIPE (ASTM D-3034, SDR 26), UNLESS OTHERWISE NOTED ON THE DRAWINGS.
11. ALL SANITARY SEWERS AND WATER MAINS SHALL HAVE SIX (6) INCHES OF SAND BACKFILL BOTH UNDER AND OVER PIPE WITH DETECTOR TAPE (METALLIC) INSTALLED 1.5' BELOW FINISH GRADE.
12. BACKFILL WITH CEMENT STABILIZED SAND WHEN SANITARY SEWER CROSSES OVER STORM SEWER (SPACE BETWEEN STORM AND SANITARY SEWERS).
13. ALL SEWERS UNDER OR WITHIN ONE (1) FOOT OF PROPOSED OR FUTURE PAVEMENT SHALL BE BACKFILLED WITH 1 ½ SACK CEMENT STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE.
14. COST OF SPECIAL BACKFILL AND BEDDING IS INCIDENTAL TO THE UNIT PRICE BID PER LINEAR FOOT, NO EXTRA PAY.
15. WATER MAINS SHALL BE C-900 PVC PIPE BEARING THE NSF-PWSEAL AND FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT WITH NON-CORRODING HARDWARE INCLUDING MEGA-LUG RESTRAINTS CONFORMING TO AWWA CL-110 OR C-153.
16. FIRE HYDRANTS SHALL BE "MUELLER IMPROVED" OR APPROVED EQUAL.
17. MINIMUM OF SIX (6) INCHES OF CLEARANCE SHALL BE MAINTAINED BETWEEN WATER MAIN CROSSING OF OTHER UTILITIES.
18. ALL PROPOSED PIPE STUB-OUTS FROM STORM MANHOLES OR INLETS ARE TO BE PLUGGED WITH EIGHT (8) INCH BRICK WALLS UNLESS OTHERWISE NOTED.
19. THE CONTRACTOR SHALL NOTIFY THE CITY OR GOVERNMENTAL AGENCY HAVING JURISDICTION, 48 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION.
20. GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE OBSERVED.
21. ALL SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TCEQ "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS".
22. CONTRACTOR SHALL OBTAIN ALL CONSTRUCTION PERMITS REQUIRED TO THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
23. SANITARY MANHOLES WITHIN THE FLOOD PLAIN SHALL BE WATERPROOFED AND VENTED WITH RISER ABOVE FLOOD PLAIN OR RIMS SET ABOVE THE 100 YEAR FLOOD ELEVATION.
24. WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL AND A STANDARD LENGTH OF THE WASTEWATER PIPE IS LESS THAN 18 FEET IN LENGTH, THE POTABLE WATER PIPE SEGMENT SHALL BE CENTERED OVER THE WASTEWATER LINE. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM WITH ONE OF THE FOLLOWING OPTIONS.

    (I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.

    (II) ALL SECTIONS OF WASTEWATER MAIN OR LATERAL WITHIN NINE FEET HORIZONTALLY OF THE WATERLINE SHALL BE ENCASED IN AN 18-FOOT (OR LONGER) SECTION OF PIPE. FLEXIBLE ENCASING PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE ENCASING PIPE SHALL BE CENTERED ON THE WATERLINE AND SHALL BE AT LEAST TWO NOMINAL PIPE DIAMETERS LARGER THAN THE WASTEWATER MAIN OR LATERAL. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT (OR LESS) INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. EACH END OF THE CASING SHALL BE SEALED WITH WATERTIGHT NON-SHRINK CEMENT GROUT OR A MANUFACTURED WATERTIGHT SEAL. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF SIX INCHES BETWEEN THE ENCASEMENT PIPE AND THE WATERLINE SHALL BE PROVIDED. THE WASTEWATER LINE SHALL BE LOCATED BELOW THE WATERLINE.

    (III) WHEN A NEW WATERLINE CROSSES UNDER A WASTEWATER MAIN OR LATERAL, THE WATERLINE SHALL BE ENCASED AS DESCRIBED FOR WASTEWATER MAINS OR LATERALS IN SUBCLASS (II) OF THIS CLAUSE OR CONSTRUCTED OF DUCTILE IRON OR STEEL PIPE WITH MECHANICAL OR WELDED JOINTS AS APPROPRIATE. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF ONE FOOT BETWEEN THE WATERLINE AND THE WASTEWATER MAIN OR LATERAL SHALL BE PROVIDED. BOTH THE WATERLINE AND WASTEWATER MAIN OR LATERAL MUST PASS A PRESSURE AND LEAKAGE TEST AS SPECIFIED IN AWWA C600 STANDARDS.

25. COST OF TRENCH SAFETY SYSTEMS AS REQUIRED BY OSHA FOR DEPTHS OVER FIVE (5) FEET IS INCIDENTAL TO THE PROJECT.
26. WATER LINES ARE TO BE CONSTRUCTED TYPICALLY 4 FEET DEEP TO THE TOP OF THE LINE FROM THE FINISHED CURB ELEVATION OR NATURAL GROUND. LINES MAY BE SAGGED OR RAISED WITHIN THE RANGE OF 3-6 FEET TO AVOID UTILITY CONFLICTS WATER LINE DEFLECTIONS SHALL NOT EXCEED THE PIPE MANUFACTURES RECOMMENDATIONS.
27. ALL SLEEVES TO BE FOUR (4) INCH SCHEDULE 40 PVC SLEEVES TO BE EIGHTEEN (18) INCHES BELOW THE BOTTOM OF THE PAVEMENT BASE MATERIAL. STUB OUT THREE (3) FEET BEYOND CURB AND MARK SLEEVES LOCATIONS ON CURB.
28. THERE SHALL BE A MINIMUM HORIZONTAL DISTANCE OF FOUR (4) FEET CLEARANCE BETWEEN ALL WATER LINES AND SANITARY SEWER LINES THAT ARE SDR 26, AND A NINE (9) FOOT CLEARANCE BETWEEN ALL WATER LINES AND SANITARY SEWER LINES THAT ARE SDR 35. (SEE DETAIL)
29. ALL JOINTS OF DUCTILE IRON PIPE BELOW GROUND WILL BE M.J. WITH PIPE RESTRAINTS.
30. ALL SIGNAGE AND/OR TRAFFIC CONTROL DEVICES SHALL BE APPROVED BY HARRIS COUNTY PRIOR TO CONSTRUCTION.

NOTE:
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES IN THE ROAD R.O.W. PRIOR TO CONSTRUCTION. (TEXAS ONE CALL 1-800-545-6005)

NOTE:
CONTRACTOR SHALL ADJUST ALL WATER VALVES AND STORM SEWER MANHOLES TO MATCH FINAL GRADES. SEE ALL GRADING PLANS SHEETS.

NOTE:
CONTRACTOR SHALL VERIFY ALL WATER, SANITARY SEWER AND STORM SEWER LINES PRIOR TO WORKING IN ANY AREA. SEE TOPO MAP AND REFERENCE DRAWINGS.

NOTE:
THIS DEVELOPMENT HAS BEEN DESIGNED TO NOT IMPEDE, IMPOUND, OR BLOCK THE NATURAL FLOW OF DRAINAGE FROM OR ACROSS ADJACENT AND CONTIGUOUS PROPERTIES.

NOTE:
ALL FUTURE SITE AND BUILDINGS PROJECTS WILL REQUIRE CIVIL/SITE DRAWING APPROVAL AND CHANGES TO THE PLATS MAY BE REQUIRED AS A PART OF THE REVIEW PROCESS.

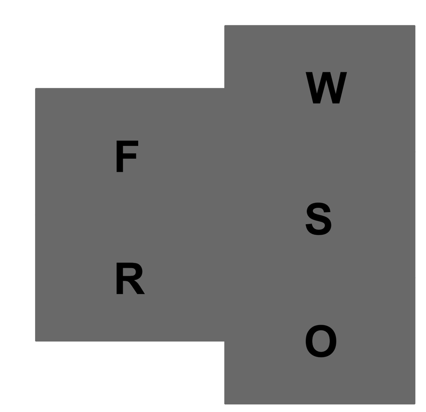
ALL PIPE PLACEMENT AND JOINTING WILL BE CONSTRUCTED STRICTLY IN ACCORDANCE WITH THE MANUFACTURES' REQUIREMENTS AND SPECIFICATIONS.

STORM SEWER PIPE — HDPE N-12, PVC SDR35 OR RCP CLASS III (RUBBER GASKET)— EXCEPT IF NOTED OTHERWISE
POTABLE WATER —— 3" AND SMALLER – SCH 80 PVC
4" AND LARGER – C-900, DR 18– 150 PSI
SANITARY SEWER – GRAVITY , PVC SDR 26
CULVERT PIPE – RCP CLASS IV T&G

THE OWNER WILL SET UP THE NECESSARY WATER ACCOUNTS AND PURCHASE THE WATER METERS AND METER BOXES.
THE CONTRACTOR WILL PICK UP THE METERS AND BOXES AT THE CITY AND DELIVER THEM TO THE JOBSITE.
THE CONTRACTOR WILL MAKE THE NECESSARY TAPS AND INSTALL THE METERS AS REQUIRED BY HARRIS COUNTY.

ONE- CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223-4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1-800-545-6005

KEY PLAN (NOT TO SCALE)



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Low Voltage & Security
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390 Glenborough Dr.
Suite 290
Houston, TX 77067
832 249 9379

Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County
Road & Bridge Department Facilities PH2
5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

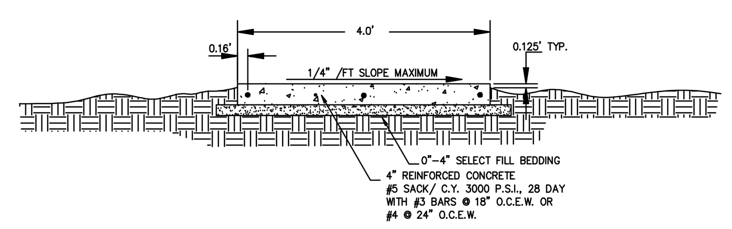
PROFESSIONAL SEALS
STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

GENERAL NOTES

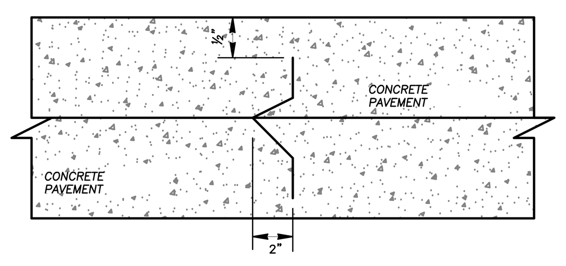
DRAWN BY: JDM
CHECKED BY: JDM
PROJECT NUMBER: 418198
PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT
DATE: 07 OCT 2020

C8.0-PH2
SHEET NUMBER

FILE PATH: File Path
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM

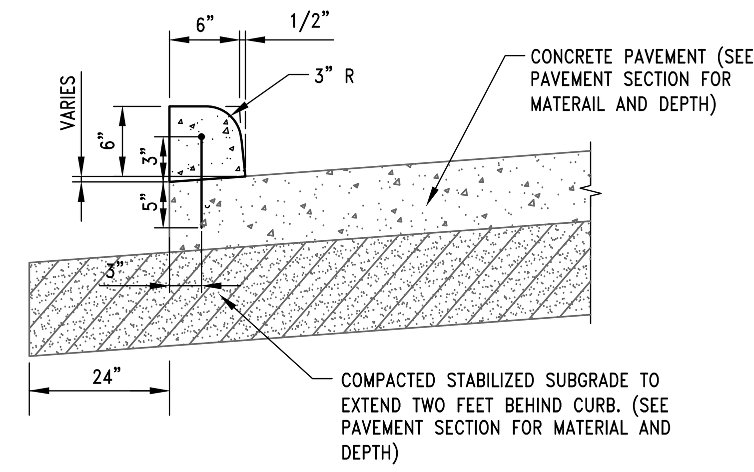


TYP. CROSS-SECTION OF SIDEWALK
NOT TO SCALE



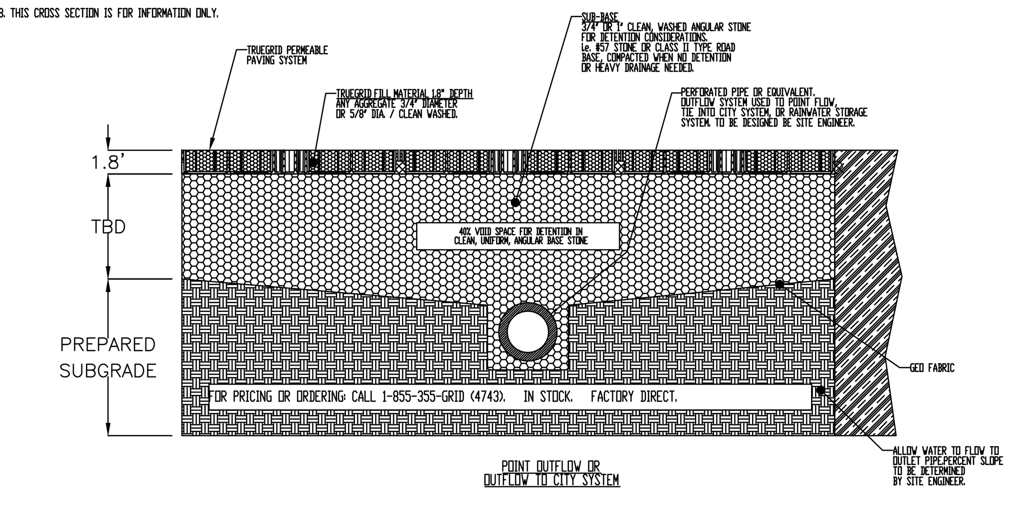
THE LOCATION OF DEFORMED STRIPS MAY BE VARIED, WITH THE APPROVAL OF THE DEPARTMENT OF PUBLIC WORKS, TO SUIT THE PROPOSED CONSTRUCTION METHODS OF THE CONTRACTOR. MAXIMUM LONGITUDINAL SPACING FOR DEFORMED STRIPS IS 14'-0". DEFORMED METAL STRIPS SHALL BE PLACED VERTICALLY ALONG A STRAIGHT ALIGNMENT.

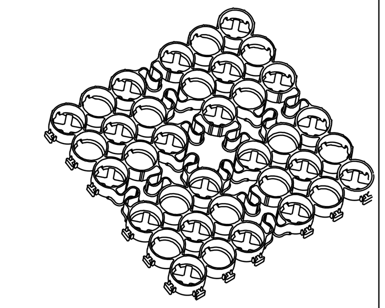
DEFORMED METAL STRIP
N.T.S



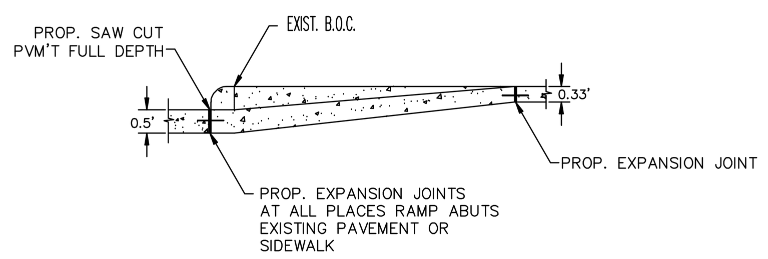
CONCRETE CURB SECTION
SCALE: N.T.S.

NOTES:
1. SUB-BASE DEPTH AND PREPARATION IS DEPENDENT ON SITE CONDITIONS PLUS LOADING REQUIREMENTS.
2. TRUEGRID PRO PLUS PRODUCTS DESIGNED FOR LOAD CAPACITIES OF 120,000 LBS PER SQ. FT. TRUEGRID PRODUCTS STRENGTHEN WITH FILL MATERIAL.
3. TRUEGRID PRO PLUS PRODUCTS ARE SUFFICIENTLY RATED FOR H-20 /HS-20 LOADING AND GREATER.
4. GEOGRID MESH OR GEOFABRIC MAY BE REQUIRED BETWEEN SUB-GRADE & SUB-BASE FOR CERTAIN SOILS AND SITE SPECIFIC REQUIREMENTS.
5. INCREASE SUB-BASE DEPTH FOR INCREASED STORM WATER DETENTION.
6. NO STAKING NECESSARY WITH TRUEGRID PRO PLUS WHEN SLOPE IS BELOW 10 DEGREES. ASSESS PROJECT, AS NEEDED.
7. FINAL ENGINEERED CROSS SECTION AGGREGATES AND DEPTH SHOULD ALLOW FOR EXPECTED INFILTRATION RATES, STORAGE CAPACITIES, OUTLET FLOW RATES, AND OTHER SITE SPECIFIC CONDITIONS AND LOAD REQUIREMENTS.
8. THIS CROSS SECTION IS FOR INFORMATION ONLY.

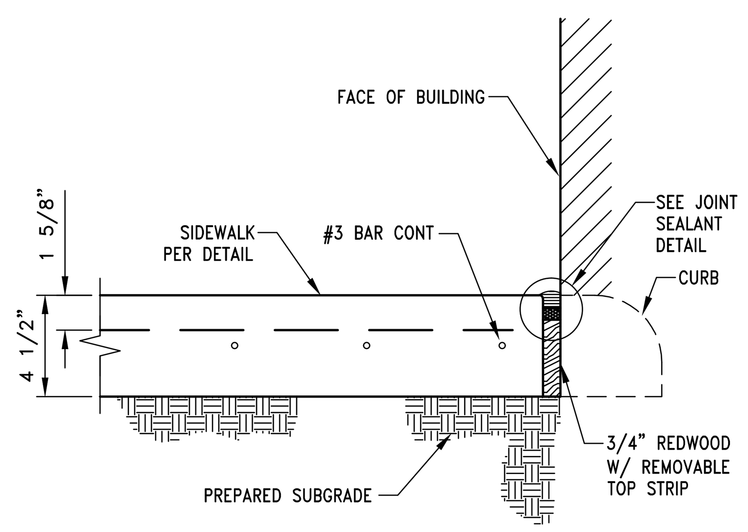




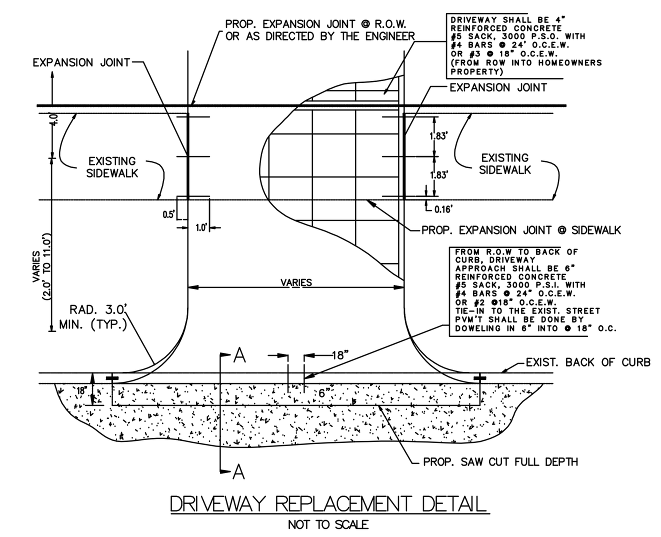
TRUEGRID BLOCK REFERENCE VIEW
PREASSEMBLED & DELIVERED IN 4' X 4' SHEET. RECONFIGURED AS NEEDED.NO EXTRA TOOLING OR ACCESSORIES REQUIRED



SECTION A-A
THIS SECTION IS TYPICAL OF ALL RAMPS AND AT EXISTING DRIVEWAYS
NOT TO SCALE



SIDEWALK DETAIL
AT BUILDING OR CURB
SCALE: N.T.S.



DRIVEWAY REPLACEMENT DETAIL
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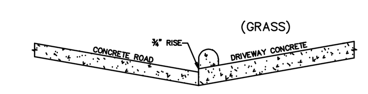

SECTION A-A
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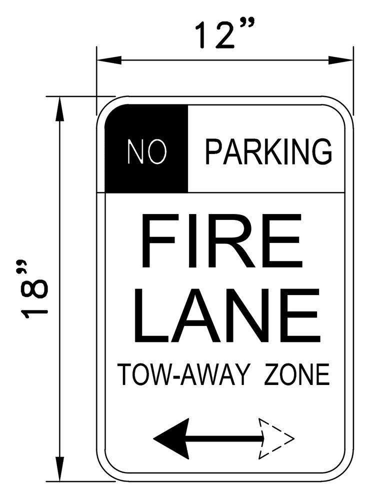


FIRE LANE SIGN
N.T.S.

AT THE BEGINNING AND END OF THE FIRE LANE, THE SIGN SHALL HAVE A SINGLE HEADED ARROW POINTING IN THE DIRECTION THE REGULATION IS IN EFFECT. THE INTERMEDIATE SIGN SHALL HAVE DOUBLE HEADED ARROWS POINTING IN BOTH DIRECTIONS.

THE MAXIMUM SPACING OF THE SIGNS SHALL BE 75' CONTINGENT UPON TRAFFIC ENGINEER'S REVIEW APPROVAL.

THE SIGNS SHALL BE SET AT AN ANGLE OF NOT LESS THAN 30° NOR MORE THAN 45° WITH THE CURB OR LINE OF TRAFFIC FLOW.

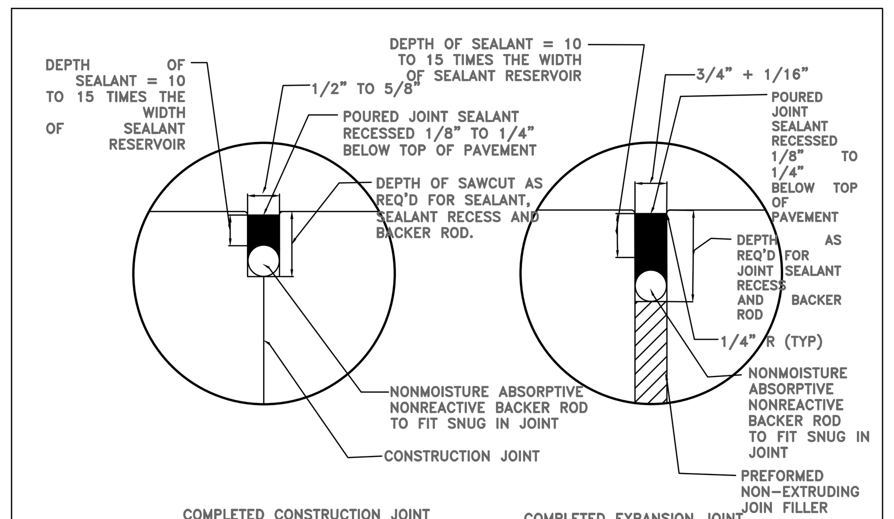
THE CLEARANCE TO THE BOTTOM OF THE SIGN SHALL BE 7 FEET. THERE SHALL BE NO OTHER SIGNS ATTACHED TO THE SIGN OR THE SIGN POLE.

THE SIGN PLATE SHALL BE A MINIMUM OF 12"X18" WITH A THICKNESS OF 0.80".

NOTE:

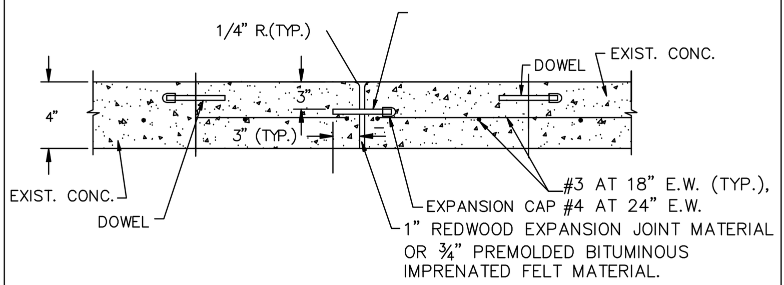
FIRE LANES: SIGNS SHALL BE POSTED ON ONE OR BOTH SIDES OF THE FIRE APPARATUS ROAD. WHERE A SIGN CAN NOT BE ERECTED, THE FIRE LANES SHALL BE MARKED USING THE APPROVED METHOD OF 6-INCH RED STRIPE WITH 4-INCH WHITE LETTERS STATING "FIRE LANE NO PARKING" AND SHALL CONTINUE ALONG THE RED STRIPE EVERY 15 FEET INTERVALS.

FIRE LANE DETAILS AND NOTES
SCALE: N.T.S.



COMPLETED CONSTRUCTION JOINT SEALANT DETAIL

COMPLETED EXPANSION JOINT SEALANT DETAIL



EXPANSION JOINT
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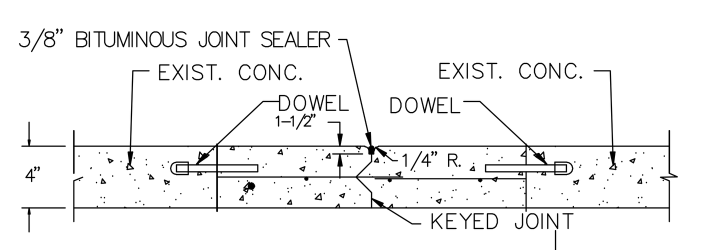

CONSTRUCTION JOINT
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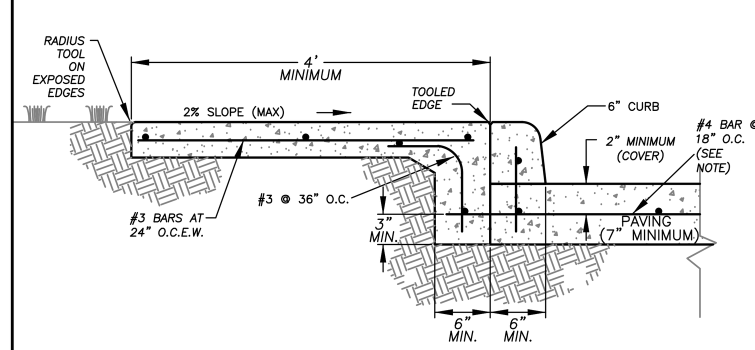
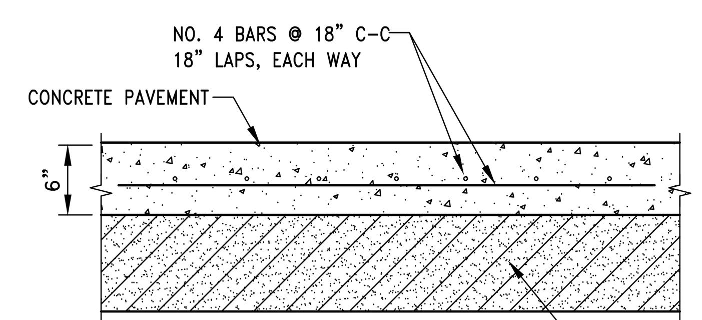


NOTES:

1. *EXTEND PAVEMENT EXPANSION JOINTS THROUGH SIDEWALK.*
2. *ALLOW KEYWAY WITH L-BAR OR DRILL & GROUT #4 IN PAVEMENT. MINIMUM EMBEDMENT 6" INTO PAVEMENT.*
3. *SEE ROSENBERG STANDARD PAVING SHEET P-100a FOR FURTHER CONCRETE CURB DETAILS*
4. *SEE ROSENBERG STANDARD PAVING SHEET P-101 FOR FURTHER SIDEWALK DETAILS*
5. *SEE ROSENBERG STANDARD PAVING SHEET P-108 FOR FURTHER ROADWAY DETAILS*

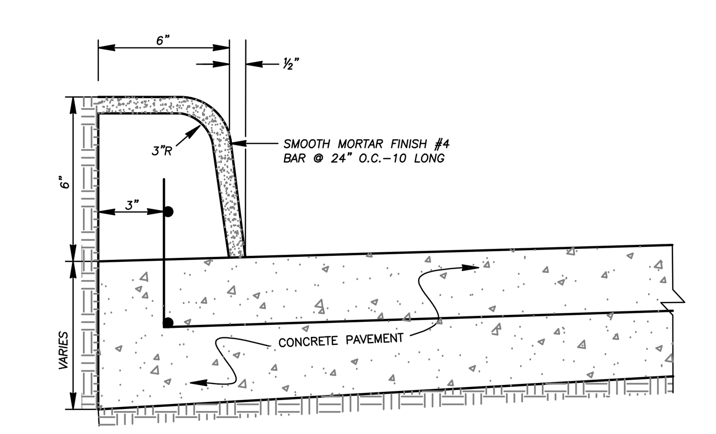
SIDEWALK CONNECTION TO CURB
N.T.S



PROPOSED 6" STABILIZED SUBGRADE SHALL BE A MINIMUM OF 8% LIME BY WEIGHT. FOR COMPACTION, REFER TO GEOTECHNICAL REPORT.

CONCRETE SHALL BE 3,500 PSI

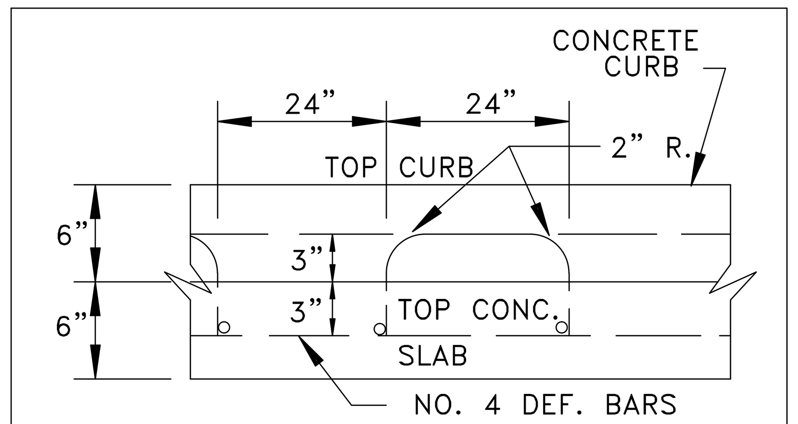
6" CONCRETE PAVEMENT
SCALE: N.T.S.



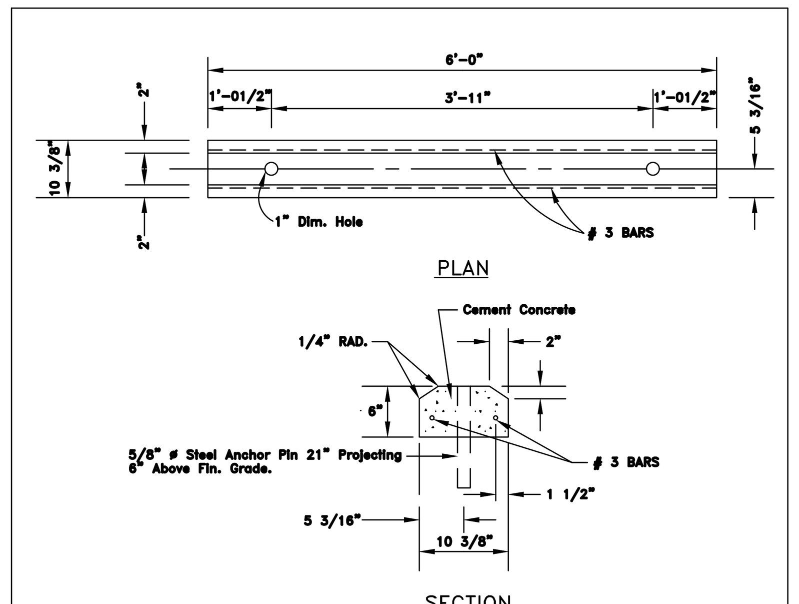
NOTES:

1. *MORTAR FINISH NOT REQUIRED WHEN CURB IS POURED BY A MACHINE, BUT CURB WILL HAVE THE SAME OUTSIDE DIMENSIONS.*
2. *WHEN CONCRETE CURB IS TO BE PLACED ON EXISTING CONCRETE BASE, USE #4 DEFORMED BARS, 10" LONG, 24" O.C., DOWELLED, AND SET IN QUICK SETTING CEMENT MORTAR*
3. *REDWOOD EXPANSION JOINTS SHALL BE INSTALLED IN CURB AT ALL PAVEMENT EXPANSION JOINTS.*

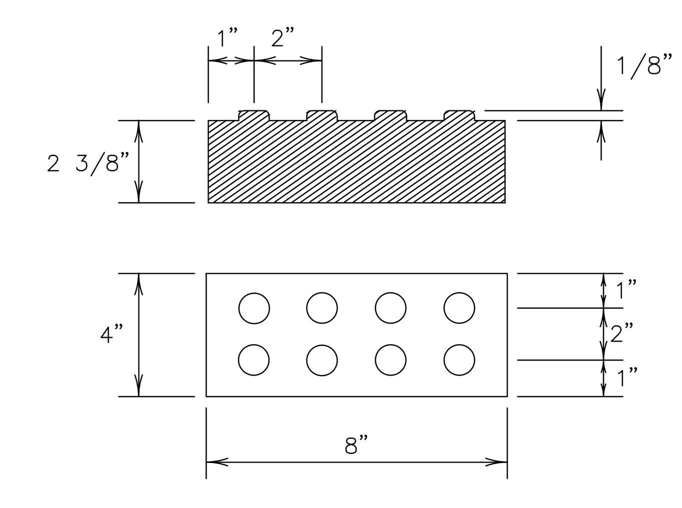
6" CONC. CURB DETAIL
N.T.S



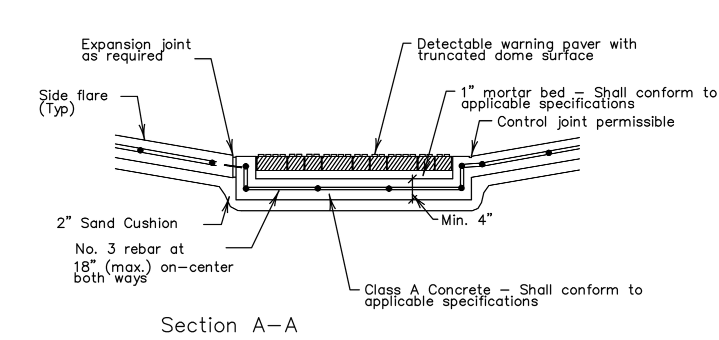
TYP. CONCRETE CURB REINFORCING
SCALE: N.T.S.

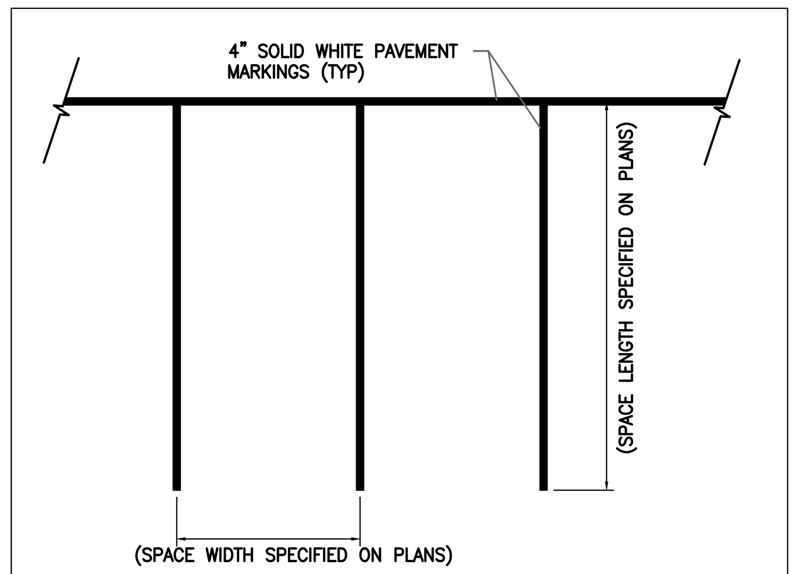


PRECAST CONC.
WHEEL STOP DETAIL
SCALE: N.T.S.

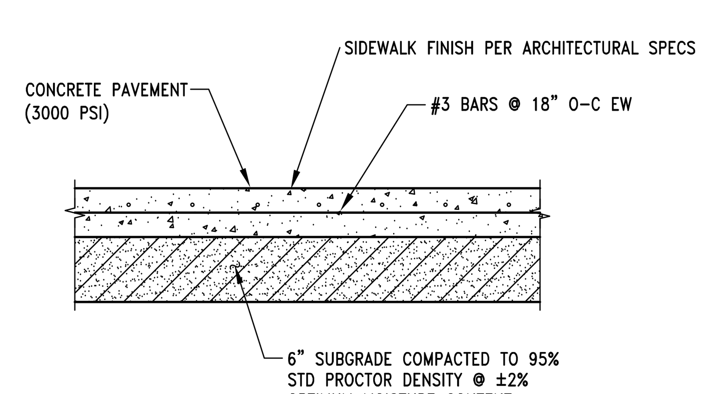


DETECTABLE WARNING PAVER
SCALE: N.T.S.





TYPICAL PARKING SPACE DIMENSIONING
SCALE: N.T.S.



5" CONCRETE SITE PAVING/SIDEWALK
SCALE: N.T.S.

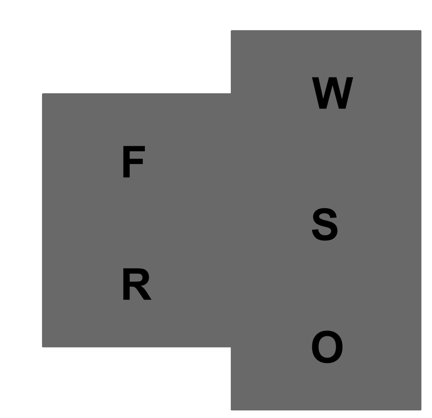
CEMENT STABILIZED SAND 2-SK/C.Y.	
RESIDENTIAL	4" MINIMUM
COMMERCIAL	6" MINIMUM
INDUSTRIAL	8" MINIMUM
REINFORCED CONCRETE PAVEMENT 3,500 PSI MIN.	
RESIDENTIAL	4" MINIMUM
COMMERCIAL	6" MINIMUM
INDUSTRIAL	8" MINIMUM

DRIVEWAY PAVEMENT CONSTRUCTION TABLE

STANDARD DRIVEWAY CONSTRUCTION TABLE & NOTES
N.T.S

ONE- CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223-4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1-800-545-6005

KEY PLAN (NOT TO SCALE)



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713 337 8881

Structural Engineering
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Low Voltage & Security
4b Technology Group, LLC
390 Glenborough Dr.
Suite 290
Houston, TX 77067
832 249 9379

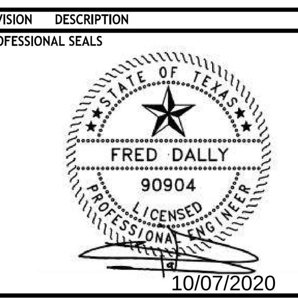
Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County
Road & Bridge Department Facilities PH2
5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

PROFESSIONAL SEALS

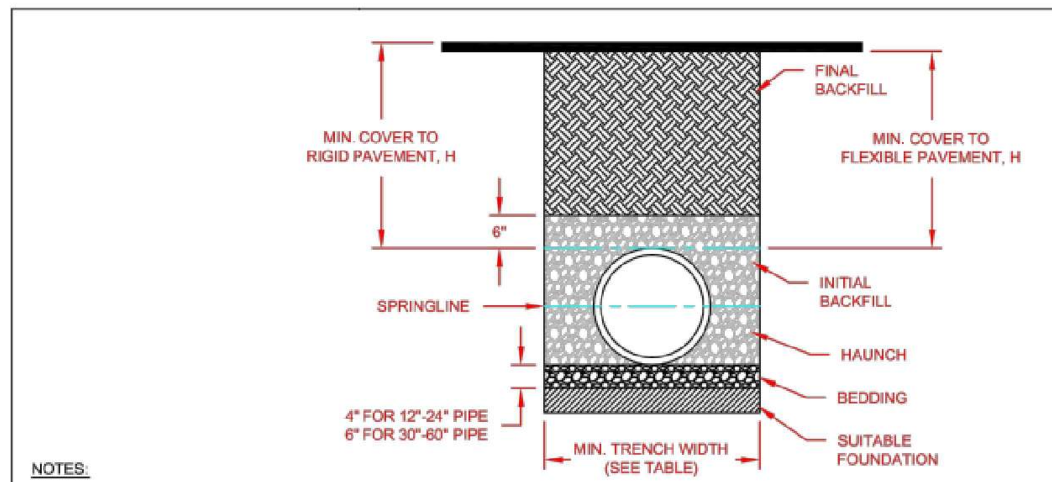


PAVEMENT DETAILS

DRAWN BY	CHECKED BY
JDM	JDM
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	07 OCT 2020

3
C9.0-PH2
SHEET NUMBER

FILE PATH File Path
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM



RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

MINIMUM RECOMMENDED COVER BASED ON RAILWAY LOADING CONDITIONS

PIPE DIAM.	COOPER E-80**
UP TO 24"	24"
30"-36"	36"
42"-60"	48"

** COVER IS MEASURED FROM TOP OF PIPE TO BOTTOM OF RAILWAY TIE.
*** E-80 COVER REQUIREMENTS, ARE ONLY APPLICABLE TO ASTM F 2306 PIPE.

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

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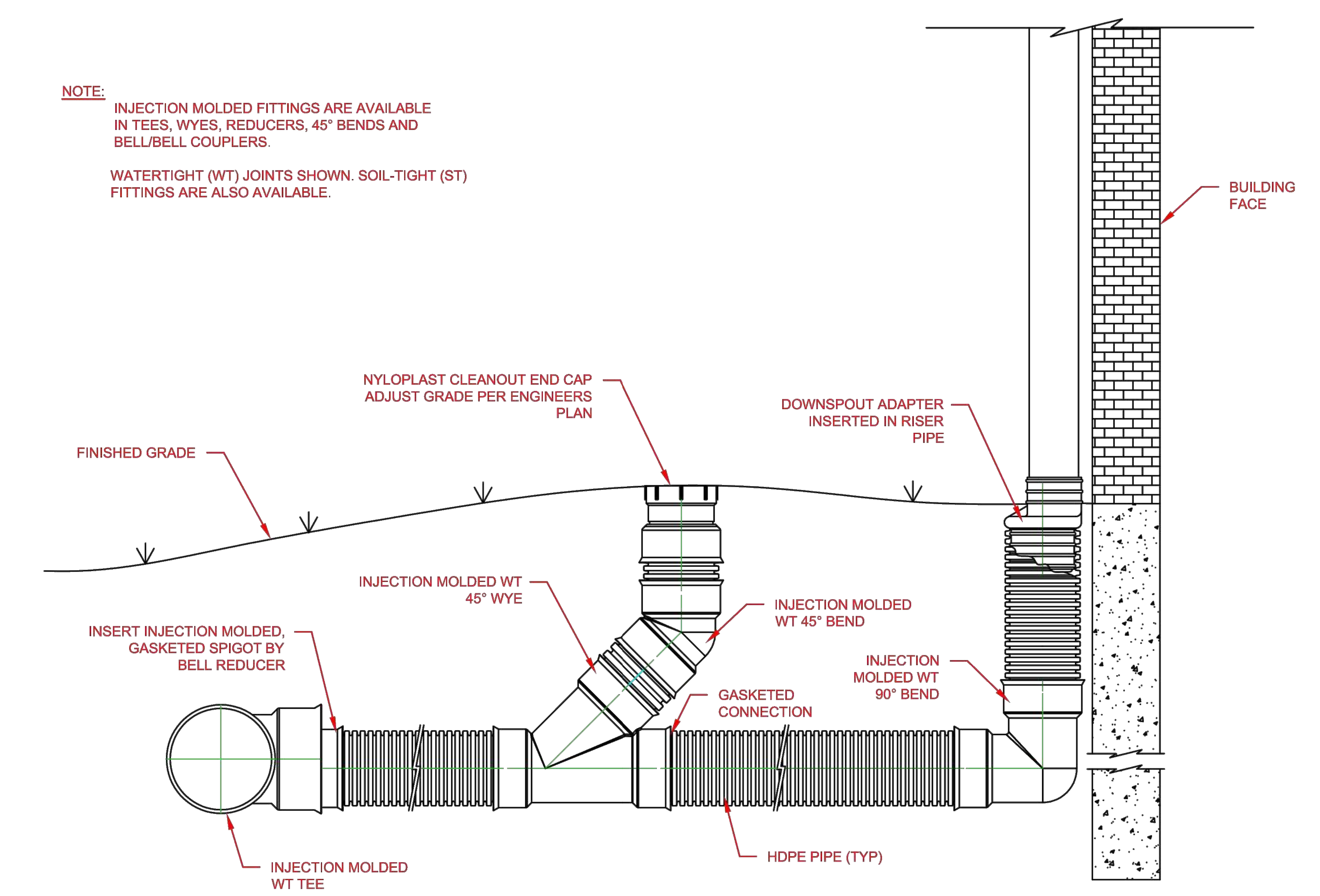
REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
2	ADDED E-80 INFORMATION	TJR	08/20/07	

ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON INFORMATION PROVIDED TO ADS. THIS DRAWING IS INTENDED TO DEPICT THE COMPONENTS AS REQUESTED. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT, NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION. IT IS THE DESIGN ENGINEERS RESPONSIBILITY TO ENSURE THE DETAILS PROVIDED HEREIN MEETS OR EXCEEDS THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

TYPICAL TRENCH DETAIL
DRAWING NUMBER: STD-101
ADS — 4640 TRUEMAN BLVD, HILLIARD, OHIO 43026 — ADVANCED DRAINAGE SYSTEMS, INC.
DRAWN BY: CKS — DATE: 10/18/06 — SCALE: NTS — SHEET: 1 OF 1

NOTE:
INJECTION MOLDED FITTINGS ARE AVAILABLE IN TEES, WYES, REDUCERS, 45° BENDS AND BELL/BELL COUPLERS.

WATERTIGHT (WT) JOINTS SHOWN. SOIL-TIGHT (ST) FITTINGS ARE ALSO AVAILABLE.



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REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
1	UPDATED DRAWING	TJR	01/11/07	CKS

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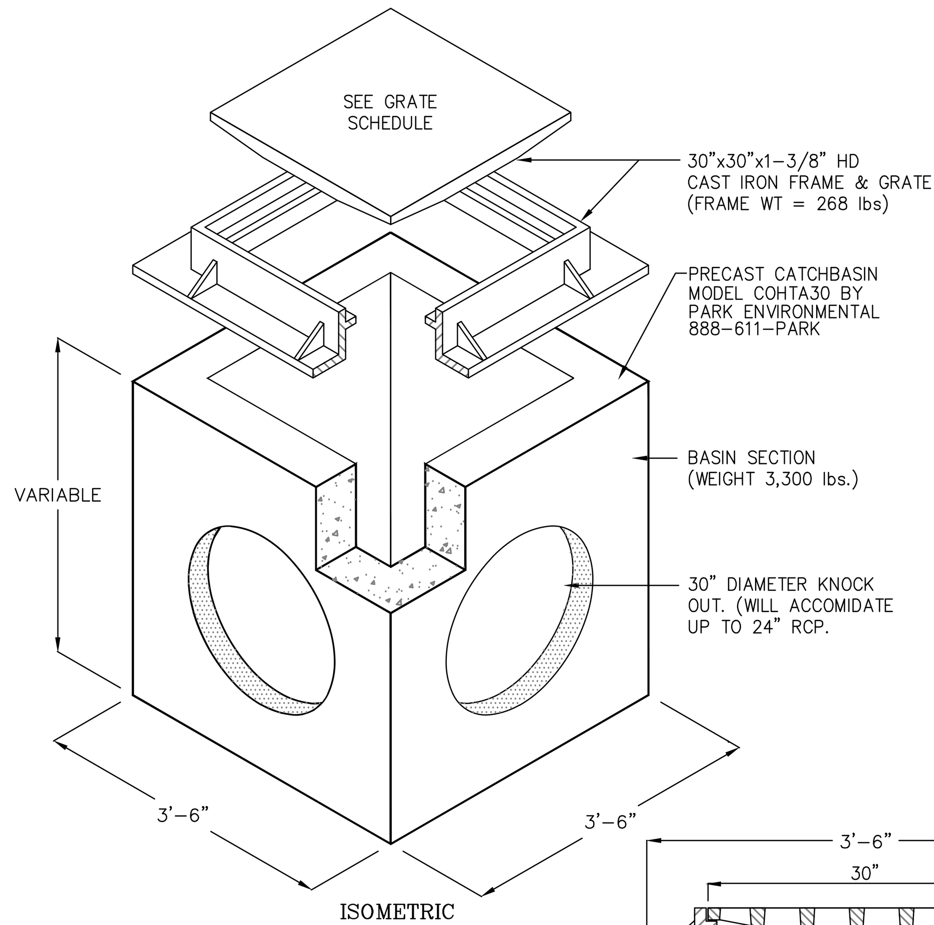
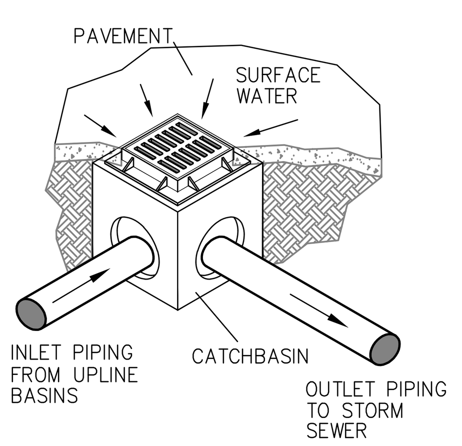
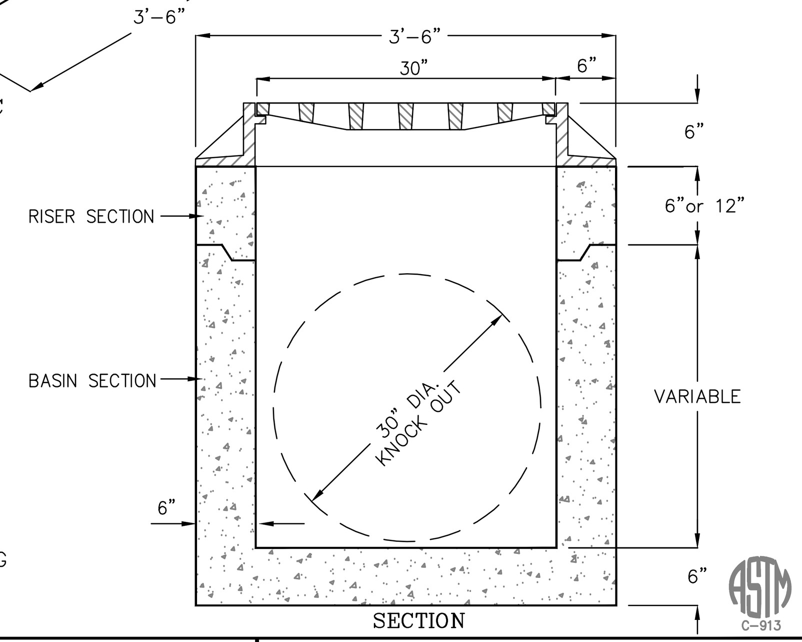
ROOF DRAIN W/45 DEG WYE CLEANOUT
DRAWING NUMBER: STD-1001
ADS — 4640 TRUEMAN BLVD, HILLIARD, OHIO 43026 — ADVANCED DRAINAGE SYSTEMS, INC.
DRAWN BY: KSK — DATE: 04.02.03 — SCALE: NTS — SHEET: 1 OF 1



GRATE SCHEDULE

GRATE = 200 lbs, OPEN AREA = 489 in²	MODEL No. V4880-1
GRATE = 240 lbs, OPEN AREA = 434 in²	MODEL No. V4880-3
GRATE = 270 lbs, OPEN AREA = 387 in²	MODEL No. V4880-4





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SPECIFICATIONS

CONCRETE : Class 1 concrete with of design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth. Rated for H-20 Loading.

REINFORCEMENT: Grade 60 reinforced with steel rebar to conform to ASTM A615 on required centers or equal.

C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

PARK ENVIRONMENTAL EQUIPMENT — 888-611-PARK — www.park-USA.com
"Expect the Best"

TYPE-A GRATE INLET
SIZE 30"

SCALE: NONE — DATE: 01/02 — DWG. NO. COHTAI-2 — REV. A

ADS N-12® ST IB PIPE (PER AASHTO) SPECIFICATION

SCOPE
This specification describes 4- through 60-inch (100 to 1500 mm) ADS N-12 ST IB pipe (per AASHTO) for use in gravity flow drainage applications.

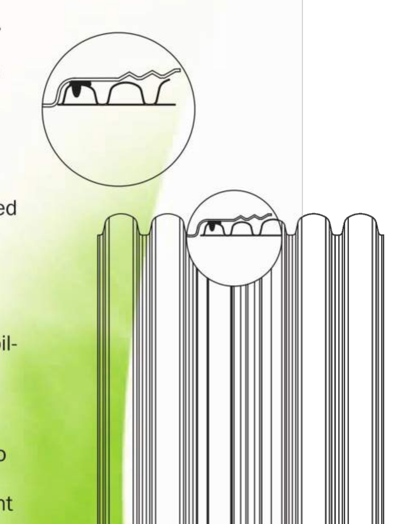
PIPE REQUIREMENTS
N-12 ST IB pipe (per AASHTO) shall have a smooth interior and annular exterior corrugations.
- 4- through 10-inch (100 to 250 mm) shall meet AASHTO M252, Type S
- 12- through 60-inch (300 to 1500 mm) shall meet AASHTO M294, Type S or ASTM F2306
- Manning's "n" value for use in design shall be 0.012

JOINT PERFORMANCE
Pipe shall be joined using a bell-and-spigot joint meeting AASHTO M252, AASHTO M294, or ASTM F2306. The joint shall be soil-tight and gaskets, when applicable, shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.

FITTINGS
Fittings shall conform to AASHTO M252, AASHTO M294 or ASTM F2306.. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the soil-tight joint performance requirements of AASHTO M252, AASHTO M294 or ASTM F2306.

MATERIAL PROPERTIES
Virgin material for pipe and fitting production shall be high-density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, or 435400C for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 60-inch (300 to 1500 mm) virgin pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306, respectfully.

INSTALLATION
Installation shall be in accordance with ASTM D2321 and ADS published installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot (0.3 m) and for 54- and 60-inch (1350-1500 mm) diameters, the minimum cover shall be 2 foot (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD) or Class 3 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.01. Contact your local ADS representative or visit our website at www.ads-pipe.com for a copy of the latest installation guidelines.



PIPE DIMENSIONS

Nominal Pipe I.D.* in. (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	54 (1350)	60 (1500)
Nominal Pipe O.D.** in. (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)	42 (1050)	48 (1200)	54 (1350)	61 (1549)	67 (1702)
Perforations	All diameters available with or without perforations.													

*Check with sales representative for availability by region.
**Pipe O.D. values are provided for reference purposes only, values stated for 12- through 60-inch are ±1 inch. Contact a sales representative for exact values.

ADS "Terms and Conditions of Sale" are available on the ADS website, www.ads-pipe.com
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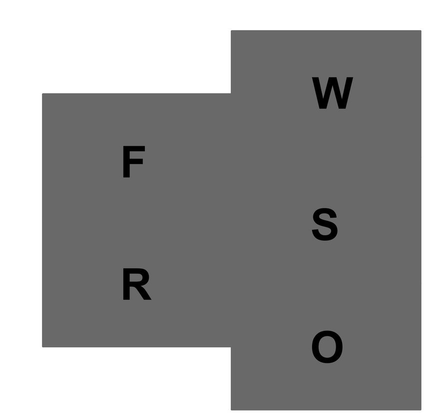
KEY PLAN (NOT TO SCALE)



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713 463 8200

Galveston County
Road & Bridge Department Facilities PH2
5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

PROFESSIONAL SEALS
STATE OF TEXAS — FRED DALLY — 90904 — LICENSED PROFESSIONAL ENGINEER
10/07/2020

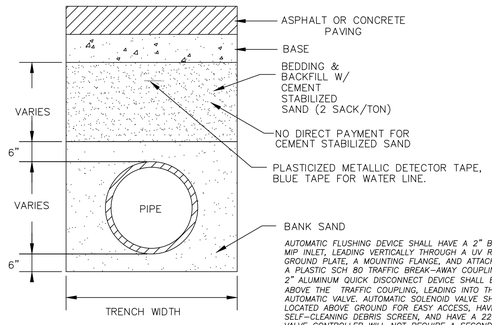
STORM DRAIN DETAILS

DRAWN BY: JDM — CHECKED BY: JDM
PROJECT NUMBER: 418198 — PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT — DATE: 07 OCT 2020

3
C10.0-PH2
SHEET NUMBER

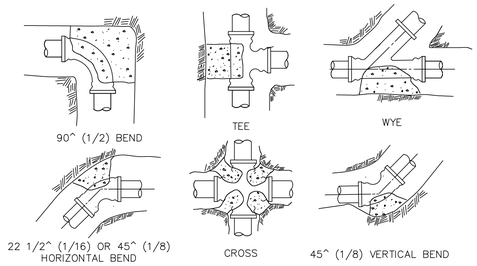
FILE PATH: File Path
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM

TYPICAL DETAILS WATER AND SANITARY SEWER (SDR 26/SDR 35)

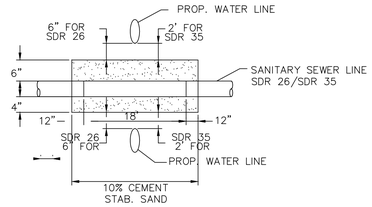


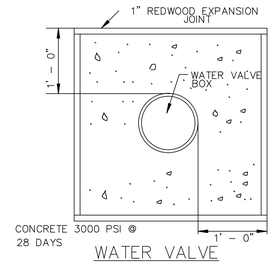
BACKFILL DETAIL WATERLINE UNDER PAVEMENT

AUTOMATIC FLUSHING DEVICE SHALL HAVE A 2" BRASS MIP INLET, LEADING VERTICALLY THROUGH A UV RESISTANT GROUND PLATE, A MOUNTING FLANGE, AND ATTACHING TO A PLASTIC SCH 80 TRAFFIC BREAK-AWAY COUPLING. A 2" ALUMINUM QUICK DISCONNECT DEVICE SHALL BE LOCATED ABOVE THE TRAFFIC COUPLING, LEADING INTO THE 2" AUTOMATIC VALVE. AUTOMATIC SOLENOID VALVE SHALL BE LOCATED ABOVE GROUND FOR EASY ACCESS, HAVE INTERNAL, SELF-CLEANING DEBRIS SCREEN, AND HAVE A 220 PSI RATING. VALVE CONTROLLER WILL NOT REQUIRE A SECOND HAND-HELD DEVICE FOR PROGRAMMING, MUST HAVE A MINIMUM OF 9 POSSIBLE FLUSHING CYLES PER DAY. SHALL BE SUBMERSIBLE TO 12 FEET. OPERATE WITH A 9 VOLT BATTERY, HAVE RESIN-SEALED ELECTRICAL COMPONENTS, AND SHALL BE LOCATED ABOVE WATER FLOW. SOLENOID SHALL HAVE NO LOOSE PARTS WHEN REMOVED FROM VALVE. VALVE, SOLENOID, AND CONTROLLER SHALL HAVE RUBBER CAPS FOR ADDED PROTECTION. EACH UNIT SHALL HAVE A DOUBLE-VALVE. ALL BRASS SAMPLING POINT. WATER SHALL EXIT UNIT HORIZONTALLY THROUGH HOLES LOCATED NEAR GROUNDLINE. ALL ABOVE-GROUND COMPONENTS SHALL BE CONTAINED WITHIN A UV-RESISTANT LOCKING DOMED COVER, AS MANUFACTURED BY KUPFERLE FOUNDRY COMPANY, ST. LOUIS, MO , 1-800-231-3990, OR APPROVED EQUAL.



TYPICAL THRUST BLOCKS



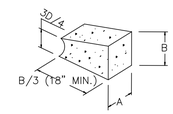


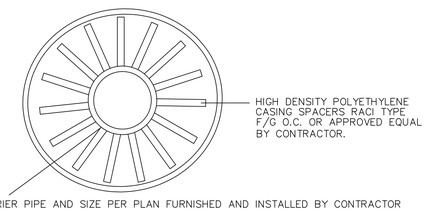
WATER VALVE BLOCKOUT

MINIMUM DIMENSIONS FOR THRUST BLOCKS

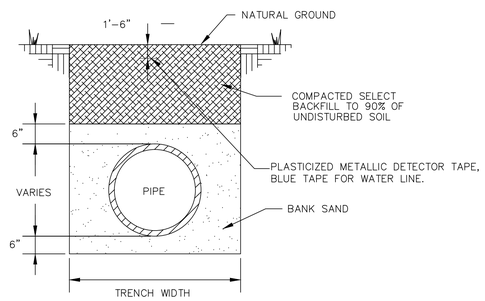
FITTING SIZE	TEES & PLUGS		90 BEND		45 BENDS & WYES	
	H	W	H	W	H	W
4"	1'-7"	1'-2"	1'-9"	1'-6"	1'-8"	0'-10"
6"	2'-0"	1'-11"	2'-5"	2'-2"	1'-10"	1'-7"
8"	2'-8"	2'-6"	3'-2"	3'-0"	2'-5"	2'-1"
10"	3'-4"	3'-3"	4'-0"	3'-10"	3'-0"	2'-9"
12"	4'-0"	3'-10"	4'-8"	4'-8"	3'-8"	3'-3"
14"	5'-5"	3'-10"	6'-6"	4'-11"	4'-9"	3'-5"
20"	5'-0"	5'-0"	6'-0"	6'-0"	5'-0"	4'-0"
24"	6'-0"	6'-0"	7'-0"	7'-0"	5'-0"	5'-0"
30"	7'-6"	7'-6"	8'-0"	8'-0"	6'-3"	6'-3"

FITTING SIZE	REDUCERS & 22 1/2 BENDS		11 ? BENDS	
	H	W	H	W
4"	1'-7"	0'-6"	0'-6"	0'-6"
6"	1'-9"	0'-10"	1'-0"	0'-6"
8"	1'-9"	1'-6"	1'-0"	1'-0"
10"	2'-2"	1'-11"	1'-6"	1'-0"
12"	2'-7"	2'-3"	2'-0"	1'-0"
14"	3'-5"	2'-5"	2'-0"	1'-6"
20"	3'-6"	3'-0"	3'-0"	2'-0"
24"	4'-8"	3'-0"	3'-0"	3'-0"
30"	4'-9"	4'-6"	3'-3"	3'-3"





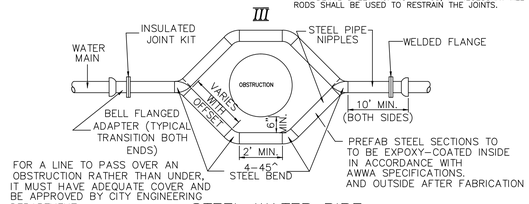
RACI CASING SPACERS					
DR 18 C900 PVC PIPE			SDR 35 PVC SEWER PIPE		
PIPE SIZE	STEEL CASING DIA.	RACI SPACERS	PIPE SIZE	STEEL CASING DIA.	RACI SPACER
4"	10"	2F OR 2N	6"	10"	2F, 1G OR 1M ,1N OR 1E, 2H OR 2P, 1Q
6"	12"	2F, 1G OR 2M OR 1E,1H OR 2P	8"	12"	3F, 1G OR 1M, 2N OR 2E, 1H OR 1P, 2Q
8"	14"	3F, 1G OR 2M, 1N OR 2E, 1H OR 2P, 1Q	10"	16"	4F OR 3M OR 3E OR 3P
10"	16"	4F OR 3M OR 3E OR 3P	12"	18"	5F OR 2M, 2N OR 3E, 1H OR 2P, 2Q
12"	20"	5F OR 3M, 1N OR 3E, 1H OR 3P, 1Q	15"	22"	6F OR 3M, 2N OR 4E, OR 3P, 2Q
14"	22"	6F OR 4M OR 4E OR 4P	18"	24"	7F OR 5M, OR 5E OR 5P
16"	24"	7F OR 5M, OR 4E, 1H OR 5P			



BACKFILL DETAIL NOT UNDER PAVEMENT

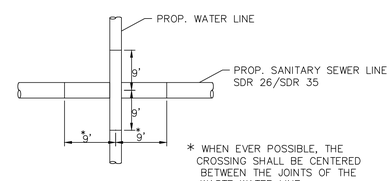
MIN. PIPE WALL THICKNESS		
4"	=	0.250"
6"	=	0.280"
8"	=	0.322"
12" AND LARGER	=	0.375"

NOTES:
1. ALL MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH ENGINEERING DEPARTMENT SPECIFICATIONS
2. INSULATED JOINT TO BE MADE UP USING INSULATING GASKETS, PLASTIC BOLT SLEEVES AND WASHERS OF INSULATING GASKET MATERIAL BACKED WITH ZINC-PLATED WASHERS, OR OTHER METHODS APPROVED SPECIFICALLY BY THE ENGINEERING DEPARTMENT.
3. NO FIELD FABRICATION OF STEEL WATER PIPE OFFSETS ALLOWED.
4. OFFSET SECTIONS SHALL BE THRUST-BLOCKED IN ACCORDANCE WITH DETAIL SHEET No. MC-11-03, IF NECESSARY ALL THREAD RODS SHALL BE USED TO RESTRAIN THE JOINTS.



FOR A LINE TO PASS OVER AN OBSTRUCTION RATHER THAN UNDER, IT MUST HAVE ADEQUATE COVER AND BE APPROVED BY CITY ENGINEERING DEPARTMENT.

STEEL WATER PIPE OFFSET ASSEMBLY



* WHEN EVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTE WATER LINE.

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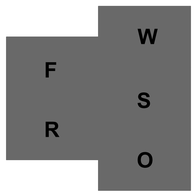

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Galveston County Road & Bridge Department Facilities PH2

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

3	ADDENDUM NO. 3	10-07-2020

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED PROFESSIONAL ENGINEER
10/07/2020

WATER DETAILS

DRAWN BY	CHECKED BY
JDM	JDM
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	07 OCT 2020

3

C11.0-PH2

SHEET NUMBER

FILE PATH
USER NAME File Path
DATE STAMP 6/26/2008 2:02:08 PM

NOTES:

1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITION. SEE SPECIFICATIONS FOR REQUIREMENTS IN OTHER CONDITIONS.

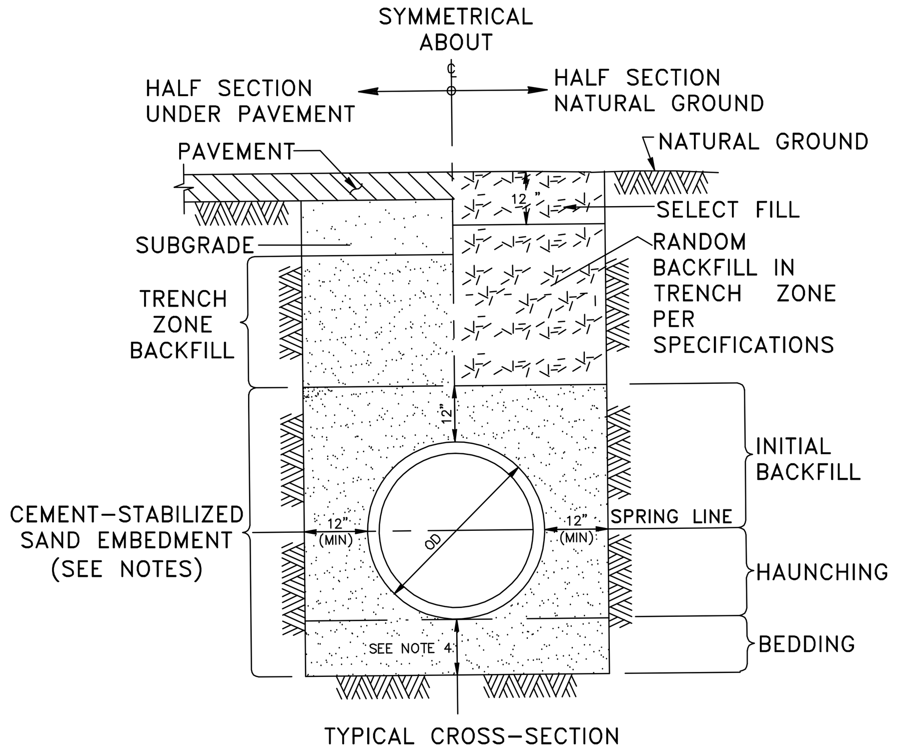
2. MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

NOMINAL PIPE SIZE	"A"
18" TO 30"	24"
OVER 30"	36"

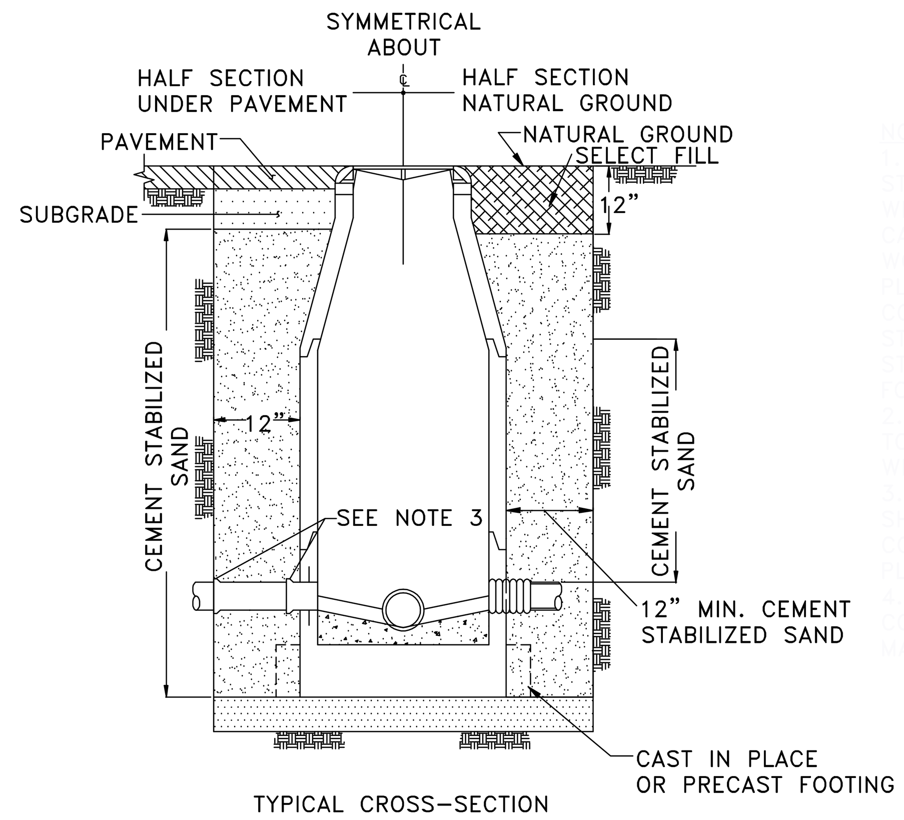
3. MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.

4. MIN. BEDDING DEPTH SHALL BBE 12 INCHES.

5. ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED



SANITARY SEWER BEDDING & BACKFILL



NOTES:
1. GROUTING OF MANHOLE STRUCTURE ANNULAR SPACE WILL BE PERMITTED IN CASES WHERE INSUFFICENT WORK SPACE EXISTS FOR PLACEMENT AND COMPACTATION OF CEMENT STABILIZED SAND, PER CLP STANDARD SPECIFICATION FOR TUNNEL GROUT.
2. THIS DETAIL ALSOAPPLIES TO BACKFILL OF SHAFTS WITHOUT STRUCTURES.
3. ARRANGE PIPE JOINTS AS SHOWN WHEN USING RIGID CONNECTION TO CAST IN PLACE MANHOLE BASE.
4. NEED COAL-TAR EPOXY COATING ON INSIDE OF MANHOLE OR EQUAL.

SANITARY SEWER MANHOLE

SANITARY SEWER

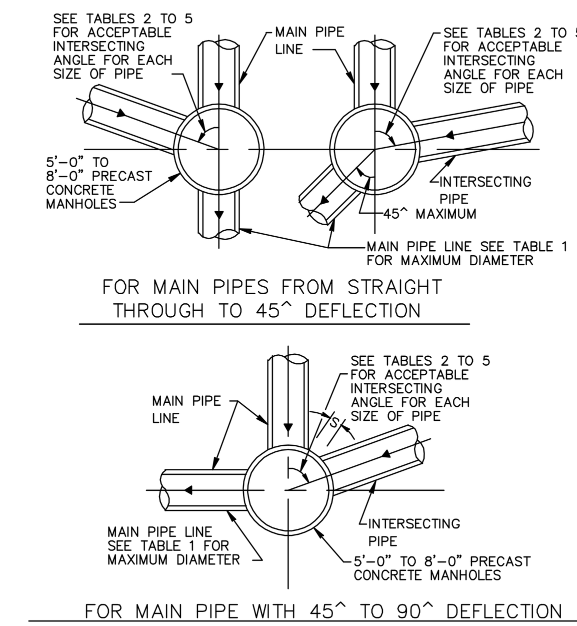


TABLE 1
MAXIMUM MAIN PIPE DIAMETER (I D) IN INCHES

MANHOLE DIAMETER (FT)	STRAIGHT THROUGH TO 45^ DEFLECTION	WITH 90^ DEFLECTION	TABLE TO BE USED
5	36	27	2
6	42	33	3
7	48	36	4
8	60	42	5

NOTES TO SPECIFIER:

1."_" INDICATES THAT A SPECIAL DESIGN OR THE NEXT LARGER MANHOLE SIZE SHALL BE USED.

2.TABLES 2 TO 5 ARE BASED ON A MIN SEPARATION DISTANCE "S" OF 15.5" OR INTERSECTION PIPE OD/2, WHICHEVER IS GREATER, BETWEEN MAIN AND INTERSECTING PIPES ALONG THE MANHOLE INSIDE WALL ARC.

3. PIPE WALL THICKNESS USED IN TABLES 2 TO 5 ARE BASED ON RCP. THE DESIGN ENGINEER MAY CALCULATE TO SEE IF THINNER WALL PIPES CAN MEET THE SEPARATION CRITERIA FOR ANGLES SMALLER THAN THE TABLES ALLOW.

4. LIMITATIONS TO BASE HEIGHT ARE BASER ON RESISTING BUOYANT UPLIFT FORCES BASED ON WATER AT GROUND SURFACE AND A SAFETY FACTOR OF 1.20.

5. A SPECIAL DESIGN IS REQUIRED IF MANHOLE ID IS GREATER THAN 8 FT.

5'-0" TO 8'-0" DIAMETER PRECAST CONCRETE MANHOLE NOTES
N.T.S

NOTES ON USE OF STANDARD DETAIL SAN-015

TABLE 3
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 6'-0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES											
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"
8	40	42	45	49	51	54	57	61	63	67	70	78
10		44	47	50	53	56	59	62	65	69	72	79
12			50	54	56	60	62	66	68	72	75	83
15				57	59	62	65	69	71	75	78	85
18					62	65	68	71	74	78	81	88
21						68	71	74	77	81	84	–
24							74	77	80	84	87	–
27								83	85	89	–	–
30				*					–	–	–	–
33										–	–	–
36											–	–
42												–

TABLE 4
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 7'-0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES												
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"
8	35	36	39	42	44	47	49	52	54	57	59	65	71
10		38	40	43	45	48	50	53	55	59	61	67	73
12			43	46	48	51	53	56	58	61	64	70	76
15				48	50	53	55	58	61	64	66	72	78
18					58	56	58	61	63	66	69	74	81
21						58	60	63	66	69	71	77	83
24							63	66	68	71	74	79	86
27								70	72	76	78	84	90
30				*					78	81	83	89	–
33										86	88	–	–
36											–	–	–
42												–	–
48													–

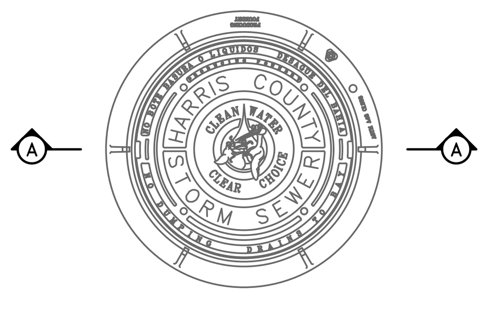
TABLE 5
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 8'-0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES														
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"	54"	60"
8	30	32	34	36	38	41	43	45	47	50	52	56	61	67	74
10		33	35	38	40	42	44	46	48	51	53	58	63	68	77
12			38	40	42	44	46	49	51	53	55	60	65	71	79
15				42	44	47	48	51	53	56	58	62	67	73	81
18					46	49	51	53	55	58	66	64	70	75	83
21						51	53	55	57	60	62	67	72	77	85
24							55	57	59	62	64	69	74	79	89
27								61	63	66	68	73	78	83	–
30									67	70	72	77	82	87	–
33				*						74	76	81	86	–	–
36											81	86	–	–	–
42												–	–	–	–
48													–	–	–
54														–	–
60															–

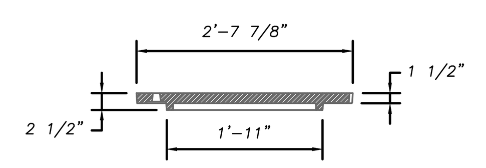
TABLE 2
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 5'-0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES										
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"
8	49	50	54	58	61	66	69	73	77	82	86
10		53	57	61	64	68	71	76	79	84	88
12			61	65	68	72	75	80	83	88	–
15				68	71	75	79	83	87	–	–
18					75	79	82	87	90	–	–
21						83	86	90	–	–	–
24							90	–	–	–	–
27			*					–	–	–	–
30									–	–	–
33										–	–
36											–

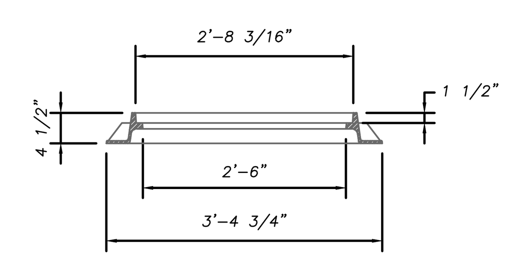
*NOT APPLICABLE
(INTERSECTING PIPE GREATER THAN MAIN PIPE)



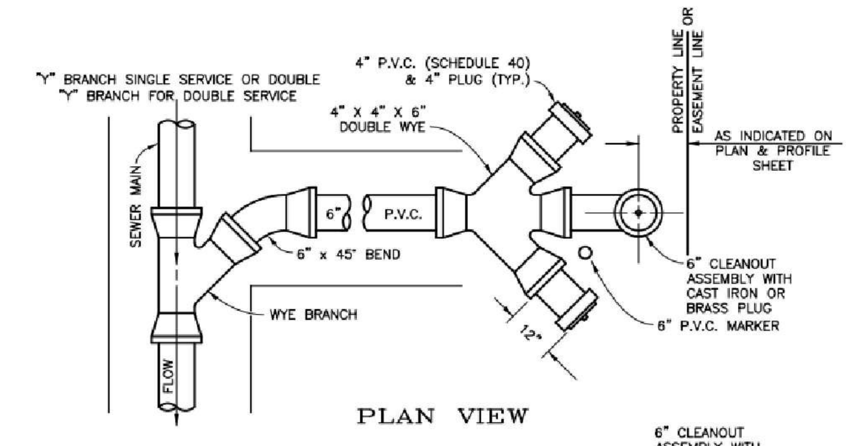
PLAN VIEW
FRAME AND COVER
SCALE: 1" = 1'-0"

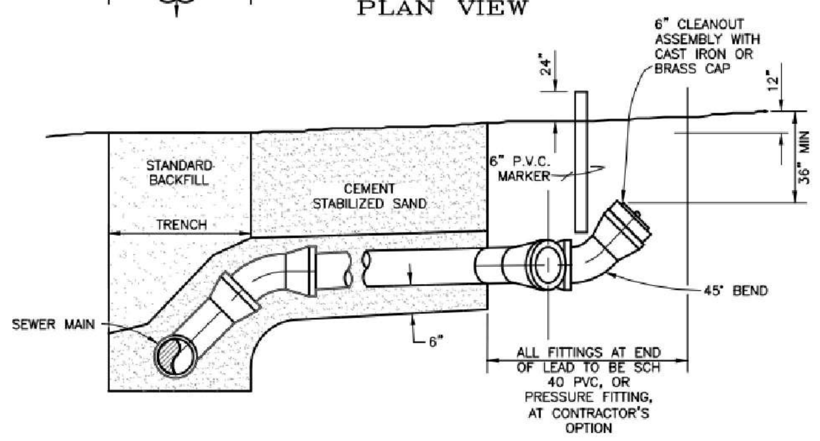


COVER SECTION A-A
SCALE: 1" = 1'-0"



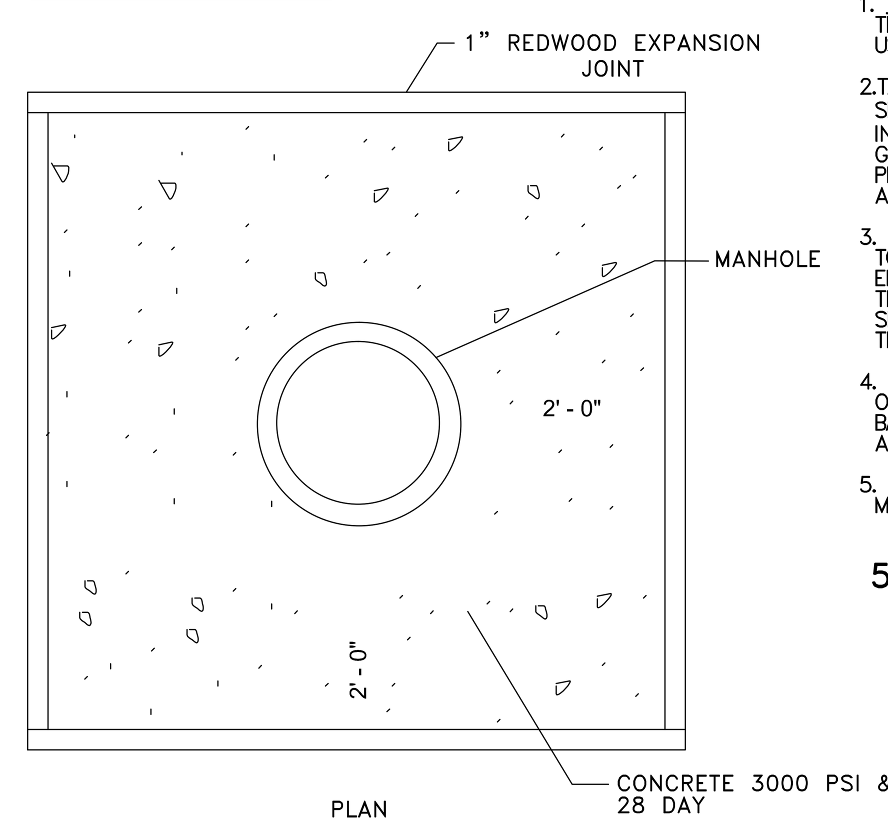
FRAME SECTION A-A
SCALE: 1" = 1'-0"



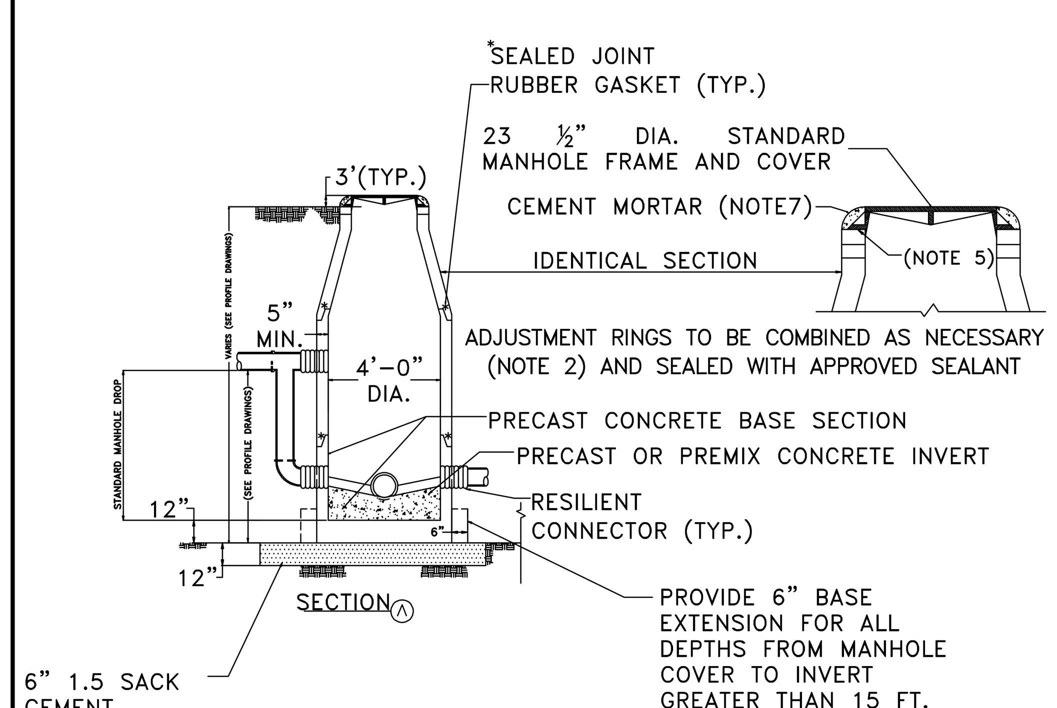


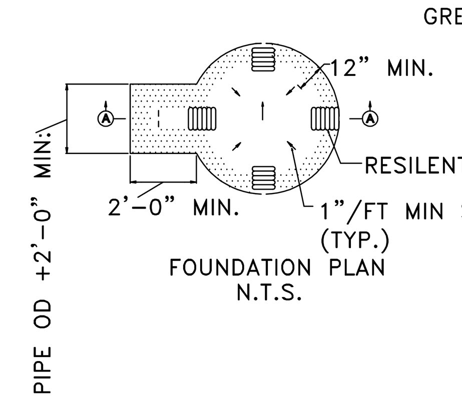
NOTE: ALL FITTINGS ON MAIN LINE AND UP TO THE END OF LEAD ARE TO BE PRESSURE FITTINGS.

SANITARY SEWER SERVICE CONNECTION



STANDARD MANHOLE BLOCKOUT FOR CONCRETE PAVEMENT

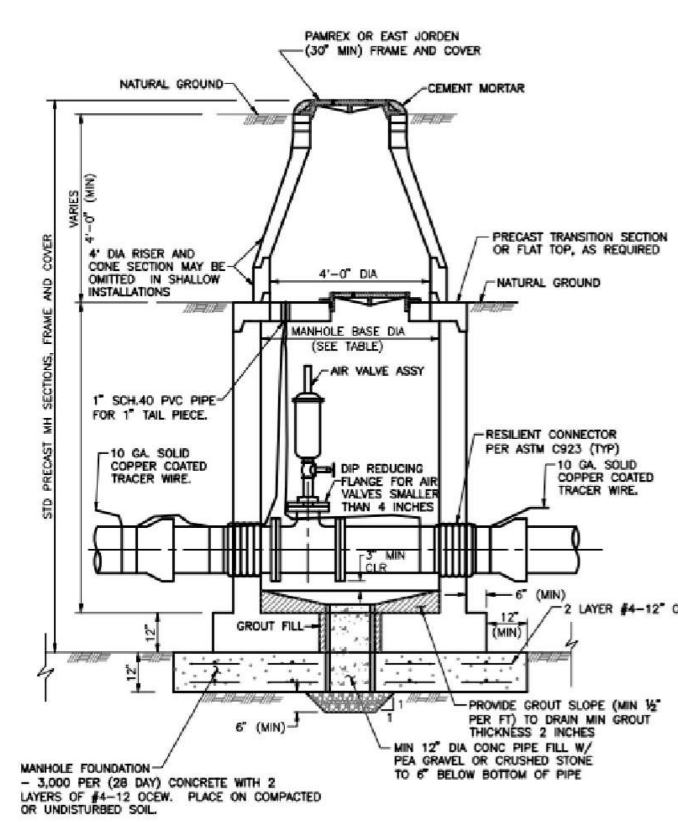




FOUNDATION PLAN
N.T.S.

NOTES:
1. DEPTH MANHOLE DETERMINES SECTIONS REQUIRED.
2. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12". THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'-6".
3. MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12'0" SHALL BE 12" THICK.
4. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
5. SEAT MANHOLE FRAME IN SEALANT PER CITY OF LA PORTE STANDARD SPECIFICATION.
6. ECCENTRIC PRECAST CONCRETE MANHOLE MAY BE USE.
7. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
8. MIN. REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE #5@ 8 EW.
9. PROVIDED BACKFILL TO MATCH ADJACENT PIPE TRENCH BACKFILL PER CITY OF LA PORTE STANDARD SPECIFICATION.
10. TEE INCLUDED IN PRICE OF DROP.
11. HORSE-SHOE SHAPED OPENINGS OR BREAKOUT OPENINGS SHALL NOT BE ACCEPTED.

4'-0" DIA PRECAST CONCRETE MANHOLE

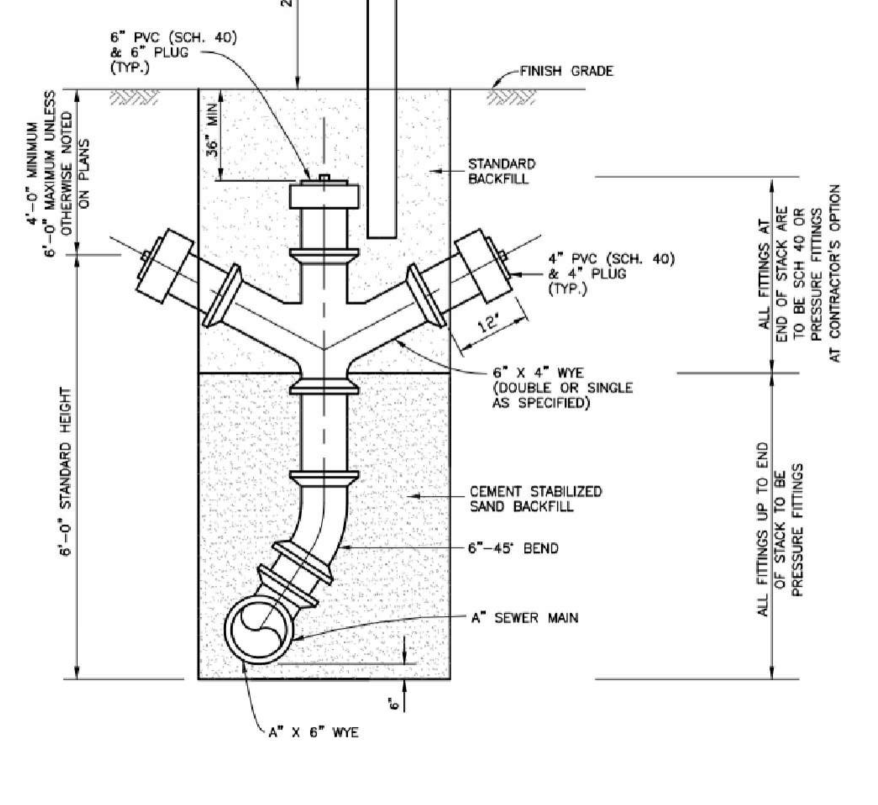


TABLE

MANHOLE BASE DIAMETER (FT)	MAX FORCE MAIN DIAMETER
5	8
6	16
8	36

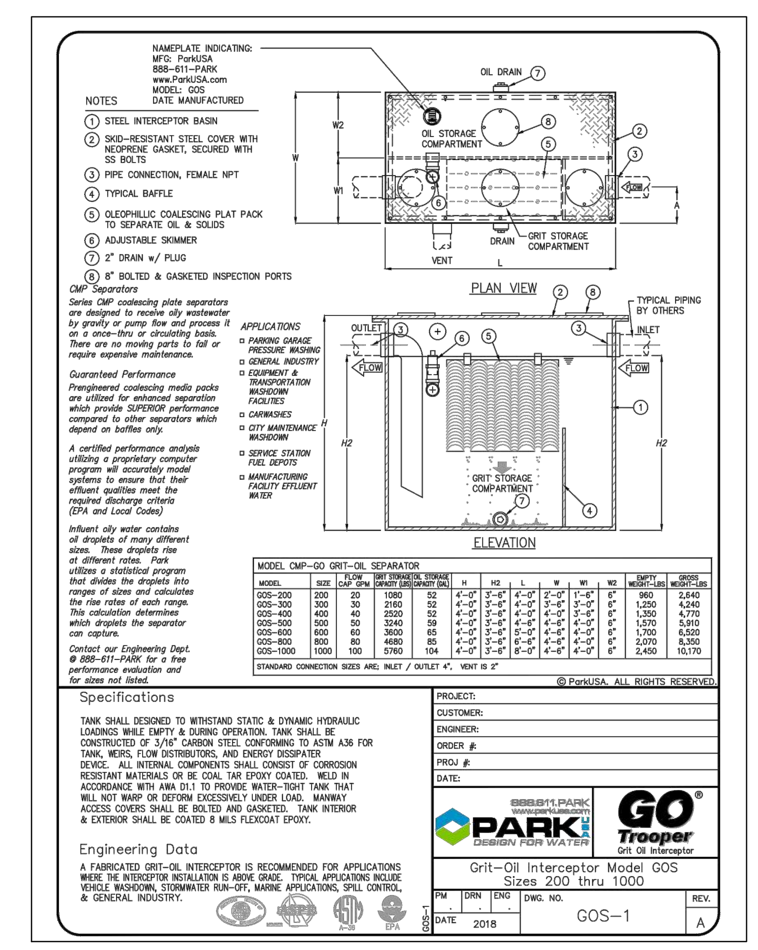
NOTES:
1. AIR RELEASE VALVE MAY BE 2" APCO 401 SAW OR PRE-APPROVED EQUAL OR AIR AND VACUUM RELEASE VALVE AS NOTED ON PLAN AND PROFILE SHEET.
2. ALL PIPING AND FITTINGS SHALL BE STAINLESS STEEL.
3. PROVIDE LINED DUCTILE IRON PIPE, THICK. CLASS 53, FOR FORCE MAIN WITHIN 12" OF OUTSIDE FACE OF MANHOLE. JOINTS WITHIN MANHOLE MAY BE FLANGED (AS SHOWN) OR GROOVED (PER ASTM 606) WITHIN MANHOLE, WITH 316 STAINLESS STEEL BOLTS.
4. MANHOLE TOP MAY BE CONCENTRIC CONE, ECCENTRIC CONE, OR FLAT TOP WITH ECCENTRIC OPENING. PROVIDE 30" MINIMUM FRAME & COVER. ORIENT ECCENTRIC OPENING OPPOSITE SIDE FROM AIR VALVE.
5. PROVIDE VENTED MANHOLE FOR AIR AND VACUUM VALVE INSTALLATIONS AND AT LOCATIONS INDICATED ON THE DRAWINGS.
6. BACKFILL MANHOLE WITH CEMENT STABILIZED SAND TO 12 INCHES ABOVE FORCE MAIN OR MINIMUM OF FOUR (4') FEET FROM TOP OF RIM, WHICHEVER IS HIGHER.

SANITARY SEWER AIR RELEASE OR AIR/ VACCUM RELEASE VALVE MANHOLE



A" = SIZE OF SEWER MAIN

SANITARY SEWER STACK



MODEL	SIZE	FLOW CAP GPM	GRIT STORAGE CAPACITY (LBS)	OIL STORAGE CAPACITY (GAL)	H	H2	L	W	W1	W2	EMPTY WEIGHT-LBS	GROSS WEIGHT-LBS
GOS-200	200	20	1080	52	4'-0"	3'-6"	4'-0"	2'-0"	1'-6"	6"	960	2,640
GOS-300	300	30	2160	52	4'-0"	3'-6"	4'-0"	3'-6"	3'-0"	6"	1,250	4,240
GOS-400	400	40	2520	52	4'-0"	3'-6"	4'-0"	4'-0"	3'-6"	6"	1,350	4,770
GOS-500	500	50	3240	59	4'-0"	3'-6"	4'-6"	4'-0"	3'-6"	6"	1,570	5,910
GOS-600	600	60	3600	65	4'-0"	3'-6"	5'-0"	4'-6"	4'-0"	6"	1,700	6,520
GOS-800	800	80	4680	85	4'-0"	3'-6"	6'-6"	4'-6"	4'-0"	6"	2,070	8,350
GOS-1000	1000	100	5760	104	4'-0"	3'-6"	8'-0"	4'-6"	4'-0"	6"	2,450	10,170

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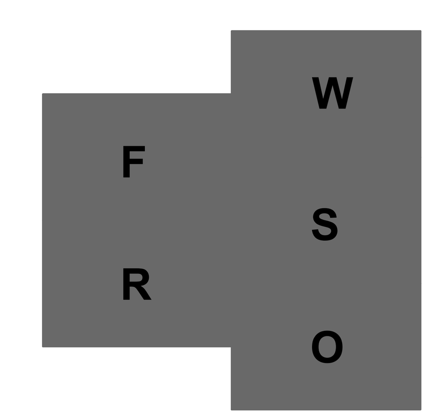

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REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

PROFESSIONAL SEALS
STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

SANITARY SEWER DETAILS

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CHECKED BY: JDM
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PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT
DATE: 07 OCT 2020
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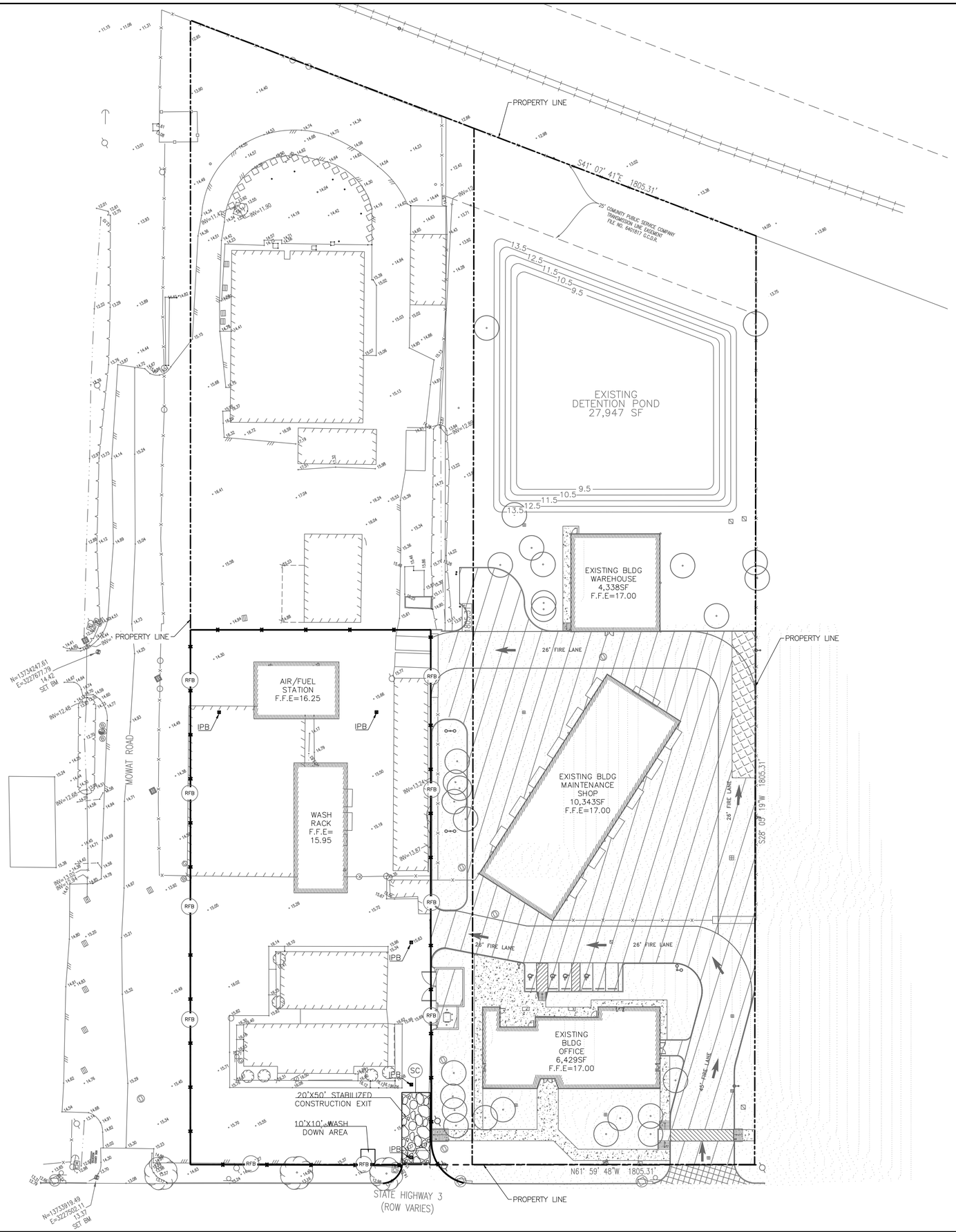
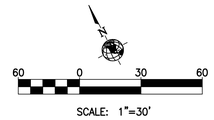
C12.0-PH2
SHEET NUMBER

FILE PATH File Path
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM





SWPPP LEGEND

- RFB — REINFORCED FILTER FABRIC BARRIER AT LEAST 2' BEHIND BACK OF CURB/PAVEMENT
- SC — STABILIZED CONSTRUCTION EXIT.
- INLET PROTECTION BARRIER (IPB).
- WASH DOWN AREA.

SWPPP CONSTRUCTION NOTES

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATION SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPPP) PLANS TO KEEP SILT AND /OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.

2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATED MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.

3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FROM THE EXCAVATED AREA.

4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

- DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
- AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
- STRUCTURAL CONTROL MEASURES.
- LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND/ OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING.
SLOPES 4:1 OR STEPPER SHALL BE REPLACED BY CLOCK SODDING.

CONCRETE TRUCK/EQUIPMENT WASH OUT

1. CONTRACTOR(S) SHALL NOT WASH OUT CONCRETE TRUCKS OR EQUIPMENT INTO STREET DEAD ENDS, RIGHT-OF-WAYS, GUTTERS, STORM SEWER INLETS, WATERWAYS, CREEKS OR ANY LOCATION WHERE THE MATERIALS COULD REACH THE STORM SEWER (MS4) SYSTEM. ROCKED CUL-DE-SACS ARE NOT APPROVED WASH OUT AREAS. ALL DEPOSITED MATERIALS SHALL BE REMOVED AND PROPERLY DISPOSED OF AT THE COMPLETION OF WORK.

2. WASH OUT CONCRETE TRUCKS AND/OR EQUIPMENT ONLY IN A DESIGNATED, CONFINED WASHOUT AREA WHERE THE WATER WILL FLOW INTO A TEMPORARY PIT IN A DIRT AREA OR ONTO STOCKPILES OF AGGREGATE BASE OR SAND. THIS AREA MUST BE AN IDENTIFIED LOCATION.

3. COLLECT AND RETURN SWEEPINGS FROM EXPOSED AGGREGATE CONCRETE TO A STOCKPILE OR DISPOSE OF THE WASTE IN A TRASH CONTAINER.

ONE- CALL NOTIFICATION SYSTM
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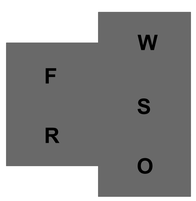
KEY PLAN (NOT TO SCALE)



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Dally & Associates
9800 Richmond Avenue
Suite 460
Houston, TX 77042
713 337 8881

Structural Engineering
Dally & Associates
9800 Richmond Avenue
Suite 460
Houston, TX 77042
713 337 8881

MEP Engineering
Page
1100 Louisiana
Suite One
Houston, TX 77002
713 871 8484

Low Voltage & Security
4b Technology Group, LLC
390 Glenborough Dr.
Suite 290
Houston, TX 77067
832 249 9379

Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities PH2

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

SWPPP PLAN

DRAWN BY	CHECKED BY
JDM	JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 07 OCT 2020

3

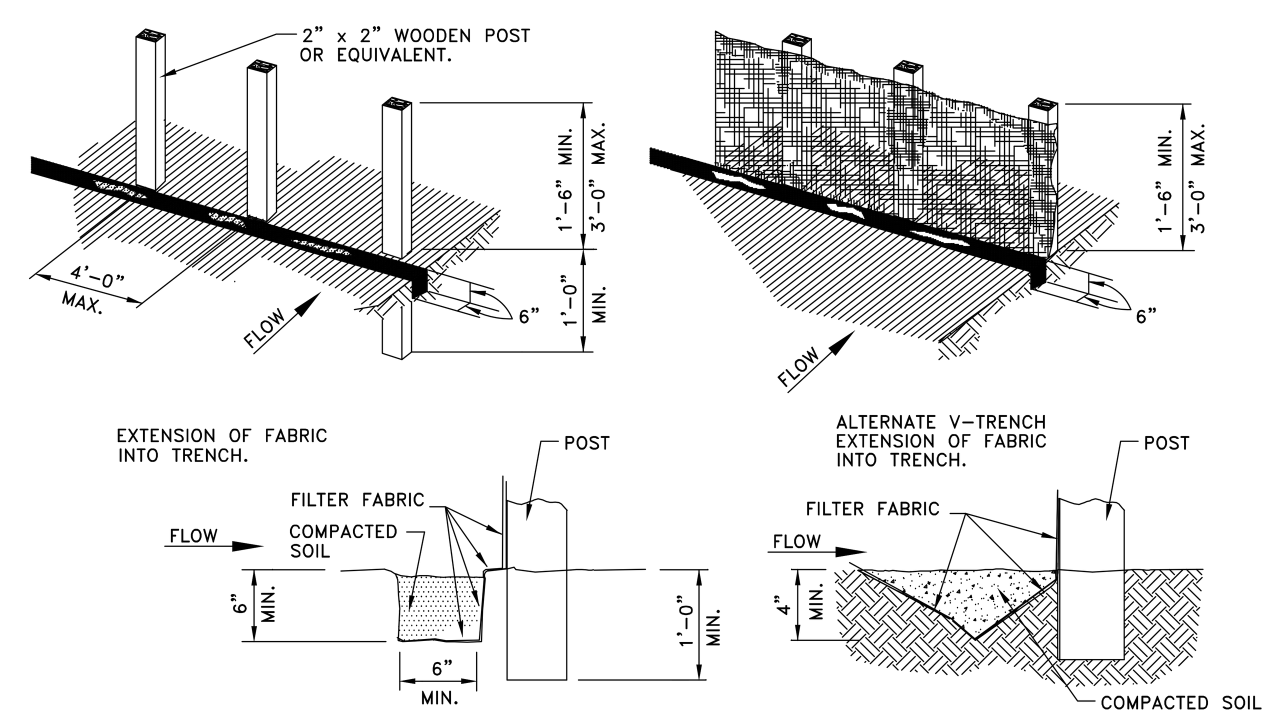
C13.0-PH2

SHEET NUMBER

FILE PATH: File Path
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM

1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE A 6" x 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.

2. ATTACH FILTER FABRIC TO POSTS AND INSTALL IT INTO THE TRENCH. BACKFILL THE TRENCH AND COMPACT THE EXCAVATED SOIL.

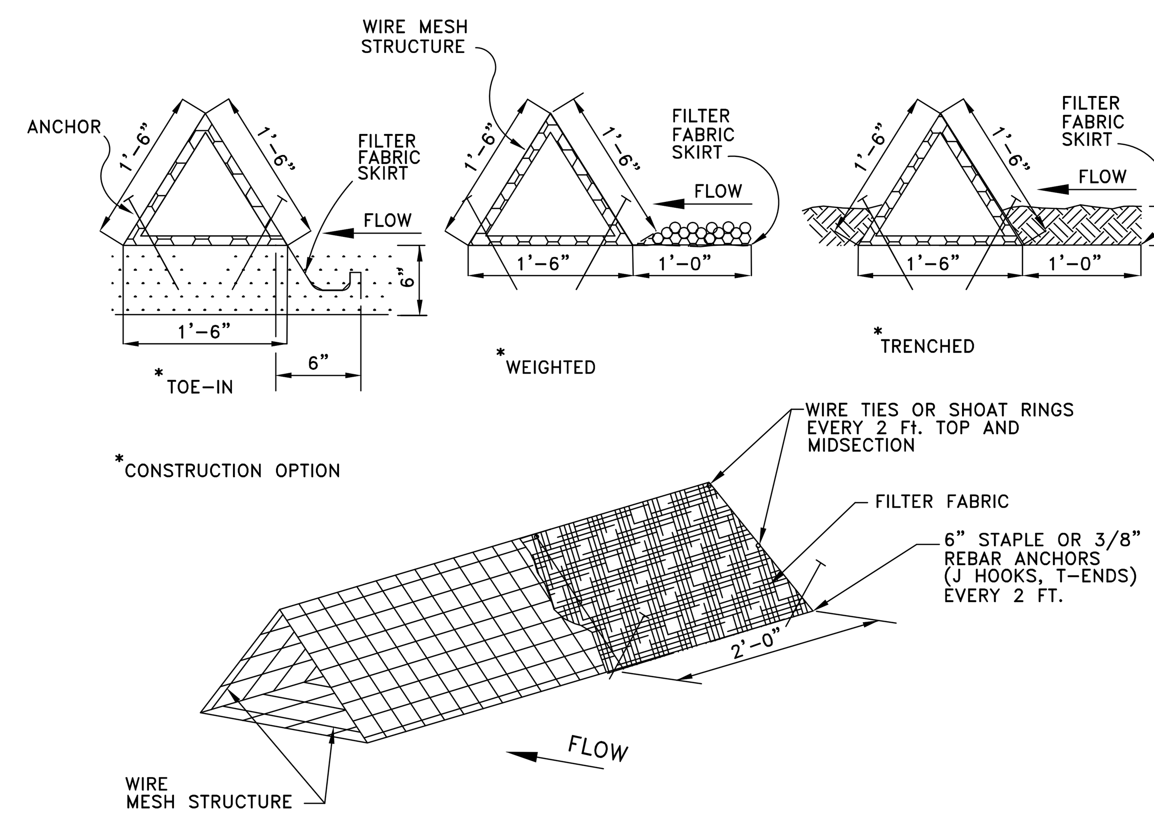


GENERAL NOTES:

1. SET POSTS AT 4-FEET MAXIMUM SPACING. IF FACTORY PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAXIMUM.
2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT THE POST, FOLD TOGETHER, AND ATTACH TO THE POSTS.
3. REMOVE SEDIMENT DEPOSITS WHEN SILT DEPTH REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE.

FILTER FABRIC FENCE

×▬ FF ▬×
SYMBOL

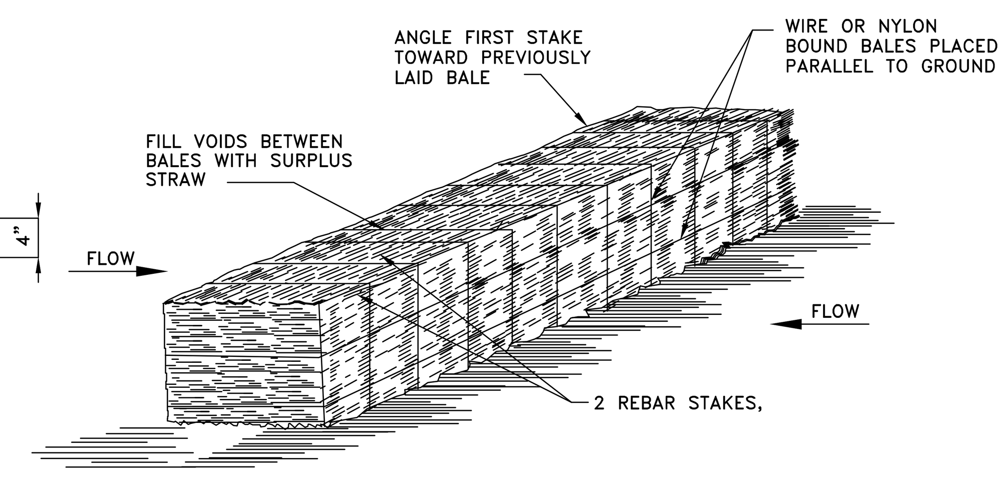


GENERAL NOTES:

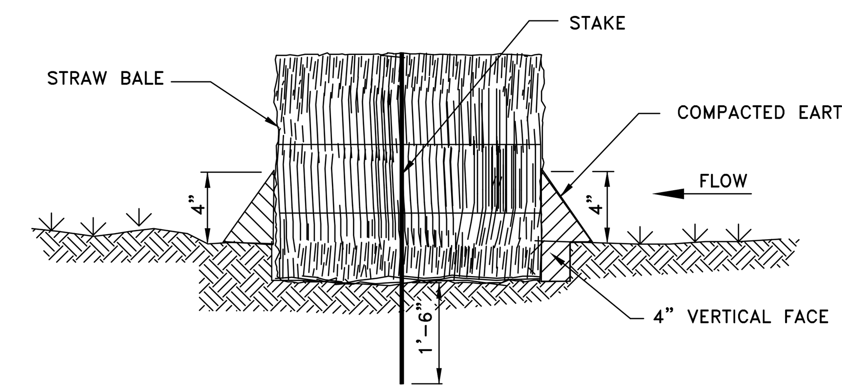
1. PLACE BARRIER IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BARRIER.
2. USING ONE CONTINUOUS SECTION OF FILTER FABRIC, WRAP FABRIC AROUND WIRE MESH AND EXTEND FABRIC TO FORM SKIRT ON THE UPSTREAM SIDE.
3. WEIGHT SKIRT WITH A CONTINUOUS LAYER OF 3-INCH TO 5-INCH OPEN GRADED ROCK, OR TOE IN SKIRT WITH SIX INCHES WITH MECHANICALLY COMPACTED MATERIAL.
4. SECURELY ANCHOR BARRIER AND SKIRT IN PLACE USING 6-INCH WIRE STAPLES ON 2-FOOT CENTERS ON BOTH EDGES, OR STAKE USING 18-INCH BY 3/8 INCH REBARS (T-ENDS, J-HOOKS).
5. FILTER FABRIC SHALL BE LAPPED OVER ENDS 6 INCHES TO COVER SEGMENT JOINTS. FASTEN JOINTS WITH GALVANIZED SHOAT RINGS OR EQUIVALENT.
6. THE BARRIER STRUCTURE SHALL BE WELDED WIRE MESH, 18 INCHES ON EACH SIDE.

TRIANGULAR FILTER FABRIC FENCE

×▬ TFF ▬×
SYMBOL



STRAW BALE FENCE



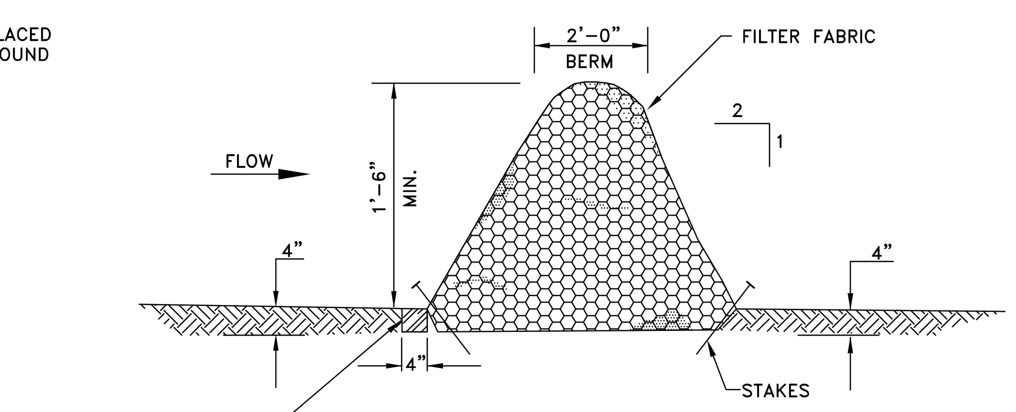
SECTION

GENERAL NOTES:

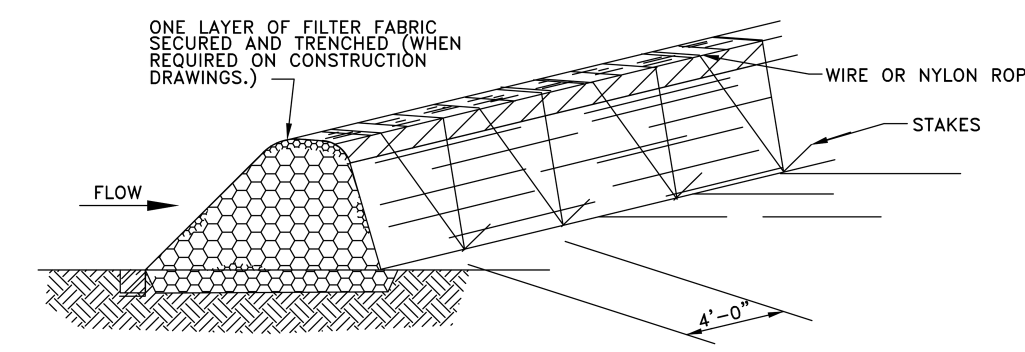
1. LIMIT USE TO ONSITE SWALES FOR PURPOSES OF LOW FLOW VELOCITY DISSIPATION FOR EROSION CONTROL. USE STRAW BALE FENCES TO TREAT OVERLAND FLOW ONLY. DO NOT USE STRAW BALE FENCES TO TREAT FLOW IN CHANNELS.
2. PLACE BALES IN A ROW WITH ENDS TIGHTLY ABUTTING ADJACENT BALES. FILL THE VOIDS BETWEEN BALES WITH SURPLUS STRAW. PLACE BALES WITH BINDING PARALLEL TO GROUND SURFACE.
3. IMBED EACH BALE AT LEAST 4 INCHES IN THE SOIL.
4. SECURELY ANCHOR BALES IN PLACE BY REBAR STAKES. DRIVE STAKES THROUGH THE BALES AND AT LEAST 18 INCHES INTO THE GROUND. ANGLE THE STAKE IN EACH BALE TOWARD THE PREVIOUS BALE TO FORCE THE BALES TOGETHER.
5. BIND BALES WITH WIRE OR NYLON ROPE TIED ACROSS THE STRAW BALES.
6. REPLACE WITH NEW STRAW BALE FENCE EVERY TWO MONTHS.
7. WATTLES STAKED INTO THE GROUND ARE A PREFERRED SUBSTITUTE FOR STRAW BALE FENCES.

STRAW BALE FENCE

×▬ SBF ▬×
SYMBOL



SECTION



GENERAL NOTES:

1. LIMIT USE TO ONSITE SWALES FOR PURPOSES OF LOW FLOW VELOCITY DISSIPATION FOR EROSION CONTROL. USE BRUSH BERMS TO TREAT OVERLAND FLOW ONLY. DO NOT USE BRUSH BERMS TO TREAT FLOW IN CHANNELS.
2. PLACE WOODY BRUSH AND BRANCHES HAVING A DIAMETER OF LESS THAN 2 INCHES WITH A 6-INCH OVERLAP. AVOID INCORPORATION OF ANNUAL WEEDS AND SOIL INTO BRUSH BERM.
3. MINIMUM HEIGHT OF THE BRUSH BERM IS 18 INCHES, MEASURED FROM THE TOP OF THE EXISTING GROUND AT THE UPSLOPE TOE TO THE TOP OF THE BERM.
4. HAND PLACE BRUSH BERMS ALONG CONTOUR LINES. MACHINE PLACEMENT OF BRUSH BERMS IS NOT PERMITTED.
5. IMBED BRUSH BERM AT LEAST 4 INCHES INTO THE SOIL.
6. ANCHOR BRUSH BERMS USING WIRE OR NYLON ROPE ACROSS THE BERM WITH A MINIMUM TENSION OF 50 POUNDS.
7. SECURELY TIE ROPE TO 18-INCH REBAR STAKES DRIVEN INTO THE GROUND ON 4-FOOT CENTERS ON BOTH SIDES OF THE BERM.
8. PERFORM MAINTENANCE AS NEEDED.

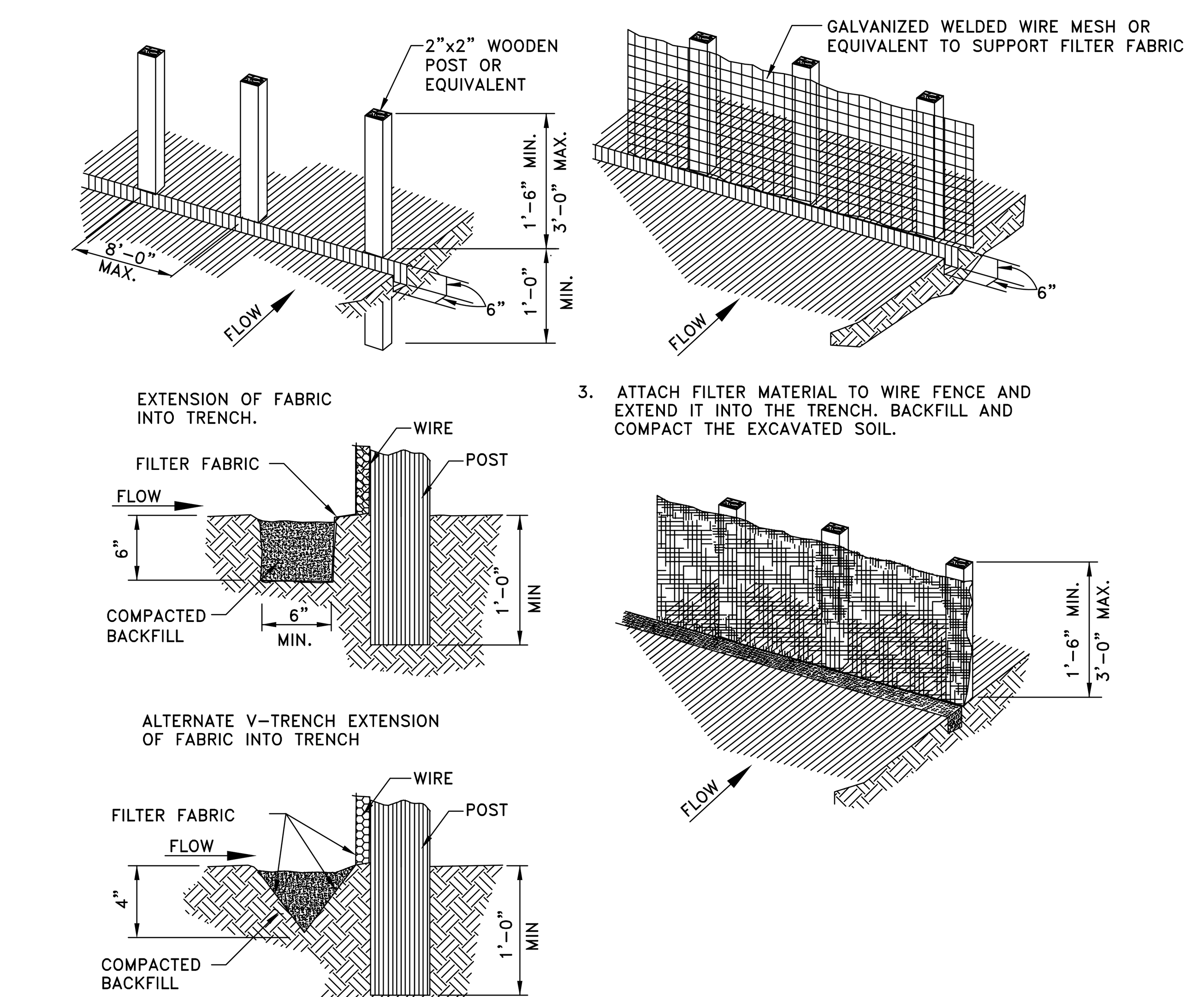
BRUSH BERM

×▬ BB ▬×
SYMBOL

1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE 6" x 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.

2. SECURE MESH FENCING TO POSTS

3. ATTACH FILTER MATERIAL TO WIRE FENCE AND EXTEND IT INTO THE TRENCH. BACKFILL AND COMPACT THE EXCAVATED SOIL.

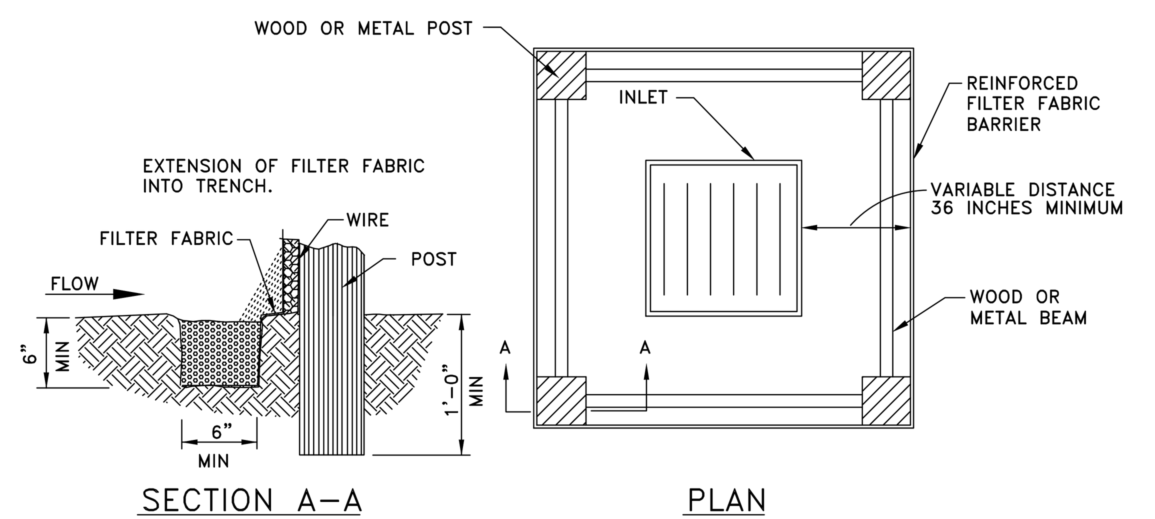


GENERAL NOTES:

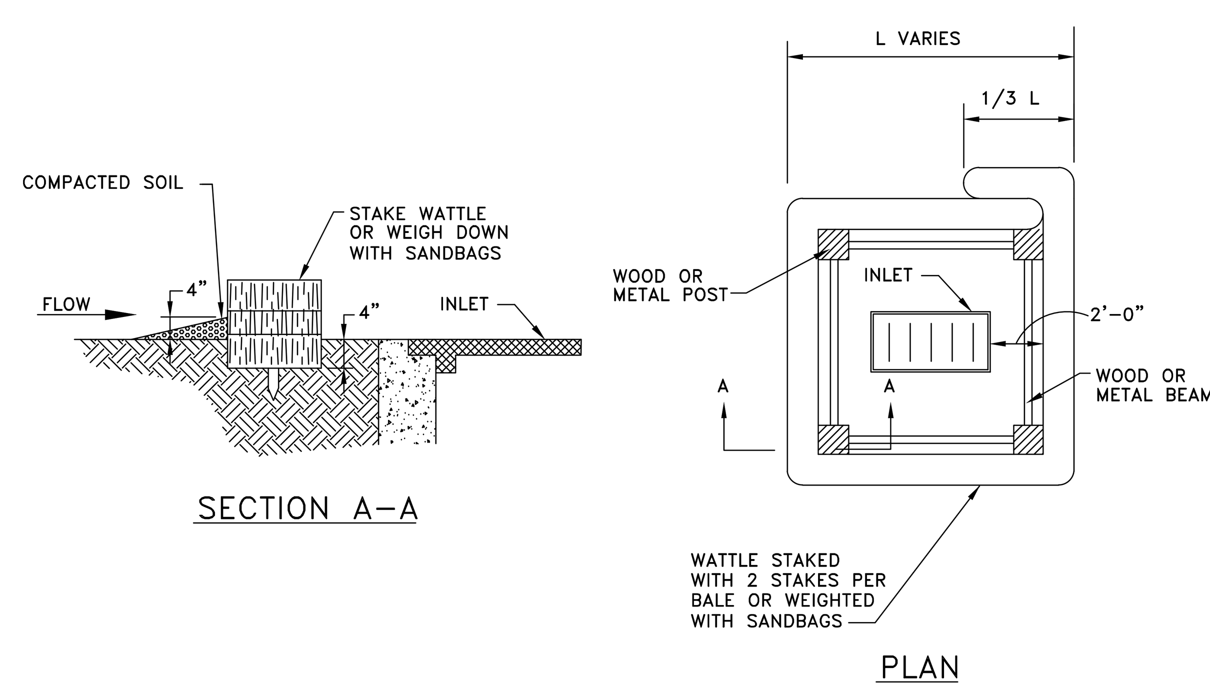
1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.

REINFORCED FILTER FABRIC BARRIER

×▬ RFB ▬ ×
SYMBOL



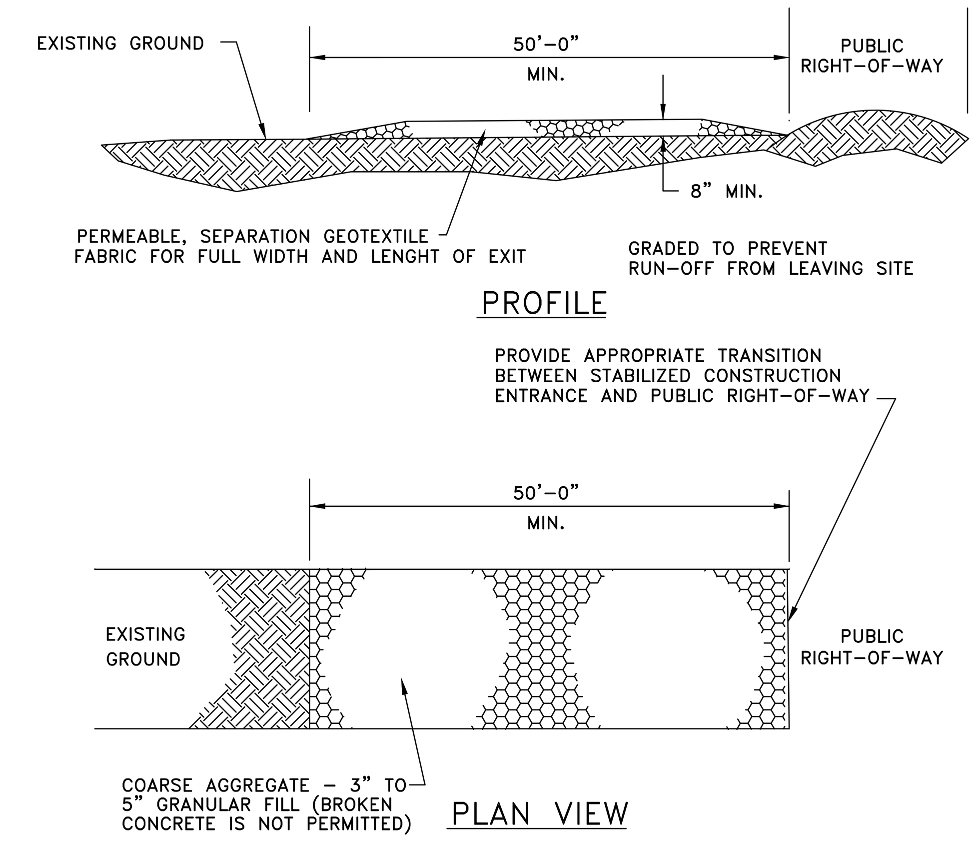
SEE REINFORCED FILTER FABRIC BARRIER DETAIL FOR REINFORCED FILTER FABRIC BARRIER REQUIREMENTS



NOTE:
TYPICALLY STRAW BALES ARE NOT RECOMMENDED FOR INLET PROTECTION BARRIERS.

INLET PROTECTION BARRIERS FOR STAGE I INLETS

IPB
SYMBOL

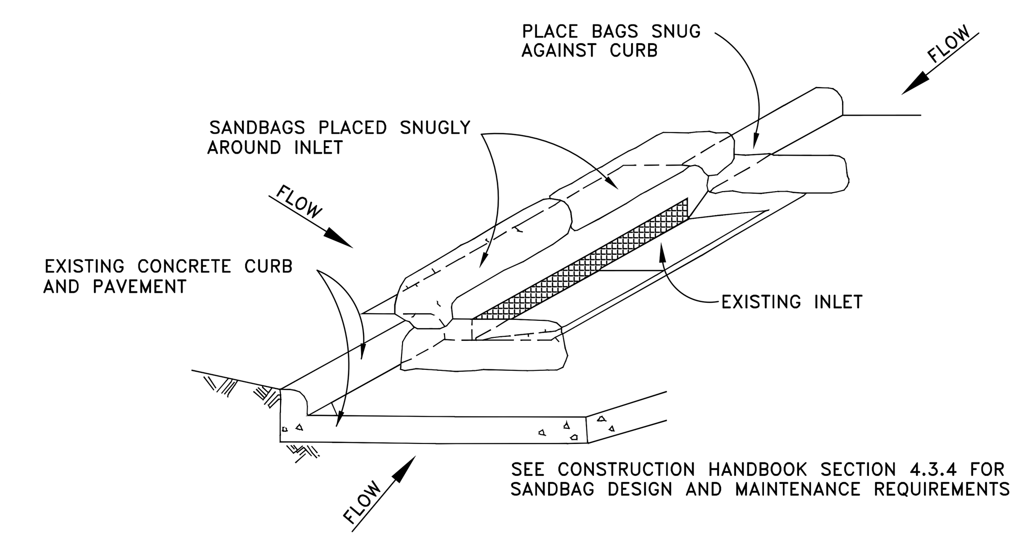


GENERAL NOTES:

1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
7. ALTERNATIVE METHODS OF CONSTRUCTION INCLUDE
-CEMENT STABILIZED SOIL: COMPACTED CEMENT STABILIZED SOIL, LIMESTONE AGGREGATE, OR OTHER FILL MATERIAL IN AN APPLICATION OF THICKNESS OF 8 INCHES.
-WOOD MATS: OAK OR OTHER HARDWOOD TIMBERS PLACED EDGE TO EDGE AND ACROSS SUPPORT WOODEN BEAMS WHICH ARE PLACED ON TOP OF EXISTING SOIL IN AN APPLICATION THICKNESS OF 6 INCHES.
-STEEL MATS: PERFORATED MATS PLACED ACROSS PERPENDICULAR SUPPORT MEMBERS.

STABILIZED CONSTRUCTION ACCESS

SC
SYMBOL



SEE CONSTRUCTION HANDBOOK SECTION 4.3.4 FOR SANDBAG DESIGN AND MAINTENANCE REQUIREMENTS

GENERAL NOTES:

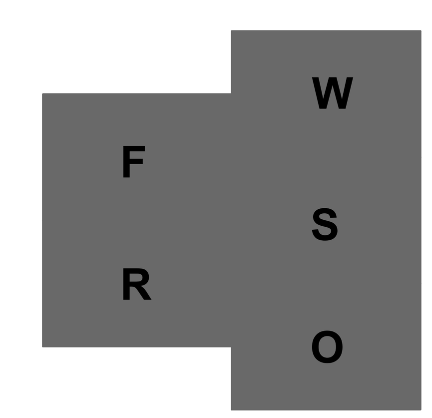
1. BAGS OR WATTLES CAN BE USED FOR THIS APPLICATION.
2. PROVIDE WOVEN OR UNWOVEN GEOTEXTILE FILTER FABRIC FOR BAGS.
3. PROVIDE COARSE SAND AND AGGREGATE MIX FOR FILL MATERIAL FOR BAGS. USE ONLY PARTICLES CONSISTING OF CLEAN, HARD, DURABLE MATERIALS FREE FROM ADHERENT COATINGS, SALT, ALKALI, DIRT, CLAY, LOAM, SHALE, SOFT OR FLAKY MATERIALS, OR ORGANIC AND INJURIOUS MATTER.
4. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.

INLET PROTECTION BARRIERS FOR STAGE II INLETS

IPB
SYMBOL

ONE- CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223-4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1-800-545-6005

KEY PLAN (NOT TO SCALE)



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Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

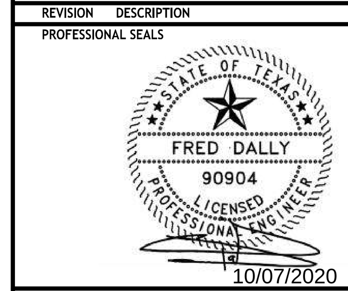
Galveston County Road & Bridge Department Facilities PH2

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO. 3	10-07-2020

PROFESSIONAL SEALS



SWPPP DETAILS

DRAWN BY	CHECKED BY
JDM	JDM
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	07 OCT 2020

3
C14.0-PH2
SHEET NUMBER

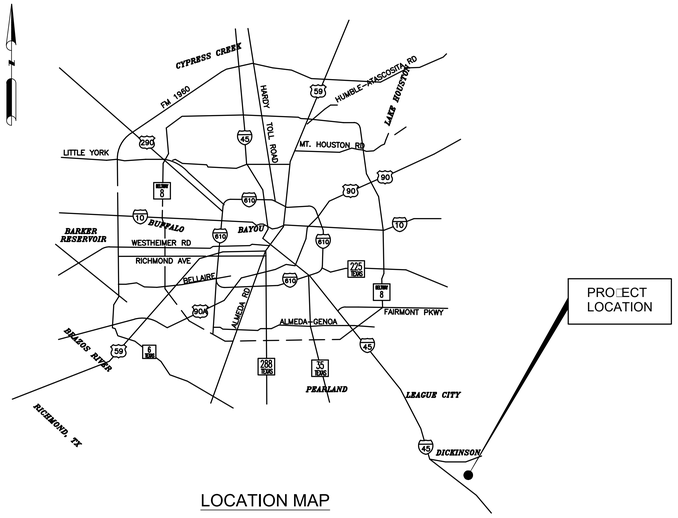
FILE PATH File Path
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM

GALVESTON COUNTY
ROAD & BRIDGE DEPARTMENT FACILITIES - PHASE 3

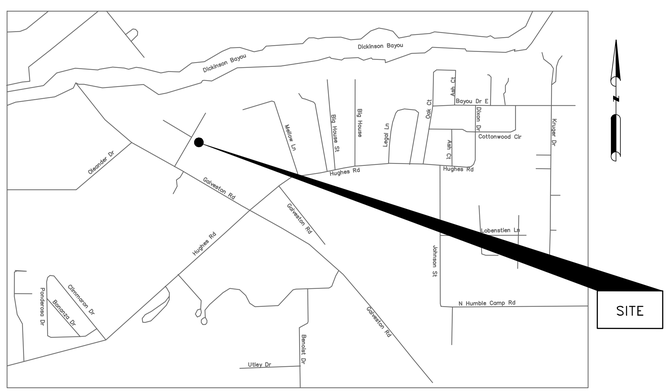
5115 TX- 3
DICKINSON, TX 77539

ISSUE FOR PERMIT

3 ADDENDUM NO.3 10/07/2020



LOCATION MAP



VICINITY MAP
N.T.S.
KEY MAP: 190-A

CIVIL ENGINEER:

DALLY ASSOCIATES, INC.
TBPE FIRM REGISTRATION 3426

9800 RICHMOND AVENUE, SUITE 460
HOUSTON, TX 77042
(713) 337 8881
www.dallyassociates.com

Project Manager: Jose Diego Monroy, CFM
Project Engineer: Fred Dally, P.E.

OCTOBER 07, 2020

CIVIL SHEET INDEX

SHEET	SHEET NAME
C1.0-PH3	COVER SHEET
C2.0-PH3	TOPOGRAPHIC SURVEY
C3.0-PH3	DEMOLITION PLAN
C4.0-PH3	PAVING PLAN
C5.0-PH3	LAYOUT PLAN
C6.0-PH3	GRADING PLAN
C7.0-PH3	GENERAL NOTES
C8.0-PH3	PAVEMENT DETAILS
C9.0-PH3	SWPP PLAN
C10.0-PH3	SWPPP DETAILS

3 3 3

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GALVESTON COUNTY
ROAD & BRIDGE
DEPARTMENT FACILITIES PH3
5115 TX-3
DICKINSON, TX 77539

COVER SHEET

TBPE FIRM REGISTRATION #3426

DRAWING SCALE

DESIGNED BY: JDM
CHECKED BY: JDM
DATE:10/07/2020

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

3 C1.0-PH3

NO.	DATE	Revisions	App.
3	10/07/20	ADDENDUM NO.3	FD

GENERAL NOTES:

1. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Galveston County, Texas, Map No. 485470095 C dated May 2, 1983 This properties lies within Zone "C" of the flood insurance rate map and does not lies within a special flood hazard area.

   This flood statement does not imply that the property or structures thereon will be free from flooding or flood damage. On rare occasions floods can and will occur and flood heights may be increased by man–made or natural causes. The location of the flood zone was determined by scaling from said FEMA map. The actual location, as determined by elevation contours, may differ. Intertek Surveying & Services assumes no liability as to the accuracy of the location of the flood zone limits. This flood statement shall not create liability on the part of KM Surveying, LLC.

2. This survey has been prepared for the sole purpose of the transaction described in the above mentioned Commitment for Title Insurance and the parties listed thereon. This survey is not to be used for any subsequent transactions.

3. This survey does not determine the location of wetlands, fault lines, toxic waste, cemeteries, landfills, dumps or any other environmental issues.

4. Intertek Surveying & Services has not been provided with construction plans showing the location of underground utilities. Underground utilities may exist which are not shown hereon.

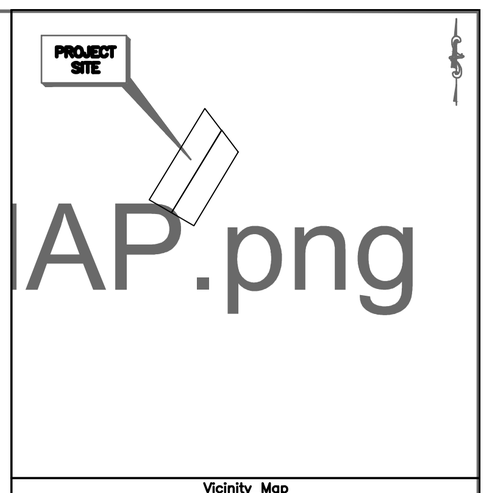
5. Readily visible improvements/utilities were located with this survey, no subsurface probing, excavation or exploration was performed Intertek Surveying & Services.

6. This exhibit has been prepared without benefits of current title report. There may be easements, setbacks, and other matters of record not shown hereon, the surveyor has not abstract the property.

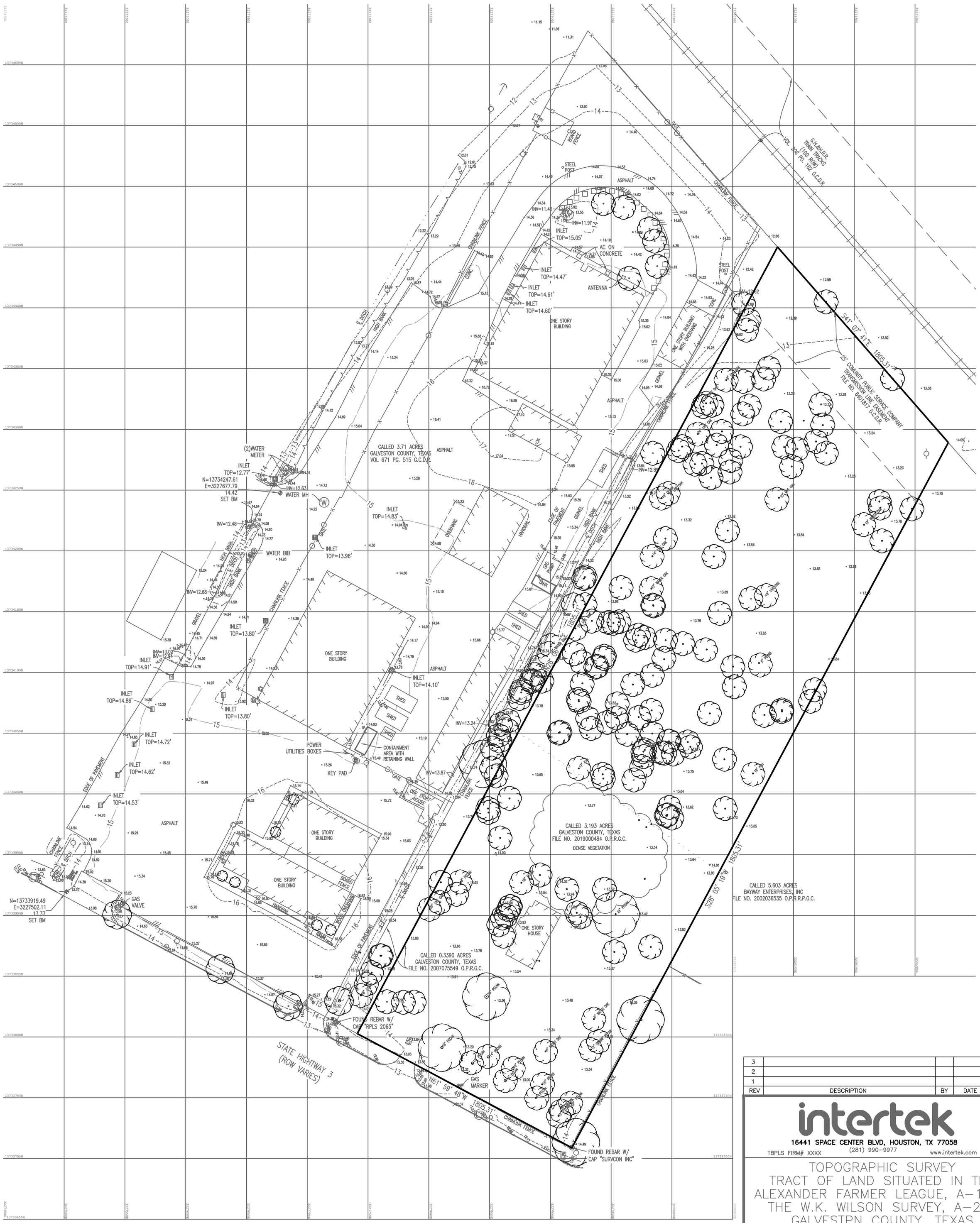
7. Reference is made to a Survey of a 3.193–acre (139,093 sq. ft.) Tract situated in the Alexander Farmer League, A–11 and The W.K Wilson Survey, A–208 Galveston County, Texas. dated 12/12/2018. Prepared by Weisser Engineering Co. Job. No. GD404 and in the field book 3510.

LEGEND:
- BOLLARD
- BENCHMARK
- INLET
- SMALL INLET
- GAS MARKER
- GAS METER
- GAS VALVE
- GUY/ANCHOR
- STORM MANHOLE
- SIGN
- POWER POLE
- WATER MH
- WATER METER
- DECIDUOUS TREE

0 20 40 80



Vicinity Map
N.T.S.



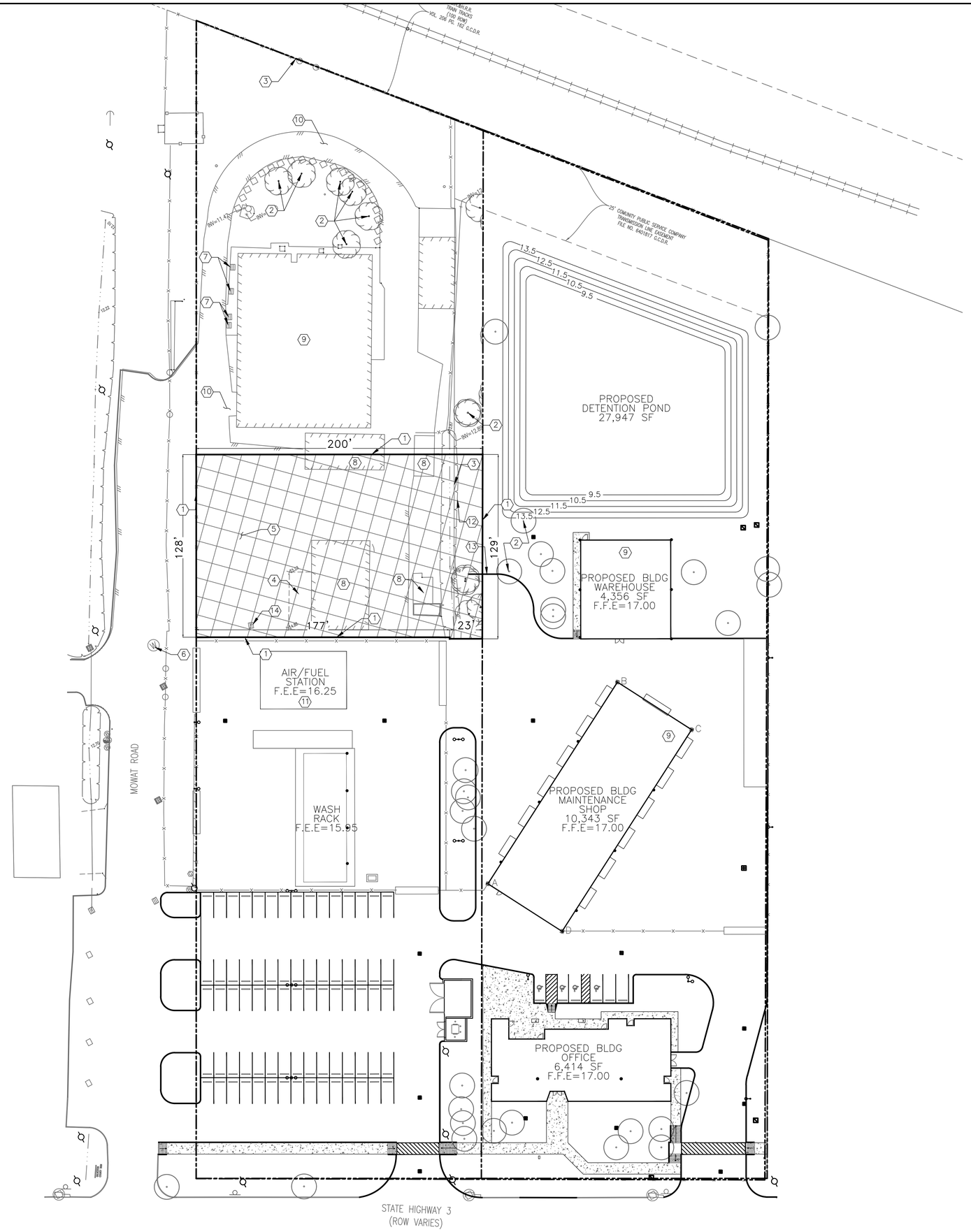
REV	DESCRIPTION	BY	DATE
3			
2			
1			

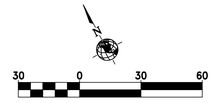
intertek
16441 SPACE CENTER BLVD, HOUSTON, TX 77058
TBPLS FIRM# XXXX (281) 990–9977 www.intertek.com

TOPOGRAPHIC SURVEY
TRACT OF LAND SITUATED IN THE ALEXANDER FARMER LEAGUE, A–11 & THE W.K. WILSON SURVEY, A–205 GALVESTPN COUNTY, TEXAS

DATE: November 8, 2019	SURVEYED: MR DRAWN: MR	JOB NO.: 19113 SCALE: 1"= 40'
DWG.: psi – iss – 19113 topo 07172019 trees (1).dwg	CHECKED: KW	SHEET NO.: 1 OF 1

3 C2.0-PH3





SCALE: 1"=30'

DEMOLITION NOTES TO CONTRACTOR

1. ALL ITEMS DESIGNATED TO BE REMOVE SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
2. THE CONTRACTOR AND OWNER SHALL COORDINATE WITH CENTERPOINT FOR TERMINATION OF POWER AND GAS SERVICES TO THE SITE OR NEW SERVICES. THIS WORK WILL BE PROVIDED BY CENTERPOINT AND SHALL BE SCHEDULE AS ONE OF THE FIRST ITEMS OF BUSINESS.
3. THE CONTRACTOR SHALL BE PROVIDE AN APPROVED TRAFFIC CONTROL PLAN TO PERFORM ANY WORK PROPER SIGNAGE.
4. WHEN EXISTING SIDEWALK IS CLOSED FOR CONSTRUCTION, CONTRACTOR SHALL BARRICADE THAT AREA AND PROVIDE SAFE ALTERNATE PATH FOR PEDESTRIAN WITH PROPER SIGNAGE.
5. ALL TRAFFIC SIGNAGE WITHIN THE ROW SHALL BE PROTECTED INPLACE AT ALL TIMES. ANY DAMAGE TO THEN SHALL BE REPAIRED IMMEDIATELY. DURING THE CONSTRUCTION, SAFE OPERATION OF PEDESTRIAN OR VEHICULAR TRAFFIC, CONTRACTOR SHALL PROVIDE A CERTIFIED FLAGGER OR PEACE OFFICER UNTIL THAT SIGN IS RESTORED TO EXISTING CONDITION.
6. CONTRACTOR SHALL REPAIR ANY ITEMS DAMAGE DURING CONSTRUCTION TO ITS EXISTING CONDITION.
7. PRIOR TO ANY DEMOLITION WORK, THE CONTRACTOR SHALL LOCATED AS WELL CAPPED. ALL UTILITIES THAT ARE SHOWN SHALL BE LOCATED AS WELL AND CAPPED. ALL UTILITIES NOT SHOW SHALL BE LOCATED AS WELL CAPPED. UTILITIES THAT ARE SHOWN ON PLANS ARE APPROXIMATE LOCATION ONLY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE ON SITE DURING ALL CONSTRUCTION ACTIVITIES.
9. THE CONTRACTOR SHALL ENTER & EXIT THE SITE THROUGH EXISTING DRIVEWAY.
10. CAUTION. THERE ARE OVERHEAD POWERLINES WITH IN THE WORK AREA. CONTRACTOR SHALL FOLLOW CITY, STATE AND FEDERAL GUIDELINES WHEN WORKING AROUND EXISTING POWER LINES.

DEMOLITION KEY NOTES

1. LIMITS OF DEMOLITION.
2. EXISTING TREE TO REMAIN. PROTECT IN-PLACE.
3. EXISTING CHAINLINK FENCE TO BE REMOVED.
4. EXISTING CONCRETE PAVEMENT TO BE REMOVED.
5. EXISTING ASPHALT PAVEMENT TO BE REMOVED.
6. EXISTING SANITAY SEWER MANHOLE TO REMAIN. PROTECT IN-PLACE.
7. EXISTING STORM DRAIN INLET TO REMAIN. PROTECT IN-PLACE.
8. EXISTING BUILDING TO BE REMOVED.
9. EXISTING BUILDING TO REMAIN.
10. EXISTING ASPHALT PAVEMENT TO REMAIN. PROTECT IN-PLACE.
11. EXISTING AIR/FUEL STATION TO REMAIN. PROTECT IN-PLACE.
12. EXISTING DITCH TO BE REMOVED.
13. EXISTING CURB TO REMAIN. PROTECT IN-PLACE.
14. EXISTING STORM DRAIN INLET TO BE REMOVED.

DEMOLITION HATCH LEGEND

LIMITS OF DEMOLITION.

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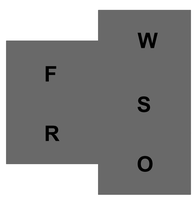

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5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

3	ADDENDUM NO.3	10-07-2020

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

DEMOLITION PLAN

DRAWN BY JDM	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

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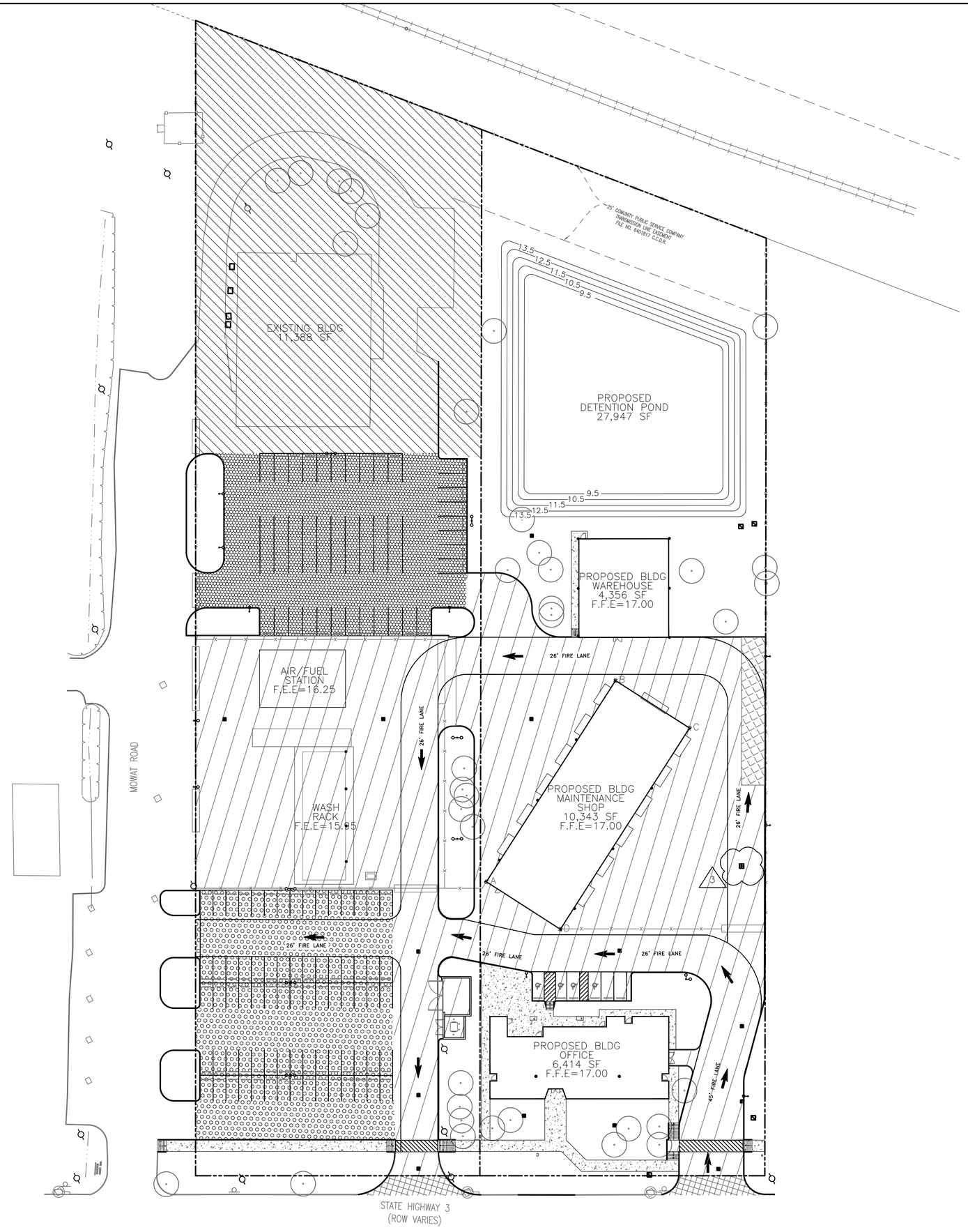
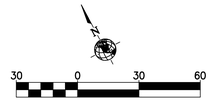




SCALE: 1"=30'

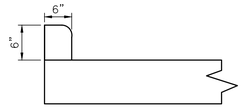
HATCH LEGEND:

- PROPOSED TRUE–GRID PRO PLUS APPROX: 21,221 SQFT
- EXISITNG 4.5" THICK CONCRETE FOR SIDEWALK APPROX: 7,123 SQFT RE: C–9.0 PAVEMENT DETAILS
- EXISTING 6" THICK CONCRETE FOR DRIVEWAY APPROX: 1,444 SQFT RE: C–9.0 PAVEMENT DETAILS
- 6" TALL CURB REF. SECTION
- EXISTING TRUE–GRID PRO PLUS APPROX: 23,865 SQFT
- 6" THICK CONCRETE PAVING APPROX: 30,938 SQFT RE: C–9.0 PAVEMENT DETAILS
- EXISTING PAVEMENT APPROX: 46,728 SQFT
- 7" THICK CONCRETE PAVING APPROX: 1,699 SQFT RE: C–9.0 PAVEMENT DETAILS

LEGEND:

- PROPOSED SAWCUTTING JOINT
- PROPOSED EXPANSION JOINT
- AREA NOT IN SCOPE

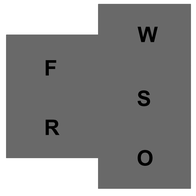
*NOTE: SEE PAVING DETAILS FOR JOINT SECTIONS



6" CONCRETE CURB APPROX: 546 LF

ONE– CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223–4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1–800–545–6005

KEY PLAN (NOT TO SCALE)



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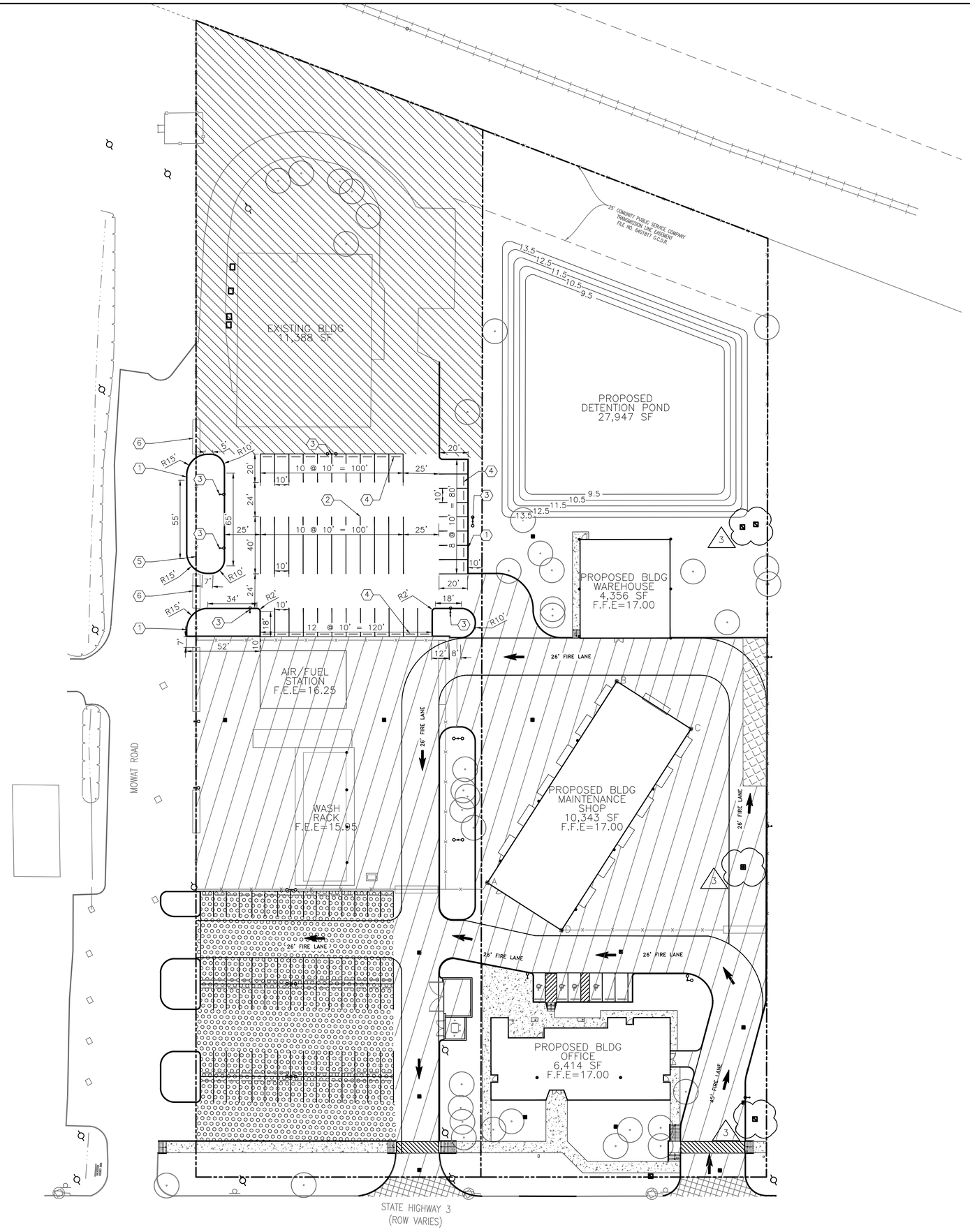

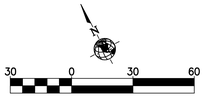

SITE LAYOUT NOTES

1. THE HORIZONTAL AND VERTICAL LOCATION OF EXISTING SUBSURFACE UTILITIES HAVE BEEN DETERMINED FROM DATA PROVIDED BY OTHERS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING UTILITIES WITHIN THE AREA OF CONSTRUCTION THAT ARE TO REMAIN IN SERVICE. CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL DIMENSIONS ARE FROM FACE OF CURB UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS ARE TO FACE OF BUILDING. REFER TO ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS.
4. REFER TO ARCHITECTURAL PLANS FOR ALL STAIRS, HANDICAPPED RAMP AND RETAINING WALL DETAILS.
5. REFER TO LANDSCAPE ARCHITECT PLANS FOR DETAILS AND DIMENSIONS OF LANDSCAPE AND HARDSCAPE AREAS.

LAYOUT KEY NOTES

1. PROPOSED 6" CONCRETE CURB PER PAVEMENT DETAILS.
2. PROPOSED 4" YELLOW STRIPING PER PAVEMENT DETAILS TYP.
3. PROPOSED LIGHT POLE; REFER TO MEP DRAWINGS FOR LAYOUT AND SPECIFICATIONS.
4. PROPOSED WHEEL STOP.
5. PROPOSED CHAIN – LINK FENCE
6. PROPOSED GATE BY OTHERS.

HATCH LEGEND

AREA NOT IN SCOPE

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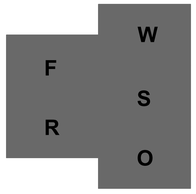

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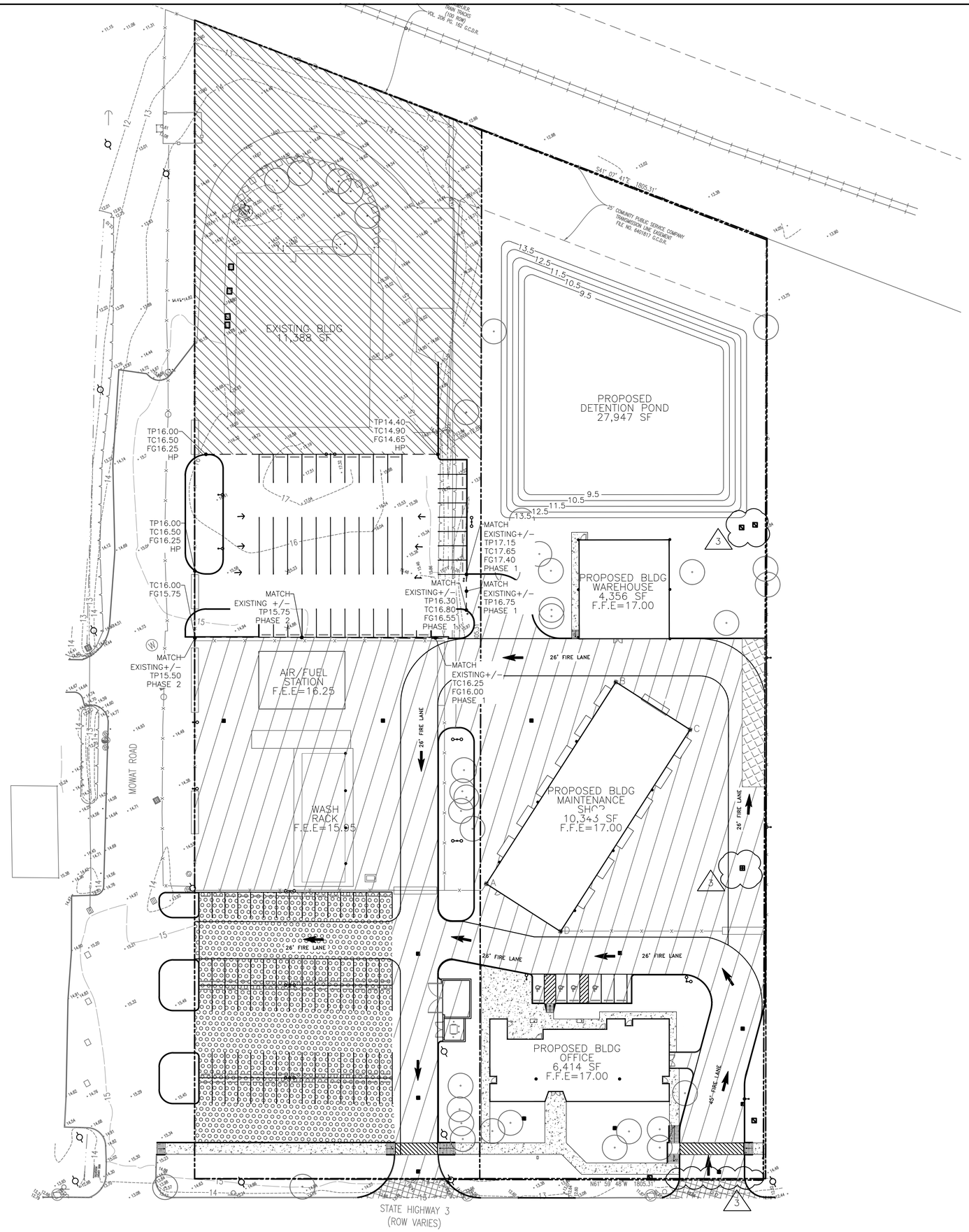

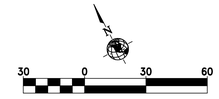

GRADING PLAN NOTES

1. REFER TO GEOTECHNICAL REPORT FOR ALL COMPACTION AND MOISTURE CONTENT REQUIREMENTS.
2. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL MANHOLES, CLEANOUTS, VALVE BOXES, FIRE HYDRANTS, ECT. WITHIN THE AREA OF CONSTRUCTION THAT ARE TO REMAIN. THEY MUST BE ADJUSTED TO PROPER LINE AND GRADE BY THE CONTRACTOR PRIOR TO AND AFTER THE PLACING OF PAVING AND GRADING. AT NO ADDITIONAL COST TO THE OWNER.
3.
4. ALL INLETS AND MANHOLES SHALL MEET THE REQUIREMENTS OF THE LOCAL GOVERNING AGENCY.
5. SIDEWALKS SHALL HAVE A SLOPE NO GRATER THAN 5% AND A CROSS SLOPE NOT GRATER THAN 2%, UNLESS OTHERWISE.

ABBREVIATIONS

TW TOP OF WALL

TP TOP OF PAVEMENT ELEVATION

TC TOP OF CURB ELEVATION

TG TOP OF GRATE ELEVATION (STORM DRAIN INLET)

FG FINISHED GRADE ELEVATION

FFE FINISHED FLOOR ELEVATION

BFE BASE FLOOD ELEVATION

FL FLOWLINE ELEVATION

HATCH LEGEND

CONSTRUCT 5" CONCRETE SIDEWALK OVER COMPACTED SUB-GRADE PER GEOTECHNICAL. ENGINEER'S RECOMMENDATIONS

AREA NOT IN SCOPE

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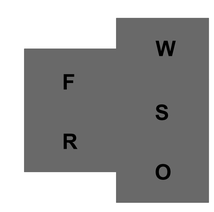

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A. GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REQUIRED SECURITY TO PROTECT HIS OWN PROPERTY, EQUIPMENT AND WORK IN PROGRESS.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING OF STREETS CAUSED BY ASSOCIATED CONSTRUCTION AT CLOSE OF EACH WORK DAY.
4. PAVED SURFACES SHALL BE PROTECTED FROM DAMAGE BY TRACKED EQUIPMENT.
5. CONTRACTOR WILL PAY ALL COST TO REPLACE IRON RODS OR OTHER LAND BOUNDARY MARKERS DISTURBED DURING CONSTRUCTION. A REGISTERED LAND SURVEYOR WILL BE USED TO RESET DISTURBED BOUNDARY MARKERS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AN UPDATE REDLINED "RECORD" SET OF CONSTRUCTION DRAWINGS ON SITE FOR INSPECTION BY THE ENGINEER.
7. CONTRACTOR SHALL PROVIDE ORANGE FENCING OR BARRICADES TO PROTECT PEDESTRIANS FROM ENTERING WORK AREAS.
8. CONTRACTOR MUST PROVIDE FENCING AROUND OPEN EXCAVATIONS AREA AT ALL TIMES.
9. REFER TO THE SWPPP GENERAL NOTES FOR PROPER MEASURES AND CONTROLS.

B. PAVEMENT

1. EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGE OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO ORIGINAL CONDITION OR BETTER, IN ACCORDANCE WITH THE GOVERNMENT AGENCY HAVING JURISDICTION.
2. THE SUBGRADE SHALL BE BROUGHT TO THE LINES AND GRADES AS SHOWN ON THE DRAWINGS.
3. WHENEVER UNSUITABLE MATERIAL IS ENCOUNTERED AND CANNOT BE HANDLED BY THE EXCAVATION OR EMBANKMENT REQUIREMENTS, THEN THE UNSUITABLE MATERIAL SHALL BE EXCAVATED TO A DEPTH DEEMED SUFFICIENT BY THE ENGINEER AND THE EXCAVATED MATERIAL SHALL BE DISPOSED OF OFF THE JOB SITE. THE EXCAVATED AREA SHALL BE FILLED WITH SELECT FILL PER STANDARDS OF THE GOVERNMENT AGENCY HAVING JURISDICTION.
4. SURPLUS EXCAVATED EARTHEN MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED AND DISPOSED OF OFF-SITE. INCLUDE COST OF REMOVAL AND DISPOSAL IN OTHER ITEMS OF WHICH THIS WORK IS A COMPONENT PART. NO SEPARATE PAY. THE MATERIAL MUST BE DISPOSED OF IN A SAFE AND LEGAL MANNER.
5. EXISTING WATER VALVES AND MANHOLES SHALL BE ADJUSTED, AS NECESSARY TO MATCH TOP OF PROPOSED PAVEMENT ELEVATION.

C. SANITARY SEWER, STORM SEWER & DRAINAGE

1. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
2. ANY CURB DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER OR OWNING AUTHORITY.
3. CONTRACTOR'S ACTIVITIES SHALL HAVE NO EFFECT TO FLOWS TO AND FROM OFF SITE AREAS EXISTING SHEET DRAINAGE SHALL NOT BE IMPEDED BY PROPOSED CONSTRUCTION.
4. WHERE MANHOLES ARE LOCATED WITHIN PAVED AREAS, CONTRACTOR SHALL SET RIM ELEVATIONS TO MATCH FINISHED GRADE ELEVATIONS. OUTSIDE OF PAVED AREAS, SET MANHOLE RIMS 3 INCHES (MINIMUM) TO 6 INCHES (MAXIMUM) ABOVE FINISHED GRADE. ADD SLOPE FILL AROUND MANHOLES, SLOPED AWAY AND DOWN FROM MANHOLE RING.
5. NO DUMPING OF EXCAVATION MATERIALS WILL BE ALLOWED ON PAVED AREAS. CONTRACTOR MUST DETERMINE A LOCATION TO TEMPORARILY STOCKPILE STORM SEWER EXCAVATION TO BE USED AS BACK FILL, AS APPROVED.
6. THE CONTRACTOR SHALL USE HDPE PLASTIC PIPE OR RCP PIPE AS SHOWN ON PLANS.

D. STANDARD NOTES FOR CONSTRUCTION DRAWINGS:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING BACKSLOPE DRAINAGE SYSTEMS.
2. ALL DISTURBED AREAS WITHIN THE SUBDIVISION, EXCEPT THE CHANNEL BOTTOM, SHALL BE FERTILIZED SEEDED.
3. ALL BACKFILL SHALL BE STRICTLY ACCORDING TO DETAILS, SPECIFICATION OR GEOTECHNICAL RECOMMENDATIONS, AS APPROVED BY ENGINEER.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING CHANNEL FLOWLINE TO DESIGN ELEVATIONS AS SHOWN ON PLANS AND DOWNSTREAM AS NECESSARY TO ENSURE NO WATER IN STORM SEWER DURING "DRY" CONDITIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORING CHANNEL TO ORIGINAL CONDITION.

E. UTILITIES

1. CENTERPOINT ENERGY

WARNING: OVERHEAD ELECTRICAL FACILITIES

A. OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE HAVE ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATED THEM PRIOR TO BEGINING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE, FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANCE FOR LINES TO BE TURNED OF OR REMOVED, CALL CENTERPOINT ENERGY, AT (713) 207-7777.

CAUTION: UNDERGROUND GAS FACILITIES

A. LOCATIONS OF CENTERPOINT ENERGY MAIN LINES, (TO INCLUDE GAS TRANSMISSION, AND/OR INDUSTRIAL GAS SUPPLY CORP. WHERE APPLICABLE), ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567 OR 1-800-669-8344 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

B. WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713)-967-8037 FROM 7:00 AM TO 4:30 PM FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.

C. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.

D. WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.

E. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

F. OTHER:

1. LOCATION OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON PLANS IS NOT GUARANTEED TO BE COMPLETE OR DEFINITE. THE APPROXIMATE LOCATIONS OF KNOWN EXISTING UTILITIES ARE SHOWN. CONTRACTOR SHALL DETERMINE THE EXACT SIZE AND HORIZONTAL AND VERTICAL LOCATIONS IN THE FIELD. THE CONTRACTOR SHALL NOTIFY ALL OF THE PROPER GOVERNING AUTHORITIES, (STATE, COUNTY OR CITY) AT LEAST 48 HOURS PRIOR TO COMMENCING WORK.
2. ANY PERMANENT RELOCATION OF AN EXISTING UTILITY NOT SHOWN ON THE DRAWINGS SHALL BE APPROVED BY THE ENGINEER PRIOR TO RELOCATION AND SHALL CONFORM TO THE APPLICABLE STANDARDS OF GOVERNING AUTHORITIES.
3. CONTRACTOR SHALL PROTECT EXISTING UNDERGROUND FACILITIES DURING INSTALLATION OF PROPOSED WORK.
4. IN THE EVENT THAT ANY CONTAMINATED MATERIALS OF SUSPECT CONTAMINATED MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL CEASE OPERATIONS IN THAT AREA AND IMMEDIATELY NOTIFY THE ENGINEER.
5. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
6. ALL PAVEMENT SHALL CONFORM WITH THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
7. ALL STORM SEWERS SHALL BE CONSTRUCTED OF REINFORCED CONCRETE PIPE (RCP) ASTM C-76, CLASS III, EXCEPT FOR ALUMINIZED STEEL PIPE FOR OUTFALLS. (SEE DETAILS FOR BEDDING).
8. STEEL METAL PIPE SHALL BE ALUMINIZED STEEL AASHTO M274 TYPE 2 MIN. 0.052 THICKNESS.
9. ALL GRAVITY SANITARY SEWERS SHALL BE CONSTRUCTED OF PVC PIPE (ASTM D-3034, SDR 26), UNLESS OTHERWISE NOTED ON THE DRAWINGS.
10. ALL FORCE MAIN SANITARY SEWERS SHALL BE CONSTRUCTED OF PVC PIPE (ASTM D-3034, SDR 26), UNLESS OTHERWISE NOTED ON THE DRAWINGS.
11. ALL SANITARY SEWERS AND WATER MAINS SHALL HAVE SIX (6) INCHES OF SAND BACKFILL BOTH UNDER AND OVER PIPE WITH DETECTOR TAPE (METALLIC) INSTALLED 1.5' BELOW FINISH GRADE.
12. BACKFILL WITH CEMENT STABILIZED SAND WHEN SANITARY SEWER CROSSES OVER STORM SEWER (SPACE BETWEEN STORM AND SANITARY SEWERS).
13. ALL SEWERS UNDER OR WITHIN ONE (1) FOOT OF PROPOSED OR FUTURE PAVEMENT SHALL BE BACKFILLED WITH 1 ½ SACK CEMENT STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE.
14. COST OF SPECIAL BACKFILL AND BEDDING IS INCIDENTAL TO THE UNIT PRICE BID PER LINEAR FOOT, NO EXTRA PAY.
15. WATER MAINS SHALL BE C-900 PVC PIPE BEARING THE NSF-PWSEAL AND FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT WITH NON-CORRODING HARDWARE INCLUDING MEGA-LUG RESTRAINTS CONFORMING TO AWWA CL-110 OR C-153.
16. FIRE HYDRANTS SHALL BE "MUELLER IMPROVED" OR APPROVED EQUAL.
17. MINIMUM OF SIX (6) INCHES OF CLEARANCE SHALL BE MAINTAINED BETWEEN WATER MAIN CROSSING OF OTHER UTILITIES.
18. ALL PROPOSED PIPE STUB-OUTS FROM STORM MANHOLES OR INLETS ARE TO BE PLUGGED WITH EIGHT (8) INCH BRICK WALLS UNLESS OTHERWISE NOTED.
19. THE CONTRACTOR SHALL NOTIFY THE CITY OR GOVERNMENTAL AGENCY HAVING JURISDICTION, 48 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION.
20. GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE OBSERVED.
21. ALL SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TCEQ "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS".
22. CONTRACTOR SHALL OBTAIN ALL CONSTRUCTION PERMITS REQUIRED TO THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
23. SANITARY MANHOLES WITHIN THE FLOOD PLAIN SHALL BE WATERPROOFED AND VENTED WITH RISER ABOVE FLOOD PLAIN OR RIMS SET ABOVE THE 100 YEAR FLOOD ELEVATION.
24. WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL AND A STANDARD LENGTH OF THE WASTEWATER PIPE IS LESS THAN 18 FEET IN LENGTH, THE POTABLE WATER PIPE SEGMENT SHALL BE CENTERED OVER THE WASTEWATER LINE. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM WITH ONE OF THE FOLLOWING OPTIONS.

(I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.

(II) ALL SECTIONS OF WASTEWATER MAIN OR LATERAL WITHIN NINE FEET HORIZONTALLY OF THE WATERLINE SHALL BE ENCASED IN AN 18-FOOT (OR LONGER) SECTION OF PIPE. FLEXIBLE ENCASING PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE ENCASING PIPE SHALL BE CENTERED ON THE WATERLINE AND SHALL BE AT LEAST TWO NOMINAL PIPE DIAMETERS LARGER THAN THE WASTEWATER MAIN OR LATERAL. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT (OR LESS) INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. EACH END OF THE CASING SHALL BE SEALED WITH WATERTIGHT NON-SHRINK CEMENT GROUT OR A MANUFACTURED WATERTIGHT SEAL. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF SIX INCHES BETWEEN THE ENCASEMENT PIPE AND THE WATERLINE SHALL BE PROVIDED. THE WASTEWATER LINE SHALL BE LOCATED BELOW THE WATERLINE.

(III) WHEN A NEW WATERLINE CROSSES UNDER A WASTEWATER MAIN OR LATERAL, THE WATERLINE SHALL BE ENCASED AS DESCRIBED FOR WASTEWATER MAINS OR LATERALS IN SUBCLASS (II) OF THIS CLAUSE OR CONSTRUCTED OF DUCTILE IRON OR STEEL PIPE WITH MECHANICAL OR WELDED JOINTS AS APPROPRIATE. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF ONE FOOT BETWEEN THE WATERLINE AND THE WASTEWATER MAIN OR LATERAL SHALL BE PROVIDED. BOTH THE WATERLINE AND WASTEWATER MAIN OR LATERAL MUST PASS A PRESSURE AND LEAKAGE TEST AS SPECIFIED IN AWWA C600 STANDARDS.

25. COST OF TRENCH SAFETY SYSTEMS AS REQUIRED BY OSHA FOR DEPTHS OVER FIVE (5) FEET IS INCIDENTAL TO THE PROJECT.
26. WATER LINES ARE TO BE CONSTRUCTED TYPICALLY 4 FEET DEEP TO THE TOP OF THE LINE FROM THE FINISHED CURB ELEVATION OR NATURAL GROUND. LINES MAY BE SAGGED OR RAISED WITHIN THE RANGE OF 3-6 FEET TO AVOID UTILITY CONFLICTS WATER LINE DEFLECTIONS SHALL NOT EXCEED THE PIPE MANUFACTURES RECOMMENDATIONS.
27. ALL SLEEVES TO BE FOUR (4) INCH SCHEDULE 40 PVC SLEEVES TO BE EIGHTEEN (18) INCHES BELOW THE BOTTOM OF THE PAVEMENT BASE MATERIAL. STUB OUT THREE (3) FEET BEYOND CURB AND MARK SLEEVES LOCATIONS ON CURB.
28. THERE SHALL BE A MINIMUM HORIZONTAL DISTANCE OF FOUR (4) FEET CLEARANCE BETWEEN ALL WATER LINES AND SANITARY SEWER LINES THAT ARE SDR 26, AND A NINE (9) FOOT CLEARANCE BETWEEN ALL WATER LINES AND SANITARY SEWER LINES THAT ARE SDR 35. (SEE DETAIL)
29. ALL JOINTS OF DUCTILE IRON PIPE BELOW GROUND WILL BE M.J. WITH PIPE RESTRAINTS.
30. ALL SIGNAGE AND/OR TRAFFIC CONTROL DEVICES SHALL BE APPROVED BY HARRIS COUNTY PRIOR TO CONSTRUCTION.

NOTE:
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES IN THE ROAD R.O.W. PRIOR TO CONSTRUCTION. (TEXAS ONE CALL 1-800-545-6005)

NOTE:
CONTRACTOR SHALL ADJUST ALL WATER VALVES AND STORM SEWER MANHOLES TO MATCH FINAL GRADES. SEE ALL GRADING PLANS SHEETS.

NOTE:
CONTRACTOR SHALL VERIFY ALL WATER, SANITARY SEWER AND STORM SEWER LINES PRIOR TO WORKING IN ANY AREA. SEE TOPO MAP AND REFERENCE DRAWINGS.

NOTE:
THIS DEVELOPMENT HAS BEEN DESIGNED TO NOT IMPEDE, IMPOUND, OR BLOCK THE NATURAL FLOW OF DRAINAGE FROM OR ACROSS ADJACENT AND CONTIGUOUS PROPERTIES.

NOTE:
ALL FUTURE SITE AND BUILDINGS PROJECTS WILL REQUIRE CIVIL/SITE DRAWING APPROVAL AND CHANGES TO THE PLATS MAY BE REQUIRED AS A PART OF THE REVIEW PROCESS.

ALL PIPE PLACEMENT AND JOINTING WILL BE CONSTRUCTED STRICTLY IN ACCORDANCE WITH THE MANUFACTURES' REQUIREMENTS AND SPECIFICATIONS.

STORM SEWER PIPE — HDPE N-12, PVC SDR35 OR RCP CLASS III (RUBBER GASKET)— EXCEPT IF NOTED OTHERWISE
POTABLE WATER —— 3" AND SMALLER – SCH 80 PVC
4" AND LARGER – C-900, DR 18- 150 PSI
SANITARY SEWER – GRAVITY , PVC SDR 26
CULVERT PIPE – RCP CLASS IV T&G

THE OWNER WILL SET UP THE NECESSARY WATER ACCOUNTS AND PURCHASE THE WATER METERS AND METER BOXES.
THE CONTRACTOR WILL PICK UP THE METERS AND BOXES AT THE CITY AND DELIVER THEM TO THE JOBSITE.
THE CONTRACTOR WILL MAKE THE NECESSARY TAPS AND INSTALL THE METERS AS REQUIRED BY HARRIS COUNTY.

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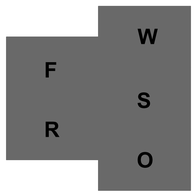

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REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	ADDENDUM NO.3	10-07-2020

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

GENERAL NOTES

DRAWN BY: JDM	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 07 OCT 2020

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3
SHEET NUMBER

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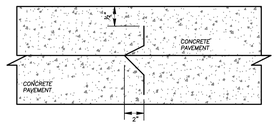
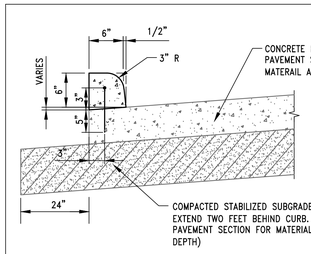


THE LOCATION OF DEFORMED STRIPS MAY BE VARIED, WITH THE APPROVAL OF THE DEPARTMENT OF PUBLIC WORKS, TO SUIT THE PROPOSED CONSTRUCTION METHODS OF THE CONTRACTOR. MAXIMUM LONGITUDINAL SPACING FOR DEFORMED STRIPS IS 14'-0". DEFORMED METAL STRIPS SHALL BE PLACED VERTICALLY ALONG A STRAIGHT ALIGNMENT.

DEFORMED METAL STRIP
N.T.S



CONCRETE CURB SECTION
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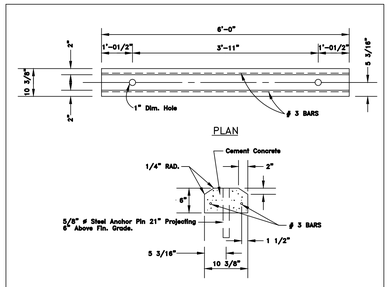
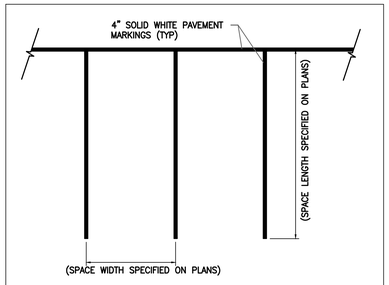


PRECAST CONC.
WHEEL STOP DETAIL
SCALE: N.T.S.



TYPICAL PARKING SPACE DIMENSIONING
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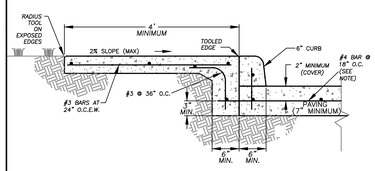
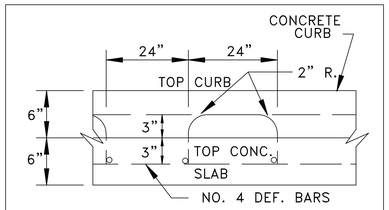


NOTES:

1. EXTEND PAVEMENT EXPANSION JOINTS THROUGH SIDEWALK.
2. ALLOW KEYWAY WITH L-BAR OR DRILL & GROUT #4 IN PAVEMENT. MINIMUM EMBEDMENT 6" INTO PAVEMENT.
3. SEE ROSENBERG STANDARD PAVING SHEET P-100a FOR FURTHER CONCRETE CURB DETAILS
4. SEE ROSENBERG STANDARD PAVING SHEET P-101 FOR FURTHER SIDEWALK DETAILS
5. SEE ROSENBERG STANDARD PAVING SHEET P-10B FOR FURTHER ROADWAY DETAILS

SIDEWALK CONNECTION
TO CURB
N.T.S



TYP. CONCRETE CURB REINFORCING
SCALE: N.T.S.

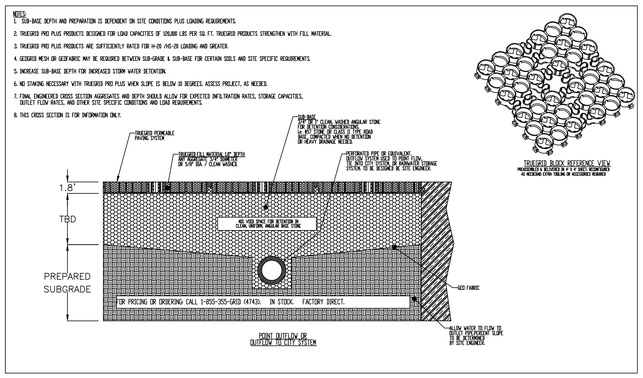
CEMENT STABILIZED SAND 2-SK/C.Y.	
RESIDENTIAL	4" MINIMUM
COMMERCIAL	6" MINIMUM
INDUSTRIAL	8" MINIMUM
REINFORCED CONCRETE PAVEMENT 3,500 PSI Min.	
RESIDENTIAL	4" MINIMUM
COMMERCIAL	6" MINIMUM
INDUSTRIAL	8" MINIMUM

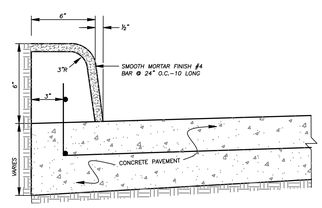
DRIVEWAY PAVEMENT
CONSTRUCTION TABLE

STANDARD DRIVEWAY
CONSTRUCTION TABLE & NOTES
N.T.S

NOTES:

1. SUB-BASE DEPTH AND PREPARATION IS DEPENDENT ON SITE CONDITIONS PLUS LOADING REQUIREMENTS.
2. TRUEGRID PRO PLUS PRODUCTS DESIGNED FOR LOAD CAPACITIES OF 120,000 LBS PER SQ.FT. TRUEGRID PRODUCTS STRENGTHEN WITH FILL MATERIAL.
3. TRUEGRID PRO PLUS PRODUCTS ARE SUFFICIENTLY RATED FOR H-20 /VS-20 LOADING AND GREATER.
4. GEOGRID MESH OR GEOFABRIC MAY BE REQUIRED BETWEEN SUB-GRADE & SUB-BASE FOR CERTAIN SOILS AND SITE SPECIFIC REQUIREMENTS.
5. INCREASE SUB-BASE DEPTH FOR INCREASED STORM WATER DETENTION.
6. NO STAKING NECESSARY WITH TRUEGRID PRO PLUS WHEN SLOPE IS BELOW 10 DEGREES. ASSESS PROJECT, AS NEEDED.
7. FINAL ENGINEERED CROSS SECTION AGGREGATES AND DEPTH SHOULD ALLOW FOR EXPECTED INFILTRATION RATES, STORAGE CAPACITIES, OUTLET FLOW RATES, AND OTHER SITE SPECIFIC CONDITIONS AND LOAD REQUIREMENTS.
8. THIS CROSS SECTION IS FOR INFORMATION ONLY.

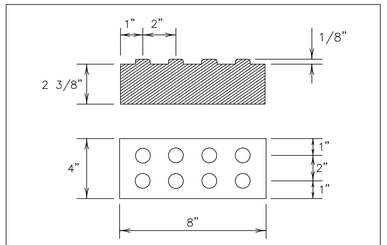




NOTES:

1. MORTAR FINISH NOT REQUIRED WHEN CURB IS POURED BY A MACHINE, BUT CURB WILL HAVE THE SAME OUTSIDE DIMENSIONS.
2. WHEN CONCRETE CURB IS TO BE PLACED ON EXISTING CONCRETE BASE, USE #4 DEFORMED BARS, 10" LONG, 24" O.C., DOWELLED, AND SET IN QUICK SETTING CEMENT MORTAR
3. REDWOOD EXPANSION JOINTS SHALL BE INSTALLED IN CURB AT ALL PAVEMENT EXPANSION JOINTS.

6" CONC. CURB DETAIL
N.T.S



DETECTABLE WARNING PAVER
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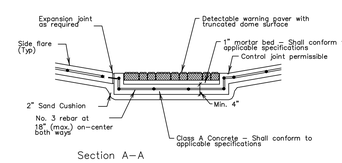

Section A-A

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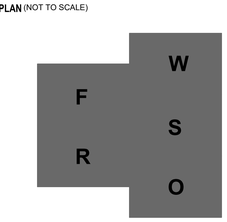

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REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

PAVEMENT DETAILS

DRAWN BY JDM	CHECKED BY JDM
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ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

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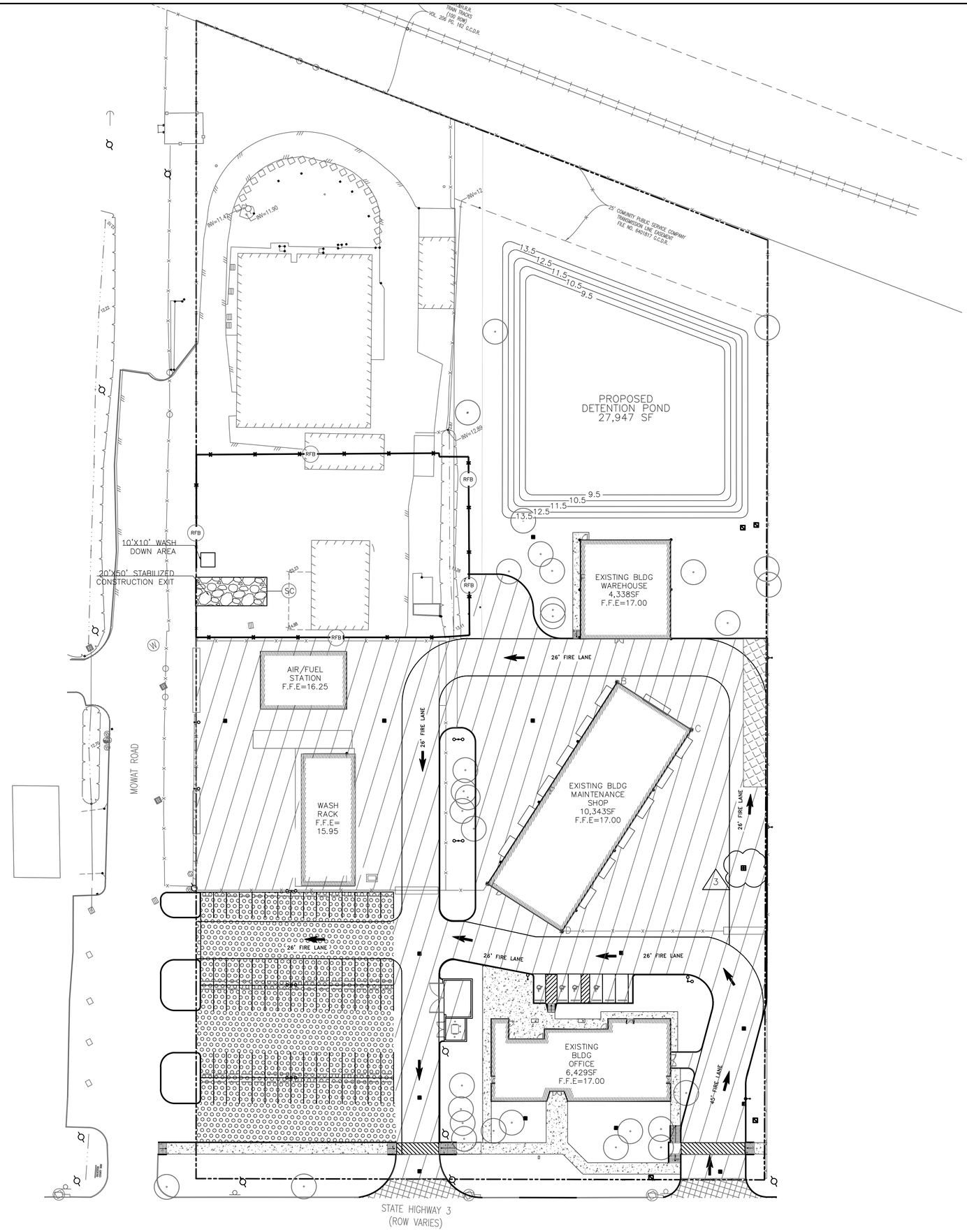

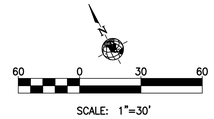

SWPPP LEGEND

- REINFORCED FILTER FABRIC BARRIER AT LEAST 2' BEHIND BACK OF CURB/PAVEMENT
- STABILIZED CONSTRUCTION EXIT.
- INLET PROTECTION BARRIER (IPB).
- WASH DOWN AREA.

SWPPP CONSTRUCTION NOTES

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATION SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPPP) PLANS TO KEEP SILT AND /OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.

2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATED MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.

3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FROM THE EXCAVATED AREA.

4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

- DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
- AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
- STRUCTURAL CONTROL MEASURES.
- LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND/ OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING.
SLOPES 4:1 OR STEPPER SHALL BE REPLACED BY CLOCK SODDING.

CONCRETE TRUCK/EQUIPMENT WASH OUT

1. CONTRACTOR(S) SHALL NOT WASH OUT CONCRETE TRUCKS OR EQUIPMENT INTO STREET DEAD ENDS, RIGHT-OF-WAYS, GUTTERS, STORM SEWER INLETS, WATERWAYS, CREEKS OR ANY LOCATION WHERE THE MATERIALS COULD REACH THE STORM SEWER (MS4) SYSTEM. ROCKED CUL-DE-SACS ARE NOT APPROVED WASH OUT AREAS. ALL DEPOSITED MATERIALS SHALL BE REMOVED AND PROPERLY DISPOSED OF AT THE COMPLETION OF WORK.

2. WASH OUT CONCRETE TRUCKS AND/OR EQUIPMENT ONLY IN A DESIGNATED, CONFINED WASHOUT AREA WHERE THE WATER WILL FLOW INTO A TEMPORARY PIT IN A DIRT AREA OR ONTO STOCKPILES OF AGGREGATE BASE OR SAND. THIS AREA MUST BE AN IDENTIFIED LOCATION.

3. COLLECT AND RETURN SWEEPINGS FROM EXPOSED AGGREGATE CONCRETE TO A STOCKPILE OR DISPOSE OF THE WASTE IN A TRASH CONTAINER.

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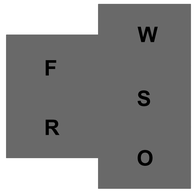

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10/07/2020

SWPPP PLAN

DRAWN BY JDM	CHECKED BY JDM
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ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

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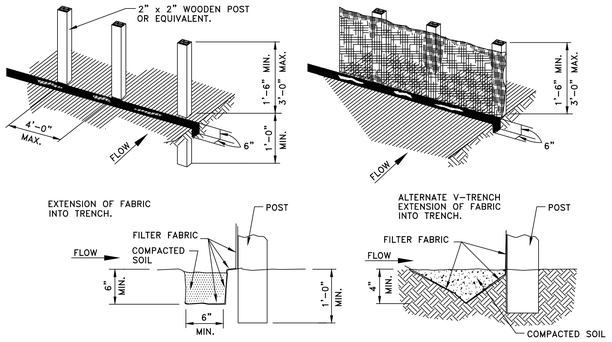
1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE A 6" x 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.

2. ATTACH FILTER FABRIC TO POSTS AND INSTALL IT INTO THE TRENCH. BACKFILL THE TRENCH AND COMPACT THE EXCAVATED SOIL.

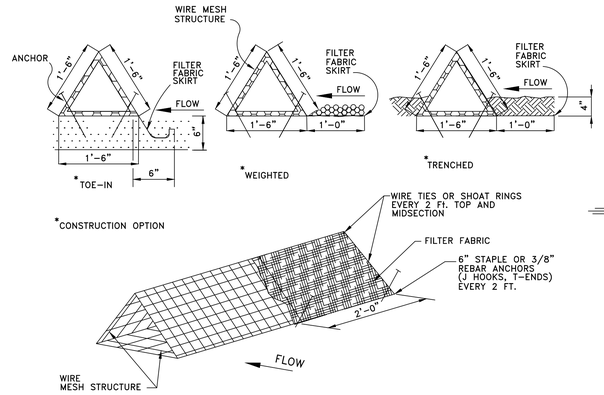


GENERAL NOTES:

1. SET POSTS AT 4-FEET MAXIMUM SPACING. IF FACTORY PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAXIMUM.
2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT THE POST, FOLD TOGETHER, AND ATTACH TO THE POSTS.
3. REMOVE SEDIMENT DEPOSITS WHEN SILT DEPTH REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE.

FILTER FABRIC FENCE

FF
SYMBOL

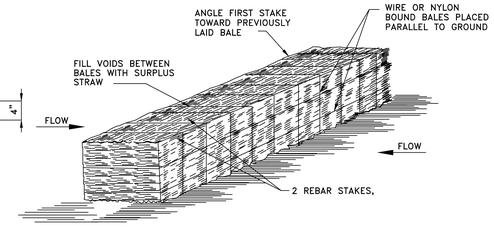


GENERAL NOTES:

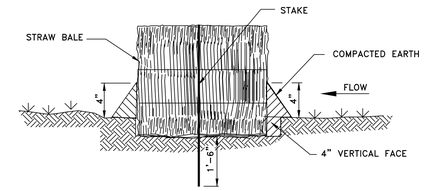
1. PLACE BARRIER IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BARRIER.
2. USING ONE CONTINUOUS SECTION OF FILTER FABRIC, WRAP FABRIC AROUND WIRE MESH AND EXTEND FABRIC TO FORM SKIRT ON THE UPSTREAM SIDE.
3. WEIGHT SKIRT WITH A CONTINUOUS LAYER OF 3-INCH TO 5-INCH OPEN GRADED ROCK, OR TOE IN SKIRT WITH SIX INCHES WITH MECHANICALLY COMPACTED MATERIAL.
4. SECURELY ANCHOR BARRIER AND SKIRT IN PLACE USING 6-INCH WIRE STAPLES ON 2-FOOT CENTERS ON BOTH EDGES, OR STAKE USING 18-INCH BY 3/8 INCH REBARS (T-ENDS, J-HOOKS).
5. FILTER FABRIC SHALL BE LAPPED OVER ENDS 6 INCHES TO COVER SEGMENT JOINTS. FASTEN JOINTS WITH GALVANIZED SHOAT RINGS OR EQUIVALENT.
6. THE BARRIER STRUCTURE SHALL BE WELDED WIRE MESH, 18 INCHES ON EACH SIDE.

TRIANGULAR FILTER FABRIC FENCE

TFF
SYMBOL



STRAW BALE FENCE



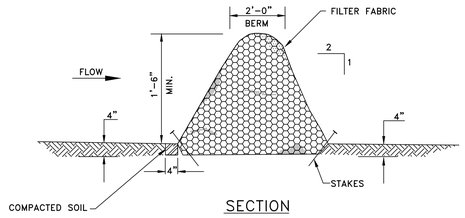
SECTION

GENERAL NOTES:

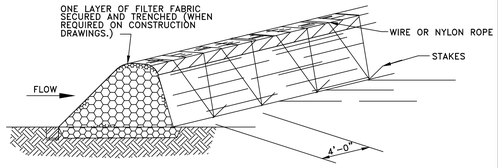
1. LIMIT USE TO ONSITE SWALES FOR PURPOSES OF LOW FLOW VELOCITY DISSIPATION FOR EROSION CONTROL. USE STRAW BALE FENCES TO TREAT OVERLAND FLOW ONLY. DO NOT USE STRAW BALE FENCES TO TREAT FLOW IN CHANNELS.
2. PLACE BALES IN A ROW WITH ENDS TIGHTLY ABUTTING ADJACENT BALES. FILL THE VOIDS BETWEEN BALES WITH SURPLUS STRAW. PLACE BALES WITH BINDING PARALLEL TO GROUND SURFACE.
3. IMBED EACH BALE AT LEAST 4 INCHES IN THE SOIL.
4. SECURELY ANCHOR BALES IN PLACE BY REBAR STAKES. DRIVE STAKES THROUGH THE BALES AND AT LEAST 18 INCHES INTO THE GROUND. ANGLE THE STAKE IN EACH BALE TOWARD THE PREVIOUS BALE TO FORCE THE BALES TOGETHER.
5. BIND BALES WITH WIRE OR NYLON ROPE TIED ACROSS THE STRAW BALES.
6. REPLACE WITH NEW STRAW BALE FENCE EVERY TWO MONTHS.
7. WATTLES STAKED INTO THE GROUND ARE A PREFERRED SUBSTITUTE FOR STRAW BALE FENCES.

STRAW BALE FENCE

SBF
SYMBOL



SECTION



GENERAL NOTES:

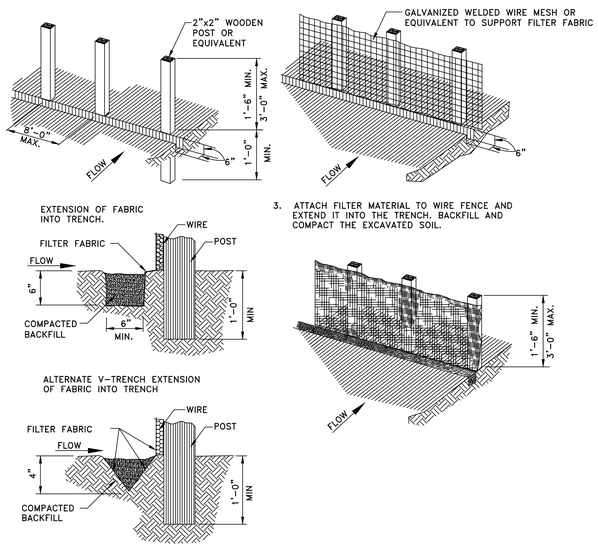
1. LIMIT USE TO ONSITE SWALES FOR PURPOSES OF LOW FLOW VELOCITY DISSIPATION FOR EROSION CONTROL. USE BRUSH BERMS TO TREAT OVERLAND FLOW ONLY. DO NOT USE BRUSH BERMS TO TREAT FLOW IN CHANNELS.
2. PLACE WOODY BRUSH AND BRANCHES HAVING A DIAMETER OF LESS THAN 2 INCHES WITH A 6-INCH OVERLAP. AVOID INCORPORATION OF ANNUAL WEEDS AND SOIL INTO BRUSH BERM.
3. MINIMUM HEIGHT OF THE BRUSH BERM IS 18 INCHES, MEASURED FROM THE TOP OF THE EXISTING GROUND AT THE UPSLOPE TOE TO THE TOP OF THE BERM.
4. HAND PLACE BRUSH BERMS ALONG CONTOUR LINES. MACHINE PLACEMENT OF BRUSH BERMS IS NOT PERMITTED.
5. IMBED BRUSH BERM AT LEAST 4 INCHES INTO THE SOIL.
6. ANCHOR BRUSH BERMS USING WIRE OR NYLON ROPE ACROSS THE BERM WITH A MINIMUM TENSION OF 50 POUNDS.
7. SECURELY TIE ROPE TO 18-INCH REBAR STAKES DRIVEN INTO THE GROUND ON 4-FOOT CENTERS ON BOTH SIDES OF THE BERM.
8. PERFORM MAINTENANCE AS NEEDED.

BRUSH BERM

BB
SYMBOL

1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE 6" x 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.

2. SECURE MESH FENCING TO POSTS



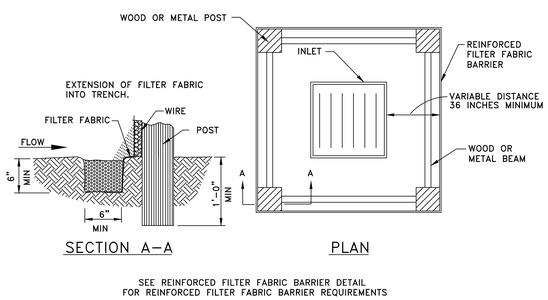
3. ATTACH FILTER MATERIAL TO WIRE FENCE AND EXTEND IT INTO THE TRENCH. BACKFILL AND COMPACT THE EXCAVATED SOIL.

GENERAL NOTES:

1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.

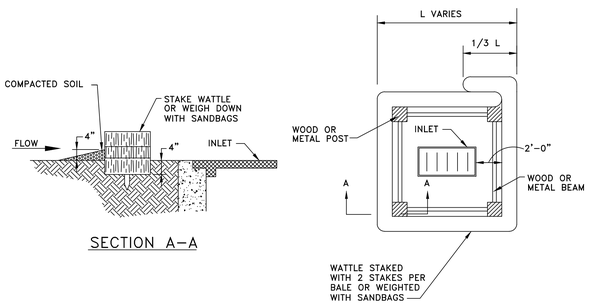
REINFORCED FILTER FABRIC BARRIER

RFB
SYMBOL



SECTION A-A PLAN

SEE REINFORCED FILTER FABRIC BARRIER DETAIL FOR REINFORCED FILTER FABRIC BARRIER REQUIREMENTS



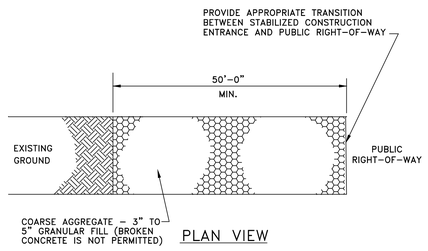
SECTION A-A PLAN

NOTE:
TYPICALLY STRAW BALES ARE NOT RECOMMENDED FOR INLET PROTECTION BARRIERS.

INLET PROTECTION BARRIERS FOR STAGE I INLETS

IPB
SYMBOL

PROFILE



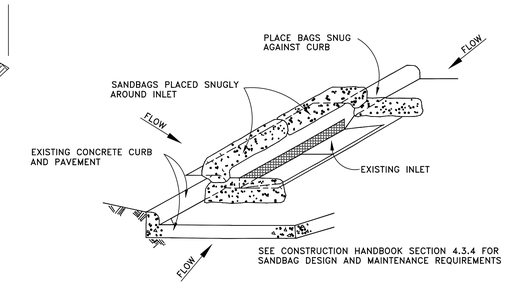
PLAN VIEW

GENERAL NOTES:

1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
7. ALTERNATIVE METHODS OF CONSTRUCTION INCLUDE
   -CEMENT STABILIZED SOIL: COMPACTED CEMENT STABILIZED SOIL, LIMESTONE AGGREGATE, OR OTHER FILL MATERIAL IN AN APPLICATION OF THICKNESS OF 8 INCHES.
   -WOOD MATS: OAK OR OTHER HARDWOOD TIMBERS PLACED EDGE TO EDGE AND ACROSS SUPPORT WOODEN BEAMS WHICH ARE PLACED ON TOP OF EXISTING SOIL IN AN APPLICATION THICKNESS OF 6 INCHES.
   -STEEL MATS: PERFORATED MATS PLACED ACROSS PERPENDICULAR SUPPORT MEMBERS.

STABILIZED CONSTRUCTION ACCESS

SC
SYMBOL



GENERAL NOTES:

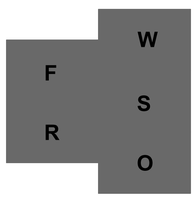
1. BAGS OR WATTLES CAN BE USED FOR THIS APPLICATION.
2. PROVIDE WOVEN OR UNWOVEN GEOTEXTILE FILTER FABRIC FOR BAGS.
3. PROVIDE COARSE SAND AND AGGREGATE MIX FOR FILL MATERIAL FOR BAGS. USE ONLY PARTICLES CONSISTING OF CLEAN, HARD, DURABLE MATERIALS FREE FROM ADHERENT COATINGS, SALT, ALKALI, DIRT, CLAY, LOAM, SHALE, SOFT OR FLAKY MATERIALS, OR ORGANIC AND INJURIOUS MATTER.
4. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.

INLET PROTECTION BARRIERS FOR STAGE II INLETS

IPB
SYMBOL

ONE- CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223-4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1-800-545-6005

KEY PLAN (NOT TO SCALE)



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713 463 8200

Galveston County Road & Bridge Department Facilities PH3

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

3	ADDENDUM NO.3	10-07-2020

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
10/07/2020

SWPPP DETAILS

DRAWN BY JDM	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 07 OCT 2020

C10.0-PH3
3
SHEET NUMBER

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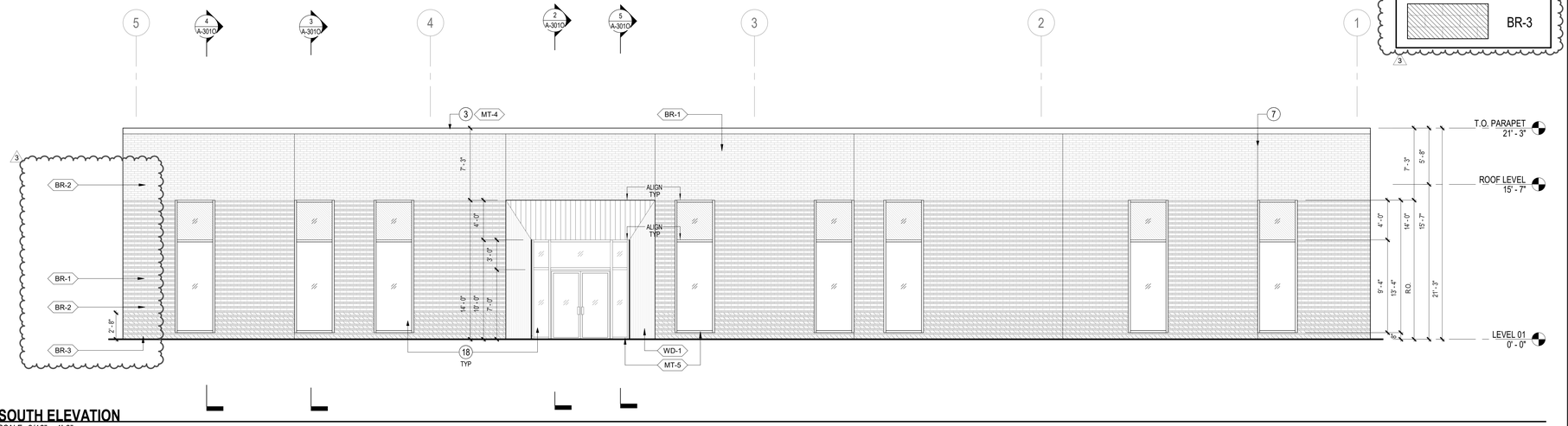
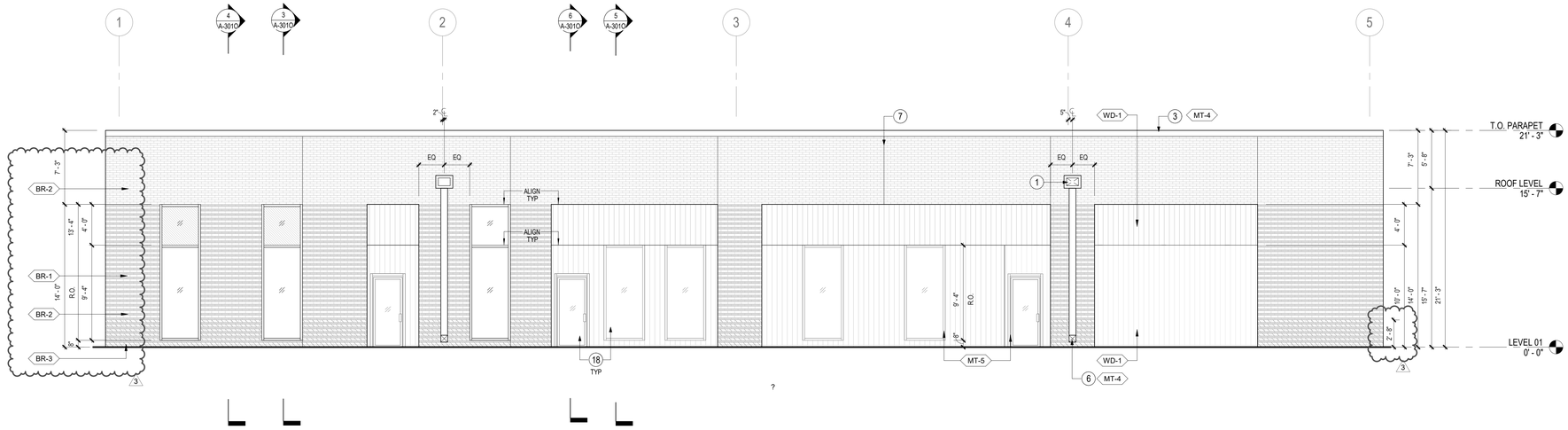


1 SOUTH ELEVATION
SCALE: 3/16" = 1'-0"



2 NORTH ELEVATION
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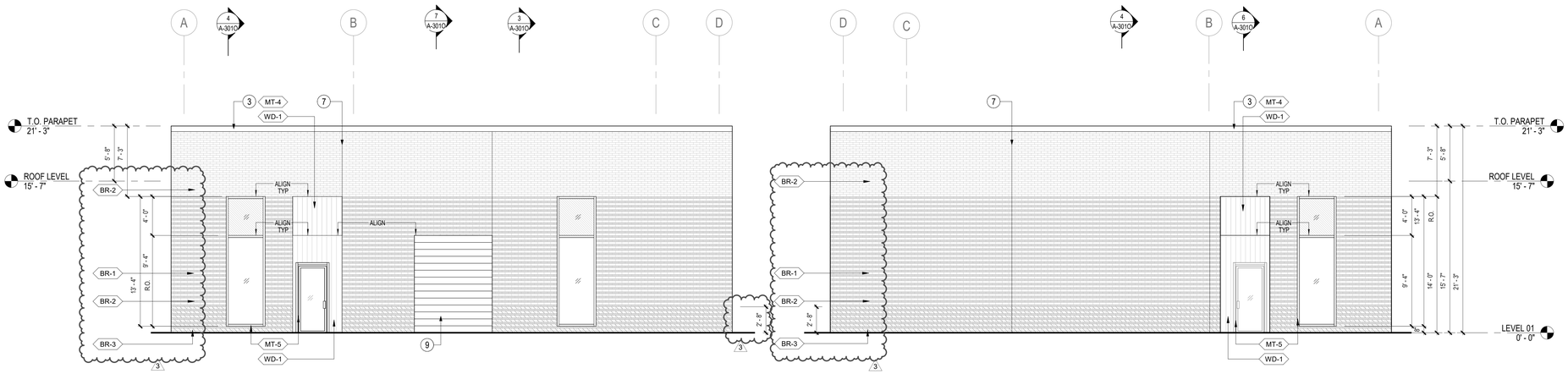
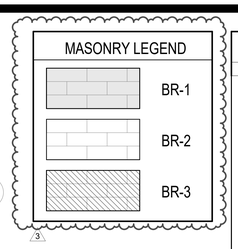


4 EAST ELEVATION
SCALE: 3/16" = 1'-0"

3 WEST ELEVATION
SCALE: 3/16" = 1'-0"



KEYED NOTES

NUMBER	DESCRIPTION
1	CATCHMENT BOX WITH SPILLOVER AND DOWNSPOUT
2	THRU-WALL SCUPPER OPENING
3	PREFINISHED SHEETMETAL COPING
4	ROOF CRICKETING
5	INSULATED ROOF HATCH
6	PREFINISHED SHEETMETAL DOWNSPOUT
7	VERTICAL BRICK CONTROL JOINTS. TYPICAL
8	MANUAL ROLLER WINDOW SHADES AT ALL EXTERIOR WINDOWS. U.N.O.
9	INSULATED OVERHEAD COILING DOOR ASSEMBLY. RE: DOOR SCHEDULE
10	PROVIDE SCHLUTER STRIP
11	WALL-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
12	FLOOR-MOUNTED CEILING-BRACED TOILET PARTITION
13	WALL-HUNG URINAL PARTITION
14	SOLID PHENOLIC Z-LOCKERS. 12"Wx18"Dx72"H
15	TAS-COMPLIANT LOCKER BENCH. 12"Wx18"Dx42"W
16	STEEL ACCESS HATCH. FIELD PAINT TO MATCH PT-3. COORDINATE FINAL HEIGHT AND SIZE WITH PLUMBING ROUGH-IN BEHIND
17	OSHA-COMPLIANT STEEL SAFETY LADDER LEADING TO ROOF HATCH ABOVE. SUPPORTED BY STEEL TUBES IN WALL. RE: STRUCTURAL
18	INSULATED GLAZED EXTERIOR STOREFRONT
19	TAS-COMPLIANT STAINLESS STEEL SINK ASSEMBLY
20	10" DIAMATER STAINELESS STEEL GROMMET
21	SOLID SURFACE COUNTERTOP
22	VENT HOOD. RE: MECHANICAL
23	INSULATED MODIFIED BITUMEN ROOFING ASSEMBLY
24	ANCHORED BRICK VENEER MASONRY ASSEMBLY
25	INSULATED SPANDREL GLAZING PANEL
26	VISION GLAZING PANEL
27	VAPOR BARRIER
28	SLAB-ON-GRADE. RE: STRUCTURAL
29	ADJACENT PAVING. RE: CIVIL
30	CHICKEN-WIRE FENCING PROTECTING INSULATION WHERE NO GYP IS PRESENT. TYPICAL
31	STEEL STRUCTURE. RE: STRUCTURAL
32	FLUID APPLIED WEATHER BARRIER
33	CONTINUOUS BOARD INSULATION
34	SHEATHING
35	COLD-FORMED METAL FRAMING WALL WITH BATT INSULATION
36	PREFINISHED SHEETMETAL FLASHING
37	INTERIOR CEILING. RE: RCP
38	COLD-FORMED FRAMING
39	NATURALLY-VENTILATED EXTERIOR SOFFIT. ALL STEEL WITHIN SOFFIT TO BE HOT-DIP GALVANIZED. RE: STRUCTURAL
40	COMPOSITE WOOD EXTERIOR LAP PLANKING
41	PROVIDE MEDIUM BROOM FINISH AT EXTERIOR CONCRETE PATIOS
42	INTERIOR GYP FINISH
43	UNINSULATED INTERIOR STOREFRONT ASSEMBLY
44	OPERABLE PARTITION ASSEMBLY
45	PROVIDE SUPPORTING STEEL FOR OPERABLE PARTITION
46	MASONRY DRAIN MATERIAL
47	WEEP
48	NONSHRINK GROUT
49	COMPRESSIBLE FILLER
50	TRACK RUNNER SET IN CONTINOUS BED OF SEALANT
52	FLEXIBLE FLASHING
53	TREATED 2BY BLOCKING
54	RETICULATED DOUBLE SEALANT JOINT WITH BACKER ROD AND WEEP BAFFLES
55	MODIFIED BITUMEN WALL AND PARAPET FLASHING
56	PARAPET WALL SHEATHING
57	CARBON-FIBER Z-CLIPS
58	INSECT SCREEN
59	PLYWOOD SUBSTRATE
60	INTERIOR STUD FRAMING
61	PROVIDE ARCHITECTURALLY-RECESSED KNOX BOX
62	MASONRY ANCHOR
63	COMPOSITE WOOD CORNER TRIM
64	END-DAM WITH INTEGRAL BASE FLASHING

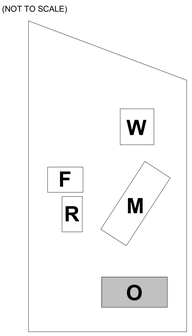
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.

LEGEND

- A — COLUMN GRID DESIGNATIONS
- 1 — KEYED NOTE; KEYED NOTES ONLY APPLY TO THIS SHEET
- 1 / A-301 — SECTION TAG
- 1 / A-201 — ELEVATION TAG
- ROOM NAME / S1 — ROOM NAME; ROOM NUMBER
- S1 — DOOR TAG
- SC-2 — FLOOR OR CEILING FINISH TAG
- SS-1 — MATERIAL FINISH TAG
- PT-2 — WALL FINISH TAG
- FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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Galveston County Road & Bridge Department Facilities

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Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	Addendum No. 03	07 OCT 2020

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT — WINDY TEASLEY — 16677 — STATE OF TEXAS
10 / 07 / 2020

ARCHITECTURAL - EXTERIOR ELEVATIONS

DRAWN BY	CHECKED BY
WJC	ST
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GCR&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

A-201O
SHEET NUMBER

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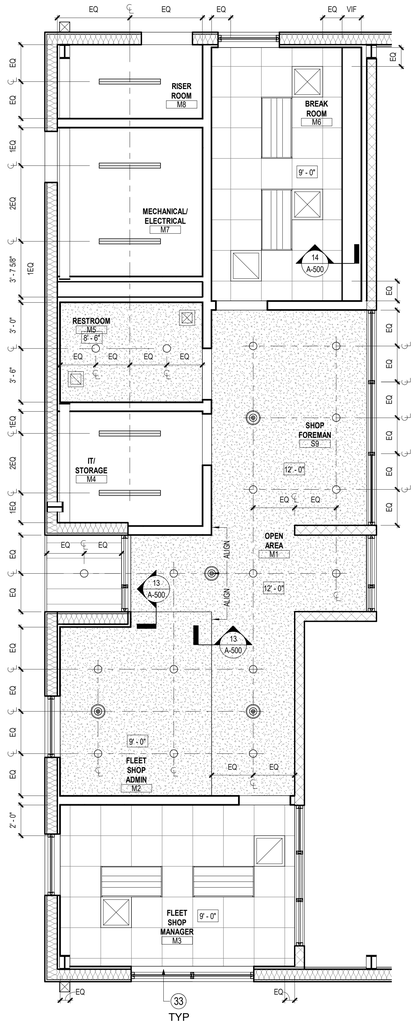
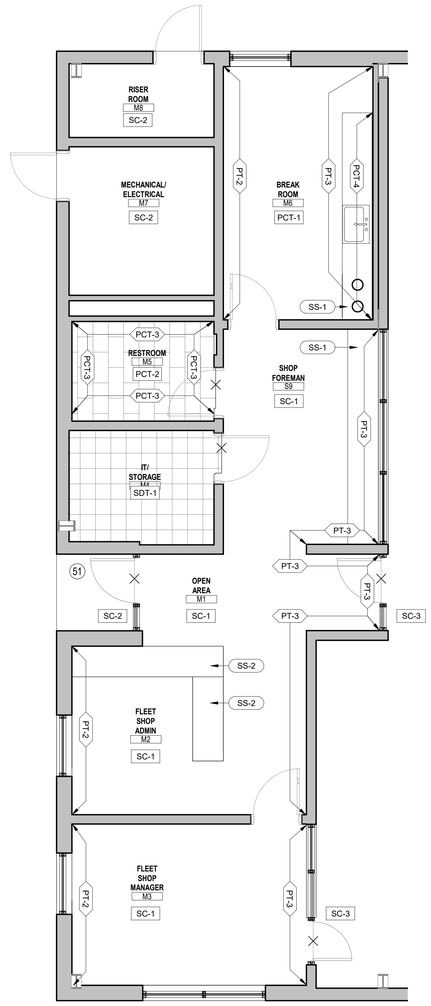


3 REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"



2 FINISH PLAN
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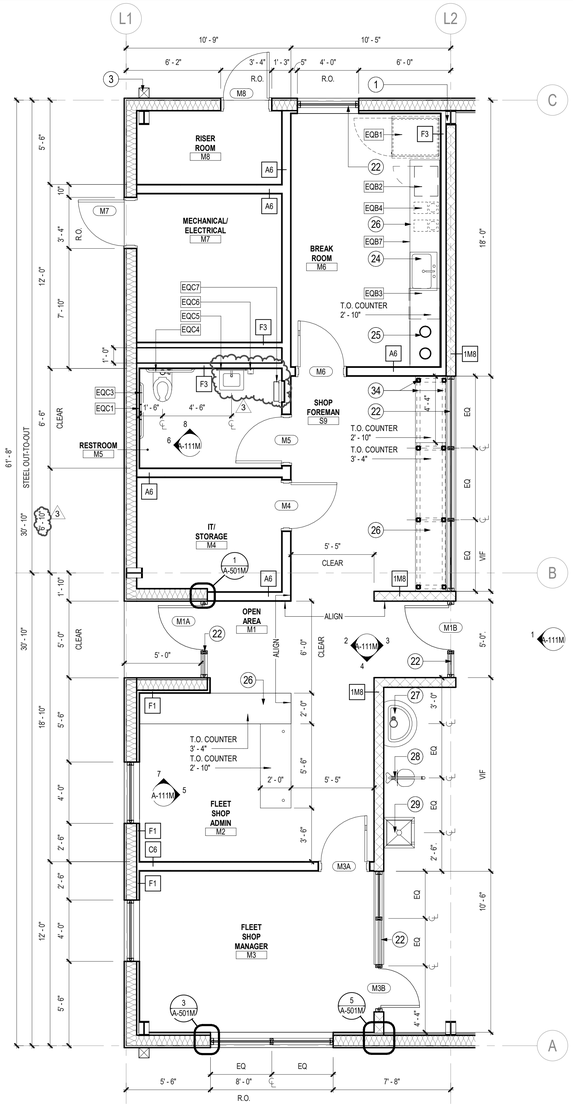
RE: INTERIOR ELEVATIONS FOR ADDITIONAL FINISH DATA



1 CONSTRUCTION PLAN
SCALE: 1/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	PEMB GUTTER ASSEMBLY
3	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
4	PEMB STRUT
5	PEMB SHEAR BRACE
6	INSULATED PEMB WALL ASSEMBLY WITH METAL PANEL FINISH
7	SURFACE-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
8	WIND-DRIVEN-RAIN-RESISTANT LOUVER ASSEMBLY. 50% MIN. FREE AREA. MIAMI-DADE APPROVED. B.O.D. IS RUSKIN ELF6375DXD. RE: MECHANICAL
9	PEMB TRIM
10	SLAB-ON-GRADE. RE: STRUCTURAL
11	OH COILING DOOR. RE: DOOR SCHEDULE
12	8" DIAMETER 42" HIGH PAINTED GALVANIZED STEEL CRASH BOLLARD WITH CONCRETE FILL AND DOME TOP
13	MECHANICAL ASSEMBLY. RE: MECHANICAL
14	INSULATED PEMB ROOFING ASSEMBLY
15	6" CAST-IN-PLACE CONCRETE PAD. FRAMED AT PERIMETER WITH STEEL ISLAND FORMS BY RED-E-FORM
16	GALVANIZED PAINTED HSS TUBE
17	OVERHEAD FAN. RE: MECHANICAL
18	CRANE RAIL BEAM
19	CRANE RAIL BEAM SUPPORT. ANCHORED TO PEMB STRUCTURE ABOVE
20	CHAIN-HUNG RADIANT HEATER. RE: MECHANICAL
21	COMPRESSED AIR LINE
22	INSULATED GLAZED EXTERIOR STOREFRONT
24	TAS-COMPLIANT STAINLESS STELL SINK ASSEMBLY
25	10" DIAMATER STAINELESS STEEL GROMMET
26	SOLID SURFACE COUNTERTOP
27	STAINLESS STEEL HAND WASHING SINK. RE: PLUMBING
28	STAINLESS STEEL EYE WASHING STATION. RE: PLUMBING
29	MOP SINK. RE: PLUMBING
30	INSULATED LIGHT-WALL ASSEMBLY
31	PEMB METAL PANEL INTERIOR WALL WAISNCOT TO 8'
32	QUICK-CONNECT COMPRESSED AIR TERMINUS. RE: PLUMBING
33	PROVIDE MANUAL ROLLER SHADE AT WINDOW HEAD
34	PROVIDE TUBE STEEL FRAMING TO SUPPORT FLOATING COUNTERTOP ASSEMBLY. PROVIDE SUPPORTS AT WALLS AT EITHER END
35	PEMB TRIM
36	CORD CHASE AND WHIP
37	2" CORD GROMMET WITH PASS-THRU COVER
41	UNINSULATED PEMB ROOFING ASSEMBLY
42	COMPRESSED FLUID LINES. RE: PLUMBING
43	DAYLIT GUTTER DISCHARGE
44	UTILITY TRENCH
45	HOSE REEL STAND. RE: PLUMBING AND ELECTRICAL
46	VAPOR BARRIER
47	GALVANIZED MCNICHOLS TRAFFIC-RATED BAR-STOCK PANEL. 3' LENGTHS
48	GALVANIZED EMBED ANGLE
49	GALVANIZED SUPPORT ANGLE
50	LINE OF PEMB STRUCTURE ADJACENT
51	PROVIDE MEDIUM BROOM FINISH AT EXTERIOR CONCRETE PATIO
52	POWER & DATA J-BOX HOSTED UNDER HOSE REEL COLUMN. RE: ELECTRICAL & TELECOM
53	DUPLEX DATA TERMINAL IN STEEL HOUSING MOUNTED TO HOSE-REEL STAND. RE: TELECOM
54	PREFINISHED SHEETMETAL FLASHING
55	PEMB WEATHER BARRIER
56	PEEL-N-STICK MASTIC
57	PEMB WALL PANEL
58	RETICULATED DOUBLE SEALANT JOINT WITH BACKER-ROD AND WEEP BAFFLES
59	INTERIOR WALL FINISH. RE: FINISH PLAN
60	CMU WALL. RE: STRUCTURAL
61	1" THICK COMPRESSIBLE FILLER
62	3/4" FIRE-TREATED PLYWOOD
63	TREATED BLOCKING

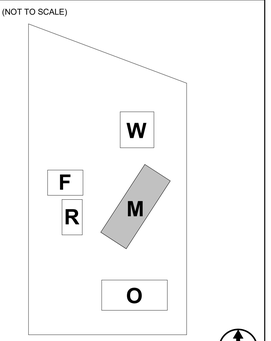
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.
4. RE: MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR ADDITIONAL DATA.
5. EQM3 (MOBILE COLUMN LIFT) NOT SHOWN IN DRAWINGS.
6. WALLS TO RECIEVE PT-1 FINISH WITH B-1 BASE U.N.O.
7. PROVIDE SCHLUTER STRIP IN ANNODIZED ALUMINUM AT ALL TILE OUTSIDE CORNERS AND ALL OPEN TILE WALL EDGES.
8. ALL EXPOSED PEMB RIBS AND EXPOSED STRUCTURAL STEEL TO RECIEVE PT-3 FINISH.
9. M-8 WALLS TO RECIEVE PT-3 FINISH U.N.O.
10. MAINTENANCE SHOP FLOOR TO RECIEVE SC-3 FINISH.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 A-301	SECTION TAG
1 A-201	ELEVATION TAG
ROOM NAME S1	ROOM NAME ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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713 337 8881

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MEP Engineering
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1100 Louisiana
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Low Voltage & Security
4b Technology Group, LLC
390 Glenborough Dr.
Suite 290
Houston, TX 77067
832 249 9379

Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	Addendum No. 03	07 OCT 2020

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

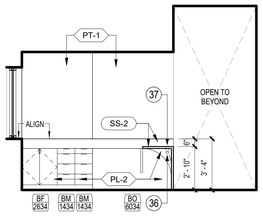
REGISTERED ARCHITECT — WINDY TEAGUE HIGH — 16677 — STATE OF TEXAS
10/ 07/ 2020

ARCHITECTURAL - ENLARGED PLANS

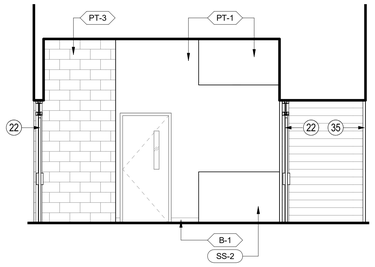
DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCRB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-110M
SHEET NUMBER

FILE PATH: C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-SHOP_vgandhiV3V3P.rvt
USER NAME:
DATE STAMP: 10/7/2020 6:34:16 PM



7 **ELEVATION**
SCALE: 1/4" = 1'-0"



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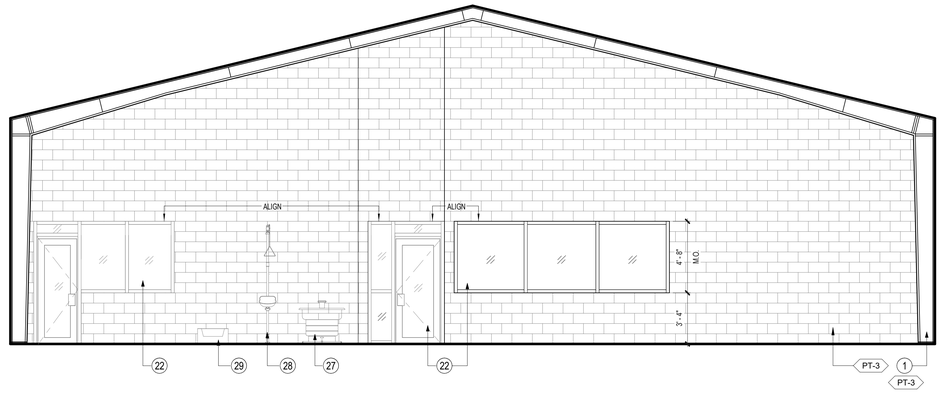
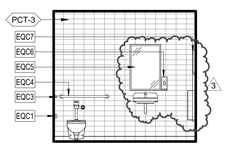
SCALE: 1/4" = 1'-0"

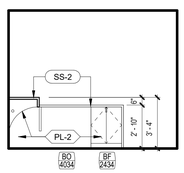


1 **ELEVATION**
SCALE: 1/4" = 1'-0"

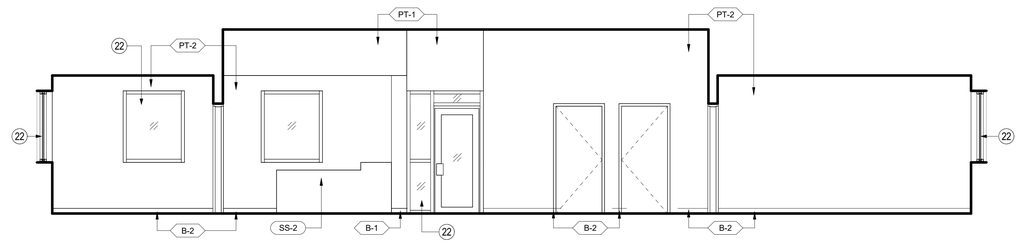


8 **ELEVATION**
SCALE: 1/4" = 1'-0"

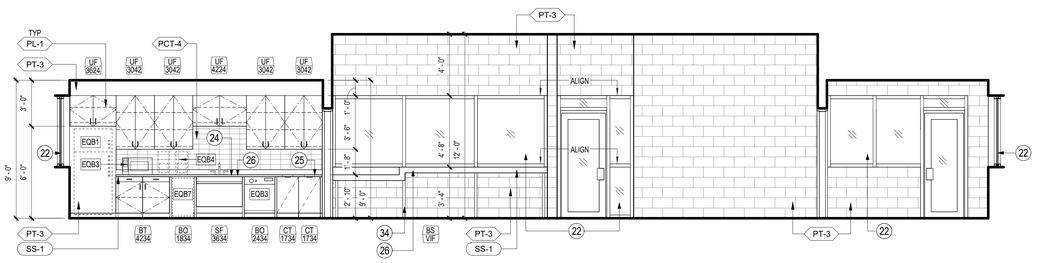
6 **ELEVATION**
SCALE: 1/4" = 1'-0"



5 **ELEVATION**
SCALE: 1/4" = 1'-0"



2 **ELEVATION**
SCALE: 1/4" = 1'-0"



3 **ELEVATION**
SCALE: 1/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	PEMB GUTTER ASSEMBLY
3	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
4	PEMB STRUT
5	PEMB SHEAR BRACE
6	INSULATED PEMB WALL ASSEMBLY WITH METAL PANEL FINISH
7	SURFACE-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
8	WIND-DRIVEN-RAIN-RESISTANT LOUVER ASSEMBLY. 50% MIN. FREE AREA. MIAMI-DADE APPROVED. B.O.D. IS RUSKIN ELF6375DXD. RE: MECHANICAL
9	PEMB TRIM
10	SLAB-ON-GRADE. RE: STRUCTURAL
11	OH COILING DOOR. RE: DOOR SCHEDULE
12	8" DIAMETER 42" HIGH PAINTED GALVANIZED STEEL CRASH BOLLARD WITH CONCRETE FILL AND DOME TOP
13	MECHANICAL ASSEMBLY. RE: MECHANICAL
14	INSULATED PEMB ROOFING ASSEMBLY
15	6" CAST-IN-PLACE CONCRETE PAD. FRAMED AT PERIMETER WITH STEEL ISLAND FORMS BY RED-E-FORM
16	GALVANIZED PAINTED HSS TUBE
17	OVERHEAD FAN. RE: MECHANICAL
18	CRANE RAIL BEAM
19	CRANE RAIL BEAM SUPPORT. ANCHORED TO PEMB STRUCTURE ABOVE
20	CHAIN-HUNG RADIANT HEATER. RE: MECHANICAL
21	COMPRESSED AIR LINE
22	INSULATED GLAZED EXTERIOR STOREFRONT
24	TAS-COMPLIANT STAINLESS STELL SINK ASSEMBLY
25	10" DIAMATER STAINELESS STEEL GROMMET
26	SOLID SURFACE COUNTERTOP
27	STAINLESS STEEL HAND WASHING SINK. RE: PLUMBING
28	STAINLESS STEEL EYE WASHING STATION. RE: PLUMBING
29	MOP SINK. RE: PLUMBING
30	INSULATED LIGHT-WALL ASSEMBLY
31	PEMB METAL PANEL INTERIOR WALL WAISNCOT TO 8'
32	QUICK-CONNECT COMPRESSED AIR TERMINUS. RE: PLUMBING
33	PROVIDE MANUAL ROLLER SHADE AT WINDOW HEAD
34	PROVIDE TUBE STEEL FRAMING TO SUPPORT FLOATING COUNTERTOP ASSEMBLY. PROVIDE SUPPORTS AT WALLS AT EITHER END
35	PEMB TRIM
36	CORD CHASE AND WHIP
37	2" CORD GROMMET WITH PASS-THRU COVER
41	UNINSULATED PEMB ROOFING ASSEMBLY
42	COMPRESSED FLUID LINES. RE: PLUMBING
43	DAYLIT GUTTER DISCHARGE
44	UTILITY TRENCH
45	HOSE REEL STAND. RE: PLUMBING AND ELECTRICAL
46	VAPOR BARRIER
47	GALVANIZED MCNICHOLS TRAFFIC-RATED BAR-STOCK PANEL. 3' LENGTHS
48	GALVANIZED EMBED ANGLE
49	GALVANIZED SUPPORT ANGLE
50	LINE OF PEMB STRUCTURE ADJACENT
51	PROVIDE MEDIUM BROOM FINISH AT EXTERIOR CONCRETE PATIO
52	POWER & DATA J-BOX HOSTED UNDER HOSE REEL COLUMN. RE: ELECTRICAL & TELECOM
53	DUPLEX DATA TERMINAL IN STEEL HOUSING MOUNTED TO HOSE-REEL STAND. RE: TELECOM
54	PREFINISHED SHEETMETAL FLASHING
55	PEMB WEATHER BARRIER
56	PEEL-N-STICK MASTIC
57	PEMB WALL PANEL
58	RETICULATED DOUBLE SEALANT JOINT WITH BACKER-ROD AND WEEP BAFFLES
59	INTERIOR WALL FINISH. RE: FINISH PLAN
60	CMU WALL. RE: STRUCTURAL
61	1" THICK COMPRESSIBLE FILLER
62	3/4" FIRE-TREATED PLYWOOD
63	TREATED BLOCKING

GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.
4. RE: MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR ADDITIONAL DATA.
5. EQM3 (MOBILE COLUMN LIFT) NOT SHOWN IN DRAWINGS.
6. WALLS TO RECIEVE PT-1 FINISH WITH B-1 BASE U.N.O.
7. PROVIDE SCHLUTER STRIP IN ANNODIZED ALUMINUM AT ALL TILE OUTSIDE CORNERS AND ALL OPEN TILE WALL EDGES.
8. ALL EXPOSED PEMB RIBS AND EXPOSED STRUCTURAL STEEL TO RECIEVE PT-3 FINISH.
9. M-8 WALLS TO RECIEVE PT-3 FINISH U.N.O.
10. MAINTENANCE SHOP FLOOR TO RECIEVE SC-3 FINISH.

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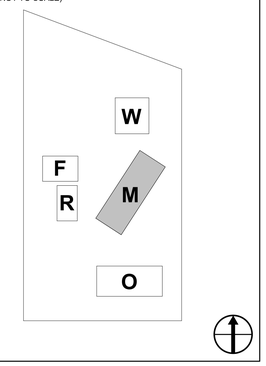

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8588 Katy Freeway
Suite 441
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713 463 8200

Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE
3	Addendum No. 03	07 OCT 2020

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

10/ 07/ 2020

ARCHITECTURAL - INTERIOR ELEVATIONS

DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCRB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-111M
SHEET NUMBER

FILE PATH: C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-SHOP_vgandhiV3V3P.rvt
USER NAME:
DATE STAMP: 10/7/2020 6:34:18 PM

THE COUNTY OF GALVESTON

RUFUS G. CROWDER, CPPO, CPPB
PURCHASING AGENT

GWEN MCLAREN, CPPB
ASST. PURCHASING AGENT

COUNTY COURTHOUSE
722 Moody (21st Street)
Fifth (5th) Floor
GALVESTON, TEXAS 77550

October 13, 2020

PROJECT NAME: **Galveston County Road & Bridge Facility Rebuild Project**

SOLICITATION NO: **ITB #B201044**

RE: **ADDENDUM #4**

To All Prospective Bidders:

The following information is being provided to aid in preparation of your bid submittal(s):

Attached you will find Addendum #4 for RFP #B201044, Galveston County Road & Bridge Facility Rebuild Project.

As a reminder, all questions regarding this bid must be submitted in writing to:

Rufus G. Crowder, CPPO CPPB
Galveston County Purchasing Agent
722 Moody, Fifth (5th) Floor
Galveston, Texas 77550
E-mail: purchasing.bids@co.galveston.tx.us

If you have any further questions regarding this bid, please address them to Rufus Crowder, CPPO CPPB, Purchasing Agent, via e-mail at purchasing.bids@co.galveston.tx.us, or contact the Purchasing Department at (409) 770-5371.

Please excuse us for any inconvenience that this may have caused.

Sincerely,

Rufus Crowder TB

Rufus G. Crowder, CPPO CPPB
Purchasing Agent
Galveston County

Page/

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Addendum

Distribution	☐ Owner ☐ Consultant(s)	☒ Bidders	☐ Other ..
From	Wendy Heger, AIA Page Southerland Page, Inc. 1100 Louisiana Street Suite One Houston, TX 77002	**Owner**	Galveston County 722 Moody Avenue 6th Floor Galveston, TX 77550
Project	Galveston County Road & Bridge Deptartment Facilities 5115 TX-3 Dickinson, TX 77573	**Architect's Project No.**	418198
Date of Issue	13-October-2020	**Addendum No.**	004
Contract For	General Construction	**For Bids Due**	22-October-2020

Seals

Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT
WENDY TEAS HEGER
16671
STATE OF TEXAS

10/13/2020

Description	This Addendum does not include changes to the Work.
Revised Documents	This Addendum does not include revised documents.
Additional Documents	Site Visit Attendance List

This Addendum is hereby incorporated into the Contract Documents for the Project referenced above, modifying and superseding any previously issued Contract Documents. Bidders must acknowledge receipt of **Addendum 004** in the bid form.

Galveston County – Road and Bridge Facilities
Site Visit Attendance List
10/08/2020 – 10/09/2020

NAME	COMPANY
Don DeAngelo	Erling
Nick Riemer	Erling
Jamey Abbs	SpawGlass
Matthew Fry	American Direct
Eric Cantu	American Direct
Jon Roebeler	Shelter Roofing
Michael Gonzalez	Gonzalez Group
Bryce Christensen	Grant Mackay Demo
Jeroen van Kessel	Westway Construction

Galveston County

5115 TX-3
DICKINSON, TEXAS 77539

Page Project No. 418198
ISSUE FOR PERMIT

06/10/2020

Road & Bridge Facilities

5115 TX-3
Dickinson, TX 77539

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Houston, TX 77024
713 463 8200

Firm Registration No. 15868
Page Southerland Page, Inc.
REGISTERED ARCHITECT
WENDY TEAS HEGER
15871
STATE OF TEXAS
01/02/2020

06/10/2020

Page Project Number 418198

Road & Bridge Facilities

G-000

FILE NAME: W:\418198\418198-A-R19-vgandhi-SITE.rvt
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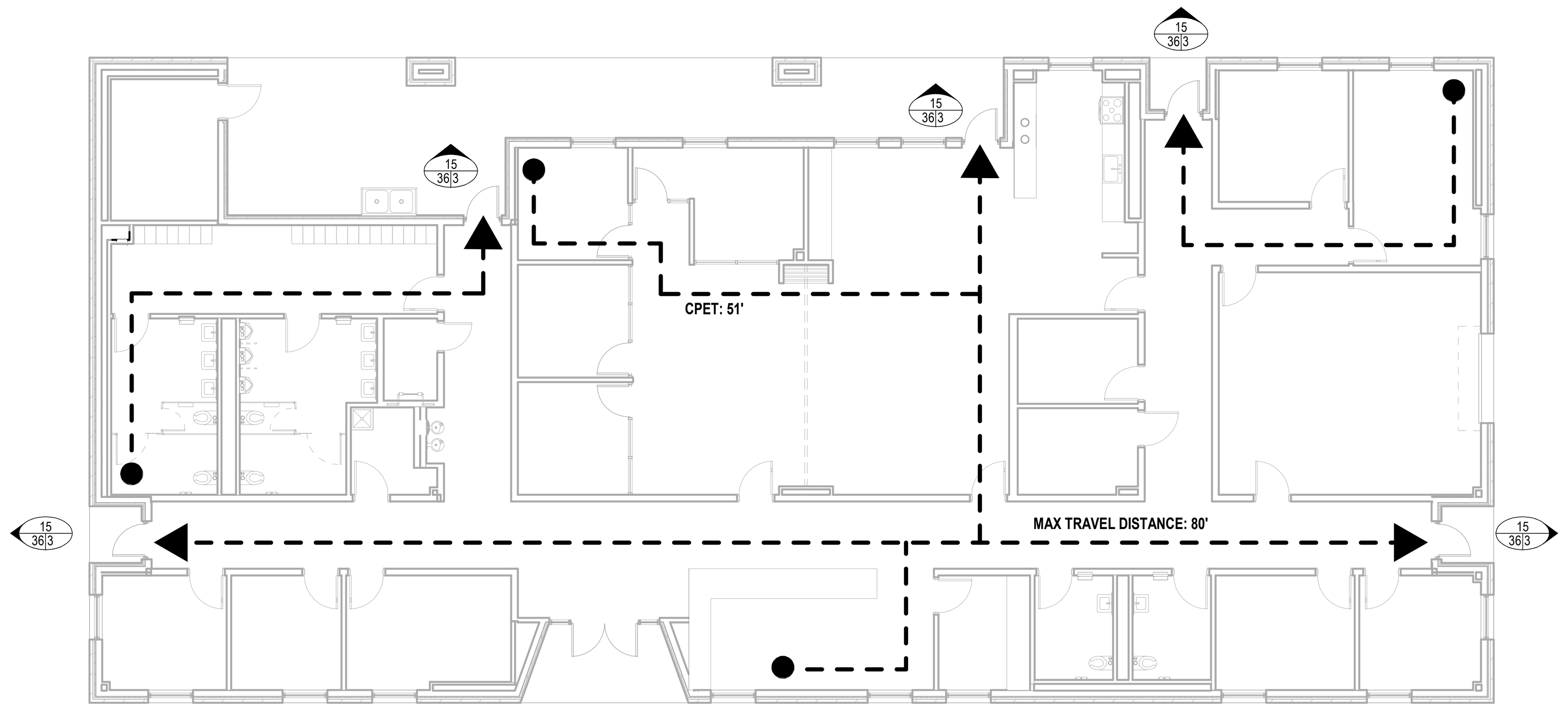
DATE STAMP: 7/2/2020 4:28:08 PM



1 LIFE-SAFETY PLAN - OFFICE
SCALE: 3/32" = 1'-0"

LIFE-SAFETY ANALYSIS - OFFICE BUILDING

NET FLOOR AREA: 6,430 SF

GROSS FLOOR AREA: 7,230 SF

OCCUPANT LOAD (IBC 2015 TABLE 1004.1.2):

7,230 SF / 100 PERSONS PER SF = 73 OCCUPANTS

DOOR WIDTH REQUIRED: 73 X .2 = 15"

DOOR WIDTH PROVIDED: 36" + 36" + 36" + 36" + 72" = 216"

MAX TRAVEL DISTANCE ALLOWED (IBC 2015 TABLE 1017.2): 200'

MAX TRAVEL DISTANCE PROVIDED: 80'

PLUMBING ANALYSIS - OFFICE BUILDING

OCCUPANCY LOAD: 73 PERSONS ~ 37 MALES & 37 FEMALES

WATER CLOSETS REQUIRED (TABLE 2902.1): 2 FOR MALES, 2 FOR FEMALES

WATER CLOSETS PROVIDED: 5 FOR MALES, 2 FOR FEMALES, 2 UNISEX

LAVATORIES REQUIRED (TABLE 2902.1): 2 FOR MALES, 2 FOR FEMALES

LAVATORIES PROVIDED: 3 FOR MALES, 3 FOR FEMALES, 2 UNISEX

DRINKING FOUNTAINS REQUIRED (TABLE 2902.1): 1 TOTAL

DRINKING FOUNTAINS PROVIDED: 2 FOUNTAINS + 1 ICE/WATER DISPENSERS

CONSTRUCTION ANALYSIS - OFFICE BUILDING

OCCUPANCY CLASSIFICATION: GROUP B (IBC 2015 304.1)

CONSTRUCTION TYPE: IIB (IBC 2015 TABLE 601)

NOT SPRINKLED

0 HR FIRE RATING REQUIRED FOR ALL BUILDING ELEMENTS (IBC 2015 TABLE 601)

FIRE SEPARATION DISTANCE FROM NEAREST BUILDING: 61'

0HR FIRE RATING FOR EXTERIOR WALLS (IBC 2015 TABLE 602)

ALLOWABLE BUILDING HEIGHT (IBC 2015 TABLE 504.3): 55'

PROPOSED BUILDING HEIGHT: 21' - 3"

ALLOWABLE STORIES ABOVE GRADE (IBC 2015 TABLE 504.4): 3

PROPOSED STORIES ABOVE GRADE: 1

ALLOWABLE AREA FACTOR (IBC 2015 TABLE 506.2): 23,000

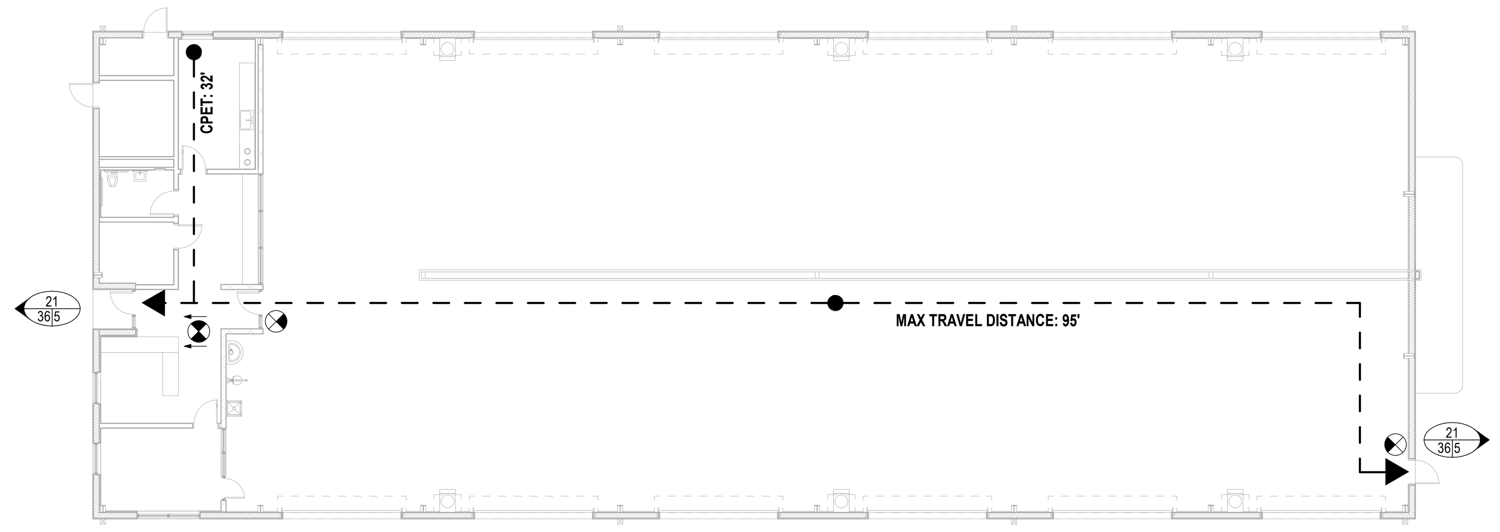
ALLOWABLE AREA FOR SINGLE-OCCUPANCY, ONE-STORY BUILDINGS (IBC 2015 506.2.1): Aa = At + (NS x If)

INCREASE DUE TO FRONTAGE [If] (IBC 2015 506.3): 1

46,000 SF = 23,000 + (23,000 x 1)

PROPOSED BUILDING AREA: 7,230 SF

ALLOWABLE AREA OF UNPROTECTED OPENINGS (IBC 2015 TABLE 705.8): NO LIMIT



2 LIFE-SAFETY PLAN - MAINTENANCE SHOP
SCALE: 1/16" = 1'-0"

LIFE-SAFETY ANALYSIS - MAINTENANCE SHOP

GROSS FLOOR AREA: 10,400 SF

ADMIN OFFICE AREA: 1,230 SF - OCCUPANCY CLASSIFICATION: B

ADMIN OFFICE OCCUPANT LOAD (IBC 2015 TABLE 1004.1.2):

1,230 SF / 100 SF PER PERSON = 13 OCCUPANTS

VEHICLE MAINTENANCE SHOP AREA: 9,170 SF - OCCUPANCY CLASSIFICATION: S-1

VEHICLE MAINTENANCE SHOP OCCUPANT LOAD (IBC 2015 TABLE 1004.1.2):

9,170 SF / 200 SF PER PERSON = 46 OCCUPANTS

TOTAL BUILDING OCCUPANTS: 46 OCCUPANTS + 13 OCCUPANTS = 59 OCCUPANTS

DOOR WIDTH REQUIRED: 59 X .2 = 12"

DOOR WIDTH PROVIDED: 36" + 36" = 72"

MAX TRAVEL DISTANCE ALLOWED (IBC 2015 TABLE 1017.2): 200'

MAX TRAVEL DISTANCE PROVIDED: 88'

PLUMBING ANALYSIS - MAINTENANCE SHOP

OCCUPANCY LOAD: 59 PERSONS

WATER CLOSETS REQUIRED (TABLE 2902.1): 1 UNISEX

WATER CLOSETS PROVIDED: 1 UNISEX

LAVATORIES REQUIRED (TABLE 2902.1): 1 UNISEX

LAVATORIES PROVIDED: 1 UNISEX

SERVICE SINKS REQUIRED: 1

SERVICE SINKS PROVIDED: 1

DRINKING FOUNTAINS REQUIRED (TABLE 2902.1): 1

DRINKING FOUNTAINS PROVIDED: 1 ICE/WATER DISPENSER

CONSTRUCTION ANALYSIS - MAINTENANCE SHOP

OCCUPANCY CLASSIFICATION: GROUP S-1 (IBC 2015 311.2)

CONSTRUCTION TYPE: IIB (IBC 2015 TABLE 601)

SPRINKLED

0 HR FIRE RATING REQUIRED FOR ALL BUILDING ELEMENTS (IBC 2015 TABLE 601)

FIRE SEPARATION DISTANCE FROM NEAREST BUILDING: 30'

0HR FIRE RATING FOR EXTERIOR WALLS (IBC 2015 TABLE 602)

ALLOWABLE BUILDING HEIGHT (IBC 2015 TABLE 504.3): 75'

PROPOSED BUILDING HEIGHT: 38' - 3"

ALLOWABLE STORIES ABOVE GRADE (IBC 2015 TABLE 504.4): 3

PROPOSED STORIES ABOVE GRADE: 1

ALLOWABLE AREA FACTOR (IBC 2015 TABLE 506.2): 70,000

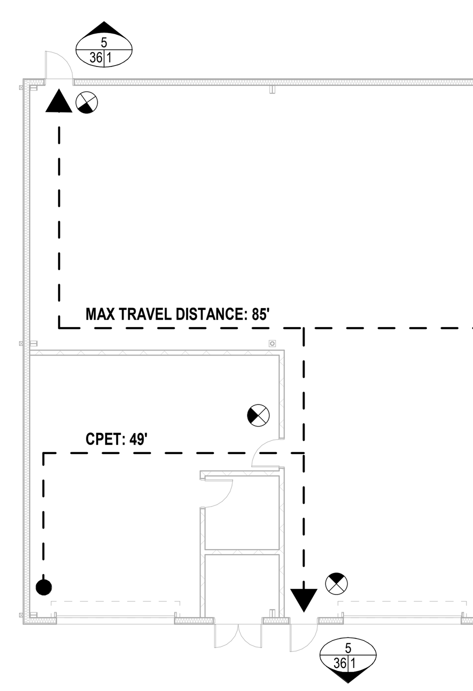
ALLOWABLE AREA FOR SINGLE-OCCUPANCY, ONE-STORY BUILDINGS (IBC 2015 506.2.1): Aa = At + (NS x If)

INCREASE DUE TO FRONTAGE [If] (IBC 2015 506.3): 1

140,000 SF = 70,000 + (70,000 x 1)

PROPOSED BUILDING AREA: 10,400 SF

ALLOWABLE AREA OF UNPROTECTED OPENINGS (IBC 2015 TABLE 705.8): NO LIMIT



3 LIFE-SAFETY PLAN - WAREHOUSE
SCALE: 1/16" = 1'-0"

LIFE-SAFETY ANALYSIS - WAREHOUSE

GROSS FLOOR AREA: 4,380 SF

OCCUPANT LOAD (IBC 2015 TABLE 1004.1.2):

4,380 SF / 500 PERSONS PER SF = 9 OCCUPANTS

DOOR WIDTH REQUIRED: 9 X .2 = 2"

DOOR WIDTH PROVIDED: 36" + 36" = 72"

MAX TRAVEL DISTANCE ALLOWED (IBC 2015 TABLE 1017.2): 150'

MAX TRAVEL DISTANCE PROVIDED: 88'

PLUMBING ANALYSIS - WAREHOUSE

THE WAREHOUSE IS AN UNOCCUPIED BUILDING,
NO RESTROOMS ARE PROVIDED.

CONSTRUCTION ANALYSIS - WAREHOUSE

OCCUPANCY CLASSIFICATION: GROUP H-3 (IBC 2015 307.5)

CONSTRUCTION TYPE: IIB (IBC 2015 TABLE 601)

SPRINKLED

0 HR FIRE RATING REQUIRED FOR ALL BUILDING ELEMENTS (IBC 2015 TABLE 601)

FIRE SEPARATION DISTANCE FROM NEAREST BUILDING: 30'

0HR FIRE RATING FOR EXTERIOR WALLS (IBC 2015 TABLE 602)

ALLOWABLE BUILDING HEIGHT (IBC 2015 TABLE 504.3): 55'

PROPOSED BUILDING HEIGHT: 23' - 6"

ALLOWABLE STORIES ABOVE GRADE (IBC 2015 TABLE 504.4): 2

PROPOSED STORIES ABOVE GRADE: 1

ALLOWABLE AREA FACTOR (IBC 2015 TABLE 506.2): 14,000

ALLOWABLE AREA FOR SINGLE-OCCUPANCY, ONE-STORY BUILDINGS (IBC 2015 506.2.1): Aa = At + (NS x If)

INCREASE DUE TO FRONTAGE [If] (IBC 2015 506.3): 1

28,000 SF = 14,000 + (14,000 x 1)

PROPOSED BUILDING AREA: 4,380 SF

LIFE-SAFETY LEGEND

Symbol	Meaning
21 / 36 / 5	DIRECTION OF TRAVEL
	NUMBER OF OCCUPANTS
	EXIT WIDTH REQUIRED (IN INCHES)
	EXIT WIDTH PROVIDED (IN INCHES)
◀ — —	PATH OF TRAVEL
●	START POINT OF TRAVEL
⊗	EXIT SIGN
FEC	FIRE EXTINGUISHER CABINET
CPET	COMMON PATH OF EGRESS TRAVEL

PROJECT DESCRIPTION

PROJECT NAME: GALVESTON COUNTY ROAD & BRIDGE DEPARTMENT HEADQUARTERS
PROJECT ADDRESS: 5115 TX-3, DICKINSON, TX 77539
OWNER: GALVESTON COUNTY

PROJECT DESCRIPTION:

PHASE 1 - SELECTIVE DEMOLITION OF STRUCTURES AND LANDSCAPING AT EXISTING CAMPUS FOR GALVESTON COUNTY ROAD & BRIDGE DEPARTMENT.

PHASE 2 - CONSTRUCTION OF NEW OFFICE BUILDING, NEW AUTOMOTIVE MAINTENANCE SHOP, NEW STORAGE WAREHOUSE, NEW COVERED WASHRACK AND NEW FUELAIR DISPENSORY BUILDINGS. SITE IMPROVEMENTS CONSIST OF SITE REGRADING, INSTALLATION OF NEW STORM DRAINAGE INFRASTRUCTURE, REPAVING AND RECURBING, NEW SITE LIGHTING, NEW SECURITY FENCING AND GATES, NEW LANDSCAPING AND A NEW SCREENED ENCLOSURE HOUSING A DUMPSTER, TRANSFORMER AND GENERATOR.

AUTHORITY HAVING JURISDICTION:

CITY OF DICKINSON, TX

APPLICABLE BUILDING CODES:

2015 INTERNATIONAL BUILDING CODE
2015 INTERNATIONAL PLUMBING CODE
2015 INTERNATIONAL MECHANICAL CODE
2015 INTERNATIONAL FIRE CODE
2014 NATIONAL ELECTRIC CODE
2015 INTERNATIONAL ENERGY CONSERVATION CODE
2015 INTERNATIONAL FUEL GAS CODE
2012 TEXAS ACCESSIBILITY STANDARDS
CITY OF DICKINSON CODE OF ORDINANCES

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Page/

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713 463 8200

Galveston County
Road & Bridge Department Facilities
5115 TX-3
Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.
REGISTERED ARCHITECT
WENDY TEAS HEGER
16677
STATE OF TEXAS
07/02/2020

GENERAL - PROJECT DATA

DRAWN BY	CHECKED BY
WJC	ST
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

G-100
SHEET NUMBER

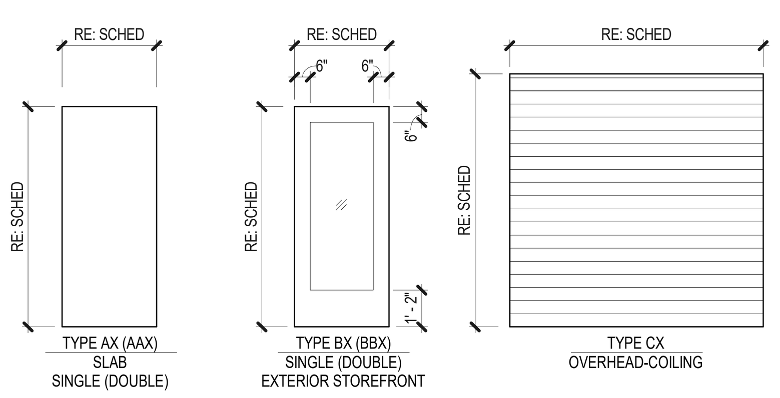
FILE PATH USER NAME: C:\Users\initialaec\Documents\418198-A-R19-CENTRAL-SITE_wcicack.rvt
DATE STAMP: 7/27/2020 5:20:13 PM

DOOR SCHEDULE - OFFICE												
		Door					Frame					
Door Number	Door Type	Overall Width	Height	Thickness	Material	Finish	Material	Jamb	Head	Fire Rating	Hardware Set	Comments
O1	BBX	6' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW714AM	
O3	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	501	
O4	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	341	
O5	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	341	
O6	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	201	
O7	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
O8	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
O9A	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	501	
O9B	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	501	
O9C	CX	8' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
O10	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
O11	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
O12	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
O13	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	401	
O14	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	201	
O15	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	201C	
O16A	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	701	
O16B	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
O17	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	507	
O18	B	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	103A	
O19	B	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	103A	
O20	B	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	103A	
O21	B	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	103A	
O23	AX	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	CW715	INSULATED
O24	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
O25	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	801	
O26	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	801L	
O27	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	801L	
O28	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
O29	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	201	
O30	A	2' - 6"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	201C	
O31	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
O32	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
O33	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	403	

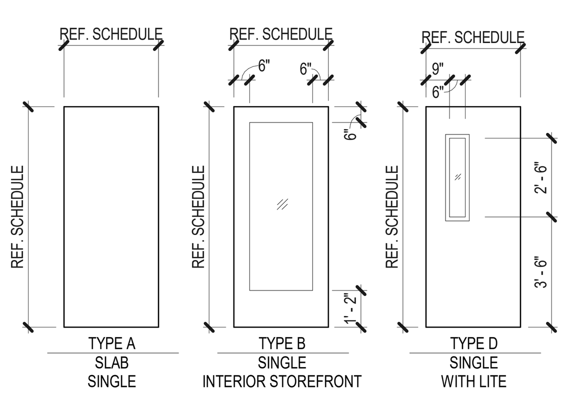
DOOR SCHEDULE - MAINTENANCE SHOP												
M1A	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	CW715A	
M1B	BX	3' - 0"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	705AG	
M3A	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	103	
M3B	BX	2' - 8"	7' - 0"	0' - 1 3/4"	ALUM	CLR ANOD	ALUM	BY MANUF	BY MANUF	NR	501ACG	
M4	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PAINT	HM	7/A-510	10/A-510	NR	201C	
M5	A	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	341	
M6	D	3' - 0"	7' - 0"	0' - 1 3/4"	SCW	PLAM	HM	7/A-510	10/A-510	NR	401	
M7	AX	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	W715	INSULATED
M8	AX	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	W205	INSULATED
MB1	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB2	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB3	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB4	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB5	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB6	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB7	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB8	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB9	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB10	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB11	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB12A	CX	15' - 0"	15' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
MB12B	AX	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	CW715Q	INSULATED

DOOR SCHEDULE - WAREHOUSE												
W1	AAX	6' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	W214	INSULATED
W2	A	3' - 6"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	8/A-501	11/A-501	NR	201W	
W3A	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
W3B	A	3' - 6"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	8/A-501	11/A-501	NR	201GW	
W4A	AX	3' - 6"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	CW205W	INSULATED
W4B	CX	15' - 0"	10' - 0"	0' - 2"	BY MANUF	BY MANUF	BY MANUF	BY MANUF	BY MANUF	NR	001	INSULATED
W6	AX	3' - 6"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	EXT	EXT	NR	W205WQ	INSULATED

DOOR SCHEDULE - WASHRACK												
R4	AX	4' - 0"	7' - 0"	0' - 1 3/4"	HM	PT-5	HM	8/A-501	11/A-501	NR	CW205Q	

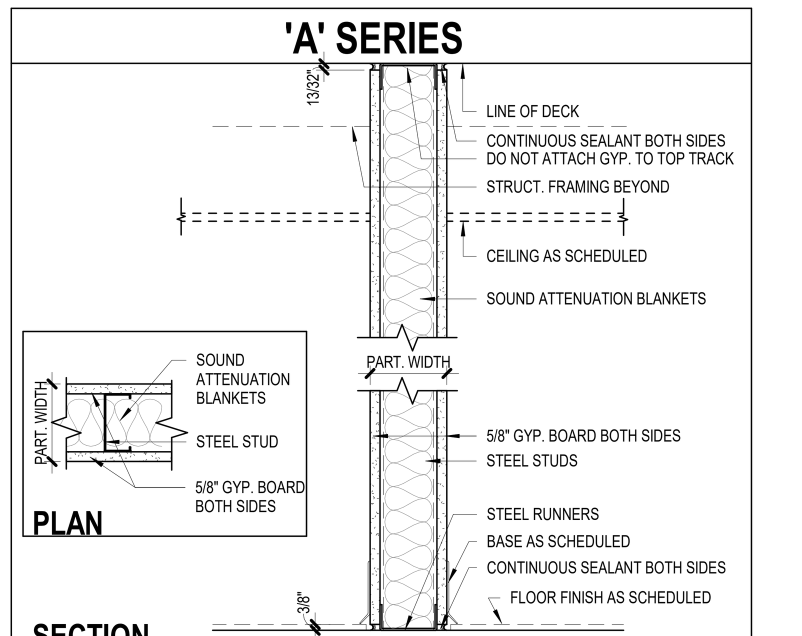


1 **EXTERIOR DOOR TYPES**
SCALE: 1/4" = 1'-0"



2 **INTERIOR DOOR TYPES**
SCALE: 1/4" = 1'-0"

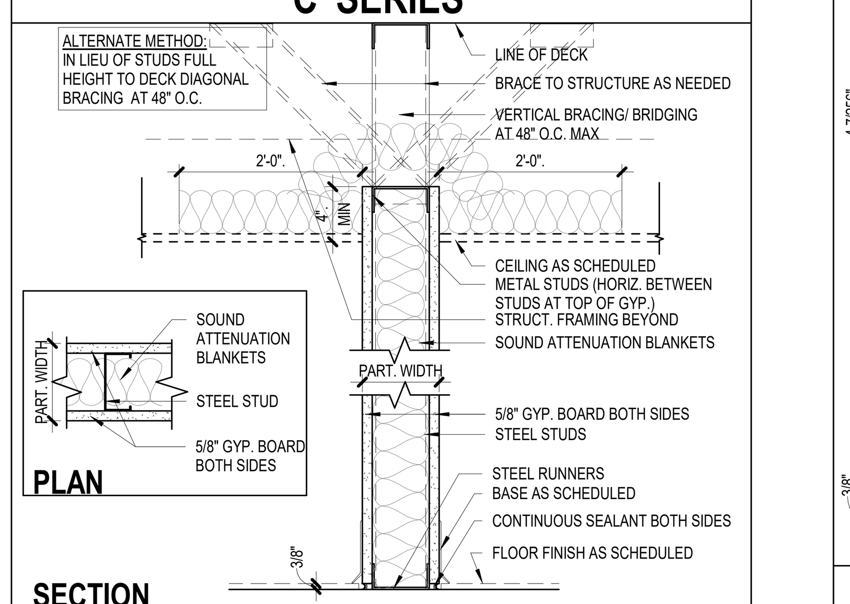
'A' SERIES



TYPE	STUD	PART. WIDTH	MAX. HEIGHT 25 GA.	MAX. HEIGHT 20 GA.		DESIGN STC MIN STC	DESIGN STC INSUL	EST STC W/O INSUL
A3	3 5/8"	4 7/8"	14' - 4"	15' - 8"		40	3 1/2"	40
A6	6"	7 1/4"	19' - 9"	23' - 2"		40	3 1/2"	40
A6	8"	9 1/4"	23' - 9"	27' - 2"		40	3 1/2"	40

LIMITING HEIGHTS BASED ON ASTM; L/240; 5 PSF

'C' SERIES



TYPE	STUD	PART. WIDTH	MAX. HEIGHT 25 GA.	MAX. HEIGHT 20 GA.		DESIGN STC MIN STC	DESIGN STC INSUL	EST STC W/O INSUL
C3	3 5/8"	4 7/8"	12' - 4"	14' - 11"		40	3 1/2"	40
C6	6"	7 1/4"	15' - 9"*	21' - 7"		40	3 1/2"	40

LIMITING HEIGHTS BASED ON SSMA/SFIA; L/240; 5 PSF
*ADD WEB STIFFENERS

Galveston Road and Bridge Fueling Overview

Two aboveground storage tanks (AST) will store diesel and gasoline products. Gasoline and diesel will be transferred to a fuel island where two dispensers will be installed in order to dispense gasoline and diesel from each dispenser. Piping, for aboveground applications, will include schedule 40 black iron-pipe and galvanized pipe. The vent pipe will be 3" galvanized. The piping for the Fill and vapor recovery will be 3" black iron. The fuel transfer piping will be 2" black iron piping. Both the diesel and gasoline piping will run from their respective submersible pump into the top of one transition sump which will be located within/under the tank pad (not on the drive). At the transition sump the steel pipe will terminate into a 2" EZ flex connector that will then be connected to the electrofusion piping system for the underground application. Electrofusion piping will be 2" in diameter. Both the diesel and gasoline fuel lines will exit the transition sump and terminate in the underground dispenser sumps (UDC) at the fuel island. Dispenser sumps will be piped with EZ flex connectors and 1-1/2" double poppet shear valves.

Tanks will be 10,000 gallon each. Insulated Fireguard, double-wall (DW) and manufactured by Modern Welding of Texas or equal.

The diesel tank will have; 4-4" CPLG x 5" LG. Fittings for Vent, ATG Probe, Submersible pump and Expansion relief valve; 1-6" SCH. 40 Pipe (T.O.E.)- for Fill; 2-8" Flanged Fittings-Primary Tank Emergency Vent and Outer Tank Emergency Vent (Modern will supply the Morrison vents -part number 2440F) ,1-2" CPLG X 5" LG; 1-20" Manway-for access; 1-2" SCH. 40 pipe-for Interstitial monitor, 2-Saddles-welded to tank; 1-18" wide ladder for observation only-welded to clips.

The gasoline tank will have; 5-4" CPLG x 5" LG. Fittings for Vapor Recovery, Vent, ATG Probe, Submersible pump and Expansion relief valve; 1-6" SCH. 40 Pipe (T.O.E.)- for Fill; 2-8" Flanged Fittings-for Primary Tank Emergency Vent and Outer Tank Emergency Vent (Modern will supply the Morrison vents -part number 2440F) ,1- 2" CPLG X 5" LG; 1-20" Manway-for access; 1-2" SCH. 40 pipe-for Interstitial monitor, 2-Saddles-welded to tank; 1-18" wide ladder for observation only-welded to clips.

Tank Hardware will be manufactured by Morrison Bros. Co. or equal.

Diesel Tank Hardware required will be supplied by Morrison:

QTY				**Remote fill, diesel:**
1	715--TT3-3MBB-0	3" - 10 Gal.		Top connection w/3" AL male QD adaptor, BR ball valve, hand pump
1	715---S400 AS			Four-leg Stand for 715 10 Gallon Remote Fill Box, Powder Coated Steel
				Overfill prevention, diesel:
1	285---2800 AS	3" w/100 Mesh		Line Strainer, Bottom Clean-out
1	9095AA3300AVEVR	3"		Pressure Fill Overfill Prevention Valve, Aluminum Body with 3"
				Female Threaded x 6" Female Threaded Connections, CARB EVR
1	9095ATM0100 AM	2" & 3"		Manual Test Mechanism 9095A, B & AA (Does Not Include Valve Top)
1	419---03081TEVR	3" x 7'-9"		Aluminum Drop Tube - CARB EVR Approved, (1 per carton)
1	539AS-0300 AD	3"		Diffuser, Slip-on
				Venting - Emergency & Normal, diesel:
2	244OF-0100 AV	8" 8oz/sq.in.		Emergency Vent - Flanged, w/O-Ring, UL & ULC Listed
1	354---0300 AV	3"		Updraft Vent
				Dispensing, diesel:
1	535BDI0300 AV	2"		Gate Valve w/Expansion Relief, Ductile Iron, Locking
1	346DI-0500 AV	2"		External Emergency Valve, Ductile Iron
1	285---2600 AS	2" w/100 Mesh		Line Strainer, Bottom Clean-out
1	7102080200 1V	2"		Solenoid Valve (FKM) w/208 Volt AC Coil
1	076DI-0200 AV	.5"		Expansion Relief Valve (50 PSI Setting)
1	691---0800 1V	2"		Full Port, Forged Brass, Ball Valve

Gasoline Tank Top Hardware Supplied by Morrison:

QTY				**Remote fill, gasoline:**
1	715--TT3-3MBB-0	3" - 10 Gal.		Top connection w/3" AL male QD adaptor, BR ball valve, hand pump
1	715---S400 AS			Four-leg Stand for 715 10 Gallon Remote Fill Box, Powder Coated Steel
				Vapor Recovery, gasoline:
1	715---VR30 AK	3"		Vapor Recovery Kit, Includes Cap, Adaptor & 2 clamps
1	323---0100 AA	4" x 3"		Vapor Recovery Adaptor (4" Vapor, 3" Riser Thread)
1	323C--0100ACEVR	4"		Vapor Recovery Cap, CARB EVR Approved
				Overfill prevention, gasoline:
1	285---2800 AS	3" w/100 Mesh		Line Strainer, Bottom Clean-out
1	9095AA3300AVEVR	3"		Pressure Fill Overfill Prevention Valve, Aluminum Body with 3"
				Female Threaded x 6" Female Threaded Connections, CARB EVR
1	9095ATM0100 AM	2" & 3"		Manual Test Mechanism 9095A, B & AA (Does Not Include Valve Top)
1	419---03081TEVR	3" x 7'-9"		Aluminum Drop Tube - CARB EVR Approved, (1 per carton)
1	539AS-0300 AD	3"		Diffuser, Slip-on
				Venting - Emergency & Normal, gasoline:
2	244OF-0100 AV	8" 8oz/sq.in.		Emergency Vent - Flanged, w/O-Ring, UL & ULC Listed
1	748A--3300 AV	3" 6oz/sq.in		Pressure Vacuum Vent, Brass Internals
				Dispensing, gasoline:
1	535BDI0300 AV	2"		Gate Valve w/Expansion Relief, Ductile Iron, Locking
1	346DI-0500 AV	2"		External Emergency Valve, Ductile Iron
1	285---2600 AS	2" w/100 Mesh		Line Strainer, Bottom Clean-out
1	7102080200 1V	2"		Solenoid Valve (FKM) w/208 Volt AC Coil
1	076DI-0200 AV	.5"		Expansion Relief Valve (50 PSI Setting)
1	691---0800 1V	2"		Full Port, Forged Brass, Ball Valve

Fuel Transfer equipment will be manufactured by Franklin Fueling Systems or equal.

2	402903924			STPKMVS2-VL2-24 (2hp variable speed submersible pump)
2	5874202800			MAG VFC Variable Frequency Controller
2	5800300100			STP-DHI- 120V UNIT Dispenser Hook Isolation
1	403168901			STP-MLD+G, SGL, GAS (mechanical leak detector)
1	403170901			STP-MLD+D, SGL, DIESEL (mechanical leak detector)

Electronic Monitoring of Inventory and leak detection will be manufactured by Morrison Bros. Co or equal.

QTY				**Electronic Tank Monitoring with Liquid Level, Interstitial, Transition and Dispenser Sump Sensors**
1	1218C-0200 AC			System Console monitors up to 2 tanks
2	1218S-2510 AS	25'		Tank Level Sensor, Drop Tube (4" tank opening is required)
2	419---0300 1T	4" x 10'		Aluminum Drop Tube (1 per carton)
1	1218C-6600 AM			External Input/output Expansion Module
1	1218S-2544 CC	100'		100' spool Belden 7933A cable
5	924LS-0150 AS	15'		Liquid sensor with 15' lead wire
2	305XP-2200 AC	2"		Tank Monitor Cap w/Port Hole & Cable Connector 3/8"
2	1218C-0163 2C			Wireless Client

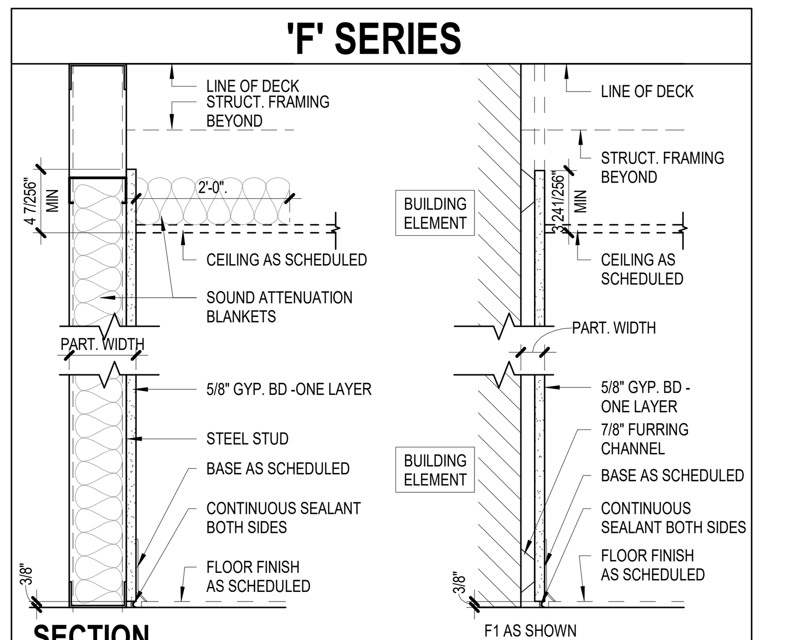
Underground Piping system will include parts and accessories manufactured by Bravo and Franklin Fueling Systems or equal.

QTY	_			BRAVO
2	B1210-S0			Single wall fiberglass UDC for Wayne Select dispenser (quantity depends on number of dispensers-this qty is based on two dispensers).
4	BK-1015			Boss-Mount bracket for B1000 and stabilizer bar
1	B601-S-220			Single wall FRP vent / transition sump with 2, 2" AST fittings
1	EO-EBS			Electrical off set on the vent / sump box
1	RS-501			Small Rack for 2" pipelines
	_			
	_			Franklin Fueling System piping parts and service station hardware parts for
	_			installation in dispenser sumps (UDC) and transition sump
	_			Quantity of piping and parts depends on how contractor lays out site install and how many dispensers will be on site.
	001-075-063-033PSE			Pipe, UPP, Double Wall, 33-foot sick
	03-063-EIF-U			Elbow, 90°, electrofusion, 2"
	04-063-EIF-U			Elbow 45°, electrofusion, 2"
	08.063-EIF-U			Tee, electrofusion,2"
	02-063-L-U			Welding Socket, 2", Long
	49-075-063TP1-U			Reducer, Electrofusion, 2" DW/2"Primary, w/Test Port
	FEB-075-M			Entry Seal, Fiberglass, 2" DW/2" Primary
	E3-502-201			E32 Equivalent
	Fiberglas-Kit			Polyester Resin Kit, 3, RS,1PUT
	G3-075-063-U			Elbow, 90°, electrofusion, Gemini 2"
	G4-075-063-U			Elbow 45°, electrofusion, Gemini 2"
	GB-075-063-U			Tee, electrofusion, Gemini 2"
	02-75SC-U			Socket, Welding-UPP, 2" SC
	90-063 QL-U			Quick release termination fitting for 2" UPP pipe
	662501902			1-1/2" double poppet shear valve, female
	FF15X18HMXEZ			1-1/2" flexible connector, EZ FIT flange X Hex Male
	EZ Clamp			EZ Fit Clamp
	407493002			2" EZ FIT gasket (one per connection)

Dispensers will be manufactured by Dover Fuel Systems or equal. Hanging Hardware will be manufactured by Husky or equal.

	_			Dispenser will be manufactured by Dover Fuel Systems
	3/G7203D/29GHJKUY/			Each Dispenser includes: Twin, Two Product, Remote Dispenser, Island Oriented, Enhanced Capacity, E25 Compatibility, Internal Filter, Pulse Output Interface Board, Explosion Proof J-Box, Hose Hanger, iMeter2, Select Gen2, electromechanical Totalizer per Hose, Proportional Solenoid Valve and WM002290 Remote Control (1per 5 dispensers). Standard one-year warranty. Unit of Measure: Gallons; Ad Panels: Regular Unleaded / Diesel; Finish: Painted Silver w/ Standard Blue Doors.
	_			
	_			Hanging Hardware for dispensers will be manufactured by Husky
	Husky 010673			9" whip-hose, 3/4" X 9-foot hose, breakaway, swivel, nozzle (two hoses per dispenser)

'F' SERIES



TYPE	STUD	PART. WIDTH	MAX. HEIGHT 25 GA.	MAX. HEIGHT 20 GA.	DESIGN NO.	DESIGN STC MIN STC	DESIGN STC INSUL	EST STC W/O INSUL
F1	7/8"	1 1/2"	6'- 11"	8' - 2"	N/A	-	-	-
F2	2 1/2"	3 1/8"	9' - 7"	11' - 3"	N/A	-	2 1/2"	-
F3	3 5/8"	4 1/4"	12' - 4"	14' - 11"	N/A	-	3 1/2"	-
F6	6"	6 5/8"	15' - 9"*	21' - 7"	N/A	-	3 1/2"	-

LIMITING HEIGHTS BASED ON SSMA / SFIA; L/240; 5 PSF
* ADD WEB STIFFENERS

EQUIPMENT SCHEDULE - BREAKROOMS				
ITEM	DESCRIPTION	MANUFACTURER	MODEL	NOTES
EQB1	REFRIGERATOR / FREEZER	GENERAL ELECTRIC	GNE29GYNFS	
EQB2	COUNTERTOP MICROWAVE	GENERAL ELECTRIC	PRB9159SJSS	
EQB3	UNDERCOUNTER DISHWASHER	GENERAL ELECTRIC	GDP645SYNFS	
EQB4	COFFE MACHINE	BY VENDOR	BY VENDOR	NIC
EQB5	ELECTRIC RANGE	GENERAL ELECTRIC	PB930SLSS	
EQB6	VENT HOOD	GENERAL ELECTRIC	JV936DSS	RE: MECH
EQB7	UNDERCOUNTER ICE MACHINE	HOSHIZAKI	C-101BAH-ADDS	RE: PLUMBING
EQB8	OUTDOOR ICE MACHINE	HOSHIZAKI	KM-301BWJ	RE: PLUMBING

EQUIPMENT SCHEDULE - RESTROOMS				
ITEM	DESCRIPTION	MANUFACTURER	MODEL	NOTES
EQC1	RECESSED MULTI-ROLL TOILET TISSUE DISPENSER	BOBRICK	B-6977	
EQC2	GRAB BAR 36"	BOBRICK	B-6806.99x36	PEENED FINISH
EQC3	GRAB BAR 42"	BOBRICK	B-6806.99x42	PEENED FINISH
EQC4	SURFACE-MOUNTED TOILET TISSUE DISPENSER WITH SHELF	BOBRICK	B-2840	
EQC5	MIRROR	BOBRICK	B-290 2436	
EQC6	SURFACE-MOUNTED HANDS-FREE SOAP DISPENSOR	BOBRICK	B-2012	
EQC7	RECESSED PAPER TOWEL DISPENSER AND WASTE BIN	BOBRICK	B-3942	

EQUIPMENT SCHEDULE - MAINTENANCE SHOP				
ITEM	DESCRIPTION	MANUFACTURER	MODEL	NOTES
EQM1	2-POST LIST - 12,000#	CHALLENGER LIFTS	CL12	
EQM2	4-POST LIFT - 15,000#	CHALLENGER LIFTS	4015XFX	
EQM3	MOBILE COLUMN LIFT - 14,000#	CHALLENGER LIFTS	CLHM-140	
EQM4	HOSE-REEL STAND	BALCRANK	2230-029	
EQM5	275 GAL NEW FLUID TANK WITH PUMP	CONTAINMENT SOLUTION INC		
EQM6	500 GAL USED FLUID TANK WITH PUMP	CONTAINMENT SOLUTION INC		
EQM7	7.5 HP 150 GAL DUPLEX AIR COMPRESSOR	CHAMPION	HR7DF-12	
EQM8	NEW OIL PUMP	BALCRANK	1130-020	PAIRS WITH EQM5
EQM9	USED OIL PUMP	BALCRANK	1121-024	PAIRS WITH EQM4
EQM10	HOSE REEL AIR/WATER	BALCRANK	2120-020	
EQM11	HOSE REEL OIL	BALCRANK	2120-013	
EQM12	ELECTRICAL CORD REEL	SAFLITE	4050-3600	

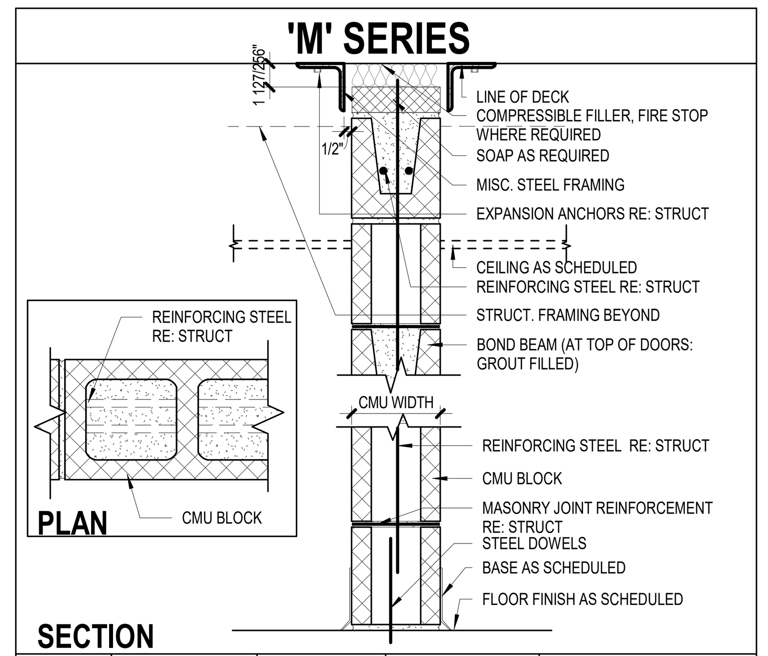
EQUIPMENT SCHEDULE - FUELAIR				
ITEM	DESCRIPTION	MANUFACTURER	MODEL	NOTES
EQF1	10,000 GALLON INSULATED FIREGUARD DOUBLEWALL STORAGE TANK	MODERN	SEE ADJACENT NARRATIVE	GASOLINE
EQF2	10,000 GALLON INSULATED FIREGUARD DOUBLEWALL STORAGE TANK	MODERN	SEE ADJACENT NARRATIVE	DIESEL
EQF3	FUEL DISPENSER	DOVER FUEL SYSTEMS	SEE ADJACENT NARRATIVE	
EQF4	FUEL CONTROLLER	MULTIFORCE	FF814	

EQUIPMENT SCHEDULE - WASHRACK				
ITEM	DESCRIPTION	MANUFACTURER	MODEL	NOTES
EQR1	PRESSURE WASHER	ALKLEAN	ALKHEO30050E4G	SEE SPECIFICATIONS
EQR2	SIMPLEX AIR COMPRESSOR	CHAMPION	VR5-8	SEE SPECIFICATIONS
EQR3	TRENCH DRAIN ASSEMBLY	ALKLEAN	SEE SPECIFICATIONS	
EQR4	DETERGENT TANK	ALKLEAN	SEE SPECIFICATIONS	
EQR5	WASHRACK ASSEMBLY	ALKLEAN	SEE SPECIFICATIONS	

FINISH SCHEDULE					
ITEM	MATERIAL	MANUFACTURER	STYLE	COLOR	SIZE
ACP-1	CEILING PANEL	ARMSTRONG	FINE FISSURE WITH HIGH NRC TEGULAR EDGE	WHITE	24" x 24"
ACT-1	CEILING GRID	ARMSTRONG	PRELUDE 15/16" EXPOSED TEE SYSTEM	WHITE	24" x 24"
B-1	WALL BASE	ROPPE	SIMPLICITY	WHITE	4"
B-2	WALL BASE	ROPPE	SIMPLICITY	WHITE - FIELD PAINTED PT-2	4"
B-3	WALL BASE	ROPPE	SIMPLICITY	WHITE - FIELD PAINTED PT-3	4"
CPT-1	CARPET TILE	J+J FLOORING	FAST TRACK 7578	3215 CHASE	18" x 36"
PCT-1	PORCELAIN TILE	DALTILE	SEASON WOOD	SW02 WINTER SPRUCE	6" x 48"
PCT-2	PORCELAIN TILE	DALTILE	DIGNITARY	DR10	12" x 24"
PCT-3	PORCELAIN TILE	DALTILE	LINEAR 0190	ARCTIC WHITE	4" x 8"
PCT-4	PORCELAIN TILE	DALTILE	LINEAR 0190	DESERT GREY	4" x 8"
PL-1	PLASTIC LAMINATE	FORMICA	912-AN - INFINITI FINISH	STORM	N/A
PL-2	PLASTIC LAMINATE	FORMICA	927-58 - MATTE FINISH	FOLKSONE	N/A
PT-1	PAINT	SHERWIN WILLIAMS	SW7636	ORIGAMI WHITE	N/A
PT-2	PAINT	SHERWIN WILLIAMS	SW6804	DIGNITY BLUE	N/A
PT-3	PAINT	SHERWIN WILLIAMS	SW7075	WEB GRAY	N/A
SC-1	SEALED CONCRETE	EUCLID	SUPER AQUA CORE VOX	CLEAR	N/A
SC-2	SEALED CONCRETE	EUCLID	EVERCLEAR	CLEAR	N/A
SC-3	SEALED CONCRETE	STONEHARD SOLUTIONS	STONECLAD GS WITH STONEKOTE GS4	GREY	N/A
SS-1	SOLID SURFACE	CAESARSTONE	SOLID SURFACE	5110 ALPINE MIST	3cm
SS-2	SOLID SURFACE	CAESARSTONE	SOLID SURFACE	4004 RAW CONCRETE	3cm
VCT-1	STATIC DISSAPATIVE TILE	ARMSTRONG	PREMIUM EXCELON CROWN TEXTURE	5C240 PEAT	12" x 12"
VCT-2	VINYL COMPOSITION TILE	ARMSTRONG	EXCELON SDT 51959	COAL	12" x 12"

FINISH SCHEDULE					
ITEM	MATERIAL	MANUFACTURER	STYLE	COLOR	SIZE
BR-1	STANDARD MODULAR BRICK	ENDICOT	STANDARD MODULAR	IRONSPOT 46	3-5/8" x 2 1/4" x 7 5/8"
BR-2	STANDARD MODULAR BRICK	ENDICOT	STANDARD MODULAR	DARK IRONSPOT	3-5/8" x 2 1/4" x 7 5/8"
MS-1	FLAT-FACE CMU	UPCHURCH KIMBROUGH	CMU WITH INTEGRAL COLOR	130 COAL	8" x 8" x 16"
MS-2	SPLIT-FACE CMU	UPCHURCH KIMBROUGH	CMU WITH INTEGRAL COLOR	130 COAL	8" x 8" x 16"
MS-3	CAST-STONE COPING	N/A	CAST-STONE WITH INTEGRAL COLOR	MATCH MS-1	N/A
MT-1	PEMB WALL PANEL	RIGID GLOBAL BUILDINGS	REVERSED "M" WALL PANEL - VERTICAL ORIENTATION	SPECTRALITE 3000 - STONE GRAY	36" OC
MT-2	PEMB SHEETMETAL FLASHING & TRIM	RIGID GLOBAL BUILDINGS	PEMB SHEET METAL, FLASHING AND TRIM	SPECTRALITE 3000 - SLATE GRAY	N/A
MT-3	PEMB ROOFING	RIGID GLOBAL BUILDINGS	PBM ROOF PANEL	SPECTRALITE 3000 - SANDSTONE	36" OC
MT-4	SHEET METAL FLASHING & TRIM	BERRIDGE	N/A	PREWEATHERED GALVALUME	N/A
MT-5	STOREFRONT FINISH	KAWNEER	CLEAR ANODIZED	CLEAR ANODIZED	N/A
MT-6	PREFINISHED METAL PANEL	BERRIDGE	"M" PANEL	PREWEATHERED GALVALUME	36" OC
PT-5	PAINT	SHERWIN WILLIAMS	SW 7068	GRIZZLE GRAY	N/A
WD-1	WOOD COMPOSITE LAP PANELING	NEWTECHWOOD	ULTRASHIELD WITH NATURALE	SMOKE WHITE	US09 PROFILE

'M' SERIES



TYPE	CMU WIDTH	HEIGHT	2 OR 3 HOUR DESIGN NO.	MIN. STC GROUT	MIN. STC HOLLOW
1M8	7 5/8" (8" NOMINAL)	RE: STRUCT	UL-U904 (3- HR)	50	45

PARTITION GENERAL NOTES

1. ALL NEW INTERIOR PARTITIONS SHOWN ON THE FLOOR PLANS ARE TYPE 'A3', UNLESS NOTED OTHERWISE.
2. PARTITION TYPE REFERENCES ARE INDICATED ON THE FLOOR PLANS.
3. PARTITION TYPES DO NOT DETERMINE EXTERIOR WALL CONSTRUCTION. REFER TO WALL SECTIONS FOR EXTERIOR WALL CONSTRUCTION.
4. ALL PARTITIONS THAT EXTEND FROM FLOOR TO THE UNDERSIDE OF DECK ABOVE SHALL HAVE THEIR PERIMETER AND ALL PENETRATIONS SEALED SMOKETIGHT WITH ACOUSTICAL SEALANT, AS APPLICABLE.
5. WHERE CERAMIC TILE, PORCELAIN PAVERS, QUARRY TILE, TERRAZZO OR CEMENT ARE INDICATED TO BE APPLIED TO PARTITIONS AS A BASE OR WALL FINISH SURFACE, REPLACE THE GWB WITH 5/8" TILE BACKER BOARD THAT HAS BEEN TESTED AND CERTIFIED TO BE EQUIVALENT IN FIRE RATING TO THE GWB WHICH THEY REPLACE. THE SCHEDULED FIRE RATING OF ANY PARTITION SHALL NOT BE VIOLATED BY THE APPLICATION OF ANY FINISHES. ALSO USE L/360 DEFLECTION CRITERIA AND 20 GAUGE MINIMUM FRAMING AT THESE LOCATIONS.
6. FLOOR TO FLOOR DIMENSIONS MAY VARY. REFER TO BUILDING SECTIONS, WALL SECTIONS, AND OTHER CONTRACT DRAWINGS FOR DETERMINING FLOOR TO FLOOR DIMENSIONS.
7. CEILING HEIGHTS MAY VARY ON EITHER OR BOTH SIDES OF THE PARTITION. REFER TO FLOOR PLANS, REFLECTED CEILING PLANS AND CEILING DETAILS FOR CEILING HEIGHTS.
8. METAL STUDS SHALL BE SPACED AT 16" O.C. MAXIMUM, UNLESS NOTED OTHERWISE. LIGHT GAUGE METAL FRAMING STUDS SPACED AT 16" O.C. MAXIMUM SHALL BE USED WHERE SPECIFIED OR DETAILED. RESILIENT CHANNELS AND FURRING CHANNELS SPACED 24" O.C. VERTICALLY MAX. 4" MAX FROM TOP AND BOTTOM ENDS.
9. ALL STEEL STUDS ARE CONTINUOUS FROM FLOOR TRACK TO BOTTOM OF DECK ABOVE, UNLESS NOTED OTHERWISE. ALLOW FOR DEFLECTION WITH TOP TRACK ASSEMBLY.
10. COLD FORMED METAL FRAMING SHALL BE USED IN LIEU OF STEEL STUDS WHERE REQUIRED TO MAINTAIN STUD WIDTH INDICATED ON THE DRAWINGS.
11. ALL GYPSUM BOARD IS TO BE 5/8" THICK UNLESS NOTED OTHERWISE.
12. PARTITION TYPE REFERENCES DO NOT INCLUDE THE APPLIED FINISHES INDICATED BY THE ROOM FINISH REFERENCE AND ROOM FINISH SCHEDULE.
13. REFER TO PARTITION DETAILS, DOOR INFORMATION, AND DOOR DETAILS FOR FRAMING AND ANCHORAGE AT DOORS.
14. INSTALL DOUBLE 20 GA. STUDS AT ALL OPENINGS, HEADS, SILLS, JAMBS UNLESS NOTED OTHERWISE AT MINIMUM.
15. REFER TO SYMBOLS ON PLAN FOR FLOOR PLAN INDICATION OF CHANGES IN PARTITION TYPE.
16. ALL JOINTS IN GYPSUM BOARD SURFACES TO BE TAPED AND FLOATED, INCLUDING RATED PARTITIONS, UNRATED PARTITIONS, EXPOSED SURFACES, CONCEALED SURFACES, AND SURFACES ABOVE THE CEILINGS.
17. ALL SOUND ATTENUATION BLANKETS SHALL BE CONTINUOUS FOR THE FULL HEIGHT OF PARTITION AND FULL WIDTH OF THE PARTITION, UNLESS OTHERWISE NOTED.
18. PARTITION TYPES AND DETAILS SHOWN HEREIN ARE TYPICAL. WHERE PARTITION TYPES OR DETAILS VARY ONLY SLIGHTLY FROM THE TYPICAL, THE ABBREVIATION "SIM" SHALL BE USED ADJACENT TO THE PARTITION TYPE REFERENCE OR DETAIL REFERENCE. PARTITIONS OR DETAILS NOT SIMILAR SHALL BE CONSTRUCTED IN A LOGICAL MANNER USING THE PRINCIPLES EVIDENT IN THE TYPICAL PARTITION TYPES AND DETAILS, AND IN ACCORDANCE WITH SPECIFICATION SECTIONS.
19. STC RATING SHOWN IN PARTITION TABLES ARE TAKEN FROM MANUF. PRODUCT LITERATURE. ADDITIONAL STC INFORMATION IS AVAILABLE THROUGH ADDITIONAL RESOURCES.
20. PARTITIONS SHALL HAVE MECH. AND ELEC. DEVICES SEALED WITH PUTTY PACKS FOR WALLS THAT EXCEED STC 45.

PARTITION REFERENCES

1. SSMA - STEEL STUD MANUFACTURERS ASSOCIATION, "PRODUCT TECHNICAL INFORMATION," COPYRIGHT 2010.
2. SFIA - STEEL FRAMING INDUSTRY ASSOCIATION, "TECHNICAL GUIDE FOR COLD-FORMED STEEL FRAMING," COPYRIGHT 2011.
3. ASTM - ASTM INTERNATION DESIGNATION C754-08, "STANDARD SPECIFICATION FOR INSTALLATION OF STEEL FRAMING MEMBERS TO RECEIVE SCREW-ATTACHED GYPSUM PANEL PRODUCTS."
4. GA - GYPSUM ASSOCIATION, "FIRE RESISTIVE DESIGN MANUAL," 19TH EDITION GA-600-2009.
5. UL - UNDERWRITER'S LABORATORIES, "BUILDING MATERIALS, FIRE PROTECTION, ROOFING MATERIALS AND SYSTEMS AND FIRE RESISTANCE DIRECTORIES (4 VOLUMES)," 2011 EDITION.
6. WHI-WARNOCK HERSEY MARK DIRECTORY
7. ICBO- ICBO EVALUATION SERVICES, INC. EVALUATION REPORT No. 3579
8. SAFB- MANUFACTURER THERMAFIBER PRODUCT: SOUND ATTENUATION FIRE BLANKET.

GENERAL NOTES

1. RE: SPEC SECTION 08 71 00 (DOOR HARDWARE) FOR DOOR HARDWARE SETS.

2. FOR MAINTENANCE SHOP EQUIPMENT CONTACT THE FOLLOWING REP FOR PRICING:

JON THORNTON
VSA MANUFACTURER'S REPRESENTATIVE
JTHORNTON@VSAREPS.COM
281.744.6223

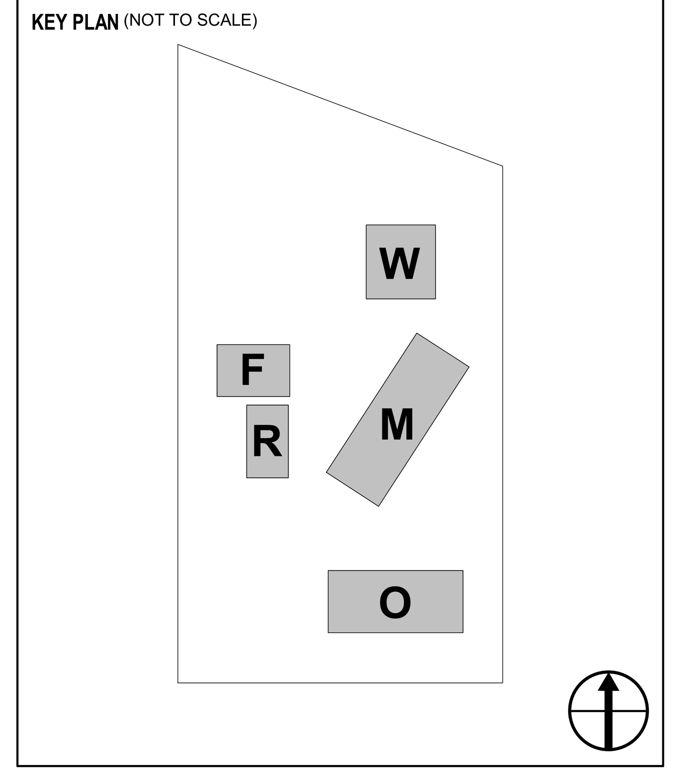
3. FOR WASHRACK EQUIPMENT CONTACT THE FOLLOWING REP FOR PRICING:

PETE BULLMORE
ALKLEAN INDUSTRIES, INC
PETE@ALKLEAN.COM
713.818.2728

4. FOR FUELAIR EQUIPMENT CONTACT THE FOLLOWING REP FOR PRICING:

DON DEANGELO
ERLING SALES & SERVICE
DDANGELO@ERLINGSALES.COM
214-505-2900

KEY PLAN (NOT TO SCALE)



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MEP Engineering
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Houston, TX 77067
832 249 9379

Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Facilities
5115 TX-3
Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

GENERAL - SCHEDULES

DRAWN BY	CHECKED BY
WJC	ST
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

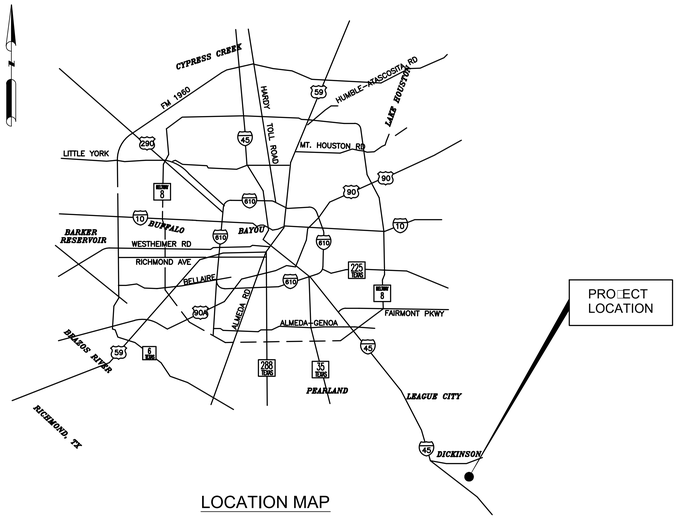
G-110
SHEET NUMBER

FILE PATH
USER NAME: C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-SITE_vgandhi.rvt
DATE STAMP: 7/1/2020 12:04:44 PM

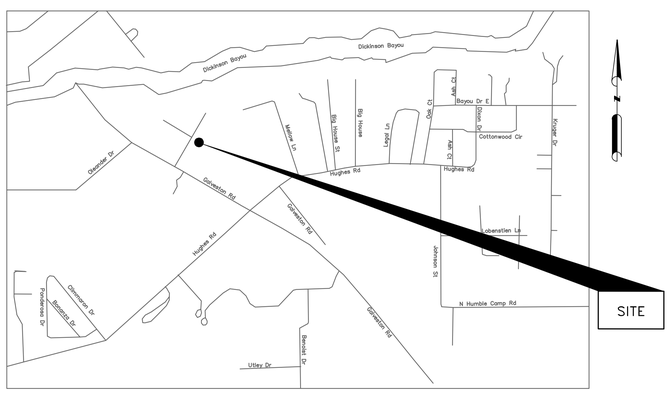
GALVESTON COUNTY
ROAD & BRIDGE DEPARTMENT FACILITIES

5115 TEXAS HIGHWAY 3
DICKINSON, TX

ISSUE FOR REGULATORY REVIEW



LOCATION MAP



VICINITY MAP
N.T.S.
KEY MAP: 190-A

CIVIL ENGINEER:

DALLY ASSOCIATES, INC.
TBPE FIRM REGISTRATION 3426

9800 RICHMOND AVENUE, SUITE 460
HOUSTON, TX 77042
(713) 337 8881
www.dallyassociates.com

Project Manager: Jose Diego Monroy, CFM
Project Engineer: Fred Dally, P.E.

JULY 03, 2020

CIVIL SHEET INDEX

SHEET	SHEET NAME
C1.0	COVER SHEET
C2.0	TOPOGRAPHIC SURVEY
C3.0	DEMOLITION PLAN
C4.0	PAVING PLAN
C5.0	LAYOUT PLAN
C6.0	GRADING PLAN
C7.0	UTILITY PLAN
C7.1	UTILITY PLAN
C8.0	GENERAL NOTES
C9.0	PAVEMENT DETAILS
C10.0	STORM DRAIN DETAILS
C11.0	WATER DETAILS
C12.0	SANITARY SEWER DETAILS
C13.0	STORM WATER POLLUTION PREVENTION PLAN
C14.0	SWPPP DETAILS
C15.0	DRAINAGE PROPOSED
C16.0	DRAINAGE CALCULATIONS 2 YEARS (PROPOSED)
C17.0	DRAINAGE CALCULATIONS 100 YEARS (PROPOSED)
C18.0	DETENTION CALCULATIONS
C19.0	DETENTION POND CROSS SECTION
C20.0	MITIGATION PLAN
C21.0	MITIGATION PLAN CALCULATIONS
C22.0	MITIGATION PLAN CUT AND FILL PROFILES
C22.1	MITIGATION PLAN CUT AND FILL PROFILES
C23.0	IMPERVIOUS AREAS EXISTING AND PROPOSED

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(New Statewide Number Outside Houston)
1-800-545-6005

GALVESTON COUNTY
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DEPARTMENT FACILITIES
5115 TEXAS HIGHWAY 3
DICKINSON,TX

COVER SHEET

TBPE FIRM REGISTRATION #3426

DRAWING SCALE

DESIGNED BY: AB
CHECKED BY: JDM

DATE: 07/03/20

C1.0

TEXAS REGISTERED ENGINEERING FIRM
FRED DALLY
90604
07/03/20

NO.	DATE	Revisions	App.

GENERAL NOTES:

1. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Galveston County, Texas, Map No. 485470095 C dated May 2, 1983 This properties lies within Zone "C" of the flood insurance rate map and does not lies within a special flood hazard area.

   This flood statement does not imply that the property or structures thereon will be free from flooding or flood damage. On rare occasions floods can and will occur and flood heights may be increased by man–made or natural causes. The location of the flood zone was determined by scaling from said FEMA map. The actual location, as determined by elevation contours, may differ. Intertek Surveying & Services assumes no liability as to the accuracy of the location of the flood zone limits. This flood statement shall not create liability on the part of KM Surveying, LLC.

2. This survey has been prepared for the sole purpose of the transaction described in the above mentioned Commitment for Title Insurance and the parties listed thereon. This survey is not to be used for any subsequent transactions.

3. This survey does not determine the location of wetlands, fault lines, toxic waste, cemeteries, landfills, dumps or any other environmental issues.

4. Intertek Surveying & Services has not been provided with construction plans showing the location of underground utilities. Underground utilities may exist which are not shown hereon.

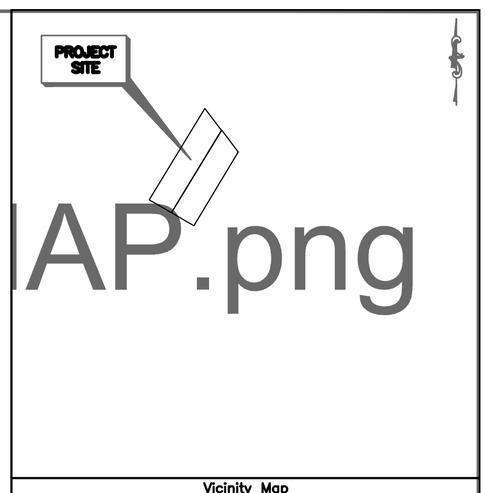
5. Readily visible improvements/utilities were located with this survey, no subsurface probing, excavation or exploration was performed Intertek Surveying & Services.

6. This exhibit has been prepared without benefits of current title report. There may be easements, setbacks, and other matters of record not shown hereon, the surveyor has not abstract the property.

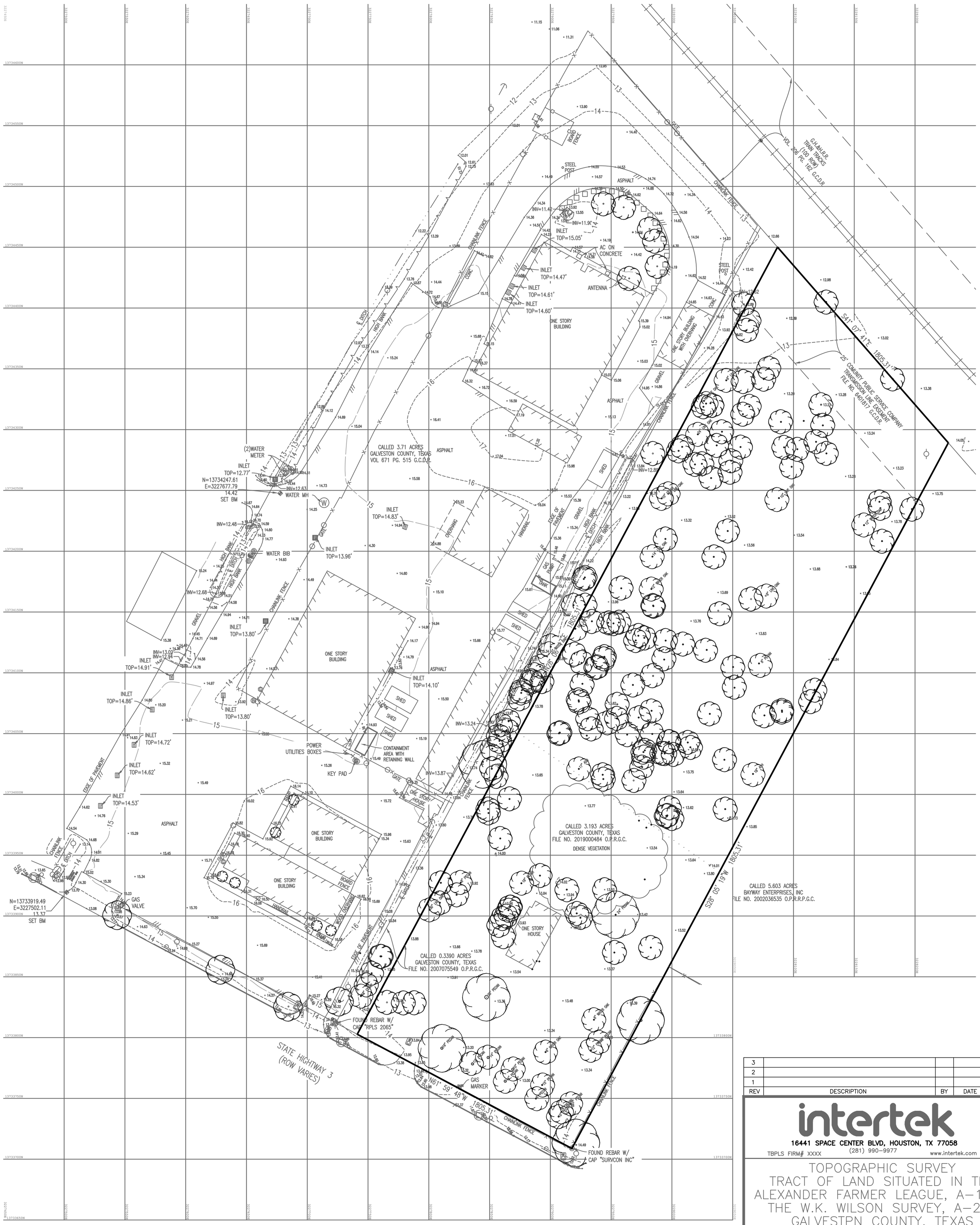
7. Reference is made to a Survey of a 3.193–acre (139,093 sq. ft.) Tract situated in the Alexander Farmer League, A–11 and The W.K Wilson Survey, A–208 Galveston County, Texas. dated 12/12/2018. Prepared by Weisser Engineering Co. Job. No. GD404 and in the field book 3510.

LEGEND:
- BOLLARD
- BENCHMARK
- INLET
- SMALL INLET
- GAS MARKER
- GAS METER
- GAS VALVE
- GUY/ANCHOR
- STORM MANHOLE
- SIGN
- POWER POLE
- WATER MH
- WATER METER
- DECIDUOUS TREE

0 20 40 80



Vicinity Map
N.T.S.



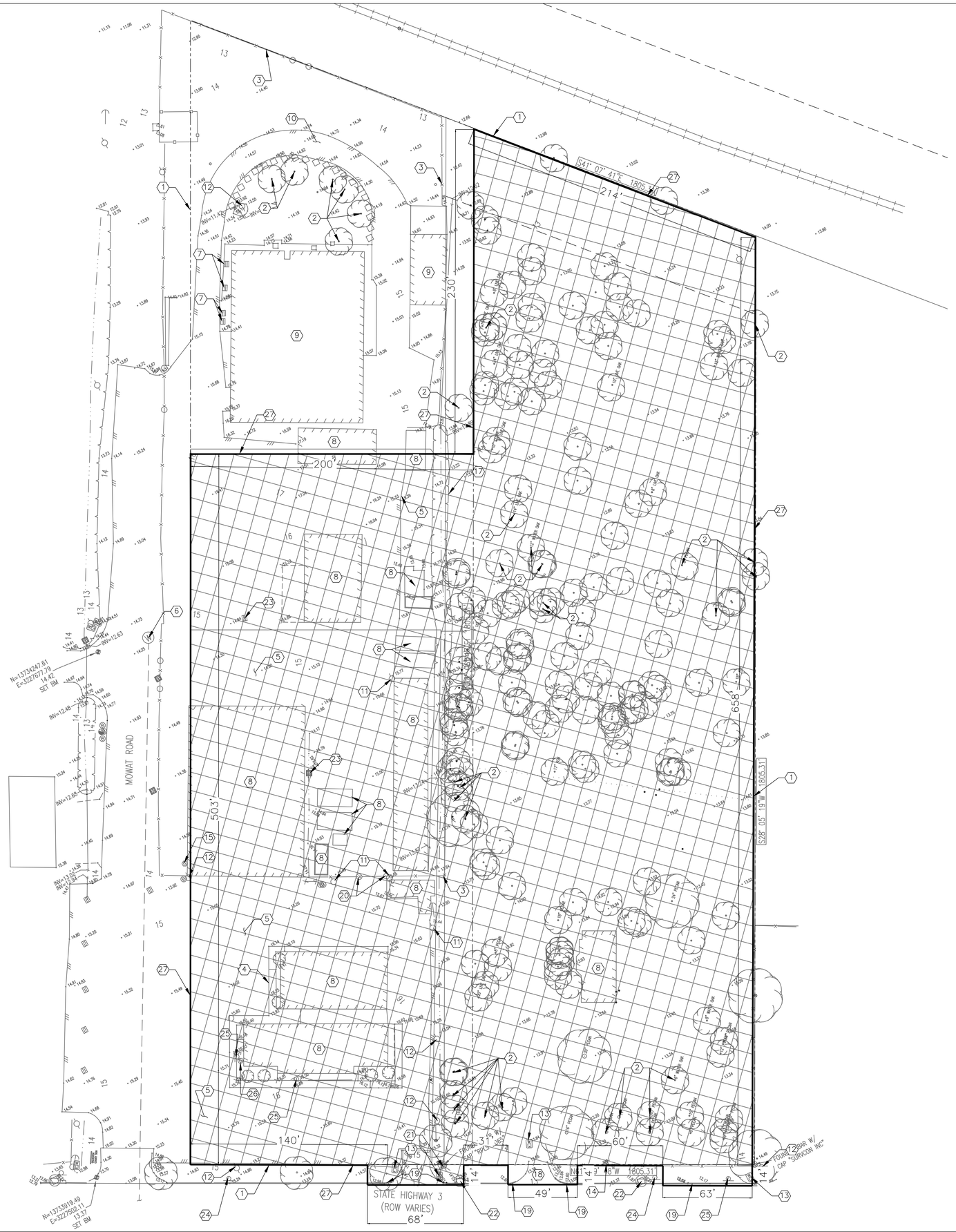
REV	DESCRIPTION	BY	DATE
3			
2			
1			

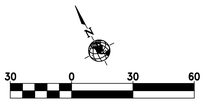
intertek

16441 SPACE CENTER BLVD, HOUSTON, TX 77058
(281) 990–9977
TBPLS FIRM# XXXX
www.intertek.com

TOPOGRAPHIC SURVEY
TRACT OF LAND SITUATED IN THE ALEXANDER FARMER LEAGUE, A–11 & THE W.K. WILSON SURVEY, A–205 GALVESTPN COUNTY, TEXAS

DATE: November 8, 2019	SURVEYED: MR DRAWN: MR	JOB NO.: 19113 SCALE: 1"= 40'
DWG.: psi – iss – 19113 topo 07172019 trees (1).dwg	CHECKED: KM	SHEET NO.: 1 OF 1





SCALE: 1"=30'

DEMOLITION NOTES TO CONTRACTOR

1. ALL ITEMS DESIGNATED TO BE REMOVE SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
2. THE CONTRACTOR AND OWNER SHALL COORDINATE WITH CENTERPOINT FOR TERMINATION OF POWER AND GAS SERVICES TO THE SITE OR NEW SERVICES. THIS WORK WILL BE PROVIDED BY CENTERPOINT AND SHALL BE SCHEDULE AS ONE OF THE FIRST ITEMS OF BUSINESS.
3. THE CONTRACTOR SHALL BE PROVIDE AN APPROVED TRAFFIC CONTROL PLAN TO PERFORM ANY WORK PROPER SIGNAGE.
4. WHEN EXISTING SIDEWALK IS CLOSED FOR CONSTRUCTION, CONTRACTOR SHALL BARRICADE THAT AREA AND PROVIDE SAFE ALTERNATE PATH FOR PEDESTRIAN WITH PROPER SIGNAGE.
5. ALL TRAFFIC SIGNAGE WITHIN THE ROW SHALL BE PROTECTED INPLACE AT ALL TIMES. ANY DAMAGE TO THEN SHALL BE REPAIRED IMMEDIATELY. DURING THE CONSTRUCTION, SAFE OPERATION OF PEDESTRIAN OR VEHICULAR TRAFFIC, CONTRACTOR SHALL PROVIDE A CERTIFIED FLAGGER OR PEACE OFFICER UNTIL THAT SIGN IS RESTORED TO EXISTING CONDITION.
6. CONTRACTOR SHALL REPAIR ANY ITEMS DAMAGE DURING CONSTRUCTION TO ITS EXISTING CONDITION.
7. PRIOR TO ANY DEMOLITION WORK, THE CONTRACTOR SHALL LOCATED AS WELL CAPPED. ALL UTILITIES THAT ARE SHOWN SHALL BE LOCATED AS WELL AND CAPPED. ALL UTILITIES NOT SHOW SHALL BE LOCATED AS WELL CAPPED. UTILITIES THAT ARE SHOWN ON PLANS ARE APPROXIMATE LOCATION ONLY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE ON SITE DURING ALL CONSTRUCTION ACTIVITIES.
9. THE CONTRACTOR SHALL ENTER & EXIT THE SITE THROUGH EXISTING DRIVEWAY.
10. CAUTION. THERE ARE OVERHEAD POWERLINES WITH IN THE WORK AREA. CONTRACTOR SHALL FOLLOW CITY, STATE AND FEDERAL GUIDELINES WHEN WORKING AROUND EXISTING POWER LINES.
11. THE DEMOLITION AND REMAIN OF THE TREES WILL BE UNDER THE INDICATIONS OF THE PLANS OF LANDSCAPE. PLEASE CONFIRM WITH THE CITY.

DEMOLITION KEY NOTES

1. PROPERTY LINE.
2. EXISTING TREE TO REMAIN. PROTECT IN–PLACE.
3. EXISTING CHAINLINK FENCE TO BE REMOVED.
4. EXISTING CONCRETE PAVEMENT TO BE REMOVED.
5. EXISTING ASPHALT PAVEMENT TO BE REMOVED.
6. EXISTING SANITAY SEWER MANHOLE TO REMAIN. PROTECT IN–PLACE.
7. EXISTING STORM DRAIN INLET TO REMAIN. PROTECT IN–PLACE.
8. EXISTING BUILDING TO BE REMOVED.
9. EXISTING BUILDING TO REMAIN.
10. EXISTING ASPHALT PAVEMENT TO REMAIN. PROTECT IN–PLACE.
11. EXISTING POWER POLE TO BE REMOVED.
12. EXISTING POWER POLE TO REMAIN. PROTECT IN–PLACE.
13. EXISTING WATER METER TO REMAIN OR TO BE REMOVED. PROTECT IN–PLACE. IN ACCORDING WITH OWNER/CITY FOR FURTHER INSTRUCTION.
14. EXISTING GAS MARKER TO REMAIN. PROTECT IN–PLACE.
15. EXISTING GAS METER TO REMAIN. PROTECT IN–PLACE
16. EXISTING GAS VALVE TO REMAIN. PROTECT IN–PLACE.
17. EXISTING DITCH TO BE REMOVED.
18. EXISTING DRIVEWAY TO BE REMOVED.
19. EXISTING CURB TO BE REMOVED.
20. EXISTING GATE TO BE REMOVED
21. EXISTING POWER POLE TO BE RELOCATED.
22. EXISTING INLET BB TO REMAIN. PROTECT IN–PLACE.
23. EXISTING STORM DRAIN INLET TO BE REMOVED.
24. EXISTING TRAFFIC SIGN TO REMAIN. PROTECT IN–PLACE.
25. EXISTING TRAFFIC SIGN TO BE RELOCATED.
26. EXISTING GAS METER TO BE REMOVED.
27. LIMITS OF DEMOLITION.

DEMOLITION HATCH LEGEND

LIMITS OF DEMOLITION.

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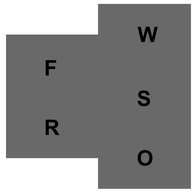
KEY PLAN (NOT TO SCALE)



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713 463 8200

Galveston County Road & Bridge Department Facilities

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
TEXAS REGISTERED ENGINEERING FIRM F–003426

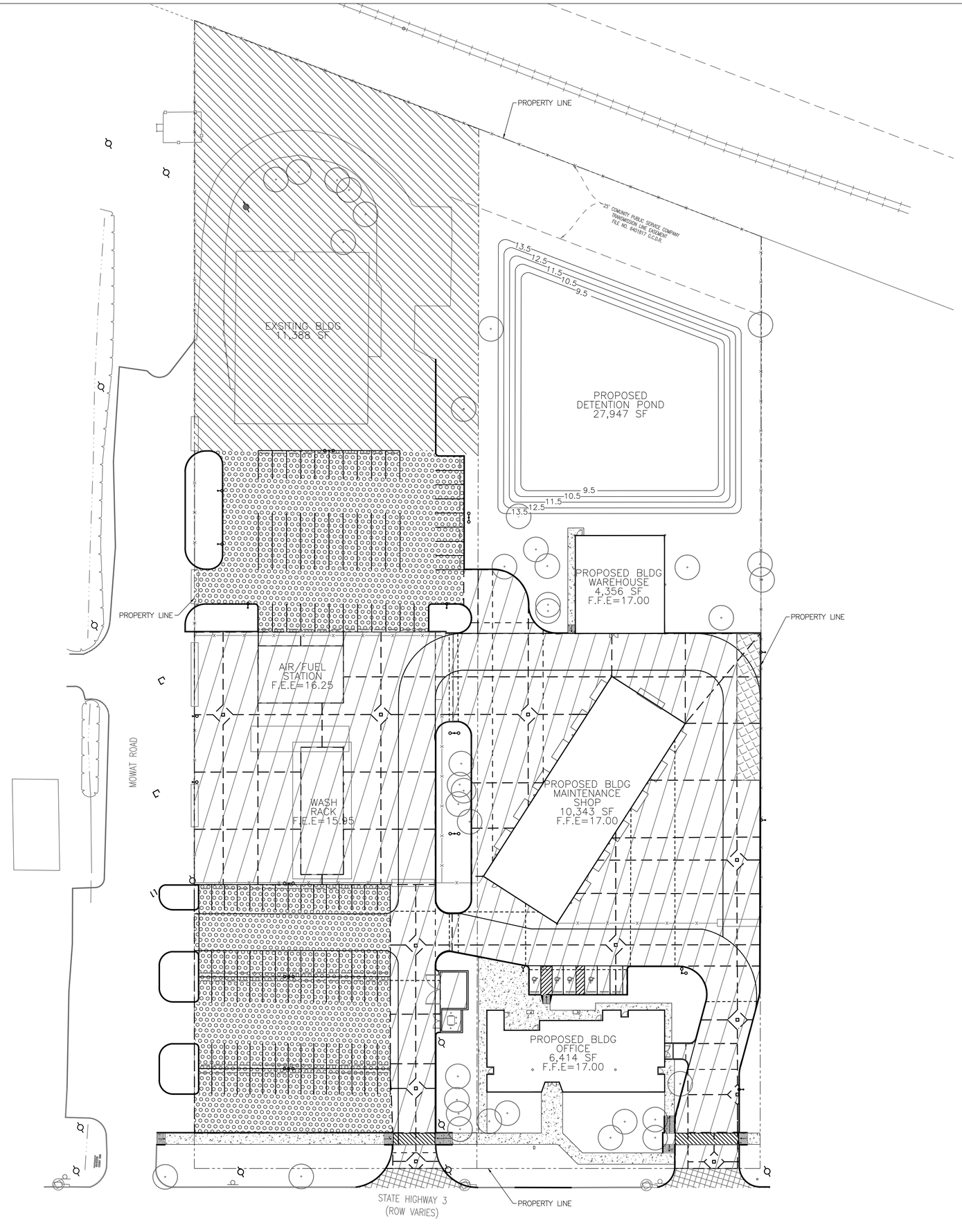
STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
07/03/20

DEMOLITION PLAN

DRAWN BY AB	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR REGULATORY REVIEW	DATE 03 JULY 2020

C3.0
SHEET NUMBER

FILE PATH
NOT VALID
File Path
DATE STAMP: 6/26/2008 2:02:08 PM



30 0 30 60

SCALE: 1"=30'

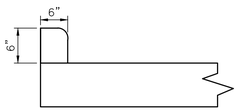
HATCH LEGEND:

- 6" THICK CONCRETE PAVING APPROX: 81,992 SQFT RE: C-9.0 PAVEMENT DETAILS
- 4.5" THICK CONCRETE FOR SIDEWALK APPROX: 7,097 SQFT RE: C-9.0 PAVEMENT DETAILS
- 6" THICK CONCRETE FOR DRIVEWAY APPROX: 1,419 SQFT RE: C-9.0 PAVEMENT DETAILS
- 6" TALL CURB REF. SECTION
- PROPOSED BUILDING LAYOUT
- PROPOSED TRUE-GRID PRO PLUS APPROX: 45,212 SQFT
- 7" THICK CONCRETE PAVING APPROX: 1,699 SQFT RE: C-9.0 PAVEMENT DETAILS
- EXISTING PAVEMENT APPROX: 16.193.56 SQFT

LEGEND:

- PROPOSED SAWCUTTING JOINT
- PROPOSED EXPANSION JOINT

*NOTE: SEE PAVING DETAILS FOR JOINT SECTIONS



6" CONCRETE CURB APPROX: 2,651 LF

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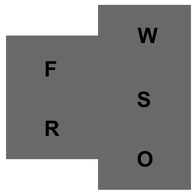
KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

TEXAS REGISTERED ENGINEERING FIRM F-003426

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER

07/03/20

PAVING PLAN

DRAWN BY AB	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR REGULATORY REVIEW	DATE 03 JULY 2020

C4.0

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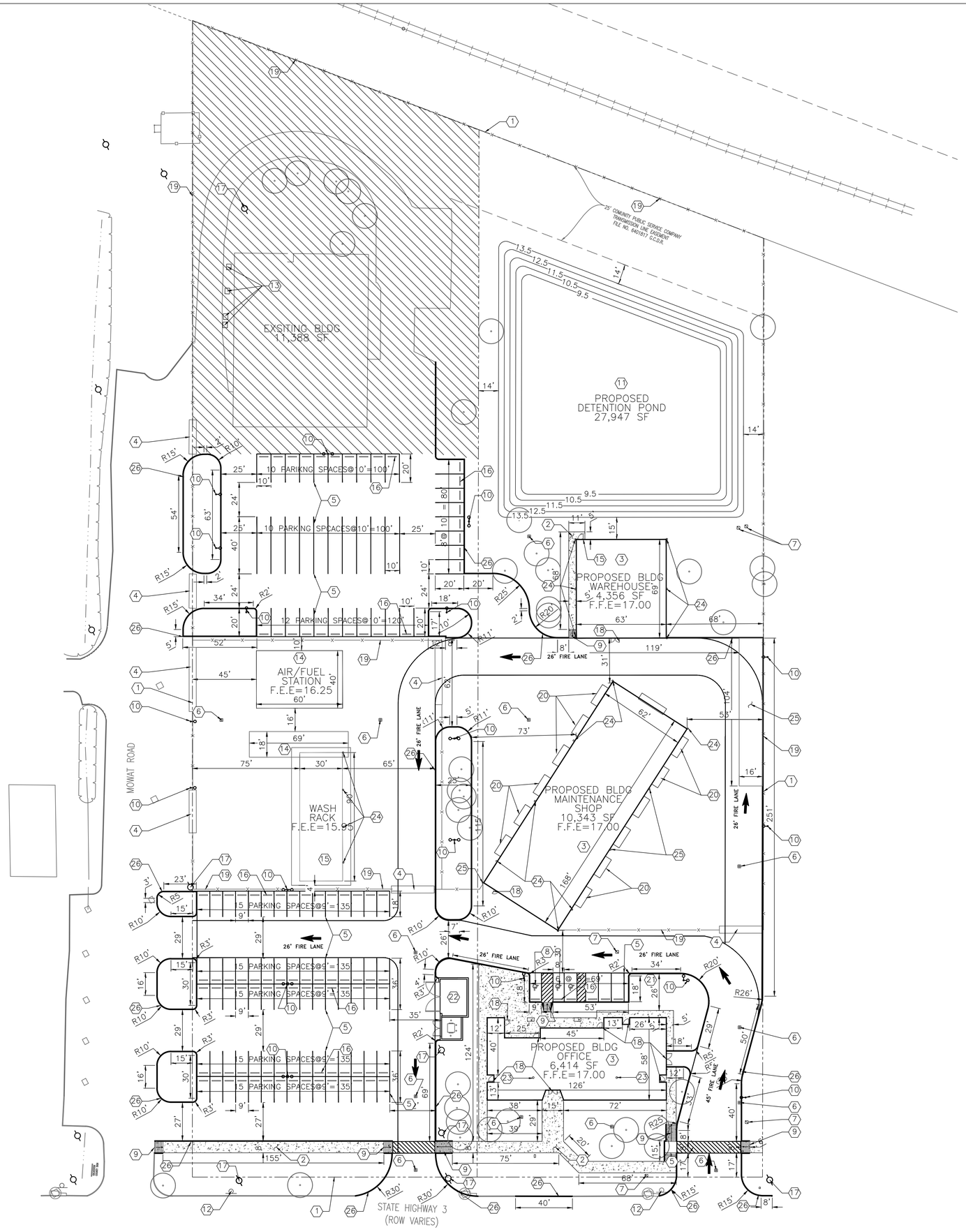

SCALE: 1"=30'

SITE LAYOUT NOTES

1. THE HORIZONTAL AND VERTICAL LOCATION OF EXISTING SUBSURFACE UTILITIES HAVE BEEN DETERMINED FROM DATA PROVIDED BY OTHERS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING UTILITIES WITHIN THE AREA OF CONSTRUCTION THAT ARE TO REMAIN IN SERVICE. CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. ALL DIMENSIONS ARE FROM FACE OF CURB UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS ARE TO FACE OF BUILDING. REFER TO ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS.
4. REFER TO ARCHITECTURAL PLANS FOR ALL STAIRS, HANDICAPPED RAMP AND RETAINING WALL DETAILS.
5. REFER TO LANDSCAPE ARCHITECT PLANS FOR DETAILS AND DIMENSIONS OF LANDSCAPE AND HARDSCAPE AREAS.

LAYOUT KEY NOTES

1. PROPERTY LINE.
2. PROPOSED 5" THICK CONCRETE SIDEWALK PER PAVEMENT DETAILS.
3. PROPOSED BUILDING PER STRUCTURAL AND ARCHITECTURAL DRAWINGS.
4. PROPOSED GATE BY OTHERS.
5. PROPOSED 4" YELLOW STRIPING PER PAVEMENT DETAILS TYP.
6. PROPOSED STORM DRAIN INLET TYPE "A" PER STORM DRAIN DETAILS.
7. PROPOSED JUCTION BOX PER STORM DRAIN DETAILS.
8. PROPOSED ADA SYMBOL PER PAVEMENT DETAILS.
9. PROPOSED ADA RAMP PER PAVEMENT DETAILS.
10. PROPOSED LIGHT POLE; REFER TO MEP DRAWINGS FOR LAYOUT AND SPECIFICATIONS.
11. PROPOSED DETENTION POND. REFER TO DETENTION POND CROSS SECTIONS.
12. EXISTING TRAFFIC SIGN TO REMAIN. PROTECT IN-PLACE.
13. EXISTING STORM DRAIN INLET TO REMAIN. PROTECT IN-PLACE.
14. PROPOSED AIR/FUEL STATION.
15. PROPOSED WASH RACK.
16. PROPOSED WHEEL STOP.
17. EXISTING POWER POLE TO REMAIN. PROTECT IN-PLACE.
18. PROPOSED DOOR PER PROPOSED BUILDING.
19. PROPOSED CHAIN - LINK FENCE
20. PROPOSED ACCESS RAMP
21. PROPOSED GENERATOR ENCLOSURE
22. PROPOSED DUMPSTER ENCLOSURE
23. PROPOSED 8" SQUARE DOWNSPOUT. REFER TO MEP DRAWINGS.
24. PROPOSED 8" SQUARE PREFINISHED METAL DOWNSPOUT. REFER TO ARQUITECTURAL DRAWINGS.
25. PROPOSED 7" THICK CONCRETE PAVING PER PAVEMENT DETAILS.
26. PROPOSED 6" CONCRETE CURB PER PAVEMENT DETAILS.

HATCH LEGEND

- CONSTRUCT 5" CONCRETE SIDEWALK ON PRIVATE AND PUBLIC PROPERTY OVER COMPACTED SUB-GRADE PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS
- PROPOSED BUILDING LAYOUT. CONTRACTOR SHALL REFER TO STRUCTURAL/ARCHITECTURAL PLANS TO BUILDING DIMENSIONS AND SPECIFICATIONS
- AREA NOT IN SCOPE
- CONSTRUCT 7" CONCRETE PAVEMENT ON PRIVATE AND PUBLIC PROPERTY OVER COMPACTED SUB-GRADE PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS

BUILDING CONTROL POINT		
Point	Northing	Easting
A	13733982.67	3227842.01
B	13734064.71	3227988.32
C	13734010.92	3228018.47
D	13733928.85	3227872.18

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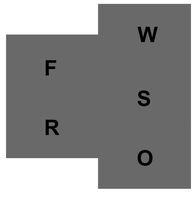
KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
TEXAS REGISTERED ENGINEERING FIRM F-003406
STATE OF TEXAS
FRED DALLY
90904
LICENSED PROFESSIONAL ENGINEER
07/03/20

LAYOUT PLAN

DRAWN BY: AB	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_RBB
ORIGINAL ISSUE: ISSUE FOR REGULATORY REVIEW	DATE: 03 JULY 2020

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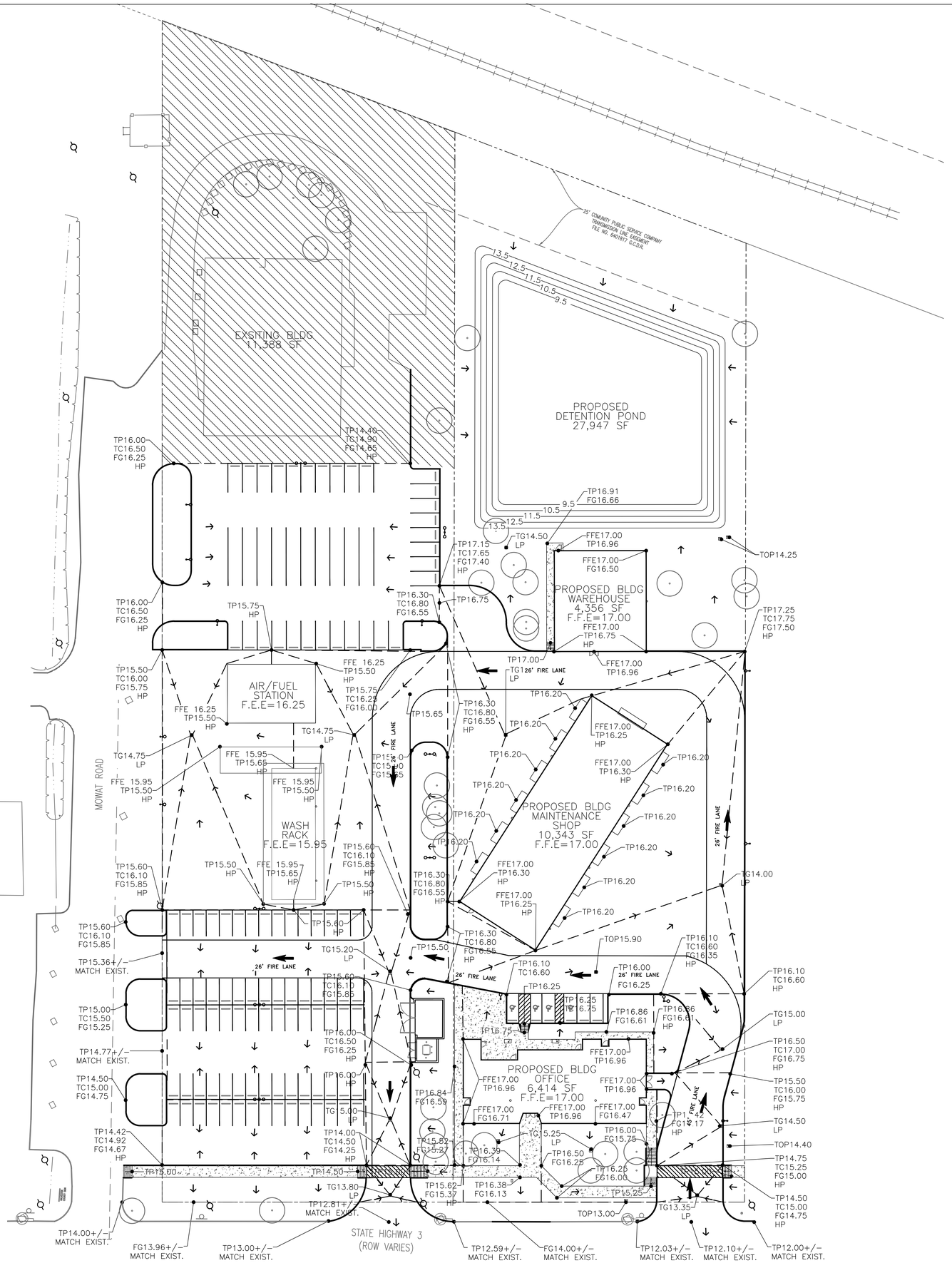

SCALE: 1"=30'

GRADING PLAN NOTES

1. REFER TO GEOTECHNICAL REPORT FOR ALL COMPACTION AND MOISTURE CONTENT REQUIREMENTS.
2. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL MANHOLES, CLEANOUTS, VALVE BOXES, FIRE HYDRANTS, ECT. WITHIN THE AREA OF CONSTRUCTION THAT ARE TO REMAIN. THEY MUST BE ADJUSTED TO PROPER LINE AND GRADE BY THE CONTRACTOR PRIOR TO AND AFTER THE PLACING OF PAVING AND GRADING. AT NO ADDITIONAL COST TO THE OWNER.
3.
4. ALL INLETS AND MANHOLES SHALL MEET THE REQUIREMENTS OF THE LOCAL GOVERNING AGENCY.
5. SIDEWALKS SHALL HAVE A SLOPE NO GRATER THAN 5% AND A CROSS SLOPE NOT GRATER THAN 2%, UNLESS OTHERWISE.

ABBREVIATIONS

TW TOP OF WALL

TP TOP OF PAVEMENT ELEVATION

TC TOP OF CURB ELEVATION

TG TOP OF GRATE ELEVATION (STORM DRAIN INLET)

FG FINISHED GRADE ELEVATION

FFE FINISHED FLOOR ELEVATION

BFE BASE FLOOD ELEVATION

FL FLOWLINE ELEVATION

HATCH LEGEND

CONSTRUCT 5" CONCRETE SIDEWALK OVER COMPACTED SUB-GRADE PER GEOTECHNICAL. ENGINEER'S RECOMMENDATIONS

PROPOSED BUILDING LAYOUT.

AREA NOT IN SCOPE

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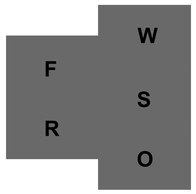
KEY PLAN (NOT TO SCALE)



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TEXAS REGISTERED ENGINEERING FIRM F-002408

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
07/03/20

DRAWN BY: AB	CHECKED BY: JDM
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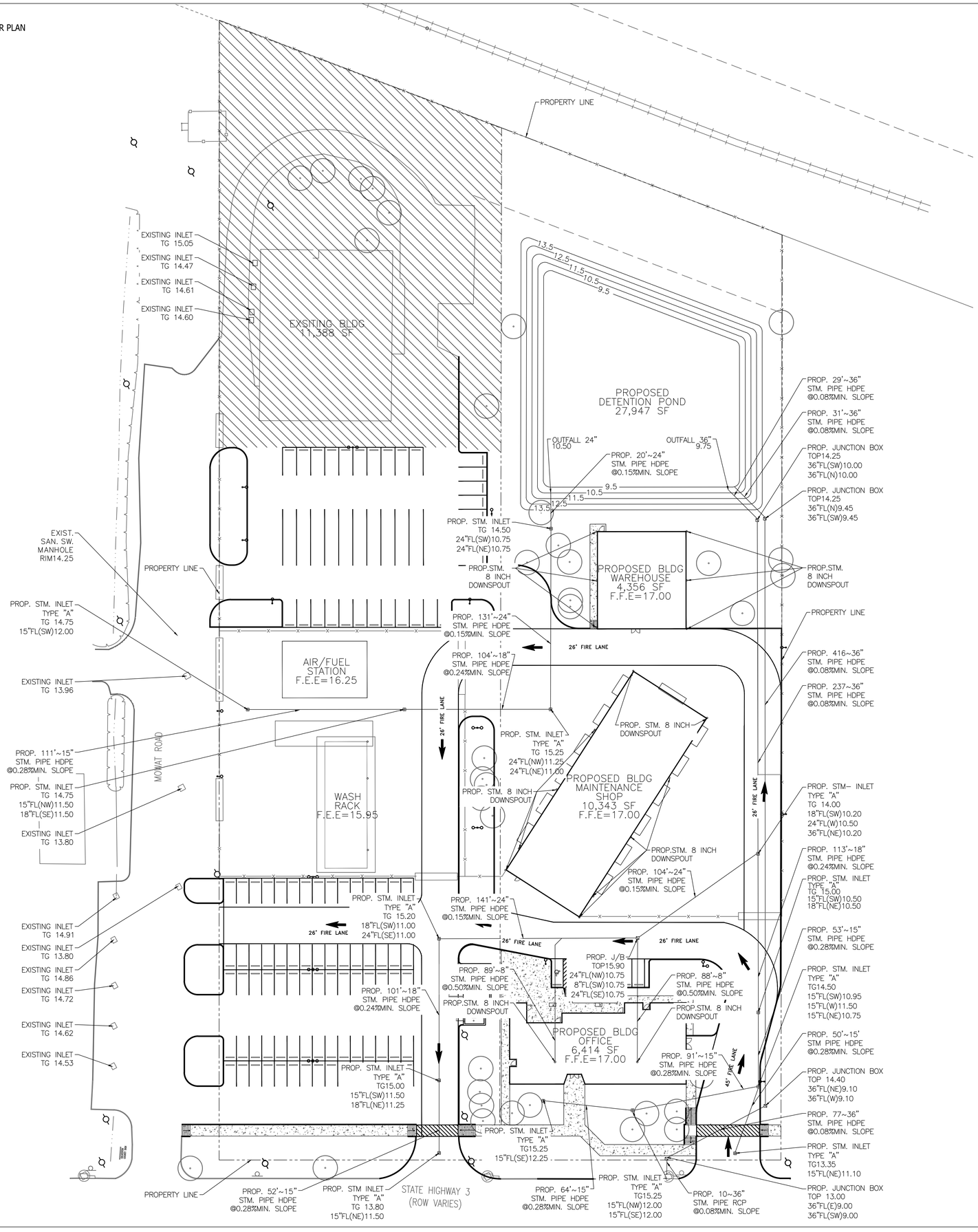
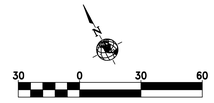
STORM SEWER PLAN





UTILITY PLAN NOTES

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4. ALL ROOF DRAINS ARE 4"TYP. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS.
5. SIDEWALKS SHALL HAVE A SLOPE NO GRATER THAN 5% AND A CROSS SLOPE NOT GRATER THAN 2%, UNLESS OTHERWISE NOTED.

HATCH LEGEND

CONSTRUCT 5" CONCRETE SIDEWALK OVER COMPACTED SUB-GRADE PER GEOTECHNICAL. ENGINEER'S RECOMMENDATIONS

PROPOSED BUILDING LAYOUT.

AREA NOT IN SCOPE

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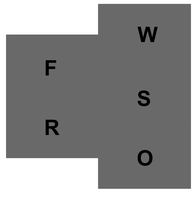

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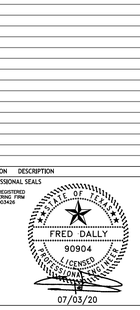

UTILITY PLAN

DRAWN BY	CHECKED BY
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PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR REGULATORY REVIEW	03 JULY 2020

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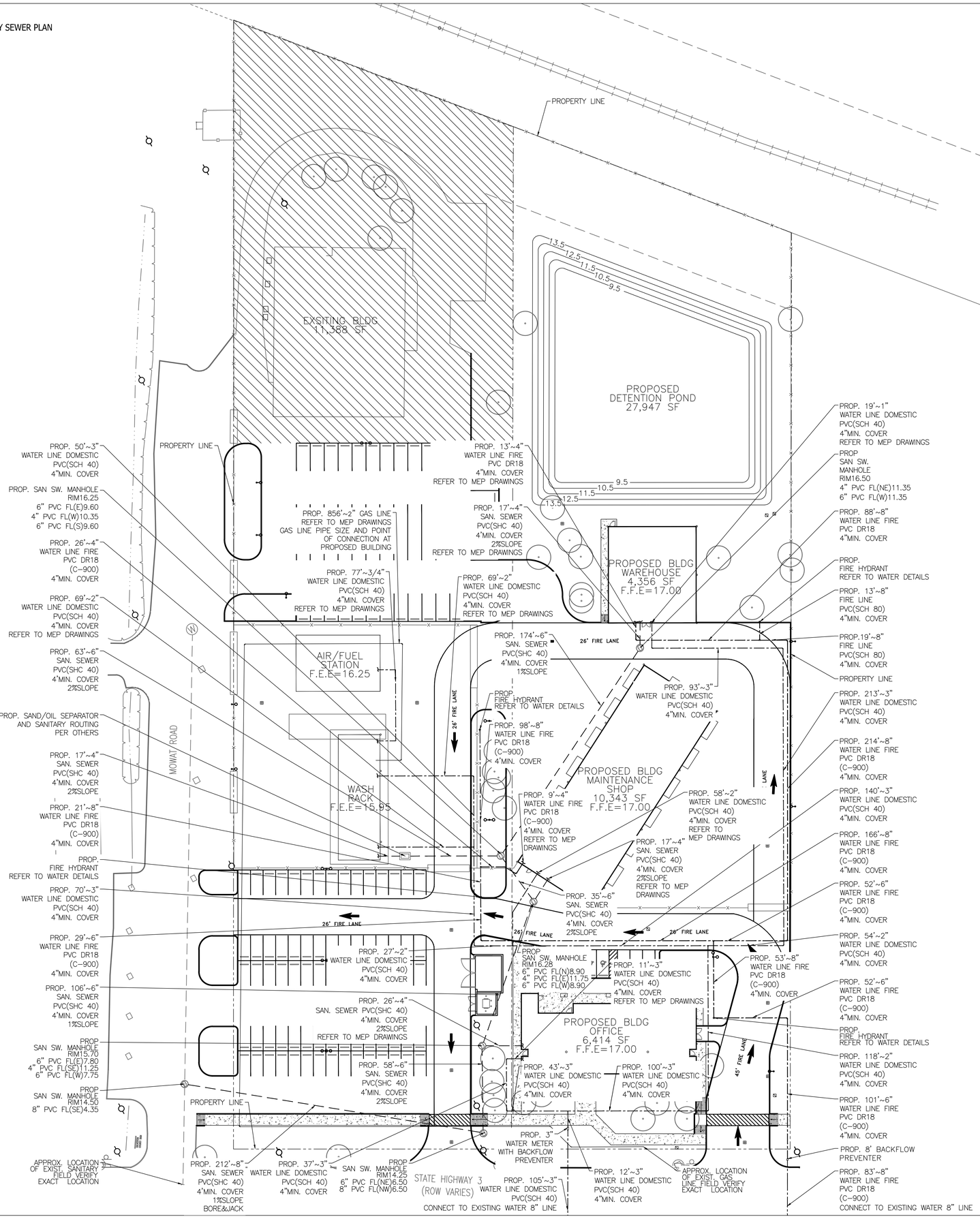
SANITARY SEWER PLAN



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SCALE: 1"=30'

UTILITY PLAN NOTES

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- PROPOSED BUILDING LAYOUT.
- AREA NOT IN SCOPE

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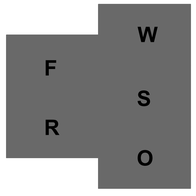

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PROFESSIONAL SEALS

TEXAS REGISTERED ENGINEERING FIRM F-00348

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER

07/03/20

UTILITY PLAN

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ORIGINAL ISSUE ISSUE FOR REGULATORY REVIEW	DATE 03 JULY 2020

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A. GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REQUIRED SECURITY TO PROTECT HIS OWN PROPERTY, EQUIPMENT AND WORK IN PROGRESS.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING OF STREETS CAUSED BY ASSOCIATED CONSTRUCTION AT CLOSE OF EACH WORK DAY.
4. PAVED SURFACES SHALL BE PROTECTED FROM DAMAGE BY TRACKED EQUIPMENT.
5. CONTRACTOR WILL PAY ALL COST TO REPLACE IRON RODS OR OTHER LAND BOUNDARY MARKERS DISTURBED DURING CONSTRUCTION. A REGISTERED LAND SURVEYOR WILL BE USED TO RESET DISTURBED BOUNDARY MARKERS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AN UPDATE REDLINED "RECORD" SET OF CONSTRUCTION DRAWINGS ON SITE FOR INSPECTION BY THE ENGINEER.
7. CONTRACTOR SHALL PROVIDE ORANGE FENCING OR BARRICADES TO PROTECT PEDESTRIANS FROM ENTERING WORK AREAS.
8. CONTRACTOR MUST PROVIDE FENCING AROUND OPEN EXCAVATIONS AREA AT ALL TIMES.
9. REFER TO THE SWPPP GENERAL NOTES FOR PROPER MEASURES AND CONTROLS.

B. PAVEMENT

1. EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGE OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO ORIGINAL CONDITION OR BETTER, IN ACCORDANCE WITH THE GOVERNMENT AGENCY HAVING JURISDICTION.
2. THE SUBGRADE SHALL BE BROUGHT TO THE LINES AND GRADES AS SHOWN ON THE DRAWINGS.
3. WHENEVER UNSUITABLE MATERIAL IS ENCOUNTERED AND CANNOT BE HANDLED BY THE EXCAVATION OR EMBANKMENT REQUIREMENTS, THEN THE UNSUITABLE MATERIAL SHALL BE EXCAVATED TO A DEPTH DEEMED SUFFICIENT BY THE ENGINEER AND THE EXCAVATED MATERIAL SHALL BE DISPOSED OF OFF THE JOB SITE. THE EXCAVATED AREA SHALL BE FILLED WITH SELECT FILL PER STANDARDS OF THE GOVERNMENT AGENCY HAVING JURISDICTION.
4. SURPLUS EXCAVATED EARTHEN MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED AND DISPOSED OF OFF-SITE. INCLUDE COST OF REMOVAL AND DISPOSAL IN OTHER ITEMS OF WHICH THIS WORK IS A COMPONENT PART. NO SEPARATE PAY. THE MATERIAL MUST BE DISPOSED OF IN A SAFE AND LEGAL MANNER.
5. EXISTING WATER VALVES AND MANHOLES SHALL BE ADJUSTED, AS NECESSARY TO MATCH TOP OF PROPOSED PAVEMENT ELEVATION.

C. SANITARY SEWER, STORM SEWER & DRAINAGE

1. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
2. ANY CURB DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE ENGINEER OR OWNING AUTHORITY.
3. CONTRACTOR'S ACTIVITIES SHALL HAVE NO EFFECT TO FLOWS TO AND FROM OFF SITE AREAS EXISTING SHEET DRAINAGE SHALL NOT BE IMPEDED BY PROPOSED CONSTRUCTION.
4. WHERE MANHOLES ARE LOCATED WITHIN PAVED AREAS, CONTRACTOR SHALL SET RIM ELEVATIONS TO MATCH FINISHED GRADE ELEVATIONS. OUTSIDE OF PAVED AREAS, SET MANHOLE RIMS 3 INCHES (MINIMUM) TO 6 INCHES (MAXIMUM) ABOVE FINISHED GRADE. ADD SLOPE FILL AROUND MANHOLES, SLOPED AWAY AND DOWN FROM MANHOLE RING.
5. NO DUMPING OF EXCAVATION MATERIALS WILL BE ALLOWED ON PAVED AREAS. CONTRACTOR MUST DETERMINE A LOCATION TO TEMPORARILY STOCKPILE STORM SEWER EXCAVATION TO BE USED AS BACK FILL, AS APPROVED.
6. THE CONTRACTOR SHALL USE HDPE PLASTIC PIPE OR RCP PIPE AS SHOWN ON PLANS.

D. STANDARD NOTES FOR CONSTRUCTION DRAWINGS:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING BACKSLOPE DRAINAGE SYSTEMS.
2. ALL DISTURBED AREAS WITHIN THE SUBDIVISION, EXCEPT THE CHANNEL BOTTOM, SHALL BE FERTILIZED SEEDED.
3. ALL BACKFILL SHALL BE STRICTLY ACCORDING TO DETAILS, SPECIFICATION OR GEOTECHNICAL RECOMMENDATIONS, AS APPROVED BY ENGINEER.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING CHANNEL FLOWLINE TO DESIGN ELEVATIONS AS SHOWN ON PLANS AND DOWNSTREAM AS NECESSARY TO ENSURE NO WATER IN STORM SEWER DURING "DRY" CONDITIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORING CHANNEL TO ORIGINAL CONDITION.

E. UTILITIES

1. CENTERPOINT ENERGY

WARNING: OVERHEAD ELECTRICAL FACILITIES

A. OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE HAVE ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATED THEM PRIOR TO BEGINING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE, FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANCE FOR LINES TO BE TURNED OF OR REMOVED, CALL CENTERPOINT ENERGY, AT (713) 207-7777.

CAUTION: UNDERGROUND GAS FACILITIES

A. LOCATIONS OF CENTERPOINT ENERGY MAIN LINES, (TO INCLUDE GAS TRANSMISSION, AND/OR INDUSTRIAL GAS SUPPLY CORP. WHERE APPLICABLE), ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567 OR 1-800-669-8344 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

B. WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713)-967-8037 FROM 7:00 AM TO 4:30 PM FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.

C. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.

D. WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.

E. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

F. OTHER:

1. LOCATION OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON PLANS IS NOT GUARANTEED TO BE COMPLETE OR DEFINITE. THE APPROXIMATE LOCATIONS OF KNOWN EXISTING UTILITIES ARE SHOWN. CONTRACTOR SHALL DETERMINE THE EXACT SIZE AND HORIZONTAL AND VERTICAL LOCATIONS IN THE FIELD. THE CONTRACTOR SHALL NOTIFY ALL OF THE PROPER GOVERNING AUTHORITIES, (STATE, COUNTY OR CITY) AT LEAST 48 HOURS PRIOR TO COMMENCING WORK.
2. ANY PERMANENT RELOCATION OF AN EXISTING UTILITY NOT SHOWN ON THE DRAWINGS SHALL BE APPROVED BY THE ENGINEER PRIOR TO RELOCATION AND SHALL CONFORM TO THE APPLICABLE STANDARDS OF GOVERNING AUTHORITIES.
3. CONTRACTOR SHALL PROTECT EXISTING UNDERGROUND FACILITIES DURING INSTALLATION OF PROPOSED WORK.
4. IN THE EVENT THAT ANY CONTAMINATED MATERIALS OF SUSPECT CONTAMINATED MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL CEASE OPERATIONS IN THAT AREA AND IMMEDIATELY NOTIFY THE ENGINEER.
5. ALL CONSTRUCTION SHALL CONFORM TO THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
6. ALL PAVEMENT SHALL CONFORM WITH THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
7. ALL STORM SEWERS SHALL BE CONSTRUCTED OF REINFORCED CONCRETE PIPE (RCP) ASTM C-76, CLASS III, EXCEPT FOR ALUMINIZED STEEL PIPE FOR OUTFALLS. (SEE DETAILS FOR BEDDING).
8. STEEL METAL PIPE SHALL BE ALUMINIZED STEEL AASHTO M274 TYPE 2 MIN. 0.052 THICKNESS.
9. ALL GRAVITY SANITARY SEWERS SHALL BE CONSTRUCTED OF PVC PIPE (ASTM D-3034, SDR 26), UNLESS OTHERWISE NOTED ON THE DRAWINGS.
10. ALL FORCE MAIN SANITARY SEWERS SHALL BE CONSTRUCTED OF PVC PIPE (ASTM D-3034, SDR 26), UNLESS OTHERWISE NOTED ON THE DRAWINGS.
11. ALL SANITARY SEWERS AND WATER MAINS SHALL HAVE SIX (6) INCHES OF SAND BACKFILL BOTH UNDER AND OVER PIPE WITH DETECTOR TAPE (METALLIC) INSTALLED 1.5' BELOW FINISH GRADE.
12. BACKFILL WITH CEMENT STABILIZED SAND WHEN SANITARY SEWER CROSSES OVER STORM SEWER (SPACE BETWEEN STORM AND SANITARY SEWERS).
13. ALL SEWERS UNDER OR WITHIN ONE (1) FOOT OF PROPOSED OR FUTURE PAVEMENT SHALL BE BACKFILLED WITH 1 ½ SACK CEMENT STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE.
14. COST OF SPECIAL BACKFILL AND BEDDING IS INCIDENTAL TO THE UNIT PRICE BID PER LINEAR FOOT, NO EXTRA PAY.
15. WATER MAINS SHALL BE C-900 PVC PIPE BEARING THE NSF-PWSEAL AND FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT WITH NON-CORRODING HARDWARE INCLUDING MEGA-LUG RESTRAINTS CONFORMING TO AWWA CL-110 OR C-153.
16. FIRE HYDRANTS SHALL BE "MUELLER IMPROVED" OR APPROVED EQUAL.
17. MINIMUM OF SIX (6) INCHES OF CLEARANCE SHALL BE MAINTAINED BETWEEN WATER MAIN CROSSING OF OTHER UTILITIES.
18. ALL PROPOSED PIPE STUB-OUTS FROM STORM MANHOLES OR INLETS ARE TO BE PLUGGED WITH EIGHT (8) INCH BRICK WALLS UNLESS OTHERWISE NOTED.
19. THE CONTRACTOR SHALL NOTIFY THE CITY OR GOVERNMENTAL AGENCY HAVING JURISDICTION, 48 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION.
20. GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE OBSERVED.
21. ALL SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TCEQ "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS".
22. CONTRACTOR SHALL OBTAIN ALL CONSTRUCTION PERMITS REQUIRED TO THE STANDARDS OF THE GOVERNMENTAL AGENCY HAVING JURISDICTION.
23. SANITARY MANHOLES WITHIN THE FLOOD PLAIN SHALL BE WATERPROOFED AND VENTED WITH RISER ABOVE FLOOD PLAIN OR RIMS SET ABOVE THE 100 YEAR FLOOD ELEVATION.
24. WHERE A NEW POTABLE WATERLINE CROSSES A NEW, NON-PRESSURE RATED WASTEWATER MAIN OR LATERAL AND A STANDARD LENGTH OF THE WASTEWATER PIPE IS LESS THAN 18 FEET IN LENGTH, THE POTABLE WATER PIPE SEGMENT SHALL BE CENTERED OVER THE WASTEWATER LINE. THE MATERIALS AND METHOD OF INSTALLATION SHALL CONFORM WITH ONE OF THE FOLLOWING OPTIONS.

    (I) WITHIN NINE FEET HORIZONTALLY OF EITHER SIDE OF THE WATERLINE, THE WASTEWATER PIPE AND JOINTS SHALL BE CONSTRUCTED WITH PIPE MATERIAL HAVING A MINIMUM PRESSURE RATING OF AT LEAST 150 PSI. AN ABSOLUTE MINIMUM VERTICAL SEPARATION DISTANCE OF TWO FEET SHALL BE PROVIDED. THE WASTEWATER MAIN OR LATERAL SHALL BE LOCATED BELOW THE WATERLINE.

    (II) ALL SECTIONS OF WASTEWATER MAIN OR LATERAL WITHIN NINE FEET HORIZONTALLY OF THE WATERLINE SHALL BE ENCASED IN AN 18-FOOT (OR LONGER) SECTION OF PIPE. FLEXIBLE ENCASING PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 115 PSI AT 5.0% DEFLECTION. THE ENCASING PIPE SHALL BE CENTERED ON THE WATERLINE AND SHALL BE AT LEAST TWO NOMINAL PIPE DIAMETERS LARGER THAN THE WASTEWATER MAIN OR LATERAL. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE-FOOT (OR LESS) INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. EACH END OF THE CASING SHALL BE SEALED WITH WATERTIGHT NON-SHRINK CEMENT GROUT OR A MANUFACTURED WATERTIGHT SEAL. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF SIX INCHES BETWEEN THE ENCASEMENT PIPE AND THE WATERLINE SHALL BE PROVIDED. THE WASTEWATER LINE SHALL BE LOCATED BELOW THE WATERLINE.

    (III) WHEN A NEW WATERLINE CROSSES UNDER A WASTEWATER MAIN OR LATERAL, THE WATERLINE SHALL BE ENCASED AS DESCRIBED FOR WASTEWATER MAINS OR LATERALS IN SUBCLASS (II) OF THIS CLAUSE OR CONSTRUCTED OF DUCTILE IRON OR STEEL PIPE WITH MECHANICAL OR WELDED JOINTS AS APPROPRIATE. AN ABSOLUTE MINIMUM SEPARATION DISTANCE OF ONE FOOT BETWEEN THE WATERLINE AND THE WASTEWATER MAIN OR LATERAL SHALL BE PROVIDED. BOTH THE WATERLINE AND WASTEWATER MAIN OR LATERAL MUST PASS A PRESSURE AND LEAKAGE TEST AS SPECIFIED IN AWWA C600 STANDARDS.

25. COST OF TRENCH SAFETY SYSTEMS AS REQUIRED BY OSHA FOR DEPTHS OVER FIVE (5) FEET IS INCIDENTAL TO THE PROJECT.
26. WATER LINES ARE TO BE CONSTRUCTED TYPICALLY 4 FEET DEEP TO THE TOP OF THE LINE FROM THE FINISHED CURB ELEVATION OR NATURAL GROUND. LINES MAY BE SAGGED OR RAISED WITHIN THE RANGE OF 3-6 FEET TO AVOID UTILITY CONFLICTS WATER LINE DEFLECTIONS SHALL NOT EXCEED THE PIPE MANUFACTURES RECOMMENDATIONS.
27. ALL SLEEVES TO BE FOUR (4) INCH SCHEDULE 40 PVC SLEEVES TO BE EIGHTEEN (18) INCHES BELOW THE BOTTOM OF THE PAVEMENT BASE MATERIAL. STUB OUT THREE (3) FEET BEYOND CURB AND MARK SLEEVES LOCATIONS ON CURB.
28. THERE SHALL BE A MINIMUM HORIZONTAL DISTANCE OF FOUR (4) FEET CLEARANCE BETWEEN ALL WATER LINES AND SANITARY SEWER LINES THAT ARE SDR 26, AND A NINE (9) FOOT CLEARANCE BETWEEN ALL WATER LINES AND SANITARY SEWER LINES THAT ARE SDR 35. (SEE DETAIL)
29. ALL JOINTS OF DUCTILE IRON PIPE BELOW GROUND WILL BE M.J. WITH PIPE RESTRAINTS.
30. ALL SIGNAGE AND/OR TRAFFIC CONTROL DEVICES SHALL BE APPROVED BY HARRIS COUNTY PRIOR TO CONSTRUCTION.

NOTE:
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES IN THE ROAD R.O.W. PRIOR TO CONSTRUCTION. (TEXAS ONE CALL 1-800-545-6005)

NOTE:
CONTRACTOR SHALL ADJUST ALL WATER VALVES AND STORM SEWER MANHOLES TO MATCH FINAL GRADES. SEE ALL GRADING PLANS SHEETS.

NOTE:
CONTRACTOR SHALL VERIFY ALL WATER, SANITARY SEWER AND STORM SEWER LINES PRIOR TO WORKING IN ANY AREA. SEE TOPO MAP AND REFERENCE DRAWINGS.

NOTE:
THIS DEVELOPMENT HAS BEEN DESIGNED TO NOT IMPEDE, IMPOUND, OR BLOCK THE NATURAL FLOW OF DRAINAGE FROM OR ACROSS ADJACENT AND CONTIGUOUS PROPERTIES.

NOTE:
ALL FUTURE SITE AND BUILDINGS PROJECTS WILL REQUIRE CIVIL/SITE DRAWING APPROVAL AND CHANGES TO THE PLATS MAY BE REQUIRED AS A PART OF THE REVIEW PROCESS.

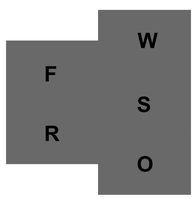
ALL PIPE PLACEMENT AND JOINTING WILL BE CONSTRUCTED STRICTLY IN ACCORDANCE WITH THE MANUFACTURES' REQUIREMENTS AND SPECIFICATIONS.

STORM SEWER PIPE — HDPE N-12, PVC SDR35 OR RCP CLASS III (RUBBER GASKET)— EXCEPT IF NOTED OTHERWISE
POTABLE WATER —— 3" AND SMALLER - SCH 80 PVC
4" AND LARGER - C-900, DR 18- 150 PSI
SANITARY SEWER - GRAVITY , PVC SDR 26
CULVERT PIPE - RCP CLASS IV T&G

THE OWNER WILL SET UP THE NECESSARY WATER ACCOUNTS AND PURCHASE THE WATER METERS AND METER BOXES.
THE CONTRACTOR WILL PICK UP THE METERS AND BOXES AT THE CITY AND DELIVER THEM TO THE JOBSITE.
THE CONTRACTOR WILL MAKE THE NECESSARY TAPS AND INSTALL THE METERS AS REQUIRED BY HARRIS COUNTY.

ONE- CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223-4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1-800-545-6005

KEY PLAN (NOT TO SCALE)



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390 Glenborough Dr.
Suite 290
Houston, TX 77067
832 249 9379

Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE

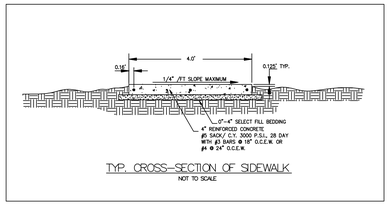
PROFESSIONAL SEALS
TEXAS REGISTERED ENGINEERING FIRM F-003408
STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
07/03/20

GENERAL NOTES

DRAWN BY AB	CHECKED BY JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR REGULATORY REVIEW	DATE 03 JULY 2020

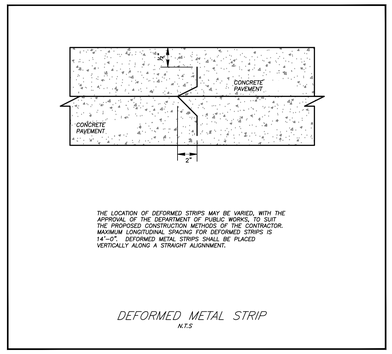
C8.0
SHEET NUMBER

FILE PATH: File Path
DATE STAMP: 6/26/2008 2:02:08 PM



TYP. CROSS-SECTION OF SIDEWALK

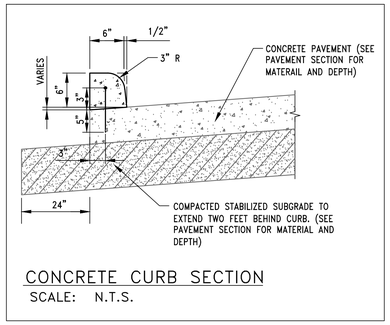
NOT TO SCALE



THE LOCATION OF DEFORMED STRIPS MAY BE VARIED, WITH THE APPROVAL OF THE DEPARTMENT OF PUBLIC WORKS, TO SUIT THE PROPOSED CONSTRUCTION METHODS OF THE CONTRACTOR. MAXIMUM LONGITUDINAL SPACING FOR DEFORMED STRIPS IS 14'-0". DEFORMED METAL STRIPS SHALL BE PLACED VERTICALLY ALONG A STRAIGHT ALIGNMENT.

DEFORMED METAL STRIP

N.T.S



CONCRETE CURB SECTION

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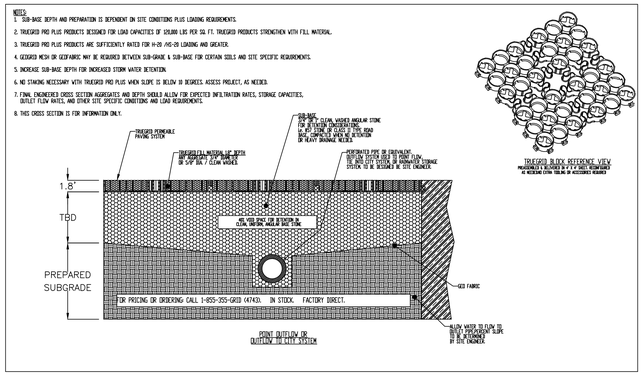
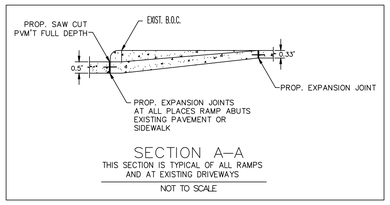
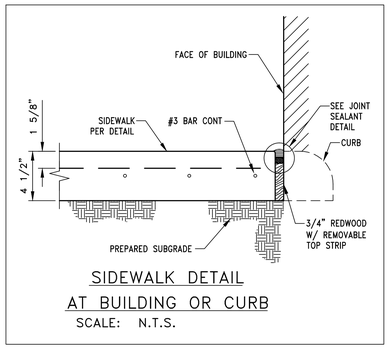




SECTION A–A

THIS SECTION IS TYPICAL OF ALL RAMPS AND AT EXISTING DRIVEWAYS

NOT TO SCALE



SIDEWALK DETAIL

AT BUILDING OR CURB

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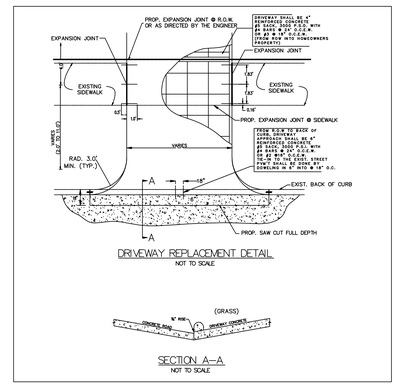

DRIVEWAY REPLACEMENT DETAIL

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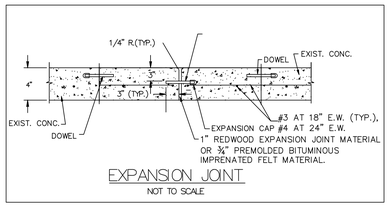

EXPANSION JOINT

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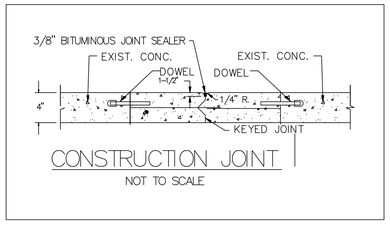

CONSTRUCTION JOINT

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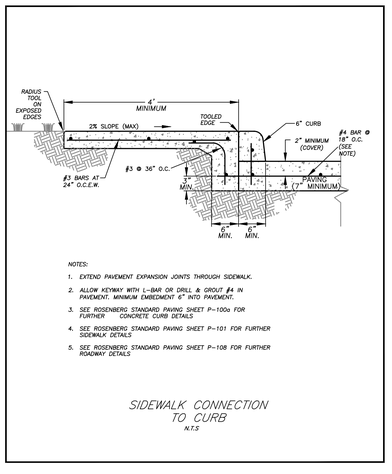
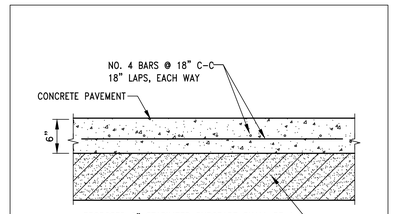


NOTES:

1. EXTEND PAVEMENT EXPANSION JOINTS THROUGH SIDEWALK.
2. ALLOW KEYWAY WITH L-BAR OR DRILL & GROUT #4 IN PAVEMENT. MINIMUM EMBEDMENT 6" INTO PAVEMENT.
3. SEE ROSENBERG STANDARD PAVING SHEET P-100a FOR FURTHER CONCRETE CURB DETAILS
4. SEE ROSENBERG STANDARD PAVING SHEET P-101 FOR FURTHER SIDEWALK DETAILS
5. SEE ROSENBERG STANDARD PAVING SHEET P-108 FOR FURTHER ROADWAY DETAILS

SIDEWALK CONNECTION TO CURB

N.T.S

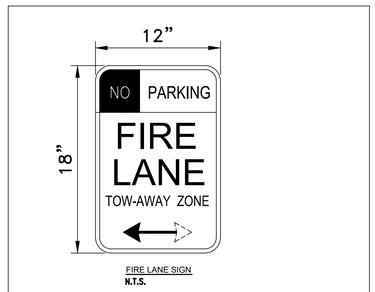


PROPOSED 6" STABILIZED SUBGRADE SHALL BE A MINIMUM OF 8% LIME BY WEIGHT. FOR COMPACTION, REFER TO GEOTECHNICAL REPORT.

CONCRETE SHALL BE 3,500 PSI

6" CONCRETE PAVEMENT

SCALE: N.T.S.



FIRE LANE SIGN

N.T.S.

AT THE BEGINNING AND END OF THE FIRE LANE, THE SIGN SHALL HAVE A SINGLE HEADED ARROW POINTING IN THE DIRECTION THE REGULATION IS IN EFFECT. THE INTERMEDIATE SIGN SHALL HAVE DOUBLE HEADED ARROWS POINTING IN BOTH DIRECTIONS.

THE MAXIMUM SPACING OF THE SIGNS SHALL BE 75' CONTINGENT UPON TRAFFIC ENGINEER'S REVIEW APPROVAL.

THE SIGNS SHALL BE SET AT AN ANGLE OF NOT LESS THAN 30° NOR MORE THAN 45° WITH THE CURB OR LINE OF TRAFFIC FLOW.

THE CLEARANCE TO THE BOTTOM OF THE SIGN SHALL BE 7 FEET. THERE SHALL BE NO OTHER SIGNS ATTACHED TO THE SIGN OR THE SIGN POLE.

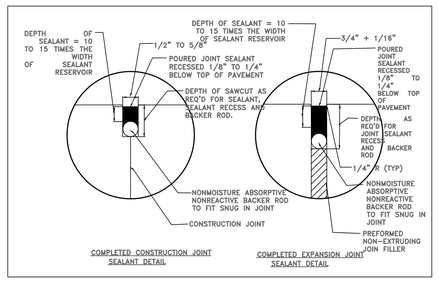
THE SIGN PLATE SHALL BE A MINIMUM OF 12"X18" WITH A THICKNESS OF 0.80".

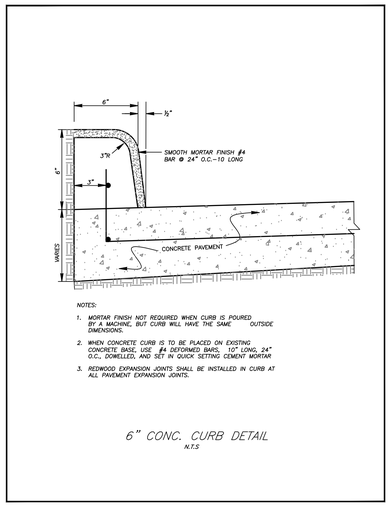
NOTE:

FIRE LANES: SIGNS SHALL BE POSTED ON ONE OR BOTH SIDES OF THE FIRE APPARATUS ROAD. WHERE A SIGN CAN NOT BE ERECTED, THE FIRE LANES SHALL BE MARKED USING THE APPROVED METHOD OF 6-INCH RED STRIPE WITH 4-INCH WHITE LETTERS STATING "FIRE LANE NO PARKING" AND SHALL CONTINUE ALONG THE RED STRIPE EVERY 15 FEET INTERVALS.

FIRE LANE DETAILS AND NOTES

SCALE: N.T.S.



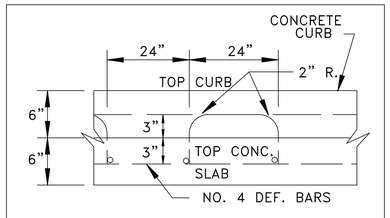


NOTES:

1. MORTAR FINISH NOT REQUIRED WHEN CURB IS POURED BY A MACHINE, BUT CURB WILL HAVE THE SAME OUTSIDE DIMENSIONS.
2. WHEN CONCRETE CURB IS TO BE PLACED ON EXISTING CONCRETE BASE, USE #4 DEFORMED BARS, 10" LONG, 24" O.C., DOWELLED, AND SET IN QUICK SETTING CEMENT MORTAR
3. REDWOOD EXPANSION JOINTS SHALL BE INSTALLED IN CURB AT ALL PAVEMENT EXPANSION JOINTS.

6" CONC. CURB DETAIL

N.T.S



TYP. CONCRETE CURB REINFORCING

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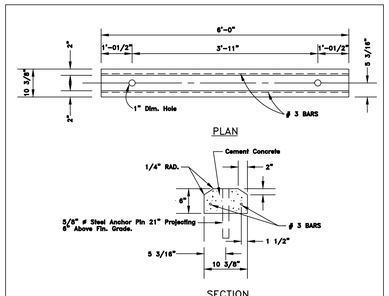

PRECAST CONC.

WHEEL STOP DETAIL

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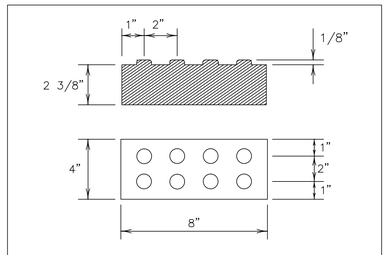

DETECTABLE WARNING PAVER

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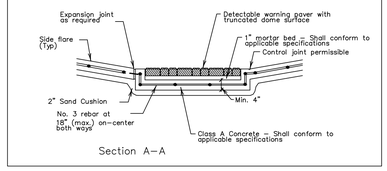

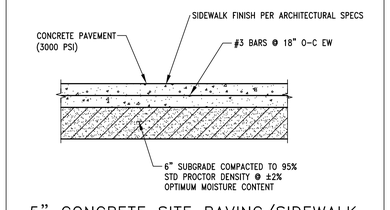

5" CONCRETE SITE PAVING/SIDEWALK

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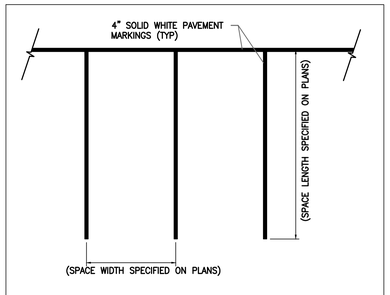


TYPICAL PARKING SPACE DIMENSIONING

SCALE: N.T.S.

CEMENT STABILIZED SAND 2-SK/C.Y.	
RESIDENTIAL	4" MINIMUM
COMMERCIAL	6" MINIMUM
INDUSTRIAL	8" MINIMUM
REINFORCED CONCRETE PAVEMENT 3,500 PSI MIN.	
RESIDENTIAL	4" MINIMUM
COMMERCIAL	6" MINIMUM
INDUSTRIAL	8" MINIMUM

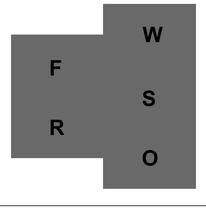
DRIVEWAY PAVEMENT CONSTRUCTION TABLE

STANDARD DRIVEWAY CONSTRUCTION TABLE & NOTES

N.T.S

ONE– CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223–4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1–800–545–6005

KEY PLAN (NOT TO SCALE)



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832 249 9379

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8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

TEXAS REGISTERED ENGINEERING FIRM F-003425

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
07/03/20

PAVEMENT DETAILS

DRAWN BY	CHECKED BY
AB	JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR REGULATORY REVIEW	DATE 03 JULY 2020

C9.0

SHEET NUMBER

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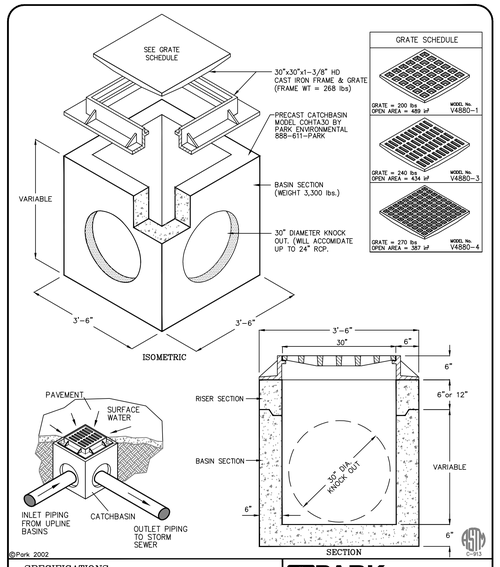

SPECIFICATIONS

CONCRETE : Class 1 concrete with of design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth. Rated for H-20 Loading.

REINFORCEMENT: Grade 60 reinforced with steel rebar to conform to ASTM A615 on required centers or equal.

C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

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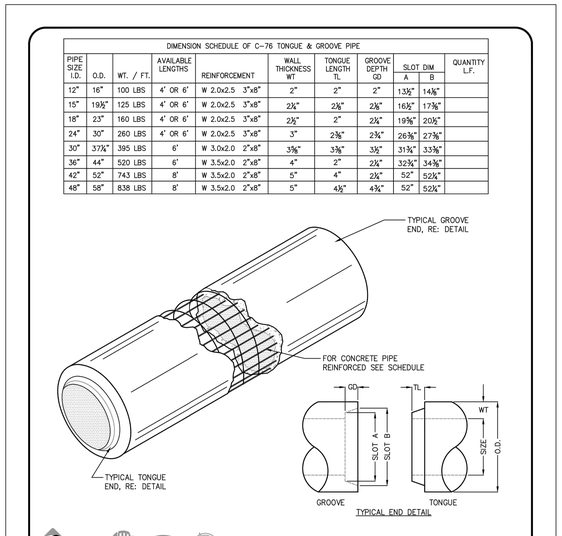
"Expect the Best"

TYPE-A GRATE INLET SIZE 30"

SCALE	NONE	DWG. NO.	COHTAI-2	REV.
DATE	01/02			A

DIMENSION SCHEDULE OF C-76 TONGUE & GROOVE PIPE										
PIPE SIZE I.D.	O.D.	WT. / FT.	AVAILABLE LENGTHS	REINFORCEMENT	WALL THICKNESS WT	TONGUE LENGTH TL	GROOVE DEPTH GD	SLOT DIM A	SLOT DIM B	QUANTITY L.F.
12"	16"	100 LBS	4' OR 6'	W 2.0x2.5 3"x8"	2"	2"	2"	13⅜"	14⅜"	
15"	19⅜"	125 LBS	4' OR 6'	W 2.0x2.5 3"x8"	2¼"	2⅜"	2⅜"	16⅜"	17⅜"	
18"	23"	160 LBS	4' OR 6'	W 2.0x2.5 3"x8"	2½"	2"	2¼"	19⅝"	20½"	
24"	30"	260 LBS	4' OR 6'	W 2.0x2.5 3"x8"	3"	2⅜"	2¾"	26⅜"	27⅜"	
30"	37¾"	395 LBS	6'	W 3.0x2.0 2"x8"	3⅜"	3⅜"	3½"	31¾"	33⅜"	
36"	44"	520 LBS	6'	W 3.5x2.0 2"x8"	4"	2"	2¼"	32¾"	34⅜"	
42"	52"	743 LBS	8'	W 3.5x2.0 2"x8"	5"	4"	2¼"	52"	52¼"	
48"	58"	838 LBS	8'	W 3.5x2.0 2"x8"	5"	4½"	4¾"	52"	52¼"	



SPECIFICATIONS

CONCRETE: CLASS 1 CONCRETE WITH DESIGN STRENGTH OF 4000 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AND IS DESIGNED CONFORMING TO ASTM C-76 CLASS III, WALL B.

REINFORCEMENT: GRADE 60 REINFORCED STEEL REBAR CONFORMING TO ASTM A185 ON REQUIRED CENTERS OR EQUAL.

C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

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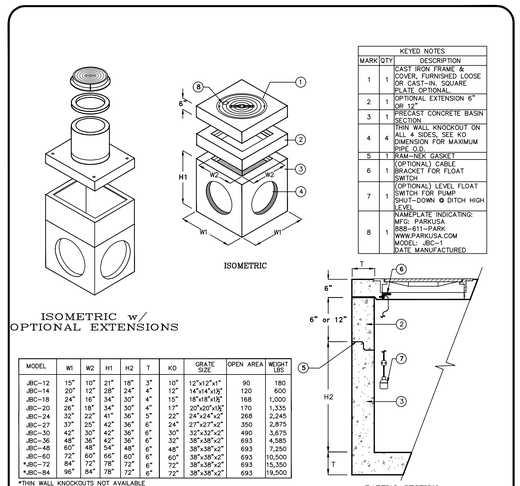
PROJECT: ; CUSTOMER: ; ENGINEER: ; ORDER #: ; PROJ #: ; DATE: ; LOCATION: ;

PARK ENVIRONMENTAL EQUIPMENT, INC. www.parkusa.com 888-611-PARK

REINFORCED CONCRETE PIPE MODEL RCP - 12" THRU 48"

PM	PC	DRN	CHK	DWG. NO.	REV.
				RCP-1	

DATE 01/2019



KEYED NOTES		
MARK	QTY	DESCRIPTION
1	1	CAST IRON FRAME & COVER, FURNISHED LOOSE OR CAST-IN. SQUARE PLATE OPTIONAL.
2	1	OPTIONAL EXTENSION 6" OR 12"
3	1	PRECAST CONCRETE BASIN SECTION
4	4	THIN WALL KNOCKOUT ON ALL 4 SIDES, SEE KO DIMENSION FOR MAXIMUM SIZE.
5	1	RAM-NEK GASKET
6	1	(OPTIONAL) CABLE BRACKET FOR FLOAT SWITCH
7	1	(OPTIONAL) LEVEL FLOAT SWITCH FOR PUMP SHUT-DOWN @ DITCH HIGH LEVEL
8	1	NAMEPLATE INDICATING; MFG: PARKUSA 888-611-PARK WWW.PARKUSA.COM MODEL: JBC-1 DATE MANUFACTURED

MODEL	W1	W2	H1	H2	T	KO	GRATE SIZE	OPEN AREA	WEIGHT LBS
JBC-12	15"	10"	21"	18"	3"	10"	12"x12"x1"	90	180
JBC-14	20"	12"	28"	24"	4"	12"	14"x14"x1⅛"	120	600
JBC-18	24"	16"	34"	30"	4"	15"	18"x18"x1⅛"	168	1,000
JBC-20	26"	18"	34"	30"	4"	17"	20"x20"x1⅜"	170	1,335
JBC-24	32"	22"	41"	36"	5"	22"	24"x24"x2"	268	2,245
JBC-27	37"	25"	42"	36"	6"	24"	27"x27"x2"	350	2,875
JBC-30	42"	30"	42"	36"	6"	30"	32"x32"x2"	490	3,675
JBC-36	48"	36"	42"	36"	6"	32"	38"x38"x2"	693	4,585
JBC-48	60"	48"	54"	48"	6"	48"	38"x38"x2"	693	7,250
JBC-60	72"	60"	66"	60"	6"	60"	38"x38"x2"	693	10,500
JBC-72	84"	72"	78"	72"	6"	72"	38"x38"x2"	693	15,350
*JBC-84	96"	84"	78"	72"	6"	72"	38"x38"x2"	693	19,500

*THIN WALL KNOCKOUTS NOT AVAILABLE

SPECIFICATIONS

CONCRETE : CLASS II CONCRETE WITH OF DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

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PROJECT: ; CUSTOMER: ; ENGINEER: ; ORDER #: ; PROJ #: ; DATE: ; LOCATION: ;

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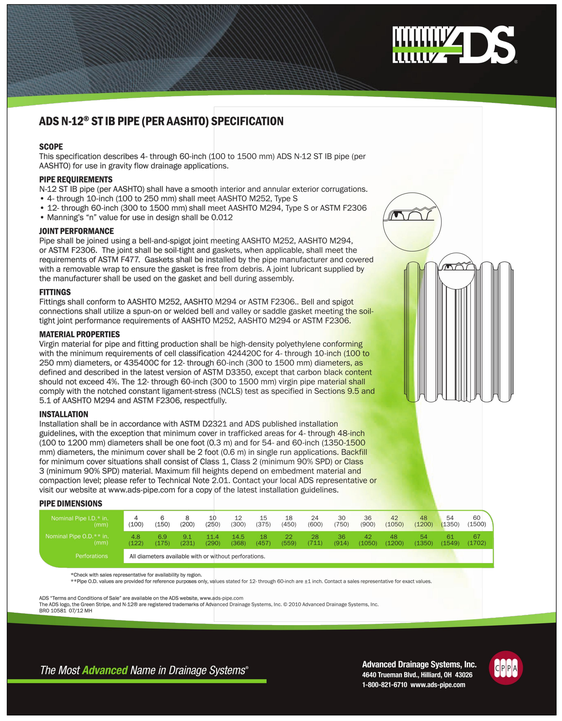
JUNCTION BOX MODEL JBC - 12" THRU 84"

PM	PC	DRN	CHK	DWG. NO.	REV.
				D10.0 STORM DRAIN DETAILS	

DATE 01/2019



ADS

ADS N-12® ST IB PIPE (PER AASHTO) SPECIFICATION

SCOPE

This specification describes 4- through 60-inch (100 to 1500 mm) ADS N-12 ST IB pipe (per AASHTO) for use in gravity flow drainage applications.

PIPE REQUIREMENTS

N-12 ST IB pipe (per AASHTO) shall have a smooth interior and annular exterior corrugations.
- 4- through 10-inch (100 to 250 mm) shall meet AASHTO M252, Type S
- 12- through 60-inch (300 to 1500 mm) shall meet AASHTO M294, Type S or ASTM F2306
- Manning's "n" value for use in design shall be 0.012

JOINT PERFORMANCE

Pipe shall be joined using a bell-and-spigot joint meeting AASHTO M252, AASHTO M294, or ASTM F2306. The joint shall be soil-tight and gaskets, when applicable, shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.

FITTINGS

Fittings shall conform to AASHTO M252, AASHTO M294 or ASTM F2306.. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the soil-tight joint performance requirements of AASHTO M252, AASHTO M294 or ASTM F2306.

MATERIAL PROPERTIES

Virgin material for pipe and fitting production shall be high-density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, or 435400C for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 60-inch (300 to 1500 mm) virgin pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306, respectfully.

INSTALLATION

Installation shall be in accordance with ASTM D2321 and ADS published installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot (0.3 m) and for 54- and 60-inch (1350-1500 mm) diameters, the minimum cover shall be 2 foot (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD) or Class 3 (minimum 90% SPD) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.01. Contact your local ADS representative or visit our website at www.ads-pipe.com for a copy of the latest installation guidelines.

PIPE DIMENSIONS

Nominal Pipe I.D.* in. (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	54 (1350)	60 (1500)
Nominal Pipe O.D.** in. (mm)	4.5 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.0 (368)	18 (457)	22 (559)	28 (711)	36 (914)	42 (1050)	48 (1200)	54 (1350)	60 (1549)	67 (1702)
Perforations	All diameters available with or without perforations.													

*Check with sales representative for availability by region.
**Pipe O.D. values are provided for reference purposes only, values stated for 12- through 60-inch are ±1 inch. Contact a sales representative for exact values.

ADS "Terms and Conditions of Sale" are available on the ADS website, www.ads-pipe.com
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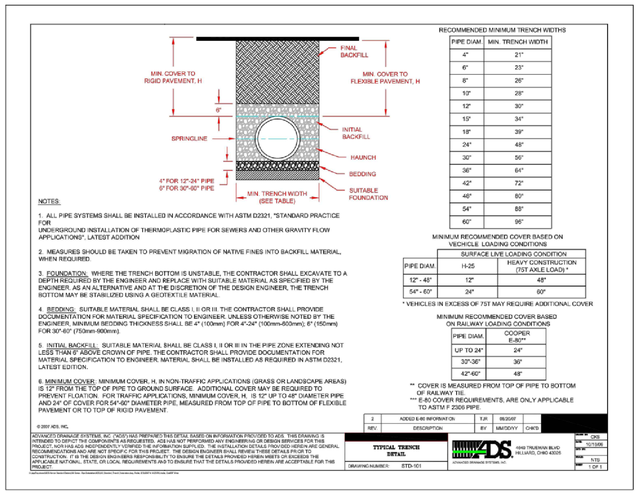

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

	SURFACE LIVE LOADING CONDITION	
PIPE DIAM	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

MINIMUM RECOMMENDED COVER BASED ON RAILWAY LOADING CONDITIONS

PIPE DIAM	COOPER E-80**
UP TO 24"	24"
30"-36"	30"
42"-60"	48"

** COVER IS MEASURED FROM TOP OF PIPE TO BOTTOM OF RAILWAY TIE.
*** E-80 COVER REQUIREMENTS, ARE ONLY APPLICABLE TO ASTM F 2306 PIPE.

REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
2	ADDED E-80 INFORMATION	TJR	06/30/07	CKS

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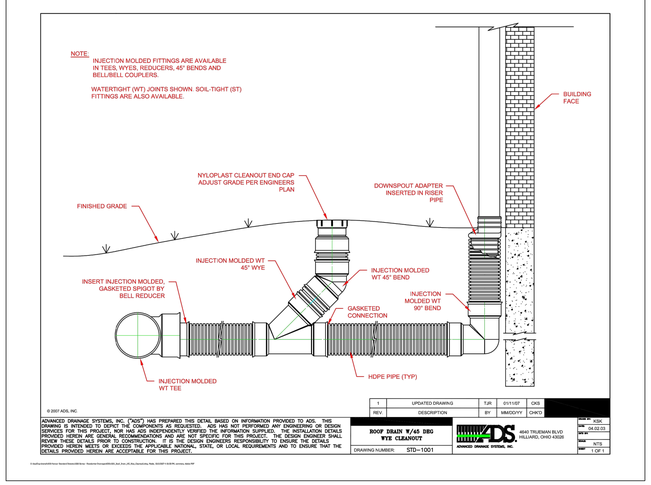
TYPICAL TRENCH DETAIL

DRAWING NUMBER: STD-101

ADVANCED DRAINAGE SYSTEMS, INC. 4640 TRUEMAN BLVD HILLIARD, OHIO 43026

DRWN CKS 10/15/08; CHK'D TJR 06/30/07; N.T.S.; 1 OF 1



REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
1	UPDATED DRAWING	TJR	01/11/07	CKS

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ROOF DRAIN W/45 DEG WYE CLEANOUT

DRAWING NUMBER: STD-1001

ADVANCED DRAINAGE SYSTEMS, INC. 4640 TRUEMAN BLVD HILLIARD, OHIO 43026

DRWN CKS 04.02.03; CHK'D N/A; N.T.S.; 1 OF 1

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CALL BEFORE YOU DIG!!!
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(New Statewide Number Outside Houston)
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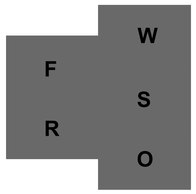
KEY PLAN (NOT TO SCALE)



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Galveston County Road & Bridge Department Facilities

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

TEXAS REGISTERED ENGINEERING FIRM F-003426

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
07/03/20

STORM DRAIN DETAILS

DRAWN BY	CHECKED BY
AB	JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR REGULATORY REVIEW	DATE 03 JULY 2020

C10.0
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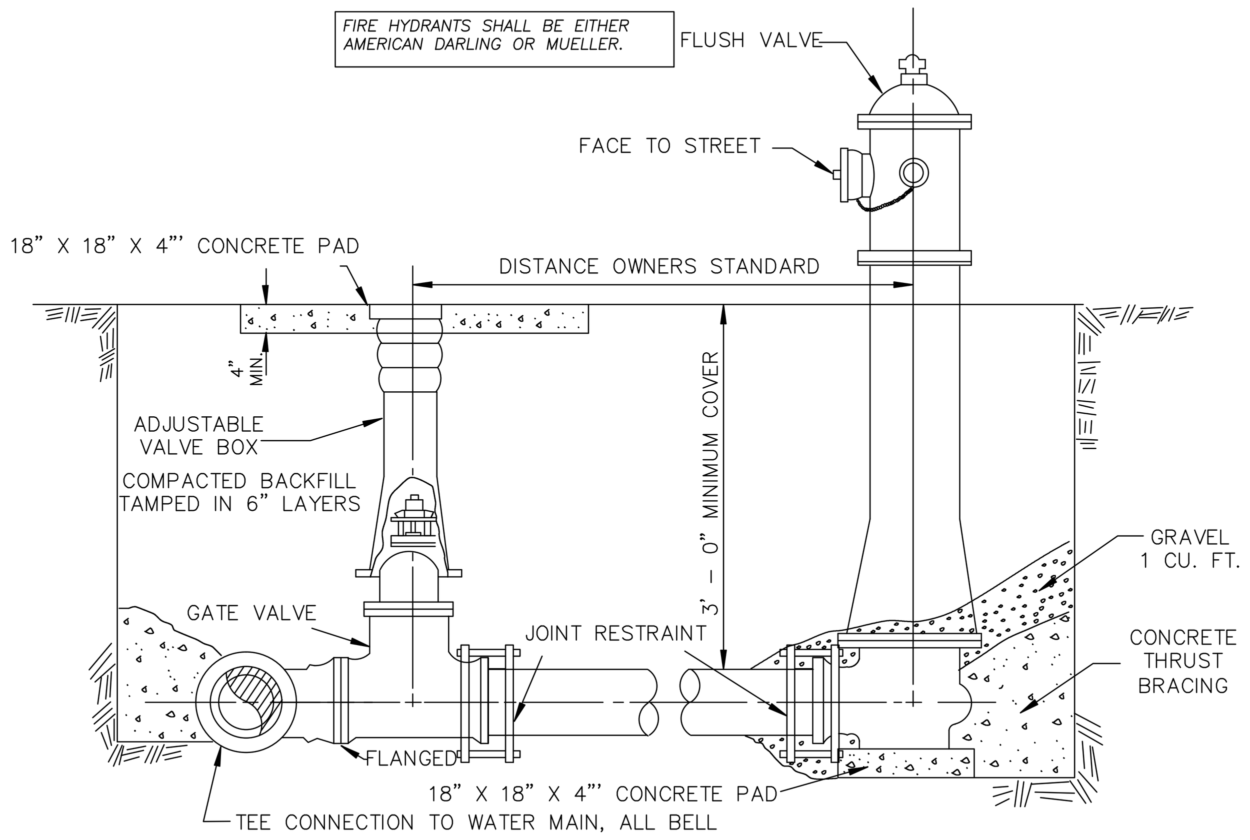
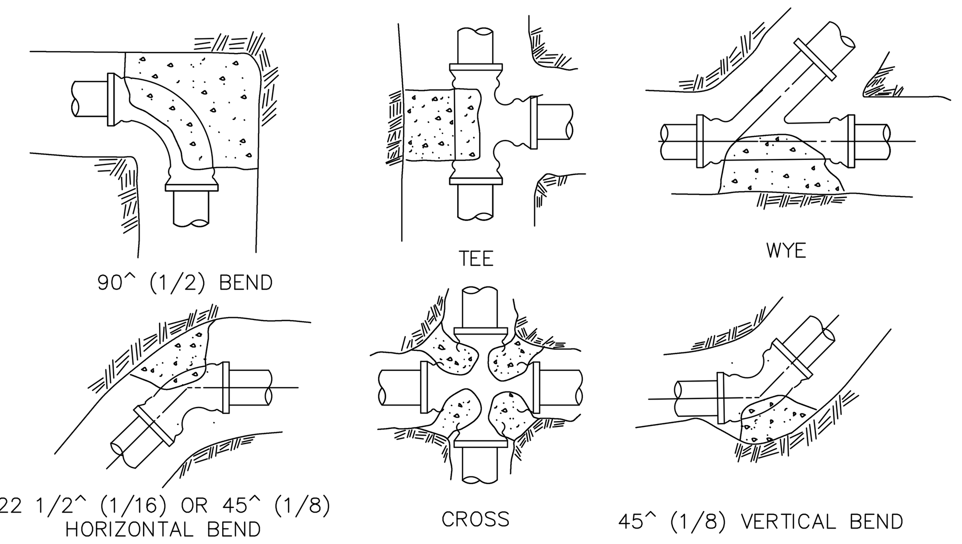
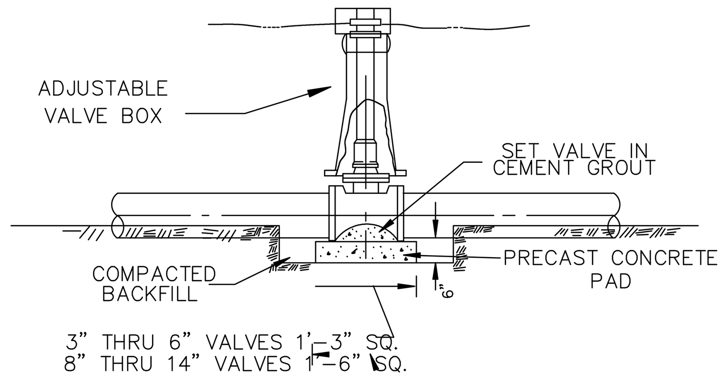


TYPICAL GATE VALVE AND FLUSH VALVE DETAILS



TYPICAL THRUST BLOCKS

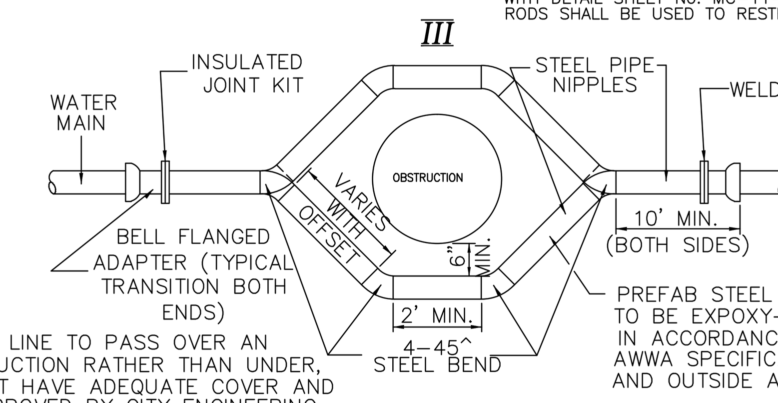


BLOCKING FOR VALVES

14' AND SMALLER

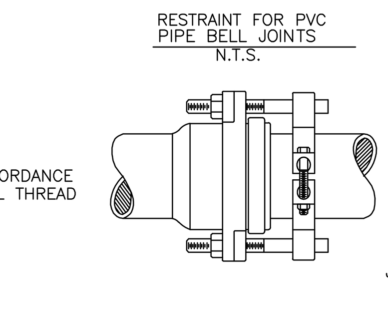
MIN. PIPE WALL THICKNESS	
4"	0.250"
6"	0.280"
8"	0.322"
12" AND LARGER	0.375"

NOTES:
1. ALL MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH ENGINEERING DEPARTMENT SPECIFICATIONS
2. INSULATED JOINT TO BE MADE UP USING INSULATING GASKETS, PLASTIC BOLT SLEEVES AND WASHERS OF INSULATING GASKET MATERIAL BACKED WITH ZINC-PLATED WASHERS, OR OTHER METHODS APPROVED SPECIFICALLY BY THE ENGINEERING DEPARTMENT.
3. NO FIELD FABRICATION OF STEEL WATER PIPE OFFSETS ALLOWED.
4. OFFSET SECTIONS SHALL BE THRUST-BLOCKED IN ACCORDANCE WITH DETAIL SHEET No. MC-11-03, IF NECESSARY ALL THREAD RODS SHALL BE USED TO RESTRAIN THE JOINTS.



FOR A LINE TO PASS OVER AN OBSTRUCTION RATHER THAN UNDER, IT MUST HAVE ADEQUATE COVER AND BE APPROVED BY CITY ENGINEERING DEPARTMENT.

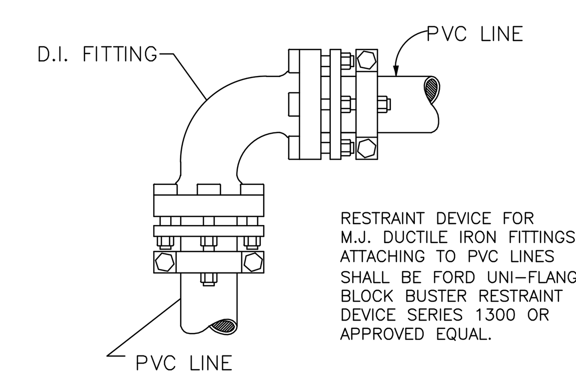
STEEL WATER PIPE OFFSET ASSEMBLY



RESTRAINT DEVICE FOR PVC PIPE BELL JOINTS SHALL BE FORD UNI-FLANGE BLOCK BUSTER SERIES 1350 OR APPROVED EQUAL.

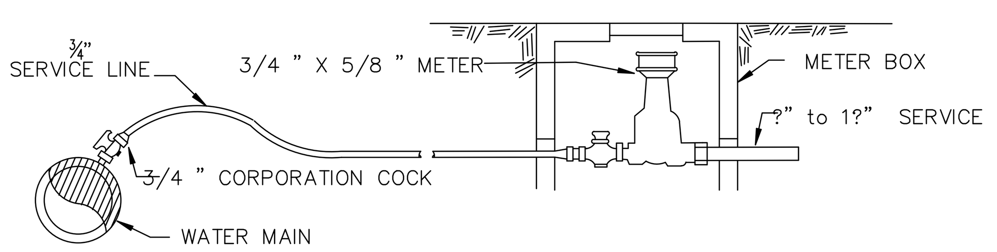
NOTE:
ALL BOLTS TO BE BURIED SHALL BE TYPE 304 STAINLESS STEEL.

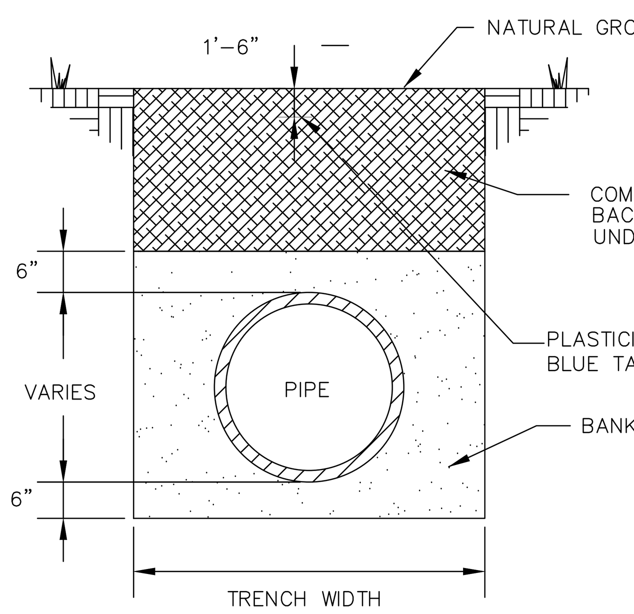
JOINT RESTRAINT DEVICE DETAILS FOR CAST IRON & DUCTLE IRON MECHANICAL JOINT FITTINGS AND PVC PIPE.
N.T.S.



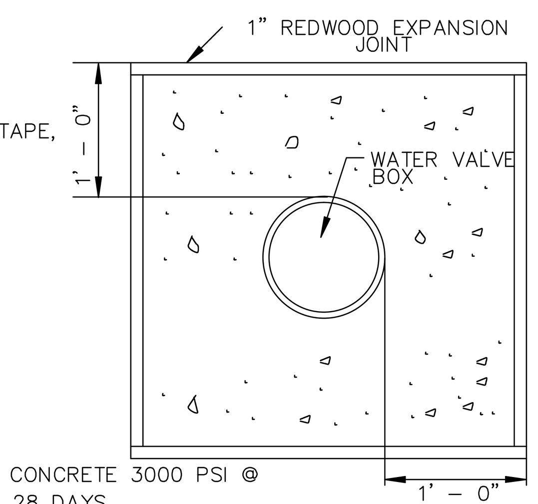
RESTRAINT DEVICE FOR M.J. DUCTILE IRON FITTINGS ATTACHING TO PVC LINES SHALL BE FORD UNI-FLANGE BLOCK BUSTER RESTRAINT DEVICE SERIES 1300 OR APPROVED EQUAL.

USE RESTRAINED JOINTS WHERE INDICATED ON PLANS



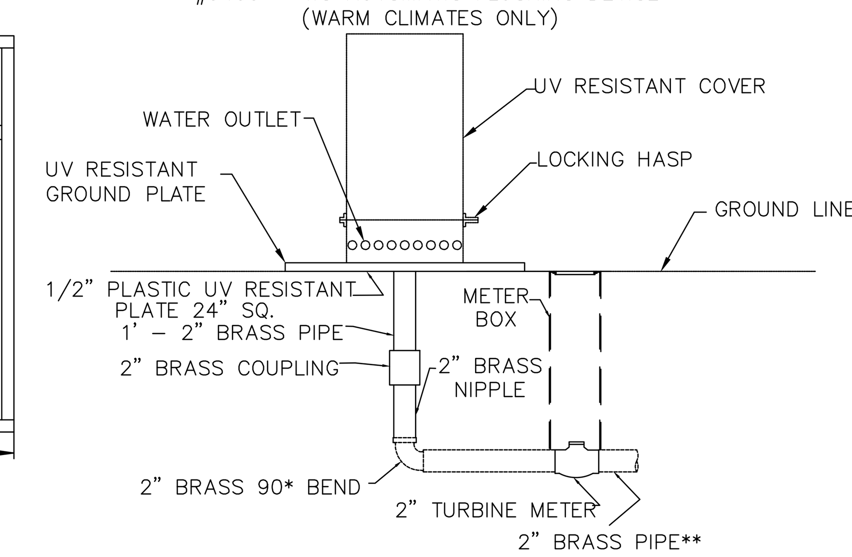


BACKFILL DETAIL NOT UNDER PAVEMENT

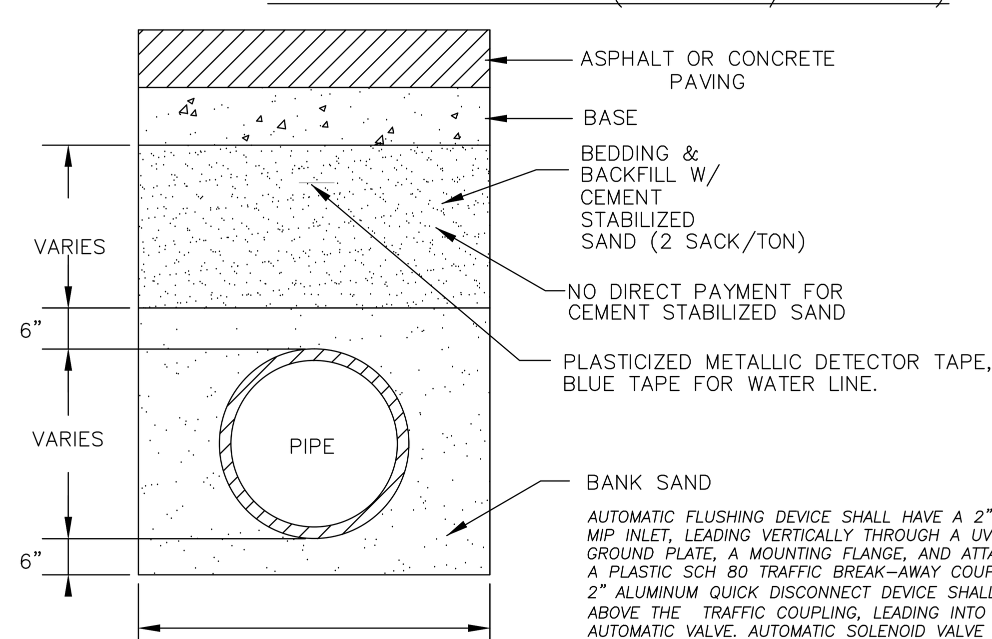


WATER VALVE BLOCKOUT

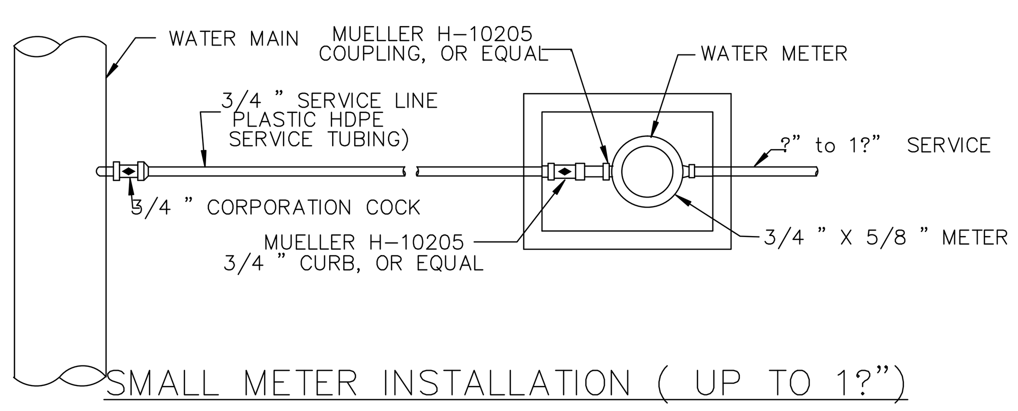
METER SHALL BE PURCHASED FROM THE CITY OF MONT BELVIEU #9400 – WC AUTOMATIC FLUSHING DEVICE (WARM CLIMATES ONLY)



TYPICAL DETAILS WATER AND SANITARY SEWER (SDR 26/SDR 35)



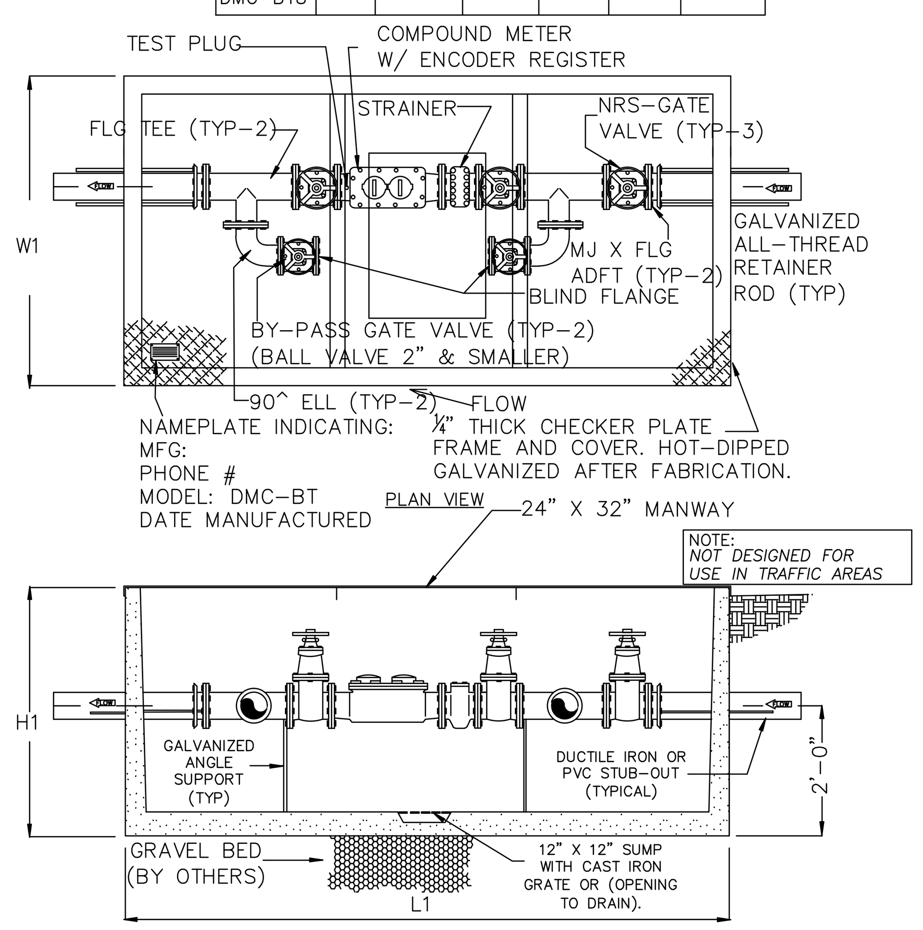
BACKFILL DETAIL WATERLINE UNDER PAVEMENT



SMALL METER INSTALLATION (UP TO 1?")

AUTOMATIC FLUSHING DEVICE SHALL HAVE A 2" BRASS MIP INLET, LEADING VERTICALLY THROUGH A UV RESISTANT GROUND PLATE, A MOUNTING FLANGE, AND ATTACHING TO A PLASTIC SCH 80 TRAFFIC BREAK-AWAY COUPLING. A 2" ALUMINUM QUICK DISCONNECT DEVICE SHALL BE LOCATED ABOVE THE TRAFFIC COUPLING, LEADING INTO THE 2" AUTOMATIC VALVE. AUTOMATIC SOLENOID VALVE SHALL BE LOCATED ABOVE GROUND FOR EASY ACCESS, HAVE INTERNAL, SELF-CLEANING DEBRIS SCREEN, AND HAVE A 220 PSI RATING. VALVE CONTROLLER WILL NOT REQUIRE A SECOND HAND-HELD DEVICE FOR PROGRAMMING, MUST HAVE A MINIMUM OF 9 POSSIBLE FLUSHING CYLES PER DAY. SHALL BE SUBMERSIBLE TO 12 FEET. OPERATE WITH A 9 VOLT BATTERY, HAVE RESIN-SEALED ELECTRICAL COMPONENTS, AND SHALL BE LOCATED ABOVE WATER FLOW. SOLENOID SHALL HAVE NO LOOSE PARTS WHEN REMOVED FROM VALVE. VALVE, SOLENOID, AND CONTROLLER SHALL HAVE RUBBER CAPS FOR ADDED PROTECTION. EACH UNIT SHALL HAVE A DOUBLE-VALVE, ALL BRASS SAMPLING POINT. WATER SHALL EXIT UNIT HORIZONTALLY THROUGH HOLES LOCATED NEAR GROUNDLINE. ALL ABOVE-GROUND COMPONENTS SHALL BE CONTAINED WITHIN A UV-RESISTANT LOCKING DOMED COVER, AS MANUFACTURED BY KUPFERLE FOUNDRY COMPANY, ST. LOUIS, MO , 1-800-231-3990, OR APPROVED EQUAL.

DIMENSIONS						
MODEL	SIZE	BY PASS	L1	W1	H1	WEIGHT LBS
DMC-BT2	2"	1'	6'0"	3'-6"	4'-0"	12,000
DMC-BT3	3'	1-1/2"	8'-8"	5'-0"	4'-0"	15,000
DMC-BT4	4"	2"	8'-8"	5'-0"	4'-0"	15,000
DMC-BT4	6"	3"	11'-0"	6'-0"	4'-0"	18,000
DMC-BT6	8"	4"	13'-0"	7'-0"	4'-3"	25,000
DMC-BT8						



Specifications

CONCRETE: *Class 1 concrete with design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and forst stage of wall with sectional riser to requird depth. Gross empty weight of as indicated.*

REINFORCEMENT: *Grade 60 reinforced. Steel rebar conforming to ASTM A615 on required centers or equal.*

STEEL COVER: *¼" steel skid-resistant floor plate welded to 3" angle frame with (2) 3'x2-3/8" I beam supports.*

Engineering Data

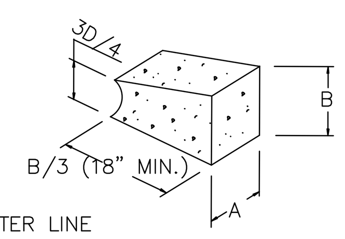
The meter assembly shall be factory assembled in vault & hydrostatically tested prior to delivery. Field excavation & preparation shall be complete prior to delivery. As manufactured by Park Equipment, Houston Tx. 713-937-7602

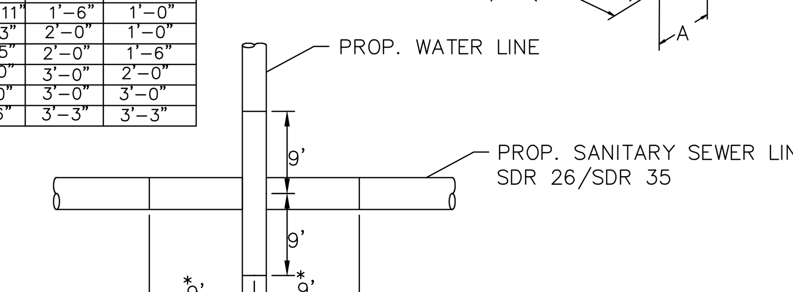
LARGE METER INSTALLATION (2" & UP)

MINIMUM DIMENSIONS FOR THRUST BLOCKS

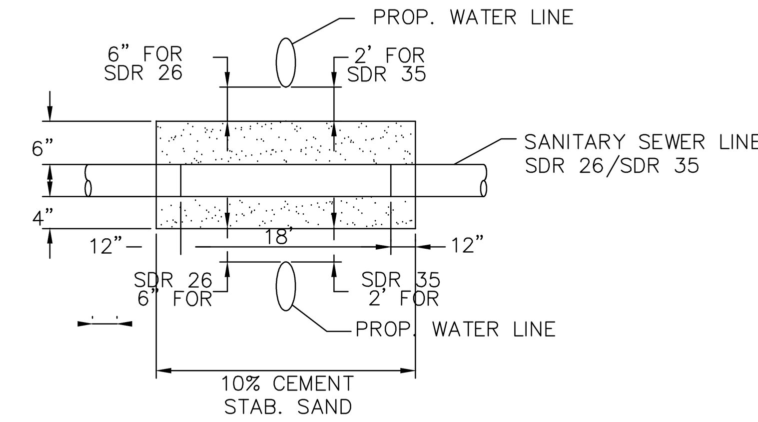
FITTING SIZE	TEES & PLUGS H	TEES & PLUGS W	90 BEND H	90 BEND W	45 BENDS & WYES H	45 BENDS & WYES W
4"	1'-7"	1'-2"	1'-9"	1'-6"	1'-8"	0'-10"
6"	2'-0"	1'-11"	2'-5"	2'-2"	1'-10"	1'-7"
8"	2'-8"	2'-6"	3'-2"	3'-0"	2'-5"	2'-1"
10"	3'-4"	3'-3"	4'-0"	3'-10"	3'-0"	2'-9"
12"	4'-0"	3'-10"	4'-8"	4'-8"	3'-8"	3'-3"
14"	5'-5"	3'-10"	6'-6"	4'-11"	4'-9"	3'-5"
20"	5'-0"	5'-0"	6'-0"	6'-0"	5'-0"	4'-0"
24"	6'-0"	6'-0"	7'-0"	7'-0"	5'-0"	5'-0"
30"	7'-6"	7'-6"	8'-0"	8'-0"	6'-3"	6'-3"

FITTING SIZE	REDUCERS & 22 ½ BENDS H	REDUCERS & 22 ½ BENDS W	11 ? BENDS H	11 ? BENDS W
4"	1'-7"	0'-6"	0'-6"	0'-6"
6"	1'-9"	0'-10"	1'-0"	0'-6"
8"	1'-9"	1'-6"	1'-0"	1'-0"
10"	2'-2"	1'-11"	1'-6"	1'-0"
12"	2'-7"	2'-3"	2'-0"	1'-0"
14"	3'-5"	2'-5"	2'-0"	1'-6"
20"	3'-6"	3'-0"	3'-0"	2'-0"
24"	4'-6"	3'-0"	3'-0"	3'-0"
30"	4'-9"	4'-6"	3'-3"	3'-3"

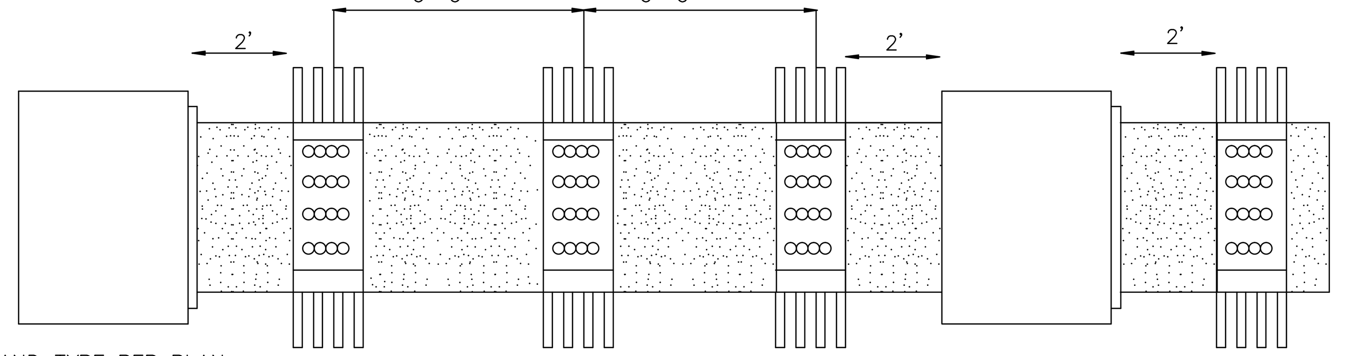




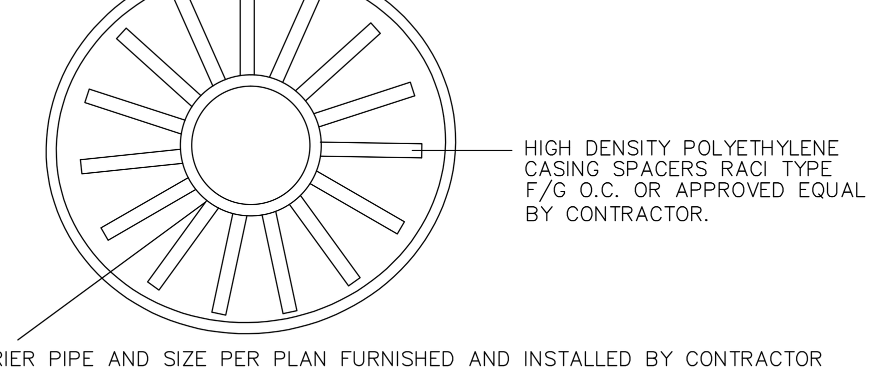
* WHEN EVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN THE JOINTS OF THE WASTE WATER LINE.



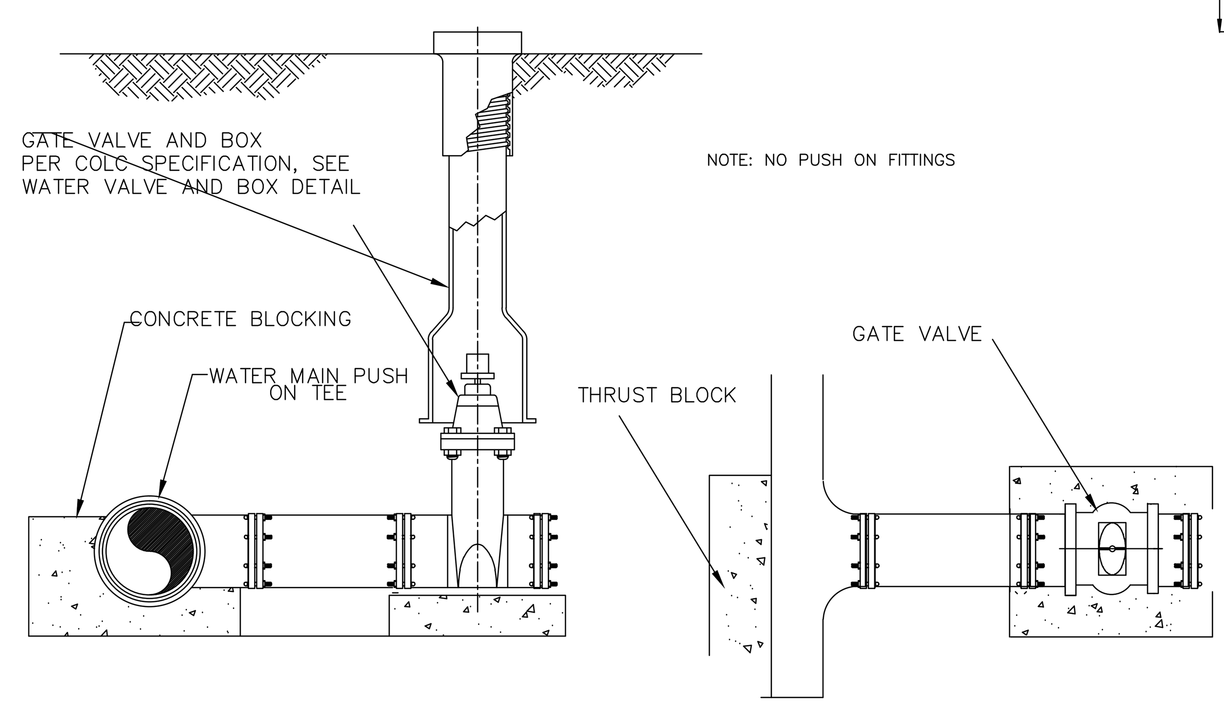
ENCASEMENT SPACER DETAILS



SPACING DETAILS



RACI CASING SPACERS					
DR 18 C900 PVC PIPE			SDR 35 PVC SEWER PIPE		
PIPE SIZE	STEEL CASING DIA.	RACI SPACERS	PIPE SIZE	STEEL CASING DIA.	RACI SPACER
4"	10"	2F OR 2N	6"	10"	2F, 1G OR 1M ,1N OR 1E, 2H OR 2P, 1Q
6"	12"	2F, 1G OR 2M OR 1E,1H OR 2P	8"	12"	3F, 1G OR 1M, 2N OR 2E, 1H OR 1P, 2Q
8"	14"	3F, 1G OR 2M, 1N OR 2E, 1H OR 2P, 1Q	10"	16"	4F OR 3M OR 3E OR 3P
10"	16"	4F OR 3M OR 3E OR 3P	12"	18"	5F OR 2M, 2N OR 3E, 1H OR 2P, 2Q
12"	20"	5F OR 3M, 1N OR 3E, 1H OR 3P, 1Q	15"	22"	6F OR 3M, 2N OR 4E, OR 3P, 2Q
14"	22"	6F OR 4M OR 4E OR 4P	18"	24"	7F OR 5M, OR 5E OR 5P
16"	24"	7F OR 5M, OR 4E, 1H OR 5P			

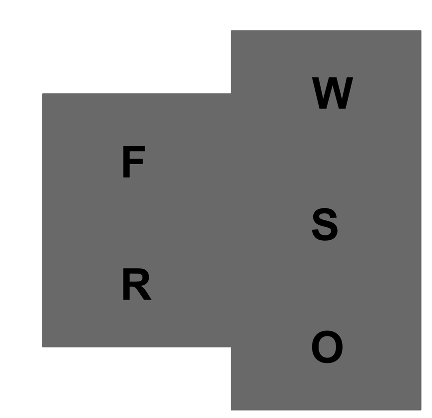


BLOCKING FOR GATE VALVES

16" AND LARGER

ONE- CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223-4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1-800-545-6005

KEY PLAN (NOT TO SCALE)



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Suite 290
Houston, TX 77067
832 249 9379

Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
TEXAS REGISTERED ENGINEERING FIRM F-003426
STATE OF TEXAS ★ FRED DALLY 90904 LICENSED PROFESSIONAL ENGINEER
07/03/20

WATER DETAILS

DRAWN BY	CHECKED BY
AB	JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR REGULATORY REVIEW	DATE 03 JULY 2020

C11.0

SHEET NUMBER

FILE PATH File Path
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM

NOTES:

1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITION. SEE SPECIFICATIONS FOR REQUIREMENTS IN OTHER CONDITIONS.

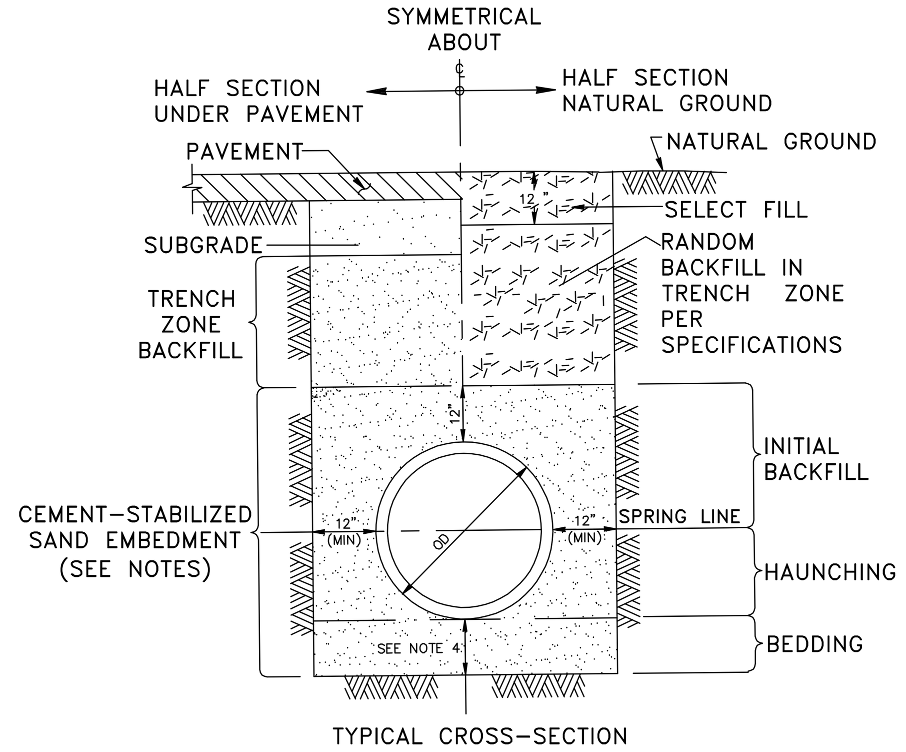
2. MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

NOMINAL PIPE SIZE	"A"
18" TO 30"	24"
OVER 30"	36"

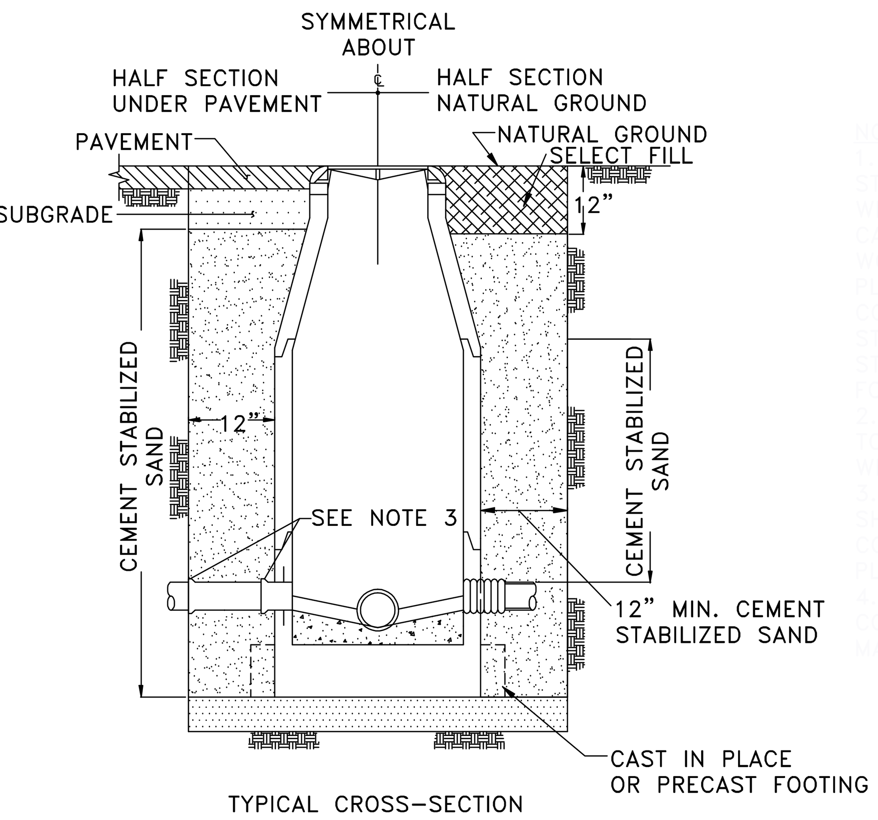
3. MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.

4. MIN. BEDDING DEPTH SHALL BBE 12 INCHES.

5. ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED



SANITARY SEWER BEDDING & BACKFILL



NOTES:
1. GROUTING OF MANHOLE STRUCTURE ANNULAR SPACE WILL BE PERMITTED IN CASES WHERE INSUFFICENT WORK SPACE EXISTS FOR PLACEMENT AND COMPACTATION OF CEMENT STABILIZED SAND. PER CLP STANDARD SPECIFICATION FOR TUNNEL GROUT.
2. THIS DETAIL ALSOAPPLIES TO BACKFILL OF SHAFTS WITHOUT STRUCTURES.
3. ARRANGE PIPE JOINTS AS SHOWN WHEN USING RIGID CONNECTION TO CAST IN PLACE MANHOLE BASE.
4. NEED COAL-TAR EPOXY COATING ON INSIDE OF MANHOLE OR EQUAL.

SANITARY SEWER MANHOLE

SANITARY SEWER

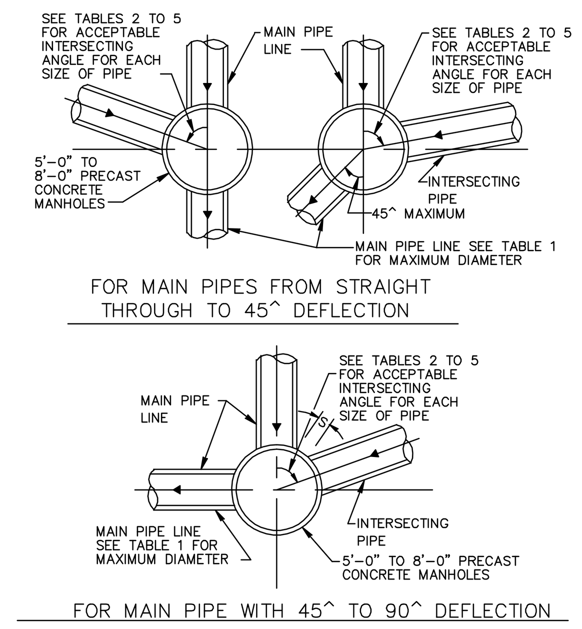


TABLE 1
MAXIMUM MAIN PIPE DIAMETER (I D) IN INCHES

MANHOLE DIAMETER (FT)	STRAIGHT THROUGH TO 45^ DEFLECTION	WITH 90^ DEFLECTION	TABLE TO BE USED
5	36	27	2
6	42	33	3
7	48	36	4
8	60	42	5

NOTES TO SPECIFIER:

1."_" INDICATES THAT A SPECIAL DESIGN OR THE NEXT LARGER MANHOLE SIZE SHALL BE USED.

2.TABLES 2 TO 5 ARE BASED ON A MIN SEPARATION DISTANCE "S" OF 15.5" OR INTERSECTION PIPE OD/2, WHICHEVER IS GREATER, BETWEEN MAIN AND INTERSECTING PIPES ALONG THE MANHOLE INSIDE WALL ARC.

3. PIPE WALL THICKNESS USED IN TABLES 2 TO 5 ARE BASED ON RCP. THE DESIGN ENGINEER MAY CALCULATE TO SEE IF THINNER WALL PIPES CAN MEET THE SEPARATION CRITERIA FOR ANGLES SMALLER THAN THE TABLES ALLOW.

4. LIMITATIONS TO BASE HEIGHT ARE BASER ON RESISTING BUOYANT UPLIFT FORCES BASED ON WATER AT GROUND SURFACE AND A SAFETY FACTOR OF 1.20.

5. A SPECIAL DESIGN IS REQUIRED IF MANHOLE ID IS GREATER THAN 8 FT.

5'-0" TO 8'-0" DIAMETER PRECAST CONCRETE MANHOLE NOTES
N.T.S

NOTES ON USE OF STANDARD DETAIL SAN-015

TABLE 3
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 6'-0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES											
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"
8	40	42	45	49	51	54	57	61	63	67	70	78
10		44	47	50	53	56	59	62	65	69	72	79
12			50	54	56	60	62	66	68	72	75	83
15				57	59	62	65	69	71	75	78	85
18					62	65	68	71	74	78	81	88
21						68	71	74	77	81	84	–
24							74	77	80	84	87	–
27								83	85	89	–	–
30			*						–	–	–	–
33										–	–	–
36											–	–
42												–

TABLE 4
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 7'-0" DIA MANHOLE

INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES												
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"
8	35	36	39	42	44	47	49	52	54	57	59	65	71
10		38	40	43	45	48	50	53	55	59	61	67	73
12			43	46	48	51	53	56	58	61	64	70	76
15				48	50	53	55	58	61	64	66	72	78
18					58	56	58	61	63	66	69	74	81
21						58	60	63	66	69	71	77	83
24							63	66	68	71	74	79	86
27								70	72	76	78	84	90
30			*						78	81	83	89	–
33										86	88	–	–
36											–	–	–
42												–	–
48													–

TABLE 5
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 8'-0" DIA MANHOLE

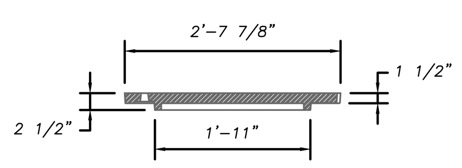
INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES														
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"	54"	60"
8	30	32	34	36	38	41	43	45	47	50	52	56	61	67	74
10		33	35	38	40	42	44	46	48	51	53	58	63	68	77
12			38	40	42	44	46	49	51	53	55	60	65	71	79
15				42	44	47	48	51	53	56	58	62	67	73	81
18					46	49	51	53	55	58	66	64	70	75	83
21						51	53	55	57	60	62	67	72	77	85
24							55	57	59	62	64	69	74	79	89
27								61	63	66	68	73	78	83	–
30									67	70	72	77	82	87	–
33				*						74	76	81	86	–	–
36											81	86	–	–	–
42												–	–	–	–
48													–	–	–
54														–	–
60															–

TABLE 2
MINIMUM ANGLE AND INTERSECTING PIPE ID SIZES FOR 5'-0" DIA MANHOLE

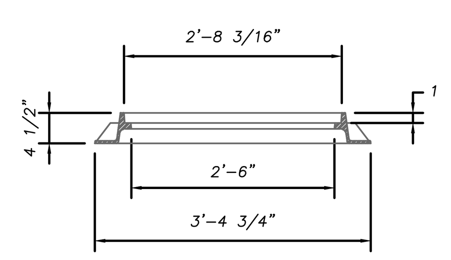
INTERSECTING PIPE ID SIZES (INCHES)	MINIMUM INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE ID SIZES IN INCHES										
	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"
8	49	50	54	58	61	66	69	73	77	82	86
10		53	57	61	64	68	71	76	79	84	88
12			61	65	68	72	75	80	83	88	–
15				68	71	75	79	83	87	–	–
18					75	79	82	87	90	–	–
21						83	86	90	–	–	–
24							90	–	–	–	–
27			*					–	–	–	–
30									–	–	–
33										–	–
36											–

*NOT APPLICABLE
(INTERSECTING PIPE GREATER THAN MAIN PIPE)

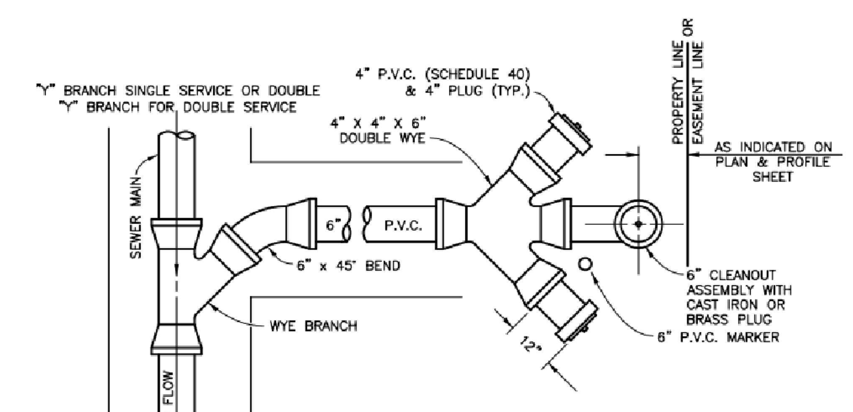
PLAN VIEW
FRAME AND COVER
SCALE: 1" = 1'-0"



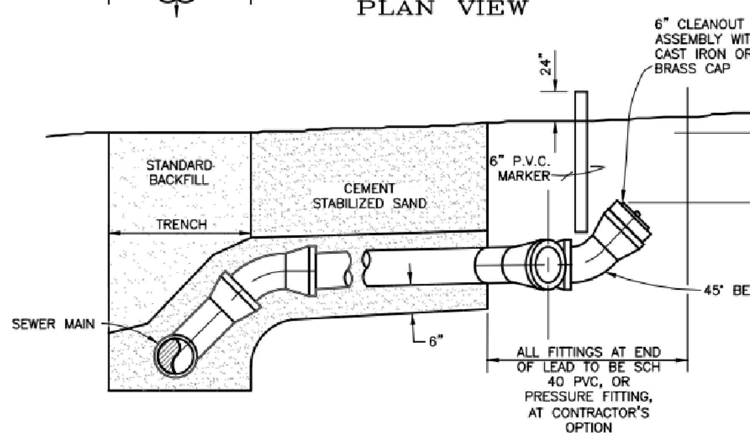
COVER SECTION A-A
SCALE: 1" = 1'-0"



FRAME SECTION A-A
SCALE: 1" = 1'-0"



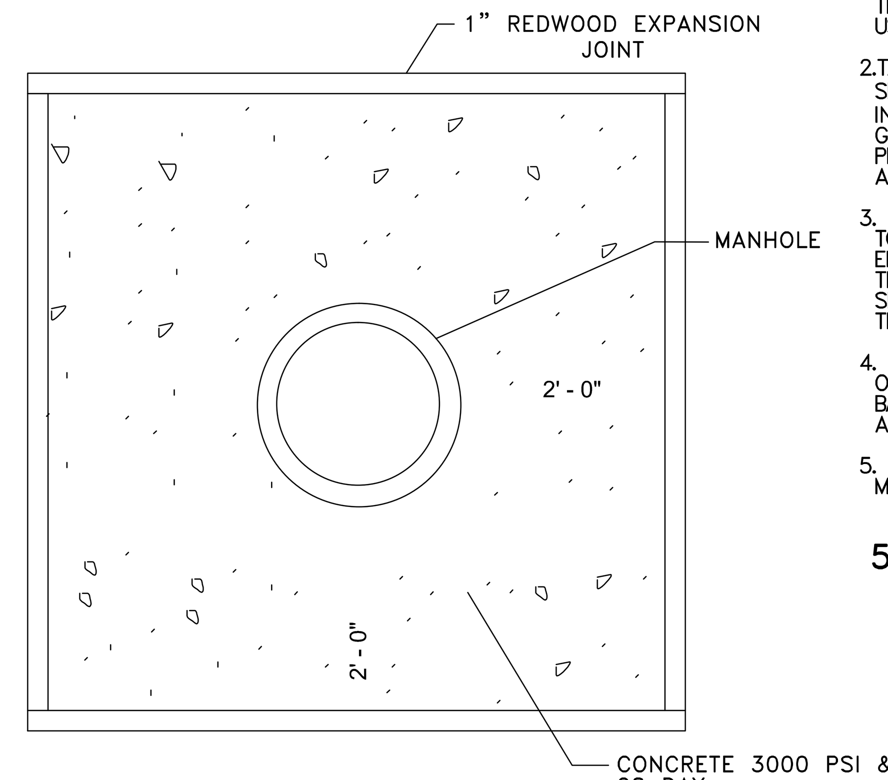
PLAN VIEW



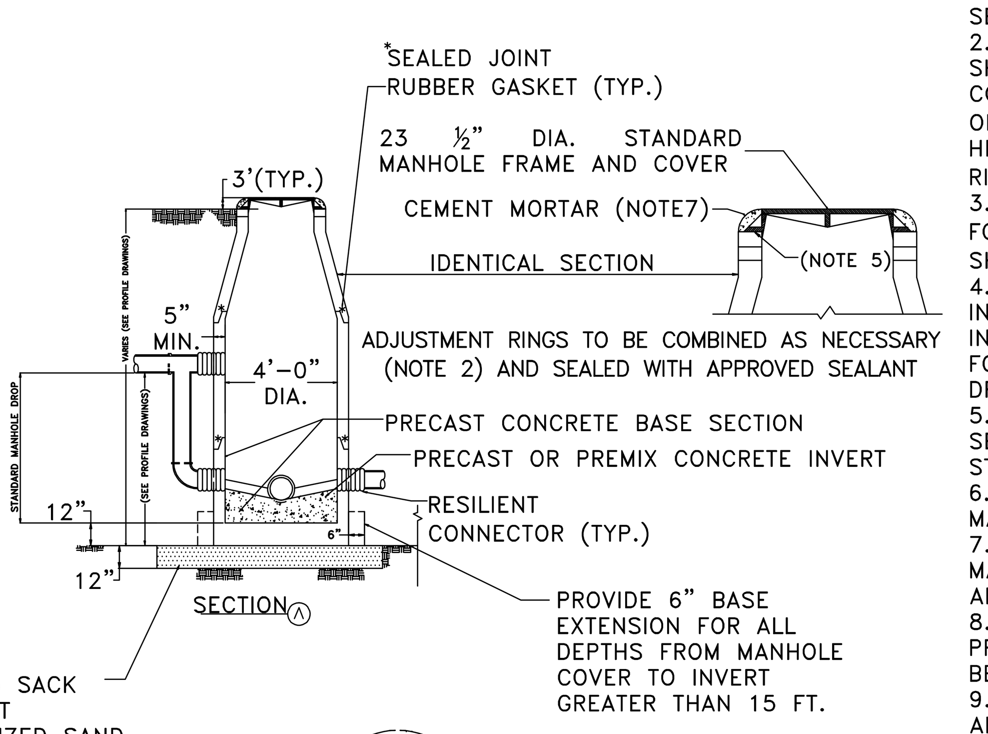
ELEVATION VIEW

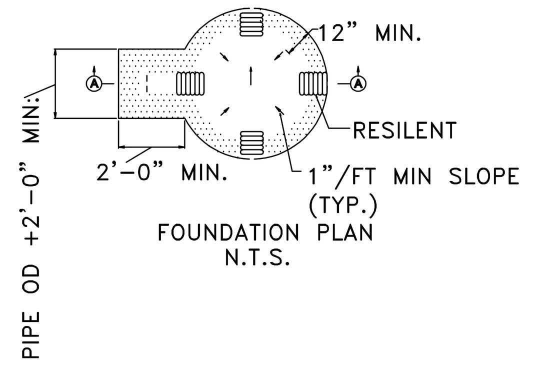
NOTE: ALL FITTINGS ON MAIN LINE AND UP TO THE END OF LEAD ARE TO BE PRESSURE FITTINGS.

SANITARY SEWER SERVICE CONNECTION



STANDARD MANHOLE BLOCKOUT FOR CONCRETE PAVEMENT

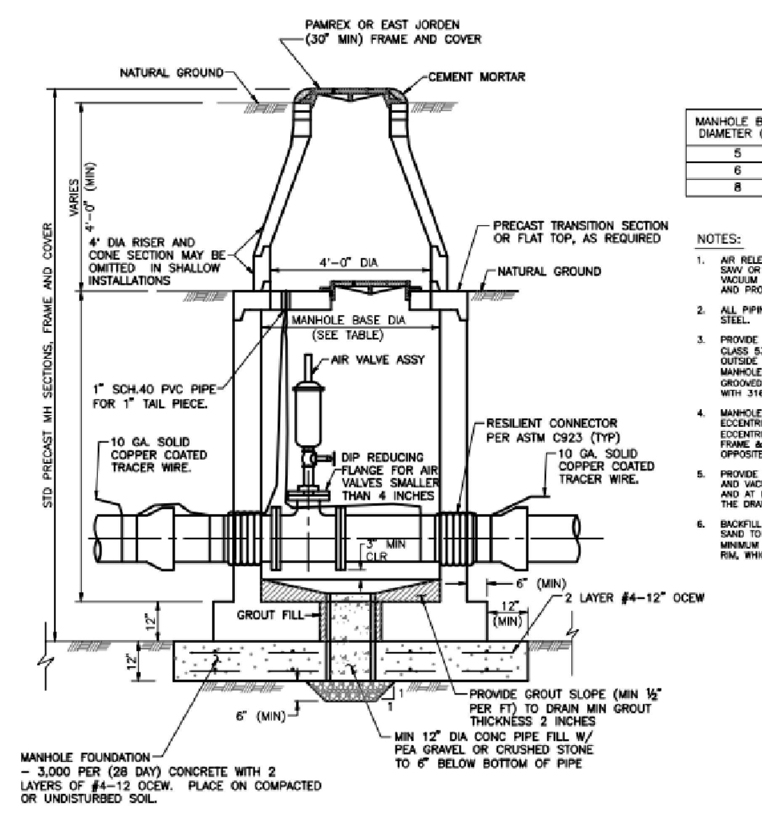




FOUNDATION PLAN
N.T.S.

NOTES:
1. DEPTH MANHOLE DETERMINES SECTIONS REQUIRED.
2. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12". THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'-6".
3. MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12'0" SHALL BE 12" THICK.
4. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
5. SEAT MANHOLE FRAME IN SEALANT PER CITY OF LA PORTE STANDARD SPECIFICATION.
6. ECCENTRIC PRECAST CONCRETE MANHOLE MAY BE USE.
7. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
8. MIN. REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE #5@ 8 EW.
9. PROVIDED BACKFILL TO MATCH ADJACENT PIPE TRENCH BACKFILL PER CITY OF LA PORTE STANDARD SPECIFICATION.
10. TEE INCLUDED IN PRICE OF DROP.
11. HORSE-SHOE SHAPED OPENINGS OR BREAKOUT OPENINGS SHALL NOT BE ACCEPTED.

4'-0" DIA PRECAST CONCRETE MANHOLE

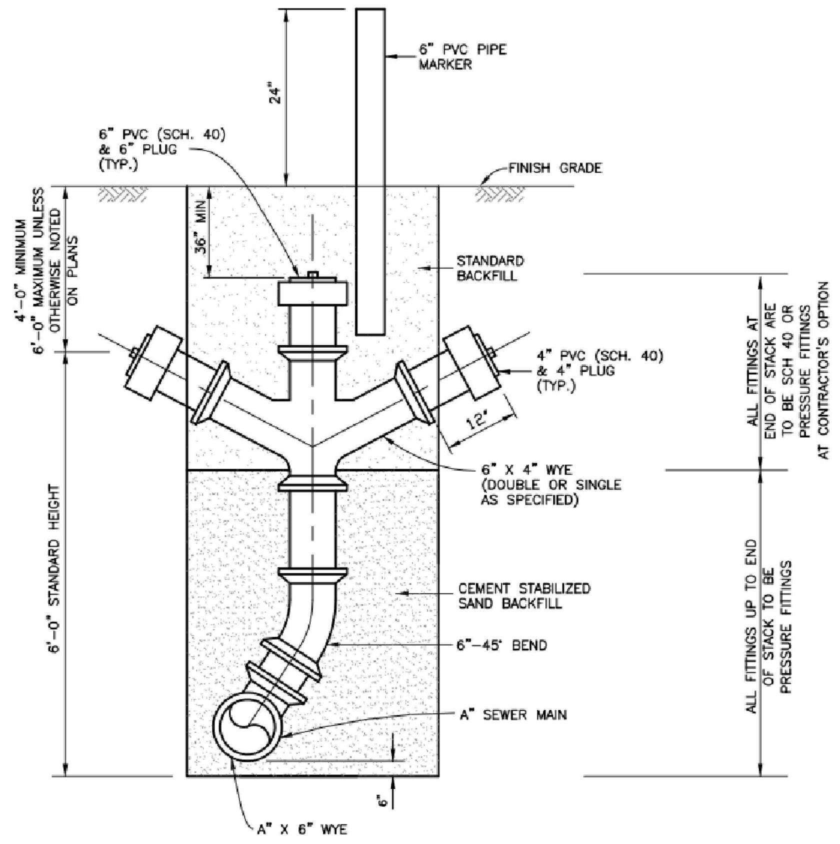


TABLE

MANHOLE BASE DIAMETER (FT)	MAX FORCE MAIN DIAMETER
5	8
6	16
8	36

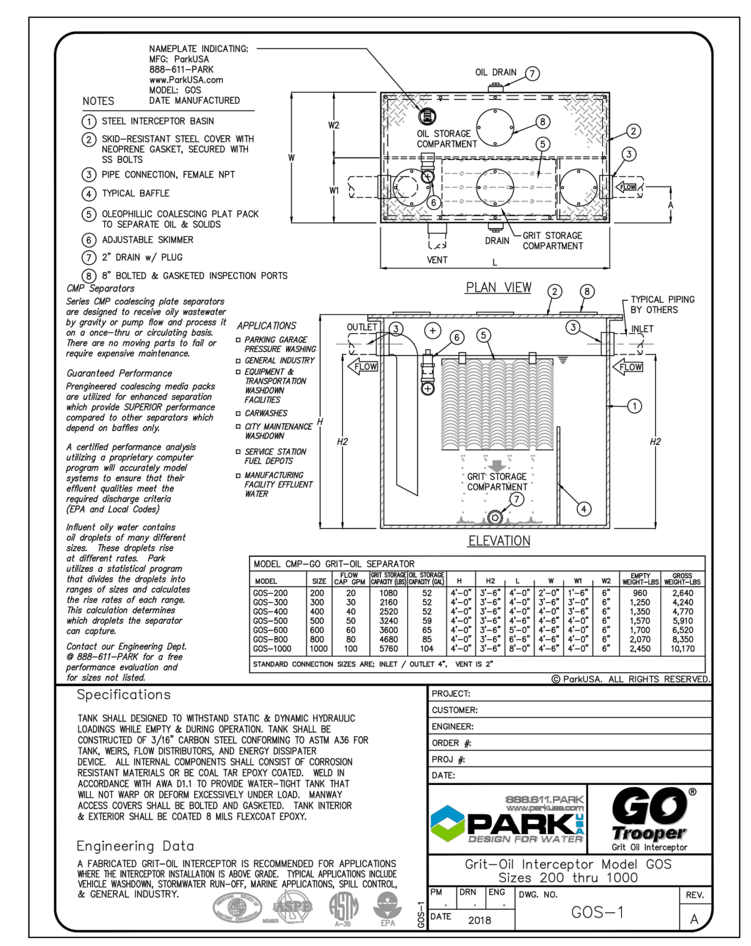
NOTES:
1. AIR RELEASE VALVE MAY BE 2" APCO 401 SAW OR PRE-APPROVED EQUAL OR AIR AND VACUUM RELEASE VALVE AS NOTED ON PLAN AND PROFILE SHEET.
2. ALL PIPING AND FITTINGS SHALL BE STAINLESS STEEL.
3. PROVIDE LINED DUCTILE IRON PIPE, THICK. CLASS 53, FOR FORCE MAIN WITHIN 12" OF OUTSIDE FACE OF MANHOLE. JOINTS WITHIN MANHOLE MAY BE FLANGED (AS SHOWN) OR GROOVED (PER ASTM 606) WITHIN MANHOLE, WITH 316 STAINLESS STEEL BOLTS.
4. MANHOLE TOP MAY BE CONCENTRIC CONE, ECCENTRIC CONE, OR FLAT TOP WITH ECCENTRIC OPENING. PROVIDE 30" MINIMUM FRAME & COVER. ORIENT ECCENTRIC OPENING OPPOSITE SIDE FROM AIR VALVE.
5. PROVIDE VENTED MANHOLE FOR AIR AND VACUUM VALVE INSTALLATIONS AND AT LOCATIONS INDICATED ON THE DRAWINGS.
6. BACKFILL MANHOLE WITH CEMENT STABILIZED SAND TO 12 INCHES ABOVE FORCE MAIN OR MINIMUM OF FOUR (4') FEET FROM TOP OF RIM, WHICHEVER IS HIGHER.

SANITARY SEWER AIR RELEASE OR AIR/ VACCUM RELEASE VALVE MANHOLE



A" = SIZE OF SEWER MAIN

SANITARY SEWER STACK



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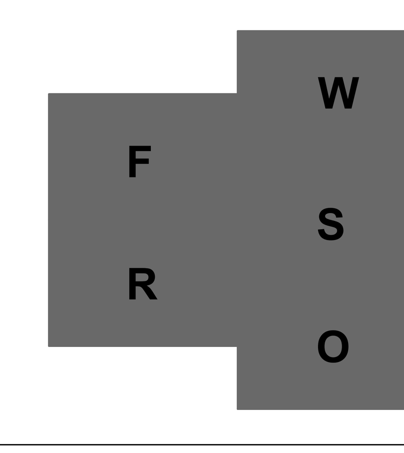
KEY PLAN (NOT TO SCALE)



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5115 Texas Highway 3
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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
TEXAS REGISTERED ENGINEERING FIRM F-003426
STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
07/03/20

SANITARY SEWER DETAILS

DRAWN BY	CHECKED BY
AB	JDM
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR REGULATORY REVIEW	03 JULY 2020

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SHEET NUMBER

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USER NAME:
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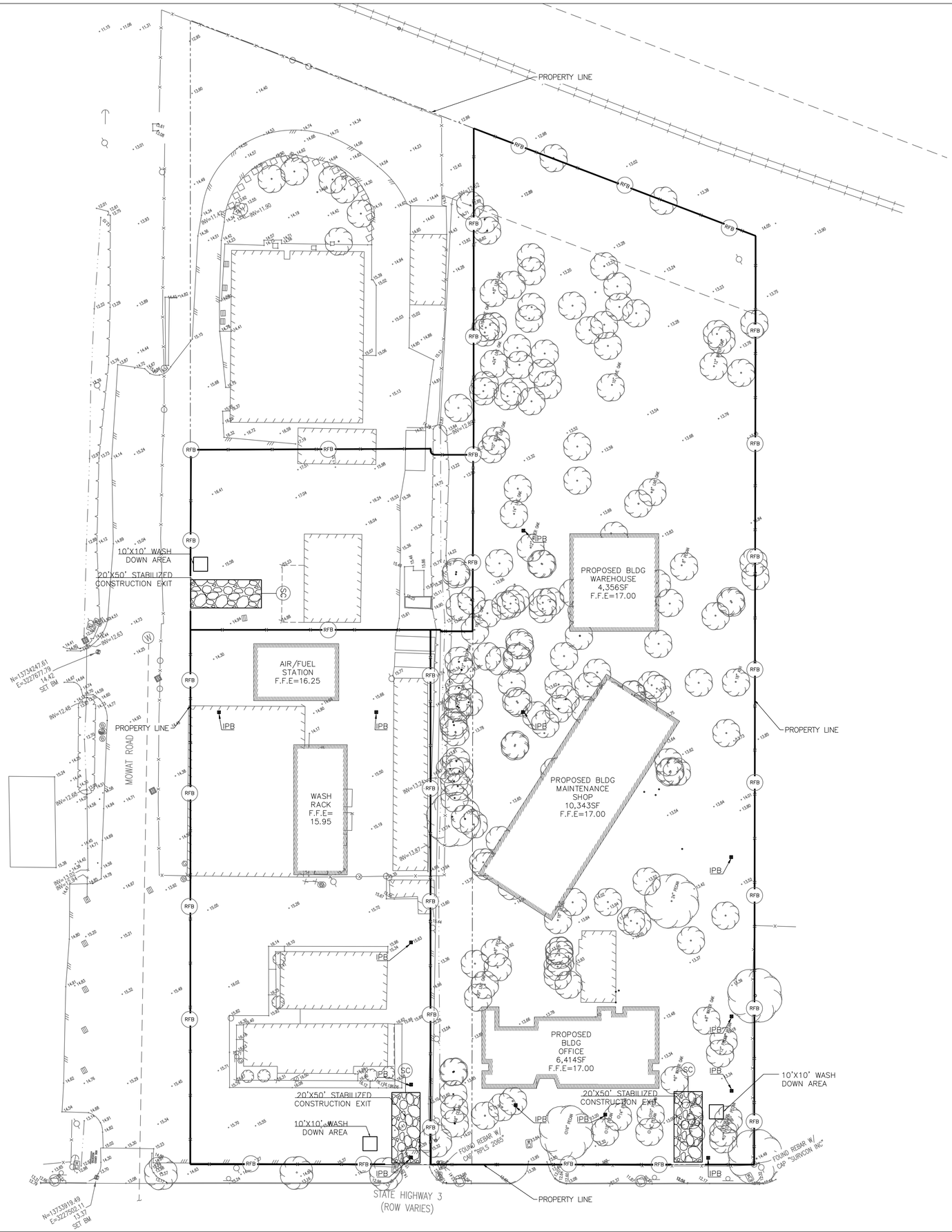

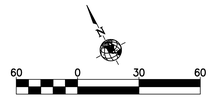

SWPPP LEGEND

- REINFORCED FILTER FABRIC BARRIER AT LEAST 2' BEHIND BACK OF CURB/PAVEMENT
- STABILIZED CONSTRUCTION EXIT.
- INLET PROTECTION BARRIER (IPB).
- WASH DOWN AREA.

SWPPP CONSTRUCTION NOTES

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATION SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPPP) PLANS TO KEEP SILT AND /OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.

2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATED MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.

3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FROM THE EXCAVATED AREA.

4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

- DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
- AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
- STRUCTURAL CONTROL MEASURES.
- LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND/ OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING.
SLOPES 4:1 OR STEPPER SHALL BE REPLACED BY CLOCK SODDING.

CONCRETE TRUCK/EQUIPMENT WASH OUT

1. CONTRACTOR(S) SHALL NOT WASH OUT CONCRETE TRUCKS OR EQUIPMENT INTO STREET DEAD ENDS, RIGHT-OF-WAYS, GUTTERS, STORM SEWER INLETS, WATERWAYS, CREEKS OR ANY LOCATION WHERE THE MATERIALS COULD REACH THE STORM SEWER (MS4) SYSTEM. ROCKED CUL-DE-SACS ARE NOT APPROVED WASH OUT AREAS. ALL DEPOSITED MATERIALS SHALL BE REMOVED AND PROPERLY DISPOSED OF AT THE COMPLETION OF WORK.

2. WASH OUT CONCRETE TRUCKS AND/OR EQUIPMENT ONLY IN A DESIGNATED, CONFINED WASHOUT AREA WHERE THE WATER WILL FLOW INTO A TEMPORARY PIT IN A DIRT AREA OR ONTO STOCKPILES OF AGGREGATE BASE OR SAND. THIS AREA MUST BE AN IDENTIFIED LOCATION.

3. COLLECT AND RETURN SWEEPINGS FROM EXPOSED AGGREGATE CONCRETE TO A STOCKPILE OR DISPOSE OF THE WASTE IN A TRASH CONTAINER.

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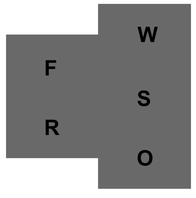
KEY PLAN (NOT TO SCALE)



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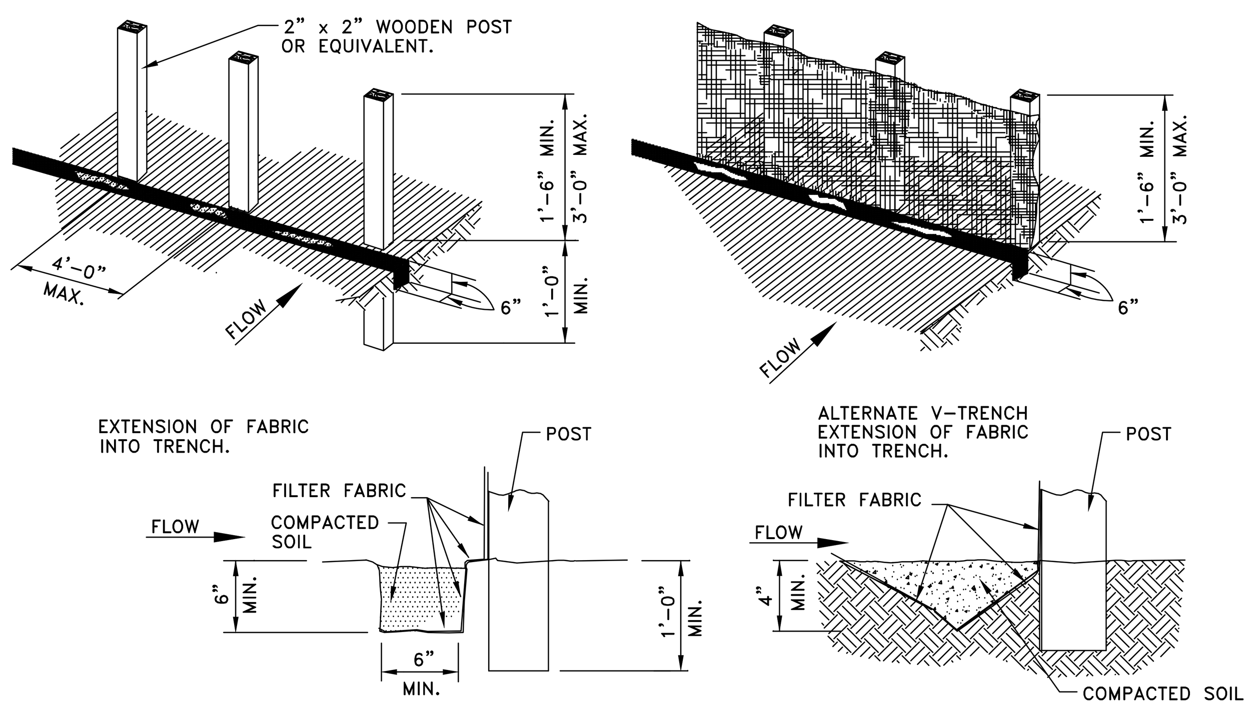
1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE A 6" x 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.

2. ATTACH FILTER FABRIC TO POSTS AND INSTALL IT INTO THE TRENCH. BACKFILL THE TRENCH AND COMPACT THE EXCAVATED SOIL.

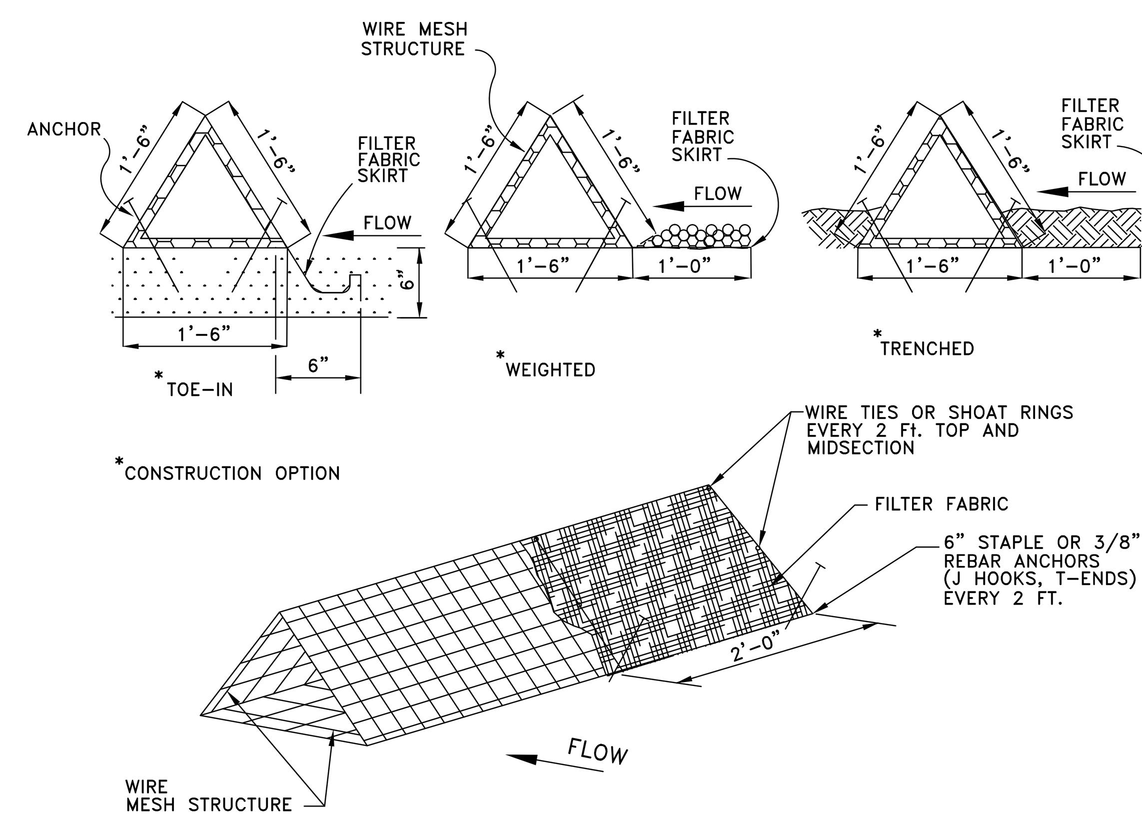


GENERAL NOTES:

1. SET POSTS AT 4-FEET MAXIMUM SPACING. IF FACTORY PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAXIMUM.
2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT THE POST, FOLD TOGETHER, AND ATTACH TO THE POSTS.
3. REMOVE SEDIMENT DEPOSITS WHEN SILT DEPTH REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE.

FILTER FABRIC FENCE

×— FF —× SYMBOL

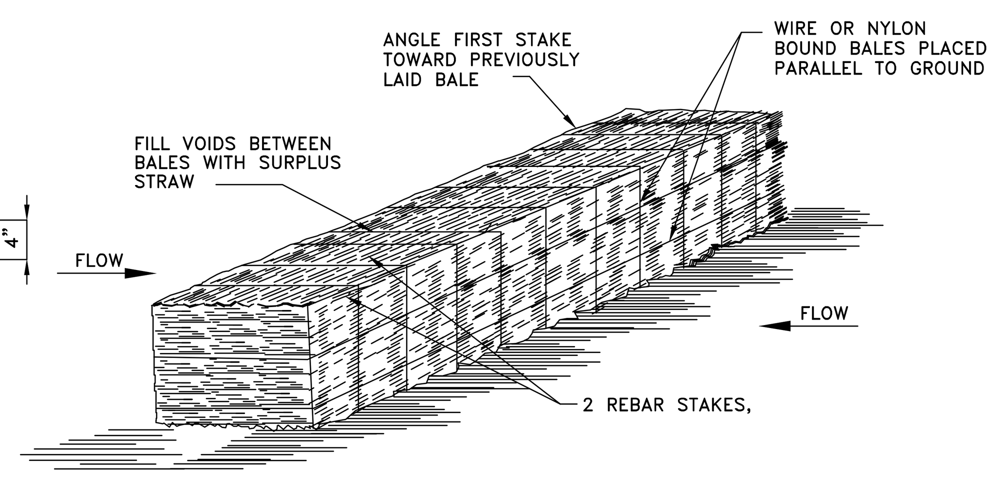


GENERAL NOTES:

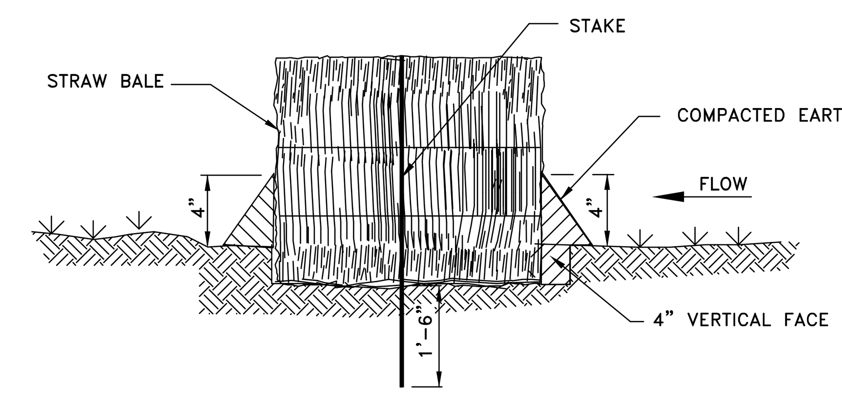
1. PLACE BARRIER IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BARRIER.
2. USING ONE CONTINUOUS SECTION OF FILTER FABRIC, WRAP FABRIC AROUND WIRE MESH AND EXTEND FABRIC TO FORM SKIRT ON THE UPSTREAM SIDE.
3. WEIGHT SKIRT WITH A CONTINUOUS LAYER OF 3-INCH TO 5-INCH OPEN GRADED ROCK, OR TOE IN SKIRT WITH SIX INCHES WITH MECHANICALLY COMPACTED MATERIAL.
4. SECURELY ANCHOR BARRIER AND SKIRT IN PLACE USING 6-INCH WIRE STAPLES ON 2-FOOT CENTERS ON BOTH EDGES, OR STAKE USING 18-INCH BY 3/8 INCH REBARS (T-ENDS, J-HOOKS).
5. FILTER FABRIC SHALL BE LAPPED OVER ENDS 6 INCHES TO COVER SEGMENT JOINTS. FASTEN JOINTS WITH GALVANIZED SHOAT RINGS OR EQUIVALENT.
6. THE BARRIER STRUCTURE SHALL BE WELDED WIRE MESH, 18 INCHES ON EACH SIDE.

TRIANGULAR FILTER FABRIC FENCE

×— TFF —× SYMBOL



STRAW BALE FENCE



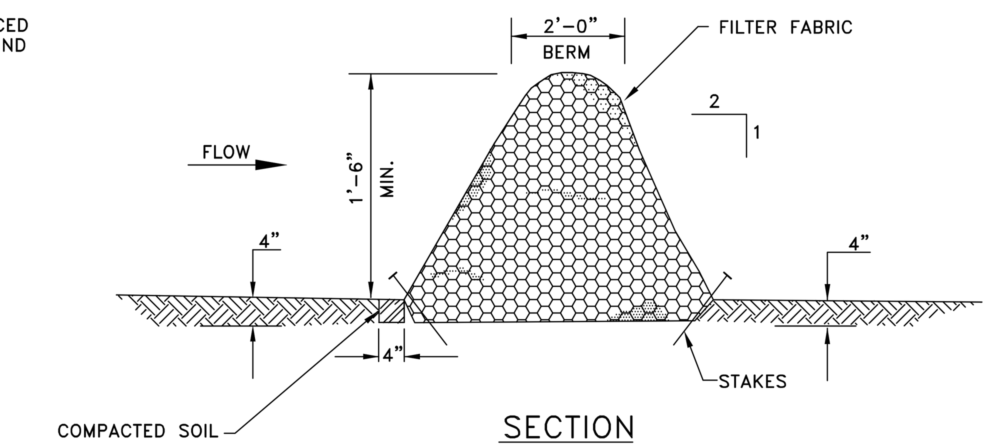
SECTION

GENERAL NOTES:

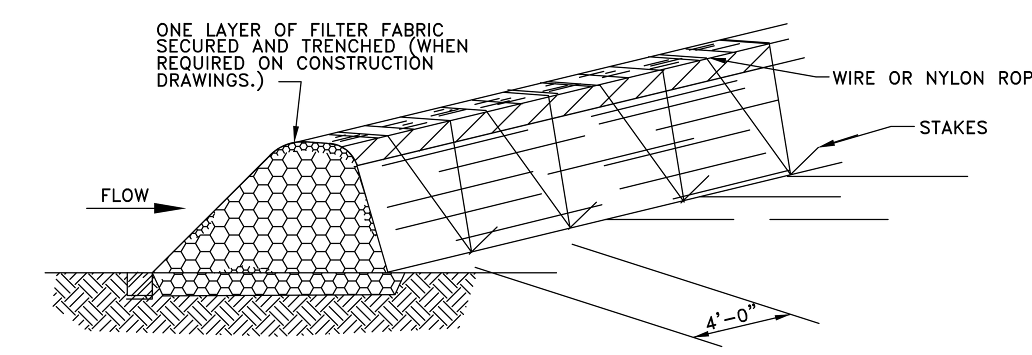
1. LIMIT USE TO ONSITE SWALES FOR PURPOSES OF LOW FLOW VELOCITY DISSIPATION FOR EROSION CONTROL. USE STRAW BALE FENCES TO TREAT OVERLAND FLOW ONLY. DO NOT USE STRAW BALE FENCES TO TREAT FLOW IN CHANNELS.
2. PLACE BALES IN A ROW WITH ENDS TIGHTLY ABUTTING ADJACENT BALES. FILL THE VOIDS BETWEEN BALES WITH SURPLUS STRAW. PLACE BALES WITH BINDING PARALLEL TO GROUND SURFACE.
3. IMBED EACH BALE AT LEAST 4 INCHES IN THE SOIL.
4. SECURELY ANCHOR BALES IN PLACE BY REBAR STAKES. DRIVE STAKES THROUGH THE BALES AND AT LEAST 18 INCHES INTO THE GROUND. ANGLE THE STAKE IN EACH BALE TOWARD THE PREVIOUS BALE TO FORCE THE BALES TOGETHER.
5. BIND BALES WITH WIRE OR NYLON ROPE TIED ACROSS THE STRAW BALES.
6. REPLACE WITH NEW STRAW BALE FENCE EVERY TWO MONTHS.
7. WATTLES STAKED INTO THE GROUND ARE A PREFERRED SUBSTITUTE FOR STRAW BALE FENCES.

STRAW BALE FENCE

×— SBF —× SYMBOL



SECTION



GENERAL NOTES:

1. LIMIT USE TO ONSITE SWALES FOR PURPOSES OF LOW FLOW VELOCITY DISSIPATION FOR EROSION CONTROL. USE BRUSH BERMS TO TREAT OVERLAND FLOW ONLY. DO NOT USE BRUSH BERMS TO TREAT FLOW IN CHANNELS.
2. PLACE WOODY BRUSH AND BRANCHES HAVING A DIAMETER OF LESS THAN 2 INCHES WITH A 6-INCH OVERLAP. AVOID INCORPORATION OF ANNUAL WEEDS AND SOIL INTO BRUSH BERM.
3. MINIMUM HEIGHT OF THE BRUSH BERM IS 18 INCHES, MEASURED FROM THE TOP OF THE EXISTING GROUND AT THE UPSLOPE TOE TO THE TOP OF THE BERM.
4. HAND PLACE BRUSH BERMS ALONG CONTOUR LINES. MACHINE PLACEMENT OF BRUSH BERMS IS NOT PERMITTED.
5. IMBED BRUSH BERM AT LEAST 4 INCHES INTO THE SOIL.
6. ANCHOR BRUSH BERMS USING WIRE OR NYLON ROPE ACROSS THE BERM WITH A MINIMUM TENSION OF 50 POUNDS.
7. SECURELY TIE ROPE TO 18-INCH REBAR STAKES DRIVEN INTO THE GROUND ON 4-FOOT CENTERS ON BOTH SIDES OF THE BERM.
8. PERFORM MAINTENANCE AS NEEDED.

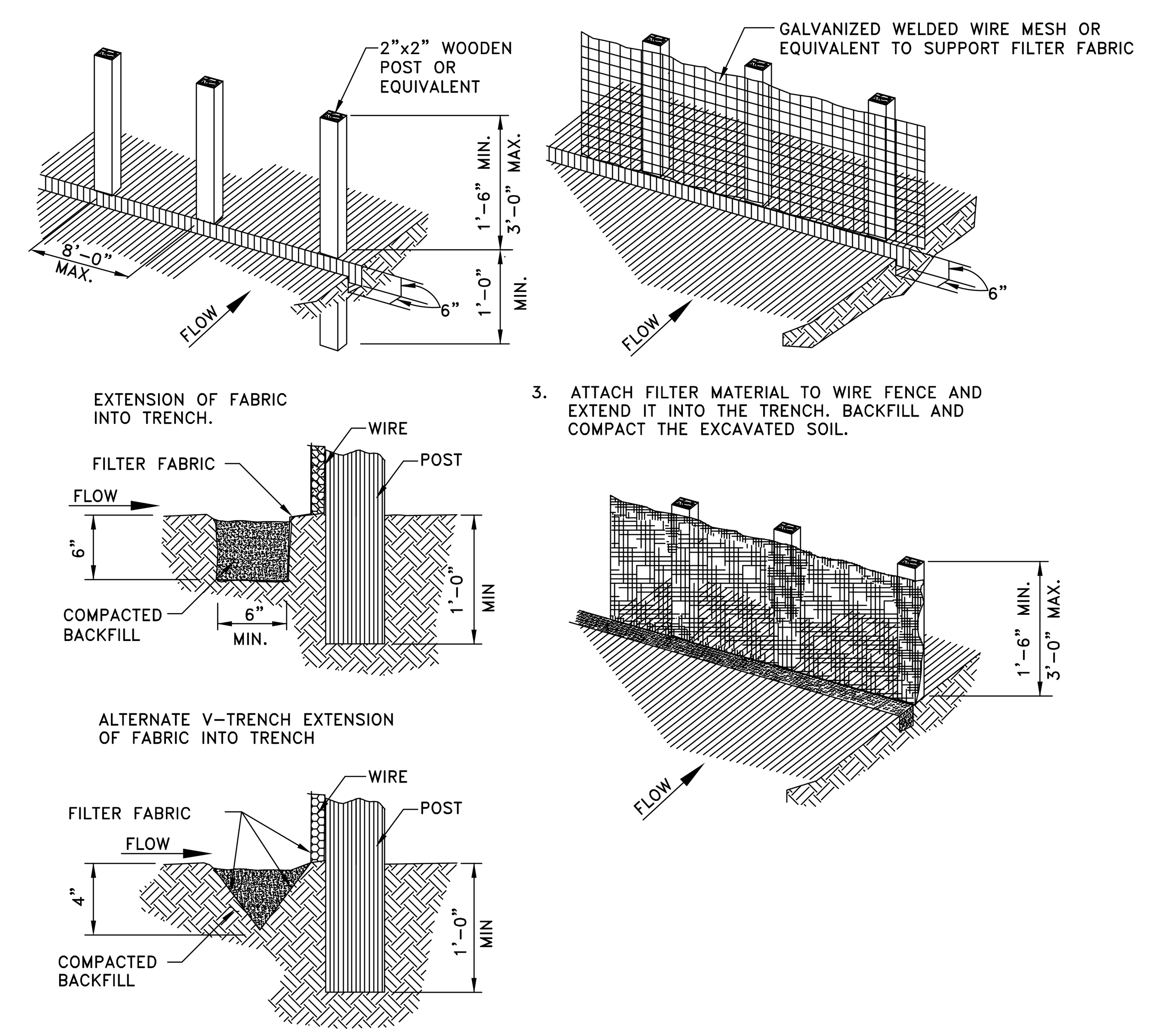
BRUSH BERM

×— BB —× SYMBOL

1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE 6" x 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.

2. SECURE MESH FENCING TO POSTS

3. ATTACH FILTER MATERIAL TO WIRE FENCE AND EXTEND IT INTO THE TRENCH. BACKFILL AND COMPACT THE EXCAVATED SOIL.

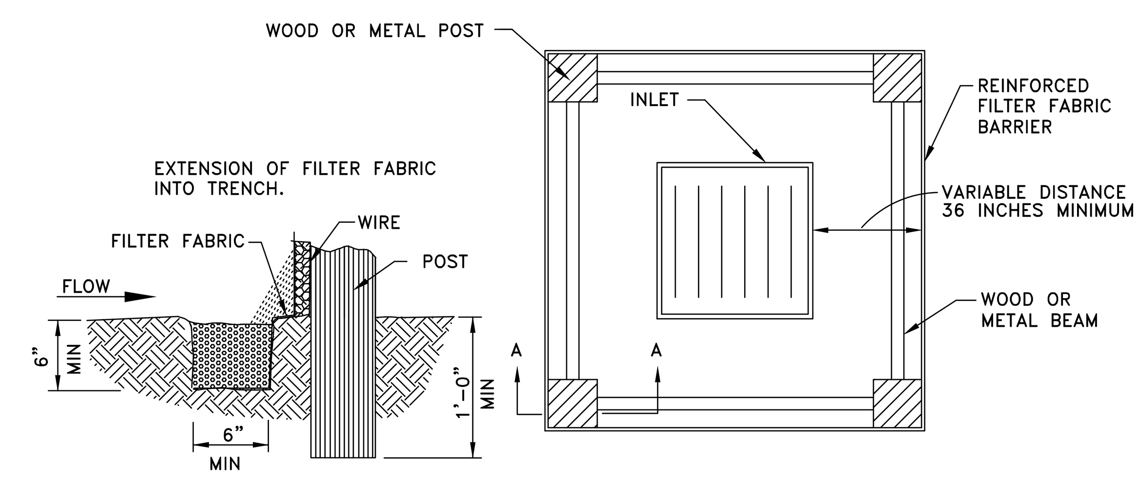


GENERAL NOTES:

1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.

REINFORCED FILTER FABRIC BARRIER

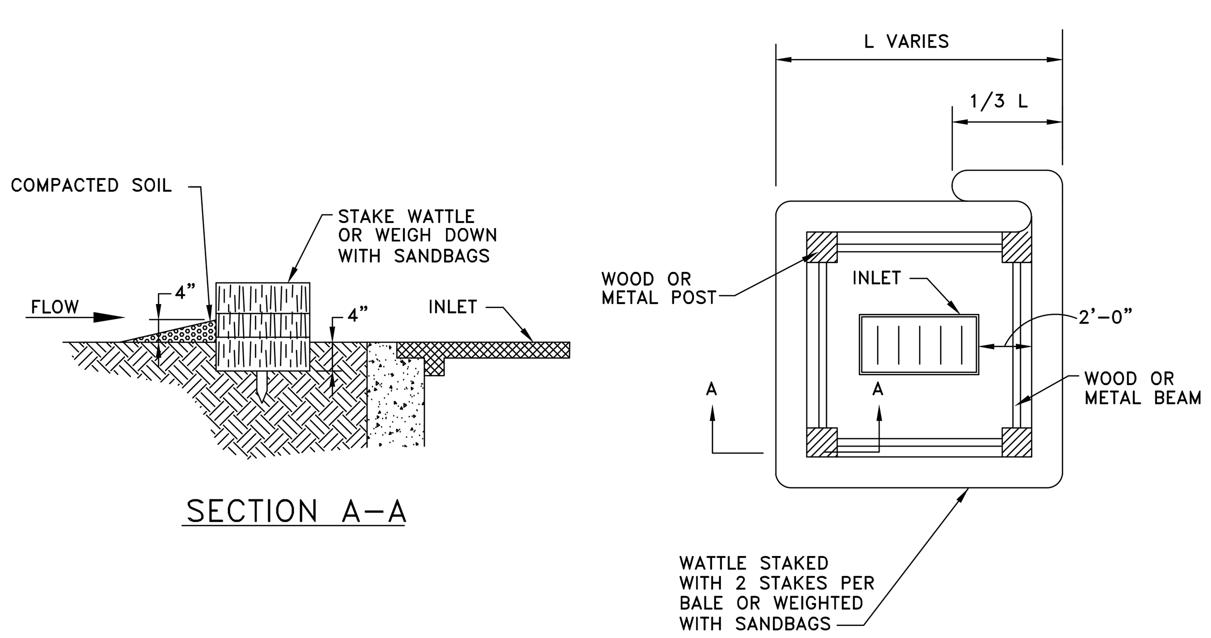
×— RFB —× SYMBOL



SECTION A-A

PLAN

SEE REINFORCED FILTER FABRIC BARRIER DETAIL FOR REINFORCED FILTER FABRIC BARRIER REQUIREMENTS



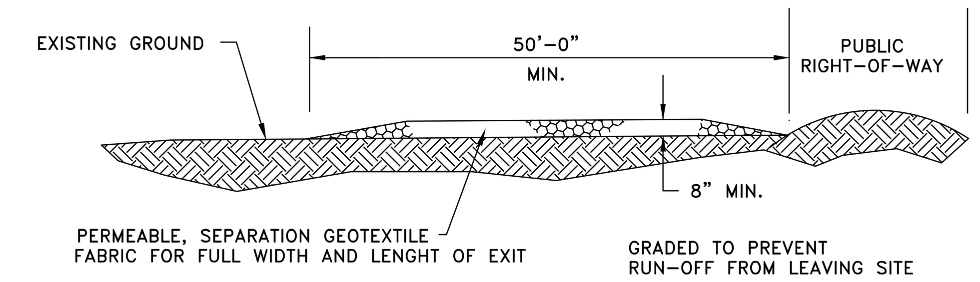
SECTION A-A

PLAN

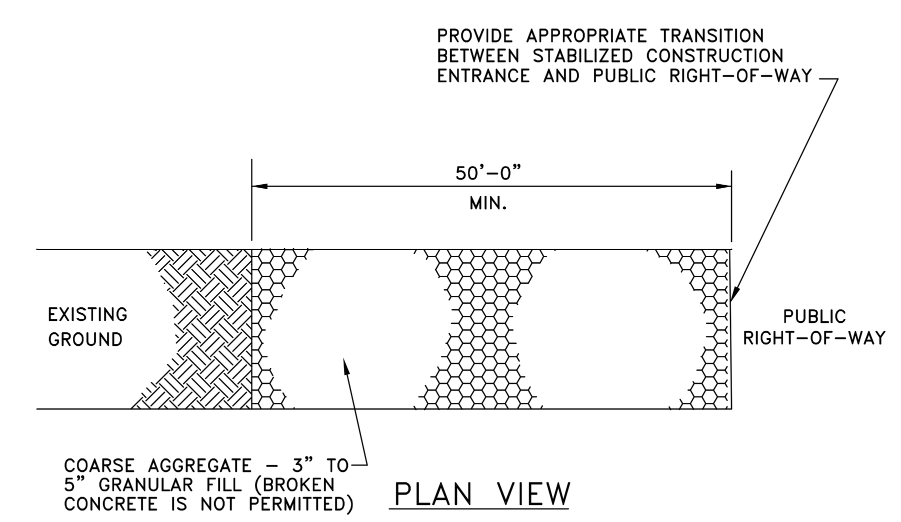
NOTE:
TYPICALLY STRAW BALES ARE NOT RECOMMENDED FOR INLET PROTECTION BARRIERS.

INLET PROTECTION BARRIERS FOR STAGE I INLETS

IPB SYMBOL



PROFILE



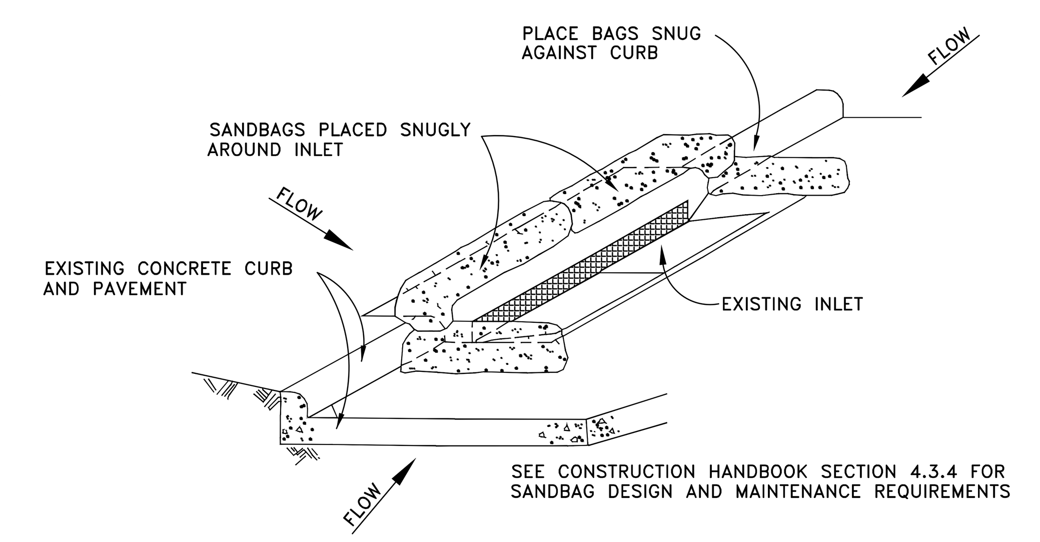
PLAN VIEW

GENERAL NOTES:

1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
7. ALTERNATIVE METHODS OF CONSTRUCTION INCLUDE
-CEMENT STABILIZED SOIL: COMPACTED CEMENT STABILIZED SOIL, LIMESTONE AGGREGATE, OR OTHER FILL MATERIAL IN AN APPLICATION OF THICKNESS OF 8 INCHES.
-WOOD MATS: OAK OR OTHER HARDWOOD TIMBERS PLACED EDGE TO EDGE AND ACROSS SUPPORT WOODEN BEAMS WHICH ARE PLACED ON TOP OF EXISTING SOIL IN AN APPLICATION THICKNESS OF 6 INCHES.
-STEEL MATS: PERFORATED MATS PLACED ACROSS PERPENDICULAR SUPPORT MEMBERS.

STABILIZED CONSTRUCTION ACCESS

SC SYMBOL



GENERAL NOTES:

1. BAGS OR WATTLES CAN BE USED FOR THIS APPLICATION.
2. PROVIDE WOVEN OR UNWOVEN GEOTEXTILE FILTER FABRIC FOR BAGS.
3. PROVIDE COARSE SAND AND AGGREGATE MIX FOR FILL MATERIAL FOR BAGS. USE ONLY PARTICLES CONSISTING OF CLEAN, HARD, DURABLE MATERIALS FREE FROM ADHERENT COATINGS, SALT, ALKALI, DIRT, CLAY, LOAM, SHALE, SOFT OR FLAKY MATERIALS, OR ORGANIC AND INJURIOUS MATTER.
4. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.

INLET PROTECTION BARRIERS FOR STAGE II INLETS

IPB SYMBOL

ONE- CALL NOTIFICATION SYSTM
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(New Statewide Number Outside Houston)
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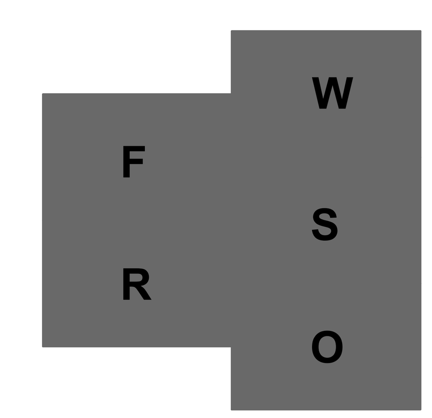
KEY PLAN (NOT TO SCALE)



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07/03/20

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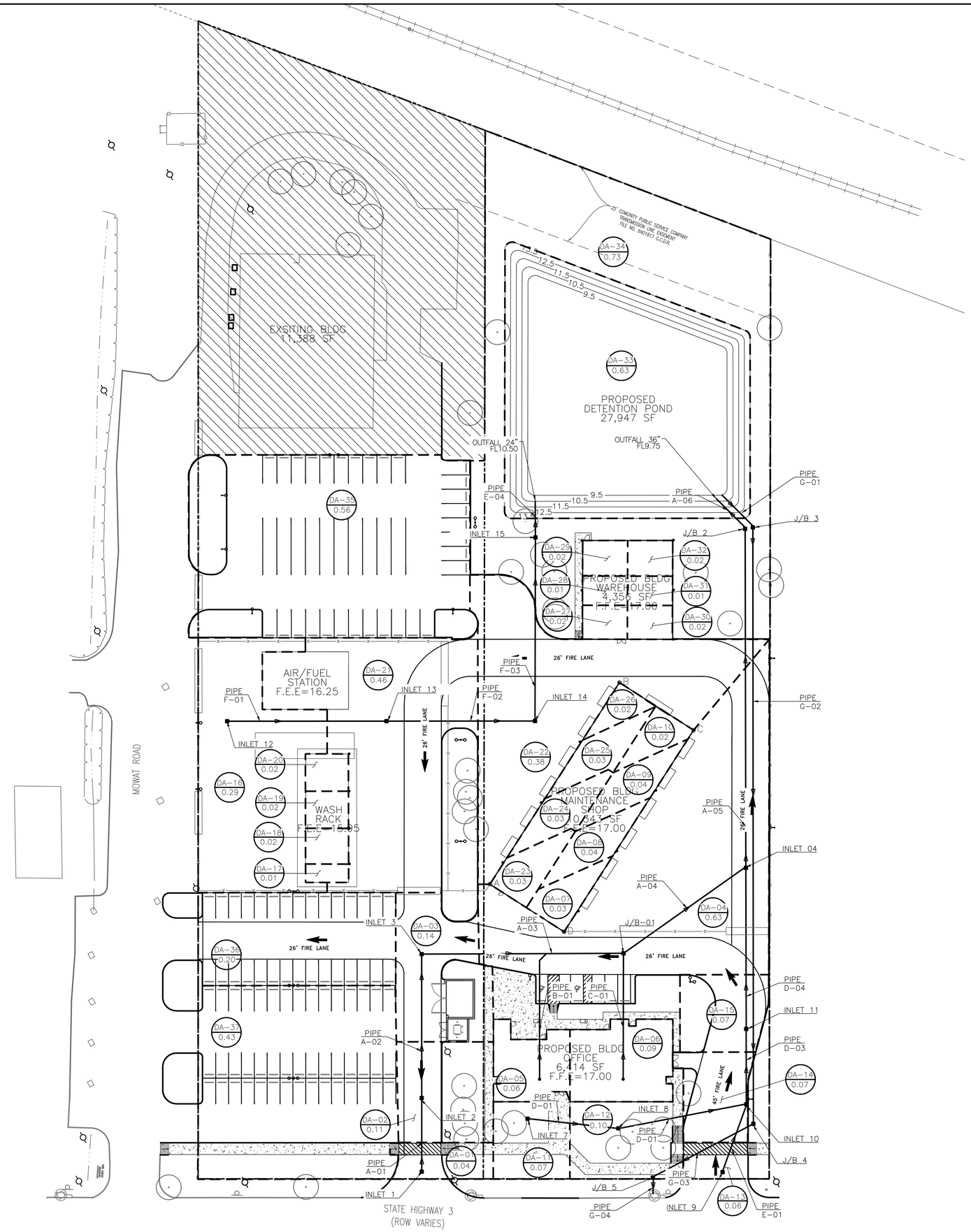

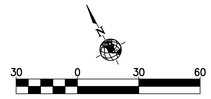

SCALE: 1"=30'

DA1 / 0.01	DRAINAGE SUB-AREA / DRAINAGE SUB-AREA ACREAGE
	DRAINAGE AREA LIMITS
	RUNOFF FLOW DIRECTION
	STORM WATER FLOW DIRECTION
	PROPOSED TYPE 'A' INLET
PIPE A-1	STORM DRAIN PIPE ID FOR HYDRAULICS CALCULATIONS

HATCH LEGEND

- CONSTRUCT 5" CONCRETE SIDEWALK OVER COMPACTED SUB-GRADE PER GEOTECHNICAL. ENGINEER'S RECOMMENDATIONS
- PROPOSED BUILDING LAYOUT.
- AREA NOT IN SCOPE

ONE- CALL NOTIFICATION SYSTM
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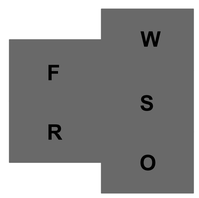
KEY PLAN (NOT TO SCALE)



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Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
TBAE REGISTERED ENGINEERING FIRM F-002408
STATE OF TEXAS
FRED DALLY
90904
LICENSED PROFESSIONAL ENGINEER
07/03/20

DRAINAGE PLAN

DRAWN BY: AB	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR REGULATORY REVIEW	DATE: 03 JULY 2020

C15.0
SHEET NUMBER

FILE PATH
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM

2 YEARS ANALYSIS PROPOSED AREA

PIPES

RATIONAL METHOD: 2 YEARS STORM ANALYSIS FOR PIPES

Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
A-01	Inlet-01	Inlet-02	52.00	11.50	0.25	0.4800	CIRCULAR	15.000	0.0150	0.14	0 00:21	1.86	0.47	3.88	0.04	0.13	0.00	0.16	Calculated
A-02	Inlet-02	Inlet-03	101.00	11.25	0.25	0.2500	CIRCULAR	18.000	0.0150	0.51	0 00:22	1.73	0.97	4.53	0.11	0.23	0.00	0.34	Calculated
A-03	Inlet-03	J/B-01	141.00	11.00	0.25	0.1800	CIRCULAR	24.000	0.0150	0.96	0 00:23	1.77	1.33	8.26	0.12	0.23	0.00	0.46	Calculated
A-04	J/B-01	Inlet-04	104.00	10.75	0.55	0.5300	CIRCULAR	24.000	0.0150	1.45	0 00:23	2.92	0.59	14.26	0.10	0.21	0.00	0.43	Calculated
A-05	Inlet-04	J/B-02	237.00	10.20	0.20	0.0800	CIRCULAR	36.000	0.0150	4.98	0 00:24	2.10	1.88	16.79	0.30	0.37	0.00	1.12	Calculated
A-06	J/B-02	Stor-01	29.00	10.00	0.25	0.8600	CIRCULAR	36.000	0.0150	4.98	0 00:24	4.75	0.10	53.67	0.09	0.21	0.00	0.62	Calculated
B-01	Inlet-05	Jun-01	89.00	11.25	0.50	0.5600	CIRCULAR	8.040	0.0150	0.20	0 00:21	2.46	0.60	0.78	0.25	0.34	0.00	0.23	Calculated
C-01	Inlet-06	Jun-01	88.00	11.25	0.50	0.5700	CIRCULAR	8.040	0.0150	0.30	0 00:22	2.64	0.56	0.79	0.38	0.43	0.00	0.29	Calculated
D-01	Inlet-07	Inlet-08	64.00	12.25	0.25	0.3900	CIRCULAR	15.000	0.0150	0.23	0 00:21	2.01	0.53	3.50	0.07	0.18	0.00	0.22	Calculated
D-02	Inlet-08	Inlet-10	91.00	12.00	1.25	1.3700	CIRCULAR	15.000	0.0150	0.58	0 00:22	3.31	0.46	6.56	0.09	0.20	0.00	0.25	Calculated
D-03	Inlet-10	Inlet-11	53.00	10.75	0.25	0.4700	CIRCULAR	15.000	0.0150	1.01	0 00:22	2.64	0.33	3.85	0.26	0.35	0.00	0.44	Calculated
D-04	Inlet-11	Inlet-04	113.00	10.50	0.30	0.2700	CIRCULAR	18.000	0.0150	1.25	0 00:22	2.26	0.83	4.69	0.27	0.35	0.00	0.53	Calculated
E-01	Inlet-09	Inlet-10	50.00	11.10	0.35	0.7000	CIRCULAR	15.000	0.0150	0.20	0 00:21	2.18	0.38	4.68	0.04	0.14	0.00	0.18	Calculated
F-01	Inlet-12	Inlet-13	111.00	12.00	0.50	0.4500	CIRCULAR	15.000	0.0150	0.95	0 00:23	3.12	0.59	3.76	0.25	0.34	0.00	0.43	Calculated
F-02	Inlet-13	Inlet-14	104.00	11.50	0.50	0.4800	CIRCULAR	18.000	0.0150	2.60	0 00:24	3.41	0.51	6.31	0.41	0.45	0.00	0.67	Calculated
F-03	Inlet-14	Inlet-15	131.00	11.00	0.25	0.1900	CIRCULAR	24.000	0.0150	4.16	0 00:24	2.72	0.80	8.56	0.49	0.49	0.00	0.98	Calculated
F-04	Inlet-15	Stor-01	20.00	10.75	0.25	1.2500	CIRCULAR	24.000	0.0150	4.44	0 00:24	5.47	0.06	21.92	0.20	0.31	0.00	0.61	Calculated
G-01	Stor-01	J/B-03	31.00	9.50	0.05	0.1600	CIRCULAR	36.000	0.0150	1.97	0 00:43	2.00	0.26	23.22	0.09	0.20	0.00	0.59	Calculated
G-02	J/B-03	J/B-04	416.00	9.45	0.35	0.0800	CIRCULAR	36.000	0.0150	1.97	0 00:46	1.60	4.33	16.77	0.12	0.23	0.00	0.69	Calculated
G-03	J/B-04	J/B-05	77.00	9.10	0.10	0.1300	CIRCULAR	36.000	0.0150	1.97	0 00:47	1.86	0.69	20.83	0.09	0.21	0.00	0.62	Calculated
G-04	J/B-05	Out-01	10.00	9.00	0.25	2.5000	CIRCULAR	36.000	0.0150	1.97	0 00:47	5.13	0.03	91.40	0.02	0.10	0.00	0.31	Calculated

INLETS

RATIONAL METHOD: 2 YEARS STORM ANALYSIS FOR INLETS

Element ID	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft²)	Grate Clogging Factor (%)	Peak Flow (cfs)	Allowable Spread (ft)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Maximum Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
Inlet-01	11.50	13.80	11.50	10.00	25.00	0.14	7.00	0.00	13.82	0.02	0 00:20	0.00	0.00
Inlet-02	11.25	15.00	11.25	10.00	25.00	0.37	7.00	0.00	15.05	0.05	0 00:22	0.00	0.00
Inlet-03	11.00	15.20	11.00	10.00	25.00	0.47	7.00	0.00	15.26	0.06	0 00:22	0.00	0.00
Inlet-04	10.20	14.00	10.20	10.00	25.00	2.37	7.00	0.00	14.17	0.17	0 00:23	0.00	0.00
Inlet-05	11.25	17.00	11.25	10.00	25.00	0.20	7.00	0.00	17.03	0.03	0 00:21	0.00	0.00
Inlet-06	11.25	17.00	11.25	10.00	25.00	0.30	7.00	0.00	17.04	0.04	0 00:21	0.00	0.00
Inlet-07	12.25	15.25	12.25	10.00	25.00	0.23	7.00	0.00	15.28	0.03	0 00:21	0.00	0.00
Inlet-08	12.00	15.25	12.00	10.00	25.00	0.35	7.00	0.00	15.30	0.05	0 00:21	0.00	0.00
Inlet-09	11.10	13.35	11.10	10.00	25.00	0.20	7.00	0.00	13.38	0.03	0 00:21	0.00	0.00
Inlet-10	10.75	14.50	10.75	10.00	25.00	0.23	7.00	0.00	14.53	0.03	0 00:21	0.00	0.00
Inlet-11	10.50	15.00	10.50	10.00	25.00	0.25	7.00	0.00	15.03	0.03	0 00:22	0.00	0.00
Inlet-12	12.00	14.75	12.00	10.00	25.00	0.96	7.00	0.00	14.84	0.09	0 00:23	0.00	0.00
Inlet-13	11.50	14.75	11.50	10.00	25.00	1.66	7.00	0.00	14.89	0.14	0 00:23	0.00	0.00
Inlet-14	11.00	15.25	11.00	10.00	25.00	1.59	7.00	0.00	15.38	0.13	0 00:23	0.00	0.00
Inlet-15	10.75	14.50	10.75	10.00	25.00	0.36	7.00	0.00	14.55	0.05	0 00:24	0.00	0.00

AREA

RATIONAL METHOD: 2 YEARS STORM ANALYSIS FOR AREAS

Element ID	Area (acres)	Drainage Node ID	Impervious Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
DA-01	0.04	Inlet-01	0.90	1.34	1.20	0.14	3.878	0 00:20:42
DA-02	0.11	Inlet-02	0.90	1.38	1.24	0.37	3.778	0 00:21:46
DA-03	0.14	Inlet-03	0.90	1.38	1.24	0.47	3.752	0 00:22:03
DA-04	0.63	Inlet-04	0.90	1.44	1.29	2.03	3.571	0 00:24:13
DA-05	0.06	Inlet-05	0.90	1.35	1.21	0.20	3.843	0 00:21:03
DA-06	0.09	Inlet-06	0.90	1.36	1.23	0.30	3.800	0 00:21:31
DA-07	0.03	Inlet-04	0.90	1.33	1.19	0.10	3.913	0 00:20:19
DA-08	0.04	Inlet-04	0.90	1.33	1.20	0.12	3.893	0 00:20:32
DA-09	0.04	Inlet-04	0.90	1.33	1.20	0.12	3.893	0 00:20:32
DA-10	0.02	Inlet-04	0.90	1.32	1.19	0.08	3.931	0 00:20:09
DA-11	0.07	Inlet-07	0.90	1.35	1.22	0.23	3.828	0 00:21:13
DA-12	0.10	Inlet-08	0.90	1.37	1.23	0.35	3.784	0 00:21:42
DA-13	0.06	Inlet-09	0.90	1.35	1.21	0.20	3.842	0 00:21:04
DA-14	0.07	Inlet-10	0.90	1.35	1.22	0.23	3.828	0 00:21:13
DA-15	0.07	Inlet-11	0.90	1.36	1.22	0.25	3.820	0 00:21:18
DA-16	0.29	Inlet-12	0.90	1.41	1.27	0.96	3.667	0 00:23:02
DA-17	0.01	Inlet-13	0.90	1.29	1.16	0.03	4.011	0 00:19:21
DA-18	0.02	Inlet-13	0.90	1.31	1.18	0.06	3.958	0 00:19:52
DA-19	0.02	Inlet-13	0.90	1.31	1.18	0.06	3.955	0 00:19:54
DA-20	0.02	Inlet-13	0.90	1.32	1.19	0.06	3.953	0 00:19:55
DA-21	0.46	Inlet-13	0.90	1.43	1.28	1.49	3.612	0 00:23:42
DA-22	0.38	Inlet-14	0.90	1.42	1.28	1.25	3.634	0 00:23:26
DA-23	0.03	Inlet-14	0.90	1.33	1.20	0.11	3.905	0 00:20:25
DA-24	0.03	Inlet-14	0.90	1.33	1.20	0.12	3.896	0 00:20:30
DA-25	0.03	Inlet-14	0.90	1.33	1.20	0.12	3.896	0 00:20:30
DA-26	0.02	Inlet-14	0.90	1.31	1.18	0.06	3.958	0 00:19:52
DA-27	0.02	Inlet-15	0.90	1.31	1.18	0.06	3.958	0 00:19:52
DA-28	0.02	Inlet-15	0.90	1.31	1.18	0.05	3.969	0 00:19:46
DA-29	0.02	Inlet-15	0.90	1.32	1.19	0.06	3.953	0 00:19:55
DA-30	0.02	Inlet-15	0.90	1.31	1.18	0.06	3.958	0 00:19:52
DA-31	0.02	Inlet-15	0.90	1.31	1.18	0.05	3.969	0 00:19:46
DA-32	0.02	Inlet-15	0.90	1.32	1.19	0.06	3.953	0 00:19:55

Rainfall Intensity-Duration-Frequency Coefficients for Texas

Based on United States Geological Survey (USGS) Scientific Investigations Report 2004–5041
"Atlas of Depth-Duration Frequency of Precipitation Annual Maxima for Texas"

1. Select English or SI Units: English

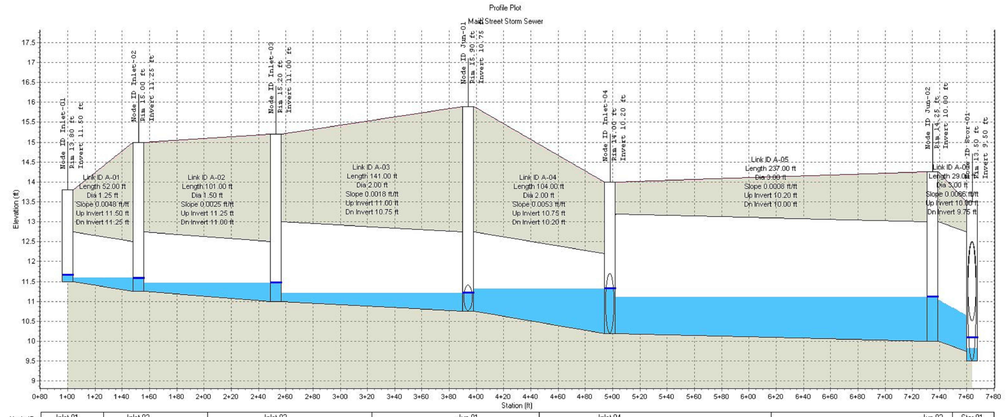
2. Select or Enter a County: Galveston

3. Enter a Time of Conc. Select Units: 28.99 min

Coefficient	50% (2-year)	20% (5-year)	10% (10-year)	4% (25-year)	2% (50-year)	1% (100-year)
e	0.7839	0.7636	0.7496	0.743	0.7308	0.7295
b (in.)	58.30	70.47	77.97	91.45	99.26	115.89
d (min)	11.04	12.60	13.38	14.79	14.85	16.50
Intensity (in./hr)	3.23	4.09	4.70	5.52	6.26	7.15

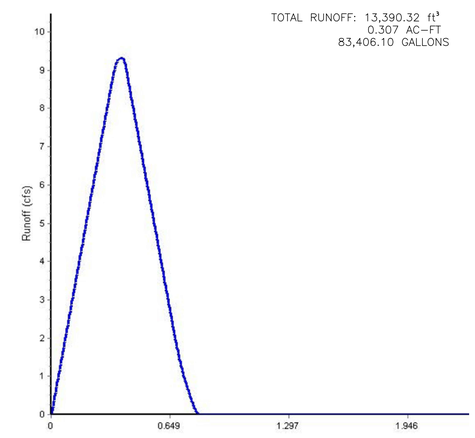
(Spreadsheet Release Date: August 31, 2015; data table reshuffle by Asquith July 14, 2016)

LINES – A



Node ID:	Inlet-01	Inlet-02	Inlet-03	Jun-01	Inlet-04	Jun-02	Stor-01
Rim (ft):	13.80	15.00	15.20	15.90	14.00	14.25	13.50
Invert (ft):	11.50	11.25	11.00	10.75	10.20	10.00	9.50
Min Pipe Cover (ft):				3.15		1.25	
Max HGL (ft):	11.66	11.59	11.47	11.21	11.32	11.12	10.09

Link ID:	A-01	A-02	A-03	A-04	A-05	A-06
Length (ft):	52.00	101.00	141.00	104.00	237.00	29.00
Dia (ft):	1.25	1.50	2.00	2.00	3.00	3.00
Slope (ft/ft):	0.0048	0.0025	0.0018	0.0053	0.0008	0.0086
Up Invert (ft):	11.50	11.25	11.00	10.75	10.20	10.00
Dn Invert (ft):	11.25	11.00	10.75	10.20	10.00	9.75
Max Q (cfs):	0.14	0.51	0.96	1.45	4.98	4.98
Max Vel (ft/s):	1.86	1.73	1.77	2.92	2.10	4.75
Max Depth (ft):	0.16	0.34	0.46	0.43	1.12	0.62



Time period
From: 05/28/2020, 12:00:00 AM
To: 06/12/2020, 12:00:00 AM

Element ID	System
Maximum Runoff (cfs)	9.33
Minimum Runoff (cfs)	0.00
Event Mean Runoff (cfs)	0.01

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(New Statewide Number Outside Houston)
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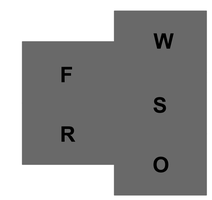
KEY PLAN (NOT TO SCALE)



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713 463 8200

Galveston County Road & Bridge Department Facilities

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
TEXAS REGISTERED ENGINEERING FIRM F-003409
STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
07/03/20

DRAINAGE CALCULATIONS
2 YEARS (PROPOSED)

DRAWN BY	CHECKED BY
AB	JDM
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR REGULATORY REVIEW	DATE 03 JULY 2020

C16.0
SHEET NUMBER

FILE PATH: File Path
USER NAME:
DATE STAMP: 6/26/2008 3:02:08 PM

100 YEARS ANALYSIS PROPOSED AREA

PIPES

RATIONAL METHOD: 100 YEARS STORM ANALYSIS FOR PIPES

Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (inches)	Manning's Roughness	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
A-01	Inlet-01	Inlet-02	52.00	11.50	0.25	0.4800	CIRCULAR	15.000	0.0150	0.30	0 00:21	2.17	0.40	3.88	0.08	0.19	0.00	0.24	Calculated
A-02	Inlet-02	Inlet-03	101.00	11.25	0.25	0.2500	CIRCULAR	18.000	0.0150	1.09	0 00:22	2.12	0.79	4.53	0.24	0.33	0.00	0.50	Calculated
A-03	Inlet-03	J/B-01	141.00	11.00	0.25	0.1800	CIRCULAR	24.000	0.0150	2.08	0 00:22	2.20	1.07	8.26	0.25	0.34	0.00	0.68	Calculated
A-04	J/B-01	Inlet-04	104.00	10.75	0.55	0.5300	CIRCULAR	24.000	0.0150	3.12	0 00:22	3.64	0.48	14.26	0.22	0.32	0.00	0.63	Calculated
A-05	Inlet-04	J/B-02	237.00	10.20	0.20	0.0800	CIRCULAR	36.000	0.0150	10.71	0 00:24	2.55	1.55	16.79	0.64	0.58	0.00	1.74	Calculated
A-06	J/B-02	Stor-01	29.00	10.00	0.25	0.8600	CIRCULAR	36.000	0.0150	10.71	0 00:24	5.92	0.08	53.67	0.20	0.30	0.00	0.91	Calculated
B-01	Inlet-05	Jun-01	89.00	11.25	0.50	0.5600	CIRCULAR	8.040	0.0150	0.43	0 00:21	2.90	0.51	0.78	0.54	0.52	0.00	0.35	Calculated
C-01	Inlet-06	Jun-01	88.00	11.25	0.50	0.5700	CIRCULAR	8.040	0.0150	0.65	0 00:22	3.13	0.47	0.79	0.82	0.69	0.00	0.46	Calculated
D-01	Inlet-07	Inlet-08	64.00	12.25	0.25	0.3900	CIRCULAR	15.000	0.0150	0.50	0 00:21	2.37	0.45	3.50	0.14	0.25	0.00	0.32	Calculated
D-02	Inlet-08	Inlet-10	91.00	12.00	1.25	1.3700	CIRCULAR	15.000	0.0150	1.25	0 00:22	4.12	0.37	6.56	0.19	0.30	0.00	0.37	Calculated
D-03	Inlet-10	Inlet-11	53.00	10.75	0.25	0.4700	CIRCULAR	15.000	0.0150	2.16	0 00:22	3.23	0.27	3.85	0.56	0.54	0.00	0.67	Calculated
D-04	Inlet-11	Inlet-04	113.00	10.50	0.30	0.2700	CIRCULAR	18.000	0.0150	2.68	0 00:22	2.76	0.68	4.69	0.57	0.54	0.00	0.81	Calculated
E-01	Inlet-09	Inlet-10	50.00	11.10	0.35	0.7000	CIRCULAR	15.000	0.0150	0.44	0 00:21	2.57	0.32	4.68	0.09	0.21	0.00	0.26	Calculated
F-01	Inlet-12	Inlet-13	111.00	12.00	0.50	0.4500	CIRCULAR	15.000	0.0150	2.06	0 00:23	3.69	0.50	3.76	0.55	0.53	0.00	0.66	Calculated
F-02	Inlet-13	Inlet-14	104.00	11.50	0.50	0.4800	CIRCULAR	18.000	0.0150	5.63	0 00:24	4.06	0.43	6.31	0.89	0.74	0.00	1.10	Calculated
F-03	Inlet-14	Inlet-15	131.00	11.00	0.25	0.1900	CIRCULAR	24.000	0.0150	9.27	0 00:25	3.21	0.68	8.56	1.08	0.92	0.00	1.85	> CAPACITY
F-04	Inlet-15	Stor-01	20.00	10.75	0.25	1.2500	CIRCULAR	24.000	0.0150	9.80	0 00:25	6.95	0.05	21.92	0.45	0.47	0.00	0.94	Calculated
G-01	Stor-01	J/B-03	31.00	9.50	0.05	0.1600	CIRCULAR	36.000	0.0150	6.63	0 00:39	2.83	0.18	23.22	0.29	0.37	0.00	1.10	Calculated
G-02	J/B-03	J/B-04	416.00	9.45	0.35	0.0800	CIRCULAR	36.000	0.0150	6.62	0 00:42	2.25	3.08	16.77	0.39	0.44	0.00	1.31	Calculated
G-03	J/B-04	J/B-05	77.00	9.10	0.10	0.1300	CIRCULAR	36.000	0.0150	6.62	0 00:42	2.61	0.49	20.83	0.32	0.39	0.00	1.16	Calculated
G-04	J/B-05	Out-01	10.00	9.00	0.25	2.5000	CIRCULAR	36.000	0.0150	6.62	0 00:42	7.53	0.02	91.40	0.07	0.18	0.00	0.55	Calculated

INLETS

RATIONAL METHOD: 100 YEARS STORM ANALYSIS FOR INLETS

Element ID	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Grate Clogging Factor (%)	Peak Flow (cfs)	Allowable Spread (ft)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Maximum Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)
Inlet-01	11.50	13.80	11.50	10.00	25.00	0.31	7.00	0.00	13.84	0.04	0 00:20	0.00	0.00
Inlet-02	11.25	15.00	11.25	10.00	25.00	0.80	7.00	0.00	15.08	0.08	0 00:22	0.00	0.00
Inlet-03	11.00	15.20	11.00	10.00	25.00	1.01	7.00	0.00	15.30	0.10	0 00:22	0.00	0.00
Inlet-04	10.20	14.00	10.20	10.00	25.00	5.14	7.00	8.45	14.42	0.42	0 00:23	0.00	0.00
Inlet-05	11.25	17.00	11.25	10.00	25.00	0.43	7.00	0.00	17.05	0.05	0 00:21	0.00	0.00
Inlet-06	11.25	17.00	11.25	10.00	25.00	0.65	7.00	0.00	17.07	0.07	0 00:21	0.00	0.00
Inlet-07	12.25	15.25	12.25	10.00	25.00	0.50	7.00	0.00	15.31	0.06	0 00:21	0.00	0.00
Inlet-08	12.00	15.25	12.00	10.00	25.00	0.75	7.00	0.00	15.33	0.08	0 00:21	0.00	0.00
Inlet-09	11.10	13.35	11.10	10.00	25.00	0.44	7.00	0.00	13.41	0.06	0 00:21	0.00	0.00
Inlet-10	10.75	14.50	10.75	10.00	25.00	0.50	7.00	0.00	14.56	0.06	0 00:21	0.00	0.00
Inlet-11	10.50	15.00	10.50	10.00	25.00	0.54	7.00	0.00	15.06	0.06	0 00:21	0.00	0.00
Inlet-12	12.00	14.75	12.00	10.00	25.00	2.07	7.00	0.00	14.91	0.16	0 00:23	0.00	0.00
Inlet-13	11.50	14.75	11.50	10.00	25.00	3.59	7.00	0.00	14.98	0.23	0 00:23	0.00	0.00
Inlet-14	11.00	15.25	11.00	10.00	25.00	3.44	7.00	0.00	15.47	0.22	0 00:22	0.00	0.00
Inlet-15	10.75	14.50	10.75	10.00	25.00	0.76	7.00	0.00	14.58	0.08	0 00:25	0.00	0.00

AREAS

RATIONAL METHOD: 100 YEARS STORM ANALYSIS FOR AREAS

Element ID	Area (acres)	Drainage Node ID	Impervious Coefficient	Accumulated Precipitation (inches)	Total Runoff (inches)	Peak Runoff (cfs)	Rainfall Intensity (inches/hr)	Time of Concentration (days hh:mm:ss)
DA-01	0.04	Inlet-01	0.90	2.85	2.57	0.31	8.286	0 00:20:42
DA-02	0.11	Inlet-02	0.90	2.95	2.66	0.80	8.116	0 00:21:46
DA-03	0.14	Inlet-03	0.90	2.96	2.66	1.01	8.072	0 00:22:03
DA-04	0.63	Inlet-04	0.90	3.12	2.81	4.41	7.757	0 00:24:13
DA-05	0.06	Inlet-05	0.90	2.88	2.59	0.43	8.228	0 00:21:03
DA-06	0.09	Inlet-06	0.90	2.92	2.63	0.65	8.153	0 00:21:31
DA-07	0.03	Inlet-04	0.90	2.83	2.55	0.21	8.346	0 00:20:19
DA-08	0.04	Inlet-04	0.90	2.84	2.56	0.26	8.312	0 00:20:32
DA-09	0.04	Inlet-04	0.90	2.84	2.56	0.26	8.312	0 00:20:32
DA-10	0.02	Inlet-04	0.90	2.82	2.53	0.17	8.376	0 00:20:09
DA-11	0.07	Inlet-07	0.90	2.89	2.60	0.50	8.201	0 00:21:13
DA-12	0.10	Inlet-08	0.90	2.94	2.64	0.75	8.127	0 00:21:42
DA-13	0.06	Inlet-09	0.90	2.88	2.59	0.44	8.225	0 00:21:04
DA-14	0.07	Inlet-10	0.90	2.89	2.60	0.50	8.201	0 00:21:13
DA-15	0.07	Inlet-11	0.90	2.91	2.62	0.54	8.188	0 00:21:18
DA-16	0.29	Inlet-12	0.90	3.04	2.73	2.07	7.925	0 00:23:02
DA-17	0.01	Inlet-13	0.90	2.74	2.47	0.07	8.511	0 00:19:21
DA-18	0.02	Inlet-13	0.90	2.78	2.51	0.13	8.422	0 00:19:52
DA-19	0.02	Inlet-13	0.90	2.78	2.50	0.13	8.417	0 00:19:54
DA-20	0.02	Inlet-13	0.90	2.80	2.52	0.14	8.413	0 00:19:55
DA-21	0.46	Inlet-13	0.90	3.09	2.78	3.22	7.829	0 00:23:42
DA-22	0.38	Inlet-14	0.90	3.08	2.77	2.70	7.867	0 00:23:26
DA-23	0.03	Inlet-14	0.90	2.85	2.56	0.23	8.332	0 00:20:25
DA-24	0.03	Inlet-14	0.90	2.84	2.56	0.25	8.317	0 00:20:30
DA-25	0.03	Inlet-14	0.90	2.84	2.56	0.25	8.317	0 00:20:30
DA-26	0.02	Inlet-14	0.90	2.78	2.51	0.13	8.422	0 00:19:52
DA-27	0.02	Inlet-15	0.90	2.78	2.51	0.13	8.422	0 00:19:52
DA-28	0.02	Inlet-15	0.90	2.79	2.51	0.11	8.440	0 00:19:46
DA-29	0.02	Inlet-15	0.90	2.80	2.52	0.14	8.413	0 00:19:55
DA-30	0.02	Inlet-15	0.90	2.78	2.51	0.13	8.422	0 00:19:52
DA-31	0.02	Inlet-15	0.90	2.79	2.51	0.11	8.440	0 00:19:46
DA-32	0.02	Inlet-15	0.90	2.80	2.52	0.14	8.413	0 00:19:55

Rainfall Intensity-Duration-Frequency Coefficients for Texas

Based on United States Geological Survey (USGS) Scientific Investigations Report 2004–5041
"Atlas of Depth-Duration Frequency of Precipitation Annual Maxima for Texas"

1. Select English or SI Units: English

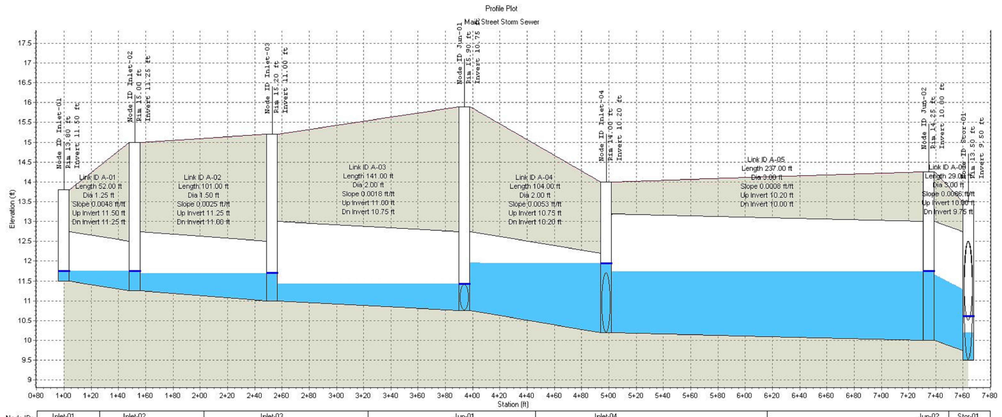
2. Select or Enter a County: Galveston

3. Enter a Time of Conc. Select Units: 28.99 min

Coefficient	50% (2-year)	20% (5-year)	10% (10-year)	4% (25-year)	2% (50-year)	1% (100-year)
e	0.7839	0.7636	0.7496	0.743	0.7308	0.7295
b (in.)	58.30	70.47	77.97	91.45	99.26	115.89
d (min)	11.04	12.60	13.38	14.79	14.85	16.50
Intensity (in./hr)	3.23	4.09	4.70	5.52	6.26	7.15

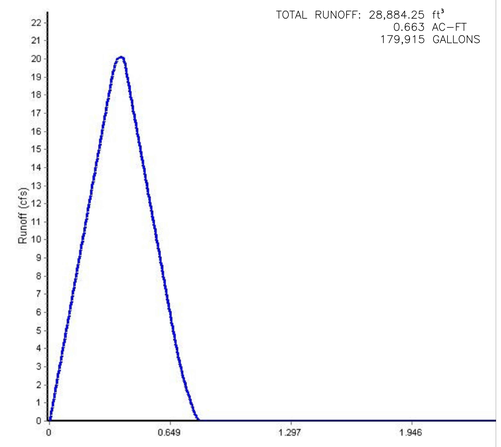
(Spreadsheet Release Date: August 31, 2015; data table reshuffle by Asquith July 14, 2016)

LINES – A



Node ID:	Inlet-01	Inlet-02	Inlet-03	Jun-01	Inlet-04	Jun-02	Stor-01
Rim (ft):	13.80	15.00	15.20	15.90	14.00	14.25	13.50
Invert (ft):	11.50	11.25	11.00	10.75	10.20	10.00	9.50
Min Pipe Cover (ft):				3.15		1.25	
Max HGL (ft):	11.74	11.75	11.69	11.43	11.94	11.74	10.60

Link ID:	A-01	A-02	A-03	A-04	A-05	A-06
Length (ft):	52.00	101.00	141.00	104.00	237.00	29.00
Dia (ft):	1.25	1.50	2.00	2.00	3.00	3.00
Slope (ft/ft):	0.0048	0.0025	0.0018	0.0053	0.0008	0.0086
Up Invert (ft):	11.50	11.25	11.00	10.75	10.20	10.00
Dn Invert (ft):	11.25	11.00	10.75	10.20	10.00	9.75
Max Q (cfs):	0.30	1.09	2.08	3.12	10.71	10.71
Max Vel (ft/s):	2.17	2.12	2.20	3.64	2.55	5.92
Max Depth (ft):	0.24	0.50	0.68	0.63	1.74	0.91

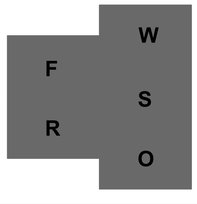


Time period
From: 05/28/2020, 12:00:00 AM
To: 06/12/2020, 12:00:00 AM

Element ID	System
Maximum Runoff (cfs)	20.11
Minimum Runoff (cfs)	0.00
Event Mean Runoff (cfs)	0.02

ONE– CALL NOTIFICATION SYSTM
CALL BEFORE YOU DIG!!!
(713) 223–4567 (In Houston, Tx)
(New Statewide Number Outside Houston)
1–800–545–6005

KEY PLAN (NOT TO SCALE)



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Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
TEXAS REGISTERED ENGINEERING FIRM F-003409
STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
07/03/20

DRAINAGE CALCULATIONS
100 YEARS (PROPOSED)

DRAWN BY: AB	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR REGULATORY REVIEW	DATE: 03 JULY 2020

C17.0
SHEET NUMBER

FILE PATH: File Path
USER NAME:
DATE STAMP: 6/26/2008 2:02:08 PM

Tract	293,668	sf
	6.74	ac
Total	**293,668**	**sf**
	6.74	**ac**

Existing Conditions

Impervious Area sf	ac		Pervious Area sf	ac
48,803	1.12	Building	**157,862**	**3.62**
82,229	1.89	Paving Concrete		
3,626	0.08	Sidewalk		
1,148	0.03	Driveway		
135,806	**3.12**			

46% Impervious 54% Pervious

Proposed Conditions

Impervious Area sf	ac		Pervious Area sf	ac	
27,055	0.62	Proposed Buildings	45,212	1.04	True Grid
7,097	0.16	Proposed Sidewalks	48,484	1.11	Proposed Green Area
27,947	0.64	Detention Pond	53,198	1.21	Existing area not in scope
83,691	1.92	Proposed Pavement			
1,419	0.03	Driveway	**146,894**	**3.36**	
147,209	**3.38**				

50% Impervious 34% Pervious

Malcom Method Equations

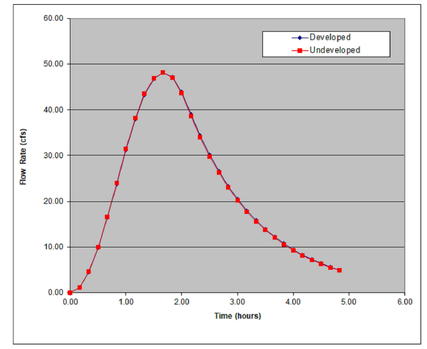
$T_P = V / (1.39Q_P)$ T_P = Peak Flow Rate (cfs)

$q_i = (Q_P/2)[1 - \cos(3.14159*t/T_P)]$ for ti <= 1.25T_P

$q_i = 4.34 * Q_P e^{(-1.3t/TP)}$ for ti > 1.25TP

DATA FOR DEVELOPED CONDITIONS	
Runoff Volume (V) =	**9.30** acre-feet
Runoff Volume (V) =	405087.734 cubic feet
Peak Flow Rate Q_P =	**48.2** cfs
Time Interval =	***10*** minutes
Time to Peak (T_P) =	6047 seconds
=	100.8 minutes
=	1.68 hours

DATA FOR UNDEVELOPED CONDITIONS	
Runoff Volume (V) =	**9.24** acre-feet
Runoff Volume (V) =	402459.154 cubic feet
Peak Flow Rate Q_P =	**48.2** cfs
Time Interval =	**10** minutes
Time to Peak (T_P) =	6008 seconds
=	100.1 minutes
=	1.67 hours



EFFECT OF WATERSHED DEVELOPMENT ON STORM HYDROGRAPH

3,553.4 Total Storage Requirement (cubic feet)
0.08 Total Storage Requirement (acre-feet)

THE SCS CURVE NUMBER METHOD

INPUT DATA		
Drainage Area =	*6.74* acres	Undeveloped
SCS Curve Number (CN) =	*80*	
Impervious Cover =	*46* percent	
	25-Year	**100-Year**
Rainfall Depth (P)=	*12.4* inches	*17.9* inches
COMPUTED RESULTS		
Computed Value of S =	2.50	2.50
Runoff from Pervious Areas Q=	9.83 inches	15.21 inches
Weighted Runoff =	11.01 inches	16.45 inches
Runoff Volume =	6.19 acre-feet	9.24 acre-feet

INPUT DATA		
Drainage Area =	6.74 acres	Developed
SCS Curve Number (CN) =	80	
Impervious Cover =	*50* percent	
	25-Year	**100-Year**
Rainfall Depth (P) =	12.4 inches	17.9 inches
COMPUTED RESULTS		
Computed Value of S =	2.50	2.50
Runoff from Pervious Areas Q =	9.83 inches	15.21 inches
Weighted Runoff =	11.12 inches	16.56 inches
Runoff Volume =	6.24 acre-feet	9.30 acre-feet

The SCS curve number method

Was used for determining the approximate amount of runoff from a rainfall in a particular area.

$$Q = \frac{(P - I_a)^2}{(P - I_a) + S} \qquad (1)$$

Where:

Q= accumulated direct runoff.

P= accumulated rainfall (potential maximum runoff).

I_a= initial abstraction including surface storage, interception, and infiltration prior to runoff.

S= potential maximum retention.

$$I_a = 0.2S \qquad (2)$$

substituting 0.2S for I_a in equation (1), the equation follows:

$$Q = \frac{(P - 0.2S)^2}{(P + 0.8S)} \qquad (3)$$

Computed Value of S

$$S = \frac{1000}{CN} - 10 \qquad (4)$$

DRAINAGE CRITERIA MANUAL GALVESTON COUNTY- Rational Method

Time of Concentration (Tc)

$$T_c = 10*(A)^{0.1761} + 15$$

Drainage Area	*Acres*
A=	*6.74*
Time of Concentration	*Min*
Tc=	*28.99*

Rainfall Intensity-Duration-Frequency Coefficients for Texas

Based on United States Geological Survey (USGS) Scientific Investigations Report 2004–5041
"Atlas of Depth-Duration Frequency of Precipitation Annual Maxima for Texas"

1. Select English or SI Units
English

2. Select or Enter a County
Galveston

3. Enter a Time of Conc.
Select Units
28.99 min

Coefficient	50% (2-year)	20% (5-year)	10% (10-year)	4% (25-year)	2% (50-year)	1% (100-year)
e	0.7839	0.7636	0.7496	0.743	0.7308	0.7295
b (in.)	58.30	70.47	77.97	91.45	99.26	115.89
d (min)	11.04	12.60	13.38	14.79	14.85	16.50
Intensity (in./hr)	3.23	4.09	4.70	5.52	6.26	7.15

(Spreadsheet Release Date: August 31, 2015; data table reshuffle by Asquith July 14, 2016)

DEVELOPED CONDITIONS HYDROGRAPH			
Ordinate	Time (hours)	Time (t) (seconds)	q_i (cfs)
1	0.00	0	0.00
2	0.17	600	1.16
3	0.33	1200	4.53
4	0.50	1800	9.79
5	0.67	2400	16.42
6	0.83	3000	23.80
7	1.00	3600	31.20
8	1.17	4200	37.92
9	1.33	4800	43.31
10	1.50	5400	46.84
11	1.67	6000	48.18
12	1.83	6600	47.20
13	2.00	7200	44.00
14	2.17	7800	39.11
15	2.33	8400	34.37
16	2.50	9000	30.21
17	2.67	9600	26.56
18	2.83	10200	23.34
19	3.00	10800	20.52
20	3.17	11400	18.04
21	3.33	12000	15.85
22	3.50	12600	13.94
23	3.67	13200	12.25
24	3.83	13800	10.77
25	4.00	14400	9.46
26	4.17	15000	8.32
27	4.33	15600	7.31
28	4.50	16200	6.43
29	4.67	16800	5.65
30	4.83	17400	4.97
31	5.00	18000	4.36
32	5.17	18600	3.84
33	5.33	19200	3.37
34	5.50	19800	2.96
35	5.67	20400	2.61
36	5.83	21000	2.29
37	6.00	21600	2.01
38	6.17	22200	1.77
39	6.33	22800	1.56
40	6.50	23400	1.37
41	6.67	24000	1.20
42	6.83	24600	1.06
43	7.00	25200	0.93
44	7.17	25800	0.82
45	7.33	26400	0.72
46	7.50	27000	0.63
47	7.67	27600	0.55
48	7.83	28200	0.49
49	8.00	28800	0.43
50	8.17	29400	0.38
51	8.33	30000	0.33
52	8.50	30600	0.29
53	8.67	31200	0.26
54	8.83	31800	0.22
55	9.00	32400	0.20
56	9.17	33000	0.17
57	9.33	33600	0.15
58	9.50	34200	0.13
59	9.67	34800	0.12
60	9.83	35400	0.10
61	10.00	36000	0.09

UNDEVELOPED CONDITIONS HYDROGRAPH			
Ordinate	Time (hours)	Time (t) (seconds)	q_i (cfs)
1	0.00	0	0.00
2	0.17	600	1.18
3	0.33	1200	4.59
4	0.50	1800	9.91
5	0.67	2400	16.61
6	0.83	3000	24.04
7	1.00	3600	31.48
8	1.17	4200	38.20
9	1.33	4800	43.54
10	1.50	5400	46.98
11	1.67	6000	48.19
12	1.83	6600	47.05
13	2.00	7200	43.66
14	2.17	7800	38.68
15	2.33	8400	33.97
16	2.50	9000	29.84
17	2.67	9600	26.20
18	2.83	10200	23.01
19	3.00	10800	20.21
20	3.17	11400	17.75
21	3.33	12000	15.59
22	3.50	12600	13.69
23	3.67	13200	12.02
24	3.83	13800	10.56
25	4.00	14400	9.27
26	4.17	15000	8.15
27	4.33	15600	7.15
28	4.50	16200	6.28
29	4.67	16800	5.52
30	4.83	17400	4.85
31	5.00	18000	4.26
32	5.17	18600	3.74
33	5.33	19200	3.28
34	5.50	19800	2.88
35	5.67	20400	2.53
36	5.83	21000	2.22
37	6.00	21600	1.95
38	6.17	22200	1.72
39	6.33	22800	1.51
40	6.50	23400	1.32
41	6.67	24000	1.16
42	6.83	24600	1.02
43	7.00	25200	0.90
44	7.17	25800	0.79
45	7.33	26400	0.69
46	7.50	27000	0.61
47	7.67	27600	0.53
48	7.83	28200	0.47
49	8.00	28800	0.41
50	8.17	29400	0.36
51	8.33	30000	0.32
52	8.50	30600	0.28
53	8.67	31200	0.24
54	8.83	31800	0.21
55	9.00	32400	0.19
56	9.17	33000	0.17
57	9.33	33600	0.15
58	9.50	34200	0.13
59	9.67	34800	0.11
60	9.83	35400	0.10
61	10.00	36000	0.09

Vs CALC
Incr. Vs (cubic feet)
0.0
0.0
0.0
0.0
0.0
0.0
0.0
95.1
202.6
255.6
241.8
227.6
213.3
199.2
185.3
171.8
158.9
146.6
135.0
124.0
113.7
104.0
95.0
86.7
79.0
71.9
65.4
59.3
53.8
48.8
44.1
39.9
36.1
32.6
29.4
26.5
23.9
21.5
19.4
17.4
15.7
14.1
12.6
11.3
10.2
9.1
8.2
7.3
6.6
5.9
5.3
4.7
4.2
3.8
3.4
3.0
2.7

3,553.4 Total Storage Requirement (cubic feet)
0.08 Total Storage Requirement (acre-feet)

Stormwater Detention Volume Provided =		1.985	AC-FT	
		86,457	CF	
		648,428	GALLONS	

Underground Detention Volume Calculations

Elevation (ft)	Surface Area (sf)	Average Volume (cf)	Average Volume (ac-ft)	Description
WSE-13.5	27,947	-	-	Top of Underground Detention
WSE-12.5	25,288	25,288	0.581	
WSE-11.5	22,762	22,762	0.523	
WSE-10.5	20,368	20,368	0.468	
WSE-9.5	18,039	18,039	0.414	
		-	-	
		-	-	
		-	-	
		-	-	
		-	-	
		-	-	
		-	-	
		86,457.00	1.985	Detention Pond Volume

DETENTION SUMMARY		
AREA SERVICED =	6.74	AC
DETENTION STORAGE RATE = C'S =	0.65	AC-FT-AC
DETENTION STORAGE VOLUME REQUIRED =	0.08	AC-FT
DETENTION STORAGE VOLUME PROVIDED =	1.98	AC-FT
RESTRICTOR SIZE =	10	INCHES
OUTFALL PIPE SIZE=	36	INCHES

NOTE: Detention calculations were made for a storm with a 100-year return period.

Rational Method (Developed)

Maximum rate of runoff Calculations (Q)

Drainage Area	*Acres*	*Runoff Coefficient*	*Dimensioless*
A=	*6.74*	*C=*	*0.9*
		Cf=	*1.25*

Design Rainfall Intensity (I)		*Design Rainfall Intensity (I)*
	in/hr	*Based on United Stated Geological Survey (USGS) Scientific Investigations Report 2004-5041 "Atlas of Depth-Duration Frecuency of Precipitation Annual Maxima for Texas*
I=	*7.15*	

Maximum rate of runoff (Q)		
	Cfs	
Q=	*48.19*	

Q=CiA
Q=CiACf

Land Use or Land Cover	Rational Coefficient 'C'
Raw, undeveloped acerage	0.20
Improved, undeveloped acerage (i.e., mowed, filled, graded, etc.)	0.30
Park Land	0.40
Residential – 1 acre lots or larger	0.40
Residential – ½ to 1 acre lots	0.45
Residential – less than ½ acre lots	0.55
Multi-Family	0.75
Commercial/Industrial	0.90

Storm Frequency	Frequency Factor (C_f)
10	1.00
25	1.10
100	1.25

The product of C_f and C used in the Rational Method should not exceed 1.0.

Tables Based by Galveston County subdivision and Regulations

Rational Method (Undeveloped)

Maximum rate of runoff Calculations (Q)

Drainage Area	*Acres*	*Runoff Coefficient*	*Dimensioless*
A=	*6.74*	*C=*	*0.9*
		Cf=	*1.25*

Design Rainfall Intensity (I)		*Design Rainfall Intensity (I)*
	in/hr	*Based on United Stated Geological Survey (USGS) Scientific Investigations Report 2004-5041 "Atlas of Depth-Duration Frecuency of Precipitation Annual Maxima for Texas*
I=	*7.15*	

Maximum rate of runoff (Q)		
	Cfs	
Q=	*48.19*	

Q=CiA
Q=CiACf

Land Use or Land Cover	Rational Coefficient 'C'
Raw, undeveloped acerage	0.20
Improved, undeveloped acerage (i.e., mowed, filled, graded, etc.)	0.30
Park Land	0.40
Residential – 1 acre lots or larger	0.40
Residential – ½ to 1 acre lots	0.45
Residential – less than ½ acre lots	0.55
Multi-Family	0.75
Commercial/Industrial	0.90

Storm Frequency	Frequency Factor (C_f)
10	1.00
25	1.10
100	1.25

The product of C_f and C used in the Rational Method should not exceed 1.0.

Tables Based by Galveston County subdivision and Regulations

Calculation of Restrictor/Outlet Pipe Calculations

Qh = C*A*(2*g*H)^(1/2) Qh= Orifice flow Capacity (Cfs)
C= Orifice Coeficient (0.8)
A= Orifice Opening Area (Sq.ft)
g = Gravitational Acceleration Constant (32.2 Ft/Sq.S)
H = Differential head Across The Orifice (ft)

H = Total detention pond deph - Total Curb Inlet depth

Equation based on Galveston County

Qh=	5.91	Cfs		
g=	32.2	ft/Sq.s	DETENTION POND TOP	13.50
C=	0.8		DETENTION POND BOTTOM	9.5
H=	2.60	ft	TOTAL DETENTION POND DEPTH	4.00
A=	0.57	Sq.ft	TOTAL CURB INLET DEPTH	6.6
D=	0.85	ft		
D=	**10.23**	in	D= 10 in	
			Qh= **5.65** Cfs	

Therefore Qh < Q

Maximum release Rate Calculations

Q = C*I*A Q = Peak Discharge (Cfs)
A = Lfrontage * L A = Study Drainage Area (acre)
L= Frontage Length (ft)
L= Length Coefficient (100ft)
C = Runoff Coefficient
I = Rainfall Intensity (in/hr)

C =	0.9	
I =	7.15	in/hr
L =	100	ft
L Frontage =	400	ft
A=	40000	Sq.ft
A=	0.92	Acres
Q=	**5.91**	Cfs

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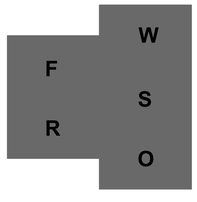
KEY PLAN (NOT TO SCALE)



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Galveston County Road & Bridge Department Facilities

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
TEXAS REGISTERED ENGINEERING FIRM F-002408
STATE OF TEXAS
FRED DALLY
90904
LICENSED PROFESSIONAL ENGINEER
07/03/20

DETENTION CALCULATIONS

DRAWN BY: AB	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR REGULATORY REVIEW	DATE: 03 JULY 2020

C18.0
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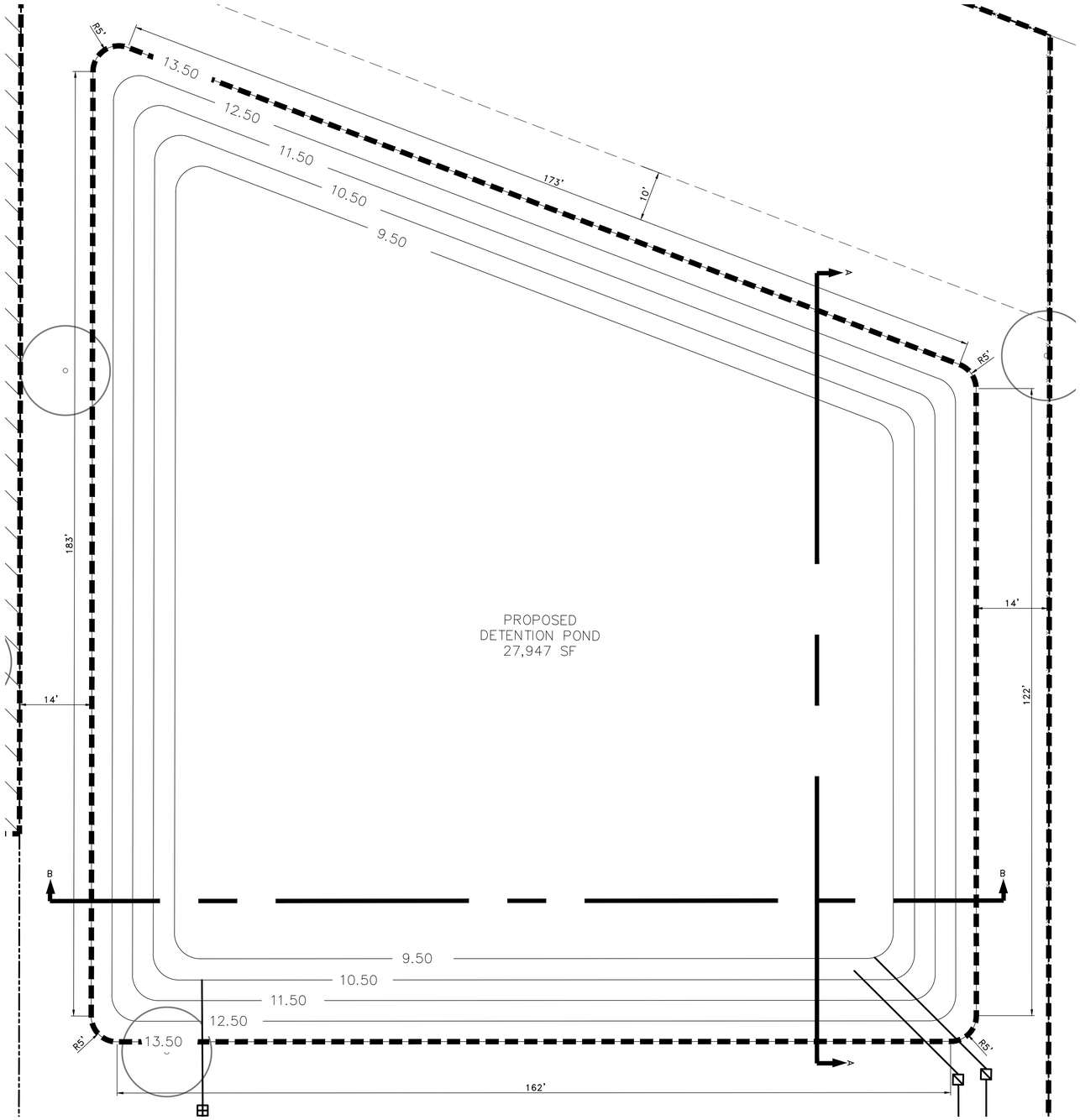

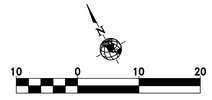

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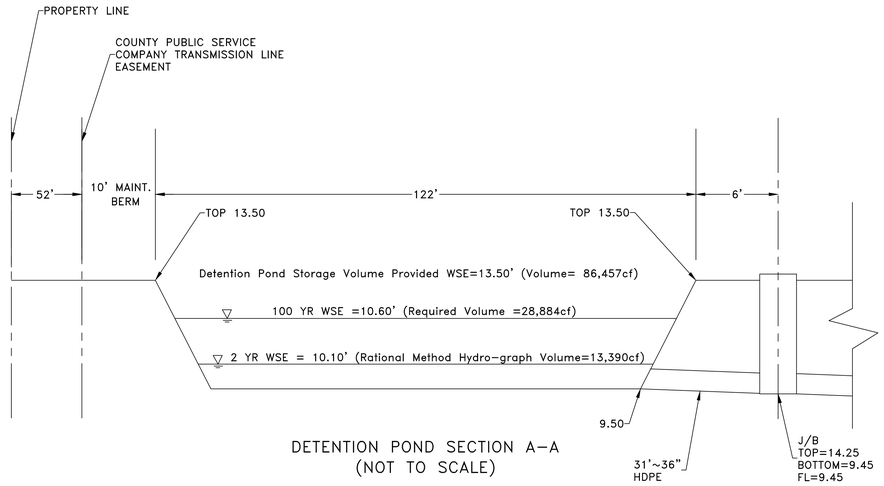

DETENTION POND SECTION A–A
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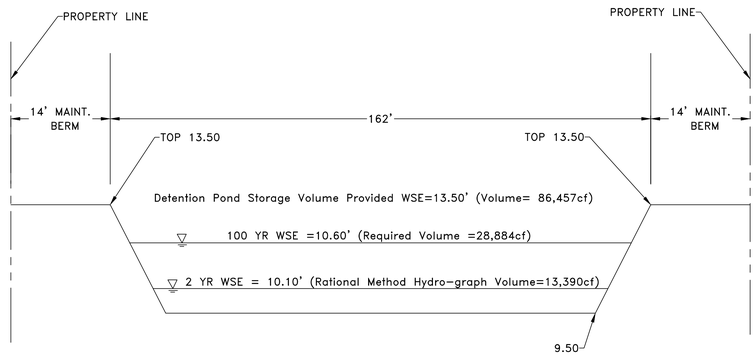
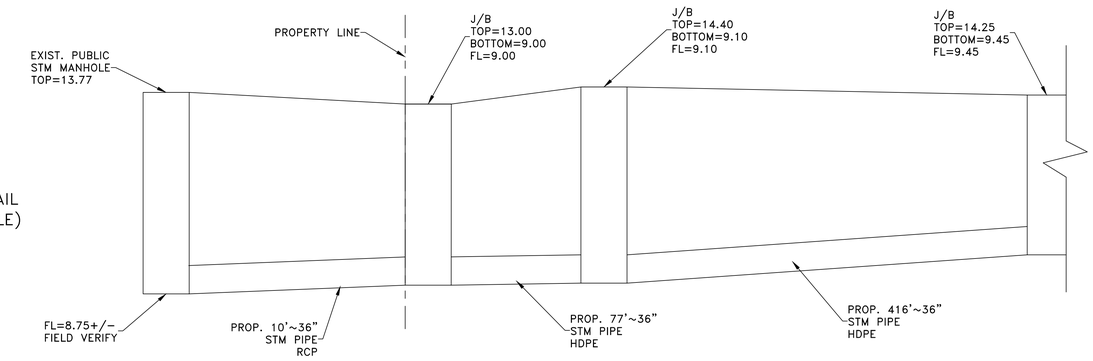


DETENTION POND SECTION B–B
(NOT TO SCALE)



PROPOSED
OUTFALL DETAIL
(NOT TO SCALE)

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CALL BEFORE YOU DIG!!!
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(New Statewide Number Outside Houston)
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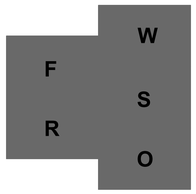
KEY PLAN (NOT TO SCALE)



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REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

TEXAS REGISTERED ENGINEERING FIRM F–003426

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
07/03/20

DETENTION POND
CROSS SECTION

DRAWN BY: AB	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR REGULATORY REVIEW	DATE: 03 JULY 2020

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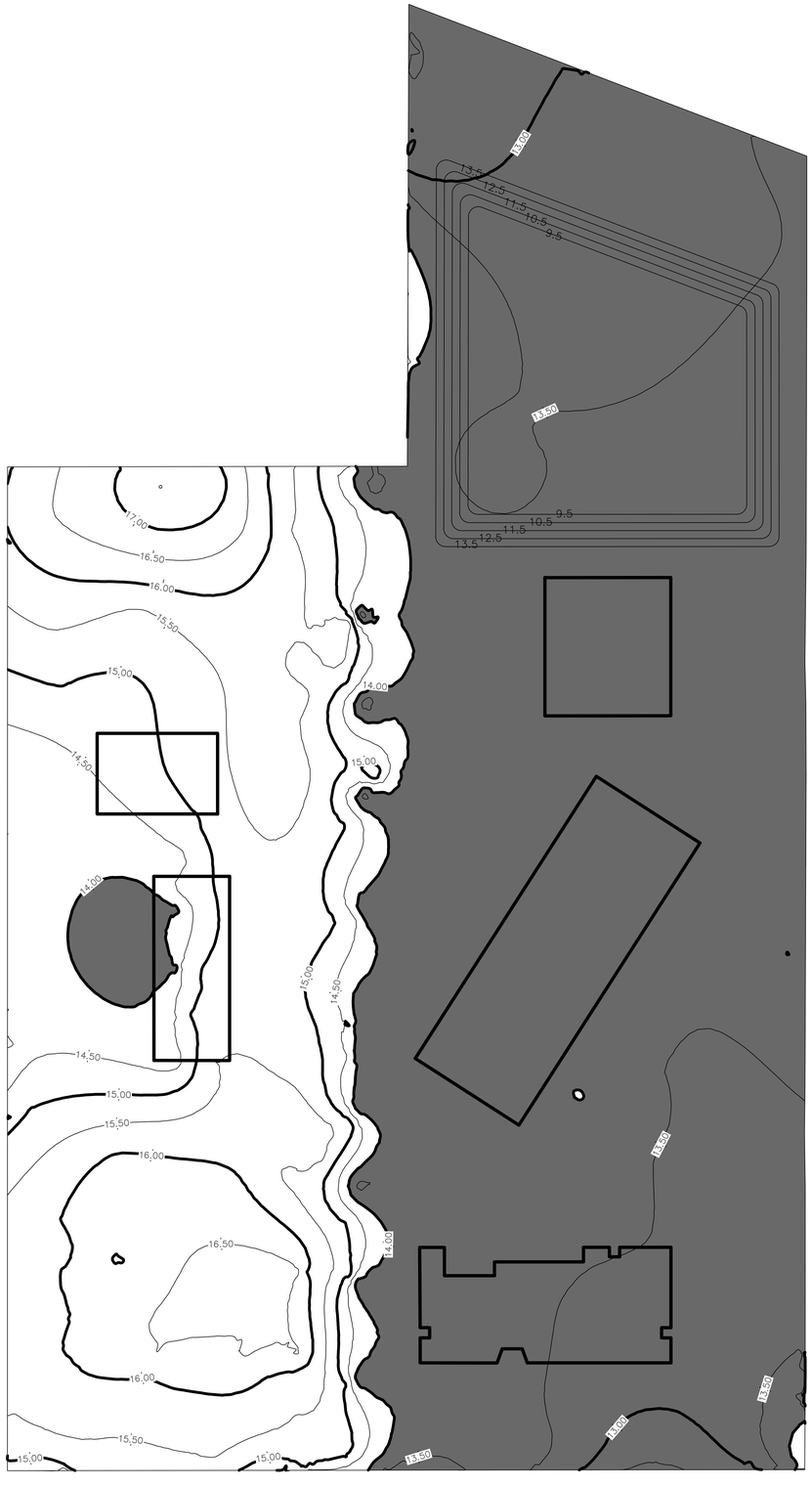

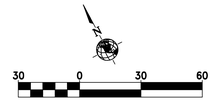

SCALE: 1"=30'

LEGEND

EXISTING NATURAL GROUND

FINISH GRADE

HATCH LEGEND

MITIGATION FILL AREA

ONE– CALL NOTIFICATION SYSTM
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(New Statewide Number Outside Houston)
1–800–545–6005

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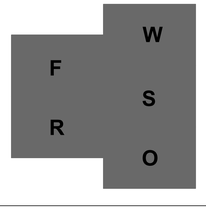

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STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER

07/03/20

MITIGATION PLAN

DRAWN BY: AB	CHECKED BY: JDM
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR REGULATORY REVIEW	DATE: 03 JULY 2020

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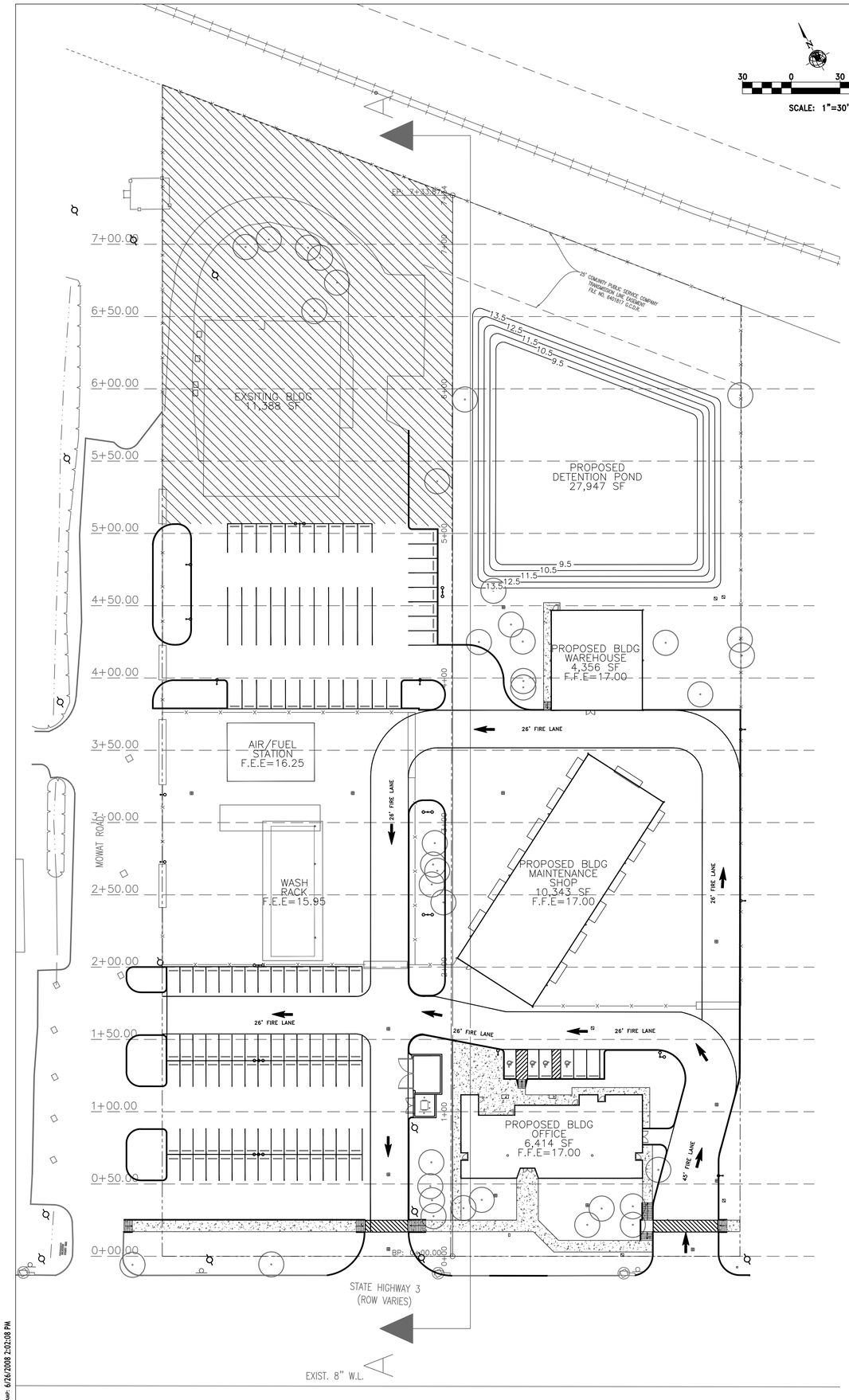

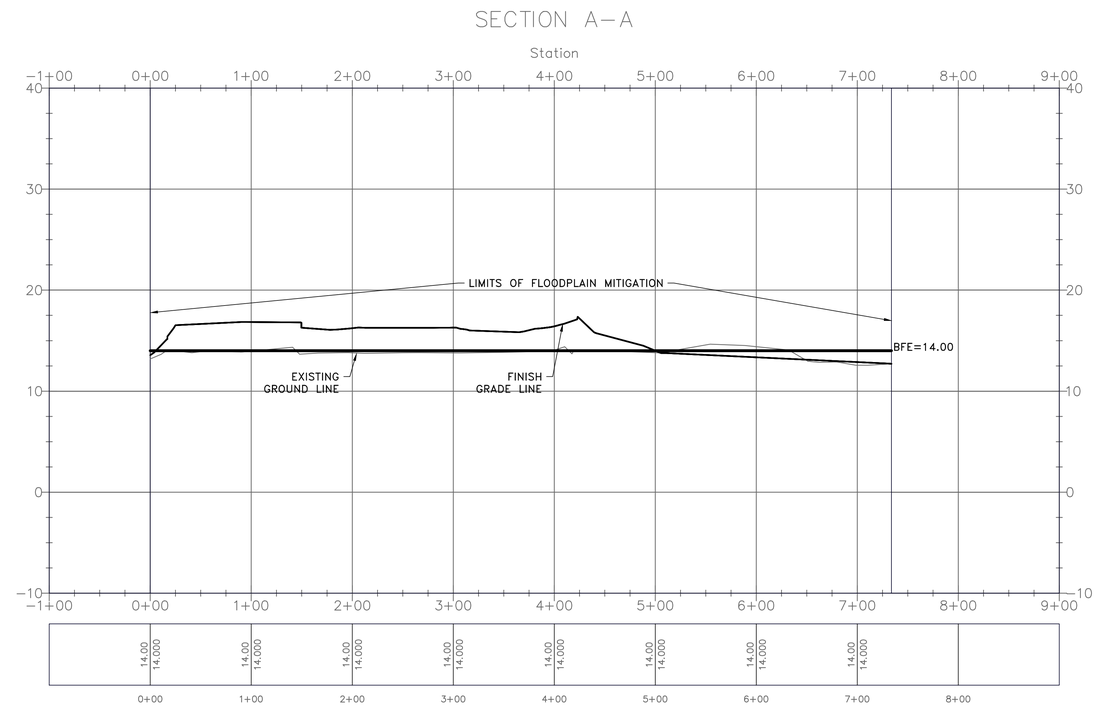

NEW BUILDING F.F.E =17.00'

BASE FLOOD ELEVATION=14.00'

HIGHEST EXISTING NATURAL GRADE AT FLOODPLAIN=17.51'

LOWEST EXISTING NATURAL GRADE AT FLOODPAIN=11.87'

MITIGATION EARTHWORK CALCULATIONS			
ITEM	CUT	FILL	NET VOLUME
FLOODPLAIN MITIGATION VOLUME FROM NG TO FG	4,859.11 CU YD	11,124.88 CU YD	6,265.76 CU YD (FILL)
FLOODPLAIN MITIGATION VOLUME FROM BFE TO FG	4362.18 CU YD	13,070.29 CU YD	8,708.11 CU YD (FILL)
FLOODPLAIN MITIGATION VOLUME TOTAL (NG TO FG – BFE TO FG)	496.93 CU YD	–1,945.41 CU YD	2,442.35 CU YD (CUT)

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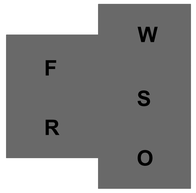

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STATE OF TEXAS
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PROFESSIONAL ENGINEER

07/03/20

MITIGATION PLAN
CUT AND FILL CALCULATIONS

DRAWN BY	CHECKED BY
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ISSUE FOR REGULATORY REVIEW	03 JULY 2020

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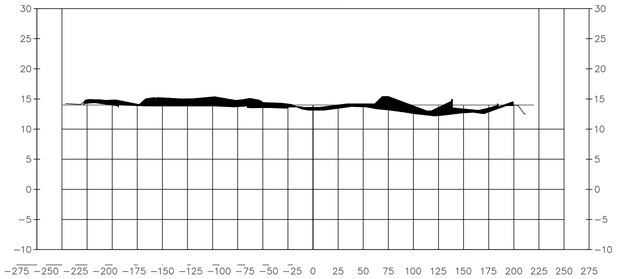
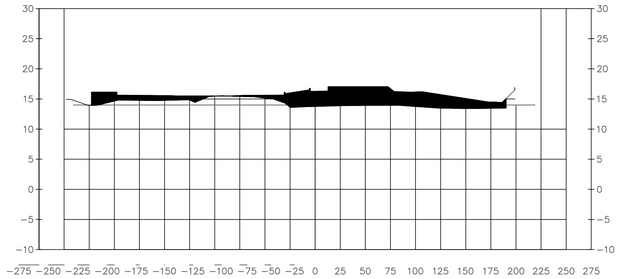


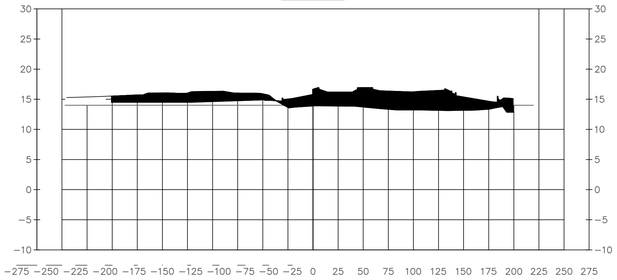
Total Volume at Station 0+00.00	
Cut Area	207.78
Fill Area	169.72
Cut Vol	0.00
Fill Vol	0.00
Cum Cut Vol	0.00
Cum Fill Vol	0.00

2+00.00



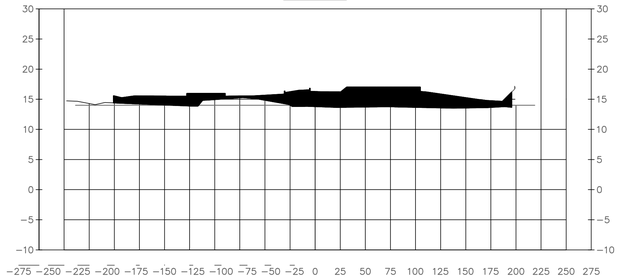
Total Volume at Station 2+00.00	
Cut Area	0.74
Fill Area	633.27
Cut Vol	84.63
Fill Vol	1070.80
Cum Cut Vol	1036.17
Cum Fill Vol	3972.05

0+50.00



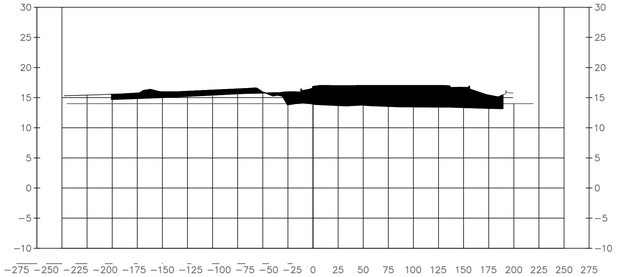
Total Volume at Station 0+50.00	
Cut Area	225.36
Fill Area	554.43
Cut Vol	401.05
Fill Vol	670.51
Cum Cut Vol	401.05
Cum Fill Vol	670.51

2+50.00



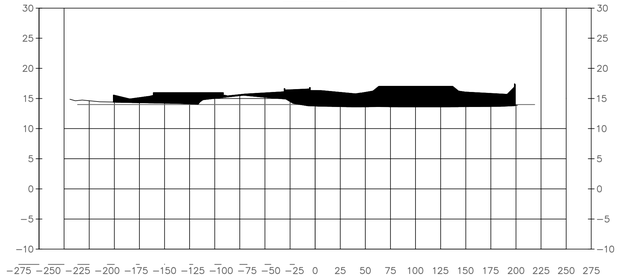
Total Volume at Station 2+50.00	
Cut Area	0.00
Fill Area	743.79
Cut Vol	0.69
Fill Vol	1275.06
Cum Cut Vol	1036.86
Cum Fill Vol	5247.11

1+00.00



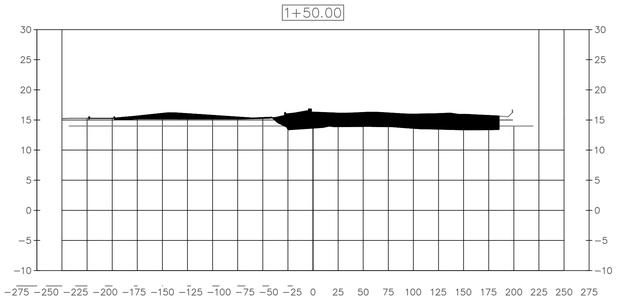
Total Volume at Station 1+00.00	
Cut Area	139.26
Fill Area	665.79
Cut Vol	337.61
Fill Vol	1129.83
Cum Cut Vol	738.66
Cum Fill Vol	1800.34

3+00.00



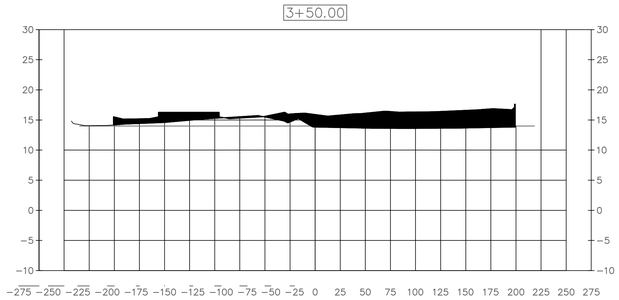
Total Volume at Station 3+00.00	
Cut Area	0.00
Fill Area	775.96
Cut Vol	0.00
Fill Vol	1407.18
Cum Cut Vol	1036.86
Cum Fill Vol	6654.28

1+50.00



Total Volume at Station 1+50.00	
Cut Area	90.66
Fill Area	523.19
Cut Vol	212.88
Fill Vol	1100.91
Cum Cut Vol	951.55
Cum Fill Vol	2901.25

3+50.00



Total Volume at Station 3+50.00	
Cut Area	9.17
Fill Area	697.69
Cut Vol	8.49
Fill Vol	1364.49
Cum Cut Vol	1045.35
Cum Fill Vol	8018.78

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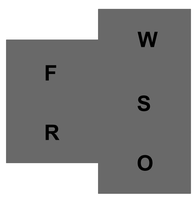

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Galveston County Road & Bridge Department Facilities

5115 Texas Highway 3
Dickinson, TX

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

TEXAS REGISTERED ENGINEERING FIRM F–003426

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER

07/03/20

MITIGATION PLAN
CUT AND FILL PROFILES

DRAWN BY	CHECKED BY
AB	JDM
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR REGULATORY REVIEW	03 JULY 2020

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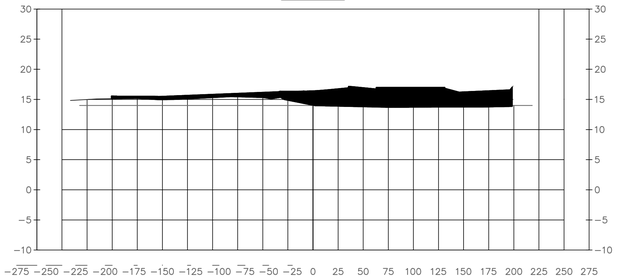
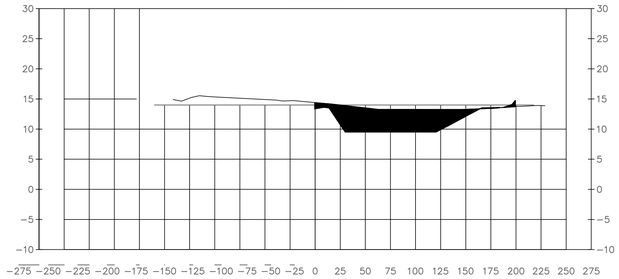
4+00.00



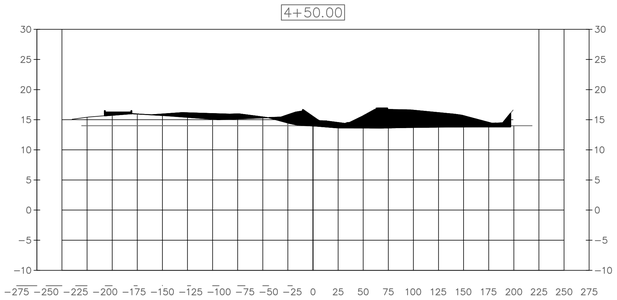
Total Volume at Station 4+00.00	
Cut Area	0.00
Fill Area	739.38
Cut Vol	8.49
Fill Vol	1330.62
Cum Cut Vol	1053.84
Cum Fill Vol	9349.40

6+00.00



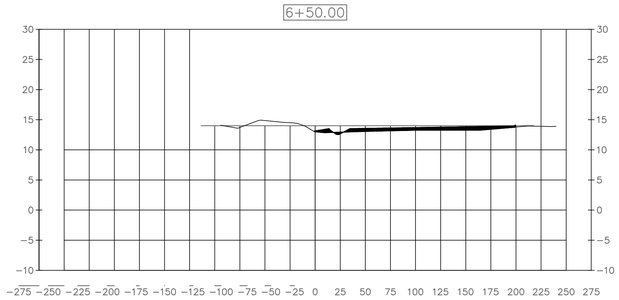
Total Volume at Station 6+00.00	
Cut Area	488.58
Fill Area	4.76
Cut Vol	1062.08
Fill Vol	9.82
Cum Cut Vol	4401.66
Cum Fill Vol	10948.65

4+50.00



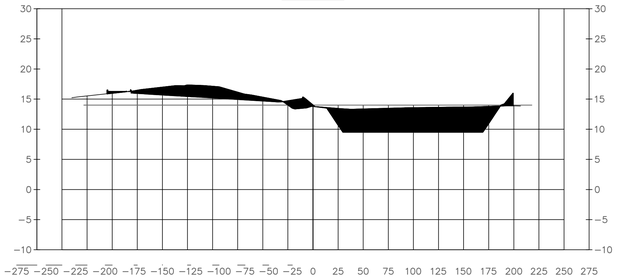
Total Volume at Station 4+50.00	
Cut Area	74.71
Fill Area	438.61
Cut Vol	69.18
Fill Vol	1090.73
Cum Cut Vol	1123.02
Cum Fill Vol	10440.13

6+50.00



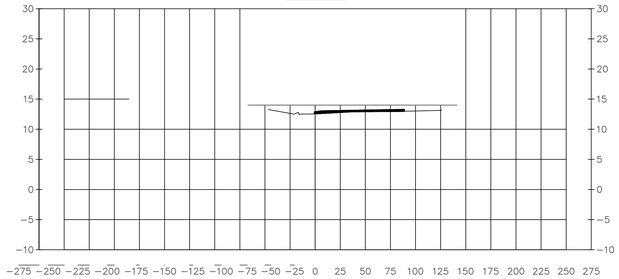
Total Volume at Station 6+50.00	
Cut Area	2.74
Fill Area	80.11
Cut Vol	454.92
Fill Vol	78.58
Cum Cut Vol	4856.58
Cum Fill Vol	11027.22

5+00.00



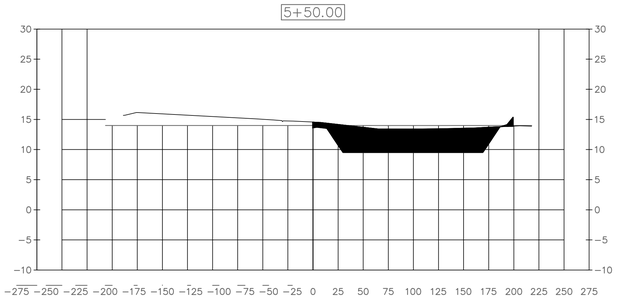
Total Volume at Station 5+00.00	
Cut Area	830.35
Fill Area	47.07
Cut Vol	838.02
Fill Vol	449.70
Cum Cut Vol	1961.04
Cum Fill Vol	10889.83

7+00.00



Total Volume at Station 7+00.00	
Cut Area	0.00
Fill Area	25.36
Cut Vol	2.53
Fill Vol	97.65
Cum Cut Vol	4859.11
Cum Fill Vol	11124.88

5+50.00



Total Volume at Station 5+50.00	
Cut Area	658.47
Fill Area	5.85
Cut Vol	1378.53
Fill Vol	49.00
Cum Cut Vol	3339.58
Cum Fill Vol	10938.82

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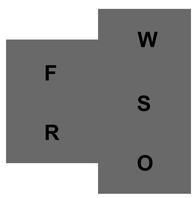

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

TEXAS REGISTERED ENGINEERING FIRM F–003426

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER

07/03/20

MITIGATION PLAN
CUT AND FILL PROFILES

DRAWN BY	CHECKED BY
AB	JDM
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR REGULATORY REVIEW	03 JULY 2020

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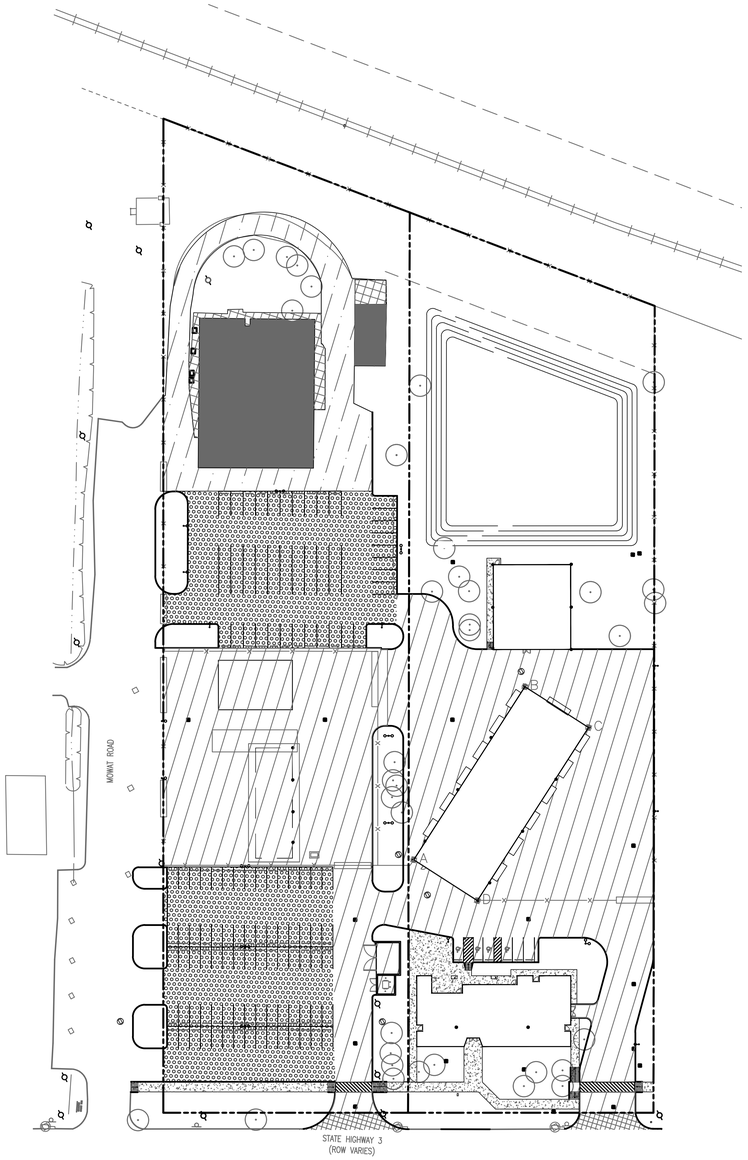
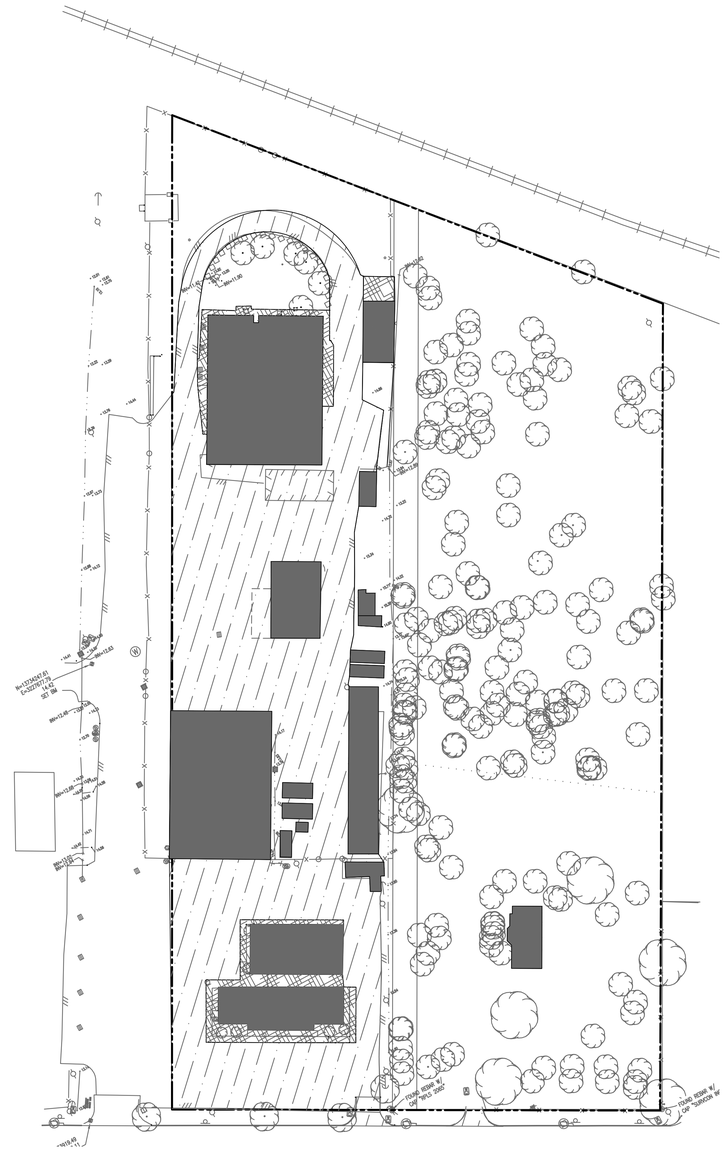
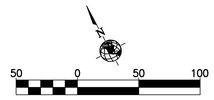


PROPOSED CONDITIONS



EXISTING CONDITIONS



SCALE: 1"=50'

HATCH LEGEND

PROPOSED DEVELOPMENT

- PROPOSED SIDEWALK.
- PROPOSED BUILDING.
- PROPOSED PAVEMENT.
- PROPOSED DRIVEWAY ENTRANCE.
- PROPOSED TRUE-GRID PRO PLUS

EXISTING DEVELOPMENT

- EXISTING SIDEWALK.
- EXISTING BUILDING.
- EXISTING PAVEMENT.
- EXISTING GREEN AREA.

Tract	293,668	sf
	6.74	ac
Total	**293,668**	**sf**
	6.74	**ac**

Existing Conditions

Impervious Area sf	ac		Pervious Area sf	ac
48,803	1.12	Building	**157,862**	**3.62**
82,229	1.89	Paving Concrete		
3,626	0.08	Sidewalk		
1,148	0.03	Driveway		
135,806	**3.12**			

46% Impervious 54% Pervious

Proposed Conditions

Impervious Area sf	ac		Pervious Area sf	ac	
27,055	0.62	Proposed Buildings	45,212	1.04	True Grid
7,097	0.16	Proposed Sidewalks	48,484	1.11	Proposed Green Area
27,947	0.64	Detention Pond	53,198	1.21	Existing area not in scope
83,691	1.92	Proposed Pavement			
1,419	0.03	Driveway	**146,894**	**3.36**	
147,209	**3.38**				

50% Impervious 34% Pervious

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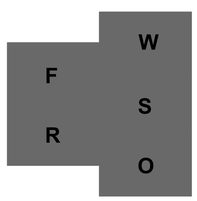

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PROFESSIONAL ENGINEER

07/03/20

IMPERVIOUS AREAS
(EXISTING & PROPOSED)

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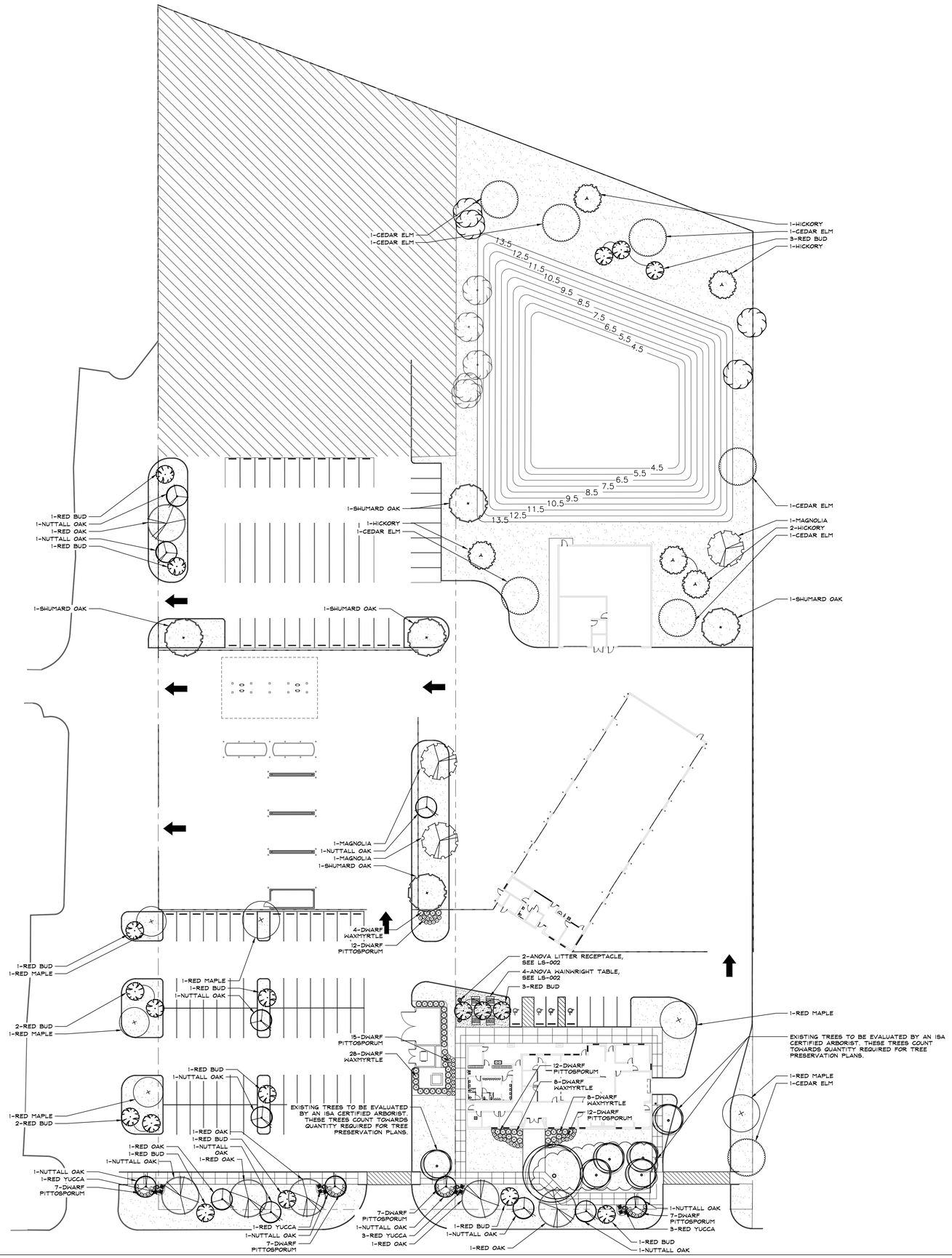

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Galveston County Road & Bridge Department Facilities

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Dickinson, Texas 77539

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REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

REGISTERED LANDSCAPE ARCHITECT
ALLEN T. GOEM
No. 2642
STATE OF TEXAS

"For regulatory approval, not for construction."

06/26/2020

LANDSCAPE PLAN

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ISSUE FOR PERMIT	26 JUNE 2020

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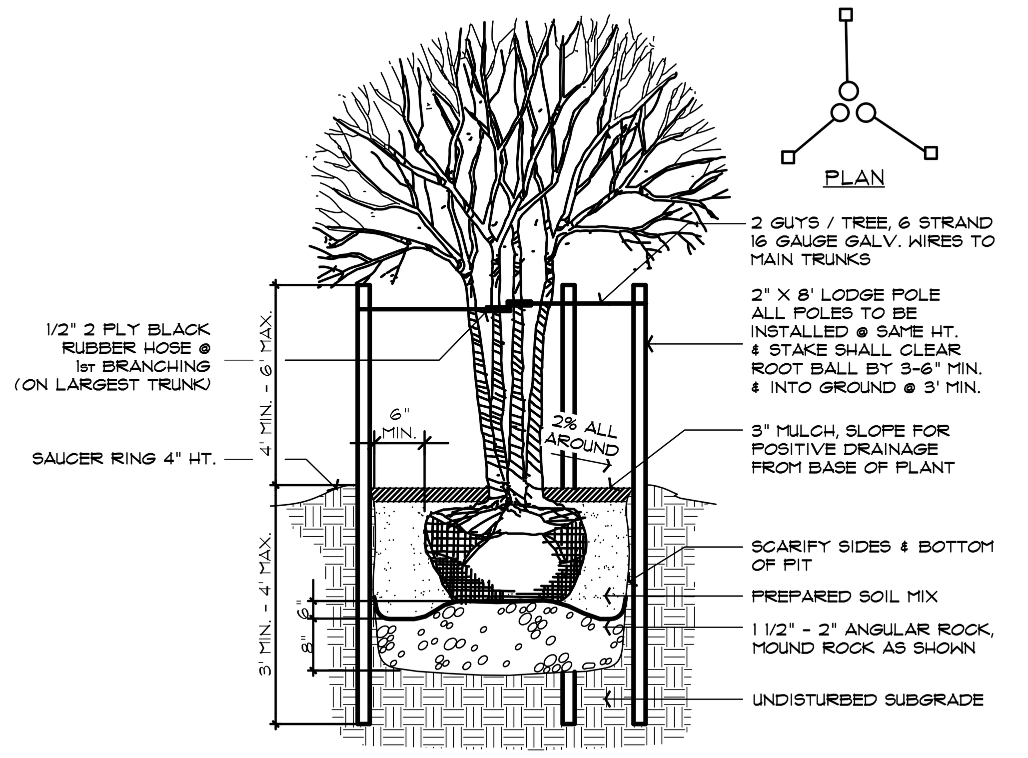
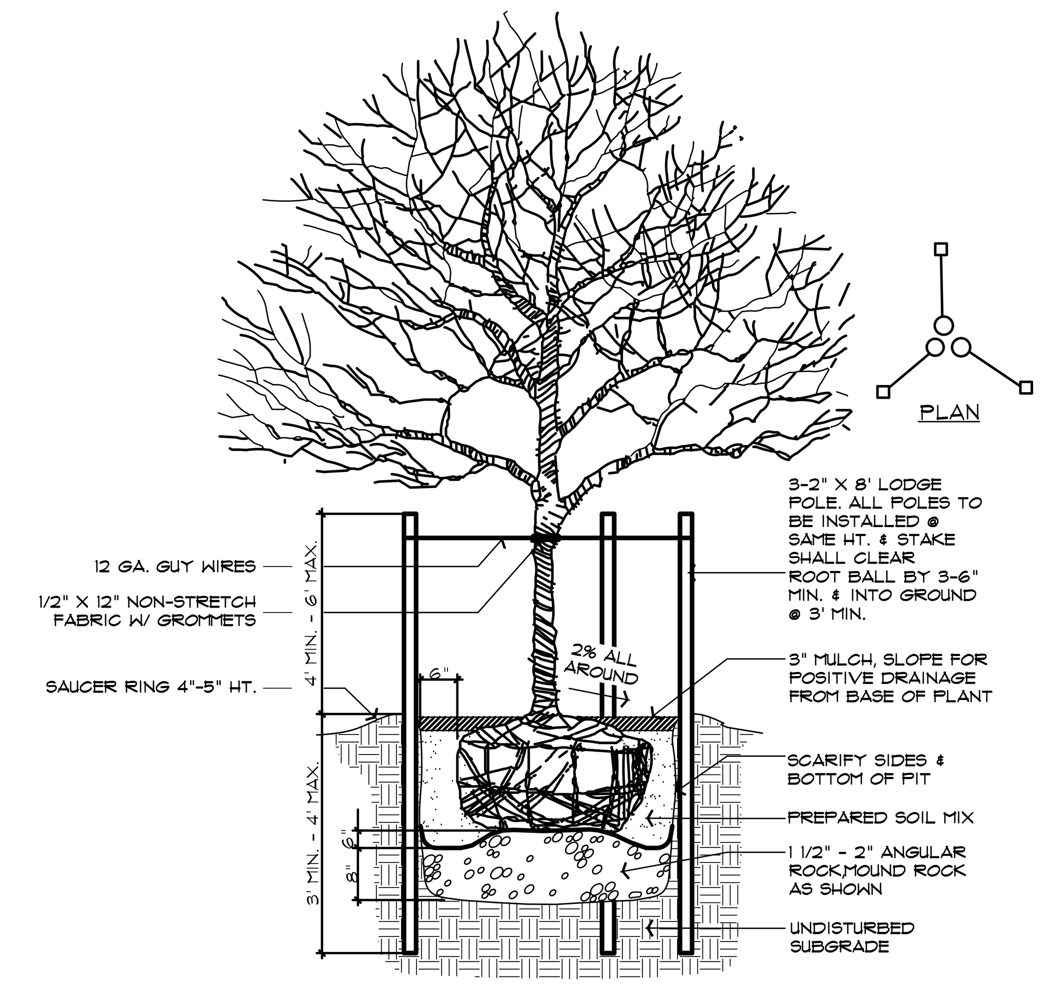
DATE STAMP: Wednesday, June 24, 2020 11:33:07 AM

MATERIALS SCHEDULE

PLANT QTY.	COMMON NAME / BOTANICAL NAME	SYMBOL	SIZE/ CALIPER	COMMENTS
	TREES			
19	Texas Red Bud Cercis canadensis 'Texensis'		30 GAL.	CONTAINER GROWN & WELL BRANCHED.
6	Red Oak Quercus rubra		30 GAL.	MULTIPLE TRUNKS, MIN. 3-5 CANES, 1-1/2" CAL. MIN., MATCHING, CONTAINER GROWN, FULL
6	Red Maple Acer rubrum		30 GAL.	CONTAINER GROWN & WELL BRANCHED.
3	Southern Magnolia Magnolia grandiflora		30 GAL.	CONTAINER GROWN & WELL BRANCHED.
5	Texas Hickory Carya texana		30 GAL.	MULTIPLE TRUNKS, MIN. 3-5 CANES, 1-1/2" CAL. MIN., MATCHING, CONTAINER GROWN, FULL
7	Cedar Elm Ulmus crassifolia		30 GAL.	MULTIPLE TRUNKS, MIN. 3-5 CANES, 1-1/2" CAL. MIN., MATCHING, CONTAINER GROWN, FULL
5	Shumard Oak Quercus shumardii		30 GAL.	CONTAINER GROWN & WELL BRANCHED.
13	Nuttall Oak Quercus texana		30 GAL.	CONTAINER GROWN & WELL BRANCHED.
	SHRUBS			
12	Red Yucca Hesperaloe parvifolia		5 GAL.	PLANT 30" O.C., FULL, FLOWERING.
48	Dwarf Waxmyrtle Myrica cerifera 'Don's Dwarf'		3 GAL.	PLANT 30" O.C., FULL.
64	Dwarf Pittosporum Pittosporum tobira 'Wheeleri'		3 GAL.	PLANT 30" O.C., FULL.
XX SF	Common Bermuda - Hydromulch Cynodon dactylon			TO BE SEEDED 2 LBS / 1,000 SF., CONTRACTOR TO FIELD VERIFY QUANTITY OF SEED REQUIRED. INSTALL 2' STRIP SOD AT THE BACK OF CURB AND ALONG BOTH SIDES OF ALL SIDEWALKS
XX SF	Common Bermuda - Strip Sod Cynodon dactylon			HEALTHY CONDITION, GREEN, VIGOROUS, AND WEED FREE. STRIP SOD TO BE PLACED EDGE TO EDGE FOR COMPLETE COVERAGE.

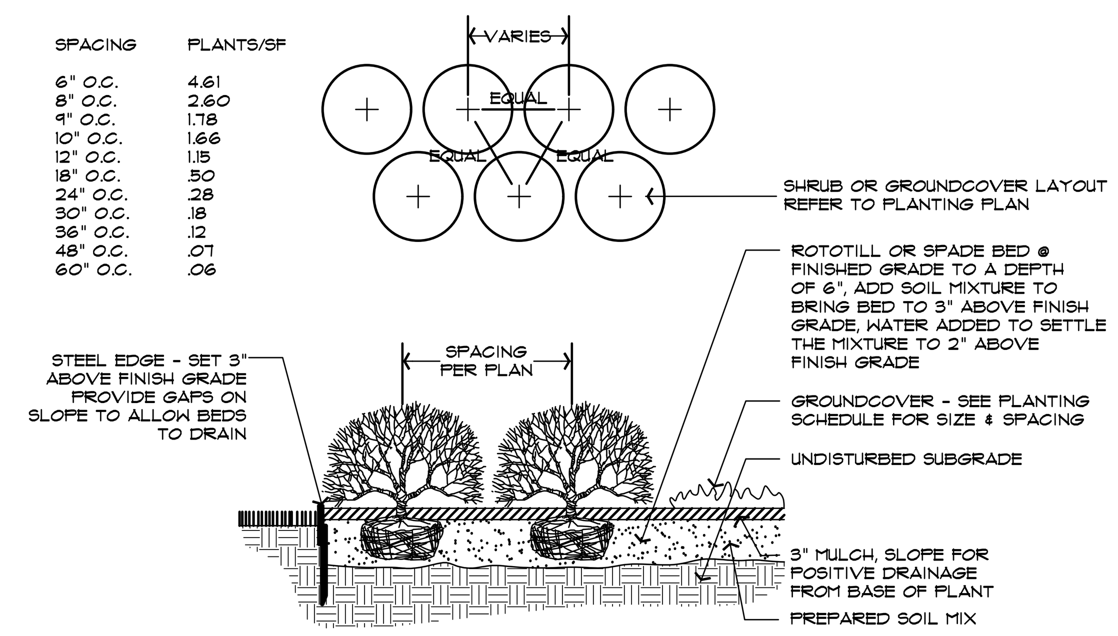


1 MULTI-TRUNK TREE PLANTING & STAKING
SCALE: NTS



2 CANOPY TREE PLANTING & STAKING
SCALE: NTS

SPACING	PLANTS/SF
6" O.C.	4.61
8" O.C.	2.60
9" O.C.	1.78
10" O.C.	1.66
12" O.C.	1.15
18" O.C.	.50
24" O.C.	.28
30" O.C.	.18
36" O.C.	.12
48" O.C.	.07
60" O.C.	.06



3 SHRUB/GROUNDCOVER PLANTING
SCALE: NTS

ANOVA

211 North Lindbergh Blvd.
St. Louis, MO 63141
800.231.1327 tel.| 314.754.0835 fax
specify@anovafurnishings.com
anovafurnishings.com

RCPWT63 — Wainwright 6' Picnic Table Set

6' picnic table plus two 6' flat benches with recycled plastic table top and seat planks, portable or surface mount steel frame and legs

Material
The table is 72" in length and comes with two independent 72" long benches. The table top and seats are made of 1.5" x 3.5" (2" x 4" nominal dimensions) recycled plastic planks. The center plank of the table top is 1.5" x 5.75" (2" x 6" nominal dimensions) and features a 2" diameter umbrella hole. The table top is designed to support 100 lbs. per square foot and the sets will support 200 lbs. per linear foot.
The frames are made of .38" thick x 4" wide formed steel. Wide 4" steel band wraps the table and bench ends and joins to the heavy-duty frame. Table and benches are designed to be portable for flexibility in placement or surface mounted using pre-drilled .50" diameter holes in feet to prevent movement; mounting hardware is not included.
The planks are made of 95% recycled content by weight and are impervious to moisture and corrosion, do not require the application of sealants or preservatives, and will never need painting for staining throughout the product's life.

Finish
Fade-resistant, powder coated steel frame features a state-of-the-art primer proven to prevent rusting. Treated components exceed the industry standard by 34% in testing by independent sources.

Color
See website or sales representative for color choices.

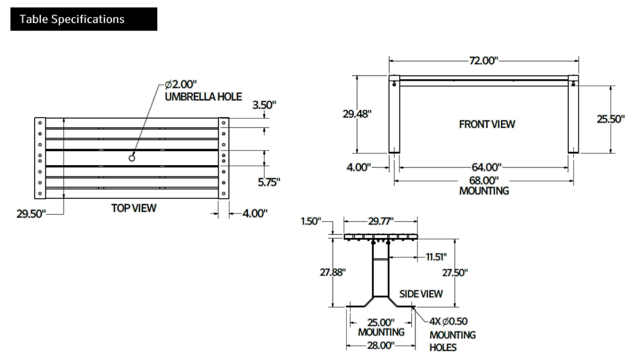
Assembly
The table set requires some assembly. Stainless steel assembly hardware is included.

Maintenance
The product is virtually maintenance-free and requires only periodic cleaning with a sponge and a solution of mild detergent and water to remove surface dirt. Do not clean with solvent or petroleum base products.

Warranty
20-year limited structural warranty on recycled plastic from the date of purchase. See full details on multi-year warranties for components at www.anovafurnishings.com/warranty.aspx.

Accessories
9' Premium Fabric Color Umbrella 9LPU-CPC
9' Standard Fabric Color Umbrella 9LPU-CSC
11" Dia. Umbrella Stand UB11
15" Dia. Umbrella Stand UB15

Table Specifications



1
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A ANOVA - WAINWRIGHT 6' PICNIC TABLE
SCALE: NTS

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LEX45 — Exposition Receptacle/Recycler with Side Door

45-gallon steel slat receptacle with side door, bonnet top, plastic liner, rubber feet and optional decals (when specified)

Material
The receptacle is 43.95" tall and is composed of heavy-duty .25" thick steel front and back panels and 12-gauge steel side panels with a .75" gap horizontal slotted pattern. The front panel opens on a continuous geared hinge and features a hidden gate lock that allows the door to be latched or locked for tamper resistance. The receptacle features a built-in bonnet top with 7.83" tall by 26.25" wide front and back openings and 4.86" tall by 22" wide openings on the sides.
Optional decals are available: "Bottles/Cans" with recycling logo, "Mixed Recycling" with recycling logo, "Paper" with recycling logo or "Trash" decal—custom decals also available. Specify black or white lettering. Decal placement will be centered at the top of the door. Decals will be factory installed and must be specified at the time of order.
The receptacle is designed to be portable for flexibility in placement or surface mounted using pre-drilled holes inside base to prevent movement. The rubber feet are adjustable to assist in leveling the receptacle. The reusable plastic liner is made of high-density polyethylene. Mounting hardware is not included.

Finish
Fade-resistant, powder coated steel is protected by a state-of-the-art primer proven to prevent rusting. Treated components exceed the industry standard by 34% in testing by independent sources.

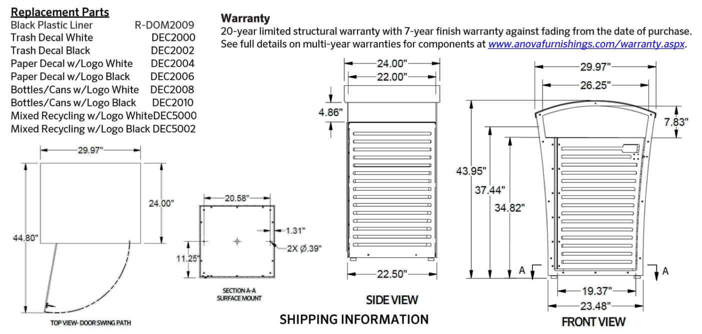
Color
See website or sales representative for color choices.

Assembly
The receptacle ships fully assembled and ready for use.

Maintenance
The product is virtually maintenance-free and requires only periodic cleaning with a sponge and a mild detergent and water solution to remove surface dirt. Do not clean with solvent or petroleum base products.

Warranty
20-year limited structural warranty with 7-year finish warranty against fading from the date of purchase. See full details on multi-year warranties for components at www.anovafurnishings.com/warranty.aspx.

Replacement Parts
Black Plastic Liner R-DOM2009
Trash Decal White DEC2000
Trash Decal Black DEC2002
Paper Decal w/Logo White DEC2004
Paper Decal w/Logo Black DEC2006
Bottles/Cans w/Logo White DEC2008
Bottles/Cans w/Logo Black DEC2010
Mixed Recycling w/Logo White DEC5000
Mixed Recycling w/Logo Black DEC5002



SHIPPING INFORMATION

Unit Weight	Unit Shipping Wt. UPS	Unit Shipping Wt. Truck (1+ Units)	Unit Ship Size w/Pallet	Max Units Per Pallet	Pallet Size/Wt. (32" x 48")	Total No. Pkgs.	Shipping Class
198 lbs.	N/A	205 lbs./unit	39 cu. ft.	1	50 lbs.	1	125

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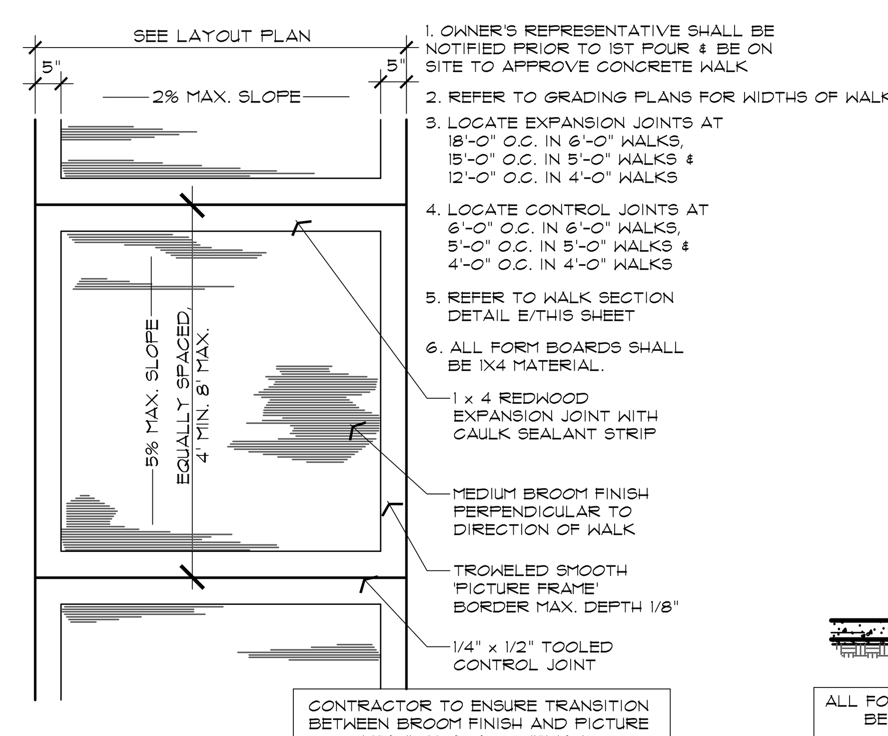
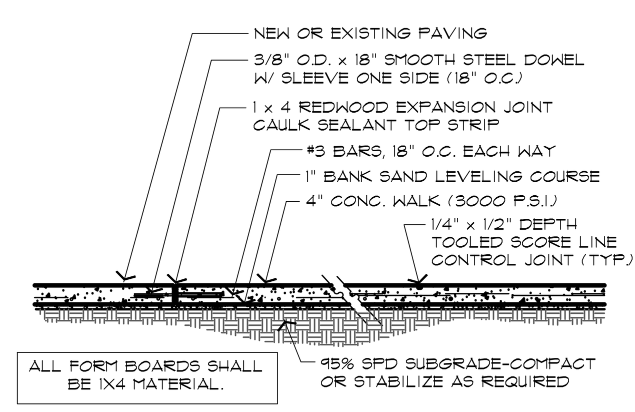
F ANOVA - LEX45 EXPOSITION RECEPTACLE
SCALE: NTS

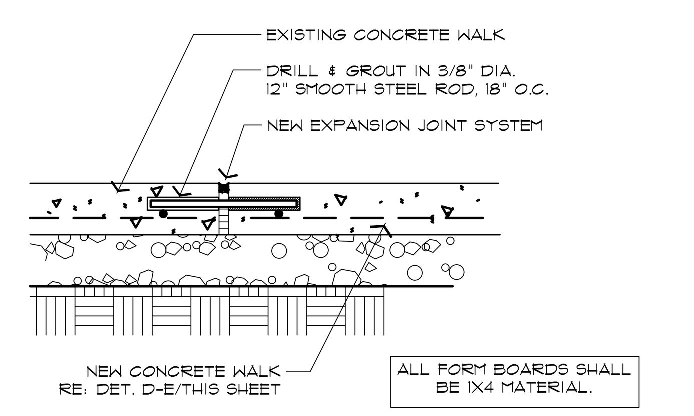


1. OWNER'S REPRESENTATIVE SHALL BE NOTIFIED PRIOR TO 1ST POUR & BE ON SITE TO APPROVE CONCRETE WALK
2. REFER TO GRADING PLANS FOR WIDTHS OF WALK
3. LOCATE EXPANSION JOINTS AT 18'-0" O.C. IN 6'-0" WALKS, 15'-0" O.C. IN 5'-0" WALKS & 12'-0" O.C. IN 4'-0" WALKS
4. LOCATE CONTROL JOINTS AT 6'-0" O.C. IN 6'-0" WALKS, 5'-0" O.C. IN 5'-0" WALKS & 4'-0" O.C. IN 4'-0" WALKS
5. REFER TO WALK SECTION DETAIL E/THIS SHEET
6. ALL FORM BOARDS SHALL BE 1X4 MATERIAL.

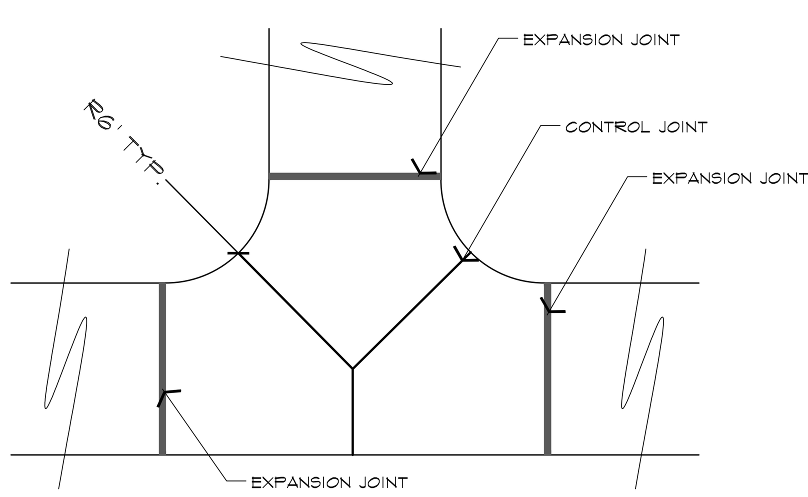
D CONCRETE WALK
SCALE: NTS



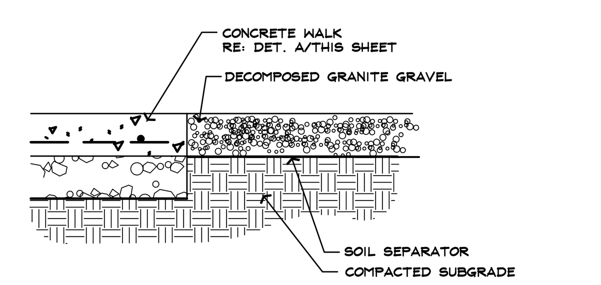
E CONCRETE WALK SECTION
SCALE: NTS



F NEW CONC. WALK / EXISTING WALK CONNECTION
SCALE: NTS



G CONCRETE WALK CONNECTION
SCALE: NTS



X CONC. WALK / DECOMPOSED GRANITE CONNECTION
SCALE: NTS

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Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
REGISTERED LANDSCAPE ARCHITECT ADAM P. McGOVERN 2604 STATE OF TEXAS
"For regulatory approval, NOT for construction."
06/26/2020

LANDSCAPE DETAILS & SCHEDULE

DRAWN BY	CHECKED BY
EHRA	VG
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

LS-002
SHEET NUMBER

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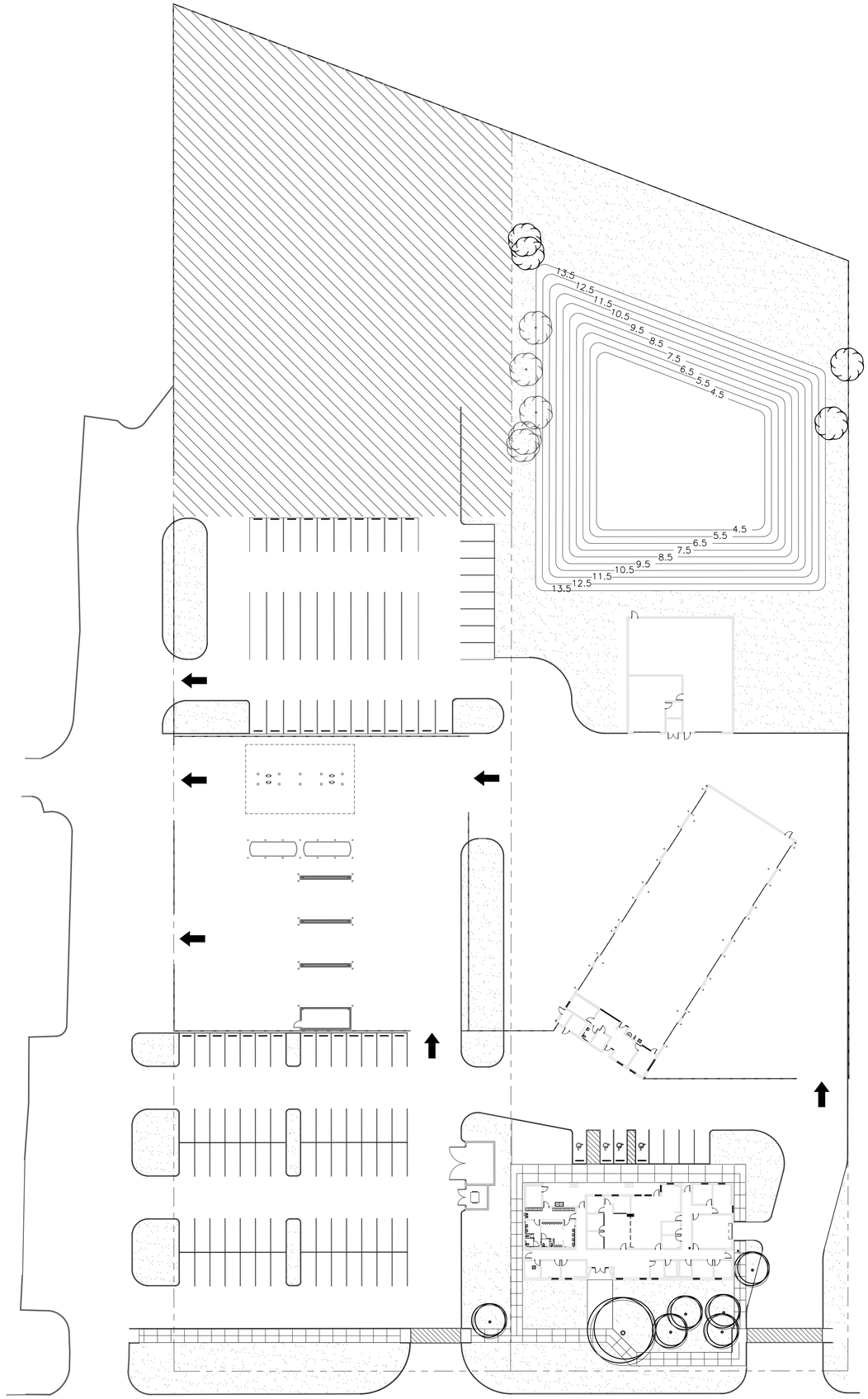
DATE STAMP: Wednesday, June 24, 2020 1:08:23 PM



Tree Type	Caliper / Inches	Treatment	In. Removed
Total Trees	35	Qualifying Trees Removed	22
Total Inches	458	Significant Trees Removed	2
Qualifying Trees	31	Qualifying Inches Removed	262
Significant Trees	4	Significant Inches Removed	44
Qualifying Inches	370	Qualifying Trees Saved	9
Significant Inches	88	Significant Trees Saved	2
25% Threshold Qualifying Trees	8	% Qualifying Trees Saved	29.03%
60% Threshold Significant Trees	3	% Significant Trees Saved	50.00%
Significant Inches to Be Replaced at accelerated rate (1.3 x inches)		32	

LEGEND:

TREE TO BE SAVED

4' 0 4' 8' 16'

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Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

REGISTERED LANDSCAPE ARCHITECT
ELIZABETH HOGAN
No. 2903
STATE OF TEXAS

"For regulatory approval, not for construction."

06/26/2020

TREE PRESERVATION PLAN

DRAWN BY	CHECKED BY
EHRA	VG
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

LS-003
SHEET NUMBER

FILE PATH: Q:\Landscape Architecture Reference\Knudson Work\Projects\19-21580 PAGE_Galveston Co R&M Facility\04 PROJECT DESIGN\07 CD\01 DRAWING FILES\GC-RBF 95% CD.dwg
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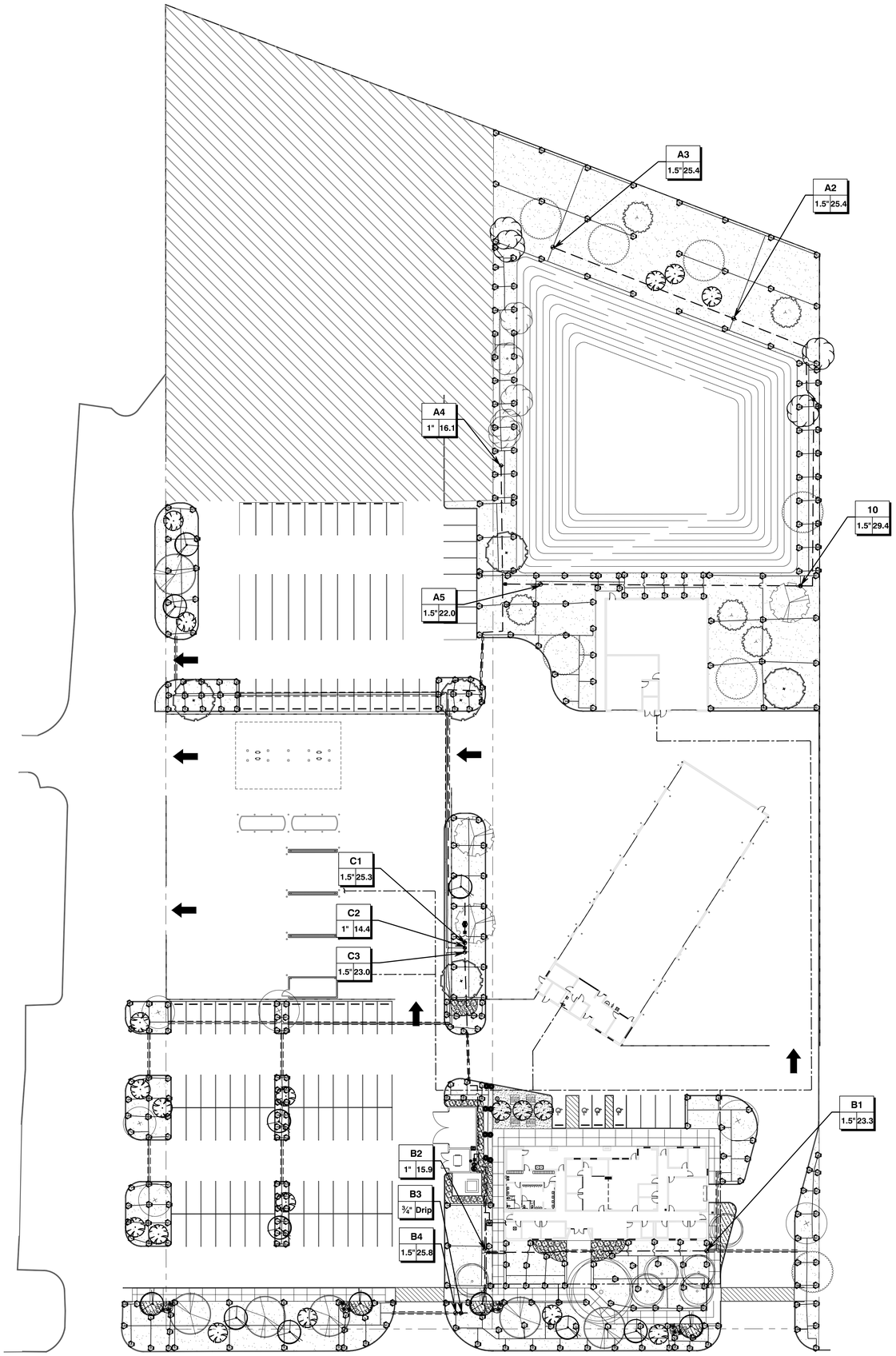

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL
	Hunter MP Rotator Strip 515 Series
	Hunter MP800 SR PROS-04-PRS40-CV
	Hunter MPCorner PROS-04-PRS40-CV
	Hunter MP1000 PROS-04-PRS40-CV
	Hunter MP2000 PROS-04-PRS40-CV
	Hunter MP3000 PROS-04-PRS40-CV
	Hunter PCN50-1/2 GPM (two per tree) *Not Shown

SYMBOL	MANUFACTURER/MODEL
	Hunter ICZ-101-LF 1" Drip Valve
	Area to Receive Dripline Hunter HDL-06-18

SYMBOL	MANUFACTURER/MODEL
	Hunter ICV-151G-FS 1.5" Zone Valve Hunter ICV-101G-FS 1" Zone Valve
	Hunter ICZ -101-LF-40 Drip Valve
BF	Febco 765 1" Pressure Vacuum Breaker
	Hunter HQ-5 Quick Coupler Valve
RS	Hunter Rain-Clik Sensor RAIN-CLIK
C	Hunter PC-4-00 Controller w/ PCM-900 Module
	Irrigation Lateral Line: PVC Class 200 SDR 21
	Irrigation Mainline: 1.5" PVC Class 200 SDR 21
	Pipe Sleeve: PVC Schedule 40

Valve Callout

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Galveston County
Road & Bridge Department Facilities

5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

REGISTERED LANDSCAPE ARCHITECT
ALLEN T. GRAHAM
No. 2472
STATE OF TEXAS

"For regulatory approval, not for construction."

06/26/2020

IRRIGATION PLAN

DRAWN BY	CHECKED BY
EHRA	VG
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

IR-001
SHEET NUMBER

FILE PATH: Q:\Landscape Architecture Reference\Knudson Work\Projects\19-21580 PAGE_Galveston Co R&B Facility\04 PROJECT DESIGN\07 CD\01 DRAWING FILES_GC-RBF 95% IRR.dwg
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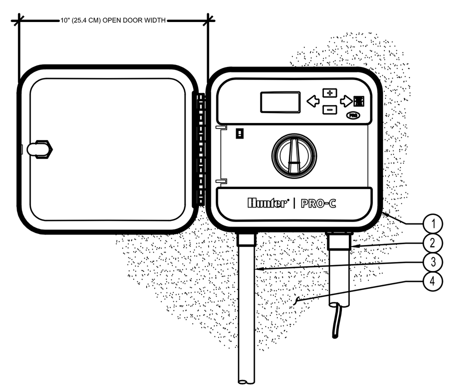
DATE STAMP: Tuesday, June 9, 2020 2:21:27 PM

IRRIGATION NOTES

THESE NOTES ARE PRESENTED AS A "SUMMARY" OF THE WRITTEN SPECIFICATIONS ISSUED FOR THE PROJECT. REFER TO THE WRITTEN SPECIFICATIONS, IF INCLUDED, FOR ADDITIONAL DETAIL AND FULL PROJECT REQUIREMENTS.

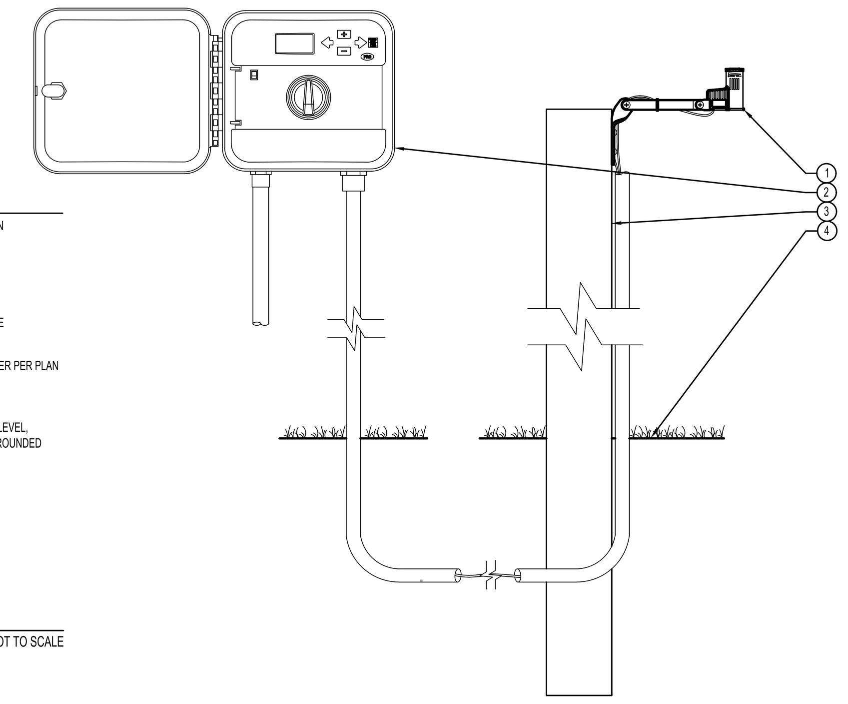
1. THE IRRIGATION SYSTEM DESIGN IS BASED ON 70 STATIC PRESSURE (PSI) AND MAXIMUM FLOW OF 36 GALLONS PER MINUTE(GPM). THE IRRIGATION CONTRACTOR SHALL VERIFY THE PRESSURE AND FLOW PRIOR TO COMMENCEMENT OF CONSTRUCTION. REPORT TO THE OWNER OR OWNER'S REPRESENTATIVE ANY DIFFERENCES BETWEEN THE PRESSURE INDICATED AND THE ACTUAL PRESSURE READING AT THE POINT OF CONNECTION.
2. THE PIPE ROUTING SHOWN IS DIAGRAMMATIC ONLY. ALL PIPING, VALVES, HEADS, ETC SHOWN WITHIN PAVED AREAS ARE FOR DESIGN CLARIFICATION ONLY. PRESSURE LOSS CALCULATIONS ARE BASED ON THE PIPE ROUTING AS SHOWN. SIGNIFICANT DEVIATIONS FROM THE ROUTING SHOWN SHOULD BE AVOIDED.
3. DO NOT WILLINGLY INSTALL THE SPRINKLER SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES, OR DIFFERENCES IN THE DIMENSIONS OF THE CONSTRUCTED AREAS EXIST THAT MIGHT NOT HAVE BEEN CONSIDERED IN THE IRRIGATION DESIGN OR CHANGES HAVE OCCURRED IN THE SITE PLAN. SUCH OBSTRUCTIONS OR DIFFERENCES SHOULD BE BROUGHT TO THE ATTENTION OF THE IRRIGATION DESIGNER AND THE GENERAL CONTRACTOR IMMEDIATELY. SHOULD THE IRRIGATION CONTRACTOR PROCEED WITH THE INSTALLATION WITHOUT NOTIFYING THE IRRIGATION DESIGNER AND THE GENERAL CONTRACTOR, THE IRRIGATION CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ANY AND ALL REVISIONS / RECONSTRUCTION NECESSARY.
4. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO FAMILIARIZE HIMSELF / HERSELF WITH THE SITE, ALL GRADE DIFFERENCES, LOCATIONS OF WALLS, AND INSTALLED UTILITIES. COORDINATE WORK WITH THE OWNER OR GENERAL CONTRACTOR AND OTHER SUBCONTRACTORS FOR THE LOCATION AND INSTALLATION OF PIPE SLEEVES UNDERNEATH PAVEMENT AND THROUGH WALLS.
5. DUE TO THE SCALE OF THE DRAWING, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, JOINTS, ETC. WHICH MAY BE REQUIRED. THE IRRIGATION CONTRACTOR SHALL CAREFULLY INVESTIGATE THE STRUCTURAL AND FINISHED CONDITIONS AFFECTING ALL OF HIS/HER WORK AND PLAN HIS/HER WORK ACCORDINGLY, FURNISHING SUCH FITTINGS, ETC. AS MAY BE REQUIRED TO MEET SUCH CONDITIONS. ALL WORK SHALL BE INSTALLED IN SUCH A MANNER AS TO AVOID CONFLICTS BETWEEN IRRIGATION SYSTEM COMPONENTS, LANDSCAPE PLANTING, AND ARCHITECTURAL FEATURES.
6. FLUSH ALL LINES AND HEADS PRIOR TO INSTALLING NOZZLES. ADJUST NOZZLE SPRAY ARC AND RADIUS FOR OPTIMUM PERFORMANCE TO PREVENT OVERSPRAY ONTO PAVED SURFACES OR FACE OF BUILDING AS MUCH AS POSSIBLE TO FIT THE SITE CONDITIONS. THROTTLE FLOW CONTROL AT EACH VALVE FOR OPTIMUM OPERATING PRESSURE FOR EACH ZONE.
7. ALL SPRINKLER HEADS SHALL BE SET PERPENDICULAR TO FINISHED GRADE OF THE AREA TO BE IRRIGATED UNLESS OTHERWISE NOTED.
8. WHEN VERTICAL OBSTRUCTIONS (POLES, SIGNS, TREES, HYDRANTS, ETC) INTERFERE WITH THE SPRAY PATTERN OF THE HEADS SO AS TO PREVENT PROPER COVERAGE, THE CONTRACTOR SHALL FIELD ADJUST THE SPRINKLER SYSTEM BY INSTALLING A QUARTER, THIRD, OR HALF CIRCLE HEAD AT THE SIDES OF THE OBSTRUCTION SO AS TO PROVIDE PROPER COVERAGE. ALL ADJUSTMENTS SHALL BE MADE AT NO ADDITIONAL COST.
9. USE TEFLON TAPE ON ALL MALE PIPE THREADS ON PVC PIPE, SWING JOINTS, AND VALVE ASSEMBLIES.
10. INSTALL VALVE BOXES 18-INCHES FROM AND PERPENDICULAR TO WALKS, CURBS, BUILDING, OR LANDSCAPE FEATURES. AT MULTIPLE VALVE BOX GROUPS, EACH BOX SHALL BE INSTALLED A MINIMUM OF 12-INCHES APART.
11. ALL VALVES SHALL BE PLACED IN VALVE BOXES AS SHOWN IN THE DETAILS AND ALL ELECTRICAL CONNECTIONS SHALL BE SEALED WITH WATERPROOF CONNECTORS.
12. 120-VOLT ELECTRICAL POWER AT THE CONTROLLER SHALL BE PROVIDED BY OTHERS. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO MAKE THE FINAL HOOK-UP FROM THE POWER PROVIDED TO THE CONTROLLER.
13. PROVIDE AS-BUILT DRAWINGS WITHIN 21 DAYS UPON COMPLETION OF THE IRRIGATION INSTALLATION.
14. THERE SHALL BE NO SUBSTITUTIONS OR CHANGES TO THE IRRIGATION DESIGN ALLOWED WITHOUT DIRECT, WRITTEN APPROVAL FROM THE IRRIGATION CONSULTANT OR THE LANDSCAPE ARCHITECT. CONTACT EHRA ENGINEERING FOR INFORMATION.
15. ALL SPRINKLERS, VALVES AND VALVE BOXES SHALL BE PLACED 5' AWAY FROM ANY RADIUS OF CURB AS SHOWN IN DETAILS.
16. IRRIGATION CONTRACTOR SHALL PROVIDE THE FIRST WINTERIZATION BLOW OUT. IN ADDITION, HE SHALL PROVIDE THE SPRING TURN ON. ALL NECESSARY HEAD ADJUSTMENTS SHALL BE MADE AT THAT TIME AND REPLACE OR REPAIR ANY WARRANTY ITEMS. THESE ITEMS SHALL BE INCLUDED WITH BID.
17. PROVIDE GROUNDING ALONG CONTROLLER WIRE RUN PER MANUFACTURES INSTALLATION RECOMMENDATIONS.



LEGEND:
1. IRRIGATION CONTROLLER (PRO-C) PER PLAN
2. IRRIGATION CONTROL WIRE IN CONDUIT SIZE AND TYPE PER LOCAL CODES
3. ELECTRICAL SUPPLY CONDUIT CONNECT TO POWER SOURCE, J-BOX INSIDE CONTROLLER
4. ADJACENT SURFACE TO MOUNT CONTROLLER PER PLAN

NOTE
MOUNT CONTROLLER LCD SCREEN AT EYE LEVEL, CONTROLLER SHALL BE HARD-WIRED TO GROUNDED 110 VAC POWER SOURCE

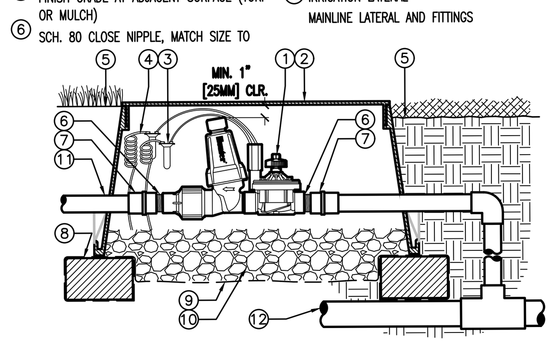
A — PRO-C - WALL MOUNT
Hunter C.PROC.01 — NOT TO SCALE



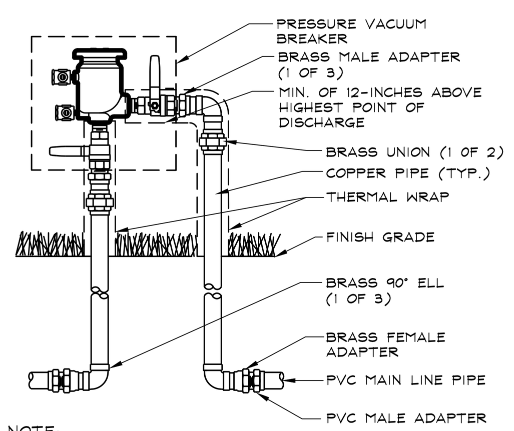
LEGEND:
1. RAIN-CLIK SENSOR
2. WALL MOUNT CONTROLLER
3. POST OR SUITABLE MOUNTING SURFACE
4. FINISHED GRADE

B — RAIN-CLIK WITH GENERIC WALL MOUNT CONTROLLER
Hunter S.RC.01 — NOT TO SCALE

LEGEND
1. HUNTER REMOTE CONTROL VALVE (ICZ) WITH FILTER REGULATOR
2. IRRIGATION VALVE BOX: HEAT STAMP LID WITH 'RCV' IN 2" LETTERS
3. WATERPROOF CONNECTORS (2)
4. 18"-24" COILED WIRE TO CONTROLLER
5. FINISH GRADE AT ADJACENT SURFACE (TURF OR MULCH)
6. SCH. 80 CLOSE NIPPLE, MATCH SIZE TO
7. VALVE
8. PVC SLIP X FPT ADAPTOR
9. BRICK SUPPORTS (4)
10. FILTER FABRIC – WRAP TWICE AROUND BRICK SUPPORTS
11. 3/4" WASHED GRAVEL – 4" MIN. DEPTH
12. IRRIGATION LATERAL
MAINLINE LATERAL AND FITTINGS



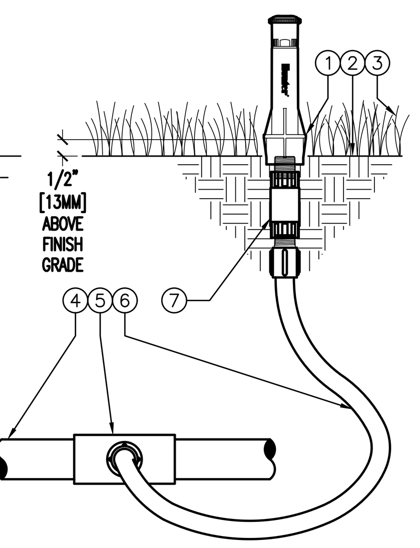
C — DRIP CONTROL ZONE KIT (ICZ-101-LF)
Hunter V.ICZ.01 — NO SCALE



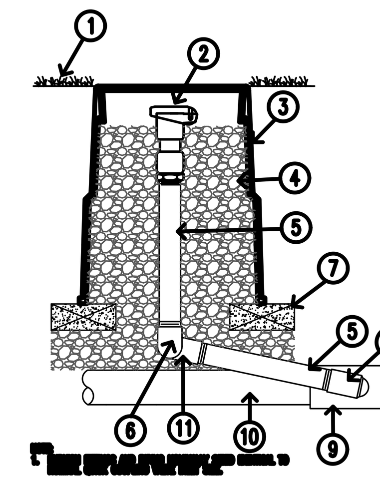
NOTE:
1. INSTALL BACK FLOW PREVENTER AS REQUIRED BY LOCAL CODES AND HEALTH DEPARTMENT. VERIFY LOCAL REQUIREMENTS PRIOR TO INSTALLATION.
2. INSTALL "GUARDSHACK" ENCLOSURE BY BACKFLOW PREVENTION DEVICE ENCLOSURES. ENCLOSURE TO BE DETERMINED BY SIZE OF BACKFLOW PREVENTER.

PRESSURE VACUUM BREAKER-
FEBCO #765 PVB — NTS

LEGEND
1. HUNTER SPRAY BODY (PROS-00-PRS30/40), NOZZLE PER PLAN
2. FINISHED GRADE
3. ADJACENT LANDSCAPE
4. LATERAL PIPE PER PLAN
5. LATERAL FITTING PER PLAN
6. FLEX TUBING
7. CHECK VALVE (HUNTER HCV)

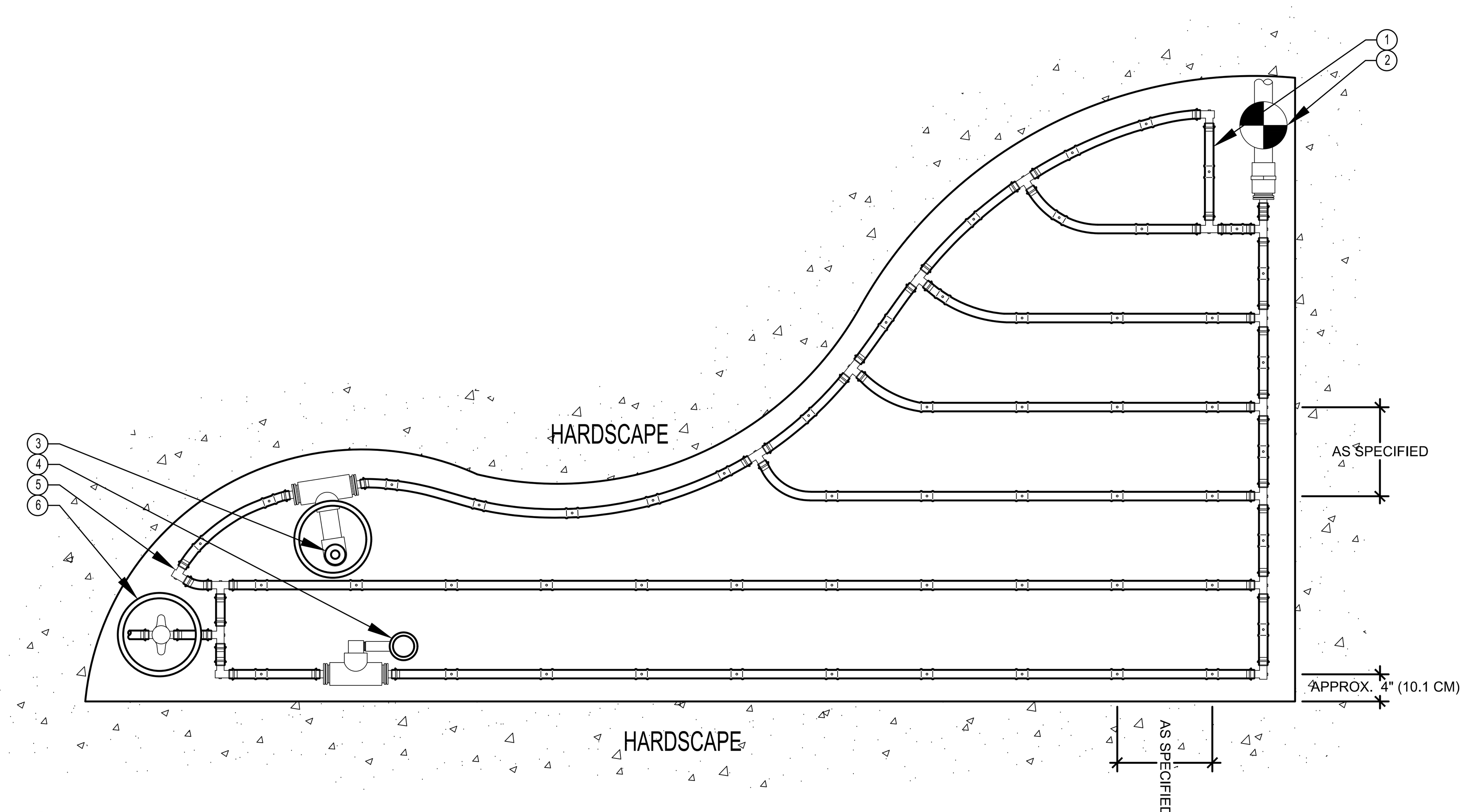


E — SHRUB ADAPTER (PROS-00-PRS30/40) WITH FLEX TUBING AND CHECK VALVE
Hunter SB.PRO.10 — NO SCALE



1. FINISH GRADE
2. QUICK-COUPLING VALVE ONE-PIECE BODY WITH 1 INCH INLET AND 1 1/4 INCH KEY OUTLET
3. VALVE BOX WITH COVER
4. 3/4" MINUS WASHED GRAVEL
5. PVC SCH 80 NIPPLE-1" (LENGTH AS REQUIRED)
6. PVC SCH 40 STREET ELL-1"
7. BRICK SUPPORTS (2)
8. PVC SCH 40 STREET ELL-1"
9. PVC SCH 40 TEE OR ELL X 1"
10. PVC MAINLINE PIPE
11. PVC SCH 40 ELL-1"

F — HQ5 QUICK COUPLING VALVE
SCALE: 1.5" = 1'-0" Hunter IRRIGATION DETAIL



LEGEND:
1. HUNTER DRIPLINE PER PLAN
2. DRIP CONTROL ZONE KIT PER PLAN
3. AIR RELIEF VALVE IN VALVE BOX
4. ECO-INDICATOR ON SWING ARM
5. PLD OR PLD-LOCK FITTING (TYP.)
6. FLUSH POINT (PLD-BV) IN SUBTERRANEAN BOX PER PLAN

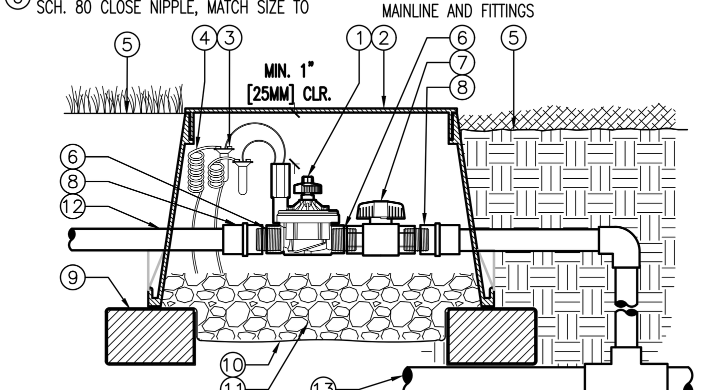
NOTES
AIR RELIEF VALVE (PLD-AVR) INSTALLED IN VALVE BOX AT OPTIMAL HIGHEST POINT FROM CONTROL ZONE KIT. MULTIPLE AIR RELIEF VALVES MAY BE NEEDED TO ACCOMMODATE DIFFERENCES IN GRADE.

ECO-INDICATOR TO BE INSTALLED AT OPTIMAL FURTHEST POINT FROM CONTROL ZONE KIT IN CLEAR VIEW WHEN POPPED UP.

FLUSH POINT TO BE INSTALLED AT OPTIMAL FURTHEST POINT FROM CONTROL ZONE KIT TO ALLOW FOR MAXIMUM DEBRIS FLUSH IN SYSTEM.

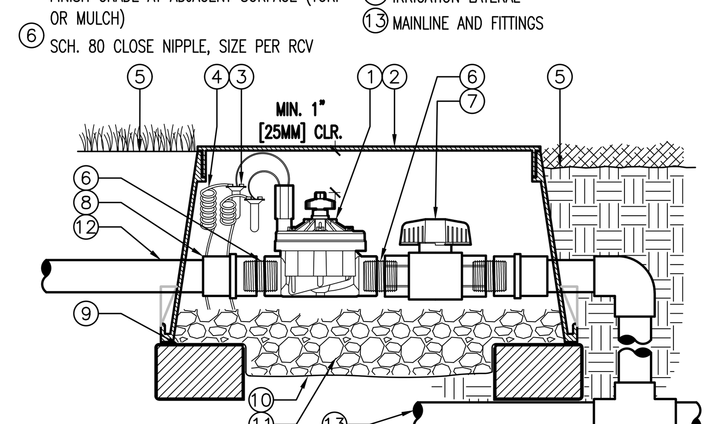
A — HUNTER DRIPLINE - IRREGULAR PLANTED AREA
Hunter HM.HDL.02 — NOT TO SCALE

LEGEND
1. HUNTER REMOTE CONTROL VALVE (ICV) WITH FLOW CONTROL
2. IRRIGATION VALVE BOX: HEAT STAMP LID WITH 'RCV' IN 2" LETTERS
3. WATERPROOF CONNECTORS (2)
4. 18"-24" COILED WIRE TO CONTROLLER
5. FINISH GRADE AT ADJACENT SURFACE (TURF OR MULCH)
6. SCH. 80 CLOSE NIPPLE, MATCH SIZE TO
7. VALVE
8. ISOLATION VALVE, SIZE AND TYPE PER PLAN
9. PVC SLIP X FPT ADAPTOR
10. BRICK SUPPORTS (4)
11. FILTER FABRIC – WRAP TWICE AROUND BRICK SUPPORTS
12. 3/4" WASHED GRAVEL – 4" MIN. DEPTH
13. IRRIGATION LATERAL
MAINLINE AND FITTINGS



G — IN-LINE VALVE (ICV-101G) WITH ISOLATION VALVE
Hunter V.ICV.03 — NO SCALE

LEGEND
1. HUNTER REMOTE CONTROL VALVE (ICV) WITH FLOW CONTROL
2. IRRIGATION VALVE BOX: HEAT STAMP LID WITH 'RCV' IN 2" LETTERS
3. WATERPROOF CONNECTORS (2)
4. 18"-24" COILED WIRE TO CONTROLLER
5. FINISH GRADE AT ADJACENT SURFACE (TURF OR MULCH)
6. SCH. 80 CLOSE NIPPLE, SIZE PER RCV
7. ISOLATION VALVE, SIZE AND TYPE PER PLAN
8. PVC SLIP X FPT ADAPTOR
9. BRICK SUPPORTS (4)
10. FILTER FABRIC – WRAP TWICE AROUND BRICK SUPPORTS
11. 3/4" WASHED GRAVEL – 4" MIN. DEPTH
12. IRRIGATION LATERAL
13. MAINLINE AND FITTINGS



H — IN-LINE VALVE (ICV-151G) WITH ISOLATION VALVE
Hunter V.ICV.07 — NO SCALE

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Landscape Architecture
EHRA Engineering
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Houston, TX 77042
713 784 4500

Galveston County
Road & Bridge Department Facilities
5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
REGISTERED LANDSCAPE ARCHITECT — ADAM P. McGOVERN — 2604 — STATE OF TEXAS
"For regulatory approval, NOT for construction."
06/26/2020

TREE PRESERVATION PLAN

DRAWN BY	CHECKED BY
EHRA	CHK
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

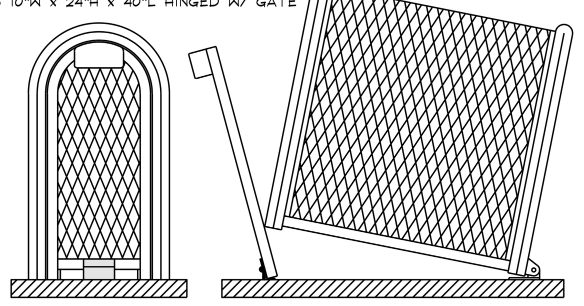
IR-002
SHEET NUMBER

FILE PATH: O:\Landscape Architecture Reference\Knudson Work\Projects\19-21580 PAGE_Galveston Co RBM Facility\04 PROJECT DESIGN\07 CD\01 DRAWING FILES_GC-RBF 95% IRR.dwg
USER NAME:
DATE STAMP: Tuesday, January 14, 2020 11:03:31 AM

STANDARD GUARDSHACK™
SIZES INTERNAL DIMENSIONS

HGS- 1 10"W x 24"H x 22"L HINGED W/ GATE
HGS- 2 10"W x 24"H x 30"L HINGED W/ GATE
HGS- 3 10"W x 24"H x 40"L HINGED W/ GATE

GUARDSHACK DIVISION OF B.P.D.I.
1-800-266-5411
www.guardshackenclosures.com



GUARDSHACK™ GENERAL SPECIFICATIONS

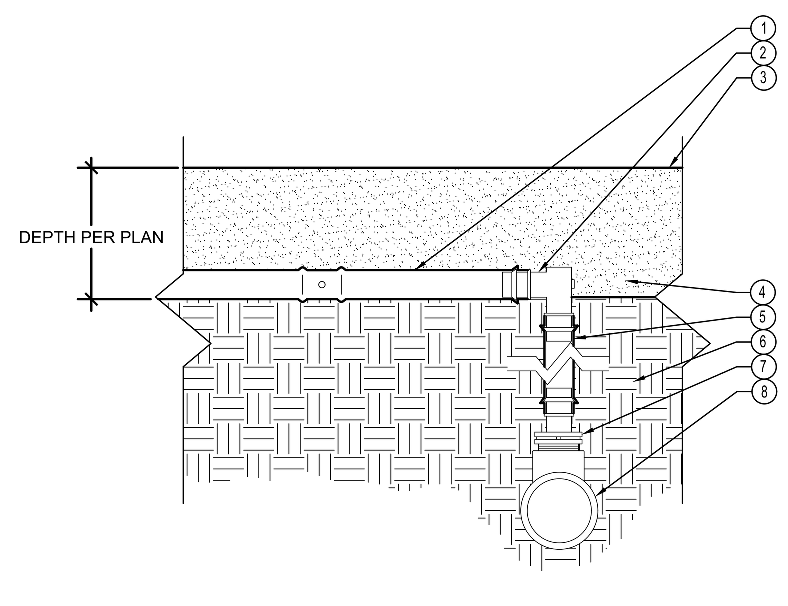
- All pipe shall be 1 ¼" schedule 40 A.S.T.M. A-53 Grade A- Electric Weld pipe.
- Angle Iron shall be 1" x 1" x ⅛" steel.
- Expanded metal shall be ½" spacing x # 13 Ga. flattened diamond pattern steel.
- All Enclosures shall have an integrated Lock Shield Bracket (LSB).
- There shall be no exposed ends of expanded metal on the outside of the enclosure.
- Welding shall be a minimum of ¼" long welds on 4" spacing.
- Hardware kits provided for mounting enclosures.
- All hardware shall be securely attached to enclosures.
- All mounting hardware shall be concealed internally.
- All enclosures shall withstand a minimum of 200 lbs. per square foot without any permanent deflection or distortion.
- 3/8" spacing between angle iron framework of enclosure and slab to prevent rusting. Only pipe ends to touch slab.

POWDERCOATED UNITS

Pre-powdercoat Treatment Process
Clean GuardShack® unit with a S-44 alkaline cleaner, overflow rinse, apply an AC-8115 iron phosphate treatment, overflow rinse and finish with a #198 sealer rinse to prevent rusting and improve adhesion.

Powdercoat Treatment Process
Units shall be preheated and coated by electrostatic application of 2.0 to 3.5 mil thickness on all surfaces. Powder shall be RAL 1019 Woodlands Tan or TCI 8810-6058 Forest Green or approved eqaul Impact Resistance Finish 160 inch pounds direct 160 inch pounds reverse, per ASTM D-2794 specs. Gloss Finish >85, per ASTM D-523. Adhesion to be rated excellent when tested to ASTM D-3359 standards.

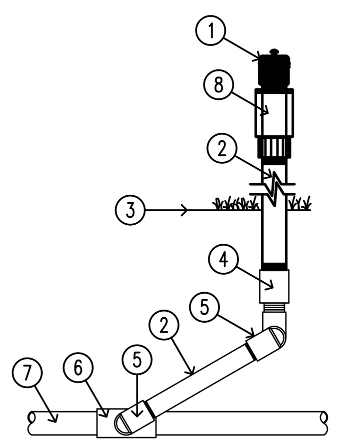
B GUARDSHACK™ ENCLOSURES HGS SERIES
NTS



LEGEND:
1. HUNTER DRIPLINE (HDL) PER PLAN
2. PLD OR PLD-LOC FITTING
3. FINISHED GRADE
4. MULCH (AS SPECIFIED)
5. HDL RISER - LENGTH AS REQUIRED
6. SOIL
7. PLD OR PLD-LOC FITTING
8. PVC SUPPLY HEADER - SIZE PER PLAN

C HUNTER DRIPLINE - CONNECTION WITH DRIPLINE AND ELBOW
Hunter HM.HDL.04
NOT TO SCALE

1. MODEL AFB BUBBLER
2. SCH 80 NIPPLE
3. FINISH GRADE
4. SCH 40 THREADED COUPLER
5. 1/2" PVC STREET ELLS (3)
6. LATERAL TEE OR ELL
7. LATERAL PIPE
8. MODEL HC-50F-50M CHECK VALVE



D AFB BUBBLER
SCALE: 3" = 1'-0" Hunter IRRIGATION DETAIL

IRRIGATION NOTES
THESE NOTES ARE PRESENTED AS A "SUMMARY" OF THE WRITTEN SPECIFICATIONS ISSUED FOR THE PROJECT. REFER TO THE WRITTEN SPECIFICATIONS, IF INCLUDED, FOR ADDITIONAL DETAIL AND FULL PROJECT REQUIREMENTS.

1. THE IRRIGATION SYSTEM DESIGN IS BASED ON 60 STATIC PRESSURE (PSI) AND MAXIMUM FLOW OF 28 GALLONS PER MINUTE(GPM). THE IRRIGATION CONTRACTOR SHALL VERIFY THE PRESSURE AND FLOW PRIOR TO COMMENCEMENT OF CONSTRUCTION. REPORT TO THE OWNER OR OWNER'S REPRESENTATIVE ANY DIFFERENCES BETWEEN THE PRESSURE INDICATED AND THE ACTUAL PRESSURE READING AT THE POINT OF CONNECTION.
2. THE PIPE ROUTING SHOWN IS DIAGRAMMATIC ONLY. ALL PIPING, VALVES, HEADS, ETC SHOWN WITHIN PAVED AREAS ARE FOR DESIGN CLARIFICATION ONLY. PRESSURE LOSS CALCULATIONS ARE BASED ON THE PIPE ROUTING AS SHOWN. SIGNIFICANT DEVIATIONS FROM THE ROUTING SHOWN SHOULD BE AVOIDED.
3. DO NOT WILLINGLY INSTALL THE SPRINKLER SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES, OR DIFFERENCES IN THE DIMENSIONS OF THE CONSTRUCTED AREAS EXIST THAT MIGHT NOT HAVE BEEN CONSIDERED IN THE IRRIGATION DESIGN OR CHANGES HAVE OCCURRED IN THE SITE PLAN. SUCH OBSTRUCTIONS OR DIFFERENCES SHOULD BE BROUGHT TO THE ATTENTION OF THE IRRIGATION DESIGNER AND THE GENERAL CONTRACTOR IMMEDIATELY. SHOULD THE IRRIGATION CONTRACTOR PROCEED WITH THE INSTALLATION WITHOUT NOTIFYING THE IRRIGATION DESIGNER AND THE GENERAL CONTRACTOR, THE IRRIGATION CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ANY AND ALL REVISIONS / RECONSTRUCTION NECESSARY.
4. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO FAMILIARIZE HIMSELF / HERSELF WITH THE SITE, ALL GRADE DIFFERENCES, LOCATIONS OF WALLS, AND INSTALLED UTILITIES. COORDINATE WORK WITH THE OWNER OR GENERAL CONTRACTOR AND OTHER SUBCONTRACTORS FOR THE LOCATION AND INSTALLATION OF PIPE SLEEVES UNDERNEATH PAVEMENT AND THROUGH WALLS.
5. DUE TO THE SCALE OF THE DRAWING, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, JOINTS, ETC. WHICH MAY BE REQUIRED. THE IRRIGATION CONTRACTOR SHALL CAREFULLY INVESTIGATE THE STRUCTURAL AND FINISHED CONDITIONS AFFECTING ALL OF HIS/HER WORK AND PLAN HIS/HER WORK ACCORDINGLY, FURNISHING SUCH FITTINGS, ETC. AS MAY BE REQUIRED TO MEET SUCH CONDITIONS. ALL WORK SHALL BE INSTALLED IN SUCH A MANNER AS TO AVOID CONFLICTS BETWEEN IRRIGATION SYSTEM COMPONENTS, LANDSCAPE PLANTING, AND ARCHITECTURAL FEATURES.
6. FLUSH ALL LINES AND HEADS PRIOR TO INSTALLING NOZZLES. ADJUST NOZZLE SPRAY ARC AND RADIUS FOR OPTIMUM PERFORMANCE TO PREVENT OVERSPRAY ONTO PAVED SURFACES OR FACE OF BUILDING AS MUCH AS POSSIBLE TO FIT THE SITE CONDITIONS. THROTTLE FLOW CONTROL AT EACH VALVE FOR OPTIMUM OPERATING PRESSURE FOR EACH ZONE.
7. ALL SPRINKLER HEADS SHALL BE SET PERPENDICULAR TO FINISHED GRADE OF THE AREA TO BE IRRIGATED UNLESS OTHERWISE NOTED.
8. WHEN VERTICAL OBSTRUCTIONS (POLES, SIGNS, TREES, HYDRANTS, ETC) INTERFERE WITH THE SPRAY PATTERN OF THE HEADS SO AS TO PREVENT PROPER COVERAGE, THE CONTRACTOR SHALL FIELD ADJUST THE SPRINKLER SYSTEM BY INSTALLING A QUARTER, THIRD, OR HALF CIRCLE HEAD AT THE SIDES OF THE OBSTRUCTION SO AS TO PROVIDE PROPER COVERAGE. ALL ADJUSTMENTS SHALL BE MADE AT NO ADDITIONAL COST.
9. USE TEFLON TAPE ON ALL MALE PIPE THREADS ON PVC PIPE, SWING JOINTS, AND VALVE ASSEMBLIES.
10. INSTALL VALVE BOXES 18-INCHES FROM AND PERPENDICULAR TO WALKS, CURBS, BUILDING, OR LANDSCAPE FEATURES. AT MULTIPLE VALVE BOX GROUPS, EACH BOX SHALL BE INSTALLED A MINIMUM OF 12-INCHES APART.
11. ALL VALVES SHALL BE PLACED IN VALVE BOXES AS SHOWN IN THE DETAILS AND ALL ELECTRICAL CONNECTIONS SHALL BE SEALED WITH WATERPROOF CONNECTORS.
12. 120-VOLT ELECTRICAL POWER AT THE CONTROLLER SHALL BE PROVIDED BY OTHERS. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO MAKE THE FINAL HOOK-UP FROM THE POWER PROVIDED TO THE CONTROLLER.
13. PROVIDE AS-BUILT DRAWINGS WITHIN 21 DAYS UPON COMPLETION OF THE IRRIGATION INSTALLATION.
14. THERE SHALL BE NO SUBSTITUTIONS OR CHANGES TO THE IRRIGATION DESIGN ALLOWED WITHOUT DIRECT, WRITTEN APPROVAL FROM THE IRRIGATION CONSULTANT OR THE LANDSCAPE ARCHITECT. CONTACT EHRA ENGINEERING FOR INFORMATION.
15. ALL SPRINKLERS, VALVES AND VALVE BOXES SHALL BE PLACED 5' AWAY FROM ANY RADIUS OF CURB AS SHOWN IN DETAILS.
16. IRRIGATION CONTRACTOR SHALL PROVIDE THE FIRST WINTERIZATION BLOW OUT. IN ADDITION, HE SHALL PROVIDE THE SPRING TURN ON. ALL NECESSARY HEAD ADJUSTMENTS SHALL BE MADE AT THAT TIME AND REPLACE OR REPAIR ANY WARRANTY ITEMS. THESE ITEMS SHALL BE INCLUDED WITH BID.
17. PROVIDE GROUNDING ALONG CONTROLLER WIRE RUN PER MANUFACTURES INSTALLATION RECOMMENDATIONS.

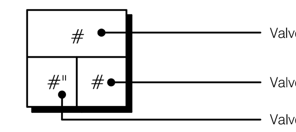
IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL
EST LCS RCS CST SST	Hunter MP Rotator Strip 515 Series
B Y A	Hunter MP800 SR PROS-04-PRS40-CV
B Y A	Hunter MPCorner PROS-04-PRS40-CV
B Y A	Hunter MP1000 PROS-04-PRS40-CV
B Y A	Hunter MP2000 PROS-04-PRS40-CV
B Y A	Hunter MP3000 PROS-04-PRS40-CV
	Hunter PCN50-1/2 GPM (two per tree) *Not Shown

SYMBOL	MANUFACTURER/MODEL
	Hunter ICZ-101-LF 1" Drip Valve
	Area to Receive Dripline Hunter HDL-06-18

SYMBOL	MANUFACTURER/MODEL
	Hunter ICV-151G-FS 1.5" Zone Valve Hunter ICV-101G-FS 1" Zone Valve
	Hunter ICZ -101-LF-40 Drip Valve
BF	Febco 765 1" Pressure Vacuum Breaker
	Hunter HQ-5 Quick Coupler Valve
RS	Hunter Rain-Clik Sensor RAIN-CLIK
C	Hunter PC-4-00 Controller w/ PCM-900 Module
	Irrigation Lateral Line: PVC Class 200 SDR 21
	Irrigation Mainline: 1.5" PVC Class 200 SDR 21
	Pipe Sleeve: PVC Schedule 40

Valve Callout



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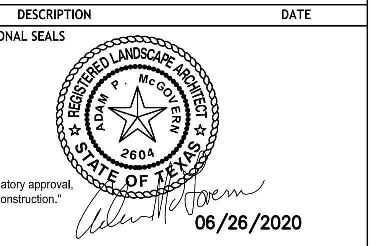

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IRRIGATION DETAILS
& SCHEDULE

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EHRA	CHK
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

IR-003
SHEET NUMBER

FILE PATH
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STRUCTURAL CONCEPT, STANDARDS AND LOADS

A. DESIGN CONCEPT:

THE STRUCTURE AS SHOWN HAS BEEN DESIGNED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS AND DESIGN STANDARDS TO SUPPORT THE FINAL BUILDING SERVICE LOADS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL SUPPORTS FOR THE STRUCTURE IF NECESSITATED BY THE CONSTRUCTION SEQUENCE OR METHODS OF FABRICATION, HANDLING, ERECTION, AND OTHER CONSTRUCTION OPERATIONS.

B. BUILDING CODES AND DESIGN STANDARDS:

1. INTERNATIONAL BUILDING CODE, 2015 EDITION.
2. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE); MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE 7-10, AS AMENDED.
3. AMERICAN CONCRETE INSTITUTE (ACI), BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318, AS AMENDED.
4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, 14TH EDITION (ASD), AS AMENDED.
5. AMERICAN WELDING SOCIETY (AWS).
6. STEEL JOIST INSTITUTE (SJI), STANDARD SPECIFICATIONS FOR OPEN WEB STEEL JOISTS AND JOIST GIRDERS.
7. STEEL DECK INSTITUTE (SDI), DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS, ROOF DECKS, AND CELLULAR METAL FLOOR DECK WITH ELECTRICAL DISTRIBUTION.
8. AMERICAN IRON AND STEEL INSTITUTE (AISI) "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION.

C. GRAVITY LOADS:

SUPERIMPOSED LOADS ARE GIVEN IN POUNDS PER SQUARE FOOT (PSF).

BUILDING AREA	DEAD LOAD (PSF)	LIVE LOAD (PSF)
ROOF	20	20
MECHANICAL AREAS	10	150(**)

**EQUIPMENT WEIGHT IF LARGER

D. LATERAL DESIGN LOADS:

1. WIND LOADS FOR AN ULTIMATE WIND SPEED OF 145 MPH 3-SECOND GUST, WITH EXPOSURE C AND A RISK CATEGORY II (ASCE 7-10 METHOD)
2. COMPONENT AND CLADDING PRESSURES ARE AS FOLLOWS:

TYPE	TRIBUTARY AREA	PRESSURES (PSF)		
		CORNER	PERIMETER	FIELD
WALLS	10 FT²	+42.2, -56.3	-	+42.2, -45.8
ROOF	10 FT²	+42.2, -77.4	+42.2, -77.4	+18.8, -46.1
PARAPET	10 FT²	+111.4, -89.1	-	+111.4, -78.0

TYPE	TRIBUTARY AREA	PRESSURES (PSF)		
		CORNER	PERIMETER	FIELD
WALLS	100 FT²	+36.0, -43.9	-	+36.0, -39.5
ROOF	100 FT²	+36.0, -50.1	+36.0, -50.1	+16.0, -42.2
PARAPET	100 FT²	+76.0, -69.5	-	+76.0, -64.9

a. SEE THE REFERENCED INTERNATIONAL BUILDING CODE FOR DESCRIPTION OF CORNER, PERIMETER & FIELD.

b. POSITIVE PRESSURES ARE PRESSURES ACTING TOWARD THE BUILDING.

c. NEGATIVE PRESSURES ARE PRESSURES ACTING AWAY FROM THE BUILDING.

d. VALUES ABOVE ARE FOR ULTIMATE WIND PRESSURES. THE ASD FACTOR FOR NOMINAL PRESSURES IS 0.6.

E. GROUND SNOW LOADS: 0 PSF

F: SPECIAL LOADS:

1. STAIR TREADS, RAILING AND GUARDRAILS:

ITEM	REQUIRED CAPACITY
TREADS	300 POUNDS AT CENTER
TOP RAILS	50 PLF HORIZONTALLY
OTHER RAILS, FILLERS & CONNECTIONS	50 PSF HORIZONTALLY
HAND RAILS	200 POUNDS ANY DIRECTION

G. SEISMIC LOAD:

1. IMPORTANCE FACTOR:........1.00
2. OCCUPANCY CATEGORY:........0
3. MAPPED SPECTRAL RESPONSE ACCELERATIONS:
   a. Ss: 0.066
   b. S1: 0.038
4. SITE CLASS: ....D
5. SPECTRAL RESPONSE COEFFICIENTS:
   a. SDS: 0.070
   b. SD1: 0.061
6. SEISMIC DESIGN CATEGORY: ....A
7. BASIC SEISMIC FORCE-RESISTING SYSTEM: ORDINARY STEEL CONCENTRICALLY BRACED FRAMES
8. DESIGN BASE SHEAR: ....0.012 W
9. SEISMIC RESPONSE COEFFICIENT (S) (Cs): 0.012
10. RESPONSE MODIFICATION FACTOR (R): 6
11. ANALYSIS PROCEDURE USED: ..... EQUIVALENT LATERAL FORCE PROCEDURE.

MASONRY

A. CONSTRUCT REINFORCED MASONRY IN ACCORDANCE WITH "SPECIFICATION FOR MASONRY STRUCTURES", ACI 530.1/ASC36. MASONRY ALLOWABLE DESIGN STRESSES ARE BASED UPON REQUIRING NO SPECIAL INSPECTION.

B. ALL CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90, GRADE N, TYPE 1 MINIMUM FACE THICKNESS SHALL BE 1.25". ALL WALLS ARE LIGHT WEIGHT BLOCKS (105 PCF OR LESS).

C. REINFORCING STEEL SHALL BE ASTM A615, GRADE 60. ALL BOLTS USED FOR ANCHORAGE SHALL BE ASTM A307 HEADED BOLTS.

D. MASONRY STRENGTH (F'M) AT 28 DAYS SHALL BE A MINIMUM OF 2,000 PSI. USE TYPE M OR S MORTAR. MASONRY UNITS SHALL HAVE A MINIMUM NET AREA COMPRESSIVE STRENGTH OF 2800 PSI. GROUT SHALL CONFORM TO ASTM C476. GROUT STRENGTH SHALL BE AT LEAST 2800 PSI.

E. PROVIDE MORTAR BED OR WEB BETWEEN GROUTED BED AND HOLLOW CELL. USE FULL HEAD AND BED JOINTS.

F. UNLESS SHOWN OTHERWISE, ALL CMU WALLS TO BE REINFORCED WITH #5 VERTICALS @ 24" OC IN FULLY GROUTED CELLS, WITH MATCHING DOWELS (MINIMUM 3'-0" LAP).

G. UNLESS SHOWN ON DETAILS, PROVIDE #9 LADDER OR TRUSS HORIZONTAL JOINT REINFORCEMENT AT 16" O.C. PROVIDE 2-#5 AT ALL JAMBS AND ENDS OF WALLS.

H. GROUT SOLID THE FIRST CELL ON EITHER SIDE OF DOOR OPENINGS, UNLESS OTHERWISE NOTED. PROVIDE 8" U-BLOCK CMU LINTEL WITH 8" BEARING EACH END; REINFORCE WITH (2) #4 BOTTOM.

I. EMBED ALL BOLTS IN FULL GROUTED CELL. PLACE BOLTS IN SAME VERTICAL CELL AS REINFORCING IF POSSIBLE. MINIMUM EMBEDDED LENGTH IS ONE-HALF WIDTH OF CELL.

J. GROUT SOLID THE FIRST CELL ON EACH LEVEL & ROOF. REINFORCE WITH HORIZONTAL AS PER DETAILS.

CONCRETE MASONRY UNIT (CMU) LINTEL SCHEDULE

MASONRY OPENING	U-BLOCK	REINFORCING
LESS THAN 4'-8"	8" x 8"	(2) #4
4'-8" BUT LESS THAN 6'-8"	8" x 8"	(2) #6
6'-8" BUT LESS THAN 9'-6"	8" x 16"	(2) #6
9'-6" BUT LESS THAN 19'-8"	8" x 32"	(2) #7 TOP & BOT. w/ #3 STIRRUPS @ 16" O.C.

A. PROVIDE 8" MINIMUM BEARING EACH END FOR CMU LINTELS. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS.

B. CURVE CMU LINTEL AND REINFORCING FOR THE RADIUS OF THE WALL WHERE OCCURRING AND PROVIDE 1'-4" MINIMUM BEARING EACH END.

GENERAL NOTES FOR CONSTRUCTION

A. THESE NOTES APPLY TO STRUCTURAL DOCUMENTS SEALED BY THE STRUCTURAL ENGINEER AND ARE INTENDED TO BE COMPLIMENTARY TO AND USED IN CONJUNCTION WITH THE PLANS AND SPECIFICATIONS, INCLUDING THOSE PREPARED BY OTHER DISCIPLINES. CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT/ENGINEER IMMEDIATELY. ANY SUCH DISCREPANCIES SHALL BE RESOLVED TO THE MORE STRINGENT REQUIREMENTS, UNLESS OTHERWISE AUTHORIZED BY ARCHITECT/ENGINEER.

B. IT IS THE INTENT OF THE STRUCTURAL DOCUMENTS TO DESCRIBE A FUNCTIONALLY COMPLETE STRUCTURAL PROJECT. ALL LABOR, DOCUMENTATION, SERVICES, MATERIALS, OR EQUIPMENT THAT MAY BE REASONABLY INFERRED FROM THESE DOCUMENTS OR FROM PREVAILING CUSTOM OR TRADE USAGE AS BEING REQUIRED TO PRODUCE THE INTENDED RESULT, WHETHER OR NOT SPECIFICALLY CALLED FOR, SHALL BE PROVIDED AT NO ADDITIONAL COST TO OWNER.

C. ANY DISCREPANCIES ON THE STRUCTURAL DOCUMENTS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT/STRUCTURAL ENGINEER PRIOR TO SUBMISSION OF BIDS OR PROPOSALS, OR IF NOT REASONABLY DISCERNABLE DURING PREPARATION OF BIDS AND PROPOSALS, BEFORE COMMENCING THE WORK IN QUESTION. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE ARCHITECT AND THE STRUCTURAL ENGINEER. NO CHANGE ORDER CONSIDERATION WILL BE GIVEN TO CHANGES FOR WHICH THE ARCHITECT AND STRUCTURAL ENGINEER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM.

D. ANY DEVIATION FROM, ADDITION TO, SUBSTITUTION FROM, OR MODIFICATION TO THE STRUCTURE OR ANY PART OF THE STRUCTURE DESCRIBED IN THESE DOCUMENTS SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT/ENGINEER FOR REVIEW.

E. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS AND METHODS OF CONSTRUCTION UNLESS SO STATED OR NOTED. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO INITIATE, MAINTAIN, AND SUPERVISE ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THE WORK, AND SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE WORK, OTHER PROPERTY, THE WORKMEN AND OTHER PERSONS DURING DEMOLITION AND CONSTRUCTION.

F. SITE OBSERVATION VISITS, IF MADE BY ENGINEER, ARE MADE FOR THE PURPOSE OF DETERMINING, FOR THE BENEFIT OF THE OWNER, THAT THE WORK IS GENERALLY PROCEEDING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SITE OBSERVATIONS ARE NOT INTENDED TO BE EXHAUSTIVE OR DETAILED INSPECTIONS OF CONTRACTOR'S WORK. CONTRACTOR RETAINS SOLE RESPONSIBILITY TO CONSTRUCT THE WORK IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND APPLICABLE REGULATIONS.

G. CONSTRUCTION MATERIALS OR EQUIPMENT SHALL NOT BE STORED OR OPERATED ON FLOORS OR ROOFS IN EXCESS OF THE DESIGN LOADS INDICATED ON THE DRAWINGS. IMPACT SHALL BE AVOIDED WHEN PLACING MATERIALS ON FLOOR OR ROOFS.

H. REFER TO WALL SECTIONS AND ELEVATIONS FOR ADDITIONAL REINFORCEMENT, INSERTS, ANCHORS, ETC. REFER TO DRAWINGS AND SPECIFICATIONS FOR WATERPROOFING, FLASHING, METAL EXPANSION JOINTS, CAULKING, SEALANTS, ETC. CONTRACTOR SHALL COMPARE THE STRUCTURAL SECTIONS WITH THE ARCHITECTURAL SECTIONS AND REPORT ANY DISCREPANCIES TO THE ARCHITECT/ENGINEER PRIOR TO COMPLETION OF THE SHOP DRAWINGS.

I. NOT ALL OPENINGS AND OTHER COMPONENTS THAT ARE REQUIRED HAVE BEEN SHOWN IN THE STRUCTURAL DRAWINGS. COORDINATE WITH THE ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS AND VERIFY THE LOCATIONS AND SIZES OF ALL CHASES, INSERTS, OPENINGS, SLEEVES, FINISHES, DEPRESSIONS, PADS AND OTHER PROJECT REQUIREMENTS. FLOOR PLAN WILL BE FURNISHED FOR THAT PURPOSE.

J. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE MECHANICAL, ELECTRICAL, PLUMBING AND ARCHITECTURAL DRAWINGS TO DETERMINE WHERE OPENINGS ARE REQUIRED IN REINFORCED CONCRETE BEAMS, SLABS AND WALLS.

K. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, DETAILING ALL THE OPENINGS, INCLUDING ADDED REINFORCEMENT AS SHOWN ON THE TYPICAL WALL, SLAB AND BEAM OPENING DETAILS FOR REVIEW.

L. ADDITIONAL REINFORCEMENT ABOVE THAT SHOWN IN THE TYPICAL SLAB AND BEAM OPENING DETAILS MAY BE REQUIRED AND WILL BE REVIEWED ON THE SHOP DRAWINGS.

M. USE THE MANUFACTURER'S CERTIFIED DRAWINGS AND SPECIFICATIONS FOR THE EQUIPMENT ANCHORAGE AND DETAILS.

N. ALL CONSTRUCTION JOINTS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE INCORPORATED INTO THE STRUCTURE. ADDITIONAL CONSTRUCTION JOINTS TO FACILITATE CONSTRUCTION SHALL BE LOCATED AND DETAILED ON THE SHOP DRAWINGS FOR REVIEW.

O. HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE PERMITTED IN BEAMS UNLESS SHOWN ON THE STRUCTURAL DRAWINGS.

P. ALL CONSTRUCTION AND CONTROL JOINTS FOR BEAMS WHICH ARE EXPOSED TO VIEW ARE TO BE LOCATED TO COINCIDE WITH THE ARCHITECTURAL RUSTICATION JOINTS AS SHOWN ON THE BUILDING ELEVATION SHEETS OR AS REVIEWED IN WRITING.

Q. SHOP DRAWINGS:

1. THE TERM "SHOP DRAWINGS" INCLUDES FABRICATION, MANUFACTURING, ERECTION AND SETTING DRAWINGS, BROCHURES, CERTIFICATES, AND PRODUCT DATA DESCRIBING MATERIALS AND EQUIPMENT. SHOP DRAWINGS SHALL INCLUDE ALL PERTINENT INFORMATION REQUIRED FOR THE ENGINEER TO FULLY EVALUATE THE MATERIALS BEING REPRESENTED BY THE SUBMITTAL INCLUDING THE PHYSICAL PROPERTIES, DIMENSIONS, LOCATIONS AND METHOD OF INSTALLATION.
2. SHOP DRAWINGS WILL BEAR THE REVIEW STAMP OF THE CONTRACTOR INDICATING THAT HE HAS REVIEWED THE DRAWINGS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS; COORDINATED ITEMS INCLUDED IN THE SUBMITTAL WITH RELATED ITEMS; AND VERIFIED AND COORDINATED DIMENSIONS.
3. REPRODUCTIONS OF THE ENGINEERING DRAWINGS WILL NOT BE ACCEPTABLE AS SHOP DRAWINGS.
4. ANY SHOP DRAWING NOT CONFORMING TO THESE REQUIREMENTS WILL BE CAUSE FOR REJECTION AND WILL BE RETURNED WITHOUT ANY FURTHER ACTION.

EXCAVATION, BACKFILLING & FOUNDATIONS

A. A GEOTECHNICAL EXPLORATION OF SUBSURFACE CONDITIONS, CONTAINING TEST BORINGS, LABORATORY TEST, ENGINEERING ANALYSIS AND FOUNDATION RECOMMENDATIONS, PERFORMED BY EARTH ENGINEERING, Inc. DATED NOVEMBER 4, 2019 REPORT NO. EE-1919908-G IS AVAILABLE FOR REVIEW.

B. MAINTAIN PROPER SITE DRAINAGE DURING CONSTRUCTION SO THAT PONDING OF WATER DOES NOT OCCUR IN THE BUILDING AREA.

C. SUB-GRADE PREPARATION:

1. PERFORM DEMOLITION OF EXISTING STRUCTURES AS REQUIRED BY THE SOIL REPORT. THE ENTIRE VOLUME OF THE EXCAVATIONS CREATED BY DEMOLITION AND REMOVAL OF EXISTING STRUCTURES SHOULD BE BACKFILLED WITH ENGINEERED (SELECT) FILL THAT IS PROPERLY PLACED AND COMPACTED.
2. EXCAVATE EXISTING SOILS AS REQUIRED TO REMOVE ALL EXISTING VEGETATION ROOTS & DELETERIOUS MATERIALS FROM THE PROPOSED BUILDING AREA, & AS REQUIRED BY SOIL REPORT. THE CLEARING SHOULD EXTEND BEYOND THE BUILDING EDGE AS NOTED IN THE SOILS REPORT. ONCE ROUGH GRADE IS ESTABLISHED, THE EXPOSED SURFACE SHOULD BE PROOF-ROLLED IN ACCORDANCE WITH TxDOT ITEM 216 (1993). ANY SOFT POCKETS OF SOFT OR WEAK SOILS ENCOUNTERED SHOULD BE REMOVED. BUILD BUILDING PAD AS REQUIRED BY SOIL REPORT. REFER TO SOIL REPORT FOR SITE SOILS PREPARATION REQUIREMENT UNDER THE BUILDING SLAB.
3. A MINIMUM OF NINE (9) FEET OF SELECT FILL IS REQUIRED UNDER THE BUILDING SLAB AND SHALL EXTEND BEYOND THE BUILDING PERIMETER AS REQUIRED BY THE SOIL REPORT.
4. THE MATERIAL USED TO CONSTRUCT THE BUILDING PAD SHOULD CONSIST OF A SELECT NON-ACTIVE, INORGANIC SANDY CLAY TYPE SOIL HAVING A PLASTICITY INDEX (P.I.) OF 25% OR LESS. SELECT FILL MATERIAL SHOULD BE PLACED UNDER LABORATORY CONTROL, IN NO GREATER THAN EIGHT (8) INCH LOOSE LAYERS, AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY AS DETERMINED BY ASTM D-698 PROCEDURE, AT OPTIMUM MOISTURE CONTENT (0 TO +3%).

D. FOUNDATIONS HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 3,000 PSF FOR DEAD PLUS SUSTAINED LOAD AND 4,500 PSF FOR TOTAL LOADS AT A MINIMUM EMBEDMENT DEPTH OF 15 FEET BELOW EXISTING GRADE ELEVATION

E. REFER TO THE GEOTECHNICAL EXPLORATION FOR ADDITIONAL INFORMATION.

F. INSTALL SLAB ON GRADE OVER 15 MIL VAPOR BARRIER

CONCRETE

A. CONCRETE SCHEDULE:

BUILDING COMPONENT	28 DAY CYLINDER COMPRESSIVE STRENGTH POUNDS PER SQUARE INCH(PSI)					
	NORMAL WEIGHT			MAX AGGREGATE SIZE (IN)	SLUMP (IN)	W/C RATIO
	3000	3500	4000			
DRILLED PIERS	●			1 1/2"	5-7	0.55
SLAB-ON-GRADE		●		1"	4-6	0.50
GRADE BEAMS AND PLINTHS		●		1"	4-6	0.50
ALL OTHER CONCRETE	●			1"	4-6	0.52

B. PROVIDE DEFORMED NEW BILLET STEEL BARS CONFORMING TO ASTM A615, GRADE 60. ALL REINFORCING STEEL SHALL BE SECURELY HELD IN PLACE; PROVIDE ADDITIONAL BARS OR STIRRUPS FOR SUPPORT AS REQUIRED.

C. WELDED WIRE FABRIC SHALL CONSIST OF FLAT SHEETS AND SHALL CONFORM TO ASTM A185, WITH A MINIMUM YIELD STRENGTH OF 65.0 KSI

D. PROVIDE FULL EMBEDMENT WITH STANDARD 90 DEGREE HOOKS FOR ALL DOWELS. IF NOT OTHERWISE SPECIFIED, THE DOWEL SIZE AND SPACING SHALL BE THE SAME AS THE MAIN REINFORCING.

E. WHEN REINFORCING STEEL IN GRADE BEAMS, WALLS, SLABS AND BEAMS, IS NOTED AS CONTINUOUS, SPLICE REINFORCING STEEL ONLY WHEN UNAVOIDABLE DUE TO STOCK LENGTHS. STAGGER ALL SPLICES A MINIMUM OF 4'-0". ADJACENT BAR SPLICES ARE NOT ACCEPTABLE.
LOCATE THE TOP BAR SPLICES WITHIN THE MIDDLE HALF OF THE SPAN AND LOCATE THE BOTTOM BAR SPLICES AT SUPPORTS OR BETWEEN SUPPORTS AND 1/3 SPAN POINT, UNLESS NOTED OTHERWISE ON PLANS, DETAILS OR SCHEDULES.

F. PROVIDE INTERIOR AND EXTERIOR HORIZONTAL LAPPED CORNER BARS AT ALL CORNERS TO MATCH THE SIZE, TYPE AND SPACING OF THE WALL AND GRADE BEAM HORIZONTAL REINFORCING.

G. UNLESS SPECIFICALLY NOTED, SCHEDULED OR DETAILED OTHERWISE, PROVIDE DEVELOPMENT LENGTH FOR REINFORCING IN CONCRETE COMPONENTS IN ACCORDANCE WITH THE SCHEDULE IN NOTE H. BELOW. THIS SCHEDULE SHALL APPLY TO ALL DEVELOPMENT LENGTHS NOT OTHERWISE NOTED, DETAILED OR SCHEDULED IN THE DRAWINGS OR SPECIFICATIONS.

H. REINFORCING BAR DEVELOPMENT LENGTHS (Ld) IN INCHES FOR VARIOUS CONCRETE STRENGTHS IN POUNDS PER SQUARE INCH (PSI). TOP BARS ARE DEFINED AS HORIZONTAL REINFORCING SO PLACED IN A MEMBER THAT MORE THAN 12 INCHES OF CONCRETE IS CAST BELOW THE BAR. ALL OTHER CONDITIONS ARE CONSIDERED BOTTOM BARS FOR DEVELOPMENT AND SPLICE LENGTH PURPOSES.

BAR SIZE GRADE 60	Ld FOR TOP BARS 28 DAY CYLINDER CONCRETE STRENGTH (PSI)				Ld FOR BOTTOM BARS 28 DAY CYLINDER CONCRETE STRENGTH (PSI)			
	3000	4000	5000	6000	3000	4000	5000	6000
#3	22	19	17	16	17	15	13	12
#4	29	25	23	21	22	19	17	16
#5	36	31	28	26	28	24	22	20
#6	43	37	34	31	33	29	26	24
#7	63	54	49	45	48	42	38	34
#8	72	62	56	51	55	48	43	39
#9	81	70	62	57	62	54	48	44
#10	89	78	69	63	69	60	53	49
#11	98	85	76	70	76	66	59	54

J. PROVIDE LAP SPLICE LENGTHS FOR REINFORCING BARS 1.3 TIMES THE Ld NOTED IN NOTE H ABOVE.

1. WHEN TWO BARS OF DIFFERENT SIZES ARE LAPPED, THE SMALLER SIZE SHALL GOVERN THE LAP LENGTH UNLESS SPECIFICALLY NOTED.
2. WELDED OR MECHANICAL SPLICES CAPABLE OF DEVELOPING 125% OF THE BAR YIELD STRENGTH MAY BE USED IN LIEU OF THE LAPS. SUCH SPLICES MAY BE EITHER FULL BUTT WELDS OR SERIES "C CADWELDS OR EQUAL."

K. THE GENERAL NOTES, LAP LENGTHS OR DETAILS PERTAINING TO REINFORCING STEEL AS SHOWN ON THE DETAIL SHEETS OR OTHER SCHEDULES SHALL SUPERSEDE THE NOTES SHOWN ON THIS SHEET.

L. PROVIDE THE FOLLOWING COVER FOR CAST-IN-PLACE CONCRETE REINFORCING.

1. UNFORMED SURFACES IN CONTACT WITH EARTH: 3 INCHES
2. UNFORMED SURFACES OVER MOISTURE BARRIER: 2 INCHES
3. FORMED SURFACES EXPOSED TO EARTH OR WEATHER
   a. #6 AND LARGER: 2 INCHES
   b. #5 AND SMALLER: 1 1/2" INCHES
4. FORMED SURFACES NOT EXPOSED TO EARTH OR WEATHER
   a. SLABS AND WALLS: 3/4 INCHES
   b. BEAMS AND COLUMNS 1 1/2 INCHES

METAL BUILDING SYSTEM LOADS

A. PROVIDE METAL BUILDING SYSTEM CAPABLE OF WITHSTANDING THE EFFECTS OF GRAVITY LOADS AND THE FOLLOWING LOADS AND CONDITIONS INDICATED.

B. ENGINEER METAL BUILDING SYSTEMS ACCORDING TO PROCEDURES IN THE METAL BUILDING MANUFACTURER'S ASSOCIATION (MBMA), METAL BUILDING SYSTEMS MANUAL.

1. DESIGN LOADS AS NOTED IN "STRUCTURAL CONCEPT, STANDARDS AND LOADS".
2. ROOF LIVE LOAD: 20 PSF (REDUCIBLE)
3. WIND LOADS AS SPECIFIED IN "STRUCTURAL CONCEPT, STANDARDS AND LOADS".
4. COLLATERAL LOADS: INCLUDE ADDITIONAL DEAD LOAD FOR SUSPENDED BUILDING SYSTEMS: 3 PSF MINIMUM WHEN NOT SUPPORTING CEILING. USE 6 PSF WHEN SUPPORTING CEILING BUT NO FIRE SPRINKLER SYSTEM. USE 10 PSF WHEN SUPPORTING CEILING AND FIRE SPRINKLER SYSTEM.

5. DEFLECTION CRITERIA:

MAIN FRAMES LATERAL (DRIFT):

- METAL PANEL FINISH	H/100
- PLASTER/STUCCO FINISH	H/360
- BRICK FINISH	H/400

MAIN FRAMES VERTICAL:

- NOT SUPPORTING CEILING	L/180
- SUPPORTING NON PLASTER CEILING	L/240
- SUPPORTING PLASTER/STUCCO FINISH	L/360

BEARING FRAME RAFTER:

- NOT SUPPORTING CEILING	L/180
- SUPPORTING NON PLASTER CEILING	L/240
- SUPPORTING PLASTER/STUCCO FINISH	L/360

ENDWALL COLUMNS:

- METAL PANEL FINISH	L/120
- PLASTER/STUCCO FINISH	L/360
- BRICK FINISH	L/600

ROOF PANELS:	L/120
WALL PANELS:	L/60

PURLINS:

- NOT SUPPORTING CEILING	L/180
- SUPPORTING NON PLASTER CEILING	L/240
- SUPPORTING PLASTER/STUCCO FINISH	L/360

GIRTS: LATERAL

- METAL PANEL FINISH	L/120
- PLASTER/STUCCO FINISH/THIN SET BRICK	L/360
- BRICK FINISH	L/600

CRANE SUPPORTING COLUMNS(DRIFT) :	H/100*
RAIL BEAMS VERTICAL:	
- CLASS A,B,C CRANES	L/600*
- CLASS D CRANES	L/800*
- CLASS E AND F CRANES	L/1000*
RAIL BEAM LATERAL:	L/400*

* MINIMUM OR HIGHER IF REQUIRED BY CRANE MANUFACTURER, G.C./PEMB MANUFACTURER TO COORDINATE WITH OWNER AND CRANE MANUFACTURER.

BRICK LINTEL VERTICAL AND LATERAL L/600

STRUCTURAL STEEL

A. ROLLED SHAPES:

1. ALL STRUCTURAL STEEL FOR ALL WIDE FLANGE MEMBERS SHALL CONFORM TO ASTM A992, GRADE 50, UNLESS OTHERWISE NOTED
2. ALL STRUCTURAL STEEL FOR HOLLOW STRUCTURAL SECTIONS SHALL CONFORM TO ASTM A500, GRADE B WITH A MINIMUM YIELD OF 46KSI, UNLESS OTHERWISE NOTED.
3. ALL STRUCTURAL STEEL FOR PIPE SHALL CONFORM TO ASTM A53, TYPE E OR S, GRADE B, UNLESS OTHERWISE NOTED.
4. ALL STRUCTURAL STEEL FOR ANGLES, CHANNELS, PLATES AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36, UNLESS OTHERWISE NOTED.
5. ALL EXPOSED STEEL TO BE GALVANIZED.

B. CONNECTIONS

1. THE DESIGN OF STRUCTURAL STEEL CONNECTIONS IS THE RESPONSIBILITY OF THE CONTRACTOR AND THE STEEL FABRICATOR, THE DESIGN OF THE CONNECTION SHALL BE PERFORMED BY A REGISTERED PROFESSIONAL ENGINEER.
2. PROVIDE STANDARD BOLTED CONNECTIONS CONFORMING TO AISC BOLTED CONNECTIONS, USING ASTM A325 BOLTS OR A490 BOLTS, FOR THE BEAM END SHEARS AND AXIAL FORCES INDICATED IN THE DOCUMENTS. PROVIDE MINIMUM OF TWO BOLTS FOR ALL CONNECTIONS.
3. ALL WELDED CONNECTIONS SHALL CONFORM TO AWS UNLESS OTHERWISE NOTED.
4. SURVEY ALL PLANS, DETAILS, SECTIONS, SCHEDULES AND SPECIFICATIONS FOR SPECIAL CONNECTIONS.
5. UNLESS OTHERWISE NOTED AND/OR SPECIFIED, DESIGN ALL BEAM CONNECTIONS TO SUPPORT 1/2 OF THE TOTAL MEMBER SIZE AND SPAN AS DETERMINED BY THE TABLES FOR ALLOWABLE UNIFORM LOADS ON BEAMS IN THE AISC MANUAL OF STEEL CONSTRUCTION (ALLOWABLE STRESS DESIGN).
6. WHERE BEAMS ARE TO RECEIVE HEADED SHEAR CONNECTORS, DESIGN THOSE BEAM CONNECTIONS FOR THE REACTION SHOWN. IF REACTIONS ARE NOT SHOWN, DESIGN THE CONNECTIONS TO SUPPORT 40 PERCENT OF THE MAXIMUM WEB SHEAR, V, FOR THE APPLICABLE MEMBER SIZE AS DETERMINED BY THE TABLES FOR ALLOWABLE UNIFORM LOADS ON BEAMS IN THE 13TH EDITION OF THE AISC MANUAL
7. UNLESS OTHERWISE NOTED, ALL MOMENT CONNECTIONS SHALL BE MADE WITH FULL PENETRATION WELDS AND SHALL BE DESIGNED TO DEVELOP THE FULL CAPACITY OF THE MEMBER.
8. WHERE FILLET WELD IS NOT SHOWN ON DETAIL, ITS SIZE SHALL BE ASSUMED TO BE THE PLATE THICKNESS OF THE THINNEST PIECE MINUS 1/16"

C. WELDING:

1. CONFORM TO "CODE FOR WELDING IN BUILDING CONSTRUCTION" BY THE AMERICAN WELDING SOCIETY, LATEST EDITION.
2. WELDS ON INDICATED ON DRAWINGS ARE TO BE FILLET ALL AROUND AS PRESCRIBED BY AISC SPECIFICATION, PROVIDE WELDING OF CONTINUOUS MEMBERS OF 2 INCHES OF 3/16" INCH FILLET STITCH WELDS AT 12 INCHES OC, STAGGERED EACH SIDE, UNLESS OTHERWISE NOTED.
3. FIELD PAINT ALL WELDS W/ "GALVILITE" BY Z.R.C. OR APPROVED EQUAL ARC WELDING ELECTRODES.
4. METAL DECK - E60XX
   STRUCTURAL STUDS - E6022 OR E6011, 3/32" RODS.
   ALL OTHER - E70XX LOW HYDROGEN, 250 DEGREE MIN. OVEN TEMP.
5. SIZE - ALL FILLETS ARE 1/16" LESS THAN MINIMUM THICKNESS TO BE WELDED
6. PROVIDE ULTRASONIC INSPECTION BY THE TESTING LABORATORY FOR ALL WELDS INDICATED AS PENETRATION WELDS.

D. OPEN WEB STEEL JOISTS:

1. AS APPLICABLE FOR THE OPEN WEB STEEL JOIST TYPE INDICATED ON THE DRAWINGS, CONFORMING TO SJI OR AISC, WHICHEVER IS MORE STRINGENT.
2. PROVIDE JOIST BRIDGING IN ACCORDANCE WITH SJI.
3. DESIGN ROOF JOISTS FOR NET UPLIFT PRESSURES OF -30 PSF, UNLESS OTHERWISE PROVIDED ON A WIND PRESSURE PLAN.

E. STEEL DECK:

TYPE 1

1. PROVIDE STEEL ROOF DECK 1 1/2" DEEP TYPE B 20 GAUGE STEEL SHEETS AND CONFORMING TO ASTM A653, STRUCTURAL STEEL (SS), GRADE 33, GALVANIZED COATING DESIGNATION G60.
2. PROVIDE STEEL ROOF DECK WITH THE FOLLOWING MINIMUM SECTION PROPERTIES:
   a. MOMENT OF INERTIA: I =0.201 INCHES⁴ /FOOT WIDTH
   b. SECTION MODULUS: Sp =0.234 INCHES³ /FOOT WIDTH
   c. SECTION MODULUS: Sn =0.247 INCHES³ /FOOT WIDTH
3. ATTACH STEEL ROOF DECK TO STEEL SUPPORTS AND AT SIDE LAPS AS FOLLOWS:
   a. POWDER-ACTUATED FASTENERS:
      SUPPORTS: "HILTI" X-HSN24 AND "HILTI" X-ENP-19L15, 36/5 PATTERN
      SIDELAPS: #10 "TEK" @ 10" O.C. MAXIMUM

INDEPENDENT TESTING LABORATORY & SPECIAL INSPECTIONS

A. A GEOTECHNICAL EXPLORATION OF SUBSURFACE CONDITIONS, CONTAINING TEST BORINGS, LABORATORY TEST, ENGINEERING ANALYSIS AND FOUNDATION RECOMMENDATIONS, PERFORMED IS AVAILABLE FOR REVIEW. SEE "EXCAVATION, BACKFILLING & FOUNDATIONS" SECTION.

B. EMPLOYMENT OF A TESTING LABORATORY IN NO WAY RELIEVES THE CONTRACTOR OF ANY OBLIGATION TO PERFORM WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

C. CONTRACTOR RESPONSIBILITIES:

1. DELIVER TO LABORATORY AT DESIGNATED LOCATION ADEQUATE SAMPLES OF MATERIALS PROPOSED TO BE USED WHICH REQUIRE TESTING, TOGETHER WITH PROPOSED MIX DESIGNS.
2. COOPERATE WITH LABORATORY PERSONNEL AND PROVIDE ACCESS TO WORK AND TO MANUFACTURER'S FACILITIES.
3. PROVIDE INCIDENTAL LABOR AND FACILITIES TO PROVIDE ACCESS TO WORK TO BE TESTED, TO OBTAIN AND HANDLE SAMPLES AT THE SITE OR AT SOURCE OF PRODUCTS TO BE TESTED, TO FACILITATE TEST AND INSPECTIONS AND FOR STORAGE AND CURING OF TEST SAMPLES.
4. NOTIFY LABORATORY OF MATERIAL SOURCES AND FURNISH NECESSARY QUANTITIES OF REPRESENTATIVE SAMPLES OF MATERIALS PROPOSED FOR USE WHICH ARE REQUIRED TO BE TESTED.
5. NOTIFY ARCHITECT AND LABORATORY 24 HOURS PRIOR TO EXPECTED TIME FOR OPERATIONS REQUIRING INSPECTION AND TESTING SERVICES.
6. ADVISE LABORATORY IN A TIMELY FASHION TO COMPLETE REQUIRED INSPECTION AND TESTING PRIOR TO SUBSEQUENT WORK BEING PERFORMED.
7. PAY FOR ALL SUBSEQUENT RE-TESTING OF PRODUCTS OR SYSTEMS FOUND TO BE DEFECTIVE OR OTHERWISE NOT IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS. REMOVE REJECTED PRODUCTS AND REPLACE WITH PRODUCTS OF SPECIFIED QUALITY.

D. SPECIAL INSTRUCTIONS:

1. THE OWNER SHALL EMPLOY ONE OR MORE SPECIAL INSPECTOR(S) TO PROVIDE INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF CONSTRUCTION LISTED IN THIS SECTIONS. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE TO THE INSPECTIONS BEING PERFORMED TO THE SATISFACTION OF THE ENGINEER OF RECORD AND THE BUILDING OFFICIAL. THE SPECIAL INSPECTOR SHALL HAVE EXPERIENCE WITH AT LEAST FIVE OTHER PROJECTS SIMILAR IN NATURE.
2. THE PURPOSE OF THE INSPECTIONS SHALL BE TO ENFORCE COMPLIANCE WITH THE CONSTRUCTION DRAWINGS, SPECIFICATIONS, GEOTECHNICAL REPORT AND THE 20XX INTERNATIONAL BUILDING CODE (IBC), SECTION 1704.
3. THE FOLLOWING ITEMS REQUIRE INDIVIDUAL TESTS & INSPECTIONS BY THE SPECIAL INSPECTOR AS OUTLINED IN CHAPTER 17 OF THE IBC.
   A. SOIL COMPACTION TESTS
   B. DRILLED PIER/SPREAD FOOTING BEARING STRATA CONFIRMATION, INSPECTION AND TESTS
   C. CONCRETE COMPRESSIVE STRENGTH TESTS
   D. CONCRETE SLUMP TESTS
   E. CONCRETE AIR CONTENT TESTS
   F. STRUCTURAL STEEL FIELD WELD INSPECTION AND TESTS. INSPECT AND TEST 100% OF FULL PENETRATION WELDS.
   G. STRUCTURAL STEEL BOLTED AND HIGH STRENGTH BOLTED CONNECTION INSPECTION AND TESTS
   H. STEEL JOIST FIELD WELD INSPECTION
   I. STEEL DECK FIELD WELD AND ATTACHMENT INSPECTION

NOTES:

1. PROVIDE A SET OF 4 TEST SAMPLES FOR EVERY 75 CY OF BUT NOT LESS THAN 1 TEST SAMPLE FOR EVERY 5,000 SF OF SLAB OR WALL SURFACE AREA. MONITOR SLUMP AND AIR CONTENT OF CONC. AND NOTIFY DELIVERY DRIVER IF SLUMP DEVIATES MORE THAN 1" FROM SPEC'D VALUE.
2. ALL DRILLED AND EPOXIED ANCHORS (REBAR, BOLTS, THREADED RODS ETC.) SHALL BE PULL TESTED TO 110% FOR NO LESS THAN 3 MIN.
3. ADDITIONAL TESTS AT THE CONTRACTOR'S EXPENSE WILL BE PERFORMED TO DETERMINE COMPLIANCE OF REPLACED OR ADDITIONAL WORK WITH SPECIFIED REQUIREMENTS.
4. CORRECT DEFICIENCIES IN WORK THAT TEST REPORTS AND INSPECTIONS INDICATE DO NOT COMPLY WITH THE CONTRACT DOCUMENTS.
5. PROVIDE THE ENGINEER OF RECORD (EOR) COPIES OF ALL SPECIAL INSPECTIONS SO A SPECIAL INSPECTIONS REPORT CAN BE PREPARED FOR OBTAINING A CERTIFICATE OF OCCUPANCY.

PROJECT: 19-344-00

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5115 TX-3
Dickenson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

STATE OF TEXAS
FRED DALLY
90904
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

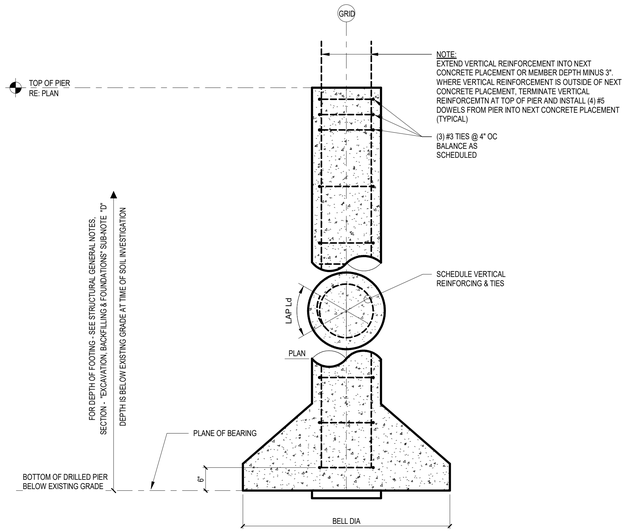
STRUCTURAL GENERAL CRITERIA

DRAWN BY	CHECKED BY
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

S-000
SHEET NUMBER

FILE PATH
USER NAME: C:\Users\TKrueger\Documents\19-344_GALVESTON_R&B_OFFICE_R19_tkrueger4SF7J.rvt
DATE STAMP: 6/26/2020 12:15:43 PM

1A. DRILLED PIER DETAILS



1. DRILLED PIER SCHEDULE

SHAFT DIAMETER	VERTICAL REINFORCING		TIES		REMARKS
	NUMBER	SIZE	SIZE	SPACING	
18"	10	6	#4	10"	
24"	8	8	#4	10"	

1B. DRILLED PIER GENERAL NOTES

1. A GEOTECHNICAL REPORT IS AVAILABLE FOR REVIEW IN THE "EXCAVATION, BACKFILLING & FOUNDATION" SECTION OF THE GENERAL NOTES.

2. THE INDEPENDENT TESTING LABORATORY SHALL CONFIRM THE ALLOWABLE SOIL BEARING CAPACITY IN THE FIELD AT THE ELEVATION DESIGNATED AS THE PLANE OF BEARING FOR THE DRILLED PIER.

3. THE INDEPENDENT TESTING LABORATORY SHALL INSPECT THE BOTTOM AND SIDES OF THE DRILLED PIER PRIOR TO PLACING REINFORCING AND CONCRETE.

4. CENTER ALL DRILLED PIERS UNDER THEIR COLUMNS, UON.

5. MAINTAIN CLOSE AND ACCURATE DRILLING PRACTICES TO ACHIEVE CLOSE TOLERANCES WITH THE REINFORCING STEEL AND THE ANCHOR ROD TEMPLATE.

6. ALL REINFORCING STEEL FOR DRILLED PIERS SHALL BE DEFORMED NEW BILLET STEEL CONFORMING TO ASTM A615, GRADE 60.

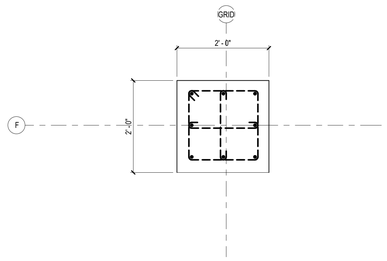
7. ALL SCHEDULED REINFORCEMENT SHALL BE UNIFORMLY DISTRIBUTED.

8. DEPOSIT CONCRETE TO ITS FINAL POSITION BY THE USE OF A TREMIE.

9. CONSOLIDATE CONCRETE IN ITS FINAL POSITION BY VIBRATING.

2A. PLINTH DETAILS

ALL DETAILS ARE PLAN VIEW UON



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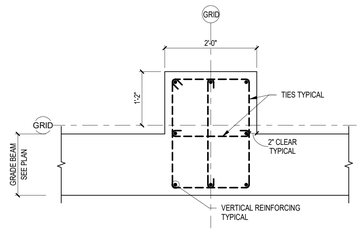

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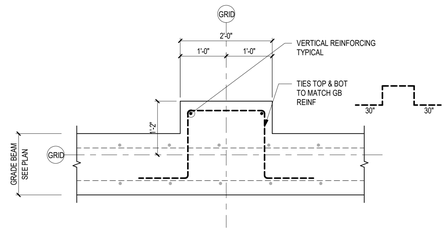

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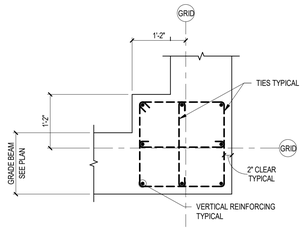

TYPE 1

2. PLINTH SCHEDULE

MARK	PLINTH TYPE	REINFORCING		REMARKS
		VERTICAL	TIES	
P1	TYPE 1	(8) #6	#4 @ 10" OC	
P2	TYPE 2	(2) #6	-	
P3	TYPE 3	(8) #6	#4 @ 10" OC	
P4	TYPE 4	(8) #6	#4 @ 10" OC	

2B. PLINTH GENERAL NOTES

1. RE: PLAN FOR TYPE AND ORIENTATION OF PLINTHS.

2. WHERE A PLINTH IS INTEGRAL WITH A BEAM, EXTEND THE HORIZONTAL REINFORCING THROUGH THE PLINTH.

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8588 Katy Freeway
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Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickenson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

DRILLED PIER SCHEDULE

DRAWN BY
CHECKED BY

PROJECT NUMBER 418198
PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT
DATE 26 JUNE 2020

S-301
SHEET NUMBER

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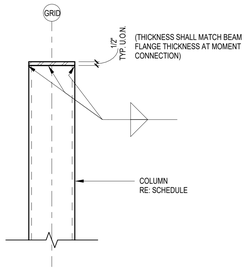
DATE STAMP 6/26/2020 12:15:48 PM

A. CAP PLATE DETAIL
(NO SCALE)

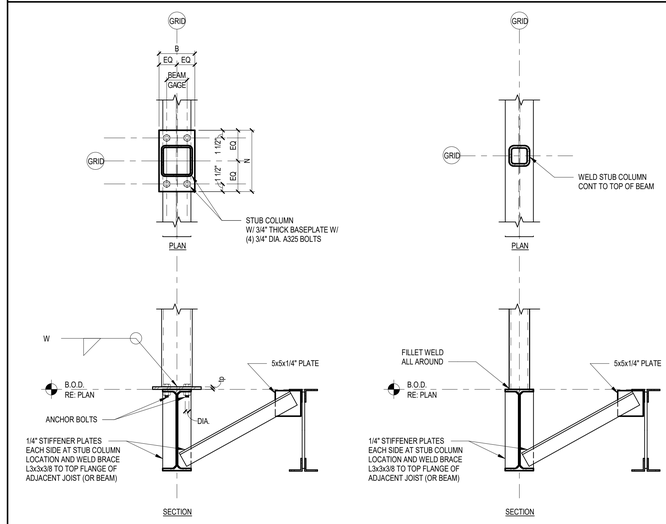


B. COLUMN GENERAL NOTES

1. PROVIDE STRUCTURAL STEEL FOR W SHAPES CONFORMING TO ASTM 992, GRADE 50.
2. PROVIDE STRUCTURAL STEEL FOR HSS COLUMNS CONFORMING TO ASTM A500, GRADE B.
3. PROVIDE STEEL FOR STIFFENER PLATES, CONNECTION PLATES AND ANGLES CONFORMING TO ASTM A36.
4. SAW OR MILL SURFACES NOTED FIN. (FINISHED) FOR TRUE AND FULL CONTACT.
5. USE E70XX WELDING ELECTRODES FOR ALL WELDS, UNLESS OTHERWISE NOTED.
6. WEB DOUBLER PLATES ARE NOT REQUIRED.

C. COLUMN REMARKS

D. STUB COLUMN BASE PLATE DETAIL
(NO SCALE)



E. BASE PLATE GENERAL NOTES

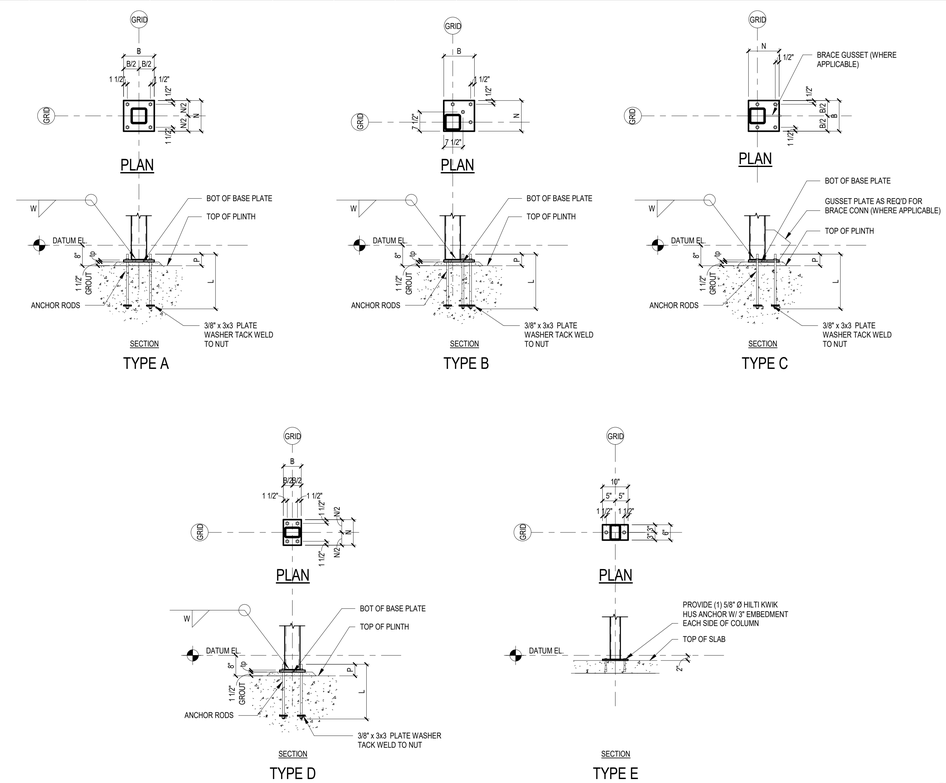
1. PROVIDE STEEL FOR BASE PLATES CONFORMING TO ASTM A36.
2. PROVIDE HOLES IN BASE PLATES IN ACCORDANCE WITH AISC 14TH EDITION.
3. PROVIDE ANCHOR RODS CONFORMING TO ASTM F1554, GRADE 55 WELDABLE.
4. PROVIDE ANCHOR RODS WITH PLATE WASHERS AND HEX NUTS.
5. USE E70XX WELDING ELECTRODES FOR ALL WELDS, UNLESS OTHERWISE NOTED.
6. MILL SURFACES NOTED FIN. (FINISHED) FOR TRUE AND FULL CONTACT.
7. SET ANCHOR RODS WITH TEMPLATE.
8. PROVIDE NON-METALLIC SHRINK-RESISTANT GROUT WITH 8000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28-DAYS.

1. STRUCTURAL STEEL COLUMN SCHEDULE AND DETAILS

LEVEL	COLUMN MARK	C1	C2	C3
CAP PLATE DETAIL		A/S302	A/S302	A/S302
ROOF LEVEL T.O.C. = SEE PLAN / F.F.E. = 0'-0"		HSS8X8X1/4	HSS8X8X1/4	HSS8X8X1/4
BOTTOM OF BASE PLATE EL.		- 6 1/2"	- 6 1/2"	- 2"
BASE PLATE MARK		BP1	BP2	BP3
REMARKS		-	-	-

2. BASE PLATE SCHEDULE AND DETAILS

PLATE MARK	PLATE TYPE	DIMENSIONS B (IN)	DIMENSIONS N (IN)	DIMENSIONS tp (IN)	ANCHOR RODS NUMBER	ANCHOR RODS DIA. (IN)	ANCHOR RODS PROJECTION, P (IN)	ANCHOR RODS LENGTH, L (IN)	REMARKS
BP1	A	12	12	3/4"	4	3/4"	6	2'-0"	USE TYPE B AT CORNER LOCATIONS. USE TYPE C AT PERIMETER AND BRACE LOCATIONS.
BP2	D	7	10	3/4"	4	3/4"	6	2'-0"	
BP3	E	6	10	1/2"	2	5/8"	-	-	



PROJECT: 19-344-00

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S-302
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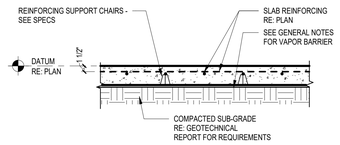
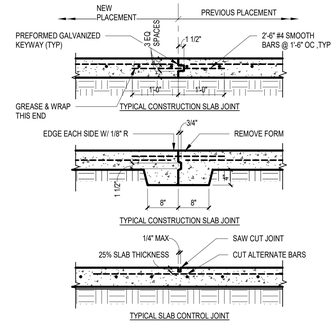
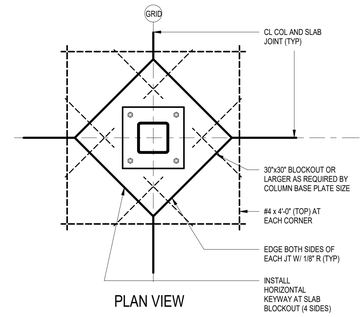


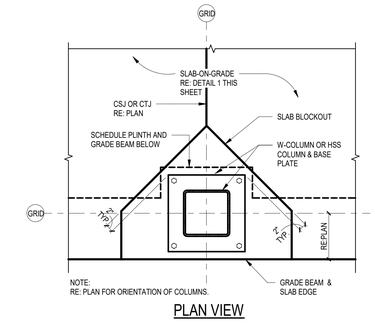
1 TYPICAL SLAB DETAIL
3/4" = 1'-0"



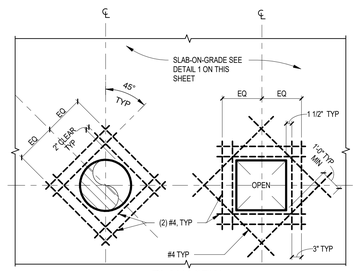
2 TYPICAL CONTRUCTION SLAB JOINT
3/4" = 1'-0"



3 SLAB BLOCKOUT AT INTERIOR COLUMN
3/4" = 1'-0"

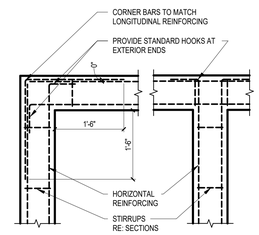


4 PERIMETER COLUMN BLOCKOUT
3/4" = 1'-0"

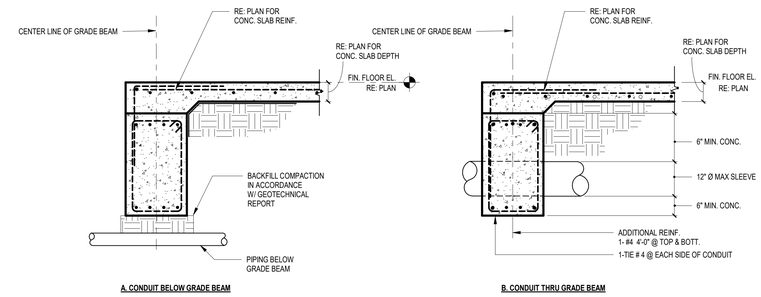


NOTE:
RE: ARCHITECTURAL, PLUMBING AND ELECTRICAL DRAWINGS FOR SIZES AND LOCATIONS OF THE FLOOR PENETRATIONS.

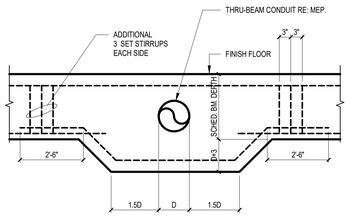
5 TYPICAL SLAB ADD'L REINF. AT OPENING
3/4" = 1'-0"



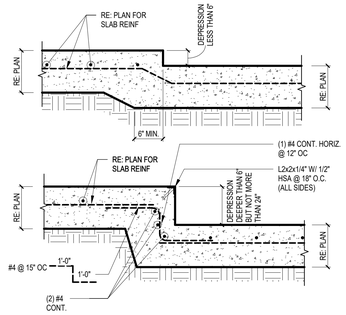
6 TYPICALGRADE BEAM PLAN
3/4" = 1'-0"



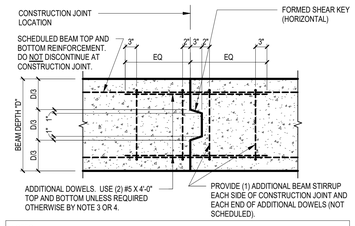
7 TYP. CONDITION OF CONDUIT
3/4" = 1'-0"



8 TYPICAL THRU. BEAM CONDUIT
3/4" = 1'-0"

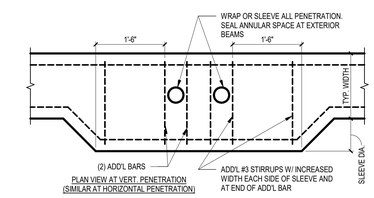


9 TYPICAL SLAB DEPRESSION DETAILS
3/4" = 1'-0"



NOTES:
1. GENERAL CONTRACTOR SHALL SUBMIT DESIRED CONSTRUCTION JOINT LAYOUT AS A SHOP DRAWING FOR APPROVAL A MINIMUM OF TWO WEEK PRIOR TO POUR.
2. CONSTRUCTION JOINT LOCATIONS SHALL BE COORDINATED WITH REINFORCING STEEL SUPPLIER AND ERECTOR.
3. ACCEPTABLE JOINT LOCATIONS ARE AS FOLLOWS:
   a. FOR BEAMS NOT SUPPORTING INTERSECTING BEAMS: PLACE JOINT MIDDLE THIRD OF SPAN.
   b. FOR BEAMS SUPPORTING INTERSECTING BEAMS, CHECK WITH STRUCTURAL ENGINEER.
4. FOR JOINT LOCATIONS OTHER THAN WITHIN MIDDLE THIRD OF SPAN, CONTRACTOR SHALL COORDINATE
   REQUIRED ADDITIONAL REINFORCEMENT WITH THE ENGINEER ON THE SHOP DRAWINGS.

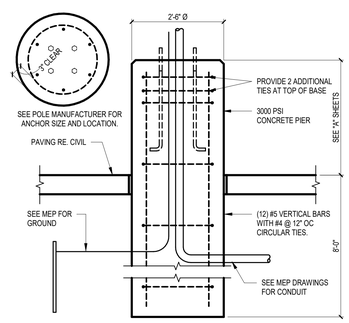
10 TYP. GRADE BEAM CONSTRUCTION JOINT
3/4" = 1'-0"



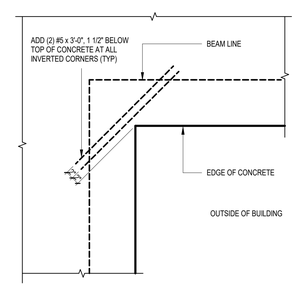
NOTE:
WHERE FOUNDATION BEAMS ARE VERTICALLY PENETRATED BY PIPED, SLEEVE, OR OTHER OBJECTS GREATER THAN 2" DIAMETER, THE BEAM SHALL BE INCREASED IN WIDTH BY A DIMENSION AT LEAST EQUAL TO THE GREATEST DIMENSION OF THE SLEEVES, PIPE OR OBJECT. THE INCREASED WIDTH SHALL EXTEND 1'-6" ON EACH SIDE OF PENETRATION. ADD (1) #4 TOP AND BOTTOM AND ADD'L STIRRUPS AS SHOWN ABOVE AT THICKENED PORTION OF BEAM. UNDER NO CIRCUMSTANCES SHALL ANY REBAR BE CUT.

WHERE FOUNDATION BEAMS ARE HORIZONTALLY PENETRATED BY PIPES, SLEEVE, OR OTHER OBJECTS GREATER THAN 6" DIAMETER, THE BEAM SHALL BE INCREASED IN DEPTH BY A DIMENSION AT LEAST EQUAL TO THE GREATEST DIMENSION OF THE SLEEVE,S PIPE OR OBJECT. THE INCREASED DEPTH SHALL EXTEND 1'-6" ON EACH SIDE OF THE PENETRATION. ADD 2 BOTTOM BARS (SAME SIZE AS SCHEDULED) AND ADD'L STIRRIPS AS SHOWN ABOVE AT THICKENED PORTION OF BEAM. UNDER NO CIRCUMSTANCES SHALL ANY REBAR BE CUT.

11 TYPICAL THRU. BEAM CONDUIT
3/4" = 1'-0"



12 TYPICAL LIGHT POLE DETAIL
3/4" = 1'-0"



13 TYP REINF DETAIL AT INVERTED CORNER
3/4" = 1'-0"

PROJECT: 19-344-00

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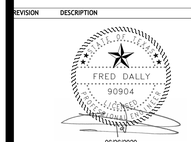

06/26/2020

TYPICAL FOUNDATION DETAILS

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PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B

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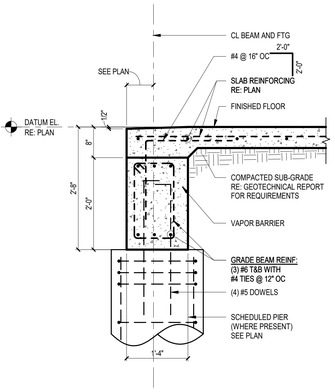
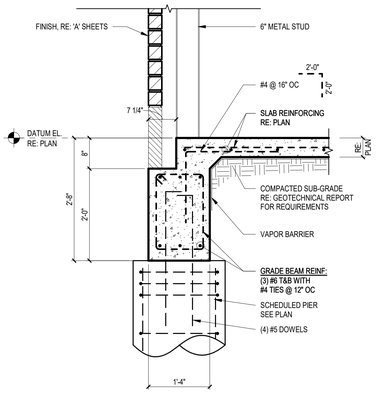
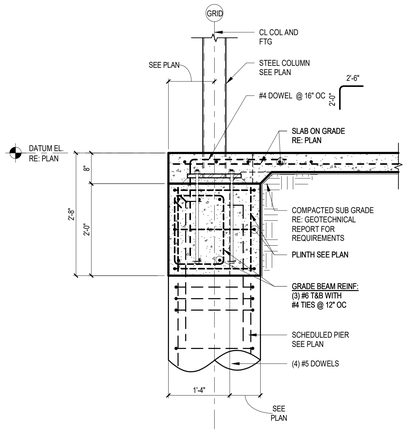


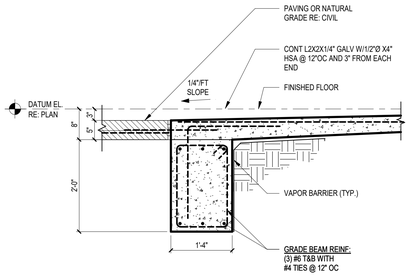
1 **FOUNDATION DETAIL**
3/4" = 1'-0"



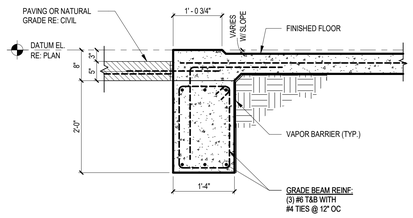
2 **FOUNDATION DETAIL**
3/4" = 1'-0"



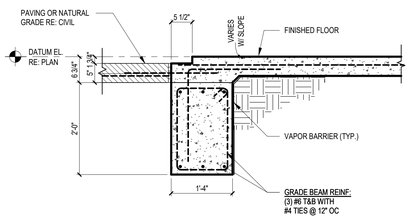
3 **GRADE BEAM AT PIER AT COLUMN**
3/4" = 1'-0"



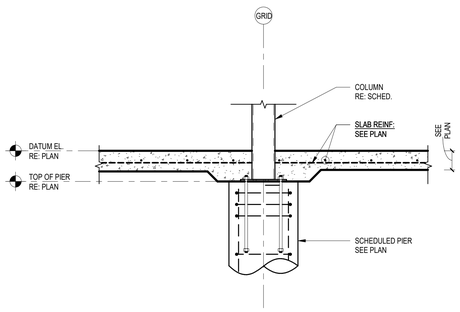
4 **EXTERIOR GRADE BEAM AT OVERHEAD DOOR**
3/4" = 1'-0"



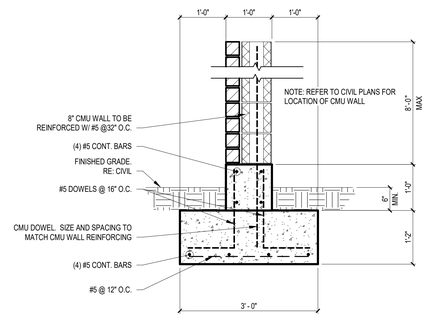
5 **EXTERIOR GRADE BEAM AT OVERHEAD DOOR**
3/4" = 1'-0"



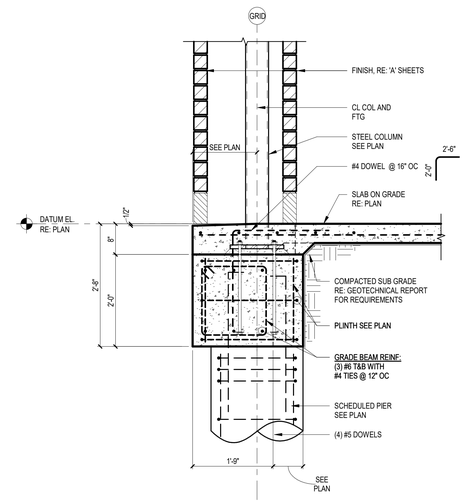
6 **EXTERIOR GRADE BEAM AT DETAIL BAY**
3/4" = 1'-0"



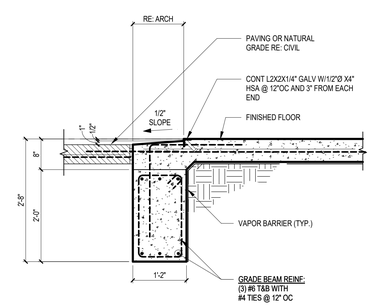
7 **INTERIOR PEMB AT PIER**
3/4" = 1'-0"



8 **CMU FENCE FOOTING**
3/4" = 1'-0"



9 **GRADE BEAM AT PIER AT COLUMN**
3/4" = 1'-0"



10 **EXTERIOR GRADE BEAM AT OVERHEAD DOOR**
3/4" = 1'-0"

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FRED DALLY
90904
06/26/2020

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DRAWN BY	CHECKED BY
PROJECT NUMBER 418198	**PROJECT ABBREVIATION** GC_R&B
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S-402
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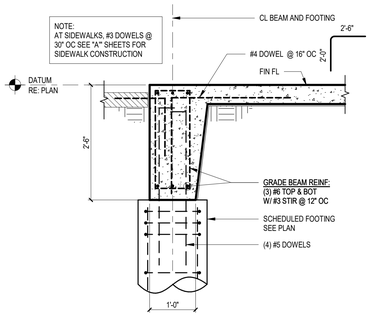
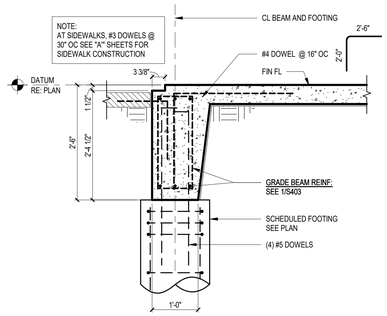


1 **EXTERIOR GRADE BEAM**
3/4" = 1'-0"



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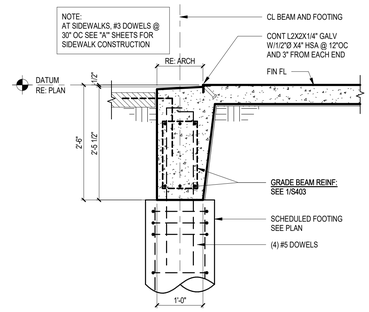

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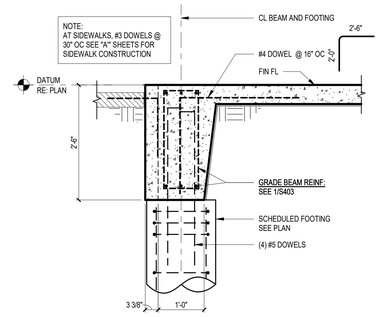
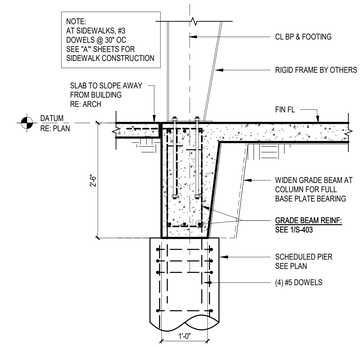
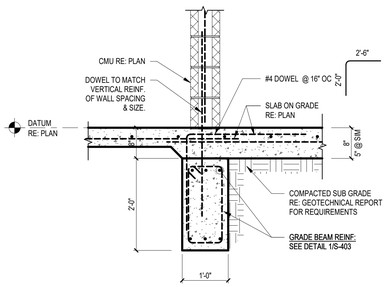
3/4" = 1'-0"



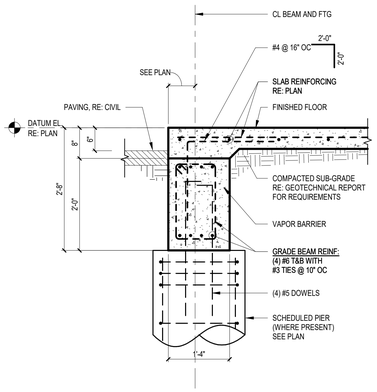
4 **EXTERIOR GRADE BEAM**
3/4" = 1'-0"



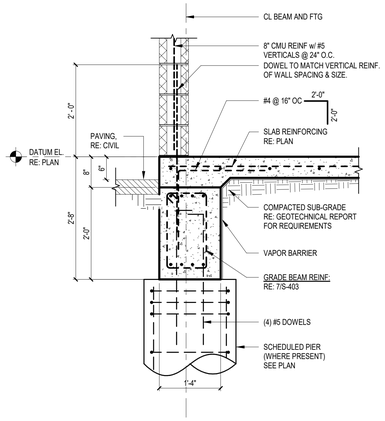
5 **EXTERIOR GRADE BEAM**
3/4" = 1'-0"



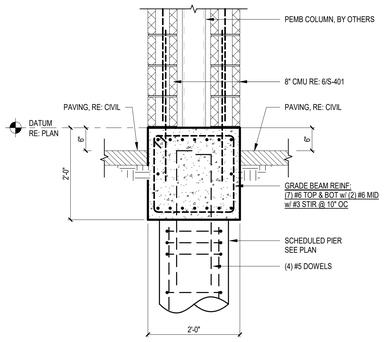
6 **INTERIOR GRADE BEAM WITH CMU**
3/4" = 1'-0"



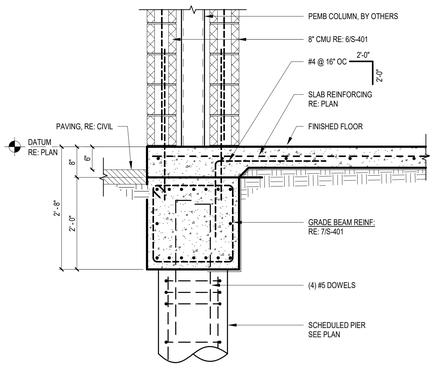
7 **FOUNDATION DETAIL**
3/4" = 1'-0"



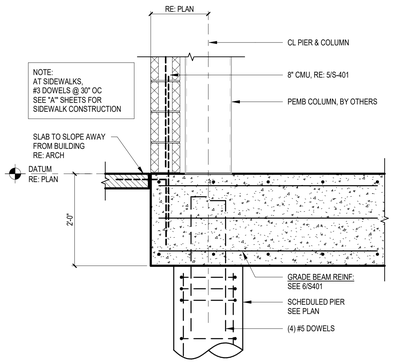
8 **FOUNDATION DETAIL**
3/4" = 1'-0"



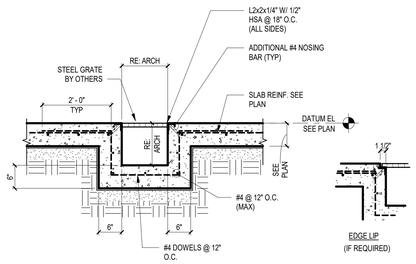
9 **INTERIOR GRADE BEAM WITH CMU**
3/4" = 1'-0"



10 **INTERIOR GRADE BEAM WITH CMU**
3/4" = 1'-0"



11 **EXTERIOR GRADE BEAM**
3/4" = 1'-0"



12 **TYPICAL DETAIL - SECTION AT TRENCH DRAIN**
3/4" = 1'-0"

PROJECT: 19-344-00

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

FRED DALLY
90904
06/26/2020

FOUNDATION DETAILS

DRAWN BY	CHECKED BY
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

S-403
SHEET NUMBER

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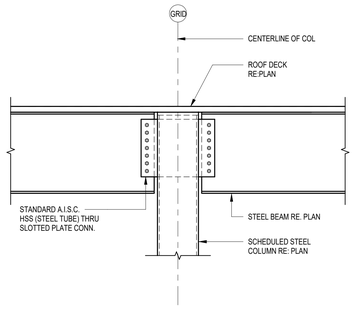
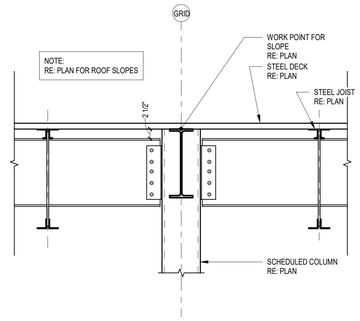
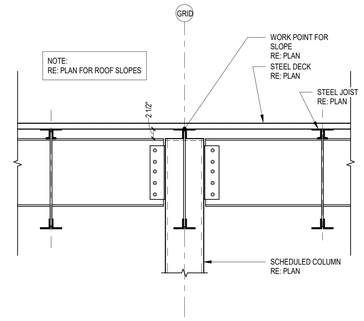


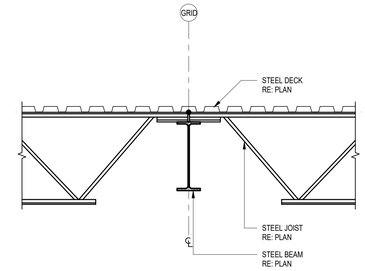
1 **BEAM GIRDER CONNECTION**
3/4" = 1'-0"



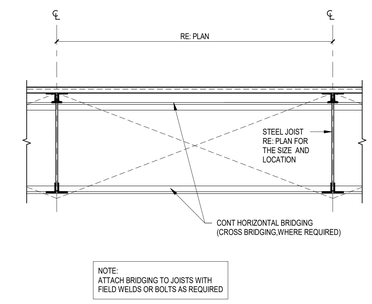
2 **TYPICAL ROOF SECTION**
3/4" = 1'-0"



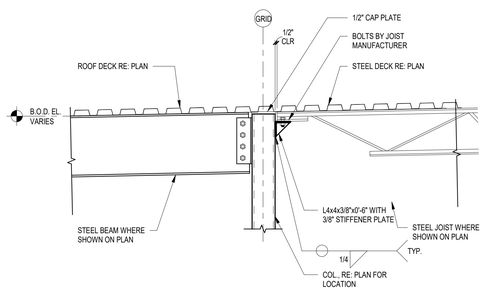
3 **TYPICAL ROOF SECTION**
3/4" = 1'-0"



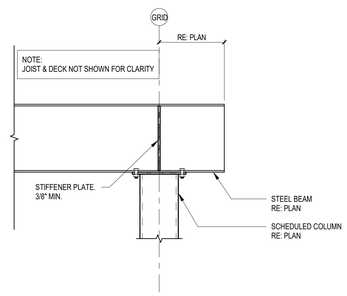
4 **TYPICAL ROOF SECTION**
3/4" = 1'-0"



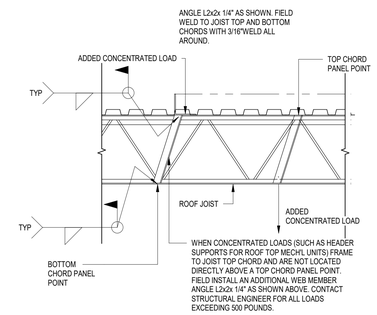
5 **TYPICAL ROOF SECTION**
3/4" = 1'-0"



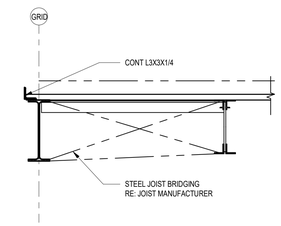
6 **JOIST & BEAM TO COLUMN CONNECTION DETAILS**
3/4" = 1'-0"



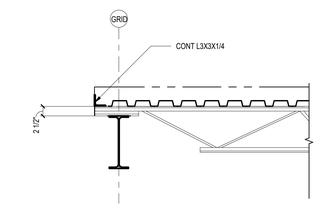
7 **CANTILEVERED BEAM DETAIL**
3/4" = 1'-0"



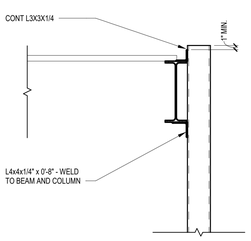
8 **LOAD OFFSET FROM JOIST PANEL POINT**
3/4" = 1'-0"



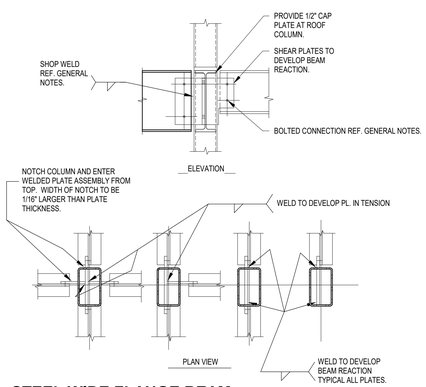
9 **ROOF SECTION**
3/4" = 1'-0"



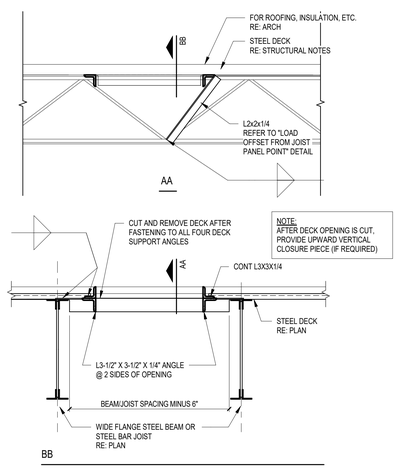
10 **ROOF SECTION**
3/4" = 1'-0"



11 **ROOF SECTION**
3/4" = 1'-0"

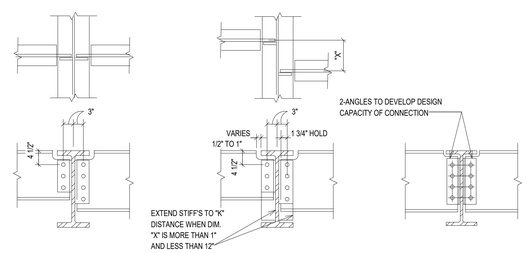


STEEL WIDE FLANGE BEAM
12 **CONNECTION TO HSS (TUBE) COLUMNS**
3/4" = 1'-0"



NOTES:
1. THESE DETAILS APPLY TO ALL OPENINGS WITH A DIMENSION GREATER THAN 12".
2. THESE DETAILS APPLY TO FLOOR DRAINS, ROOF DRAINS, AND OVERFLOW DRAINS.
3. NOTE THAT ANGLE FRAMES AND OPENINGS MAY BE REQUIRED THAT ARE NOT INDICATED ON THE STRUCTURAL DRAWINGS.
4. COORDINATE WITH THE ARCHITECTURAL AND MEP DRAWINGS FOR SLEEVES, CURBS, INSERTS, ETC... NOT INDICATED ON THE STRUCTURAL DRAWINGS.
5. THE LOCATION OF SLEEVES AND/OR OPENINGS SHALL BE SUBMITTED TO DALLY ASSOCIATES FOR REVIEW
6. HEAVIER STRUCTURAL MEMBERS MAY BE REQUIRED FOR OPENINGS LARGER THAN INDICATED IN THIS DETAIL.

13 **TYPICAL ROOF OPENING DETAIL WITH STL JOISTS**
3/4" = 1'-0"



NOTES:-
1. BOTH THE WELDS & THE BOLTS TO BE DESIGNED FOR MOMENT CAUSED BY ECCENTRICITY BETWEEN WELD GROUP & BOLT CENTERLINE.
2. END REACTION TO BE DETERMINED PER GENERAL NOTES SHEET OR AS SHOWN ON PLANS.

14 **BEAM CONNECTION DETAILS**
3/4" = 1'-0"

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

FRED DALLY
90904
06/26/2020

TYPICAL FRAMING DETAILS

DRAWN BY	CHECKED BY

PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B

ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

PROJECT: 19-344-00

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S-501
SHEET NUMBER

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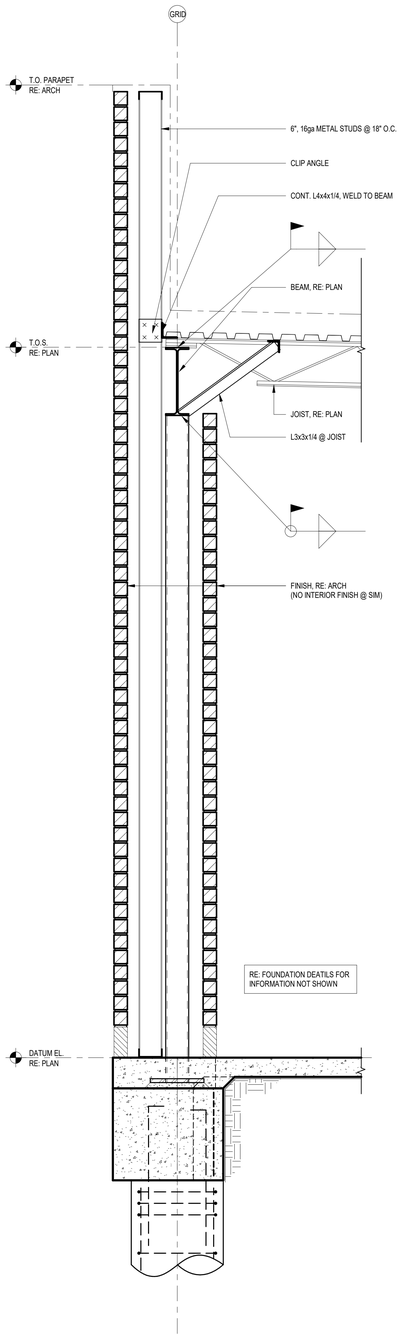
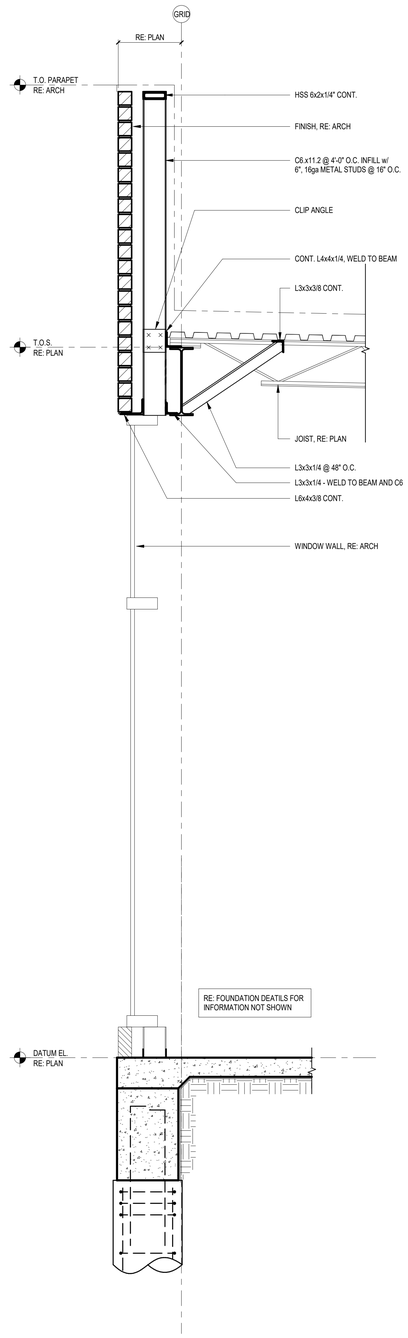
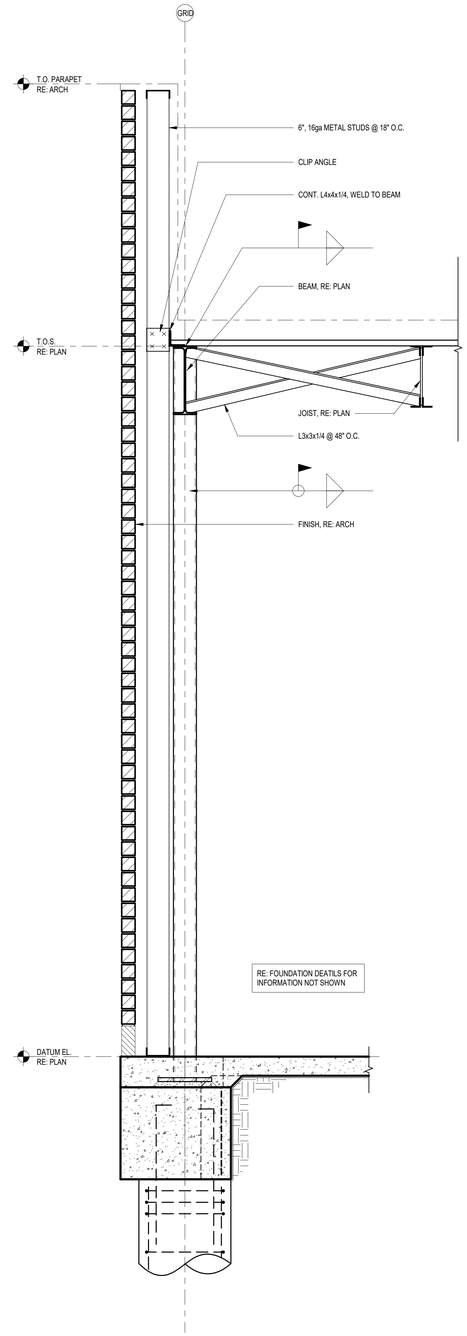


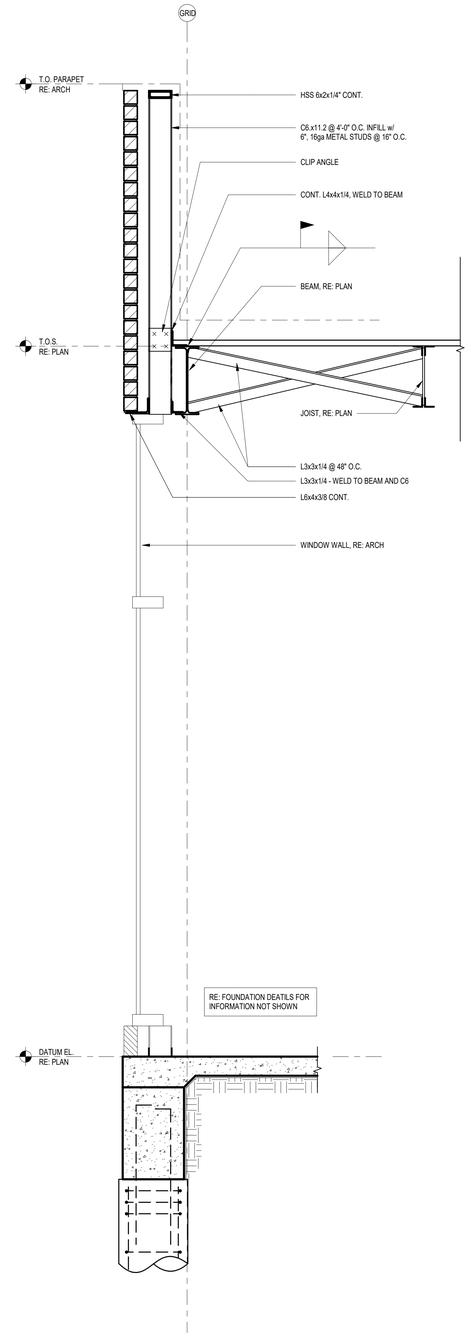
1 **SECTION**
3/4" = 1'-0"



2 **SECTION**
3/4" = 1'-0"



3 **SECTION**
3/4" = 1'-0"



4 **SECTION**
3/4" = 1'-0"

PROJECT: 19-344-00

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

FRED DALLY
90904
06/26/2020

FULL HEIGHT DETAILS

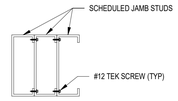
DRAWN BY	CHECKED BY
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

S-502
SHEET NUMBER

FILE PATH: C:\Users\TKrueger\Documents\19-344_GALVESTON_R&B_OFFICE_R19_tkrueger4SF7J.rvt
USER NAME:
DATE STAMP: 6/26/2020 12:16:00 PM

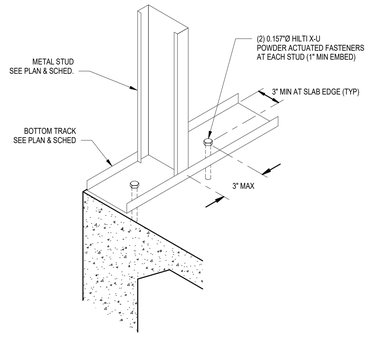
JAMB STUD SCHEDULE

OPENING SIZE	NO. OF JAMB STUDS	NO. OF JACK STUDS	HEADER DETAIL	SILL SIZE	SILL ATTACHMENT
< 4'-6"	2	1	XXA/SX.XX	600T125-54	AL600 CLIP W/ (4) #12 TEK SCREWS INTO JAMB & (4) #12 TEK SCREWS INTO SILL
4'-6" <= 10'-0"	4	1	XXB/SX.XX	600T125-54	AL600 CLIP W/ (4) #12 TEK SCREWS INTO JAMB & (4) #12 TEK SCREWS INTO SILL

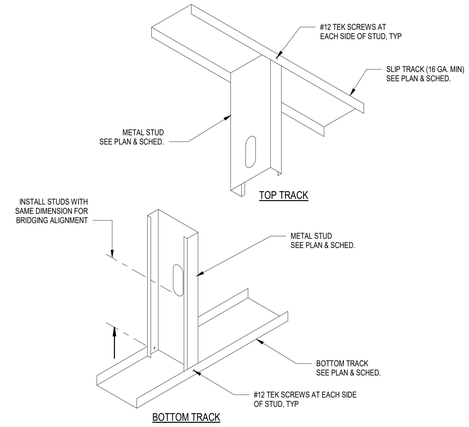


NOTES:
1. ATTACH MULTIPLE METAL STUDS TOGETHER W/ (2) #12 TEK SCREWS @ 12" O.C.

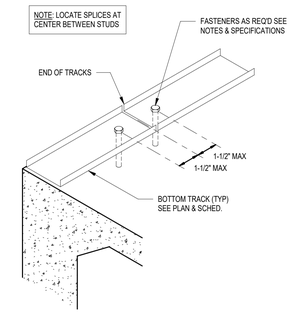
1 MULTIPLE METAL STUD DETAIL
1" = 1'-0"



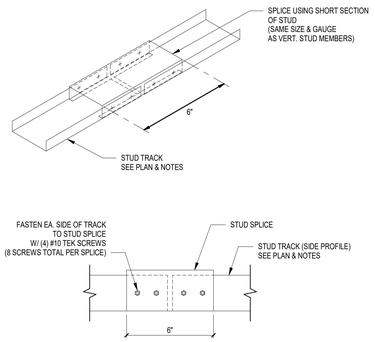
2 TYPICAL DETAIL - BOTTOM RUNNER TRACK CONNECTION
1" = 1'-0"



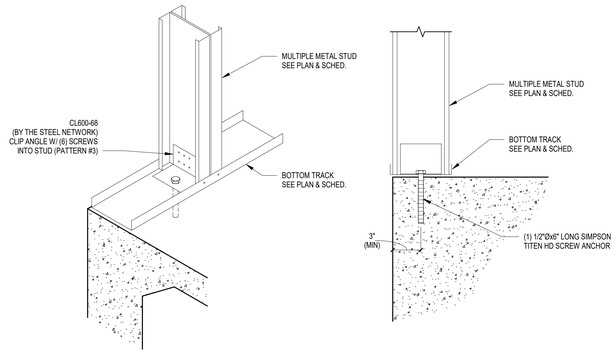
3 TYPICAL DETAIL - STUD TO TRACK CONNECTION
1" = 1'-0"



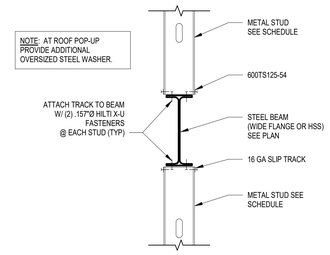
4 TYPICAL DETAIL - BOTTOM TRACK SPLICE
1" = 1'-0"



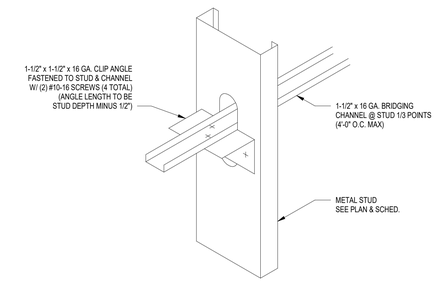
5 TYPICAL TOP TRACK SPLICE
1" = 1'-0"



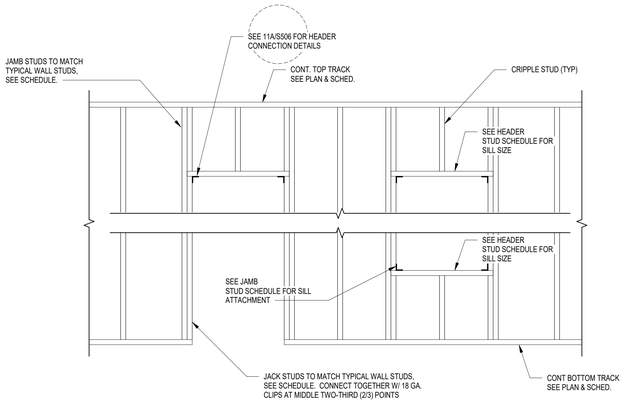
6 TYPICAL DETAIL - STUD HOLDDOWN CONNECTION TO FOUNDATION AT JAMB
1" = 1'-0"



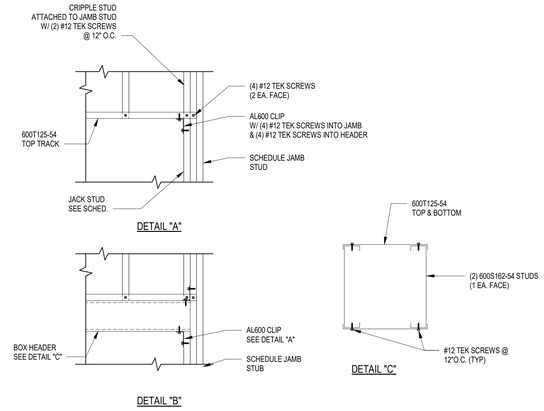
7 TYPICAL DETAIL - TYPICAL CONNECTION TO STRUCTURE
1" = 1'-0"



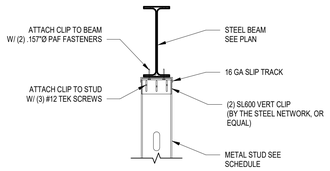
8 U-CHANNEL BRIDGING DETAIL
1" = 1'-0"



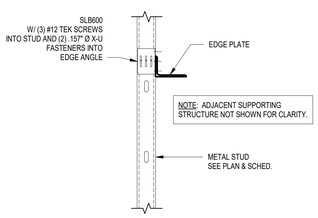
9 TYPICAL FRAMING AT OPENINGS
1" = 1'-0"



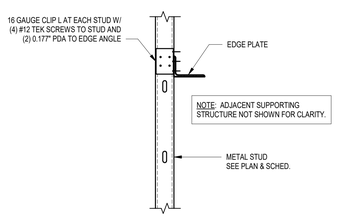
10 TYPICAL FRAMING AT OPENINGS
1" = 1'-0"



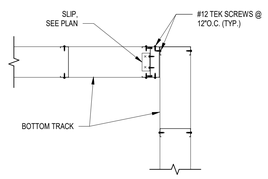
11 TYPICAL DETAIL - MULTIPLE STUD ATTACHMENT TO TOP TRACK AT STRUCTURE
1" = 1'-0"



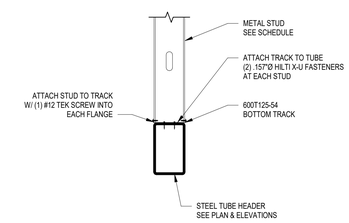
12 TYPICAL METAL STUD BYPASS CONNECTION
1" = 1'-0"



13 TYPICAL METAL STUD BYPASS CONNECTION
1" = 1'-0"



15 TYPICAL FRAMING AT END-WALL (PLAN VIEW)
1" = 1'-0"



16 TYPICAL DETAIL - METAL STUD ATTACHMENT TO STEEL HEADER
1" = 1'-0"

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06/26/2020

TYPICAL LIGHT GAUGE DETAILS

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ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

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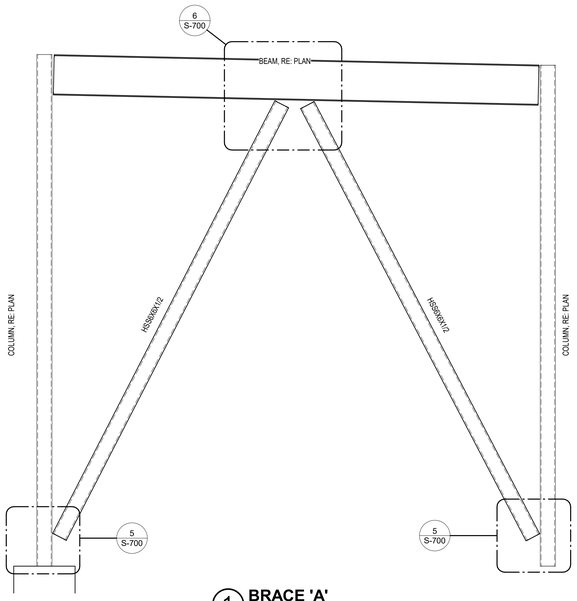
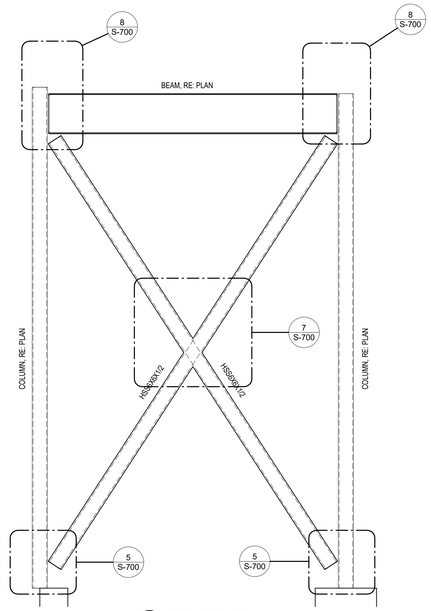
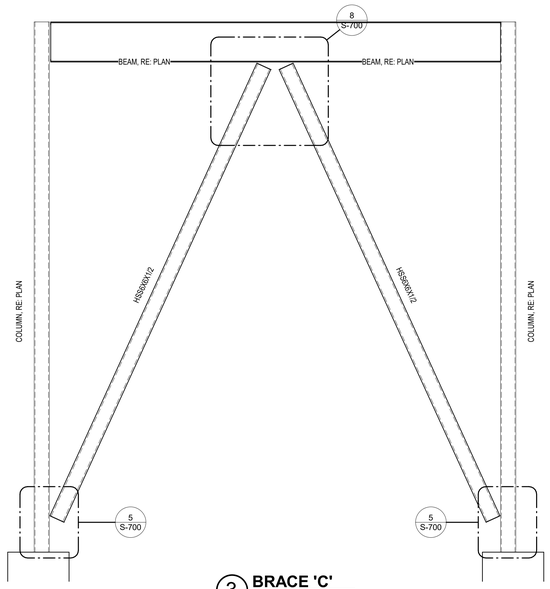


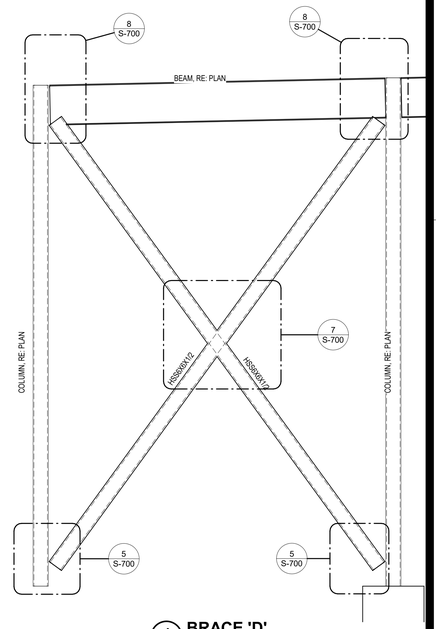
1 **BRACE 'A'**
1/2" = 1'-0"



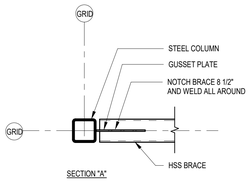
2 **BRACE 'B'**
1/2" = 1'-0"



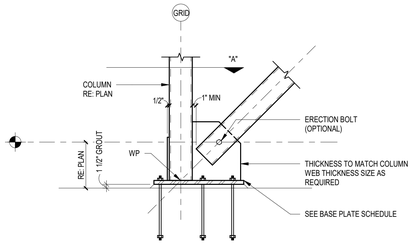
3 **BRACE 'C'**
1/2" = 1'-0"



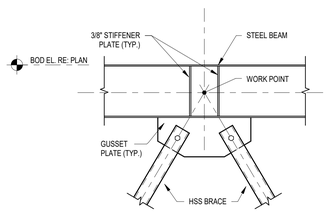
4 **BRACE 'D'**
1/2" = 1'-0"



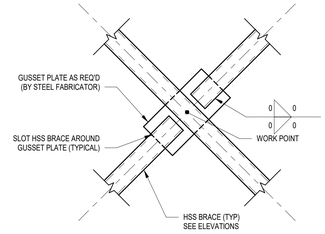
NOTES:
1. ALL WELDS TO BE SIZED BY STEEL FABRICATOR.
2. BOLTED CONNECTIONS MAY BE SUBSTITUTED (WHERE POSSIBLE) PER FABRICATORS PREFERENCE.



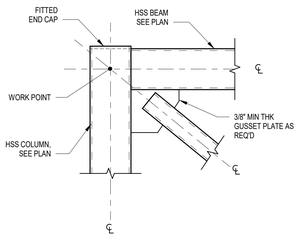
5 **BRACE DETAIL AT FOUNDATION**
3/4" = 1'-0"



6 **BRACE CONNECTION DETAIL**
3/4" = 1'-0"



7 **TYPICAL DETAIL - X-BRACE CONNECTION**
1" = 1'-0"



8 **DETAIL AT HSS CONNECTION**
1" = 1'-0"

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BRACE ELEVATIONS & DETAILS

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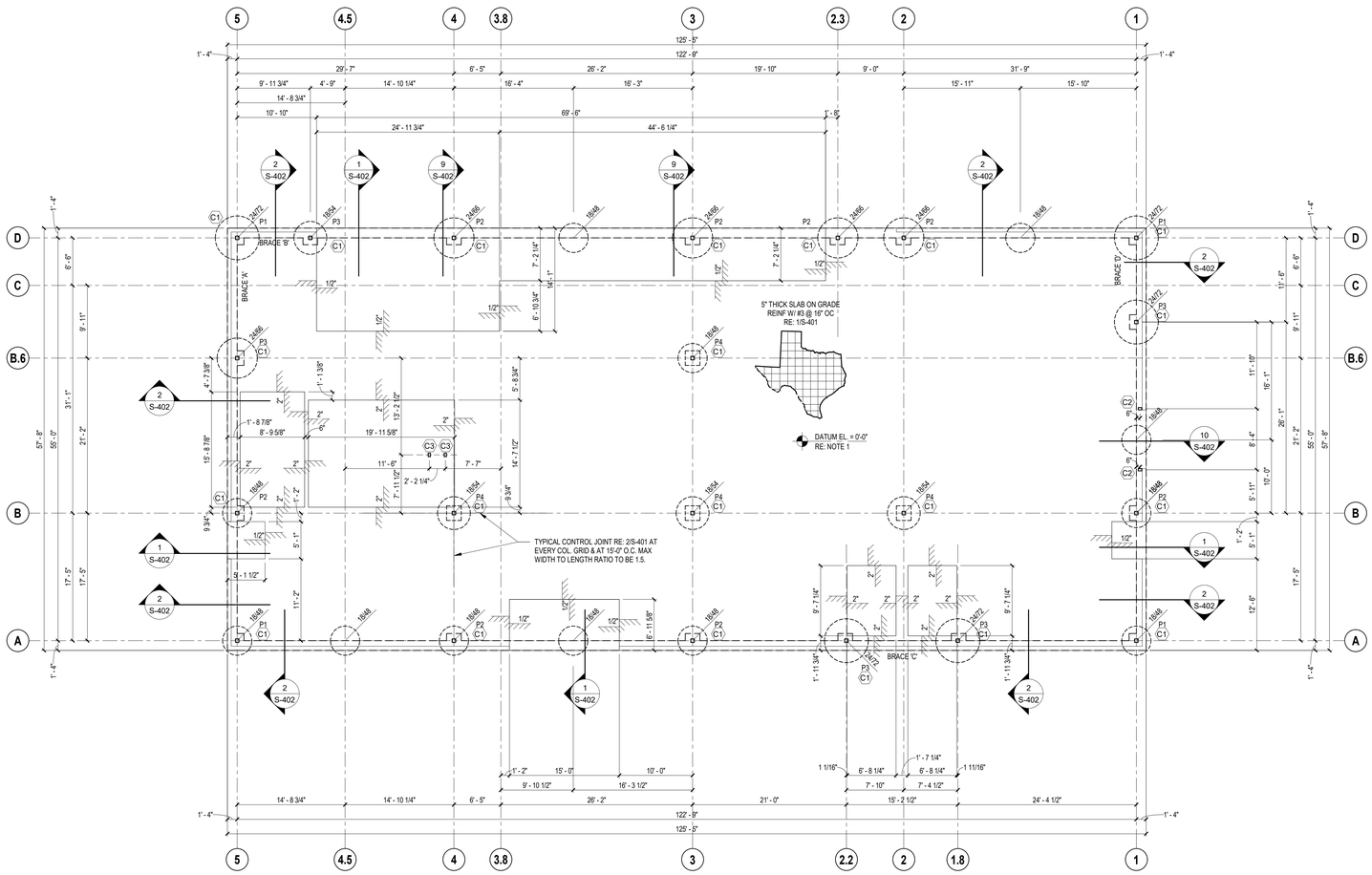

1 FOUNDATION PLAN - THE OFFICE

1/8" = 1'-0"

FOUNDATION NOTES:

1. DATUM ELEVATION 0'-0" CORRESPONDS TO TRUE ELEVATION = RE: CIVIL. ALL ELEVATIONS ARE RELATIVE TO DATUM ELEVATION (0'-0").
2. ALL COLUMNS ARE MARKED. RE:S-302 FOR COLUMN SCHEDULE.
3. ALL INTERIOR PLINTHS ARE "P1" U.O.N. RE:S-301 FOR PLINTH SCHEDULE.
4. TOP OF ALL INTERIOR PLINTHS ARE AT ELEVATION (-8") U.O.N.
5. TOP OF ALL PERIMETER PIERS ARE AT ELEVATION (-2'-8") U.O.N.
6. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL PLANS PRIOR TO DRILLING PIERS. NOTIFY ENGINEER OF DISCREPANCIES.
7. VERIFY ALL DIMENSIONS, AND EXACT SIZE AND LOCATIONS OF ALL BLOCK-OUTS, DEPRESSIONS, EMBEDS, FLOOR DRAINS, ELECTRICAL BOXES, AND SIMILAR ITEMS WITH ARCHITECTURAL & MEP PLANS PRIOR TO FORMING CONCRETE. NOTIFY ENGINEER OF DISCREPANCIES.
8. ALL PIPING AND CONDUIT SHALL BE UNDER FULL DEPTH OF SLAB AND SHALL NOT BE LAID ON TOP OF SUB-GRADE OR POLY.

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FOUNDATION PLAN - OFFICE

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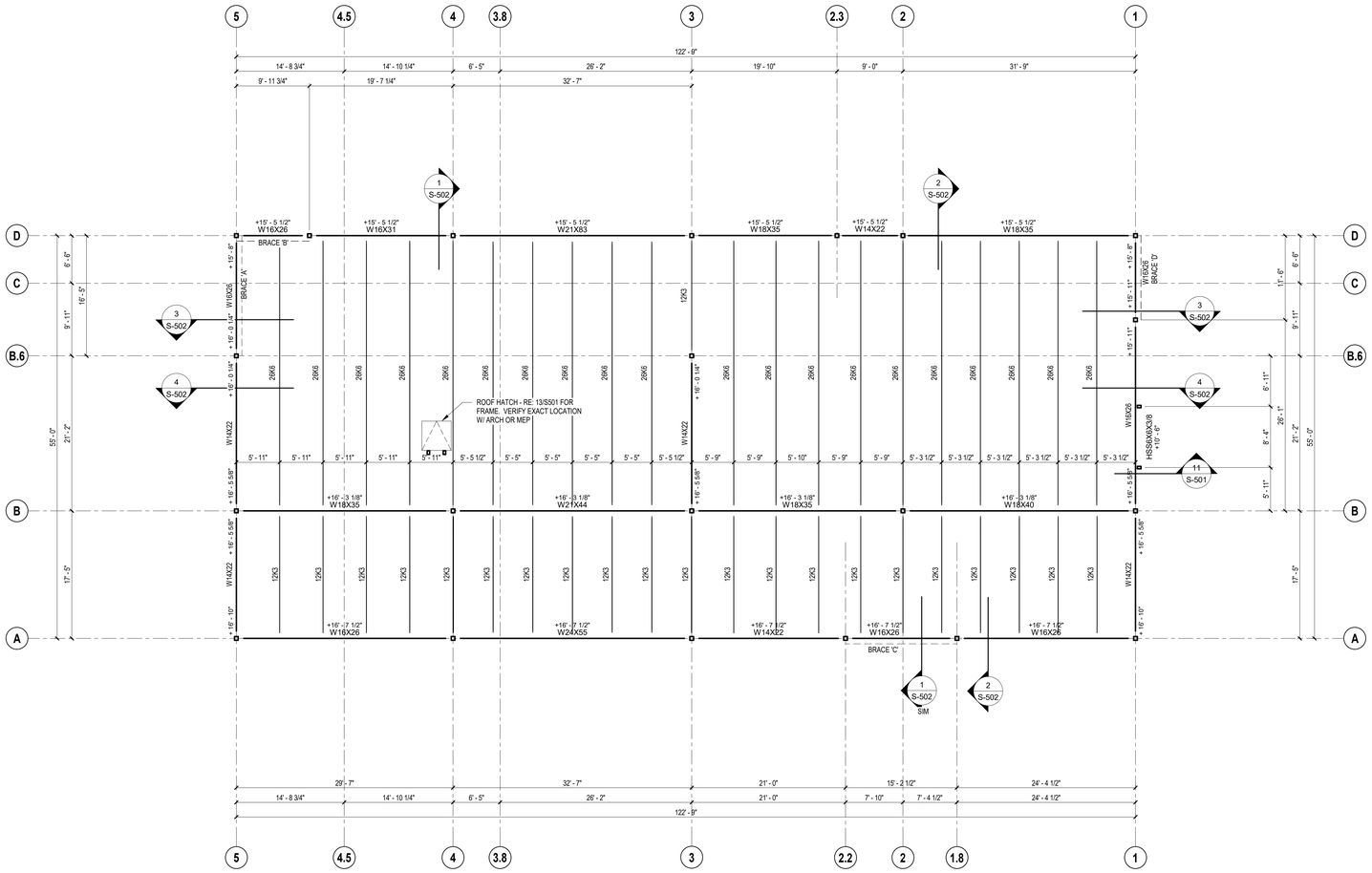

1 ROOF FRAMING PLAN - THE OFFICE

1/8" = 1'-0"

FRAMING NOTES:

1. ALL ELEVATIONS ARE RELATIVE TO DATUM ELEVATION (0'-0")
2. RE:SECTION 7E ON S-000 FOR ROOF DECK INFORMATION
3. ALL OPENING IN THE ROOF DECK LARGER THAN 10" SQ. MUST BE SUPPORTED ON AN ANGLE FRAME L3X3X1/4" FIELD WELDED TO ADJACENT JOIST OR W-BEAM. REFER TO 8/S-501
4. SIZE AND LOCATION OF MECHANICAL OPENINGS SHOWN ARE APPROXIMATE AND SHALL BE COORDINATED WITH CONTRACTOR BEFORE FRAMING IS INSTALLED. STRUCTURAL ENGINEER SHALL BE NOTIFIED IF SIZE AND/OR LOCATION OF REQUIRED OPENING AND UNITS DIFFER FROM THOSE SHOWN ON PLAN.
5. G.C./ STEEL FABRICATOR COORDINATE ROOF PENETRATIONS WITH MECHANICAL CONTRACTOR.

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ROOF FRAMING PLAN - OFFICE

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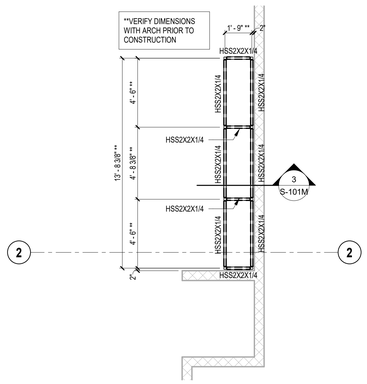
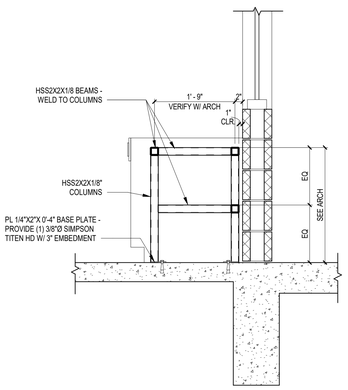
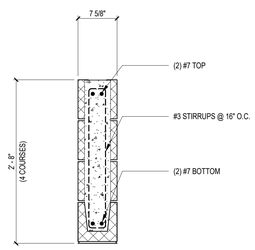


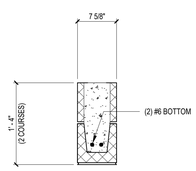
2 MISC. FRAMING
1/4" = 1'-0"



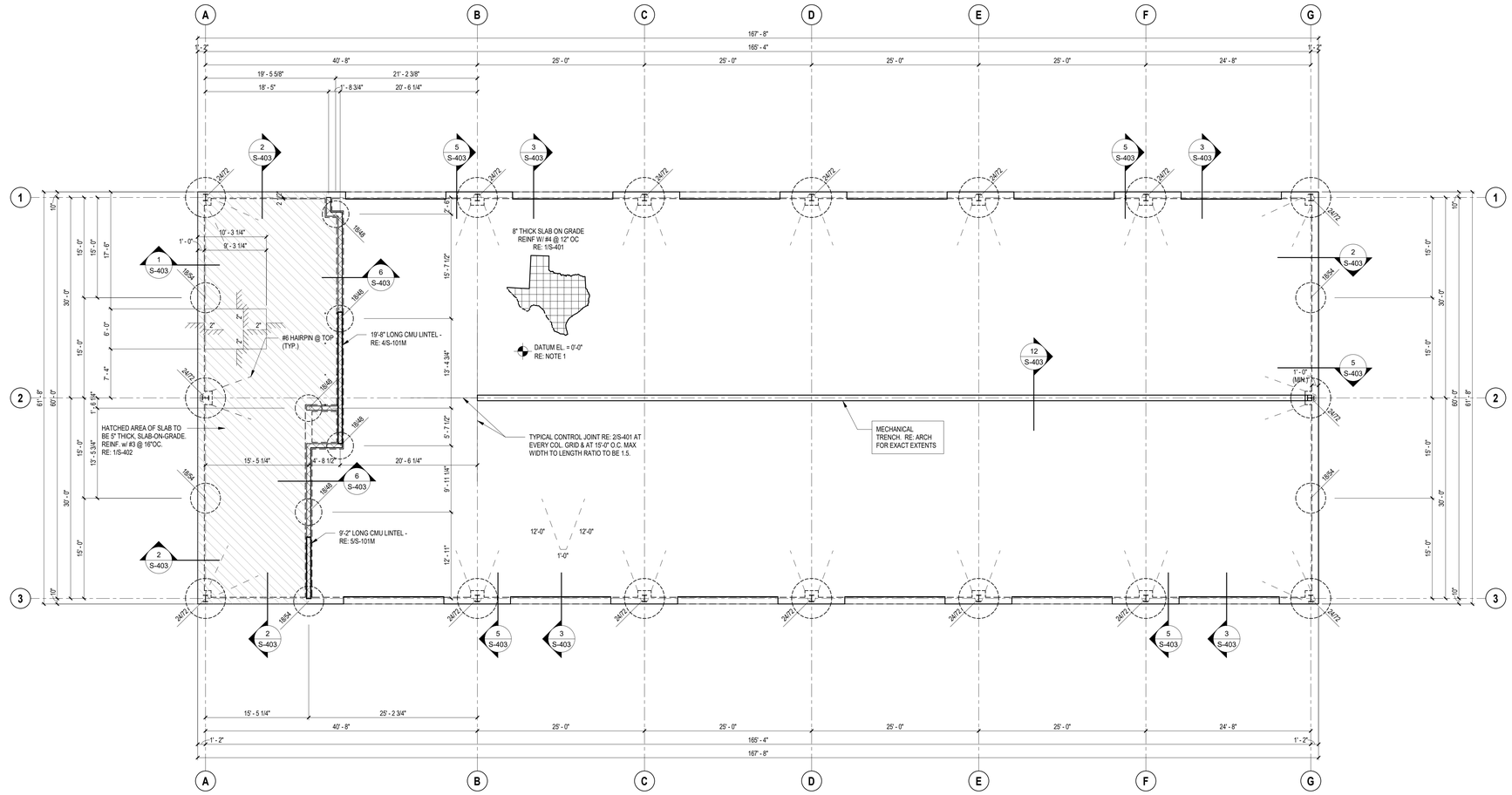
3 MISC. FRAMING DETAIL
3/4" = 1'-0"



4 LINTEL
1" = 1'-0"



5 LINTEL
1" = 1'-0"



1 FOUNDATION PLAN - THE SHOP
1/8" = 1'-0"

NOTE:

FOLLOW PEMB ANCHOR BOLTS LAYOUT DRAWINGS FOR LOCATION OF ANCHOR BOLTS. DO NOT USE THESE DRAWINGS TO PLACE ANCHOR BOLT LOCATION.

NOTE:

FOUNDATION CONSTRUCTION MAY NOT COMMENCE UNTIL THE STRUCTURAL ENGINEER HAS RECIEVED AND REVIEWED THE FINAL METAL BUILDING MANUFACTURERS DRAWINGS.

FOUNDATION NOTES:

1. DATUM ELEVATION 0'-0" CORRESPONDS TO TRUE ELEVATION = RE: CIVIL. ALL ELEVATIONS ARE RELATIVE TO DATUM ELEVATION (0'-0").
2. ALL COLUMNS ARE MARKED. RE:S-302 FOR COLUMN SCHEDULE.
3. ALL PERIMETER PLINTHS ARE "P3" U.O.N.
   ALL CORNER PLINTHS ARE "P1" U.O.N.
   RE:S301 FOR PLINTH SCHEDULE.
4. TOP OF ALL INTERIOR PLINTHS ARE AT ELEVATION (-8") U.O.N.
5. TOP OF ALL PIERS ARE AT ELEVATION (-2'-6") U.O.N.
6. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL PLANS PRIOR TO DRILLING PIERS. NOTIFY ENGINEER OF DISCREPANCIES.
7. VERIFY ALL DIMENSIONS, AND EXACT SIZE AND LOCATIONS OF ALL BLOCK-OUTS, DEPRESSIONS, EMBEDS, FLOOR DRAINS, ELECTRICAL BOXES, AND SIMILAR ITEMS WITH ARCHITECTURAL & MEP PLANS PRIOR TO FORMING CONCRETE. NOTIFY ENGINEER OF DISCREPANCIES.
8. ALL PIPING AND CONDUIT SHALL BE UNDER FULL DEPTH OF SLAB AND SHALL NOT BE LAID ON TOP OF SUB-GRADE OR POLY.

PROJECT: 19-344-00

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06/26/2020

FOUNDATION PLAN - SHOP

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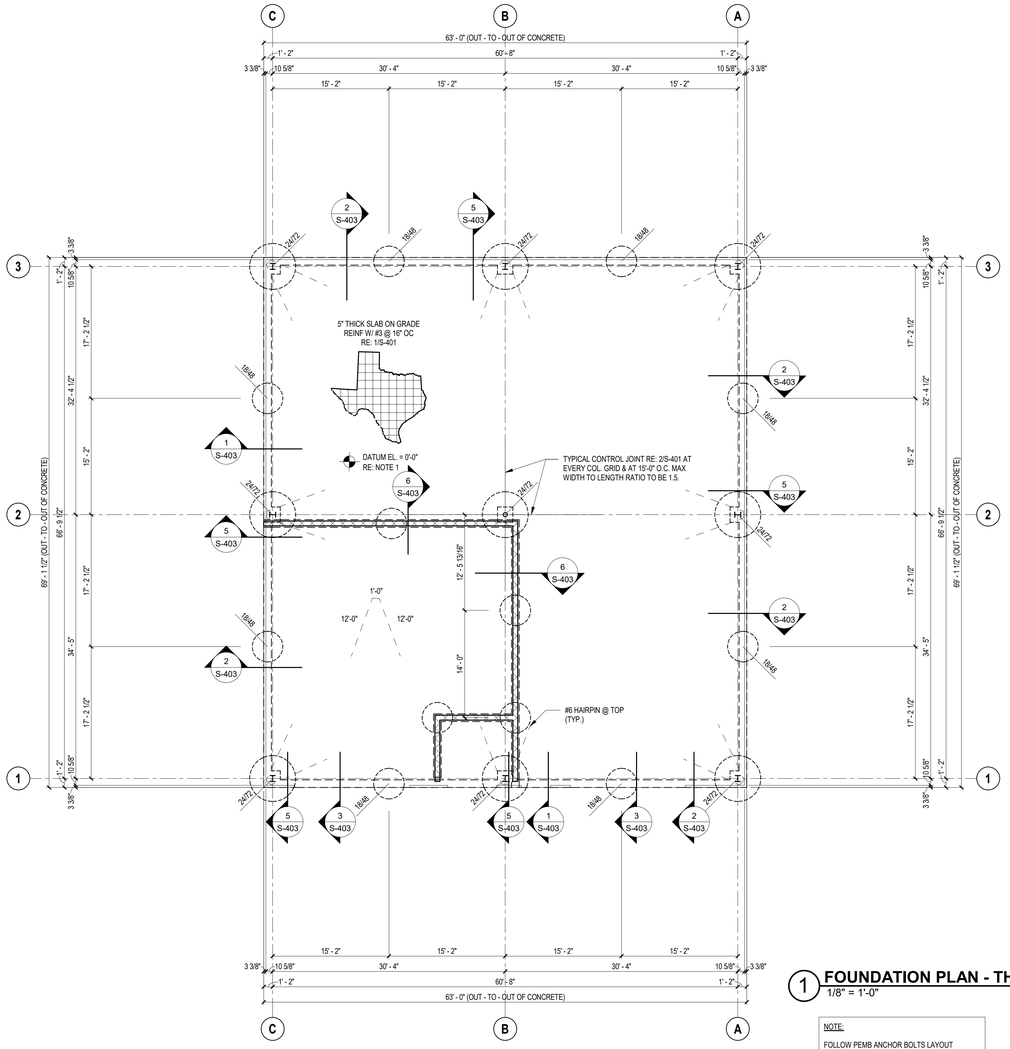

1 FOUNDATION PLAN - THE WAREHOUSE

1/8" = 1'-0"

NOTE:

FOLLOW PEMB ANCHOR BOLTS LAYOUT DRAWINGS FOR LOCATION OF ANCHOR BOLTS. DO NOT USE THESE DRAWINGS TO PLACE ANCHOR BOLT LOCATION.

NOTE:

FOUNDATION CONSTRUCTION MAY NOT COMMENCE UNTIL THE STRUCTURAL ENGINEER HAS RECIEVED AND REVIEWED THE FINAL METAL BUILDING MANUFACTURERS DRAWINGS.

FOUNDATION NOTES:

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8. ALL PIPING AND CONDUIT SHALL BE UNDER FULL DEPTH OF SLAB AND SHALL NOT BE LAID ON TOP OF SUB-GRADE OR POLY.

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FOUNDATION PLAN

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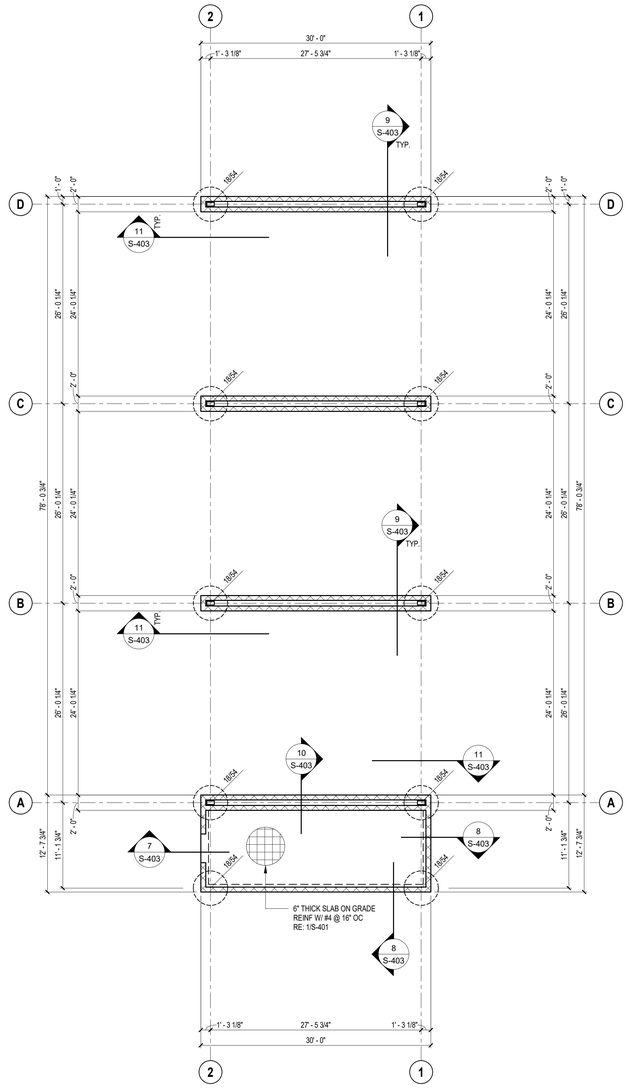

1 FOUNDATION PLAN - WASH STATION

1/8" = 1'-0"

NOTE:

FOLLOW PEMB ANCHOR BOLTS LAYOUT DRAWINGS FOR LOCATION OF ANCHOR BOLTS. DO NOT USE THESE DRAWINGS TO PLACE ANCHOR BOLT LOCATION.

NOTE:

FOUNDATION CONSTRUCTION MAY NOT COMMENCE UNTIL THE STRUCTURAL ENGINEER HAS RECEIVED AND REVIEWED THE FINAL METAL BUILDING MANUFACTURERS DRAWINGS.

FOUNDATION NOTES:

1. DATUM ELEVATION 0'-0" CORRESPONDS TO TRUE ELEVATION = RE: CIVIL. ALL ELEVATIONS ARE RELATIVE TO DATUM ELEVATION (0'-0").
2. ALL INTERIOR PLINTHS ARE "P1" U.O.N. RE:S-301 FOR PLINTH SCHEDULE.
3. TOP OF ALL INTERIOR PLINTHS ARE AT ELEVATION (-8") U.O.N.
4. TOP OF ALL PIERS ARE AT ELEVATION (-2'-6") U.O.N.
5. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL PLANS PRIOR TO DRILLING PIERS. NOTIFY ENGINEER OF DISCREPANCIES.
6. VERIFY ALL DIMENSIONS, AND EXACT SIZE AND LOCATIONS OF ALL BLOCK-OUTS, DEPRESSIONS, EMBEDS, FLOOR DRAINS, ELECTRICAL BOXES, AND SIMILAR ITEMS WITH ARCHITECTURAL & MEP PLANS PRIOR TO FORMING CONCRETE. NOTIFY ENGINEER OF DISCREPANCIES.
7. ALL PIPING AND CONDUIT SHALL BE UNDER FULL DEPTH OF SLAB AND SHALL NOT BE LAID ON TOP OF SUB-GRADE OR POLY.

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5115 TX-3
Dickenson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

FRED DALLY
90904
06/26/2020

FOUNDATION AND FRAMING PLAN

DRAWN BY	CHECKED BY

PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B

ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

PROJECT: 19-344-00

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S-101R
SHEET NUMBER

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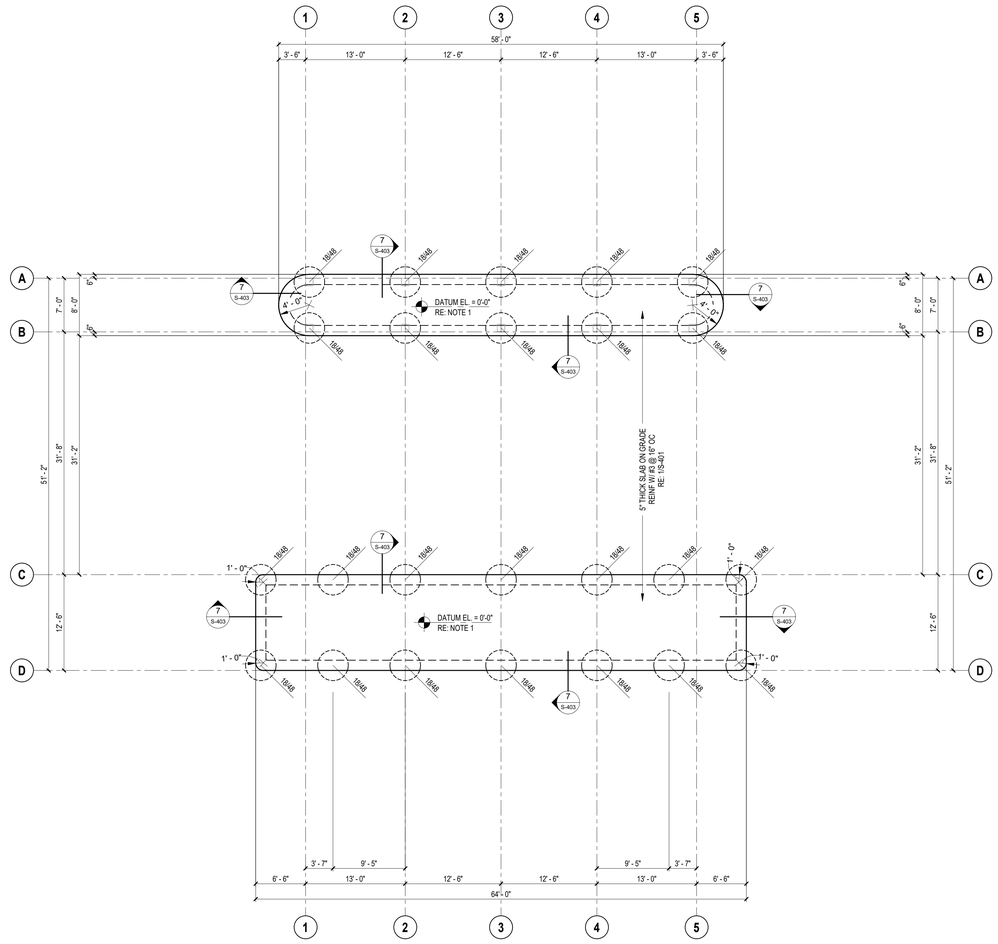

1 FOUNDATION PLAN - FUEL AND AIR CANOPY

1/8" = 1'-0"

NOTE:

FOLLOW PEMB ANCHOR BOLTS LAYOUT DRAWINGS FOR LOCATION OF ANCHOR BOLTS. DO NOT USE THESE DRAWINGS TO PLACE ANCHOR BOLT LOCATION.

NOTE:

FOUNDATION CONSTRUCTION MAY NOT COMMENCE UNTIL THE STRUCTURAL ENGINEER HAS RECIEVED AND REVIEWED THE FINAL METAL BUILDING MANUFACTURERS DRAWINGS.

FOUNDATION NOTES:

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FRED DALLY
90904
06/26/2020

FOUNDATION PLAN - FUEL & AIR CANOPY

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PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

PROJECT: 19-344-00

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S-101F
SHEET NUMBER

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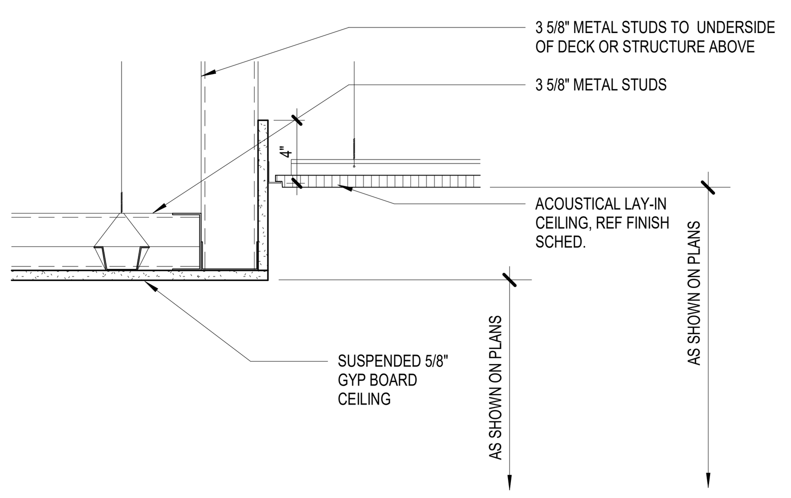
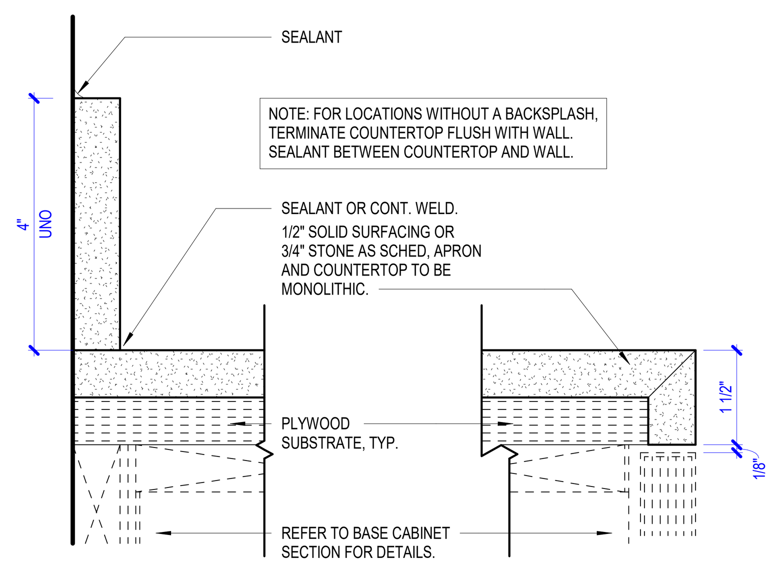
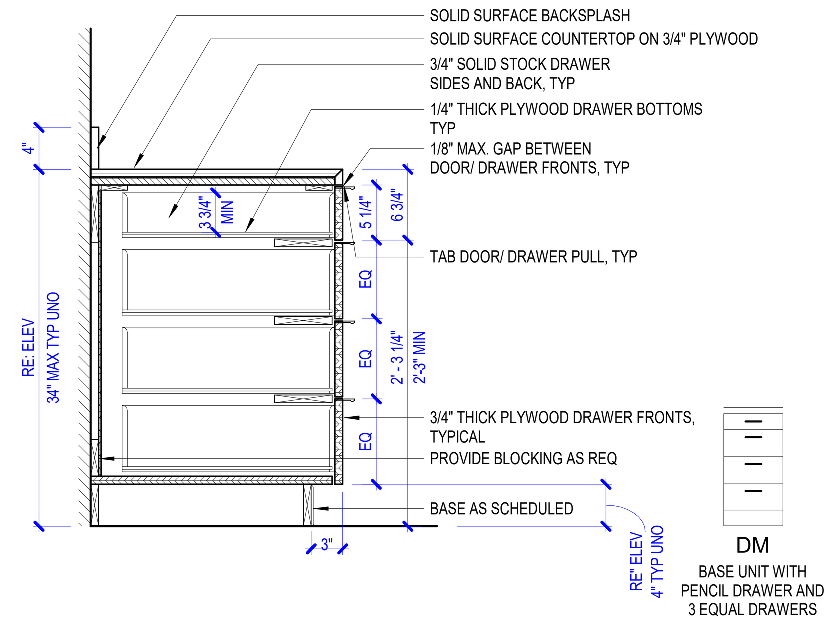


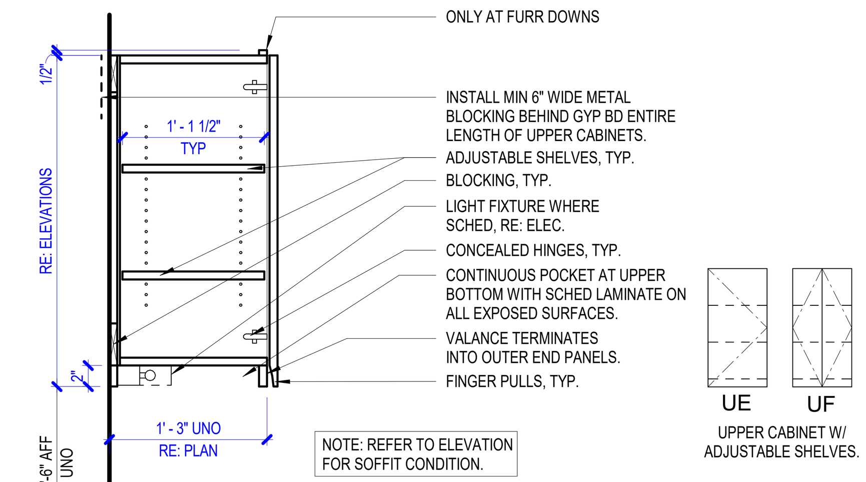
13 **CEILING TRANSITION DETAIL**
SCALE: 1 1/2" = 1'-0"



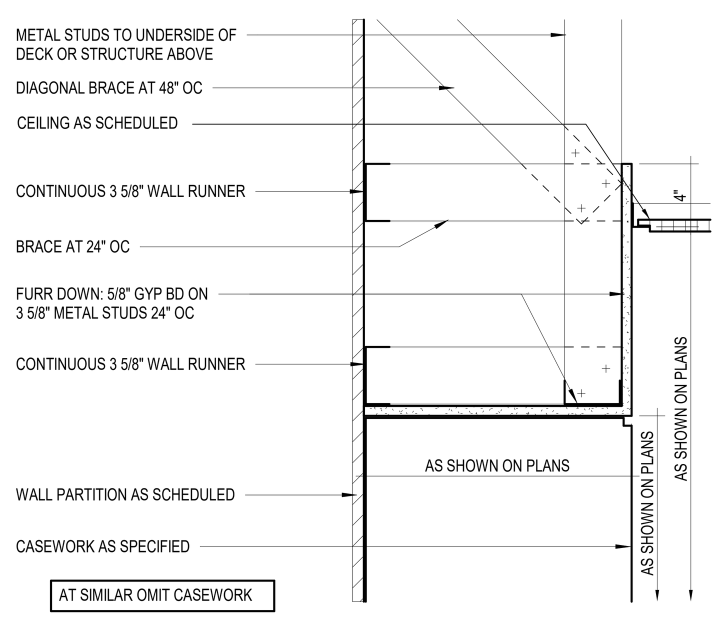
9 **COUNTERTOP DETAIL**
SCALE: 6" = 1'-0"



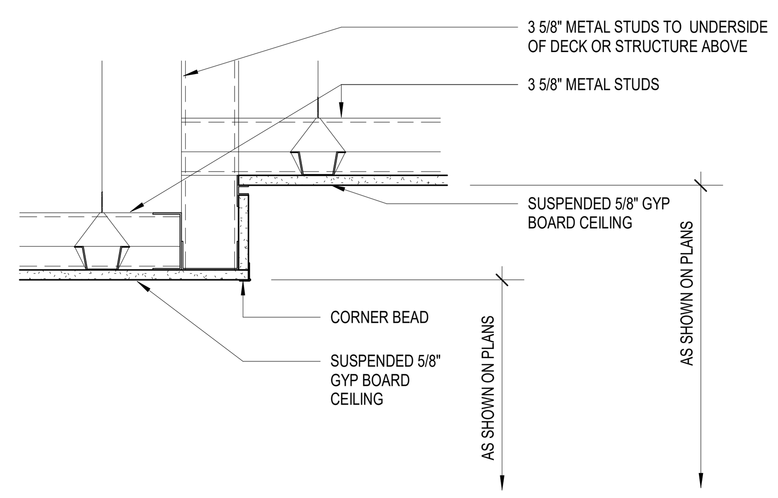
5 **BM - BASE CABINET W/DRAWERS**
SCALE: 1" = 1'-0"



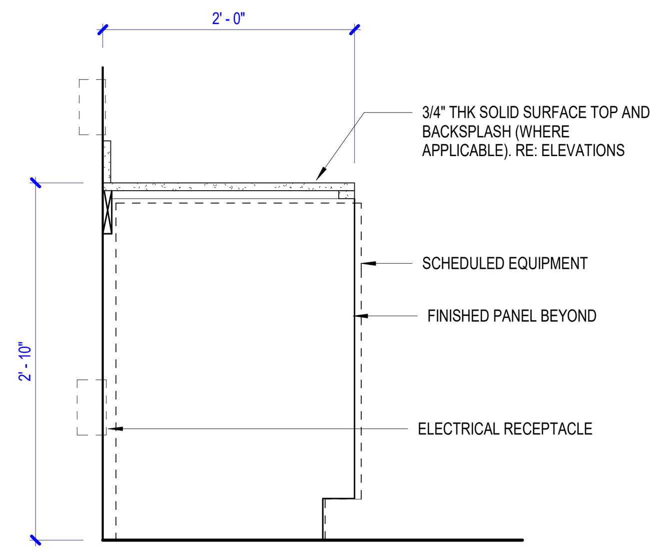
1 **UE/UF - UPPER CABINET**
SCALE: 1" = 1'-0"



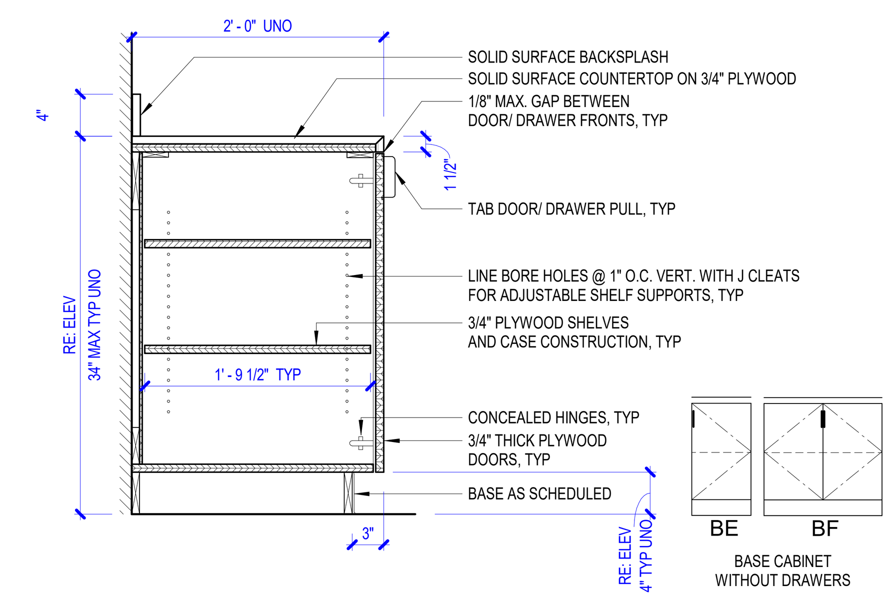
14 **SOFFIT DETAIL**
SCALE: 1 1/2" = 1'-0"



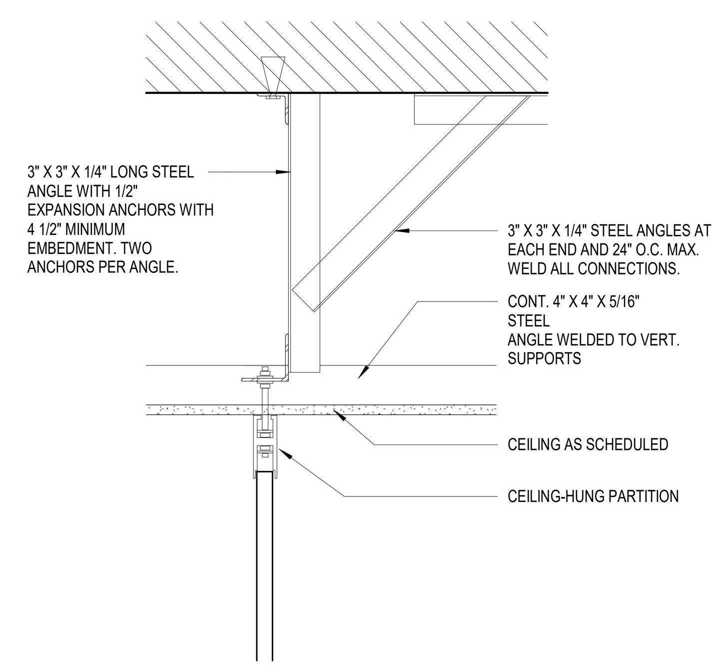
10 **GYP CEILING TRANSITION DETAIL**
SCALE: 1 1/2" = 1'-0"



6 **BO - OPEN BAY**
SCALE: 1" = 1'-0"



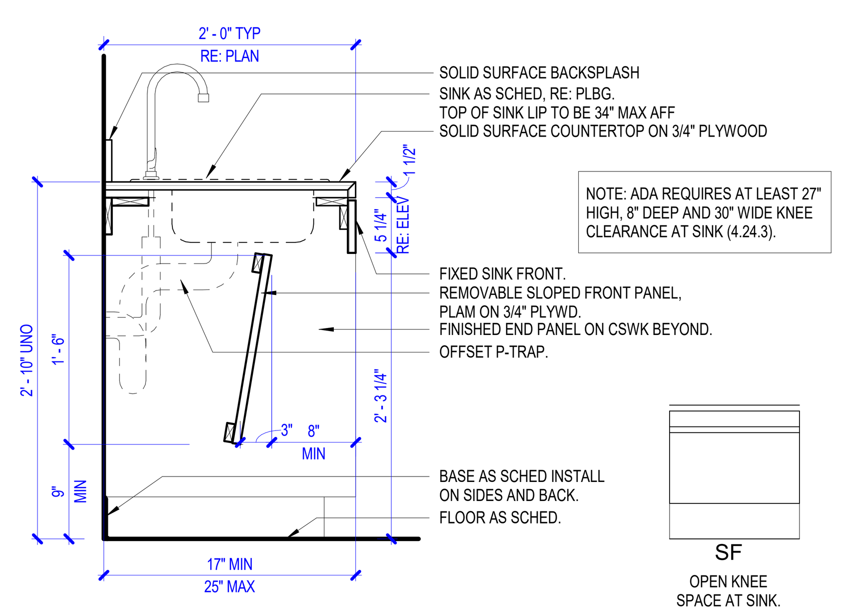
2 **BE/BF - BASE CABINET W/SHELVES**
SCALE: 1" = 1'-0"



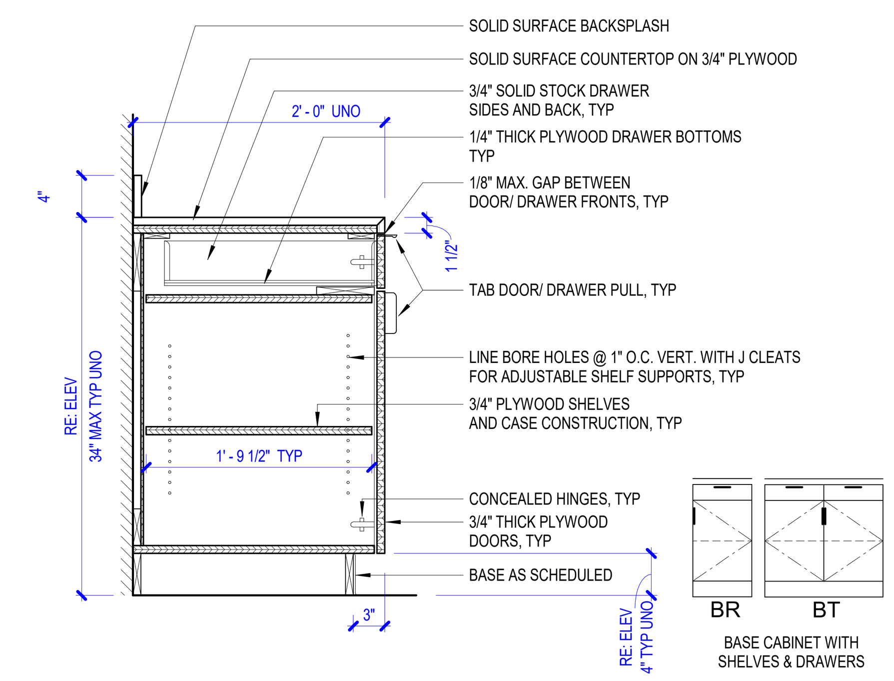
15 **TOILET PARTITION BRACING SUPPORT DETAIL**
SCALE: 1 1/2" = 1'-0"

DRAFT

11 **HEADER SECTION DETAIL**
SCALE: 1 1/2" = 1'-0"



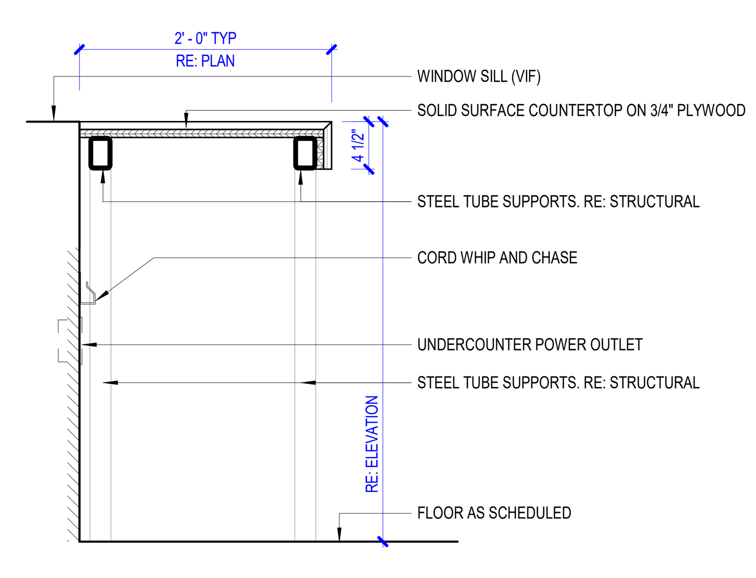
7 **SF - BASE CABINET W/ ADA SINK**
SCALE: 1" = 1'-0"



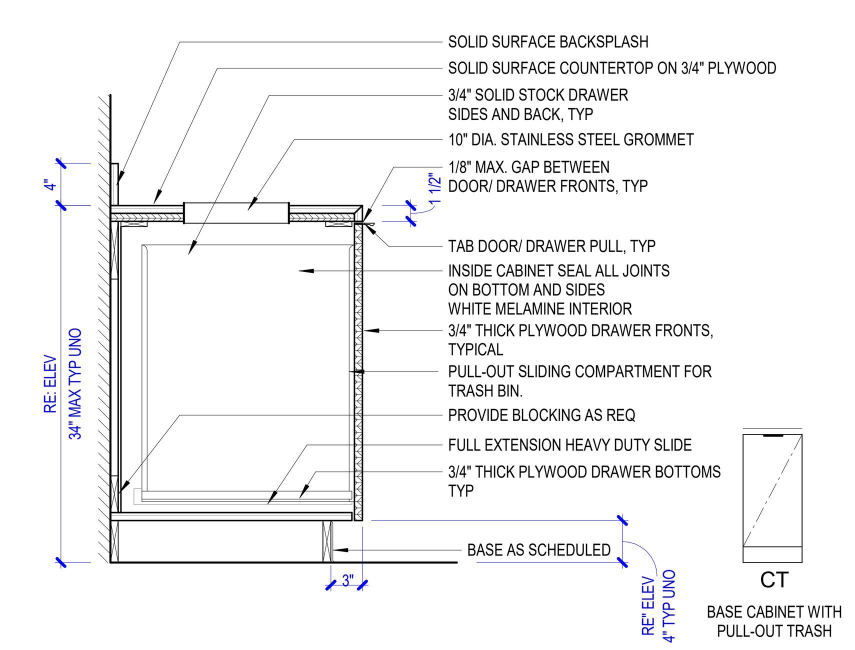
3 **BR/BT- BASE CABINET W/SHELVES & DRAWERS**
SCALE: 1" = 1'-0"

DRAFT

12 **REVEAL DETAIL, TYP.**
SCALE: 12" = 1'-0"



8 **BS - BUFFET SERVING COUNTER**
SCALE: 1" = 1'-0"



4 **CT - PULL-OUT CABINET**
SCALE: 1" = 1'-0"

INTERIOR FINISH GENERAL NOTES

1. NO SUBSTITUTIONS OF FINISHES ARE ALLOWED WITHOUT APPROVAL OF ARCHITECT.
2. SUBMIT (3) SAMPLES OF EACH FINISH AS SPECIFIED ON APPROPRIATE SUBSTRATE TO ARCHITECT FOR APPROVAL PRIOR TO ORDERING.
3. FLAME SPREAD AND SMOKE DEVELOPMENT RATINGS FOR INTERIOR FINISHES ARE TO BE IN ACCORDANCE WITH APPLICABLE CODES.
4. FLOOR TRANSITIONS SHALL OCCUR AT CENTERLINE OF DOOR IN CLOSED POSITION, UNO.
5. PROVIDE TRANSITION STRIP BETWEEN SCHEDULED CARPET, RESILIENT FLOORING, STONE FLOORING, AND TILE AS REQUIRED; UNO. REFER TO SECTION 096500. COLOR TO MATCH CARPET.
6. FLOORING TRANSITIONS SHALL BE COMPLETELY FLUSH. FIELD VERIFY FLOOR SLAB AND NOTIFY ARCHITECT OF AREAS TO BE LEVELED BEFORE COMMENCING WORK. PROVIDE ADEQUATE FLOOR LEVELING MATERIAL TO MAINTAIN CONSISTENT LEVEL FLOOR SURFACE BETWEEN DIFFERENT FLOORING FINISH MATERIALS. NOTIFY ARCHITECT IMMEDIATELY IF EXCESSIVE FLOOR FLOAT IS REQUIRED.
7. TYPICAL FLOOR BASE SHALL BE RB-1, UNO. PROVIDE STRAIGHT BASE AT CARPET AND COVED BASE AT OTHER HARD FLOOR MATERIALS.
8. REFER TO REFLECTED CEILING PLANS FOR CEILING FINISH INFORMATION.
9. REFER TO INTERIOR ELEVATIONS FOR ADDITIONAL FINISH REQUIREMENTS, INCLUDING DIMENSIONS AND EXTENT OF SPECIAL WALL FINISHES.
10. GYPSUM BOARD PARTITIONS SHALL BE FLOATED OUT TO MAINTAIN A SMOOTH, EVEN, CONSISTENT APPEARANCE IN ACCORDANCE WITH SPECIFICATION SECTION 092900. NOTICEABLE JOINTS OR TAPE LINES IN GYPSUM BOARD PARTITIONS WILL NOT BE ACCEPTABLE. REFER TO FINISH SCHEDULE AND SPECIFICATIONS FOR ADDITIONAL WALL FINISH INFO.
11. PAINTED WALLS SHALL HAVE AN EVEN DEPTH OF COLOR AND REFLECTANCE. IF A PORTION OF A WALL IS REPAINTED AND AN EVEN FINISH IS NOT ACHIEVED, THE ENTIRE WALL SHALL BE REPAINTED.
12. ACCESS PANELS, ELECTRICAL PANELS, AND OTHER UNFINISHED OR PRIME COATED ITEMS SHALL BE PAINTED TO MATCH THE WALL OR CEILING.
13. TYPICAL WINDOW COVERING AT ALL PERIMETER WINDOW WALLS ARE BUILDING PROVIDED MINI-BLINDS, UNLESS NOTED OTHERWISE. GC TO PROTECT FROM DAMAGE THROUGHOUT THE DURATION OF CONSTRUCTION. PRIOR TO TENANT MOVE-IN, MINI-BLINDS ARE TO BE CLEANED AND REINSTALLED.
14. ELECTRICAL COMMUNICATION DEVICES AND COVER PLATES SHALL BE WHITE, UNO.
15. WALLS SHALL RECEIVE [PT-1] AND RB-1, TYPICAL, UNO. ALLOW FOR PRIMER AND TWO TOPCOATS FOR PAINT APPLICATION OVER GYPSUM BOARD WITH [EGGSHELL] [SEMIGLOSS] FINISH.
16. WHEN A CEILING RECEIVES A COLOR OTHER THAN THE STANDARD, PAINT CEILING MOUNTED DEVICES TO MATCH, INCLUDING DIFFUSERS.
17. ACCESS PANELS, ELECTRICAL PANELS, AND OTHER UNFINISHED OR PRIME COATED ITEMS SHALL BE PAINTED TO MATCH THE WALL OR CEILING IN WHICH IT IS INSTALLED.
18. ACCENT PAINT SHALL EXTEND HORIZONTALLY FROM INSIDE CORNER TO INSIDE CORNER ALONG WALL. CONTINUE ACCENT PAINT ACROSS FURR-DOWNS AND BULKHEADS ONLY IF THEY ARE IN THE SAME PLANE AS THE ACCENT WALL.
19. CAULKING AND SEALANT SHALL MATCH SURFACE TO WHICH IT IS APPLIED, UNO. SUBMIT COLOR CHART FOR ARCHITECT'S SELECTION. WHERE TWO DIFFERENT MATERIALS/COLORS ALIGN IN THE SAME PLANE, MATCH THE DARKER COLOR.
20. PAINT HOLLOW METAL DOORS SAME COLOR AS FRAME, TYPICAL, UNO. HOLLOW METAL FRAMES SHALL BE SEMI-GLOSS.
21. PAINTED METAL RAILINGS SHALL HAVE PRIMER AND TWO COATS OF EPOXY PAINT WITH POLYURETHANE TOPCOAT.
22. SCHEDULED FLOOR FINISH TO RUN CONTINUOUSLY UNDERNEATH MILLWORK, UNO.

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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Page Southerland Page, Inc.
REGISTERED ARCHITECT
WENDY TEAS HEGER
16677
STATE OF TEXAS
07/02/2020

ARCHITECTURAL - DETAILS

DRAWN BY	CHECKED BY
Author	Checker
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418198	GC_R&B
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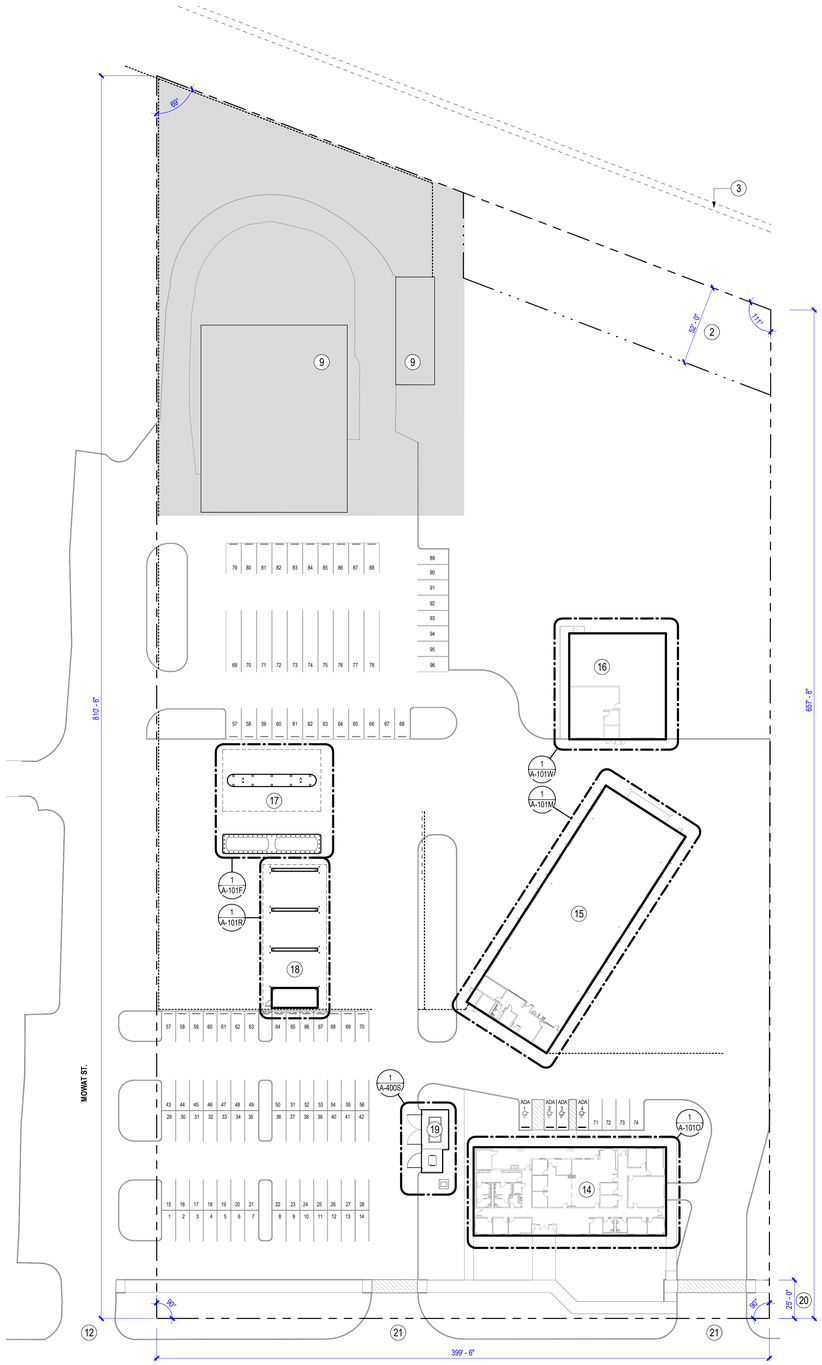
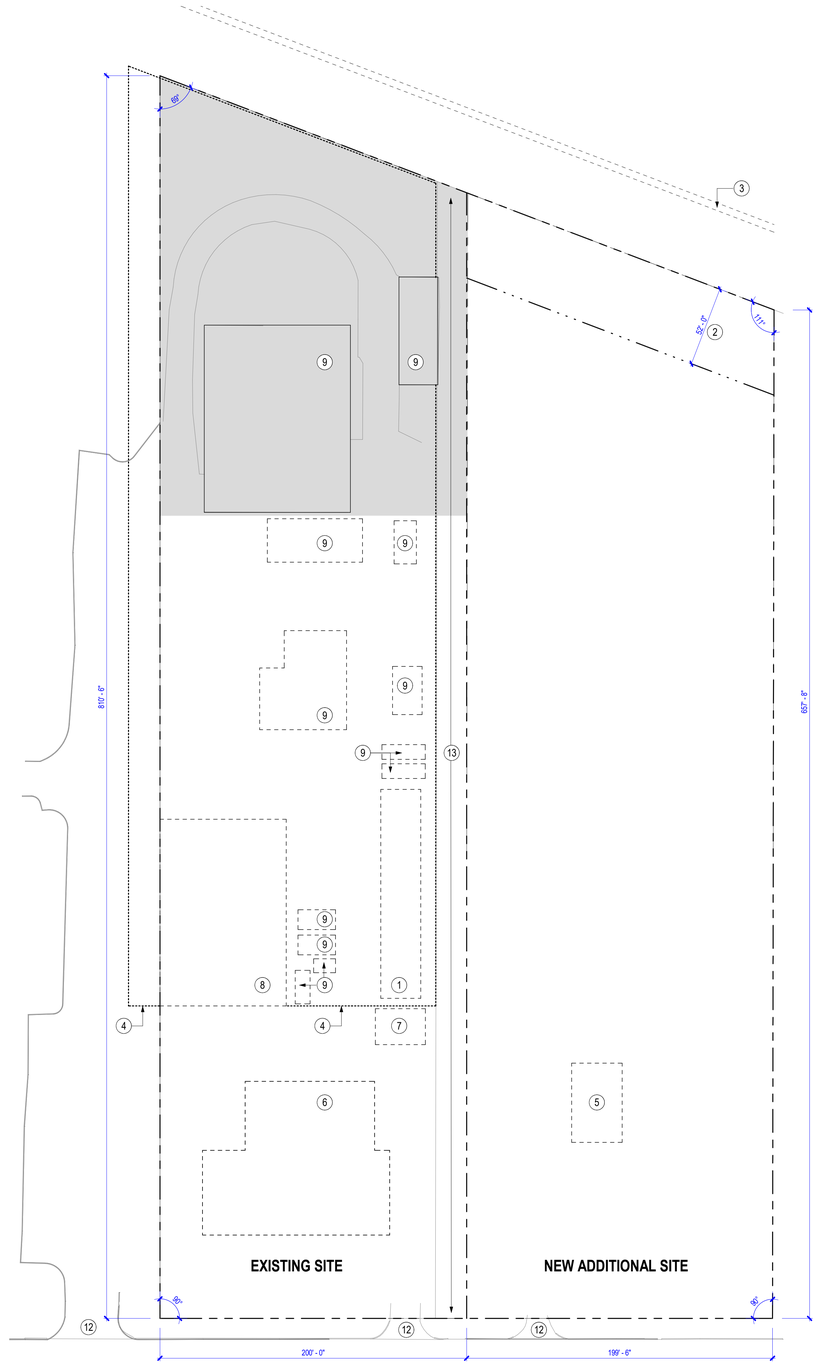


2 SITE PLAN - CONSTRUCTION
SCALE: 1" = 40'-0"



1 SITE PLAN - EXISTING
SCALE: 1" = 40'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	EXISTING FUEL CENTER
01	NEW OFFICE BUILDING
2	COMUNITY PUBLIC SERVICE COMPANY TRANSMISSION LINE EASEMENT
02	NEW MAINTENANCE SHOP
3	G.H. & H.R.R. TRAIN TRACKS (100' ROW)
03	NEW WAREHOUSE
4	CHAINLINK FENCE
04	NEW WASHRACK
5	EXISTING ONE-STORY HOUSE
05	NEW FUELAIR CENTER
6	EXISTING ONE-STORY OFFICE
7	EXISTING ONE-STORY SHED
8	EXISTING ONE-STORY MAINTENANCE SHOP
9	EXISTING ONE-STORY BUILDING
10	STATE HIGHWAY 3 (ROW VARIES)
12	EXISTING CURB CUT FROM HWY 3
13	EXISTING TRENCH BETWEEN SITES A & B
14	NEW OFFICE BUILDING
15	NEW MAINTENANCE SHOP
16	NEW WAREHOUSE
17	NEW FUELAIR CENTER
18	NEW WASHRACK
19	NEW GENERATOR AND DUMPSTER ENCLOSURE
20	SETBACK
21	NEW CURB CUT FROM HWY 3

PARKING REQUIREMENTS

OFFICE [A]	26
MAINTENANCE SHOP [B]	46
WAREHOUSE [C]	5
MOSQUITO CONTROL [D]	14
TOTAL STANDARD SPACES REQUIRED TOTAL ACCESSIBLE SPACES REQUIRED TOTAL SPACES REQUIRED	89 2 91
TOTAL STANDARD SPACES PROVIDED TOTAL ACCESSIBLE SPACES PROVIDED TOTAL SPACES PROVIDED	96 4 100

[A] CITY OF DICKINSON CLASSIFICATION: BANK, CLINIC, OFFICE = 1:250 SF
OFFICE = 6,430SF / 250 = 26 SPACES

[B] CITY OF DICKINSON CLASSIFICATION: SERVICE STATION = 4:1 BAY
MAINTENANCE SHOP = 12 BAYS x 4 = 48 SPACES

[C] CITY OF DICKINSON CLASSIFICATION: WAREHOUSE, SHIPPING & RECIEVING = 1:1,000 F
WAREHOUSE = 4,380SF / 1000 = 5 SPACES

[D] CITY OF DICKINSON CLASSIFICATION: WAREHOUSE, SHIPPING & RECIEVING = 1:1,000 F
MOSQUITOE = 13,500SF / 1000 = 14 SPACES

PHASING PLAN

PHASE 1

DEMOLITION OF STRUCTURES ON NEW SITE
CLEARING OF NEW SITE
SITE PREP

CONSTRUCTION OF WAREHOUSE
CONSTRUCTION OF SHOP
CONSTRUCTION OF OFFICE BUILDING

PHASE 2

DEMOLITION OF EXISTING OFFICE BUILDING
DEMOLITION OF EXISTING SHOP BUILDING
DEMOLITION OF EXISTING CANOPY STRUCTURES
DEMOLITION OF EXISTING ACCESSORY STRUCTURES

CONSTRUCTION OF NEW PUBLIC PARKING LOT
CONSTRUCTION OF NEW FUEL STATION
CONSTRUCTION OF NEW WASH RACK

PHASE 3

DEMOLITION OF EXISTING FUEL STATION
DEMOLITION OF EXISTING STORAGE BUILDING

CONSTRUCTION OF FLEET PARKING LOT

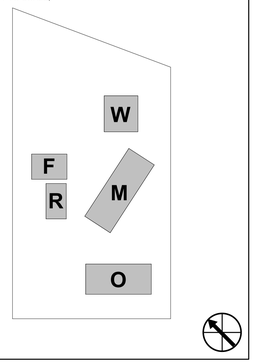
SITE PLAN LEGEND

- AREA OUTSIDE PROJECT SCOPE
- PROPERTY LINE
- EASMENT LINE
- CHAINLINK FENCE

SITE PLAN GENERAL NOTES

1. SEE LANDSCAPE DRAWINGS FOR SELECTIVE DEMOLITION OF TREES AND OTHER LANDSCAPE ELEMENTS.
2. SEE CIVIL DRAWINGS FOR SELECTIVE DEMOLITION OF SITE ELEMENTS.

KEY PLAN (NOT TO SCALE)



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MANDY TEAS HERGES
7667
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ARCHITECTURAL - SITE PLANS

DRAWN BY WJC	CHECKED BY VG
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
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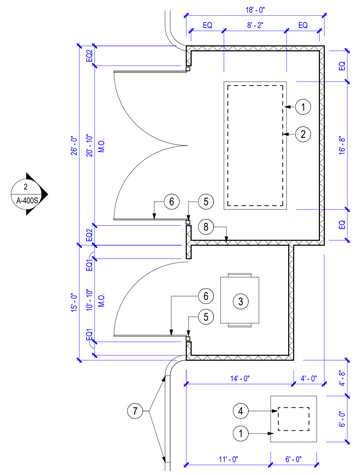
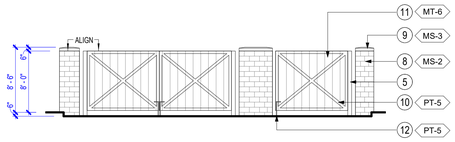


1 PLAN @ ENCLOSURE

SCALE: 1/8" = 1'-0"



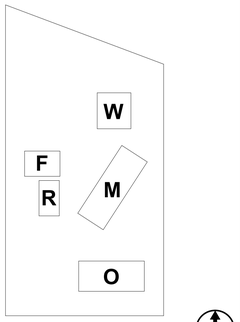
2 DUMPSTER ENCLOSURE - EAST ELEVATION

SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	CONCRETE UTILITY PAD
2	NATURAL-GAS GENERATOR. RE: ELECTRICAL & PLUMBING
3	4 CU DUMPSTER. SHOWN FOR REFERENCE ONLY. NIC
4	TRANSFORMER. RE: ELECTRICAL. NIC
5	PAINTED GALVANIZED STEEL TUBE. SUPPORTS HINGE SIDE OF ORNAMENTAL GATE. RE: STRUCTURAL
6	STEEL FRAMED ORNAMENTAL GATE
7	ROLLOVER CURB
8	CMU WALL
9	CAST-STONE COPING WITH SLOPED TOP
10	STEEL TUBE FRAME
11	PREFINISHED PERFORATED PANEL WALL
12	GALVANIZED, PAINTED CANE-BOLT LOCK WIHT EMBEDDED RECIEVER

KEY PLAN (NOT TO SCALE)



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Galveston County Road & Bridge Facilities

5115 TX-3
Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

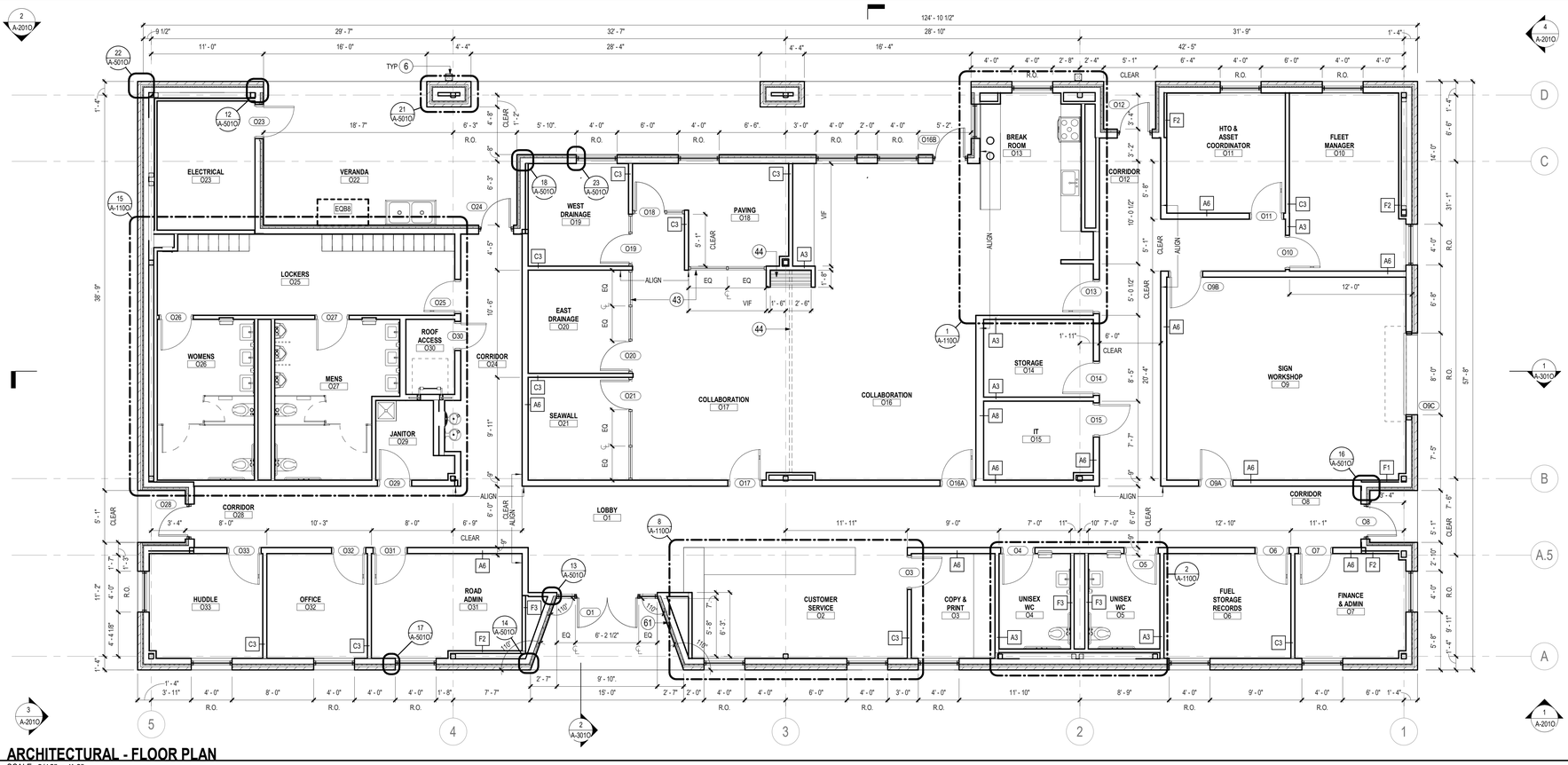
REGISTERED ARCHITECT
WINDY TEAS HEARN
16677
STATE OF TEXAS
07 / 02 / 2020

ARCHITECTURAL - SITE DETAILS

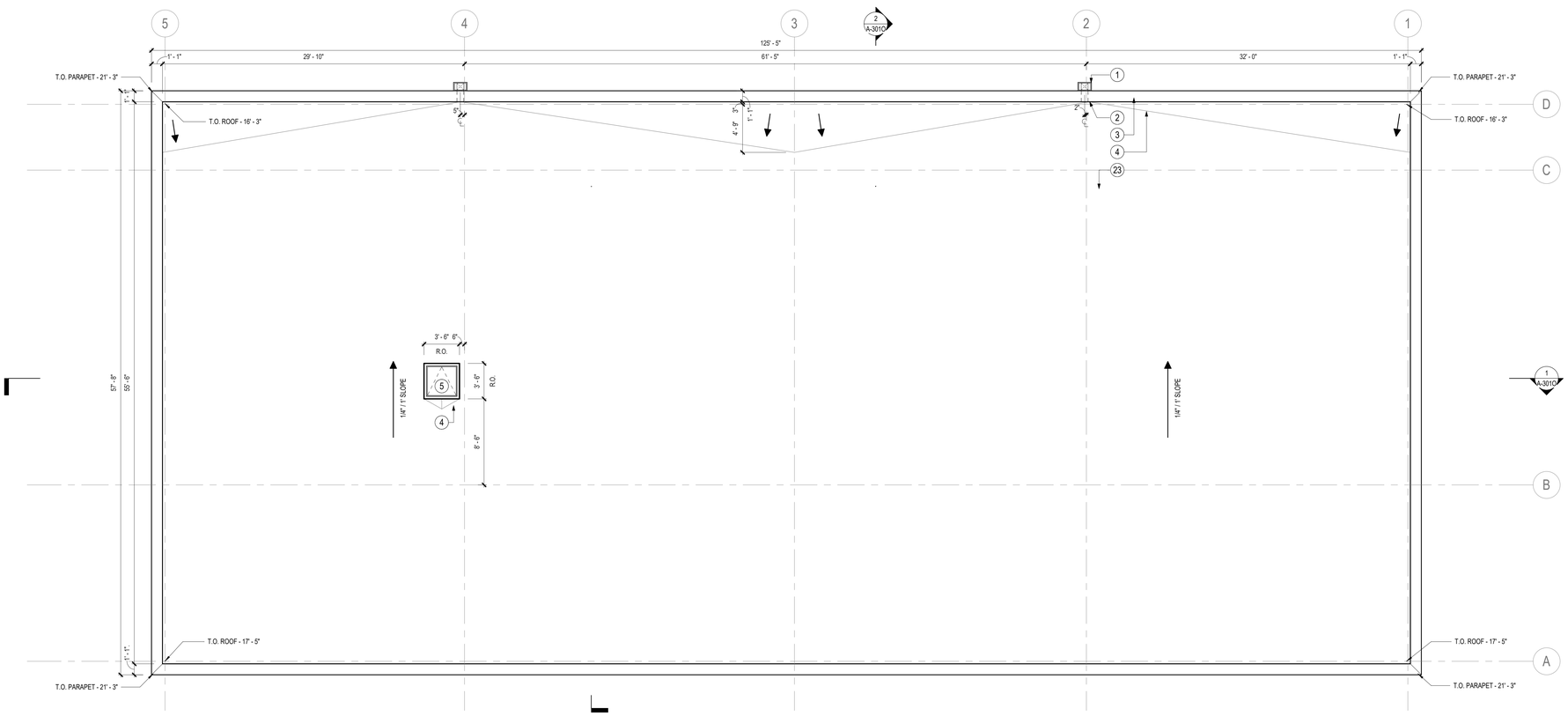
DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-400S
SHEET NUMBER

FILE PATH: C:\Users\initialaec\Documents\418198-A-R19-CENTRAL-SITE_wcicack.rvt
USER NAME:
DATE STAMP 7/1/2020 1:52:30 PM



1 ARCHITECTURAL - FLOOR PLAN
SCALE: 3/16" = 1'-0"



2 ARCHITECTURAL - ROOF PLAN
SCALE: 3/16" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	CATCHMENT BOX WITH SPILLOVER AND DOWNSPOUT
2	THRU-WALL SCUPPER OPENING
3	PREFINISHED SHEETMETAL COPING
4	ROOF CRICKETING
5	INSULATED ROOF HATCH
6	PREFINISHED SHEETMETAL DOWNSPOUT
7	VERTICAL BRICK CONTROL JOINTS. TYPICAL
8	MANUAL ROLLER WINDOW SHADES AT ALL EXTERIOR WINDOWS. U.N.O.
9	INSULATED OVERHEAD COILING DOOR ASSEMBLY. RE: DOOR SCHEDULE
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18	INSULATED GLAZED EXTERIOR STOREFRONT
19	TAS-COMPLIANT STAINLESS STEEL SINK ASSEMBLY
20	10" DIAMATER STAINELESS STEEL GROMMET
21	SOLID SURFACE COUNTERTOP
22	VENT HOOD. RE: MECHANICAL
23	INSULATED MODIFIED BITUMEN ROOFING ASSEMBLY
24	ANCHORED BRICK VENEER MASONRY ASSEMBLY
25	INSULATED SPANDREL GLAZING PANEL
26	VISION GLAZING PANEL
27	VAPOR BARRIER
28	SLAB-ON-GRADE. RE: STRUCTURAL
29	ADJACENT PAVING. RE: CIVIL
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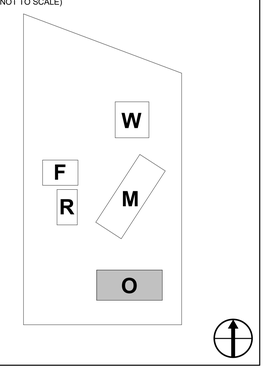
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 / A-301	SECTION TAG
1 / A-201	ELEVATION TAG
ROOM NAME / S1	ROOM NAME ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
×	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT WANDY LEAS TREGRE 16617 STATE OF TEXAS
01/02/2020

ARCHITECTURAL - CONSTRUCTION & ROOF PLANS

DRAWN BY	CHECKED BY
WJC	ST
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GCR&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

A-101O
SHEET NUMBER

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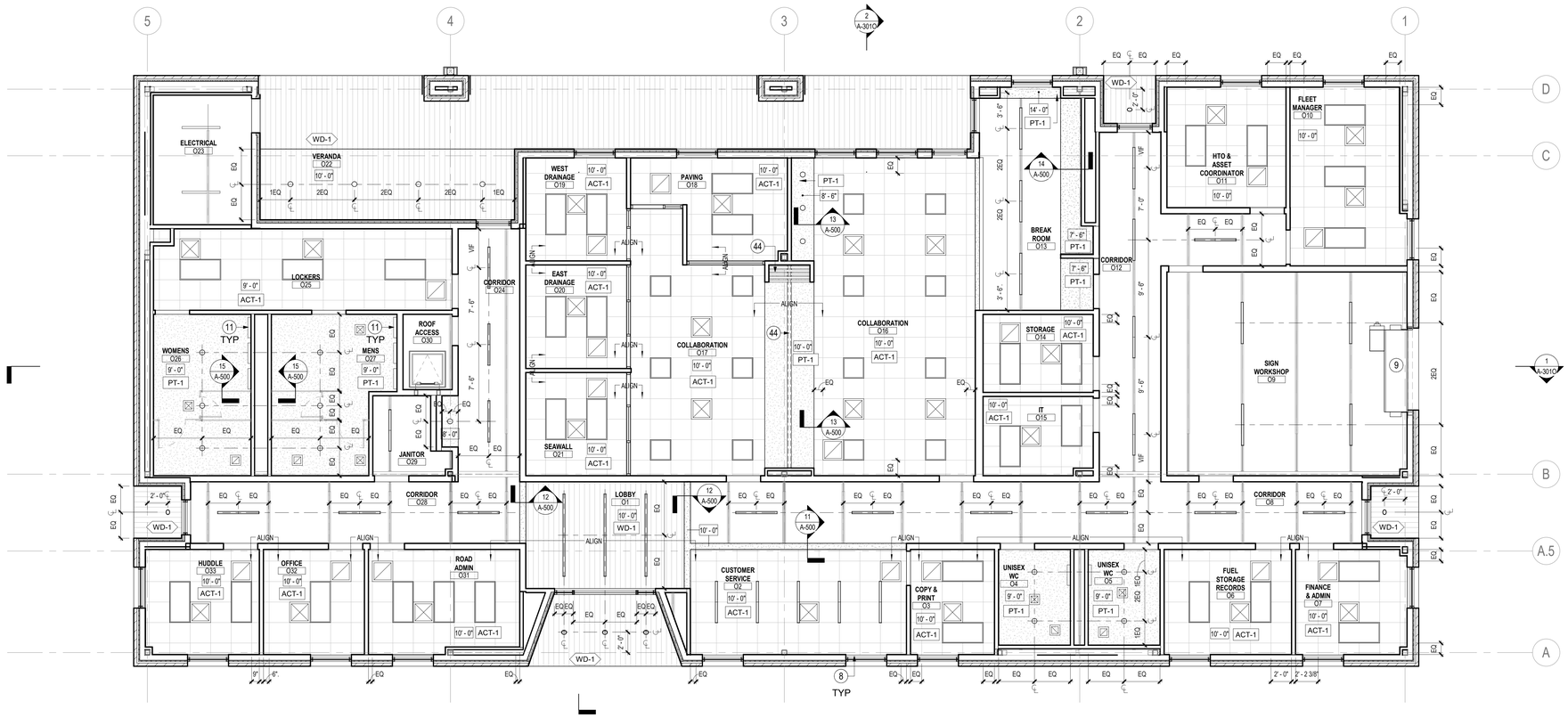
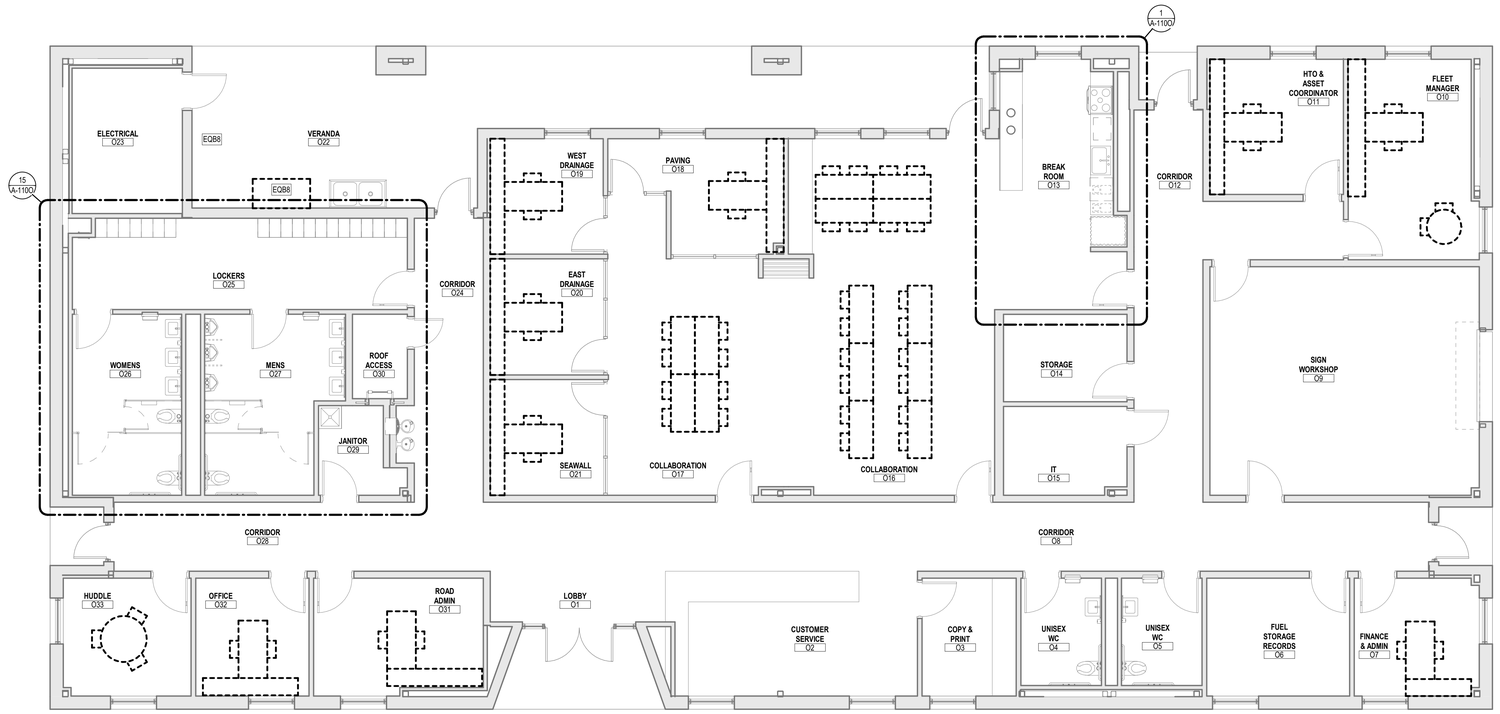


1 **ARCHITECTURAL - REFLECTED CEILING PLAN**
SCALE: 3/16" = 1'-0"



2 **ARCHITECTURAL - FURNITURE & EQUIPMENT PLAN**
SCALE: 3/16" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
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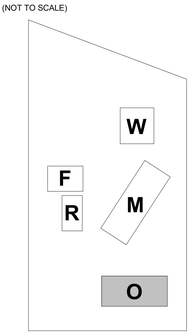

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT — WANDY TEAS VANGHEN — 16677 — STATE OF TEXAS
07/02/2020

ARCHITECTURAL - REFLECTED CEILING & EQUIPMENT PLANS

DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCR&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-102O
SHEET NUMBER

FILE PATH: W:\418198\418198-A-R19-vgandhi-OFFICE.rvt
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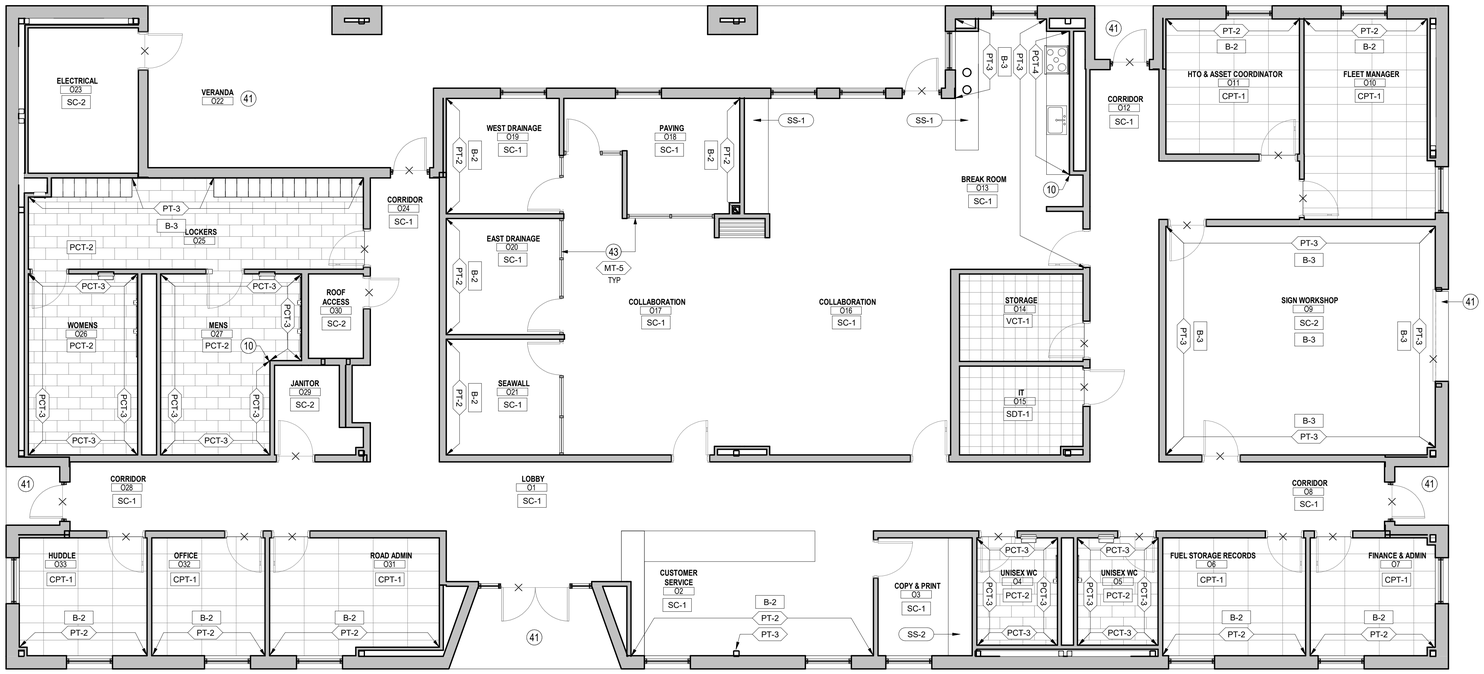

1 **INTERIOR - FLOOR PLAN LEVEL 01**
SCALE: 3/16" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
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63	COMPOSITE WOOD CORNER TRIM
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GENERAL NOTES

1. RE G-110 FOR FINISH SCHEDULE.
2. WALLS TO RECIEVE PT-1 FINISH WITH B-1 BASE BETWEEN FINISH FLOOR AND 10'-0" U.N.O.; WALLS TO RECIEVE PT-3 FINISH FROM 10'-0" TO DECK U.N.O.
3. ALL VISUALLY-EXPOSED INTERIOR STEEL INCLUDING BUT NOT LIMITED TO COLUMNS, JOISTS, BEAM AND DECK TO RECIEVE PT-3 FINISH U.N.O.
4. ALL VISUALLY-EXPOSED MECHANICAL ITEMS TO RECIEVE PT-3 FINISH U.N.O.
5. ALL VISUALLY-EXPOSED PLUMBING AND ELECTRICAL ITEMS OCCURING ABOVE 10'-0" AFF TO RECIEVE PT-3 FINISH.
4. ALL EXTEROR CONCRETE FLOORS TO RECIEVE MEDIUM BROOM FINISH U.N.O.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 / A-301	SECTION TAG
1 / A-201	ELEVATION TAG
ROOM NAME / S1	ROOM NAME ROOM NUMBER
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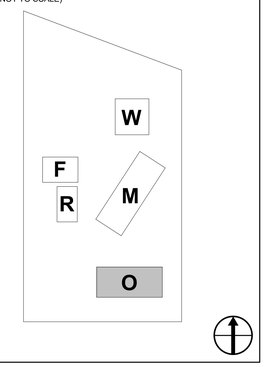
KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT
WILLIAM JOY TEAGUE
16877
STATE OF TEXAS

07 / 02 / 2020

ARCHITECTURAL - FINISH PLAN & SCHEDULE

DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCR&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

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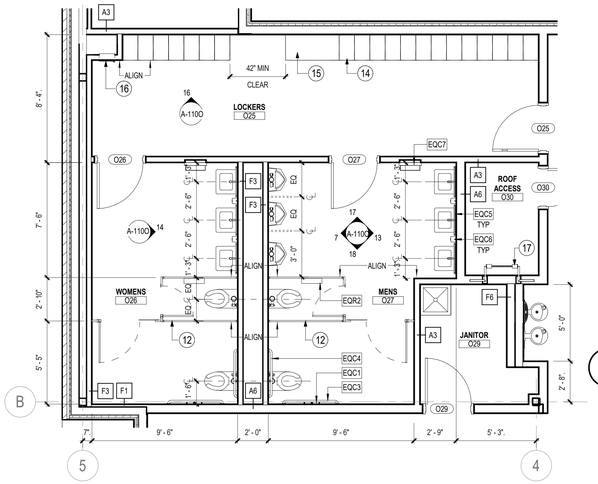
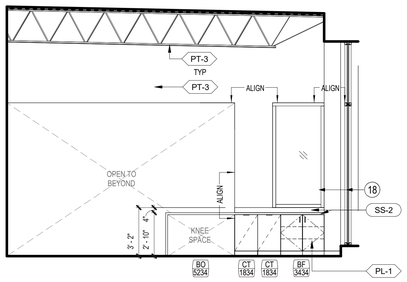
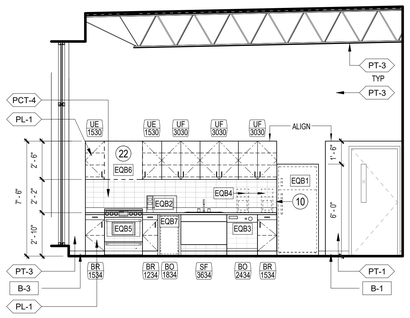


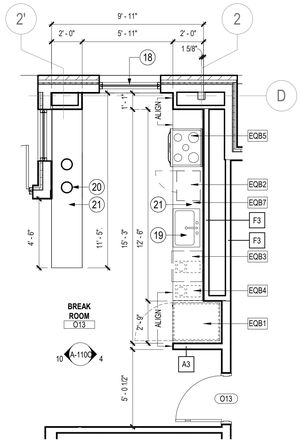
15 PLAN @ RESTROOM / LOCKER SUITE
SCALE: 1/4" = 1'-0"



10 ELEVATION
SCALE: 1/4" = 1'-0"



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



1 PLAN @ BREAKROOM
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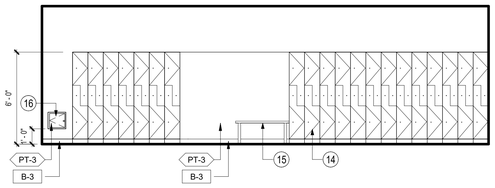

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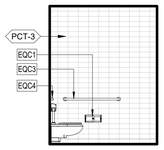

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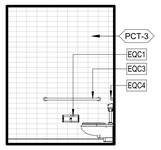

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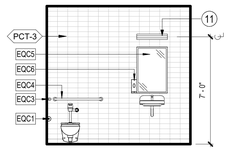
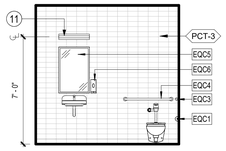


5 ELEVATION
SCALE: 1/4" = 1'-0"



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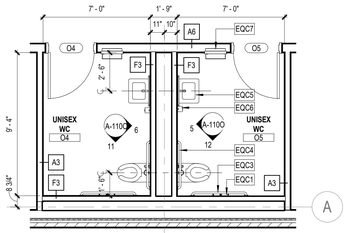

2 PLAN @ UNISEX RESTROOMS
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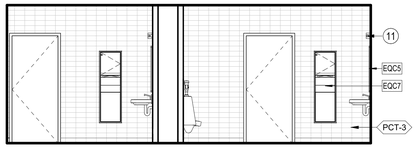

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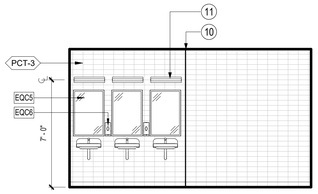

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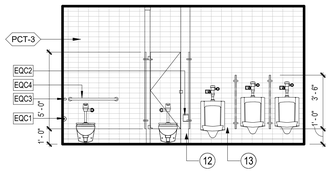

7 ELEVATION
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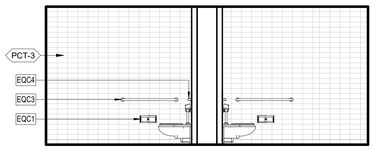

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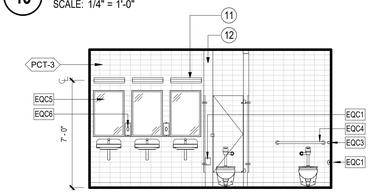

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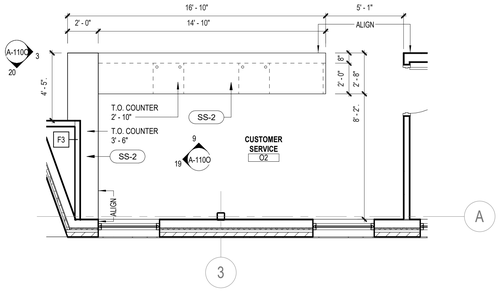

8 PLAN @ RECEPTION
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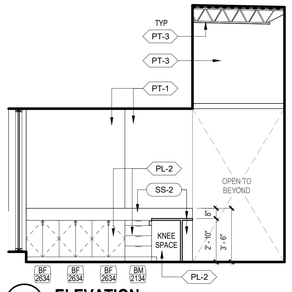

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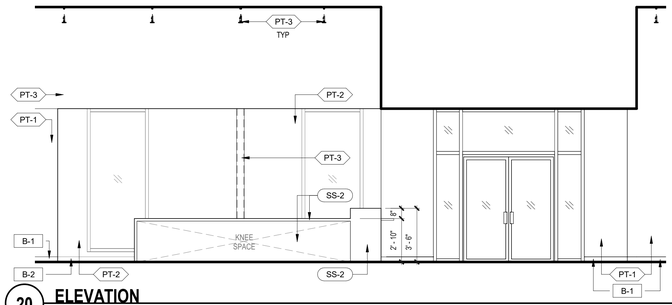

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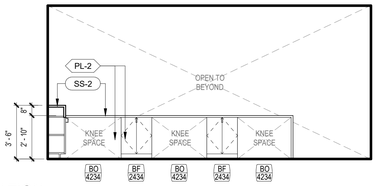
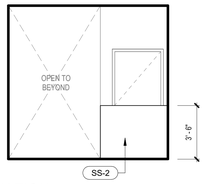


9 ELEVATION
SCALE: 1/4" = 1'-0"



3 ELEVATION
SCALE: 1/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	CATCHMENT BOX WITH SPILLOVER AND DOWNSPOUT
2	THRU-WALL SCUPPER OPENING
3	PREFINISHED SHEETMETAL COPING
4	ROOF CRICKETING
5	INSULATED ROOF HATCH
6	PREFINISHED SHEETMETAL DOWNSPOUT
7	VERTICAL BRICK CONTROL JOINTS. TYPICAL
8	MANUAL ROLLER WINDOW SHADES AT ALL EXTERIOR WINDOWS. U.N.O.
9	INSULATED OVERHEAD COILING DOOR ASSEMBLY. RE: DOOR SCHEDULE
10	PROVIDE SCHLUTER STRIP
11	WALL-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
12	FLOOR-MOUNTED CEILING-BRACED TOILET PARTITION
13	WALL-HUNG URINAL PARTITION
14	SOLID PHENOLIC Z-LOCKERS. 12"Wx18"Dx72"H
15	TAS-COMPLIANT LOCKER BENCH. 12"Wx18"Dx42"W
16	STEEL ACCESS HATCH. FIELD PAINT TO MATCH PT-3. COORDINATE FINAL HEIGHT AND SIZE WITH PLUMBING ROUGH-IN BEHIND
17	OSHA-COMPLIANT STEEL SAFETY LADDER LEADING TO ROOF HATCH ABOVE. SUPPORTED BY STEEL TUBES IN WALL. RE: STRUCTURAL
18	INSULATED GLAZED EXTERIOR STOREFRONT
19	TAS-COMPLIANT STAINLESS STELL SINK ASSEMBLY
20	10" DIAMATER STAINELESS STEEL GROMMET
21	SOLID SURFACE COUNTERTOP
22	VENT HOOD. RE: MECHANICAL
23	INSULATED MODIFIED BITUMEN ROOFING ASSEMBLY
24	ANCHORED BRICK VENEER MASONRY ASSEMBLY
25	INSULATED SPANDREL GLAZING PANEL
26	VISION GLAZING PANEL
27	VAPOR BARRIER
28	SLAB-ON-GRADE. RE: STRUCTURAL
29	ADJACENT PAVING. RE: CIVIL
30	CHICKEN-WIRE FENCING PROTECTING INSULATION WHERE NO GYP IS PRESENT. TYPICAL
31	STEEL STRUCTURE. RE: STRUCTURAL
32	FLUID APPLIED WEATHER BARRIER
33	CONTINUOUS BOARD INSULATION
34	SHEATHING
35	COLD-FORMED METAL FRAMING WALL WITH BATT INSULATION
36	PREFINISHED SHEETMETAL FLASHING
37	INTERIOR CEILING. RE: RCP
38	COLD-FORMED FRAMING
39	NATURALLY-VENTILATED EXTERIOR SOFFIT. ALL STEEL WITHIN SOFFIT TO BE HOT-DIP GALVANIZED. RE: STRUCTURAL
40	COMPOSITE WOOD EXTERIOR LAP PLANKING
41	PROVIDE MEDIUM BROOM FINISH AT EXTERIOR CONCRETE PATIOS
42	INTERIOR GYP FINISH
43	UNINSULATED INTERIOR STOREFRONT ASSEMBLY
44	OPERABLE PARTITION ASSEMBLY
45	PROVIDE SUPPORTING STEEL FOR OPERABLE PARTITION
46	MASONRY DRAIN MATERIAL
47	WEEP
48	NONSHRINK GROUT
49	COMPRESSIBLE FILLER
50	TRACK RUNNER SET IN CONTINOUS BED OF SEALANT
52	FLEXIBLE FLASHING
53	TREATED 2BY BLOCKING
54	RETICULATED DOUBLE SEALANT JOINT WITH BACKER ROD AND WEEP BAFFLES
55	MODIFIED BITUMEN WALL AND PARAPET FLASHING
56	PARAPET WALL SHEATHING
57	CARBON-FIBER Z-CLIPS
58	INSECT SCREEN
59	PLYWOOD SUBSTRATE
60	INTERIOR STUD FRAMING
61	PROVIDE ARCHITECTURALLY-RECESSED KNOX BOX
62	MASONRY ANCHOR
63	COMPOSITE WOOD CORNER TRIM
64	END-DAM WITH INTEGRAL BASE FLASHING

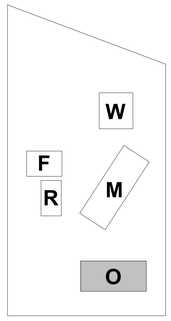
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE. KEYED NOTES ONLY APPLY TO THIS SHEET
1 / A-301	SECTION TAG
1 / A-201	ELEVATION TAG
ROOM NAME / S1	ROOM NAME / ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
×	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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Low Voltage & Security
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Suite 290
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832 249 9379

Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT WINDY LEAS WEGNER 16677 STATE OF TEXAS
07/02/2020

ARCHITECTURAL - ENLARGED PLANS & ELEVATIONS

DRAWN BY: WJC	CHECKED BY: VG
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCR&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-1100
SHEET NUMBER

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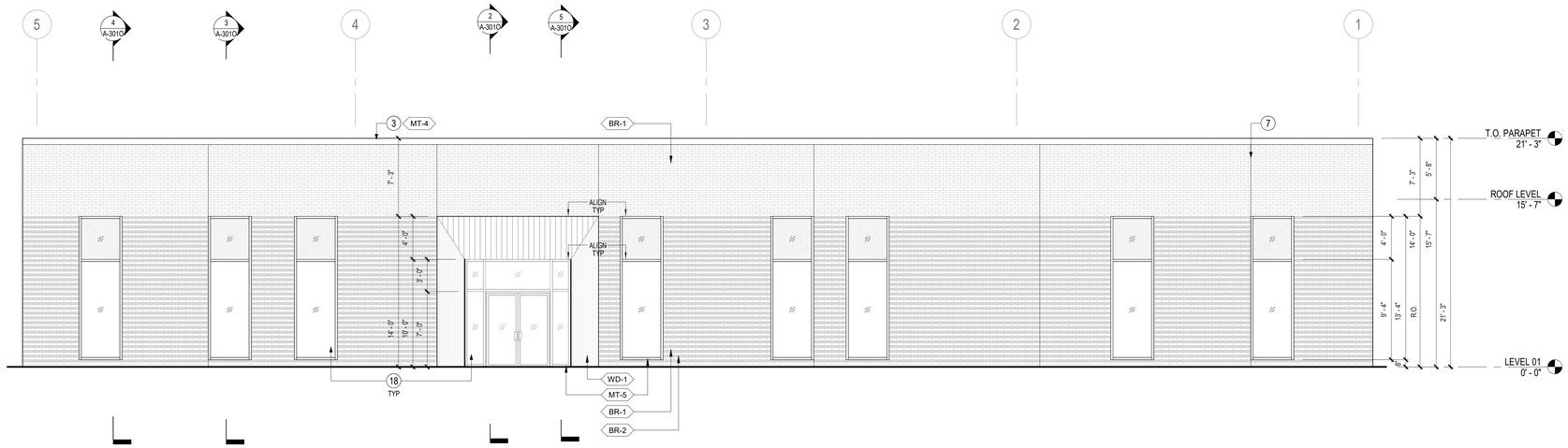
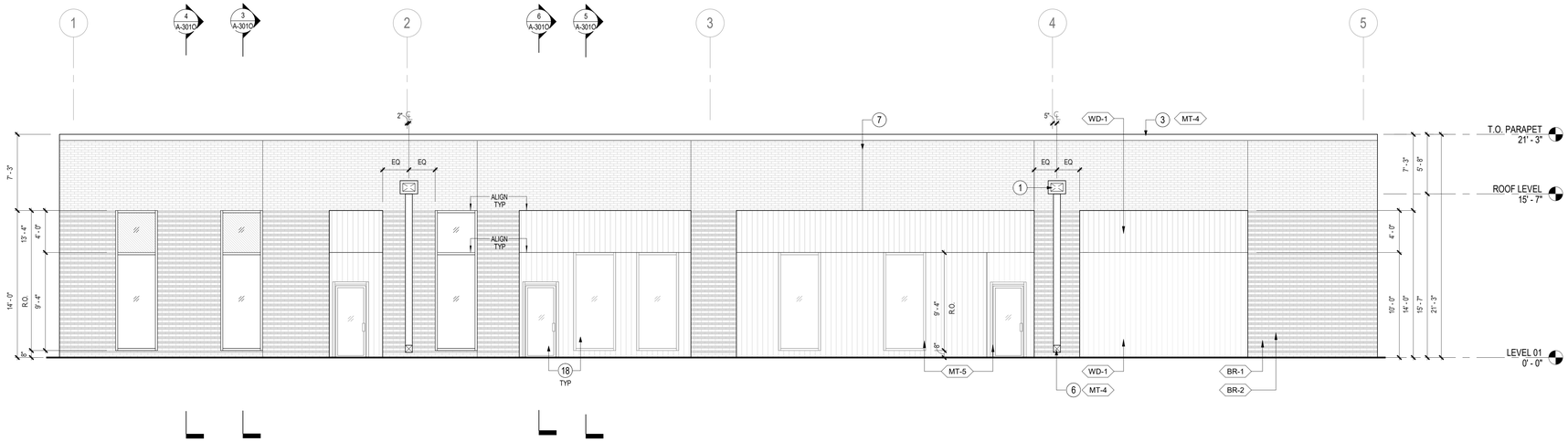


1 SOUTH ELEVATION
SCALE: 3/16" = 1'-0"



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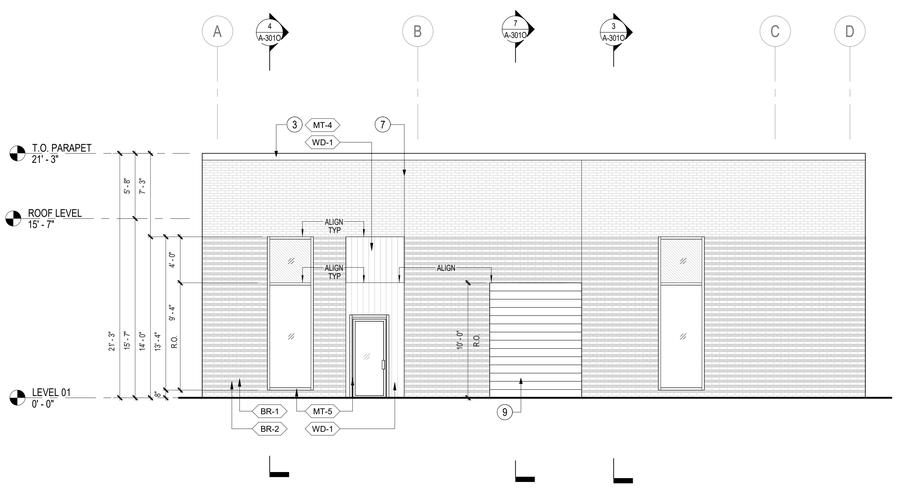

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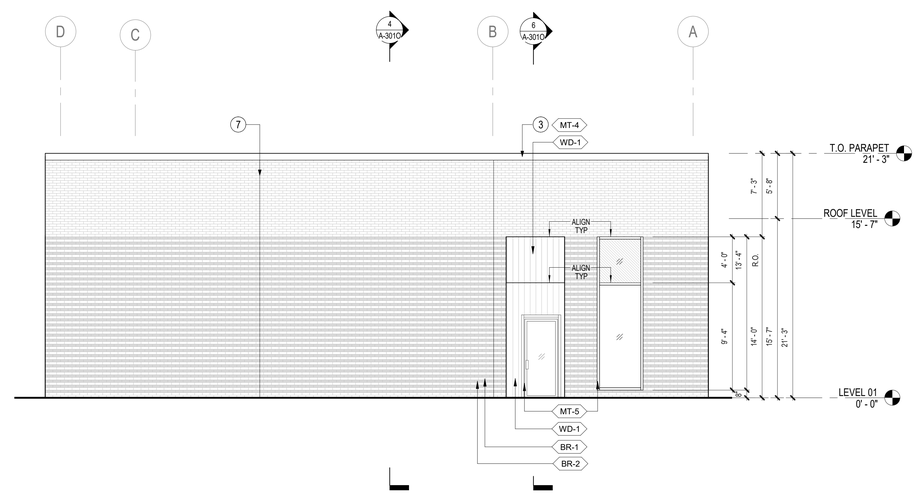

3 WEST ELEVATION
SCALE: 3/16" = 1'-0"

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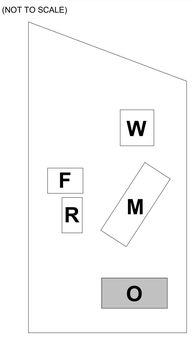

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713 463 8200

Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
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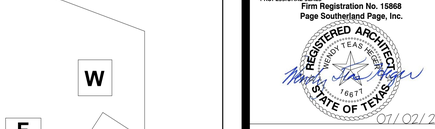

ARCHITECTURAL - EXTERIOR ELEVATIONS

DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCR&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-201O
SHEET NUMBER

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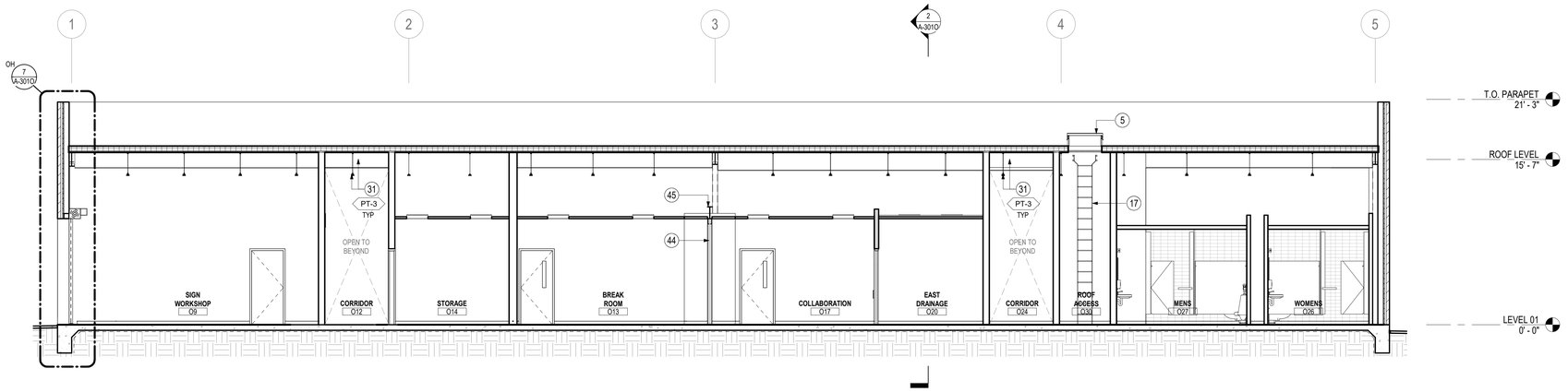
USER NAME:
DATE STAMP: 7/1/2020 10:33:43 AM



1 BUILDING SECTION
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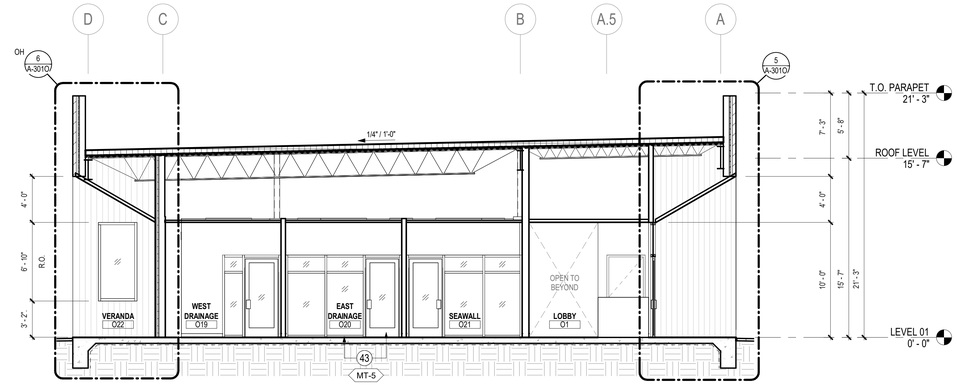

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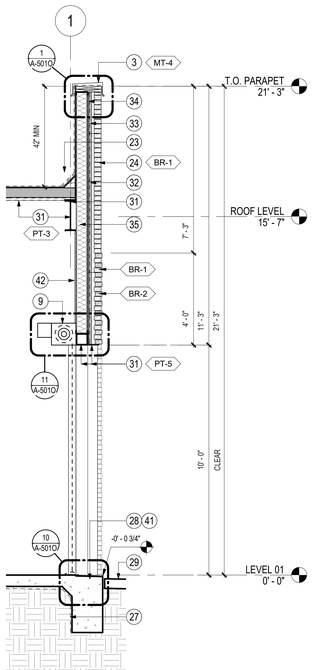

7 WALL SECTION
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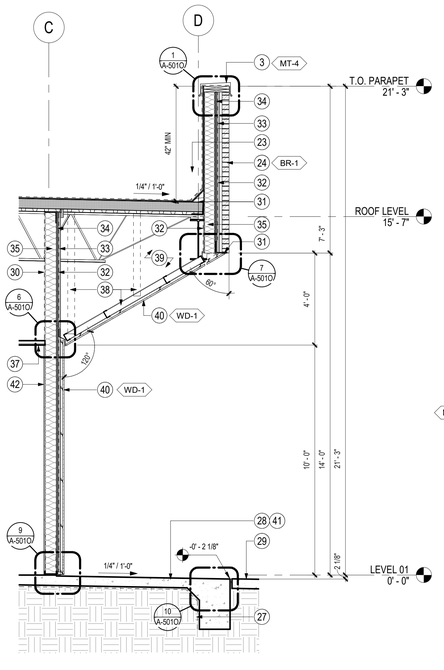
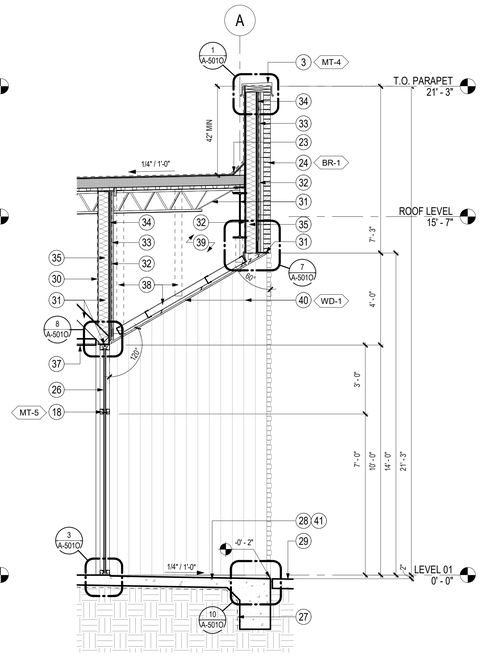


6 WALL SECTION
SCALE: 3/8" = 1'-0"



5 WALL SECTION
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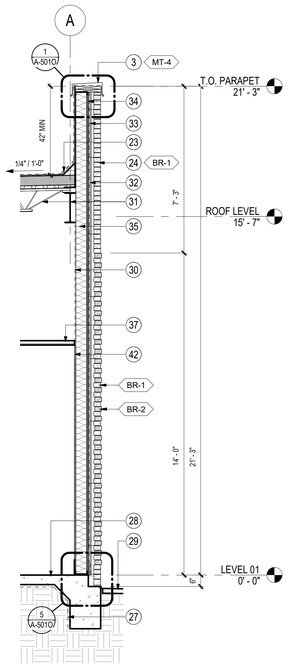
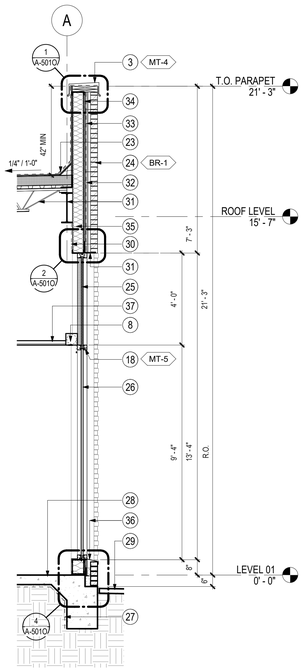


4 WALL SECTION
SCALE: 3/8" = 1'-0"



3 WALL SECTION
SCALE: 3/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	CATCHMENT BOX WITH SPILLOVER AND DOWNSPOUT
2	THRU-WALL SCUPPER OPENING
3	PREFINISHED SHEETMETAL COPING
4	ROOF CRICKETING
5	INSULATED ROOF HATCH
6	PREFINISHED SHEETMETAL DOWNSPOUT
7	VERTICAL BRICK CONTROL JOINTS. TYPICAL
8	MANUAL ROLLER WINDOW SHADES AT ALL EXTERIOR WINDOWS. U.N.O.
9	INSULATED OVERHEAD COILING DOOR ASSEMBLY. RE: DOOR SCHEDULE
10	PROVIDE SCHLUTER STRIP
11	WALL-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
12	FLOOR-MOUNTED CEILING-BRACED TOILET PARTITION
13	WALL-HUNG URINAL PARTITION
14	SOLID PHENOLIC Z-LOCKERS. 12"Wx18"Dx72"H
15	TAS-COMPLIANT LOCKER BENCH. 12"Wx18"Dx42"W
16	STEEL ACCESS HATCH. FIELD PAINT TO MATCH PT-3. COORIDNATE FINAL HEIGHT AND SIZE WITH PLUMBING ROUGH-IN BEHIND
17	OSHA-COMPLIANT STEEL SAFETY LADDER LEADING TO ROOF HATCH ABOVE. SUPPORTED BY STEEL TUBES IN WALL. RE: STRUCTURAL
18	INSULATED GLAZED EXTERIOR STOREFRONT
19	TAS-COMPLIANT STAINLESS STELL SINK ASSEMBLY
20	10" DIAMATER STAINELESS STEEL GROMMET
21	SOLID SURFACE COUNTERTOP
22	VENT HOOD. RE: MECHANICAL
23	INSULATED MODIFIED BITUMEN ROOFING ASSEMBLY
24	ANCHORED BRICK VENEER MASONRY ASSEMBLY
25	INSULATED SPANDREL GLAZING PANEL
26	VISION GLAZING PANEL
27	VAPOR BARRIER
28	SLAB-ON-GRADE. RE: STRUCTURAL
29	ADJACENT PAVING. RE: CIVIL
30	CHICKEN-WIRE FENCING PROTECTING INSULATION WHERE NO GYP IS PRESENT. TYPICAL
31	STEEL STRUCTURE. RE: STRUCTURAL
32	FLUID APPLIED WEATHER BARRIER
33	CONTINUOUS BOARD INSULATION
34	SHEATHING
35	COLD-FORMED METAL FRAMING WALL WITH BATT INSULATION
36	PREFINISHED SHEETMETAL FLASHING
37	INTERIOR CEILING. RE: RCP
38	COLD-FORMED FRAMING
39	NATURALLY-VENTILATED EXTERIOR SOFFIT. ALL STEEL WITHIN SOFFIT TO BE HOT-DIP GALVANIZED. RE: STRUCTURAL
40	COMPOSITE WOOD EXTERIOR LAP PLANKING
41	PROVIDE MEDIUM BROOM FINISH AT EXTERIOR CONCRETE PATIOS
42	INTERIOR GYP FINISH
43	UNINSULATED INTERIOR STOREFRONT ASSEMBLY
44	OPERABLE PARTITION ASSEMBLY
45	PROVIDE SUPPORTING STEEL FOR OPERABLE PARTITION
46	MASONRY DRAIN MATERIAL
47	WEEP
48	NONSHRINK GROUT
49	COMPRESSIBLE FILLER
50	TRACK RUNNER SET IN CONTINOUS BED OF SEALANT
52	FLEXIBLE FLASHING
53	TREATED 2BY BLOCKING
54	RETICULATED DOUBLE SEALANT JOINT WITH BACKER ROD AND WEEP BAFFLES
55	MODIFIED BITUMEN WALL AND PARAPET FLASHING
56	PARAPET WALL SHEATHING
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58	INSECT SCREEN
59	PLYWOOD SUBSTRATE
60	INTERIOR STUD FRAMING
61	PROVIDE ARCHITECTURALLY-RECESSED KNOX BOX
62	MASONRY ANCHOR
63	COMPOSITE WOOD CORNER TRIM
64	END-DAM WITH INTEGRAL BASE FLASHING

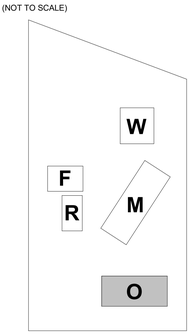
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 A-301	SECTION TAG
1 A-201	ELEVATION TAG
ROOM NAME 51	ROOM NAME ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
×	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT WINDY TEAS TREADGILL 16617 STATE OF TEXAS

07/02/2020

ARCHITECTURAL - BUILDING & WALL SECTIONS

DRAWN BY WJC	CHECKED BY ST
PROJECT NUMBER 418198	PROJECT ABBREVIATION GCR&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

A-301O
SHEET NUMBER

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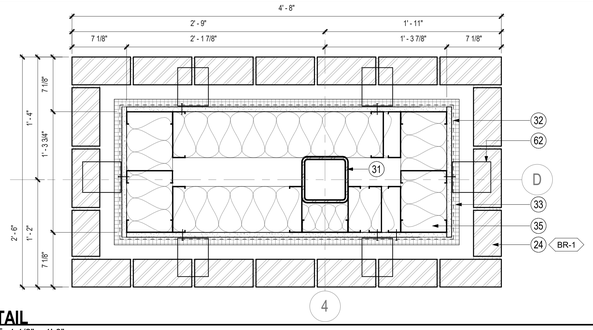
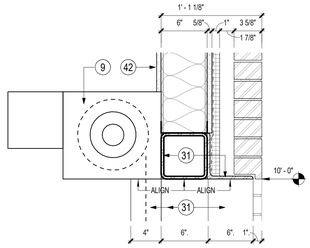


21 **DETAIL**
SCALE: 1 1/2" = 1'-0"



11 **DETAIL** RE: 5/A-501O FOR TYPICAL NOTES
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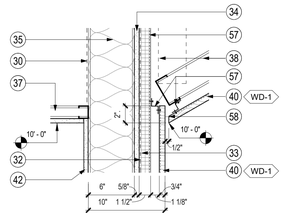

6 **DETAIL @ SOFFIT @ WOOD**
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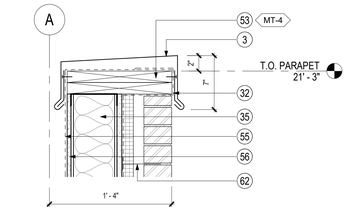

1 **DETAIL @ PARAPET @ BRICK**
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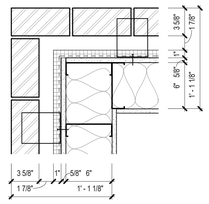

22 **DETAIL** RE: 21/A-501O FOR TYPICAL NOTES
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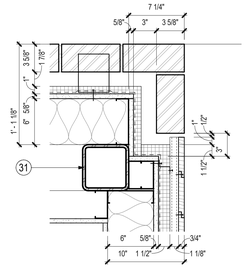

12 **DETAIL** RE: 17 & 23/A-501O FOR TYPICAL NOTES
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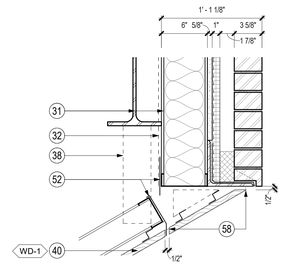
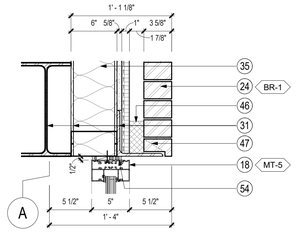
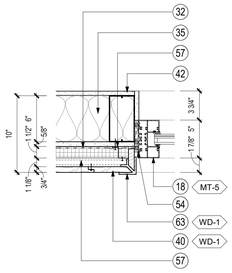


7 **DETAIL** RE: 2 & 5/A-501O FOR TYPICAL NOTES
SCALE: 1 1/2" = 1'-0"



2 **DETAIL @ STOREFRONT @ HEAD @ BRICK**
SCALE: 1 1/2" = 1'-0"



23 **DETAIL**
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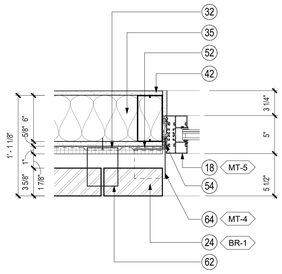

17 **DETAIL**
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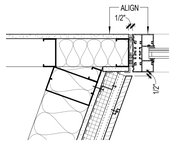
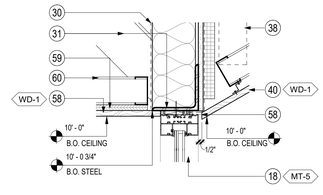
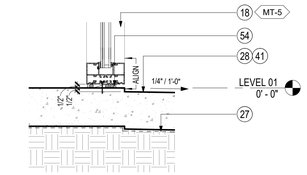


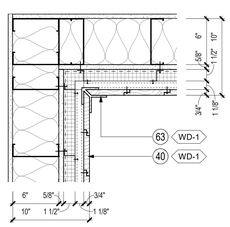
13 **DETAIL** RE: 14, 17 & 23/A-501O FOR TYPICAL NOTES
SCALE: 1 1/2" = 1'-0"



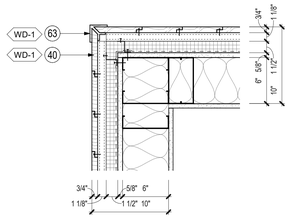
8 **DETAIL @ STOREFRONT @ HEAD @ SOFFIT** RE: 6/A-501O FOR TYPICAL NOTES
SCALE: 1 1/2" = 1'-0"



3 **DETAIL @ STOREFRONT @ SILL**
SCALE: 1 1/2" = 1'-0"



16 **DETAIL** RE: 23/A-501O FOR TYPICAL NOTES
SCALE: 1 1/2" = 1'-0"



18 **DETAIL** RE: 23/A-501O FOR TYPICAL NOTES
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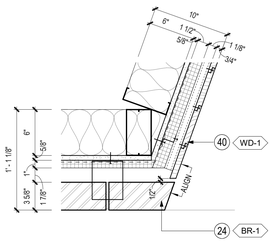
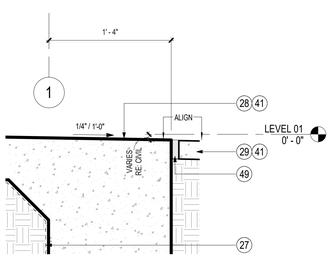
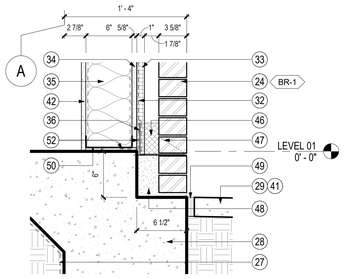


14 **DETAIL** RE: 17 & 23/A-501O FOR TYPICAL NOTES
SCALE: 1 1/2" = 1'-0"



9 **DETAIL @ BASE @ WOOD** RE: 5/A-501O FOR SIMILAR NOTES
SCALE: 1 1/2" = 1'-0"



4 **DETAIL @ STOREFRONT @ SILL @ BRICK** RE: 5/A-501O FOR TYPICAL NOTES
SCALE: 1 1/2" = 1'-0"

10 **DETAIL @ EXPOSED SLAB EDGE**
SCALE: 1 1/2" = 1'-0"

5 **DETAIL @ BASE @ BRICK**
SCALE: 1 1/2" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	CATCHMENT BOX WITH SPILLOVER AND DOWNSPOUT
2	THRU-WALL SCUPPER OPENING
3	PREFINISHED SHEETMETAL COPING
4	ROOF CRICKETING
5	INSULATED ROOF HATCH
6	PREFINISHED SHEETMETAL DOWNSPOUT
7	VERTICAL BRICK CONTROL JOINTS. TYPICAL
8	MANUAL ROLLER WINDOW SHADES AT ALL EXTERIOR WINDOWS. U.N.O.
9	INSULATED OVERHEAD COILING DOOR ASSEMBLY. RE: DOOR SCHEDULE
10	PROVIDE SCHLUTER STRIP
11	WALL-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
12	FLOOR-MOUNTED CEILING-BRACED TOILET PARTITION
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18	INSULATED GLAZED EXTERIOR STOREFRONT
19	TAS-COMPLIANT STAINLESS STELL SINK ASSEMBLY
20	10" DIAMATER STAINELESS STEEL GROMMET
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27	VAPOR BARRIER
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32	FLUID APPLIED WEATHER BARRIER
33	CONTINUOUS BOARD INSULATION
34	SHEATHING
35	COLD-FORMED METAL FRAMING WALL WITH BATT INSULATION
36	PREFINISHED SHEETMETAL FLASHING
37	INTERIOR CEILING. RE: RCP
38	COLD-FORMED FRAMING
39	NATURALLY-VENTILATED EXTERIOR SOFFIT. ALL STEEL WITHIN SOFFIT TO BE HOT-DIP GALVANIZED. RE: STRUCTURAL
40	COMPOSITE WOOD EXTERIOR LAP PLANKING
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42	INTERIOR GYP FINISH
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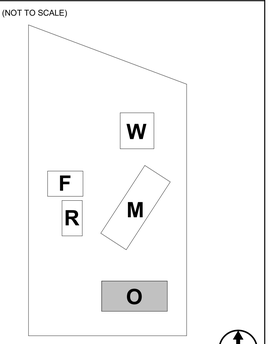
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 / A-301	SECTION TAG
1 / A-201	ELEVATION TAG
ROOM NAME / S1	ROOM NAME ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
×	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

01/02/2020

ARCHITECTURAL - DETAILS

DRAWN BY	CHECKED BY
WJC	ST
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GCR&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

A-501O
SHEET NUMBER

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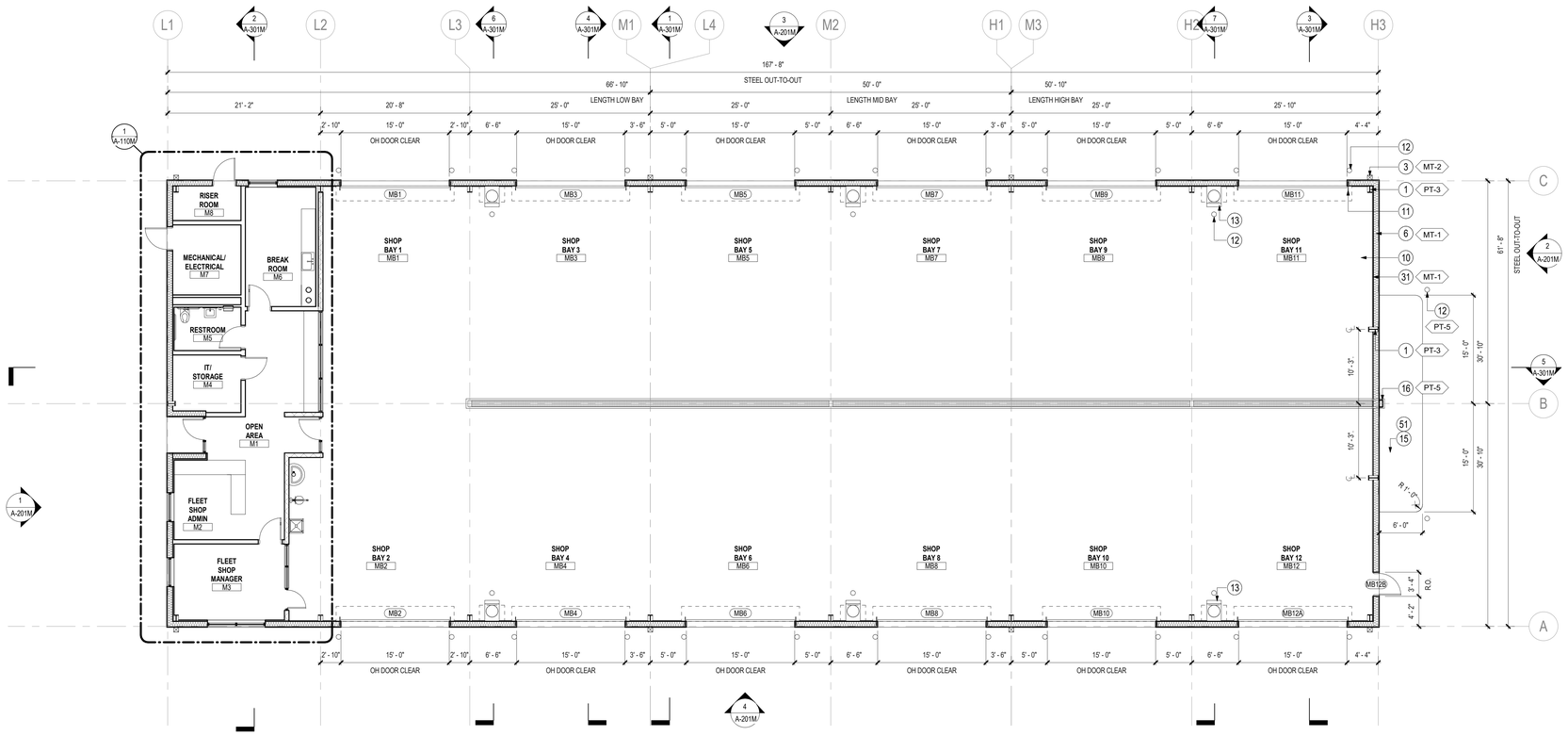
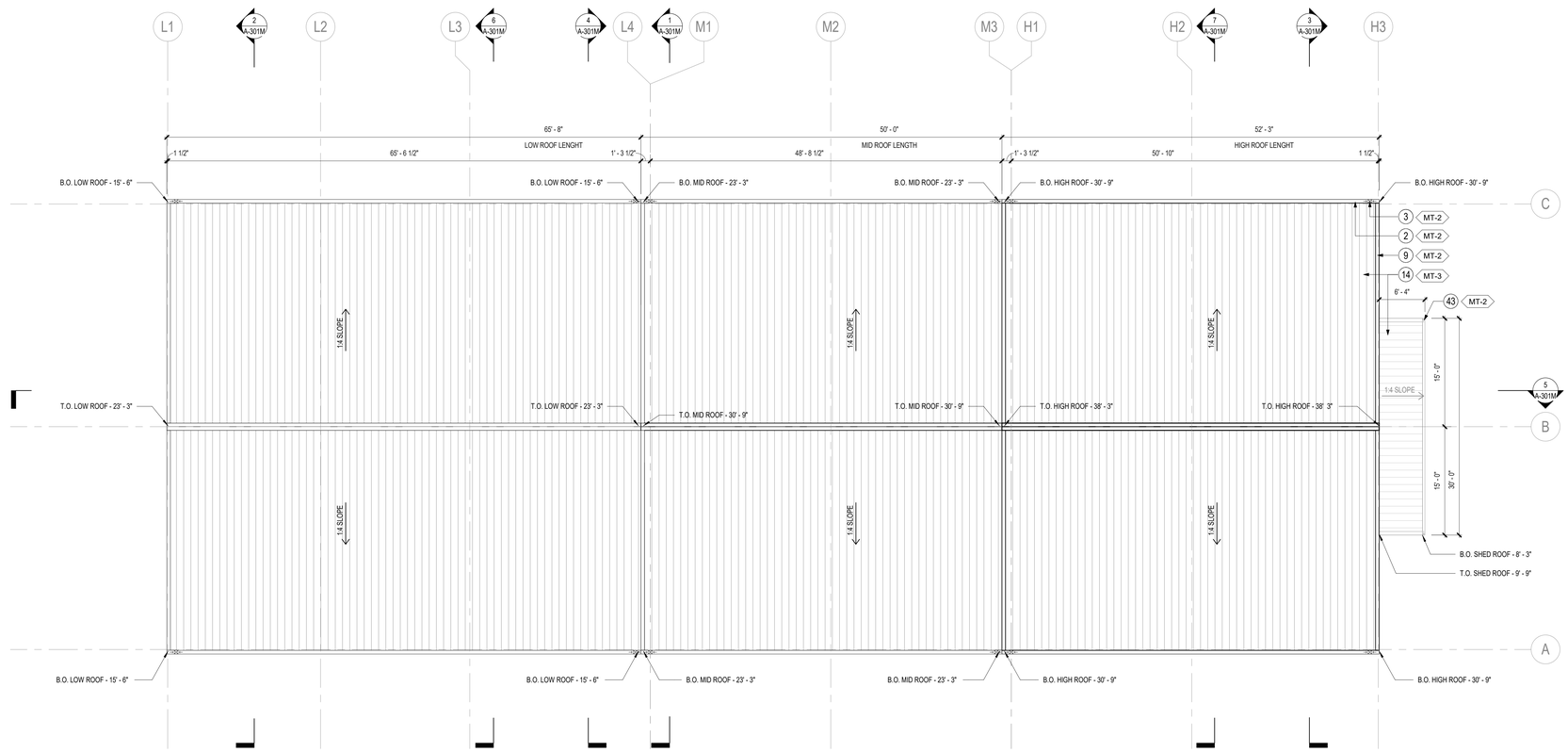


1 CONSTRUCTION PLAN

SCALE: 1/8" = 1'-0"



2 ROOF PLAN

SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	PEMB GUTTER ASSEMBLY
3	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
4	PEMB STRUT
5	PEMB SHEAR BRACE
6	INSULATED PEMB WALL ASSEMBLY WITH METAL PANEL FINISH
7	SURFACE-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
8	WIND-DRIVEN-RAIN-RESISTANT LOUVER ASSEMBLY. 50% MIN. FREE AREA. B.O.D. IS RANKIN BRAND. RE: MECHANICAL
9	PEMB TRIM
10	SLAB-ON-GRADE. RE: STRUCTURAL
11	OH COILING DOOR. RE: DOOR SCHEDULE
12	8" DIAMETER 42" HIGH PAINTED GALVANIZED STEEL CRASH BOLLARD WITH CONCRETE FILL AND DOME TOP
13	MECHANICAL ASSEMBLY. RE: MECHANICAL
14	INSULATED PEMB ROOFING ASSEMBLY
15	6" CAST-IN-PLACE CONCRETE PAD. FRAMED AT PERIMETER WITH STEEL ISLAND FORMS BY RED-E-FORM
16	GALVANIZED PAINTED HSS TUBE
17	OVERHEAD FAN. RE: MECHANICAL
18	CRANE RAIL BEAM
19	CRANE RAIL BEAM SUPPORT. ANCHORED TO PEMB STRUCTURE ABOVE
20	CHAIN-HUNG RADIANT HEATER. RE: MECHANICAL
21	COMPRESSED AIR LINE
22	INSULATED GLAZED EXTERIOR STOREFRONT
24	TAS-COMPLIANT STAINLESS STELL SINK ASSEMBLY
25	10" DIAMATER STAINELESS STEEL GROMMET
26	SOLID SURFACE COUNTERTOP
27	STAINLESS STEEL HAND WASHING SINK. RE: PLUMBING
28	STAINLESS STEEL EYE WASHING STATION. RE: PLUMBING
29	MOP SINK. RE: PLUMBING
30	INSULATED LIGHT-WALL ASSEMBLY
31	PEMB METAL PANEL INTERIOR WALL WAISNCOT TO 8'
32	QUICK-CONNECT COMPRESSED AIR TERMINUS. RE: PLUMBING
33	PROVIDE MANUAL ROLLER SHADE AT WINDOW HEAD
34	PROVIDE TUBE STEEL FRAMING TO SUPPORT FLOATING COUNTERTOP ASSEMBLY. PROVIDE SUPPORTS AT WALLS AT EITHER END
35	PEMB TRIM
36	CORD CHASE AND WHIP
37	2" CORD GROMMET WITH PASS-THRU COVER
41	UNINSULATED PEMB ROOFING ASSEMBLY
42	COMPRESSED FLUID LINES. RE: PLUMBING
43	DAYLIT GUTTER DISCHARGE
44	UTILITY TRENCH
45	HOSE REEL STAND. RE: PLUMBING AND ELECTRICAL
46	VAPOR BARRIER
47	GALVANIZED MCNICHOLS TRAFFIC-RATED BAR-STOCK PANEL. 3' LENGTHS
48	GALVANIZED EMBED ANGLE
49	GALVANIZED SUPPORT ANGLE
50	LINE OF PEMB STRUCTURE ADJACENT
51	PROVIDE MEDIUM BROOM FINISH AT EXTERIOR CONCRETE PATIO
52	POWER & DATA J-BOX HOSTED UNDER HOSE REEL COLUMN. RE: ELECTRICAL & TELECOM
53	DUPLEX DATA TERMINAL IN STEEL HOUSING MOUNTED TO HOSE-REEL STAND. RE: TELECOM

GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.
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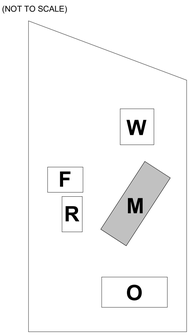
7. PROVIDE SCHLUTER STRIP IN ANNODIZED ALUMINUM AT ALL TILE OUTSIDE CORNERS AND ALL OPEN TILE WALL EDGES.
8. ALL EXPOSED PEMB RBS AND EXPOSED STRUCTURAL STEEL TO RECIEVE PT-3 FINISH.
9. M-8 WALLS TO RECIEVE PT-3 FINISH U.N.O.
10. MAINTENANCE SHOP FLOOR TO RECIEVE SC-3 FINISH.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 A-301	SECTION TAG
1 A-201	ELEVATION TAG
ROOM NAME S1	ROOM NAME ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
X	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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MEP Engineering
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832 249 9379

Landscape Architecture
Knudson, LP
8588 Katy Freeway
Suite 441
Houston, TX 77024
713 463 8200

Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT
WILLIAM JOY TEAGUE
16877
STATE OF TEXAS

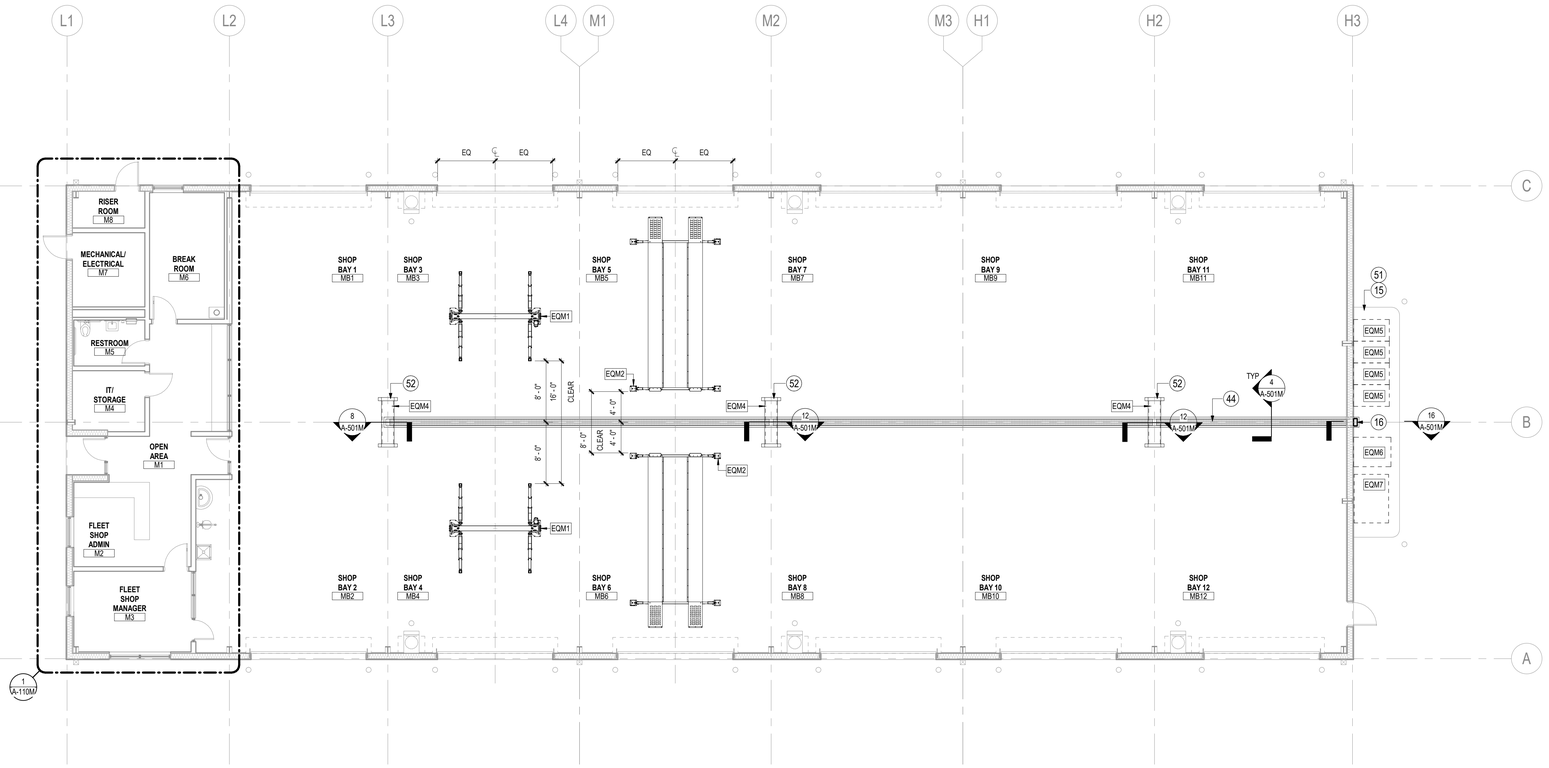
01/02/2020

ARCHITECTURAL - CONSTRUCTION & ROOF PLANS

DRAWN BY WJC	CHECKED BY ST
PROJECT NUMBER 418198	PROJECT ABBREVIATION GCRB
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

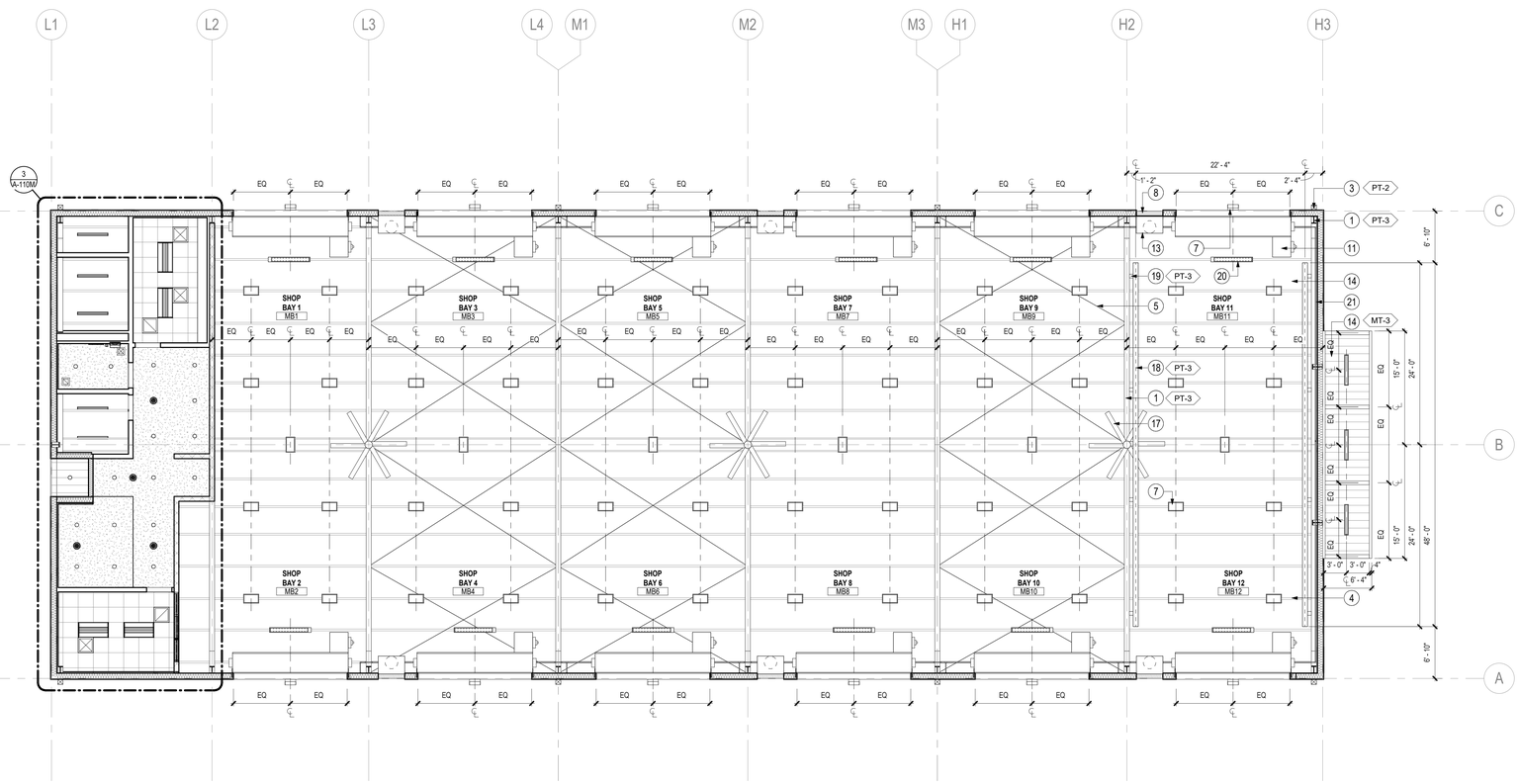
A-101M
SHEET NUMBER

FILE PATH C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-SHOP_vgandhi.rvt
DATE STAMP 7/1/2020 11:25:25 AM



1 EQUIPMENT PLAN

SCALE: 1/8" = 1'-0"



2 REFFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	PEMB GUTTER ASSEMBLY
3	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
4	PEMB STRUT
5	PEMB SHEAR BRACE
6	INSULATED PEMB WALL ASSEMBLY WITH METAL PANEL FINISH
7	SURFACE-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
8	WIND-DRIVEN-RAIN-RESISTANT LOUVER ASSEMBLY. 50% MIN. FREE AREA. B.O.D. IS RANKIN BRAND. RE: MECHANICAL
9	PEMB TRIM
10	SLAB-ON-GRADE. RE: STRUCTURAL
11	OH COILING DOOR. RE: DOOR SCHEDULE
12	8" DIAMETER 42" HIGH PAINTED GALVANIZED STEEL CRASH BOLLARD WITH CONCRETE FILL AND DOME TOP
13	MECHANICAL ASSEMBLY. RE: MECHANICAL
14	INSULATED PEMB ROOFING ASSEMBLY
15	6" CAST-IN-PLACE CONCRETE PAD. FRAMED AT PERIMETER WITH STEEL ISLAND FORMS BY RED-E-FORM
16	GALVANIZED PAINTED HSS TUBE
17	OVERHEAD FAN. RE: MECHANICAL
18	CRANE RAIL BEAM
19	CRANE RAIL BEAM SUPPORT. ANCHORED TO PEMB STRUCTURE ABOVE
20	CHAIN-HUNG RADIANT HEATER. RE: MECHANICAL
21	COMPRESSED AIR LINE
22	INSULATED GLAZED EXTERIOR STOREFRONT
24	TAS-COMPLIANT STAINLESS STELL SINK ASSEMBLY
25	10" DIAMATER STAINELESS STEEL GROMMET
26	SOLID SURFACE COUNTERTOP
27	STAINLESS STEEL HAND WASHING SINK. RE: PLUMBING
28	STAINLESS STEEL EYE WASHING STATION. RE: PLUMBING
29	MOP SINK. RE: PLUMBING
30	INSULATED LIGHT-WALL ASSEMBLY
31	PEMB METAL PANEL INTERIOR WALL WAISNCOT TO 8'
32	QUICK-CONNECT COMPRESSED AIR TERMINUS. RE: PLUMBING
33	PROVIDE MANUAL ROLLER SHADE AT WINDOW HEAD
34	PROVIDE TUBE STEEL FRAMING TO SUPPORT FLOATING COUNTERTOP ASSEMBLY. PROVIDE SUPPORTS AT WALLS AT EITHER END
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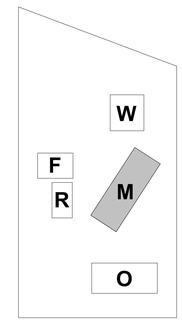

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5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT · WINDY TEAGUE HUGHES · 16877 · STATE OF TEXAS

01/02/2020

ARCHITECTURAL - REFLECTED CEILING & EQUIPMENT PLANS

DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCRB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-102M
SHEET NUMBER

FILE PATH: C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-SHOP_vgandhi.rvt
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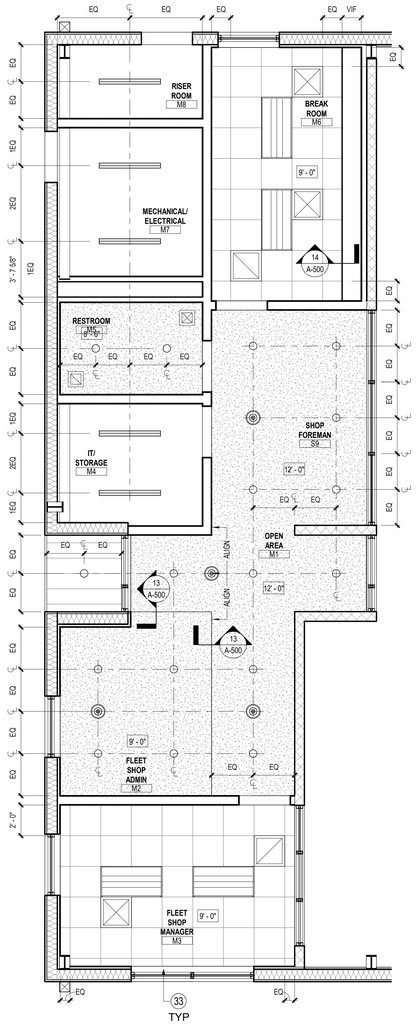
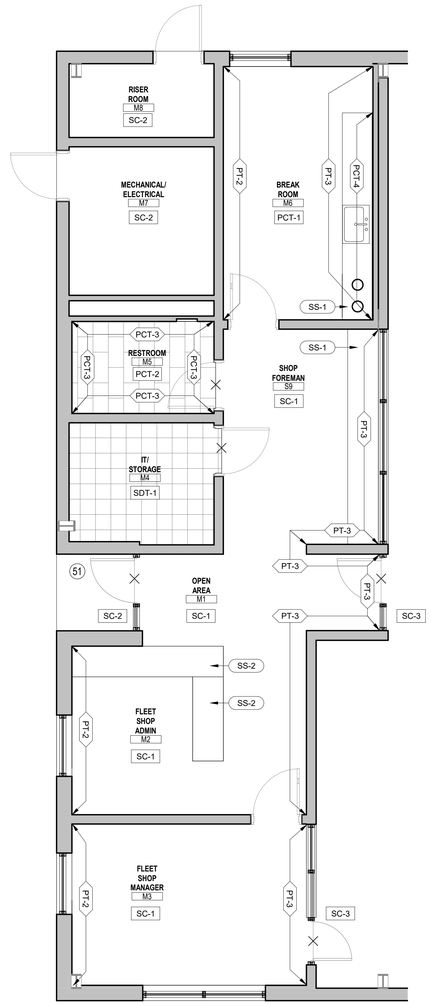
DATE STAMP: 7/1/2020 11:25:28 AM

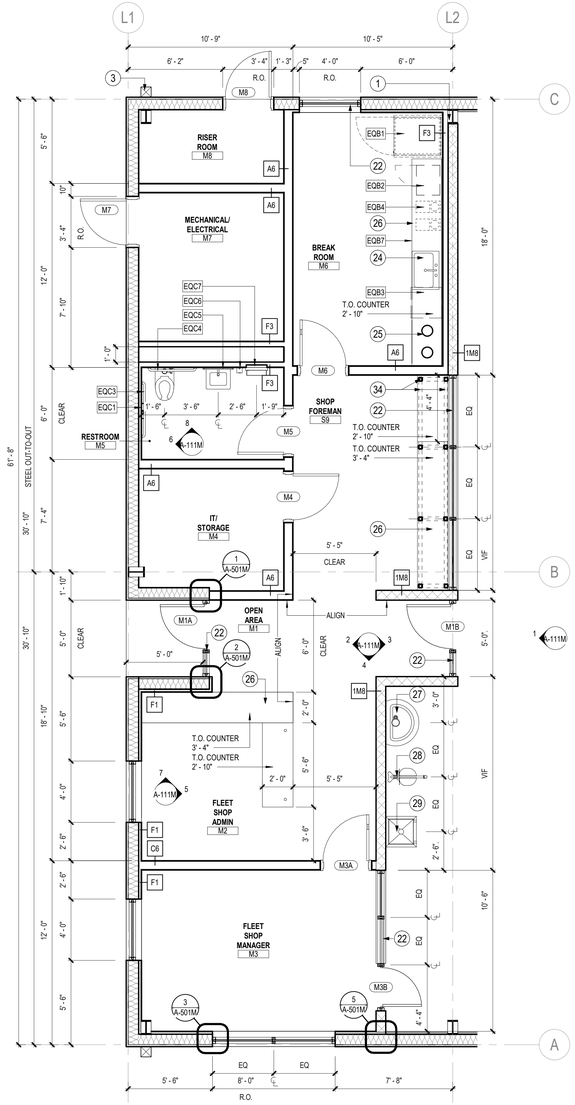


3 REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"



2 FINISH PLAN
SCALE: 1/4" = 1'-0"

RE: INTERIOR ELEVATIONS FOR ADDITIONAL FINISH DATA



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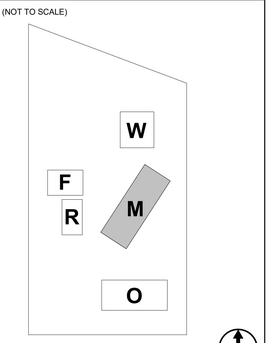
	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT · WINDY TEAS HOGAN · 16677 · STATE OF TEXAS

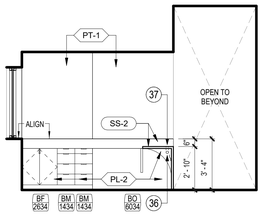
07 / 02 / 2020

ARCHITECTURAL - ENLARGED PLANS

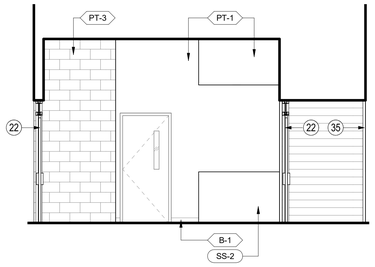
DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCRB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-110M
SHEET NUMBER

FILE PATH: C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-SHOP_vgandhi.rvt
USER NAME:
DATE STAMP: 7/1/2020 11:25:32 AM



7 **ELEVATION**
SCALE: 1/4" = 1'-0"



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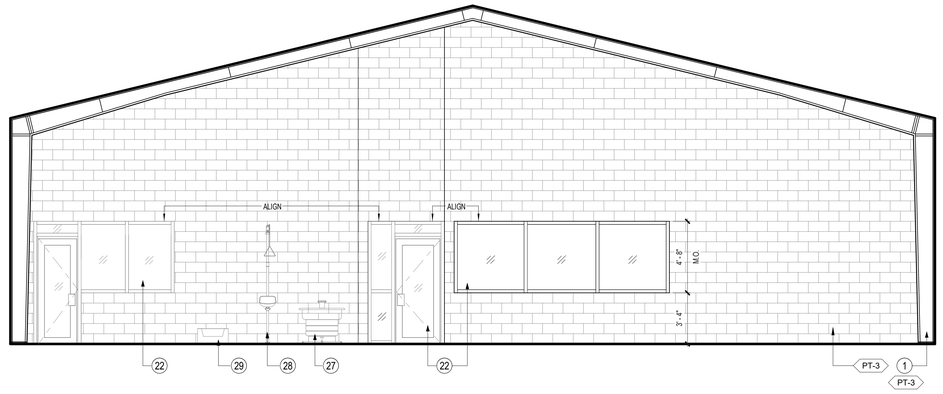

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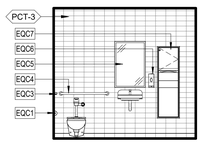

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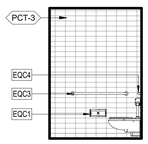

6 **ELEVATION**
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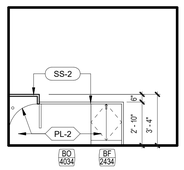

5 **ELEVATION**
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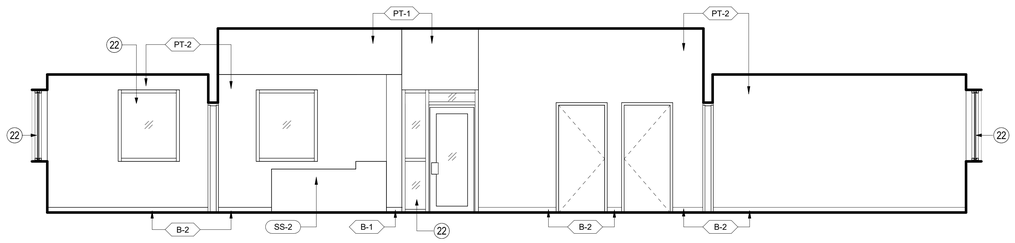

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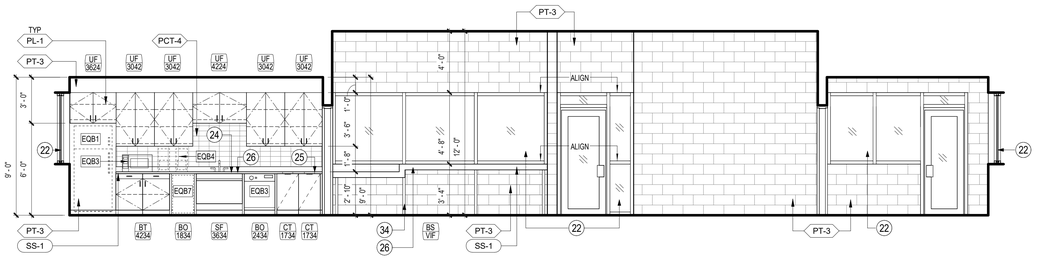

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37	2" CORD GROMMET WITH PASS-THRU COVER
41	UNINSULATED PEMB ROOFING ASSEMBLY
42	COMPRESSED FLUID LINES. RE: PLUMBING
43	DAYLIT GUTTER DISCHARGE
44	UTILITY TRENCH
45	HOSE REEL STAND. RE: PLUMBING AND ELECTRICAL
46	VAPOR BARRIER
47	GALVANIZED MCNICHOLS TRAFFIC-RATED BAR-STOCK PANEL. 3' LENGTHS
48	GALVANIZED EMBED ANGLE
49	GALVANIZED SUPPORT ANGLE
50	LINE OF PEMB STRUCTURE ADJACENT
51	PROVIDE MEDIUM BROOM FINISH AT EXTERIOR CONCRETE PATIO
52	POWER & DATA J-BOX HOSTED UNDER HOSE REEL COLUMN. RE: ELECTRICAL & TELECOM
53	DUPLEX DATA TERMINAL IN STEEL HOUSING MOUNTED TO HOSE-REEL STAND. RE: TELECOM

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1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.
4. RE: MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR ADDITIONAL DATA.
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7. PROVIDE SCHLUTER STRIP IN ANNODIZED ALUMINUM AT ALL TILE OUTSIDE CORNERS AND ALL OPEN TILE WALL EDGES.
8. ALL EXPOSED PEMB RIBS AND EXPOSED STRUCTURAL STEEL TO RECIEVE PT-3 FINISH.
9. M-8 WALLS TO RECIEVE PT-3 FINISH U.N.O.
10. MAINTENANCE SHOP FLOOR TO RECIEVE SC-3 FINISH.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
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ROOM NAME / S1	ROOM NAME ROOM NUMBER
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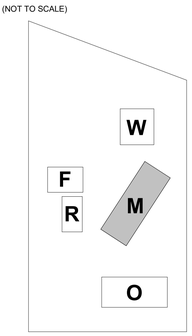
PT-2	WALL FINISH TAG
	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

07/02/2020

ARCHITECTURAL - INTERIOR ELEVATIONS

DRAWN BY	CHECKED BY
WJC	ST
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GCRB
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

A-111M
SHEET NUMBER

FILE PATH
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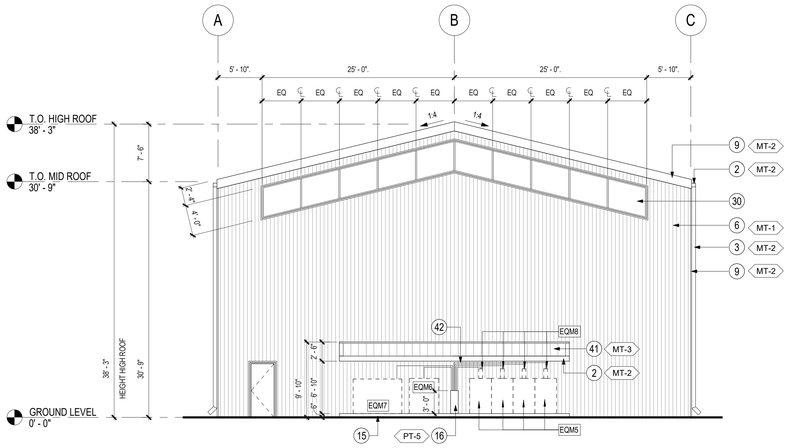
DATE STAMP 7/1/2020 11:25:36 AM



2 EAST ELEVATION
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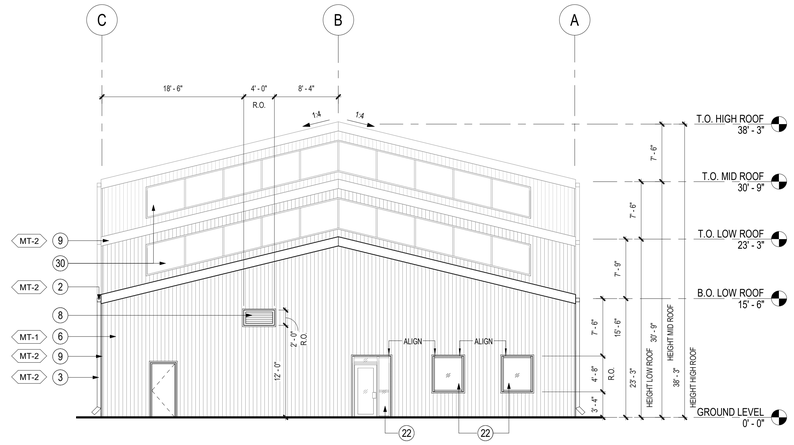

1 WEST ELEVATION
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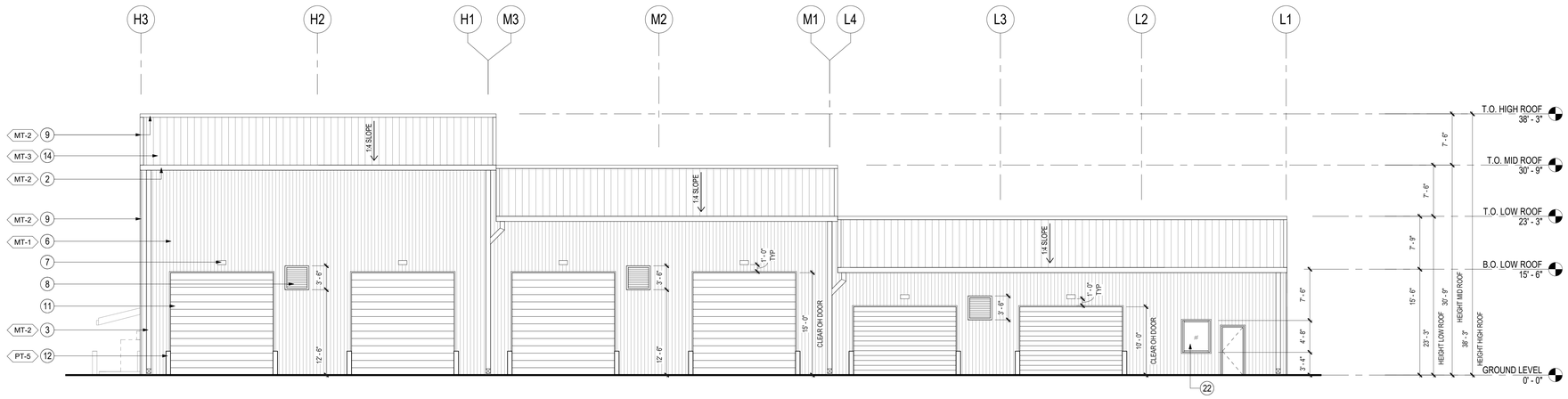

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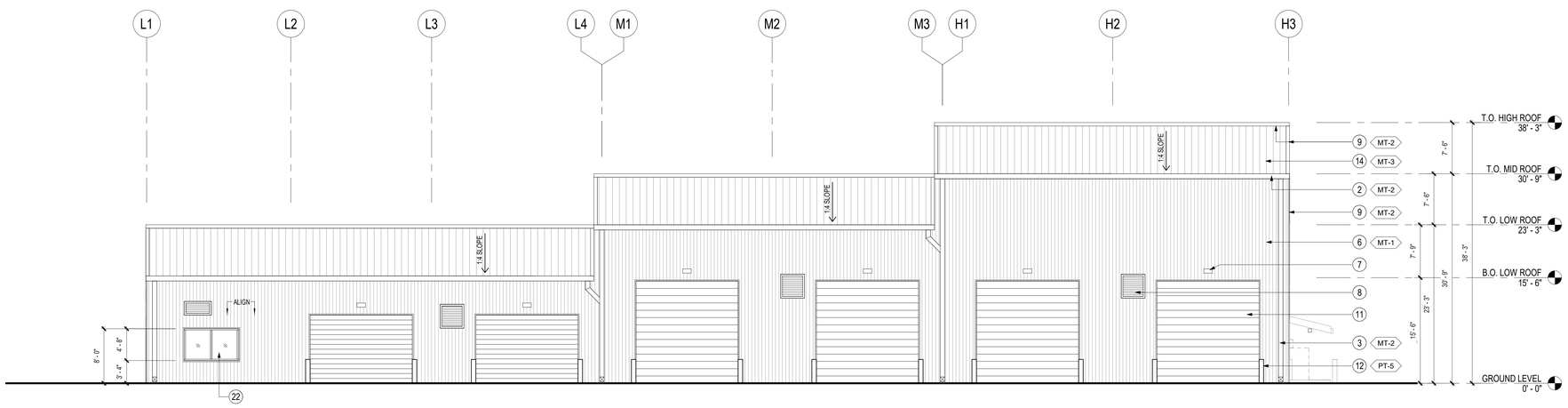

4 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	PEMB GUTTER ASSEMBLY
3	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
4	PEMB STRUT
5	PEMB SHEAR BRACE
6	INSULATED PEMB WALL ASSEMBLY WITH METAL PANEL FINISH
7	SURFACE-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
8	WIND-DRIVEN-RAIN-RESISTANT LOUVER ASSEMBLY. 50% MIN. FREE AREA. B.O.D. IS RANKIN BRAND. RE: MECHANICAL
9	PEMB TRIM
10	SLAB-ON-GRADE. RE: STRUCTURAL
11	OH COILING DOOR. RE: DOOR SCHEDULE
12	8" DIAMETER 4/2" HIGH PAINTED GALVANIZED STEEL CRASH BOLLARD WITH CONCRETE FILL AND DOME TOP
13	MECHANICAL ASSEMBLY. RE: MECHANICAL
14	INSULATED PEMB ROOFING ASSEMBLY
15	6" CAST-IN-PLACE CONCRETE PAD. FRAMED AT PERIMETER WITH STEEL ISLAND FORMS BY RED-E-FORM
16	GALVANIZED PAINTED HSS TUBE
17	OVERHEAD FAN. RE: MECHANICAL
18	CRANE RAIL BEAM
19	CRANE RAIL BEAM SUPPORT. ANCHORED TO PEMB STRUCTURE ABOVE.
20	CHAIN-HUNG RADIANT HEATER. RE: MECHANICAL
21	COMPRESSED AIR LINE
22	INSULATED GLAZED EXTERIOR STOREFRONT
24	TAS-COMPLIANT STAINLESS STELL SINK ASSEMBLY
25	10" DIAMATER STAINELESS STEEL GROMMET
26	SOLID SURFACE COUNTERTOP
27	STAINLESS STEEL HAND WASHING SINK. RE: PLUMBING
28	STAINLESS STEEL EYE WASHING STATION. RE: PLUMBING
29	MOP SINK. RE: PLUMBING
30	INSULATED LIGHT-WALL ASSEMBLY
31	PEMB METAL PANEL INTERIOR WALL WAISNCOT TO 8'
32	QUICK-CONNECT COMPRESSED AIR TERMINUS. RE: PLUMBING
33	PROVIDE MANUAL ROLLER SHADE AT WINDOW HEAD
34	PROVIDE TUBE STEEL FRAMING TO SUPPORT FLOATING COUNTERTOP ASSEMBLY. PROVIDE SUPPORTS AT WALLS AT EITHER END
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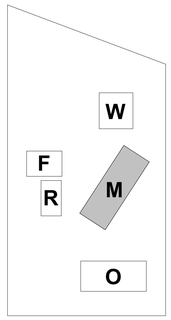
	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT
WANDY LEAS GANDHI
16617
STATE OF TEXAS

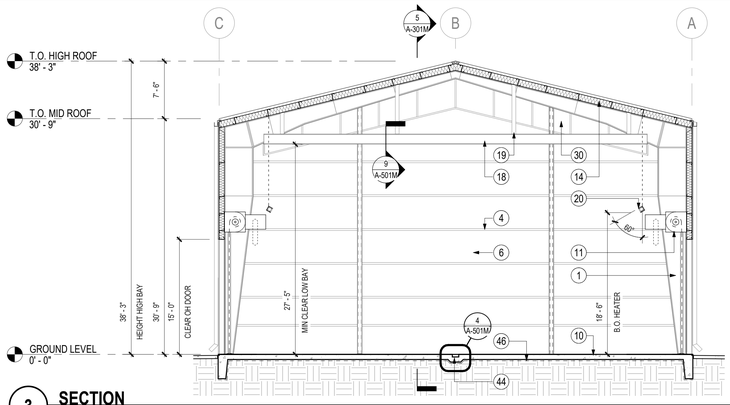
07/02/2020

ARCHITECTURAL - EXTERIOR ELEVATIONS

DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCRB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-201M
SHEET NUMBER

FILE PATH: C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-SHOP_vgandhi.rvt
USER NAME:
DATE STAMP: 7/1/2020 11:25:39 AM



3 **SECTION**
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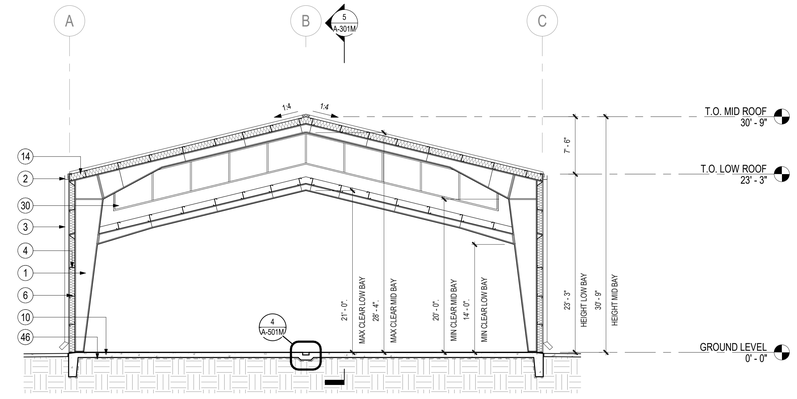

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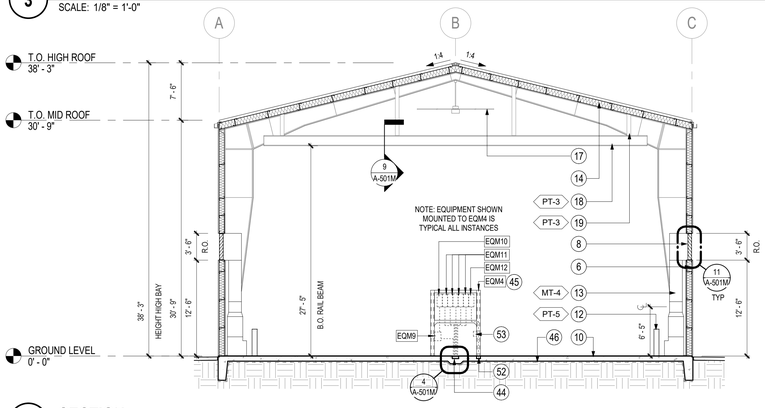

7 **SECTION**
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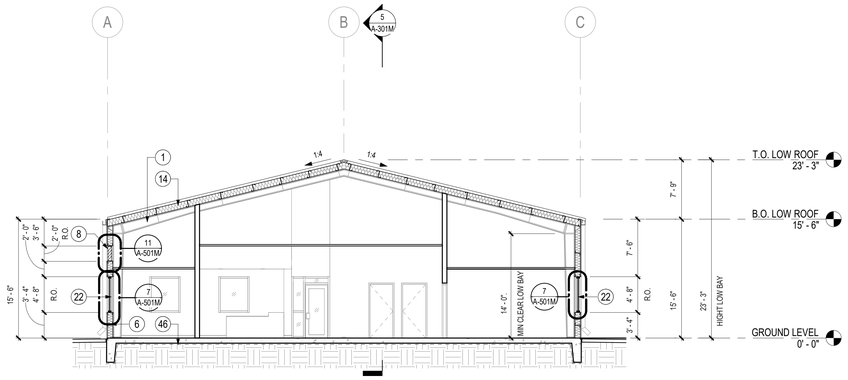

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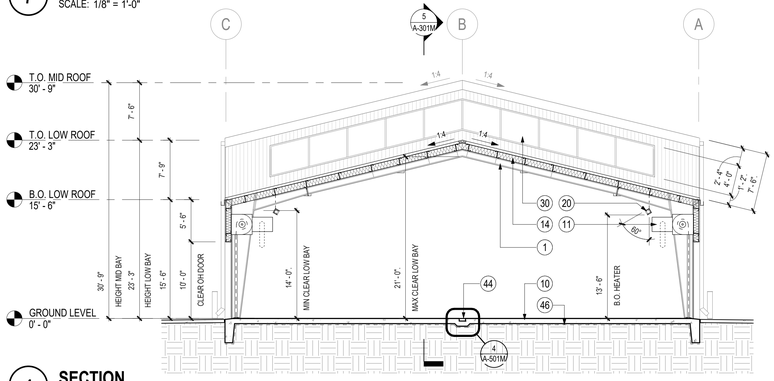
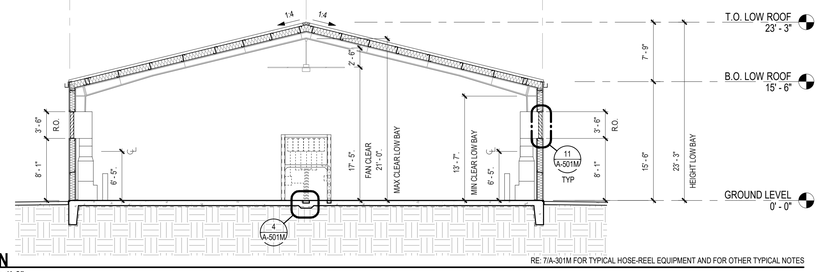
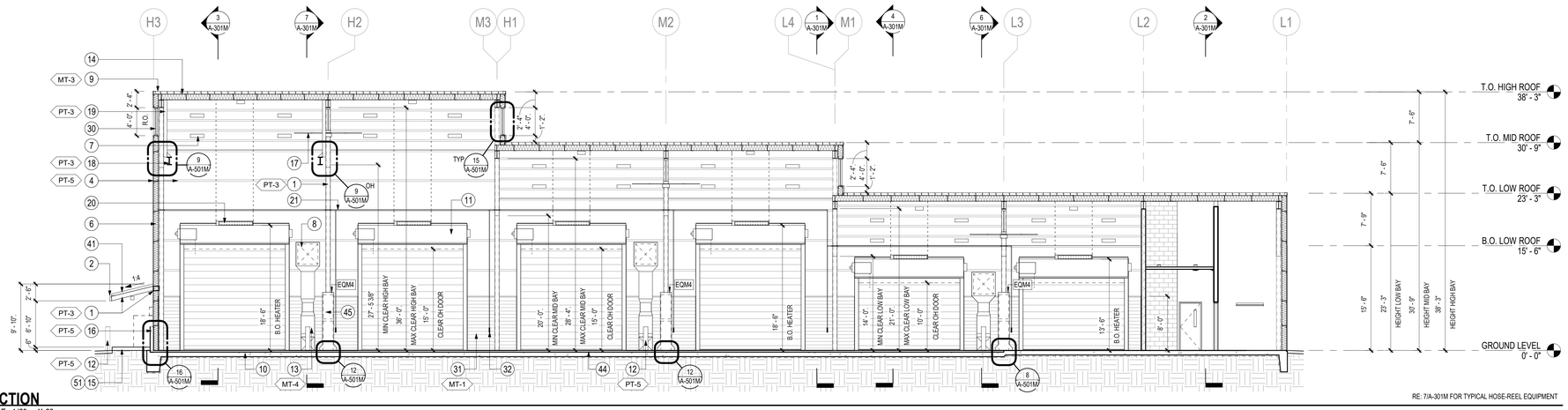


4 **SECTION**
SCALE: 1/8" = 1'-0"



6 **SECTION**
SCALE: 1/8" = 1'-0"

RE: 7/A-301M FOR TYPICAL HOSE-REEL EQUIPMENT AND FOR OTHER TYPICAL NOTES



RE: 7/A-301M FOR TYPICAL HOSE-REEL EQUIPMENT

5 **SECTION**
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KEYED NOTES

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10	SLAB-ON-GRADE. RE: STRUCTURAL
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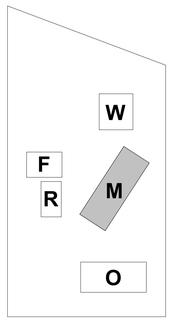

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Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT
WINDY LEAO WILLIAMS
16677
STATE OF TEXAS

07/02/2020

ARCHITECTURAL - BUILDING SECTIONS

DRAWN BY: WJC	CHECKED BY: WH
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCRB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-301M
SHEET NUMBER

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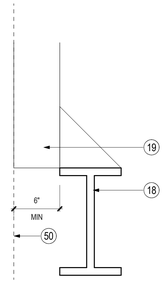


9 **DETAIL @ CRANE RAIL**
SCALE: 1 1/2" = 1'-0"

5 **DETAIL @ ENCLOSURE**
SCALE: 1 1/2" = 1'-0"

1 **DETAIL @ ENCLOSURE**
SCALE: 1 1/2" = 1'-0"

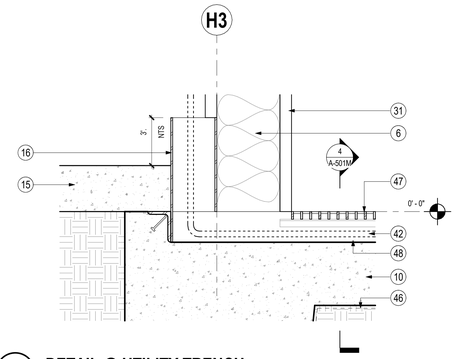
2 **DETAIL @ ENCLOSURE**
SCALE: 1 1/2" = 1'-0"

15 **DETAIL @ LIGHTWALL**
SCALE: 1 1/2" = 1'-0"

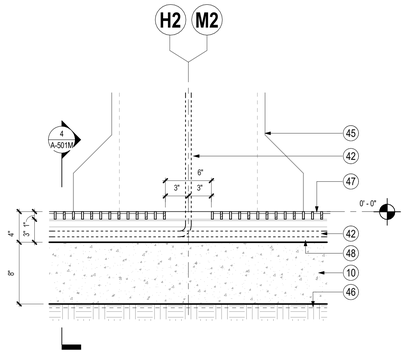
11 **DETAIL @ LOUVER**
SCALE: 1 1/2" = 1'-0"

7 **DETAIL @ STOREFRONT**
SCALE: 1 1/2" = 1'-0"

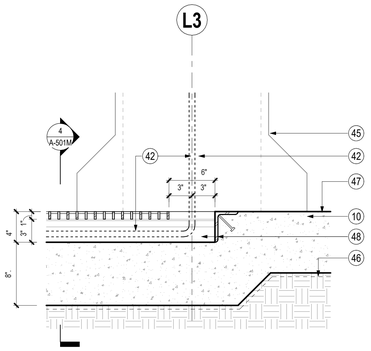
3 **DETAIL @ ENCLOSURE**
SCALE: 1 1/2" = 1'-0"



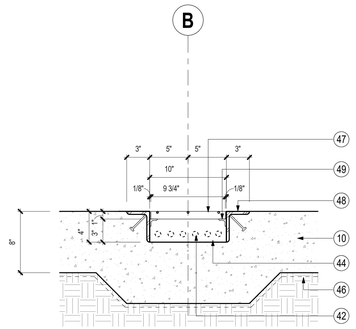
16 **DETAIL @ UTILITY TRENCH**
SCALE: 1 1/2" = 1'-0"



12 **DETAIL @ UTILITY TRENCH**
SCALE: 1 1/2" = 1'-0"



8 **DETAIL @ UTILITY TRENCH**
SCALE: 1 1/2" = 1'-0"



4 **DETAIL @ UTILITY TRENCH**
SCALE: 1 1/2" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	PEMB GUTTER ASSEMBLY
3	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
4	PEMB STRUT
5	PEMB SHEAR BRACE
6	INSULATED PEMB WALL ASSEMBLY WITH METAL PANEL FINISH
7	SURFACE-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
8	WIND-DRIVEN-RAIN-RESISTANT LOUVER ASSEMBLY. 50% MIN. FREE AREA. B.O.D. IS RANKIN BRAND. RE: MECHANICAL
9	PEMB TRIM
10	SLAB-ON-GRADE. RE: STRUCTURAL
11	OH COILING DOOR. RE: DOOR SCHEDULE
12	8" DIAMETER 42" HIGH PAINTED GALVANIZED STEEL CRASH BOLLARD WITH CONCRETE FILL AND DOME TOP
13	MECHANICAL ASSEMBLY. RE: MECHANICAL
14	INSULATED PEMB ROOFING ASSEMBLY
15	6" CAST-IN-PLACE CONCRETE PAD. FRAMED AT PERIMETER WITH STEEL ISLAND FORMS BY RED-E-FORM
16	GALVANIZED PAINTED HSS TUBE
17	OVERHEAD FAN. RE: MECHANICAL
18	CRANE RAIL BEAM
19	CRANE RAIL BEAM SUPPORT. ANCHORED TO PEMB STRUCTURE ABOVE
20	CHAIN-HUNG RADIANT HEATER. RE: MECHANICAL
21	COMPRESSED AIR LINE
22	INSULATED GLAZED EXTERIOR STOREFRONT
24	TAS-COMPLIANT STAINLESS STELL SINK ASSEMBLY
25	10" DIAMATER STAINELESS STEEL GROMMET
26	SOLID SURFACE COUNTERTOP
27	STAINLESS STEEL HAND WASHING SINK. RE: PLUMBING
28	STAINLESS STEEL EYE WASHING STATION. RE: PLUMBING
29	MOP SINK. RE: PLUMBING
30	INSULATED LIGHT-WALL ASSEMBLY
31	PEMB METAL PANEL INTERIOR WALL WAISNCOT TO 8'
32	QUICK-CONNECT COMPRESSED AIR TERMINUS. RE: PLUMBING
33	PROVIDE MANUAL ROLLER SHADE AT WINDOW HEAD
34	PROVIDE TUBE STEEL FRAMING TO SUPPORT FLOATING COUNTERTOP ASSEMBLY. PROVIDE SUPPORTS AT WALLS AT EITHER END
35	PEMB TRIM
36	CORD CHASE AND WHIP
37	2" CORD GROMMET WITH PASS-THRU COVER
41	UNINSULATED PEMB ROOFING ASSEMBLY
42	COMPRESSED FLUID LINES. RE: PLUMBING
43	DAYLIT GUTTER DISCHARGE
44	UTILITY TRENCH
45	HOSE REEL STAND. RE: PLUMBING AND ELECTRICAL
46	VAPOR BARRIER
47	GALVANIZED MCNICHOLS TRAFFIC-RATED BAR-STOCK PANEL. 3' LENGTHS
48	GALVANIZED EMBED ANGLE
49	GALVANIZED SUPPORT ANGLE
50	LINE OF PEMB STRUCTURE ADJACENT
51	PROVIDE MEDIUM BROOM FINISH AT EXTERIOR CONCRETE PATIO
52	POWER & DATA J-BOX HOSTED UNDER HOSE REEL COLUMN. RE: ELECTRICAL & TELECOM
53	DUPLEX DATA TERMINAL IN STEEL HOUSING MOUNTED TO HOSE-REEL STAND. RE: TELECOM

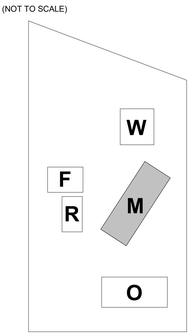
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.
4. RE: MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR ADDITIONAL DATA.
5. EQ#3 (MOBILE COLUMN LIFT) NOT SHOWN IN DRAWINGS.
6. WALLS TO RECIEVE PT-1 FINISH WITH B-1 BASE U.N.O.
7. PROVIDE SCHLUTER STRIP IN ANNODIZED ALUMINUM AT ALL TILE OUTSIDE CORNERS AND ALL OPEN TILE WALL EDGES.
8. ALL EXPOSED PEMB RIBS AND EXPOSED STRUCTURAL STEEL TO RECIEVE PT-3 FINISH.
9. M-8 WALLS TO RECIEVE PT-3 FINISH U.N.O.
10. MAINTENANCE SHOP FLOOR TO RECIEVE SC-3 FINISH.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 / A-301	SECTION TAG
1 / A-201	ELEVATION TAG
ROOM NAME	ROOM NAME
S1	ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
×	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT — STATE OF TEXAS — 16677
01/02/2020

ARCHITECTURAL - DETAILS

DRAWN BY	CHECKED BY
WJC	ST
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GCRB
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

A-501M
SHEET NUMBER

DRAFT

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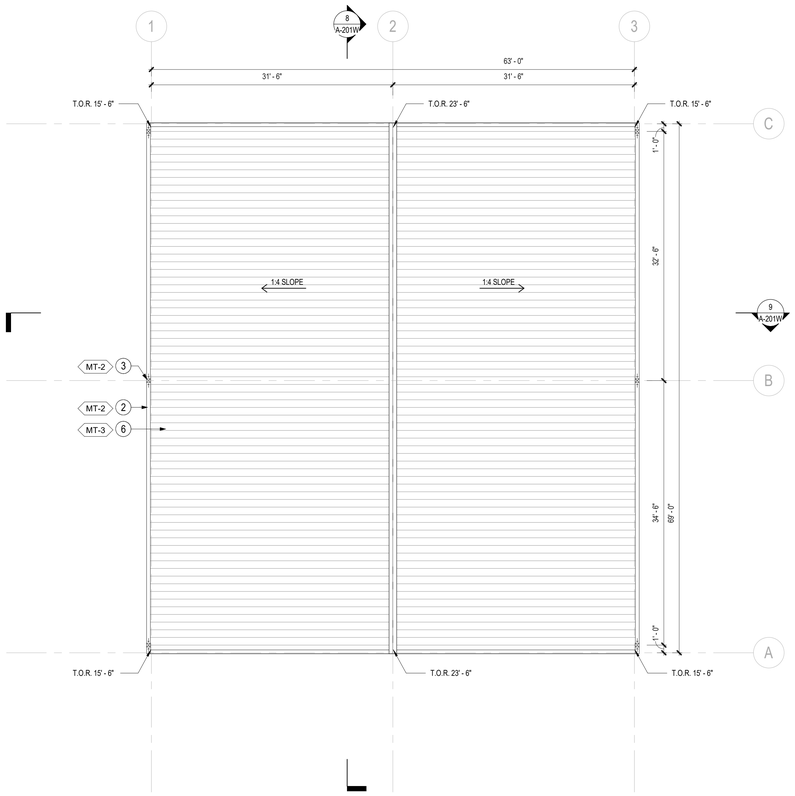
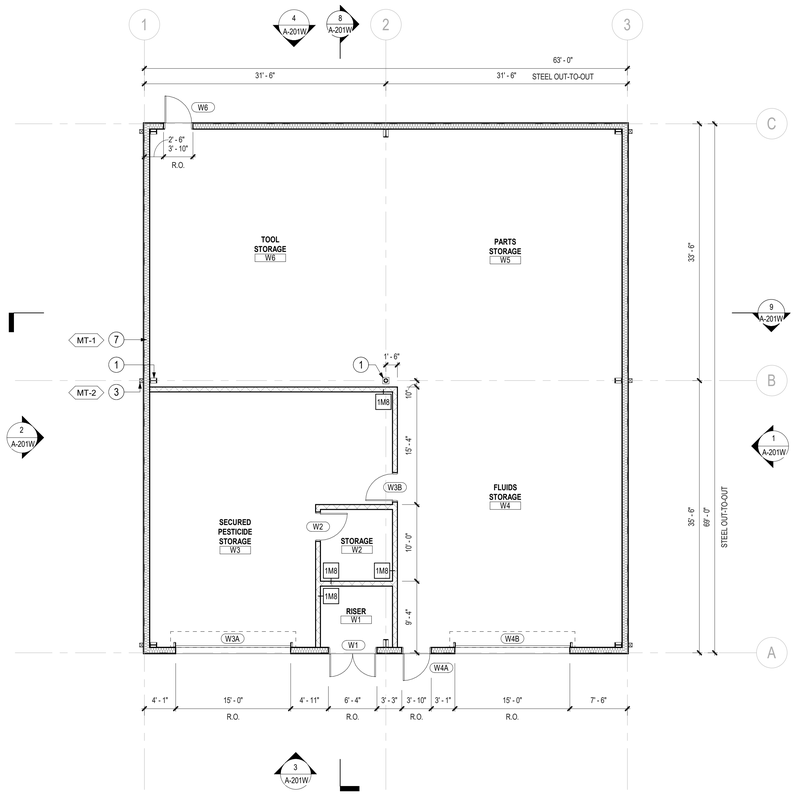
DATE STAMP 7/1/2020 11:25:46 AM



2 ROOF PLAN
SCALE: 1/8" = 1'-0"



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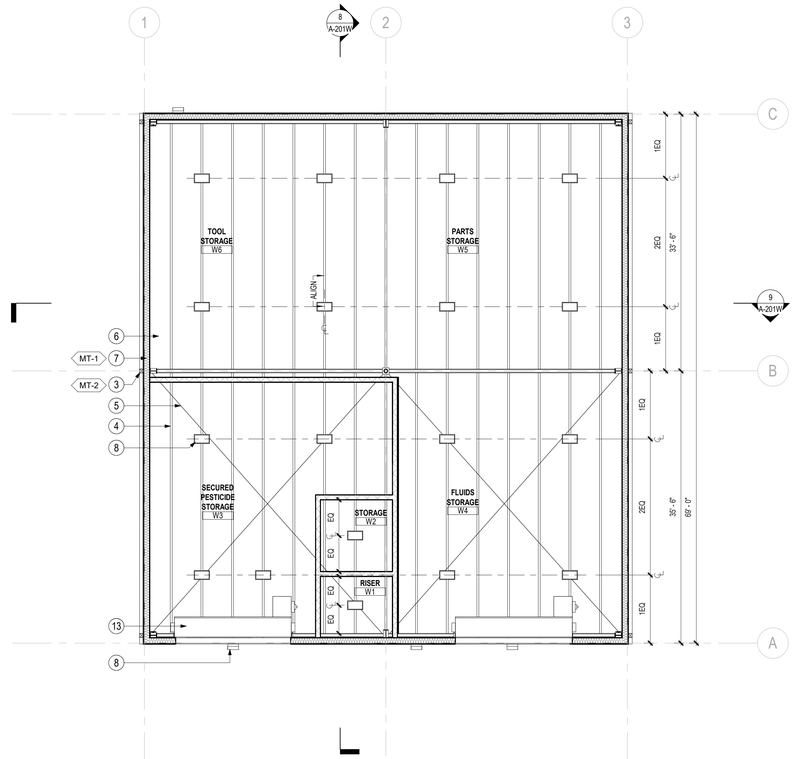


3 REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	PEMB GUTTER ASSEMBLY
3	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
4	PEMB STRUT
5	PEMB SHEAR BRACE
6	INSULATED PEMB ROOFING ASSEMBLY
7	INSULATED PEMB WALL ASSEMBLY WITH METAL PANEL FINISH
8	SURFACE-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
9	PRECAST CONCRETE SPLASH BLOCK
10	WIND-DRIVEN-RAIN-RESISTANT LOUVER ASSEMBLY
11	PEMB TRIM
12	SLAB-ON-GRADE. RE: STRUCTURAL
13	OH COILING DOOR. RE: DOOR SCHEDULE
14	MECHANICAL CONDENSING UNIT. RE MECHANICAL. PROVIDE PEMB PLATFORM AND STRUT SUPPORT TO RAISE CONDENSOR OFF GROUND
15	VAPOR BARRIER

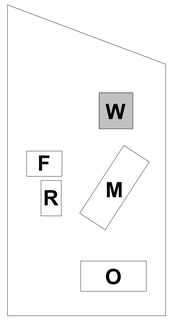
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.
4. ALL EXPOSED STRUCTRUCTURAL STEEL INCLUDING PEMB RIBS TO BE HOT-DIP GALVANIZED.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 A-301	SECTION TAG
1 A-201	ELEVATION TAG
ROOM NAME S1	ROOM NAME ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT WINDY TEAS TREGRE 16617 STATE OF TEXAS

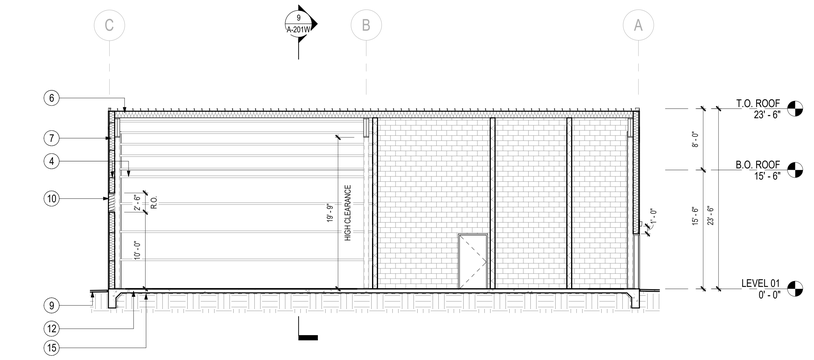
01/02/2020

ARCHITECTURAL - PLANS

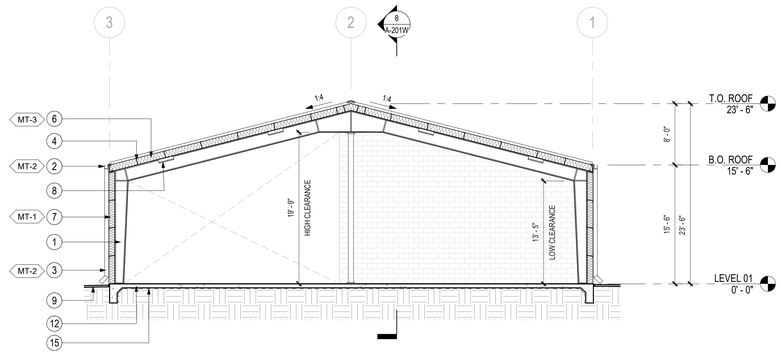
DRAWN BY WJC	CHECKED BY ST
PROJECT NUMBER 418198	PROJECT ABBREVIATION GCRB
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

A-101W
SHEET NUMBER

FILE PATH: C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-WAREHOUSE_vgandhi.rvt
USER NAME: vgandhi
DATE STAMP: 7/1/2020 11:06:16 AM



8 BUILDING SECTION
SCALE: 1/8" = 1'-0"



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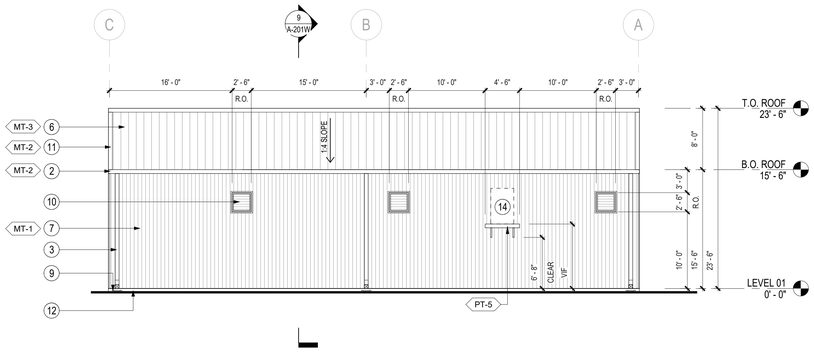

2 WEST ELEVATION
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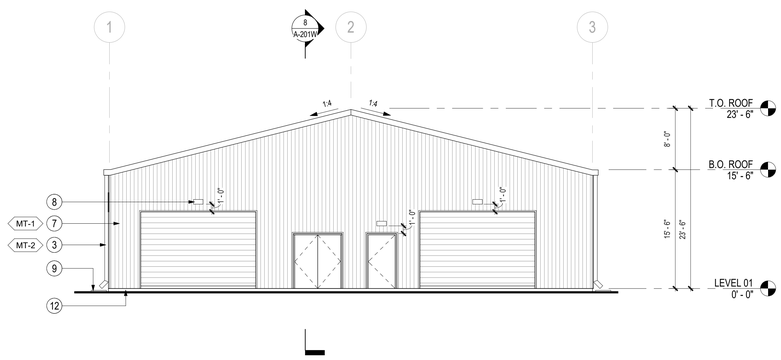
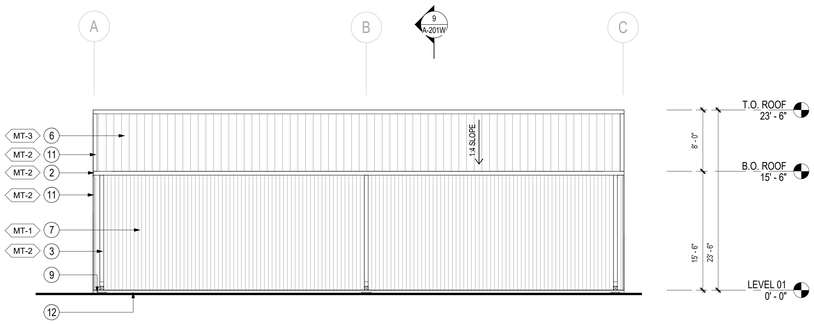
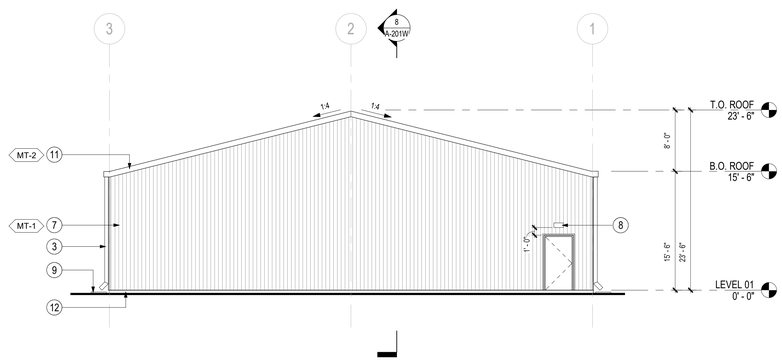


3 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



1 EAST ELEVATION
SCALE: 1/8" = 1'-0"



4 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	PEMB GUTTER ASSEMBLY
3	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
4	PEMB STRUT
5	PEMB SHEAR BRACE
6	INSULATED PEMB ROOFING ASSEMBLY
7	INSULATED PEMB WALL ASSEMBLY WITH METAL PANEL FINISH
8	SURFACE-MOUNTED LIGHTING FIXTURE. RE: ELECTRICAL
9	PRECAST CONCRETE SPLASH BLOCK
10	WIND-DRIVEN-RAIN-RESISTANT LOUVER ASSEMBLY
11	PEMB TRIM
12	SLAB-ON-GRADE. RE: STRUCTURAL
13	OH COILING DOOR. RE: DOOR SCHEDULE
14	MECHANICAL CONDENSING UNIT. RE MECHANICAL. PROVIDE PEMB PLATFORM AND STRUT SUPPORT TO RAISE CONDENSOR OFF GROUND
15	VAPOR BARRIER

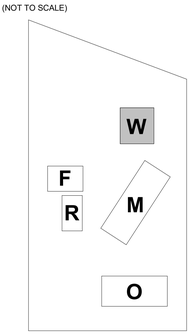
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.
4. ALL EXPOSED STRUCTRUCTURAL STEEL INCLUDING PEMB RIBS TO BE HOT-DIP GALVANIZED.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 / A-301	SECTION TAG
1 / A-201	ELEVATION TAG
ROOM NAME / S1	ROOM NAME ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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Galveston County Road & Bridge Department Facilities

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Dickinson, Texas 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT
WANDY TEAS TREGRE
16617
STATE OF TEXAS

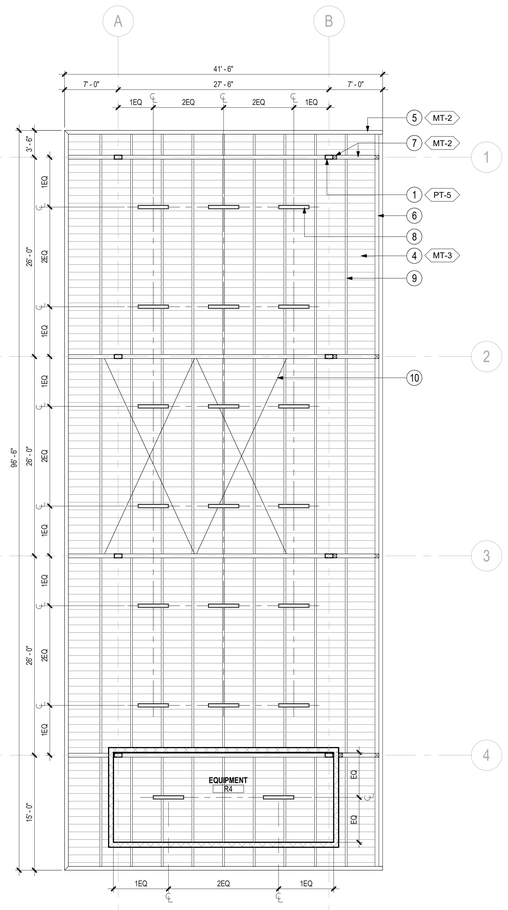
01/02/2020

ARCHITECTURAL - SECTIONS & ELEVATIONS

DRAWN BY	CHECKED BY
WJC	ST
PROJECT NUMBER	**PROJECT ABBREVIATION**
418198	GCRB
ORIGINAL ISSUE	**DATE**
ISSUE FOR PERMIT	26 JUNE 2020

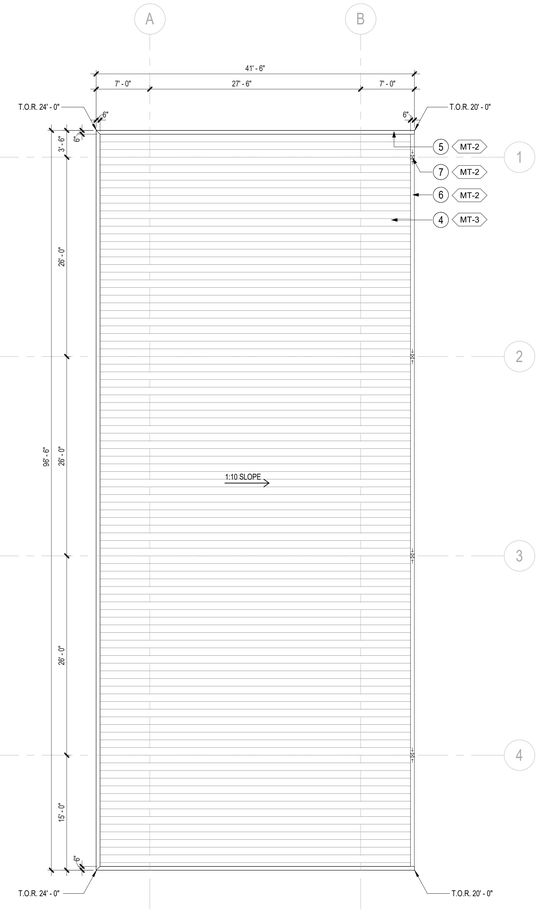
A-201W
SHEET NUMBER

FILE PATH: C:\Users\vgandhi\Documents\418198-A-R19-CENTRAL-WAREHOUSE_vgandhi.rvt
USER NAME:
DATE STAMP: 7/1/2020 11:06:19 AM



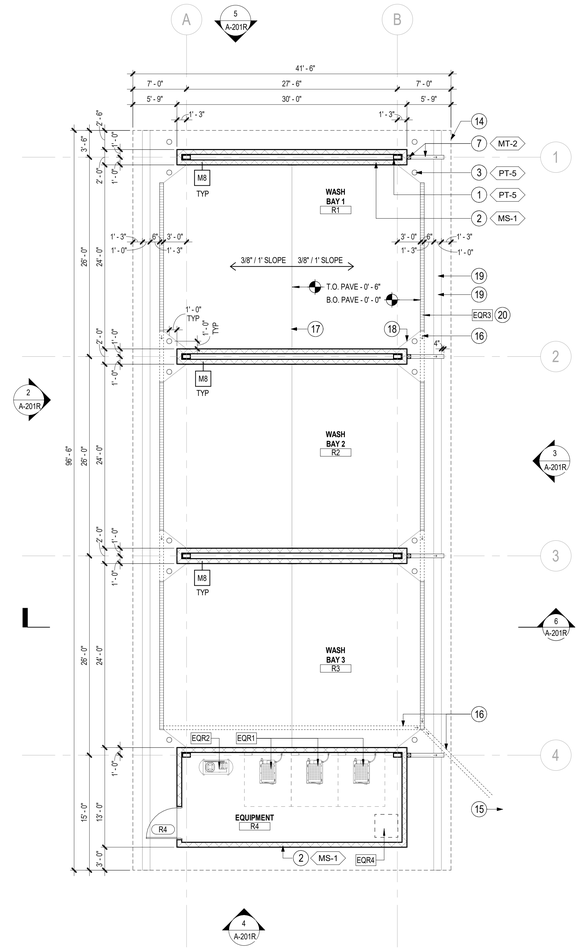
3 ARCHITECTURAL - REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"



2 ARCHITECTURAL - ROOF PLAN

SCALE: 1/8" = 1'-0"



1 ARCHITECTURAL - LAYOUT PLAN

SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	CMU WALL
3	8" DIAMTER 42" HIGH PAINTED GALVANIZED STEEL CRASH BOLLARD WITH CONCRETE FILL AND DOME TOP
4	PEMB ROOFING ASSEMBLY
5	PEMB C-CHANEL FASCIA
6	PEMB GUTTER ASSEMBLY
7	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
8	SURFACE-MOUNTED WATERPROOF LIGHTING FIXTURE. RE: ELECTRICAL
9	PEMB STRUT
10	PEMB SHEAR BRACE
11	CAST-STONE COPING WITH SLOPED TOP
12	6" CAST-IN-PLACE CONCRETE PAD. EXTENTS IDENTICAL TO CMU WALL ABOVE
13	WIND-DRIVEN-RAIN-RESISTANT LOUVER ASSEMBLY
14	LINE OF ROOF ABOVE SHOWN DASHED
15	BURIED FUEL-OIL SEPARATOR. RE: PLUMBING
16	ROUTING OF TRENCH DRAIN BELOW SHOWN DASHED
17	HIGH-POINT IN PAVEMENT RIDGE AT CENTERLINE OF BAY. TYP
18	PAVING CRIKETING SLOPING DRAINAGE TO TRENCH DRAIN ASSEMBLY. TYP
19	12" WIDE x 4" HIGH ROLL-VER CURB IN PAVING
20	PREMANUFACTURED LINEAR TRENCH DRAIN
21	DOWNSPOUT DISCHARGES BEYOND ROLL-OVER CURB

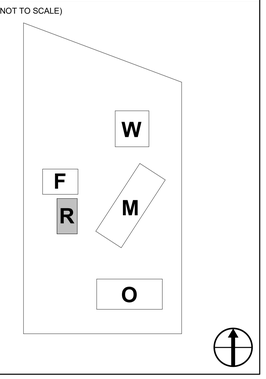
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 / A-301	SECTION TAG
1 / A-201	ELEVATION TAG
ROOM NAME / S1	ROOM NAME ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
X	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

REGISTERED ARCHITECT
WANDY TEAS VANDERGRIFF
16671
STATE OF TEXAS

01/02/2020

ARCHITECTURAL - PLANS

DRAWN BY: WJC	CHECKED BY: ST
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GCRB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

A-101R
SHEET NUMBER

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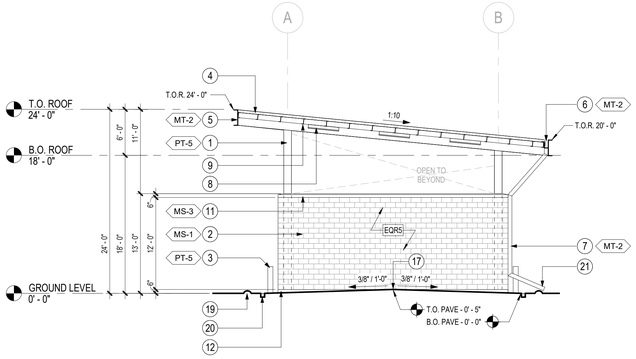
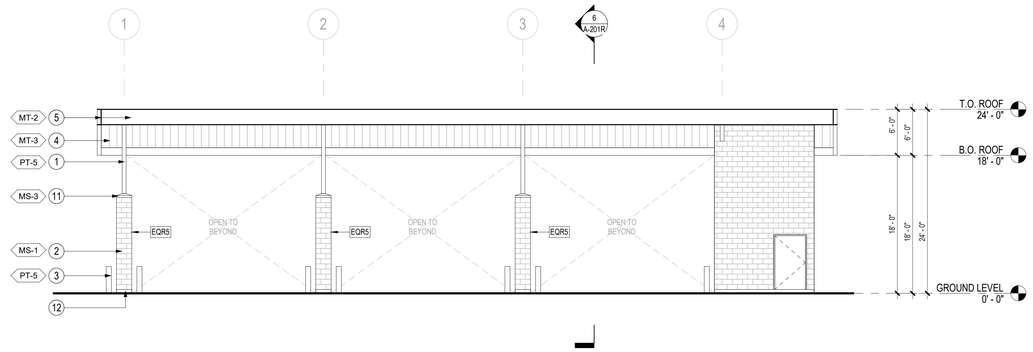
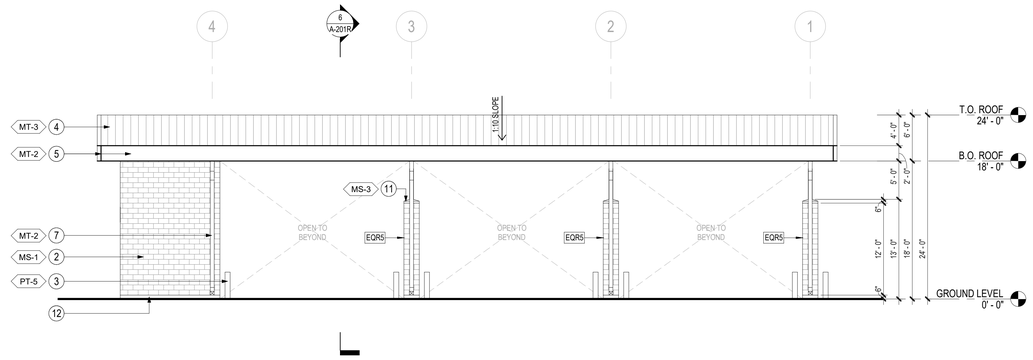


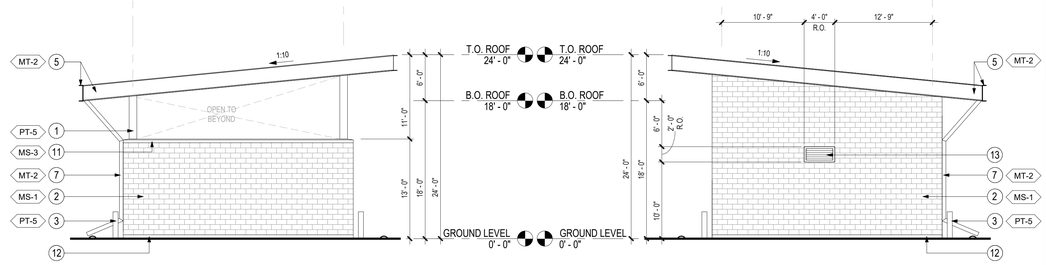
6 EAST-WEST BUILDING SECTION
SCALE: 1/8" = 1'-0"



2 ARCHITECTURAL - WEST ELEVATION
SCALE: 1/8" = 1'-0"



3 ARCHITECTURAL - EAST ELEVATION
SCALE: 1/8" = 1'-0"



5 ARCHITECTURAL - NORTH ELEVATION
SCALE: 1/8" = 1'-0"

4 ARCHITECTURAL - SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	CMU WALL
3	8" DIAMTER 42" HIGH PAINTED GALVANIZED STEEL CRASH BOLLARD WITH CONCRETE FILL AND DOME TOP
4	PEMB ROOFING ASSEMBLY
5	PEMB C-CHANEL FASCIA
6	PEMB GUTTER ASSEMBLY
7	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
8	SURFACE-MOUNTED WATERPROOF LIGHTING FIXTURE. RE: ELECTRICAL
9	PEMB STRUT
10	PEMB SHEAR BRACE
11	CAST-STONE COPING WITH SLOPED TOP
12	6" CAST-IN-PLACE CONCRETE PAD. EXTENTS IDENTICAL TO CMU WALL ABOVE
13	WIND-DRIVEN-RAIN-RESISTANT LOUVER ASSEMBLY
14	LINE OF ROOF ABOVE SHOWN DASHED
15	BURIED FUEL-OIL SEPARATOR. RE: PLUMBING
16	ROUTING OF TRENCH DRAIN BELOW SHOWN DASHED
17	HIGH-POINT IN PAVEMENT RIDGE AT CENTERLINE OF BAY. TYP
18	PAVING CRIKETING SLOPING DRAINAGE TO TRENCH DRAIN ASSEMBLY. TYP
19	12" WIDE x 4" HIGH ROLL-VER CURB IN PAVING
20	PREMANUFACTURED LINEAR TRENCH DRAIN
21	DOWNSPOUT DISCHARGES BEYOND ROLL-OVER CURB

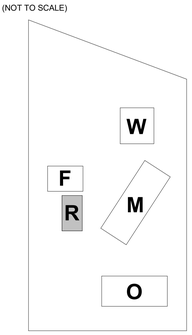
GENERAL NOTES

1. RE: G-110 FOR DOOR, HARDWARE, EQUIPMENT AND FINISH SCHEDULES.
2. RE: G-100 FOR CODE AND LIFE-SAFETY ANALYSIS.
3. RE: A-101S FOR SITE PLAN.

LEGEND

A	COLUMN GRID DESIGNATIONS
1	KEYED NOTE KEYED NOTES ONLY APPLY TO THIS SHEET
1 / A-301	SECTION TAG
1 / A-201	ELEVATION TAG
ROOM NAME / S1	ROOM NAME ROOM NUMBER
S1	DOOR TAG
SC-2	FLOOR OR CEILING FINISH TAG
SS-1	MATERIAL FINISH TAG
PT-2	WALL FINISH TAG
	FLOOR FINISH TRANSITION

KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

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ARCHITECTURAL - SECTIONS & ELEVATIONS

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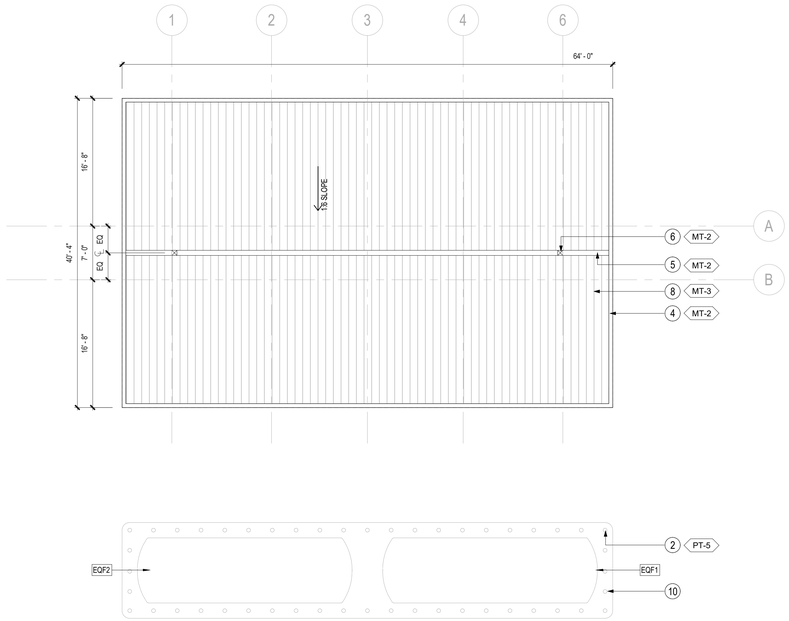
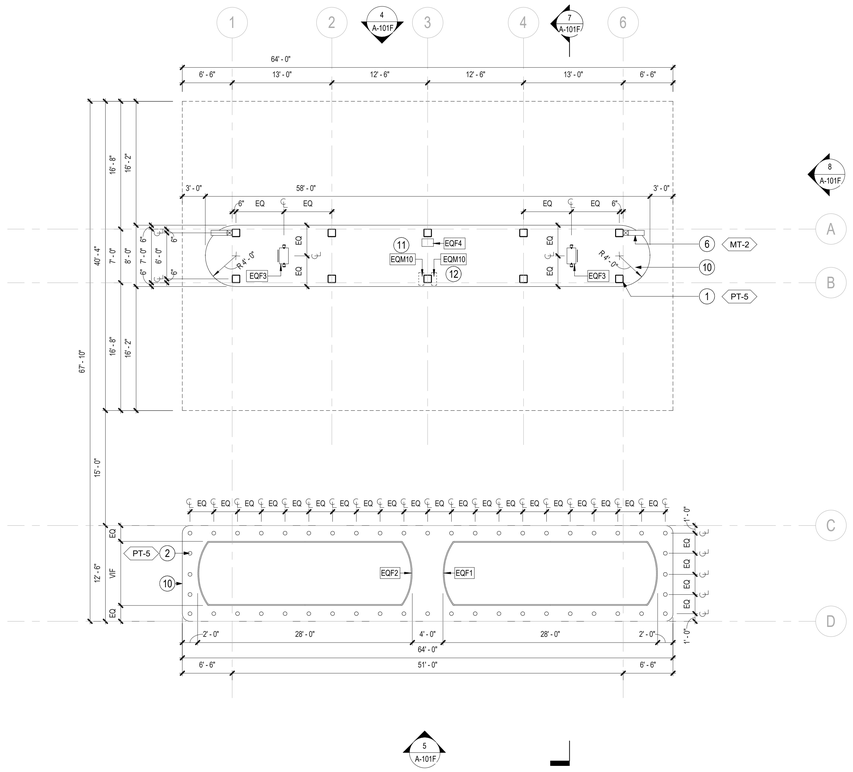
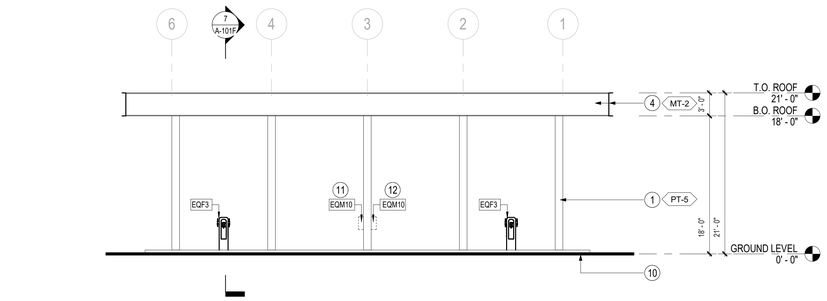


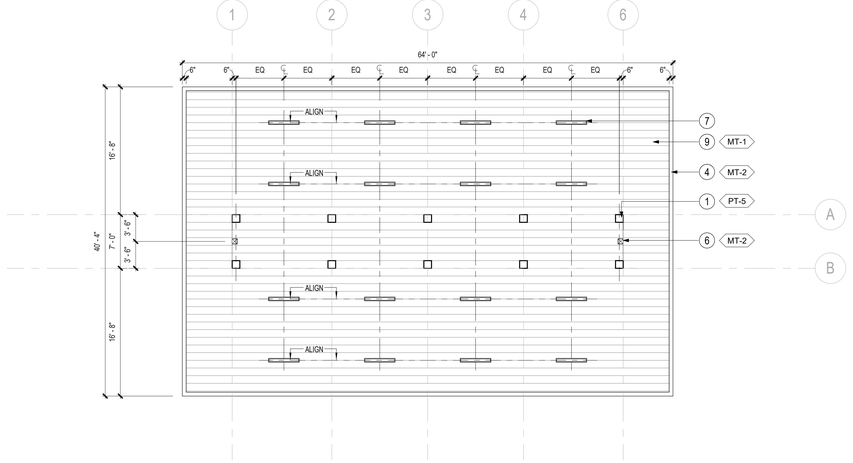
3 ROOF PLAN
SCALE: 1/8" = 1'-0"



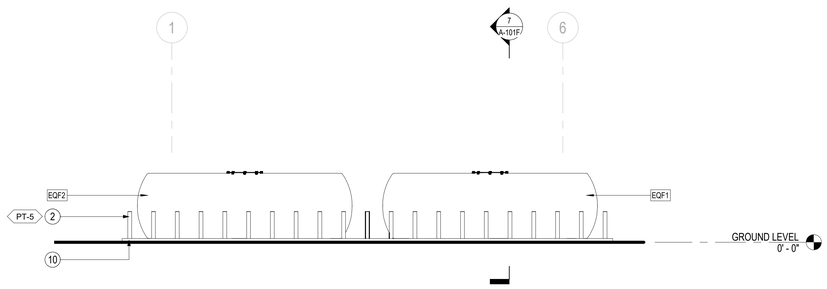
1 CONSTRUCTION PLAN
SCALE: 1/8" = 1'-0"



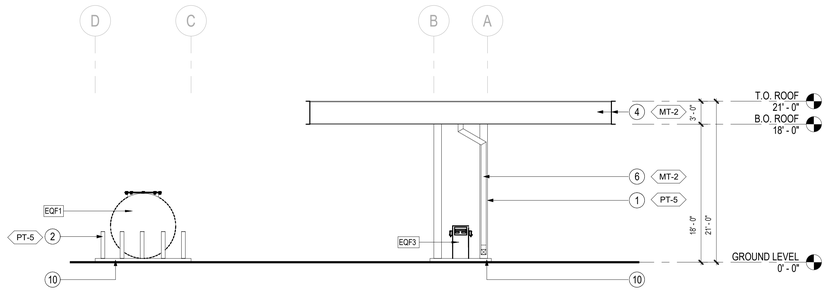
4 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



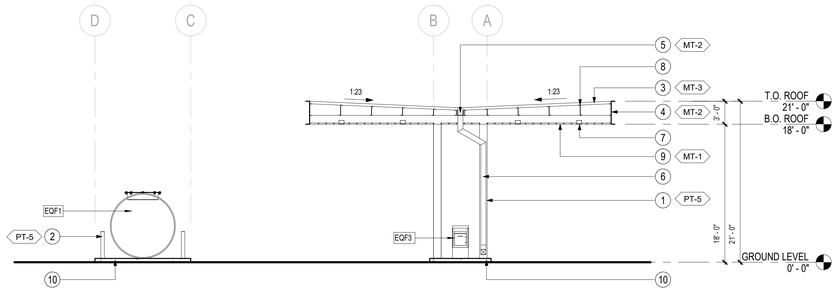
2 REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"



5 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



8 EAST ELEVATION
SCALE: 1/8" = 1'-0"



7 SECTION
SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PEMB STRUCTURE
2	8" DIAMTER 42" HIGH PAINTED GALVANIZED STEEL CRASH BOLLARD WITH CONCRETE FILL AND DOME TOP
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5	PEMB GUTTER ASSEMBLY
6	PEMB DOWNSPOUT ASSEMBLY WITH DAYLIGHT
7	SURFACE-MOUNTED WATERPROOF LIGHTING FIXTURE. RE: ELECTRICAL
8	PEMB STRUT
9	PEMB SOFFIT PANELS
10	6" CAST-IN-PLACE CONCRETE PAD. FRAMED AT PERIMETER WITH STEEL ISLAND FORMS BY RED-E-FORM
11	WATER HOSE REEL. RE: PLUMBING
12	COMPRESSED AIR HOSE REEL. RE: PLUMBING

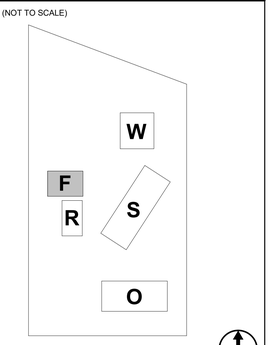
FLOOR PLAN GENERAL NOTES

1. SAMPLE GENERAL NOTE

LEGEND

- A — COLUMN GRID DESIGNATIONS
- 1 — KEYED NOTE; KEYED NOTES ONLY APPLY TO THIS SHEET
- 1 / A-301 — SECTION TAG
- 1 / A-201 — ELEVATION TAG
- ROOM NAME / F1 — ROOM NAME; ROOM NUMBER
- F1 — DOOR TAG

KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
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REGISTERED ARCHITECT — WINDY TEAS VERGARA — 16671 — STATE OF TEXAS

01/02/2020

ARCHITECTURAL - PLANS, SECTION & ELEVATIONS

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PIPE AND FITTING SYMBOLS

DOUBLE LINE | SINGLE LINE

- PIPE
- WELDED JOINT
- SCREWED JOINT (OR GENERIC SINGLE LINE)
- FLANGED JOINT
- UNION
- GROOVED END JOINT
- BRAIDED FLEXIBLE COUPLING
- SPHERICAL FLEXIBLE COUPLING
- BELLOWS-TYPE FLEXIBLE COUPLING
- MECHANICAL (BALL) JOINT
- GROOVED END ADAPTER FLANGE
- FLANGED COUPLING ADAPTER
- STUB END OR FLANGE ADAPTER W/ FLANGE RING
- ELBOW, 45 DEGREE (LONG RADIUS UON)
- ELBOW, 90 DEGREE (LONG RADIUS UON)
- ELBOW, 90 DEGREE - CHANGE IN DIRECTION TOWARD VIEWER
- ELBOW, 90 DEGREE - CHANGE IN DIRECTION AWAY FROM VIEWER
- TEE
- TEE, BRANCH TOWARD VIEWER
- TEE, BRANCH AWAY FROM VIEWER
- LATERAL
- REDUCER - CONCENTRIC
- REDUCER - ECCENTRIC
- CAP
- ANCHOR
- PG — PIPE ALIGNMENT GUIDE
- BF — BLIND FLANGE
- TEST PORT
- PIPING WITH INSULATION
- E — INSULATED PIPE WITH HEAT TRACING TYPE AS NOTED (E=ELECTRIC, S=STEAM, HW=HOT WATER)
- SECONDARY CONTAINMENT (SLEEVED) PIPING
- STRAINER - "Y" TYPE WITH BLOW DOWN
- STRAINER - BASKET TYPE
- AIR SEPARATOR
- M — WATER METER
- THERMOWELL WITH THERMOMETER
- PRESSURE GAUGE W/GAUGE COCK (SERVICES EXCEPT STEAM)
- PRESSURE GAUGE W/GAUGE COCK AND SYPHON LOOP (STEAM / CONDENSATE SERVICE)
- VENTURI FLOW METER
- FLOW ORIFICE PLATE
- OFFSET (45° ELBOWS UON)
- F&T — STEAM TRAP, TYPE AS NOTED
  - IB = INVERTED BUCKET
  - F&T = FLOAT & THERMOSTATIC
  - TH = THERMODYNAMIC
  - BP = BALANCED PRESSURE
- GENERIC PUMP

NOTES:
1. ONLY WELDED FITTINGS ARE SHOWN FOR DOUBLE LINE PIPING. FITTINGS WITH OTHER END CONDITIONS ARE SIMILAR

PIPING DESIGNATION

EXAMPLE:

2" CHWS

- SYSTEM SERVICE ABBREVIATION
- NOMINAL PIPE SIZE (IN INCHES)

VALVE SYMBOLS

DOUBLE LINE | SINGLE LINE

- GATE VALVE (GENERIC VALVE SYMBOL)
- CHECK VALVE
- NON-SLAM (SPRING) CHECK VALVE
- BUTTERFLY VALVE
- DIAPHRAGM VALVE
- BALL VALVE
- COMBINATION BALANCING & SHUT-OFF VALVE
- PLUG VALVE
- SELF-ACTUATING REGULATOR (DIAPHRAGM-TYPE ACTUATOR UON)
- 25 — PRESSURE REDUCING VALVE INDICATING LOW SIDE PRESSURE
- 100 — PRESSURE RELIEF/SAFETY VALVE INDICATING RELIEF PRESSURE
- TEMPERATURE CONTROL VALVE
- THREE-WAY VALVE (BALL TYPE BODY SHOWN)
- GLOBE VALVE
- GLOBE VALVE, SEALED STEM
- ANGLE VALVE
- CIRCUIT SETTER
- AUTOMATIC AIR VENT
- MANUAL AIR VENT
- VACUUM BREAKER

MANUAL ACTUATOR SYMBOLS

- HANDWHEEL ACTUATOR, NON-RISING STEM
- LEVER ACTUATOR
- HANDWHEEL ACTUATOR, RISING STEM, OUTSIDE SCREW AND YOKE (OS&Y)
- G — GEAR ACTUATOR (HANDWHEEL OR CRANK)

NOTE:
VALVE TYPE GRAPHICS ARE SHOWN FOR SIZES 4 INCH NOMINAL AND LARGER, MAY OR MAY NOT BE DESCRIBED ON VALVE SIZES SMALLER THAN 4 INCH NOMINAL.

AUTOMATIC VALVES

SEE AUTOMATIC ACTUATOR SYMBOLS (TYP)

- 2-WAY VALVE, GLOBE STYLE
- 3-WAY VALVE, GLOBE STYLE
- 2-WAY VALVE, GATE STYLE
- 3-WAY VALVE, BUTTERFLY STYLE
- 2-WAY VALVE, BUTTERFLY STYLE
- 2-WAY VALVE, BALL STYLE

AUTOMATIC ACTUATOR SYMBOLS

- S — ELECTRIC ACTUATOR, SOLENOID
- PNEUMATIC ACTUATOR, DIAPHRAGM
- M — ELECTRIC ACTUATOR, MOTOR
- M — PNEUMATIC ACTUATOR, MOTOR

MULTI-LINE DESIGNATION KEY

HORIZONTAL RUN ON PLAN READ TOP TO BOTTOM

2" HWS
2" HWR
4" CWR
4" CWS
BOP 12'-6" AFF LOWER PIPE RACK

4" HA (F) *
2" IA
2" IW
2" DIS
2" DIR
BOP 13'-6" AFF UPPER PIPE RACK

HWS, HWR, CWR, CWS — HA(F) *, IA, IW, DIS, DIR

VERTICAL RUN ON PLAN READ LEFT TO RIGHT

DIR, DIS, IW, IA, HA (F) *

4" CWS
4" CWR
2" HWR
2" HWS
BOP 12'-6" AFF LOWER PIPE RACK

CWS, CWR, HWR, HWS

2" DIR
2" DIS
2" IW
2" IA
4" HA (F) *
BOP 13'-6" AFF UPPER PIPE RACK

* - (F) INDICATES FUTURE PIPING ON RACK

GRAPHIC SYMBOLS

X / XX.XX

- SECTION NUMBER
- DIRECTION OF CUTTING PLANE
- SHEET NO. OF THE PACKAGE ON WHICH SECTION IS DRAWN

EXAMPLE: ASSUME A SECTION IS CUT ON DWG. P2.01 WITH A TAG OF 1/P6.01. THE SECTION No. 1 IS ON DRAWING No. P6.01.

1 — DRAWING TITLE, SCALE: 1/4" = 1'-0"

- SECTION OR DETAIL NUMBER
- DRAWING TITLE
- SCALE OF SECTION OR DETAIL

1 / M-501

- DETAIL NUMBER
- SHEET NO. ON WHICH DETAIL IS DRAWN

DUCTWORK SYMBOLS

DOUBLE LINE | SINGLE LINE

- W/D — UNLINED DUCTWORK. FIRST DIMENSION (W) IS SIDE SHOWN
- W/D — ACOUSTICALLY LINED DUCTWORK. FIRST DIMENSION (W) IS SIDE SHOWN
- DØ — ROUND DUCT. D = DIAMETER
- W/DØ — FLAT OVAL DUCT (W=MAJOR AXIS WIDTH, D=MINOR AXIS DIAMETER)
- FLEXIBLE DUCT
- OFFSET, RECTANGULAR DUCT (45° ELBOWS UON)
- OFFSET, ROUND DUCT (45° ELBOWS UON)
- DIRECTION OF AIRFLOW
- R — DUCT SLOPE IN DIRECTION OF AIR FLOW (R=RISE, D=DROP)
- DUCT UNDER NEGATIVE PRESSURE, SECTION TOWARD VIEWER
- DUCT UNDER POSITIVE PRESSURE, SECTION TOWARD VIEWER
- DUCT UNDER NEGATIVE PRESSURE, SECTION AWAY FROM VIEWER
- DUCT UNDER POSITIVE PRESSURE, SECTION AWAY FROM VIEWER
- FLEXIBLE CONNECTION
- VD — MANUAL VOLUME DAMPER, (PARALLEL BLADE UON)
- OBD — OPPOSED BLADE DAMPER (OBD)
- M — MOTORIZED VOLUME DAMPER, ACTUATOR TYPE AS SPECIFIED
- BDD — BACKDRAFT DAMPER
- FDx — FIRE DAMPER (FD) OR COMBINATION FIRE/SMOKE DAMPER (FSD)
  - = HORIZONTAL POSITION
  - = VERTICAL POSITION
  - x = HOUR RATING
- AD — ACCESS DOOR
- HUMIDIFIER
- MITERED ELBOW (WITH TURNING VANES UON)
- R, W — RADIUS ELBOW (R=1.5W UON)
- 2-WAY T-SPLIT (FLOWS DIVERGING ONLY)
- BRANCH DUCT TAP (FLOW TO OR FROM BRANCH DUCT)
- DUCT TRANSTITION, ASYMETRIC (RECT x RECT)
- DUCT TRANSTITION, SYMETRIC (RECT x RECT)
- DUCT TRANSTITION (RECT x ROUND)
- SPIN-IN FITTING WITH DAMPER, FITTING TYPE AS SPECIFIED
- ARROWS, IF SHOWN, INDICATE THROW PATTERN. LACK OF ARROWS AT CEILING DIFFUSERS INDICATES SCHEDULED THROW PATTERN UON.
- ROUND / RECTANGULAR — CFM X — CEILING SUPPLY: MARK (SEE SCHEDULE FOR FACE SIZE, NECK SIZE AND CONSTRUCTION); DESIGN CFM
- CFM X — CEILING RETURN OR EXHAUST: MARK (SEE SCHEDULE FOR FACE SIZE, NECK SIZE AND CONSTRUCTION); DESIGN CFM
- CFM X, FxF — SIDEWALL GRILLE OR REGISTER: DESIGN CFM; MARK (SEE SCHEDULE FOR TYPE, SERVICE AND CONSTRUCTION); FACE SIZE (INCHES)
- CFM X L — SLOT DIFFUSER: MARK (SEE SCHEDULE FOR WIDTH AND NUMBER OF SLOTS, NECK SIZE AND CONSTRUCTION); LENGTH (FEET); DESIGN CFM
- DG — DOOR GRILLE
- UCD 1" — UNDERCUT DOOR (UNDERCUT HEIGHT SHOWN)
- LOUVER
- SUPPLY AIRFLOW
- RETURN OR EXHAUST AIRFLOW
- CONSTANT-VOLUME FAN-POWERED TERMINAL UNIT: FLEXIBLE CONNECTIONS AT PRIMARY AIR INLET AND UNIT DISCHARGE (TYP. FOR ALL FAN-POWERED TERMINAL UNITS)
- VV (VARIABLE-VOLUME) OR CV (CONSTANT-VOLUME) TERMINAL UNIT (SHOWN WITH TERMINAL HEATING COIL)

ABBREVIATIONS

A	AIR LINE
AAV	AUTOMATIC AIR VENT
ABS	ABSOLUTE
ABV	ABOVE
AC	ALTERNATING CURRENT, AIR CURTAIN
ACCU	AIR COOLED CONDENSING UNIT
ACHKV	AUTOMATIC CHECK VALVE
AP	ACCESS PANEL
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR, AREA DRAIN
ADP	APPARATUS DEW POINT
AF	AIR FILTER
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTITUDE
AMB	AMBIENT
AMP	AMPERE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APD	AIR PRESSURE DROP
APPROX	APPROXIMATE
APR	AIR PRESSURE RETURN
AS	AIR SEPARATOR
ASC	APPLICATION-SPECIFIC CONTROLLER
ASU	AIR SUPPLY VENT
ASV	ANGLE STOP VALVE
ATC	AUTOMATIC TEMPERATURE CONTROL
ATM	ATMOSPHERE
ATV	ATMOSPHERIC VENT
AUV	AUTOMATIC VENT
AV	AIR VENT
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
B&S	BELL & SPIGOT
B/B	BACK TO BACK
BAL	BALANCE
BARO PR	BAROMETRIC PRESSURE
BBD	BOILER BLOWDOWN
BF	BOTH FACES
BFV	BUTTERFLY VALVE
BFBP	BOILER FEED BOOSTER PUMP
BFW	BOILER FEED WATER
BLDG	BUILDING
BHP	BRAKE HORSEPOWER, BOILER HORSEPOWER
BLR	BOILER
BLW	BELOW
BLWDN	BLOW DOWN LINE
BO	BLOWOFF
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STEEL
BS	BOTH SIDES
BSP	BLACK STEEL PIPE
BSTR	BOOSTER
BSS	BOTTOM OF STRUCTURAL STEEL
BT WLD	BUTT WELD
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BV	BALL VALVE
BW	BOTH WAYS
BYP	BYPASS
C	[THERMAL] CONDUCTANCE
°C	CELSIUS [DEGREES]
C-C	CENTER TO CENTER
C/C	COOLING COIL
CA	COMPRESSED AIR
CACU	COMPUTER AIR CONDITIONING UNIT
CAP	CAPACITY
CB	CATCH BASIN
CC	CUBIC CENTIMETER
CCW	COUNTERCLOCKWISE
CD	CONDENSATE DRAIN
CDC	CONDENSATE DRAIN COOLER
CF	CHEMICAL FEED
CFCI	CONTRACTOR FURNISHED/ CONTRACTOR INSTALLED
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CH	CHILLER
CHW	CHILLED WATER
CHWP	CHILLED WATER PUMP
CHWPP	CHILLED WATER PRIMARY PUMP
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHWSP	CHILLED WATER SECONDARY PUMP
CI	CAST IRON
CIP	CAST IRON PIPE
CKT	CIRCUIT
CKV	CHECK VALVE
CL	CENTER LINE (℄)
CLG	COOLING
CMP	CORRUGATED PIPE
CNDS	CONDENSATE
COEF	COEFFICIENT
COMPR	COMPRESSOR
COND	CONDENSER
CONDN	CONDENSATION
CONN	CONNECTION
CPLG	COUPLING
CRP	CONDENSATE RETURN PUMP
CT	COOLING TOWER
CU	COPPER
CU FT	CUBIC FEET
CU IN	CUBIC INCH
CUH	CABINET UNIT HEATER
CV	CONSTANT-VOLUME [FLOW]
C_V	COEFFICIENT - VALVE FLOW
CW	CLOCKWISE, CONDENSER WATER
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
DBT	DRY BULB TEMPERATURE
dB	DECIBEL
DC	DIRECT CURRENT
DCW	DOMESTIC COLD WATER
DDC	DIRECT DIGITAL CONTROL
DDCFP	DIRECT DIGITAL CONTROL FIELD PANEL
DEG	DEGREES [CELSIUS OR FAHRENHEIT]
DENS	DENSITY
DEWPT	DEW POINT TEMPERATURE
DIA	DIAMETER
DIFF	DIFFERENCE OR △
DIP	DUCTILE IRON PIPE
DIV	DIVISION
DPS	DIFFERENTIAL PRESSURE SENSOR
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
DR	DRAIN
DWV	DRAIN, WASTE & VENT
E	EXISTING
EAT	ENTERING AIR TEMPERATURE
ECC	ECCENTRIC
ECON	ECONOMIZER
ECU	EVAPORATIVE COOLING UNIT
EDBT	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EFF	EFFICIENCY
EL	ELEVATION
ENT	ENTERING
EOV	ELECTRONICALLY OPERATED VALVE
EQIV	EQUIVALENT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK, ENTERING TEMPERATURE
EVAP	EVAPORATOR
EWBT	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EXCH	EXCHANGER
EXH	EXHAUST
EXP	EXPANSION
EXP JT	EXPANSION JOINT
FA	FACE AREA, FREE AREA
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FDW	FEEDWATER
F-F	FACE-to-FACE
°F	FAHRENHEIT [DEGREES]
FLM	FLOW METER
FL SW	FLOW SWITCH
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONNECTION
FLG	FLANGE
FL	FLOW LINE (FL)
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FLTR	FILTER
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FSS	FLOW SENSING SWITCH
FSTAT	FREEZE STAT
FT	FLOW TRANSMITTER, FOOT, FEET
FT LB	FOOT-POUND
FP	FREEZING POINT
FTR	FINNED TUBE RADIATION
FURN	FURNACE, FURNISH
FVEL	FACE VELOCITY
FVNR	FULL VOLTAGE NON-REVERSING
GA	GAUGE (INSTRUMENT), GAGE (THICKNESS)
GAL	GALLON
GEN	GENERATOR, GENERAL
GI	GALVANIZED IRON
GIP	GALVANIZED IRON PIPE
GLV	GLOBE VALVE
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GLYCOL RETURN, GRAINS
GS	GLYCOL SUPPLY
GSH	GRAND SENSIBLE HEAT
GTD	GREATEST TEMPERATURE DIFFERENCE
GTH	GRAND TOTAL HEAT
GWS	GEOTHERMAL WATER SUPPLY
GWR	GEOTHERMAL WATER RETURN
H	HUMIDIFIER
HB	HOSE BIBB
HC	HEATING COIL, HOSE CABINET
HCONN	HOSE CONNECTOR
HD	HEAD
HEPA	HIGH EFFICIENCY PARTICULATE ARRESTANCE
HEX	HEAT EXCHANGER
HFC	HEPA FILTER CABINET
HG	MERCURY
HGR	HANGER
HGT	HEIGHT
HP	HEAT PUMP, HIGH PRESSURE, HORSEPOWER
HPB	HIGH PRESSURE BOILER
HPDT	HIGH PRESSURE DRIP TRAP
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM
HR	HOUR
HS	HUMIDITY SENSOR
HSH	HUMIDITY SENSOR HIGH LIMIT
HSTAT	HUMIDISTAT
HTHW	HIGH TEMPERATURE HOT WATER
HV	HOSE VALVE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HW	HOT WATER
HWB	HOT WATER BOILER
HWC	HOT WATER COIL
HWCP	HOT WATER CIRCULATING PUMP
HWP	HOT WATER PUMP
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HYD	HYDRANT
HZ	HERTZ (FREQUENCY)
I/O	INPUT/OUTPUT
IA	INSTRUMENT AIR
ICW	INDUSTRIAL CITY WATER (NON-POTABLE)
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IHP	INDICATED HORSEPOWER
IN WC	INCHES WATER COLUMN
INSTR	INSTRUMENT
INV	INVERT
IP	IRON PIPE
IPS	IRON PIPE SIZE, INCHES PER SECOND
IPT	IRON PIPE THREADED
IR	INFRARED
IW	INDIRECT WASTE, INDUSTRIAL WASTE
K	KELVIN [DEGREES]
k	THERMAL CONDUCTIVITY
KIP	THOUSAND POUNDS
KIP FT	THOUSAND FOOT-POUNDS
KW	KILOWATT
KWh	KILOWATT HOUR
LAT	LEAVING AIR TEMPERATURE
LB	POUNDS
LDBT	LEAVING DRY BULB TEMPERATURE
LF	LINEAR FEET
LG	LENGTH
LH	LATENT HEAT
LHG	LATENT HEAT GAIN
LMTD	LEAST MEAN TEMPERATURE DIFFERENCE
LP	LOW PRESSURE
LPAS	LOW PRESSURE ALARM SWITCH
LPB	LOW PRESSURE BOILER
LPC	LOW PRESSURE CONDENSATE
LPDT	LOW PRESSURE DRIP TRAP SET
LPS	LOW PRESSURE STEAM
LRA	LOCKED ROTOR AMPS
LT	LEAVING TEMPERATURE
LTD	LEAST TEMPERATURE DIFFERENCE
LTHW	LOW TEMPERATURE HOT WATER
LVR	LOUVER
LWBT	LEAVING WET BULB TEMPERATURE
LWCO	LOW WATER CUT-OFF
LWT	LEAVING WATER TEMPERATURE
mA	MILLIAMPERES
MAU	MAKE UP AIR UNIT
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MB	MIXING BOX
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MCF	THOUSAND CUBIC FEET
MDC	MOTOR DIRECT CONNECT
MET	MEAN EFFECTIVE TEMPERATURE
MHP	MOTOR HORSEPOWER
MIN	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
MOV	MOTOR OPERATED VALVE
MP	MEDIUM PRESSURE
MPC	MEDIUM PRESSURE CONDENSATE
MPH	MILES PER HOUR
MPS	MEDIUM PRESSURE STEAM
MPT	MALE PIPE THREAD
MTD	MEAN TEMPERATURE DIFFERENCE
MTHW	MEDIUM TEMPERATURE HOT WATER
MU	MAKE-UP WATER
NA	NOT APPLICABLE
NC	NOISE CRITERIA, NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN, NUMBER
NPS	NOMINAL PIPE SIZE
NR	NOISE REDUCTION
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAF	OUTSIDE AIR FAN
OAI	OUTSIDE AIR INTAKE
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED / CONTRACTOR INSTALLED
OFD	OVERFLOW DRAIN
OGA	OIL GAUGE
OLVL	OIL LEVEL
OPRS	OIL PRESSURE
ORD	OVERFLOW ROOF DRAIN
OS	OIL SWITCH
OSP	OPERATING STEAM PRESSURE
OVFL	OVERFLOW
OZ	OUNCE
P	PUMP
P/E	PNEUMATIC ELECTRIC
%	PERCENT
PA	PIPE ANCHOR
PC	PUMPED CONDENSATE
PCC	PRECOOL COIL
PD	PRESSURE DROP, PRESSURE DIFFERENTIAL
PMPSCT	PUMP SUCTION
PCD	PUMPED CONDENSATE DISCHARGE
PDISCH	PUMP DISCHARGE
POS	POSITIVE, PROVIDED BY OTHER SECTION
PE	PNEUMATIC ELECTRIC
PR	PUMPED RETURN
PRESS SW	PRESSURE SWITCH
PG	PRESSURE GAUGE
PH	PHASE
PHC	PREHEAT COIL
PHWR	PRIMARY HOT WATER RETURN
PHWS	PRIMARY HOT WATER SUPPLY
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE
PRV	PRESSURE REGULATING VALVE
PPM	PARTS PER MILLION
PLBG	PLUMBING
PRESS	PRESSURE
PRI	PRIMARY
PS	PRESSURE SWITCH
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSID	POUNDS PER SQUARE INCH DIFFERENTIAL
PSIG	POUNDS PER SQUARE INCH GAUGE
PSL	PIPE SLEEVE
PSV	PRESSURE SAFETY VALVE
PT	PIPE THREAD, PNEUMATIC TUBE
PTAC	PACKAGED TERMINAL AIR CONDITIONER
PTRV	PRESSURE TEMPERATURE RELIEF VALVE
Q	TOTAL, TOTAL HEAT
QT	QUART
QTY	QUANTITY
R	RELOCATED
RA	RETURN AIR
RAC	ROOM AIR CONDITIONER
RAD	RADIATOR
RCVR	RECEIVER
RECT	RECTANGULAR [DUCT]
REFR	REFRIGERATION, REFRIGERANT
RD	ROOF DRAIN
RET	RETURN
RED	REDUCER
REV	REVOLUTIONS
REF	REFERENCE
RFGT	REFRIGERANT
RGH	ROUGHNESS
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RHG	REFRIGERANT HOT GAS
RHV	REHEAT VALVE
RLL	REFRIGERANT LIQUID LINE
RPM	REVOLUTIONS PER MINUTE
RPS	REVOLUTIONS PER SECOND
RSL	REFRIGERANT SUCTION LINE
RTU	ROOF TOP UNIT
RV	RELIEF VALVE
S	SECOND
SA	SUPPLY AIR
SAF	SUPPLY AIR FAN
SAT	SATURATION
SC	SHADING COEFFICIENT
SD	SMOKE DAMPER
SF	SAFETY FACTOR, SQUARE FEET
SHP	SHAFT HORSEPOWER
SG	SPECIFIC GRAVITY, STEAM GAUGE
SH	SENSIBLE HEAT
SHG	SENSIBLE HEAT GAIN
SHGC	SOLAR HEAT GAIN COEFFICIENT
SHR	SENSIBLE HEAT RATIO
SHWR	SECONDARY HOT WATER RETURN
SHWS	SECONDARY HOT WATER SUPPLY
SLNT	SEALANT
SL	SEA LEVEL
SLV	SLEEVE
SMP	SUMP PUMP
SNSR	SENSOR
SOLV	SOLENOID VALVE
SOV	SHUT OFF VALVE
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SPF	STAIRWELL PRESSURIZATION FAN
SPH	STATIC PRESSURE HIGH LIMIT
SPL	STATIC PRESSURE LOW LIMIT
SPLY	SUPPLY
SPS	STATIC PRESSURE SENSOR
SQ	SQUARE
SSP	STAINLESS STEEL PIPE
SST	STAINLESS STEEL
STGEN	STEAM GENERATOR
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STM	STEAM
STP	STANDARD TEMPERATURE & PRESSURE
STR	STRAINER
SUCT	SUCTION
SUP	SUPPLY
SV	SAFETY VALVE
T	TEMPERATURE SENSOR
T&P	TEMPERATURE AND PRESSURE [VALVE]
TA	THROWAWAY
TC	THERMOCOUPLE
TCP	TEMPERATURE CONTROL PANEL
TCV	TEMPERATURE CONTROL VALVE
TD	TEMPERATURE DIFFERENCE
TEMP	TEMPERATURE, TEMPORARY
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
THK	THICK(NESS)
TMH	TOP OF MANHOLE
TNL	TUNNEL
TR	TONS OF REFRIGERATION
TOP	TOP OF PIPE
TRANS	TRANSFER
TS	TUBE STEEL
TSTAT	THERMOSTAT
TCEQ	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
U	HEAT TRANSFER COEFFICIENT
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
V	VENT, VOLTS
VAC	VOLTS ALTERNATING CURRENT
VAP PR	VAPOR PRESSURE
VAR	VARIABLE
VAV	VARIABLE AIR VOLUME
VDC	VOLTS DIRECT CURRENT
VEL	VELOCITY
VENT	VENT, VENTILATION
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VISC	VISCOSITY
VP	VELOCITY PRESSURE
VV	VARIABLE-VOLUME [FLOW]
W	WATT
WB	WET BULB
WBT	WET BULB TEMPERATURE
WC	WATER COLUMN
WCHR	WATER CHILLER
WCLD	WATER COOLED
WG	WATER GAGE
WH	WALL HUNG, WATT HOUR
WL	WATER LINE
WLD	WELDED
WM	WATER METER
WNF	WELD NECK FLANGE
WP	WATER PUMP
WPD	WATER PRESSURE DROP
WPR	WORKING PRESSURE DROP
WSP	WORKING STEAM PRESSURE
WT	WEIGHT
YD	YARD, YARD DRAIN
YR	YEAR
Z	ZONE

MISCELLANEOUS SYMBOLS

- ? — KEYED NOTE
- T — ROOM-MOUNTED THERMOSTAT OR TEMPERATURE SENSOR
- FLOW ARROW
- STANDARD BREAK / RECTANGULAR DUCT BREAK
- XXX-1 — EQUIPMENT DESIGNATIONS
- PIPE SECTION
- PIPE BREAK

GENERAL NOTES

1. THIS IS A STANDARD LEGEND SHEET. SOME INFORMATION ON THIS SHEET MAY NOT NECESSARILY APPLY TO THIS PROJECT.
2. ISOLATION VALVES SHALL BE PROVIDED IN ALL BRANCH PIPING AND AT EQUIPMENT CONNECTIONS.
3. PIPING CONNECTIONS TO ALL EQUIPMENT SHALL BE FABRICATED WITH THE ISOLATION VALVES, FLANGES AND/OR UNIONS POSITIONED TO ALLOW REMOVAL AND SERVICE OF THE COMPONENT PARTS.
4. INSTALL MANUAL AIR VENTS AT THE HIGH POINTS OF THE PIPING SYSTEMS.
5. ROUTE PIPING IN AN ORDERLY MANNER AND MAINTAIN PROPER GRADES. INSTALL TO CONSERVE HEADROOM AND TO CREATE MINIMUM INTERFERENCE WITH USE OF SPACE. ROUTE EXPOSED PIPING PARALLEL TO BUILDING LINES. GROUP PIPING AT COMMON BOP ELEVATIONS WHENEVER PRACTICAL. PIPES LOCATED IN CONCEALED SPACES SHALL BE ROUTED CLOSE TO THE BUILDING STRUCTURE UON.
6. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE OR EQUIPMENT CONNECTED.
7. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL, NOT INVERTED.
8. INSTALL VALVES IN ACCESSIBLE LOCATIONS. INSTALL ACCESS DOORS IN PARTITIONS WHERE VALVES WOULD OTHER WISE BE INACCESSIBLE.
9. WHEN SOCKET WELD OR SOLDER END VALVES ARE INSTALLED, SPECIAL CARE SHALL BE TAKEN TO AVOID OVERHEATING AND DAMAGING THE VALVE BODY, TRIM OR PACKING.
10. IDENTIFY EACH PIPE WITH LABELING AS REQUIRED BY SPECIFICATIONS.
11. SLEEVE ALL PIPING THAT PENETRATES FIRE RATED WALLS, FLOORS AND PARTITIONS. PENETRATIONS SHALL BE SEALED WITH A U.L. LISTED ASSEMBLY TO PROVIDE A RATING EQUAL TO OR GREATER THAN THAT OF THE PENETRATED WALL, FLOOR OR PARTITION.
12. SLEEVE ALL PIPING THAT PENETRATES EXTERIOR BUILDING WALLS AND GRADE BEAMS. SEAL PENETRATIONS WATERTIGHT.
13. COORDINATE WITH OTHER TRADES BEFORE FABRICATION OR INSTALLATION OF ANY SYSTEMS.
14. EXISTING DUCTWORK, PIPING AND EQUIPMENT SHOWN ON THESE DRAWINGS INDICATES THE GENERAL LOCATION AND ROUTING. THE ACTUAL LOCATION SHALL BE DETERMINED BY THE CONTRACTOR WHO SHALL COORDINATE ALL WORK WITH ALL TRADES NECESSARY TO INSTALL NEW DUCTWORK, PIPING OR EQUIPMENT AS SHOWN ON THE DRAWING.
15. THESE DRAWINGS DO NOT NECESSARILY SHOW ALL OFFSETS OR ELEVATION DIFFERENCES WHICH MAY BE NECESSARY FOR THE COMPLETE INSTALLATION.
16. ALL NEW DUCT SHALL BE EXTERNALLY INSULATED UON.
17. WHERE REMOVAL OF EXISTING DUCTWORK OR PORTIONS OF ANY AIR SYSTEM IS NECESSARY, THE DUCT SHALL BE PATCHED AND SEALED AIRTIGHT USING PATCH OF SAME MATERIAL AND EQUAL OR GREATER THICKNESS AS EXISTING. PATCHES SHALL BE ATTACHED WITH SHEET METAL SCREWS OR OTHER MEANS OF POSITIVE ATTACHMENT (WELDING, BONDING, ETC.) AS SPECIFIED FOR THE PARTICULAR DUCT SYSTEM. NEW INSULATION MATERIAL AND ITS THERMAL PROPERTIES SHALL BE EQUAL TO OR BETTER THAN EXISTING AND SHALL BE PATCHED AND SEALED TO MATCH EXISTING INSULATION.
18. NUMBER SHOWN IN PARENTHESIS (100) IS CFM OF EXISTING AIR TERMINAL, DUCT, OR AIR DEVICE AND IS FOR INFORMATION ONLY.
19. COORDINATE ALL REMODEL WORK WITH NEW CONSTRUCTION AND OTHER TRADES.
20. THE CONTRACTOR SHALL ADJUST AND BALANCE ALL MECHANICAL SYSTEMS TO DESIGN SETTINGS AS SHOWN AND SHALL REBALANCE TO RESTORE SETTINGS OF SYSTEMS TEMPORARILY ALTERED FOR THE PURPOSES OF COMPLETING THE WORK OF THIS PROJECT.
21. NOTIFY AND COORDINATE WITH OWNER PRIOR TO SHUTDOWN OF ANY EQUIPMENT. SHUTDOWN TIME TO BE MINIMUM.
22. ANY ITEMS DAMAGED DURING DEMOLITION SHALL BE REPLACED WITH NEW MATERIALS TO MATCH EXISTING.
23. CONTRACTOR SHALL PROVIDE TEMPORARY DUCTWORK, ELECTRICAL SERVICE, PIPING OR OTHER BUILDING SERVICES AS REQUIRED TO KEEP OTHER AREAS IN OPERATION DURING REMODELING. NOTIFY OWNER PRIOR TO SHUT-DOWN FOR ANY TEMPORARY SERVICE REQUIREMENTS.
24. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR LOCATIONS OF CEILING-MOUNTED HVAC DEVICES AND EQUIPMENT.
25. DUCT ROUTING CHANGES MADE BY THE CONTRACTOR FOR THE PURPOSE OF ACCOMMODATING FIELD CONDITIONS SHALL INCLUDE FIRE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS IN RATED PARTITIONS AS SHOWN IN ORIGINAL ROUTING ARRANGEMENTS.
26. FURNISH AND INSTALL ACCESS DOORS (AD) IN THE DUCTWORK IMMEDIATELY ADJACENT TO EACH RATED DAMPER WHICH HAS A FUSIBLE LINK. PARTITIONS SHALL BE PROVIDED WITH ACCESS DOORS TO PROVIDE SERVICE AND ACCESS TO DAMPER ACCESS DOORS.
27. FIRE, SMOKE, AND COMBINATION FIRE/SMOKE DAMPERS SHALL BE UL APPROVED, SHALL BEAR THE UL LABEL AND SHALL COMPLY WITH NFPA BULLETIN NO. 90A. FULLY-OPEN DAMPERS SHALL NOT HAVE ANY PROJECTIONS INTO THE AIRSTREAM.
28. ABANDONED DUCT SHALL BE REMOVED WHERE INDICATED ON THE DRAWINGS. DUCT REMAINING IN PLACE SHALL BE CAPPED AND SEALED AIR TIGHT AT POINT(S) OF DEMOLITION.
29. NEW HOLES THROUGH EXISTING FLOORS AND NO GREATER THAN 6" DIAMETER SHALL BE CORE DRILLED. AVOID BEAMS AND JOIST LEGS.
30. ALL DUCT SIZES SHOWN HEREIN REPRESENT INSIDE CLEAR DIMENSIONS. EXTERNAL SHEET METAL DIMENSIONS OF INTERNALLY-LINED DUCTWORK SHALL BE ADJUSTED TO ALLOW FOR THICKNESS OF LINING.
31. THE OWNER SHALL HAVE THE OPTION TO DESIGNATE ANY MATERIALS REMOVED OR DEMOLISHED DURING THIS WORK AS "RECYCLABLE" AND SHALL HAVE FINAL DISPOSITION OVER THE DISPOSAL OF THESE MATERIALS. ALL MATERIALS REMOVED/DEMOLISHED BY THE CONTRACTOR FOR THIS JOB AND NOT RETAINED BY THE OWNER FOR RECYCLING OR OTHER PURPOSES SHALL BE DISPOSED OFF-SITE BY THE CONTRACTOR.
32. ANY AND ALL WATER CONNECTIONS MADE FOR THE PURPOSE OF CLEANING TOOLS OR THE WORK AREA OR FOR ANY OTHER CONSTRUCTION-RELATED PURPOSES SHALL BE MADE ONLY TO DOMESTIC WATER HOSE BIBBS OR TO CONTRACTOR-SUPPLIED WATER SOURCES. FOR THESE PURPOSES, CONNECTIONS SHALL NOT BE MADE TO FIRE WATER, CHILLED WATER, CONDENSED WATER, HEATING HOT WATER, DOMESTIC HOT WATER OR ANY OTHER TREATED WATER SOURCE UNLESS REQUIRED AS PART OF WORK ON THESE SYSTEMS.
33. EXCEPT WHERE REQUIRED AT EQUIPMENT NOZZLES, FLANGES SHALL BE RAISED FACE WELD-NECK.
34. INSTALL DIELECTRIC FITTINGS AT ALL FERROUS PIPE CONNECTIONS TO NON-FERROUS METALLIC PIPE OR EQUIPMENT.
35. BULLHEAD TEES SHALL NOT BE USED TO JOIN CONVERGING (RETURN) FLOWS, REGARDLESS OF ARRANGEMENT SHOWN ON PLANS.
36. PROVIDE ESCUTCHEON PLATES WHERE PIPES EXPOSED TO VIEW PENETRATE FINISHED WALLS.
37. PROVIDE DRAIN VALVES AT LOW POINTS OF PIPING SECTIONS, EQUIPMENT CONNECTIONS AND VENTS AT HIGH POINTS. PROVIDE HOSE BIBB CONNECTIONS AT DRAIN VALVES WHICH DO NOT DISCHARGE DIRECTLY OVER OR ARE NOT PIPED DIRECTLY TO AN APPROPRIATE DRAIN.
38. PIPING, DUCTWORK OR EQUIPMENT CONNECTIONS OPENED BY DEMOLITION OR RENOVATION SHALL BE TEMPORARILY SEALED TO KEEP OUT FOREIGN MATTER UNTIL SUCH TIME AS RECONNECTIONS ARE MADE.
39. ALL PIPING RUN-OUTS TO VV AND CV TERMINAL UNIT HOT WATER COILS SHALL BE 3/4" NPS UNLESS NOTED OTHERWISE.
40. PROVIDE 4" HOUSEKEEPING PAD FOR ALL FLOOR MOUNTED EQUIPMENT INSIDE BUILDING AND 6" FOR OUTDOOR.
41. DUCT RUN-OUTS TO TERMINAL AIR DEVICES SHALL BE THE SAME SIZE AS DEVICE NECK. SEE AIR FLOW RATE SCHEDULE IN AIR DISTRIBUTION DEVICE SCHEDULE ON 600-SERIES SHEET(S).
42. VV AND CV TERMINAL UNITS PRIMARY SUPPLY AIR RUN-OUTS SHALL BE THE SAME SIZE AS THE PRIMARY INLET CONNECTION. RE: TERMINAL UNIT SCHEDULE FOR INLET SIZE.
43. CONTRACTOR SHALL AVOID DAMAGE TO SYSTEMS WHICH ARE THE WORK OF OTHER TRADES. ANY SYSTEM COMPONENTS WHICH ARE DAMAGED AND ARE NOT IN THE CONTRACTOR'S SCOPE OF WORK SHALL BE REPAIRED, BY THE CONTRACTOR, TO THE AS-INSTALLED CONDITION.
44. ALL MATERIALS IN THE PLENUM SPACE SHALL BE NONCOMBUSTIBLE.
45. FLEXIBLE SUPPLY DUCT RUNOUT LENGTHS SHALL NOT EXCEED 6'-0", FULLY DEVELOPED.

DESIGN CONDITIONS

COOLING	OUTDOOR	INDOOR
TEMPERATURE	91.3°F DB / 79.1°F WB	75°F DB +/- 5°F
RELATIVE HUMIDITY		50% RH +/- 10%
MAX. ENTHALPY	88.0°F DB / 81.1°F WB	
EVAPORATION	NOT APPLICABLE	
HEATING	**OUTDOOR**	**INDOOR**
TEMPERATURE	36°F DB	72°F DB +/- 2°F*
REL. HUMIDITY	NOT APPLICABLE	NOT APPLICABLE
CLIMATE ZONE	2A (GALVESTON, TX)	

APPLICABLE CODES AND STANDARDS

- TEXAS WELL DRILLING RULES
- INTERNATIONAL ENERGY CONSERVATION CODE - 2015 EDITION
- ASHRAE STANDARD 62.1 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY - 2013 EDITION
- INTERNATIONAL BUILDING CODE - 2015 EDITION WITH GALVESTON COUNTY AMENDMENTS
- INTERNATIONAL MECHANICAL CODE - 2015 EDITION WITH GALVESTON COUNTY AMENDMENTS
- NFPA 101 LIFE SAFETY CODE
- NFPA 90A - STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATION SYSTEMS - 2018 EDITION

GEOTHERMAL NOTES

DRILLING CONTRACTOR REQUIREMENTS

A. DRILLER SHALL COORDINATE WITH ARCHITECT ON EXACT LOCATION OF WELL TO BE DRILLED PRIOR TO DRILLING.

B. DRILLER SHALL ALSO VISIT SITE AND CONFIRM SUFFICIENT SPACE EXISTS AROUND LOCATION FOR DRILLING OPERATION.

C. DRILLING CONTRACTOR MUST HAVE A CURRENT TEXAS WELL DRILLERS LICENSE AND PUMP INSTALLERS LICENSE. LICENSED DRILLER IS RESPONSIBLE FOR PULLING ALL REQUIRED PERMITS AND WATER TESTING IN ACCORDANCE WITH TEXAS REGULATIONS.

TEXAS WELL RULES

1. DRILLING

A. THE DRILLING PROCESS OR USE OF DRILLING FLUID ADDITIVES SHALL NOT CONTAMINATE ANY AQUIFER AND SHALL BE AN ENVIRONMENTALLY-FRIENDLY SOLUTION.

B. WATER USED IN THE DRILLING PROCESS SHALL BE OBTAINED FROM A SOURCE THAT WILL NOT RESULT IN CHEMICAL OR BIOLOGICAL CONTAMINATION OF ANY AQUIFER. WATER TAKEN DIRECTLY FROM PONDS, LAKES, STREAMS OR OTHER SURFACE WATER SOURCES SHALL NOT BE USED.

C. WELL SHALL NOT CONNECT AQUIFERS OR ZONES THAT HAVE DOCUMENTED DIFFERENCES:
1. IN WATER QUALITY THAT WOULD RESULT IN CONTAMINATION OF ANY AQUIFER OR ZONE SUCH THAT ANY STATE PRIMARY DRINKING WATER STANDARD IS EXCEEDED.
2. IN STATIC WATER LEVELS THAT WOULD RESULT IN DEPLETION OF WATER FROM ANY AQUIFER OR ZONE, OR SIGNIFICANT LOSS OF HEAD IN ANY AQUIFER OR ZONE.

D. BOREHOLE SHALL BE ELECTRONICALLY LOGGED BEFORE SETTING CASING TO VERIFY WATER SANDS LOCATION.

2. CASING

A. WELL CASING SHALL BE 4" WITH 3" OVERSIZE FOR THE BOREHOLE.

B. CASING SHALL BE 4" SDR 21 200 CLASS PVC.

C. CASING SHALL EXTEND 2' ABOVE FINISHED GRADE

D. GRADE SHALL SLOPE AWAY FROM CASING.

E. CASING SHALL HAVE A PITLESS ADAPTER INSTALLED ON TOP. SEE DETAIL.

F. PUMP SHALL ALSO HAVE A SAFETY LINE FROM PITLESS ADAPTER TO PUMP FOR RETRIEVAL IF NECESSARY

G. PUMP WIRE SHALL BE RUN IN METAL CONDUIT FROM BELOW GRADE UP TO PITLESS ADAPTER TO PROTECT FROM MOWING EQUIPMENT

H. SAFETY SWITCH, PUMP SAVER AND LIGHTENING ARRESTOR SHALL BE IN SAME LOCATION AS 2" BALL VALVE TERMINATION OF WATER LINE.

I. CASING SHALL BE HALLIBURTON PRESSURE CEMENTED.

J. JET THE WELL BEFORE SETTING PUMP TO CLEAN OUT INSIDE OF CASING AND SCREEN. ENSURE NO FINE SAND IS PRESENT INSIDE CASING.

K. DRILLER RESPONSIBLE FOR SAND EVALUATION FOR SCREEN SIZING.

L. CHLORINATE INSIDE CASING PRIOR TO PUMP SETTING IN TEXAS STATE REQUIREMENTS.

M. 2" HANG PIPE TO BE SCH 40 GALVANIZED STEEL

3. TRENCHING AND UNDERGROUND PIPING TO VALVE BOX; FOR MORE DETAIL, SEE ALL DRAWINGS:

A. MINIMUM DEPTH TO TOP OF PIPE IS 30" BELOW GRADE & COORDINATE WITH OTHER BURIED UTILITIES.

B. PIPES MUST BE BEDDED IN SAND AND COVERED IN SAND OR ROCK DUST.

C. LARGER PIPES MUST MUST NOT BEAR ON SMALLER PIPES IN TRENCHES.

D. MINIMIZE CROSSING OF PIPES AS MUCH AS POSSIBLE.

E. ALL UNDERGROUND 2" PIPE TO TERMINATION POINT TO BE SDR 11 HDPE 4708

F. PRESSURE TANK SHALL BE LOCATED IN BUILDING WITH CONTROL BOX AND SHUT OFF VALVE.

DRAWING INDEX

DWG NUMBER	DWG NAME
MECHANICAL - TYPICAL	
M-001	MECHANICAL - LEGENDS, ABBREVIATIONS, AND GENERAL NOTES
M-301	MECHANICAL - SECTIONS
M-501	MECHANICAL - DETAILS
M-502	MECHANICAL - DETAILS
M-503	MECHANICAL - DETAILS
M-601	MECHANICAL - SCHEDULES
M-611	MECHANICAL - AIRFLOW DIAGRAM
M-612	MECHANICAL - AIRFLOW DIAGRAM
M-621	MECHANICAL - PIPING DIAGRAM
M-622	MECHANICAL - PIPING DIAGRAM
M-623	MECHANICAL - GEOTHERMAL WATER DIAGRAM
MECHANICAL - SITE	
MS-101S	MECHANICAL - GEOTHERMAL SITE PLAN
MECHANICAL - OFFICE	
MH-101O	MECHANICAL HVAC PLAN - OFFICE - LEVEL 01
MH-102O	MECHANICAL HVAC ROOF PLAN - OFFICE
MP-101O	MECHANICAL PIPING PLAN - OFFICE
MP-102O	MECHANICAL PIPING ROOF PLAN - OFFICE
MZ-101O	MECHANICAL - ZONING PLAN - OFFICE
MECHANICAL - MAINTENANCE SHOP	
MH-101M	MECHANICAL HVAC PLAN - SHOP- LEVEL 01
MH-101M-A	MECHANICAL HVAC PLAN - SHOP - LEVEL 01 - AREA A
MH-101M-B	MECHANICAL HVAC PLAN - SHOP - LEVEL 01 - AREA B
MP-101M-A	MECHANICAL PIPING PLAN - SHOP
MP-101M-B	MECHANICAL PIPING PLAN - SHOP
MZ-101M	MECHANICAL - ZONING PLAN - SHOP
MECHANICAL - WAREHOUSE	
MH-101W	MECHANICAL HVAC PLAN - WAREHOUSE - LEVEL 01
MP-101W	MECHANICAL - PIPING PLAN - WAREHOUSE
MZ-101W	MECHANICAL - ZONING PLAN - WAREHOUSE
MECHANICAL-CONTROLS	
MI-001	MECHANICAL - INSTRUMENTATION AND CONTROLS - GENERAL INFORMATION
MI-601	MECHANICAL - INSTRUMENTATION AND CONTROLS - DIAGRAMS
MI-602	MECHANICAL - INSTRUMENTATION AND CONTROLS - DIAGRAMS
MI-603	MECHANICAL - INSTRUMENTATION AND CONTROLS - DIAGRAMS
MI-604	MECHANICAL - INSTRUMENTATION AND CONTROLS - DIAGRAMS

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Galveston County
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Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Page Southerland Page, Inc.
Firm Registration No.15868
STATE OF TEXAS — CHRISTY N. TROUTMAN — 124781 — LICENSED PROFESSIONAL ENGINEER
06/26/2020

MECHANICAL - LEGENDS, ABBREVIATIONS, AND GENERAL NOTES

DRAWN BY: AB	CHECKED BY: CNT
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUN 2020

M-001
SHEET NUMBER

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USER NAME: ROAD_BRIDGE-R19-CENTRAL_ctroutman.rvt
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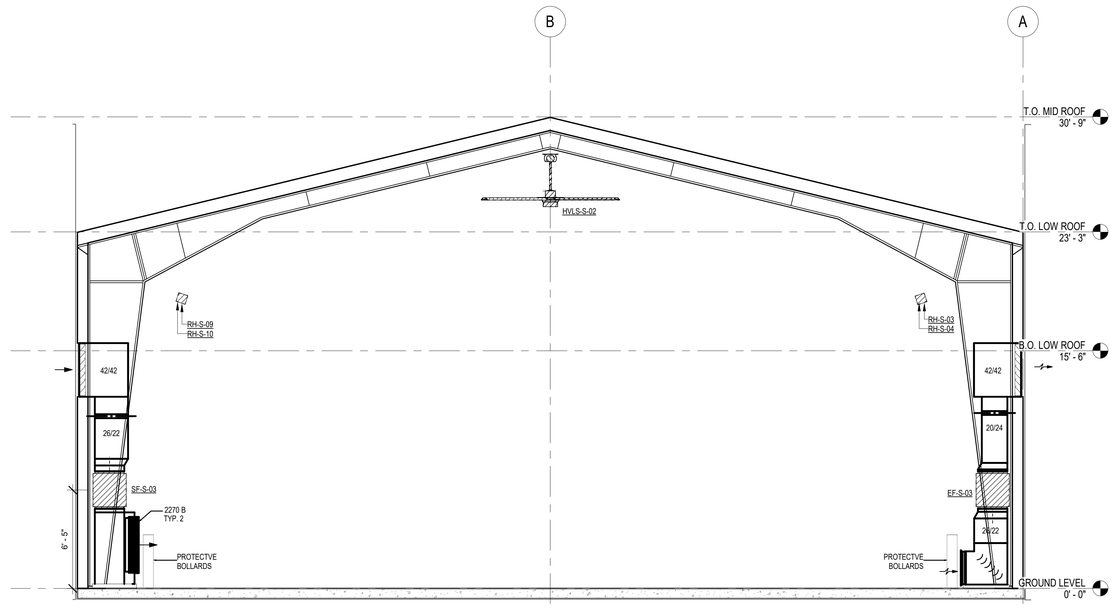
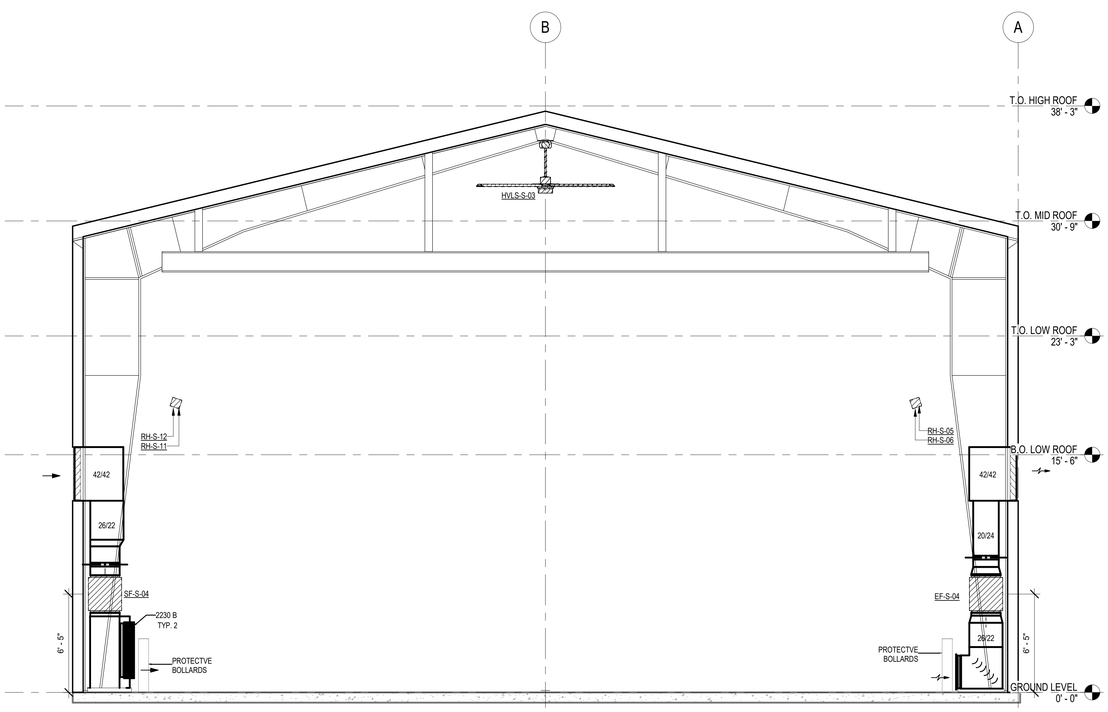
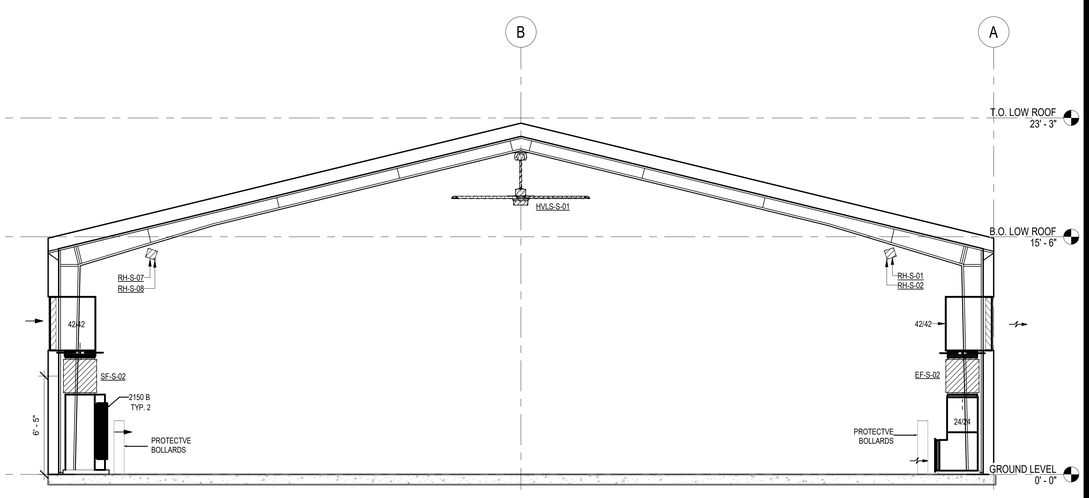


2 **MECHANICAL - SECTION VIEW - MEDIUM BAY**
SCALE: 1/4" = 1'-0"



3 **MECHANICAL - SECTION VIEW - HIGH BAY**
SCALE: 1/4" = 1'-0"



1 **MECHANICAL - SECTION VIEW - LOW BAY**
SCALE: 1/4" = 1'-0"

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PROFESSIONAL SEALS
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STATE OF TEXAS
CHRISTY N. TROUTMAN
124781
06/26/2020

MECHANICAL - SECTIONS

DRAWN BY	CHECKED BY
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PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
ORIGINAL ISSUE	DATE
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M-301
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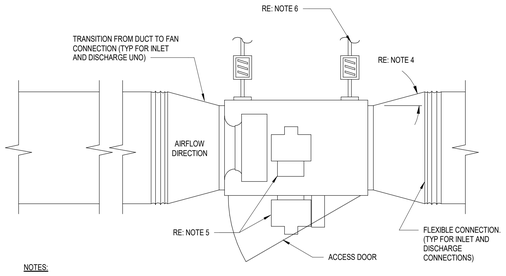
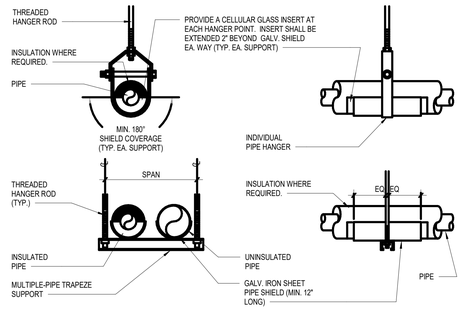


NOTES:

1. WHERE SUSPENSION RODS PENETRATE THE STRUCTURE'S FIRE-RETARDANT COATING, THE CONTRACTOR SHALL PATCH AROUND RODS WITH A MATERIAL WHICH WILL RESTORE OR EXCEED THE INTENDED FIRE RATING OF THE PROTECTED STRUCTURE.
2. DETAIL APPLIES TO ALL INLINE FANS (INLINE CENTRIFUGAL SHOWN AS EXAMPLE).
3. REFER TO MECHANICAL FLOOR PLAN, SPECIFICATIONS, AND CONTROLS DESIGN DOCUMENTS FOR DAMPER TYPE, LOCATION, SPECIFICATION, AND SEQUENCE OF OPERATION.
4. REFER TO SMACNA STANDARD FOR DUCTWORK CONSTRUCTION FOR MAXIMUM DIVERGENCE AT INLET AND DISCHARGE CONNECTIONS, UON. (TYP.)
5. REFER TO MANUFACTURER FOR CLEARANCE REQUIREMENTS FOR OPERATION AND MAINTENANCE. SEE SCHEDULE FOR MOTOR AND DRIVE REQUIREMENTS.
6. MOUNT FAN FROM BUILDING STRUCTURE. PROVIDE SUPPLEMENTAL STRUCTURAL STEEL MEMBERS FOR SUPPORT AS NECESSARY. SUPPORT FAN WITH THREADED ROD AND VIBRATION ISOLATORS. SUPPORT PER MANUFACTURER'S RECOMMENDATIONS (TYP).

9 INLINE FAN MOUNTING DETAIL

SCALE: NTS

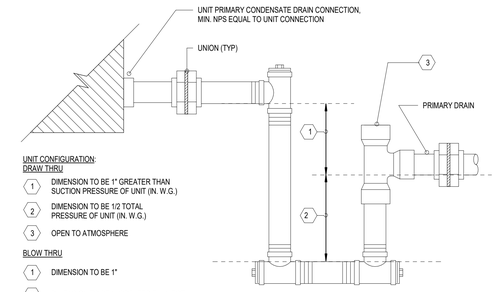


NOTES:

1. ALL PIPE 6"NPS AND LARGER SHALL BE SUSPENDED FROM STRUCTURAL BEAMS AND/OR SUPPORTED BY STRUCTURAL COLUMNS. PIPES 6" NPS AND LARGER SHALL NOT BE SUPPORTED FROM ROOF JOISTS OR ANY OTHER LIGHT-GAGE FRAMING MEMBERS.
2. TRAPEZE SIUPPORT SIZE AND SPACING SHALL BE GOVERNED BY THE CUMULATIVE WEIGHT OF THE SUPPORTED PIPING. PROVIDE SUPPORTING MEMBER AS REQUIRED TO LIMIT MAXIMUM TRAPEZE DEFLECTION TO NO MORE THAN 1/240TH OF THE SPAN.

6 SUPPORT FOR HORIZONTAL PIPE

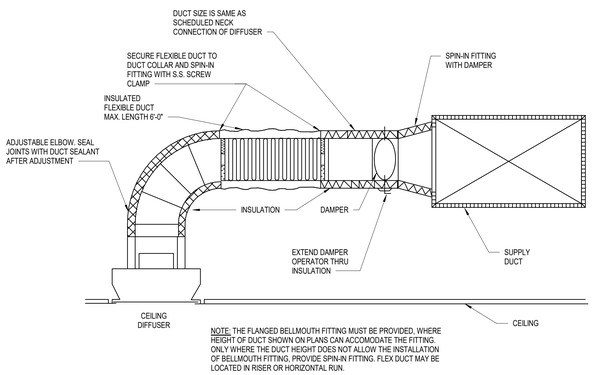
SCALE: NTS



NOTES:
1. REFER TO PLANS FOR DRAIN SIZE.

3 TYPICAL CONDENSATE DRAIN TRAP CONFIGURATION

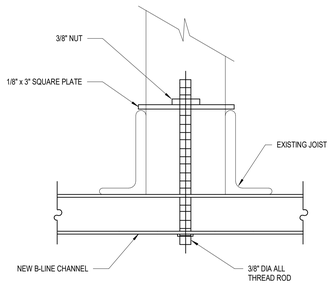
SCALE: NTS



NOTE: THE FLANGED BELLMOUTH FITTING MUST BE PROVIDED, WHERE HEIGHT OF DUCT SHOWN ON PLANS CAN ACCOMODATE THE FITTING. ONLY WHERE THE DUCT HEIGHT DOES NOT ALLOW THE INSTALLATION OF BELLMOUTH FITTING, PROVIDE SPIN-IN FITTING. FLEX DUCT MAY BE LOCATED IN RISER OR HORIZONTAL RUN.

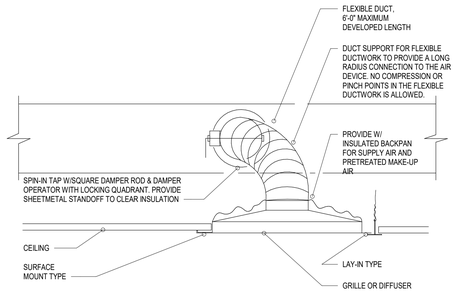
8 CEILING DIFFUSER CONNECTION DETAIL

SCALE: NTS



5 DUCT HANGER CONNECTION

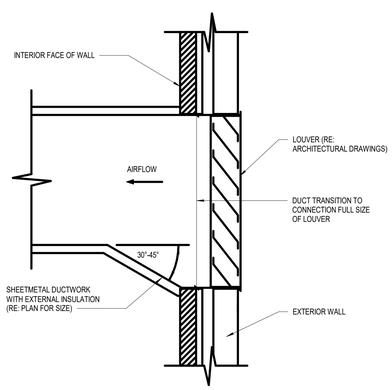
SCALE: NTS



NOTE:
SIDEWALL BRANCH CONNECTION SHOWN IN THIS DETAIL IS THE PREFERRED CEILING SUPPLY AIR DEVICE RUNOUT CONNECTION METHOD.

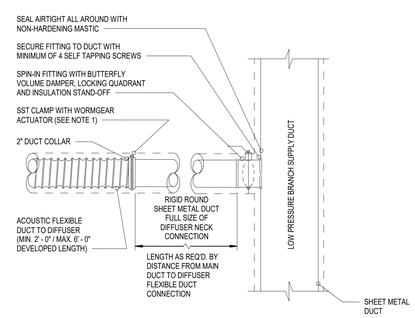
2 FLEXIBLE DUCT RUNOUT TO CEILING AIR DEVICE DETAIL

SCALE: NTS



7 OUTSIDE AIR INTAKE LOUVER CONNECTION DETAIL

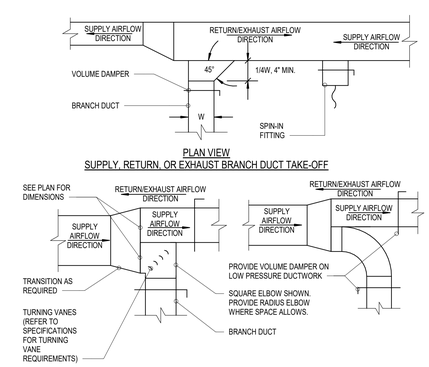
SCALE: NTS



NOTE:
1. PROVIDE SIMILAR CLAMP FOR FLEX. DUCT CONNECTION AT DIFFUSER NECK. FOR INSULATION FLEX DUCT, CLAMP SHALL CONNECT INNER SLEEVE TO DIFFUSER NICK, WITH OUTER INSULATED SLEEVE PILLED OVER CLAMP TO COMPLETELY COVER.

4 LOW PRESSURE DUCT RUNOUT

SCALE: NTS



1 DUCT BRANCH TAKE-OFFS

SCALE: NTS

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06/26/2020

MECHANICAL - DETAILS

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PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_R&B
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M-501
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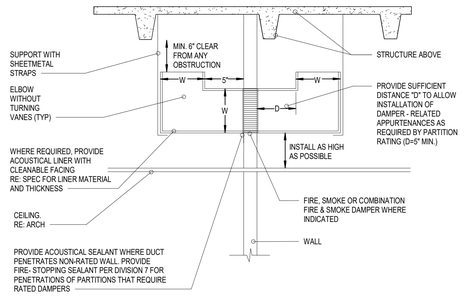
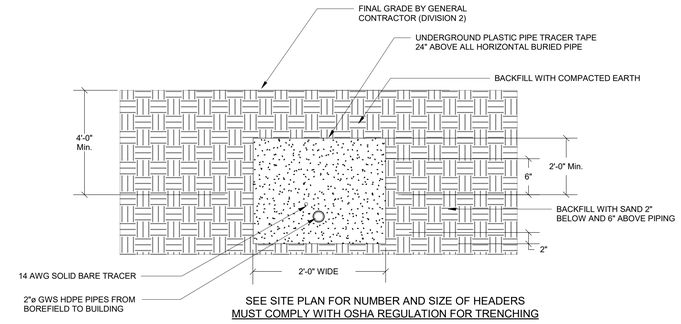
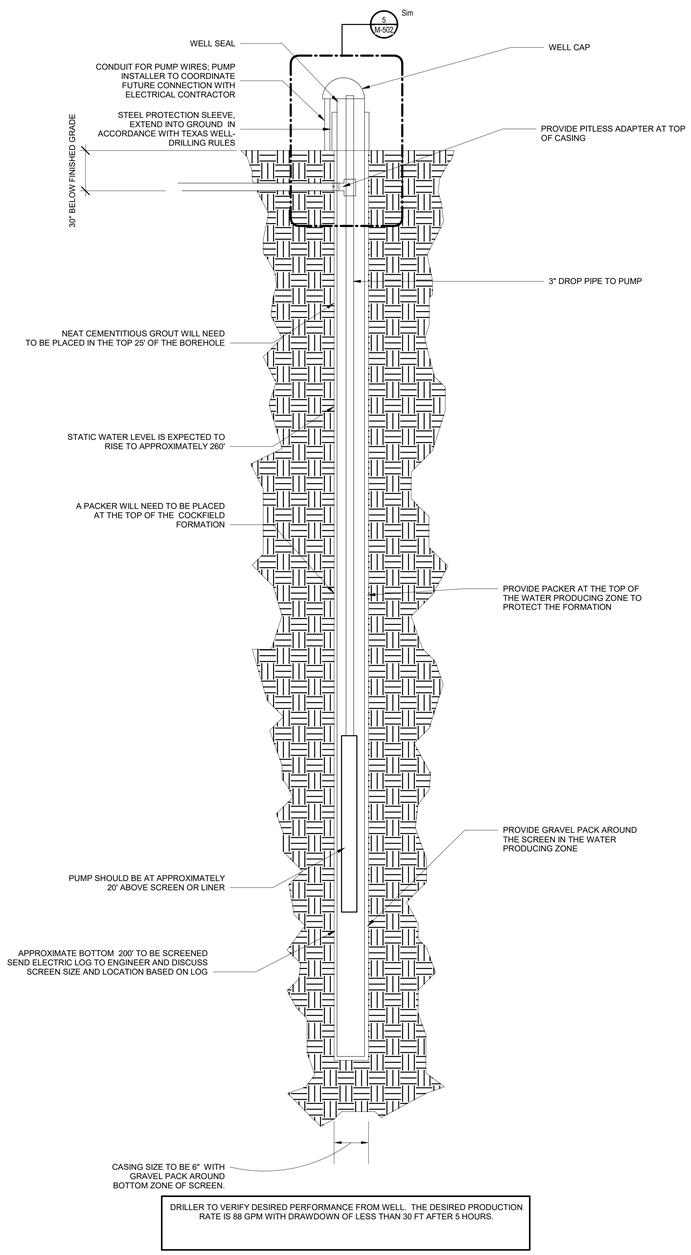


4 TRANSFER AIR BOOT
SCALE: NTS

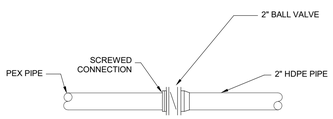


2 GEOTHERMAL TRENCH
SCALE: NTS



DRILLER TO VERIFY DESIRED PERFORMANCE FROM WELL. THE DESIRED PRODUCTION RATE IS 88 GPM WITH DRAWDOWN OF LESS THAN 30 FT AFTER 5 HOURS.

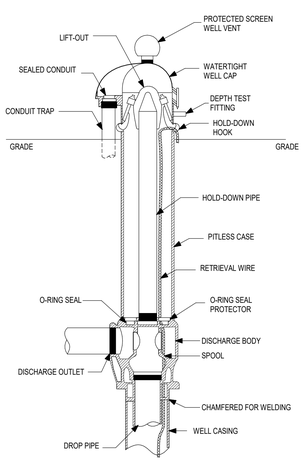
1 WELL CROSS-SECTION
SCALE: Not to Scale



NOTE:

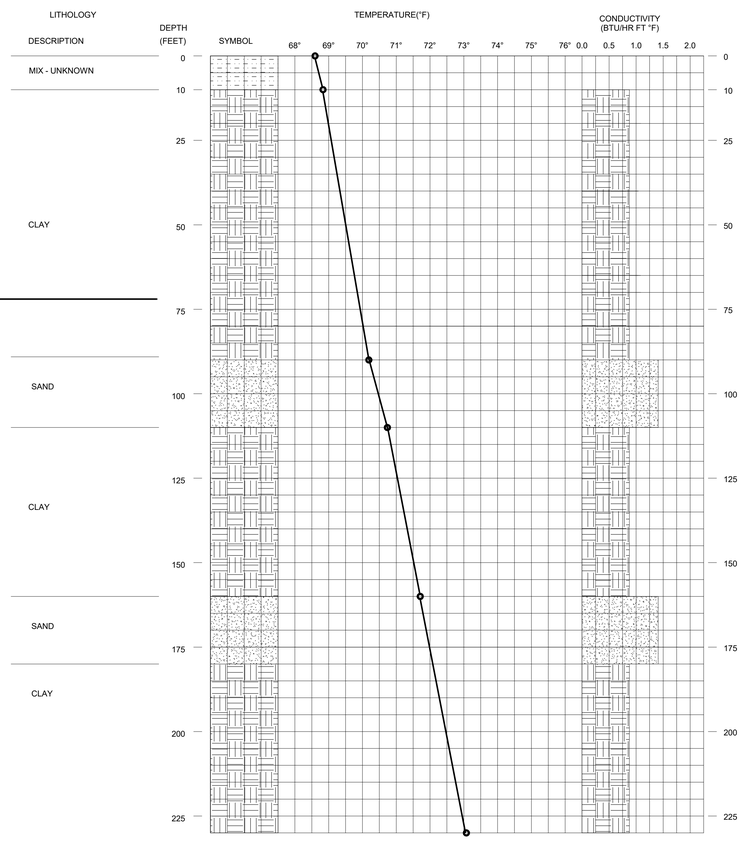
1. HDPE PIPING ONLY OUTSIDE THE BUILDING.
2. PEX PIPE WITH BALL VALVE TO SERVE BUILDING. REFER TO DRAWINGS FOR PIPE SIZE AND ITS CORRESPONDING BUILDING.

6 HDPE TO PEX CONNECTION DETAIL
SCALE: NTS



5 PITLESS ADAPTER DETAIL
SCALE: NTS

GENERALIZED LITHOLOGY
w/ GEOTHERMAL GRADIENT AND THERMAL CONDUCTIVITY.
(DATA PROVIDED BY GEOLOGIST--NOT CONFIRMED BY PAGE)



THE LITHOLOGY LOG ABOVE IS BASED ON WELL LOGS FROM THE AREA AND ACTUAL CONDITIONS AT EACH WELL MAY BE DIFFERENT; DRILLER IS RESPONSIBLE FOR THEIR OWN INVESTIGATION AND INCLUDE COSTS IN PROJECT; NO CHANGE ORDERS FOR VARIATIONS IN GEOLOGY. THIS DATA IS FOR BIDDING PURPOSES ONLY.

3 GEOTHERMAL LITHOLOGY
SCALE: NTS

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124781
LICENSED PROFESSIONAL ENGINEER
06/26/2020

MECHANICAL - DETAILS

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PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUN 2020

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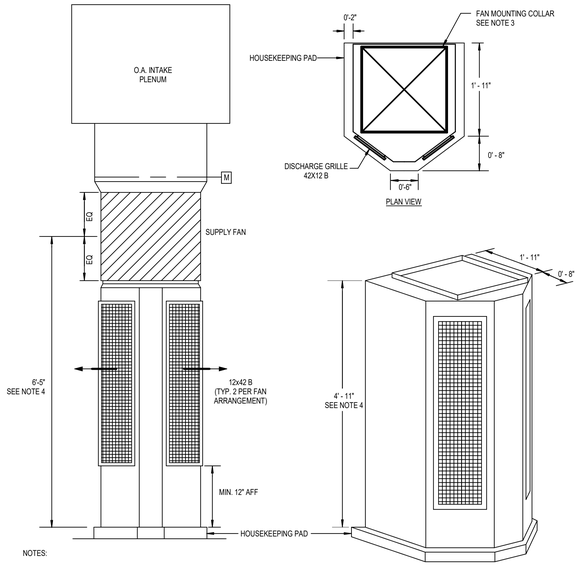
SHEET NUMBER

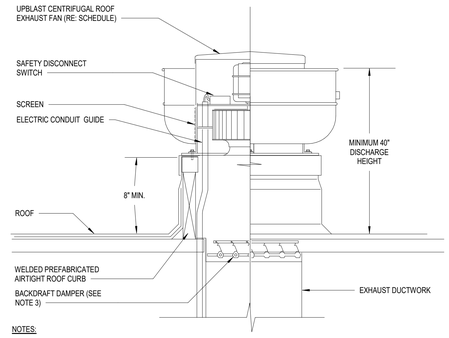


NOTES:

1. MAINTAIN SUFFICIENT SEPARATION BETWEEN THE PLENUM AND THE FAN TO ENSURE AN APPROPIATE TRANSITION AS REQUIRED.
2. PROVIDE 4" HOUSEKEEPING PAD.
3. COORDINATE FAN MOUNTING COLLAR DIMENSIONS WITH APPROVED SUPPLY-FAN SUBMITTAL.
4. DIMENSION IS BASED ON B.O.D AND SHALL BE ADJUSTED ACCORDING TO APPROVED SUPPLY-FAN SUBMITTAL.

8 SHOP SUPPLY FAN ARRANGEMENT DETAIL

SCALE: NTS

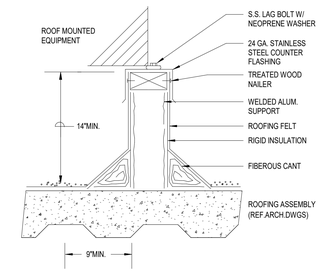


NOTES:

1. SEAL PENETRATION AIR TIGHT AROUND CONDUIT THRU WELDED ROOF CURB.
2. SEAL AIR TIGHT ANY PENETRATIONS THRU WELDED ROOF CURB.
3. PROVIDE MOTORIZED DAMPER FOR ALL EXHAUST FANS WITH CAPACITY 300 CFM AND GREATER.

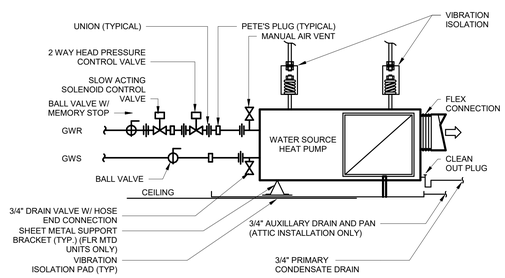
6 ROOF MOUNTED UPBLAST EXHAUST FAN DETAIL

SCALE: 1/8" = 1'-0"



3 ROOF MOUNTED EQUIPMENT SUPPORT DETAIL

SCALE: NTS

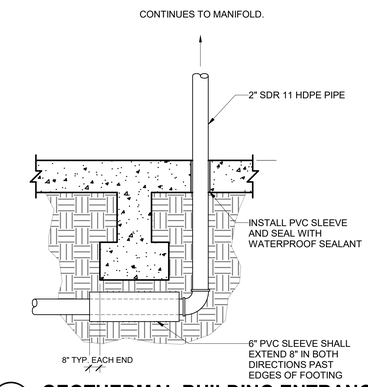


NOTES

1. CONTRACTOR SHALL CONNECT CIRC PUMP TO ELECTRICAL POWER AT TERMINAL INSIDE HT PUMP. PER NATIONAL ELECTRICAL CODE
2. DO NOT BLOCK UNIT ACCESS PANELS
3. DO NOT BLOCK RETURN AIRFLOW OR FILTER ACCESS
4. FOR SUSPENDED UNITS SUPPORT PAN FROM UNIT.
5. UNITS TO BE SUPPORTED FROM STRUCTURE ABOVE WITH VIBRATION ISOLATION (2 OR 3 SUPPORTS, SEE MANUFACTURER REQUIREMENTS) (NOT FLOOR MOUNTED)
6. DO NOT BEND HOSE CONNECTOR MORE THAN 60°
7. CONDENSATE DRAIN TO HAVE A 2" TRAP UNLESS UNIT CONTAINS INTERNAL TRAP
8. CONDENSATE PAN MUST BE 2" LARGER IN EACH DIRECTOIN AND BE UNDER THE INSTALLED CIRC PUMPS
9. UNITS LESS THAN 3 TONS, USE 1 CIRC PUMP. UNITS 3 TONS OR GREATER, USE 2 CIRC PUMPS
10. ADD AIR SEPARATOR TO HEAT PUMP AS SCHEDULED

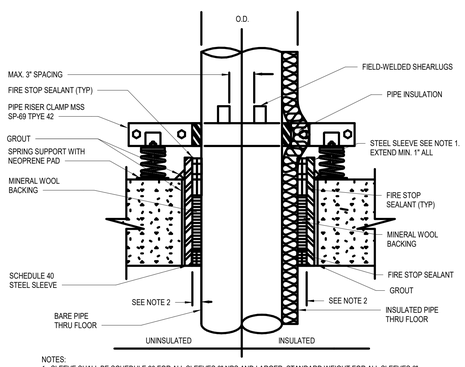
5 HEAT PUMP CONNECTION DETAIL

SCALE: NTS



2 GEOTHERMAL BUILDING ENTRANCE

SCALE: NTS

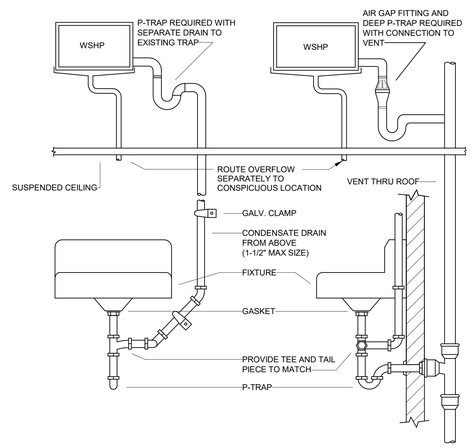


NOTES:

1. SLEEVE SHALL BE SCHEDULE 20 FOR ALL SLEEVES 8" NPS AND LARGER, STANDARD WEIGHT FOR ALL SLEEVES 6" NPS AND SMALLER
2. PROVIDE SLEEVE I.D. AT LEAST 1 PIPE SIZE LARGER THAN O.D. OF PIPE (PLUS INSULATION)

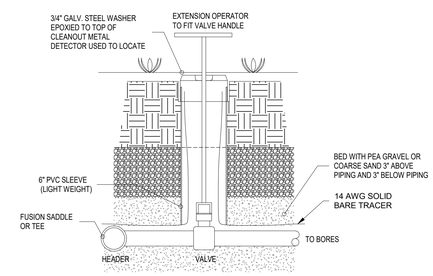
7 PIPE PENETRATION THROUGH ROOF

SCALE: NTS



4 CONDENSATE DRAIN TO SINKS & VENTS

SCALE: N.T.S.



1 ISOLATION VALVE PIT DETAIL

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M-503
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AIR DEVICE SCHEDULE

MARK	SERVICE	TYPE	MOUNTING	MODULE OR FACE SIZE	MATERIAL	MANUFACTURER	MODEL	NOTES
A	SUPPLY	DIFFUSER	CEILING, LAY-IN	24X24	ALUMINUM	TITUS	PAR	1, 2, 5, 6, 14
B	SUPPLY	GRILLE	SIDE-WALL SURFACE	42X12	ALUMINUM	TITUS	AEROBLADE	1
C	SUPPLY	ROUND DIFFUSER	CEILING, SUSPENDED	12"Ø	ALUMINUM	TITUS	R-OMNI	15
D	SUPPLY	GRILLE	SIDE-WALL, SURFACE	SEE PLANS	ALUMINUM	TITUS	AEROBLADE	1
E	SUPPLY	ROUND DIFFUSER	CEILING, SUSPENDED	22"Ø	ALUMINUM	TITUS	R-OMNI	15
F	SUPPLY	SLOT DIFFUSER	CEILING, SURFACE	2-1" SLOTS X 3'-0" LONG	ALUMINUM	TITUS	ML	1, 14
G	RETURN	DIFFUSER	CEILING, LAY-IN	24X24	ALUMINUM	TITUS	PAR	1, 14
H	EXHAUST	DIFFUSER	CEILING, SURFACE	24X24	ALUMINUM	TITUS	PAR	1, 4, 5, 14
J	EXHAUST	GRILLE	SIDE-WALL, SURFACE	SEE PLANS	ALUMINUM	TITUS	AEROBLADE	
K	EXHAUST	DIFFUSER	CEILING, SURFACE	12X12	ALUMINUM	TITUS	PAR	1, 4, 5, 14

NOTES:

1. PROVIDE WITH OFF-WHITE BAKED ENAMEL FINISH.
2. PROVIDE SUPPLY DIFFUSER NECK SIZE BASED ON AIR FLOW RATE SCHEDULE CFM RANGE.
3. PROVIDE LAMINAR SUPPLY DIFFUSER WITH STAINLESS STEEL FACE AND ALUMINUM BACKPAN.
4. PROVIDE DUCTED RETURN/EXHAUST DIFFUSER NECK SIZED BASED ON AIR FLOW RATE SCHEDULE CFM RANGE. NON-DUCTED RETURN DIFFUSERS SHALL BE SELECTED WITH MANUFACTURER'S MAXIMUM AVAILABLE NECK SIZE.
5. DUCT RUNOUTS TO DIFFUSERS SHALL BE SAME SIZE AS SCHEDULED NECK DIAMETER.
6. PROVIDE WITH FOUR-WAY THROW PATTERN, UON.
7. PROVIDE REGISTER WITH INTEGRAL VOLUME DAMPER.
8. PROVIDE WITH FLOW PATTERN CONTROL. REFER TO FLOOR PLAN FOR PATTERNS.
9. PROVIDE WITH FACTORY INSULATED BACK-PAN. FOR SIZES/MODELS WHERE A FACTORY INSULATED BACKPANS ARE NOT AVAILABLE. FIELD INSULATE DIFFUSER BACKPAN.
10. PROVIDE WITH VERTICAL THROW PATTERN, UON.
11. PROVIDE PLENUM BOX.
12. TWO SLOTS.
13. PROVIDE APERTURE STYLE DAMPER.
14. PROVIDE YOUNG REGULATOR FOR ANY TAP WHICH IS LOCATED ABOVE AN INACCESSIBLE CEILING.
15. PROVIDE WITH BLACK FINISH. FINISH TO MATCH EXPOSED DUCTWORK.

AIR FLOW RATE SCHEDULE (STANDARD)

NECK SIZE (IN)	SUPPLY CFM RANGE	EXHAUST/RETURN CFM RANGE
6Ø	0-125	N/A
8Ø	130-190	0-175
10Ø	195-290	180-275
12Ø	295-390	280-400
14Ø	395-530	405-535
16Ø	535-850	540-700
22x22	N/A	705-1700

AIR FLOW RATE SCHEDULE (LAMINAR FLOW)

NECK SIZE (IN)	SUPPLY CFM RANGE	EXHAUST/RETURN CFM RANGE
10Ø	≤ 450	N/A
12Ø	≥ 455	N/A

SHOP OFFICE BULDING PRESSURIZATION TABLE	
MINIMUM IAQ REQUIREMENT (IMC 2015)	65
BUILDING PRESSURIZATION AIRFLOW (ASHRAE FUNDAMENTALS HANDBOOK - 2013)	80
ROOM NAME	**EXHAUST AIRFLOW CFM**
MS RESTROOMS	70
TOTAL EXHAUST	**70**
TOTAL OUTSIDE AIR	**150**
PRESSURIZATION AIR	80

PESTICIDE STORAGE PRESSURIZATION TABLE	
MINIMUM EXHAUST RATE (ASHRAE FUNDAMENTALS HANDBOOK - 2013)	1,460
ROOM NAME	**EXHAUST AIRFLOW CFM**
PESTICIDE STORAGE	1,460
TOTAL EXHAUST	**1,460**
TOTAL OUTSIDE AIR	**1,235**
BUILDING PRESSURIZATION (CFM)	-225

MAINTENANCE SHOP PRESSURIZATION TABLE	
BUILDING PRESSURIZATION AIRFLOW (ASHRAE FUNDAMENTALS HANDBOOK - 2013)	13,265
BAY NAME	**EXHAUST AIRFLOW CFM**
SEDAN/SUV MAINTENANCE AREA	4,275
MEDIUM MAINTENANCE AREA	4,535
HEAVY MAINTENANCE AREA	4,445
TOTAL EXHAUST	**13,255**
TOTAL OUTSIDE AIR	**13,255**

OFFICE BULDING PRESSURIZATION TABLE	
MINIMUM IAQ REQUIREMENT (IMC 2015)	500
BUILDING PRESSURIZATION AIRFLOW (ASHRAE FUNDAMENTALS HANDBOOK - 2013)	300
ROOM NAME	**EXHAUST AIRFLOW CFM**
026 - WOMEN'S LARGE RESTROOMS	100
027 - MEN'S LARGE RESTROOMS	250
09 - SIGN WORKSHOP	250
04 - UNISEX WC	70
05 - UNISEX WC	70
029 - JANITOR	50
TOTAL EXHAUST	**790**
EQUIPMENT TAG	**OUTSIDE AIRFLOW CFM**
DOAU-O-01	1,290
TOTAL OUTSIDE AIR	**1,290**
PRESSURIZATION AIR	500

PRESSURE TANK SCHEDULE

MARK	VOLUME (GAL)	INLET SIZE (IN)	MAX. WORKING PRESSURE (PSIG)	MANUFACTURER	MODEL	NOTES
PT-01	119 GPM	1.25	150	AMTROL	WX	

UNIT HEATER SCHEDULE

MARK	SERVICE	SUPPLY CFM	ELECTRICAL POWER V	PH	HZ	CAPACITY (KW)	MANUFACTURER	MODEL	NOTES
UH-S-01	SHOP OFFICE FIRE RISER	400	480	3	60	3.0	MARKEL	5100	
UH-W-01	WAREHOUSE FIRE RISER	400	480	3	60	3.0	MARKEL	5100	

RADIANT HEATER SCHEDULE

MARK	SERVICE	HEATING CAPACITY(MBH)	ROOM SETPOINT (°F)	ELECTRICAL POWER V	PH	HZ	CAPACITY (KW)	MANUFACTURER	MODEL	NOTES
RH-S-01	SEDAN/SUV MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-02	SEDAN/SUV MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-03	MEDIUM MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-04	MEDIUM MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-05	HEAVY MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-06	HEAVY MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-07	SEDAN/SUV MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-08	SEDAN/SUV MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-09	MEDIUM MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-10	MEDIUM MAINTENANCE BAYBAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-11	HEAVY MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	
RH-S-12	HEAVY MAINTENANCE BAY	20.0	65	480	1	60	6.0	MARKEL	OCH2	

NOTES:
1. HEATER TO BE MOUNTED AT A MINIMUM OF 6 3/4" FROM CEILING AND 30" FROM VERTICAL SURFACE

VFD SCHEDULE

MARK	SERVICE	MOTOR HP	POWER V	PH	HZ	MANUFACTURER	MODEL	NOTES
VFD-SP-01	SP-01	0.5	460	3	60	YASKAWA	CIMR-PW4V0002	1

PUMP SCHEDULE

MARK	SERVICE	FLOW (GPM)	HEAD (FT H20)	MIN EFF %	TYPE	ELECTRICAL HP	POWER V	PH	HZ	RPM	CONTROLLER	MANUFACTURER	MODEL	NOTES
SP-01	GEO WELL	88	203.4	54.9	SUBMERSIBLE	7.5	208	3	60	3494	VFD	GRUNDFOS	SPE	

FAN SCHEDULE

MARK	SERVICE	CEILING HEIGHT AFF	Diameter	RPM	ELECTRICAL MOTOR HP	POWER V	PH	HZ	MOTOR CONTROL	MANUFACTURER	MODEL	NOTES
HVLS-S-01	SEDAN/SUV MAINTENANCE BAY	21' - 0"	10' - 0"	137	1.05	208	1	60	VFD	MACROAIR	MA	
HVLS-S-02	MEDIUM MAINTENANCE BAY	28' - 4"	10' - 0"	137	1.05	208	1	60	VFD	MACROAIR	MA	
HVLS-S-03	HEAVY MAINTENANCE BAY	36' - 0"	10' - 0"	137	1.05	208	1	60	VFD	MACROAIR	MA	

FAN SCHEDULE

MARK	SERVICE	EXHAUST AIRFLOW	SP	RPM	ELECTRICAL MOTOR HP	POWER V	P	HZ	MOTOR CONTROL	MANUFACTURER	MODEL	NOTES
EF-O-01	OFFICE RESTROOM EXHAUST	400	0.08	777	0.17	208	3	60	VFD	GREENHECK	CUE	
EF-O-02	OFFICE BUILDING EXHAUST	390	0.08	661	0.25	208	3	60	VFD	GREENHECK	CUE	
EF-S-01	SHOP OFFICE RESTROOM EXHAUST	70	0	850	0.02	120	1	60	VFD	GREENHECK	SP	
EF-S-02	SEDAN/SUV MAINTENANCE BAY	4,300	0.15	1,516	2	208	3	60	VFD	GREENHECK	SQ	
EF-S-03	MEDIUM MAINTENANCE BAY	4,540	0.15	1,594	2	208	3	60	VFD	GREENHECK	SQ	
EF-S-04	HEAVY MAINTENANCE BAY	4,460	0.15	1,567	2	208	3	60	VFD	GREENHECK	SQ	
EF-W-01	WAREHOUSE - PESTICIDE STORAGE	1460	0.01	1,300	0.50	208	3	60	VFD	GREENHECK	CSP	
SF-S-01	O.A. SHOP OFFICE BUILDING	150	0.05	1,725	0.07	120	1	60	VFD	GREENHECK	SG	
SF-S-02	SEDAN/SUV MAINTENANCE BAY	4,300	0.15	1,516	2	208	3	60	VFD	GREENHECK	SQ	
SF-S-03	MEDIUM MAINTENANCE BAY	4,540	0.15	1,594	2	208	3	60	VFD	GREENHECK	SQ	
SF-S-04	HEAVY MAINTENANCE BAY	4,460	0.15	1,567	2	208	3	60	VFD	GREENHECK	SQ	

AIR COOLED CONDENSING UNIT SCHEDULE

MARK	COOLING CAPACITY (MBH)	HEATING CAPACITY (MBH)	EAT DB (°F)	ELECTRICAL V	PH	HZ	MODULE 1 MCA (A)	MOP (A)	REFRIGERANT	MIN. EER	MIN. IEER	MIN. COP	MANUFACTURER	MODEL	NOTES
CU-W-01	93	89	100	230	3	60	36.3	45.0	R410A	14.3	27.3	4.21	DAIKIN	RXYQ	

GEOTHERMAL WATER COOLED CONDENSING UNIT SCHEDULE

MARK	COOLING CAPACITY (MBH)	HEATING CAPACITY (MBH)	EWT °F	LWT °F	GPM	ELECTRICAL V	PH	HZ	MODULE 1 MCA (A)	MOP (A)	MIN. EER	MIN. IEER	MIN. COP	REFRIGERANT	MANUFACTURER	MODEL	NOTES
CU-O-01	140	144	88	102	25.4	460	3	60	20.2	25.0	12.6	21.9	5.33	R410A	DAIKIN	RWEQ	

DEDICATED OUTSIDE AIR UNIT SCHEDULE

MARK	SERVICE	SUPPLY AIRFLOW	ESP	ELECTRICAL MCA	MOP	POWER V	PH	HZ	MOTOR CONTROL	TOTAL CAPACITY (BTUH)	SENSIBLE CAPACITY (BTUH)	DX COIL - COOLING MODE EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	DX COIL - HEATING MODE TOTAL CAPACITY (BTUH)	EAT (°F)	LAT (°F)	FILTER SECTION PRE FILTER	FINAL FILTER	MANUFACTURER	MODEL	NOTES
DOAU-O-01	O.A. SHOP OFFICE BUILDING	1,290	1	20.2	25	460	3	60	VFD	127,750	57,390	96	81.1	55	54	69,985	30	80	MERV 8	MERV 14	DAIKIN	D4H	1, 2
OAU-W-01	PESTICIDE STORAGE	1,235	0.5	3.8	15	230	1	60	VFD	92,800	48,655	91.3	79.1	55	54	67,100	30	80	MERV 8	MERV 14	DAIKIN	FXMQ	

NOTE:
1. PROVIDE TWO EXPANSION VALVES WITHIN UNIT.
2. ROOF MOUNTED UNIT. AMBIENT CONDITIONS MODIFIED TO ACCOUNT FOR ROOF LOAD.

WATER SOURCE HEAT PUMP SCHEDULE

MARK	SERVICE	FAN DATA SUPPLY AIRFLOW (CFM)	OA AIRFLOW (CFM)	ESP	ELECTRICAL HP	POWER V	PH	HZ	MOTOR CONTROL	GEOTHERMAL WATER COOLING COIL TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	MIN WATER FLOW (GPM)	COMPRESSOR EWT (°F)	LWT (°F)	EER	GEOTHERMAL HEATING TOTAL CAPACITY (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	COP	FILTER MERV RATING	TYPE	MANUFACTURER	MODEL	NOTES
WSHP-O-01	O25 - LOCKERS	890	100	0.20	0.33	208	1	60	VFD	30.4	23.4	77.0	64.5	55.0	54.0	4.3	88	102	16.1	16.7	70.0	85.0	67	55	5.3	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-02	O28 - CORRIDOR	640	100	0.30	0.33	208	1	60	VFD	21.9	16.8	77.0	64.5	55.0	54.0	3.1	88	102	11.8	12.0	70.0	85.0	67	55	4.4	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-03	O33 - CONFERENCE	290	60	0.05	0.125	208	1	60	VFD	9.9	7.6	77.0	64.5	55.0	54.0	1.4	88	102	11.0	5.4	70.0	85.0	67	55	4.4	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-04	O32 - OFFICE	500	60	0.07	0.33	208	1	60	VFD	17.1	13.1	77.0	64.5	55.0	54.0	2.4	88	102	12.7	9.4	70.0	85.0	67	55	4.6	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-05	O18 - PAVING	370	100	0.06	0.125	208	1	60	VFD	12.6	9.7	77.0	64.5	55.0	54.0	1.8	88	102	11.5	6.9	70.0	85.0	67	55	4.1	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-06	O16 - COLLABORATION	885	150	0.13	0.33	208	1	60	VFD	30.2	23.2	77.0	64.5	55.0	54.0	4.3	88	102	12.9	16.6	70.0	85.0	67	55	4.5	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-07	O20 - EAST DRAINAGE	1,055	190	0.25	0.50	208	1	60	VFD	36.0	27.7	77.0	64.5	55.0	54.0	5.1	88	102	12.5	19.7	70.0	85.0	67	55	4.4	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-08	O1 - LOBBY	520	90	0.13	0.33	208	1	60	VFD	17.8	13.7	77.0	64.5	55.0	54.0	2.5	88	102	12.1	9.7	70.0	85.0	67	55	4.5	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-09	O8 - CORRIDOR	540	60	0.21	0.33	208	1	60	VFD	18.4	14.2	77.0	64.5	55.0	54.0	2.6	88	102	12.2	10.1	70.0	8.0	67	55	4.5	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-10	O15 - IT ROOM	245	0	0.03	0.125	208	1	60	VFD	8.4	6.4	77.0	64.5	55.0	54.0	1.2	88	102	10.5	4.6	70.0	85.0	67	55	4.2	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-11	O2 - PERMITS	755	80	0.17	0.33	208	1	60	VFD	25.8	19.8	77.0	64.5	55.0	54.0	3.7	88	102	13.2	14.1	70.0	85.0	67	55	4.4	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-12	O10 - FLEET MANAGER	475	90	0.20	0.33	208	1	60	VFD	16.2	12.5	77.0	64.5	55.0	54.0	2.3	88	102	12.1	8.9	70.0	85.0	67	55	4.5	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-O-13	O9 - SIGN ROOM	1,490	100	0.20	0.75	208	1	60	VFD	50.9	39.1	77.0	64.5	55.0	54.0	7.3	88	102	14.7	27.9	70.0	85.0	67	55	4.7	MERV 8	PLEATED	DAIKIN	GSH048	
WSHP-O-14	O7 - FINANCE & ADMIN	465	110	0.15	0.33	208	1	60	VFD	15.9	12.2	77.0	64.5	55.0	54.0	2.3	88	102	12.7	8.7	70.0	85.0	67	55	4.6	MERV 8	PLEATED	DAIKIN	WGSH	
WSHP-S-01	M4 - IT/STORAGE	705	40	0.12	0.33	208	1	60	VFD	24.1	18.8	77.3	64.5	55.0	54.0	3.4	88	102	13.1	13.2	70.0	85.0	67	55	4.3	MERV 8	PLEATED	DAIKIN	WCCW	
WSHP-S-02	M6 - BREAK ROOM	510	50	0.05	0.33	208	1	60	VFD	18.7	14	78.0	65.1	55.0	54.0	2.7	88	102	12.1	9.5	70.0	85.0	67	55	4.5	MERV 8	PLEATED	DAIKIN	WCCW	
WSHP-S-03	M1 - OPEN AREA	240	20	0.05	0.125	208	1	60	VFD	8.8	6.6	78.1	65.1	55.0	54.0	1.3	88	102	10.47	4.5	70.0	85.0	67	55	4.2	MERV 8	PLEATED	DAIKIN	WCCW	
WSHP-S-04	M2 - FLEET SHOP ADMIN	270	20	0.06	0.125	208	1	60	VFD	9.2	7.2	77.3	64.5	55.0	54.0	1.3	88	102	10.5	5.1	70.0	85.0	67	55	4.2	MERV 8	PLEATED	DAIKIN	WCCW	
WSHP-S-05	M3 - FLEET SHOP MANAGER	305	20	0.04	0.125	208	1	60	VFD	11.2	8.4	78.1	65.1	55.0	54.0	1.6	88	102	11.2	5.7	70.0	85.0	67	55	3.9	MERV 8	PLEATED	DAIKIN	WCCW	
WSHP-W-01	W5 - PARTS STORAGE	940	195	0.5	0.33	208	1	60	VFD	46.5	25.6	82.8	72.1	60.0	59.0	6.6	88	102	13.3	15.0	72.2	85.0	67	55	4.6	MERV 8	PLEATED	DAIKIN	WCC	

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Page Southerland Page, Inc.
Firm Registration No.15868

STATE OF TEXAS
CHRISTY N. TROUTMAN
124281
06/26/2020

MECHANICAL - SCHEDULES

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AB	CNT
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUN 2020

M-601
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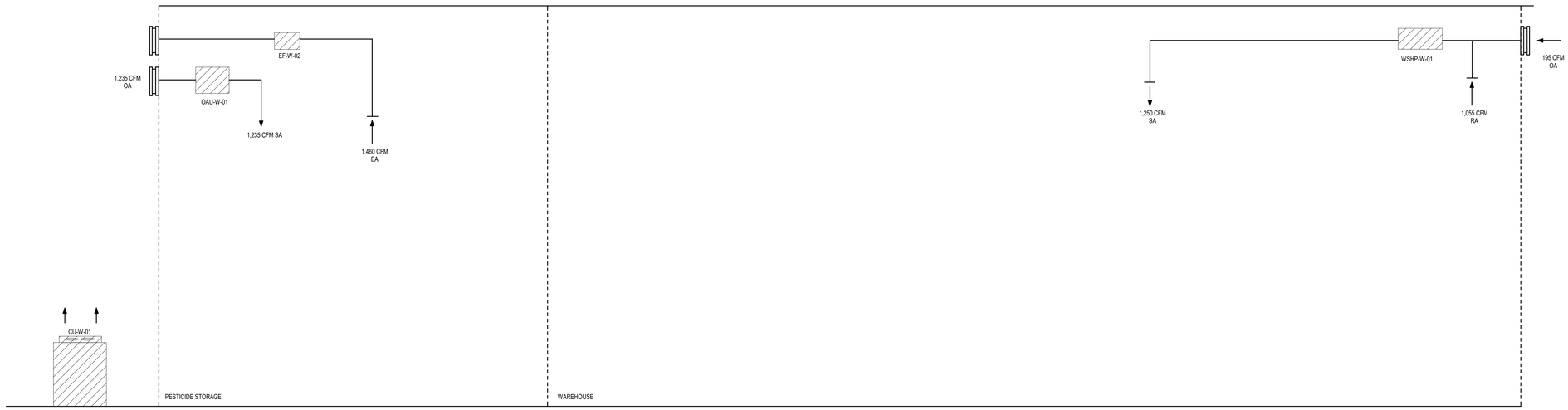
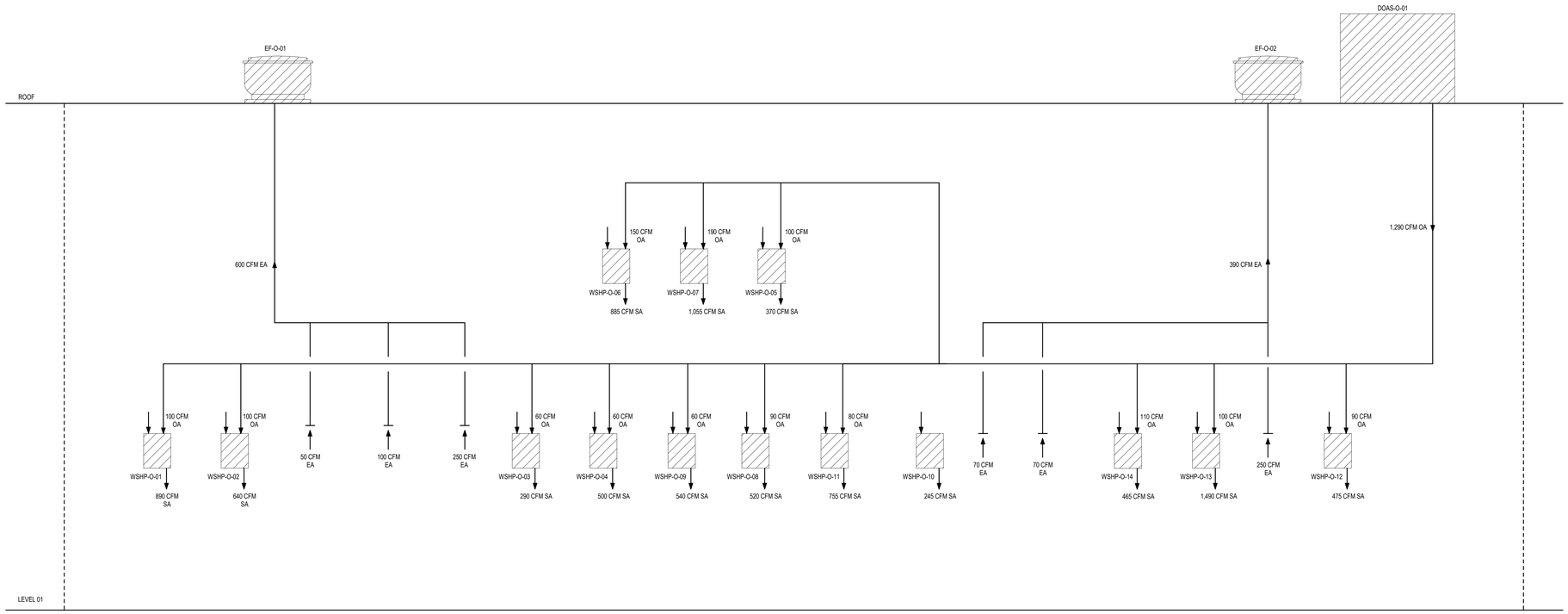


2 MECHANICAL - AIRFLOW DIAGRAM - WAREHOUSE

SCALE: NTS



1 MECHANICAL - AIRFLOW DIAGRAM - OFFICE

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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Firm Registration No.15868

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124781
06/26/2020

MECHANICAL - AIRFLOW DIAGRAM

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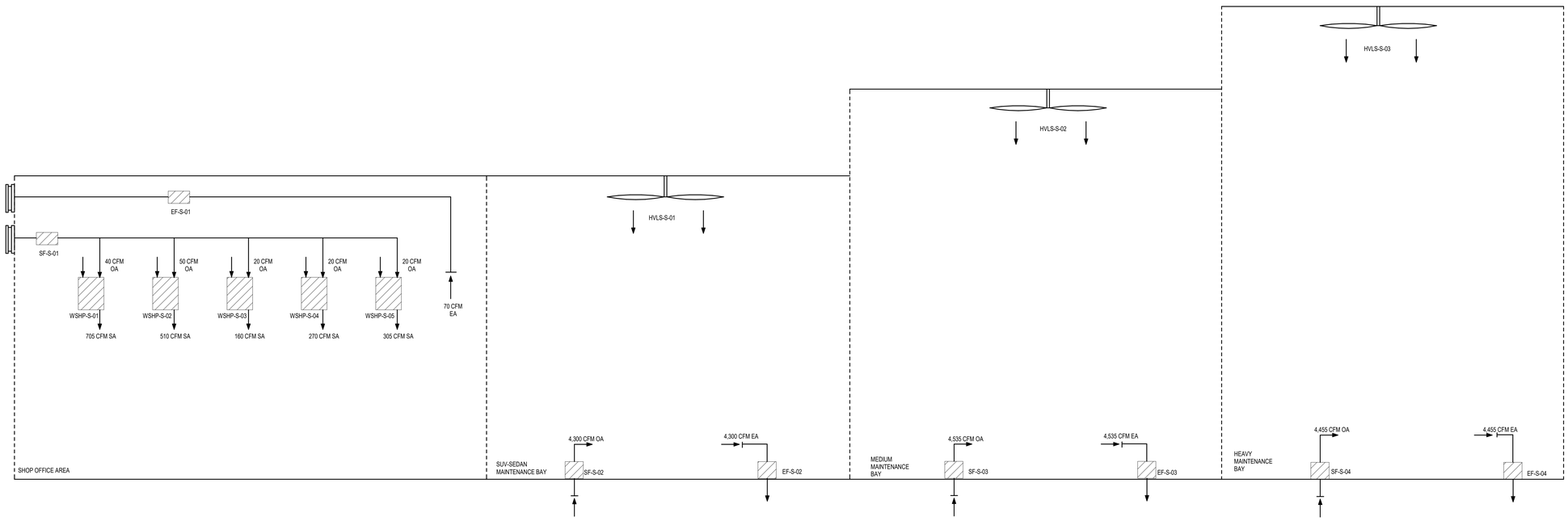
M-611
SHEET NUMBER



1 **MECHANICAL - AIRFLOW DIAGRAM - MAINTENANCE SHOP**
SCALE: NTS

FILE NAME: C:\Users\initialaec\Documents\418198M-GC
USER NAME: ROAD_BRIDGE-R19-CENTRAL_ctroutman.rvt
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STATE OF TEXAS
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124741
06/26/2020

MECHANICAL - AIRFLOW DIAGRAM

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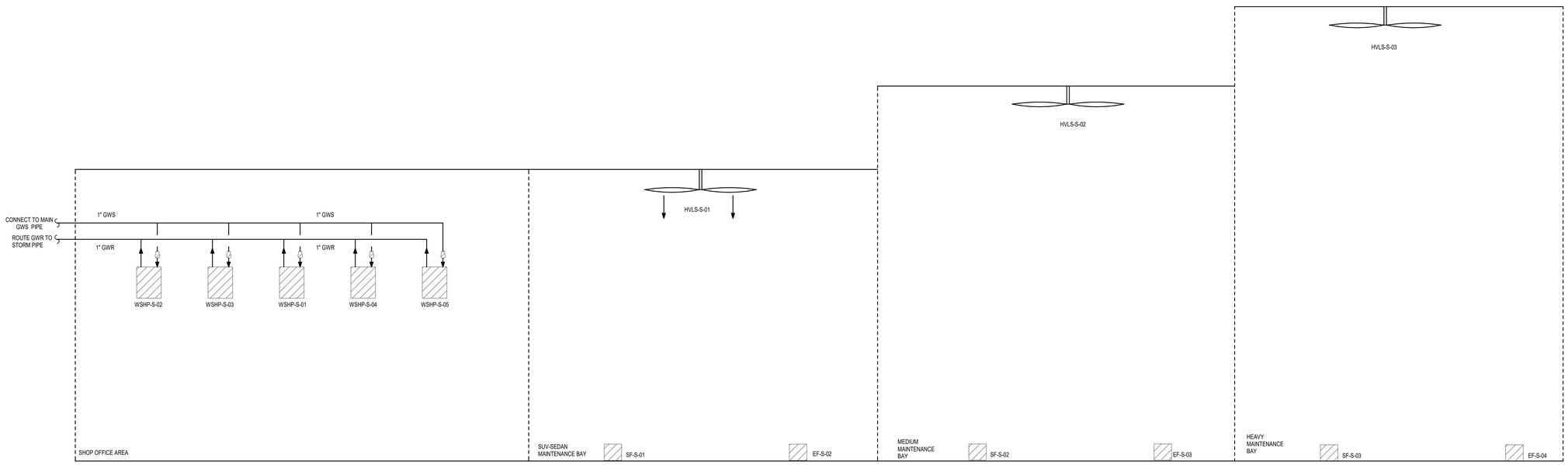
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUN 2020

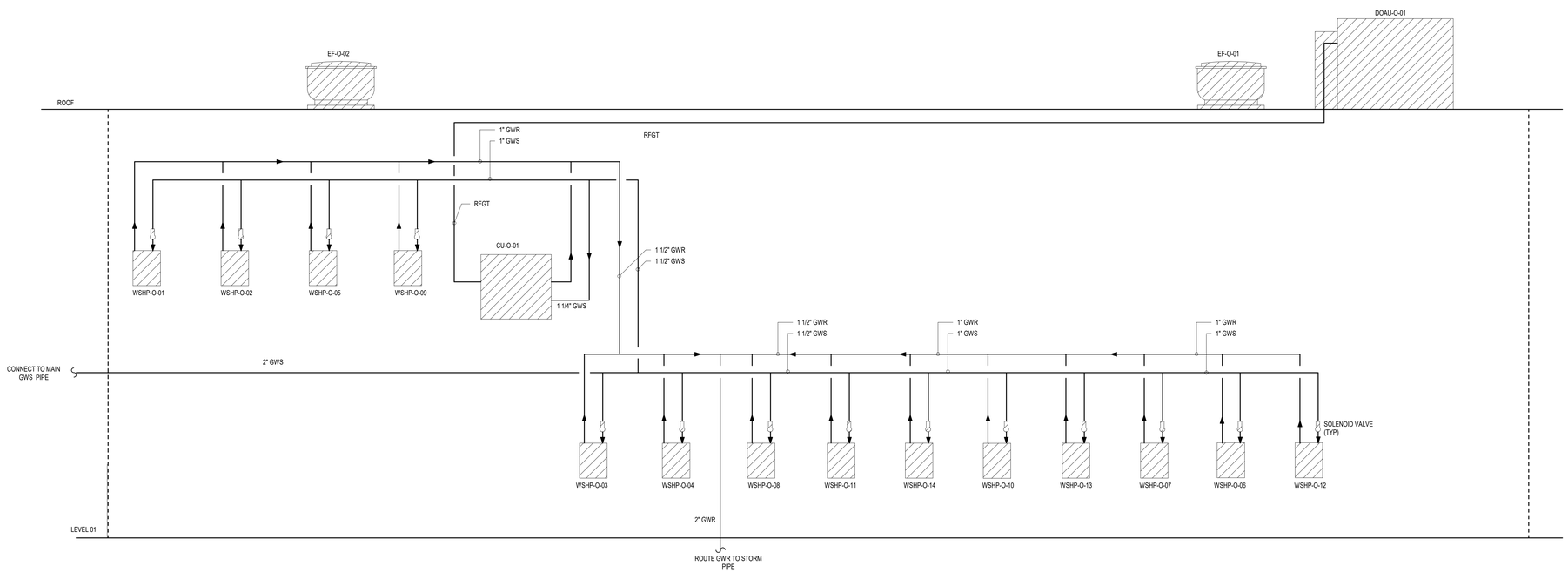
M-612
SHEET NUMBER



MECHANICAL - PIPING DIAGRAM - MAINTENANCE SHOP

2

SCALE: NTS



MECHANICAL - PIPING DIAGRAM - OFFICE

1

SCALE: NTS

FILE NAME: C:\Users\initialaec\Documents\418198M-GC
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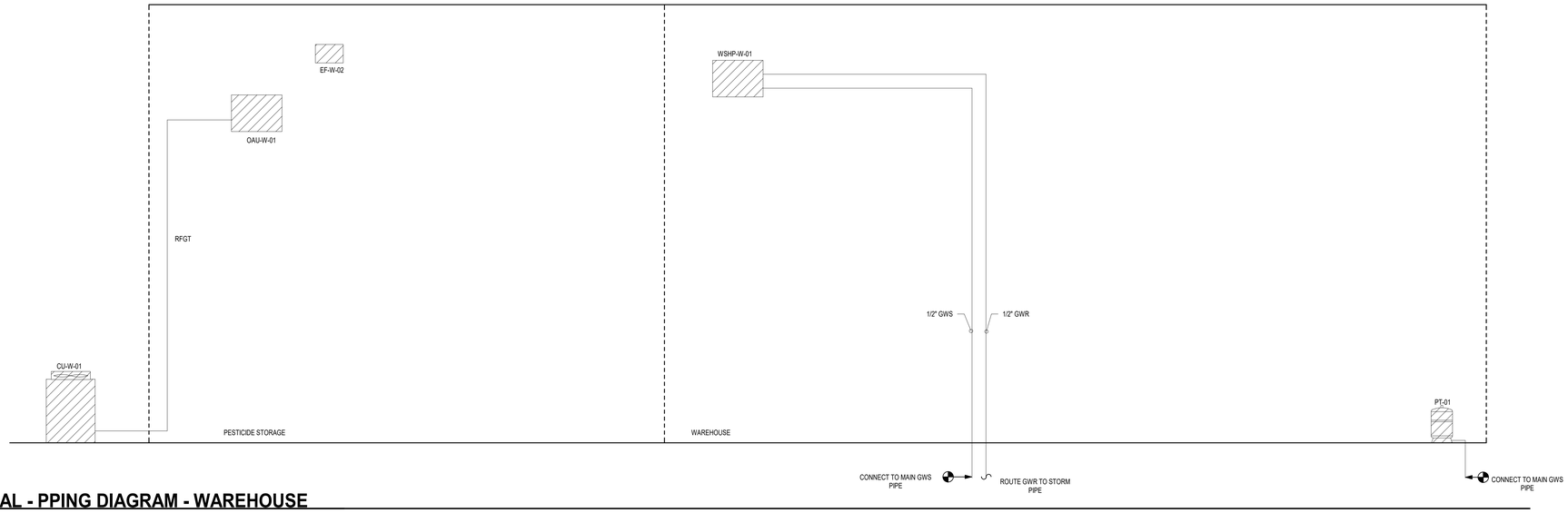
MECHANICAL - PIPING DIAGRAM

DRAWN BY: AB	CHECKED BY: CNT
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUN 2020

M-621

SHEET NUMBER



1 **MECHANICAL - PPING DIAGRAM - WAREHOUSE**
SCALE: NTS

FILE NAME: C:\Users\initialaec\Documents\418198M-GC
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MECHANICAL - PIPING DIAGRAM

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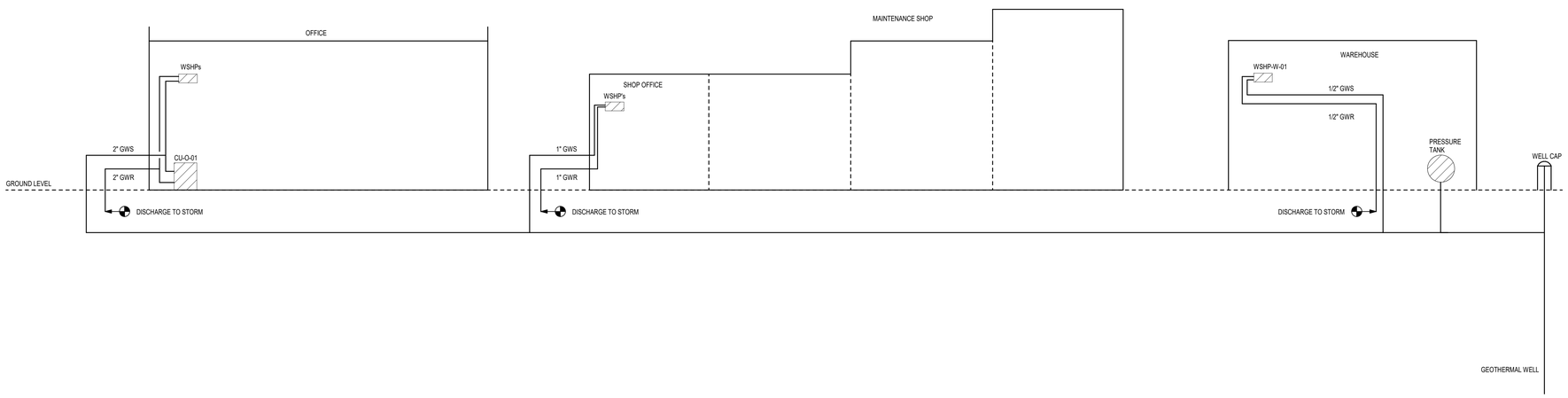
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUN 2020

M-622
SHEET NUMBER



1 **MECHANICAL - WATER WELL PIPING DIAGRAM**
SCALE: NTS

FILE NAME: C:\Users\initialaec\Documents\418198M-GC
USER NAME: ROAD_BRIDGE:R19-CENTRAL_ctroutman.rvt
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MECHANICAL - GEOTHERMAL WATER DIAGRAM

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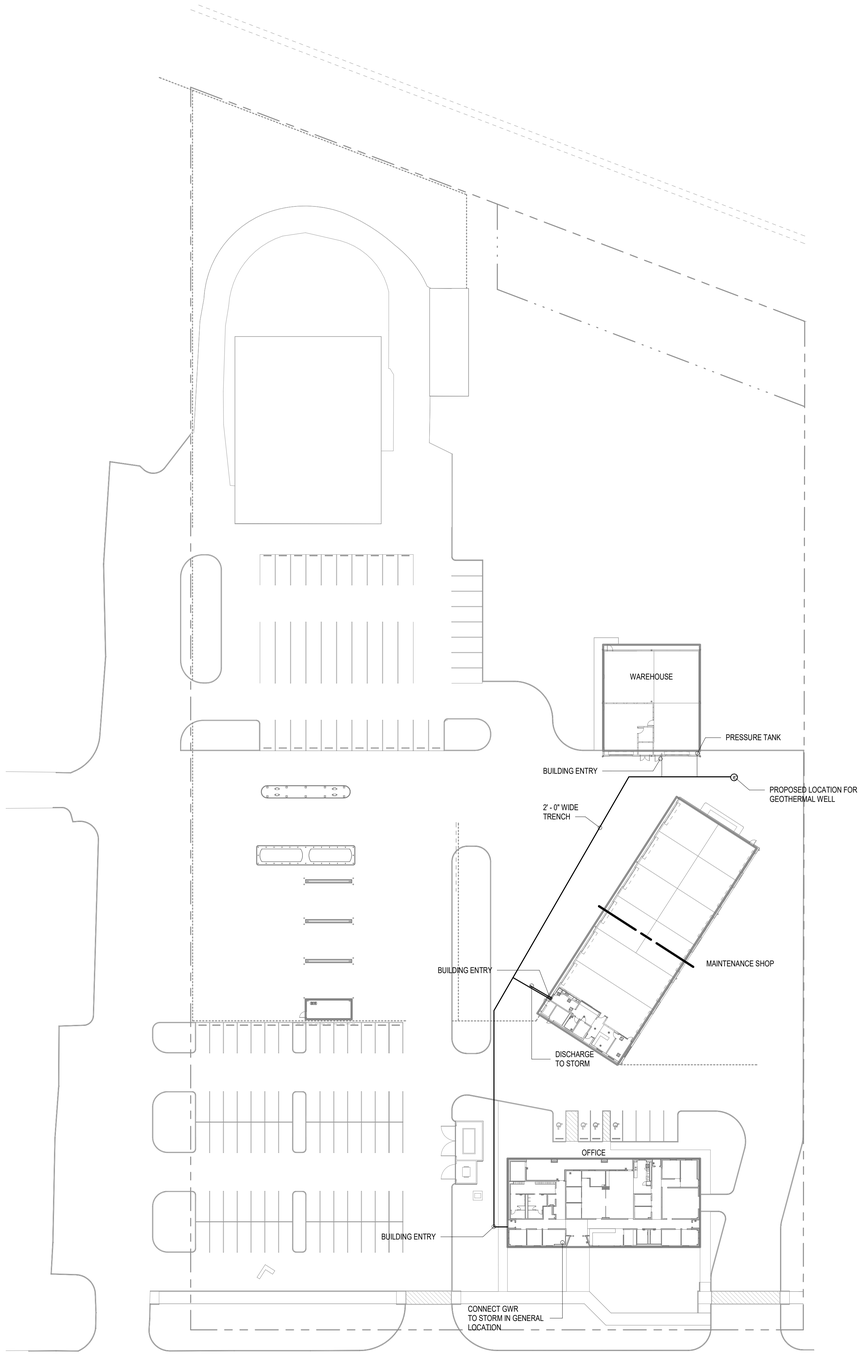
M-623
SHEET NUMBER

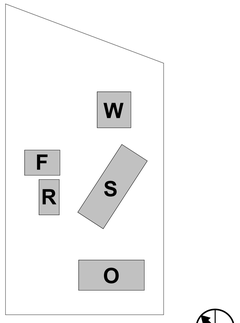


1 **MECHANICAL - SITE PLAN**
SCALE: 1" = 40'-0"

GENERAL NOTES

1 REFER TO CIVIL SET FOR STORM PIPE LOCATION.

KEY PLAN (NOT TO SCALE)



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MECHANICAL - GEOTHERMAL SITE PLAN

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418198	GC_RGB
ORIGINAL ISSUE	DATE
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MS-101S
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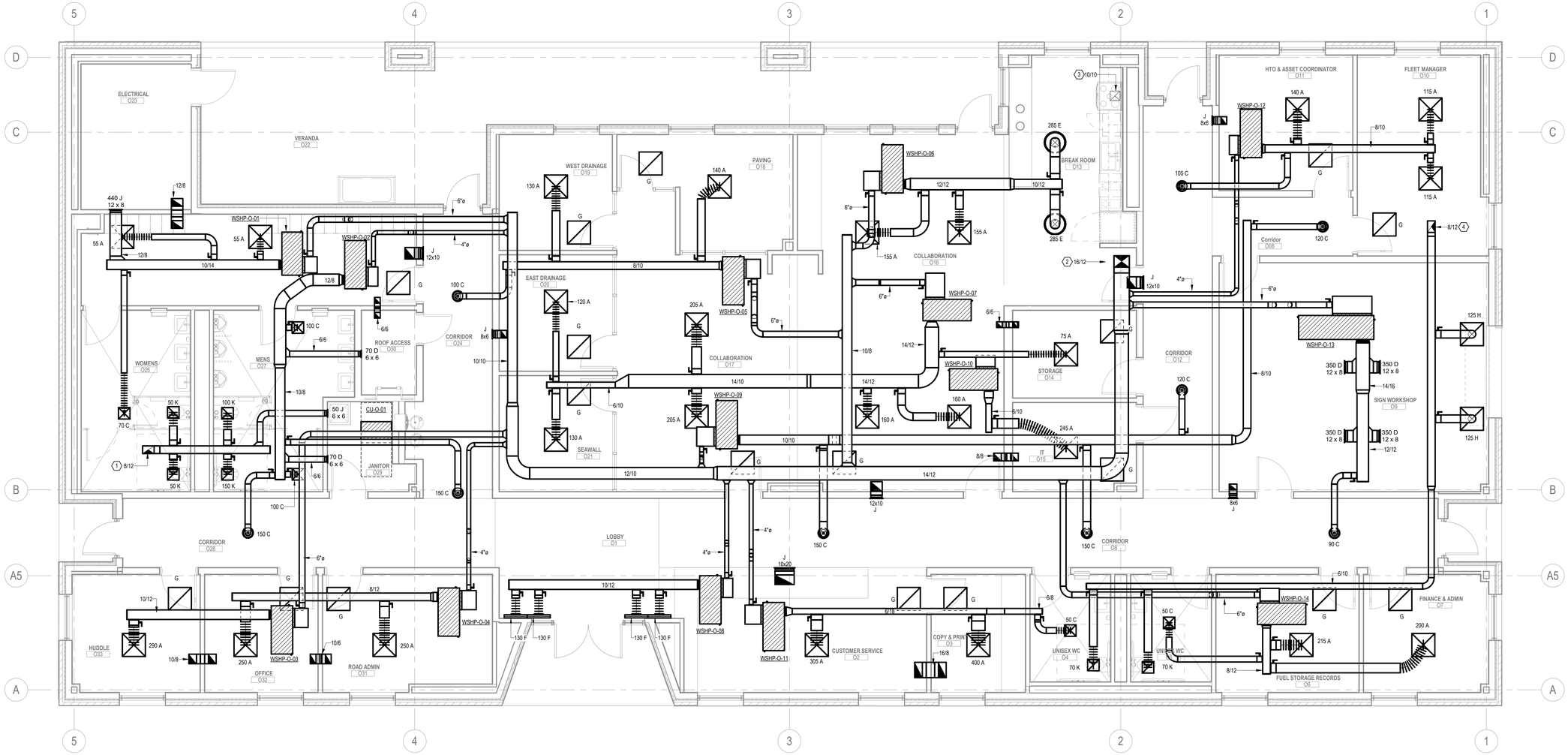
USER NAME:
DATE STAMP: 6/26/2020 2:58:56 PM

KEYED NOTES

NUMBER	DESCRIPTION
1	ROUTE DUCT UP TO EXHAUST FAN EF-O-01. REFER TO MH-102-O FOR DUCT CONTINUATION.
2	ROUTE SUPPLY DUCT DOWN FROM DOAU-01 MOUNTED ON ROOF. RE: MH-102-O.
3	CONNECT EXHAUST DUCT TO HOOD VENT AND ROUTE UP TO ROOF. REFER TO ARCHITECTURAL SET FOR HOOD VENT INFORMATION.
4	ROUTE DUCT UP TO EXHAUST FAN EF-O-02 MOUNTED ON ROOF. RE: MH-102-O.

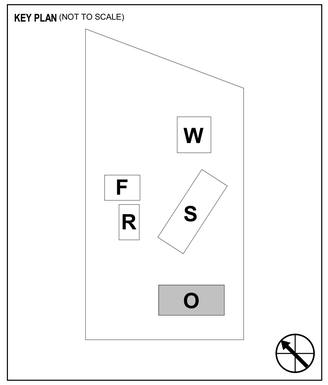
GENERAL NOTES

1	EXPOSED DUCTWORK TO BE INTERNALLY LINED.
2	EXPOSED DUCTWORK TO BE PAINTED BLACK.



1 **HVAC FLOOR PLAN - OFFICE - LEVEL 01**
SCALE: 1/4" = 1'-0"

KEY PLAN (NOT TO SCALE)



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MECHANICAL HVAC PLAN - OFFICE - LEVEL 01

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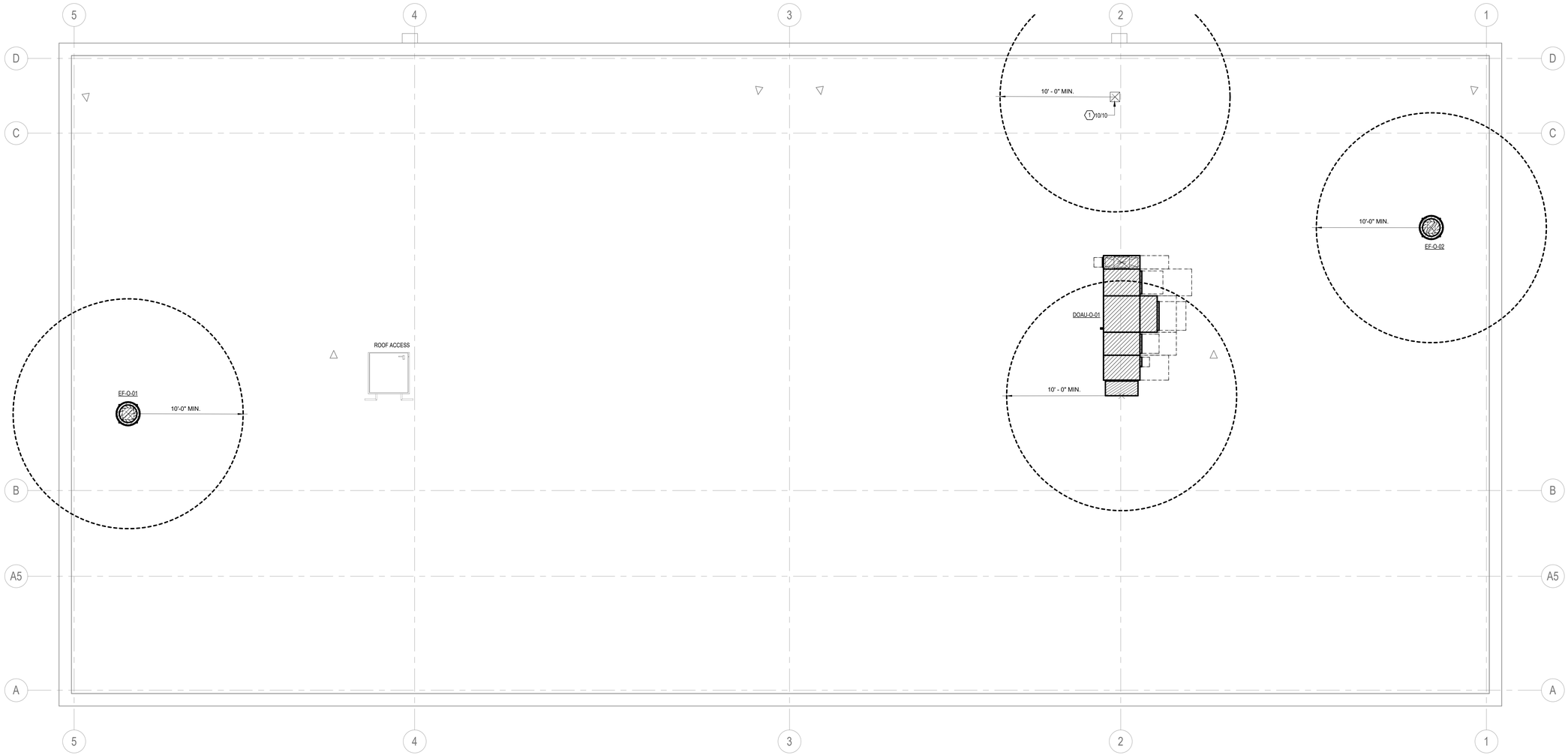
DATE STAMP: 6/26/2020 2:58:43 PM

KEYED NOTES

NUMBER	DESCRIPTION
1	PROVIDE MUSHROOM COVER FOR EXHAUST DUCT.

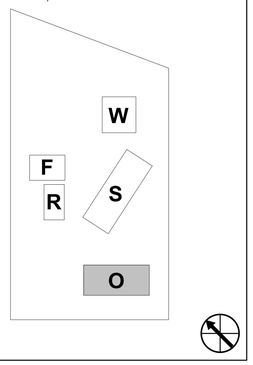
GENERAL NOTES

1	OUTSIDE AIR INTAKE TO BE AT A MINIMUM OF 10'-0" FROM EXHAUST DISCHARGE



1 **HVAC FLOOR PLAN - OFFICE - ROOF LEVEL**
SCALE: 1/4" = 1'-0"

KEY PLAN (NOT TO SCALE)



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MECHANICAL HVAC ROOF PLAN - OFFICE

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ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUN 2020

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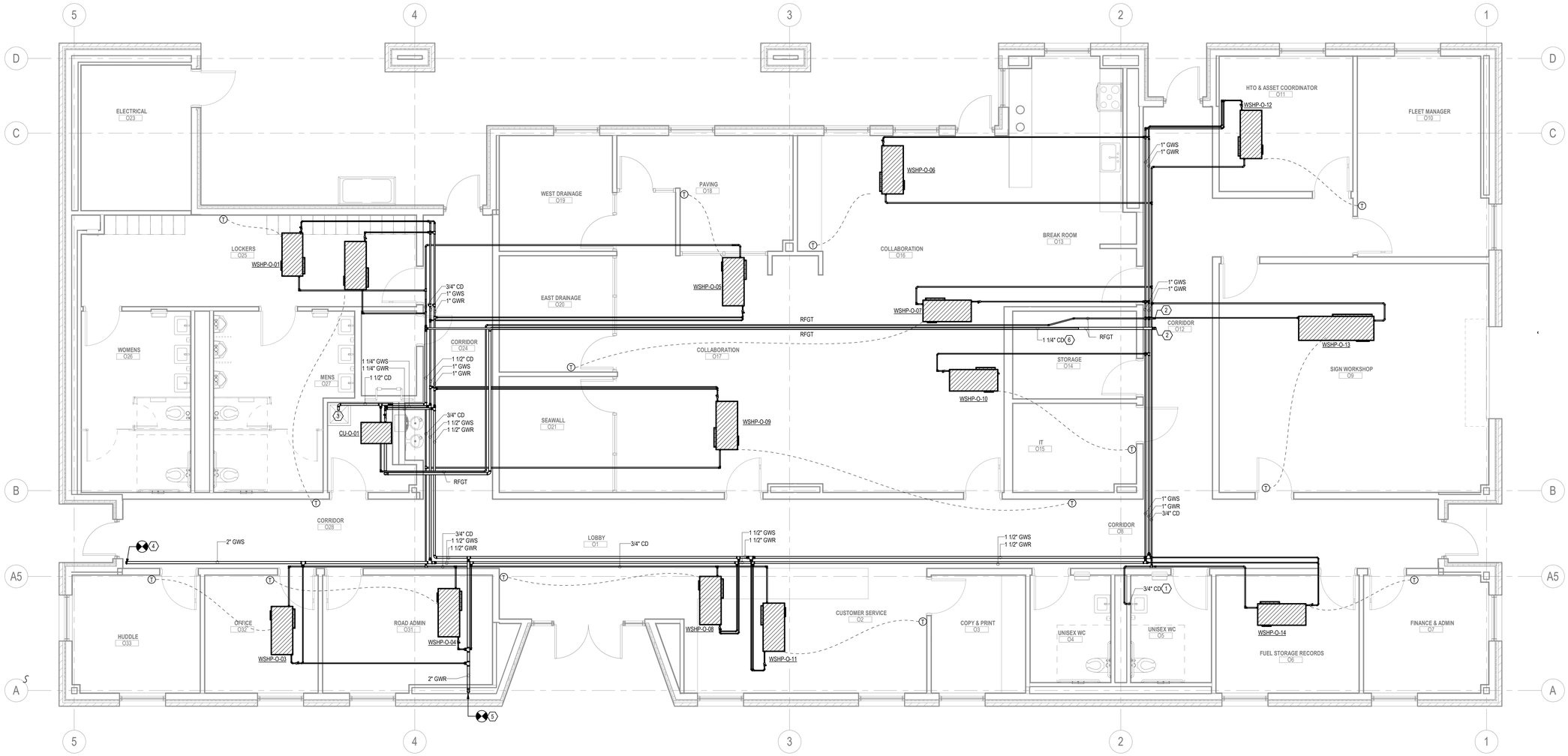
KEYED NOTES

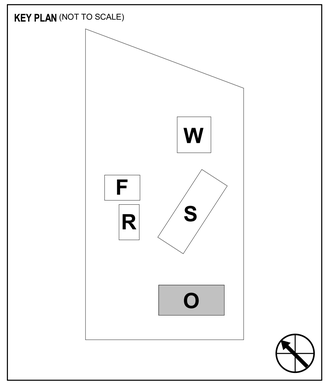
NUMBER	DESCRIPTION
1	ROUTE PRIMARY CONDENSATE PIPE DOWN TO SINK DRAIN TRAP. REFER TO PLUMBING SET.
2	ROUTE REFRIGERANT PIPING DOWN FROM DEDICATED UNIT DOAU-01 ON ROOF. REFER TO MP-102-O FOR PIPING CONTINUATION.
3	ROUTE PRIMARY CONDENSATE PIPE DOWN TO MOP SINK. REFER TO PLUMBING SET .
4	CONNECT TO MAIN GEOTHERMAL WATER SUPPLY PIPE. REFER TO MS-101 FOR PIPE CONTINUATION.
5	ROUTE GEOTHERMAL WATER RETURN TO STORM PIPE AT THIS APPROXIMATE LOCATION. REFER TO CIVIL DRAWING SET FOR STORM PIPE LOCATION.
6	ROUTE PRIMARY CONDENSATE PIPE FROM DAOU-O-01 DOWN FROM ROOF LEVEL.



HVAC FLOOR PLAN - OFFICE - LEVEL 01 - PIPING PLAN

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

KEY PLAN (NOT TO SCALE)



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MECHANICAL PIPING PLAN - OFFICE

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MP-101O
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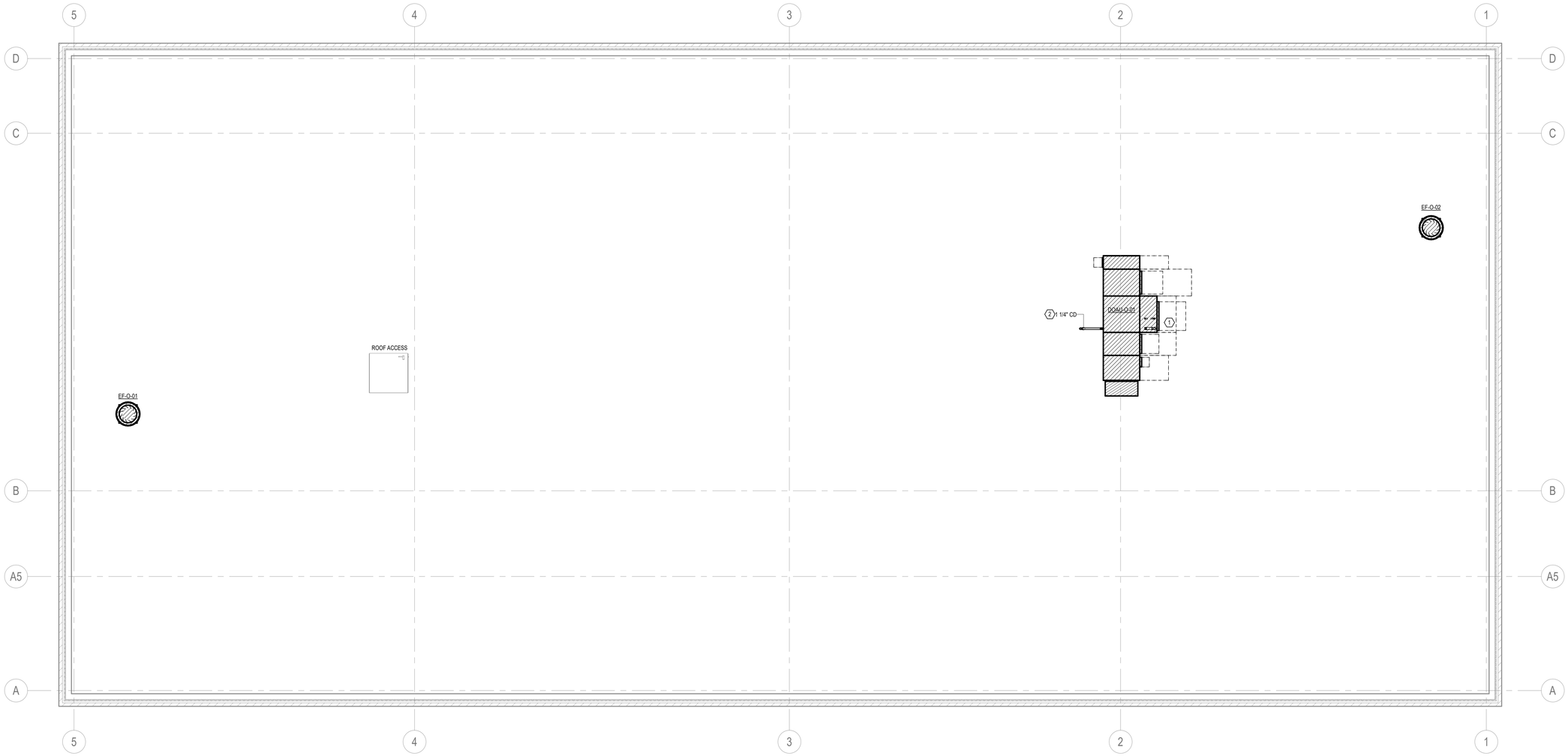
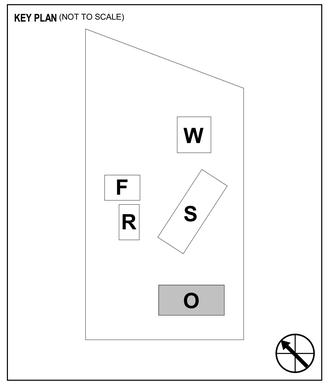
KEYED NOTES

NUMBER	DESCRIPTION
1	ROUTE REFRIGERANT PIPING DOWN TO CONDENSING UNIT CU-01. REFER TO MP-101-O FOR PIPING CONTINUATION.
2	ROUTE PRIMARY CONDENSATE PIPE DOWN TO LEVEL 01. REFER TO MP-101-O FOR PIPE CONTINUATION.





1 **HVAC FLOOR PLAN - OFFICE - ROOF LEVEL - PIPING PLAN**
SCALE: 1/4" = 1'-0"

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MECHANICAL PIPING ROOF PLAN - OFFICE

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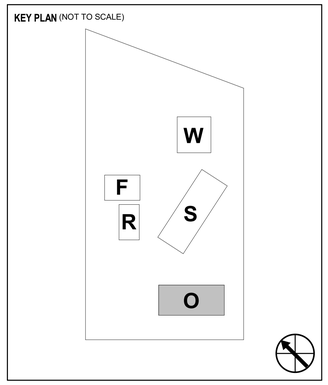
KEY PLAN (NOT TO SCALE)



1 MECHANICAL - ZONING PLAN - OFFICE

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

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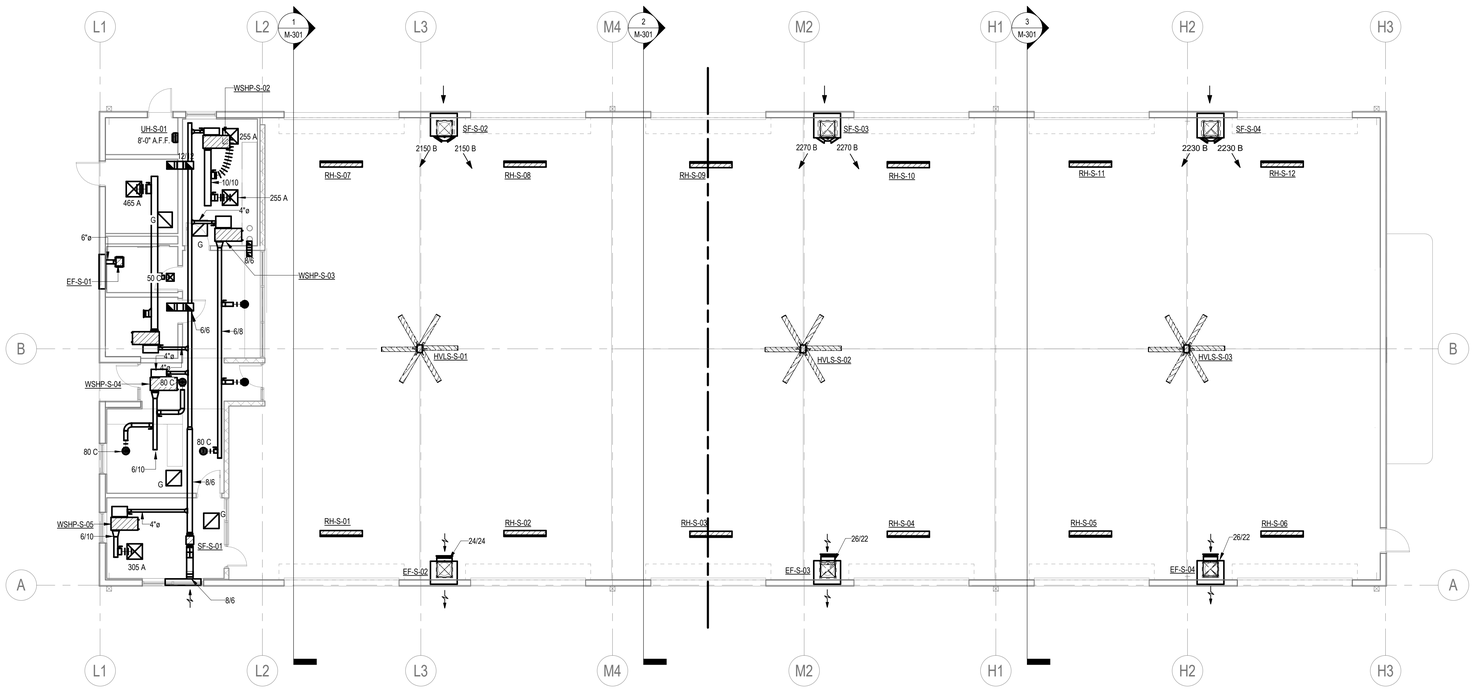
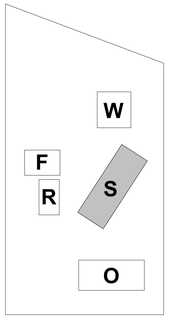


1 **HVAC FLOOR PLAN - SHOP - LEVEL 01**
SCALE: 1/8" = 1'-0"

KEY PLAN (NOT TO SCALE)



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STATE OF TEXAS
CHRISTY N. TROUTMAN
124781
06/26/2020

MECHANICAL HVAC PLAN - SHOP-LEVEL 01

DRAWN BY: AB	CHECKED BY: CNT
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_RGB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUN 2020

MH-101M
SHEET NUMBER

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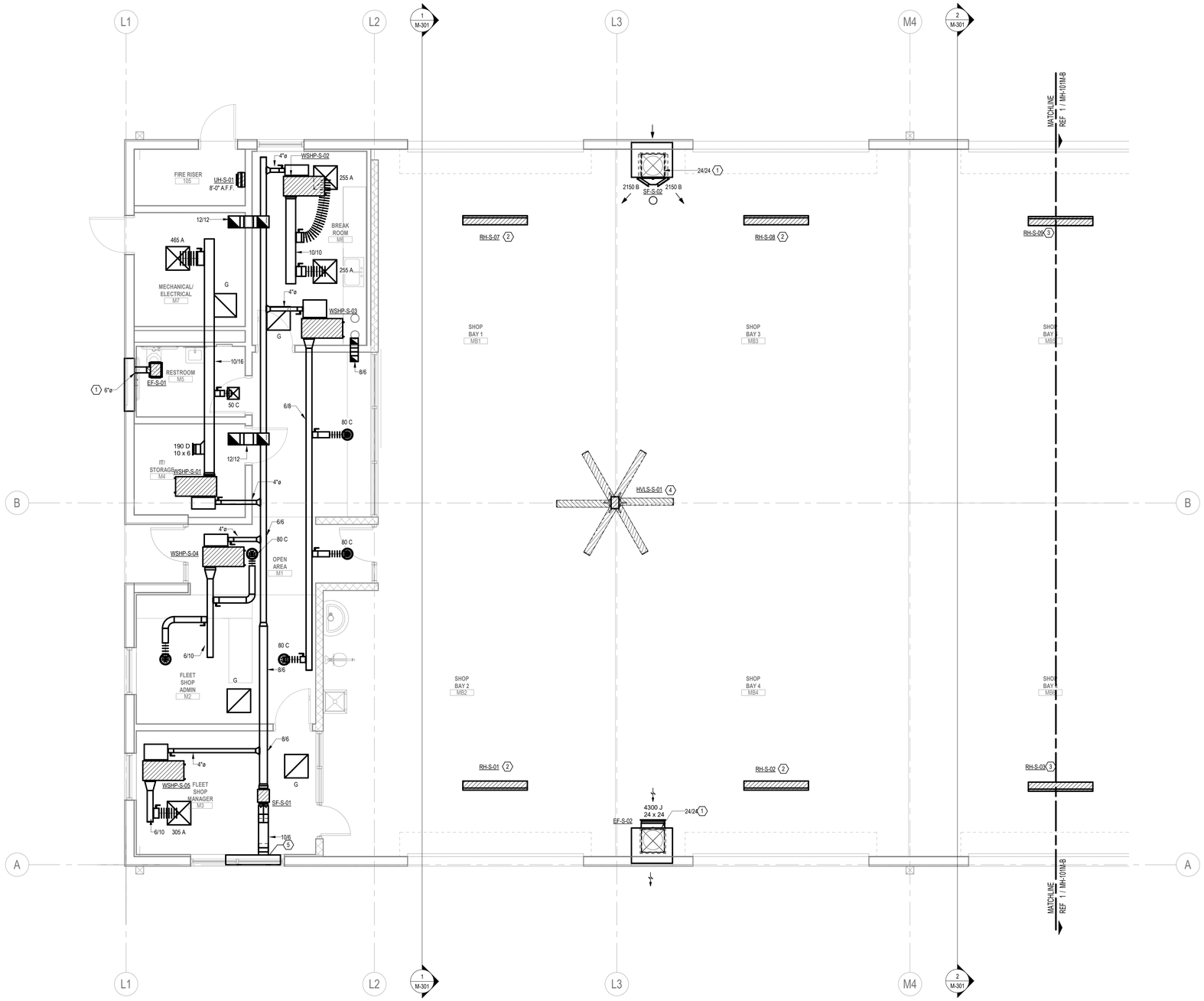


1 **HVAC FLOOR PLAN - SHOP - LEVEL 01 - AREA A**
SCALE: 1/4" = 1'-0"

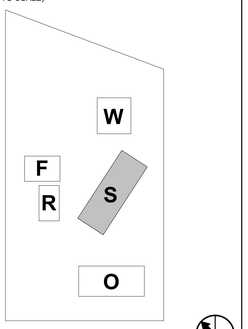
KEYED NOTES

NUMBER	DESCRIPTION
1	ROUTE DUCT TO BACK OF LOUVER WITH PLENUM. LOUVER TO BE A MINIMUM OF 10.75 SQ FT WITH 50% FREE AREA. REFER TO ARCHITECTURAL DOCUMENTS FOR LOUVER INFORMATION.
2	MOUNT RADIANT HEATER AT 14'-0" AFF 60 DEGREES FROM WALL. REFER TO M-301.
3	MOUNT RADIANT HEATER AT 18'-6" AFF, 60 DEGREES FROM WALL. REFER TO M-301 FOR SECTION VIEW.
4	MOUNT FAN TO STRUCTURE AT 21'-0" AFF .
5	ROUTE DUCT TO BACK OF LOUVER WITH PLENUM. LOUVER TO BE A MINIMUM OF 0.4 SQ FT WITH 50% FREE AREA. REFER TO ARCHITECTURAL DOCUMENTS FOR LOUVER INFORMATION.

GENERAL NOTES

1. EXPOSED DUCTWORK TO BE EXTERNALLY INSULATED.
2. EXPOSED DUCTWORK AND INSULATION TO BE PAINTED BLACK.

KEY PLAN (NOT TO SCALE)



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CHRISTY N. TROUTMAN
124781
06/26/2020

MECHANICAL HVAC PLAN - SHOP - LEVEL 01 - AREA A

DRAWN BY	CHECKED BY
AB	CNT
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_RGB
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUN 2020

MH-101M-A
SHEET NUMBER

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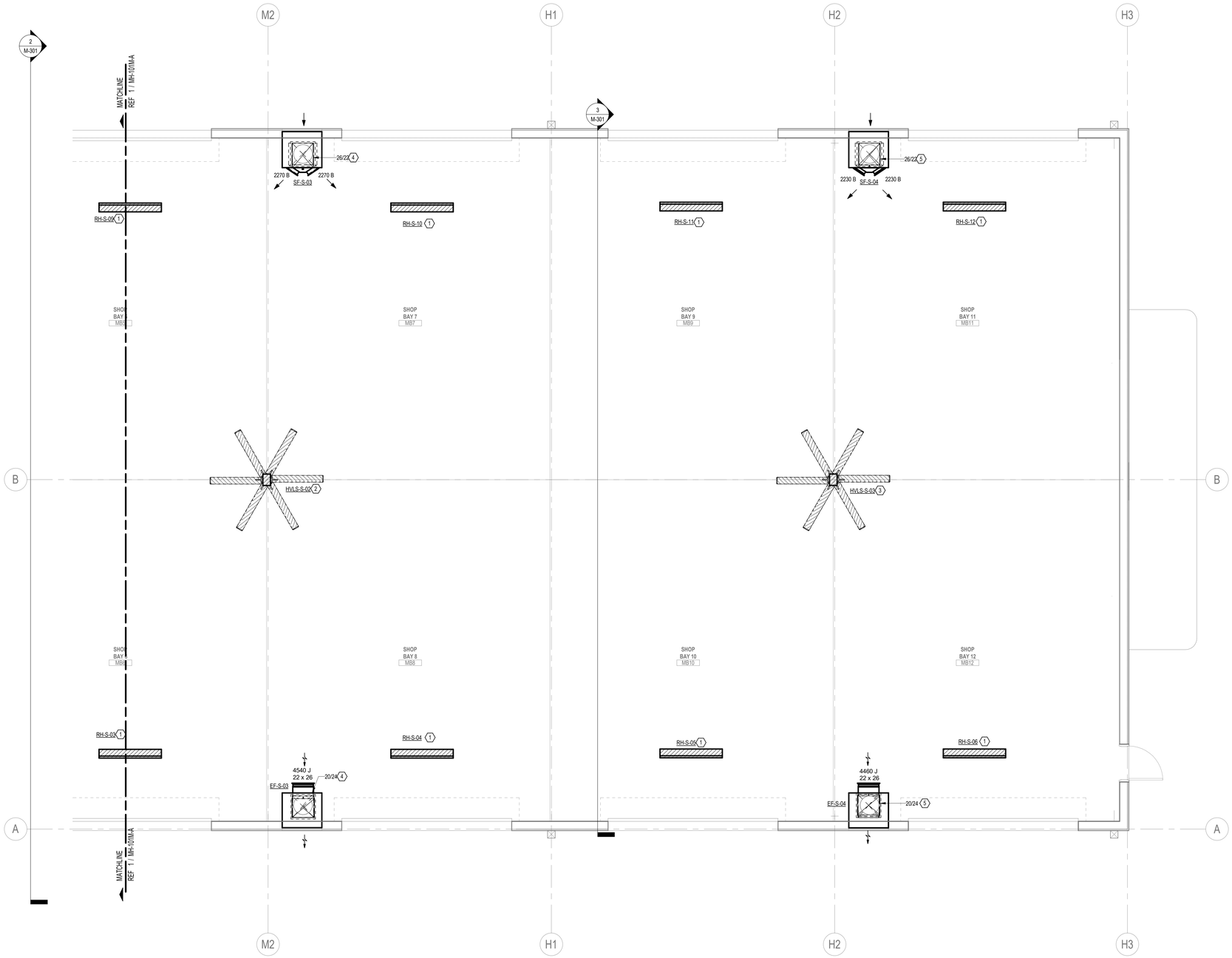


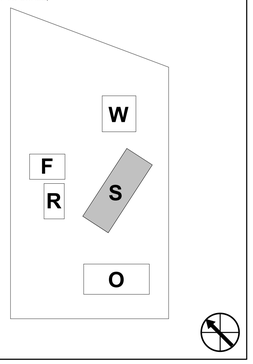
1 HVAC FLOOR PLAN - SHOP - LEVEL 01 - AREA B

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

KEYED NOTES 1

NUMBER	DESCRIPTION
1	MOUNT RADIANT HEATER AT 18'-6" AFF, 60 DEGREES FROM WALL. REFER TO M-301 FOR SECTION VIEW.
2	MOUNT FAN TO STRUCTURE AT 28'-4" AFF.
3	MOUNT FAN TO STRUCTURE AT 36'-0" AFF.
4	ROUTE DUCT TO BACK OF LOUVER WITH PLENUM. LOUVER TO BE A MINIMUM OF 11.35 SQ FT WITH 50% FREE AREA. REFER TO ARCHITECTURAL DOCUMENTS FOR LOUVER INFORMATION.
5	ROUTE DUCT TO BACK OF LOUVER WITH PLENUM. LOUVER TO BE A MINIMUM OF 11.15 SQ FT WITH 50% FREE AREA. REFER TO ARCHITECTURAL DOCUMENTS FOR LOUVER INFORMATION.

KEY PLAN (NOT TO SCALE)



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124781
06/26/2020

MECHANICAL HVAC PLAN - SHOP - LEVEL 01 - AREA B

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PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_RGB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUN 2020

MH-101M-B
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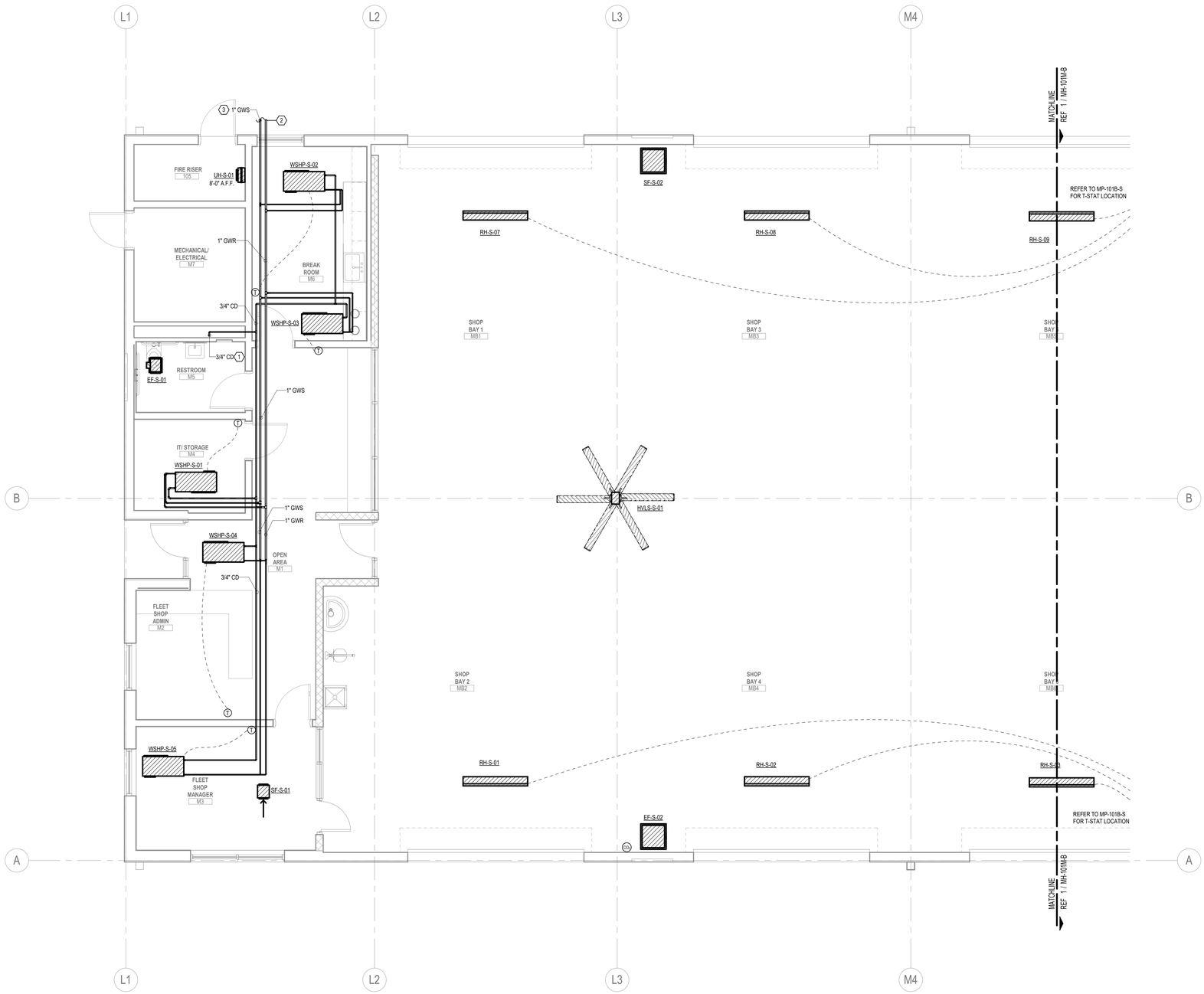


HVAC FLOOR PLAN - SHOP - LEVEL 01 - PIPING PLAN AREA A

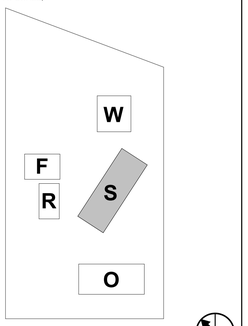
1

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

KEYED NOTES

NUMBER	DESCRIPTION
1	ROUTE PRIMARY CONDENSATE PIPE DOWN TO SINK DRAIN TRAP. REFER TO PLUMBING SET.
2	ROUTE GEOTHERMIAL WATER RETURN TO STORM PIPE AT THIS APPROXIMATE LOCATION. REFER TO CIVIL DRAWING SET FOR STORM PIPE LOCATION.
3	CONNECT TO MAIN GEOTHERMIAL WATER SUPPLY AT THIS APPROXIMATE LOCATION. REFER TO MS-101 FOR PIPE CONTINUATION.

KEY PLAN (NOT TO SCALE)



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124781
LICENSED PROFESSIONAL ENGINEER

06/26/2020

MECHANICAL PIPING PLAN - SHOP

DRAWN BY: AB	CHECKED BY: CNT
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_RGB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUN 2020

MP-101M-A

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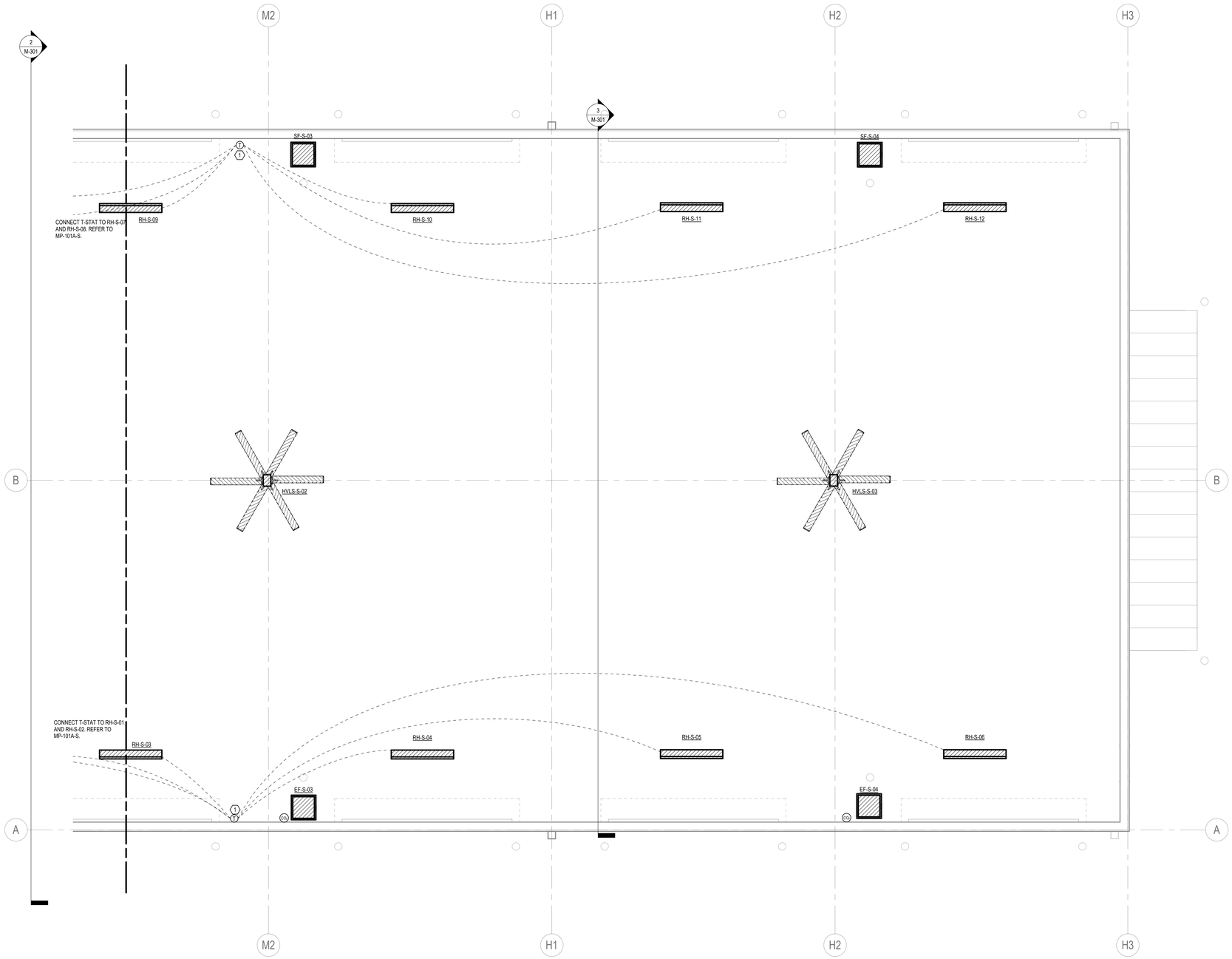
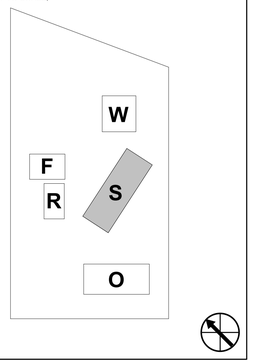


HVAC FLOOR PLAN - SHOP - OFFICE ROOF LEVEL - AREA B

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

KEY PLAN (NOT TO SCALE)



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MECHANICAL PIPING PLAN - SHOP

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PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_RGB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUN 2020

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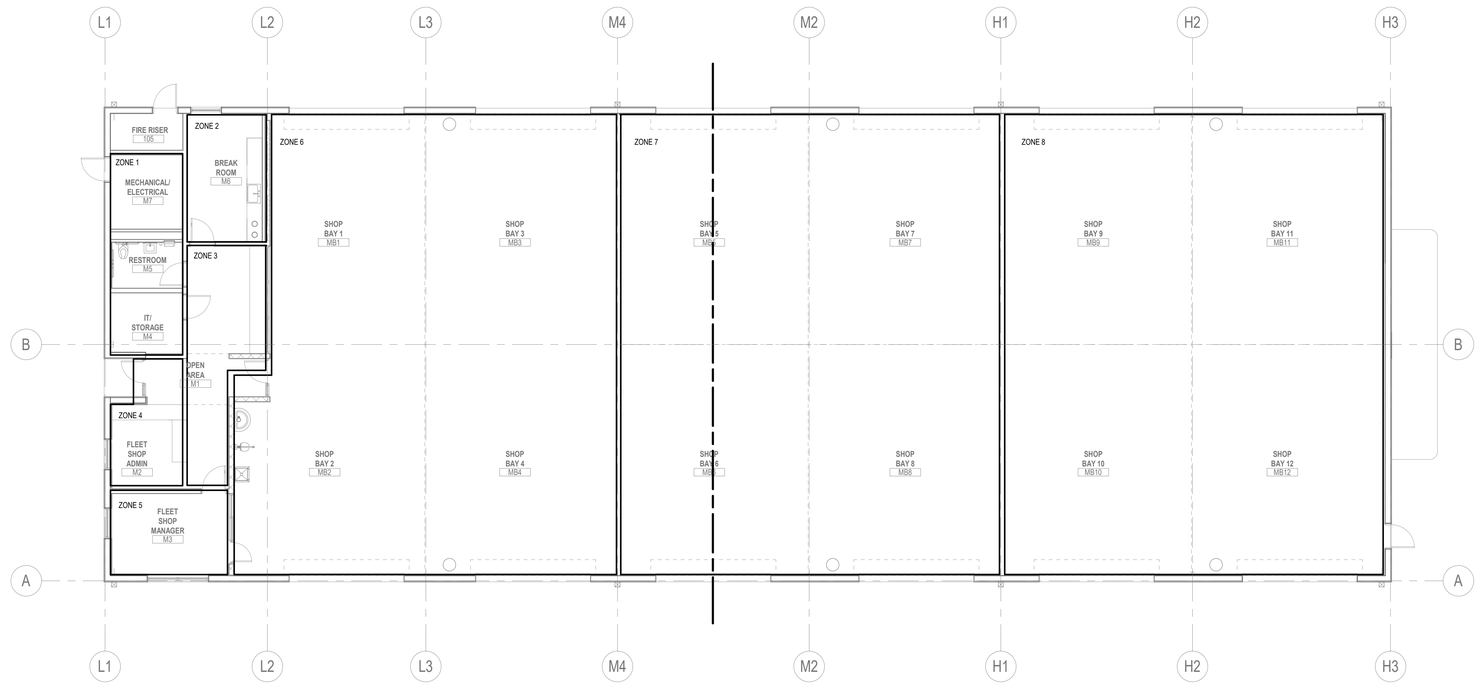
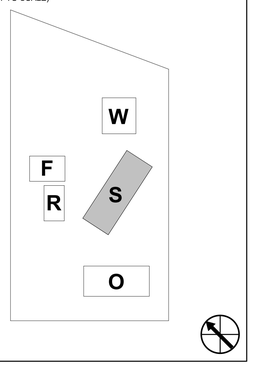


1 **MECHANICAL - ZONING PLAN - SHOP**
SCALE: 1/8" = 1'-0"

KEY PLAN (NOT TO SCALE)



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06/26/2020

MECHANICAL - ZONING PLAN - SHOP

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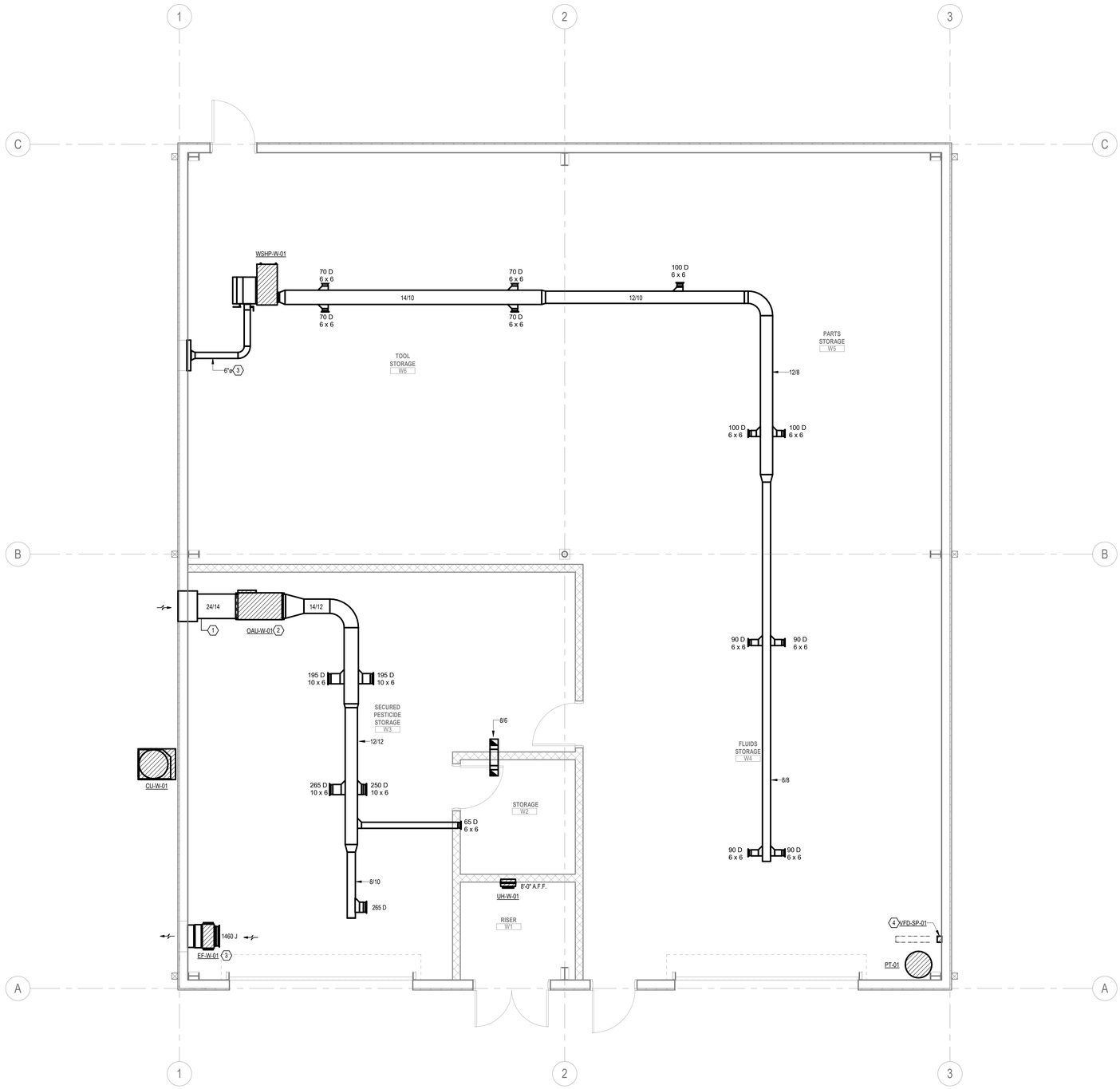
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_RGB
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUN 2020

MZ-101M
SHEET NUMBER

KEYED NOTES

NUMBER	DESCRIPTION
1	ROUTE DUCT TO LOUVER PLENUM BOX SIZE 3.1 SQ FT WITH A MINIMUM OF 50 PERCENT FREE AREA. REFER TO ARCHITECTURE FOR LOUVER LOCATION.
2	MOUNT OUTSIDE AIR UNIT AT A MINIMUM OF 9'-11" AFF.
3	ROUTE DUCT TO BACK OF LOUVER WITH PLENUM. LOUVER TO BE A MINIMUM OF 10.75 SQ FT WITH 50% FREE AREA. REFER TO ARCHITECTURAL DOCUMENTS FOR LOUVER INFORMATION.
4	VFD FOR PUMP SP-01 WILL BE LOCATED ON WALL AS SHOWN. ENSURE CLEARANCE REQUIREMENTS.



KEY PLAN (NOT TO SCALE)

TRUE NORTH

1 HVAC FLOOR PLAN - WAREHOUSE - LEVEL 01

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

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MECHANICAL HVAC PLAN - WAREHOUSE - LEVEL 01

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PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUN 2020

MH-101W

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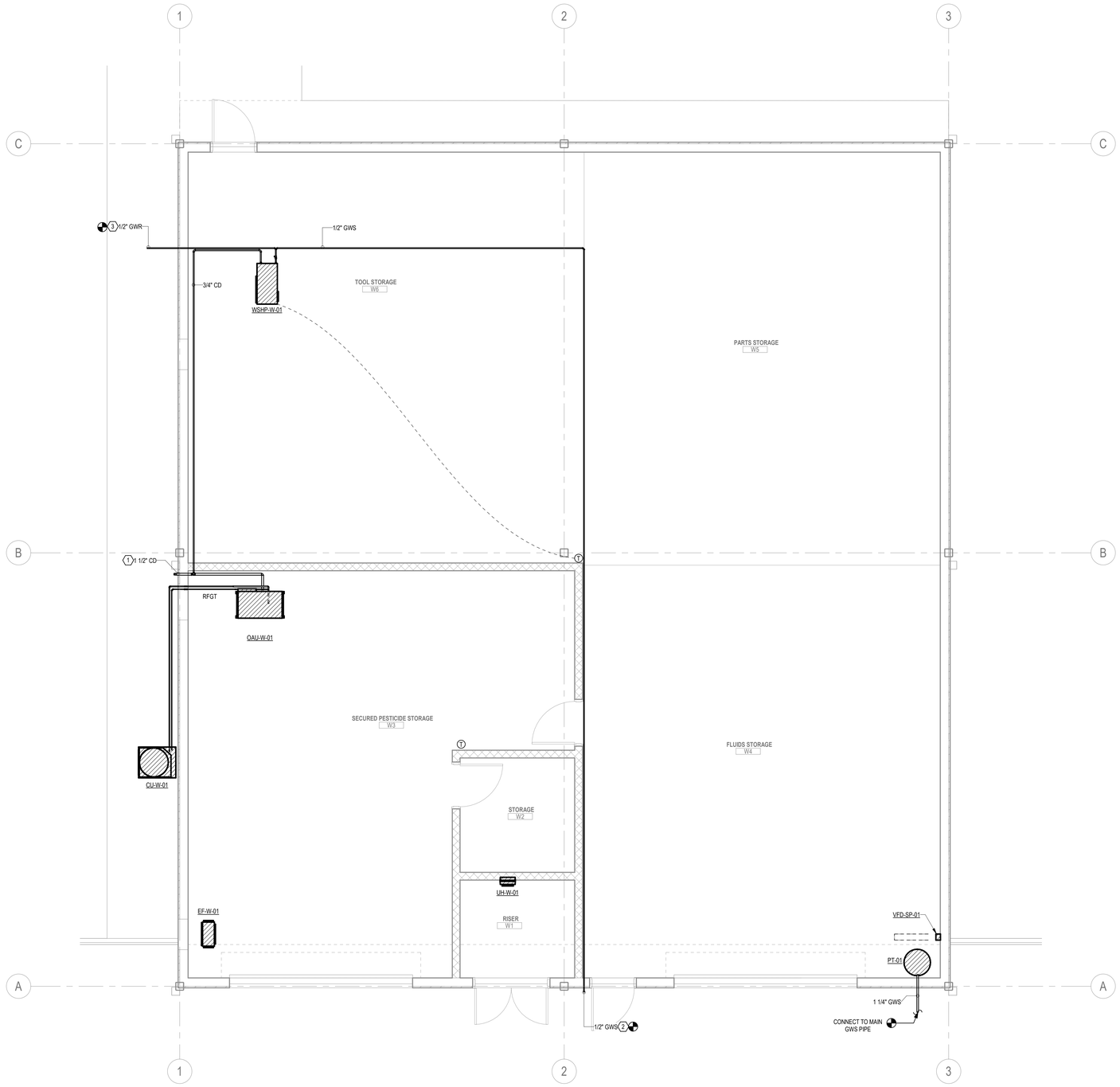


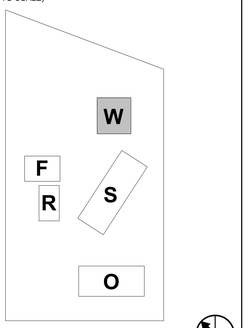
HVAC FLOOR PLAN - WAREHOUSE - LEVEL 01 - PIPING PLAN

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

KEYED NOTES

NUMBER	DESCRIPTION
1	ROUTE PRIMARY CONDENSATE PIPE TO DRYWELL. REFER TO PLUMBING SET FOR LOCATION.
2	CONNECT TO MAIN GEOTHERMAL WATER SUPPLY AT THIS APPROXIMATE LOCATION. REFER TO MS-101 FOR PIPE CONTINUATION.
3	ROUTE GEOTHERMAL WATER RETURN TO STORM PIPE AT THIS APPROXIMATE LOCATION. REFER TO CIVIL DRAWING SET FOR STORM PIPE LOCATION.

KEY PLAN (NOT TO SCALE)



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06/26/2020

MECHANICAL - PIPING PLAN - WAREHOUSE

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PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUN 2020

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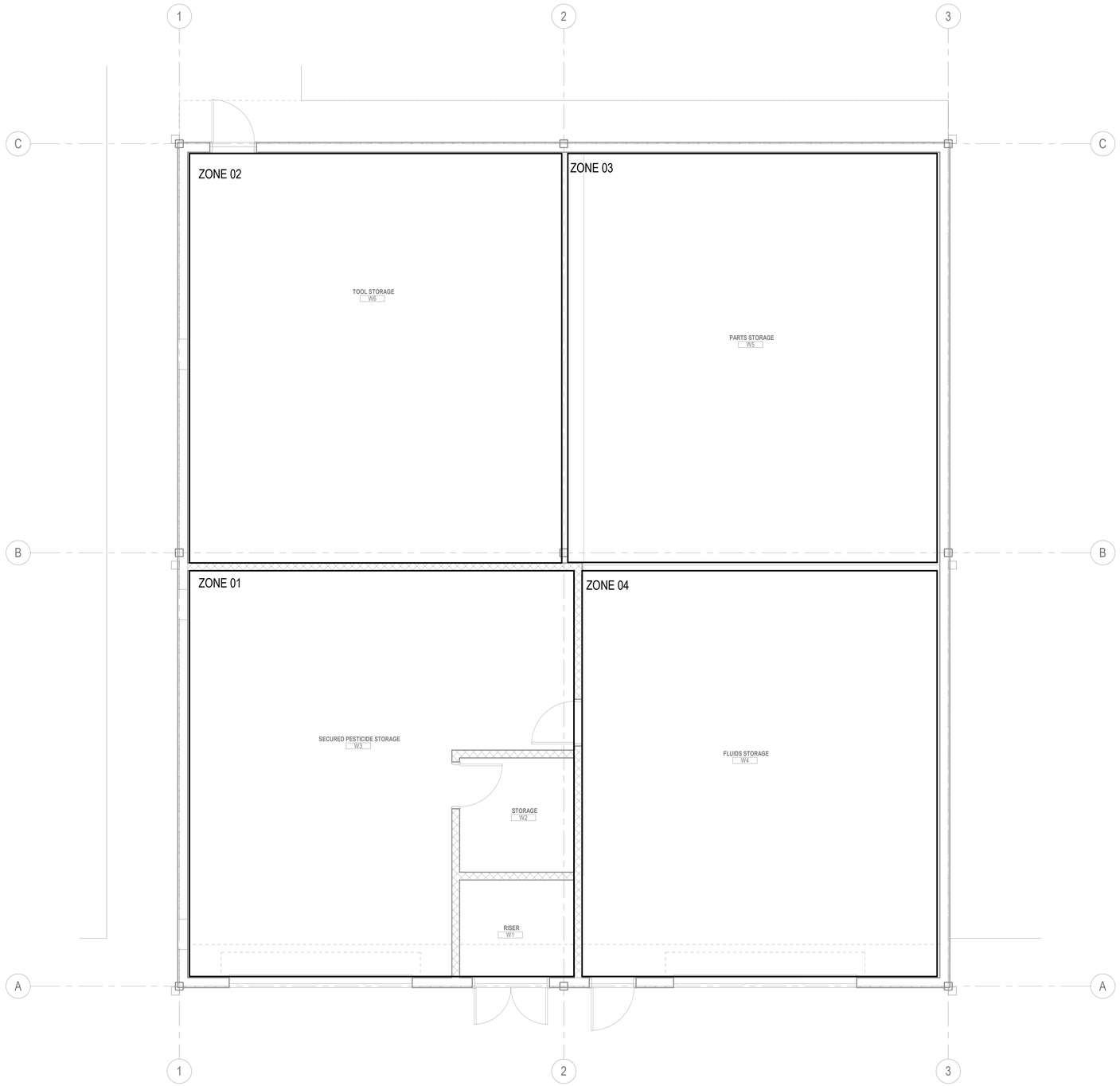
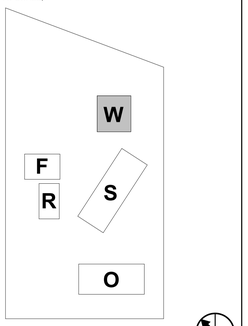


1 **MECHANICAL - ZONING PLAN - WAREHOUSE**
SCALE: 1/4" = 1'-0"

KEY PLAN (NOT TO SCALE)



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Firm Registration No.15868

STATE OF TEXAS
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06/26/2020

MECHANICAL - ZONING PLAN - WAREHOUSE

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PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC_RGB
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CONTROL LEGEND

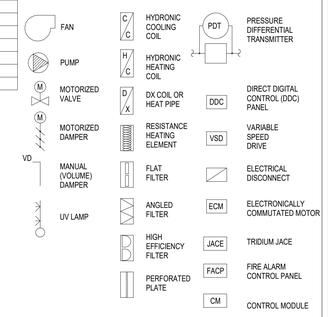
INSTRUMENT FUNCTION

INSTRUMENT LEGEND		ALARM HIGH	ALARM HI/LO	ALARM LOW	CONTROLLER	VALVE POSITIONING ACTUATING	ELEMENT	INDICATOR	INDEPENDENT CONTROLLER	INDEPENDENT INDICATOR	INDEPENDENT TRANSMITTER	LIGHT	RECORDER	SWITCH OR SENSOR	SWITCH-CLOSED	SWITCH-HIGH, SENSOR-HIGH LIMIT	SWITCH-HIGH/LOW, SENSOR-HIGH/LOW RANGE	SWITCH-LOW, SENSOR-LOW LIMIT	SWITCH-OPEN	TRANSMITTER	VALVE	CONV/COMP DEVICE
		AH	AHL	AL	C	CV	E	I	IC	IR	IT	L	R	S	SC	SH	SHL	SL	SO	T	V	Y
MEASURED OR CONTROLLING VARIABLE	ANALYSIS A	AAH	AAHL	AAL	AC		AE	AI	AIC	AIR	AIT		AR			ASH	ASHL	ASL		AT	AV	AY
	VOLTAGE E	EAH	EAHL	EAL	EC		EE	EI	EIC	EIR	EIT		ER			ESH	ESHL	ESL		ET		EY
	FLOW F	FAH	FAHL	FAL	FC		FE	FI	FIC	FIR	FIT		FR	FS		FSH	FSHL	FSL		FT	FV	FY
	MANUAL H	H							HIC					HS							HV	HY
	CURRENT I	IAH	IAHL	IAL	IC		IE	II	IIC	IIR	IIT		IR	IS		ISH	ISHL	ISL		IT		IY
	POWER J	JAH	JAHL	JAL	JC		JE	JI	JIC	JIR	JIT		JR			JSH	JSHL	JSL		JT		JY
	TIME K	KAH	KAHL	KAL	KC		KE	KI	KIC	KIR	KIT		KR			KSH	KSHL	KSL		KT	KV	KY
	LEVEL L	LAH	LAHL	LAL	LC	LCV	LE	LI	LIC	LIR	LIT		LR			LSH	LSHL	LSL		LT	LV	LY
	HUMIDITY M	M					ME							MS		MSH				MT		
	PRESSURE P	PAH	PAHL	PAL	PC	PCV	PE	PI	PIC	PIR	PIT		PR	PS		PSH	PSHL	PSL		PT	PV	PY
	PRESS. DIFF. PD	PDAH		PDAL	PDC		PDE	PDI	PDIC	PDIR	PDIT		PDR	PDS		PDSH		PDSL	PDS	PDT		
	SPEED/FREQ. S	SAH	SAHL	SAL	SC		SE	SI	SIC	SIR	SIT		SR			SSH	SSHL	SSL		ST		SY
	TEMPERATURE T	TAH	TAHL	TAL	TC	TCV	TE	TI	TIC	TIR	TIT		TR	TS		TSH	TSHL	TSL		TT	TV	TY
	MULTI-VAR. U	UAH	UAHL	UAL				UI		UIR			UR									UY
	VIBRATION V	VAH		VAL			VE	VI						VS		VSH		VSL		VT		VY
	WEIGHT W	WAH	WAHL	WAL	WC		WE	WI	WIC	WIR	WIT		WR			WSH	WSHL	WSL		WT	WV	WY
	ON/OFF X													XS							XV	XY
	POSITION Z	ZAH		ZAL				ZE		ZIC			ZL	ZS	ZSC	ZSH		ZSL	ZSO	ZT		

MISC. INSTRUMENTS AND CONTROLS LEGEND

FO	FLOW RESTRICTION ORIFICE	RI	VIDEO MONITOR
FQ	FLOWMETER - TOTALIZER	RY	VIDEO CAMERA
LOP	LOCAL OPERATOR PANEL	SD	SMOKE DETECTOR
LP	LOCAL PANEL	TW	THERMOWELL
PRV	PRESSURE RELIEF VALVE	OS	OCCUPANCY SENSOR
PSV	PRESSURE SAFETY VALVE	NS	FIRE ALARM STATUS
CS	CARBON MONOXIDE SENSOR	H	HUMIDITY SENSOR

SCHEMATIC SYMBOLS



NOTES:

1. UNLISTED COMBINATIONS OF INSTRUMENT LEGEND LETTER GROUPS MAY BE USED WHEN REQUIRED.
2. THE TAG NUMBER BY WHICH INSTRUMENTS OR LOOPS ARE IDENTIFIED IN A PANEL OR CONTROL SYSTEM IS THE TAG NUMBER OF THE MAIN FIELD INSTRUMENT.
3. NEW OR SPECIAL DEVICES WHICH CANNOT BE IDENTIFIED FROM THE LEGEND (SEE NOTE 1) SHALL BE ASSIGNED THE FIRST LETTER "N". THE INSTRUMENT LEGEND FOR SPECIFIC PROJECTS SHOULD BE MODIFIED TO INDICATE DEFINITIONS FOR THESE ADDITIONAL SYMBOLS.

INSTRUMENT TAG FORMAT

ALARMS:

A1. IF ON OR TRUE
A2. IF OFF, FALSE OR 0.
A3. FALSE FOR 30 SECONDS WITH START COMMAND TRUE
A4. FALSE FOR 5 MINUTES WHEN START COMMAND TRUE
A5. TURNS FALSE OR T0 0 WITH START COMMAND STILL TRUE
A6. STATUS FEEDBACK POINT DOES NOT MATCH COMMANDED POSITION +/- 2% WITHIN 90 SECONDS OF COMMAND
A7. VALUE IS 100% FOR 5 MINUTES
A8. IF GREATER THAN OR EQUAL TO 100%
A9. VALUE IS OVER 100% OF SETPOINT FOR 5 MINUTES
A10. IF GREATER THAN 61 Hz OR LESS THAN 59 Hz
A11. IF SETPOINT CANNOT BE MAINTAINED FOR 5 MINUTES
A12. VALUE IS GREATER THAN + 2F (COOLING MODE) OR -2F (HEATING MODE) OF ACTIVE SETPOINT FOR 5 MINUTES
A13. VALUE IS GREATER THAN +/- 10% OF NOMINAL VALUE OR SETPOINT FOR 5 MINUTES
A14. VALUE IS GREATER THAN 5F ABOVE SETPOINT FOR 5 MINUTES
A15. VALUE IS LOWER THAN 5F FOR 5 MINUTES
A16. TEMPERATURE IS ABOVE 85F OR BELOW 65F FOR 5 MINUTES - ALARM "OUTSIDE RECOMMENDED RANGE"
A17. TEMPERATURE IS ABOVE 90F OR BELOW 59F FOR 5 MINUTES - ALARM "OUTSIDE ALLOWABLE RANGE"
A18. VALUE IS LOWER THAN 16F DEWPOINT, GREATER THAN 60% RH, OR GREATER THAN 55F DEWPOINT - ALARM "OUTSIDE RECOMMENDED RANGE"
A19. VALUE IS LOWER 11F DEWPOINT AND 8% RH, GREATER THAN 80% RH, OR GREATER THAN 62.5F DEWPOINT - ALARM "OUTSIDE ALLOWABLE RANGE"
A20. TEMPERATURE IS ABOVE 104F FOR 5 MINUTES
A21. IF VALUE IS GREATER THAN INITIAL VALUE + 1.0 IWC
A22. IF BOTH THE OPEN AND CLOSED POINTS ARE ACTIVE AT THE SAME TIME
A23. IF SWITCH POSITION IS NOT VERIFIED WITHIN ALLOWABLE STROKE TIME AFTER COMMAND. ALLOWABLE STROKE TIME IS DETERMINED IN THE FIELD BY MEASURING ACTUAL TIME TO STROKE OPEN AND SEPARATELY ACTUAL TIME TO STROKE CLOSED, AND ADDING 15 SECONDS TO THE MEASURED TIME TO STROKE.
A24. STATUS FEEDBACK POINT DOES NOT MATCH COMMAND WITHIN 3 SECONDS OF ISSUING COMMAND
A25. IF POINT AND ASSOCIATED POINT(S) ARE BOTH "CLOSED", OFF OR FALSE SIMULTANEOUSLY
A26. IF VALUE IS AT OR ABOVE 100% FOR ANY DURATION
A27. IF VALUE IS BELOW MINIMUM REQUIRED TO DELIVER SYSTEM DESIGN CAPACITY. MINIMUM VALUE TO BE DETERMINED DURING TEST AND BALANCE.
A28. THERE ARE MULTIPLE ALARMS FOR THIS POINT. REFER TO VALUES LISTED IN THE "NOMINAL VALUE/ SETPOINT" COLUMN. (LL,LI,HI,HH) - LOW-LOW, LOW, HIGH AND HIGH-HIGH
A29. VALUE IS LOWER THAN SETPOINT FOR 5 MINUTES CONTINUOUSLY
A30. VALUES LISTED IN "NOM. VALUE/ SETPOINT" ARE (MIN AIRFLOW, MAX AIRFLOW), (LOW ALARM, SETPOINT, HIGH ALARM) OR (LOW ALARM, HEATING SETPOINT, COOLING SETPOINT, HIGH ALARM)
A31. COORDINATE WITH EQUIPMENT MANUFACTURER FOR RECOMMENDED SETPOINT

GRAPHICS:

G1. VALUE TO BE NORMALLY HIDDEN, AND DISPLAYED IN RED FONT WHEN TRUE
G2. NOTED VALUES ARE MUTUALLY EXCLUSIVE AND THEREFORE WILL BE SHOWN ONLY WHEN TRUE. NOTED VALUES SHOULD OCCUPY THE SAME PHYSICAL SPACE ON THE GRAPHIC
G3. IF BOTH OPEN AND CLOSED END SWITCHES ARE OFF SIMULTANEOUSLY, DISPLAY "MOVING"
G4. REFER TO RISERS AND SCHEDULES FOR EQUIPMENT CAPACITY
G5. REFER TO M-40X FOR SETPOINT
G6. 125% OF MANUFACTURER'S MINIMUM

TRENDING:

T1. CHANGE OF VALUE
T2. DURING COMMISSIONING PHASE SET TRENDING FOR 5 SECOND INTERVAL. POST-COMMISSIONING, SET TRENDING TO 15 MINUTE INTERVAL
T3. 60 MINUTE INTERVAL
T4. TWO CONCURRENT TRENDS TO EXIST. THE PRIMARY TREND WILL SAMPLE AT A 15 MINUTE INTERVAL. THE SECOND TREND WILL BE AT A 5 SECOND INTERVAL, AND SHALL PASS THROUGH A FIRST-IN-FIRST-OUT BUFFER. IT WILL NOT NORMALLY BE STORED TO THE HISTORIAN SERVER. UPON AN ALARM CONDITION, THE SECOND TREND WILL BE SAVED TO THE HISTORIAN AS A "SNAP SHOT" WHEN THE TIMESTAMP OF THE OLDEST DATA IN THE BUFFER IS 1 MINUTE PRIOR TO THE TIMESTAMP OF THE ALARM TRIGGER.

NOTES:

N1. THE POINT NAME ON THIS LINE REFERS TO A PIECE OF EQUIPMENT OR SYSTEM INSTEAD OF A POINT. THE FIELD DEVICE LISTED ON THIS LINE REFERS TO THE POINTS LIST OF THE SAME NAME. REFER TO THE POINTS LIST CORRESPONDING TO THE NAME LISTED UNDER FIELD DEVICE FOR ALL DETAILED REQUIREMENTS FOR THE LISTED EQUIPMENT/SYSTEM. ALL POINTS IDENTIFIED ON THE REFERENCED EQUIPMENT'S POINTS LIST FOR GRAPHICAL DISPLAY ON THE SYSTEM GRAPHIC, WILL BE SHOWN ON THIS SYSTEM GRAPHIC.
N2. SIGNAL TO BE PHYSICALLY WIRED TO BOTH BMS CONTROLLER FOR MONITORING AND VFD SAFETY CIRCUIT FOR HARD-WIRED SHUTDOWN
N3. MUST BE SET TO A SUB-AMBIENT PRESSURE WITHIN THE SMACNA CONSTRUCTION STANDARDS OF THE ASSOCIATED DUCTWORK OR AHU CASING
N4. DEPENDING ON MANUFACTURER, THIS POINT MAY BE A MULTI-STATE VALUE. BMS CONTRACTOR TO ADVISE ENGINEER IN WRITING OF ALL AVAILABLE MULTI-STATE VALUES SO ALL DESIRED INFORMATION IS OBTAINED. NOTE THAT THE DESCRIPTION OF THE ANALOG VALUE MUST BE DISPLAYED, NOT THE ACTUAL ANALOG VALUE READ.
N5. DEPENDING ON MANUFACTURER, THIS POINT MAY BE A MULTI-STATE VALUE. ONLY VALUES NOTED IN POINT DESCRIPTION ARE REQUIRED. NOTE THAT THE DESCRIPTION OF THE ANALOG VALUE MUST BE DISPLAYED, NOT THE ACTUAL ANALOG VALUE READ.
N6. FIELD DEVICE TO BE PROVIDED AND INSTALLED BY OTHERS. POINT TO BE MONITORED BY SYSTEM AS NOTED.
N7. REFERENCED POINT IS PER DEVICE. THE SYSTEM WILL COMMUNICATE WITH THE REFERENCED POINT IN EACH INSTANCE OF THE ASSOCIATED EQUIPMENT IN THE SYSTEM.
N8. POINT MUST BE DIRECTLY WIRED TO THE CONTROLLER. IT IS NOT PERMISSIBLE FOR SIGNAL INPUT TO BE COMMUNICATED TO CONTROLLER OVER COMMUNICATIONS NETWORK.
N9. REFER TO EQUIPMENT MANUFACTURER'S DATA FOR NOMINAL VALUES.
N10. SIGNAL TO BE PHYSICALLY WIRED TO THE IO TERMINAL STRIP ON THE EQUIPMENT ON BOARD CONTROLLER.
N11. THE REFERENCED INFORMATION IS PER BATTERY CELL. COORDINATE WITH BATTERY SYSTEM INFORMATION FOR QUANTITY OF CELLS
N12. THE REFERENCED INFORMATION IS PER BATTERY STRING. COORDINATE WITH BATTERY SYSTEM INFORMATION FOR QUANTITY OF STRINGS
N13. DEPENDING ON MANUFACTURER, THIS MAY BE AN AGGREGATION OF MULTIPLE POINTS INTO A SINGLE LOGIC POINT. NOTE THAT WHILE MULTIPLE INTEGRATION POINTS MAY BE REQUIRED AS INPUTS, ONLY ONE OUTPUT OR RESULTANT VALUE IS DESIRED. POINTS TO BE AGGREGATED SHALL NOT INCLUDE OTHER SIMILAR POINTS EXPLICITLY REQUIRED ELSEWHERE IN THE POINTS LIST.
N14. DEPENDING ON MANUFACTURER, THIS MAY BE AN AGGREGATION OF MULTIPLE POINTS INTO A SINGLE LOGIC POINT. NOTE THAT WHILE MULTIPLE INTEGRATION POINTS MAY BE REQUIRED AS INPUTS, ONLY ONE OUTPUT OR RESULTANT VALUE IS DESIRED. POINTS TO BE AGGREGATED SHALL NOT INCLUDE OTHER SIMILAR POINTS EXPLICITLY REQUIRED ELSEWHERE IN THE POINTS LIST.
N15. SYSTEM UTILIZES REDUNDANT PLCs. EACH PLC AGGREGATES DATA FROM EACH FIELD DEVICE. BMS TO OBTAIN DATA FROM EACH PLC, BUT ONLY DISPLAY AND LOG DATA FROM ACTIVE PLC. FIELD DEVICE IN THIS CASE REFERS TO THE DEVICE FROM WHICH THE PLC OBTAINS THE INFORMATION. BMS CONNECTION IS TO THE PLC.
N16. VALUE TO BE NORMALLY "OFF". "OFF" CONDITION MEANS "LEAD PLC IN CONTROL". "ON" CONDITION MEANS "REDUNDANT PLC IN CONTROL".
N17. VALUE SHALL BE TRUE WHEN THE CORRESPONDING ANALOG "COUNT" VALUE IN INCREMENTED. VALUE SHALL BE MADE FALSE ONLY BY OPERATOR ACKNOWLEDGEMENT OF EVENT
N18. THIS VALUE MAY NOT BE AVAILABLE VIA INTERFACE. IN THIS CASE, VALUE REPORTED SHALL BE THE CALCULATED AVERAGE OF THE ASSOCIATED MEASURED VALUES.
N19 THIS VALUE MAY NOT BE AVAILABLE VIA INTERFACE. IN THIS CASE, VALUE REPORTED SHALL BE THE SUM TOTAL OF THE ASSOCIATED MEASURED VALUES.
N20 COORDINATE WITH DEVICE MANUFACTURER. WITH SOME ALLOWABLE DEVICES, DATA IS CONTAINED IN A FILE THAT MUST BE REQUESTED FROM THE REFERENCED METER AND DOWNLOADED BY THE SYSTEM FOR LOGGING. GRAPHICAL DISPLAY OF DATA TO BE THROUGH METER'S NATIVE GRAPHICS VIA IP.
N21. SIGNAL TO BE PROVIDED TO THE PLC VIA FACTORY-INSTALLED ACCESSORY, WIRED TO THE PLC. BMS SHALL OBTAIN THE VALUE VIA INTEGRATION TO THE PLC.
N22. SYSTEM TO WRITE VALUES TO BOTH PLCS TO ENSURE EVENT TIME STAMPING IS CONSISTENT THROUGHOUT THE FACILITY
N23. VALUE IS TO BE CALCULATED BY ADDING THE VALUES FROM THE REFERENCED FIELD DEVICES
N24. FIELD DEVICE IS WIRED PHYSICALLY TO THE UNIT CONTROLLER, AND IS MONITORED BY THE BMS VIA INTEGRATION.
N25. MONITORED VALUE IS AN INDEX. BMS WILL DISPLAY TEXT CORRESPONDING TO APPROPRIATE INDEX VALUE ON THE GRAPHICS.
N26. THIS POINT IS AN UNPUBLISHED OPTION AVAILABLE FROM THE MANUFACTURER. COORDINATE WITH MANUFACTURER'S REPRESENTATIVE FOR REGISTER MAP INFORMATION.
N27. FIELD DEVICE IS SHOWN ELSEWHERE IN THE PLANS WITH THE ASSOCIATED SPACE. NOTE THAT THE REFERENCED POINT IS OBTAINED THROUGH THE NETWORK TO THIS CONTROL LOOP, AND THAT AN ADDITIONAL FIELD DEVICE IS NOT REQUIRED.
N28. PROVIDE AND INSTALL A RED PUSHBUTTON UNDER A CLEAR PLASTIC COVER. WIRE CONTACTS ON PUSHBUTTON TO SYSTEM PANEL, EMERGENCY STROBE, AND HORN.
N29. VALUE IS THE CALCULATED DIFFERENCE IN TOTALIZED MAKEUP AND TOTALIZED BLOWDOWN
N30. EQUIPMENT MAY HAVE MULTIPLE DEVICES OF THIS TYPE (IE COMPRESSOR, FAN, CIRCUIT, ETC). PROVIDE THE ASSOCIATED POINT FOR EACH DISCRETE DEVICE.
N31. VALUE IS CALCULATED BY SELECTING THE MOST DEMANDING ASSOCIATED ZONE AS THE CRITICAL ZONE
N32. DEVICE IS PROVIDED BY EQUIPMENT MANUFACTURER AND INSTALLED BY CONTRACTOR
N33. RE: IA-10X PLANS FOR DEVICE COUNTS AND LOCATIONS.

Page/

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Page Southerland Page, Inc.
Firm Registration No.15868
STATE OF TEXAS
CHRISTY N. TROUTMAN
124781
06/26/2020

MECHANICAL - INSTRUMENTATION AND CONTROLS - GENERAL INFORMATION

DRAWN BY CNT	CHECKED BY JGN
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUN 2020

MI-001
SHEET NUMBER

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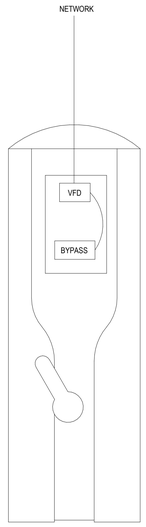
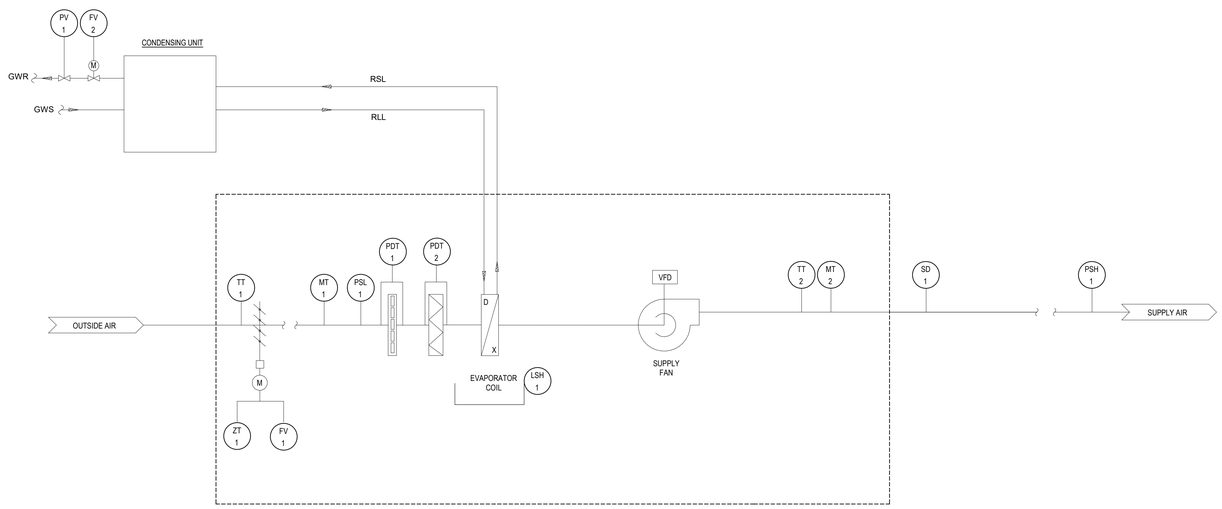


POINT NAME	FIELD DEVICE	POINT TYPE									FAIL POSITION/ STATUS		GRAPHICS (RE: MI-001 FOR NOTES)					TRENDING (RE: MI-001 FOR NOTES)	ALARM (RE: MI-001 FOR NOTES)	NOTES (RE: MI-001 FOR NOTES)
		PHYSICAL				NETWORK				CALCULATED/ USER DEFINED	LOSS OF CTRL POWER	LOSS OF SIGNAL	FLOOR PLAN	SYSTEM	EQUIPMENT	NOM. VALUE/ SETPOINT	UNITS			
		AI	AO	BI	BO	AI	AO	BI	BO											
START/STOP	VFD								X		ON	ON	X	X	X			T1		
VFD HOA STATUS	VFD							X					G1	G1	G1			T1	A1	N4
VFD SPEED COMMAND	VFD						X				LAST	LAST		X	X		Hz	T4		
MOTOR RPM FEEDBACK	VFD					X									X		RPM			
VFD FREQUENCY FEEDBACK	VFD					X								X	X		Hz	T4	A5, A6, A24	
VFD FAULT STATUS	VFD							X						G1	G1			T1	A1	
VFD LAST FAULT	VFD					X									X			T1		N25
VFD PREVIOUS FAULT 1	VFD					X									X			T1		N25
VFD PREVIOUS FAULT 2	VFD					X									X			T1		N25
VFD ALARM STATUS	VFD							X						G1	G1			T1	A1	
VFD OUTPUT VOLTAGE	VFD					X									X		VAC	T2		
VFD OUTPUT CURRENT	VFD					X									X		AMPS	T2		
VFD OUTPUT TORQUE	VFD					X									X		%	T4	A8	
VFD POWER	VFD					X									X		kW	T2		
VFD DC BUS VOLTAGE	VFD					X									X		VDC	T4	A2, A13	
VFD OUTPUT VOLTAGE	VFD					X									X		VAC	T4	A2, A13	
VFD ENERGY CONSUMED	VFD					X									X		kWh	T3		
VFD RUNTIME	VFD					X											HRS	T3		
VFD DRIVE TEMPERATURE	VFD					X									X		F	T4	A20	
BYPASS SELECT	BYPASS								X											
BYPASS HOA STATUS	BYPASS							X					G1	G1	G1			T1	A1	N4
BYPASS FAULT STATUS	BYPASS							X						G1	G1			T1	A1	
BYPASS LAST FAULT	BYPASS					X									X			T1		N25
BYPASS PREVIOUS FAULT 1	BYPASS					X									X			T1		N25
BYPASS PREVIOUS FAULT 2	BYPASS					X									X			T1		N25
BYPASS CURRENT	BYPASS					X									X		A	T4		
BYPASS RUNTIME	BYPASS					X											HRS	T3		
BYPASS INPUT VOLTAGE	BYPASS					X									X	480	VAC	T4	A2, A13	
BYPASS PHASE AB VOLTAGE	BYPASS					X									X	480	VAC	T4	A2, A13	
BYPASS PHASE BC VOLTAGE	BYPASS					X									X	480	VAC	T4	A2, A13	
BYPASS PHASE CA VOLTAGE	BYPASS					X									X	480	VAC	T4	A2, A13	
BYPASS ENERGY CONSUMED	BYPASS					X									X		kWh	T3		
BYPASS TEMPERATURE	BYPASS					X									X		F	T4	A20	

2 MECH - VFD POINTS LIST

SCALE:NTS



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		PHYSICAL				NETWORK				CALCULATED/ USER DEFINED	LOSS OF CTRL POWER	LOSS OF SIGNAL	FLOOR PLAN	SYSTEM	EQUIPMENT	NOM. VALUE/ SETPOINT	UNITS			
		AI	AO	BI	BO	AI	AO	BI	BO											
SUPPLY FAN VFD	VFD								X											N1
CONDENSATE HIGH LEVEL SWITCH	LSH -1							X							X				A1	
DISCHARGE AIR TEMPERATURE	TT-2					X								X	X		F	T4		N24
PRE-FILTER PRESSURE DROP	PDT-1							X							X		iwc	T3	A21	
FINAL FILTER PRESSURE DROP	PDT-2							X							X		iwc	T3	A21	
SUPPLY AIR STATIC PRESSURE SETPOINT										X				X	X			T1		
SMOKE DETECTOR	SD-1			X									G1	G1	G1			T1	A1	N2
OUTSIDE AIR DAMPER POSITION	ZT-1	X												X	X			T1	A1	N2
SUPPLY TEMPERATURE SETPOINT										X				X	X	55/80	F	T1		
OUTDOOR AIR DAMPER COMMAND	FV-1							X			LAST	100%		X	X			T1		
SUPPLY FAN HIGH STATIC SAFETY	PSH-1							X					G1	G1	G1			T1	A1	N2,N3
SUPPLY FAN LOW STATIC SAFETY	PSL-1							X					G1	G1	G1			T1	A1	N2,N3
OUTDOOR AIR TEMPERATURE	TT-1					X								X	X		F	T4	A13	N24
OUTDOOR AIR HUMIDITY	MT-1					X								X	X		%	T4	A1	N24
COIL LEAVING AIR HUMIDITY	MT-2					X								X	X		%	T4	A1	N24
GEOTHERMAL CONTROL FLOW VALVE	FV-2							X							X		%			

1 CONTROLS - WATER COOLED DX DEDICATED OUTDOOR AIR UNIT CONTROLS

SCALE:NTS

DX PACKAGED ROOFTOP OUTDOOR AIR UNIT CONTROL

A. GENERAL

1. THE ROOFTOP DEDICATED OUTDOOR AIR UNIT SHALL BE CONTROLLED BY A DEDICATED CONTROLLER.
2. ALL SETPOINTS TO BE OPERATOR ADJUSTABLE.
3. CONTROL POINTS AVAILABLE FROM MANUFACTURER VARY. CONTRACTOR SHALL VERIFY AND COORDINATE WITH EQUIPMENT AND CONTROLS MANUFACTURER FOR INCLUSION OF ALL POINTS.
4. UNIT SHALL OPERATE BASED ON A USER-DEFINED OCCUPANCY SCHEDULE. UNIT SHALL BE ENABLE FOR OPTIMUM START, NIGHT SETBACK AND OCCUPANCY OVERRIDES. A MINIMUM SET FOR PRESSURIZATION FOR BUILDING DURINGING OFF HOURS AND AT 100% DURING OPERATION HOURS.

B. SAFETIES/ ALARMS

1. WHEN THE FOLLOWING SAFETIES (EACH WITH ITS OWN MANUAL RESET BUTTON) ARE INITIATED, DE-ENERGIZE THE UNIT AND INITIATE RESPECTIVE ALARMS, AS INDICATED:

   A. IF THE SUPPLY FAN IS COMMANDED TO RUN AND ANY TIME AFTER A 15 SECOND DELAY (TIME ADJUSTABLE), THE CONTROL SYSTEM SENSES NO STATUS VIA THE FAN'S CURRENT SENSORS RELAYS (REFER TO VFD POINTS).
   B. OUTSIDE AIR DAMPER IS COMMANDED TO OPEN OR CLOSE AND OUTSIDE AIR DAMPER POSITION END SWITCH (XV-1) DOES NOT PROVE OPEN OR CLOSED AFTER A 2 MINUTE (TIME ADJUSTABLE) DELAY.
   C. SMOKE DETECTOR (SD-1) SHALL BE FURNISHED, INSTALLED AND WIRED BY A FIRE ALARM CONTRACTOR TO THE FIRE ALARM SYSTEM TO DEACTIVATE THE UNIT.
   D. IN THE EVENT OF A HIGH (PSH-1) OR LOW DIFFERENTIAL STATIC PRESSURE (PSL-1) ALARM.

2. THE CONTROL SYSTEM SHALL INITIATE RESPECTIVE ALARM:

   A. IF THE DOAU PRE-FILTER DIFFERENTIAL SWITCH (PDT-1) DETECTS A PRESSURE DIFFERENTIAL GREATER THAN 0.8 IN. W.G. (ADJUSTABLE) UNIT CONTINUES TO OPERATE IN ITS CURRENT MODE.
   B. IF THE DOAU FINAL FILTER DIFFERENTIAL SWITCH (PDT-2) DETECTS A PRESSURE DIFFERENTIAL GREATER THAN 1.0 IN W.G. (ADJUSTABLE) UNIT CONTINUES TO OPERATE IN ITS CURRENT MODE.
   C. IF THE CONDENSATE LEVEL SENSOR (LSH-1) DETECTS A HIGH WATER LEVEL IN THE UNIT DRAIN PAN. UNIT CONTINUES TO OPERATE IN ITS CURRENT MODE.

C. NORMAL OPERATION

1. UNIT FAN ON:

   A. UPON A CALL FOR THE UNIT TO OPERATE, THE MODULATING OUTSIDE AIR DAMPER (ZT-1) SHALL OPEN, ALONG WITH GEOTHERMAL CONTROL VALVE (FV-2).
   B. WHEN THE MOTORIZED OUTSIDE AIR DAMPER POSITION SWITCH (ZT-1) AND GEOTHERMAL CONTROL VALVE (FV-1) BOTH PROVE FULLY OPEN, THE SUPPLY FAN IS ENERGIZED VIA A VARIABLE FREQUENCY DRIVE (VFD).
   C. THE VFD SHALL MAINTAIN CONTSTANT SUPPLY AIR CFM PER MECHANICAL SCHEDULES.

2. UNIT FAN SET TO MINIMUM:

   A. UPON A CALL FOR THE UNIT TO BE SET TO A MINIMUM FLOW, SUPPLY FAN VIA THE VARIABLE FREQUENCY DRIVE (VFD) SHALL SLOW DOWN TO 300 CFM TO MAINTAIN BUILDING PRESSURIZATION.

D. DAMPERS

1. THE MOTORIZED OUTDOOR AIR DAMPER (FV-1) SHALL BE COMMANDED OPEN AT 100% TO MEET VENTILATION REQUIREMENTS.
2. DURING UNOCCUPIED HOURS, DAMPER WILL BE SET TO A MINIMUM TO MAINTAIN BUILDING PRESSURIZATION SETPOINT OF 300 CFM.

E. DX COOLING MODE

1. UNIT SHALL OPERATE EVAPORATOR COIL IN COOLING MODE TO MAINTAIN COIL LEAVING AIR TEMPERATURE SETPOINT (TT-2) OF 55 DEG. F.

F. DX HEATING MODE:

1. UNIT SHALL OPERATE EVAPORATOR COIL IN HEATING MODE TO MAINTAIN COIL LEAVING AIR TEMPERATURE SETPOINT (TT-2) OF 80 DEG. F.

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REVISION HISTORY

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Firm Registration No.15868

STATE OF TEXAS
CHRISTY N. TROUTMAN
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LICENSED
PROFESSIONAL ENGINEER
06/26/2020

MECHANICAL - INSTRUMENTATION AND CONTROLS - DIAGRAMS

DRAWN BY	CHECKED BY
CNT	JGN
PROJECT NUMBER 418198	PROJECT ABBREVIATION GC_R&B
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUN 2020

MI-601
SHEET NUMBER

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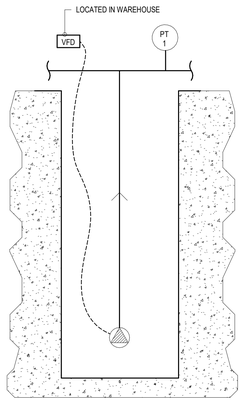
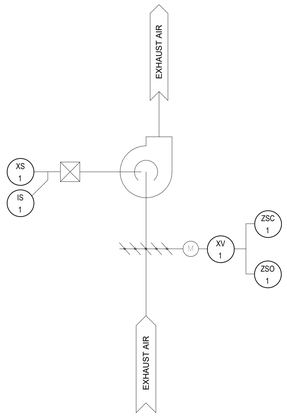


SUBMERSIBLE GEOTHERMAL PUMP SEQUENCE OF OPERATION

1. THE PUMP SHALL OPERATE CONTINUOUSLY AT ALL TIMES.
2. VFD SHALL MODULATE PUMP SPEED TO MAINTAIN WATER LEVEL PRESSURE TRANSDUCER SETPOINT.
   a. PRESSURE TRANSDUCER SHALL BE SET AT 5 PSIG OFFSET WAND VFD SHALL RAMP UP PUMP SPEED LINEARLY TO FULL PRESSURE AT 60 PSIG.

POINT NAME	FIELD DEVICE	POINT TYPE									FAIL POSITION/ STATUS		GRAPHICS (RE: MI-001 FOR NOTES)					TRENDING (RE: MI-001 FOR NOTES)	ALARM (RE: MI-001 FOR NOTES)	NOTES (RE: MI-001 FOR NOTES)
		PHYSICAL				NETWORK				CALCULATED/ USER DEFINED	LOSS OF POWER	CONTROL FAILURE	FLOOR PLAN	SYSTEM	EQUIPMENT	NOM. VALUE/ SETPOINT	UNITS			
		AI	AO	BI	BO	AI	AO	BI	BO											
PUMP VFD	VFD																			
WATER LEVEL PRESSURE TRANSDUCER	PT-1	X												X	X	1 - 5	PSI	T2	A13	

3 SUBMERSIBLE GEOTHERMAL PUMP
SCALE: NTS



GENERAL EXHAUST FAN

A. GENERAL
   1. EXHAUST FAN(S) SHALL OPERATED ON A USER-DEFINED TIME-BASED SCHEDULE.

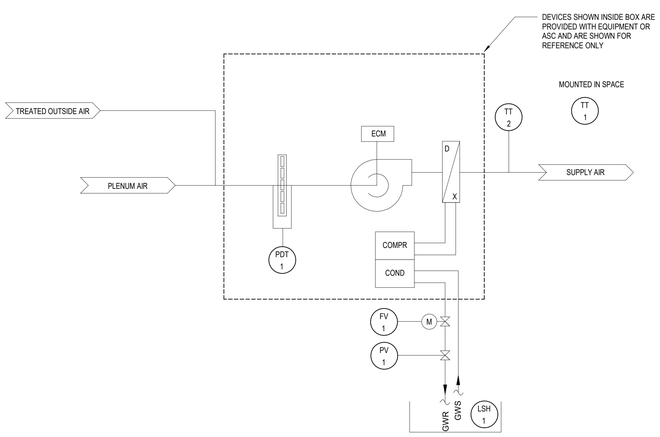
B. SAFETIES AND ALARMS
   1. SAFETIES SHALL SHUT DOWN SYSTEM AND INITIATE AN ALARM IF EXHAUST FAN CURRENT SENSOR (IS-1) PROVES NO CURRENT DURING NORMAL FAN OPERATION.
   2. INITIATE AN ALARM IF FAN ISOLATION DAMPER POSITION END SWITCH (ZSC-1,ZSO-1) DOES NOT INDICATE COMMANDED STATE AFTER 2-MINUTE TIME DELAY (TIME ADJ.)

C. UNIT FAN ON:
   1. UPON A CALL FOR THE FAN TO OPERATE, THE 2-POSITION EXHAUST AIR DAMPER (XV-1) OPENS.
   2. WHEN THE 2-POSITION EXHAUST AIR DAMPER OPEN END SWITCH (ZSO-1) PROVES FULLY OPEN, THE EXHAUST FAN IS ENERGIZED VIA THE EXHAUST FAN START/STOP SWITCH (XS-1).
   3. EXHAUST FAN(S) SHALL PROVIDE CONSTANT AIRFLOW AS INDICATED PER THE MECHANICAL SCHEDULE.

D. UNIT FAN OFF:
   1. UPON A CALL FOR THE FAN TO SHUT DOWN, DE-ENERGIZE THE EXHAUST FAN VIA THE EXHAUST FAN START/STOP SWITCH (XS-1).
   2. AFTER A 5 MINUTE TIME DELAY (ADJ.) THE 2-POSITION EXHAUST AIR DAMPER WILL CLOSE.

POINT NAME	FIELD DEVICE	POINT TYPE									FAIL POSITION/ STATUS		GRAPHICS (RE: MI-001 FOR NOTES)					TRENDING (RE: MI-001 FOR NOTES)	ALARM (RE: MI-001 FOR NOTES)	NOTES (RE: MI-001 FOR NOTES)
		PHYSICAL				NETWORK				CALCULATED/ USER DEFINED	LOSS OF POWER	CONTROL FAILURE	FLOOR PLAN	SYSTEM	EQUIPMENT	NOM. VALUE/ SETPOINT	UNITS			
		AI	AO	BI	BO	AI	AO	BI	BO											
EXHAUST FAN START/STOP	XS-1				X						ON	ON			X			T1	A2	
EXHAUST FAN STATUS	IS-1			X										X	X			T1	A2	
EXHAUST FAN ISOLATION DAMPER COMMAND	XV-1				X						OPEN	OPEN			X			T1	A4, A5	
EXHAUST FAN ISOLATION DAMPER OPEN	ZSO-1			X										G2,G3	G2,G3			T1	A22,A23	N2
EXHAUST FAN ISOLATION DAMPER CLOSED	ZSC-1			X										G2,G3	G2,G3			T1	A22,A23	N2

2 MECHANICAL - GENERAL EXHAUST FAN CONTROLS
SCALE: NTS



WATER SOURCE HEAT PUMP CONTROL

A. GENERAL
   1. UNIT(S) SHALL OPERATE BASED ON A USER-DEFINED OCCUPANCY SCHEDULE. UNIT SHALL BE ENABLED FOR OPTIMUM START, NIGHT SETBACK AND OCCUPANCY OVERRIDES.
   2. ALL SETPOINTS SHALL BE OPERATOR ADJUSTABLE.

B. NORMAL OPERATION:
   1. UNIT FAN ON:
      A. UPON A CALL FOR THE UNIT TO OPERATE, THE MOTORIZED OUTDOOR AIR DAMPER (FV-1) OPENS AND THE GEOTHERMAL CONTROL VALVE (FV-1) OPENS. WHEN THE OUTDOOR AIR DAMPER POSITION (ZT-1) AND THE GEOTHERMAL CONTROL VALVE (FV-1) PROVES FULLY OPEN, THE SUPPLY FAN IS ENERGIZED VIA THE VARIABLE FREQUENCY DRIVE (VFD).
      B. FAN OPERATES AT VARIABLE-SPEED TO MAINTAIN ZONE OCCUPIED SPACE TEMPERATURE.
      C. TEMPERATURE SETPOINT IS MEASURED BY SPACE TEMPERATURE TRANSMITTER (TT-1).
      D. WHEN TT-1 CALLS FOR HEATING OR COOLING, THE COMPRESSOR SHALL START.

C. UNOCCUPIED MODE
   1. FAN CYCLES TO MAINTAIN ZONE UNOCCUPIED SPACE TEMPERATURE.
   2. WHEN SPACE TEMPERATURE AS MEASURED BY SPACE TEMPERATURE SENSOR (TT-1) IS BELOW OR ABOVE UNOCCUPIED SETPOINT, TURN HEAT PUMP ON IN HEATING OR COOLING TO ACHIEVE DESIRED ZONE UNOCCUPIED SPACE TEMPERATURE AS MEASURED BY SPACE TEMPERATURE TRANSMITTER (TT-1).

D. SAFETIES AND ALARMS:
   1. WHEN THE FOLLOWING SAFETIES ARE INITIATED ANNUNCIATE THE RESPECTIVE ALARM:
      A. IF THE SUPPLY FAN IS COMMANDED TO RUN AND, AT ANY TIME AFTER A 14 SECOND DELAY (TIME ADJ.), THE CONTROL SYSTEM SENSE NO STATUS VIA THE FAN'S CURRENT SENSOR RELAYS, DE-ENERGIZE THE SUPPLY FAN AND INITIATE ALARM.
   2. THE CONTROL SYSTEM SHALL INITIATE RESPECTIVE ALARM:
      A. IF THE FILTER PRESSURE DIFFERENTIAL TRANSMITTER (PDT-1) DETECTS A PRESSURE DIFFERENTIAL GREATER THAN 1.0 IN. W.G. (ADJ.) THE UNIT CONTINUES TO OPERATE IN ITS CURRENT MODE AND INITIATES ALARM.
      B. IF THE HIGH LEVEL SENSOR (LSH-1) DETECTS A HIGH WATER LEVEL IN THE UNIT DRAIN PAN, UNIT CONTINUES TO OPERATE IN ITS CURRENT MODE, AND INITIATES ALARM.

POINT NAME	FIELD DEVICE	POINT TYPE									FAIL POSITION/ STATUS		GRAPHICS					TRENDING (RE: MI-001 FOR NOTES)	ALARM (RE: MI-001 FOR NOTES)	NOTES (RE: MI-001 FOR NOTES)
		PHYSICAL				NETWORK				CALCULATED/ USER DEFINED	LOSS OF CTRL POWER	LOSS OF SIGNAL	FLOOR PLAN	SYSTEM	EQUIPMENT	NOM. VALUE/ SETPOINT	UNITS			
		AI	AO	BI	BO	AI	AO	BI	BO											
START/STOP									X		ON	ON			X			T1	A2	
UNIT STATUS								X						X	X			T1		N24
VENTILATION AIR FLOW SETPOINT										X					X		CFM	T2		
SPACE TEMPERATURE	TT-1					X							X	X	X		F	T2	A16	N24
SPACE TEMPERATURE SETPOINT (COOLING OCCUPIED)										X					X	74	F	T2		
SPACE TEMPERATURE SETPOINT (COOLING UNOCCUPIED)										X					X	85	F	T2		
SPACE TEMPERATURE SETPOINT (HEATING OCCUPIED)										X					X	70	F	T2		
SPACE TEMPERATURE SETPOINT (HEATING UNOCCUPIED)										X					X	65	F	T2		
SUPPLY AIR TEMPERATURE	TT-2					X								X	X		F	T2	A16	N24
SPACE TEMPERATURE SETPOINT (COOLING STANDBY)										X					X	77	F	T2		
SPACE TEMPERATURE SETPOINT (HEATING STANDBY)										X					X	68	F	T2		
MANUAL OVERRIDE SWITCH	HS-1							X						X	X					
TREATED OUTSIDE AIR ISOLATION DAMPER COMMAND	FV-1		X								LAST	100%		X	X			T1		
FILTER PRESSURE DIFFERENTIAL	PDT-1						X								X	1.0	IN. WG			
CONDENSATE HIGH LEVEL SWITCH	LSH-1						X								X				A1	

1 WATER SOURCE HEAT PUMP DIAGRAM
SCALE: NTS

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MECHANICAL - INSTRUMENTATION AND CONTROLS - DIAGRAMS

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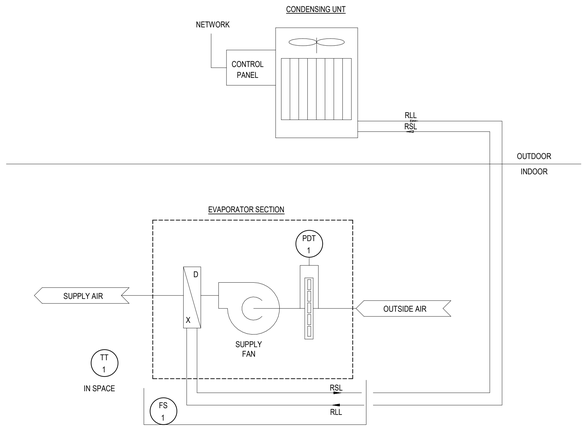


DX SPLIT SYSTEM CONTROL

A. GENERAL

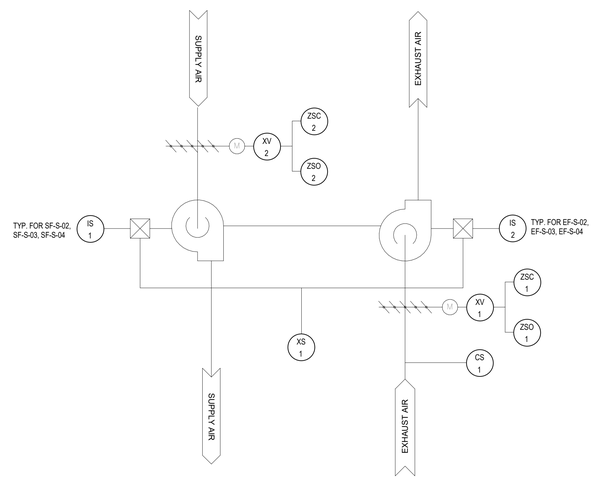
1. SYSTEM SERVES PESTICIDE STORAGE ROOM
2. EVAPORATOR SECTION PROVIDES 100% OUTSIDE AIR.

B. OPERATION
1. EVAPORATOR-SECTION FAN RUNS AT ALL TIMES TO MAINTAIN VENTILATION FLOW.
2. SYSTEM COMPRESSOR SHALL CYCLE TO MAINTAIN SPACE TEMPERATURE (TT-1)

C. ALARMS AND SAFETIES
1. IF SPACE TEMPERATURE CANNOT, FOR A PERIOD OF AT LEAST TEN (10) MINUTES BE MAINTAINED WITHIN +/- 5 DEGREES F (ADJ.), AN ALARM SHALL BE ISSUED.
2. IN THE EVENT EVAPORATOR SECTION FILTER STATIC PRESSURE EXCEEDS SET POINT, AN ALARM SHALL BE ISSUED.
3. IN THE EVENT EVAPORATOR SECTION CONDENSATE DRAIN PAN HIGH-LIMIT (FS-1), AN ALARM SHALL BE INITIATED.

POINT NAME	FIELD DEVICE	POINT TYPE									FAIL POSITION/ STATUS		GRAPHICS (RE: MI-001 FOR NOTES)					Tx (RE: MI-001 FOR NOTES)	Ax (RE: MI-001 FOR NOTES)	Nx (RE: MI-001 FOR NOTES)
		PHYSICAL				NETWORK				CALCULATED/ USER DEFINED	LOSS OF CTRL POWER	LOSS OF SIGNAL	FLOOR PLAN	SYSTEM	EQUIPMENT	NOM. VALUE/ SETPOINT	UNITS			
		AI	AO	BI	BO	AI	AO	BI	BO											
START/STOP	XS-1								X		ON	ON	1		X			1	2	
SPACE TEMPERATURE	TT-1					X							X	X	X		F	4	14	24
SPACE TEMPERATURE SETPOINT (COOLING OCCUPIED)										X				X	X	74	F	1		
FLOAT SWITCH HIGH LIMIT	FS-1							X					1	1	1			1	1	24
FILTER PRESSURE DIFFERENTIAL	PDT-1						X								X				A1	

3 MECHANICAL - DX SPLIT SYSTEM SINGLE INDOOR UNIT
SCALE: NTS



GENERAL VENTILATION - EXHAUST/SUPPLY FAN PAIRS

A. GENERAL

1. THREE (3) EXHAUST-FAN/SUPPLY-FAN PAIRS SERVE THE OPEN SHOP AREAS, WITH EACH FAN PAIR SERVING A SINGLE ZONE COMPRISING FOUR (4) STRUCTURAL BAYS.
2. OPERATION OF EACH ZONE'S EXHAUST-FAN / SUPPLY-FAN PAIR SHALL BE INTERLOCKED FOR REQUIRED SIMULTANEOUS OPERATION
3. EACH FAN PAIR SHALL BE STARTED AND STOPPED BY ITS RESPECTIVE WALL-MOUNTED MANUAL SWITCH LOCATED BETWEEN ITS ZONE'S SOUTH-BAY ROLL-UP DOORS.

B. SAFETIES AND ALARMS

1. AN ALARM SHALL BE INITIATED IF FAN ISOLATION DAMPER 'CLOSED' END SWITCH (ZSC-1, ZSC-2) IS NOT IN COMMANDED STATE AFTER A 2-MINUTE DELAY (TIME ADJ.)
2. WHEN CARBON MONOXIDE SENSOR IS DETECTED AT A SET PPM (SET BY GALVESTON COUNTY), ENERGIZE EXHAUST-FAN/SUPPLY-FAN PAIRS AND INITIATE ALARM.
3. AN ALARM SHALL BE INITIATED IF EITHER FAN IN THE FAN-PAIR ARRAGEMENT DOES NOT RETURN STATUS (IS-1, IS-2) AFTER BEING COMMANDED TO 'RUN' OR 'STOP.'

C. FAN-PAIR ON:

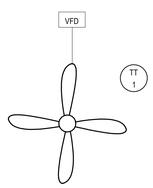
1. UPON A CALL FOR EACH EXHAUST-FAN/SUPPLY-FAN PAIR TO OPERATE, THE FAN-PAIR'S 2-POSITION EXHAUST AND SUPPLY AIR DAMPERS (XV-1 AND XV-2) OPEN.
2. WHEN THE 2-POSITION DAMPER OPEN END SWITCH (ZSO-1 AND ZSO-2) PROVES FULLY OPEN, THE EXHAUST-FAN/SUPPLY FAN PAIR IS ENERGIZED VIA THE FAN-PAIR START/STOP SWITCH (XS-1)
3. EXHAUST FAN(S) AND SUPPLY FAN(S) SHALL PROVIDE CONSTANT AIRFLOW AS INDICATED PER THE MECHANICAL SCHEDULE.

D. FAN-PAIR OFF:

1. UPON A CALL FOR AN EXHAUST-FAN/SUPPLY-FAN PAIR TO SHUT DOWN, DE-ENERGIZE THE FANS VIA FAN-PAIR'S START/STOP SWITCH (XS-1)
2. AFTER A 5 MINUTE TIME DELAY (ADJ.) THE FAN- PAIR'S 2-POSITION (ZSC-1 AND ZSC-2) DAMPERS WILL CLOSE.

POINT NAME	FIELD DEVICE	POINT TYPE									FAIL POSITION/ STATUS		GRAPHICS (RE: MI-001 FOR GRAPHICS NOTES)					TRENDING (RE: MI-001 FOR NOTES)	ALARM (RE: MI-001 FOR NOTES)	NOTES (RE: MI-001 FOR NOTES)
		PHYSICAL				NETWORK				CALCULATED/ USER DEFINED	LOSS OF POWER	CONTROL FAILURE	FLOOR PLAN	SYSTEM	EQUIPMENT	NOM. VALUE/ SETPOINT	UNITS			
		AI	AO	BI	BO	AI	AO	BI	BO											
EXHAUST FAN + SUPPLY FAN START/STOP	XS-1				X						ON	ON			X			T1	A2	
EXHAUST FAN STATUS	IS-1			X										X	X			T1	A2	
SUPPLY FAN STATUS	IS-2			X										X	X			T1	A2	
EXHAUST FAN ISOLATION DAMPER COMMAND	XV-1				X						OPEN	OPEN			X			T1	A4, A5	
EXHAUST FAN ISOLATION DAMPER OPEN	ZSO-1			X										G2,G3	G2,G3			T1	A22, A23	N2
EXHAUST FAN ISOLATION DAMPER CLOSED	ZSC-1			X										G2,G3	G2,G3			T1	A22, A23	N2
SUPPLY FAN ISOLATION DAMPER COMMAND	XV-2				X						OPEN	OPEN			X			T1	A4, A5	
SUPPLY FAN ISOLATION DAMPER OPEN	ZSO-2			X										G2,G3	G2,G3			T1	A22, A23	N2
SUPPLY FAN ISOLATION DAMPER CLOSED	ZSC-2			X										G2,G3	G2,G3			T1	A22, A23	N2
CARBON MONOXIDE SENSOR	CS-1			X									G1	G1	G1		PPM	T1	A1	N2, N24

2 MECHANICAL - MAINTENANCE SHOP FAN CONTROLS
SCALE: NTS



SEQUENCE OF OPERATION:
HIGH VOLUME LOW SPEED FANS - HVLS

A. ALL FANS OPERATE IN UNISON, WITH MULTIPLE UNITS GROUPED AND CONTROLLED BY A SINGLE THERMOSTAT. REFER TO MH-101A-S & MH-101B-S FOR GROUPINGS.
B. SCHEDULE
1. UNITS WILL OPERATE BASED ON A USER-DEFINED OCCUPANCY SCHEDULE WITH USER OVERRIDE.

POINT NAME	FIELD DEVICE	POINT TYPE									FAIL POSITION/ STATUS		GRAPHICS (RE: MI-001 FOR GRAPHICS)					TRENDING (RE: MI-001 FOR TRENDING)	ALARM (RE: MI-001 FOR ALARMS)	NOTES (RE: MI-001 FOR NOTES)
		PHYSICAL				NETWORK				CALCULATED/ USER DEFINED	LOSS OF POWER	CONTROL FAILURE	FLOOR PLAN	SYSTEM	EQUIPMENT	NOM. VALUE/ SETPOINT	UNITS			
		AI	AO	BI	BO	AI	AO	BI	BO											
FAN START/STOP	XS-1								X		ON	ON	1		X			T1	A2	
SPACE TEMPERATURE	TT-1					X							X	X	X		F	4	A14	N24

1 MECHANICAL - HVLS CONTROL DIAGRAM
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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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STATE OF TEXAS
CHRISTY N. TROUTMAN
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06/26/2020

MECHANICAL - INSTRUMENTATION AND CONTROLS - DIAGRAMS

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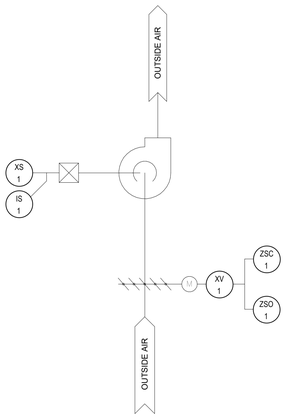

GENERAL SUPPLY FAN

A. GENERAL

1. SUPPLY FAN SHALL BE INTERLOCKED WITH WSHP(S).

B. SAFETIES AND ALARMS

1. SAFETIES SHALL SHUT DOWN O.A. FAN SYSTEM AND INITIATE AN ALARM IF SUPPLY FAN CURRENT SENSOR (IS-1) PROVES NO CURRENT DURING NORMAL FAN OPERATION.
2. SAFETIES SHALL INITIATE AN ALARM IF AN ISOLATION DAMPER END SWITCH POSITION (ZSC-1,ZSO-1) IS NOT COMMANDED STATE AFTER A 2-MINUTE (ADJ.) TIME DELAY.

C. UNIT FAN ON:

1. UPON A CALL FOR THE FAN TO OPERATE, THE 2-POSITION OUTSIDE AIR DAMPER (XV-1) OPENS.
2. WHEN WSHP(S) FAN IS PROVED ON, THE 2-POSITION OUTSIDE AIR DAMPER OPEN END SWITCH (ZSO-1) PROVES FULLY OPEN, THE SUPPLY FAN IS ENERGIZED VIA THE SUPPLY FAN START/STOP SWITCH (XS-1).
3. SUPPLY FAN SHALL PROVIDE CONSTANT AIRFLOW AS INDICATED PER THE MECHANICAL SCHEDULE.

D. UNIT FAN OFF:

1. UPON A CALL FOR THE UNIT TO SHUT DOWN, DE-ENERGIZE THE SUPPLY FAN VIA THE OUTSIDE SUPPLY FAN START/STOP SWITCH (XS-1).
2. WHEN WSHP(S) FAN(S) PROVE TO BE OFF AND AFTER A 5 MINUTE TIME DELAY (ADJ.) THE 2-POSITION SUPPLY AIR DAMPER WILL CLOSE.

POINT NAME	FIELD DEVICE	POINT TYPE									FAIL POSITION/ STATUS		GRAPHICS (RE: MI-001 FOR NOTES)					TRENDING (RE: MI-001 FOR NOTES)	ALARM (RE: MI-001 FOR NOTES)	NOTES (RE: MI-001 FOR NOTES)
		PHYSICAL				NETWORK				CALCULATED/ USER DEFINED	LOSS OF POWER	CONTROL FAILURE	FLOOR PLAN	SYSTEM	EQUIPMENT	NOM. VALUE/ SETPOINT	UNITS			
		AI	AO	BI	BO	AI	AO	BI	BO											
SUPPLY FAN START/STOP	XS-1				X						ON	ON			X			T1	A2	
SUPPLY FAN STATUS	IS-1			X										X	X			T1	A2	
SUPPLY FAN ISOLATION DAMPER COMMAND	XV-1				X						OPEN	OPEN			X			T1	A4, A5	
SUPPLY FAN ISOLATION DAMPER OPEN	ZSO-1			X										G2,G3	G2,G3			T1	A22,A23	N2
SUPPLY FAN ISOLATION DAMPER CLOSED	ZSC-1			X										G2,G3	G2,G3			T1	A22,A23	N2

1 MECHANICAL - MAINTENANCE SHOP OUTSIDE AIR FAN CONTROLS

SCALE: NTS

Page

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Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEAL(S)
Page Southerland Page, Inc.
Firm Registration No.15868

STATE OF TEXAS
CHRISTY N. TROUTMAN
124781
06/26/2020

MECHANICAL - INSTRUMENTATION AND CONTROLS - DIAGRAMS

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ONE-LINE AND RISER

FEEDER TAG
POINT OF CONNECTION
AMP LSIG — MEDIUM VOLTAGE DRAWOUT CIRCUIT BREAKER
AMP FUSE — MEDIUM VOLTAGE MOTOR STARTER WITH DISCONNECT
NAME KVA HV-LV %Z — POWER TRANSFORMER
GEN KW PF — GENERATOR
AMP — LOW VOLTAGE DRAWOUT CIRCUIT BREAKER:
- E.O. = ELECTRICALLY OPERATED
- G = GROUND
- I = INSTANTANEOUS
- L = LONG TIME
- S = SHORT TIME
- M.O. = MANUALLY OPERATED
- E.T. = ELECTRONIC TRIP

AMP — MOLDED CASE CIRCUIT BREAKER
ST — SHUNT TRIP BREAKER
AMP — FUSED DISCONNECT SWITCH
NON-FUSED DISCONNECT SWITCH
VFD — VARIABLE FREQUENCY DRIVE
M — MOTOR:
M = HORSE POWER
*= CONVERTER
~ = AC
- = DC
BATTERY
SURGE ARRESTOR
IMPEDANCE GROUNDED WYE
GROUND
DELTA
SOLID GROUNDED WYE
(QTY) PRI:SEC ACCUR — VOLTAGE TRANSFORMER
(QTY) PRI:SEC ACCUR — CURRENT TRANSFORMER
■ INDICATES POLARITY
PRI/SEC ACCUR — CURRENT TRANSFORMER, ZERO SEQUENCE
* — MULTIFUNCTION RELAY (* SEE GENERAL NOTE D)
MFM — DIGITAL MULTIFUNCTION METER
PQM — DIGITAL POWER QUALITY METER
SPD — SURGE PROTECTION DEVICE
SPD 1HA — PANELBOARD, SPD PANELBOARD
NAME
AMPACITY
KAIC RATING
NAME AMP POLES — TRANSFER SWITCHES:
ATS = AUTOMATIC
MTS = MANUAL
SIZE AF AT — COMBINATION STARTER WITH CIRCUIT BREAKER:
- FVNR = FULL VOLTAGE NON-REVERSING
- FVR = FULL VOLTAGE REVERSING
- 2S = TWO SPEED
- SFT = SOFT START

GROUNDING

GROUND BUS BAR
GROUND CONDUCTOR
LIGHTNING PROTECTION MAIN CONDUCTOR GROUND
GROUND ROD
LIGHTNING PROTECTION AIR TERMINAL
THROUGH ROOF TERMINAL
LIGHTNING PROTECTION SPHERE
GROUNDING CONNECTION TO STRUCTURE
FLUSH GROUND PLATE
GROUND CONDUCTOR CONNECTION
GROUNDING PIGTAIL
GTW — GROUND TEST WELL

PLAN VIEW

SINGLE RECEPTACLE
DUPLEX RECEPTACLE
* IG FOR ISOLATED GROUND RECEPTACLE
QUAD RECEPTACLE
SPECIAL PURPOSE RECEPTACLE
TELEVISION RECEPTACLE
RECEPTACLE ABOVE COUNTER
RECEPTACLE ON EMERGENCY POWER
RECEPTACLE ON CRITICAL POWER
DUPLEX RECEPTACLE - TAMPER RESISTANT
DUPLEX RECEPTACLE - HOOD MOUNTED
COMBINATION DUPLEX RECEPTACLE & USB CHARGING PORT
COMBINATION QUAD RECEPTACLE & USB CHARGING PORT
CEILING MOUNTED DUPLEX RECEPTACLE
CEILING MOUNTED QUAD RECEPTACLE
FLOOR MOUNTED DUPLEX RECEPTACLE
FLOOR MOUNTED QUAD RECEPTACLE
CEILING MOUNTED COMBINATION DATA AND DUPLEX RECEPTACLE
AV — CEILING MOUNTED COMBINATION AUDIO VISUAL, PHONE/DATA, AND DUPLEX RECEPTACLE
AV — CEILING MOUNTED COMBINATION AUDIO VISUAL, PHONE/DATA, AND QUAD RECEPTACLE
FLOOR MOUNTED COMBINATION DATA AND DUPLEX RECEPTACLE
FLOOR MOUNTED COMBINATION DATA AND QUAD RECEPTACLE
FLOOR MOUNTED COMBINATION PHONE/DATA AND DUPLEX RECEPTACLE
FLOOR MOUNTED COMBINATION PHONE/DATA AND QUAD RECEPTACLE
AV — FLOOR MOUNTED COMBINATION AUDIO VISUAL, PHONE/DATA, AND DUPLEX RECEPTACLE
AV — FLOOR MOUNTED COMBINATION AUDIO VISUAL, DATA, AND QUAD RECEPTACLE
POWER POLE
POWER POLE WITH DATA
D P — MODULAR FURNITURE CEILING MOUNTED COMBINATION POWER, PHONE/DATA
D P — MODULAR FURNITURE FLOOR MOUNTED COMBINATION POWER, PHONE/DATA
D P — MODULAR FURNITURE WALL MOUNTED POWER, PHONE/DATA
T — TRANSFORMER
$M — MOTOR RATED DISCONNECT SWITCH
M — MOTOR (M = HORSE POWER)
VFD — VARIABLE FREQUENCY DRIVE
FIRE SMOKE DAMPER
J — JUNCTION BOX, CEILING MTD
J — JUNCTION BOX, FLOOR MTD
J — SURFACE METAL RACEWAY
MH — MANHOLE
HH — HANDHOLE
UNDERGROUND/UNDERSLAB CONDUIT
DISTRIBUTION PANELBOARD, 480Y/277V OR 480V
DISTRIBUTION PANELBOARD, 208Y/120V OR 120/240V
BRANCH PANELBOARD, 480Y/277V OR 480V
BRANCH PANELBOARD, 208Y/120V OR 120/240V
RECESSED PANELBOARD
M — UTILITY KWH METER
* — TRANSFER SWITCH
ATS = AUTOMATIC
MTS = MANUAL
STATIC TRANSFER SWITCH
DISCONNECT SWITCH; NON-FUSED
DISCONNECT SWITCH; FUSED
COMBINATION MOTOR STARTER & DISCONNECT SWITCH
MOTOR STARTER; * INDICATES STARTER SIZE
MGAP — MEDICAL GAS ALARM PANEL
GAP — GENERATOR ALARM PANEL
EPO — EMERGENCY POWER OFF BUTTON

COMMUNICATION

TP — TELEPHONE PANEL
TTB — TELEPHONE TERMINAL BOARD
AMP — AMPLIFIER
Y Y — PHONE OUTLET, WALL MOUNTED
Y = PHONE QUANTITY
SLASH INDICATES ABOVE COUNTER DEVICE
X X — DATA OUTLET, WALL MOUNTED
X = DATA QUANTITY
SLASH INDICATES ABOVE COUNTER DEVICE
XY XY — COMBINATION PHONE/DATA OUTLET, WALL MOUNTED
X = DATA QUANTITY
Y = PHONE QUANTITY
SLASH INDICATES ABOVE COUNTER DEVICE
X — DATA OUTLET, CEILING MOUNTED
X = DATA QUANTITY
XY — COMBINATION PHONE/DATA OUTLET, CEILING MOUNTED
X = DATA QUANTITY
Y = PHONE QUANTITY
X — DATA OUTLET, FLOOR MOUNTED
X = DATA QUANTITY
XY — COMBINATION PHONE/DATA OUTLET, FLOOR MOUNTED
X = DATA QUANTITY
Y = PHONE QUANTITY
C — CLOCK
M — PUBLIC ADDRESS MICROPHONE OUTLET
M — PUBLIC ADDRESS MICROPHONE OUTLET, WALL MOUNTED
S* — PUBLIC ADDRESS SPEAKER
* - MUSIC OR PUBLIC ADDRESS
S* — PUBLIC ADDRESS SPEAKER, WALL MOUNTED
* - MUSIC OR PUBLIC ADDRESS
V — MUSIC/PUBLIC ADDRESS VOLUME CONTROL
I — INTERCOM
WAP — WIRELESS ACCESS POINT DATA OUTLET, CEILING MOUNTED, UON
WAP — WIRELESS ACCESS POINT DATA OUTLET, WALL MOUNTED

LIGHTING

2' X 4' LIGHTING FIXTURE
2' X 2' LIGHTING FIXTURE
1' x 4', STRIP LIGHTING FIXTURES
WALL MOUNTED LINEAR FIXTURE
ROUND & SQUARE DOWNLIGHT
EXTERIOR WALL PACK
AE — FIXTURE WITH CENTER LAMP ON CRITICAL POWER
(CENTER SHADED)
LETTER "E" IN FIXTURE TAG INDICATES BATTERY PACK TO BE PROVIDED
AE — FIXTURE ON CRITICAL POWER
(HALF SHADED)
LETTER "E" IN FIXTURE TAG INDICATES BATTERY PACK TO BE PROVIDED
AE — FIXTURE ON EMERGENCY POWER
(CENTER CROSS HATCHED)
LETTER "E" IN FIXTURE TAG INDICATES BATTERY PACK TO BE PROVIDED
EXIT SIGN, SINGLE FACE, CEILING MOUNTED
EXIT SIGN, DOUBLE FACE, CEILING MOUNTED
EXIT SIGN, SINGLE FACE, WALL MOUNTED
EXIT SIGN, DOUBLE FACE, WALL MOUNTED
EXIT SIGN DIRECTIONAL CHEVRONS
EMERGENCY BATTERY OPERATED UNIT
POLE MOUNTED LIGHTING :
- SINGLE HEAD
- DUAL HEADS @ 90 DEGREES
- DUAL HEADS @ 180 DEGREES
- TRIPLE HEAD
- QUAD HEAD

* = POLE MOUNTED LIGHTING CONTROLS:
- LC = LIGHTING CONTACTOR
- PC = PHOTOELECTRIC CELL
- TC = TIME CLOCK
- LOS = LIGHTING OVERRIDE SWITCH
- LCP = LIGHTING CONTROL PANEL

$*a * = LINE VOLTAGE SWITCHES:
- 3 = THREE-WAY
- 4 = FOUR-WAY
- O = OCCUPANCY SENSOR
- D = DIMMER
- K = KEY OPERATED
- P = PILOT
- T = TIMER (ELECTRONIC- PROGRAMMABLE
- EXP = EXPLOSION PROOF
- a,b,c,... = DENOTES SWITCHING CONTROL

OCCUPANCY SENSOR - DUAL TECHNOLOGY CEILING MOUNTED
*OS * =
- BLANK = 360° FIELD OF VIEW, 500FT²
- a = 360° FIELD OF VIEW, 1000FT²
- b = 360° FIELD OF VIEW, 2000FT²
- h = 360° HALLWAY/CORRIDOR, 2000FT²

LOW VOLTAGE LIGHTING CONTROLS BASIS OF DESIGN: LUTRON

WC	WALL MOUNTED SCENE CONTROLLER, x = 2 OR 4 SCENES
WCD	WALL MOUNTED 4-SCENE CONTROLLER WITH DIMMING
WG	WALL MOUNTED GRAPHIC 16-SCENE CONTROLLER WITH DIMMING
WS	WALL MOUNTED SWITCH: ON/OFF; X = 1, 2, OR 4 CHANNELS
WD	WALL MOUNTED SWITCH: ON/OFF w/DIMMING; X = 1, 2, OR 4 CHANNELS
CD	WALL MOUNTED SWITCH: ON/OFF w/DIMMING FOR COLOR TEMPERATURE
WTS	WALL MOUNTED TIMER SWITCH
WT	WALL MOUNTED DUAL TECHNOLOGY SENSOR SWITCH; SETTINGS (UON): "MANUAL ON - AUTO OFF"
WR	WALL MOUNTED INFRARED SENSOR SWITCH; SETTINGS (UON): "MANUAL ON - AUTO OFF"
WTD	WALL MOUNTED DUAL TECHNOLOGY SENSOR SWITCH WITH DIMMING; SETTINGS (UON): "MANUAL ON - AUTO OFF"
WRD	WALL MOUNTED INFRARED SENSOR SWITCH WITH DIMMING; SETTINGS (UON): "MANUAL ON - AUTO OFF"
OS	CORNER MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR WIDE VIEW; SETTINGS (UON): "AUTO ON - AUTO OFF"
VS	CORNER MOUNTED DUAL TECHNOLOGY VACANCY SENSOR WIDE VIEW; SETTINGS (UON): "AUTO ON - AUTO OFF"
DS	CORNER MOUNTED DAYLIGHT SENSOR WITH AUTOMATIC DIMMING; SETTINGS (UON): "AUTO ON - AUTO OFF"
OS	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR 360 DEGREE RANGE; SETTINGS (UON): "AUTO ON - AUTO OFF" X = E (EXTENDED RANGE)
VS	CEILING MOUNTED DUAL TECHNOLOGY VACANCY SENSOR 360 DEGREE RANGE; SETTINGS (UON): "MANUAL ON - AUTO OFF" X = E (EXTENDED RANGE)
DS	CEILING MOUNTED DAYLIGHT SENSOR WITH AUTOMATIC DIMMING; SETTINGS (UON): "AUTO ON - AUTO OFF"
OP	OUTDOOR PHOTCELL TO BE MOUNTED FACING NORTH; SETTINGS (UON): "ON/OFF"
CP	COLOR TEMPERATURE POWER PACK; 16 AMP RATING
PP	POWER PACK; 16 AMP RATING
PD	POWER PACK WITH DIMMING; 16 AMP RATING
EC	EMERGENCY POWER PACK WITH DIMMING FOR COLOR TEMPERATURE; 16 AMP RATING
EP	EMERGENCY POWER PACK; 16 AMP RATING
ED	EMERGENCY POWER PACK WITH DIMMING; 16 AMP RATING
PL	RECEPTACLE LOAD POWER PACK; 20 AMP RATING
SH	MOTORIZED SHADE POWER PACK; 20 AMP RATING
IO	RAISE / LOWER SWITCH INTERFACE
PS	INFRARED PARTITION SENSOR
MS	MOMENTARY SWITCH
	INDICATES WIRELESS CONTROLS
HUB	LIGHTING CONTROL HUB
TC	TIME CLOCK

ABBREVIATIONS

ABBREV.	DESCRIPTION
A, AMP	AMPERES
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERES INTERRUPTING CAPACITY
AL	ALUMINUM
ARCH	ARCHITECT, ARCHITECTUAL
ARF	ABOVE RAISED FLOOR
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BC	BARE COPPER
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
CMH	COMMUNICATIONS MANHOLE
COAX	COAXIAL CABLE
CONT	CONTINUATION
COORD	COORDINATION/COORDINATE
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
D	DEMOLISH
DATACOM	DATA AND/OR COMMUNICATION
DB	DUCT BANK
DC	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DEMO	DEMOLITION
DIA	DIAMETER
DIV	DIVISION
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DWG	DRAWING
E.O.	ELECTRICALLY OPERATED
EA	EACH
EDF	ELECTRIC DRINKING FOUNTAIN
EG	EQUIPMENT GROUND
ELS	EMERGENCY LIFE SAFETY
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
EPO	EMERGENCY POWER OFF
EXIST, EX, (E)	EXISTING
F	FUSE
FA	FIRE DETECTION AND ALARM SYSTEM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
FLR	FLOOR
FO	FIBER OPTIC(S)
FSD	FIRE SMOKE DAMPER
FTL	FEED-THROUGH LUGS
G, GND	GROUND
GEN	GENERATOR
GFCI	GROUND FAULT CURRENT NTERRUPTER
GFEP	GROUND FAULT EQUIPMENT PROTECTION
H	HOT
h1	
HH	HANDHOLE
HMT	HARMONIC MITIGATING TRANSFORMER
HOA	HAND OFF AUTOMATIC
HP	HORSEPOWER
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING
I/O	INPUT/OUTPUT
IG	ISOLATED GROUND
IT	INFORMATION TECHNOLOGY
JB	JUNCTION BOX
K	KILO, THOUSAND
KA	KILOAMPERES
KAIC	THOUSAND AMPERES INTERRUPTING CAPACITY
KCMIL	THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KW	KILOWATT
KWH	KILOWATT-HOUR
LAN	LOCAL AREA NETWORK
LC	LIGHTING CONTRACTOR
LCP	LIGHTING CONTROL PANEL
LED	LIGHT EMITTING DIODE
LP	LIGHTNING PROTECTION
LRA	LOCKED ROTOR AMPERES
LSI	LONG TIME, SHORT TIME, INSTANTANEOUS
LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND
LTG	LIGHTING
LV	LOW VOLTAGE WIRING
mA	MILLIAMPS
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MECH	MECHANICAL
MFAP	MAIN FIRE DETECTION & ALARM PANEL
MFR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MVA	MEGA VOLT AMPERES
MW	MEGA WATTS
N	NEW
N, NEU	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF	NON-FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OH	OVERHEAD
OL	OVERLOAD
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX, PUSHBUTTOM
PC	PHOTOCELL
PDU	POWER DISTRIBUTION UNIT
PF	POWER FACTOR
PH	PHASE
PIR	PASSIVE INFARED
PIV	POST INDICATOR VALVE
PLBG	PLUMBING
PMH	POWER MANHOLE
PNL	PANELBOARD
QTY	QUANTITY
R	RELOCATE
RCPT	RECEPTACLE
RE	REFER TO, REGARDING, REFERENCE
RM	ROOM
RMS	ROOT MEAN SQUARE
SCADA	SUPERVISORY CONTROL & DATA ACQUISITION
SCH	SCHEDULE
SPD	SURGE PROTECTION DEVICE
SPDT	SINGLE POLE, DOUBLE THROW
SPST	SINGLE POLE, SINGLE THROW
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STP	SHEILD TWISTED PAIR
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
SYNCH	SYNCHRONOUS
TBD	TO BE DETERMINED
TELECOM	TELECOMMUNICATIONS
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITER'S LABORATORY
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLE
UTIL	UTILITY
UTP	UNSHIELDED TWISTED PAIR
V	VOLTS
VA	VOLT AMPERES
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
VFD	VARIABLE FREQUENCY DRIVE
VT	VOLTAGE TRANSFORMER
W	WIRE, WATTS
W/	WITH
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER
Y	WYE
Y-Δ	WYE-DELTA
Z	IMPEDANCE

GENERAL NOTES

1. ALL SYMBOLS SHOWN ON THIS LEGEND MAY NOT APPEAR ON THIS SET OF DRAWINGS.
2. THE GENERAL NOTES APPLY TO ALLELECTRICAL DRAWINGS UNDER THIS CONTRACT. REFER TO INDIVIDUAL DRAWINGS FOR ADDITIONAL NOTES.
3. ALL ELECTRICAL WORK AND MATERIAL IS NEW, AND PROVIDE BY THE CONTRACTOR UON. SEE GRAPHIC LINE LEGEND TO DETERMINE WHEN ELECTRICAL EQUIPMENT SHOWN ON PLANS IS NEW OR EXISTING.
4. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT EVERY DETAIL OR EXACT LOCATION OF EQUIPMENT AND/OR CONDUIT IS SHOWN. VERIFY ALL CONDITIONS AND DIMENSIONS IN THE FEILD PRIOR TO ORDERING ANY MATERIAL OR PERFORMING ANY WORK. NOTIFY THE ENGINEER OF ANY CONDITIONS OR DIMENSIONS WHICH WOULD AFFECT THE PERFORMANCE OF WORK IN ACORDANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS.
5. IEEE STANDARD C37.2-1991, ELECTRICAL POWER SYSTEM DEVICE FUNCTION NUMBERS.
6. UPPER CASE LETTER ADJACENT TO LIGHTING FIXTURE ANNOTATION INDICATES FIXTURE TYPE. LOWER CASE LETTER ADJACENT TO FIXTURE INDICATES CONTROL CIRCUIT. EACH SWITCH LOWERCASE CHARACTER INDICATES AN INDIVIDUAL SWITCH. TWO OR MORE CHARACTERS AT A LUMINAIRE INDICATES MULTI-LEVEL SWITCHING OF THE LUMINAIRE.
7. THE FIRE ALARM SYSTEM SHALL BE A DELEGATED DESIGN. CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING THE SERVICES OF A FIRM THAT IS REGISTERED WITH THE STATE FIRE MARSHAL'S OFFICE, AND HAVING ONE OR MORE FULL TIME EMPLOYEES DULY LICENSED TO PERFORM PLANNING, ENGINEERING, PROGRAMMING, INSPECTION AND TESTING SERVICES FOR FIRE ALARM SYSTEMS. THE DULY LICENSED EMPLOYEE SHALL HAVE DELEGATED RESPONSIBILITY FOR THE DESIGN AND ENGINEERING OF A FIRE PROTECTION COMPONENT OR SYSTEM, SHALL SIGN, SEAL AND DATE THE FIRE ALARM SYSTEM DOCUMENTS, AND PROVIDE THESE DOCUMENTS TO THE LOCAL FIRE MARSHAL AND/OR AUTHORITY HAVING JURISDICTION FOR APPROVAL, PRIOR TO INSTALLATION OF THE SYSTEM. THE FIRE ALARM DESIGN SHALL BE NFPA 72 CODE COMPLIANT AND SHALL MEET ALL LOCAL, STATE AND FEDERAL CODES AND REGULATIONS, INCLUDING AMENDMENTS.
8. ALL NEW FIRE ALARM DEVICES SHALL FOLLOW THE EXISTING ALARM SEQUENCE FOR FUNCTION AND PERFORMANCE.
9. COORDINATE WITH OTHER TRADES.
10. COORDINATE WORK BETWEEN DIVISION 26, 27, AND 28 FOR SECURITY, COMMUNICATIONS, AUDIO/VISUAL (AV), AND FIRE ALARM SYSTEMS. DIVISION 26 SHALL PROVIDE EMPTY RACEWAY & BOXES FOR AV, SECURITY, DATA, COMMUNICAITONS, AND FIRE ALARM SYSTEM WIRING, OUTLETS, AND DEVICES. COORDINATE WITH DIVISION 27 AND 28 FOR DATA, COMMUNICATION, SECURITY, AV SYSTEM, AND FIRE ALARM DEVICE AND OUTLET LOCATIONS. REFER TO COMMUNICATION, AV, SECURITY, AND FIRE ALARM SYSTEM DRAWINGS FOR WORK BY DIVISIONS 27 AND 28. COMMUNICATIONS, AUDIO/VISUAL (AV), AND FIRE ALARM SYSTEMS. DIVISION 26 SHALL PROVIDE EMPTY RACEWAY & BOXES FOR AV, SECURITY, DATA, COMMUNICATIONS, AND FIRE ALARM SYSTEM WIRING, OUTLETS, & DEVICES. COORDINATE W/DIV 27 & 28 FOR DATA, COMMUNICATION, SECURITY, AV SYSTEM, AND FIRE ALARM DEVICE AND OUTLET LOCATIONS. REFER TO COMMUNICATION, AV, AND SECURITY, AND FIRE ALARM SYSTEM DRAWINGS FOR WORK BY DIV 27 & 28.
11. ELECTRICAL MATERIAL AND EQUIPMENT: NO ELECTRICAL MATERIALS, APPARATUS, DEVICES, APPLIANCES, FIXTURES OR EQUIPMENT SHALL BE SOLD OR INSTALLED IN THE CITY OF HOUSTON UNLESS THEY ARE IN CONFORMANCE WITH THE PROVISIONS CITY OF HOUSTON ELECTRICAL CODE, THE LAWS OF THE STATE OF TEXAS AND APPLICABLE RULES AND REGUSLATIONS ISSUED UNDER THE AUTHORITY OF THE STATE STATUTES. THE MAKER'S NAME, TRADEMARK, OR IDENTIFICATION SYMBOL SHALL BE PLACED ON ALL ELECTRICAL MATERIALS, APPARATUS', DEVICES, APPLIANCES, FIXTURES, AND EQUIPMENT USED OR INSTALLED UNDER THE PROVISIONS OF THIS CODE. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE LISTED AND LABELED FOR INTENDED USE AND SHALL BE INCLUDED IN A LIST PUBLISHED BY AN APPROVED AGENCY.
12. PRIOR TO PASSING FINAL INSPECTION, THE CONSTRACTOR SHALL PROVIDE DOCUMENTED EVIDENCE TO THE ENGINEER AND OWNER THAT THE LIGHTING CONTROL SYSTEMS HAVE BEEN TESTED TO ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND MANUFACTURER'S INSTRUCTIONS. FUNCTIONAL TESTING SHALL BE IN ACCORDANCE WITH IECC 2015, SECTIONS C408.3.1.1 AND C408.3.1.2 FOR APPLICABLE CONTROL TYPE.
13. DOCUMENTS CERTIFYING THAT THE INSTALLED LIGHTING CONTROLS MEET DOCUMENTED PERFORMANCE CRITERIA OF IECC 2015 SECTION C405 SHALL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS FROM THE DATE OF RECIEPT OF CERTIFICATE OF OCCUPANCY.
14. GROUNDING OF RECEPTACLES AND FIXED ELECTRICAL EQUIPMENT IN PATIENT CARE AREAS: ALL BRANCH CIRCUITS SERVING PATIENT CARE AREAS SHALL BE PROVIDED WITH AN EFFECTIVE GROUND FAULT CURRENT PATH BY INSTALLATION IN A METAL RACEWAY SYSTEM, OR A CABLE HAVING A METALLIC ARMOR ASSEMBLY. THE METALLIC RACEWAY SYSTEM OR METALLIC ARMORED CABLE CABLE SHALL ITSELF QUALIFY AS AN EQUIPMENT GROUNDING CONDUCTOR. THE FOLLOWIING ITEMS SHALL BE DIRECTLY CONNECTED TO AN INSULATED ARMORED CABLE: (1) THE GROUNDING TERMINALS OF ALL RECEPTACLES. (2) METAL BOXES AND ENCLOSURES CONTAINING RECEPTACLES. (3) ALL NON-CURRENT CARRYING CONDUCTIVE SERVICES OF FIXED ELECTRICAL EQUIPMENT LIKELY TO BECOME ENERGIZED THAT ARE SUBJECT TO PERSONAL CONTACT, OPERATING AT OVER 1000 VOLTS.

GENERAL DEMOLITION NOTES

1. DRAWINGS ARE BASED ON EXISTING BUILDING PLANS AND FIELD INVESTIGATION WITHOUT DEMOLITION. RENOVATION HAS OCCURRED IN VARIOUS STAGES AND RECORD DRAWINGS ARE NOT AVAILABLE FOR ALL STAGES OF PAST CONSTRUCTION. EXAMINE AVAILABLE DRAWINGS TO AVOID CONFLICTS.
2. VISIT THE SITE PRIOR TO COMMENCING WORK TO DETERMINE THE EXISTING SITE CONDITIONS. IF THE CONTRACTOR DETERMINES THAT ANY CONDITIONS EXIST THAT WILL MATERIALLY AFFECT THE PROJECT, INFORM THE OWNER IMMEDIATELY AND DO NOT PERFORM ANY WORK BEFORE RESOLUTION OF THE PROBLEM.
3. CONFIRM THE LOCATIONS OF EXISTING UTILITIES AND SERVICES WITHIN THE INDICATED CONSTRUCTION AREA. MAINTAIN EXISTING SERVICES TO ADJACENT AREAS THAT WILL REMAIN IN OPERATION AND SERVED BY THESE SERVICES. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF DAMAGES TO EXISTING SERVICES OR UTILITIES.
4. DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL BE COORDINATED WITH THE OWNER TO MINIMIZE DISRUPTION OF THE NORMAL DAILY FUNCTIONS WITHIN THE AREAS TO REMAIN IN OPERATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY POWER AS MAY BE REQUIRED TO MAINTAIN SERVICE FOR THE AREAS TO REMAIN IN OPERATION. PROVIDE ALL EQUIPMENT, MAKE ALL ARRANGEMENTS, AND MAKE ALL CONNECTIONS REQUIRED FOR TEMPORARY POWER.
5. GENERAL SCOPE OF ELECTRICAL DEMOLITION CONSISTS OF DISCONNECTING AND REMOVING ALL LUMINAIRES, WIRING DEVICES, EQUIPMENT, BRANCH CIRCUIT WIRING AND CONDUIT WITHIN THE CONFINES OF THE DEMOLITION AREA, AS DEFINED ON THE DEMOLITION DRAWINGS. LUMINAIRES AND OTHER ELECTRICAL ITEMS OR EQUIPMENT AS DEFINED BY THE OWNER SHALL BE TURNED OVER TO THE OWNER.
6. WHERE EQUIPMENT OR DEVICES ARE NOTED AS "REMOVE", REMOVE ALL CONDUCTORS ASSOCIATED WITH THESE ITEMS TO THE LAST ACTIVE ITEM ON THE CIRCUIT, OR TO THE BRANCH CIRCUIT BREAKER IF ALL ITEMS ON THE CIRCUIT ARE REMOVED. EXISTING CONDUITS THAT WILL NOT BE REUSED SHALL BE REMOVED WHERE THEY ARE RUN EXPOSED, RUN ABOVE CEILING OR IN FLOOR PLENUMS. CONDUITS RUN CONCEALED IN WALLS OR FLOOR SLABS SHALL BE CUT OFF FLUSH WITH SURFACE AND ABANDONED. ALL VOIDS IN WALLS OR FLOOR LEFT BY THE REMOVAL OF ELECTRICAL EQUIPMENT OR CONDUITS SHALL BE FILLED WITH NON-SHRINK GROUT AND FINISHED TO MATCH EXISTING ADJACENT SURFACES.
7. THE CONTRACTOR SHALL REROUTE AND RECONNECT ANY CIRCUIT OR CIRCUITS THAT WILL REMAIN IN USE BUT INTERFERES WITH NEW CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING EQUIPMENT THAT COULD BE DAMAGED DUE TO CONSTRUCTION. EXISTING EQUIPMENT DAMAGED DURING DEMOLITION OR CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT NO COST TO THE OWNER.
9. EXISTING JUNCTION BOXES TO REMAIN SHALL HAVE COVERS. PROVIDE COVERS AND INDICATE THE TYPE OF CIRCUIT OR CIRCUIT NUMBERS PASSING THROUGH THE BOX.
10. FLOURESCENT AND HID LIGHTING REMOVED DURING DEMOLITION SHALL BE ASSUMED TO HAVE COMPONENTS THAT CONSTITUE HAZARDOUS WASTE. BALLASTS ARE ASSUMED TO CONTAIN PCB'S AND SHALL BE DISPOSED OF AS PCB CONTAMINATED WASTE. LAMPS THAT ARE SCHEDULED FOR DISPOSAL SHALL BE REMOVED PRIOR TO THE START OF ANY OTHER DEMOLITION AND DISPOSED OF AS MERCURY-CONTAMINATED WASTE.
11. ANY OPENINGS CREATED IN A FIRE OR SMOKE RATED WALL BY PROVISION OR REMOVAL OF ANY ELECTRICAL DEVICE OR CONDUIT, SHALL BE SEALED AFTER THE WORK IS COMPLETED WITH A UL APPROVED FIRE/SMOKE SEALANT APPROPRIATE TO RE-ESTABLISH THE PREVIOUS RATING OF THE WALL. SEE ARCHITECTURAL PLANS FOR FIRE RATED WALLS/ FLOORS AND THEIR RATING.

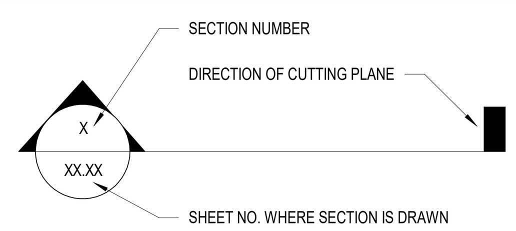
APPLICABLE CODES & STANDARDS

INTERNATIONAL BUILDING CODE - 2015 EDITION
INTERNATIONAL ENERGY CONSERVATION CODE 2015 EDITION
NATIONAL ELECTRICAL CODE - 2014 EDITION

GRAPHIC LINE AND HOMERUN

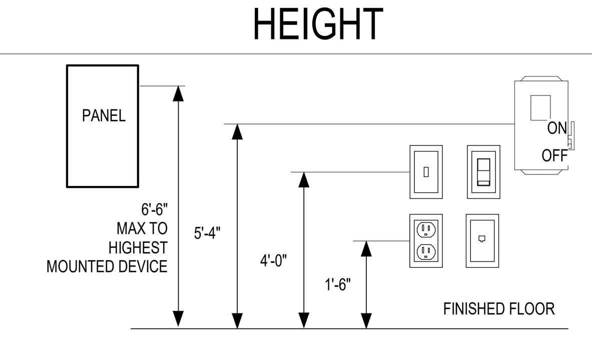
DEMOLITION PLANS:
EXISTING TO REMAIN
RENOVATION PLANS:
EXISTING TO REMAIN
NEW WORK PLANS:
NEW WORK TO BE PROVIDED
FLEXIBLE CONDUIT
CONDUIT RISER UP
CONDUIT RISER DOWN
LA - 1 — SINGLE PHASE HOMERUN CIRCUIT WITH ONE PHASE CONDUCTOR, ONE NEUTRAL CONDUCTOR, AND ONE GROUND CONDUCTOR (2#12, 1#12 GND IN 3/4"C, UON)
LA - 1, 3 — SINGLE PHASE, 2-POLE HOMERUN CIRCUIT WITH TWO PHASE CONDUCTORS AND ONE GROUND CONDUCTOR (S#12, 1#12 GND IN 3/4" C, UON)
LA - 1, 3, 5 — THREE PHASE, 3-POLE HOMERUN CIRCUIT WITH TWO PHASE CONDUCTORS AND ONE GROUND CONDUCTOR (3#12, 1#12 GND IN 3/4" C, UON)
LA - 1,3 — TWO SINGLE PHASE HOMERUN CIRCUITS WITH TWO PHASE CONDUCTORS, TWO NEUTRAL CONDUCTORS, AND ONE GROUND CONDUCTOR (4#12, 1#12 GND IN 3/4" C, UON)
LA - 1, 3, 5 — THREE SINGLE PHASE HOMERUN CIRCUITS WITH THREE PHASE CONDUCTORS, THREE NEUTRAL CONDUCTORS, AND ONE GROUND CONDUCTOR (6#12 1#12 GND IN 3/4" C)
LA - 1 — CIRCUIT HOMERUN; TICK MARKS INDICATE CONDUCTORS
PHASE CONDUCTOR
NEUTRAL CONDUCTOR
GROUND CONDUCTOR
SWITCH LEG CONDUCTOR
#8/#8/#12 — HOMERUN CALL-OUT
PHASE/NEUTRAL/GROUND
#8/#12 — HOMERUN CALL-OUT
PHASE/GROUND

GRAPHIC DETAIL SYMBOL



EXAMPLE: A SECTION IS CUT ON SHEET E-101 WITH A TAG OF 1/E-301.
THEN: SECTION NO. 1 IS DRAWN ON SHEET NO. E-301

ELECTRICAL DEVICE MOUNTING HEIGHT



NOTE: ELEVATION INDICATED ARE TYPICAL; SEE ARCH DWGS AND ELEVATIONS FOR SPECIFIC DEVICE MOUNTING HEIGHTS.

ELECTRICAL SHEET INDEX

DWG NUMBER	DWG NAME
ELECTRICAL - TYPICAL	
E-001	ELECTRICAL LEGENDS, ABBREVIATIONS, AND GENERAL NOTES
E-401	ELECTRICAL ENLARGED PLANS
EP-500	ELECTRICAL POWER DETAILS DETAILS
EL-501	ELECTRICAL LIGHTING CONTROL DETAILS
EL-502	ELECTRICAL LIGHTING CONTROL DETAILS
EL-503	ELECTRICAL LIGHTING CONTROL DETAILS
EL-504	ELECTRICAL LIGHTING CONTROL DETAILS
EL-505	ELECTRICAL LIGHTING CONTROL DETAILS
EL-506	ELECTRICAL LIGHTING CONTROL DETAILS
EL-507	ELECTRICAL LIGHTING CONTROL DETAILS
EL-508	ELECTRICAL LIGHTING CONTROL DETAILS
EL-509	ELECTRICAL LIGHTING CONTROL DETAILS
E-601	ELECTRICAL RISER DIAGRAM
E-602	ELECTRICAL WIRE SCHEDULES - COPPER
E-603	ELECTRICAL WIRE SCHEDULE - ALUMINUM
ELECTRICAL - SITE	
ES-101S	ELECTRICAL SITE PLAN
ELECTRICAL - OFFICE	
EP-101O	ELECTRICAL POWER PLAN - OFFICE - LEVEL 01
EL-101O	ELECTRICAL LIGHTING PLAN - OFFICE - LEVEL 01
EG-101O	ELECTRICAL GROUNDING & LIGHTNING PROTECTION PLAN - OFFICE - LEVEL 01
EQ-101O	ELECTRICAL EQUIPMENT PLAN - OFFICE - LEVEL 01
EQ-102O	ELECTRICAL EQUIPMENT PLAN - OFFICE - ROOF LEVEL
ELECTRICAL - MAINTENANCE SHOP	
EP-101M-A	ELECTRICAL POWER PLAN - SHOP - LEVEL 01 - AREA A
EP-101M-B	ELECTRICAL POWER PLAN - SHOP - LEVEL 01 - AREA B
EL-101M-A	ELECTRICAL LIGHTING PLAN - SHOP - LEVEL 01 - AREA A
EL-101M-B	ELECTRICAL LIGHTING PLAN - SHOP - LEVEL 01 - AREA B
EL-102M-A	ELECTRICAL LIGHTING CONTROLS PLAN - SHOP - LEVEL 01
EL-102M-B	ELECTRICAL LIGHTING CONTROLS PLAN - SHOP - LEVEL 01
EQ-101M-A	ELECTRICAL EQUIPMENT PLAN - SHOP - LEVEL 01 - AREA A
EQ-101M-B	ELECTRICAL EQUIPMENT PLAN - SHOP - LEVEL 01 - AREA B
EG-101M-B	ELECTRICAL GROUNDING & LIGHTNING PROTECTION PLAN - SHOP - LEVEL 01
ELECTRICAL - WAREHOUSE	
EP-101W	ELECTRICAL POWER PLAN - WAREHOUSE - LEVEL 01
EL-101W	ELECTRICAL LIGHTING PLAN- WAREHOUSE - LEVEL 01
EL-102W	ELECTRICAL LIGHTING CONTROLS PLAN - WAREHOUSE - LEVEL 01
EG-101W	ELECTRICAL LIGHTNING PROTECTION PLAN - WAREHOUSE - ROOF LEVEL
EQ-101W	ELECTRICAL EQUIPMENT PLAN - WAREHOUSE - LEVEL 01
ELECTRICAL - WASHRACK & FUELAIR	
EP-101RF	ELECTRICAL PLAN - WASH RACK & FUELING STATION
EG-101RF	ELECTRICAL GROUNDING & LIGHTNING PROTECTION PLAN

Grand total: 37

Page/

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REVISION	DESCRIPTION	DATE

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PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL LEGENDS, ABBREVIATIONS, AND GENERAL NOTES

DRAWN BY: DGW	CHECKED BY: DGW
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: ABBREV
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

E-001
SHEET NUMBER

FILE PATH
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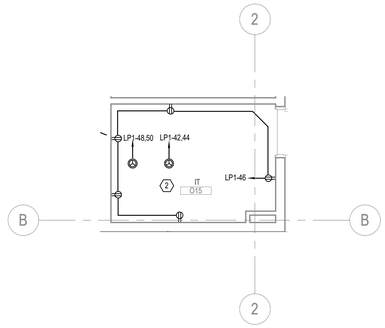
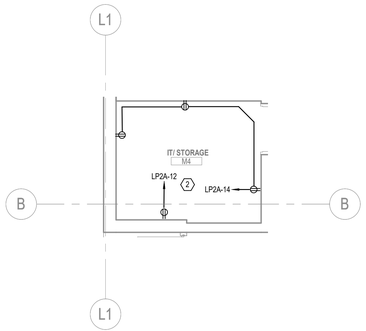
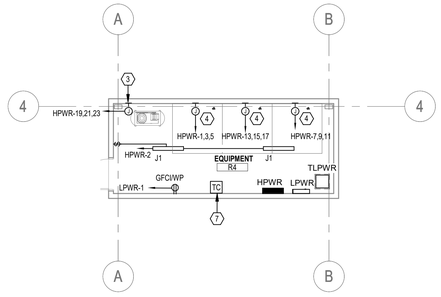
DATE STAMP: 6/26/2020 3:23:55 PM



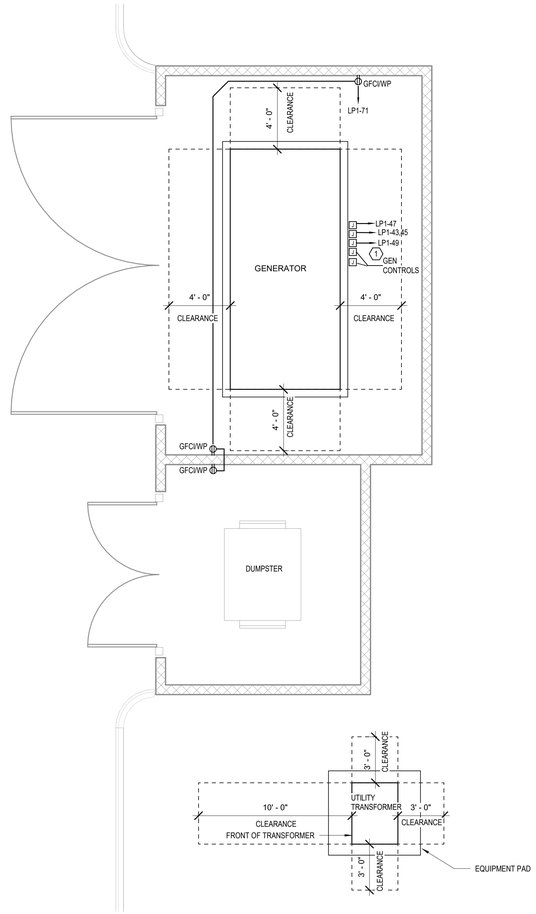
4 ENLARGED PLAN - OFFICE - IT RM
SCALE: 1/4" = 1'-0"

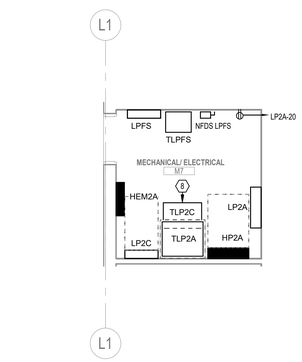


6 ELECTRICAL POWER PLAN - SHOP IT RM
SCALE: 1/4" = 1'-0"

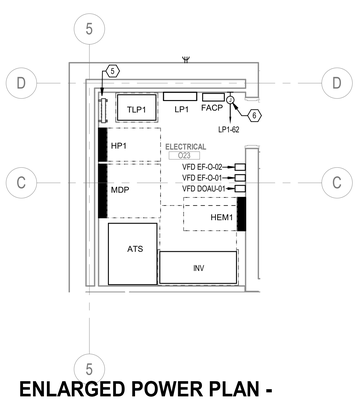


3 ENLARGED PLAN - WASH RACK
SCALE: 1/8" = 1'-0"





5 ENLARGED POWER PLAN - SHOP RM ME001
SCALE: 1/4" = 1'-0"



2 ENLARGED POWER PLAN - OFFICE RM 27
SCALE: 1/4" = 1'-0"

1 ENLARGED PLAN - UTILITY YARD
SCALE: 1/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PROVIDE GENERATOR AUXILIARY CIRCUITS AND CONTROLS AS REQUIRED PER MANUFACTURERS SPECIFICATIONS (BATTERY CHARGER, ALTERNATOR HEATER, COOLANT & LUBE OIL HEATER).
2	COORDINATE LOCATION AND REQUIREMENT OF TELECOMMUNICATION EQUIPMENT WITH THE T-SERIES DRAWINGS PRIOR TO INSTALLATION.
3	CONNECTION TO AIR COMPRESSOR UNIT (AC-1), AND CIRCUIT AS SHOWN. COORDINATE EXACT LOCATION AND REQUIREMENT WITH DIV 22.
4	PROVIDE POWER FOR WASH RACK EQUIPMENT. COORDINATE REQUIREMENTS WITH EQUIPMENT MANUFACTURER PRIOR TO INSTALLATION.
5	GROUND BAR. REFER TO DETAIL 9/EG-500.
6	PROVIDE POWER FOR FIRE ALARM CONTROL PANEL FACP.
7	WASH RACK LIGHTING TO BE CONTROLLED VIA TIMECLOCK. COORDINATE EXACT REQUIREMENTS WITH LIGHTING MANUFACTURER PRIOR TO INSTALLATION.
8	REFER TO DETAIL 5/EP-501 FOR STACKED TRANSFORMERS DETAIL.

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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STATE OF TEXAS
DAVID G. WEATHERLY
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06/26/2020

ELECTRICAL ENLARGED PLANS

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER	PROJECT ABBREVIATION
418198	ABBREV
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

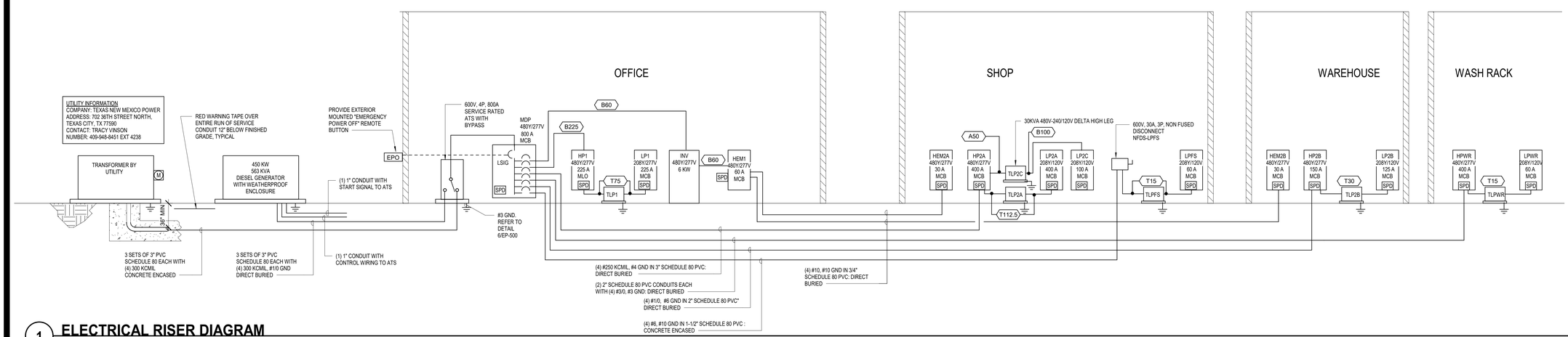
E-401
SHEET NUMBER

FILE PATH W:\418198\418198E-GC ROAD_BRIDGE-R19-kmeeks.RVT
USER NAME:
DATE STAMP: 6/26/2020 3:24:00 PM

UNLESS OTHERWISE NOTED REFER TO PANEL EQUIPMENT SCHEDULE AND TRANSFORMER SCHEDULE FOR EQUIPMENT SIZES THIS SHEET

IN LIEU OF THE MAXIMUM AVAILABLE FAULT CURRENT MARKING AS REQUIRED BY 110.24, A PERMANENTLY AFFIXED LABEL SHALL BE APPLIED WITH THE AVAILABLE FAULT CURRENT AT THE TIME OF INSTALLATION AND CALCULATION. THE LABEL SHALL BE 2"x3" IN SIZE AND SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND. THIS LABEL SHALL ALSO INCLUDE THE DATE OF THE CALCULATION.

REFER TO SHEET E-602 FOR WIRE AND TRANSFORMER TAGS. THESE SCHEDULES ARE FOR ABOVE GROUND INSTALLATIONS ONLY. XXX



1 ELECTRICAL RISER DIAGRAM

SCALE: NONE

GENERATOR LOAD ANALYSIS

#	MAIN ELECTRICAL SERVICE ENTRANCE EQUIPMENT	LOAD
1	ATS	581155 VA
2		
3		
4		
	TOTAL CONNECTED LOAD (VA)	581155 VA
	TOTAL CONNECTED LOAD (AMPS)	699 A

Load...	Connected Load	Demand...	Estimated Demand
HVAC	47076 VA	100.00%	47076 VA
Lighting	21660 VA	125.00%	27075 VA
Motor	89276 VA	108.06%	96476 VA
Other	49075 VA	100.00%	49075 VA
Receptacles	36620 VA	63.65%	23310 VA
Heating	78000 VA	100.00%	78000 VA
Kitchen	18000 VA	65.00%	11700 VA
Equipment	241516 VA	70.00%	169061 VA
TOTALS (VA)	581155 VA	86.33%	501690 VA
TOTALS (AMPS)	699 A	86.33%	603 A

LOAD ANALYSIS

#	MAIN ELECTRICAL SERVICE ENTRANCE EQUIPMENT	LOAD
1	ATS	581155 VA
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3		
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TOTALS (VA)	581155 VA	86.33%	501690 VA
TOTALS (AMPS)	699 A	86.33%	603 A

Panel Equipment Schedule

Panel Name	Mains	Mains Type	Total Estimated Demand Current	Voltage	Short Circuit Rating (KAIC)	Short Circuit Current (AIC)	Enclosure	Supply From	Location
MDP	800 A	MCB	603 A	480	42	31534 A	NEMA 1	ATS	ELECTRICAL O23
LP2A	400 A	MCB	212 A	208	22	20605 A	NEMA 1	TLP2A	MECHANICAL/ ELECTRICAL M7
HPWR	400 A	MCB	185 A	480	22	17545 A	NEMA 4X	MDP	EQUIPMENT R4
HP2A	400 A	MCB	257 A	480	32	22386 A	NEMA 1	MDP	MECHANICAL/ ELECTRICAL M7
HP1	225 A	MLO	128 A	480	42	31298 A	NEMA 1	MDP	ELECTRICAL O23
LP1	225 A	MCB	151 A	208	32	28146 A	NEMA 1	TLP1	ELECTRICAL O23
HP2B	150 A	MCB	38 A	480	14	9603 A	NEMA 1	MDP	TOOL STORAGE W6
LP2B	125 A	MCB	68 A	208	10	7293 A	NEMA 1	TLP2B	TOOL STORAGE W6
LP2C	100 A	MCB	12 A	208	14	13989 A	NEMA 1	TLP2C	MECHANICAL/ ELECTRICAL M7
LPWR	60 A	MCB	0 A	208	14	12157 A	NEMA 4X	TLPWR	EQUIPMENT R4
LPFS	60 A	MCB	5 A	208	10	2461 A	NEMA 1	TLPFS	MECHANICAL/ ELECTRICAL M7
HEM1	60 A	MLO	6 A	480	18	14511 A	NEMA 1	MDP	ELECTRICAL O23
HEM2A	30 A	MCB	2 A	480	14	2290 A	NEMA 1	HEM1	MECHANICAL/ ELECTRICAL M7
HEM2B	30 A	MCB	1 A	480	14	737 A	NEMA 1	HEM1	TOOL STORAGE W6

Transformer Equipment

Panel Name	Total Estimated Demand	Supply From	Enclosure	Location
TLP1	54288 VA	HP1	NEMA 1	ELECTRICAL O23
TLP2A	76330 VA	HP2A	NEMA 1	MECHANICAL/ ELECTRICAL M7
TLPFS	1875 VA	MDP	NEMA 1	MECHANICAL/ ELECTRICAL M7
TLP2B	24413 VA	HP2B	NEMA 1	TOOL STORAGE W6
TLPWR	180 VA	HPWR	NEMA 4X	EQUIPMENT R4
TLP2C	4802 VA	HP2A	NEMA 1	MECHANICAL/ ELECTRICAL M7

Transfer Switch Equipment

Panel Name	Supply From	Total Estimated Demand Current	Short Circuit Current Rating (AIC)	Short Circuit Current (AIC)	Enclosure	Location
ATS	UTILITY	603 A	42000 A	31866 A	NEMA 1	ELECTRICAL O23

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06/26/2020

ELECTRICAL RISER DIAGRAM

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER	PROJECT ABBREVIATION
418198	ABBREV
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

E-601
SHEET NUMBER

FILE PATH: W:\418198\418198E-GC ROAD_BRIDGE-R19-kmeeks.RVT
USER NAME:
DATE STAMP: 6/26/2020 3:24:01 PM

TRANSFORMER SCHEDULE

DESIGNATION	TRANSFORMER	PRIMARY SIDE - 480 VOLT, 3-PHASE, 3-WIRE						SECONDARYY SIDE - 208Y/120 VOLT, 3-PHASE, 4-WIRE								
	kVA 40ºC AMBIENT	PRIMARY NOTE 1	CONDUCTORS			FLEX CONDUIT 3-WIRE W/GND		SYSTEM BONDING JUMPER	SUPPLY SIDE BONDING JUMPER	GROUNDING ELECTRODE CONDUCTOR	SECONDARY	CONDUCTORS			FLEX CONDUIT 3-WIRE W/GND	
		OCPD	SETS	WIRE SIZE	GND WIRE	THHN THWN	XHHW				OCPD	SETS	WIRE SIZE	GND WIRE	THHN THWN	XHHW
T15	15	25	1	10	10	3/4"	3/4"	8	8	8	60	1	6	10	1"	1"
T30	30	50	1	8	10	3/4"	3/4"	8	8	8	100	1	2	6	1-1/2"	1-1/2"
T45	45	70	1	4	8	1"	1"	4	4	4	150	1	2/0	6	2"	2"
T75	75	125	1	1	6	1-1/2"	1-1/2"	2	2	2	225	1	4/0	4	2-1/2"	2-1/2"
T112	112.5	175	1	2/0	6	1-1/2"	1-1/2"	1/0	1/0	1/0	400	1	600	3	3-1/2"	3-1/2"
T150	150	225	1	4/0	4	2"	2"	2/0	2/0	2/0	600	2	350	1	3"	3"
T225	225	350	1	500	3	3"	3"	3/0	3/0	3/0	800	2	600	1/0	3-1/2"	3-1/2"
T300	300	500	2	250	2	2"	2"	250	250	250	1000	3	400	2/0	3"	3"
T500	500	800	2	600	1/0	3"	3"	400	400	400	1600	4	600	4/0	3-1/2"	3-1/2"

NOTES:
1. NEC DISCONNECTING MEANS - TRANSFORMER SHALL HAVE A PRIMARY DISCONNECTING MEANS LOCATED EITHER IN SIGHT OF THE TRANSFORMER OR IN A REMOTE LOCATION. WHERE LOCATED IN A REMOTE LOCATION, THE DISCONNECTING MEANS SHALL BE LOCKABLE, AND THE LOCATION OF THE DISCONNECTING MEANS SHALL BE FIELD MARKED ON THE TRANSFORMER.

ONE WIRE, NEUTRAL AND GROUND

DESIGNATION	LOAD (AMPS)	INSULATION TYPE	CONDUCTOR MATERIAL	PHASE WIRE SIZE	NUMBER OF PHASE CONDUCTORS	NEUTRAL WIRE SIZE	NUMBER OF NEUTRAL CONDUCTORS	EQUIPMENT GROUND SIZE	CONDUIT TYPE	CONDUIT SIZE	NUMBER OF PARALLEL RUNS
C15	15	THHN/THWN	COPPER	12	1	12	1	12	EMT	3/4"	1
C20	20	THHN/THWN	COPPER	12	1	12	1	12	EMT	3/4"	1
C25	25	THHN/THWN	COPPER	10	1	10	1	10	EMT	3/4"	1
C30	30	THHN/THWN	COPPER	10	1	10	1	10	EMT	3/4"	1
C35	35	THHN/THWN	COPPER	8	1	8	1	10	EMT	3/4"	1
C40	40	THHN/THWN	COPPER	8	1	8	1	10	EMT	3/4"	1
C45	45	THHN/THWN	COPPER	8	1	8	1	10	EMT	3/4"	1
C50	50	THHN/THWN	COPPER	8	1	8	1	10	EMT	3/4"	1
C60	60	THHN/THWN	COPPER	6	1	6	1	10	EMT	1"	1
C70	70	THHN/THWN	COPPER	4	1	4	1	8	EMT	1"	1
C80	80	THHN/THWN	COPPER	3	1	3	1	8	EMT	1"	1
C90	90	THHN/THWN	COPPER	2	1	2	1	8	EMT	1-1/4"	1
C100	100	THHN/THWN	COPPER	2	1	2	1	8	EMT	1-1/4"	1
C110	110	THHN/THWN	COPPER	2	1	2	1	6	EMT	1-1/4"	1
C125	125	THHN/THWN	COPPER	1	1	1	1	6	EMT	1-1/4"	1

TWO WIRE AND GROUND

DESIGNATION	LOAD (AMPS)	INSULATION TYPE	CONDUCTOR MATERIAL	PHASE WIRE SIZE	NUMBER OF PHASE CONDUCTORS	NEUTRAL WIRE SIZE	NUMBER OF NEUTRAL CONDUCTORS	EQUIPMENT GROUND SIZE	CONDUIT TYPE	CONDUIT SIZE	NUMBER OF PARALLEL RUNS
D15	15	THHN/THWN	COPPER	12	2	N/A	0	12	EMT	3/4"	1
D20	20	THHN/THWN	COPPER	12	2	N/A	0	12	EMT	3/4"	1
D25	25	THHN/THWN	COPPER	10	2	N/A	0	10	EMT	3/4"	1
D30	30	THHN/THWN	COPPER	10	2	N/A	0	10	EMT	3/4"	1
D35	35	THHN/THWN	COPPER	8	2	N/A	0	10	EMT	3/4"	1
D40	40	THHN/THWN	COPPER	8	2	N/A	0	10	EMT	3/4"	1
D45	45	THHN/THWN	COPPER	8	2	N/A	0	10	EMT	3/4"	1
D50	50	THHN/THWN	COPPER	8	2	N/A	0	10	EMT	3/4"	1
D60	60	THHN/THWN	COPPER	6	2	N/A	0	10	EMT	3/4"	1
D70	70	THHN/THWN	COPPER	4	2	N/A	0	8	EMT	3/4"	1
D80	80	THHN/THWN	COPPER	3	2	N/A	0	8	EMT	1"	1
D90	90	THHN/THWN	COPPER	2	2	N/A	0	8	EMT	1"	1
D100	100	THHN/THWN	COPPER	2	2	N/A	0	8	EMT	1"	1
D110	110	THHN/THWN	COPPER	2	2	N/A	0	6	EMT	1"	1
D125	125	THHN/THWN	COPPER	1	2	N/A	0	6	EMT	1-1/4"	1

TWO WIRE, NEUTRAL AND GROUND

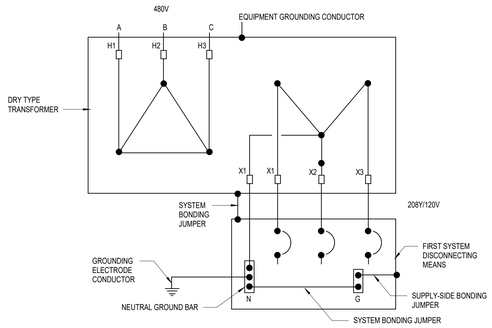
DESIGNATION	LOAD (AMPS)	INSULATION TYPE	CONDUCTOR MATERIAL	PHASE WIRE SIZE	NUMBER OF PHASE CONDUCTORS	NEUTRAL WIRE SIZE	NUMBER OF NEUTRAL CONDUCTORS	EQUIPMENT GROUND SIZE	CONDUIT TYPE	CONDUIT SIZE	NUMBER OF PARALLEL RUNS
E15	15	THHN/THWN	COPPER	12	2	12	1	12	EMT	3/4"	1
E20	20	THHN/THWN	COPPER	12	2	12	1	12	EMT	3/4"	1
E25	25	THHN/THWN	COPPER	10	2	10	1	10	EMT	3/4"	1
E30	30	THHN/THWN	COPPER	10	2	10	1	10	EMT	3/4"	1
E35	35	THHN/THWN	COPPER	8	2	8	1	10	EMT	3/4"	1
E40	40	THHN/THWN	COPPER	8	2	8	1	10	EMT	3/4"	1
E45	45	THHN/THWN	COPPER	8	2	8	1	10	EMT	3/4"	1
E50	50	THHN/THWN	COPPER	8	2	8	1	10	EMT	3/4"	1
E60	60	THHN/THWN	COPPER	6	2	6	1	10	EMT	1"	1
E70	70	THHN/THWN	COPPER	4	2	4	1	8	EMT	1"	1
E80	80	THHN/THWN	COPPER	3	2	3	1	8	EMT	1"	1
E90	90	THHN/THWN	COPPER	2	2	2	1	8	EMT	1-1/4"	1
E100	100	THHN/THWN	COPPER	2	2	2	1	8	EMT	1-1/4"	1
E110	110	THHN/THWN	COPPER	2	2	2	1	6	EMT	1-1/4"	1
E125	125	THHN/THWN	COPPER	1	2	1	1	6	EMT	1-1/4"	1

THREE PHASE AND GROUND

DESIGNATION	LOAD (AMPS)	INSULATION TYPE	CONDUCTOR MATERIAL	PHASE WIRE SIZE	NUMBER OF PHASE CONDUCTORS	NEUTRAL WIRE SIZE	NUMBER OF NEUTRAL CONDUCTORS	EQUIPMENT GROUND SIZE	CONDUIT TYPE	CONDUIT SIZE	NUMBER OF PARALLEL RUNS
A15	15	THHN/THWN	COPPER	12	3	N/A	0	12	EMT	3/4"	1
A20	20	THHN/THWN	COPPER	12	3	N/A	0	12	EMT	3/4"	1
A25	25	THHN/THWN	COPPER	10	3	N/A	0	10	EMT	3/4"	1
A30	30	THHN/THWN	COPPER	10	3	N/A	0	10	EMT	3/4"	1
A35	35	THHN/THWN	COPPER	8	3	N/A	0	10	EMT	3/4"	1
A40	40	THHN/THWN	COPPER	8	3	N/A	0	10	EMT	3/4"	1
A45	45	THHN/THWN	COPPER	8	3	N/A	0	10	EMT	3/4"	1
A50	50	THHN/THWN	COPPER	8	3	N/A	0	10	EMT	3/4"	1
A60	60	THHN/THWN	COPPER	6	3	N/A	0	10	EMT	3/4"	1
A70	70	THHN/THWN	COPPER	4	3	N/A	0	8	EMT	1"	1
A80	80	THHN/THWN	COPPER	4	3	N/A	0	8	EMT	1"	1
A90	90	THHN/THWN	COPPER	2	3	N/A	0	8	EMT	1-1/4"	1
A100	100	THHN/THWN	COPPER	2	3	N/A	0	8	EMT	1-1/4"	1
A110	110	THHN/THWN	COPPER	2	3	N/A	0	6	EMT	1-1/4"	1
A125	125	THHN/THWN	COPPER	1	3	N/A	0	6	EMT	1-1/4"	1
A150	150	THHN/THWN	COPPER	1/0	3	N/A	0	6	EMT	1-1/2"	1
A175	175	THHN/THWN	COPPER	2/0	3	N/A	0	6	EMT	1-1/2"	1
A200	200	THHN/THWN	COPPER	3/0	3	N/A	0	6	EMT	2"	1
A225	225	THHN/THWN	COPPER	4/0	3	N/A	0	4	EMT	2"	1
A250	250	THHN/THWN	COPPER	250	3	N/A	0	4	EMT	2"	1
A300	300	THHN/THWN	COPPER	350	3	N/A	0	4	EMT	2-1/2"	1
A350	350	THHN/THWN	COPPER	500	3	N/A	0	3	EMT	3"	1
A400	400	THHN/THWN	COPPER	4/0	3	N/A	0	3	EMT	2"	2
A450	450	THHN/THWN	COPPER	4/0	3	N/A	0	2	EMT	2"	1
A500	500	THHN/THWN	COPPER	250	3	N/A	0	2	EMT	2"	2
A600	600	THHN/THWN	COPPER	350	3	N/A	0	1	EMT	2-1/2"	2
A700	700	THHN/THWN	COPPER	500	3	N/A	0	1/0	EMT	3"	1
A800	800	THHN/THWN	COPPER	300	3	N/A	0	1/0	EMT	2-1/2"	3
A1000	1000	THHN/THWN	COPPER	400	3	N/A	0	2/0	EMT	3"	3
A1200	1200	THHN/THWN	COPPER	350	3	N/A	0	3/0	EMT	3"	4
A1600	1600	THHN/THWN	COPPER	400	3	N/A	0	4/0	EMT	3"	5
A2000	2000	THHN/THWN	COPPER	400	3	N/A	0	250	EMT	3"	6
A2500	2500	THHN/THWN	COPPER	500	3	N/A	0	350	EMT	3"	7
A3000	3000	THHN/THWN	COPPER	500	3	N/A	0	400	EMT	3"	8
A4000	4000	THHN/THWN	COPPER	600	3	N/A	0	500	EMT	4"	10

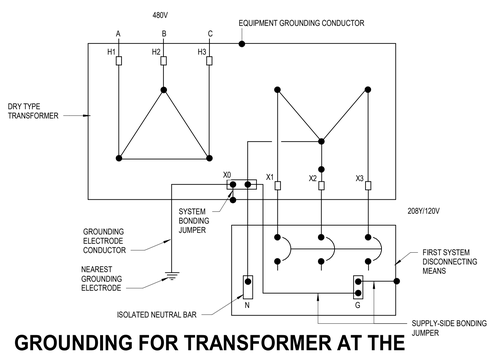
THREE PHASE, NEUTRAL AND GROUND

DESIGNATION	LOAD (AMPS)	INSULATION TYPE	CONDUCTOR MATERIAL	PHASE WIRE SIZE	NUMBER OF PHASE CONDUCTORS	NEUTRAL WIRE SIZE	NUMBER OF NEUTRAL CONDUCTORS	EQUIPMENT GROUND SIZE	CONDUIT TYPE	CONDUIT SIZE	NUMBER OF PARALLEL RUNS
B15	15	THHN/THWN	COPPER	12	3	12	1	12	EMT	3/4"	1
B20	20	THHN/THWN	COPPER	12	3	12	1	12	EMT	3/4"	1
B25	25	THHN/THWN	COPPER	10	3	10	1	10	EMT	3/4"	1
B30	30	THHN/THWN	COPPER	10	3	10	1	10	EMT	3/4"	1
B35	35	THHN/THWN	COPPER	8	3	8	1	10	EMT	3/4"	1
B40	40	THHN/THWN	COPPER	8	3	8	1	10	EMT	3/4"	1
B45	45	THHN/THWN	COPPER	8	3	8	1	10	EMT	3/4"	1
B50	50	THHN/THWN	COPPER	8	3	8	1	10	EMT	3/4"	1
B60	60	THHN/THWN	COPPER	6	3	6	1	10	EMT	1-1/4"	1
B70	70	THHN/THWN	COPPER	4	3	4	1	8	EMT	1-1/4"	1
B80	80	THHN/THWN	COPPER	4	3	4	1	8	EMT	1-1/4"	1
B90	90	THHN/THWN	COPPER	2	3	2	1	8	EMT	1-1/4"	1
B100	100	THHN/THWN	COPPER	2	3	2	1	8	EMT	1-1/4"	1
B110	110	THHN/THWN	COPPER	2	3	2	1	6	EMT	1-1/4"	1
B125	125	THHN/THWN	COPPER	1	3	1	1	6	EMT	1-1/2"	1
B150	150	THHN/THWN	COPPER	1/0	3	1/0	1	6	EMT	1-1/2"	1
B175	175	THHN/THWN	COPPER	2/0	3	2/0	1	6	EMT	2"	1
B200	200	THHN/THWN	COPPER	3/0	3	3/0	1	6	EMT	2"	1
B225	225	THHN/THWN	COPPER	4/0	3	4/0	1	4	EMT	2-1/2"	1
B250	250	THHN/THWN	COPPER	250	3	250	1	4	EMT	2-1/2"	1
B300	300	THHN/THWN	COPPER	350	3	350	1	4	EMT	2-1/2"	1
B350	350	THHN/THWN	COPPER	500	3	500	1	3	EMT	3"	1
B400	400	THHN/THWN	COPPER	3/0	3	3/0	1	3	EMT	2"	2
B450	450	THHN/THWN	COPPER	4/0	3	4/0	1	2	EMT	2-1/2"	2
B500	500	THHN/THWN	COPPER	250	3	250	1	2	EMT	2-1/2"	2
B600	600	THHN/THWN	COPPER	350	3	350	1	1	EMT	3"	2
B700	700	THHN/THWN	COPPER	500	3	500	1	1/0	EMT	4"	2
B800	800	THHN/THWN	COPPER	300	3	300	1	1/0	EMT	3"	3
B1000	1000	THHN/THWN	COPPER	400	3	400	1	2/0	EMT	3"	3
B1200	1200	THHN/THWN	COPPER	350	3	350	1	3/0	EMT	3"	4
B1600	1600	THHN/THWN	COPPER	400	3	400	1	4/0	EMT	3"	5
B2000	2000	THHN/THWN	COPPER	400	3	400	1	250	EMT	3"	6
B2500	2500	THHN/THWN	COPPER	500	3	500	1	350	EMT	4"	7
B3000	3000	THHN/THWN	COPPER	500	3	500	1	400	EMT	4"	8
B4000	4000	THHN/THWN	COPPER	600	3	4/0	2	500	EMT	4"	10



1 GROUNDING FOR TRANSFORMER AT THE FIRST SYSTEM DISCONNECT

SCALE: 12" = 1'-0"



2 GROUNDING FOR TRANSFORMER AT THE SOURCE

SCALE: 12" = 1'-0"

FILE PATH: W:\418198\418198E-GC ROAD_BRIDGE-R19-kmeeks.RVT
USER NAME:
DATE STAMP: 6/26/2020 3:24:09 PM

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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Firm Registration No. 15868
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STATE OF TEXAS
DAVID G. WEATHERLY
115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL WIRE SCHEDULES - COPPER

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER 418198	PROJECT ABBREVIATION ABBREV
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

E-602
SHEET NUMBER

THREE PHASE AND GROUND											
DESIGNATION	LOAD (AMPS)	INSULATION TYPE	CONDUCTOR MATERIAL	PHASE WIRE SIZE	NUMBER OF PHASE CONDUCTORS	NEUTRAL WIRE SIZE	NUMBER OF NEUTRAL CONDUCTORS	EQUIPMENT GROUND SIZE	CONDUIT TYPE	CONDUIT SIZE	NUMBER OF PARALLEL RUNS
A100	100	THHN/THWN	ALUMINUM	1	3	N/A	0	6	EMT	1-1/4"	1
A110	110	THHN/THWN	ALUMINUM	1/0	3	N/A	0	6	EMT	1-1/2"	1
A125	125	THHN/THWN	ALUMINUM	2/0	3	N/A	0	6	EMT	1-1/2"	1
A150	150	THHN/THWN	ALUMINUM	3/0	3	N/A	0	6	EMT	2"	1
A175	175	THHN/THWN	ALUMINUM	4/0	3	N/A	0	6	EMT	2"	1
A200	200	THHN/THWN	ALUMINUM	250	3	N/A	0	4	EMT	2"	1
A225	225	THHN/THWN	ALUMINUM	300	3	N/A	0	4	EMT	2-1/2"	1
A250	250	THHN/THWN	ALUMINUM	350	3	N/A	0	4	EMT	2-1/2"	1
A300	300	THHN/THWN	ALUMINUM	500	3	N/A	0	2	EMT	2-1/2"	1
A350	350	THHN/THWN	ALUMINUM	1/0	3	N/A	0	2	EMT	1-1/2"	2
A400	400	THHN/THWN	ALUMINUM	250	3	N/A	0	1	EMT	2-1/2"	2
A450	450	THHN/THWN	ALUMINUM	3/0	3	N/A	0	1	EMT	2"	3
A500	500	THHN/THWN	ALUMINUM	4/0	3	N/A	0	1/0	EMT	2"	3
A600	600	THHN/THWN	ALUMINUM	250	3	N/A	0	2/0	EMT	2-1/2"	3
A700	700	THHN/THWN	ALUMINUM	350	3	N/A	0	2/0	EMT	2-1/2"	3
A800	800	THHN/THWN	ALUMINUM	250	3	N/A	0	3/0	EMT	2-1/2"	4
A1000	1000	THHN/THWN	ALUMINUM	600	3	N/A	0	4/0	EMT	3"	3
A1200	1200	THHN/THWN	ALUMINUM	500	3	N/A	0	250	EMT	3"	4
A1600	1600	THHN/THWN	ALUMINUM	600	3	N/A	0	350	EMT	3"	5
A2000	2000	THHN/THWN	ALUMINUM	600	3	N/A	0	400	EMT	3"	7
A2500	2500	THHN/THWN	ALUMINUM	600	3	N/A	0	600	EMT	3"	8
A3000	3000	THHN/THWN	ALUMINUM	500	3	N/A	0	600	EMT	3"	10
A4000	4000	THHN/THWN	ALUMINUM	600	3	N/A	0	700	EMT	3-1/2"	12

THREE PHASE, NEUTRAL AND GROUND											
DESIGNATION	LOAD (AMPS)	INSULATION TYPE	CONDUCTOR MATERIAL	PHASE WIRE SIZE	NUMBER OF PHASE CONDUCTORS	NEUTRAL WIRE SIZE	NUMBER OF NEUTRAL CONDUCTORS	EQUIPMENT GROUND SIZE	CONDUIT TYPE	CONDUIT SIZE	NUMBER OF PARALLEL RUNS
B100	100	THHN/THWN	ALUMINUM	1	3	1	1	6	EMT	1-1/2"	1
B110	110	THHN/THWN	ALUMINUM	1/0	3	1/0	1	6	EMT	1-1/2"	1
B125	125	THHN/THWN	ALUMINUM	2/0	3	2/0	1	6	EMT	2"	1
B150	150	THHN/THWN	ALUMINUM	3/0	3	3/0	1	6	EMT	2"	1
B175	175	THHN/THWN	ALUMINUM	4/0	3	4/0	1	6	EMT	2-1/2"	1
B200	200	THHN/THWN	ALUMINUM	250	3	250	1	4	EMT	2-1/2"	1
B225	225	THHN/THWN	ALUMINUM	300	3	300	1	4	EMT	2-1/2"	1
B250	250	THHN/THWN	ALUMINUM	350	3	350	1	4	EMT	2-1/2"	1
B300	300	THHN/THWN	ALUMINUM	500	3	500	1	2	EMT	3"	1
B350	350	THHN/THWN	ALUMINUM	1/0	3	1/0	1	2	EMT	2"	2
B400	400	THHN/THWN	ALUMINUM	250	3	250	1	1	EMT	2-1/2"	2
B450	450	THHN/THWN	ALUMINUM	3/0	3	3/0	1	1	EMT	2"	3
B500	500	THHN/THWN	ALUMINUM	4/0	3	4/0	1	1/0	EMT	2-1/2"	3
B600	600	THHN/THWN	ALUMINUM	250	3	250	1	2/0	EMT	2-1/2"	3
B700	700	THHN/THWN	ALUMINUM	350	3	350	1	2/0	EMT	2-1/2"	3
B800	800	THHN/THWN	ALUMINUM	250	3	250	1	3/0	EMT	2-1/2"	4
B1000	1000	THHN/THWN	ALUMINUM	600	3	600	1	4/0	EMT	3-1/2"	3
B1200	1200	THHN/THWN	ALUMINUM	500	3	500	1	250	EMT	3"	4
B1600	1600	THHN/THWN	ALUMINUM	600	3	600	1	350	EMT	3-1/2"	5
B2000	2000	THHN/THWN	ALUMINUM	600	3	600	1	400	EMT	3-1/2"	7
B2500	2500	THHN/THWN	ALUMINUM	600	3	600	1	600	EMT	3-1/2"	8
B3000	3000	THHN/THWN	ALUMINUM	500	3	500	1	600	EMT	3-1/2"	10
B4000	4000	THHN/THWN	ALUMINUM	600	3	600	1	700	EMT	3-1/2"	12

SINGLE WIRE, NEUTRAL AND GROUND											
DESIGNATION	LOAD (AMPS)	INSULATION TYPE	CONDUCTOR MATERIAL	PHASE WIRE SIZE	NUMBER OF PHASE CONDUCTORS	NEUTRAL WIRE SIZE	NUMBER OF NEUTRAL CONDUCTORS	EQUIPMENT GROUND SIZE	CONDUIT TYPE	CONDUIT SIZE	NUMBER OF PARALLEL RUNS
C100	100	THHN/THWN	ALUMINUM	1	1	1	1	6	EMT	1-1/4"	1
C110	110	THHN/THWN	ALUMINUM	1/0	1	1/0	1	6	EMT	1-1/4"	1
C125	125	THHN/THWN	ALUMINUM	2/0	1	2/0	1	6	EMT	1-1/4"	1

TWO WIRE AND GROUND											
DESIGNATION	LOAD (AMPS)	INSULATION TYPE	CONDUCTOR MATERIAL	PHASE WIRE SIZE	NUMBER OF PHASE CONDUCTORS	NEUTRAL WIRE SIZE	NUMBER OF NEUTRAL CONDUCTORS	EQUIPMENT GROUND SIZE	CONDUIT TYPE	CONDUIT SIZE	NUMBER OF PARALLEL RUNS
D100	100	THHN/THWN	ALUMINUM	1	2	N/A	0	6	EMT	1-1/4"	1
D110	110	THHN/THWN	ALUMINUM	1/0	2	N/A	0	6	EMT	1-1/4"	1
D125	125	THHN/THWN	ALUMINUM	2/0	2	N/A	0	6	EMT	1-1/4"	1

TWO WIRE, NEUTRAL AND GROUND											
DESIGNATION	LOAD (AMPS)	INSULATION TYPE	CONDUCTOR MATERIAL	PHASE WIRE SIZE	NUMBER OF PHASE CONDUCTORS	NEUTRAL WIRE SIZE	NUMBER OF NEUTRAL CONDUCTORS	EQUIPMENT GROUND SIZE	CONDUIT TYPE	CONDUIT SIZE	NUMBER OF PARALLEL RUNS
E100	100	THHN/THWN	ALUMINUM	1	2	1	1	6	EMT	1-1/4"	1
E110	110	THHN/THWN	ALUMINUM	1/0	2	1/0	1	6	EMT	1-1/2"	1
E125	125	THHN/THWN	ALUMINUM	2/0	2	2/0	1	6	EMT	1-1/2"	1

Page/

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Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

STATE OF TEXAS
DAVID G. WEATHERLY
115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL WIRE SCHEDULE - ALUMINUM

DRAWN BY: DGW
CHECKED BY: DGW
PROJECT NUMBER: 418198
PROJECT ABBREVIATION: ABBREV
ORIGINAL ISSUE: ISSUE FOR PERMIT
DATE: 26 JUNE 2020

E-603
SHEET NUMBER

FILE PATH: W:\418198\418198E-GC ROAD_BRIDGE-R19-kmeeks.RVT
USER NAME:
DATE STAMP: 6/26/2020 3:24:14 PM

PANEL LOAD SCHEDULE

PANEL: LP1

SUPPLY FROM:	TLP1	MAINS RATING:	225 A	NEUTRAL RATING:	100.00%
VOLTS:	208Y/120V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	32	GROUND BUS:	Yes

LOCATION:	ELECTRICAL O23
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	MICROWAVE (PROVIDE GFCI BREAKER)	20 A	1	1800 VA	1080 VA					1	20 A	RECS CORRIDOR	2
3	DISHWASHER (PROVIDE GFCI BREAKER)	20 A	1			1800 VA	720 VA			1	20 A	RECS RM O7	4
5	KITCHEN REC RM O13	20 A	1					180 VA	1080 VA	1	20 A	RECS RM O3,O6,O9	6
7	KITCHEN REC RM O13	20 A	1	180 VA	1800 VA					1	20 A	COPY MACHINE RM O3	8
9	COFFEE MAKER RM O13	20 A	1			1500 VA	180 VA			1	20 A	COPY MACHINE	10
11	GFCI REC RM O26,O27,O29	20 A	1					540 VA	360 VA	1	20 A	RESTROOM RECS RM O4,O5	12
13	ELECTRIC OVEN	30 A	2	1500 VA	1600 VA					1	20 A	RECS RM O18,O19,O20,O21	14
15	--	--	--			1500 VA	1080 VA			1	20 A	RM O17	16
17	REFRIGERATOR	20 A	1					900 VA	0 VA	1	20 A	FLOOR REC RM O17,016	18
19	COFFEE MAKER RM O13	20 A	1	1500 VA	800 VA					1	20 A	TV REC RM O1	20
21	EXTERIOR GFCI REC	20 A	1			1080 VA	800 VA			1	20 A	TV REC RM 016	22
23	WSHP-O-03,04,08,11,14	35 A	2					2808 VA	1200 VA	1	20 A	COMP REC RM O7,O11,O10	24
25	--	--	--	2808 VA	540 VA					1	20 A	REC RM O33	26
27	REC RM O24	20 A	1			180 VA	0 VA			1	20 A	FLOOR REC O33	28
29	RECS RMS O30,031	20 A	1					1440 VA	720 VA	1	20 A	EXTERIOR GFCI REC	30
31	RECS CORRIDOR	20 A	1	900 VA	1200 VA					1	20 A	COMP REC RM O32, O31	32
33	RECS RM O18	20 A	1			720 VA	400 VA			1	20 A	TV REC RM O33	34
35	RECS RM O19	20 A	1					720 VA	900 VA	1	20 A	GATE ARM CONTROLLER	36
37	RECS RM O21	20 A	1	1080 VA	900 VA					1	20 A	GATE ARM CONTROLLER	38
39	RECS O11	20 A	1			720 VA	900 VA			1	20 A	GATE ARM CONTROLLER	40
41	RECS O10	20 A	1					720 VA	1000 VA	2	20 A	IT RACK	42
43	GEN HEATER	20 A	2	1000 VA	1000 VA					--	--	--	44
45	--	--	--			1000 VA	900 VA			1	20 A	IT REC RM O15	46
47	GEN BATT CHARGER	20 A	1					900 VA	1000 VA	2	20 A	IT RACK	48
49	GEN HEATER	20 A	1	1000 VA	1000 VA					--	--	--	50
51	DIGITAL PRINTER RM O9	20 A	2			1250 VA	2808 VA			2	35 A	WSHP-O-06,07,10,12,13	52
53	--	--	--					1250 VA	2808 VA	--	--	--	54
55	COMP REC RM O9	20 A	1	800 VA	2246 VA					2	30 A	WSHP-01,02,05,09	56
57	PRINTER RM O9	20 A	1			400 VA	2246 VA			--	--	--	58
59	WATER FOUNTAIN	20 A	1					180 VA	540 VA	1	20 A	GFCI ROOFTOP REC	60
61	CP-1	20 A	1	0 VA	200 VA					1	20 A	FIRE ALARM	62
63	FLOOR REC RM O2	20 A	1			720 VA	0 VA			1	20 A	Spare	64
65	COMP REC RM O2	20 A	1					1200 VA	0 VA	1	20 A	Spare	66
67	TV REC RM 016	20 A	1	400 VA	0 VA					1	20 A	Spare	68
69	GARAGE DOOR OPENER	20 A	1			500 VA	0 VA			1	20 A	Spare	70
71	GEN YARD GFCI REC	20 A	1					540 VA	0 VA	1	20 A	Spare	72
73	Spare	20 A	1	0 VA	0 VA					1	20 A	Spare	74
75	Spare	20 A	1			0 VA	0 VA			1	20 A	Spare	76
77	Spare	20 A	1					0 VA	0 VA	1	20 A	Spare	78
79	SURGE PROTECTION DEVICE (SPD)	60 A	3	0 VA	0 VA					1	20 A	Spare	80
81	--	--	--			0 VA	0 VA			1	20 A	Spare	82
83	--	--	--					0 VA	0 VA	1	20 A	Spare	84

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	0 VA	0.00%	0 VA	220.42
Receptacles	23120 VA	71.63%	16560 VA	220.14(I) , (K), 220.44
Motor	500 VA	125.00%	625 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	11080 VA	70.00%	7756 VA	430.24
HVAC	15722 VA	100.00%	15722 VA	430.24
Kitchen	10500 VA	65.00%	6825 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	6800 VA	100.00%	6800 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	25334 VA	21404 VA	20985 VA
AMPERES PER PHASE	212 A	179 A	175 A
1. TOTAL CONNECTED LOAD	188 A		
2. DIVERSITY OR DEMAND:	80.16%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	54288 VA		
5. TOTAL DEMAND AMPS:	**151 A**		

PANEL LOAD SCHEDULE

PANEL: LP2A

SUPPLY FROM:	TLP2A	MAINS RATING:	400 A	NEUTRAL RATING:	100.00%
VOLTS:	208Y/120V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	22	GROUND BUS:	Yes

LOCATION:	MECHANICAL/...
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	EF-O-01	15 A	3	0 VA	200 VA					1	20 A	GEN ANNUNCIATOR	2
3	--	--	--			0 VA	1080 VA			1	20 A	RECS RM S3	4
5	--	--	--					0 VA	1520 VA	1	20 A	COMP REC RM S2,S3	6
7	SF-S-02	15 A	3	500 VA	1080 VA					1	20 A	RECS RM S1	8
9	--	--	--			500 VA	180 VA			1	20 A	REC RM S5	10
11	--	--	--					500 VA	400 VA	1	20 A	IT REC	12
13	EF-O-02	15 A	3	0 VA	1200 VA					1	20 A	IT REC	14
15	--	--	--			0 VA	1000 VA			1	20 A	MOTOR	16
17	--	--	--					0 VA	1000 VA	1	20 A	GARAGE DOOR OPERATOR	18
19	SF-S-04	15 A	3	500 VA	180 VA					1	20 A	RECS RM S7	20
21	--	--	--			500 VA	900 VA			1	20 A	REFRIGERATOR	22
23	--	--	--					500 VA	1800 VA	1	20 A	MICROWAVE	24
25	SF-S-03	15 A	3	500 VA	1500 VA					1	20 A	COFFEE MAKER	26
27	--	--	--			500 VA	1500 VA			1	20 A	COFFEE MAKER	28
29	--	--	--					500 VA	180 VA	1	20 A	KITCHEN REC	30
31	RECEPTACLES	20 A	1	900 VA	1800 VA					1	20 A	DISHWASHER (PROVIDE GFCI BREAKER)	32
33	RECS SHOP	20 A	1			720 VA	180 VA			1	20 A	KITCHEN REC	34
35	RECS SHOP	20 A	1					720 VA	400 VA	1	20 A	TV REC RM S6	36
37	RECEPTACLES	20 A	1	720 VA	0 VA					1	20 A	CP-2	38
39	RECEPTACLES	20 A	1			720 VA	1000 VA			1	20 A	GARBAGE DISPOSAL	40
41	CRANE	100 A	3					9600 VA	720 VA	1	20 A	RECS SHOP	42
43	--	--	--	9600 VA	500 VA					3	15 A	EF-S-03	44
45	--	--	--			9600 VA	500 VA			--	--	--	46
47	EXTERIOR GFCI REC	20 A	1					900 VA	500 VA	--	--	--	48
49	EXTERIOR GFCI REC	20 A	1	900 VA	500 VA					3	15 A	EF-S-02	50
51	WSHP-S	20 A	2			0 VA	500 VA			--	--	--	52
53	--	--	--					0 VA	500 VA	--	--	--	54
55	EF-S-01	20 A	1	0 VA	1000 VA					1	20 A	GARAGE DOOR OPERATOR	56
57	SF-S-01	20 A	1			0 VA	1000 VA			1	20 A	GARAGE DOOR OPERATOR	58
59	HVLS-S-01	20 A	2					915 VA	1000 VA	1	20 A	GARAGE DOOR OPERATOR	60
61	--	--	--	915 VA	1000 VA					1	20 A	GARAGE DOOR OPERATOR	62
63	HVLS-S-02	20 A	2			915 VA	0 VA			1	20 A	Spare	64
65	--	--	--					915 VA	0 VA	1	20 A	Spare	66
67	HVLS-S-03	20 A	2	915 VA	0 VA					--	--	Space	68
69	--	--	--			915 VA	0 VA			--	--	Space	70
71	SHOP EQUIP	20 A	1					900 VA	0 VA	--	--	Space	72
73	OTHER	20 A	1	900 VA	0 VA					--	--	Space	74
75	SHOP EQUIP	20 A	1			900 VA	0 VA			--	--	Space	76
77	EF-S-04	15 A	3					500 VA	0 VA	--	--	Space	78
79	--	--	--	500 VA	0 VA					3	60 A	SURGE PROTECTION DEVICE (SPD)	80
81	--	--	--			500 VA	0 VA			--	--	--	82
83	Spare	20 A	1					0 VA	0 VA	--	--	--	84

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	0 VA	0.00%	0 VA	220.42
Receptacles	9900 VA	100.00%	9900 VA	220.14(I) , (K), 220.44
Motor	49290 VA	114.61%	56490 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	6700 VA	70.00%	4690 VA	430.24
HVAC	0 VA	0.00%	0 VA	430.24
Kitchen	7500 VA	70.00%	5250 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	0 VA	0.00%	0 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	25810 VA	23610 VA	23970 VA
AMPERES PER PHASE	216 A	197 A	200 A
1. TOTAL CONNECTED LOAD	204 A		
2. DIVERSITY OR DEMAND:	104.01%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	76330 VA		
5. TOTAL DEMAND AMPS:	**212 A**		

PANEL LOAD SCHEDULE

PANEL: HP1

SUPPLY FROM:	MDP	MAINS RATING:	225 A	NEUTRAL RATING:	100.00%
VOLTS:	480/277V	MAINS TYPE:	MLO	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	42	GROUND BUS:	Yes

LOCATION:	ELECTRICAL O23
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	LIGHTING	20 A	1	1148 VA	0 VA					1	20 A	Spare	2
3	Spare	20 A	1			0 VA	0 VA			1	20 A	Spare	4
5	CORRIDOR LTG	20 A	1					576 VA	0 VA	1	20 A	Spare	6
7	LTG ELEC RM	20 A	1	0 VA	0 VA					1	20 A	Spare	8
9	LTG EXT BLDG	20 A	1			274 VA	0 VA			1	20 A	Spare	10
11	EWH-1	20 A	3					3000 VA	0 VA	1	20 A	Spare	12
13	--	--	--	3000 VA	0 VA					1	20 A	Spare	14
15	--	--	--			3000 VA	0 VA			1	20 A	Spare	16
17	DOAU-01	25 A	3					5595 VA	0 VA	--	--	Space	18
19	--	--	--	5595 VA	0 VA					--	--	Space	20
21	--	--	--			5595 VA	0 VA			--	--	Space	22
23	SITE LIGHTING	20 A	1					1480 VA	0 VA	--	--	Space	24
25	CU-O-01	25 A	3	5595 VA	0 VA					--	--	Space	26
27	--	--	--			5595 VA	0 VA			--	--	Space	28
29	--	--	--					5595 VA	0 VA	--	--	Space	30
31	SITE LIGHTING	20 A	1	1309 VA	0 VA					--	--	Space	32
33	Spare	20 A	1			0 VA	0 VA			--	--	Space	34
35	Spare	20 A	1					0 VA	0 VA	--	--	Space	36
37	SURGE PROTECTION DEVICE (SPD)	60 A	3	0 VA	25334 VA					3	70 A	TLP1	38
39	--	--	--			0 VA	21404 VA			--	--	--	40
41	--	--	--					0 VA	20985 VA	--	--	--	42

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	4683 VA	125.00%	5853 VA	220.42
Receptacles	23120 VA	71.63%	16560 VA	220.14(I) , (K), 220.44
Motor	17286 VA	124.28%	21483 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	11080 VA	70.00%	7756 VA	430.24
HVAC	32508 VA	100.00%	32508 VA	430.24
Kitchen	10500 VA	65.00%	6825 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	15800 VA	100.00%	15800 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	41854 VA	35868 VA	37121 VA
AMPERES PER PHASE	152 A	129 A	135 A
1. TOTAL CONNECTED LOAD	138 A		
2. DIVERSITY OR DEMAND:	92.84%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	106618 VA		
5. TOTAL DEMAND AMPS:	**128 A**		

PANEL LOAD SCHEDULE

PANEL: HP2A

SUPPLY FROM:	MDP	MAINS RATING:	400 A	NEUTRAL RATING:	100.00%
VOLTS:	480/277V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	32	GROUND BUS:	Yes

LOCATION:	MECHANICAL/...
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	SHOP AREA LTG	20 A	1	2805 VA	3050 VA					3	20 A	LUBE SYS	2
3	SHOP AREA LTG	20 A	1			1712 VA	3050 VA			--	--	--	4
5	SHOP AREA LTG	20 A	1					1712 VA	3050 VA	--	--	--	6
7	UH-S-01	20 A	3	1000 VA	140 VA					1	20 A	CORRIDOR LTG	8
9	--	--	--			1000 VA	1046 VA			1	20 A	LTG EXT BLDG	10
11	--	--	--					1000 VA	0 VA	1	20 A	Spare	12
13	SHOP OFFICE LTG	20 A	1	210 VA	0 VA					1	20 A	Spare	14
15	AC-1	30 A	3			3050 VA	0 VA			1	20 A	Spare	16
17	--	--	--					3050 VA	0 VA	1	20 A	Spare	18
19	--	--	--	3050 VA	0 VA					--	--	Space	20
21	EWH-2	50 A	3			10000 VA	0 VA			--	--	Space	22
23	--	--	--					10000 VA	0 VA	--	--	Space	24
25	--	--	--	10000 VA	3130 VA					3	50 A	TLP2C	26
27	RADIANT HEATERS RH-S-10 THRU 12	50 A	2			9000 VA	1865 VA			--	--	--	28
29	--	--	--					9000 VA	1865 VA	--	--	--	30
31	RADIANT HEATERS RH-S-7 THRU 9	50 A	2	9000 VA	25810 VA					3	175 A	TLP2A	32
33	--	--	--			9000 VA	23610 VA			--	--	--	34
35	RADIANT HEATERS RH-S-1 THRU 3	50 A	2					9000 VA	23970 VA	--	--	--	36
37	--	--	--	9000 VA	0 VA					3	60 A	SURGE PROTECTION DEVICE (SPD)	38
39	RADIANT HEATERS RH-S-4 THRU 6	50 A	2			9000 VA	0 VA			--	--	--	40
41	--	--	--					9000 VA	0 VA	--	--	--	42

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	7625 VA	125.00%	9531 VA	220.42
Receptacles	9900 VA	100.00%	9900 VA	220.14(I) , (K), 220.44
Motor	67590 VA	110.65%	74790 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	13560 VA	70.00%	9492 VA	430.24
HVAC	0 VA	0.00%	0 VA	430.24
Kitchen	7500 VA	70.00%	5250 VA	220.56
Heating	75000 VA	100.00%	75000 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	30000 VA	100.00%	30000 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	67195 VA	72333 VA	71647 VA
AMPERES PER PHASE	243 A	264 A	261 A
1. TOTAL CONNECTED LOAD	254 A		
2. DIVERSITY OR DEMAND:	101.32%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	213963 VA		
5. TOTAL DEMAND AMPS:	**257 A**		

Distribution Panel: MDP

SUPPLY FROM:	ATS	MAINS RATING:	800 A	LOCATION:	ELECTRICAL O23
VOLTS:	480/277V	MAINS TYPE:	MCB	MOUNTING:	Surface
PH / WIRES / HZ:	3PH /4W / 60HZ	K.A.I.C. RATING:	42	ENCLOSURE:	NEMA 1
		CALCULATED K.A.I.C. RATING:		SURGE PROTECTOR:	
				MCB METER:	

Notes:

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	HP1	3	225 A	225 A	114841 VA	
2	HPWR	3	400 A	400 A	218256 VA	
3	HP2A	3	400 A	400 A	211175 VA	
4	NFD-LPFS/TLPFS	3	100 A	30 A	1615 VA	
5	HP2B	3	150 A	150 A	31001 VA	
6	HEM1	3	400 A	60 A	4275 VA	
7	Space	--	--	--	0 VA	--
8	Space	--	--	--	0 VA	--
9	Space	--	--	--	0 VA	--
10	SURGE PROTECTION DEVICE (SPD)	3	100 A	100 A	0 VA	
				Total Conn. Load:	581155 VA	
				Total Amps:	699 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	21660 VA	125.00%	27075 VA		
HVAC	47076 VA	100.00%	47076 VA	Total Conn. Load:	581155 VA
Motor	89276 VA	108.06%	96476 VA	Total Est. Demand:	501690 VA
Other	49075 VA	100.00%	49075 VA	Total Conn. Current:	699 A
Receptacles	36620 VA	63.65%	23310 VA	Total Est. Demand Current:	603 A
Heating	78000 VA	100.00%	78000 VA		
Kitchen	18000 VA	65.00%	11700 VA		
Equipment	241516 VA	70.00%	169061 VA		

PANEL LOAD SCHEDULE

PANEL: LPFS

SUPPLY FROM:	TLPFS	MAINS RATING:	60 A	NEUTRAL RATING:	100.00%
VOLTS:	208Y/120V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	10	GROUND BUS:	Yes

LOCATION:	MECHANICAL/...
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	FUEL PUMP EQUIPMENT	20 A	1	575 VA	0 VA					--	--	Space	2
3	FUEL STATION LIGHTING	20 A	1			1040 VA	0 VA			--	--	Space	4
5	Spare	20 A	1					0 VA	0 VA	--	--	Space	6
7	Spare	20 A	1	0 VA	0 VA					--	--	Space	8
9	Spare	20 A	1			0 VA	0 VA			--	--	Space	10
11	Spare	20 A	1					0 VA	0 VA	--	--	Space	12
13	SURGE PROTECTION DEVICE (SPD)	30 A	3	0 VA	0 VA					--	--	Space	14
15	--	--	--			0 VA	0 VA			--	--	Space	16
17	--	--	--					0 VA	0 VA	--	--	Space	18

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	1040 VA	125.00%	1300 VA	220.42
Receptacles	0 VA	0.00%	0 VA	220.14(I) , (K), 220.44
Motor	0 VA	0.00%	0 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	0 VA	0.00%	0 VA	430.24
HVAC	0 VA	0.00%	0 VA	430.24
Kitchen	0 VA	0.00%	0 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	575 VA	100.00%	575 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	575 VA	1040 VA	0 VA
AMPERES PER PHASE	6 A	9 A	0 A
1. TOTAL CONNECTED LOAD	4 A		
2. DIVERSITY OR DEMAND:	116.10%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	1875 VA		
5. TOTAL DEMAND AMPS:	**5 A**		

LP1	HP1	MDP
LP2A	HP2A	LPFS

Page/

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Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

STATE OF TEXAS
DAVID G. WEATHERLY
115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL PANEL SCHEDULES

DRAWN BY: DGW	CHECKED BY: DGW
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: ABBREV
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

E-610
SHEET NUMBER

FILE PATH: W:\418198\418198E-GC ROAD_BRIDGE\R19-kmeeks.RVT
USER NAME:
DATE STAMP: 6/26/2020 3:24:14 PM

PANEL LOAD SCHEDULE

PANEL: HEM2A

SUPPLY FROM:	HEM1	MAINS RATING:	30 A	NEUTRAL RATING:	100.00%
VOLTS:	480/277V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	14	GROUND BUS:	Yes

LOCATION:	MECHANICAL/...
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	EGRESS LIGHTING	20 A	1	1194 VA	0 VA					--	--	Space	2
3	LTG EXT EGRESS	20 A	1			188 VA	0 VA			--	--	Space	4
5	Spare	20 A	1					0 VA	0 VA	--	--	Space	6
7	Spare	20 A	1	0 VA	0 VA					--	--	Space	8
9	Spare	20 A	1			0 VA	0 VA			--	--	Space	10
11	Spare	20 A	1					0 VA	0 VA	--	--	Space	12
13	SURGE PROTECTION DEVICE (SPD)	60 A	3	0 VA	0 VA					--	--	Space	14
15	--	--	--			0 VA	0 VA			--	--	Space	16
17	--	--	--					0 VA	0 VA	--	--	Space	18

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	1382 VA	125.00%	1728 VA	220.42
Receptacles	0 VA	0.00%	0 VA	220.14(I) , (K), 220.44
Motor	0 VA	0.00%	0 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	0 VA	0.00%	0 VA	430.24
HVAC	0 VA	0.00%	0 VA	430.24
Kitchen	0 VA	0.00%	0 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	0 VA	0.00%	0 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	1194 VA	188 VA	0 VA
AMPERES PER PHASE	4 A	1 A	0 A
1. TOTAL CONNECTED LOAD	2 A		
2. DIVERSITY OR DEMAND:	125.00%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	1728 VA		
5. TOTAL DEMAND AMPS:	2 A		

PANEL LOAD SCHEDULE

PANEL: HEM1

SUPPLY FROM:	MDP	MAINS RATING:	60 A	NEUTRAL RATING:	100.00%
VOLTS:	480/277V	MAINS TYPE:	MLO	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	18	GROUND BUS:	Yes

LOCATION:	ELECTRICAL O23
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	LTG CORRIDOR EGRESS	20 A	1	648 VA	1194 VA					3	30 A	HEM2A	2
3	LTG ELEC RM	20 A	1			66 VA	188 VA			--	--	--	4
5	LIGHTING	20 A	1					1369 VA	0 VA	--	--	--	6
7	LTG EXT EGRESS	20 A	1	156 VA	0 VA					1	20 A	Spare	8
9	HEM2B	30 A	3			431 VA	0 VA			1	20 A	Spare	10
11	--	--	--					0 VA	0 VA	--	--	Space	12
13	--	--	--	0 VA	0 VA					3	60 A	SURGE PROTECTION DEVICE (SPD)	14
15	LTG EGRESS	20 A	1			223 VA	0 VA			--	--	--	16
17	Spare	20 A	1					0 VA	0 VA	--	--	--	18

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	4275 VA	125.00%	5344 VA	220.42
Receptacles	0 VA	0.00%	0 VA	220.14(I) , (K), 220.44
Motor	0 VA	0.00%	0 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	0 VA	0.00%	0 VA	430.24
HVAC	0 VA	0.00%	0 VA	430.24
Kitchen	0 VA	0.00%	0 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	0 VA	0.00%	0 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	1998 VA	908 VA	1369 VA
AMPERES PER PHASE	7 A	3 A	5 A
1. TOTAL CONNECTED LOAD	5 A		
2. DIVERSITY OR DEMAND:	125.00%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	5344 VA		
5. TOTAL DEMAND AMPS:	6 A		

PANEL LOAD SCHEDULE

PANEL: HP2B

SUPPLY FROM:	MDP	MAINS RATING:	150 A	NEUTRAL RATING:	100.00%
VOLTS:	480/277V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	14	GROUND BUS:	Yes

LOCATION:	TOOL STORAGE W6
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	TLP2B	70 A	3	8826 VA	1000 VA					3	20 A	UH-W-01	2
3	--	--	--			7966 VA	1000 VA			--	--	--	4
5	--	--	--					7396 VA	1000 VA	--	--	--	6
7	SITE LIGHTING	20 A	1	1309 VA									8
9	LIGHTING	20 A	1			1498 VA	232 VA			1	20 A	LTG EXT BLDG	10
11	WELL PUMP (SP-01)	20 A	3					300 VA	0 VA	1	20 A	Spare	12
13	--	--	--	300 VA	0 VA					1	20 A	Spare	14
15	--	--	--			300 VA	0 VA			1	20 A	Spare	16
17	Spare	20 A	1					0 VA	0 VA	--	--	Space	18
19	Spare	20 A	1	0 VA	0 VA					--	--	Space	20
21	Spare	20 A	1			0 VA	0 VA			--	--	Space	22
23	Spare	20 A	1					0 VA	0 VA	--	--	Space	24
25	SURGE PROTECTION DEVICE (SPD)	60 A	3	0 VA	0 VA					--	--	Space	26
27	--	--	--			0 VA	0 VA			--	--	Space	28
29	--	--	--					0 VA	0 VA	--	--	Space	30

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	2964 VA	125.00%	3704 VA	220.42
Receptacles	3420 VA	100.00%	3420 VA	220.14(I) , (K), 220.44
Motor	4400 VA	105.11%	4625 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	0 VA	0.00%	0 VA	430.24
HVAC	14568 VA	100.00%	14568 VA	430.24
Kitchen	0 VA	0.00%	0 VA	220.56
Heating	3000 VA	100.00%	3000 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	2700 VA	100.00%	2700 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	11318 VA	10996 VA	8696 VA
AMPERES PER PHASE	42 A	41 A	31 A
1. TOTAL CONNECTED LOAD	37 A		
2. DIVERSITY OR DEMAND:	103.08%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	31956 VA		
5. TOTAL DEMAND AMPS:	38 A		

PANEL LOAD SCHEDULE

PANEL: HEM2B

SUPPLY FROM:	HEM1	MAINS RATING:	30 A	NEUTRAL RATING:	100.00%
VOLTS:	480/277V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	14	GROUND BUS:	Yes

LOCATION:	TOOL STORAGE W6
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	EGRESS LIGHTING	20 A	1	431 VA	0 VA					--	--	Space	2
3	LTG EXT EGRESS	20 A	1			0 VA	0 VA			--	--	Space	4
5	Spare	20 A	1					0 VA	0 VA	--	--	Space	6
7	Spare	20 A	1	0 VA	0 VA					--	--	Space	8
9	Space	--	--			0 VA	0 VA			--	--	Space	10
11	Space	--	--					0 VA	0 VA	--	--	Space	12
13					0 VA					--	--	Space	14
15							0 VA			--	--	Space	16
17									0 VA	--	--	Space	18

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	431 VA	125.00%	539 VA	220.42
Receptacles	0 VA	0.00%	0 VA	220.14(I) , (K), 220.44
Motor	0 VA	0.00%	0 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	0 VA	0.00%	0 VA	430.24
HVAC	0 VA	0.00%	0 VA	430.24
Kitchen	0 VA	0.00%	0 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	0 VA	0.00%	0 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	431 VA	0 VA	0 VA
AMPERES PER PHASE	2 A	0 A	0 A
1. TOTAL CONNECTED LOAD	1 A		
2. DIVERSITY OR DEMAND:	125.00%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	539 VA		
5. TOTAL DEMAND AMPS:	1 A		

PANEL LOAD SCHEDULE

PANEL: HPWR

SUPPLY FROM:	MDP	MAINS RATING:	400 A	NEUTRAL RATING:	100.00%
VOLTS:	480/277V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	22	GROUND BUS:	Yes

LOCATION:	EQUIPMENT R4
MOUNTING:	Surface
ENCLOSURE:	NEMA 4X
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	WASH RACK EQUIP	125 A	3	27146 VA	1200 VA					1	20 A	LIGHTING	2
3	--	--	--			27146 VA	0 VA			1	20 A	Spare	4
5	--	--	--					27146 VA	0 VA	1	20 A	Spare	6
7	WASH RACK EQUIP	125 A	3	0 VA	0 VA					1	20 A	Spare	8
9	--	--	--			0 VA	0 VA			1	20 A	Spare	10
11	--	--	--					0 VA	0 VA	1	20 A	Spare	12
13	WASH RACK EQUIP	125 A	3	27146 VA	0 VA					1	20 A	Spare	14
15	--	--	--			27146 VA	0 VA			1	20 A	Spare	16
17	--	--	--					27146 VA	0 VA	1	20 A	Spare	18
19	AC-1	100 A	3	18000 VA	0 VA					--	--	Space	20
21	--	--	--			18000 VA	0 VA			--	--	Space	22
23	--	--	--					18000 VA	0 VA	--	--	Space	24
25	TLPWR	25 A	3	180 VA	0 VA					--	--	Space	26
27	--	--	--			0 VA	0 VA			--	--	Space	28
29	--	--	--					0 VA	0 VA	--	--	Space	30

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	1200 VA	125.00%	1500 VA	220.42
Receptacles	180 VA	100.00%	180 VA	220.14(I) , (K), 220.44
Motor	0 VA	0.00%	0 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	216876 VA	70.00%	151813 VA	430.24
HVAC	0 VA	0.00%	0 VA	430.24
Kitchen	0 VA	0.00%	0 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	0 VA	0.00%	0 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	73672 VA	72292 VA	72292 VA
AMPERES PER PHASE	266 A	261 A	261 A
1. TOTAL CONNECTED LOAD	263 A		
2. DIVERSITY OR DEMAND:	70.33%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	153493 VA		
5. TOTAL DEMAND AMPS:	185 A		

PANEL LOAD SCHEDULE

PANEL: LP2B

SUPPLY FROM:	TLP2B	MAINS RATING:	125 A	NEUTRAL RATING:	100.00%
VOLTS:	208Y/120V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	10	GROUND BUS:	Yes

LOCATION:	TOOL STORAGE W6
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	RECEPTACLES	20 A	1	900 VA	4356 VA					3	45 A	CU-W-01	2
3	RECEPTACLES	20 A	1			1260 VA	4356 VA			--	--	--	4
5	RECEPTACLES	20 A	1					540 VA	4356 VA	--	--	--	6
7	RECEPTACLES	20 A	1	720 VA	900 VA					1	20 A	GATE ARM CONTROLLER	8
9	OAU-W-01	15 A	2			400 VA	900 VA			1	20 A	GATE ARM CONTROLLER	10
11	--	--	--					400 VA	900 VA	1	20 A	GATE ARM CONTROLLER	12
13	WSHP-W-01	20 A	2	750 VA	0 VA					1	20 A	Spare	14
15	--	--	--			750 VA	0 VA			1	20 A	Spare	16
17	EF-W-01	15 A	3					300 VA	0 VA	1	20 A	Spare	18
19	--	--	--	300 VA	0 VA					1	20 A	Spare	20
21	--	--	--			300 VA	0 VA			1	20 A	Spare	22
23	GARAGE DOOR OPERATOR	20 A	1					900 VA	0 VA	1	20 A	Spare	24
25	GARAGE DOOR OPERATOR	20 A	1	900 VA	0 VA					--	--	Space	26
27	Spare	20 A	1			0 VA	0 VA			--	--	Space	28
29	Spare	20 A	1					0 VA	0 VA	--	--	Space	30
31	Spare	20 A	1	0 VA	0 VA					--	--	Space	32
33	Spare	20 A	1			0 VA	0 VA			--	--	Space	34
35	Spare	20 A	1					0 VA	0 VA	--	--	Space	36
37	SURGE PROTECTION DEVICE (SPD)	60 A	3	0 VA	0 VA					--	--	Space	38
39	--	--	--			0 VA	0 VA			--	--	Space	40
41	--	--	--					0 VA	0 VA	--	--	Space	42

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	0 VA	0.00%	0 VA	220.42
Receptacles	3420 VA	100.00%	3420 VA	220.14(I) , (K), 220.44
Motor	3500 VA	106.43%	3725 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	0 VA	0.00%	0 VA	430.24
HVAC	14568 VA	100.00%	14568 VA	430.24
Kitchen	0 VA	0.00%	0 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	2700 VA	100.00%	2700 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	8826 VA	7966 VA	7396 VA
AMPERES PER PHASE	74 A	67 A	62 A
1. TOTAL CONNECTED LOAD	67 A		
2. DIVERSITY OR DEMAND:	100.93%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	24413 VA		
5. TOTAL DEMAND AMPS:	68 A		

PANEL LOAD SCHEDULE

PANEL: LP2C

SUPPLY FROM:	TLP2C	MAINS RATING:	100 A	NEUTRAL RATING:	100.00%
VOLTS:	120/240V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	14	GROUND BUS:	Yes

LOCATION:	MECHANICAL/...
MOUNTING:	Surface
ENCLOSURE:	NEMA 1
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	40K LBS POST LIFT	20 A	3	300 VA	0 VA					--	--	Space	2
3	--	--	--			300 VA	0 VA			--	--	Space	4
5	--	--	--					300 VA	0 VA	--	--	Space	6
7	12K LBS POST LIFT	20 A	2	1265 VA	0 VA					--	--	Space	8
9	--	--	--			1265 VA	0 VA			--	--	Space	10
11	40K LBS POST LIFT	20 A	3					300 VA	0 VA	--	--	Space	12
13	--	--	--	300 VA	0 VA					--	--	Space	14
15	--	--	--			300 VA	0 VA			--	--	Space	16
17	12K LBS POST LIFT	20 A	2					1265 VA	0 VA	--	--	Space	18
19	--	--	--	1265 VA	0 VA					--	--	Space	20
21	Space	--	--			0 VA	0 VA			--	--	Space	22
23	Space	--	--					0 VA	0 VA	--	--	Space	24
25	SURGE PROTECTION DEVICE (SPD)	60 A	3	0 VA	0 VA					--	--	Space	26
27	--	--	--			0 VA	0 VA			--	--	Space	28
29	--	--	--					0 VA	0 VA	--	--	Space	30

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	0 VA	0.00%	0 VA	220.42
Receptacles	0 VA	0.00%	0 VA	220.14(I) , (K), 220.44
Motor	0 VA	0.00%	0 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	6860 VA	70.00%	4802 VA	430.24
HVAC	0 VA	0.00%	0 VA	430.24
Kitchen	0 VA	0.00%	0 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	0 VA	0.00%	0 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

120V LOADS TO BE CONNECTED TO PHASE A OR C. PHASE B TO BE INDICATED AS THE HIGH LEG. HIGH LEG CONDUCTOR TO BE ORANGE IN COLOR PER NEC 230.56

	A	B	C
TOTAL VOLT-AMPERES	3130 VA	1865 VA	1865 VA
AMPERES PER PHASE	23 A	13 A	13 A
1. TOTAL CONNECTED LOAD	17 A		
2. DIVERSITY OR DEMAND:	70.00%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	4802 VA		
5. TOTAL DEMAND AMPS:	12 A		

PANEL LOAD SCHEDULE

PANEL: LPWR

SUPPLY FROM:	TLPWR	MAINS RATING:	60 A	NEUTRAL RATING:	100.00%
VOLTS:	208Y/120V	MAINS TYPE:	MCB	NEUTRAL BUS:	Yes
PH / WIRES/ HZ:	3PH / 4W / 60HZ	K.A.I.C. RATING:	14	GROUND BUS:	Yes

LOCATION:	EQUIPMENT R4
MOUNTING:	Surface
ENCLOSURE:	NEMA 4X
SUB-FEED LUGS:	No
SURGE PROTECTOR:	
MCB METER:	

Ck...	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	Ck...
1	REC RM R4	20 A	1	180 VA	0 VA					--	--	Space	2
3							0 VA			--	--	Space	4
5	Spare	20 A	1					0 VA	0 VA	--	--	Space	6
7	Spare	20 A	1	0 VA	0 VA					--	--	Space	8
9	Spare	20 A	1			0 VA	0 VA			--	--	Space	10
11	Spare	20 A	1					0 VA	0 VA	--	--	Space	12
13	Spare	20 A	1	0 VA	0 VA					--	--	Space	14
15	Spare	20 A	1			0 VA	0 VA			--	--	Space	16
17	Space	--	--					0 VA	0 VA	--	--	Space	18
19	Space	--	--	0 VA	0 VA					--	--	Space	20
21	Space	--	--			0 VA	0 VA			--	--	Space	22
23	Space	--	--					0 VA	0 VA	--	--	Space	24
25	Space	--	--	0 VA	0 VA					--	--	Space	26
27	Space	--	--			0 VA	0 VA			--	--	Space	28
29	Space	--	--					0 VA	0 VA	--	--	Space	30

Load Classification	Connected Load	Demand Factor	Estimated Demand	NEC REFERENCE EDITION
Lighting	0 VA	0.00%	0 VA	220.42
Receptacles	180 VA	100.00%	180 VA	220.14(I) , (K), 220.44
Motor	0 VA	0.00%	0 VA	430.24
Elevator	0 VA	0.00%	0 VA	430.24
Equipment	0 VA	0.00%	0 VA	430.24
HVAC	0 VA	0.00%	0 VA	430.24
Kitchen	0 VA	0.00%	0 VA	220.56
Heating	0 VA	0.00%	0 VA	220.51
Computer	0 VA	0.00%	0 VA	220.14(A)
Other	0 VA	0.00%	0 VA	210.19(A)(1), 210.20(A)
Existing Load	0 VA	0.00%	0 VA	

Notes:

	A	B	C
TOTAL VOLT-AMPERES	180 VA	0 VA	0 VA
AMPERES PER PHASE	2 A	0 A	0 A
1. TOTAL CONNECTED LOAD	0 A		
2. DIVERSITY OR DEMAND:	100.00%		
3. EXISTING LOAD:			
4. TOTAL DEMAND LOAD:	180 VA		
5. TOTAL DEMAND AMPS:	0 A		

HEM2A	HEM1	HP2B
HEM2B	HPWR	LP2B
LP2C	LPWR	

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713 463 8200

Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

STATE OF TEXAS
DAVID G. WEATHERLY
115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL PANEL SCHEDULES

DRAWN BY: DGW	CHECKED BY: DGW
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: ABBREV
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

E-611
SHEET NUMBER

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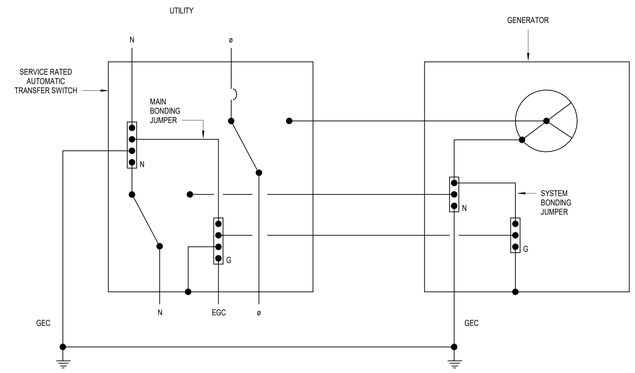
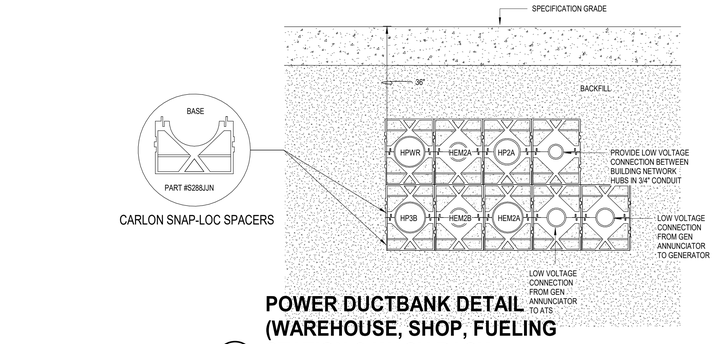
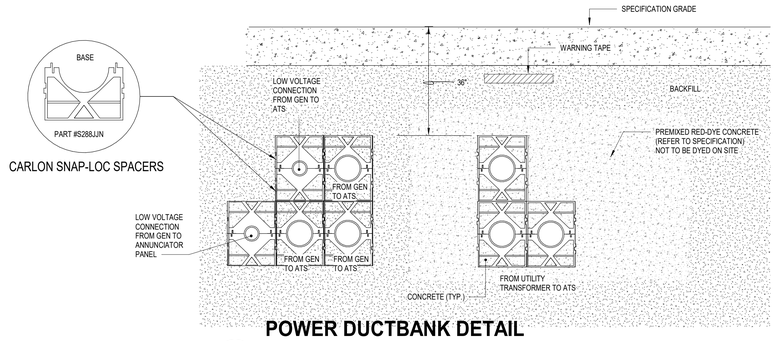


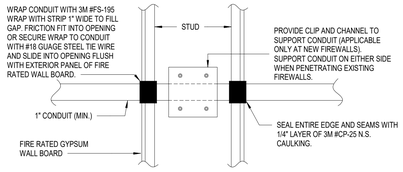
MAIN SERVICE GROUNDING DETAIL
6 SCALE: NONE



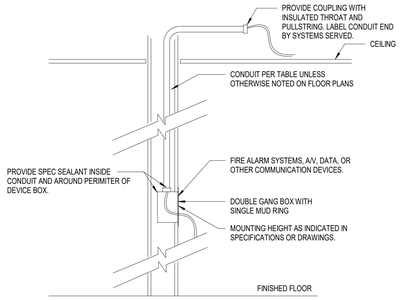
POWER DUCTBANK DETAIL (WAREHOUSE, SHOP, FUELING STATION & WASH RACK
9 SCALE: NONE



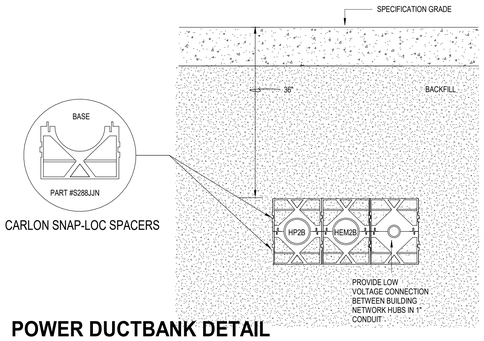
POWER DUCTBANK DETAIL (UTILITY & GENERATOR)
8 SCALE: NONE



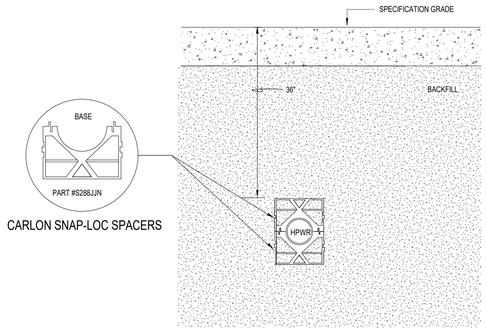
CONDUIT PENETRATION THROUGH FIRE WALL
4 SCALE: NONE



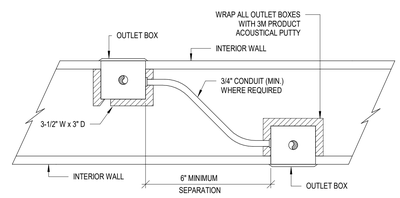
COMMUNICATION CONDUIT STUB-UP DETAIL
3 SCALE: NONE



POWER DUCTBANK DETAIL (WAREHOUSE)
11 SCALE: NONE



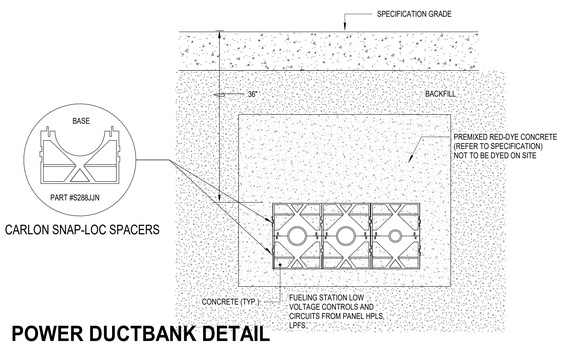
POWER DUCTBANK DETAIL (WASH RACK)
7 SCALE: NONE



NOTES:

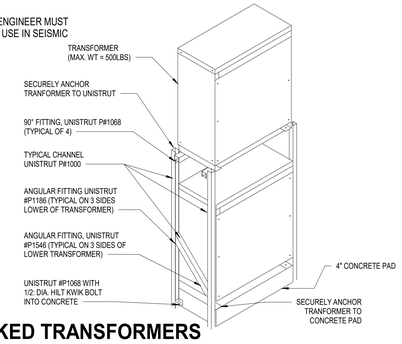
1. INSTALLATION SIMILAR IN BLOCK WALL CONDITIONS.

BACK-TO-BACK RECEPTACLE DETAIL
2 SCALE: NONE

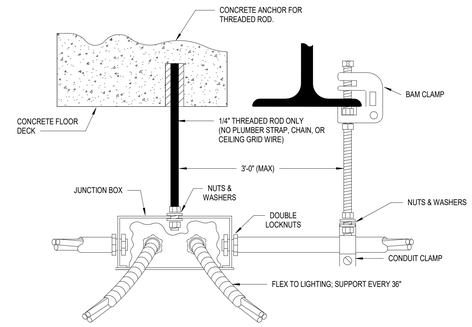


POWER DUCTBANK DETAIL (FUELING STATION)
10 SCALE: NONE

NOTE:
STRUCTURAL ENGINEER MUST APPROVE FOR USE IN SEISMIC AREAS.



STACKED TRANSFORMERS DETAIL
5 SCALE: NONE



CONDUIT/JUNCTION BOX MOUNTING DETAIL
1 SCALE: NONE

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Galveston County Road & Bridge Department Facilities

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Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
Page Southerland Page, Inc.

STATE OF TEXAS
DAVID G. WEATHERLY
115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL POWER DETAILS
DETAILS

DRAWN BY: DGW	CHECKED BY: DGW
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: ABBREV
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

EP-500
SHEET NUMBER

FILE PATH: W:\418198\418198E-GC ROAD_BRIDGE-R19-kmeeks.RVT
USER NAME:
DATE STAMP: 6/26/2020 3:25:38 PM

NOTES ON WIRING

QS CONTROL LINK

THE QS CONTROL LINK HAS A FREE WIRING TOPOLOGY (DAISY CHAIN, T-TAP, ETC). THE SYSTEM WIRING ILLUSTRATED BY THIS DRAWING HAS BEEN LAID OUT TO ENSURE APPROPRIATE POWER TO EACH DEVICE. IF FOR ANY REASON THE SYSTEM IS TO BE WIRED DIFFERENTLY THAN WHAT IS SHOWN, PLEASE CONFIRM ALL DEVICE POWER REQUIREMENTS ARE MET (PLEASE REFER TO "QS LINK POWER REQUIREMENTS" FOR INDIVIDUAL DEVICE POWER REQUIREMENTS).

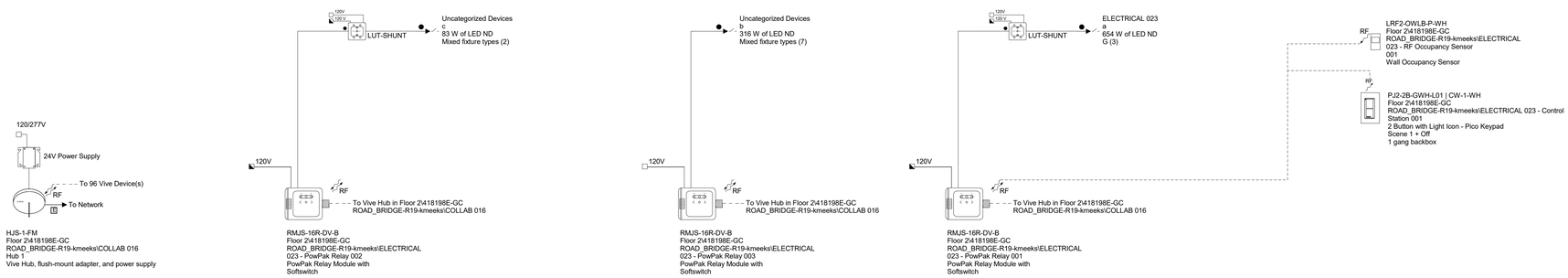
FOR QS CONTROL WIRE LENGTHS TOTALING LESS THAN 500 FT (153 M), USE LUTRON CABLE GRX-CBL-346S (4 CONDUCTOR NON-PLENUM), OR GRX-PCBL-346S (4 CONDUCTOR PLENUM). OTHERWISE USE 2 #18 AWG (1.0 SQ MM) + 2 #22 AWG (0.5 SQ MM) TWISTED AND SHIELDED OR EQUIVALENT (BELDEN #9461). FOR QS CONTROL WIRE LENGTHS TOTALING UP TO 2,000 FT, USE GRX-CBL-46L (4 CONDUCTOR NON-PLENUM) OR GRX-PCBL-46L (4 CONDUCTOR PLENUM). TOTAL QS CONTROL WIRE LENGTH MUST NOT EXCEED 2,000 FT (600 M).

QS LINK POWER REQUIREMENTS

DEVICE	PDUS
QS DEVICES THAT SUPPLY PDU	
DIN RAIL POWER SUPPLY	+75
MYROOM DIN RAIL POWER SUPPLY	+30
QS PLUG-IN POWER SUPPLY, QS J-BOX POWER SUPPLY	+8
ENERGI SAVR NODE WITH ECOSYSTEM, ENERGI SAVR NODE WITH DALI, ENERGI SAVR NODE WITH T-SERIES TUNABLE-WHITE	+30
ENERGI SAVR NODE FOR 0–10 V, ENERGI SAVR NODE WITH SOFTSWITCH, ENERGI SAVR NODE FOR 0–10 V (DIN RAIL), ENERGI SAVR NODE WITH SOFTSWITCH (DIN RAIL)	+14
ENERGI SAVR NODE PHASE ADAPTIVE (DIN RAIL), 1 A MYROOM DIN RAIL POWER MODULE SWITCHING, 1 A MYROOM DIN RAIL POWER MODULE PHASE ADAPTIVE	+4
ENERGI SAVR NODE WITH DALI (DIN RAIL), ENERGI SAVR NODE WITH ECOSYSTEM (DIN RAIL)	+3
QS MOTOR GROUP CONTROLLER (DIN RAIL), HOMEWORKS QS DIN RAIL POWER MODULES	0
GRAFIK EYE QS (ALL MODELS EXCEPT GRAFIK EYE QS DALI WITH KNX), QS TIMECLOCK	+3
QP2 QUANTUM LIGHTING HUB	LINK A : 0 LINKS B,C,D : +33 EACH
QP3 QUANTUM LIGHTING HUB	LINKS A,B : +33 EACH
QS DEVICES THAT CONSUME PDU	
QS WALLSTATION (SEETOUCH, ARCHITRAVE, SIGNATURE SERIES, QS PICO, KEYSWITCH, SINGLE COLUMN PALLADIOM), QS SLIDER, GRAFIK T SLIDER, QS INFRARED (IR) EYE, WALLBOX INPUT CLOSURE INTERFACE	-1
QS NETWORK INTERFACE, QS DMX INTERFACE, ENERGI SAVR NODE PROGRAMMING INTERFACE, QS WALLSTATION (DOUBLE COLUMN PALLADIOM)	-2
QS SENSOR MODULE (QSM), NOT INCLUDING ATTACHED WIRED SENSORS (SEE SECTION BELOW FOR MORE INFORMATION), QS CONTACT CLOSURE INTERFACE, PALLADIOM ROOM THERMOSTAT	-3
GUESTROOM CONTROL UNIT	-8
SENSORS & DEVICES THAT CONSUME PDUS WHEN WIRED TO A QSM	
LUTRON DAYLIGHT SENSOR, LUTRON INFRARED (IR) RECEIVER, PICO WIRED CONTROLLER	-0.5
ECOSYSTEM WALLSTATION	-1
LOS C SERIES OCCUPANCY SENSOR, HIGH BAY OCCUPANCY SENSOR	-2

LUTRON SERVICES

QTY	SERVICE TITLE (MODEL NUMBER)	SERVICE DESCRIPTION
	THE QUANTITY OF SERVICES BELOW ARE TO BE INCLUDED AS PART OF THIS PROJECT'S SCOPE OF WORK AND SPECIFIED INTO THE WRITTEN SPEC DOCUMENTS	
	PRE-STARTUP SERVICES	
	ONSITE PRE-WIRE VISIT (LSC-PREWIRE)	AN ONSITE VISIT WITH THE ELECTRICAL CONTRACTOR TO DISCUSS LOGISTICAL CONSTRUCTION CONSIDERATIONS INCLUDING THE WIRING AND MOUNTING OF SYSTEM DEVICES, THE CONSTRUCTION SCHEDULE, AND LUTRON DOCUMENTATION. QUANTITY DICTATES THE NUMBER OF VISITS PURCHASED.
	SYSTEM & NETWORK INTEGRATION CONSULTATION (LSC-INT-VISIT)	A CONSULTATIVE VISIT WITH THIRD PARTY INTEGRATORS TO CONFIRM THE SPECIFIED SEQUENCE OF OPERATION AND DISCUSS INTEGRATION PROCEDURES NEEDED IN ORDER TO INTEGRATE WITH THE LUTRON EQUIPMENT. THIS MAY INCLUDE ANY OF THE FOLLOWING THIRD PARTY SYSTEMS: BMS, BAS, IT, NON-LUTRON SHADES, BACNET, AV, OR ENERGY DASHBOARDS.
	SENSOR LAYOUT & TUNING (LSC-SENS-LT)	LUTRON WILL TAKE RESPONSIBILITY FOR LUTRON-PROVIDED SENSOR PLACEMENT AND PERFORMANCE BY CREATING SENSOR LAYOUTS AND COORDINATING SENSOR PLACEMENT BEFORE AND AFTER INSTALLATION. ONCE THE BUILDING IS OCCUPIED, LUTRON WILL RETURN UP TO TWO TIMES TO PERFORM SENSOR FINE-TUNING.
	STARTUP SUPPORT SERVICES (THESE SERVICES ARE ADDITIONAL TO YOUR SPECIFIED STARTUP BASED ON YOUR REQUIREMENTS)	
	AFTER HOURS STARTUP (LSC-AH-SU)	STARTUP PROVIDED BETWEEN THE HOURS OF 5:00PM – 7:00AM, MONDAY - FRIDAY. THIS SCOPE OF WORK DOES NOT INCLUDE HOLIDAY OR WEEKEND WORK. ADDITIONAL FEES MAY APPLY FOR WORK TO BE COMPLETED ON WEEKENDS (FRIDAY 5:00PM – MONDAY 7:00AM).
	ONSITE SCENE & LEVEL TUNING (LSC-AF-VISIT)	AN ONSITE VISIT WITH THE SPECIFIER OR CUSTOMER REPRESENTATIVE TO REVIEW THE DESIGN INTENT, FINE-TUNE THE SCENE LEVEL PROGRAMMING, AND MAKE ADJUSTMENTS TO TIMECLOCKS.
	ONSITE PERFORMANCE-VERIFICATION WALKTHROUGH (LSC-WALK)	AN ONSITE WALKTHROUGH WITH FACILITY REPRESENTATIVES OR PROJECT COMMISSIONING AGENTS TO DEMONSTRATE THAT THE SYSTEM FUNCTIONALITY MEETS THE DESIGN INTENT. THIS MAY INCLUDE ANY OF THE FOLLOWING ONSITE ACTIVITIES – CONSULTATION/TRAINING DEMOS, FUNCTIONAL TESTING ASSISTANCE, OR INVENTORY OF LUTRON EQUIPMENT.
	SYSTEM PERFORMANCE-VERIFICATION DOCUMENTATION (LSC-SPV-DOC)	COMPLETION OF DOCUMENTATION WHICH PROVIDES PERFORMANCE VERIFICATION CERTIFYING THE LUTRON EQUIPMENT HAS BEEN THOROUGHLY TESTED. IT SUPPORTS THE DOCUMENTATION REQUIREMENTS OF MANY BUILDING STANDARDS.
	TITLE 24 ACCEPTANCE TEST VISIT (LSC-SPV-DOC-T24)	ACCEPTANCE TESTING BY A LUTRON CERTIFIED LIGHTING CONTROL ACCEPTANCE TEST TECHNICIAN (CLCATT) TO FULFILL THE REQUIRED TITLE 24 INTERIOR LIGHTING CONTROL TESTS.
	POST-STARTUP SERVICES	
	CUSTOMER-SITE SOLUTION TRAINING (LSC-TRAINING-SP)	A VISIT TO TEACH SYSTEM USERS HOW TO OPERATE AND MAINTAIN THE LIGHTING CONTROL SYSTEM.
	SYSTEM OPTIMIZATION (LSC-SYSOPT-SP)	AN ONSITE CONSULTATIVE VISIT TO IDENTIFY AND IMPLEMENT LIGHTING CONTROL ADJUSTMENTS TO SAVE ADDITIONAL ENERGY AND CREATE A MORE PRODUCTIVE WORK ENVIRONMENT.
	MAINTENANCE & SUPPORT SERVICES	
	SOFTWARE MAINTENANCE AGREEMENT (LSC-SMA-SP)	PROVIDES COMPATIBILITY TESTING RESULTS OF QUANTUM WITH OPERATING SYSTEM PATCHES AND WEB BROWSER UPDATES. INCLUDES AN ELECTIVE FREE SOFTWARE UPGRADE LICENSE.
1	COMMERCIAL SYSTEMS 2-YEAR LIMITED WARRANTY (LSC-B2)	A 2-YEAR SYSTEM WARRANTY PROVIDING 100% REPLACEMENT PARTS AND 100% LUTRON DIAGNOSTIC LABOR COVERAGE WITH A FIRST-AVAILABLE RESPONSE TIME.
	ENHANCED SILVER (LSC-E8S)	YEARS 1-2 - 100% REPLACEMENT PARTS AND 100% LUTRON DIAGNOSTIC LABOR COVERAGE WITH A FIRST-AVAILABLE RESPONSE TIME; YEARS 3-5 - 50% PARTS ONLY COVERAGE; YEARS 6-8 - 25% PARTS ONLY COVERAGE.
	ENHANCED GOLD (LSC-E8G)	YEARS 1-2 - 100% REPLACEMENT PARTS AND 100% LUTRON DIAGNOSTIC LABOR COVERAGE WITH A 72-HOUR RESPONSE TIME AND AN ANNUAL (1-DAY) SCHEDULED PREVENTIVE MAINTENANCE VISIT; YEARS 3-5 - 50% PARTS ONLY COVERAGE; YEARS 6-8 - 25% PARTS ONLY COVERAGE.
	ENHANCED PLATINUM (LSC-E8P)	YEARS 1-2 - 100% REPLACEMENT PARTS AND 100% LUTRON DIAGNOSTIC LABOR COVERAGE WITH A 24-HOUR RESPONSE TIME AND AN ANNUAL (1-DAY) SCHEDULED PREVENTIVE MAINTENANCE VISIT; YEARS 3-5 - 50% PARTS ONLY COVERAGE; YEARS 6-8 - 25% PARTS ONLY COVERAGE.
	SILVER TECHNOLOGY SUPPORT PLAN (LSC-SILV-IW)	AN ANNUAL SERVICE PLAN THAT COVERS 100% REPLACEMENT PARTS AND 100% LUTRON DIAGNOSTIC LABOR WITH A FIRST-AVAILABLE ONSITE OR REMOTE RESPONSE TIME.
	GOLD TECHNOLOGY SUPPORT PLAN (LSC-GOLD-IW)	AN ANNUAL SERVICE PLAN THAT COVERS 100% REPLACEMENT PARTS AND 100% LUTRON LABOR WITH A 72-HOUR ONSITE OR REMOTE RESPONSE TIME. ALSO INCLUDES AN ANNUAL (1-DAY) SCHEDULED PREVENTIVE MAINTENANCE VISIT EACH YEAR.
	PLATINUM TECHNOLOGY SUPPORT PLAN (LSC-PLAT-IW)	AN ANNUAL SERVICE PLAN THAT COVERS 100% REPLACEMENT PARTS AND 100% LUTRON DIAGNOSTIC LABOR WITH A 24-HOUR ONSITE OR REMOTE RESPONSE TIME. ALSO INCLUDES AN ANNUAL (1-DAY) SCHEDULED PREVENTIVE MAINTENANCE VISIT EACH YEAR.
	PREVENTIVE MAINTENANCE VISIT(S) (LSC-SCH-MAINT)	SCHEDULED MAINTENANCE VISIT TO PERFORM PREVENTIVE MAINTENANCE, MINOR PROGRAMMING, AND CONDUCT SYSTEM TRAININGS. QUANTITY IS IN ADDITION TO ANY YEARLY VISITS SPECIFIED WITH AN ENHANCED WARRANTY OR TECHNOLOGY SUPPORT PLAN.
	PLEASE GO TO WWW.LUTRON.COM/SERVICES FOR FURTHER INFORMATION.	



Lutron Designer 12.0

One-Line

Wire Legend

- QS Control Link (Connect wires 1, 2, 3 and 4)*
- QS Control Link (Connect wires 1, 3 and 4. Do not connect wire 2)*
- Panel Control Link (Connect wires 1, 2, 3, 4 and 5)*
- Panel Control Link (Connect wires 1, 2, 3 and 4. Do not connect wire #5)*
- Panel Control Link (Connect wires 1, 3, 4 and 5. Do not connect wire #2)*
- QS Sivoia Shade Control Link*
- Belden Cable 1387LA(Or Equivalent)
- Normal Input Power 2 #12 AWG (4 sq mm) + ground
- Normal-Emergency Input Power 2 #12 AWG (4 sq mm) + ground
- 3 Phase 4 wire Input Power, 4 #12 AWG (4 sq mm) + ground
- 2 #12 AWG (4 sq mm) + ground
- 3 #12 AWG (4 sq mm) + ground
- 0-10 V Signal: 2#18AWG (1.0 sq mm)
- 2#18 AWG (1.0 sq mm)
- 3#18 AWG (1.0 sq mm)
- EcoSystem Bus/Loop*
- DALI Loop
- T-Series Tunable-White Loop
- Lutron Sensor Cable C-CBL-522S or use 4#22 AWG (1.0 sq mm)
- Lutron Sensor Cable C-CBL-522S or use 3#22 AWG (1.0 sq mm)
- DMX Cable. Use Lutron GRX-CBL-DMX-250/GRX-CBL-DMX-500 or Beldon #9729 (Non-plenum) or Beldon #89729 (Plenum) or Dura Flex 22/4 WA Cable.
- Ethernet cable. CAT5E or better cable for Lutron Network terminated with RJ45 connectors (not provided by Lutron). 328 ft (100 m) maximum run.
- Fiber optic cable for Lutron Network terminated with appropriate fiber optic connectors (not provided by Lutron). Requires dedicated fiber optic link (single-mode or multi-mode)
- RF Connection
- Wired Connection

*Please refer to Notes on Wiring for more wiring guidelines.
**Refer to Load Schedule for feed and load information

Project Name:
Galveston Road & Bridge

Location:
Houston, Texas

Project Number:

Created by:
Justin Watson

File Name:
Galveston Road & Bridge.lutd

Document Revision:

May 29, 2020 | Sheet 1 of 9

For detailed definition of product capabilities refer to product specification submittal sheets.

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Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
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STATE OF TEXAS
DAVID G. WEATHERLY
115250
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PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL LIGHTING CONTROL DETAILS

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: ABBREV
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

EL-501
SHEET NUMBER

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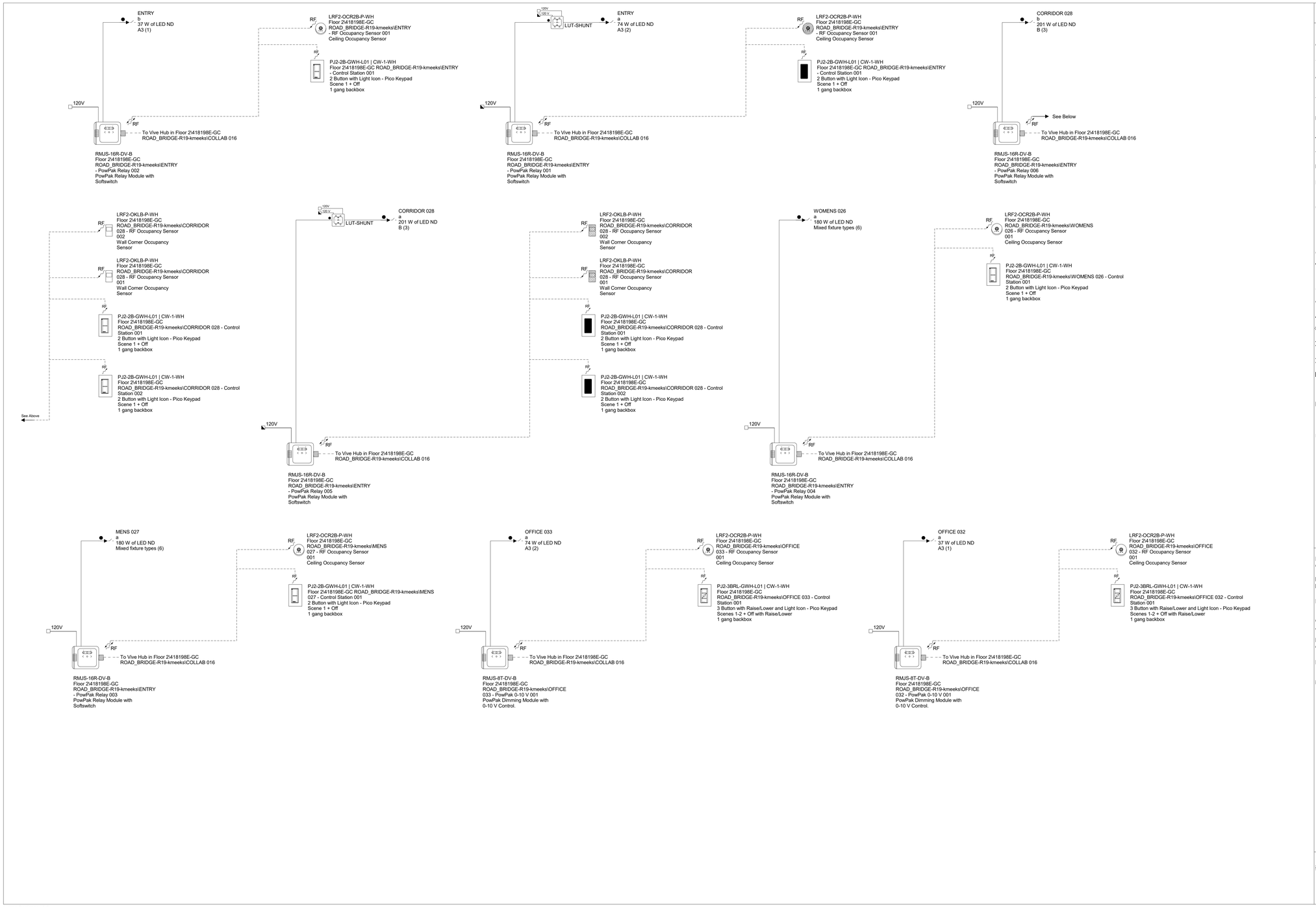

Lutron Designer 12.0

One-Line

Wire Legend

- QS Control Link (Connect wires 1, 2, 3 and 4)*
- QS Control Link (Connect wires 1, 3 and 4. Do not connect wire 2)*
- Panel Control Link (Connect wires 1, 2, 3, 4 and 5)*
- Panel Control Link (Connect wires 1, 2, 3 and 4. Do not connect wire #5)*
- Panel Control Link (Connect wires 1, 3, 4 and 5. Do not connect wire #2)*
- QS Sivoia Shade Control Link*
- Belden Cable 1387LA(Or Equivalent)
- Normal Input Power 2 #12 AWG (4 sq mm) + ground
- Normal-Emergency Input Power 2 #12 AWG (4 sq mm) + ground
- 3 Phase 4 wire Input Power, 4 #12 AWG (4 sq mm) + ground
- 2 #12 AWG (4 sq mm) + ground
- 3 #12 AWG (4 sq mm) + ground
- 0-10 V Signal: 2#18AWG (1.0 sq mm)
- 2#18 AWG (1.0 sq mm)
- 3#18 AWG (1.0 sq mm)
- EcoSystem Bus/Loop*
- DALI Loop
- T-Series Tunable-White Loop
- Lutron Sensor Cable C-CBL-522S or use 4#22 AWG (1.0 sq mm)
- Lutron Sensor Cable C-CBL-522S or use 3#22 AWG (1.0 sq mm)
- DMX Cable. Use Lutron QRX-CBL-DMX-250/QRX-CBL-DMX-500 or Beldon #9729 (Non-plenum) or Beldon #89729 (Plenum) or Dura Flex 22/4 WA Cable.
- Ethernet cable. CAT5E or better cable for Lutron Network terminated with RJ45 connectors (not provided by Lutron). 328 ft (100 m) maximum run.
- Fiber optic cable for Lutron Network terminated with appropriate fiber optic connectors (not provided by Lutron). Requires dedicated fiber optic link (single-mode or multi-mode)
- RF Connection
- Wired Connection

*Please refer to Notes on Wiring for more wiring guidelines.
**Refer to Load Schedule for feed and load information

Project Name:
Galveston Road & Bridge

Location:
Houston, Texas

Project Number:

Created by:
Justin Watson

File Name:
Galveston Road & Bridge.lutd

Document Revision:

May 29, 2020 | Sheet 2 of 9

For detailed definition of product capabilities refer to product specification submittal sheets.

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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STATE OF TEXAS
DAVID G. WEATHERLY
115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL LIGHTING CONTROL DETAILS

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER	PROJECT ABBREVIATION
418198	ABBREV
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

EL-502
SHEET NUMBER

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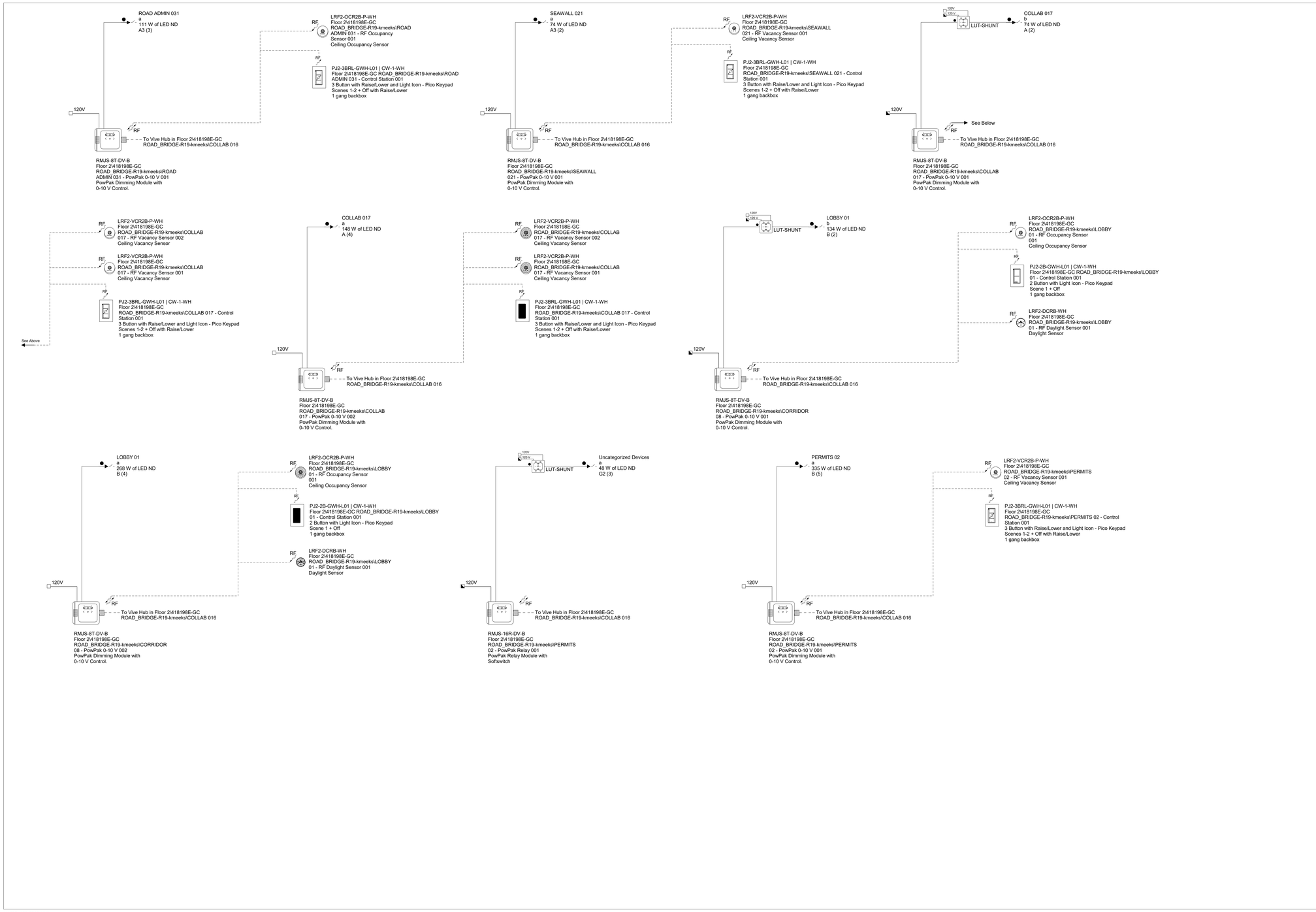

Lutron Designer 12.0

One-Line

Wire Legend

- QS Control Link (Connect wires 1, 2, 3 and 4)*
- QS Control Link (Connect wires 1, 3 and 4. Do not connect wire 2)*
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- Panel Control Link (Connect wires 1, 2, 3 and 4. Do not connect wire #5)*
- Panel Control Link (Connect wires 1, 3, 4 and 5. Do not connect wire #2)*
- QS Sivoia Shade Control Link*
- Belden Cable 1387LA(Or Equivalent)
- Normal Input Power 2 #12 AWG (4 sq mm) + ground
- Normal-Emergency Input Power 2 #12 AWG (4 sq mm) + ground
- 3 Phase 4 wire Input Power, 4 #12 AWG (4 sq mm) + ground
- 2 #12 AWG (4 sq mm) + ground
- 3 #12 AWG (4 sq mm) + ground
- 0-10 V Signal: 2#18AWG (1.0 sq mm)
- 2#18 AWG (1.0 sq mm)
- 3#18 AWG (1.0 sq mm)
- EcoSystem Bus/Loop*
- DALI Loop
- T-Series Tunable-White Loop
- Lutron Sensor Cable C-CBL-522S or use 4#22 AWG (1.0 sq mm)
- Lutron Sensor Cable C-CBL-522S or use 3#22 AWG (1.0 sq mm)
- DMX Cable. Use Lutron GRX-CBL-DMX-250/GRX-CBL-DMX-500 or Belden #9729 (Non-plenum) or Beldon #89729 (Plenum) or Dura Flex 22/4 WA Cable.
- Ethernet cable. CAT5E or better cable for Lutron Network terminated with RJ45 connectors (not provided by Lutron). 328 ft (100 m) maximum run.
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- RF Connection
- Wired Connection

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**Refer to Load Schedule for feed and load information

Project Name:
Galveston Road & Bridge

Location:
Houston, Texas

Project Number:

Created by:
Justin Watson

File Name:
Galveston Road & Bridge.lutd

Document Revision:

May 29, 2020 | Sheet 3 of 9

For detailed definition of product capabilities refer to product specification submittal sheets.

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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STATE OF TEXAS
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115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL LIGHTING CONTROL DETAILS

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER	PROJECT ABBREVIATION
418198	ABBREV
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

EL-503
SHEET NUMBER

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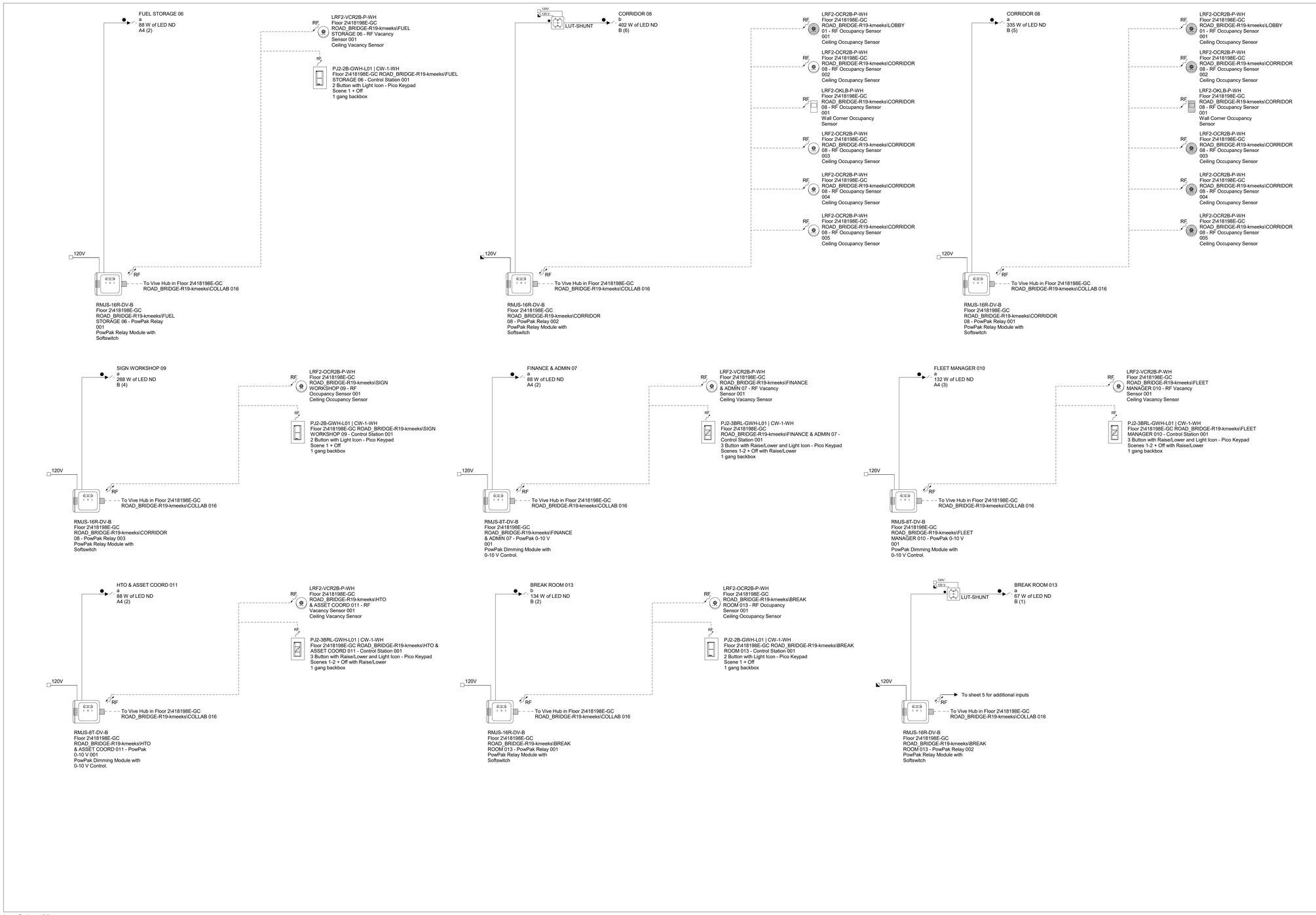

Lutron Designer 12.0

One-Line

Wire Legend

- QS Control Link (Connect wires 1, 2, 3 and 4)*
- QS Control Link (Connect wires 1, 3 and 4. Do not connect wire 2)*
- Panel Control Link (Connect wires 1, 2, 3, 4 and 5)*
- Panel Control Link (Connect wires 1, 2, 3 and 4. Do not connect wire #5)*
- Panel Control Link (Connect wires 1, 3, 4 and 5. Do not connect wire #2)*
- QS Sivoia Shade Control Link*
- Belden Cable 1387LA(Or Equivalent)
- Normal Input Power 2 #12 AWG (4 sq mm) + ground
- Normal-Emergency Input Power 2 #12 AWG (4 sq mm) + ground
- 3 Phase 4 wire Input Power, 4 #12 AWG (4 sq mm) + ground
- 2 #12 AWG (4 sq mm) + ground
- 3 #12 AWG (4 sq mm) + ground
- 0-10 V Signal: 2#18AWG (1.0 sq mm)
- 2#18 AWG (1.0 sq mm)
- 3#18 AWG (1.0 sq mm)
- EcoSystem Bus/Loop*
- DALI Loop
- T-Series Tunable-White Loop
- Lutron Sensor Cable C-CBL-522S or use 4#22 AWG (1.0 sq mm)
- Lutron Sensor Cable C-CBL-522S or use 3#22 AWG (1.0 sq mm)
- DMX Cable. Use Lutron GRX-CBL-DMX-250/GRX-CBL-DMX-500 or Beldon #9729 (Non-plenum) or Beldon #89729 (Plenum) or Dura Flex 22/4 WA Cable.
- Ethernet cable. CAT5E or better cable for Lutron Network terminated with RJ45 connectors (not provided by Lutron). 328 ft (100 m) maximum run.
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- RF Connection
- Wired Connection

*Please refer to Notes on Wiring for more wiring guidelines.
**Refer to Load Schedule for feed and load information

Project Name:
Galveston Road & Bridge

Location:
Houston, Texas

Project Number:

Created by:
Justin Watson

File Name:
Galveston Road & Bridge.lutd

Document Revision:

May 29, 2020 | Sheet 4 of 9

For detailed definition of product capabilities refer to product specification submittal sheets.

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Galveston County Road & Bridge Department Facilities

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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ELECTRICAL LIGHTING CONTROL DETAILS

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER	PROJECT ABBREVIATION
418198	ABBREV
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

EL-504
SHEET NUMBER

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DATE STAMP: 6/26/2020 3:25:08 PM

Lutron Designer 12.0

One-Line

Wire Legend

- QS Control Link (Connect wires 1, 2, 3 and 4)*
- QS Control Link (Connect wires 1, 3 and 4. Do not connect wire 2)*
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- Panel Control Link (Connect wires 1, 3, 4 and 5. Do not connect wire #2)*
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- 2 #12 AWG (4 sq mm) + ground
- 3 #12 AWG (4 sq mm) + ground
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- 2#18 AWG (1.0 sq mm)
- 3#18 AWG (1.0 sq mm)
- EcoSystem Bus/Loop*
- DALI Loop
- T-Series Tunable-White Loop
- Lutron Sensor Cable C-CBL-522S or use 4#22 AWG (1.0 sq mm)
- Lutron Sensor Cable C-CBL-522S or use 3#22 AWG (1.0 sq mm)
- DMX Cable. Use Lutron GRX-CBL-DMX-250/GRX-CBL-DMX-500 or Belden #9729 (Non-plenum) or Belden #89729 (Plenum) or Dura Flex 22/4 WA Cable.
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**Refer to Load Schedule for feed and load information

Project Name:
Galveston Road & Bridge

Location:
Houston, Texas

Project Number:

Created by:
Justin Watson

File Name:
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Document Revision:

May 29, 2020 | Sheet 5 of 9

For detailed definition of product capabilities refer to product specification submittal sheets.

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Galveston County Road & Bridge Department Facilities

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
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06/26/2020

ELECTRICAL LIGHTING CONTROL DETAILS

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER	PROJECT ABBREVIATION
418198	ABBREV
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

EL-505
SHEET NUMBER

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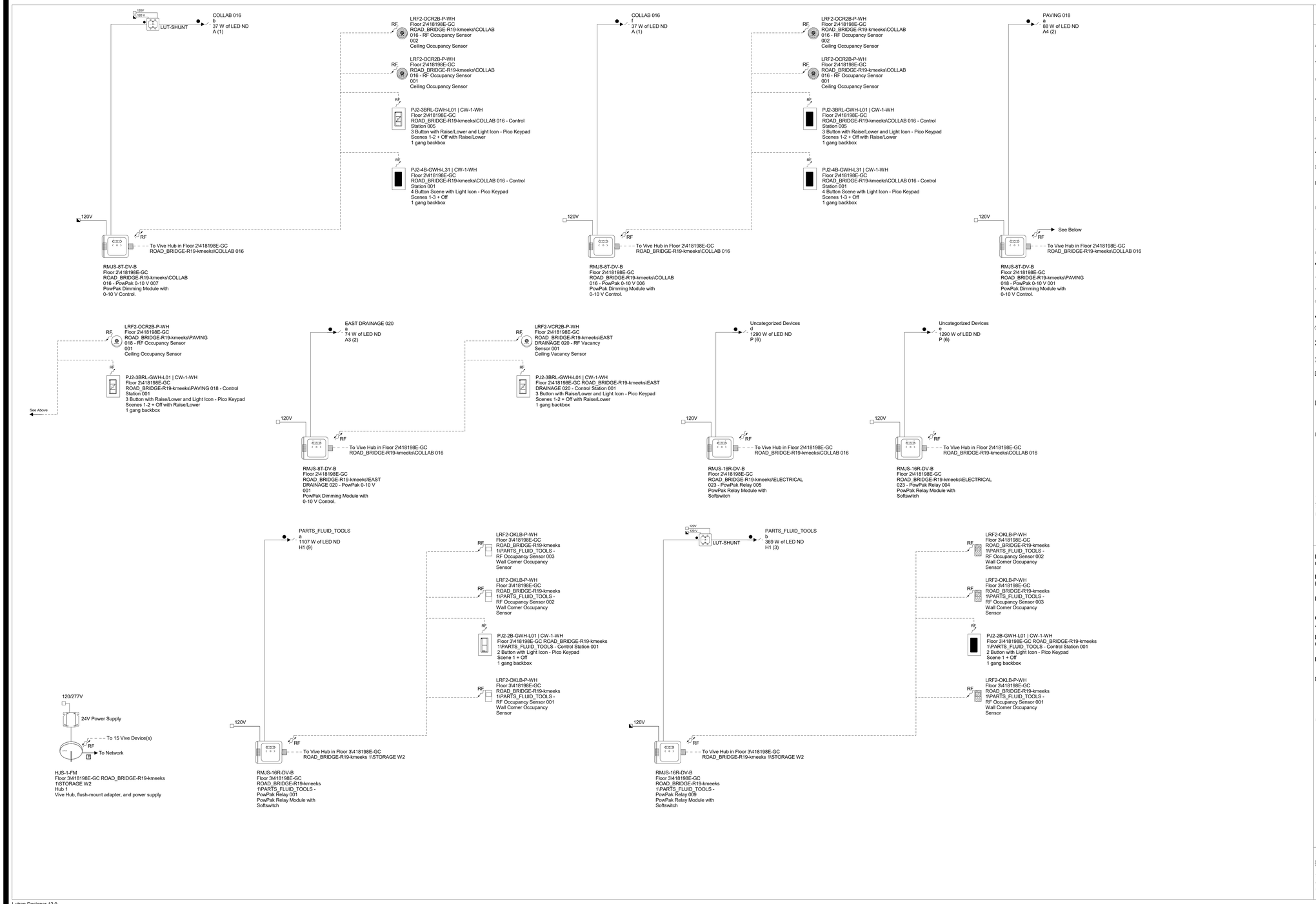

Lutron Designer 12.0

One-Line

Wire Legend

- QS Control Link (Connect wires 1, 2, 3 and 4)*
- QS Control Link (Connect wires 1, 3 and 4. Do not connect wire 2)*
- Panel Control Link (Connect wires 1, 2, 3, 4 and 5)*
- Panel Control Link (Connect wires 1, 2, 3 and 4. Do not connect wire #5)*
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- 2 #12 AWG (4 sq mm) + ground
- 3 #12 AWG (4 sq mm) + ground
- 0-10 V Signal: 2#18AWG (1.0 sq mm)
- 2#18 AWG (1.0 sq mm)
- 3#18 AWG (1.0 sq mm)
- EcoSystem Bus/Loop*
- DALI Loop
- T-Series Tunable-White Loop
- Lutron Sensor Cable C-CBL-522S or use 4#22 AWG (1.0 sq mm)
- Lutron Sensor Cable C-CBL-522S or use 3#22 AWG (1.0 sq mm)
- D DMX Cable. Use Lutron GRX-CBL-DMX-250/GRX-CBL-DMX-500 or Belden #9729 (Non-plenum) or Belden #89729 (Plenum) or Dura Flex 22/4 WA Cable.
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- RF Connection
- Wired Connection

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**Refer to Load Schedule for feed and load information

Project Name:
Galveston Road & Bridge

Location:
Houston, Texas

Project Number:

Created by:
Justin Watson

File Name:
Galveston Road & Bridge.lutd

Document Revision:

May 29, 2020 | Sheet 6 of 9

For detailed definition of product capabilities refer to product specification submittal sheets.

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Galveston County Road & Bridge Department Facilities

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
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STATE OF TEXAS
DAVID G. WEATHERLY
115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL LIGHTING CONTROL DETAILS

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER	PROJECT ABBREVIATION
418198	ABBREV
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

EL-506
SHEET NUMBER

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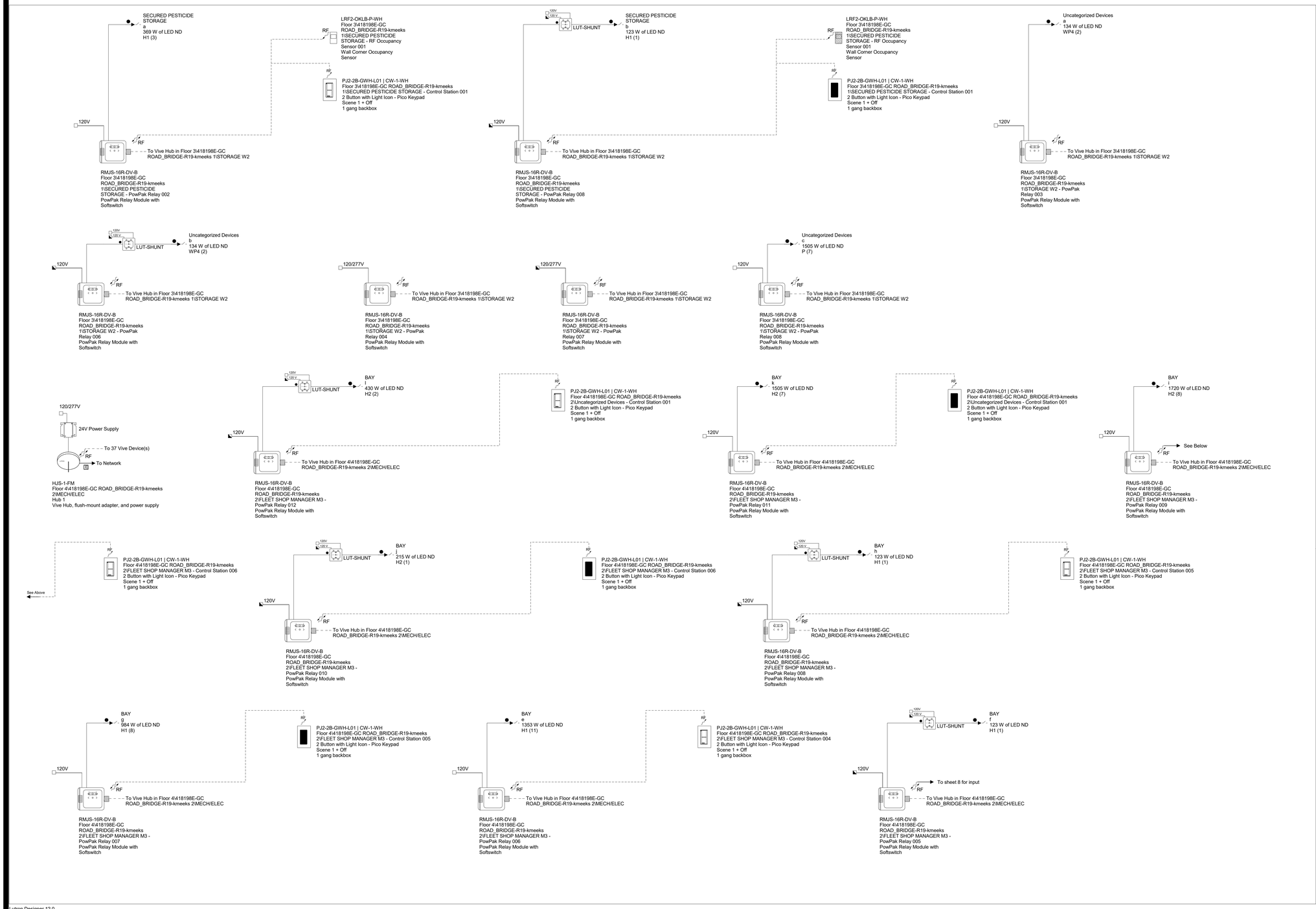

Lutron Designer 12.0

One-Line

Wire Legend

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- 2 #12 AWG (4 sq mm) + ground
- 3 #12 AWG (4 sq mm) + ground
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- 2#18 AWG (1.0 sq mm)
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- Wired Connection

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**Refer to Load Schedule for feed and load information

Project Name:
Galveston Road & Bridge

Location:
Houston, Texas

Project Number:

Created by:
Justin Watson

File Name:
Galveston Road & Bridge.lutd

Document Revision:

May 29, 2020 | Sheet 7 of 9

For detailed definition of product capabilities refer to product specification submittal sheets.

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713 463 8200

Galveston County Road & Bridge Department Facilities

5115 TX-3
Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 15868
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STATE OF TEXAS
DAVID G. WEATHERLY
115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL LIGHTING CONTROL DETAILS

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER	PROJECT ABBREVIATION
418198	ABBREV
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

EL-507
SHEET NUMBER

FILE PATH: W:\418198\418198E-GC ROAD_BRIDGE-R19-kmeeks.RVT
USER NAME:
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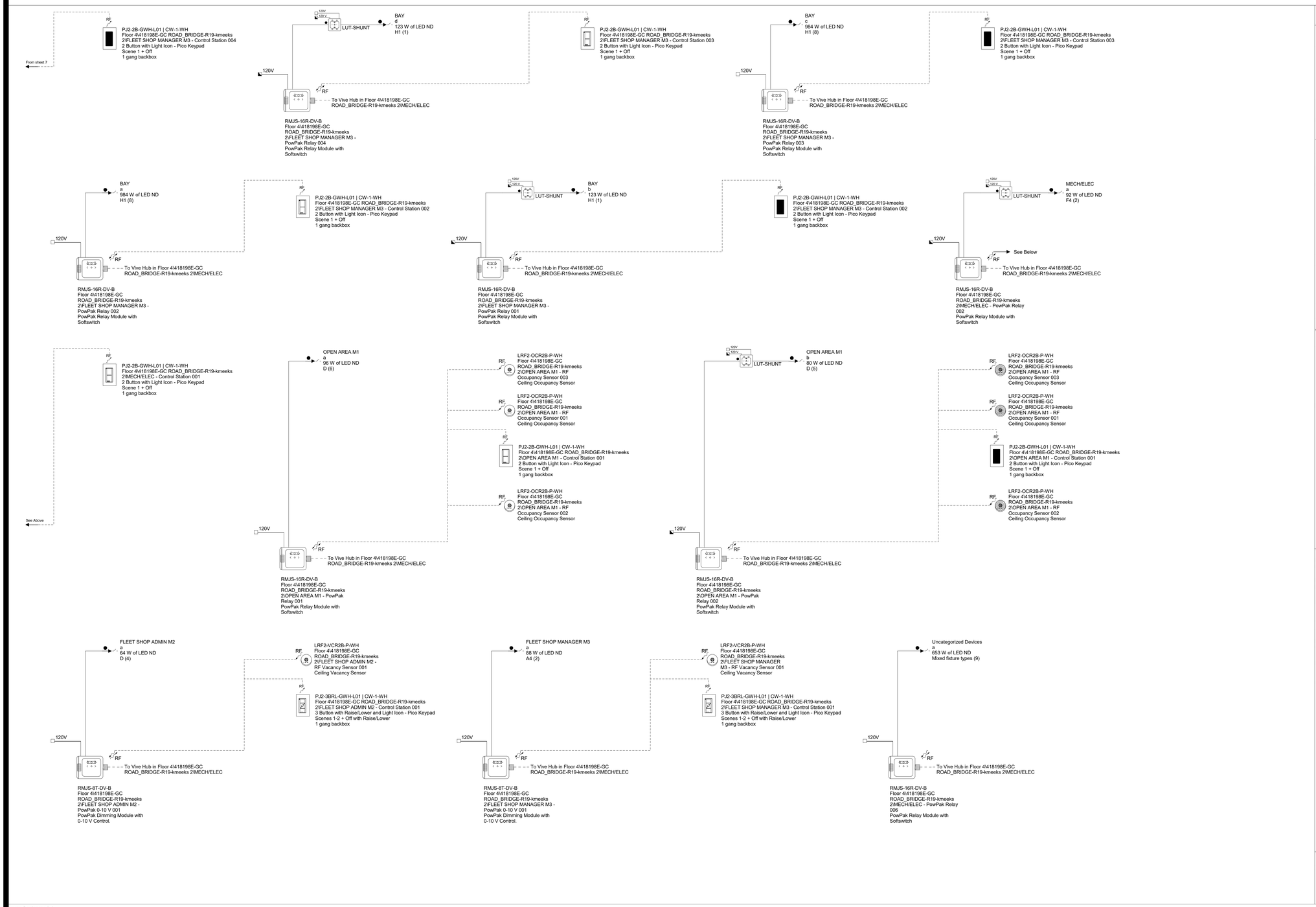

Lutron Designer 12.0

One-Line

Wire Legend

- △0 QS Control Link (Connect wires 1, 2, 3 and 4)*
- ▲0 QS Control Link (Connect wires 1, 3 and 4. Do not connect wire 2)*
- ▽P Panel Control Link (Connect wires 1, 2, 3, 4 and 5)*
- ▼P Panel Control Link (Connect wires 1, 2, 3 and 4. Do not connect wire #5)*
- ▷P Panel Control Link (Connect wires 1, 3, 4 and 5. Do not connect wire #2)*
- ◁S QS Sivoia Shade Control Link*
- ▲T Belden Cable 1387LA(Or Equivalent)
- □ Normal Input Power 2 #12 AWG (4 sq mm) + ground
- ◪ Normal-Emergency Input Power 2 #12 AWG (4 sq mm) + ground
- ③ 3 Phase 4 wire Input Power, 4 #12 AWG (4 sq mm) + ground
- ● 2 #12 AWG (4 sq mm) + ground
- ○ 3 #12 AWG (4 sq mm) + ground
- ◆ 0-10 V Signal: 2#18AWG (1.0 sq mm)
- ◆◆ 2#18 AWG (1.0 sq mm)
- ○○ 3#18 AWG (1.0 sq mm)
- ◇ EcoSystem Bus/Loop*
- DALI Loop
- T-Series Tunable-White Loop
- Lutron Sensor Cable C-CBL-522S or use 4#22 AWG (1.0 sq mm)
- Lutron Sensor Cable C-CBL-522S or use 3#22 AWG (1.0 sq mm)
- D DMX Cable. Use Lutron GRX-CBL-DMX-250/GRX-CBL-DMX-500 or Belden #9729 (Non-plenum) or Beldon #89729 (Plenum) or Dura Flex 22/4 WA Cable.
- E Ethernet cable. CAT5E or better cable for Lutron Network terminated with RJ45 connectors (not provided by Lutron). 328 ft (100 m) maximum run.
- F Fiber optic cable for Lutron Network terminated with appropriate fiber optic connectors (not provided by Lutron). Requires dedicated fiber optic link (single-mode or multi-mode)
- RF Connection
- Wired Connection

*Please refer to Notes on Wiring for more wiring guidelines.
**Refer to Load Schedule for feed and load information

Project Name:
Galveston Road & Bridge

Location:
Houston, Texas

Project Number:

Created by:
Justin Watson

File Name:
Galveston Road & Bridge.lutd

Document Revision:

May 29, 2020 | Sheet 8 of 9

For detailed definition of product capabilities refer to product specification submittal sheets.

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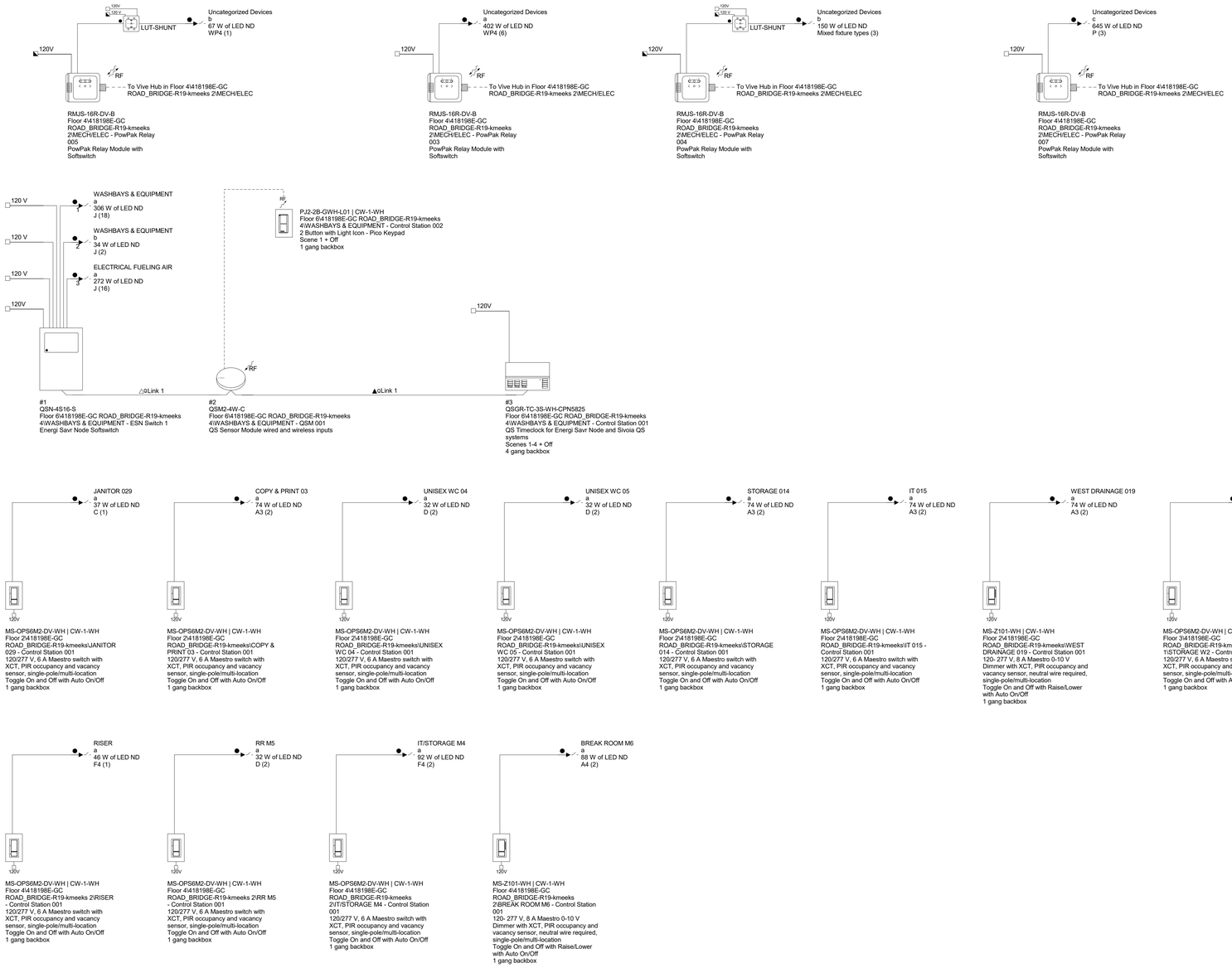

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Document Revision:

May 29, 2020 | Sheet 9 of 9

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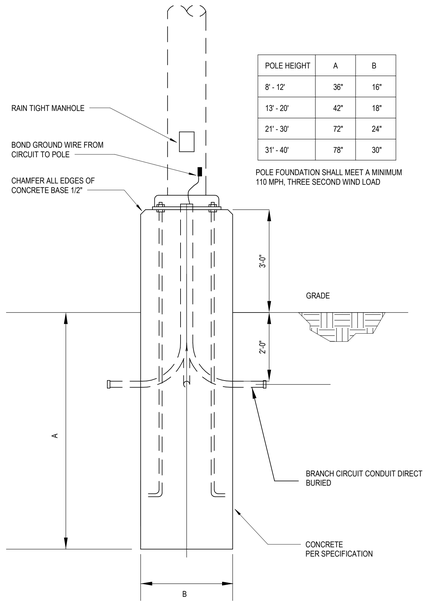
LUMINAIRE SCHEDULE									
Type	LITE Desciption	Manufacturer	Catalog Number	Lamps &Watts	Volts	Input	Mounting Type	Mounting Height	Notes
A1	LED TROFFER	HE WILLIAMS	LT 2 2 L39 8 35 AF DIM UNV	LED	277 V	33 VA	RECESSED		
A1E	LED TROFFER	HE WILLIAMS	LT 2 2 L39 8 35 AF DIM UNV	LED	277 V	33 VA	RECESSED		
A3	LED TROFFER	HE WILLIAMS	LT 2 4 L40 8 35 AF DIM UNV	LED	277 V	32 VA	RECESSED		
A3E	LED TROFFER	HE WILLIAMS	LT 2 4 L40 8 35 AF DIM UNV	LED	277 V	32 VA	RECESSED		
A4	LED TROFFER	HE WILLIAMS	LT 2 4 L52 8 35 AF DIM UNV	LED	277 V	37 VA	RECESSED		
B1	LED NARROW STRIP	HE WILLIAMS	75R 4 L65 8 40 DIM UNV	LED	277 V	58 VA	PENDANT		
B1E	LED NARROW STRIP	HE WILLIAMS	75R 4 L65 8 40 DIM UNV	LED	277 V	58 VA	PENDANT		
C1	4' LINEAR LED	HE WILLIAMS	75R-4-L50-835-VBY-2-DIM-UNV	LED	277 V	33 VA	SURFACE		
C1E	4' LINEAR LED	HE WILLIAMS	75R-4-L50-835-VBY-2-DIM-UNV	LED	277 V	33 VA	SURFACE		
D1	LED DOWNLIGHT ROUND	HE WILLIAMS	4DR-TL L15 8 35 DIM UNV O W OF CS	LED	277 V	14 VA	RECESSED		
D1E	LED DOWNLIGHT ROUND	HE WILLIAMS	4DR-TL L15 8 35 DIM UNV O W OF CS	LED	277 V	14 VA	RECESSED		
D2	LED DOWNLIGHT ROUND	HE WILLIAMS	4DR-TL L15 8 35 DIM UNV O W OF CS	LED	277 V	9 VA	RECESSED		
F4	LED STRIP LIGHTS	CORONET	LSR1 LED 4' 0" 35-LTG3 UNV DB XXX TX SD	LED	277 V	40 VA	RECESSED		
FF8	8' LINEAR	CORONET	LSR1-LED-8'-0"-35-LTG1-UNV-DB-xxx-xx-SD	LED	277 V	40 VA	RECESSED		
FF8E	8' LINEAR	CORONET	LSR1-LED-8'-0"-35-LTG1-UNV-DB-xxx-xx-SD	LED	277 V	40 VA	RECESSED		
H1	LED HIGH BAY	HE WILLIAMS	GP2 L150 8 40 W GS/Y26/10 DIM UNV	LED	277 V	107 VA	SUSPENDED	14'-6"	
H1 160	LED HIGH BAY	HE WILLIAMS	GP2 L150 8 40 W GS/Y26/10 DIM UNV	LED	277 V	107 VA	SUSPENDED	16'-0"	
H1 190	LED HIGH BAY	HE WILLIAMS	GP2 L150 8 40 W GS/Y26/10 DIM UNV	LED	277 V	107 VA	SUSPENDED	19'-0"	
H1 206	LED HIGH BAY	HE WILLIAMS	GP2 L150 8 40 W GS/Y26/10 DIM UNV	LED	277 V	107 VA	SUSPENDED	20'-6"	
H1 240	LED HIGH BAY	HE WILLIAMS	GP2 L150 8 40 W GS/Y26/10 DIM UNV	LED	277 V	107 VA	SUSPENDED	24'-0"	
H1 270	LED HIGH BAY	HE WILLIAMS	GP2 L150 8 40 W GS/Y26/10 DIM UNV	LED	277 V	107 VA	SUSPENDED	27'-0"	
H1 290	LED HIGH BAY	HE WILLIAMS	GP2 L150 8 40 W GS/Y26/10 DIM UNV	LED	277 V	107 VA	SUSPENDED	29'-0"	
H1E	LED HIGH BAY	HE WILLIAMS	GP2 L150 8 40 W GS/Y26/10 DIM UNV	LED	277 V	107 VA	SUSPENDED	14'-6"	
H1E 190	LED HIGH BAY	HE WILLIAMS	GP2 L150 8 40 W GS/Y26/10 DIM UNV	LED	277 V	107 VA	SUSPENDED	19'-0"	
H1E 270	LED HIGH BAY	HE WILLIAMS	GP2 L150 8 40 W GS/Y26/10 DIM UNV	LED	277 V	107 VA	SUSPENDED	27'-0"	
H2 316	LED HIGH BAY	HE WILLIAMS	GP2 L230 8 40 W GS/Y26/10 DIM UNV	LED	277 V	187 VA	SUSPENDED	31'-6"	
H2 346	LED HIGH BAY	HE WILLIAMS	GP2 L230 8 40 W GS/Y26/10 DIM UNV	LED	277 V	187 VA	SUSPENDED	34'-6"	
H2 366	LED HIGH BAY	HE WILLIAMS	GP2 L230 8 40 W GS/Y26/10 DIM UNV	LED	277 V	187 VA	SUSPENDED	36'-6"	
H2E 316	LED HIGH BAY	HE WILLIAMS	GP2 L230 8 40 W GS/Y26/10 DIM UNV	LED	277 V	187 VA	SUSPENDED	31'-6"	
H2E 346	LED HIGH BAY	HE WILLIAMS	GP2 L230 8 40 W GS/Y26/10 DIM UNV	LED	277 V	187 VA	SUSPENDED	34'-6"	
J1	2' LINEAR	CORONET	LS1-LED-2FT-35-LTG1-UNV-DB-xx-WM-SD	LED	277 V	15 VA	SURFACE		
K1	WALL PACK	ATLAS	PFLXW102LEDAK	LED	277 V	102 VA	WALL MOUNTED	16'-0"	
L1	4' LINEAR LED	HE WILLIAMS	SLF-4-L52-835-HIA-DIM-UNV	LED	277 V	40 VA	SURFACE		
M1	4' ENCLOSED AND GASKETED INDUSTRIAL STRIP	HE WILLIAMS	96-4-L81/840-HIAFR-xxx_DIM-UNV	LED	277 V	65 VA	SURFACE		
M2	4' ENCLOSED AND GASKETED INDUSTRIAL STRIP	HE WILLIAMS	96-4-L81/840-HIAFR-xxx_DIM-UNV	LED	120 V	65 VA	SURFACE		
SA2	LED POLE LIGHT 2 HEAD 180 DEGREE	LSI	MRM LED 24L SIL FT 40 70CRI	374	277 V	374 VA	25' POLE MOUNT		
S8	LED STRIP LIGHTS 1 HEAD	LSI	MRM LED 24L SIL 2 40 70CRI	187	277 V	187 VA	25' POLE MOUNT		
SC2	LED POLE LIGHT 2 HEAD 90 DEGREE	LSI	MRM LED 24L SIL 3 40 70CRI	374	277 V	374 VA	25' POLE MOUNT		
SD1	LED STRIP LIGHTS 1 HEAD	LSI	MRM LED 24L SIL 3 40 70CRI	187	277 V	187 VA	25' POLE MOUNT		
SG1	LED STRIP LIGHTS 1 HEAD	LSI	MRM LED 24L SIL FT 40 70CRI	187	277 V	187 VA	25' POLE MOUNT		
SG2	LED POLE LIGHT 2 HEAD 90 DEGREE	LSI	MRM LED 24L SIL FT 40 70CRI	374	277 V	374 VA	25' POLE MOUNT		
SG3	LED POLE LIGHT 3 HEAD	LSI	MRM LED 24L SIL FT 40 70CRI	561	277 V	561 VA	25' POLE MOUNT		
WP4	WALL SCONCE	RAYON	T651LED 58 UNI12 40 T4	58	277 V	58 VA	WALL MOUNTED	8'-0"	
WP4-11	WALL SCONCE	RAYON	T651LED 58 UNI12 40 T4	58	277 V	58 VA	WALL MOUNTED	11'-0"	
WP4-16	WALL SCONCE	RAYON	T651LED 58 UNI12 40 T4	58	277 V	58 VA	WALL MOUNTED	16'-0"	
WP4E	WALL SCONCE	RAYON	T651LED 58 UNI12 40 T4	58	277 V	58 VA	WALL MOUNTED	8'-0"	
XA	EXIT SIGN	ISOLITE	ELT AC G 1C WH SW UC			5 VA	WALL MOUNTED		

GENERAL LUMINAIRE FIXTURE SCHEDULE NOTES

A. PRODUCT CATALOG NUMBERS ARE CURRENT AS OF THE ISSUE DATE OF THESE DRAWINGS. PROVIDE FIXTURES WHICH FULLY MEET THE INTENT OF THE LUMINAIRE SCHEDULE.
B. CONTRACTOR SHALL CHECK THE BUILDING ELECTRICAL REQUIREMENTS, ARCHITECTURAL FINISHES AND REGARDLESS OF THE CATALOG NUMBER PREFIXES AND SUFFIXES SHOWN, FURNISH FIXTURES WITH THE PROPER TRIM, HANGERS, DRIVERS, VOLTAGE RATING, AND OTHER MISCELLANEOUS APPURTENANCES TO PROPERLY COORDINATE WITH SAID FIXTURES.
C. CONTRACTOR SHALL ALSO CHECK THE TYPE OF CEILINGS TO BE INSTALLED IN EACH ROOM AND VERIFY THAT THE RECESSED LIGHT FIXTURES ARE PROPER FOR THE TYPE OF CEILING TO BE INSTALLED BEFORE ORDERING FIXTURES.
D. LUMINAIRES SHALL BE PAINTED AFTER FABRICATION BY ELECTROSTATIC APPLCATION AT FACTORY, UNLESS ROLL FORMED. PAINT AFTER FABRICATION APPLIES TO ALL PARTS, INCLUDING HOUSING, END PLATES, AND BALLAST AND WIREWAY COVERS. USE OF PREPAINTED STEEL PUNCHED IN A DIE PRESS IS UNACCEPTABLE; HOWEVER, PREPAINTED STEEL THAT IS ROLL FORMED WITH ALL CUT EDGES ROLLED TO CONCEAL THE CUT EDGE IS AN ACCEPTABLE EQUIVALENT TO PAINT AFTER FABRICATION.
E. LUMINAIRES LISTED WITH ALTERNATE MANUFACTURERS WITH INCOMPLETE MODEL NUMBERS SHALL BE COORDINATED IN EVERY ASPECT OF STYLE, DESIGN AND OPERATION WITH MANUFACTURER MODEL NUMBER LISTED.
F. LUMINAIRES THAT HAVE A DESIGNATED 'E' SUFFIX ON THE EDGE OF THE FIXTURE TYPE NAME SHALL BE CONNECTED TO THE DESIGNATED EMERGENCY CIRCUIT.
G. WALL MOUNT EXIT SIGNS ARE TO BE CENTERED ABOVE DOOR OR OPENING, WITH BOTTOM OF SIGN SIX (6) INCHES MINIMUM ABOVE TOP OF DOOR OR OPENING.

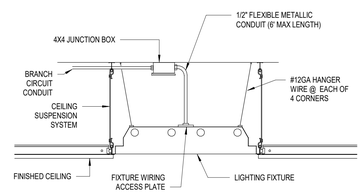


POLE HEIGHT	A	B
8' - 12'	36"	16"
13' - 20'	42"	18"
21' - 30'	72"	24"
31' - 40'	78"	30"

POLE FOUNDATION SHALL MEET A MINIMUM 110 MPH, THREE SECOND WIND LOAD

NOTE: FINAL LIGHT POLE BASE DESIGN TO BE BY LICENSED STRUCTURAL ENGINEER

2 LIGHT POLE BASE DETAIL
SCALE: NONE



1 TYPICAL LAY-IN LIGHTING FIXTURE MOUNTING DETAIL
SCALE: NONE

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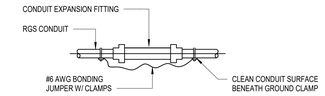
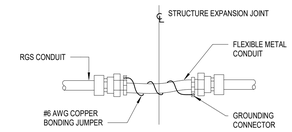
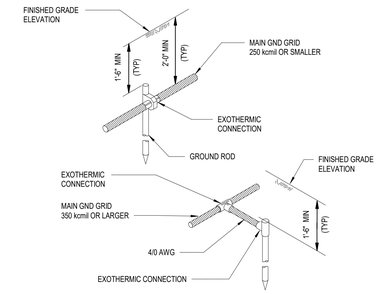


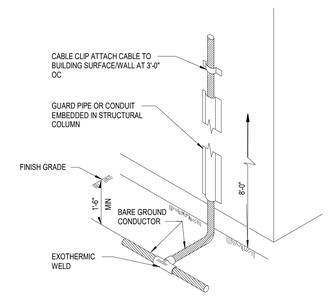
BONDING JUMPER AT EXPANSION FITTING
SCALE: NONE



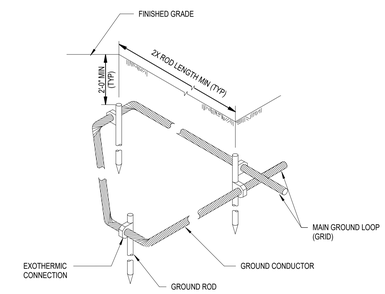
8 BONDING JUMPER AT EXPANSION JOINTS
SCALE: NONE



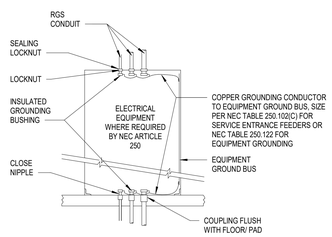
4 GROUNDING CONNECTION TO MAIN GRID
SCALE: NONE



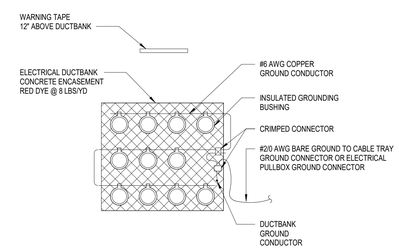
7 DOWNLEAD CONDUCTOR CONNECTION TO GROUND LOOP
SCALE: NONE



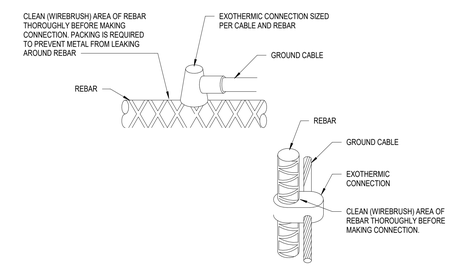
3 GROUNDING COUNTERPOISE
SCALE: NONE



10 METALLIC CONDUIT GROUND TO ELECTRICAL EQUIPMENT
SCALE: NONE

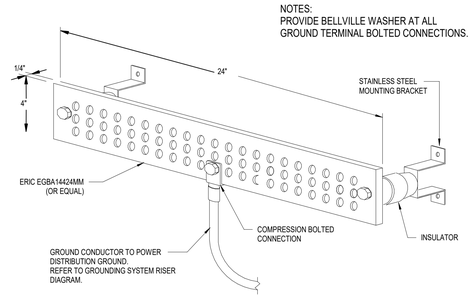


6 DUCTBANK GROUNDING
SCALE: NONE

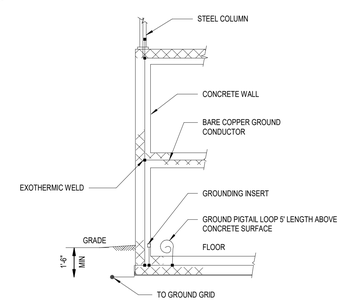


2 GROUNDING RE-BAR CONNECTION
SCALE: NONE

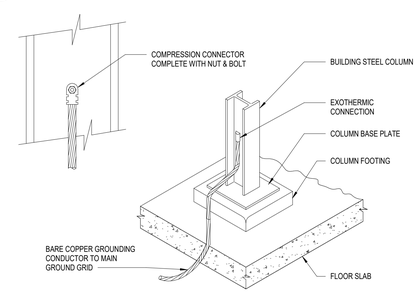
NOTES:
PROVIDE BELLVILLE WASHER AT ALL GROUND TERMINAL BOLTED CONNECTIONS.



9 ELECTRICAL & IT ROOMS GROUND BUS
SCALE: NONE



5 EMBEDDED GROUNDING CONNECTION
SCALE: NONE



1 GROUNDING STRUCTURAL MEMBERS DETAIL
SCALE: NONE

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Firm Registration No. 15868
Page Southerland Page, Inc.

STATE OF TEXAS
DAVID G. WEATHERLY
115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL GROUNDING DETAILS

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER	PROJECT ABBREVIATION
418198	ABBREV
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

EG-501
SHEET NUMBER

FILE PATH: W:\418198\418198E-GC ROAD_BRIDGE-R19-kmeeks.RVT
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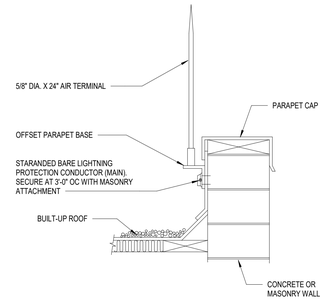
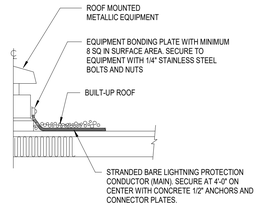
DATE STAMP: 6/26/2020 3:24:34 PM



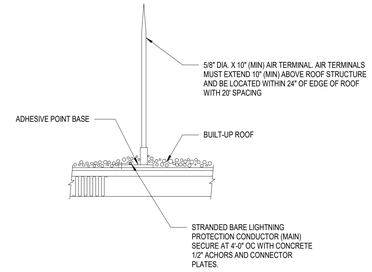
LIGHTNING PROTECTION AIR TERMINAL PARAPET WALL INSTALLATION

4 SCALE: NONE



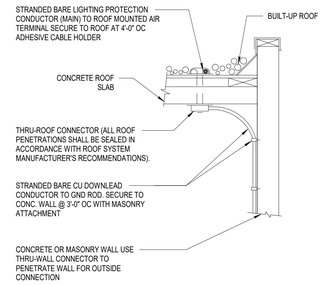
LIGHTNING PROTECTION BONDING PLATE FOR ROOF MOUNTED EQUIPMENT

3 SCALE: NONE



LIGHTNING PROTECTION AIR TERMINAL MID-ROOF INSTALLATION

2 SCALE: NONE



LIGHTNING PROTECTION AIR TERMINAL TROUGH ROOF PENETRATION

1 SCALE: NONE

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ELECTRICAL LIGHTNING PROTECTION DETAILS

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DGW	DGW
PROJECT NUMBER	PROJECT ABBREVIATION
418198	ABBREV
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

EG-502
SHEET NUMBER

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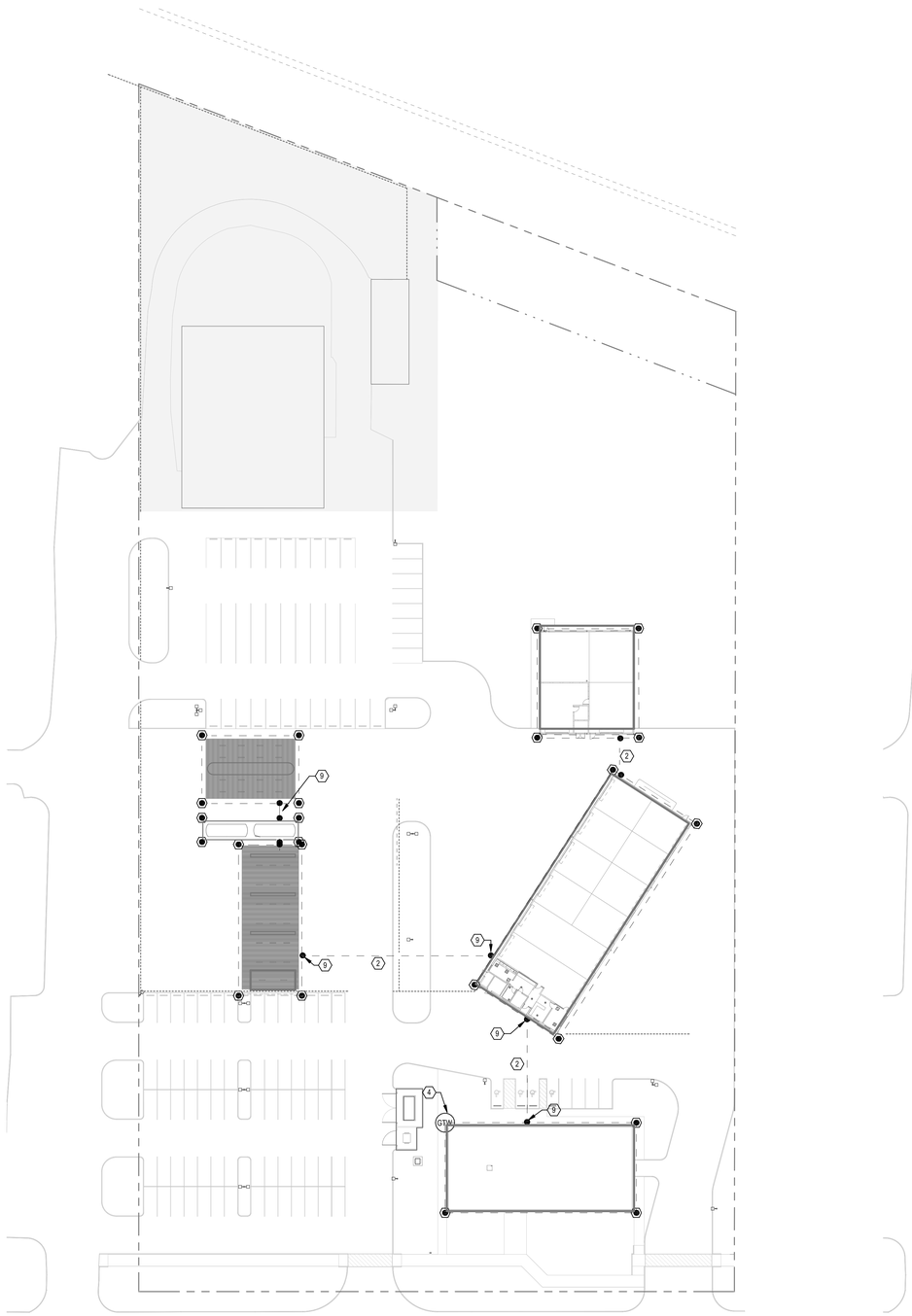
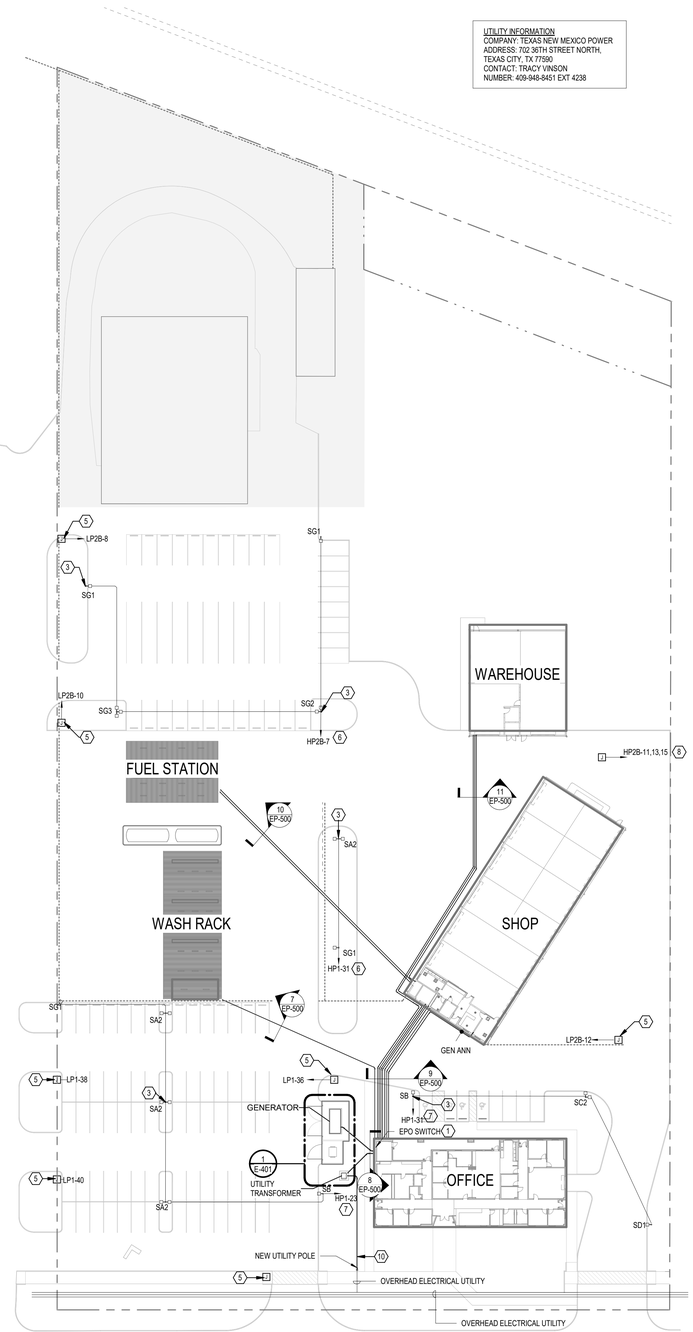


2 LIGHTNING PROTECTION SITE PLAN
SCALE: 1" = 40'-0"

UTILITY INFORMATION
COMPANY: TEXAS NEW MEXICO POWER
ADDRESS: 702 36TH STREET NORTH,
TEXAS CITY, TX 77590
CONTACT: TRACY VINSON
NUMBER: 409-948-8451 EXT 4238



1 ELECTRICAL - SITE PLAN
SCALE: 1" = 40'-0"

GENERAL NOTES

1. COORDINATE ALL UNDERGROUND INSTALLATION WITH OTHER DISCIPLINES PRIOR TO WORK.

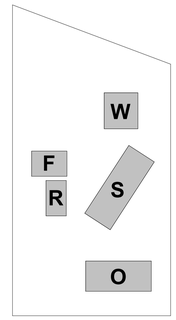
KEYED NOTES

NUMBER	DESCRIPTION
1	PROVIDE READILY ACCESSIBLE, EXTERIOR MOUNTED "EMERGENCY POWER OFF" SWITCH (EPO). PROVIDE WITH DUAL LOCK MECHANISM THAT WILL ALLOW ACCESS BY THE CUSTOMER AND TNMP.
2	#3/0 BARE COPPER GROUND WIRE TO GROUND RING.
3	REFER TO LIGHT POLE BASE DETAIL 2/EL-601.
4	GROUND TEST WELL.
5	PROVIDE POWER FOR ROLLING GATE. REFER TO TELECOM DRAWINGS FOR ADDITIONAL INFORMATION. COORDINATE EXACT LOCATION AND REQUIREMENT PRIOR TO WORK. PROVIDE (2) #8, #10 GND IN 3/4" CONDUIT. VERIFY EQUIPMENT VOLTAGE, AMPERAGE, PHASE AND POLE WITH MANUFACTURER'S SPECIFICATIONS PRIOR TO INSTALLATION.
6	LIGHTING CIRCUIT TO BE CONTROLLED VIA POWER PACK/RELAY "PP", "PO" LOCATED IN THE WAREHOUSE BUILDING TOOL STORAGE ROOM W6.
7	LIGHTING CIRCUIT TO BE CONTROLLED VIA POWER PACK/RELAY "PP", "PO" LOCATED IN THE OFFICE BUILDING ELECTRICAL ROOM O23.
8	CONNECTION TO WELL PUMP, SP-01, AND CIRCUIT AS SHOWN. REFER TO SHEET EG-101-W FOR DISCONNECT AND VFD LOCATION.
9	GROUNDING CONNECTION TO MAIN GRID. REFER TO DETAIL 4/EG-500
10	PROVIDE PRIMARY EMPTY CONDUIT WITH PULL STRING ROUTED UNDERGROUND IN ACCORDANCE WITH UTILITY STANDARDS. VERIFY SIZE, QUANTITY AND INSTALLATION WITH UTILITY PRIOR TO INSTALLATION.

GENERAL NOTES

A. PROVIDE A COMPLETE AND FUNCTIONAL LIGHTNING PROTECTION SYSTEM THAT HAS BEEN CERTIFIED AND IS IN COMPLIANCE WITH THE REQUIREMENTS AND STANDARDS INDICATED IN THE SPECIFICATIONS.
B. A CERTIFICATE SHALL BE PROVIDED TO THE OWNER UPON SATISFACTORY COMPLETION OF INSTALLATION AND INSPECTION OF THE LIGHTNING PROTECTION SYSTEM.
C. ANY BUILDING STRUCTURES THAT DO NOT FALL WITHIN A ZONE OF PROTECTION SHALL BE EQUIPPED WITH A FULL LIGHTNING PROTECTION SYSTEM THAT HAS BEEN PROPERLY INTERCONNECTED IN A NEAT AND WORKMANLIKE MANNER.
D. ORDINARY STRUCTURES NOT EXCEEDING 75 FEET IN HEIGHT SHALL BE PROTECTED WITH CLASS I MATERIALS. ORDINARY STRUCTURES EXCEEDING 75 FEET IN HEIGHT SHALL BE PROTECTED WITH CLASS II MATERIALS.
E. MATERIAL COMPONENTS USED IN LIGHTNING PROTECTION SYSTEMS SHALL BE COMPATIBLE WITH THE BUILDING SURFACE WHERE MOUNTED. IN NO CASE SHALL COPPER MATERIALS BE INSTALLED ON ALUMINUM ROOFING OR SIDING, OR ALUMINUM MATERIALS INSTALLED ON COPPER SURFACES.
F. AN ALUMINUM CONDUCTOR SHALL NOT BE ATTACHED TO A SURFACE COATED WITH ALKALINE-BASED PAINT, EMBEDDED IN CONCRETE OR MASONRY, OR INSTALLED IN A LOCATION SUBJECT TO EXCESSIVE MOISTURE.
G. ALUMINUM MATERIALS SHALL NOT BE USED FOR DIRECT GROUNDING OF AN ALUMINUM LIGHTNING PROTECTION SYSTEM. ALUMINUM MATERIALS SHALL NOT COME INTO DIRECT WITH EARTH.
H. ONLY UL APPROVED BIMETALLIC FITTINGS SHALL BE USED TO JOIN ALUMINUM AND COPPER LIGHTNING PROTECTION SYSTEM COMPONENTS.
I. METAL PARTS OF A STRUCTURE THAT ARE EXPOSED TO DIRECT LIGHTNING FLASHES AND THAT HAVE A METAL THICKNESS OF 3/16-INCH OR GREATER SHALL REQUIRE CONNECTION TO THE LIGHTNING PROTECTION SYSTEM. SUCH CONNECTION SHALL PROVIDE A MINIMUM OF TWO PATHS TO GROUND.
J. AIR TERMINALS SHALL BE REQUIRED ON ALL PROJECTIONS THAT ARE NOT LOCATED WITHIN A ZONE OF PROTECTION, INCLUDING METAL PARTS OF A STRUCTURE HAVING A METAL THICKNESS OF LESS THAN 3/16-INCH.
K. MAIN ROOF CONDUCTORS SHALL INTERCONNECT AIR TERMINALS, INCLUDING PROJECTIONS, AND PROVIDE TWO OR MORE PATHS FROM EACH AIR TERMINAL DOWNWARD, HORIZONTALLY, OR RISING AT NO MORE THAN ½ PITCH TO CONNECTIONS WITH THE GROUNDING ELECTRODE SYSTEM. METAL ROOFING AND SIDING SHALL NOT BE USED AS A MAIN ROOF CONDUCTOR.
L. DOWN CONDUCTORS COURSED ON OR IN REINFORCED CONCRETE COLUMNS OR ON STURCTURAL STEEL COLUMNS SHALL BE CONNECTED TO THE REINFORCING STEEL OR STUCTURAL STEEL MEMBER AT THEIR UPPER AND LOWER EXTREMITIES. IN THE CASE OF LONG VERTICAL RUNS, AN ADDITIONAL CONNECTION SHALL BE MADE AT INTERVALS NOT EXCEEDING 200 FEET. WHERE THESE BONDING REQUIREMENTS CANNOT BE SATISFIED BECAUSE OF LACK OF ACCESS, PROVISIONS SHAL BE MADE TO ENSURE THE CONNECTIONS OF THESE VERTICAL PATHS AT THE EXTREMITIES AND AT INTERVALS NOT EXCEEDING 200 FEET.
M. METAL BODIES, LOCATED OUTSIDE OR INSIDE A STRUCTURE, THAT CONTRIBUTE TO LIGHTNING HAZARDS BACAUSE THEY ARE GROUNDED OR PROVIDE A PATH TO GROUND FOR LIGHTNING CURRENTS, SHALL BE INTERCONNECTED WITH THE LIGHTNING PROTECTION SYSTEM.

KEY PLAN (NOT TO SCALE)



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DAVID G. WEATHERLY
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LICENSED
PROFESSIONAL ENGINEER
06/26/2020

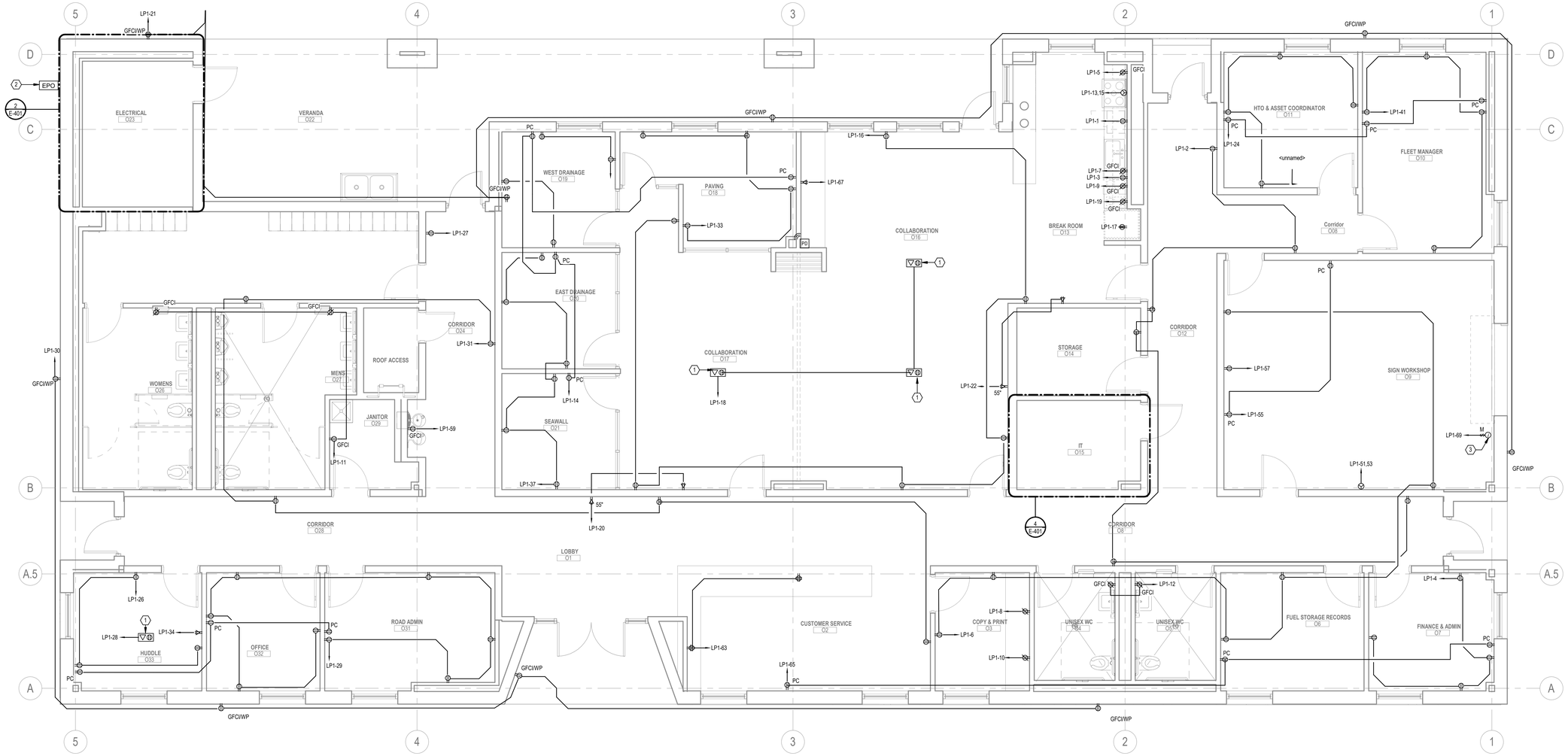
ELECTRICAL SITE PLAN

DRAWN BY: DGW	CHECKED BY: DGW
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: ABBREV
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

ES-101S
SHEET NUMBER

FILE PATH: W:\418198\418198E-GC ROAD_BRIDGE-R19-kmeeks.RVT
USER NAME:
DATE STAMP: 6/26/2020 3:26:02 PM

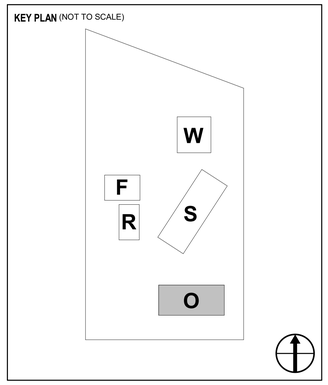
GENERAL NOTES	KEYED NOTES ⟨1⟩
	NUMBER — DESCRIPTION
	1 — FLOOR MOUNTED RECESSED COMBINATION DUPLEX RECEPTACLE/PHONE/DATA/AUDIO VISUAL OUTLET AND CIRCUIT AS INDICATED. VERIFY WITH AUDIO VISUAL CONSULTANT FOR EXACT TYPE/SIZE/MANUFACTURER OF OUTLET PRIOR TO BID AND INSTALLATION. VERIFY EXACT MOUNTING LOCATION IN FLOOR WITH ARCHITECTURAL DRAWINGS PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO ET-SERIES DRAWINGS FOR AUDIO/VISUAL/DATA DROPS ASSOCIATED WITH FLOOR BOX.
	2 — PROVIDE READILY ACCESSIBLE, EXTERIOR MOUNTED "EMERGENCY POWER OFF" SWITCH (EPO). PROVIDE WITH DUAL LOCK MECHANISM THAT WILL ALLOW ACCESS BY THE CUSTOMER AND TNMP.
	3 — 120V CONNECTION TO OVERHEAD DOOR MOTOR. PROVIDE 120V CONTROL STATION (3-POSITION MOMENTARY SWITCH WITH CENTER-OFF). IF CONTROL STATION IS FURNISHED WITH OVERHEAD DOOR, PROVIDE INSTALLATION AND CONTROL WIRING PER VENDOR'S WIRING DIAGRAM.



1 ELECTRICAL POWER PLAN - OFFICE - LEVEL 01

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

KEY PLAN (NOT TO SCALE)



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06/26/2020

ELECTRICAL POWER PLAN - OFFICE - LEVEL 01

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: ABBREV
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

EP-101O
SHEET NUMBER

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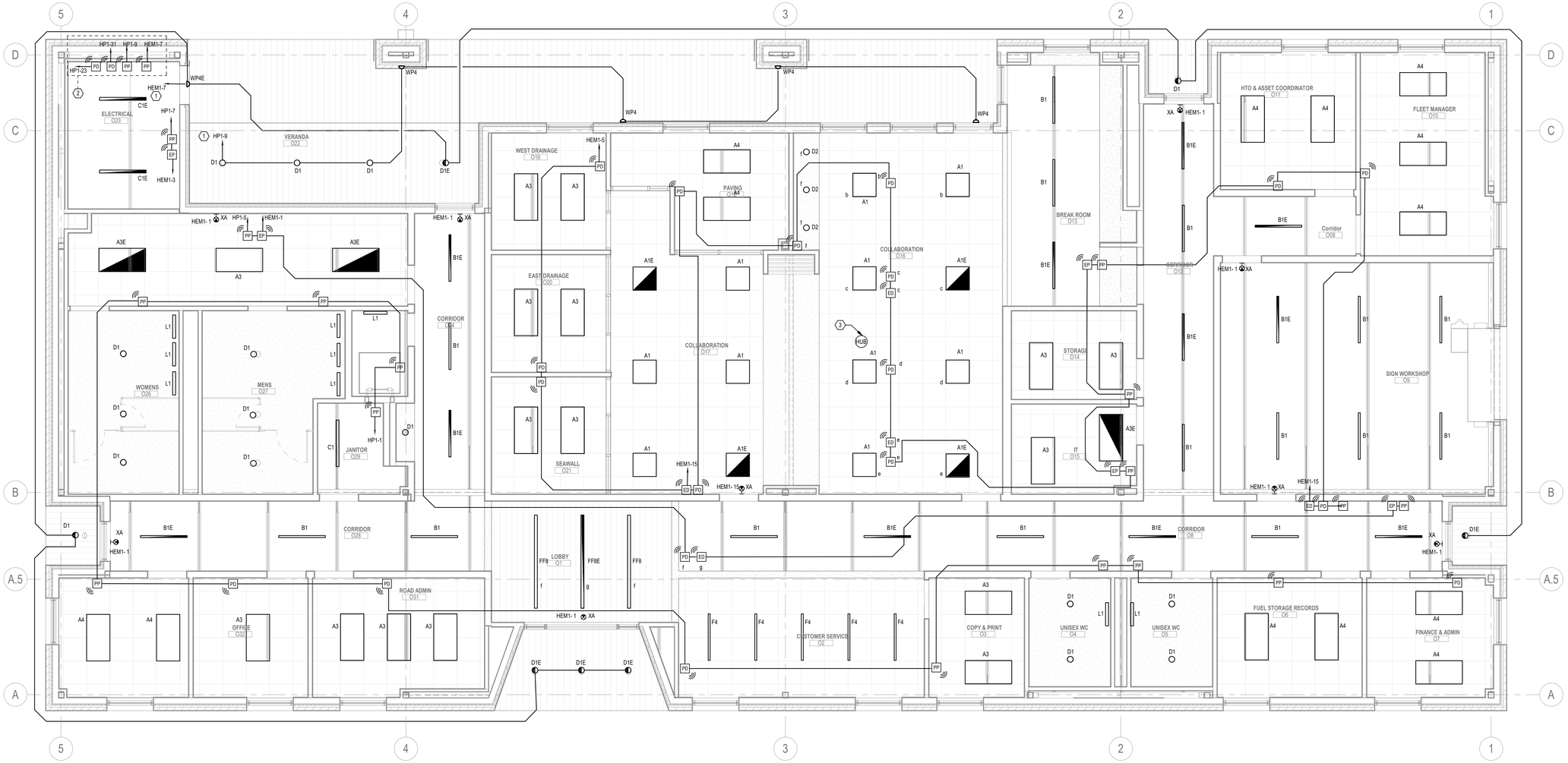
USER NAME:
DATE STAMP: 6/26/2020 3:25:27 PM

GENERAL NOTES	KEYED NOTES ⟨1⟩
	NUMBER — DESCRIPTION
	1 — LIGHTING CIRCUIT TO BE CONTROLLED VIA POWER PACK/RELAY "PP". "PD" LOCATED IN THE OFFICE BUILDING ELECTRICAL ROOM O23.
	2 — PROVIDE CONTROL WIRING FROM PACK/RELAY TO CONTROL SITE POLE LIGHTING AND BUILDING LIGHTING. SITE POLE AND BUILDING LIGHTING TO BE CONTROLLED WIRELESSLY VIA BUILDING HUB. COORDINATE EXACT REQUIREMENTS WITH LIGHTING MANUFACTURER PRIOR TO INSTALLATION. SEE SHEET ES-101 FOR SITE LIGHTING.
	3 — NETWORK HUBS FOR OFFICE, WAREHOUSE AND SHOP TO BE INTERCONNECTED VIA LOW VOLTAGE WIRE CONNECTION. COORDINATE EXACT REQUIREMENTS WITH LIGHTING MANUFACTURER PRIOR TO INSTALLATION.

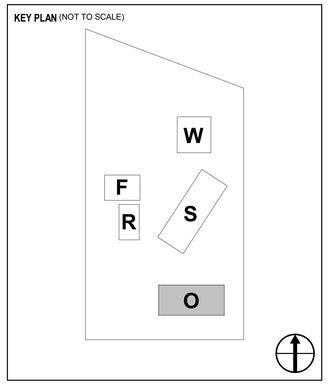


ELECTRICAL LIGHTING PLAN - OFFICE - LEVEL 01

1

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

KEY PLAN (NOT TO SCALE)



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06/26/2020

ELECTRICAL LIGHTING PLAN - OFFICE - LEVEL 01

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PROJECT NUMBER 418198	PROJECT ABBREVIATION ABBREV
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SHEET NUMBER

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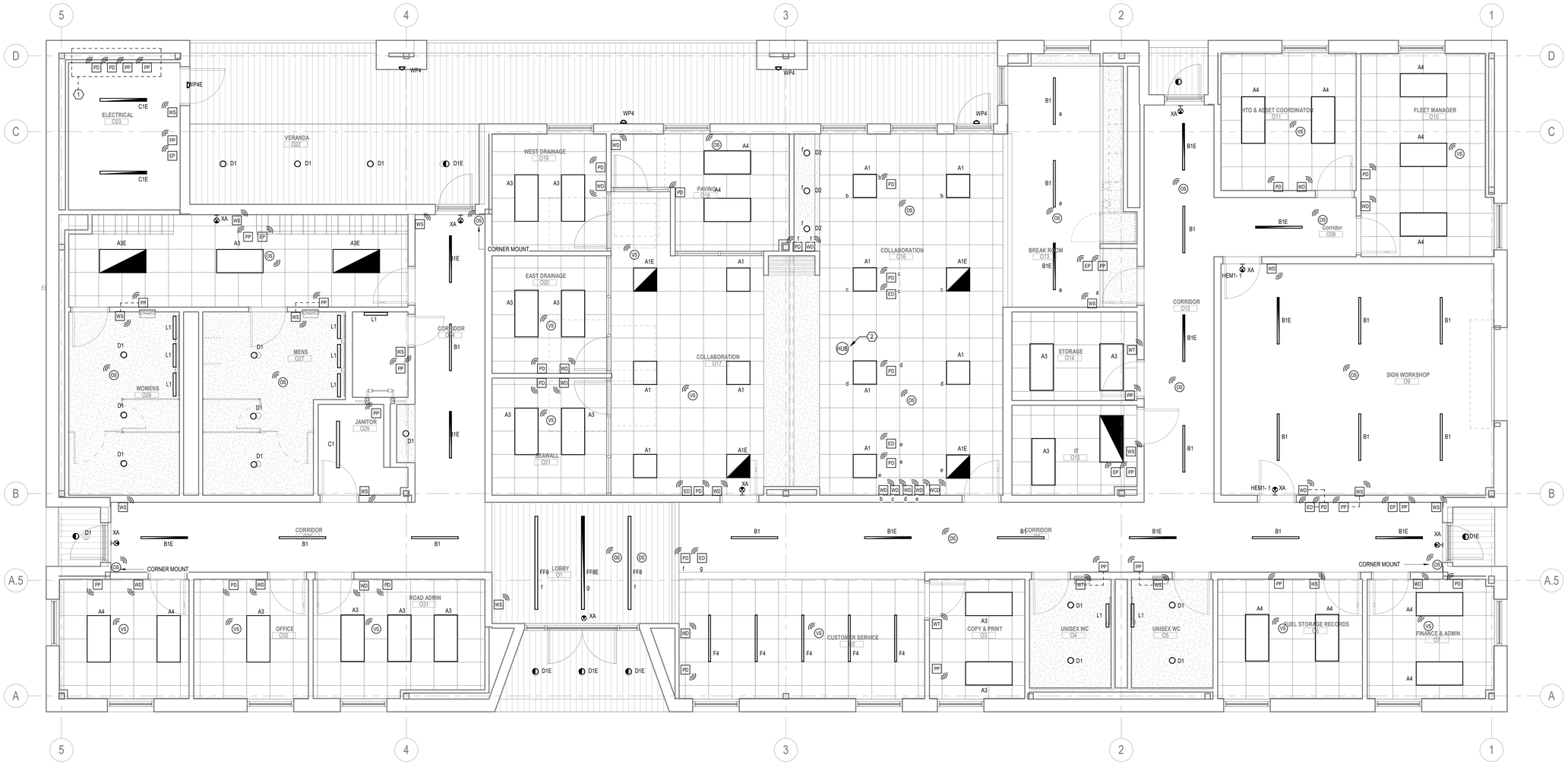
USER NAME:
DATE STAMP: 6/26/2020 3:24:48 PM

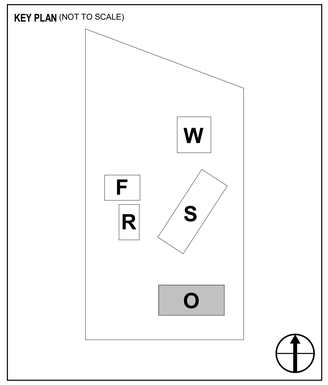
GENERAL NOTES	KEYED NOTES ⟨1⟩
	NUMBER / DESCRIPTION
	1 PROVIDE CONTROL WIRING FROM PACK/RELAY TO CONTROL SITE POLE LIGHTING AND BUILDING LIGHTING. SITE POLE AND BUILDING LIGHTING TO BE CONTROLLED WIRELESSLY VIA BUILDING HUB. COORDINATE EXACT REQUIREMENTS WITH LIGHTING MANUFACTURER PRIOR TO INSTALLATION. SEE SHEET ES-101 FOR SITE LIGHTING.
	2 NETWORK HUBS FOR OFFICE, WAREHOUSE AND SHOP TO BE INTERCONNECTED VIA LOW VOLTAGE WIRE CONNECTION. COORDINATE EXACT REQUIREMENTS WITH LIGHTING MANUFACTURER PRIOR TO INSTALLATION.



1 ELECTRICAL LIGHTING CONTROL PLAN - OFFICE - LEVEL 01

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

KEY PLAN (NOT TO SCALE)



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LICENSED PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL LIGHTING CONTROLS PLAN - OFFICE - LEVEL 01

DRAWN BY	CHECKED BY
DGW	DGW
PROJECT NUMBER 418198	PROJECT ABBREVIATION ABBREV
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

EL-102O
SHEET NUMBER

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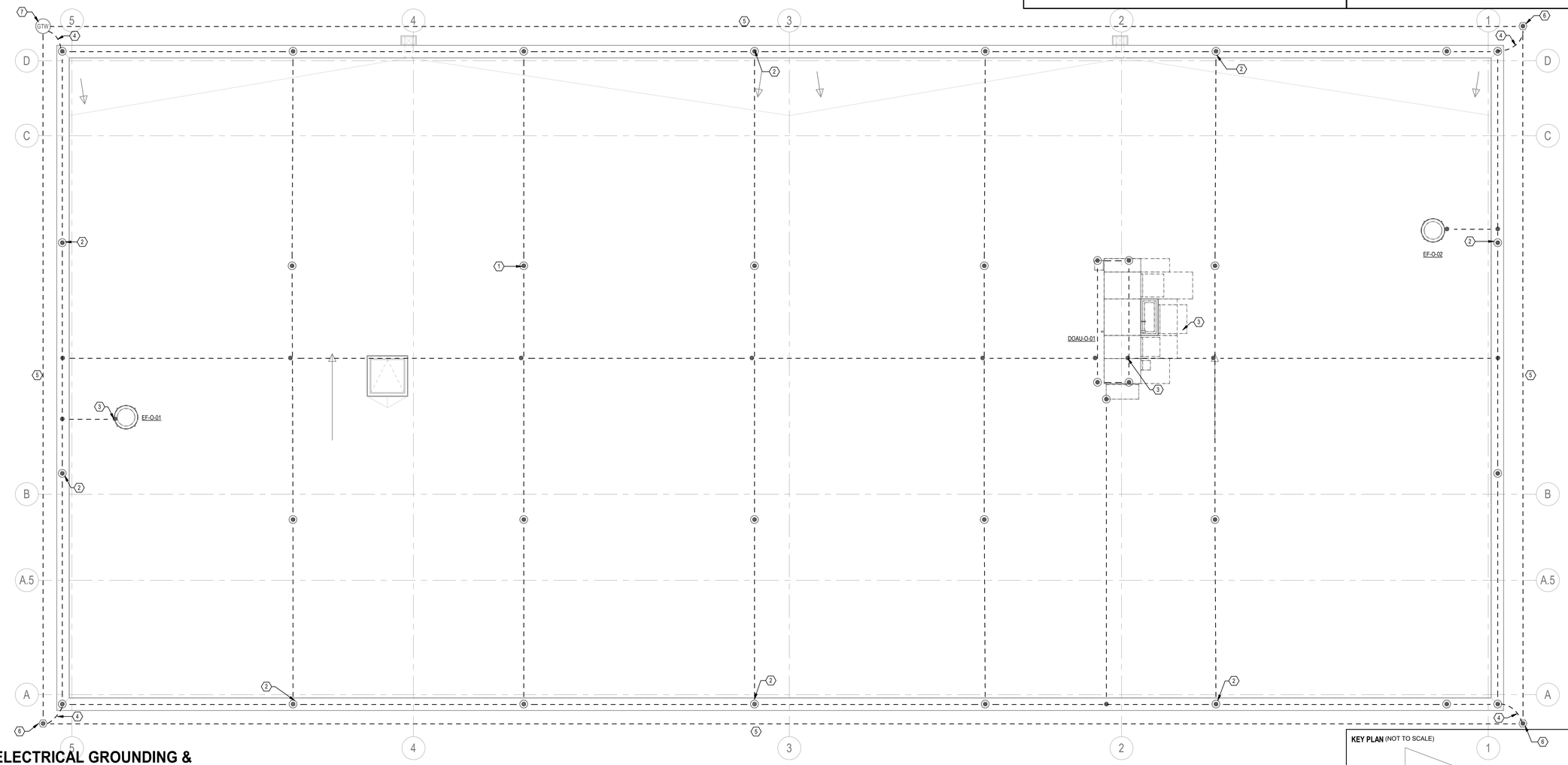
GENERAL NOTES

A. PROVIDE A COMPLETE AND FUNCTIONAL LIGHTNING PROTECTION SYSTEM THAT HAS BEEN CERTIFIED AND IS IN COMPLIANCE WITH THE REQUIREMENTS AND STANDARDS INDICATED IN THE SPECIFICATIONS.
B. A CERTIFICATE SHALL BE PROVIDED TO THE OWNER UPON SATISFACTORY COMPLETION OF INSTALLATION AND INSPECTION OF THE LIGHTNING PROTECTION SYSTEM.
C. ANY BUILDING STRUCTURES THAT DO NOT FALL WITHIN A ZONE OF PROTECTION SHALL BE EQUIPPED WITH A FULL LIGHTNING PROTECTION SYSTEM THAT HAS BEEN PROPERLY INTERCONNECTED IN A NEAT AND WORKMANLIKE MANNER.
D. ORDINARY STRUCTURES NOT EXCEEDING 75 FEET IN HEIGHT SHALL BE PROTECTED WITH CLASS I MATERIALS. ORDINARY STRUCTURES EXCEEDING 75 FEET IN HEIGHT SHALL BE PROTECTED WITH CLASS II MATERIALS.
E. MATERIAL COMPONENTS USED IN LIGHTNING PROTECTION SYSTEMS SHALL BE COMPATIBLE WITH THE BUILDING SURFACE WHERE MOUNTED. IN NO CASE SHALL COPPER MATERIALS BE INSTALLED ON ALUMINUM ROOFING OR SIDING, OR ALUMINUM MATERIALS INSTALLED ON COPPER SURFACES.
F. AN ALUMINUM CONDUCTOR SHALL NOT BE ATTACHED TO A SURFACE COATED WITH ALKALINE-BASED PAINT, EMBEDDED IN CONCRETE OR MASONRY, OR INSTALLED IN A LOCATION SUBJECT TO EXCESSIVE MOISTURE.
G. ALUMINUM MATERIALS SHALL NOT BE USED FOR DIRECT GROUNDING OF AN ALUMINUM LIGHTNING PROTECTION SYSTEM. ALUMINUM MATERIALS SHALL NOT COME INTO DIRECT WITH EARTH.
H. ONLY UL APPROVED BIMETALLIC FITTINGS SHALL BE USED TO JOIN ALUMINUM AND COPPER LIGHTNING PROTECTION SYSTEM COMPONENTS.
I. METAL PARTS OF A STRUCTURE THAT ARE EXPOSED TO DIRECT LIGHTNING FLASHES AND THAT HAVE A METAL THICKNESS OF 3/16-INCH OR GREATER SHALL REQUIRE CONNECTION TO THE LIGHTNING PROTECTION SYSTEM. SUCH CONNECTION SHALL PROVIDE A MINIMUM OF TWO PATHS TO GROUND.
J. AIR TERMINALS SHALL BE REQUIRED ON ALL PROJECTIONS THAT ARE NOT LOCATED WITHIN A ZONE OF PROTECTION, INCLUDING METAL PARTS OF A STRUCTURE HAVING A METAL THICKNESS OF LESS THAN 3/16-INCH.
K. MAIN ROOF CONDUCTORS SHALL INTERCONNECT AIR TERMINALS, INCLUDING PROJECTIONS, AND PROVIDE TWO OR MORE PATHS FROM EACH AIR TERMINAL DOWNWARD, HORIZONTALLY, OR RISING AT NO MORE THAN ¼ PITCH TO CONNECTIONS WITH THE GROUNDING ELECTRODE SYSTEM. METAL ROOFING AND SIDING SHALL NOT BE USED AS A MAIN ROOF CONDUCTOR.
L. DOWN CONDUCTORS COURSED ON OR IN REINFORCED CONCRETE COLUMNS OR ON STURCTURAL STEEL COLUMNS SHALL BE CONNECTED TO THE REINFORCING STEEL OR STUCTURAL STEEL MEMBER AT THEIR UPPER AND LOWER EXTREMITIES. IN THE CASE OF LONG VERTICAL RUNS, AN ADDITIONAL CONNECTION SHALL BE MADE AT INTERVALS NOT EXCEEDING 200 FEET. WHERE THESE BONDING REQUIREMENTS CANNOT BE SATISFIED BECAUSE OF LACK OF ACCESS, PROVISIONS SHAL BE MADE TO ENSURE THE CONNECTIONS OF THESE VERTICAL PATHS AT THE EXTREMITIES AND AT INTERVALS NOT EXCEEDING 200 FEET.
M. METAL BODIES, LOCATED OUTSIDE OR INSIDE A STRUCTURE, THAT CONTRIBUTE TO LIGHTNING HAZARDS BACAUSE THEY ARE GROUNDED OR PROVIDE A PATH TO GROUND FOR LIGHTNING CURRENTS, SHALL BE INTERCONNECTED WITH THE LIGHTNING PROTECTION SYSTEM.

KEYED NOTES

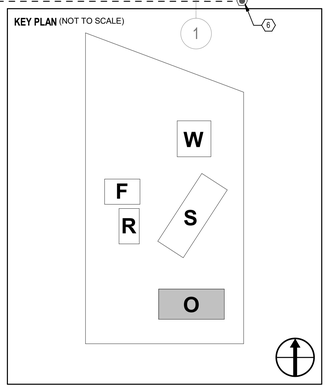
NUMBER	DESCRIPTION
1	ALUMINUM LIGHTNING PROTECTION AIR TERMINAL MOUNTED TO ROOF. REFER TO DETAIL 2/EG-501
2	ALUMINUM LIGHTNING PROTECTION AIR TERMINAL MOUNTED TO PARAPET. SEE DETAIL 4/ES-501
3	LIGHTNING PROTECTION CONDUCTOR BONDED TO MECHANICAL EQUIPMENT. SEE DETAIL 3/EG-501
4	#4/0 AWG COPPER LIGHTNING PROTECTION DOWN-WIRE BONDED TO LIGHTNING PROTECTION GROUND LOOP. SEE DETAIL 7/EG-500
5	#4/0 AWG COPPER GROUNDING PROTECTION LOOP.
6	3/4" X 10' COPPER CLAD STEEL GROUND ROD
7	GROUND TEST WELL.



ELECTRICAL GROUNDING & LIGHTNING PROTECTION PLAN - OFFICE - LEVEL 01

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

KEY PLAN (NOT TO SCALE)



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06/26/2020

ELECTRICAL GROUNDING & LIGHTNING PROTECTION PLAN - OFFICE - LEVEL 01

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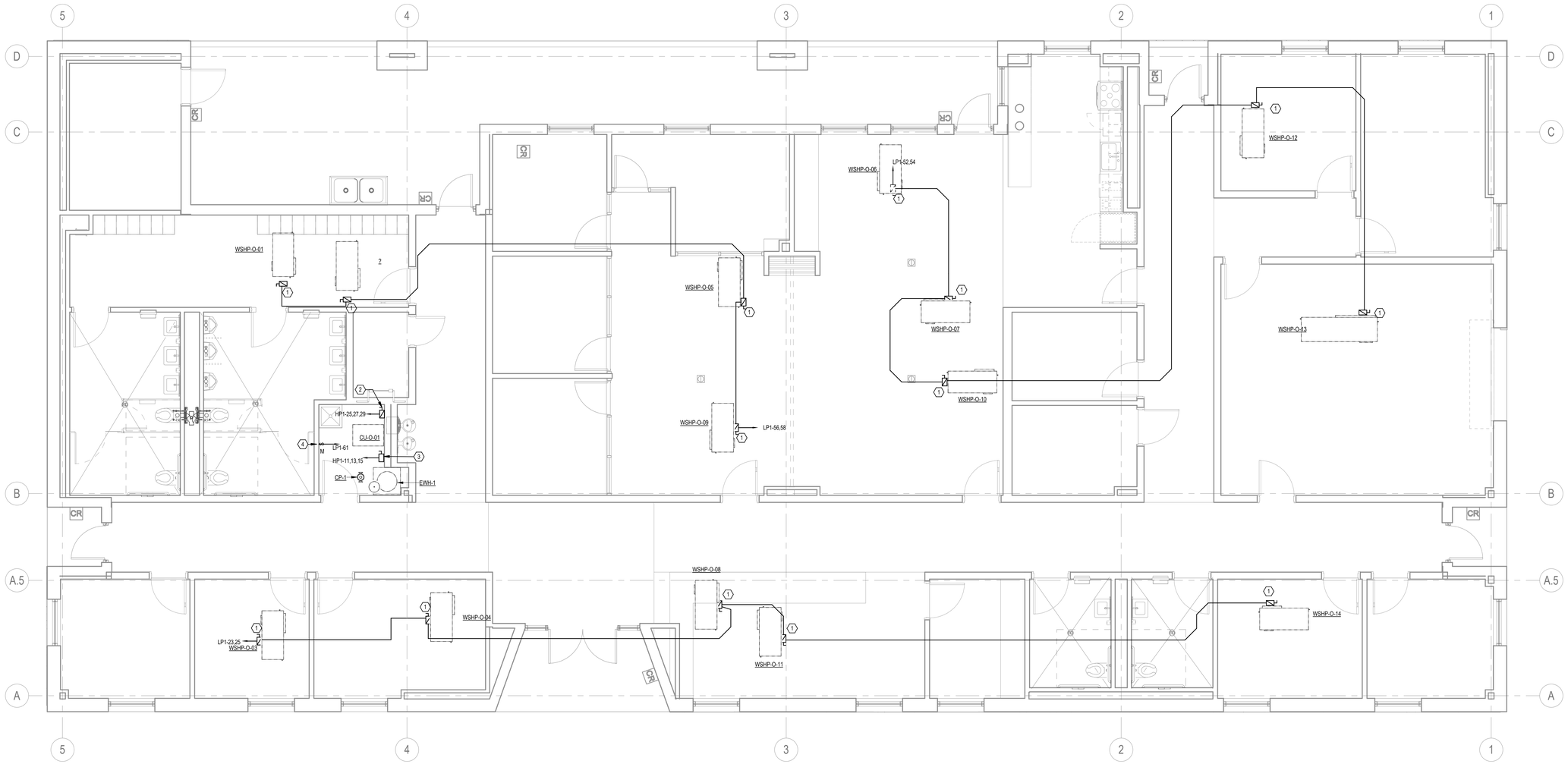
GENERAL NOTES

1. COORDINATE ALL WORK WITH DIV 22 AND 23 PRIOR TO INSTALLATION.
2. PROVIDE LABEL FOR ALL DISCONNECTS TO IDENTIFY ASSOCIATED EQUIPMENT.
3. ENSURE ALL DISCONNECTS ARE ACCESSIBLE.

KEYED NOTES (1)

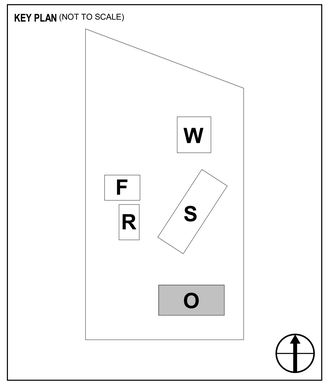
NUMBER	DESCRIPTION
1	CONNECTION TO WATER SOURSE HEAT PUMP. WSHP-XX, AND CIRCUIT AS SHOWN. PROVIDE 250V, 30A, 2P, 2F, NEMA 1 FUSIBLE DISCONNECT SWITCH WITH THREE (2) 15A RK5 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
2	CONNECTION TO CONDENSING UNITS, CU-O-01, AND CIRCUIT AS SHOWN. PROVIDE 600V,30A, 3P, 3F, NEMA 1 FUSIBLE DISCONNECT SWITCH WITH THREE (3) 25A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26. PROVIDE LABEL FOR DISCONNECT SWITCH INDICATING ASSOCIATED CONDENSING UNIT.
3	CONNECTION TO ELECTRIC WATER HEATER, EWH-X, AND CIRCUIT AS SHOWN. PROVIDE 600V, 60A, 3P, NEMA 1, NON-FUSIBLE DISCONNECT SWITCH. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
4	CONNECTION TO RECIRCULATION PUMP VIA 20A MOTOR RATED SWITCH AND CIRCUIT AS INDICATED. COORDINATE WITH DIV. 22 AND PUMP MANUFACTURER FOR CONNECTION REQUIREMENTS PRIOR TO ROUGH-IN AND INSTALLATION.



1 ELECTRICAL EQUIPMENT PLAN - OFFICE - LEVEL 01

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

KEY PLAN (NOT TO SCALE)



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ELECTRICAL EQUIPMENT PLAN - OFFICE - LEVEL 01

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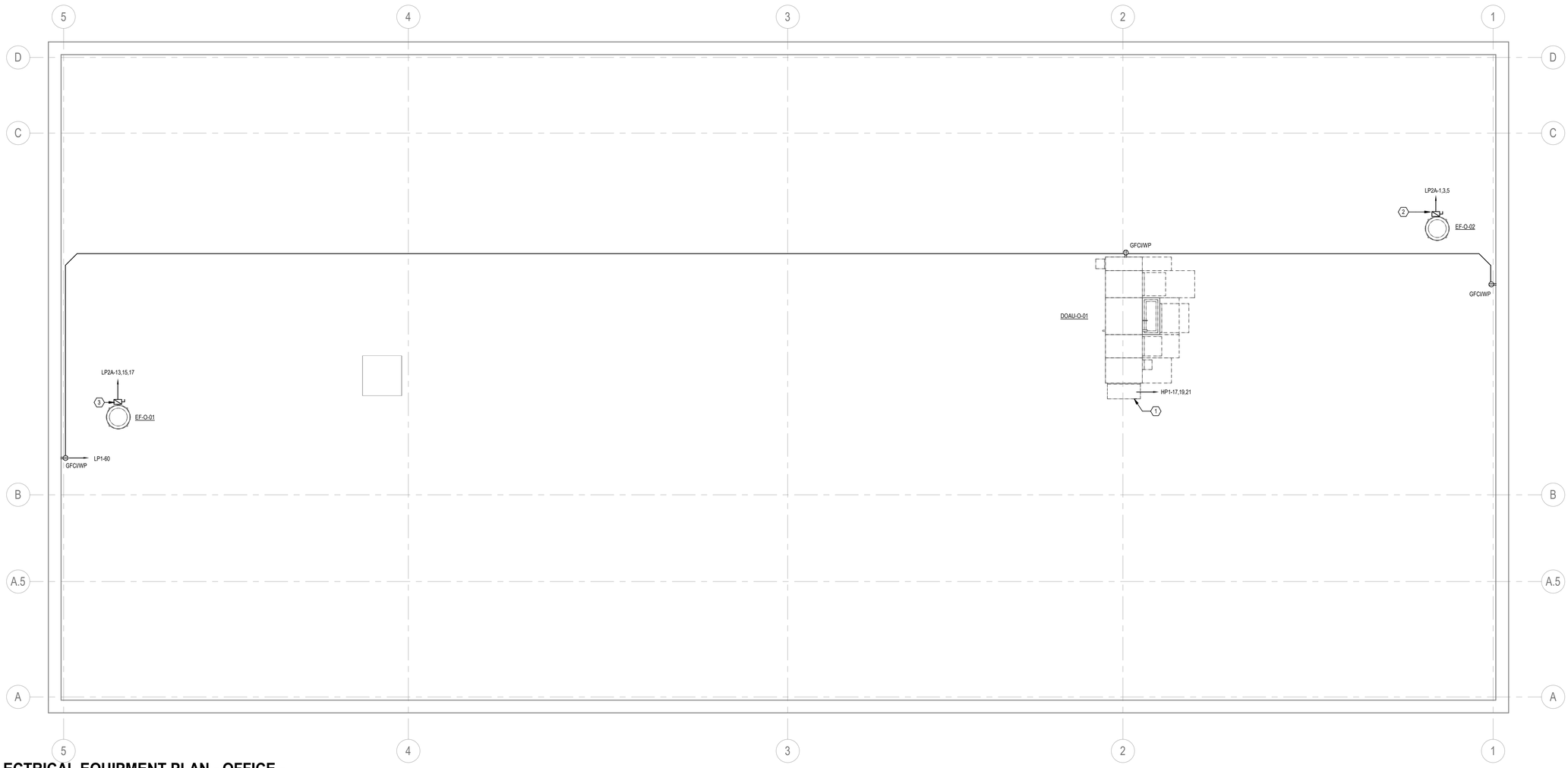
GENERAL NOTES

1. COORDINATE ALL WORK WITH DIV 22 AND 23 PRIOR TO INSTALLATION.
2. PROVIDE LABEL FOR ALL DISCONNECTS TO IDENTIFY ASSOCIATED EQUIPMENT.
3. ENSURE ALL DISCONNECTS ARE ACCESSIBLE.

KEYED NOTES

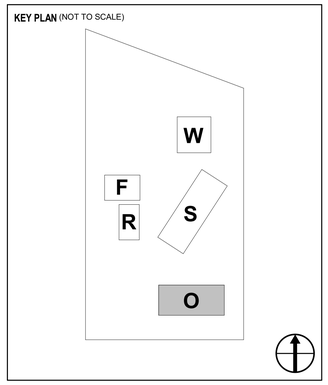
NUMBER	DESCRIPTION
1	CONNECTION TO DEDICATED OUTSIDE AIR HANDLER UNIT, DOAU-01, AND CIRCUIT AS SHOW. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26. CONNECT DISCONNECT SWITCH DOWNSTREAM OF ASSOCIATED VFD. DIV 23 TO FURNISH VFD AND DIV 26 TO INSTALL IN THE MAIN ELECTRICAL ROOM. COORDINATE EXACT LOCATION WITH DIV. 23 PRIOR TO ROUGH-IN AND INSTALLATION. PROVIDE AUXILIARY CONTACT FROM DISCONNECT TO VFD SO THAT VFD WILL SHUT DOWN WHEN DISCONNECT IS OPEN AND THEN RE-ENGAGED WHEN THE DISCONNECT IS CLOSED.
2	CONNECTION TO EXHAUST FAN, EF-O-02, AND CIRCUIT AS SHOWN. DISCONNECT TO BE 250V, 30A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26. CONNECT DISCONNECT SWITCH DOWNSTREAM OF ASSOCIATED VFD. DIV 23 TO FURNISH VFD AND DIV 26 TO INSTALL IN THE MAIN ELECTRICAL ROOM.
3	CONNECTION TO EXHAUST FAN, EF-O-01, AND CIRCUIT AS SHOWN. DISCONNECT TO BE 250V, 30A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26. CONNECT DISCONNECT SWITCH DOWNSTREAM OF ASSOCIATED VFD. DIV 23 TO FURNISH VFD AND DIV 26 TO INSTALL IN THE MAIN ELECTRICAL ROOM.



1 ELECTRICAL EQUIPMENT PLAN - OFFICE - ROOF LEVEL

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

KEY PLAN (NOT TO SCALE)



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ELECTRICAL EQUIPMENT PLAN - OFFICE - ROOF LEVEL

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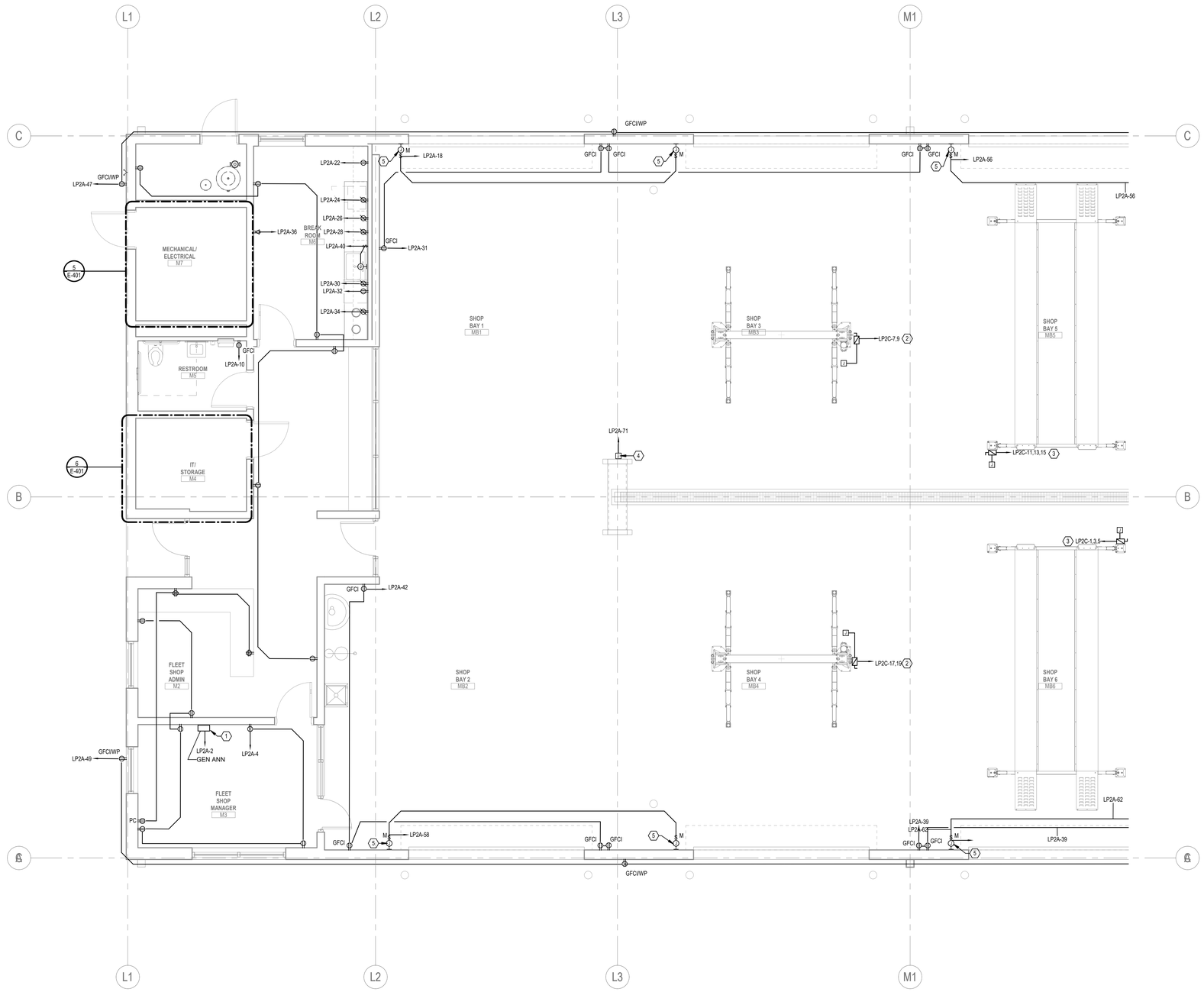


1 ELECTRICAL POWER PLAN - SHOP - LEVEL 01 - AREA A

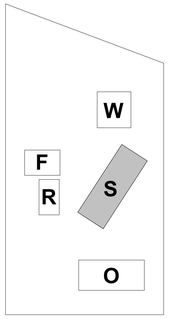
SCALE: 1/4" = 1'-0"

GENERAL NOTES

KEYED NOTES

NUMBER	DESCRIPTION
1	PROVIDE POWER FOR GENERATOR ANNUNCIATOR PANEL. REFER TO MANUFACTURER'S SPECIFICATIONS FOR FINAL CONNECTIONS.
2	PROVIDE CIRCUIT AND DISCONNECT AS SHOWN FOR SHOP EQUIPMENT. PROVIDE 250V, 30A, 2P, FUSIBLE DISCONNECT WITH (2) 20A RK1 FUSES. COORDINATE EXACT LOCATION AND REQUIREMENT WITH ARCHITECT PRIOR TO INSTALLATION.
3	PROVIDE CIRCUIT AND DISCONNECT AS SHOWN FOR SHOP EQUIPMENT. PROVIDE 250V, 30A, 3P, FUSIBLE DISCONNECT WITH (3) 20A RK1 FUSES. COORDINATE EXACT LOCATION AND REQUIREMENT WITH ARCHITECT PRIOR TO INSTALLATION.
4	PROVIDE FLOOR BOX AND CIRCUIT FOR CORD REEL. VERIFY EXACT LOCATION PRIOR TO ROUGH-IN. CORD REEL TO BE PROVIDED BY OWNER.
5	120V CONNECTION TO OVERHEAD DOOR MOTOR. PROVIDE 120V CONTROL STATION (3-POSITION MOMENTARY SWITCH WITH CENTER-OFF). IF CONTROL STATION IS FURNISHED WITH OVERHEAD DOOR, PROVIDE INSTALLATION AND CONTROL WIRING PER VENDOR'S WIRING DIAGRAM.

KEY PLAN (NOT TO SCALE)



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06/26/2020

ELECTRICAL POWER PLAN - SHOP - LEVEL 01 - AREA A

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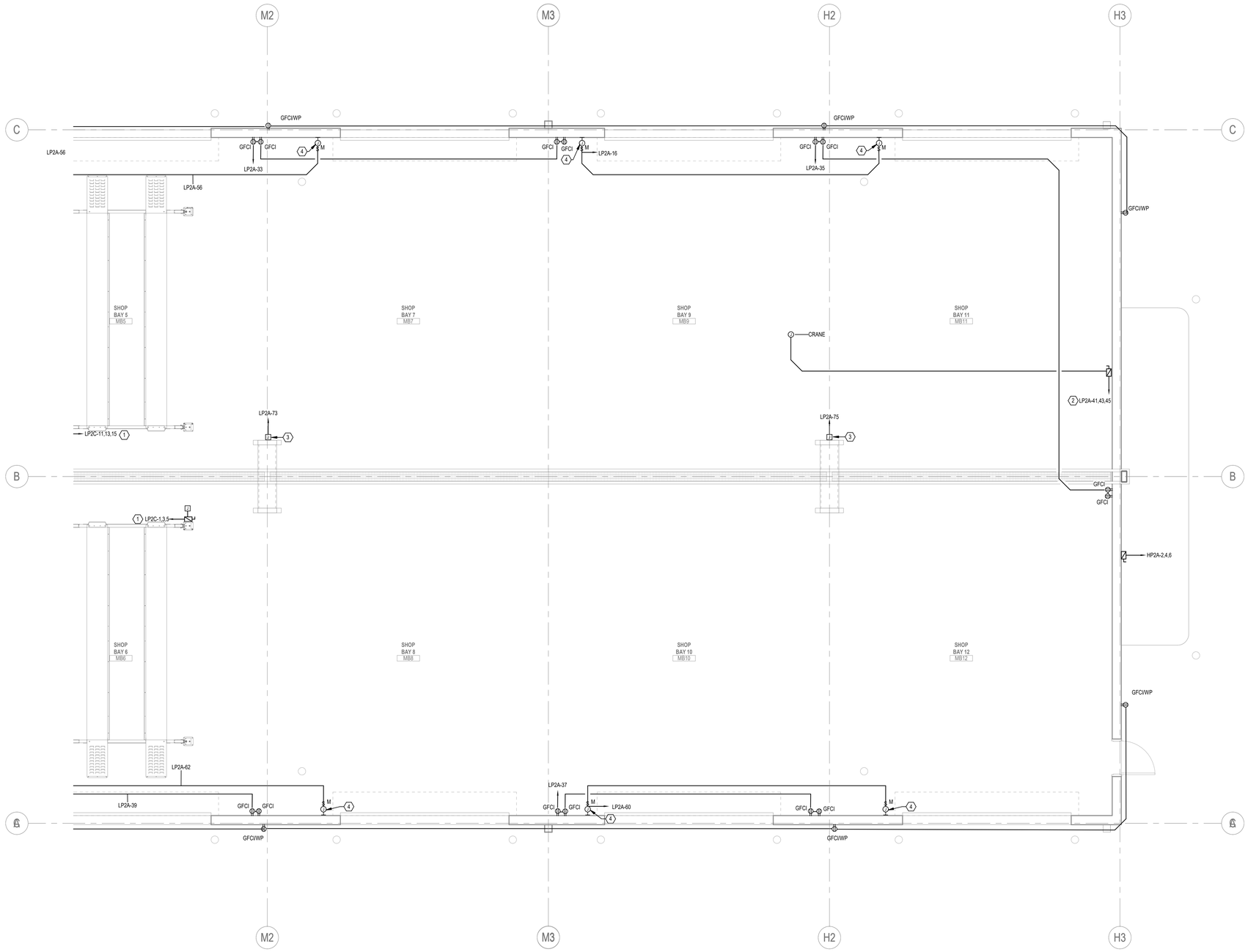


ELECTRICAL POWER PLAN - SHOP - LEVEL 01 - AREA B

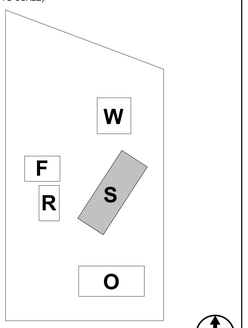
1 SCALE: 1/4" = 1'-0"

GENERAL NOTES

KEYED NOTES

NUMBER	DESCRIPTION
1	PROVIDE CIRCUIT AND DISCONNECT AS SHOWN FOR SHOP EQUIPMENT. PROVIDE 250V, 30A, 3P, FUSIBLE DISCONNECT WITH (3) 20A RK1 FUSES, COORDINATE EXACT LOCATION AND REQUIREMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2	CONNECTION TO CRANE AND CIRCUIT AS SHOWN. PROVIDE 600V, 100A, 3P, 3F, NEMA 1 FUSIBLE DISCONNECT SWITCH WITH THREE (3) 100A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26. ALL RELATED APPURTANCES TO BE FURNISHED BY MANUFACTURER AND DIV.26 TO MAKE ALL FINAL CONNECTIONS FOR FULLY OPERATIONAL EQUIPMENT.
3	PROVIDE FLOOR BOX AND CIRCUIT FOR CORD REEL. VERIFY EXACT LOCATION PRIOR TO ROUGH-IN. CORD REEL TO BE PROVIDED BY OWNER.
4	120V CONNECTION TO OVERHEAD DOOR MOTOR. PROVIDE 120V CONTROL STATION (3-POSITION MOMENTARY SWITCH WITH CENTER-OFF). IF CONTROL STATION IS FURNISHED WITH OVERHEAD DOOR, PROVIDE INSTALLATION AND CONTROL WIRING PER VENDOR'S WIRING DIAGRAM.

KEY PLAN (NOT TO SCALE)



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ELECTRICAL POWER PLAN - SHOP - LEVEL 01 - AREA B

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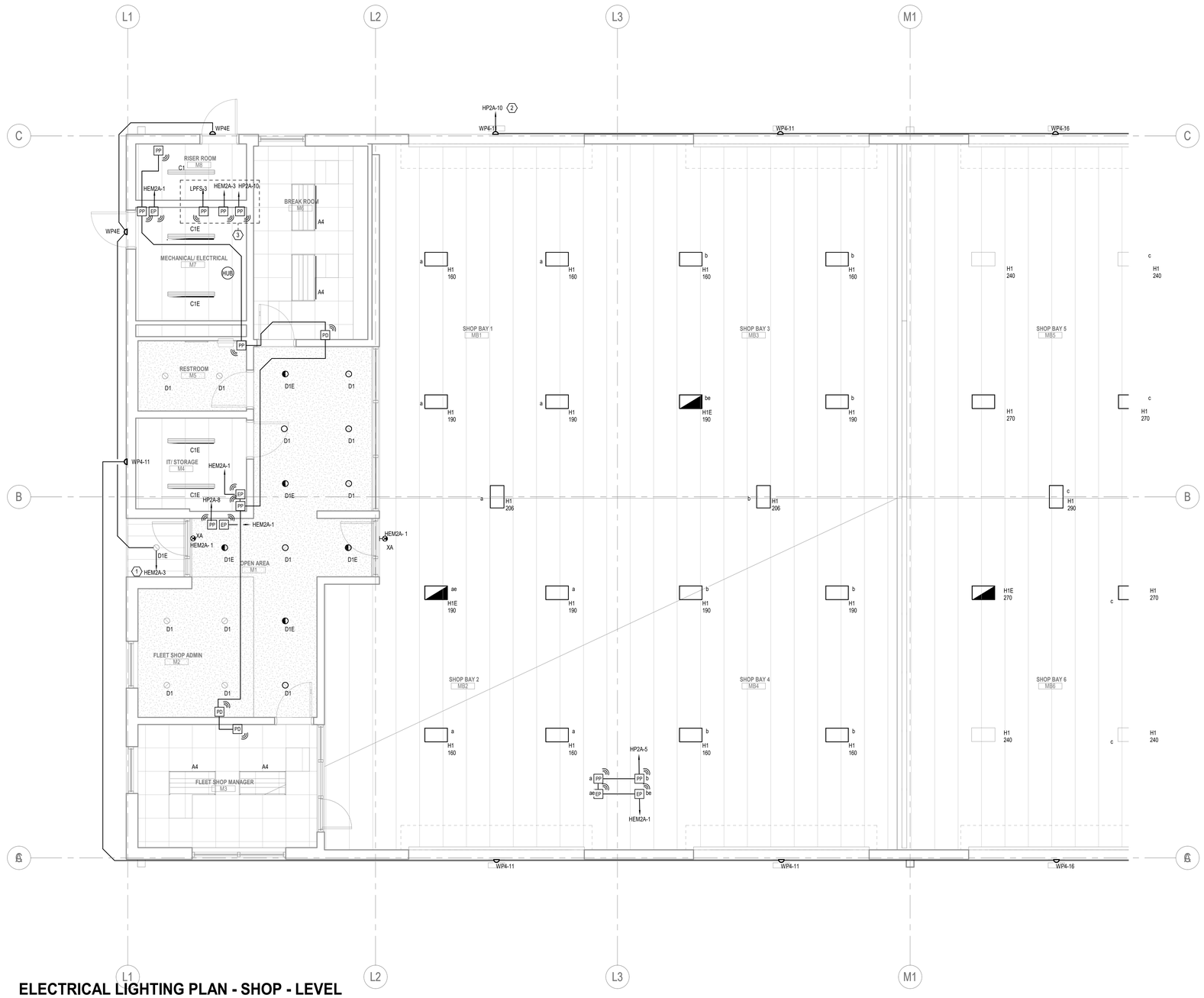


ELECTRICAL LIGHTING PLAN - SHOP - LEVEL 01 - AREA A

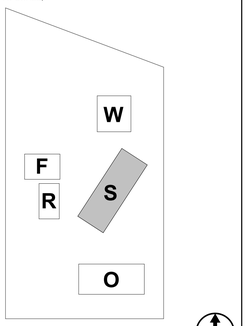
1 SCALE: 1/4" = 1'-0"

GENERAL NOTES

KEYED NOTES

NUMBER	DESCRIPTION
1	LIGHTING CIRCUIT TO BE CONTROLLED VIA POWER PACK/RELAY "PP", "PD" LOCATED IN THE WAREHOUSE BUILDING TOOL STORAGE ROOM W6.
2	LIGHTING CIRCUIT TO BE CONTROLLED VIA POWER PACK/RELAY "PP" LOCATED IN THE SHOP BUILDING ELECTRICAL ROOM M7.
3	PROVIDE CONTROL WIRING FROM PACK/RELAY TO CONTROL BUILDING LIGHTING AND FUEL STATION LIGHTING. BUILDING LIGHTING TO BE CONTROLLED WIRELESSLY VIA BUILDING HUB. FUEL STATION TO BE CONTROLLED VIA TIMECLOCK. COORDINATE EXACT REQUIREMENTS WITH LIGHTING MANUFACTURER PRIOR TO INSTALLATION. SEE SHEET ES-101 FOR SITE LIGHTING.

KEY PLAN (NOT TO SCALE)



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06/26/2020

ELECTRICAL LIGHTING PLAN - SHOP - LEVEL 01 - AREA A

DRAWN BY: DGW	CHECKED BY: DGW
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ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

EL-101M-A
SHEET NUMBER

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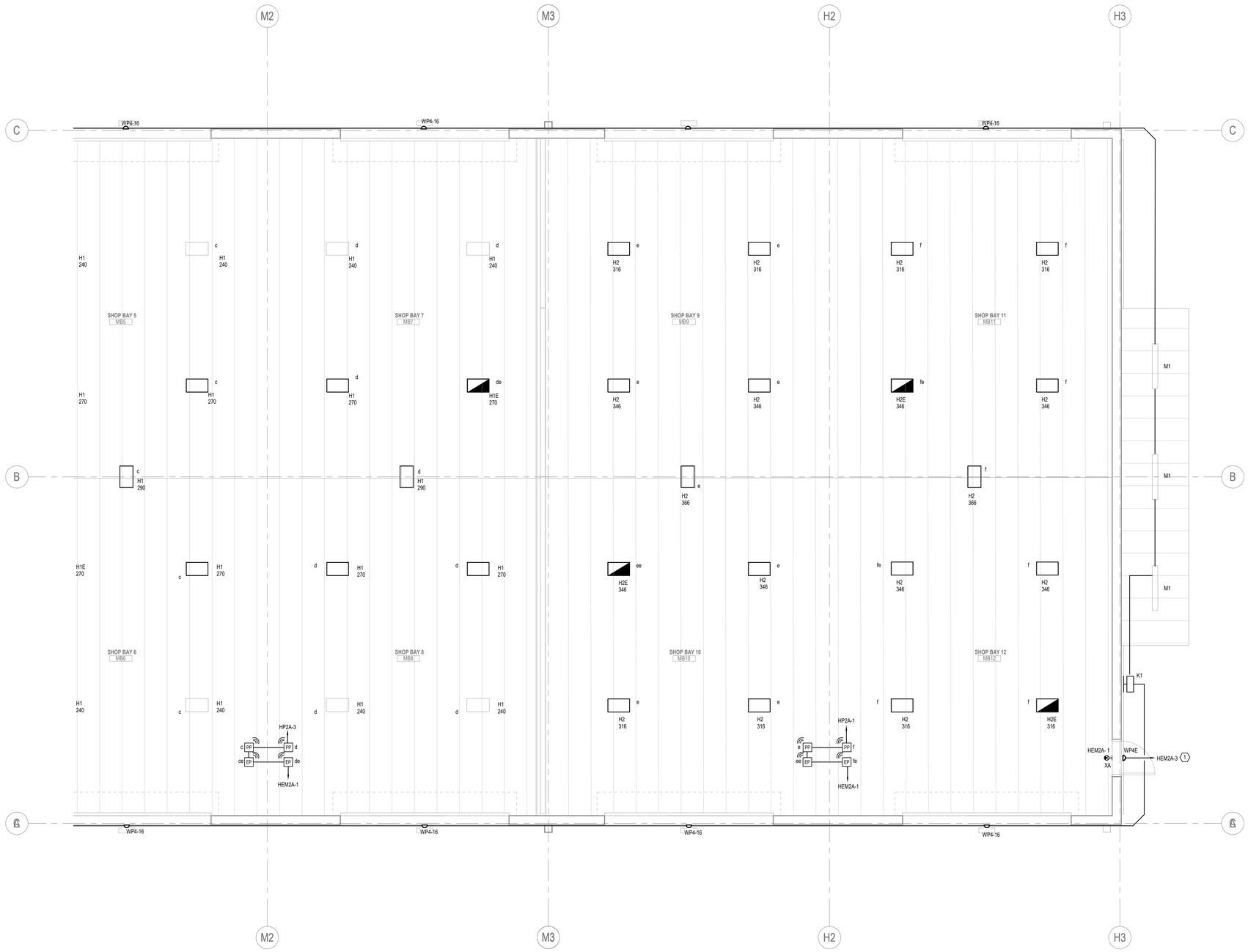


1 LIGHTNING PLAN - SHOP - LEVEL 01 - AREA B

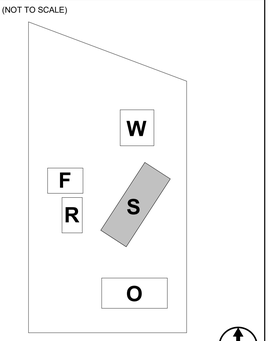
SCALE: 1/4" = 1'-0"

GENERAL NOTES

KEYED NOTES

NUMBER	DESCRIPTION
1	LIGHTING CIRCUIT TO BE CONTROLLED VIA POWER PACK/RELAY "PP" LOCATED IN THE SHOP BUILDING ELECTRICAL ROOM M7.

KEY PLAN (NOT TO SCALE)



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STATE OF TEXAS
DAVID G. WEATHERLY
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LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL LIGHTING PLAN - SHOP - LEVEL 01 - AREA B

DRAWN BY: DGW	CHECKED BY: DGW
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ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

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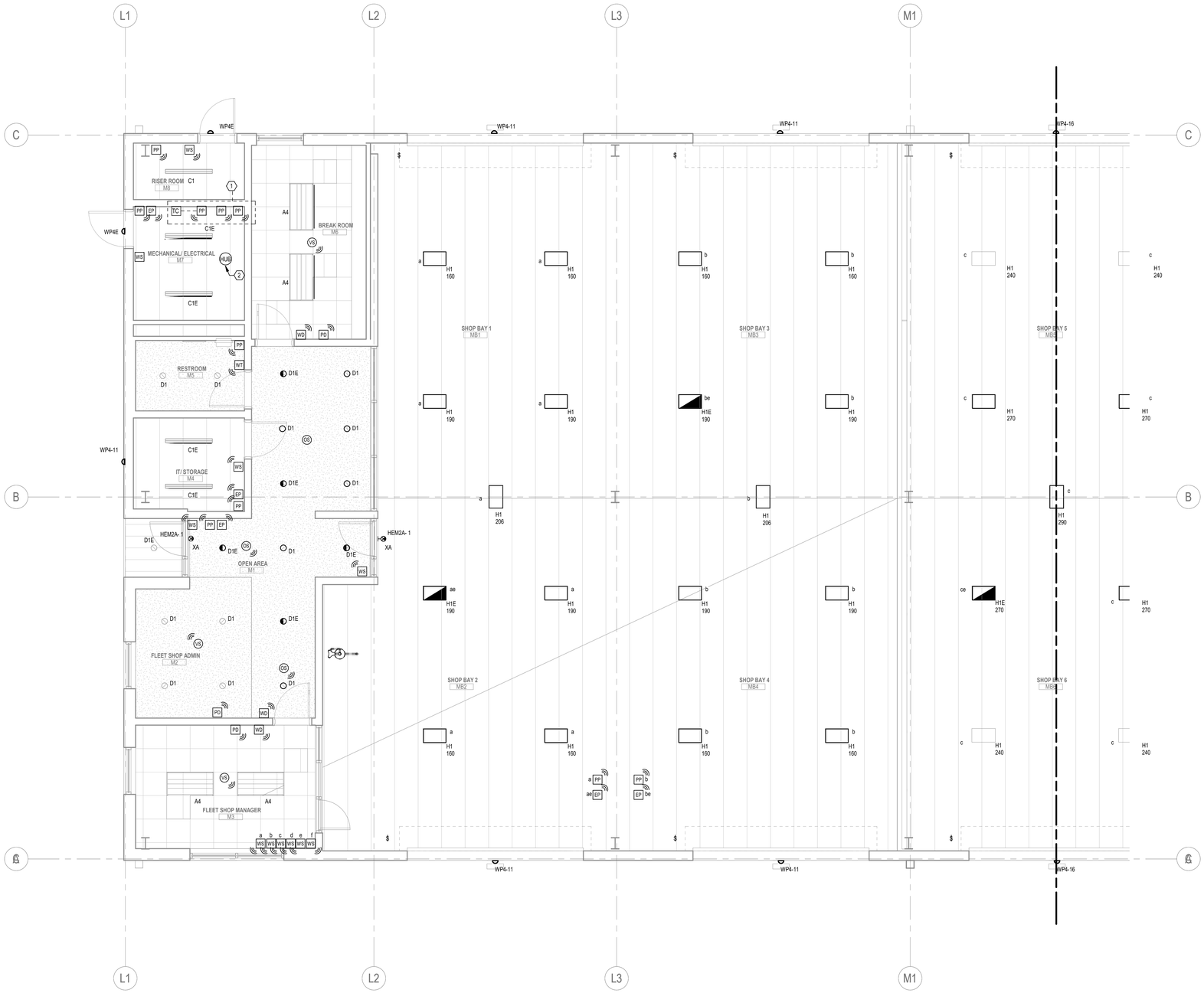
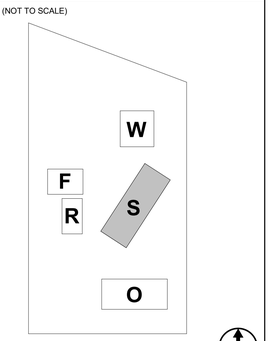


GENERAL NOTES

KEYED NOTES

NUMBER	DESCRIPTION
1	PROVIDE CONTROL WIRING FROM PACK/RELAY TO CONTROL BUILDING LIGHTING AND FUEL STATION LIGHTING. BUILDING LIGHTING TO BE CONTROLLED WIRELESSLY VIA BUILDING HUB. FUEL STATION TO BE CONTROLLED VIA TIMECLOCK. COORDINATE EXACT REQUIREMENTS WITH LIGHTING MANUFACTURER PRIOR TO INSTALLATION. SEE SHEET ES-101 FOR SITE LIGHTING.
2	NETWORK HUBS FOR OFFICE, WAREHOUSE AND SHOP TO BE INTERCONNECTED VIA LOW VOLTAGE WIRE CONNECTION. COORDINATE EXACT REQUIREMENTS WITH LIGHTING MANUFACTURER PRIOR TO INSTALLATION.

KEY PLAN (NOT TO SCALE)



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06/26/2020

ELECTRICAL LIGHTING CONTROLS PLAN - SHOP - LEVEL 01

DRAWN BY: DGW	CHECKED BY: DGW
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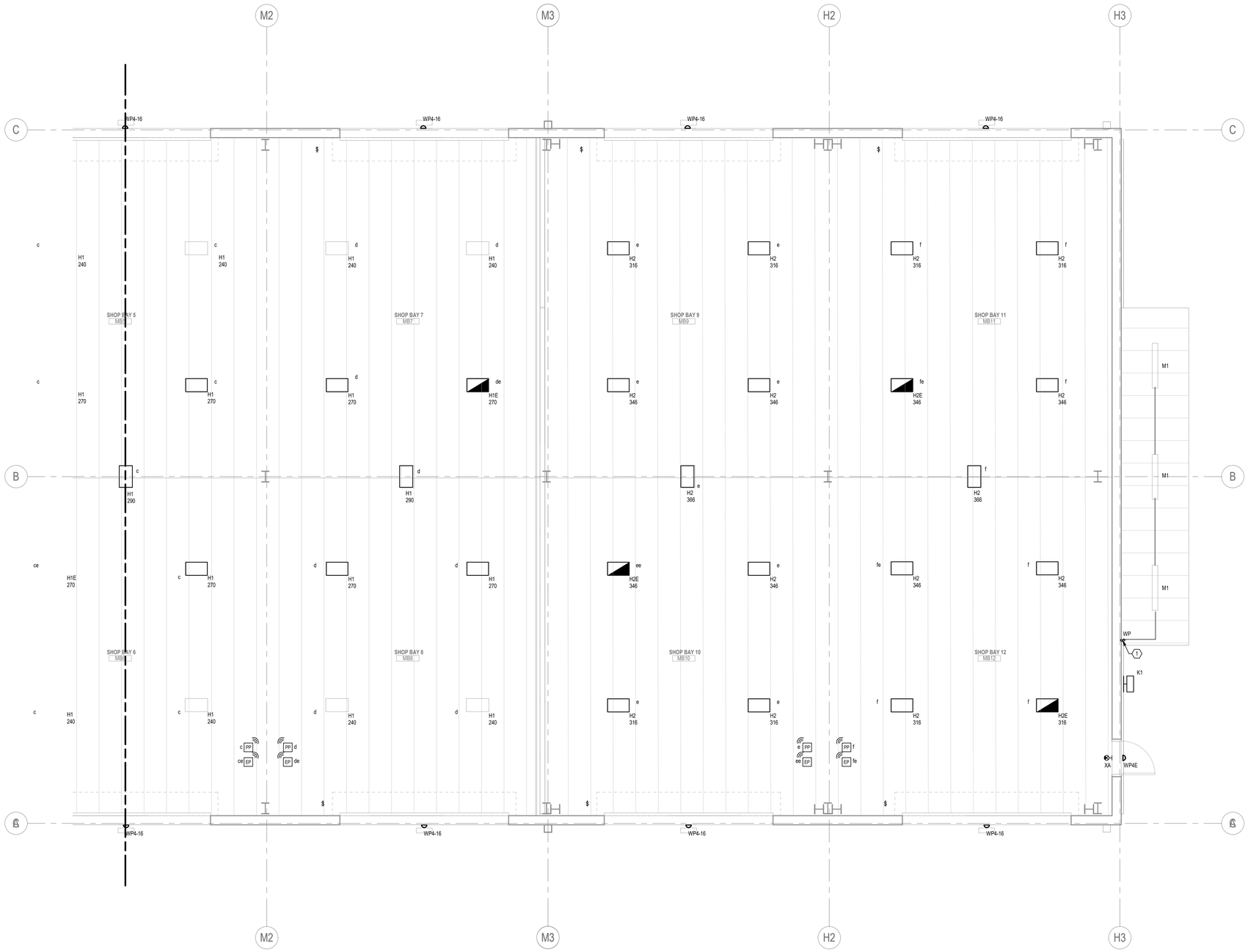
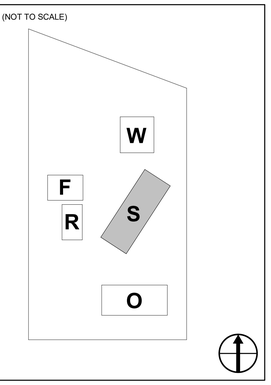


GENERAL NOTES

KEYED NOTES

NUMBER	DESCRIPTION
1	PROVIDE WEATHERPROOF TOGGLE SWITCH FOR UNDER CANOPY LIGHTING.

KEY PLAN (NOT TO SCALE)



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ELECTRICAL LIGHTING CONTROLS PLAN - SHOP - LEVEL 01

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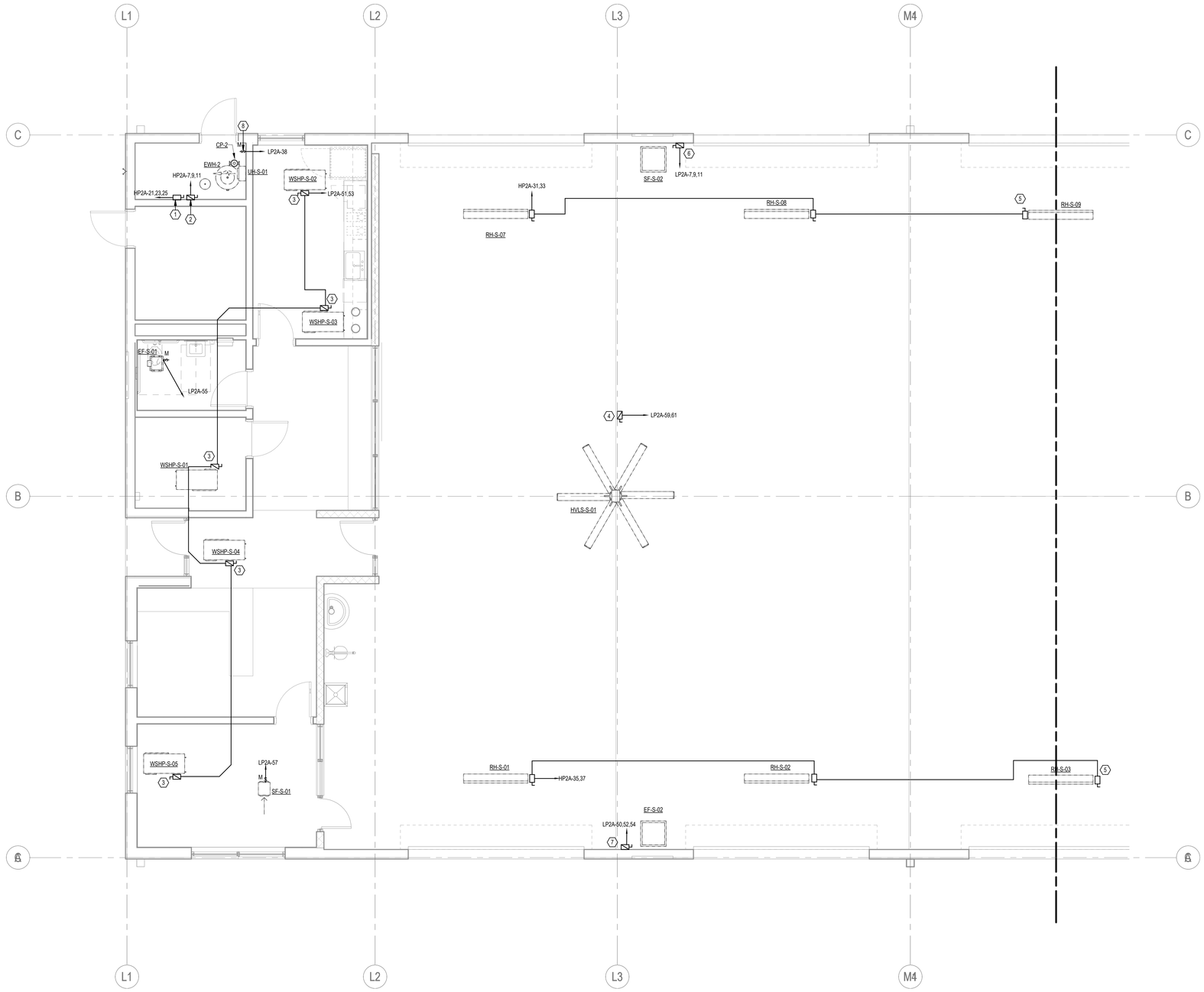


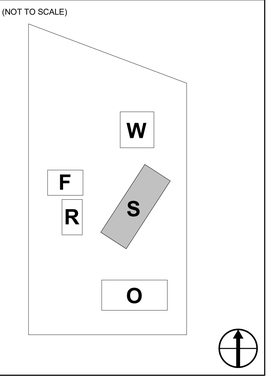
GENERAL NOTES

1. COORDINATE ALL WORK WITH DIV 22 AND 23 PRIOR TO INSTALLATION.
2. PROVIDE LABEL FOR ALL DISCONNECTS TO IDENTIFY ASSOCIATED EQUIPMENT.
3. ENSURE ALL DISCONNECTS ARE ACCESSIBLE.

KEYED NOTES (1)

NUMBER	DESCRIPTION
1	CONNECTION TO ELECTRIC WATER HEATER, EWH-X, AND CIRCUIT AS SHOWN. PROVIDE 600V, 60A, 3P, NEMA 1, NON-FUSIBLE DISCONNECT SWITCH. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
2	CONNECTION TO UNIT HEATER, UH-S-01, AND CIRCUIT AS SHOWN. PROVIDE 600V, 30A, 2P, 2F, NEMA 1 FUSIBLE DISCONNECT SWITCH WITH THREE (3) 20A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
3	CONNECTION TO WATER SOURSE HEAT PUMP, WSHP-XX, AND CIRCUIT AS SHOWN. PROVIDE 250V, 30A, 2P, 2F, NEMA 1 FUSIBLE DISCONNECT SWITCH WITH THREE (2) 15A RK5 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
4	CONNECTION TO SHOP FAN, HVLS-S-XX, AND CIRCUIT AS SHOWN. FAN CONROLS PROVIDED BY DIV 23. DISCONNECT TO BE 600V, 30A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26., MOUNTING LOCATION SHALL BE FIELD VERIFIED.
5	CONNECTION TO RADIANT HEATERS, RH-S-XX, AND CIRCUIT AS SHOWN. PROVIDE 600V, 30A, 3P, NEMA 1 NON FUSIBLE DISCONNECT SWITCH. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
6	CONNECTION TO EXHAUST FAN, EF-W-01, AND CIRCUIT AS SHOWN. DISCONNECT TO BE 250V, 30A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
7	CONNECTION TO EXHAUST FAN, EF-S-XX, AND CIRCUIT AS SHOWN. DISCONNECT TO BE 250V, 30A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
8	CONNECTION TO RECIRCULATION PUMP VIA 20A MOTOR RATED SWITCH AND CIRCUIT AS INDICATED. COORDINATE WITH DIV. 22 AND PUMP MANUFACTURER FOR CONNECTION REQUIREMENTS PRIOR TO ROUGH-IN AND INSTALLATION.

KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

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06/26/2020

ELECTRICAL EQUIPMENT PLAN - SHOP - LEVEL 01 - AREA A

DRAWN BY: DGW	CHECKED BY: DGW
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ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

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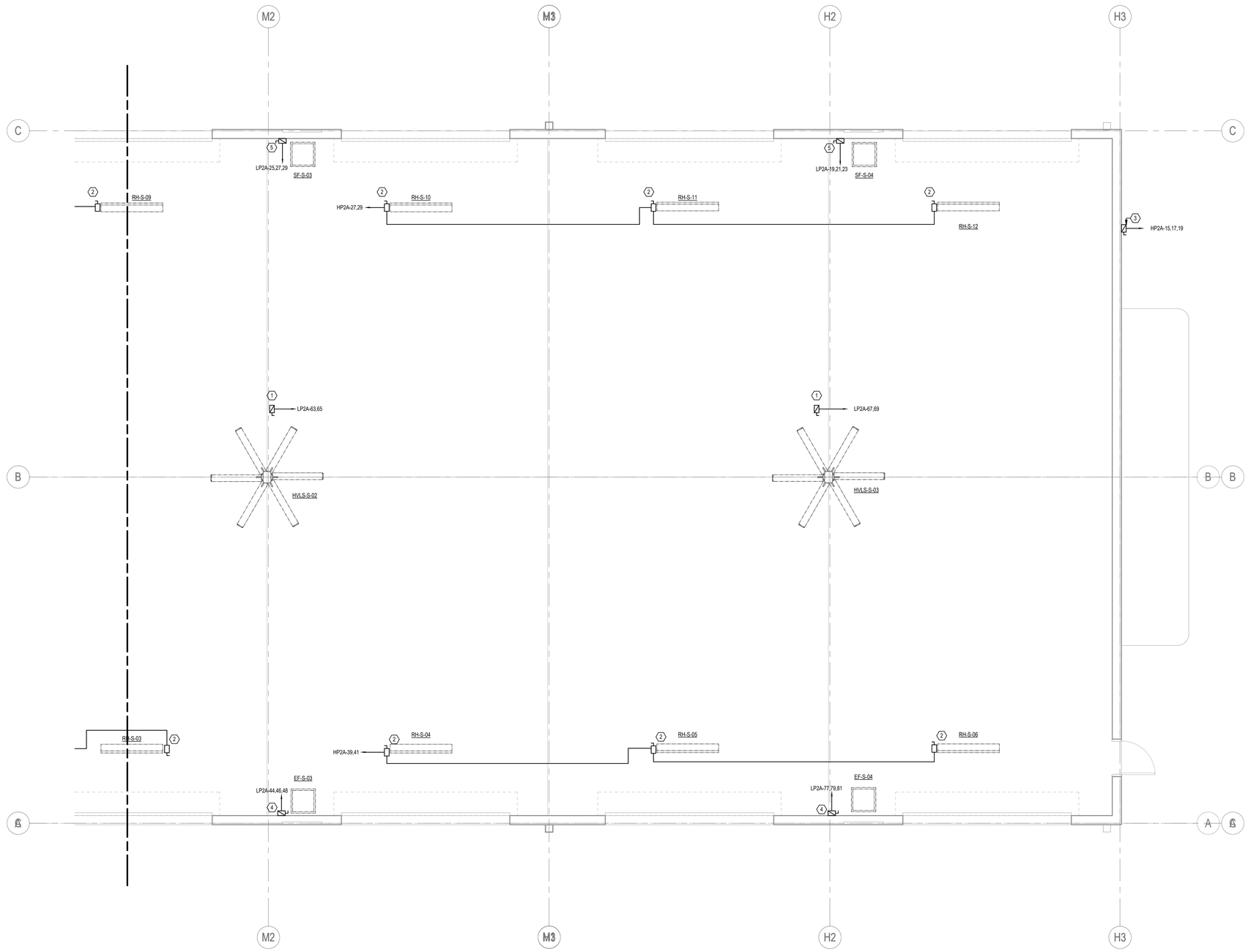


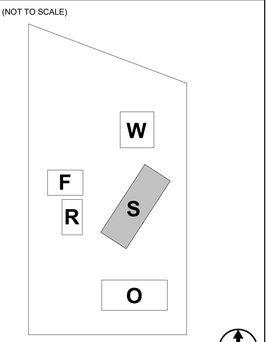
GENERAL NOTES

1. COORDINATE ALL WORK WITH DIV 22 AND 23 PRIOR TO INSTALLATION.
2. PROVIDE LABEL FOR ALL DISCONNECTS TO IDENTIFY ASSOCIATED EQUIPMENT.
3. ENSURE ALL DISCONNECTS ARE ACCESSIBLE.

KEYED NOTES (1)

NUMBER	DESCRIPTION
1	CONNECTION TO SHOP FAN, HVLS-S-XX, AND CIRCUIT AS SHOWN. FAN CONROLS PROVIDED BY DIV 23. DISCONNECT TO BE 600V, 30A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26., MOUNTING LOCATION SHALL BE FIELD VERIFIED.
2	CONNECTION TO RADIANT HEATERS, RH-S-XX, AND CIRCUIT AS SHOWN. PROVIDE 600V, 30A, 3P, NEMA 1 NON FUSIBLE DISCONNECT SWITCH. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
3	CONNECTION TO AIR COMPRESSOR UNIT, AND CIRCUIT AS SHOWN. PROVIDE 600V, 30A, 3P, NEMA 1 FUSIBLE DISCONNECT SWITCH WITH (3) 30A RK1 FUSES. COORDINATE EXACT LOCATION AND REQUIREMENT WITH DIV 22. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
4	CONNECTION TO EXHAUST FAN, EF-S-XX, AND CIRCUIT AS SHOWN. DISCONNECT TO BE 250V, 30A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
5	CONNECTION TO SUPPLY FAN, SF-S-XX, AND CIRCUIT AS SHOWN. DISCONNECT TO BE 250V, 30A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.

KEY PLAN (NOT TO SCALE)



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06/26/2020

ELECTRICAL EQUIPMENT PLAN - SHOP - LEVEL 01 - AREA B

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ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

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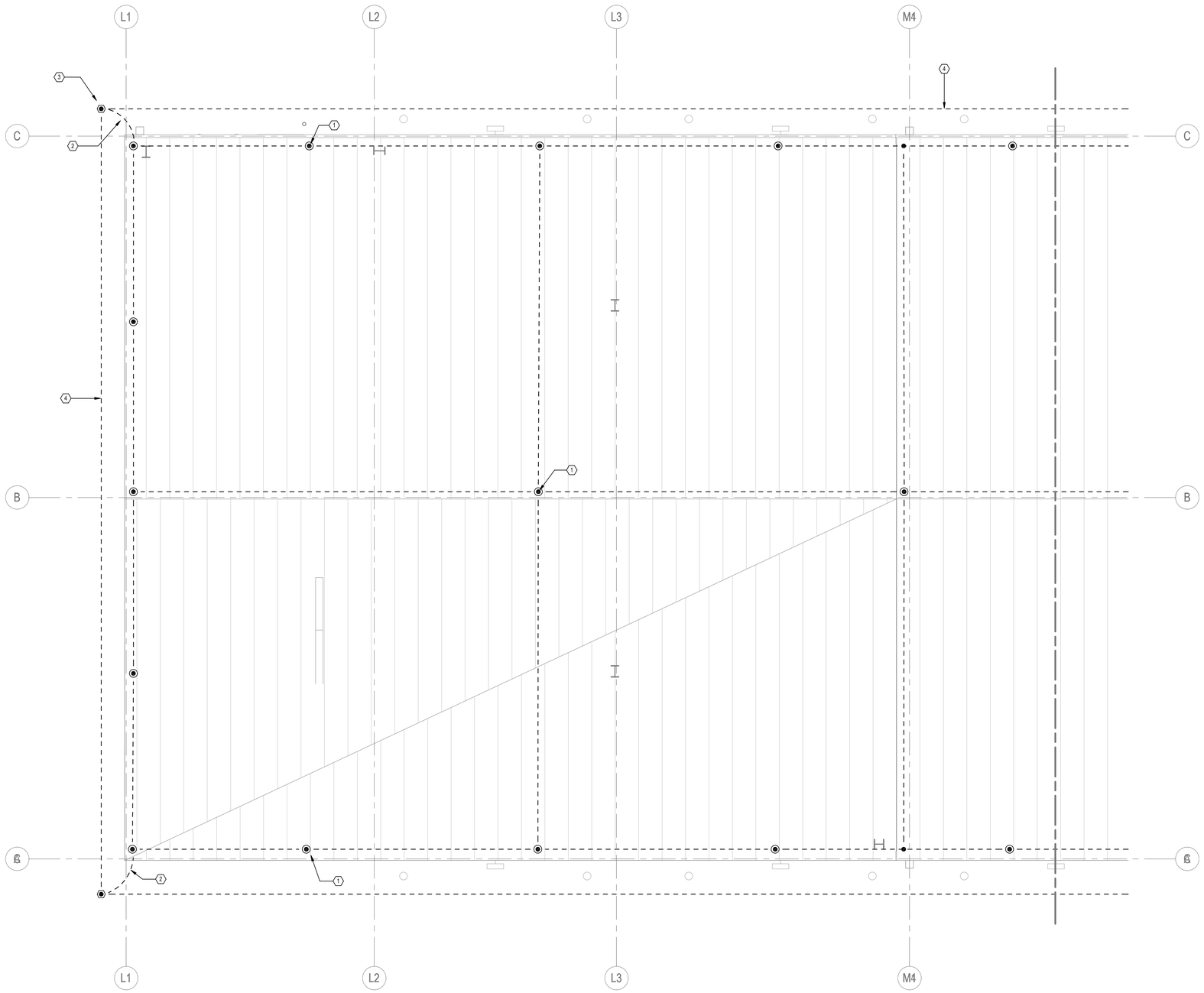


1 ELECTRICAL GROUNDING & LIGHTNING PROTECTION - SHOP - ROOF PLAN - AREA A

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

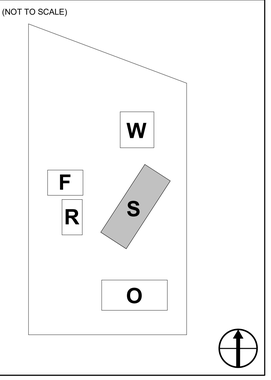
GENERAL NOTES

A. PROVIDE A COMPLETE AND FUNCTIONAL LIGHTNING PROTECTION SYSTEM THAT HAS BEEN CERTIFIED AND IS IN COMPLIANCE WITH THE REQUIREMENTS AND STANDARDS INDICATED IN THE SPECIFICATIONS.
B. A CERTIFICATE SHALL BE PROVIDED TO THE OWNER UPON SATISFACTORY COMPLETION OF INSTALLATION AND INSPECTION OF THE LIGHTNING PROTECTION SYSTEM.
C. ANY BUILDING STRUCTURES THAT DO NOT FALL WITHIN A ZONE OF PROTECTION SHALL BE EQUIPPED WITH A FULL LIGHTNING PROTECTION SYSTEM THAT HAS BEEN PROPERLY INTERCONNECTED IN A NEAT AND WORKMANLIKE MANNER.
D. ORDINARY STRUCTURES NOT EXCEEDING 75 FEET IN HEIGHT SHALL BE PROTECTED WITH CLASS I MATERIALS. ORDINARY STRUCTURES EXCEEDING 75 FEET IN HEIGHT SHALL BE PROTECTED WITH CLASS II MATERIALS.
E. MATERIAL COMPONENTS USED IN LIGHTNING PROTECTION SYSTEMS SHALL BE COMPATIBLE WITH THE BUILDING SURFACE WHERE MOUNTED. IN NO CASE SHALL COPPER MATERIALS BE INSTALLED ON ALUMINUM ROOFING OR SIDING, OR ALUMINUM MATERIALS INSTALLED ON COPPER SURFACES.
F. AN ALUMINUM CONDUCTOR SHALL NOT BE ATTACHED TO A SURFACE COATED WITH ALKALINE-BASED PAINT, EMBEDDED IN CONCRETE OR MASONRY, OR INSTALLED IN A LOCATION SUBJECT TO EXCESSIVE MOISTURE.
G. ALUMINUM MATERIALS SHALL NOT BE USED FOR DIRECT GROUNDING OF AN ALUMINUM LIGHTNING PROTECTION SYSTEM. ALUMINUM MATERIALS SHALL NOT COME INTO DIRECT WITH EARTH.
H. ONLY UL APPROVED BIMETALLIC FITTINGS SHALL BE USED TO JOIN ALUMINUM AND COPPER LIGHTNING PROTECTION SYSTEM COMPONENTS.
I. METAL PARTS OF A STRUCTURE THAT ARE EXPOSED TO DIRECT LIGHTNING FLASHES AND THAT HAVE A METAL THICKNESS OF 3/16-INCH OR GREATER SHALL REQUIRE CONNECTION TO THE LIGHTNING PROTECTION SYSTEM. SUCH CONNECTION SHALL PROVIDE A MINIMUM OF TWO PATHS TO GROUND.
J. AIR TERMINALS SHALL BE REQUIRED ON ALL PROJECTIONS THAT ARE NOT LOCATED WITHIN A ZONE OF PROTECTION, INCLUDING METAL PARTS OF A STRUCTURE HAVING A METAL THICKNESS OF LESS THAN 3/16-INCH.
K. MAIN ROOF CONDUCTORS SHALL INTERCONNECT AIR TERMINALS, INCLUDING PROJECTIONS, AND PROVIDE TWO OR MORE PATHS FROM EACH AIR TERMINAL DOWNWARD, HORIZONTALLY, OR RISING AT NO MORE THAN ¼ PITCH TO CONNECTIONS WITH THE GROUNDING ELECTRODE SYSTEM. METAL ROOFING AND SIDING SHALL NOT BE USED AS A MAIN ROOF CONDUCTOR.
L. DOWN CONDUCTORS COURSED ON OR IN REINFORCED CONCRETE COLUMNS OR ON STURCTURAL STEEL COLUMNS SHALL BE CONNECTED TO THE REINFORCING STEEL OR STUCTURAL STEEL MEMBER AT THEIR UPPER AND LOWER EXTREMITIES. IN THE CASE OF LONG VERTICAL RUNS, AN ADDITIONAL CONNECTION SHALL BE MADE AT INTERVALS NOT EXCEEDING 200 FEET. WHERE THESE BONDING REQUIREMENTS CANNOT BE SATISFIED BECAUSE OF LACK OF ACCESS, PROVISIONS SHAL BE MADE TO ENSURE THE CONNECTIONS OF THESE VERTICAL PATHS AT THE EXTREMITIES AND AT INTERVALS NOT EXCEEDING 200 FEET.
M. METAL BODIES, LOCATED OUTSIDE OR INSIDE A STRUCTURE, THAT CONTRIBUTE TO LIGHTNING HAZARDS BACAUSE THEY ARE GROUNDED OR PROVIDE A PATH TO GROUND FOR LIGHTNING CURRENTS, SHALL BE INTERCONNECTED WITH THE LIGHTNING PROTECTION SYSTEM.

KEYED NOTES (1)

NUMBER	DESCRIPTION
1	ALUMINUM LIGHTNING PROTECTION AIR TERMINAL MOUNTED TO ROOF. REFER TO DETAIL 2/EG-501
2	#4/0 AWG COPPER LIGHTNING PROTECTION DOWN-WIRE BONDED TO LIGHTNING PROTECTION GROUND LOOP. SEE DETAIL 7/EG-500
3	3/4" X 10' COPPER CLAD STEEL GROUND ROD
4	#4/0 AWG COPPER GROUNDING PROTECTION LOOP.

KEY PLAN (NOT TO SCALE)



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ELECTRICAL GROUNDING & LIGHTNING PROTECTION PLAN

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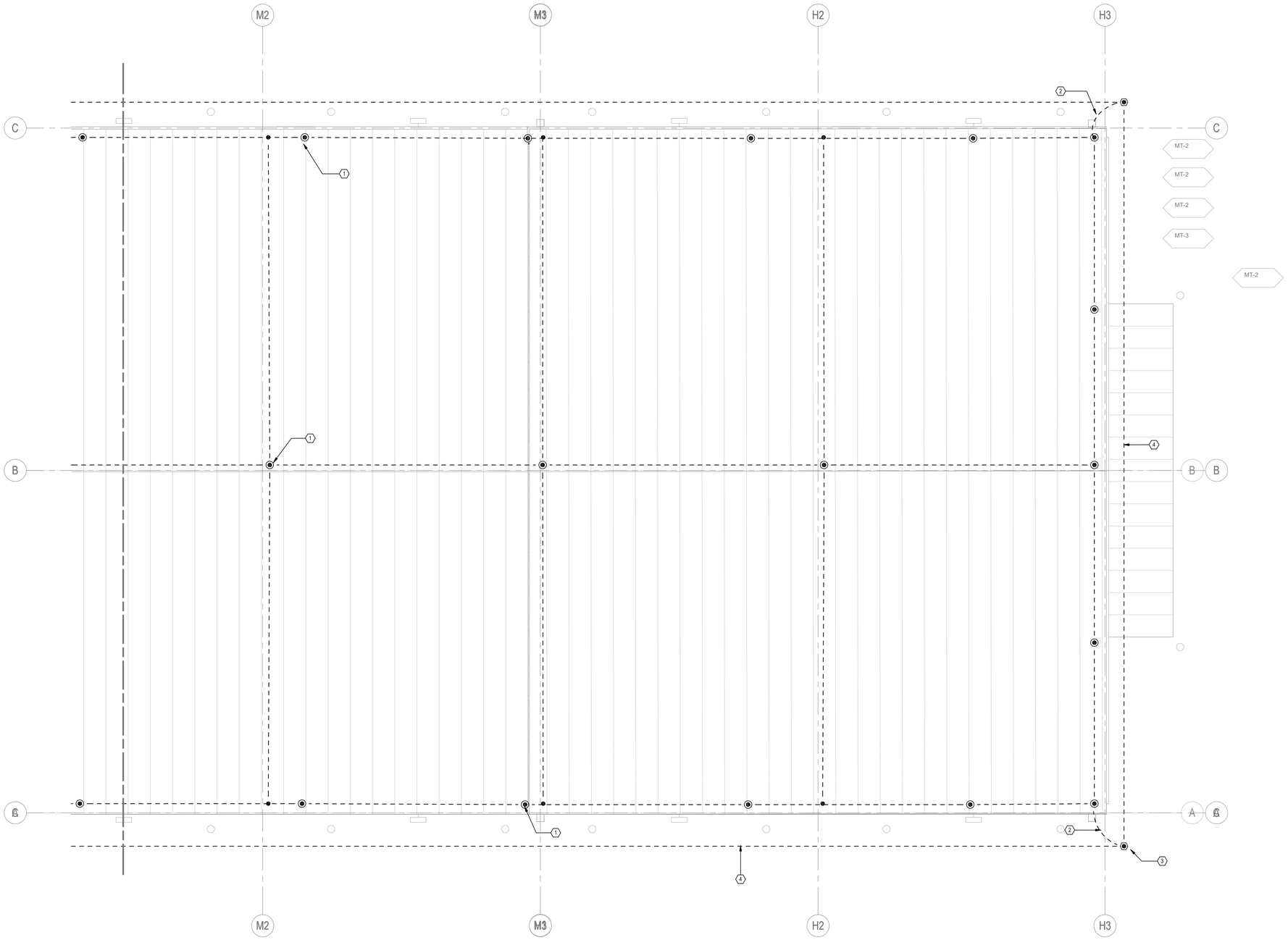


ELECTRICAL GROUNDING & LIGHTNING PROTECTION - SHOP - ROOF PLAN- AREA B

1

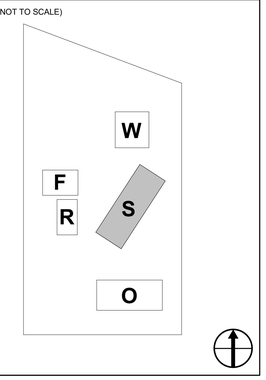
SCALE: 1/4" = 1'-0"

GENERAL NOTES

KEYED NOTES

NUMBER	DESCRIPTION
1	ALUMINUM LIGHTNING PROTECTION AIR TERMINAL MOUNTED TO ROOF. REFER TO DETAIL 2/EG-501
2	#4/0 AWG COPPER LIGHTNING PROTECTION DOWN-WIRE BONDED TO LIGHTNING PROTECTION GROUND LOOP. SEE DETAIL 7/EG-500
3	3/4" X 10' COPPER CLAD STEEL GROUND ROD
4	#4/0 AWG COPPER GROUNDING PROTECTION LOOP.

KEY PLAN (NOT TO SCALE)



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06/26/2020

ELECTRICAL GROUNDING & LIGHTNING PROTECTION PLAN - SHOP - LEVEL 01

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SHEET NUMBER

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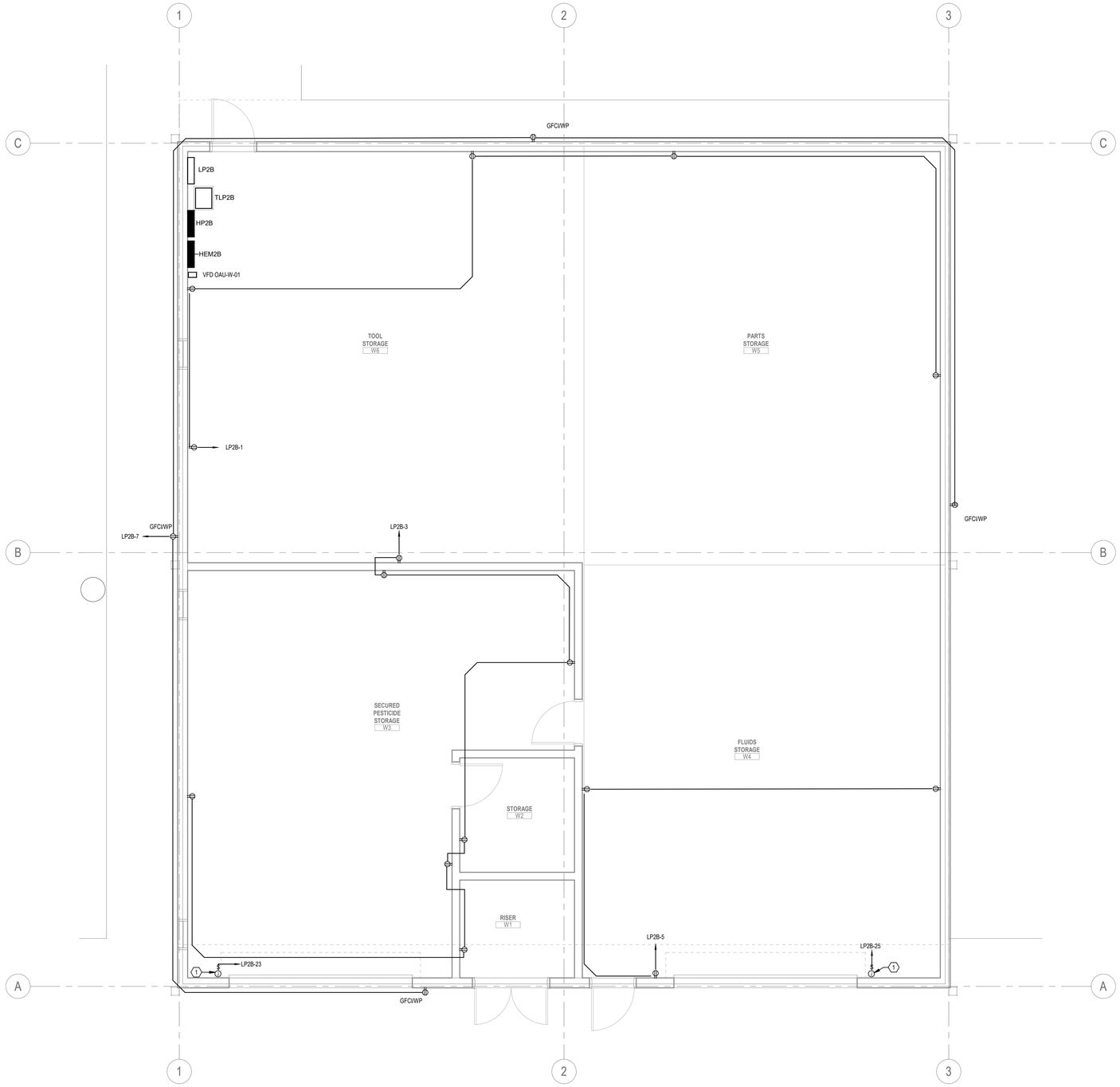


1 ELECTRICAL POWER PLAN - WAREHOUSE - LEVEL 01

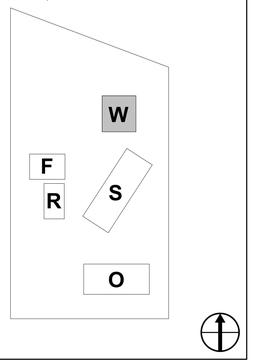
SCALE: 1/4" = 1'-0"

GENERAL NOTES

KEYED NOTES

NUMBER	DESCRIPTION
1	120V CONNECTION TO OVERHEAD DOOR MOTOR. PROVIDE 120V CONTROL STATION (3-POSITION MOMENTARY SWITCH WITH CENTER-OFF). IF CONTROL STATION IS FURNISHED WITH OVERHEAD DOOR, PROVIDE INSTALLATION AND CONTROL WIRING PER VENDOR'S WIRING DIAGRAM.

KEY PLAN (NOT TO SCALE)



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ELECTRICAL POWER PLAN - WAREHOUSE - LEVEL 01

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PROJECT NUMBER 418198	PROJECT ABBREVIATION ABBREV
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

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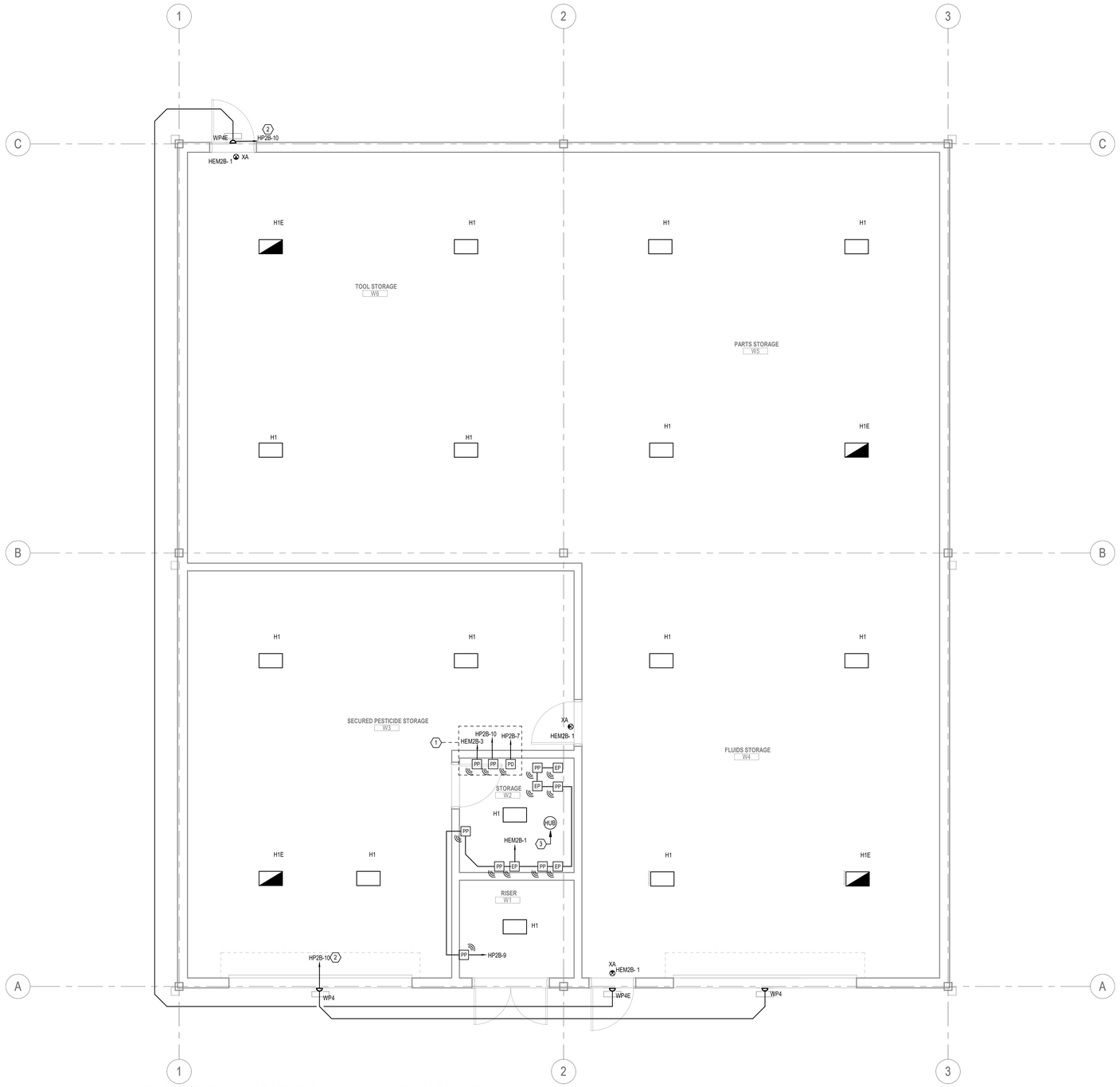


ELECTRICAL LIGHTING PLAN - WAREHOUSE - LEVEL 01

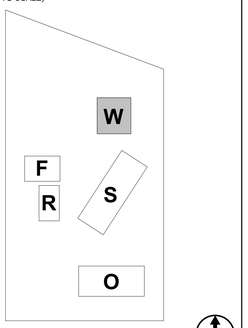
1 SCALE: 1/4" = 1'-0"

GENERAL NOTES

KEYED NOTES

NUMBER	DESCRIPTION
1	PROVIDE CONTROL WIRING FROM PACK/RELAY TO CONTROL SITE POLE LIGHTING AND BUILDING LIGHTING. SITE POLE AND BUILDING LIGHTING TO BE CONTROLLED WIRELESSLY VIA BUILDING HUB. COORDINATE EXACT REQUIREMENTS WITH LIGHTING MANUFACTURER PRIOR TO INSTALLATION. SEE SHEET ES-101 FOR SITE LIGHTING.
2	LIGHTING CIRCUIT TO BE CONTROLLED VIA POWER PACK/RELAY "PP". "PD" LOCATED IN THE WAREHOUSE BUILDING TOOL STORAGE ROOM W6.
3	NETWORK HUBS FOR OFFICE, WAREHOUSE AND SHOP TO BE INTERCONNECTED VIA LOW VOLTAGE WIRE CONNECTION. COORDINATE EXACT REQUIREMENTS WITH LIGHTING MANUFACTURER PRIOR TO INSTALLATION.

KEY PLAN (NOT TO SCALE)



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ELECTRICAL LIGHTING PLAN- WAREHOUSE - LEVEL 01

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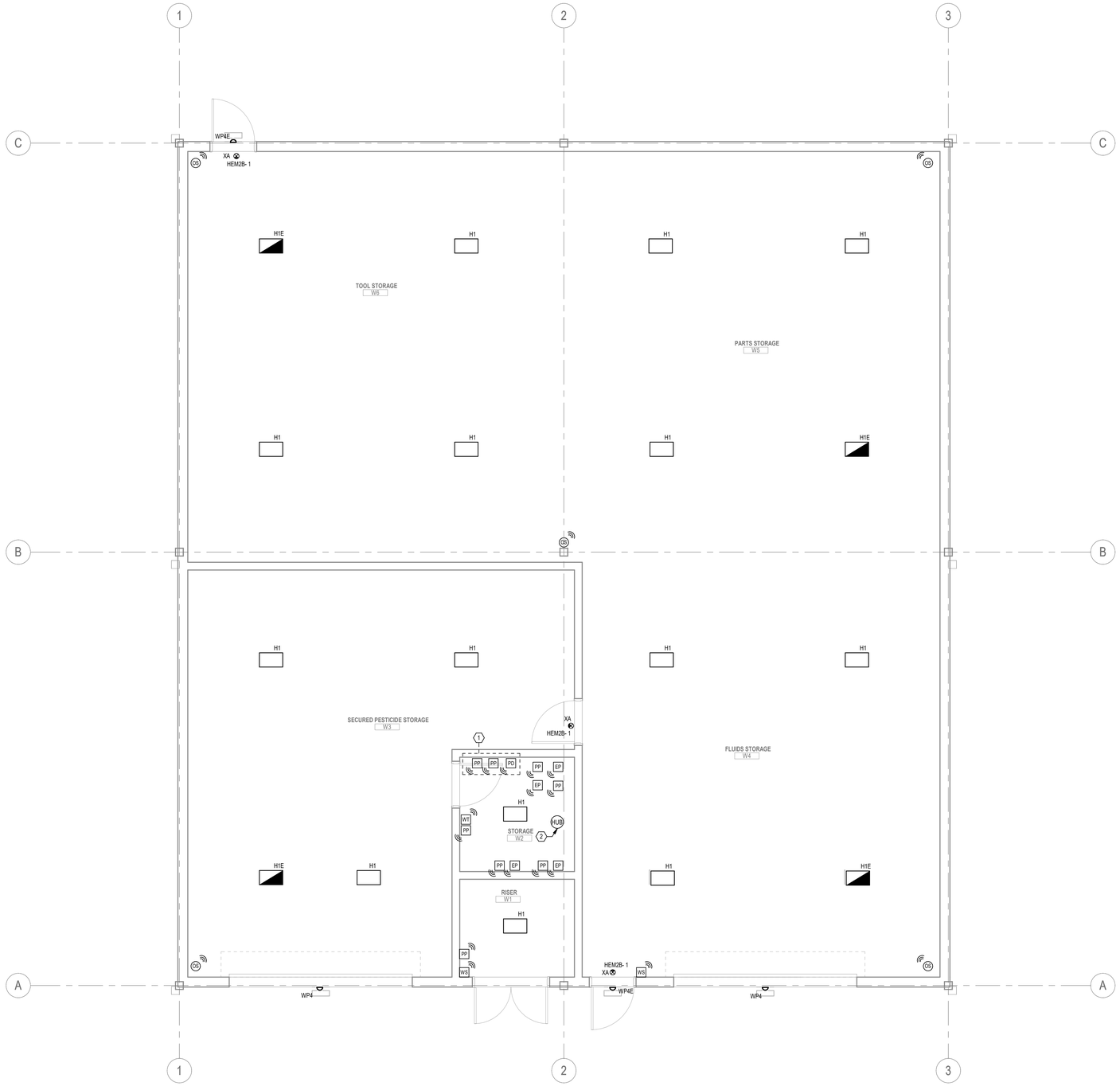


ELECTRICAL LIGHTING CONTROL PLAN - WAREHOUSE - LEVEL 01

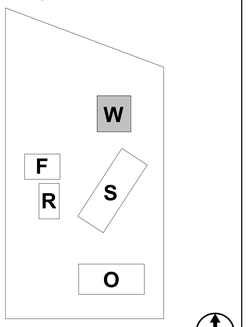
1 SCALE: 1/4" = 1'-0"

GENERAL NOTES

KEYED NOTES

NUMBER	DESCRIPTION

KEY PLAN (NOT TO SCALE)



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ELECTRICAL LIGHTING CONTROLS PLAN - WAREHOUSE - LEVEL 01

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ORIGINAL ISSUE	DATE
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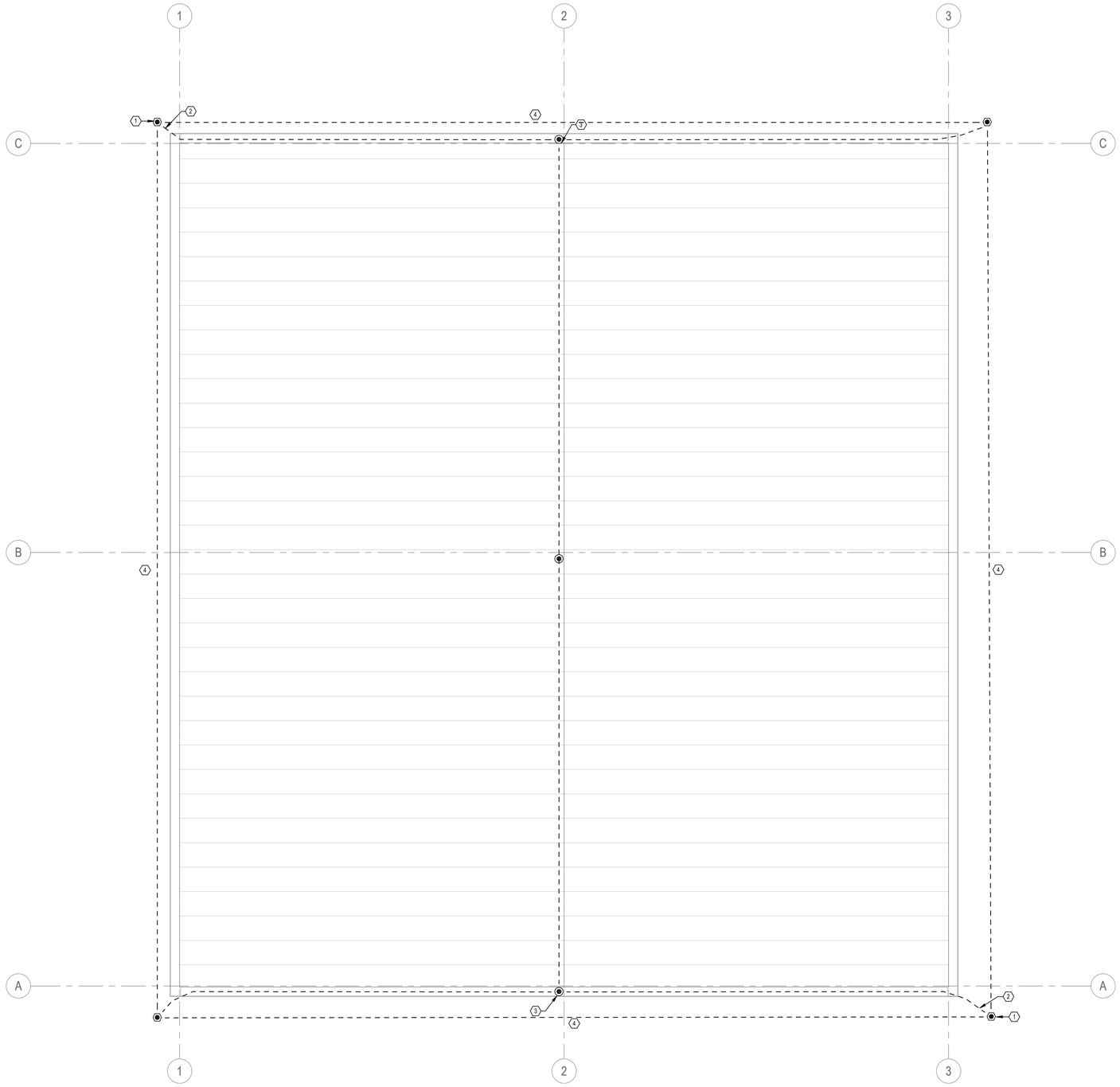


ELECTRICAL GROUNDING & LIGHTNING PROTECTION PLAN - WAREHOUSE - ROOF LEVEL

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

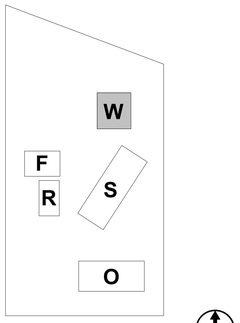
GENERAL NOTES

A. PROVIDE A COMPLETE AND FUNCTIONAL LIGHTNING PROTECTION SYSTEM THAT HAS BEEN CERTIFIED AND IS IN COMPLIANCE WITH THE REQUIREMENTS AND STANDARDS INDICATED IN THE SPECIFICATIONS.
B. A CERTIFICATE SHALL BE PROVIDED TO THE OWNER UPON SATISFACTORY COMPLETION OF INSTALLATION AND INSPECTION OF THE LIGHTNING PROTECTION SYSTEM.
C. ANY BUILDING STRUCTURES THAT DO NOT FALL WITHIN A ZONE OF PROTECTION SHALL BE EQUIPPED WITH A FULL LIGHTNING PROTECTION SYSTEM THAT HAS BEEN PROPERLY INTERCONNECTED IN A NEAT AND WORKMANLIKE MANNER.
D. ORDINARY STRUCTURES NOT EXCEEDING 75 FEET IN HEIGHT SHALL BE PROTECTED WITH CLASS I MATERIALS. ORDINARY STRUCTURES EXCEEDING 75 FEET IN HEIGHT SHALL BE PROTECTED WITH CLASS II MATERIALS.
E. MATERIAL COMPONENTS USED IN LIGHTNING PROTECTION SYSTEMS SHALL BE COMPATIBLE WITH THE BUILDING SURFACE WHERE MOUNTED. IN NO CASE SHALL COPPER MATERIALS BE INSTALLED ON ALUMINUM ROOFING OR SIDING, OR ALUMINUM MATERIALS INSTALLED ON COPPER SURFACES.
F. AN ALUMINUM CONDUCTOR SHALL NOT BE ATTACHED TO A SURFACE COATED WITH ALKALINE-BASED PAINT, EMBEDDED IN CONCRETE OR MASONRY, OR INSTALLED IN A LOCATION SUBJECT TO EXCESSIVE MOISTURE.
G. ALUMINUM MATERIALS SHALL NOT BE USED FOR DIRECT GROUNDING OF AN ALUMINUM LIGHTNING PROTECTION SYSTEM. ALUMINUM MATERIALS SHALL NOT COME INTO DIRECT WITH EARTH.
H. ONLY UL APPROVED BIMETALLIC FITTINGS SHALL BE USED TO JOIN ALUMINUM AND COPPER LIGHTNING PROTECTION SYSTEM COMPONENTS.
I. METAL PARTS OF A STRUCTURE THAT ARE EXPOSED TO DIRECT LIGHTNING FLASHES AND THAT HAVE A METAL THICKNESS OF 3/16-INCH OR GREATER SHALL REQUIRE CONNECTION TO THE LIGHTNING PROTECTION SYSTEM. SUCH CONNECTION SHALL PROVIDE A MINIMUM OF TWO PATHS TO GROUND.
J. AIR TERMINALS SHALL BE REQUIRED ON ALL PROJECTIONS THAT ARE NOT LOCATED WITHIN A ZONE OF PROTECTION, INCLUDING METAL PARTS OF A STRUCTURE HAVING A METAL THICKNESS OF LESS THAN 3/16-INCH.
K. MAIN ROOF CONDUCTORS SHALL INTERCONNECT AIR TERMINALS, INCLUDING PROJECTIONS, AND PROVIDE TWO OR MORE PATHS FROM EACH AIR TERMINAL DOWNWARD, HORIZONTALLY, OR RISING AT NO MORE THAN ¼ PITCH TO CONNECTIONS WITH THE GROUNDING ELECTRODE SYSTEM. METAL ROOFING AND SIDING SHALL NOT BE USED AS A MAIN ROOF CONDUCTOR.
L. DOWN CONDUCTORS COURSED ON OR IN REINFORCED CONCRETE COLUMNS OR ON STURCTURAL STEEL COLUMNS SHALL BE CONNECTED TO THE REINFORCING STEEL OR STUCTURAL STEEL MEMBER AT THEIR UPPER AND LOWER EXTREMITIES. IN THE CASE OF LONG VERTICAL RUNS, AN ADDITIONAL CONNECTION SHALL BE MADE AT INTERVALS NOT EXCEEDING 200 FEET. WHERE THESE BONDING REQUIREMENTS CANNOT BE SATISFIED BECAUSE OF LACK OF ACCESS, PROVISIONS SHAL BE MADE TO ENSURE THE CONNECTIONS OF THESE VERTICAL PATHS AT THE EXTREMITIES AND AT INTERVALS NOT EXCEEDING 200 FEET.
M. METAL BODIES, LOCATED OUTSIDE OR INSIDE A STRUCTURE, THAT CONTRIBUTE TO LIGHTNING HAZARDS BACAUSE THEY ARE GROUNDED OR PROVIDE A PATH TO GROUND FOR LIGHTNING CURRENTS, SHALL BE INTERCONNECTED WITH THE LIGHTNING PROTECTION SYSTEM.

KEYED NOTES 1

NUMBER	DESCRIPTION
1	3/4" X 10' COPPER CLAD STEEL GROUND ROD
2	#4/0 AWG COPPER LIGHTNING PROTECTION DOWN-WIRE BONDED TO LIGHTNING PROTECTION GROUND LOOP. SEE DETAIL 7/EG-500
3	ALUMINUM LIGHTNING PROTECTION AIR TERMINAL MOUNTED TO ROOF. REFER TO DETAIL 2/EG-501
4	#4/0 AWG COPPER GROUNDING PROTECTION LOOP.

KEY PLAN (NOT TO SCALE)



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06/26/2020

ELECTRICAL LIGHTNING PROTECTION PLAN - WAREHOUSE - ROOF LEVEL

DRAWN BY	CHECKED BY
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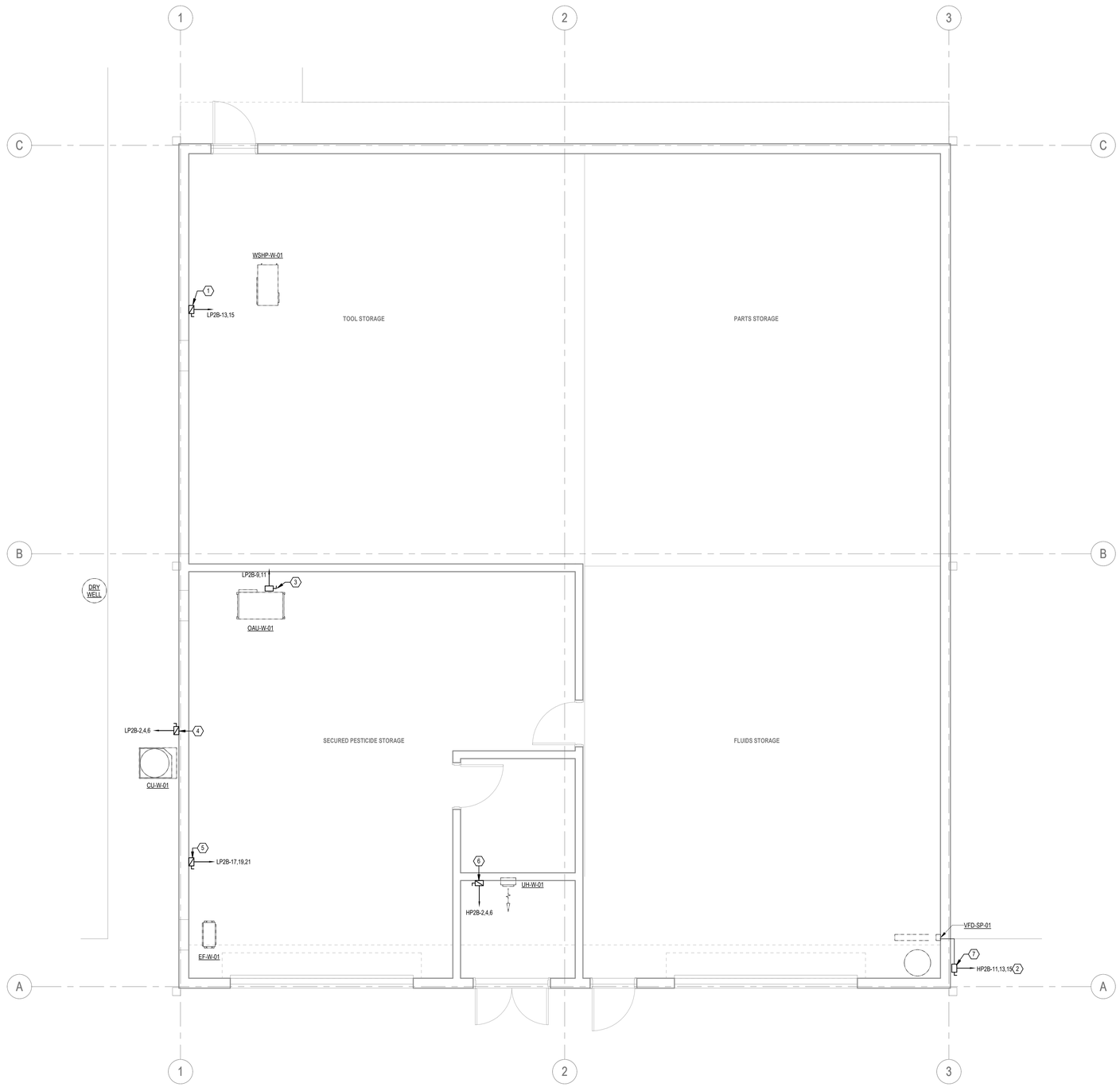


ELECTRICAL EQUIPMENT PLAN - WAREHOUSE - LEVEL 01

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

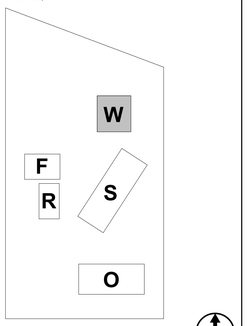
GENERAL NOTES

1. COORDINATE ALL WORK WITH DIV 22 AND 23 PRIOR TO INSTALLATION.
2. PROVIDE LABEL FOR ALL DISCONNECTS TO IDENTIFY ASSOCIATED EQUIPMENT.
3. ENSURE ALL DISCONNECTS ARE ACCESSIBLE.

KEYED NOTES 1

NUMBER	DESCRIPTION
1	CONNECTION TO WATER SOURSE HEAT PUMP, WSHP-XX, AND CIRCUIT AS SHOWN. PROVIDE 250V, 30A, 2P, 2F, NEMA 1 FUSIBLE DISCONNECT SWITCH WITH THREE (2) 15A RK5 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
2	CONNECTION TO WELL PUMP, SP-01, AND CIRCUIT AS SHOWN. PROVIDE 600V, 30A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26. CONNECT DISCONNECT SWITCH DOWNSTREAM OF ASSOCIATED VFD. DIV 23 TO FURNISH VFD AND DIV 26 TO INSTALL IN THE WAREHOUSE. COORDINATE EXACT LOCATION WITH DIV. 23 PRIOR TO ROUGH-IN AND INSTALLATION. REFER TO SITE PLAN SHEET ES-101 FOR WELL PUMP CONNECTION.
3	CONNECTION TO OUTSIDE AIR HANDLER UNIT, OAU-W-01, AND CIRCUIT AS SHOWN. PROVIDE 600V, 30A, 3P, NF, NEMA 1 NON FUSIBLE DISCONNECT SWITCH. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26. CONNECT DISCONNECT SWITCH DOWNSTREAM OF ASSOCIATED VFD. DIV 23 TO FURNISH VFD AND DIV 26 TO INSTALL IN THE MAIN ELECTRICAL ROOM. COORDINATE EXACT LOCATION WITH DIV. 23 PRIOR TO ROUGH-IN AND INSTALLATION. PROVIDE AUXILIARY CONTACT FROM DISCONNECT TO VFD SO THAT VFD WILL SHUT DOWN WHEN DISCONNECT IS OPEN AND THEN RE-ENGAGED WHEN THE DISCONNECT IS CLOSED.
4	CONNECTION TO CONDENSING UNITS, CU-W-01, AND CIRCUIT AS SHOWN. PROVIDE 600V,60A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 45A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26. PROVIDE LABEL FOR DISCONNECT SWITCH INDICATING ASSOCIATED CONDENSING UNIT.
5	CONNECTION TO EXHAUST FAN, EF-W-01, AND CIRCUIT AS SHOWN. DISCONNECT TO BE 250V, 30A, 3P, 3F, NEMA 3R FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
6	CONNECTION TO UNIT HEATERS, UH-W-01 AND CIRCUIT AS SHOWN. PROVIDE 600V, 30A, 3P, 3F, NEMA 1 FUSIBLE DISCONNECT SWITCH WITH THREE (3) 15A RK1 FUSES. DISCONNECT TO BE FURNISHED AND INSTALLED BY DIV. 26.
7	

KEY PLAN (NOT TO SCALE)



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06/26/2020

ELECTRICAL EQUIPMENT PLAN - WAREHOUSE - LEVEL 01

DRAWN BY DGW	CHECKED BY DGW
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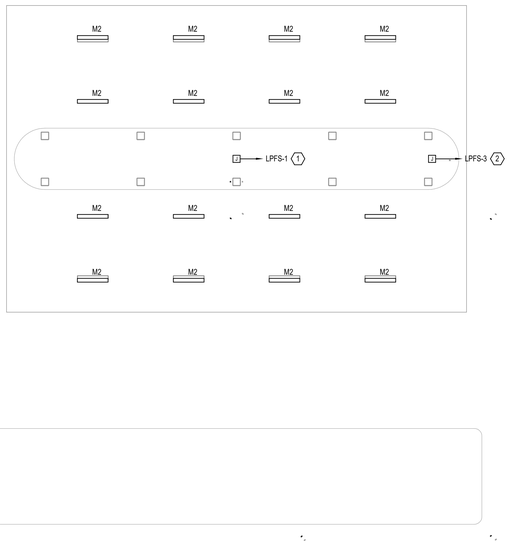
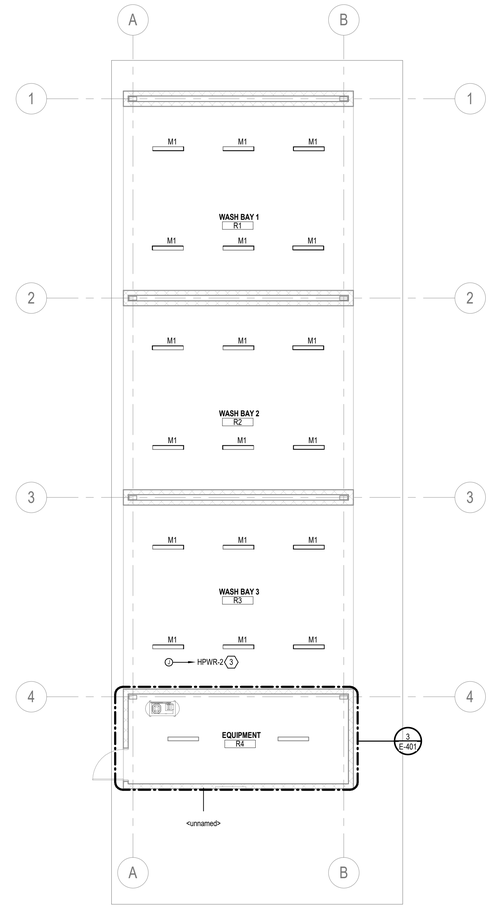


1 POWER & LIGHTING PLAN - FUELING AIR

SCALE: 1/8" = 1'-0"



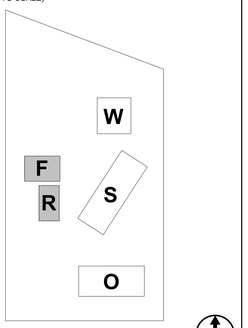
2 POWER & LIGHTING PLAN - WASH RACK

SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	PROVIDE POWER FOR FUEL SYSTEM CONTROLLER. PROVIDE (2) #8, (1) #10 IN 3/4 PVC CONDUIT. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MANUFACTURER PRIOR TO INSTALLATION.
2	PROVIDE CIRCUIT AND CONTROLS FROM MAINTENANCE SHOP ELECTRICAL RM MT TO FUELING STATION LIGHTING. FUELING STATION LIGHTING TO BE CONTROLLED VIA TIME CLOCK. PROVIDE (2) #8, (1) #10 IN 3/4 PVC CONDUIT.
3	ALL WASH BAY LIGHTING TO BE POWER FROM CIRCUIT AS SHOWN. LIGHTING CIRCUIT FOR WASH BAYS TO BE CONTROLLED VIA POWER PACK/RELAY "PP" LOCATED IN THE WASH RACK EQUIPMENT RM #R4.

KEY PLAN (NOT TO SCALE)



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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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Firm Registration No. 15868
Page Southerland Page, Inc.

STATE OF TEXAS
DAVID G. WEATHERLY
115250
LICENSED
PROFESSIONAL ENGINEER
06/26/2020

ELECTRICAL PLAN - WASH RACK & FUELING STATION

DRAWN BY DGW	CHECKED BY DGW
PROJECT NUMBER 418198	PROJECT ABBREVIATION ABBREV
ORIGINAL ISSUE ISSUE FOR PERMIT	DATE 26 JUNE 2020

EP-101RF

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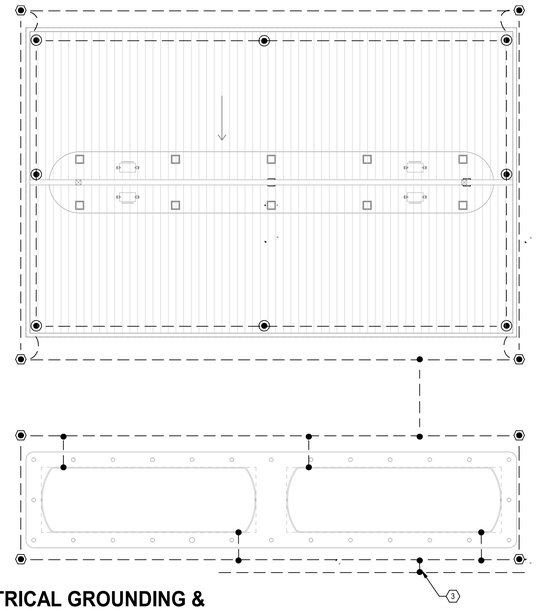
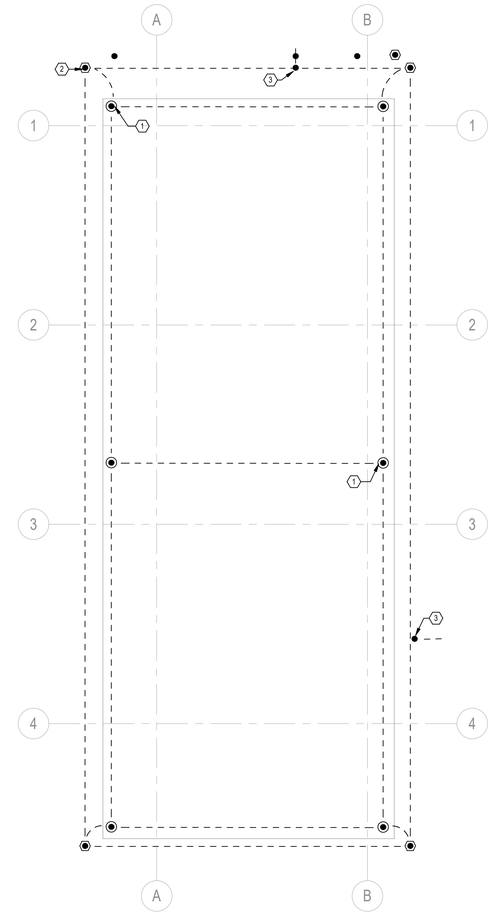


ELECTRICAL GROUNDING & LIGHTNING PROTECTION PLAN - FUELING AIR - ROOF PLAN

2 SCALE: 1/8" = 1'-0"



LIGHTNING PROTECTION PLAN - WASH RACK - ROOF LEVEL

1 SCALE: 1/8" = 1'-0"

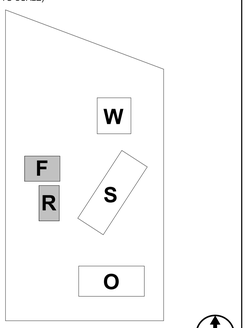
GENERAL NOTES

A. PROVIDE A COMPLETE AND FUNCTIONAL LIGHTNING PROTECTION SYSTEM THAT HAS BEEN CERTIFIED AND IS IN COMPLIANCE WITH THE REQUIREMENTS AND STANDARDS INDICATED IN THE SPECIFICATIONS.
B. A CERTIFICATE SHALL BE PROVIDED TO THE OWNER UPON SATISFACTORY COMPLETION OF INSTALLATION AND INSPECTION OF THE LIGHTNING PROTECTION SYSTEM.
C. ANY BUILDING STRUCTURES THAT DO NOT FALL WITHIN A ZONE OF PROTECTION SHALL BE EQUIPPED WITH A FULL LIGHTNING PROTECTION SYSTEM THAT HAS BEEN PROPERLY INTERCONNECTED IN A NEAT AND WORKMANLIKE MANNER.
D. ORDINARY STRUCTURES NOT EXCEEDING 75 FEET IN HEIGHT SHALL BE PROTECTED WITH CLASS I MATERIALS. ORDINARY STRUCTURES EXCEEDING 75 FEET IN HEIGHT SHALL BE PROTECTED WITH CLASS II MATERIALS.
E. MATERIAL COMPONENTS USED IN LIGHTNING PROTECTION SYSTEMS SHALL BE COMPATIBLE WITH THE BUILDING SURFACE WHERE MOUNTED. IN NO CASE SHALL COPPER MATERIALS BE INSTALLED ON ALUMINUM ROOFING OR SIDING, OR ALUMINUM MATERIALS INSTALLED ON COPPER SURFACES.
F. AN ALUMINUM CONDUCTOR SHALL NOT BE ATTACHED TO A SURFACE COATED WITH ALKALINE-BASED PAINT, EMBEDDED IN CONCRETE OR MASONRY, OR INSTALLED IN A LOCATION SUBJECT TO EXCESSIVE MOISTURE.
G. ALUMINUM MATERIALS SHALL NOT BE USED FOR DIRECT GROUNDING OF AN ALUMINUM LIGHTNING PROTECTION SYSTEM. ALUMINUM MATERIALS SHALL NOT COME INTO DIRECT WITH EARTH.
H. ONLY UL APPROVED BIMETALLIC FITTINGS SHALL BE USED TO JOIN ALUMINUM AND COPPER LIGHTNING PROTECTION SYSTEM COMPONENTS.
I. METAL PARTS OF A STRUCTURE THAT ARE EXPOSED TO DIRECT LIGHTNING FLASHES AND THAT HAVE A METAL THICKNESS OF 3/16-INCH OR GREATER SHALL REQUIRE CONNECTION TO THE LIGHTNING PROTECTION SYSTEM. SUCH CONNECTION SHALL PROVIDE A MINIMUM OF TWO PATHS TO GROUND.
J. AIR TERMINALS SHALL BE REQUIRED ON ALL PROJECTIONS THAT ARE NOT LOCATED WITHIN A ZONE OF PROTECTION, INCLUDING METAL PARTS OF A STRUCTURE HAVING A METAL THICKNESS OF LESS THAN 3/16-INCH.
K. MAIN ROOF CONDUCTORS SHALL INTERCONNECT AIR TERMINALS, INCLUDING PROJECTIONS, AND PROVIDE TWO OR MORE PATHS FROM EACH AIR TERMINAL DOWNWARD, HORIZONTALLY, OR RISING AT NO MORE THAN ¼ PITCH TO CONNECTIONS WITH THE GROUNDING ELECTRODE SYSTEM. METAL ROOFING AND SIDING SHALL NOT BE USED AS A MAIN ROOF CONDUCTOR.
L. DOWN CONDUCTORS COURSED ON OR IN REINFORCED CONCRETE COLUMNS OR ON STURCTURAL STEEL COLUMNS SHALL BE CONNECTED TO THE REINFORCING STEEL OR STUCTURAL STEEL MEMBER AT THEIR UPPER AND LOWER EXTREMITIES. IN THE CASE OF LONG VERTICAL RUNS, AN ADDITIONAL CONNECTION SHALL BE MADE AT INTERVALS NOT EXCEEDING 200 FEET. WHERE THESE BONDING REQUIREMENTS CANNOT BE SATISFIED BECAUSE OF LACK OF ACCESS, PROVISIONS SHAL BE MADE TO ENSURE THE CONNECTIONS OF THESE VERTICAL PATHS AT THE EXTREMITIES AND AT INTERVALS NOT EXCEEDING 200 FEET.
M. METAL BODIES, LOCATED OUTSIDE OR INSIDE A STRUCTURE, THAT CONTRIBUTE TO LIGHTNING HAZARDS BACAUSE THEY ARE GROUNDED OR PROVIDE A PATH TO GROUND FOR LIGHTNING CURRENTS, SHALL BE INTERCONNECTED WITH THE LIGHTNING PROTECTION SYSTEM.

KEYED NOTES (1)

NUMBER	DESCRIPTION
1	ALUMINUM LIGHTNING PROTECTION AIR TERMINAL MOUNTED TO ROOF. REFER TO DETAIL 2/EG-501
2	3/4" X 10' COPPER CLAD STEEL GROUND ROD
3	GROUNDING CONNECTION TO MAIN GRID. REFER TO DETAIL 4/EG-500

KEY PLAN (NOT TO SCALE)



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ELECTRICAL GROUNDING & LIGHTNING PROTECTION PLAN

DRAWN BY DGW	CHECKED BY DGW
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FIRE ALARM SYMBOLS

FACP	FIRE ALARM CONTROL PANEL
MNFP	FIRE ALARM PANEL WITH MASS NOTIFICATION
FAA	FIRE ALARM ANNUNCIATOR PANEL
FFOP	FIREFIGHTERS OVERRIDE PANEL
PACP	PRE-ACTION CONTROL PANEL
NAC	NAC EXTENDER PANEL POWER SUPPLY
FATC	FIRE ALARM TERMINAL CABINET
FDB	FIRE ALARM DOCUMENT BOX
RCC	REMOTE COMMAND CONSOLE
FPC	FIRE PUMP CONTROLLER
PRN	PRINTER
PIV	POST INDICATOR VALVE
PS	SPRINKLER PRESSURE SWITCH
WF	SPRINKLER WATER FLOW SWITCH
VS	VALVE SUPERVISORY SWITCH
LLI	LIQUID LEVEL INDICATOR SWITCH
F	MANUAL PULL STATION
IsO	ISOLATION MODULE
AIM	ADDRESSABLE INPUT MODULE
AOM	ADDRESSABLE OUTPUT MODULE
S	DUCT MOUNTED SMOKE DETECTOR
	SMOKE DETECTOR
S S BT BR	BEAM TYPE SMOKE DETECTOR BT = TRANSMITTER; BR = RECEIVER
	HEAT DETECTOR
CO_2	CARBON DIOXIDE DETECTOR
CO	CARBON MONOXIDE DETECTOR
	STROBE, CEILING MOUNT
	STROBE, WALL MOUNT
C 120	HORN/STROBE, CEILING MOUNT
120	HORN/STROBE, WALL MOUNT
	HORN, CEILING MOUNT
C 120	SPEAKER/STROBE, CEILING MOUNT
120	SPEAKER/STROBE, WALL MOUNT
C	SPEAKER, CEILING MOUNT
	SPEAKER, WALL MOUNT
	FIRE SPRINKLER BELL, WALL MOUNT
FSD	FIRE SMOKE DAMPER
	FIRE FIGHTER'S TELEPHONE JACK

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLER UNIT SHUTDOWN
AIM	ADDRESSABLE INPUT MODULE
ALT	ELEVATOR RECALL, ALTERNATE
AOM	ADDRESSABLE OUTPUT MODULE
AS	AUTOMATIC SPRINKLER
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DECK
BOP	BOTTOM OF PIPE
BOR	BOTTOM OF RISER
BV	BUTTERFLY VALVE
C	CENTERLINE
CAC	COMPOUND ACCESS CONTROL FACILITIES
CV	CHECK VALVE
DDCV	DOUBLE DETECTOR CHECK VALVE ASSEMBLY
DIP	DUCTILE IRON PIPE
DN	DROP NIPPLE
(E)	EXISTING
EC	EXTENDED COVERAGE
EL	ELEVATION
F	FAHRENHEIT
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FDC	FIRE DEPARTMENT CONNECTION
FF	FINISHED FLOOR
FFL	FLOOR FLANGE
FHC	FIRE HOSE CABINET
FHS	FIRE HOSE STATION
FLT	FIRE PUMP FAULT
FS	FLOW SWITCH
FSD	FIRE SMOKE DAMPER
FT	FEET
G	GRADE
GPM	GALLONS PER MINUTE
GSO	SUPPORT ANNEX
GV	GATE VALVE
H	HANGER
HDPE	HIGH DENSITY POLYETHYLENE
HSW	HORIZONTAL SIDE WALL
HV	HOSE VALVE
ID	INSIDE DIAMETER
IN	INCHES
IE	INVERT ELEVATION
KH	KITCHEN HOOD
LOW	FIRE PUMP LOW FUEL
MAX	MAXIMUM
MIN	MINIMUM
(N)	NEW
NAC	NOTIFICATION APPLIANCE CIRCUIT
NIC	NOT IN CONTRACT
NO	NUMBER
NTS	NOT TO SCALE
OBJ	OPEN BAR JOIST
OD	OUTSIDE DIAMETER
OS&Y	OUTSIDE SCREW & YOKE
PIV	POST INDICATOR VALVE
PRI	ELEVATOR RECALL, PRIMARY
PRV	PRESSURE RELEASE VALVE
PS	PRESSURE SWITCH
(R)	REMOVE
(RL)	RELOCATE
RN	RISER NIPPLE
RM	ROOF MANIFOLD
RUN	FIRE PUMP RUNNING
S	SOUNDER BASE
SLC	SIGNALING LINE CIRCUIT
ST	ELEVATOR, SHUNT TRIP
STS	ELEVATOR, SHUNT TRIP SUPERVISION
TMP	LOW SPACE TEMP
TNK	WATER TANK LEVEL
UTL	UTILITY BUILDING
VT	VALVE TAMPER SWITCH
WHS	WAREHOUSE
WP	WEATHERPROOF

GENERAL NOTES

A. ALL SYMBOLS SHOWN ON THIS LEGEND MAY NOT APPEAR ON THIS SET OF DRAWINGS.

B. THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF DESCRIBING THE FIRE ALARM SYSTEM IN COMPLIANCE WITH THE TEXAS ENGINEER PRACTICES ACT. THE FIRE ALARM SYSTEM IS A DELEGATED DESIGN AND THESE DOCUMENTS SHALL NOT BE USED FOR REGULATORY APPROVAL, PERMIT, OR CONSTRUCTION SERVICES.

C. THIS DRAWING ISSUED FOR REVIEW AND IS INTENDED TO DESCRIBE THE GENERAL DESIGN INTENT BY WHICH THE FIRE ALARM PLANNER CAN CORRECTLY PLAN THE SYSTEM(S). SOME PARTS OF THE SYSTEM MAY NOT BE DEPICTED, AND ADDITIONAL DEVICES MAY BE REQUIRED. REFER TO SPECIFICATION SECTION 28 31 00 FOR COMPLETE PERFORMANCE REQUIREMENTS.

D. THE DESIGN, EQUIPMENT, MATERIALS, INSTALLATION, AND WORKMANSHIP SHALL BE IN STRICT ACCORDANCE WITH THE REQUIRED AND ADVISORY PROVISIONS OF NFPA 70 (2014 EDITION), ABA/ADA AND WITH ALL OTHER REQUIREMENTS IDENTIFIED IN THE SPECIFICATIONS. THE ADVISORY PROVISIONS (APENDICES) OF THE NFPA PUBLICATIONS REFERRED TO HEREIN SHALL BE CONSIDERED TO BE MANDATORY, AS THOUGH THE WORD "SHALL" HAD BEEN SUBSTITUTED FOR FOR "SHOULD" WHEREVER IT APPEARS. IF THERE ARE ANY CONFLICTS BETWEEN THE SPECIFICATIONS AND THE REFERENCED STANDARDS AND PUBLICATIONS, THE MOST STRINGENT REQUIREMENT SHALL APPLY.

E. THE FIRE ALARM SYSTEM DESIGN SHALL BE NFPA 72 CODE COMPLIANT AND SHALL MEET ALL LOCAL, STATE, AND FEDERAL CODES AND REGULATIONS, INCLUDING AMENDMENTS AND LH DESIGN GUIDELINES AND STANDARDS.

F. THE FIRE ALARM SUB-CONTRACTOR (CONTRACTOR) SHALL BE RESPONSIBLE FOR OBTAINING, AND PAYING FOR, ANY AND ALL PERMITS REQUIRED PRIOR TO BEGINNING WORK AT THE DIRECTION OF THE GENERAL CONTRACTOR.

G. THE FIRE ALARM SUB-CONTRACTOR (CONTRACTOR) TO ENSURE SYSTEM VOICE INTELLIGIBILITY MEETS THE GUIDELINES IN ANNEX A OF IEC 60849, SOUND SYSTEMS FOR EMERGENCY PURPOSES AND LH DESIGN GUIDELINES. AUDIBLE SYSTEM TO BE TESTED IN ACCORDANCE WITH ANNEX B, CLAUSE B1, OF IEC 60849.

H. COORDINATE SYSTEM REQUIREMENTS WITH ALL CONDITIONS OF THE BUILDING AND SITE INCLUDING, BUT NOT LIMITED TO, BLIND SPACES, SHELVING, LIGHTS, GRILLES AND DIFFUSERS, PIPING, DUCT WORK, DOORS, WINDOWS, EQUIPMENT PLATFORMS, WALLS (FIRE-RATED AND NON-FIRE-RATED), BEAMS, JOISTS, COLUMNS, HVAC EQUIPMENT, ELECTRICAL PANELS AND EQUIPMENT, CEILINGS, AREAS WITHOUT CEILINGS, WALL CONSTRUCTION, FLOORS AND ALL CONSTRUCTION, EQUIPMENT AND BUILDING APPURTENANCES.

I. COORDINATE WORK BETWEEN DIVISION 26, 27, AND 28 FOR SECURITY, COMMUNICATIONS, AUDIO/VISUAL (AV), AND FIRE ALARM SYSTEMS. DIVISION 26 SHALL PROVIDE EMPTY RACEWAY AND BOXES FOR AV, SECURITY, DATA, COMMUNICATIONS, AND FIRE ALARM SYSTEM WIRING, OUTLETS, AND DEVICES. COORDINATE WIDIV 27 AND 28 FOR DATA, COMMUNICATION, SECURITY, AV SYSTEM, AND FIRE ALARM DEVICE AND OUTLET LOCATIONS. REFER TO COMMUNICATION, AV, AND SECURITY, AND FIRE ALARM SYSTEM DRAWINGS FOR WORK BY DIV 27 AND 28.

J. COORDINATE WITH DIVISION 14 FOR INTERFACE BETWEEN FIRE ALARM SYSTEM AND ELEVATOR CONTROLS, WHERE APPLICABLE.

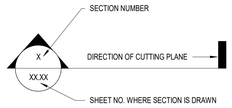
K. COORDINATE WITH DIVISION 23 FOR SEQUENCING OF FSD CLOSURES AND/OR HVAC SHUTDOWN. SEE MECHANICAL SHEETS AND DETAILS FOR HVAC DUCTWORK, EQUIPMENT LOCATIONS, AND ZONE MAPS.

L. SPRINKLER SYSTEM DEVICE LOCATIONS ARE APPROXIMATE AND ARE SHOWN FOR COORDINATION ONLY. CW 21 FIRE PROTECTION FOR FLOW, TAMPER (SUPERVISORY), FIRE PUMP, JOCKEY PUMP, CONTROLLERS, AND POST INDICATOR VALVE LOCATIONS.

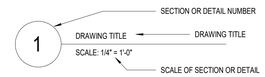
APPLICABLE CODES & STANDARDS

INTERNATIONAL FIRE CODE - 2015 EDITION

GRAPHIC SYMBOLS



EXAMPLE: A SECTION IS CUT ON SHEET FA-101 WITH A TAG OF 1/FA-301.
THEN: SECTION NO. 1 IS DRAWN ON SHEET NO. FA-301



DRAWING INDEX

DWG NUMBER	DWG NAME
FA-001	FIRE ALARM - LEGENDS, ABBREVIATIONS, AND GENERAL NOTES
FA-101O	FIRE ALARM PLAN - LEVEL 01 - OFFICE

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FIRE ALARM - LEGENDS, ABBREVIATIONS, AND GENERAL NOTES

DRAWN BY: KEM	CHECKED BY: DGW
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: ABBREV
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

FA-001
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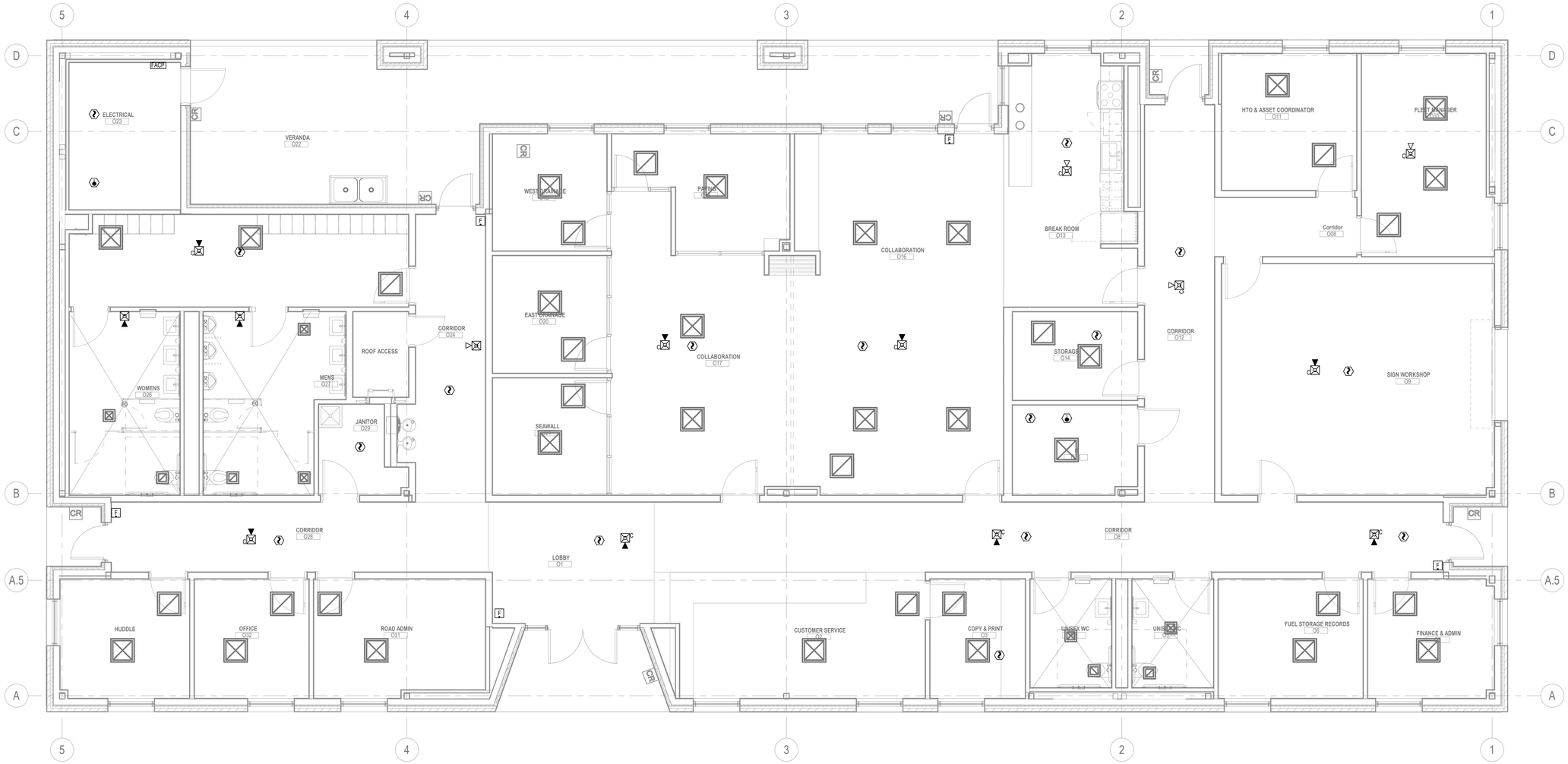
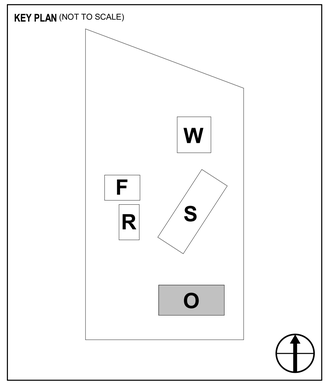
GENERAL NOTES	KEYED NOTES ⟨1⟩
	NUMBER DESCRIPTION



1 **FIRE ALARM PLAN - OFFICE - LEVEL 01**
SCALE: 1/4" = 1'-0"

KEY PLAN (NOT TO SCALE)



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FIRE ALARM PLAN - LEVEL 01 - OFFICE

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PLUMBING ABBREVIATIONS

A	AIR LINE	MP	MEDIUM PRESSURE
ACU	AIR CONDITIONING UNIT	MS	MOP SINK
AD	AREA DRAIN	MV	MEDICAL VACUUM
AFF	ABOVE FINISHED FLOOR	N	NITROGEN
AFG	ABOVE FINISHED GRADE	N2O	NITROUS OXIDE
AHU	AIR HANDLING UNIT	NA	NOT APPLICABLE
AV	ACID VENT	NC	NORMALLY CLOSED
AW	ACID WASTE	NIC	NOT IN CONTRACT
BT	BATH TUB	NO	NORMALLY OPEN
BTU	BRITISH THERMAL UNIT	NTS	NOT TO SCALE
CA	COMPRESSED AIR	O	OXYGEN
CD	CONDENSATE DRAIN	OD	OVERFLOW ROOF DRAIN
CFCI	CONTRACTOR FURNISHED CONTACTOR INSTALLED	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
CFH	CUBIC FEET PER HOUR	OFOI	OWNER FURNISHED OWNER INSTALLED
CL	CENTER LINE		
CO2	CARBON DIOXIDE	OZ	OUNCE
CS	CLINICAL SINK	P	PUMP
CW	COLD WATER	PH	PHASE
D	DRAIN LINE	PIV	POST INDICATOR VALVE
DCO	DOUBLE CLEANOUT	PLBG	PLUMBING
DFU	DRAINAGE FIXTURE UNITS	PRV	PRESSURE REDUCING VALVE
DHR	DOMESTIC HOT WATER RETURN	PSI	POUNDS PER SQUARE INCH
DHW	DOMESTIC HOT WATER	PW	PROTECTED WATER
DIA	DIAMETER	RD	ROOF DRAIN
DWV	DRAIN, WASTE & VENT	REF	REFERENCE
EL	ELEVATION	RO	REVERSE OSMOSIS WATER RETURN
EQ	EQUIPMENT	SAN	SANITARY WASTE
ES	EMERGENCY SHOWER	SD	STORM DRAIN
ET	EXPANSION TANK	SF	SQUARE FEET
EWC	ELECTRIC WATER COOLER	SH	SHOWER
F	FIRE	SPEC	SPECIFICATION
FCO	FLOOR CLEANOUT	SQ	SQUARE
FCU	FAN COIL UNIT	SSD	SUBSOIL DRAIN
FD	FLOOR DRAIN	STM	STEAM
FS	FLOOR SINK	SW	SOFT WATER
G	GAS	T&P	TEMPERATURE AND PRESSURE
GAL	GALLON	TD	TRENCH DRAIN
GCO	GRADE CLEANOUT	TEMP	TEMPERATURE
GPH	GALLONS PER HOUR	TYP	TYPICAL
GW	GREASE WASTE	UH	UNIT HEATER
GWH	GAS WATER HEATER	UR	URINAL
HB	HOSE BIBB	V	VENT
HC	HOSE CABINET	VFD	VARIABLE FREQUENCY DRIVE
HD	HUB DRAIN	VOL	VOLUME
HP	HIGH PRESSURE	VS	SLIDE MEDICAL VACUUM
HR	HOSE REEL	VTR	VENT THRU ROOF
HW	HOT WATER	W	WATT
HWR	HOT WATER RETURN	W.C.	INCHES WATER COLUMN
HWS	HOT WATER SUPPLY	WAGD	WASTE ANESTHETIC GAS DISPOSAL
HZ	HERTZ (FREQUENCY)	WC	WATER CLOSET
IA	INSTRUMENT AIR	WCO	WALL CLEANOUT
IE	INVERT ELEVATION	WG	WATER GAGE
INV	INVERT	WH	WALL HUNG
IW	INDIRECT WASTE	WSFU	WATER SUPPLY FIXTURE UNIT
L	LAVATORY	YR	YEAR
LAP	MEDICAL GAS LOCAL ALARM PANEL	Z	ZONE
LF	LINEAR FEET	ZVB	MEDICAL GAS ZONE VALVE BOX
MA	MEDICAL AIR	°C	CELSIUS
MAP	MASTER ALARM PANEL MEDICAL GAS		
MAX	MAXIMUM		
MG	MEDICAL GAS		
MGO	MEDICAL GAS OUTLET		
MIN	MINIMUM		

PLUMBING SYSTEM LABELS

	EXISTING PIPING/FIXTURES/EQUIPMENT TO REMAIN
	EXISTING PIPING/FIXTURES/EQUIPMENT TO BE REMOVED
CW	COLD WATER
	COLD WATER
HW	HOT WATER
	HOT WATER
HR	HOT WATER RETURN/RECIRCULATION
	HOT WATER RETURN/RECIRCULATION
SW	SOFT WATER
NPCW	NONPOTABLE COLD WATER
NPHW	NONPOTABLE HOT WATER
NPHR	NONPOTABLE HOT WATER RETURN/RECIRCULATION
NPSW	NONPOTABLE SOFT WATER
TW	TEMPERED WATER
PWS	PUIFIED WATER SUPPLY
PWR	PURIFIED WATER RETURN/RECIRCULATION
CA	COMPRESSED AIR
MA	MEDICAL AIR
IA	INSTRUMENT AIR
LA	LABORATORY AIR
V	VACUUM
MV	MEDICAL VACUUM
LV	LABORATORY VACUUM
WAGD	WASTE ANESTHETIC GAS DISPOSAL
N	NITROGEN
O	OXYGEN
N2O	NITROUS OXDE
CO2	CARBON DIOXIDE
H2	HYDROGEN
G	NATURAL GAS
FOS	FUEL OIL SUPPLY
FOR	FUEL OIL RETURN/RECIRCULATION
SS	SANITARY SEWER
SD	STORM DRAIN
SSD	SUBSOIL DRAIN
OD	OVERFLOW DRAIN
GW	GREASE WASTE
OW	OIL WASTE
FM	FORCE MAIN
AW	ACID WASTE
V	VENT
GV	GREASE VENT
AV	ACID VENT
GD	GARAGE DRAIN

VALVE SYMBOLS

DOUBLE LINE | SINGLE LINE

- GATE VALVE (GENERIC VALVE SYMBOL)
- CHECK VALVE
- NON-SLAM (SPRING) CHECK VALVE
- BUTTERFLY VALVE
- DIAPHRAGM VALVE
- BALL VALVE
- COMBINATION BALANCING & SHUT-OFF VALVE
- PLUG VALVE
- SELF-ACTUATING REGULATOR (DIAPHRAGM-TYPE ACTUATOR UON)
- PRESSURE REDUCING VALVE INDICATING LOW SIDE PRESSURE
- PRESSURE RELIEF/SAFETY VALVE INDICATING RELIEF PRESSURE
- TEMPERATURE CONTROL VALVE
- THREE-WAY VALVE (BALL TYPE BODY SHOWN)
- GLOBE VALVE
- GLOBE VALVE, SEALED STEM
- ANGLE VALVE
- CIRCUIT SETTER
- AUTOMATIC AIR VENT
- MANUAL AIR VENT
- VACUUM BREAKER

MANUAL ACTUATOR SYMBOLS

- HANDWHEL ACTUATOR, NON-RISING STEM
- HANDWHEL ACTUATOR, RISING STEM, OUTSIDE SCREW AND YOKE (OS&Y)
- LEVER ACTUATOR
- GEAR ACTUATOR (HANDWHEEL OR CRANK)

NOTE: VALVE TYPE GRAPHICS ARE SHOWN FOR SIZES 4 INCH NOMINAL AND LARGER, MAY OR MAY NOT BE DESCRIBED ON VALVE SIZES SMALLER THAN 4 INCH NOMINAL

GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE WORK OF OTHER TRADES TO AVOID CONFLICTS AND TO MINIMIZE INTERRUPTION OF SERVICES.
2. ALL WORK, METHODS, AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE PREVAILING BUILDING CODE, INSPECTION REGULATIONS AND ALL OFFICIALS HAVING JURISDICTION.
3. DUE TO THE SCALE OF DRAWINGS, NOT ALL PIPING AND APPURTENANCES TO BE PROVIDED ARE SHOWN. CONTRACTOR SHALL PROVIDE SERVICES INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING: PIPING INSIDE WALLS AND CHASES TO SERVE ADJACENT PLUMBING FIXTURES AND EQUIPMENT, INDIVIDUAL FIXTURE SUPPLIES AND DRAINS, PIPING OFFSETS, VALVES, TRAPS, GAUGES, STRAINERS, AND UNIONS TO ENSURE THE COMPLETE AND FUNCTIONING INSTALLATION OF FIXTURES AND EQUIPMENT.
4. CONTRACTOR SHALL COORDINATE ROUTING OF PIPING BELOW SLAB WITH COLUMN FOOTINGS, GRADE BEAMS, UNDERGROUND PLUMBING AND ELECTRICAL UTILITIES, AND OTHER SUB-SURFACE BUILDING ELEMENTS.
5. DO NOT ROUGH-IN BASED UPON THESE DRAWINGS. REFER TO LATEST DRAWINGS PREPARED BY THE ARCHITECT. THE FINAL LOCATIONS OF ALL PIPING SHALL ALLOW INSTALLATION OF FIXTURES WITHOUT THE NEED TO FURR-OUT WALLS.
6. VERIFY EXACT LOCATION OF EQUIPMENT PRIOR TO ROUGH-IN OF DRAINS AND CLEANOUTS.
7. NO PIPING IS TO BE INSTALLED OPEN TO PUBLIC VIEW UNLESS NOTED OTHERWISE.
8. DO NOT INSTALL PIPING AT LOCATIONS THAT INTERFERE WITH SERVICE ACCESSIBILITY TO EQUIPMENT.
9. ALL PENETRATIONS THROUGH FLOOR SLABS AND EXTERIOR WALLS SHALL BE SEALED WATERTIGHT.
10. INSTALL FIXTURES ACCORDING TO ADA/TAS REQUIREMENTS.
11. WHEREVER EXISTING PIPING SYSTEMS ARE CONNECTED TO, RE-ROUTED, OR CAPPED, CLEAN AND TEST THE ENTIRE SECTION OF THE SYSTEM AFFECTED IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS.
12. SAWCUT OR COREDRILL AND REMOVE EXISTING FLOOR SLAB AS REQUIRED TO PROVIDE NEW FIXTURES, CLEANOUTS, AND UNDERSLAB WATER, WASTE AND VENT PIPING. PATCH AND REFINISH FLOOR TO MATCH EXISTING. COORDINATE WITH STRUCTURAL ENGINEER PRIOR TO CUTTING OR DRILLING SLAB.
13. SAWCUT AND REMOVE EXISTING PAVING AND SIDEWALKS AS REQUIRED TO PROVIDE NEW SERVICES. PATCH AND RE-FINISH TO MATCH EXISTING.
14. ALL EXISTING WALLS, FLOORS, DRIVEWAYS, SIDEWALKS, PARKING AREAS, FENCING, ETC. DISTURBED DUE TO WORK DONE AND THAT ARE TO REMAIN SHALL BE REPAIRED TO CONDITION THAT IS ACCEPTABLE TO THE ARCHITECT/ENGINEER AND OWNER.
15. INVERT ELEVATIONS LISTED ARE APPROXIMATE. PRIOR TO CONSTRUCTION, FIELD VERIFY EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS REQUIRED TO ENSURE PROPER CONNECTIONS TO UTILITIES.
16. PRIOR TO CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A COPY OF THE OWNER'S MOST RECENT RULES AND REGULATIONS FOR CONSTRUCTION. THE CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH SUCH RULES AND REGULATIONS.
17. SITE INSPECTION: CONTRACTOR SHALL VISIT THE SITE OF WORK PRIOR TO SUBMISSION OF HIS BID AND THOROUGHLY FAMILIARIZE HIMSELF WITH THE WORKING CONDITIONS AND EXACT NATURE OF THE WORK. SUBMISSION OF A BID ACKNOWLEDGES FULL RESPONSIBILITY FOR PROVIDING ALL NECESSARY LABOR AND MATERIALS TO ENSURE COMPLETE, FUNCTIONAL, AND COMPLIANT SYSTEMS. FAILURE TO MEET THIS REQUIREMENT SHALL NOT BE CONSIDERED JUSTIFICATION FOR OMISSIONS, FAULTY WORK, OR THE PAYMENT OF ADDITIONAL COMPENSATION.
18. CONTRACTOR SHALL COORDINATE ROUTING OF PIPING IN CEILING SPACES WITH MECHANICAL AND ELECTRICAL EQUIPMENT, DUCTWORK AND CONDUIT. INSTALL TO CONSERVE HEADROOM AND TO CREATE MINIMUM INTERFERENCE WITH USE OF SPACE. SHOULD A CONFLICT OCCUR THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER PRIOR TO INSTALLING AN ALTERNATE PIPING PLAN. GROUP PIPING AT COMMON ELEVATIONS WHENEVER PRACTICAL.
19. PRIOR TO ANY ROUGH-INS, COORDINATE ALL FIXTURE AND EQUIPMENT LOCATIONS AND CONNECTION REQUIREMENTS WITH LATEST MANUFACTURER RECOMMENDATIONS AND DRAWINGS AND SPECIFICATIONS PREPARED BY THE ARCHITECT AND OTHER CONSULTANTS (FOOD SERVICE, LABORATORY PLANNING, ETC.). MAKE ADJUSTMENTS AND PROVIDE SERVICES AS REQUIRED.
20. ALL PENETRATIONS THROUGH RATED PARTITIONS AND FLOOR SLABS SHALL BE SEALED TO PROVIDE A FIRE/SMOKE RATING EQUAL TO OR GREATER THAN THE RATING OF THE PARTITION OR FLOOR SLAB. REFER TO ARCHITECTURAL DRAWINGS FOR RATINGS.
21. LOCATE VENT TERMINALS AND FLUES THROUGH ROOF TO MAINTAIN A MINIMUM OF 15'-0"" HORIZONTALLY FROM AND 3'-0"" VERTICALLY ABOVE ALL OUTSIDE AIR INTAKES, OPERABLE WINDOWS, DOORS, AND ANY OTHER BUILDING OPENINGS.
22. ALL VALVES INDICATED ON DRAWINGS SHALL BE LINE-SIZED (THE SAME SIZE AS THE PIPE THEY SERVE) UNLESS NOTED OTHERWISE.
23. PROVIDE LOCKING ACCESS PANELS ACCEPTABLE TO ARCHITECT/OWNER AS REQUIRED TO ENSURE ACCESS TO VALVES AND WATER HAMMERS.
24. PROVIDE CLEANOUTS IN ADDITION TO THOSE SHOWN AS REQUIRED BY CODE.
25. ALL ABOVE SLAB ON GRADE FLOOR DRAINS, P-TRAPS, AND CONNECTED DRAINAGE PIPING RECEIVING CONDENSATE, ICE MACHINE WASTE, OR CONVEYING CONTENTS HAVING TEMPERATURES BELOW 55°F SHALL BE PROPERLY INSULATED TO THE FIRST VERTICAL OFFSET AND VAPOR SEALED TO PREVENT CONDENSATION.
26. UPON COMPLETION OF WORK, THOROUGHLY ROD AND FLUSH OUT ALL GRAVITY DRAINAGE PIPING TO ENSURE IT IS FREE FROM BLOCKAGES AND FLOWING FREELY.
27. UNLESS NOTED OTHERWISE, ADDITIONAL PRECAUTIONARY MEASURES MUST BE PROVIDED IN SPECIAL ROOMS AND AREAS AND ABOVE SPECIAL EQUIPMENT. THESE SPACES INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING: IDF, MDF, SERVER, ELECTRICAL, TELECOM, FOOD STORAGE, FOOD PREPARATION, FOOD SERVING, CLEAN ROOMS, STERILE AREAS, DINING ROOMS, OPERATING ROOMS, IMAGING ROOMS, AND OVER VFD'S AND CONTROL PANELS. AT SUCH LOCATIONS, PROVIDE AUXILIARY DRAIN PANS BENEATH ALL WATER, STORM, WASTE AND VENT PIPING TO DIVERT POSSIBLE LEAKAGE OR CONDENSATION. PANS SHALL BE SUSPENDED FROM STRUCTURE ABOVE WITH GALVANIZED THREADED HANGER RODS AND HARDWARE. PANS SHALL BE GALVANIZED OR STAINLESS STEEL CONSTRUCTION, WITH ALL SOLDERED SEAMS AND JOINTS, MINIMUM 4"" DEEP, SLOPED, WITH A MINIMUM 1-1/4"" DRAIN OUTLET AT THE LOW POINT OF THE PAN. PROVIDE DIELECTRIC ADAPTER AND TYPE DWV COPPER DRAIN LINE AND FITTINGS SLOPED TO NEAREST APPROVED INDIRECT WASTE RECEPTOR.
28. EXISTING WATER, WASTE, AND VENT UTILITIES SHALL BE MODIFIED AS REQUIRED FOR THE INSTALLATION OF NEW PLUMBING FIXTURES. REFER TO PLUMBING FLOOR PLANS FOR POINTS OF CONNECTION.
29. PRIOR TO BEGINNING CONSTRUCTION, FIELD VERIFY THE EXACT LOCATION, SIZE, DEPTH, DIRECTION OF FLOW, CAPACITY, PIPE MATERIAL, AND CONDITION OF EXISTING PIPING TO ENSURE THAT PROPER CONNECTIONS TO AND EXTENSION OF SUCH UTILITIES CAN BE MADE.

APPLICABLE CODES & STANDARDS

PLUMBING CODE - 2015 INTERNATIONAL PLUMBING CODE
BUILDING CODE - 2015 INTERNATIONAL BUILDING CODE
2015 INTERNATIONAL FUEL GAS CODE
2015 IECC
TAS - TEXAS ACCESSIBILITY STANDARD - LATEST ADOPTED VERSION
TDSHS - TEXAS DEPARTMENT OF STATE HEALTH SERVICES

DESIGN CONDITIONS

STATIC PRESSURE -N/A
RESIDUAL PRESSURE -N/A
FLOW AT RESIDUAL PRESSURE -N/A
DATE OF TEST -N/A

PIPE MATERIAL LIST

DOMESTIC WATER PIPING:
ABOVE GRADE INSIDE THE BUILDING, PIPE 2-1/2" AND SMALLER SHALL BE:
ASTM B 88 TYPE L SEAMLESS COPPER WATER TUBE WITH WROUGHT COPPER FITTINGS, ANSI B16.22. SOLDER MATERIAL SHALL BE 95.5% LEAD FREE, ASTM B 32. THE USE OF DRILLED-T CONNECTIONS IS NOT PERMITTED.

ABOVE SLAB INSIDE THE BUILDING, PIPE 3" AND LARGER SHALL BE:
ASTM B 88 TYPE L SEAMLESS COPPER WATER TUBE WITH GROOVED-JOINTS AND GROOVED-JOINT FITTINGS.

BELOW SLAB WITHIN 5'-0" OF THE BUILDING, PIPE 3" AND LARGER SHALL BE:
DUCTILE IRON PIPE WITH STANDARD OR COMPACT MECHANICAL JOINT FITTINGS AND MECHANICAL JOINTS.

BELOW SLAB WITHIN 5'-0" OF THE BUILDING, PIPE 2-1/2" AND SMALLER SHALL BE:
SCHEDULE 40 PVC.

SANITARY WASTE, SANITARY VENT, STORM DRAINAGE AND OVERFLOW DRAINAGE:

ABOVE SLAB ON GRADE INSIDE BUILDING SHALL BE:
SERVICE WEIGHT NO-HUB CAST IRON SYSTEM. PIPE AND FITTINGS SHALL CONFORM TO ASTM A888 OR CISPI 301. JOINT GASKETS SHALL CONFORM TO ASTM C564. MECHANICAL COUPLING JOINTS SHALL BE ALL STAINLESS STEEL SHIELDED, CONFORMING TO ASTM C1277 OR ASTM C1540.

BELOW GRADE SHALL BE:
SCHEDULE 40 DWV POLYVINYL CHLORIDE PIPE WITH SOLVENT WELDED JOINTS AND FITTINGS TO ASTM D-1784-82

COMPRESSED AIR PIPING TO BE:
ABOVE SLAB SCHEDULE 40 GALVANIZED PIPE WITH GALVANIZED FITTINGS.

BELOW SLAB COMPRESSED AIR PIPING UNDERGROUND PE PIPE WITH FUSION JOINTS.

INSULATION - MINERAL FIBER, ASTM C547, PREFORMED PIPE INSULATION, TYPE I:

STORM AND OVERFLOW STORM PIPE SHALL BE 1" THICK

DOMESTIC/INDUSTRIAL COLD WATER SHALL BE 1" THICK

DOMESTIC/INDUSTRIAL HOT AND RECIRCULATED HOT WATER PIPE

NPS 1-1/2" AND SMALLER SHALL BE 1" THICK

NPS 1-1/2" AND LARGER SHALL BE 1-1/2" THICK

NOTE:
CONTRACTOR SHALL REFER TO THE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

PLUMBING SYMBOLS

- ELBOW DOWN
- ELBOW UP
- TEE DOWN
- TEE UP
- PIPE CAP
- FLANGE
- UNION
- ANCHOR
- PIPE GUIDE
- PIPE SLEEVE
- ECCENTRIC REDUCER
- CONCENTRIC REDUCER
- DIRECTION OF FLOW
- DIRECTION OF PITCH
- PIPE FLEXIBLE CONNECTION
- EXPANSION JOINT
- FLOW SENSING DEVICE
- GAS REGULATOR
- HEAT TRACE TERMINATION
- HEAT TRACE POWER
- NFWH — NON FREEZE WALL HYDRANT
- HB — HOSE BIBB
- YH — YARD HYDRANT
- FLOOR DRAIN
- OVERFLOW DRAIN
- ROOF DRAIN
- FLOOR SINK
- P-TRAP
- WALL OR END CLEANOUT
- FLOOR CLEANOUT
- DOUBLE CLEANOUT
- BALL VALVE
- GATE VALVE
- GLOBE VALVE
- BUTTERFLY VALVE
- GAS VALVE
- BALANCING VALVE
- CHECK VALVE
- STRAINER
- PRESSURE REDUCING & REGULATING VALVE
- S — SOLENOID VALVE
- RELIEF VALVE
- PRESSURE OR VACUUM SWITCH
- THERMOMETER
- PRESSURE GAUGE WITH GAUGE COCK
- WATER HAMMER ARRESTOR
- FILTER
- INLINE PUMP
- PUMP

PIPING SYSTEM LABELS

EXAMPLE:

2" DCW — SYSTEM SERVICE ABBREVIATION — NOMINAL PIPE SIZE (IN INCHES)

- XXX-1 — PLUMBING FIXTURE DESIGNATION
- PIPE IN SECTION
- PIPE BREAK
- FLOW ARROW
- STANDARD BREAK
- SAW CUT SLAB AREA FOR NEW PIPING
- KEYED NOTE
- POINT OF DISCONNECTION
- POINT OF CONNECTION (NEW TO EXISTING)
- NEW ITEMS (PIPING/EQUIPMENT)
- EXISTING ITEMS TO REMAIN
- EXISTING ITEMS TO BE DEMOLISHED OR RELOCATED
- LIMIT OF EXISTING ITEMS TO BE REMOVED

GRAPHIC SYMBOLS

SECTION NUMBER
DIRECTION OF CUTTING PLANE
SHEET NO. OF THE PACKAGE ON WHICH SECTION IS DRAWN

EXAMPLE: ASSUME A SECTION IS CUT ON DWG. P2.01 WITH A TAG OF 1/P6.01. THE SECTION No. 1 IS ON DRAWING No. P6.01.

SECTION OR DETAIL NUMBER
DRAWING TITLE
SCALE: 1/4" = 1'-0"
DRAWING TITLE
SCALE OF SECTION OR DETAIL
AREA OF DETAIL ENLARGED
DETAIL NO.
SHEET NO. ON WHICH DETAIL IS DRAWN
RISER TYPE
RISER NUMBER
PIPE SIZE

DRAWING INDEX

DWG NUMBER	DWG NAME
PLUMBING - SITE	
P-101S	PLUMBING - SITE PLAN
PLUMBING - TYPICAL	
P-001	PLUMBING - LEGENDS, ABBREVIATIONS, AND GENERAL NOTES
P-501	PLUMBING - DETAILS
P-601	PLUMBING - SCHEDULES
PLUMBING - OFFICE	
PU-101O	PLUMBING FLOOR PLAN - OFFICE - UNDERFLOOR
P-101O	PLUMBING FLOOR PLAN - OFFICE - LEVEL 01
P-102O	PLUMBING ROOF PLAN - OFFICE
P-401O	PLUMBING - ENLARGED PLANS
PLUMBING - MAINTENANCE SHOP	
PU-101M - A	PLUMBING FLOOR PLAN - SHOP - UNDERFLOOR - AREA A
PU-101M - B	PLUMBING FLOOR PLAN - SHOP - UNDERFLOOR - AREA B
P-101M - A	PLUMBING FLOOR PLAN - SHOP - LEVEL 01 - AREA A
P-101M - B	PLUMBING FLOOR PLAN - SHOP - LEVEL 01 - AREA B
P-613M	PLUMBING - SHOP RISERS
PLUMBING - WAREHOUSE	
PU-101W	PLUMBING FLOOR PLAN - WAREHOUSE - UNDERFLOOR
P-101W	PLUMBING FLOOR PLAN - WAREHOUSE - LEVEL 01
PLUMBING - WASHRACK & FUELAIR	
P-101FR	PLUMBING - FLOOR PLAN - WASH RACK/FUELAIR

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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Firm Registration No. 958
Page Southerland Page, LLP

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JOHN G. NEUBAUER
No. 18203
LICENSED
06/26/2020

PLUMBING - LEGENDS, ABBREVIATIONS, AND GENERAL NOTES

DRAWN BY: LO	CHECKED BY: SWS
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

P-001
SHEET NUMBER

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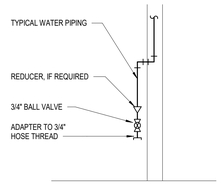
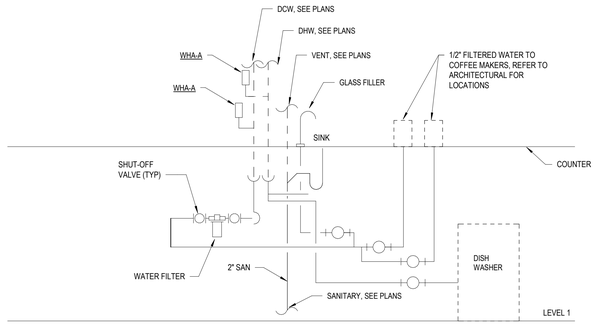


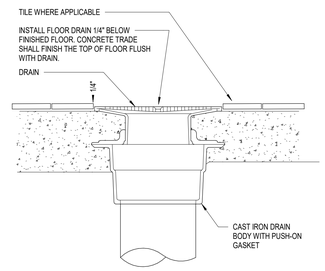
ELEVATION
THREADED PIPING

NOTES:
1. DRAIN ALL LOW POINTS AS INDICATED ABOVE.
2. WHERE SCALE POCKETS ARE SHOWN ON PIPE RISER DIAGRAMS AND/OR PLANS LOCATE DRAIN AT BOTTOM OF SCALE POCKET.

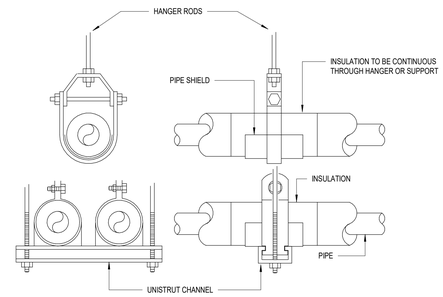
11 TYPICAL DRAIN VALVE CONNECTION
SCALE: NONE



10 KITCHENETTE SECTION OFFICE
SCALE: NONE



6 FINISHED FLOOR DRAIN
SCALE: NOT TO SCALE



3 PLUMBING PIPE HANGER DETAIL
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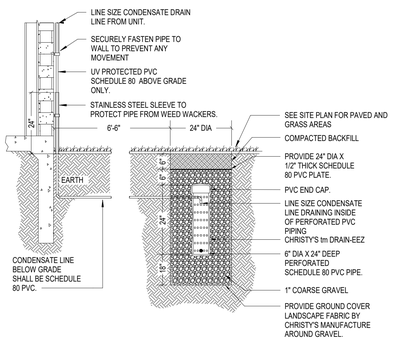
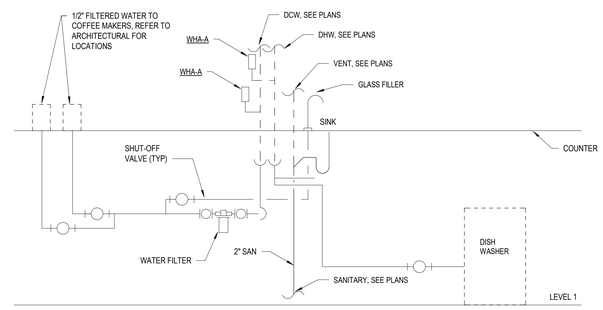
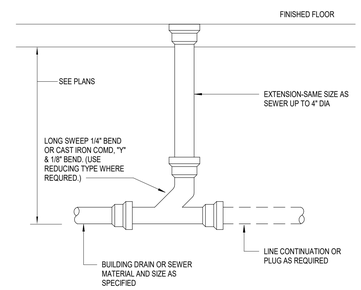


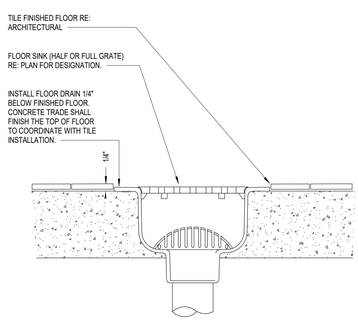
9 DRYWELL DETAIL
SCALE: NOT TO SCALE



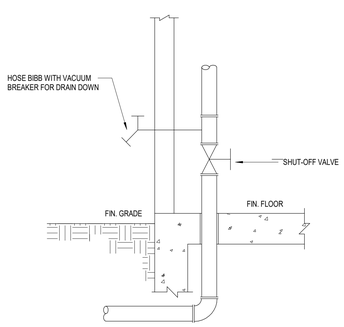
5 KITCHENETTE SECTION SHOP
SCALE: 1/2" = 1'-0"



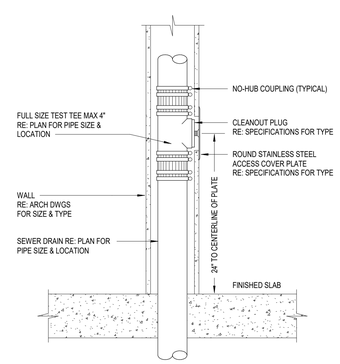
2 FLOOR CLEANOUT
SCALE: NOT TO SCALE



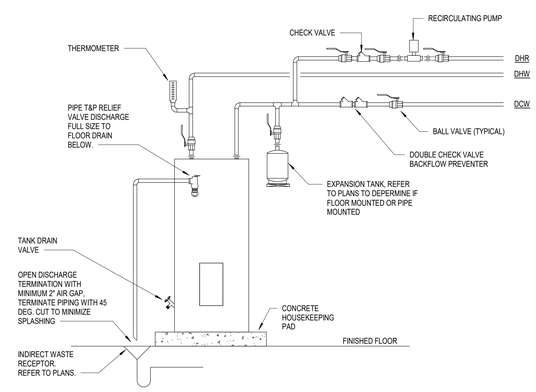
8 FLOOR SINK
SCALE: NOT TO SCALE



7 INTERNAL COLD WATER BUILDING ENTRY DETAIL
SCALE: NONE



4 TYPICAL WALL CLEANOUT
SCALE: NOT TO SCALE



1 DOMESTIC WATER HEATER DETAIL
SCALE: NOT TO SCALE

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS
Firm Registration No. 958
Page Southerland Page, LLP
STATE OF TEXAS
JOHN G. NEUBAUER
LICENSED
06/26/2020

PLUMBING - DETAILS

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PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
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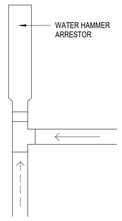

WATER HAMMER SCHEDULE

PPP INC. MODEL #	PIPE SIZE	SIZE	MARK	AIR CHAMBER	FIXTURE UNIT CAPACITY
SC-500	1/2"	A	WHA-A	60 PSIG	1 TO 11
SC-750	3/4""	B	WHA-B	60 PSIG	12 TO 32
SC-1000	1"	C	WHA-C	60 PSIG	33 TO 60
SC-1250	1 1/4"	D	WHA-D	60 PSIG	61 TO 113
SC-1500	1 1/2"	E	WHA-E	60 PSIG	114 TO 154
SC-2000	2"	F	WHA-F	60 PSIG	155 TO 330

WATER HAMMER ARRESTORS SHALL MEET A.S.S.E. 1010 AND BE SIZED PER PDI STANDARDS

PLUMBING DRAIN SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	CW	HW	WASTE	VENT	TRAP PROTECTION	SPECIFICATION
FD-1	FLOOR DRAIN	JAY R. SMITH	-	-	3"	2"	PRO-SET TRAP GUARD	J.R. SMITH MODEL NUMBER 2005 FLOOR DRAIN, CAST IRON BODY WITH FLANGE, ADJUSTABLE NICKEL BRONZE SQUARE STRAINER AND INTEGRAL REVERSIBLE CLAMPING COLLAR, SEEPAGE OPENINGS.
FD-2	FLOOR DRAIN - ROUND	JAY R. SMITH	-	-	3"	2"	PRO-SET TRAP GUARD	J.R. SMITH MODEL NUMBER 2110 FLOOR DRAIN, CAST IRON BODY WITH FLANGE, CAST IRON ROUND BAR GRATE AND FLASHING COLLAR, SEEPAGE OPENINGS.
FS-1	FLOOR SINK SQUARE	WADE	-	-	REFER TO FLOOR PLANS	2"	PRO-SET TRAP GUARD	WADE MODEL 9140 12" SQUARE FLOOR SINK, 8" SUMP DEPTH, CAST IRON WITH INTERIOR PLASTIC DOME STRAINER AND FULL GRATE.
WCO-1	WALL CLEANOUT	JAY R. SMITH	-	-	4"	-	-	JAY R. SMITH 3100-Y CAST IRON BODY FLANGED RECEPTOR WITH ACID RESISTANT INTERIOR, NICKEL BRONZE RIM, AND SECURED 1/2 GRATE. FLOOR SINK SHALL HAVE 8-1/2" TOP GRATE WITH 6" SUMP, ALUMINUM DOME STRAINER, SEEPAGE FLANGE, MEMBRANE CLAMPING DEVICE.

PLUMBING PUMP SCHEDULE

MARK	LOCATION	MANUFACTURER	MODEL	PUMP HEAD (FT)	FLOWRATE (GPM)	HP	VOLTAGE	PHASE	FREQUENCY
CP-1	OFFICE BUILDING	BELL & GOSSETT	ECOCIRCE XL 20-35	14	3	1/15	115	1	60
CP-2	SHOP BUILDING	BELL & GOSSETT	ECOCIRCE XL 20-35	14	3	1/15	115	1	60

PLUMBING WATER HEATER SCHEDULE

MARK	LOCATION	MANUFACTURER	MODEL	INPUT HEAT (KW)	TEMPERATURE RISE	VOLUME	VOLTAGE	PHASE	Hz	REMARKS
EWH-1	OFFICE BUILDING	A. O. SMITH	DEN-52	9	80°	50	480	3	60	
EWH-2	SHOP BUILDING	A. O. SMITH	DSE-120A	30	80°	120	480	3	60	

P-TANK SCHEDULE

MARK	LOCATION	DESCRIPTION	MANUFACTURER	MODEL	SERVICE	MAXIMUM TANK VOLUME (GALLONS)	MAXIMUM ACCECPTANCE FACTOR	MAXIMUM OPERATING TEMPERATURE	REMARKS
ET-1	OFFICE BUILDING	EXPANSION TANK	AMTROL	ST-12	DOMESTIC HOT WATER	4.4	1	200 °F	
ET-2	SHOP BUILDING	EXPANSION TANK	AMTROL	ST-25V	DOMESTIC HOT WATER	10.3	1	200 °F	

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	MANUFACTURER	LOCATION	CW	HW	WASTE	VENT	SPECIFICATION
EDF-1	ELECTRIC DRINKING FOUNTAIN - ADA	ELKAY		1/2"	-	2"	2"	ELKAY BI-LEVEL HIGH EFFICIENCY COOLER, FILTERED 8 GPH STAINLESS DRINKING FOUNTAIN MODEL NO. LRPB28K.
EES-1	EMERGENCY EYE WASH/FACE SHOWER	BRADLEY		-	1-1/4"	-	-	BRADLEY COMBINATION DRENCH SHOWER AND HALO EYE/FACE WASH WITH STAINLESS STEEL BOWL AND HINGED DUST COVER MODEL NO. S19314DCFW. PROVIDE EMERGENCY THERMOSTATIC MIXING VALVE NAVIGATOR MODEL NO. S19-2150 EFX20 AND EMERGENCY SIGNALING SYSTEM MODEL NO. S19-323D. ALARM SIGNAL TO BE CONNECTED TO THE BAS SYSTEM.
EEW-1	EMERGENCY FACE AND EYE WASH	BRADLEY		1/2	-	-	-	BRADLEY COMBINATION EYE/FACE WASH WITH PLASTIC BOWL MODEL NO. S10-210FW
FCO-1	FLOOR CLEANOUT	JAY R. SMITH		-	-	SEE PLANS	-	J.R. SMITH MODEL 4318 CAST IRON FLOOR CLEANOUT WITH ADJUSTABLE HOUSING, ROUND TOP WITH LOOSE SET CAST IRON COVER, TAPER THREAD BRONZE CLOSURE PLUG AND FLASHING COLLAR.
HB-1	HOSE BIBB	CHICAGO FAUCETS		3/4"	-	-	-	CHICAGO NO. 293-E27CP, 1/2" NPT FEMALE THREAD INLET, POLISHED CHROME PLATE, VACUUM BREAKER WITH HOSE THREAD OUTLET.
L-1	LAVATORY - WALL HUNG	AMERICAN STANDARD		1/2"	1/2"	2"	2"	AMERICAN STANDARD LUCERNE WALL HUNG LAVATORY VITREOUS CHINA SINGLE HOLE MODEL NO. 0356.041, ADA COMPLIANT, BATTERY POWERED SELECTRONIC ELECTRONIC PROXIMITY LAVATORY FAUCET 0.5 GPM MODEL NO. 6053.105. PROVIDE MIXING VALVE BRADLEY S59-4000A. McGUIRE NO 155A2 1-1/2" STRAINER DRAIN. McGUIRE 8912 1-1/2" x 1-1/2" CAST BRASS P-TRAP WITH CLEANOUT, TUBING WASTE TO WALL AND ESCUTCHEON. McGUIRE SUPPLIES NO.LF2165CC CHROME PLATED ANGLE SUPPLY WITH 1/2" x 12" RISER AND 1/2" x 3/8" STOP WITH WROUGHT ESCUTCHEON INSULATE DRAIN TAILPIECE, P-TRAP, AND SUPPLIES WITH TRUEBRO OR PLUMBEREX INSULATION KIT.
MS-1	MOP SINK SQUARE	FIAT PRODUCT		3/4"	3/4"	3"	2"	FIAT TERRAZZO MOP SERVICE BASIN 12" DEPTH WITH 6" DROP FRONT 24" X 24" X 12" MODEL TSB3000. FLOOR MOUNTED TYPE PRECAST TERRAZZO MOP SINK WITH ALUMINUM BUMPERGUARD WITH VINYL INSERT MODEL 1239BB AND STAINLESS STEEL WALL GUARDS MODEL MSG. PROVIDE FIAT SERVICE SINK FAUCET MODEL NO. 830-AA.
SK-1	SINK KITCHEN	ELKAY		1/2	1/2"	2"	2"	ELKAY LUSTERTONE CLASSIC STAINLESS STEEL 31" x 22" x 6-1/2", SINGLE BOWL DROP-IN ADA SINK MODEL NO. LRADQ312265PD WITH PERFECT DRAIN. PROVIDE LK110 CLASS FILLER MOUNTED ON SINK. PROVIDE CHICAGO FAUCETS No. 786-E72XKABCP DECK MOUNTED 8" FIXED CENTERS CONCEALED SINK FAUCET, 0.5 GPM, 4" VANDAL PROOF WRISTBLADE HANDLE, CERAMIC 1/4 TURN OPERATING CARTRIDGE. PROVIDE INSINKERATOR STANDARD SERIES BADGER 1, 1/3 HP, 120 V, 60 HZ GARBAGE DISPOSAL WITH HARD ELECTRICAL CONNECTION. McGUIRE NO. 8912 1-1/2" x 1-1/2" CAST BRASS P-TRAP WITH CLEANOUT, TUBING WASTE TO WALL AND ESCUTCHEON. McGUIRE SUPPLIES NO. 167 LK CHROME PLATED ANGLE SUPPLY WITH 1/2" x 12"FLEX RISER AND 1/2" x 3/8" LOOSE KEY STOP WITH WROUGHT ESCUTCHEON. ADJUST FEET TO HEIGHT SPECIFIED BY ARCHITECT.
SK-2	DOUBLE COMPARTMENT SCULLERY SINK	ELKAY		1/2"	1/2"	2"	2"	ELKAY RIGIDBILT STAINLESS STEEL 59-1/4" X 29-3/4" X 12-3/4", FLOOR MOUNT, DOUBLE COMPARTMENT SCULLERY SINK MODEL RNSF82482. SINK IS MANUFACTURED FROM 16 GAUGE 304 STAINLESS STEEL WITH A BUFFED SATIN FINISH, CENTER DRAIN PLACEMENT. SINKS SUPPORTED BY (4) 16 GAUGE STAINLESS STEEL, 1-5/8" O.D. TUBULAR LEGS WITH BULLET SHAPED FEET ADJUSTABLE UP TO 1". CHICAGO FAUCETS No. 786-E72XKABCP DECK MOUNTED 8" FIXED CENTERS CONCEALED SINK FAUCET, 0.5 GPM, 4" VANDAL PROOF WRISTBLADE HANDLE, CERAMIC 1/4 TURN OPERATING CARTRIDGE. McGUIRE 8912 1-1/2" x 1-1/2" CAST BRASS P-TRAP WITH CLEANOUT, TUBING WASTE TO WALL AND ESCUTCHEON. McGUIRE SUPPLIES NO.LF2165CC CHROME PLATED ANGLE SUPPLY WITH 1/2" x 12" RISER AND 1/2" x 3/8" STOP WITH WROUGHT ESCUTCHEON INSULATE DRAIN TAILPIECE, P-TRAP, AND SUPPLIES WITH TRUEBRO OR PLUMBEREX INSULATION KIT.
U-1	URINAL	AMERICAN STANDARD		1"	-	2"	2"	AMERICAN STANDARD No. 6590.001 (WHITE) WASHBROOK WALL HUNG FLUSHING RIM, WASHOUT FLUSH ACTION, ELONGATED 14" RIM FROM WALL, VITREOUS CHINA HIGH EFFICIENCY URINAL, 0.125 GPF. SLOAN ROYAL 186-0.125, SENSOR EXPOSED BATTERY POWERED FLUSH VALVE WITH MECHANICAL MANUAL OVERRIDE BUTTON, AND VACUUM BREAKER. MOUNT FIXTURE AT STANDARD (NON-HANDICAPPED) HEIGHT.
U-2	URINAL-ADA	AMERICAN STANDARD		1"	-	2"	2"	AMERICAN STANDARD No. 6590.001 (WHITE) WASHBROOK WALL HUNG FLUSHING RIM, WASHOUT FLUSH ACTION, ELONGATED 14" RIM FROM WALL, VITREOUS CHINA HIGH EFFICIENCY URINAL, 0.125 GPF. SLOAN ROYAL 186-0.125, SENSOR EXPOSED BATTERY POWERED FLUSH VALVE WITH MECHANICAL MANUAL OVERRIDE BUTTON, AND VACUUM BREAKER. MOUNT FIXTURE AT STANDARD (HANDICAPPED) HEIGHT.
WC-1	WATER CLOSET - WALL MOUNTED	AMERICAN STANDARD	RESTROOMS	1-1/4"	-	4"	2"	AMERICAN STANDARD MODEL NO. 2294.011 WALL-HUNG WATER CLOSET WITH SLOAN "ROYAL" MODEL NO. 111-1.28 BATTERY POWERED FLUSH VALVE, CHURCH MODEL NO. 9500SSCT-047 BLACK OPEN-FRONT SEAT AND J.R. SMITH FLOOR MOUNTED ADJUSTABLE FIXTURE CARRIER SECURELY BOLTED TO FLOOR. MOUNT FIXTURE AT STANDARD (NON-HANDICAPPED) HEIGHT. CARRIER SHALL HAVE A MINIMUM 400 POUND RATING.
WC-2	WATER CLOSET - WALL MOUNTED-ADA	AMERICAN STANDARD	RESTROOMS	1-1/4"	-	4"	2"	AMERICAN STANDARD MODEL NO. 2294.011 WALL-HUNG WATER CLOSET WITH SLOAN "ROYAL" MODEL NO. 111-1.28 BATTERY POWERED FLUSH VALVE, CHURCH MODEL NO. 9500SSCT-047 BLACK OPEN-FRONT SEAT AND J.R. SMITH FLOOR MOUNTED ADJUSTABLE FIXTURE CARRIER SECURELY BOLTED TO FLOOR. MOUNT FIXTURE AT STANDARD (HANDICAPPED) HEIGHT. CARRIER SHALL HAVE A MINIMUM 400 POUND RATING.
WCO-1	WALL CLEANOUT							
WF-1	WASH FOUNTAIN	BRADLEY		1/2"	1/2"	2"	2"	BRADLEY MODEL # 2703-B-TMA, SEMI-CIRCULAR MODEL, ACCOMMODATES 3 USERS AT A TIME. ALL MODELS UTILIZE LESS WATER, ENERGY AND SPACE THAN LAVATORIES EQUIPPED WITH CONVENTIONAL FAUCETS. THE CLASSIC SPRAYHEAD IS CONTROLLED BY AN INFRARED SENSOR, ELECTRONIC PUSHBUTTON OR PIEZO SWITCH, AIR ACTIVATED PUSHBUTTON OR FOOT RAIL. BOWL, PEDESTAL, AND FITTINGS REQUIRE ASSEMBLY. THE OPERATING RANGE IS 20-80 PSI. FLOW RATE CONTROLLED BY VOLUME CONTROL VALVE.
WH-1	WALL HYDRANT	WADE		3/4"	-	-	-	WADE MODEL 8700 ENCASED, NON-FREEZE WALL HYDRANT WITH BOX WITH HINGED LOCKING LID AND ANTI-SIPHON BACKFLOW PREVENTER AND VACUUM BREAKER

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PLUMBING - SCHEDULES

DRAWN BY: LO	CHECKED BY: SWS
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ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

P-601
SHEET NUMBER

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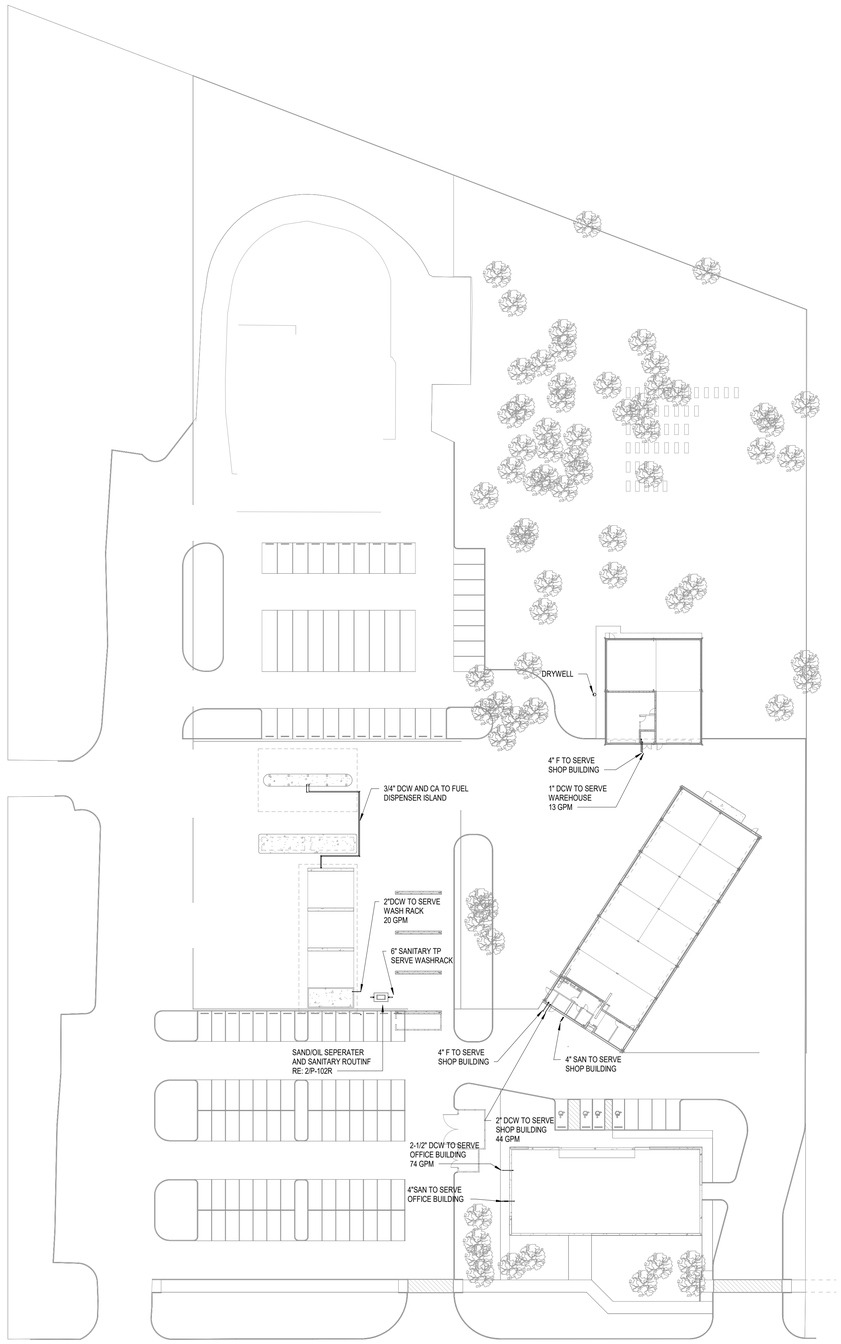


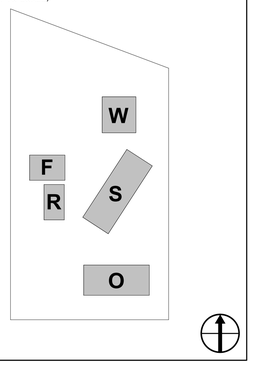
1 **PLUMBING - SITE PLAN**
SCALE: 1" = 40'-0"

KEYED NOTES

NUMBER	DESCRIPTION

GENERAL NOTES

KEY PLAN (NOT TO SCALE)



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PLUMBING - SITE PLAN

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418198	GC_R&B
ORIGINAL ISSUE	DATE
ISSUE FOR PERMIT	26 JUNE 2020

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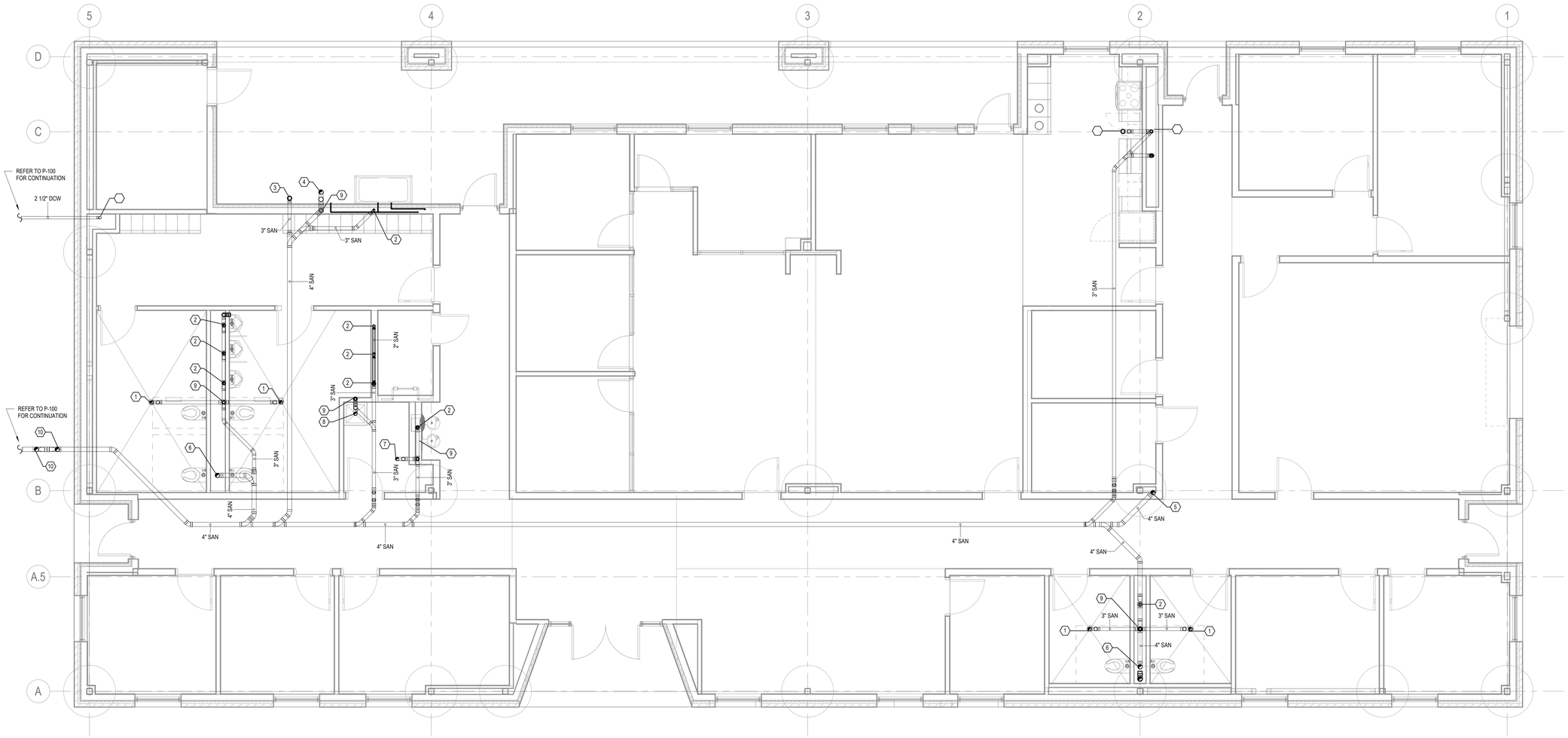
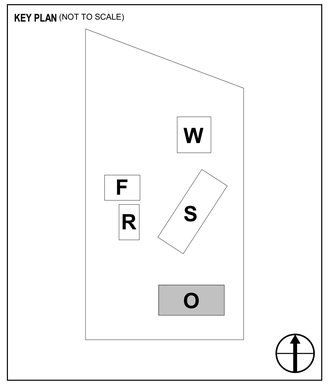
KEYED NOTES

NUMBER	DESCRIPTION
1	3" TRAPPED SANITARY WASTE FROM ABOVE TO SERVE FLOOR DRAIN/SINK.
2	2" SANITARY WASTE UP.
3	3" SANITARY WASTE UP TO CLEANOUT.
4	4" TRAPPED SANITARY WASTE UP TO SERVE FLOOR DRAIN/SINK.
5	4" SANITARY WASTE UP TO CLEANOUT.
6	4" SANITARY WASTE FROM ABOVE.
7	3" TRAPPED SANITARY WASTE UP TO SERVE FLOOR DRAIN/SINK.
8	3" TRAPPED SANITARY WASTE UP TO SERVE MOP SINK.
9	2" VENT UP.
10	4" SANITARY WASTE UP TO TWO-WAY CLEANOUT.



1 **PLUMBING UNDERFLOOR PLAN - OFFICE - LEVEL 01**
SCALE: 1/4" = 1'-0"

KEY PLAN (NOT TO SCALE)



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PLUMBING FLOOR PLAN - OFFICE - UNDERFLOOR

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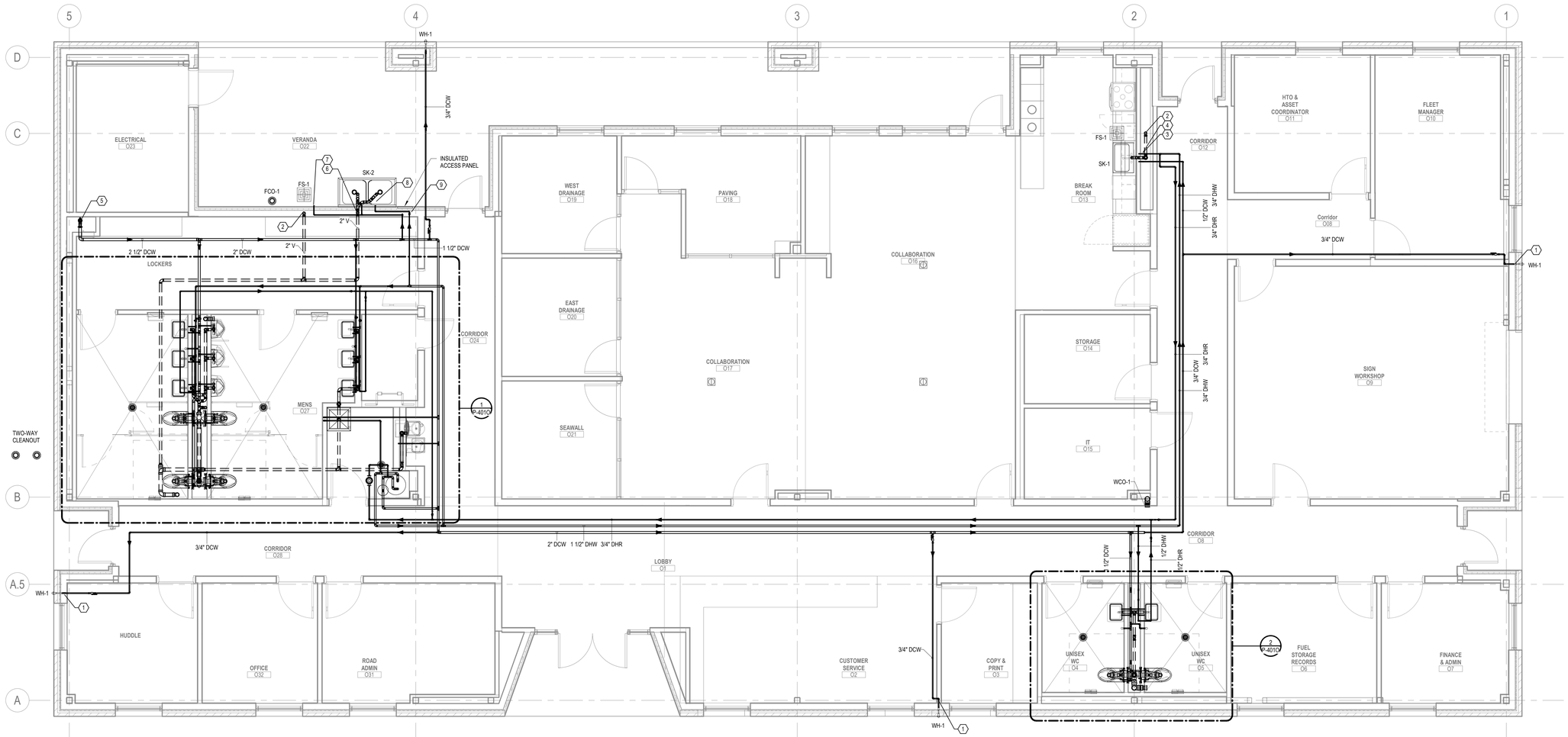
KEYED NOTES

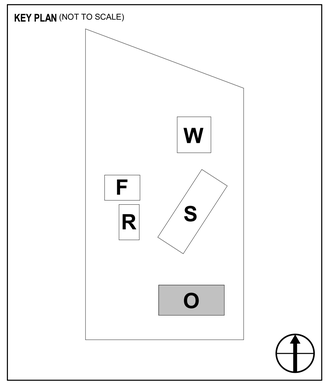
NUMBER	DESCRIPTION
1	3/4" COLD WATER DOWN TO WALL HYDRANT.
2	2" VENT UP FROM BELOW SLAB.
3	REFER TO DETAIL 10/P-501 FOR ADDITIONAL DCW AND DHW CONNECTIONS.
4	1/2" COLD WATER, 1/2" HOT WATER, 2" SANITARY WASTE DOWN AND 2" VENT UP TO SERVE FIXTURE.
5	2-1/2" COLD WATER FROM BELOW SLAB TO SERVE BUILDING. LOCATE SHUT-OFF VALVE BEHIND ACCESS PANEL.
6	2" SANITARY WASTE DOWN TO BELOW SLAB AND 2" VENT UP.
7	1/2" DCW TO ICE-MAKER, TERMINATE WITH BALL VALVE.
8	1/2" DCW AND DHW TO SINK.
9	1/2" DCW AND DHW DOWN. PROVIDE SHUT-OFF VALVES BEHIND INSULATED ACCESS PANEL AT 3'-0" ABOVE FINISHED FLOOR AT CENTERLINE. STUB OUT OF WALL BELOW SINK AND ICE MAKER CONNECTION AND TERMINATE WITH DRAIN VALVE CONNECTION. REFER TO 11/P-501.



1 PLUMBING FLOOR PLAN - OFFICE - LEVEL 01

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

KEY PLAN (NOT TO SCALE)



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PLUMBING FLOOR PLAN - OFFICE - LEVEL 01

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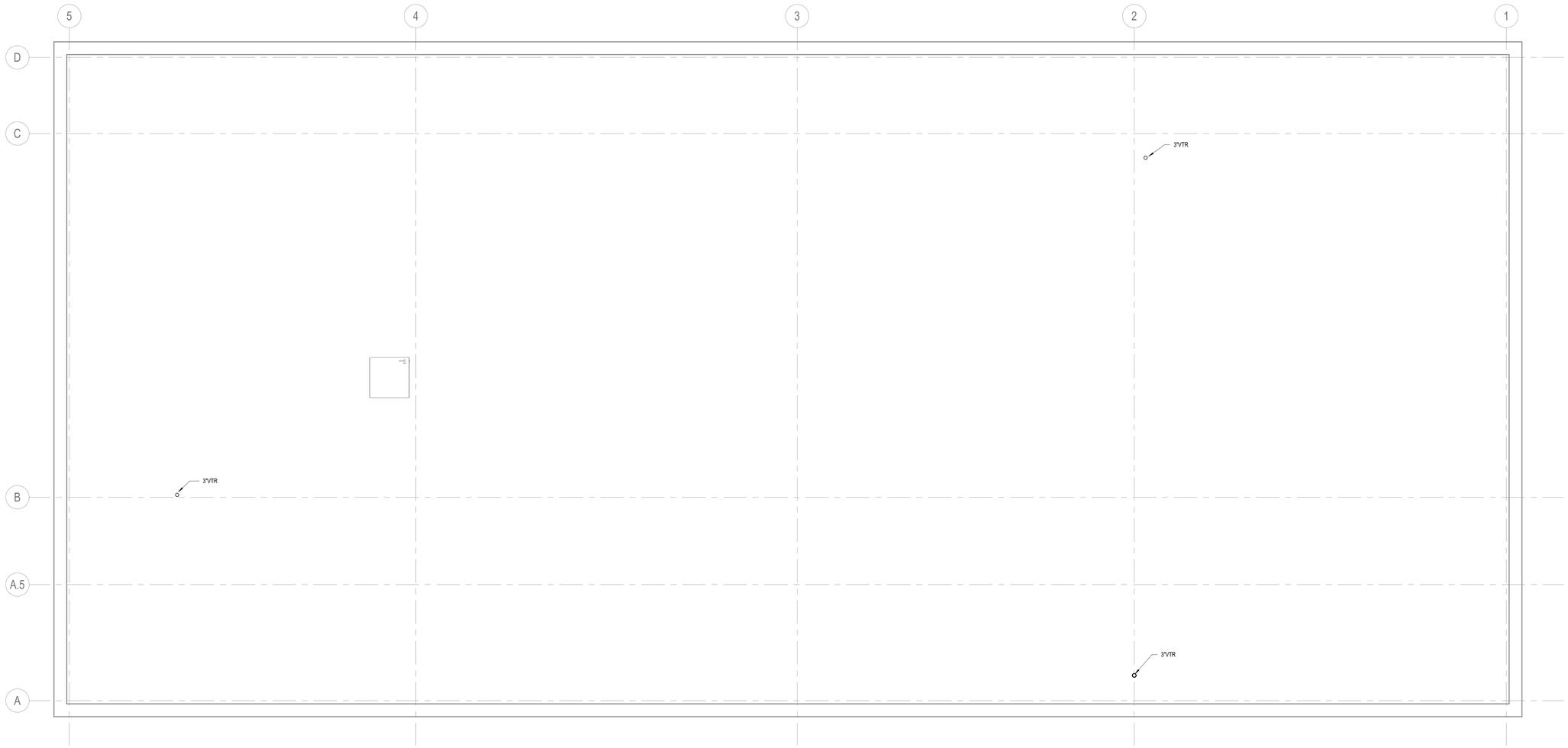
KEYED NOTES

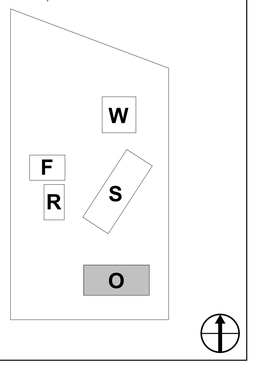
NUMBER	DESCRIPTION



1 PLUMBING FLOOR PLAN - OFFICE - ROOF LEVEL

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

KEY PLAN (NOT TO SCALE)



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PLUMBING ROOF PLAN - OFFICE

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USER NAME: dtaylor
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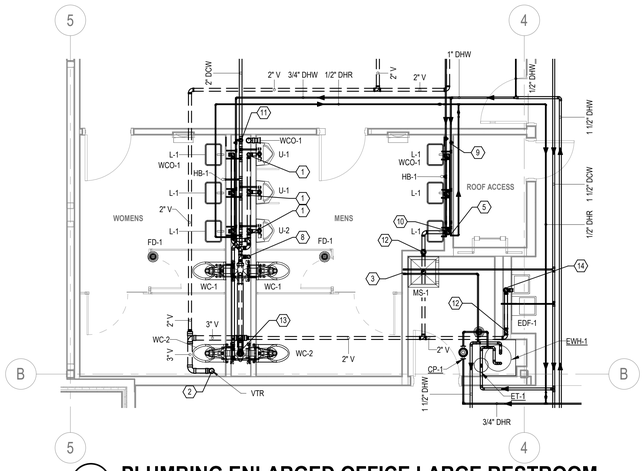
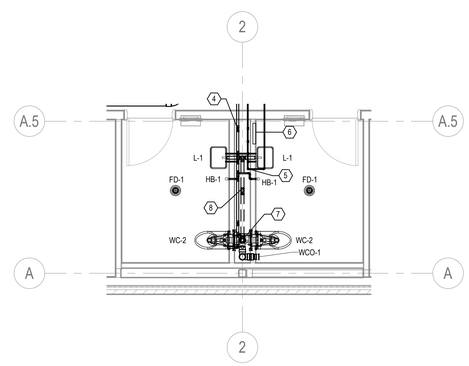
KEYED NOTES (1)

NUMBER	DESCRIPTION
1	3/4" COLD WATER, 2" SANITARY WASTE AND 2" VENT TO SERVE FIXTURE.
2	3" VENT UP TO VENT THRU ROOF.
3	3/4" COLD WATER, 3/4" HOT WATER TO SERVE MOP SINK.
4	1-1/2" DCW AND 1/2" DHW DOWN, PROVIDE SHUT-OFF VALVES BEHIND ACCESS PANEL.
5	1/2" DHR UP TO ABOVE CEILING.
6	ACCESS PANEL TO BE LOCATED UNDER LAVATORY AS HIGH AS POSSIBLE.
7	4" WASTE DOWN TO BELOW SLAB, 2" VENT UP TO 2" VTR.
8	2" VENT UP FROM BELOW SLAB.
9	3/4" DCW AND DHW DOWN, PROVIDE SHUT-OFF VALVES BEHIND ACCESS PANEL.
10	2" WASTE DOWN TO BELOW SLAB AND 2" VENT RISE TO ABOVE CEILING.
11	2" DCW AND 1/2" DWH DOWN, PROVIDE SHUT-OFF VALVE BEHIND ACCESS PANEL.
12	2" VENT UP FROM BELOW SLAB AND RISE TO ABOVE CEILING.
13	4" WASTE DOWN TO BELOW SLAB AND 3" VENT RISE TO ABOVE CEILING.
14	2" WASTE DOWN TO BELOW SLAB AND 2" VENT RISE TO ABOVE CEILING. 1/2" DCW DOWN.



1 PLUMBING ENLARGED OFFICE LARGE RESTROOM

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



2 PLUMBING ENLARGED OFFICE SMALL RESTROOM

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

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PLUMBING - ENLARGED PLANS

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418198	GC_R&B
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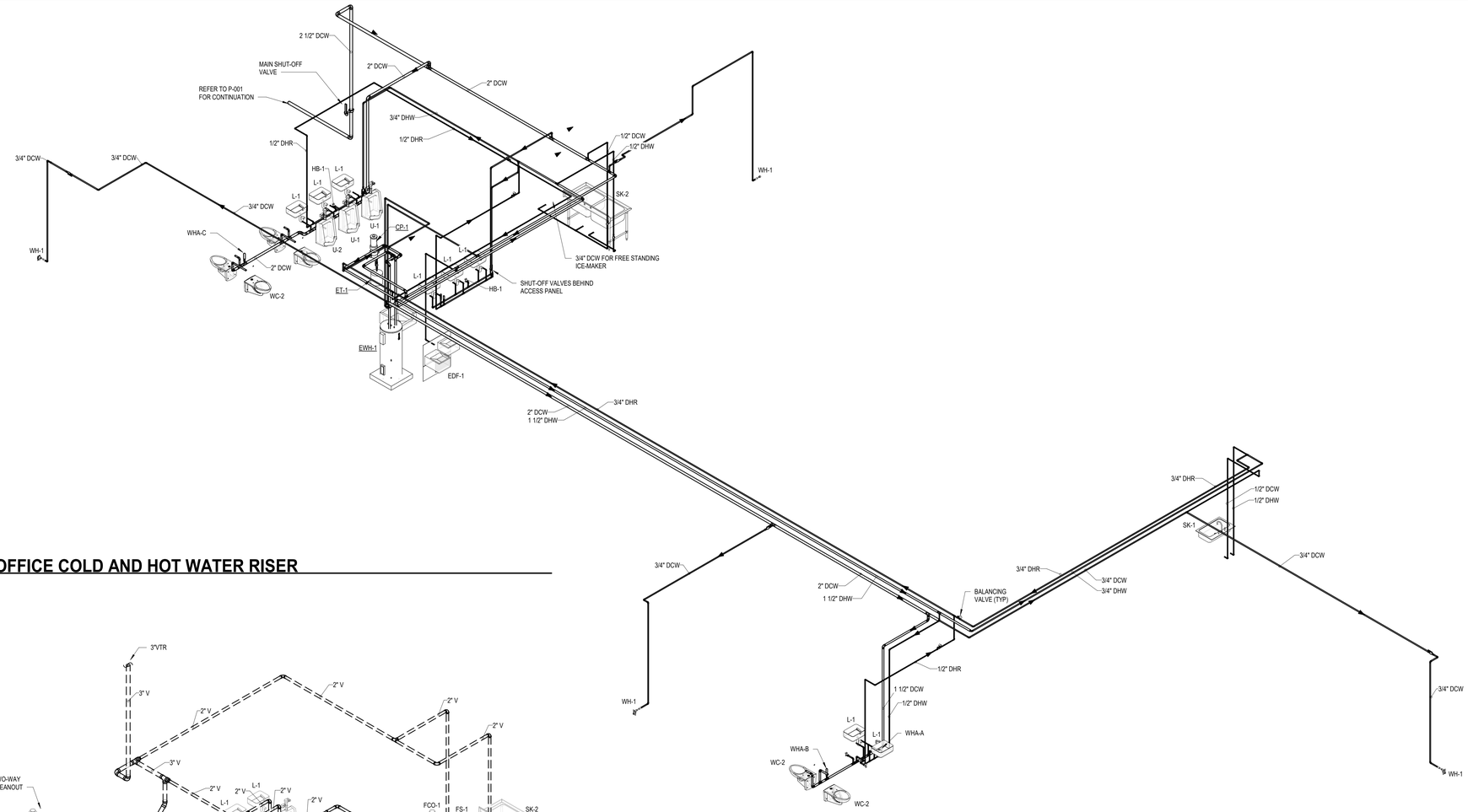
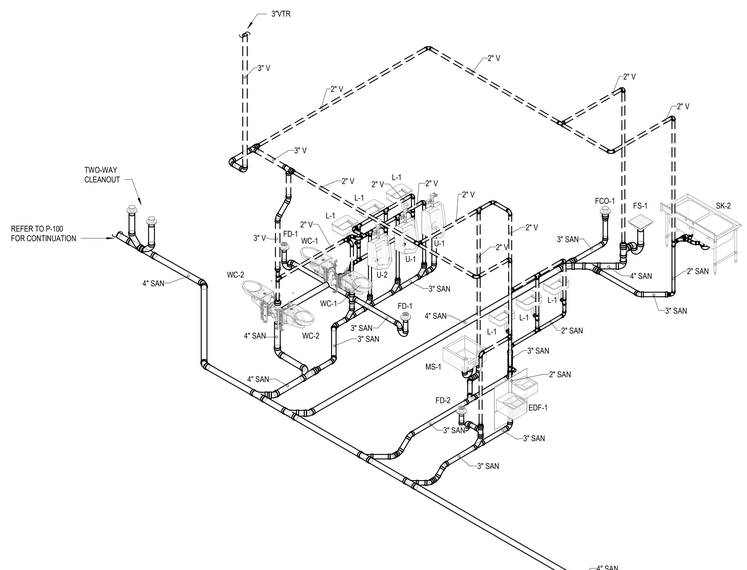
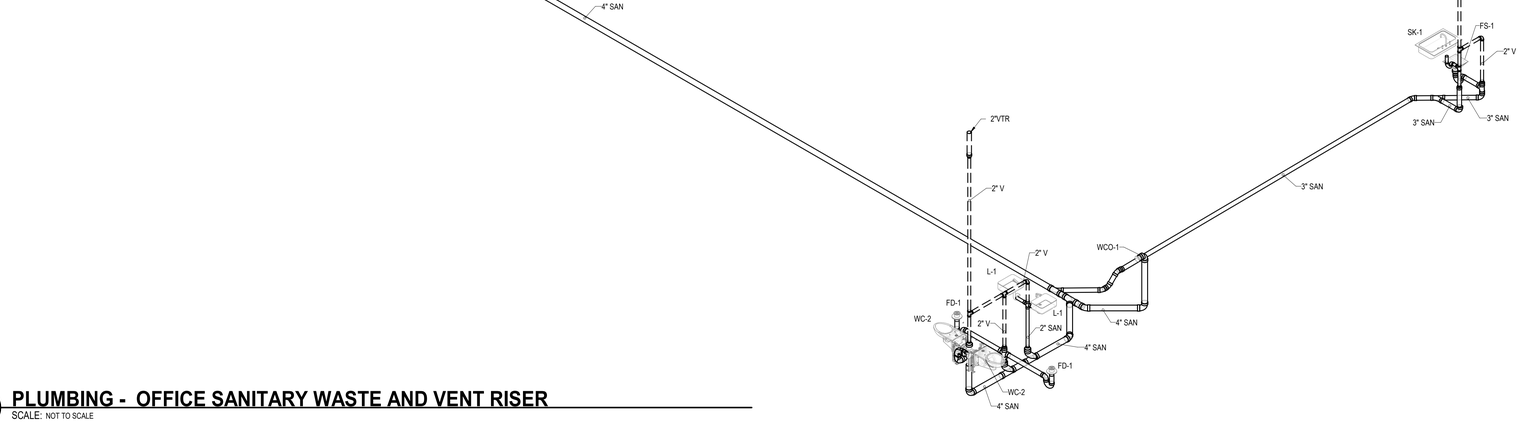


1 **PLUMBING - OFFICE COLD AND HOT WATER RISER**
SCALE: NOT TO SCALE





2 **PLUMBING - OFFICE SANITARY WASTE AND VENT RISER**
SCALE: NOT TO SCALE

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PLUMBING - OFFICE RISERS

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418198	GC_R&B
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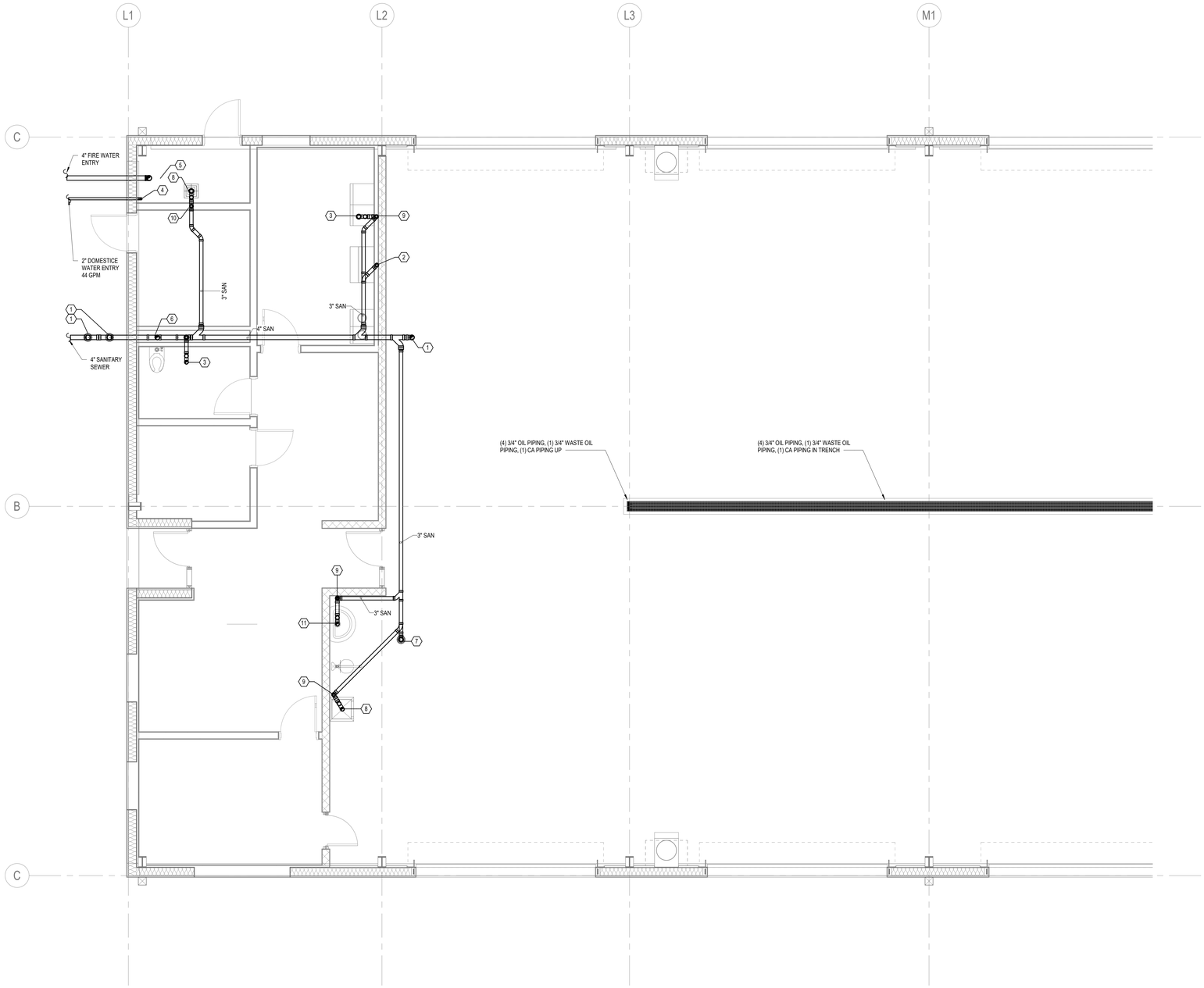


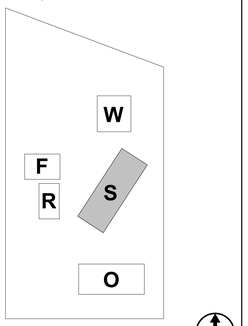
1 **PLUMBING UNDERFLOOR PLAN - SHOP - LEVEL 01 - AREA A**
SCALE: 1/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	4" SANITARY WASTE UP TO CLEANOUT.
2	2" SANITARY WASTE UP.
3	3" TRAPPED SANITARY WASTE FROM ABOVE TO SERVE FLOOR DRAIN/SINK.
4	2" COLD WATER UP TO SERVE BUILDING.
5	4" FIRE WATER UP TO SERVE BUILDING.
6	4" SANITARY WASTE FROM ABOVE.
7	3" SANITARY WASTE UP TO CLEANOUT.
8	3" TRAPPED SANITARY WASTE FROM ABOVE TO SERVE MOP SINK.
9	2" VENT UP.
10	3" SANITARY WASTE DOWN AND 2" VENT UP.
11	3" SANITARY WASTE UP.

GENERAL NOTES

KEY PLAN (NOT TO SCALE)



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PLUMBING FLOOR PLAN - SHOP - UNDERFLOOR - AREA A

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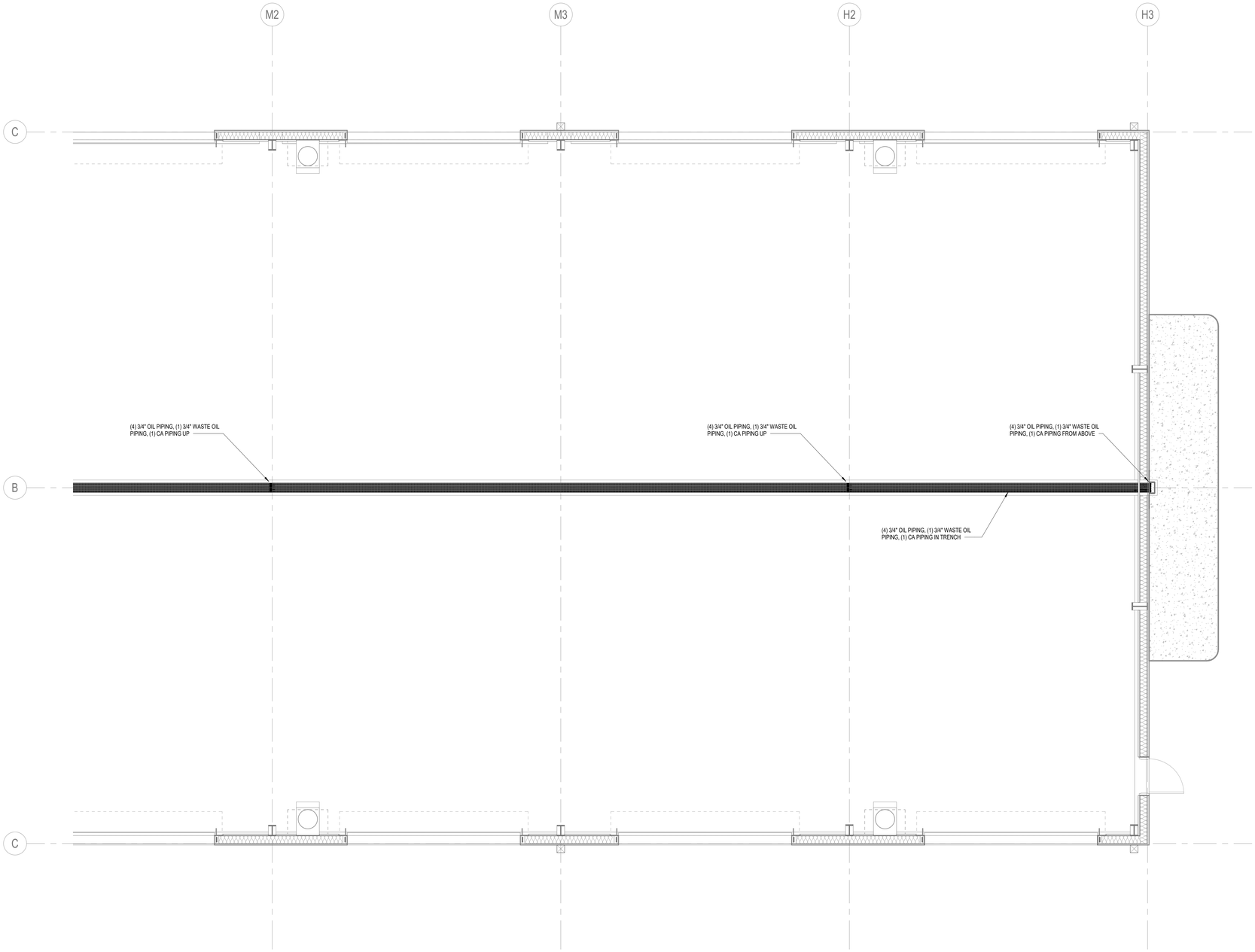


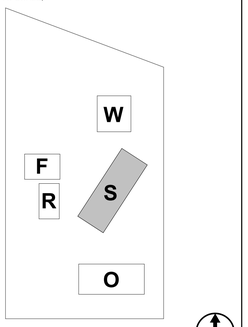
1 **PLUMBING UNDERFLOOR PLAN - SHOP - LEVEL 01 - AREA B**
SCALE: 1/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION

GENERAL NOTES

KEY PLAN (NOT TO SCALE)



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PLUMBING FLOOR PLAN - SHOP - UNDERFLOOR - AREA B

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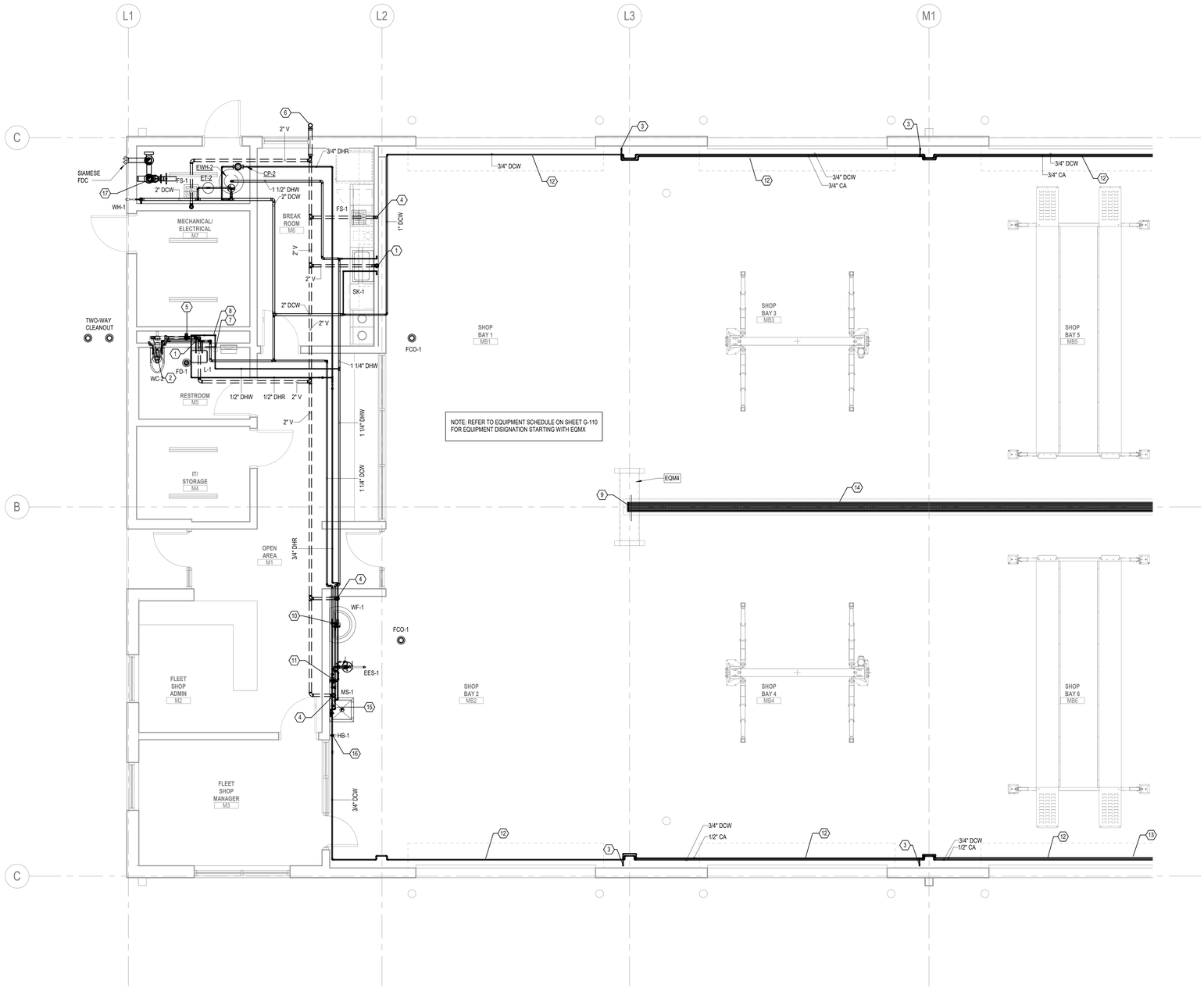


1 PLUMBING FLOOR PLAN - SHOP - AREA A

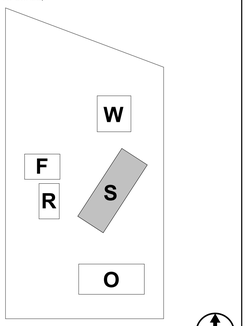
SCALE: 1/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	1/2" COLD WATER, 1/2" HOT WATER, 2" SANITARY WASTE DOWN AND 2" VENT UP TO SERVE FIXTURE.
2	1-1/4" COLD WATER, 4" SANITARY WASTE AND 2" VENT TO SERVE FIXTURE.
3	3/4" COMPRESSED AIR DOWN, TERMINATE WITH EQUAL TO TULEAD PNEUMATIC MANIFOLD BLOCK ALUMINUM MANIFOLD SPLITTER AIR HOSE SPLITTER AIR COMPRESSOR DISTRIBUTION BLOCK HOSE FITTING 5 WAYS.
4	2" VENT UP FROM BELOW SLAB AND RISE TO ABOVE CEILING.
5	2" VENT UP FROM BELOW SLAB.
6	3" VENT ROUTE THROUGH VERTICAL WALL. PROVIDE ELBOW AND DISCHARGE 1 FOOT ABOVE ROOF.
7	ACCESS PANEL TO BE LOCATED UNDER LAVATORY AS HIGH AS POSSIBLE.
8	1-1/2" DCW AND 1/2" DHW DOWN, PROVIDE SHUT-OFF VALVES BEHIND ACCESS PANEL.
9	(4) 3/4" OIL LINES, (1) 3/4" COMPRESSED AIR LINE UP FROM TRENCH AND ROUTE UP TO RACK AND REELS. REFER TO ARCHITECTURAL. (1) 3/4" WASTE OIL FROM RACK DOWN INTO TRENCH.
10	1-1/4" DCW AND DHW DOWN.
11	1" DCW AND DHW DOWN TO THERMOSTATIC MIXING VALVE, ROUTE 1-1/4" TEPID WATER TO EMERGENCY SHOWER/EYE WASH.
12	MOUNT PIPING TIGHT TO WALL ABOVE DOOR.
13	ROUTE DCW AND CA PIPING OVER EACH OTHER AND MOUNT AS CLOSE TO WALL AS POSSIBLE, PIPING IS SHOWN OFFSET FOR CLARITY ONLY.
14	(4) OIL PIPES, (1) WASTE OIL PIPE AND (1) CA PIPE LOCATED IN TRENCH. REFER TO TRENCH DETAIL 4/A-501M.
15	3/4" COLD WATER, 3/4" HOT WATER TO SERVE MOP SINK.
16	3/4" DCW DOWN TO HOSE BIBB.
17	4" FIRE WATER UP FROM BELOW SLAB, PROVIDE OS&Y SHUT-OFF VALVE, WATTS LF709S BACKFLOW PREVENTER MOUNTED IN VERTICAL AND RISE TO STRUCTURE. SIZE SPRINKLER SYSTEM PER HYDRAULIC CALCULATIONS.

GENERAL NOTES

KEY PLAN (NOT TO SCALE)



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PLUMBING FLOOR PLAN - SHOP - LEVEL 01 - AREA A

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PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

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SHEET NUMBER

FILE PATH: W:\418198\418198P-GC ROAD_BRIDGE-R19-dtaylor.rvt
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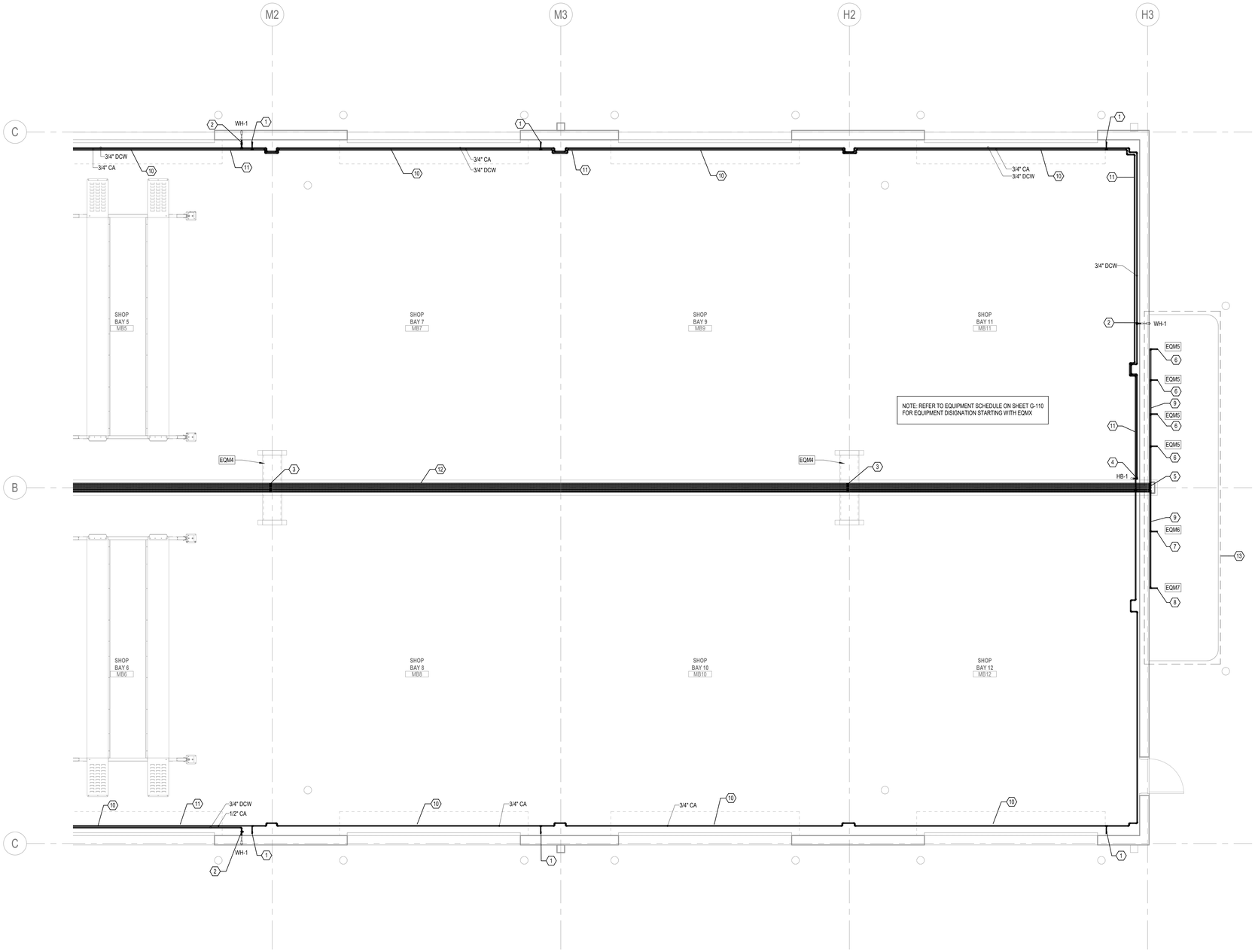


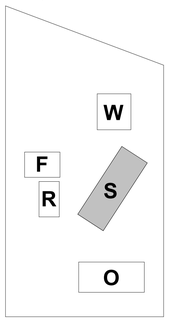
1 **PLUMBING FLOOR PLAN - SHOP - AREA B**
SCALE: 1/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	3/4" COMPRESSED AIR DOWN, TERMINATE WITH EQUAL TO TULEAD PNEUMATIC MANIFOLD BLOCK ALUMINUM MANIFOLD SPLITTER AIR HOSE SPLITTER AIR COMPRESSOR DISTRIBUTION BLOCK HOSE FITTING 5 WAYS.
2	3/4" COLD WATER DOWN TO WALL HYDRANT.
3	(4) 3/4" OIL LINES, (1) 3/4" COMPRESSED AIR LINE UP FROM TRENCH AND ROUTE UP TO RACK AND REELS, REFER TO ARCHITECTURAL. (1) 3/4" WASTE OIL FROM RACK DOWN INTO TRENCH.
4	3/4" DCW DOWN TO HOSE BIBB.
5	(4) 3/4" OIL LINES, (1) WASTE OIL AND (1) CA DOWN WALL TO INTO TRENCH.
6	CONNECT 3/4" TO OIL STORAGE TANK.
7	CONNECT 3/4" TO WASTE OIL STORAGE TANK.
8	CONNECT 3/4" TO AIR COMPRESSOR.
9	REFER TO ELEVATION 2/A-201M FOR PIPE ROUTING TO EQUIPMENT, MOUNT PIPING TO WALL.
10	MOUNT PIPING TIGHT TO WALL ABOVE DOOR.
11	ROUTE DCW AND CA PIPING OVER EACH OTHER AND MOUNT AS CLOSE TO WALL AS POSSIBLE, PIPING IS SHOWN OFFSET FOR CLARITY ONLY.
12	(4) OIL PIPES, (1) WASTE OIL PIPE AND (1) CA PIPE LOCATED IN TRENCH, REFER TO TRENCH DETAIL 4/A-501M.
13	THE OIL STORAGE AND OIL WASTE STORAGE SYSTEM AND PIPING IS A DELEGATED DESIGN. REFER TO ARCHITECTURAL FOR ADDITIONAL INFORMATION.

GENERAL NOTES

KEY PLAN (NOT TO SCALE)



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PLUMBING FLOOR PLAN - SHOP - LEVEL 01 - AREA B

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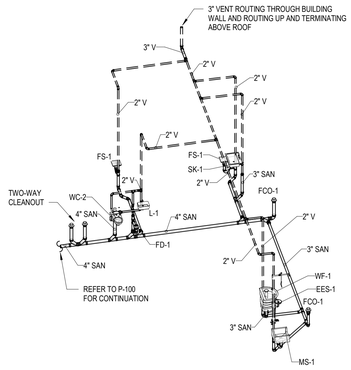
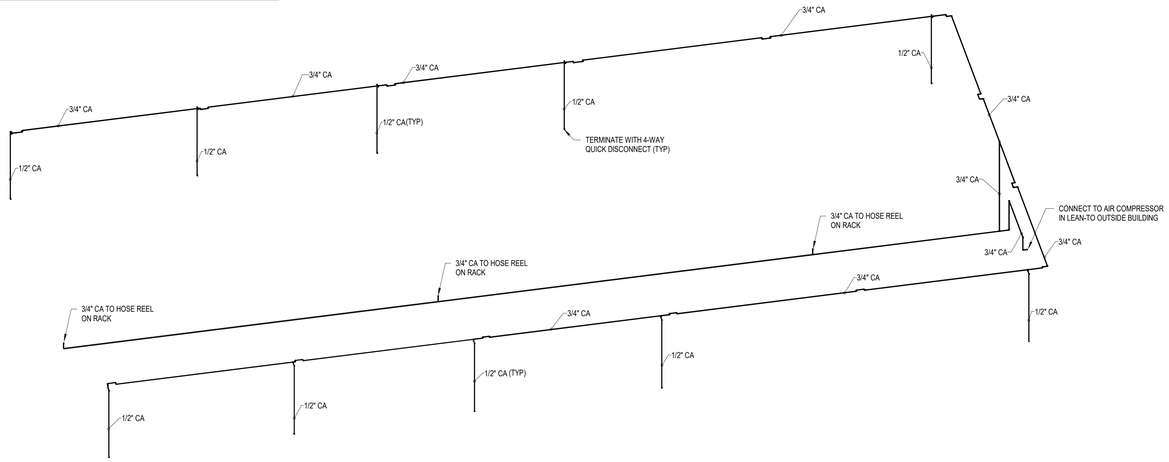


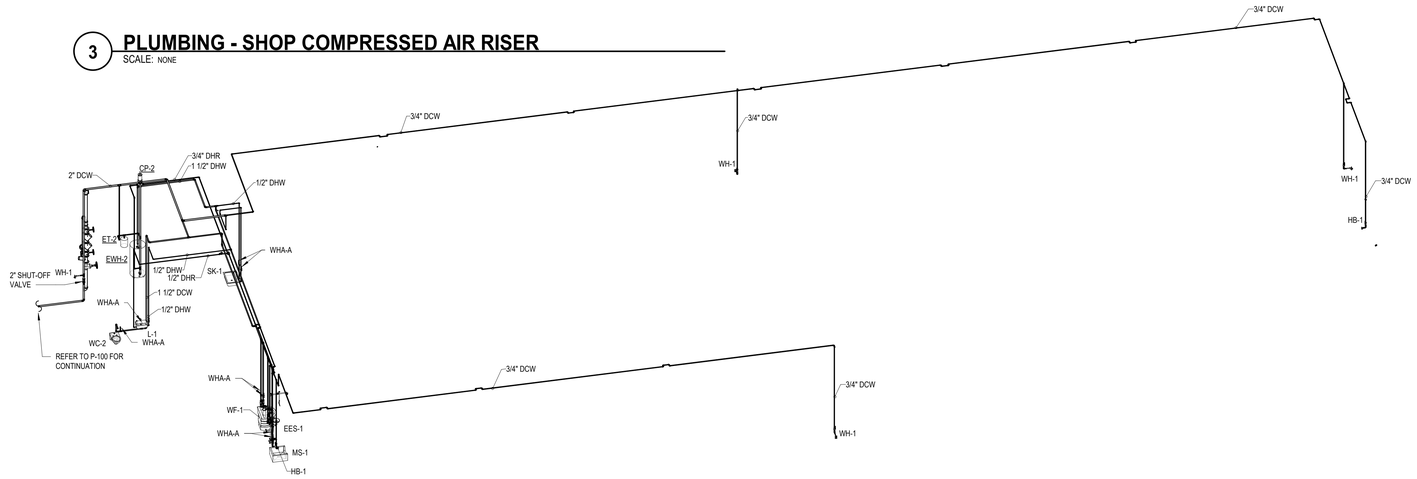
2 PLUMBING - SHOP SANITARY AND VENT RISES

SCALE: NONE



3 PLUMBING - SHOP COMPRESSED AIR RISER

SCALE: NONE



1 PLUMBING - SHOP COLD AND HOT WATER RISERS

SCALE: NONE

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PLUMBING - SHOP RISERS

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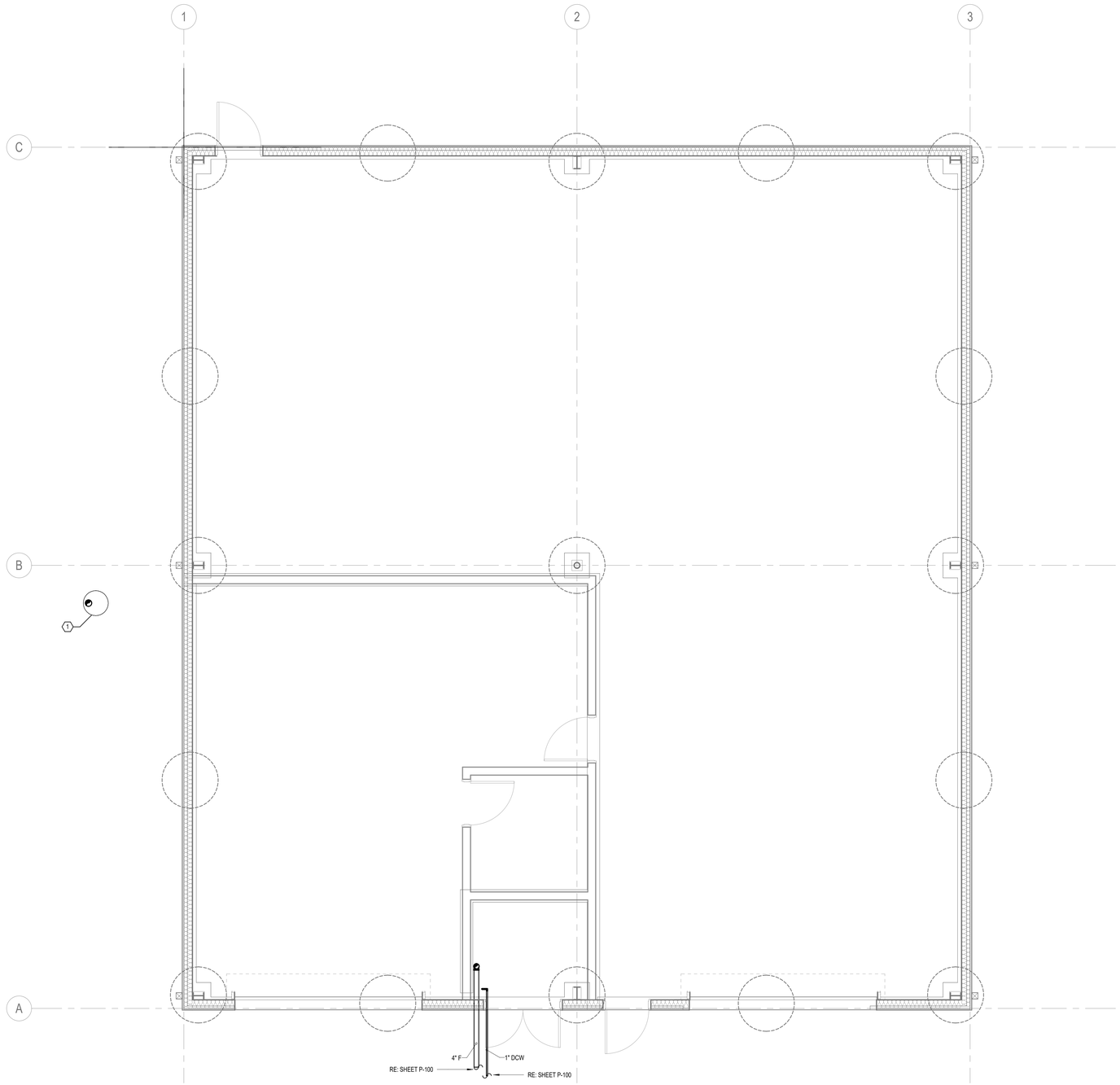


1 PLUMBING UNDERFLOOR PLAN - WAREHOUSE - LEVEL 01

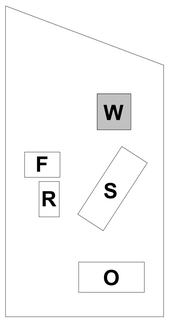
SCALE: 1/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	DRYWELL, REFER TO DETAIL 9/P-501.
2	1" COLD WATER UP TO SERVE BUILDING.

GENERAL NOTES

KEY PLAN (NOT TO SCALE)



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ARCHITECT

06/26/2020

PLUMBING FLOOR PLAN - WAREHOUSE - UNDERFLOOR

DRAWN BY: LO	CHECKED BY: SWS
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC_RGB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

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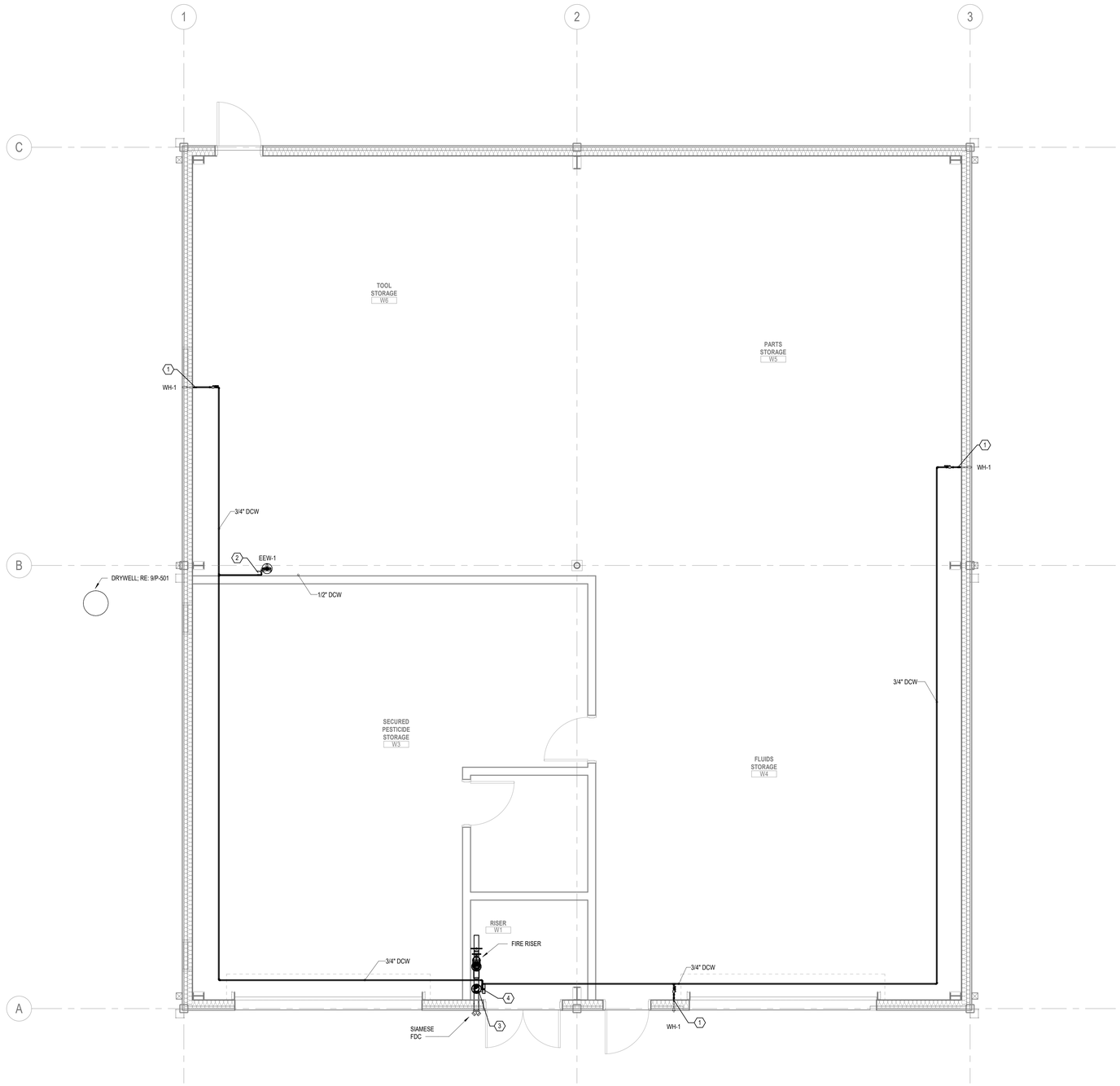


2 PLUMBING FLOOR PLAN - WAREHOUSE - LEVEL 01

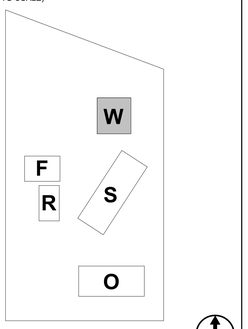
SCALE: 1/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	3/4" COLD WATER DOWN TO SERVE FIXTURE.
2	3/4" HOT WATER 3/4" COLD WATER TO SERVE EMERGENCY EYE WASH.
3	4" FIRE WATER UP FROM BELOW SLAB. PROVIDE OS&Y SHUT-OFF VALVE. WATTS LF709S BACKFLOW PREVENTER MOUNTED IN VERTICAL AND RISE TO STRUCTURE. SIZE SPRINKLER SYSTEM PER HYDRAULIC CALCULATIONS.
4	1" DCW UP FROM BELOW SLAB. PROVIDE SHUT-OFF VALVE 2' ABOVE FINISHED FLOOR AND ROUTE 1" UP TO STRUCTURE.

GENERAL NOTES

KEY PLAN (NOT TO SCALE)



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PLUMBING FLOOR PLAN - WAREHOUSE - LEVEL 01

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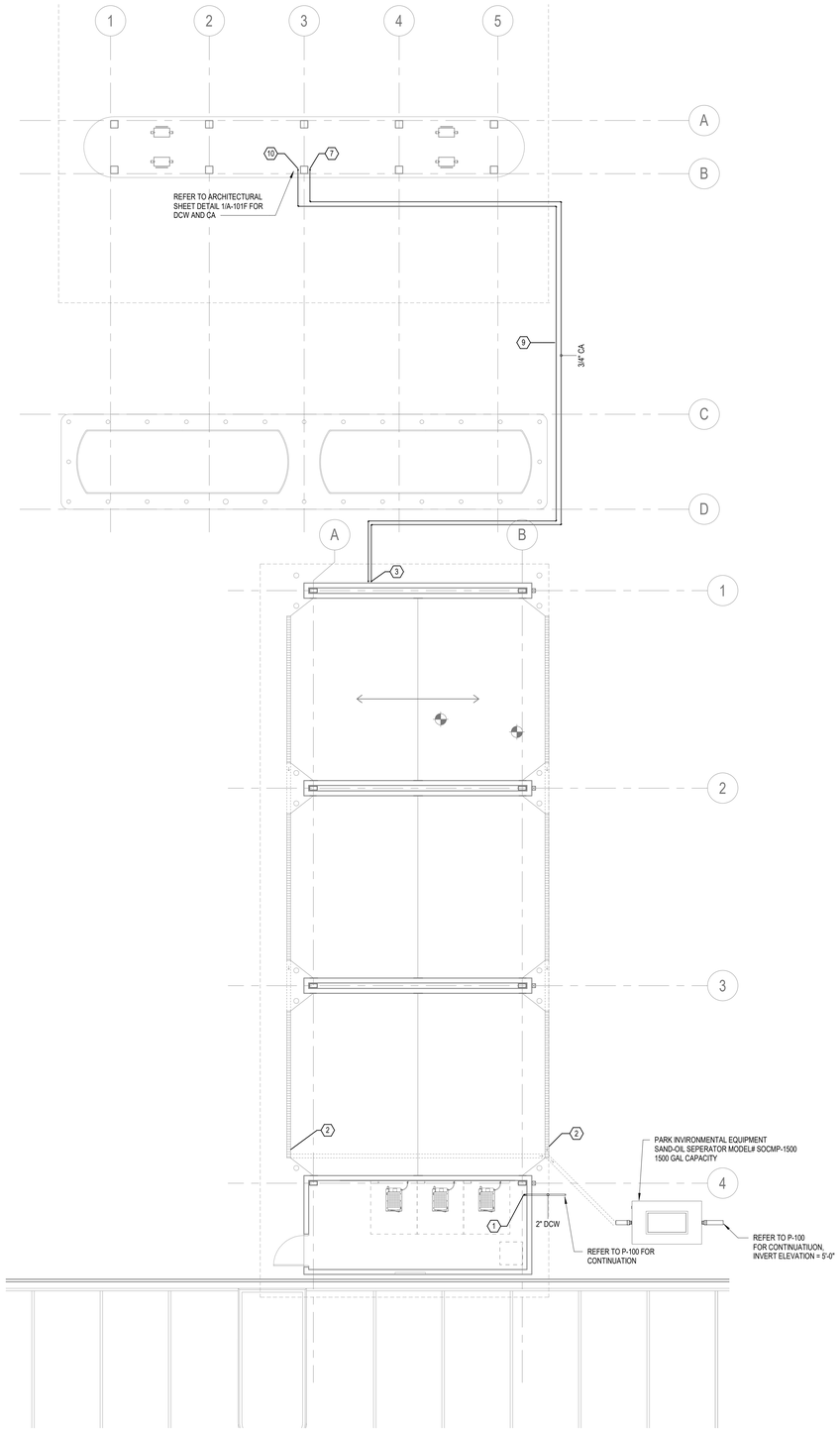
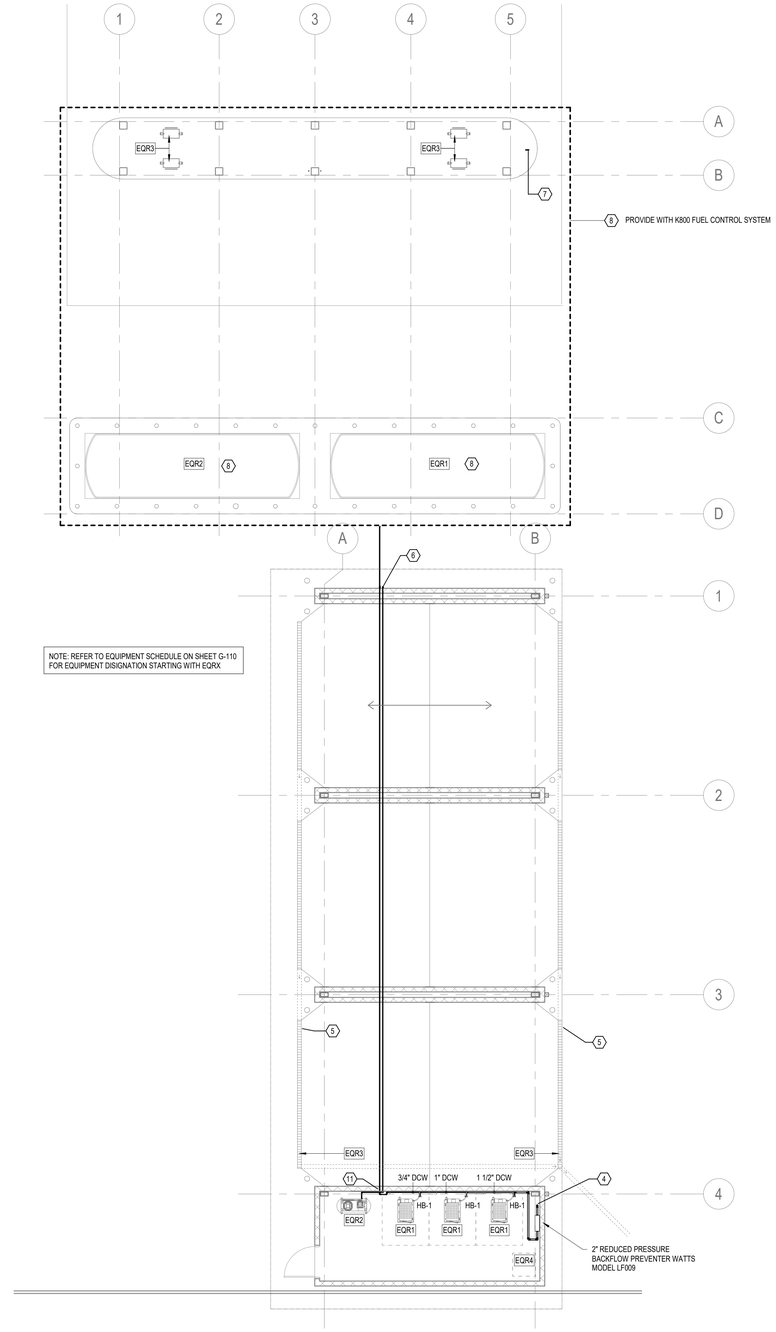


2 PLUMBING UNDERFLOOR PLAN - WASH RACK - LEVEL 01

SCALE: 1/8" = 1'-0"



NOTE: REFER TO EQUIPMENT SCHEDULE ON SHEET G-110 FOR EQUIPMENT DISIGNATION STARTING WITH EQRX

1 PLUMBING FLOOR PLAN - WASH RACK/FUELAIR

SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	2" COLD WATER UP TO SERVE BUILDING.
2	TRENCH DRAIN SYSTEM IS A DELEGATED DESIGN. REFER TO ARCHITECTURAL PLAN FOR ADDITIONAL INFORMATION.
3	3/4" CA FROM ABOVE.
4	2" DCW UP FROM BELOW SLAB.
5	TRENCH DRAIN SYSTEM AND PIPING IS A DELEGATED DESIGN. REFER TO ARCHITECTURAL FOR ADDITIONAL INFORMATION.
6	3/4" CA DOWN TO BELOW GRADE.
7	3/4" CA UP TO HOSE REEL.
8	THE FUEL SYSTEM AND PIPING IS A DELEGATED DESIGN. REFER TO ARCHITECTURAL FOR ADDITIONAL INFORMATION.
9	PROVIDE TYPE "K" SOFT COPPER FOR DCW BELOW SLAB/GRADE WITH NO FITTINGS.
10	3/4" DCW UP TO HOSE REEL.
11	3/4" DCW AND CA UP.

GENERAL NOTES

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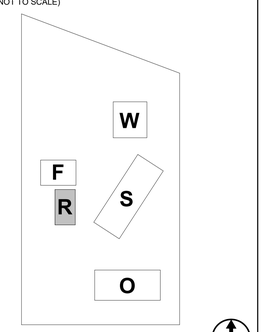

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TELECOM SYMBOL LEGEND

WAP	WIRELESS ACCESS POINT (WAP), (DATA CEILING OUTLET), CABLE TYPE AS SPECIFIED. 2 DATA RUN PER LOCATION UNLESS NOTED OTHERWISE
xD	DATA OUTLET (D), CABLE TYPE AS SPECIFIED, MOUNTED +18" A.F.F. UNLESS NOTED OTHERWISE. (x) = NUMBER OF CABLE RUNS PER LOCATION AS INDICATED.
xD	DATA OUTLET (D) (x) = NUMBER OF CABLE RUNS PER LOCATION AS INDICATED. STUB CONDUIT, min. 6" IN TO MILLWORK.
CAM	IP SECURITY CAMERA OUTLET(CAM), CEILING OUTLET, TYPICALLY ONE(1) DATA UNLESS NOTED OTHERWISE.
xDTV	DATA OUTLET FOR WALL MOUNTED DISPLAY. (x)=NUMBER OF CABLES PER LOCATION. TERMINATE TO DISPLAY BACK BOX. REFERENCE TA SHEETS FOR DETAILS. COORDINATE WITH AV CONTRACTOR.
xD AV	DATA OUTLET FOR WALL MOUNTED AV DEVICE. (x)=NUMBER OF CABLES PER LOCATION. TERMINATE TO PLUG IN AV BACK BOX. COORDINATE WITH AV CONTRACTOR.

TELECOM NOTES

GENERAL NOTES

1. THE GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS AND OTHER REQUIREMENTS OF DIVISION 1. THE ELECTRICAL, AUDIO VISUAL, AND SECURITY PLANS AND SPECIFICATIONS, MAY APPLY TO THE WORK SPECIFIED.
2. COMMUNICATION CABLING INTEGRATOR HEREAFTER REFERRED TO, AS "CONTRACTOR" SHALL PROVIDE ALL MATERIALS, COMPONENTS, TOOLS, AND LABOR TO COMPLETE A TELECOMMUNICATIONS INFRASTRUCTURE AS SET FORTH IN THE STRUCTURED CABLING SYSTEM DOCUMENTS, CONTRACTS AND DRAWINGS. REF. DIVISION 27, T DRAWINGS AND E DRAWINGS.
3. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE SITE TO DETERMINE THE EXTENT OF WORK AND CONDITION UNDER WHICH IT WILL BE DONE. REVIEW AND VERIFY CONTRACT DOCUMENTS IN RELATION TO FIELD CONDITIONS TO VERIFY ACCURACY, THE OWNER, OR THEIR DESIGNATED REPRESENTATIVE, SHOULD BE CONSULTED AS NEEDED FOR CLARIFICATION OR DIRECTION REGARDING ANY PROJECT RELATED QUESTIONS; THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING CLARIFICATION FROM THE OWNER, OR THEIR DESIGNATED REPRESENTATIVE, PRIOR TO PROCEEDING WITH THE WORK OR RELATED WORK IN QUESTION.
4. DISCREPANCIES BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS MUST BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE OWNER, OR THEIR DESIGNATED REPRESENTATIVE, FOR CLARIFICATION.
5. REFER TO TECHNOLOGY CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS AS A UNIT AND IN WHOLE IN THE BIDDING AND INSTALLATION OF THIS PROJECT.
6. ELECTRICAL CONTRACTOR SHALL READ IN THEIR ENTIRETY ALL SECTIONS OF THE COMMUNICATIONS CABLING SYSTEM DOCUMENTS AND APPLY THEM AS APPROPRIATE FOR WORK IN THIS SECTION. REF DIVISION 27 AND T DRAWINGS.
7. ELECTRICAL CONTRACTOR SHALL PROVIDE MATERIALS, COMPONENTS, TOOLS, AND LABOR TO COMPLETE COMMUNICATIONS CABLING PATHWAY, ELECTRICAL POWER DISTRIBUTION AND GROUNDING SYSTEM AS SET FORTH IN THE COMMUNICATIONS CABLING SYSTEM DOCUMENTS AND THE ELECTRICAL DOCUMENTS, SPECIFICATIONS AND DRAWINGS.
8. CONTRACTOR SHALL NOTE AND REPORT TO GC COMMUNICATION SYSTEM WORK PERFORMED OR NOT PERFORMED BY ELECTRICAL CONTRACTOR WHICH DOES NOT COMPLY WITH COMMUNICATIONS SPECIFICATIONS AND DRAWINGS AND ARE INTENDED FOR THE COMMUNICATION SYSTEMS COMPONENTS.
9. CONTRACTOR SHALL TAKE NECESSARY MEANS TO PROTECT COMMUNICATION SYSTEM COMPONENTS FROM MECHANICAL DAMAGE BEFORE, DURING AND AFTER CONSTRUCTION.
10. CONTRACTOR IS REQUIRED TO REFERENCE DIVISION 27 SPECIFICATIONS FOR ITEMIZED PRICING REQUIREMENTS.

TELECOM NOTES

COMMUNICATION PATHWAY

1. OUTLET FACEPLATES MUST BE LABELED WITH THE JACK NUMBERS OR PATCH PANEL PORTS PER SPECIFICATIONS. ALL JACKS MUST BE FLUSH WITH THE FACEPLATE.
2. BACK BOXES INSTALLED FOR COMMUNICATIONS DATA AND VOICE WIRING TERMINATION SHALL BE 4 11/16"X4 11/16"X3" DEEP BOXES TO ALLOW FOR THE REQUIRED WORKING CLEARANCE OF THE CAT6 UTP CABLE. THESE BOXES SHALL BE SEPARATE FROM ELECTRICAL JUNCTION BOXES AND BE EXCLUSIVELY FOR DATA AND VOICE COMMUNICATIONS.
3. MUD RINGS SHALL BE INSTALLED ON ALL COMMUNICATIONS WALL BOXES.
4. CONDUITS TO COMMUNICATIONS WALL BOXES SHALL BE MINIMUM OF ONE IN. (1") IN DIAMETER AND SHALL BE COMPLETE WITH NYLON PULL STRING. OUTLETS HAVING MORE THEN TWO CABLES REQUIRE AN ADDITIONAL (1") CONDUIT PER WALL BOX.
5. SUPPLY SOLUTIONS AND SHOP DRAWINGS SUBMITTALS FOR CONDUIT SEALING MATERIALS AND SYSTEMS FOR WRITTEN APPROVAL OF MATERIAL/SYSTEMS PRIOR TO PURCHASE AND INSTALLATION. MATERIALS AND SYSTEMS SHALL BE COMPLETE UPON INSTALLATION.
6. CONDUIT RUNS SHALL BE INSTALLED WITH NO MORE THAN TWO (2) SWEEPING 90 DEG. BENDS AND NOT EXCEED 100 FEET. IF THESE CONDITIONS CAN NOT BE MET. A J-BOX MUST BE PLACED IN THE RUN, WITH THE ABILITY TO ACCESS BOX THROUGH THE CEILING.
7. CONDUITS SHALL HAVE CONNECTORS, PROTECTIVE BUSHINGS, PULL STRINGS AND SHALL BE GROUNDED.
8. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH ARCHITECT AND TELECOMMUNICATIONS CONSULTANT ON ENTRY, PATHWAYS AND OUTLET BOX PLACEMENT IN MODULAR FURNITURE AND CUSTOM MILLWORK.
9. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL THE 18" CORRIDOR BASKET TRAY AS SHOWN IN T-DRAWINGS.

COMMUNICATIONS ROOMS

1. TELECOM ROOM LAYOUTS AND EQUIPMENT ARE SHOWN FOR COORDINATION AND INFORMATIONAL PURPOSES ONLY.
2. FURNISH AND INSTALL CABLE SUPPORT, CABLE MANAGEMENT AND ASSOCIATED HARDWARE WITHIN TELECOMMUNICATIONS ROOMS.
3. CONTRACTOR TO PROVIDE AUTOCAD FLOOR PLAN AS-BUILT ON "D" SIZE PAPER, LAMINATED WITH PLASTIC AND MOUNTED BEHIND CUT PLEXI-GLASS ON THE WALL IN THE MDF.

GROUNDING AND BONDING

1. ALL METAL RACKS, FRAMES, CABINETS AND MISCELLANEOUS EQUIPMENT ENCLOSURES SHALL BE BONDED TOGETHER USING GREEN INSULATED COPPER WIRE SO THAT ALL EQUIPMENT, STRUCTURED CABLING RACKS ARE AT THE SAME GROUND POTENTIAL. A VOLT-O-METER (VOM) MEASUREMENT BETWEEN ANY TWO POINTS ON METAL RACKS AND EQUIPMENT ENCLOSURES IN THE TELECOMMUNICATIONS ROOMS SHALL BE LESS THAN 1.25 VOLTS DC OR AC POTENTIAL.
2. ALL GROUNDS USED SHALL BE BONDED TOGETHER TO FORM A SINGLE GROUNDING ELECTRODE SYSTEM AS REQUIRED IN ARTICLE 250 OF NFPA 70 - NATIONAL ELECTRICAL CODE.
3. SURFACES SHALL BE PREPARED TO PROVIDE A PROPER PATH TO GROUND. ANY SURFACE TO BE GROUNDED MUST BE FREE OF PAINT OR OTHER COATING THAT MIGHT PREVENT AN EFFECTIVE GROUND. PAINT SHOULD BE SCRAPED AWAY UNTIL METALLIC SURFACE HAS BEEN EXPOSED BEFORE THE ATTACHMENT OF GROUNDING OR BONDING WIRE.
4. CONTRACTOR TO INSTALL MANUFACTURER PROVIDED STAR WASHERS PER PANEL INSTALLED IN ORDER FOR PANELS TO BE BONDED TO RACK. ONLY ONE (1) STAR WASHER IS REQUIRED PER PANEL.
5. CONTRACTOR TO PROVIDE "L" BRACKETS 18" APART ON CABLE RUNWAY IN IDF'S. "L" BRACKETS TO HANG BENEATH CABLE RUNWAY AND SUPPORT GROUNDING WIRE AROUND TRAY TO RACKS AND WALL FIELDS. ATTACH GROUND WIRE TO "L" BRACKETS WITH VELCRO.
6. NO GROUND WIRE SHALL BE RAN IN CABLE RUNWAY WITH HORIZONTAL CABLING OR ATTACHED TO THE OUTSIDE OF THE RACEWAY. "L" BRACKETS ARE REQUIRED.

ELECTRICAL

1. FOR SPECIFIC POWER AND RECEPTACLE REQUIREMENTS IN THE PROJECT REFERENCE ELECTRICAL SPECIFICATIONS AND DRAWINGS AND VERIFY WITH COMMUNICATION SPECIFICATIONS AND DRAWINGS. REPORT TO GC DISCREPANCIES PRIOR TO PURCHASE OR INSTALLATION.

TELECOM NOTES

COMMUNICATIONS CABLE

1. CONTRACTOR SHALL PROVIDE AND INSTALL HORIZONTAL COPPER DATA CABLES.
2. HORIZONTAL DATA CABLING SHALL CONSIST OF 24 AWG PLENUM CAT6 4PR UTP CABLES TO EACH DATA OUTLET.
3. WIRELESS DATA CABLING SHALL CONSIST OF 24 AWG PLENUM CAT6 4PR UTP CABLES TO EACH ACCESS POINT.
4. SECURITY IP CAMERA DATA CABLING SHALL CONSIST OF 24 AWG PLENUM CAT6 4PR UTP CABLES TO EACH SECURITY CAMERA.
5. NO HORIZONTAL CABLE SHALL BE LONGER THAN 295 FEET FROM TERMINATION TO TERMINATION. IF THE CONTRACTOR BELIEVES ANY STATION CABLE WILL EXCEED THE 295 FEET LIMIT WRITTEN APPROVAL FROM THE OWNER'S ARCHITECT/ENGINEER WILL BE REQUIRED PRIOR TO INSTALLATION.
6. PROVIDE CATEGORY 6 CABLING FROM EACH WORKSTATION OUTLET LOCATION TO THE APPROPRIATE TELECOM ROOM LOCATED ON EACH FLOOR.
7. HORIZONTAL DATA CABLING SHALL TERMINATE ON RACK MOUNTED PATCH PANELS LOCATED IN TELECOM ROOM, AND ON 8P8C ANGLED INSERTS AT THE OUTLET. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
8. WIRELESS AND SECURITY DATA CABLING SHALL TERMINATE ON SEPARATE RACK MOUNTED PATCH PANELS LOCATED IN TELECOM ROOM, AND ON RJ45 MODULAR PLUGS AT THE DEVICE.
9. COMMUNICATIONS CABLE SHALL NOT BE PAINTED.
10. LABEL CABLES PER OWNER STANDARD. COORDINATE FINAL NOMENCLATURE WITH OWNER PRIOR TO INSTALLATION.
11. CATV HORIZONTAL CABLING SHALL CONSIST OF PLENUM QUAD SHIELD SERIES 6 (RG-6) COAXIAL CABLING WITH COMPRESSION F-FITTING CONNECTIONS.
12. CATV HORIZONTAL RISER CABLING SHALL CONSIST OF PLENUM .500 HARD-LINE COAXIAL CABLING WITH 3-PEICE CONNECTORS.
13. CONTRACTOR TO PROVIDE PROPER RATED CABLE TYPE PER INSTALLATION TYPE OSP, RISER OR PLENUM. COLOR FOR CABLES, JACK, SPECIFICATION BY PORT BY OWNER. ALL CABLING BELOW SLAB-ON-GRADE MUST BE EXTERIOR RATED CABLE. CONSOLIDATION POINTS WHERE NECESSARY ARE ACCEPTABLE BUT MUST HAVE PRIOR APPROVAL FROM OWNER.
14. ALL CABLING INSTALLED UNDERGROUND IN CONCRETE SLABS, IN DIRECT CONTACT WITH THE EARTH, LOCATIONS SUBJECT TO SATURATION WITH LIQUIDS AND UNPROTECTED LOCATIONS EXPOSED TO WEATHER SHALL BE CONSTRUCTED WITH APPROPRIATE WEATHER PROOFING COMPOUNDS AND SHEATHING.

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AWG	AMERICAN WIRE GAUGE
CON.	CONDUCTOR
I/O	INFORMATION OUTLET
IDF	INTERMEDIATE DISTRIBUTION FRAME
LAN	LOCAL AREA NETWORK
MDF	MAIN DISTRIBUTION FRAME
N/A	NOT APPLICABLE
NIC	NOT INCLUDED IN CONTRACT
OFOI	OWNER FURNISH OWNER INSTALLED
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TBC	TELECOMMUNICATIONS BONDING CONDUCTOR
TGB	TELECOMMUNICATIONS GROUND BUS BAR
TMBC	TELECOMMUNICATIONS MAIN BONDING CONDUCTOR
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUS BAR
TR	TELECOM ROOM
TS	TRADE SIZE
UTP	UNSHIELDED TWISTED PAIR
WP	WATER PROOF

INDEX OF DRAWINGS

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T-101S	TELECOM SITE PLAN
T-101O	TELECOM - FLOOR PLAN & REFLECTED CEILING PLAN - OFFICE
T-401O	TELECOM - ENLARGED MDF - OFFICE
T-101M	TELECOM -REFLECTED CEILING & EQUIPMENT PLANS - MAINTENANCE SHOP
T-401M	TELECOM - ENLARGED IT ROOM - MAINTENANCE SHOP
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TELECOM INDEX

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PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC R&B
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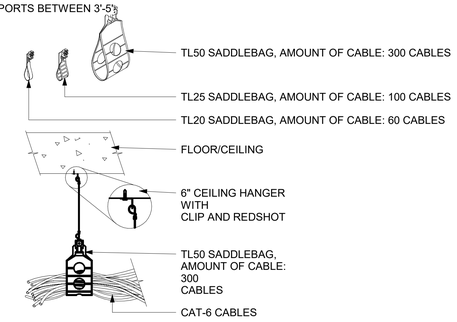
NOTE:

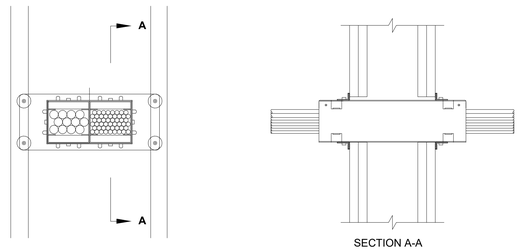
VARY SUPPORTS BETWEEN 3'-5'



1 CABLE HANGER LOOP DETAIL
SCALE: NTS

EZ-PATH FIRESTOP SYSTEMS

SYSTEM NO. W-L-3218
F RATINGS - 1, 2, 3 AND 4 HR
T RATINGS - 3/4 AND 1 HR
L RATING AT ANBIENT - 4 OR 7 SCFM
L RATING AT 400F - 2 OR 3 SCFM



2 EZ PATH FIRE STOP SYSTEM DETAIL
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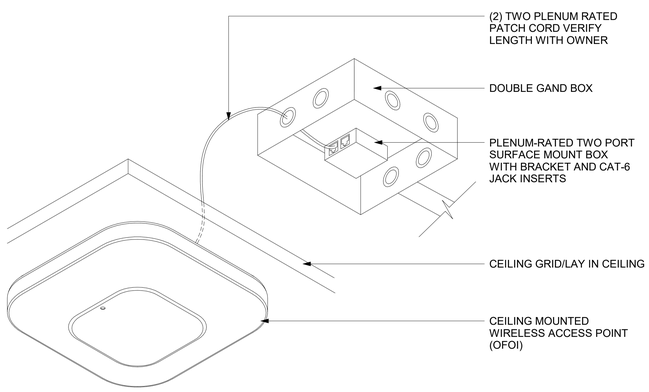
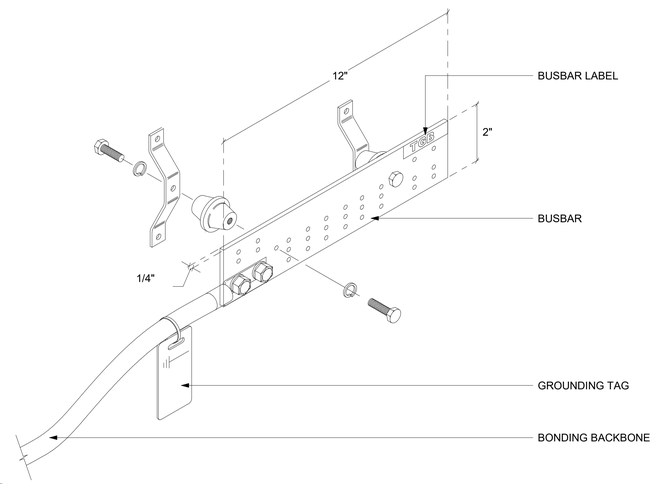


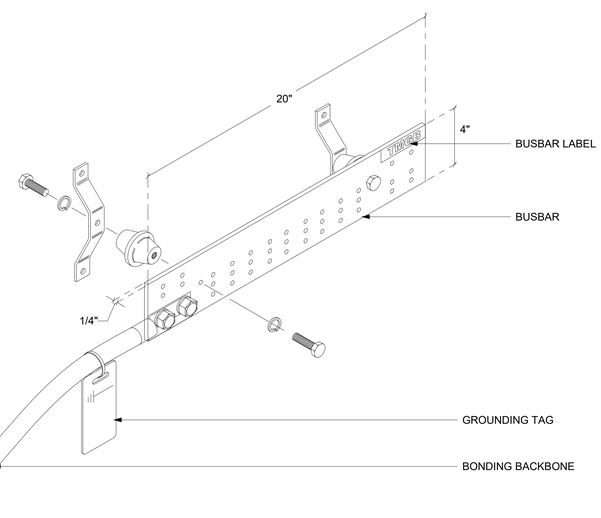
3 WIRELESS ACCESS POINT (WAP) ROUGH-IN DETAIL
SCALE: NTS



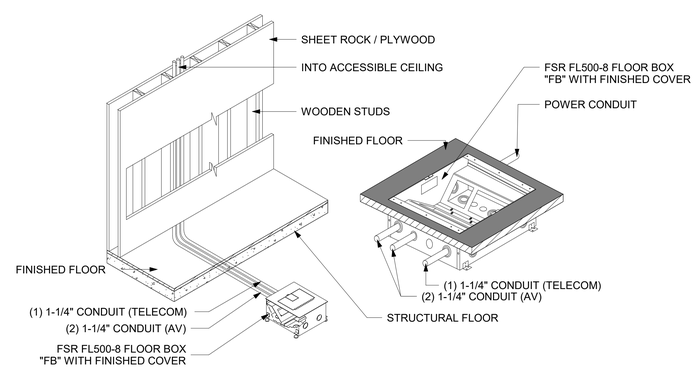
4 TELECOM GROUND BUSBAR (TGB) DETAIL
SCALE: NTS

GENERAL NOTES:

1. ALL FIRST FLOOR LOCATIONS REQUIRE FSR FL500-8 WITH CONCRETE FLOOR PAN.
2. FLOOR PLAN SHOWS INTENDED CONDUIT PATH WITH LINE TO NEAREST WALL.
3. "FB" ALSO REQUIRE AC POWER BY OTHERS (PATHWAY NOT SHOWN).
4. INSTALL CONDUITS TO NEAREST ACCESSIBLE CEILING
5. MOUNT AV CONDUITS ABOVE FINISHED CEILING AND SWEEP 90 DEGREES INTO ACCESSIBLE PLENUM.
6. COORDINATE WITH OWNER FOR JACK COLORS.
7. PROVIDE BLANKS FOR ANY UNUSED CONNECTIVITY SPACES.
8. PROVIDE PRE-POUR FLOOR PAN FOR ANY ON-GRADE LOCATIONS.
9. COORDINATE COVER AND FINISH WITH ARCHITECT.



5 TELECOM MAIN GROUND BUSBAR (TMGB) DETAIL
SCALE: NTS



6 "FB" FLOOR BOX ROUGH-IN DETAIL
SCALE: NTS

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REVISION HISTORY

REVISION	DESCRIPTION	DATE

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Wesly Ausman
BICSI ID # 186242
EXPIRES 12-31-22
RCDD

TELECOM DETAILS

DRAWN BY	CHECKED BY
YC	GB
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC R&B
ORIGINAL ISSUE	DATE
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T-501
SHEET NUMBER

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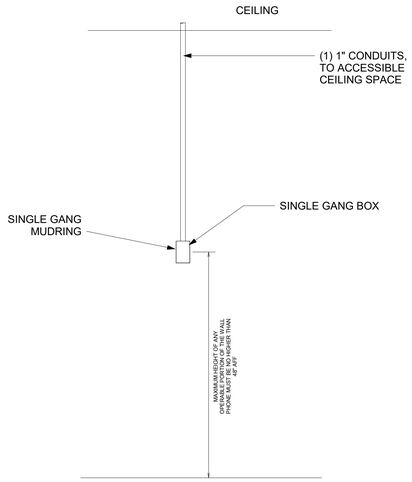
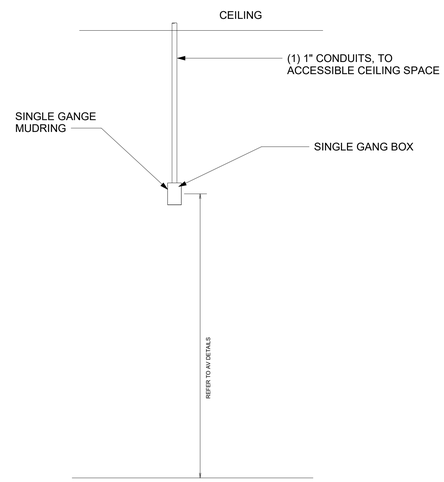
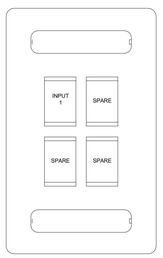


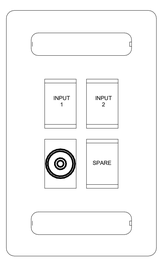
1 **TIME CLOCK ROUGH-IN DETAIL**
SCALE: NTS



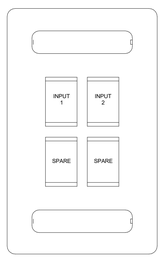
2 **TV OUTLET ROUGH-IN DETAIL**
SCALE: NTS



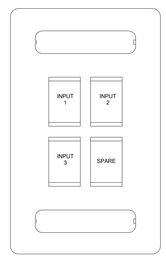
3 **FACEPLATE - 1D**
SCALE: NTS



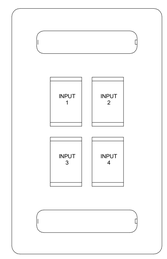
4 **FACEPLATE - 2D-1TV**
SCALE: NTS



5 **FACEPLATE - 2D**
SCALE: NTS



6 **FACEPLATE - 3D**
SCALE: NTS



7 **FACEPLATE - 4D**
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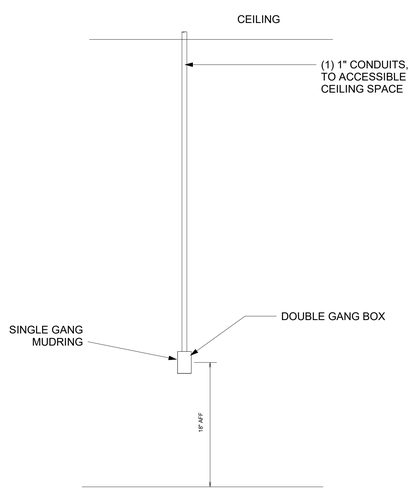
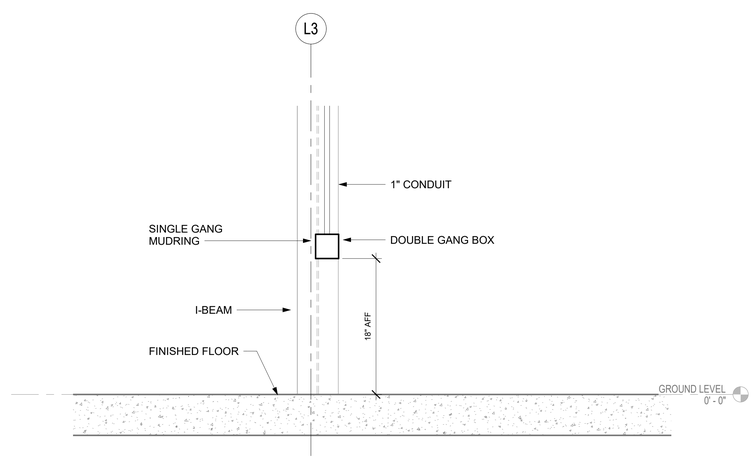


8 **DATA OUTLET ROUGH-IN DETAIL 18" AFF**
SCALE: NTS



9 **I-BEAM FACE MOUNTED DATA OUTLET ROUGH-INDETAIL**
SCALE: NTS

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TELECOM DETAILS

DRAWN BY: YC	CHECKED BY: GB
PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC RGB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

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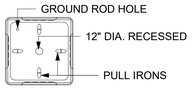
48" X 48" X 48"
PRECAST

CONCRETE
MAINTENANCE
HOLE



PLAN

ELEVATION

STANDARD PULL BOX FEATURE

1. DESIGNED FOR HS-20 LOADING
2. SEGMENTED THIN WALL KNOCKOUTS (SHOWN)
3. PULL IRONS CAST IN FLOOR (SHOWN)
4. 6"ø RECESSED SUMP IN FLOOR
5. 2"ø GROUND ROD HOLE IN FLOOR (SHOWN)
6. HOT DIPPED GALANIZED STEEL COVER
7. SLAB TOP W/3x3 HINGED COVER (SHOWN)
8. SMOOTH CORNERS FOR SAFE INSTALLATION & QUALITY

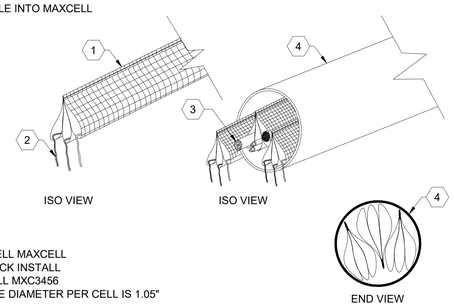
PULL BOX OPTION

1. UNISTRUT CAST INTO WALL FOR RACKING IN LIEU OF BOLT INSERTS
2. TERMINATORS CAST INTO WALL IN LIEU OF THIN WALL RECESS
3. NON-METALLIC RACKING
4. PLASTIC COATED RACKING
5. CAST IN GROUNDING LUG
6. PULL IRONS - ADD OR CHANGE LOCATION
7. ALUMINUM LID IN LIEU OF NON SKID LID
8. DIVIDER PLATE FOR MULTI-PURPOSE BOXES

1 48-X48-X48- MAINTENANCE HOLE DETAIL
SCALE: NTS

KEY NOTES

1. CELLS ARE CONNECTED ALONG THE ENTIRE LENGTH WITH A COLOR CODED STITCH
2. TAPE IS COLOR CODED AND MARKED FOR FOOTAGE
3. INSTALLATION OF CABLE INTO MAXCELL
4. 4" CONDUIT



ISO VIEW

ISO VIEW

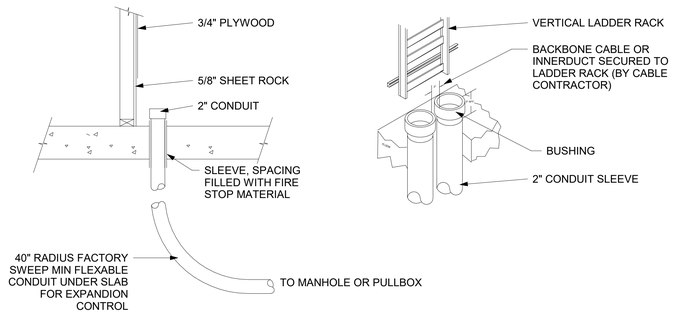
END VIEW

4G MAXCELL MAXCELL
TRIPLE PACK INSTALL
(3) 3" 3 CELL MXC3456
MAX CABLE DIAMETER PER CELL IS 1.05"

2 4" INNERDUCT DETAIL
SCALE: NTS

GENERAL NOTES

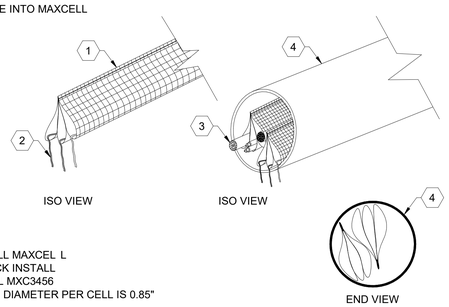
1. CONDUIT SLEEVES (BY ELECTRICAL CONTRACTOR OR BY G.C. DIRECTION)
2. FIRE STOP ALL FLOOR PENETRATIONS WITH APPROVED FIRE STOP SYSTEM RATED FOR SPECIFIES ARCH. SPECIFICATION FOR APPROVED RATED MATERIAL AND METHODS
3. CONDUIT SHALL BE CAPPED OR PLUGGED WITH REMOVABLE COVER AT ALL TIMES DURING INSTRUCTION.



3 CONDUIT SLEEVE DETAIL
SCALE: NTS

KEY NOTES

1. CELLS ARE CONNECTED ALONG THE ENTIRE LENGTH WITH A COLOR CODED STITCH
2. TAPE IS COLOR CODED AND MARKED FOR FOOTAGE
3. INSTALLATION OF CABLE INTO MAXCELL
4. 2" CONDUIT



ISO VIEW

ISO VIEW

END VIEW

4G MAXCELL MAXCEL L
TRIPLE PACK INSTALL
(2) 2" 3 CELL MXC3456
MAX CABLE DIAMETER PER CELL IS 0.85"

4 2" INNERDUCT DETAIL
SCALE: NTS

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SHEET NUMBER

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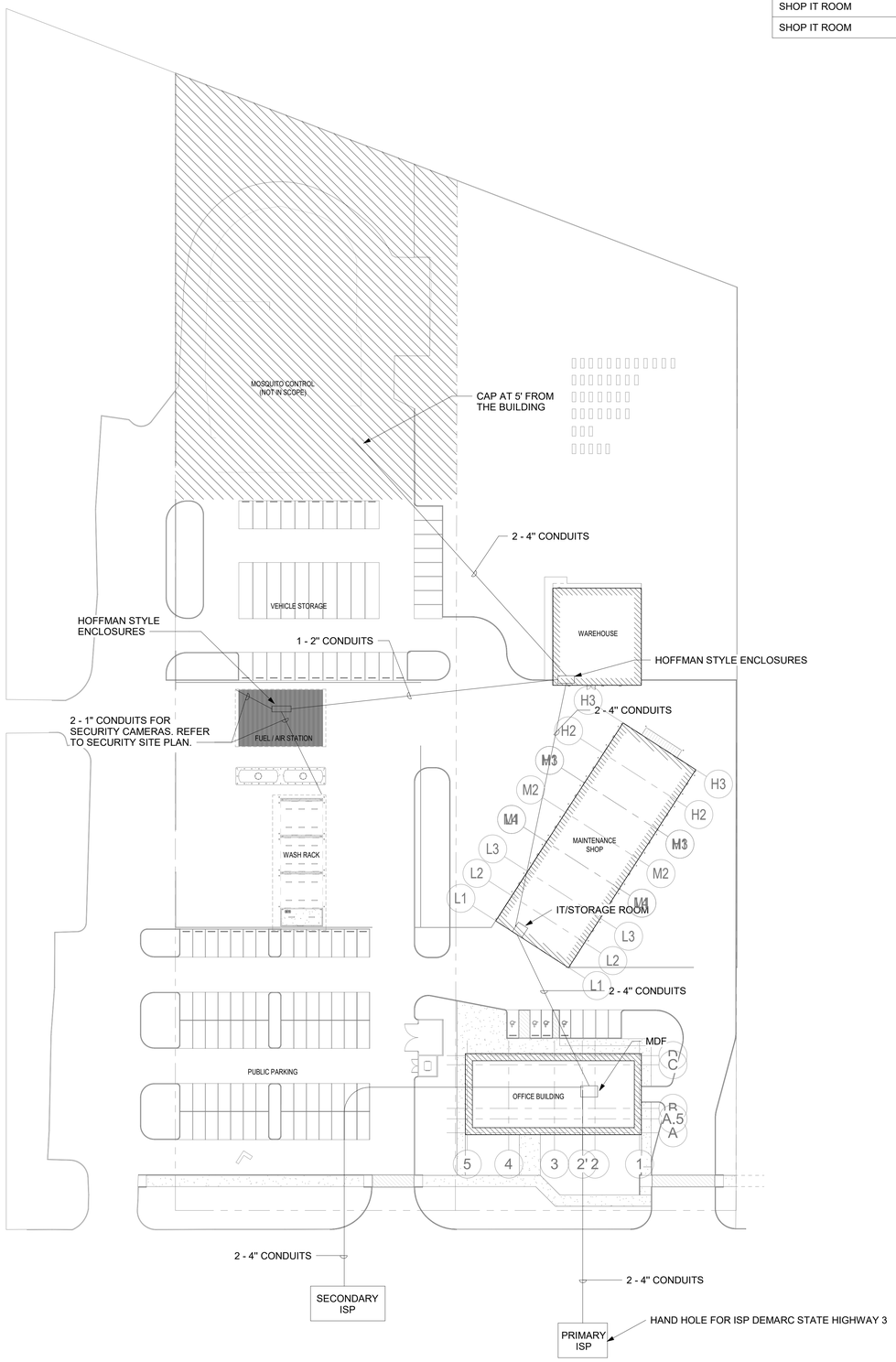
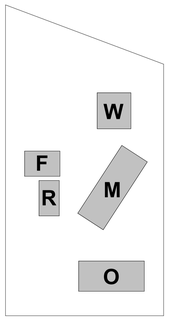
FROM	TO	BACKBONE CABLE
OFFICE MDF	SHOP IT ROOM	(1) 12 STRAND SM FIBER AND 25 PAIRS CAT 3 COPPER
OFFICE MDF	WAREHOUSE ENCLOSURE	(1) 12 STRAND SM FIBER AND 25 PAIRS CAT 3 COPPER
OFFICE MDF	FUEL STATION ENCLOSURE	(1) 12 STRAND SM FIBER AND 25 PAIRS CAT 3 COPPER
SHOP IT ROOM	SITE CAMERA 01	CAT 6 OSP
SHOP IT ROOM	SITE CAMERA 02	CAT 6 OSP
SHOP IT ROOM	FUEL CONTROLLER TOWER	CAT 6 OSP



1 **TELECOM SITE PLAN**
SCALE: 1" = 40'-0"

KEY PLAN (NOT TO SCALE)



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BICSI ID # 186242
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TELECOM SITE PLAN

DRAWN BY	CHECKED BY
YC	GB
PROJECT NUMBER	PROJECT ABBREVIATION
418198	GC R&B
ORIGINAL ISSUE	DATE
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SHEET NUMBER

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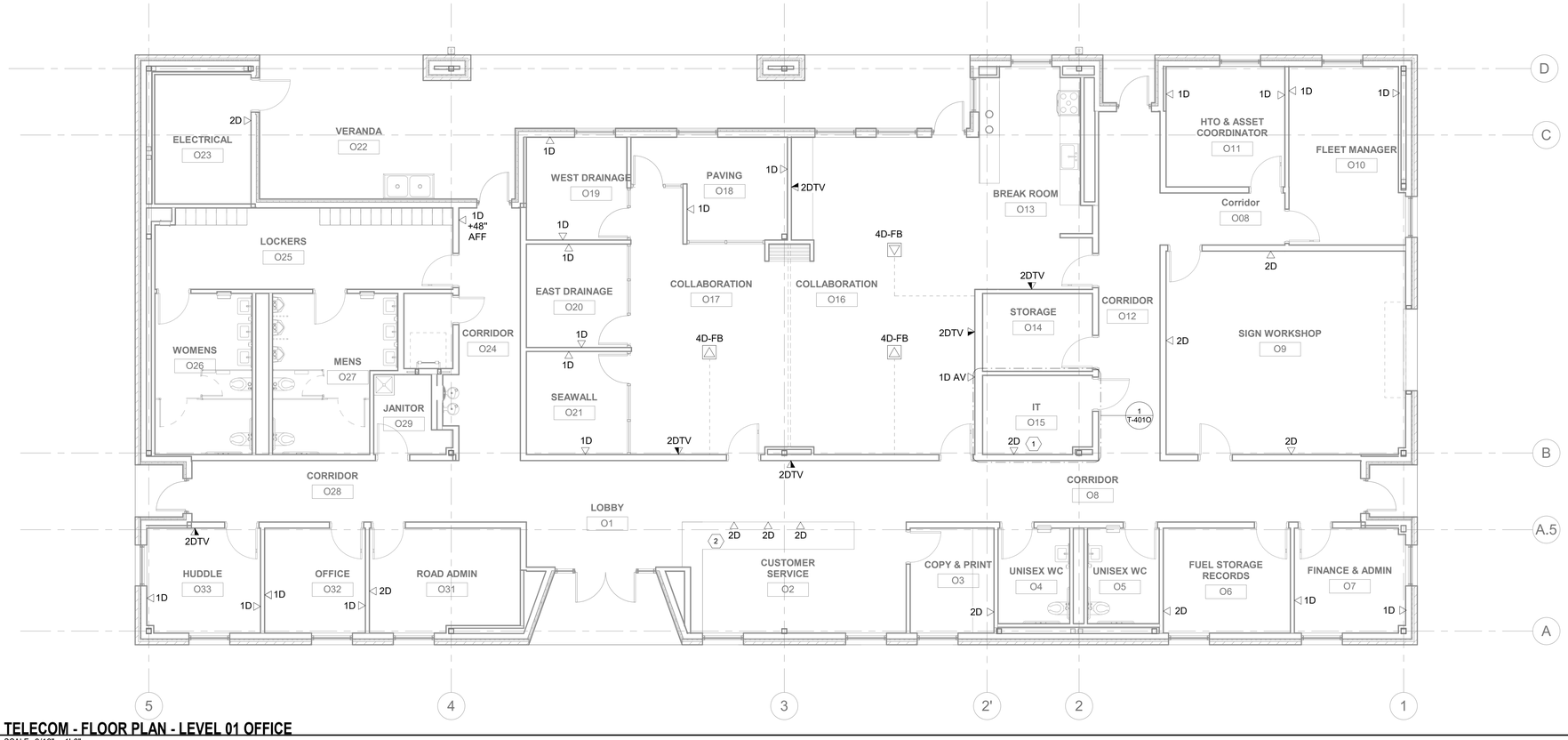
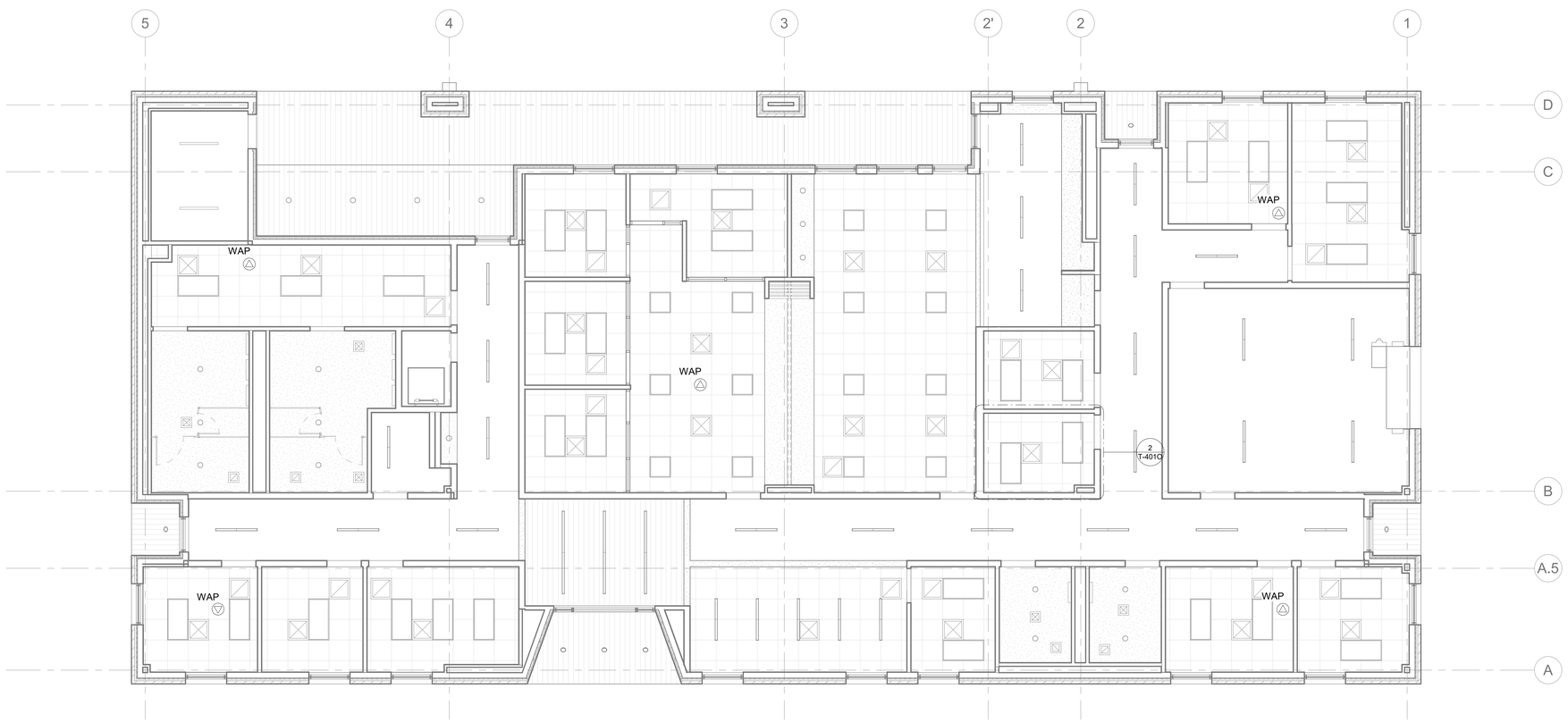


1 **TELECOM - FLOOR PLAN - LEVEL 01 OFFICE**
SCALE: 3/16" = 1'-0"

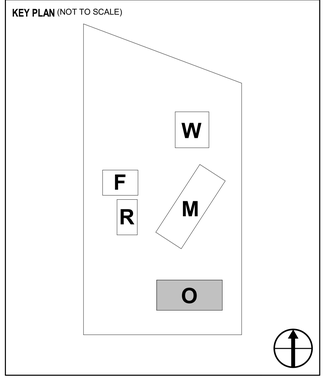


2 **TELECOM - REFLECTED CEILING PLAN - LEVEL 01 OFFICE**
SCALE: 3/16" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	COORDINATE EXACT LOCATION WITH FUEL FORCE INSTALLER.
2	CABLES WILL FEED INTO FURNITURE.

KEY PLAN (NOT TO SCALE)



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BICSI ID # 186242
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TELECOM - FLOOR PLAN &
REFLECTED CEILING PLAN - OFFICE

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418198	GC RGB
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FILE PATH: C:\Users\nkoelsch\Documents\GALVESTON COUNTY ROAD & BRIDGE-4B-R19-CENTRAL_natalie.koelsch9ZJW4.rvt
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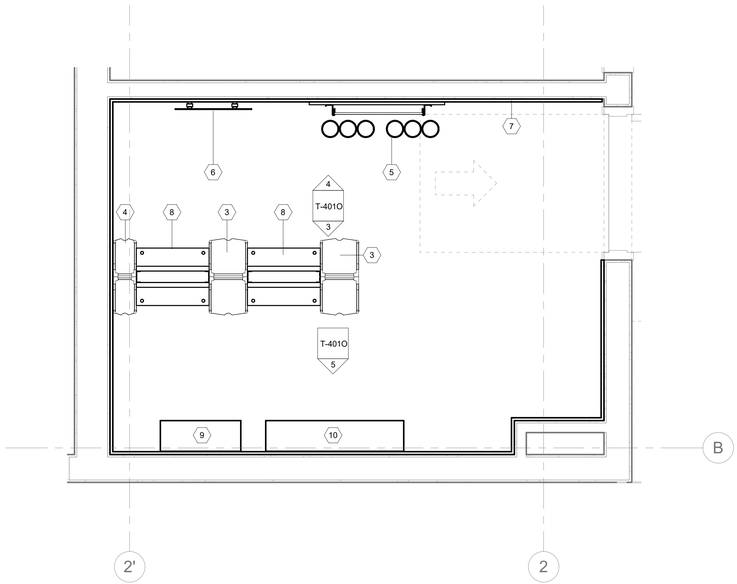
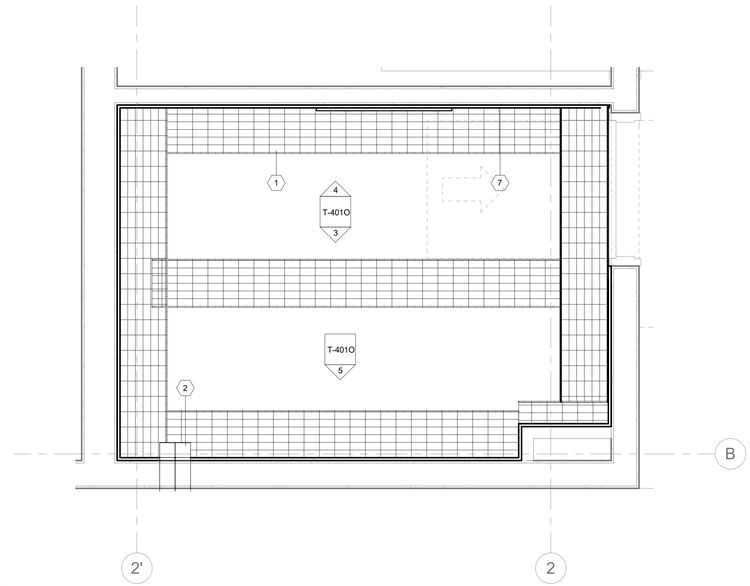
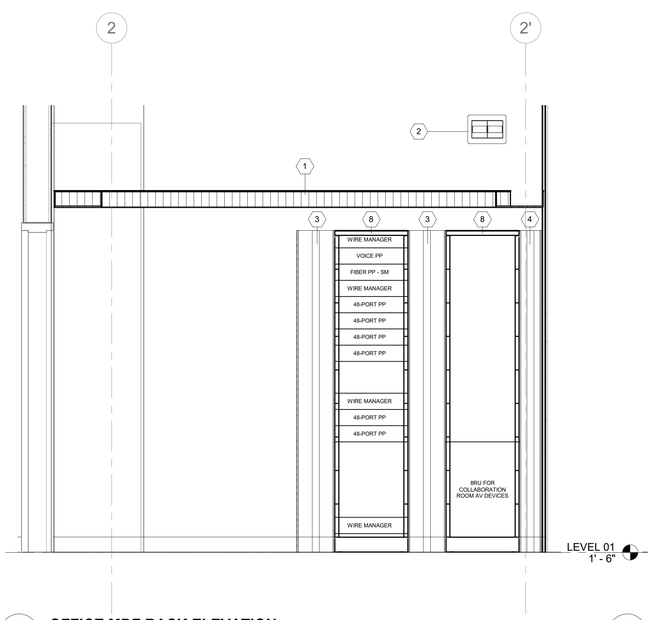


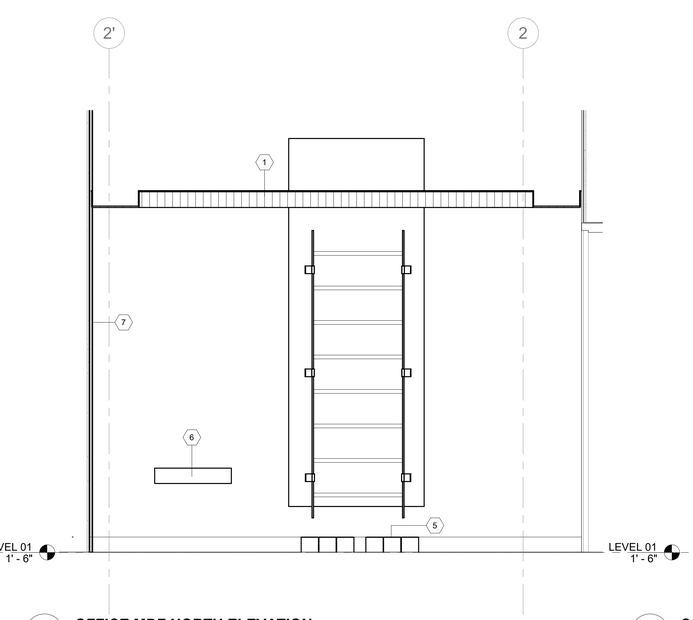
1 **TELECOM - LEVEL 01 OFFICE MDF FLOOR PLAN**
SCALE: 3/4" = 1'-0"



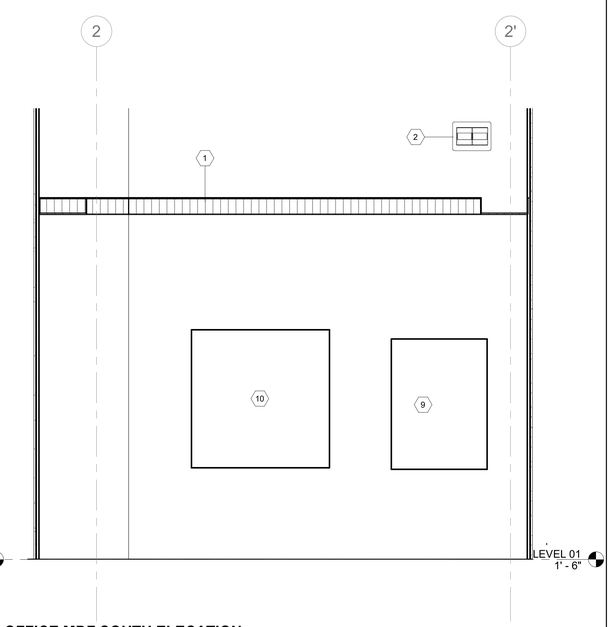
2 **TELECOM - LEVEL 01 OFFICE MDF RCP PLAN**
SCALE: 3/4" = 1'-0"



3 **OFFICE MDF RACK ELEVATION**
SCALE: 3/4" = 1'-0"



4 **OFFICE MDF NORTH ELEVATION**
SCALE: 3/4" = 1'-0"



5 **OFFICE MDF SOUTH ELECATION**
SCALE: 3/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	12" BASKET TRAY AT 7'6" AFF
2	(2)-4" FIRESTOP EZ-PATH WITH RADIUS CONTROL MODULE
3	10" VERTICAL WIRE MANAGER
4	6" VERTICAL WIRE MANAGER
5	(6)-4" CONDUITS WITH VERTICAL LADDER TRAY
6	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
7	3/4" FIRE RATED PLYWOOD
8	2-POST EQUIPMENT RACK
9	RESERVED SPACE FOR SECURITY PANEL
10	RESERVED 3' SQUARE FOR THE FUEL FORCE. INSTALLED BY OTHERS.

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TELECOM - ENLARGED MDF - OFFICE

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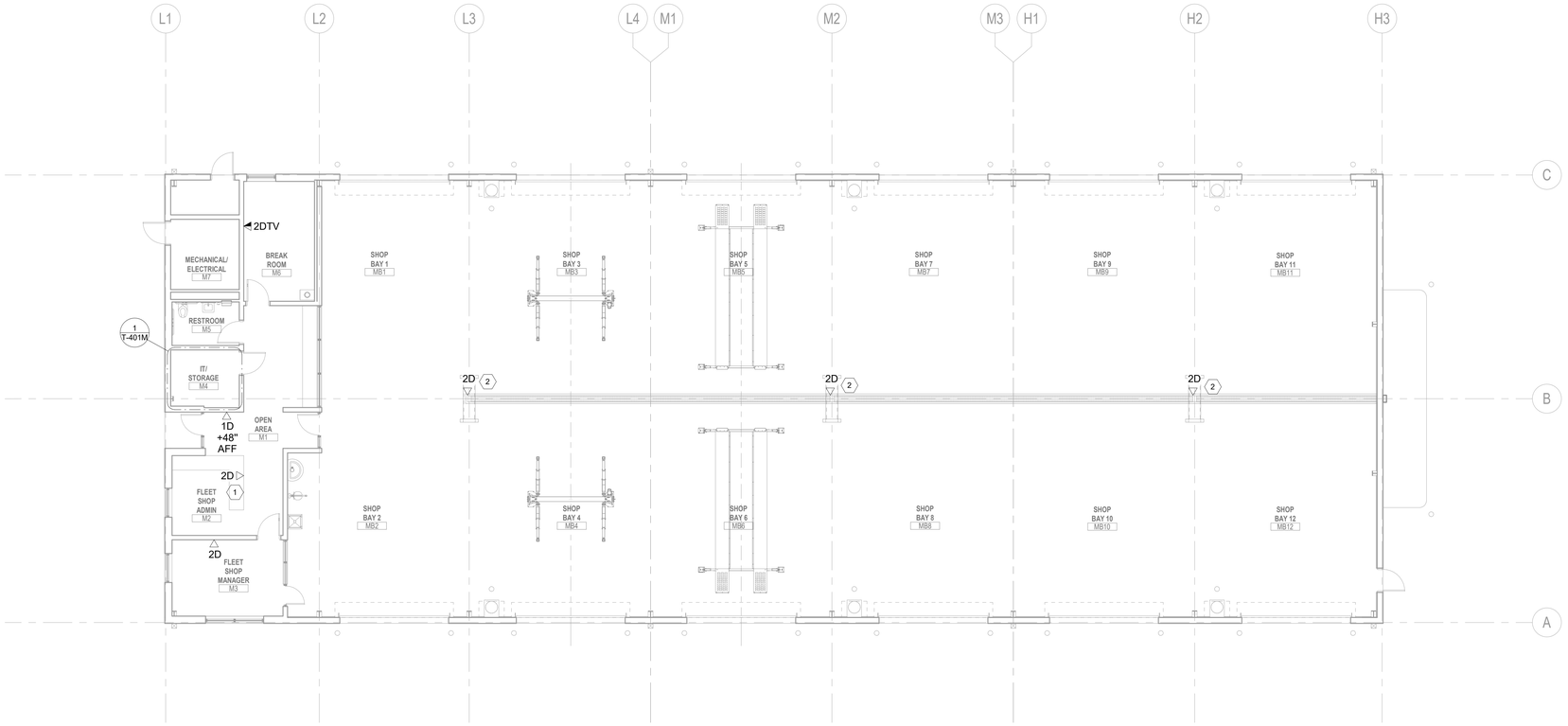
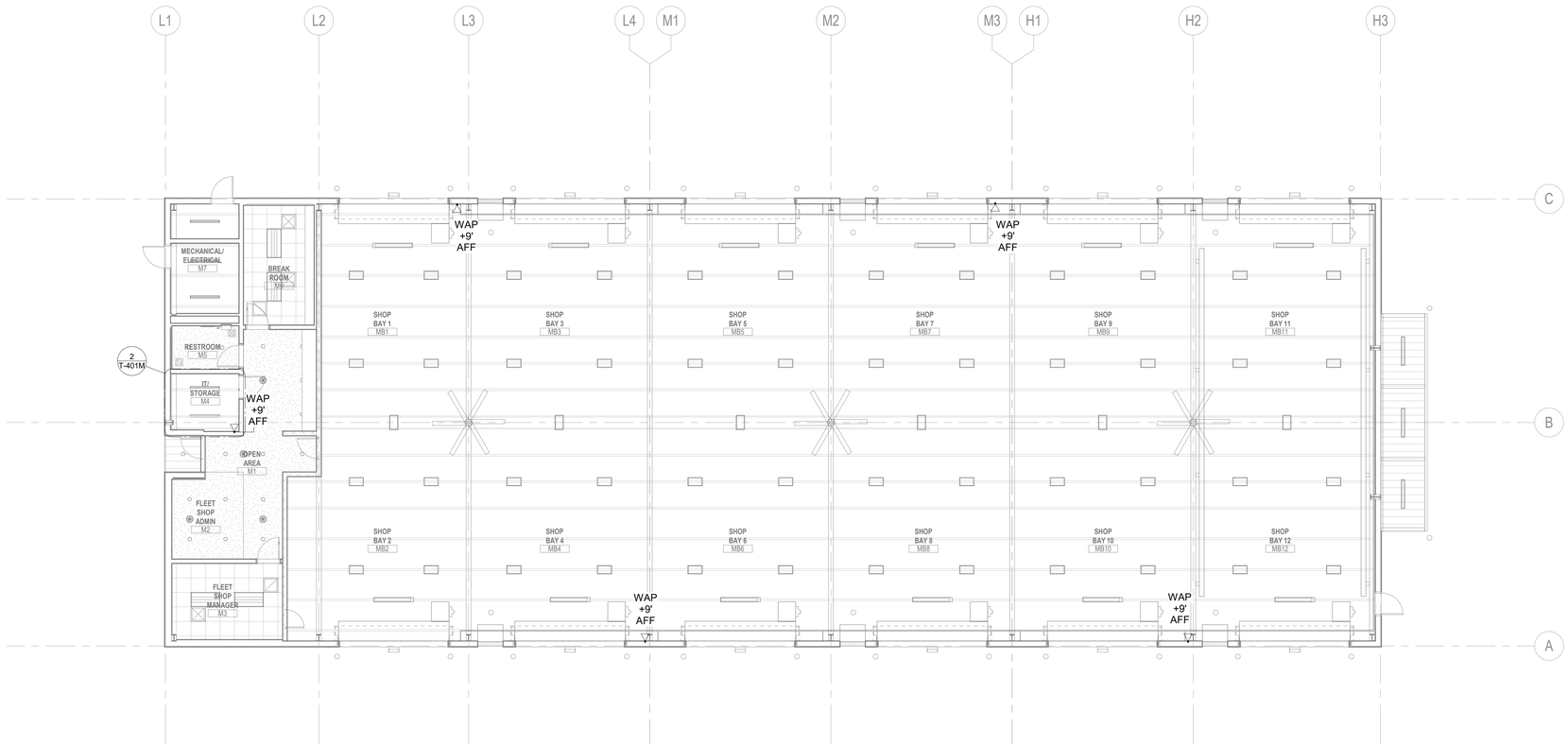


1 **TELECOM - FLOOR PLAN - LEVEL 01 SHOP**
SCALE: 1/8" = 1'-0"



2 **TELECOM - REFLECTED CEILING PLAN - LEVEL 01 SHOP**
SCALE: 1/8" = 1'-0"

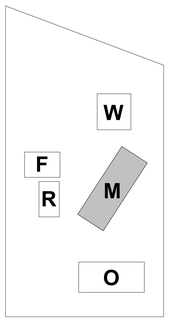
KEYED NOTES

NUMBER	DESCRIPTION
1	CONDUIT WILL ROUTE DOWN THE WALL AND THROUGH THE FURNITURE WITH DOUBLE GANG BOX AND SINGLE GANG MUD RING.
2	COORDINATE THE EXACT LOCATION AND ROUTING INTO FLOOR BOX WITH THE ELECTRICAL CONTRACTOR.

TYPICAL NOTES:

ANY VISIBLE DEVICE TO HAVE MOUNTING DETAILS SHOWN IN THE SHOP DRAWING SUBMITTALS

KEY PLAN (NOT TO SCALE)



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TELECOM -REFLECTED CEILING & EQUIPMENT PLANS - MAINTENANCE SHOP

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PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC RGB
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

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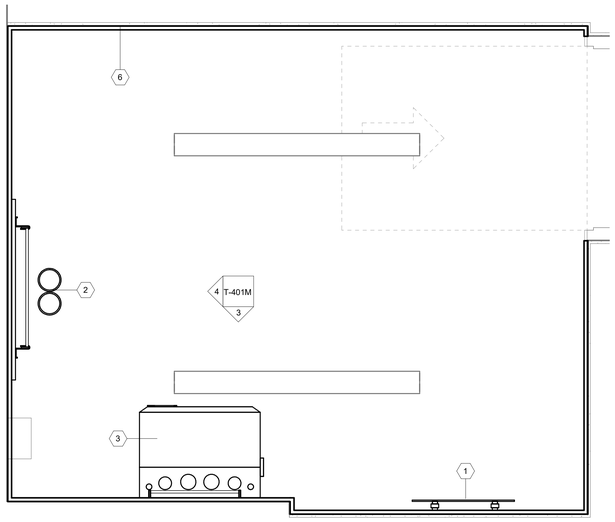
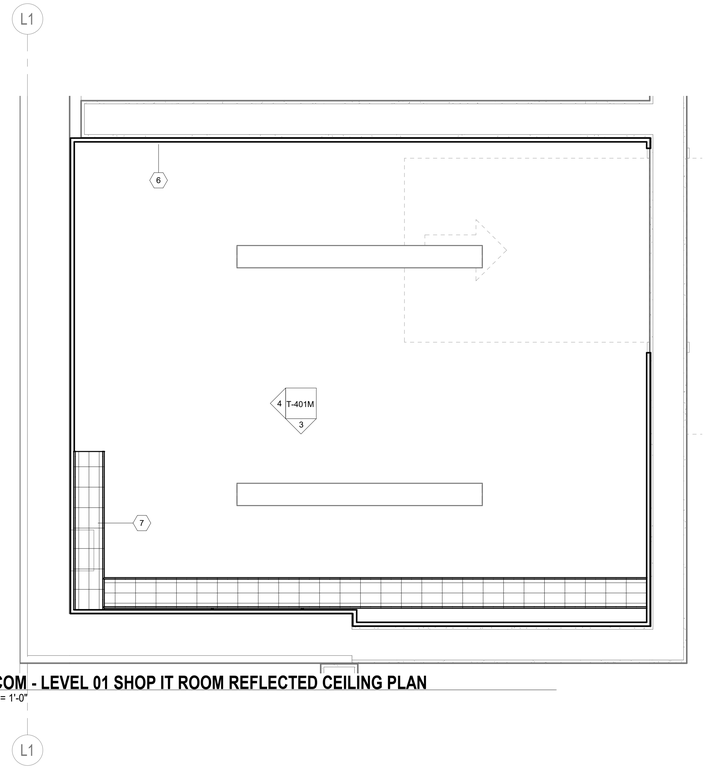
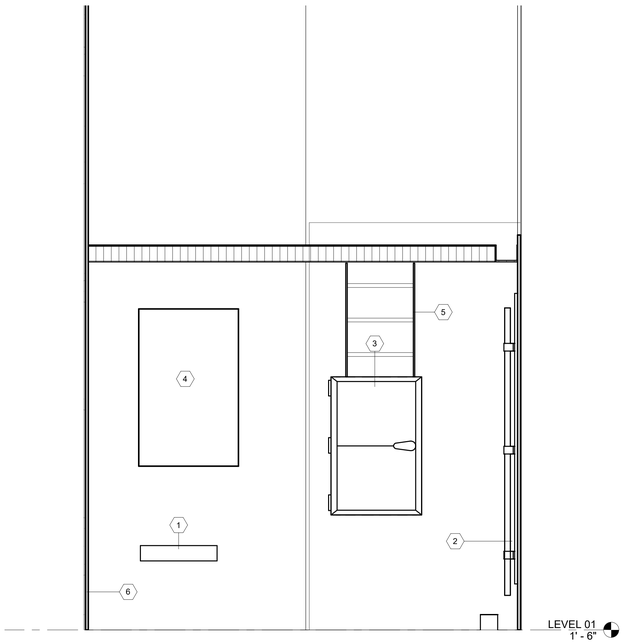


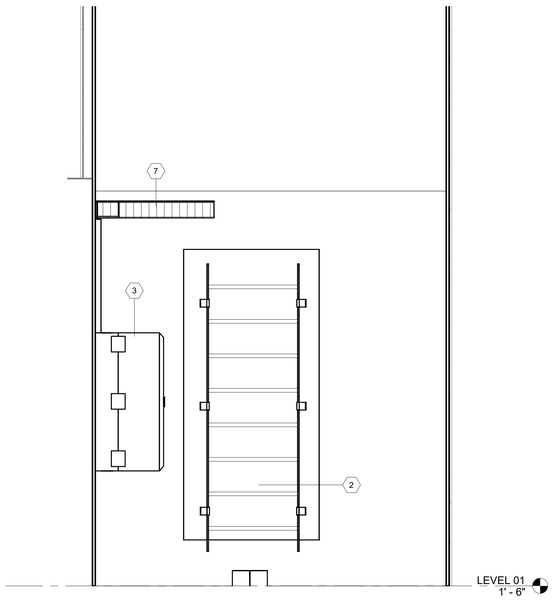
1 **TELECOM - LEVEL 01 SHOP IT ROOM FLOOR PLAN**
SCALE: 1" = 1'-0"



2 **TELECOM - LEVEL 01 SHOP IT ROOM REFLECTED CEILING PLAN**
SCALE: 1" = 1'-0"



3 **SHOP IT ROOM SOUTHEAST ELEVATION**
SCALE: 3/4" = 1'-0"



4 **SHOP IT ROOM SOUTNWEST ELEVATION**
SCALE: 3/4" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
2	(2)-4" CONDUITS WITH VERTICAL LADDER TRAY
3	HOFFMAN STYLE ENCLOSURE AT 4' AFF
4	RESERVED SPACE FOR SECURITY PANEL
5	10" VERTICAL LADDER RACK
6	3/4" FIRE RATED PLYWOOD
7	6" BASKET TRAY AT 8' AFF

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TELECOM - ENLARGED IT ROOM - MAINTENANCE SHOP

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YC	GB
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418198	GC R&B
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GENERAL NOTES

1. THE ARCHITECTURAL PLANS AND SPECIFICATIONS, GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS AND OTHER REQUIREMENTS OF DIVISION 1, THE MECHANICAL, ELECTRICAL, COMMUNICATIONS AND SECURITY PLANS AND SPECIFICATIONS, MAY APPLY TO THE WORK SPECIFIED.
2. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE PREMISES TO DETERMINE THE EXTENT OF WORK AND CONDITION UNDER WHICH IT WILL BE DONE. REVIEW AND VERIFY CONTRACT DOCUMENTS IN RELATION TO FIELD CONDITIONS TO VERIFY ACCURACY, CONFIRMING WITH THE OWNER, OR THEIR DESIGNATED REPRESENTATIVE, THAT THE WORK HAS BEEN COMPLETED PRIOR TO PROCEEDING WITH INSTALLATION. REGARDING ANY PROJECT RELATED QUESTIONS; THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING CLARIFICATIONS FROM THE OWNER, OR THEIR DESIGNATED REPRESENTATIVE, PRIOR TO PROCEEDING WITH THE WORK OR RELATED WORK IN QUESTION.
3. SHOULD THERE BE CONFLICT BETWEEN THE DOCUMENTS LISTED ABOVE, THE MOST STRINGENT SPECIFICATION SHALL APPLY.
4. ANY DISCREPANCIES BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS MUST BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE OWNER, OR THEIR DESIGNATED REPRESENTATIVE, FOR CLARIFICATION.
5. THE CONTRACTOR SHALL OBTAIN THE OWNER'S PERMISSION PRIOR TO PROCEEDING WITH ANY WORK NECESSITATING CUTTING INTO OR THROUGH AND PART OF BUILDING STRUCTURES SUCH AS GIRDERS, BEAMS, CONCRETE OR TILE FLOORS, PARTITIONS AND/OR CEILINGS.

PROJECT NOTES

1. AUDIOVISUAL ELEMENTS FOR EACH ROOM ARE ROUTED TO THE ASSOCIATED AUDIOVISUAL OUTLET IN CONDUIT, CABLE TRAY, AND OR J-HOOK.
2. FLAT PANEL DISPLAYS TO INCLUDE DISPLAY MOUNTS AND BACK BOXES WITH CONDUIT AND CABLING AS NOTED.
3. DATA AND FIBER OPTIC CABLE MUST BE INSTALLED, TERMINATED, TESTED AND DOCUMENTED BY A TELECOM CONTRACTOR.
4. AUDIOVISUAL CABLES SHALL NOT BE PAINTED.
5. CONTRACTOR TO COORDINATE FINAL LOCATIONS OF ALL SPEAKERS, PROJECTORS, CAMERAS AND MICROPHONES WITH ELECTRICAL, LIGHTING AND HVAC LAYOUT.
6. GENERAL CONTRACTOR TO PROVIDE 5/8" PLYWOOD BLOCKING, IN WALL, FOR ALL WALL MOUNTED FLAT SCREEN DISPLAYS.

COORDINATION NOTES

1. AV DRAWING SET CONTAINS INFORMATION RELATED TO MULTIPLE TRADES (FRAMING, ELECTRICAL, ETC.) AND REQUIRES COORDINATION FROM THE GENERAL CONTRACTOR.
2. CONTRACTOR TO COORDINATE ALL AV PLATE FINISHES WITH ARCHITECT.
3. CONTRACTOR TO COORDINATE ALL CEILING MOUNTED SPEAKERS WITH ELECTRICAL LIGHTING LAYOUT. CENTER ALL SPEAKERS IN CEILING TILE. CONTACT ARCHITECT AND A/V DESIGNER OF ANY DISCREPANCIES.
4. CONTRACTOR TO COORDINATE WITH OWNER ON ALL FINAL LOCATIONS FOR AUDIO VIDEO CONTROL PLATE AND INTERCONNECT PLATES.
5. ALL AV WALL PLATES, BACK BOXES, AND PLENUM BOXES REQUIRE A CONDUIT BACK TO CORRIDOR SPACE OR NEAREST ACCESSIBLE CEILING.
6. ALL AV FLOOR BOXES SHALL HAVE CONDUIT RUNNING TO ACCESILBLE CEILING.
7. WALLS WITH DISPLAYS MOUNTED ON OPPOSING SIDES OF THE WALL MUST BE FRAMED OUT FOR BACKBOXES TO FIT BACK TO BACK.
8. THIS SHEET INCLUDES A RESPONSIBILITY MATRIX FOR ALL AV AND AV-RELATED ITEMS. ADDITIONAL COORDINATION FOR FURNITURE INSTALLATION WILL BE REQUIRED.

AUDIOVISUAL SYMBOL LEGEND

SYMBOL	DESCRIPTION	POWER REQUIREMENTS	DATA REQUIREMENTS	CONDUIT REQUIREMENTS	NOTES
AV	AUDIOVISUAL WALLPLATE	120VAC DUPLEX CONVIENCE OUTLET WITH IN 12" OF AV PLATE	N/A	1-1/4" CONDUIT FROM 2-GANG BACK BOX WITH 2-GANG MUDRING TO ACCESSIBLE CEILING.	REFER TO PLANS AND ELEVATIONS FOR LOCATION AND MOUNTING HEIGHTS.
CP	AUDIOVISUAL CONTROL PANEL	N/A	N/A	1-1/4" CONDUIT FROM 2-GANG BACK BOX WITH 2-GANG MUDRING TO ACCESSIBLE CEILING.	REFER TO PLANS AND ELEVATIONS FOR LOCATION AND MOUNTING HEIGHTS.
S	CEILING-RECESSED DISTRIBUTED LOUDSPEAKER.	N/A	N/A	N/A	
CM	CEILING MOUNTED MICROPHONE.	N/A	N/A	N/A	
XX" FPD	FLAT PANEL DISPLAY (TELEVISION) WITH IN-WALL BACKBOX.	120VAC/20A DUPLEX OUTLET INSTALLED WITHIN CHIEF BACKBOX.	2-DATA INSTALLED WITHIN CHIEF BACKBOX.	REF: "AUDIO VISUAL DETAILS" SHEET	
FPD-F	FUTURE FLAT PANEL DISPLAY (TELEVISION) WITH IN-WALL BACKBOX.	120VAC/20A DUPLEX OUTLET INSTALLED WITHIN CHIEF BACKBOX.	2-DATA INSTALLED WITHIN CHIEF BACKBOX.	REF: "AUDIO VISUAL DETAILS" SHEET	PROVIDE INFRASTRUCUTRE ONLY TO SUPPORT FUTURE DISPLAY. PROVIDE BLANK COVER FOR BACK BOX.
XX" DSD	DIGITAL SIGNAGE DISPLAY (TELEVISION)	120VAC/20A DUPLEX OUTLET BEHIND DISPLAY.	2-DATA OUTLET BEHIND DISPLAY.	REF: "AUDIO VISUAL DETAILS" SHEET	SIGNAGE PLAYERS TO BE OWNER FURNISHED AND INSTALLED BY AV CONTRACTOR.
FB	AV FLOOR BOX.	(2) 120VAC/20A DUPLEX OUTLETS ON A DEDICATED CIRCUIT.	TELECOM TO SPECIFY.	REF: "AUDIO VISUAL DETAILS" SHEET AND ANY ADDITIONAL KEYNOTES ON FLOOR PLANS.	FLOOR BOX TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. DASHED LINE ON PLAN REPRESENTS RECOMMENDED CONDUIT PATHWAY TO DISPLAY OR ABOVE FINISHED CEILING.
ALS	ASSISTIVE LISTENING TRANSMITER	N/A	N/A	REF: "AUDIO VISUAL DETAILS" SHEET AND ANY ADDITIONAL KEYNOTES ON FLOOR PLANS.	REFER TO PLANS AND ELEVATIONS FOR LOCATION AND MOUNTING HEIGHTS.
VC	VIDEOCONFERENING CAMERA	N/A	N/A	REF: "AUDIO VISUAL DETAILS" SHEET AND ANY ADDITIONAL KEYNOTES ON FLOOR PLANS.	REFER TO PLANS AND ELEVATIONS FOR LOCATION AND MOUNTING HEIGHTS.

ABBREVIATIONS

ALS	ASSISTIVE LISTENING SYSTEM
AV	AUDIOVISUAL
AVC	AUDIOVISUAL CONTRACTOR
AWG	AMERICAN WIRE GAGE
CATV	COMMUNITY ANTENNA TELEVISION
CCTV	CLOSED CIRCUIT TELEVISION
dB	DECIBEL
DEC	DECODER
EQ	EQUAL
EMT	ELECTRIC METALLIC TUBING
ENC	ENCODER
EQUIP	EQUIPMENT
HDBT	HDBASET
IDF	INTERMEDIATE DISTRIBUTION FRAME
LAN	LOCAL AREA NETWORK
MDF	MAIN DISTRIBUTION FRAME
MH	MANHOLE
MM	MULTIMODE FIBER
NEC	NATIONAL ELECTRIC CODE
OFOI	OWNER FURNISH OWNER INSTALLED
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMIN.
PB	PULLBOX
PVC	POLYVINYL CHLORIDE
RFI	RADIO FREQUENCY INTERFERENCE
SM	SINGLE MODE FIBER
STP	SHIELDED TWISTED PAIR
TBB	TELECOMMUNICATIONS BONDING BACKBONE

AV RESPONSIBILITY MATRIX

ITEM	GC	AVC	OWNER
NETWORK CABLING TO IDF	X	-	-
CONDUITS	X	-	-
J-BOXES	X	-	-
POWER >24VDC	X	-	-
FLOOR BOXES/FLOOR POKES	X	-	-
DISPLAY BACK BOXES/BACKING	X	-	-
ACCESS PANELS	X	-	-
AV CABLING	-	X	-
AV SWITCHERS	-	X	-
AV CONTROLLERS	-	X	-
AV RACKS	-	X	-
AUDIO/PA SYSTEMS	-	X	-
DISPLAYS AND MOUNTING	-	X	-
PROJECTORS AND MOUNTING	-	X	-
PROJECTION SCREENS AND MOUNTING	-	X	-
AV WALL PLATES	-	X	-
FURNITURE	-	-	X
COMPUTERS	-	-	X
CABLE CUBBIES	-	X	-
DOCUMENT CAMERAS	-	X	-

AUDIOVISUAL DRAWINGS INDEX

TA-001 AUDIOVISUAL - INDEX SHEET

TA-101O AUDIOVISUAL - FLOOR PLAN & REFLECTED CEILING PLAN - OFFICE

TA-101M AUDIOVISUAL - FLOOR PLAN - MAINTENANCE SHOP

TA-501 AUDIOVISUAL - DETAILS
TA-502 AUDIOVISUAL - DETAILS
TA-503 AUDIOVISUAL - DETAILS

TA-701 AUDIOVISUAL - SCHEMATICS

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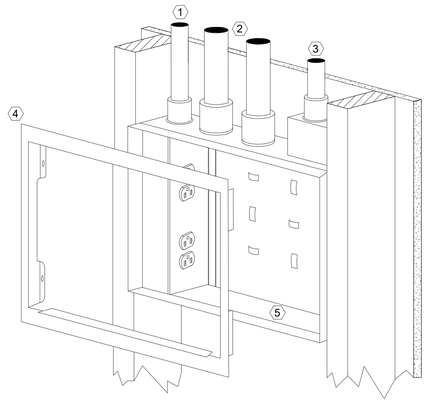
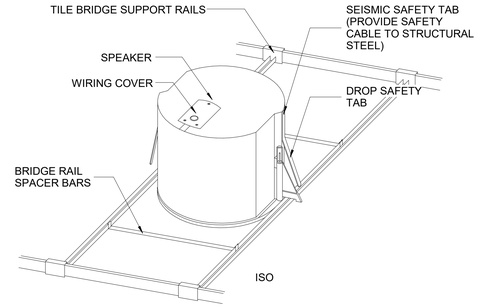


KEYNOTES:

1. CONDUIT FOR POWER
2. (2) 1-1/4" CONDUIT FOR AV CONNECTIVITY
3. CONDUIT FOR DATA OUTLET
4. KEEP FLANGE AND COVER FOR TRIM-OUT AFTER ROUGH-IN
5. PROVIDE CONDUIT DOWN TO ANY DEVICES REQUIRED BELOW DISPLAY LOCATION. DO NOT RUN HIGH VOLTAGE WIRING OR CONDUIT THROUGH AV JUNCTION BOX

1 DISPLAY BACK BOX ROUGH-IN DETAILS

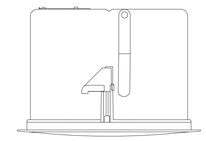
SCALE: 12" = 1'-0"



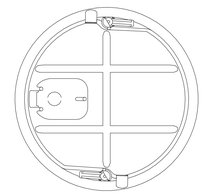
ISO

NOTES:

1. PROVIDE NEW CONSTRUCTION BRACKET FOR ANY DRYWALL OR LATH AND PLASTER INSTALLATIONS.
2. IN RETROFIT AREAS (IF APPLICABLE) USE TILE BRIDGE AND SUPPORT RAILS AND SPACERS PER MANUFACTURERS RECOMMENDATIONS.



SIDE



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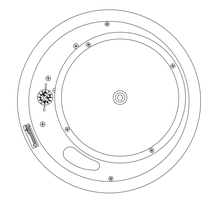

FRONT (NO GRILL SHOWN)

2 CEILING SPEAKER DETAIL

SCALE: NTS

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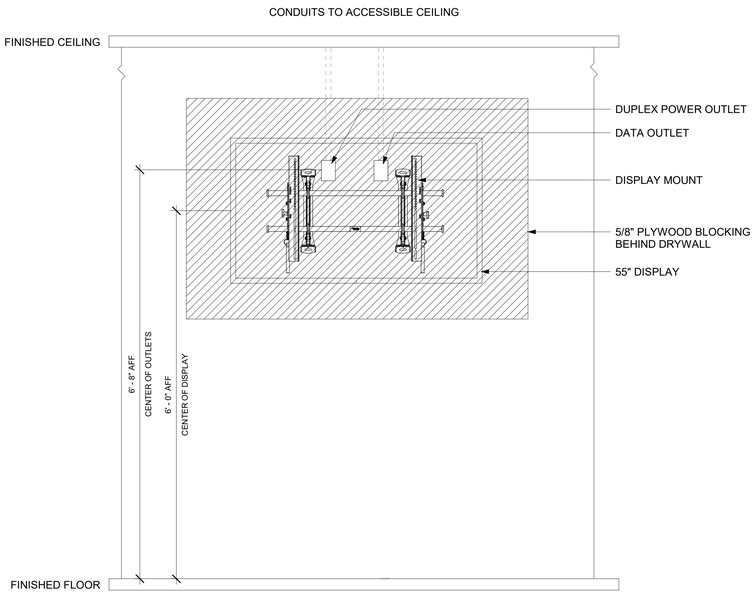
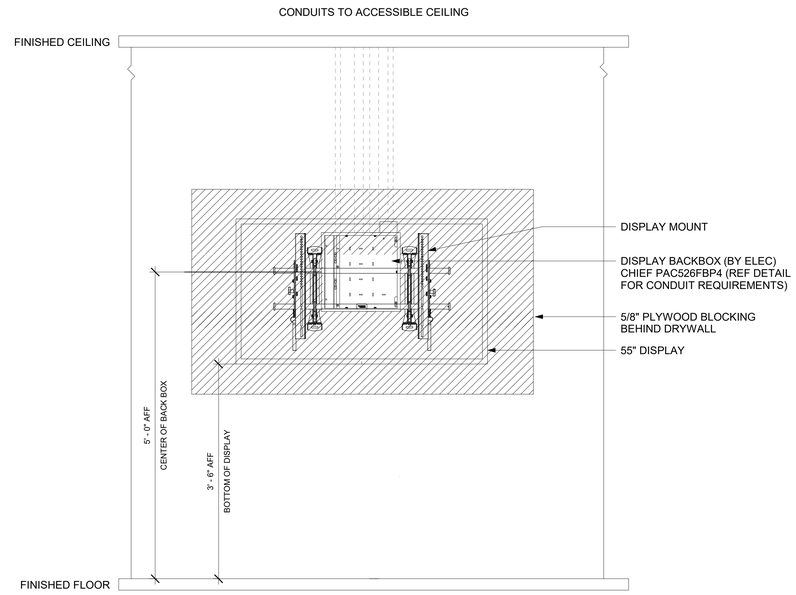
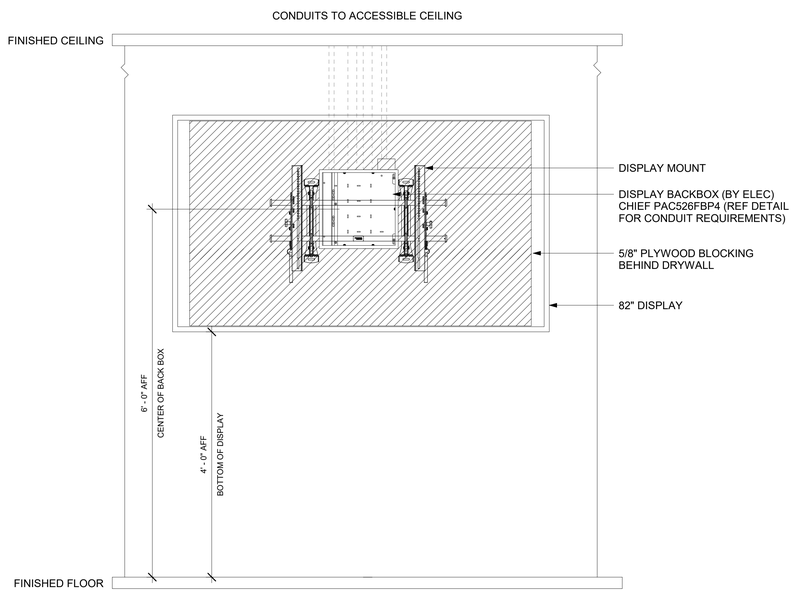


1 **55" DSD (DIGITAL SIGNAGE) DISPLAY ROUGH-IN AND ELEVATION**
SCALE: 1" = 1'-0"



2 **55" FPD (FLAT PANEL DISPLAY) ROUGH-IN AND ELEVATION**
SCALE: 1" = 1'-0"



3 **82" FPD (FLAT PANEL DISPLAY) ROUGH-IN AND ELEVATION**
SCALE: 1" = 1'-0"

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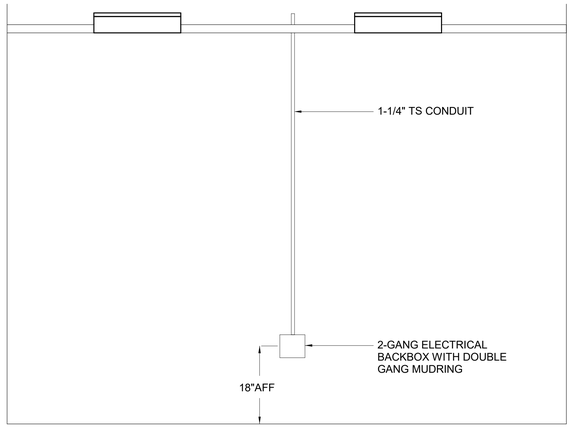
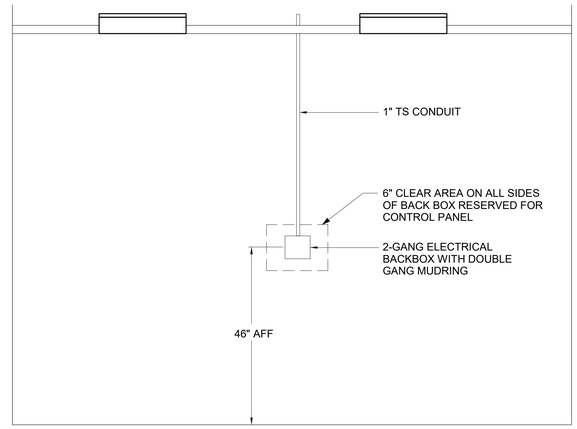
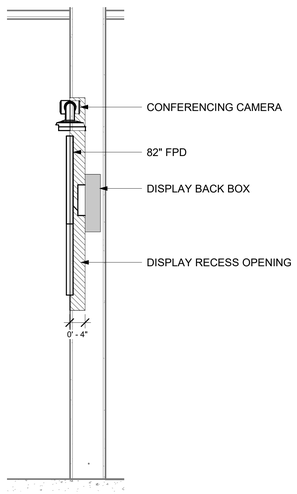


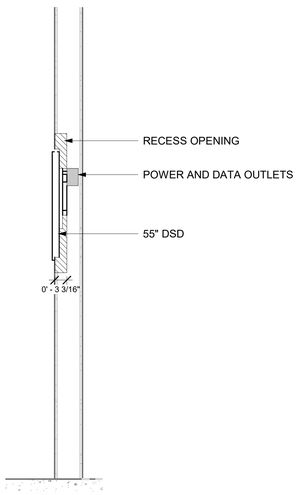
1 **"AV" WALL PLATE ROUGH-IN DETAIL**
SCALE: NTS



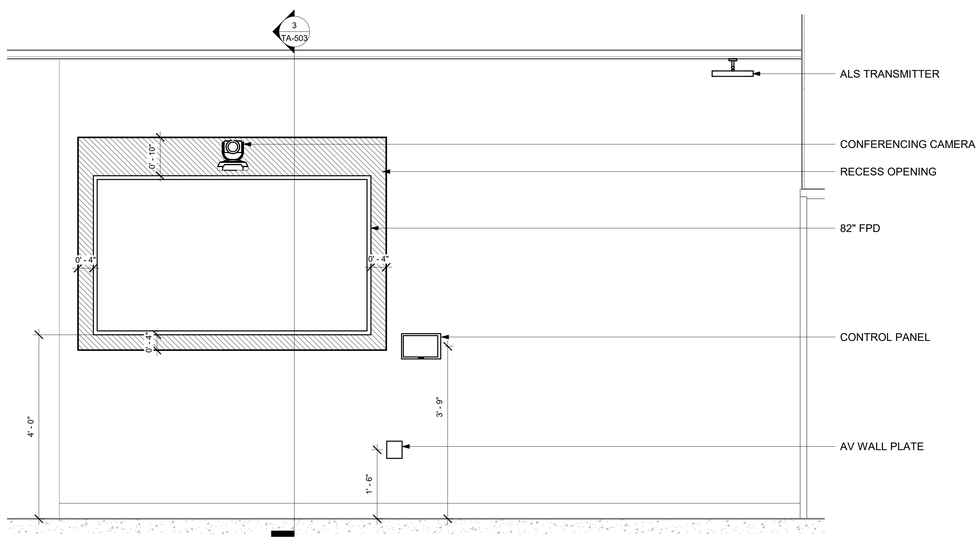
2 **"CP" CONTROL PANEL ROUGH-IN DETAIL**
SCALE: NTS



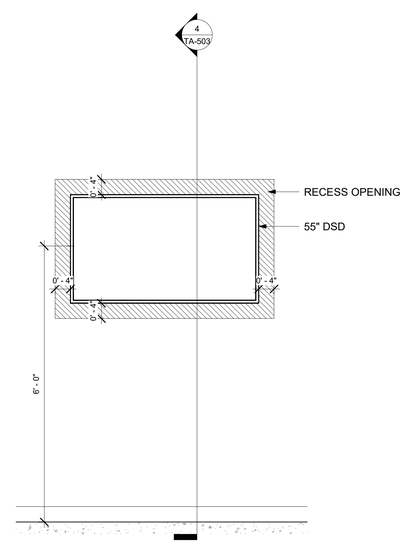
3 **SECTION - COLLABORATION O16 DISPLAY RECESS**
SCALE: 3/4" = 1'-0"



4 **SECTION - DIGITAL SIGNAGE DISPLAY RECESS**
SCALE: 3/4" = 1'-0"



5 **ELEVATION - COLLABORATION O16 DISPLAY WALL**
SCALE: 3/4" = 1'-0"



6 **ELEVATION - DIGITAL SIGNAGE DISPLAY WITH RECESS**
SCALE: 3/4" = 1'-0"

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Galveston County Road & Bridge Facilities

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Dickinson, TX 77539

REVISION HISTORY

REVISION	DESCRIPTION	DATE

PROFESSIONAL SEALS

REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
Bicsi
Wesly Ausman
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AUDIOVISUAL - DETAILS

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USER NAME:
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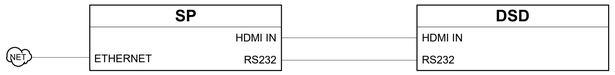
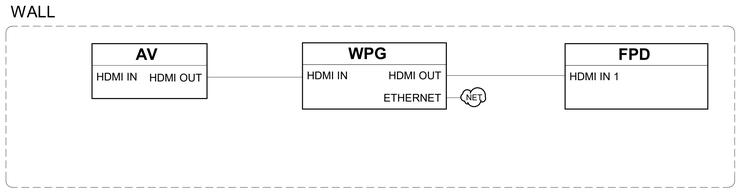
SYMBOL	DESCRIPTION	MAKE	MODEL	NOTES
SP	DIGITAL SINAGE PLAYER	BRIGHTSIGN	XT1144	COORDINATE INTEGRATION WITH IT DEPARTMENT. PROVIDE 64GB SD CARD. CONTENT TO BE OFOI.
DSD	DIGITAL SIGNAGE DISPLAY	SAMSUNG, NEC, LG	SIZE PER PLANS	PROVIDE LATEST MODEL WITH REQUIRED CONNECTIVITY AND FUNCTIONALITY.



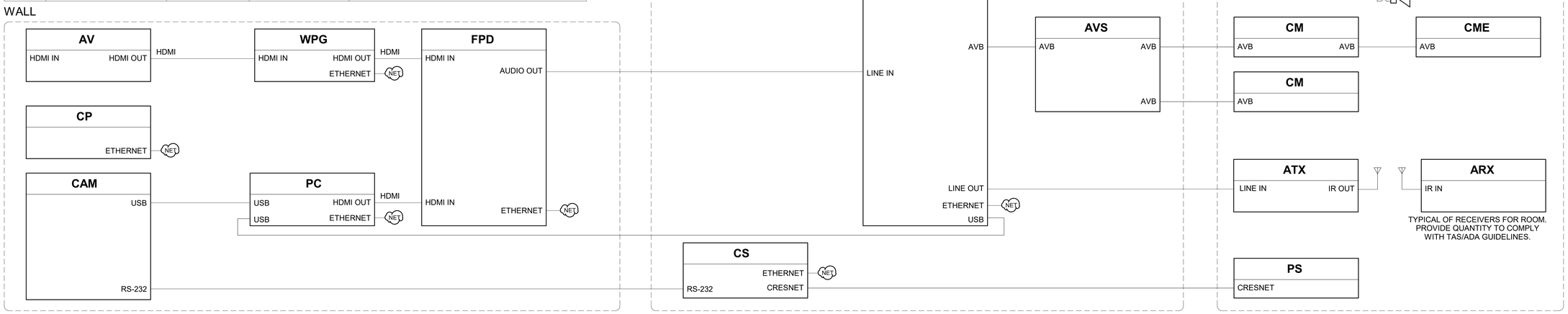
1 SCHEMATIC - DIGITAL SIGNAGE
SCALE: NTS

SYMBOL	DESCRIPTION	MAKE	MODEL	NOTES
WPG	WIRELESS PRESENTATION GATEWAY	CRESTRON	AM-200	COORDINATE INTEGRATION WITH IT DEPARTMENT.
AV	AV WALLPLATE	CUSTOM	CUSTOM	CONFIRM COLOR WITH ARCHITECT. PROVIDE CONNECTIVITY PER SCHEMATIC.
FPD	FLAT PANEL DISPLAY	SAMSUNG, NEC, LG	SIZE PER PLANS	PROVIDE LATEST MODEL WITH REQUIRED CONNECTIVITY AND FUNCTIONALITY.



2 SCHEMATIC - CONFERENCE
SCALE: NTS

SYMBOL	DESCRIPTION	MAKE	MODEL	NOTES
AV	AV WALLPLATE	CUSTOM	CUSTOM	CONFIRM COLOR WITH ARCHITECT. PROVIDE CONNECTIVITY PER SCHEMATIC.
CP	CONTROL TOUCH PANEL	CRESTRON	TSW-1060	CONFIRM COLOR WITH ARCHITECT.
CAM	USB CONFERENCING CAMERA	VADDIO	CONFERENCE SHOT 10	
WPG	WIRELESS PRESENTATION GATEWAY	CRESTRON	AM-300	COORDINATE INTEGRATION WITH IT DEPARTMENT.
PC	LOCAL COMPUTER	OFCI	OFCI	
FPD	FLAT PANEL DISPLAY	SAMSUNG	BE82N	
CS	AV CONTROL SYSTEM	CRESTRON	RMC3	COORDINATE INTEGRATION WITH IT DEPARTMENT.
DSP	AUDIO SIGNAL PROCESSOR	BIAMP	FORTE AVB VT4	COORDINATE INTEGRATION WITH IT DEPARTMENT.
AMP	AUDIO AMPLIFIER	CRESTRON	AMP-X300	
S	RECESSED CEILING SPEAKER	CRESTRON	SAROS IC6T	
ATX	ALS TRANSMITTER	LISTEN TECHNOLOGIES	LT-84	
ARX	ALS RECEIVER	LISTEN TECHNOLOGIES	LT-4200-IR-P1	PROVIDE QUANTITY TO MEET TAS/ADA GUIDLINES AND CHARGING TRAY. COORINATE NOTIFICATION SIGN WITH ARCHITECT.
CM	CEILING MICROPHONE	BIAMP	TCM-X	
CME	CEILING MIC EXPANSION	BIAMP	TCM-EX	
AVS	AVB SWITCH	BIAMP	TC-5	
PS	PARTITION SENSOR	CRESTRON	GLS-PART-CN	



3 SCHEMATIC - CONFERENCE/TRAINING
SCALE: NTS

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AUDIOVISUAL - SCHEMATICS

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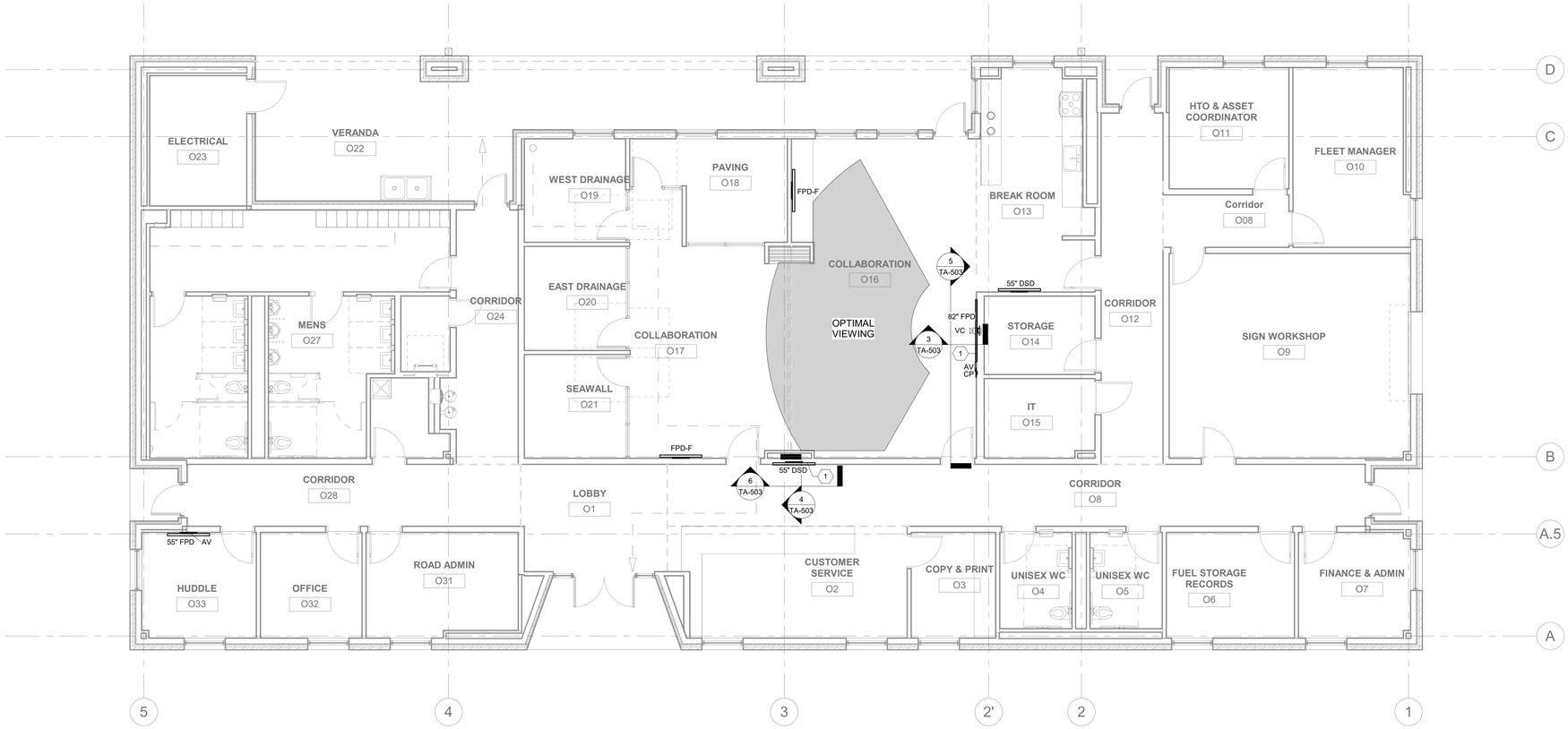
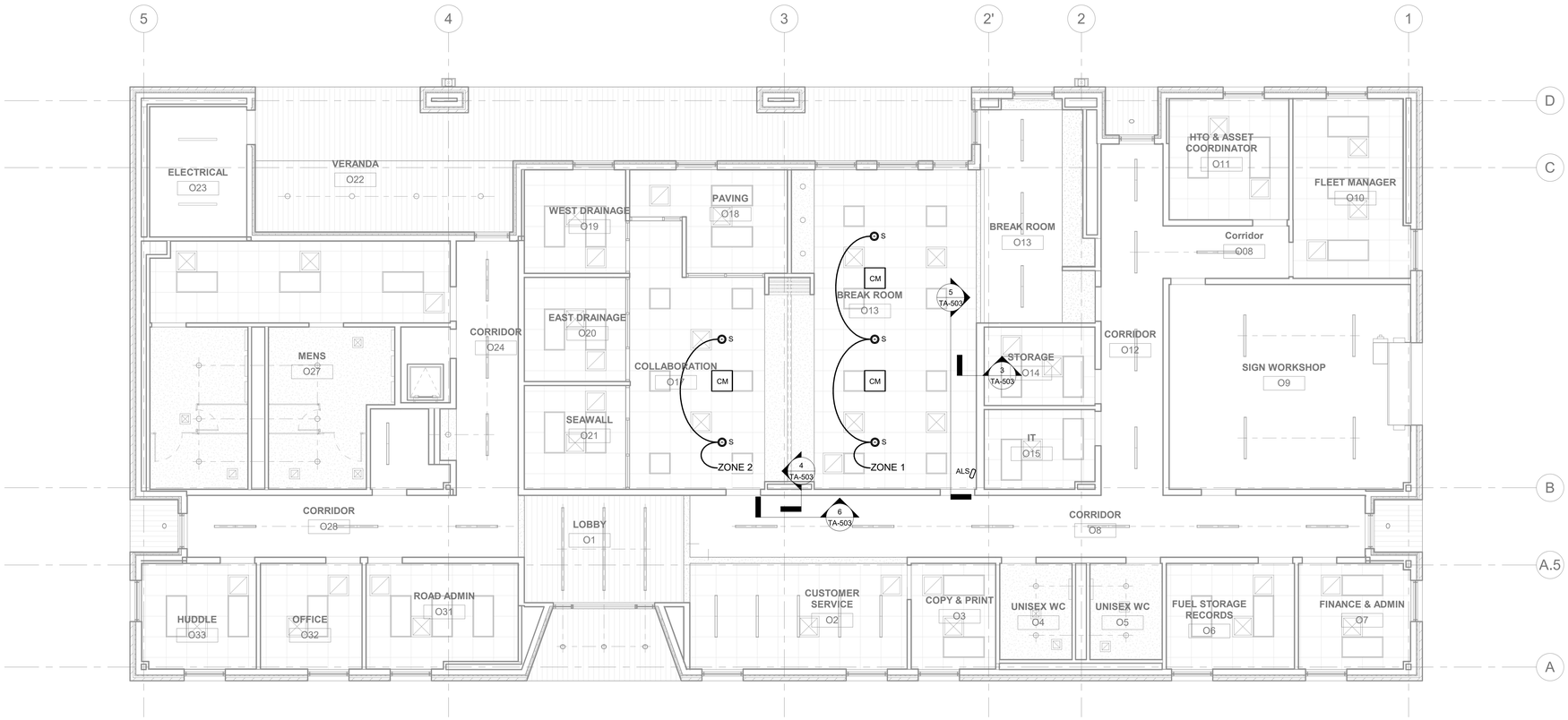


1 **AUDIOVISUAL - FLOOR PLAN - LEVEL 01 OFFICE**
SCALE: 3/16" = 1'-0"

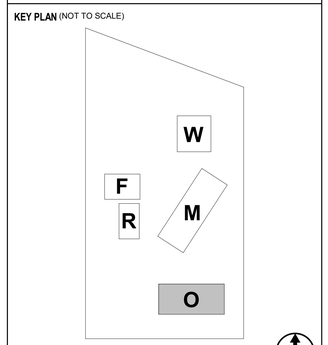


2 **AUDIOVISUAL - REFLECTED CEILING PLAN - LEVEL 01 OFFICE**
SCALE: 3/16" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	DISPLAY IS TO BE RECESSED. REFER TO AV AND ARCHITECTURAL DETAILS.

KEY PLAN (NOT TO SCALE)



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BICSI ID # 186242
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AUDIOVISUAL - FLOOR PLAN & REFLECTED CEILING PLAN - OFFICE

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PROJECT NUMBER	PROJECT ABBREVIATION
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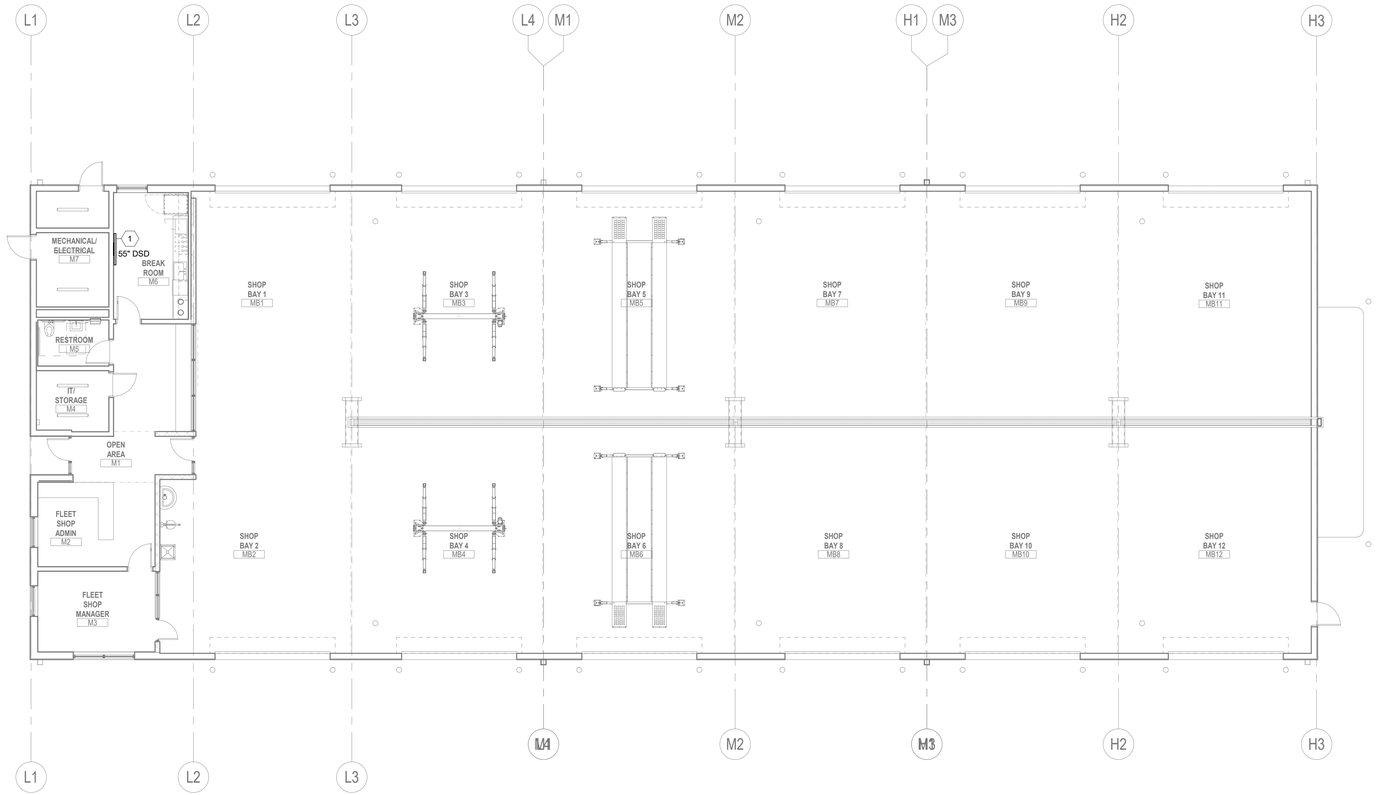
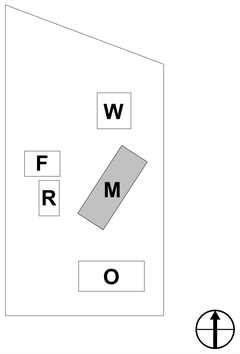


1 **AUDIOVISUAL - FLOOR PLAN - LEVEL 01 SHOP**
SCALE: 1/8" = 1'-0"

KEYED NOTES

NUMBER	DESCRIPTION
1	DISPLAY IS TO BE RECESSED. REFER TO AV AND ARCHITECTURAL DETAILS.

KEY PLAN (NOT TO SCALE)



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Wesly Ausman
BICSI ID # 186242
EXPIRES 12-31-22
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AUDIOVISUAL - FLOOR PLAN - MAINTENANCE SHOP

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PROJECT NUMBER: 418198	PROJECT ABBREVIATION: GC R&B
ORIGINAL ISSUE: ISSUE FOR PERMIT	DATE: 26 JUNE 2020

TA-101M
SHEET NUMBER

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SECURITY SYMBOL LEGEND

SECURITY SYMBOLS

CR	CARD READER - LOCATIONS INCLUDE READER, DOOR CONTACT, REX, AND POWER FOR ELECTRIFIED LOCKSET. ELECTRIFIED LOCKSET PROVIDED BY DOOR CONTRACTOR.
DC	DOOR CONTACT
REX	REQUEST TO EXIT
MS	MOTION SENSOR
RL	REMOTE LOCKDOWN
	SECURITY IP CAMERA
DR	DOOR RELEASE BUTTON

GENERAL NOTES

1. THE GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS AND OTHER REQUIREMENTS OF DIVISION 1. THE ELECTRICAL, COMMUNICATION, AND SECURITY PLANS AND SPECIFICATIONS, MAY APPLY TO THE WORK SPECIFIED.
2. SECURITY INTEGRATOR HERE AFTER REFERRED TO, AS "CONTRACTOR" SHALL PROVIDE ALL MATERIALS, COMPONENTS, TOOLS, AND LABOR TO COMPLETE A VIDEO SURVEILLANCE AND ACCESS CONTROL SYSTEM AS SET FORTH IN THE ELECTRONIC SAFETY AND SECURITY SYSTEM DOCUMENTS, CONTRACTS AND DRAWINGS. REF. DIVISION 27/28, TY DRAWINGS AND E DRAWINGS.
3. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE SITE TO DETERMINE THE EXTENT OF WORK AND CONDITION UNDER WHICH IT WILL BE DONE. REVIEW AND VERIFY CONTRACT DOCUMENTS IN RELATION TO FIELD CONDITIONS TO VERIFY ACCURACY, CONFIRMING WITH THE OWNER, OR THEIR DESIGNATED REPRESENTATIVE, THAT THE WORK HAS BEEN COMPLETED PRIOR TO PROCEEDING WITH INSTALLATION. REGARDING ANY PROJECT RELATED QUESTIONS; THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING CLARIFICATION FROM OWNER, OR THEIR DESIGNATED REPRESENTATIVE, PRIOR TO PROCEEDING WITH THE WORK OR RELATED WORK IN QUESTION.
4. DISCREPANCIES BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS MUST BE BROUGHT TO THE IMMEDIATE ATTENTION OF OWNER, OR THEIR DESIGNATED REPRESENTATIVE, FOR CLARIFICATION.
5. REFER TO SECURITY AND ELECTRICAL CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS AS A UNIT AND IN WHOLE IN THE BIDDING AND INSTALLATION OF THIS PROJECT.
6. ELECTRICAL CONTRACTOR SHALL READ IN THEIR ENTIRETY ALL SECTIONS OF THE ELECTRONIC SAFETY AND SECURITY SYSTEM DOCUMENTS AND APPLY THEM AS APPROPRIATE FOR WORK IN THIS SECTION. REF DIVISION 28 AND TY DRAWINGS.
7. ELECTRICAL CONTRACTOR SHALL PROVIDE MATERIALS, COMPONENTS, TOOLS, AND LABOR TO COMPLETE SECURITY CABLING PATHWAY, ELECTRICAL POWER DISTRIBUTION AND GROUNDING SYSTEM AS SET FORTH IN THE ELECTRONIC SAFETY AND SECURITY SYSTEM DOCUMENTS AND THE ELECTRICAL DOCUMENTS, SPECIFICATIONS AND DRAWINGS.
8. CONTRACTOR SHALL NOTE AND REPORT TO GC SECURITY SYSTEM WORK PERFORMED OR NOT PERFORMED BY ELECTRICAL CONTRACTOR WHICH DOES NOT COMPLY WITH ELECTRONIC SAFETY AND SECURITY SPECIFICATIONS AND DRAWINGS AND ARE INTENDED FOR THE SECURITY SYSTEMS COMPONENTS.
9. CONTRACTOR SHALL TAKE NECESSARY MEANS TO PROTECT SECURITY SYSTEM COMPONENTS FROM MECHANICAL DAMAGE BEFORE, DURING AND AFTER CONSTRUCTION.
10. ALL COMPONENTS AND DEVICES SHOWN ON THESE DRAWINGS ARE FOR APPROXIMATE LOCATIONS AND POSITIONING ONLY. VERIFY EXACT LOCATIONS WITH THE OWNER OR G.C. PRIOR TO INSTALLATION.

SECURITY NOTES

SECURITY PATHWAY

1. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL CONDUITS, PULL STRINGS, CORES, AND JUNCTION BOXES AS REQUIRED ON THE TY DRAWINGS.
2. CONDUIT RUNS SHALL BE INSTALLED WITH NO MORE THAN TWO (2) 90 DEG. RADIUS BENDS AND NOT EXCEED 100FT FOR INTERIOR CABLING.
3. PRIOR TO SUBSTANTIAL COMPLETION. ALL SECURITY PATHWAY CONDUITS AND UNUSED "SECURITY INTENDED USE CONDUITS" SHALL BE PROPERLY FIRESTOPPED AND LABELED.
4. CONDUIT SIZES INDICATED ON THE DRAWINGS AND HOME RUN SIZES SHOWN ON DETAIL SHEETS ARE TO BE CONSIDERED THE MINIMUM SIZE TO BE INSTALLED. PROVIDE LARGER OR ADDITIONAL CONDUIT IF REQUIRED. CONDUIT SIZES INDICATE DEDICATED HOME RUNS, BUT MAY BE COMBINED WITH OTHER LOCATIONS BY SYSTEM TYPE (VIDEO SURVEILLANCE, INTERCOM AND ACCESS CONTROL) AS LONG AS NEC MAXIMUM FILL REQUIREMENTS ARE MAINTAINED.
5. FURNISH AND INSTALL CABLE MANAGEMENT DEVICES (VELECRO WRAPS, ETC) AND CEILING MOUNTING HARDWARE, CABLE SADDLES AS REQUIRED. (UNLESS SPECIFIED FOR INSTALLATION BY ELECTRICAL CONTRACTOR)
6. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL HOMERUN CONDUIT PATHS FROM EACH CAMERA LOCATIONS BACK TO NEAREST TELECOM ROOM SECURITY WALL FIELD. PROVIDE PULL STRINGS, CORES, AND JUNCTION BOXES AS REQUIRED.

VIDEO SURVEILLANCE

1. CONTRACTOR SHALL PROVIDE AND INSTALL MOUNTS AND HARDWARE AS SHOWN ON TY DRAWINGS.
2. CONTRACTOR SHALL PROVIDE AND INSTALL CAMERAS AT THE HEIGHT ABOVE GRADE OR ABOVE FINISHED FLOOR AS INDICATED ON THE TY PLANS.
3. COORDINATE LOCATION OF CAMERAS WITH ALL CEILING MOUNTED ARCHITECTURAL AND MEP EQUIPMENT.
4. CONTRACTOR SHALL LOCATE CAMERA AND CONFIGURE LENS SETTINGS TO OPTIMIZE CAMERA VIEWS.
5. CONTRACTOR SHALL PROVIDE AND INSTALL ALL COMPONENTS AS DETAILED IN THE TY DRAWINGS.
6. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS NUTS, BOLTS MOUNTING PLATES AND OTHER ACCESSORIES REQUIRED FOR A FULL TURN KEY INSTALLATION.
7. CONTRACTOR IS RESPONSIBLE FOR CAMERA LICENSES, SOFTWARE REVISIONS, SET UP OF OWNER PROVIDED STORAGE SERVER AND CAMERA FIELD OF VIEWS. AS WELL AS COORDINATION WITH OWNER TO ENSURE SUCCESSFUL TIE INTO VIEWING AND RECORDING SYSTEM.
8. CONTRACTOR SHALL PROVIDE NETWORK STORAGE CALCULATIONS AS PART OF THE SUBMITTAL PACKAGE.
9. MOTION DETECTION WINDOWS ARE TO BE CONFIGURED WITH THE INVOLVEMENT OF THE OWNER IN ORDER TO MINIMIZE FALSE MOTION EVENTS.
10. ALL CABLING FOR IP CAMERAS WILL BE PROVIDED AND INSTALLED BY COMMUNICATION CABLING CONTRACTOR.
11. COORDINATE WITH COMMUNICATION CABLING CONTRACTOR FOR INSTALLATION OF CATEGORY 6E CAMERA CABLING.
12. THE CAMERA INSTALLER SHALL VERIFY THERE ARE NO PHYSICAL OBSTRUCTIONS TO THE INTENDED CAMERA VIEW PRIOR TO INSTALLATION. SHOULD ANY OBSTRUCTION BE PRESENT IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE CONSULTANT AND OWNER AND ADJUST THE CAMERA POSITION AS NEEDED.
13. CONTRACTOR SHALL PROVIDE SECURITY CAMERA POWER SUPPLY AS REQUIRED FOR PAN/TILT/ZOOM (PTZ) CAMERA'S TO CONTROL PTZ FUNCTIONS.

PROJECT NOTES

GROUNDING AND BONDING

1. CONTRACTOR SHALL ADHERE TO ALL GROUNDING AND BONDING REQUIREMENTS SET FOURTH IN THE ANSI-J-STD-607-A COMMERCIAL GROUNDING AND BONDING STANDARDS.

ACCESS CONTROL

1. DOOR CONTRACTOR SHALL PROVIDE AND INSTALL ALL ELECTRIC LOCKS AS SHOWN ON DRAWINGS AND COMPLY WITH BUILDING HARDWARE SCHEDULE.
2. DOOR CONTRACTOR SHALL PROVIDE AND INSTALL EXTERIOR KEY-BYPASS OPTION ON ALL ELECTRIC LOCK DOORS TO ALLOW MANUAL ENTRY. LOCKS SHALL BE THE SAME MANUFACTURER AS REQUIRED BY BUILDING HARDWARE SCHEDULE.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL DOOR PREP TO INCLUDE CONDUIT, PULL STRINGS AND JUNCTION BOXES AS SHOWN ON THE TY DRAWINGS.
4. ELECTRICAL CONTRACTOR SHALL REFER TO SECURITY DRAWINGS TO VERIFY LOCATIONS OF SECURITY GANG BOXES AND CONDUIT AND PROVIDE THOSE COMPONENTS PRIOR TO THE SECURITY INSTALLATION.
5. SECURITY CONTRACTOR TO HOME-RUN ALL SECURITY DOOR DEVICE COMPOSITE CABLING TO TELECOM ROOM.
6. SECURITY CONTRACTOR TO LEAVE 24" SERVICE LOOPS OF COMPOSITE CABLING ABOVE DOOR AND ABOVE THE ENCLOSURE IN THE TELECOM ROOM.
7. SECURITY CONTRACTOR TO SIZE DOOR CONTROLLERS, ENCLOSURES, BOARDS AND POWER SUPPLIES TO PREPARE FOR FUTURE ACCESS CONTROL DOORS.
8. DOOR CONTRACTOR SHALL PROVIDE AND INSTALL ALL ELECTRICAL TRANSFER HINGES AS SHOWN ON DRAWINGS AND COMPLY WITH BUILDING HARDWARE SCHEDULE.
9. FIRE ALARM CONTRACTOR SHALL PROVIDE FIRE ALARM SIGNAL INTERFACES AS REQUIRED AND COORDINATED BY THE SECURITY CONTRACTOR FOR RELEASE OF SECURITY CONTROLLED DOORS PER CURRENT LIFE SAFETY CODES.
10. SECURITY CONTRACTOR SHALL PROVIDE AND INSTALL THE FOLLOWING:
    A. CARD READERS
    B. SUPERVISED RESISTORS
    C. DOOR CONTACTS
    D. BOARD ENCLOSURE
    E. CONTROLLER
    F. EXPANSION BOARDS AS REQUIRED
    G. POWER SUPPLIES
    H. INTERCOM - MASTER STATION AND REMOTE STATION
    I. LOW VOLTAGE CABLE AS REQUIRED
    J. PROJECT MANAGEMENT AND CUSTOMER TRAINING.
    K. COORDINATION WITH OWNER TO ENSURE SUCCESSFUL TIE INTO OWNERS ACCESS CONTROL SYSTEM.

ELECTRICAL

1. FOR SPECIFIC POWER AND RECEPTACLE REQUIREMENTS IN THE PROJECT REFERENCE ELECTRICAL SPECIFICATIONS AND DRAWINGS AND VERIFY WITH SECURITY SPECIFICATIONS AND DRAWINGS. REPORT TO GC DISCREPANCIES PRIOR TO PURCHASE OR INSTALLATION.
2. FOR SPECIFIC POWER REQUIREMENTS FOR CAMERAS AND ACCESS CONTROL, REFERENCE ELECTRICAL SPECIFICATIONS AND DRAWINGS AND VERIFY AGAINST SECURITY SPECIFICATIONS AND DRAWINGS. REPORT TO GC DISCREPANCIES PRIOR TO PURCHASE OR INSTALLATION.
3. ELECTRICAL CONTRACTOR SHALL INSTALL NORMAL AND GENERATOR BACK-UP POWER AS REQUIRED BY THE SECURITY SYSTEM AND COORDINATED BY THE SECURITY CONTRACTOR.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE 120V AC FOR ELECTRIC LOCK POWER SUPPLIES, SECURITY POWER SUPPLIES AND CAMERA POWER SUPPLIES AS REQUIRED. SECURITY AND DOOR CONTRACTORS SHALL IDENTIFY LOCATIONS ON SUBMITTALS.

ABBREVIATIONS

ACS	ACCESS CONTROL SYSTEM
AFF	ABOVE FINISHED FLOOR
APS	ACCESS CONTROL POWER SUPPLY
AWG	AMERICAN WIRE GAUGE
CCTV	CLOSED CIRCUIT TELEVISION
CH	CHANNEL
CPS	CAMERA POWER SUPPLY
CPU	CENTRAL PROCESSING UNIT
CON.	CONDUCTOR
CRT	CATHODE RAY TUBE
DB	DECIBEL
DGP	DATA GATHERING PANEL
DVR	DIGITAL VIDEO RECORDER
EL	ELECTRONIC LOCKSET
ESS	ELECTRONIC SAFETY & SECURITY
FC	FOOT CANDLE
FOV	FIELD OF VIEW
FPS	FRAMES PER SECONDS
FSD	FLAT SCREEN DISPLAY
IDF	ITERMEDIATE DISTRUBUTION FRAME
IP	INTERNET PROTOCOL
IR	INFRARED
JPEG	JOINT PHOTOGRAPHIC EXPERTS GROUP
LPS	LOCK POWER SUPPLY
MDF	MAIN DISTRIBUTION FRAME
MPEG	MOTION PICTURE EXPERTS GROUP
NTSC	NATIONAL TELEVISION STANDARDS COMMITTEE
NVR	NETWORK VIDEO RECORDER
PIR	PASSIVE INFRARED
POE	POWER OVER ETHERNET
PP	PATCH PANEL
PPF	PIXELS PER FOOT
PTZ	PAN-TILT-ZOOM
REX	REQUEST TO EXIT
SMS	SOFTWARE MANAGEMENT SYSTEM
TP	TERMINATION POINT
TS	TRADE SIZE
TR	TELECOM ROOM
TY	SECURITY DISCIPLINE DESIGNATOR
UM	MICRON
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
VMS	VIDEO MANAGEMENT SOFTWARE
WDR	WIDE DYNAMIC RANGE

INDEX OF DRAWINGS

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TY-101O	SECURITY - FLOOR PLAN - LEVEL 01 - OFFICE
TY-101M	SECURITY - FLOOR PLAN - MAINTENANCE SHOP
TY-501	SECURITY - DETAILS
TY-502	SECURITY - DETAILS

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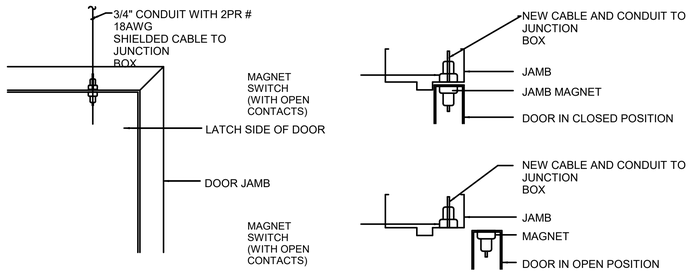
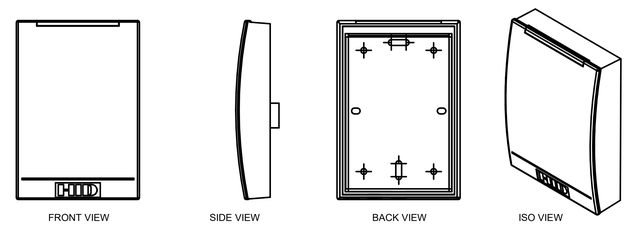


1 TYPICAL DOOR CONTACT SWITCH DETAIL

SCALE: 1/8" = 1'-0"



2 CARD READER DETAIL

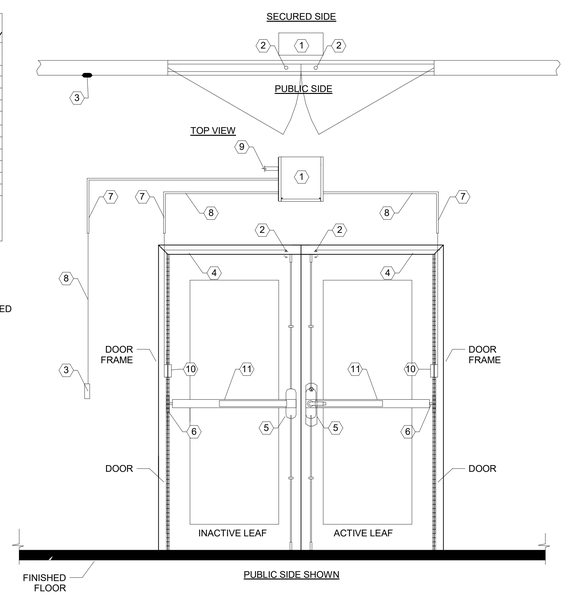
SCALE: 1/8" = 1'-0"

ITEM	EQUIPMENT LIST DESCRIPTION	QTY
1	NEMA 12 ENCLOSURE W/ BACK PLANE * SIZE ACCORDINGLY	1
2	MAGNETIC DOOR CONTACT	2
3	PROXIMITY CARD READER	1
4	DOOR OPERATOR (NOT SHOWN)	2
5	CONCEALED VERT. ROD EXIT DEVICE	2
6	CORE DOOR FOR SECURITY LOCK	2
7	EMT CONDUIT	AR
8	SECURITY CABLE	AR
9	EMT TO SECURITY PANEL	AR
10	ELECTRONIC POWER TRANSFER	2
11	INTEGRAL REX SWITCH	2
12	NONE	-

LEGEND:
AR = AS REQUIRED
(REF. SPEC.) = REFERENCE SPECIFICATIONS
IEM NUMBER = NUMBER SYMBOLS

WIRE TYPE - BELDEN
LOCK POWER / INTEGRATED REX: 4C, 18 AWG, SHIELDED
CARD READER: 3PR, 22 AWG OA SHIELD
DOOR CONTACT: 2C, 22 AWG, SHIELDED
REX / SPARE: 4C, 22 AWG, SHIELDED

NOTE:
ENTRY PROXIMITY CARD READER, EXPOSED VERTICAL ROD EXIT DEVICE WITH INTEGRAL REQUEST TO EXIT SWITCH



DOOR SEQUENCE OF OPERATION - CARD IN-FREE OUT

ENTRY SIDE:

THE DOOR IS EQUIPPED WITH A INTEGRATED CARD READER ON THE PUBLIC SIDE OF THE DOOR TO CONTROL ENTRY INTO A SECURED AREA. THE CONTACT SWITCH MONITORS THE POSITION OF THE DOOR. USE OF THE CARD READER BYPASSES THE DOOR CONTACT SWITCH TO ALLOW ENTRY. THE DOOR IS LOCKED ON THE PUBLIC SIDE.

EXIT SIDE:

THE DOOR IS EQUIPPED CRASH BARS WITH INTEGRAL REQUEST TO EXIT SWITCH TO CONTROL EXITING FROM A SECURED AREA. THE CONTACT SWITCH MONITORS THE POSITION OF THE DOOR. ACTIVATION OF THE REQUEST TO EXIT SWITCH BYPASSES THE DOOR CONTACT SWITCH TO ALLOW EGRESS.THE DOOR IS UNLOCKED ON THE SECURE SIDE.

DOOR STATUS :

IF THE DOOR IS HELD OPEN, A DOOR HELD OPEN ALARM WILL BE GENERATED. IF THE DOOR IS OPENED WITHOUT USE OF READERS, A DOOR FORCED ALARM WILL BE GENERATED.

NOTE: NO DOOR PROPS ARE TO BE USED ON SECURITY DOORS

5 TYPICAL DOUBLE DOOR DETAIL1

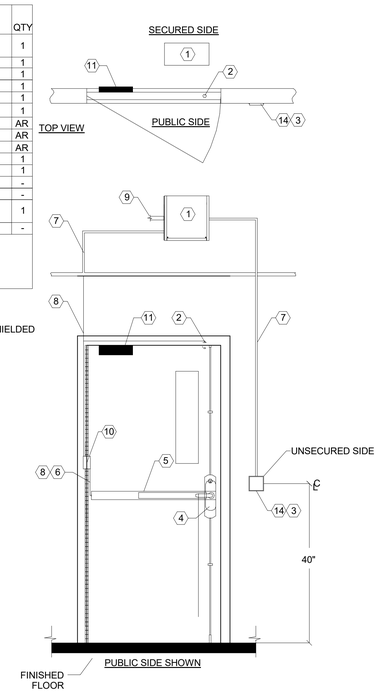
SCALE: NTS

ITEM	EQUIPMENT LIST DESCRIPTION	QTY
1	NEMA 12 ENCLOSURE W/ BACK PLANE * SIZE ACCORDINGLY	1
2	MAGNETIC DOOR CONTACT	1
3	PROXIMITY CARD READER	1
4	CONCEALED VERT. ROD EXIT DEVICE	1
5	INTEGRAL REX SWITCH	1
6	CORE DOOR FOR SECURITY LOCK	1
7	EMT CONDUIT - MINIMUM $\frac{3}{4}$" (DIV. 26)	AR
8	SECURITY CABLE	AR
9	EMT TO SECURITY PANEL	AR
10	ELECTRICAL POWER TRANSFER	1
11	DOOR CLOSER (PER SCHEDULE)	1
12	NOT USED	-
13	NOT USED	-
14	DOUBLE GANG BOX IN WALL (REF SPECS) WITH SINGLE GANG MUD RING	1
15	NOT USED	-

LEGEND:
AR = AS REQUIRED
(REF. SPEC.) = REFERENCE SPECIFICATIONS
ITEM NUMBER = NUMBER SYMBOLS

WIRE TYPE - BELDEN
LOCK POWER / INTEGRATED REX: 4C, 18 AWG, SHIELDED
CARD READER: 3PR, 22 AWG OA SHIELD
DOOR CONTACT: 2C, 22 AWG, SHIELDED
REX / SPARE: 4C, 22 AWG, SHIELDED

NOTE:
ENTRY PROXIMITY CARD READER, ELECTRIFIED PANIC HARDWARE WITH INTEGRAL REQUEST TO EXIT SWITCH



DOOR SEQUENCE OF OPERATION - CARD IN-FREE OUT

ENTRY SIDE:

THE DOOR IS EQUIPPED WITH A CARD READER ON THE PUBLIC SIDE OF THE DOOR TO CONTROL ENTRY INTO A SECURED AREA. THE CONTACT SWITCH MONITORS THE POSITION OF THE DOOR. USE OF THE CARD READER BYPASSES THE DOOR CONTACT SWITCH TO ALLOW ENTRY. THE DOOR IS LOCKED ON THE PUBLIC SIDE.

EXIT SIDE:

THE DOOR IS EQUIPPED CRASHBAR WITH INTEGRAL REQUEST TO EXIT SWITCH TO CONTROL EXITING FROM A SECURED AREA. THE CONTACT SWITCH MONITORS THE POSITION OF THE DOOR. ACTIVATION OF THE REQUEST TO EXIT SWITCH BYPASSES THE DOOR CONTACT SWITCH TO ALLOW EGRESS.THE DOOR IS UNLOCKED ON THE SECURE SIDE.

DOOR STATUS :

IF THE DOOR IS HELD OPEN, A DOOR HELD OPEN ALARM WILL BE GENERATED. IF THE DOOR IS OPENED WITHOUT USE OF READERS, A DOOR FORCED ALARM WILL BE GENERATED.

NOTE: NO DOOR PROPS ARE TO BE USED ON SECURITY DOORS

6 TYPICAL SINGLE DOOR DETAIL1

SCALE: NTS

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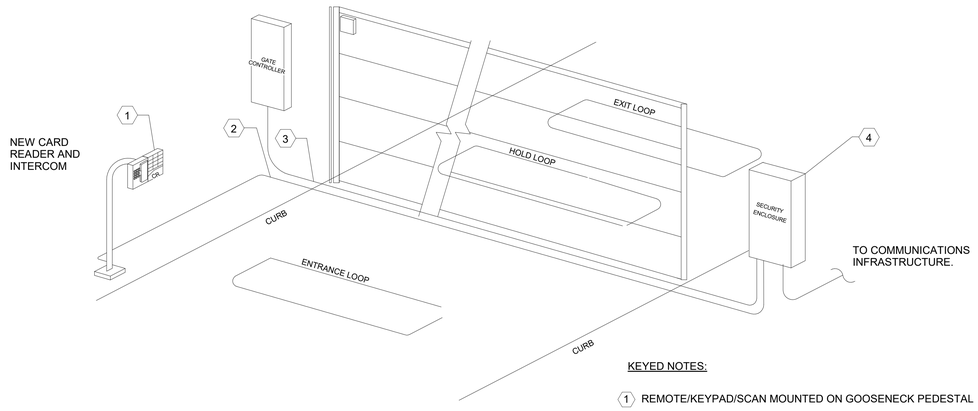


KEYED NOTES:

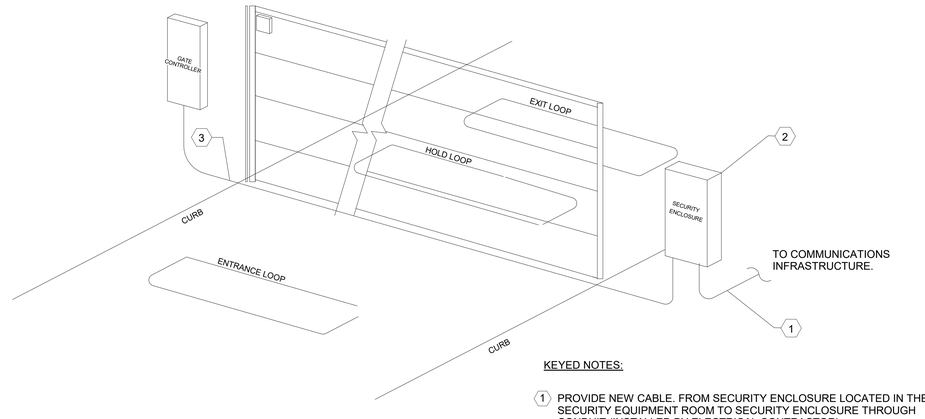
1. REMOTE/KEYPAD/SCAN MOUNTED ON GOOSENECK PEDESTAL
2. PROVIDE NEW CABLE. FROM SECURITY ENCLOSURE LOCATED IN THE SECURITY EQUIPMENT ROOM TO SECURITY ENCLOSURE THROUGH CONDUIT (INSTALLED BY ELECTRICAL CONTRACTOR).
3. PROVIDE NEW CABLE FROM SECURITY ENCLOSURE TO GATE CONTROLLER.
4. INSTALL NEW GATE INTERFACE MODULES INSIDE OF THE SECURITY ENCLOSURE LOCATED IN THE SECURITY EQUIPMENT ROOM. PROVIDE ALL EQUIPMENT AND CABLING REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM.

GENERAL NOTES:

1. COORDINATE WITH THE GATE MANUFACTURER TO ENSURE PROVISIONS FOR WIRELESS REMOTE OPERATION OF THE GATE IS SUPPLIED UPON REQUEST.

1 SECURITY GATE WITH REMOTE/KEYPAD/SCAN

SCALE: NTS



KEYED NOTES:

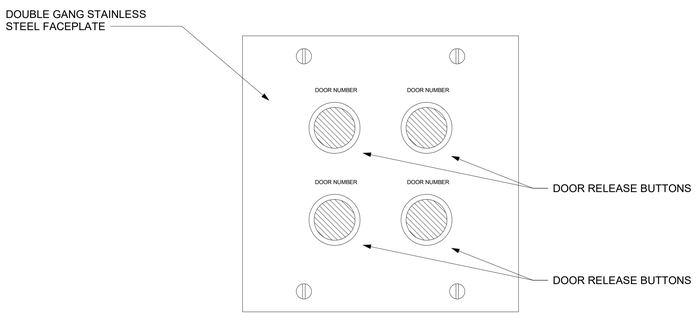
1. PROVIDE NEW CABLE. FROM SECURITY ENCLOSURE LOCATED IN THE SECURITY EQUIPMENT ROOM TO SECURITY ENCLOSURE THROUGH CONDUIT (INSTALLED BY ELECTRICAL CONTRACTOR).
2. INSTALL NEW GATE INTERFACE MODULES INSIDE OF THE SECURITY ENCLOSURE LOCATED IN THE SECURITY EQUIPMENT ROOM. PROVIDE ALL EQUIPMENT AND CABLING REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM.
3. PROVIDE NEW CABLE FROM SECURITY ENCLOSURE TO GATE CONTROLLER

GENERAL NOTES:

1. COORDINATE WITH THE GATE MANUFACTURER TO ENSURE PROVISIONS FOR WIRELESS REMOTE OPERATION OF THE GATE IS SUPPLIED UPON REQUEST.

2 SECURITY GATE

SCALE: NTS



3 DOOR RELEASE BUTTON - DETAIL

SCALE: 1" = 1'-0"

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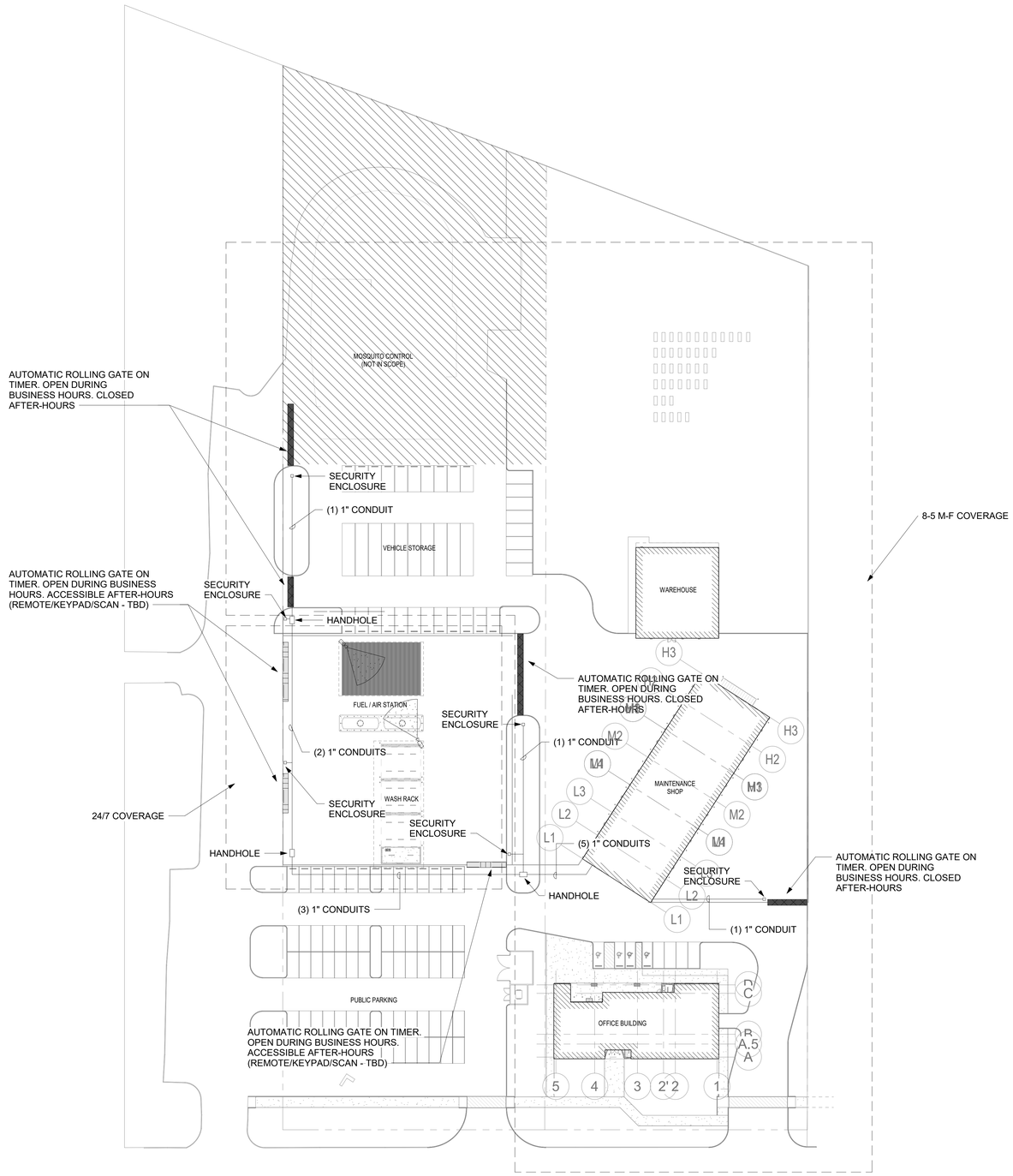
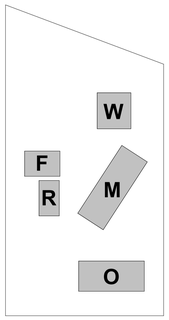


1 **SECURITY SITE PLAN**
SCALE: 1" = 40'-0"

KEY PLAN (NOT TO SCALE)



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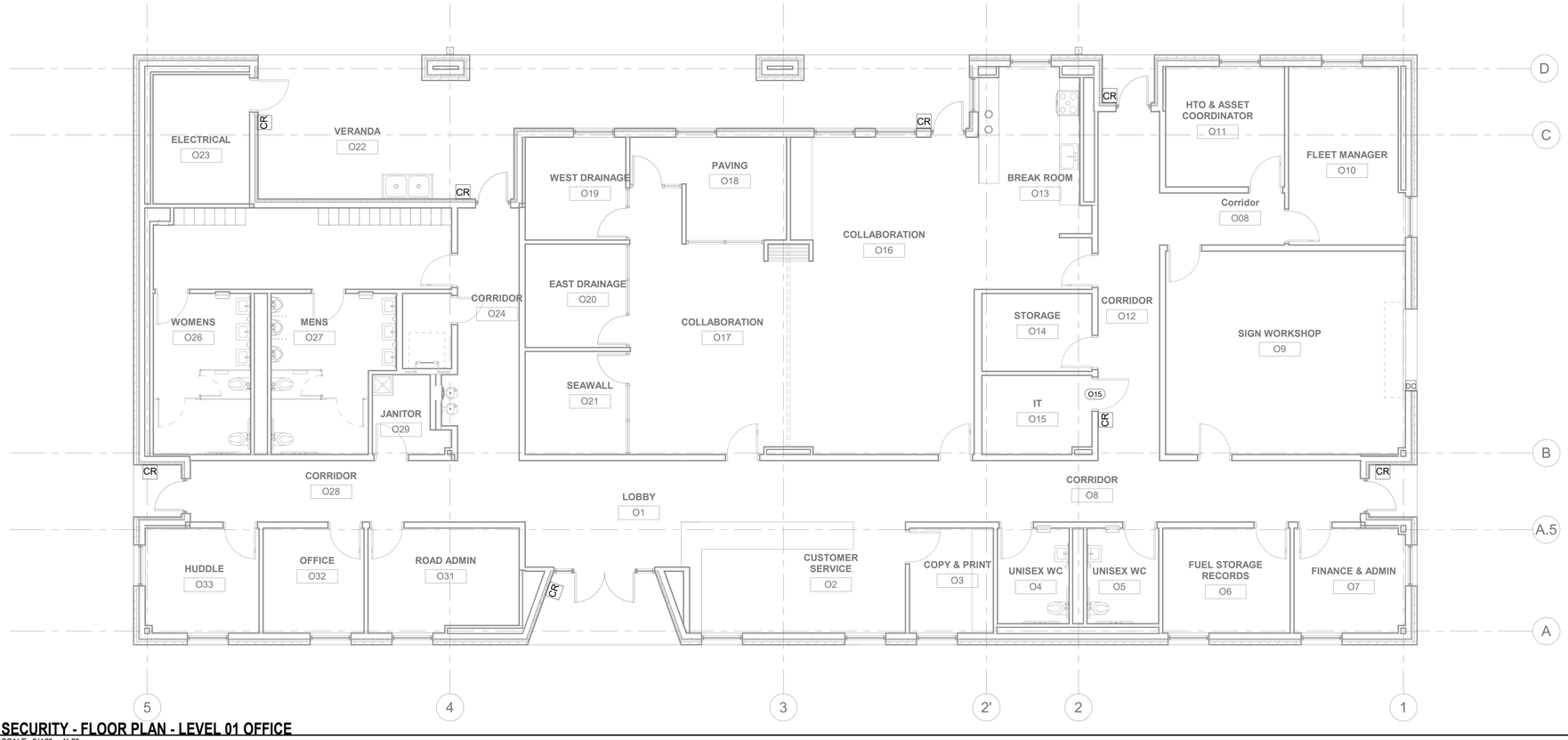
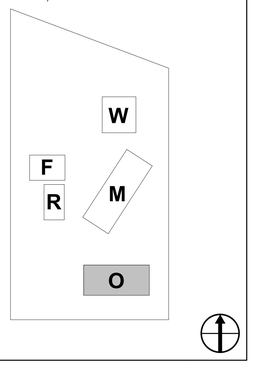


1 **SECURITY - FLOOR PLAN - LEVEL 01 OFFICE**
SCALE: 3/16" = 1'-0"

SECURITY SYMBOLS

CR	CARD READER - LOCATIONS INCLUDE READER, DOOR CONTACT, REX, AND POWER FOR ELECTRIFIED LOCKSET. ELECTRIFIED LOCKSET PROVIDED BY DOOR CONTRACTOR.
DC	DOOR CONTACT
REX	REQUEST TO EXIT
MS	MOTION SENSOR
RL	REMOTE LOCKDOWN
DR	DOOR RELEASE BUTTON

KEY PLAN (NOT TO SCALE)



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SECURITY - FLOOR PLAN - LEVEL 01 - OFFICE

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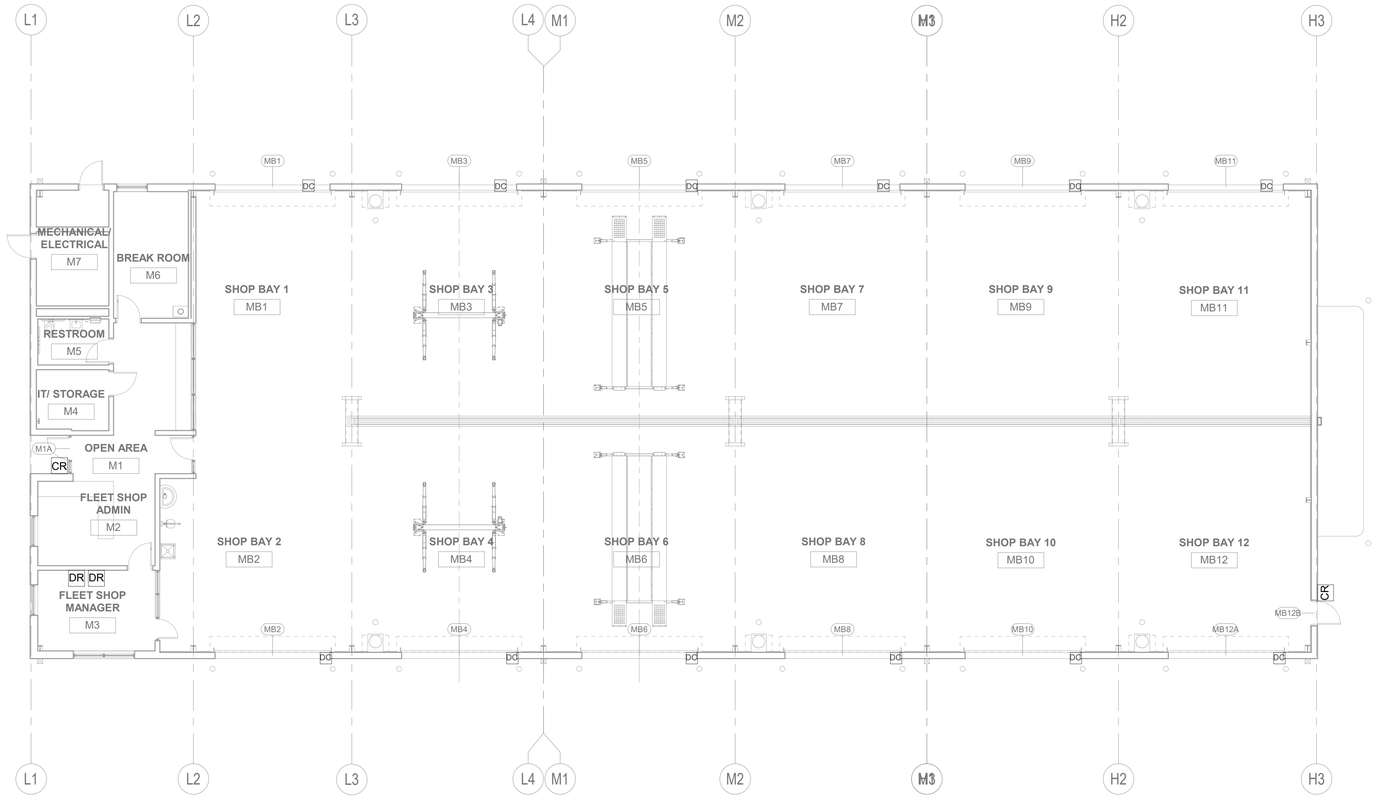
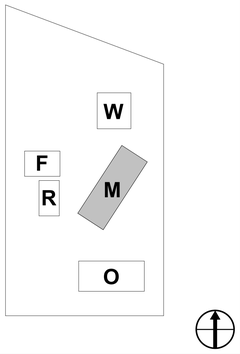


1 **SECURITY - FLOOR PLAN - LEVEL 01 SHOP**
SCALE: 1/8" = 1'-0"

SECURITY SYMBOLS

CR	CARD READER - LOCATIONS INCLUDE READER, DOOR CONTACT, REX, AND POWER FOR ELECTRIFIED LOCKSET. ELECTRIFIED LOCKSET PROVIDED BY DOOR CONTRACTOR.
DC	DOOR CONTACT
REX	REQUEST TO EXIT
MS	MOTION SENSOR
RL	REMOTE LOCKDOWN
DR	DOOR RELEASE BUTTON

KEY PLAN (NOT TO SCALE)



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